



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: MARCH 31, 2018

Executive Performance Summary Review for

Tennessee Consolidated Retirement System

1st quarter summary

THE ECONOMIC CLIMATE

- The U.S. economy is expected to grow at around 2.2% in Q1. Economists expect a slightly quicker rate of growth throughout the year. We believe that this *middle-of-the-road* expansion – characterized as not too fast and not too slow – may allow the U.S. economy to continue expanding for longer than expected.
- The U.S. has enacted a 25% tariff on steel and a 10% tariff on aluminum, which went into effect on March 23rd. The U.S. also engaged with China over allegations of asymmetrical trade policies and intellectual property theft.

PORTFOLIO IMPACTS

- Global economic growth has improved – low inflation, strong employment, and accommodative foreign central bank policies have been supportive of equity prices. In the U.S., monetary tightening has yet to have a major impact on equities.
- Concerns over increasing trade protectionism weighed on financial markets. The tariffs placed on steel and aluminum are not likely to have a material impact on asset prices, but escalating tensions and retaliatory measures could have a negative impact on global growth.

THE INVESTMENT CLIMATE

- Excitement and optimism over tax cuts helped lead equities higher to begin the year. However, markets stumbled in February – falling roughly 10%. Equities recovered much of the losses throughout the quarter, but then fell back to their lows at the end of March.
- 2018 is expected to be a banner year for U.S. corporate profits. Earnings for the calendar year are forecast to grow 17.3%, with 7.3% revenue growth. These 2018 expectations may already be priced in.
- February’s market correction appeared isolated to the equity markets. “Risk-off” selling that often accompanies market drawdowns was not apparent – credit spreads, U.S. Treasuries, and gold, reacted minimally.

ASSET ALLOCATION ISSUES

- Upward price momentum in equities has diminished following the February market correction. Investor sentiment is less positive, but the global economic and earnings backdrop remains intact. We believe a neutral or mild risk overweight is warranted in this environment.
- Equity volatility spiked in February, ending the period of extreme calm that investors experienced since the beginning of 2017. The VIX Index averaged 20.7 during the last two months of the quarter.

Changing market dynamics suggest a neutral or mild risk overweight may be warranted

U.S. economics summary

- Economic growth remained near expansion highs in the fourth quarter. U.S. real GDP growth was 2.6% from the previous year. Consumer spending and investment pushed the economy ahead, while falling exports were a drag on growth.
- The U.S. enacted a 25% tariff on steel and 10% tariff on aluminum, which went into effect March 23rd. The U.S. has engaged with China over allegations of asymmetrical trade policies and intellectual property theft, creating concerns over the risks of a trade war.
- Additions to U.S. payrolls averaged 202,000 per month in the first quarter, above the expansion average.
- In recent years, the U.S. has seen discouraged and part-time workers drawn back to full-time employment. This effect can be

quantified by the shrinking difference between U-6 and U-3 unemployment figures. The difference between these two measures fell to 3.9%, matching expansion lows.

- Core CPI inflation moved from 1.8% to 2.1% YoY during the quarter, the highest rate in more than a year. Prices jumped in March primarily due to the low base effect from an unexpected drop in wireless telecom prices one year ago.
- The Fed raised interest rates on March 21st to 1.50-1.75%. Comments made during the March meeting suggest the FOMC expects continued moderate economic activity, spending, and business investment. Unsurprisingly, the Committee stated that the U.S. inflation rate is expected to stabilize at the 2% target over the near-term.

	Most Recent	12 Months Prior
GDP (YoY)	2.6% <i>12/31/17</i>	1.8% <i>12/31/16</i>
Inflation (CPI YoY, Core)	2.1% <i>3/31/18</i>	2.0% <i>3/31/17</i>
Expected Inflation (5yr-5yr forward)	2.2% <i>3/31/18</i>	2.2% <i>3/31/17</i>
Fed Funds Target Range	1.50 – 1.75% <i>3/31/18</i>	0.75 – 1.00% <i>3/31/17</i>
10 Year Rate	2.8% <i>3/31/18</i>	2.4% <i>3/31/17</i>
U-3 Unemployment	4.1% <i>3/31/18</i>	4.5% <i>3/31/17</i>
U-6 Unemployment	8.0% <i>3/31/18</i>	8.8% <i>3/31/17</i>

International developed equity

Unhedged International equities were in line with U.S. equities during Q1, delivering slightly negative performance. The MSCI EAFE Index returned -1.5%. Positive currency returns masked underperformance of local developed market equities. On a hedged basis, the MSCI EAFE Index posted a -3.8% return. Looking forward, accelerating corporate earnings, and more attractive valuations following the February fall in equity prices, may be supportive for another positive year in 2018. Forward one year earnings growth is expected to be around 15%.

Along with the U.S., most developed markets also experienced an approximate 10% drawdown in February, but were not as quick to recover. Most regional benchmarks finished the quarter still 7-10% below recent peaks.

Trailing P/E ratios for the EAFE Index have moved to below average, providing a possible value opportunity. However, downside risks to these markets, including political issues and reliance on central bank support may be a justification for low valuations.

EQUITY PERFORMANCE (3-YEAR ROLLING)



Source: Bloomberg, as of 3/31/18

EARNINGS GROWTH (YOY)



Source: MSCI, as of 3/31/18 – YoY growth in forward earnings

EFFECT OF CURRENCY (1-YEAR ROLLING)

