

Western States Office & Professional Employees Pension Fund

Investment Performance Review

Period Ending: June 30, 2019



VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

2nd quarter summary

THE ECONOMIC CLIMATE

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

PORTFOLIO IMPACTS

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

THE INVESTMENT CLIMATE

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

ASSET ALLOCATION ISSUES

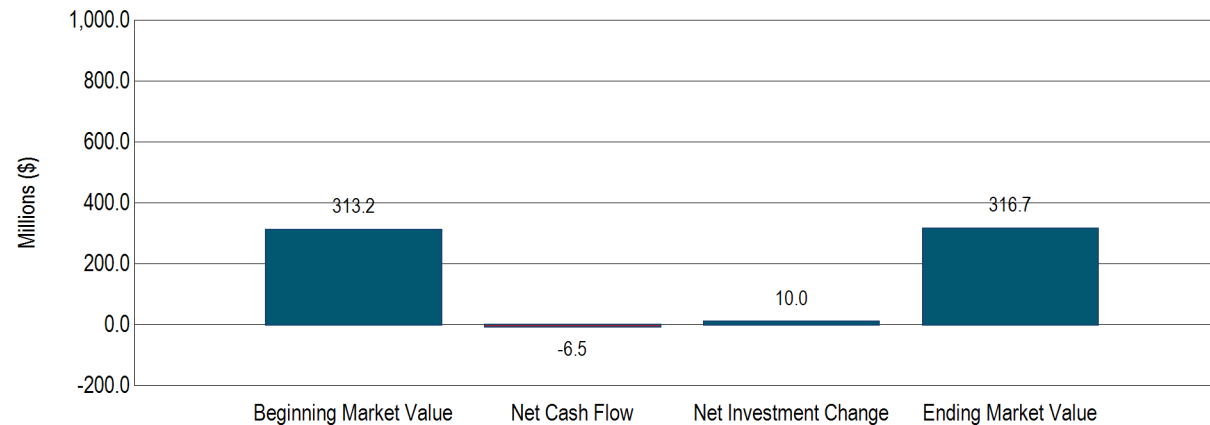
- Risk assets delivered strong returns over the quarter. Global Equities gained +3.6% and U.S. high yield gained +2.5%. Longer duration exposures generally outperformed as interest rates fell.
- U.S. equity prices have continued to rise on expectations of nearly three interest rate cuts in 2019 and perhaps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

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

Portfolio Reconciliation

	Last Three Months	Year-To-Date
Beginning Market Value	\$313,167,656	\$295,732,840
Net Cash Flow	-\$6,509,177	-\$11,820,681
Net Investment Change	\$10,021,170	\$32,767,491
Ending Market Value	\$316,679,649	\$316,679,649

Change in Market Value
Last Three Months



Contributions and withdrawals may include intra-account transfers between managers/funds.

Total Fund

Cash Flow by Manager - Last Three Months

Period Ending: June 30, 2019

	Beginning Market Value	Contributions	Withdrawals	Net Cash Flow	Net Investment Change	Ending Market Value
BlackRock Equity Index NL	\$33,210,120	\$3,000,000	-\$4,200,000	-\$1,200,000	\$1,381,282	\$33,391,402
INTECH US Adaptive Volatility	\$31,543,511	\$0	\$0	\$0	\$1,018,965	\$32,562,476
PanAgora US Small Cap Core Stock Selector	\$17,391,889	\$0	-\$3,000,000	-\$3,000,000	\$456,196	\$14,848,085
WCM Focused International Growth Fund, L.P.	\$29,791,116	\$0	\$0	\$0	\$2,943,681	\$32,734,797
Causeway International Value Ins	\$18,790,140	\$0	\$0	\$0	\$12,519	\$18,802,658
Brandes International Small Cap Equity	\$5,959,905	\$0	\$0	\$0	\$47,370	\$6,007,275
Loomis Sayles Core Plus	\$65,877,059	\$0	\$0	\$0	\$2,081,698	\$67,958,757
ASB Allegiance Real Estate	\$26,262,996	\$0	-\$65,964	-\$65,964	\$366,590	\$26,563,621
Invesco Real Estate II	\$43,002	\$0	\$0	\$0	-\$552	\$42,450
JPMorgan Special Situation Property	\$14,555,859	\$0	-\$56,826	-\$56,826	\$58,199	\$14,557,232
IFM Global Infrastructure (US) LP	\$9,321,781	\$0	\$0	\$0	\$358,716	\$9,680,497
JPMorgan IIF ERISA LP	\$8,227,723	\$0	-\$156,501	-\$156,501	\$166,262	\$8,237,484
Invesco Balanced-Risk Allocation	\$47,560,016	\$0	-\$1,900,000	-\$1,900,000	\$1,130,245	\$46,790,261
US Bank Checking Account	\$2,058,197	\$9,007,384	-\$9,139,233	-\$131,849	\$0	\$1,926,348
US Bank Clearing Account	\$2,574,342	\$7,717,583	-\$7,715,620	\$1,963	\$0	\$2,576,305
Total	\$313,167,656	\$19,724,967	-\$26,234,145	-\$6,509,177	\$10,021,170	\$316,679,649

