



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



PERIOD ENDING: SEPTEMBER 30, 2017

Executive Performance Summary Review for

Tennessee Consolidated Retirement System

3rd quarter summary

THE ECONOMIC CLIMATE

- Growth strengthened across developed and emerging economies. Business surveys suggest conditions are improving in both manufacturing and service industries.
- The U.S. job market tightened as unemployment dropped from 4.4 to 4.2%, despite disappointing job growth data. Unemployment has not been this low since March of 2001.
- An independence movement in Catalonia has received little attention from the financial community, and risk premiums may not reflect the negative possible knock-on effects on the EU.

PORTFOLIO IMPACTS

- Improving economic growth, low inflation, low unemployment, and supportive monetary policy across most markets has created a positive environment for global risk assets, justifying a moderate overweight risk position.
- Within risk assets, we believe opportunities exist in emerging markets.

THE INVESTMENT CLIMATE

- Global interest rates are still at historic lows, and very little monetary tightening is priced in across developed markets over the next few years. Even in the U.S., the market is only expecting two rate hikes through the end of next year.
- Valuations across global equities and credit are elevated, and have been so for the past few years. Further price appreciation through equity multiple expansion or credit spread contraction is unlikely.

ASSET ALLOCATION ISSUES

- Equity performance remains strong. Year-to-date returns have been fundamentally driven, supported by earnings growth rather than valuation expansion.
- Equity volatility is near historic lows. Stable economic growth and inflation have likely contributed to the muted volatility environment. Investors should monitor leverage in strategies with a specific volatility target.

We believe a moderate overweight to risk is warranted

U.S. economics summary

- U.S. real GDP grew 2.2% YoY in Q2, consistent with the trend of slow, but steady growth in the current expansion. Consumer spending and business investment were the primary drivers of growth.
- Purchasing manager indexes (PMIs) moved higher to above average levels, indicating a likely acceleration in economic growth over the coming quarters. The ISM Manufacturing and Services PMIs for September were 60.8 and 59.8, respectively.
- The economy added an average of 91,000 jobs per month to payrolls in the third quarter. The September employment data was heavily influenced by hurricanes Harvey and Irma, which resulted in a decline of 33,000 jobs from payrolls, the first drop since 2010. Due to the calculation methodology, a bounce back should be expected in October.
- The U3 unemployment rate (unaffected by the hurricanes) fell 0.2% to a 17-year low of 4.2% over the quarter. The broader U6 unemployment rate also tightened, dropping 0.3% to 8.3%.
- Year-over-year headline CPI accelerated from 1.6% in June to 2.2% in September, while the core inflation rate was unchanged over the quarter at 1.7%. Outside of volatile energy prices inflationary pressures still appear absent, and core inflation remains below the Fed's 2% target.
- The Fed paused from raising interest rates following three consecutive quarters with hikes. Core inflation that has persistently been below the Fed's 2% target was the primary reason given to delay further tightening. The market is expecting the Fed to raise interest rates again in December based on fed fund futures prices.

	Most Recent	12 Months Prior
GDP (YoY)	2.2% 6/30/17	1.2% 6/30/16
Inflation (CPI YoY, Headline)	2.2% 9/30/17	1.5% 9/30/16
Expected Inflation (5yr-5yr forward)	2.0% 9/30/17	1.8% 9/30/16
Fed Funds Rate	1.25% 9/30/17	0.50% 9/30/16
10 Year Rate	2.3% 9/30/17	1.6% 9/30/16
U-3 Unemployment	4.2% 9/30/17	4.9% 9/30/16
U-6 Unemployment	8.3% 9/30/17	9.7% 9/30/16

International economics summary

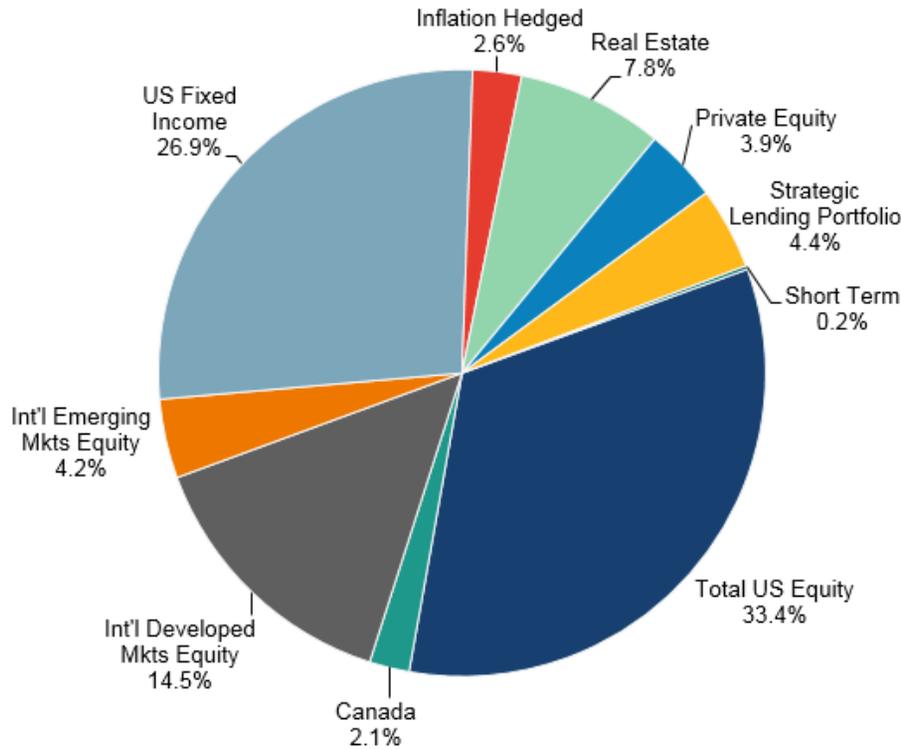
- International economic growth advanced in the second quarter in both developed and emerging markets. PMIs are above 50 (indicating expansion) in nearly every country across the world, pointing towards a continuation in the recent global growth pickup.
- The IMF raised its projections for global GDP growth 0.1% for both 2017 and 2018 to 3.6% and 3.7%, respectively. For comparison, global GDP growth was 3.2% in 2016.
- Economic conditions in emerging markets have improved. Several countries, such as Brazil and Russia, are still at the beginning stages of a recovery. Lower inflation has allowed emerging central banks to pursue looser monetary policy, which should provide a tailwind to further economic growth.
- Inflation in developed countries has yet to see much pressure outside of the U.K., and remains well below central bank targets.
- Inflation in the U.K. (headline CPI) rose 3.0% YoY in September, driven partly by a weaker pound, while wages only increased by 2.2%. The Bank of England stated that a rate hike may be necessary before the end of the year to slow price increases.
- On October 1st, Catalonia passed a referendum to declare independence from Spain, which the Spanish government declared illegal. Although the Catalan prime minister accepted the vote as a mandate to declare independence, he immediately suspended this declaration with the goal of bringing the Spanish government to the negotiating table.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	2.2% <i>6/30/17</i>	2.2% <i>9/30/17</i>	4.2% <i>9/30/17</i>
Western Europe	2.0% <i>6/30/17</i>	1.5% <i>9/30/17</i>	7.9% <i>6/30/17</i>
Japan	1.4% <i>6/30/17</i>	0.7% <i>8/31/17</i>	2.8% <i>8/31/17</i>
BRICS Nations	5.6% <i>6/30/17</i>	2.0% <i>6/30/17</i>	5.8% <i>6/30/17</i>
Brazil	0.3% <i>6/30/17</i>	2.5% <i>9/30/17</i>	12.7% <i>9/30/17</i>
Russia	2.5% <i>6/30/17</i>	3.0% <i>9/30/17</i>	4.9% <i>8/31/17</i>
India	5.7% <i>6/30/17</i>	3.3% <i>9/30/17</i>	8.4% <i>12/31/16</i>
China	6.9% <i>6/30/17</i>	1.6% <i>9/30/17</i>	4.0% <i>6/30/17</i>

