



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: JUNE 30, 2019

Executive Performance Summary Review for

Tennessee Consolidated Retirement System

2nd quarter summary

THE ECONOMIC CLIMATE

- U.S. real GDP expanded 3.2% YoY in Q1 (3.1% quarterly annualized rate). Year-over-year growth was the strongest since the second quarter of 2015. The U.S. Congressional Budget Office expects the U.S. economy to slow to a 2.1% pace in 2020, near the growth rate of other developed markets.
- Effective May 10th, U.S. tariff rates on \$200 billion in Chinese imports were hiked from 10% to 25%, and the Chinese responded with commensurate tariff rate hikes. In June, Presidents Trump and Xi met on the sidelines of the G20 summit in Osaka. The meeting yielded a “trade truce” in which both countries agreed to pause any additional tariffs.

PORTFOLIO IMPACTS

- Equity performance in Q2 appears to have been largely driven by higher prices, rather than improved earnings expectations. Estimated Q2 S&P 500 earnings worsened from -0.5% to -2.6% during this time.
- U.S. inflation remained stable at 2.1% YoY in June, excluding food & energy. Headline inflation rose 1.6% YoY, dragged down by falling energy prices. Core inflation has been range-bound over the past five years, fluctuating between 1.7% and 2.3%. Investors and consumers expect this trend to continue.

THE INVESTMENT CLIMATE

- The Federal Open Market Committee left the range for its benchmark interest rate unchanged at 2.25%-2.50% and reiterated that it would continue to act appropriately to sustain the expansion. Markets interpreted the press conference as confirmation of a 0.25% rate cut in July.
- European Central Bank President Mario Draghi issued dovish forward guidance, announcing that “additional stimulus” was on the table should the economic backdrop worsen, and inflation remain subdued. European and international developed sovereign yields have fallen along with U.S. yields. German 10-year bunds closed the month at new lows of -0.33%.

ASSET ALLOCATION ISSUES

- Risk assets delivered strong returns over the quarter. Global Equities gained +3.6% and U.S. high yield gained +2.5%. Longer duration exposures generally outperformed as interest rates fell.
- U.S. equity prices have continued to rise on expectations of nearly three interest rate cuts in 2019 and perhaps an assumption that U.S. earnings exceptionalism will extend into the future. If domestic conditions converge with other developed economies and these expectations turn out to be overly optimistic, we believe U.S. equities may possess greater downside risk.

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

U.S. economics summary

- U.S. real GDP expanded 3.2% YoY in Q1 (3.1% quarterly annualized rate). Year-over-year growth was the strongest since the second quarter of 2015.
- The U.S. economy is expected to slow to a 2.1% pace in 2020, near the growth rate of other developed markets, as indicated by the U.S. Congressional Budget Office.
- U.S.-China trade remained central to headlines over the quarter. Effective May 10th, U.S. tariff rates on \$200 billion in Chinese imports were hiked from 10% to 25%, and the Chinese responded with commensurate tariff increases. In June, Presidents Trump and Xi met on the sidelines of the G20 summit in Osaka. The meeting yielded a “trade truce” in which both countries agreed to pause any additional tariff rate hikes.
- Headline CPI inflation fell from a YoY rate of 1.9% in March to 1.6% in June. PCE inflation, the Fed’s preferred inflation gauge, ticked up from a YoY rate of 1.5% at the end of the 1st quarter to 1.6% in May.
- Average hourly earnings grew 3.1% YoY in June, below expectations of 3.2%. The average non-farm private workweek fell slightly from 34.5 hours per week to 34.4.
- The labor market continued to show strength in Q2. The U-3 unemployment rate touched 50-year lows at 3.6% in May and ended the quarter in June at 3.7%.
- The Federal Open Market Committee messaged that it would continue to “act as appropriate to sustain the expansion”, which markets viewed as dovish. Over the quarter, expectations for additional 2019 rate cuts moved from a 64% chance of a 0.25% cut to a 61% chance of 0.75% in cuts.

| | Most Recent | 12 Months Prior |
|---|-------------------------|-------------------------|
| GDP (YoY) | 3.2% 3/31/19 | 2.6% 3/31/18 |
| Inflation (CPI YoY, Core) | 2.1% 6/30/19 | 2.2% 6/30/18 |
| Expected Inflation (5yr-5yr forward) | 1.9% 6/30/19 | 2.2% 6/30/18 |
| Fed Funds Target Range | 2.25 – 2.50% 6/30/19 | 1.75 – 2.00% 6/30/18 |
| 10 Year Rate | 2.0% 6/30/19 | 2.9% 6/30/18 |
| U-3 Unemployment | 3.7% 6/30/19 | 4.0% 6/30/18 |
| U-6 Unemployment | 7.2% 6/30/19 | 7.8% 6/30/18 |

International economics summary

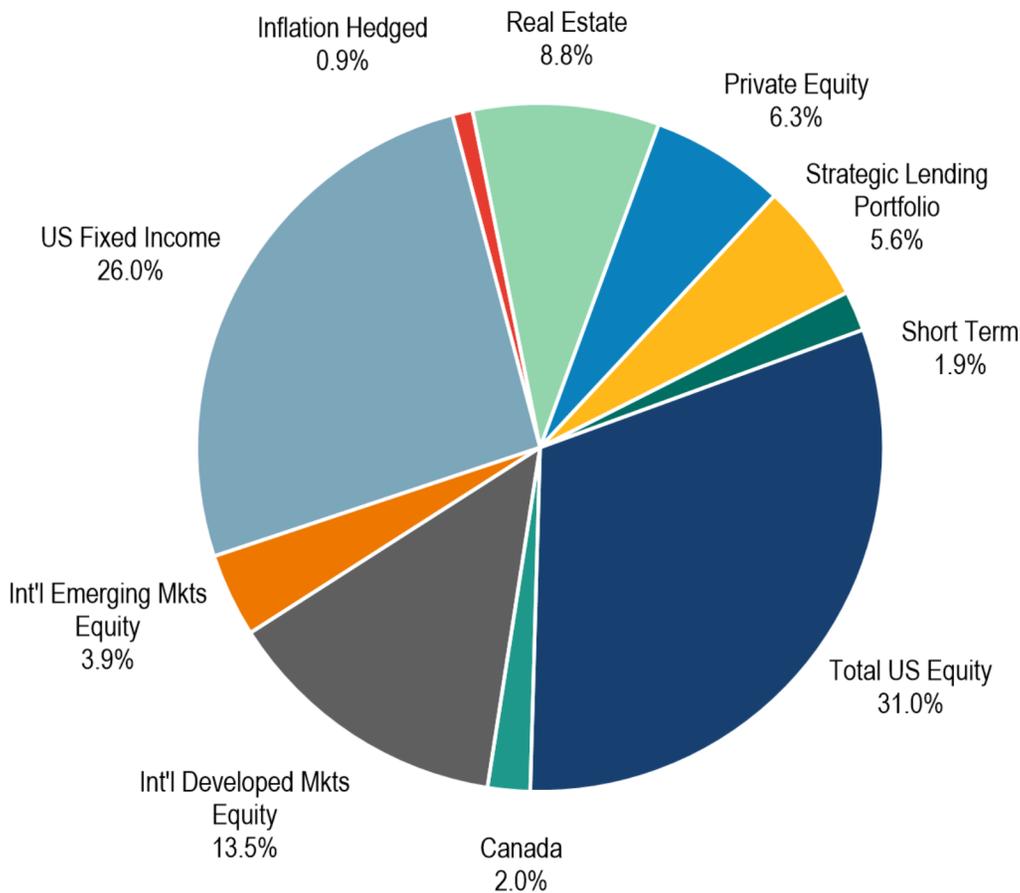
- U.S.-China trade remained central to headlines over the quarter. Effective May 10th, U.S. tariff rates on \$200 billion in Chinese imports were hiked from 10% to 25%, and the Chinese responded with commensurate tariff rate hikes. In June, Presidents Trump and Xi met on the sidelines of the G20 summit in Osaka. The meeting yielded a “trade truce” in which both countries agreed to pause any additional tariff rate hikes.
- The U.K. Prime Minister Theresa May announced her resignation effective June 7th. In July, Boris Johnson defeated Jeremy Hunt and will replace Theresa May as Britain’s next prime minister. Mr. Johnson has taken a harder line on Brexit than Mr. Hunt, and his election likely increases the probability that the U.K. exits the E.U. without a deal.
- President Trump called off prospective 5% tariffs on Mexican imports after the two countries signed an immigration deal aimed at reducing illegal border crossings. The deal expanded the Migrant Protection Protocols program, which requires asylum-seekers to wait on the Mexican side of the border while their cases are reviewed.
- Chinese GDP growth slowed 0.2% to 6.2% YoY in the second quarter, its slowest rate in 27 years. On a brighter note, YoY growth in industrial production and retail sales both surprised to the upside, supporting the view that Beijing’s countercyclical easing measures have proven effective.
- The Citi Global Economic Surprise Index fell from -18.8 to -27.7 in June, registering its 15th consecutive month in negative territory.