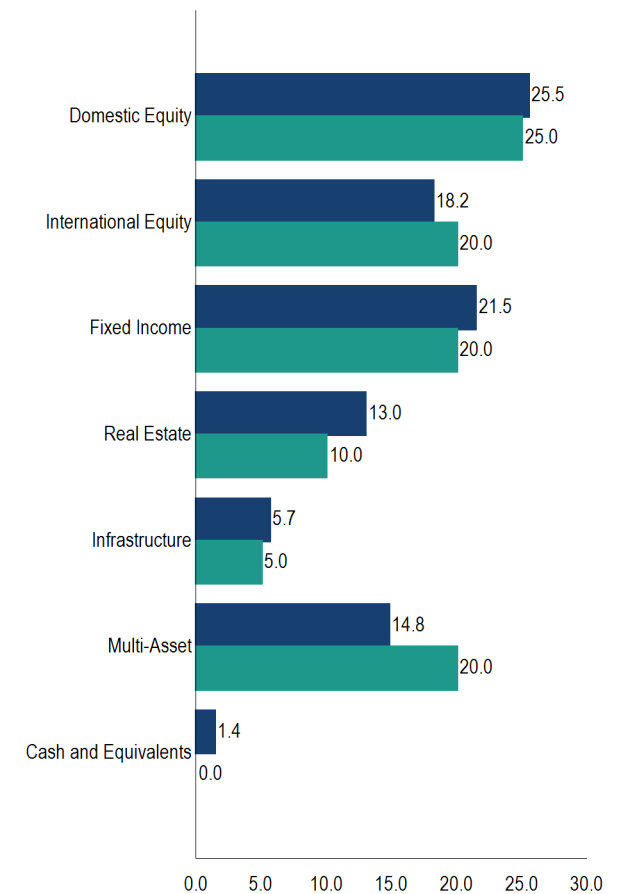
Loomis Sayles Full Discretion liquidated 3/21/2017. Loomis Sayles Core Plus funded 3/21/2017. Parametric liquidated 4/21/2017. Mellon Dynamic liquidated 5/5/2017. Grosvenor Institutional liquidated 4/30/2018.

Total Fund Executive Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Fund	316,679,649	100.0	3.2	11.1	5.8	7.7	5.5	8.9
<i>Total Fund Policy Index</i>			3.5	11.8	7.0	7.7	5.2	8.2
<i>Target Asset Allocation Policy Index</i>			3.4	12.0	7.3	8.4	6.3	8.9
<i>InvMetrics Tft-Hrtly DB \$250mm-\$1B Net Rank</i>			14	33	32	89	79	54
Total Domestic Equity	80,801,962	25.5	3.5	17.6	5.2	12.1	9.4	14.3
<i>Dow Jones U.S. Total Stock Market</i>			4.1	18.7	8.9	14.0	10.1	14.7
<i>InvMetrics Tft-Hrtly DB US Eq Net Rank</i>			81	77	83	86	45	29
Total International Equity	57,544,731	18.2	5.5	17.1	3.9	9.5	2.5	5.9
<i>Total Public Int'l Equity Benchmark (MSCI ACWI ex US IMI)</i>			2.7	13.3	0.3	9.2	2.2	6.4
<i>InvMetrics Tft-Hrtly DB ex-US Eq Net Rank</i>			4	11	4	28	29	79
Total Fixed Income	67,958,757	21.5	3.1	6.7	7.2	4.2	3.3	6.3
<i>Total Fixed Income Benchmark (BBgBarc Aggregate)</i>			3.1	6.1	7.9	2.3	2.9	3.9
<i>InvMetrics Tft-Hrtly DB US Fix Inc Net Rank</i>			15	25	35	21	29	9
Total Real Estate	41,163,303	13.0	0.9	2.8	6.6	5.9	8.6	9.2
<i>NCREIF-ODCE</i>			1.0	2.4	6.4	7.6	9.8	9.9
Total Infrastructure	17,917,982	5.7	3.0	4.9	10.6	11.1	7.1	7.7
<i>CPI + 5%</i>			2.0	4.5	6.7	7.1	6.5	6.8
Total Multi-Asset	46,790,261	14.8	2.4	11.1	4.7	5.2	4.7	8.8
<i>60% MSCI ACWI Net/40% FTSE WGBI</i>			3.7	12.0	6.0	7.4	4.2	7.1
<i>eV Global Balanced Net Rank</i>			90	72	65	96	64	47
Total Cash	4,502,653	1.4	0.0	0.0	0.0	0.4	-3.2	--

Actual vs Target Allocation (%)



Actual Policy

Policy Index: 45% MSCI World, 25% BBgBarc Aggregate, 10% NCREIF-ODCE, 20%(60% MSCI ACWI Net/40% CITI WGBI). Target Asset Allocation Policy Index: 25% Dow Jones US Total Stock, 20% MSCI ACWI ex US IMI, 20% BBgBarc Aggregate, 10% NCREIF-ODCE, 5% CPI + 5%, and 20% (60% MSCI ACWI Net/40% CITI WGBI). Data prior to 3Q 2015 is from previous consultant.