Name	Last 3 Months	Last 6 Months	1 Yr	2 Yrs	3 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
US Equity									
Russell 3000	4.6	7.7	18.7	16.8	10.7	10.7	14.2	14.3	7.6
S&P 500	4.5	7.7	18.6	17.0	10.8	10.8	14.2	14.4	7.4
Russell 1000	4.5	7.7	18.5	16.7	10.6	10.6	14.3	14.4	7.5
Russell 1000 Growth	5.9	10.8	21.9	17.8	12.7	12.7	15.3	15.4	9.1
Russell 1000 Value	3.1	4.5	15.1	15.7	8.5	8.5	13.2	13.2	5.9
Russell MidCap	3.5	6.3	15.3	14.8	9.5	9.5	14.3	13.8	8.1
Russell 2000	5.7	8.3	20.7	18.1	12.2	12.2	13.8	13.5	7.8
Russell 2000 Growth	6.2	10.9	21.0	16.5	12.2	12.2	14.3	14.2	8.5
Russell 2000 Value	5.1	5.8	20.5	19.7	12.1	12.1	13.3	12.8	7.1
International Equity									
MSCI ACWI	5.2	9.7	18.6	15.3	7.4	7.4	10.2	9.2	3.9
MSCI World ex USA	5.6	11.6	18.7	12.8	4.6	4.6	7.8	6.0	1.3
MSCI EAFE	5.4	11.9	19.1	12.6	5.0	5.0	8.4	6.4	1.3
MSCI Emerging Markets	7.9	14.7	22.5	19.6	4.9	4.9	4.0	2.5	1.3
Fixed Income									
91 Day T-Bills	0.3	0.5	0.7	0.5	0.3	0.3	0.2	0.2	0.4
BBgBarc US Aggregate TR	0.8	2.3	0.1	2.6	2.7	2.7	2.1	3.0	4.3
BBgBarc US Govt/Credit TR	0.8	2.5	0.0	2.9	2.8	2.8	2.1	3.0	4.3
BBgBarc US Municipal TR	1.1	3.0	0.9	3.2	3.2	3.2	3.0	3.9	4.5
BBgBarc US High Yield TR	2.0	4.2	8.9	10.8	5.8	5.8	6.4	7.5	7.8
Citi WGBI	1.8	4.8	-2.7	3.3	0.9	0.9	-0.4	0.8	3.0
Citi WGBI ex US	2.6	6.5	-3.1	4.4	0.5	0.5	-1.1	0.3	2.7
Real Estate									
FTSE NAREIT All REIT	1.2	3.7	3.6	11.8	10.3	10.3	9.9	11.7	6.1
NCREIF Property Index	1.7	3.5	6.9	8.1	9.8	9.8	10.3	11.2	6.2
Alternatives									
HFRI Fund of Funds Composite Index	2.3	3.1	6.5	3.4	2.2	2.2	3.8	2.9	1.1
Inflation									
Consumer Price Index	0.8	1.2	2.2	1.8	1.2	1.2	1.3	1.8	1.7

Tennessee Consolidated Retirement System
Asset Allocation Analysis

Period Ending: September 30, 2017



	Actual \$	Actual %
Total US Equity	16,118,667,797	33.4%
Canada	1,029,052,634	2.1%
Int'l Developed Mkts Equity	6,997,021,327	14.5%
Int'l Emerging Mkts Equity	2,040,258,365	4.2%
US Fixed Income	13,019,999,459	26.9%
Inflation Hedged	1,253,807,545	2.6%
Real Estate	3,773,324,299	7.8%
Private Equity	1,895,312,925	3.9%
Strategic Lending Portfolio	2,109,858,862	4.4%
Short Term	93,457,305	0.2%
TOTAL	48,330,760,518	100.0%

	TARGET	ACTUAL	DIFF
Total US Equity	31.0%	33.4%	2.4%
Canada	2.0%	2.1%	0.1%
Int'l Developed Mkts Equity	13.0%	14.5%	1.5%
Int'l Emerging Mkts Equity	4.0%	4.2%	0.2%
US Fixed Income	25.0%	26.9%	1.9%
Inflation Hedged	0.0%	2.6%	2.6%
Real Estate	10.0%	7.8%	-2.2%
Private Equity	7.0%	3.9%	-3.1%
Strategic Lending Portfolio	7.0%	4.4%	-2.6%
Short Term	1.0%	0.2%	-0.8%

	06/30/17	09/30/17	DIFF
Total US Equity	33.1%	33.4%	0.3%
Canada	2.0%	2.1%	0.1%
Int'l Developed Mkts Equity	14.8%	14.5%	-0.3%
Int'l Emerging Mkts Equity	4.5%	4.2%	-0.2%
US Fixed Income	25.5%	26.9%	1.5%
Inflation Hedged	3.2%	2.6%	-0.6%
Real Estate	7.7%	7.8%	0.1%
Private Equity	3.9%	3.9%	0.0%
Strategic Lending Portfolio	4.3%	4.4%	0.0%
Short Term	0.9%	0.2%	-0.8%

Total Fund Performance Summary

Period Ending: September 30, 2017

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Total Fund	3.55	58	3.55	58	11.38	77	7.15	53	8.34	69	5.91	26
<i>Policy Index¹</i>	<u>3.26</u>	78	<u>3.26</u>	78	<u>11.26</u>	79	<u>7.22</u>	52	<u>8.51</u>	63	<u>6.18</u>	18
Excess Return	0.29		0.29		0.12		-0.07		-0.17		-0.27	
<i>Allocation Index²</i>	3.27	78	3.27	78	11.10	82	7.14	53	8.13	73	5.95	25
<i>InvestorForce Public DB > \$1B Gross Median</i>	3.59		3.59		12.91		7.27		8.92		5.39	
North American Equity	4.97	--	4.97	--	18.96	--	9.09	--	12.59	--	--	--
<i>N.A. Equity Custom³</i>	<u>4.82</u>	--	<u>4.82</u>	--	<u>18.37</u>	--	<u>9.94</u>	--	<u>13.16</u>	--	--	--
Excess Return	0.15		0.15		0.59		-0.85		-0.57			
US Equity	4.78	35	4.78	35	19.10	39	9.88	81	13.60	73	7.30	62
<i>US Equity Custom⁴</i>	<u>4.44</u>	63	<u>4.44</u>	63	<u>18.61</u>	57	<u>10.95</u>	34	<u>14.29</u>	36	<u>7.63</u>	46
Excess Return	0.34		0.34		0.49		-1.07		-0.69		-0.33	
<i>InvestorForce All DB US Eq Gross Median</i>	4.56		4.56		18.74		10.68		14.11		7.56	
Index	4.49	55	4.49	55	18.54	53	10.98	33	14.29	44	7.52	61
S&P 500	<u>4.48</u>	55	<u>4.48</u>	55	<u>18.61</u>	53	<u>10.81</u>	37	<u>14.22</u>	46	<u>7.44</u>	62
Excess Return	0.01		0.01		-0.07		0.17		0.07		0.08	
<i>eA US Large Cap Equity Gross Median</i>	4.60		4.60		18.80		10.15		14.03		7.83	
Quant	5.33	31	5.33	31	19.37	45	8.25	82	12.34	84	6.94	74
S&P 500	<u>4.48</u>	55	<u>4.48</u>	55	<u>18.61</u>	53	<u>10.81</u>	37	<u>14.22</u>	46	<u>7.44</u>	62
Excess Return	0.85		0.85		0.76		-2.56		-1.88		-0.50	
<i>eA US Large Cap Equity Gross Median</i>	4.60		4.60		18.80		10.15		14.03		7.83	
Sector	5.01	38	5.01	38	19.64	42	10.28	48	13.89	54	7.35	65
S&P 500	<u>4.48</u>	55	<u>4.48</u>	55	<u>18.61</u>	53	<u>10.81</u>	37	<u>14.22</u>	46	<u>7.44</u>	62
Excess Return	0.53		0.53		1.03		-0.53		-0.33		-0.09	
<i>eA US Large Cap Equity Gross Median</i>	4.60		4.60		18.80		10.15		14.03		7.83	
Mid Cap ⁵	3.37	65	3.37	65	18.15	45	10.93	32	14.95	37	8.32	62
S&P MidCap 400 ⁵	<u>3.22</u>	68	<u>3.22</u>	68	<u>17.52</u>	50	<u>11.18</u>	31	<u>14.43</u>	48	<u>8.75</u>	51
Excess Return	0.15		0.15		0.63		-0.25		0.52		-0.43	
<i>eA US Mid Cap Equity Gross Median</i>	3.84		3.84		17.47		10.09		14.30		8.75	