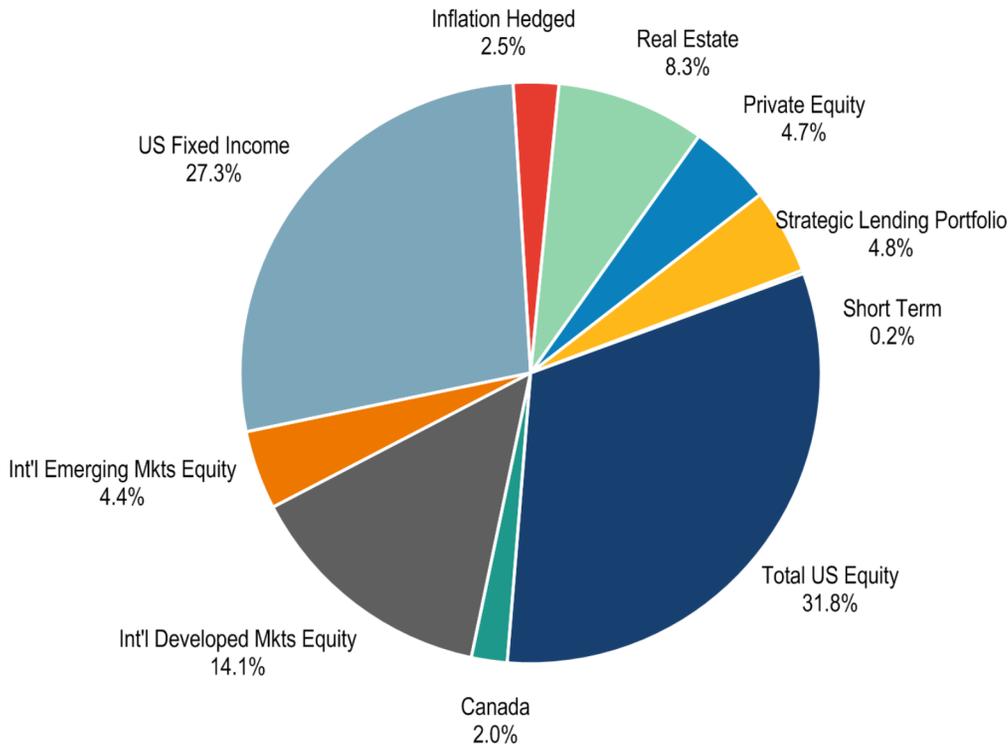


Source: MSCI, as of 3/31/18

Name	Last 3 Months	Last 6 Months	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
US Equity								
Russell 3000	-0.6	5.7	13.8	15.9	10.2	13.0	12.4	9.6
S&P 500	-0.8	5.8	14.0	15.6	10.8	13.3	12.7	9.5
Russell 1000	-0.7	5.9	14.0	15.7	10.4	13.2	12.6	9.6
Russell 1000 Growth	1.4	9.4	21.3	18.5	12.9	15.5	14.1	11.3
Russell 1000 Value	-2.8	2.3	6.9	12.9	7.9	10.8	11.0	7.8
Russell MidCap	-0.5	5.6	12.2	14.6	8.0	12.1	11.5	10.2
Russell 2000	-0.1	3.3	11.8	18.8	8.4	11.5	10.4	9.8
Russell 2000 Growth	2.3	7.0	18.6	20.8	8.8	12.9	11.3	11.0
Russell 2000 Value	-2.6	-0.6	5.1	16.6	7.9	10.0	9.4	8.6
International Equity								
MSCI ACWI	-1.0	4.7	14.8	14.9	8.1	9.2	7.9	5.6
MSCI World ex USA	-2.0	2.1	13.9	12.9	5.3	6.0	4.7	2.6
MSCI EAFE	-1.5	2.6	14.8	13.2	5.6	6.5	5.3	2.7
MSCI Emerging Markets	1.4	9.0	24.9	21.0	8.8	5.0	2.5	3.0
Fixed Income								
91 Day T-Bills	0.4	0.7	1.2	0.8	0.5	0.3	0.3	0.3
BBgBarc US Aggregate TR	-1.5	-1.1	1.2	0.8	1.2	1.8	2.9	3.6
BBgBarc US Govt/Credit TR	-1.6	-1.1	1.4	1.0	1.2	1.8	3.2	3.7
BBgBarc US Municipal TR	-1.1	-0.4	2.7	1.4	2.3	2.7	4.4	4.4
BBgBarc US High Yield TR	-0.9	-0.4	3.8	9.9	5.2	5.0	6.3	8.3
Citi WGBI	2.5	3.6	8.5	2.2	3.5	1.2	1.5	2.0
Citi WGBI ex US	4.4	6.1	12.9	3.7	5.0	1.4	1.2	1.8
Real Estate								
FTSE NAREIT All REIT	-6.7	-4.5	-1.0	2.6	3.1	6.5	8.8	7.0
NCREIF Property Index	1.7	3.5	7.1	7.2	8.7	10.0	10.6	6.1
Alternatives								
HFRI Fund of Funds Composite Index	0.2	2.3	5.5	5.9	1.9	3.4	2.6	1.5
Inflation								
Consumer Price Index	1.2	1.1	2.4	2.4	1.9	1.4	1.6	1.6

Tennessee Consolidated Retirement System
Asset Allocation Analysis

Period Ending: March 31, 2018



	Actual \$	Actual %
Total US Equity	15,767,241,957	31.8%
Canada	985,223,869	2.0%
Int'l Developed Mkts Equity	6,977,130,703	14.1%
Int'l Emerging Mkts Equity	2,171,753,653	4.4%
US Fixed Income	13,510,141,641	27.3%
Inflation Hedged	1,252,518,584	2.5%
Real Estate	4,099,942,287	8.3%
Private Equity	2,303,077,227	4.7%
Strategic Lending Portfolio	2,356,363,462	4.8%
Short Term	94,779,751	0.2%
TOTAL	49,518,173,134	100.0%

	TARGET	ACTUAL	DIFF
Total US Equity	31.0%	31.8%	0.8%
Canada	2.0%	2.0%	0.0%
Int'l Developed Mkts Equity	13.0%	14.1%	1.1%
Int'l Emerging Mkts Equity	4.0%	4.4%	0.4%
US Fixed Income	25.0%	27.3%	2.3%
Inflation Hedged	0.0%	2.5%	2.5%
Real Estate	10.0%	8.3%	-1.7%
Private Equity	7.0%	4.7%	-2.3%
Strategic Lending Portfolio	7.0%	4.8%	-2.2%
Short Term	1.0%	0.2%	-0.8%

	12/31/17	03/31/18	DIFF
Total US Equity	33.3%	31.8%	-1.4%
Canada	2.1%	2.0%	-0.1%
Int'l Developed Mkts Equity	14.0%	14.1%	0.0%
Int'l Emerging Mkts Equity	4.3%	4.4%	0.1%
US Fixed Income	26.7%	27.3%	0.6%
Inflation Hedged	2.5%	2.5%	0.0%
Real Estate	7.7%	8.3%	0.6%
Private Equity	4.2%	4.7%	0.5%
Strategic Lending Portfolio	4.6%	4.8%	0.2%
Short Term	0.6%	0.2%	-0.4%

Total Fund Performance Summary

Period Ending: March 31, 2018

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Total Fund	-0.45	84	7.14	69	10.68	61	6.83	65	7.83	62	6.61	39
<i>Policy Index</i> ¹	<u>-0.36</u>	82	<u>6.89</u>	78	<u>10.52</u>	64	<u>6.98</u>	56	<u>8.02</u>	50	<u>6.85</u>	22
Excess Return	-0.09		0.25		0.16		-0.15		-0.19		-0.24	
<i>Allocation Index</i> ²	-0.72	96	6.56	89	10.03	76	6.77	68	7.64	71	6.57	40
<i>InvestorForce Public DB > \$1B Gross Median</i>	0.09		7.67		11.14		7.12		8.01		6.38	
North American Equity	-1.07	--	10.74	--	13.87	--	9.18	--	11.74	--	--	--
<i>N.A. Equity Custom</i> ³	<u>-1.44</u>	--	<u>9.87</u>	--	<u>12.88</u>	--	<u>9.96</u>	--	<u>12.07</u>	--	--	--
Excess Return	0.37		0.87		0.99		-0.78		-0.33			
US Equity	-0.67	67	11.11	32	14.37	38	9.58	67	12.67	60	9.34	65
<i>US Equity Custom</i> ⁴	<u>-0.72</u>	71	<u>10.46</u>	57	<u>13.73</u>	58	<u>10.63</u>	23	<u>13.21</u>	28	<u>9.68</u>	46
Excess Return	0.05		0.65		0.64		-1.05		-0.54		-0.34	
<i>InvestorForce All DB US Eq Gross Median</i>	-0.49		10.55		13.89		10.06		12.82		9.61	
Index	-0.73	51	10.58	52	13.99	49	10.92	32	13.37	42	9.58	57
S&P 500	<u>-0.76</u>	51	<u>10.58</u>	52	<u>13.99</u>	49	<u>10.78</u>	34	<u>13.31</u>	44	<u>9.49</u>	60
Excess Return	0.03		0.00		0.00		0.14		0.06		0.09	
<i>eV US Large Cap Equity Gross Median</i>	-0.73		10.76		13.79		9.87		12.99		9.81	
Quant	-1.47	64	11.52	44	14.37	47	8.24	79	11.63	75	8.86	75
S&P 500	<u>-0.76</u>	51	<u>10.58</u>	52	<u>13.99</u>	49	<u>10.78</u>	34	<u>13.31</u>	44	<u>9.49</u>	60
Excess Return	-0.71		0.94		0.38		-2.54		-1.68		-0.63	
<i>eV US Large Cap Equity Gross Median</i>	-0.73		10.76		13.79		9.87		12.99		9.81	
Sector	-0.65	48	11.57	44	15.06	43	10.15	46	13.18	46	9.47	60
S&P 500	<u>-0.76</u>	51	<u>10.58</u>	52	<u>13.99</u>	49	<u>10.78</u>	34	<u>13.31</u>	44	<u>9.49</u>	60
Excess Return	0.11		0.99		1.07		-0.63		-0.13		-0.02	
<i>eV US Large Cap Equity Gross Median</i>	-0.73		10.76		13.79		9.87		12.99		9.81	
Mid Cap ⁵	0.14	45	10.64	46	13.56	48	9.11	44	12.78	42	10.79	54
S&P MidCap 400 ⁵	<u>-0.77</u>	61	<u>8.83</u>	65	<u>10.97</u>	62	<u>8.96</u>	47	<u>11.97</u>	63	<u>10.73</u>	56
Excess Return	0.91		1.81		2.59		0.15		0.81		0.06	
<i>eV US Mid Cap Equity Gross Median</i>	-0.16		10.08		12.91		8.63		12.52		10.94	