| Area | GDP (Real, YoY) | Inflation (CPI, YoY) | Unemployment |
|------------------|-------------------------|-------------------------|-------------------------|
| United States | 3.2% <i>3/31/19</i> | 1.6% <i>6/30/19</i> | 3.7% <i>6/30/19</i> |
| Eurozone | 1.2% <i>3/31/19</i> | 1.1% <i>5/31/19</i> | 7.5% <i>5/31/19</i> |
| Japan | 0.9% <i>3/31/19</i> | 0.7% <i>5/31/19</i> | 2.4% <i>5/31/19</i> |
| BRICS Nations | 5.2% <i>3/31/19</i> | 2.4% <i>3/31/19</i> | 5.2% <i>3/31/19</i> |
| Brazil | 1.4% <i>3/31/19</i> | 3.4% <i>6/30/19</i> | 12.4% <i>6/30/19</i> |
| Russia | 2.7% <i>12/31/18</i> | 4.7% <i>6/30/19</i> | 4.5% <i>5/31/19</i> |
| India | 7.2% <i>12/31/18</i> | 3.2% <i>6/30/19</i> | 8.5% <i>12/31/17</i> |
| China | 6.4% <i>3/31/19</i> | 2.7% <i>6/30/19</i> | 3.7% <i>3/31/19</i> |

| Name | Last 3 Months | Last 6 Months | 1 Yr | 2 Yrs | 3 Yrs | 5 Yrs | 7 Yrs | 10 Yrs |
|------------------------------------|---------------|---------------|------|-------|-------|-------|-------|--------|
| US Equity | | | | | | | | |
| Russell 3000 | 4.1 | 18.7 | 9.0 | 11.8 | 14.0 | 10.2 | 13.8 | 14.7 |
| S&P 500 | 4.3 | 18.5 | 10.4 | 12.4 | 14.2 | 10.7 | 14.0 | 14.7 |
| Russell 1000 | 4.2 | 18.8 | 10.0 | 12.3 | 14.1 | 10.5 | 14.0 | 14.8 |
| Russell 1000 Growth | 4.6 | 21.5 | 11.6 | 16.9 | 18.1 | 13.4 | 15.8 | 16.3 |
| Russell 1000 Value | 3.8 | 16.2 | 8.5 | 7.6 | 10.2 | 7.5 | 12.1 | 13.2 |
| Russell MidCap | 4.1 | 21.3 | 7.8 | 10.1 | 12.2 | 8.6 | 13.4 | 15.2 |
| Russell 2000 | 2.1 | 17.0 | -3.3 | 6.6 | 12.3 | 7.1 | 11.6 | 13.4 |
| Russell 2000 Growth | 2.7 | 20.4 | -0.5 | 10.1 | 14.7 | 8.6 | 12.9 | 14.4 |
| Russell 2000 Value | 1.4 | 13.5 | -6.2 | 3.0 | 9.8 | 5.4 | 10.3 | 12.4 |
| International Equity | | | | | | | | |
| MSCI ACWI | 3.6 | 16.2 | 5.7 | 8.2 | 11.6 | 6.2 | 9.9 | 10.1 |
| MSCI World ex USA | 3.8 | 14.6 | 1.3 | 4.1 | 9.0 | 2.0 | 7.0 | 6.7 |
| MSCI EAFE | 3.7 | 14.0 | 1.1 | 3.9 | 9.1 | 2.2 | 7.3 | 6.9 |
| MSCI Emerging Markets | 0.6 | 10.6 | 1.2 | 4.6 | 10.7 | 2.5 | 4.2 | 5.8 |
| Fixed Income | | | | | | | | |
| 91 Day T-Bills | 0.6 | 1.2 | 2.3 | 1.8 | 1.4 | 0.9 | 0.6 | 0.5 |
| BBgBarc US Aggregate TR | 3.1 | 6.1 | 7.9 | 3.7 | 2.3 | 2.9 | 2.6 | 3.9 |
| BBgBarc US Govt/Credit TR | 3.5 | 6.9 | 8.5 | 3.8 | 2.4 | 3.1 | 2.7 | 4.1 |
| BBgBarc US Municipal TR | 2.1 | 5.1 | 6.7 | 4.1 | 2.6 | 3.6 | 3.5 | 4.7 |
| BBgBarc US High Yield TR | 2.5 | 9.9 | 7.5 | 5.0 | 7.5 | 4.7 | 6.4 | 9.2 |
| FTSE WGBI TR | 3.6 | 5.4 | 5.5 | 3.7 | 1.0 | 0.8 | 0.9 | 2.2 |
| FTSE WGBI ex US TR | 3.9 | 5.5 | 4.5 | 3.9 | 0.8 | 0.2 | 0.5 | 1.9 |
| Real Estate | | | | | | | | |
| FTSE NAREIT All REIT | 1.1 | 18.0 | 11.5 | 8.1 | 5.8 | 8.6 | 9.4 | 15.5 |
| NCREIF Property Index | 1.5 | 3.3 | 6.5 | 6.8 | 6.9 | 8.8 | 9.4 | 9.2 |
| Alternatives | | | | | | | | |
| HFRI Fund of Funds Composite Index | 1.5 | 6.2 | 1.2 | 3.1 | 4.2 | 2.2 | 3.7 | 3.2 |
| Inflation | | | | | | | | |
| Consumer Price Index | 0.8 | 2.0 | 1.6 | 2.3 | 2.0 | 1.5 | 1.6 | 1.7 |

Total Fund
Asset Allocation Analysis

Period Ending: June 30, 2019



| | Actual \$ | Actual % |
|-----------------------------|-----------------------|---------------|
| Total US Equity | 16,206,054,765 | 31.0% |
| Canada | 1,043,354,160 | 2.0% |
| Int'l Developed Mkts Equity | 7,055,992,481 | 13.5% |
| Int'l Emerging Mkts Equity | 2,052,179,355 | 3.9% |
| US Fixed Income | 13,589,983,638 | 26.0% |
| Inflation Hedged | 495,260,316 | 0.9% |
| Real Estate | 4,585,336,721 | 8.8% |
| Private Equity | 3,309,723,281 | 6.3% |
| Strategic Lending Portfolio | 2,937,559,327 | 5.6% |
| Short Term | 981,181,751 | 1.9% |
| TOTAL | 52,256,625,795 | 100.0% |

| | TARGET | ACTUAL | DIFF |
|-----------------------------|--------|--------|-------|
| Total US Equity | 31.0% | 31.0% | 0.0% |
| Canada | 2.0% | 2.0% | 0.0% |
| Int'l Developed Mkts Equity | 13.0% | 13.5% | 0.5% |
| Int'l Emerging Mkts Equity | 4.0% | 3.9% | -0.1% |
| US Fixed Income | 25.0% | 26.0% | 1.0% |
| Inflation Hedged | 0.0% | 0.9% | 0.9% |
| Real Estate | 10.0% | 8.8% | -1.2% |
| Private Equity | 7.0% | 6.3% | -0.7% |
| Strategic Lending Portfolio | 7.0% | 5.6% | -1.4% |
| Short Term | 1.0% | 1.9% | 0.9% |

| | 03/31/19 | 06/30/19 | DIFF |
|-----------------------------|----------|----------|-------|
| Total US Equity | 32.2% | 31.0% | -1.2% |
| Canada | 2.0% | 2.0% | 0.0% |
| Int'l Developed Mkts Equity | 13.4% | 13.5% | 0.1% |
| Int'l Emerging Mkts Equity | 4.0% | 3.9% | 0.0% |
| US Fixed Income | 25.6% | 26.0% | 0.4% |
| Inflation Hedged | 0.9% | 0.9% | 0.0% |
| Real Estate | 8.8% | 8.8% | 0.0% |
| Private Equity | 6.1% | 6.3% | 0.2% |
| Strategic Lending Portfolio | 5.6% | 5.6% | 0.0% |
| Short Term | 1.4% | 1.9% | 0.4% |

