

Fresno County Employees' Retirement Association

Investment Performance Review

Period Ending: September 30, 2018



VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

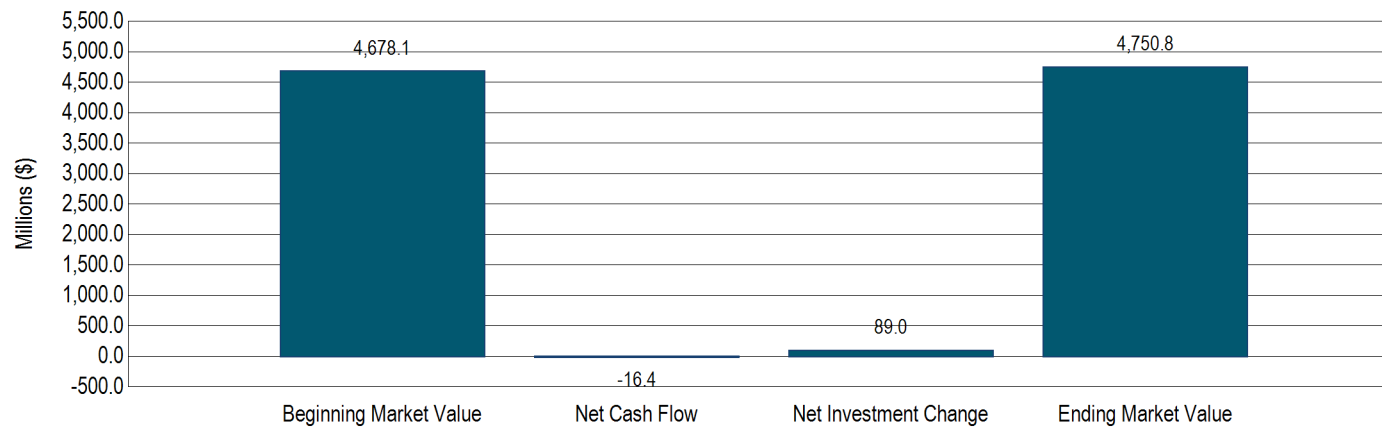
Total Fund
Portfolio Reconciliation

Period Ending: September 30, 2018

Portfolio Reconciliation

	Last Three Months	Year-To-Date
Beginning Market Value	\$4,678,087,555	\$4,677,838,025
Net Cash Flow	-\$16,379,485	-\$32,217,639
Net Investment Change	\$89,048,564	\$105,136,249
Ending Market Value	\$4,750,756,635	\$4,750,756,635

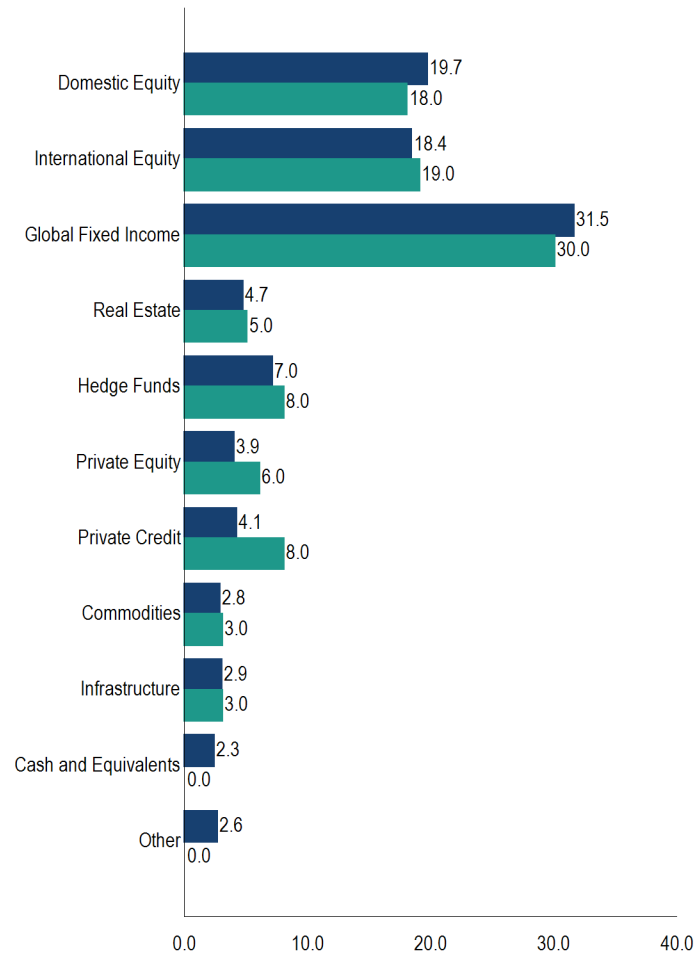
Change in Market Value
Last Three Months



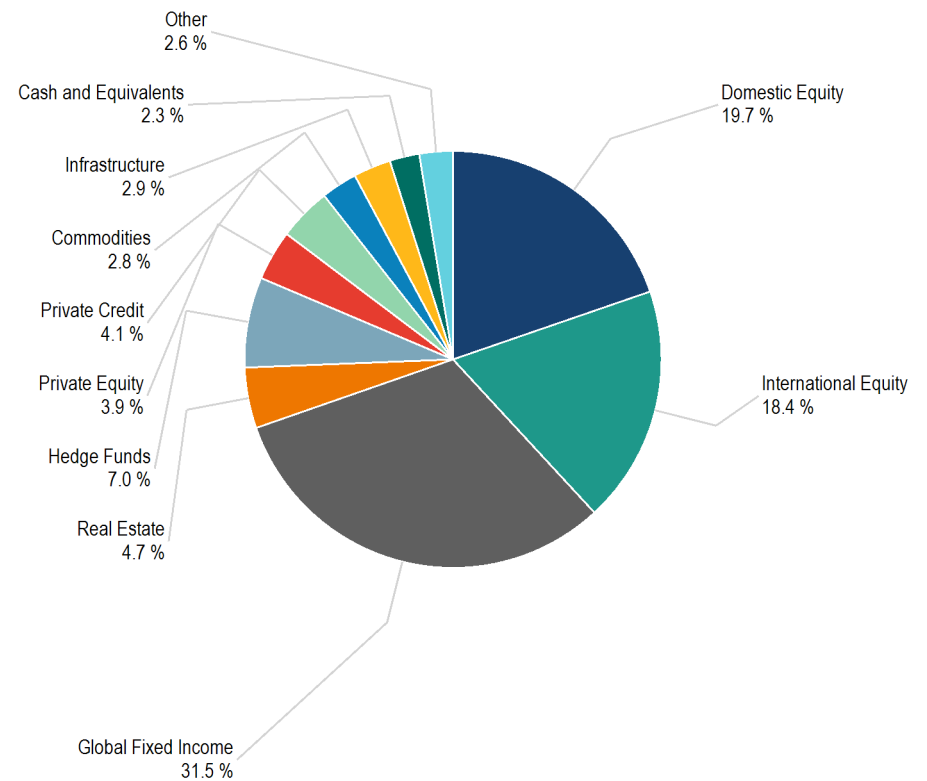
Total Fund Asset Allocation

Period Ending: September 30, 2018

Actual vs Target Allocation (%)



Current Allocation

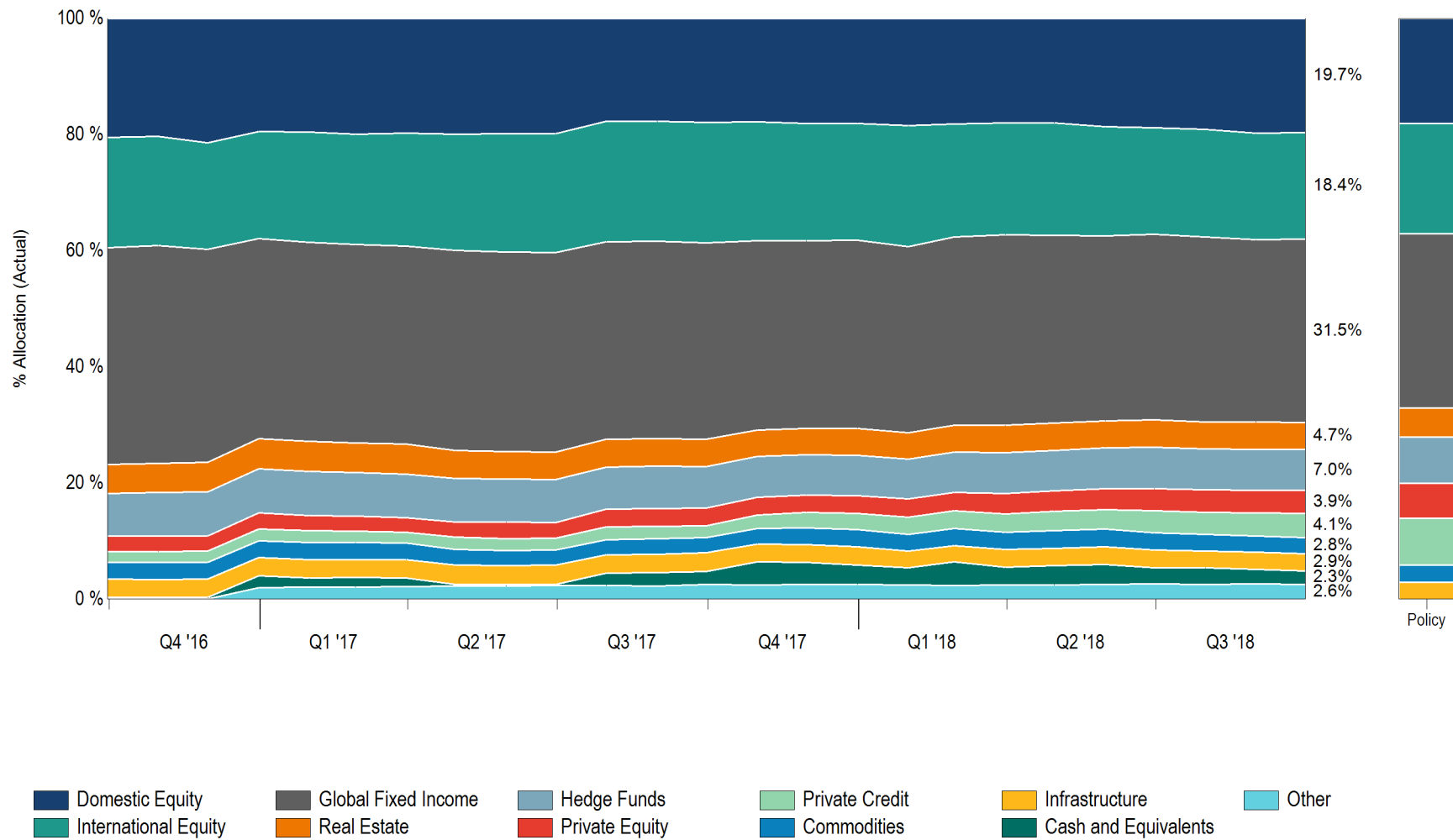


Actual Policy

Other consists of cash held for the overlay program. The target allocation reflects the most recent asset allocation targets per Asset Allocation Glidepath in IPS.

Total Fund Asset Allocation History

Period Ending: September 30, 2018



Total Fund

Executive Summary (Net of Fees)

Period Ending: September 30, 2018

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2017	2016	2015	2014	2013
Total Fund	4,750,756,635	100.0	1.9	2.2	5.4	8.3	5.9	7.3	14.6	6.7	-2.5	3.5	16.3
Policy Index			1.5	1.8	5.1	7.9	5.5	6.6	14.0	6.5	-1.7	2.6	15.6
InvestorForce Public DB > \$1B Net Rank			71	76	88	92	94	48	68	80	86	88	20
Total Domestic Equity	933,703,222	19.7	6.2	10.6	17.5	15.5	12.3	11.8	20.2	8.9	1.5	9.8	36.8
Russell 3000			7.1	10.6	17.6	17.1	13.5	12.0	21.1	12.7	0.5	12.6	33.6
Total International Equity	872,579,177	18.4	1.3	-3.7	1.2	9.8	4.1	6.0	28.5	3.0	-7.5	-2.5	18.7
MSCI ACWI ex USA Gross			0.8	-2.7	2.3	10.5	4.6	5.7	27.8	5.0	-5.3	-3.4	15.8
Total Fixed Income	1,498,648,652	31.5	0.3	-1.4	-0.9	4.1	2.7	5.7	8.0	6.7	-4.5	5.0	-1.1
BBgBarc Global Aggregate*			-0.9	-2.4	-1.3	2.0	0.7	3.0	7.4	2.1	-3.2	0.0	-2.0
Total Real Estate	222,169,869	4.7	2.3	6.6	8.1	7.7	9.9	4.7	5.8	8.5	13.9	11.8	11.8
NCREIF ODCE Net			1.9	5.8	7.7	7.8	9.7	4.6	6.7	7.8	13.9	11.5	12.9
Total Infrastructure	140,059,530	2.9	6.1	16.7	21.3	14.0	--	--	19.0	6.1	--	--	--
NCREIF ODCE Net			1.9	5.8	7.7	7.8	9.7	4.6	6.7	7.8	13.9	11.5	12.9
Total Hedge Funds	334,864,181	7.0	0.6	3.4	5.1	3.7	3.5	2.9	4.6	3.0	0.0	3.1	7.8
HFRI Fund of Funds Composite Index			0.2	0.9	3.0	3.3	3.2	2.5	7.8	0.5	-0.3	3.4	9.0
Total Commodities	133,424,628	2.8	-3.1	-3.7	3.8	3.2	-3.6	--	5.8	13.8	-12.8	-16.9	-9.4
Bloomberg Commodity Index TR USD			-2.0	-2.0	2.6	-0.1	-7.2	-6.2	1.7	11.8	-24.7	-17.0	-9.5
Total Private Equity 1 Qtr Lagged	187,033,637	3.9	1.4	7.8	11.4	11.1	11.0	10.1	13.9	10.7	3.8	4.8	21.4
Russell 2000 1 Qtr Lagged			7.8	11.3	17.6	15.8	10.3	10.7	10.9	21.3	-4.4	4.9	38.8
Total Private Credit 1 Qtr Lagged	196,236,016	4.1	1.0	4.0	6.3	6.5	5.3	13.9	8.1	7.4	-2.5	6.8	13.6
BBgBarc US Corp. High Yield 1 Qtr Lagged			1.0	0.6	2.6	7.3	5.0	9.2	7.0	17.1	-4.5	2.5	7.4
Total Custodied Cash	44,731,681	0.9	2.9	3.6	3.7	1.6	1.0	0.9	0.3	0.8	-0.1	0.3	0.4
91 Day T-Bills			0.5	1.3	1.6	0.9	0.5	0.3	0.9	0.3	0.0	0.0	0.0
Total County Cash	65,038,604	1.4	0.7	1.6	2.0	--	--	--	--	--	--	--	--
91 Day T-Bills			0.5	1.3	1.6	0.9	0.5	0.3	0.9	0.3	0.0	0.0	0.0