Total Fund

Risk Analysis - 3 & 5 Year (Net of Fees)

Period Ending: June 30, 2019

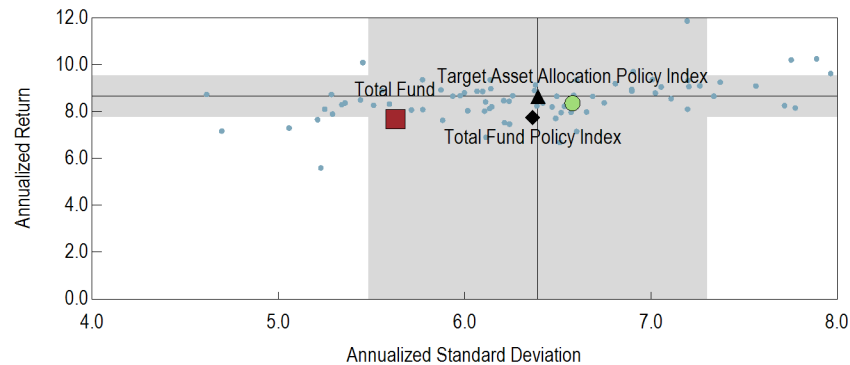
3 Year

	Anlzd Standard Deviation	Ann Excess BM Return	Anlzd Alpha	Beta	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio	Information Ratio	Tracking Error	Sharpe Ratio
Total Fund	5.63%	-0.06%	0.96%	0.87	0.96	89.69%	81.01%	-0.05	1.37%	1.12
Total Fund Policy Index	6.37%	0.00%	0.00%	1.00	1.00	100.00%	100.00%	--	0.00%	1.00
Target Asset Allocation Policy Index	6.58%	0.61%	0.40%	1.03	0.99	105.35%	99.80%	0.81	0.76%	1.06

5 Year

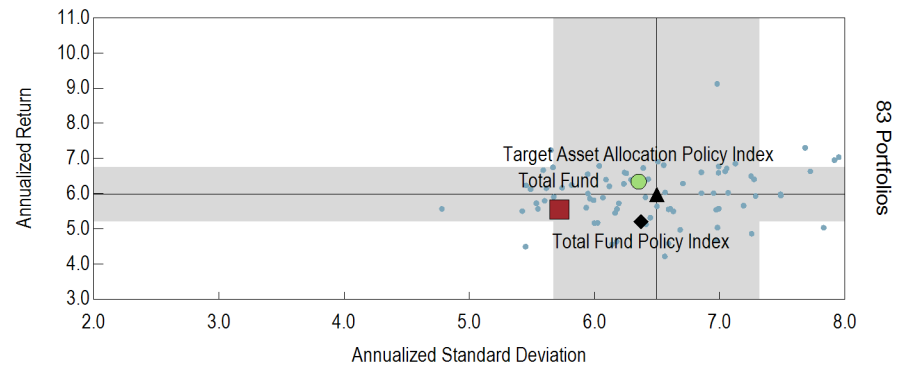
	Anlzd Standard Deviation	Ann Excess BM Return	Anlzd Alpha	Beta	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio	Information Ratio	Tracking Error	Sharpe Ratio
Total Fund	5.72%	0.34%	0.97%	0.88	0.96	91.50%	84.53%	0.25	1.37%	0.82
Total Fund Policy Index	6.37%	0.00%	0.00%	1.00	1.00	100.00%	100.00%	--	0.00%	0.68
Target Asset Allocation Policy Index	6.35%	1.14%	1.20%	0.99	0.98	105.58%	91.32%	1.28	0.89%	0.86

3 Year



- Total Fund
- ◆ Total Fund Policy Index
- Target Asset Allocation Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Tft-Hrtly DB \$250mm-\$1B Net

5 Year

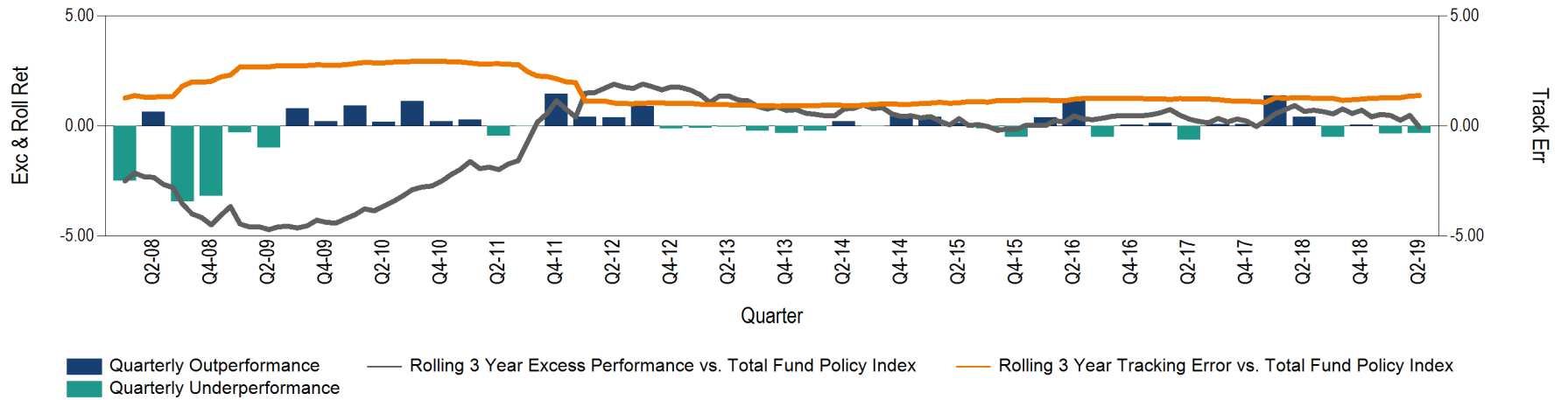


- Total Fund
- ◆ Total Fund Policy Index
- Target Asset Allocation Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Tft-Hrtly DB \$250mm-\$1B Net