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 7/1/17, Total Fund Allocation Index is 32.91% S&P 1500/ 2.12% S&P TSX 60/ 13.80% MSCI EAFE IMI net/ 4.25% MSCI Emerging Markets net/ 27.30% Citigroup LPF/ 2.67% Citigroup TIPS/ 7.70% NCREIF 1Q Lag/ 3.92% S&P 500 + 3% 1Q Lag/ 4.33% 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: September 30, 2017

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Small Cap⁶	6.19	37	6.19	37	21.44	46	14.35	23	15.81	32	--	--
S&P 600 SmallCap	<u>5.96</u>	41	<u>5.96</u>	41	<u>21.05</u>	50	<u>14.07</u>	27	<u>15.60</u>	38	--	--
Excess Return	0.23		0.23		0.39		0.28		0.21			
eA US Small Cap Equity Gross Median	5.53		5.53		20.97		12.42		14.86		8.96	
Large Cap Overlay	4.71	--	4.71	--	--	--	--	--	--	--	--	--
S&P 500	<u>4.48</u>	--	<u>4.48</u>	--	--	--	--	--	--	--	--	--
Excess Return	0.23		0.23									
Canada	8.06	--	8.06	--	16.59	--	1.53	--	3.76	--	--	--
S&P/TSX 60	<u>7.97</u>	--	<u>7.97</u>	--	<u>16.09</u>	--	<u>1.41</u>	--	<u>3.70</u>	--	--	--
Excess Return	0.09		0.09		0.50		0.12		0.06			
International Equity	5.81	68	5.81	68	19.12	72	6.61	36	8.71	39	3.22	22
Int'l Equity Custom ⁷	<u>5.48</u>	78	<u>5.48</u>	78	<u>19.25</u>	71	<u>5.10</u>	77	<u>7.37</u>	81	<u>1.07</u>	78
Excess Return	0.33		0.33		-0.13		1.51		1.34		2.15	
InvestorForce All DB ex-US Eq Gross Median	6.22		6.22		20.29		6.10		8.39		2.07	
Int'l Developed Mkts Equity	6.16	41	6.16	41	19.70	50	7.89	23	10.38	24	4.01	13
MSCI EAFE IMI	<u>5.70</u>	56	<u>5.70</u>	56	<u>19.50</u>	53	<u>5.83</u>	62	<u>8.96</u>	55	<u>1.82</u>	65
Excess Return	0.46		0.46		0.20		2.06		1.42		2.19	
InvestorForce All DB Dev Mkt ex-US Eq Gross Median	5.87		5.87		19.70		6.37		9.08		2.30	
Acadian⁺	10.40	11	10.40	11	--	--	--	--	--	--	--	--
MSCI EAFE Small Cap	<u>7.46</u>	73	<u>7.46</u>	73	--	--	--	--	--	--	--	--
Excess Return	2.94		2.94									
eA EAFE Small Cap Equity Gross Median	8.40		8.40		24.41		12.20		14.50		5.39	
American Century	8.96	32	8.96	32	24.19	53	12.93	38	15.12	37	--	--
MSCI EAFE Small Cap	<u>7.46</u>	73	<u>7.46</u>	73	<u>21.84</u>	75	<u>11.13</u>	77	<u>12.85</u>	80	--	--
Excess Return	1.50		1.50		2.35		1.80		2.27			
eA EAFE Small Cap Equity Gross Median	8.40		8.40		24.41		12.20		14.50		5.39	

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).

+ Funded October 2016

Total Fund Performance Summary

Period Ending: September 30, 2017

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Baring Asset Mgmt	6.12	47	6.12	47	22.18	34	7.03	50	8.84	72	--	--
<i>MSCI EAFE</i>	<u>5.40</u>	70	<u>5.40</u>	70	<u>19.10</u>	66	<u>5.04</u>	85	<u>8.38</u>	81	--	--
Excess Return	0.72		0.72		3.08		1.99		0.46			
<i>eA All EAFE Equity Gross Median</i>	6.00		6.00		20.60		7.02		10.02		3.16	
FIAM	6.36	82	6.36	82	20.60	92	11.51	70	13.10	73	--	--
<i>MSCI EAFE Small Cap</i>	<u>7.46</u>	73	<u>7.46</u>	73	<u>21.84</u>	75	<u>11.13</u>	77	<u>12.85</u>	80	--	--
Excess Return	-1.10		-1.10		-1.24		0.38		0.25			
<i>eA EAFE Small Cap Equity Gross Median</i>	8.40		8.40		24.41		12.20		14.50		5.39	
Fiera Capital ⁺	5.87	55	5.87	55	--	--	--	--	--	--	--	--
<i>MSCI EAFE</i>	<u>5.40</u>	70	<u>5.40</u>	70	--	--	--	--	--	--	--	--
Excess Return	0.47		0.47									
<i>eA All EAFE Equity Gross Median</i>	6.00		6.00		20.60		7.02		10.02		3.16	
JP Morgan ⁺	4.20	--	4.20	--	--	--	--	--	--	--	--	--
<i>MSCI Pacific</i>	<u>3.87</u>	--	<u>3.87</u>	--	--	--	--	--	--	--	--	--
Excess Return	0.33		0.33									
Marathon	4.17	89	4.17	89	17.61	77	7.14	50	10.42	44	4.65	27
<i>MSCI EAFE</i>	<u>5.40</u>	70	<u>5.40</u>	70	<u>19.10</u>	66	<u>5.04</u>	85	<u>8.38</u>	81	<u>1.34</u>	91
Excess Return	-1.23		-1.23		-1.49		2.10		2.04		3.31	
<i>eA All EAFE Equity Gross Median</i>	6.00		6.00		20.60		7.02		10.02		3.16	
Mondrian ⁺	5.45	68	5.45	68	--	--	--	--	--	--	--	--
<i>MSCI EAFE</i>	<u>5.40</u>	70	<u>5.40</u>	70	--	--	--	--	--	--	--	--
Excess Return	0.05		0.05									
<i>eA All EAFE Equity Gross Median</i>	6.00		6.00		20.60		7.02		10.02		3.16	
PanAgora Asset Mgmt	5.28	74	5.28	74	20.44	51	7.50	45	10.62	40	3.32	46
<i>MSCI EAFE</i>	<u>5.40</u>	70	<u>5.40</u>	70	<u>19.10</u>	66	<u>5.04</u>	85	<u>8.38</u>	81	<u>1.34</u>	91
Excess Return	-0.12		-0.12		1.34		2.46		2.24		1.98	
<i>eA All EAFE Equity Gross Median</i>	6.00		6.00		20.60		7.02		10.02		3.16	

+ Funded October 2016.