Policy Index (Floating policy weights updated as of 9/30/2018. See Data Sources and Methodology for monthly policy breakout): 17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 2.1% Russell 2000, 3.9% BBgBarc US Corp. High Yield, 3.9% Private Equity Neutralized, 4.1% Private Credit Neutralized, 0.4% Real Estate Neutralized, 8% HFRI FoF Composite, 7.6% NCREIF ODCE Net, & 3% Bloomberg Commodity Index. Composite total market values reflect manager exposures and any underlying cash balances. De-risking of the Plan commenced on April 30, 2014. Effective 1/01/2017, only traditional asset class (public equity, public fixed income, REITs) investment management fees will be included in the gross of fee return calculation.

*Prior to 3/31/2014 BBgBarc U.S. Aggregate Index and as of 4/1/2014 BBgBarc Global Aggregate Index.

Total Fund Executive Summary (Gross of Fees)

Period Ending: September 30, 2018

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2017	2016	2015	2014	2013
Total Fund	4,750,756,635	100.0	1.9	2.4	5.6	8.7	6.2	7.7	14.8	7.2	-2.1	3.8	16.6
<i>Policy Index</i>			1.5	1.8	5.1	7.9	5.5	6.6	14.0	6.5	-1.7	2.6	15.6
Total Domestic Equity	933,703,222	19.7	6.2	10.7	17.7	15.7	12.5	12.0	20.3	9.1	1.8	10.1	37.2
<i>Russell 3000</i>			7.1	10.6	17.6	17.1	13.5	12.0	21.1	12.7	0.5	12.6	33.6
Total International Equity	872,579,177	18.4	1.4	-3.4	1.7	10.3	4.5	6.5	29.1	3.5	-7.1	-2.1	19.3
<i>MSCI ACWI ex USA Gross</i>			0.8	-2.7	2.3	10.5	4.6	5.7	27.8	5.0	-5.3	-3.4	15.8
Total Fixed Income	1,498,648,652	31.5	0.3	-1.1	-0.5	4.4	2.9	5.9	8.3	7.0	-4.2	5.1	-0.9
<i>BBgBarc Global Aggregate*</i>			-0.9	-2.4	-1.3	2.0	0.7	3.0	7.4	2.1	-3.2	0.0	-2.0
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<i>NCREIF ODCE Net</i>			1.9	5.8	7.7	7.8	9.7	4.6	6.7	7.8	13.9	11.5	12.9
Total Hedge Funds	334,864,181	7.0	0.6	3.4	5.1	4.0	4.1	--	4.6	3.8	0.9	4.2	9.0
<i>HFRI Fund of Funds Composite Index</i>			0.2	0.9	3.0	3.3	3.2	2.5	7.8	0.5	-0.3	3.4	9.0
Total Commodities	133,424,628	2.8	-3.1	-3.7	3.8	3.5	-3.4	--	5.8	14.4	-12.3	-16.7	-9.0
<i>Bloomberg Commodity Index TR USD</i>			-2.0	-2.0	2.6	-0.1	-7.2	-6.2	1.7	11.8	-24.7	-17.0	-9.5
Total Private Equity 1 Qtr Lagged	187,033,637	3.9	1.4	7.8	11.4	11.5	11.2	10.3	13.9	11.8	3.9	4.8	21.6
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Total Custodied Cash	44,731,681	0.9	2.9	3.6	3.7	1.6	1.0	0.9	0.3	0.8	-0.1	0.3	0.4
<i>91 Day T-Bills</i>			0.5	1.3	1.6	0.9	0.5	0.3	0.9	0.3	0.0	0.0	0.0
Total County Cash	65,038,604	1.4	0.7	1.6	2.0	--	--	--	--	--	--	--	--
<i>91 Day T-Bills</i>			0.5	1.3	1.6	0.9	0.5	0.3	0.9	0.3	0.0	0.0	0.0

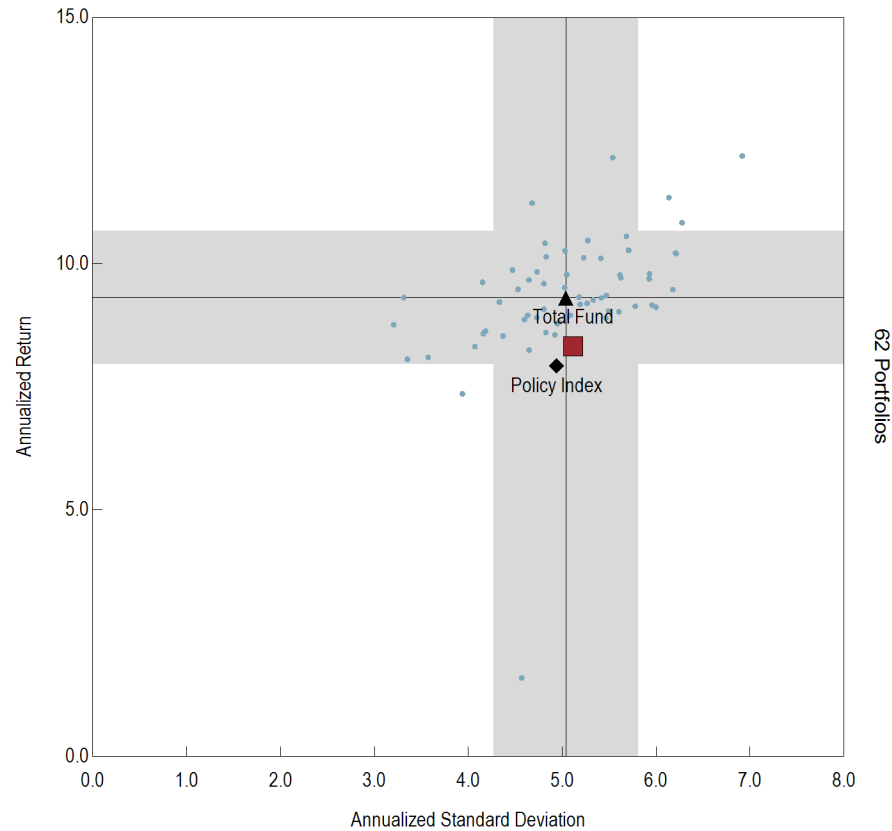
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*Prior to 3/31/2014 BBgBarc U.S. Aggregate Index and as of 4/1/2014 BBgBarc Global Aggregate Index.

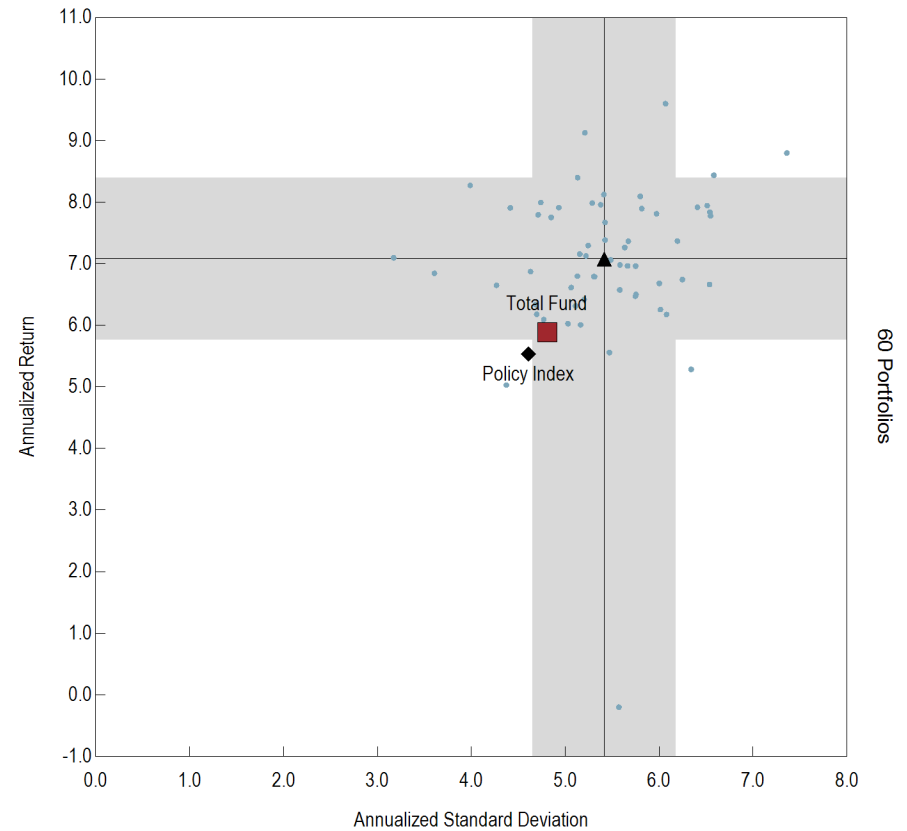
Total Fund Risk Analysis (Net of Fees)

Period Ending: September 30, 2018

3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Total Fund	8.3%	5.1%	1.5
Policy Index	7.9%	4.9%	1.4
InvestorForce Public DB > \$1B Net Median	9.3%	5.0%	1.7

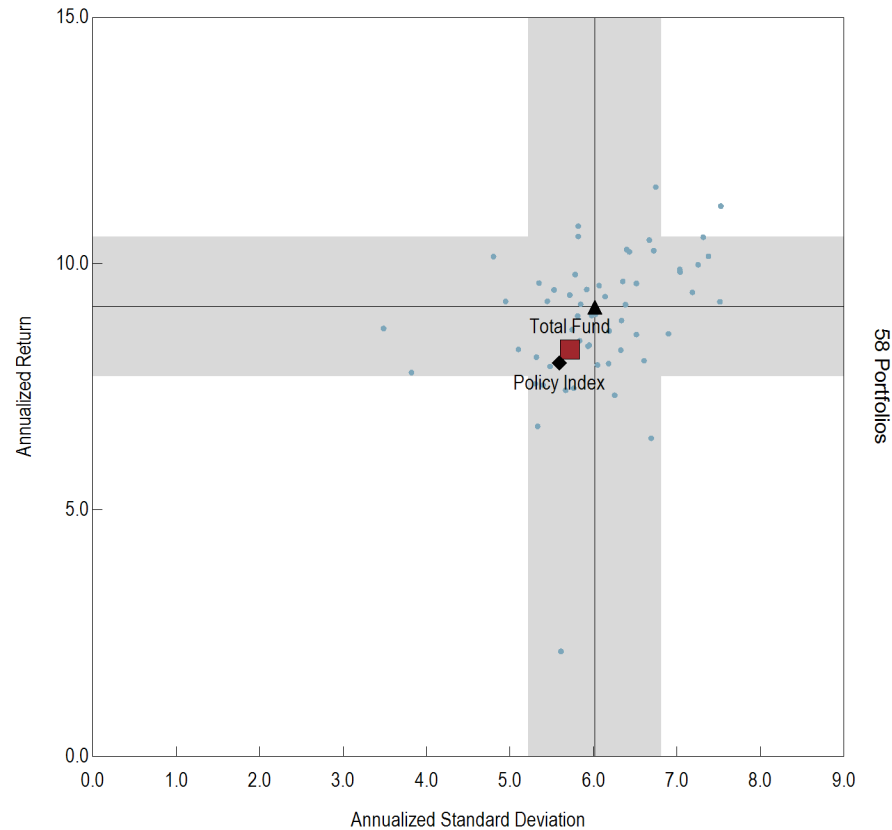
5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Total Fund	5.9%	4.8%	1.1
Policy Index	5.5%	4.6%	1.1
InvestorForce Public DB > \$1B Net Median	7.1%	5.4%	1.2

