

## Bristol County Retirement System

# ANALYSIS OF INVESTMENT PERFORMANCE

As of September 30, 2018

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## ANALYSIS OF INVESTMENT PERFORMANCE

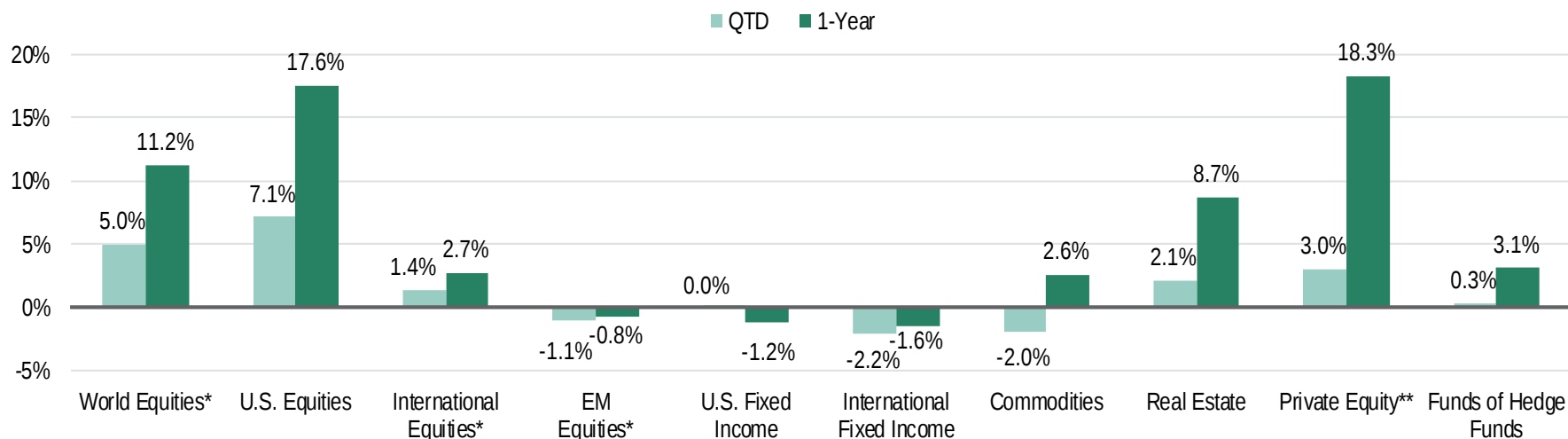
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## **Financial Market Conditions**

# Q3 2018 In Review

## Summary of Investment Returns



## Quarterly Synopsis

- World equity markets rose in Q3. Solid economic and earnings data outweighed global policy uncertainty among investors.
- U.S. equity gained during the quarter. A healthy economy and robust earnings led stocks to rise despite global trade concerns.
- International equity was boosted by stronger economic news and the European Central Bank's statement that it would not hike interest rates until at least the summer of 2019.
- Emerging market equity declined again in Q3 amid U.S. dollar strength, slowing growth in China and nervousness about the collapse of the Turkish lira.
- U.S. fixed income was flat for the quarter. Short-term interest rates rose again in Q3, though longer-term yields increased as well.
- Non-U.S. fixed income declined in Q3 as Italian bonds slid.
- Hedge funds were slightly positive in the quarter. Multi-strategy and macro funds were among the best YTD performers.

\* Net of Dividends

\*\* Performance as of Q1 2018 because Q2 2018 and Q3 2018 performance data is not yet available.

Sources: Investment Metrics, Thomson One, FactSet

# Q3 2018 Index Returns

| Asset Class            | Indices                                     | QTD   | YTD   | 1-Year | 3-Year | 5-Year | 10-Year |
|------------------------|---------------------------------------------|-------|-------|--------|--------|--------|---------|
| World Equity           | MSCI World <sup>1</sup>                     | 4.98  | 5.43  | 11.24  | 13.54  | 9.28   | 8.56    |
| U.S. Equity            | Russell 3000                                | 7.12  | 10.57 | 17.58  | 17.07  | 13.46  | 12.01   |
| Non-U.S. Equity        | MSCI EAFE <sup>1</sup>                      | 1.35  | -1.43 | 2.74   | 9.23   | 4.42   | 5.38    |
| Emerging Market Equity | MSCI EM <sup>1</sup>                        | -1.09 | -7.68 | -0.81  | 12.36  | 3.61   | 5.40    |
| U.S. Fixed Income      | Bloomberg Barclays U.S. Aggregate           | 0.02  | -1.60 | -1.22  | 1.31   | 2.16   | 3.77    |
| Non-U.S. Fixed Income  | FTSE <sup>2</sup> Non-U.S. WGBI (Unhedged)  | -2.19 | -3.09 | -1.57  | 2.39   | -0.23  | 1.99    |
| Commodities            | Bloomberg Commodity Index                   | -2.02 | -2.03 | 2.59   | -0.11  | -7.18  | -6.24   |
| Private Real Estate    | NFI-ODCE                                    | 2.09  | 6.48  | 8.68   | 8.80   | 10.72  | 5.58    |
| Private Equity         | Thomson Reuters Private Equity <sup>3</sup> | 3.03  | 3.03  | 18.32  | 12.43  | 13.96  | 9.51    |
| Hedge Funds            | HFRI Fund of Funds Composite                | 0.27  | 0.99  | 3.08   | 3.29   | 3.18   | 2.55    |

<sup>1</sup> Net of Dividends

<sup>2</sup> Formerly Citigroup Non-U.S. WGBI. Citigroup's fixed income indices were purchased by London Stock Exchange Group (LSEG) and will all be rebranded to FTSE by July 31, 2018.

FTSE Russell is a unit of LSEG's Information Services Division and a wholly owned subsidiary of LSEG.

<sup>3</sup> Performance as of Q1 2018 because Q2 2018 and Q3 2018 performance data is not yet available.

Sources: Investment Metrics, Thomson One, FactSet

# Q3 2018 In Review: U.S. Economy

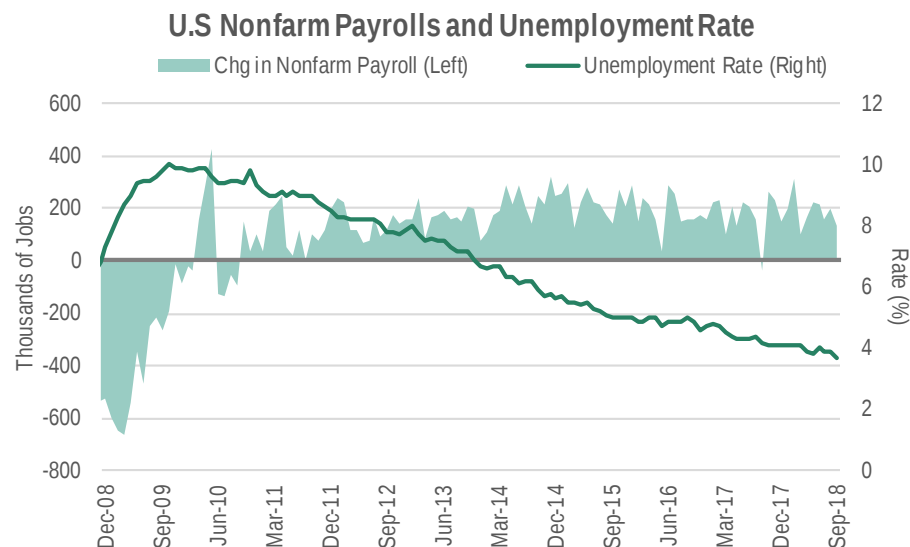
## GDP Growth

- Real GDP grew at a rate of 3.5% in Q3 2018. Real GDP growth for Q2 was revised upward from 4.1% to 4.2%.
- GDP growth in Q3 came from personal consumption expenditures (PCE), state and local government spending, federal government spending and nonresidential fixed investment.
- These contributions were offset by reductions in exports and residential fixed investment. Imports increased in Q3.



## Employment Picture

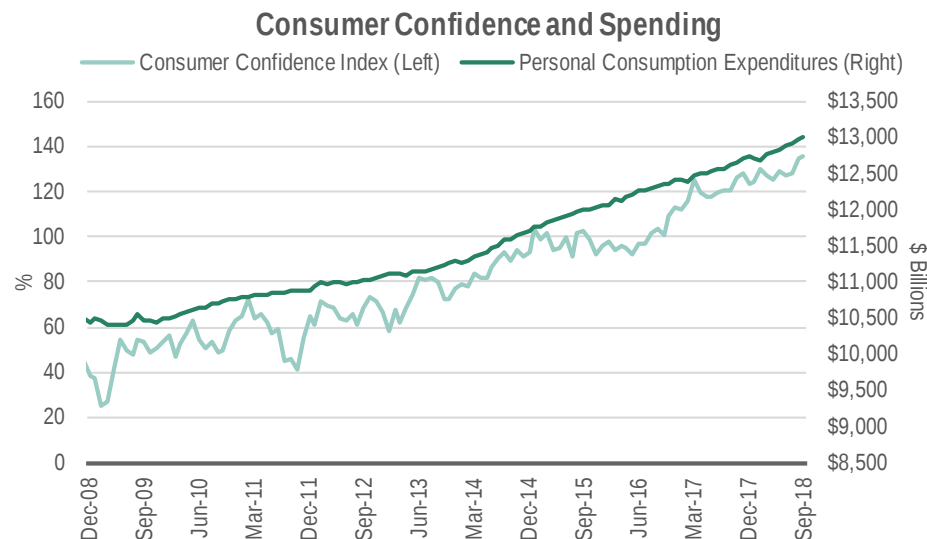
- The unemployment rate fell to 3.7% in September. Nonfarm payrolls rose by 569,000 over the quarter.
- Employment grew across almost all sectors, led by gains in professional and business services, health care, transportation, construction, mining, and manufacturing. Employment in hospitality and leisure fell.



# Q3 2018 In Review: U.S. Economy

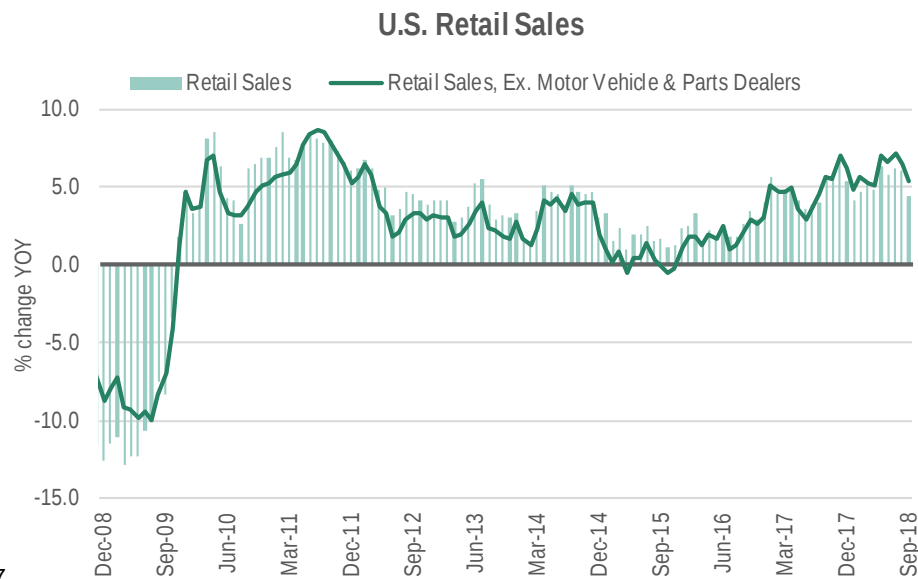
## Consumer Confidence and Spending

- Sentiment rose in Q3, as the Conference Board's Consumer Confidence Index increased from 126.4 at the end of June to 135.3 at the end of September.
- Personal consumption expenditures increased during the quarter.
- Consumer confidence improved as trade worries eased somewhat and the U.S. economic backdrop remained solid.



## Retail Sales

- Retail sales slowed in August\*, but ended the month up 6.1% from one year ago.
- The deceleration was largely due to fewer motor vehicle and clothing purchases.
- July retail sales data was revised upward, keeping expectations in place for strong results overall for Q3.

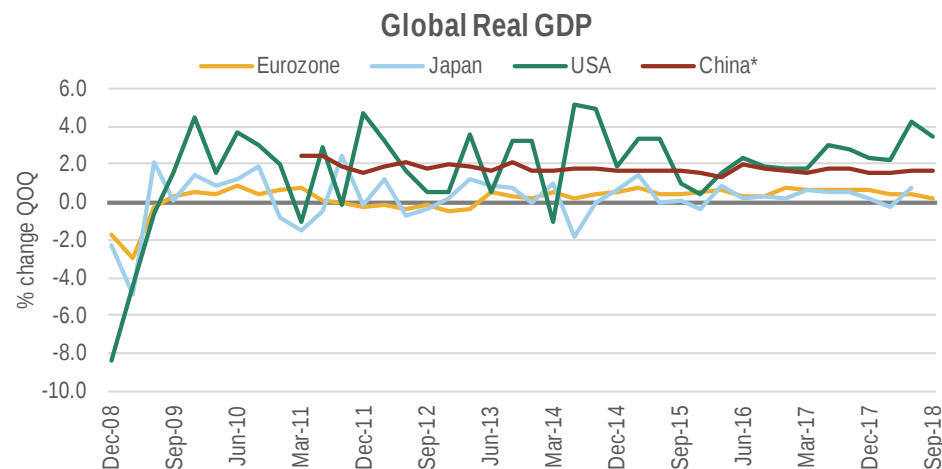


\*The most recent data available.  
Source this page: FactSet

# Q3 2018 In Review: Global Economy

## World GDP Growth

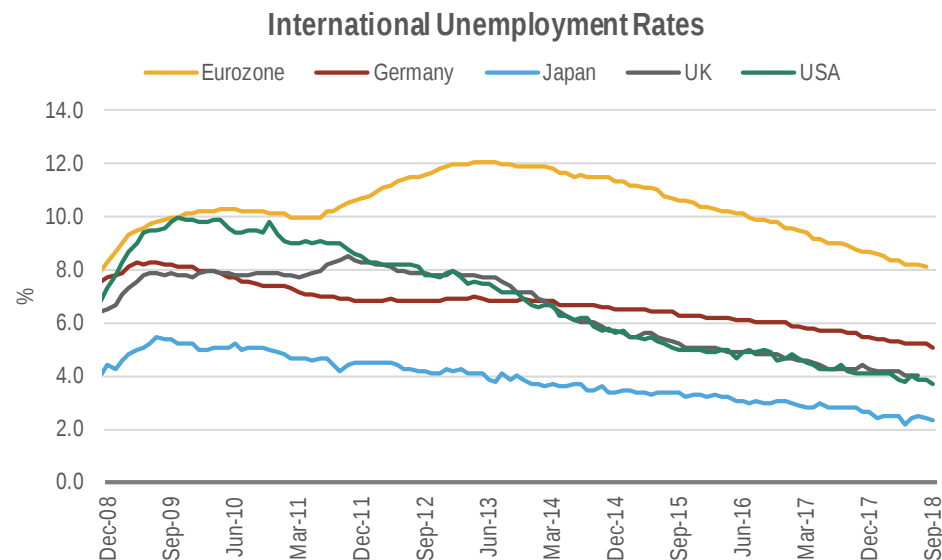
- Eurozone GDP growth slowed in Q3 to its weakest rate in four years amid worries about Italy's budget crisis and a strong USD. The Eurozone's annual growth rate fell to 1.7% in Q3.
- China's GDP growth declined by 0.2% quarter over quarter (QoQ) to 1.6%. The country's annual growth rate fell to 6.5%.
- Japan's GDP rose 0.74% QoQ in Q2\*\*. The Japanese economy's annual growth rate is 1%.



Note that the figures in the graph above represent the percent change in real GDP from the previous quarter, not the annual growth rate of these economies.

## Global Employment Picture

- Eurozone unemployment fell to 8.1% in August 2018\*\*, the region's lowest-recorded rate since November 2008. The Eurozone's recent economic strength has led to this reduction in unemployment, although economic momentum has slowed there this year.
- Japan's unemployment rate ticked down to 2.3% in September. While a bit higher than its earlier historic low of 2.2%, unemployment remained quite modest in Japan.



\*Quarter over quarter data calculations began in 2011.

\*\*Most recent data available.

Source this page: FactSet

# Q3 2018 In Review: Global Equity Overview

| Equity Indices                                | QTD   | YTD   | 1-Year | 3-Year | 5-Year | 10-Year |
|-----------------------------------------------|-------|-------|--------|--------|--------|---------|
| S&P 500                                       | 7.71  | 10.56 | 17.91  | 17.31  | 13.95  | 11.97   |
| MSCI Europe, Australasia and Far East (EAFE)* | 1.35  | -1.43 | 2.74   | 9.23   | 4.42   | 5.38    |
| MSCI Emerging Markets (EM)*                   | -1.09 | -7.68 | -0.81  | 12.36  | 3.61   | 5.40    |

All data in the table are percentages.

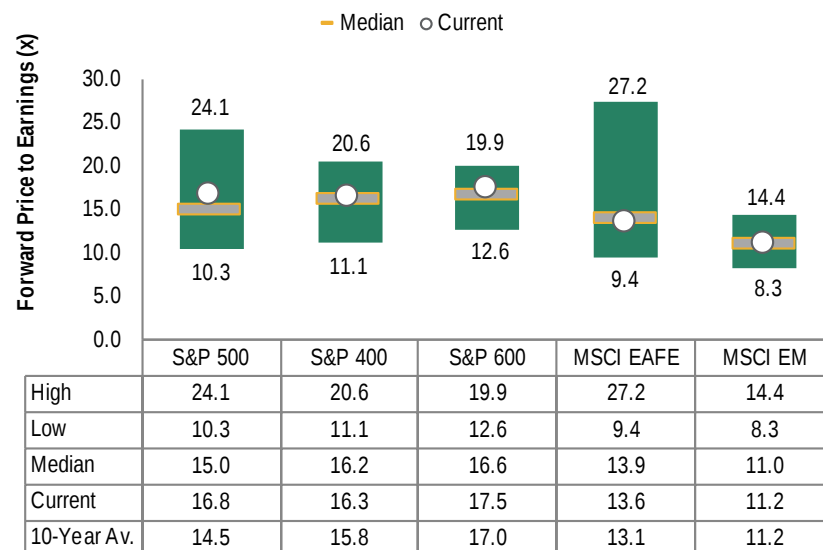
\* Net of dividends

## Global Equity Performance and Valuations

- U.S. equities outperformed international and emerging equity markets in Q3. Positive earnings momentum and supportive economic data in the U.S. helped to lift domestic equities despite uncertainty about global trade disputes. U.S. dollar strength was a headwind to international and emerging market equities.
- Over the 3-, 5-, and 10-year periods, U.S., non-U.S. developed, and emerging market equities are all in positive territory.
- The current P/E multiple for U.S. large cap is above median and its 10-year average, indicating it may be overvalued. U.S. small cap appears to be slightly overvalued compared to its median and long-term average multiple, while mid cap seems to be near fair value.
- The current MSCI EAFE P/E multiple is below its median and slightly above its 10-year average. As such, international equities appear to be close to fairly valued according to this measure.
- The MSCI EM P/E multiple at the end of Q3 was just north of its median and exactly at its 10-year average; therefore, emerging market equities look as if they are close to fair value by this measure.

Source this page: FactSet

## Price to Earnings



Data range is from 12/31/99-9/30/18. P/E ratios are forward 12 months.

# Q3 2018 In Review: U.S. Equity

| U.S. Equity Indices | QTD  | YTD   | 1-Year | 3-Year | 5-Year | 10-Year |
|---------------------|------|-------|--------|--------|--------|---------|
| S&P 500             | 7.71 | 10.56 | 17.91  | 17.31  | 13.95  | 11.97   |
| Russell 1000        | 7.42 | 10.49 | 17.76  | 17.07  | 13.67  | 12.09   |
| Russell 1000 Growth | 9.17 | 17.09 | 26.30  | 20.55  | 16.58  | 14.31   |
| Russell 1000 Value  | 5.70 | 3.92  | 9.45   | 13.55  | 10.72  | 9.79    |
| Russell 2000        | 3.58 | 11.51 | 15.24  | 17.12  | 11.07  | 11.11   |
| Russell 2000 Growth | 5.52 | 15.76 | 21.06  | 17.98  | 12.14  | 12.65   |
| Russell 2000 Value  | 1.60 | 7.14  | 9.33   | 16.12  | 9.91   | 9.52    |
| Russell 3000        | 7.12 | 10.57 | 17.58  | 17.07  | 13.46  | 12.01   |

All data in the tables are percentages.

## Performance

- Strong corporate earnings and positive U.S. economic data continued to benefit U.S. equities in Q3.
- Large cap stocks outpaced small cap stocks during the quarter, a reversal from Q1 and Q2.
- Growth continued to outperform value over the short and long term.
- All sectors of the S&P 500 Index were positive in Q3, but Healthcare posted the strongest return. Energy and Materials' returns were muted due to uncertainty surrounding tariffs imposed by China.

\*At the end of September 2018, the Telecommunications Sector sector was renamed Communications Services and was expanded to include some companies from the Consumer Discretionary and Information Technology sectors.  
Sources this page: Investment Metrics, FactSet

| S&P 500 Sector Returns       | QTD   | 1-Year |
|------------------------------|-------|--------|
| Consumer Discretionary       | 8.07  | 32.00  |
| Consumer Staples             | 5.45  | 2.02   |
| Energy                       | 0.40  | 12.95  |
| Financials                   | 4.21  | 8.14   |
| Healthcare                   | 14.38 | 17.76  |
| Industrials                  | 9.84  | 10.54  |
| Information Technology       | 8.71  | 30.99  |
| Materials                    | 0.21  | 3.39   |
| Telecommunications Services* | 9.47  | 2.71   |
| Utilities                    | 2.12  | 1.85   |

# Q3 2018 In Review: International Equity

| MSCI International Equity Indices | QTD   | YTD   | 1-Year | 3-Year | 5-Year | 10-Year |
|-----------------------------------|-------|-------|--------|--------|--------|---------|
| World ex. U.S.                    | 1.31  | -1.50 | 2.67   | 9.32   | 4.24   | 5.18    |
| EAFE                              | 1.35  | -1.43 | 2.74   | 9.23   | 4.42   | 5.38    |
| EAFE Local Currency               | 2.36  | 1.38  | 5.09   | 9.38   | 7.87   | 6.70    |
| Europe                            | 0.80  | -2.46 | -0.30  | 7.71   | 3.70   | 4.85    |
| Europe ex U.K.                    | 1.77  | -2.38 | -1.49  | 8.33   | 4.33   | 4.76    |
| U.K.                              | -1.66 | -2.69 | 2.87   | 6.19   | 2.23   | 4.92    |
| Pacific ex Japan                  | -0.55 | -2.56 | 4.27   | 12.73  | 3.86   | 7.66    |
| Japan                             | 3.68  | 1.58  | 10.20  | 12.13  | 6.76   | 5.96    |

All data in the tables are percentages and net of dividends.

## Performance

- International equity markets had a restrained third quarter, which was characterized by political uncertainty and trade issues.
- The U.K. equity market suffered as the outcome of Brexit remains cloudy. European financial stocks were subdued following a challenging Italian budget announcement and concerns over potential spillover of issues in emerging markets. Japan was the strongest major region, with exporters benefiting from a weaker yen.
- In a continuation of the trend we saw in Q2, many major currencies, including the euro, British pound, and Japanese yen, weakened against the U.S. dollar, which was a drag on USD-denominated returns.
- Sector returns were mixed in Q3. Healthcare posted a strong return, and Telecom also performed well. The Energy and Industrials sectors delivered returns in line with long-term averages. All other sectors were flat or negative, but the traditionally defensive Utilities sector fared the worst, as rising oil prices continued to drag on corporate profit margins.

| MSCI EAFE Sector Returns    | QTD   | 1-Year |
|-----------------------------|-------|--------|
| Consumer Discretionary      | -0.70 | 0.77   |
| Consumer Staples            | -0.55 | -0.30  |
| Energy                      | 2.21  | 18.79  |
| Financials                  | 0.12  | -8.05  |
| Healthcare                  | 5.20  | 4.31   |
| Industrials                 | 2.07  | 1.42   |
| Information Technology      | 0.06  | 4.95   |
| Materials                   | -0.52 | 2.55   |
| Telecommunications Services | 3.22  | -7.71  |
| Utilities                   | -1.40 | -3.22  |

# Q3 2018 In Review: Emerging Market Equity

| MSCI EM Equity Indices | QTD   | YTD    | 1-Year | 3-Year | 5-Year | 10-Year |
|------------------------|-------|--------|--------|--------|--------|---------|
| Emerging Markets       | -1.09 | -7.68  | -0.81  | 12.36  | 3.61   | 5.40    |
| EM Local Currency      | -0.04 | -2.86  | 2.65   | 12.18  | 7.26   | 7.72    |
| Asia                   | -1.83 | -6.79  | 1.00   | 13.50  | 6.74   | 8.23    |
| EMEA                   | -1.63 | -12.48 | -2.22  | 6.26   | -2.34  | 1.14    |
| Latin America          | 4.77  | -6.91  | -9.09  | 13.67  | -2.27  | 0.66    |

All data in the tables are percentages and net of dividends.

## Performance

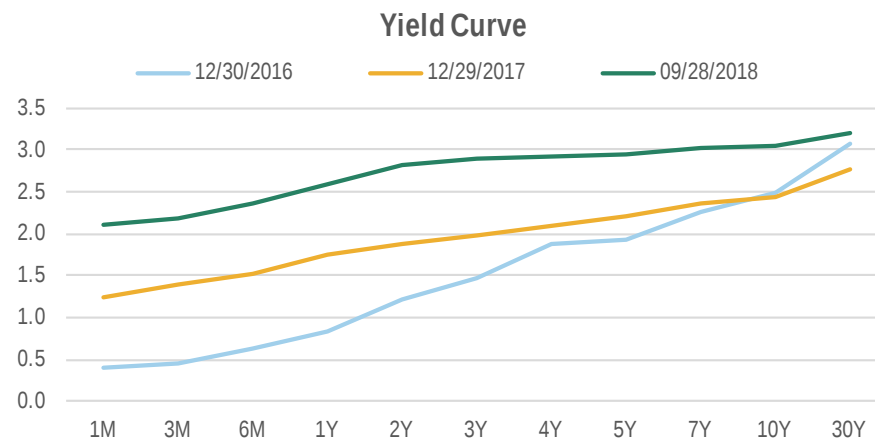
- Emerging market equities were volatile in Q3 and ultimately declined in the quarter.
- The EM Index gained in July, but fell in August and September, as Turkey and Argentina's economic and currency crises emerged and global tensions persisted, such as the ongoing trade disputes between the U.S. and China.
- Latin America was a bright spot for emerging markets, as Brazil and Mexico posted strong returns in Q3.
- U.S. dollar strength continued to be a headwind to returns. Though they were both negative, the EM local currency index finished the quarter 1.05% ahead of the USD-based index.
- Sector returns were mixed in Q3. Energy posted the strongest gain and Consumer Discretionary registered the steepest loss.

| MSCI EM Sector Returns      | QTD    | 1-Year |
|-----------------------------|--------|--------|
| Consumer Discretionary      | -10.46 | -14.91 |
| Consumer Staples            | -2.78  | -2.09  |
| Energy                      | 14.30  | 26.35  |
| Financials                  | 1.31   | -0.34  |
| Healthcare                  | -7.15  | 10.01  |
| Industrials                 | 3.13   | -4.54  |
| Information Technology      | -4.58  | -0.96  |
| Materials                   | 4.07   | 7.71   |
| Telecommunications Services | 1.62   | -8.97  |
| Utilities                   | -1.90  | -5.81  |

# Q3 2018 In Review: Fixed Income Overview

## Yield Curve

- Treasury yields rose across all maturities in Q3 as the Fed continued to tighten monetary policy.
- Global demand accentuated the yield curve's flattening trajectory, with long-term Treasury yields failing to rise at the same pace as short-term yields.
- The 30-year Treasury ended the quarter yielding 3.20%, 21 basis points (bps) higher than it was at the end of Q2, while the 2-year Treasury ended the quarter at 2.81%, which was 29 bps higher than the prior quarter.

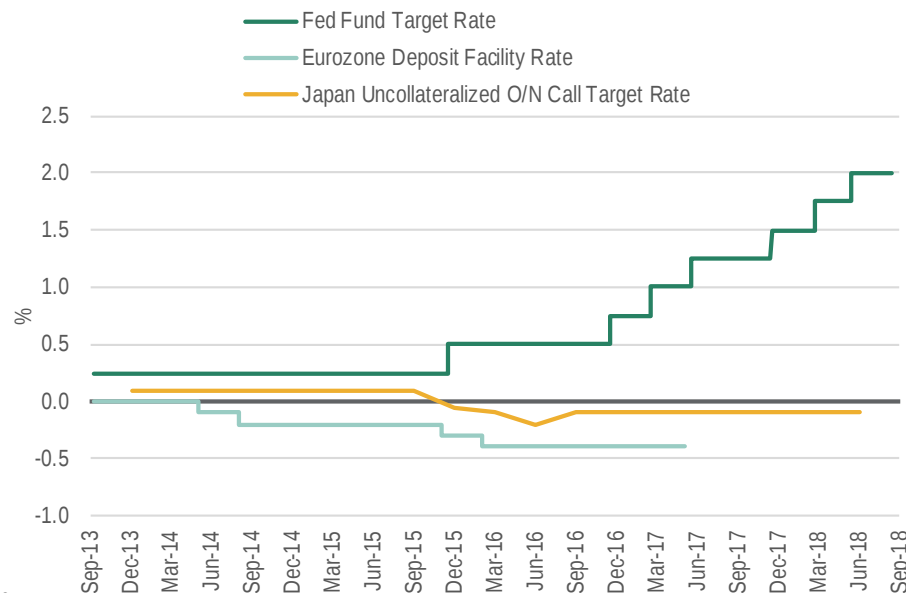


## Monetary Policies/Global Interest Rates

- Central bank deposit rates remained negative in the Eurozone and Japan.
- The U.S. is the exception—the Federal Reserve (Fed) raised rates again in September, the third hike of 2018.
- The Fed indicated that a fourth rate hike is likely this year.

| Interest Rates | Fed Funds Rate    | EZ Deposit Facility Rate |
|----------------|-------------------|--------------------------|
| Average        | 5.72% (1971-2018) | 1.28% (1999-2018)        |
| Max            | 20.0% (Mar. 1980) | 3.75% (Oct. 2000)        |
| Min            | 0.25% (Dec. 2008) | -0.40% (Mar. 2016)       |

## Central Bank Target Rates



# Q3 2018 In Review: U.S. Fixed Income

| U.S. Fixed Income Indices* | QTD   | YTD   | 1-Year | 3-Year | 5-Year | 10-Year |
|----------------------------|-------|-------|--------|--------|--------|---------|
| U.S. Aggregate             | 0.02  | -1.60 | -1.22  | 1.31   | 2.16   | 3.77    |
| Government/Credit          | 0.06  | -1.85 | -1.37  | 1.45   | 2.23   | 3.95    |
| Government                 | -0.57 | -1.62 | -1.57  | 0.26   | 1.34   | 2.66    |
| Investment Grade Corporate | 0.97  | -2.33 | -1.19  | 3.12   | 3.54   | 6.35    |
| Investment Grade CMBS      | 0.55  | -0.63 | -0.24  | 1.66   | 2.41   | 5.64    |
| U.S. Corporate High Yield  | 2.40  | 2.57  | 3.05   | 8.15   | 5.54   | 9.46    |
| FTSE** 3-Month T-Bill      | 0.50  | 1.29  | 1.57   | 0.80   | 0.49   | 0.32    |
| Hueler Stable Value        | 0.56  | 1.63  | 2.15   | 1.94   | 1.85   | 2.29    |

\* Bloomberg Barclays Indices, unless otherwise noted.

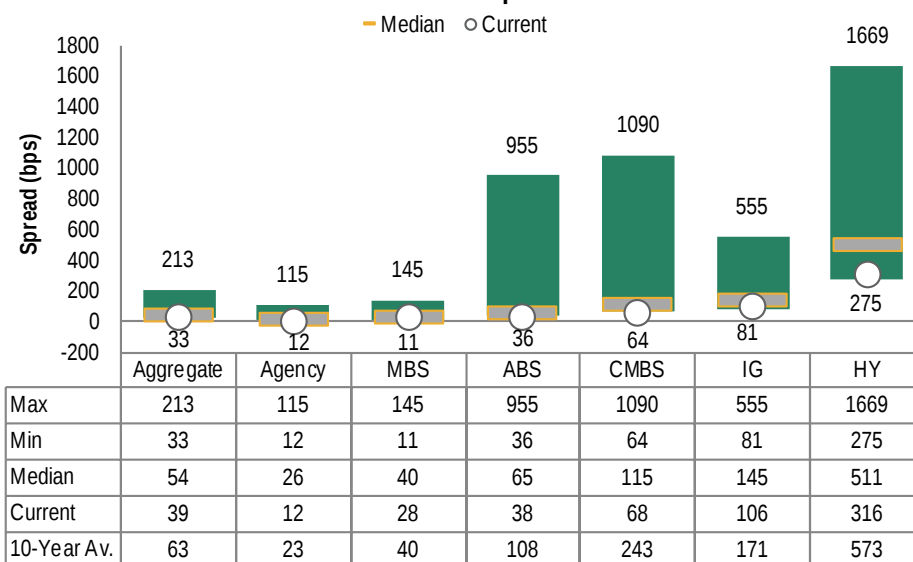
\*\* Formerly Citigroup. Citigroup's fixed income indices were purchased by London Stock Exchange Group (LSEG) and will all be rebranded to FTSE by July 31, 2018. FTSE Russell is a unit of LSEG's Information Services Division and a wholly owned subsidiary of LSEG.

All data in the table are percentages.

## Performance and Spreads

- The U.S. Aggregate Index was modestly positive in Q3. Performance was driven by the Investment Grade Corporate sector, where spreads fell 17 bps.
- High yield generated a 2.40% return in Q3 as interest rates rose while credit fundamentals remained strong.
- Domestic fixed income spreads are low by historical measures. Absent from current market conditions are some of the themes that would signal the end of a credit cycle (e.g., aggressive central bank rate hikes, economic deterioration, and rapidly rising debt levels), so the environment for credit remains positive despite elevated valuations.

## Fixed Income Spreads



# Q3 2018 In Review: International Fixed Income

| Global Fixed Income Indices               | QTD   | YTD   | 1-Year | 3-Year | 5-Year | 10-Year |
|-------------------------------------------|-------|-------|--------|--------|--------|---------|
| Bloomberg Barclays Global Aggregate       | -0.92 | -2.36 | -1.31  | 1.98   | 0.75   | 2.89    |
| Bloomberg Barclays Global Aggregate (Hgd) | -0.05 | 0.02  | 0.83   | 2.36   | 3.13   | 4.07    |
| FTSE Non-U.S. WGBI*                       | -2.19 | -3.09 | -1.57  | 2.39   | -0.23  | 1.99    |
| FTSE Non-U.S. WGBI (Hgd)                  | -0.55 | 1.17  | 2.29   | 2.97   | 3.98   | 4.08    |
| JPM EMBI Global Diversified**             | 2.30  | -3.04 | -1.92  | 6.04   | 5.38   | 7.55    |
| JPM GBI-EM Global Diversified***          | -1.83 | -8.15 | -7.40  | 5.17   | -1.68  | 2.70    |

All data in the table are percentages.

\* Formerly Citigroup. The FTSE Non-U.S. World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment grade sovereign bonds excluding the U.S.

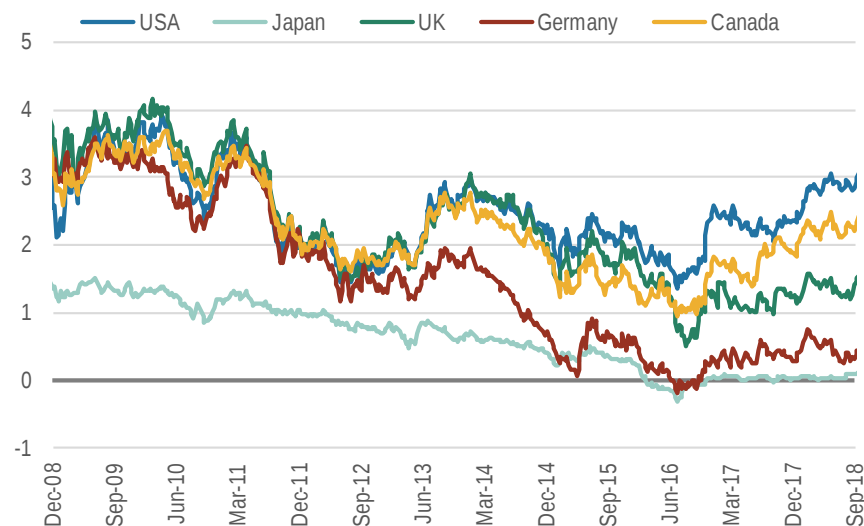
\*\* The JP Morgan Emerging Market Bond Index (EMBI) Global Diversified index measures government bonds in hard currencies.

\*\*\* The JP Morgan Government Bond Index – Emerging Markets (GBI-EM) Global Diversified index measures government bonds in local currencies.

## Global Performance and Yields

- Currency depreciation negatively impacted both developed and emerging market economies in Q3.
- In developed markets, the euro, British pound, and Japanese yen all depreciated relative to the U.S. dollar. In emerging markets, steep currency depreciation occurred in Turkey, South Africa and Argentina.
- The European Central Bank announced it will likely end its quantitative easing program in December and it will taper down asset purchases from €30 billion to €15 billion per month in Q4. The BOJ made a few changes to policy to make its stimulus program more flexible, causing the 10-year Japanese government bond to break 10 bps for the first time in over 2 years.

## Global 10-Year Treasury Yields



# Q3 2018 In Review: Absolute Return Strategies

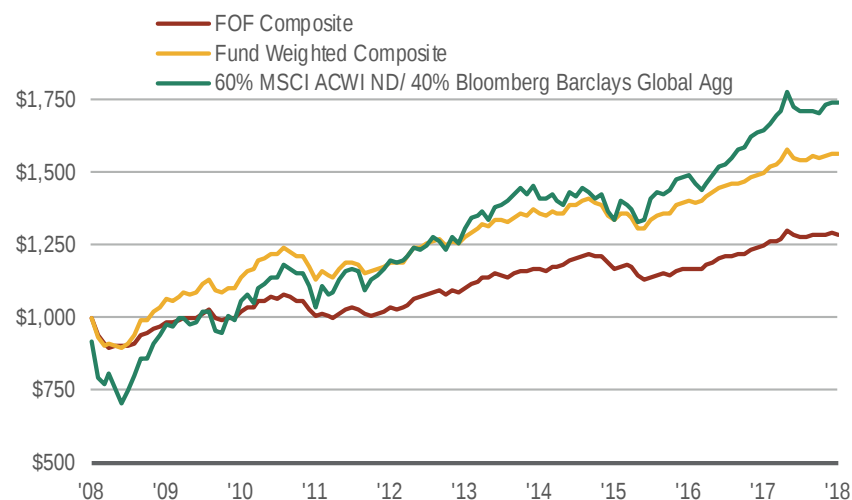
| HFRI Indices            | QTD   | YTD   | 1-Year | 3-Year | 5-Year | 10-Year |
|-------------------------|-------|-------|--------|--------|--------|---------|
| Fund of Funds Composite | 0.27  | 0.99  | 3.08   | 3.29   | 3.18   | 2.55    |
| Fund Weighted Composite | 0.55  | 1.37  | 3.98   | 5.34   | 4.11   | 4.56    |
| Event Driven            | 0.78  | 2.79  | 4.76   | 6.79   | 4.35   | 5.58    |
| Equity Hedge            | 0.48  | 1.66  | 5.07   | 7.31   | 5.09   | 5.16    |
| Macro                   | -0.03 | -1.82 | 0.54   | 0.41   | 1.48   | 1.64    |
| Emerging Markets        | -3.19 | -6.78 | -3.19  | 6.75   | 3.05   | 3.69    |
| Relative Value          | 1.31  | 2.99  | 4.09   | 5.16   | 4.36   | 6.01    |

All data in the table are percentages.  
Returns for periods greater than one year are annualized.

## Hedge Fund Performance

- The HFRI Fund Weighted Composite gained 0.6%. Strong performance from Technology and Event-Driven strategies was somewhat offset by the volatility associated with trade and tariffs towards the end of Q3.
- Relative Value led all major hedge fund strategies during the quarter. Yield alternatives gained in areas such as MLPs and REITS due to their floating rate dividends and low-duration nature.
- Emerging Markets' performance was negative in Q3. Currency declines and fears of a spillover from the crisis in Turkey, as well as underperformance by Asian stocks due to ongoing U.S.-China trade uncertainties, contributed to the losses.
- The Fund Weighted and Fund of Funds Composite indices gained during Q3 but underperformed the 60/40 Balanced MSCI ACWI\*/Bloomberg Barclays Global Aggregate index, which increased 2.3% during the quarter.

## HFR Hedge Fund and Fund of Fund Weighted Composite Growth of



# Q3 2018 In Review: Private Equity

## Performance

- The total return for private equity funds, comprising performance across all regions and strategies, was 3.0% in Q1 2018\* and 18.3% over the 1-year period ending Q1.
- The 3-, 5- and 20-year returns for private equity funds were 12.4%, 14.0% and 12.6%, respectively, at the end of Q1. The 10-year return of 9.5% was lower than other time periods due to the impact of the Global Financial Crisis.
- All funds from recent vintage years are performing in line with our longer-term expectations for private equity.

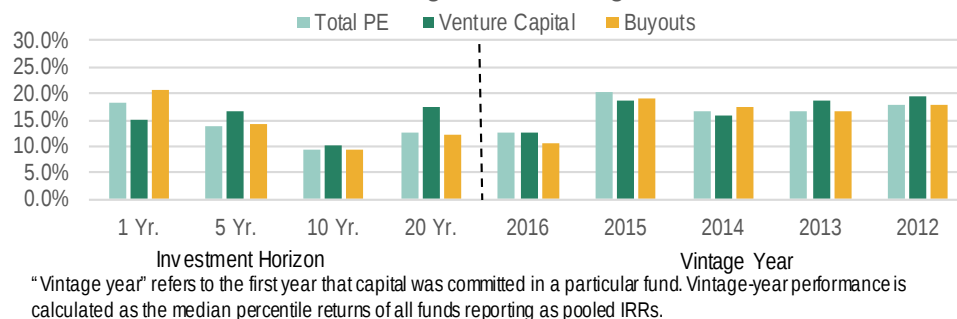
## Fundraising

- U.S. private equity funds raised approximately \$275.5 billion across 864 funds through September 17, 2018\*.
- With continued strong fundraising levels, the amount of private equity dry powder globally has exceeded \$1 trillion.
- Increasing competition for high quality assets has driven up purchase price multiples causing private equity funds to be more selective when putting capital to work. This is one explanation for the record growth in dry powder.

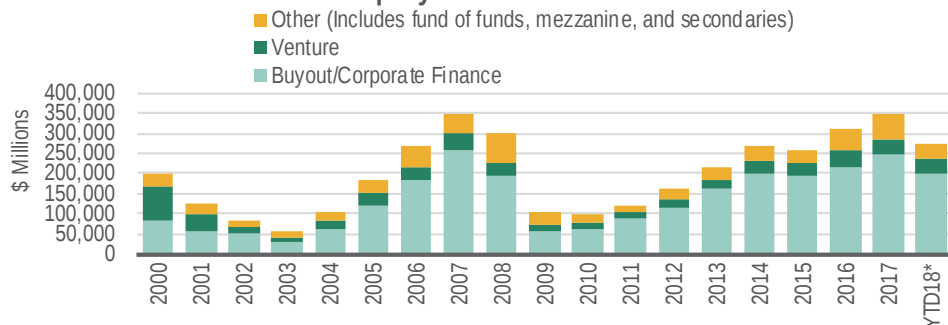
## Exit Activity

- There were 1,066 private equity-backed exit deals completed during the first three quarters of 2018, on par with the same period last year. Aggregate deal value, however, increased significantly to \$43.9 billion from \$25.6 billion over the same period in 2017, largely due to a few major IPOs and M&A deals in China and the United States.
- The largest IPO in this quarter, Chinese tech company Meituan-Dianping, made a strong stock market debut in September raising \$4.2 billion from investors. The newly issued shares were priced near the top of its target range.

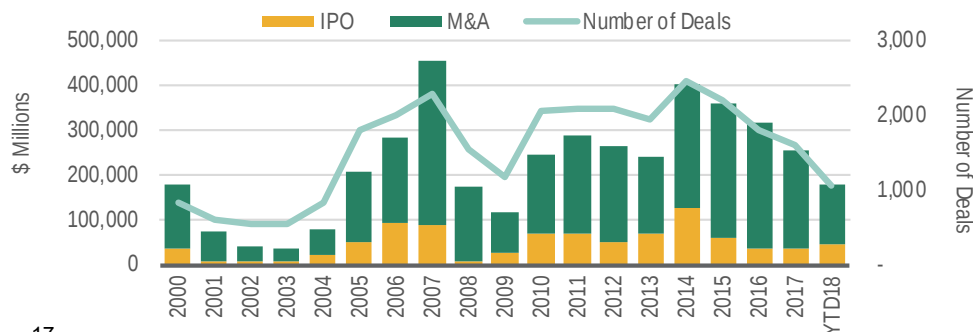
## Private Equity Performance by Investment Horizon and Vintage Year: All Regions



## Private Equity Commitments: United States



## Private Equity Exit: All Regions



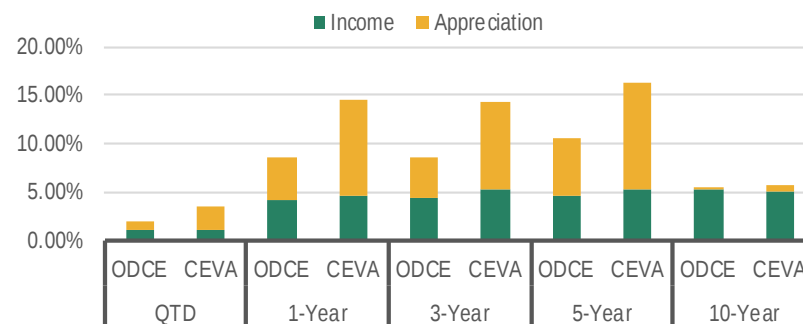
\*The most recent data available. \*\*Dry powder is capital raised that hasn't yet been invested.  
Sources this page: Thomson Reuters, *Private Equity Analyst*, Preqin

# Q3 2018 In Review: Real Estate

## Real Estate Performance

- Comparing the most recent performance of core real estate, as measured by the NFI-ODCE index (Q3 2018), and value add real estate, as measured by the CEVA index (Q2 2018), the CEVA outperformed the ODCE by 149 bps. Most of the CEVA's outperformance came from the appreciation component of the return.
- Income for both ODCE and CEVA remains in lock step, with both experiencing minimal decreases QoQ. Appreciation's contribution to returns increased by 100 bps for CEVA with only a 5 bps increase in the ODCE.
- The CEVA Index continued to outperform the ODCE over the QTD, 1, 3, 5, and 10-year rolling periods, on a gross basis. However, over the same trailing periods, the CEVA has a much wider gross/net return spread relative to the ODCE, with a median spread of 2.83%.
- On an equal-weighted basis for Q3 2018, the CEVA gross/net returns are 2.55%/2.06% relative to the ODCE's 2.09%/1.88%.

NCREIF Fund Index (NFI) Open-End Diversified Core (ODCE) and Closed End Value-Add (CEVA) Real Estate Performance



The NFI-ODCE (Open-end Diversified Core Equity) is defined by NCREIF as a fund-level cap-weighted, gross of fee, time-weighted return index with an inception date of December 31, 1977.

The NFI-CEVA Index, which is a quarter lagged in performance reporting, is defined by NCREIF as a capitalization-weighted, gross of fees, time-weighted return index. Funds included in the index must be closed-end with a value-add strategy operated for U.S. institutional investors and must comply with NCREIF's data collection and reporting standards.

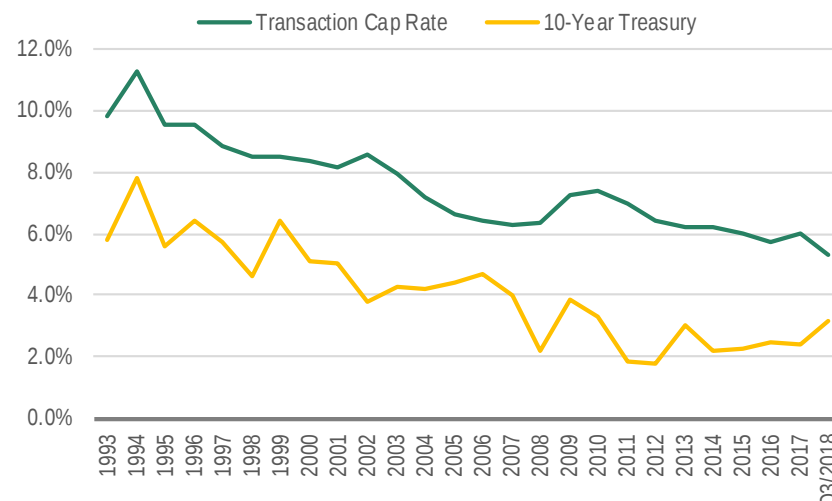
## Real Estate Capitalization Rates vs. Treasuries

- Prime assets have seen strong capital flow, which has kept investment values generally stable. However, there are concerns that values may have peaked or are even poised to decline after significant appreciation and due to higher interest rates. Lower quality assets are at the greatest risk of price declines.
- Prevailing cap rates\* have been buoyed by historically wide spreads versus financing costs and persistent demand for real estate.
- Further compounding the cap rate spread issue, there is a record level of capital available to invest in real estate.

\*A cap rate is the potential rate of return on a real estate investment. Assuming no change in net operating income, real estate valuations rise when cap rates fall. Comparing cap rates to the 10-year U.S. Treasury provides investors with an estimated spread for expected returns from real estate (higher risk) vs. fixed rate bond (lower risk) investments.

Sources this page: NCREIF, Bloomberg

## Capitalization Rates & 10-Year U.S. Treasury

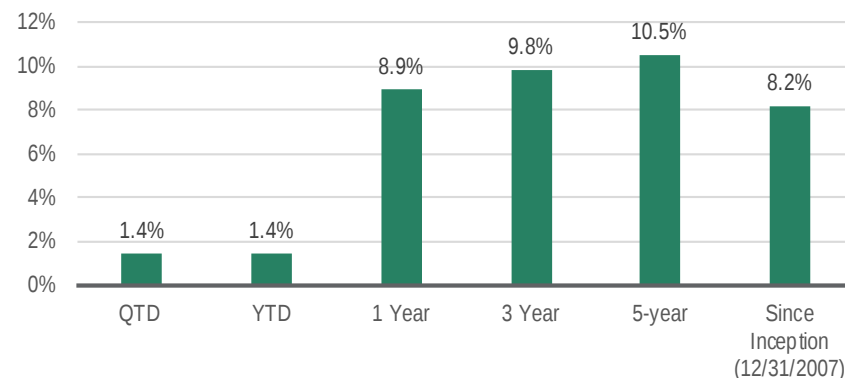


# Q3 2018 In Review: Infrastructure

## Infrastructure Performance

- Private infrastructure gained 1.4% in Q1 2018\*. The 1-year return is in line with private infrastructure's annual return expectations.
- The 1-, 3-, and 5-year results exceeded the since-inception return, indicating the asset class has recovered well from the global financial crisis. Private infrastructure started off 2018 with returns below expectations, partly because the number of deals dropped from a historic high of 942 in Q4 2017 to 695 in Q1 2018.
- Public infrastructure rose 0.70% in Q3 2018, as per the FTSE Global Infrastructure 50/50 Index. The Communications and Utilities sectors gained, while Transportation and Energy declined.

Preqin Infrastructure Annualized Return as of 3/31/2018\*

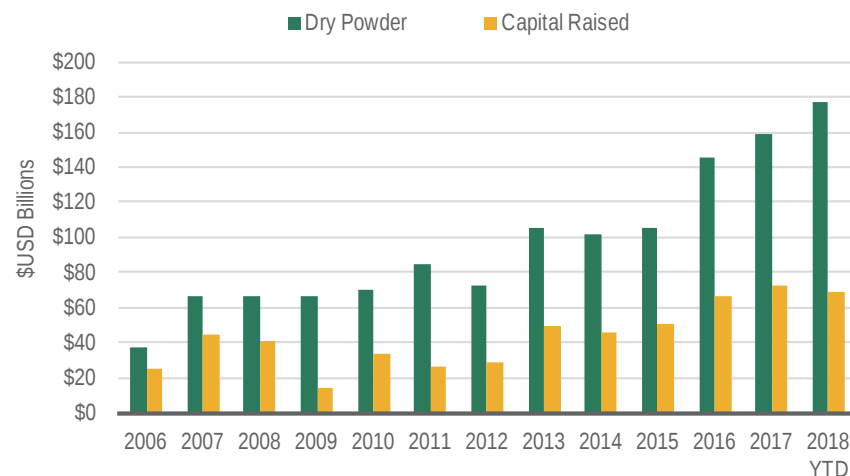


According to Preqin, the Preqin Infrastructure Index captures the average returns earned by investors in their infrastructure portfolios, based on the actual amount of money invested. The Preqin Infrastructure index is calculated on a quarterly basis using data from Preqin's Infrastructure Online services.

## Dry Powder and Fundraising

- Infrastructure fundraising in Q3 2018 soared to a record high of \$37.9 billion. The previous record was \$31.6 billion in Q1 2017. The average fund size on a quarterly basis also hit a high of \$1.9 billion in Q3 2018 relative to the average quarterly fund size of \$832.1 million.
- Dry powder\*\* increased slightly in Q3 amid strong fundraising globally. Funds raised \$37.9 billion during the quarter and dry powder increased by \$2 billion.
- The average deal size increased from \$334.9 million in 2017 to \$395.8 million in 2018, which helped managers deploy more capital and keep dry powder growth in check. Despite this, dry powder still stands at \$177 billion YTD.

Dry Powder and Fundraising



\*The most recent data available.

\*\*Dry powder is capital raised that hasn't yet been invested.

Sources this page: Preqin

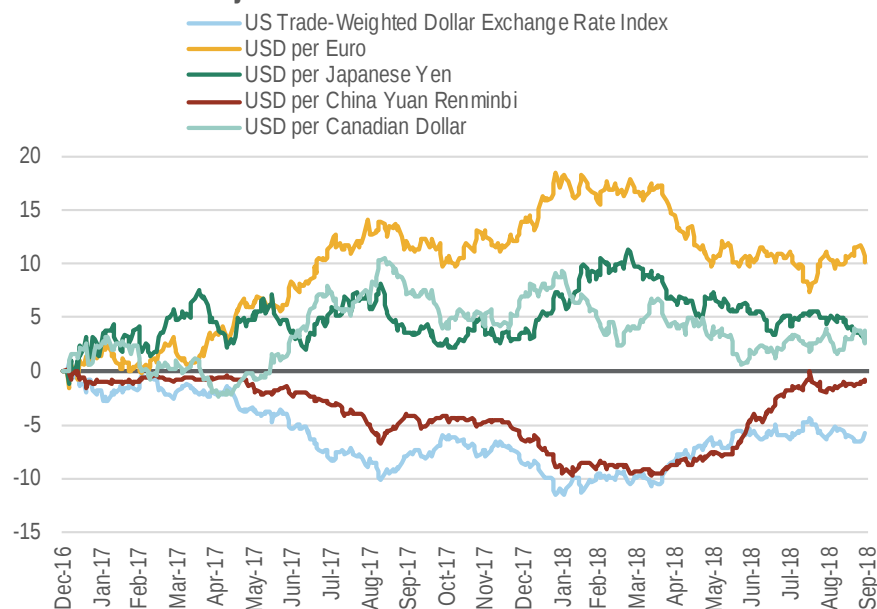
# Q3 2018 In Review: Commodities and Currencies

| BCOM Indices                     | QTD   | YTD    | 1-Year | 3-Year | 5-Year | 10-Year |
|----------------------------------|-------|--------|--------|--------|--------|---------|
| Bloomberg Commodity Index (BCOM) | -2.02 | -2.03  | 2.59   | -0.11  | -7.18  | -6.24   |
| Energy                           | 4.39  | 17.63  | 28.13  | 0.39   | -12.72 | -16.06  |
| Agriculture                      | -5.45 | -10.92 | -12.71 | -7.50  | -10.03 | -4.54   |
| Industrial Metals                | -6.88 | -11.82 | -2.36  | 7.87   | -1.35  | -2.75   |
| Precious Metals                  | -6.00 | -10.66 | -8.83  | 1.02   | -4.16  | 2.25    |
| Livestock                        | 2.88  | -2.38  | 0.85   | -1.83  | -2.70  | -4.48   |

## Commodity and Currency Highlights

- The Bloomberg Commodity Index fell during Q3 with mixed performance across the underlying sectors.
- The Energy sector was the top performer. The price of crude oil and petroleum products increased, while inventories dropped due to OPEC's decision not to increase production and the first round of U.S. sanctions on Iran took effect.
- Industrial Metals fell as a result of global trade disputes. The prospects of higher tariffs and weakening demand from China contributed to declines in nickel, lead, zinc and copper. Precious Metals lost ground due to a strong U.S. economy and the Federal Reserve raising short-term interest rates, as higher interest rates lessen the appeal of holding gold and silver.
- The U.S. dollar continued to strengthen in Q3, though not at the pace it did during Q2.
- The euro stabilized in Q3 as trade tensions between the U.S. and Eurozone eased.

## Major World Currencies Indexed to Zero

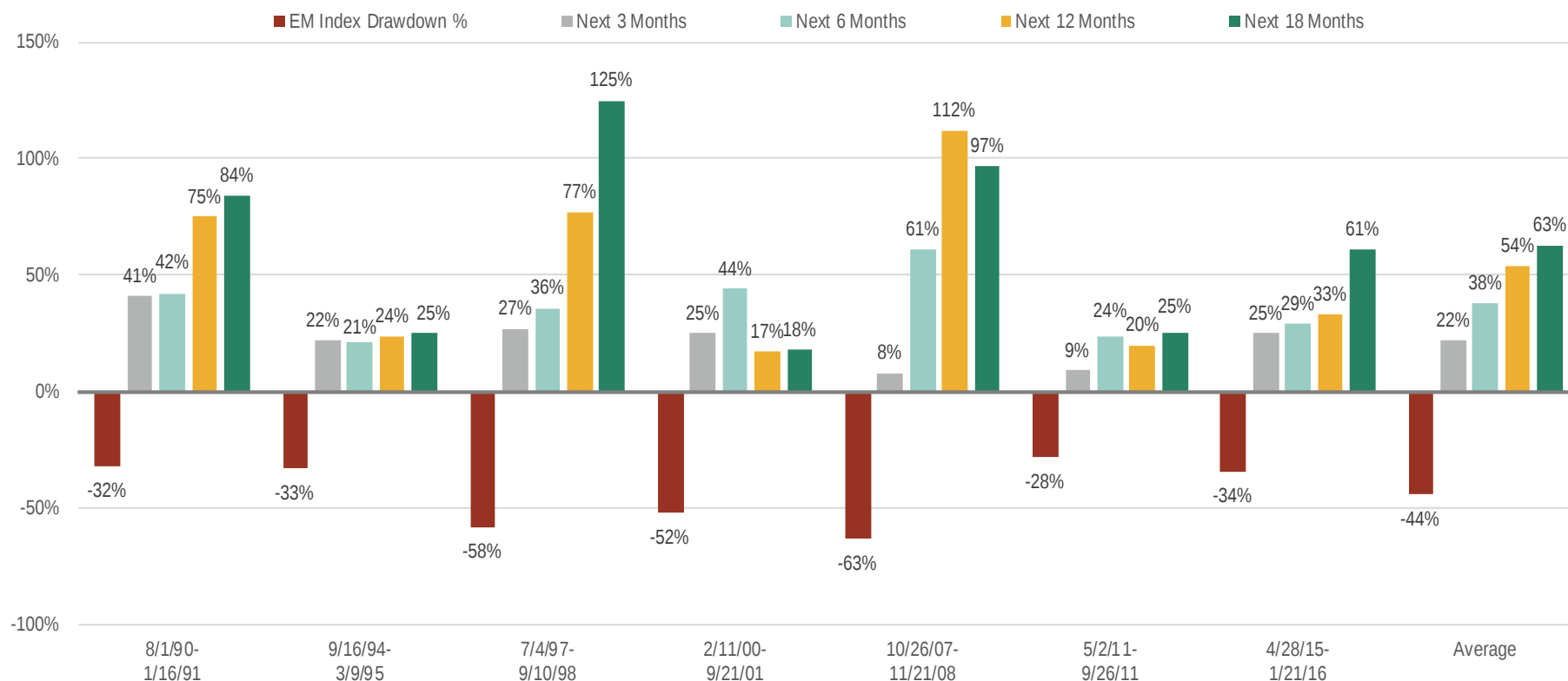


# Q3 2018 In Review: Noteworthy Developments

## Emerging Market Equity - Rebounds After Drawdowns

- Emerging market equity returns have been extremely volatile over the last 30 years, but most major declines have been followed by recoveries that have often been nearly as robust as the declines were precipitous.
- The message with EME, therefore, is clear – patience seems to be rewarded over time, but investors with sensitivity to extremes should be aware of that requirement.

Emerging Market Equity Bear Markets and Subsequent Performance



# Q3 2018 In Review: Noteworthy Developments

## Revised Life Expectancy's Impact on Plans

- A Bloomberg study measured the health care efficiency of almost 200 economies, using average lifespan, determining medical costs both as a percentage of income and in absolute dollars.
- Americans' life expectancy declined for the second year in a row. Per the CDC, deaths from drug overdoses, chronic liver disease, suicide, Alzheimer's and blood infections have all gone up, resulting in a shortened average life span.
- Impact on pension plans: Lower life expectancy results in higher mortality tables, which reduces pension liabilities.
- The Society of Actuaries (SOA) annually updates the mortality improvement scale for pension plans. For 2017 and 2018 (which reflects age-adjusted U.S. population mortality rates for 2014-15 and 2015-16, respectively), the mortality rates suggest that life expectancies declined slightly each year. Declines two years in a row are rare – the last time life expectancy fell two years in a row, was 1962-63:
  - The 2017 study suggests the new rates could reduce a pension plan's obligations by 0.7% to 1.0% (using a 4% discount rate).
  - The 2018 study suggests the new rates could reduce a pension plan's obligations by 0.3% to 0.5% (using a 4% discount rate).

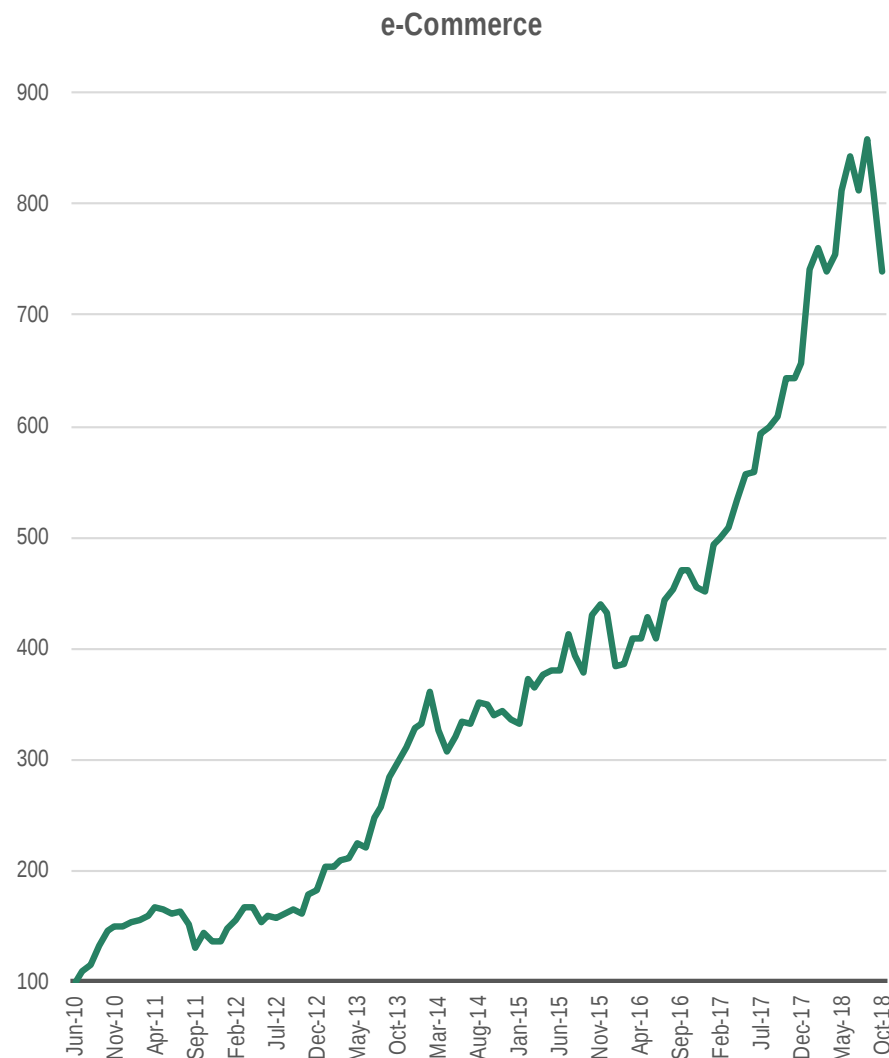
## Bloomberg Health Care Efficiency

| Rank      | Rank 1 Year Ago | Change    | Economy     | Efficiency Score | Life Expectancy | Relative Cost % | Absolute Cost \$ |
|-----------|-----------------|-----------|-------------|------------------|-----------------|-----------------|------------------|
| 1         | 1               | -         | Hong Kong   | 87.3             | 84.3            | 5.7             | 2,222            |
| 2         | 2               | -         | Singapore   | 85.6             | 82.7            | 4.3             | 2,280            |
| 3         | 3               | -         | Spain       | 69.3             | 82.8            | 9.2             | 2,354            |
| 4         | 6               | +2        | Italy       | 67.6             | 82.5            | 9.0             | 2,700            |
| 5         | 4               | -1        | South Korea | 67.4             | 82.0            | 7.4             | 2,013            |
| 6         | 7               | +1        | Israel      | 67.0             | 82.1            | 7.4             | 2,756            |
| 7         | 5               | -2        | Japan       | 64.3             | 83.8            | 10.9            | 3,733            |
| 8         | 10              | 2         | Australia   | 62.0             | 82.4            | 9.4             | 4,934            |
| <b>54</b> | <b>50</b>       | <b>-4</b> | <b>U.S.</b> | <b>29.6</b>      | <b>78.7</b>     | <b>16.8</b>     | <b>9,536</b>     |

# Q3 2018 In Review: Noteworthy Developments

## Is e-Commerce in Bubble Territory?

- The Dow Jones Internet Commerce Index, which measures the 15 biggest and most actively traded e-commerce stocks (chart at right), is up more than 8x since June 2010 and may now be in bubble territory.
- Increased central bank liquidity, *i.e.* easier access to credit, could be creating an environment for an asset price bubble. Also, the free cash flow yield of the Internet Commerce Index is lower than that of the tech sector in the late 90s (dot-com bubble), making e-Commerce valuations appear frothy in comparison.
- On the other hand, the digital era has fostered business models that lower marginal costs. Many digital technologies are scalable, in that they can be replicated at low or no cost, which is beneficial for the company and, ultimately, the consumer. Improved and less expensive AI capabilities could translate into more product sales, higher subscription premiums or better-focused advertising for internet companies.
- As outlined above, there are points and counterpoints to the question of whether e-Commerce is in a valuation bubble. But it seems likely that investors will see changes to the top players in e-Commerce as technology continues to evolve and digital disruptions keep occurring.



**Total Fund**

As of September 30, 2018

|                              | Allocation           |               | Performance (%) |                           |                           |              |              |              |              |              |              |                 | Inception Date    |
|------------------------------|----------------------|---------------|-----------------|---------------------------|---------------------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
|                              | Market Value (\$000) | %             | 1 Quarter       | 1 Quarter Ending Jun-2018 | 1 Quarter Ending Mar-2018 | Year To Date | 1 Year       | 3 Years      | 5 Years      | 7 Years      | 10 Years     | Since Inception |                   |
| <b>Total Fund</b>            | <b>700,340</b>       | <b>100.00</b> | <b>2.44</b>     | <b>-1.13</b>              | <b>0.89</b>               | <b>2.19</b>  | <b>5.91</b>  | <b>9.73</b>  | <b>7.64</b>  | <b>10.09</b> | <b>8.12</b>  | <b>7.54</b>     | <b>01/01/2000</b> |
| Total Plan Index             |                      |               | 2.59            | 0.40                      | -0.39                     | 2.60         | 6.45         | 9.51         | 7.42         | 9.64         | 7.74         | 4.95            |                   |
| Total Plan Allocation Index  |                      |               | 2.55            | 0.12                      | -0.38                     | 2.29         | 6.20         | N/A          | N/A          | N/A          | N/A          | N/A             |                   |
| <b>Total Domestic Equity</b> | <b>162,160</b>       | <b>23.15</b>  | <b>5.39</b>     | <b>1.53</b>               | <b>0.47</b>               | <b>7.50</b>  | <b>13.84</b> | <b>15.20</b> | <b>12.59</b> | <b>16.65</b> | <b>11.88</b> | <b>5.77</b>     | <b>01/01/2000</b> |
| S&P 500 Index                |                      |               | 7.71            | 3.43                      | -0.76                     | 10.56        | 17.91        | 17.31        | 13.95        | 16.91        | 11.97        | 5.75            |                   |
| Russell 3000 Index           |                      |               | 7.12            | 3.89                      | -0.64                     | 10.57        | 17.58        | 17.07        | 13.46        | 16.86        | 12.01        | 6.17            |                   |
| ClearBridge Large Cap Growth | 27,650               | 3.95          | N/A             | N/A                       | N/A                       | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | 2.66            | 09/01/2018        |
| Russell 1000 Growth Index    |                      |               | 9.17            | 5.76                      | 1.42                      | 17.09        | 26.30        | 20.55        | 16.58        | 18.69        | 14.31        | 0.56            |                   |
| Columbia                     | 36,356               | 5.19          | 7.45            | 4.86                      | 5.74                      | 19.13        | 25.01        | 17.85        | 14.41        | N/A          | N/A          | 15.54           | 09/01/2013        |
| Russell 1000 Growth Index    |                      |               | 9.17            | 5.76                      | 1.42                      | 17.09        | 26.30        | 20.55        | 16.58        | 18.69        | 14.31        | 17.29           |                   |
| LSV                          | 34,212               | 4.89          | 5.12            | -0.64                     | -1.88                     | 2.49         | 9.97         | 14.18        | 12.12        | 17.48        | 11.48        | 9.46            | 09/01/2004        |
| Russell 1000 Value Index     |                      |               | 5.70            | 1.18                      | -2.83                     | 3.92         | 9.45         | 13.55        | 10.72        | 15.02        | 9.79         | 8.17            |                   |
| Lyrical                      | 32,729               | 4.67          | 3.28            | -4.26                     | -3.02                     | -4.11        | 0.34         | 10.94        | 11.13        | N/A          | N/A          | 12.04           | 09/01/2013        |
| Russell 1000 Value Index     |                      |               | 5.70            | 1.18                      | -2.83                     | 3.92         | 9.45         | 13.55        | 10.72        | 15.02        | 9.79         | 11.07           |                   |
| Rice Hall James              | 16,338               | 2.33          | 7.15            | 6.44                      | 1.72                      | 16.01        | 22.12        | 12.47        | 9.90         | 14.29        | 12.97        | 10.10           | 06/01/2005        |
| Russell 2000 Growth Index    |                      |               | 5.52            | 7.23                      | 2.30                      | 15.76        | 21.06        | 17.98        | 12.14        | 17.52        | 12.65        | 10.47           |                   |
| Earnest Partners             | 14,873               | 2.12          | 1.98            | 5.32                      | -1.24                     | 6.08         | 13.04        | 18.38        | 12.22        | 16.84        | 11.38        | 12.45           | 04/01/2003        |
| Russell 2000 Value Index     |                      |               | 1.60            | 8.30                      | -2.64                     | 7.14         | 9.33         | 16.12        | 9.91         | 15.26        | 9.52         | 11.16           |                   |

As of September 30, 2018

|                                   | Allocation           |              | Performance (%) |                           |                           |               |              |              |             |              |              |                 | Inception Date    |
|-----------------------------------|----------------------|--------------|-----------------|---------------------------|---------------------------|---------------|--------------|--------------|-------------|--------------|--------------|-----------------|-------------------|
|                                   | Market Value (\$000) | %            | 1 Quarter       | 1 Quarter Ending Jun-2018 | 1 Quarter Ending Mar-2018 | Year To Date  | 1 Year       | 3 Years      | 5 Years     | 7 Years      | 10 Years     | Since Inception |                   |
| <b>Total International Equity</b> | <b>175,648</b>       | <b>25.08</b> | <b>1.03</b>     | <b>-5.22</b>              | <b>-0.07</b>              | <b>-4.31</b>  | <b>0.71</b>  | <b>11.16</b> | <b>5.70</b> | <b>9.64</b>  | <b>8.07</b>  | <b>10.02</b>    | <b>01/01/2000</b> |
| MSCI EAFE (net)                   |                      |              | 1.35            | -1.24                     | -1.53                     | -1.43         | 2.74         | 9.23         | 4.42        | 8.30         | 5.38         | 3.18            |                   |
| MSCI AC World ex USA              |                      |              | 0.80            | -2.39                     | -1.08                     | -2.67         | 2.25         | 10.49        | 4.60        | 7.74         | 5.67         | 4.13            |                   |
| <b>Arrowstreet Capital</b>        | <b>30,694</b>        | <b>4.38</b>  | <b>2.93</b>     | <b>-3.22</b>              | <b>1.29</b>               | <b>0.91</b>   | <b>5.90</b>  | <b>13.16</b> | <b>7.07</b> | <b>10.12</b> | <b>8.38</b>  | <b>7.82</b>     | <b>07/01/2001</b> |
| MSCI AC World ex USA              |                      |              | 0.80            | -2.39                     | -1.08                     | -2.67         | 2.25         | 10.49        | 4.60        | 7.74         | 5.67         | 6.36            |                   |
| <b>Freedom Capital Intl</b>       | <b>38,844</b>        | <b>5.55</b>  | <b>1.52</b>     | <b>1.33</b>               | <b>-1.42</b>              | <b>1.41</b>   | <b>6.71</b>  | <b>13.14</b> | <b>8.79</b> | <b>13.47</b> | <b>10.67</b> | <b>9.67</b>     | <b>06/01/1998</b> |
| MSCI EAFE (net)                   |                      |              | 1.35            | -1.24                     | -1.53                     | -1.43         | 2.74         | 9.23         | 4.42        | 8.30         | 5.38         | 4.36            |                   |
| <b>MFS International Equity</b>   | <b>32,028</b>        | <b>4.57</b>  | <b>1.87</b>     | <b>0.16</b>               | <b>-1.37</b>              | <b>0.63</b>   | <b>4.65</b>  | <b>9.95</b>  | <b>5.49</b> | <b>9.66</b>  | <b>N/A</b>   | <b>7.93</b>     | <b>08/01/2010</b> |
| MSCI EAFE (net)                   |                      |              | 1.35            | -1.24                     | -1.53                     | -1.43         | 2.74         | 9.23         | 4.42        | 8.30         | 5.38         | 6.60            |                   |
| <b>Lazard Emerging Markets</b>    | <b>41,645</b>        | <b>5.95</b>  | <b>-1.60</b>    | <b>-13.32</b>             | <b>1.46</b>               | <b>-13.46</b> | <b>-7.99</b> | <b>10.21</b> | <b>0.69</b> | <b>3.45</b>  | <b>4.00</b>  | <b>2.34</b>     | <b>05/01/2007</b> |
| MSCI Emerging Markets Index       |                      |              | -0.95           | -7.86                     | 1.47                      | -7.39         | -0.44        | 12.77        | 3.99        | 5.41         | 5.76         | 3.47            |                   |
| <b>Aberdeen Emerging Markets</b>  | <b>32,438</b>        | <b>4.63</b>  | <b>-0.28</b>    | <b>-10.13</b>             | <b>-0.46</b>              | <b>-10.79</b> | <b>-6.02</b> | <b>N/A</b>   | <b>N/A</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>5.33</b>     | <b>03/01/2017</b> |
| MSCI Emerging Markets Index       |                      |              | -0.95           | -7.86                     | 1.47                      | -7.39         | -0.44        | 12.77        | 3.99        | 5.41         | 5.76         | 10.63           |                   |
| <b>Global REITs</b>               |                      |              |                 |                           |                           |               |              |              |             |              |              |                 |                   |
| <b>CBRE Clarion Global REITs</b>  | <b>13,885</b>        | <b>1.98</b>  | <b>-0.44</b>    | <b>3.22</b>               | <b>-4.56</b>              | <b>-1.93</b>  | <b>3.25</b>  | <b>5.18</b>  | <b>5.21</b> | <b>8.90</b>  | <b>N/A</b>   | <b>8.90</b>     | <b>10/01/2011</b> |
| FTSE EPRA/NAREIT Developed Index  |                      |              | -0.15           | 5.45                      | -4.30                     | 0.76          | 4.62         | 7.16         | 6.34        | 10.17        | 6.88         | 10.17           |                   |

As of September 30, 2018

|                                       | Allocation           |              | Performance (%) |                           |                           |              |              |             |             |             |             |                 | Inception Date    |
|---------------------------------------|----------------------|--------------|-----------------|---------------------------|---------------------------|--------------|--------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
|                                       | Market Value (\$000) | %            | 1 Quarter       | 1 Quarter Ending Jun-2018 | 1 Quarter Ending Mar-2018 | Year To Date | 1 Year       | 3 Years     | 5 Years     | 7 Years     | 10 Years    | Since Inception |                   |
| <b>Total Domestic Fixed</b>           | <b>53,394</b>        | <b>7.62</b>  | <b>0.01</b>     | <b>0.01</b>               | <b>-1.26</b>              | <b>-1.23</b> | <b>-0.57</b> | <b>1.96</b> | <b>2.65</b> | <b>3.03</b> | <b>4.88</b> | <b>5.50</b>     | <b>01/01/2000</b> |
| Barclays Cap Aggregate                |                      |              | 0.02            | -0.16                     | -1.46                     | -1.60        | -1.22        | 1.31        | 2.16        | 2.02        | 3.77        | 4.82            |                   |
| Income Research & Management          | 41,546               | 5.93         | 0.13            | -0.19                     | -1.54                     | -1.60        | -0.95        | 2.02        | 2.92        | 3.17        | 5.24        | 5.55            | 12/01/1996        |
| Blmbg. Barc. U.S. Gov't/Credit        |                      |              | 0.06            | -0.33                     | -1.58                     | -1.85        | -1.37        | 1.45        | 2.23        | 2.10        | 3.95        | 4.91            |                   |
| IR+M TIPS                             | 11,506               | 1.64         | -0.42           | 0.56                      | -0.37                     | -0.23        | 0.34         | 1.72        | 0.96        | 1.00        | 2.78        | 3.47            | 02/01/2007        |
| Barclays Cap US Treas: US TIPS        |                      |              | -0.82           | 0.77                      | -0.79                     | -0.84        | 0.41         | 2.04        | 1.37        | 1.33        | 3.32        | 3.91            |                   |
| <b>Total Global Fixed</b>             | <b>124,671</b>       | <b>17.80</b> | <b>0.86</b>     | <b>-3.63</b>              | <b>0.96</b>               | <b>-1.86</b> | <b>-1.24</b> | <b>5.52</b> | <b>3.60</b> | <b>4.06</b> | <b>6.19</b> | <b>6.45</b>     | <b>01/01/2000</b> |
| Barclays Cap Global Aggregate         |                      |              | -0.92           | -2.78                     | 1.37                      | -2.36        | -1.31        | 1.98        | 0.75        | 0.86        | 2.89        | 4.33            |                   |
| Colchester Global Bond                | 25,832               | 3.69         | -0.95           | -4.14                     | 3.46                      | -1.77        | -1.82        | 3.23        | 0.93        | N/A         | N/A         | 0.40            | 12/01/2012        |
| Citigroup World Govt Bond             |                      |              | -1.62           | -3.35                     | 2.50                      | -2.55        | -1.54        | 1.68        | 0.20        | -0.06       | 2.21        | -0.50           |                   |
| PIMCO Diversified Income              | 64,944               | 9.27         | 1.69            | -0.73                     | -0.64                     | 0.30         | 1.10         | 6.78        | 5.02        | 5.87        | 7.73        | 6.48            | 08/01/2006        |
| PIMCO Diversified Income Index**      |                      |              | 0.99            | -2.53                     | -0.21                     | -1.77        | -0.99        | 5.20        | 3.42        | 4.59        | 6.54        | 5.92            |                   |
| Stone Harbor EMD                      | 18,478               | 2.64         | -0.52           | -9.52                     | 2.45                      | -7.79        | -6.86        | N/A         | N/A         | N/A         | N/A         | 0.71            | 11/01/2016        |
| 50%/50% Blend **                      |                      |              | 0.25            | -7.02                     | 1.33                      | -5.55        | -4.60        | 5.68        | 1.87        | 2.94        | 5.18        | 1.12            |                   |
| Ashmore Emerging Markets Total Return | 15,418               | 2.20         | 1.31            | -7.53                     | 1.22                      | -5.18        | -4.39        | N/A         | N/A         | N/A         | N/A         | 4.37            | 01/01/2017        |
| JPM EMBI Global Diversified           |                      |              | 2.30            | -3.54                     | -1.74                     | -3.04        | -1.92        | 6.04        | 5.38        | 5.87        | 7.55        | 3.89            |                   |

As of September 30, 2018

|                                    | Allocation           |             | Performance (%) |                           |                           |              |              |             |              |             |             |                 | Inception Date    |
|------------------------------------|----------------------|-------------|-----------------|---------------------------|---------------------------|--------------|--------------|-------------|--------------|-------------|-------------|-----------------|-------------------|
|                                    | Market Value (\$000) | %           | 1 Quarter       | 1 Quarter Ending Jun-2018 | 1 Quarter Ending Mar-2018 | Year To Date | 1 Year       | 3 Years     | 5 Years      | 7 Years     | 10 Years    | Since Inception |                   |
| PRIT Absolute Return               | 34,325               | 4.90        | 0.86            | 1.06                      | 0.11                      | 2.04         | 4.79         | 4.61        | 4.27         | 5.50        | 4.25        | 4.25            | 10/01/2008        |
| HFRI Fund of Funds Composite Index |                      |             | 0.19            | 0.46                      | 0.27                      | 0.92         | 3.01         | 3.27        | 3.16         | 3.60        | 2.55        | 2.55            |                   |
| HFRI FOF: Diversified Index        |                      |             | 0.60            | 0.70                      | 0.07                      | 1.38         | 3.46         | 3.00        | 3.15         | 3.55        | 2.61        | 2.61            |                   |
| <b>Total Real Estate</b>           | <b>60,104</b>        | <b>8.58</b> | <b>1.74</b>     | <b>4.30</b>               | <b>1.81</b>               | <b>8.03</b>  | <b>11.12</b> | <b>9.38</b> | <b>10.31</b> | <b>9.17</b> | <b>2.05</b> | <b>7.08</b>     | <b>01/01/1995</b> |
| NCREIF Property Index              |                      |             | 1.67            | 1.81                      | 1.70                      | 5.27         | 7.16         | 7.75        | 9.57         | 9.98        | 6.42        | 9.51            |                   |
| RREEF America REIT II              | 13,075               | 1.87        | 2.49            | 2.16                      | 2.38                      | 7.19         | 9.61         | 9.25        | 11.14        | 11.98       | 6.03        | 7.62            | 04/01/2005        |
| NCREIF Property Index              |                      |             | 1.67            | 1.81                      | 1.70                      | 5.27         | 7.16         | 7.75        | 9.57         | 9.98        | 6.42        | 8.42            |                   |
| Intercontinental                   | 28,898               | 4.13        | 2.52            | 2.89                      | 2.79                      | 8.42         | 11.22        | N/A         | N/A          | N/A         | N/A         | 9.65            | 01/01/2017        |
| NCREIF Property Index              |                      |             | 1.67            | 1.81                      | 1.70                      | 5.27         | 7.16         | 7.75        | 9.57         | 9.98        | 6.42        | 7.02            |                   |
| <b>Total Infrastructure</b>        | <b>32,637</b>        | <b>4.66</b> | <b>6.02</b>     | <b>-1.06</b>              | <b>7.78</b>               | <b>13.06</b> | <b>17.92</b> | <b>N/A</b>  | <b>N/A</b>   | <b>N/A</b>  | <b>N/A</b>  | <b>9.43</b>     | <b>03/01/2016</b> |
| IFM                                | 25,494               | 3.64        | 6.79            | -1.03                     | 9.08                      | 15.28        | 20.17        | N/A         | N/A          | N/A         | N/A         | 18.67           | 04/01/2017        |
| Bristol County Cash                | 4,902                | 0.70        | 0.46            | 2.14                      | 0.19                      | 2.80         | 3.11         | 1.44        | 1.22         | 0.90        | 0.88        | 2.76            | 01/01/1997        |
| 90 Day U.S. Treasury Bill          |                      |             | 0.49            | 0.45                      | 0.35                      | 1.30         | 1.59         | 0.80        | 0.50         | 0.37        | 0.32        | 2.17            |                   |

\*\*Stone Harbor 50/50 Blend: 50% JPM EMBI Global Diversified Index/50% JPM GBI-EM Global Diversified US Index

\*\*PIMCO Index: 33% BC Global Agg/33% ML Global HY/33% JPM EMBI Global.

|                                                  | Market Value<br>(\$) | %    | 1<br>Quarter | 1<br>Quarter<br>Ending<br>Jun-2018 | 1<br>Quarter<br>Ending<br>Mar-2018 | 1<br>Quarter<br>Ending<br>Dec-2017 | 1<br>Year | 3<br>Years | 5<br>Years | 7<br>Years | Since<br>Inception | Inception<br>Date |
|--------------------------------------------------|----------------------|------|--------------|------------------------------------|------------------------------------|------------------------------------|-----------|------------|------------|------------|--------------------|-------------------|
| <b>Other Fixed Income</b>                        |                      |      |              |                                    |                                    |                                    |           |            |            |            |                    |                   |
| Invesco Mortgage Recovery Fund                   | 342,476              | 0.05 | 0.00         | 5.73                               | 3.20                               | 4.95                               | 15.27     | 3.45       | 19.81      | 14.49      | 13.94              | 03/31/2010        |
| <b>Real Assets</b>                               |                      |      |              |                                    |                                    |                                    |           |            |            |            |                    |                   |
| <b>Active Funds:</b>                             |                      |      |              |                                    |                                    |                                    |           |            |            |            |                    |                   |
| Brookfield Timberlands Fund V                    | 1,222,399            | 0.18 | 0.00         | 1.67                               | 2.24                               | 5.47                               | 9.70      | 6.09       | N/A        | N/A        | 9.69               | 12/23/2013        |
| Eastern Timberland Opportunities II              | 2,925,979            | 0.42 | 2.00         | 0.80                               | -0.59                              | 3.79                               | 6.10      | 6.74       | N/A        | N/A        | 9.58               | 07/03/2014        |
| GCM Customized Infrastructures Strategies II, LP | 7,143,214            | 1.02 | 3.33         | -1.15                              | 3.10                               | 4.84                               | 9.86      | N/A        | N/A        | N/A        | 8.16               | 03/10/2016        |
| Invesco Mortgage Recovery II                     | 7,498,574            | 1.07 | 0.00         | 14.46                              | -3.88                              | 4.65                               | 15.76     | N/A        | N/A        | N/A        | 11.62              | 05/20/2016        |
| <b>Funds in Liquidation</b>                      |                      |      |              |                                    |                                    |                                    |           |            |            |            |                    |                   |
| Hunt RIVA (FKA SSgA Tuckerman)                   | 64,723               | 0.01 | 0.00         | -0.82                              | -2.32                              | 0.85                               | 1.22      | -4.49      | 8.18       | 9.66       | 0.00               | 10/01/2004        |

|                                 | Market Value<br>(\$) | %    | 1<br>Quarter | 1<br>Quarter<br>Ending<br>Jun-2018 | 1<br>Quarter<br>Ending<br>Mar-2018 | 1<br>Quarter<br>Ending<br>Dec-2017 | 1<br>Year | 3<br>Years | 5<br>Years | 7<br>Years | Since<br>Inception | Inception<br>Date |
|---------------------------------|----------------------|------|--------------|------------------------------------|------------------------------------|------------------------------------|-----------|------------|------------|------------|--------------------|-------------------|
| Total Private Equity            | 34,467,455           | 4.92 | 4.56         | 3.64                               | 7.97                               | 0.33                               | 17.53     | 10.88      | 9.82       | 10.12      | 177.68             | 01/05/1995        |
| <b>Active Funds:</b>            |                      |      |              |                                    |                                    |                                    |           |            |            |            |                    |                   |
| BlackRock Vesey Street Fund III | 477,457              | 0.07 | 0.00         | -4.98                              | -4.09                              | -0.30                              | -8.74     | -5.80      | 8.43       | 10.31      | 4.24               | 07/17/2006        |
| DuPont Capital Management II    | 724,807              | 0.10 | 0.00         | 0.40                               | -1.47                              | 1.82                               | 0.84      | -0.75      | -0.23      | 3.26       | 0.75               | 08/14/2006        |
| DN Partners II                  | 1,072,419            | 0.15 | 0.00         | -0.57                              | -0.56                              | 23.51                              | 21.89     | -15.38     | -13.85     | -10.94     | -12.34             | 01/11/2007        |
| BlackRock Vesey Street Fund IV  | 4,860,218            | 0.69 | 0.00         | -1.29                              | 3.90                               | 1.37                               | 4.34      | 6.41       | 8.90       | 10.65      | 8.04               | 02/24/2009        |
| Mesirow PE Fund V               | 4,151,870            | 0.59 | 0.00         | 5.36                               | 3.84                               | 4.04                               | 14.08     | 13.42      | 16.27      | 15.36      | 14.13              | 04/09/2009        |
| PRIT Vintage 2014               | 7,723,372            | 1.10 | 7.92         | 7.67                               | 15.06                              | -3.71                              | 29.46     | 24.97      | N/A        | N/A        | 19.79              | 05/01/2014        |
| PRIT Vintage 2015               | 9,211,365            | 1.32 | 5.60         | 6.09                               | 11.29                              | 3.38                               | 29.01     | 22.26      | N/A        | N/A        | 20.23              | 03/01/2015        |
| PRIT Vintage 2016               | 3,687,005            | 0.53 | 7.79         | 7.58                               | -3.43                              | -8.39                              | 9.87      | N/A        | N/A        | N/A        | 5.52               | 03/01/2016        |
| PRIT Vintage 2017               | 1,796,632            | 0.26 | 13.26        | -16.25                             | 52.79                              | -54.43                             | 8.11      | N/A        | N/A        | N/A        | 6.83               | 04/30/2017        |
| PRIT Vintage 2018               | 621,643              | 0.09 | -5.34        | N/A                                | N/A                                | N/A                                | N/A       | N/A        | N/A        | N/A        | -6.81              | 05/30/2018        |
| <b>Funds in Liquidation:</b>    |                      |      |              |                                    |                                    |                                    |           |            |            |            |                    |                   |
| Charles River XI                | 140,667              | 0.02 | 0.00         | 0.00                               | -0.02                              | 0.70                               | 0.68      | 6.90       | 12.50      | 14.17      | 8.87               | 11/22/2000        |

As of September 30, 2018

| <b>Policy Index</b>           | <b>Weight (%)</b> |
|-------------------------------|-------------------|
| Jan-1976                      |                   |
| Blmbg. Barc. U.S. Aggregate   | 35.00             |
| MSCI EAFE (Net)               | 15.00             |
| S&P 500                       | 50.00             |
| Jul-2007                      |                   |
| Blmbg. Barc. U.S. Aggregate   | 33.00             |
| MSCI EAFE (Net)               | 22.00             |
| S&P 500                       | 45.00             |
| Jul-2010                      |                   |
| Blmbg. Barc. U.S. Aggregate   | 33.00             |
| MSCI EAFE (Net)               | 25.50             |
| S&P 500                       | 41.50             |
| Jan-2017                      |                   |
| Blmbg. Barc. U.S. Aggregate   | 18.00             |
| Russell 3000 Index            | 34.00             |
| Blmbg. Barc. Global Aggregate | 16.50             |
| MSCI AC World ex USA          | 24.00             |
| NCREIF Property Index         | 7.50              |

As of September 30, 2018

| Policy Index                        | Weight (%) |
|-------------------------------------|------------|
| Jan-2017                            |            |
| Russell 3000 Index                  | 30.00      |
| NCREIF Timberland Index             | 3.00       |
| FTSE EPRA/NAREIT Developed Index    | 2.00       |
| MSCI EAFE Index                     | 12.50      |
| MSCI Emerging Markets Index         | 10.50      |
| Blmbg. Barc. U.S. Aggregate         | 11.00      |
| Blmbg. Barc. U.S. TIPS              | 2.00       |
| Blmbg. Barc. Global Aggregate       | 6.50       |
| JPM EMBI Global Diversified         | 7.00       |
| FTSE High Yield Market Capped Index | 3.00       |
| HFRI FOF: Diversified Index         | 5.00       |
| NCREIF Property Index               | 7.50       |

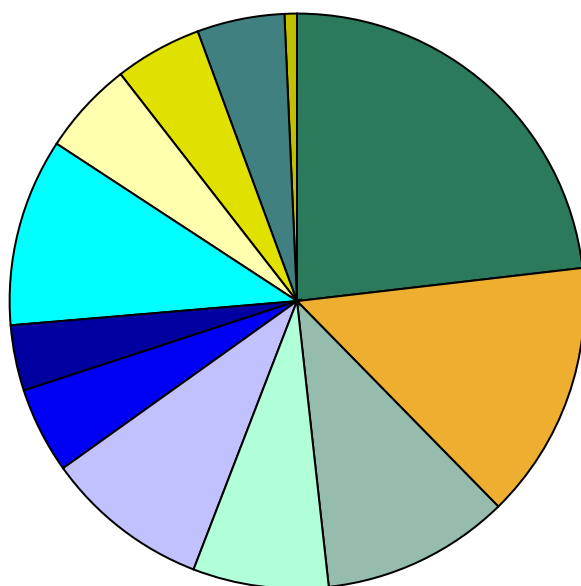
# Bristol County Retirement System

**Total Fund**

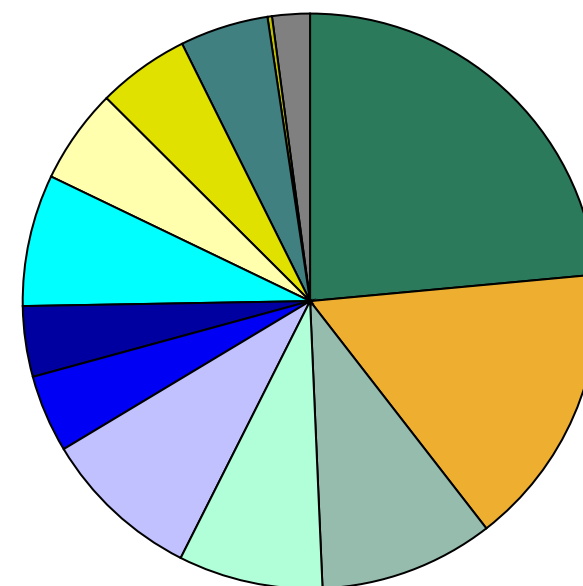
As of September 30, 2018

Sep-2018 : \$700,339,996

Jun-2018 : \$657,336,997



| Segments                   | Market Value (\$) | Allocation (%) |
|----------------------------|-------------------|----------------|
| Domestic Equity            | 162,159,515       | 23.15          |
| International Equity       | 101,565,381       | 14.50          |
| Emerging Equity            | 74,082,708        | 10.58          |
| Domestic Fixed Income      | 53,394,113        | 7.62           |
| International Fixed Income | 64,943,579        | 9.27           |
| Emerging Fixed Income      | 33,895,241        | 4.84           |
| Global Fixed Income        | 25,831,839        | 3.69           |
| Real Estate                | 73,988,656        | 10.56          |
| Alternative Investment     | 36,785,174        | 5.25           |
| Hedge Fund                 | 34,324,739        | 4.90           |
| Private Equity             | 34,467,455        | 4.92           |
| Cash Equivalent            | 4,901,594         | 0.70           |
| Other Equity               | -                 | 0.00           |



| Segments                   | Market Value (\$) | Allocation (%) |
|----------------------------|-------------------|----------------|
| Domestic Equity            | 154,609,090       | 23.52          |
| International Equity       | 105,027,483       | 15.98          |
| Emerging Equity            | 64,491,486        | 9.81           |
| Domestic Fixed Income      | 53,421,968        | 8.13           |
| International Fixed Income | 58,915,306        | 8.96           |
| Emerging Fixed Income      | 28,644,588        | 4.36           |
| Global Fixed Income        | 26,119,932        | 3.97           |
| Real Estate                | 48,658,971        | 7.40           |
| Alternative Investment     | 35,097,898        | 5.34           |
| Hedge Fund                 | 34,031,768        | 5.18           |
| Private Equity             | 32,714,173        | 4.98           |
| Cash Equivalent            | 1,635,545         | 0.25           |
| Other Equity               | 13,968,789        | 2.13           |

# Bristol County Retirement System

# Financial Reconciliation

1 Quarter Ending September 30, 2018

|                                       | Market Value<br>As of<br>07/01/2018 | Contributions | Distributions | Fees    | Expenses | Return On<br>Investment | Market Value<br>As of<br>09/30/2018 |
|---------------------------------------|-------------------------------------|---------------|---------------|---------|----------|-------------------------|-------------------------------------|
| <b>Domestic Equity</b>                |                                     |               |               |         |          |                         |                                     |
| ClearBridge Large Cap Growth          | -                                   | 27,000,000    | -             | -       | -        | 650,022                 | 27,650,022                          |
| Intech Large Cap Growth               | 26,537,727                          | -             | -27,619,588   | -34,646 | -        | 1,116,507               | -                                   |
| Columbia                              | 33,835,501                          | -             | -             | -       | -        | 2,520,631               | 36,356,133                          |
| LSV                                   | 32,592,838                          | -             | -             | -46,862 | -        | 1,666,294               | 34,212,270                          |
| Lyrical                               | 31,749,746                          | -             | -             | -59,643 | -        | 1,039,092               | 32,729,196                          |
| Earnest Partners                      | 14,618,583                          | -             | -             | -34,692 | -        | 289,514                 | 14,873,406                          |
| Rice Hall James                       | 15,274,695                          | -             | -             | -26,729 | -        | 1,090,524               | 16,338,490                          |
| <b>International Equity</b>           |                                     |               |               |         |          |                         |                                     |
| Arrowstreet Capital                   | 29,819,718                          | -             | -             | -       | -        | 874,147                 | 30,693,865                          |
| Freedom Capital Intl                  | 43,767,530                          | -             | -5,500,000    | -96,766 | -        | 672,966                 | 38,843,730                          |
| MFS International Equity              | 31,440,235                          | -             | -             | -       | -        | 587,551                 | 32,027,786                          |
| Lazard Emerging Markets               | 37,039,615                          | 5,000,000     | -             | -       | -        | -394,673                | 41,644,942                          |
| Aberdeen Emerging Markets             | 27,451,872                          | 5,000,000     | -             | -69,168 | -        | 55,062                  | 32,437,766                          |
| <b>Global REITs</b>                   |                                     |               |               |         |          |                         |                                     |
| CBRE Clarion Global REITs             | 13,968,789                          | -             | -             | -22,509 | -        | -61,454                 | 13,884,825                          |
| <b>Domestic Fixed Income</b>          |                                     |               |               |         |          |                         |                                     |
| Income Research & Management          | 41,522,024                          | -             | -             | -32,170 | -        | 55,988                  | 41,545,842                          |
| IRM-TIPS                              | 11,557,468                          | -             | -             | -2,881  | -        | -48,792                 | 11,505,795                          |
| Invesco Mortgage Recovery Fund        | 342,476                             | -             | -             | -       | -        | -                       | 342,476                             |
| <b>International Fixed Income</b>     |                                     |               |               |         |          |                         |                                     |
| Colchester Global Bond                | 26,119,932                          | -             | -             | -39,056 | -        | -249,037                | 25,831,839                          |
| PIMCO Diversified Income              | 58,915,306                          | 5,000,000     | -             | -       | -        | 1,028,273               | 64,943,579                          |
| Stone Harbor EMD                      | 15,972,012                          | 2,500,000     | -             | -14,727 | -        | 20,327                  | 18,477,612                          |
| Ashmore Emerging Markets Total Return | 12,672,576                          | 2,500,000     | -             | -       | -        | 245,053                 | 15,417,629                          |
| <b>Short Term Investments</b>         |                                     |               |               |         |          |                         |                                     |
| Bristol County Cash                   | 1,635,545                           | 69,613,460    | -66,389,439   | -       | -        | 42,027                  | 4,901,594                           |