1 Effective 1/1/17, Policy Index is 31% S&P 1500/ 2% S&P TSX 60/ 13% MSCI EAFE IMI net/ 4% MSCI Emerging Markets net/ 25% Citigroup LPF/ 10% NCREIF 1Q Lag/ 7% S&P 500 + 3% 1Q Lag/ 7% Strategic Lending/ 1% 91 Day T-Bill.

2 Effective 1/1/18, Total Fund Allocation Index is 32.75% S&P 1500/ 2.11% S&P TSX 60/ 13.73% MSCI EAFE IMI net/ 4.23% MSCI Emerging Markets net/ 27.33% Citigroup LPF/ 2.44% Citigroup TIPS/ 7.67% NCREIF 1Q Lag/ 4.18% S&P 500 + 3% 1Q Lag/ 4.56% 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 100 Index.

Total Fund Performance Summary

Period Ending: March 31, 2018

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Small Cap ⁶	0.82	36	11.19	35	13.12	41	11.06	22	13.73	28	--	--
S&P 600 SmallCap	0.57	38	10.78	38	12.68	44	10.76	27	13.56	30	--	46
Excess Return	0.25		0.41		0.44		0.30		0.17			
eV US Small Cap Equity Gross Median	-0.35		9.28		11.91		9.12		12.38		11.11	
Large Cap Overlay	-1.03	--	11.03	--	--	--	--	--	--	--	--	--
S&P 500	-0.76	--	10.58	--	--	--	--	--	--	--	--	--
Excess Return	-0.27		0.45									
Canada	-7.24	--	4.96	--	6.20	--	4.11	--	2.72	--	--	--
S&P/TSX 60	-7.30	--	4.84	--	5.74	--	3.99	--	2.61	--	--	--
Excess Return	0.06		0.12		0.46		0.12		0.11			
International Equity	-0.14	41	11.19	42	18.44	44	8.06	31	7.33	44	4.57	22
Int'l Equity Custom ⁷	-0.85	76	10.07	68	16.93	66	6.81	66	6.15	82	2.64	79
Excess Return	0.71		1.12		1.51		1.25		1.18		1.93	
InvestorForce All DB ex-US Eq Gross Median	-0.37		10.79		17.99		7.35		7.15		3.58	
Int'l Developed Mkts Equity	-0.71	59	10.50	40	18.36	37	8.17	30	8.57	32	5.27	17
MSCI EAFE IMI	-1.27	78	9.05	74	16.03	61	6.45	56	7.11	67	3.28	68
Excess Return	0.56		1.45		2.33		1.72		1.46		1.99	
InvestorForce All DB Dev Mkt ex-US Eq Gross Median	-0.30		9.91		16.95		6.72		7.67		3.64	
Acadian	0.74	35	15.97	39	24.83	48	--	--	--	--	--	--
MSCI EAFE Small Cap	0.24	48	14.24	55	23.49	61	--	61	--	75	--	86
Excess Return	0.50		1.73		1.34							
eV EAFE Small Cap Equity Gross Median	0.12		14.69		24.53		13.14		12.39		7.90	
American Century	3.40	4	20.13	9	33.17	3	15.09	21	14.17	18	--	--
MSCI EAFE Small Cap	0.24	48	14.24	55	23.49	61	12.25	61	11.10	75	--	86
Excess Return	3.16		5.89		9.68		2.84		3.07			
eV EAFE Small Cap Equity Gross Median	0.12		14.69		24.53		13.14		12.39		7.90	

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: March 31, 2018

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Baring Asset Mgmt	-2.32	88	8.04	73	15.02	70	7.08	55	6.94	77	--	--
<i>MSCI EAFE</i>	<u>-1.53</u>	71	<u>8.18</u>	71	<u>14.80</u>	72	<u>5.55</u>	84	<u>6.50</u>	87	--	91
Excess Return	-0.79		-0.14		0.22		1.53		0.44			
<i>eV All EAFE Equity Gross Median</i>	-0.88		9.91		17.20		7.31		8.22		4.61	
FIAM	0.53	40	14.04	60	23.99	56	12.44	59	11.69	64	--	--
<i>MSCI EAFE Small Cap</i>	<u>0.24</u>	48	<u>14.24</u>	55	<u>23.49</u>	61	<u>12.25</u>	61	<u>11.10</u>	75	--	86
Excess Return	0.29		-0.20		0.50		0.19		0.59			
<i>eV EAFE Small Cap Equity Gross Median</i>	0.12		14.69		24.53		13.14		12.39		7.90	
Fiera Capital	-0.90	51	9.02	60	17.95	44	--	--	--	--	--	--
<i>MSCI EAFE</i>	<u>-1.53</u>	71	<u>8.18</u>	71	<u>14.80</u>	72	--	84	--	87	--	91
Excess Return	0.63		0.84		3.15							
<i>eV All EAFE Equity Gross Median</i>	-0.88		9.91		17.20		7.31		8.22		4.61	
JP Morgan	0.41	--	14.81	--	21.98	--	--	--	--	--	--	--
<i>MSCI Pacific</i>	<u>-0.68</u>	--	<u>11.41</u>	--	<u>15.78</u>	--	--	--	--	--	--	--
Excess Return	1.09		3.40		6.20							
Marathon	-1.15	59	6.71	87	14.62	75	6.75	62	8.28	49	5.64	33
<i>MSCI EAFE</i>	<u>-1.53</u>	71	<u>8.18</u>	71	<u>14.80</u>	72	<u>5.55</u>	84	<u>6.50</u>	87	<u>2.74</u>	91
Excess Return	0.38		-1.47		-0.18		1.20		1.78		2.90	
<i>eV All EAFE Equity Gross Median</i>	-0.88		9.91		17.20		7.31		8.22		4.61	
Mondrian	-1.97	82	7.87	75	12.33	90	--	--	--	--	--	--
<i>MSCI EAFE</i>	<u>-1.53</u>	71	<u>8.18</u>	71	<u>14.80</u>	72	--	84	--	87	--	91
Excess Return	-0.44		-0.31		-2.47							
<i>eV All EAFE Equity Gross Median</i>	-0.88		9.91		17.20		7.31		8.22		4.61	
PanAgora Asset Mgmt	-1.55	71	7.44	80	13.48	84	6.80	61	8.45	45	4.61	50
<i>MSCI EAFE</i>	<u>-1.53</u>	71	<u>8.18</u>	71	<u>14.80</u>	72	<u>5.55</u>	84	<u>6.50</u>	87	<u>2.74</u>	91
Excess Return	-0.02		-0.74		-1.32		1.25		1.95		1.87	
<i>eV All EAFE Equity Gross Median</i>	-0.88		9.91		17.20		7.31		8.22		4.61	