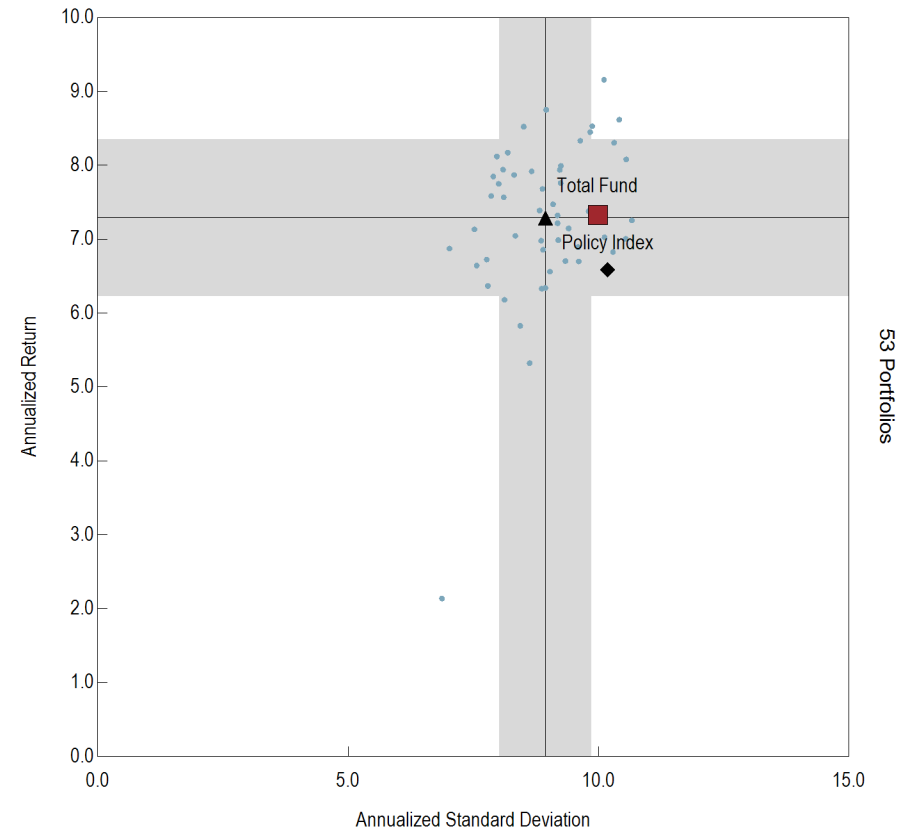
Total Fund Risk Analysis (Net of Fees)

Period Ending: September 30, 2018

7 Years



10 Years



7 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Total Fund	8.3%	5.7%	1.4
Policy Index	8.0%	5.6%	1.4
InvestorForce Public DB > \$1B Net Median	9.1%	6.0%	1.4

10 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Total Fund	7.3%	10.0%	0.7
Policy Index	6.6%	10.2%	0.6
InvestorForce Public DB > \$1B Net Median	7.3%	8.9%	0.8

Total Fund
Risk Analysis (Net of Fees)

Period Ending: September 30, 2018

3 Years

	Anlzd Standard Deviation	Anlzd Alpha	Beta	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio	Information Ratio	Tracking Error	Sharpe Ratio	Sortino Ratio
Total Fund	5.12%	0.32%	1.01	0.95	102.84%	96.92%	0.35	1.14%	1.47	2.74
Total Domestic Equity	10.01%	-2.64%	1.06	0.97	96.26%	113.20%	-0.91	1.73%	1.47	2.06
Total International Equity	10.62%	-0.26%	0.96	0.97	92.86%	95.99%	-0.34	1.99%	0.85	1.76
Total Domestic Fixed Income	2.45%	3.36%	0.64	0.48	125.61%	34.58%	1.43	2.02%	1.38	2.36
Total Real Estate	3.16%	1.03%	0.86	0.78	89.72%	--	-0.06	1.56%	2.20	918.04
Total Hedge Funds	2.97%	1.10%	0.80	0.68	89.24%	61.94%	0.25	1.79%	0.98	1.16
Total Alternative Illiquids	4.31%	7.67%	0.07	0.02	28.83%	-4.76%	-1.13	9.65%	1.91	370.49

5 Years

	Anlzd Standard Deviation	Anlzd Alpha	Beta	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio	Information Ratio	Tracking Error	Sharpe Ratio	Sortino Ratio
Total Fund	4.81%	0.34%	1.00	0.92	102.38%	89.37%	0.27	1.32%	1.12	1.21
Total Domestic Equity	7.72%	-1.59%	1.03	0.94	89.08%	95.56%	-0.66	1.84%	1.52	1.61
Total International Equity	10.27%	-0.64%	1.02	0.94	97.65%	105.31%	-0.23	2.42%	0.35	0.47
Total Domestic Fixed Income	2.77%	2.11%	0.75	0.64	120.23%	38.42%	0.86	1.82%	1.17	4.59
Total Real Estate	1.97%	-0.69%	1.09	0.57	102.22%	--	0.14	1.30%	4.77	--
Total Hedge Funds	3.36%	0.83%	0.84	0.75	106.54%	96.09%	0.18	1.78%	0.89	0.92
Total Alternative Illiquids	5.47%	1.37%	0.46	0.38	43.70%	28.23%	-1.27	5.85%	1.53	2.45

Total Fund Risk Analysis (Net of Fees)

Period Ending: September 30, 2018

7 Years

	Anlzd Standard Deviation	Anlzd Alpha	Beta	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio	Information Ratio	Tracking Error	Sharpe Ratio	Sortino Ratio
Total Fund	5.72%	0.27%	1.00	0.95	102.16%	94.35%	0.22	1.23%	1.38	2.00
Total Domestic Equity	9.71%	-1.78%	1.07	0.96	96.96%	112.58%	-0.31	2.01%	1.64	2.51
Total International Equity	11.12%	-0.16%	1.01	0.96	99.79%	100.50%	-0.03	2.16%	0.66	0.96
Total Domestic Fixed Income	3.02%	2.32%	0.86	0.64	146.64%	53.97%	1.10	1.85%	1.22	2.42
Total Real Estate	1.94%	0.29%	0.97	0.42	99.25%	--	-0.04	1.47%	5.01	--
Total Hedge Funds	3.14%	0.76%	0.73	0.67	88.40%	80.52%	-0.11	2.04%	0.96	1.07
Total Alternative Illiquids	4.83%	3.86%	0.29	0.29	32.22%	16.87%	-1.35	7.54%	1.91	2.66

10 Years

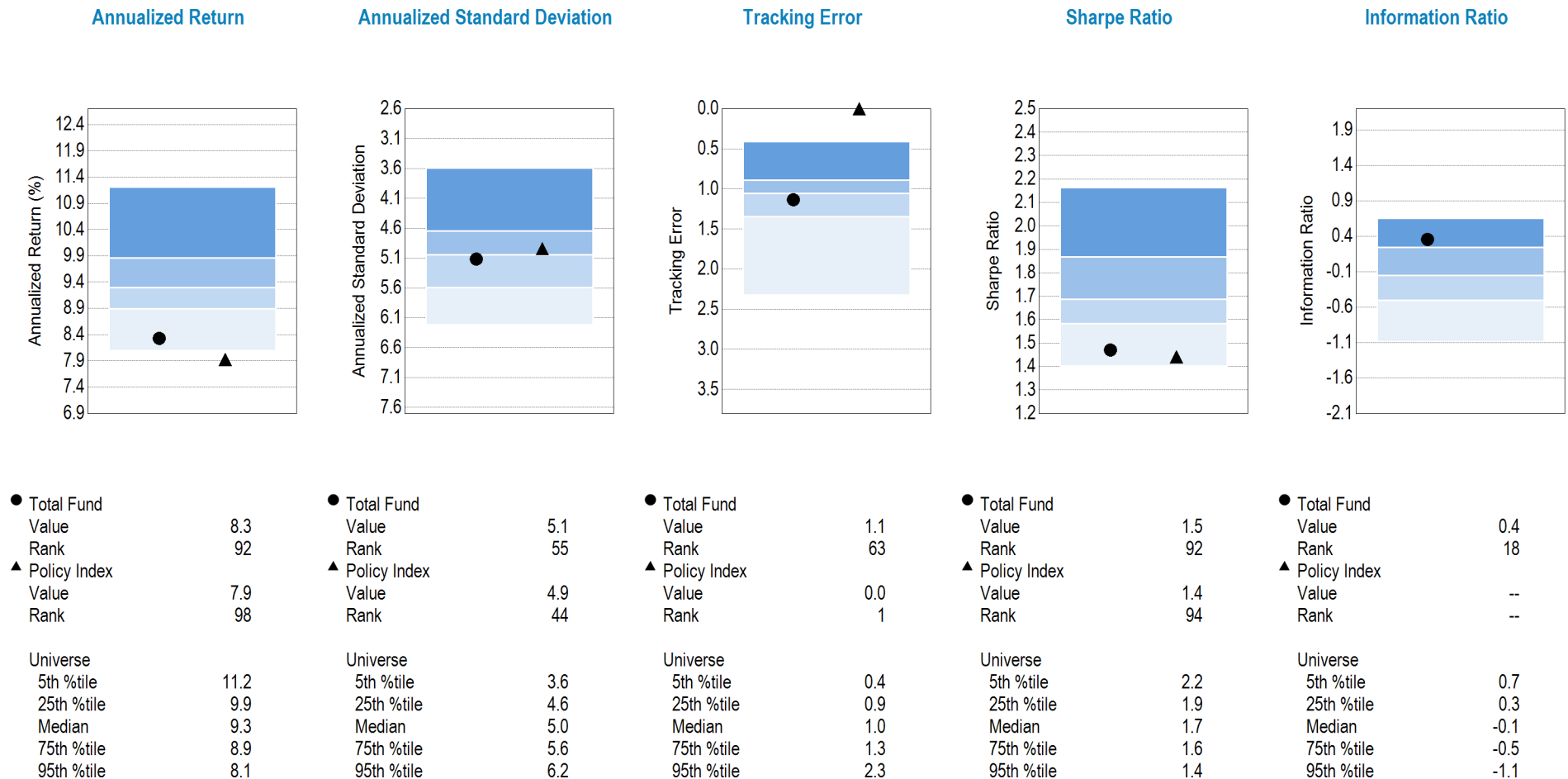
	Anlzd Standard Deviation	Anlzd Alpha	Beta	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio	Information Ratio	Tracking Error	Sharpe Ratio	Sortino Ratio
Total Fund	9.99%	0.93%	0.97	0.98	104.47%	93.83%	0.54	1.37%	0.70	0.84
Total Domestic Equity	16.41%	-0.42%	1.02	0.99	98.97%	101.00%	-0.12	1.88%	0.70	0.79
Total International Equity	17.69%	0.75%	0.93	0.98	93.34%	95.23%	0.15	2.52%	0.32	0.47
Total Domestic Fixed Income	3.82%	3.26%	0.78	0.46	150.79%	49.64%	0.85	2.89%	1.54	3.73
Total Real Estate	7.88%	0.77%	0.85	0.83	88.67%	86.96%	0.02	3.52%	0.55	0.48
Total Hedge Funds	4.86%	0.96%	0.77	0.76	85.36%	69.31%	0.13	2.72%	0.53	0.47
Total Alternative Illiquids	8.34%	2.32%	0.40	0.60	26.51%	47.06%	-0.59	11.03%	0.95	0.78

Total Fund

Peer Universe Statistics - 3 Years (Net of Fees)