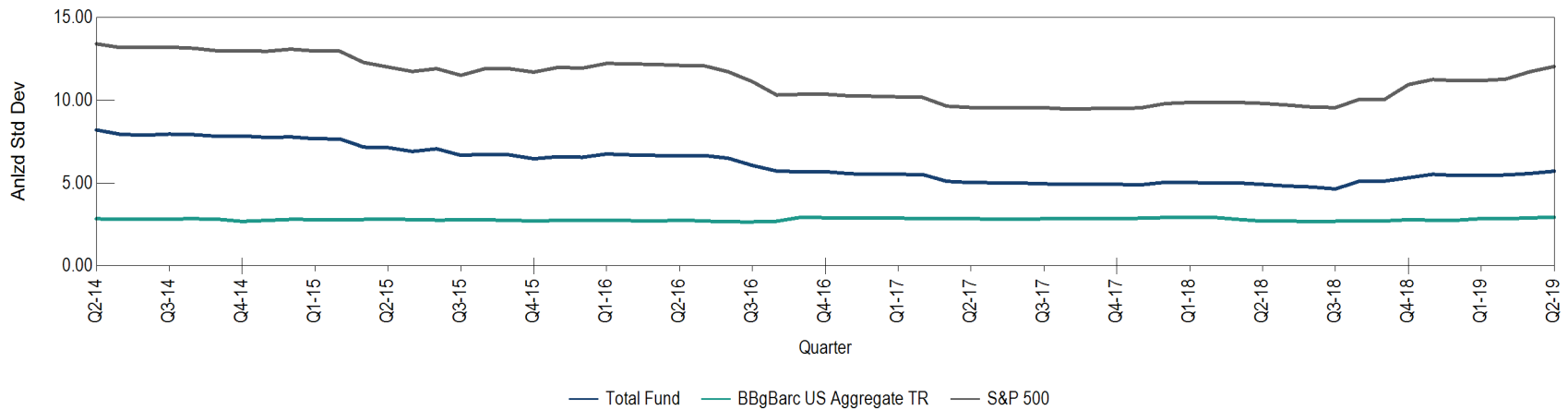
Total Fund
Rolling Performance Relative to Policy (Net of Fees)

Period Ending: June 30, 2019

Rolling Annualized Excess Performance and Tracking Error



Rolling 5 Year Annualized Standard Deviation



Total Fund
Executive Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fund	316,679,649	100.0	3.2	11.1	5.8	7.7	5.5	8.9	-3.2	13.0	6.9	0.9	5.1
<i>Total Fund Policy Index</i>			3.5	11.8	7.0	7.7	5.2	8.2	-4.5	13.5	5.8	1.1	4.7
<i>Target Asset Allocation Policy Index</i>			3.4	12.0	7.3	8.4	6.3	8.9	-3.2	13.7	7.2	1.3	7.1
<i>InvMetrics Tft-Hrtly DB \$250mm-\$1B Net Rank</i>			14	33	32	89	79	54	45	64	80	38	70
Domestic Equity	80,801,962	25.5											
BlackRock Equity Index NL	33,391,402	10.5	4.3	18.6	10.4	14.2	10.7	--	-4.4	21.8	11.9	1.3	13.8
S&P 500			4.3	18.5	10.4	14.2	10.7	--	-4.4	21.8	12.0	1.4	13.7
<i>eV US Large Cap Core Equity Net Rank</i>			44	36	38	25	19	--	32	46	21	37	33
INTECH US Adaptive Volatility	32,562,476	10.3	3.2	16.9	--	--	--	--	--	--	--	--	--
Russell 1000			4.2	18.8	--	--	--	--	--	--	--	--	--
<i>eV US Large Cap Core Equity Net Rank</i>			68	55	--	--	--	--	--	--	--	--	--
PanAgora US Small Cap Core Stock Selector	14,848,085	4.7	2.4	17.0	-6.3	11.3	--	--	-9.2	10.8	20.3	--	--
Russell 2000			2.1	17.0	-3.3	12.3	--	--	-11.0	14.6	21.3	--	--
<i>eV US Small Cap Core Equity Net Rank</i>			53	47	76	52	--	--	36	83	41	--	--
International Equity	57,544,731	18.2											
WCM Focused International Growth Fund, L.P.	32,734,797	10.3	9.9	24.2	12.2	13.7	--	--	-7.4	31.1	--	--	--
MSCI ACWI ex USA			3.0	13.6	1.3	9.4	--	--	-14.2	27.2	--	--	--
<i>eV ACWI ex-US All Cap Growth Eq Net Rank</i>			1	12	1	18	--	--	1	71	--	--	--
Causeway International Value Ins	18,802,658	5.9	0.1	10.4	-4.7	--	--	--	-18.6	27.2	--	--	--
MSCI EAFE			3.7	14.0	1.1	--	--	--	-13.8	25.0	--	--	--
<i>Foreign Large Value MStar MF Rank</i>			93	58	71	--	--	--	91	14	--	--	--
Fixed Income	67,958,757	21.5											
Loomis Sayles Core Plus	67,958,757	21.5	3.1	6.7	7.2	--	--	--	-0.4	--	--	--	--
BBgBarc US Aggregate TR			3.1	6.1	7.9	--	--	--	0.0	--	--	--	--
<i>eV US Core Plus Fixed Inc Net Rank</i>			60	60	83	--	--	--	40	--	--	--	--
Real Estate	41,163,303	13.0											
ASB Allegiance Real Estate	26,563,621	8.4	1.4	3.4	7.0	5.5	--	--	7.1	3.9	4.5	--	--
NCREIF-ODCE			1.0	2.4	6.4	7.6	--	--	8.3	7.6	8.8	--	--