# Bristol County Retirement System

# Financial Reconciliation

1 Quarter Ending September 30, 2018

|                                                  | Market Value<br>As of<br>07/01/2018 | Contributions      | Distributions       | Fees            | Expenses        | Return On<br>Investment | Market Value<br>As of<br>09/30/2018 |
|--------------------------------------------------|-------------------------------------|--------------------|---------------------|-----------------|-----------------|-------------------------|-------------------------------------|
| <b>Total Private Equity</b>                      |                                     |                    |                     |                 |                 |                         |                                     |
| DN Partners II                                   | 1,072,419                           | -                  | -                   | -               | -               | -                       | 1,072,419                           |
| Charles River XI                                 | 140,667                             | -                  | -                   | -               | -               | -                       | 140,667                             |
| DuPont Capital Management II                     | 863,781                             | 1,315              | -140,289            | -1,315          | -               | 1,315                   | 724,807                             |
| BlackRock Vesey Street Fund III                  | 537,457                             | -                  | -60,000             | -               | -               | -                       | 477,457                             |
| BlackRock Vesey Street Fund IV                   | 5,085,218                           | -                  | -225,000            | -               | -               | -                       | 4,860,218                           |
| Mesirow PE Fund V                                | 4,326,870                           | -                  | -175,000            | -               | -               | -                       | 4,151,870                           |
| PRIT Vintage 2014                                | 7,767,720                           | -65,481            | -578,745            | -743            | -31,988         | 632,608                 | 7,723,372                           |
| PRIT Vintage 2015                                | 8,304,787                           | 593,671            | -160,034            | -8,892          | -38,514         | 520,347                 | 9,211,365                           |
| PRIT Vintage 2016                                | 3,112,481                           | 399,655            | -78,594             | -681            | -36,128         | 290,271                 | 3,687,005                           |
| PRIT Vintage 2017                                | 1,370,805                           | 234,278            | -9,910              | -430            | -46,452         | 248,341                 | 1,796,632                           |
| <b>Real Assets</b>                               |                                     |                    |                     |                 |                 |                         |                                     |
| Hunt RIVA (FKA SSgA Tuckerman)                   | 120,528                             | -                  | -55,805             | -               | -               | -                       | 64,723                              |
| RREEF America REIT II                            | 12,787,260                          | -                  | -                   | -30,626         | -               | 318,677                 | 13,075,311                          |
| Intercontinental                                 | 28,252,609                          | -                  | -                   | -66,077         | -               | 711,753                 | 28,898,285                          |
| Brookfield Timberlands Fund V                    | 1,243,402                           | 3,510              | -24,513             | -2,769          | -741            | 3,510                   | 1,222,399                           |
| Eastern Timberland Opportunities II              | 3,010,937                           | -                  | -143,718            | -               | -               | 58,760                  | 2,925,979                           |
| GCM Customized Infrastructures Strategies II, LP | 6,912,680                           | -                  | -                   | -               | -               | 230,534                 | 7,143,214                           |
| IFM                                              | 23,930,879                          | -                  | -                   | -61,960         | -               | 1,624,663               | 25,493,583                          |
| <b>Hedge Fund of Funds</b>                       |                                     |                    |                     |                 |                 |                         |                                     |
| PRIT Absolute Return                             | 34,031,768                          | -                  | -                   | -91,522         | -               | 384,494                 | 34,324,739                          |
| <b>Total Fund</b>                                | <b>657,336,997</b>                  | <b>128,859,129</b> | <b>-101,160,685</b> | <b>-745,764</b> | <b>-160,050</b> | <b>16,210,368</b>       | <b>700,339,996</b>                  |

# Bristol County Retirement System

# Financial Reconciliation

1 Year Ending September 30, 2018

|                                       | Market Value<br>As of<br>10/01/2017 | Contributions | Distributions | Fees     | Expenses | Return On<br>Investment | Market Value<br>As of<br>09/30/2018 |
|---------------------------------------|-------------------------------------|---------------|---------------|----------|----------|-------------------------|-------------------------------------|
| <b>Domestic Equity</b>                |                                     |               |               |          |          |                         |                                     |
| ClearBridge Large Cap Growth          | -                                   | 27,000,000    | -             | -        | -        | 650,022                 | 27,650,022                          |
| Intech Large Cap Growth               | 26,045,538                          | -             | -30,119,588   | -144,794 | -        | 4,218,844               | -                                   |
| Columbia                              | 31,350,073                          | -             | -2,500,000    | -44,235  | -        | 7,550,295               | 36,356,133                          |
| LSV                                   | 33,662,002                          | -             | -2,500,000    | -193,915 | -        | 3,244,183               | 34,212,270                          |
| Lyrical                               | 35,287,184                          | -             | -2,500,000    | -218,083 | -        | 160,095                 | 32,729,196                          |
| Earnest Partners                      | 15,621,412                          | -             | -2,500,000    | -144,563 | -        | 1,896,556               | 14,873,406                          |
| Rice Hall James                       | 15,754,994                          | -             | -2,500,000    | -112,691 | -        | 3,196,187               | 16,338,490                          |
| <b>International Equity</b>           |                                     |               |               |          |          |                         |                                     |
| Arrowstreet Capital                   | 31,594,741                          | -             | -2,500,000    | -203,667 | -        | 1,802,791               | 30,693,865                          |
| Freedom Capital Intl                  | 41,906,552                          | -             | -5,500,000    | -381,052 | -        | 2,818,230               | 38,843,730                          |
| MFS International Equity              | 30,604,201                          | -             | -             | -        | -        | 1,423,585               | 32,027,786                          |
| Lazard Emerging Markets               | 42,120,016                          | 5,000,000     | -2,500,000    | -        | -        | -2,975,074              | 41,644,942                          |
| Aberdeen Emerging Markets             | 31,863,077                          | 5,000,000     | -2,500,000    | -300,492 | -        | -1,624,819              | 32,437,766                          |
| <b>Global REITs</b>                   |                                     |               |               |          |          |                         |                                     |
| CBRE Clarion Global REITs             | 13,533,834                          | -             | -             | -89,437  | -        | 440,428                 | 13,884,825                          |
| <b>Domestic Fixed Income</b>          |                                     |               |               |          |          |                         |                                     |
| Income Research & Management          | 42,075,721                          | -             | -             | -129,617 | -        | -400,263                | 41,545,842                          |
| IRM-TIPS                              | 11,478,806                          | -             | -             | -11,495  | -        | 38,484                  | 11,505,795                          |
| Invesco Mortgage Recovery Fund        | 365,270                             | 840           | -76,638       | -635     | -        | 53,639                  | 342,476                             |
| <b>International Fixed Income</b>     |                                     |               |               |          |          |                         |                                     |
| Colchester Global Bond                | 26,466,466                          | -             | -             | -155,971 | -        | -478,655                | 25,831,839                          |
| PIMCO Diversified Income              | 59,261,857                          | 5,000,000     | -             | -        | -        | 681,722                 | 64,943,579                          |
| Stone Harbor EMD                      | 17,123,297                          | 2,500,000     | -             | -78,493  | -        | -1,067,192              | 18,477,612                          |
| Ashmore Emerging Markets Total Return | 13,427,828                          | 2,500,000     | -             | -        | -        | -510,199                | 15,417,629                          |

# Bristol County Retirement System

# Financial Reconciliation

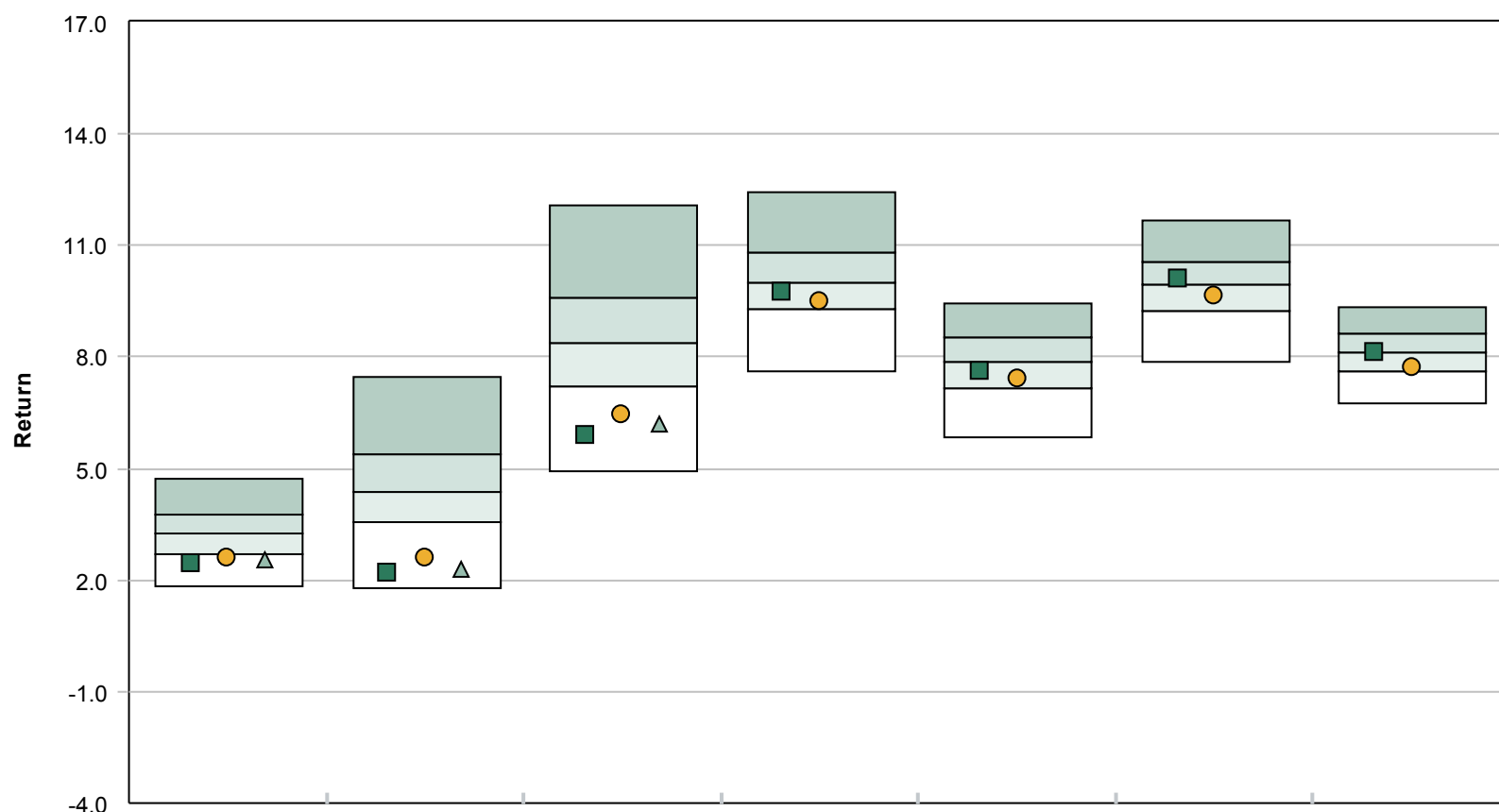
1 Year Ending September 30, 2018

|                                                  | Market Value<br>As of<br>10/01/2017 | Contributions      | Distributions       | Fees              | Expenses        | Return On<br>Investment | Market Value<br>As of<br>09/30/2018 |
|--------------------------------------------------|-------------------------------------|--------------------|---------------------|-------------------|-----------------|-------------------------|-------------------------------------|
| <b>Short Term Investments</b>                    |                                     |                    |                     |                   |                 |                         |                                     |
| Bristol County Cash                              | 20,559,067                          | 97,798,242         | -113,568,848        | -                 | -               | 113,132                 | 4,901,594                           |
| <b>Total Private Equity</b>                      |                                     |                    |                     |                   |                 |                         |                                     |
| DN Partners II                                   | 868,294                             | 12,139             | -                   | -12,139           | -               | 204,125                 | 1,072,419                           |
| Charles River XI                                 | 139,711                             | -                  | -                   | -                 | -               | 956                     | 140,667                             |
| DuPont Capital Management II                     | 1,085,668                           | 6,786              | -375,744            | -4,770            | -               | 12,867                  | 724,807                             |
| BlackRock Vesey Street Fund III                  | 946,404                             | -                  | -410,000            | -                 | -               | -58,947                 | 477,457                             |
| BlackRock Vesey Street Fund IV                   | 5,956,020                           | 174,456            | -1,499,453          | -                 | -24,453         | 253,648                 | 4,860,218                           |
| Mesirow PE Fund V                                | 4,287,617                           | 150,000            | -849,744            | -19,237           | -               | 583,234                 | 4,151,870                           |
| PRIT Vintage 2014                                | 5,796,669                           | 1,331,171          | -1,239,719          | -3,277            | -134,162        | 1,972,690               | 7,723,372                           |
| PRIT Vintage 2015                                | 5,546,548                           | 2,591,652          | -805,276            | -34,552           | -192,624        | 2,105,617               | 9,211,365                           |
| PRIT Vintage 2016                                | 1,487,242                           | 2,038,970          | -79,321             | -3,486            | -140,742        | 384,341                 | 3,687,005                           |
| PRIT Vintage 2017                                | 397,812                             | 1,402,635          | -85,786             | -2,020            | -117,264        | 201,256                 | 1,796,632                           |
| <b>Real Assets</b>                               |                                     |                    |                     |                   |                 |                         |                                     |
| New Boston                                       | 36,197                              | -                  | -11,392             | -                 | -               | -24,805                 | -                                   |
| Hunt RIVA (FKA SSgA Tuckerman)                   | 916,518                             | -                  | -855,681            | -1,763            | -               | 5,649                   | 64,723                              |
| RREEF America REIT II                            | 12,041,459                          | -                  | -                   | -118,856          | -               | 1,152,708               | 13,075,311                          |
| Intercontinental                                 | 26,224,129                          | -                  | -                   | -258,879          | -               | 2,933,035               | 28,898,285                          |
| Brookfield Timberlands Fund V                    | 1,156,651                           | 3,510              | -48,014             | -5,508            | -741            | 116,501                 | 1,222,399                           |
| Eastern Timberland Opportunities II              | 2,995,474                           | -                  | -247,514            | -                 | -               | 178,019                 | 2,925,979                           |
| GCM Customized Infrastructures Strategies II, LP | 4,300,093                           | 2,799,582          | -556,157            | -39,000           | -5,246          | 643,942                 | 7,143,214                           |
| IFM                                              | 21,422,234                          | -                  | -                   | -228,471          | -               | 4,299,819               | 25,493,583                          |
| <b>Hedge Fund of Funds</b>                       |                                     |                    |                     |                   |                 |                         |                                     |
| PRIT Absolute Return                             | 32,755,737                          | -                  | -                   | -377,918          | -               | 1,946,920               | 34,324,739                          |
| <b>Total Fund</b>                                | <b>673,993,011</b>                  | <b>167,701,793</b> | <b>-176,508,555</b> | <b>-3,342,786</b> | <b>-621,458</b> | <b>39,117,990</b>       | <b>700,339,996</b>                  |

# Bristol County Retirement System

# All Public Plans < \$1B-Total Fund

As of September 30, 2018



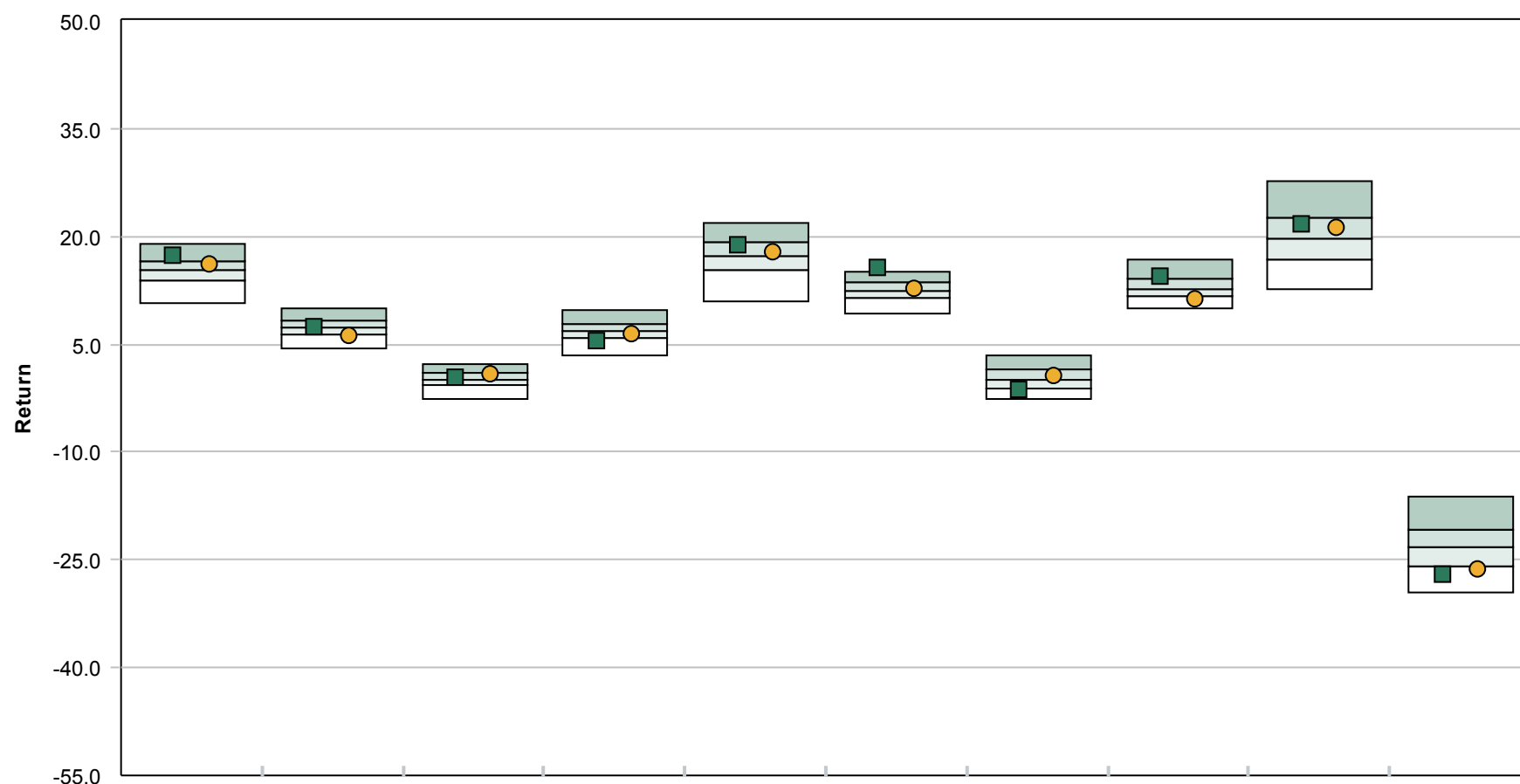
|                               | 1 Qtr     | YTD       | 1 Yr      | 3 Yrs     | 5 Yrs     | 7 Yrs      | 10 Yrs    |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| ■ Total Fund                  | 2.44 (84) | 2.19 (94) | 5.91 (90) | 9.73 (59) | 7.64 (60) | 10.09 (45) | 8.12 (50) |
| ● Total Plan Index            | 2.59 (80) | 2.60 (90) | 6.45 (86) | 9.51 (68) | 7.42 (68) | 9.64 (59)  | 7.74 (69) |
| ▲ Total Plan Allocation Index | 2.55 (80) | 2.29 (92) | 6.20 (88) | N/A       | N/A       | N/A        | N/A       |
| 5th Percentile                | 4.74      | 7.47      | 12.10     | 12.45     | 9.47      | 11.69      | 9.36      |
| 1st Quartile                  | 3.74      | 5.40      | 9.61      | 10.81     | 8.52      | 10.57      | 8.61      |
| Median                        | 3.25      | 4.38      | 8.39      | 10.01     | 7.85      | 9.94       | 8.12      |
| 3rd Quartile                  | 2.68      | 3.55      | 7.20      | 9.28      | 7.14      | 9.25       | 7.60      |
| 95th Percentile               | 1.84      | 1.77      | 4.91      | 7.60      | 5.84      | 7.87       | 6.77      |
| Population                    | 452       | 449       | 448       | 408       | 372       | 360        | 325       |

Parentheses contain percentile rankings.  
Calculation based on quarterly periodicity.

# Bristol County Retirement System

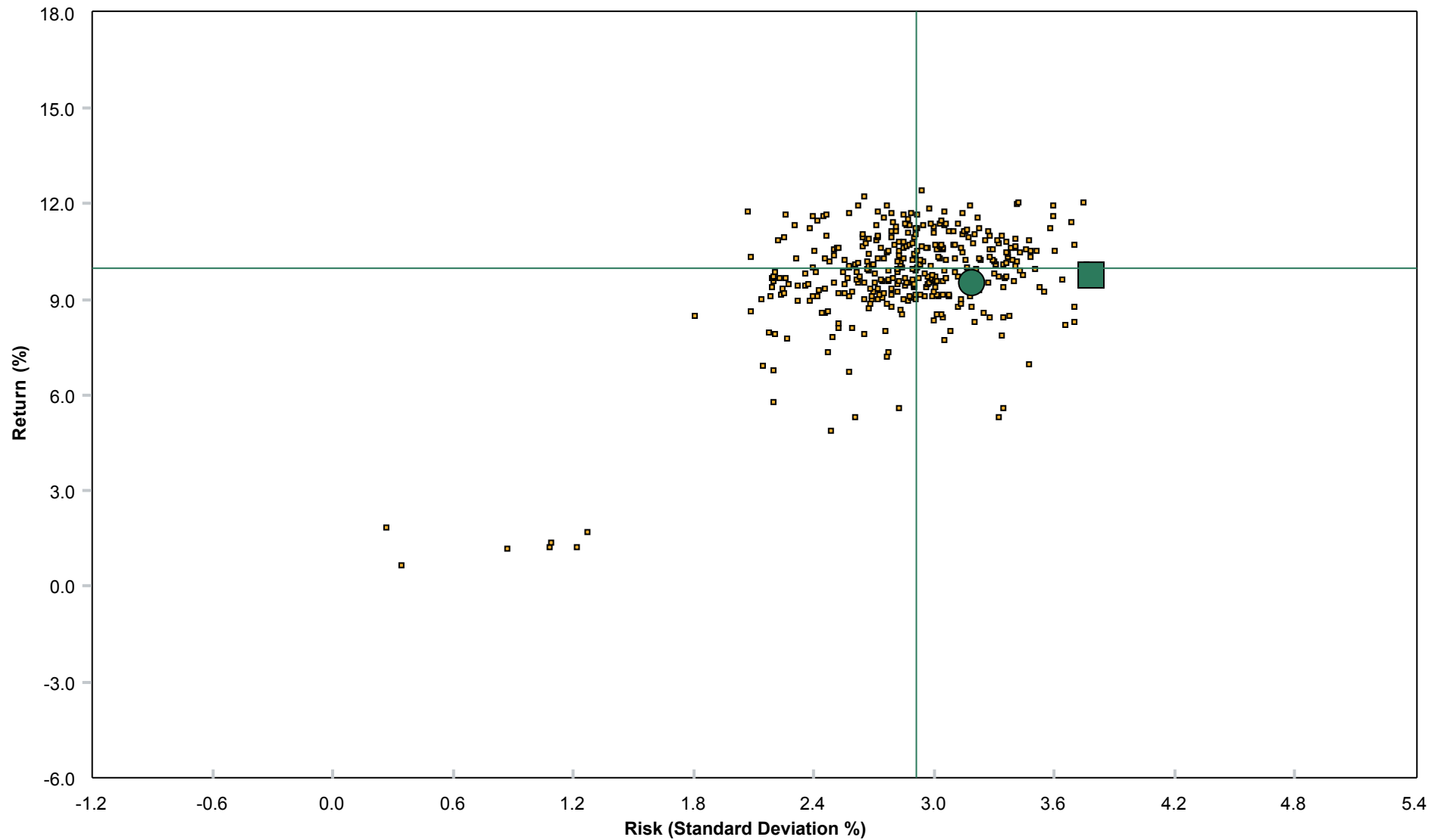
# All Public Plans < \$1B-Total Fund

As of September 30, 2018



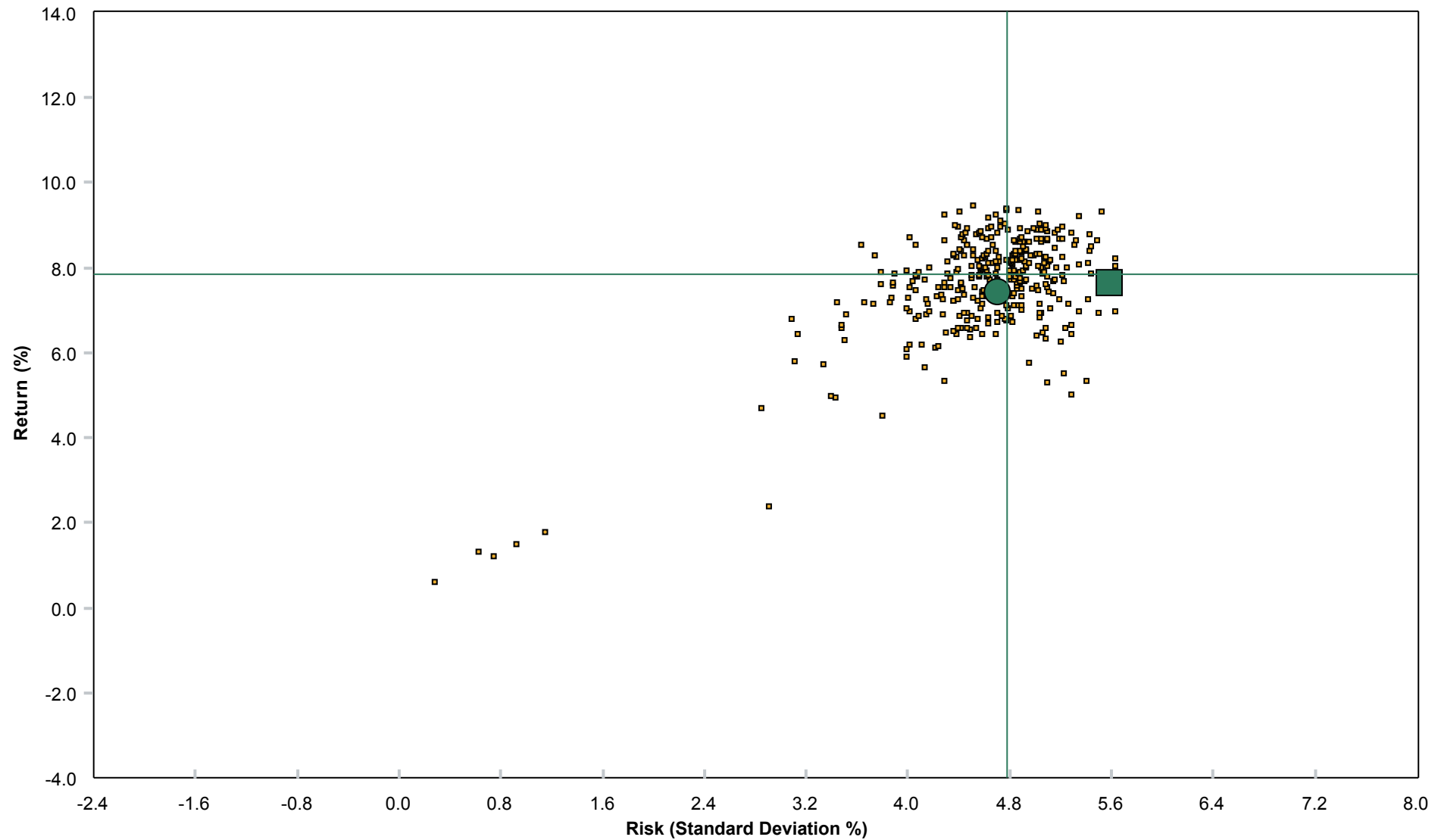
|                    | 2017       | 2016      | 2015      | 2014      | 2013       | 2012       | 2011       | 2010       | 2009       | 2008        |
|--------------------|------------|-----------|-----------|-----------|------------|------------|------------|------------|------------|-------------|
| ■ Total Fund       | 17.23 (15) | 7.30 (48) | 0.19 (48) | 5.27 (82) | 18.83 (29) | 15.67 (3)  | -1.44 (82) | 14.26 (23) | 21.58 (35) | -27.00 (82) |
| ● Total Plan Index | 15.96 (39) | 6.19 (77) | 0.79 (30) | 6.25 (66) | 17.81 (45) | 12.59 (48) | 0.45 (43)  | 11.21 (84) | 21.02 (38) | -26.45 (78) |
| 5th Percentile     | 18.89      | 9.96      | 2.31      | 9.72      | 21.80      | 15.18      | 3.39       | 16.70      | 27.58      | -16.08      |
| 1st Quartile       | 16.55      | 8.35      | 0.95      | 7.91      | 19.09      | 13.61      | 1.39       | 14.04      | 22.69      | -20.75      |
| Median             | 15.43      | 7.21      | 0.07      | 6.83      | 17.32      | 12.44      | 0.15       | 12.75      | 19.64      | -23.19      |
| 3rd Quartile       | 13.97      | 6.25      | -0.79     | 5.84      | 15.30      | 11.42      | -1.08      | 11.72      | 16.75      | -25.89      |
| 95th Percentile    | 10.70      | 4.37      | -2.56     | 3.37      | 11.02      | 9.16       | -2.64      | 9.89       | 12.70      | -29.54      |
| Population         | 528        | 525       | 479       | 451       | 446        | 448        | 433        | 423        | 408        | 377         |

Parentheses contain percentile rankings.  
Calculation based on quarterly periodicity.



|                    | Return | Standard<br>Deviation |
|--------------------|--------|-----------------------|
| ■ Total Fund       | 9.73   | 3.78                  |
| ● Total Plan Index | 9.51   | 3.19                  |
| — Median           | 10.01  | 2.91                  |

Calculation based on quarterly periodicity.

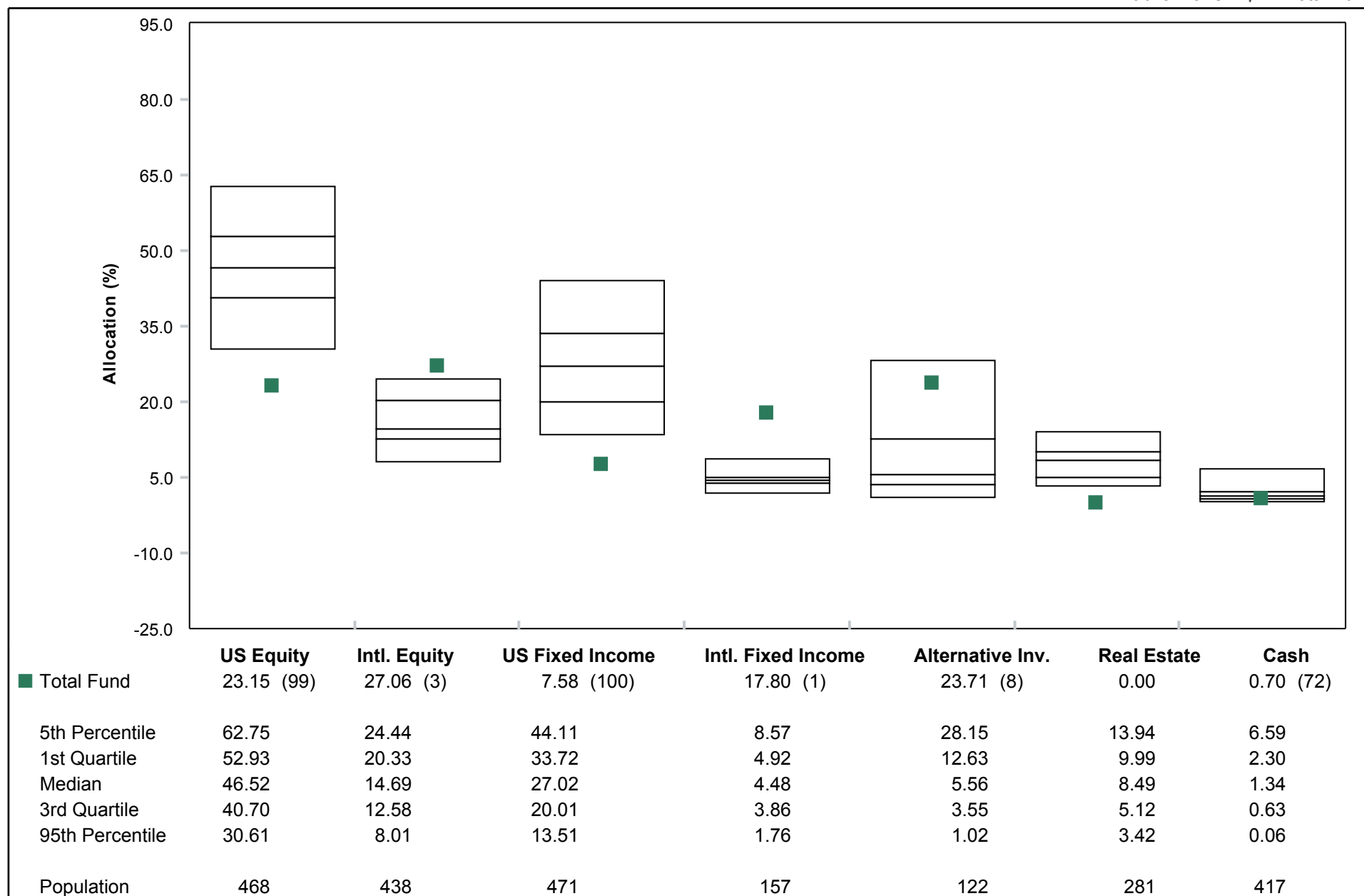


|                    | Return | Standard<br>Deviation |
|--------------------|--------|-----------------------|
| ■ Total Fund       | 7.64   | 5.58                  |
| ● Total Plan Index | 7.42   | 4.70                  |
| — Median           | 7.85   | 4.77                  |

Calculation based on quarterly periodicity.

As of September 30, 2018

All Public Plans &lt; \$1B-Total Fund



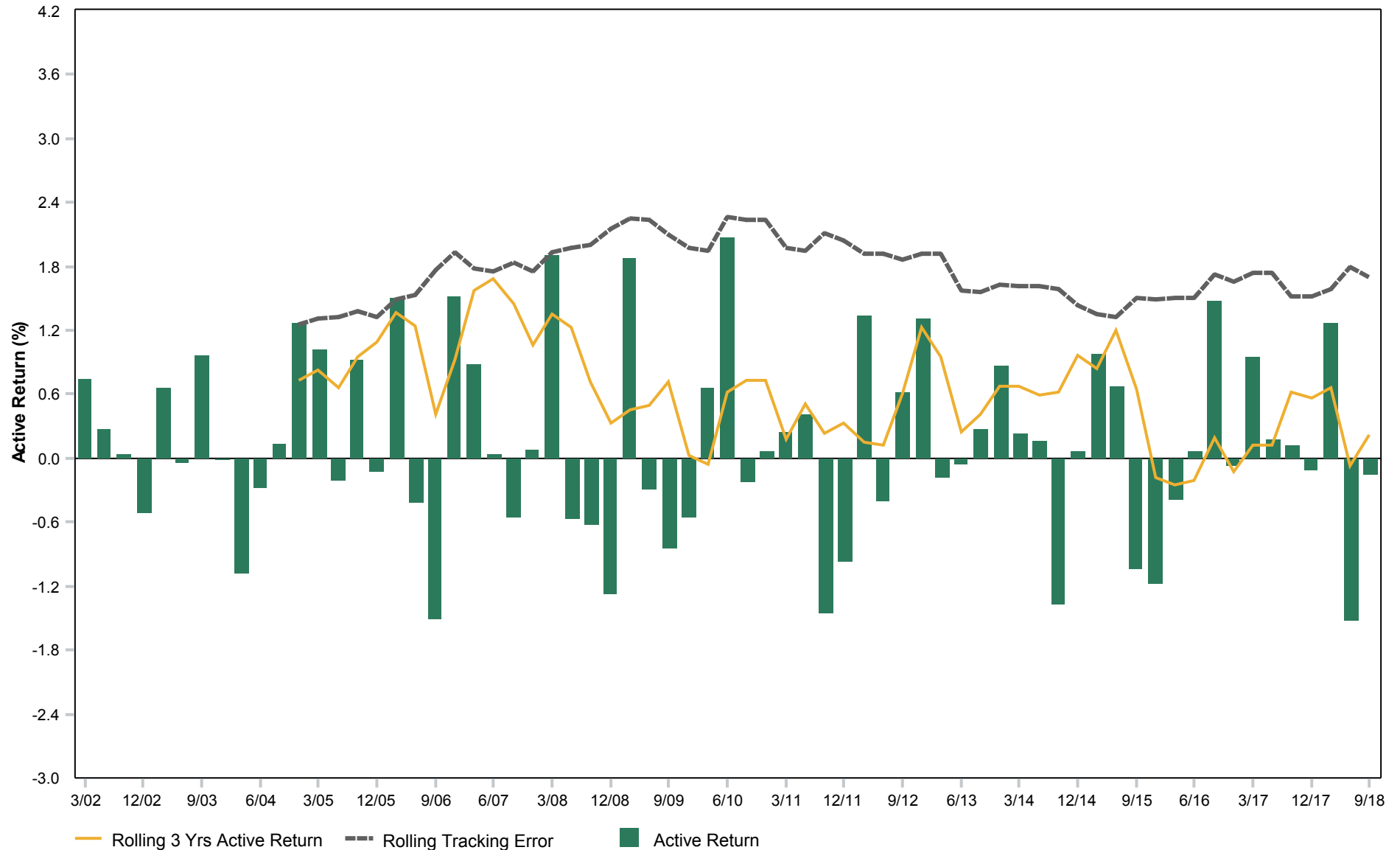
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

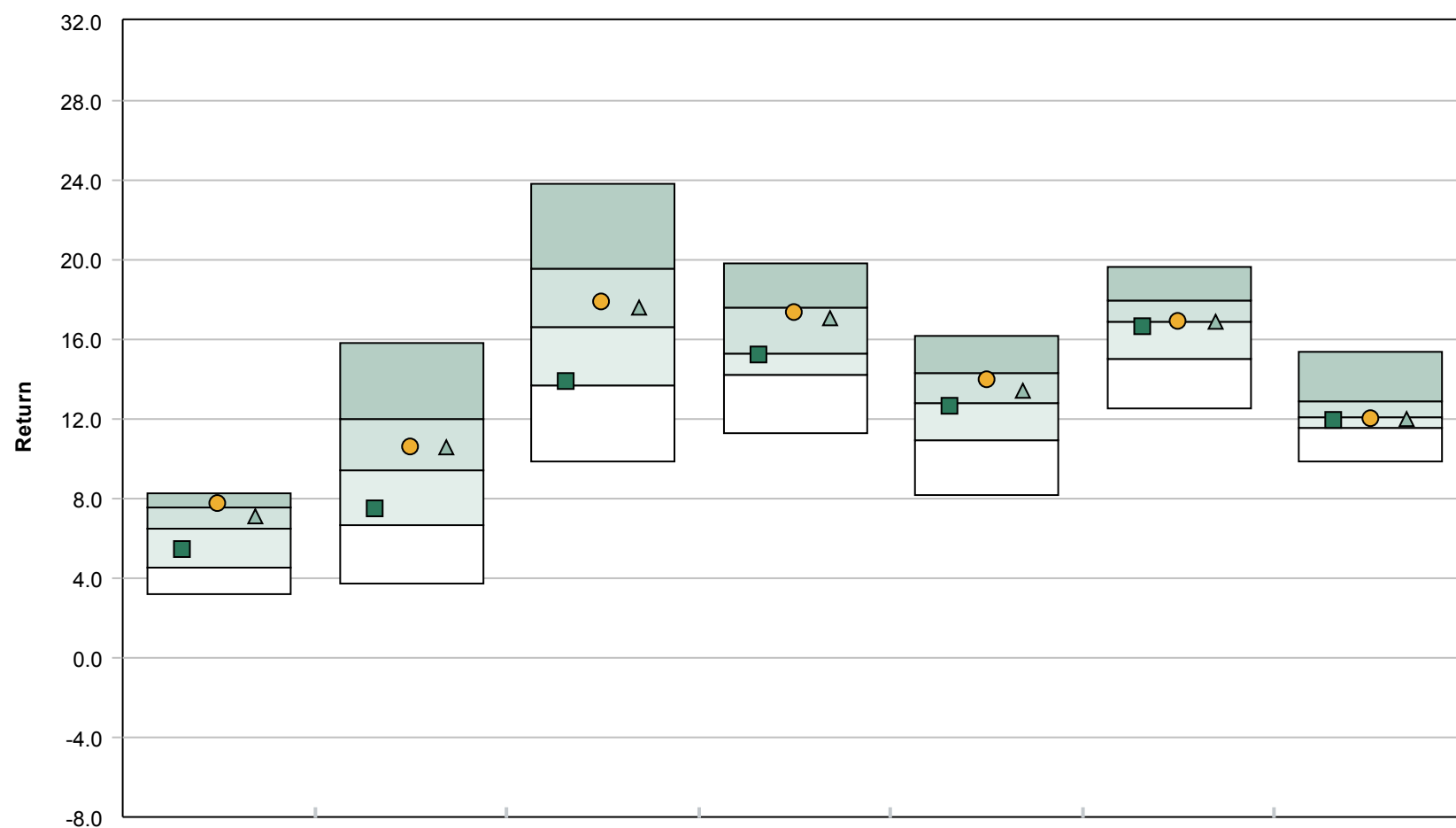
As of September 30, 2018

|                  | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016 | 2015  | 2014  |
|------------------|-------|-------|-------|-------|-------|-------|--------|-------|------|-------|-------|
| Total Fund       | 2.44  | 2.19  | 5.91  | 9.73  | 7.64  | 10.09 | 8.12   | 17.23 | 7.30 | 0.19  | 5.27  |
| Total Plan Index | 2.59  | 2.60  | 6.45  | 9.51  | 7.42  | 9.64  | 7.74   | 15.96 | 6.19 | 0.79  | 6.25  |
| Difference       | -0.15 | -0.41 | -0.54 | 0.22  | 0.22  | 0.45  | 0.38   | 1.27  | 1.11 | -0.60 | -0.98 |



## **Domestic Equity**

As of September 30, 2018

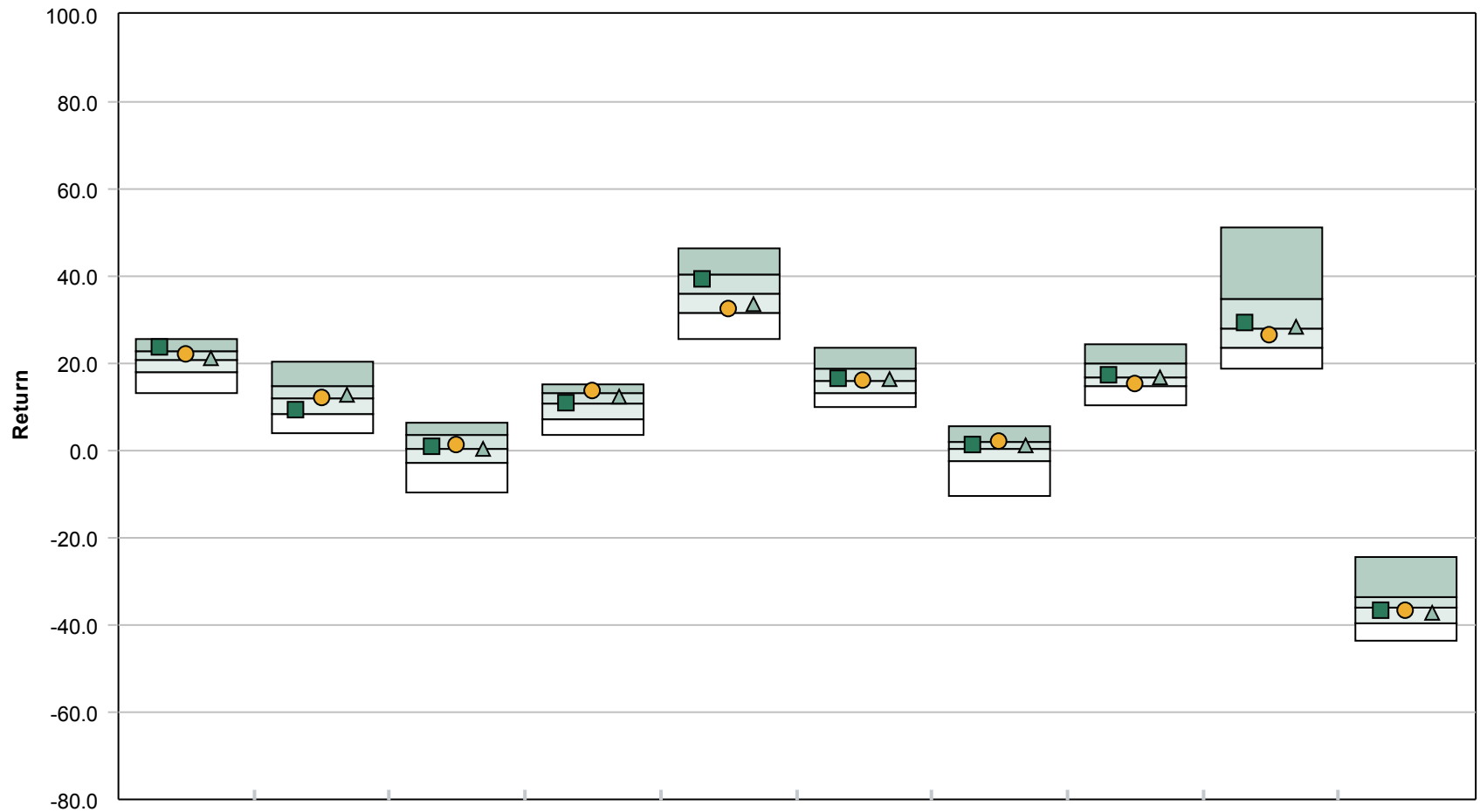


■ Total Domestic Equity  
 ● S&P 500 Index  
 ▲ Russell 3000 Index

|                       | 1 Qtr     | YTD        | 1 Yr       | 3 Yrs      | 5 Yrs      | 7 Yrs      | 10 Yrs     |
|-----------------------|-----------|------------|------------|------------|------------|------------|------------|
| Total Domestic Equity | 5.39 (64) | 7.50 (68)  | 13.84 (75) | 15.20 (57) | 12.59 (53) | 16.65 (56) | 11.88 (63) |
| S&P 500 Index         | 7.71 (17) | 10.56 (39) | 17.91 (35) | 17.31 (31) | 13.95 (31) | 16.91 (49) | 11.97 (62) |
| Russell 3000 Index    | 7.12 (37) | 10.57 (39) | 17.58 (36) | 17.07 (32) | 13.46 (37) | 16.86 (50) | 12.01 (61) |

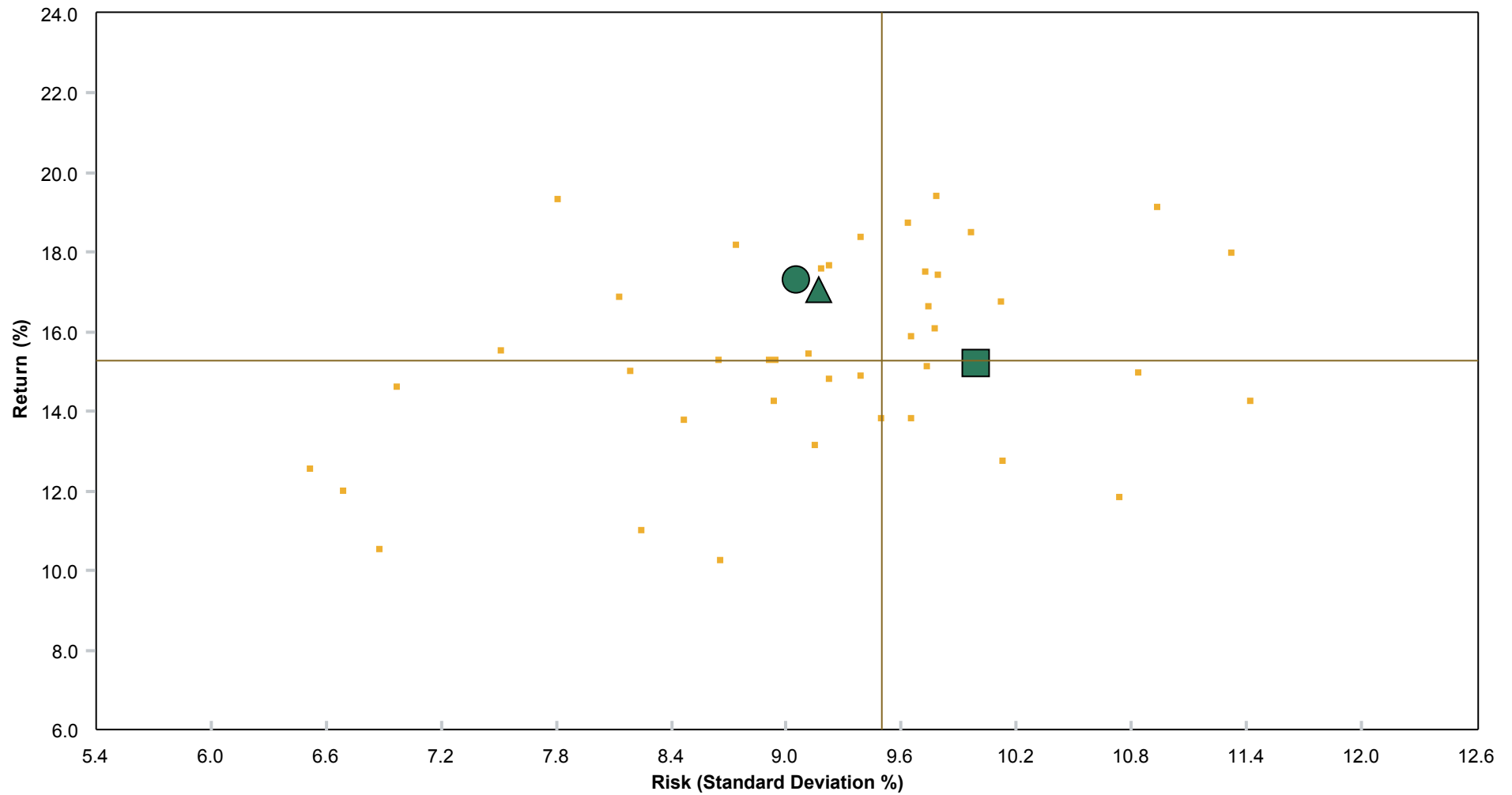
|                 |      |       |       |       |       |       |       |
|-----------------|------|-------|-------|-------|-------|-------|-------|
| 5th Percentile  | 8.31 | 15.81 | 23.86 | 19.86 | 16.14 | 19.67 | 15.41 |
| 1st Quartile    | 7.51 | 12.03 | 19.59 | 17.61 | 14.34 | 17.95 | 12.91 |
| Median          | 6.52 | 9.41  | 16.62 | 15.29 | 12.78 | 16.85 | 12.12 |
| 3rd Quartile    | 4.56 | 6.67  | 13.72 | 14.24 | 10.91 | 15.00 | 11.52 |
| 95th Percentile | 3.16 | 3.76  | 9.85  | 11.25 | 8.21  | 12.50 | 9.89  |

Parentheses contain percentile rankings.  
 Calculation based on monthly periodicity.

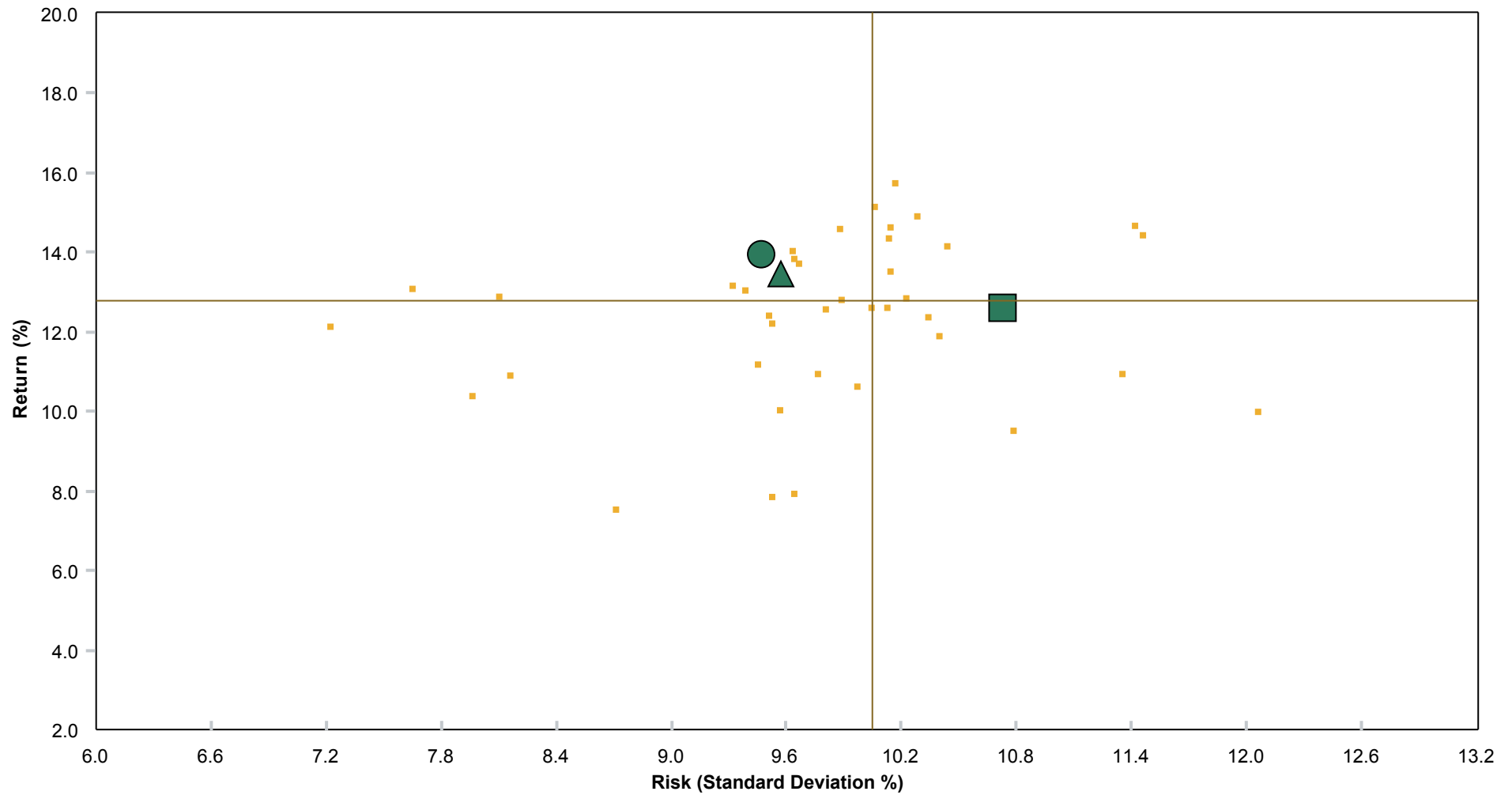


|                         | 2017       | 2016       | 2015      | 2014       | 2013       | 2012       | 2011      | 2010       | 2009       | 2008        |
|-------------------------|------------|------------|-----------|------------|------------|------------|-----------|------------|------------|-------------|
| ■ Total Domestic Equity | 23.61 (20) | 9.01 (68)  | 0.66 (48) | 10.97 (48) | 39.12 (28) | 16.25 (48) | 1.11 (43) | 17.08 (47) | 29.17 (44) | -36.74 (59) |
| ● S&P 500 Index         | 21.83 (33) | 11.96 (51) | 1.38 (41) | 13.69 (18) | 32.39 (73) | 16.00 (50) | 2.11 (25) | 15.06 (71) | 26.46 (56) | -37.00 (60) |
| ▲ Russell 3000 Index    | 21.13 (46) | 12.74 (47) | 0.48 (51) | 12.56 (32) | 33.55 (66) | 16.42 (44) | 1.03 (43) | 16.93 (53) | 28.34 (46) | -37.31 (62) |
| 5th Percentile          | 25.65      | 20.46      | 6.41      | 15.15      | 46.48      | 23.62      | 5.78      | 24.54      | 51.35      | -24.32      |
| 1st Quartile            | 22.83      | 14.95      | 3.73      | 13.30      | 40.43      | 18.95      | 2.01      | 20.06      | 34.84      | -33.74      |
| Median                  | 20.70      | 12.12      | 0.52      | 10.80      | 35.95      | 15.97      | 0.32      | 16.99      | 27.82      | -35.92      |
| 3rd Quartile            | 17.89      | 8.37       | -2.87     | 7.24       | 31.68      | 13.08      | -2.23     | 14.77      | 23.68      | -39.68      |
| 95th Percentile         | 13.22      | 4.14       | -9.78     | 3.78       | 25.65      | 10.00      | -10.48    | 10.29      | 18.88      | -43.65      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



|                         | Return | Standard<br>Deviation |
|-------------------------|--------|-----------------------|
| ■ Total Domestic Equity | 15.20  | 9.99                  |
| ● S&P 500 Index         | 17.31  | 9.05                  |
| ▲ Russell 3000 Index    | 17.07  | 9.17                  |
| — Median                | 15.29  | 9.50                  |



|                         | Return | Standard<br>Deviation |
|-------------------------|--------|-----------------------|
| ■ Total Domestic Equity | 12.59  | 10.73                 |
| ● S&P 500 Index         | 13.95  | 9.47                  |
| ▲ Russell 3000 Index    | 13.46  | 9.57                  |
| — Median                | 12.78  | 10.05                 |

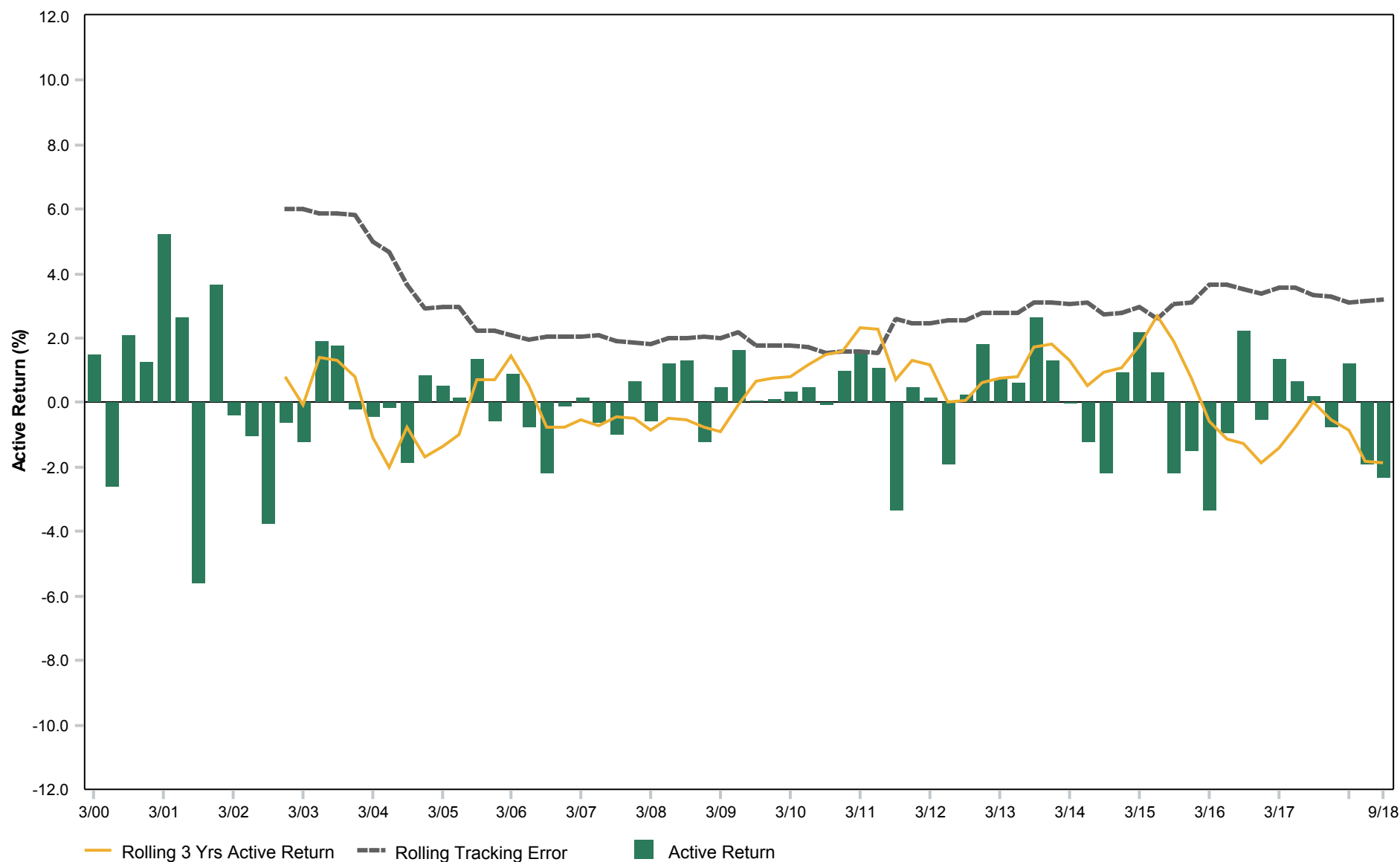
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                       | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015  | 2014  |
|-----------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| Total Domestic Equity | 5.39  | 7.50  | 13.84 | 15.20 | 12.59 | 16.65 | 11.88  | 23.61 | 9.01  | 0.66  | 10.97 |
| S&P 500 Index         | 7.71  | 10.56 | 17.91 | 17.31 | 13.95 | 16.91 | 11.97  | 21.83 | 11.96 | 1.38  | 13.69 |
| Difference            | -2.32 | -3.06 | -4.07 | -2.11 | -1.36 | -0.26 | -0.09  | 1.78  | -2.95 | -0.72 | -2.72 |



# Bristol County Retirement System

# Total Domestic Equity

1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 5.66  
 Portfolio Trading -0.27  
 Actual Return 5.39  
 Benchmark Return 7.71  
 Actual Active Return -2.32

Stock Selection -2.72  
 Sector Selection 0.89  
 Interaction -0.22  
 Total Selection -2.05

Portfolio Trading -0.27  
 Benchmark Trading 0.00  
 Active Trading Impact -0.27

Buy & Hold Active Return -2.32

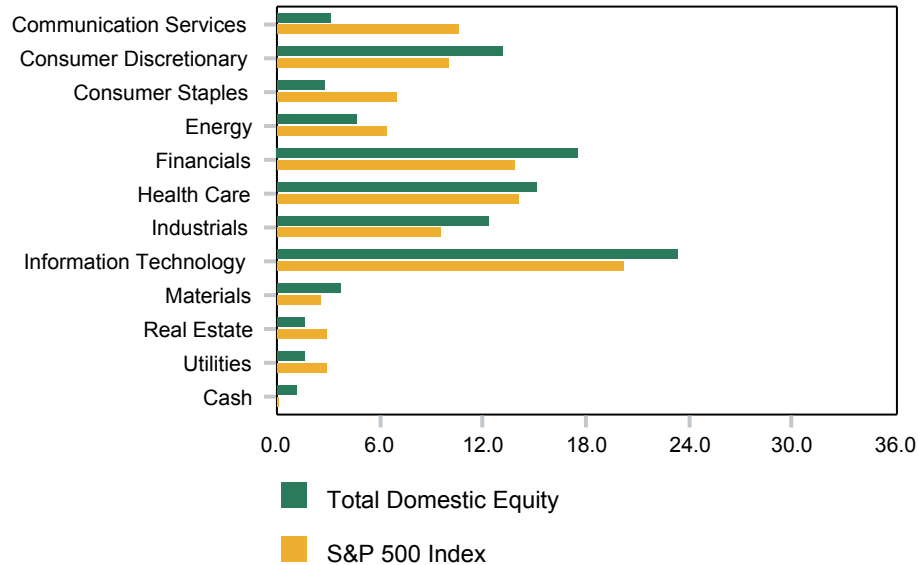
|                        | Allocation — 07/01/2018 |           | Performance — 1 Quarter<br>Ending September 30, 2018 |           | Stock | Attribution |             |       |
|------------------------|-------------------------|-----------|------------------------------------------------------|-----------|-------|-------------|-------------|-------|
|                        | Portfolio               | Benchmark | Portfolio                                            | Benchmark |       | Sector      | Interaction | Total |
| Communication Services | 3.18                    | 10.59     | -1.14                                                | 1.08      | -0.24 | 0.49        | 0.16        | 0.42  |
| Consumer Discretionary | 13.10                   | 10.04     | 0.75                                                 | 9.32      | -0.86 | 0.05        | -0.26       | -1.07 |
| Consumer Staples       | 2.74                    | 6.96      | 2.22                                                 | 5.62      | -0.24 | 0.09        | 0.14        | 0.00  |
| Energy                 | 4.67                    | 6.34      | -1.29                                                | 0.73      | -0.13 | 0.12        | 0.03        | 0.02  |
| Financials             | 17.56                   | 13.84     | 2.54                                                 | 4.36      | -0.25 | -0.12       | -0.07       | -0.44 |
| Health Care            | 15.04                   | 14.07     | 16.64                                                | 14.45     | 0.31  | 0.07        | 0.02        | 0.40  |
| Industrials            | 12.32                   | 9.51      | 6.29                                                 | 10.10     | -0.36 | 0.07        | -0.11       | -0.40 |
| Information Technology | 23.30                   | 20.23     | 7.25                                                 | 12.49     | -1.06 | 0.15        | -0.16       | -1.07 |
| Materials              | 3.71                    | 2.60      | 3.01                                                 | 0.33      | 0.07  | -0.08       | 0.03        | 0.02  |
| Real Estate            | 1.60                    | 2.86      | 1.73                                                 | 0.65      | 0.03  | 0.09        | -0.01       | 0.11  |
| Utilities              | 1.61                    | 2.95      | 2.54                                                 | 2.38      | 0.00  | 0.07        | 0.00        | 0.07  |
| Cash                   | 1.17                    | 0.00      | 0.00                                                 | 0.00      | 0.00  | -0.09       | 0.00        | -0.09 |
| Total                  | 100.00                  | 100.00    | 5.66                                                 | 7.71      | -2.72 | 0.89        | -0.22       | -2.05 |

## Bristol County Retirement System

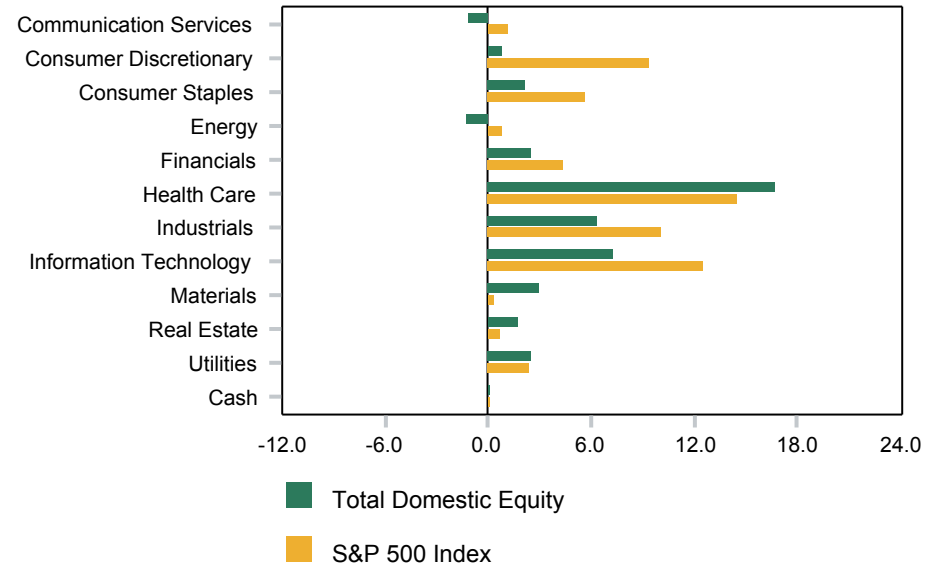
## Buy and Hold Sector Attribution Graph

1 Quarter Ending September 30, 2018

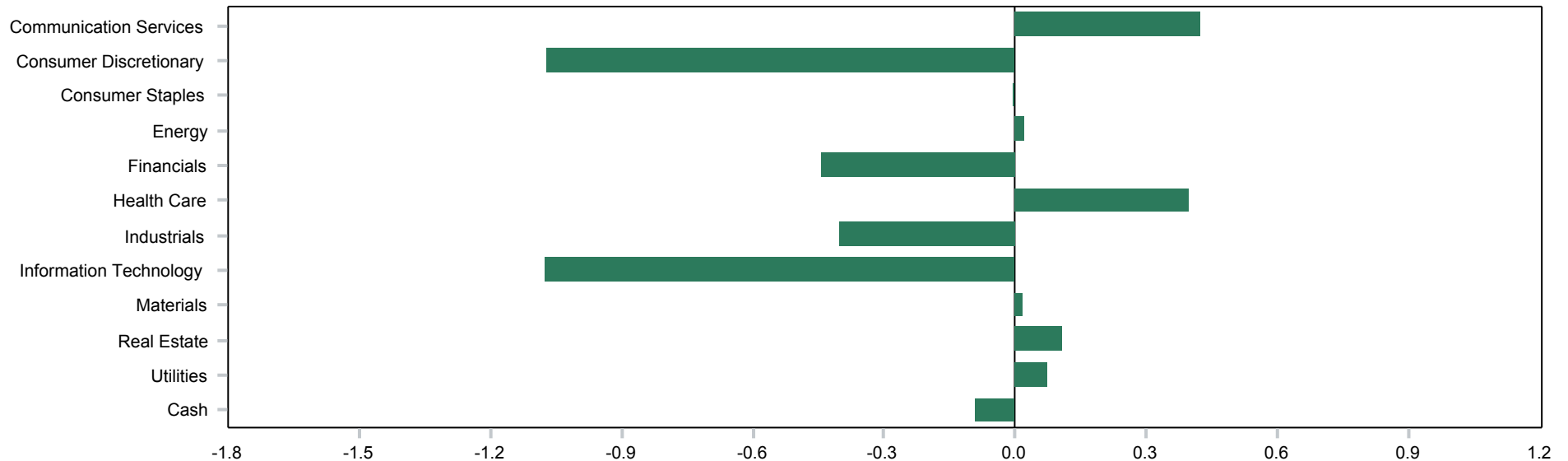
### Allocation



### Performance



### Total Attribution



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 5.66  
 Portfolio Trading -0.27  
 Actual Return 5.39  
 Benchmark Return 7.71  
 Actual Active Return -2.32

Stock Selection -0.99  
 Style Selection -1.27  
 Interaction 0.21  
 Total Selection -2.05

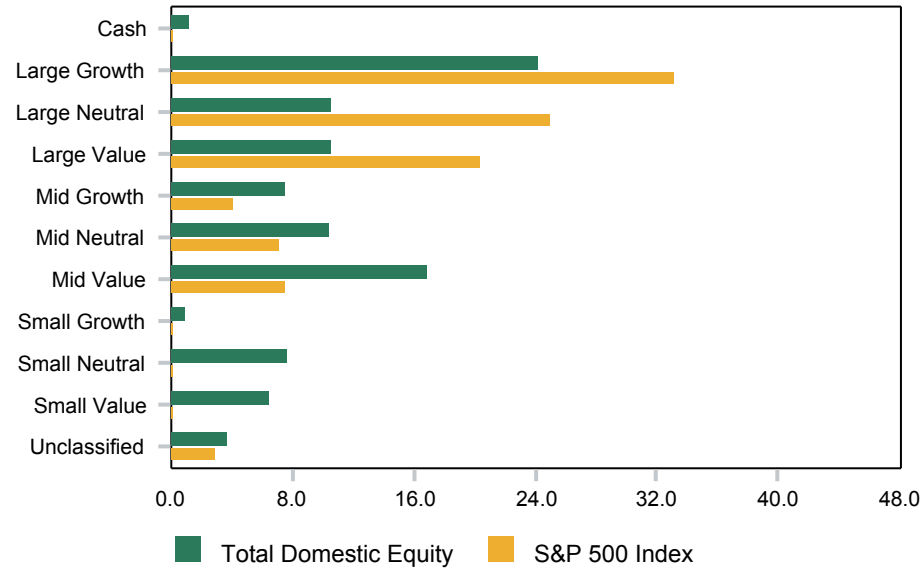
Portfolio Trading -0.27  
 Benchmark Trading 0.00  
 Active Trading Impact -0.27

Buy & Hold Active Return -2.32

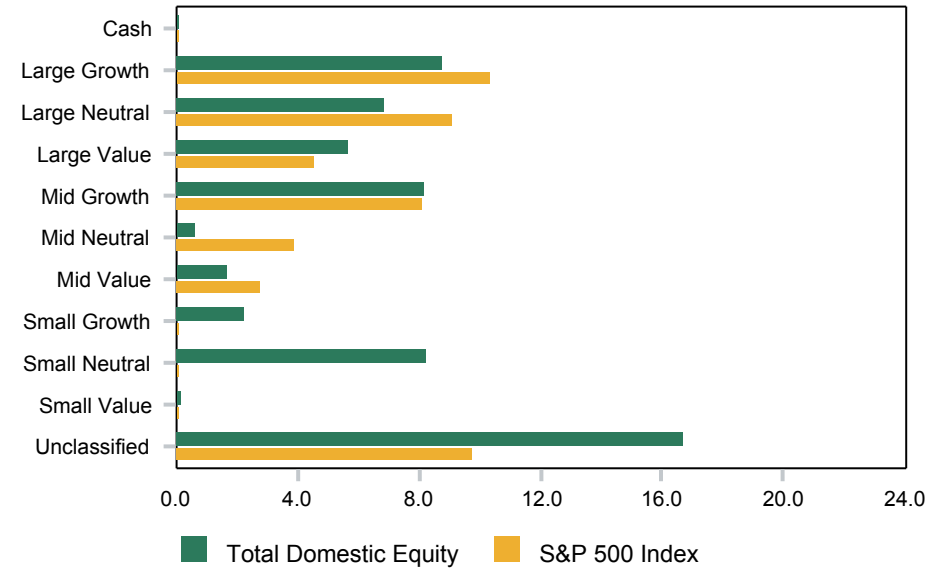
**Performance-1 Quarter Ending  
September 30, 2018**

|               | Allocation-07/01/2018 |           | Performance-1 Quarter Ending<br>September 30, 2018 |           | Attribution |       |             |       |
|---------------|-----------------------|-----------|----------------------------------------------------|-----------|-------------|-------|-------------|-------|
|               | Portfolio             | Benchmark | Portfolio                                          | Benchmark | Stock       | Style | Interaction | Total |
| Cash          | 1.17                  | 0.00      | 0.00                                               | 0.00      | 0.00        | -0.09 | 0.00        | -0.09 |
| Large Growth  | 24.18                 | 33.14     | 8.71                                               | 10.34     | -0.54       | -0.24 | 0.15        | -0.63 |
| Large Neutral | 10.58                 | 25.01     | 6.84                                               | 9.09      | -0.56       | -0.20 | 0.33        | -0.44 |
| Large Value   | 10.51                 | 20.34     | 5.64                                               | 4.51      | 0.23        | 0.31  | -0.11       | 0.43  |
| Mid Growth    | 7.49                  | 4.03      | 8.14                                               | 8.07      | 0.00        | 0.01  | 0.00        | 0.02  |
| Mid Neutral   | 10.41                 | 7.06      | 0.58                                               | 3.89      | -0.23       | -0.13 | -0.11       | -0.47 |
| Mid Value     | 16.83                 | 7.54      | 1.66                                               | 2.78      | -0.08       | -0.46 | -0.10       | -0.65 |
| Small Growth  | 0.99                  | 0.00      | 2.23                                               | 0.00      | 0.00        | -0.05 | 0.00        | -0.05 |
| Small Neutral | 7.67                  | 0.00      | 8.25                                               | 0.00      | 0.00        | 0.04  | 0.00        | 0.04  |
| Small Value   | 6.45                  | 0.00      | 0.13                                               | 0.00      | 0.00        | -0.49 | 0.00        | -0.49 |
| Unclassified  | 3.72                  | 2.89      | 16.72                                              | 9.72      | 0.20        | 0.02  | 0.06        | 0.28  |
| Total         | 100.00                | 100.00    | 5.66                                               | 7.71      | -0.99       | -1.27 | 0.21        | -2.05 |

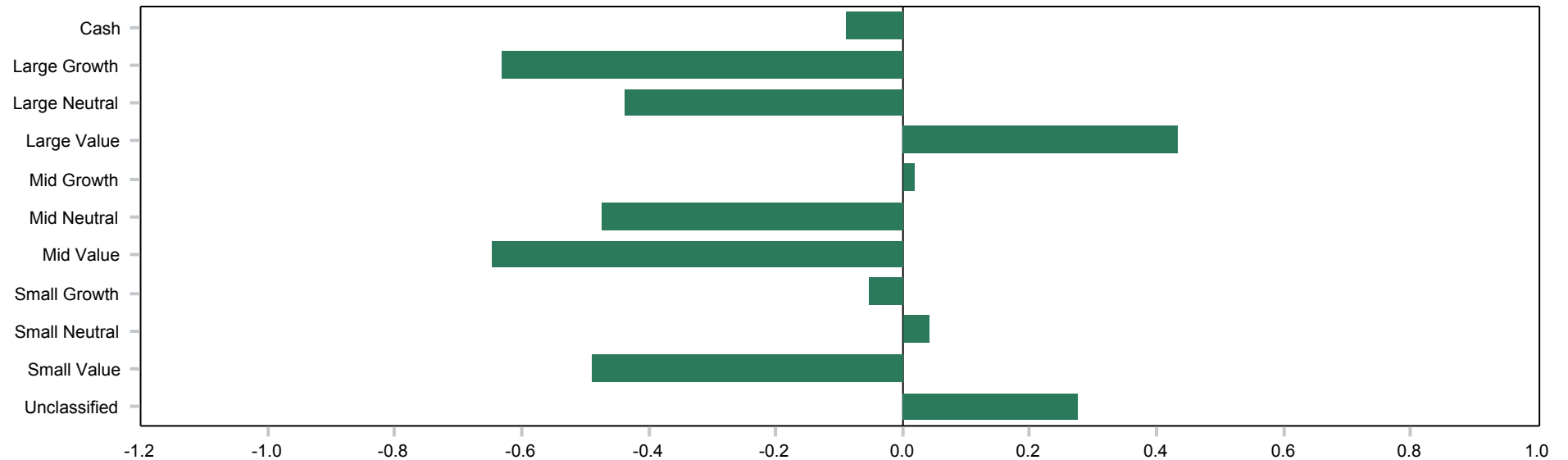
Allocation



Performance



Total Attribution



## Bristol County Retirement System

## Total Domestic Equity

As of September 30, 2018

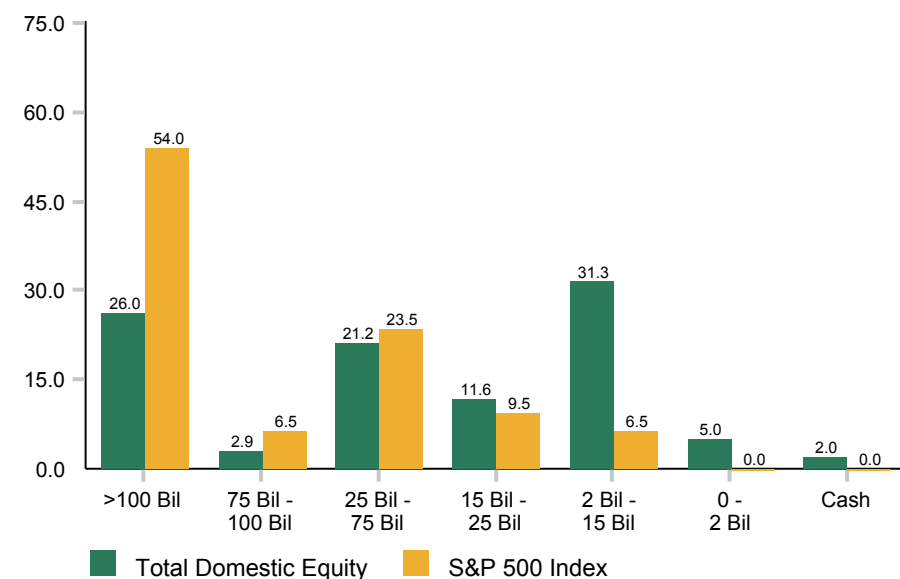
### Top Ten Equity Holdings

|                           | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|---------------------------|----------------------|----------------------|-------------------|----------------------|
| Amazon.com Inc            | 2.20                 | 3.34                 | -1.14             | 17.84                |
| Visa Inc                  | 1.46                 | 1.08                 | 0.38              | 13.49                |
| HCA Healthcare Inc        | 1.41                 | 0.15                 | 1.26              | 35.95                |
| Facebook Inc              | 1.38                 | 1.61                 | -0.23             | -15.37               |
| Anthem Inc                | 1.37                 | 0.29                 | 1.08              | 15.45                |
| Adobe Inc                 | 1.27                 | 0.54                 | 0.73              | 10.72                |
| Corning Inc               | 1.18                 | 0.12                 | 1.06              | 29.01                |
| PayPal Holdings Inc       | 1.17                 | 0.42                 | 0.75              | 5.49                 |
| Unitedhealth Group Inc    | 1.08                 | 1.04                 | 0.04              | 8.80                 |
| Alibaba Group Holding Ltd | 1.06                 | 0.00                 | 1.06              | -11.20               |
| % of Portfolio            | 13.58                | 8.59                 | 4.99              |                      |

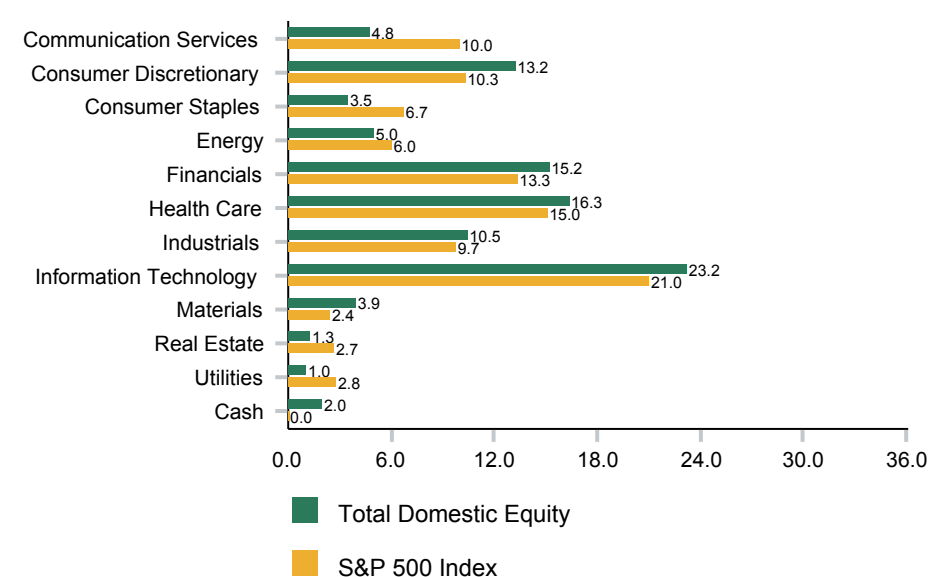
### Portfolio Characteristics

|                           | Portfolio       | Benchmark       |
|---------------------------|-----------------|-----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 104,211,956,072 | 244,411,521,053 |
| Median Mkt. Cap (\$)      | 9,202,111,360   | 21,788,922,880  |
| Price/Earnings ratio      | 19.75           | 21.51           |
| Price/Book ratio          | 3.23            | 3.55            |
| 5 Yr. EPS Growth Rate (%) | 16.29           | 11.20           |
| Current Yield (%)         | 1.32            | 1.89            |
| Beta (5 Years, Monthly)   | 1.07            | 1.00            |
| Number of Stocks          | 336             | 505             |

### Distribution of Market Capitalization (%)



### Sector Weights (%)



As of September 30, 2018

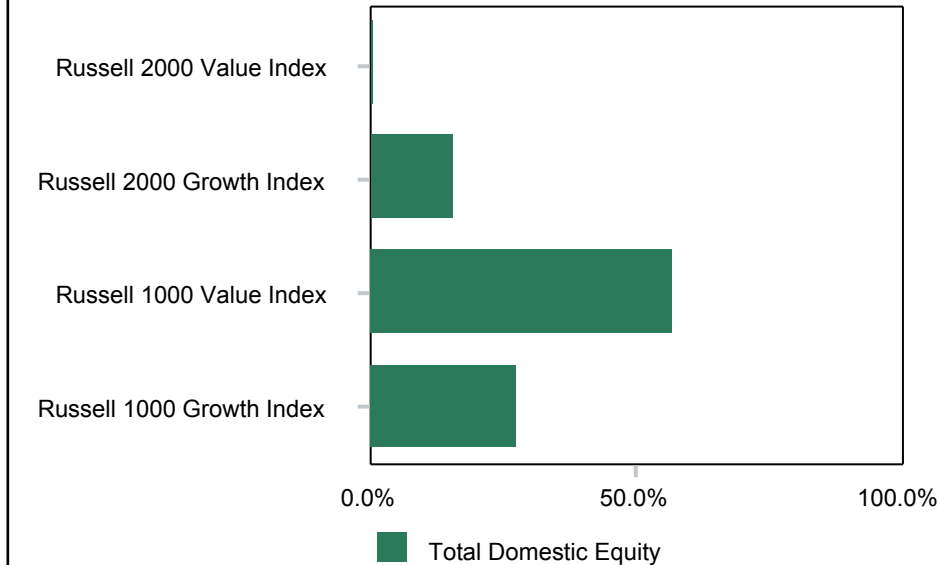
## Ten Best Performers

|                                   | Portfolio<br>Weight<br>(%) | Benchmark<br>Weight<br>(%) | Active<br>Weight<br>(%) | Quarterly<br>Return<br>(%) |
|-----------------------------------|----------------------------|----------------------------|-------------------------|----------------------------|
| Liveramp Holdings Inc             | 0.15                       | 0.00                       | 0.15                    | 64.98                      |
| Mallinckrodt Plc                  | 0.02                       | 0.00                       | 0.02                    | 57.07                      |
| Molina Healthcare Inc.            | 0.17                       | 0.00                       | 0.17                    | 51.83                      |
| Integrated Device Technology Inc. | 0.23                       | 0.00                       | 0.23                    | 47.46                      |
| Mercury Systems Inc               | 0.14                       | 0.00                       | 0.14                    | 45.35                      |
| BioTelemetry Inc                  | 0.25                       | 0.00                       | 0.25                    | 43.22                      |
| Dave & Buster's Entertainment Inc | 0.23                       | 0.00                       | 0.23                    | 39.44                      |
| Steelcase Inc.                    | 0.11                       | 0.00                       | 0.11                    | 38.04                      |
| Omnicell Inc                      | 0.18                       | 0.00                       | 0.18                    | 37.08                      |
| NuVasive Inc                      | 0.22                       | 0.00                       | 0.22                    | 36.19                      |
| % of Portfolio                    | 1.70                       | 0.00                       | 1.70                    |                            |

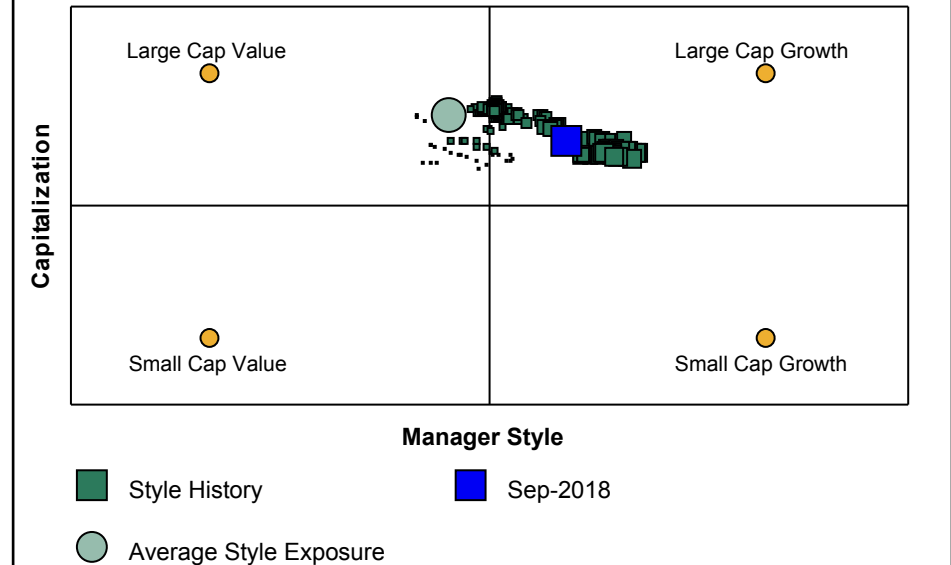
## Ten Worst Performers

|                                               | Portfolio<br>Weight<br>(%) | Benchmark<br>Weight<br>(%) | Active<br>Weight<br>(%) | Quarterly<br>Return<br>(%) |
|-----------------------------------------------|----------------------------|----------------------------|-------------------------|----------------------------|
| United Natural Foods Inc                      | 0.10                       | 0.00                       | 0.10                    | -29.79                     |
| LSC Communications Inc                        | 0.01                       | 0.00                       | 0.01                    | -27.74                     |
| Shutterfly Inc                                | 0.17                       | 0.00                       | 0.17                    | -26.81                     |
| U S Silica Holdings Inc                       | 0.09                       | 0.00                       | 0.09                    | -26.48                     |
| Diplomat Pharmacy Inc                         | 0.15                       | 0.00                       | 0.15                    | -24.06                     |
| Western Digital Corp                          | 0.47                       | 0.07                       | 0.40                    | -23.73                     |
| Ctrip.com International Ltd                   | 0.49                       | 0.00                       | 0.49                    | -21.96                     |
| New Oriental Education & Technology Group Inc | 0.55                       | 0.00                       | 0.55                    | -21.81                     |
| Lear Corp                                     | 0.14                       | 0.00                       | 0.14                    | -21.64                     |
| Adient Plc                                    | 0.35                       | 0.00                       | 0.35                    | -19.64                     |
| % of Portfolio                                | 2.52                       | 0.07                       | 2.45                    |                            |

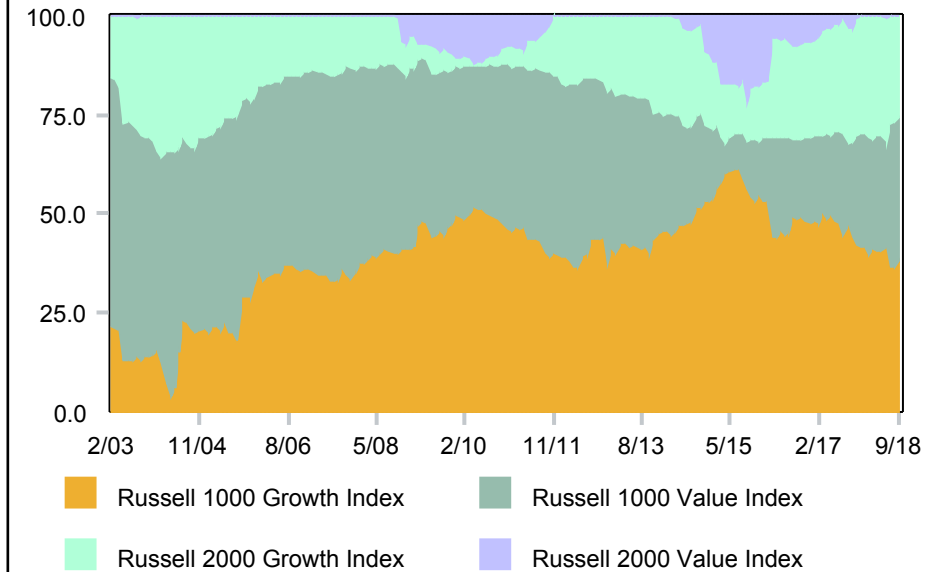
Investment Style Exposure



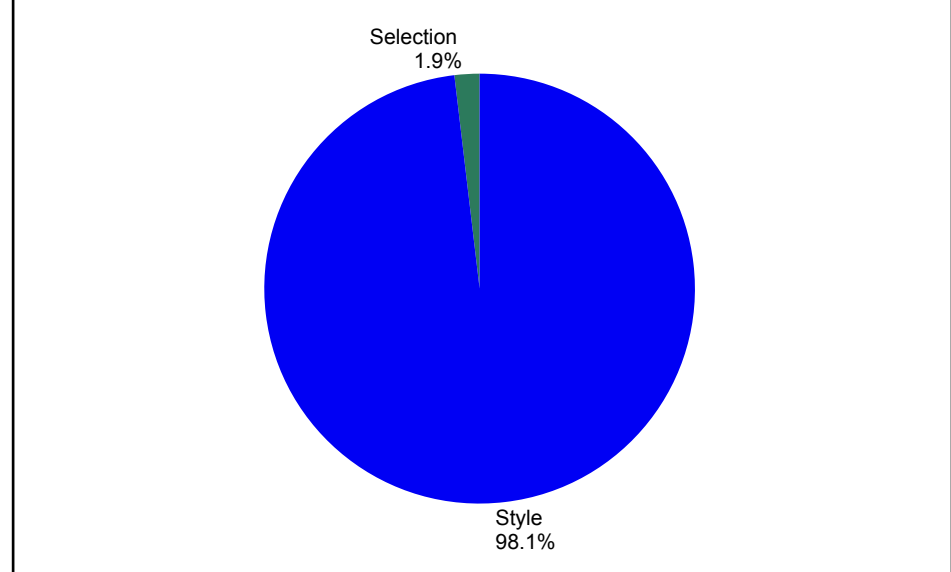
Style Map(ppp)



Style History(ppp)



Return Variance



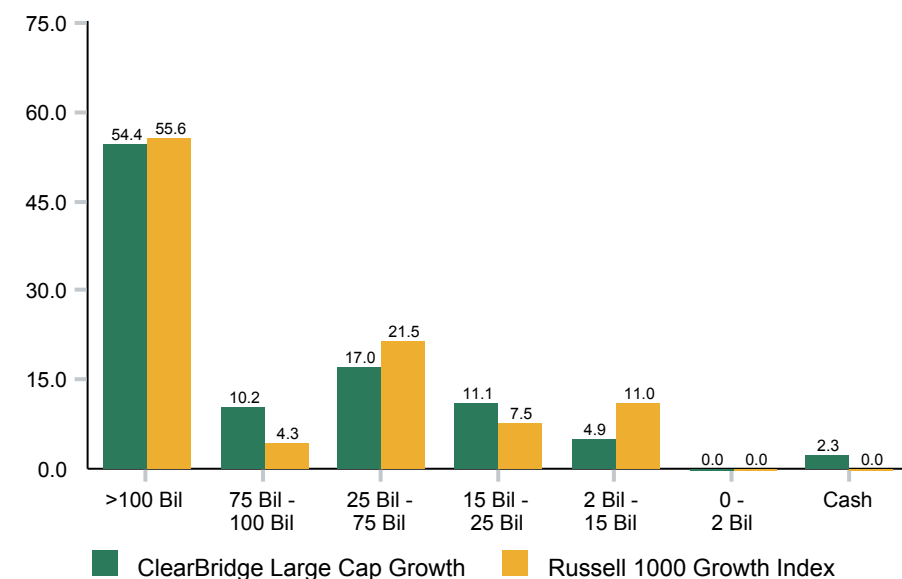
Top Ten Equity Holdings

|                         | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|-------------------------|----------------------|----------------------|-------------------|----------------------|
| Amazon.com Inc          | 6.73                 | 5.88                 | 0.85              | 17.84                |
| Microsoft Corp          | 4.35                 | 5.93                 | -1.58             | 16.43                |
| Visa Inc                | 3.76                 | 1.94                 | 1.82              | 13.49                |
| Facebook Inc            | 3.21                 | 2.82                 | 0.39              | -15.37               |
| Alphabet Inc            | 3.19                 | 2.62                 | 0.57              | 6.98                 |
| Adobe Inc               | 3.11                 | 0.96                 | 2.15              | 10.72                |
| Unitedhealth Group Inc  | 2.95                 | 1.84                 | 1.11              | 8.80                 |
| Apple Inc               | 2.83                 | 7.88                 | -5.05             | 22.38                |
| Home Depot Inc. (The)   | 2.40                 | 1.72                 | 0.68              | 6.72                 |
| Akamai Technologies Inc | 2.19                 | 0.08                 | 2.11              | -0.11                |
| % of Portfolio          | 34.72                | 31.67                | 3.05              |                      |