Period Ending: September 30, 2018

Total Fund vs. InvestorForce Public DB > \$1B Net Universe

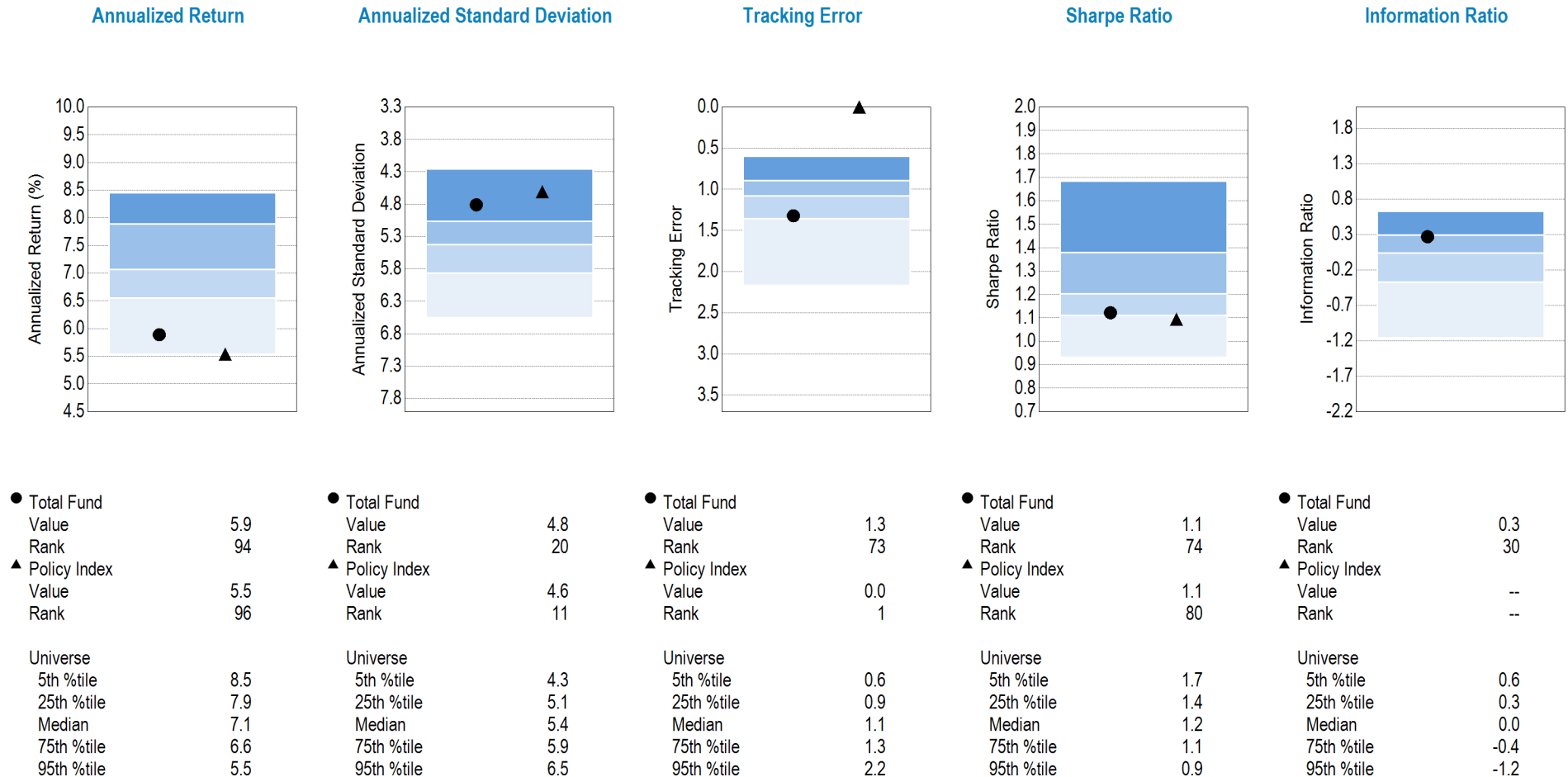


Total Fund

Peer Universe Statistics - 5 Years (Net of Fees)

Period Ending: September 30, 2018

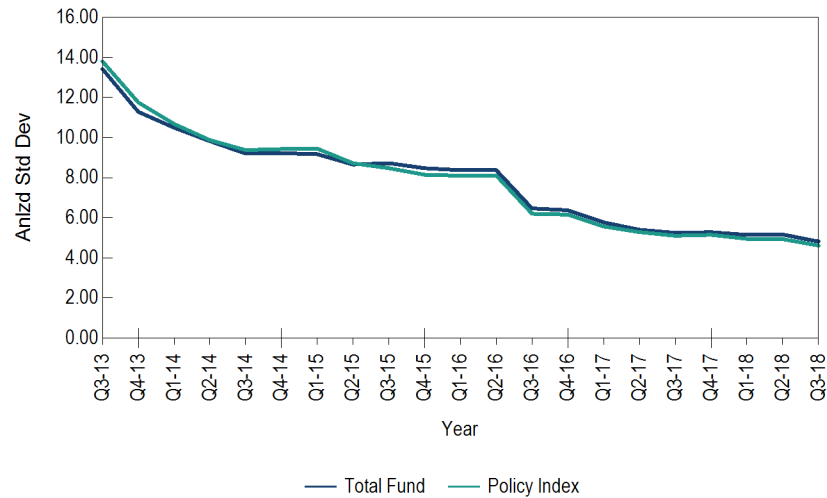
Total Fund vs. InvestorForce Public DB > \$1B Net Universe



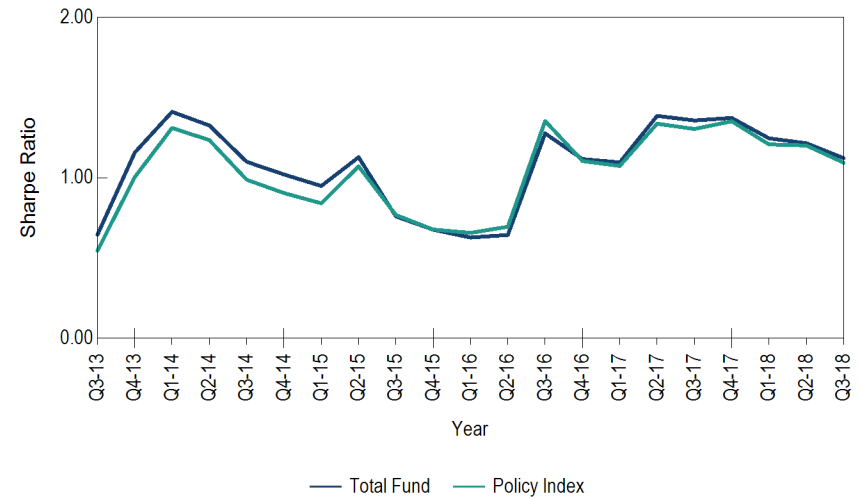
Total Fund Risk Analysis - 5 Years (Net of Fees)

Period Ending: September 30, 2018

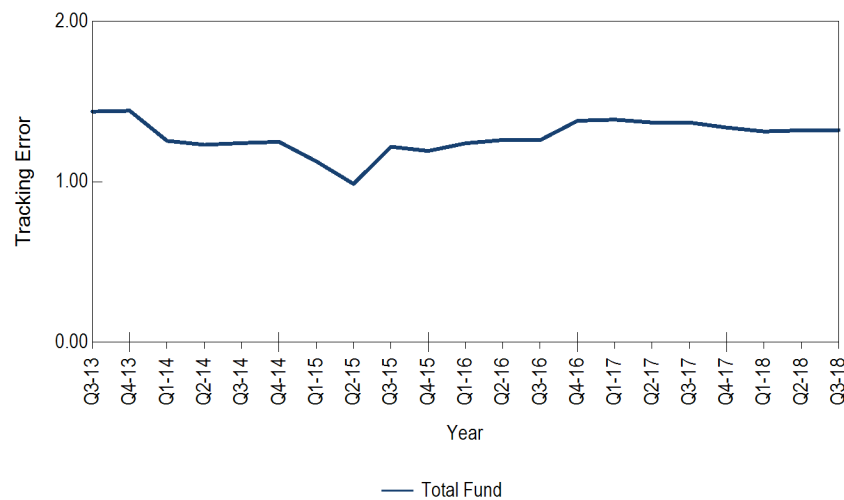
Rolling 5 Year Annualized Standard Deviation



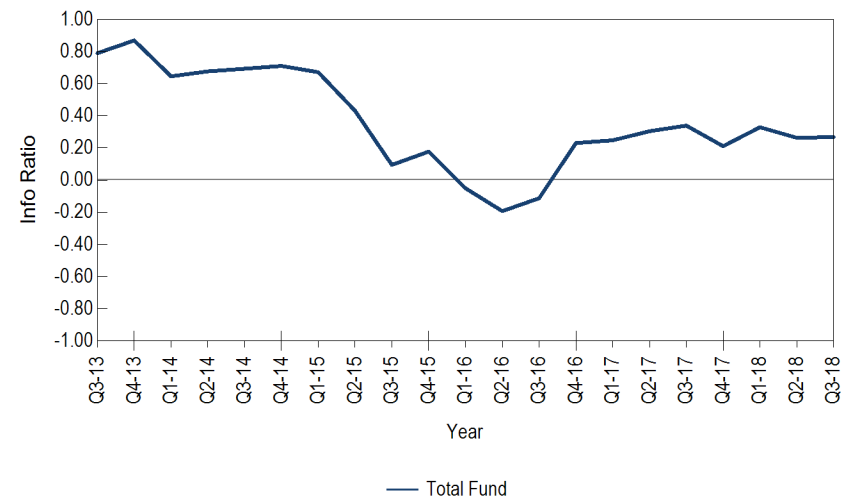
Rolling 5 Year Sharpe Ratio



Rolling 5 Year Tracking Error



Rolling 5 Year Information Ratio



Total Fund Performance Summary (Net of Fees)

Period Ending: September 30, 2018

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2017	2016	2015	2014	2013	Inception	Inception Date
Total Fund	4,750,756,635	100.0	1.9	2.2	5.4	8.3	5.9	7.3	14.6	6.7	-2.5	3.5	16.3	7.2	Jun-02
<i>Policy Index</i>			1.5	1.8	5.1	7.9	5.5	6.6	14.0	6.5	-1.7	2.6	15.6	6.5	Jun-02
Total Fund Ex Parametric	4,628,489,196	97.4	1.9	2.2	5.3	--	--	--	13.9	--	--	--	--	9.0	Dec-16
<i>Policy Index</i>			1.5	1.8	5.1	7.9	5.5	6.6	14.0	6.5	-1.7	2.6	15.6	8.8	Dec-16
Total Domestic Equity	933,703,222	19.7	6.2	10.6	17.5	15.5	12.3	11.8	20.2	8.9	1.5	9.8	36.8	--	Mar-97
<i>Russell 3000</i>			7.1	10.6	17.6	17.1	13.5	12.0	21.1	12.7	0.5	12.6	33.6	8.7	Mar-97
SSgA S&P 500 Flagship Fund	196,283,892	4.1	7.7	10.5	17.9	17.3	14.0	12.0	21.8	12.0	1.4	13.7	32.4	9.0	Mar-04
<i>S&P 500</i>			7.7	10.6	17.9	17.3	13.9	12.0	21.8	12.0	1.4	13.7	32.4	9.0	Mar-04
Ivy	299,107,946	6.3	8.6	20.1	27.7	19.5	16.3	--	30.0	1.4	6.7	12.7	36.6	15.2	Dec-10
<i>Russell 1000 Growth</i>			9.2	17.1	26.3	20.6	16.6	14.3	30.2	7.1	5.7	13.0	33.5	15.6	Dec-10
Aronson Johnson Ortiz	283,384,038	6.0	4.7	3.5	11.2	11.7	10.0	10.2	16.7	9.5	-0.1	9.6	38.0	10.5	Dec-95
<i>Russell 1000 Value</i>			5.7	3.9	9.5	13.6	10.7	9.8	13.7	17.3	-3.8	13.5	32.5	9.0	Dec-95
Systematic Small/Mid Cap Value	77,781,089	1.6	1.5	0.3	7.4	13.2	9.2	--	12.3	22.0	-1.1	4.0	37.2	11.7	Oct-10
<i>Russell 2500 Value</i>			2.7	5.7	10.2	14.5	10.0	10.5	10.4	25.2	-5.5	7.1	33.3	12.5	Oct-10
PIMCO StocksPLUS Small Fund	77,066,396	1.6	3.7	--	--	--	--	--	--	--	--	--	--	13.8	Feb-18
<i>Russell 2000</i>			3.6	11.5	15.2	17.1	11.1	11.1	14.6	21.3	-4.4	4.9	38.8	13.1	Feb-18
Total International Equity	872,579,177	18.4	1.3	-3.7	1.2	9.8	4.1	6.0	28.5	3.0	-7.5	-2.5	18.7	--	--
<i>MSCI ACWI ex USA Gross</i>			0.8	-2.7	2.3	10.5	4.6	5.7	27.8	5.0	-5.3	-3.4	15.8	--	--
Artisan International Growth	200,566,680	4.2	3.3	1.5	5.4	9.3	5.0	--	31.5	-9.0	-2.2	-0.1	--	6.5	Apr-13
<i>MSCI EAFE</i>			1.4	-1.4	2.7	9.2	4.4	5.4	25.0	1.0	-0.8	-4.9	22.8	5.9	Apr-13
Research Affiliates International Equity	201,507,113	4.2	1.8	-3.1	1.1	11.2	4.9	--	25.7	9.3	-5.9	-5.8	28.9	5.0	Apr-11
<i>MSCI EAFE</i>			1.4	-1.4	2.7	9.2	4.4	5.4	25.0	1.0	-0.8	-4.9	22.8	4.2	Apr-11
Mondrian International Small Cap	156,353,286	3.3	0.1	0.6	6.6	12.6	6.4	--	32.4	0.1	2.7	-4.9	17.3	10.2	Nov-09
<i>S&P Developed Ex-U.S. SmallCap</i>			-0.3	-2.2	3.9	12.2	7.8	9.0	32.4	3.8	5.9	-3.4	26.1	9.3	Nov-09
Mondrian Emerging Markets	314,152,098	6.6	0.4	-9.1	-3.4	8.1	1.3	4.7	27.2	9.0	-16.3	0.0	-7.1	5.4	Nov-05
<i>MSCI Emerging Markets</i>			-1.1	-7.7	-0.8	12.4	3.6	5.4	37.3	11.2	-14.9	-2.2	-2.6	6.1	Nov-05
Total Fixed Income	1,498,648,652	31.5	0.3	-1.4	-0.9	4.1	2.7	5.7	8.0	6.7	-4.5	5.0	-1.1	--	--
<i>BBgBarc Global Aggregate*</i>			-0.9	-2.4	-1.3	2.0	0.7	3.0	7.4	2.1	-3.2	0.0	-2.0	--	--
Western Asset Investment Grade Credit	208,751,413	4.4	1.1	-2.1	-1.1	3.9	--	--	6.8	7.0	-0.5	--	--	3.2	Oct-14
<i>BBgBarc US Credit TR</i>			0.9	-2.1	-1.1	3.0	3.4	5.9	6.2	5.6	-0.8	7.5	-2.0	2.6	Oct-14
Loomis Sayles High Yield	309,117,687	6.5	1.8	1.5	2.1	6.9	--	--	7.1	14.4	-5.2	--	--	4.2	Oct-14
<i>BBgBarc US High Yield TR</i>			2.4	2.6	3.0	8.1	5.5	9.5	7.5	17.1	-4.5	2.5	7.4	5.1	Oct-14
Eaton Vance Senior Loan Fund	283,299,501	6.0	1.8	4.2	5.2	5.4	--	--	4.0	9.9	-0.8	--	--	4.2	Oct-14
<i>S&P/LSTA Leveraged Loan Index</i>			1.8	4.0	5.2	5.3	4.1	6.1	4.1	10.2	-0.7	1.6	5.3	4.2	Oct-14

*Prior to 3/31/2014 BBgBarc U.S. Aggregate Index and as of 4/1/2014 BBgBarc Global Aggregate Index. T. Rowe Price replaced Ivy on 10/18/2018.