Policy Index: 45% MSCI World, 25% BBcBarc Aggregate, 10% NCREIF-ODCE, 20%(60% MSCI ACWI Net/40% CITI WGBI). Target Asset Allocation Policy Index: 25% Dow Jones US Total Stock, 20% MSCI ACWI ex US IMI, 20% BBgBarc Aggregate, 10% NCREIF-ODCE, 5% CPI + 5%, and 20% (60% MSCI ACWI Net/40% CITI WGBI). Loomis Sayles Core Plus replaced Loomis Sayles Full Discretion 3/21/2017. Parametric liquidated 4/21/2017. Mellon Dynamic liquidated 5/5/2017. Grosvenor Institutional liquidated 4/30/2018. Data prior to 3Q 2015 is from previous consultant.

Total Fund
Executive Summary (Net of Fees)

Period Ending: June 30, 2019

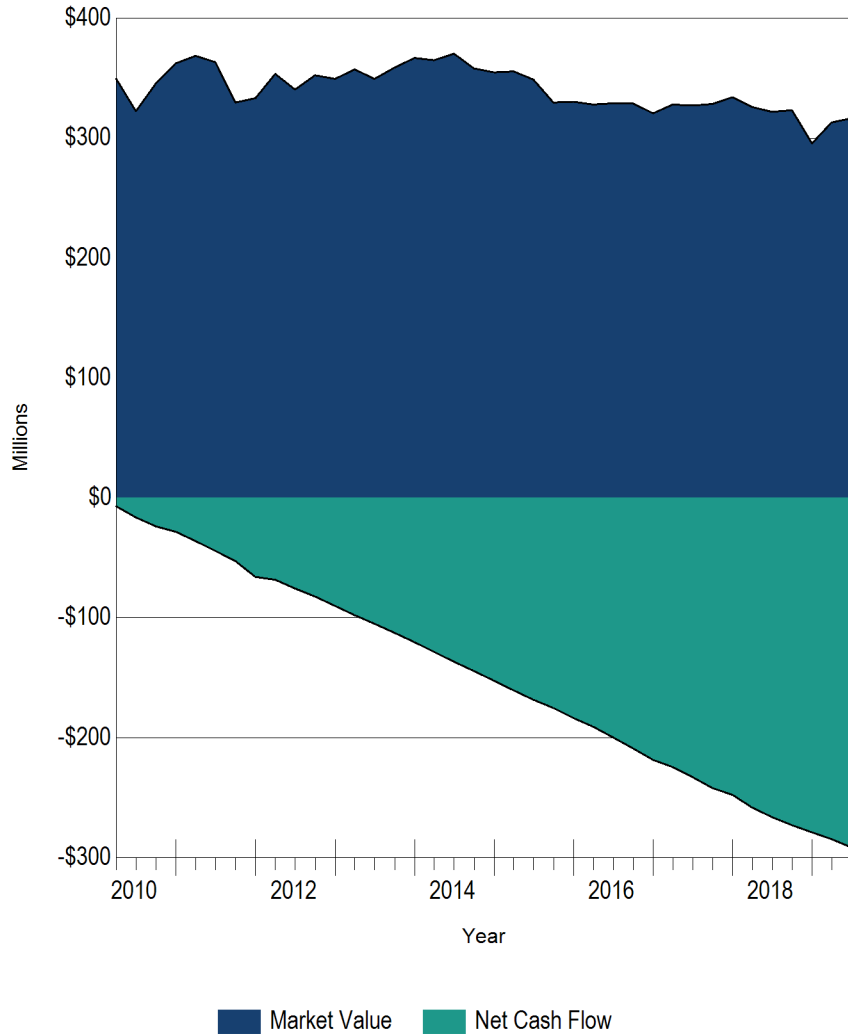
	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Invesco Real Estate II	42,450	0.0	-1.3	-1.4	-4.8	-1.2	1.7	9.3	-6.1	4.8	1.2	6.1	11.5
NCREIF-ODCE			1.0	2.4	6.4	7.6	9.8	9.9	8.3	7.6	8.8	15.0	12.5
JPMorgan Special Situation Property	14,557,232	4.6	0.0	1.6	5.9	7.4	--	--	9.6	7.9	8.7	18.9	--
NCREIF-ODCE			1.0	2.4	6.4	7.6	--	--	8.3	7.6	8.8	15.0	--
Infrastructure	17,917,982	5.7											
IFM Global Infrastructure (US) LP	9,680,497	3.1	3.8	6.6	14.9	14.9	9.9	9.7	15.8	21.1	6.1	5.2	1.3
CPI + 5%			2.0	4.5	6.7	7.1	6.5	6.8	7.0	7.2	7.2	5.8	5.8
JPMorgan IIF ERISA LP	8,237,484	2.6	2.0	3.1	6.0	6.9	4.1	--	4.2	14.2	1.2	3.4	-1.6
CPI + 5%			2.0	4.5	6.7	7.1	6.5	--	7.0	7.2	7.2	5.8	5.8
Multi-Asset	46,790,261	14.8											
Invesco Balanced-Risk Allocation	46,790,261	14.8	2.4	11.1	4.7	5.5	4.5	--	-5.8	10.5	12.2	-3.5	6.3
60% MSCI ACWI Net/40% FTSE WGBI			3.7	12.0	6.0	7.4	4.2	--	-5.8	17.1	5.5	-2.6	2.3
FTSE 3-Month T-bill +6%			2.1	4.2	8.4	7.4	6.9	--	8.0	6.9	6.3	6.0	6.0
eV Global Balanced Net Rank			90	72	65	94	72	--	22	99	19	74	37
Cash and Equivalents	4,502,653	1.4											
US Bank Checking Account	1,926,348	0.6											
US Bank Clearing Account	2,576,305	0.8											