Total Fund Performance Summary

Period Ending: June 30, 2019

| | 3 Mo (%) | Rank | 1 Yr (%) | Rank | 3 Yrs (%) | Rank | 5 Yrs (%) | Rank | 10 Yrs (%) | Rank |
|--|-------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|--------------|-----------|
| Total Fund | 3.77 | 11 | 7.54 | 7 | 9.02 | 39 | 6.60 | 16 | 9.41 | 35 |
| <i>Policy Index</i> ¹ | <u>3.82</u> | 10 | <u>7.60</u> | 7 | <u>8.90</u> | 51 | <u>6.59</u> | 16 | <u>9.45</u> | 33 |
| Excess Return | -0.05 | | -0.06 | | 0.12 | | 0.01 | | -0.04 | |
| <i>Allocation Index</i> ² | 3.87 | 10 | 7.40 | 10 | 8.64 | 60 | 6.39 | 22 | 9.12 | 49 |
| <i>InvMetrics Public DB > \$1B Gross Median</i> | 2.96 | | 5.43 | | 8.91 | | 5.78 | | 9.04 | |
| North American Equity | 3.94 | -- | 7.07 | -- | 13.10 | -- | 8.74 | -- | -- | -- |
| <i>N.A. Equity Custom</i> ³ | <u>4.28</u> | -- | <u>8.93</u> | -- | <u>13.43</u> | -- | <u>9.49</u> | -- | -- | -- |
| Excess Return | -0.34 | | -1.86 | | -0.33 | | -0.75 | | | |
| US Equity | 3.88 | 69 | 7.20 | 62 | 13.33 | 66 | 9.45 | 59 | 14.23 | 58 |
| <i>US Equity Custom</i> ⁴ | <u>4.16</u> | 46 | <u>9.32</u> | 24 | <u>13.91</u> | 48 | <u>10.45</u> | 20 | <u>14.73</u> | 30 |
| Excess Return | -0.28 | | -2.12 | | -0.58 | | -1.00 | | -0.50 | |
| <i>InvMetrics All DB US Eq Gross Median</i> | 4.10 | | 8.01 | | 13.82 | | 9.73 | | 14.39 | |
| Index | 4.34 | 48 | 10.41 | 40 | 14.16 | 42 | 10.81 | 37 | 14.73 | 41 |
| S&P 500 | <u>4.30</u> | 49 | <u>10.42</u> | 40 | <u>14.19</u> | 42 | <u>10.71</u> | 38 | <u>14.70</u> | 42 |
| Excess Return | 0.04 | | -0.01 | | -0.03 | | 0.10 | | 0.03 | |
| <i>eV US Large Cap Equity Gross Median</i> | 4.23 | | 9.03 | | 13.50 | | 9.86 | | 14.41 | |
| Large Quant | 4.11 | 53 | 8.47 | 55 | 13.18 | 54 | 8.71 | 69 | 13.41 | 74 |
| S&P 500 | <u>4.30</u> | 49 | <u>10.42</u> | 40 | <u>14.19</u> | 42 | <u>10.71</u> | 38 | <u>14.70</u> | 42 |
| Excess Return | -0.19 | | -1.95 | | -1.01 | | -2.00 | | -1.29 | |
| <i>eV US Large Cap Equity Gross Median</i> | 4.23 | | 9.03 | | 13.50 | | 9.86 | | 14.41 | |
| Sector | 3.83 | 61 | 6.25 | 72 | 13.32 | 53 | 9.64 | 54 | 14.18 | 56 |
| S&P 500 | <u>4.30</u> | 49 | <u>10.42</u> | 40 | <u>14.19</u> | 42 | <u>10.71</u> | 38 | <u>14.70</u> | 42 |
| Excess Return | -0.47 | | -4.17 | | -0.87 | | -1.07 | | -0.52 | |
| <i>eV US Large Cap Equity Gross Median</i> | 4.23 | | 9.03 | | 13.50 | | 9.86 | | 14.41 | |
| Mid Cap ⁵ | 2.08 | 83 | 0.10 | 81 | 10.50 | 72 | 7.92 | 63 | 14.78 | 61 |
| S&P MidCap 400 ⁵ | <u>3.05</u> | 72 | <u>1.36</u> | 72 | <u>10.90</u> | 66 | <u>8.02</u> | 62 | <u>14.64</u> | 64 |
| Excess Return | -0.97 | | -1.26 | | -0.40 | | -0.10 | | 0.14 | |
| <i>eV US Mid Cap Equity Gross Median</i> | 4.53 | | 6.94 | | 12.72 | | 8.76 | | 15.18 | |

1 Effective 4/1/19, Policy Index is 31% S&P 1500/ 2% S&P TSX 60/ 13% MSCI EAFE IMI net/ 4% MSCI Emerging Markets net/ 25% FTSE LPF/ 10% NCREIF 1Q Lag/ 7% Cambridge custom / 7% Strategic Lending/ 1% 91 Day T-Bill.

2 Effective 4/1/19, Total Fund Allocation Index is 31.56% S&P 1500/ 2.04% S&P TSX 60/ 13.24% MSCI EAFE IMI net/ 4.07% MSCI Emerging Markets net/ 26.21% FTSE LPF/ 1.43% FTSE TIPS/ 8.79% NCREIF 1Q Lag/ 6.09% Cambridge custom/ 5.57% Strategic Lending/ 1% 91 Day T-Bill.

3 Effective 1/1/13, benchmark is 89.19% S&P 1500/ 10.81% S&P TSX 60; linked to 87.5% S&P 1500/ 12.5% S&P TSX 60 Index.

4 Effective 7/1/04, benchmark is S&P 1500.

5 Effective 7/1/08, strategy was changed from SMID Cap. Benchmark is linked to 100% S&P 1000 Index.

Total Fund Performance Summary

Period Ending: June 30, 2019

| | 3 Mo (%) | Rank | 1 Yr (%) | Rank | 3 Yrs (%) | Rank | 5 Yrs (%) | Rank | 10 Yrs (%) | Rank |
|---|-------------|-----------|--------------|-----------|--------------|-----------|-------------|-----------|-------------|-----------|
| Small Cap ⁶ | 2.03 | -- | -4.50 | -- | 12.32 | -- | 8.71 | -- | -- | -- |
| S&P 600 SmallCap | <u>1.87</u> | -- | <u>-4.88</u> | -- | <u>11.97</u> | -- | <u>8.41</u> | -- | -- | -- |
| Excess Return | 0.16 | | 0.38 | | 0.35 | | 0.30 | | | |
| Small Cap Index | 1.96 | 65 | -4.55 | 66 | 12.30 | 48 | 8.69 | 39 | -- | -- |
| S&P 600 SmallCap | <u>1.87</u> | 66 | <u>-4.88</u> | 68 | <u>11.97</u> | 52 | <u>8.41</u> | 42 | -- | -- |
| Excess Return | 0.09 | | 0.33 | | 0.33 | | 0.28 | | | |
| eV US Small Cap Equity Gross Median | 2.93 | | -2.21 | | 12.12 | | 7.59 | | 14.68 | |
| Small Quant | 2.12 | 63 | -- | -- | -- | -- | -- | -- | -- | -- |
| S&P 600 SmallCap | <u>1.87</u> | 66 | -- | -- | -- | -- | -- | -- | -- | -- |
| Excess Return | 0.25 | | | | | | | | | |
| Large Cap Overlay | 5.14 | 30 | 11.88 | 30 | -- | -- | -- | -- | -- | -- |
| S&P 500 | <u>4.30</u> | 49 | <u>10.42</u> | 40 | -- | -- | -- | -- | -- | -- |
| Excess Return | 0.84 | | 1.46 | | | | | | | |
| eV US Large Cap Equity Gross Median | 4.23 | | 9.03 | | 13.50 | | 9.86 | | 14.41 | |
| Canada | 4.84 | -- | 5.12 | -- | 9.26 | -- | 1.42 | -- | -- | -- |
| S&P/TSX 60 | <u>5.28</u> | -- | <u>5.55</u> | -- | <u>9.28</u> | -- | <u>1.43</u> | -- | -- | -- |
| Excess Return | -0.44 | | -0.43 | | -0.02 | | -0.01 | | | |
| International Equity | 3.57 | 25 | 1.09 | 40 | 9.56 | 41 | 3.35 | 32 | 8.11 | 22 |
| Int'l Equity Custom ⁷ | <u>3.05</u> | 47 | <u>0.75</u> | 45 | <u>8.99</u> | 60 | <u>2.20</u> | 75 | <u>6.43</u> | 84 |
| Excess Return | 0.52 | | 0.34 | | 0.57 | | 1.15 | | 1.68 | |
| InvMetrics All DB ex-US Eq Gross Median | 2.95 | | 0.50 | | 9.28 | | 2.79 | | 7.37 | |
| Int'l Developed Mkts Equity | 4.02 | 23 | 0.40 | 55 | 10.02 | 46 | 4.21 | 36 | 9.03 | 17 |
| MSCI EAFE IMI | <u>3.40</u> | 48 | <u>-0.04</u> | 66 | <u>9.10</u> | 63 | <u>2.53</u> | 72 | <u>7.24</u> | 66 |
| Excess Return | 0.62 | | 0.44 | | 0.92 | | 1.68 | | 1.79 | |
| InvMetrics All DB Dev Mkt ex-US Eq Gross Median | 3.26 | | 0.90 | | 9.78 | | 3.64 | | 7.69 | |
| Acadian | 2.33 | 58 | -5.33 | 34 | -- | -- | -- | -- | -- | -- |
| MSCI EAFE Small Cap | <u>1.71</u> | 71 | <u>-6.35</u> | 48 | -- | -- | -- | -- | -- | -- |
| Excess Return | 0.62 | | 1.02 | | | | | | | |
| eV EAFE Small Cap Equity Gross Median | 2.59 | | -6.43 | | 9.38 | | 4.83 | | 11.30 | |

⁶ Use 100% Russell 2000 Futures returns January 2011-June 2012. Use weighted blend of Russell 2000 Futures and Small Cap Fund returns July 2012- October 2012. Use 100% Small Cap Fund returns November 2012-present.

⁷ Effective 1/1/17, benchmark is 76.47% MSCI EAFE IMI net/ 23.53% MSCI Emerging Mkts net; linked to 72.22% MSCI EAFE IMI net/ 27.78% MSCI Emerging Mkts net (01/13-12/16); 100% MSCI EAFE IMI net (10/08-12/12) and 100% MSCI EAFE net Index (7/04-9/08).

