

# Fresno County Employees' Retirement Association

Investment Performance Review  
Period Ending: December 31, 2017



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SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

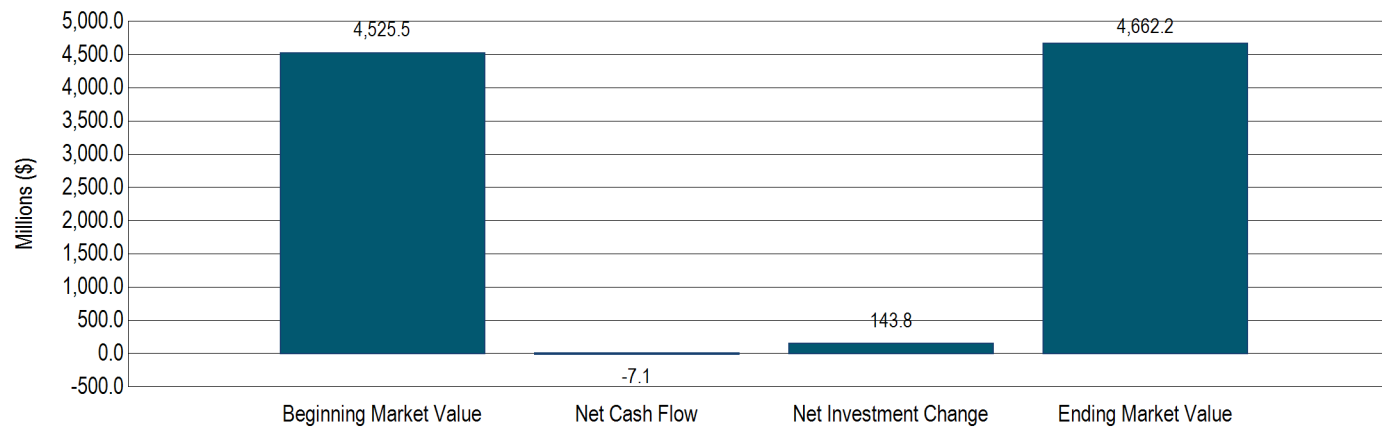
Total Fund  
Portfolio Reconciliation

Period Ending: December 31, 2017

Portfolio Reconciliation

	Last Three Months	Year-To-Date
Beginning Market Value	\$4,525,469,008	\$4,097,749,904
Net Cash Flow	-\$7,070,636	-\$38,609,199
Net Investment Change	\$143,815,330	\$603,072,998
Ending Market Value	\$4,662,213,703	\$4,662,213,703

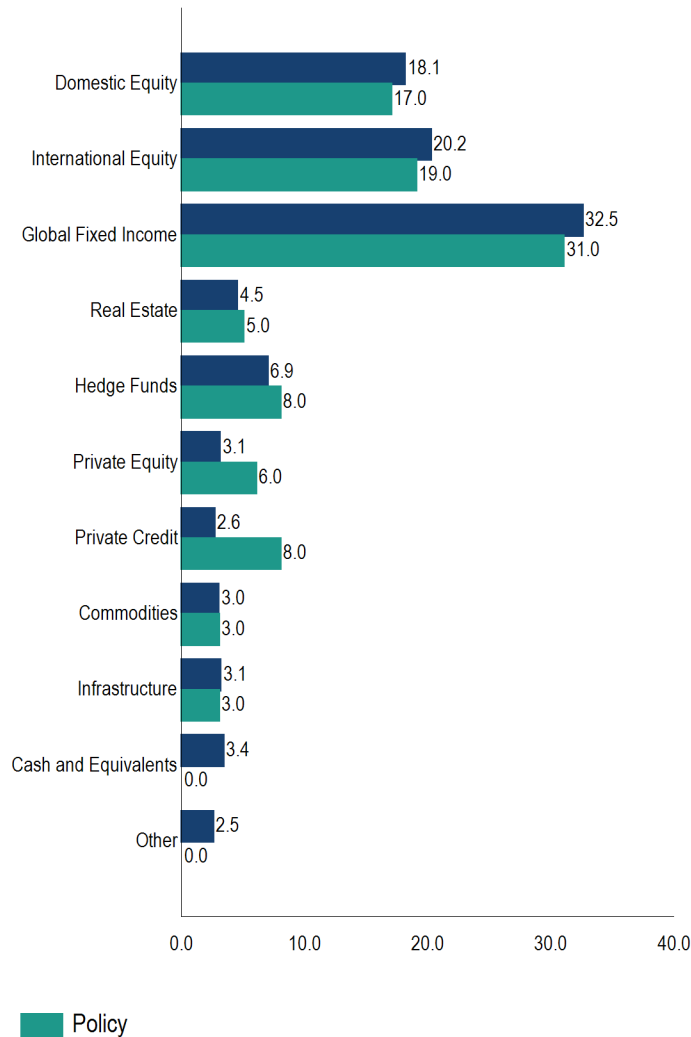
Change in Market Value  
Last Three Months



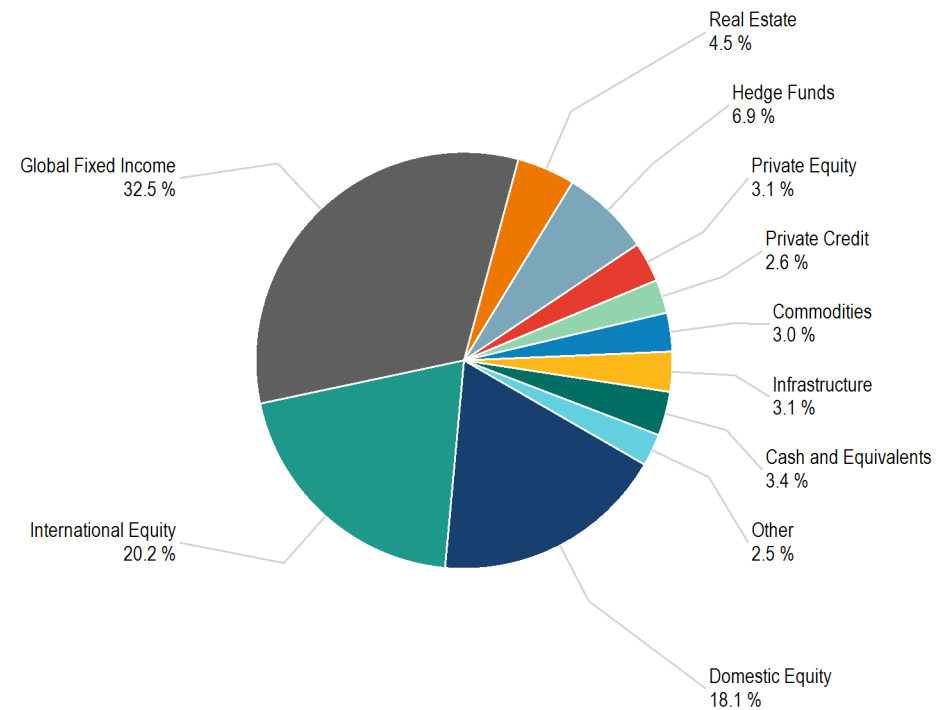
# Total Fund Asset Allocation

Period Ending: December 31, 2017

Actual vs Target Allocation (%)



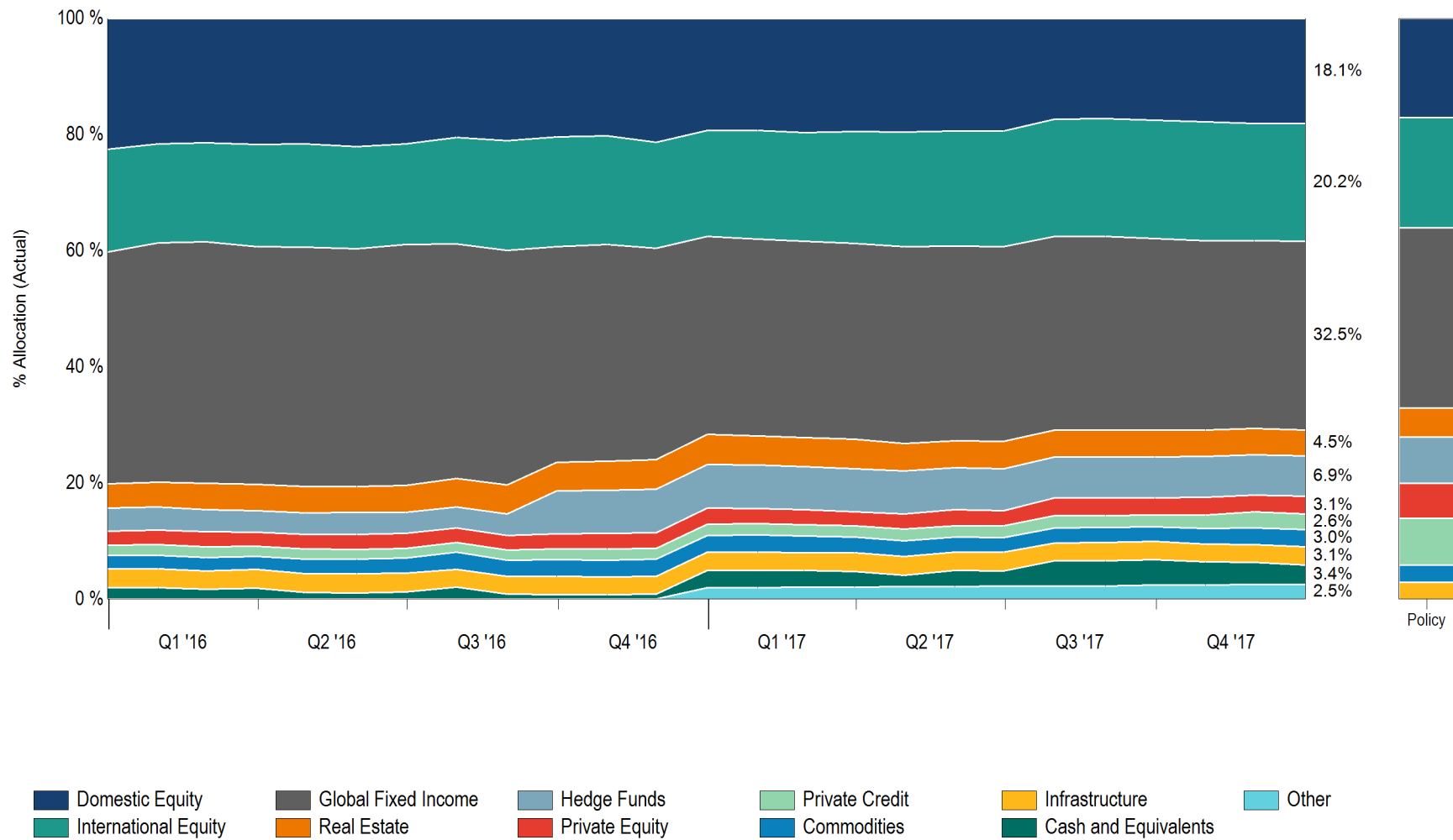
Current Allocation



Other consists of cash held for the overlay program.

# Total Fund Asset Allocation History

Period Ending: December 31, 2017





# Total Fund Executive Summary (Net of Fees)

Period Ending: December 31, 2017

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2017	2016	2015	2014	2013
<b>Total Fund</b>	<b>4,662,213,704</b>	<b>100.0</b>	<b>3.1</b>	<b>6.8</b>	<b>14.5</b>	<b>6.0</b>	<b>7.5</b>	<b>5.4</b>	<b>14.5</b>	<b>6.7</b>	<b>-2.5</b>	<b>3.5</b>	<b>16.3</b>
<i>Policy Index</i>			3.3	6.7	14.0	6.1	7.2	4.8	14.0	6.5	-1.7	2.6	15.6
<b>Total Domestic Equity</b>	<b>843,730,405</b>	<b>18.1</b>	<b>6.3</b>	<b>11.9</b>	<b>20.2</b>	<b>10.0</b>	<b>14.8</b>	<b>--</b>	<b>20.2</b>	<b>8.9</b>	<b>1.5</b>	<b>9.8</b>	<b>36.8</b>
<i>Russell 3000</i>			6.3	11.2	21.1	11.1	15.6	8.6	21.1	12.7	0.5	12.6	33.6
<b>Total International Equity</b>	<b>942,921,579</b>	<b>20.2</b>	<b>5.2</b>	<b>10.9</b>	<b>28.5</b>	<b>7.0</b>	<b>7.2</b>	<b>--</b>	<b>28.5</b>	<b>3.0</b>	<b>-7.5</b>	<b>-2.5</b>	<b>18.7</b>
<i>MSCI ACWI ex USA Gross</i>			5.1	11.6	27.8	8.3	7.3	2.3	27.8	5.0	-5.3	-3.4	15.8
<b>Total Fixed Income</b>	<b>1,516,481,146</b>	<b>32.5</b>	<b>0.6</b>	<b>2.6</b>	<b>8.0</b>	<b>3.3</b>	<b>2.7</b>	<b>--</b>	<b>8.0</b>	<b>6.7</b>	<b>-4.5</b>	<b>5.0</b>	<b>-1.1</b>
<i>BBgBarc Global Aggregate*</i>			1.1	2.9	7.4	2.0	0.8	3.3	7.4	2.1	-3.2	0.0	-2.0
<b>Total Real Estate</b>	<b>208,846,295</b>	<b>4.5</b>	<b>1.5</b>	<b>2.3</b>	<b>5.8</b>	<b>9.3</b>	<b>10.4</b>	<b>--</b>	<b>5.8</b>	<b>8.5</b>	<b>13.9</b>	<b>12.1</b>	<b>11.8</b>
<i>NCREIF ODCE Net</i>			1.9	3.5	6.7	9.4	10.5	4.1	6.7	7.8	13.9	11.5	12.9
<b>Total Infrastructure</b>	<b>145,799,761</b>	<b>3.1</b>	<b>4.0</b>	<b>7.4</b>	<b>19.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>19.0</b>	<b>6.1</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>NCREIF ODCE Net</i>			1.9	3.5	6.7	9.4	10.5	4.1	6.7	7.8	13.9	11.5	12.9
<b>Total Hedge Funds</b>	<b>323,664,245</b>	<b>6.9</b>	<b>1.6</b>	<b>2.3</b>	<b>4.6</b>	<b>2.5</b>	<b>3.7</b>	<b>1.4</b>	<b>4.6</b>	<b>3.0</b>	<b>0.0</b>	<b>3.1</b>	<b>7.8</b>
<i>HFRI Fund of Funds Composite Index</i>			2.0	4.3	7.7	2.6	4.0	1.1	7.7	0.5	-0.3	3.4	9.0
<b>Total Commodities</b>	<b>138,545,977</b>	<b>3.0</b>	<b>7.8</b>	<b>13.0</b>	<b>5.7</b>	<b>1.6</b>	<b>-4.6</b>	<b>--</b>	<b>5.7</b>	<b>13.8</b>	<b>-12.8</b>	<b>-16.9</b>	<b>-9.4</b>
<i>Bloomberg Commodity Index TR USD</i>			4.7	7.3	1.7	-5.0	-8.5	-6.8	1.7	11.8	-24.7	-17.0	-9.5
<b>Total Private Equity 1 Qtr Lagged</b>	<b>143,530,182</b>	<b>3.1</b>	<b>3.4</b>	<b>10.8</b>	<b>13.9</b>	<b>9.4</b>	<b>--</b>	<b>--</b>	<b>13.9</b>	<b>10.7</b>	<b>3.8</b>	<b>4.8</b>	<b>--</b>
<i>Russell 2000 1 Qtr Lagged</i>			5.7	8.3	10.9	8.8	13.4	8.4	10.9	21.3	-4.4	4.9	38.8
<b>Total Private Credit 1 Qtr Lagged</b>	<b>123,119,242</b>	<b>2.6</b>	<b>2.1</b>	<b>5.3</b>	<b>8.1</b>	<b>4.2</b>	<b>--</b>	<b>--</b>	<b>8.1</b>	<b>7.4</b>	<b>-2.5</b>	<b>6.8</b>	<b>--</b>
<i>BBgBarc US Corp. High Yield 1 Qtr Lagged</i>			2.0	4.2	7.0	6.2	5.7	8.0	7.0	17.1	-4.5	2.5	7.4
<b>Total Custodied Cash</b>	<b>42,331,358</b>	<b>0.9</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>--</b>	<b>0.3</b>	<b>0.8</b>	<b>-0.1</b>	<b>0.3</b>	<b>0.4</b>
<i>91 Day T-Bills</i>			0.3	0.6	0.9	0.4	0.3	0.3	0.9	0.3	0.0	0.0	0.0
<b>Total County Cash</b>	<b>114,572,025</b>	<b>2.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>--</b>	<b>--</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>--</b>
<i>91 Day T-Bills</i>			0.3	0.6	0.9	0.4	0.3	0.3	0.9	0.3	0.0	0.0	0.0

Policy Index (effective 3/19/2014 Q2 floating policy until rebalance is complete, weights shown are as of 12/31/2017. See Data Sources and Methodology for monthly policy breakout): 17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 3.2% Russell 2000, 6% BBgBarc US Corp. High Yield, 2.8% Private Equity Neutralized, 2.0% Private Credit Neutralized, 1.2% Real Estate Neutralized, 8% HFRI FoF Composite, 6.8% 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: December 31, 2017

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2017	2016	2015	2014	2013
<b>Total Fund</b>	<b>4,662,213,704</b>	<b>100.0</b>	<b>3.2</b>	<b>7.0</b>	<b>14.8</b>	<b>6.4</b>	<b>7.8</b>	<b>5.8</b>	<b>14.8</b>	<b>7.2</b>	<b>-2.1</b>	<b>3.8</b>	<b>16.6</b>
<i>Policy Index</i>			3.3	6.7	14.0	6.1	7.2	4.8	14.0	6.5	-1.7	2.6	15.6
<b>Total Domestic Equity</b>	<b>843,730,405</b>	<b>18.1</b>	<b>6.3</b>	<b>12.0</b>	<b>20.3</b>	<b>10.2</b>	<b>15.1</b>	<b>8.7</b>	<b>20.3</b>	<b>9.1</b>	<b>1.8</b>	<b>10.1</b>	<b>37.2</b>
<i>Russell 3000</i>			6.3	11.2	21.1	11.1	15.6	8.6	21.1	12.7	0.5	12.6	33.6
<b>Total International Equity</b>	<b>942,921,579</b>	<b>20.2</b>	<b>5.3</b>	<b>11.1</b>	<b>29.1</b>	<b>7.5</b>	<b>7.7</b>	<b>3.6</b>	<b>29.1</b>	<b>3.5</b>	<b>-7.1</b>	<b>-2.1</b>	<b>19.3</b>
<i>MSCI ACWI ex USA Gross</i>			5.1	11.6	27.8	8.3	7.3	2.3	27.8	5.0	-5.3	-3.4	15.8
<b>Total Fixed Income</b>	<b>1,516,481,146</b>	<b>32.5</b>	<b>0.7</b>	<b>2.8</b>	<b>8.3</b>	<b>3.6</b>	<b>3.0</b>	<b>--</b>	<b>8.3</b>	<b>7.0</b>	<b>-4.2</b>	<b>5.1</b>	<b>-0.9</b>
<i>BBgBarc Global Aggregate*</i>			1.1	2.9	7.4	2.0	0.8	3.3	7.4	2.1	-3.2	0.0	-2.0
<b>Total Real Estate</b>	<b>208,846,295</b>	<b>4.5</b>	<b>1.5</b>	<b>2.3</b>	<b>5.8</b>	<b>10.1</b>	<b>11.1</b>	<b>4.8</b>	<b>5.8</b>	<b>9.9</b>	<b>14.8</b>	<b>12.9</b>	<b>12.4</b>
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<i>Bloomberg Commodity Index TR USD</i>			4.7	7.3	1.7	-5.0	-8.5	-6.8	1.7	11.8	-24.7	-17.0	-9.5
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<b>Total Custodied Cash</b>	<b>42,331,358</b>	<b>0.9</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.8</b>	<b>0.3</b>	<b>0.8</b>	<b>-0.1</b>	<b>0.3</b>	<b>0.4</b>
<i>91 Day T-Bills</i>			0.3	0.6	0.9	0.4	0.3	0.3	0.9	0.3	0.0	0.0	0.0
<b>Total County Cash</b>	<b>114,572,025</b>	<b>2.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>--</b>	<b>--</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>--</b>
<i>91 Day T-Bills</i>			0.3	0.6	0.9	0.4	0.3	0.3	0.9	0.3	0.0	0.0	0.0

Policy Index (effective 3/19/2014 Q2 floating policy until rebalance is complete, weights shown are as of 12/31/2017. See Data Sources and Methodology for monthly policy breakout): 17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 3.2% Russell 2000, 6% BBgBarc US Corp. High Yield, 2.8% Private Equity Neutralized, 2.0% Private Credit Neutralized, 1.2% Real Estate Neutralized, 8% HFRI FoF Composite, 6.8% 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.

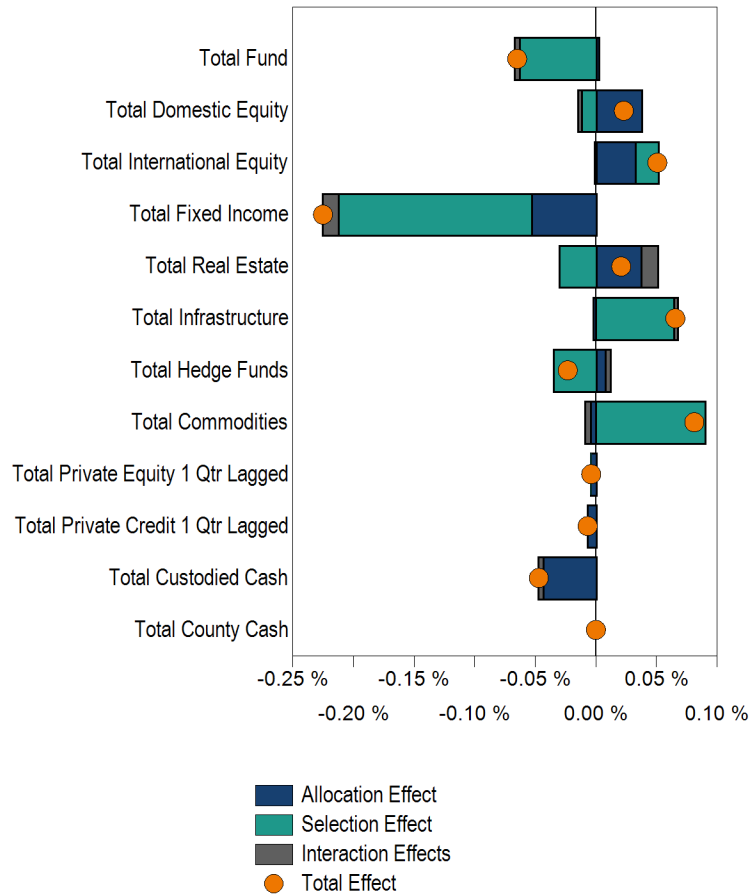
\*Prior to 3/31/2014 BBgBarc U.S. Aggregate Index and as of 4/1/2014 BBgBarc Global Aggregate Index.

# Total Fund

## Attribution Analysis - Asset Class Level (Net of Fees)

Period Ending: December 31, 2017

### Attribution Effects Ending December 31, 2017



### Performance Attribution

	Quarter	1 Yr
Wtd. Actual Return	3.06%	13.86%
Wtd. Index Return *	3.01%	13.26%
<b>Excess Return</b>	<b>0.05%</b>	<b>0.60%</b>
Selection Effect	-0.06%	0.36%
Allocation Effect	0.00%	0.12%
Interaction Effect	0.00%	0.01%

\*Calculated from benchmark returns and weightings of each component.

### Attribution Summary Last Three Months

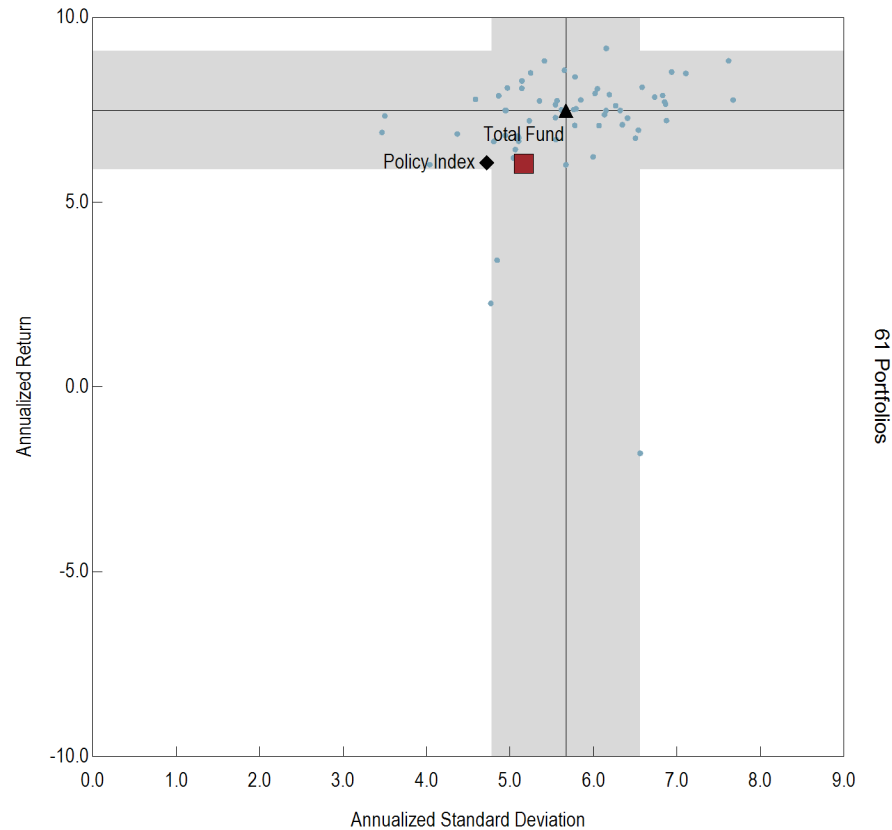
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Domestic Equity	6.27%	6.34%	-0.07%	-0.01%	0.04%	0.00%	0.02%
Total International Equity	5.16%	5.06%	0.10%	0.02%	0.03%	0.00%	0.05%
Total Fixed Income	0.57%	1.08%	-0.50%	-0.16%	-0.05%	-0.01%	-0.23%
Total Real Estate	1.49%	1.85%	-0.36%	-0.03%	0.04%	0.01%	0.02%
Total Infrastructure	3.98%	1.85%	2.13%	0.06%	0.00%	0.00%	0.07%
Total Hedge Funds	1.56%	1.99%	-0.43%	-0.03%	0.01%	0.00%	-0.02%
Total Commodities	7.77%	4.71%	3.06%	0.09%	0.00%	0.00%	0.08%
Total Private Equity 1 Qtr Lagged	3.38%	3.38%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Private Credit 1 Qtr Lagged	2.13%	2.13%	0.00%	0.00%	-0.01%	0.00%	-0.01%
Total Custodied Cash	0.08%	0.30%	-0.22%	0.00%	-0.04%	0.00%	-0.05%
Total County Cash	--	--	--	--	--	--	--
<b>Total</b>	<b>3.06%</b>	<b>3.01%</b>	<b>0.05%</b>	<b>-0.06%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>-0.06%</b>

Total Fund attribution return is calculated based on the underlying composite returns and beginning of period portfolio weights, the effects of transactions during the period are not reflected in the return. The Total Fund attribution portfolio return will vary from the actual Total Fund return. The Policy Index attribution return is calculated based on the primary benchmarks for the underlying composites used in the attribution analysis and their respective beginning of month target weights. Weighted index returns shown in attribution analysis may differ from actual returns.

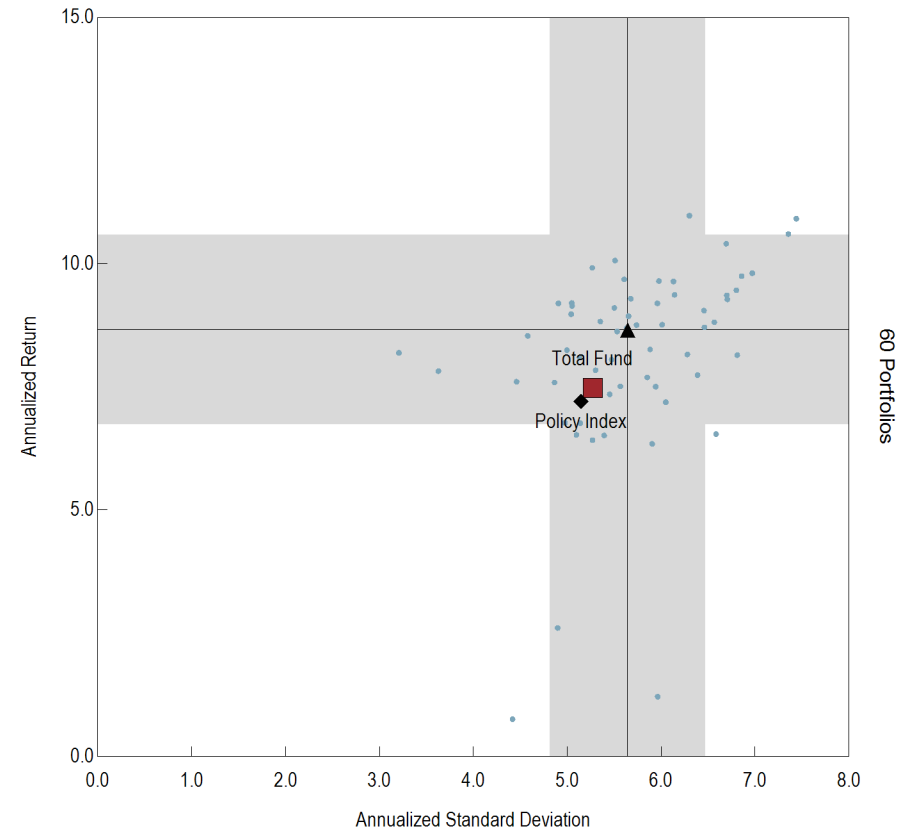
# Total Fund Risk Analysis (Net of Fees)

Period Ending: December 31, 2017

3 Years



5 Years



3 Years

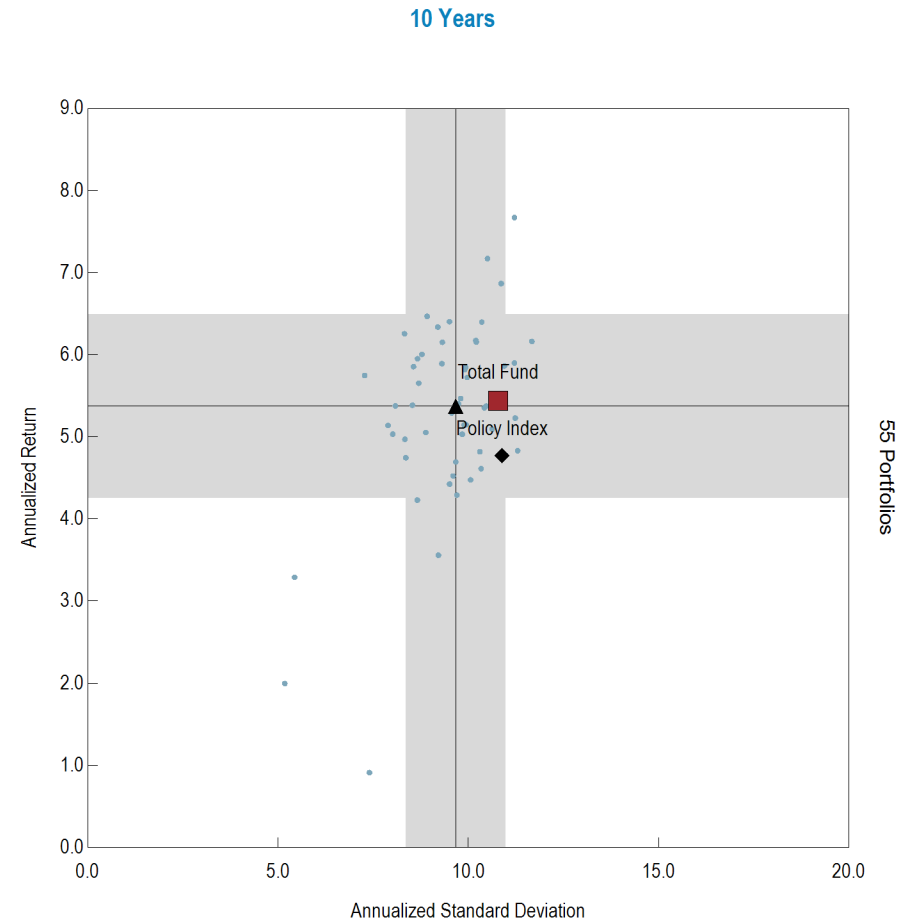
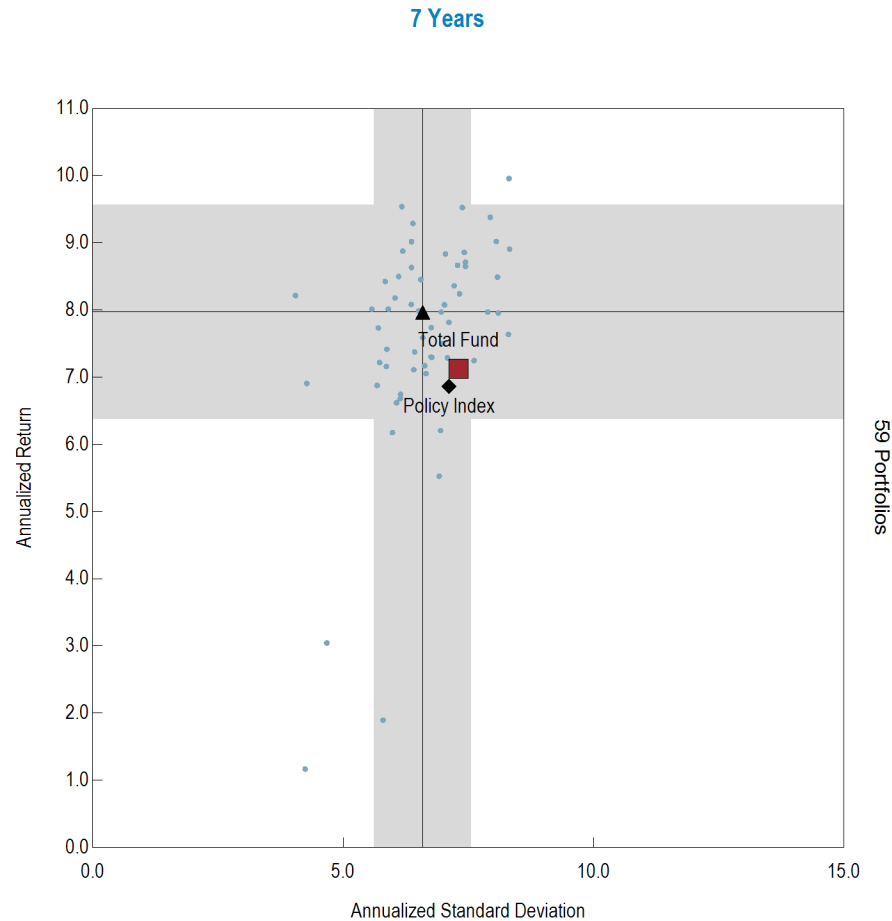
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Total Fund	6.0%	5.2%	1.1
Policy Index	6.1%	4.7%	1.2
InvestorForce Public DB > \$1B Net Median	7.5%	5.7%	1.2

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Total Fund	7.5%	5.3%	1.4
Policy Index	7.2%	5.1%	1.4
InvestorForce Public DB > \$1B Net Median	8.7%	5.6%	1.4

# Total Fund Risk Analysis (Net of Fees)

Period Ending: December 31, 2017



	7 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Total Fund	7.1%	7.3%	0.9
Policy Index	6.9%	7.1%	0.9
InvestorForce Public DB > \$1B Net Median	8.0%	6.6%	1.1

	10 Years		
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Total Fund	5.4%	10.8%	0.5
Policy Index	4.8%	10.9%	0.4
InvestorForce Public DB > \$1B Net Median	5.4%	9.7%	0.5

Total Fund  
Risk Analysis (Net of Fees)

Period Ending: December 31, 2017

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	5.17%	-0.29%	1.04	0.91	100.22%	102.06%	-0.02	1.58%	1.10	0.81
Total Domestic Equity	8.16%	-1.77%	1.05	0.93	91.51%	104.94%	-0.53	2.20%	1.17	1.16
Total International Equity	11.45%	-1.50%	1.02	0.95	91.60%	106.01%	-0.53	2.52%	0.58	0.53
Total Domestic Fixed Income	3.12%	1.95%	0.74	0.61	115.33%	58.06%	0.64	2.14%	1.03	13.60
Total Real Estate	2.32%	-0.93%	1.09	0.55	99.06%	--	-0.05	1.57%	3.86	--
Total Hedge Funds	4.04%	0.30%	0.87	0.77	96.90%	96.09%	-0.02	2.01%	0.53	1.11
Total Alternative Illiquids	4.33%	2.38%	0.35	0.37	47.86%	51.24%	-1.11	5.94%	1.59	--

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	5.27%	0.35%	0.99	0.94	99.86%	85.28%	0.21	1.34%	1.37	1.51
Total Domestic Equity	8.59%	-1.87%	1.07	0.95	94.89%	104.94%	-0.36	2.08%	1.70	1.95
Total International Equity	10.74%	0.00%	0.99	0.95	96.60%	95.49%	-0.02	2.32%	0.65	0.79
Total Domestic Fixed Income	3.17%	1.39%	0.86	0.70	114.40%	63.19%	0.62	1.79%	0.93	1.86
Total Real Estate	2.05%	0.56%	0.93	0.44	98.42%	--	-0.09	1.53%	4.94	--
Total Hedge Funds	3.60%	0.26%	0.86	0.75	92.79%	96.09%	-0.16	1.85%	0.96	0.97
Total Alternative Illiquids	5.45%	1.39%	0.43	0.38	40.97%	51.24%	-1.48	6.21%	1.66	2.57

Total Fund  
Risk Analysis (Net of Fees)

Period Ending: December 31, 2017

7 Years

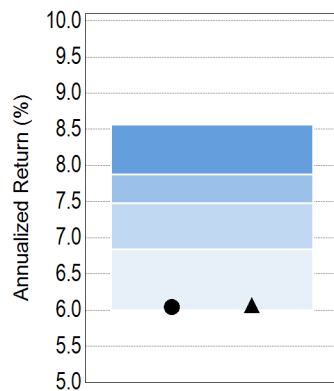
	Anlzd Standard Deviation	Anlzd Alpha	Beta	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio	Information Ratio	Tracking Error	Sharpe Ratio	Sortino Ratio
Total Fund	7.31%	0.18%	1.01	0.97	102.30%	97.54%	0.21	1.24%	0.95	0.95
Total Domestic Equity	12.49%	-1.72%	1.08	0.98	99.06%	111.05%	-0.33	2.06%	1.01	0.99
Total International Equity	13.25%	0.61%	0.97	0.97	98.88%	95.03%	0.21	2.13%	0.43	0.48
Total Domestic Fixed Income	2.99%	2.33%	0.70	0.49	124.92%	63.19%	0.59	2.31%	1.46	2.65
Total Real Estate	2.47%	1.52%	0.78	0.23	88.70%	--	-0.43	2.20%	4.00	--
Total Hedge Funds	3.17%	1.47%	0.58	0.60	81.48%	52.17%	0.13	2.68%	0.89	1.01
Total Alternative Illiquids	5.85%	3.98%	0.32	0.40	37.73%	36.63%	-0.78	9.01%	1.55	1.87

10 Years

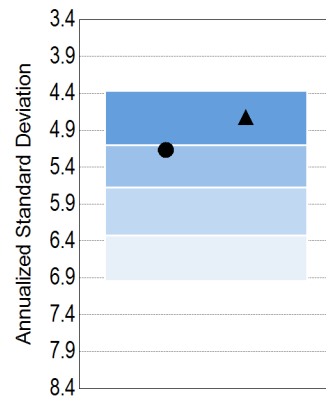
	Anlzd Standard Deviation	Anlzd Alpha	Beta	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio	Information Ratio	Tracking Error	Sharpe Ratio	Sortino Ratio
Total Fund	10.79%	0.74%	0.98	0.98	103.54%	95.65%	0.46	1.43%	0.47	0.66
Total Domestic Equity	--	--	--	--	--	--	--	--	--	--
Total International Equity	--	--	--	--	--	--	--	--	--	--
Total Domestic Fixed Income	--	--	--	--	--	--	--	--	--	--
Total Real Estate	--	--	--	--	--	--	--	--	--	--
Total Hedge Funds	5.84%	0.57%	0.79	0.83	79.46%	76.17%	0.13	2.74%	0.18	0.21
Total Alternative Illiquids	9.42%	1.06%	0.44	0.64	28.47%	59.14%	-0.47	11.03%	0.61	0.62