Total Fund Performance Summary

Period Ending: September 30, 2017

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
SSgA*	7.65	--	7.65	--	22.19	--	6.40	--	8.46	--	--	--
<i>MSCI Europe</i>	<u>6.45</u>	--	<u>6.45</u>	--	<u>22.30</u>	--	<u>4.36</u>	--	<u>8.36</u>	--	--	--
Excess Return	1.20		1.20		-0.11		2.04		0.10			
TimesSquare ⁺	7.97	61	7.97	61	--	--	--	--	--	--	--	--
<i>MSCI EAFE Small Cap</i>	<u>7.46</u>	73	<u>7.46</u>	73	--	--	--	--	--	--	--	--
Excess Return	0.51		0.51									
<i>eA EAFE Small Cap Equity Gross Median</i>	8.40		8.40		24.41		12.20		14.50		5.39	
TT International	7.59	25	7.59	25	19.69	58	6.12	67	11.24	32	--	--
<i>MSCI EAFE</i>	<u>5.40</u>	70	<u>5.40</u>	70	<u>19.10</u>	66	<u>5.04</u>	85	<u>8.38</u>	81	--	--
Excess Return	2.19		2.19		0.59		1.08		2.86			
<i>eA All EAFE Equity Gross Median</i>	6.00		6.00		20.60		7.02		10.02		3.16	
Walter Scott	4.73	83	4.73	83	15.84	87	8.33	38	8.98	69	5.61	12
<i>MSCI EAFE</i> ⁸	<u>5.40</u>	70	<u>5.40</u>	70	<u>19.10</u>	66	<u>5.04</u>	85	<u>8.38</u>	81	<u>0.86</u>	96
Excess Return	-0.67		-0.67		-3.26		3.29		0.60		4.75	
<i>eA All EAFE Equity Gross Median</i>	6.00		6.00		20.60		7.02		10.02		3.16	
Int'l Emerging Mkts Equity	4.64	86	4.64	86	17.43	81	2.88	91	--	--	--	--
<i>MSCI Emerging Markets ND Custom</i>	<u>4.67</u>	85	<u>4.67</u>	85	<u>18.83</u>	75	<u>2.94</u>	90	--	--	--	--
Excess Return	-0.03		-0.03		-1.40		-0.06					
<i>eA Emg Mkts Equity Gross Median</i>	7.80		7.80		23.08		6.36		5.87		2.81	
US Fixed Income	1.05	57	1.05	57	-0.58	91	4.19	34	3.41	40	5.99	34
<i>Citigroup LPF</i> ⁹	<u>1.07</u>	56	<u>1.07</u>	56	<u>-1.18</u>	94	<u>4.05</u>	37	<u>2.88</u>	56	<u>5.63</u>	39
Excess Return	-0.02		-0.02		0.60		0.14		0.53		0.36	
<i>InvestorForce All DB US Fix Inc Gross Median</i>	1.14		1.14		1.17		3.46		3.11		5.17	
Corporate	1.79	7	1.79	7	3.22	29	5.73	4	5.22	7	7.77	3
<i>Citigroup LPF Credit</i> ¹⁰	<u>1.83</u>	6	<u>1.83</u>	6	<u>2.15</u>	79	<u>5.44</u>	8	<u>4.32</u>	30	<u>6.85</u>	25
Excess Return	-0.04		-0.04		1.07		0.29		0.90		0.92	
<i>eA US Corporate Fixed Inc Gross Median</i>	1.49		1.49		2.71		4.50		3.97		6.45	

* Formerly GE Asset Mgmt

+ Funded October 2016.

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: September 30, 2017

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Gov't 5 Plus	0.49	--	0.49	--	-4.69	--	4.21	--	2.59	--	5.70	--
<i>Citigroup LPF Treas/Govt Spons¹¹</i>	0.53	--	0.53	--	-4.77	--	4.07	--	2.40	--	6.01	--
Excess Return	-0.04		-0.04		0.08		0.14		0.19		-0.31	
MBS	0.90	77	0.90	77	0.37	90	2.51	83	2.06	87	3.76	90
<i>Citi BIG Mortgage</i>	0.99	57	0.99	57	0.34	90	2.44	86	1.95	92	4.16	78
Excess Return	-0.09		-0.09		0.03		0.07		0.11		-0.40	
<i>eA US Mortgage Fixed Inc Gross Median</i>	1.04		1.04		1.71		3.20		2.94		4.86	
Total Return Fund *	0.74	--	0.74	--	-3.52	--	4.57	--	3.63	--	6.60	--
<i>Citigroup LPF Treas/Govt Spons¹²</i>	0.53	--	0.53	--	-4.77	--	4.07	--	2.40	--	5.48	--
Excess Return	0.21		0.21		1.25		0.50		1.23		1.12	
Inflation Hedged	0.92	49	0.92	49	-1.00	92	1.80	32	0.06	76	4.04	55
<i>Citi TIPS</i>	0.93	46	0.93	46	-0.83	87	1.71	50	0.02	86	3.99	58
Excess Return	-0.01		-0.01		-0.17		0.09		0.04		0.05	
<i>eA TIPS / Infl Indexed Fixed Inc Gross Median</i>	0.91		0.91		-0.43		1.71		0.16		4.05	
Real Estate	2.53	2	2.53	2	9.23	15	11.47	21	11.26	41	5.96	10
<i>NCREIF 1Q Lag</i>	1.75	35	1.75	35	6.98	47	10.16	51	10.49	81	6.42	3
Excess Return	0.78		0.78		2.25		1.31		0.77		-0.46	
<i>InvestorForce All DB Real Estate Pub Gross Median</i>	1.43		1.43		6.50		10.17		11.05		4.76	
Traditional Private Equity +	4.74	--	4.74	--	16.96	--	15.26	--	16.25	--	--	--
<i>S&P 500 +3% 1Q Lag</i>	3.39	--	3.39	--	20.90	--	12.62	--	17.64	--	--	--
Excess Return	1.35		1.35		-3.94		2.64		-1.39			
Strategic Lending Portfolio¹³	1.70	--	1.70	--	8.77	--	5.38	--	--	--	--	--
<i>Strategic Lending¹⁴</i>	1.52	--	1.52	--	7.11	--	4.92	--	--	--	--	--
Excess Return	0.18		0.18		1.66		0.46					
Short Term	0.19	--	0.19	--	0.29	--	0.87	--	0.82	--	1.59	--
<i>91 Day T-Bills</i>	0.26	--	0.26	--	0.72	--	0.32	--	0.21	--	0.36	--
Excess Return	-0.07		-0.07		-0.43		0.55		0.61		1.23	

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 Gov't 1-5.