Total Fund Performance Summary

Period Ending: June 30, 2019

| | 3 Mo (%) | Rank | 1 Yr (%) | Rank | 3 Yrs (%) | Rank | 5 Yrs (%) | Rank | 10 Yrs (%) | Rank |
|--|-------------|------|--------------|------|--------------|------|--------------|------|---------------|------|
| American Century | 4.10 | 24 | -10.20 | 77 | 10.09 | 40 | 5.88 | 37 | 12.48 | 21 |
| <i>MSCI EAFE Small Cap</i> | <u>1.71</u> | 71 | <u>-6.35</u> | 48 | <u>9.06</u> | 57 | <u>4.40</u> | 62 | <u>9.67</u> | 90 |
| Excess Return | 2.39 | | -3.85 | | 1.03 | | 1.48 | | 2.81 | |
| <i>eV EAFE Small Cap Equity Gross Median</i> | 2.59 | | -6.43 | | 9.38 | | 4.83 | | 11.30 | |
| Fiera Capital | 7.25 | 3 | 11.34 | 1 | -- | -- | -- | -- | -- | -- |
| <i>MSCI EAFE</i> | <u>3.68</u> | 40 | <u>1.08</u> | 37 | -- | -- | -- | -- | -- | -- |
| Excess Return | 3.57 | | 10.26 | | | | | | | |
| <i>eV All EAFE Equity Gross Median</i> | 3.07 | | -0.68 | | 9.27 | | 3.59 | | 8.67 | |
| JP Morgan | 4.09 | -- | -2.18 | -- | -- | -- | -- | -- | -- | -- |
| <i>MSCI Pacific</i> | <u>2.43</u> | -- | <u>-0.17</u> | -- | -- | -- | -- | -- | -- | -- |
| Excess Return | 1.66 | | -2.01 | | | | | | | |
| Marathon | 3.47 | 44 | -0.78 | 52 | 8.57 | 64 | 3.36 | 56 | 8.86 | 45 |
| <i>MSCI EAFE</i> | <u>3.68</u> | 40 | <u>1.08</u> | 37 | <u>9.11</u> | 54 | <u>2.25</u> | 80 | <u>6.90</u> | 89 |
| Excess Return | -0.21 | | -1.86 | | -0.54 | | 1.11 | | 1.96 | |
| <i>eV All EAFE Equity Gross Median</i> | 3.07 | | -0.68 | | 9.27 | | 3.59 | | 8.67 | |
| Mondrian | 2.16 | 71 | 4.49 | 14 | -- | -- | -- | -- | -- | -- |
| <i>MSCI EAFE</i> | <u>3.68</u> | 40 | <u>1.08</u> | 37 | -- | -- | -- | -- | -- | -- |
| Excess Return | -1.52 | | 3.41 | | | | | | | |
| <i>eV All EAFE Equity Gross Median</i> | 3.07 | | -0.68 | | 9.27 | | 3.59 | | 8.67 | |
| PanAgora Asset Mgmt | 1.16 | 87 | -2.45 | 63 | 8.18 | 73 | 2.77 | 65 | 8.27 | 60 |
| <i>MSCI EAFE</i> | <u>3.68</u> | 40 | <u>1.08</u> | 37 | <u>9.11</u> | 54 | <u>2.25</u> | 80 | <u>6.90</u> | 89 |
| Excess Return | -2.52 | | -3.53 | | -0.93 | | 0.52 | | 1.37 | |
| <i>eV All EAFE Equity Gross Median</i> | 3.07 | | -0.68 | | 9.27 | | 3.59 | | 8.67 | |
| Pzena | 1.60 | 80 | -- | -- | -- | -- | -- | -- | -- | -- |
| <i>MSCI Europe</i> | <u>4.48</u> | 23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Excess Return | -2.88 | | | | | | | | | |
| TimesSquare | 4.51 | 19 | -7.42 | 61 | -- | -- | -- | -- | -- | -- |
| <i>MSCI EAFE Small Cap</i> | <u>1.71</u> | 71 | <u>-6.35</u> | 48 | -- | -- | -- | -- | -- | -- |
| Excess Return | 2.80 | | -1.07 | | | | | | | |
| <i>eV EAFE Small Cap Equity Gross Median</i> | 2.59 | | -6.43 | | 9.38 | | 4.83 | | 11.30 | |

Total Fund Performance Summary

Period Ending: June 30, 2019

| | 3 Mo (%) | Rank | 1 Yr (%) | Rank | 3 Yrs (%) | Rank | 5 Yrs (%) | Rank | 10 Yrs (%) | Rank |
|--|-------------|------|--------------|------|-------------|------|-------------|------|-------------|------|
| TT International | -0.36 | 98 | -10.35 | 96 | 6.74 | 89 | 1.76 | 88 | 7.25 | 82 |
| <i>MSCI EAFE</i> | <u>3.68</u> | 40 | <u>1.08</u> | 37 | <u>9.11</u> | 54 | <u>2.25</u> | 80 | <u>6.90</u> | 89 |
| Excess Return | -4.04 | | -11.43 | | -2.37 | | -0.49 | | 0.35 | |
| <i>eV All EAFE Equity Gross Median</i> | 3.07 | | -0.68 | | 9.27 | | 3.59 | | 8.67 | |
| WCM | 11.84 | 1 | -- | -- | -- | -- | -- | -- | -- | -- |
| <i>MSCI EAFE</i> | <u>3.68</u> | 47 | -- | -- | -- | -- | -- | -- | -- | -- |
| Excess Return | 8.16 | | | | | | | | | |
| <i>eV All ACWI ex-US Equity Gross Median</i> | 3.47 | | 0.23 | | 9.86 | | 3.77 | | 8.82 | |
| Walter Scott | 6.14 | 9 | 10.03 | 1 | 12.35 | 9 | 7.12 | 7 | 10.27 | 20 |
| <i>MSCI EAFE⁸</i> | <u>3.68</u> | 40 | <u>1.08</u> | 37 | <u>9.11</u> | 54 | <u>2.25</u> | 80 | <u>6.90</u> | 89 |
| Excess Return | 2.46 | | 8.95 | | 3.24 | | 4.87 | | 3.37 | |
| <i>eV All EAFE Equity Gross Median</i> | 3.07 | | -0.68 | | 9.27 | | 3.59 | | 8.67 | |
| Int'l Emerging Mkts Equity | 2.04 | 35 | 3.34 | 36 | 8.03 | 85 | 0.78 | 96 | -- | -- |
| <i>MSCI Emerging Markets ND Custom</i> | <u>1.91</u> | 38 | <u>3.17</u> | 39 | <u>8.59</u> | 78 | <u>1.05</u> | 94 | -- | -- |
| Excess Return | 0.13 | | 0.17 | | -0.56 | | -0.27 | | | |
| <i>MSCI Emerging Markets Gross</i> | 0.74 | 72 | 1.61 | 52 | 11.07 | 46 | 2.87 | 64 | -- | -- |
| <i>eV Emg Mkts Equity Gross Median</i> | 1.42 | | 1.79 | | 10.72 | | 3.41 | | 7.46 | |
| US Fixed Income | 4.67 | 17 | 11.01 | 18 | 3.11 | 52 | 4.49 | 20 | 6.39 | 22 |
| <i>FTSE LPF⁹</i> | <u>4.56</u> | 17 | <u>10.72</u> | 18 | <u>2.65</u> | 64 | <u>4.30</u> | 23 | <u>5.32</u> | 41 |
| Excess Return | 0.11 | | 0.29 | | 0.46 | | 0.19 | | 1.07 | |
| <i>InvMetrics All DB US Fix Inc Gross Median</i> | 2.80 | | 7.37 | | 3.15 | | 3.24 | | 5.13 | |
| Corporate | 6.21 | 1 | 14.55 | 1 | 5.40 | 7 | 5.62 | 1 | 8.61 | 1 |
| <i>FTSE LPF Credit¹⁰</i> | <u>6.08</u> | 1 | <u>13.99</u> | 1 | <u>4.80</u> | 20 | <u>5.27</u> | 4 | <u>7.25</u> | 24 |
| Excess Return | 0.13 | | 0.56 | | 0.60 | | 0.35 | | 1.36 | |
| <i>eV US Corporate Fixed Inc Gross Median</i> | 4.46 | | 10.78 | | 4.31 | | 4.40 | | 6.71 | |
| Gov't 5 Plus | 5.25 | -- | 11.79 | -- | 1.63 | -- | 4.92 | -- | 6.25 | -- |
| <i>FTSE LPF Treas/Govt Spons¹¹</i> | <u>5.25</u> | -- | <u>11.46</u> | -- | <u>1.39</u> | -- | <u>4.76</u> | -- | <u>5.72</u> | -- |
| Excess Return | 0.00 | | 0.33 | | 0.24 | | 0.16 | | 0.53 | |

⁸ Effective 3/1/09. Benchmark is linked to MSCI Europe Index.

⁹ Effective 9/1/11. Benchmark is linked to 50% FTSE BIG/ 50% FTSE LPF (4/1/11-8/31/11) and 100% FTSE BIG (8/1/05-3/31/11).

¹⁰ Effective 7/1/11. Benchmark is linked to 50% FTSE BIG Credit/ 50% FTSE LPF (4/1/11-6/30/11) and 100% FTSE BIG Credit Index (1/1/01-3/31/11).

¹¹ Effective 7/1/11. Benchmark is linked to 50% FTSE Core 5+ Gov't/ 50% FTSE 7+ Gov't (4/1/11-6/30/11), 100% FTSE Core 5+ Gov't (9/1/09-3/31/11), and 100% FTSE Gov't (7/1/04-8/31/09).