## Total Fund vs. InvestorForce Public DB &gt; \$1B Net Universe

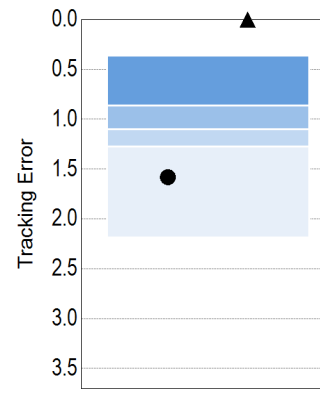
Annualized Return



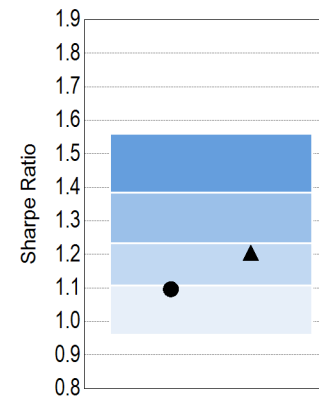
Annualized Standard Deviation



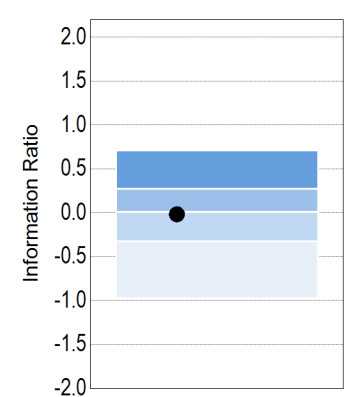
Tracking Error



Sharpe Ratio



Information Ratio



● Total Fund  
Value 6.0  
Rank 94  
▲ Policy Index  
Value 6.1  
Rank 93

● Total Fund  
Value 5.2  
Rank 33  
▲ Policy Index  
Value 4.7  
Rank 8

● Total Fund  
Value 1.6  
Rank 88  
▲ Policy Index  
Value 0.0  
Rank 1

● Total Fund  
Value 1.1  
Rank 79  
▲ Policy Index  
Value 1.2  
Rank 55

● Total Fund  
Value 0.0  
Rank 54  
▲ Policy Index  
Value --  
Rank --

Universe  
5th %tile 8.6  
25th %tile 7.9  
Median 7.5  
75th %tile 6.8  
95th %tile 6.0

Universe  
5th %tile 4.4  
25th %tile 5.1  
Median 5.7  
75th %tile 6.3  
95th %tile 6.9

Universe  
5th %tile 0.4  
25th %tile 0.9  
Median 1.1  
75th %tile 1.3  
95th %tile 2.2

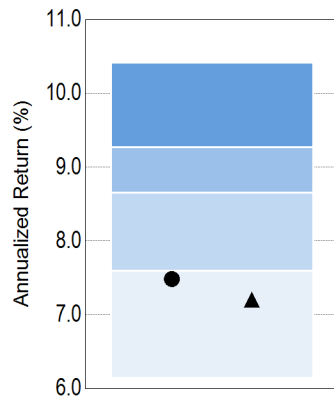
Universe  
5th %tile 1.6  
25th %tile 1.4  
Median 1.2  
75th %tile 1.1  
95th %tile 1.0

Universe  
5th %tile 0.7  
25th %tile 0.3  
Median 0.0  
75th %tile -0.3  
95th %tile -1.0

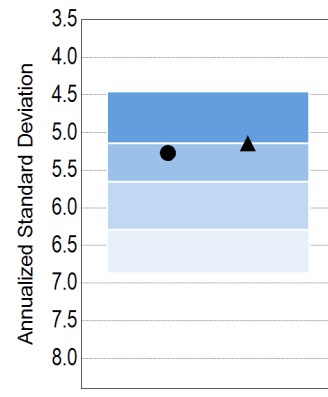


## Total Fund vs. InvestorForce Public DB &gt; \$1B Net Universe

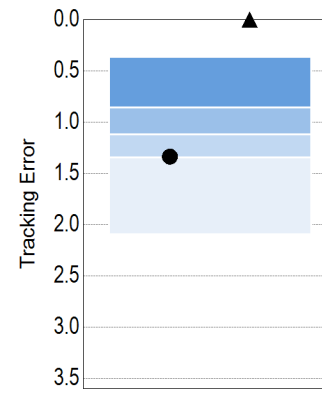
Annualized Return



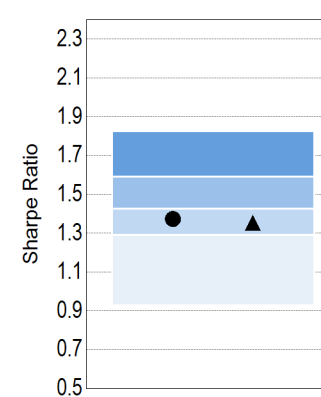
Annualized Standard Deviation



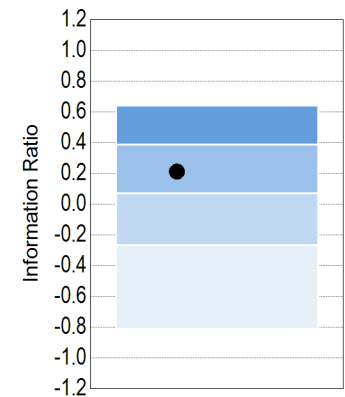
Tracking Error



Sharpe Ratio



Information Ratio



● Total Fund  
Value 7.5  
Rank 80  
▲ Policy Index  
Value 7.2  
Rank 83

● Total Fund  
Value 5.3  
Rank 29  
▲ Policy Index  
Value 5.1  
Rank 26

● Total Fund  
Value 1.3  
Rank 75  
▲ Policy Index  
Value 0.0  
Rank 1

● Total Fund  
Value 1.4  
Rank 58  
▲ Policy Index  
Value 1.4  
Rank 66

● Total Fund  
Value 0.2  
Rank 41  
▲ Policy Index  
Value --  
Rank --

Universe  
5th %tile 10.4  
25th %tile 9.3  
Median 8.7  
75th %tile 7.6  
95th %tile 6.2

Universe  
5th %tile 4.5  
25th %tile 5.1  
Median 5.6  
75th %tile 6.3  
95th %tile 6.9

Universe  
5th %tile 0.4  
25th %tile 0.9  
Median 1.1  
75th %tile 1.3  
95th %tile 2.1

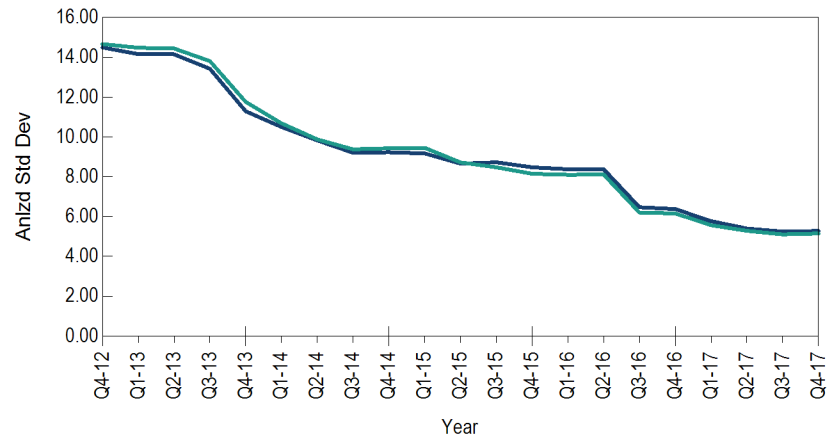
Universe  
5th %tile 1.8  
25th %tile 1.6  
Median 1.4  
75th %tile 1.3  
95th %tile 0.9

Universe  
5th %tile 0.6  
25th %tile 0.4  
Median 0.1  
75th %tile -0.3  
95th %tile -0.8

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

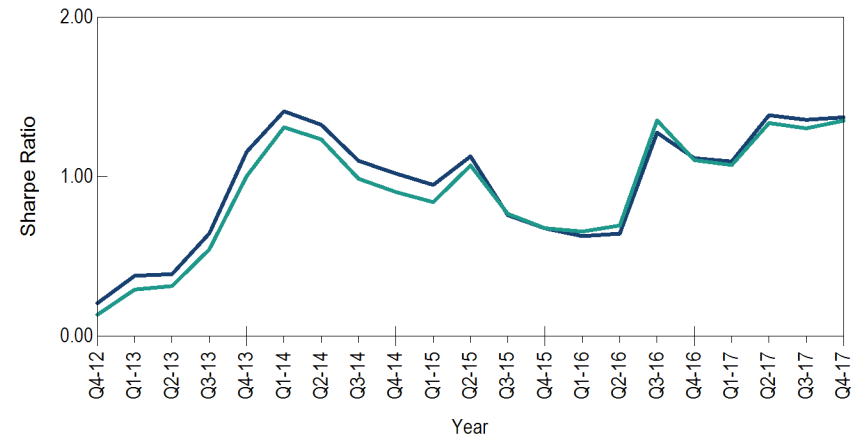
Period Ending: December 31, 2017

Rolling 5 Year Annualized Standard Deviation



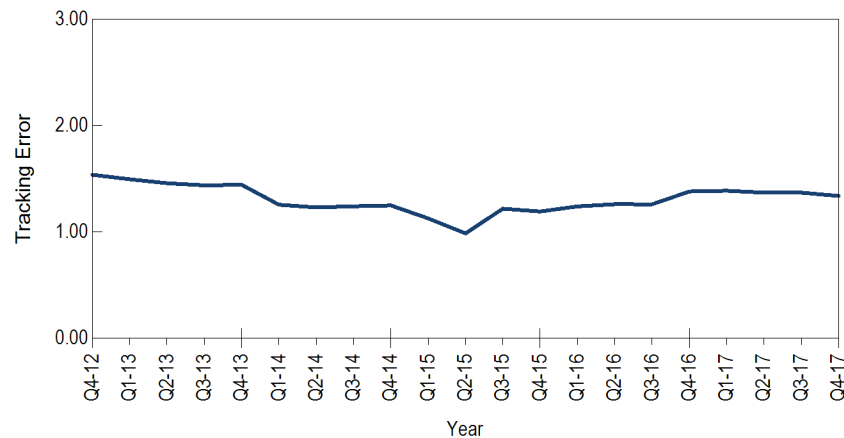
— Total Fund — Policy Index

Rolling 5 Year Sharpe Ratio



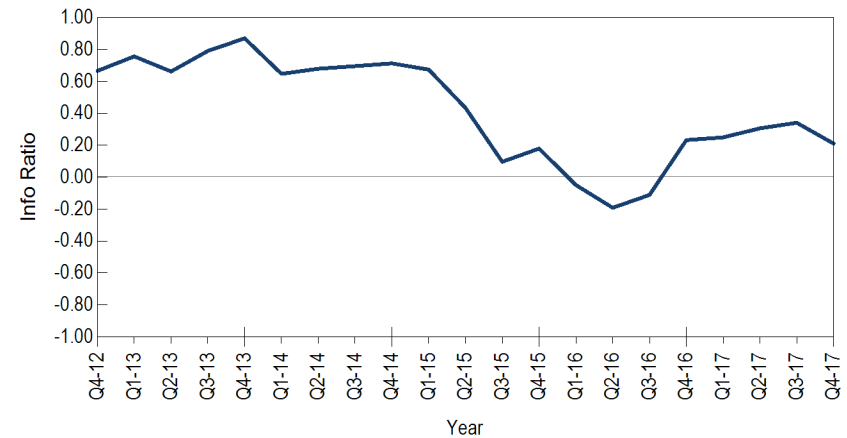
— Total Fund — Policy Index

Rolling 5 Year Tracking Error



— Total Fund

Rolling 5 Year Information Ratio



— Total Fund

# Total Fund Performance Summary (Net of Fees)

Period Ending: December 31, 2017

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2017	2016	2015	2014	2013	Return	Since
<b>Total Fund</b>	<b>4,662,213,704</b>	<b>100.0</b>	<b>3.1</b>	<b>6.8</b>	<b>14.5</b>	<b>6.0</b>	<b>7.5</b>	<b>5.4</b>	<b>14.5</b>	<b>6.7</b>	<b>-2.5</b>	<b>3.5</b>	<b>16.3</b>	<b>7.4</b>	<b>Jun-02</b>
<i>Policy Index</i>			3.3	6.7	14.0	6.1	7.2	4.8	14.0	6.5	-1.7	2.6	15.6	6.7	Jun-02
<b>Total Fund Ex Parametric</b>	<b>4,543,542,215</b>	<b>97.5</b>	<b>3.1</b>	<b>6.5</b>	<b>13.9</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>13.9</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>13.9</b>	<b>Dec-16</b>
<i>Policy Index</i>			3.3	6.7	14.0	6.1	7.2	4.8	14.0	6.5	-1.7	2.6	15.6	14.0	Dec-16
<b>Total Domestic Equity</b>	<b>843,730,405</b>	<b>18.1</b>	<b>6.3</b>	<b>11.9</b>	<b>20.2</b>	<b>10.0</b>	<b>14.8</b>	<b>--</b>	<b>20.2</b>	<b>8.9</b>	<b>1.5</b>	<b>9.8</b>	<b>36.8</b>	<b>--</b>	<b>Mar-97</b>
<i>Russell 3000</i>			6.3	11.2	21.1	11.1	15.6	8.6	21.1	12.7	0.5	12.6	33.6	8.5	Mar-97
SSgA S&P 500 Flagship Fund	177,518,554	3.8	6.6	11.4	21.8	11.4	15.8	8.5	21.8	12.0	1.4	13.7	32.4	8.7	Mar-04
<i>S&amp;P 500</i>			6.6	11.4	21.8	11.4	15.8	8.5	21.8	12.0	1.4	13.7	32.4	8.7	Mar-04
Ivy	263,468,524	5.7	6.3	14.5	30.0	12.0	16.7	--	30.0	1.4	6.7	12.7	36.6	14.0	Dec-10
<i>Russell 1000 Growth</i>			7.9	14.2	30.2	13.8	17.3	10.0	30.2	7.1	5.7	13.0	33.5	14.8	Dec-10
Aronson Johnson Ortiz	257,224,005	5.5	7.4	12.7	16.7	8.5	14.1	7.7	16.7	9.5	-0.1	9.6	38.0	10.7	Dec-95
<i>Russell 1000 Value</i>			5.3	8.6	13.7	8.7	14.0	7.1	13.7	17.3	-3.8	13.5	32.5	9.1	Dec-95
Systematic Small/Mid Cap Value	77,368,528	1.7	7.1	13.3	12.3	10.7	14.1	--	12.3	22.0	-1.1	4.0	37.2	13.0	Oct-10
<i>Russell 2500 Value</i>			4.3	8.2	10.4	9.3	13.3	8.8	10.4	25.2	-5.5	7.1	33.3	13.0	Oct-10
<b>Total International Equity</b>	<b>942,921,579</b>	<b>20.2</b>	<b>5.2</b>	<b>10.9</b>	<b>28.5</b>	<b>7.0</b>	<b>7.2</b>	<b>--</b>	<b>28.5</b>	<b>3.0</b>	<b>-7.5</b>	<b>-2.5</b>	<b>18.7</b>	<b>--</b>	
<i>MSCI ACWI ex USA Gross</i>			5.1	11.6	27.8	8.3	7.3	2.3	27.8	5.0	-5.3	-3.4	15.8	--	
Artisan International Growth	216,658,838	4.6	3.9	9.8	31.5	5.4	--	--	31.5	-9.0	-2.2	-0.1	--	7.2	Apr-13
<i>MSCI EAFE</i>			4.2	9.9	25.0	7.8	7.9	1.9	25.0	1.0	-0.8	-4.9	22.8	7.2	Apr-13
Research Affiliates International Equity	227,790,756	4.9	4.3	12.4	25.7	8.9	9.4	--	25.7	9.3	-5.9	-5.8	28.9	6.1	Apr-11
<i>MSCI EAFE</i>			4.2	9.9	25.0	7.8	7.9	1.9	25.0	1.0	-0.8	-4.9	22.8	4.9	Apr-11
Mondrian International Small Cap	154,673,419	3.3	6.0	12.1	32.4	10.9	8.7	--	32.4	0.1	2.7	-4.9	17.3	11.2	Nov-09
<i>S&amp;P Developed Ex-U.S. SmallCap</i>			6.2	13.7	32.4	13.3	12.1	5.2	32.4	3.8	5.9	-3.4	26.1	10.5	Nov-09
Mondrian Emerging Markets	343,798,566	7.4	6.2	10.0	27.2	5.1	1.5	2.4	27.2	9.0	-16.3	0.0	-7.1	6.5	Nov-05
<i>MSCI Emerging Markets</i>			7.4	15.9	37.3	9.1	4.3	1.7	37.3	11.2	-14.9	-2.2	-2.6	7.2	Nov-05
<b>Total Fixed Income</b>	<b>1,516,481,146</b>	<b>32.5</b>	<b>0.6</b>	<b>2.6</b>	<b>8.0</b>	<b>3.3</b>	<b>2.7</b>	<b>--</b>	<b>8.0</b>	<b>6.7</b>	<b>-4.5</b>	<b>5.0</b>	<b>-1.1</b>	<b>--</b>	
<i>BBgBarc Global Aggregate*</i>			1.1	2.9	7.4	2.0	0.8	3.3	7.4	2.1	-3.2	0.0	-2.0	--	
Western Asset Investment Grade Credit	213,106,236	4.6	1.0	2.7	6.8	4.4	--	--	6.8	7.0	-0.5	--	--	4.6	Oct-14
<i>BBgBarc US Credit TR</i>			1.0	2.4	6.2	3.6	3.2	5.4	6.2	5.6	-0.8	7.5	-2.0	3.9	Oct-14
Loomis Sayles High Yield	303,412,071	6.5	0.6	2.5	7.1	5.1	--	--	7.1	14.4	-5.2	--	--	4.7	Oct-14
<i>BBgBarc US High Yield TR</i>			0.5	2.5	7.5	6.4	5.8	8.0	7.5	17.1	-4.5	2.5	7.4	5.5	Oct-14
Eaton Vance Senior Loan Fund	271,661,880	5.8	1.0	2.0	4.0	4.3	--	--	4.0	9.9	-0.8	--	--	3.9	Oct-14
<i>S&amp;P/LSTA Leveraged Loan Index</i>			1.1	2.2	4.1	4.4	4.0	4.9	4.1	10.2	-0.7	1.6	5.3	3.9	Oct-14
Eaton Vance Institutional Senior Loan Plus Fund	20,729,397	0.4	1.0	2.0	3.6	--	--	--	3.6	--	--	--	--	3.6	Jan-17
<i>S&amp;P/LSTA Leveraged Loan Index</i>			1.1	2.2	4.1	4.4	4.0	4.9	4.1	10.2	-0.7	1.6	5.3	3.6	Jan-17

\*Prior to 3/31/2014 BBgBarc U.S. Aggregate Index and as of 4/1/2014 BBgBarc Global Aggregate Index. Total Domestic Equity composite includes cash held after Kalmar termination.

# Total Fund Performance Summary (Net of Fees)

Period Ending: December 31, 2017

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2017	2016	2015	2014	2013	Return	Since
SSgA TIPS	175,782,663	3.8	1.3	2.1	3.0	2.0	0.1	--	3.0	4.6	-1.5	3.6	-8.6	4.2	Feb-09
BBgBarc US TIPS TR			1.3	2.1	3.0	2.1	0.1	3.5	3.0	4.7	-1.4	3.6	-8.6	4.3	Feb-09
Brandywine Global Sovereign	303,255,530	6.5	-0.6	2.4	11.9	1.5	--	--	11.9	3.8	-9.8	--	--	1.4	Jan-15
Citi WGBI			1.0	2.9	7.5	1.7	0.1	2.7	7.5	1.6	-3.6	-0.5	-4.0	1.9	Jan-15
PIMCO Emerging Local Bond Ins	228,533,367	4.9	0.7	4.4	15.4	2.3	--	--	15.4	10.7	-16.3	-5.4	--	-0.1	Jul-13
JP Morgan GBI EM Global Diversified TR USD			0.8	4.4	15.2	2.5	-1.5	3.5	15.2	9.9	-14.9	-5.7	-9.0	0.0	Jul-13
<b>Total Real Estate</b>	<b>208,846,295</b>	<b>4.5</b>	<b>1.5</b>	<b>2.3</b>	<b>5.8</b>	<b>9.3</b>	<b>10.4</b>	<b>--</b>	<b>5.8</b>	<b>8.5</b>	<b>13.9</b>	<b>12.1</b>	<b>11.8</b>	<b>--</b>	
NCREIF ODCE Net			1.9	3.5	6.7	9.4	10.5	4.1	6.7	7.8	13.9	11.5	12.9	--	
Invesco Core Real Estate	168,113,014	3.6	1.5	2.1	6.2	9.4	10.6	4.2	6.2	8.3	13.7	11.4	13.4	4.3	Oct-07
NCREIF ODCE Net			1.9	3.5	6.7	9.4	10.5	4.1	6.7	7.8	13.9	11.5	12.9	4.2	Oct-07
<b>Total Infrastructure</b>	<b>145,799,761</b>	<b>3.1</b>	<b>4.0</b>	<b>7.4</b>	<b>19.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>19.0</b>	<b>6.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	
NCREIF ODCE Net			1.9	3.5	6.7	9.4	10.5	4.1	6.7	7.8	13.9	11.5	12.9	--	
IFM Infrastructure	145,799,761	3.1	4.0	7.4	19.0	--	--	--	19.0	6.1	--	--	--	10.7	May-15
NCREIF ODCE Net			1.9	3.5	6.7	9.4	10.5	4.1	6.7	7.8	13.9	11.5	12.9	9.4	May-15
<b>Total Hedge Funds</b>	<b>323,664,245</b>	<b>6.9</b>	<b>1.6</b>	<b>2.3</b>	<b>4.6</b>	<b>2.5</b>	<b>3.7</b>	<b>1.4</b>	<b>4.6</b>	<b>3.0</b>	<b>0.0</b>	<b>3.1</b>	<b>7.8</b>	<b>--</b>	
HFRI Fund of Funds Composite Index			2.0	4.3	7.7	2.6	4.0	1.1	7.7	0.5	-0.3	3.4	9.0	--	
Grosvenor	164,525,772	3.5	2.4	4.1	6.4	3.0	5.4	--	6.4	2.6	0.0	3.5	15.2	4.9	Oct-09
HFRI Fund of Funds Composite Index			2.0	4.3	7.7	2.6	4.0	1.1	7.7	0.5	-0.3	3.4	9.0	3.2	Oct-09
GCM Better Futures Fund	159,138,473	3.4	0.7	0.6	2.8	--	--	--	2.8	--	--	--	--	4.7	Sep-16
HFRI Fund of Funds Composite Index			2.0	4.3	7.7	2.6	4.0	1.1	7.7	0.5	-0.3	3.4	9.0	6.8	Sep-16
<b>Total Commodities</b>	<b>138,545,977</b>	<b>3.0</b>	<b>7.8</b>	<b>13.0</b>	<b>5.7</b>	<b>1.6</b>	<b>-4.6</b>	<b>--</b>	<b>5.7</b>	<b>13.8</b>	<b>-12.8</b>	<b>-16.9</b>	<b>-9.4</b>	<b>--</b>	
Bloomberg Commodity Index TR USD			4.7	7.3	1.7	-5.0	-8.5	-6.8	1.7	11.8	-24.7	-17.0	-9.5	--	
Invesco Commodities	138,545,977	3.0	7.8	13.1	5.8	--	--	--	5.8	13.8	--	--	--	1.6	May-15
Bloomberg Commodity Index TR USD			4.7	7.3	1.7	-5.0	-8.5	-6.8	1.7	11.8	-24.7	-17.0	-9.5	-4.6	May-15
<b>Total Custodied Cash</b>	<b>42,331,358</b>	<b>0.9</b>	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>--</b>	<b>0.3</b>	<b>0.8</b>	<b>-0.1</b>	<b>0.3</b>	<b>0.4</b>	<b>--</b>	
91 Day T-Bills			0.3	0.6	0.9	0.4	0.3	0.3	0.9	0.3	0.0	0.0	0.0	--	
<b>Total County Cash</b>	<b>114,572,025</b>	<b>2.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>--</b>	<b>--</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>--</b>	<b>--</b>	
91 Day T-Bills			0.3	0.6	0.9	0.4	0.3	0.3	0.9	0.3	0.0	0.0	0.0	--	
<b>Total Parametric Overlay</b>	<b>118,671,489</b>	<b>2.5</b>													

Closed end Real Estate funds not shown on this page.

Real Estate  
Closed End Funds (Net of Fees)

Period Ending: December 31, 2017

Real Estate - Closed End Funds

Inception Date	Manager Name/Fund Name	% of Portfolio	Total Commitment	Contributions	Distributions	Estimated Market Value	One Quarter Return	One Year Return	Three Years Return	Five Years Return	(IRR) Since Inception
2017	Invesco Value-Add Fund V	0.0%	\$30,000,000	\$0	\$0	\$0	N/A	N/A	N/A	N/A	N/A
2016	Kennedy Wilson Real Estate Fund V	0.5%	\$30,000,000	\$25,113,444	\$4,007,340	\$24,451,280	2.2%	8.3%	N/A	N/A	11.7%
2016	Gerding Edlen Green Cities III	0.3%	\$20,000,000	\$13,717,334	\$263,020	\$15,066,562	1.0%	0.9%	N/A	N/A	10.2%
2009	TA Realty IX	0.0%	\$30,000,000	\$30,000,000	\$45,985,006	\$1,215,439	-1.2%	-1.6%	6.5%	8.8%	10.4%

% of Total Fund (Market Value)

0.9%

*Invesco Value-Add Fund V is pending satisfactory legal review.*

# Total Alternative Illiquids Non Marketable Securities Overview

Period Ending: December 31, 2017

Verus Internal Analysis										Manager Reported		
Vintage Year	Manager Name/Fund Name	Estimated Market Value as of 12/31/17 <sup>3</sup>	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Distrib./ Paid-In (DPI) <sup>1</sup>	Tot. Value/ Paid-In (TVPI) <sup>2</sup>	Market Value as of IRR Date	Net IRR Since Inception <sup>4</sup>	IRR Date
<b>Private Equity</b>												
2017	Hamilton Lane Secondaries IV	\$14,038,259	\$75,000,000	\$11,152,727	15%	\$63,847,273	\$0	N/A	N/A	N/A	N/A	N/A <sup>4</sup>
2016	Horsley Bridge XI Growth Buyout L.P.	\$3,978,137	\$30,000,000	\$4,344,000	14%	\$25,656,000	\$0	0.0%	91.6%	N/A	N/A	N/A <sup>4</sup>
2016	Hamilton Lane IX L.P.	\$39,322,172	\$100,000,000	\$34,499,615	34%	\$65,500,385	\$2,004,483	5.8%	119.8%	\$37,172,545	20.8%	09/30/17
2015	Warburg Pincus XII	\$14,787,391	\$34,000,000	\$16,473,000	48%	\$17,527,000	\$261,800	1.6%	91.4%	\$14,451,272	1.2%	09/30/17
2008	Landmark Equity XIV, L.P.	\$11,443,774	\$30,000,000	\$28,780,377	96%	\$1,219,623	\$28,147,347	97.8%	137.6%	\$11,449,882	10.8%	09/30/17
2007	New Mountain Partners III	\$12,380,007	\$15,000,000	\$15,270,869	102%	\$1,121,057	\$19,054,216	124.8%	205.8%	\$12,310,331	13.6%	09/30/17
2007	Hamilton Lane VI	\$28,990,822	\$70,000,000	\$62,607,682	89%	\$7,392,318	\$69,707,132	111.3%	157.6%	\$28,699,712	12.3%	09/30/17
2007	WP Private Equity X, L.P.	\$12,113,692	\$25,000,000	\$25,000,000	100%	\$0	\$24,459,238	97.8%	146.3%	\$11,641,678	8.3%	09/30/17
2002	Blackstone IV	\$2,406,246	\$20,000,000	\$22,364,019	112%	\$0	\$50,864,310	227.4%	238.2%	\$2,307,551	29.6%	06/30/17
2001	WP Private Equity VIII, L.P.	\$3,302,929	\$25,000,000	\$25,000,000	100%	\$0	\$55,907,813	223.6%	236.8%	\$3,192,429	14.8%	09/30/17
1998	WP Equity Partners, L.P. <sup>5</sup>	\$120,641	\$20,000,000	\$20,000,000	100%	\$0	\$32,982,907	164.9%	165.5%	\$78,193	10.3%	12/31/16
<b>Total Private Equity</b>		<b>\$142,884,070</b>	\$444,000,000	\$265,492,289	60%	\$182,263,656	\$283,389,245	106.7%	160.6%			
<b>% of Portfolio (Market Value)</b>		<b>3.1%</b>										
<b>Private Credit</b>												
2017	TCG BDC II	\$24,328,140	\$150,000,000	\$24,328,140	16%	\$125,671,860	\$0	N/A	N/A	N/A	N/A	N/A <sup>4</sup>
2017	EQT European Special Situations Debt	\$3,351,814	\$40,000,000	\$3,351,814	8%	\$36,648,186	\$0	N/A	N/A	N/A	N/A	N/A <sup>4</sup>
2016	OHA Strategic Credit Fund II, L.P.	\$1,890,735	\$40,000,000	\$2,000,000	5%	\$38,000,000	\$0	N/A	N/A	N/A	N/A	N/A <sup>4</sup>
2016	TSSP Adjacent Opportunities Partners	\$9,517,342	\$30,000,000	\$16,239,475	54%	\$13,760,525	\$3,421,554 <sup>==</sup>	21.1%	79.7%	\$7,115,613	9.1%	03/31/17
2015	GSO European Senior Debt	\$10,735,550	\$30,000,000	\$14,824,227	49%	\$15,175,773	\$3,046,491	20.6%	93.0%	\$4,712,421	-3.6%	03/31/17
2015	CVI Credit Value Fund III	\$27,884,240	\$30,000,000	\$19,500,000	65%	\$10,500,000 <sup>==</sup>	\$0	0.0%	143.0%	\$26,680,732	14.8%	09/30/17
2014	Colony Distressed Credit III, L.P.	\$16,559,600	\$20,000,000	\$21,205,327	106%	\$4,762,633 <sup>==</sup>	\$9,315,034	43.9%	122.0%	\$16,213,162	10.0%	09/30/17
2012	Oaktree Opportunities IX, L.P.	\$13,075,387	\$15,000,000	\$15,000,000	100%	\$0	\$2,245,174	15.0%	102.1%	\$12,516,131	3.0%	09/30/17
2010	KKR Mezzanine Partners	\$12,690,914	\$30,000,000	\$33,403,359	111%	\$3,164,154 <sup>==</sup>	\$34,641,742	103.7%	141.7%	\$12,401,064	8.0%	06/30/17
2010	Angelo Gordon VII	\$2,218,446	\$30,000,000	\$30,000,000	100%	\$0	\$35,088,723	117.0%	124.4%	\$2,278,051	5.0%	09/30/17
2009	Colony Distressed Credit I, L.P. <sup>12</sup>	\$2,265,600	\$40,000,000	\$42,267,900	106%	\$0	\$62,343,122	147.5%	152.9%	\$2,333,713	13.0%	09/30/17
2002	Lone Star Fund IV	\$47,129	\$20,000,000	\$19,045,199	95%	\$954,801	\$44,255,063	232.4%	232.6%	\$72,289	30.7%	09/30/17
1998	TCW Shop III	\$38,595	\$15,000,000	\$15,000,000	100%	\$0	\$18,664,813	124.4%	124.7%	\$437,407	3.4%	12/31/15
<b>Total Private Credit</b>		<b>\$124,603,491</b>	\$490,000,000	\$256,165,441	52%	\$248,637,932	\$213,021,716	83.2%	131.8%			
<b>% of Portfolio (Market Value)</b>		<b>2.7%</b>										

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

<sup>2</sup>(TVPI) is equal to (market value + capital returned) / capital called

<sup>3</sup>Last known market value + capital calls - distributions

<sup>4</sup>IRR currently unavailable for these funds.

<sup>5</sup>Investment period ended, no further capital to be called.

<sup>6</sup>Gross IRR is calculated on the cash flows of the underlying investments of the fund and is net of the underlying fund fees and carried interest.

<sup>6</sup>Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR figure is provided by its respective manager.

<sup>7</sup>\$1,366,953 capital returned but subject to recall

<sup>8</sup>\$,969,371 capital returned but subject to recall

<sup>9</sup>On June 11, 2012 \$1,029,076 was transferred from the Partnership to a Liquidation Trust.

<sup>10</sup>\$4,673,663 capital returned but subject to recall

<sup>11</sup>\$5,277,489 capital returned but subject to recall and \$1,055,373 return of unused capital subject to recall

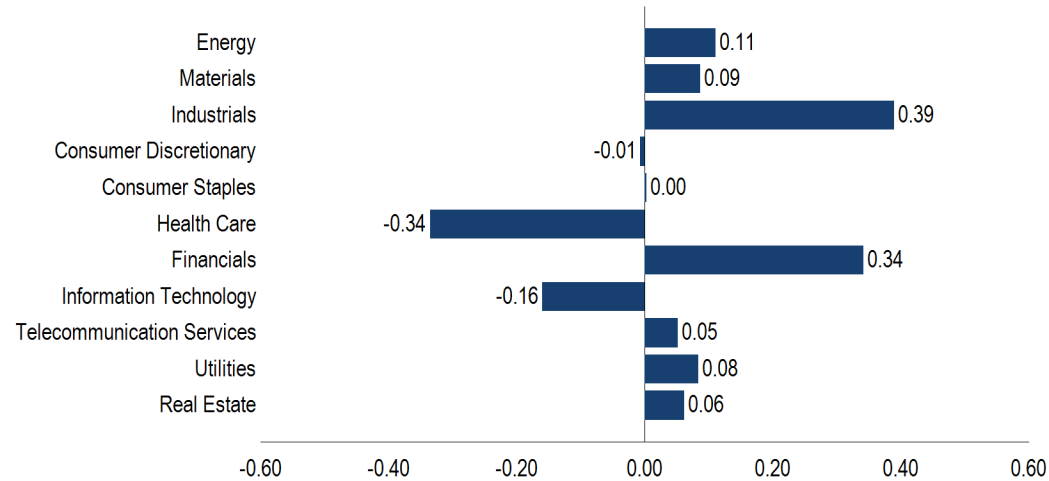
<sup>12</sup>Colony Capital reflects a FCERA-specific IRR.