Total Fund Performance Summary (Net of Fees)

Period Ending: September 30, 2018

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2017	2016	2015	2014	2013	Inception	Inception Date
Eaton Vance Institutional Senior Loan Plus Fund	21,561,939	0.5	2.0	3.9	4.9	--	--	--	3.6	--	--	--	--	4.4	Jan-17
<i>S&P/LSTA Leveraged Loan Index</i>			1.8	4.0	5.2	5.3	4.1	6.1	4.1	10.2	-0.7	1.6	5.3	4.6	Jan-17
SSgA TIPS	174,296,728	3.7	-0.8	-0.9	0.4	2.0	1.3	--	3.0	4.6	-1.5	3.6	-8.6	3.8	Feb-09
<i>BBgBarc US TIPS TR</i>			-0.8	-0.8	0.4	2.0	1.4	3.3	3.0	4.7	-1.4	3.6	-8.6	3.9	Feb-09
Brandywine Global Sovereign	292,363,807	6.2	-1.0	-3.8	-4.4	3.5	--	--	11.9	3.8	-9.8	--	--	0.1	Jan-15
<i>FTSE WGBI TR</i>			-1.6	-2.5	-1.5	1.7	0.2	2.2	7.5	1.6	-3.6	-0.5	-4.0	0.8	Jan-15
PIMCO Emerging Local Bond Ins	209,257,577	4.4	-2.4	-9.0	-8.4	4.8	-2.2	--	15.4	10.7	-16.3	-5.4	--	-1.9	Jul-13
<i>JP Morgan GBI EM Global Diversified TR USD</i>			-1.8	-8.1	-7.4	5.2	-1.7	2.7	15.2	9.9	-14.9	-5.7	-9.0	-1.6	Jul-13
Total Real Estate	222,169,869	4.7	2.3	6.6	8.1	7.7	9.9	4.7	5.8	8.5	13.9	11.8	11.8	--	
<i>NCREIF ODCE Net</i>			1.9	5.8	7.7	7.8	9.7	4.6	6.7	7.8	13.9	11.5	12.9	--	
Invesco Core Real Estate	175,521,029	3.7	2.3	6.3	7.9	7.7	9.9	4.5	6.2	8.3	13.7	11.4	13.4	4.6	Oct-07
<i>NCREIF ODCE Net</i>			1.9	5.8	7.7	7.8	9.7	4.6	6.7	7.8	13.9	11.5	12.9	4.4	Oct-07
FCERA Realty Group LLC	7,947,614	0.2													
Total Infrastructure	140,059,530	2.9	6.1	16.7	21.3	14.0	--	--	19.0	6.1	--	--	--	--	
<i>NCREIF ODCE Net</i>			1.9	5.8	7.7	7.8	9.7	4.6	6.7	7.8	13.9	11.5	12.9	--	
IFM Infrastructure	140,059,530	2.9	6.1	16.7	21.3	14.0	--	--	19.0	6.1	--	--	--	13.2	May-15
<i>NCREIF ODCE Net</i>			1.9	5.8	7.7	7.8	9.7	4.6	6.7	7.8	13.9	11.5	12.9	9.0	May-15
Total Hedge Funds	334,864,181	7.0	0.6	3.4	5.1	3.7	3.5	2.9	4.6	3.0	0.0	3.1	7.8	--	
<i>HFRI Fund of Funds Composite Index</i>			0.2	0.9	3.0	3.3	3.2	2.5	7.8	0.5	-0.3	3.4	9.0	--	
Grosvenor	171,027,068	3.6	0.6	3.9	6.4	4.3	4.1	--	6.4	2.6	0.0	3.5	15.2	5.0	Oct-09
<i>HFRI Fund of Funds Composite Index</i>			0.2	0.9	3.0	3.3	3.2	2.5	7.8	0.5	-0.3	3.4	9.0	3.0	Oct-09
GCM Better Futures Fund	163,837,113	3.4	0.6	2.9	3.7	--	--	--	2.8	--	--	--	--	4.4	Sep-16
<i>HFRI Fund of Funds Composite Index</i>			0.2	0.9	3.0	3.3	3.2	2.5	7.8	0.5	-0.3	3.4	9.0	4.7	Sep-16
Total Commodities	133,424,628	2.8	-3.1	-3.7	3.8	3.2	-3.6	--	5.8	13.8	-12.8	-16.9	-9.4	--	
<i>Bloomberg Commodity Index TR USD</i>			-2.0	-2.0	2.6	-0.1	-7.2	-6.2	1.7	11.8	-24.7	-17.0	-9.5	--	
Invesco Commodities	133,424,628	2.8	-3.1	-3.7	3.8	3.2	--	--	5.8	13.8	--	--	--	0.1	May-15
<i>Bloomberg Commodity Index TR USD</i>			-2.0	-2.0	2.6	-0.1	-7.2	-6.2	1.7	11.8	-24.7	-17.0	-9.5	-4.2	May-15
Total Custodied Cash	44,731,681	0.9	2.9	3.6	3.7	1.6	1.0	0.9	0.3	0.8	-0.1	0.3	0.4	--	
<i>91 Day T-Bills</i>			0.5	1.3	1.6	0.9	0.5	0.3	0.9	0.3	0.0	0.0	0.0	--	
Total County Cash	65,038,604	1.4	0.7	1.6	2.0	--	--	--	--	--	--	--	--	--	
<i>91 Day T-Bills</i>			0.5	1.3	1.6	0.9	0.5	0.3	0.9	0.3	0.0	0.0	0.0	--	
Total Parametric Overlay	122,267,439	2.6													

Closed end Real Estate funds not shown on this page.

Real Estate

Closed End Funds (Net of Fees)

Period Ending: September 30, 2018

Real Estate - Closed End Funds											
Fund	Inception Date	% of Portfolio	Total Commitment	Contributions	Distributions	Estimated Market Value	One Quarter Return	One Year Return	Three Years Return	Five Years Return	(IRR) Since Inception
Invesco Value-Add Fund V	2017	0.0%	\$30,000,000	\$0	\$0	\$0	N/A	N/A	N/A	N/A	N/A
Kennedy Wilson Real Estate Fund V	2016	0.4%	\$30,000,000	\$28,113,444	\$14,082,766	\$20,139,083	3.7%	14.2%	N/A	N/A	12.9%
Gerding Edlen Green Cities III	2016	0.4%	\$20,000,000	\$16,682,120	\$537,072	\$18,498,640	1.2%	5.8%	N/A	N/A	9.0%
TA Realty IX	2009	0.0%	\$30,000,000	\$30,000,000	\$47,156,465	\$63,503	0.5%	-3.9%	1.5%	6.9%	10.4%
% of Total Fund (Market Value)						0.8%					

Private Equity Non Marketable Securities Overview

Period Ending: September 30, 2018

Private Equity								
Fund	Vintage Year	Commitment	Unfunded	Paid-In Capital	Capital Distributed	NAV	TVPI	Since Inception IRR
Legacy Portfolio								
Blackstone Capital Partners IV, L.P.	2003	\$20,000,000	\$623,369	\$22,623,203	\$51,046,172	\$2,354,676	2.36x	29.64%
Hamilton Lane Private Equity Fund IX L.P.	2016	\$100,000,000	\$36,910,009	\$63,089,991	\$12,681,770	\$61,377,849	1.17x	17.93%
Hamilton Lane Private Equity Fund VI, LP	2007	\$70,000,000	\$7,388,235	\$62,611,765	\$75,823,471	\$25,441,522	1.62x	9.62%
Horsley Bridge XI Growth Buyout L.P.	2016	\$30,000,000	\$22,393,347	\$7,606,653	\$525,613	\$6,905,324	0.98x	(2.89%)
Landmark Equity Partners XIV, L.P.	2009	\$30,000,000	\$1,037,070	\$28,962,930	\$30,297,792	\$7,697,638	1.31x	10.26%
New Mountain Partners III, L.P.	2007	\$15,000,000	\$1,054,146	\$15,337,738	\$19,660,519	\$9,745,286	1.92x	13.24%
Warburg Pincus Equity Partners, L.P.	1998	\$20,000,000	\$0	\$20,000,000	\$33,046,892	\$64,046	1.66x	10.26%
Warburg Pincus Private Equity VIII, L.P.	2001	\$25,000,000	\$0	\$26,100,000	\$56,352,985	\$2,890,853	2.27x	14.62%
Warburg Pincus Private Equity X, L.P.	2007	\$25,000,000	\$0	\$25,046,896	\$27,483,861	\$13,055,103	1.62x	8.81%
Warburg Pincus Private Equity XII, L.P.	2015	\$34,000,000	\$15,895,000	\$18,119,177	\$343,977	\$20,285,193	1.14x	11.16%
Total Legacy Portfolio		\$369,000,000	\$85,301,176	\$289,498,353	\$307,263,053	\$149,817,490	1.58x	13.05%
Hamilton Lane Portfolio								
Avista Capital Partners IV, L.P.	2018	\$10,000,000	\$5,793,628	\$5,800,351	\$4,403,384	\$3,141,091	1.30x	51.94%
Hamilton Lane Secondary Fund IV, L.P.	2017	\$75,000,000	\$49,373,304	\$29,881,532	\$5,285,078	\$30,166,878	1.19x	55.63%
Kelso Investment Associates X, L.P.	2018	\$7,500,000	\$7,500,000	\$0	\$0	\$0	N/A	N/A
Platinum Equity Small Cap Fund, L.P.	2018	\$7,500,000	\$7,176,000	\$324,000	\$0	\$278,983	0.86x	N/A
Total Hamilton Lane Portfolio		\$100,000,000	\$69,842,932	\$36,005,883	\$9,688,462	\$33,586,952	1.20x	64.98%
Total Private Equity		\$469,000,000	\$155,144,108	\$325,504,236	\$316,951,515	\$183,404,442	1.54x	13.23%

Data provided by Hamilton Lane.