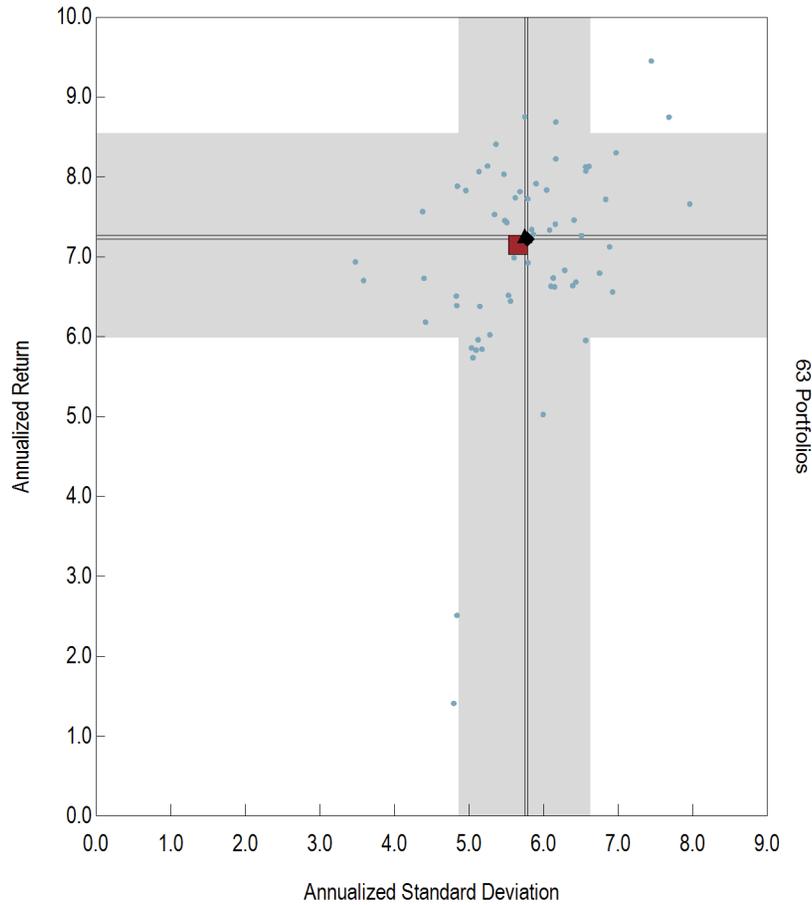
+ Effective 4/1/12. One quarter lagged IRR returns are provided by TorreyCove Capital Partners. TorreyCove replaced Cambridge Associates effective 8/1/15.

¹³ Funded 8/1/13. Reported net of fees. GSO Credit Alpha, Hayfin DLF I & II, SOF II, ICG Europe VI, OrbiMed Royalty Opp II, Taurus Mining and Triton Debt Opp market values are rolled forward from Q2 2017, and adjusted for any Q3 cash flows.

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

Total Fund
Risk vs. Return (3 Years)

Period Ending: September 30, 2017

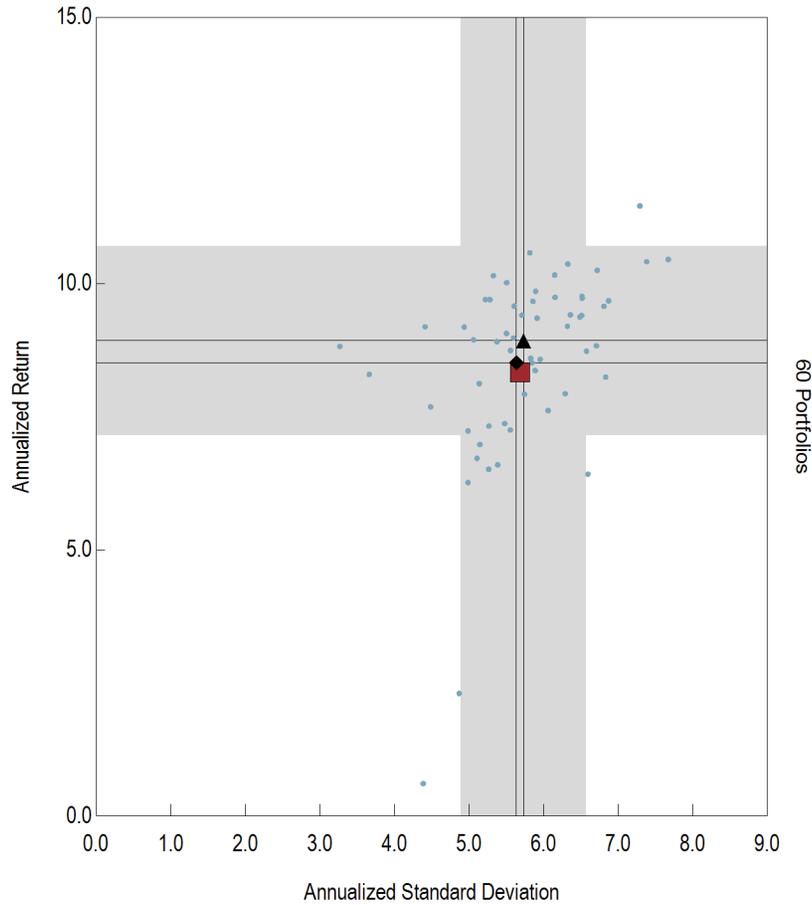


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Gross

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Fund	7.15%	53	5.66%	48	1.21	42
Policy Index	7.22%	52	5.78%	52	1.19	44
InvestorForce Public DB > \$1B Gross Median	7.27%	--	5.75%	--	1.18	--

Total Fund
Risk vs. Return (5 Years)