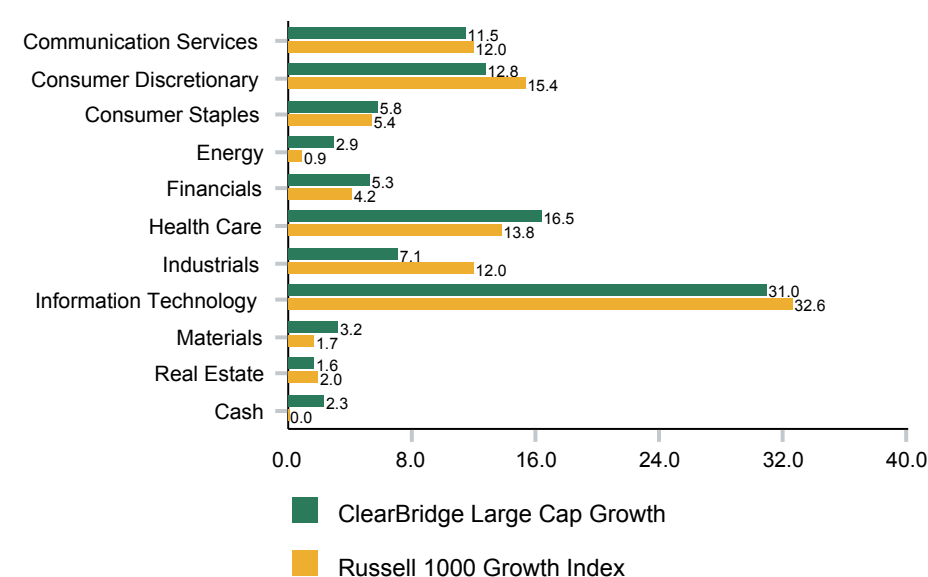
Portfolio Characteristics

|                           | Portfolio       | Benchmark       |
|---------------------------|-----------------|-----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 269,187,121,747 | 313,613,099,484 |
| Median Mkt. Cap (\$)      | 91,161,129,855  | 12,897,250,560  |
| Price/Earnings ratio      | 31.92           | 29.31           |
| Price/Book ratio          | 6.23            | 7.54            |
| 5 Yr. EPS Growth Rate (%) | 13.32           | 16.26           |
| Current Yield (%)         | 1.07            | 1.18            |
| Beta                      | N/A             | 1.00            |
| Number of Stocks          | 49              | 542             |

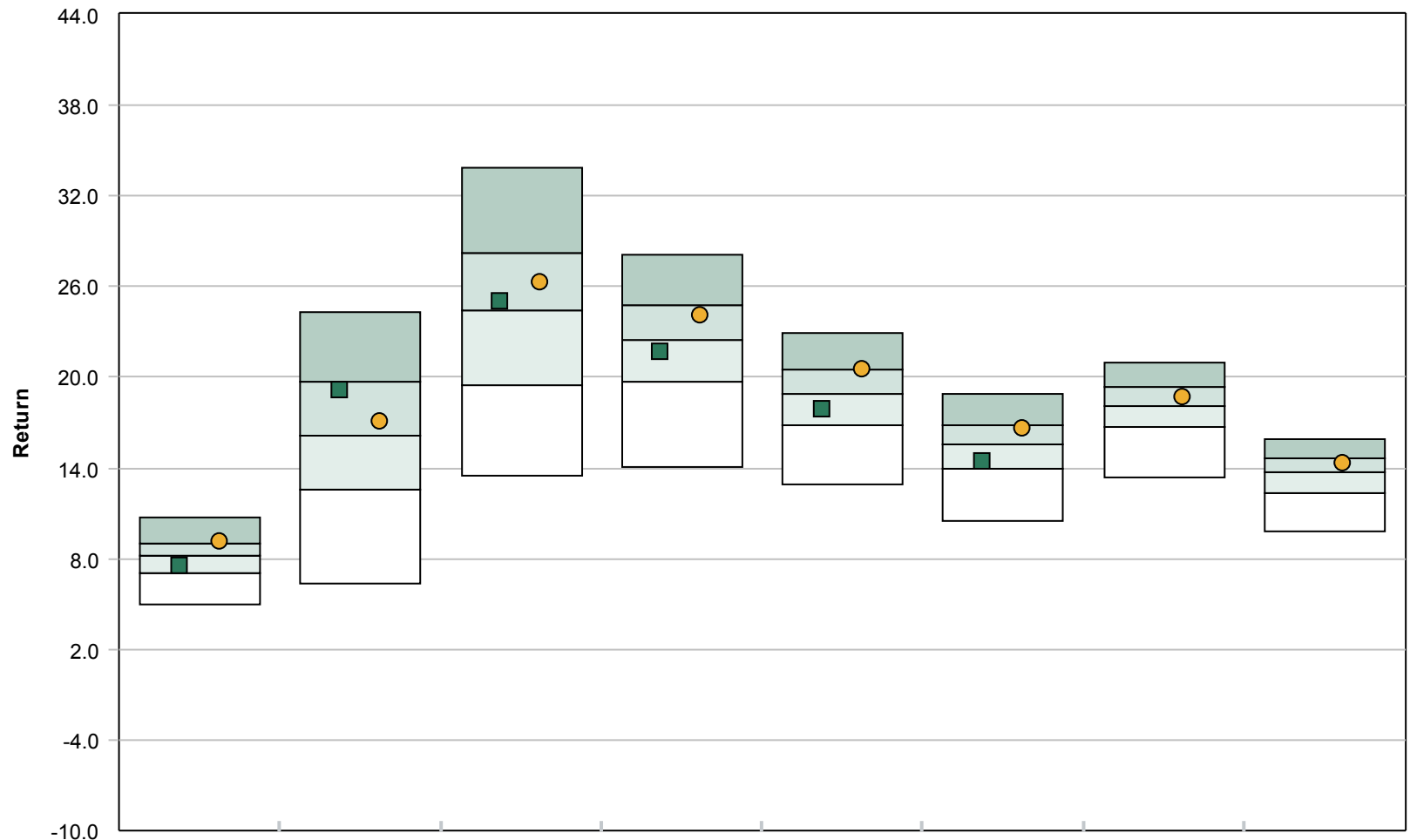
Distribution of Market Capitalization (%)



Sector Weights (%)



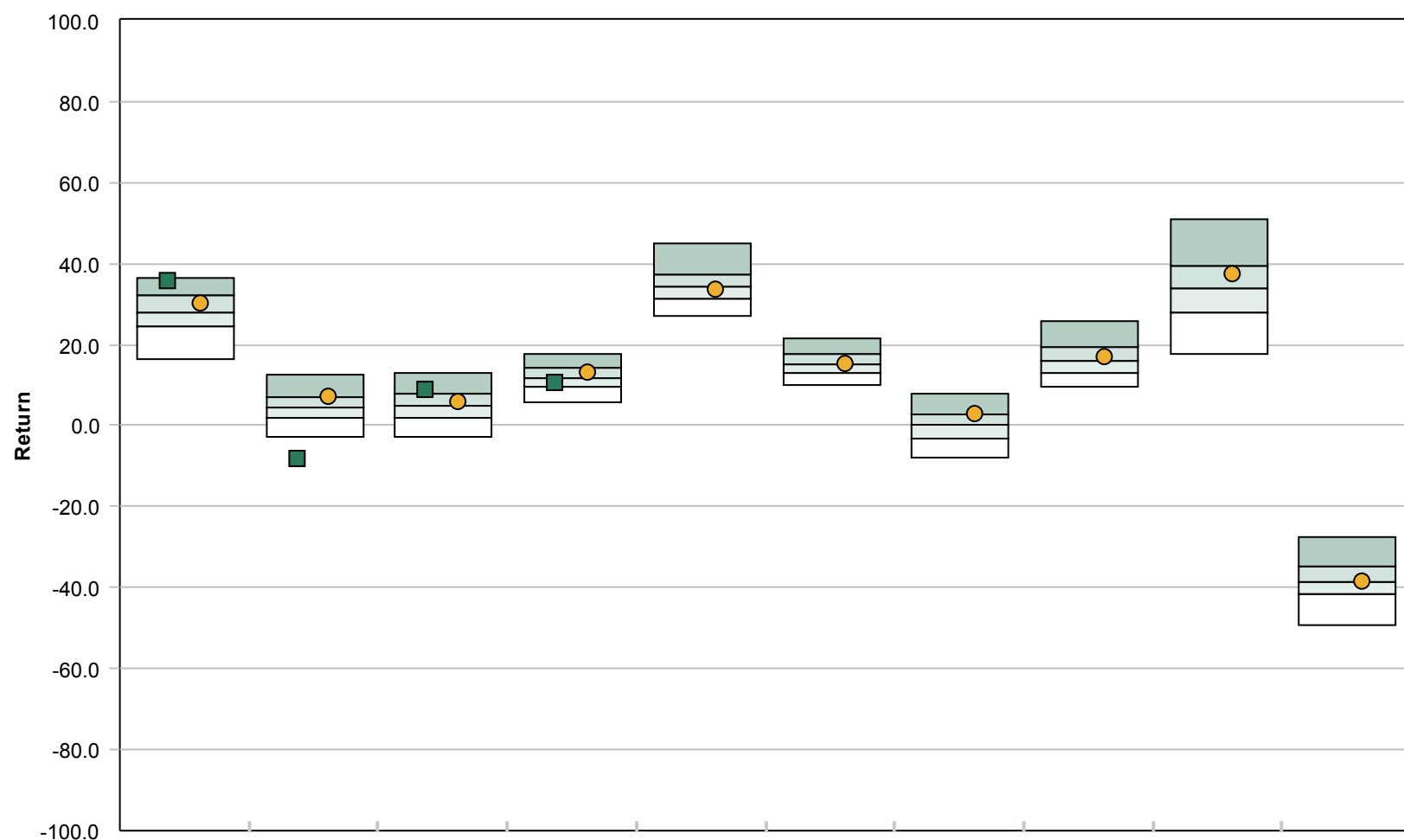
As of September 30, 2018



|                             | 1 Qtr     | YTD        | 1 Yr       | 2 Yrs      | 3 Yrs      | 5 Yrs      | 7 Yrs      | 10 Yrs     |
|-----------------------------|-----------|------------|------------|------------|------------|------------|------------|------------|
| ■ Columbia                  | 7.45 (64) | 19.13 (30) | 25.01 (46) | 21.67 (60) | 17.85 (63) | 14.41 (68) | N/A        | N/A        |
| ● Russell 1000 Growth Index | 9.17 (23) | 17.09 (45) | 26.30 (37) | 24.10 (34) | 20.55 (22) | 16.58 (32) | 18.69 (39) | 14.31 (34) |
| 5th Percentile              | 10.77     | 24.35      | 33.88      | 28.07      | 22.93      | 18.91      | 21.01      | 15.92      |
| 1st Quartile                | 9.05      | 19.66      | 28.21      | 24.79      | 20.47      | 16.83      | 19.30      | 14.64      |
| Median                      | 8.17      | 16.17      | 24.42      | 22.51      | 18.85      | 15.59      | 18.13      | 13.73      |
| 3rd Quartile                | 7.02      | 12.60      | 19.49      | 19.75      | 16.83      | 13.95      | 16.70      | 12.34      |
| 95th Percentile             | 4.99      | 6.38       | 13.45      | 14.09      | 12.91      | 10.49      | 13.39      | 9.86       |

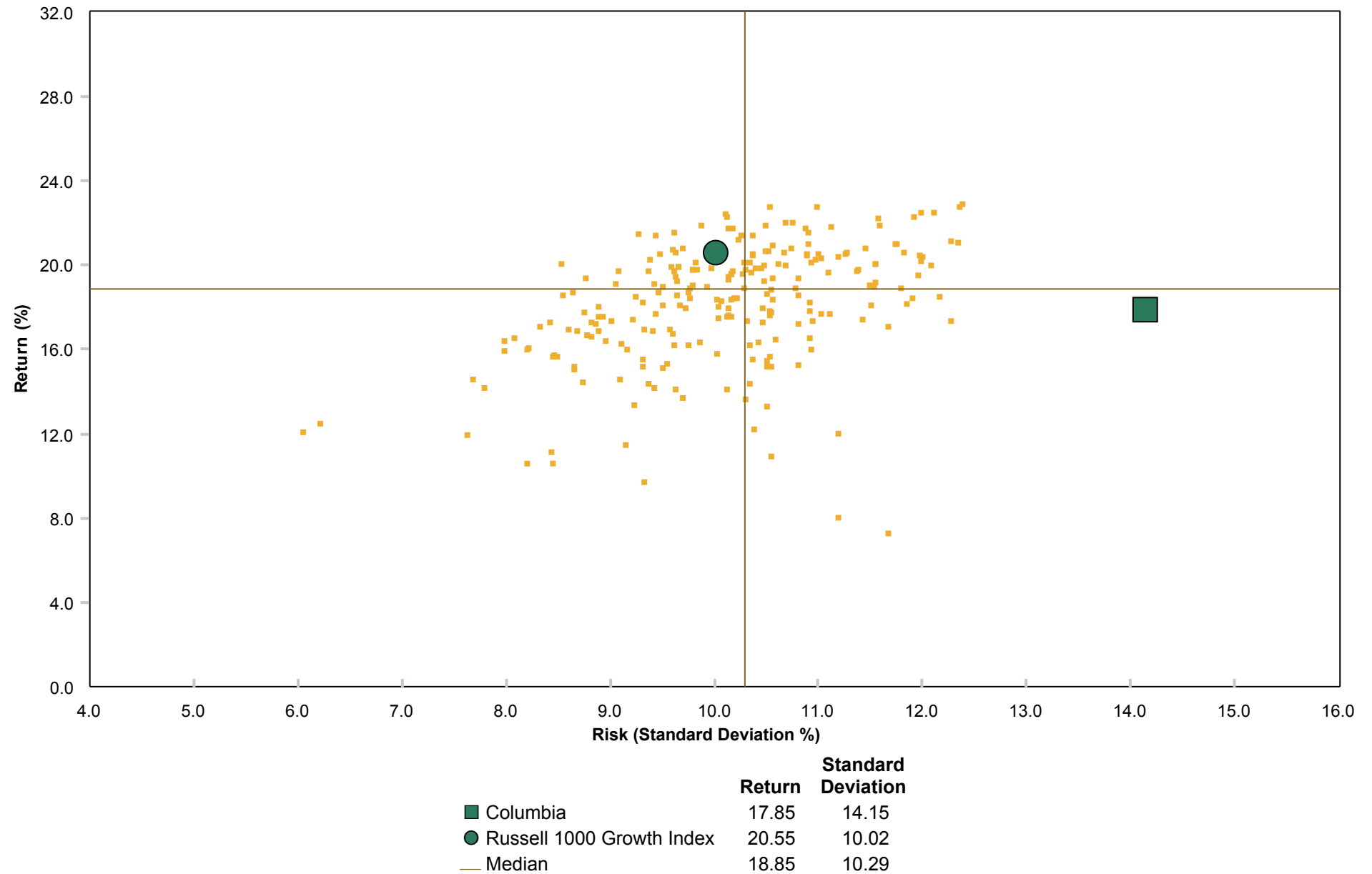
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018

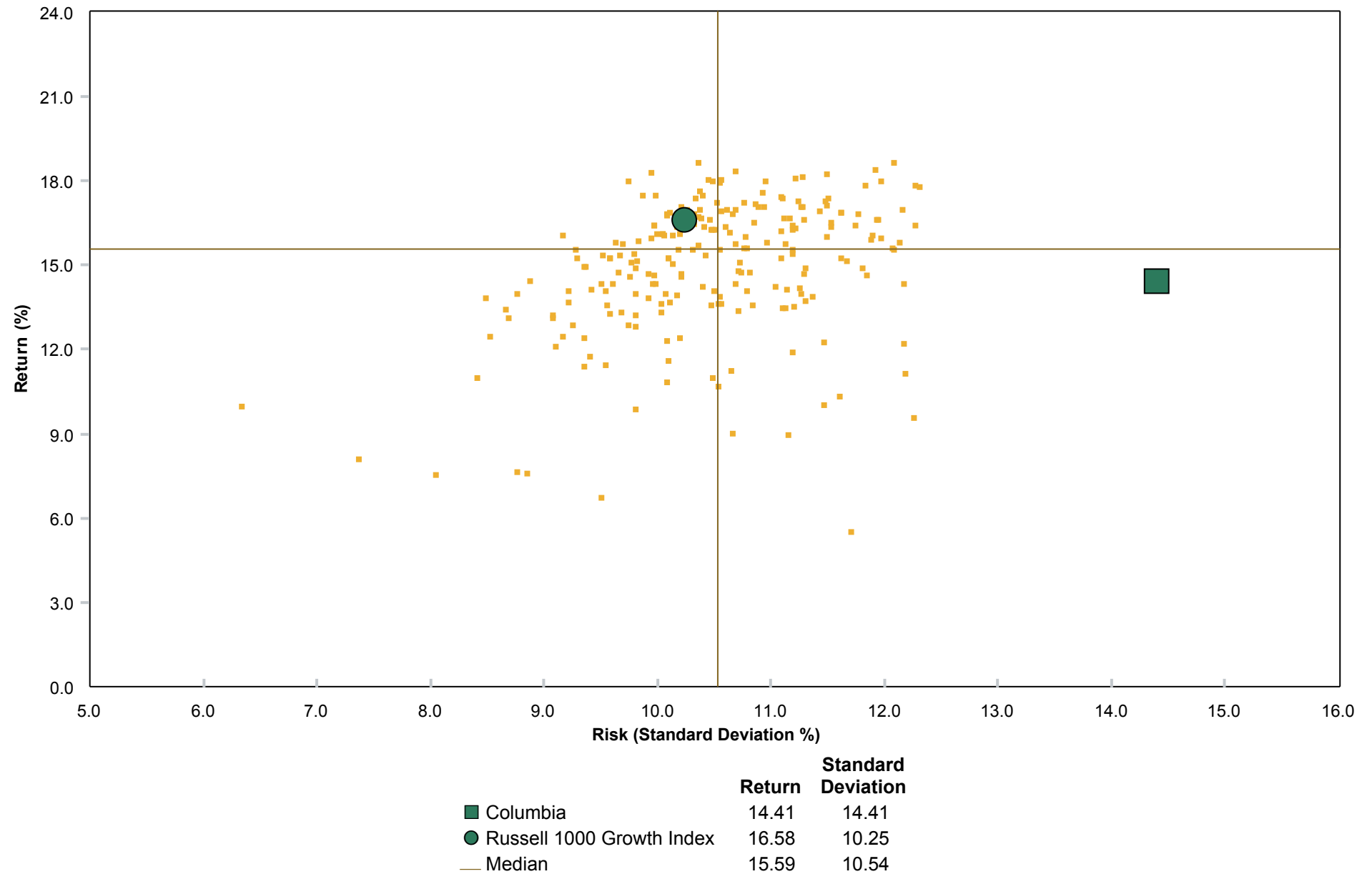


|                             | 2017       | 2016        | 2015      | 2014       | 2013       | 2012       | 2011      | 2010       | 2009       | 2008        |
|-----------------------------|------------|-------------|-----------|------------|------------|------------|-----------|------------|------------|-------------|
| ■ Columbia                  | 35.56 (9)  | -8.17 (100) | 8.65 (20) | 10.45 (66) | N/A        | N/A        | N/A       | N/A        | N/A        | N/A         |
| ● Russell 1000 Growth Index | 30.21 (38) | 7.08 (26)   | 5.67 (45) | 13.05 (39) | 33.48 (59) | 15.26 (50) | 2.64 (27) | 16.71 (46) | 37.21 (34) | -38.44 (50) |
| 5th Percentile              | 36.55      | 12.44       | 12.96     | 17.67      | 45.10      | 21.67      | 7.85      | 25.72      | 50.86      | -27.57      |
| 1st Quartile                | 32.31      | 7.23        | 8.04      | 14.37      | 37.44      | 17.63      | 2.93      | 19.25      | 39.39      | -34.82      |
| Median                      | 28.11      | 4.65        | 5.02      | 11.91      | 34.52      | 15.18      | 0.18      | 16.00      | 34.11      | -38.45      |
| 3rd Quartile                | 24.65      | 1.80        | 2.01      | 9.63       | 31.24      | 13.13      | -3.21     | 13.06      | 27.73      | -41.56      |
| 95th Percentile             | 16.48      | -2.63       | -2.63     | 5.89       | 26.93      | 9.82       | -7.84     | 9.80       | 17.84      | -49.21      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



Calculation based on monthly periodicity.



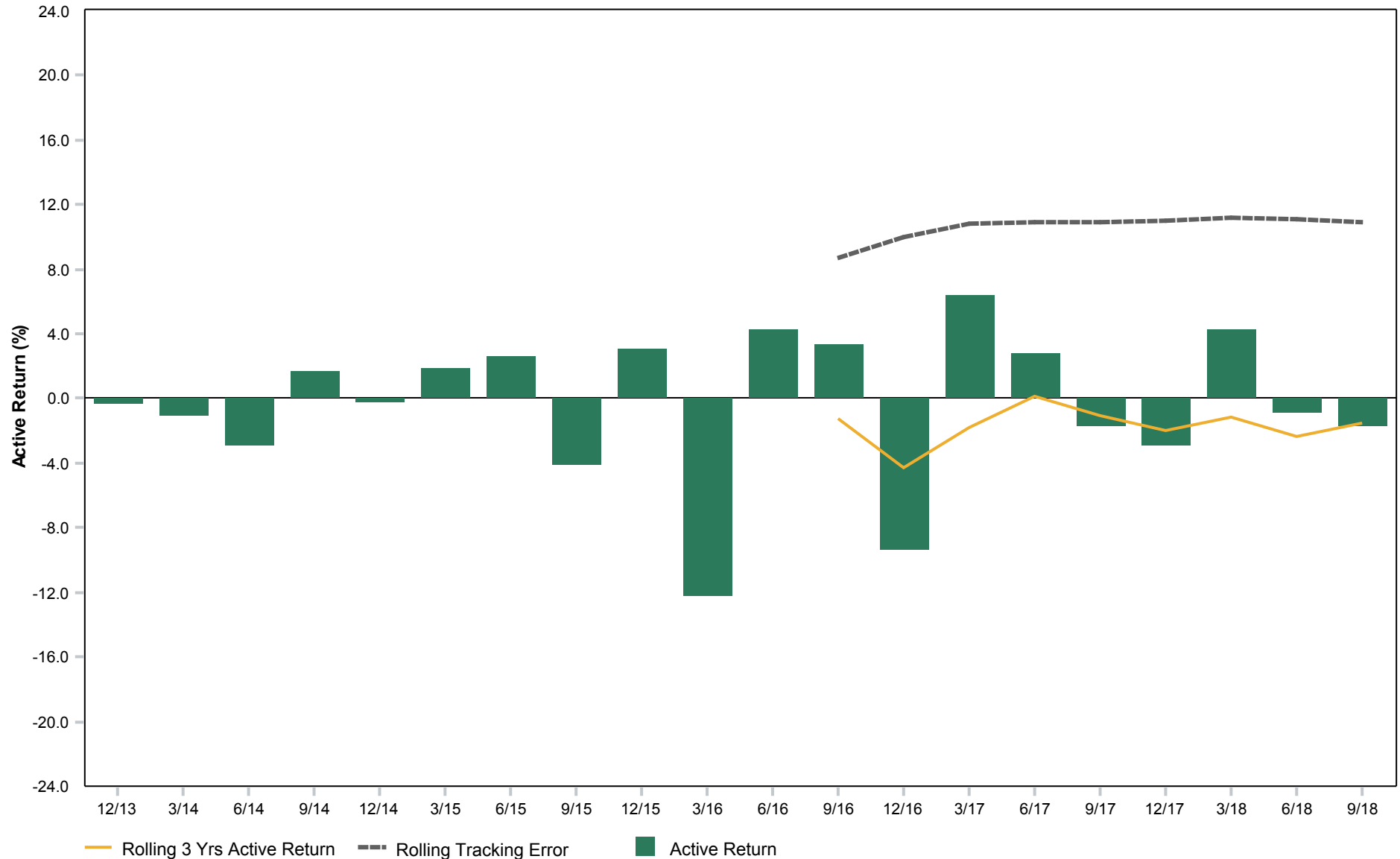
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                           | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016   | 2015 | 2014  |
|---------------------------|-------|-------|-------|-------|-------|-------|--------|-------|--------|------|-------|
| Columbia                  | 7.45  | 19.13 | 25.01 | 17.85 | 14.41 | N/A   | N/A    | 35.56 | -8.17  | 8.65 | 10.45 |
| Russell 1000 Growth Index | 9.17  | 17.09 | 26.30 | 20.55 | 16.58 | 18.69 | 14.31  | 30.21 | 7.08   | 5.67 | 13.05 |
| Difference                | -1.72 | 2.04  | -1.29 | -2.70 | -2.17 | N/A   | N/A    | 5.35  | -15.25 | 2.98 | -2.60 |



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 7.49  
 Portfolio Trading -0.04  
 Actual Return 7.45  
 Benchmark Return 9.17  
 Actual Active Return -1.72

Stock Selection -2.39  
 Sector Selection 0.73  
 Interaction 0.01  
 Total Selection -1.65

Portfolio Trading -0.04  
 Benchmark Trading 0.03  
 Active Trading Impact -0.07

Buy & Hold Active Return -1.72

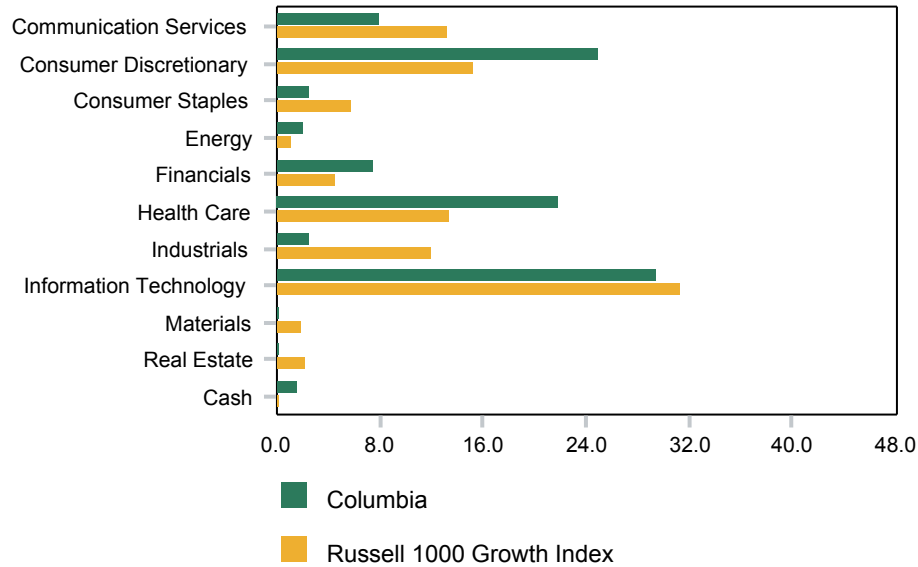
|                        | Allocation — 07/01/2018 |           | Performance — 1 Quarter<br>Ending September 30, 2018 |           | Stock | Attribution |             |       |
|------------------------|-------------------------|-----------|------------------------------------------------------|-----------|-------|-------------|-------------|-------|
|                        | Portfolio               | Benchmark | Portfolio                                            | Benchmark |       | Sector      | Interaction | Total |
| Communication Services | 7.83                    | 13.19     | -4.63                                                | -1.07     | -0.47 | 0.55        | 0.19        | 0.27  |
| Consumer Discretionary | 24.89                   | 15.16     | 1.82                                                 | 10.27     | -1.28 | 0.11        | -0.82       | -1.99 |
| Consumer Staples       | 2.49                    | 5.72      | 12.67                                                | 6.11      | 0.38  | 0.10        | -0.21       | 0.26  |
| Energy                 | 2.03                    | 1.01      | -7.87                                                | -4.95     | -0.03 | -0.14       | -0.03       | -0.20 |
| Financials             | 7.45                    | 4.44      | 0.57                                                 | 3.25      | -0.12 | -0.18       | -0.08       | -0.38 |
| Health Care            | 21.85                   | 13.37     | 15.94                                                | 12.72     | 0.43  | 0.30        | 0.27        | 1.01  |
| Industrials            | 2.52                    | 11.87     | 3.56                                                 | 10.66     | -0.84 | -0.14       | 0.66        | -0.32 |
| Information Technology | 29.39                   | 31.27     | 12.34                                                | 13.80     | -0.46 | -0.09       | 0.03        | -0.52 |
| Materials              | 0.00                    | 1.80      | 0.00                                                 | -0.10     | 0.00  | 0.17        | 0.00        | 0.17  |
| Real Estate            | 0.00                    | 2.16      | 0.00                                                 | 0.19      | 0.00  | 0.19        | 0.00        | 0.19  |
| Cash                   | 1.55                    | 0.00      | 0.00                                                 | 0.00      | 0.00  | -0.14       | 0.00        | -0.14 |
| Total                  | 100.00                  | 100.00    | 7.49                                                 | 9.14      | -2.39 | 0.73        | 0.01        | -1.65 |

## Bristol County Retirement System

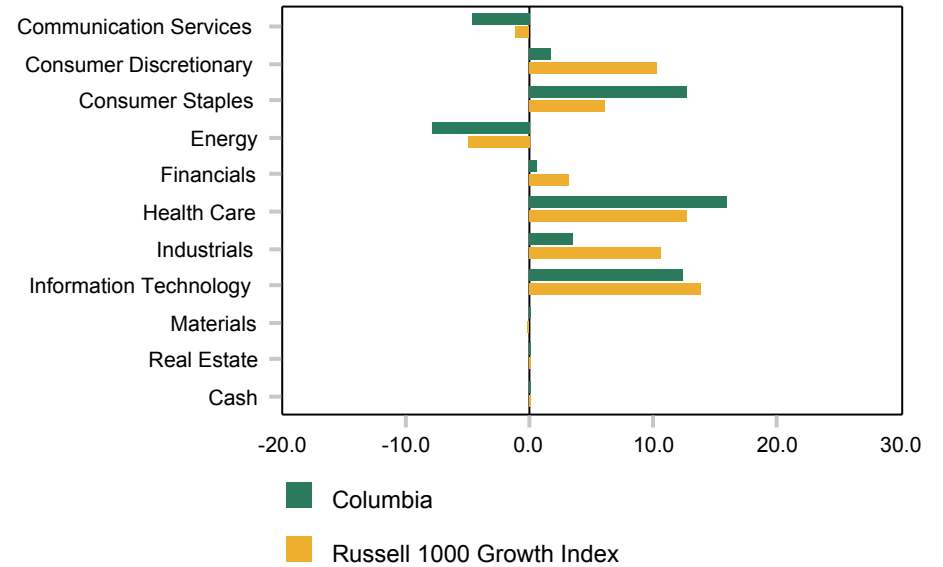
## Buy and Hold Sector Attribution Graph

1 Quarter Ending September 30, 2018

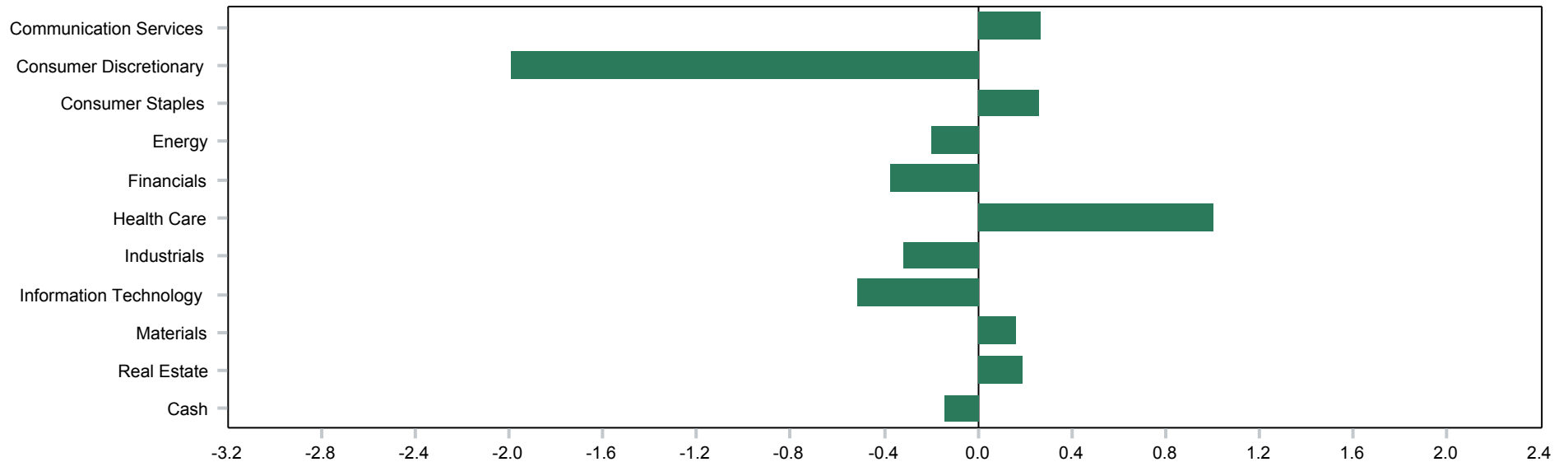
### Allocation



### Performance



### Total Attribution



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 7.49  
 Portfolio Trading -0.04  
 Actual Return 7.45  
 Benchmark Return 9.17  
 Actual Active Return -1.72

Stock Selection -1.76  
 Style Selection -0.03  
 Interaction 0.14  
 Total Selection -1.65

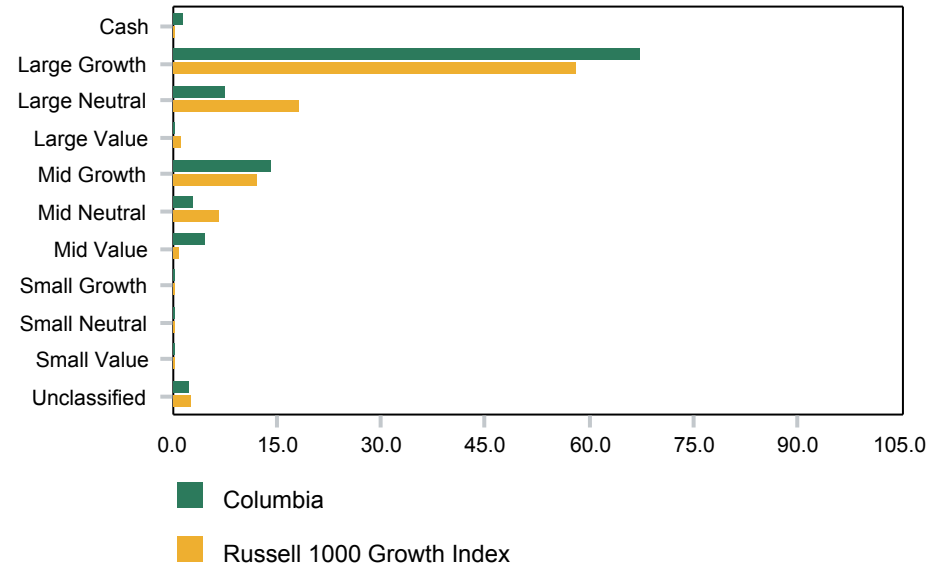
Portfolio Trading -0.04  
 Benchmark Trading 0.03  
 Active Trading Impact -0.07

Buy & Hold Active Return -1.72

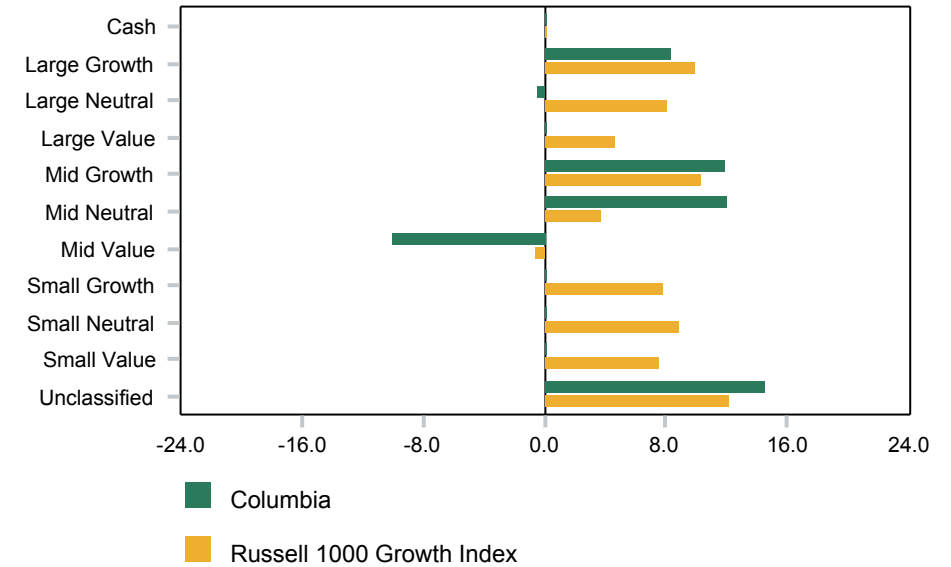
**Performance-1 Quarter Ending  
 September 30, 2018**

|               | Allocation-07/01/2018 |           | Performance-1 Quarter Ending<br>September 30, 2018 |           | Attribution |       |             |       |
|---------------|-----------------------|-----------|----------------------------------------------------|-----------|-------------|-------|-------------|-------|
|               | Portfolio             | Benchmark | Portfolio                                          | Benchmark | Stock       | Style | Interaction | Total |
| Cash          | 1.55                  | 0.00      | 0.00                                               | 0.00      | 0.00        | -0.14 | 0.00        | -0.14 |
| Large Growth  | 67.30                 | 57.98     | 8.36                                               | 9.96      | -0.93       | 0.08  | -0.15       | -1.00 |
| Large Neutral | 7.39                  | 18.19     | -0.51                                              | 8.09      | -1.57       | 0.11  | 0.93        | -0.52 |
| Large Value   | 0.00                  | 1.28      | 0.00                                               | 4.64      | 0.00        | 0.06  | 0.00        | 0.06  |
| Mid Growth    | 14.01                 | 12.21     | 11.96                                              | 10.27     | 0.21        | 0.02  | 0.03        | 0.26  |
| Mid Neutral   | 2.79                  | 6.66      | 11.97                                              | 3.80      | 0.54        | 0.21  | -0.32       | 0.43  |
| Mid Value     | 4.55                  | 0.86      | -10.11                                             | -0.59     | -0.08       | -0.36 | -0.35       | -0.79 |
| Small Growth  | 0.00                  | 0.16      | 0.00                                               | 7.83      | 0.00        | 0.00  | 0.00        | 0.00  |
| Small Neutral | 0.00                  | 0.06      | 0.00                                               | 8.86      | 0.00        | 0.00  | 0.00        | 0.00  |
| Small Value   | 0.00                  | 0.01      | 0.00                                               | 7.50      | 0.00        | 0.00  | 0.00        | 0.00  |
| Unclassified  | 2.42                  | 2.60      | 14.55                                              | 12.12     | 0.06        | -0.01 | 0.00        | 0.05  |
| Total         | 100.00                | 100.00    | 7.49                                               | 9.14      | -1.76       | -0.03 | 0.14        | -1.65 |

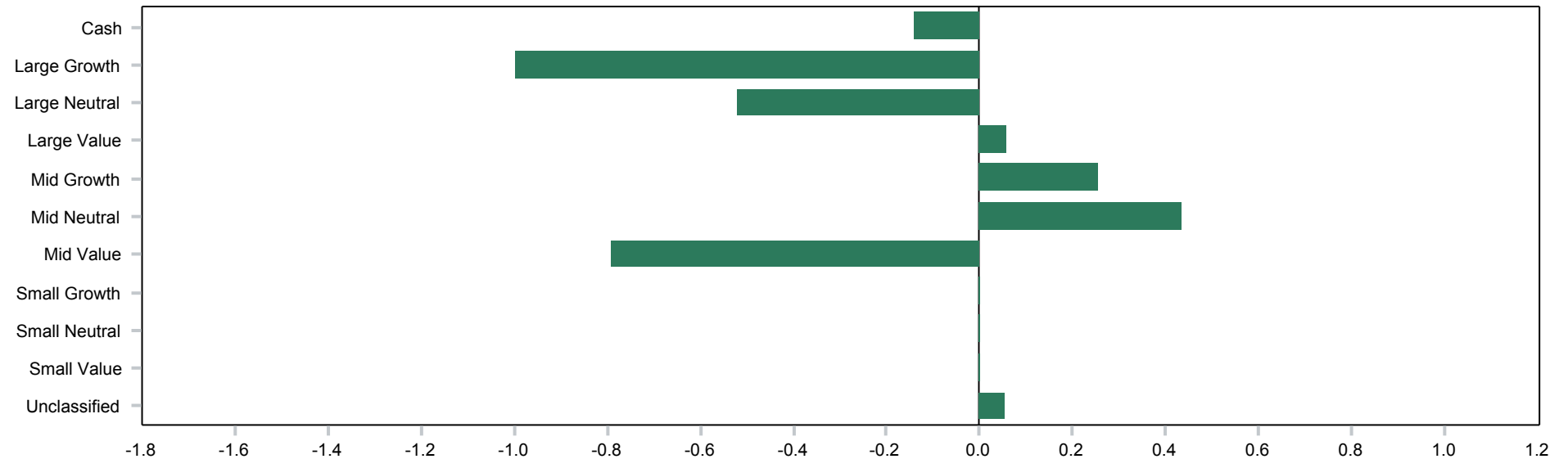
Allocation



Performance



Total Attribution



As of September 30, 2018

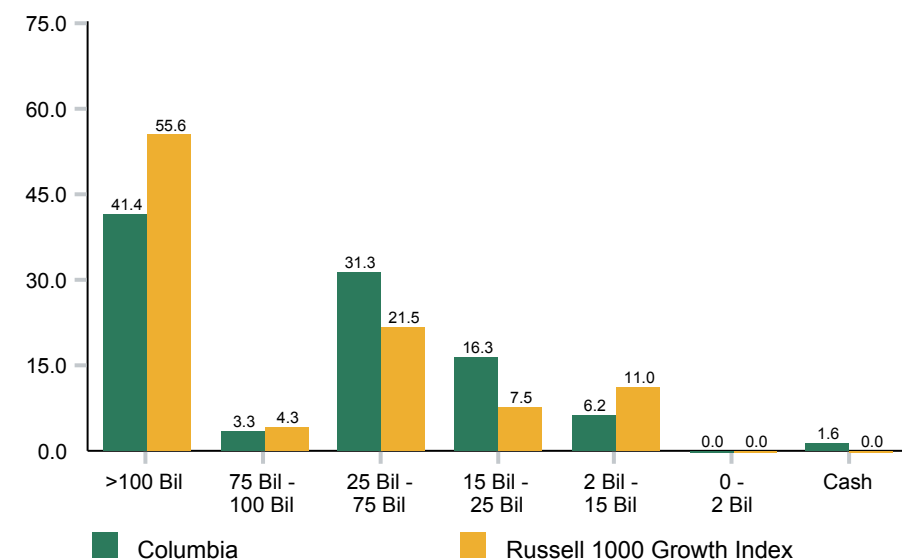
## Top Ten Equity Holdings

|                           | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|---------------------------|----------------------|----------------------|-------------------|----------------------|
| Amazon.com Inc            | 4.69                 | 5.88                 | -1.19             | 17.84                |
| Alibaba Group Holding Ltd | 3.97                 | 0.00                 | 3.97              | -11.20               |
| salesforce.com Inc        | 3.95                 | 0.81                 | 3.14              | 16.59                |
| NVIDIA Corp               | 3.77                 | 1.18                 | 2.59              | 18.69                |
| Illumina Inc              | 3.71                 | 0.39                 | 3.32              | 31.43                |
| Facebook Inc              | 3.71                 | 2.82                 | 0.89              | -15.37               |
| PayPal Holdings Inc       | 3.67                 | 0.75                 | 2.92              | 5.49                 |
| Visa Inc                  | 3.65                 | 1.94                 | 1.71              | 13.49                |
| ServiceNow Inc            | 3.56                 | 0.25                 | 3.31              | 13.43                |
| Activision Blizzard Inc   | 3.41                 | 0.45                 | 2.96              | 9.00                 |
| % of Portfolio            | 38.09                | 14.47                | 23.62             |                      |

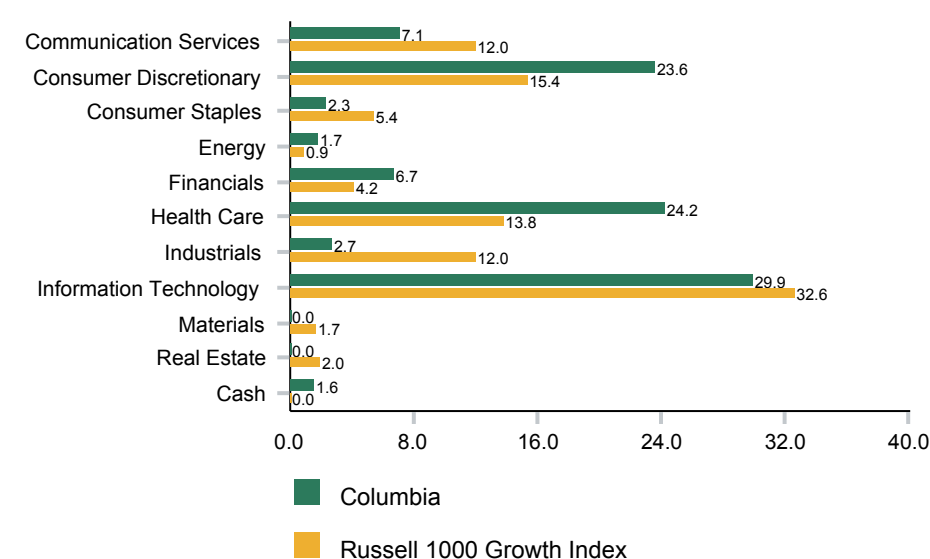
## Portfolio Characteristics

|                           | Portfolio       | Benchmark       |
|---------------------------|-----------------|-----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 144,593,822,917 | 313,613,099,484 |
| Median Mkt. Cap (\$)      | 54,609,618,255  | 12,897,250,560  |
| Price/Earnings ratio      | 41.16           | 29.31           |
| Price/Book ratio          | 7.50            | 7.54            |
| 5 Yr. EPS Growth Rate (%) | 23.57           | 16.26           |
| Current Yield (%)         | 0.38            | 1.18            |
| Beta (5 Years, Monthly)   | 1.19            | 1.00            |
| Number of Stocks          | 35              | 542             |

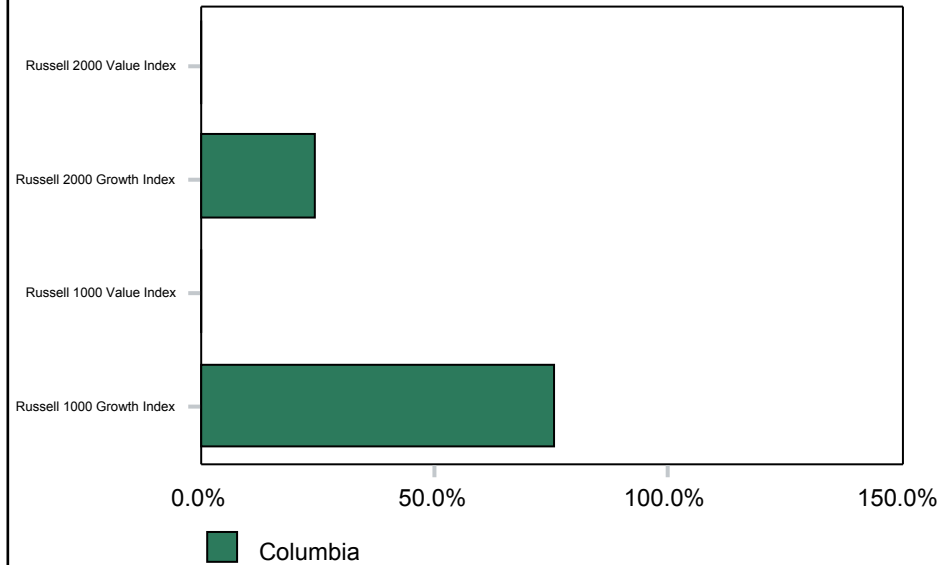
## Distribution of Market Capitalization (%)



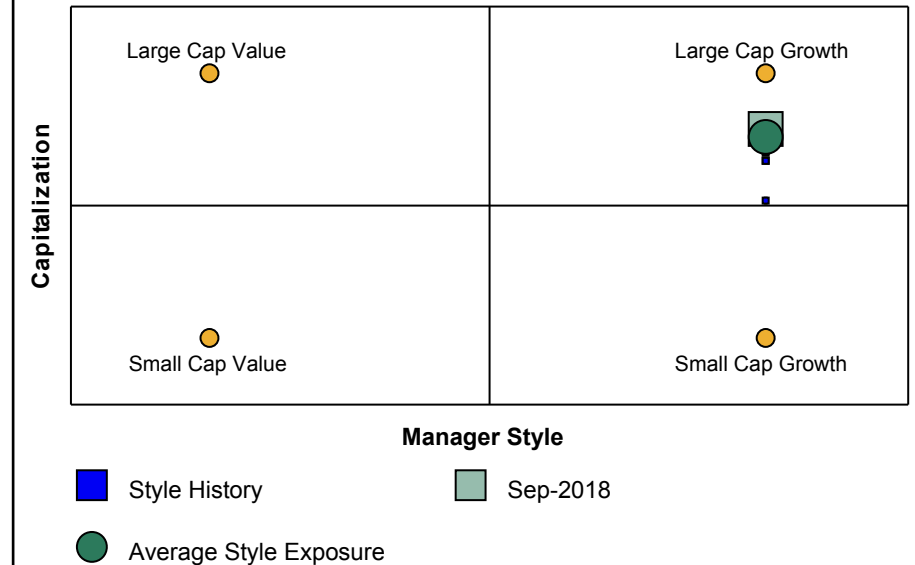
## Sector Weights (%)



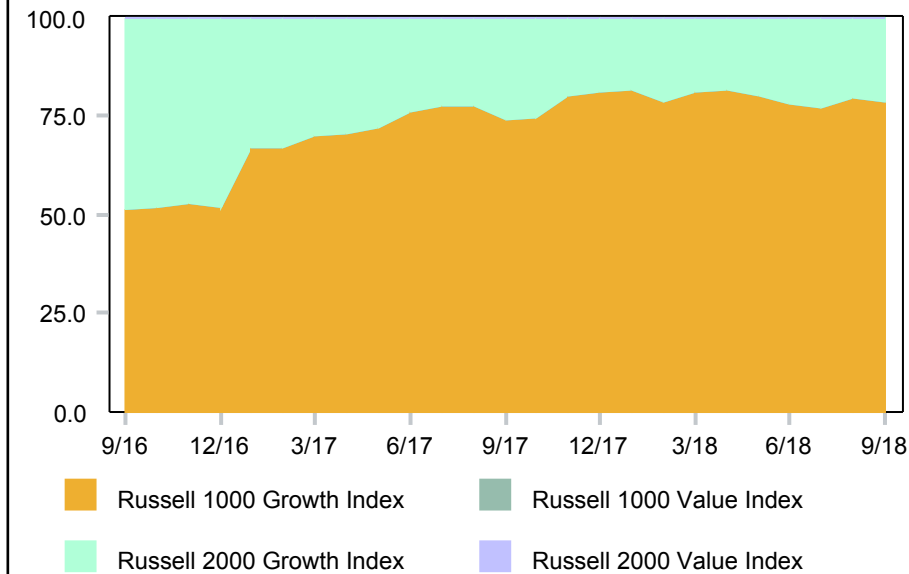
Investment Style Exposure



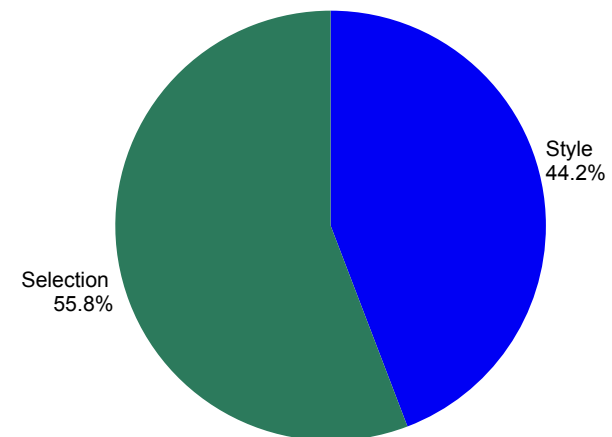
Style Map(ppp)



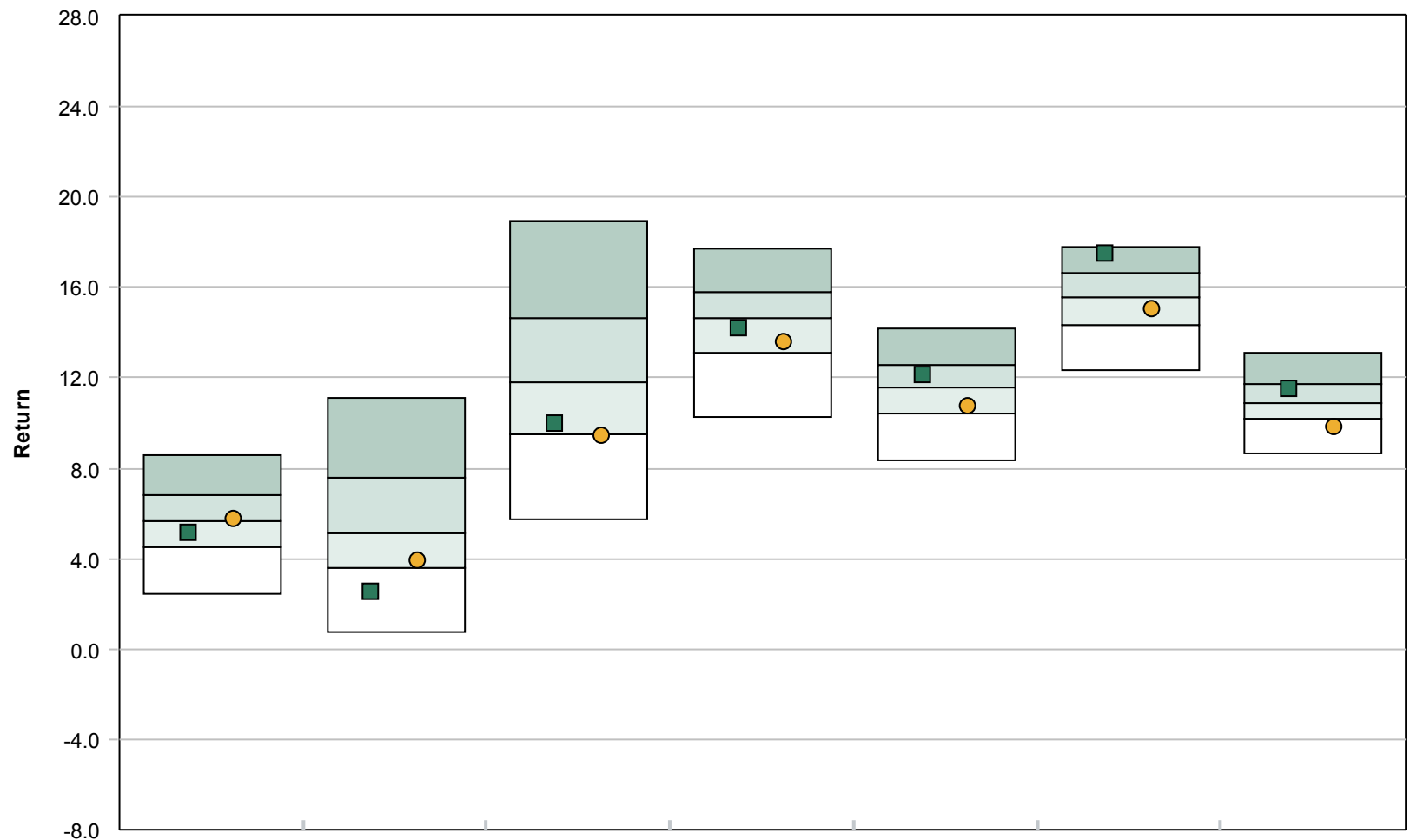
Style History(ppp)



Return Variance



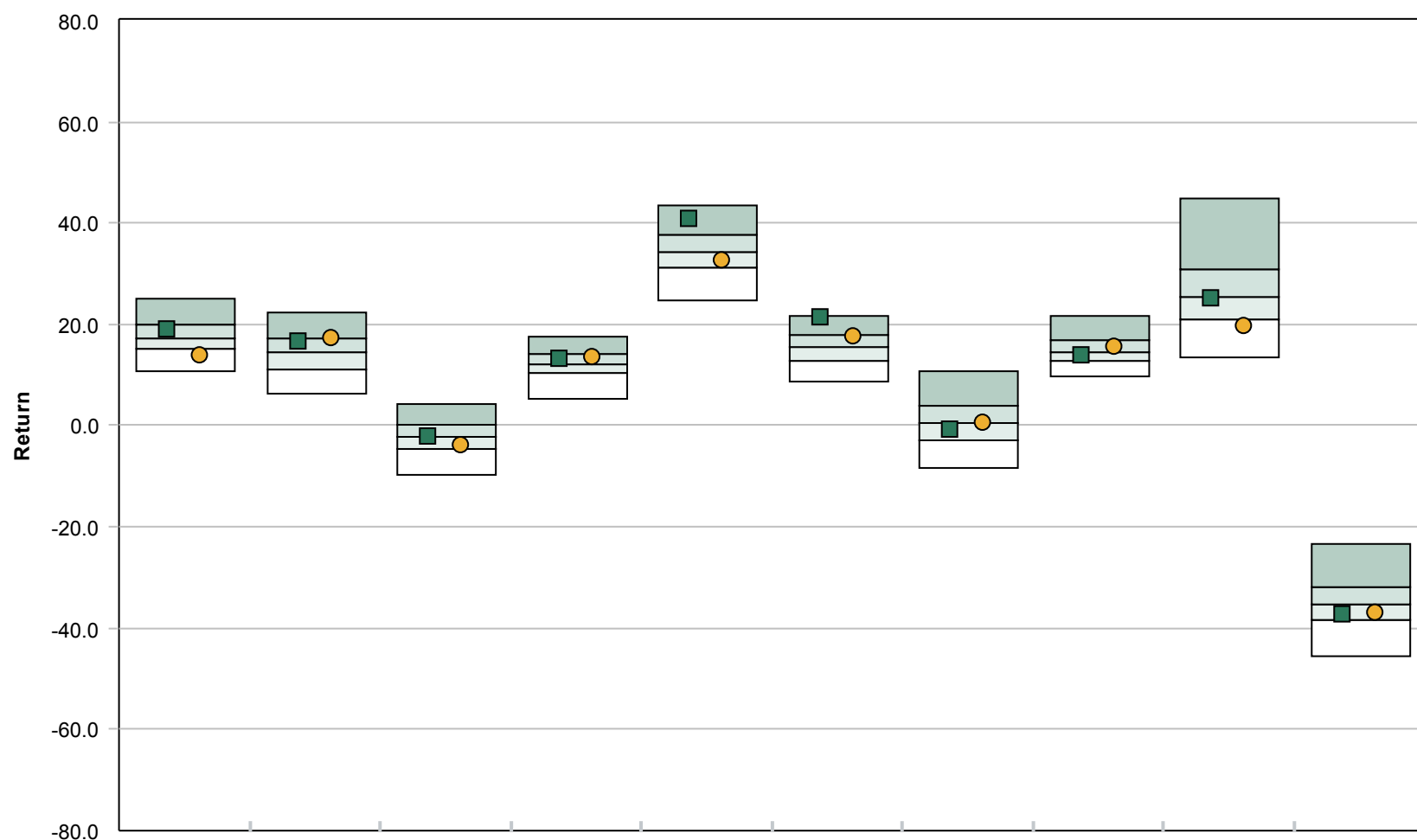
As of September 30, 2018



|                            |              |            |             |              |              |              |               |
|----------------------------|--------------|------------|-------------|--------------|--------------|--------------|---------------|
|                            | <b>1 Qtr</b> | <b>YTD</b> | <b>1 Yr</b> | <b>3 Yrs</b> | <b>5 Yrs</b> | <b>7 Yrs</b> | <b>10 Yrs</b> |
| ■ LSV                      | 5.12 (63)    | 2.49 (86)  | 9.97 (70)   | 14.18 (60)   | 12.12 (37)   | 17.48 (10)   | 11.48 (34)    |
| ● Russell 1000 Value Index | 5.70 (49)    | 3.92 (70)  | 9.45 (77)   | 13.55 (71)   | 10.72 (71)   | 15.02 (66)   | 9.79 (83)     |
| 5th Percentile             | 8.57         | 11.13      | 18.90       | 17.72        | 14.15        | 17.82        | 13.15         |
| 1st Quartile               | 6.81         | 7.55       | 14.62       | 15.78        | 12.57        | 16.63        | 11.73         |
| Median                     | 5.65         | 5.14       | 11.82       | 14.61        | 11.55        | 15.59        | 10.87         |
| 3rd Quartile               | 4.51         | 3.55       | 9.54        | 13.08        | 10.42        | 14.34        | 10.17         |
| 95th Percentile            | 2.47         | 0.75       | 5.72        | 10.30        | 8.37         | 12.34        | 8.67          |

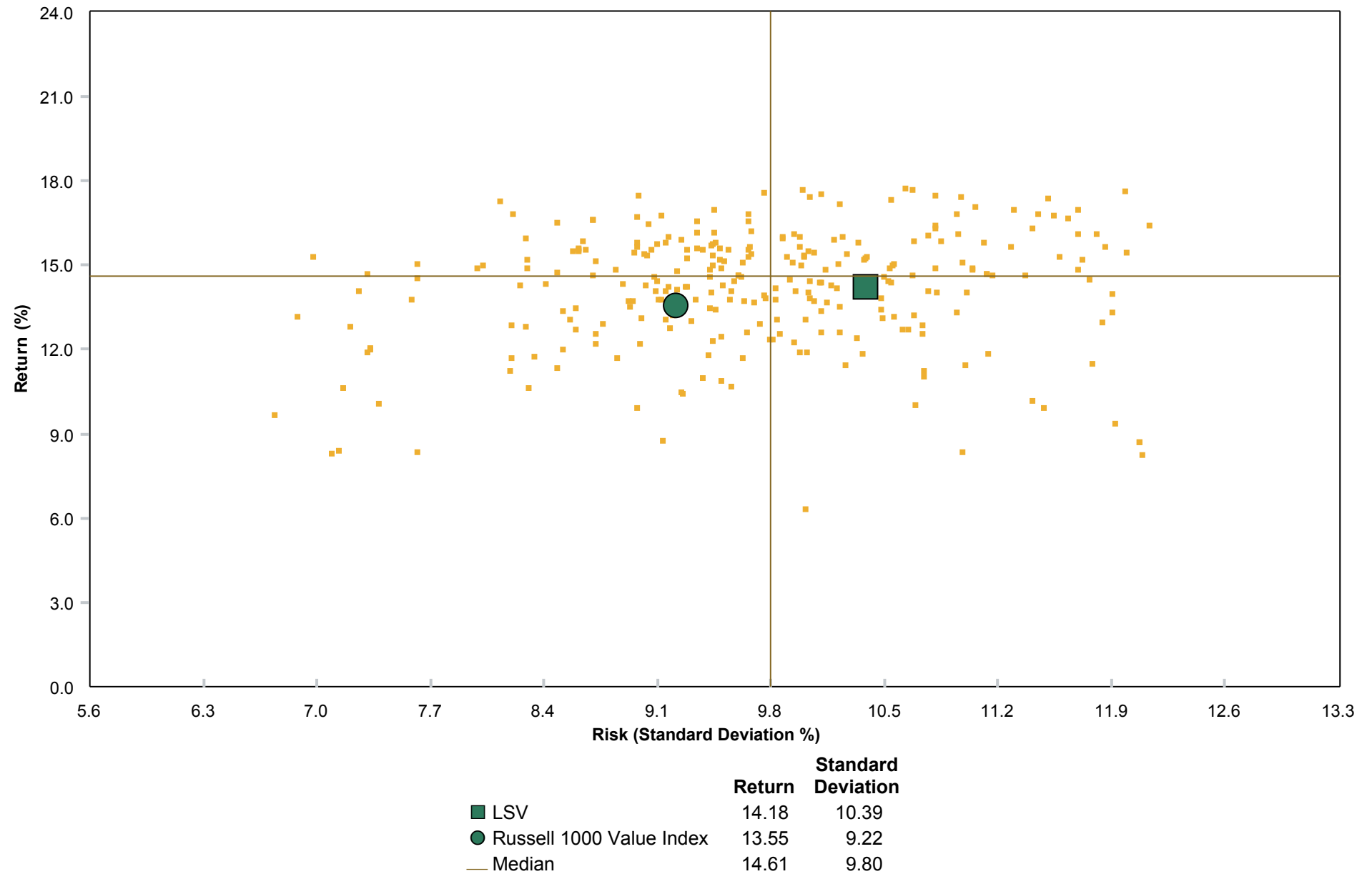
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018

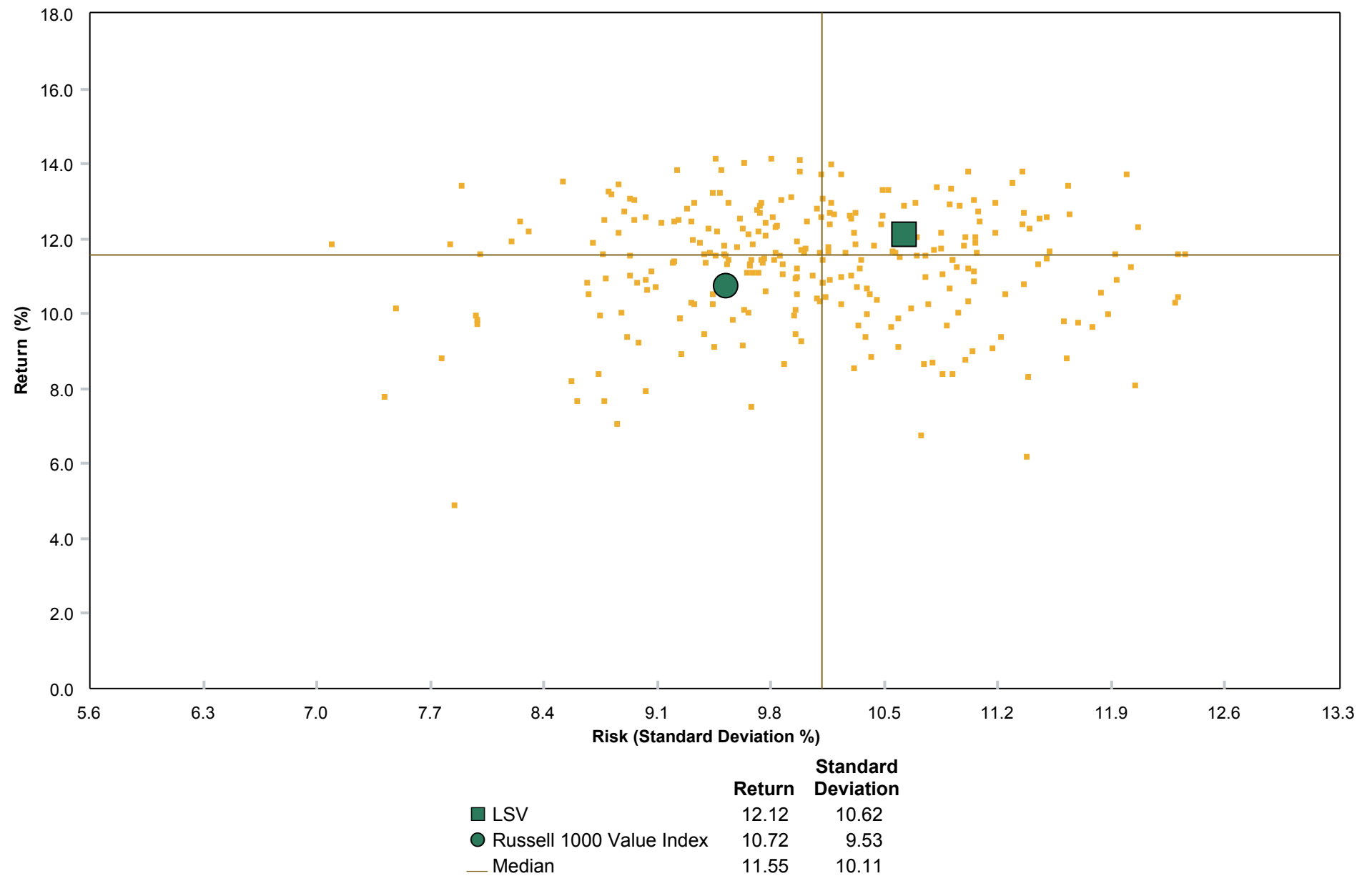


|                            | 2017       | 2016       | 2015       | 2014       | 2013       | 2012       | 2011       | 2010       | 2009       | 2008        |
|----------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| ■ LSV                      | 18.89 (34) | 16.66 (29) | -2.14 (50) | 13.25 (38) | 40.94 (12) | 21.22 (7)  | -0.94 (63) | 13.94 (59) | 24.91 (53) | -37.37 (69) |
| ● Russell 1000 Value Index | 13.66 (89) | 17.34 (25) | -3.83 (70) | 13.45 (35) | 32.53 (62) | 17.51 (29) | 0.39 (52)  | 15.51 (41) | 19.69 (80) | -36.85 (64) |
| 5th Percentile             | 24.95      | 22.43      | 4.36       | 17.49      | 43.54      | 21.67      | 10.87      | 21.60      | 45.03      | -23.39      |
| 1st Quartile               | 20.00      | 17.15      | 0.12       | 14.08      | 37.72      | 18.00      | 4.09       | 16.89      | 30.99      | -31.97      |
| Median                     | 17.22      | 14.35      | -2.22      | 12.24      | 34.26      | 15.63      | 0.61       | 14.63      | 25.26      | -35.37      |
| 3rd Quartile               | 15.18      | 11.13      | -4.73      | 10.32      | 31.08      | 12.92      | -2.99      | 12.83      | 21.00      | -38.42      |
| 95th Percentile            | 10.80      | 6.36       | -9.89      | 5.18       | 24.82      | 8.82       | -8.26      | 9.57       | 13.32      | -45.52      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



Calculation based on monthly periodicity.



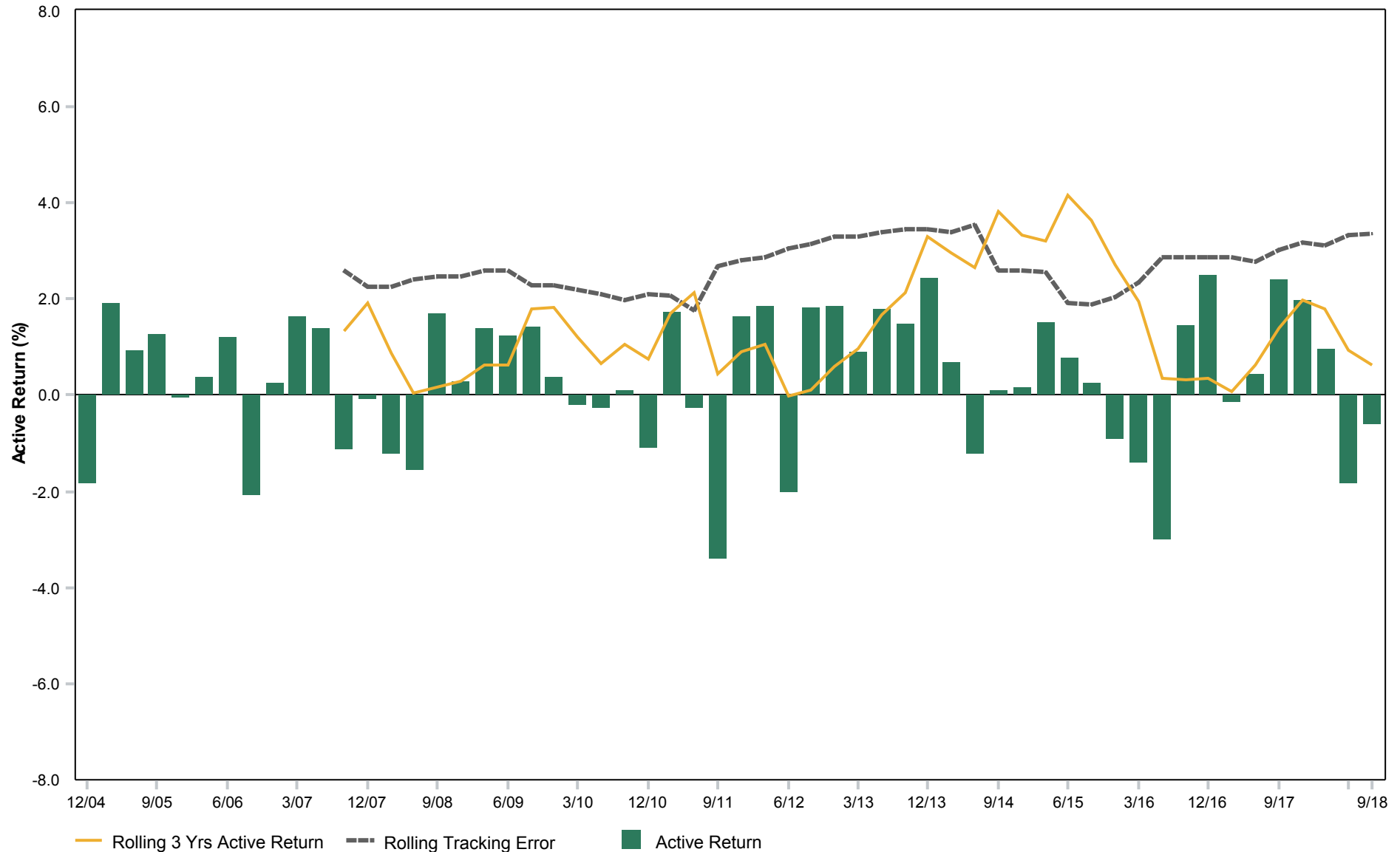
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                          | 1 Qtr | YTD   | 1 Yr | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015  | 2014  |
|--------------------------|-------|-------|------|-------|-------|-------|--------|-------|-------|-------|-------|
| LSV                      | 5.12  | 2.49  | 9.97 | 14.18 | 12.12 | 17.48 | 11.48  | 18.89 | 16.66 | -2.14 | 13.25 |
| Russell 1000 Value Index | 5.70  | 3.92  | 9.45 | 13.55 | 10.72 | 15.02 | 9.79   | 13.66 | 17.34 | -3.83 | 13.45 |
| Difference               | -0.58 | -1.43 | 0.52 | 0.63  | 1.40  | 2.46  | 1.69   | 5.23  | -0.68 | 1.69  | -0.20 |



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 5.04  
 Portfolio Trading 0.07  
 Actual Return 5.12  
 Benchmark Return 5.70  
 Actual Active Return -0.59

Stock Selection -0.11  
 Sector Selection -0.06  
 Interaction -0.47  
 Total Selection -0.65

Portfolio Trading 0.07  
 Benchmark Trading 0.01  
 Active Trading Impact 0.06

Buy & Hold Active Return -0.59

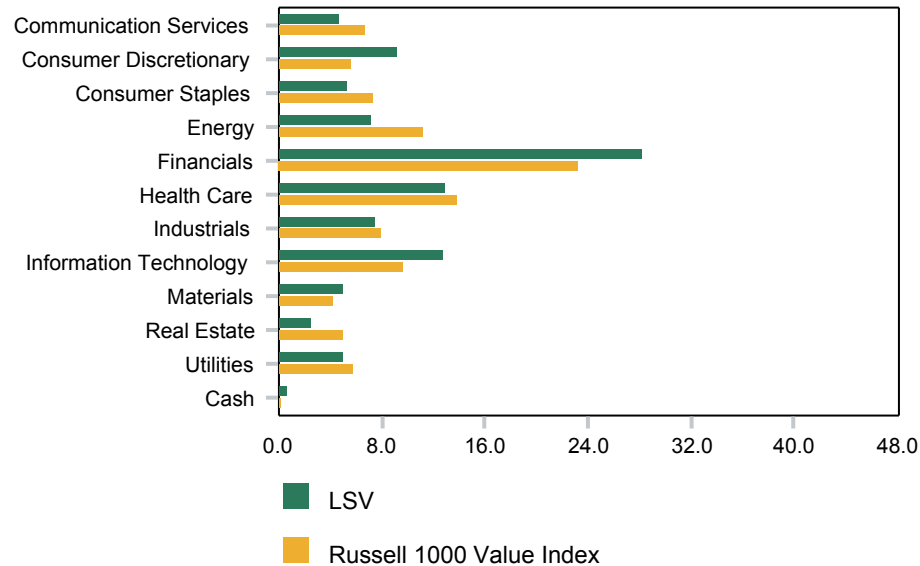
|                        | Allocation — 07/01/2018 |           | Performance — 1 Quarter<br>Ending September 30, 2018 |           | Stock | Attribution |             |       |
|------------------------|-------------------------|-----------|------------------------------------------------------|-----------|-------|-------------|-------------|-------|
|                        | Portfolio               | Benchmark | Portfolio                                            | Benchmark |       | Sector      | Interaction | Total |
| Communication Services | 4.59                    | 6.72      | 7.35                                                 | 6.21      | 0.08  | -0.01       | -0.02       | 0.04  |
| Consumer Discretionary | 9.06                    | 5.54      | -3.34                                                | 0.32      | -0.20 | -0.19       | -0.13       | -0.52 |
| Consumer Staples       | 5.26                    | 7.27      | 5.01                                                 | 4.71      | 0.02  | 0.02        | -0.01       | 0.04  |
| Energy                 | 7.17                    | 11.12     | 3.75                                                 | 1.48      | 0.25  | 0.17        | -0.09       | 0.33  |
| Financials             | 28.16                   | 23.29     | 4.30                                                 | 4.19      | 0.03  | -0.07       | 0.01        | -0.04 |
| Health Care            | 12.82                   | 13.85     | 17.17                                                | 15.60     | 0.22  | -0.10       | -0.02       | 0.10  |
| Industrials            | 7.36                    | 7.87      | 6.10                                                 | 8.32      | -0.17 | -0.01       | 0.01        | -0.18 |
| Information Technology | 12.63                   | 9.60      | 3.45                                                 | 8.21      | -0.46 | 0.08        | -0.14       | -0.53 |
| Materials              | 4.92                    | 4.10      | -0.53                                                | -0.09     | -0.02 | -0.05       | 0.00        | -0.07 |
| Real Estate            | 2.53                    | 4.91      | 4.01                                                 | 0.72      | 0.16  | 0.12        | -0.08       | 0.20  |
| Utilities              | 4.91                    | 5.72      | 2.16                                                 | 2.44      | -0.02 | 0.03        | 0.00        | 0.01  |
| Cash                   | 0.59                    | 0.00      | 0.00                                                 | 0.00      | 0.00  | -0.03       | 0.00        | -0.03 |
| Total                  | 100.00                  | 100.00    | 5.04                                                 | 5.69      | -0.11 | -0.06       | -0.47       | -0.65 |

## Bristol County Retirement System

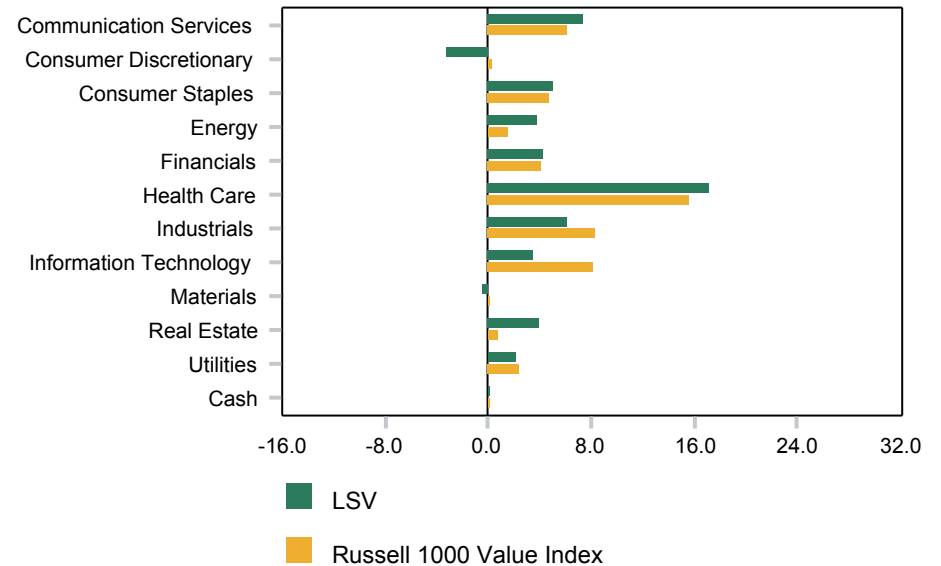
## Buy and Hold Sector Attribution Graph

1 Quarter Ending September 30, 2018

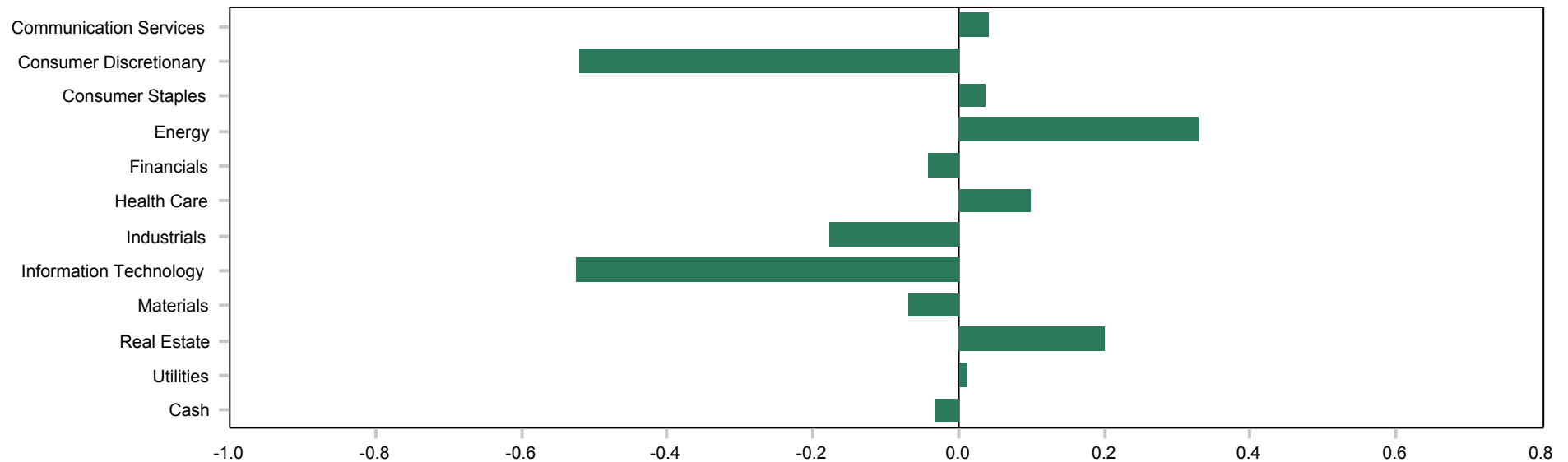
### Allocation



### Performance



### Total Attribution



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 5.04  
 Portfolio Trading 0.07  
 Actual Return 5.12  
 Benchmark Return 5.70  
 Actual Active Return -0.59

Stock Selection -0.06  
 Style Selection -0.59  
 Interaction 0.00  
 Total Selection -0.65

Portfolio Trading 0.07  
 Benchmark Trading 0.01  
 Active Trading Impact 0.06

Buy & Hold Active Return -0.59

**Performance-1 Quarter Ending  
 September 30, 2018**

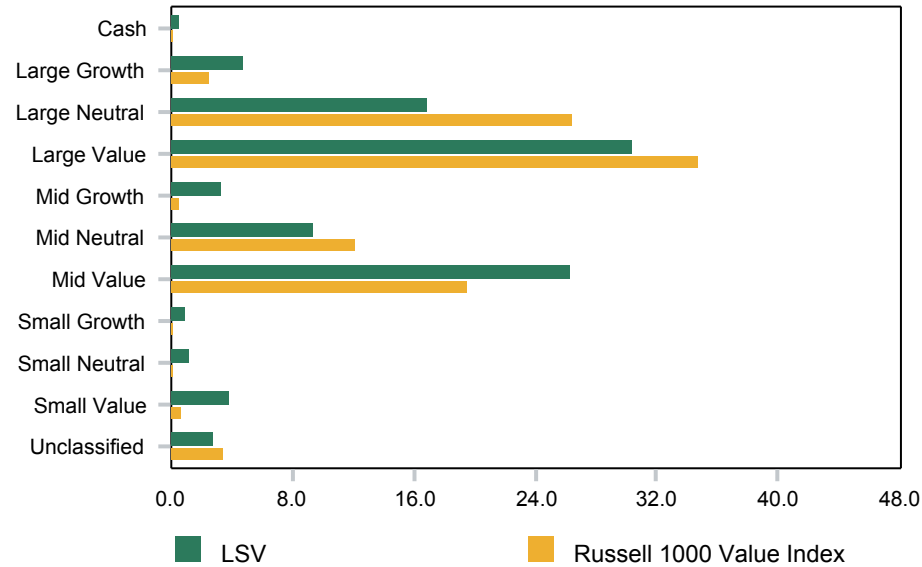
|               | <b>Allocation-07/01/2018</b> |                  | <b>Performance-1 Quarter Ending<br/>September 30, 2018</b> |                  | <b>Attribution</b> |              |                    |              |
|---------------|------------------------------|------------------|------------------------------------------------------------|------------------|--------------------|--------------|--------------------|--------------|
|               | <b>Portfolio</b>             | <b>Benchmark</b> | <b>Portfolio</b>                                           | <b>Benchmark</b> | <b>Stock</b>       | <b>Style</b> | <b>Interaction</b> | <b>Total</b> |
| Cash          | 0.59                         | 0.00             | 0.00                                                       | 0.00             | 0.00               | -0.03        | 0.00               | -0.03        |
| Large Growth  | 4.74                         | 2.44             | 5.66                                                       | 11.82            | -0.15              | 0.14         | -0.14              | -0.15        |
| Large Neutral | 16.79                        | 26.46            | 10.29                                                      | 9.42             | 0.23               | -0.36        | -0.08              | -0.22        |
| Large Value   | 30.40                        | 34.69            | 5.09                                                       | 4.56             | 0.18               | 0.05         | -0.02              | 0.21         |
| Mid Growth    | 3.23                         | 0.58             | -0.15                                                      | 4.17             | -0.03              | -0.04        | -0.11              | -0.18        |
| Mid Neutral   | 9.34                         | 12.05            | -3.54                                                      | 4.31             | -0.95              | 0.04         | 0.21               | -0.70        |
| Mid Value     | 26.24                        | 19.47            | 3.62                                                       | 2.81             | 0.16               | -0.20        | 0.05               | 0.02         |
| Small Growth  | 0.91                         | 0.00             | 3.98                                                       | 0.00             | 0.00               | -0.02        | 0.00               | -0.02        |
| Small Neutral | 1.14                         | 0.18             | -1.76                                                      | 4.43             | -0.01              | -0.01        | -0.06              | -0.08        |
| Small Value   | 3.80                         | 0.67             | 8.39                                                       | 0.77             | 0.05               | -0.15        | 0.24               | 0.14         |
| Unclassified  | 2.81                         | 3.46             | 19.67                                                      | 6.51             | 0.46               | -0.01        | -0.09              | 0.36         |
| Total         | 100.00                       | 100.00           | 5.04                                                       | 5.69             | -0.06              | -0.59        | 0.00               | -0.65        |

## Bristol County Retirement System

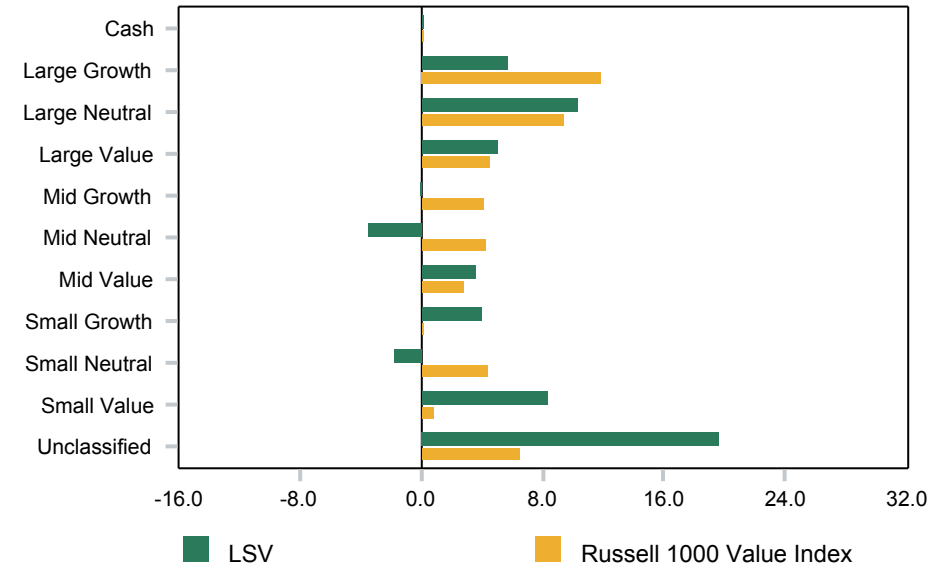
## Buy and Hold Style Attribution Graph

1 Quarter Ending September 30, 2018

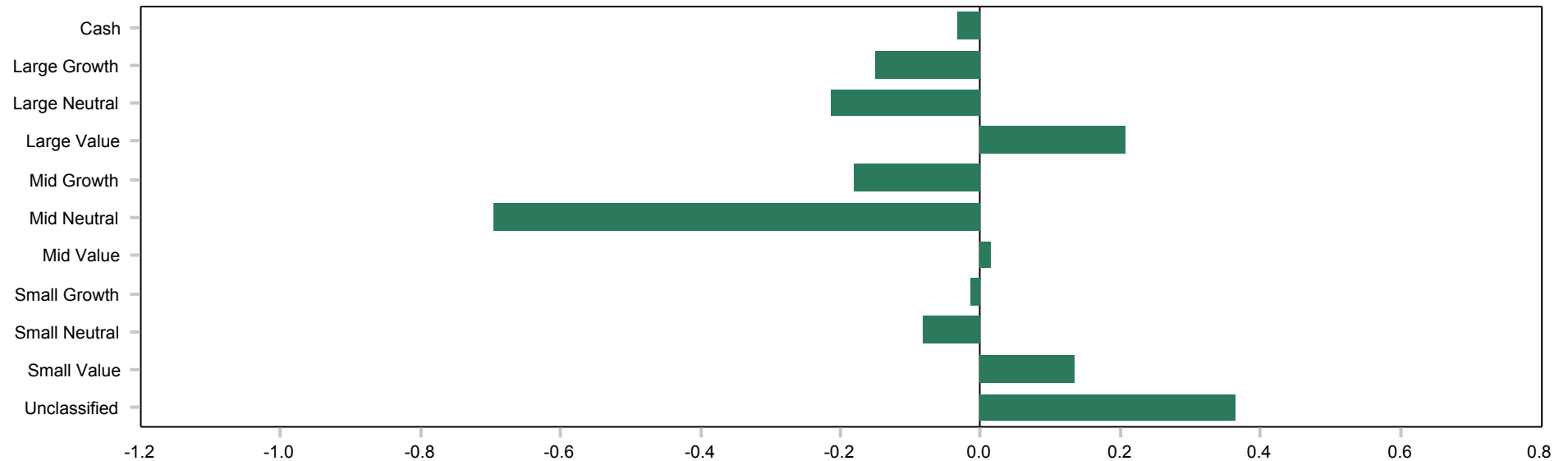
### Allocation



### Performance



### Total Attribution



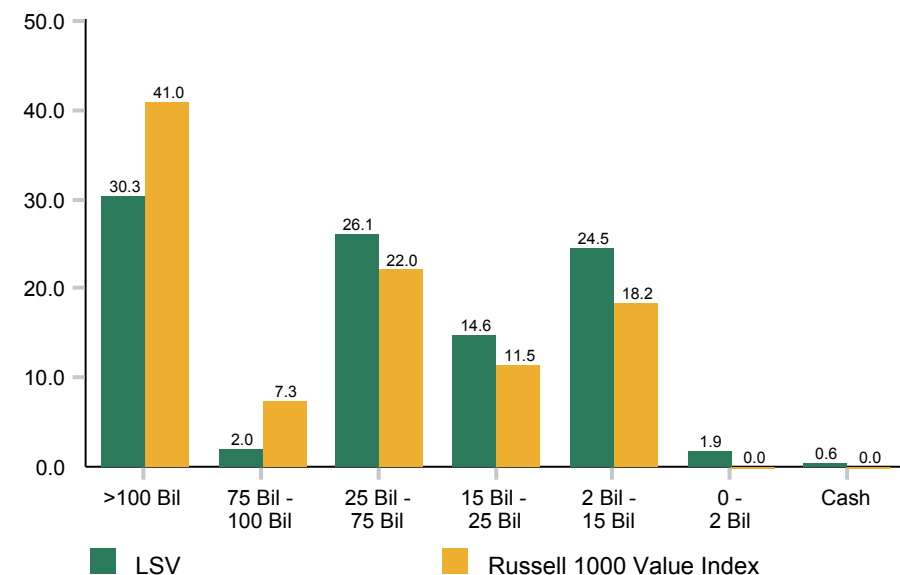
Top Ten Equity Holdings

|                            | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|----------------------------|----------------------|----------------------|-------------------|----------------------|
| JPMorgan Chase & Co        | 3.00                 | 2.77                 | 0.23              | 8.88                 |
| Pfizer Inc                 | 2.58                 | 1.88                 | 0.70              | 22.51                |
| Cisco Systems Inc          | 2.45                 | 1.68                 | 0.77              | 13.94                |
| Citigroup Inc              | 2.25                 | 1.33                 | 0.92              | 7.87                 |
| Intel Corp                 | 2.23                 | 1.60                 | 0.63              | -4.29                |
| Johnson & Johnson          | 2.22                 | 2.23                 | -0.01             | 14.63                |
| Bank of America Corp       | 2.05                 | 2.01                 | 0.04              | 5.01                 |
| Verizon Communications Inc | 1.91                 | 1.62                 | 0.29              | 7.36                 |
| Amgen Inc                  | 1.76                 | 0.06                 | 1.70              | 13.05                |
| Exxon Mobil Corp           | 1.57                 | 2.64                 | -1.07             | 3.83                 |
| % of Portfolio             | 22.02                | 17.82                | 4.20              |                      |

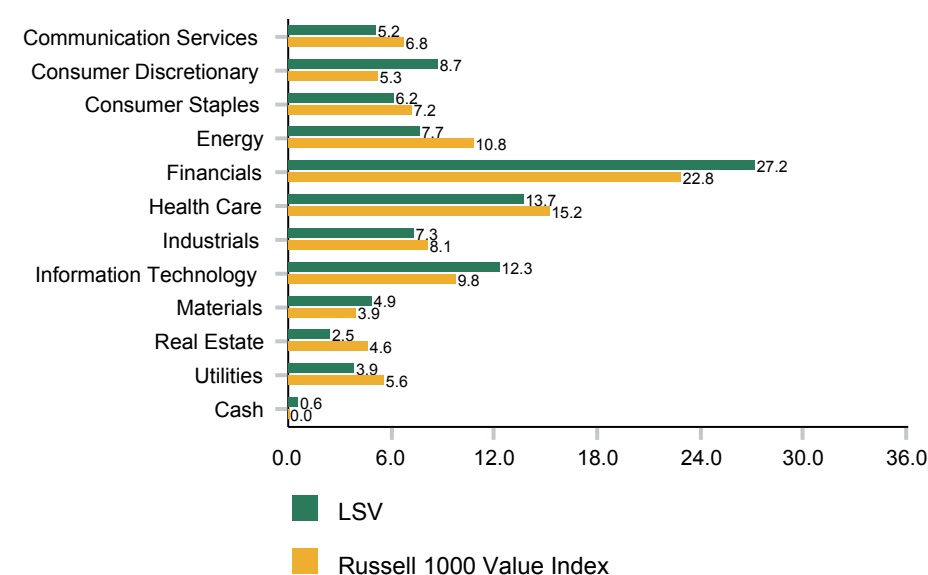
Portfolio Characteristics

|                           | Portfolio      | Benchmark       |
|---------------------------|----------------|-----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 94,212,083,089 | 126,935,326,977 |
| Median Mkt. Cap (\$)      | 18,357,237,220 | 9,935,306,040   |
| Price/Earnings ratio      | 13.37          | 16.45           |
| Price/Book ratio          | 2.20           | 2.24            |
| 5 Yr. EPS Growth Rate (%) | 10.19          | 7.25            |
| Current Yield (%)         | 2.78           | 2.51            |
| Beta (5 Years, Monthly)   | 1.09           | 1.00            |
| Number of Stocks          | 144            | 727             |

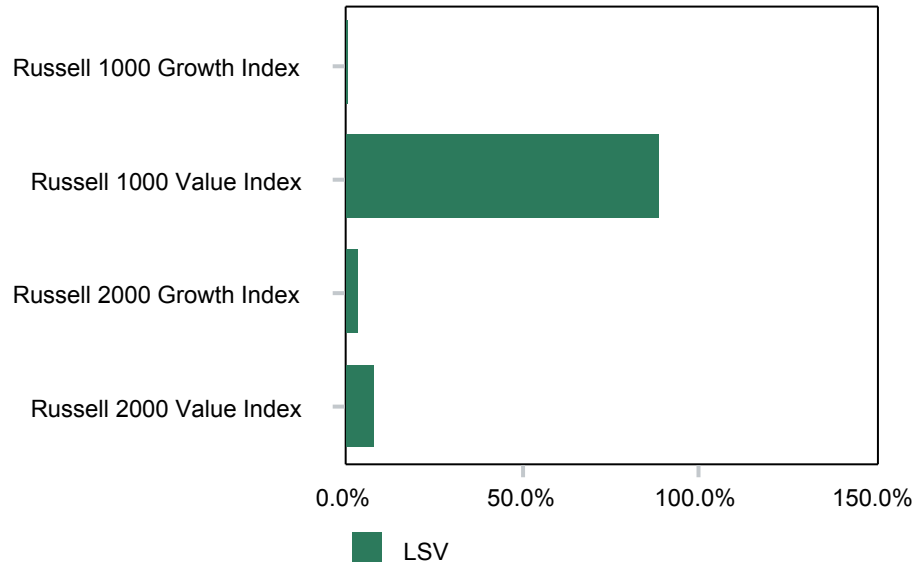
Distribution of Market Capitalization (%)



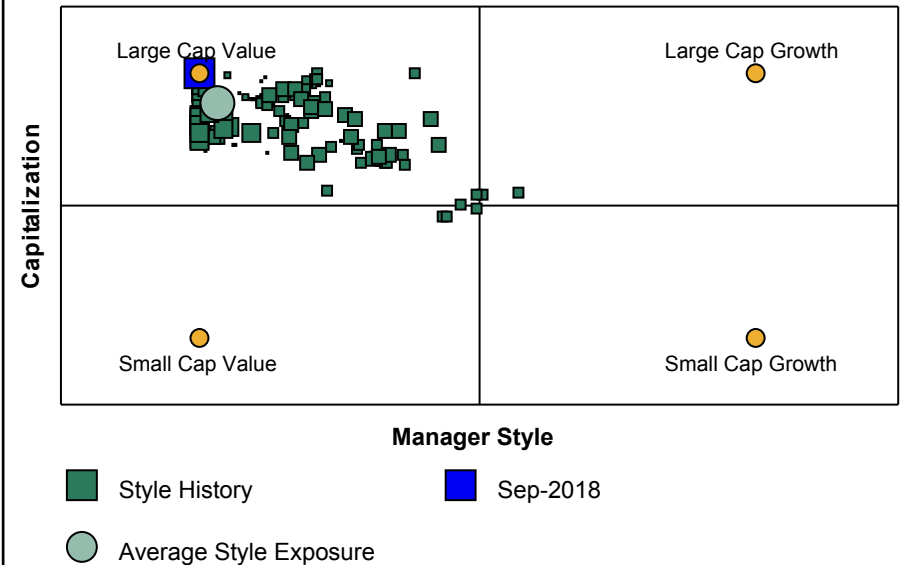
Sector Weights (%)