Private Credit Non Marketable Securities Overview

Period Ending: September 30, 2018

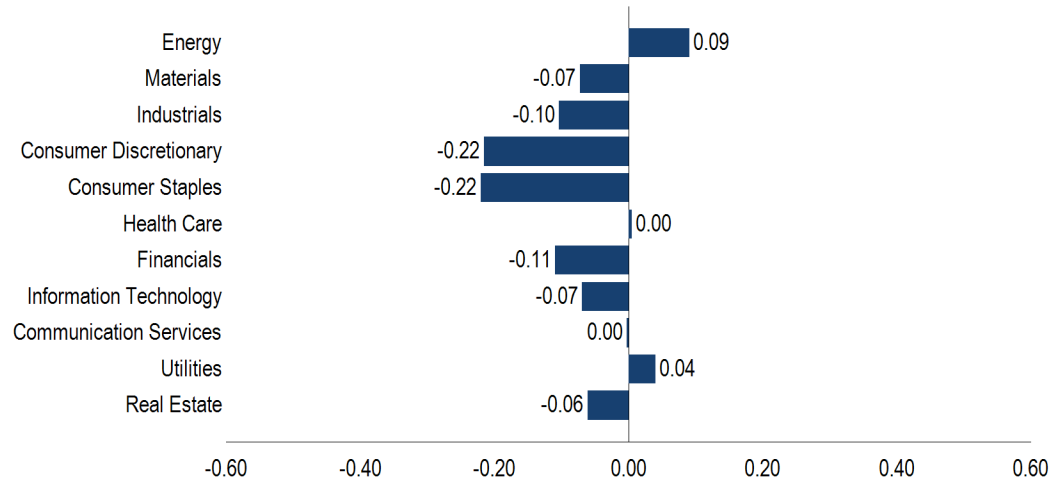
Private Credit								
Fund	Vintage Year	Commitment	Unfunded	Paid-In Capital	Capital Distributed	NAV	TVPI	Since Inception IRR
Legacy Portfolio								
EQT European Special Situations Debt	2017	\$40,000,000	\$38,980,818	\$5,991,140	\$0	\$5,690,821	0.95	11.00%
OHA Strategic Credit Fund II	2016	\$40,000,000	\$38,000,000	\$2,000,000	\$0	\$2,411,374	1.21	15.80%
TSSP Adjacent Opportunities Partners	2016	\$30,000,000	\$14,411,054	\$24,269,284	\$8,680,338	\$17,852,347	1.09	10.40%
GSO European Senior Debt	2015	\$30,000,000	\$13,480,124	\$17,475,631	\$4,581,475	\$17,847,862	1.28	7.30%
CVI Credit Value Fund III	2015	\$30,000,000	\$1,500,000	\$28,500,000	\$0	\$34,347,465	1.21	12.29%
Colony Distressed Credit III	2014	\$20,000,000	\$2,734,614	\$21,939,049	\$12,112,494	\$14,230,212	1.20	10.00%
Oaktree Opportunities IX	2012	\$15,000,000	\$0	\$15,000,000	\$4,934,315	\$12,018,569	1.13	3.20%
KKR Mezzanine Partners	2010	\$30,000,000	\$3,135,380	\$33,432,133	\$37,615,912	\$6,554,770	1.32	8.60%
Angelo Gordon VII	2010	\$30,000,000	\$0	\$30,000,000	\$35,321,659	\$1,210,391	1.22	4.94%
Colony Distressed Credit I	2009	\$40,000,000	\$2,219,487	\$42,267,927	\$63,855,850	\$459,761	1.52	13.00%
Lone Star Fund IV	2002	\$20,000,000	\$954,801	\$19,045,199	\$44,354,883	\$61,572	2.33	30.71%
TCW Shop III	1998	\$15,000,000	\$0	\$15,000,000	\$18,664,813	\$27,459	1.25	3.50%
Total Legacy Portfolio		\$340,000,000	\$115,416,278	\$254,920,363	\$230,121,739	\$112,712,603	1.31	
Carlyle Portfolio								
TCG BDC II	2017	\$150,000,000	\$111,178,889	\$38,821,111	\$815,330	\$39,349,101	1.03	6.74%
CPC V	2017	\$150,000,000	\$114,060,156	\$35,939,843	\$0	\$36,740,580	1.02	9.88%
AlpInvest FC Credit Fund	2017	\$100,000,000	\$89,131,085	\$10,868,915	\$301,516	\$10,295,370	0.97	-4.39%
Total Carlyle Portfolio		\$400,000,000	\$314,370,131	\$85,629,868	\$1,116,846	\$86,385,051	1.01	
Total Private Credit		\$740,000,000	\$429,786,408	\$340,550,231	\$231,238,585	\$199,097,654		

Data provided by Carlyle.

Total Domestic Equity Performance Attribution by Sector (Net of Fees)

Period Ending: September 30, 2018

**Total Domestic Equity vs. Russell 3000
Current Quarter**



GICS Sector	Portfolio Weight	Index Weight	Excess Weight	Portfolio USD Return	Index USD Return	Excess Return	Allocation Effect (Local)	Selection Effect (Local)	Active Contrib.	Passive Contrib.	Total Contrib.
Energy	6.95%	6.01%	0.93%	2.84%	0.69%	2.14%	-0.07%	0.16%	0.09%	-0.39%	-0.30%
Materials	3.02%	3.07%	-0.05%	-2.42%	0.02%	-2.44%	0.00%	-0.08%	-0.07%	-0.22%	-0.29%
Industrials	10.09%	10.25%	-0.15%	8.11%	9.11%	-1.00%	0.00%	-0.10%	-0.10%	0.20%	0.10%
Consumer Discretionary	13.03%	13.10%	-0.07%	4.95%	6.61%	-1.66%	0.00%	-0.22%	-0.22%	-0.07%	-0.28%
Consumer Staples	5.28%	6.22%	-0.93%	1.04%	5.35%	-4.32%	0.01%	-0.23%	-0.22%	-0.11%	-0.33%
Health Care	12.22%	13.77%	-1.54%	14.40%	13.68%	0.72%	-0.09%	0.09%	0.00%	0.90%	0.91%
Financials	16.06%	14.26%	1.80%	3.28%	3.74%	-0.46%	-0.03%	-0.08%	-0.11%	-0.48%	-0.59%
Information Technology	25.36%	24.75%	0.61%	8.97%	9.31%	-0.34%	0.02%	-0.09%	-0.07%	0.54%	0.47%
Communication Services	1.59%	1.82%	-0.23%	7.76%	7.92%	-0.16%	0.00%	0.00%	0.00%	0.01%	0.01%
Utilities	2.69%	2.92%	-0.23%	3.69%	2.54%	1.15%	0.01%	0.03%	0.04%	-0.13%	-0.09%
Real Estate	3.70%	3.84%	-0.14%	-1.21%	0.49%	-1.70%	0.01%	-0.07%	-0.06%	-0.26%	-0.32%
Total				6.42%	7.14%	-0.72%	-0.13%	-0.59%	-0.72%	0.00%	-0.72%

Total Domestic Equity
Performance Attribution Summary (Net of Fees)

Period Ending: September 30, 2018

Portfolio: Total Domestic Equity
Benchmark: Russell 3000

Portfolio Total Return 6.19%

	Equity Only
Portfolio	6.43%
Benchmark	<u>7.14%</u>
Return From Active Mgmt	-0.71%

Local Returns	
Portfolio	6.43%
Benchmark	<u>7.14%</u>
Active Equity Return	-0.71%

Country Selection	-0.09%
Stock Selection	-0.62%

Currency Contributions	
Portfolio	0.00%
Benchmark	<u>0.00%</u>
Active Currency Contributions	0.00%

Chart uses return-based methodology

Total International Equity
Performance Attribution by Country (Net of Fees)

Period Ending: September 30, 2018

Total International Equity vs. MSCI ACWI ex USA

Current Quarter

	Portfolio Weight	Index Weight	Excess Weight	Portfolio USD Return	Index USD Return	Excess USD Return	Active Return	Allocation Effect (Local)	Selection Effect (Local)	Currency Effect
AUSTRALIA	4.90%	4.80%	0.10%	-2.42%	-0.84%	-1.58%	-0.04%	0.00%	-0.08%	0.04%
AUSTRIA	0.24%	0.17%	0.07%	-1.50%	0.40%	-1.90%	-0.01%	-0.01%	-0.01%	0.00%
BELGIUM	0.21%	0.74%	-0.53%	-6.38%	-5.21%	-1.18%	-0.06%	-0.02%	-0.03%	0.00%
BRAZIL	1.04%	1.46%	-0.42%	19.06%	6.16%	12.90%	0.14%	-0.02%	0.13%	0.03%
CANADA	7.02%	6.62%	0.40%	4.18%	1.01%	3.17%	0.16%	0.01%	0.17%	-0.03%
CHILE	0.00%	0.28%	-0.28%	--	-1.93%	1.93%	0.01%	0.01%	0.00%	0.00%
CHINA	1.54%	8.12%	-6.58%	-8.07%	-7.35%	-0.73%	0.61%	0.64%	-0.02%	-0.01%
COLOMBIA	0.00%	0.12%	-0.12%	--	-2.38%	2.38%	0.00%	0.00%	0.00%	0.00%
CZECH REPUBLIC	0.00%	0.04%	-0.04%	--	3.98%	-3.98%	0.00%	0.00%	0.00%	0.00%
DENMARK	0.48%	1.13%	-0.65%	1.80%	2.36%	-0.56%	-0.03%	-0.02%	-0.02%	0.00%
EGYPT	0.00%	0.03%	-0.03%	--	-7.49%	7.49%	0.00%	0.00%	0.00%	0.00%
FINLAND	0.17%	0.70%	-0.54%	0.65%	3.18%	-2.53%	-0.01%	-0.01%	0.00%	0.00%
FRANCE	9.75%	7.49%	2.25%	2.79%	2.91%	-0.12%	0.04%	0.05%	0.01%	-0.03%
GERMANY	15.91%	6.45%	9.47%	5.46%	-0.58%	6.04%	0.76%	-0.29%	1.13%	-0.08%
GREECE	0.00%	0.08%	-0.08%	--	-18.24%	18.24%	0.02%	0.02%	0.00%	0.00%
HONG KONG	3.57%	2.49%	1.07%	-4.35%	-0.90%	-3.44%	-0.14%	-0.01%	-0.13%	0.00%
HUNGARY	0.00%	0.07%	-0.07%	--	4.66%	-4.66%	0.00%	0.00%	0.00%	0.00%
INDIA	0.00%	2.14%	-2.14%	--	-2.34%	2.34%	0.09%	-0.04%	0.00%	0.13%
INDONESIA	0.21%	0.46%	-0.26%	6.66%	1.96%	4.70%	0.01%	-0.01%	0.01%	0.01%
IRELAND	0.67%	0.38%	0.28%	-13.94%	-5.36%	-8.58%	-0.06%	0.00%	-0.07%	0.00%
ISRAEL	0.32%	0.37%	-0.05%	1.74%	5.11%	-3.37%	-0.01%	0.00%	-0.01%	0.00%
ITALY	3.44%	1.65%	1.79%	-4.20%	-4.02%	-0.18%	-0.21%	-0.17%	-0.02%	-0.01%
JAPAN	15.39%	16.68%	-1.28%	1.34%	3.67%	-2.33%	-0.39%	-0.09%	-0.35%	0.04%
KOREA	0.00%	3.64%	-3.64%	--	0.31%	-0.31%	0.05%	0.07%	0.00%	-0.02%
MALAYSIA	0.00%	0.58%	-0.58%	--	3.83%	-3.83%	-0.01%	-0.03%	0.00%	0.01%
MEXICO	0.00%	0.72%	-0.72%	--	6.93%	-6.93%	-0.04%	0.00%	0.00%	-0.04%

Total International Equity
Performance Attribution by Country (Net of Fees)

Period Ending: September 30, 2018

	Portfolio Weight	Index Weight	Excess Weight	Portfolio USD Return	Index USD Return	Excess USD Return	Active Return	Allocation Effect (Local)	Selection Effect (Local)	Currency Effect
NETHERLANDS	3.84%	2.45%	1.39%	-0.96%	-1.30%	0.34%	-0.10%	-0.08%	0.00%	-0.02%
NEW ZEALAND	1.38%	0.15%	1.23%	-2.36%	2.56%	-4.91%	-0.04%	-0.04%	-0.01%	0.01%
NORWAY	0.94%	0.51%	0.43%	6.68%	6.86%	-0.18%	-0.02%	-0.01%	0.00%	0.00%
Other Countries	0.03%	0.00%	0.03%	-0.61%	0.77%	-1.38%	0.00%	0.00%	0.00%	0.00%
PAKISTAN	0.00%	0.02%	-0.02%	--	-4.79%	4.79%	0.00%	0.00%	0.00%	0.00%
PERU	0.00%	0.10%	-0.10%	--	-2.11%	2.11%	0.00%	0.00%	0.00%	0.00%
PHILIPPINES	0.00%	0.23%	-0.23%	--	1.06%	-1.06%	0.00%	0.00%	0.00%	0.00%
POLAND	0.00%	0.27%	-0.27%	--	11.06%	-11.06%	-0.03%	-0.02%	0.00%	0.00%
PORTUGAL	0.11%	0.11%	0.00%	-10.03%	-0.38%	-9.65%	-0.02%	0.00%	-0.01%	0.00%
QATAR	0.00%	0.21%	-0.21%	--	11.51%	-11.51%	-0.02%	-0.02%	0.00%	0.00%
RUSSIA	0.00%	0.85%	-0.85%	--	7.07%	-7.07%	-0.05%	-0.08%	0.00%	0.03%
SINGAPORE	2.36%	0.88%	1.49%	3.34%	2.20%	1.15%	0.03%	-0.01%	0.04%	0.00%
SOUTH AFRICA	0.00%	1.57%	-1.57%	89.55%	-7.14%	96.69%	0.14%	0.09%	0.00%	0.05%
SPAIN	1.55%	2.09%	-0.55%	-3.51%	-2.34%	-1.17%	-0.04%	-0.01%	-0.03%	0.00%
SWEDEN	1.98%	1.74%	0.24%	8.88%	6.99%	1.89%	0.01%	-0.03%	0.02%	0.01%
SWITZERLAND	5.08%	5.28%	-0.20%	6.94%	7.32%	-0.37%	-0.01%	-0.01%	0.00%	0.00%
TAIWAN	0.00%	2.88%	-2.88%	--	7.11%	-7.11%	-0.16%	-0.16%	0.00%	0.00%
THAILAND	0.00%	0.55%	-0.55%	--	13.71%	-13.71%	-0.07%	-0.05%	0.00%	-0.01%
TURKEY	0.00%	0.19%	-0.19%	--	-20.28%	20.28%	0.04%	0.00%	0.00%	0.04%
UNITED ARAB EMIRATES	0.00%	0.16%	-0.16%	--	1.40%	-1.40%	0.00%	0.00%	0.00%	0.00%
UNITED KINGDOM	14.22%	12.33%	1.90%	-2.37%	-1.58%	-0.78%	-0.17%	-0.03%	-0.12%	-0.02%
UNITED STATES	3.69%	0.00%	3.69%	12.78%	7.36%	5.42%	0.41%	0.21%	0.20%	0.00%
	100.00%	100.00%	0.00%	1.56%	0.77%	0.79%	0.79%	-0.16%	0.80%	0.15%