Policy Index: 45% MSCI World, 25% BBcBarc Aggregate, 10% NCREIF-ODCE, 20%(60% MSCI ACWI Net/40% CITI WGBI). Target Asset Allocation Policy Index: 25% Dow Jones US Total Stock, 20% MSCI ACWI ex US IMI, 20% BBgBarc Aggregate, 10% NCREIF-ODCE, 5% CPI + 5%, and 20% (60% MSCI ACWI Net/40% CITI WGBI). Loomis Sayles Core Plus replaced Loomis Sayles Full Discretion 3/21/2017. Parametric liquidated 4/21/2017. Mellon Dynamic liquidated 5/5/2017. Grosvenor Institutional liquidated 4/30/2018. Data prior to 3Q 2015 is from previous consultant.

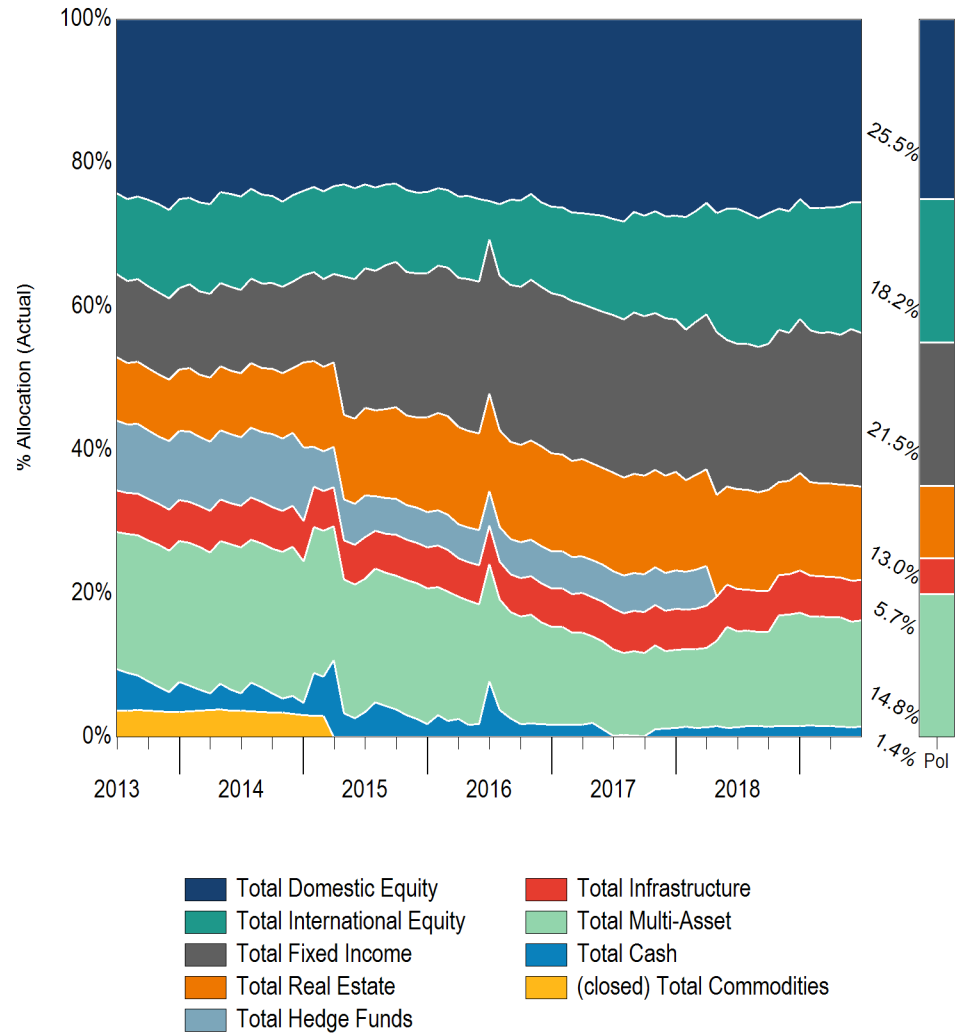
Total Fund
Asset Allocation History

Period Ending: June 30, 2019

Market Value History



Asset Allocation History

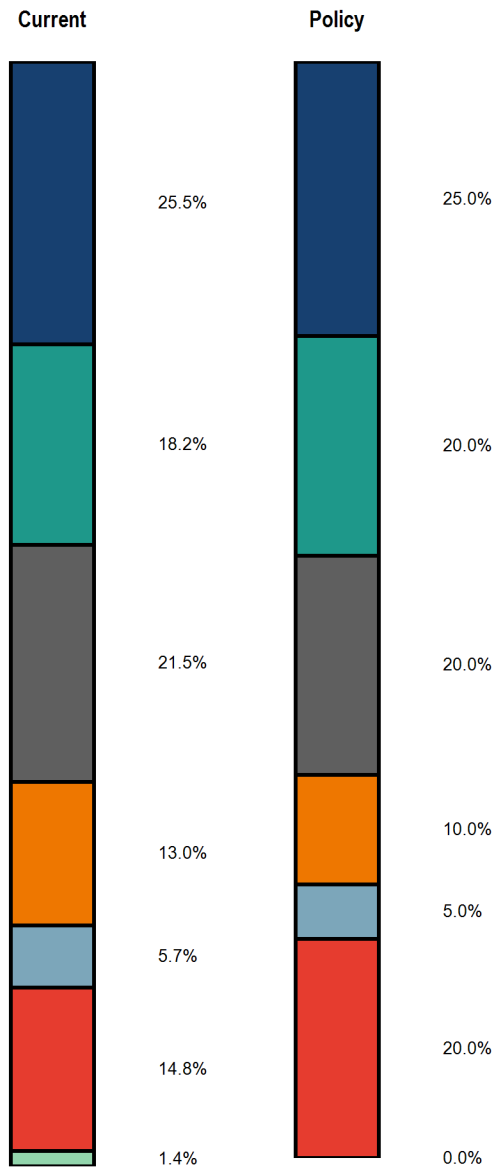


Net cash flow is cumulative.