Period Ending: September 30, 2017

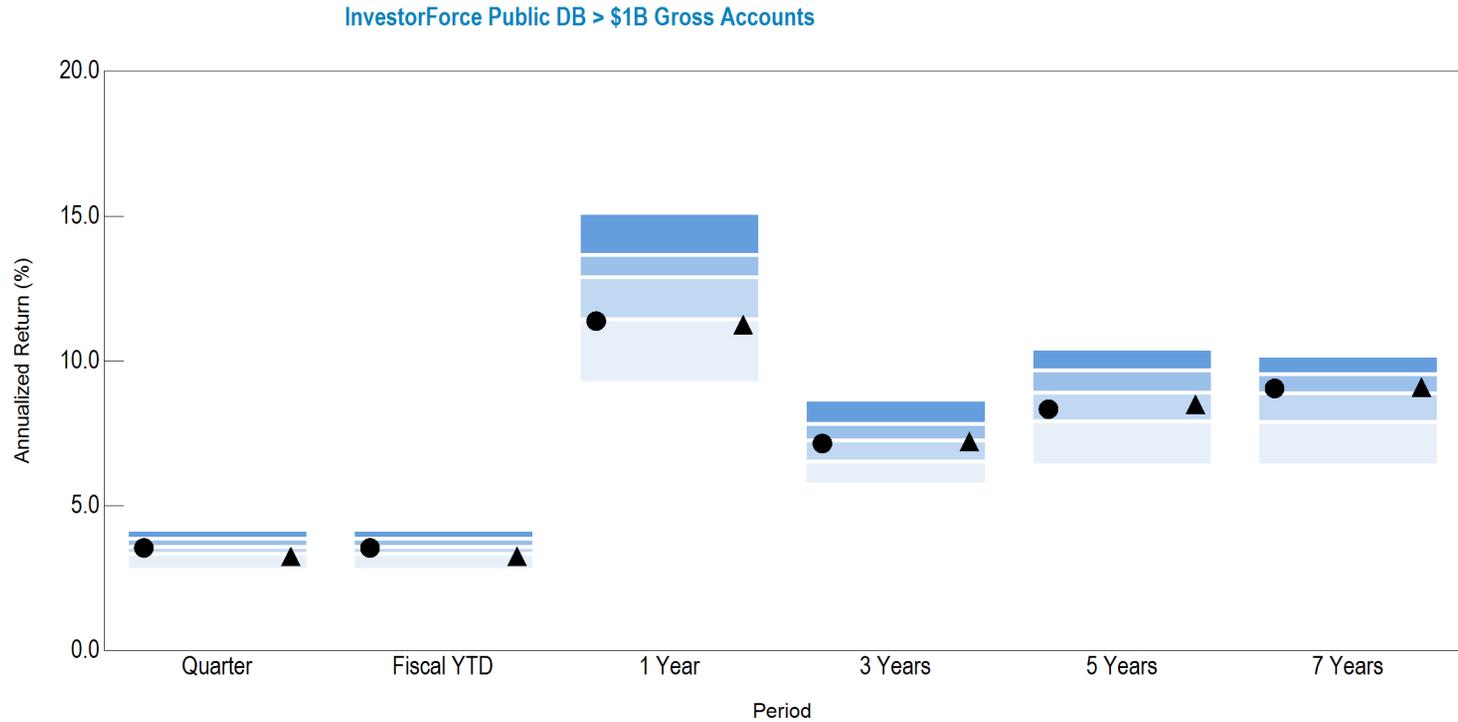


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Gross

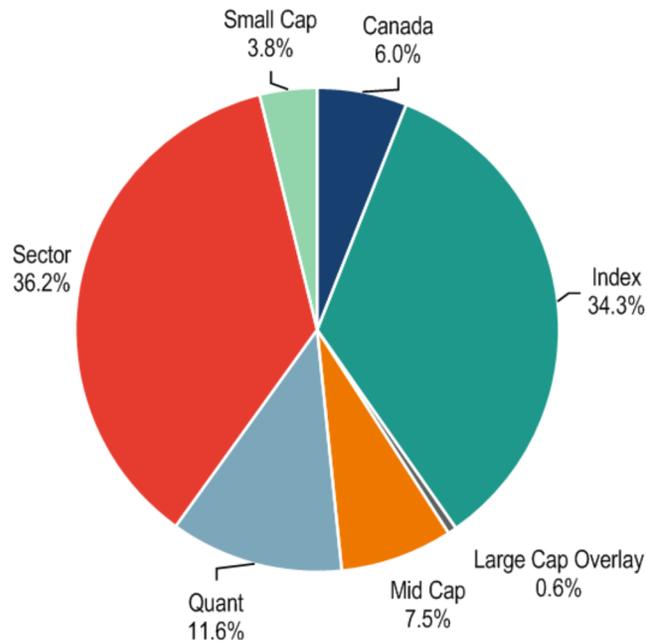
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Fund	8.34%	69	5.69%	47	1.43	54
Policy Index	8.51%	63	5.63%	46	1.47	44
InvestorForce Public DB > \$1B Gross Median	8.92%	--	5.73%	--	1.44	--

Total Fund
Peer Universe Comparison

Period Ending: September 30, 2017



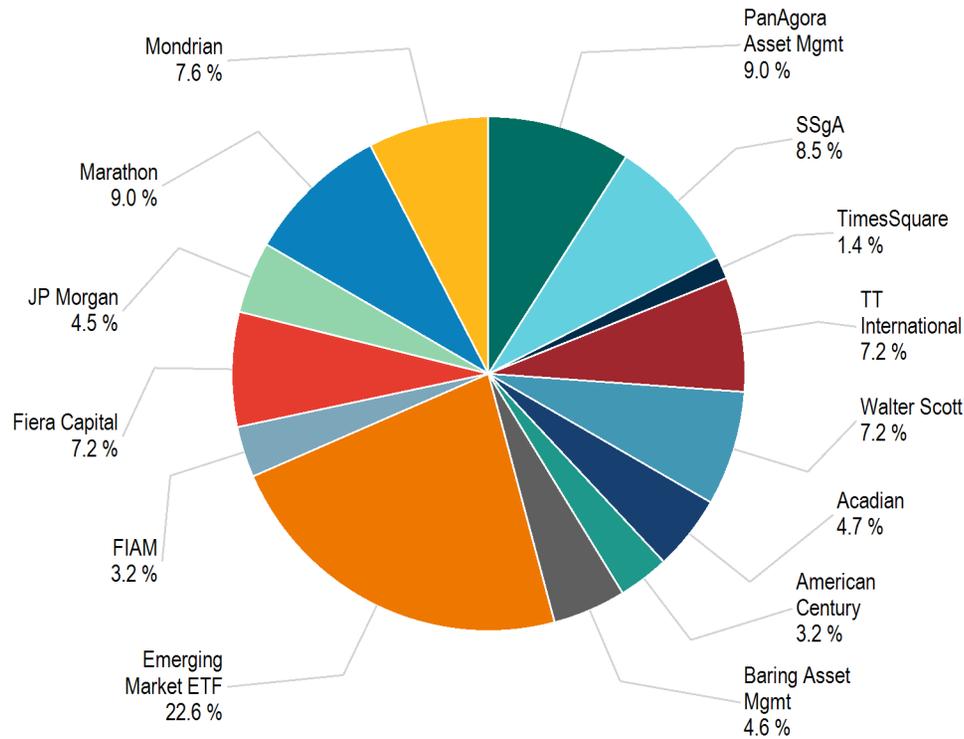
	Return (Rank)											
	Quarter		Fiscal YTD		1 Year		3 Years		5 Years		7 Years	
5th Percentile	4.17		4.17		15.10		8.66		10.41		10.17	
25th Percentile	3.88		3.88		13.66		7.83		9.68		9.56	
Median	3.59		3.59		12.91		7.27		8.92		8.90	
75th Percentile	3.35		3.35		11.46		6.54		7.93		7.91	
95th Percentile	2.80		2.80		9.24		5.75		6.41		6.41	
# of Portfolios	79		79		79		63		60		49	
● Total Fund	3.55	(58)	3.55	(58)	11.38	(77)	7.15	(53)	8.34	(69)	9.05	(45)
▲ Policy Index	3.26	(78)	3.26	(78)	11.26	(79)	7.22	(52)	8.51	(63)	9.10	(43)



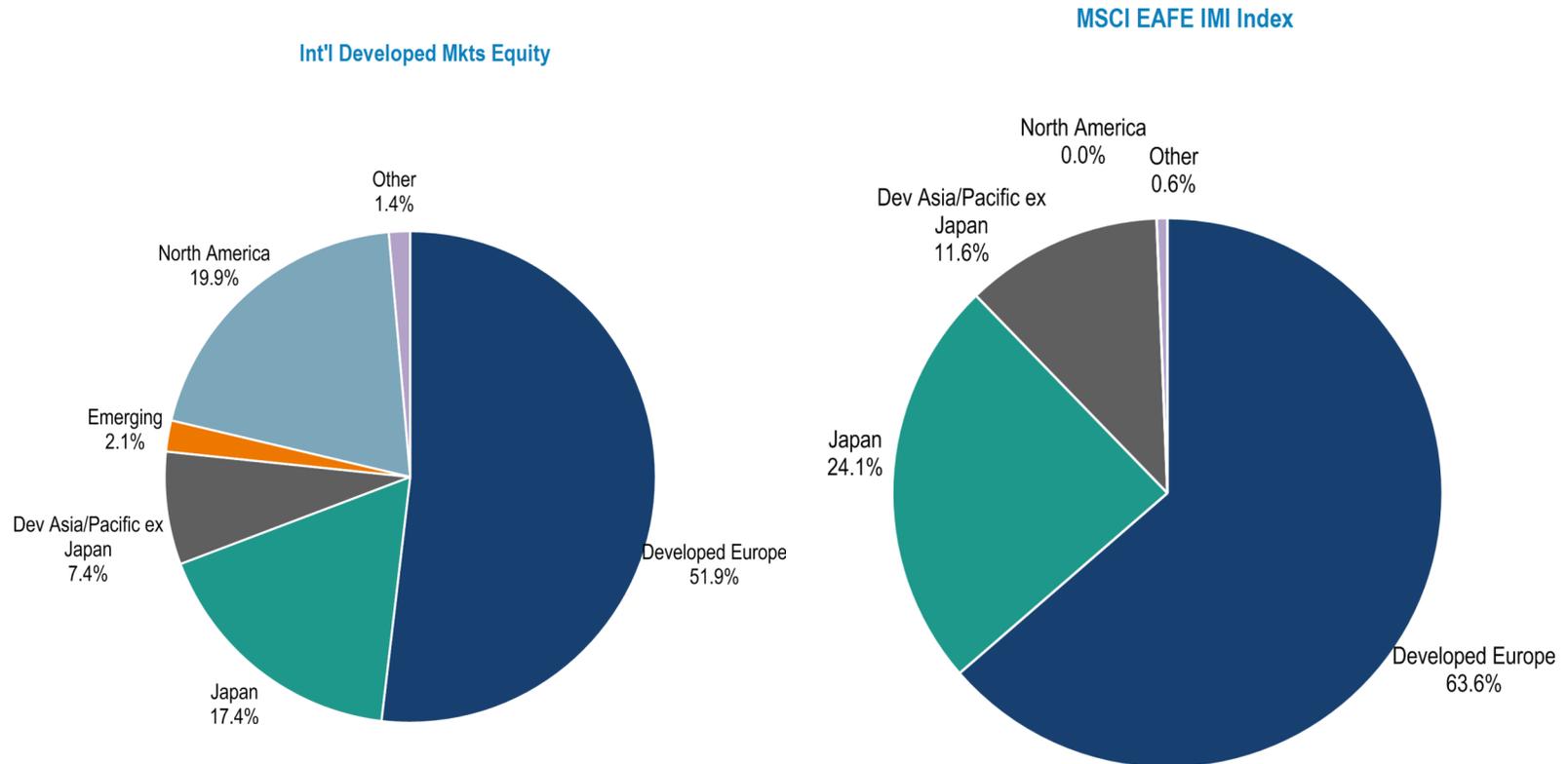
	Actual \$	Actual %
Canada	1,029,052,634	6.0%
Index	5,877,395,333	34.3%
Large Cap Overlay	99,993,492	0.6%
Mid Cap	1,288,464,286	7.5%
Quant	1,983,271,046	11.6%
Sector	6,212,279,410	36.2%
Small Cap	657,264,230	3.8%
TOTAL	17,147,720,431	100.0%