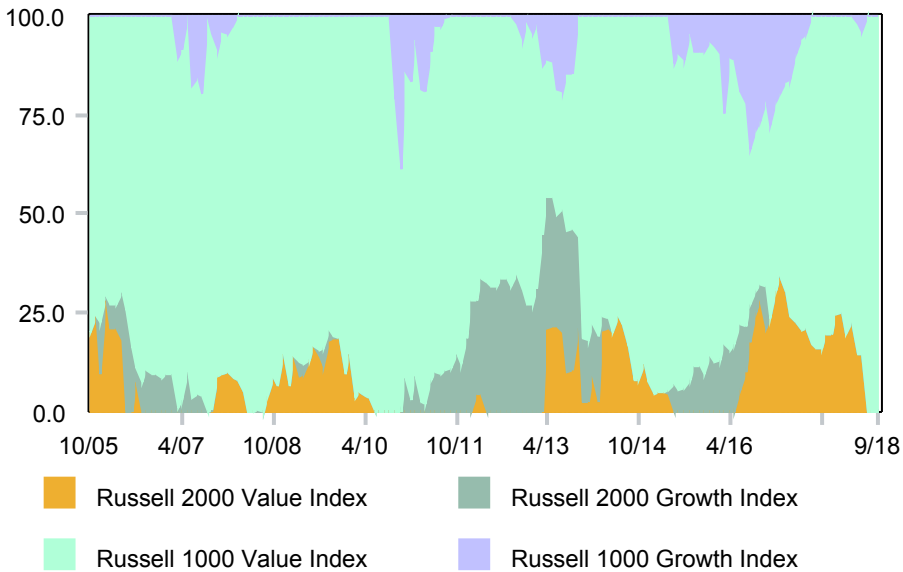
Investment Style Exposure



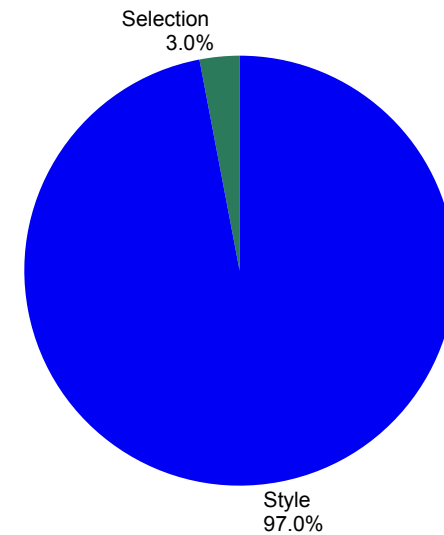
Style Map(ppp)



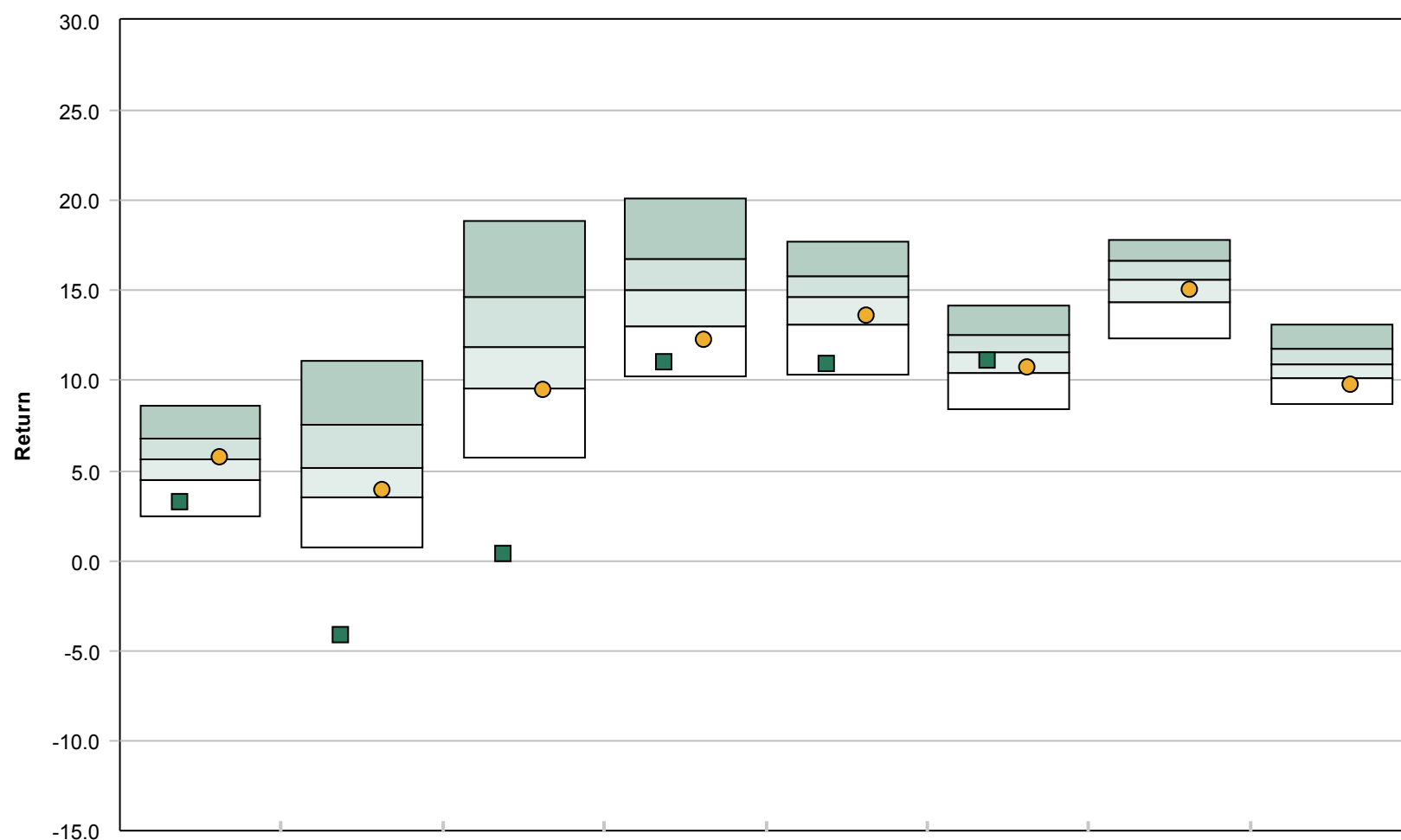
Style History(ppp)



Return Variance



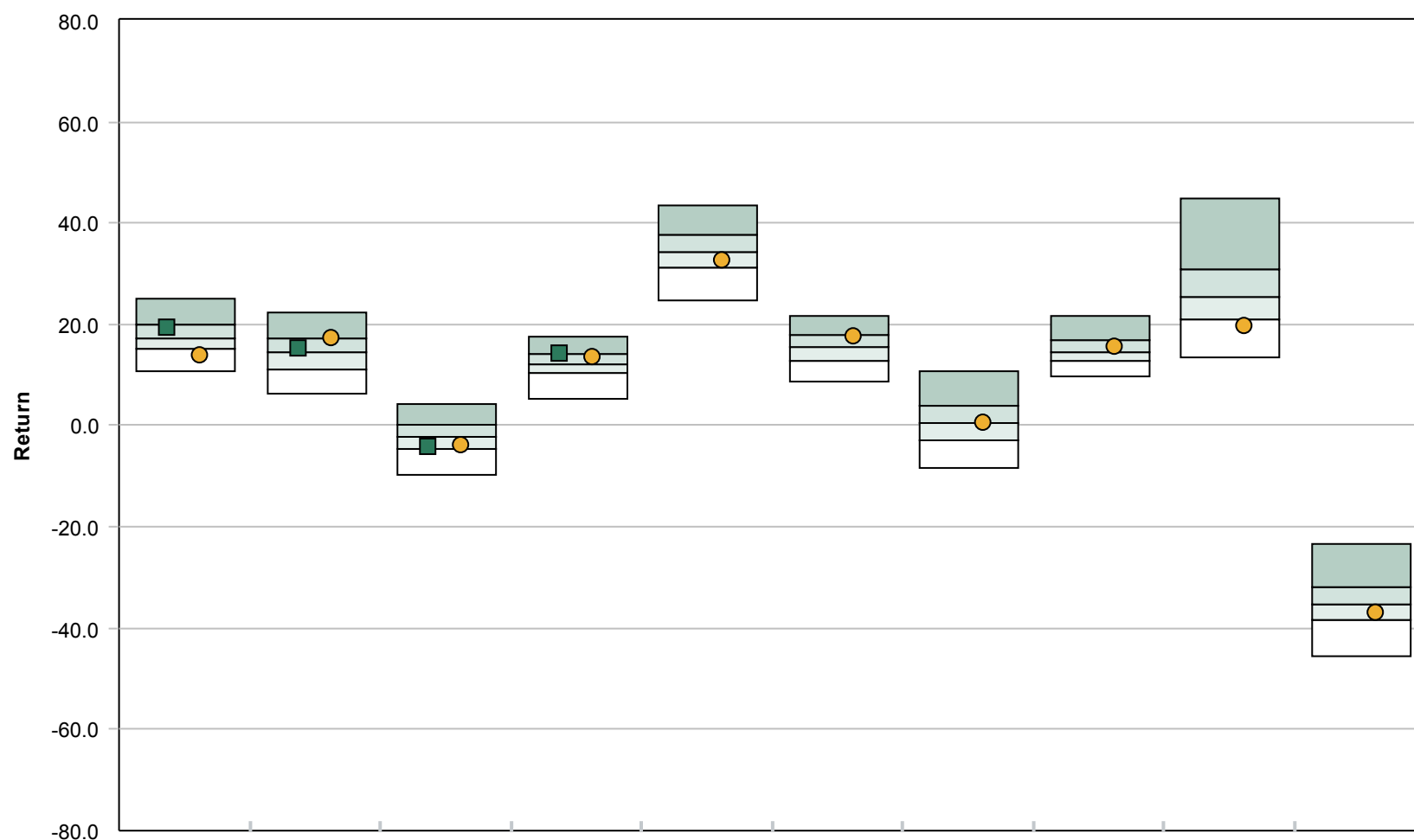
As of September 30, 2018



|                            | 1 Qtr     | YTD         | 1 Yr       | 2 Yrs      | 3 Yrs      | 5 Yrs      | 7 Yrs      | 10 Yrs    |
|----------------------------|-----------|-------------|------------|------------|------------|------------|------------|-----------|
| ■ Lyrical                  | 3.28 (90) | -4.11 (100) | 0.34 (100) | 11.04 (92) | 10.94 (93) | 11.13 (62) | N/A        | N/A       |
| ● Russell 1000 Value Index | 5.70 (49) | 3.92 (70)   | 9.45 (77)  | 12.25 (83) | 13.55 (71) | 10.72 (71) | 15.02 (66) | 9.79 (83) |
| 5th Percentile             | 8.57      | 11.13       | 18.90      | 20.12      | 17.72      | 14.15      | 17.82      | 13.15     |
| 1st Quartile               | 6.81      | 7.55        | 14.62      | 16.80      | 15.78      | 12.57      | 16.63      | 11.73     |
| Median                     | 5.65      | 5.14        | 11.82      | 15.00      | 14.61      | 11.55      | 15.59      | 10.87     |
| 3rd Quartile               | 4.51      | 3.55        | 9.54       | 13.03      | 13.08      | 10.42      | 14.34      | 10.17     |
| 95th Percentile            | 2.47      | 0.75        | 5.72       | 10.20      | 10.30      | 8.37       | 12.34      | 8.67      |

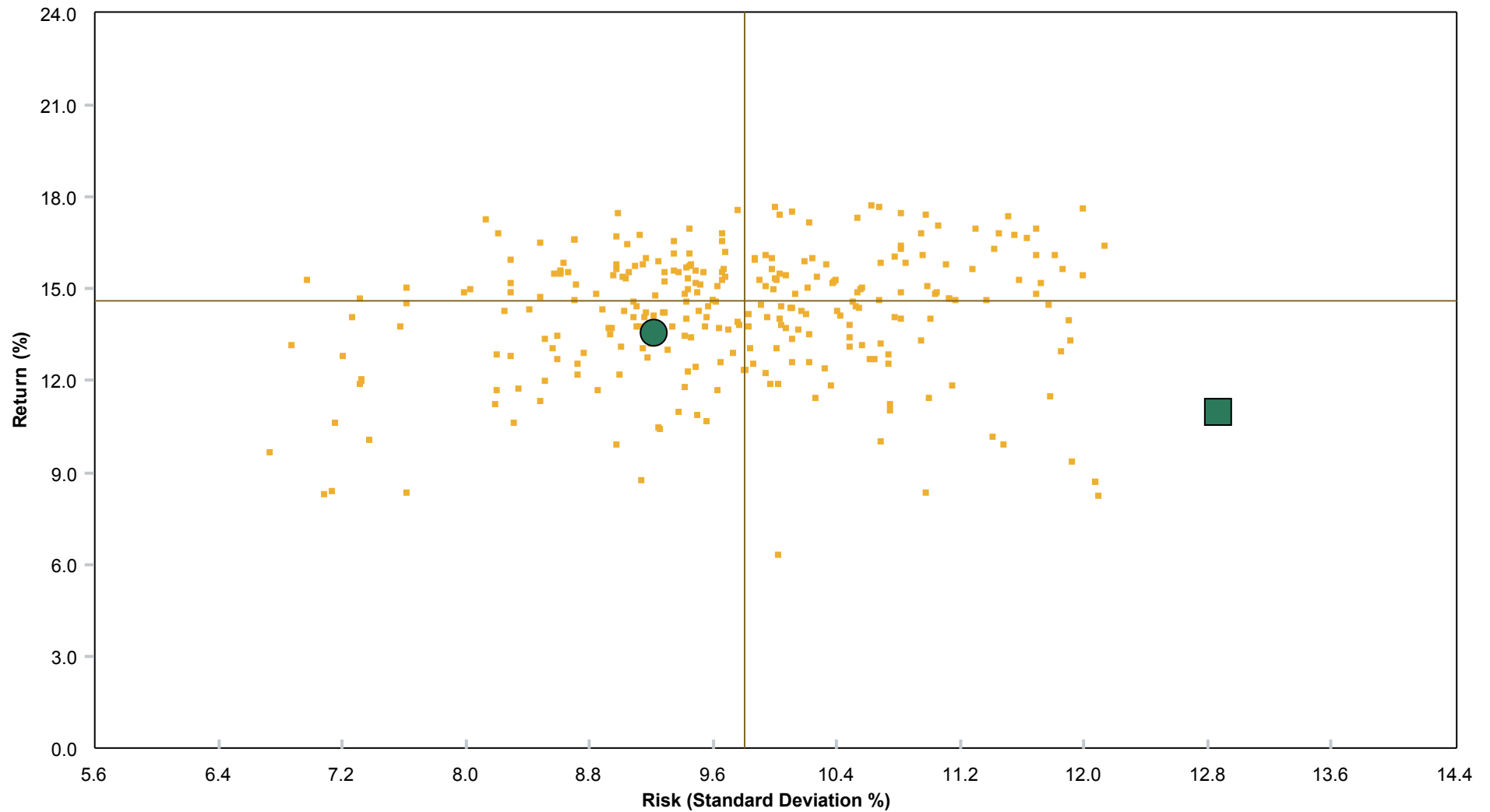
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018



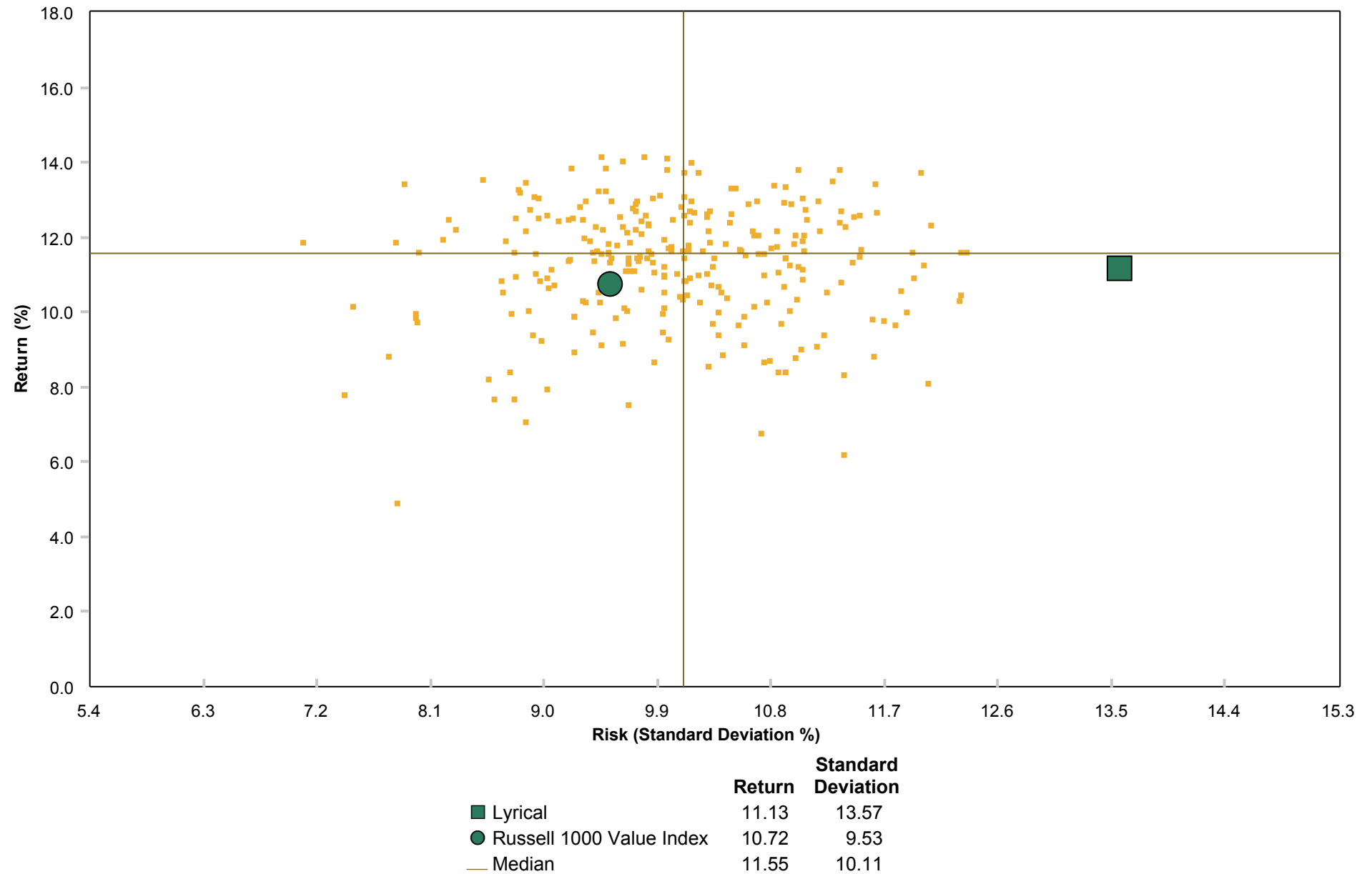
|                            | 2017       | 2016       | 2015       | 2014       | 2013       | 2012       | 2011      | 2010       | 2009       | 2008        |
|----------------------------|------------|------------|------------|------------|------------|------------|-----------|------------|------------|-------------|
| ■ Lyrical                  | 19.32 (31) | 15.33 (42) | -4.25 (73) | 14.28 (23) | N/A        | N/A        | N/A       | N/A        | N/A        | N/A         |
| ● Russell 1000 Value Index | 13.66 (89) | 17.34 (25) | -3.83 (70) | 13.45 (35) | 32.53 (62) | 17.51 (29) | 0.39 (52) | 15.51 (41) | 19.69 (80) | -36.85 (64) |
| 5th Percentile             | 24.95      | 22.43      | 4.36       | 17.49      | 43.54      | 21.67      | 10.87     | 21.60      | 45.03      | -23.39      |
| 1st Quartile               | 20.00      | 17.15      | 0.12       | 14.08      | 37.72      | 18.00      | 4.09      | 16.89      | 30.99      | -31.97      |
| Median                     | 17.22      | 14.35      | -2.22      | 12.24      | 34.26      | 15.63      | 0.61      | 14.63      | 25.26      | -35.37      |
| 3rd Quartile               | 15.18      | 11.13      | -4.73      | 10.32      | 31.08      | 12.92      | -2.99     | 12.83      | 21.00      | -38.42      |
| 95th Percentile            | 10.80      | 6.36       | -9.89      | 5.18       | 24.82      | 8.82       | -8.26     | 9.57       | 13.32      | -45.52      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



|                            | Return | Standard<br>Deviation |
|----------------------------|--------|-----------------------|
| ■ Lyrical                  | 10.94  | 12.87                 |
| ● Russell 1000 Value Index | 13.55  | 9.22                  |
| — Median                   | 14.61  | 9.80                  |

Calculation based on monthly periodicity.



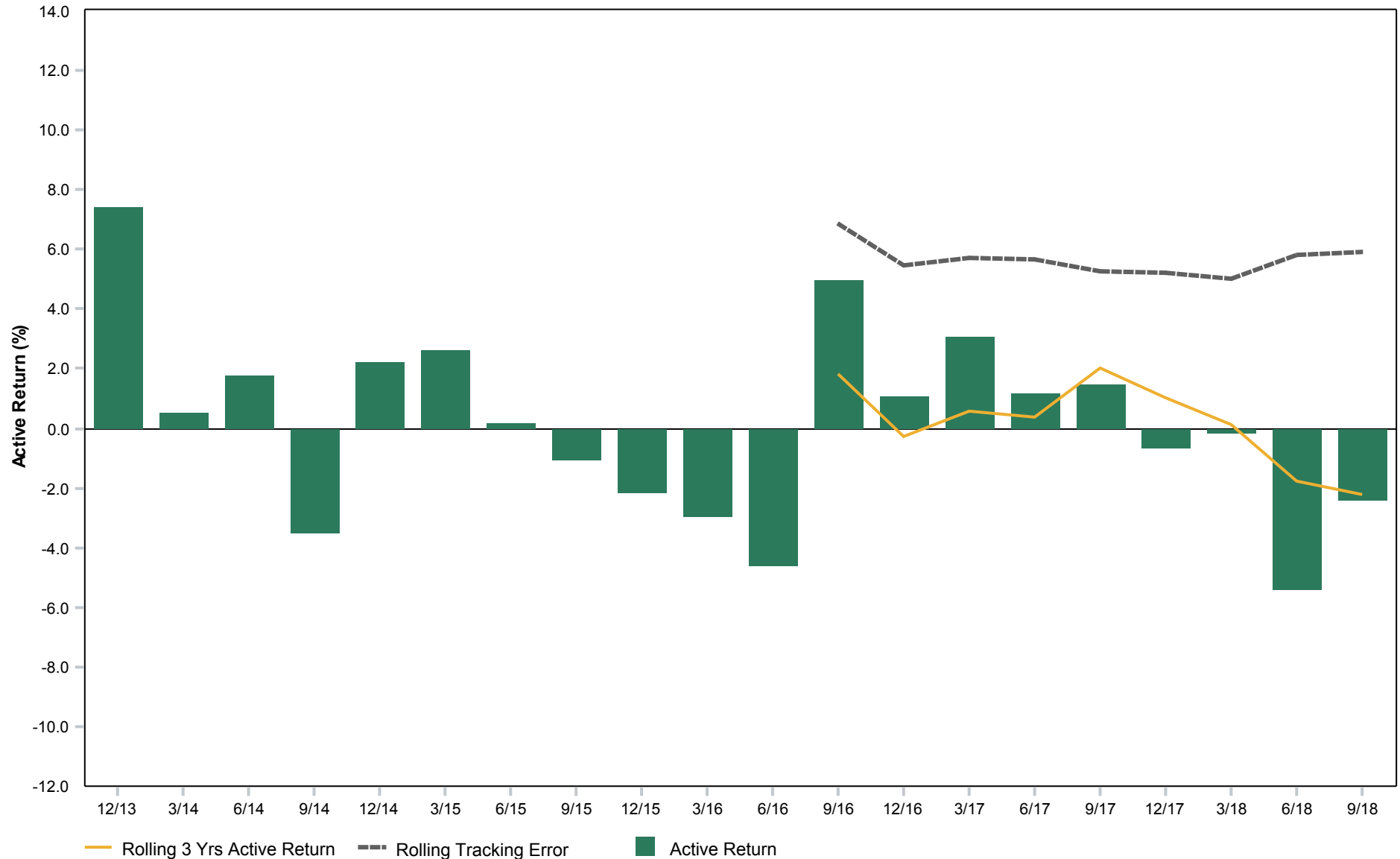
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                          | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015  | 2014  |
|--------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| Lyrical                  | 3.28  | -4.11 | 0.34  | 10.94 | 11.13 | N/A   | N/A    | 19.32 | 15.33 | -4.25 | 14.28 |
| Russell 1000 Value Index | 5.70  | 3.92  | 9.45  | 13.55 | 10.72 | 15.02 | 9.79   | 13.66 | 17.34 | -3.83 | 13.45 |
| Difference               | -2.42 | -8.03 | -9.11 | -2.61 | 0.41  | N/A   | N/A    | 5.66  | -2.01 | -0.42 | 0.83  |



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 3.26  
 Portfolio Trading 0.01  
 Actual Return 3.28  
 Benchmark Return 5.70  
 Actual Active Return -2.43

Stock Selection -0.55  
 Sector Selection 0.11  
 Interaction -1.99  
 Total Selection -2.43

Portfolio Trading 0.01  
 Benchmark Trading 0.01  
 Active Trading Impact 0.00

Buy & Hold Active Return -2.43

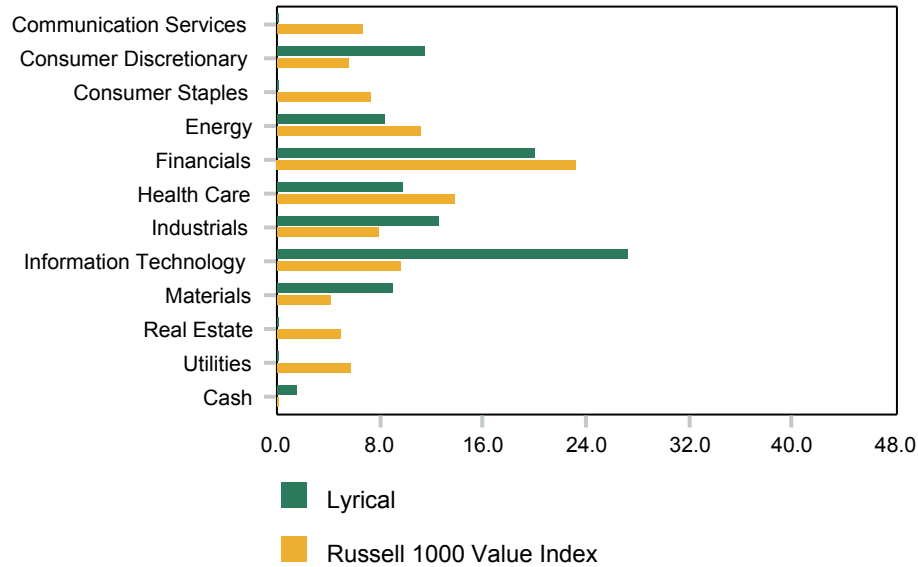
|                        | Allocation — 07/01/2018 |           | Performance — 1 Quarter<br>Ending September 30, 2018 |           | Stock | Attribution |             |       |
|------------------------|-------------------------|-----------|------------------------------------------------------|-----------|-------|-------------|-------------|-------|
|                        | Portfolio               | Benchmark | Portfolio                                            | Benchmark |       | Sector      | Interaction | Total |
| Communication Services | 0.00                    | 6.72      | 0.00                                                 | 6.21      | 0.00  | -0.03       | 0.00        | -0.03 |
| Consumer Discretionary | 11.48                   | 5.54      | -6.79                                                | 0.32      | -0.39 | -0.32       | -0.42       | -1.14 |
| Consumer Staples       | 0.00                    | 7.27      | 0.00                                                 | 4.71      | 0.00  | 0.07        | 0.00        | 0.07  |
| Energy                 | 8.33                    | 11.12     | -0.43                                                | 1.48      | -0.21 | 0.12        | 0.05        | -0.04 |
| Financials             | 20.05                   | 23.29     | 3.26                                                 | 4.19      | -0.22 | 0.05        | 0.03        | -0.14 |
| Health Care            | 9.79                    | 13.85     | 24.08                                                | 15.60     | 1.17  | -0.40       | -0.34       | 0.43  |
| Industrials            | 12.52                   | 7.87      | 3.18                                                 | 8.32      | -0.41 | 0.12        | -0.24       | -0.52 |
| Information Technology | 27.28                   | 9.60      | 0.53                                                 | 8.21      | -0.74 | 0.45        | -1.36       | -1.65 |
| Materials              | 9.03                    | 4.10      | 5.82                                                 | -0.09     | 0.24  | -0.28       | 0.29        | 0.25  |
| Real Estate            | 0.00                    | 4.91      | 0.00                                                 | 0.72      | 0.00  | 0.24        | 0.00        | 0.24  |
| Utilities              | 0.00                    | 5.72      | 0.00                                                 | 2.44      | 0.00  | 0.19        | 0.00        | 0.19  |
| Cash                   | 1.53                    | 0.00      | 0.00                                                 | 0.00      | 0.00  | -0.09       | 0.00        | -0.09 |
| Total                  | 100.00                  | 100.00    | 3.26                                                 | 5.69      | -0.55 | 0.11        | -1.99       | -2.43 |

## Bristol County Retirement System

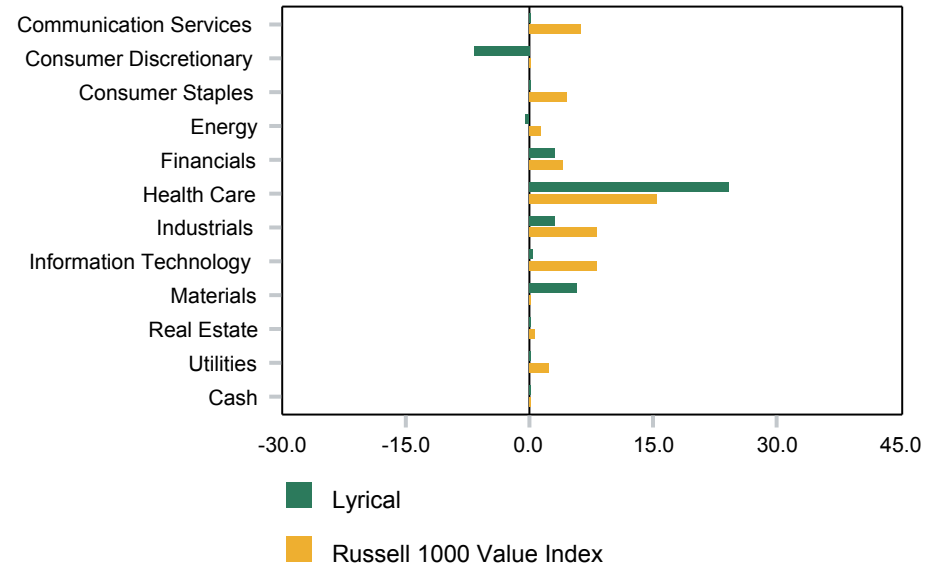
## Buy and Hold Sector Attribution Graph

1 Quarter Ending September 30, 2018

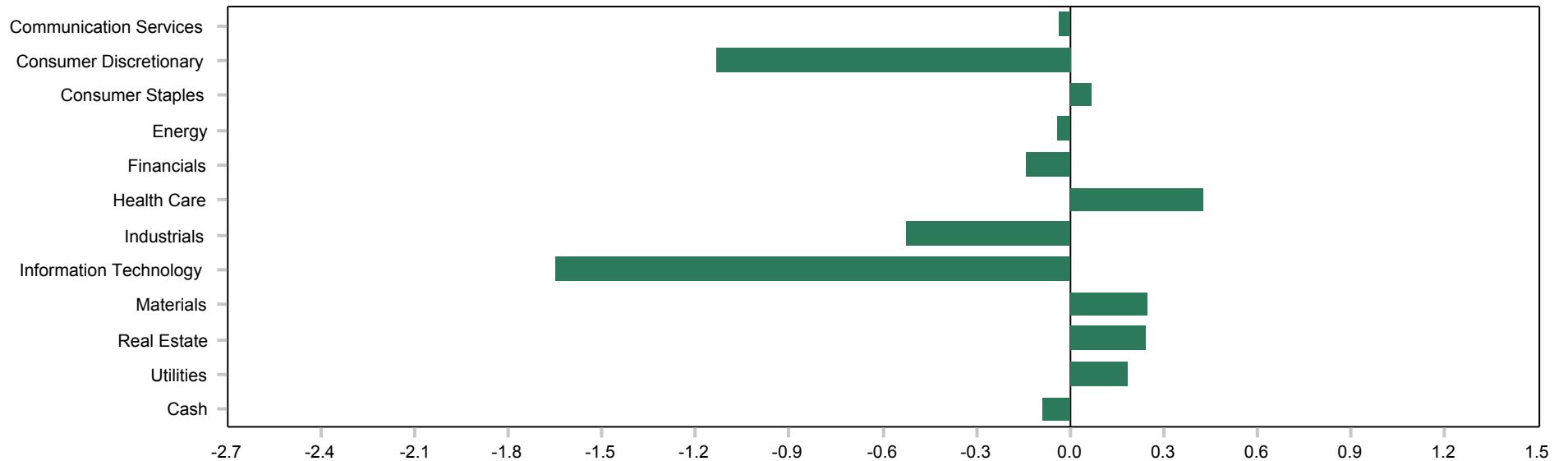
### Allocation



### Performance



### Total Attribution



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 3.26  
 Portfolio Trading 0.01  
 Actual Return 3.28  
 Benchmark Return 5.70  
 Actual Active Return -2.43

Stock Selection -0.78  
 Style Selection -1.52  
 Interaction -0.13  
 Total Selection -2.43

Portfolio Trading 0.01  
 Benchmark Trading 0.01  
 Active Trading Impact 0.00

Buy & Hold Active Return -2.43

**Performance-1 Quarter Ending  
September 30, 2018**

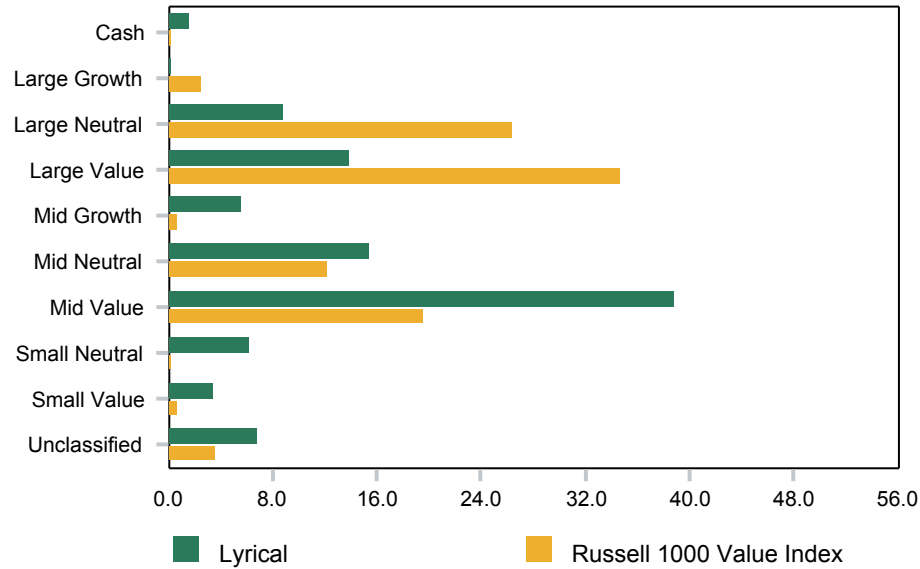
|               | <b>Allocation-07/01/2018</b> |                  | <b>Performance-1 Quarter Ending<br/>September 30, 2018</b> |                  | <b>Attribution</b> |              |                    |              |
|---------------|------------------------------|------------------|------------------------------------------------------------|------------------|--------------------|--------------|--------------------|--------------|
|               | <b>Portfolio</b>             | <b>Benchmark</b> | <b>Portfolio</b>                                           | <b>Benchmark</b> | <b>Stock</b>       | <b>Style</b> | <b>Interaction</b> | <b>Total</b> |
| Cash          | 1.53                         | 0.00             | 0.00                                                       | 0.00             | 0.00               | -0.09        | 0.00               | -0.09        |
| Large Growth  | 0.00                         | 2.44             | 0.00                                                       | 11.82            | 0.00               | -0.15        | 0.00               | -0.15        |
| Large Neutral | 8.76                         | 26.46            | 2.53                                                       | 9.42             | -1.82              | -0.66        | 1.22               | -1.26        |
| Large Value   | 13.73                        | 34.69            | 8.62                                                       | 4.56             | 1.41               | 0.24         | -0.85              | 0.79         |
| Mid Growth    | 5.55                         | 0.58             | 1.40                                                       | 4.17             | -0.02              | -0.08        | -0.14              | -0.23        |
| Mid Neutral   | 15.32                        | 12.05            | -0.47                                                      | 4.31             | -0.58              | -0.05        | -0.16              | -0.78        |
| Mid Value     | 38.82                        | 19.47            | 1.98                                                       | 2.81             | -0.16              | -0.56        | -0.16              | -0.88        |
| Small Neutral | 6.16                         | 0.18             | 0.93                                                       | 4.43             | -0.01              | -0.08        | -0.21              | -0.29        |
| Small Value   | 3.38                         | 0.67             | -9.35                                                      | 0.77             | -0.07              | -0.13        | -0.27              | -0.48        |
| Unclassified  | 6.73                         | 3.46             | 19.95                                                      | 6.51             | 0.47               | 0.03         | 0.44               | 0.93         |
| Total         | 100.00                       | 100.00           | 3.26                                                       | 5.69             | -0.78              | -1.52        | -0.13              | -2.43        |

## Bristol County Retirement System

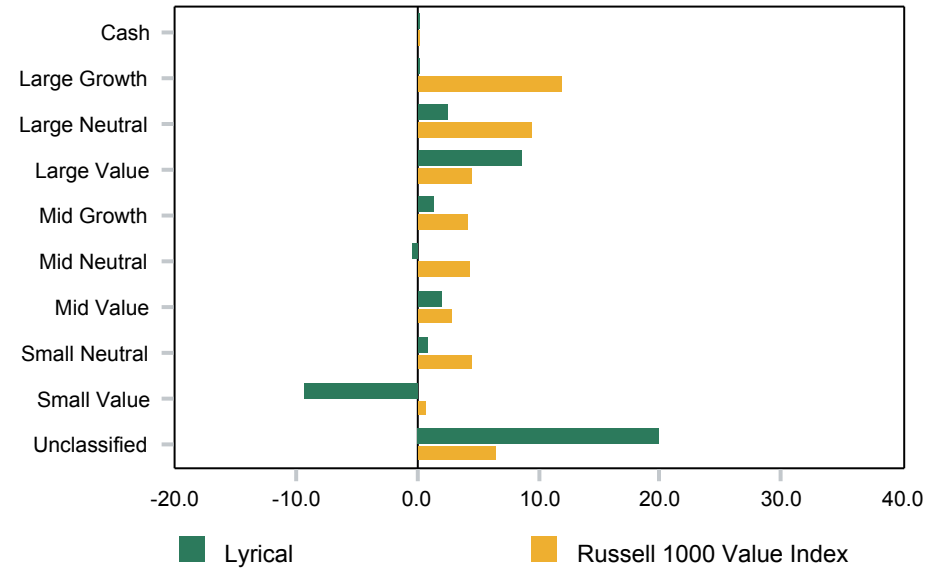
## Buy and Hold Style Attribution Graph

1 Quarter Ending September 30, 2018

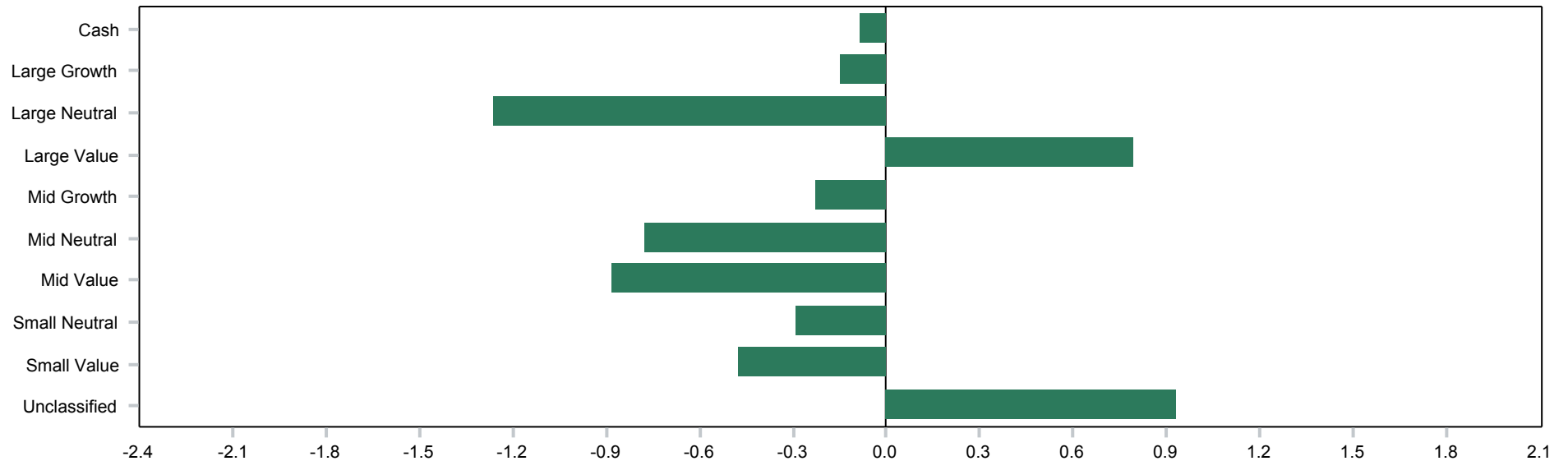
### Allocation



### Performance



### Total Attribution



As of September 30, 2018

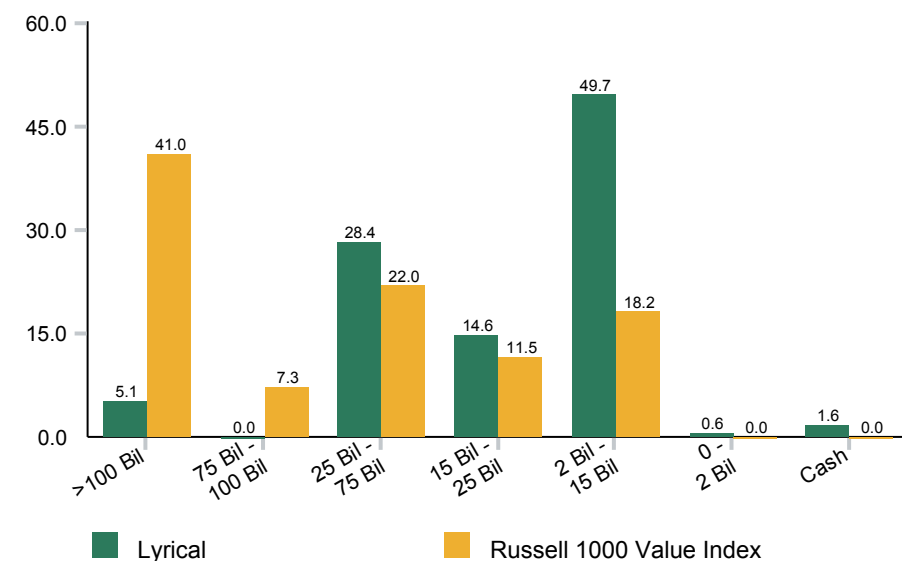
## Top Ten Equity Holdings

|                          | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|--------------------------|----------------------|----------------------|-------------------|----------------------|
| Anthem Inc               | 6.34                 | 0.52                 | 5.82              | 15.45                |
| HCA Healthcare Inc       | 5.42                 | 0.08                 | 5.34              | 35.95                |
| AerCap Holdings NV       | 5.07                 | 0.00                 | 5.07              | 6.22                 |
| Broadcom Inc             | 5.06                 | 0.31                 | 4.75              | 2.43                 |
| Corning Inc              | 4.95                 | 0.21                 | 4.74              | 29.01                |
| Celanese Corp            | 4.64                 | 0.04                 | 4.60              | 3.13                 |
| Assurant Inc.            | 4.08                 | 0.04                 | 4.04              | 4.87                 |
| Lincoln National Corp    | 3.84                 | 0.11                 | 3.73              | 9.24                 |
| EOG Resources Inc.       | 3.62                 | 0.48                 | 3.14              | 2.68                 |
| Ameriprise Financial Inc | 3.51                 | 0.13                 | 3.38              | 6.24                 |
| % of Portfolio           | 46.53                | 1.92                 | 44.61             |                      |

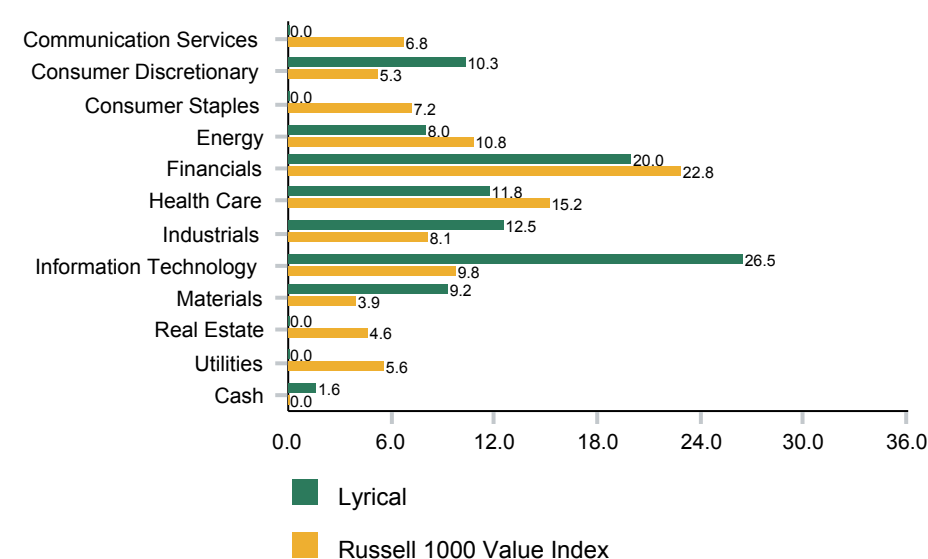
## Portfolio Characteristics

|                           | Portfolio      | Benchmark       |
|---------------------------|----------------|-----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 25,774,205,009 | 126,935,326,977 |
| Median Mkt. Cap (\$)      | 8,524,604,060  | 9,935,306,040   |
| Price/Earnings ratio      | 13.19          | 16.45           |
| Price/Book ratio          | 2.27           | 2.24            |
| 5 Yr. EPS Growth Rate (%) | 19.48          | 7.25            |
| Current Yield (%)         | 1.41           | 2.51            |
| Beta (5 Years, Monthly)   | 1.27           | 1.00            |
| Number of Stocks          | 34             | 727             |

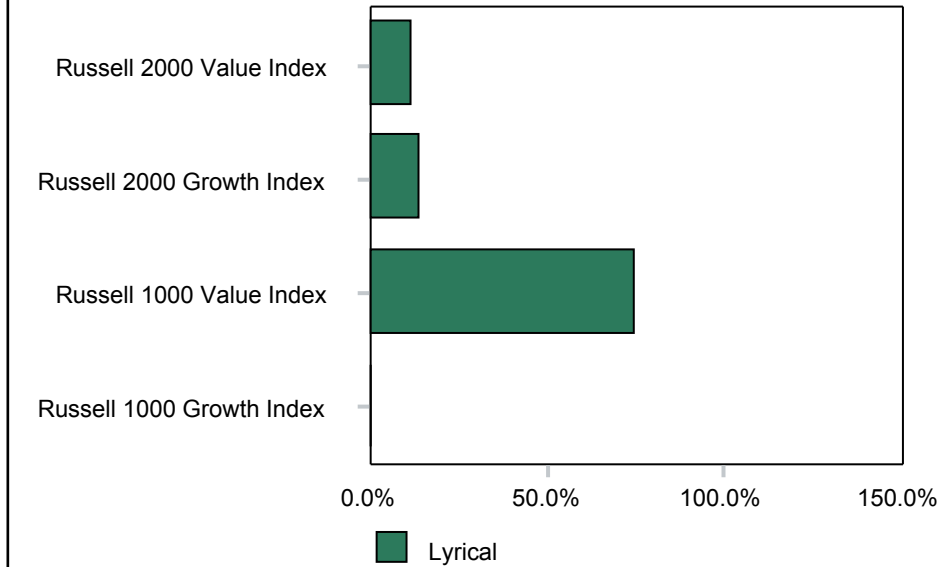
## Distribution of Market Capitalization (%)



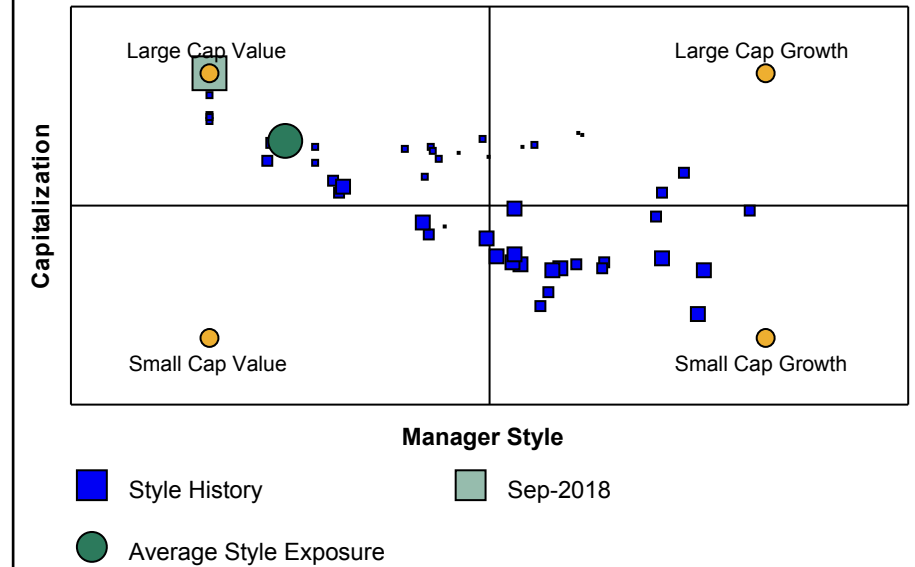
## Sector Weights (%)



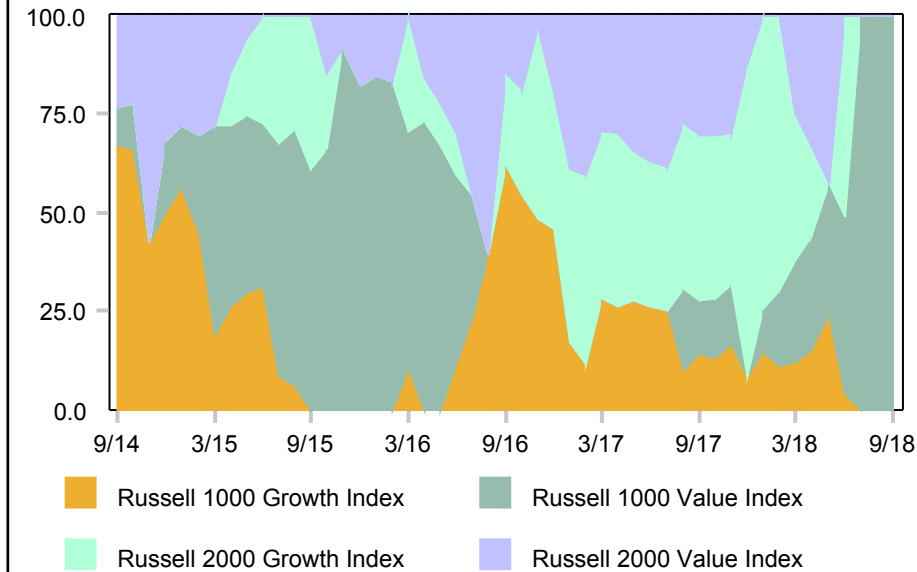
Investment Style Exposure



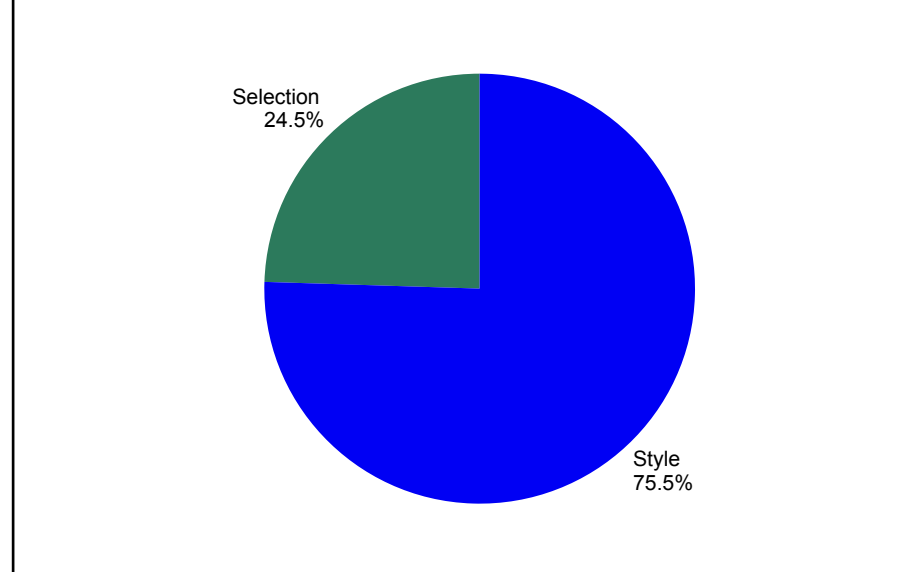
Style Map(ppp)



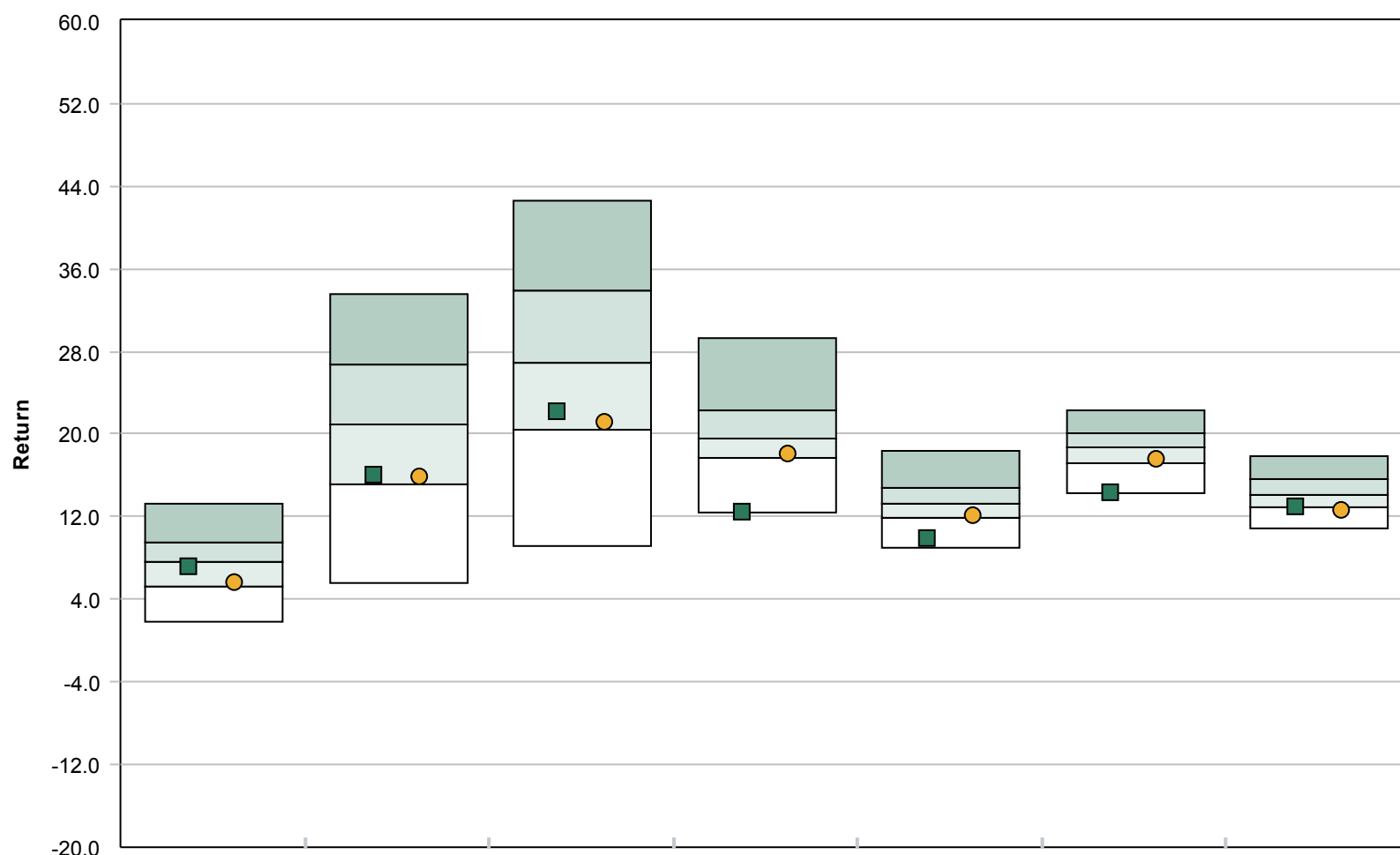
Style History(ppp)



Return Variance



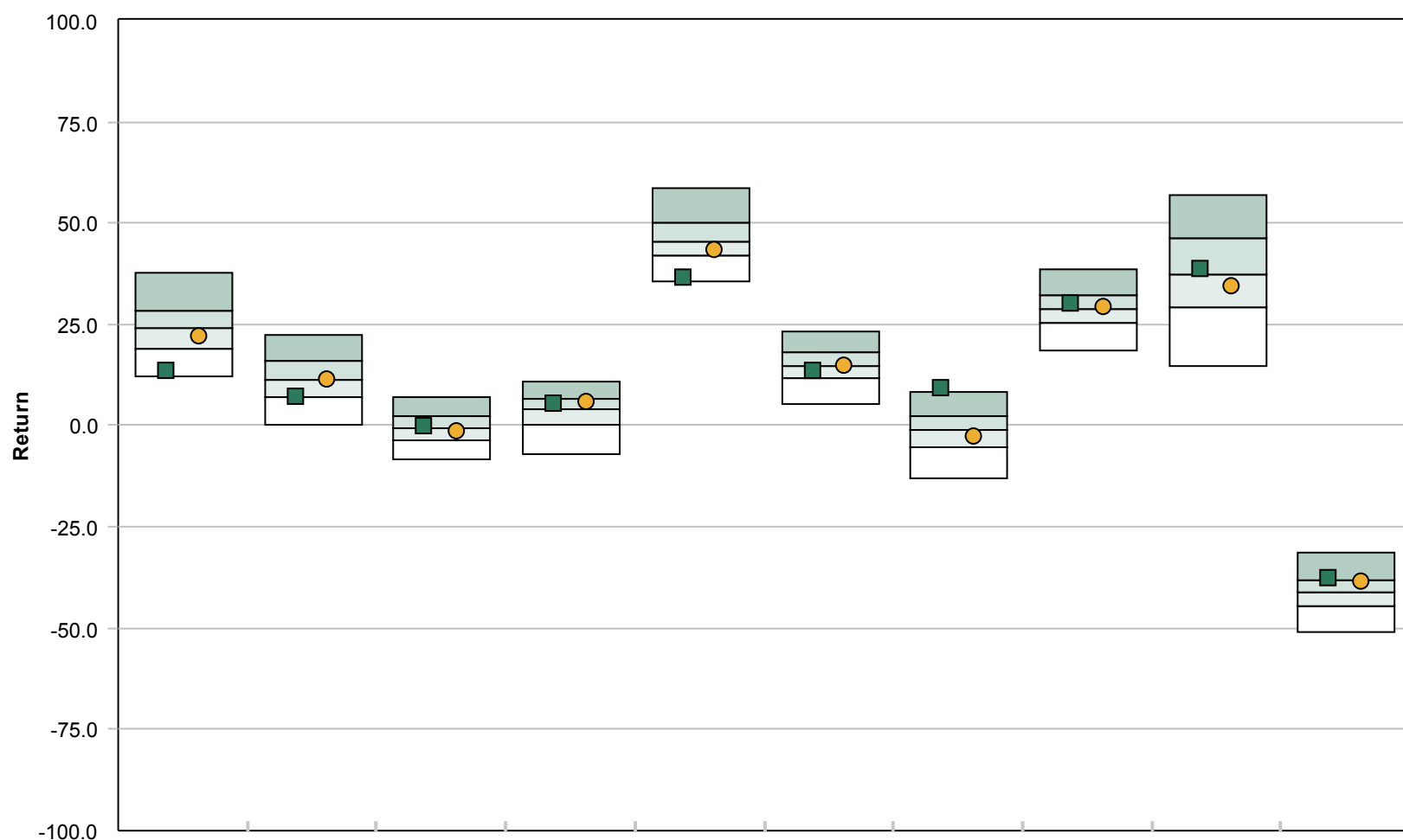
As of September 30, 2018



|                             |              |            |             |              |              |              |               |
|-----------------------------|--------------|------------|-------------|--------------|--------------|--------------|---------------|
|                             | <b>1 Qtr</b> | <b>YTD</b> | <b>1 Yr</b> | <b>3 Yrs</b> | <b>5 Yrs</b> | <b>7 Yrs</b> | <b>10 Yrs</b> |
| ■ Rice Hall James           | 7.15 (59)    | 16.01 (74) | 22.12 (69)  | 12.47 (94)   | 9.90 (90)    | 14.29 (96)   | 12.97 (74)    |
| ● Russell 2000 Growth Index | 5.52 (73)    | 15.76 (74) | 21.06 (74)  | 17.98 (72)   | 12.14 (70)   | 17.52 (70)   | 12.65 (79)    |
| 5th Percentile              | 13.18        | 33.57      | 42.59       | 29.29        | 18.32        | 22.37        | 17.89         |
| 1st Quartile                | 9.59         | 26.81      | 33.92       | 22.26        | 14.80        | 20.09        | 15.73         |
| Median                      | 7.71         | 20.97      | 26.92       | 19.56        | 13.35        | 18.69        | 14.04         |
| 3rd Quartile                | 5.32         | 15.16      | 20.45       | 17.63        | 11.93        | 17.15        | 12.91         |
| 95th Percentile             | 1.82         | 5.56       | 9.13        | 12.36        | 8.94         | 14.31        | 10.92         |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

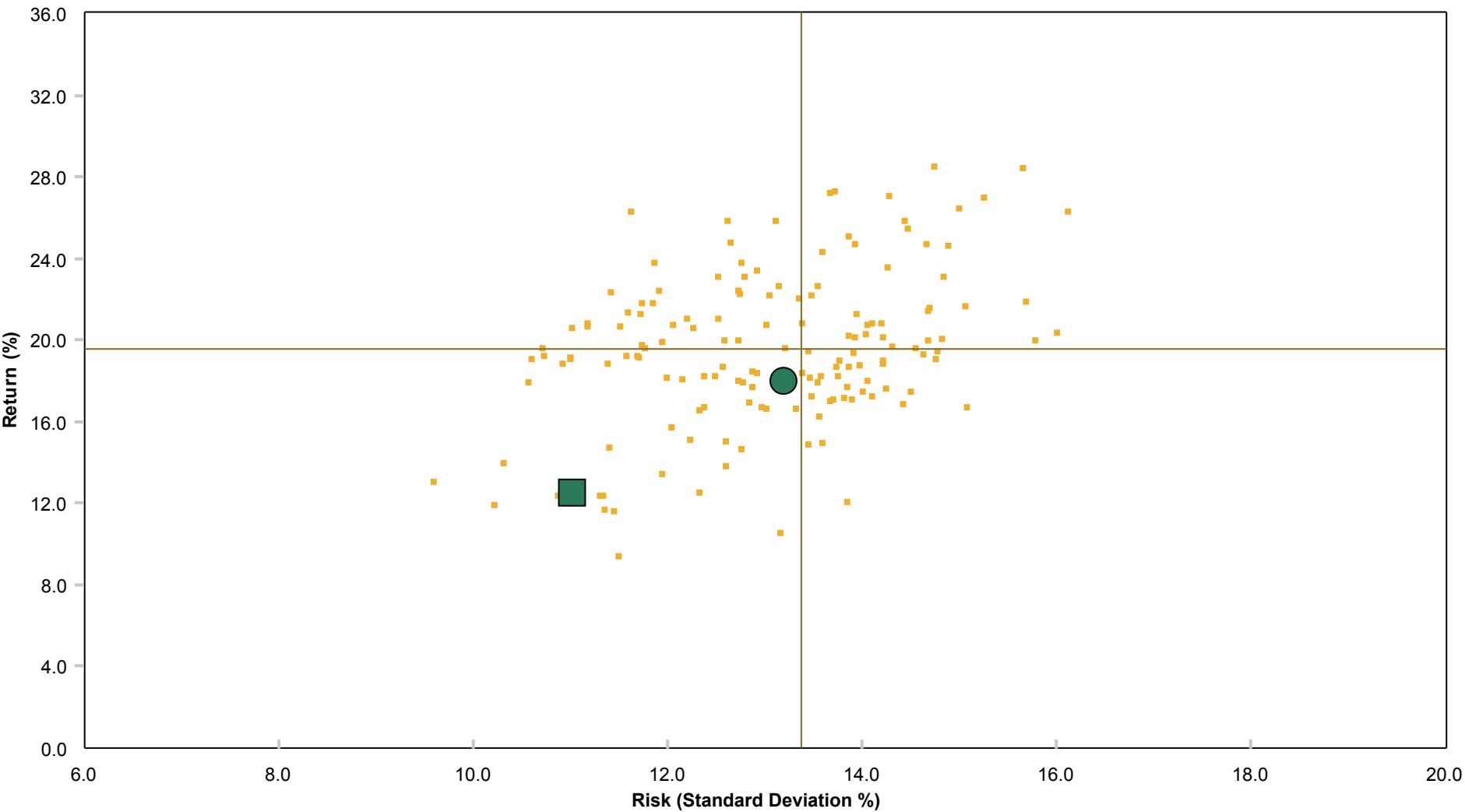
As of September 30, 2018



|                             |            |            |            |           |            |            |            |            |            |             |
|-----------------------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|-------------|
| ■ Rice Hall James           | 2017       | 2016       | 2015       | 2014      | 2013       | 2012       | 2011       | 2010       | 2009       | 2008        |
| ● Russell 2000 Growth Index | 13.28 (93) | 7.08 (77)  | -0.08 (43) | 5.41 (37) | 36.41 (93) | 13.30 (60) | 9.12 (5)   | 30.15 (39) | 38.55 (47) | -37.83 (23) |
|                             | 22.17 (58) | 11.32 (52) | -1.38 (56) | 5.60 (35) | 43.30 (67) | 14.59 (52) | -2.91 (61) | 29.09 (47) | 34.47 (61) | -38.54 (28) |

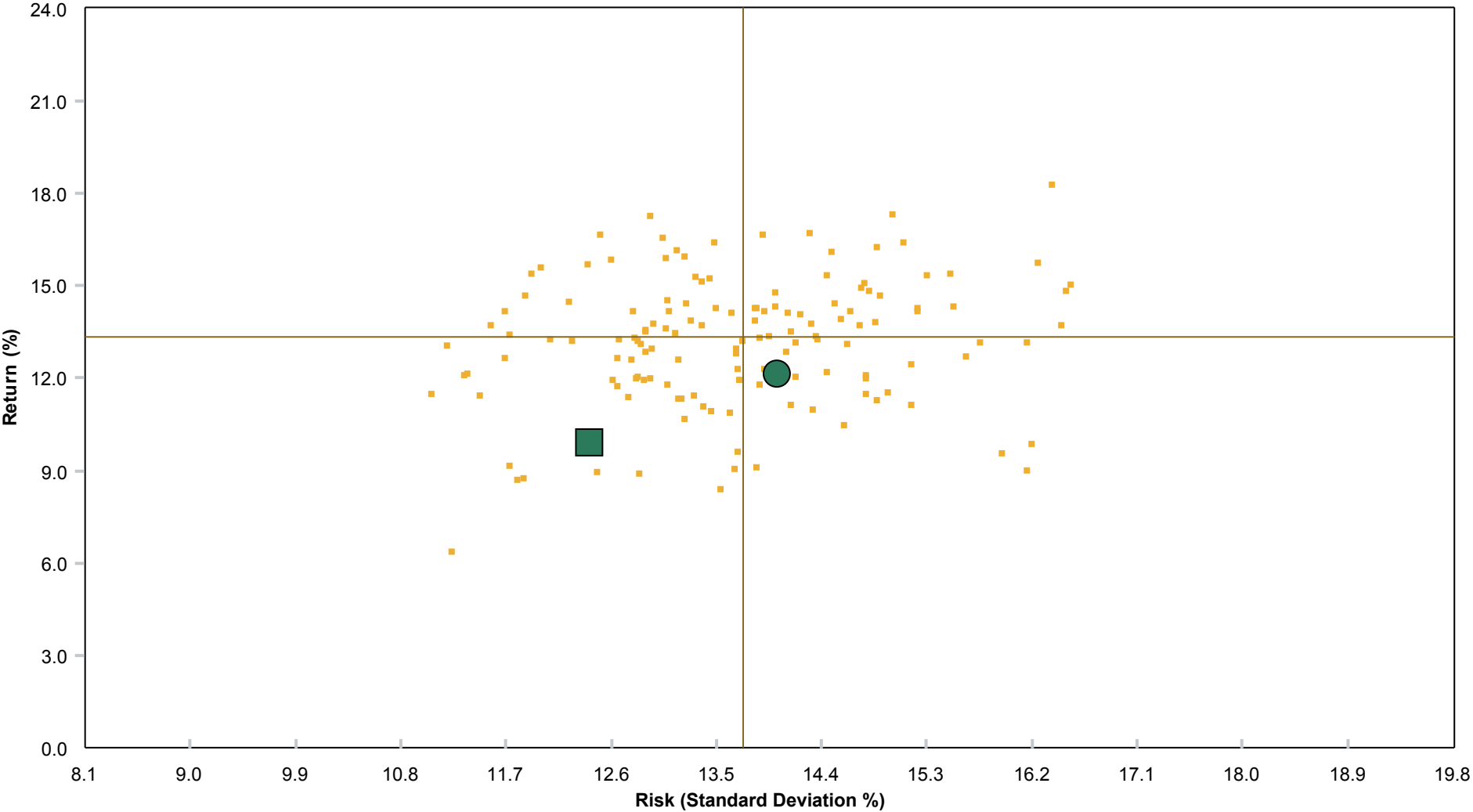
|                 |       |       |       |       |       |       |        |       |       |        |
|-----------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|--------|
| 5th Percentile  | 37.81 | 22.47 | 6.83  | 11.06 | 58.85 | 23.43 | 8.11   | 38.51 | 56.79 | -31.46 |
| 1st Quartile    | 28.56 | 16.07 | 2.27  | 6.68  | 50.26 | 18.16 | 2.46   | 32.32 | 46.22 | -38.14 |
| Median          | 23.91 | 11.40 | -0.74 | 4.13  | 45.47 | 14.74 | -1.23  | 28.74 | 37.40 | -41.17 |
| 3rd Quartile    | 19.10 | 7.18  | -3.64 | 0.36  | 41.98 | 11.62 | -5.27  | 25.45 | 29.07 | -44.73 |
| 95th Percentile | 12.36 | 0.14  | -8.52 | -7.03 | 35.61 | 5.36  | -13.00 | 18.63 | 14.53 | -51.16 |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



|                           | Return | Standard Deviation |
|---------------------------|--------|--------------------|
| Rice Hall James           | 12.47  | 11.02              |
| Russell 2000 Growth Index | 17.98  | 13.20              |
| Median                    | 19.56  | 13.37              |

Calculation based on monthly periodicity.



|                             | Return | Standard<br>Deviation |
|-----------------------------|--------|-----------------------|
| ■ Rice Hall James           | 9.90   | 12.43                 |
| ● Russell 2000 Growth Index | 12.14  | 14.02                 |
| — Median                    | 13.35  | 13.72                 |

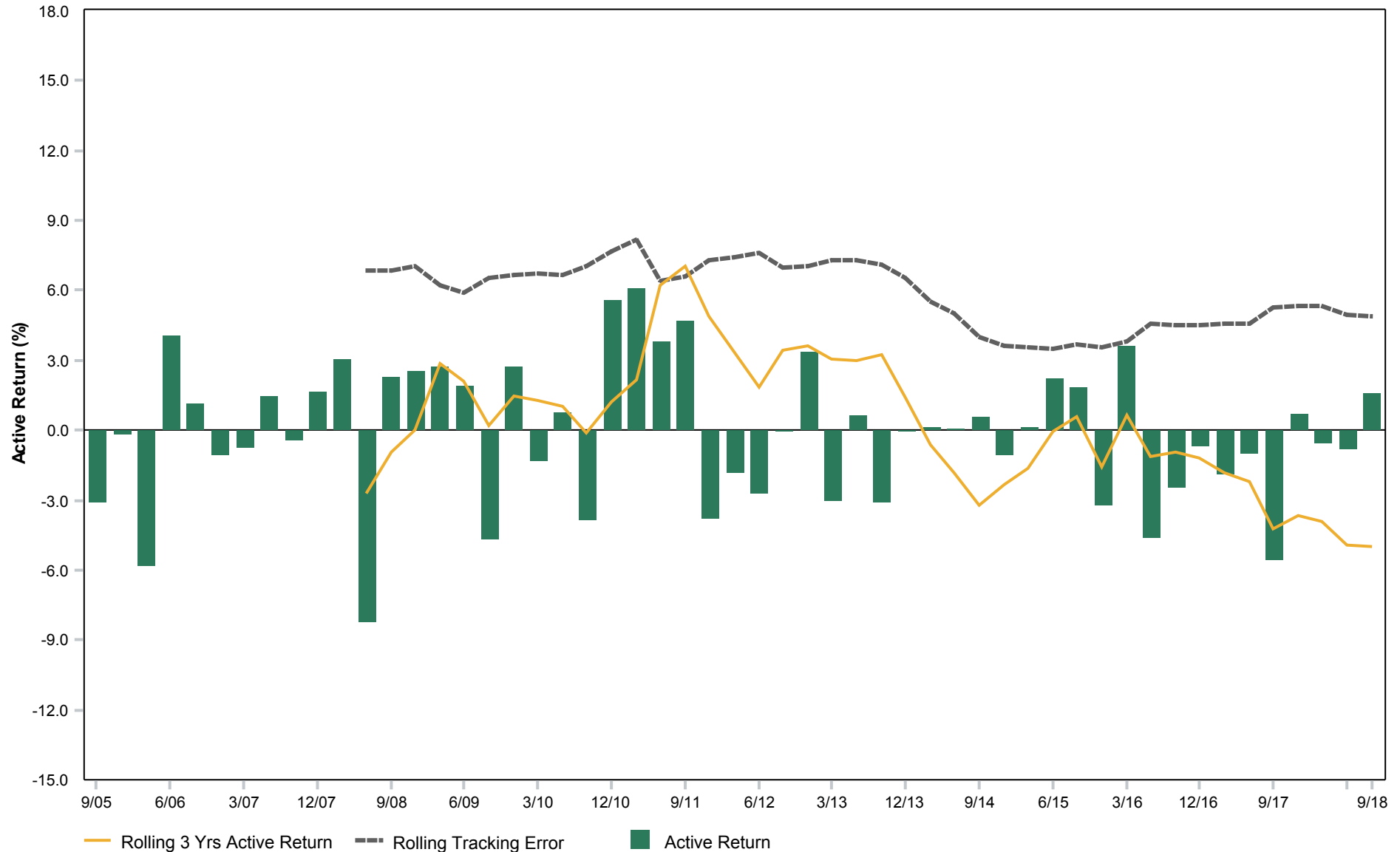
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                           | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015  | 2014  |
|---------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| Rice Hall James           | 7.15  | 16.01 | 22.12 | 12.47 | 9.90  | 14.29 | 12.97  | 13.28 | 7.08  | -0.08 | 5.41  |
| Russell 2000 Growth Index | 5.52  | 15.76 | 21.06 | 17.98 | 12.14 | 17.52 | 12.65  | 22.17 | 11.32 | -1.38 | 5.60  |
| Difference                | 1.63  | 0.25  | 1.06  | -5.51 | -2.24 | -3.23 | 0.32   | -8.89 | -4.24 | 1.30  | -0.19 |



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 7.80  
 Portfolio Trading -0.65  
 Actual Return 7.15  
 Benchmark Return 5.52  
 Actual Active Return 1.63

Stock Selection 2.49  
 Sector Selection -0.24  
 Interaction 0.09  
 Total Selection 2.33

Portfolio Trading -0.65  
 Benchmark Trading 0.06  
 Active Trading Impact -0.71

Buy & Hold Active Return 1.63

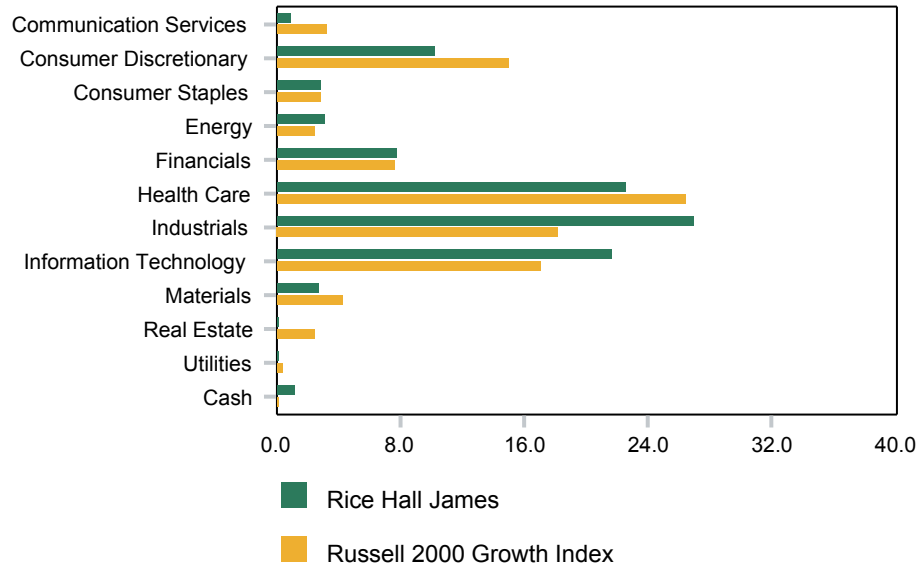
|                        | Allocation — 07/01/2018 |           | Performance — 1 Quarter<br>Ending September 30, 2018 |           | Stock | Attribution |             |       |
|------------------------|-------------------------|-----------|------------------------------------------------------|-----------|-------|-------------|-------------|-------|
|                        | Portfolio               | Benchmark | Portfolio                                            | Benchmark |       | Sector      | Interaction | Total |
| Communication Services | 0.97                    | 3.21      | -2.75                                                | 14.53     | -0.55 | -0.20       | 0.39        | -0.37 |
| Consumer Discretionary | 10.21                   | 14.93     | 8.62                                                 | 4.73      | 0.58  | 0.03        | -0.18       | 0.43  |
| Consumer Staples       | 2.88                    | 2.90      | -6.33                                                | 2.95      | -0.27 | 0.00        | 0.00        | -0.27 |
| Energy                 | 3.14                    | 2.43      | -9.18                                                | -6.45     | -0.07 | -0.08       | -0.02       | -0.17 |
| Financials             | 7.72                    | 7.67      | 1.46                                                 | 1.74      | -0.02 | 0.00        | 0.00        | -0.02 |
| Health Care            | 22.53                   | 26.46     | 16.58                                                | 7.59      | 2.38  | -0.08       | -0.35       | 1.94  |
| Industrials            | 26.95                   | 18.18     | 2.99                                                 | 3.99      | -0.18 | -0.13       | -0.09       | -0.40 |
| Information Technology | 21.71                   | 17.03     | 13.35                                                | 8.14      | 0.89  | 0.13        | 0.24        | 1.26  |
| Materials              | 2.66                    | 4.27      | -5.12                                                | 1.04      | -0.26 | 0.07        | 0.10        | -0.09 |
| Real Estate            | 0.00                    | 2.50      | 0.00                                                 | 1.85      | 0.00  | 0.09        | 0.00        | 0.09  |
| Utilities              | 0.00                    | 0.41      | 0.00                                                 | 4.47      | 0.00  | 0.00        | 0.00        | 0.00  |
| Cash                   | 1.22                    | 0.00      | 0.00                                                 | 0.00      | 0.00  | -0.07       | 0.00        | -0.07 |
| Total                  | 100.00                  | 100.00    | 7.80                                                 | 5.46      | 2.49  | -0.24       | 0.09        | 2.33  |

## Bristol County Retirement System

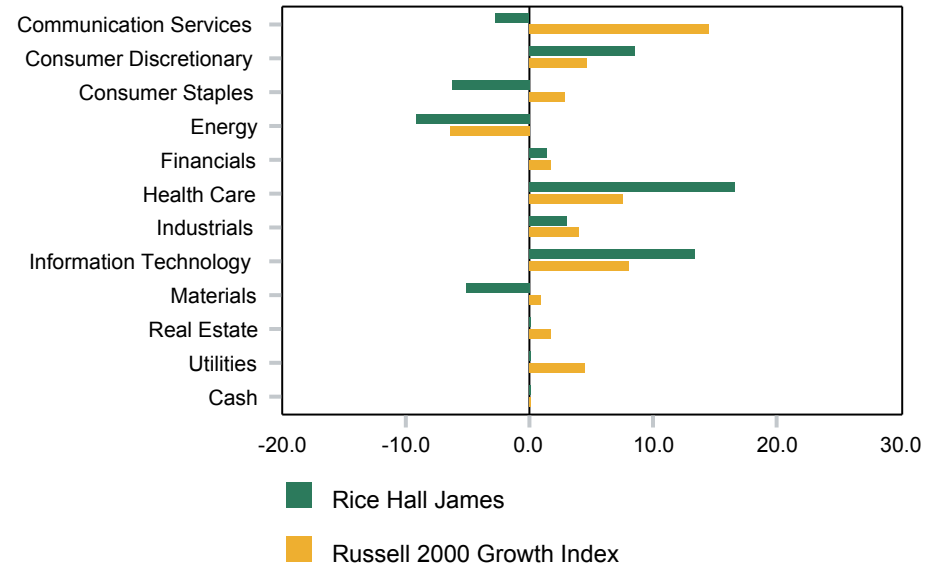
## Buy and Hold Sector Attribution Graph

1 Quarter Ending September 30, 2018

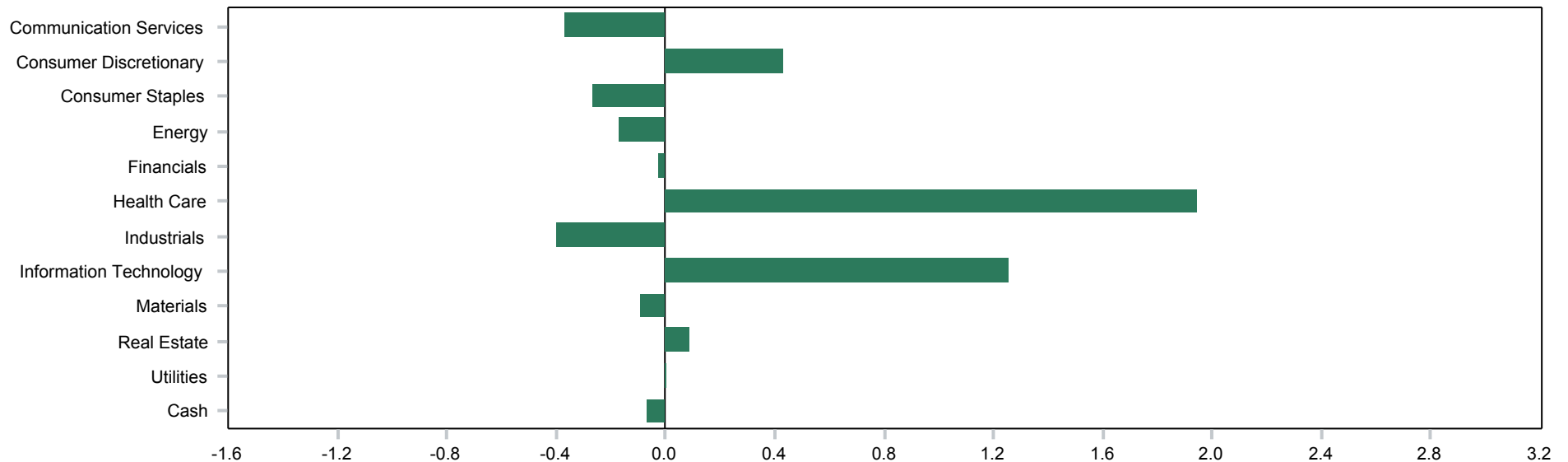
### Allocation



### Performance



### Total Attribution



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 7.80  
 Portfolio Trading -0.65  
 Actual Return 7.15  
 Benchmark Return 5.52  
 Actual Active Return 1.63

Stock Selection 3.74  
 Style Selection -1.71  
 Interaction 0.31  
 Total Selection 2.33

Portfolio Trading -0.65  
 Benchmark Trading 0.06  
 Active Trading Impact -0.71

Buy & Hold Active Return 1.63

**Performance-1 Quarter Ending  
 September 30, 2018**

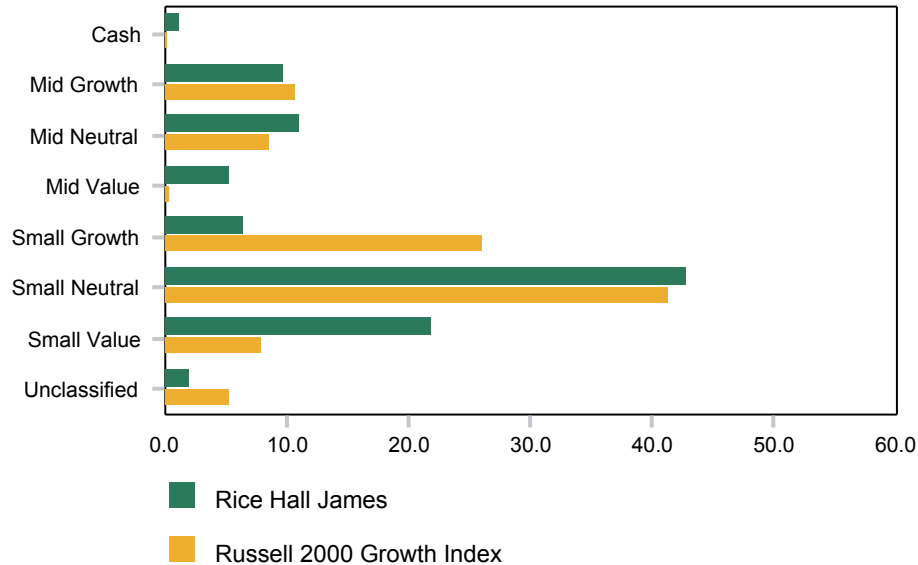
|               | <b>Allocation-07/01/2018</b> |                  | <b>Performance-1 Quarter Ending<br/>September 30, 2018</b> |                  | <b>Attribution</b> |              |                    |              |
|---------------|------------------------------|------------------|------------------------------------------------------------|------------------|--------------------|--------------|--------------------|--------------|
|               | <b>Portfolio</b>             | <b>Benchmark</b> | <b>Portfolio</b>                                           | <b>Benchmark</b> | <b>Stock</b>       | <b>Style</b> | <b>Interaction</b> | <b>Total</b> |
| Cash          | 1.22                         | 0.00             | 0.00                                                       | 0.00             | 0.00               | -0.07        | 0.00               | -0.07        |
| Mid Growth    | 9.65                         | 10.71            | 24.01                                                      | 10.58            | 1.44               | -0.05        | -0.14              | 1.24         |
| Mid Neutral   | 10.92                        | 8.47             | 0.25                                                       | 1.81             | -0.13              | -0.09        | -0.04              | -0.26        |
| Mid Value     | 5.23                         | 0.39             | 1.13                                                       | 3.00             | -0.01              | -0.12        | -0.09              | -0.22        |
| Small Growth  | 6.45                         | 26.02            | 3.84                                                       | 6.93             | -0.80              | -0.29        | 0.60               | -0.49        |
| Small Neutral | 42.75                        | 41.39            | 9.95                                                       | 5.62             | 1.79               | 0.00         | 0.06               | 1.85         |
| Small Value   | 21.82                        | 7.80             | 1.78                                                       | -2.59            | 0.34               | -1.13        | 0.61               | -0.18        |
| Unclassified  | 1.96                         | 5.22             | 25.84                                                      | 4.54             | 1.11               | 0.03         | -0.69              | 0.45         |
| Total         | 100.00                       | 100.00           | 7.80                                                       | 5.46             | 3.74               | -1.71        | 0.31               | 2.33         |

## Bristol County Retirement System

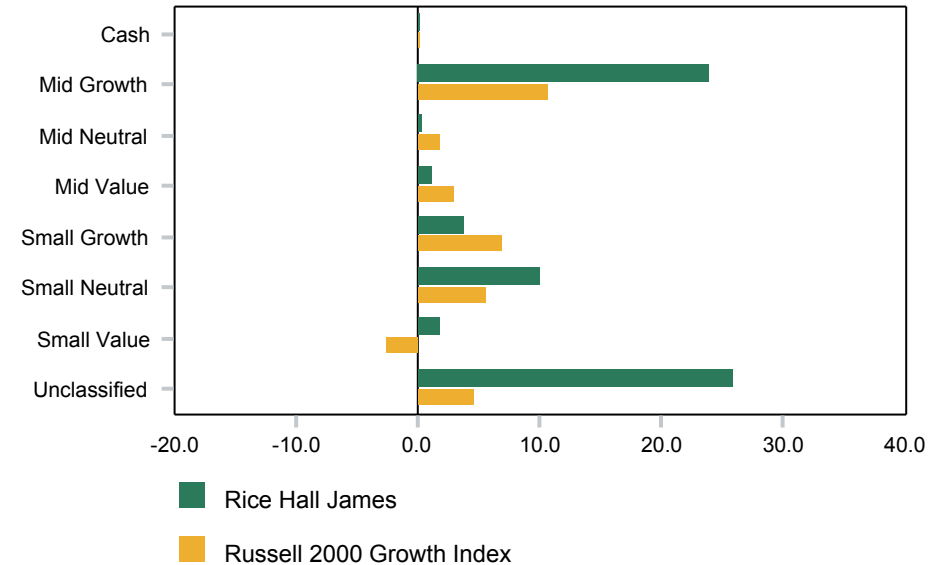
## Buy and Hold Style Attribution Graph

1 Quarter Ending September 30, 2018

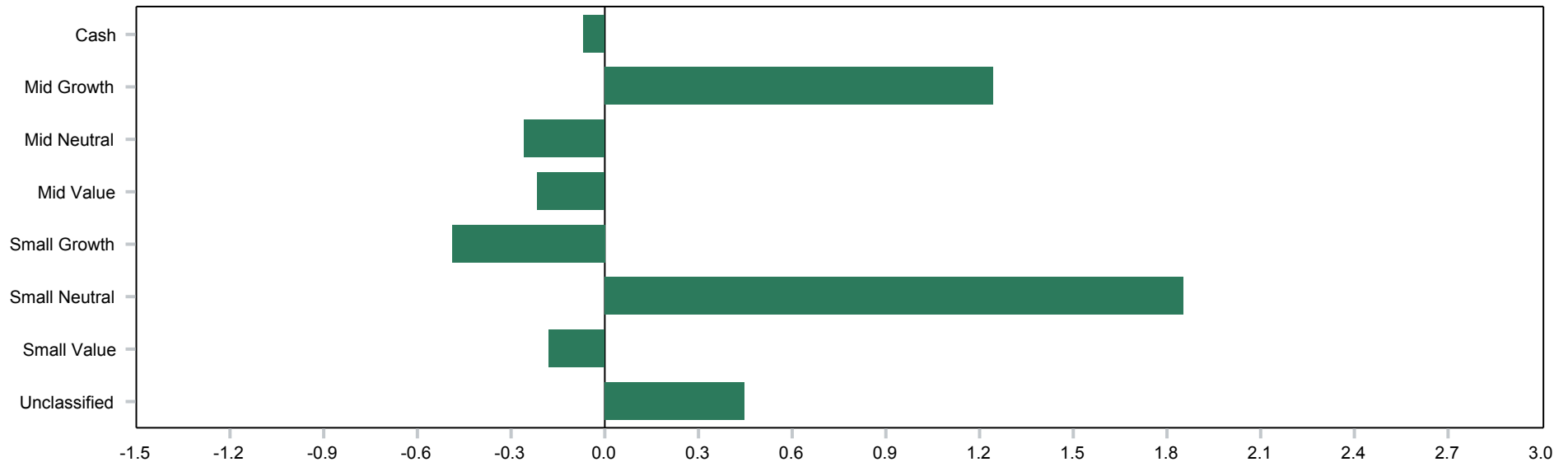
### Allocation



### Performance



### Total Attribution



## Bristol County Retirement System

Rice Hall James

As of September 30, 2018

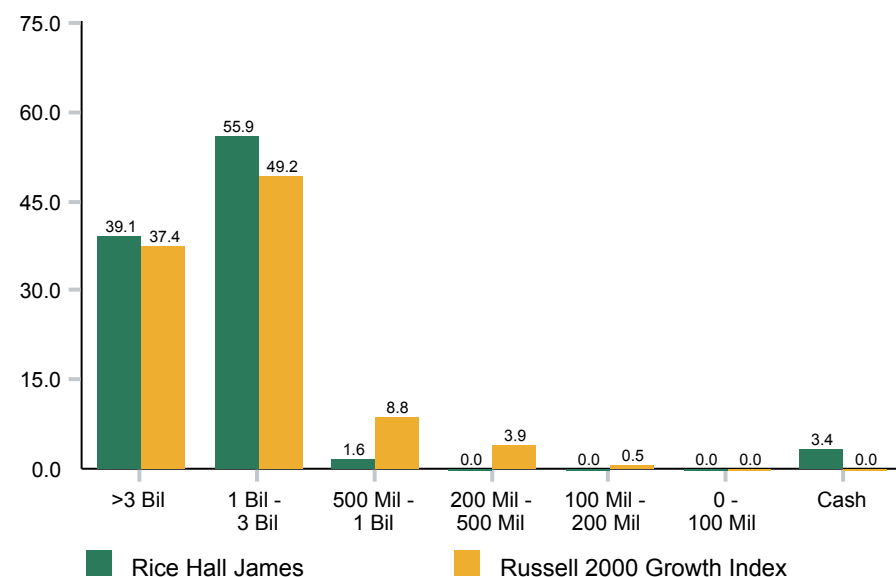
### Top Ten Equity Holdings

|                                   | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|-----------------------------------|----------------------|----------------------|-------------------|----------------------|
| BioTelemetry Inc                  | 2.56                 | 0.18                 | 2.38              | 43.22                |
| Premier Inc                       | 2.35                 | 0.00                 | 2.35              | 25.84                |
| Dave & Buster's Entertainment Inc | 2.35                 | 0.23                 | 2.12              | 39.44                |
| Integrated Device Technology Inc. | 2.28                 | 0.52                 | 1.76              | 47.46                |
| SPX FLOW Inc                      | 2.26                 | 0.00                 | 2.26              | 18.80                |
| NuVasive Inc                      | 2.23                 | 0.31                 | 1.92              | 36.19                |
| Childrens Place Inc (The)         | 2.15                 | 0.18                 | 1.97              | 6.17                 |
| Strategic Education Inc           | 2.14                 | 0.24                 | 1.90              | 21.70                |
| Emergent BioSolutions Inc         | 2.14                 | 0.25                 | 1.89              | 30.38                |
| MasTec Inc.                       | 2.13                 | 0.25                 | 1.88              | -12.02               |
| % of Portfolio                    | 22.59                | 2.16                 | 20.43             |                      |

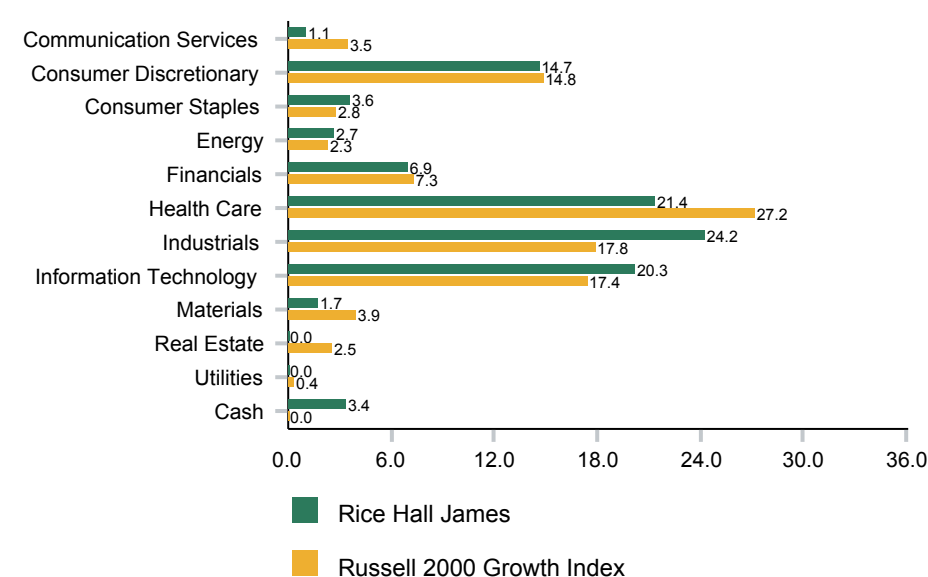
### Portfolio Characteristics

|                           | Portfolio     | Benchmark     |
|---------------------------|---------------|---------------|
| Wtd. Avg. Mkt. Cap (\$)   | 3,052,117,586 | 2,645,563,149 |
| Median Mkt. Cap (\$)      | 2,474,484,170 | 1,042,920,070 |
| Price/Earnings ratio      | 26.52         | 25.36         |
| Price/Book ratio          | 2.82          | 4.49          |
| 5 Yr. EPS Growth Rate (%) | 18.81         | 17.52         |
| Current Yield (%)         | 0.54          | 0.61          |
| Beta (5 Years, Monthly)   | 0.80          | 1.00          |
| Number of Stocks          | 58            | 1,253         |