<sup>13</sup>Distributions, Including Deemed

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

Period Ending: December 31, 2017

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	6.22%	5.74%	0.48%	8.16%	6.39%	1.77%	0.00%	0.11%	0.11%	0.00%	0.11%
Materials	2.84%	3.41%	-0.57%	10.09%	6.69%	3.40%	0.00%	0.09%	0.09%	0.01%	0.10%
Industrials	9.93%	10.88%	-0.95%	10.28%	6.49%	3.79%	0.01%	0.38%	0.39%	0.02%	0.41%
Consumer Discretionary	11.12%	12.19%	-1.08%	9.38%	9.13%	0.26%	-0.03%	0.03%	-0.01%	0.34%	0.33%
Consumer Staples	6.30%	7.33%	-1.03%	6.73%	6.41%	0.33%	-0.02%	0.02%	0.00%	0.01%	0.01%
Health Care	13.00%	13.97%	-0.97%	-1.28%	1.60%	-2.87%	0.05%	-0.38%	-0.34%	-0.66%	-1.00%
Financials	16.36%	15.05%	1.31%	9.50%	7.68%	1.82%	0.03%	0.32%	0.34%	0.20%	0.54%
Information Technology	26.17%	22.33%	3.84%	7.42%	8.45%	-1.03%	0.10%	-0.26%	-0.16%	0.47%	0.31%
Telecommunication Services	1.30%	1.99%	-0.69%	5.39%	3.16%	2.24%	0.03%	0.03%	0.05%	-0.06%	-0.01%
Utilities	2.94%	3.14%	-0.20%	2.75%	0.59%	2.16%	0.02%	0.07%	0.08%	-0.18%	-0.10%
Real Estate	3.82%	3.97%	-0.15%	4.03%	2.60%	1.43%	0.01%	0.06%	0.06%	-0.15%	-0.09%
<b>Total</b>				<b>6.96%</b>	<b>6.33%</b>	<b>0.63%</b>	<b>0.17%</b>	<b>0.45%</b>	<b>0.63%</b>	<b>0.00%</b>	<b>0.63%</b>

Total Domestic Equity  
Performance Attribution Summary (Net of Fees)

Period Ending: December 31, 2017

Portfolio: Total Domestic Equity  
Benchmark: Russell 3000

Portfolio Total Return 6.27%

	Equity Only
Portfolio	6.96%
Benchmark	<u>6.33%</u>
Return From Active Mgmt	0.63%

Local Returns	
Portfolio	6.96%
Benchmark	<u>6.33%</u>
Active Equity Return	0.63%

Country Selection	-0.08%
Stock Selection	0.71%

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: December 31, 2017

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	3.08%	4.74%	-1.66%	7.64%	6.74%	0.90%	0.01%	-0.04%	0.03%	0.02%
AUSTRIA	0.22%	0.18%	0.04%	6.03%	5.83%	0.20%	0.01%	0.00%	0.00%	0.01%
BELGIUM	0.13%	0.82%	-0.69%	1.81%	-1.53%	3.34%	0.04%	0.04%	0.01%	-0.01%
BRAZIL	4.09%	1.80%	2.28%	0.72%	-1.88%	2.60%	-0.14%	-0.11%	-0.03%	0.00%
CANADA	4.23%	6.74%	-2.51%	5.63%	4.35%	1.28%	0.06%	0.00%	0.05%	0.01%
CHILE	0.04%	0.31%	-0.26%	7.61%	7.35%	0.26%	-0.01%	0.00%	0.00%	-0.01%
CHINA	3.42%	7.10%	-3.69%	5.56%	7.66%	-2.10%	-0.19%	-0.17%	-0.03%	0.01%
COLOMBIA	0.00%	0.11%	-0.11%	--	0.80%	-0.80%	0.00%	0.00%	0.00%	0.00%
CZECH REPUBLIC	0.00%	0.04%	-0.04%	--	7.76%	-7.76%	0.00%	0.00%	0.00%	0.00%
DENMARK	0.36%	1.30%	-0.93%	-6.18%	2.30%	-8.49%	-0.02%	0.03%	-0.04%	-0.01%
EGYPT	0.00%	0.03%	-0.03%	--	-2.38%	2.38%	0.00%	0.00%	0.00%	0.00%
FINLAND	0.13%	0.69%	-0.57%	6.92%	-2.46%	9.38%	0.05%	0.04%	0.01%	0.00%
FRANCE	5.42%	7.42%	-2.00%	-1.85%	1.58%	-3.43%	-0.20%	-0.03%	-0.23%	0.06%
GERMANY	9.43%	6.71%	2.72%	7.07%	2.53%	4.54%	0.70%	-0.37%	0.75%	0.32%
GREECE	0.00%	0.08%	-0.08%	--	13.63%	-13.63%	-0.01%	-0.01%	0.00%	0.00%
HONG KONG	6.50%	2.40%	4.11%	11.15%	7.64%	3.50%	-0.03%	-0.12%	0.08%	0.00%
HUNGARY	0.00%	0.08%	-0.08%	--	7.01%	-7.01%	0.00%	0.00%	0.00%	0.00%
INDIA	5.02%	2.03%	2.99%	4.79%	11.80%	-7.00%	-0.07%	0.07%	-0.13%	-0.01%
INDONESIA	0.66%	0.54%	0.11%	18.28%	8.08%	10.21%	0.00%	-0.03%	0.03%	0.00%
IRELAND	0.30%	0.31%	-0.01%	15.79%	3.69%	12.10%	0.00%	0.00%	0.01%	-0.01%
ISRAEL	0.13%	0.33%	-0.20%	10.78%	3.95%	6.83%	0.03%	0.01%	0.02%	0.00%
ITALY	2.23%	1.71%	0.52%	-4.75%	-2.17%	-2.58%	-0.13%	-0.16%	-0.05%	0.07%
JAPAN	9.69%	16.03%	-6.34%	7.55%	8.47%	-0.92%	-0.19%	-0.14%	-0.11%	0.06%
KAZAKHSTAN	0.14%	0.00%	0.14%	3.54%	4.34%	-0.81%	0.00%	0.00%	0.00%	0.00%
KOREA	5.27%	3.59%	1.68%	4.73%	10.26%	-5.53%	-0.06%	0.16%	-0.13%	-0.09%
LUXEMBOURG	0.02%	0.00%	0.02%	6.58%	5.03%	1.56%	0.00%	0.00%	0.00%	0.00%

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

Period Ending: December 31, 2017

	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
MALAYSIA	1.79%	0.55%	1.24%	-1.86%	6.31%	-8.17%	-0.10%	-0.05%	-0.03%	-0.03%
MEXICO	1.40%	0.83%	0.56%	-6.36%	-7.99%	1.63%	-0.03%	-0.04%	0.01%	0.00%
NETHERLANDS	3.04%	2.56%	0.48%	3.90%	1.25%	2.64%	0.08%	-0.10%	0.10%	0.08%
NEW ZEALAND	0.95%	0.11%	0.83%	-2.07%	0.05%	-2.12%	-0.08%	-0.04%	0.00%	-0.05%
NORWAY	0.28%	0.49%	-0.20%	2.38%	2.30%	0.08%	0.00%	0.00%	0.00%	0.00%
PAKISTAN	0.00%	0.02%	-0.02%	--	-5.25%	5.25%	0.00%	0.00%	0.00%	0.00%
PERU	0.39%	0.09%	0.29%	2.16%	7.32%	-5.16%	-0.01%	0.00%	-0.01%	0.00%
PHILIPPINES	0.45%	0.27%	0.17%	3.57%	6.49%	-2.92%	0.00%	0.00%	0.00%	0.00%
POLAND	0.00%	0.31%	-0.31%	--	5.91%	-5.91%	-0.01%	0.01%	0.00%	-0.02%
PORTUGAL	0.05%	0.11%	-0.06%	-4.31%	-1.93%	-2.38%	0.00%	0.00%	0.00%	0.00%
QATAR	0.59%	0.14%	0.45%	2.69%	3.98%	-1.29%	0.00%	-0.03%	0.03%	0.00%
ROMANIA	0.14%	0.00%	0.14%	2.04%	-1.55%	3.59%	0.00%	0.00%	0.00%	0.00%
RUSSIA	1.69%	0.82%	0.87%	4.56%	4.62%	-0.06%	-0.01%	-0.05%	0.05%	0.00%
SINGAPORE	1.53%	0.88%	0.65%	5.42%	10.07%	-4.65%	-0.07%	0.01%	-0.07%	-0.01%
SOUTH AFRICA	2.27%	1.53%	0.74%	-3.59%	21.22%	-24.81%	-0.42%	-0.01%	-0.15%	-0.27%
SPAIN	1.53%	2.39%	-0.86%	-0.58%	-1.53%	0.95%	0.01%	-0.03%	0.01%	0.03%
SWEDEN	1.28%	2.03%	-0.75%	-3.78%	-3.69%	-0.09%	0.07%	0.07%	0.00%	0.00%
SWITZERLAND	2.91%	5.69%	-2.77%	1.34%	1.77%	-0.44%	0.08%	0.06%	-0.03%	0.06%
TAIWAN	4.14%	2.77%	1.37%	2.39%	4.20%	-1.80%	0.13%	0.14%	0.01%	-0.03%
THAILAND	0.97%	0.54%	0.43%	-1.33%	9.37%	-10.70%	-0.07%	-0.03%	-0.04%	-0.01%
TURKEY	1.26%	0.27%	0.99%	-3.13%	4.40%	-7.53%	-0.08%	0.03%	-0.04%	-0.07%
UNITED ARAB EMIRATES	0.53%	0.17%	0.36%	0.98%	-4.88%	5.86%	0.00%	0.01%	0.00%	0.00%
UNITED KINGDOM	8.64%	12.34%	-3.70%	5.72%	5.78%	-0.06%	0.11%	0.08%	0.00%	0.04%
UNITED STATES	3.67%	0.00%	3.67%	0.41%	6.40%	-5.99%	-0.12%	0.19%	-0.31%	0.00%
	<b>100.00%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>4.34%</b>	<b>5.03%</b>	<b>-0.68%</b>	<b>-0.68%</b>	<b>-0.61%</b>	<b>-0.24%</b>	<b>0.16%</b>

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

Period Ending: December 31, 2017

## 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
Australian Dollar	3.08%	4.74%	-1.66%	-0.32%	-0.35%	-0.36%	0.00%	0.02%
Baht	0.97%	0.54%	0.43%	2.33%	0.14%	2.49%	-2.35%	-0.01%
Canadian Dollar	4.23%	6.74%	-2.51%	-0.18%	-0.26%	-0.25%	-0.02%	0.01%
Chilean Peso	0.04%	0.31%	-0.26%	3.93%	0.00%	4.06%	-4.06%	-0.01%
Colombian Peso	0.00%	0.11%	-0.11%	-1.60%	0.00%	-1.64%	1.64%	0.00%
Cruzeiro Real	4.09%	1.80%	2.28%	-4.64%	-2.20%	-4.78%	2.58%	0.00%
Czech Koruna	0.00%	0.04%	-0.04%	3.41%	0.00%	3.56%	-3.56%	0.00%
Danish Krone	0.36%	1.30%	-0.93%	1.52%	1.41%	1.53%	-0.13%	-0.01%
Egyptian Pound	0.00%	0.03%	-0.03%	-0.73%	0.00%	-0.72%	0.72%	0.00%
Emirati dirham	0.53%	0.17%	0.36%	0.00%	0.00%	0.00%	0.00%	0.00%
Euro	22.49%	22.98%	-0.48%	1.57%	1.56%	1.55%	0.02%	0.55%
Forint	0.00%	0.08%	-0.08%	1.72%	0.00%	1.81%	-1.81%	0.00%
Hong Kong Dollar	6.50%	2.40%	4.11%	-0.08%	-0.09%	-0.09%	-0.01%	0.00%
Indian Rupee	5.02%	2.03%	2.99%	2.34%	0.82%	2.55%	-1.73%	-0.01%
Mexican New Peso	1.40%	0.83%	0.56%	-7.19%	-4.35%	-7.13%	2.77%	0.00%
New Sol	0.39%	0.09%	0.29%	0.80%	0.00%	0.00%	0.00%	0.00%
New Taiwan Dollar	4.14%	2.77%	1.37%	1.90%	1.91%	1.94%	-0.03%	-0.03%
New Zealand Dollar	0.95%	0.11%	0.83%	-1.62%	-1.61%	-1.65%	0.03%	-0.05%
New Zloty	0.00%	0.31%	-0.31%	4.87%	0.00%	4.92%	-4.92%	-0.02%
Norwegian Krone	0.28%	0.49%	-0.20%	-2.68%	-2.82%	-2.81%	0.00%	0.00%
Pakistani Rupee	0.00%	0.02%	-0.02%	-4.55%	0.00%	-4.52%	4.52%	0.00%
Philippines Peso	0.45%	0.27%	0.17%	1.76%	0.00%	1.84%	-1.84%	0.00%
Pound Sterling	8.64%	12.34%	-3.70%	0.83%	0.87%	0.87%	0.00%	0.04%
Qatari rial	0.59%	0.14%	0.45%	-0.03%	0.00%	-0.04%	0.04%	0.00%
Rand	2.27%	1.53%	0.74%	9.07%	-4.56%	10.08%	-14.64%	-0.27%
Ringgit (Malaysian Dollar)	1.79%	0.55%	1.24%	4.34%	-0.20%	4.42%	-4.62%	-0.03%
Romanian New Leu	0.14%	0.00%	0.14%	0.01%	0.00%	0.80%	-0.80%	0.00%
Rupiah	0.66%	0.54%	0.11%	-0.73%	-0.86%	-0.79%	-0.07%	0.00%

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

Period Ending: December 31, 2017

Currency Name	Portfolio Weight	Index Weight	Excess Weight	Currency Return	Portfolio Contrib.	Index Contrib.	Active Contrib.	Currency Effect
Russian Federation Rouble	1.69%	0.82%	0.87%	-0.02%	0.00%	-0.02%	0.02%	0.00%
Shekel	0.13%	0.33%	-0.20%	1.76%	1.49%	1.01%	0.48%	0.00%
Singapore Dollar	1.53%	0.88%	0.65%	1.61%	1.51%	1.73%	-0.21%	-0.01%
South Korean Won	5.27%	3.59%	1.68%	6.99%	6.84%	7.20%	-0.36%	-0.09%
Swedish Krona	1.28%	2.03%	-0.75%	-0.31%	-0.30%	-0.30%	0.00%	0.00%
Swiss Franc	2.91%	5.69%	-2.77%	-0.71%	-0.72%	-0.73%	0.00%	0.06%
Tenge	0.14%	0.00%	0.14%	2.28%	0.00%	0.80%	-0.80%	0.00%
Turkish Lira	1.26%	0.27%	0.99%	-6.21%	-6.55%	-6.91%	0.36%	-0.07%
US Dollar	3.67%	0.00%	3.67%	0.00%	0.01%	0.80%	-0.79%	0.00%
Yen	9.69%	16.03%	-6.34%	-0.08%	-0.08%	-0.08%	0.00%	0.06%
Yuan Renminbi	3.42%	7.10%	-3.69%	2.01%	0.09%	-0.07%	0.16%	0.01%
	<b>100.00%</b>	<b>100.00%</b>	<b>0.00%</b>		<b>0.51%</b>	<b>0.80%</b>	<b>-0.29%</b>	<b>0.16%</b>

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

Period Ending: December 31, 2017

Total International Equity vs. MSCI ACWI ex USA  
Current Quarter

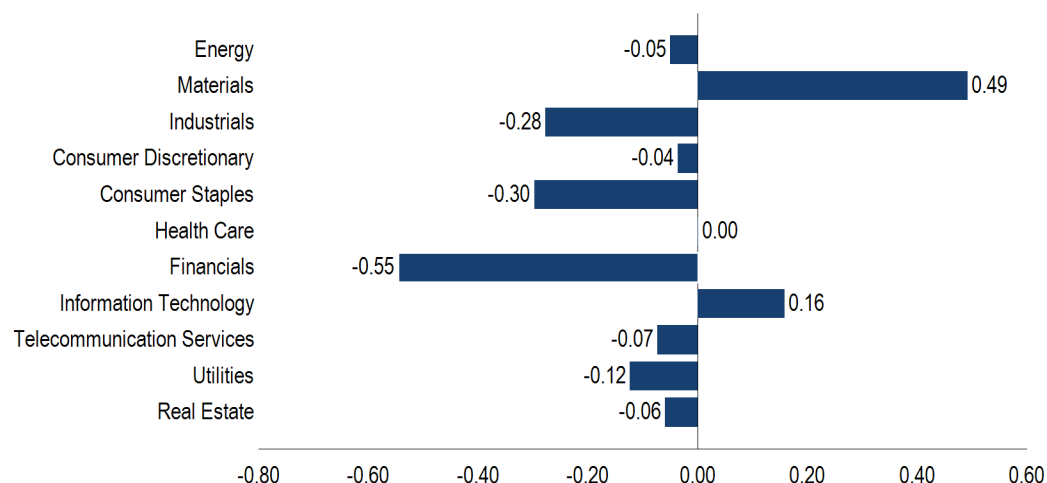
Region	Portfolio Weight	Index Weight	Excess Weight	Portfolio USD Return	Index USD Return	Excess USD Return	Allocation Effect (Local)	Selection Effect (Local)	Active Contrib.	Passive Contrib.	Total Contrib.
North America ex U.S.	4.23%	6.74%	-2.51%	5.63%	4.35%	1.28%	0.00%	0.06%	0.06%	-0.05%	0.02%
United States	3.67%	0.00%	3.67%	0.41%	--	--	0.00%	-0.12%	-0.12%	0.00%	-0.12%
Europe Ex U.K.	27.33%	32.48%	-5.15%	2.27%	0.97%	1.31%	-0.44%	1.12%	0.68%	-1.32%	-0.64%
United Kingdom	8.64%	12.34%	-3.70%	5.72%	5.78%	-0.06%	0.08%	0.04%	0.11%	0.09%	0.21%
Pacific Basin Ex Japan	12.07%	8.13%	3.94%	7.76%	7.28%	0.49%	-0.07%	-0.11%	-0.18%	0.18%	0.01%
Japan	9.69%	16.03%	-6.34%	7.55%	8.47%	-0.92%	-0.14%	-0.05%	-0.19%	0.55%	0.36%
Emerging Markets	33.37%	23.79%	9.58%	2.58%	7.29%	-4.71%	-0.04%	-1.04%	-1.07%	0.54%	-0.53%
Other	1.01%	0.50%	0.51%	15.46%	3.52%	11.94%	-0.04%	0.07%	0.03%	-0.01%	0.02%
<b>Total</b>				<b>4.34%</b>	<b>5.03%</b>	<b>-0.68%</b>	<b>-0.65%</b>	<b>-0.03%</b>	<b>-0.68%</b>	<b>0.00%</b>	<b>-0.68%</b>

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	21.70%	17.39%	4.31%	4.72%	8.13%	-3.41%	0.04%	-0.42%	-0.38%	0.54%	0.16%
EM Latin America	5.92%	3.14%	2.77%	-0.01%	-2.24%	2.23%	-0.14%	-0.04%	-0.18%	-0.23%	-0.41%
EM Europe & Middle East	2.95%	1.53%	1.43%	2.05%	5.02%	-2.98%	-0.04%	-0.06%	-0.10%	0.00%	-0.10%
EM Africa	2.27%	1.56%	0.71%	-3.59%	20.77%	-24.36%	-0.01%	-0.41%	-0.42%	0.25%	-0.17%
Other	67.16%	76.38%	-9.22%	4.00%	4.29%	-0.29%	-0.02%	0.41%	0.40%	-0.56%	-0.16%
<b>Total</b>				<b>4.34%</b>	<b>5.03%</b>	<b>-0.68%</b>	<b>-0.17%</b>	<b>-0.51%</b>	<b>-0.68%</b>	<b>0.00%</b>	<b>-0.68%</b>

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

Period Ending: December 31, 2017

**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	4.13%	6.66%	-2.53%	9.76%	7.53%	2.23%	-0.09%	0.06%	-0.04%	0.17%	0.13%
Materials	7.39%	7.84%	-0.45%	13.59%	8.20%	5.39%	0.02%	0.50%	0.52%	0.25%	0.77%
Industrials	15.92%	11.83%	4.09%	3.02%	4.76%	-1.74%	0.01%	-0.28%	-0.27%	-0.03%	-0.30%
Consumer Discretionary	11.10%	11.26%	-0.16%	5.62%	6.09%	-0.47%	-0.01%	-0.15%	-0.16%	0.12%	-0.04%
Consumer Staples	8.52%	9.58%	-1.06%	2.16%	5.39%	-3.23%	0.01%	-0.29%	-0.28%	0.03%	-0.25%
Health Care	4.23%	7.88%	-3.65%	-1.03%	1.29%	-2.32%	0.13%	-0.12%	0.00%	-0.29%	-0.29%
Financials	23.94%	23.29%	0.65%	2.86%	4.59%	-1.73%	0.04%	-0.33%	-0.28%	-0.10%	-0.38%
Information Technology	12.56%	11.18%	1.38%	7.25%	6.27%	0.99%	0.05%	0.10%	0.16%	0.14%	0.30%
Telecommunication Services	4.35%	4.21%	0.14%	0.29%	1.47%	-1.18%	0.01%	-0.06%	-0.04%	-0.15%	-0.19%
Utilities	4.73%	3.07%	1.65%	-2.92%	-0.46%	-2.46%	-0.02%	-0.09%	-0.11%	-0.17%	-0.28%
Real Estate	2.91%	3.19%	-0.28%	4.92%	6.20%	-1.28%	-0.06%	-0.10%	-0.16%	0.04%	-0.12%
Unclassified	0.22%	0.00%	0.22%	1.63%	--	2.19%	-0.01%	0.00%	-0.01%	0.00%	-0.01%

Total International Equity  
Performance Attribution Summary (Net of Fees)

Period Ending: December 31, 2017

Portfolio: Total International Equity  
Benchmark: MSCI ACWI ex USA

Portfolio Total Return 5.16%

	Equity Only
Portfolio	4.34%
Benchmark	<u>5.03%</u>
Return From Active Mgmt	-0.68%

Local Returns	
Portfolio	3.39%
Benchmark	<u>4.21%</u>
Active Equity Return	-0.82%

Country Selection	-0.61%
Stock Selection	-0.24%

Currency Contributions	
Portfolio	0.51%
Benchmark	<u>0.80%</u>
Active Currency Contributions	-0.29%

Chart uses return-based methodology

# Total Fund Watch List (Net of Fees)

Period Ending: December 31, 2017

Name	Allocation Group	Status	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6
Ivy	Domestic Equity Large Cap Growth	Watch	⌂	⌂	✓	✓	✓	✓
Aronson Johnson Ortiz	Domestic Equity Large Cap Value	No Issues	✓	⌂	✓	✓	✓	✓
Systematic Small/Mid Cap Value	Domestic Equity Small/Mid Cap Value	No Issues	✓	✓	✓	✓	✓	✓
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: December 31, 2017

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	Watch	✗	✗	✗	✗	✗	✗
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. Eaton Vance was taken off firm level watch in Q4 2017.

# Total Fund Investment Fund Fee Analysis

Period Ending: December 31, 2017

Account	Fee Schedule	Market Value As of 12/31/2017	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
SSgA S&P 500 Flagship Fund	0.03% of First \$150.0 Mil, 0.02% Thereafter	\$177,518,554	\$49,953	0.03%
Ivy	0.25% of Assets	\$263,468,524	\$658,671	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	\$257,224,005	\$764,448	0.30%
Systematic Small/Mid Cap Value	0.35% of Assets	\$77,368,528	\$270,790	0.35%
Artisan International Growth	0.30% of Assets	\$216,658,838	\$649,977	0.30%
Research Affiliates International Equity	0.12% of Assets	\$227,790,756	\$273,349	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	\$154,673,419	\$1,028,041	0.66%
Mondrian Emerging Markets	1.00% of First \$25.0 Mil, 0.75% of Next \$50.0 Mil, 0.60% Thereafter	\$343,798,566	\$2,237,791	0.65%
Western Asset Investment Grade Credit	0.30% of First \$100.0 Mil, 0.15% Thereafter	\$213,106,236	\$469,659	0.22%
Loomis Sayles High Yield	0.50% of Assets	\$303,412,071	\$1,517,060	0.50%
Eaton Vance Senior Loan Fund	0.55% of First \$50.0 Mil, 0.50% of Next \$50.0 Mil, 0.40% Thereafter	\$271,661,880	\$1,211,648	0.45%
Eaton Vance Institutional Senior Loan Plus Fund	0.40% of Assets	\$20,729,397	\$82,918	0.40%
SSgA TIPS	0.04% of Assets	\$175,782,663	\$70,313	0.04%
Brandywine Global Sovereign	0.36% of Assets	\$303,255,530	\$1,091,720	0.36%

*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: December 31, 2017

Account	Fee Schedule	Market Value As of 12/31/2017	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
PIMCO Emerging Local Bond Ins	0.50% of First \$100.0 Mil, 0.45% Thereafter	\$228,533,367	\$1,078,400	0.47%
Invesco Core Real Estate	0.90% of First \$75.0 Mil, 0.80% Thereafter	\$168,113,014	\$1,419,904	0.84%
IFM Infrastructure	0.97% of Assets	\$145,799,761	\$1,414,258	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	\$164,525,772	\$1,324,655	0.81%
Invesco Commodities	0.30% of Assets	\$138,545,977	\$415,638	0.30%
Parametric Overlay	0.15% of First \$25.0 Mil, 0.10% of Next \$75.0 Mil, 0.04% Thereafter	\$118,671,489	\$119,969	0.10%
<b>Investment Management Fee</b>		<b>\$3,970,638,348</b>	<b>\$16,149,161</b>	<b>0.41%</b>

*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.*

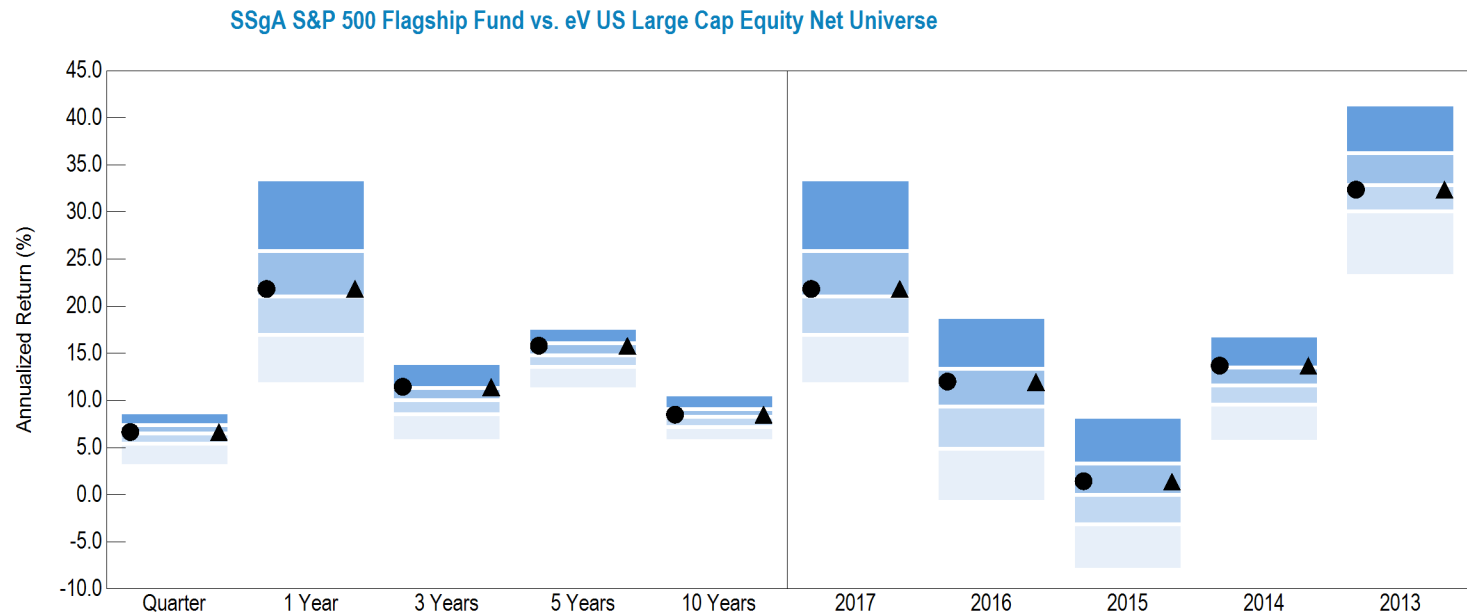
*\* Managers with incentive fee include: Ivy, Systematic, Research Affiliates, Western Asset, Artisan, Brandywine, and Invesco Commodities. Performance based fees are not included in the fee analysis. AJO has performance based fees.*

## Domestic Equity Managers

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SSgA S&P 500 Flagship Fund  
 Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017

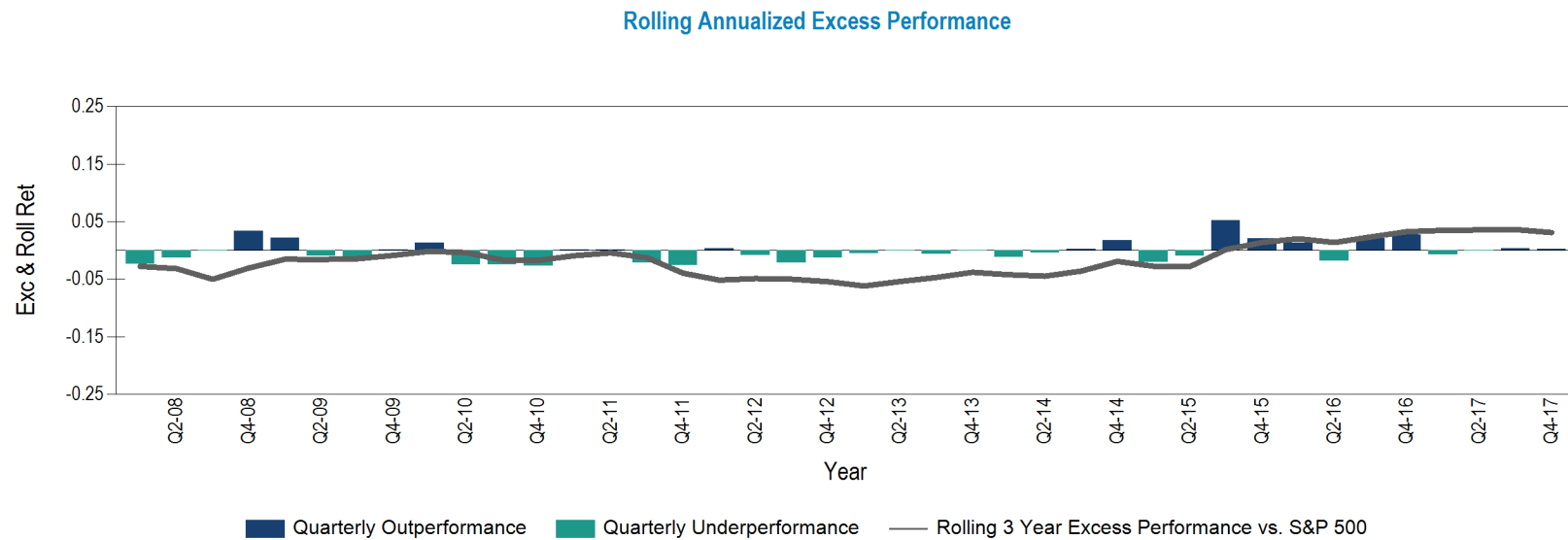
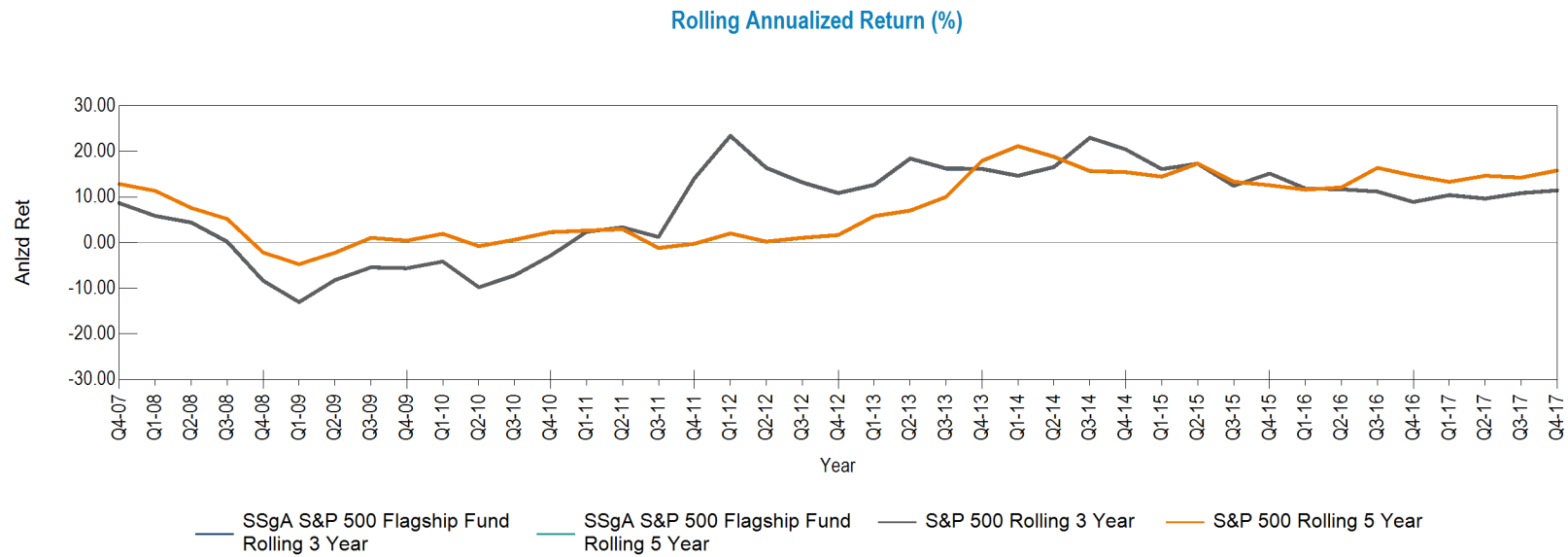


	Return (Rank)									
5th Percentile	8.7	33.5	13.9	17.6	10.6	33.5	18.8	8.3	16.8	41.4
25th Percentile	7.4	25.9	11.4	16.1	9.1	25.9	13.4	3.4	13.5	36.3
Median	6.5	21.1	10.0	14.8	8.3	21.1	9.4	0.0	11.6	32.9
75th Percentile	5.4	17.0	8.6	13.6	7.2	17.0	4.9	-3.1	9.6	30.1
95th Percentile	3.1	11.8	5.7	11.2	5.7	11.8	-0.8	-7.9	5.7	23.2
# of Portfolios	604	601	576	541	424	601	584	511	518	467
● SSgA S&P 500 Flagship Fund	6.6 (47)	21.8 (45)	11.4 (24)	15.8 (31)	8.5 (43)	21.8 (45)	12.0 (32)	1.4 (40)	13.7 (24)	32.4 (57)
▲ S&P 500	6.6 (47)	21.8 (45)	11.4 (25)	15.8 (31)	8.5 (42)	21.8 (45)	12.0 (33)	1.4 (40)	13.7 (24)	32.4 (56)

# SSgA S&P 500 Flagship Fund

## Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017

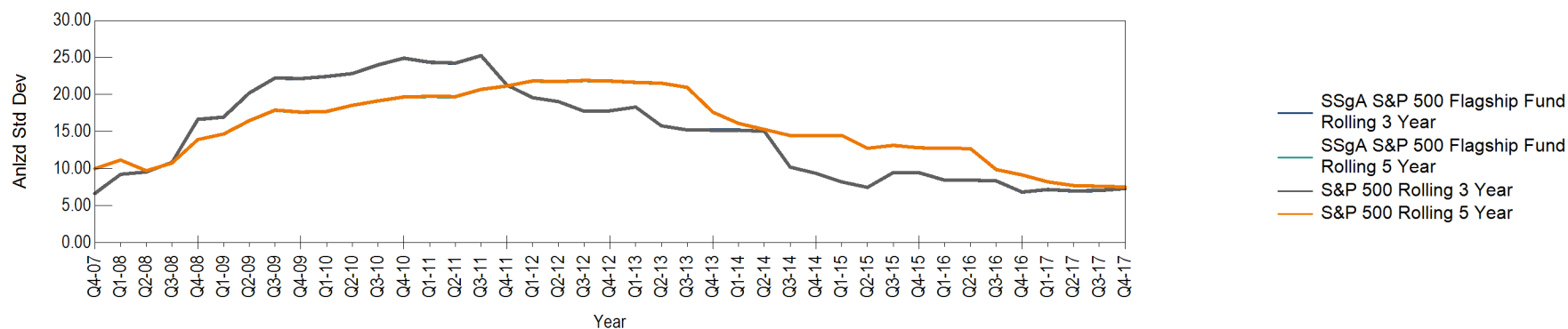


# SSgA S&P 500 Flagship Fund

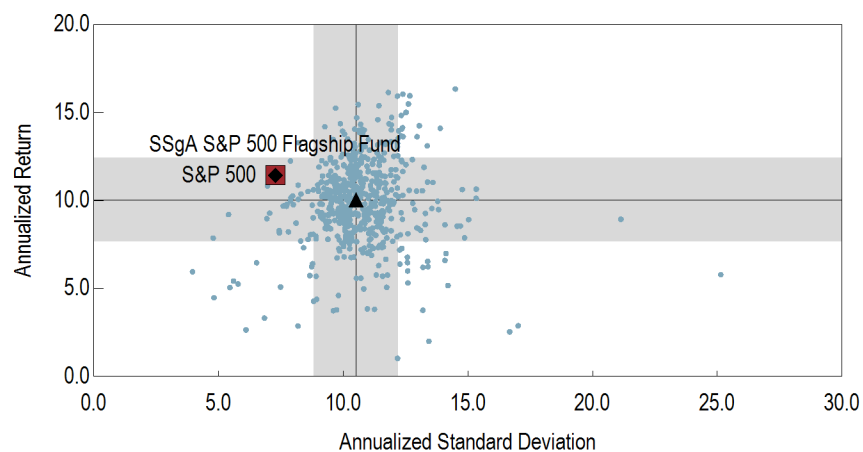
## Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

Rolling Annualized Standard Deviation



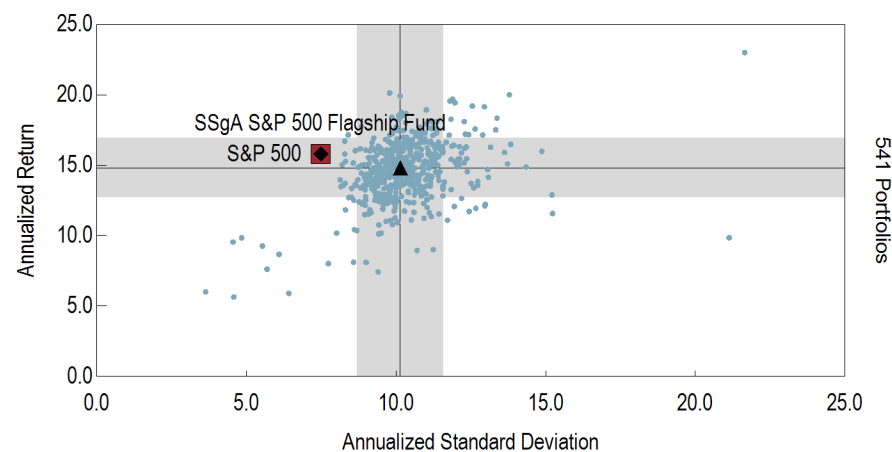
3 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
SSgA S&P 500 Flagship Fund	11.4%	7.3%	1.5
S&P 500	11.4%	7.3%	1.5
eV US Large Cap Equity Net Median	10.0%	10.5%	0.9

5 Years



5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
SSgA S&P 500 Flagship Fund	15.8%	7.5%	2.1
S&P 500	15.8%	7.5%	2.1
eV US Large Cap Equity Net Median	14.8%	10.1%	1.4

# SSgA S&P 500 Flagship Fund

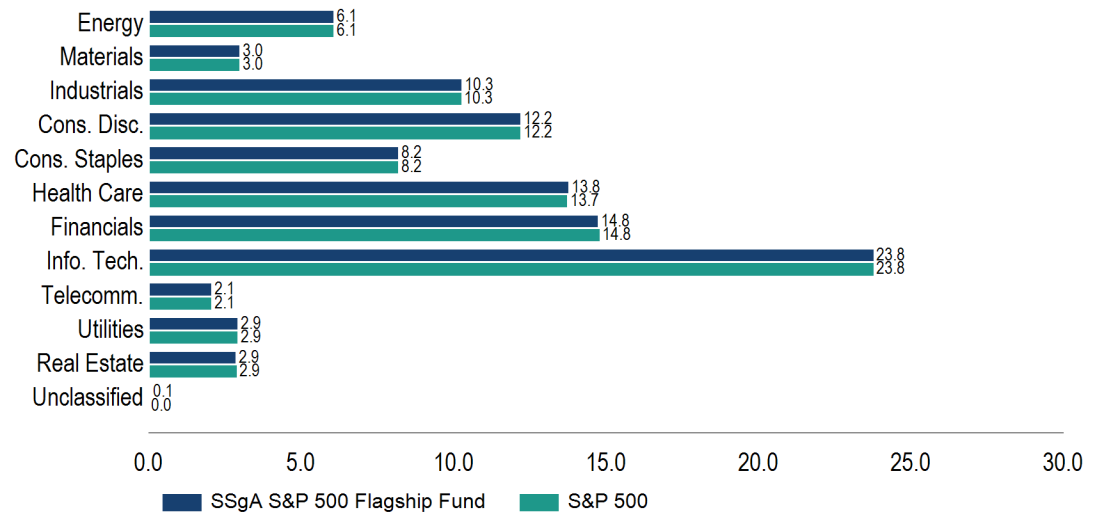
## Manager Portfolio Overview (Net of Fees)

Period Ending: December 31, 2017

### Characteristics

	Portfolio	S&P 500
Number of Holdings	504	505
Weighted Avg. Market Cap. (\$B)	180.67	180.13
Median Market Cap. (\$B)	21.55	21.55
Price To Earnings	27.49	24.81
Price To Book	6.08	4.93
Price To Sales	3.80	3.50
Return on Equity (%)	24.53	20.41
Yield (%)	1.88	1.87
Beta	1.00	1.00

### Sector Allocation (%) vs S&P 500



### Largest Holdings

	End Weight	Return
APPLE	3.81	10.20
MICROSOFT	2.90	15.42
AMAZON.COM	2.05	21.65
FACEBOOK CLASS A	1.84	3.27
BERKSHIRE HATHAWAY 'B'	1.67	8.13
JOHNSON & JOHNSON	1.65	8.12
JP MORGAN CHASE & CO.	1.63	12.61
EXXON MOBIL	1.56	2.97
ALPHABET 'C'	1.39	9.10
ALPHABET A	1.38	8.18

### Top Contributors

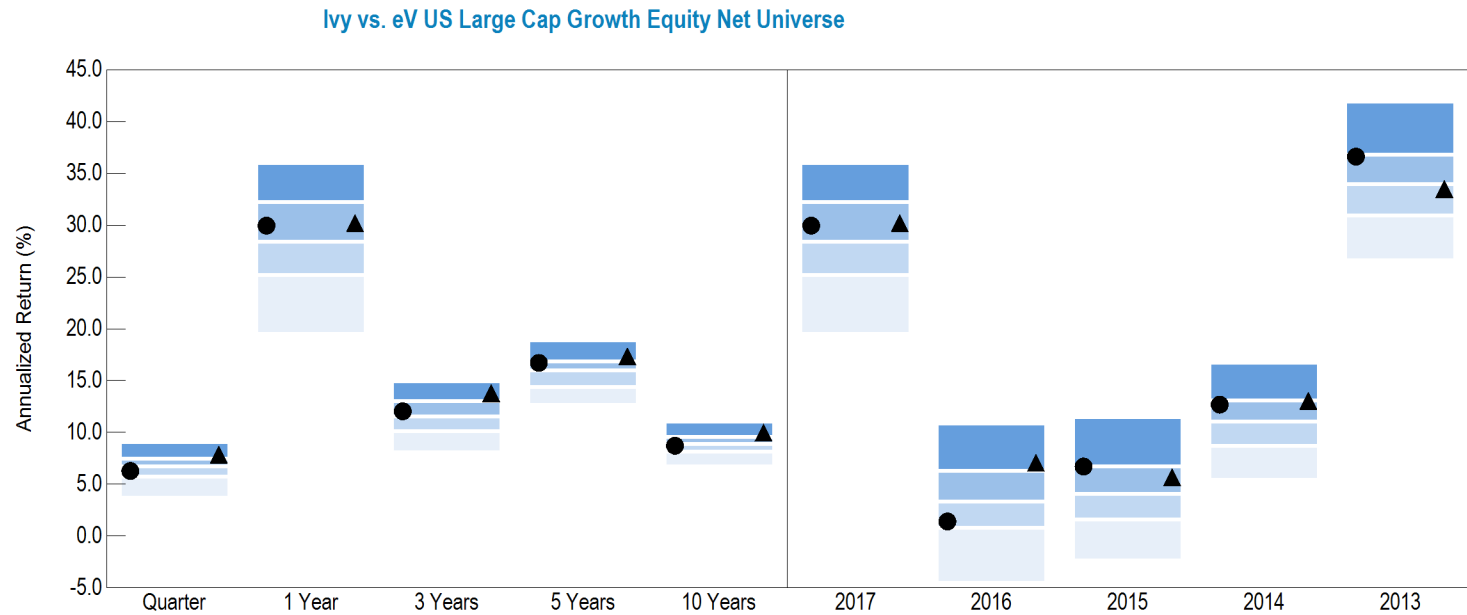
	Avg Wgt	Return	Contribution
MICROSOFT	2.81	15.42	0.43
AMAZON.COM	1.95	21.65	0.42
APPLE	3.86	10.20	0.39
BANK OF AMERICA	1.20	16.99	0.20
JP MORGAN CHASE & CO.	1.60	12.61	0.20
INTEL	0.91	21.93	0.20
WALMART	0.58	27.04	0.16
HOME DEPOT	0.91	16.46	0.15
JOHNSON & JOHNSON	1.66	8.12	0.13
BERKSHIRE HATHAWAY 'B'	1.64	8.13	0.13

### Bottom Contributors

	Avg Wgt	Return	Contribution
GENERAL ELECTRIC	0.82	-27.34	-0.22
CELGENE	0.41	-28.43	-0.12
MERCK & COMPANY	0.72	-11.37	-0.08
ALLERGAN	0.28	-19.87	-0.06
GILEAD SCIENCES	0.46	-10.96	-0.05
PG&E	0.14	-34.16	-0.05
AMGEN	0.59	-6.10	-0.04
CVS HEALTH	0.35	-10.26	-0.04
TIME WARNER	0.34	-10.37	-0.04
PHILIP MORRIS INTL.	0.75	-3.85	-0.03

Unclassified sector allocation includes cash allocations.