Total Fund Performance Summary

Period Ending: June 30, 2019

| | 3 Mo (%) | Rank | 1 Yr (%) | Rank | 3 Yrs (%) | Rank | 5 Yrs (%) | Rank | 10 Yrs (%) | Rank |
|---|-------------|------|--------------|------|--------------|------|--------------|------|---------------|------|
| MBS | 1.98 | 71 | 6.48 | 50 | 2.13 | 86 | 2.66 | 88 | 3.58 | 83 |
| FTSE BIG Mortgage TR | <u>2.09</u> | 56 | <u>6.39</u> | 56 | <u>2.09</u> | 90 | <u>2.58</u> | 92 | <u>3.27</u> | 96 |
| Excess Return | -0.11 | | 0.09 | | 0.04 | | 0.08 | | 0.31 | |
| eV US Securitized Fixed Inc Gross Median | 2.12 | | 6.48 | | 3.21 | | 3.30 | | 4.96 | |
| Total Return Fund * | 5.38 | -- | 11.62 | -- | 2.31 | -- | 5.13 | -- | 7.79 | -- |
| FTSE LPF Treas/Govt Spons ¹² | <u>5.25</u> | -- | <u>11.46</u> | -- | <u>1.39</u> | -- | <u>4.76</u> | -- | <u>5.29</u> | -- |
| Excess Return | 0.13 | | 0.16 | | 0.92 | | 0.37 | | 2.50 | |
| Inflation Hedged | 2.82 | 53 | 5.03 | 33 | 2.19 | 58 | 1.94 | 33 | 3.63 | 77 |
| FTSE TIPS TR | <u>2.94</u> | 29 | <u>4.93</u> | 35 | <u>2.12</u> | 78 | <u>1.85</u> | 53 | <u>3.76</u> | 54 |
| Excess Return | -0.12 | | 0.10 | | 0.07 | | 0.09 | | -0.13 | |
| eV US TIPS / Inflation Fixed Inc Gross Median | 2.83 | | 4.85 | | 2.27 | | 1.86 | | 3.80 | |
| Real Estate + | 2.92 | 4 | 7.82 | 38 | 9.00 | 9 | 10.50 | 14 | 7.88 | 94 |
| NCREIF 1Q Lag | <u>1.80</u> | 21 | <u>6.82</u> | 75 | <u>7.07</u> | 59 | <u>9.12</u> | 70 | <u>8.50</u> | 93 |
| Excess Return | 1.12 | | 1.00 | | 1.93 | | 1.38 | | -0.62 | |
| InvMetrics All DB Real Estate Pub Gross Median | 1.45 | | 7.39 | | 7.42 | | 9.59 | | 9.61 | |
| Traditional Private Equity ** | 4.61 | -- | 17.51 | -- | 17.96 | -- | 16.83 | -- | -- | -- |
| Private Equity Custom *** | <u>4.54</u> | -- | <u>2.79</u> | -- | <u>13.06</u> | -- | <u>11.87</u> | -- | -- | -- |
| Excess Return | 0.07 | | 14.72 | | 4.90 | | 4.96 | | -- | -- |
| Strategic Lending Portfolio¹³ | 1.98 | -- | 6.04 | -- | 8.21 | -- | 5.36 | -- | -- | -- |
| Strategic Lending ¹⁴ | <u>2.05</u> | -- | <u>5.82</u> | -- | <u>6.48</u> | -- | <u>4.30</u> | -- | -- | -- |
| Excess Return | -0.07 | | 0.22 | | 1.73 | | 1.06 | | -- | -- |
| Short Term¹⁵ | 0.34 | -- | 1.41 | -- | 1.10 | -- | 1.03 | -- | 1.22 | -- |
| 91 Day T-Bills | <u>0.57</u> | -- | <u>2.27</u> | -- | <u>1.40</u> | -- | <u>0.87</u> | -- | <u>0.47</u> | -- |
| Excess Return | -0.23 | | -0.86 | | -0.30 | | 0.16 | | 0.75 | |

* Previously Gov't 1-5.

¹² Effective 9/1/11. Benchmark is linked to FTSE 1-7 Govt (7/1/11-8/31/11), 50% FTSE 1-5 Govt/ 50% FTSE 1-7 Govt (4/1/11-6/30/11), and 100% FTSE 1-5 Govt (9/1/09-3/31/11).

+ One quarter lagged returns are provided Aon Hewitt (formerly Townsend)

** Effective 4/1/12. One quarter lagged IRR returns are provided by TorreyCove Capital Partners. TorreyCove replaced Cambridge Associates effective 8/1/15.

*** Effective 4/1/19, benchmark is Cambridge Associates custom Index 1Q Lag provided by TorreyCove; prior history linked to S&P 500 +3% 1Q Lag Index.

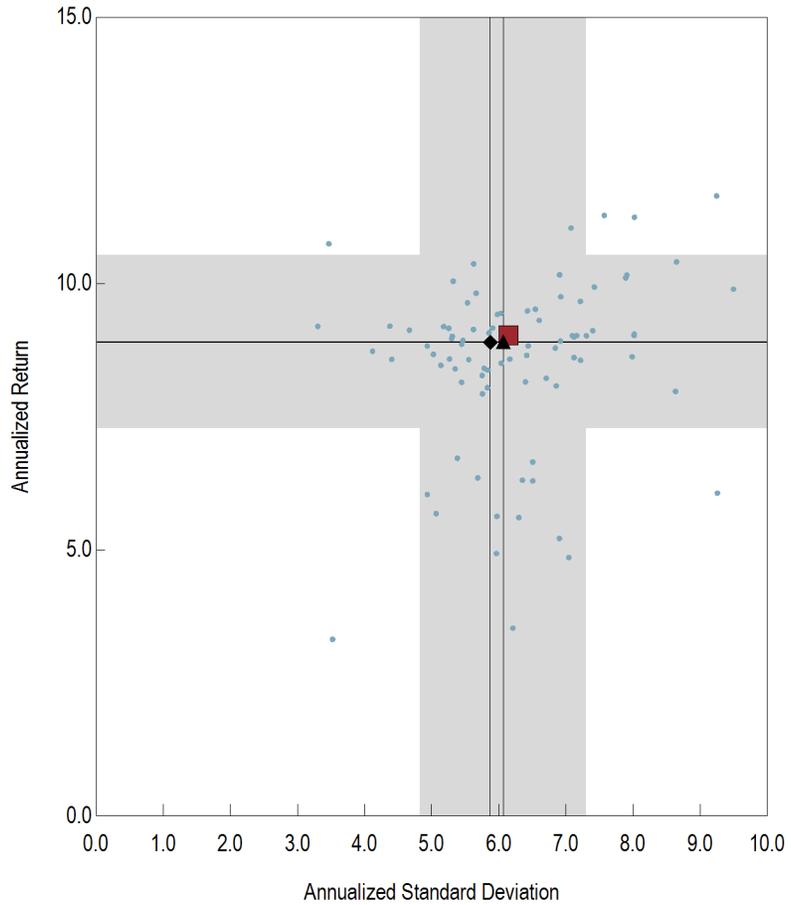
¹³ Funded 8/1/13. Reported net of fees.

¹⁴ Effective 1/1/13, benchmark is 50% BBgBarc HY 2% Issuer Capped/ 50% Credit Suisse Leveraged Loans.

¹⁵ Effective 4/1/17, Composite does not include Short Duration and Short Duration Adjustment accounts.

Total Fund
Risk vs. Return (3 Years)

Period Ending: June 30, 2019



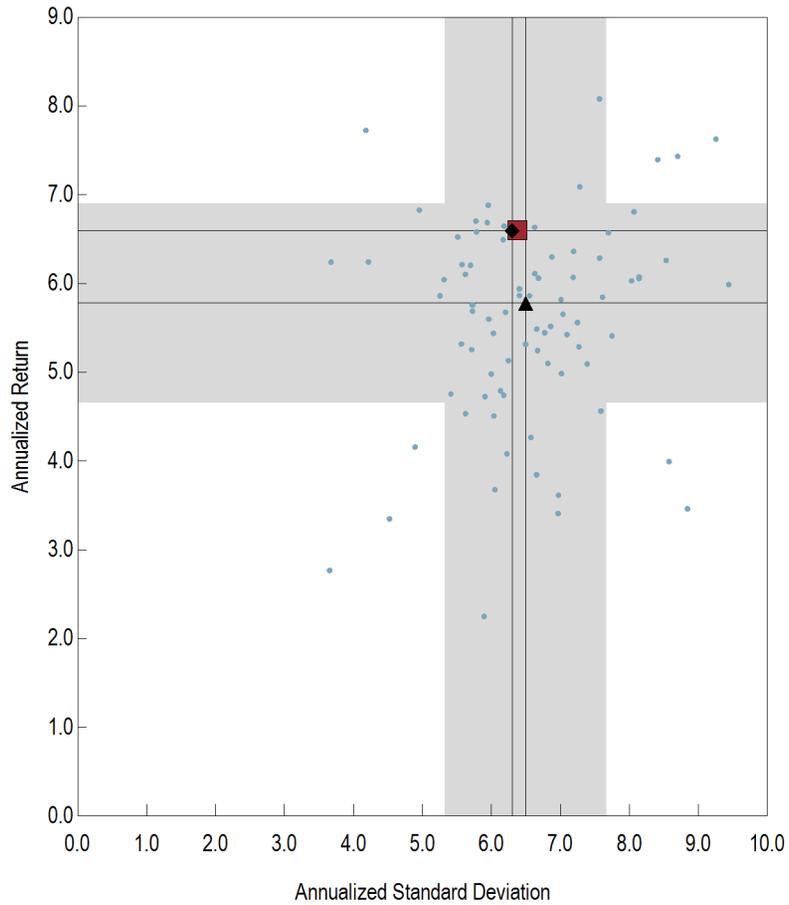
88 Portfolios

- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB > \$1B Gross

| | Anlzd Return | Anlzd Return Rank | Anlzd Standard Deviation | Anlzd Standard Deviation Rank | Sharpe Ratio | Sharpe Ratio Rank |
|--|--------------|-------------------|--------------------------|-------------------------------|--------------|-------------------|
| Total Fund | 9.02% | 39 | 6.14% | 53 | 1.24 | 40 |
| Policy Index | 8.90% | 51 | 5.87% | 41 | 1.28 | 34 |
| InvMetrics Public DB > \$1B Gross Median | 8.91% | -- | 6.06% | -- | 1.17 | -- |