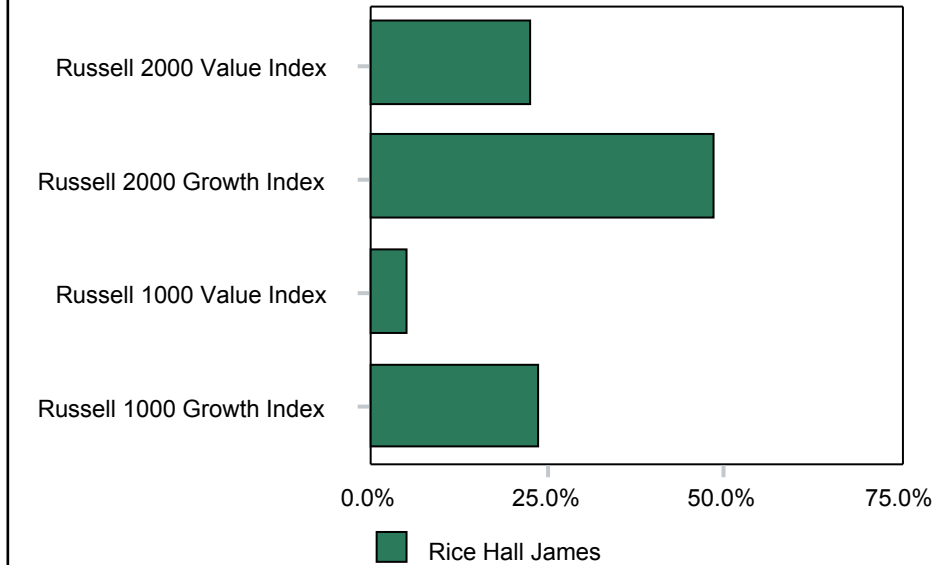
### Distribution of Market Capitalization (%)



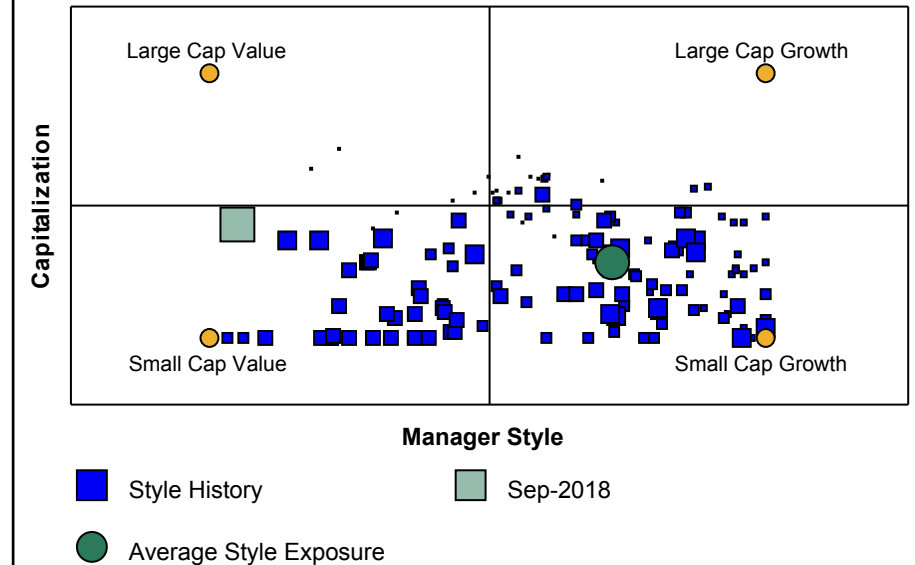
### Sector Weights (%)



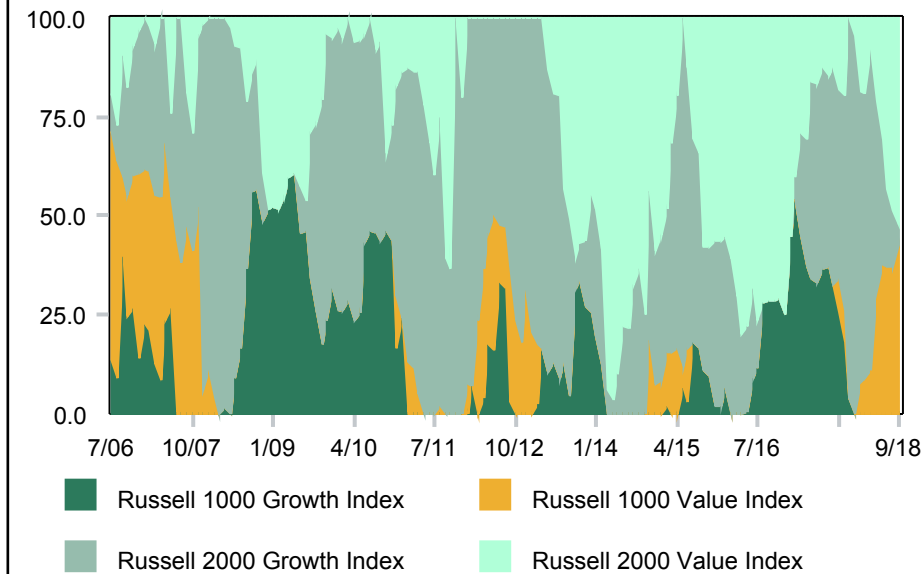
Investment Style Exposure



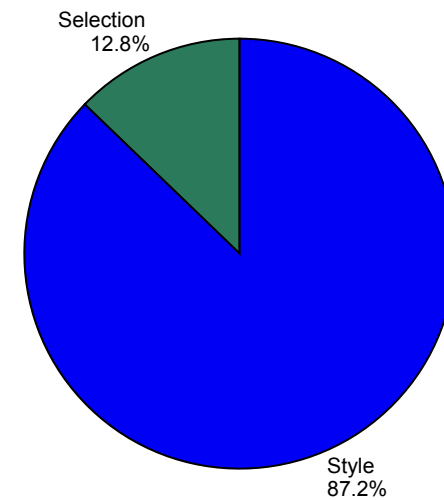
Style Map(ppp)



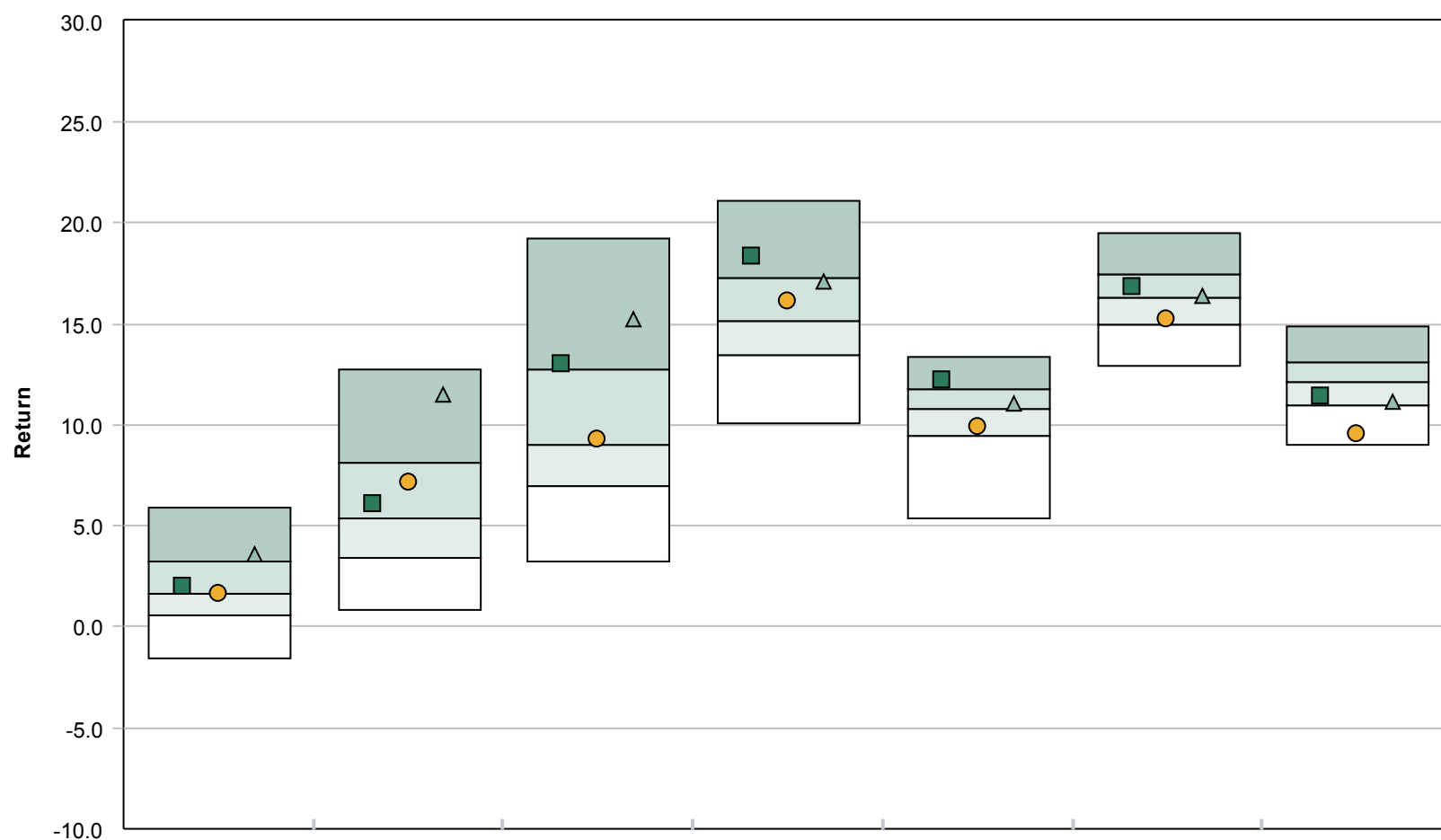
Style History(ppp)



Return Variance



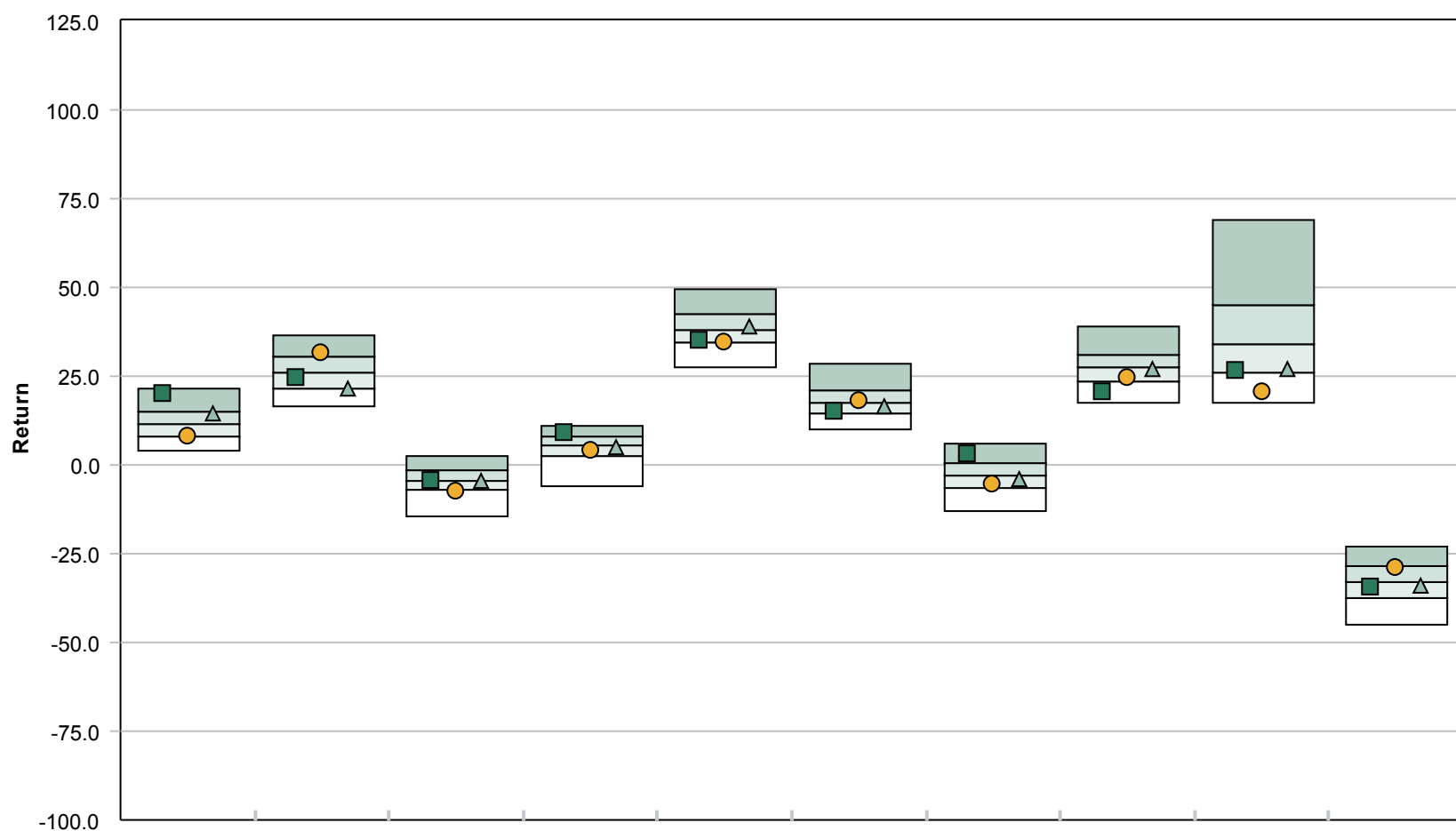
As of September 30, 2018



|                            | 1 Qtr     | YTD       | 1 Yr       | 3 Yrs      | 5 Yrs      | 7 Yrs      | 10 Yrs     |
|----------------------------|-----------|-----------|------------|------------|------------|------------|------------|
| ■ Earnest Partners         | 1.98 (46) | 6.08 (44) | 13.04 (22) | 18.38 (16) | 12.22 (18) | 16.84 (39) | 11.38 (65) |
| ● Russell 2000 Value Index | 1.60 (51) | 7.14 (33) | 9.33 (49)  | 16.12 (35) | 9.91 (67)  | 15.26 (72) | 9.52 (94)  |
| ▲ Russell 2000 Index       | 3.58 (24) | 11.51 (9) | 15.24 (15) | 17.12 (27) | 11.07 (43) | 16.43 (47) | 11.11 (72) |
| 5th Percentile             | 5.91      | 12.78     | 19.28      | 21.15      | 13.38      | 19.50      | 14.90      |
| 1st Quartile               | 3.28      | 8.10      | 12.72      | 17.30      | 11.76      | 17.46      | 13.15      |
| Median                     | 1.62      | 5.37      | 9.07       | 15.12      | 10.77      | 16.31      | 12.09      |
| 3rd Quartile               | 0.54      | 3.46      | 7.02       | 13.44      | 9.44       | 14.95      | 11.00      |
| 95th Percentile            | -1.58     | 0.85      | 3.25       | 10.09      | 5.37       | 12.96      | 9.02       |

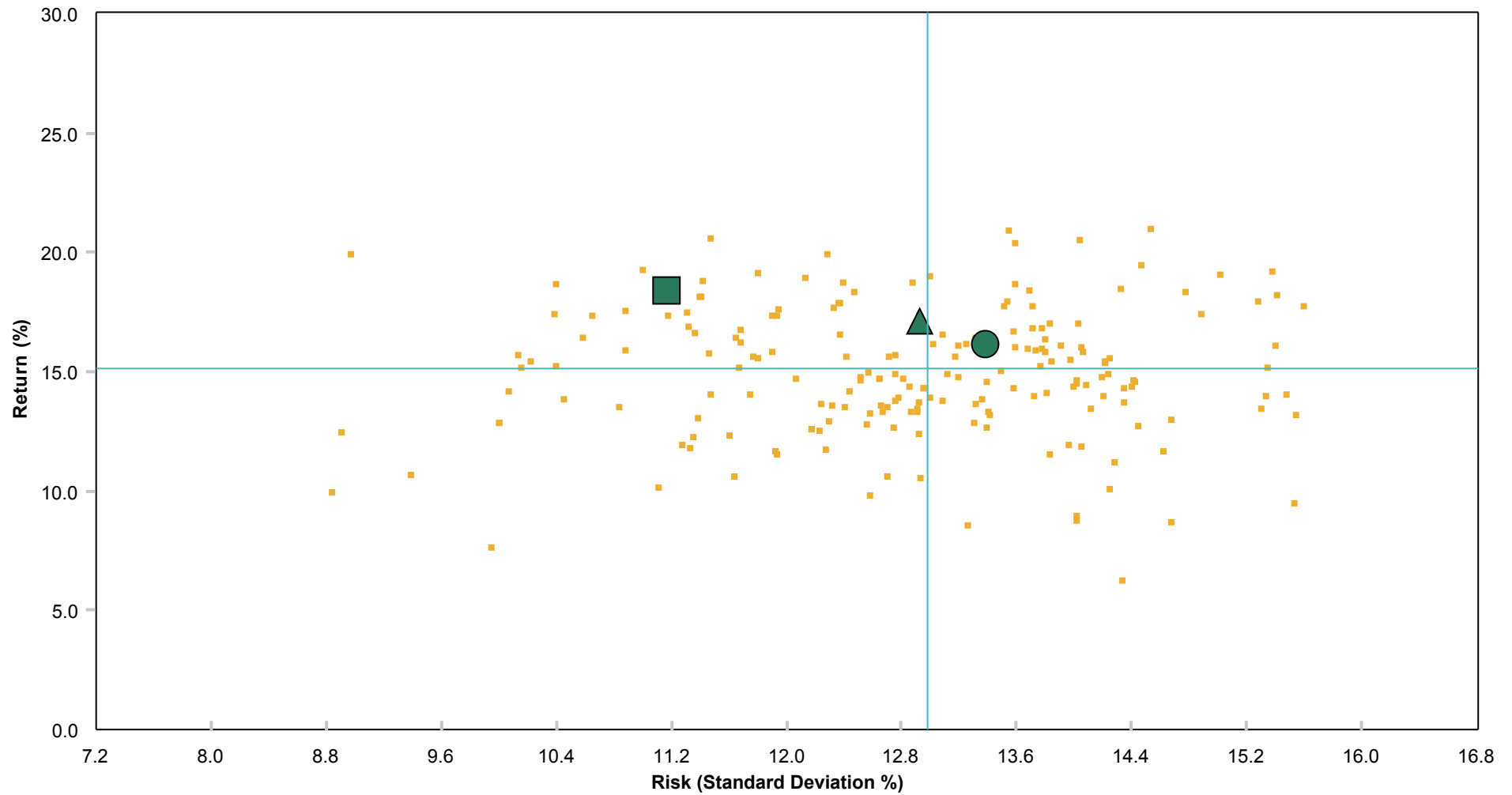
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018



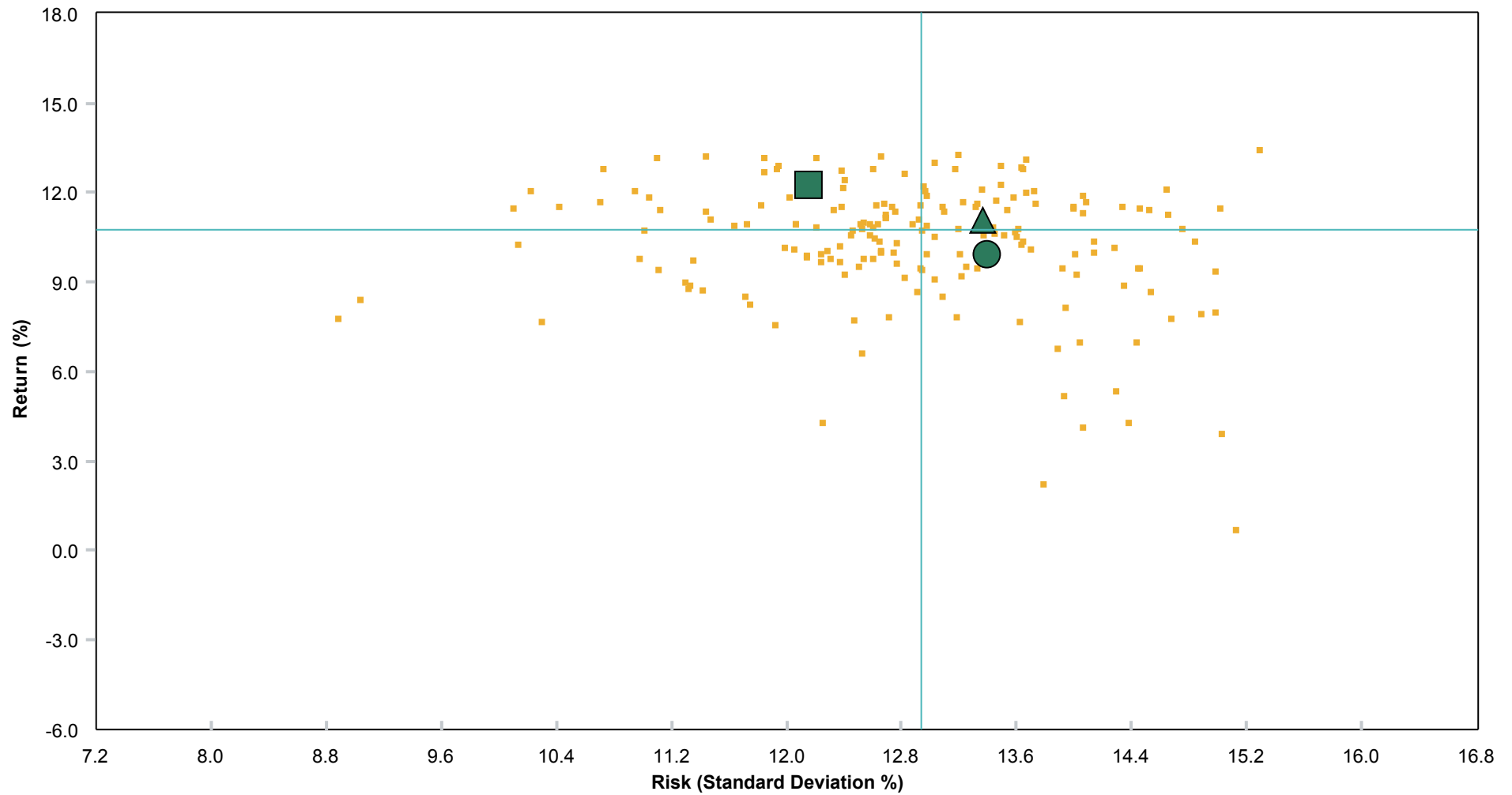
|                            | 2017       | 2016       | 2015       | 2014      | 2013       | 2012       | 2011       | 2010       | 2009       | 2008        |
|----------------------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|-------------|
| ■ Earnest Partners         | 20.01 (7)  | 24.39 (61) | -4.51 (54) | 8.89 (14) | 34.88 (74) | 14.90 (74) | 2.76 (12)  | 20.45 (90) | 26.39 (74) | -34.48 (60) |
| ● Russell 2000 Value Index | 7.84 (76)  | 31.74 (17) | -7.47 (78) | 4.22 (66) | 34.52 (75) | 18.05 (47) | -5.50 (69) | 24.50 (71) | 20.58 (87) | -28.92 (28) |
| ▲ Russell 2000 Index       | 14.65 (26) | 21.31 (78) | -4.41 (52) | 4.89 (58) | 38.82 (47) | 16.35 (61) | -4.18 (60) | 26.85 (55) | 27.17 (71) | -33.79 (57) |
| 5th Percentile             | 21.46      | 36.53      | 2.29       | 11.25     | 49.30      | 28.61      | 6.08       | 39.00      | 68.77      | -22.98      |
| 1st Quartile               | 14.88      | 30.31      | -1.71      | 7.93      | 42.29      | 21.19      | 0.75       | 31.03      | 45.11      | -28.45      |
| Median                     | 11.61      | 26.17      | -4.29      | 5.71      | 38.07      | 17.55      | -3.15      | 27.51      | 34.20      | -32.76      |
| 3rd Quartile               | 7.86       | 21.55      | -6.97      | 2.27      | 34.41      | 14.72      | -6.44      | 23.72      | 25.90      | -37.53      |
| 95th Percentile            | 3.93       | 16.35      | -14.58     | -6.20     | 27.38      | 10.00      | -13.09     | 17.68      | 17.54      | -45.11      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



|                            | Return | Standard<br>Deviation |
|----------------------------|--------|-----------------------|
| ■ Earnest Partners         | 18.38  | 11.17                 |
| ● Russell 2000 Value Index | 16.12  | 13.39                 |
| ▲ Russell 2000 Index       | 17.12  | 12.93                 |
| — Median                   | 15.12  | 12.98                 |

Calculation based on monthly periodicity.



|                            | Return | Standard<br>Deviation |
|----------------------------|--------|-----------------------|
| ■ Earnest Partners         | 12.22  | 12.16                 |
| ● Russell 2000 Value Index | 9.91   | 13.40                 |
| ▲ Russell 2000 Index       | 11.07  | 13.36                 |
| — Median                   | 10.77  | 12.94                 |

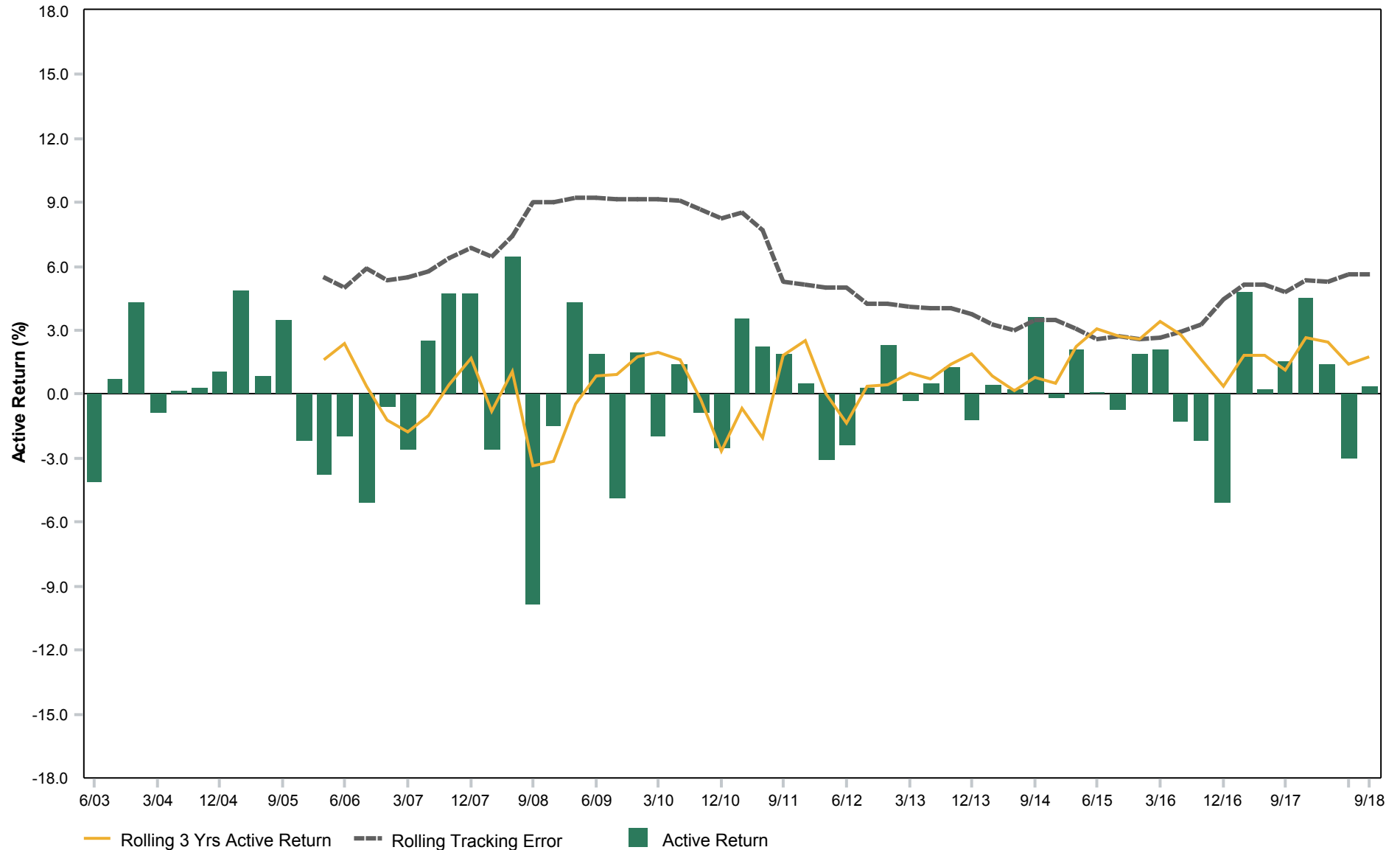
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                          | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015  | 2014 |
|--------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|------|
| Earnest Partners         | 1.98  | 6.08  | 13.04 | 18.38 | 12.22 | 16.84 | 11.38  | 20.01 | 24.39 | -4.51 | 8.89 |
| Russell 2000 Value Index | 1.60  | 7.14  | 9.33  | 16.12 | 9.91  | 15.26 | 9.52   | 7.84  | 31.74 | -7.47 | 4.22 |
| Difference               | 0.38  | -1.06 | 3.71  | 2.26  | 2.31  | 1.58  | 1.86   | 12.17 | -7.35 | 2.96  | 4.67 |



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 1.87  
 Portfolio Trading 0.11  
 Actual Return 1.98  
 Benchmark Return 1.60  
 Actual Active Return 0.38

Stock Selection -0.29  
 Sector Selection 0.24  
 Interaction 0.32  
 Total Selection 0.27

Portfolio Trading 0.11  
 Benchmark Trading 0.01  
 Active Trading Impact 0.11

Buy & Hold Active Return 0.38

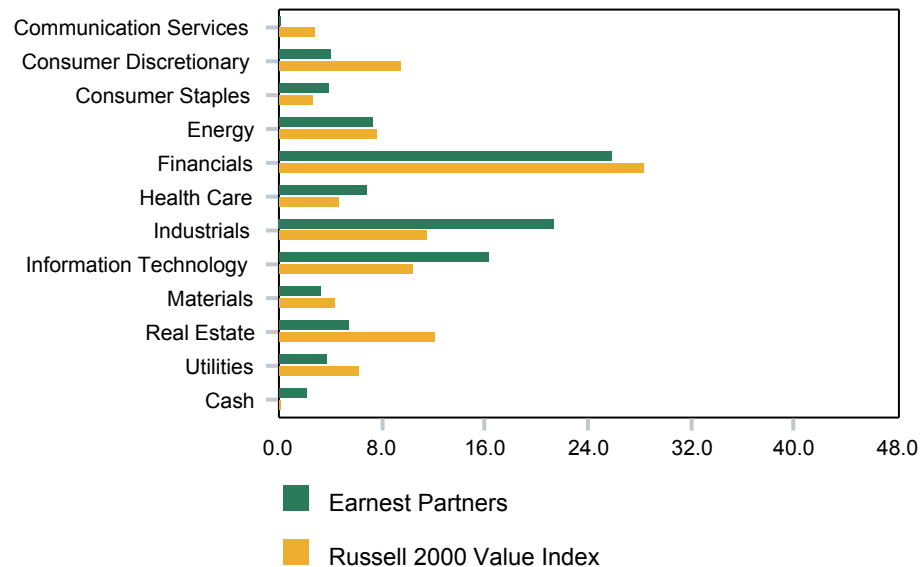
|                        | Allocation — 07/01/2018 |           | Performance — 1 Quarter<br>Ending September 30, 2018 |           | Stock | Attribution |             |       |
|------------------------|-------------------------|-----------|------------------------------------------------------|-----------|-------|-------------|-------------|-------|
|                        | Portfolio               | Benchmark | Portfolio                                            | Benchmark |       | Sector      | Interaction | Total |
| Communication Services | 0.00                    | 2.76      | 0.00                                                 | 10.35     | 0.00  | -0.24       | 0.00        | -0.24 |
| Consumer Discretionary | 4.01                    | 9.44      | 1.62                                                 | 1.83      | -0.02 | -0.01       | 0.01        | -0.02 |
| Consumer Staples       | 3.83                    | 2.69      | -13.50                                               | -6.81     | -0.18 | -0.10       | -0.08       | -0.35 |
| Energy                 | 7.27                    | 7.60      | -6.72                                                | -1.80     | -0.37 | 0.01        | 0.02        | -0.35 |
| Financials             | 25.84                   | 28.30     | -0.77                                                | 0.69      | -0.41 | 0.02        | 0.04        | -0.35 |
| Health Care            | 6.86                    | 4.65      | 12.82                                                | 7.46      | 0.25  | 0.13        | 0.12        | 0.50  |
| Industrials            | 21.37                   | 11.53     | 9.07                                                 | 5.06      | 0.46  | 0.34        | 0.39        | 1.20  |
| Information Technology | 16.25                   | 10.34     | 0.30                                                 | 1.63      | -0.14 | 0.00        | -0.08       | -0.21 |
| Materials              | 3.31                    | 4.41      | -1.09                                                | 1.22      | -0.10 | 0.00        | 0.03        | -0.07 |
| Real Estate            | 5.36                    | 12.06     | 1.22                                                 | -0.84     | 0.25  | 0.16        | -0.14       | 0.27  |
| Utilities              | 3.69                    | 6.23      | 3.04                                                 | 3.43      | -0.02 | -0.05       | 0.01        | -0.06 |
| Cash                   | 2.21                    | 0.00      | 0.00                                                 | 0.00      | 0.00  | -0.04       | 0.00        | -0.04 |
| Total                  | 100.00                  | 100.00    | 1.87                                                 | 1.60      | -0.29 | 0.24        | 0.32        | 0.27  |

## Bristol County Retirement System

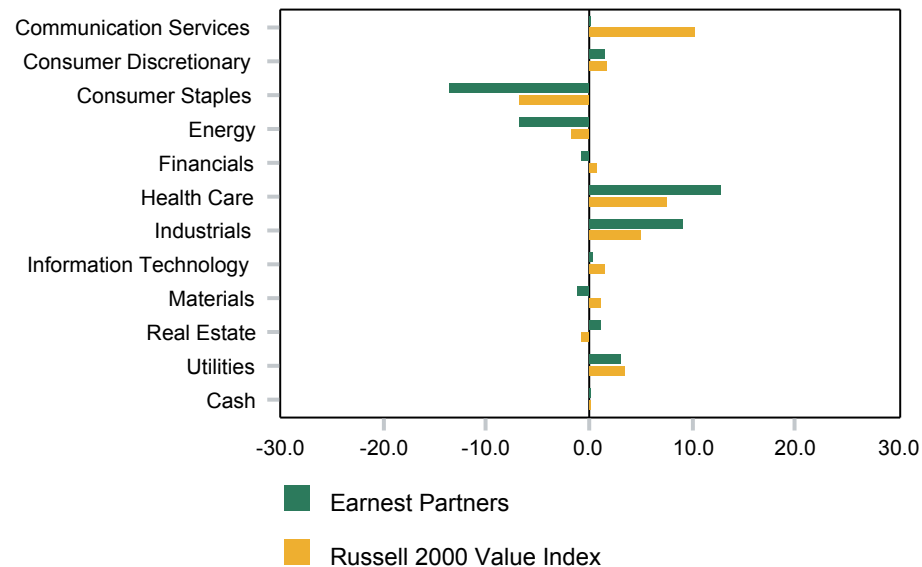
## Buy and Hold Sector Attribution Graph

1 Quarter Ending September 30, 2018

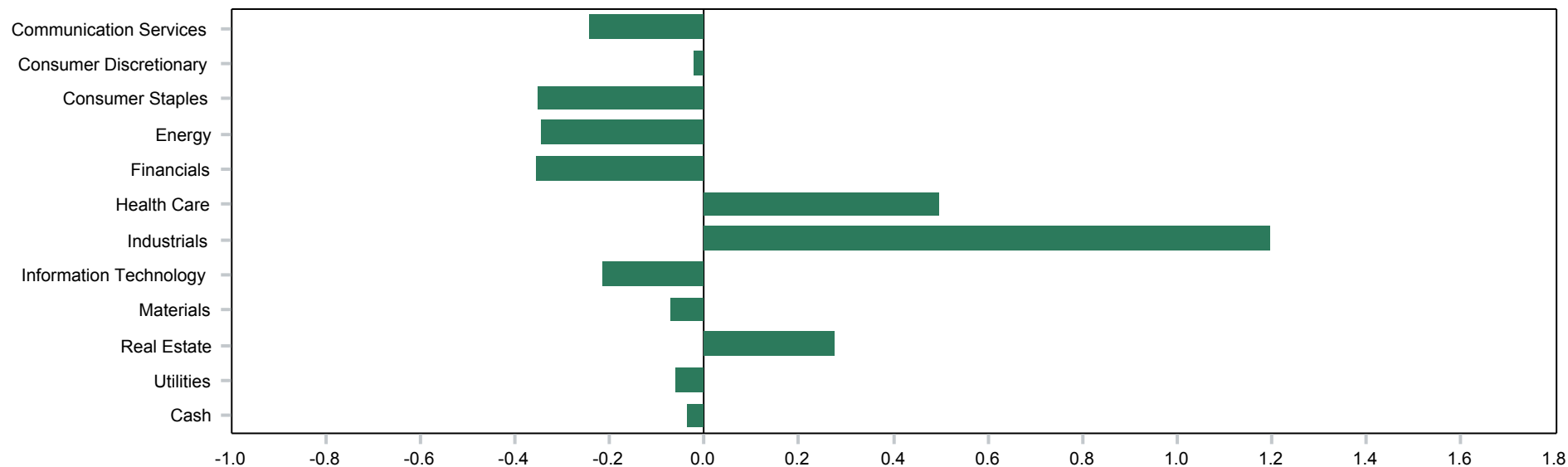
### Allocation



### Performance



### Total Attribution



1 Quarter Ending September 30, 2018

Buy-and-Hold Portfolio 1.87  
 Portfolio Trading 0.11  
 Actual Return 1.98  
 Benchmark Return 1.60  
 Actual Active Return 0.38

Stock Selection -0.52  
 Style Selection -0.17  
 Interaction 0.97  
 Total Selection 0.27

Portfolio Trading 0.11  
 Benchmark Trading 0.01  
 Active Trading Impact 0.11

Buy & Hold Active Return 0.38

**Performance-1 Quarter Ending  
September 30, 2018**

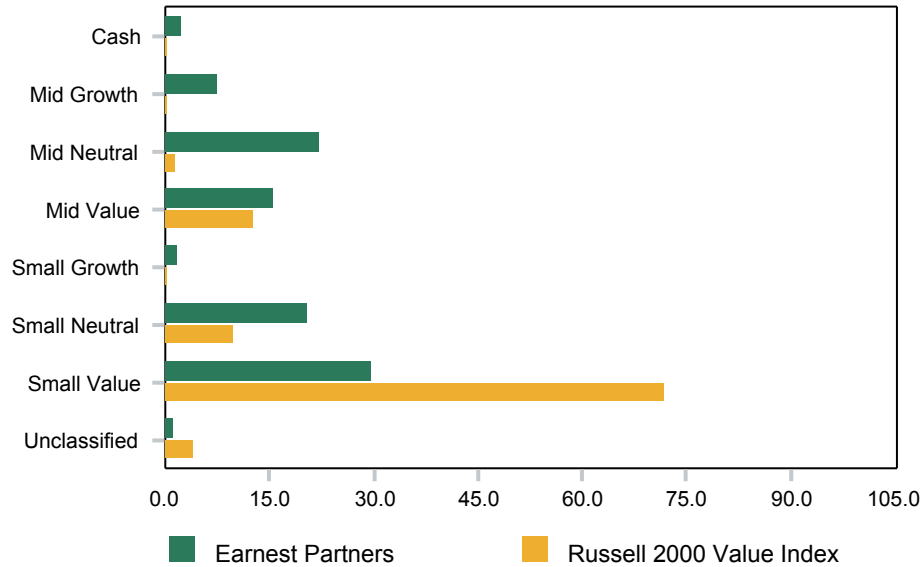
|               | <b>Allocation-07/01/2018</b> |                  | <b>Performance-1 Quarter Ending<br/>September 30, 2018</b> |                  | <b>Attribution</b> |              |                    |              |
|---------------|------------------------------|------------------|------------------------------------------------------------|------------------|--------------------|--------------|--------------------|--------------|
|               | <b>Portfolio</b>             | <b>Benchmark</b> | <b>Portfolio</b>                                           | <b>Benchmark</b> | <b>Stock</b>       | <b>Style</b> | <b>Interaction</b> | <b>Total</b> |
| Cash          | 2.21                         | 0.00             | 0.00                                                       | 0.00             | 0.00               | -0.04        | 0.00               | -0.04        |
| Mid Growth    | 7.42                         | 0.11             | -6.20                                                      | 2.02             | -0.01              | 0.03         | -0.60              | -0.58        |
| Mid Neutral   | 22.03                        | 1.56             | 1.40                                                       | 0.57             | 0.01               | -0.21        | 0.17               | -0.03        |
| Mid Value     | 15.39                        | 12.64            | 0.34                                                       | 0.87             | -0.07              | -0.02        | -0.01              | -0.10        |
| Small Growth  | 1.67                         | 0.36             | -6.41                                                      | -3.25            | -0.01              | -0.06        | -0.04              | -0.12        |
| Small Neutral | 20.47                        | 9.67             | 10.60                                                      | 3.06             | 0.73               | 0.16         | 0.81               | 1.70         |
| Small Value   | 29.66                        | 71.74            | -1.14                                                      | 1.10             | -1.61              | 0.21         | 0.95               | -0.46        |
| Unclassified  | 1.15                         | 3.92             | 21.28                                                      | 10.22            | 0.43               | -0.24        | -0.31              | -0.11        |
| Total         | 100.00                       | 100.00           | 1.87                                                       | 1.60             | -0.52              | -0.17        | 0.97               | 0.27         |

## Bristol County Retirement System

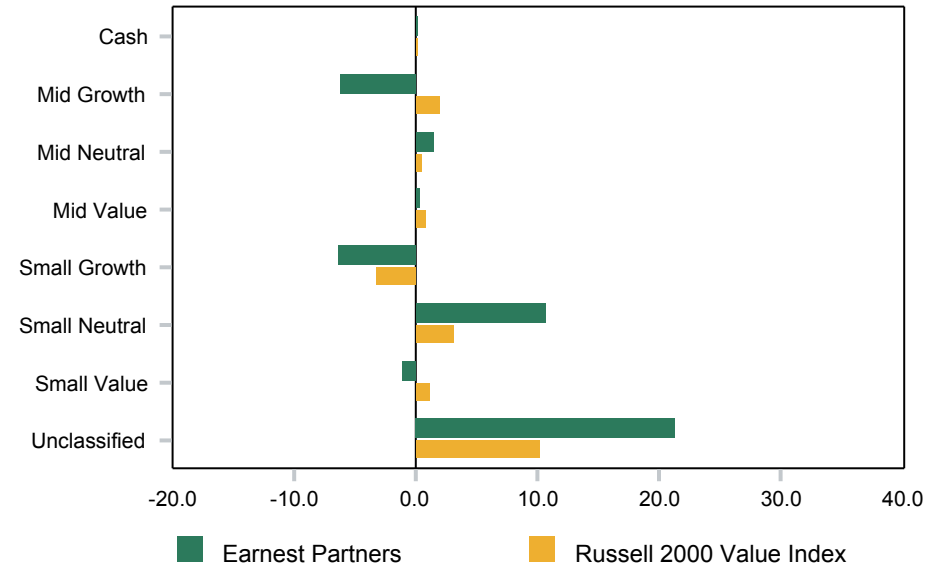
## Buy and Hold Style Attribution Graph

1 Quarter Ending September 30, 2018

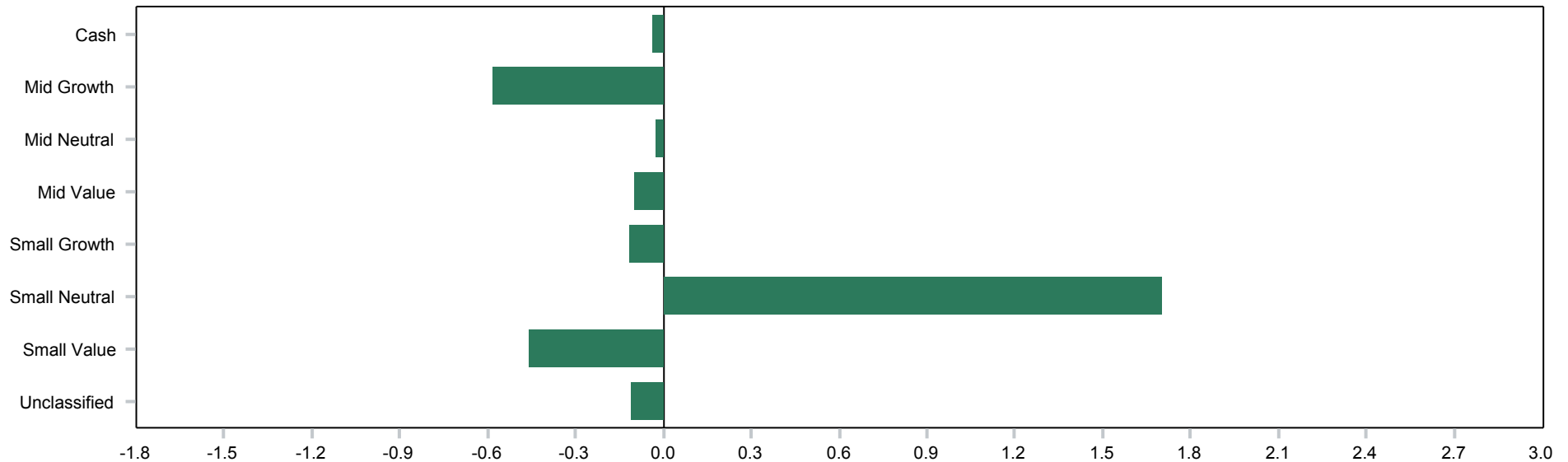
### Allocation



### Performance



### Total Attribution



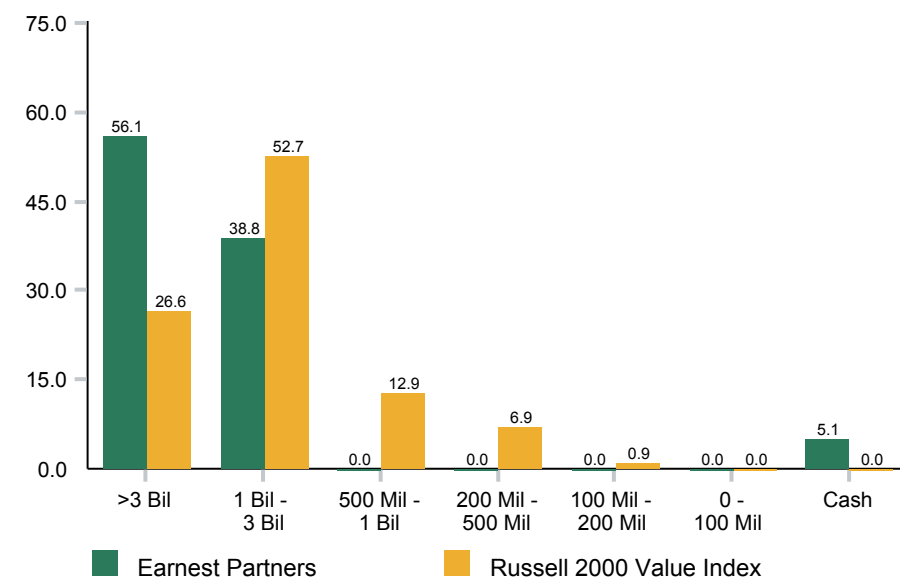
Top Ten Equity Holdings

|                              | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|------------------------------|----------------------|----------------------|-------------------|----------------------|
| FirstCash Inc                | 3.16                 | 0.00                 | 3.16              | -8.49                |
| Hexcel Corp                  | 3.16                 | 0.00                 | 3.16              | 1.23                 |
| EnerSys                      | 2.84                 | 0.12                 | 2.72              | 16.98                |
| Franklin Electric Co Inc     | 2.82                 | 0.01                 | 2.81              | 5.03                 |
| Albany International Corp.   | 2.63                 | 0.00                 | 2.63              | 32.46                |
| Catalent Inc                 | 2.37                 | 0.00                 | 2.37              | 8.74                 |
| EastGroup Properties Inc.    | 2.31                 | 0.00                 | 2.31              | 0.84                 |
| Darling Ingredients Inc      | 2.21                 | 0.29                 | 1.92              | -2.82                |
| Cabot Microelectronics Corp  | 2.21                 | 0.00                 | 2.21              | -4.08                |
| Monolithic Power Systems Inc | 2.21                 | 0.00                 | 2.21              | -5.87                |
| % of Portfolio               | 25.92                | 0.42                 | 25.50             |                      |

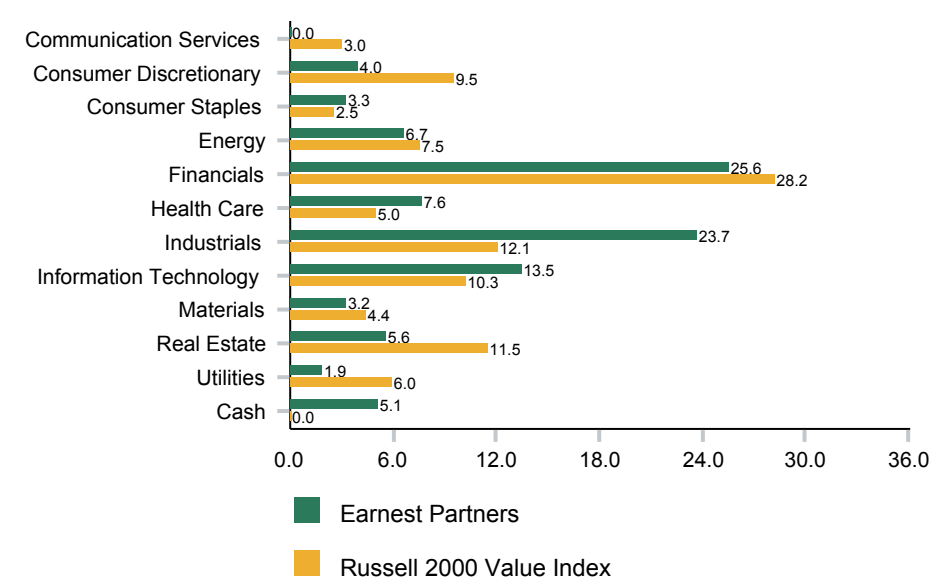
Portfolio Characteristics

|                           | Portfolio     | Benchmark     |
|---------------------------|---------------|---------------|
| Wtd. Avg. Mkt. Cap (\$)   | 3,692,514,073 | 2,150,162,535 |
| Median Mkt. Cap (\$)      | 3,234,934,080 | 820,325,840   |
| Price/Earnings ratio      | 19.34         | 15.46         |
| Price/Book ratio          | 2.22          | 1.71          |
| 5 Yr. EPS Growth Rate (%) | 12.20         | 7.14          |
| Current Yield (%)         | 1.35          | 1.98          |
| Beta (5 Years, Monthly)   | 0.85          | 1.00          |
| Number of Stocks          | 54            | 1,387         |

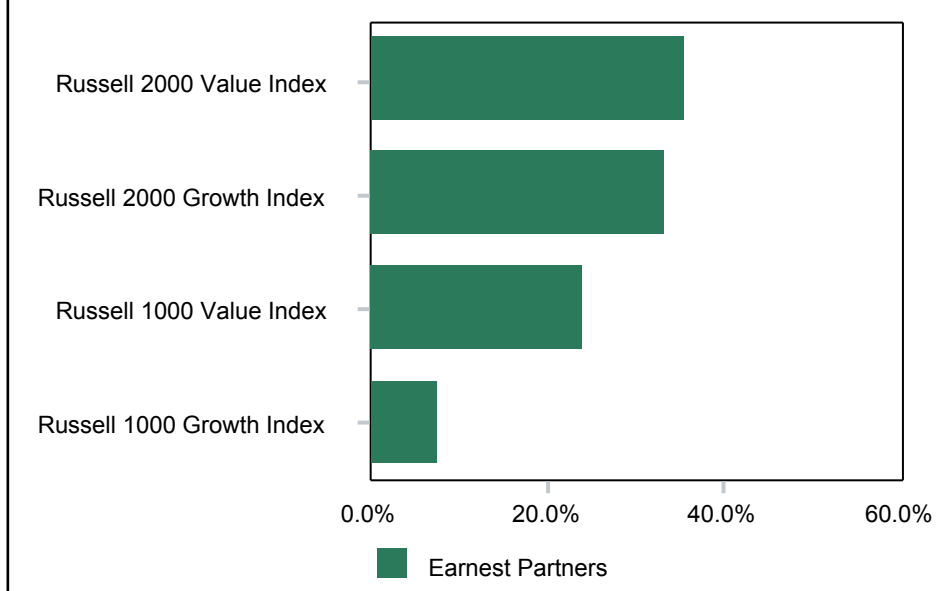
Distribution of Market Capitalization (%)



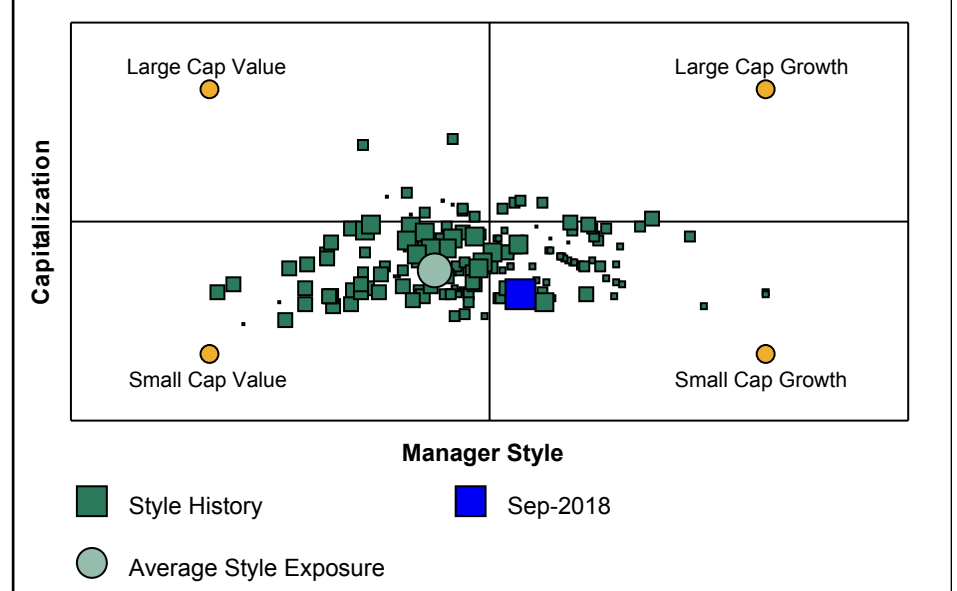
Sector Weights (%)



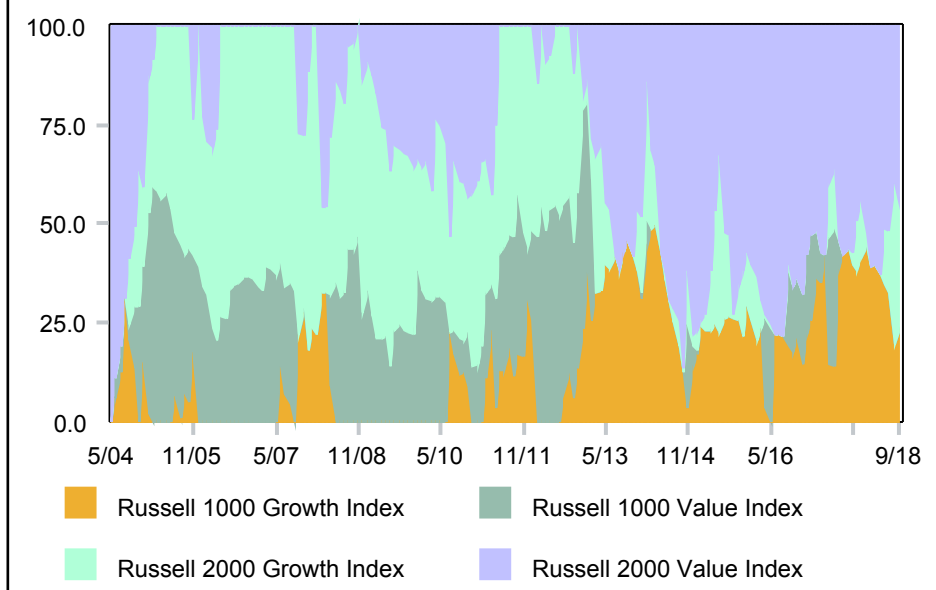
Investment Style Exposure



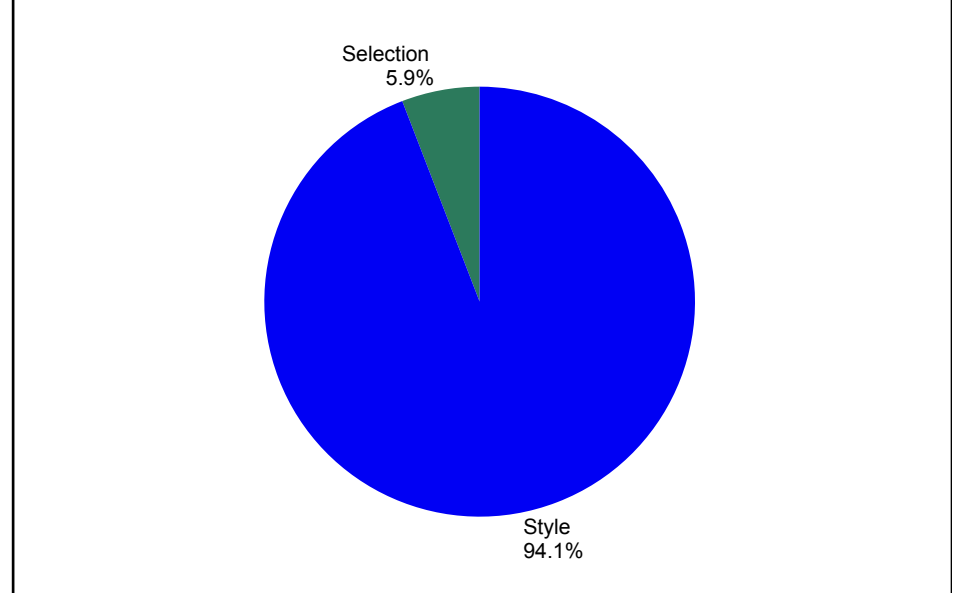
Style Map(ppp)



Style History(ppp)

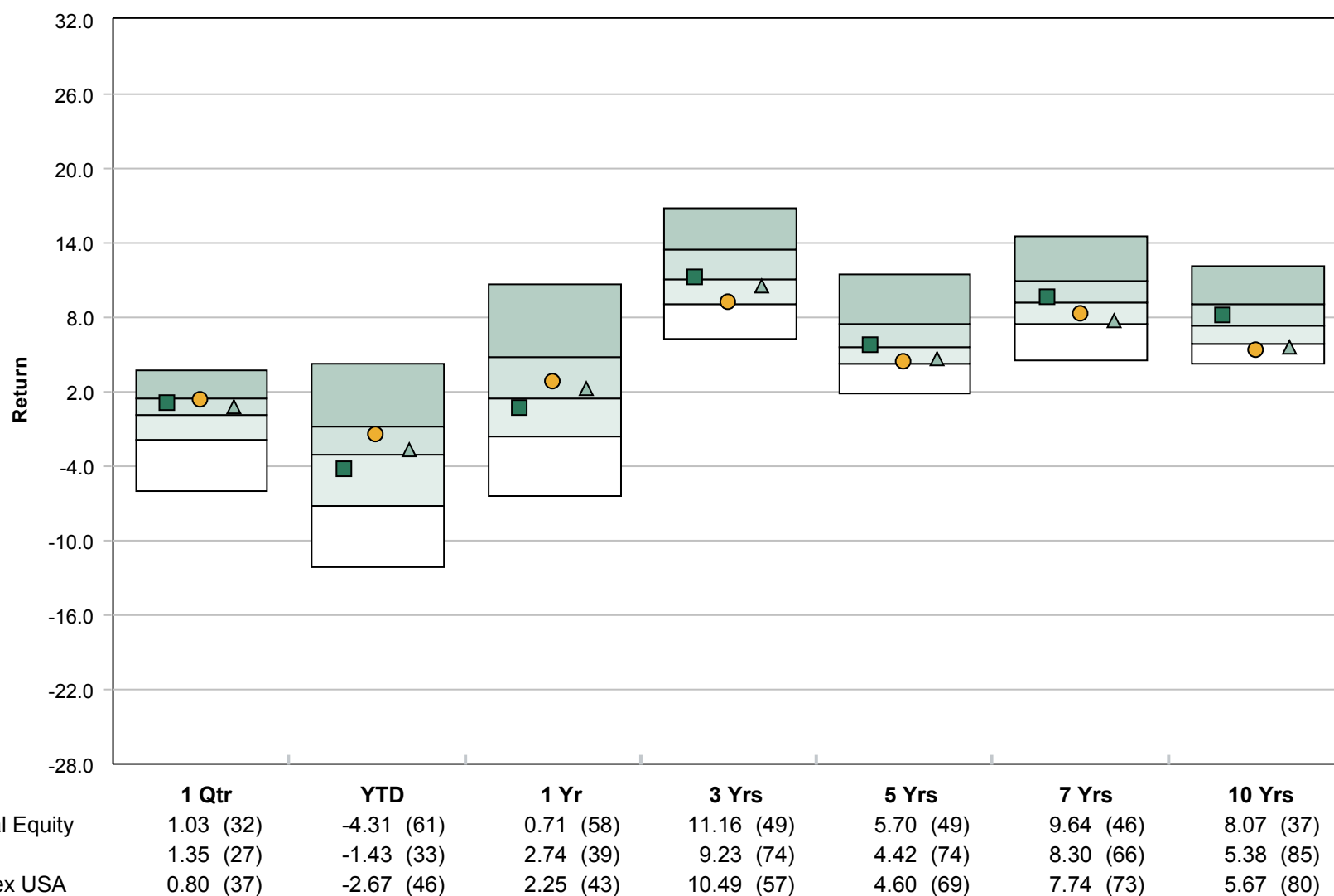


Return Variance



## **International Equity**

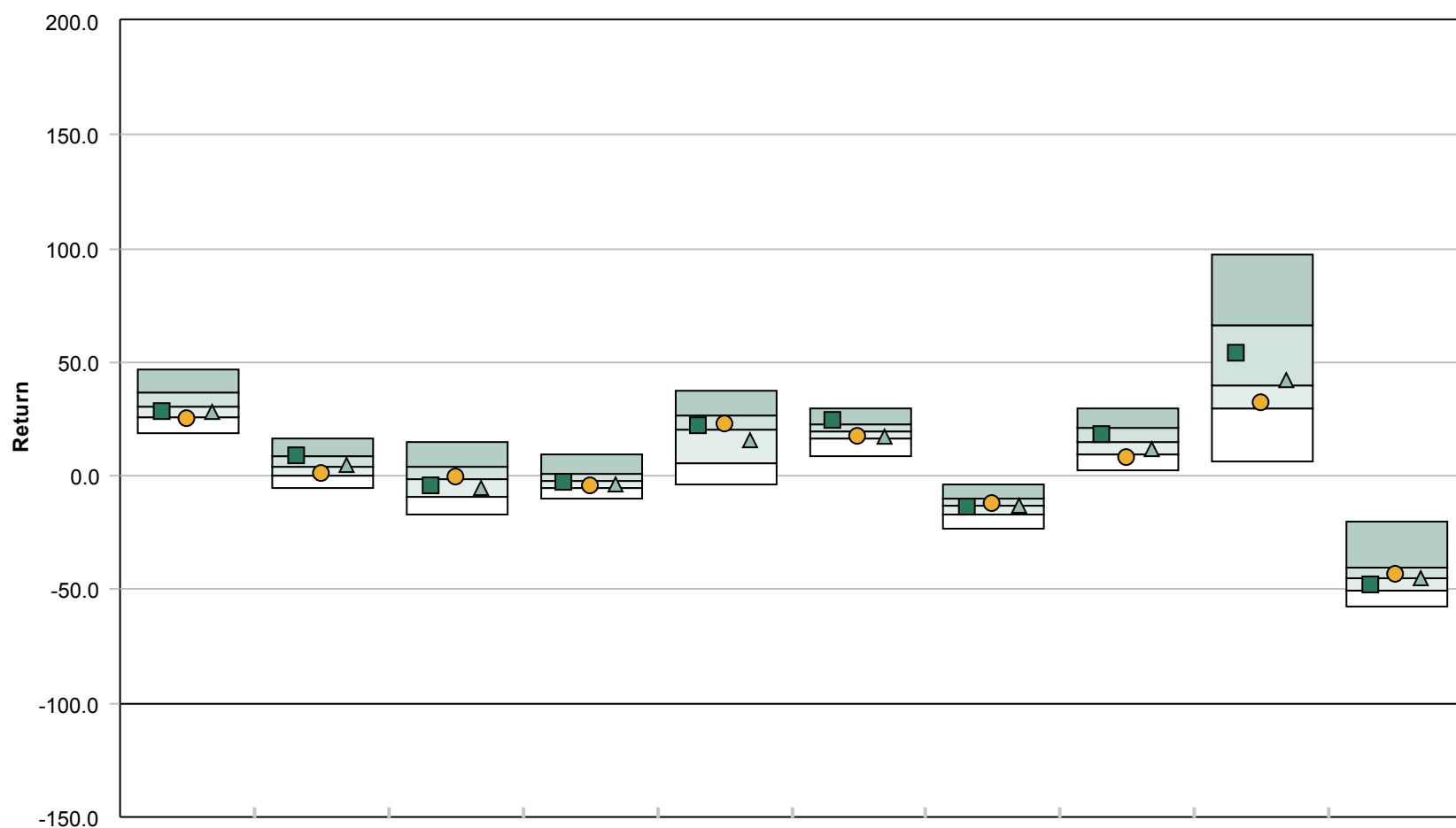
As of September 30, 2018



|                 |       |        |       |       |       |       |       |
|-----------------|-------|--------|-------|-------|-------|-------|-------|
| 5th Percentile  | 3.68  | 4.21   | 10.63 | 16.74 | 11.46 | 14.56 | 12.17 |
| 1st Quartile    | 1.41  | -0.81  | 4.77  | 13.40 | 7.49  | 10.96 | 9.08  |
| Median          | 0.14  | -3.05  | 1.49  | 11.07 | 5.64  | 9.26  | 7.31  |
| 3rd Quartile    | -1.91 | -7.21  | -1.60 | 9.09  | 4.32  | 7.48  | 5.88  |
| 95th Percentile | -6.03 | -12.17 | -6.38 | 6.31  | 1.85  | 4.57  | 4.32  |

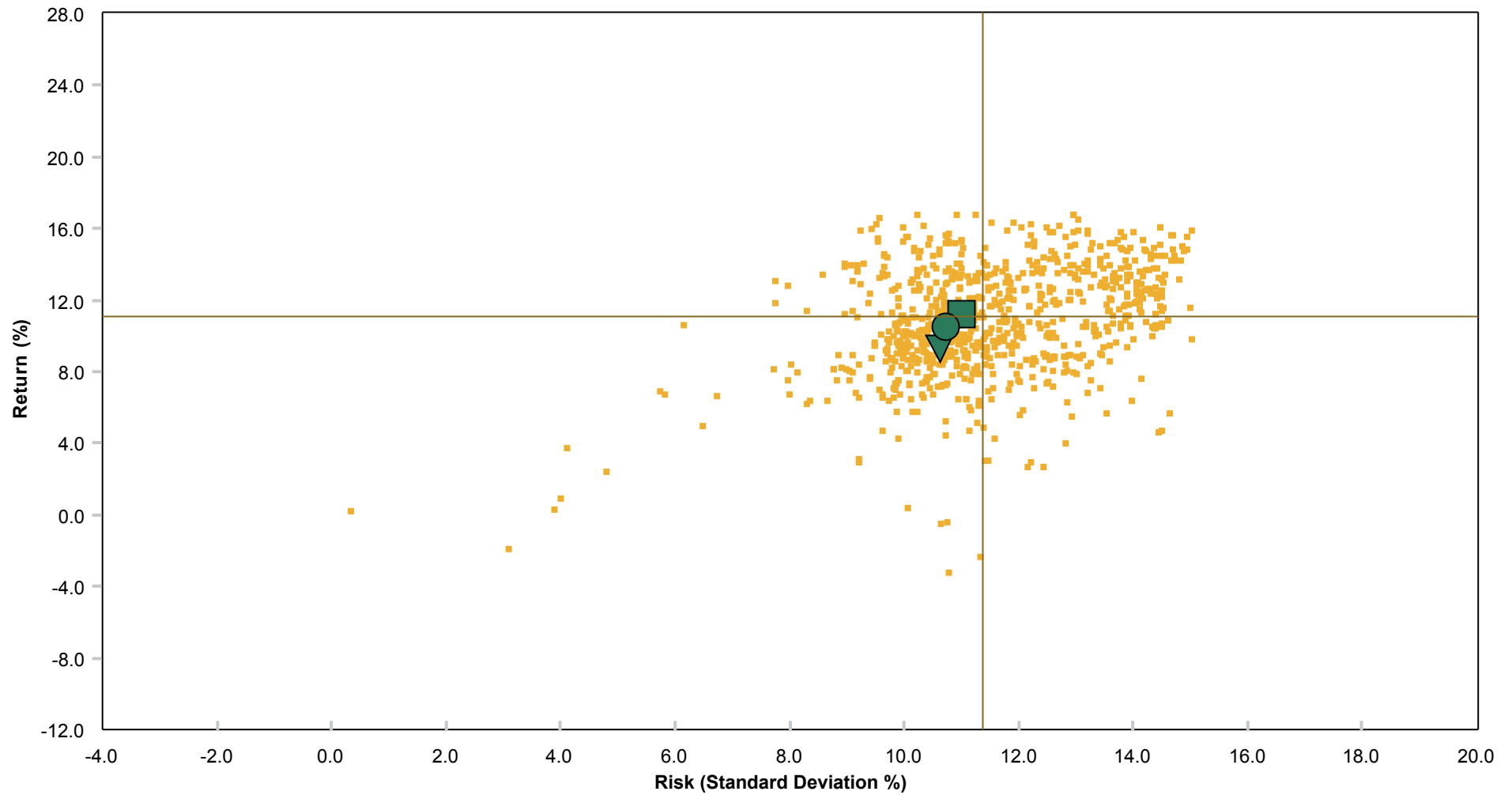
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018



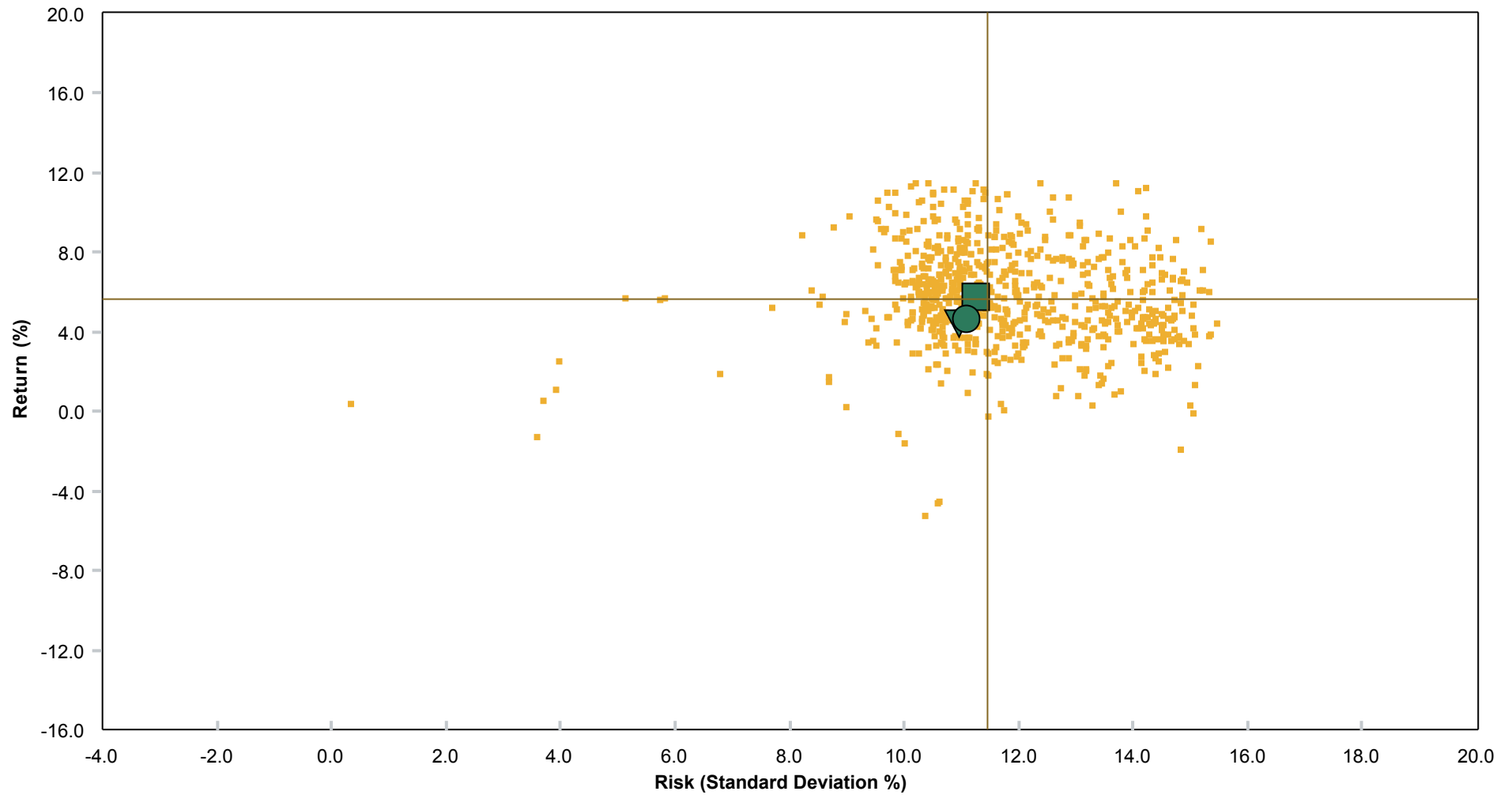
|                              | 2017       | 2016      | 2015       | 2014       | 2013       | 2012       | 2011        | 2010       | 2009       | 2008        |
|------------------------------|------------|-----------|------------|------------|------------|------------|-------------|------------|------------|-------------|
| ■ Total International Equity | 27.74 (65) | 8.40 (27) | -4.29 (62) | -3.24 (57) | 21.81 (45) | 24.35 (18) | -14.17 (59) | 17.77 (39) | 53.39 (32) | -47.73 (66) |
| ● MSCI EAFE (net)            | 25.03 (79) | 1.00 (69) | -0.81 (48) | -4.90 (74) | 22.78 (41) | 17.32 (70) | -12.14 (43) | 7.75 (84)  | 31.78 (71) | -43.38 (43) |
| ▲ MSCI AC World ex USA       | 27.77 (65) | 5.01 (43) | -5.25 (65) | -3.44 (59) | 15.78 (62) | 17.39 (69) | -13.33 (52) | 11.60 (67) | 42.14 (45) | -45.24 (53) |
| 5th Percentile               | 47.13      | 16.56     | 15.17      | 9.41       | 37.36      | 29.99      | -3.63       | 29.62      | 97.51      | -20.09      |
| 1st Quartile                 | 37.00      | 8.83      | 3.78       | 1.00       | 26.74      | 22.94      | -10.02      | 21.27      | 65.84      | -40.11      |
| Median                       | 30.50      | 3.68      | -1.58      | -2.54      | 20.08      | 19.82      | -13.08      | 15.13      | 39.68      | -44.67      |
| 3rd Quartile                 | 25.59      | 0.20      | -9.26      | -5.05      | 5.66       | 16.67      | -16.73      | 9.78       | 29.89      | -50.31      |
| 95th Percentile              | 18.48      | -4.97     | -16.83     | -9.77      | -3.97      | 8.43       | -23.13      | 2.46       | 6.09       | -57.82      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



|                              | Return | Standard<br>Deviation |
|------------------------------|--------|-----------------------|
| ■ Total International Equity | 11.16  | 11.03                 |
| ▼ MSCI EAFE (net)            | 9.23   | 10.62                 |
| ● MSCI AC World ex USA       | 10.49  | 10.73                 |
| — Median                     | 11.07  | 11.38                 |

Calculation based on monthly periodicity.



|                              | Return | Standard<br>Deviation |
|------------------------------|--------|-----------------------|
| ■ Total International Equity | 5.70   | 11.27                 |
| ▼ MSCI EAFE (net)            | 4.42   | 10.95                 |
| ● MSCI AC World ex USA       | 4.60   | 11.11                 |
| — Median                     | 5.64   | 11.45                 |

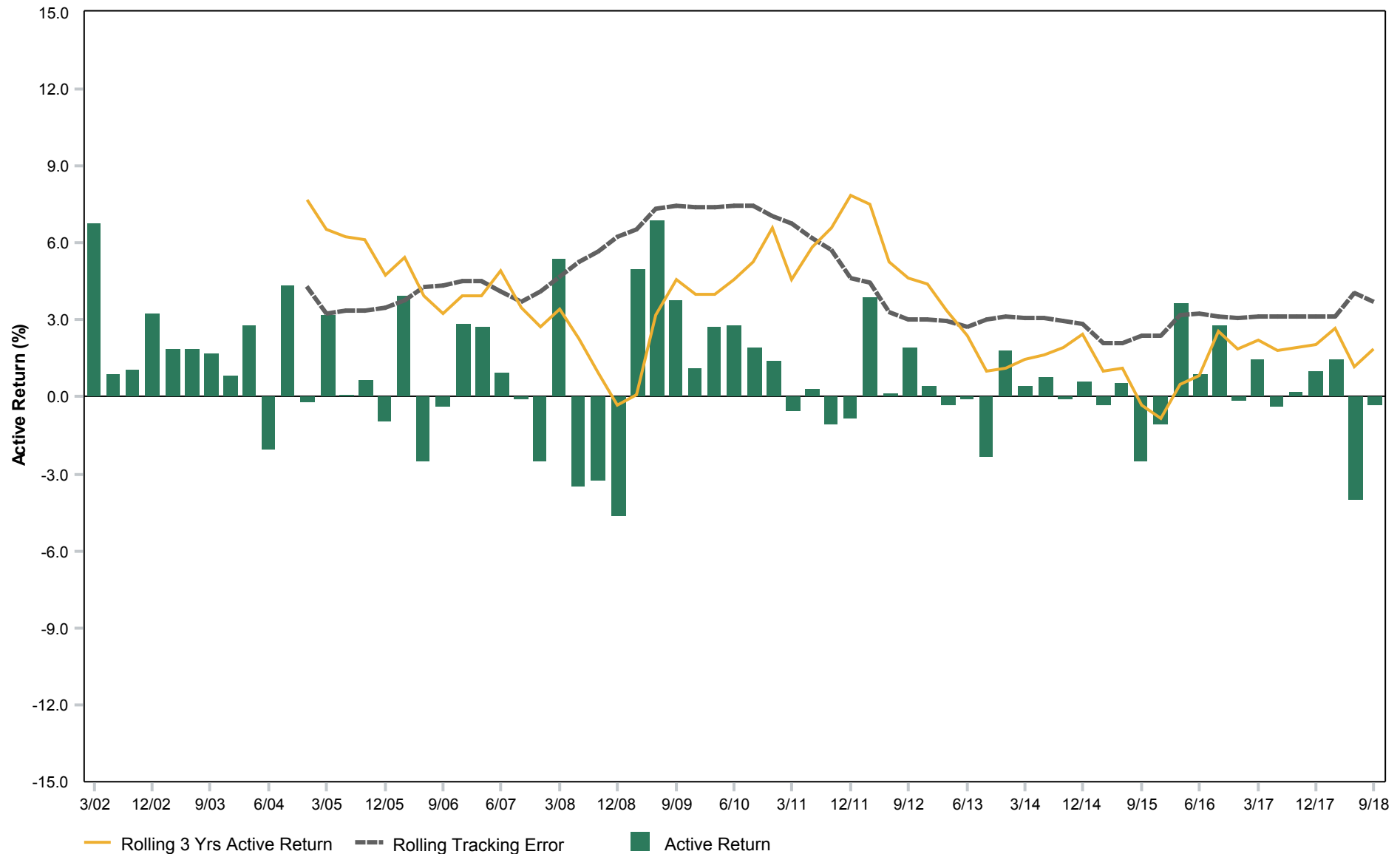
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                            | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016 | 2015  | 2014  |
|----------------------------|-------|-------|-------|-------|-------|-------|--------|-------|------|-------|-------|
| Total International Equity | 1.03  | -4.31 | 0.71  | 11.16 | 5.70  | 9.64  | 8.07   | 27.74 | 8.40 | -4.29 | -3.24 |
| MSCI EAFE (net)            | 1.35  | -1.43 | 2.74  | 9.23  | 4.42  | 8.30  | 5.38   | 25.03 | 1.00 | -0.81 | -4.90 |
| Difference                 | -0.32 | -2.88 | -2.03 | 1.93  | 1.28  | 1.34  | 2.69   | 2.71  | 7.40 | -3.48 | 1.66  |



## Bristol County Retirement System

## Total International Equity

As of September 30, 2018

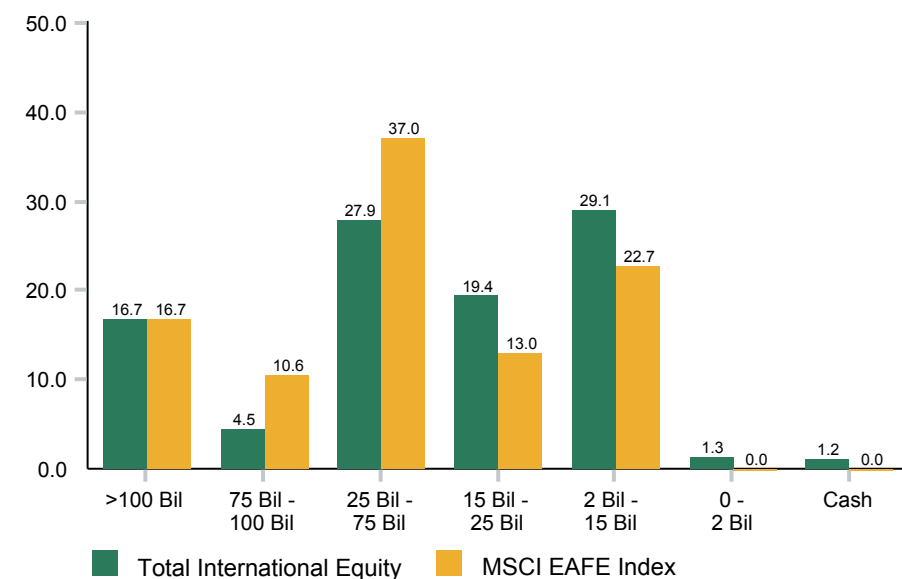
### Top Ten Equity Holdings

|                               | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|-------------------------------|----------------------|----------------------|-------------------|----------------------|
| Taiwan Semiconductor Manuf    | 1.89                 | 0.00                 | 1.89              | 21.10                |
| Tata Consultancy Services Ltd | 1.35                 | 0.00                 | 1.35              | 11.79                |
| China Construction Bank Corp  | 1.25                 | 0.00                 | 1.25              | -0.69                |
| Tencent Holdings LTD          | 1.17                 | 0.00                 | 1.17              | -17.70               |
| SK Hynix Inc                  | 1.17                 | 0.00                 | 1.17              | -14.52               |
| Samsung Electronics Co Ltd    | 1.15                 | 0.00                 | 1.15              | 1.68                 |
| AIA Group Ltd                 | 1.08                 | 0.75                 | 0.33              | 2.66                 |
| Novartis AG                   | 1.07                 | 1.30                 | -0.23             | 14.12                |
| China Mobile Ltd              | 0.99                 | 0.00                 | 0.99              | 12.91                |
| Sberbank of Russia OJSC       | 0.90                 | 0.00                 | 0.90              | -10.67               |
| % of Portfolio                | 12.02                | 2.05                 | 9.97              |                      |

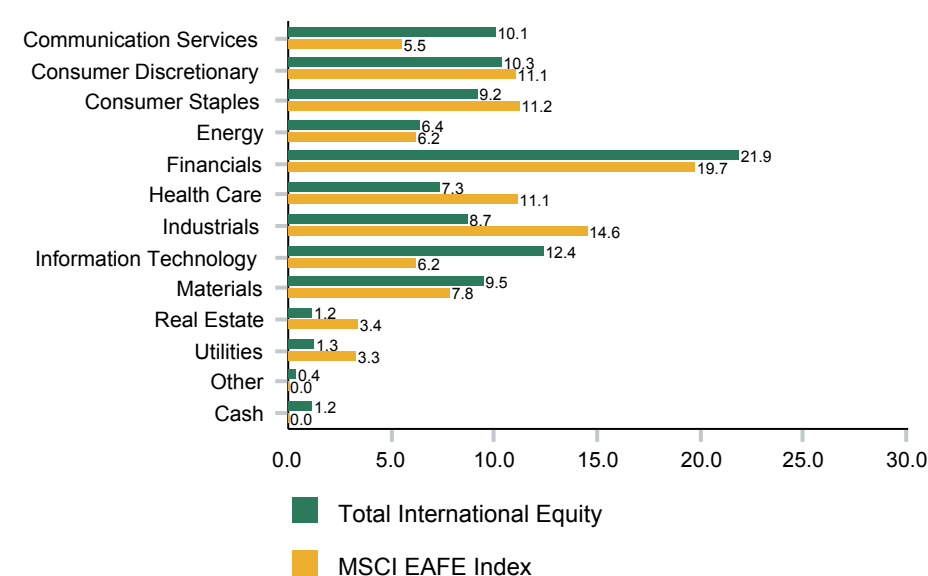
### Portfolio Characteristics

|                           | Portfolio      | Benchmark      |
|---------------------------|----------------|----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 52,341,086,759 | 61,248,915,245 |
| Median Mkt. Cap (\$)      | 20,864,029,835 | 11,018,051,194 |
| Price/Earnings ratio      | 13.89          | 14.43          |
| Price/Book ratio          | 2.31           | 2.19           |
| 5 Yr. EPS Growth Rate (%) | 8.81           | 10.83          |
| Current Yield (%)         | 3.01           | 3.27           |
| Beta (5 Years, Monthly)   | 0.98           | 1.00           |
| Number of Stocks          | 375            | 924            |

### Distribution of Market Capitalization (%)



### Sector Weights (%)



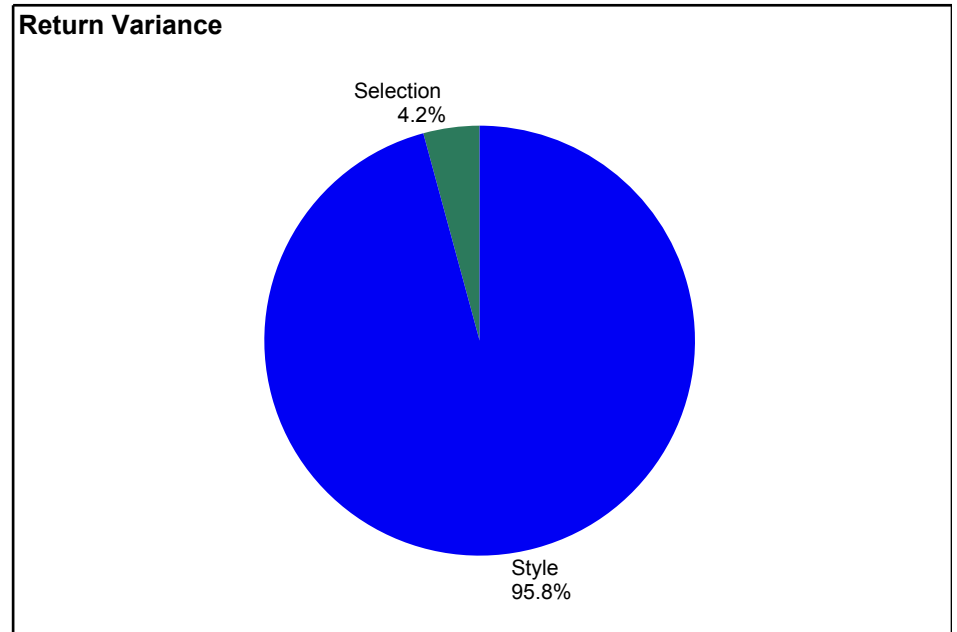
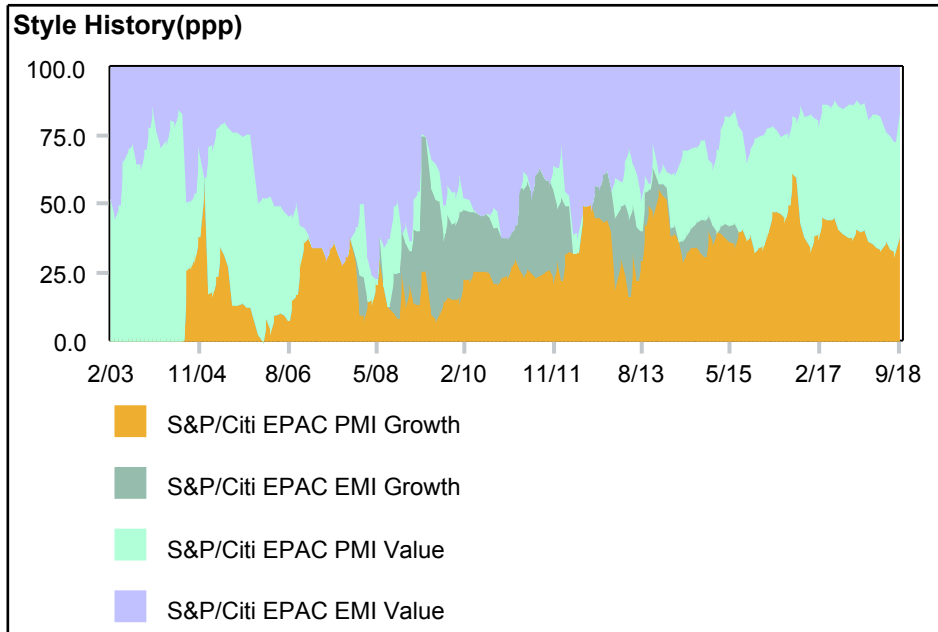
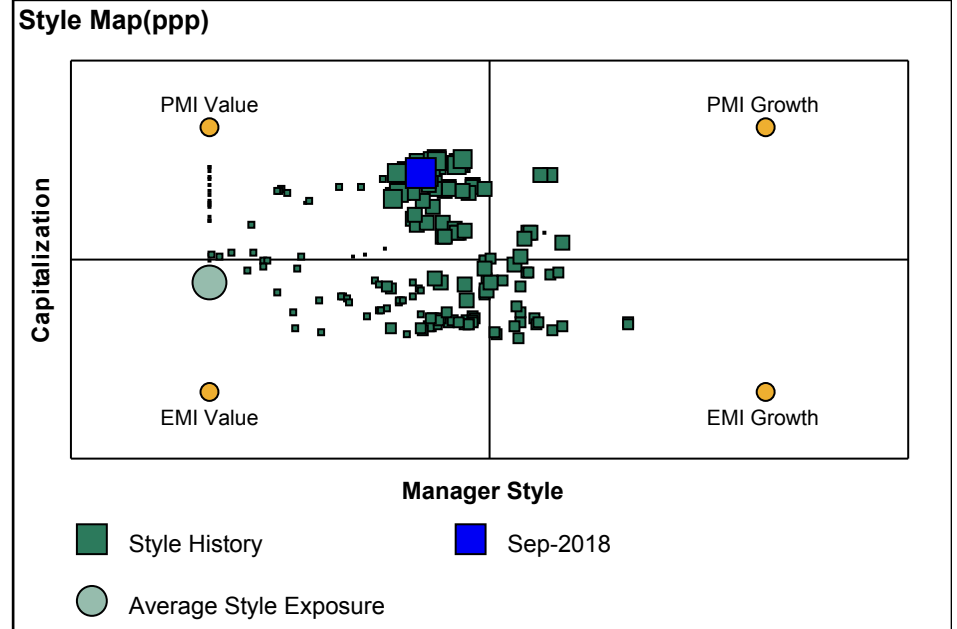
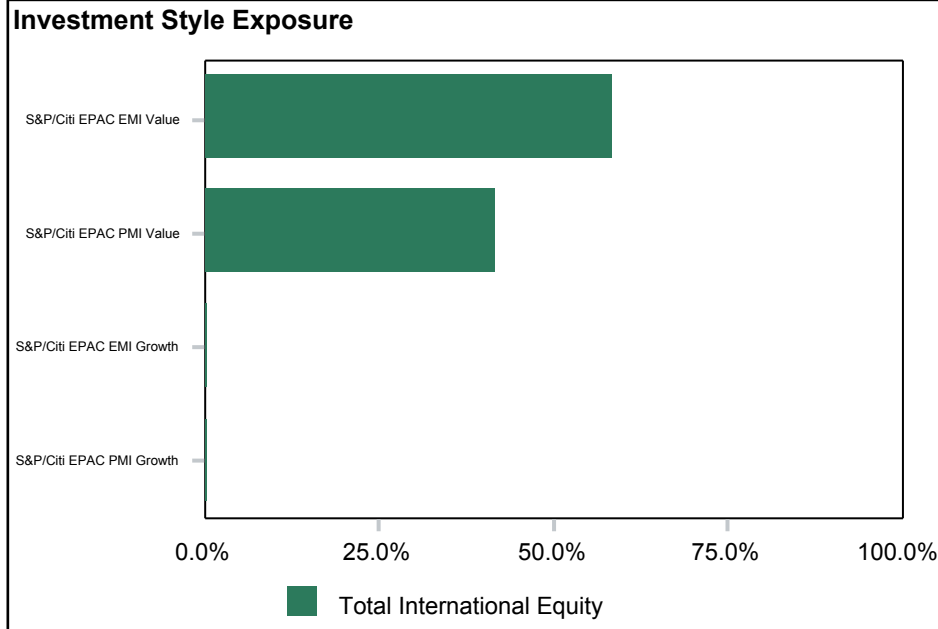
As of September 30, 2018

## Ten Best Performers

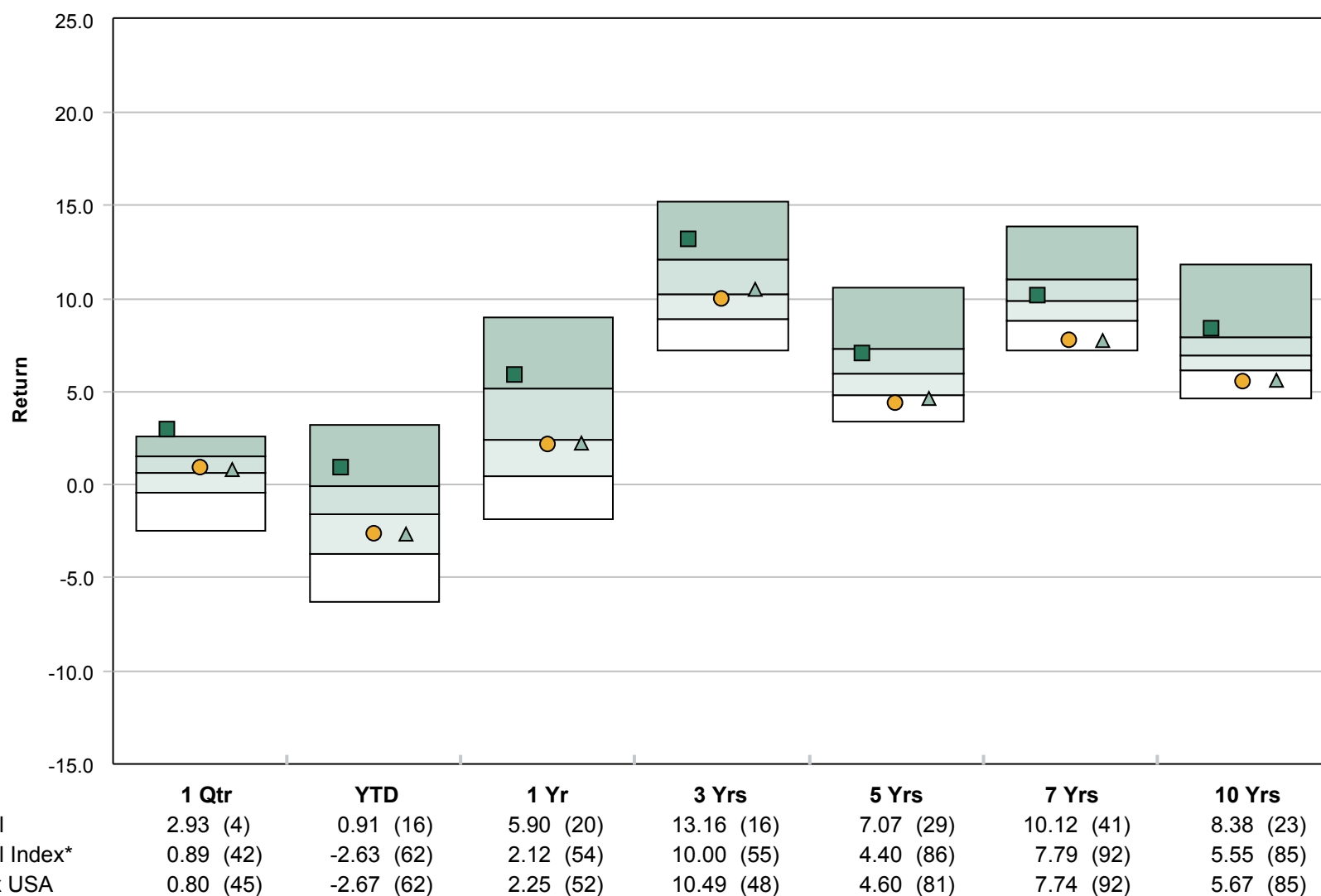
|                                           | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|-------------------------------------------|----------------------|----------------------|-------------------|----------------------|
| PT Semen Indonesia (Persero) Tbk          | 0.18                 | 0.00                 | 0.18              | 33.61                |
| LG Uplus Corp                             | 0.33                 | 0.00                 | 0.33              | 31.00                |
| PT Indocement Tungal Prakarsa TBK         | 0.17                 | 0.00                 | 0.17              | 30.00                |
| Grupo Aeroportuario del Sureste SAB de CV | 0.31                 | 0.00                 | 0.31              | 29.58                |
| Shionogi & Co Ltd                         | 0.15                 | 0.12                 | 0.03              | 28.18                |
| Chugai Pharmaceutical Co Ltd              | 0.14                 | 0.10                 | 0.04              | 22.72                |
| Siam Commercial Bank Public Co Ltd        | 0.53                 | 0.00                 | 0.53              | 22.65                |
| Grupo Financiero Banorte SA De CV Gfnorte | 0.38                 | 0.00                 | 0.38              | 21.38                |
| Taiwan Semiconductor Manuf                | 1.89                 | 0.00                 | 1.89              | 21.10                |
| Petroleo Brasileiro S.A.- Petrobras       | 0.09                 | 0.00                 | 0.09              | 21.06                |
| % of Portfolio                            | 4.17                 | 0.22                 | 3.95              |                      |