Total International Equity
Performance Attribution by Currency (Net of Fees)

Period Ending: September 30, 2018

Total International Equity vs. MSCI ACWI ex USA

Current Quarter

Currency Name	Portfolio Weight	Index Weight	Excess Weight	Currency Return	Portfolio Contrib.	Index Contrib.	Active Contrib.	Currency Effect
	0.03%	0.00%	0.03%	--	0.00%	-0.87%	0.87%	0.00%
Australian Dollar	4.90%	4.80%	0.10%	-2.07%	-2.06%	-2.10%	0.03%	0.04%
Baht	0.00%	0.55%	-0.55%	2.44%	0.00%	2.71%	-2.71%	-0.01%
Canadian Dollar	7.02%	6.62%	0.40%	1.77%	1.38%	1.75%	-0.37%	-0.03%
Chilean Peso	0.00%	0.28%	-0.28%	-1.30%	0.00%	-1.29%	1.29%	0.00%
Colombian Peso	0.00%	0.12%	-0.12%	-1.09%	0.00%	-1.08%	1.08%	0.00%
Cruzeiro Real	1.04%	1.46%	-0.42%	-3.66%	-2.18%	-4.03%	1.85%	0.03%
Czech Koruna	0.00%	0.04%	-0.04%	0.38%	0.00%	0.40%	-0.40%	0.00%
Danish Krone	0.48%	1.13%	-0.65%	-0.61%	-0.62%	-0.62%	0.00%	0.00%
Egyptian Pound	0.00%	0.03%	-0.03%	-0.17%	0.00%	-0.15%	0.15%	0.00%
Emirati dirham	0.00%	0.16%	-0.16%	0.00%	0.00%	0.00%	0.00%	0.00%
Euro	35.86%	22.30%	13.56%	-0.52%	-0.53%	-0.52%	-0.02%	-0.14%
Forint	0.00%	0.07%	-0.07%	1.23%	0.00%	1.27%	-1.27%	0.00%
Hong Kong Dollar	3.57%	2.49%	1.07%	0.26%	0.25%	0.24%	0.01%	0.00%
Indian Rupee	0.00%	2.14%	-2.14%	-5.48%	0.00%	-5.67%	5.67%	0.13%
Mexican New Peso	0.00%	0.72%	-0.72%	5.12%	0.00%	5.20%	-5.20%	-0.04%
New Sol	0.00%	0.10%	-0.10%	-0.73%	0.00%	0.00%	0.00%	0.00%
New Taiwan Dollar	0.00%	2.88%	-2.88%	-0.15%	0.00%	-0.16%	0.16%	0.00%
New Zealand Dollar	1.38%	0.15%	1.23%	-2.08%	-2.08%	-2.18%	0.10%	0.01%
New Zloty	0.00%	0.27%	-0.27%	1.57%	0.00%	1.71%	-1.71%	0.00%
Norwegian Krone	0.94%	0.51%	0.43%	0.09%	0.09%	0.09%	0.00%	0.00%
Pakistani Rupee	0.00%	0.02%	-0.02%	-2.20%	0.00%	-2.14%	2.14%	0.00%
Philippines Peso	0.00%	0.23%	-0.23%	-1.23%	0.00%	-1.25%	1.25%	0.00%
Pound Sterling	14.22%	12.33%	1.90%	-1.23%	-1.21%	-1.22%	0.01%	-0.02%
Qatari rial	0.00%	0.21%	-0.21%	-0.01%	0.00%	-0.01%	0.01%	0.00%
Rand	0.00%	1.57%	-1.57%	-3.14%	-1.00%	-3.02%	2.02%	0.05%
Ringgit (Malaysian Dollar)	0.00%	0.58%	-0.58%	-2.39%	0.00%	-2.54%	2.54%	0.01%
Rupiah	0.21%	0.46%	-0.26%	-3.84%	-4.25%	-4.07%	-0.19%	0.01%

Total International Equity
Performance Attribution by Currency (Net of Fees)

Period Ending: September 30, 2018

Currency Name	Portfolio Weight	Index Weight	Excess Weight	Currency Return	Portfolio Contrib.	Index Contrib.	Active Contrib.	Currency Effect
Russian Federation Rouble	0.00%	0.85%	-0.85%	-4.26%	0.00%	-4.08%	4.08%	0.03%
Shekel	0.32%	0.37%	-0.05%	0.67%	0.49%	0.39%	0.10%	0.00%
Singapore Dollar	2.36%	0.88%	1.49%	-0.21%	-0.17%	-0.21%	0.04%	0.00%
South Korean Won	0.00%	3.64%	-3.64%	0.47%	0.00%	0.47%	-0.47%	-0.02%
Swedish Krona	1.98%	1.74%	0.24%	0.59%	0.24%	0.39%	-0.15%	0.01%
Swiss Franc	5.08%	5.28%	-0.20%	1.65%	1.74%	1.75%	-0.01%	0.00%
Turkish Lira	0.00%	0.19%	-0.19%	-23.74%	0.00%	-24.82%	24.82%	0.04%
US Dollar	3.69%	0.00%	3.69%	0.00%	0.02%	-0.87%	0.88%	0.00%
Yen	15.39%	16.68%	-1.28%	-2.48%	-2.59%	-2.64%	0.05%	0.04%
Yuan Renminbi	1.54%	8.12%	-6.58%	-3.71%	-0.02%	0.14%	-0.16%	-0.01%
	100.00%	100.00%	0.00%		-0.73%	-0.87%	0.14%	0.15%

Total International Equity
Performance Attribution by Region (Net of Fees)

Period Ending: September 30, 2018

Total International Equity vs. MSCI ACWI ex USA
Current Quarter

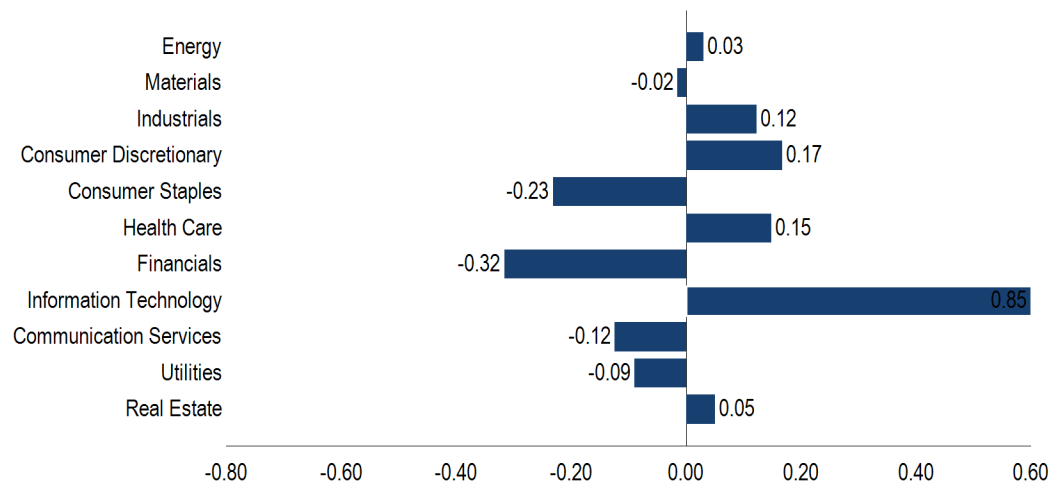
Region	Portfolio Weight	Index Weight	Excess Weight	Portfolio USD Return	Index USD Return	Excess USD Return	Allocation Effect (Local)	Selection Effect (Local)	Active Contrib.	Passive Contrib.	Total Contrib.
North America ex U.S.	7.02%	6.62%	0.40%	4.18%	1.01%	3.17%	0.01%	0.14%	0.16%	0.02%	0.17%
United States	3.69%	0.00%	3.69%	12.78%	--	--	0.00%	0.41%	0.41%	0.00%	0.41%
Europe Ex U.K.	44.33%	30.97%	13.37%	2.52%	1.80%	0.72%	-0.07%	0.33%	0.26%	0.32%	0.58%
United Kingdom	14.22%	12.33%	1.90%	-2.37%	-1.58%	-0.78%	-0.03%	-0.14%	-0.17%	-0.29%	-0.46%
Pacific Basin Ex Japan	12.21%	8.32%	3.89%	-2.09%	-0.48%	-1.60%	-0.02%	-0.17%	-0.19%	-0.10%	-0.30%
Japan	15.39%	16.68%	-1.28%	1.34%	3.67%	-2.33%	-0.09%	-0.31%	-0.39%	0.48%	0.09%
Emerging Markets	2.79%	24.50%	-21.71%	8.14%	-1.08%	9.21%	0.37%	0.38%	0.75%	-0.45%	0.30%
Other	0.35%	0.59%	-0.25%	1.54%	7.08%	-5.55%	-0.01%	-0.02%	-0.04%	0.04%	0.00%
Total				1.56%	0.77%	0.79%	0.16%	0.62%	0.79%	0.00%	0.79%

Region	Portfolio Weight	Index Weight	Excess Weight	Portfolio USD Return	Index USD Return	Excess USD Return	Allocation Effect (Local)	Selection Effect (Local)	Active Contrib.	Passive Contrib.	Total Contrib.
EM Asia	1.75%	18.62%	-16.87%	-7.41%	-1.75%	-5.66%	0.50%	0.02%	0.53%	-0.47%	0.05%
EM Latin America	1.04%	2.69%	-1.65%	19.06%	4.78%	14.28%	-0.06%	0.18%	0.11%	0.11%	0.22%
EM Europe & Middle East	0.00%	1.43%	-1.43%	--	3.95%	--	-0.10%	0.07%	-0.04%	0.05%	0.01%
EM Africa	0.00%	1.61%	-1.61%	89.55%	-7.15%	96.70%	0.09%	0.06%	0.15%	-0.13%	0.02%
Other	97.21%	75.66%	21.55%	1.47%	1.37%	0.10%	0.12%	-0.08%	0.04%	0.45%	0.48%
Total				1.56%	0.77%	0.79%	0.55%	0.24%	0.79%	0.00%	0.79%

Total International Equity Performance Attribution by Sector (Net of Fees)

Period Ending: September 30, 2018

Total International Equity vs. MSCI ACWI ex USA
Current Quarter



GICS Sector	Portfolio Weight	Index Weight	Excess Weight	Portfolio USD Return	Index USD Return	Excess Return	Allocation Effect (Local)	Selection Effect (Local)	Active Contrib.	Passive Contrib.	Total Contrib.
Energy	3.17%	7.43%	-4.26%	7.56%	4.42%	3.13%	-0.09%	0.14%	0.05%	0.27%	0.32%
Materials	8.39%	8.16%	0.23%	0.33%	0.42%	-0.08%	0.00%	-0.02%	-0.02%	-0.03%	-0.05%
Industrials	20.58%	11.66%	8.92%	3.35%	2.85%	0.50%	0.13%	0.00%	0.13%	0.24%	0.37%
Consumer Discretionary	10.38%	11.25%	-0.87%	-1.65%	-2.71%	1.06%	0.06%	0.15%	0.22%	-0.39%	-0.18%
Consumer Staples	8.37%	9.67%	-1.30%	-2.67%	-0.52%	-2.14%	0.01%	-0.19%	-0.18%	-0.12%	-0.30%
Health Care	6.92%	8.09%	-1.17%	7.16%	4.48%	2.67%	-0.03%	0.22%	0.19%	0.30%	0.49%
Financials	22.47%	21.92%	0.56%	0.89%	1.64%	-0.75%	-0.05%	-0.30%	-0.35%	0.19%	-0.16%
Information Technology	8.90%	11.88%	-2.98%	6.13%	-2.37%	8.50%	0.14%	0.71%	0.84%	-0.37%	0.47%
Communication Services	2.07%	3.72%	-1.66%	0.22%	3.57%	-3.34%	-0.04%	-0.07%	-0.11%	0.10%	-0.01%
Utilities	5.73%	3.01%	2.72%	-1.66%	-0.94%	-0.72%	-0.01%	-0.08%	-0.09%	-0.05%	-0.14%
Real Estate	2.63%	3.20%	-0.57%	-4.40%	-3.61%	-0.79%	0.06%	0.02%	0.08%	-0.14%	-0.06%
Unclassified	0.39%	0.00%	0.39%	13.55%	--	-0.17%	0.03%	0.00%	0.03%	0.00%	0.03%

Total International Equity
Performance Attribution Summary (Net of Fees)

Period Ending: September 30, 2018

Portfolio: Total International Equity
Benchmark: MSCI ACWI ex USA

Portfolio Total Return 1.33%

Equity Only

Portfolio 1.56%

Benchmark 0.77%

Return From Active Mgmt 0.79%

Local Returns

Portfolio 2.27%

Benchmark 1.64%

Active Equity Return 0.63%

Country Selection -0.16%

Stock Selection 0.80%

Currency Contributions

Portfolio -0.73%

Benchmark -0.87%

Active Currency Contributions 0.14%

Chart uses return-based methodology

Total Fund Watch List (Net of Fees)

Period Ending: September 30, 2018

Name	Allocation Group	Status	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6
Ivy	Domestic Equity Large Cap Growth	Terminate	✓	✗	✓	✓	✓	--
Aronson Johnson Ortiz	Domestic Equity Large Cap Value	No Issues	✓	✗	✓	✓	✗	--
Systematic Small/Mid Cap Value	Domestic Equity Small/Mid Cap Value	Watch	✓	✗	✗	✓	✗	--
Artisan International Growth	International Equity	No Issues	✓	✗	✗	✗	✗	--
Research Affiliates International Equity	International Equity	No Issues	✗	✓	✓	✗	✗	--
Mondrian International Small Cap	International Equity Small Cap	No Issues	✗	✗	✗	✗	✗	--
Mondrian Emerging Markets	Emerging Markets Equity	No Issues	✗	✗	✗	✗	✗	--

Rule 1 - Manager has underperformed the benchmark index more than half the time over the last 20 quarters

Rule 2 - Equity manager has returned less than 110% of the benchmark index for the three year period.