Total Fund Performance Summary

Period Ending: March 31, 2018

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
SSgA*	-1.81	--	8.95	--	16.92	--	6.46	--	6.49	--	--	--
<i>MSCI Europe</i>	<u>-1.98</u>	--	<u>6.64</u>	--	<u>14.49</u>	--	<u>4.79</u>	--	<u>6.37</u>	--	--	--
Excess Return	0.17		2.31		2.43		1.67		0.12			
TimesSquare	4.49	2	18.98	12	33.73	3	--	--	--	--	--	--
<i>MSCI EAFE Small Cap</i>	<u>0.24</u>	48	<u>14.24</u>	55	<u>23.49</u>	61	--	61	--	75	--	86
Excess Return	4.25		4.74		10.24							
<i>eV EAFE Small Cap Equity Gross Median</i>	0.12		14.69		24.53		13.14		12.39		7.90	
TT International	-0.19	31	14.99	13	23.25	19	7.06	56	9.41	33	--	--
<i>MSCI EAFE</i>	<u>-1.53</u>	71	<u>8.18</u>	71	<u>14.80</u>	72	<u>5.55</u>	84	<u>6.50</u>	87	--	91
Excess Return	1.34		6.81		8.45		1.51		2.91			
<i>eV All EAFE Equity Gross Median</i>	-0.88		9.91		17.20		7.31		8.22		4.61	
Walter Scott	-1.19	59	8.72	62	17.19	51	8.95	31	7.28	71	6.32	24
<i>MSCI EAFE</i> ⁸	<u>-1.53</u>	71	<u>8.18</u>	71	<u>14.80</u>	72	<u>5.55</u>	84	<u>6.50</u>	87	<u>2.07</u>	98
Excess Return	0.34		0.54		2.39		3.40		0.78		4.25	
<i>eV All EAFE Equity Gross Median</i>	-0.88		9.91		17.20		7.31		8.22		4.61	
Int'l Emerging Mkts Equity	1.71	49	13.55	82	19.07	83	7.93	81	3.41	93	--	--
<i>MSCI Emerging Markets ND Custom</i>	<u>0.52</u>	76	<u>13.28</u>	85	<u>19.71</u>	79	<u>7.74</u>	82	<u>3.55</u>	92	--	--
Excess Return	1.19		0.27		-0.64		0.19		-0.14			
<i>eV Emg Mkts Equity Gross Median</i>	1.66		17.40		24.77		10.34		6.19		4.65	
US Fixed Income	-2.37	79	-0.09	77	2.67	46	1.70	68	3.08	37	5.48	30
<i>Citigroup LPF</i> ⁹	<u>-2.48</u>	81	<u>-0.23</u>	84	<u>2.34</u>	52	<u>1.38</u>	77	<u>2.77</u>	47	<u>4.89</u>	45
Excess Return	0.11		0.14		0.33		0.32		0.31		0.59	
<i>InvestorForce All DB US Fix Inc Gross Median</i>	-0.98		0.64		2.42		2.18		2.67		4.73	
Corporate	-3.40	99	0.53	36	4.75	1	3.16	20	4.54	5	7.48	2
<i>Citigroup LPF Credit</i> ¹⁰	<u>-3.42</u>	99	<u>0.59</u>	34	<u>4.39</u>	3	<u>2.94</u>	33	<u>4.07</u>	16	<u>6.42</u>	31
Excess Return	0.02		-0.06		0.36		0.22		0.47		1.06	
<i>eV US Corporate Fixed Inc Gross Median</i>	-2.09		0.41		3.02		2.68		3.45		6.11	

* Formerly GE Asset Mgmt

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

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

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

Total Fund Performance Summary

Period Ending: March 31, 2018

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Gov't 5 Plus	-2.72	--	-0.92	--	2.08	--	0.55	--	2.58	--	5.05	--
<i>Citigroup LPF Treas/Govt Spons</i> ¹¹	-2.72	--	-0.92	--	1.97	--	0.35	--	2.44	--	5.03	--
Excess Return	0.00		0.00		0.11		0.20		0.14		0.02	
MBS	-1.19	87	-0.18	92	0.83	84	1.16	87	1.84	88	3.21	93
<i>Citi BIG Mortgage</i>	-1.23	90	-0.15	91	0.77	88	1.06	94	1.77	90	3.47	86
Excess Return	0.04		-0.03		0.06		0.10		0.07		-0.26	
<i>eV US Securitized Fixed Inc Gross Median</i>	-0.58		0.65		2.05		2.15		2.69		4.23	
Total Return Fund *	-2.54	--	-0.41	--	2.55	--	1.19	--	3.33	--	5.79	--
<i>Citigroup LPF Treas/Govt Spons</i> ¹²	-2.72	--	-0.92	--	1.97	--	0.35	--	2.44	--	4.72	--
Excess Return	0.18		0.51		0.58		0.84		0.89		1.07	
Inflation Hedged	-1.00	94	1.41	56	1.06	54	1.36	58	0.14	58	2.95	67
<i>Citi TIPS</i>	-0.94	93	1.40	58	1.00	63	1.28	85	0.11	61	3.00	62
Excess Return	-0.06		0.01		0.06		0.08		0.03		-0.05	
<i>eV US TIPS / Inflation Fixed Inc Gross Median</i>	-0.71		1.46		1.10		1.40		0.17		3.03	
Real Estate	2.60	3	7.62	3	9.43	6	10.63	15	10.89	47	5.76	15
<i>NCREIF 1Q Lag</i>	1.80	69	5.34	51	6.98	56	9.39	45	10.19	82	6.08	4
Excess Return	0.80		2.28		2.45		1.24		0.70		-0.32	
<i>InvestorForce All DB Real Estate Pub Gross Median</i>	1.99		5.37		7.38		9.34		10.84		4.81	
Traditional Private Equity +	6.84	--	10.15	--	20.53	--	15.98	--	17.18	--	--	--
<i>S&P 500 +3% 1Q Lag</i>	7.32	--	16.64	--	24.83	--	14.42	--	18.80	--	--	--
Excess Return	-0.48		-6.49		-4.30		1.56		-1.62			
Strategic Lending Portfolio ¹³	1.86	--	5.59	--	7.85	--	6.46	--	--	--	--	--
<i>Strategic Lending</i> ¹⁴	0.36	--	2.71	--	4.21	--	4.77	--	--	--	--	--
Excess Return	1.50		2.88		3.64		1.69					
Short Term ¹⁵	0.28	--	0.67	--	0.85	--	0.71	--	0.80	--	1.36	--
<i>91 Day T-Bills</i>	0.38	--	0.94	--	1.16	--	0.55	--	0.34	--	0.29	--
Excess Return	-0.10		-0.27		-0.31		0.16		0.46		1.07	

¹¹ Effective 7/1/11. Benchmark is linked to 50% Citigroup Core 5+ Govt/ 50% Citigroup 7+ Govt (4/1/11-6/30/11), 100% Citigroup Core 5+ Govt (9/1/09-3/31/11), and 100% Citigroup Govt (7/1/04-8/31/09).

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

* Formerly Govt 1-5.