International Equity
 Manager Allocation Analysis

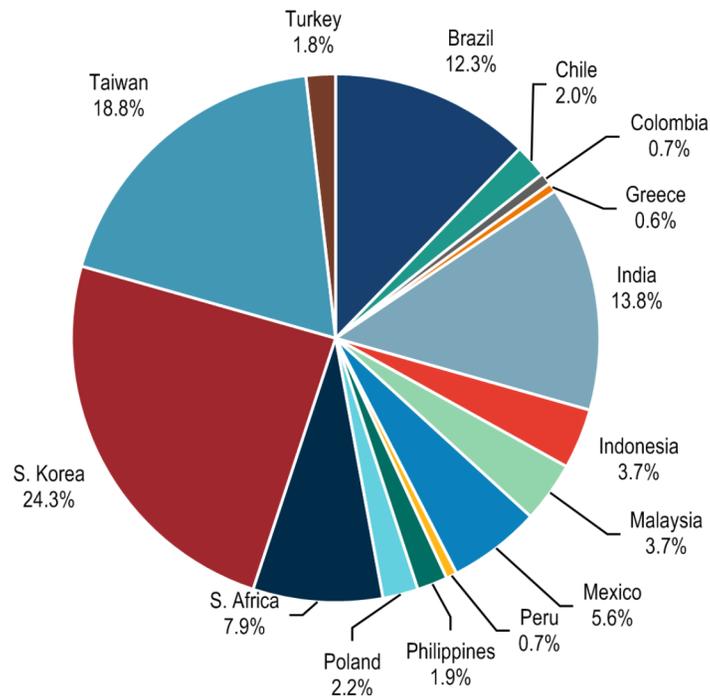
Period Ending: September 30, 2017



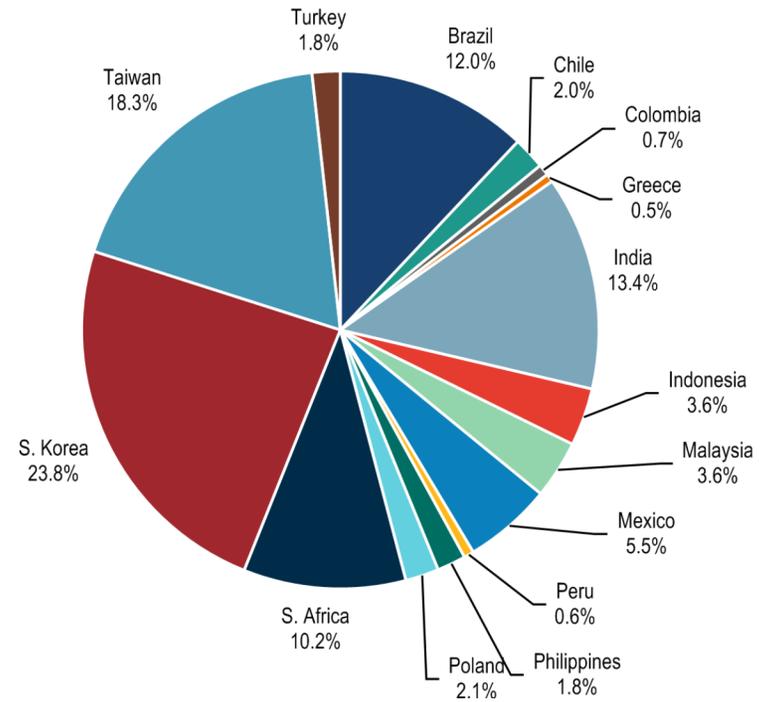
	Actual	Actual
Acadian	\$422,768,604	4.7%
American Century	\$292,452,272	3.2%
Baring Asset Mgmt	\$412,377,935	4.6%
Emerging Market ETF	\$2,040,258,365	22.6%
FIAM	\$292,932,161	3.2%
Fiera Capital	\$652,029,795	7.2%
Int'l Transition	-\$1,524	0.0%
JP Morgan	\$405,582,844	4.5%
Marathon	\$811,937,477	9.0%
Mondrian	\$691,279,531	7.6%
PanAgora Asset Mgmt	\$816,444,456	9.0%
SSgA	\$770,954,273	8.5%
TimesSquare	\$123,909,519	1.4%
TT International	\$653,959,412	7.2%
Walter Scott	\$650,394,572	7.2%
Total	\$9,037,279,692	100.0%