## Ten Worst Performers

|                                               | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|-----------------------------------------------|----------------------|----------------------|-------------------|----------------------|
| Turk Telekomunikasyon AS                      | 0.00                 | 0.00                 | 0.00              | -44.26               |
| Turkiye Is Bankasi AS                         | 0.04                 | 0.00                 | 0.04              | -40.75               |
| Sunny Optical Technology Group Co Ltd         | 0.08                 | 0.00                 | 0.08              | -37.98               |
| AAC Technologies Holdings Inc                 | 0.24                 | 0.00                 | 0.24              | -25.87               |
| Midea Group Co Ltd                            | 0.18                 | 0.00                 | 0.18              | -25.63               |
| Hangzhou Hik-Vision Digital Technology Co Ltd | 0.21                 | 0.00                 | 0.21              | -25.41               |
| Amorepacific Group Inc                        | 0.09                 | 0.00                 | 0.09              | -24.29               |
| Continental AG                                | 0.12                 | 0.13                 | -0.01             | -23.64               |
| Autohome Inc                                  | 0.18                 | 0.00                 | 0.18              | -23.36               |
| Huazhu Group Ltd                              | 0.20                 | 0.00                 | 0.20              | -23.08               |
| % of Portfolio                                | 1.34                 | 0.13                 | 1.21              |                      |



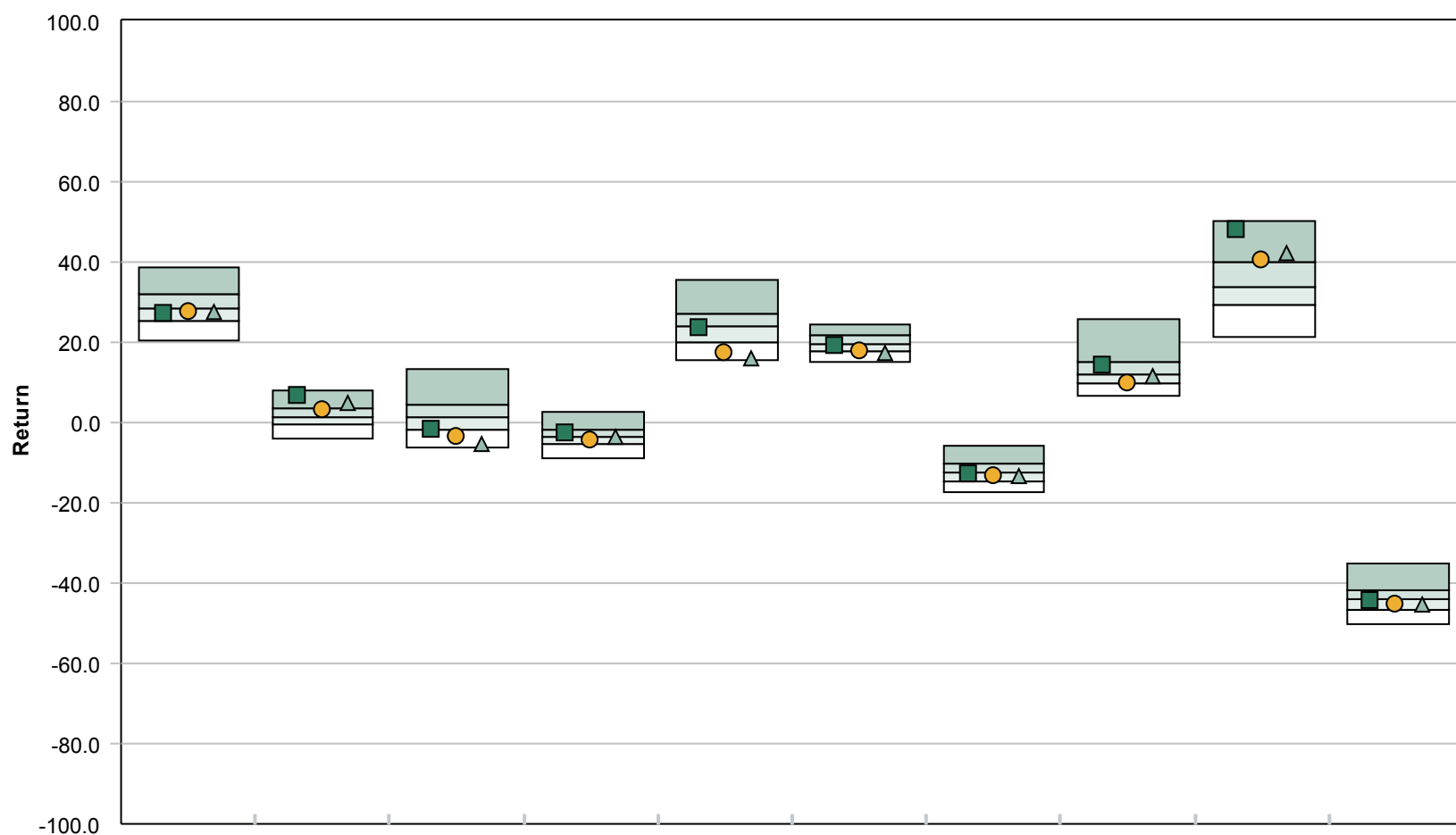
As of September 30, 2018



|                 |       |       |       |       |       |       |       |
|-----------------|-------|-------|-------|-------|-------|-------|-------|
| 5th Percentile  | 2.59  | 3.20  | 9.00  | 15.21 | 10.61 | 13.93 | 11.88 |
| 1st Quartile    | 1.50  | -0.10 | 5.20  | 12.07 | 7.28  | 11.06 | 7.94  |
| Median          | 0.65  | -1.62 | 2.40  | 10.22 | 5.97  | 9.86  | 6.93  |
| 3rd Quartile    | -0.43 | -3.70 | 0.46  | 8.94  | 4.84  | 8.86  | 6.19  |
| 95th Percentile | -2.44 | -6.32 | -1.82 | 7.26  | 3.39  | 7.19  | 4.64  |

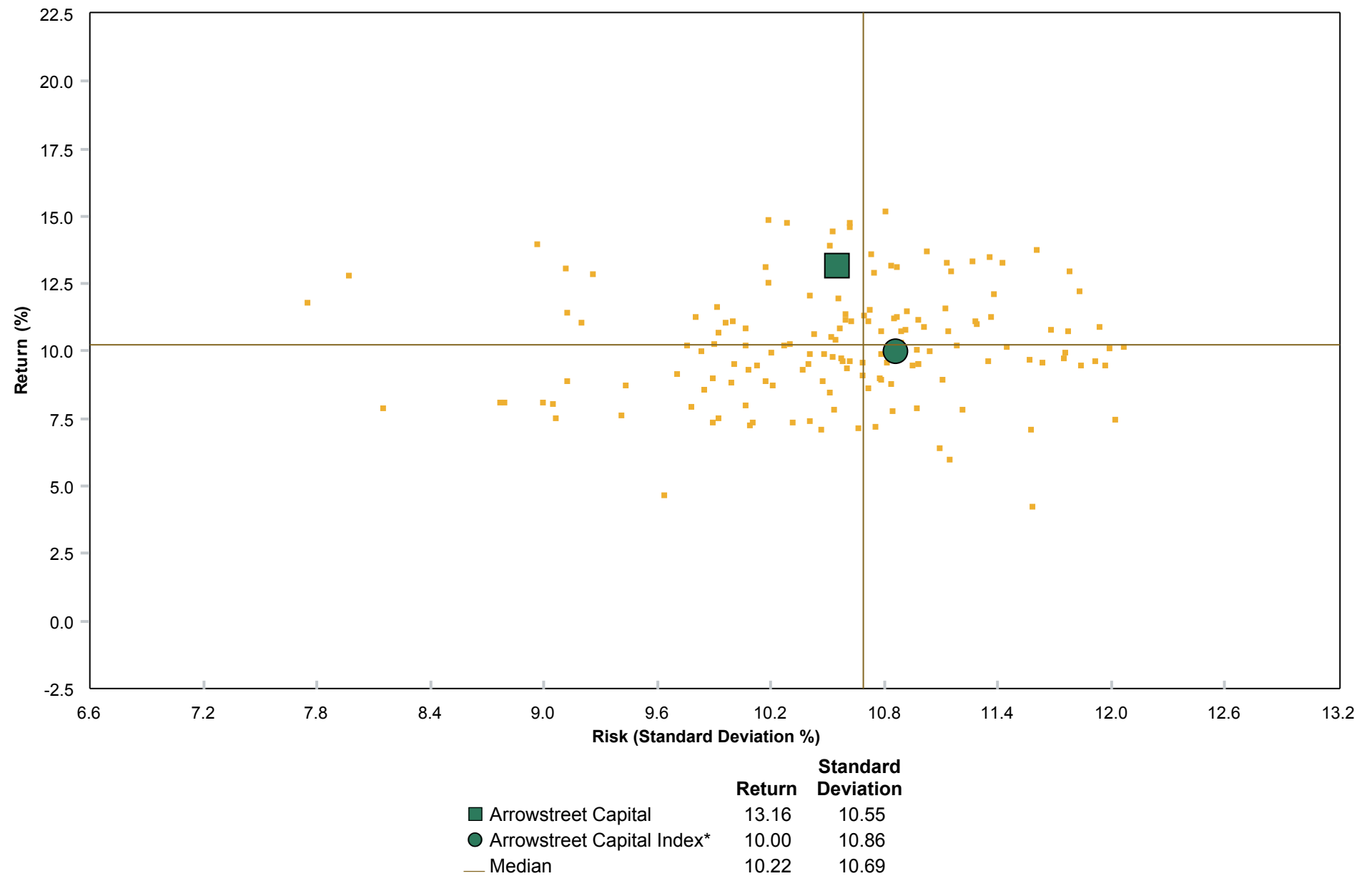
\*80% MSCI EAFE/20% MSCI EME

As of September 30, 2018

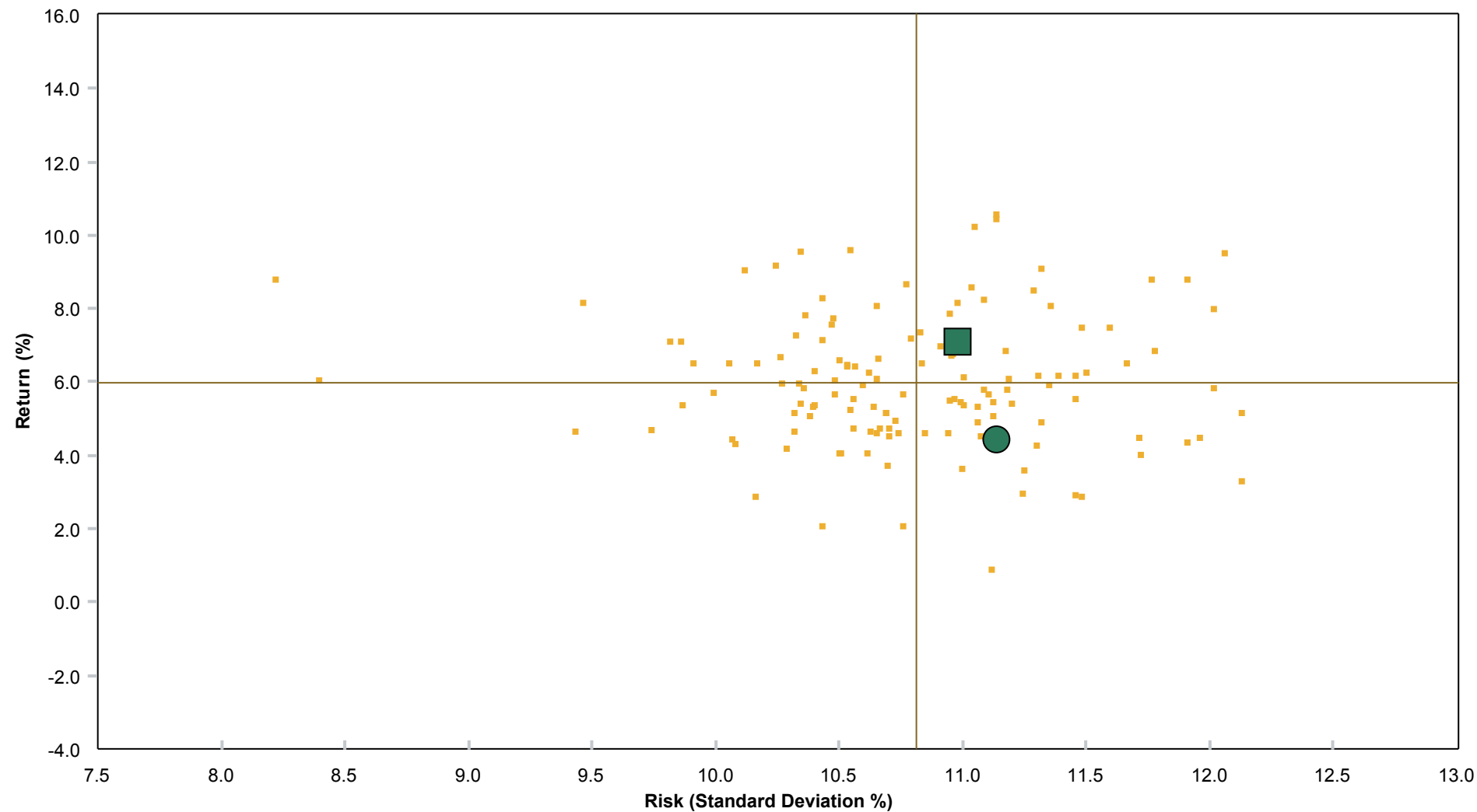


|                              | 2017       | 2016      | 2015       | 2014       | 2013       | 2012       | 2011        | 2010       | 2009       | 2008        |
|------------------------------|------------|-----------|------------|------------|------------|------------|-------------|------------|------------|-------------|
| ■ Arrowstreet Capital        | 27.26 (56) | 6.87 (10) | -1.88 (76) | -2.74 (37) | 23.44 (57) | 19.10 (62) | -12.96 (57) | 14.39 (30) | 47.80 (9)  | -44.23 (53) |
| ● Arrowstreet Capital Index* | 27.52 (56) | 3.15 (32) | -3.64 (88) | -4.23 (58) | 17.38 (86) | 17.65 (75) | -13.27 (61) | 9.98 (69)  | 40.33 (24) | -45.40 (65) |
| ▲ MSCI AC World ex USA       | 27.77 (55) | 5.01 (19) | -5.25 (94) | -3.44 (49) | 15.78 (94) | 17.39 (78) | -13.33 (62) | 11.60 (54) | 42.14 (19) | -45.24 (65) |
| 5th Percentile               | 38.79      | 8.15      | 13.31      | 2.79       | 35.74      | 24.59      | -5.90       | 25.60      | 50.11      | -34.94      |
| 1st Quartile                 | 32.01      | 3.49      | 4.52       | -1.95      | 27.30      | 21.97      | -10.42      | 15.16      | 39.87      | -41.82      |
| Median                       | 28.38      | 1.47      | 1.12       | -3.47      | 24.09      | 19.73      | -12.40      | 11.99      | 33.97      | -44.14      |
| 3rd Quartile                 | 25.28      | -0.36     | -1.80      | -5.26      | 20.18      | 17.62      | -14.79      | 9.70       | 29.23      | -46.55      |
| 95th Percentile              | 20.64      | -3.91     | -6.07      | -9.06      | 15.36      | 14.92      | -17.52      | 6.65       | 21.54      | -50.34      |

\*80% MSCI EAFE/20% MSCI EME



\*80% MSCI EAFE/20% MSCI EME.



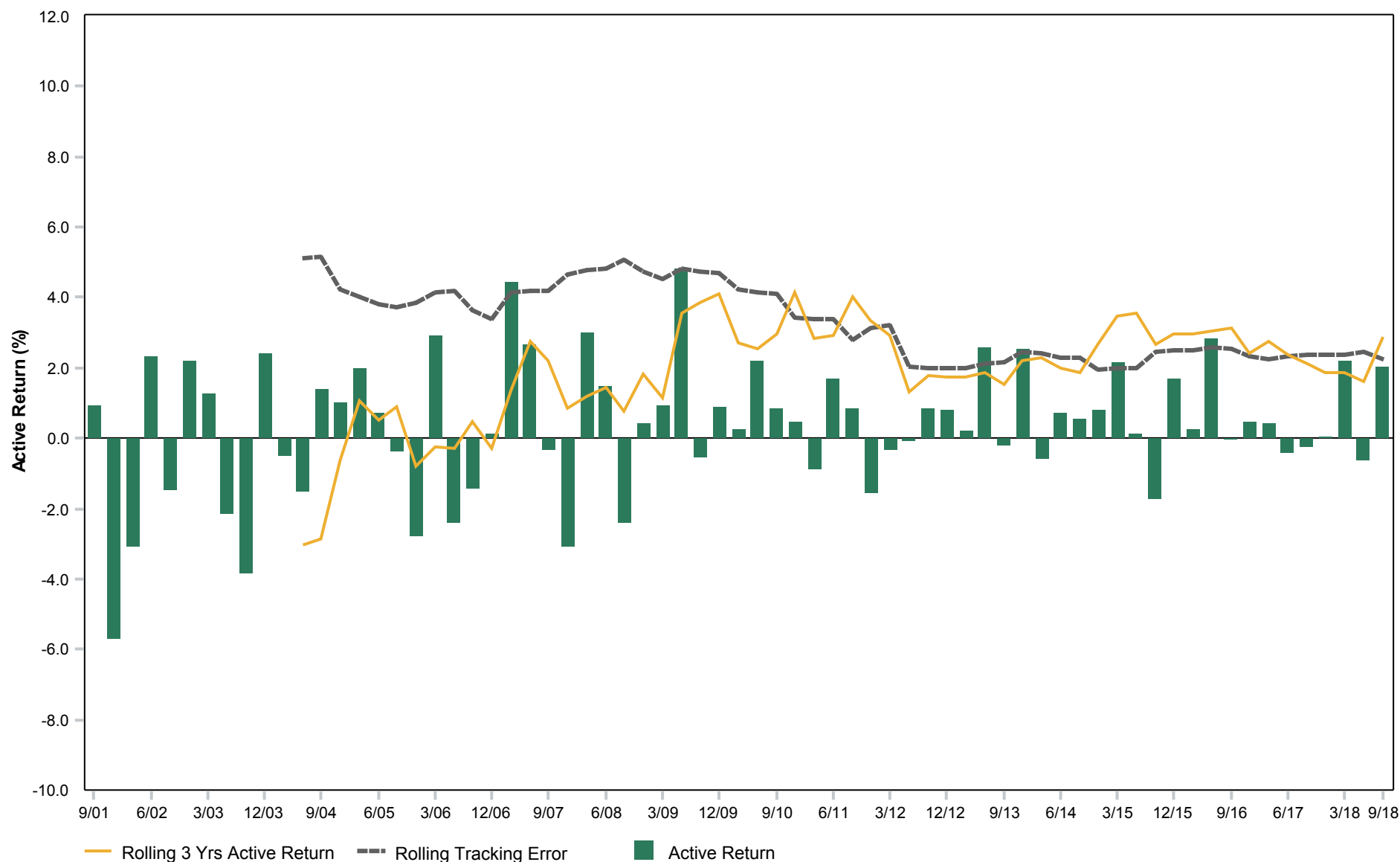
\*80% MSCI EAFE/20% MSCI EME.

# Bristol County Retirement System

# Comparative Performance & Rolling Return

As of September 30, 2018

|                            | 1 Qtr | YTD   | 1 Yr | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016 | 2015  | 2014  |
|----------------------------|-------|-------|------|-------|-------|-------|--------|-------|------|-------|-------|
| Arrowstreet Capital        | 2.93  | 0.91  | 5.90 | 13.16 | 7.07  | 10.12 | 8.38   | 27.26 | 6.87 | -1.88 | -2.74 |
| Arrowstreet Capital Index* | 0.89  | -2.63 | 2.12 | 10.00 | 4.40  | 7.79  | 5.55   | 27.52 | 3.15 | -3.64 | -4.23 |
| Difference                 | 2.04  | 3.54  | 3.78 | 3.16  | 2.67  | 2.33  | 2.83   | -0.26 | 3.72 | 1.76  | 1.49  |



\*80% MSCI EAFE (Net)/20% MSCI EMF.  
Gross of Fees

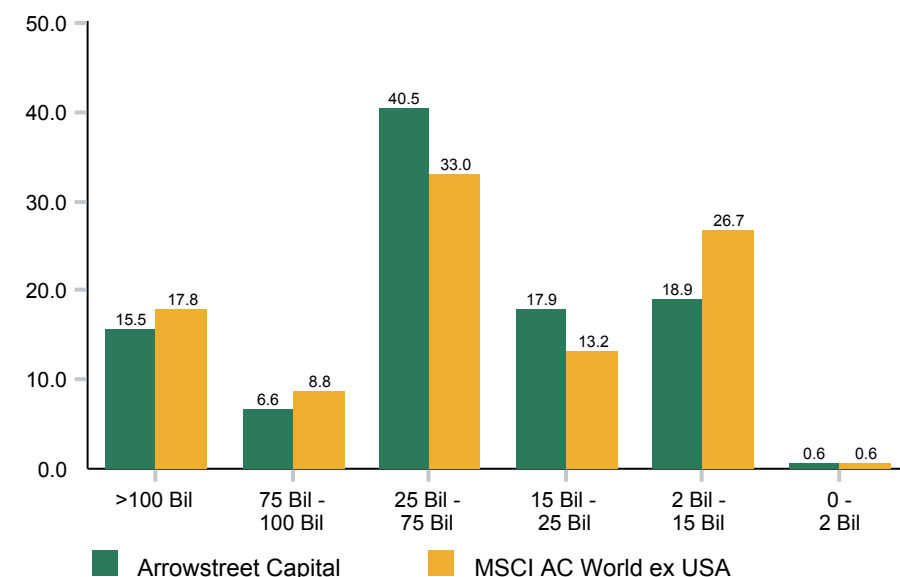
Top Ten Equity Holdings

|                              | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|------------------------------|----------------------|----------------------|-------------------|----------------------|
| IShares MSCI Taiwan ETF      | 2.41                 | 0.00                 | 2.41              | 4.72                 |
| Samsung Electronics Co Ltd   | 1.71                 | 0.96                 | 0.75              | 0.53                 |
| Roche Holding AG             | 1.60                 | 0.81                 | 0.79              | 9.73                 |
| Canadian National Railway Co | 1.54                 | 0.31                 | 1.23              | 10.29                |
| Royal Dutch Shell PLC        | 1.50                 | 0.75                 | 0.75              | -1.07                |
| Petrochina Co Ltd            | 1.49                 | 0.08                 | 1.41              | 8.32                 |
| Cnooc Ltd                    | 1.48                 | 0.17                 | 1.31              | 17.35                |
| Tokio Marine Holdings Inc    | 1.37                 | 0.16                 | 1.21              | 7.72                 |
| Amadeus IT Group SA          | 1.37                 | 0.19                 | 1.18              | 17.88                |
| Toronto-Dominion Bank (The)  | 1.33                 | 0.53                 | 0.80              | 6.01                 |
| % of Portfolio               | 15.80                | 3.96                 | 11.84             |                      |

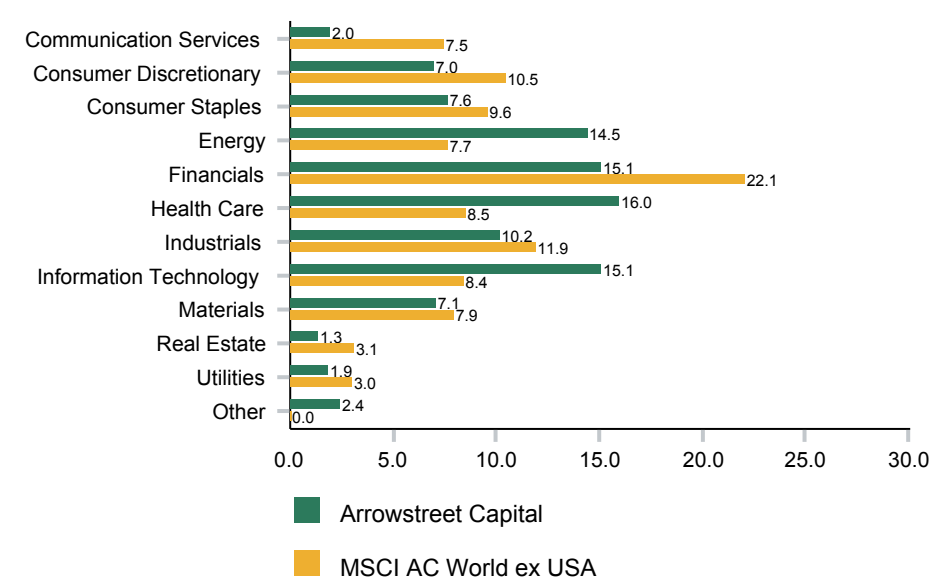
Portfolio Characteristics

|                           | Portfolio      | Benchmark      |
|---------------------------|----------------|----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 51,588,391,447 | 64,560,338,574 |
| Median Mkt. Cap (\$)      | 27,730,804,669 | 8,008,619,923  |
| Price/Earnings ratio      | 14.15          | 14.09          |
| Price/Book ratio          | 2.19           | 2.20           |
| 5 Yr. EPS Growth Rate (%) | 10.85          | 11.33          |
| Current Yield (%)         | 2.90           | 3.15           |
| Beta (5 Years, Monthly)   | 0.95           | 1.00           |
| Number of Stocks          | 155            | 2,166          |

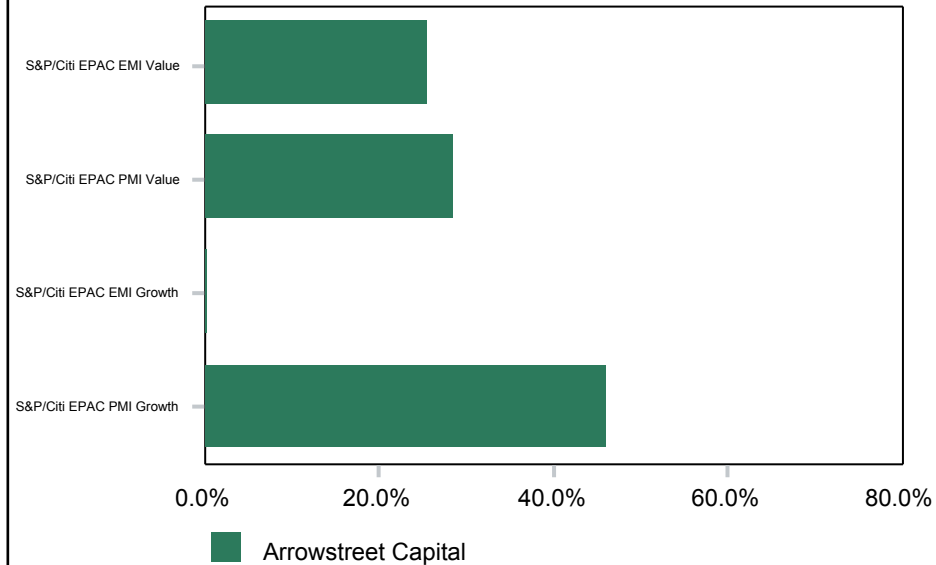
Distribution of Market Capitalization (%)



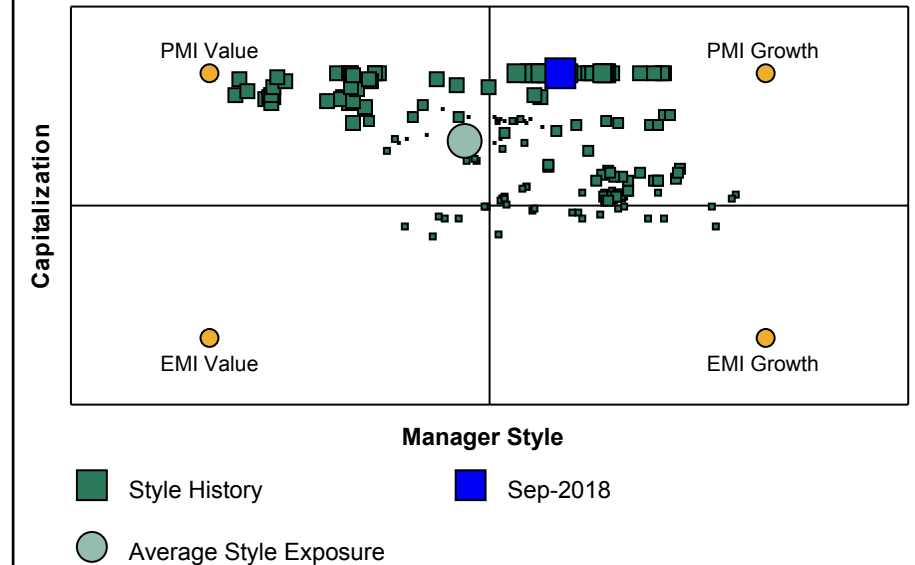
Sector Weights (%)



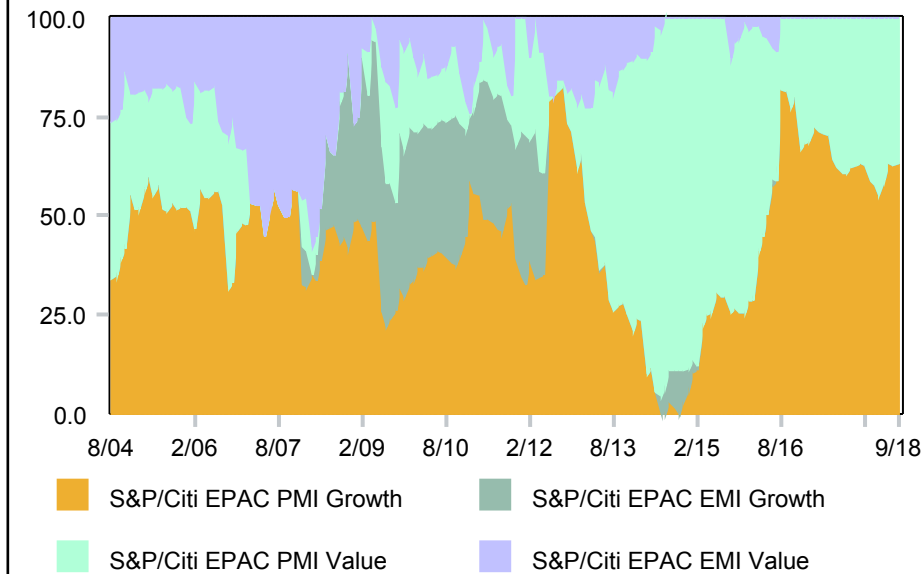
Investment Style Exposure



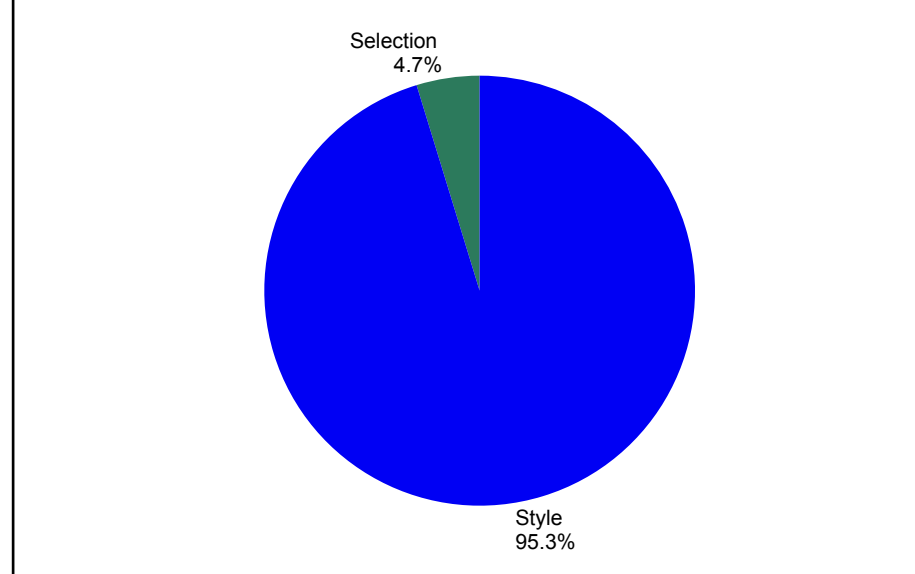
Style Map(ppp)



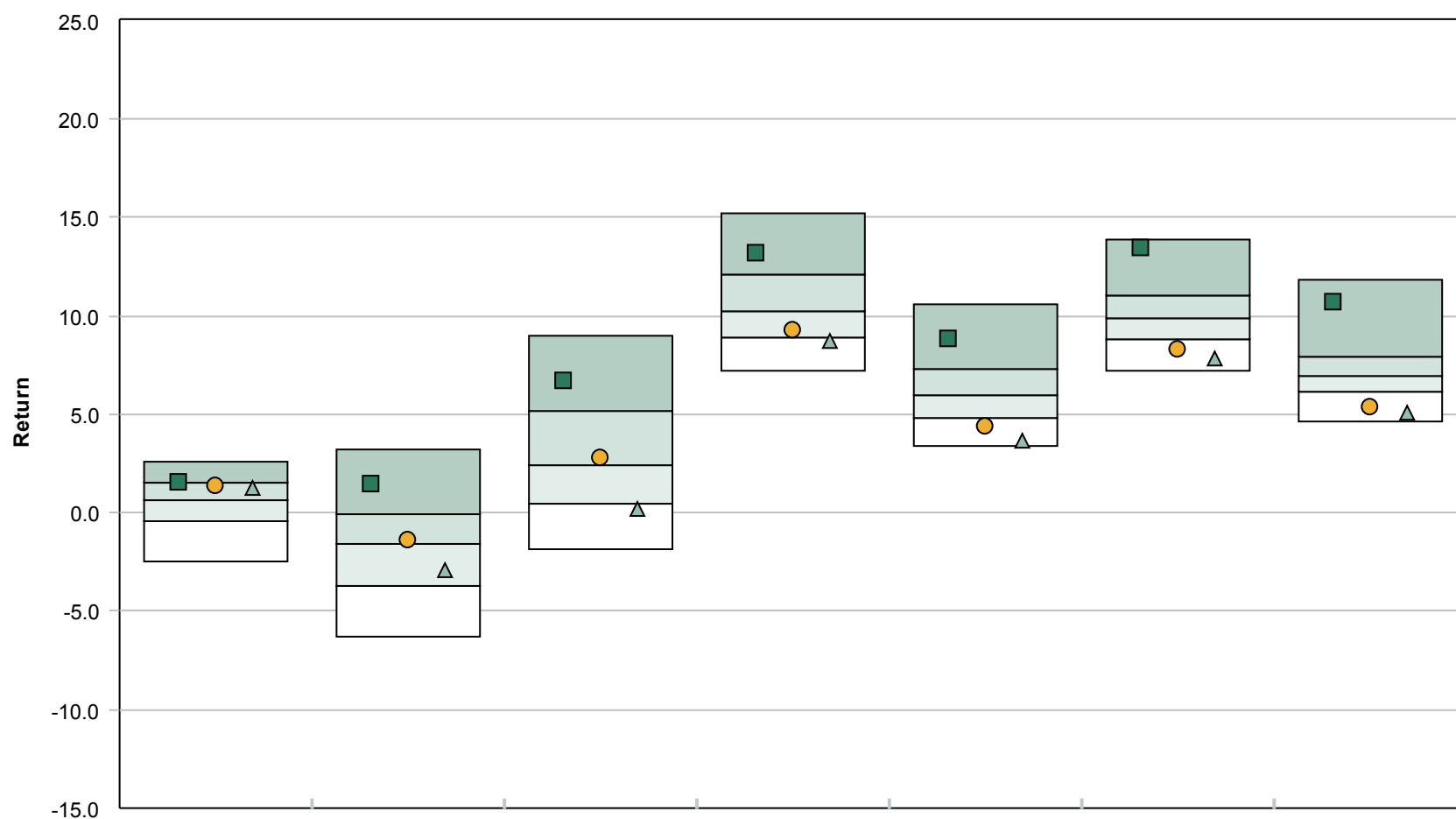
Style History(ppp)



Return Variance



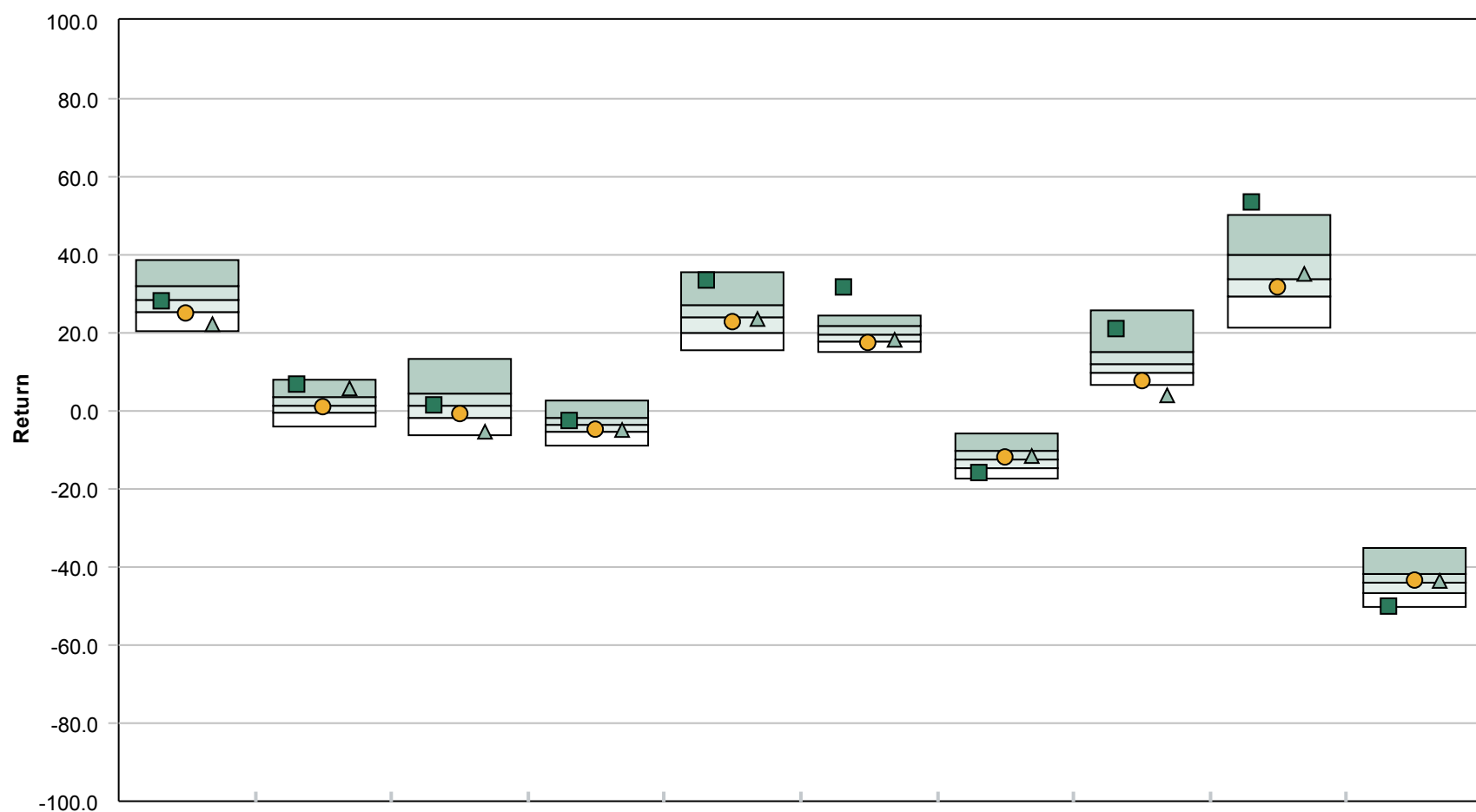
As of September 30, 2018



|                        | 1 Qtr     | YTD        | 1 Yr      | 3 Yrs      | 5 Yrs     | 7 Yrs     | 10 Yrs     |
|------------------------|-----------|------------|-----------|------------|-----------|-----------|------------|
| ■ Freedom Capital Intl | 1.52 (25) | 1.41 (15)  | 6.71 (13) | 13.14 (16) | 8.79 (12) | 13.47 (9) | 10.67 (12) |
| ● MSCI EAFE (net)      | 1.35 (29) | -1.43 (48) | 2.74 (47) | 9.23 (73)  | 4.42 (86) | 8.30 (88) | 5.38 (87)  |
| ▲ MSCI EAFE Value      | 1.26 (30) | -2.95 (67) | 0.24 (79) | 8.76 (80)  | 3.71 (94) | 7.86 (92) | 5.09 (92)  |
| 5th Percentile         | 2.59      | 3.20       | 9.00      | 15.21      | 10.61     | 13.93     | 11.88      |
| 1st Quartile           | 1.50      | -0.10      | 5.20      | 12.07      | 7.28      | 11.06     | 7.94       |
| Median                 | 0.65      | -1.62      | 2.40      | 10.22      | 5.97      | 9.86      | 6.93       |
| 3rd Quartile           | -0.43     | -3.70      | 0.46      | 8.94       | 4.84      | 8.86      | 6.19       |
| 95th Percentile        | -2.44     | -6.32      | -1.82     | 7.26       | 3.39      | 7.19      | 4.64       |

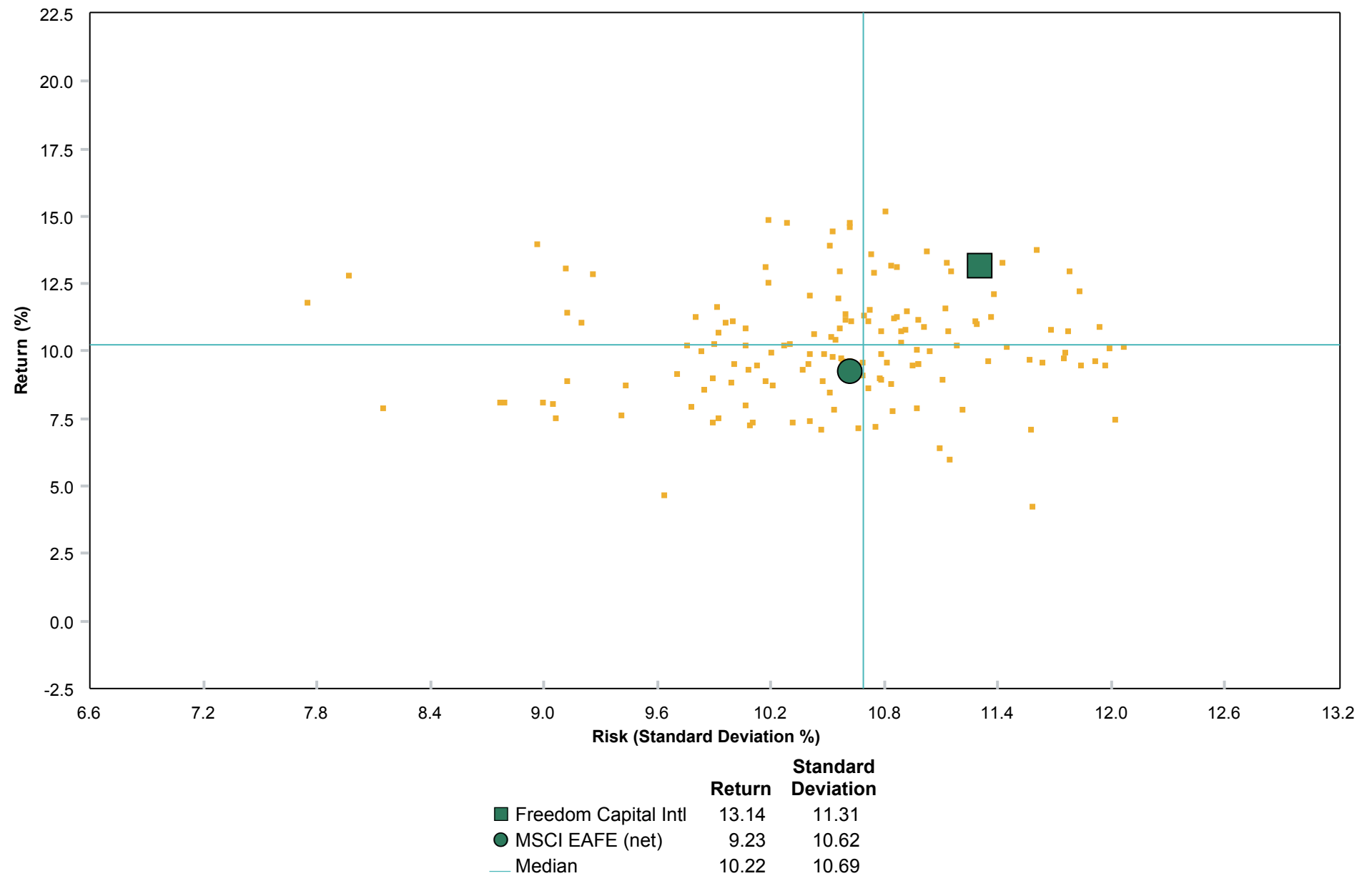
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018

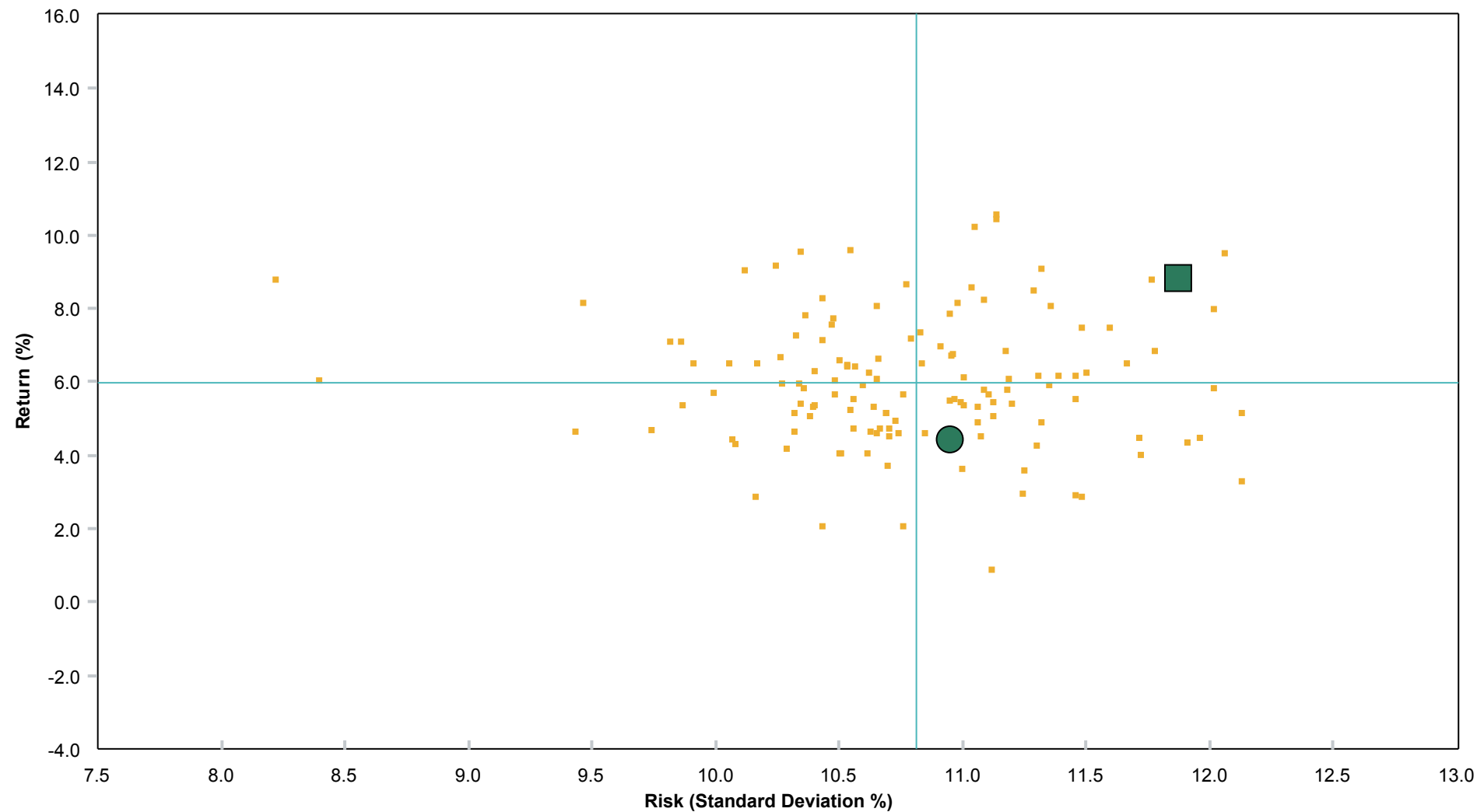


|                        | 2017       | 2016      | 2015       | 2014       | 2013       | 2012       | 2011        | 2010       | 2009       | 2008        |
|------------------------|------------|-----------|------------|------------|------------|------------|-------------|------------|------------|-------------|
| ■ Freedom Capital Intl | 27.96 (54) | 6.75 (10) | 1.37 (48)  | -2.88 (39) | 33.24 (8)  | 31.46 (1)  | -15.84 (88) | 20.72 (13) | 53.54 (3)  | -50.22 (95) |
| ● MSCI EAFE (net)      | 25.03 (78) | 1.00 (57) | -0.81 (68) | -4.90 (68) | 22.78 (61) | 17.32 (78) | -12.14 (46) | 7.75 (92)  | 31.78 (60) | -43.38 (43) |
| ▲ MSCI EAFE Value      | 22.12 (94) | 5.68 (15) | -5.22 (94) | -4.92 (68) | 23.59 (55) | 18.43 (70) | -11.65 (41) | 3.81 (98)  | 35.06 (48) | -43.68 (46) |
| 5th Percentile         | 38.79      | 8.15      | 13.31      | 2.79       | 35.74      | 24.59      | -5.90       | 25.60      | 50.11      | -34.94      |
| 1st Quartile           | 32.01      | 3.49      | 4.52       | -1.95      | 27.30      | 21.97      | -10.42      | 15.16      | 39.87      | -41.82      |
| Median                 | 28.38      | 1.47      | 1.12       | -3.47      | 24.09      | 19.73      | -12.40      | 11.99      | 33.97      | -44.14      |
| 3rd Quartile           | 25.28      | -0.36     | -1.80      | -5.26      | 20.18      | 17.62      | -14.79      | 9.70       | 29.23      | -46.55      |
| 95th Percentile        | 20.64      | -3.91     | -6.07      | -9.06      | 15.36      | 14.92      | -17.52      | 6.65       | 21.54      | -50.34      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



Calculation based on monthly periodicity.



|                      | Return | Standard Deviation |
|----------------------|--------|--------------------|
| Freedom Capital Intl | 8.79   | 11.88              |
| MSCI EAFE (net)      | 4.42   | 10.95              |
| Median               | 5.97   | 10.81              |

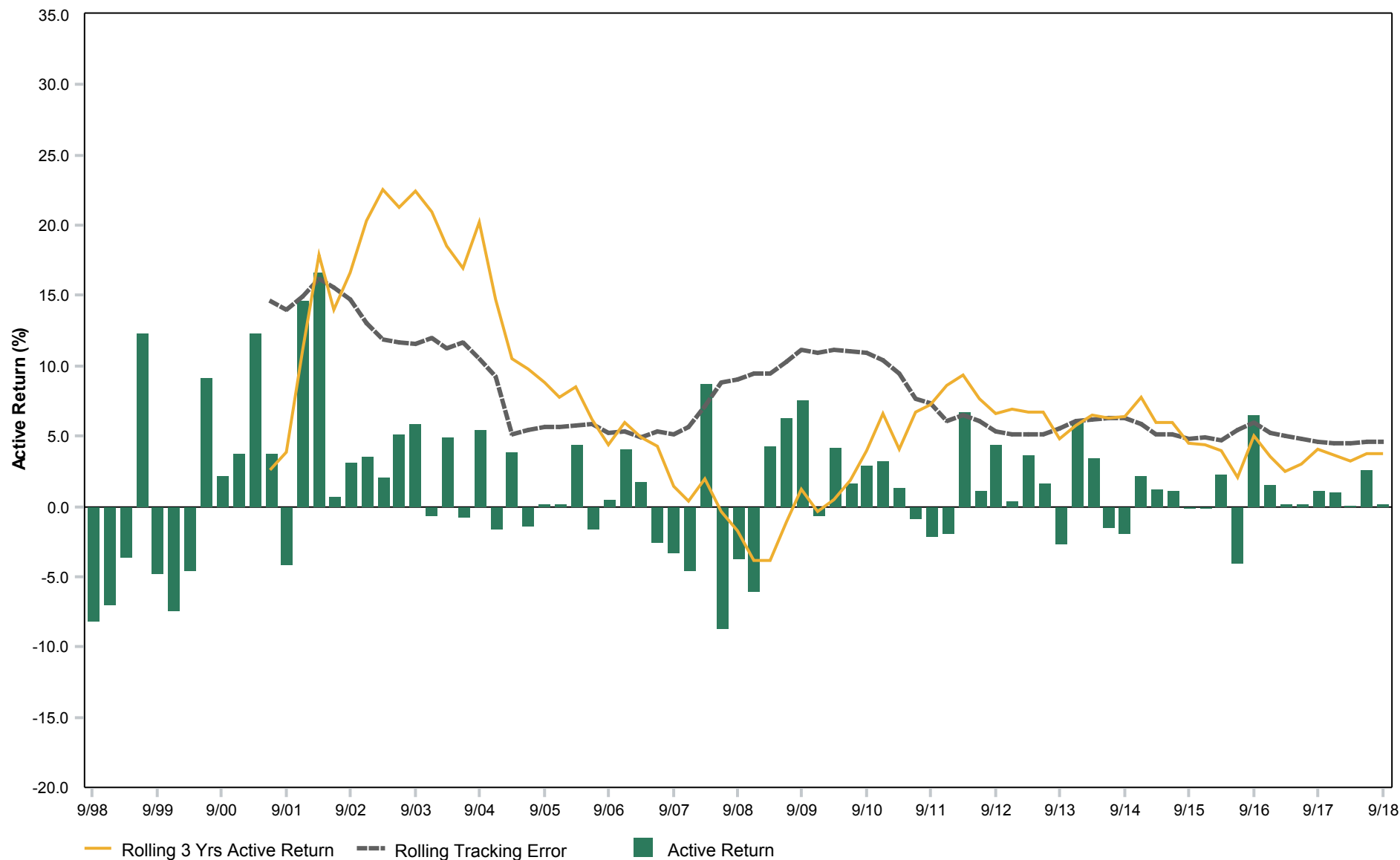
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                      | 1 Qtr | YTD   | 1 Yr | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016 | 2015  | 2014  |
|----------------------|-------|-------|------|-------|-------|-------|--------|-------|------|-------|-------|
| Freedom Capital Intl | 1.52  | 1.41  | 6.71 | 13.14 | 8.79  | 13.47 | 10.67  | 27.96 | 6.75 | 1.37  | -2.88 |
| MSCI EAFE (net)      | 1.35  | -1.43 | 2.74 | 9.23  | 4.42  | 8.30  | 5.38   | 25.03 | 1.00 | -0.81 | -4.90 |
| Difference           | 0.17  | 2.84  | 3.97 | 3.91  | 4.37  | 5.17  | 5.29   | 2.93  | 5.75 | 2.18  | 2.02  |



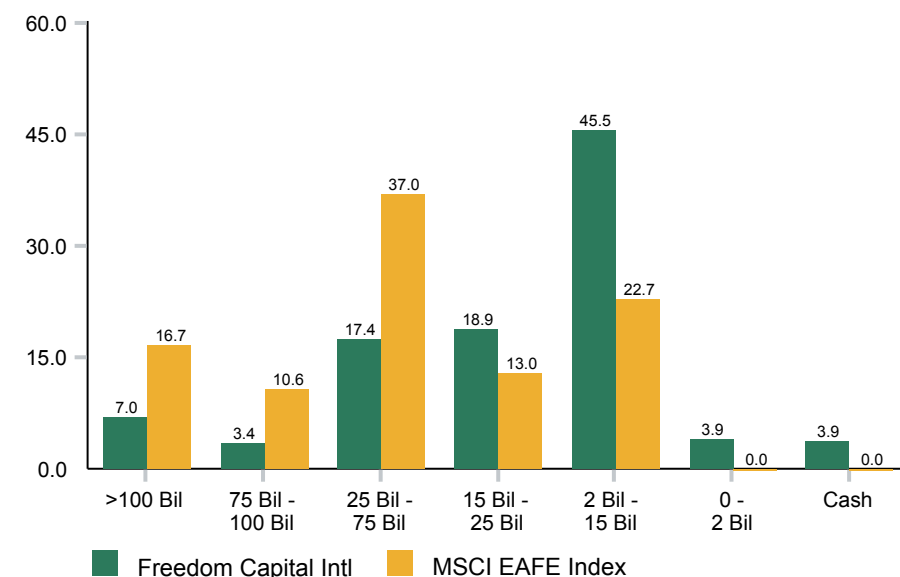
Top Ten Equity Holdings

|                                    | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|------------------------------------|----------------------|----------------------|-------------------|----------------------|
| Methanex Corp                      | 2.88                 | 0.00                 | 2.88              | 12.09                |
| Cineworld Group                    | 2.77                 | 0.00                 | 2.77              | 18.91                |
| DnB ASA                            | 2.70                 | 0.14                 | 2.56              | 7.68                 |
| Linde AG                           | 2.52                 | 0.30                 | 2.22              | -0.76                |
| Next PLC                           | 2.44                 | 0.07                 | 2.37              | -8.60                |
| Bellway PLC                        | 2.40                 | 0.00                 | 2.40              | -0.80                |
| Teva Pharmaceutical Industries Ltd | 2.37                 | 0.14                 | 2.23              | -11.43               |
| Samsung Electronics Co Ltd         | 2.36                 | 0.00                 | 2.36              | 0.53                 |
| Novartis AG                        | 2.34                 | 1.30                 | 1.04              | 14.12                |
| BHP Billiton Group                 | 2.32                 | 0.56                 | 1.76              | N/A                  |
| % of Portfolio                     | 25.10                | 2.51                 | 22.59             |                      |

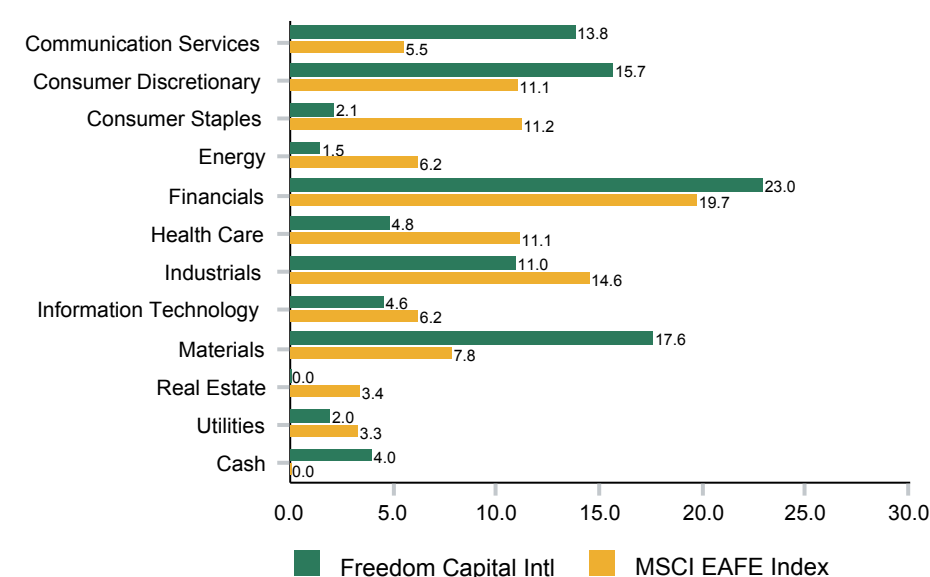
Portfolio Characteristics

|                           | Portfolio      | Benchmark      |
|---------------------------|----------------|----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 32,407,723,180 | 61,248,915,245 |
| Median Mkt. Cap (\$)      | 13,746,783,289 | 11,018,051,194 |
| Price/Earnings ratio      | 14.44          | 14.43          |
| Price/Book ratio          | 1.76           | 2.19           |
| 5 Yr. EPS Growth Rate (%) | 2.46           | 10.83          |
| Current Yield (%)         | 3.23           | 3.27           |
| Beta (5 Years, Monthly)   | 1.00           | 1.00           |
| Number of Stocks          | 53             | 924            |

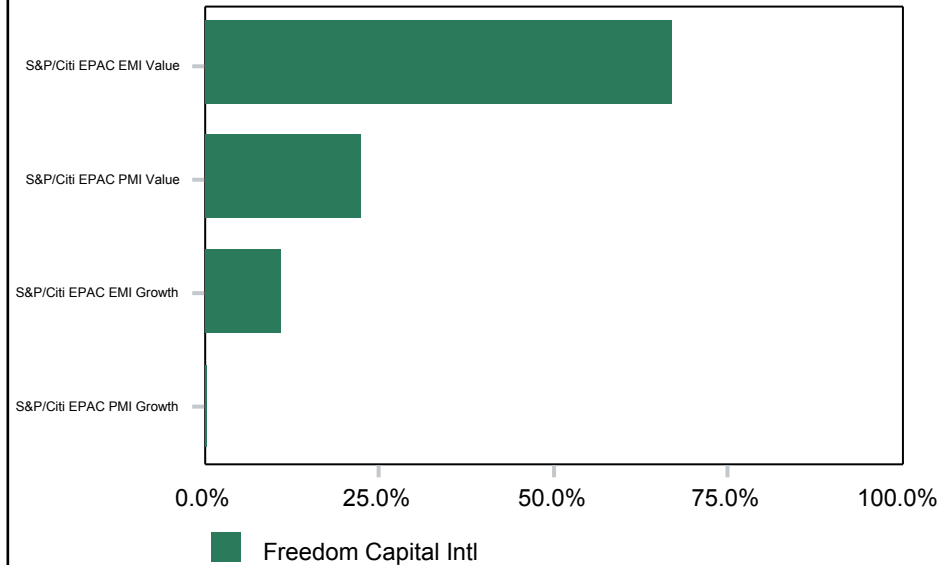
Distribution of Market Capitalization (%)



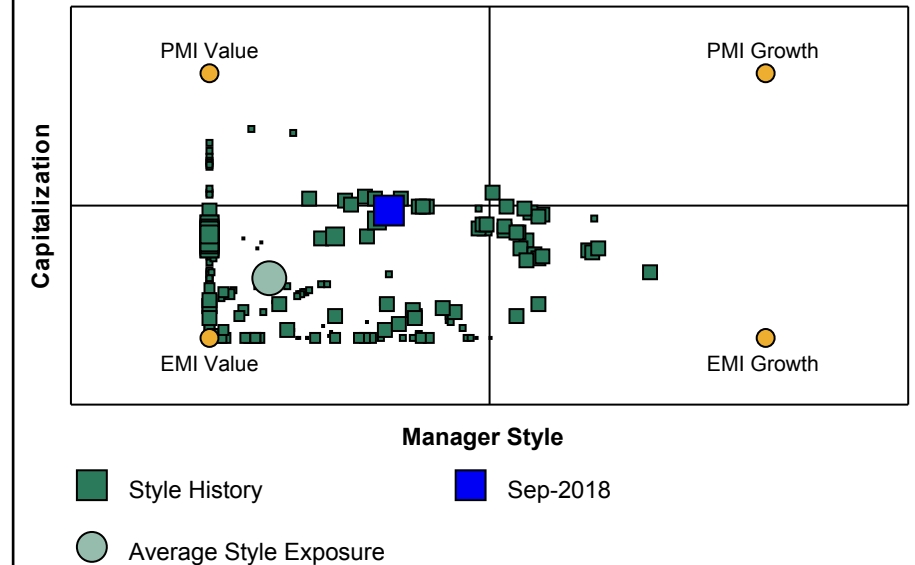
Sector Weights (%)



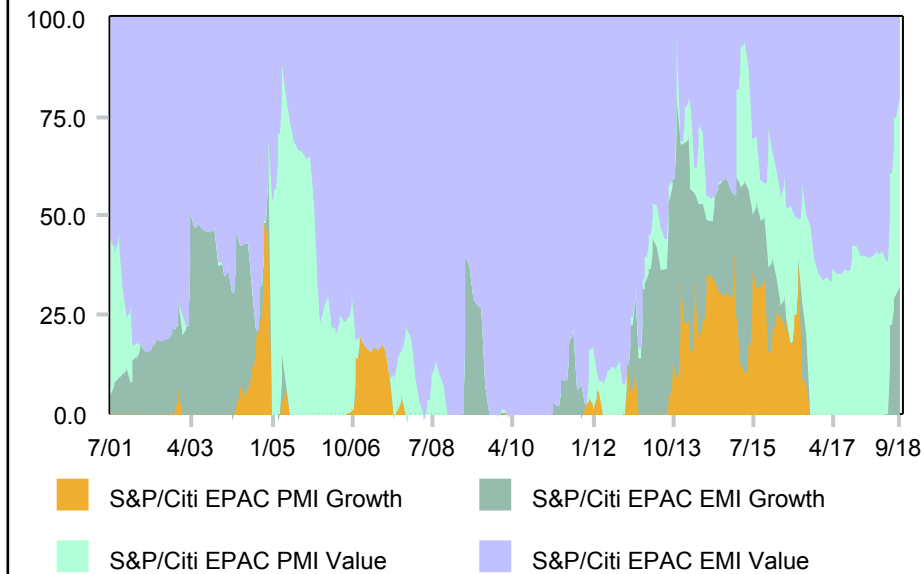
### Investment Style Exposure



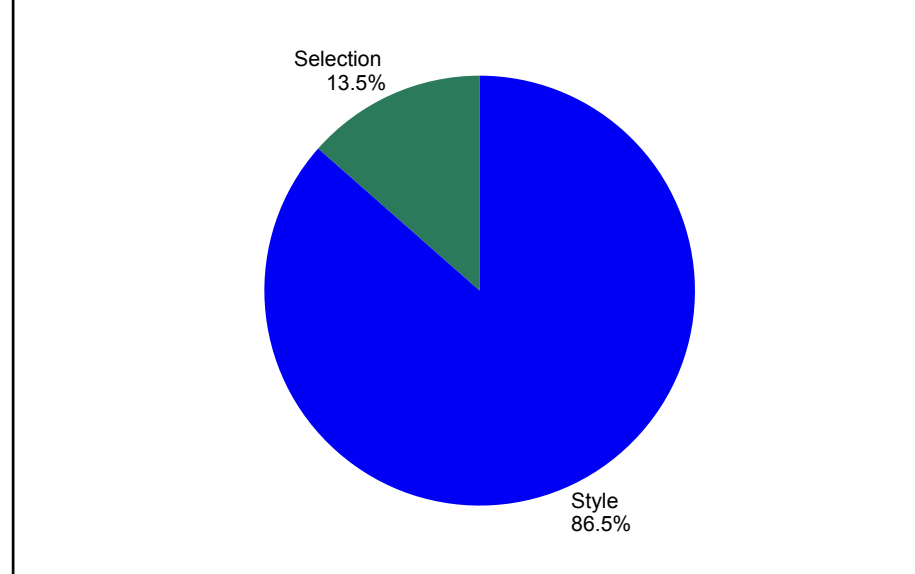
### Style Map(ppp)



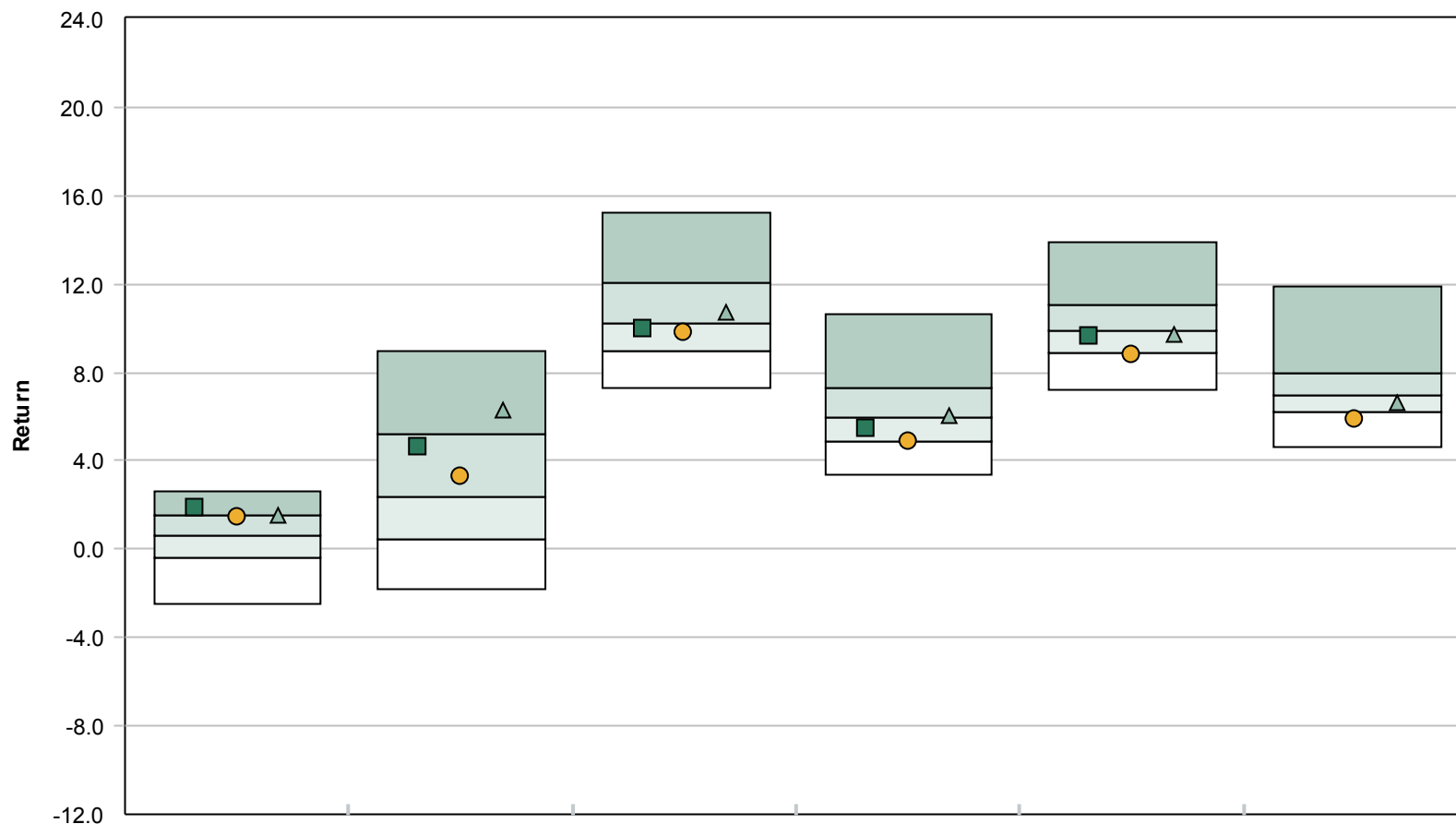
### Style History(ppp)



### Return Variance



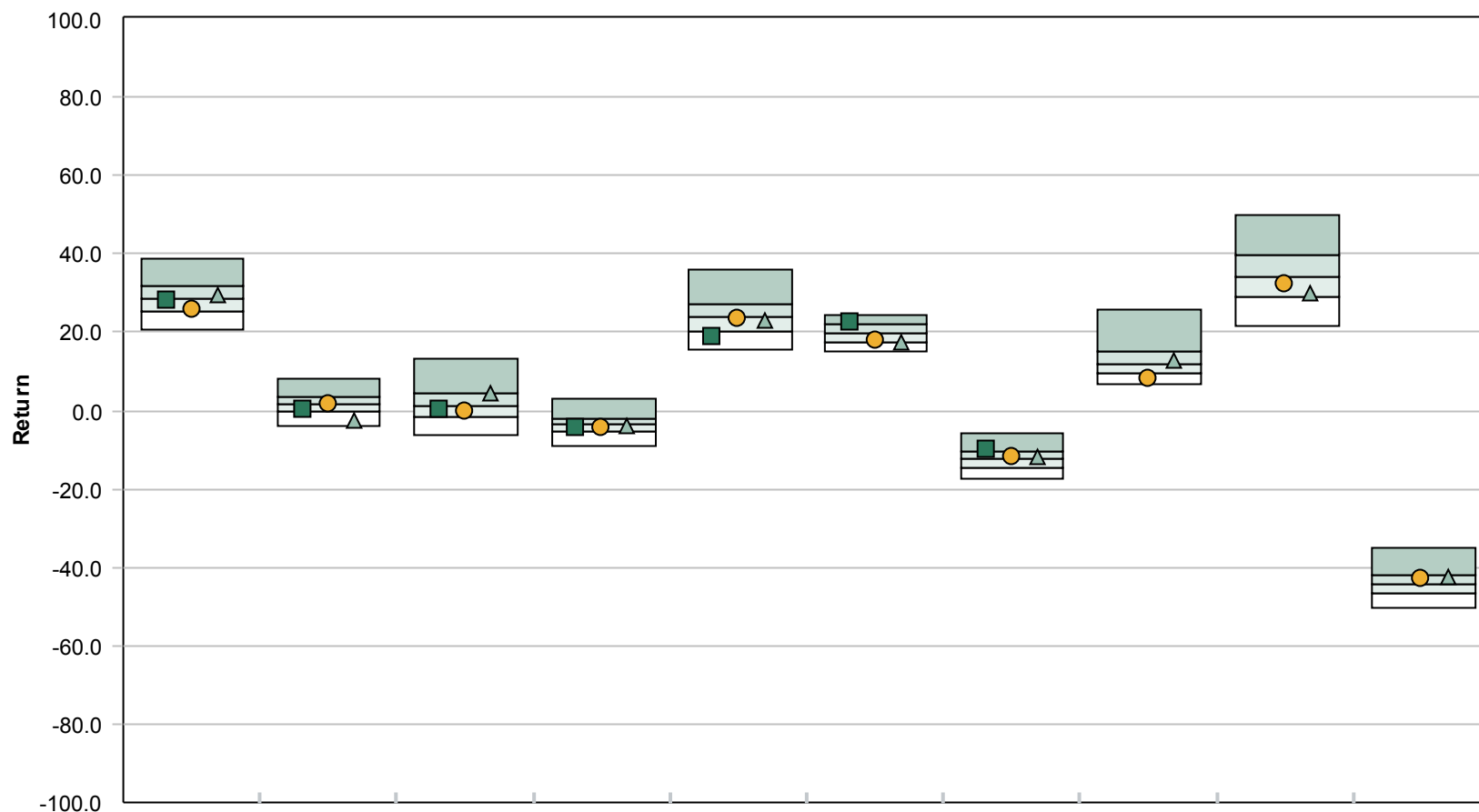
As of September 30, 2018



|                            | 1 Qtr     | 1 Yr      | 3 Yrs      | 5 Yrs     | 7 Yrs     | 10 Yrs    |
|----------------------------|-----------|-----------|------------|-----------|-----------|-----------|
| ■ MFS International Equity | 1.87 (17) | 4.65 (31) | 9.95 (56)  | 5.49 (61) | 9.66 (57) | N/A       |
| ● MSCI EAFE Index          | 1.42 (27) | 3.25 (40) | 9.77 (60)  | 4.90 (74) | 8.80 (78) | 5.87 (82) |
| ▲ MSCI EAFE Growth Index   | 1.57 (23) | 6.27 (18) | 10.68 (46) | 6.02 (49) | 9.68 (57) | 6.59 (69) |
| 5th Percentile             | 2.59      | 9.00      | 15.21      | 10.61     | 13.93     | 11.88     |
| 1st Quartile               | 1.50      | 5.20      | 12.07      | 7.28      | 11.06     | 7.94      |
| Median                     | 0.65      | 2.40      | 10.22      | 5.97      | 9.86      | 6.93      |
| 3rd Quartile               | -0.43     | 0.46      | 8.94       | 4.84      | 8.86      | 6.19      |
| 95th Percentile            | -2.44     | -1.82     | 7.26       | 3.39      | 7.19      | 4.64      |

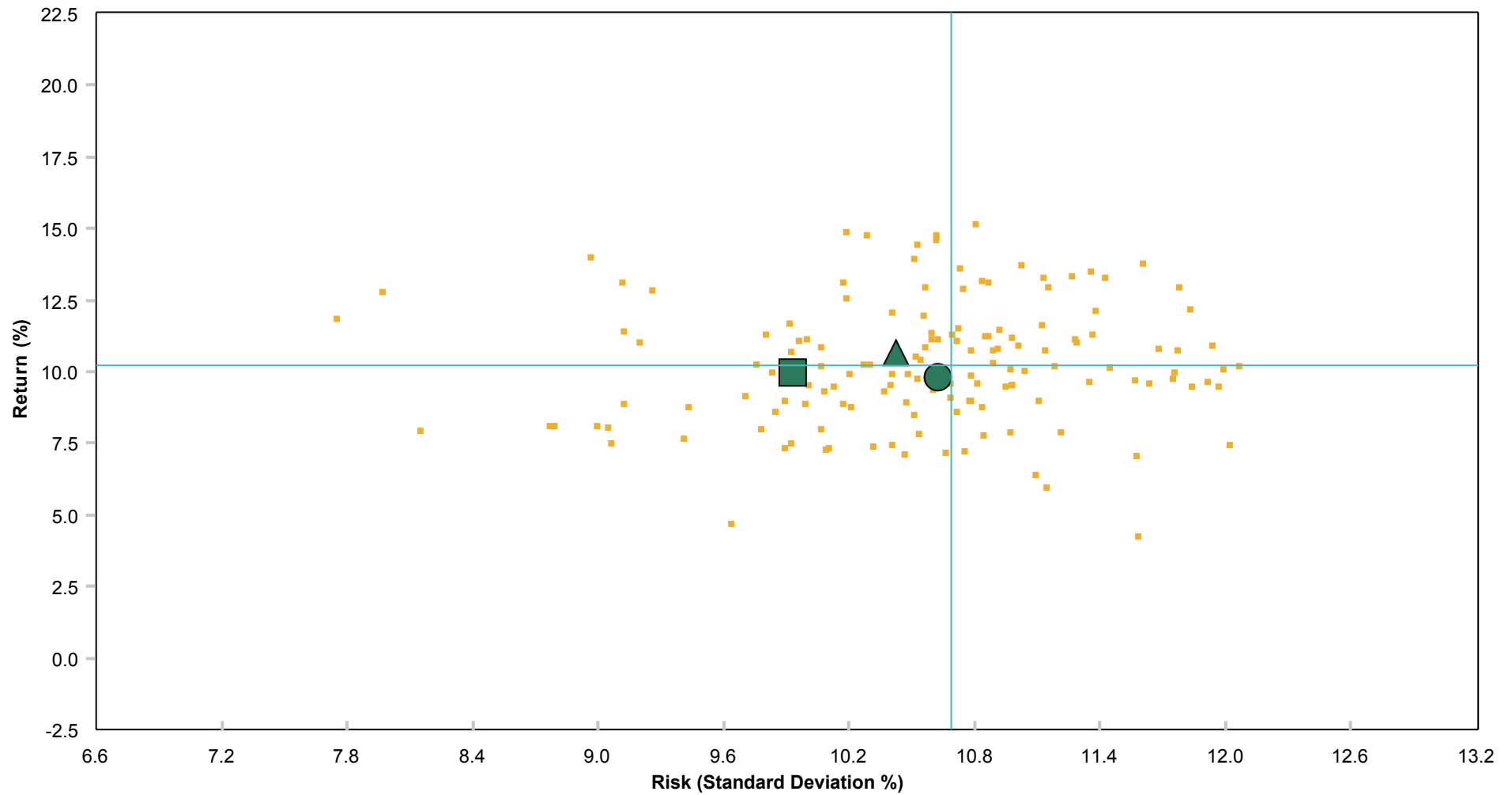
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018



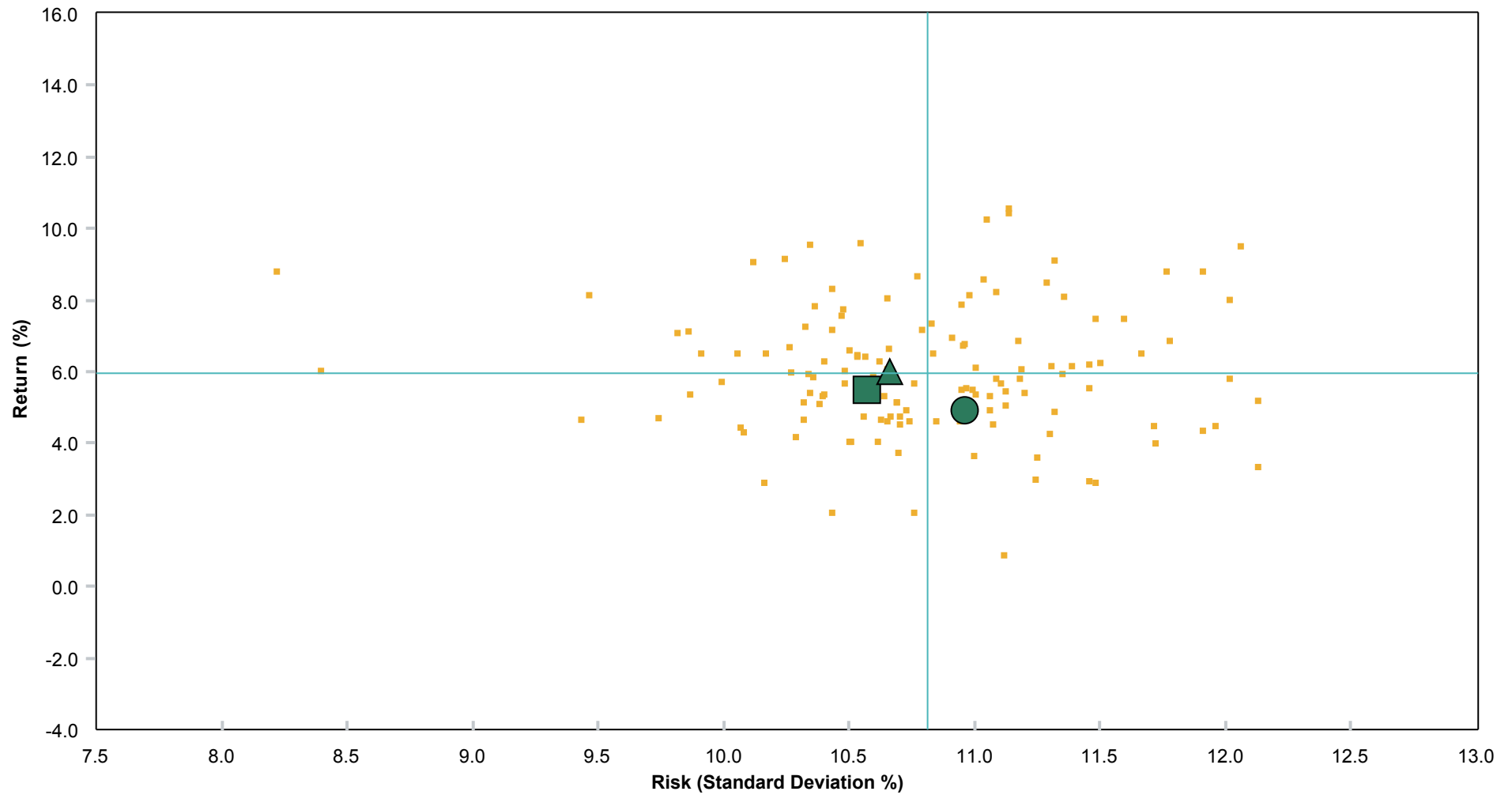
|                            | 2017       | 2016       | 2015       | 2014       | 2013       | 2012       | 2011        | 2010       | 2009       | 2008        |
|----------------------------|------------|------------|------------|------------|------------|------------|-------------|------------|------------|-------------|
| ■ MFS International Equity | 28.02 (53) | 0.30 (68)  | 0.02 (62)  | -4.21 (58) | 18.57 (81) | 22.55 (18) | -9.80 (21)  | N/A        | N/A        | N/A         |
| ● MSCI EAFE Index          | 25.62 (71) | 1.51 (50)  | -0.39 (66) | -4.48 (62) | 23.29 (59) | 17.90 (73) | -11.73 (41) | 8.21 (89)  | 32.46 (58) | -43.06 (39) |
| ▲ MSCI EAFE Growth Index   | 29.34 (43) | -2.66 (90) | 4.47 (26)  | -4.06 (57) | 22.95 (60) | 17.28 (78) | -11.82 (41) | 12.60 (42) | 29.90 (71) | -42.46 (35) |
| 5th Percentile             | 38.79      | 8.15       | 13.31      | 2.79       | 35.74      | 24.59      | -5.90       | 25.60      | 50.11      | -34.94      |
| 1st Quartile               | 32.01      | 3.49       | 4.52       | -1.95      | 27.30      | 21.97      | -10.42      | 15.16      | 39.87      | -41.82      |
| Median                     | 28.38      | 1.47       | 1.12       | -3.47      | 24.09      | 19.73      | -12.40      | 11.99      | 33.97      | -44.14      |
| 3rd Quartile               | 25.28      | -0.36      | -1.80      | -5.26      | 20.18      | 17.62      | -14.79      | 9.70       | 29.23      | -46.55      |
| 95th Percentile            | 20.64      | -3.91      | -6.07      | -9.06      | 15.36      | 14.92      | -17.52      | 6.65       | 21.54      | -50.34      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



|                            | Return | Standard<br>Deviation |
|----------------------------|--------|-----------------------|
| ■ MFS International Equity | 9.95   | 9.94                  |
| ● MSCI EAFE Index          | 9.77   | 10.63                 |
| ▲ MSCI EAFE Growth Index   | 10.68  | 10.42                 |
| — Median                   | 10.22  | 10.69                 |

Calculation based on monthly periodicity.



|                            | Return | Standard<br>Deviation |
|----------------------------|--------|-----------------------|
| ■ MFS International Equity | 5.49   | 10.57                 |
| ● MSCI EAFE Index          | 4.90   | 10.97                 |
| ▲ MSCI EAFE Growth Index   | 6.02   | 10.66                 |
| — Median                   | 5.97   | 10.81                 |

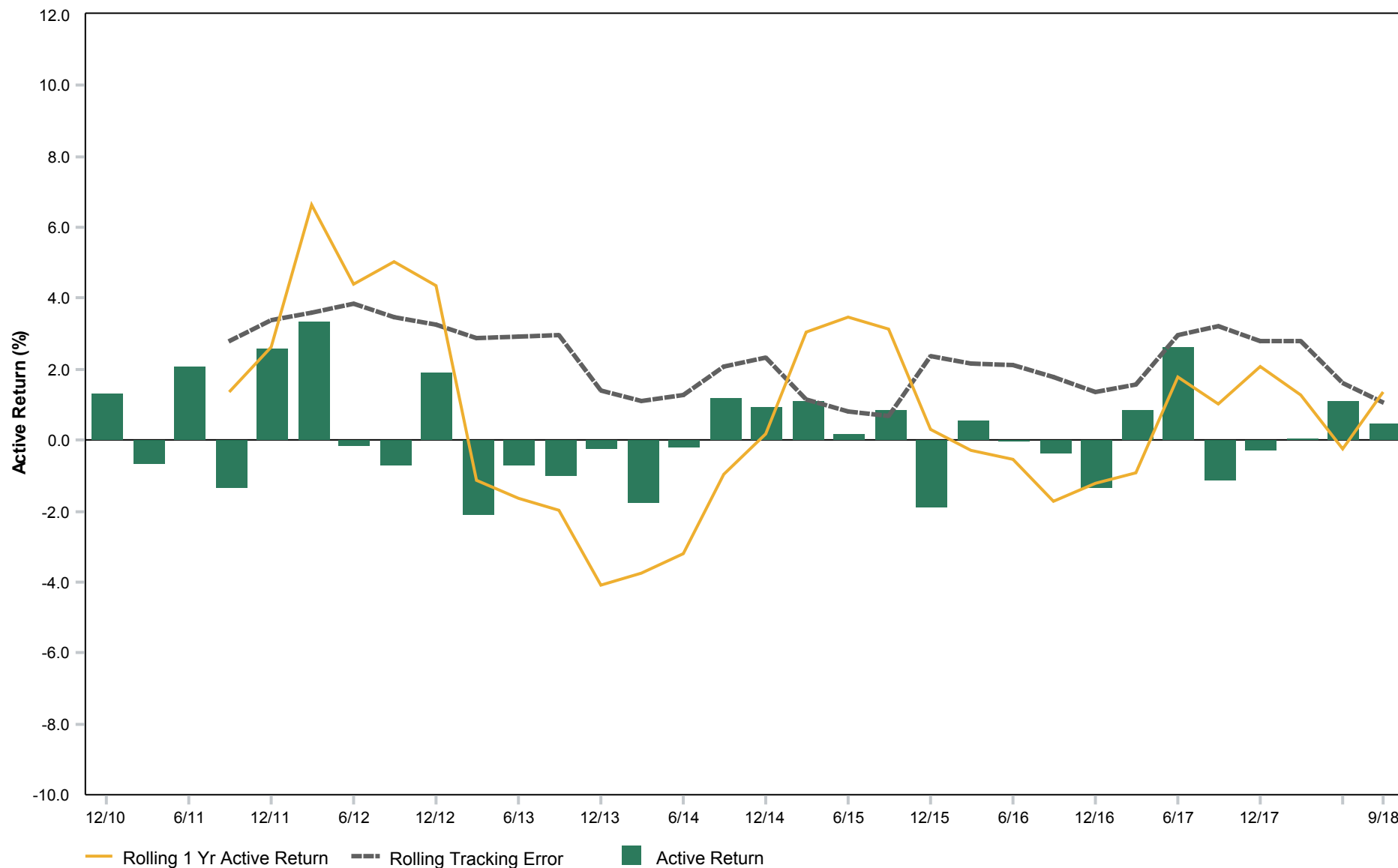
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                          | 1 Qtr | YTD   | 1 Yr | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015  | 2014  |
|--------------------------|-------|-------|------|-------|-------|-------|--------|-------|-------|-------|-------|
| MFS International Equity | 1.87  | 0.63  | 4.65 | 9.95  | 5.49  | 9.66  | N/A    | 28.02 | 0.30  | 0.02  | -4.21 |
| MSCI EAFE Index          | 1.42  | -0.98 | 3.25 | 9.77  | 4.90  | 8.80  | 5.87   | 25.62 | 1.51  | -0.39 | -4.48 |
| Difference               | 0.45  | 1.61  | 1.40 | 0.18  | 0.59  | 0.86  | N/A    | 2.40  | -1.21 | 0.41  | 0.27  |



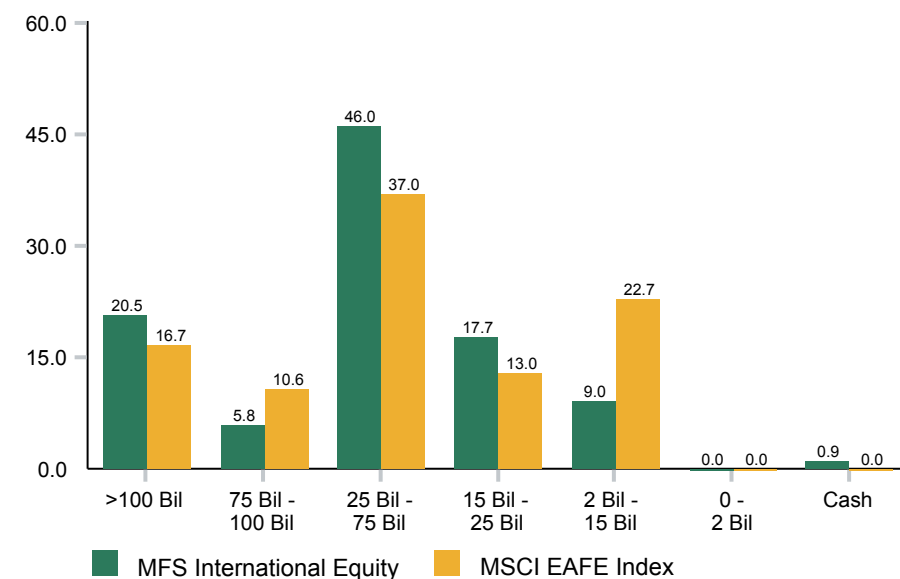
Top Ten Equity Holdings

|                                     | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|-------------------------------------|----------------------|----------------------|-------------------|----------------------|
| Nestle SA, Cham Und Vevey           | 3.69                 | 1.81                 | 1.88              | 8.30                 |
| AIA Group Ltd                       | 2.83                 | 0.75                 | 2.08              | 2.66                 |
| Roche Holding AG                    | 2.65                 | 1.18                 | 1.47              | 9.73                 |
| SAP AG Systeme Anwendungen          | 2.62                 | 0.84                 | 1.78              | 6.68                 |
| L'Air Liquide SA                    | 2.56                 | 0.39                 | 2.17              | 4.76                 |
| Hoya Corp                           | 2.53                 | 0.16                 | 2.37              | 5.13                 |
| Bayer AG                            | 2.48                 | 0.57                 | 1.91              | -19.25               |
| Schneider Electric SA               | 2.41                 | 0.30                 | 2.11              | -3.37                |
| Amadeus IT Group SA                 | 2.21                 | 0.28                 | 1.93              | 17.88                |
| LVMH Moet Hennessy Louis Vuitton SE | 2.18                 | 0.68                 | 1.50              | 6.36                 |
| % of Portfolio                      | 26.16                | 6.96                 | 19.20             |                      |

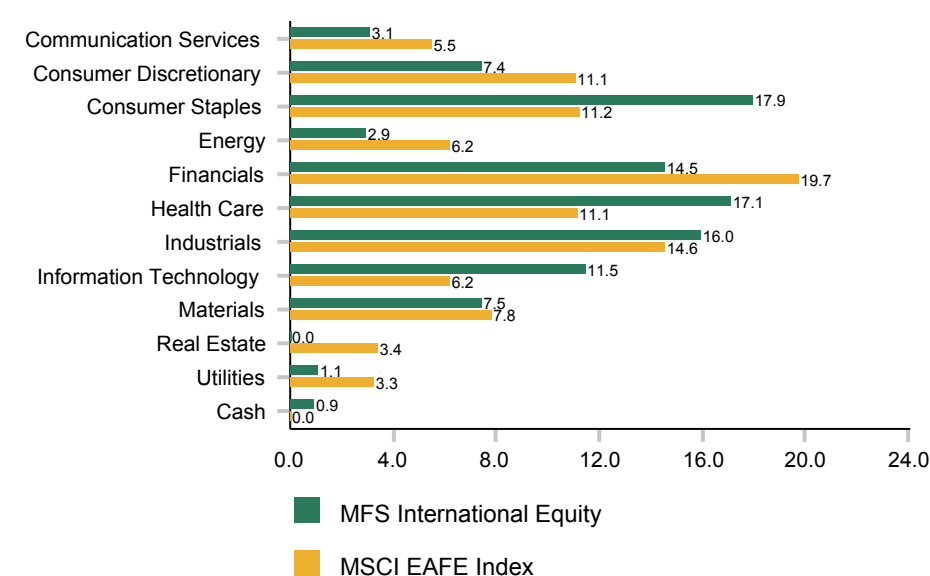
Portfolio Characteristics

|                           | Portfolio      | Benchmark      |
|---------------------------|----------------|----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 70,055,481,853 | 61,248,915,245 |
| Median Mkt. Cap (\$)      | 39,840,194,756 | 11,018,051,194 |
| Price/Earnings ratio      | 19.63          | 14.43          |
| Price/Book ratio          | 2.87           | 2.19           |
| 5 Yr. EPS Growth Rate (%) | 11.45          | 10.83          |
| Current Yield (%)         | 2.61           | 3.27           |
| Beta (5 Years, Monthly)   | 0.94           | 1.00           |
| Number of Stocks          | 77             | 924            |

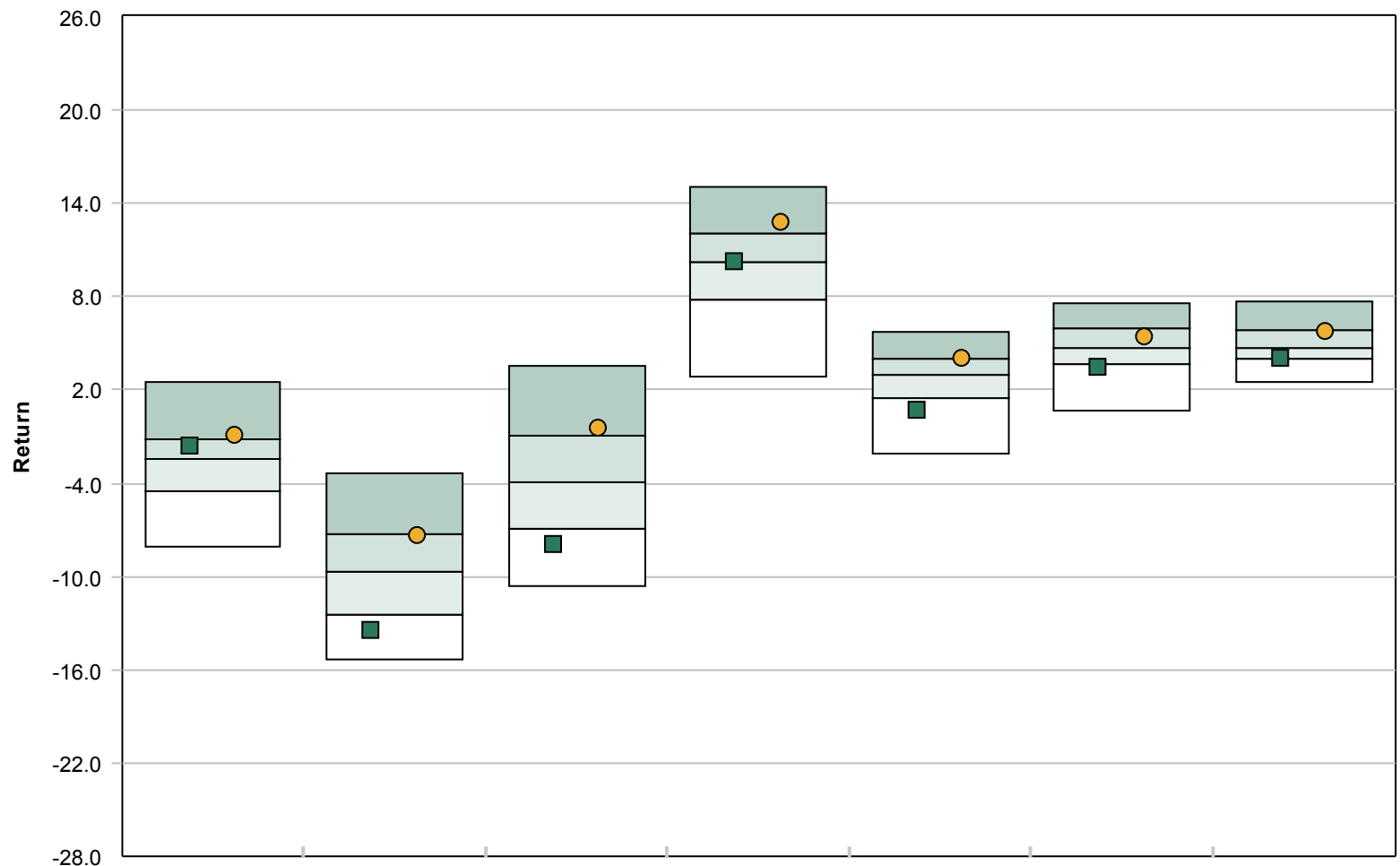
Distribution of Market Capitalization (%)



Sector Weights (%)



As of September 30, 2018

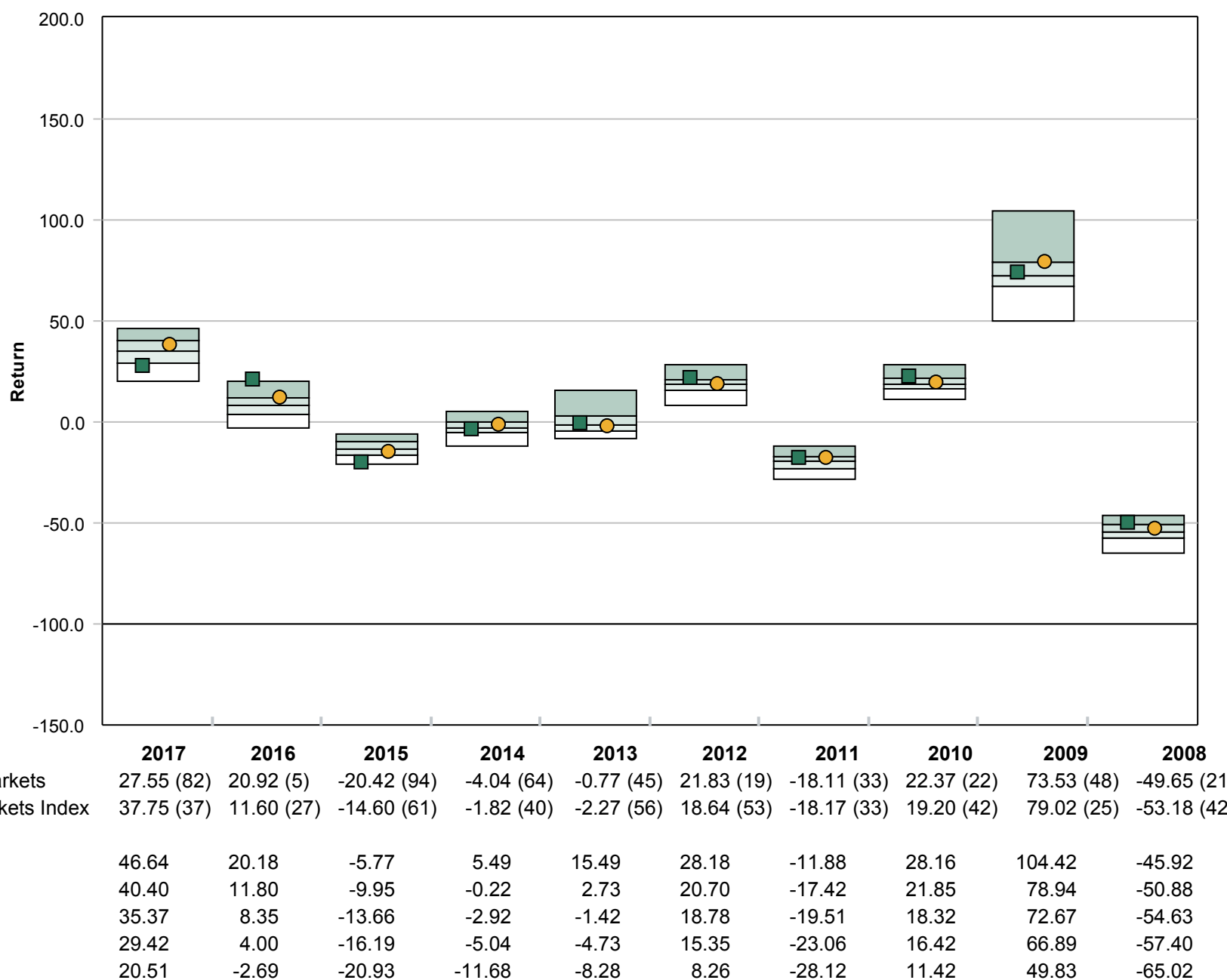


■ Lazard Emerging Markets  
 ● MSCI Emerging Markets Index

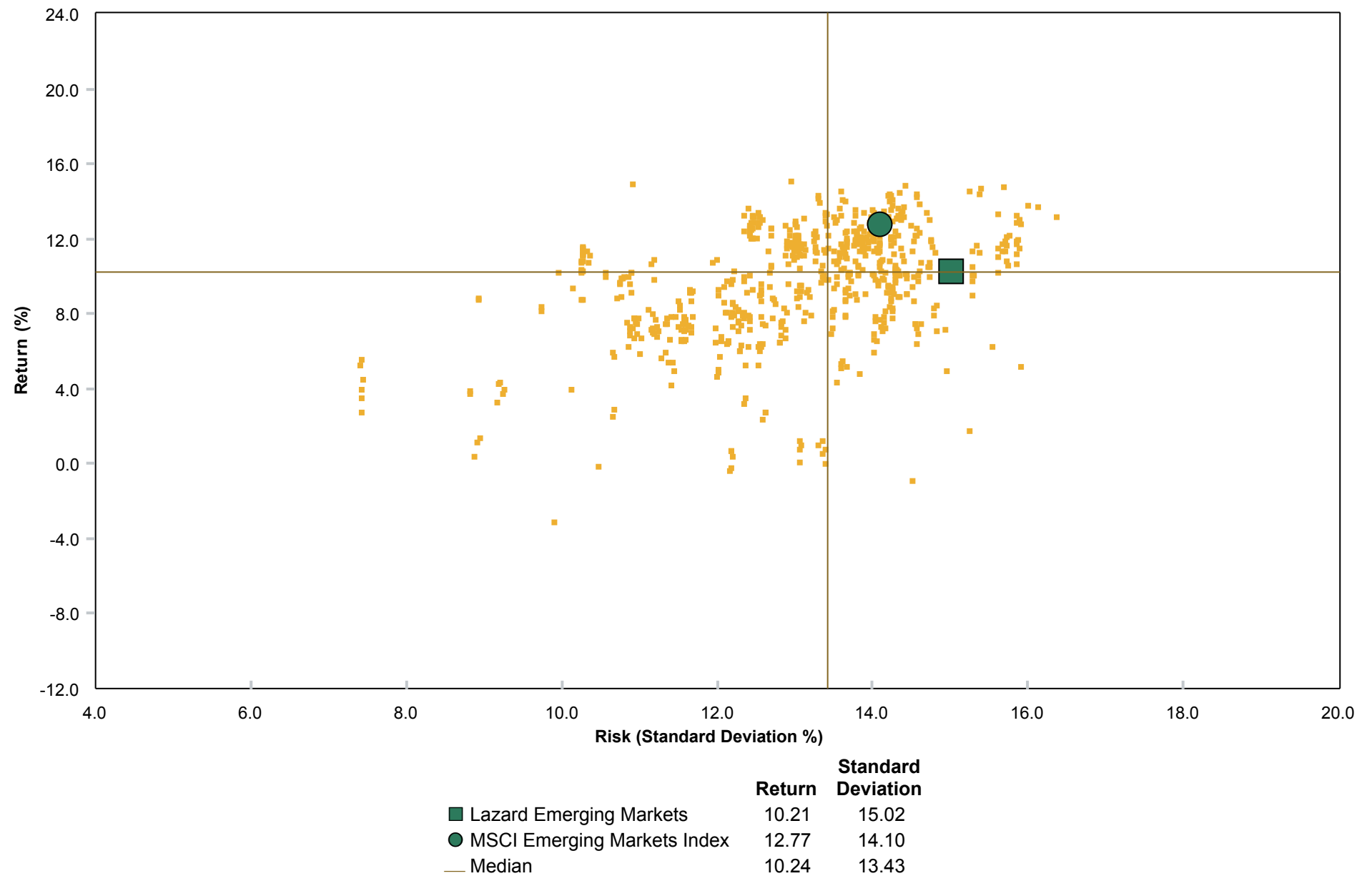
|                 | 1 Qtr      | YTD         | 1 Yr       | 3 Yrs      | 5 Yrs     | 7 Yrs     | 10 Yrs    |
|-----------------|------------|-------------|------------|------------|-----------|-----------|-----------|
|                 | -1.60 (37) | -13.46 (87) | -7.99 (84) | 10.21 (51) | 0.69 (84) | 3.45 (81) | 4.00 (75) |
|                 | -0.95 (23) | -7.39 (26)  | -0.44 (20) | 12.77 (18) | 3.99 (25) | 5.41 (36) | 5.76 (27) |
| 5th Percentile  | 2.46       | -3.32       | 3.50       | 15.01      | 5.72      | 7.57      | 7.69      |
| 1st Quartile    | -1.13      | -7.33       | -0.97      | 12.03      | 3.97      | 5.96      | 5.84      |
| Median          | -2.42      | -9.72       | -3.97      | 10.24      | 2.92      | 4.70      | 4.74      |
| 3rd Quartile    | -4.56      | -12.44      | -6.88      | 7.77       | 1.48      | 3.72      | 3.98      |
| 95th Percentile | -8.04      | -15.33      | -10.60     | 2.85       | -2.07     | 0.67      | 2.45      |

Parentheses contain percentile rankings.  
 Calculation based on monthly periodicity.