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

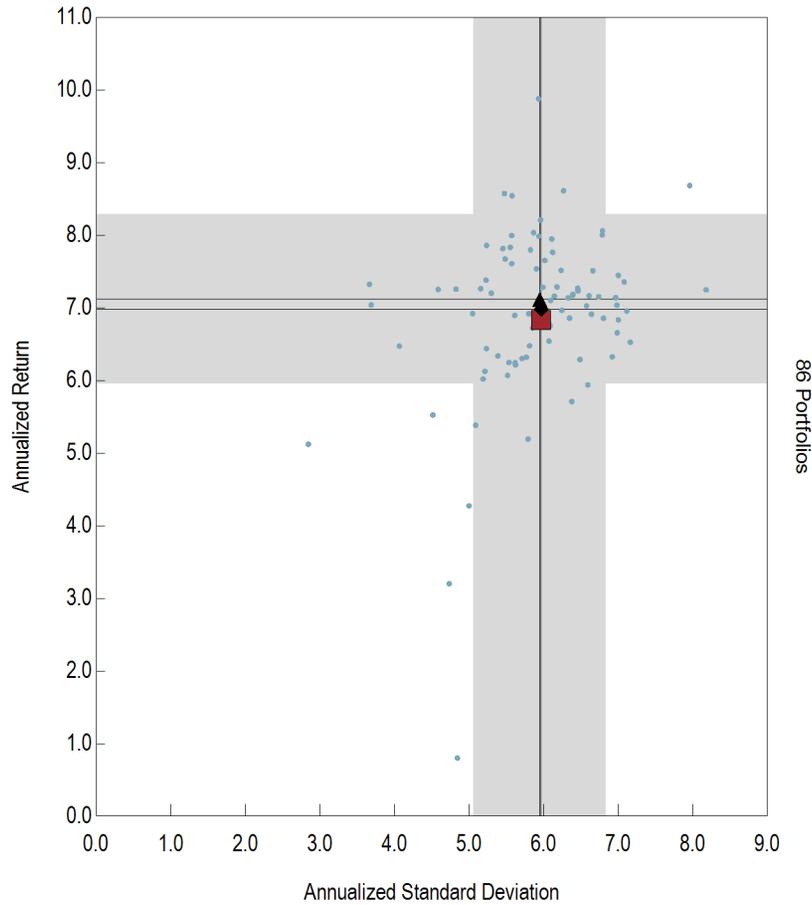
¹³ Funded 8/1/13. Reported net of fees. Triton Debt Opp mv is rolled forward from Q4 2017, and adjusted for any Q1 cash flows.

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: March 31, 2018



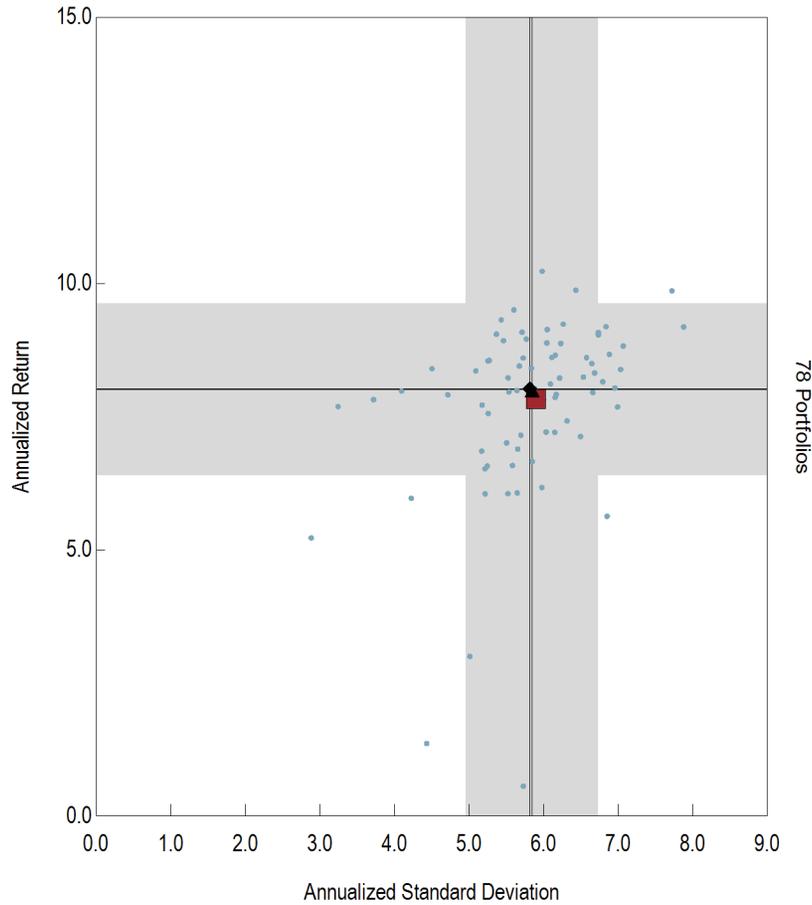
86 Portfolios

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

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Fund	6.83%	65	5.97%	51	1.05	50
Policy Index	6.98%	56	5.97%	51	1.08	44
InvestorForce Public DB > \$1B Gross Median	7.12%	--	5.95%	--	1.05	--

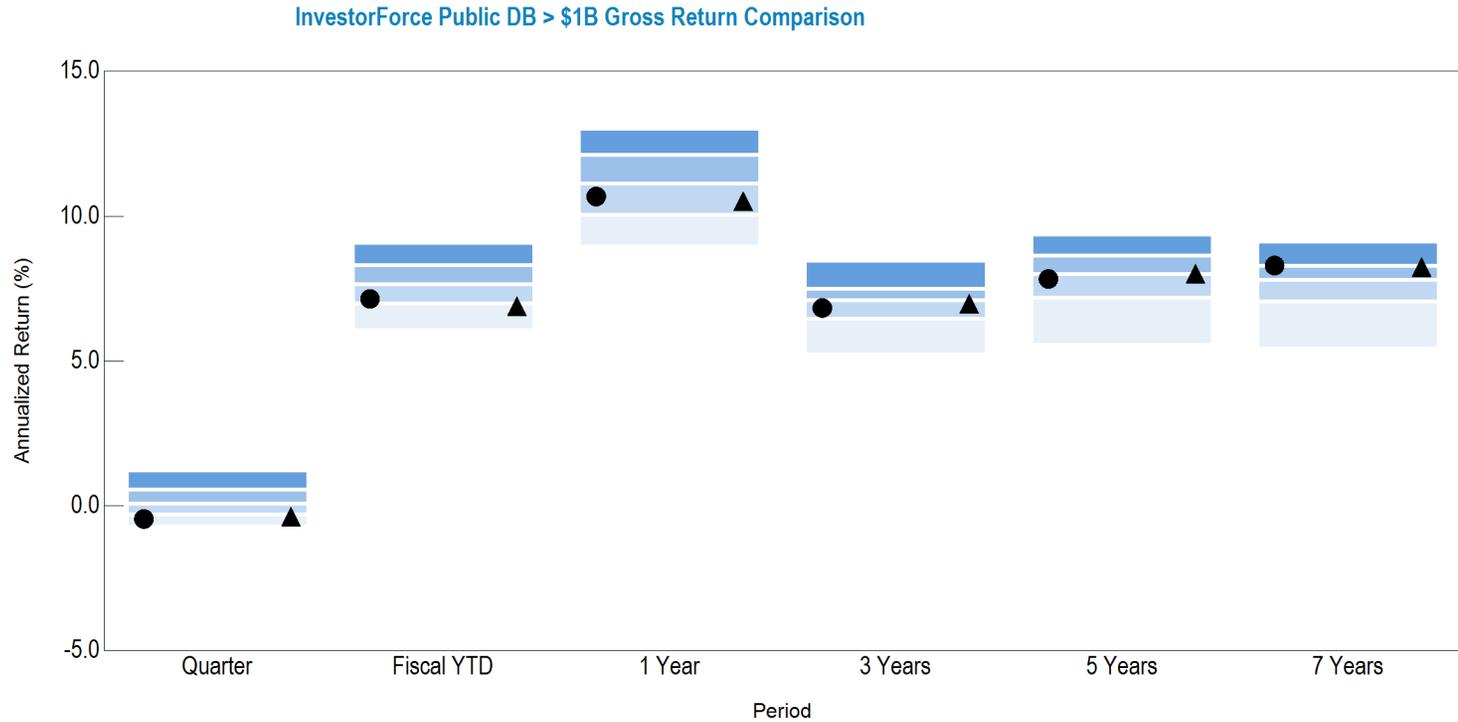
Total Fund
Risk vs. Return (5 Years)