Rule 3 - Manager has underperformed the 50th percentile in the appropriate style universe in more than two of the last five years of consecutive returns.

Rule 4 - Manager's Sharpe Ratio is worse than the 50th Percentile in an appropriate style universe for the five year period $(\text{five year return minus five year risk free rate})/(\text{standard deviation})$.

Rule 5 - Manager's Information Ratio is worse than the 50th Percentile in an appropriate style universe for the five year period $(\text{excess return over benchmark})/(\text{tracking error})$.

Rule 6 - Fund experiences non-performance related issues including personnel turnover, changes in investment philosophy or drift, excessive asset growth, change in ownership and any other reason that raises concern.

Watch List standards are run against historical composite returns prior to manager since inception.

Total Fund Watch List (Net of Fees)

Period Ending: September 30, 2018

Name	Allocation Group	Status	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6
Brandywine Global Sovereign	Global Fixed Income	No Issues	✓	✓	✗	✗	✗	--
Western Asset Investment Grade Credit	Domestic Fixed Income	No Issues	✓	✓	✓	✓	✓	--
Loomis Sayles High Yield	Domestic Fixed Income High Yield	No Issues	✗	✗	✗	✗	✓	--
Eaton Vance Senior Loan Fund	Domestic Fixed Income Bank Loans	No Issues	✓	✗	✓	✗	✗	--
PIMCO Emerging Local Bond Ins	Emerging Markets Fixed Income	No Issues	✓	✗	✗	✗	✗	--
Invesco Core Real Estate	Real Estate	No Issues	✗	✗	✗	--	--	--
Grosvenor	Hedge Funds	No Issues	✓	✓	✗	--	--	--
Invesco Commodities	Commodities	No Issues	✓	✓	✗	--	--	--

Rule 1 - Manager has underperformed the benchmark index more than half the time over the last 20 quarters

Rule 2 - Fixed Income manager has returned less than 105% of the benchmark index for the three year period.

Rule 3 - Manager has underperformed the 50th percentile in the appropriate style universe in more than two of the last five years of consecutive returns.

Rule 4 - Manager's Sharpe Ratio is worse than the 50th Percentile in an appropriate style universe for the five year period $[(\text{five year return minus five year risk free rate})/(\text{standard deviation})]$.

Rule 5 - Manager's Information Ratio is worse than the 50th Percentile in an appropriate style universe for the five year period $[(\text{excess return over benchmark})/(\text{tracking error})]$.

Rule 6 - Fund experiences non-performance related issues including personnel turnover, changes in investment philosophy or drift, excessive asset growth, change in ownership and any other reason that raises concern.

Watch List standards are run against historical composite returns prior to manager since inception.

Total Fund Investment Fund Fee Analysis

Period Ending: September 30, 2018

Account	Fee Schedule	Market Value As of 9/30/2018	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
SSgA S&P 500 Flagship Fund	0.03% of First 150.0 Mil, 0.02% Thereafter	\$196,283,892	\$53,331	0.03%
Ivy	0.25% of Assets	\$299,107,946	\$747,770	0.25%
Aronson Johnson Ortiz	0.30% of First 250.0 Mil, 0.20% of Next 250.0 Mil, 0.15% of Next 500.0 Mil, 0.13% Thereafter	\$283,384,038	\$816,768	0.29%
Systematic Small/Mid Cap Value	0.35% of Assets	\$77,781,089	\$272,234	0.35%
PIMCO StocksPLUS Small Fund	0.50% of First 150.0 Mil, 0.45% Thereafter	\$77,066,396	\$385,332	0.50%
Artisan International Growth	0.30% of Assets	\$200,566,680	\$601,700	0.30%
Research Affiliates International Equity	0.12% of Assets	\$201,507,113	\$241,809	0.12%
Mondrian International Small Cap	0.85% of First 25.0 Mil, 0.65% of Next 50.0 Mil, 0.63% of Next 50.0 Mil, 0.60% Thereafter	\$156,353,286	\$1,038,120	0.66%
Mondrian Emerging Markets	1.00% of First 25.0 Mil, 0.75% of Next 50.0 Mil, 0.60% Thereafter	\$314,152,098	\$2,059,913	0.66%
Western Asset Investment Grade Credit	0.30% of First 100.0 Mil, 0.15% Thereafter	\$208,751,413	\$463,127	0.22%
Loomis Sayles High Yield	0.50% of Assets	\$309,117,687	\$1,545,588	0.50%
Eaton Vance Senior Loan Fund	0.55% of First 50.0 Mil, 0.50% of Next 50.0 Mil, 0.40% Thereafter	\$283,299,501	\$1,258,198	0.44%
Eaton Vance Institutional Senior Loan Plus Fund	0.40% of Assets	\$21,561,939	\$86,248	0.40%

This fee analysis only reflects base fees for investment management, does not incorporate performance-based fees, and excludes fees paid to closed end real estate managers, private equity managers and GCM Better Futures Fund. Closed end real estate and private equity fees have other components which cannot be easily captured in this simplified format.

** Managers with incentive fee include: Ivy, Systematic, Research Affiliates, Western Asset, Artisan, Brandywine, and Invesco Commodities. Performance based fees are not included in the fee analysis. AJO has performance based fees.*

Total Fund Investment Fund Fee Analysis

Period Ending: September 30, 2018

Account	Fee Schedule	Market Value As of 9/30/2018	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
SSgA TIPS	0.04% of Assets	\$174,296,728	\$69,719	0.04%
Brandywine Global Sovereign	0.36% of Assets	\$292,363,807	\$1,052,510	0.36%
PIMCO Emerging Local Bond Ins	0.50% of First 100.0 Mil, 0.45% Thereafter	\$209,257,577	\$991,659	0.47%
Invesco Core Real Estate	0.90% of First 75.0 Mil, 0.80% Thereafter	\$175,521,029	\$1,479,168	0.84%
IFM Infrastructure	0.97% of Assets	\$140,059,530	\$1,358,577	0.97%
Grosvenor	1.15% of First 25.0 Mil, 1.00% of Next 25.0 Mil, 0.80% of Next 50.0 Mil, 0.60% Thereafter	\$171,027,068	\$1,363,662	0.80%
Invesco Commodities	0.30% of Assets	\$133,424,628	\$400,274	0.30%
Parametric Overlay	0.15% of First 25.0 Mil, 0.10% of Next 75.0 Mil, 0.04% Thereafter	\$122,267,439	\$121,407	0.10%
Investment Management Fee		\$4,047,150,884	\$16,407,113	0.41%

This fee analysis only reflects base fees for investment management, does not incorporate performance-based fees, and excludes fees paid to closed end real estate managers, private equity managers and GCM Better Futures Fund. Closed end real estate and private equity fees have other components which cannot be easily captured in this simplified format.

** Managers with incentive fee include: Ivy, Systematic, Research Affiliates, Western Asset, Artisan, Brandywine, and Invesco Commodities. Performance based fees are not included in the fee analysis. AJO has performance based fees.*

Performance Return Calculations

Performance is calculated using Modified Dietz and for time periods with large cash flow (generally greater than 10% of portfolio value), Time Weighted Rates of Return (TWR) methodologies. Monthly returns are geometrically linked and annualized for periods longer than one year.

Data Source

Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.

Illiquid Alternatives

Due to the inability to receive final valuation prior to report production, closed end funds (including but are not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit) performance is typically reported at a one-quarter lag. Valuation is reported at a one-quarter lag, adjusted for current quarter flow (cash flows are captured real time). Closed end fund performance is calculated using a time-weighted return methodology consistent with all portfolio and total fund performance calculations. For Private Markets, performance reports also include Verus-calculated multiples based on flows and valuations (e.g. DPI and TVPI) and manager-provided IRRs.

Manager Line Up

Manager	Fund Incepted	Data Source	Manager	Fund Incepted	Data Source
Benefits Payment Cash	N/A	Northern Trust	Loomis Sayles High Yield	10/1/2014	Northern Trust
Custodied	N/A	Northern Trust	Eaton Vance Senior Loan	10/1/2014	Eaton Vance
County Cash	N/A	FCERA	Colony Distressed Credit III	2014	Carlyle
Aronson Johnson Ortiz	12/4/1995	Northern Trust	Brandywine Global Sovereign	1/31/2015	Northern Trust
Warburg Pincus	1998	Hamilton Lane	IFM Global Infrastructure	5/13/2015	IFM
TCW Shop III	1998	Carlyle	Invesco Commodities	5/27/2015	Invesco
Warburg Pincus VIII	2001	Hamilton Lane	GSO European Senior Debt	2015	Carlyle
Blackstone IV	2002	Hamilton Lane	CVI Credit Value Fund III	2015	Carlyle
Lonestar IV	2002	Carlyle	Warburg Pincus XII	2015	Hamilton Lane
TCW Shop IV	2002	Carlyle	Gerding Edlen Green Cities III	2016	Gerding Edlen
SSgA S&P 500 Flagship Fund	4/1/2004	State Street	Hamilton Lane PE Fund IX	2016	Hamilton Lane
Mondrian Emerging Markets	11/17/2005	Mondrian	Kennedy Wilson Real Estate V	2016	Kennedy Wilson
Invesco Core Real Estate	10/1/2007	Invesco	TSSP Adjacent Opportunities	2016	Carlyle
New Mountain III	2007	Hamilton Lane	OHA Strategic Credit Fund II, L.P.	2016	Carlyle
Hamilton Lane VI	2007	Hamilton Lane	Horsley Bridge XI GBO	2016	Hamilton Lane
Warburg Pincus X	2007	Hamilton Lane	GCM Better Futures Fund	2016	Grosvenor
Landmark Equity Partners XIV	2008	Hamilton Lane	Parametric Overlay	2016	Northern Trust
SSgA TIPS	2/27/2009	State Street	EQT European S. Situations Debt	2017	Carlyle
Grosvenor	10/31/2009	Grosvenor	Eaton Vance Ins. Sr Loan Plus	2017	Eaton Vance
Mondrian Int'l Small Cap	11/2/2009	Mondrian	PIMCO StocksPLUS Small Fund	4/31/2018	PIMCO
Colony Distressed Credit I	2009	Carlyle	Hamilton Lane Secondary Fund IV	2017	Hamilton Lane
TA Associates Realty 9	2009	TA Associates	TCG BDC II	2017	Carlyle
Systematic Small/Mid Value	10/8/2010	Northern Trust	AlpInvest FC Credit Fund, L.P.	2017	Carlyle
Ivy	12/20/2010	Northern Trust	CPC V, L.P.	2017	Carlyle
KKR Mezzanine Partners I	2010	Carlyle	Kelso Investment Associates X, L.P.	2018	Hamilton Lane
Angelo Gordon Cap. Recov. VII	2010	Carlyle	Avista Capital Partners IV	2018	Hamilton Lane
RAFI International Equity	4/30/2011	Northern Trust	Platinum Equity Small Cap Fund	2018	Hamilton Lane
Oaktree Opportunities Fund IX	2012	Carlyle			
Artisan International Growth	4/1/2013	Northern Trust			
PIMCO Emerging Local Bond	7/31/2013	Northern Trust			
WAMCO Credit Index	10/1/2014	Northern Trust			

Policy & Custom Index Composition	
Floating Policy Index (7/1/2018-7/31/2018)	17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 2.1% Russell 2000, 4.2% BBgBarc US Corp. High Yield, 3.9% Private Equity Neutralized, 3.8% Private Credit Neutralized, 0.5% Real Estate Neutralized, 8% HFRI FoF Composite, 7.5% NCREIF ODCE Net, & 3% Bloomberg Commodity Index.
(8/1/2018-8/31/2018)	17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 2% Russell 2000, 4.1% BBgBarc US Corp. High Yield, 4% Private Equity Neutralized, 3.9% Private Credit Neutralized, 0.4% Real Estate Neutralized, 8% HFRI FoF Composite, 7.6% NCREIF ODCE Net, & 3% Bloomberg Commodity Index.
(9/1/2018-9/30/2018)	17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 2.1% Russell 2000, 3.9% BBgBarc US Corp. High Yield, 3.9% Private Equity Neutralized, 4.1% Private Credit Neutralized, 0.4% Real Estate Neutralized, 8% HFRI FoF Composite, 7.6% NCREIF ODCE Net, & 3% Bloomberg Commodity Index.

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BBgBarc Global Aggregate*

Prior to 3/31/2014 BBgBarc U.S. Aggregate Index and as of 4/1/2014 BBgBarc Global Aggregate Index.

**The term neutralized indicates that the benchmark performance was set equal to the asset class composite.

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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