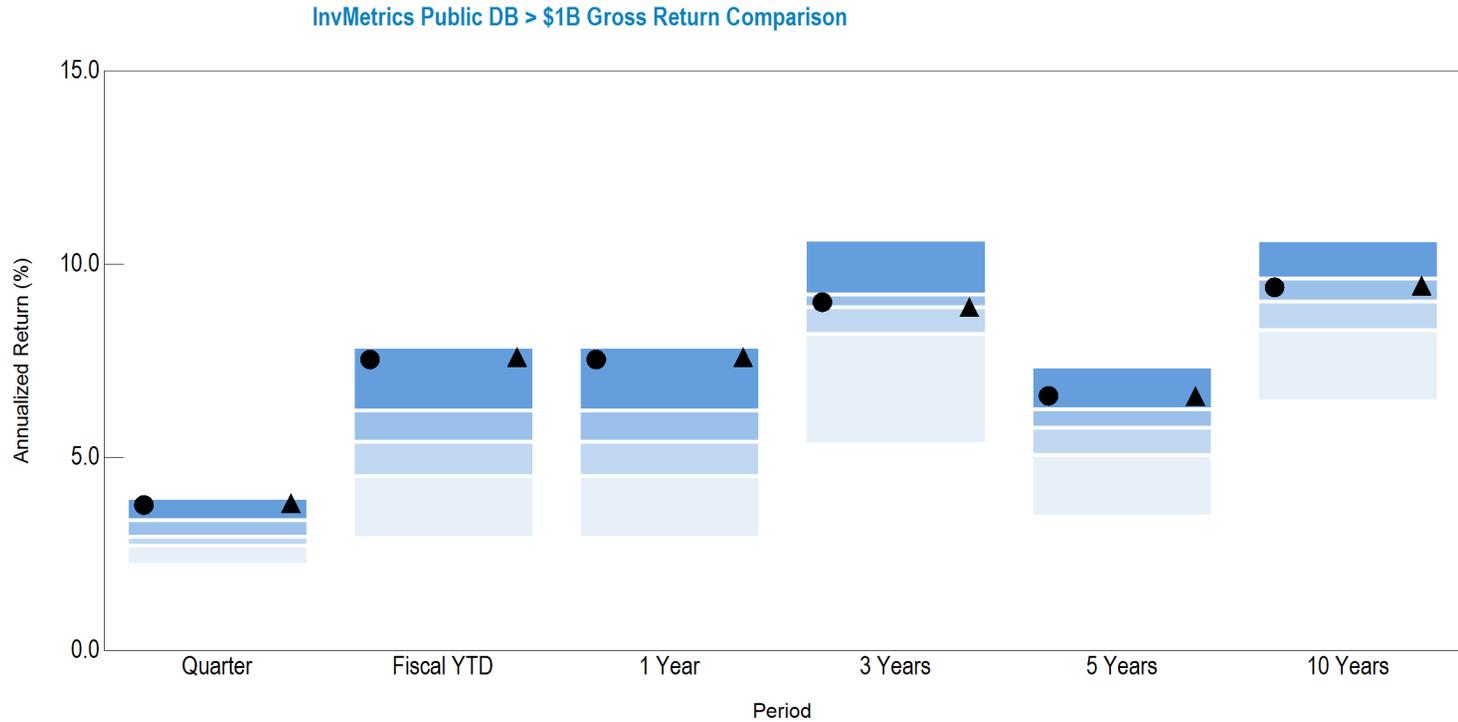
Total Fund
Risk vs. Return (5 Years)

Period Ending: June 30, 2019

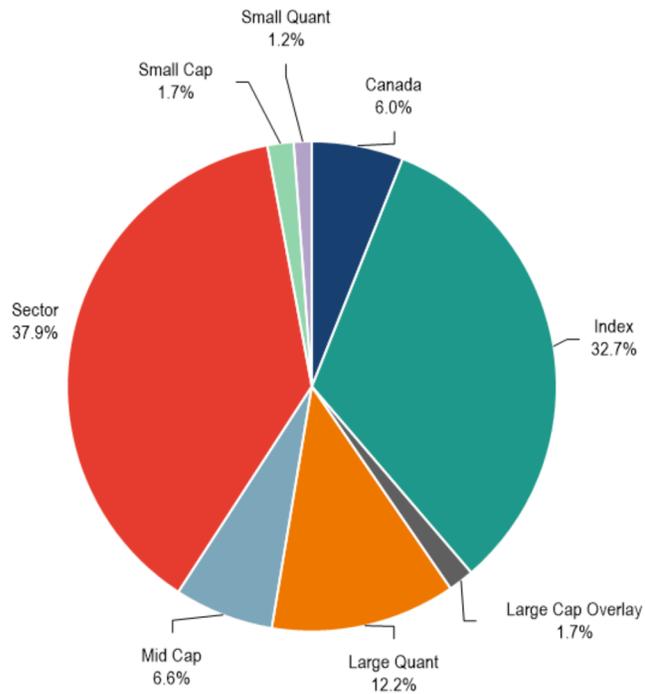


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB > \$1B Gross

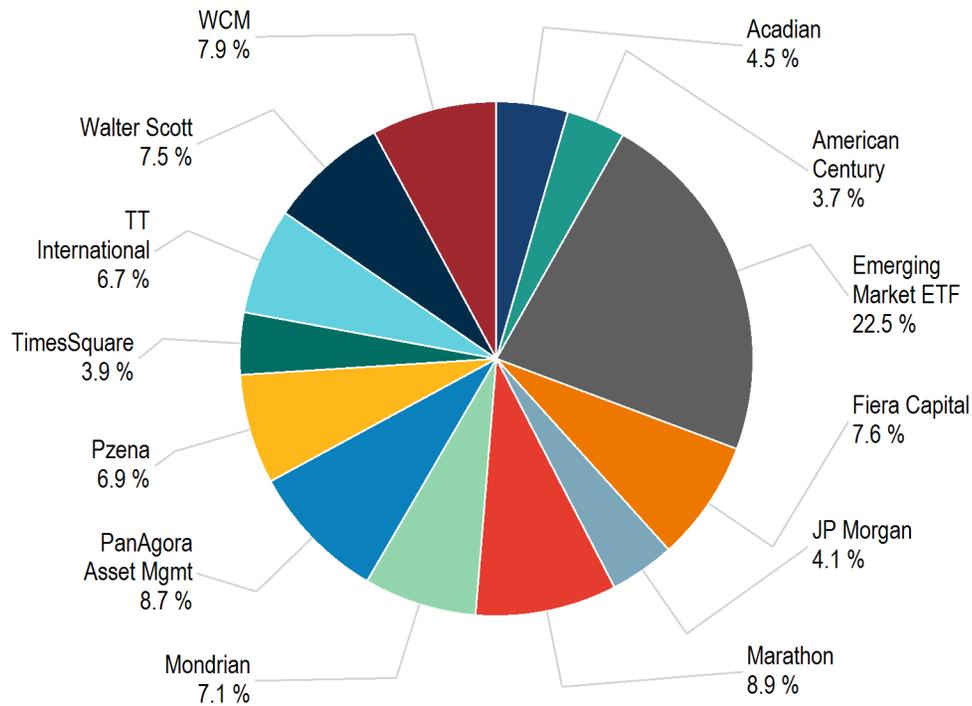
| | Anlzd Return | Anlzd Return Rank | Anlzd Standard Deviation | Anlzd Standard Deviation Rank | Sharpe Ratio | Sharpe Ratio Rank |
|--|--------------|-------------------|--------------------------|-------------------------------|--------------|-------------------|
| Total Fund | 6.60% | 16 | 6.38% | 47 | 0.90 | 21 |
| Policy Index | 6.59% | 16 | 6.30% | 46 | 0.91 | 20 |
| InvMetrics Public DB > \$1B Gross Median | 5.78% | -- | 6.50% | -- | 0.72 | -- |



| | Return (Rank) | | | | | | | | | | | |
|-----------------|---------------|------|------|-----|------|-----|-------|------|------|------|-------|------|
| 5th Percentile | 3.96 | | 7.86 | | 7.86 | | 10.63 | | 7.35 | | 10.62 | |
| 25th Percentile | 3.38 | | 6.23 | | 6.23 | | 9.23 | | 6.27 | | 9.64 | |
| Median | 2.96 | | 5.43 | | 5.43 | | 8.91 | | 5.78 | | 9.04 | |
| 75th Percentile | 2.73 | | 4.53 | | 4.53 | | 8.20 | | 5.07 | | 8.31 | |
| 95th Percentile | 2.23 | | 2.93 | | 2.93 | | 5.35 | | 3.48 | | 6.46 | |
| # of Portfolios | 88 | | 88 | | 88 | | 88 | | 84 | | 77 | |
| ● Total Fund | 3.77 | (11) | 7.54 | (7) | 7.54 | (7) | 9.02 | (39) | 6.60 | (16) | 9.41 | (35) |
| ▲ Policy Index | 3.82 | (10) | 7.60 | (7) | 7.60 | (7) | 8.90 | (51) | 6.59 | (16) | 9.45 | (33) |