Period Ending: March 31, 2018

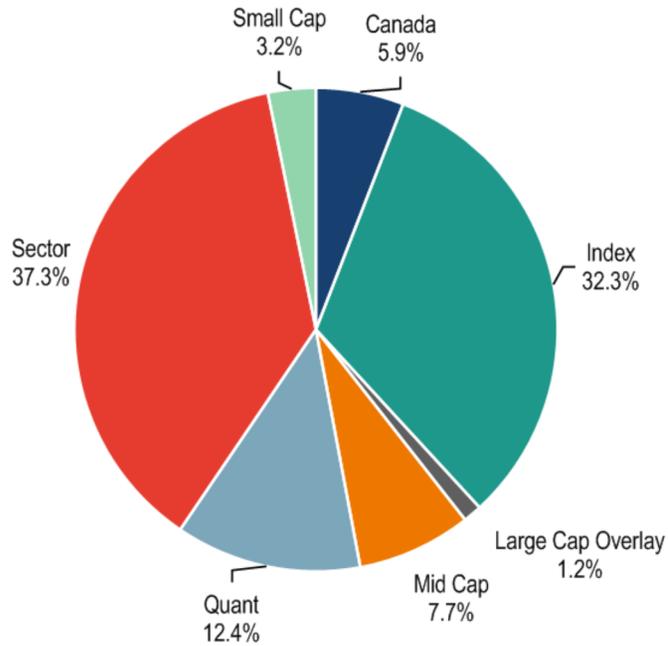


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Fund	7.83%	62	5.90%	53	1.27	51
Policy Index	8.02%	50	5.81%	47	1.32	41
InvestorForce Public DB > \$1B Gross Median	8.01%	--	5.85%	--	1.27	--



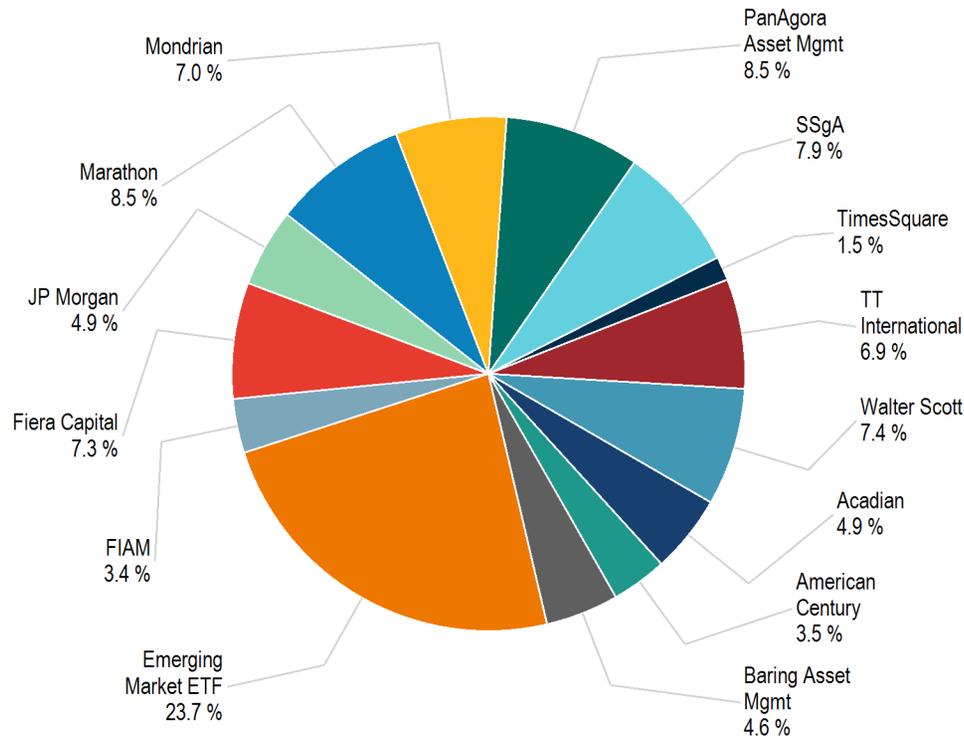
	Return (Rank)											
5th Percentile	1.22		9.07		13.01		8.46		9.35		9.10	
25th Percentile	0.57		8.31		12.12		7.51		8.64		8.29	
Median	0.09		7.67		11.14		7.12		8.01		7.82	
75th Percentile	-0.28		7.00		10.06		6.47		7.21		7.07	
95th Percentile	-0.71		6.07		8.96		5.24		5.57		5.44	
# of Portfolios	97		95		95		86		78		69	
● Total Fund	-0.45	(84)	7.14	(69)	10.68	(61)	6.83	(65)	7.83	(62)	8.29	(25)
▲ Policy Index	-0.36	(82)	6.89	(78)	10.52	(64)	6.98	(56)	8.02	(50)	8.24	(29)



	Actual \$	Actual %
Canada	985,223,869	5.9%
Index	5,407,033,214	32.3%
Large Cap Overlay	209,071,791	1.2%
Mid Cap	1,281,573,583	7.7%
Quant	2,084,172,611	12.4%
Sector	6,249,413,155	37.3%
Small Cap	535,977,603	3.2%
TOTAL	16,752,465,826	100.0%

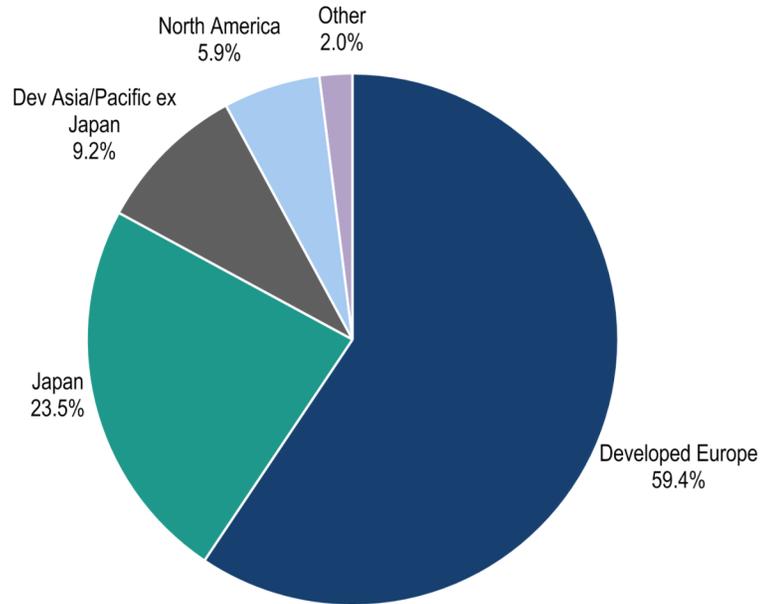
International Equity
 Manager Allocation Analysis