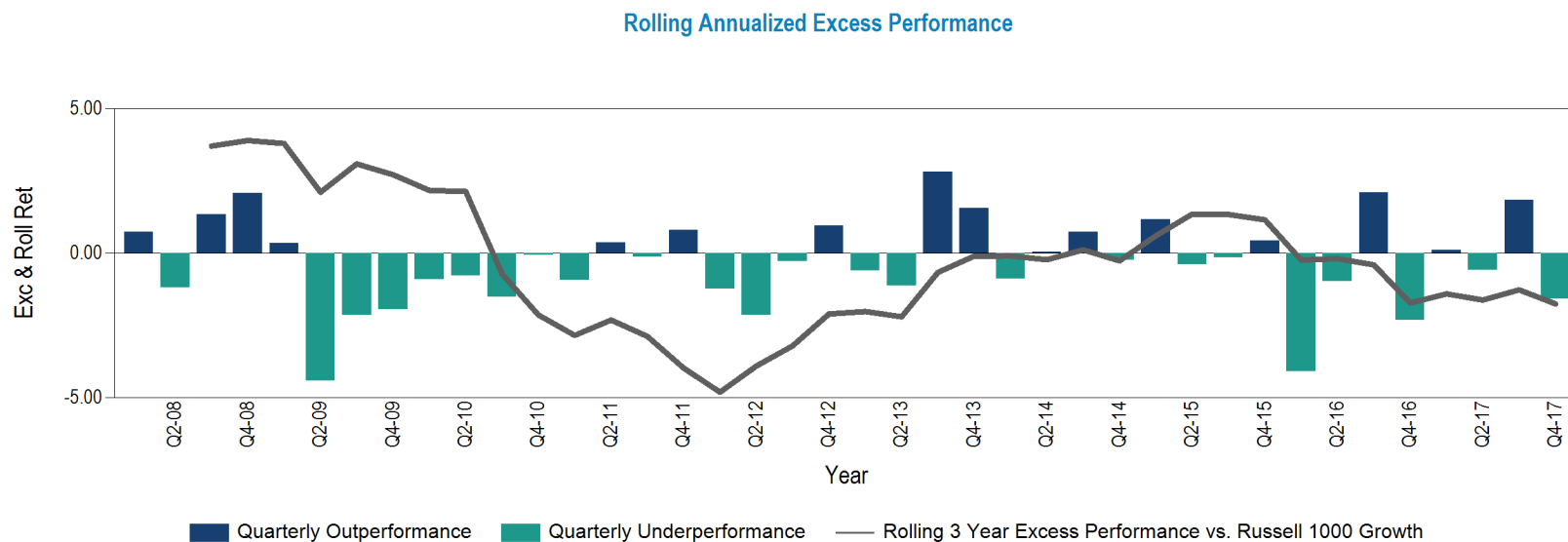
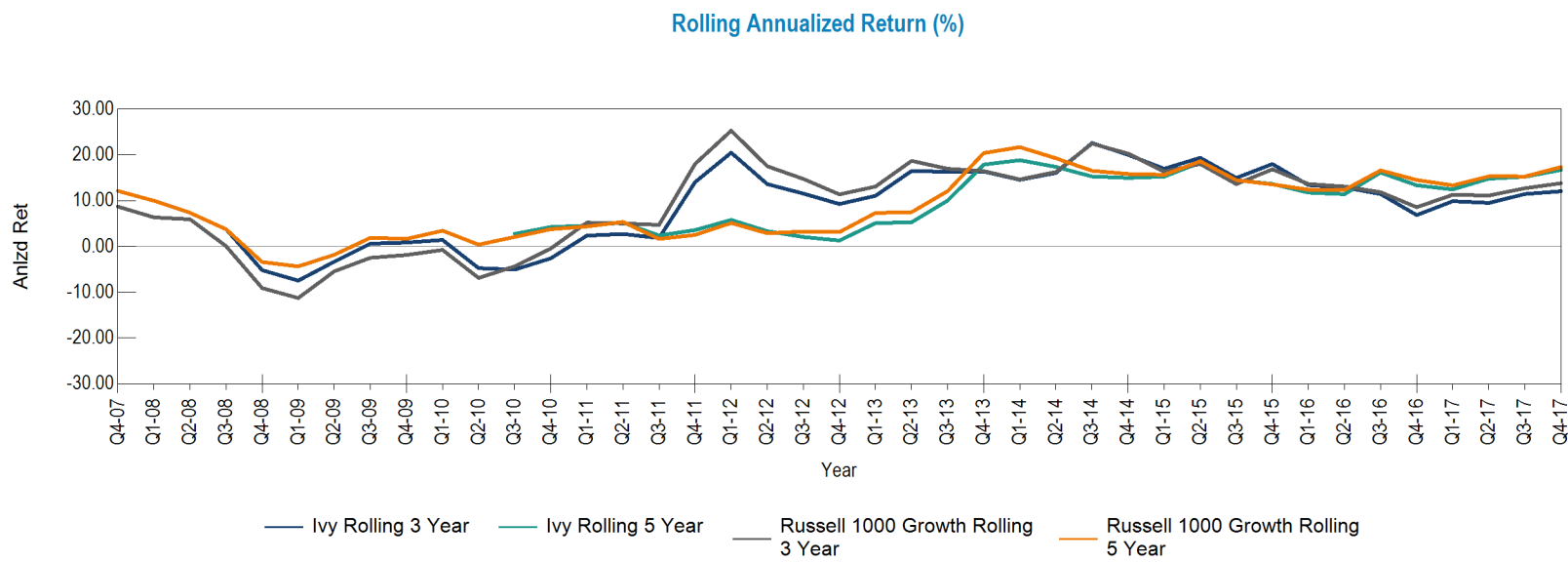
	Return (Rank)									
5th Percentile	9.0	36.0	14.9	18.9	11.0	36.0	10.8	11.4	16.7	41.9
25th Percentile	7.5	32.2	13.1	16.9	9.6	32.2	6.3	6.8	13.1	36.8
Median	6.7	28.5	11.6	16.0	8.9	28.5	3.4	4.1	11.1	34.0
75th Percentile	5.8	25.2	10.1	14.4	8.2	25.2	0.8	1.6	8.7	30.9
95th Percentile	3.7	19.5	8.1	12.7	6.8	19.5	-4.5	-2.3	5.5	26.6
# of Portfolios	182	182	174	166	135	182	182	175	180	158
● Ivy	6.3 (63)	30.0 (42)	12.0 (44)	16.7 (28)	8.7 (61)	30.0 (42)	1.4 (71)	6.7 (26)	12.7 (31)	36.6 (28)
▲ Russell 1000 Growth	7.9 (16)	30.2 (38)	13.8 (16)	17.3 (17)	10.0 (21)	30.2 (38)	7.1 (20)	5.7 (35)	13.0 (28)	33.5 (54)

Returns prior to inception date are composite returns.

# Ivy

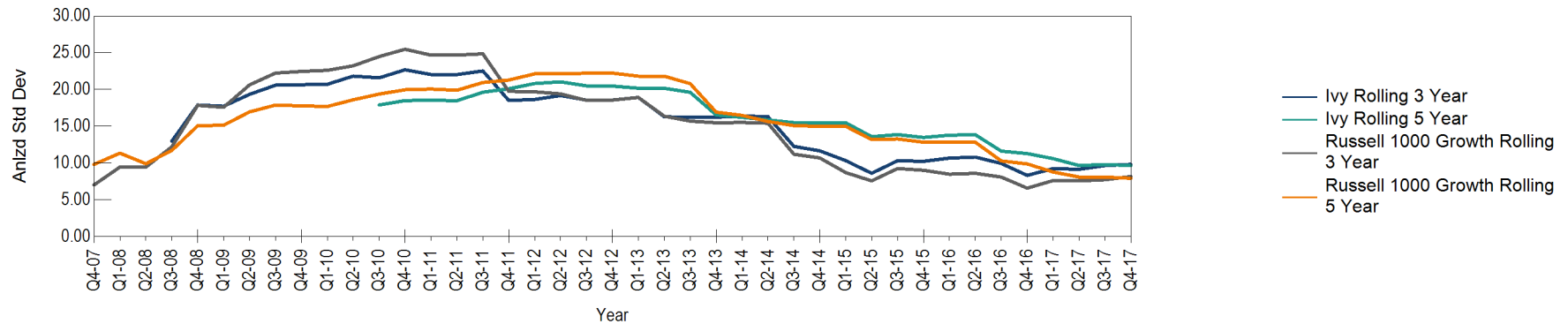
## Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017

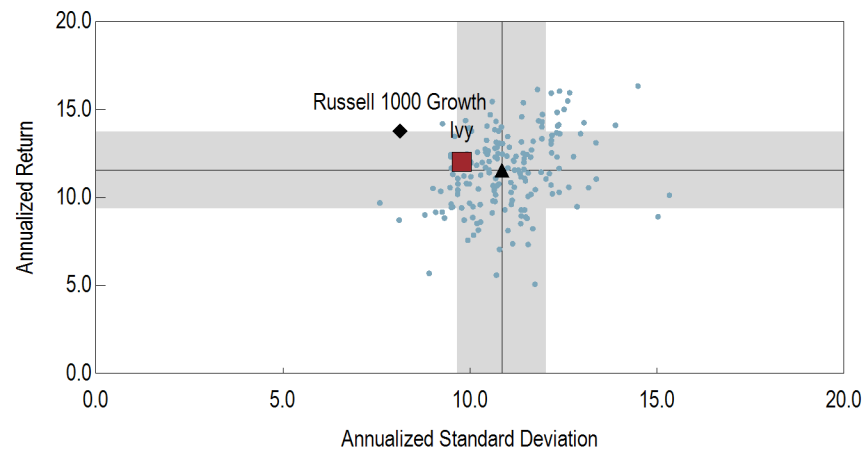


Returns prior to inception date are composite returns.

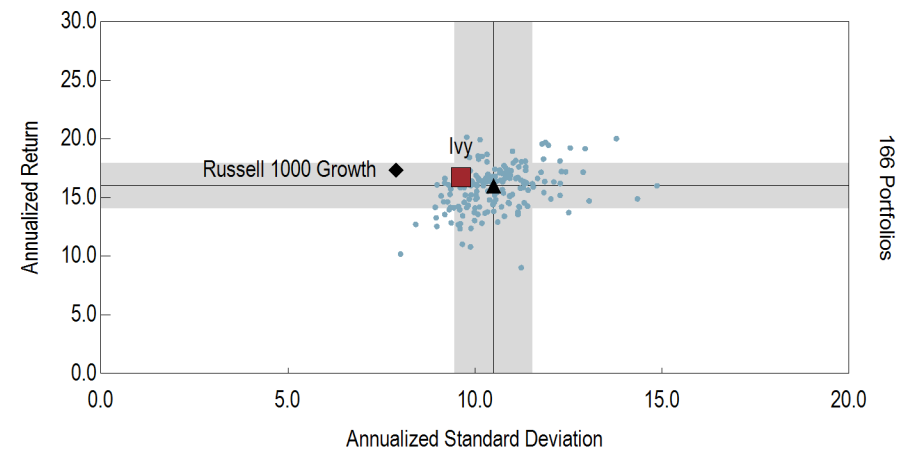
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Ivy	12.0%	9.8%	1.2
Russell 1000 Growth	13.8%	8.1%	1.6
eV US Large Cap Growth Equity Net Median	11.6%	10.9%	1.0

5 Years

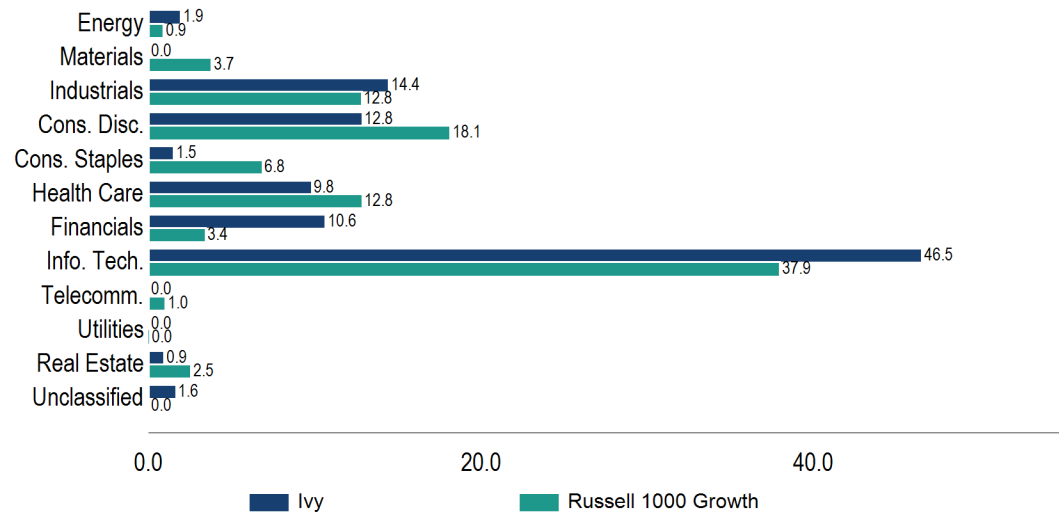
	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Ivy	16.7%	9.6%	1.7
Russell 1000 Growth	17.3%	7.9%	2.2
eV US Large Cap Growth Equity Net Median	16.0%	10.5%	1.5

Returns prior to inception date are composite returns.

## Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	45	551
Weighted Avg. Market Cap. (\$B)	201.94	204.47
Median Market Cap. (\$B)	71.32	11.69
Price To Earnings	36.04	28.84
Price To Book	9.07	7.69
Price To Sales	5.87	4.68
Return on Equity (%)	40.80	27.71
Yield (%)	0.98	1.32
Beta	1.13	1.00

## Sector Allocation (%) vs Russell 1000 Growth



## Largest Holdings

	End Weight	Return
APPLE	4.61	10.20
MICROSOFT	4.60	15.42
HOME DEPOT	4.56	16.46
PAYPAL HOLDINGS	4.52	14.98
MASTERCARD	4.28	7.36
AMAZON.COM	4.21	21.65
VISA 'A'	3.98	8.53
FACEBOOK CLASS A	3.95	3.27
CME GROUP	3.80	10.70
CATERPILLAR	3.57	27.11

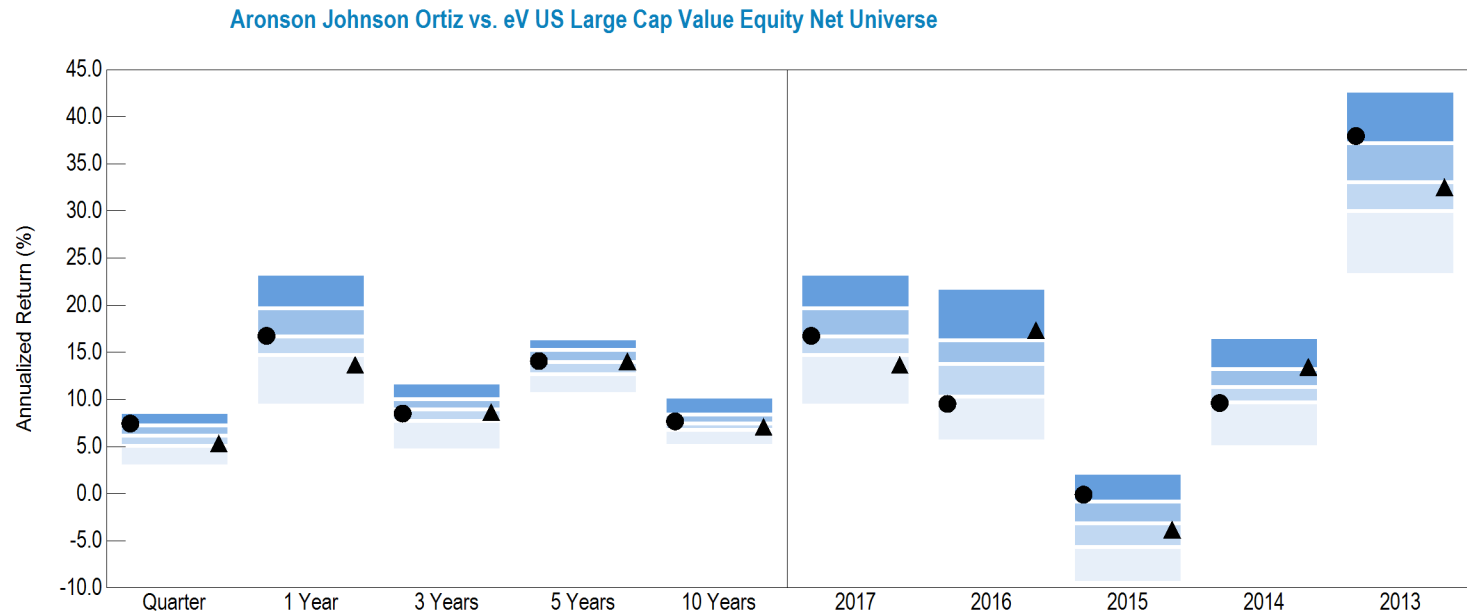
## Top Contributors

	Avg Wgt	Return	Contribution
AMAZON.COM	4.01	21.65	0.87
CATERPILLAR	2.66	27.11	0.72
HOME DEPOT	4.23	16.46	0.70
MICROSOFT	4.48	15.42	0.69
PAYPAL HOLDINGS	4.30	14.98	0.64
ADOBE SYSTEMS	3.44	17.47	0.60
APPLE	4.63	10.20	0.47
CHARLES SCHWAB	2.46	17.66	0.43
VISA 'A'	3.94	8.53	0.34
CME GROUP	3.13	10.70	0.34

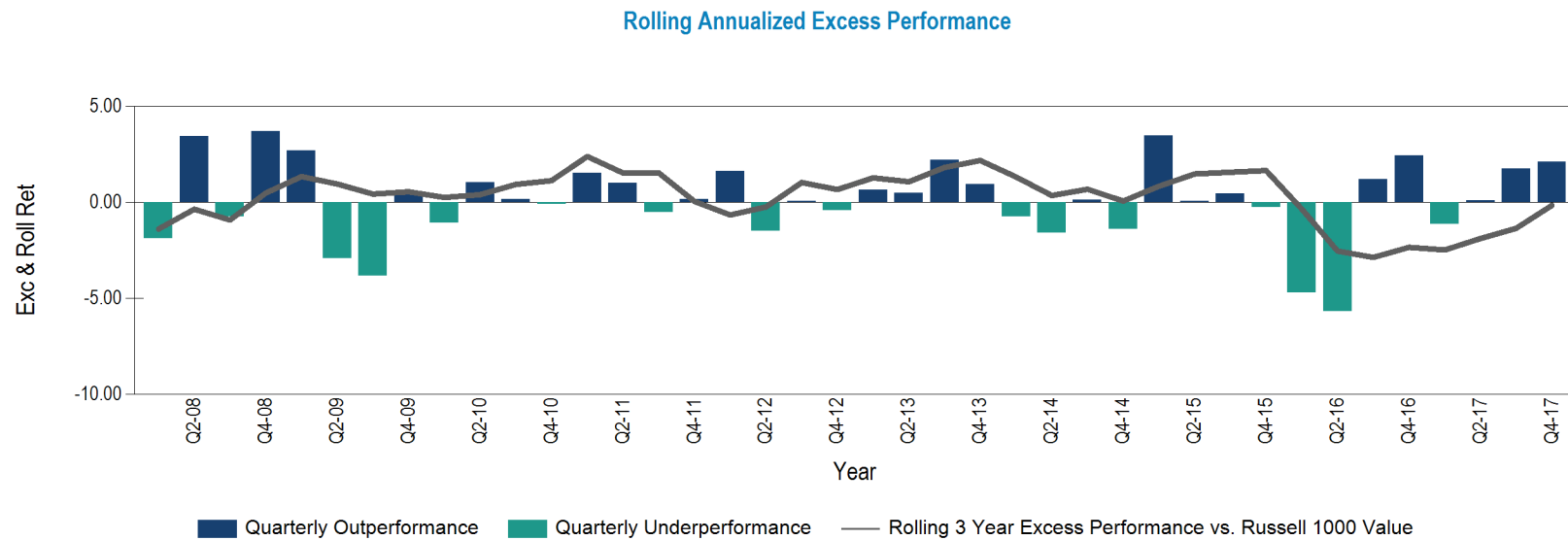
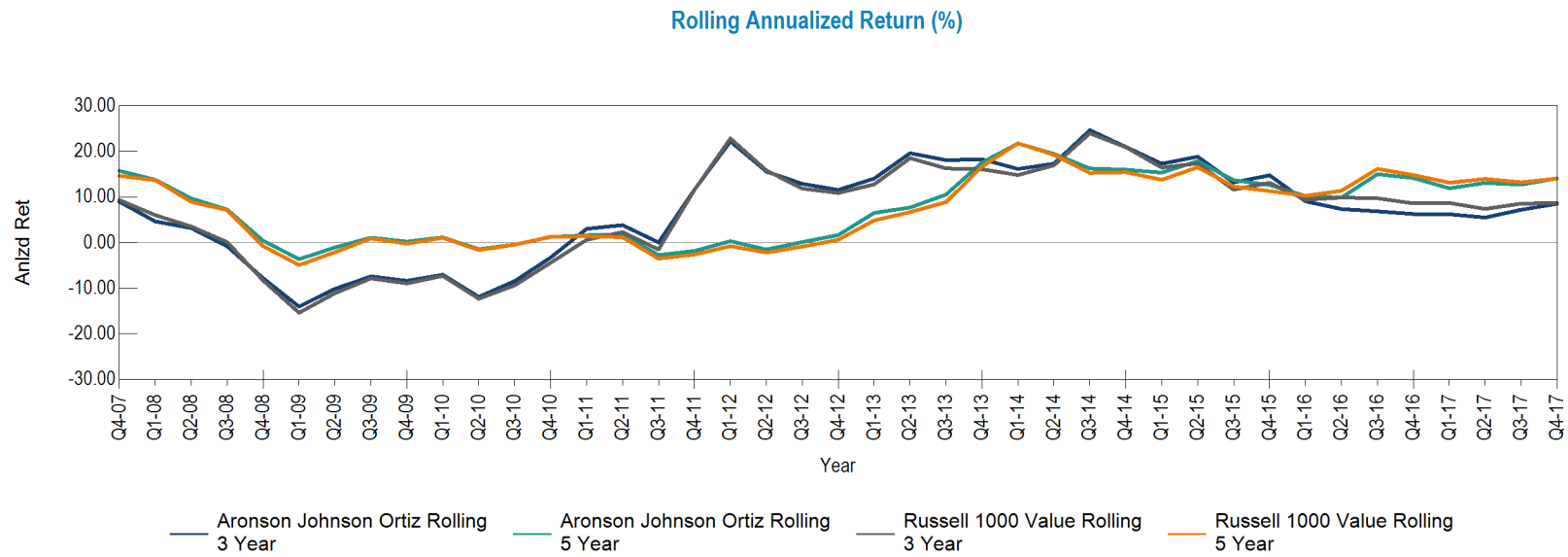
## Bottom Contributors

	Avg Wgt	Return	Contribution
CELGENE	2.36	-28.43	-0.67
ELECTRONIC ARTS	2.47	-11.01	-0.27
PHILIP MORRIS INTL.	2.64	-3.85	-0.10
FERRARI	1.97	-5.11	-0.10
ALEXION PHARMS.	0.67	-14.76	-0.10
PRICELINE GROUP	1.65	-5.08	-0.08
MICROCHIP TECH.	2.47	-1.73	-0.04
VERTEX PHARMS.	1.45	-1.43	-0.02
APPLIED MATS.	1.22	-1.69	-0.02
BRISTOL MYERS SQUIBB	0.47	-3.27	-0.02

Unclassified sector allocation includes cash allocations.



	Return (Rank)									
5th Percentile	8.6	23.3	11.7	16.4	10.3	23.3	21.8	2.2	16.6	42.8
25th Percentile	7.3	19.7	10.1	15.3	8.4	19.7	16.3	-0.8	13.3	37.3
Median	6.2	16.7	9.0	14.0	7.5	16.7	13.8	-3.1	11.3	33.1
75th Percentile	5.1	14.8	7.8	12.7	6.8	14.8	10.4	-5.7	9.7	30.0
95th Percentile	2.9	9.4	4.6	10.6	5.1	9.4	5.6	-9.4	5.0	23.2
# of Portfolios	231	231	223	211	161	231	225	195	197	184
● Aronson Johnson Ortiz	7.4 (20)	16.7 (50)	8.5 (58)	14.1 (49)	7.7 (46)	16.7 (50)	9.5 (83)	-0.1 (16)	9.6 (78)	38.0 (21)
▲ Russell 1000 Value	5.3 (73)	13.7 (86)	8.7 (56)	14.0 (49)	7.1 (61)	13.7 (86)	17.3 (19)	-3.8 (59)	13.5 (24)	32.5 (54)

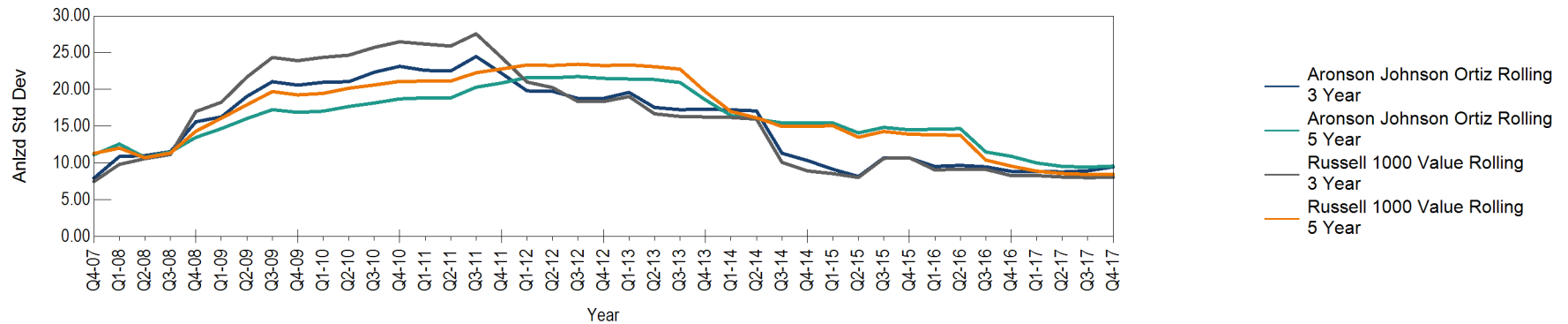


# Aronson Johnson Ortiz

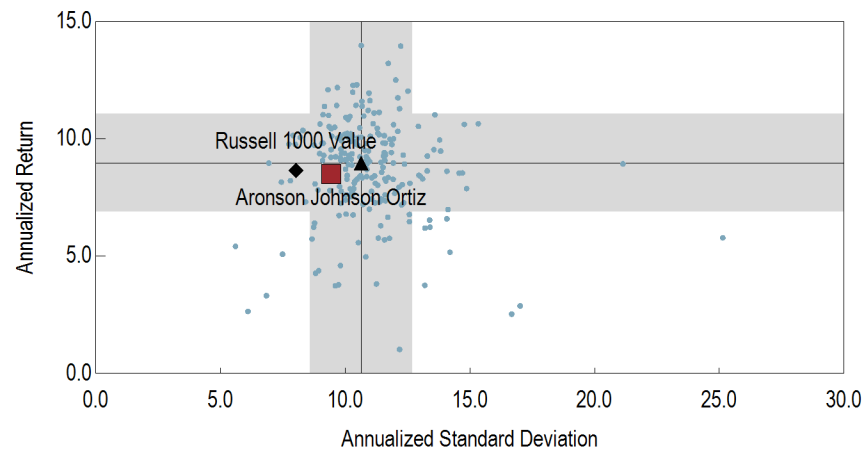
## Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

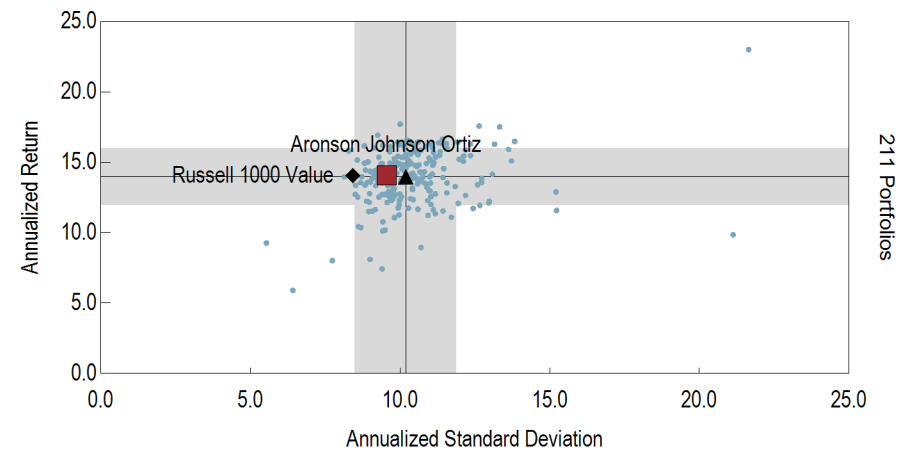
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Aronson Johnson Ortiz	8.5%	9.4%	0.9
Russell 1000 Value	8.7%	8.0%	1.0
eV US Large Cap Value Equity Net Median	9.0%	10.6%	0.8

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Aronson Johnson Ortiz	14.1%	9.5%	1.4
Russell 1000 Value	14.0%	8.4%	1.6
eV US Large Cap Value Equity Net Median	14.0%	10.2%	1.3

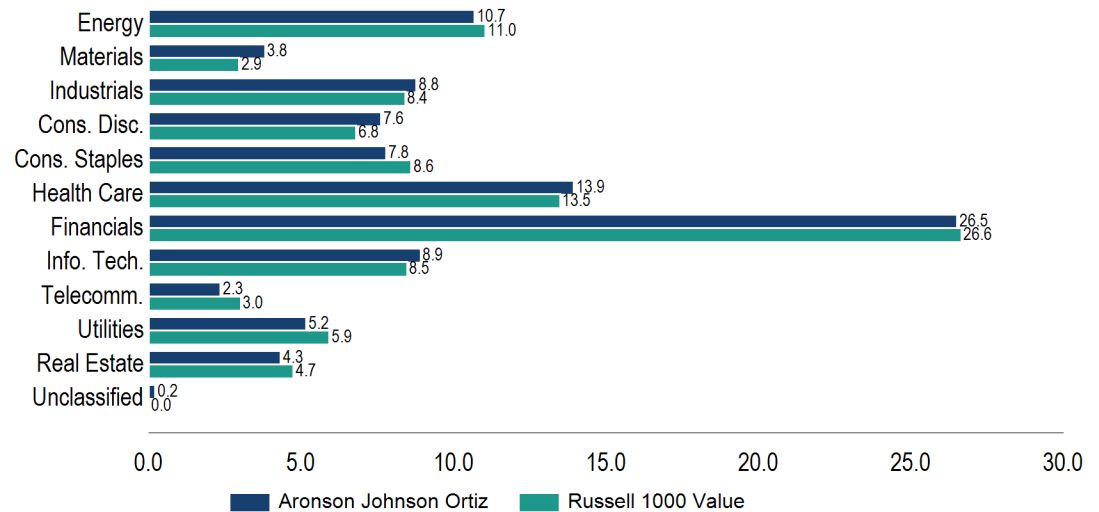
# Aronson Johnson Ortiz Manager Portfolio Overview (Net of Fees)

Period Ending: December 31, 2017

## Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	145	713
Weighted Avg. Market Cap. (\$B)	93.97	119.36
Median Market Cap. (\$B)	10.00	9.42
Price To Earnings	20.67	21.04
Price To Book	3.63	2.73
Price To Sales	2.21	2.88
Return on Equity (%)	19.93	11.48
Yield (%)	2.01	2.31
Beta	0.96	1.00

## Sector Allocation (%) vs Russell 1000 Value



## Largest Holdings

	End Weight	Return
JOHNSON & JOHNSON	3.57	8.12
BANK OF AMERICA	3.29	16.99
EXXON MOBIL	3.19	2.97
PFIZER	2.87	2.38
JP MORGAN CHASE & CO.	2.79	12.61
MERCK & COMPANY	1.90	-11.37
VERIZON COMMUNICATIONS	1.80	8.24
WALMART	1.73	27.04
VALERO ENERGY	1.62	20.49
PRUDENTIAL FINL.	1.57	8.89

## Top Contributors

	Avg Wgt	Return	Contribution
BANK OF AMERICA	3.14	16.99	0.53
WALMART	1.88	27.04	0.51
JP MORGAN CHASE & CO.	2.72	12.61	0.34
VALERO ENERGY	1.45	20.49	0.30
JOHNSON & JOHNSON	3.64	8.12	0.30
VOYA FINANCIAL	1.06	24.04	0.25
MARATHON PETROLEUM	1.27	18.42	0.23
DELTA AIR LINES	1.36	16.84	0.23
INGREDION	1.29	16.38	0.21
ALLSTATE	1.45	14.34	0.21

## Bottom Contributors

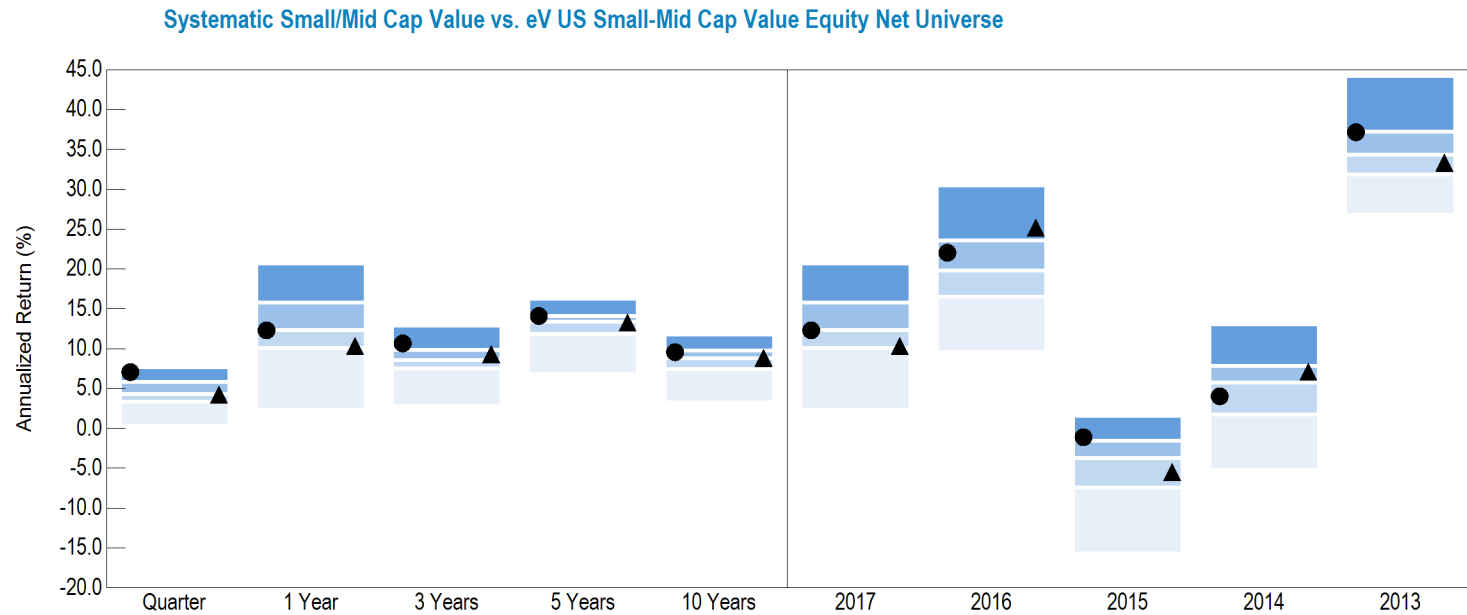
	Avg Wgt	Return	Contribution
MERCK & COMPANY	2.20	-11.37	-0.25
SANDERSON FARMS	0.57	-13.38	-0.08
OCEANEERING	0.37	-19.53	-0.07
ADVANCED ENERGY INDS.	0.38	-16.44	-0.06
ASSURED GUARANTY	0.62	-9.93	-0.06
EDISON INTL.	0.25	-17.28	-0.04
OFFICE DEPOT	0.20	-21.43	-0.04
WORLD FUEL SVS.	0.25	-16.69	-0.04
JABIL	0.50	-7.80	-0.04
NAVIENT	0.34	-10.19	-0.03

Unclassified sector allocation includes cash allocations.