Total Fund

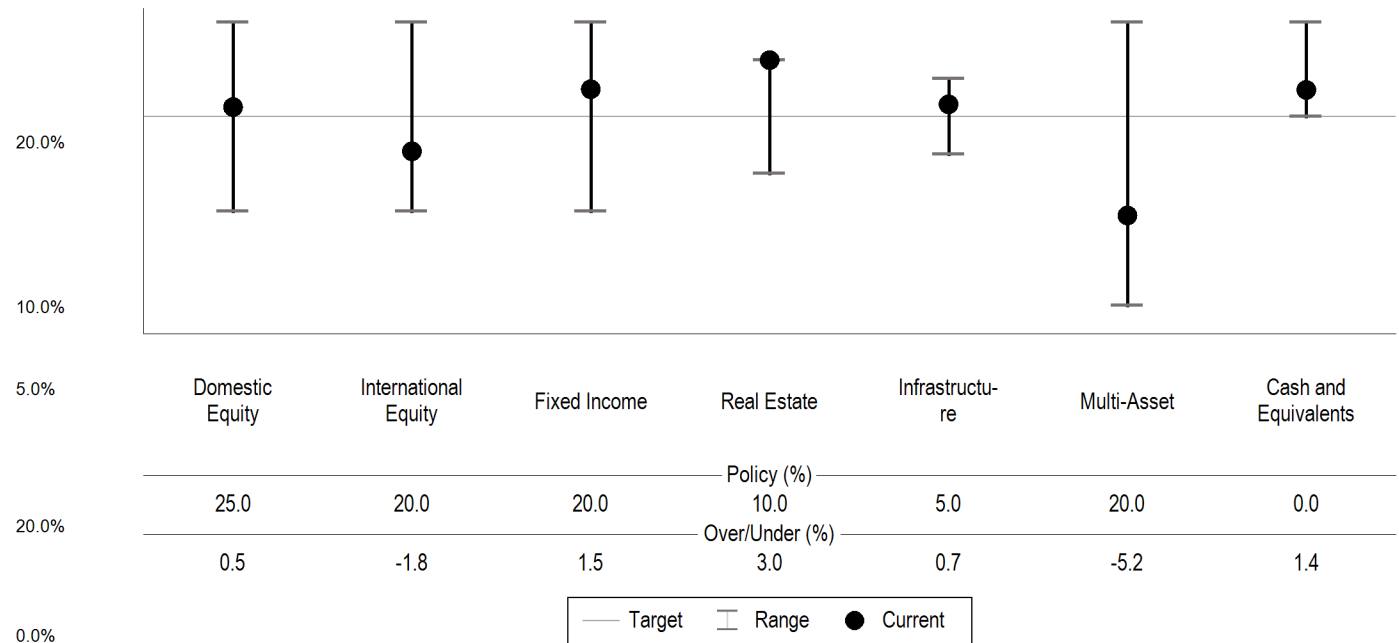
Asset Allocation vs. Policy

Period Ending: June 30, 2019



	Current	%	Policy	Difference	Policy Range	Within Range
Domestic Equity	\$80,801,962	25.5%	25.0%	\$1,632,050	20.0% - 30.0%	Yes
International Equity	\$57,544,731	18.2%	20.0%	-\$5,791,199	15.0% - 25.0%	Yes
Fixed Income	\$67,958,757	21.5%	20.0%	\$4,622,827	15.0% - 25.0%	Yes
Real Estate	\$41,163,303	13.0%	10.0%	\$9,495,338	7.0% - 13.0%	Yes
Infrastructure	\$17,917,982	5.7%	5.0%	\$2,083,999	3.0% - 7.0%	Yes
Multi-Asset	\$46,790,261	14.8%	20.0%	-\$16,545,669	10.0% - 25.0%	Yes
Cash and Equivalents	\$4,502,653	1.4%	0.0%	\$4,502,653	0.0% - 5.0%	Yes
Total	\$316,679,649	100.0%	100.0%			

Actual vs. Target



Total Fund Investment Fund Fee Analysis

Period Ending: June 30, 2019

Name	Asset Class	Fee Schedule	Market Value	% of Portfolio	Estimated Fee Value	Estimated Fee
BlackRock Equity Index NL	Domestic Equity	0.03% of Assets	\$33,391,402	10.5%	\$10,017	0.03%
INTECH US Adaptive Volatility	Domestic Equity	0.40% of Assets	\$32,562,476	10.3%	\$130,250	0.40%
PanAgora US Small Cap Core Stock Selector	Domestic Equity	0.85% of Assets	\$14,848,085	4.7%	\$126,209	0.85%
WCM Focused International Growth Fund, L.P.	International Equity	0.75% of Assets	\$32,734,797	10.3%	\$245,511	0.75%
Causeway International Value Ins	International Equity	0.90% of Assets	\$18,802,658	5.9%	\$169,224	0.90%
Brandes International Small Cap Equity	International Equity	0.90% of Assets	\$6,007,275	1.9%	\$54,065	0.90%
Loomis Sayles Core Plus	Fixed Income	0.35% of First 20.0 Mil, 0.25% Thereafter	\$67,958,757	21.5%	\$189,897	0.28%
ASB Allegiance Real Estate	Real Estate	1.25% of First 5.0 Mil, 1.00% of Next 10.0 Mil, 0.90% of Next 60.0 Mil, 0.75% Thereafter	\$26,563,621	8.4%	\$266,573	1.00%
Invesco Real Estate II	Real Estate	0.67% of Assets	\$42,450	0.0%	\$284	0.67%
JPMorgan Special Situation Property	Real Estate	1.60% of Assets	\$14,557,232	4.6%	\$232,916	1.60%