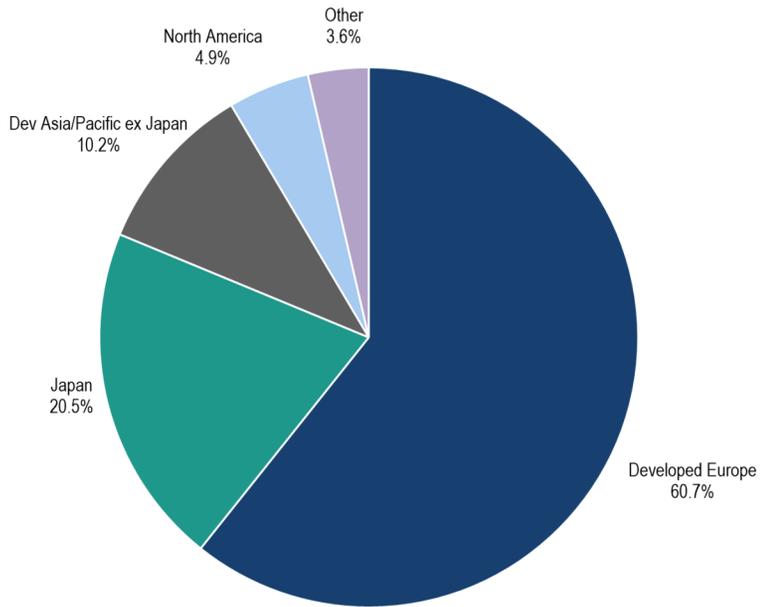


| | Actual \$ | Actual % |
|-------------------|-----------------------|---------------|
| Canada | 1,043,354,160 | 6.0% |
| Index | 5,635,537,639 | 32.7% |
| Large Cap Overlay | 292,015,841 | 1.7% |
| Large Quant | 2,105,696,485 | 12.2% |
| Mid Cap | 1,131,177,128 | 6.6% |
| Sector | 6,539,096,079 | 37.9% |
| Small Cap | 297,930,323 | 1.7% |
| Small Quant | 204,601,270 | 1.2% |
| TOTAL | 17,249,408,925 | 100.0% |

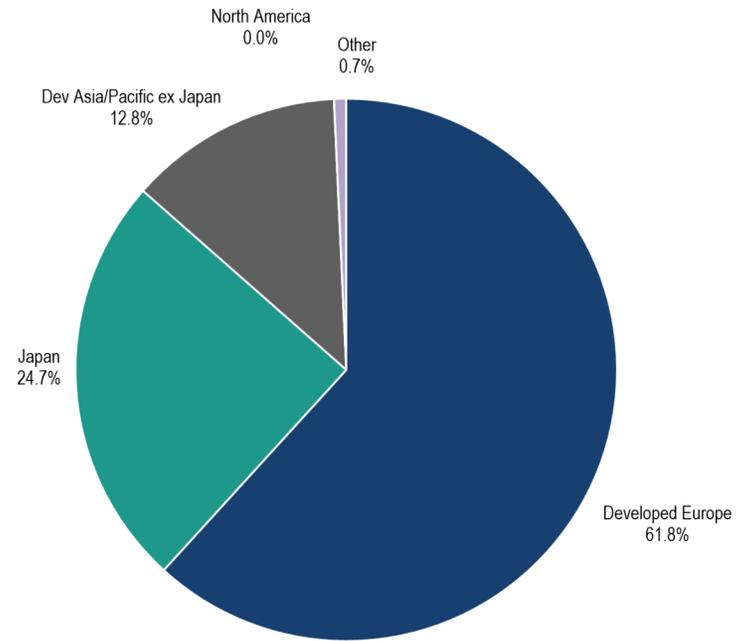


| | Actual | Actual |
|---------------------|------------------------|---------------|
| Acadian | \$409,878,183 | 4.5% |
| American Century | \$337,041,730 | 3.7% |
| Baring Asset Mgmt | \$347,706 | 0.0% |
| Emerging Market ETF | \$2,052,179,355 | 22.5% |
| FIAM | \$387,743 | 0.0% |
| Fiera Capital | \$689,634,042 | 7.6% |
| JP Morgan | \$371,222,630 | 4.1% |
| Marathon | \$812,105,348 | 8.9% |
| Mondrian | \$647,928,002 | 7.1% |
| PanAgora Asset Mgmt | \$790,688,335 | 8.7% |
| Pzena | \$626,413,639 | 6.9% |
| SSgA | \$2,565,764 | 0.0% |
| TimesSquare | \$351,987,902 | 3.9% |
| TT International | \$608,619,577 | 6.7% |
| Walter Scott | \$687,441,531 | 7.5% |
| WCM | \$719,730,349 | 7.9% |
| Total | \$9,108,171,836 | 100.0% |