# Systematic Small/Mid Cap Value Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017

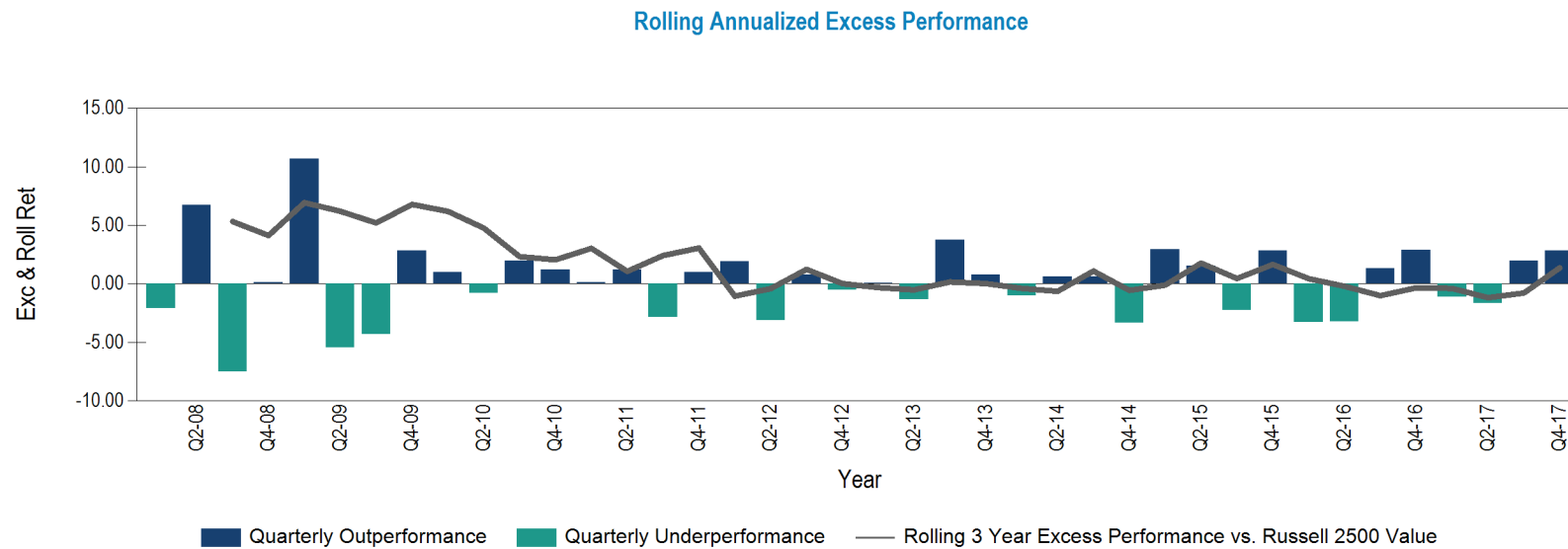
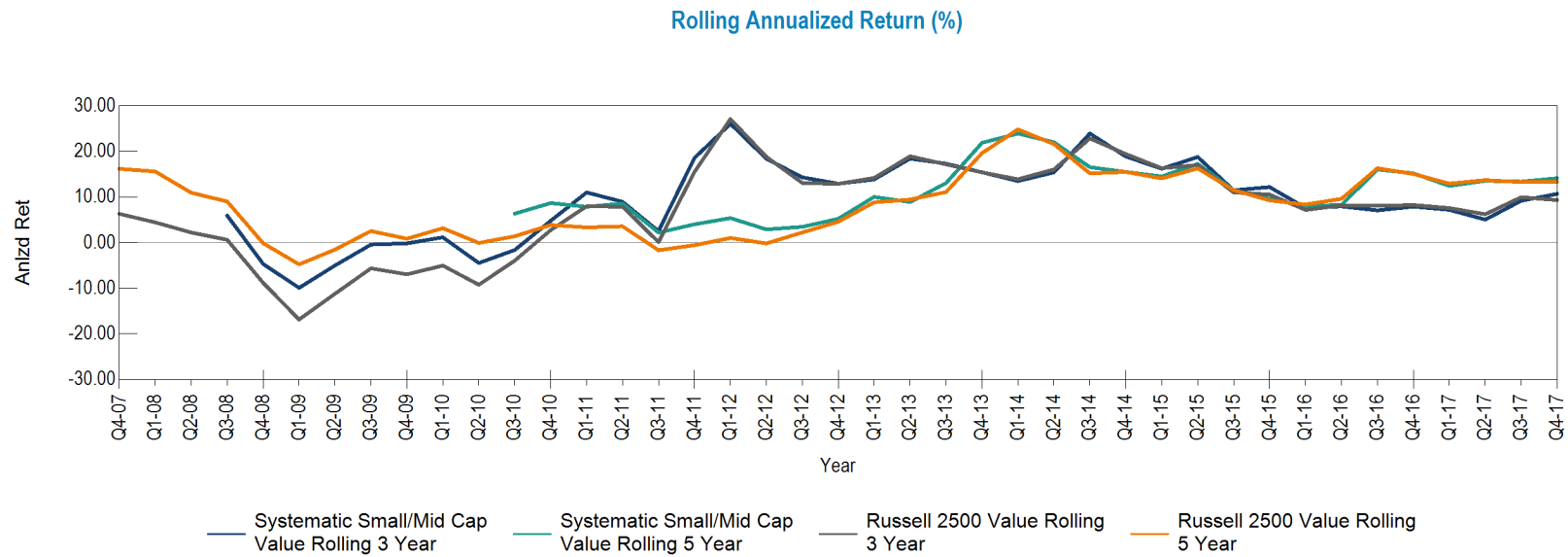


	Return (Rank)									
5th Percentile	7.6	20.6	12.8	16.3	11.7	20.6	30.5	1.5	13.0	44.2
25th Percentile	5.9	15.8	9.9	14.2	9.8	15.8	23.6	-1.5	7.9	37.3
Median	4.4	12.4	8.6	13.4	8.8	12.4	19.9	-3.7	5.8	34.4
75th Percentile	3.4	10.1	7.5	11.9	7.5	10.1	16.5	-7.4	1.8	31.9
95th Percentile	0.3	2.3	2.9	6.8	3.3	2.3	9.7	-15.7	-5.2	26.8
# of Portfolios	65	65	59	57	39	65	64	58	57	45
● Systematic Small/Mid Cap Value	7.1 (8)	12.3 (52)	10.7 (17)	14.1 (33)	9.6 (31)	12.3 (52)	22.0 (32)	-1.1 (22)	4.0 (68)	37.2 (27)
▲ Russell 2500 Value	4.3 (52)	10.4 (73)	9.3 (36)	13.3 (53)	8.8 (51)	10.4 (73)	25.2 (17)	-5.5 (62)	7.1 (34)	33.3 (65)

Returns prior to inception date are composite returns.

# Systematic Small/Mid Cap Value Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017

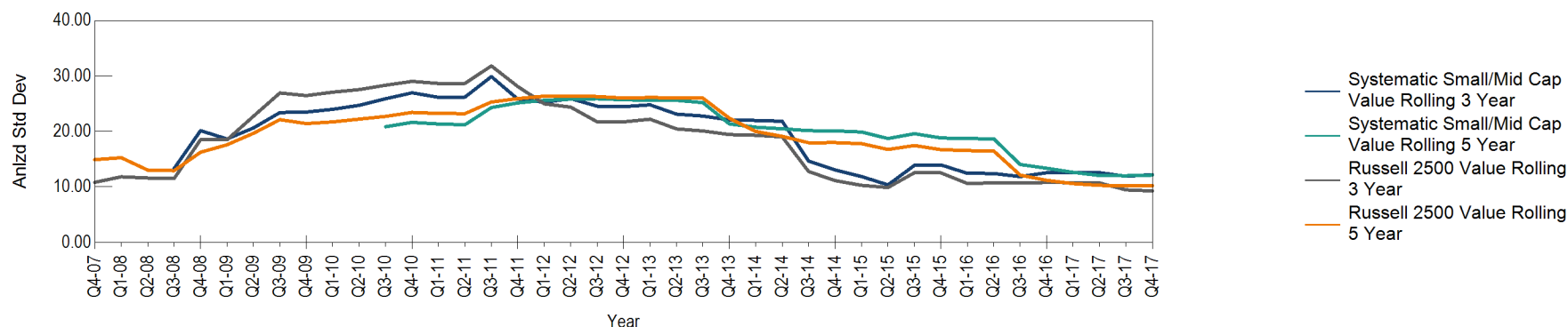


Returns prior to inception date are composite returns.

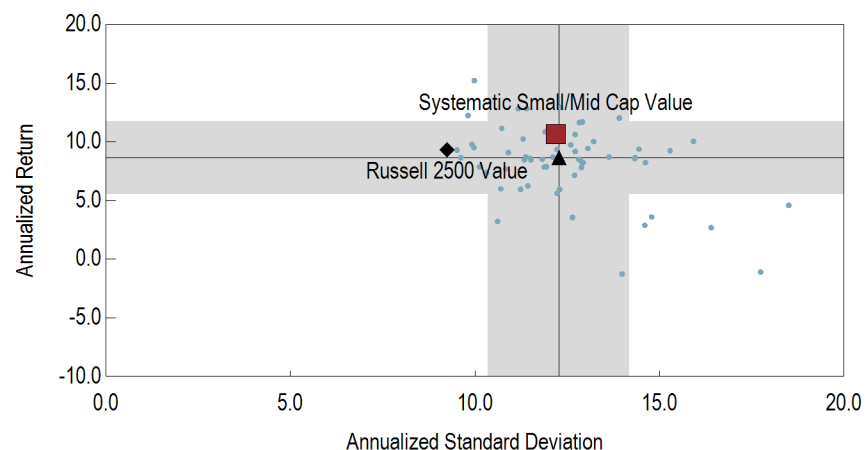
# Systematic Small/Mid Cap Value Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

Rolling Annualized Standard Deviation



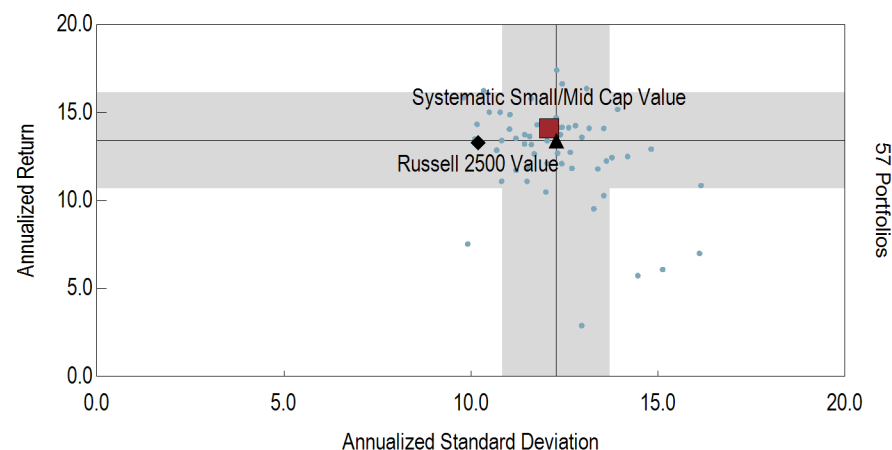
3 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Systematic Small/Mid Cap Value	10.7%	12.2%	0.8
Russell 2500 Value	9.3%	9.2%	1.0
eV US Small-Mid Cap Value Equity Net Median	8.6%	12.3%	0.7

5 Years



5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Systematic Small/Mid Cap Value	14.1%	12.1%	1.1
Russell 2500 Value	13.3%	10.2%	1.3
eV US Small-Mid Cap Value Equity Net Median	13.4%	12.3%	1.1

Returns prior to inception date are composite returns.

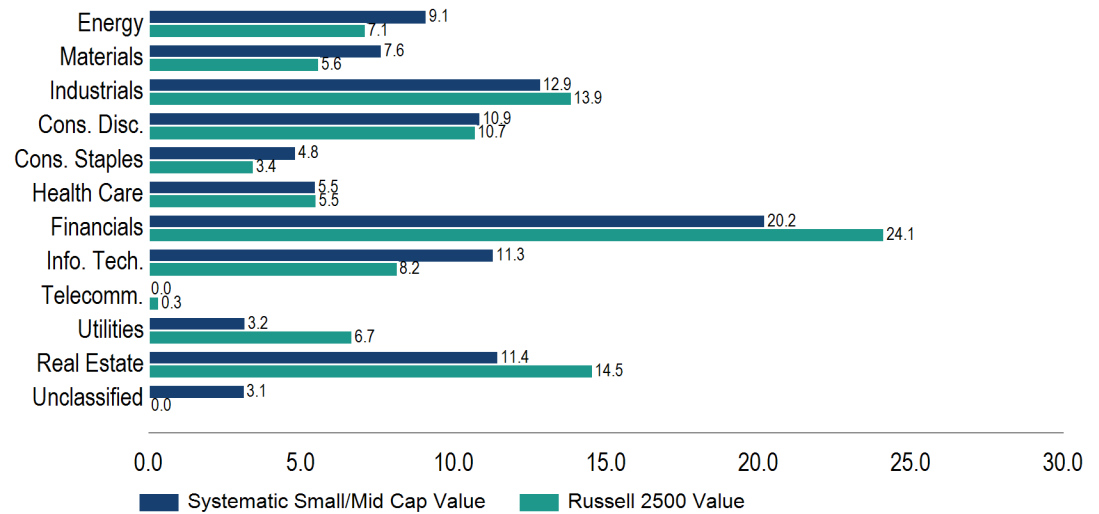
# Systematic Small/Mid Cap Value Manager Portfolio Overview (Net of Fees)

Period Ending: December 31, 2017

## Characteristics

	Portfolio	Russell 2500 Value
Number of Holdings	88	1,752
Weighted Avg. Market Cap. (\$B)	7.10	4.75
Median Market Cap. (\$B)	5.56	1.04
Price To Earnings	20.74	19.31
Price To Book	2.73	2.18
Price To Sales	2.56	2.91
Return on Equity (%)	10.34	7.47
Yield (%)	1.55	1.84
Beta	1.22	1.00

## Sector Allocation (%) vs Russell 2500 Value



## Largest Holdings

	End Weight	Return
CITIZENS FINANCIAL GROUP	3.16	11.38
KBR	2.43	11.39
PINNACLE FOODS	2.28	4.61
ENERGEN	2.26	5.29
TEREX	2.25	7.30
MICROSEMI	2.04	0.33
LIBERTY PROPERTY TST.	1.99	5.72
BELDEN	1.93	-4.11
MEDICAL PROPS.TRUST	1.90	6.81
ENERGY	1.90	7.69

## Top Contributors

	Avg Wgt	Return	Contribution
H&E EQUIPMENT SERVICES	1.14	40.32	0.46
ARCH COAL 'A'	1.33	30.44	0.40
HUNTSMAN	1.78	21.90	0.39
BURLINGTON STORES	1.32	28.88	0.38
WPX ENERGY	1.66	22.35	0.37
CITIZENS FINANCIAL GROUP	3.09	11.38	0.35
NETAPP	1.29	26.98	0.35
CHILDRENS PLACE	1.25	23.38	0.29
TOLL BROTHERS	1.81	16.01	0.29
LAZARD 'A'	1.65	17.11	0.28

## Bottom Contributors

	Avg Wgt	Return	Contribution
ADVANCED ENERGY INDS.	0.71	-16.44	-0.12
CRAWFORD 'B'	0.50	-19.16	-0.10
BELDEN	2.15	-4.11	-0.09
ICHOR HOLDINGS	1.00	-8.21	-0.08
EPR PROPERTIES	1.58	-4.71	-0.07
ATHENE HOLDING 'A'	1.73	-3.96	-0.07
ATLAS AIR WWD.HDG.	0.43	-10.87	-0.05
CAESARS	0.88	-5.24	-0.05
ENTERTAINMENT			
PRECISION DRILLING (NYS)	1.34	-3.21	-0.04
ABM INDS.	0.46	-9.21	-0.04

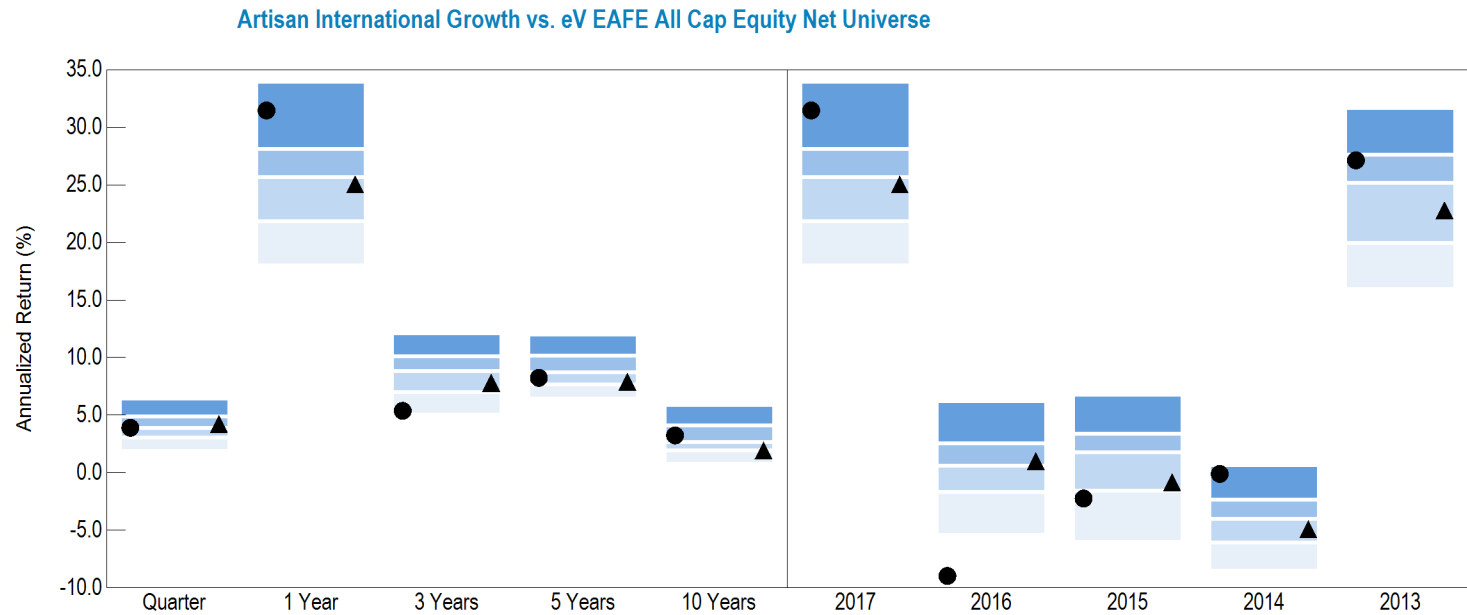
Unclassified sector allocation includes cash allocations.

## International Equity Managers

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# Artisan International Growth Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017



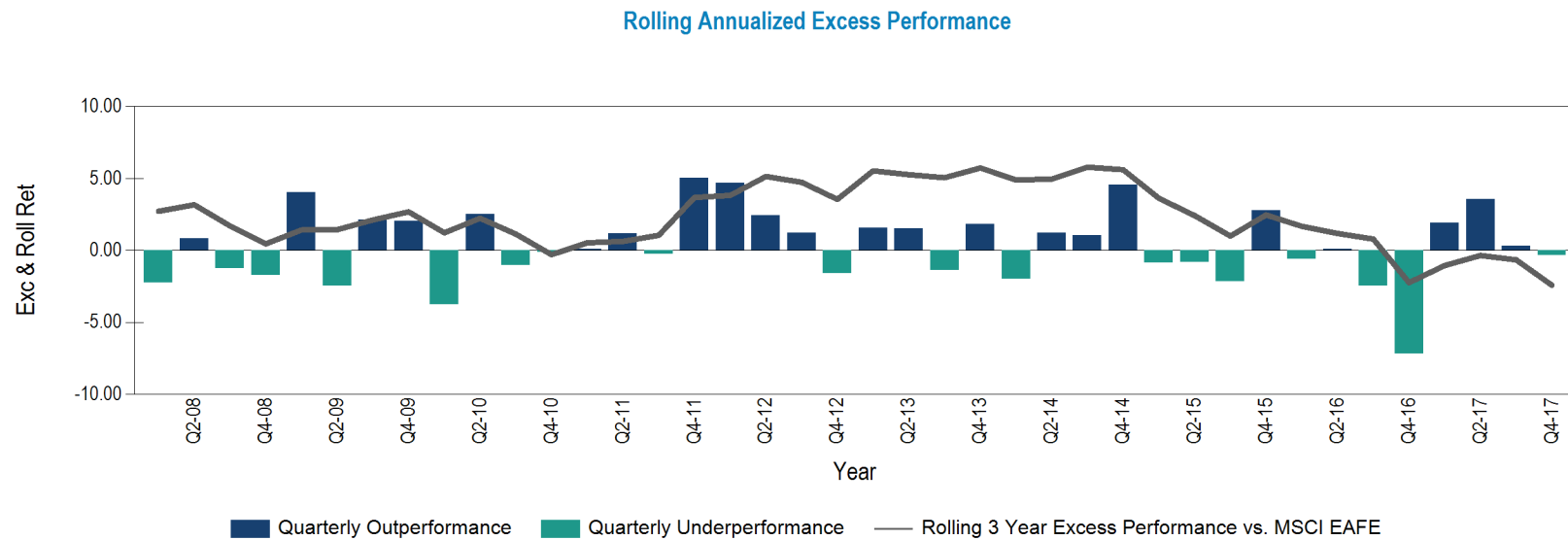
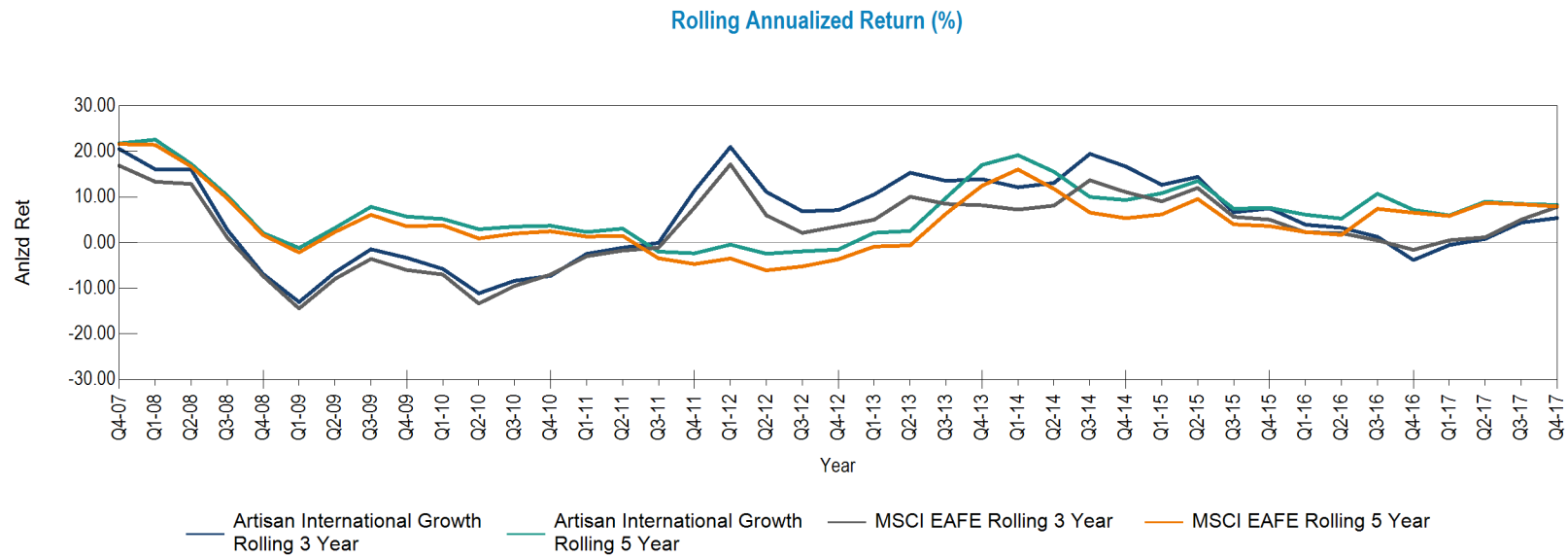
	Return (Rank)									
5th Percentile	6.4	33.9	12.1	12.0	5.9	33.9	6.2	6.8	0.6	31.6
25th Percentile	4.9	28.1	10.1	10.2	4.1	28.1	2.6	3.4	-2.3	27.7
Median	3.9	25.7	8.9	8.7	2.7	25.7	0.6	1.8	-4.0	25.2
75th Percentile	3.1	21.8	7.0	7.7	2.0	21.8	-1.7	-1.5	-6.0	20.0
95th Percentile	1.9	18.0	5.1	6.5	0.8	18.0	-5.4	-6.0	-8.5	16.0
# of Portfolios	71	70	66	56	40	70	64	58	51	47
● Artisan International Growth	3.9 (52)	31.5 (13)	5.4 (94)	8.2 (61)	3.2 (36)	31.5 (13)	-9.0 (99)	-2.2 (80)	-0.1 (10)	27.1 (32)
▲ MSCI EAFE	4.2 (41)	25.0 (59)	7.8 (65)	7.9 (68)	1.9 (78)	25.0 (59)	1.0 (46)	-0.8 (71)	-4.9 (62)	22.8 (67)

Returns prior to inception date are composite returns.

# Artisan International Growth

## Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017



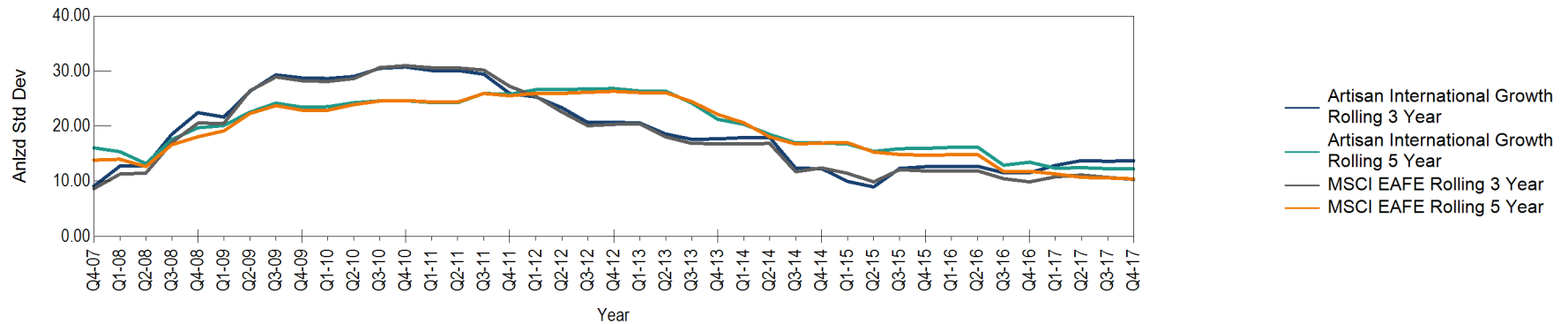
Returns prior to inception date are composite returns.

# Artisan International Growth

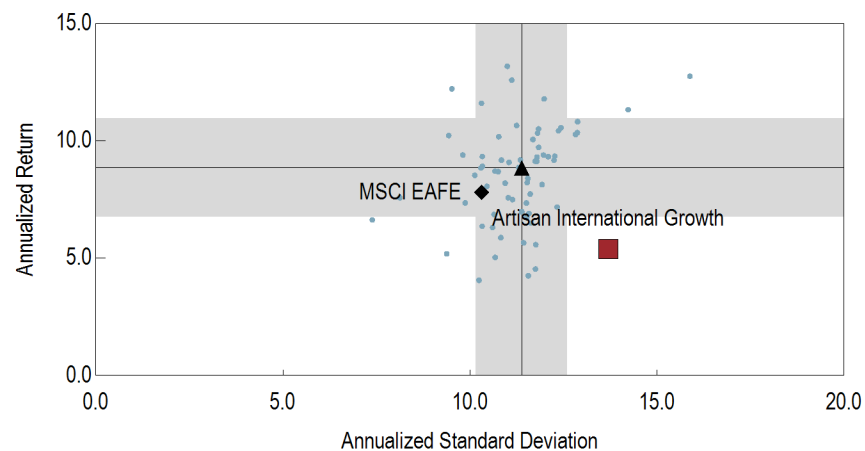
## Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

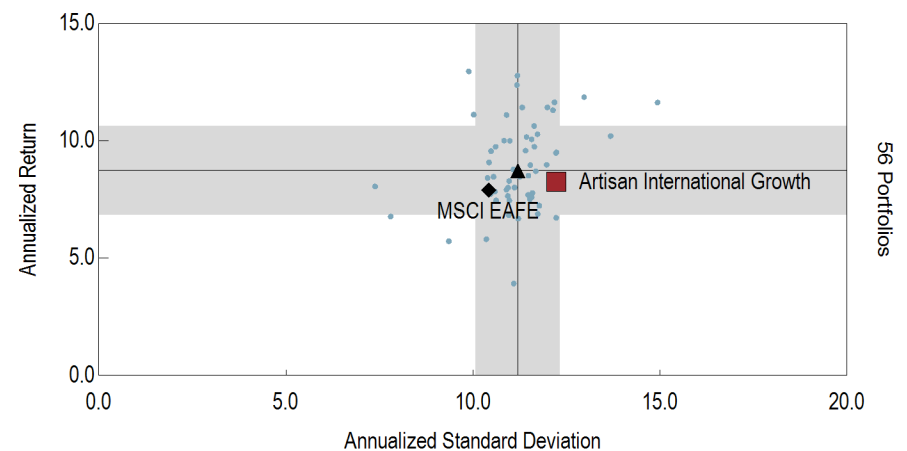
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Artisan International Growth	5.4%	13.7%	0.4
MSCI EAFE	7.8%	10.3%	0.7
eV EAFE All Cap Equity Net Median	8.9%	11.4%	0.7

5 Years

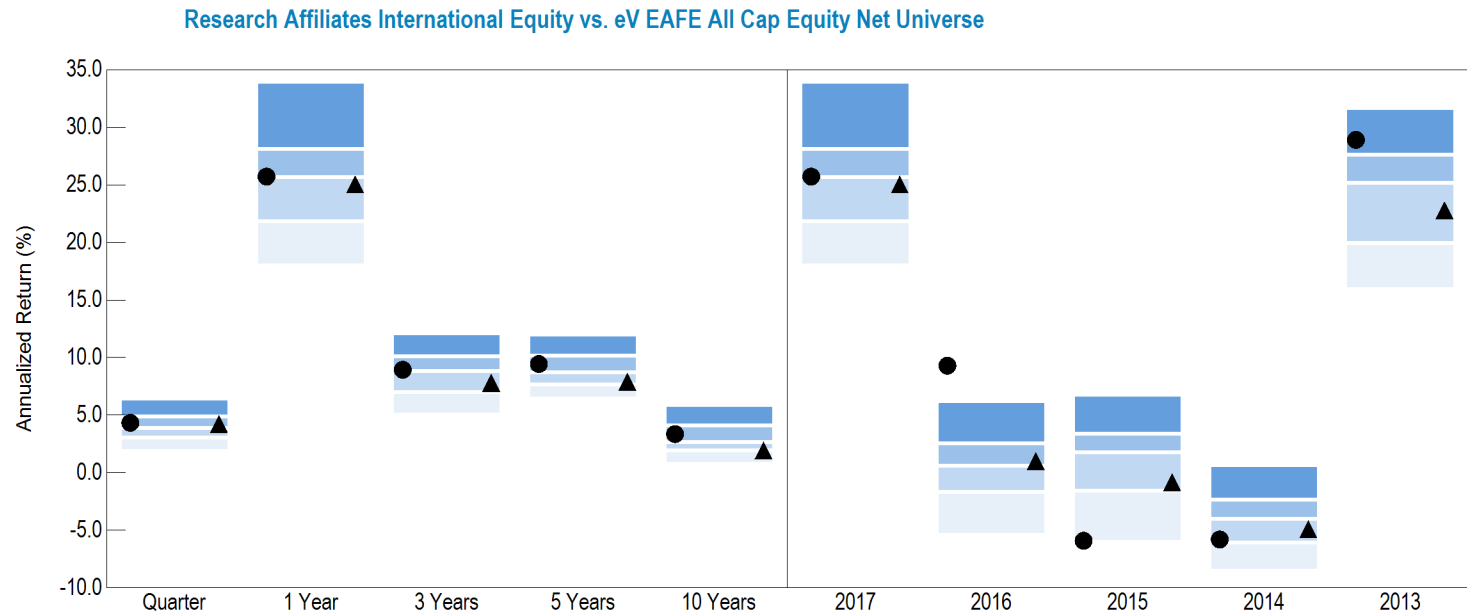
	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Artisan International Growth	8.2%	12.2%	0.7
MSCI EAFE	7.9%	10.4%	0.7
eV EAFE All Cap Equity Net Median	8.7%	11.2%	0.8

Returns prior to inception date are composite returns.



# Research Affiliates International Equity Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017

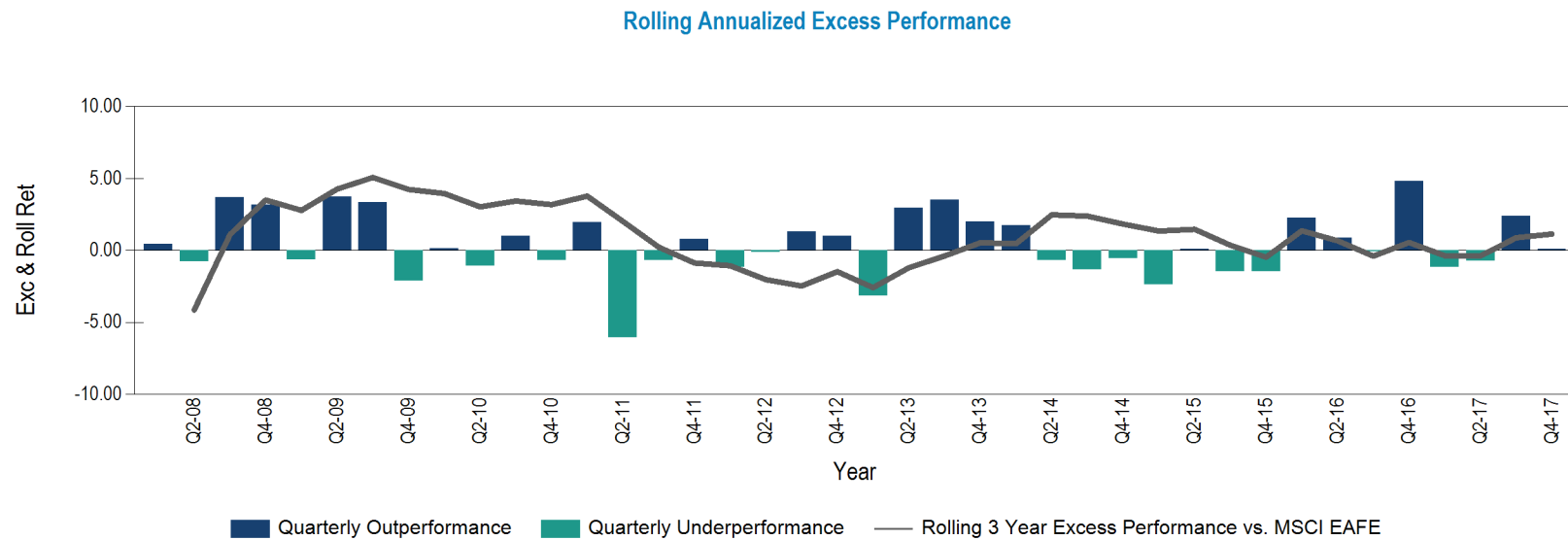
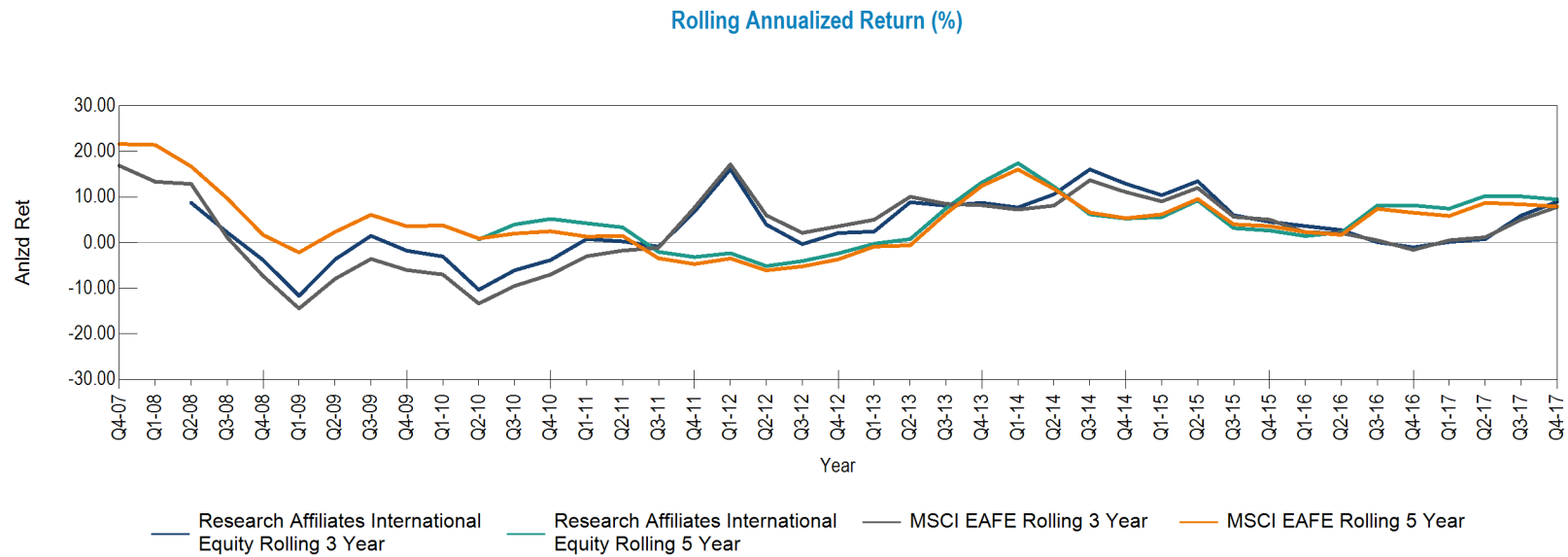


	Return (Rank)									
5th Percentile	6.4	33.9	12.1	12.0	5.9	33.9	6.2	6.8	0.6	31.6
25th Percentile	4.9	28.1	10.1	10.2	4.1	28.1	2.6	3.4	-2.3	27.7
Median	3.9	25.7	8.9	8.7	2.7	25.7	0.6	1.8	-4.0	25.2
75th Percentile	3.1	21.8	7.0	7.7	2.0	21.8	-1.7	-1.5	-6.0	20.0
95th Percentile	1.9	18.0	5.1	6.5	0.8	18.0	-5.4	-6.0	-8.5	16.0
# of Portfolios	71	70	66	56	40	70	64	58	51	47
● Research Affiliates International Equity	4.3 (39)	25.7 (51)	8.9 (48)	9.4 (43)	3.4 (35)	25.7 (51)	9.3 (1)	-5.9 (95)	-5.8 (75)	28.9 (11)
▲ MSCI EAFE	4.2 (41)	25.0 (59)	7.8 (65)	7.9 (68)	1.9 (78)	25.0 (59)	1.0 (46)	-0.8 (71)	-4.9 (62)	22.8 (67)

Returns prior to inception date are composite returns.

# Research Affiliates International Equity Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017

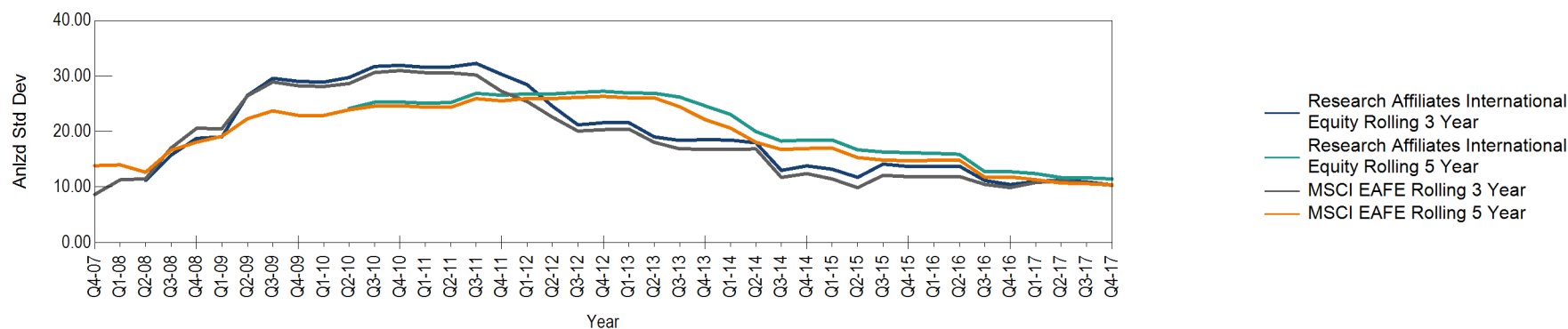


Returns prior to inception date are composite returns.