Period Ending: March 31, 2018

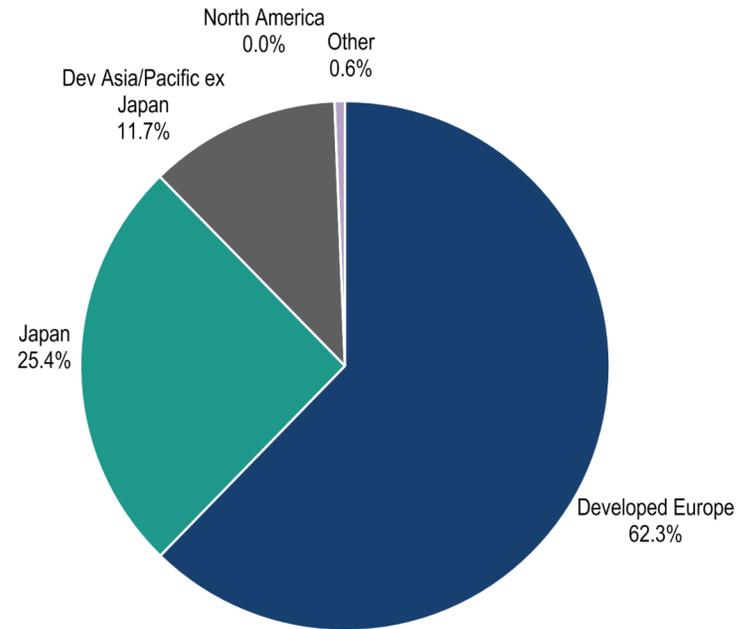


	Actual	Actual
Acadian	\$444,084,424	4.9%
American Century	\$322,445,885	3.5%
Baring Asset Mgmt	\$419,831,485	4.6%
Emerging Market ETF	\$2,171,753,653	23.7%
FIAM	\$314,082,786	3.4%
Fiera Capital	\$671,446,979	7.3%
Int'l Transition	-\$296	0.0%
JP Morgan	\$446,887,346	4.9%
Marathon	\$780,498,558	8.5%
Mondrian	\$636,207,960	7.0%
PanAgora Asset Mgmt	\$782,141,234	8.5%
SSgA	\$719,956,618	7.9%
TimesSquare	\$136,551,594	1.5%
TT International	\$627,795,489	6.9%
Walter Scott	\$675,200,641	7.4%
Total	\$9,148,884,356	100.0%