As of September 30, 2018

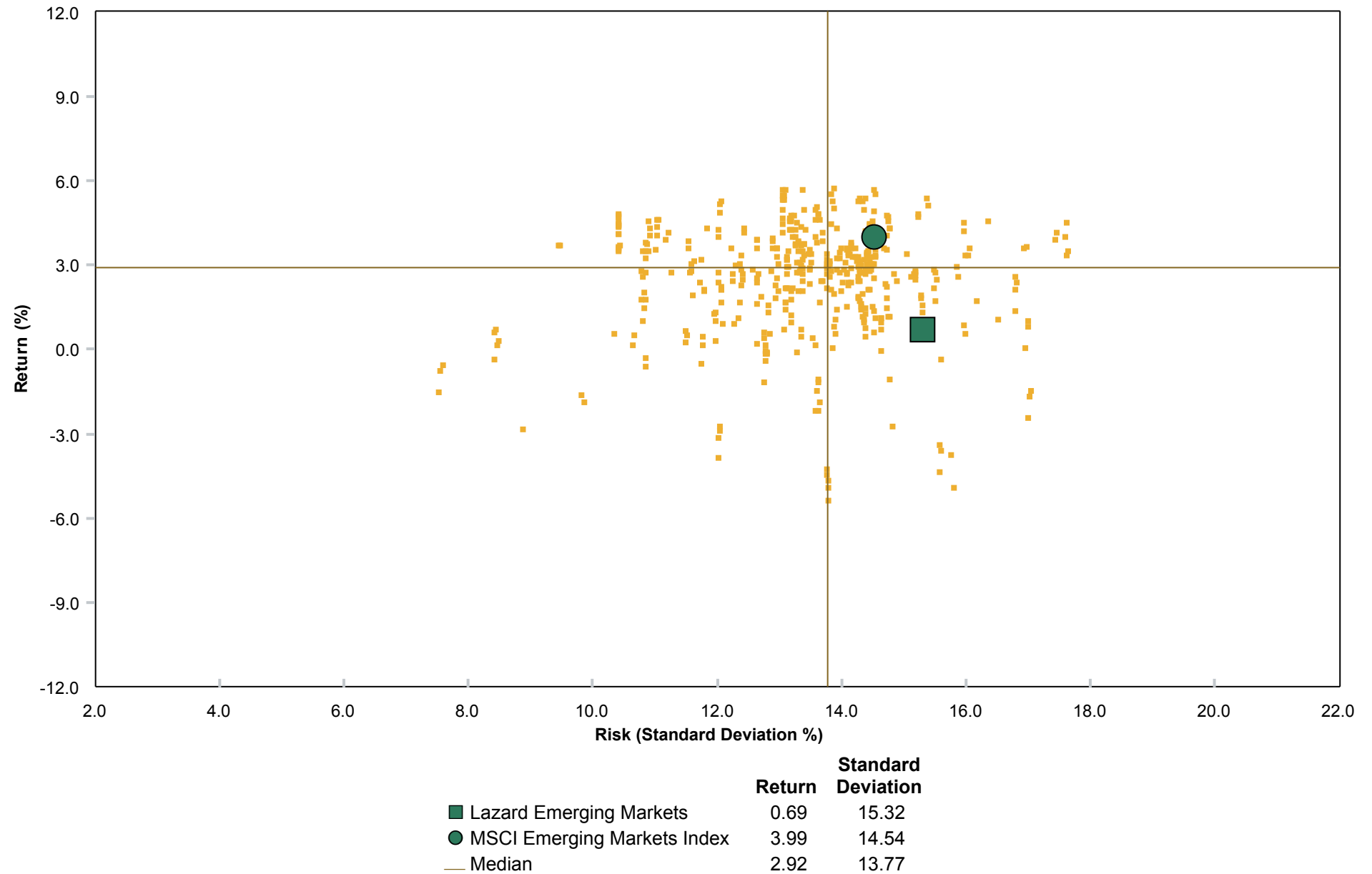


Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



Calculation based on monthly periodicity.

IM Emerging Markets Equity (MF)



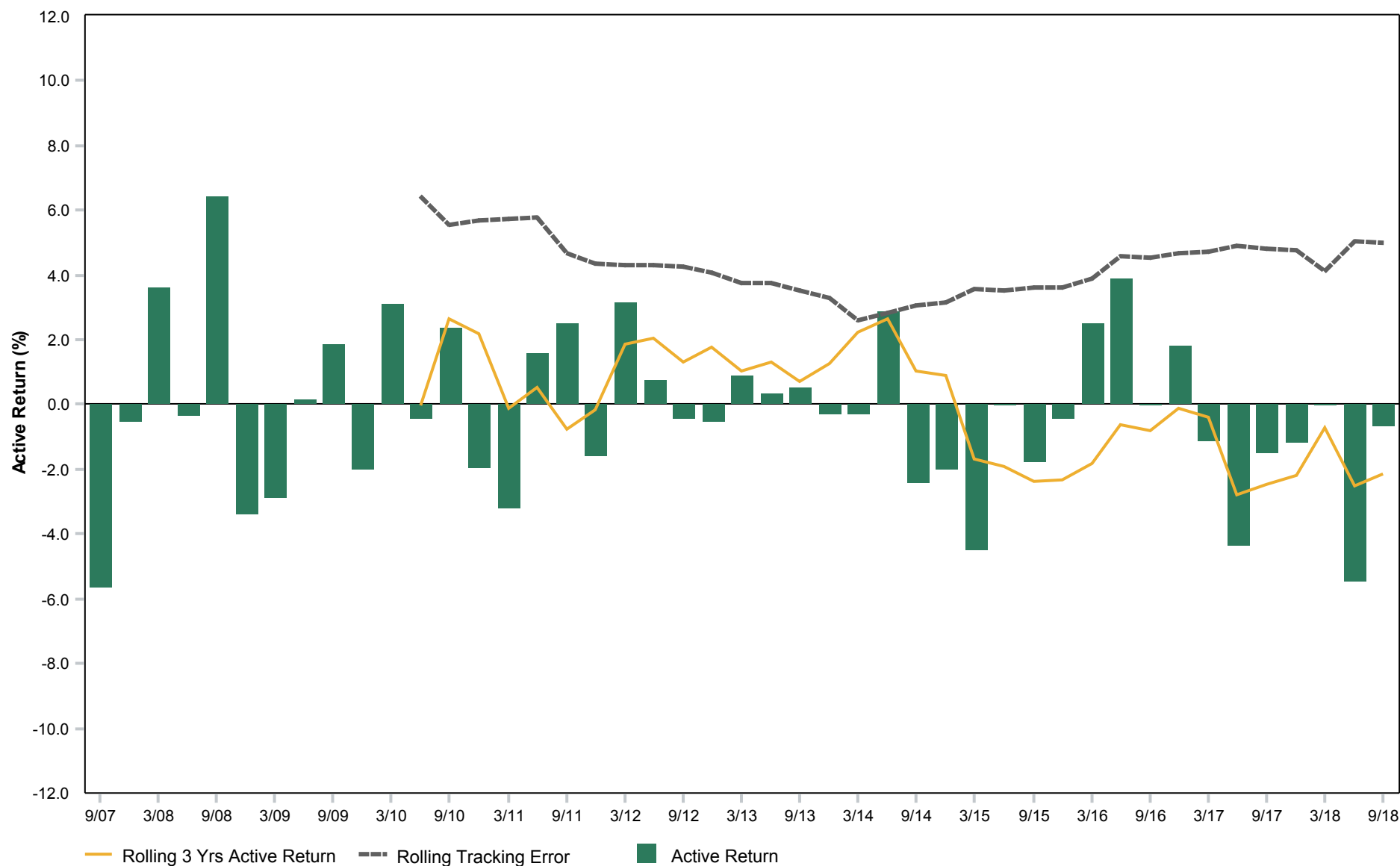
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                             | 1 Qtr | YTD    | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017   | 2016  | 2015   | 2014  |
|-----------------------------|-------|--------|-------|-------|-------|-------|--------|--------|-------|--------|-------|
| Lazard Emerging Markets     | -1.60 | -13.46 | -7.99 | 10.21 | 0.69  | 3.45  | 4.00   | 27.55  | 20.92 | -20.42 | -4.04 |
| MSCI Emerging Markets Index | -0.95 | -7.39  | -0.44 | 12.77 | 3.99  | 5.41  | 5.76   | 37.75  | 11.60 | -14.60 | -1.82 |
| Difference                  | -0.65 | -6.07  | -7.55 | -2.56 | -3.30 | -1.96 | -1.76  | -10.20 | 9.32  | -5.82  | -2.22 |



As of September 30, 2018

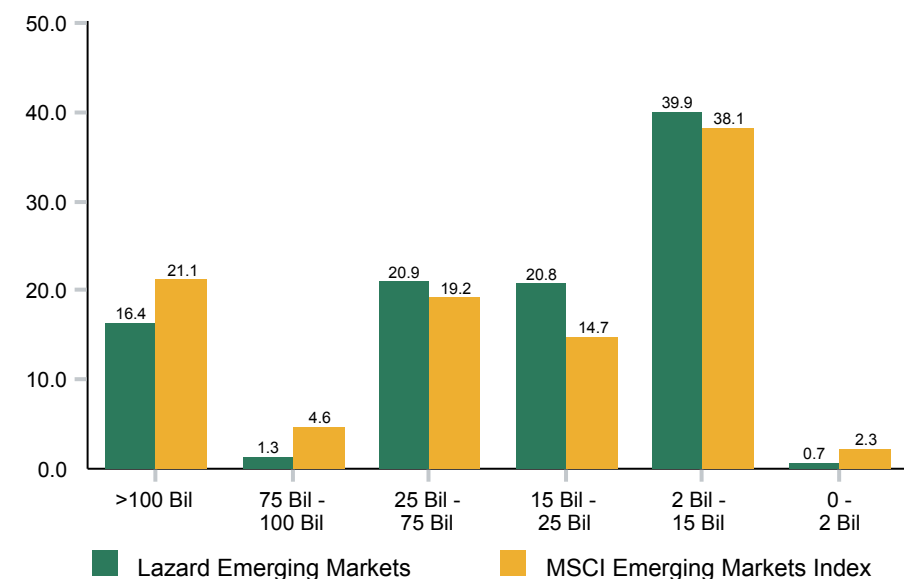
Top Ten Equity Holdings

|                                | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|--------------------------------|----------------------|----------------------|-------------------|----------------------|
| China Construction Bank Corp   | 5.28                 | 1.62                 | 3.66              | -0.69                |
| China Mobile Ltd               | 4.16                 | 1.17                 | 2.99              | 12.91                |
| Taiwan Semiconductor Manuf     | 4.00                 | 4.09                 | -0.09             | 21.10                |
| Sberbank of Russia OJSC        | 3.78                 | 0.65                 | 3.13              | -10.67               |
| SK Hynix Inc                   | 3.38                 | 0.74                 | 2.64              | -14.52               |
| Tata Consultancy Services Ltd  | 2.93                 | 0.53                 | 2.40              | 11.79                |
| Banco Do Brasil SA Bb Brasil   | 2.78                 | 0.12                 | 2.66              | 1.37                 |
| Netease Inc                    | 2.49                 | 0.35                 | 2.14              | -9.40                |
| Shinhan Financial Group Co Ltd | 2.34                 | 0.33                 | 2.01              | 4.15                 |
| America Movil SA De CV, Mexico | 2.27                 | 0.52                 | 1.75              | -2.68                |
| % of Portfolio                 | 33.41                | 10.12                | 23.29             |                      |

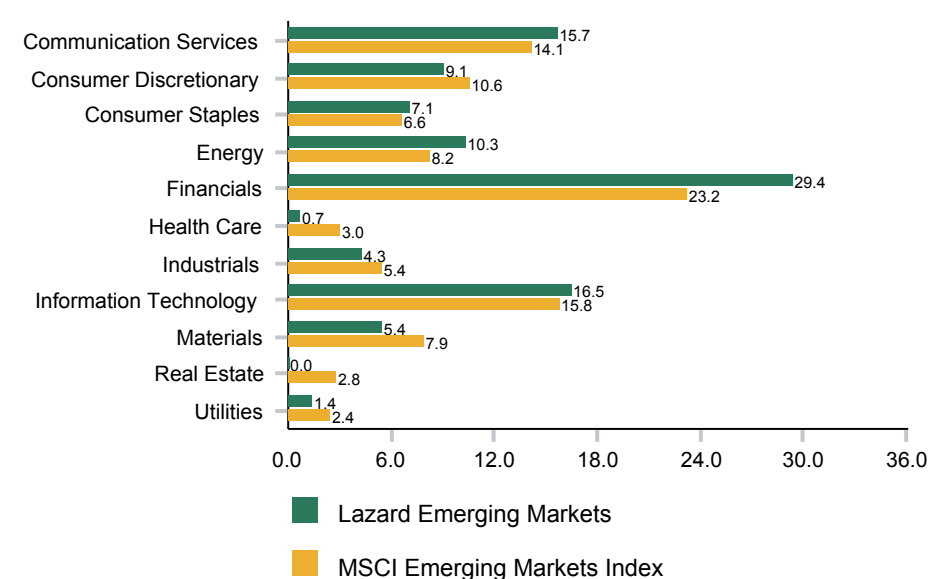
Portfolio Characteristics

|                           | Portfolio      | Benchmark      |
|---------------------------|----------------|----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 51,011,734,861 | 78,601,645,080 |
| Median Mkt. Cap (\$)      | 10,985,245,651 | 5,211,025,617  |
| Price/Earnings ratio      | 9.88           | 12.71          |
| Price/Book ratio          | 2.38           | 2.30           |
| 5 Yr. EPS Growth Rate (%) | 7.57           | 13.69          |
| Current Yield (%)         | 3.72           | 2.83           |
| Beta (5 Years, Monthly)   | 0.98           | 1.00           |
| Number of Stocks          | 71             | 1,151          |

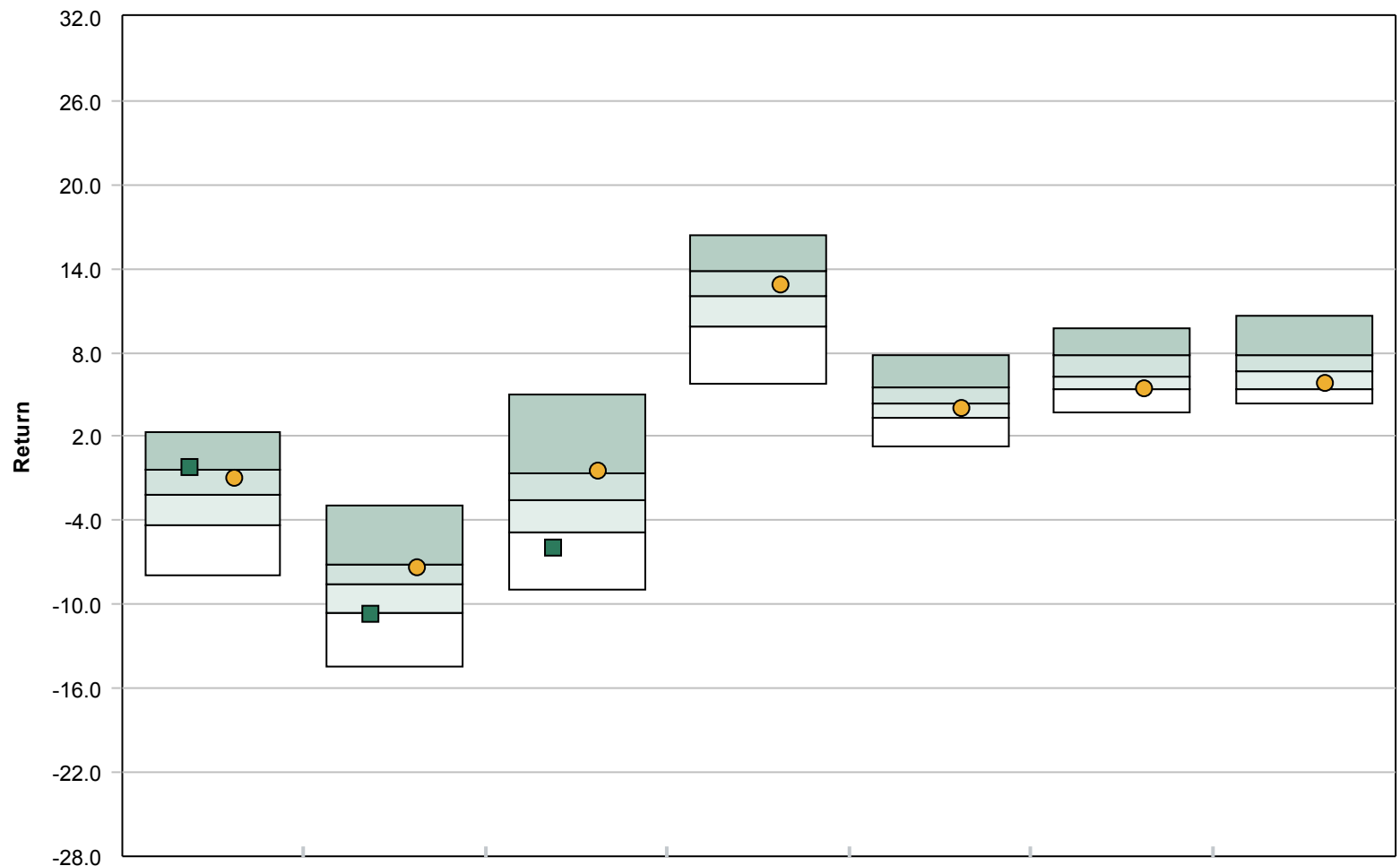
Distribution of Market Capitalization (%)



Sector Weights (%)



As of September 30, 2018



|                               | 1 Qtr      | YTD         | 1 Yr       | 3 Yrs      | 5 Yrs     | 7 Yrs     | 10 Yrs    |
|-------------------------------|------------|-------------|------------|------------|-----------|-----------|-----------|
| ■ Aberdeen Emerging Markets   | -0.28 (24) | -10.79 (76) | -6.02 (85) | N/A        | N/A       | N/A       | N/A       |
| ● MSCI Emerging Markets Index | -0.95 (35) | -7.39 (28)  | -0.44 (25) | 12.77 (40) | 3.99 (60) | 5.41 (76) | 5.76 (69) |
| 5th Percentile                | 2.31       | -2.90       | 5.00       | 16.40      | 7.87      | 9.80      | 10.63     |
| 1st Quartile                  | -0.39      | -7.16       | -0.62      | 13.88      | 5.55      | 7.77      | 7.86      |
| Median                        | -2.21      | -8.54       | -2.53      | 12.04      | 4.33      | 6.31      | 6.73      |
| 3rd Quartile                  | -4.33      | -10.66      | -4.80      | 9.84       | 3.38      | 5.42      | 5.42      |
| 95th Percentile               | -7.96      | -14.48      | -8.99      | 5.79       | 1.26      | 3.78      | 4.37      |

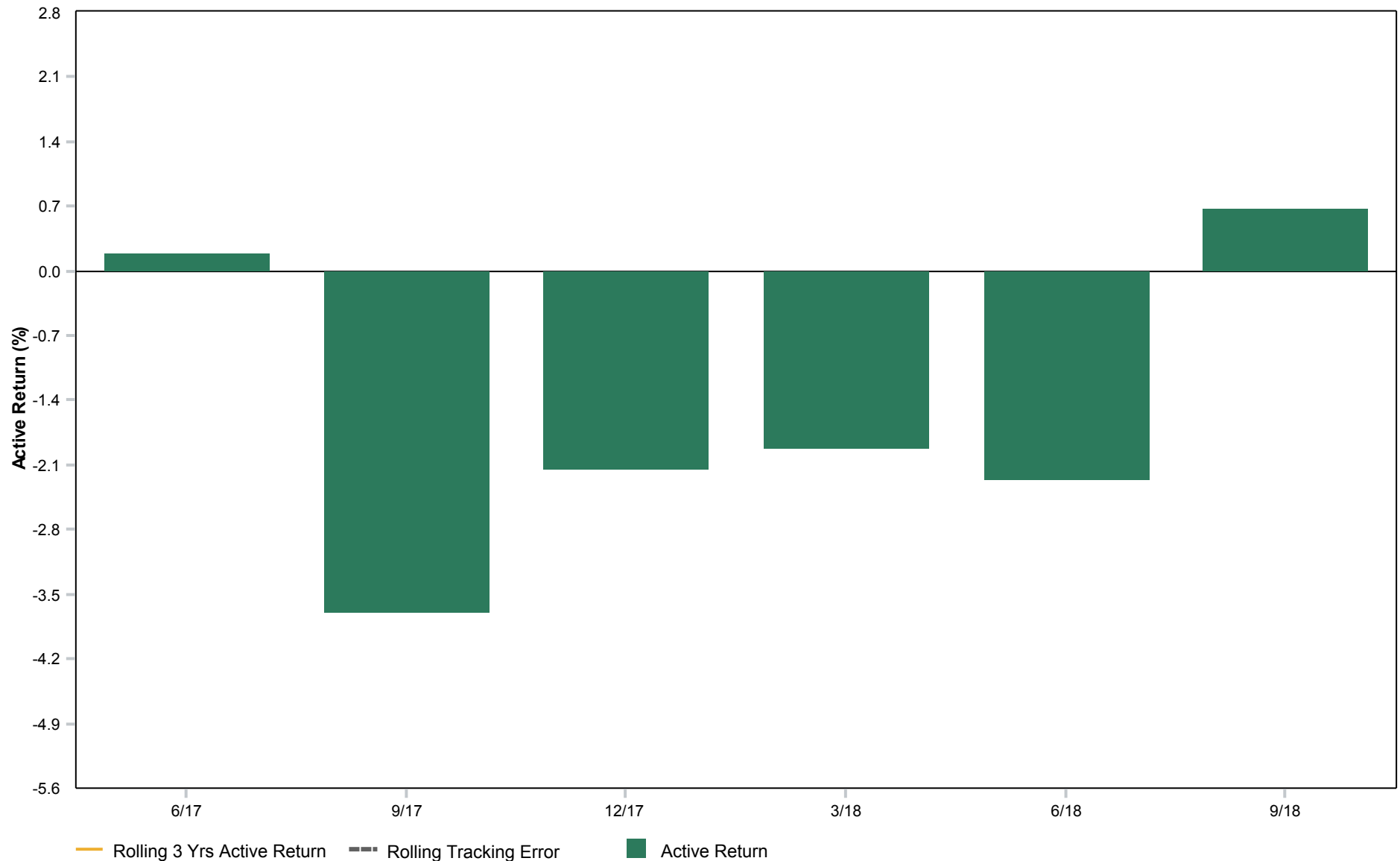
Parentheses contain percentile rankings.  
Calculation based on quarterly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                             | 1 Qtr | YTD    | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015   | 2014  |
|-----------------------------|-------|--------|-------|-------|-------|-------|--------|-------|-------|--------|-------|
| Aberdeen Emerging Markets   | -0.28 | -10.79 | -6.02 | N/A   | N/A   | N/A   | N/A    | N/A   | N/A   | N/A    | N/A   |
| MSCI Emerging Markets Index | -0.95 | -7.39  | -0.44 | 12.77 | 3.99  | 5.41  | 5.76   | 37.75 | 11.60 | -14.60 | -1.82 |
| Difference                  | 0.67  | -3.40  | -5.58 | N/A   | N/A   | N/A   | N/A    | N/A   | N/A   | N/A    | N/A   |



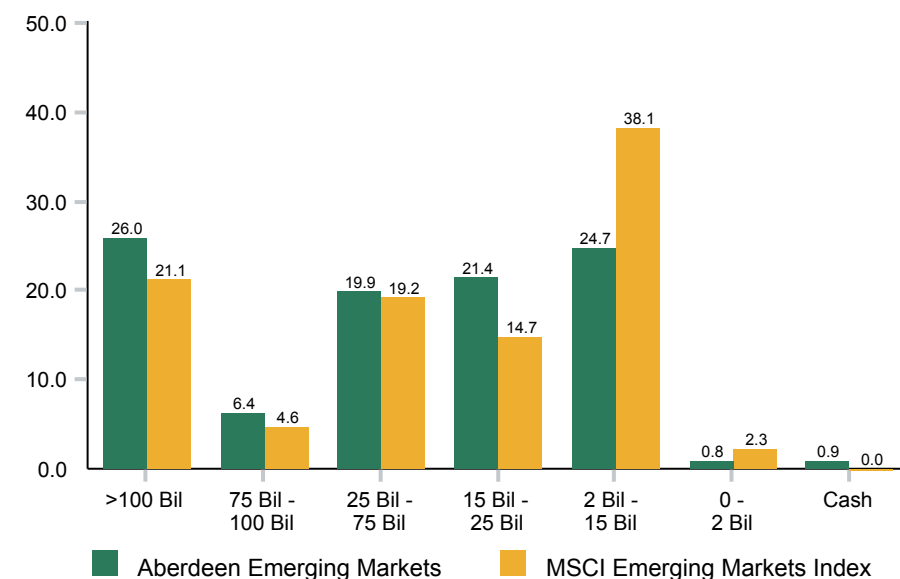
Top Ten Equity Holdings

|                                      | Portfolio Weight (%) | Benchmark Weight (%) | Active Weight (%) | Quarterly Return (%) |
|--------------------------------------|----------------------|----------------------|-------------------|----------------------|
| Tencent Holdings LTD                 | 6.34                 | 4.54                 | 1.80              | -17.70               |
| Samsung Electronics Co Ltd           | 6.24                 | 0.56                 | 5.68              | 1.68                 |
| Taiwan Semiconductor Manuf           | 5.10                 | 4.09                 | 1.01              | 21.10                |
| Housing Development Finance Corp Ltd | 3.23                 | 0.74                 | 2.49              | -12.48               |
| Ping An Insurance Group              | 2.75                 | 1.02                 | 1.73              | 11.46                |
| Vale SA                              | 2.71                 | 0.91                 | 1.80              | 19.01                |
| AIA Group Ltd                        | 2.62                 | 0.00                 | 2.62              | 2.66                 |
| Banco Bradesco Sa Brad               | 2.53                 | 0.13                 | 2.40              | 4.17                 |
| Kweichow Moutai Co Ltd               | 2.34                 | 0.04                 | 2.30              | -3.82                |
| PT Astra International TBK           | 2.24                 | 0.19                 | 2.05              | 6.82                 |
| % of Portfolio                       | 36.10                | 12.22                | 23.88             |                      |

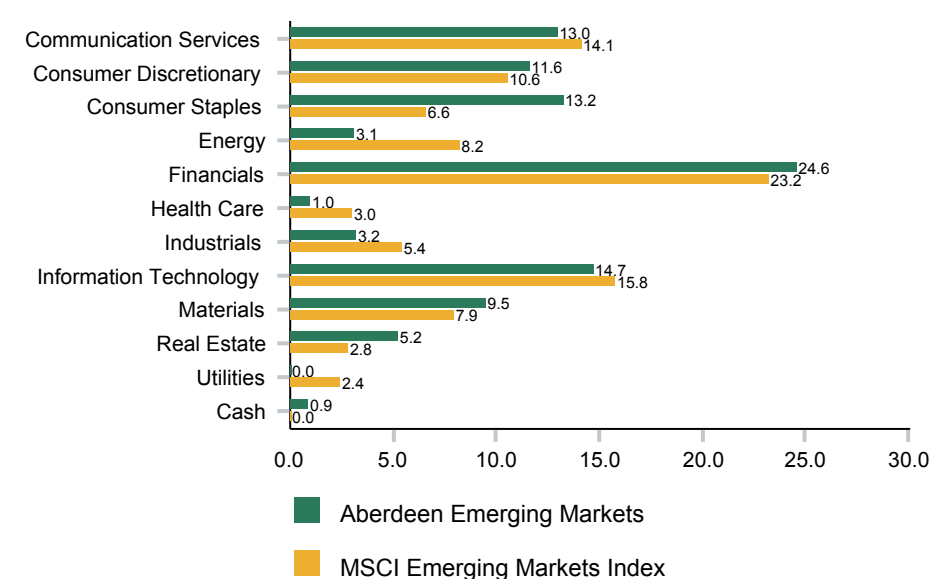
Portfolio Characteristics

|                           | Portfolio      | Benchmark      |
|---------------------------|----------------|----------------|
| Wtd. Avg. Mkt. Cap (\$)   | 61,132,619,536 | 78,601,645,080 |
| Median Mkt. Cap (\$)      | 14,261,035,132 | 5,211,025,617  |
| Price/Earnings ratio      | 17.48          | 12.71          |
| Price/Book ratio          | 2.81           | 2.30           |
| 5 Yr. EPS Growth Rate (%) | 14.17          | 13.69          |
| Current Yield (%)         | 2.34           | 2.83           |
| Beta                      | N/A            | 1.00           |
| Number of Stocks          | 67             | 1,151          |

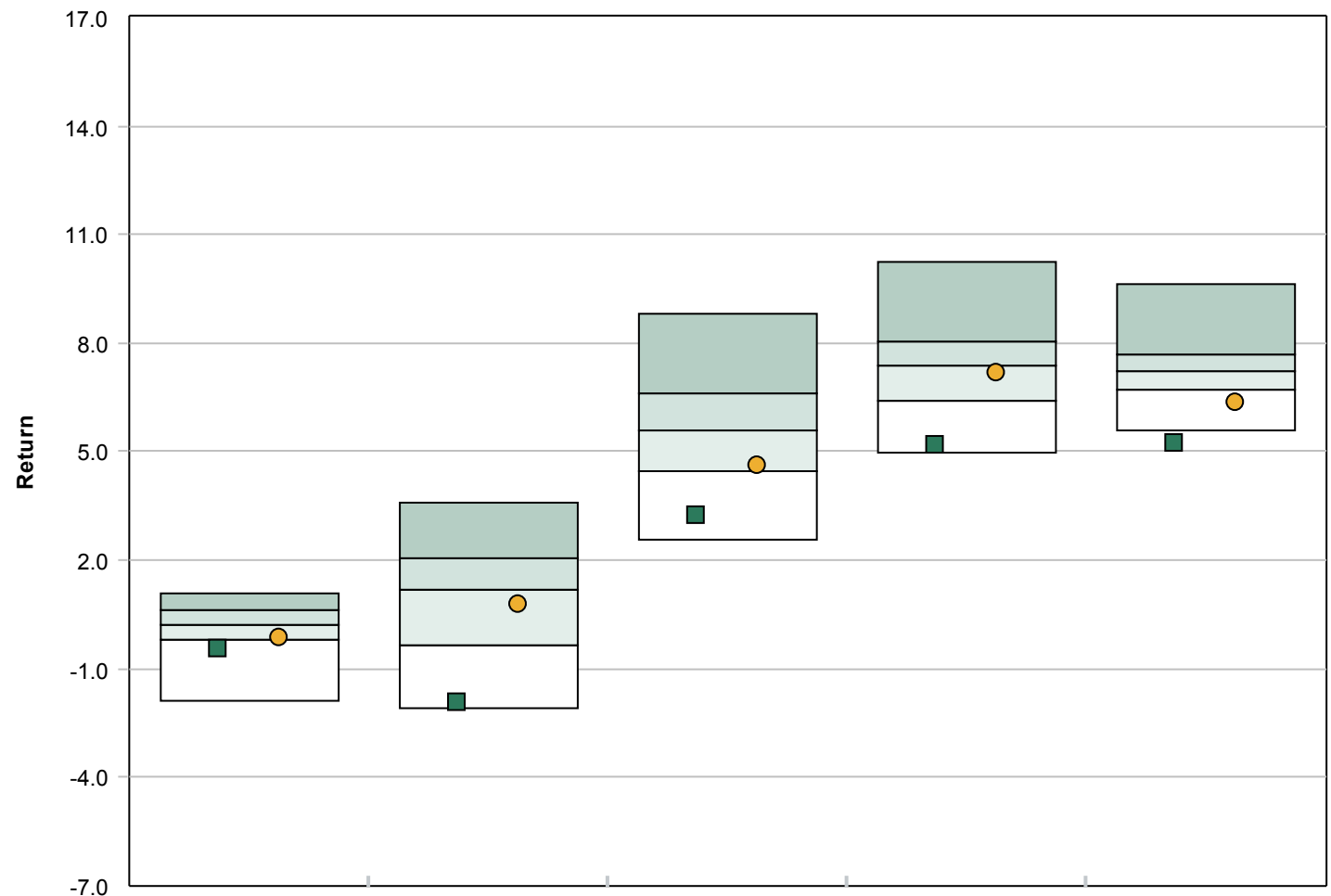
Distribution of Market Capitalization (%)



Sector Weights (%)



As of September 30, 2018

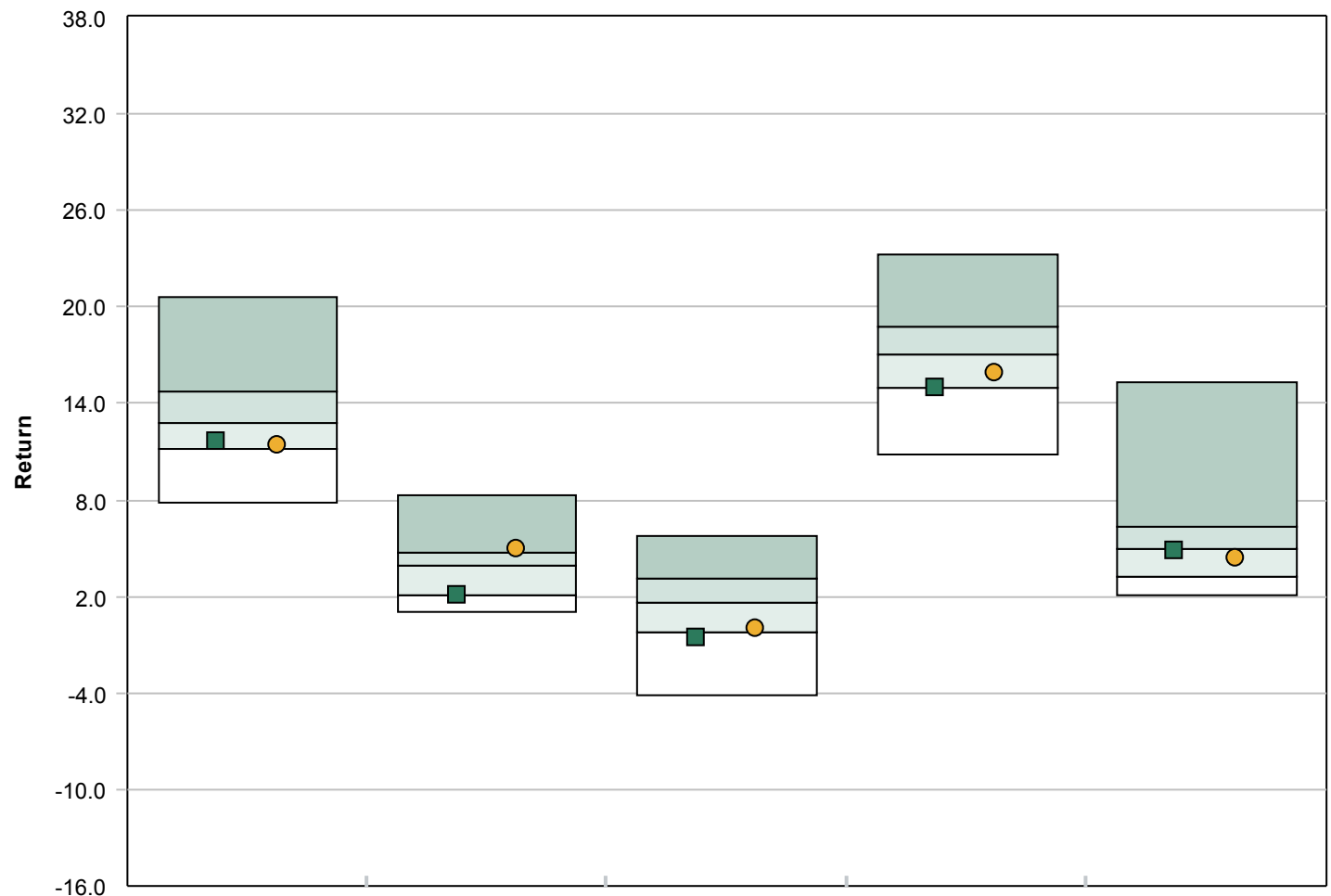


■ CBRE Clarion Global REITs  
 ● FTSE EPRA/NAREIT Developed Index

|                 | 1 Qtr      | YTD        | 1 Yr      | 3 Yrs     | 5 Yrs     |
|-----------------|------------|------------|-----------|-----------|-----------|
|                 | -0.44 (83) | -1.93 (95) | 3.25 (87) | 5.18 (94) | 5.21 (97) |
|                 | -0.15 (70) | 0.76 (62)  | 4.62 (74) | 7.16 (55) | 6.34 (82) |
| 5th Percentile  | 1.08       | 3.57       | 8.81      | 10.22     | 9.65      |
| 1st Quartile    | 0.61       | 2.08       | 6.61      | 8.03      | 7.67      |
| Median          | 0.22       | 1.17       | 5.58      | 7.36      | 7.22      |
| 3rd Quartile    | -0.19      | -0.37      | 4.49      | 6.40      | 6.70      |
| 95th Percentile | -1.89      | -2.07      | 2.58      | 4.96      | 5.59      |

Parentheses contain percentile rankings.  
 Calculation based on monthly periodicity.

As of September 30, 2018



■ CBRE Clarion Global REITs  
 ● FTSE EPRA/NAREIT Developed Index

5th Percentile  
 1st Quartile  
 Median  
 3rd Quartile  
 95th Percentile

11.62 (71)  
 11.42 (74)

2.07 (76)  
 4.99 (23)

-0.56 (82)  
 0.05 (72)

14.95 (76)  
 15.89 (66)

4.84 (55)  
 4.39 (62)

20.60  
 14.73  
 12.80  
 11.13  
 7.78

8.35  
 4.78  
 3.94  
 2.09  
 1.01

5.73  
 3.08  
 1.65  
 -0.28  
 -4.19

23.30  
 18.82  
 17.05  
 14.98  
 10.81

15.29  
 6.31  
 4.94  
 3.25  
 2.11

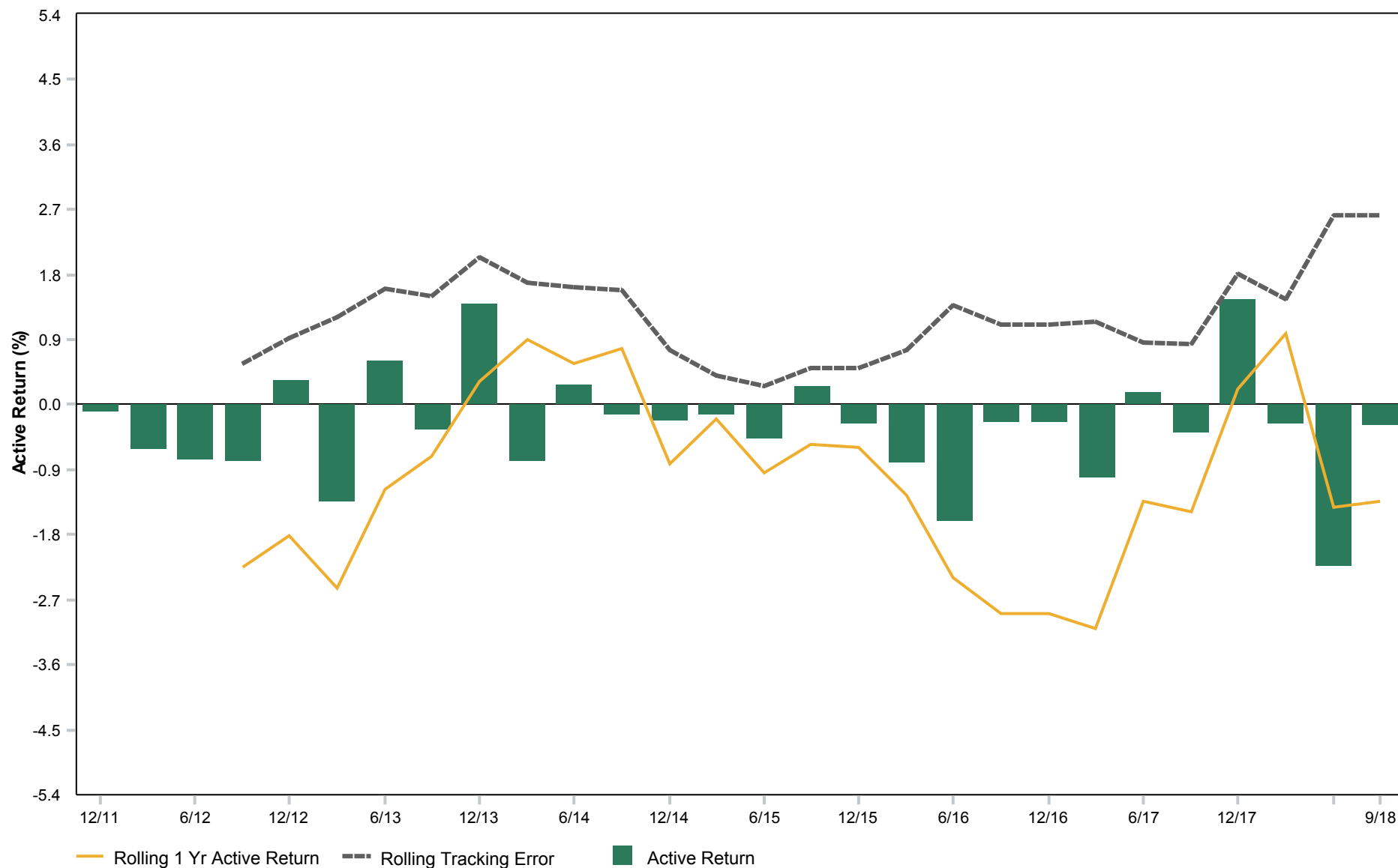
Parentheses contain percentile rankings.  
 Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

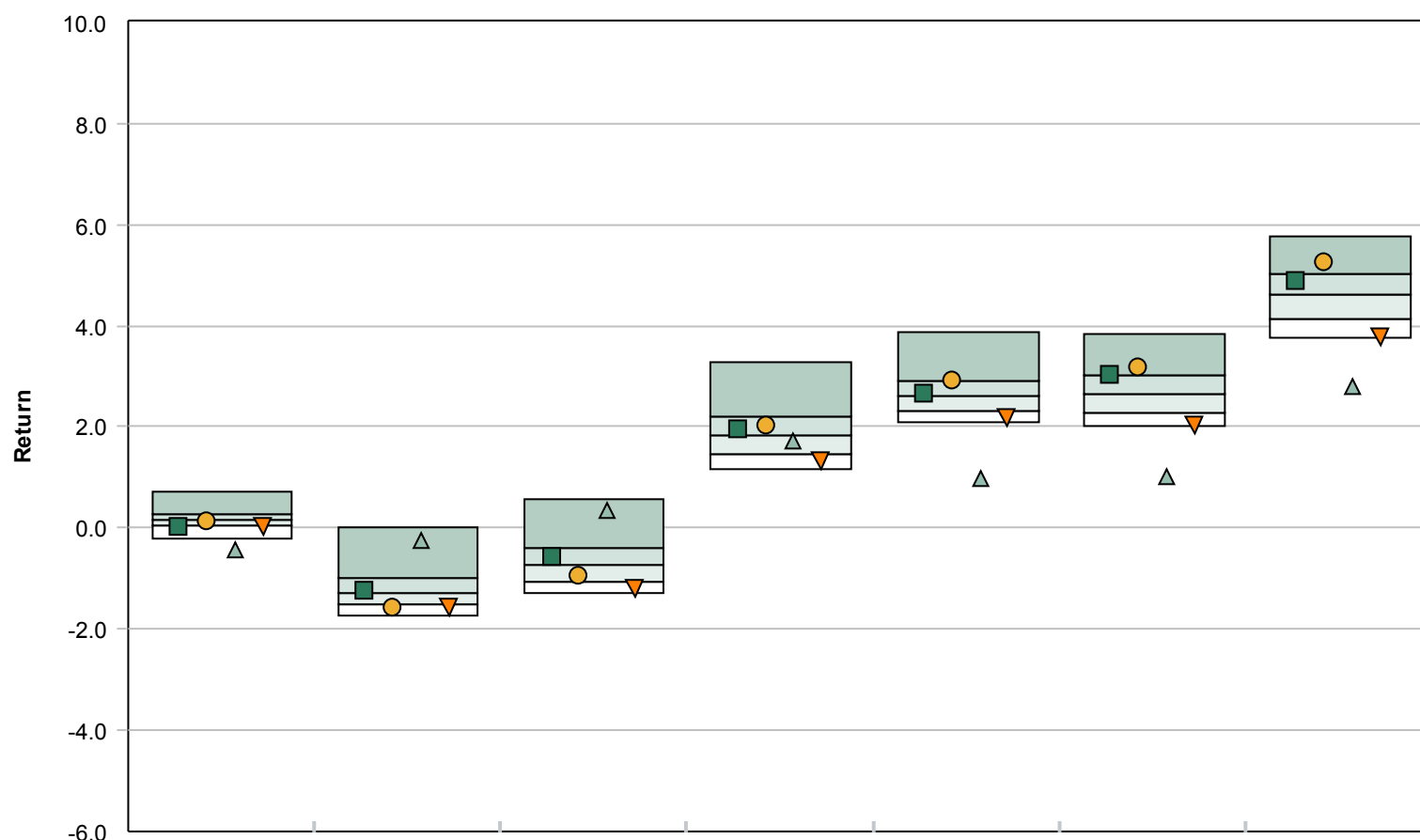
As of September 30, 2018

|                                  | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015  | 2014  |
|----------------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| CBRE Clarion Global REITs        | -0.44 | -1.93 | 3.25  | 5.18  | 5.21  | 8.90  | N/A    | 11.62 | 2.07  | -0.56 | 14.95 |
| FTSE EPRA/NAREIT Developed Index | -0.15 | 0.76  | 4.62  | 7.16  | 6.34  | 10.17 | 6.88   | 11.42 | 4.99  | 0.05  | 15.89 |
| Difference                       | -0.29 | -2.69 | -1.37 | -1.98 | -1.13 | -1.27 | N/A    | 0.20  | -2.92 | -0.61 | -0.94 |



## **Domestic Fixed Income**

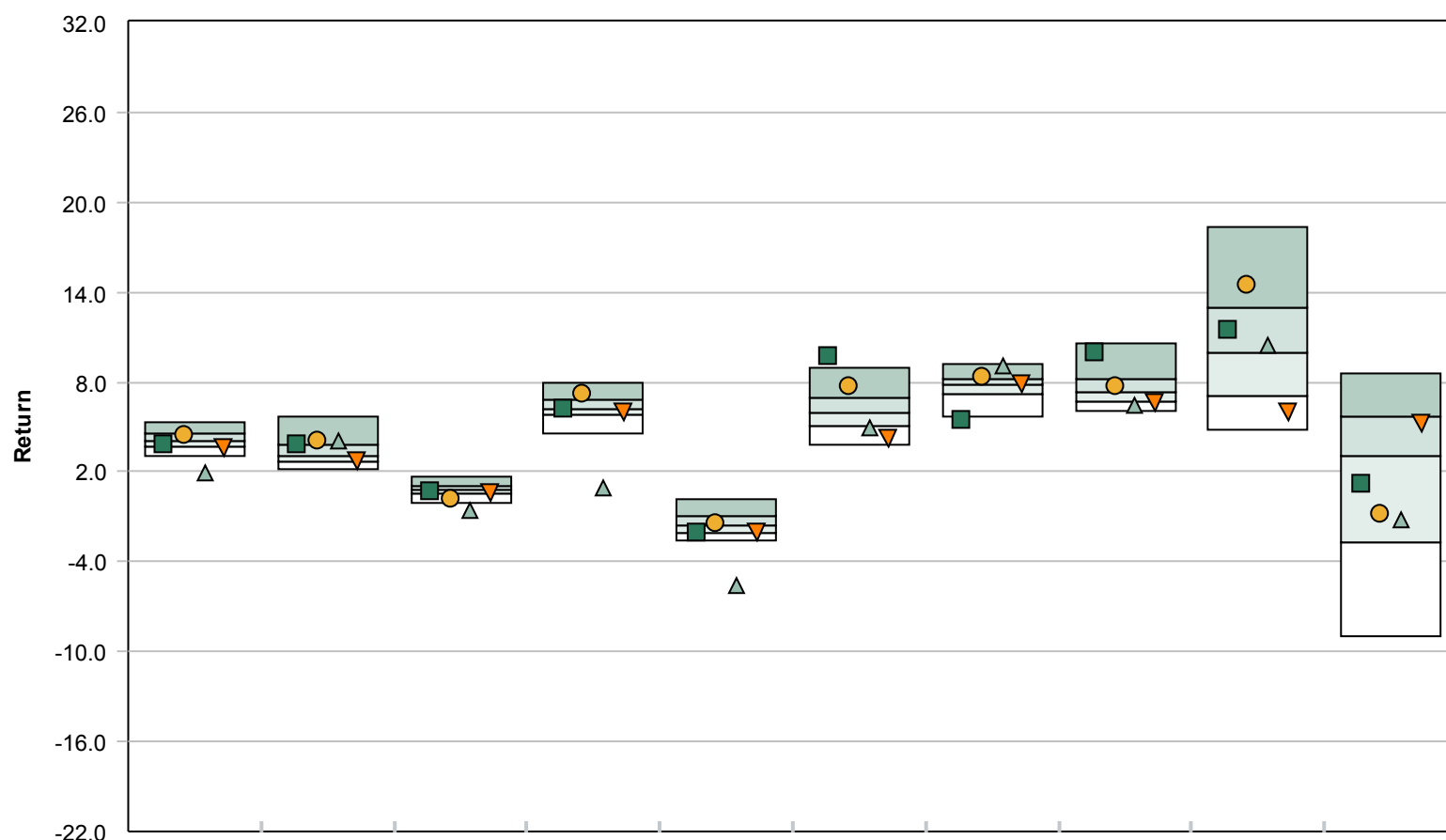
As of September 30, 2018



|                                | 1 Qtr       | YTD        | 1 Yr       | 3 Yrs     | 5 Yrs      | 7 Yrs      | 10 Yrs     |
|--------------------------------|-------------|------------|------------|-----------|------------|------------|------------|
| ■ Total Domestic Fixed         | 0.01 (85)   | -1.23 (46) | -0.57 (33) | 1.96 (42) | 2.65 (44)  | 3.03 (23)  | 4.88 (34)  |
| ● Income Research & Management | 0.13 (60)   | -1.60 (86) | -0.95 (64) | 2.02 (37) | 2.92 (26)  | 3.17 (17)  | 5.24 (15)  |
| ▲ IRM-TIPS                     | -0.42 (100) | -0.23 (7)  | 0.34 (9)   | 1.72 (56) | 0.96 (100) | 1.00 (100) | 2.78 (100) |
| ▼ Barclays Aggregate           | 0.02 (83)   | -1.60 (86) | -1.22 (90) | 1.31 (89) | 2.16 (90)  | 2.02 (95)  | 3.77 (95)  |
| 5th Percentile                 | 0.70        | 0.03       | 0.57       | 3.28      | 3.88       | 3.85       | 5.76       |
| 1st Quartile                   | 0.28        | -0.99      | -0.40      | 2.19      | 2.92       | 3.00       | 5.02       |
| Median                         | 0.18        | -1.29      | -0.74      | 1.84      | 2.61       | 2.66       | 4.60       |
| 3rd Quartile                   | 0.06        | -1.50      | -1.08      | 1.47      | 2.33       | 2.30       | 4.15       |
| 95th Percentile                | -0.22       | -1.72      | -1.30      | 1.18      | 2.09       | 2.01       | 3.77       |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

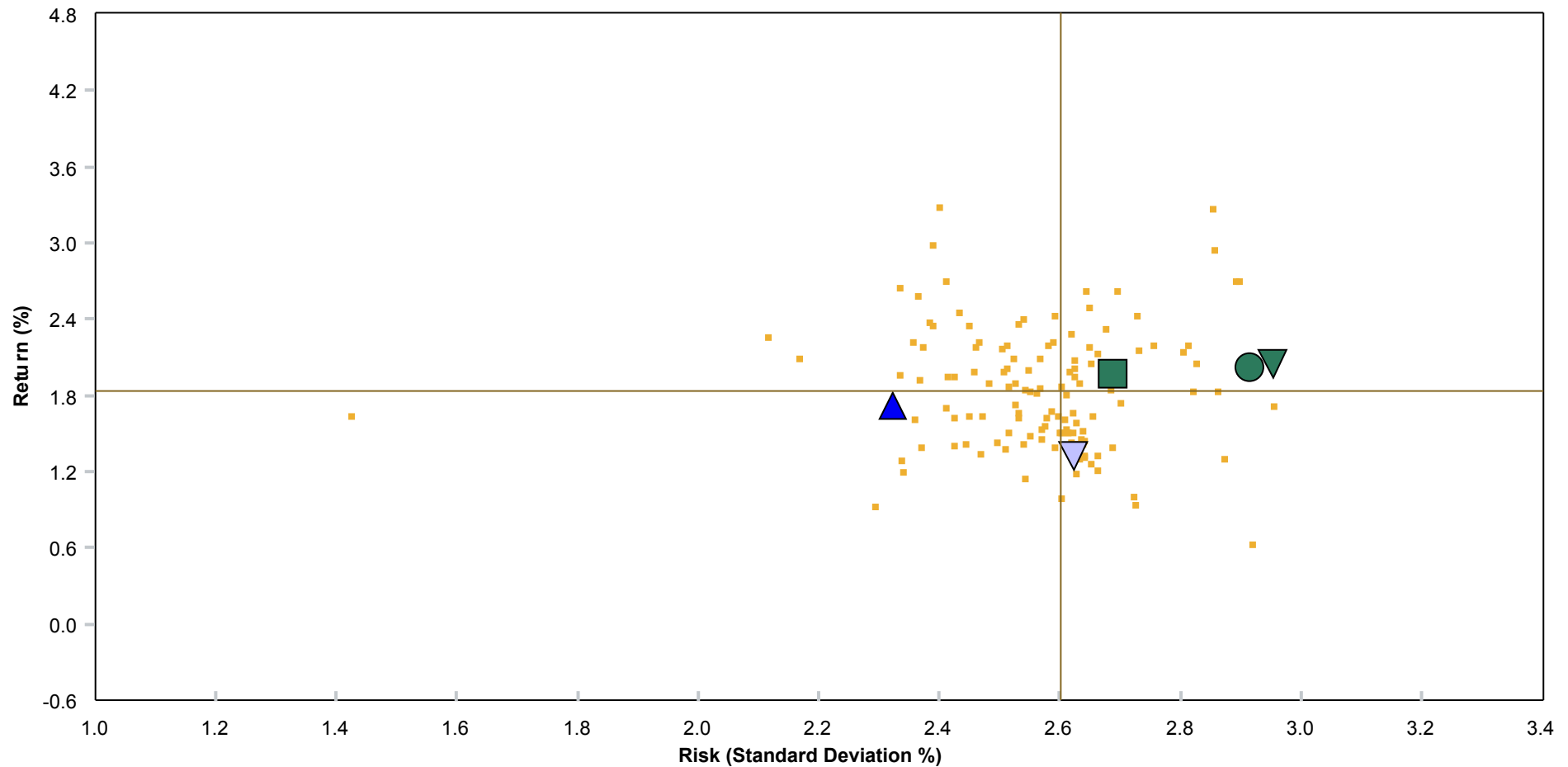
As of September 30, 2018



|                                | 2017       | 2016      | 2015       | 2014       | 2013        | 2012      | 2011      | 2010      | 2009       | 2008       |
|--------------------------------|------------|-----------|------------|------------|-------------|-----------|-----------|-----------|------------|------------|
| ■ Total Domestic Fixed         | 3.82 (63)  | 3.86 (25) | 0.66 (64)  | 6.15 (52)  | -2.14 (82)  | 9.73 (5)  | 5.49 (97) | 9.95 (8)  | 11.40 (36) | 1.20 (59)  |
| ● Income Research & Management | 4.49 (27)  | 4.00 (22) | 0.20 (86)  | 7.23 (10)  | -1.39 (41)  | 7.70 (13) | 8.31 (24) | 7.71 (40) | 14.40 (18) | -0.80 (66) |
| ▲ IRM-TIPS                     | 1.97 (100) | 4.11 (17) | -0.53 (98) | 0.88 (100) | -5.54 (100) | 4.96 (77) | 9.08 (6)  | 6.41 (84) | 10.49 (43) | -1.17 (69) |
| ▼ Barclays Aggregate           | 3.54 (84)  | 2.65 (76) | 0.55 (74)  | 5.97 (68)  | -2.02 (74)  | 4.21 (91) | 7.84 (50) | 6.54 (83) | 5.93 (89)  | 5.24 (31)  |
| 5th Percentile                 | 5.30       | 5.63      | 1.67       | 7.91       | 0.23        | 8.95      | 9.14      | 10.62     | 18.34      | 8.58       |
| 1st Quartile                   | 4.52       | 3.83      | 1.06       | 6.80       | -1.00       | 6.98      | 8.23      | 8.23      | 12.92      | 5.64       |
| Median                         | 4.06       | 3.10      | 0.82       | 6.17       | -1.56       | 5.93      | 7.84      | 7.26      | 9.90       | 3.04       |
| 3rd Quartile                   | 3.65       | 2.65      | 0.53       | 5.82       | -2.04       | 5.11      | 7.24      | 6.75      | 7.11       | -2.67      |
| 95th Percentile                | 3.05       | 2.23      | -0.07      | 4.59       | -2.63       | 3.85      | 5.72      | 6.03      | 4.85       | -8.94      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

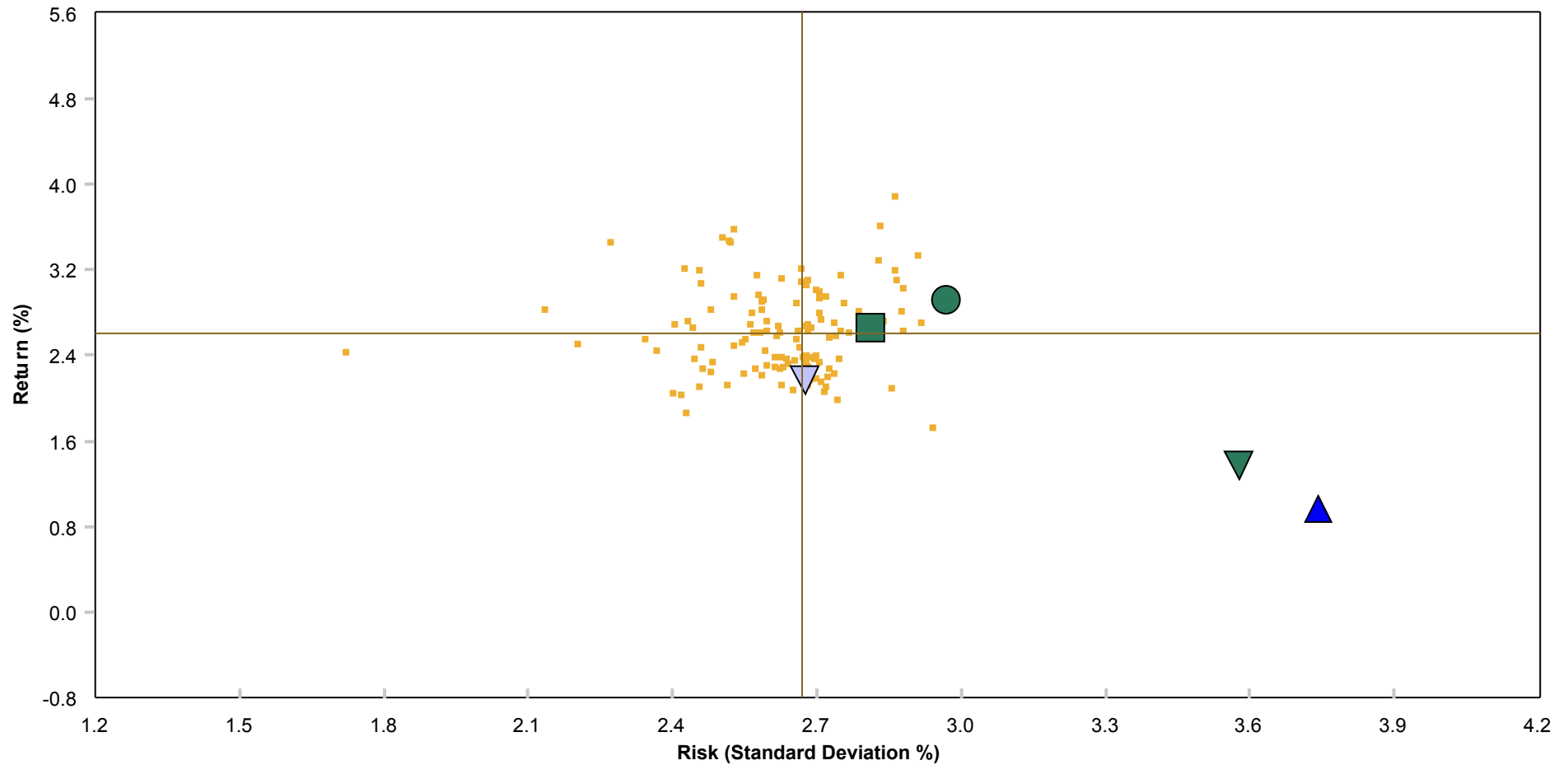
IM U.S. Broad Market Core Fixed Income (SA+CF)



|                                | Return | Standard Deviation |
|--------------------------------|--------|--------------------|
| ■ Total Domestic Fixed         | 1.96   | 2.69               |
| ● Income Research & Management | 2.02   | 2.92               |
| ▼ Barclays Aggregate           | 1.31   | 2.62               |
| ▲ IRM-TIPS                     | 1.72   | 2.32               |
| ▼ Blmbg. Barc. U.S. TIPS       | 2.04   | 2.95               |
| — Median                       | 1.84   | 2.60               |

Calculation based on monthly periodicity.

IM U.S. Broad Market Core Fixed Income (SA+CF)



|                                | Return | Standard Deviation |
|--------------------------------|--------|--------------------|
| ■ Total Domestic Fixed         | 2.65   | 2.81               |
| ● Income Research & Management | 2.92   | 2.97               |
| ▼ Barclays Aggregate           | 2.16   | 2.68               |
| ▲ IRM-TIPS                     | 0.96   | 3.74               |
| ▼ Blmbg. Barc. U.S. TIPS       | 1.37   | 3.58               |
| — Median                       | 2.61   | 2.67               |

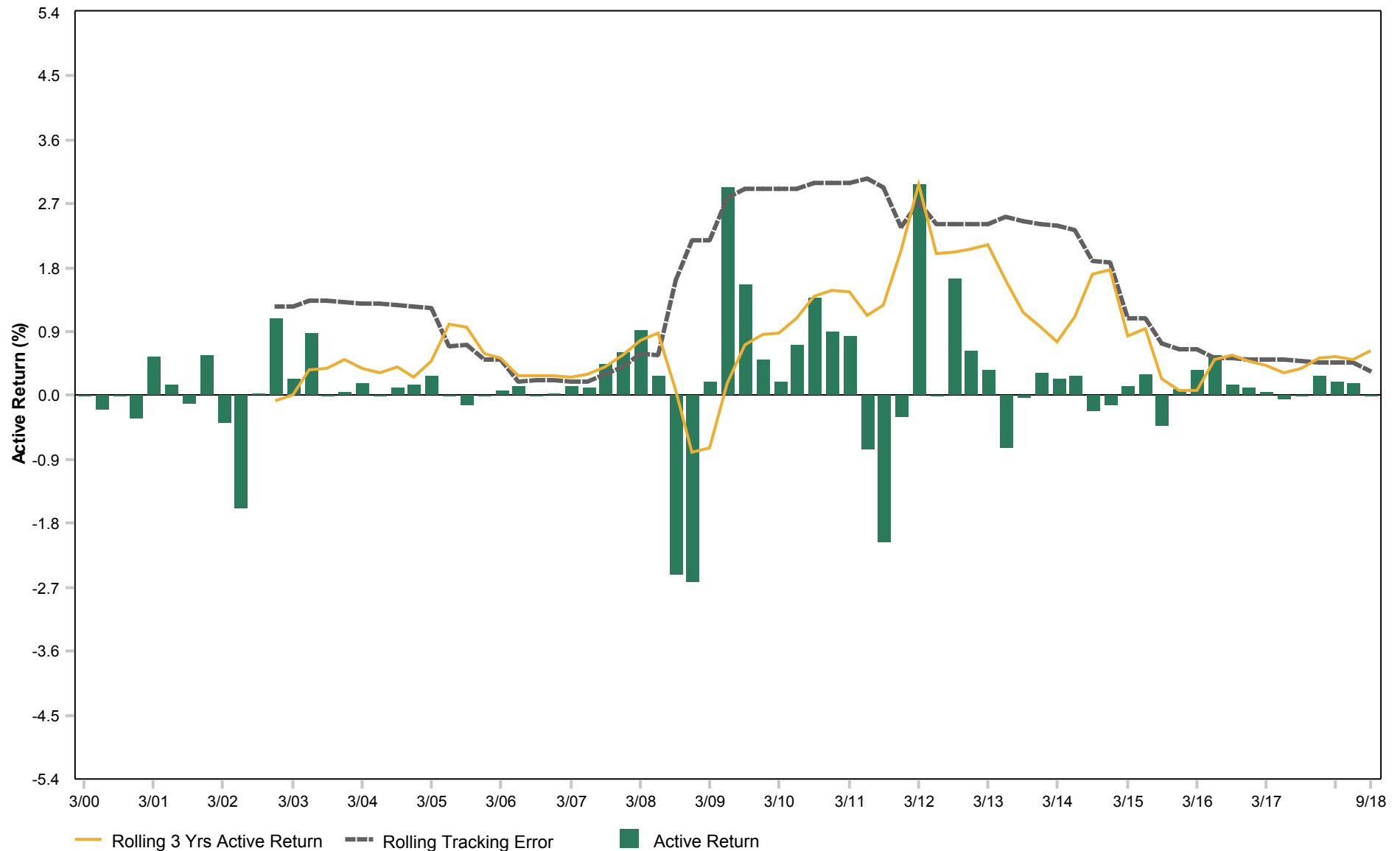
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

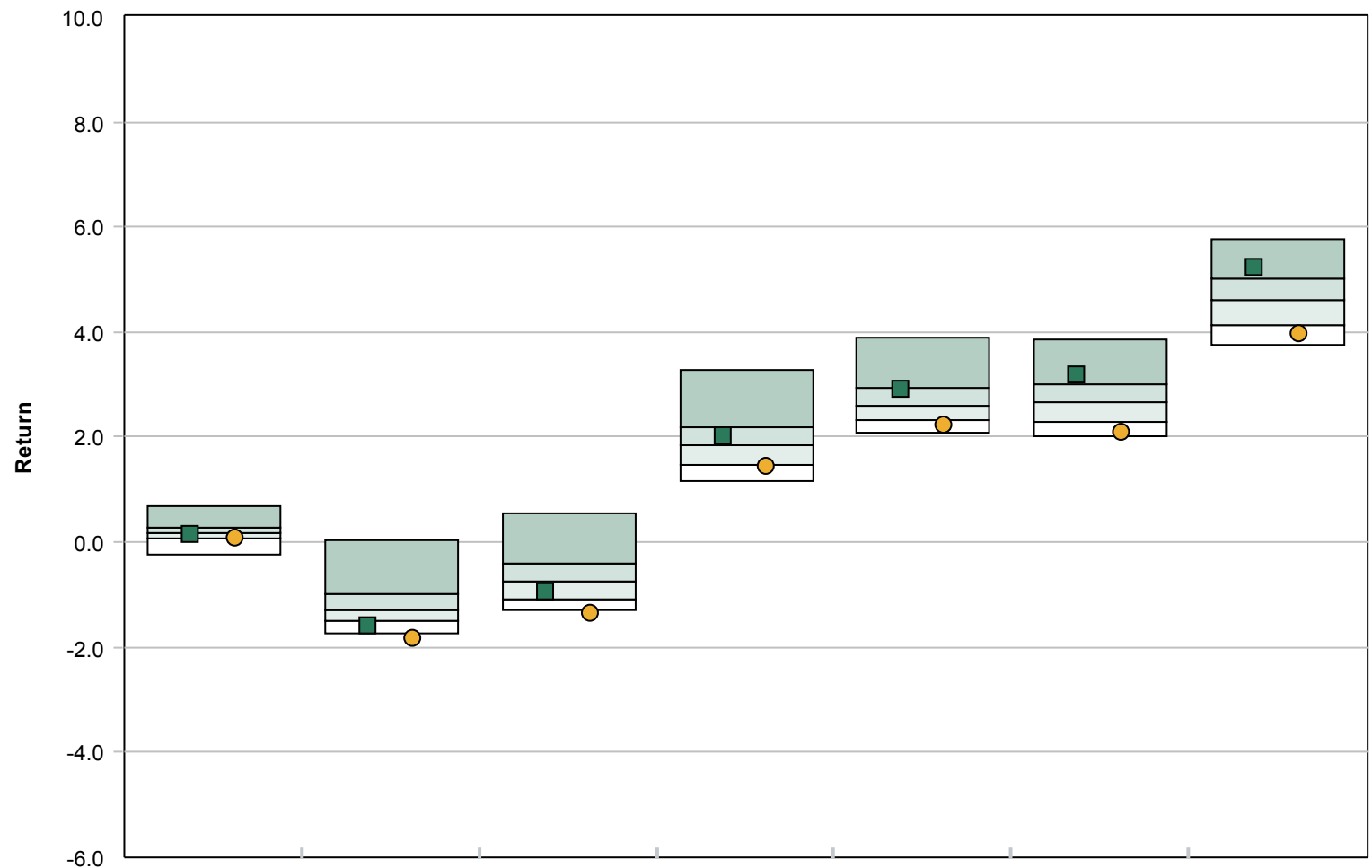
As of September 30, 2018

|                      | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017 | 2016 | 2015 | 2014 |
|----------------------|-------|-------|-------|-------|-------|-------|--------|------|------|------|------|
| Total Domestic Fixed | 0.01  | -1.23 | -0.57 | 1.96  | 2.65  | 3.03  | 4.88   | 3.82 | 3.86 | 0.66 | 6.15 |
| Barclays Aggregate   | 0.02  | -1.60 | -1.22 | 1.31  | 2.16  | 2.02  | 3.77   | 3.54 | 2.65 | 0.55 | 5.97 |
| Difference           | -0.01 | 0.37  | 0.65  | 0.65  | 0.49  | 1.01  | 1.11   | 0.28 | 1.21 | 0.11 | 0.18 |



Gross of Fees

As of September 30, 2018



■ Income Research &amp; Management

● Blmbg. Barc. U.S. Gov't/Credit

5th Percentile

1st Quartile

Median

3rd Quartile

95th Percentile

1 Qtr

YTD

1 Yr

3 Yrs

5 Yrs

7 Yrs

10 Yrs

0.13 (60)

-1.60 (86)

-0.95 (64)

2.02 (37)

2.92 (26)

3.17 (17)

5.24 (15)

0.06 (75)

-1.85 (99)

-1.37 (96)

1.45 (77)

2.23 (85)

2.10 (89)

3.95 (87)

0.70

0.03

0.57

3.28

3.88

3.85

5.76

0.28

-0.99

-0.40

2.19

2.92

3.00

5.02

0.18

-1.29

-0.74

1.84

2.61

2.66

4.60

0.06

-1.50

-1.08

1.47

2.33

2.30

4.15

-0.22

-1.72

-1.30

1.18

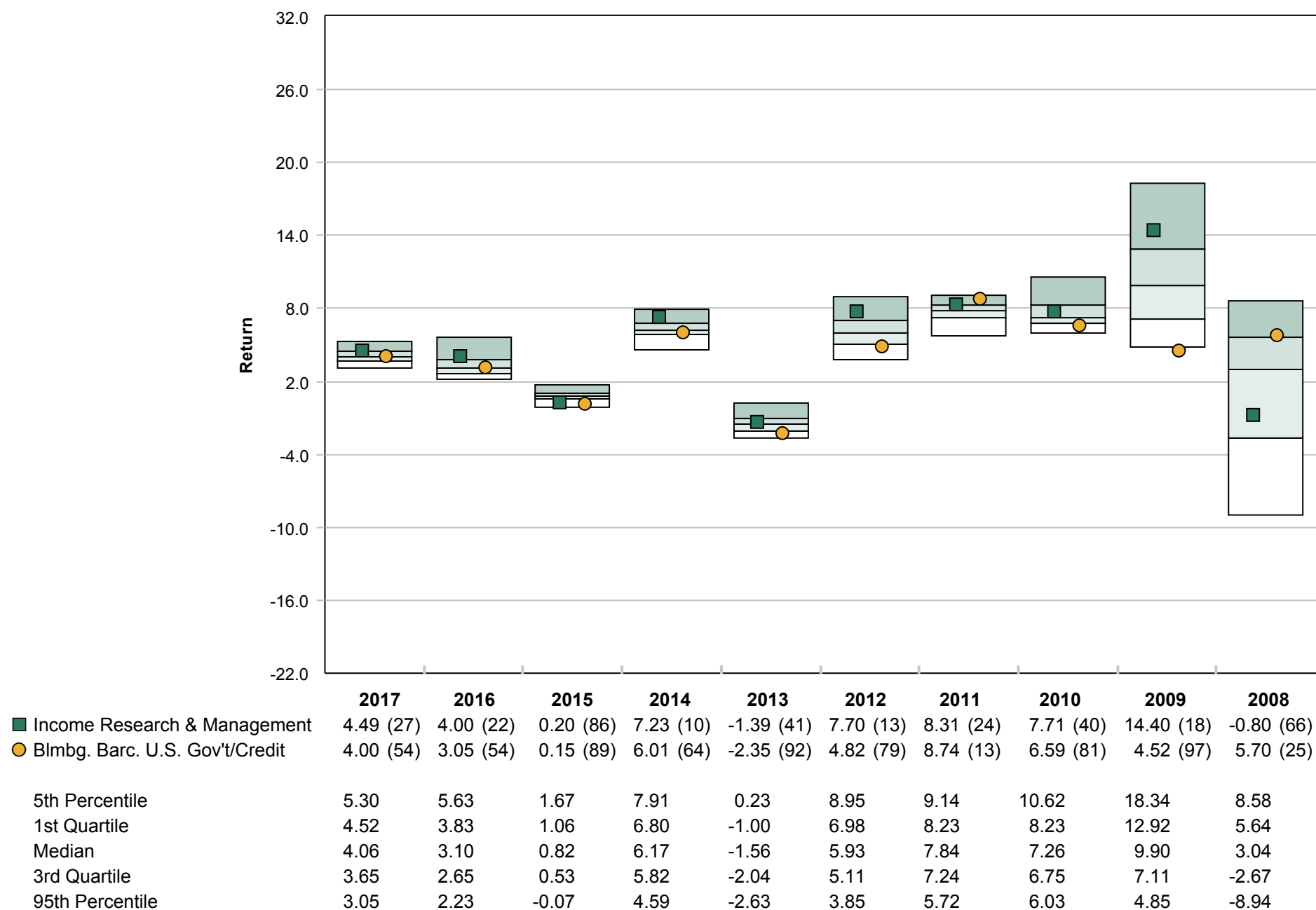
2.09

2.01

3.77

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018



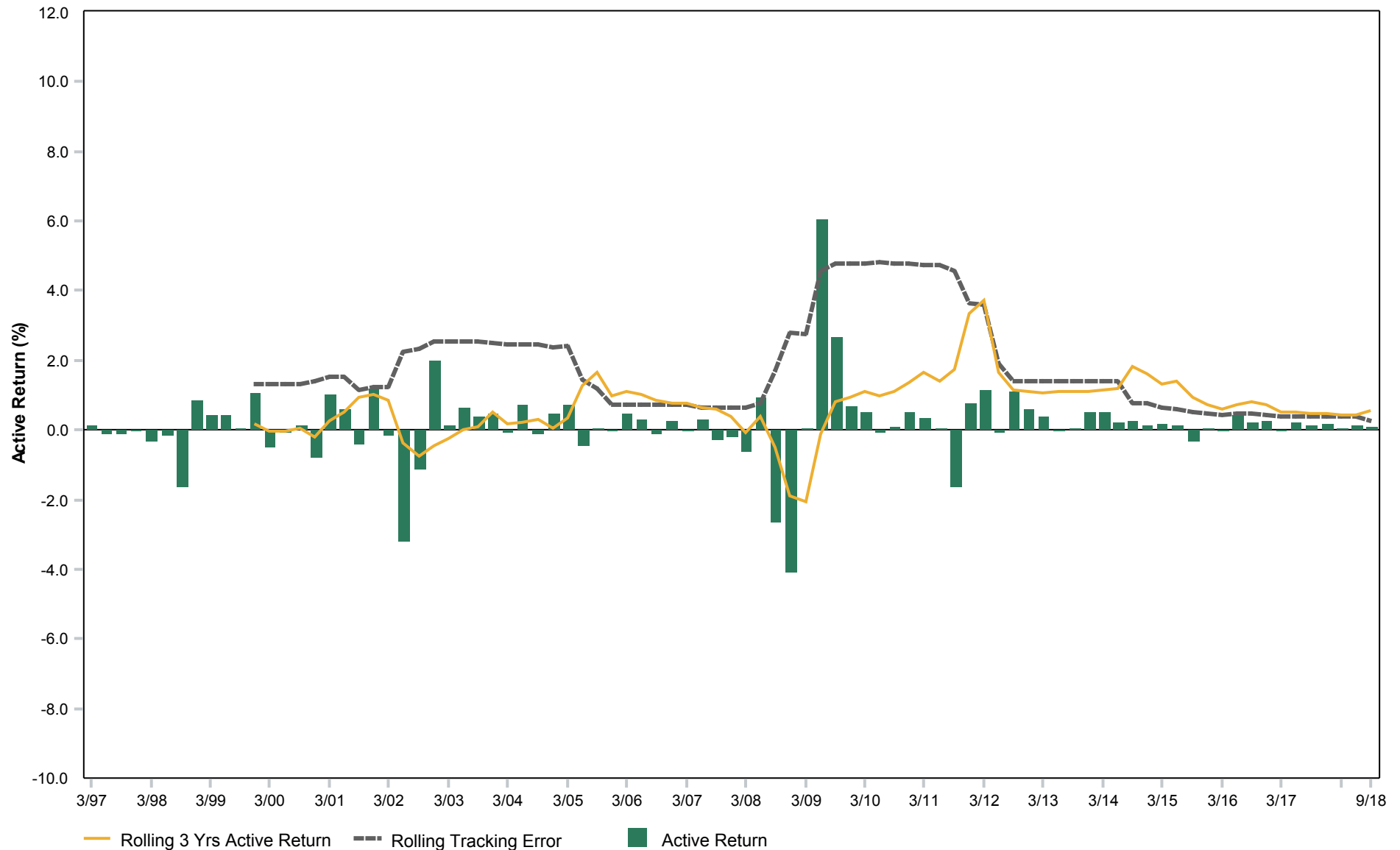
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Bristol County Retirement System

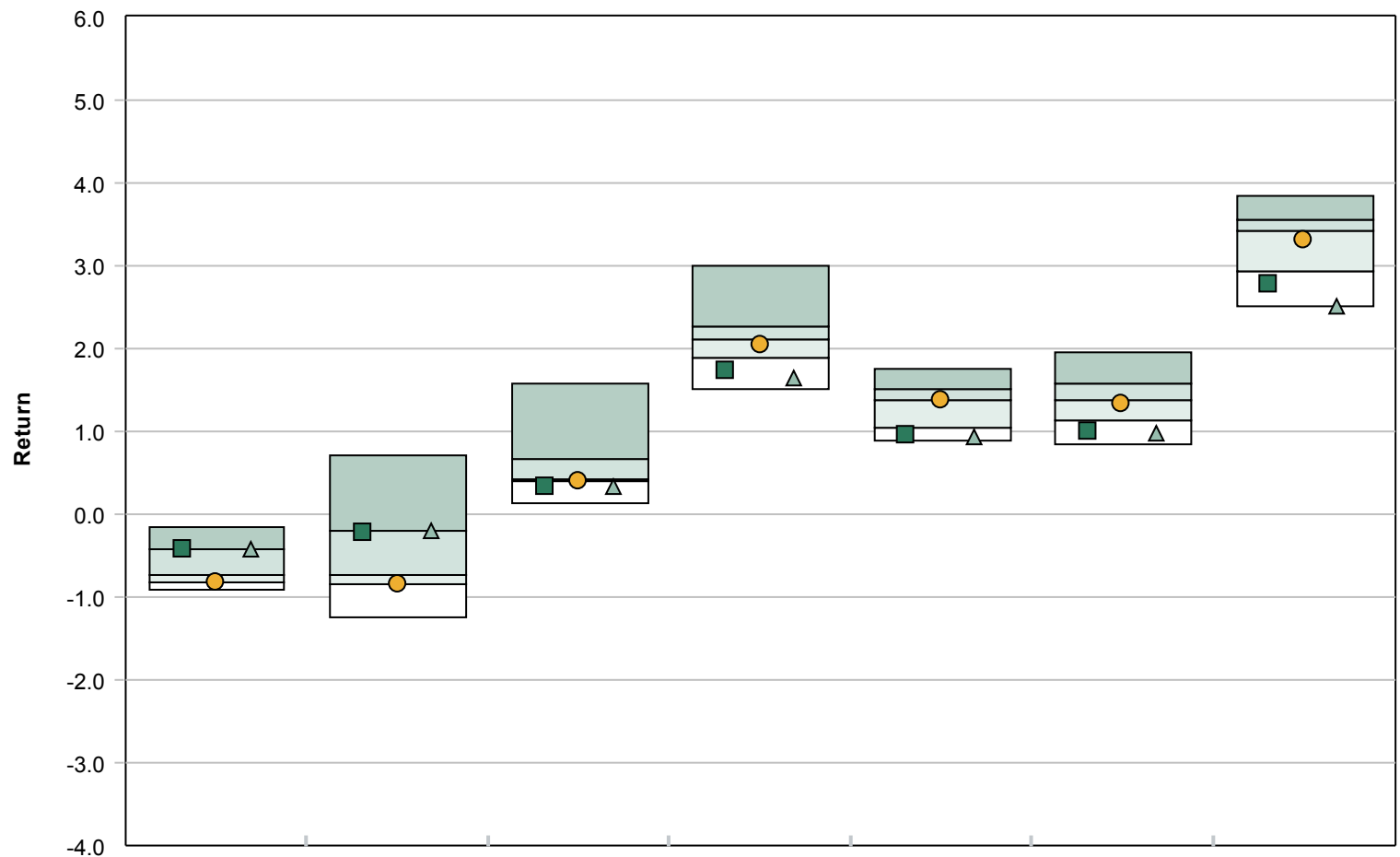
## Comparative Performance & Rolling Return

As of September 30, 2018

|                                | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017 | 2016 | 2015 | 2014 |
|--------------------------------|-------|-------|-------|-------|-------|-------|--------|------|------|------|------|
| Income Research & Management   | 0.13  | -1.60 | -0.95 | 2.02  | 2.92  | 3.17  | 5.24   | 4.49 | 4.00 | 0.20 | 7.23 |
| Blmbg. Barc. U.S. Gov't/Credit | 0.06  | -1.85 | -1.37 | 1.45  | 2.23  | 2.10  | 3.95   | 4.00 | 3.05 | 0.15 | 6.01 |
| Difference                     | 0.07  | 0.25  | 0.42  | 0.57  | 0.69  | 1.07  | 1.29   | 0.49 | 0.95 | 0.05 | 1.22 |

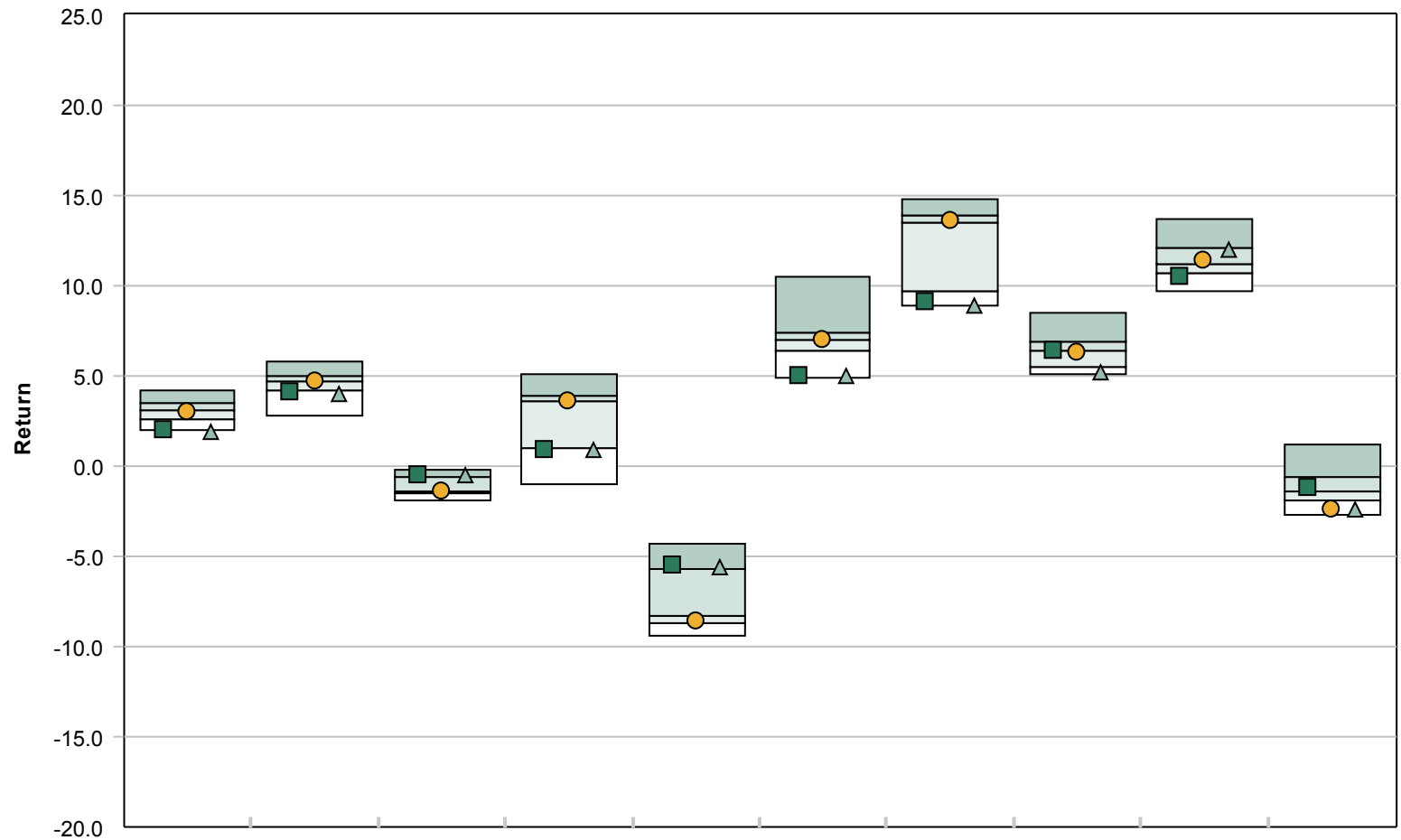


As of September 30, 2018



|                                  | 1 Qtr      | YTD        | 1 Yr      | 3 Yrs     | 5 Yrs     | 7 Yrs     | 10 Yrs    |
|----------------------------------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| IRM-TIPS                         | -0.42 (25) | -0.23 (29) | 0.34 (88) | 1.72 (82) | 0.96 (87) | 1.00 (91) | 2.78 (80) |
| Blmbg. Barc. U.S. TIPS           | -0.82 (73) | -0.84 (71) | 0.41 (70) | 2.04 (71) | 1.37 (55) | 1.33 (66) | 3.32 (63) |
| Blmbg. Barc. U.S. TIPS 1-10 Year | -0.42 (23) | -0.20 (27) | 0.33 (91) | 1.65 (91) | 0.94 (92) | 0.98 (93) | 2.52 (93) |
| 5th Percentile                   | -0.16      | 0.71       | 1.57      | 2.99      | 1.76      | 1.95      | 3.85      |
| 1st Quartile                     | -0.43      | -0.19      | 0.67      | 2.26      | 1.52      | 1.57      | 3.55      |
| Median                           | -0.74      | -0.74      | 0.43      | 2.11      | 1.38      | 1.37      | 3.43      |
| 3rd Quartile                     | -0.82      | -0.85      | 0.39      | 1.89      | 1.04      | 1.13      | 2.93      |
| 95th Percentile                  | -0.91      | -1.24      | 0.13      | 1.50      | 0.89      | 0.85      | 2.51      |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



|                                  | 2017      | 2016      | 2015       | 2014      | 2013       | 2012      | 2011       | 2010      | 2009       | 2008       |
|----------------------------------|-----------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|------------|
| IRM-TIPS                         | 1.97 (96) | 4.11 (81) | -0.53 (21) | 0.88 (86) | -5.54 (18) | 4.96 (89) | 9.08 (82)  | 6.41 (50) | 10.49 (81) | -1.17 (39) |
| Blmbg. Barc. U.S. TIPS           | 3.01 (67) | 4.68 (46) | -1.44 (58) | 3.64 (44) | -8.61 (70) | 6.98 (51) | 13.56 (46) | 6.31 (56) | 11.41 (41) | -2.35 (83) |
| Blmbg. Barc. U.S. TIPS 1-10 Year | 1.90 (98) | 4.01 (89) | -0.52 (21) | 0.91 (83) | -5.58 (22) | 5.04 (83) | 8.93 (89)  | 5.22 (93) | 12.02 (28) | -2.43 (86) |
| 5th Percentile                   | 4.18      | 5.77      | -0.15      | 5.09      | -4.34      | 10.53     | 14.80      | 8.50      | 13.67      | 1.23       |
| 1st Quartile                     | 3.51      | 4.96      | -0.63      | 3.95      | -5.68      | 7.44      | 13.87      | 6.89      | 12.08      | -0.57      |
| Median                           | 3.10      | 4.66      | -1.41      | 3.59      | -8.33      | 6.99      | 13.52      | 6.40      | 11.24      | -1.39      |
| 3rd Quartile                     | 2.65      | 4.23      | -1.54      | 1.00      | -8.67      | 6.37      | 9.66       | 5.46      | 10.71      | -1.92      |
| 95th Percentile                  | 1.97      | 2.85      | -1.93      | -0.99     | -9.43      | 4.92      | 8.87       | 5.08      | 9.75       | -2.67      |