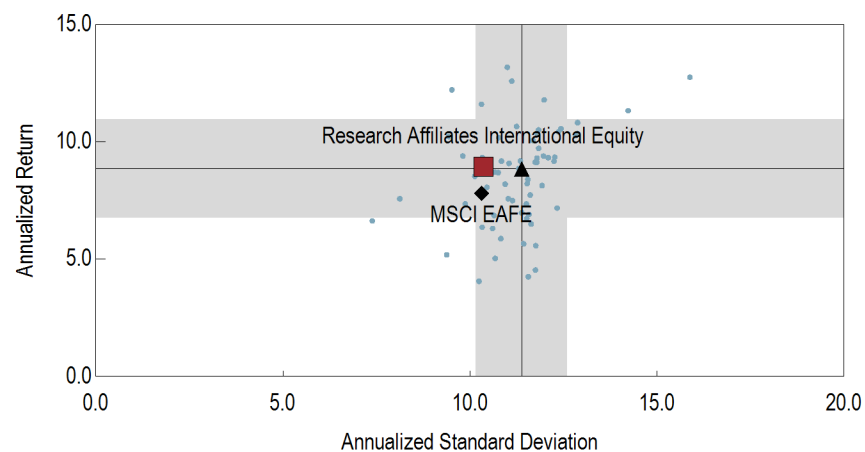
# Research Affiliates International Equity Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

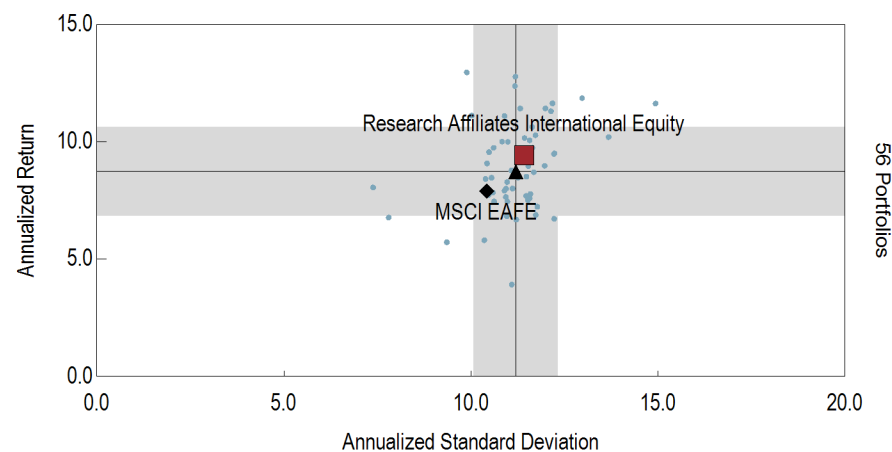
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Research Affiliates International Equity	8.9%	10.4%	0.8
MSCI EAFE	7.8%	10.3%	0.7
eV EAFE All Cap Equity Net Median	8.9%	11.4%	0.7

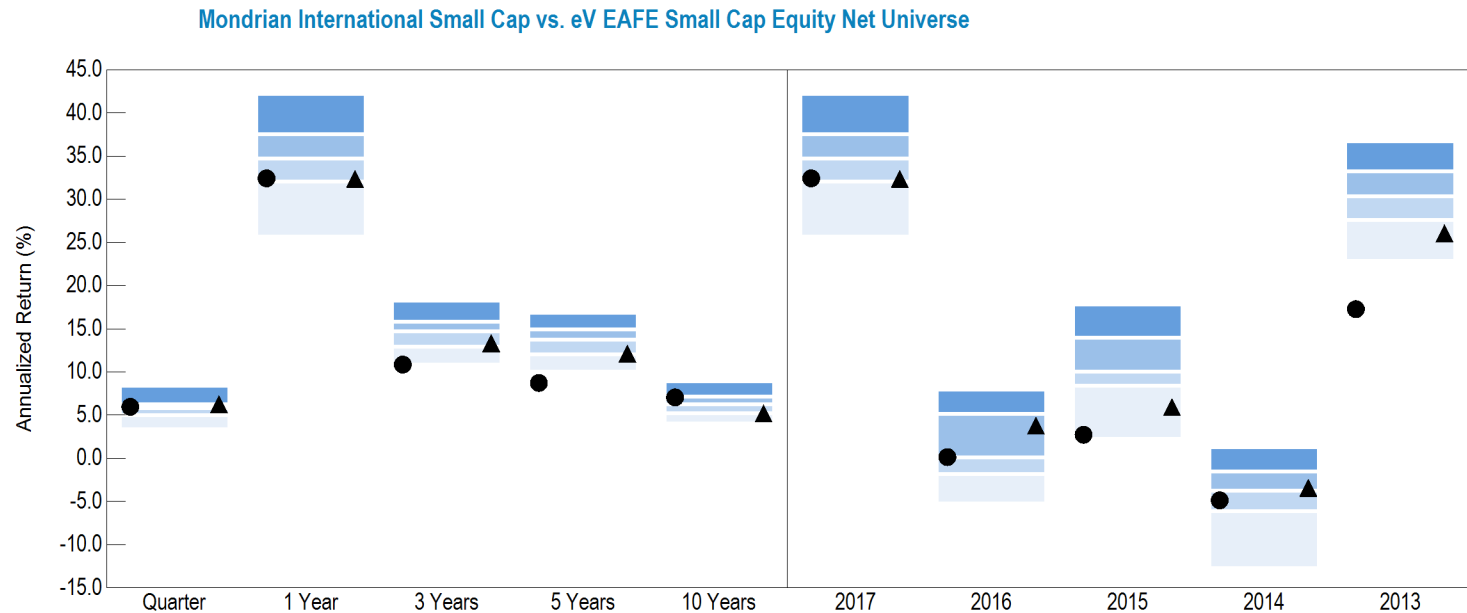
5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Research Affiliates International Equity	9.4%	11.4%	0.8
MSCI EAFE	7.9%	10.4%	0.7
eV EAFE All Cap Equity Net Median	8.7%	11.2%	0.8

Returns prior to inception date are composite returns.

# Mondrian International Small Cap Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017

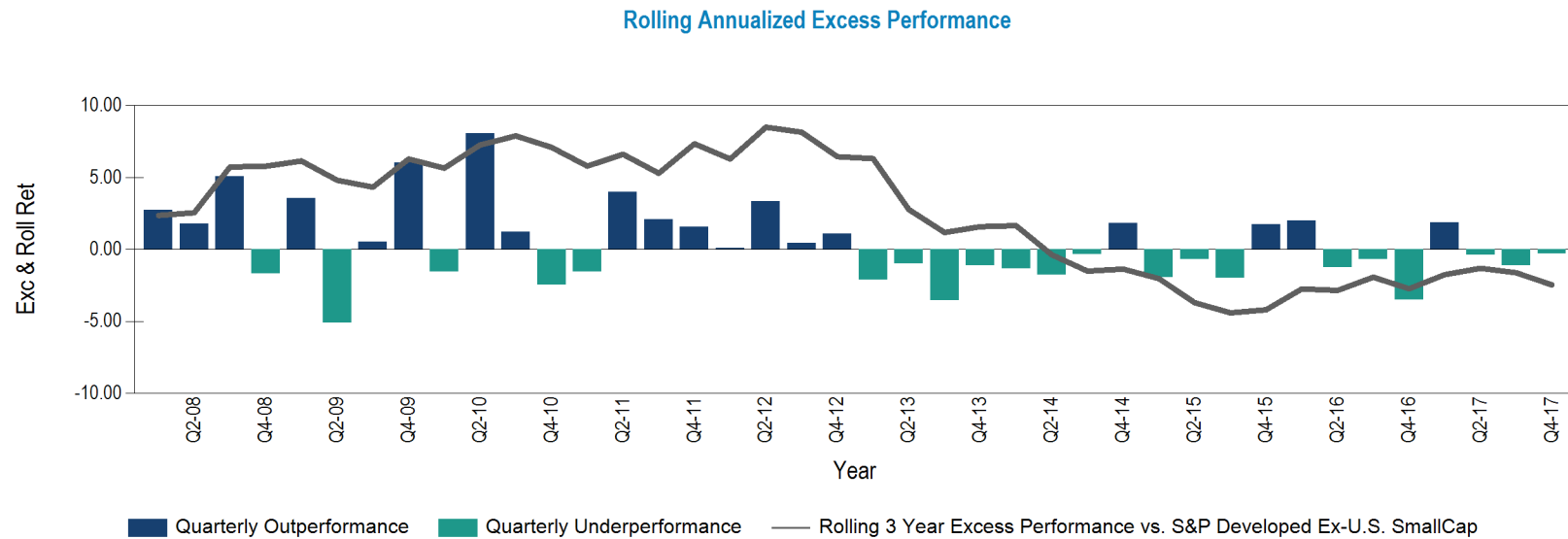
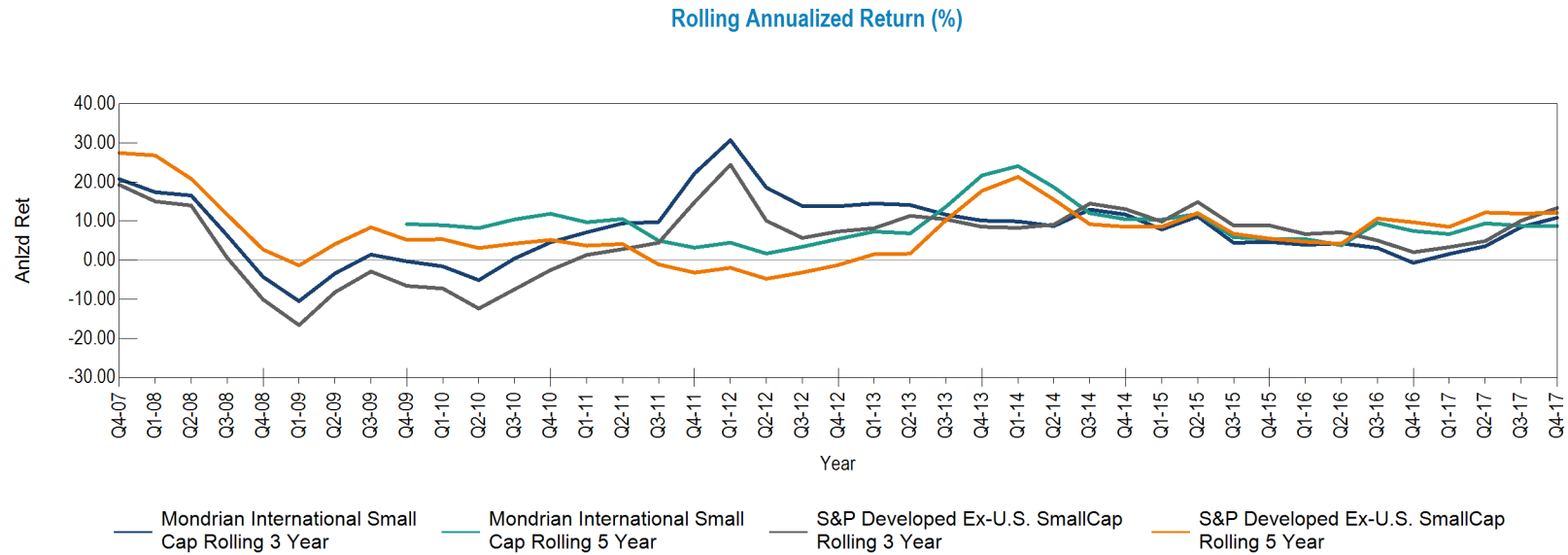


	Return (Rank)									
5th Percentile	8.4	42.2	18.2	16.8	8.9	42.2	7.9	17.8	1.2	36.7
25th Percentile	6.3	37.6	15.8	14.9	7.2	37.6	5.2	14.0	-1.5	33.3
Median	5.8	34.8	14.7	13.8	6.3	34.8	0.1	10.1	-3.7	30.4
75th Percentile	5.0	32.1	13.0	12.1	5.3	32.1	-1.8	8.5	-6.1	27.6
95th Percentile	3.4	25.7	10.9	10.1	4.1	25.7	-5.2	2.3	-12.7	22.9
# of Portfolios	52	52	45	36	23	52	41	31	32	30
● Mondrian International Small Cap	6.0 (43)	32.4 (74)	10.9 (96)	8.7 (99)	7.1 (28)	32.4 (74)	0.1 (50)	2.7 (94)	-4.9 (67)	17.3 (99)
▲ S&P Developed Ex-U.S. SmallCap	6.2 (27)	32.4 (74)	13.3 (72)	12.1 (75)	5.2 (77)	32.4 (74)	3.8 (29)	5.9 (84)	-3.4 (48)	26.1 (84)

Returns prior to inception date are composite returns.

# Mondrian International Small Cap Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017

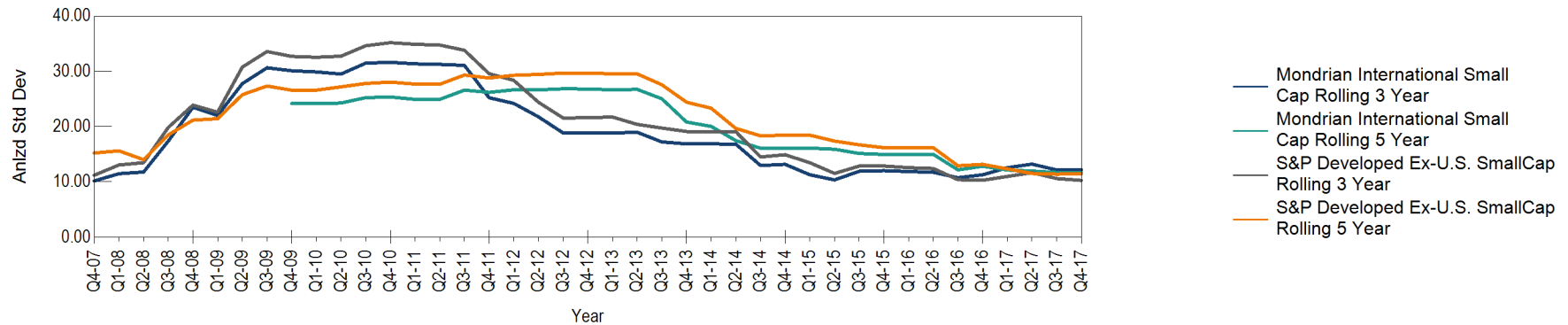


Returns prior to inception date are composite returns.

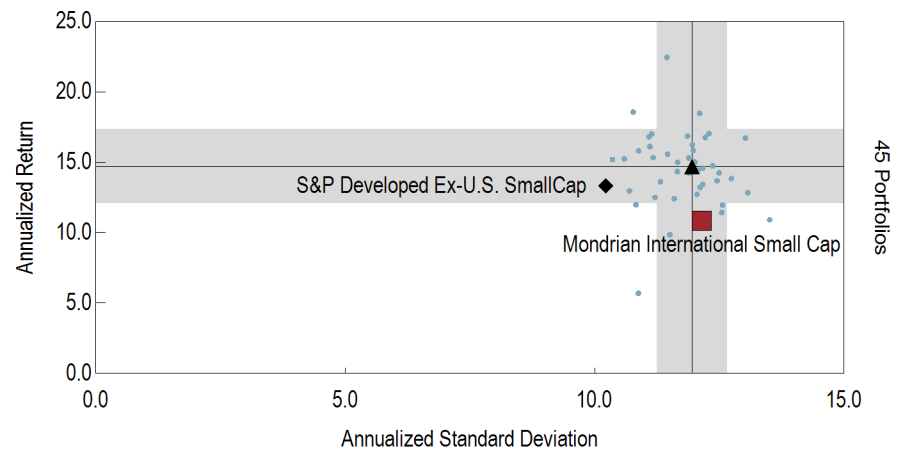
# Mondrian International Small Cap Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

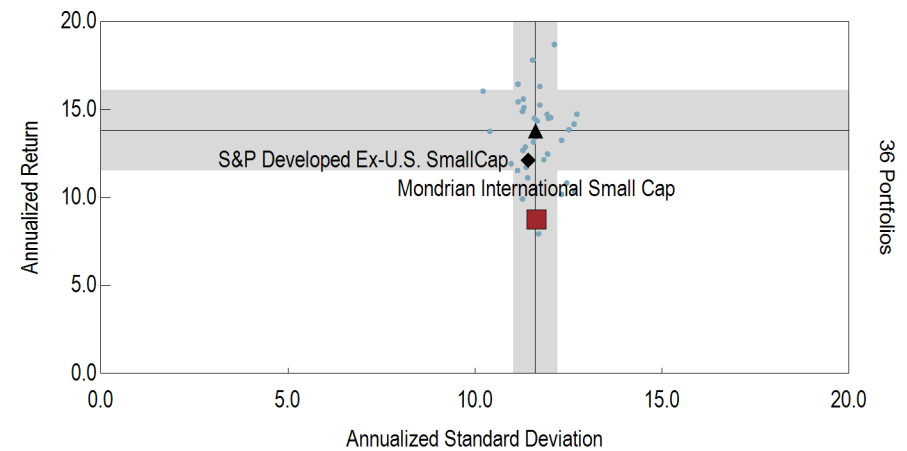
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Mondrian International Small Cap	10.9%	12.1%	0.9
S&P Developed Ex-U.S. SmallCap	13.3%	10.2%	1.3
eV EAFE Small Cap Equity Net Median	14.7%	12.0%	1.2

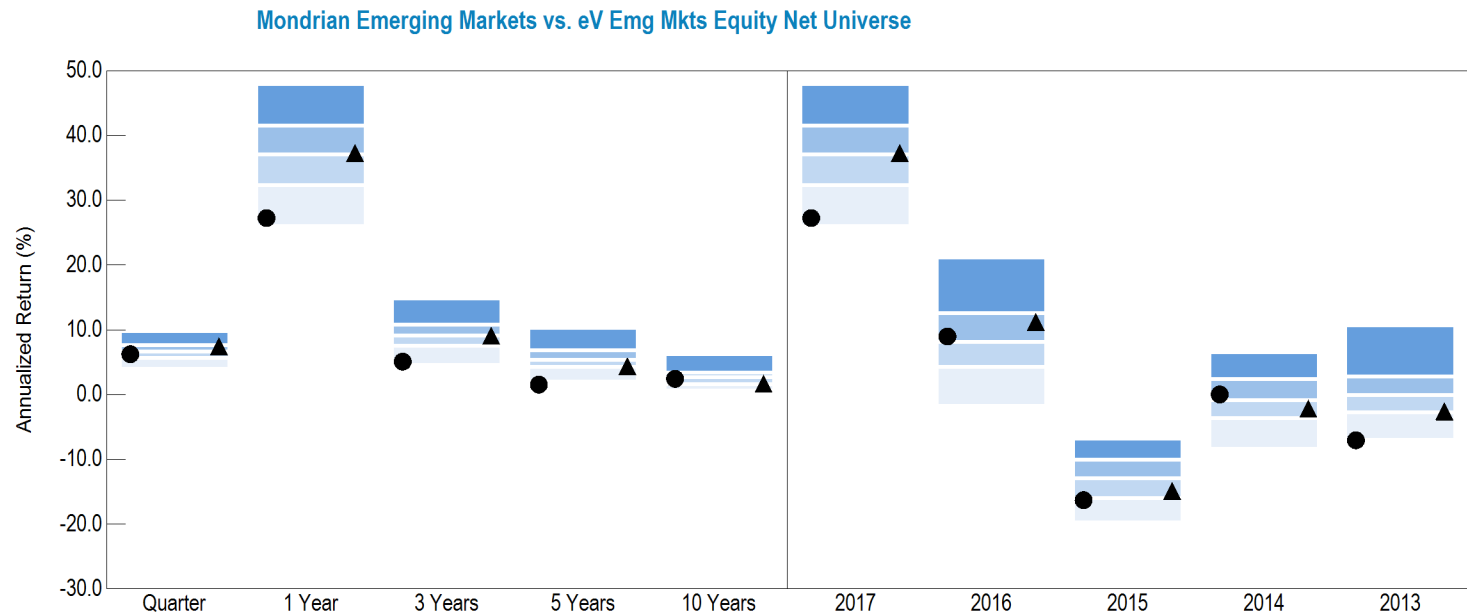
5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Mondrian International Small Cap	8.7%	11.6%	0.7
S&P Developed Ex-U.S. SmallCap	12.1%	11.4%	1.0
eV EAFE Small Cap Equity Net Median	13.8%	11.6%	1.1

Returns prior to inception date are composite returns.

Mondrian Emerging Markets  
Manager Performance Comparisons (Net of Fees)

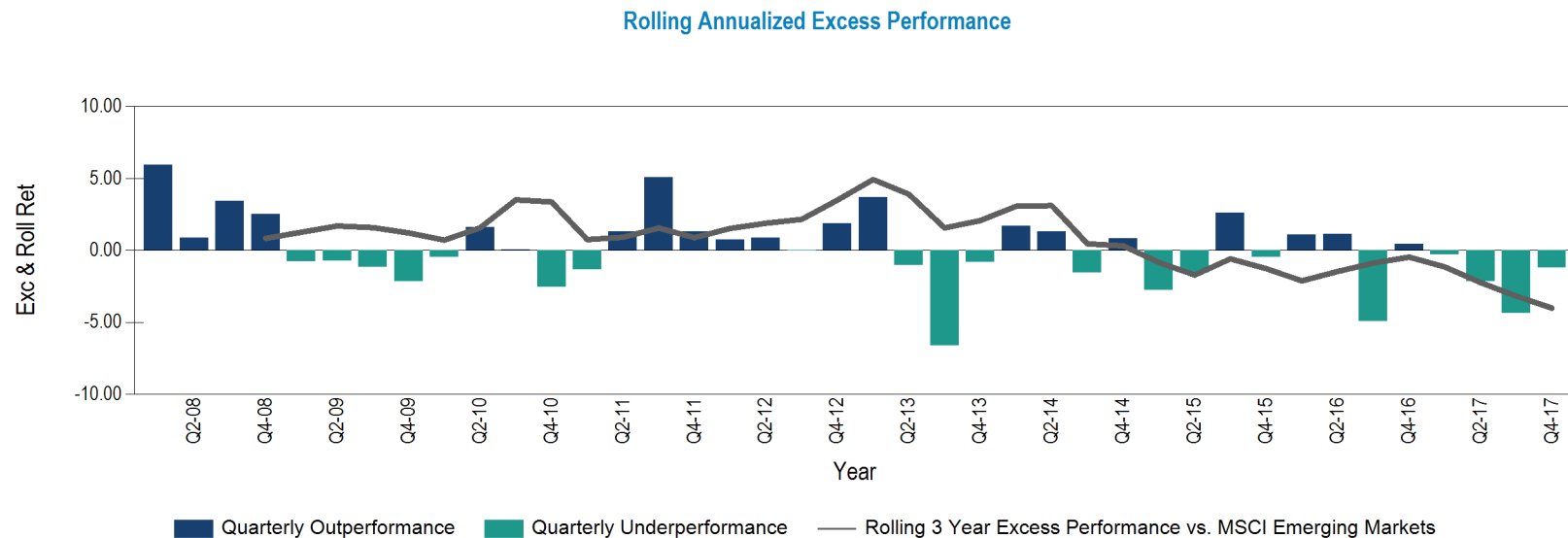
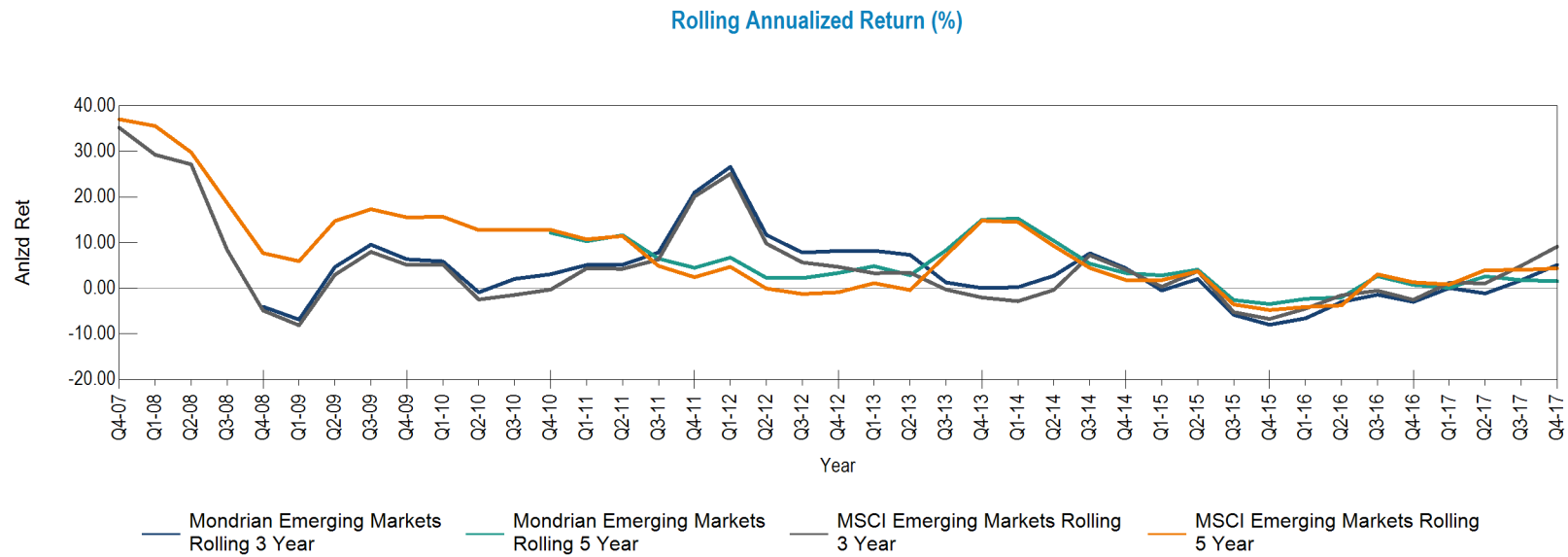
Period Ending: December 31, 2017



	Return (Rank)									
5th Percentile	9.8	47.9	14.8	10.2	6.2	47.9	21.1	-6.9	6.5	10.6
25th Percentile	7.7	41.5	10.9	6.9	3.4	41.5	12.7	-10.0	2.4	2.8
Median	6.7	37.1	9.1	5.4	2.7	37.1	8.2	-12.9	-0.8	-0.1
75th Percentile	5.7	32.4	7.6	4.3	1.7	32.4	4.4	-15.9	-3.6	-2.7
95th Percentile	4.0	26.1	4.6	2.0	0.6	26.1	-1.7	-19.7	-8.3	-6.9
# of Portfolios	187	184	170	139	63	184	181	143	126	105
● Mondrian Emerging Markets	6.2 (64)	27.2 (93)	5.1 (95)	1.5 (97)	2.4 (56)	27.2 (93)	9.0 (44)	-16.3 (80)	0.0 (42)	-7.1 (96)
▲ MSCI Emerging Markets	7.4 (30)	37.3 (48)	9.1 (52)	4.3 (74)	1.7 (75)	37.3 (48)	11.2 (34)	-14.9 (68)	-2.2 (62)	-2.6 (74)

# Mondrian Emerging Markets Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017

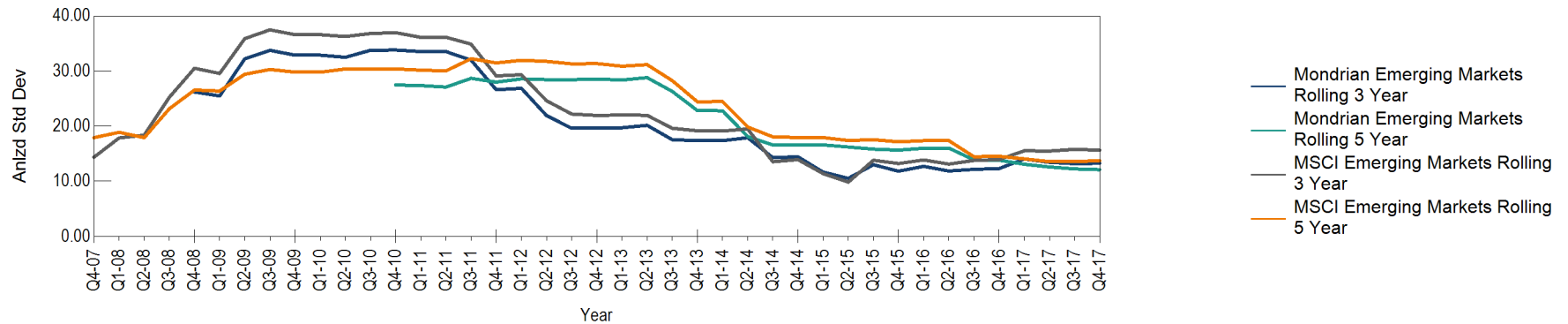




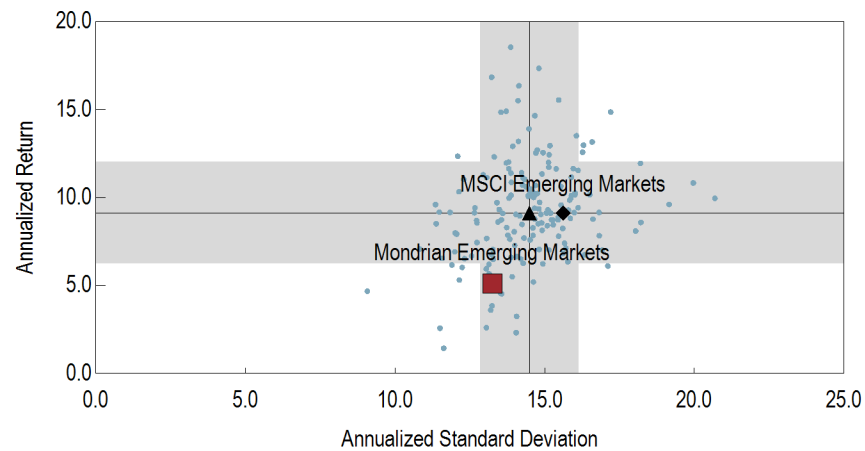
# Mondrian Emerging Markets Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

Rolling Annualized Standard Deviation



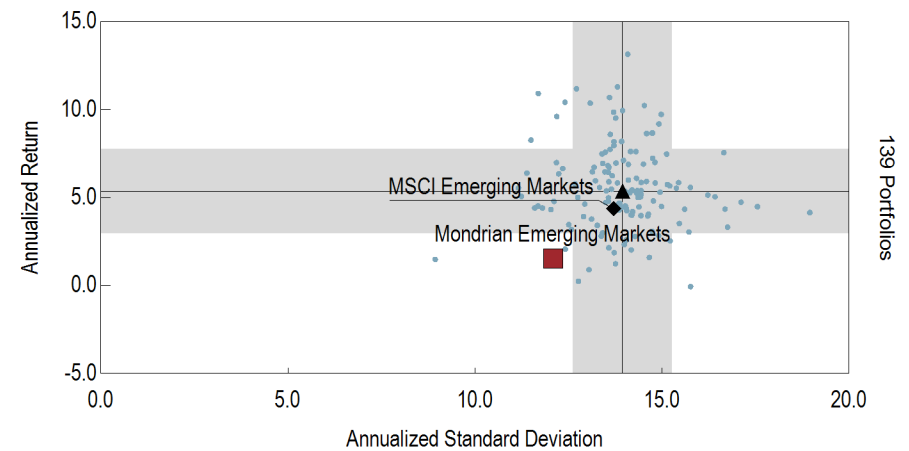
3 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Mondrian Emerging Markets	5.1%	13.2%	0.4
MSCI Emerging Markets	9.1%	15.6%	0.6
eV Emg Mkts Equity Net Median	9.1%	14.5%	0.6

5 Years



5 Years

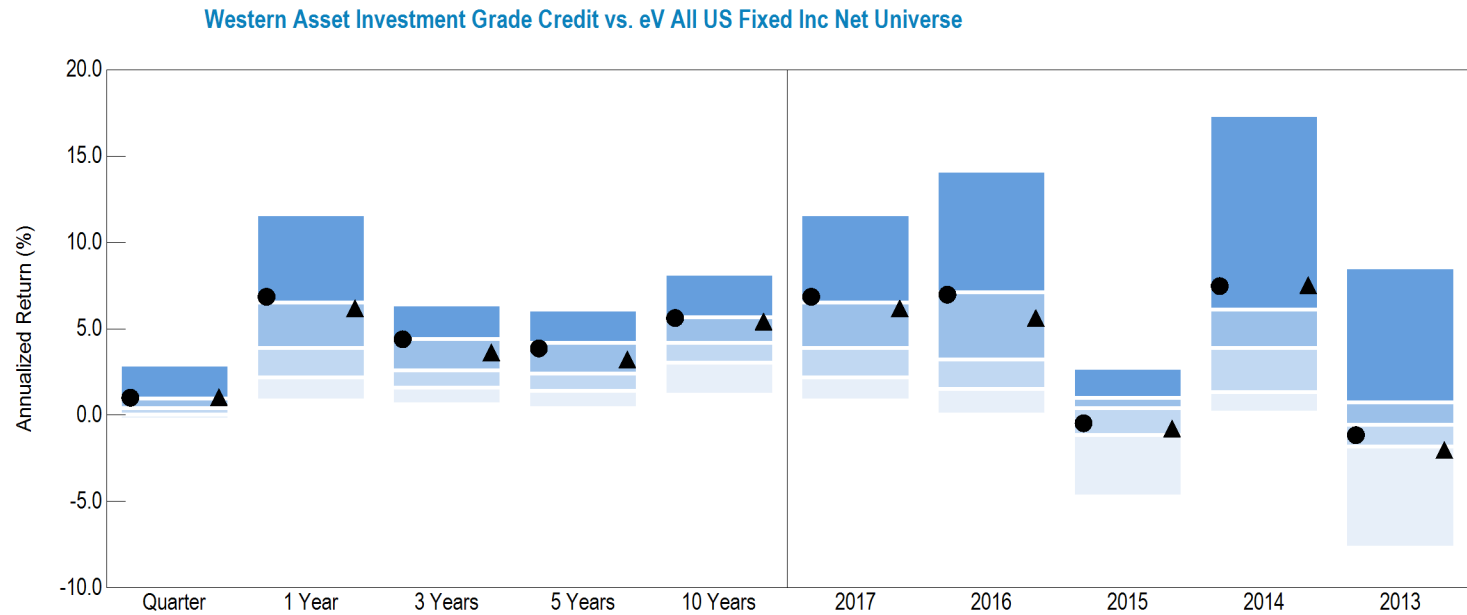
	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Mondrian Emerging Markets	1.5%	12.1%	0.1
MSCI Emerging Markets	4.3%	13.7%	0.3
eV Emg Mkts Equity Net Median	5.4%	13.9%	0.4

## Fixed Income Managers

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Western Asset Investment Grade Credit  
Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017

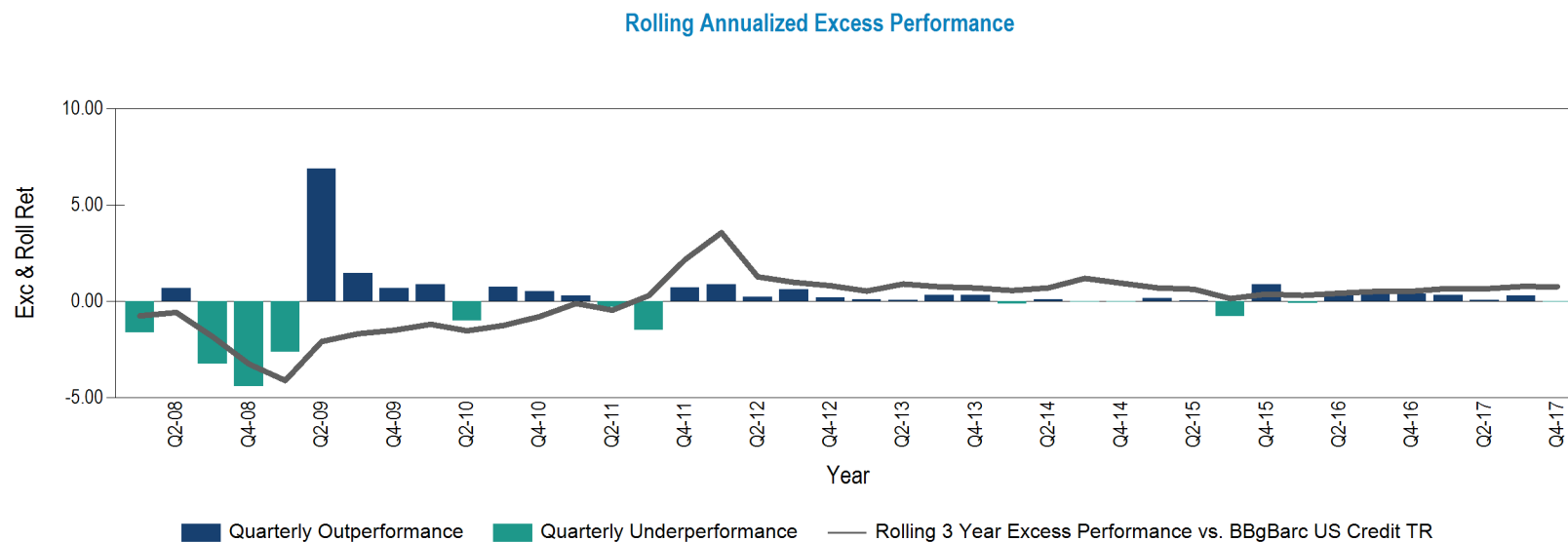
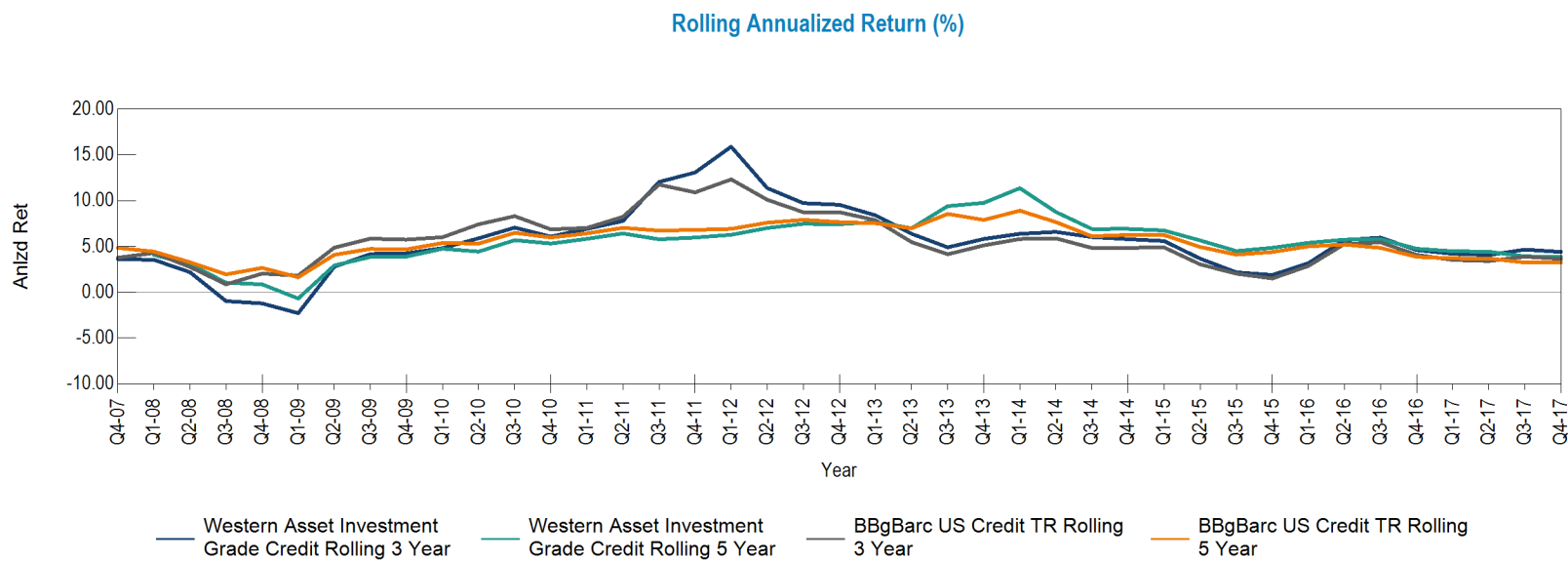


	Return (Rank)									
5th Percentile	2.9	11.6	6.4	6.1	8.2	11.6	14.1	2.7	17.4	8.5
25th Percentile	1.0	6.5	4.4	4.2	5.7	6.5	7.1	1.0	6.1	0.8
Median	0.4	3.9	2.6	2.4	4.2	3.9	3.3	0.4	3.9	-0.5
75th Percentile	0.0	2.2	1.6	1.4	3.0	2.2	1.6	-1.1	1.4	-1.8
95th Percentile	-0.3	0.9	0.6	0.4	1.2	0.9	0.0	-4.7	0.2	-7.6
# of Portfolios	1,148	1,135	1,060	990	706	1,135	1,033	827	758	662
● Western Asset Investment Grade Credit	1.0 (25)	6.8 (23)	4.4 (26)	3.9 (29)	5.6 (27)	6.8 (23)	7.0 (26)	-0.5 (70)	7.5 (15)	-1.2 (63)
▲ BBgBarc US Credit TR	1.0 (24)	6.2 (28)	3.6 (35)	3.2 (37)	5.4 (28)	6.2 (28)	5.6 (33)	-0.8 (74)	7.5 (15)	-2.0 (80)

Returns prior to inception date are composite returns.

# Western Asset Investment Grade Credit Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017

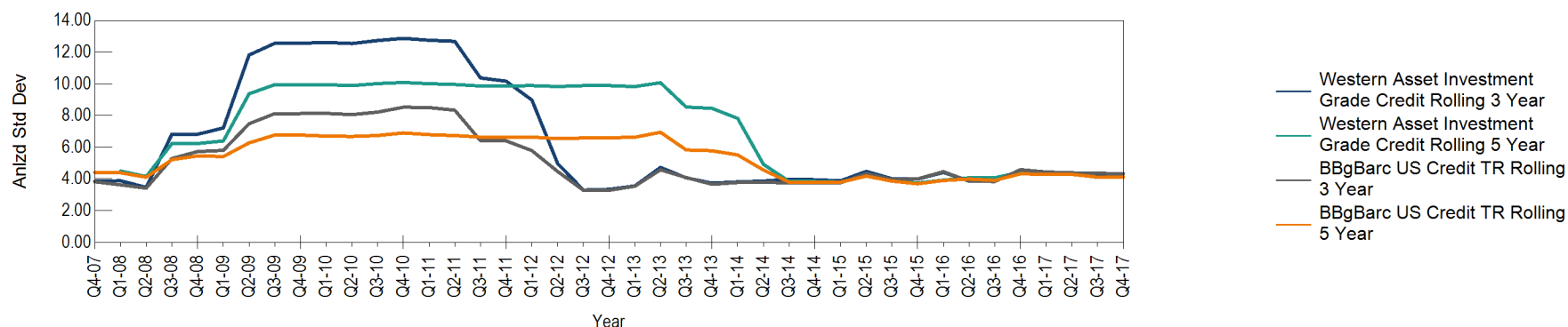


Returns prior to inception date are composite returns.