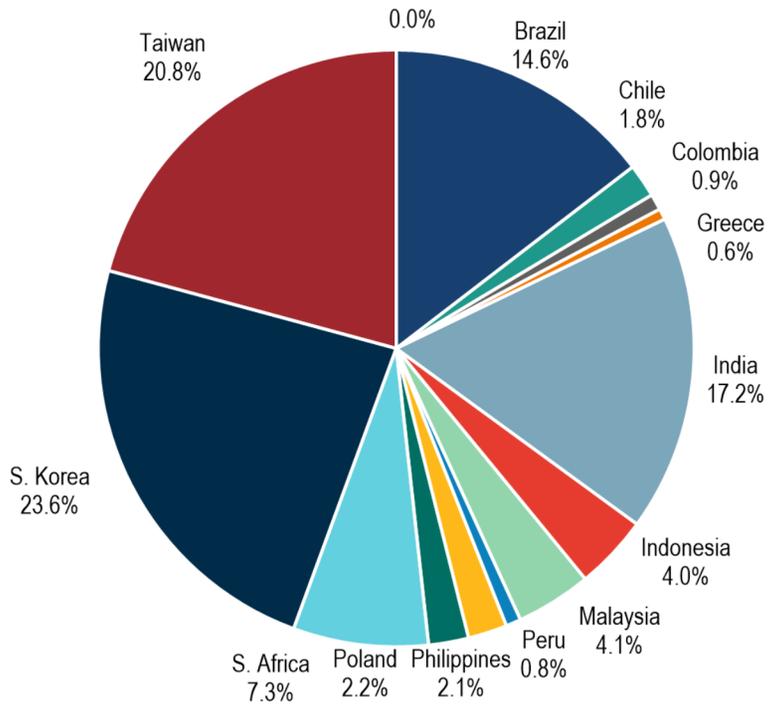
Int'l Developed Mkts Equity



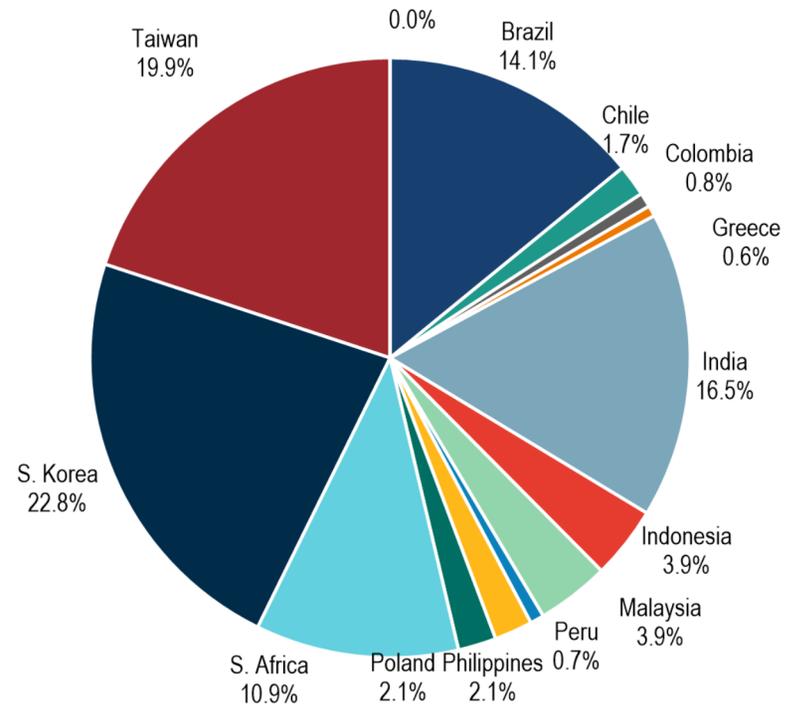
MSCI EAFE IMI Index



Int'l Emerging Mkts Equity

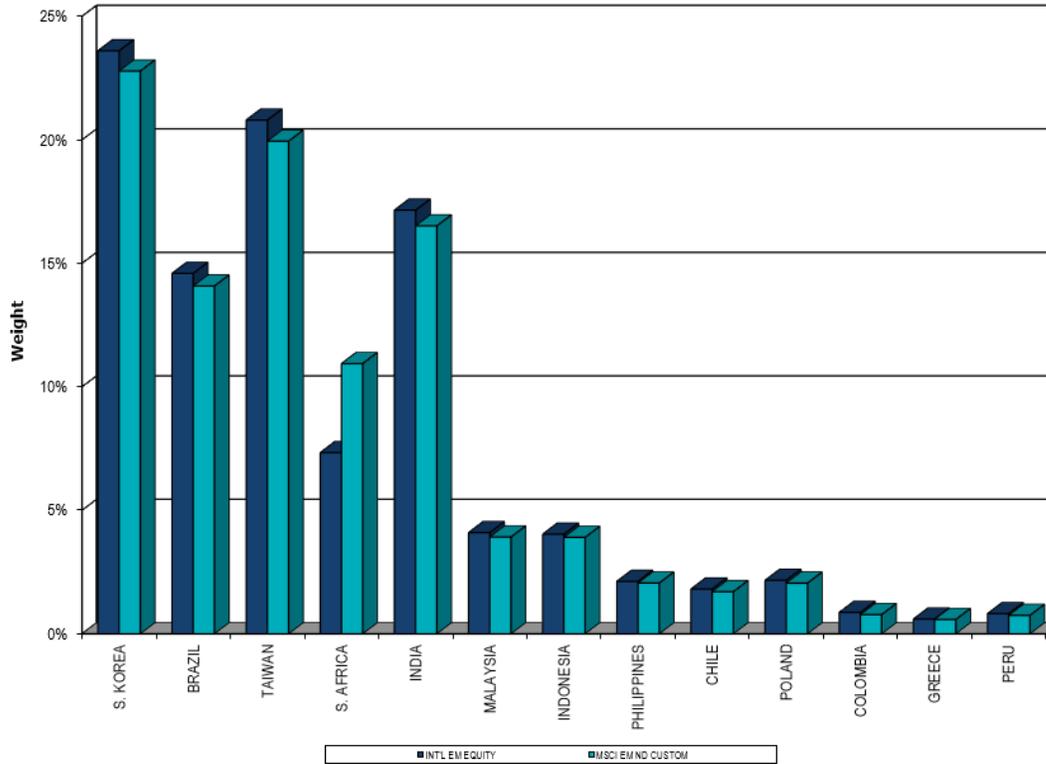


MSCI Emerging Markets ND Custom Index

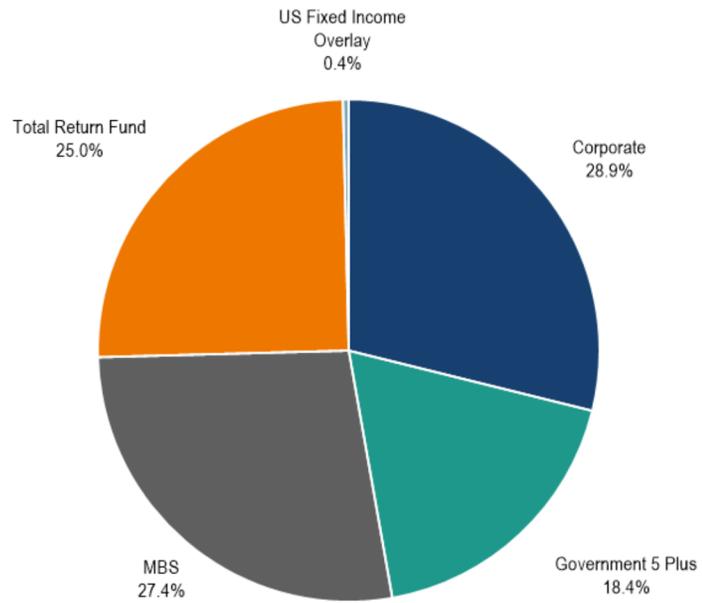


Int'l Emerging Markets Equity Portfolio Country Weights

Period Ending: June 30, 2019



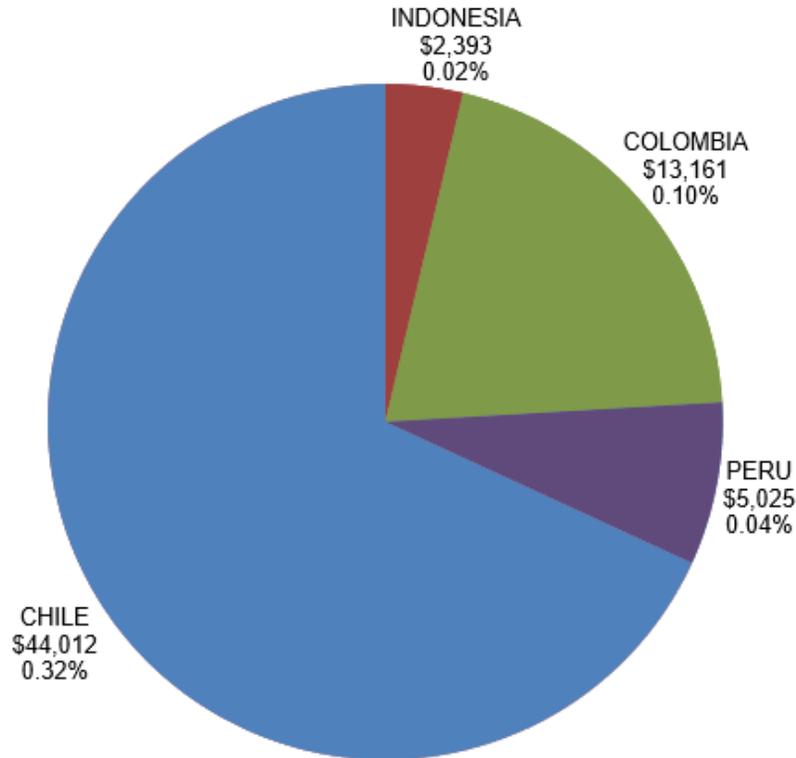
| COUNTRY | TCRS MARKET VALUE (\$ 000) | INT'L EM EQUITY | MSCI EM ND CUSTOM | DIFF |
|-------------|----------------------------|-----------------|-------------------|-------|
| S. KOREA | \$ 484,408 | 23.6% | 22.8% | +0.8% |
| BRAZIL | \$ 299,484 | 14.6% | 14.1% | +0.5% |
| TAIWAN | \$ 426,843 | 20.8% | 19.9% | +0.9% |
| S. AFRICA | \$ 150,568 | 7.3% | 10.9% | -3.6% |
| INDIA | \$ 352,019 | 17.2% | 16.5% | +0.6% |
| MALAYSIA | \$ 84,077 | 4.1% | 3.9% | +0.2% |
| INDONESIA | \$ 82,778 | 4.0% | 3.9% | +0.1% |
| PHILIPPINES | \$ 43,575 | 2.1% | 2.1% | +0.1% |
| CHILE | \$ 37,197 | 1.8% | 1.7% | +0.1% |
| POLAND | \$ 44,462 | 2.2% | 2.1% | +0.1% |
| COLOMBIA | \$ 17,770 | 0.9% | 0.8% | +0.1% |
| GREECE | \$ 12,233 | 0.6% | 0.6% | +0.0% |
| PERU | \$ 16,765 | 0.8% | 0.7% | +0.1% |
| | \$ 2,052,179 | 100.0% | 100.0% | 0.0% |



| | Actual \$ | Actual % |
|---------------------------|-----------------------|---------------|
| ■ Corporate | 3,921,378,536 | 28.9% |
| ■ Government 5 Plus | 2,495,710,886 | 18.4% |
| ■ MBS | 3,717,955,491 | 27.4% |
| ■ Total Return Fund | 3,404,213,172 | 25.0% |
| ■ US Fixed Income Overlay | 50,725,553 | 0.4% |
| TOTAL | 13,589,983,638 | 100.0% |

Emerging Markets Investment Grade Bond
Portfolio Country Weights

Period Ending: June 30, 2019



| COUNTRY | TCRS MARKET VALUE (\$ 000) | TCRS FI | LPF | DIFF |
|-------------|----------------------------|---------|-------|--------|
| MEXICO | | | 0.76% | -0.76% |
| INDONESIA | \$ 2,393 | 0.02% | 0.34% | -0.32% |
| COLOMBIA | \$ 13,161 | 0.10% | 0.23% | -0.13% |
| PHILIPPINES | | | 0.21% | -0.21% |
| PERU | \$ 5,025 | 0.04% | 0.14% | -0.10% |
| S. AFRICA | | | 0.12% | -0.12% |
| BRAZIL | | | 0.11% | -0.11% |
| CHILE | \$ 44,012 | 0.32% | 0.07% | +0.25% |
| S. KOREA | | | 0.06% | -0.06% |
| MALAYSIA | | | 0.02% | -0.02% |
| INDIA | | | 0.02% | -0.02% |
| HUNGARY | | | 0.02% | -0.02% |
| POLAND | | | 0.01% | -0.01% |
| OTHER* | | | | 0.00% |
| TURKEY | | | | 0.00% |
| TAIWAN | | | | 0.00% |
| THAILAND | | | | 0.00% |
| | \$ 64,591 | 0.48% | 2.10% | -1.63% |

* Includes Bahrain, British Virgin, Curacao, Iceland, Isle of Man, Panama, Qatar, Slovakia, Slovenia and Uruguay.

** Countries excluded: United States, Japan, Germany, France, The United Kingdom, Italy, Canada, Australia, Spain, Israel, Belgium, Ireland, Luxembourg, Netherlands, Norway, Sweden and Switzerland.

Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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