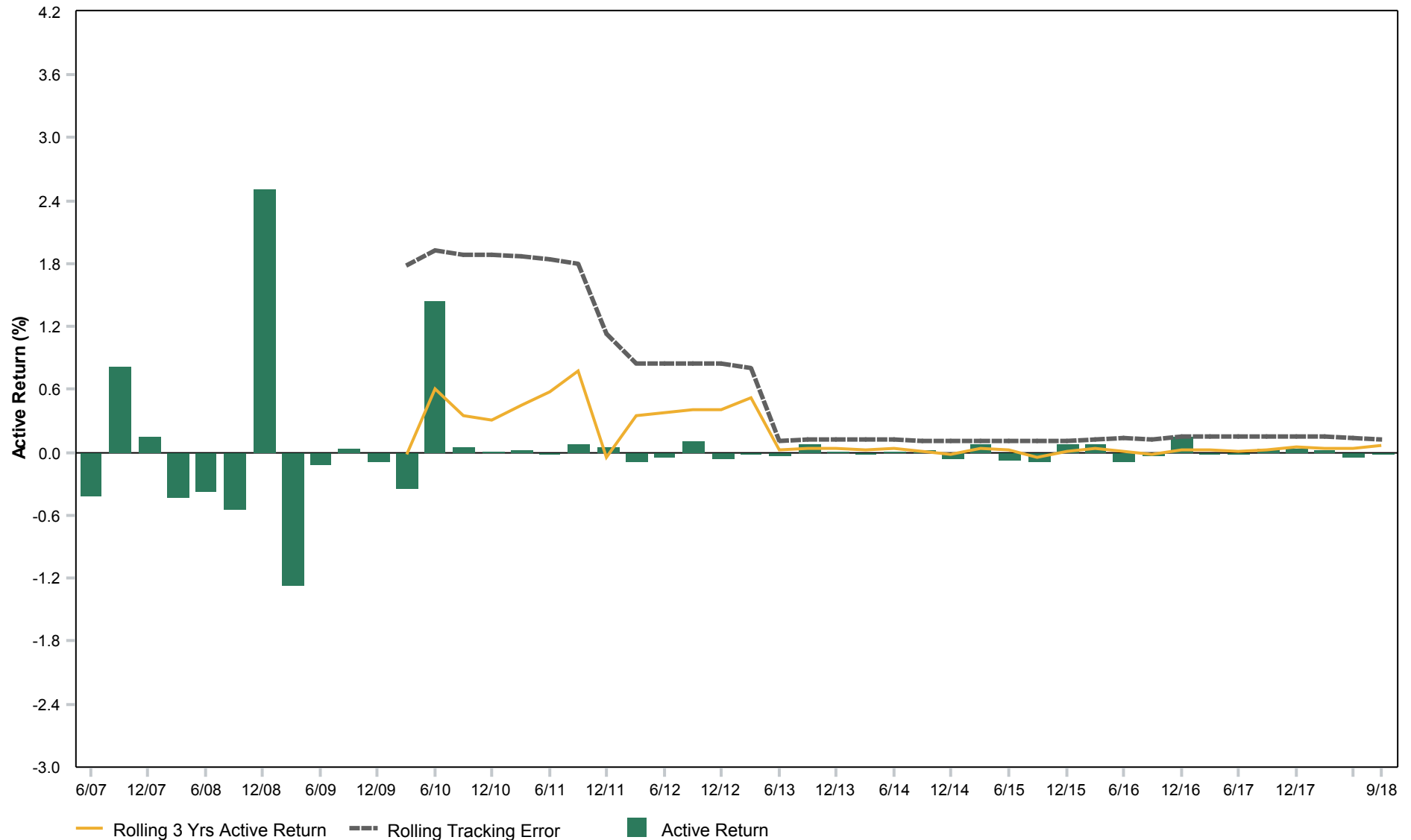
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

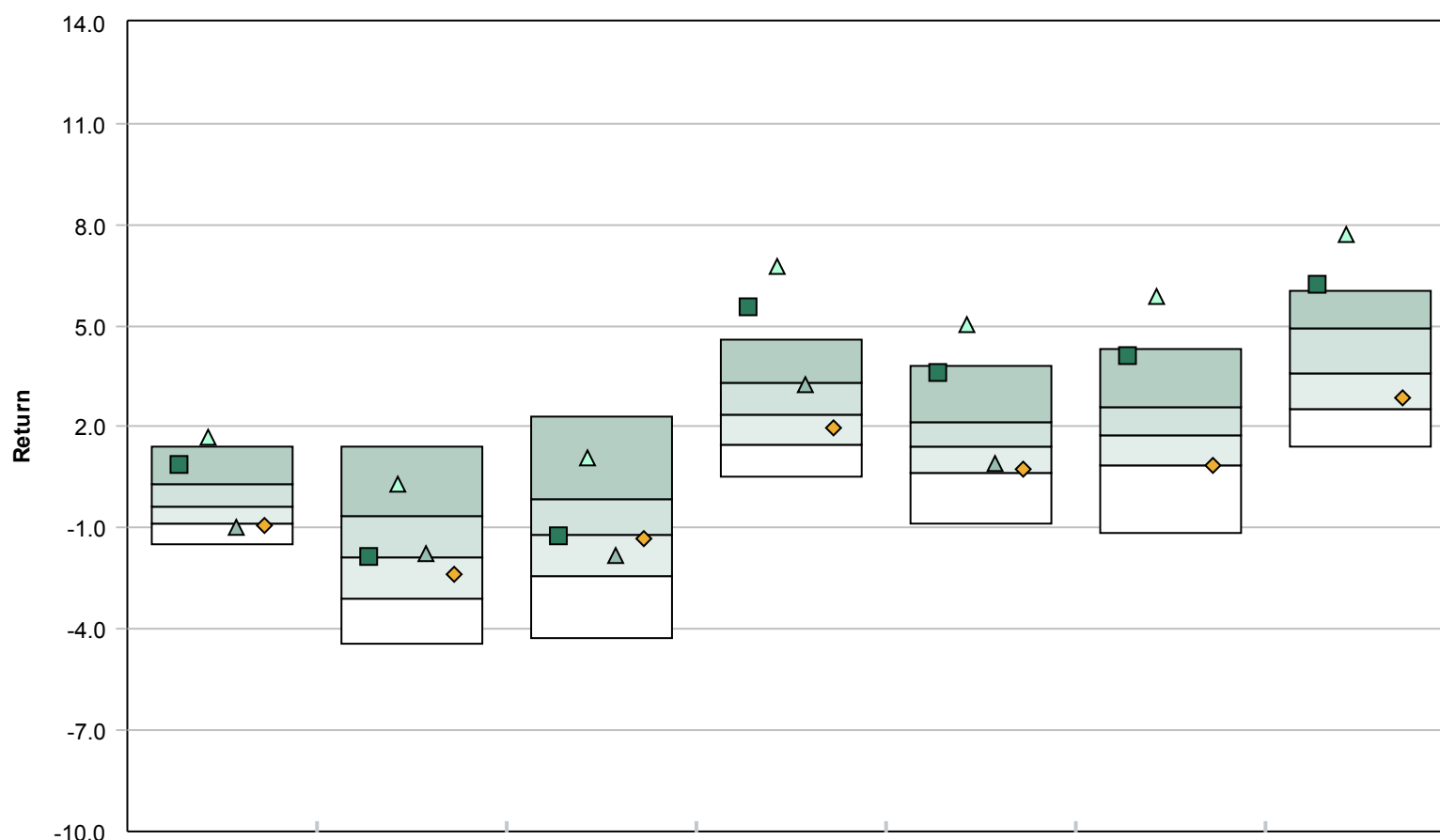
As of September 30, 2018

|                                  | YTD   | 1 Yr | 3 Yrs | 5 Yrs | 2017 | 2016 | 2015  | Since Inception | Inception Date |
|----------------------------------|-------|------|-------|-------|------|------|-------|-----------------|----------------|
| IRM-TIPS                         | -0.23 | 0.34 | 1.72  | 0.96  | 1.97 | 4.11 | -0.53 | 3.47            | 02/01/2007     |
| Blmbg. Barc. U.S. TIPS 1-10 Year | -0.20 | 0.33 | 1.65  | 0.94  | 1.90 | 4.01 | -0.52 | 3.34            |                |
| Difference                       | -0.03 | 0.01 | 0.07  | 0.02  | 0.07 | 0.10 | -0.01 | 0.13            |                |



## **Global Fixed Income**

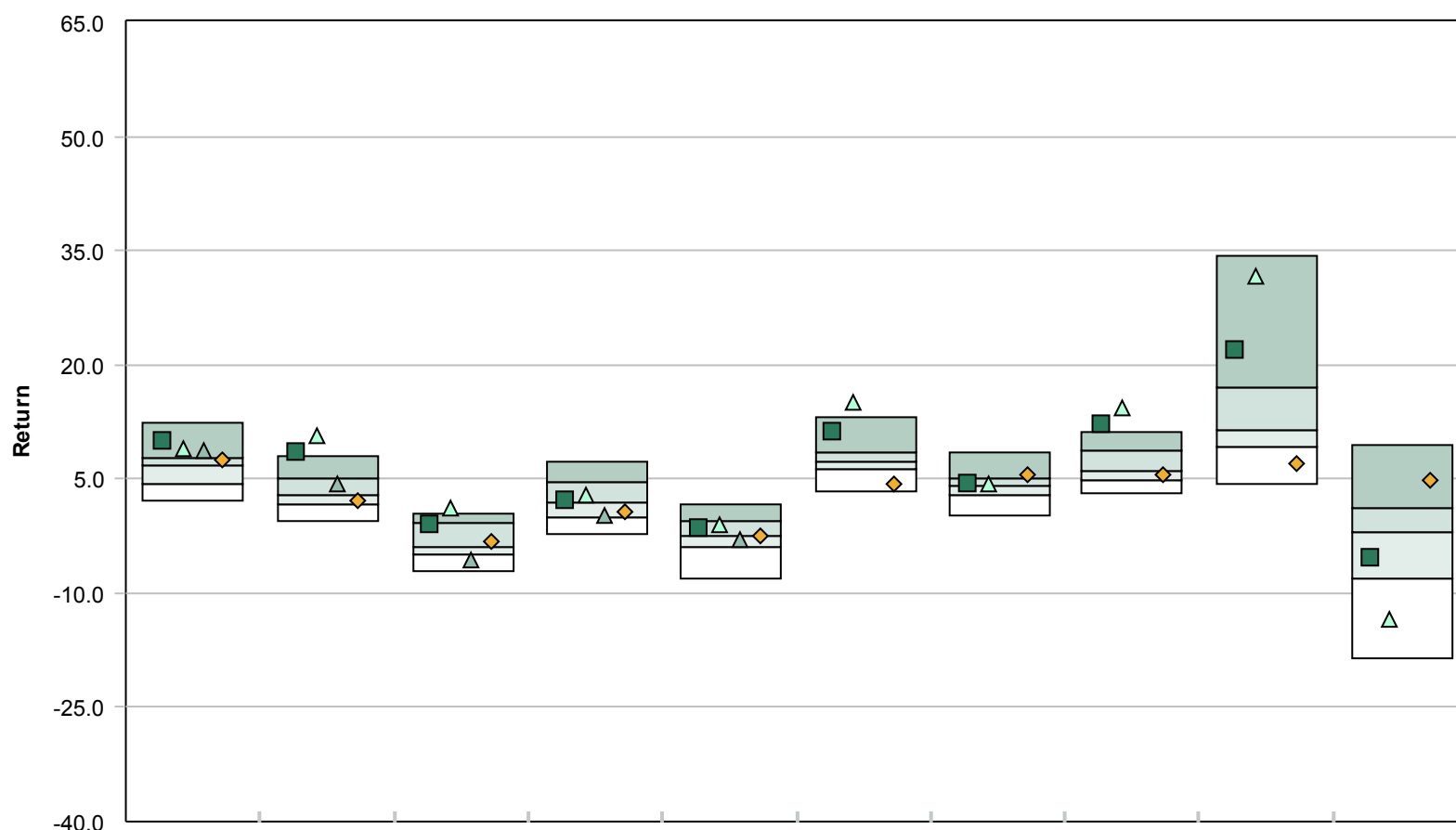
As of September 30, 2018



|                                 | 1 Qtr      | YTD        | 1 Yr       | 3 Yrs     | 5 Yrs     | 7 Yrs     | 10 Yrs    |
|---------------------------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| ■ Total Global Fixed            | 0.86 (11)  | -1.86 (51) | -1.24 (51) | 5.52 (1)  | 3.60 (7)  | 4.06 (8)  | 6.19 (3)  |
| △ PIMCO Diversified Income      | 1.69 (3)   | 0.30 (13)  | 1.10 (11)  | 6.78 (1)  | 5.02 (1)  | 5.87 (1)  | 7.73 (1)  |
| ▲ Colchester Global Bond        | -0.95 (79) | -1.77 (48) | -1.82 (61) | 3.23 (28) | 0.93 (66) | N/A       | N/A       |
| ◆ Blmbg. Barc. Global Aggregate | -0.92 (77) | -2.36 (59) | -1.31 (52) | 1.98 (60) | 0.75 (74) | 0.86 (76) | 2.89 (68) |
| 5th Percentile                  | 1.44       | 1.43       | 2.28       | 4.57      | 3.84      | 4.28      | 6.03      |
| 1st Quartile                    | 0.30       | -0.67      | -0.12      | 3.33      | 2.15      | 2.59      | 4.91      |
| Median                          | -0.39      | -1.86      | -1.19      | 2.36      | 1.39      | 1.73      | 3.57      |
| 3rd Quartile                    | -0.89      | -3.12      | -2.40      | 1.50      | 0.65      | 0.88      | 2.52      |
| 95th Percentile                 | -1.48      | -4.45      | -4.25      | 0.51      | -0.89     | -1.12     | 1.41      |

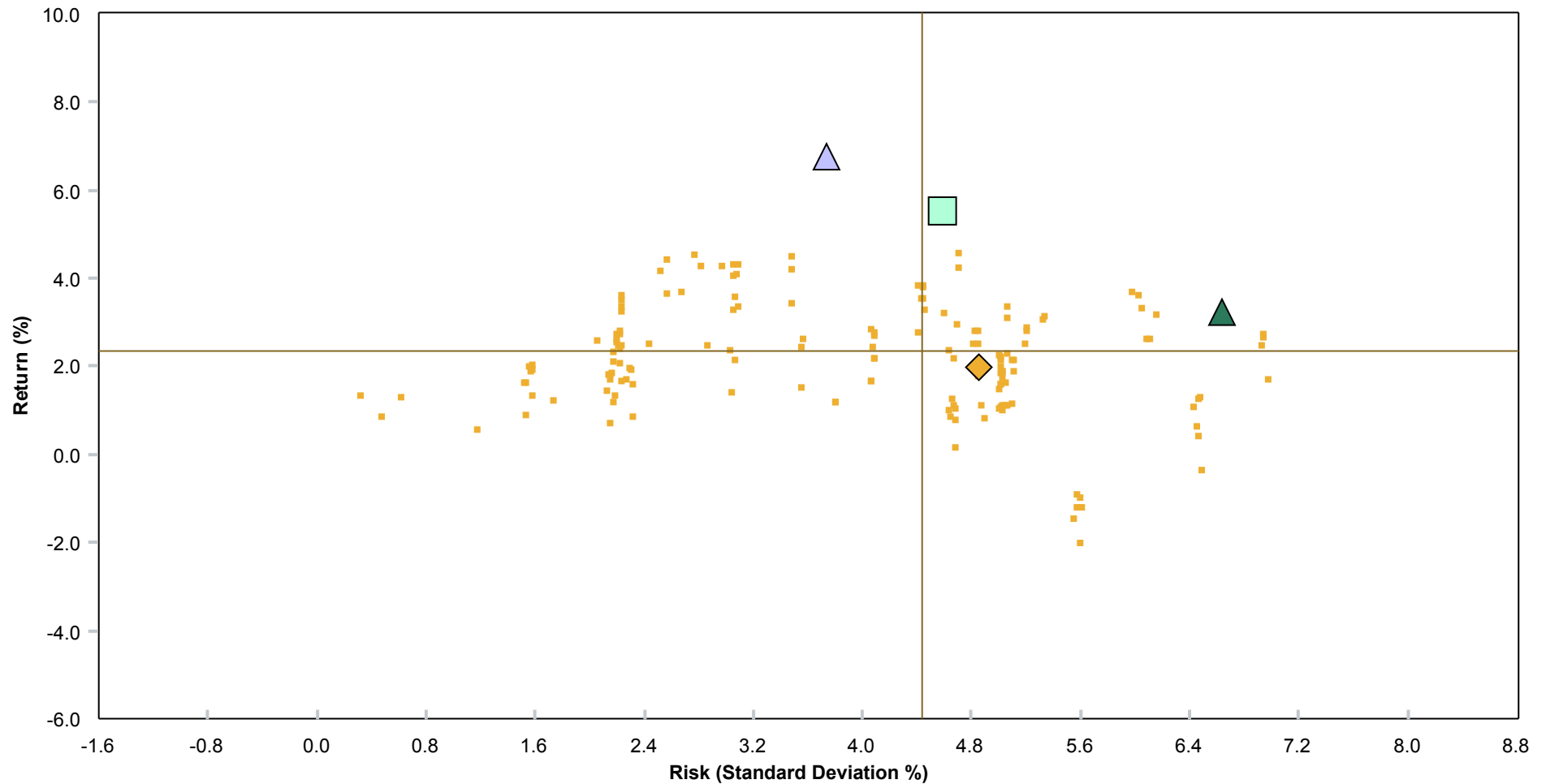
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018



|                                 | 2017      | 2016      | 2015       | 2014      | 2013       | 2012       | 2011      | 2010      | 2009       | 2008        |
|---------------------------------|-----------|-----------|------------|-----------|------------|------------|-----------|-----------|------------|-------------|
| ■ Total Global Fixed            | 10.00 (9) | 8.55 (3)  | -1.05 (27) | 2.13 (47) | -1.54 (38) | 11.04 (14) | 4.23 (46) | 12.13 (4) | 21.87 (17) | -5.31 (71)  |
| △ PIMCO Diversified Income      | 8.85 (16) | 10.56 (2) | 1.24 (1)   | 2.98 (38) | -0.91 (29) | 14.97 (4)  | 4.44 (38) | 14.27 (1) | 31.57 (6)  | -13.34 (88) |
| △ Colchester Global Bond        | 8.74 (17) | 4.28 (36) | -5.53 (85) | 0.27 (70) | -2.88 (56) | N/A        | N/A       | N/A       | N/A        | N/A         |
| ◆ Blmbg. Barc. Global Aggregate | 7.39 (38) | 2.09 (69) | -3.15 (41) | 0.59 (62) | -2.60 (52) | 4.32 (94)  | 5.64 (21) | 5.54 (59) | 6.93 (80)  | 4.79 (15)   |
| 5th Percentile                  | 12.27     | 7.96      | 0.40       | 7.36      | 1.66       | 13.22      | 8.48      | 11.05     | 34.25      | 9.40        |
| 1st Quartile                    | 7.86      | 4.95      | -0.86      | 4.52      | -0.49      | 8.43       | 5.14      | 8.64      | 16.98      | 1.27        |
| Median                          | 6.81      | 2.92      | -3.83      | 1.91      | -2.52      | 7.33       | 4.01      | 5.97      | 11.42      | -1.95       |
| 3rd Quartile                    | 4.42      | 1.70      | -4.94      | -0.14     | -3.90      | 6.27       | 2.81      | 4.72      | 9.32       | -8.17       |
| 95th Percentile                 | 2.21      | -0.62     | -7.00      | -2.35     | -8.15      | 3.48       | 0.26      | 3.08      | 4.45       | -18.54      |

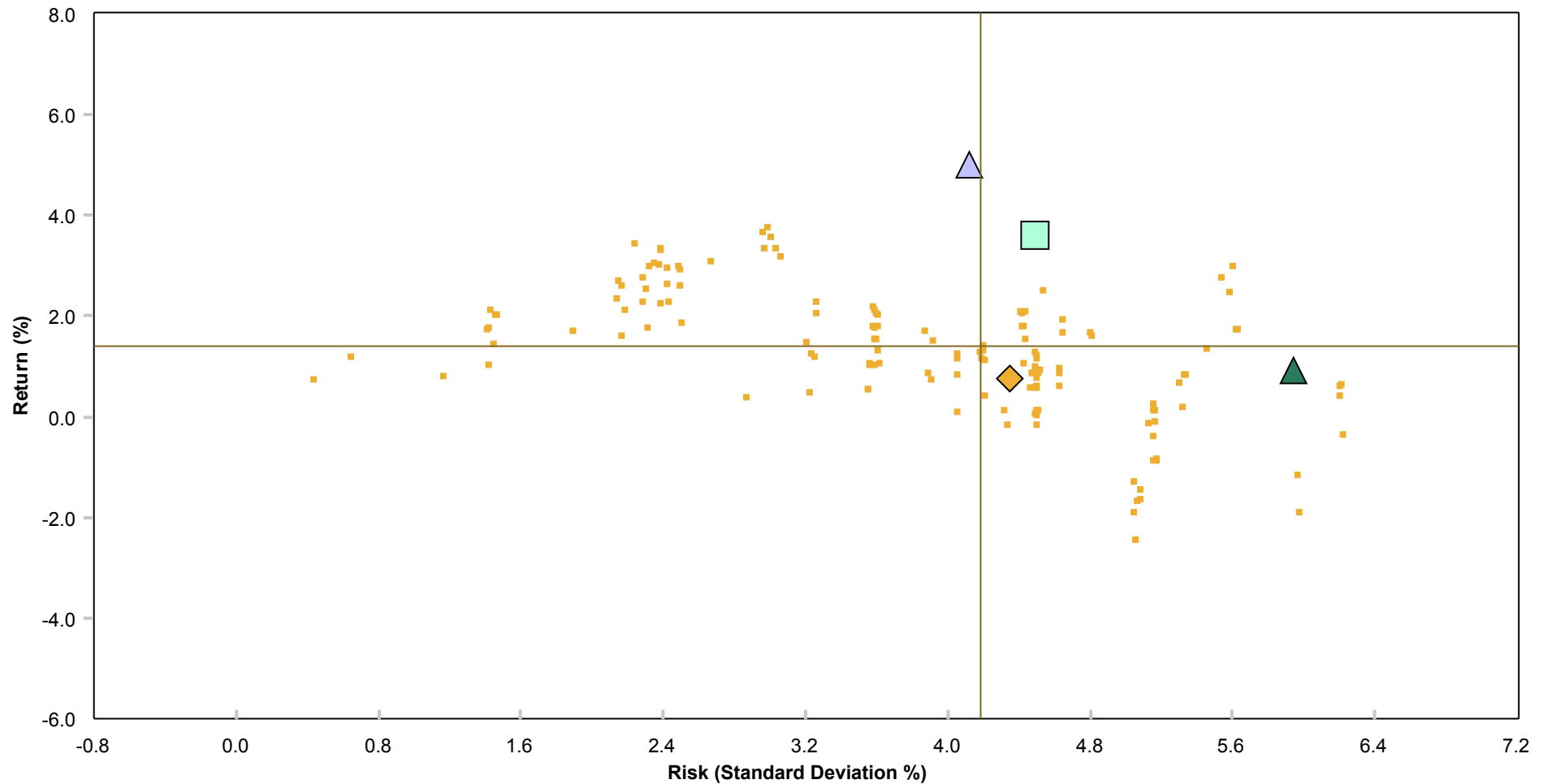
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



|                                 | Return | Standard<br>Deviation |
|---------------------------------|--------|-----------------------|
| ■ Total Global Fixed            | 5.52   | 4.60                  |
| ▲ PIMCO Diversified Income      | 6.78   | 3.74                  |
| ▲ Colchester Global Bond        | 3.23   | 6.64                  |
| ◆ Blmbg. Barc. Global Aggregate | 1.98   | 4.85                  |
| — Median                        | 2.36   | 4.44                  |

5 Years Ending September 30, 2018

IM Global Fixed Income (MF)



|                                 | Return | Standard<br>Deviation |
|---------------------------------|--------|-----------------------|
| ■ Total Global Fixed            | 3.60   | 4.49                  |
| ▲ PIMCO Diversified Income      | 5.02   | 4.12                  |
| ▲ Colchester Global Bond        | 0.93   | 5.95                  |
| ◆ Blmbg. Barc. Global Aggregate | 0.75   | 4.35                  |
| — Median                        | 1.39   | 4.19                  |

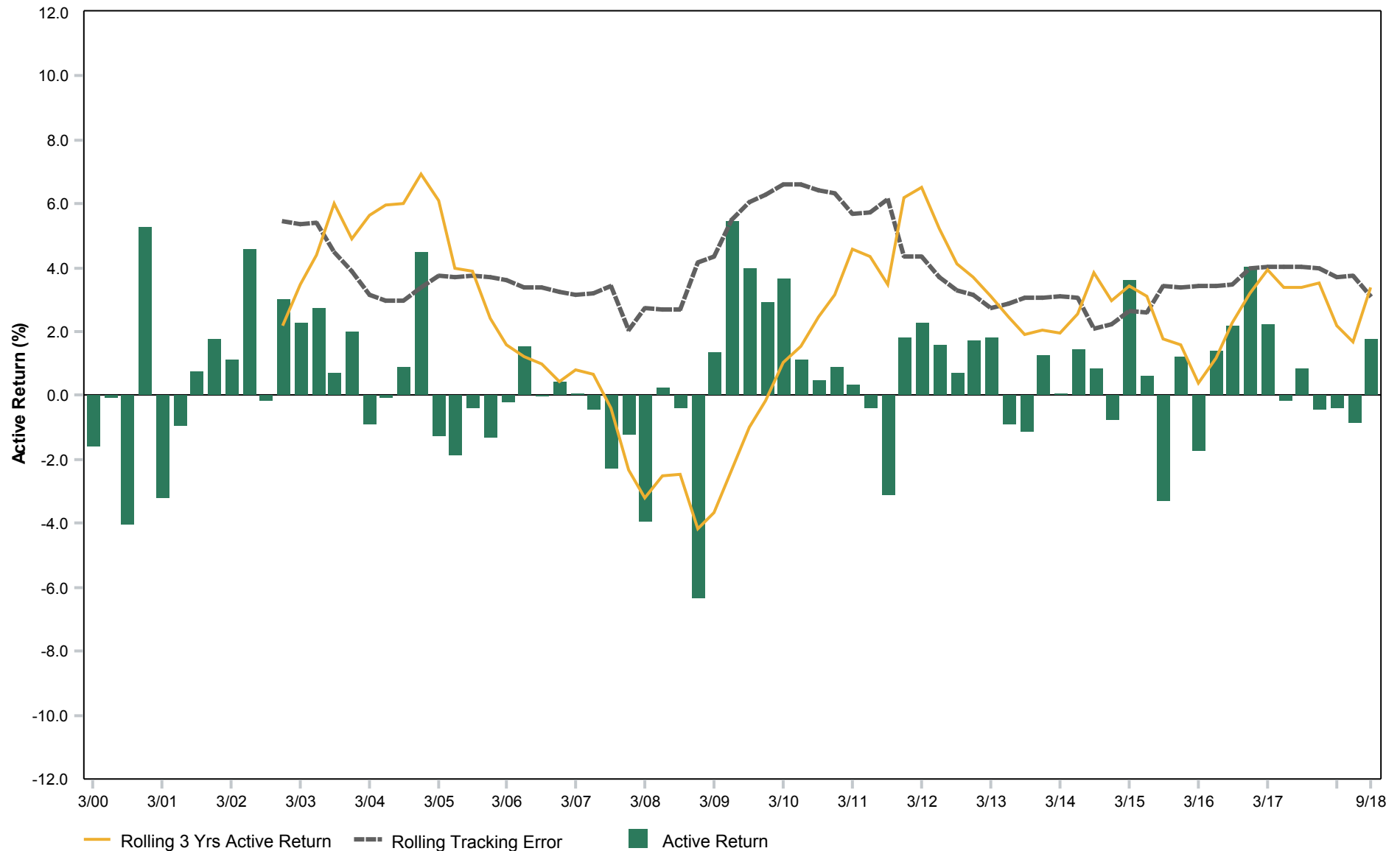
Calculation based on monthly periodicity.

# Bristol County Retirement System

## Comparative Performance & Rolling Return

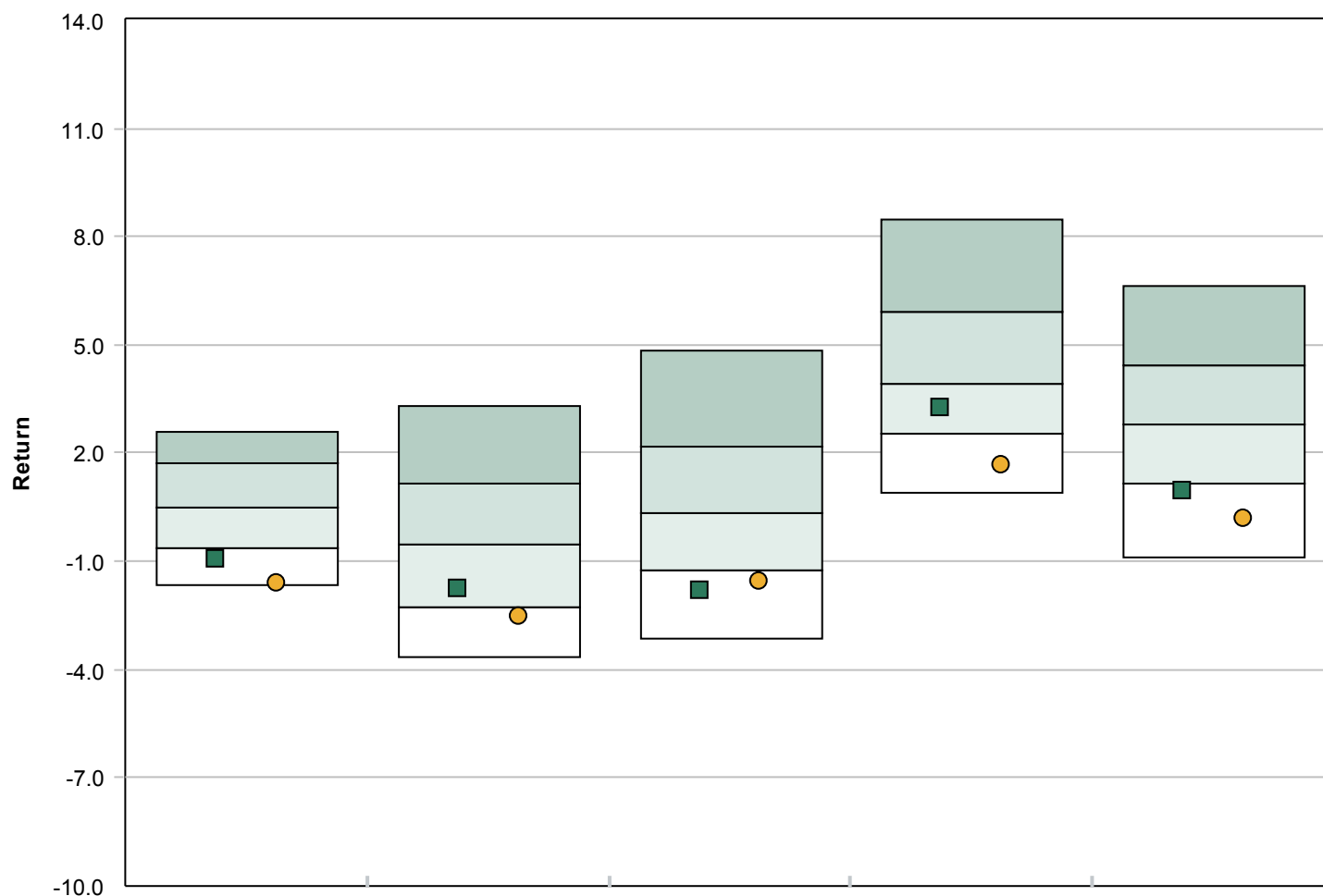
As of September 30, 2018

|                               | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016 | 2015  | 2014 |
|-------------------------------|-------|-------|-------|-------|-------|-------|--------|-------|------|-------|------|
| Total Global Fixed            | 0.86  | -1.86 | -1.24 | 5.52  | 3.60  | 4.06  | 6.19   | 10.00 | 8.55 | -1.05 | 2.13 |
| BImbg. Barc. Global Aggregate | -0.92 | -2.36 | -1.31 | 1.98  | 0.75  | 0.86  | 2.89   | 7.39  | 2.09 | -3.15 | 0.59 |
| Difference                    | 1.78  | 0.50  | 0.07  | 3.54  | 2.85  | 3.20  | 3.30   | 2.61  | 6.46 | 2.10  | 1.54 |



Net of fees.

As of September 30, 2018

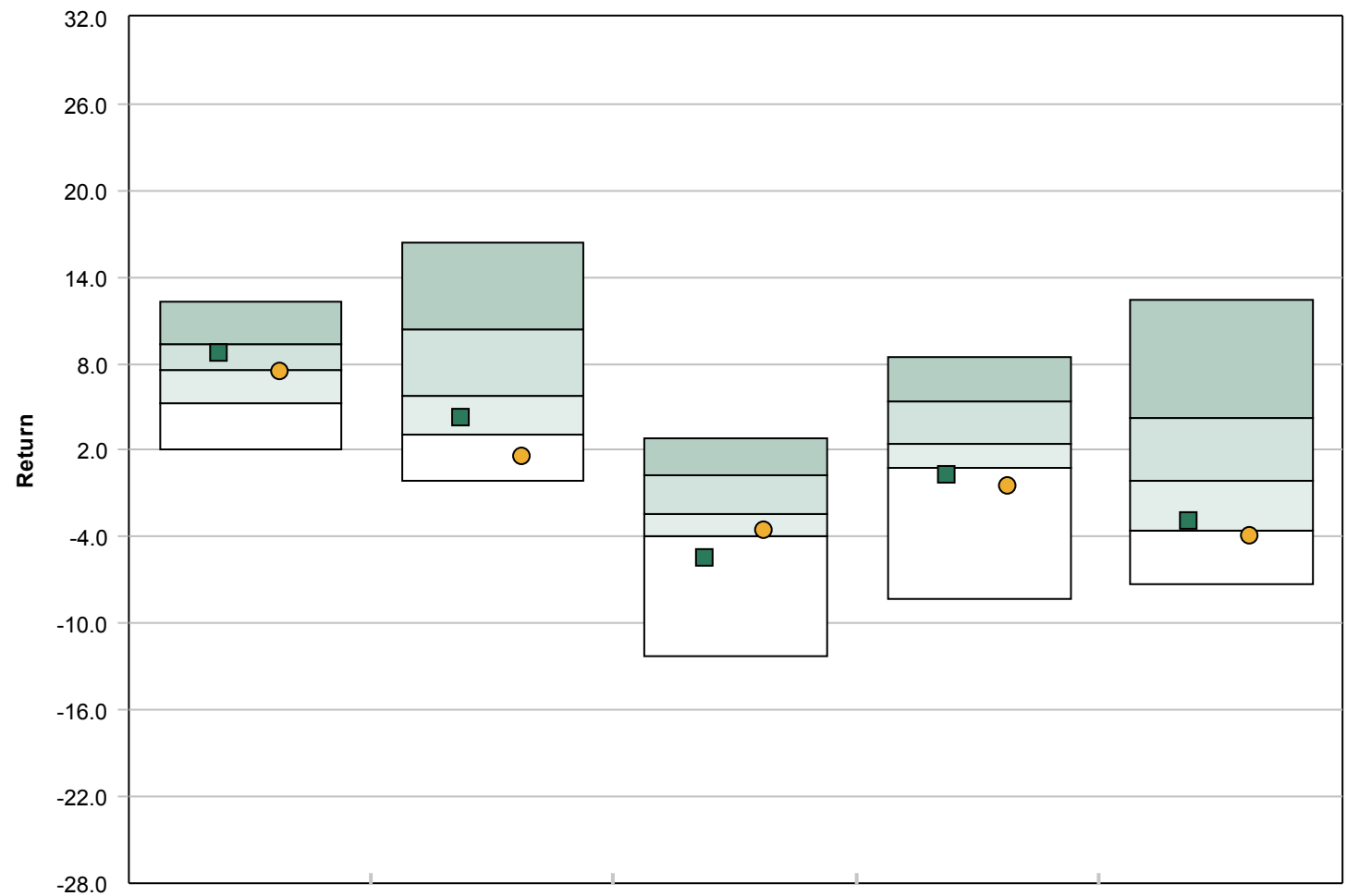


■ Colchester Global Bond  
 ● FTSE World Government Bond Index

|                                  | 1 Qtr      | YTD        | 1 Yr       | 3 Yrs     | 5 Yrs     |
|----------------------------------|------------|------------|------------|-----------|-----------|
| Colchester Global Bond           | -0.95 (85) | -1.77 (67) | -1.82 (88) | 3.23 (61) | 0.93 (82) |
| FTSE World Government Bond Index | -1.62 (95) | -2.55 (83) | -1.54 (83) | 1.68 (90) | 0.20 (92) |
| 5th Percentile                   | 2.60       | 3.32       | 4.85       | 8.46      | 6.62      |
| 1st Quartile                     | 1.73       | 1.18       | 2.19       | 5.91      | 4.41      |
| Median                           | 0.49       | -0.53      | 0.32       | 3.94      | 2.78      |
| 3rd Quartile                     | -0.63      | -2.28      | -1.26      | 2.51      | 1.17      |
| 95th Percentile                  | -1.65      | -3.64      | -3.14      | 0.88      | -0.90     |

Parentheses contain percentile rankings.  
 Calculation based on monthly periodicity.

As of September 30, 2018



■ Colchester Global Bond

● FTSE World Government Bond Index

8.74 (30)

4.28 (63)

-5.53 (85)

0.27 (80)

-2.88 (69)

7.49 (53)

1.60 (88)

-3.57 (68)

-0.48 (85)

-4.00 (80)

5th Percentile

12.29

16.41

2.78

8.52

12.40

1st Quartile

9.30

10.43

0.27

5.43

4.29

Median

7.63

5.76

-2.37

2.46

-0.16

3rd Quartile

5.29

3.05

-3.97

0.72

-3.56

95th Percentile

2.10

-0.09

-12.29

-8.34

-7.22

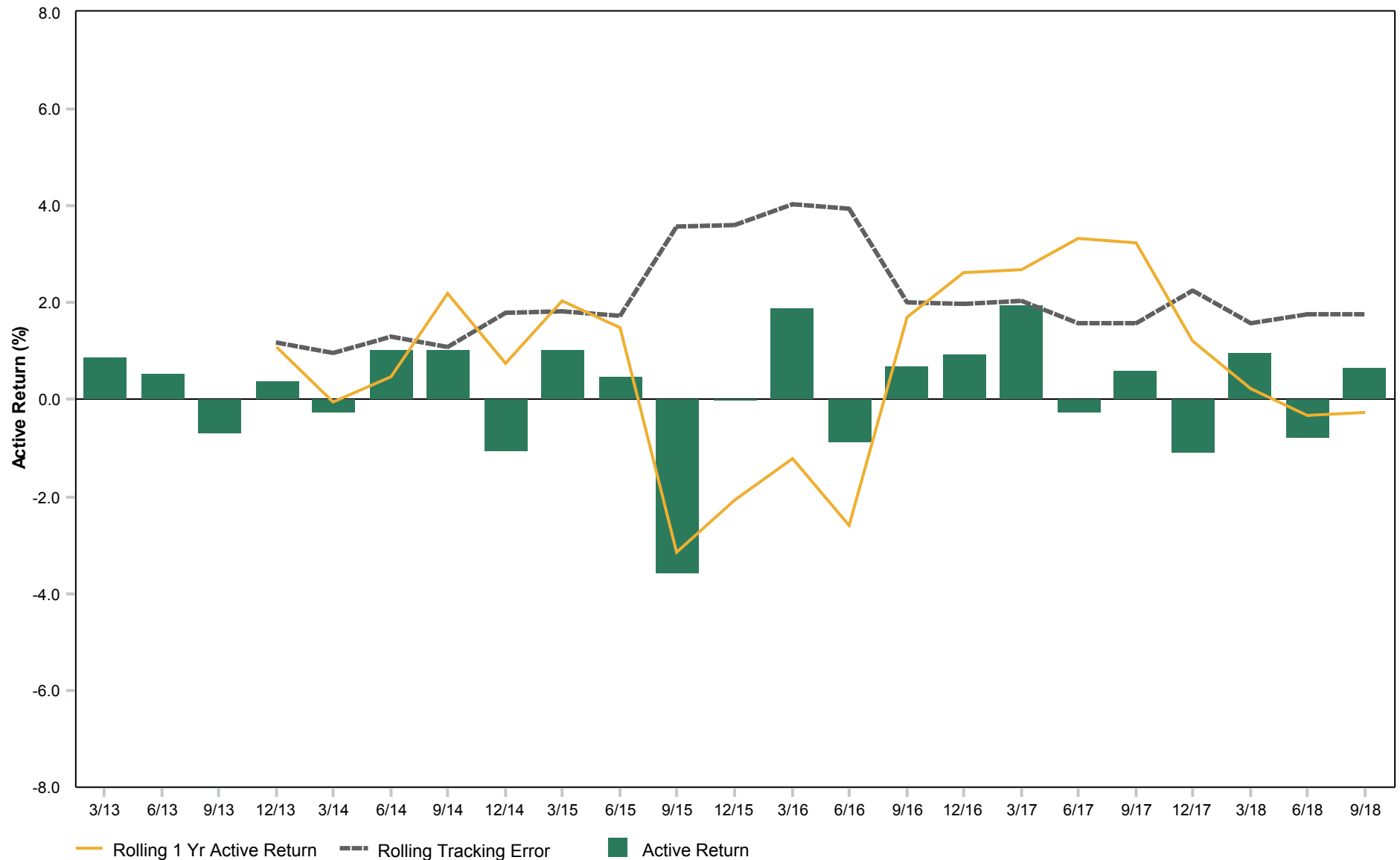
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Bristol County Retirement System

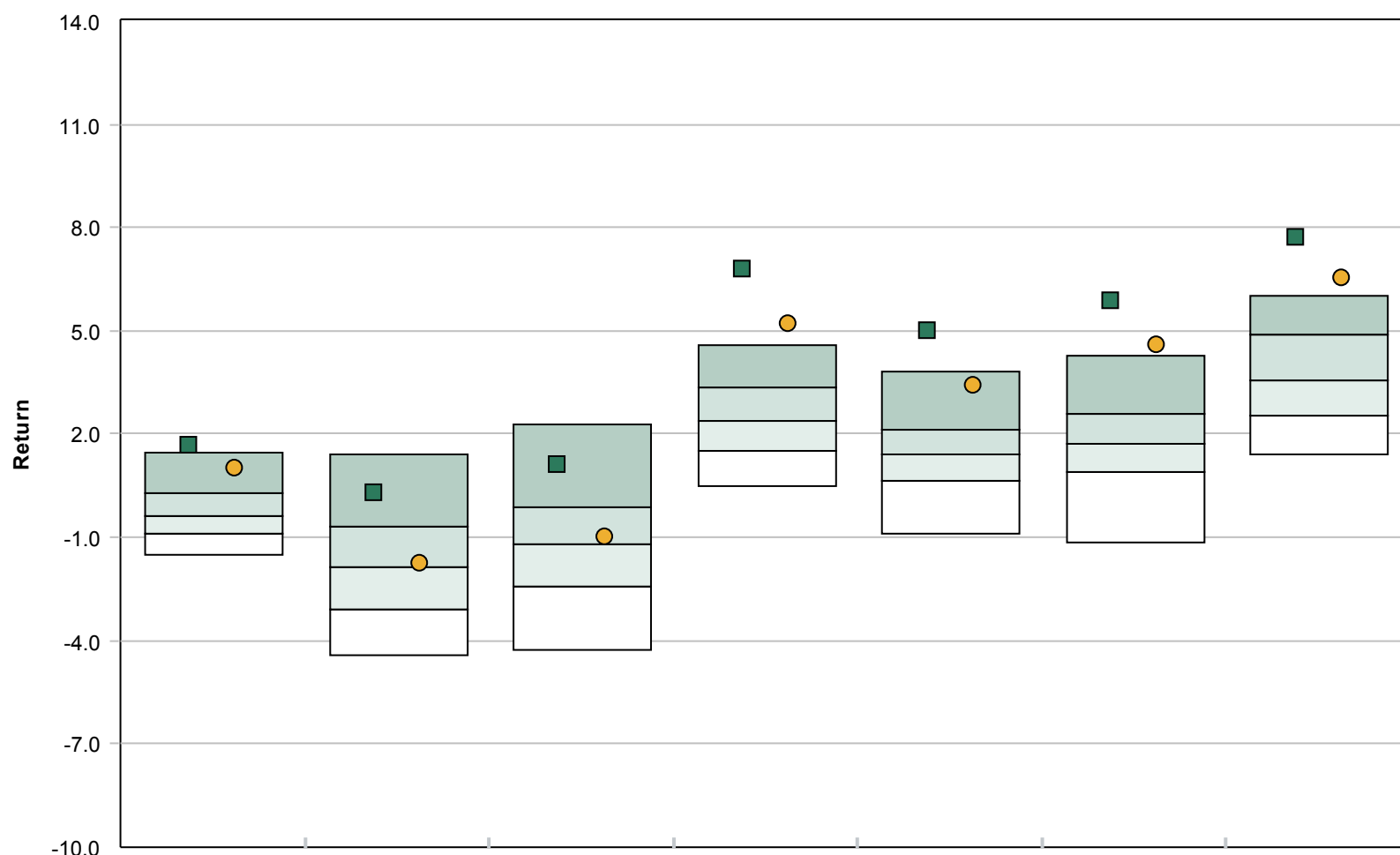
## Comparative Performance & Rolling Return

As of September 30, 2018

|                                  | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017 | 2016 | 2015  | 2014  |
|----------------------------------|-------|-------|-------|-------|-------|-------|--------|------|------|-------|-------|
| Colchester Global Bond           | -0.95 | -1.77 | -1.82 | 3.23  | 0.93  | N/A   | N/A    | 8.74 | 4.28 | -5.53 | 0.27  |
| FTSE World Government Bond Index | -1.62 | -2.55 | -1.54 | 1.68  | 0.20  | -0.06 | 2.21   | 7.49 | 1.60 | -3.57 | -0.48 |
| Difference                       | 0.67  | 0.78  | -0.28 | 1.55  | 0.73  | N/A   | N/A    | 1.25 | 2.68 | -1.96 | 0.75  |



As of September 30, 2018



■ PIMCO Diversified Income

● PIMCO Diversified Index\*

5th Percentile

1st Quartile

Median

3rd Quartile

95th Percentile

1.44

1.43

2.28

4.57

3.84

4.28

6.03

0.30

-0.67

-0.12

3.33

2.15

2.59

4.91

-0.39

-1.86

-1.19

2.36

1.39

1.73

3.57

-0.89

-3.12

-2.40

1.50

0.65

0.88

2.52

-1.48

-4.45

-4.25

0.51

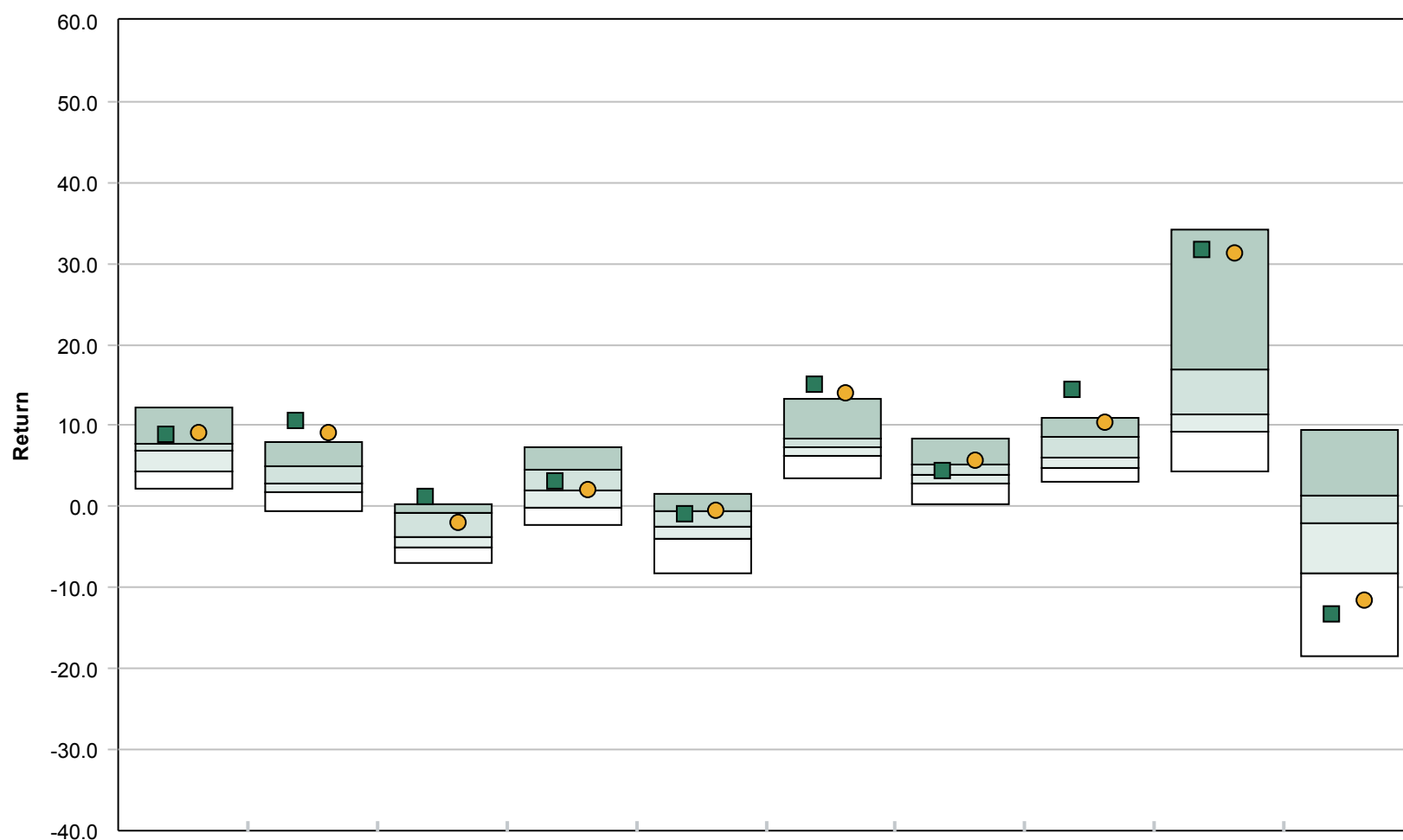
-0.89

-1.12

1.41

\*33.3% ML Global HY/33.3% JPM EMBI Global/33.3% LB Global Agg

As of September 30, 2018



|                            | 2017      | 2016      | 2015       | 2014      | 2013       | 2012      | 2011      | 2010       | 2009      | 2008        |
|----------------------------|-----------|-----------|------------|-----------|------------|-----------|-----------|------------|-----------|-------------|
| ■ PIMCO Diversified Income | 8.85 (16) | 10.56 (2) | 1.24 (1)   | 2.98 (38) | -0.91 (29) | 14.97 (4) | 4.44 (38) | 14.27 (1)  | 31.57 (6) | -13.34 (88) |
| ● PIMCO Diversified Index* | 8.97 (13) | 8.97 (2)  | -2.02 (34) | 1.99 (48) | -0.49 (25) | 13.86 (5) | 5.68 (21) | 10.39 (10) | 31.15 (6) | -11.55 (88) |
| 5th Percentile             | 12.27     | 7.96      | 0.40       | 7.36      | 1.66       | 13.22     | 8.48      | 11.05      | 34.25     | 9.40        |
| 1st Quartile               | 7.86      | 4.95      | -0.86      | 4.52      | -0.49      | 8.43      | 5.14      | 8.64       | 16.98     | 1.27        |
| Median                     | 6.81      | 2.92      | -3.83      | 1.91      | -2.52      | 7.33      | 4.01      | 5.97       | 11.42     | -1.95       |
| 3rd Quartile               | 4.42      | 1.70      | -4.94      | -0.14     | -3.90      | 6.27      | 2.81      | 4.72       | 9.32      | -8.17       |
| 95th Percentile            | 2.21      | -0.62     | -7.00      | -2.35     | -8.15      | 3.48      | 0.26      | 3.08       | 4.45      | -18.54      |

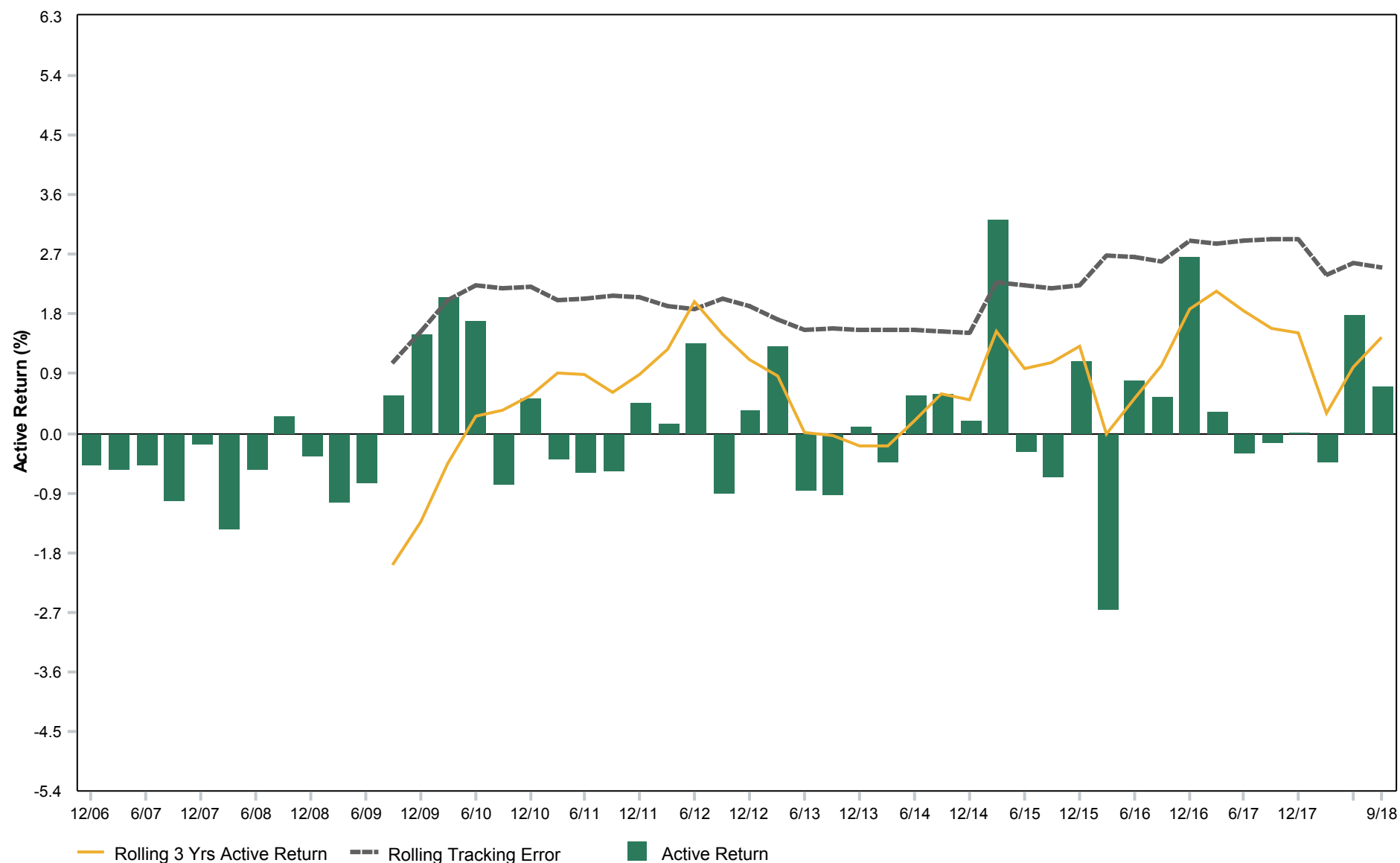
\*33.3% ML Global HY/33.3% JPM EMBI Global/33.3% LB Global Agg

# Bristol County Retirement System

## Comparative Performance & Rolling Return

As of September 30, 2018

|                          | 1 Qtr | YTD   | 1 Yr  | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs | 2017  | 2016  | 2015  | 2014 |
|--------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|------|
| PIMCO Diversified Income | 1.69  | 0.30  | 1.10  | 6.78  | 5.02  | 5.87  | 7.73   | 8.85  | 10.56 | 1.24  | 2.98 |
| PIMCO Diversified Index* | 0.99  | -1.77 | -0.99 | 5.20  | 3.42  | 4.59  | 6.54   | 8.97  | 8.97  | -2.02 | 1.99 |
| Difference               | 0.70  | 2.07  | 2.09  | 1.58  | 1.60  | 1.28  | 1.19   | -0.12 | 1.59  | 3.26  | 0.99 |



\*PIMCO Index: 33% BC Global Agg/33% ML Global HY/33% JPM EMBI Global.

## **Other Fixed Income**

As of September 30, 2018

|                                | Market Value<br>(\$) | %    | 1<br>Quarter | Year<br>To<br>Date | 1<br>Year | 3<br>Years | Since<br>Inception | Inception<br>Date |
|--------------------------------|----------------------|------|--------------|--------------------|-----------|------------|--------------------|-------------------|
| Invesco Mortgage Recovery Fund | 342,476              | 0.05 | 0.00         | 9.74               | 15.27     | 3.45       | 13.94              | 03/31/2010        |

# Bristol County Retirement System

# Schedule of Investable Assets

Invesco Mortgage Recovery Fund

Since Inception Ending September 30, 2018

| Periods Ending | Beginning<br>Market Value<br>(\$) | Net<br>Cash Flow<br>(\$) | Contributions<br>(\$) | Withdrawals<br>(\$) | Gain/Loss<br>(\$) | Ending<br>Market Value<br>(\$) | %Return | Unit Value | Income<br>(\$) | Income % of<br>Beginning<br>Market Value |
|----------------|-----------------------------------|--------------------------|-----------------------|---------------------|-------------------|--------------------------------|---------|------------|----------------|------------------------------------------|
| Jun-2010       | -                                 | 2,047,799                | 2,089,844             | 42,045              | -                 | 2,151,396                      | 5.74    | 105.74     | 27,307         | 0.00                                     |
| Sep-2010       | 2,151,396                         | 739,731                  | 921,104               | 181,373             | 142,577           | 3,033,704                      | 5.94    | 112.02     | 75,028         | 3.49                                     |
| Dec-2010       | 3,033,704                         | -448,204                 | 33,362                | 481,566             | 96,495            | 2,681,995                      | 3.67    | 116.13     | 209,106        | 6.89                                     |
| Mar-2011       | 2,681,995                         | -265,432                 | 215,509               | 480,941             | 114,718           | 2,531,281                      | 4.31    | 121.13     | 206,684        | 7.71                                     |
| Jun-2011       | 2,531,281                         | -248,483                 | 200,172               | 448,655             | -37,226           | 2,245,572                      | -1.67   | 119.11     | 33,871         | 1.34                                     |
| Sep-2011       | 2,245,572                         | 1,186,159                | 1,302,619             | 116,460             | -15,163           | 3,416,568                      | -0.67   | 118.31     | 8,310          | 0.37                                     |
| Dec-2011       | 3,416,568                         | -974,627                 | -                     | 974,627             | 7,383             | 2,449,324                      | 0.24    | 118.60     | 38,619         | 1.13                                     |
| Mar-2012       | 2,449,324                         | -880,764                 | -                     | 880,764             | 106,038           | 1,674,598                      | 4.64    | 124.10     | 18,649         | 0.76                                     |
| Jun-2012       | 1,674,598                         | -3,746                   | 159,003               | 162,749             | 44,872            | 1,715,724                      | 2.45    | 127.14     | 75,013         | 4.48                                     |
| Sep-2012       | 1,715,724                         | -10,305                  | -                     | 10,305              | 37,498            | 1,742,917                      | 2.19    | 129.92     | -              | 0.00                                     |
| Dec-2012       | 1,742,917                         | -510,562                 | -                     | 510,562             | 85,492            | 1,317,847                      | 5.91    | 137.60     | -              | 0.00                                     |
| Mar-2013       | 1,317,847                         | -65,326                  | -                     | 65,326              | 22,847            | 1,275,368                      | 1.74    | 140.00     | -              | 0.00                                     |
| Jun-2013       | 1,275,368                         | -59,917                  | 20,152                | 80,069              | 26,281            | 1,241,732                      | 2.19    | 143.07     | -              | 0.00                                     |
| Sep-2013       | 1,241,732                         | 221,939                  | 221,939               | -                   | 2,024             | 1,465,695                      | 0.14    | 143.27     | -              | 0.00                                     |
| Dec-2013       | 1,465,695                         | 132,967                  | 329,829               | 196,862             | 124,547           | 1,723,209                      | 8.11    | 154.89     | -              | 0.00                                     |
| Mar-2014       | 1,723,209                         | -97,979                  | -                     | 97,979              | 39,216            | 1,664,446                      | 2.35    | 158.54     | -              | 0.00                                     |
| Jun-2014       | 1,664,446                         | -64,464                  | 70,551                | 135,015             | 53,465            | 1,653,447                      | 3.34    | 163.84     | -              | 0.00                                     |
| Sep-2014       | 1,653,447                         | -38,489                  | 40,092                | 78,581              | 82,363            | 1,697,321                      | 5.10    | 172.19     | -              | 0.00                                     |
| Dec-2014       | 1,697,321                         | 53,602                   | 88,065                | 34,463              | 315,116           | 2,066,039                      | 18.00   | 203.18     | -              | 0.00                                     |
| Mar-2015       | 2,066,039                         | -338,868                 | 42,571                | 381,439             | 49,102            | 1,776,273                      | 2.88    | 209.03     | -              | 0.00                                     |
| Jun-2015       | 1,776,273                         | 28,704                   | 28,704                | -                   | 67,010            | 1,871,987                      | 3.91    | 217.20     | -              | 0.00                                     |
| Sep-2015       | 1,871,987                         | -239,366                 | 44,631                | 283,997             | 184,643           | 1,817,264                      | 11.31   | 241.76     | -              | 0.00                                     |
| Dec-2015       | 1,817,264                         | -255,351                 | -                     | 255,351             | 107,519           | 1,669,432                      | 6.88    | 258.40     | -              | 0.00                                     |
| Mar-2016       | 1,669,432                         | 9,080                    | 57,199                | 48,119              | -204              | 1,678,308                      | -0.01   | 258.37     | -              | 0.00                                     |
| Jun-2016       | 1,678,308                         | -423,449                 | -                     | 423,449             | 62,718            | 1,317,577                      | 5.00    | 271.28     | -              | 0.00                                     |
| Sep-2016       | 1,317,577                         | -175,341                 | -                     | 175,341             | 1,890             | 1,144,126                      | 0.17    | 271.73     | -              | 0.00                                     |
| Dec-2016       | 1,144,126                         | -1,965                   | -                     | 1,965               | -85,161           | 1,057,000                      | -7.44   | 251.51     | -              | 0.00                                     |
| Mar-2017       | 1,057,000                         | -                        | -                     | -                   | -25,343           | 1,031,657                      | -2.40   | 245.48     | -              | 0.00                                     |
| Jun-2017       | 1,031,657                         | -559,332                 | -                     | 559,332             | -399              | 471,926                        | -0.08   | 245.27     | -              | 0.00                                     |
| Sep-2017       | 471,926                           | -80,808                  | -                     | 80,808              | -25,848           | 365,270                        | -6.61   | 229.06     | -              | 0.00                                     |
| Dec-2017       | 365,270                           | -                        | -                     | -                   | 18,088            | 383,358                        | 4.95    | 240.40     | -              | 0.00                                     |
| Mar-2018       | 383,358                           | 840                      | 840                   | -                   | 12,252            | 396,450                        | 3.36    | 248.49     | -              | 0.00                                     |
| Jun-2018       | 396,450                           | -76,638                  | -                     | 76,638              | 22,664            | 342,476                        | 5.75    | 262.78     | -              | 0.00                                     |
| Sep-2018       | 342,476                           | -                        | -                     | -                   | -                 | 342,476                        | 0.00    | 262.78     | -              | 0.00                                     |

\*% return represents a time weighted return.

**Bristol County Retirement System****Schedule of Investable Assets**

Invesco Mortgage Recovery Fund

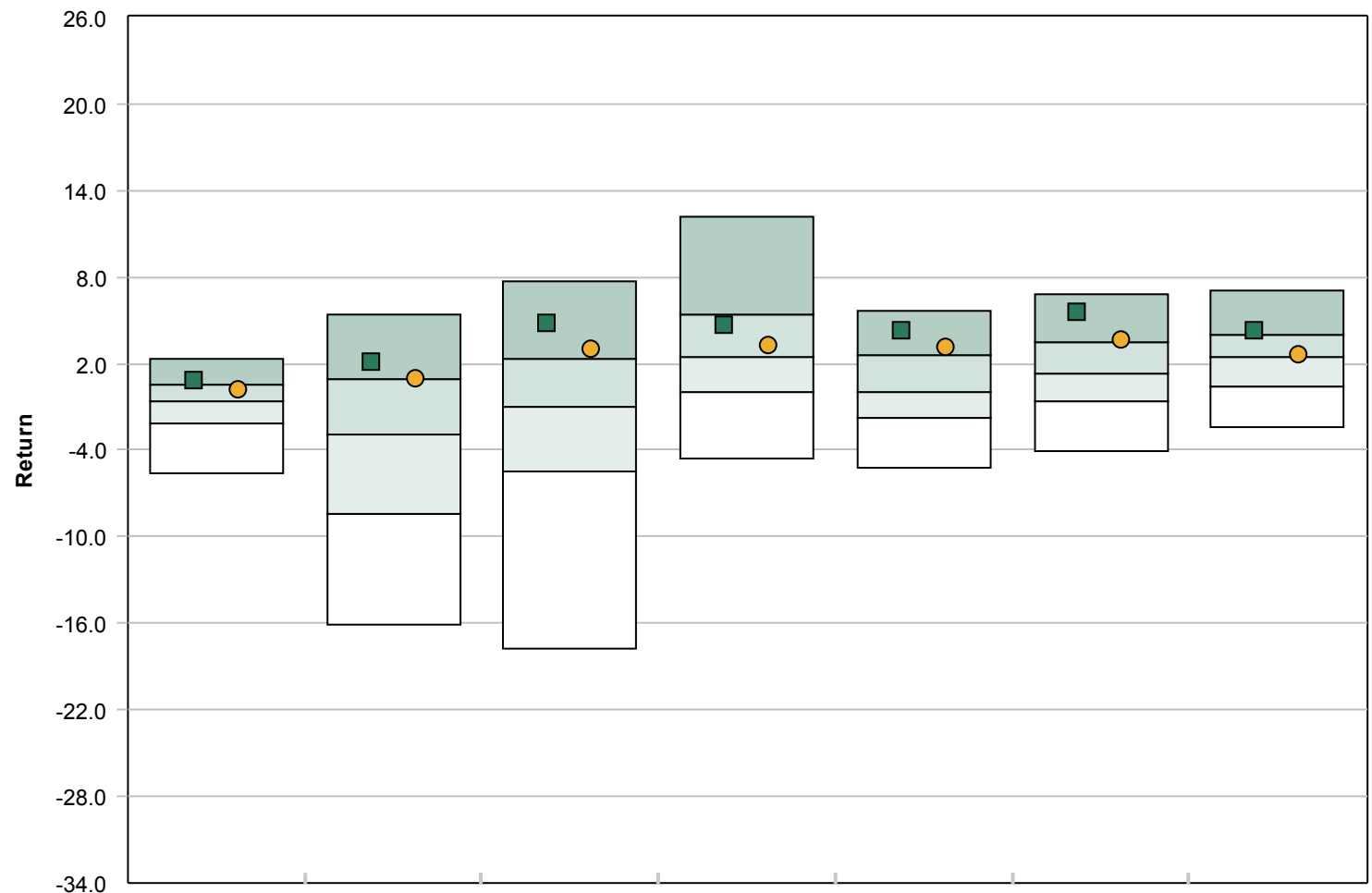
Since Inception Ending September 30, 2018

| Periods Ending | Beginning<br>Market Value<br>(\$) | Net<br>Cash Flow<br>(\$) | Contributions<br>(\$) | Withdrawals<br>(\$) | Gain/Loss<br>(\$) | Ending<br>Market Value<br>(\$) | %Return | Unit Value | Income<br>(\$) | Income % of<br>Beginning<br>Market Value |
|----------------|-----------------------------------|--------------------------|-----------------------|---------------------|-------------------|--------------------------------|---------|------------|----------------|------------------------------------------|
|                | -                                 | -1,398,595               | 5,866,186             | 7,264,781           | 1,637,474         | 342,476                        | 12.04   | 262.78     | 692,587        | 0.00                                     |

\*% return represents a time weighted return.

## **Alternatives**

As of September 30, 2018



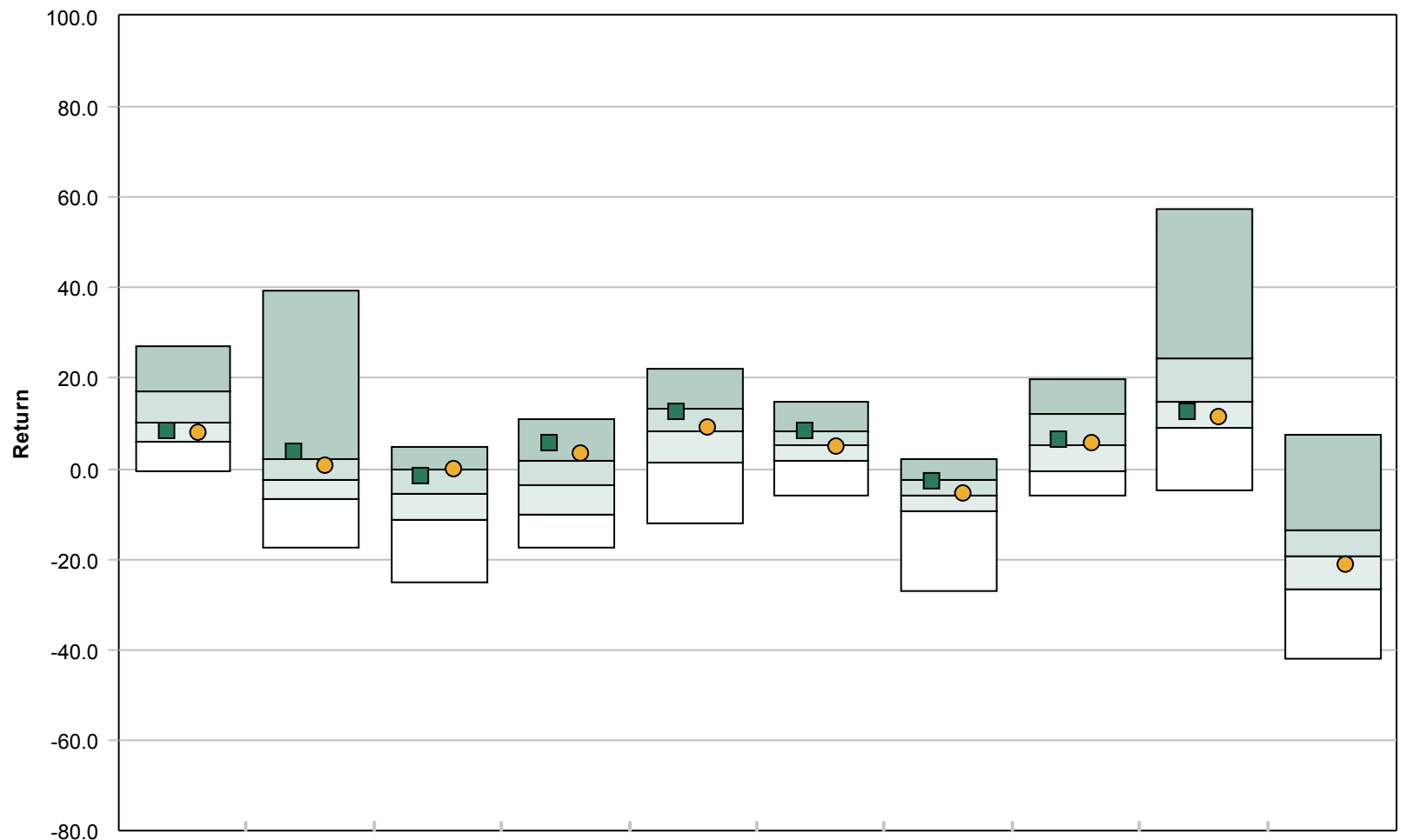
■ PRIT Absolute Return

● HFRI Fund of Funds Composite Index

|                                    | 1 Qtr     | YTD       | 1 Yr      | 3 Yrs     | 5 Yrs     | 7 Yrs     | 10 Yrs    |
|------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| PRIT Absolute Return               | 0.86 (20) | 2.04 (17) | 4.79 (12) | 4.61 (30) | 4.27 (13) | 5.50 (11) | 4.25 (22) |
| HFRI Fund of Funds Composite Index | 0.19 (33) | 0.92 (25) | 3.01 (20) | 3.27 (42) | 3.16 (20) | 3.60 (25) | 2.55 (50) |
| 5th Percentile                     | 2.28      | 5.36      | 7.65      | 12.15     | 5.65      | 6.83      | 7.08      |
| 1st Quartile                       | 0.55      | 0.89      | 2.33      | 5.35      | 2.53      | 3.47      | 4.02      |
| Median                             | -0.56     | -2.92     | -0.97     | 2.43      | 0.07      | 1.29      | 2.52      |
| 3rd Quartile                       | -2.20     | -8.44     | -5.50     | 0.07      | -1.78     | -0.56     | 0.36      |
| 95th Percentile                    | -5.60     | -16.12    | -17.73    | -4.55     | -5.22     | -4.12     | -2.34     |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

As of September 30, 2018

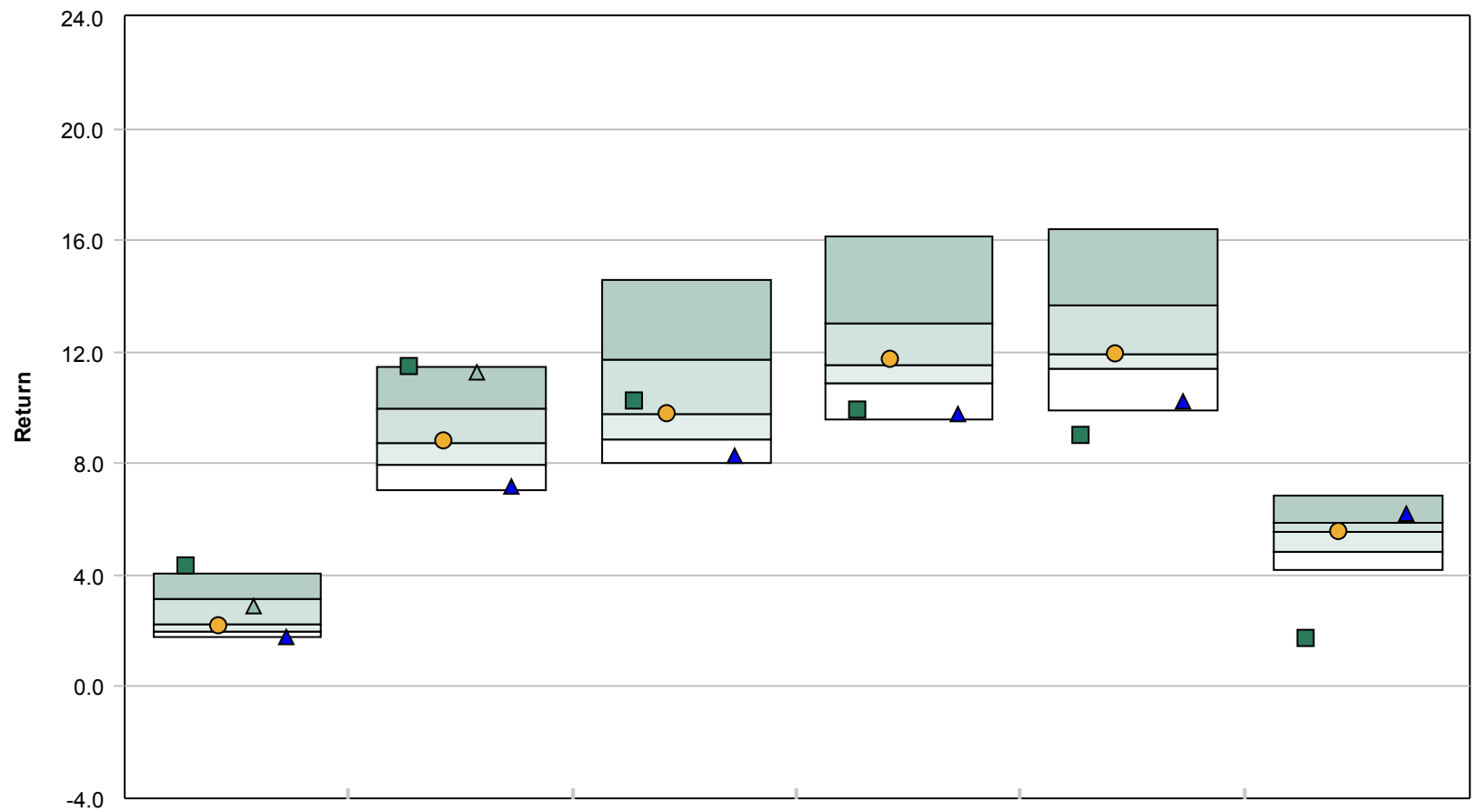


|                             |           |           |            |           |            |           |            |           |            |             |
|-----------------------------|-----------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-------------|
| PRIT Absolute Return        | 8.16 (63) | 3.57 (21) | -1.86 (34) | 5.53 (10) | 12.61 (29) | 8.36 (24) | -2.77 (28) | 6.29 (44) | 12.33 (63) | N/A         |
| HFRI F of F Composite Index | 7.77 (65) | 0.51 (33) | -0.27 (26) | 3.37 (19) | 8.96 (48)  | 4.79 (53) | -5.72 (50) | 5.70 (48) | 11.47 (67) | -21.37 (58) |

|                 |       |        |        |        |        |       |        |       |       |        |
|-----------------|-------|--------|--------|--------|--------|-------|--------|-------|-------|--------|
| 5th Percentile  | 27.17 | 39.31  | 4.91   | 10.91  | 22.14  | 14.82 | 2.31   | 19.76 | 57.52 | 7.38   |
| 1st Quartile    | 17.16 | 2.06   | -0.26  | 1.93   | 13.40  | 8.24  | -2.38  | 11.97 | 24.33 | -13.71 |
| Median          | 10.19 | -2.31  | -5.50  | -3.81  | 8.39   | 5.20  | -5.74  | 5.10  | 14.89 | -19.35 |
| 3rd Quartile    | 5.99  | -6.63  | -11.15 | -10.13 | 1.33   | 1.62  | -9.48  | -0.47 | 9.00  | -26.53 |
| 95th Percentile | -0.42 | -17.62 | -25.21 | -17.41 | -12.18 | -5.80 | -27.09 | -6.07 | -4.74 | -42.12 |

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

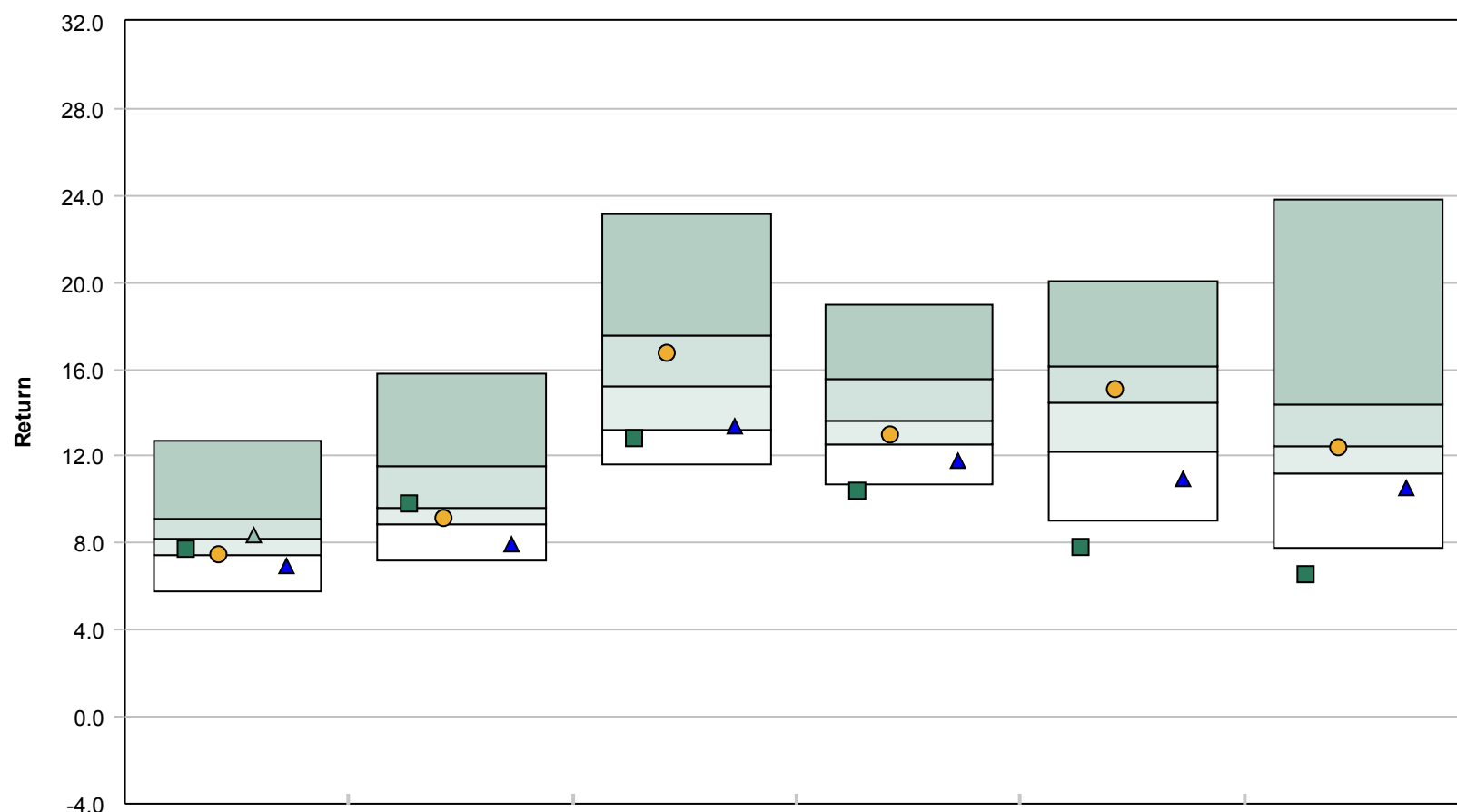
As of June 30, 2018



|                         | 1 Qtr     | 1 Yr       | 3 Yrs      | 5 Yrs      | 7 Yrs      | 10 Yrs     |
|-------------------------|-----------|------------|------------|------------|------------|------------|
| ■ Total Real Estate     | 4.30 (4)  | 11.44 (6)  | 10.21 (40) | 9.92 (93)  | 9.00 (100) | 1.69 (100) |
| ● RREEF America REIT II | 2.16 (60) | 8.81 (48)  | 9.79 (49)  | 11.70 (42) | 11.91 (50) | 5.57 (53)  |
| ▲ Intercontinental      | 2.89 (28) | 11.25 (13) | N/A        | N/A        | N/A        | N/A        |
| ▲ NCREIF Property Index | 1.81 (90) | 7.19 (91)  | 8.25 (91)  | 9.77 (94)  | 10.23 (94) | 6.22 (13)  |
| 5th Percentile          | 4.08      | 11.45      | 14.60      | 16.16      | 16.39      | 6.87       |
| 1st Quartile            | 3.14      | 9.99       | 11.75      | 13.03      | 13.65      | 5.89       |
| Median                  | 2.25      | 8.74       | 9.78       | 11.50      | 11.91      | 5.58       |
| 3rd Quartile            | 1.96      | 7.96       | 8.84       | 10.86      | 11.40      | 4.83       |
| 95th Percentile         | 1.78      | 7.01       | 8.01       | 9.56       | 9.92       | 4.18       |

Parentheses contain percentile rankings.  
Calculation based on quarterly periodicity.

As of September 30, 2018



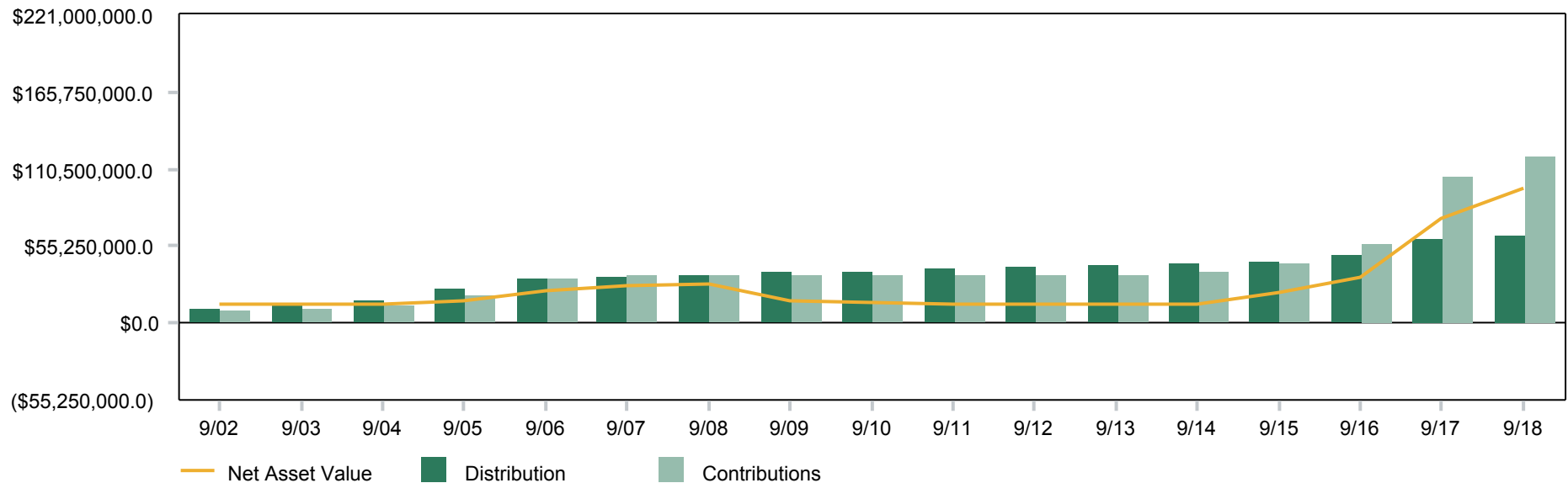
|                         | 2017      | 2016      | 2015       | 2014       | 2013       | 2012       |
|-------------------------|-----------|-----------|------------|------------|------------|------------|
| ■ Total Real Estate     | 7.73 (61) | 9.74 (49) | 12.77 (86) | 10.35 (97) | 7.79 (99)  | 6.52 (97)  |
| ● RREEF America REIT II | 7.44 (75) | 9.14 (62) | 16.70 (35) | 12.99 (68) | 15.01 (37) | 12.41 (54) |
| ▲ Intercontinental      | 8.37 (49) | N/A       | N/A        | N/A        | N/A        | N/A        |
| ▲ NCREIF Property Index | 6.96 (85) | 7.97 (88) | 13.33 (75) | 11.82 (82) | 10.98 (86) | 10.54 (81) |
| 5th Percentile          | 12.69     | 15.83     | 23.17      | 18.98      | 20.08      | 23.79      |
| 1st Quartile            | 9.12      | 11.50     | 17.53      | 15.54      | 16.14      | 14.34      |
| Median                  | 8.23      | 9.63      | 15.23      | 13.59      | 14.47      | 12.45      |
| 3rd Quartile            | 7.44      | 8.90      | 13.23      | 12.57      | 12.23      | 11.16      |
| 95th Percentile         | 5.80      | 7.15      | 11.60      | 10.68      | 9.07       | 7.77       |

Parentheses contain percentile rankings.  
Calculation based on quarterly periodicity.

**Cash Flow Summary**

|                               |               |
|-------------------------------|---------------|
| Capital Committed:            | \$128,427,501 |
| Total Contributions:          | \$128,601,676 |
| Remaining Capital Commitment: | \$8,441,431   |
| Total Distributions:          | \$62,949,400  |
| Market Value:                 | \$96,889,006  |
| Inception Date:               | 01/01/1995    |
| Inception IRR:                | 16.49         |
| TVPI:                         | 1.25          |

**Cash Flow Analysis**



# Bristol County Retirement System

# Total Active Hard Assets and Real Estate

As of September 30, 2018

| Partnerships                                     | Vintage Year | Investment Strategy | Capital Commitment (\$) | Drawn Down (\$)    | Distributed (\$)  | Market Value (\$) | IRR (%)      | TVPI Multiple |
|--------------------------------------------------|--------------|---------------------|-------------------------|--------------------|-------------------|-------------------|--------------|---------------|
| Brookfield Timberlands Fund V                    | 2013         | Timber              | 5,000,000               | 1,129,259          | 394,205           | 1,222,399         | 9.69         | 1.43          |
| Eastern Timberland Opportunities II              | 2014         | Timber              | 2,500,000               | 2,258,324          | 287,435           | 2,925,979         | 9.58         | 1.42          |
| GCM Customized Infrastructures Strategies II, LP | 2015         | Infrastructure      | 13,000,000              | 8,985,263          | 2,663,105         | 7,143,214         | 8.16         | 1.09          |
| Invesco Mortgage Recovery II                     | 2016         | Real Estate         | 15,000,000              | 12,497,857         | 7,212,168         | 7,498,574         | 11.62        | 1.23          |
| <b>Total Hard Assets</b>                         |              |                     | <b>128,427,501</b>      | <b>128,601,676</b> | <b>62,949,400</b> | <b>96,889,006</b> | <b>16.49</b> | <b>1.25</b>   |

As of September 30, 2018

Internal Rates of Return

|                                                  | Market Value<br>(\$) | %    | 1<br>Quarter | Year<br>To<br>Date | 1<br>Year | 3<br>Years | 5<br>Years | 7<br>Years | 10<br>Years | Since<br>Inception | Inception<br>Date |
|--------------------------------------------------|----------------------|------|--------------|--------------------|-----------|------------|------------|------------|-------------|--------------------|-------------------|
| Brookfield Timberlands Fund V                    | 1,222,399            | 0.18 | 0.00         | 3.98               | 9.70      | 6.09       | N/A        | N/A        | N/A         | 9.69               | 12/23/2013        |
| Eastern Timberland Opportunities II              | 2,925,979            | 0.42 | 2.00         | 2.14               | 6.10      | 6.74       | N/A        | N/A        | N/A         | 9.58               | 07/03/2014        |
| GCM Customized Infrastructures Strategies II, LP | 7,143,214            | 1.02 | 3.33         | 5.21               | 9.86      | N/A        | N/A        | N/A        | N/A         | 8.16               | 03/10/2016        |
| Invesco Mortgage Recovery II                     | 7,498,574            | 1.07 | 0.00         | 10.71              | 15.76     | N/A        | N/A        | N/A        | N/A         | 11.62              | 05/20/2016        |

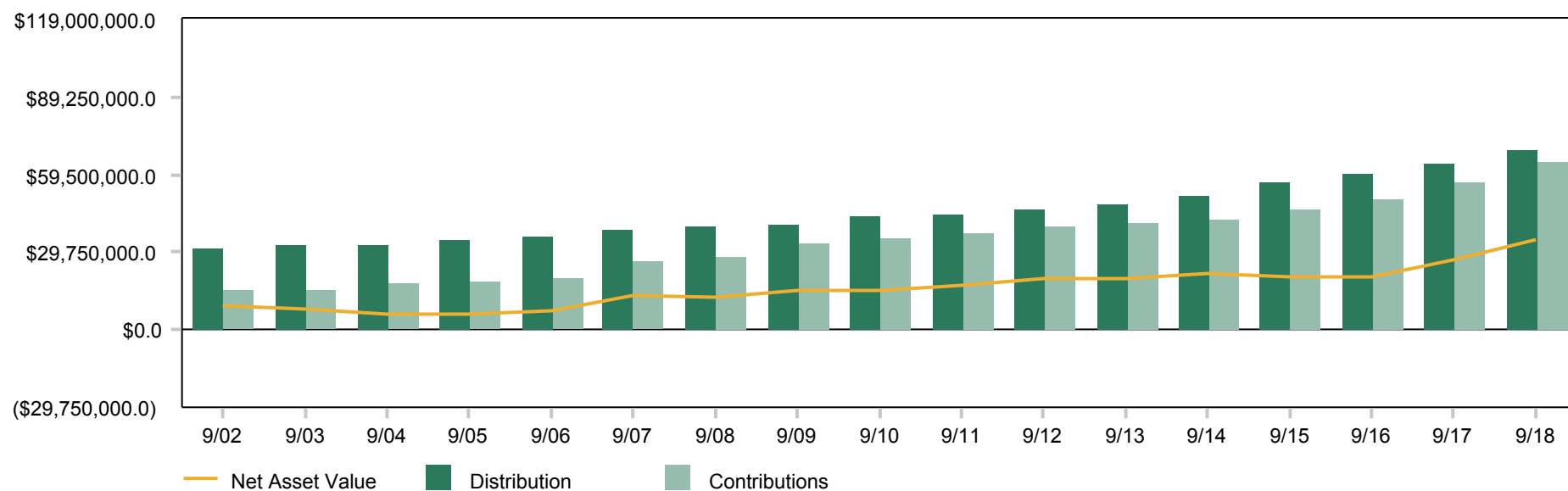
## Cash Flow Summary

Capital Committed: \$94,483,889  
 Total Contributions: \$64,954,509  
 Remaining Capital Commitment: \$31,676,172

Total Distributions: \$69,031,801  
 Market Value: \$34,467,455

Inception Date: 01/05/1995  
 Inception IRR: 177.68  
 TVPI: 1.59

## Cash Flow Analysis



As of September 30, 2018

| Partnerships                    | Vintage Year | Investment Strategy | Capital Commitment (\$) | Drawn Down (\$)   | Distributed (\$)  | Market Value (\$) | IRR (%)       | TVPI Multiple |
|---------------------------------|--------------|---------------------|-------------------------|-------------------|-------------------|-------------------|---------------|---------------|
| DuPont Capital Management II    | 2005         | Hybrid              | 5,000,000               | 3,654,639         | 3,139,751         | 724,807           | 0.75          | 1.06          |
| BlackRock Vesey Street Fund III | 2005         | Hybrid              | 5,000,000               | 4,428,703         | 5,539,098         | 477,457           | 4.24          | 1.36          |
| DN Partners II                  | 2005         | Buyouts             | 6,000,000               | 2,803,066         | -                 | 1,072,419         | -12.34        | 0.38          |
| BlackRock Vesey Street Fund IV  | 2007         | Hybrid              | 10,000,000              | 9,086,823         | 9,440,847         | 4,860,218         | 8.04          | 1.58          |
| Mesirow PE Fund V               | 2008         | Hybrid              | 5,000,000               | 3,947,081         | 3,050,658         | 4,151,870         | 14.13         | 1.83          |
| PRIT Vintage 2014               | 2014         | Hybrid              | 9,090,291               | 6,257,611         | 1,574,368         | 7,723,372         | 19.79         | 1.49          |
| PRIT Vintage 2015               | 2015         | Hybrid              | 12,290,670              | 7,618,939         | 965,876           | 9,211,365         | 20.23         | 1.34          |
| PRIT Vintage 2016               | 2016         | Hybrid              | 8,302,928               | 3,576,601         | 79,462            | 3,687,005         | 5.52          | 1.05          |
| PRIT Vintage 2017               | 2017         | Hybrid              | 15,696,576              | 1,802,220         | 84,389            | 1,796,632         | 6.83          | 1.04          |
| PRIT Vintage 2018               | 2018         | Hybrid              | 15,000,000              | 645,230           | 50                | 621,643           | -6.81         | 0.96          |
| <b>Total Private Equity</b>     |              |                     | <b>110,180,465</b>      | <b>64,954,509</b> | <b>69,031,801</b> | <b>34,467,455</b> | <b>177.68</b> | <b>1.59</b>   |

\*Active Private Equity managers shown

**Bristol County Retirement System****Active Private Equity Funds**

As of September 30, 2018

Internal Rates of Return

|                                 | <b>Market Value<br/>(\$)</b> | <b>%</b> | <b>1<br/>Quarter</b> | <b>Year<br/>To<br/>Date</b> | <b>1<br/>Year</b> | <b>3<br/>Years</b> | <b>5<br/>Years</b> | <b>7<br/>Years</b> | <b>10<br/>Years</b> | <b>Since<br/>Inception</b> | <b>Inception<br/>Date</b> |
|---------------------------------|------------------------------|----------|----------------------|-----------------------------|-------------------|--------------------|--------------------|--------------------|---------------------|----------------------------|---------------------------|
| Total Private Equity            | 34,467,455                   | 4.92     | 4.56                 | 16.91                       | 17.53             | 10.88              | 9.82               | 10.12              | 6.20                | 177.68                     | 01/05/1995                |
| BlackRock Vesey Street Fund III | 477,457                      | 0.07     | 0.00                 | -9.27                       | -8.74             | -5.80              | 8.43               | 10.31              | 6.39                | 4.24                       | 07/17/2006                |
| DuPont Capital Management II    | 724,807                      | 0.10     | 0.00                 | -1.22                       | 0.84              | -0.75              | -0.23              | 3.26               | 1.68                | 0.75                       | 08/14/2006                |
| DN Partners II                  | 1,072,419                    | 0.15     | 0.00                 | -1.12                       | 21.89             | -15.38             | -13.85             | -10.94             | -12.01              | -12.34                     | 01/11/2007                |
| BlackRock Vesey Street Fund IV  | 4,860,218                    | 0.69     | 0.00                 | 2.88                        | 4.34              | 6.41               | 8.90               | 10.65              | N/A                 | 8.04                       | 02/24/2009                |
| Mesirow PE Fund V               | 4,151,870                    | 0.59     | 0.00                 | 9.59                        | 14.08             | 13.42              | 16.27              | 15.36              | N/A                 | 14.13                      | 04/09/2009                |
| PRIT Vintage 2014               | 7,723,372                    | 1.10     | 7.92                 | 33.57                       | 29.46             | 24.97              | N/A                | N/A                | N/A                 | 19.79                      | 05/01/2014                |
| PRIT Vintage 2015               | 9,211,365                    | 1.32     | 5.60                 | 24.39                       | 29.01             | 22.26              | N/A                | N/A                | N/A                 | 20.23                      | 03/01/2015                |
| PRIT Vintage 2016               | 3,687,005                    | 0.53     | 7.79                 | 14.75                       | 9.87              | N/A                | N/A                | N/A                | N/A                 | 5.52                       | 03/01/2016                |
| PRIT Vintage 2017               | 1,796,632                    | 0.26     | 13.26                | 32.07                       | 8.11              | N/A                | N/A                | N/A                | N/A                 | 6.83                       | 04/30/2017                |
| PRIT Vintage 2018               | 621,643                      | 0.09     | -5.34                | N/A                         | N/A               | N/A                | N/A                | N/A                | N/A                 | -6.81                      | 05/30/2018                |