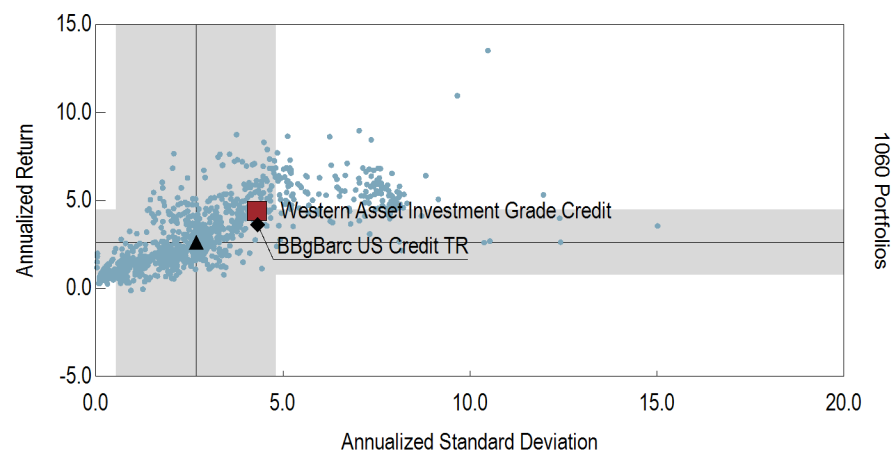
# Western Asset Investment Grade Credit Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

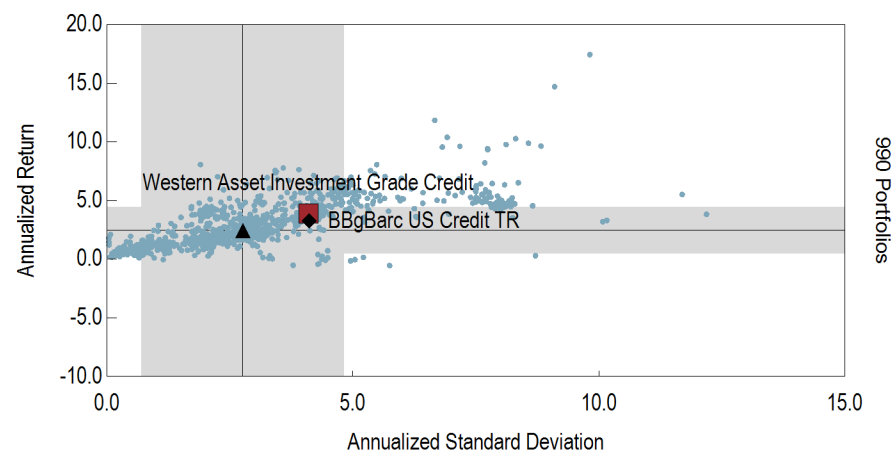
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Western Asset Investment Grade Credit	4.4%	4.3%	0.9
BBgBarc US Credit TR	3.6%	4.3%	0.7
eV All US Fixed Inc Net Median	2.6%	2.7%	0.8

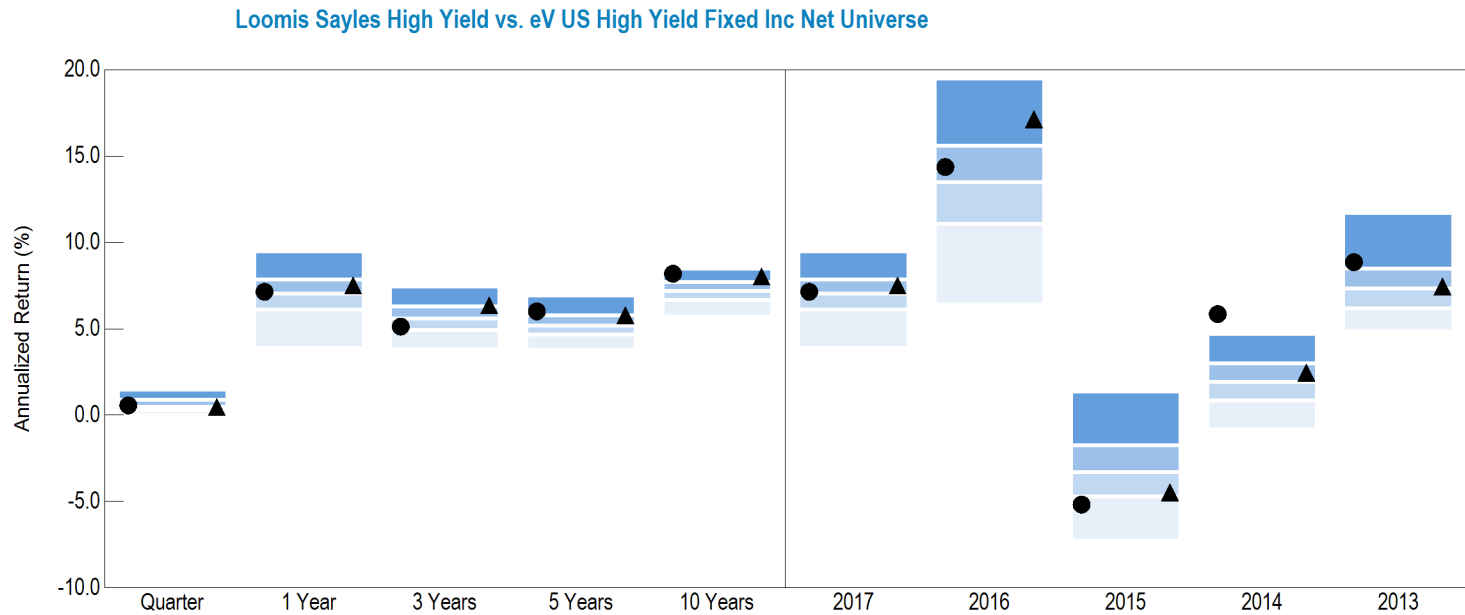
5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Western Asset Investment Grade Credit	3.9%	4.1%	0.9
BBgBarc US Credit TR	3.2%	4.1%	0.7
eV All US Fixed Inc Net Median	2.4%	2.8%	0.8

Returns prior to inception date are composite returns.

# Loomis Sayles High Yield Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017

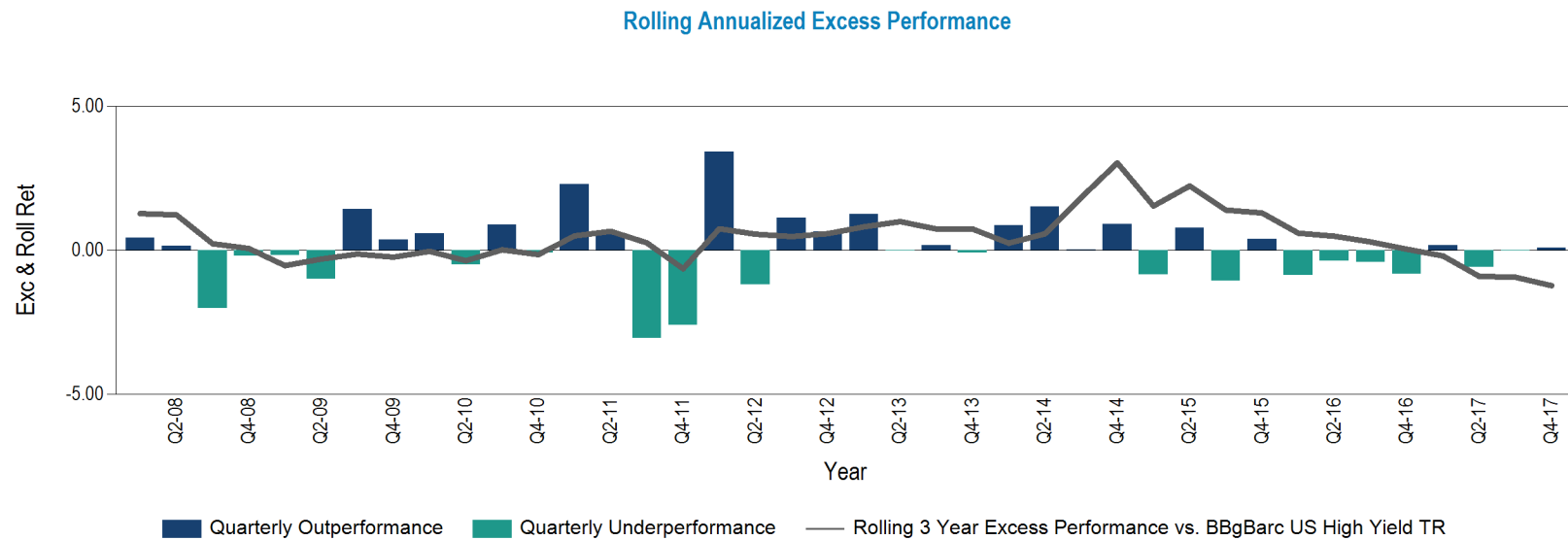
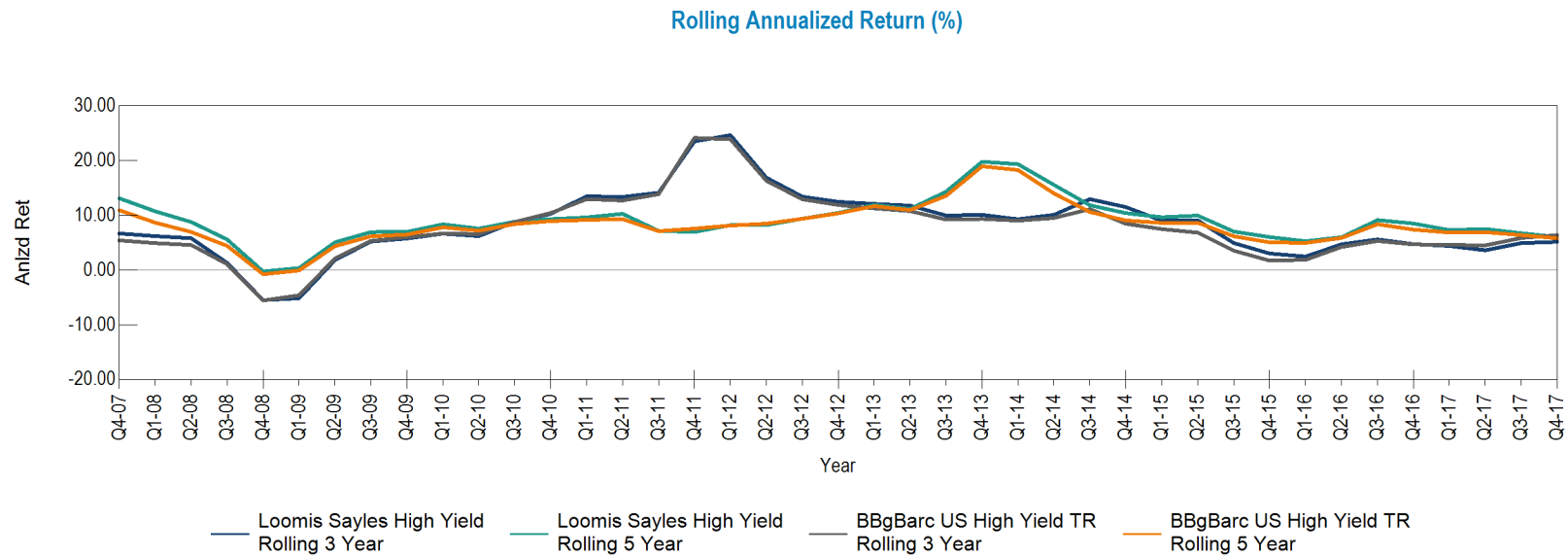


	Return (Rank)									
5th Percentile	1.5	9.5	7.4	6.9	8.4	9.5	19.5	1.4	4.7	11.7
25th Percentile	0.9	7.9	6.3	5.8	7.7	7.9	15.6	-1.7	3.0	8.5
Median	0.5	7.1	5.6	5.2	7.2	7.1	13.5	-3.3	1.9	7.3
75th Percentile	0.3	6.1	5.0	4.7	6.7	6.1	11.1	-4.7	0.9	6.2
95th Percentile	0.0	3.9	3.8	3.8	5.7	3.9	6.4	-7.2	-0.8	4.9
# of Portfolios	130	129	116	100	64	129	114	88	77	67
● Loomis Sayles High Yield	0.6 (47)	7.1 (47)	5.1 (70)	6.0 (19)	8.2 (10)	7.1 (47)	14.4 (42)	-5.2 (79)	5.8 (1)	8.9 (20)
▲ BBgBarc US High Yield TR	0.5 (55)	7.5 (39)	6.4 (25)	5.8 (26)	8.0 (15)	7.5 (39)	17.1 (12)	-4.5 (73)	2.5 (40)	7.4 (47)

Returns prior to inception date are composite returns.

# Loomis Sayles High Yield Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017

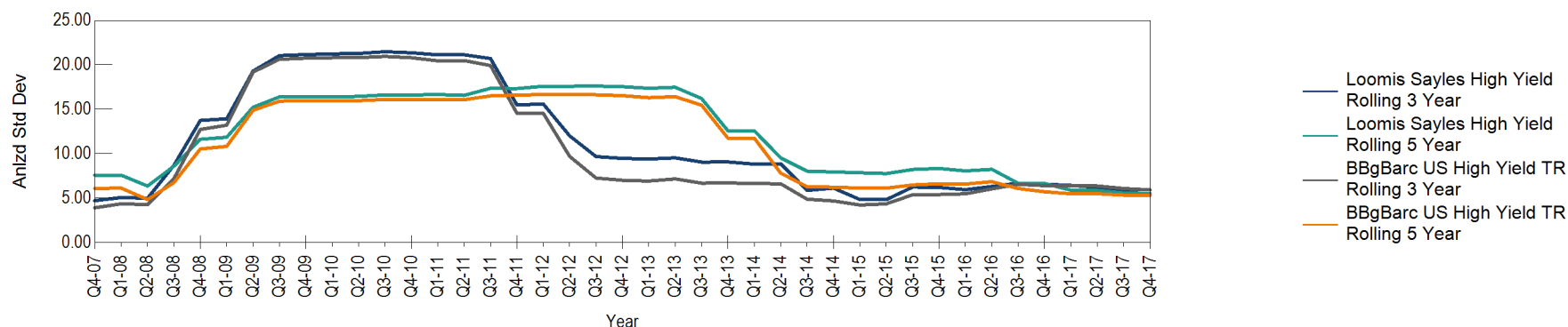


Returns prior to inception date are composite returns.

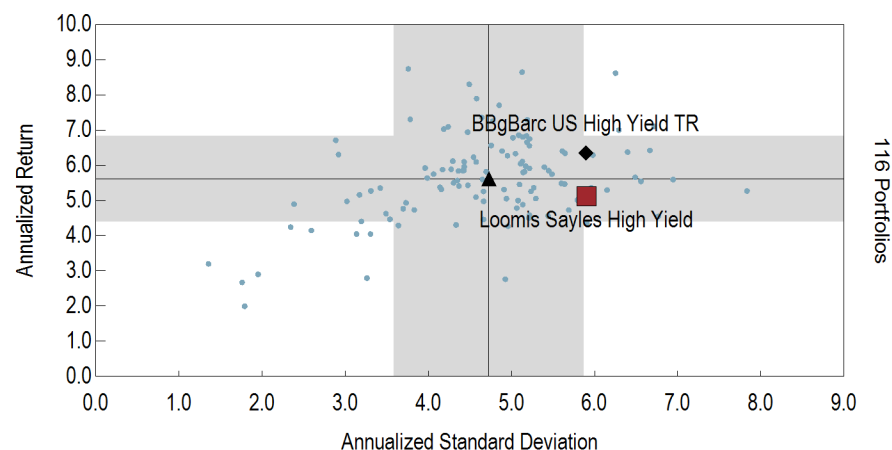
# Loomis Sayles High Yield Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

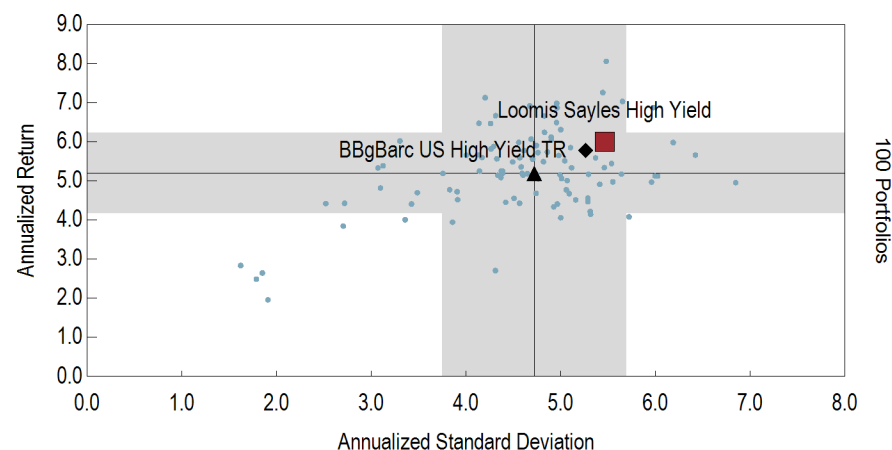
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Loomis Sayles High Yield	5.1%	5.9%	0.8
BBgBarc US High Yield TR	6.4%	5.9%	1.0
eV US High Yield Fixed Inc Net Median	5.6%	4.7%	1.2

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
Loomis Sayles High Yield	6.0%	5.5%	1.1
BBgBarc US High Yield TR	5.8%	5.3%	1.0
eV US High Yield Fixed Inc Net Median	5.2%	4.7%	1.1

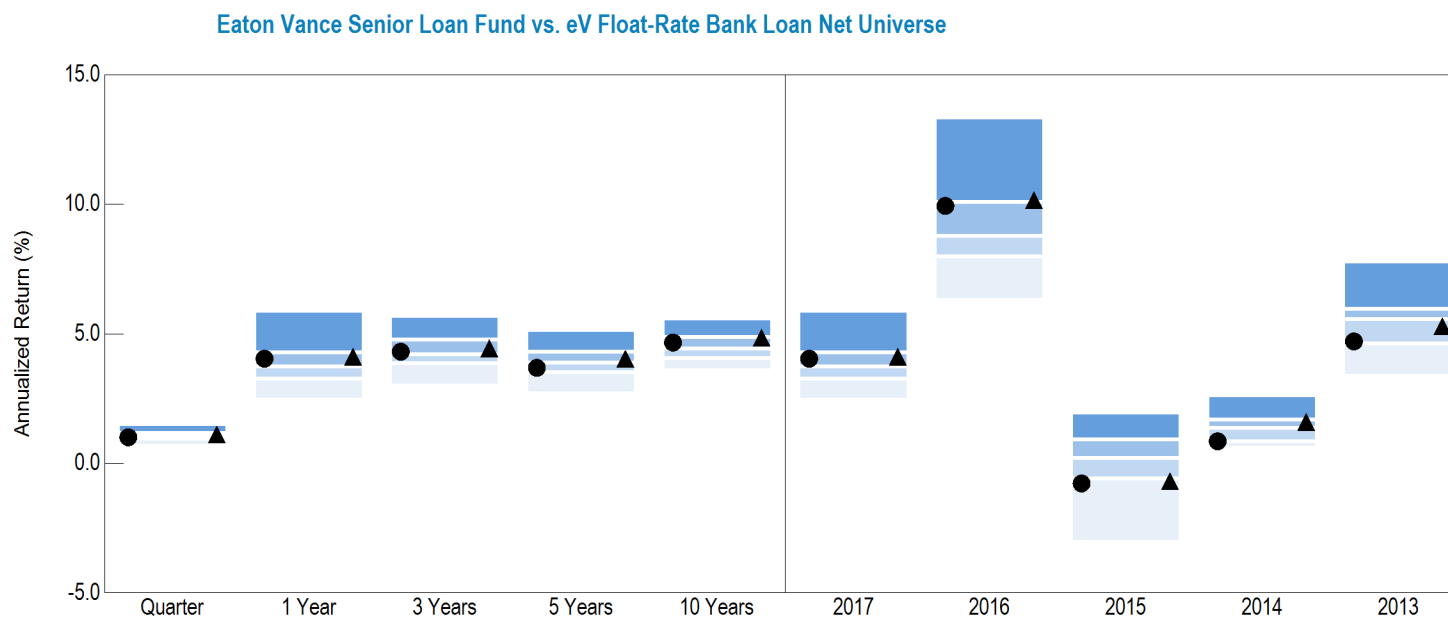
Returns prior to inception date are composite returns.



# Eaton Vance Senior Loan Fund

## Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017



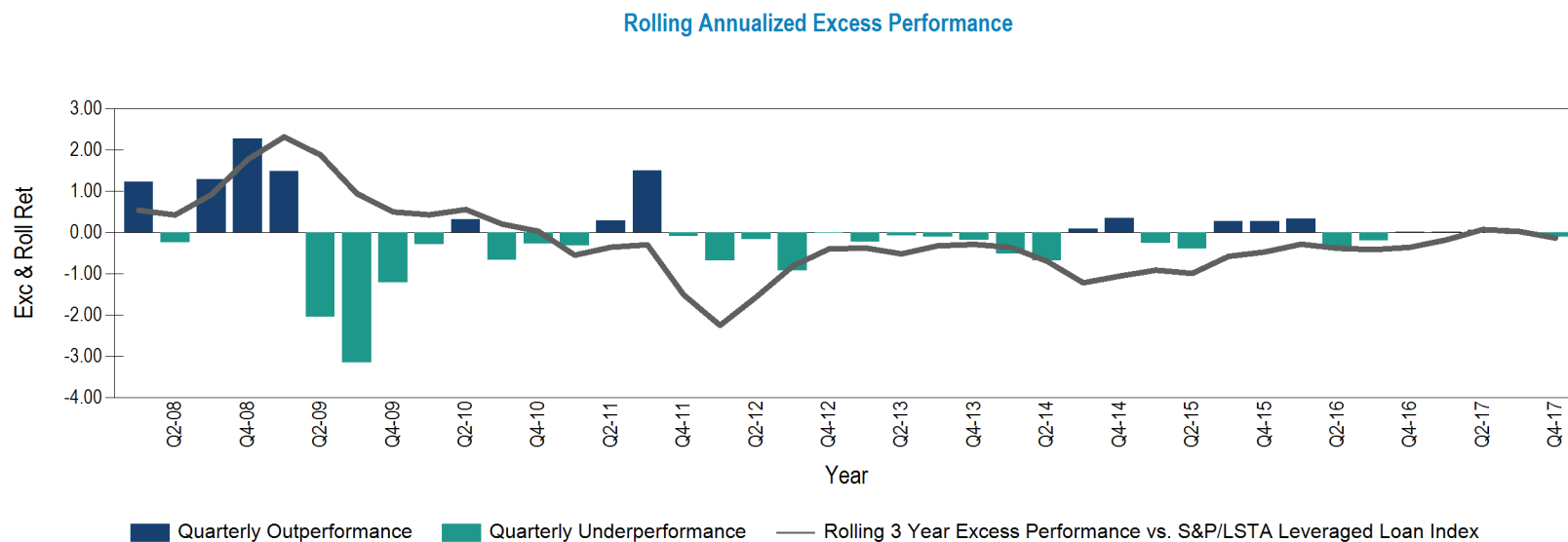
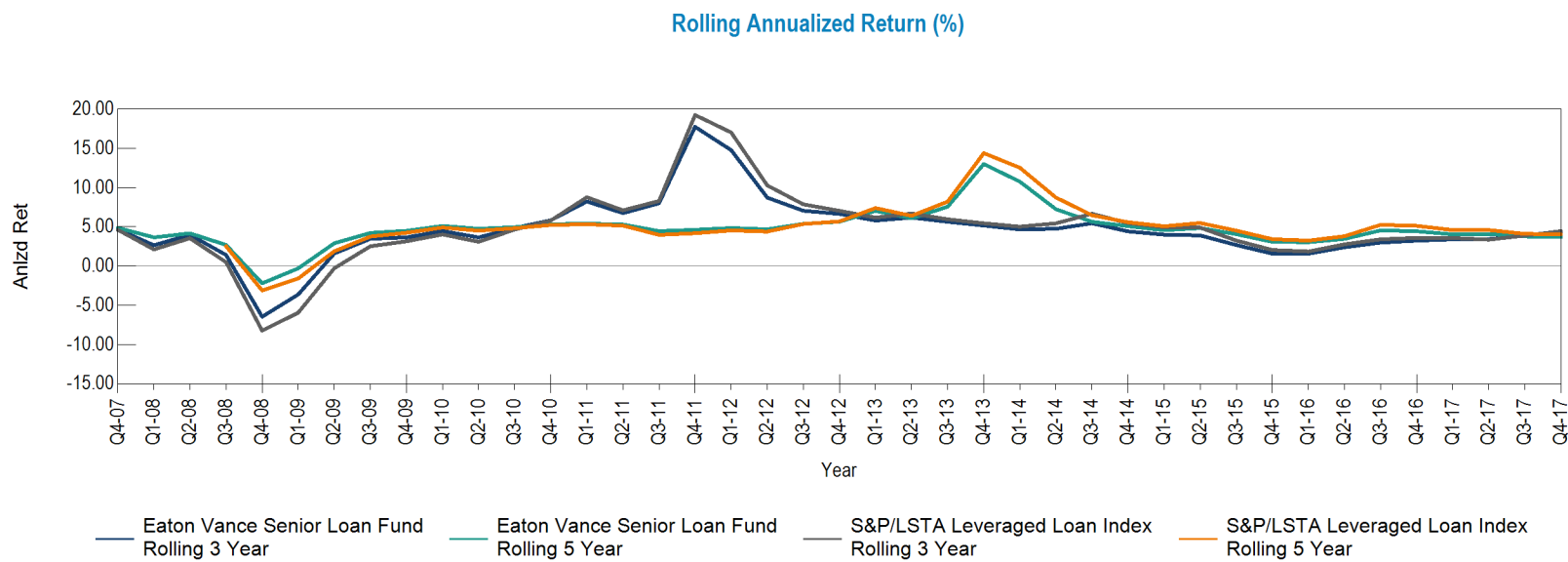
	Return (Rank)									
5th Percentile	1.5	5.9	5.7	5.1	5.6	5.9	13.3	2.0	2.6	7.8
25th Percentile	1.2	4.3	4.8	4.3	4.9	4.3	10.1	0.9	1.7	6.0
Median	1.1	3.8	4.2	3.9	4.5	3.8	8.8	0.2	1.4	5.6
75th Percentile	1.0	3.3	3.9	3.5	4.1	3.3	8.0	-0.6	0.9	4.6
95th Percentile	0.7	2.5	3.0	2.7	3.6	2.5	6.3	-3.0	0.6	3.4
# of Portfolios	49	48	47	42	24	48	45	30	26	22
● Eaton Vance Senior Loan Fund	1.0 (70)	4.0 (40)	4.3 (45)	3.7 (63)	4.7 (37)	4.0 (40)	9.9 (33)	-0.8 (85)	0.8 (78)	4.7 (74)
▲ S&P/LSTA Leveraged Loan Index	1.1 (39)	4.1 (35)	4.4 (39)	4.0 (41)	4.9 (26)	4.1 (35)	10.2 (25)	-0.7 (81)	1.6 (31)	5.3 (58)

Returns prior to inception date are composite returns.

# Eaton Vance Senior Loan Fund

## Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017



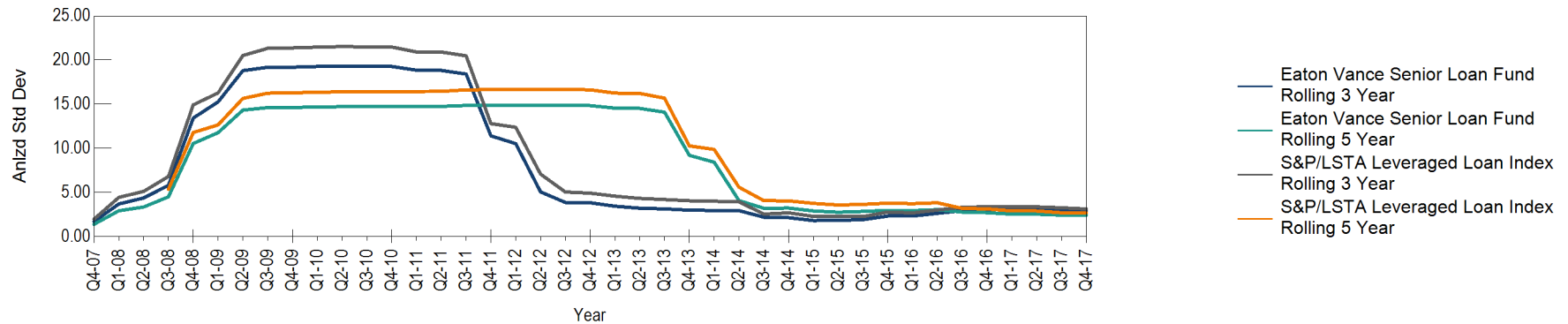
Returns prior to inception date are composite returns.

# Eaton Vance Senior Loan Fund

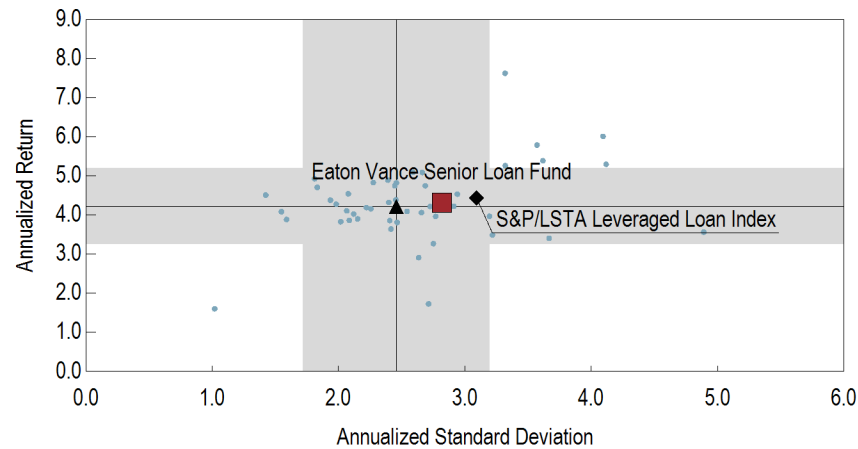
## Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

Rolling Annualized Standard Deviation



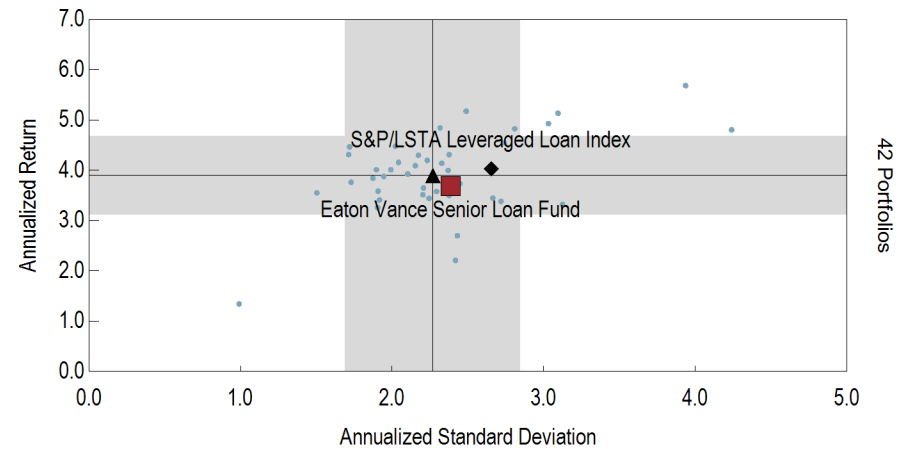
3 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Eaton Vance Senior Loan Fund	4.3%	2.8%	1.4
S&P/LSTA Leveraged Loan Index	4.4%	3.1%	1.3
eV Float-Rate Bank Loan Net Median	4.2%	2.5%	1.6

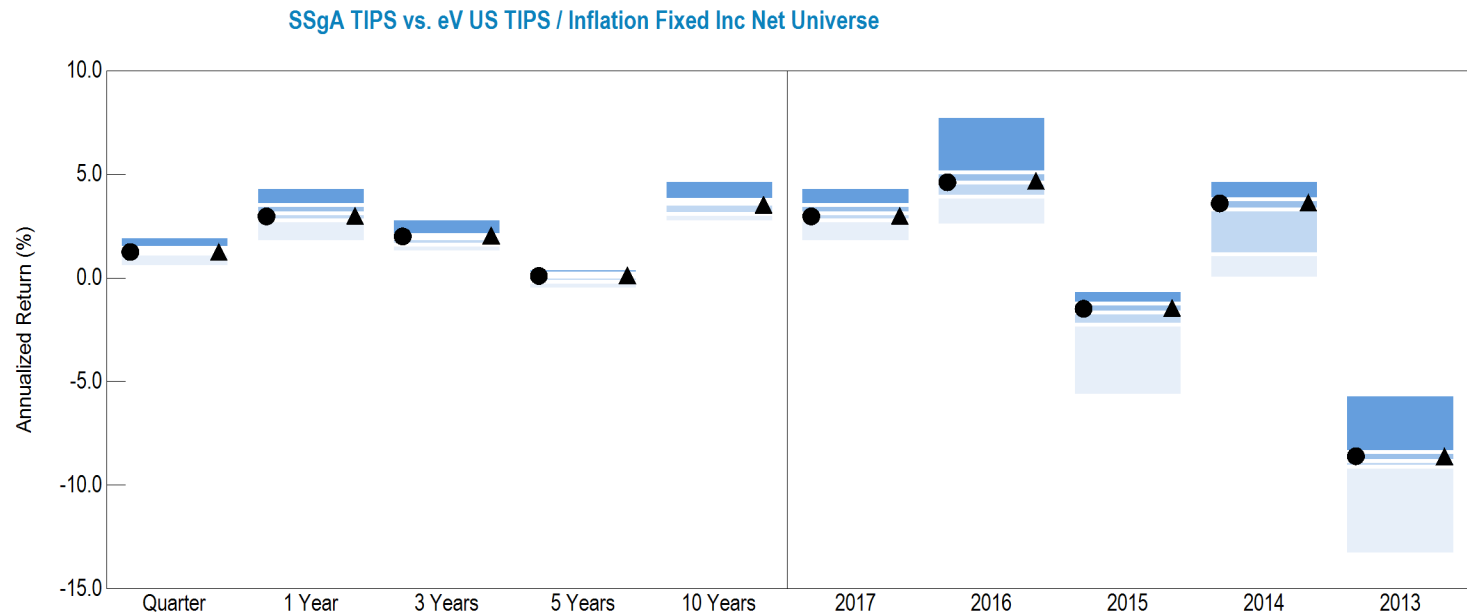
5 Years



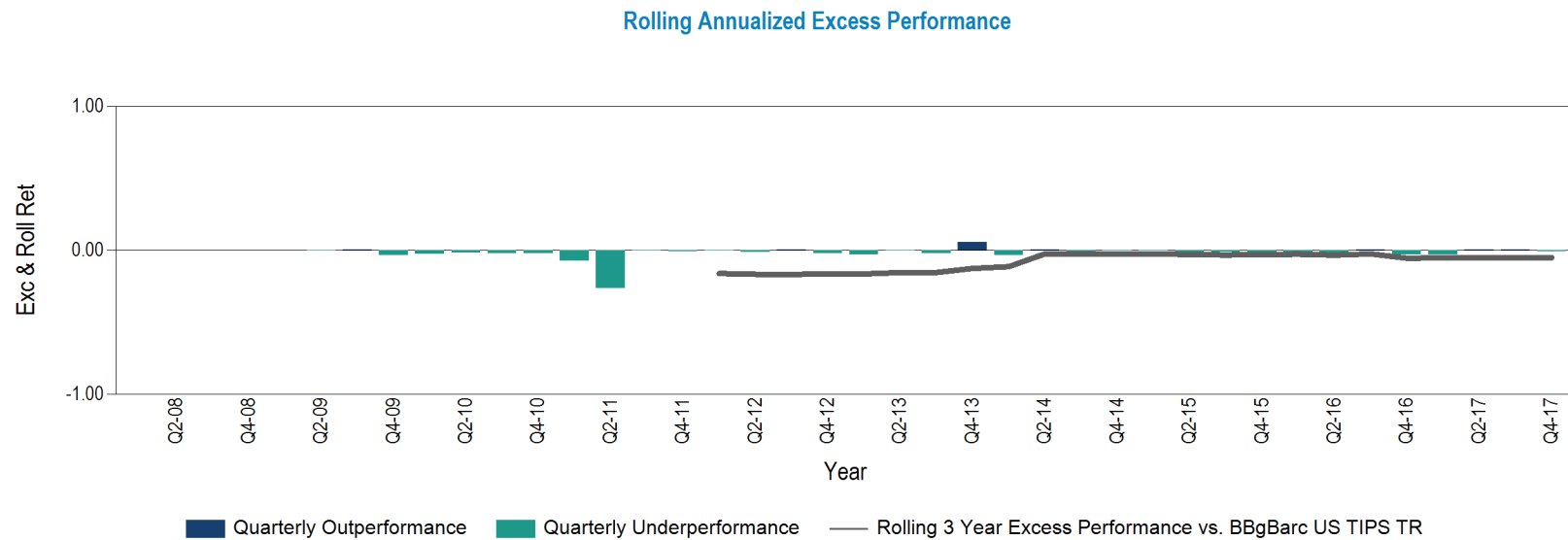
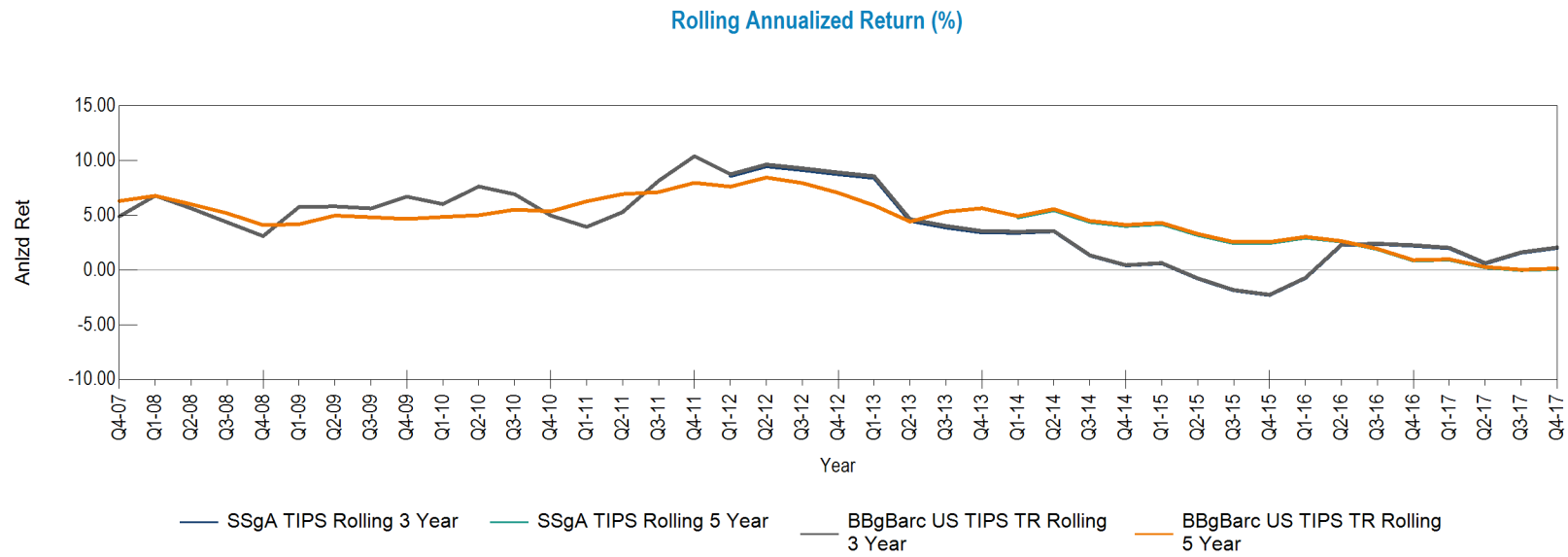
5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Eaton Vance Senior Loan Fund	3.7%	2.4%	1.4
S&P/LSTA Leveraged Loan Index	4.0%	2.7%	1.4
eV Float-Rate Bank Loan Net Median	3.9%	2.3%	1.6

Returns prior to inception date are composite returns.