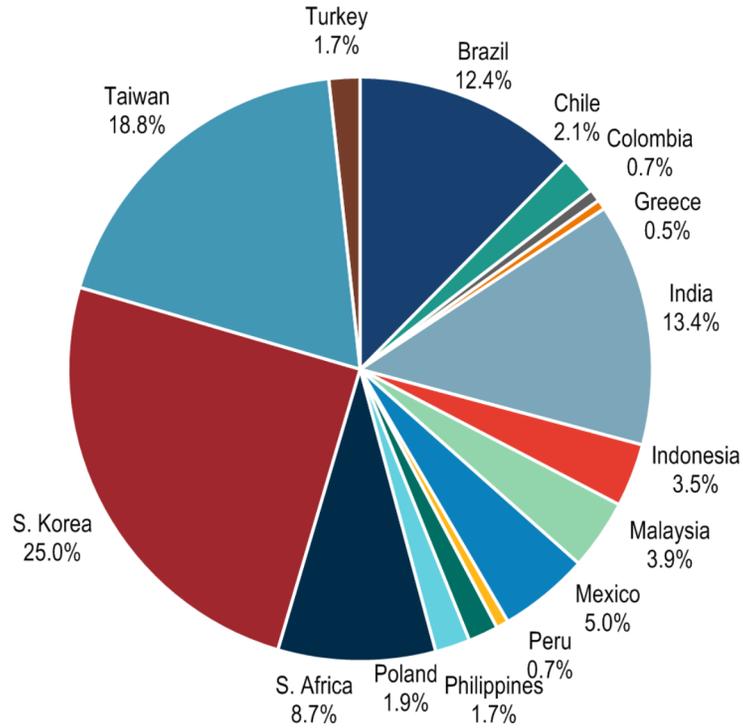
Int'l Developed Mkts Equity



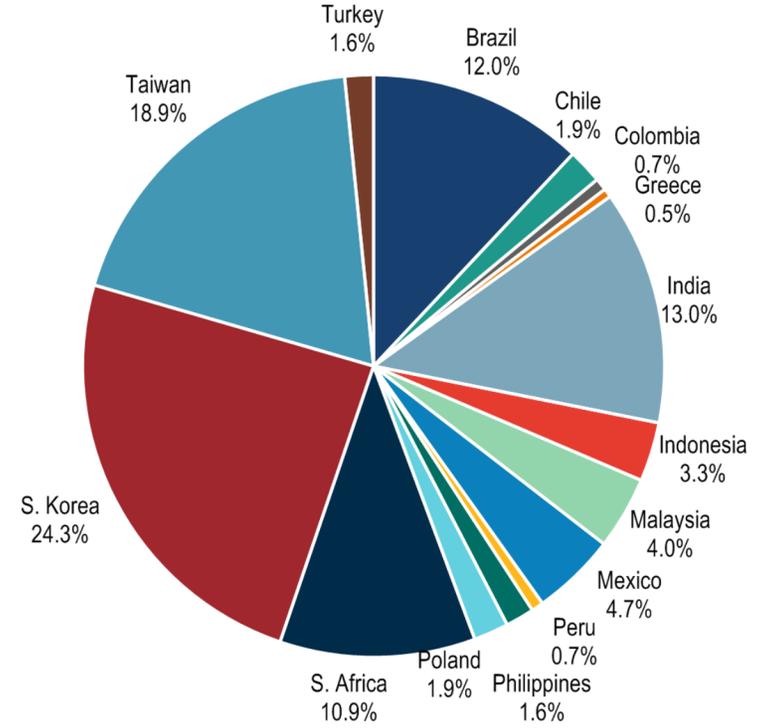
MSCI EAFE IMI Index



Int'l Emerging Mkts Equity

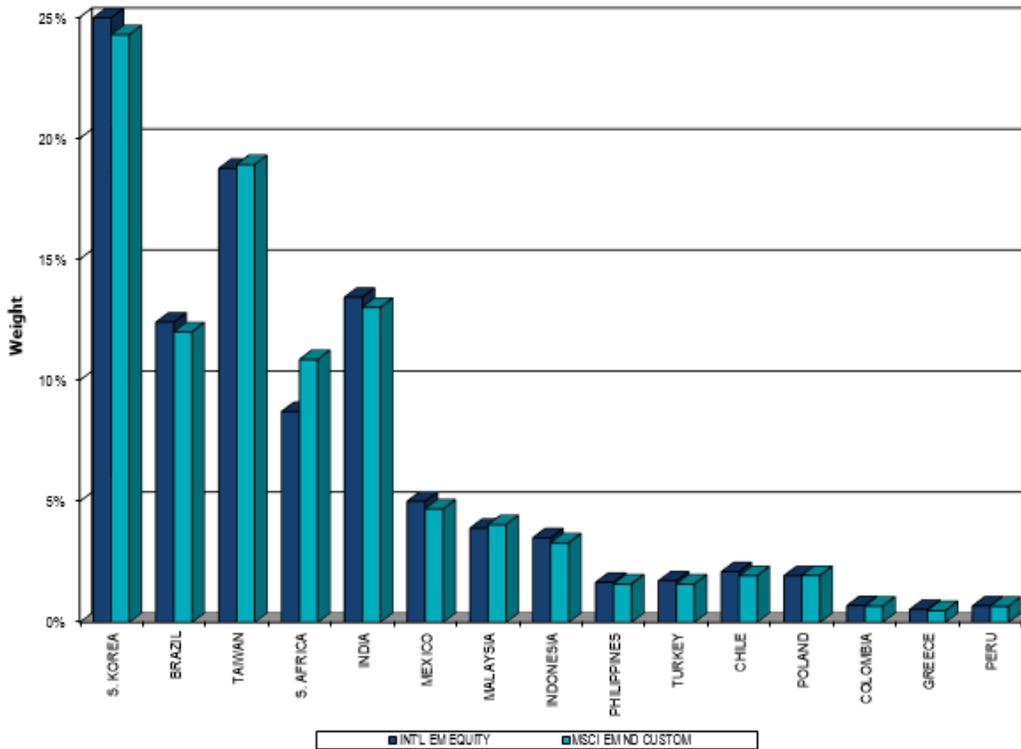


MSCI Emerging Markets ND Custom Index

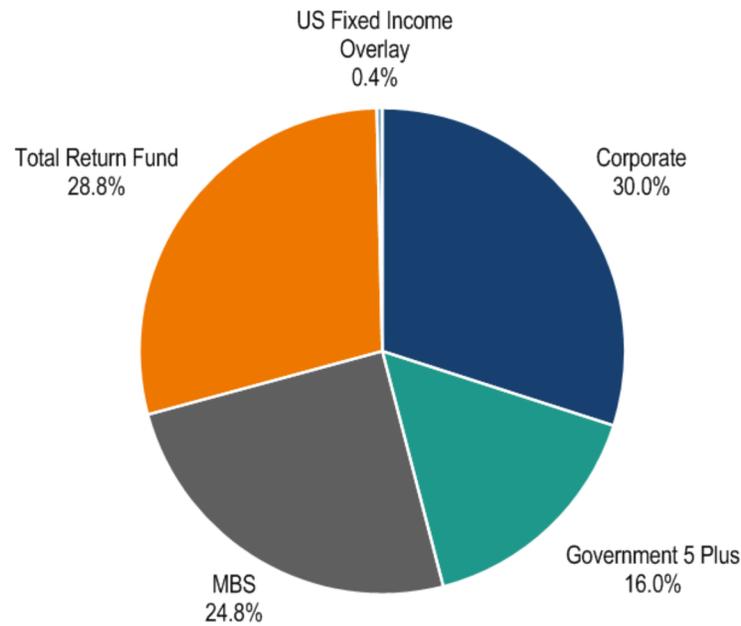


Int'l Emerging Markets Equity
Portfolio Country Weights

Period Ending: March 31, 2018



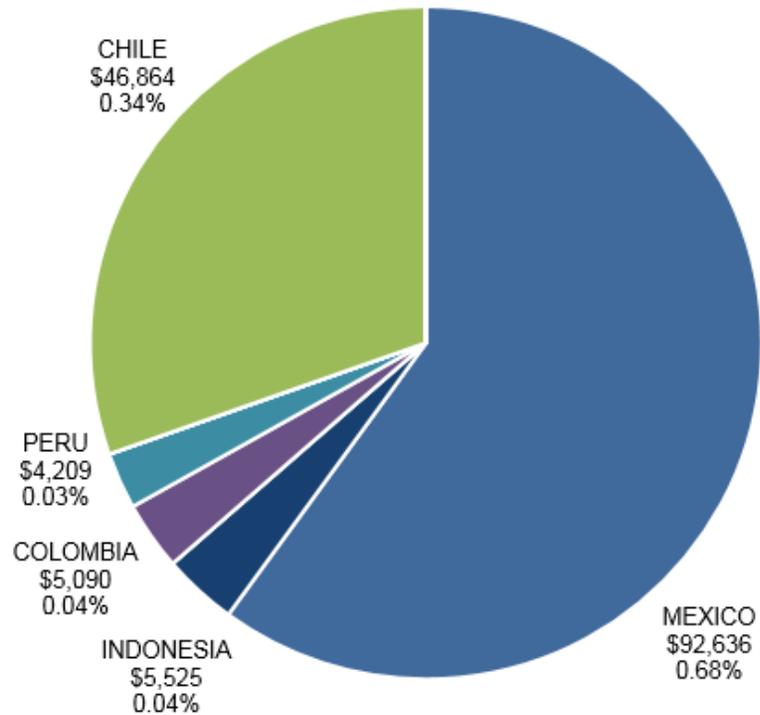
COUNTRY	TCRS MARKET VALUE (\$ 000)	INT'L EM EQUITY	MSCI EM ND CUSTOM	DIFF
S. KOREA	\$ 542,470	25.0%	24.3%	+0.7%
BRAZIL	\$ 269,417	12.4%	12.0%	+0.4%
TAIWAN	\$ 407,383	18.8%	18.9%	-0.2%
S. AFRICA	\$ 189,208	8.7%	10.9%	-2.2%
INDIA	\$ 291,752	13.4%	13.0%	+0.4%
MEXICO	\$ 108,695	5.0%	4.7%	+0.3%
MALAYSIA	\$ 84,574	3.9%	4.0%	-0.1%
INDONESIA	\$ 76,051	3.5%	3.3%	+0.2%
PHILIPPINES	\$ 35,973	1.7%	1.6%	+0.1%
TURKEY	\$ 37,348	1.7%	1.6%	+0.1%
CHILE	\$ 45,488	2.1%	1.9%	+0.2%
POLAND	\$ 41,880	1.9%	1.9%	-0.0%
COLOMBIA	\$ 15,013	0.7%	0.7%	+0.0%
GREECE	\$ 11,703	0.5%	0.5%	+0.0%
PERU	\$ 14,799	0.7%	0.7%	+0.0%
	\$ 2,171,754	100.0%	100.0%	0.0%



	Actual \$	Actual %
■ Corporate	4,046,654,657	30.0%
■ Government 5 Plus	2,162,792,602	16.0%
■ MBS	3,355,811,056	24.8%
■ Total Return Fund	3,894,409,579	28.8%
■ US Fixed Income Overlay	50,473,747	0.4%
TOTAL	13,510,141,641	100.0%

Emerging Markets Investment Grade Bond
Portfolio Country Weights

Period Ending: March 31, 2018



COUNTRY	TCRS MARKET VALUE (\$ 000)	TCRS FI	LPF	DIFF
MEXICO	\$ 92,636	0.68%	0.82%	-0.14%
INDONESIA	\$ 5,525	0.04%	0.35%	-0.31%
PHILIPPINES	\$ -		0.22%	-0.22%
COLOMBIA	\$ 5,090	0.04%	0.22%	-0.18%
PERU	\$ 4,209	0.03%	0.19%	-0.16%
BRAZIL	\$ -		0.14%	-0.14%
S. KOREA	\$ -		0.09%	-0.09%
S. AFRICA	\$ -		0.06%	-0.06%
CHILE	\$ 46,864	0.34%	0.06%	+0.28%
MALAYSIA	\$ -		0.03%	-0.03%
POLAND	\$ -		0.02%	-0.02%
HUNGARY	\$ -		0.02%	-0.02%
INDIA	\$ -		0.01%	-0.01%
OTHER*	\$ -		0.00%	0.00%
TURKEY	\$ -		0.00%	0.00%
TAIWAN	\$ -		0.00%	0.00%
THAILAND	\$ -		0.00%	0.00%
	\$ 154,324	1.13%	2.23%	-1.10%

* 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: $\text{excess return} / \text{tracking error}$.

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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