Int'l Emerging Mkts Equity

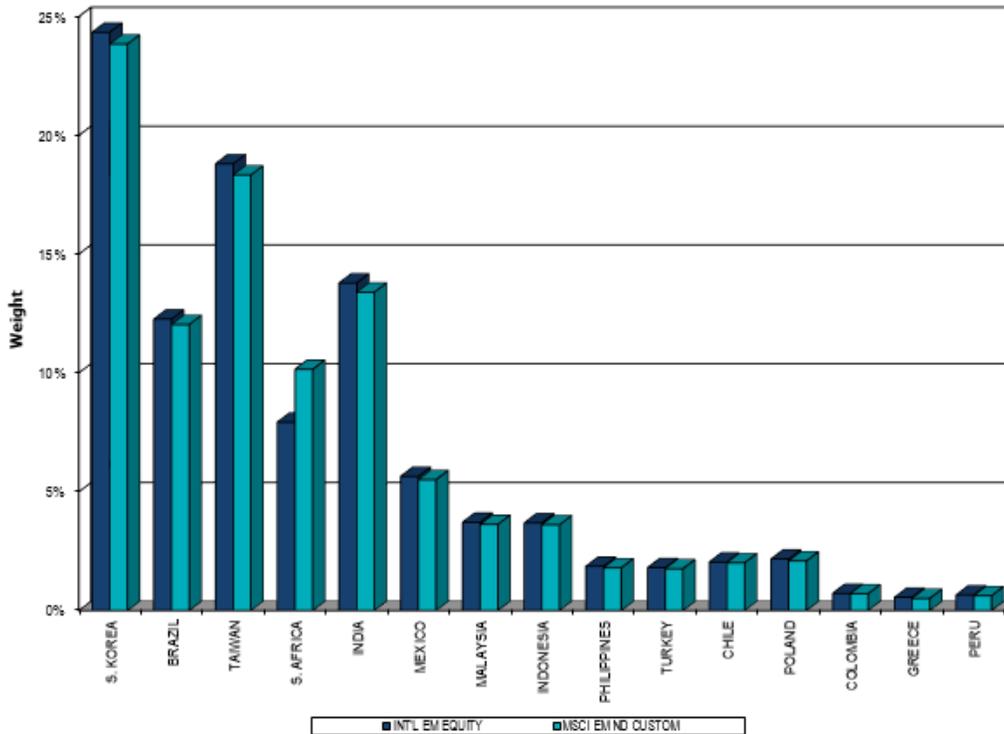


MSCI Emerging Markets ND Custom Index

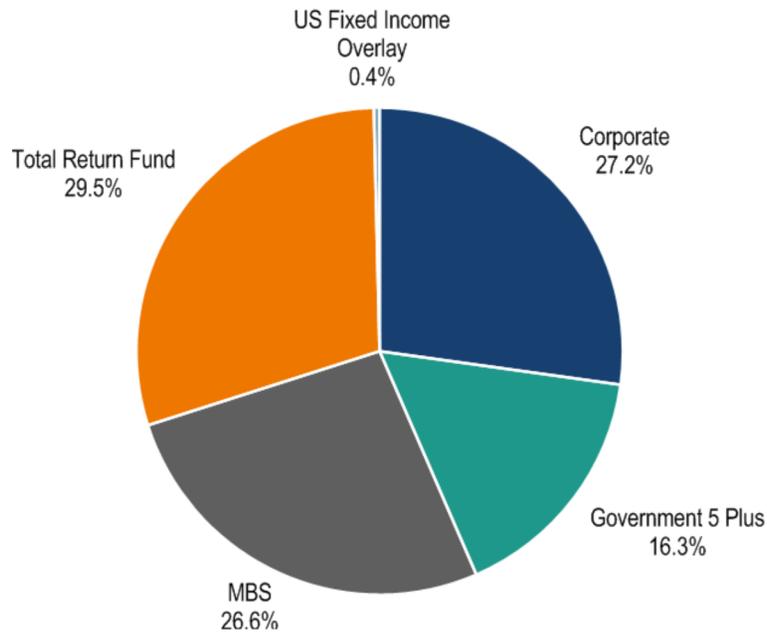


Int'l Emerging Markets Equity
Portfolio Country Weights

Period Ending: September 30, 2017



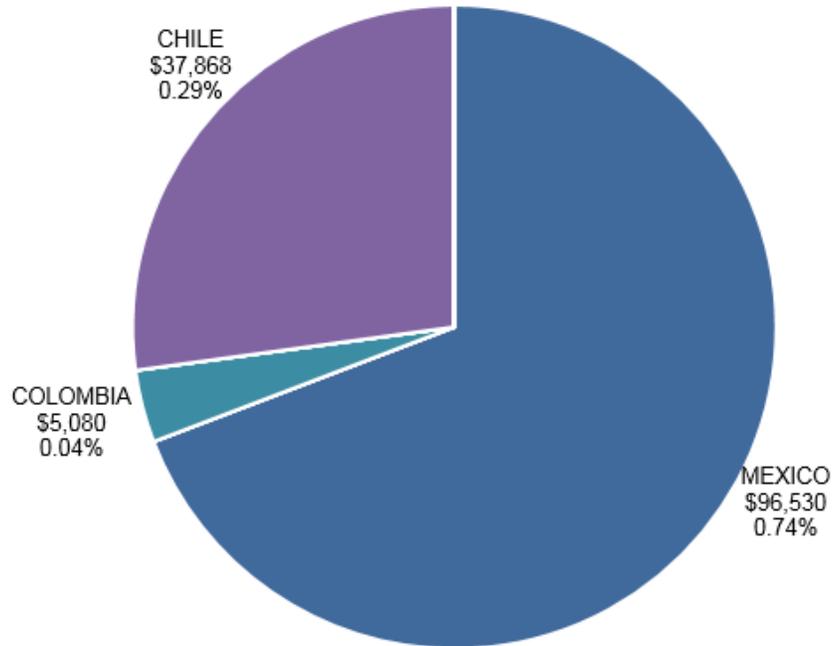
COUNTRY	TCRS MARKET VALUE (\$ 000)	INT'L EM EQUITY	MSCI EM ND CUSTOM	DIFF
S. KOREA	\$ 496,527	24.3%	23.8%	+0.5%
BRAZIL	\$ 250,268	12.3%	12.0%	+0.2%
TAIWAN	\$ 383,582	18.8%	18.3%	+0.5%
S. AFRICA	\$ 161,804	7.9%	10.2%	-2.2%
INDIA	\$ 281,241	13.8%	13.4%	+0.4%
MEXICO	\$ 115,214	5.6%	5.5%	+0.1%
MALAYSIA	\$ 75,799	3.7%	3.6%	+0.1%
INDONESIA	\$ 75,289	3.7%	3.6%	+0.1%
PHILIPPINES	\$ 38,063	1.9%	1.8%	+0.1%
TURKEY	\$ 36,811	1.8%	1.8%	+0.0%
CHILE	\$ 41,713	2.0%	2.0%	+0.0%
POLAND	\$ 44,249	2.2%	2.1%	+0.1%
COLOMBIA	\$ 14,800	0.7%	0.7%	+0.0%
GREECE	\$ 11,413	0.6%	0.5%	+0.0%
PERU	\$ 13,485	0.7%	0.6%	+0.0%
	\$ 2,040,258	100.0%	100.0%	0.0%



	Actual \$	Actual %
■ Corporate	3,541,425,399	27.2%
■ Government 5 Plus	2,121,065,169	16.3%
■ MBS	3,462,108,626	26.6%
■ Total Return Fund	3,845,857,819	29.5%
■ US Fixed Income Overlay	49,542,446	0.4%
TOTAL	13,019,999,459	100.0%

Emerging Markets Investment Grade Bond
Portfolio Country Weights

Period Ending: September 30, 2017



COUNTRY	TCRS MARKET VALUE (\$ 000)	TCRS FI	LPF	DIFF
MEXICO	\$ 96,530	0.74%	0.78%	-0.04%
OTHER*	\$ -		0.54%	-0.54%
INDONESIA	\$ -		0.34%	-0.34%
PHILIPPINES	\$ -		0.23%	-0.23%
COLOMBIA	\$ 5,080	0.04%	0.22%	-0.18%
PERU	\$ -		0.21%	-0.21%
BRAZIL	\$ -		0.13%	-0.13%
S. KOREA	\$ -		0.10%	-0.10%
S. AFRICA	\$ -		0.10%	-0.10%
CHILE	\$ 37,868	0.29%	0.05%	+0.24%
MALAYSIA	\$ -		0.03%	+0.03%
HUNGARY	\$ -		0.02%	-0.02%
POLAND	\$ -		0.02%	-0.02%
INDIA	\$ -		0.01%	-0.01%
TURKEY	\$ -		0.00%	0.00%
TAIWAN	\$ -		0.00%	0.00%
THAILAND	\$ -		0.00%	0.00%
	\$ 139,478	1.07%	2.78%	-1.64%

* 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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