	Return (Rank)									
5th Percentile	2.0	4.4	2.8	0.5	4.7	4.4	7.8	-0.6	4.7	-5.6
25th Percentile	1.5	3.5	2.1	0.2	3.8	3.5	5.1	-1.2	3.8	-8.4
Median	1.3	3.1	1.9	0.1	3.6	3.1	4.6	-1.6	3.3	-8.8
75th Percentile	1.2	2.8	1.6	-0.2	3.1	2.8	3.9	-2.2	1.2	-9.1
95th Percentile	0.5	1.7	1.2	-0.5	2.7	1.7	2.5	-5.7	0.0	-13.3
# of Portfolios	20	20	18	17	11	20	22	22	24	19
● SSgA TIPS	1.3 (67)	3.0 (58)	2.0 (44)	0.1 (46)	-- (--)	3.0 (58)	4.6 (50)	-1.5 (36)	3.6 (38)	-8.6 (44)
▲ BBgBarc US TIPS TR	1.3 (64)	3.0 (57)	2.1 (36)	0.1 (38)	3.5 (57)	3.0 (57)	4.7 (49)	-1.4 (33)	3.6 (37)	-8.6 (44)

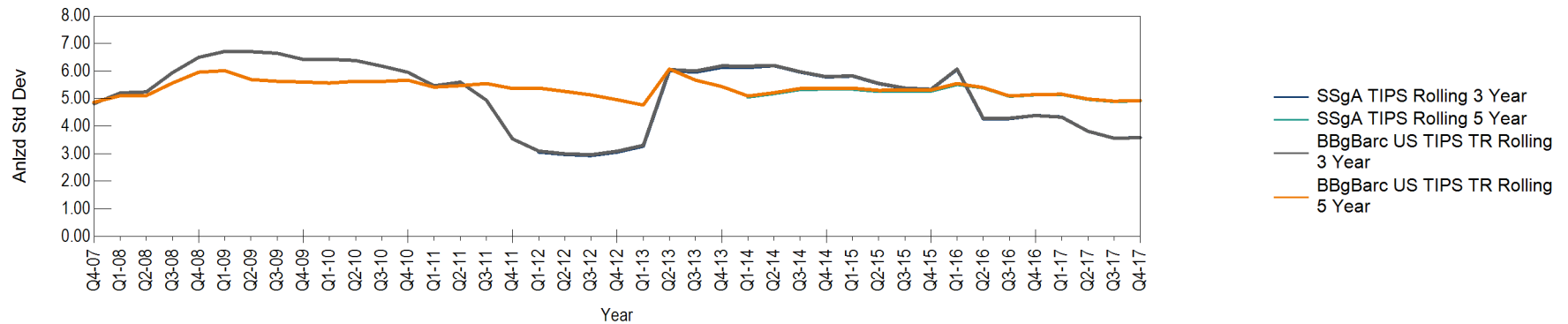


# SSgA TIPS

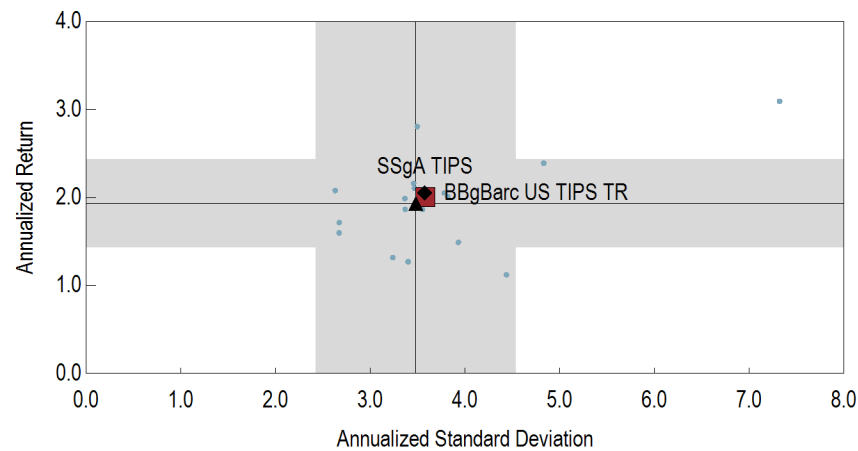
## Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

Rolling Annualized Standard Deviation



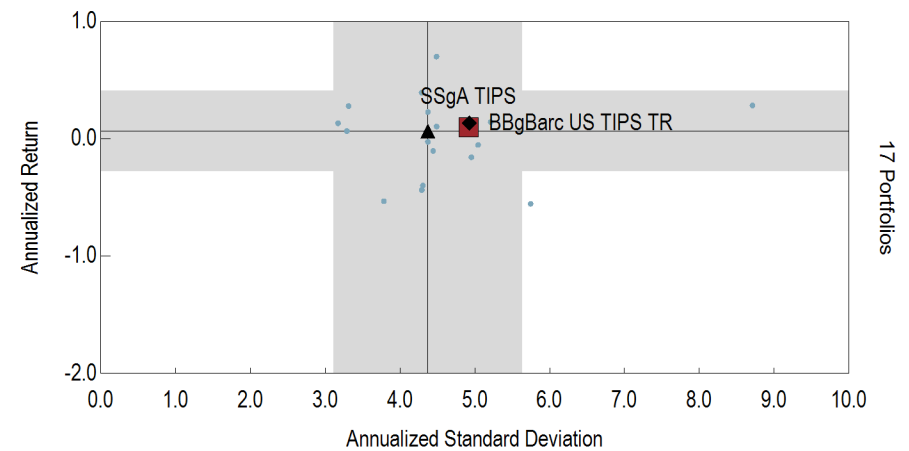
3 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
SSgA TIPS	2.0%	3.6%	0.4
BBgBarc US TIPS TR	2.1%	3.6%	0.5
eV US TIPS / Inflation Fixed Inc Net Median	1.9%	3.5%	0.4

5 Years

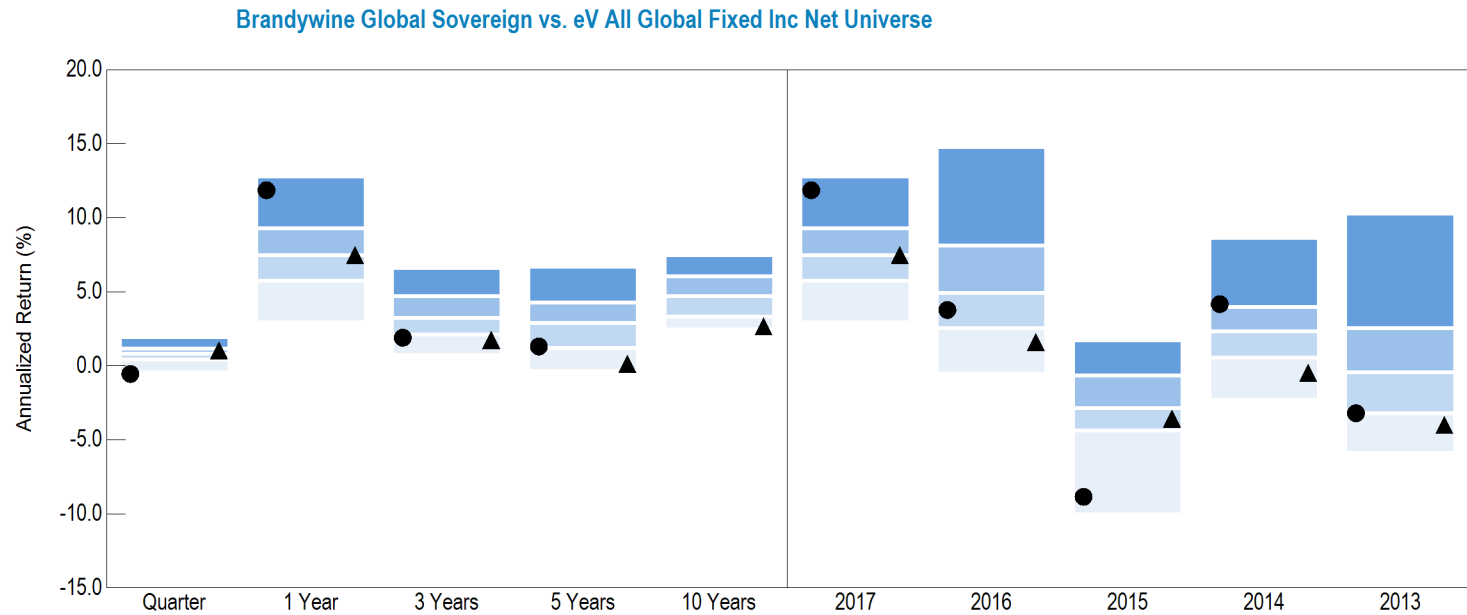


5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
SSgA TIPS	0.1%	4.9%	0.0
BBgBarc US TIPS TR	0.1%	4.9%	0.0
eV US TIPS / Inflation Fixed Inc Net Median	0.1%	4.4%	-0.1

Brandywine Global Sovereign  
Manager Performance Comparisons (Net of Fees)

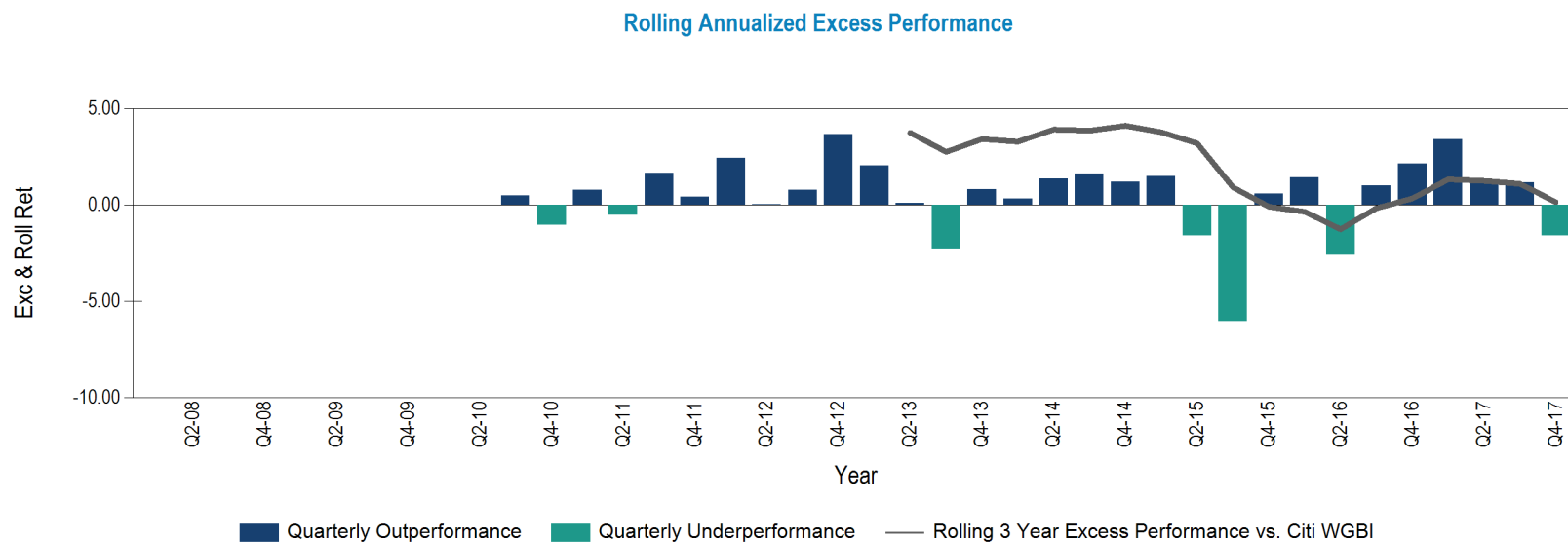
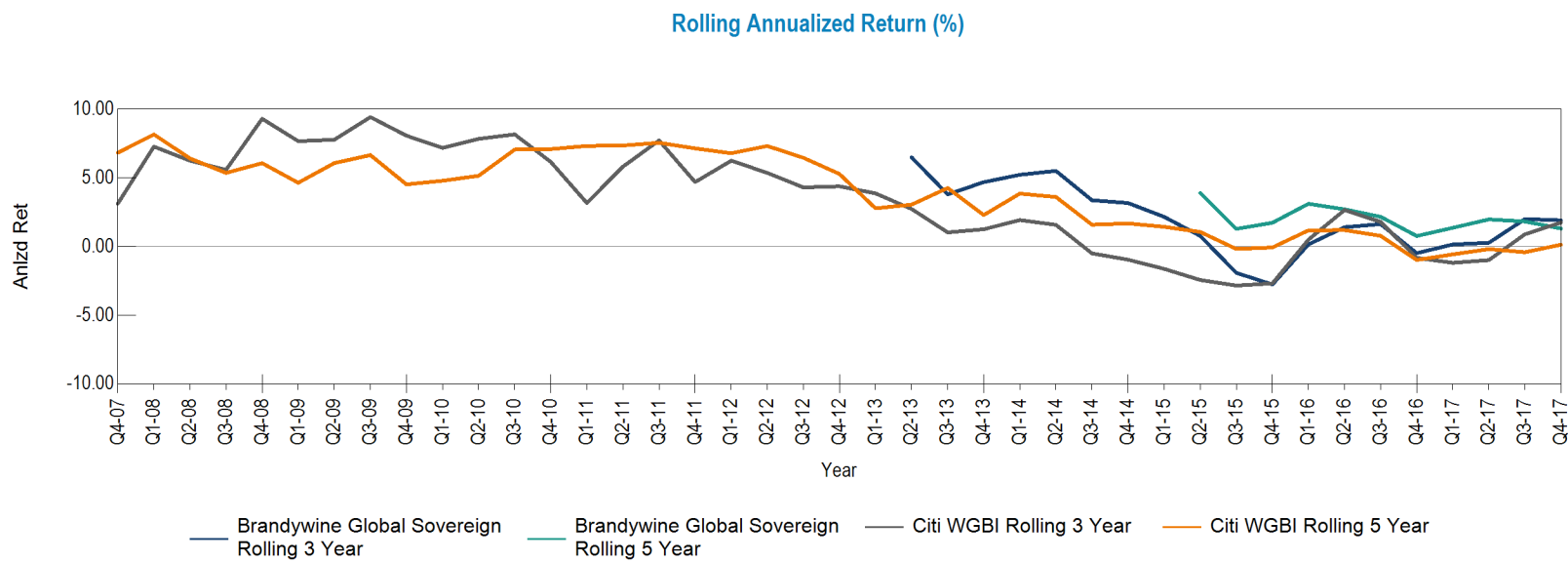
Period Ending: December 31, 2017



	Return (Rank)									
5th Percentile	1.9	12.8	6.6	6.7	7.4	12.8	14.7	1.7	8.6	10.2
25th Percentile	1.2	9.3	4.7	4.3	6.1	9.3	8.1	-0.6	4.0	2.5
Median	0.8	7.5	3.3	2.9	4.7	7.5	5.0	-2.9	2.3	-0.4
75th Percentile	0.4	5.8	2.1	1.2	3.3	5.8	2.6	-4.4	0.6	-3.2
95th Percentile	-0.4	2.9	0.8	-0.3	2.5	2.9	-0.5	-10.0	-2.3	-5.9
# of Portfolios	217	214	198	172	94	214	209	175	136	102
● Brandywine Global Sovereign	-0.6 (97)	11.9 (6)	1.9 (80)	1.3 (73)	-- (--)	11.9 (6)	3.8 (63)	-8.8 (93)	4.2 (24)	-3.2 (76)
▲ Citi WGBI	1.0 (32)	7.5 (51)	1.7 (84)	0.1 (93)	2.7 (94)	7.5 (51)	1.6 (81)	-3.6 (63)	-0.5 (85)	-4.0 (86)

# Brandywine Global Sovereign Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017



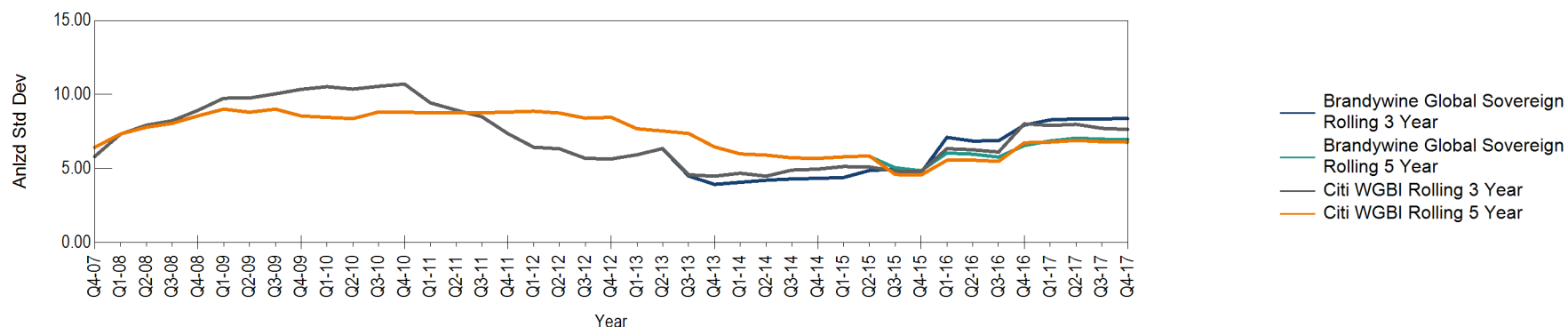


# Brandywine Global Sovereign

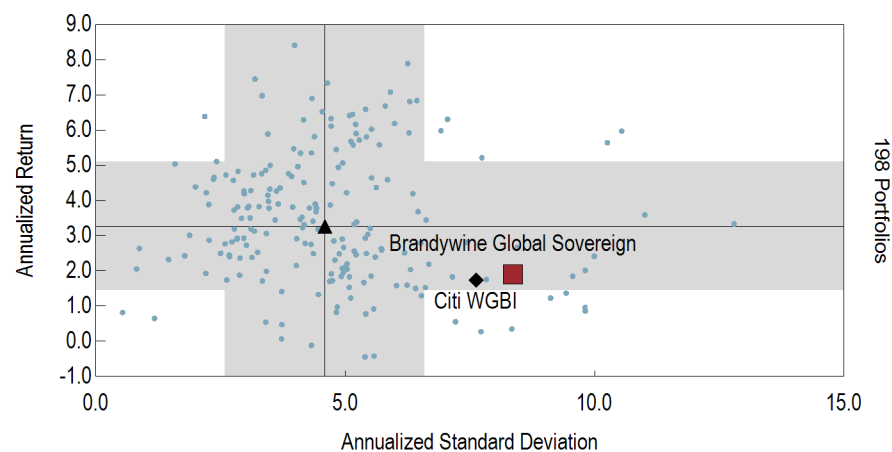
## Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

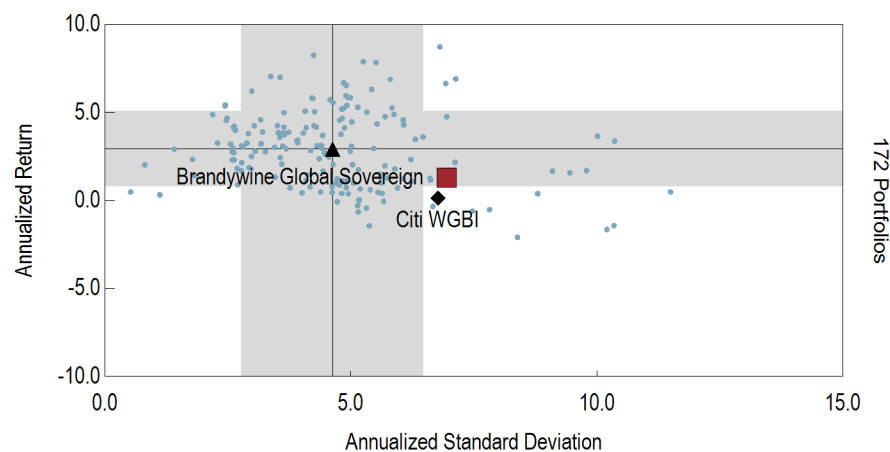
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Brandywine Global Sovereign	1.9%	8.4%	0.2
Citi WGBI	1.7%	7.6%	0.2
eV All Global Fixed Inc Net Median	3.3%	4.6%	0.8

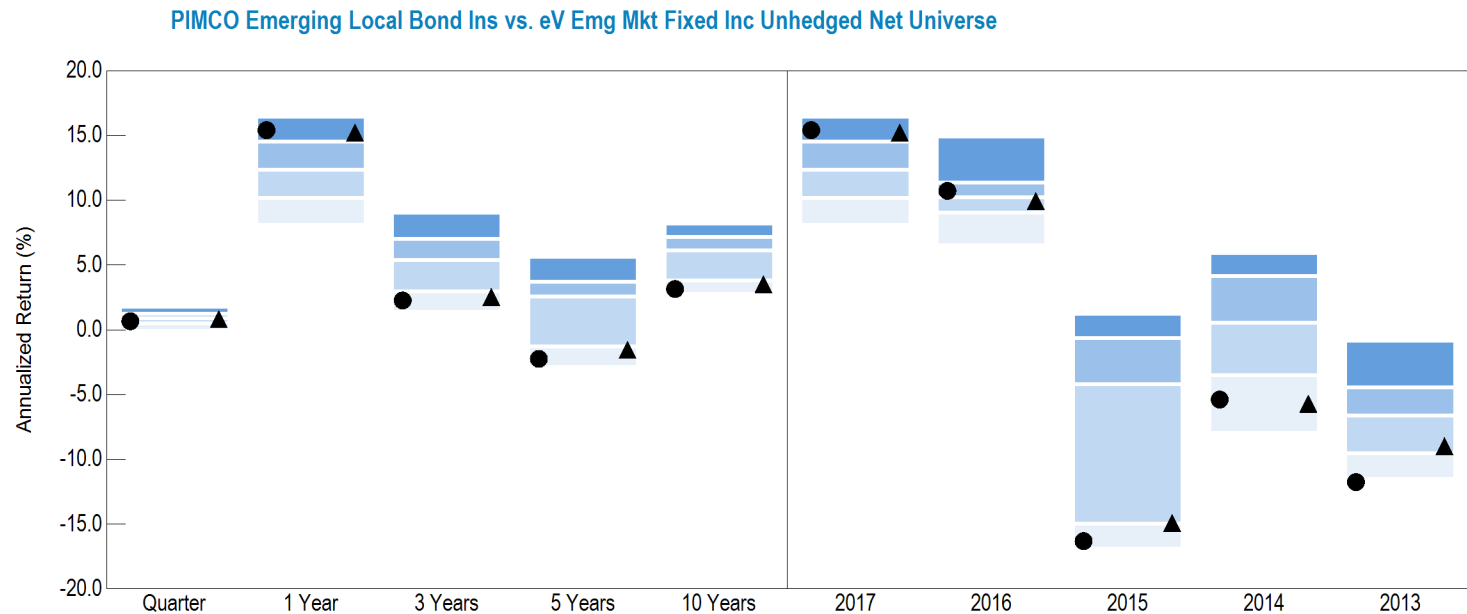
5 Years

	Annualized Return	Annualized Standard Deviation	Sharpe Ratio
Brandywine Global Sovereign	1.3%	6.9%	0.1
Citi WGBI	0.1%	6.8%	0.0
eV All Global Fixed Inc Net Median	2.9%	4.6%	0.7

Returns prior to inception date are composite returns.

# PIMCO Emerging Local Bond Ins Manager Performance Comparisons (Net of Fees)

Period Ending: December 31, 2017

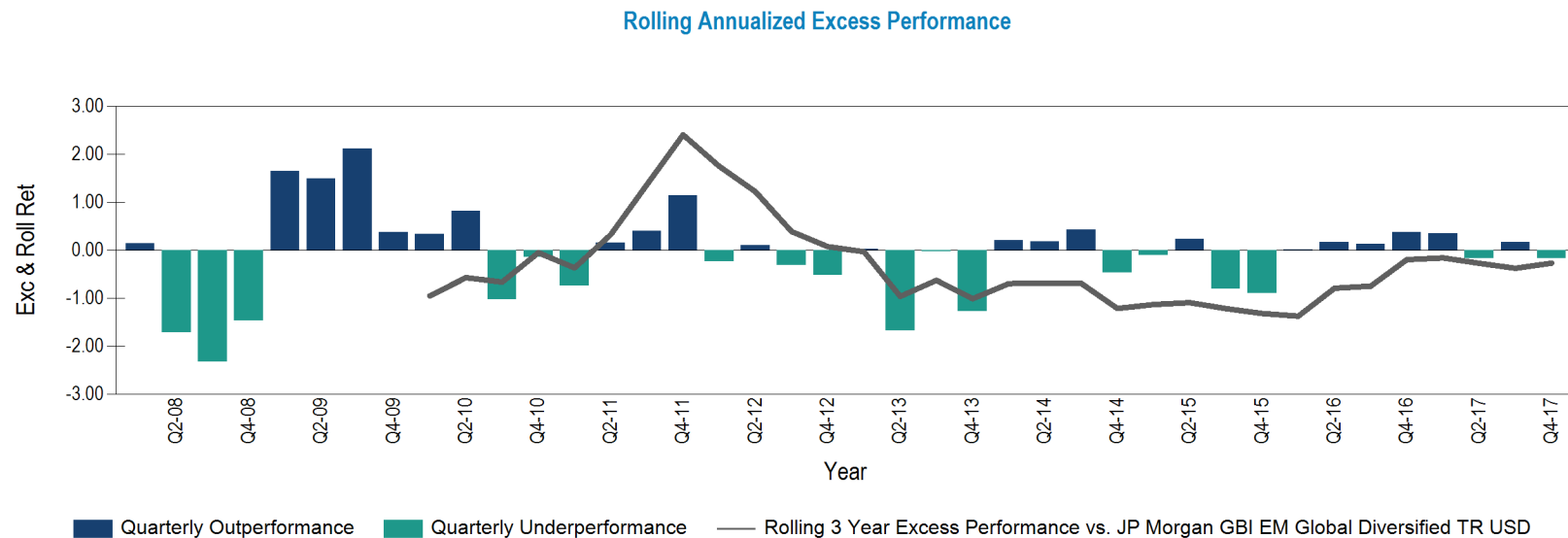
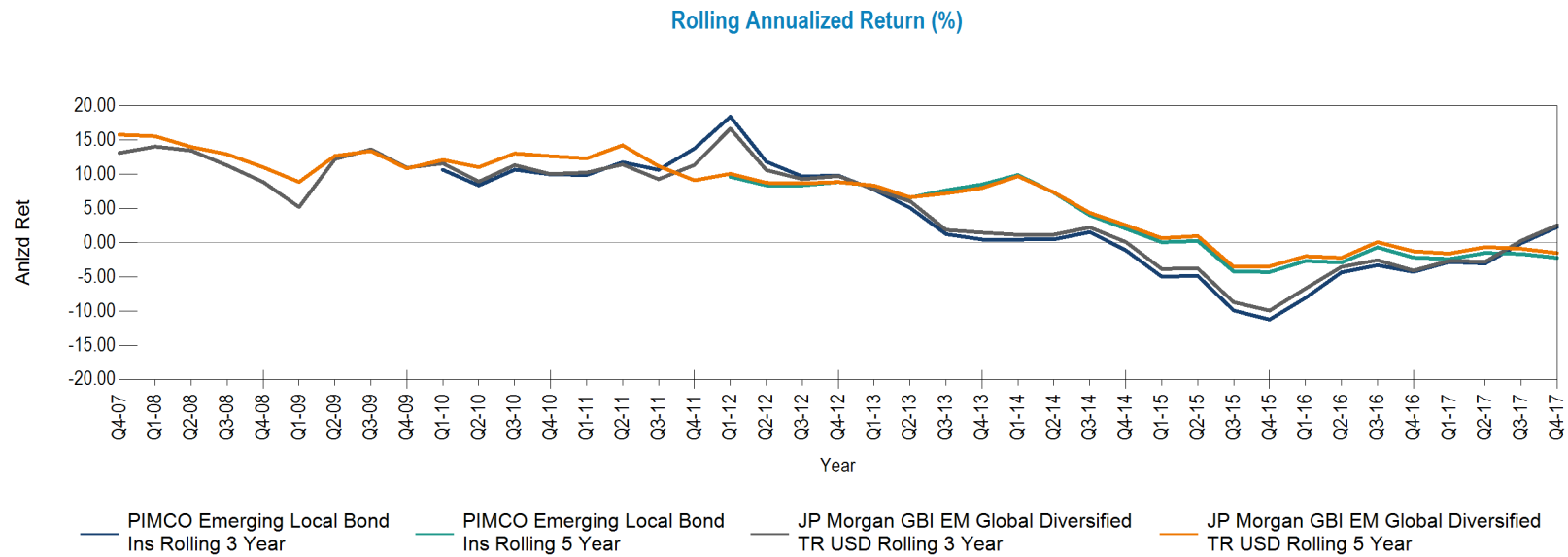


	Return (Rank)									
5th Percentile	1.8	16.5	9.0	5.6	8.2	16.5	14.9	1.2	5.9	-0.9
25th Percentile	1.3	14.5	7.1	3.7	7.2	14.5	11.4	-0.6	4.2	-4.4
Median	0.9	12.4	5.4	2.6	6.2	12.4	10.2	-4.2	0.6	-6.6
75th Percentile	0.5	10.2	3.0	-1.2	3.8	10.2	9.1	-15.0	-3.5	-9.5
95th Percentile	-0.1	8.1	1.4	-2.8	2.8	8.1	6.5	-16.9	-7.9	-11.5
# of Portfolios	77	77	71	57	28	77	58	40	39	36
● PIMCO Emerging Local Bond Ins	0.7 (69)	15.4 (13)	2.3 (82)	-2.2 (88)	3.1 (85)	15.4 (13)	10.7 (46)	-16.3 (89)	-5.4 (83)	-11.8 (96)
▲ JP Morgan GBI EM Global Diversified TR USD	0.8 (62)	15.2 (17)	2.5 (80)	-1.5 (80)	3.5 (79)	15.2 (17)	9.9 (57)	-14.9 (75)	-5.7 (87)	-9.0 (65)

Returns prior to inception date are composite returns.

# PIMCO Emerging Local Bond Ins Rolling Manager Performance (Net of Fees)

Period Ending: December 31, 2017



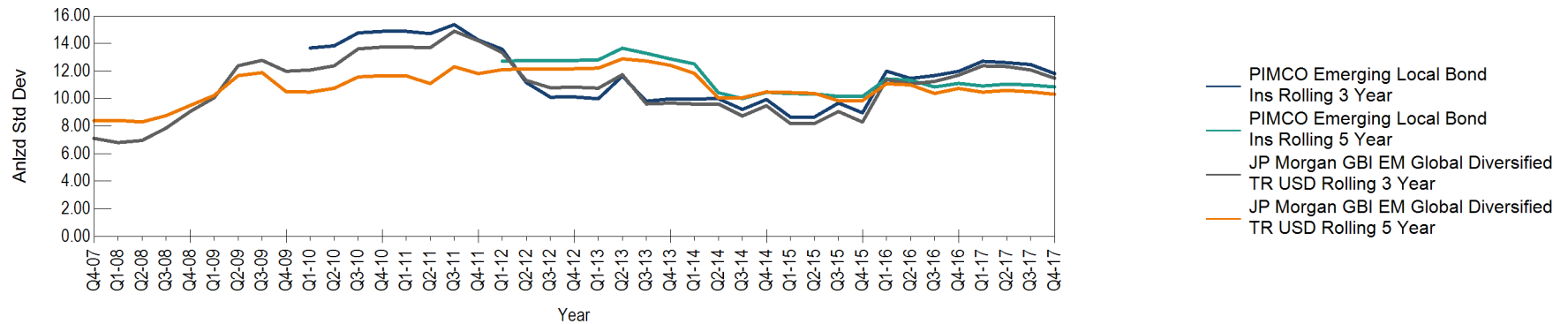
Returns prior to inception date are composite returns.

# PIMCO Emerging Local Bond Ins

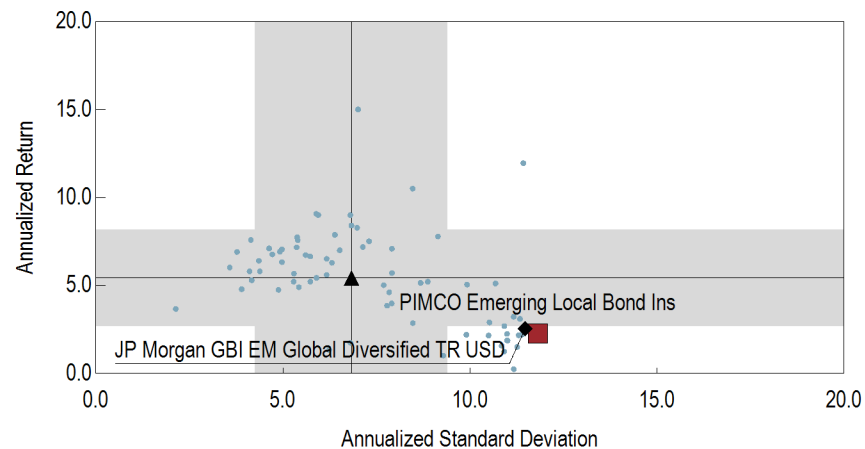
## Risk vs. Return 3 & 5 Year (Net of Fees)

Period Ending: December 31, 2017

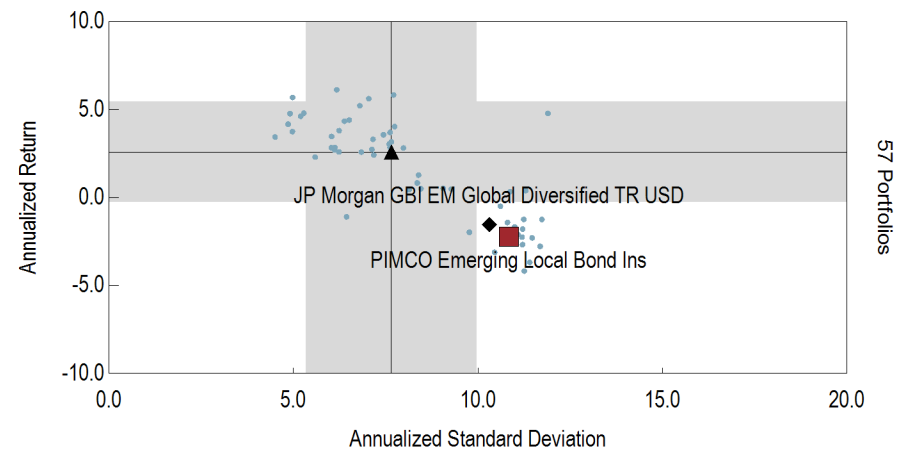
Rolling Annualized Standard Deviation



3 Years



5 Years



3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
PIMCO Emerging Local Bond Ins	2.3%	11.8%	0.2
JP Morgan GBI EM Global Diversified TR USD	2.5%	11.5%	0.2
eV Emg Mkt Fixed Inc Hedged Net Median	6.3%	6.8%	0.9

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
PIMCO Emerging Local Bond Ins	-2.2%	10.8%	-0.2
JP Morgan GBI EM Global Diversified TR USD	-1.5%	10.3%	-0.2
eV Emg Mkt Fixed Inc Unhedged Net Median	2.6%	7.7%	0.3

Returns prior to inception date are composite returns.

**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 (TWRR) 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**

<b>Manager</b>	<b>Fund Incepted</b>	<b>Data Source</b>	<b>Manager</b>	<b>Fund Incepted</b>	<b>Data Source</b>
Benefits Payment Cash	N/A	Northern Trust	RAFI International Equity	4/30/2011	Northern Trust
Custodied	N/A	Northern Trust	Oaktree Opportunities Fund IX	2012	Oaktree
County Cash	N/A	FCERA	Artisan International Growth	4/1/2013	Northern Trust
Transition	N/A	Northern Trust	PIMCO Emerging Local Bond	7/31/2013	Northern Trust
Aronson Johnson Ortiz	12/4/1995	Northern Trust	Barclays U.S. Aggregate Bond	4/30/2014	Northern Trust
Warburg Pincus	1998	Warburg Pincus	WAMCO Credit Index	10/1/2014	Northern Trust
TCW Shop III	1998	TCW	Loomis Sayles High Yield	10/1/2014	Northern Trust
Warburg Pincus VIII	2001	Warburg Pincus	Eaton Vance Senior Loan	10/1/2014	Eaton Vance
Blackstone IV	2002	Blackstone	Colony Distressed Credit III	2014	Colony
Lonestar IV	2002	Lonestar	Brandywine Global Sovereign	1/31/2015	Northern Trust
TCW Shop IV	2002	TCW	IFM Global Infrastructure	5/13/2015	IFM
SSgA S&P 500 Flagship Fund	4/1/2004	State Street	Invesco Commodities	5/27/2015	Invesco
Mondrian Emerging Markets	11/17/2005	Mondrian	GSO European Senior Debt	2015	GSO
Invesco Core Real Estate	10/1/2007	Invesco	CVI Credit Value Fund III	2015	CarVal
New Mountain III	2007	New Mountain	Warburg Pincus XII	2015	Warburg Pincus
Hamilton Lane VI	2007	Hamilton Lane	Gerding Edlen Green Cities III	2016	Gerding Edlen
Warburg Pincus X	2007	Warburg Pincus	Hamilton Lane PE Fund IX	2016	Hamilton Lane
Landmark Equity Partners XIV	2008	Landmark	Kennedy Wilson Real Estate V	2016	Kennedy Wilson
SSgA TIPS	2/27/2009	State Street	TSSP Adjacent Opportunities	2016	TSSP
Grosvenor	10/31/2009	Grosvenor	OHA Strategic Credit Fund II, L.P.	2016	OHA
Mondrian Int'l Small Cap	11/2/2009	Mondrian	Horsley Bridge XI GBO	2016	Horsley Bridge
Colony Distressed Credit I	2009	Colony	GCM Better Futures Fund	9/28/2016	Grosvenor
TA Associates Realty 9	2009	TA Associates	Parametric Overlay	12/27/2016	Northern Trust
Systematic Small/Mid Value	10/8/2010	Northern Trust	EQT European S. Situations Debt	2017	EQT
Ivy	12/20/2010	Northern Trust	Eaton Vance Ins. Sr Loan Plus	1/25/2017	Eaton Vance
KKR Mezzanine Partners I	2010	KKR			
Angelo Gordon Cap. Recov. VII	2010	Angelo Gordon			

**Policy & Custom Index Composition**

Floating Policy Index (10/1/2017-10/31/2017)	17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 3.2% Russell 2000, 5.9% BBgBarc US Corp. High Yield, 2.8% Private Equity Neutralized, 2.1% Private Credit Neutralized, 1.3% Real Estate Neutralized, 8% HFRI FoF Composite, 6.7% NCREIF ODCE Net, & 3% Bloomberg Commodity Index.
(11/1/2017-11/30/2017)	17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 3.2% Russell 2000, 5.9% BBgBarc US Corp. High Yield, 2.8% Private Equity Neutralized, 2.1% Private Credit Neutralized, 1.3% Real Estate Neutralized, 8% HFRI FoF Composite, 6.7% NCREIF ODCE Net, & 3% Bloomberg Commodity Index.
(12/1/2017-12/31/2017)	17% Russell 3000 Index, 31% BBgBarc Global Aggregate Index, 19% MSCI ACWI ex US, 3.2% Russell 2000, 6% BBgBarc US Corp. High Yield, 2.8% Private Equity Neutralized, 2% Private Credit Neutralized, 1.2% Real Estate Neutralized, 8% HFRI FoF Composite, 6.8% NCREIF ODCE Net, & 3% Bloomberg Commodity Index.

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.

**Other Disclosures**

A non-cash contribution was made matching the investment manager fee for Invesco Real Estate and non-cash contributions were made estimating the investment manager fee for Invesco Commodities.

Fresno County Employees' Retirement Association fiscal year end is June 30.

# Glossary

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**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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