IFM Global Infrastructure (US) LP	Infrastructure	0.77% of Assets	\$9,680,497	3.1%	\$74,540	0.77%
JPMorgan IIF ERISA LP	Infrastructure	1.25% of First 50.0 Mil, 1.15% of Next 50.0 Mil, 1.05% Thereafter	\$8,237,484	2.6%	\$102,969	1.25%
Invesco Balanced-Risk Allocation	Multi-Asset	0.38% of First 250.0 Mil, 0.35% of Next 500.0 Mil, 0.33% of Next 250.0 Mil, 0.30% Thereafter	\$46,790,261	14.8%	\$175,463	0.38%
US Bank Checking Account	Cash and Equivalents		\$1,926,348	0.6%		
US Bank Clearing Account	Cash and Equivalents		\$2,576,305	0.8%		
Total			\$316,679,649	100.0%	\$1,777,918	0.56%

Total Fund Watch List (Net of Fees)

Period Ending: June 30, 2019

Name	Allocation Group	Status	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6
BlackRock Equity Index NL	Domestic Equity	No Issues	--	--	--	--	--	✓
INTECH US Adaptive Volatility	Domestic Equity	No Issues	--	--	--	--	--	--
PanAgora US Small Cap Core Stock Selector	Domestic Equity	No Issues	R	R	--	--	--	--
WCM Focused International Growth Fund, L.P.	International Equity	No Issues	✓	✓	--	--	--	--
Causeway International Value Ins	International Equity	No Issues	--	--	--	--	--	--
Brandes International Small Cap Equity	International Equity	No Issues	--	--	--	--	R	--
Loomis Sayles Core Plus	Fixed Income	No Issues	--	--	--	--	--	--
ASB Allegiance Real Estate	Real Estate	No Issues	R	--	--	--	--	--
Invesco Real Estate II	Real Estate	No Issues	R	--	R	--	--	--
JPMorgan Special Situation Property	Real Estate	No Issues	R	--	--	--	--	--
IFM Global Infrastructure (US) LP	Infrastructure	No Issues	✓	--	✓	--	--	--
JPMorgan IIF ERISA LP	Infrastructure	No Issues	R	--	R	--	--	--
Invesco Balanced-Risk Allocation	Multi-Asset	No Issues	R	R	✓	R	--	--

Rule 1 - Manager has underperformed the benchmark index for the three year period.

Rule 2 - Manager has underperformed the 50th percentile in the appropriate style universe for the three year period.

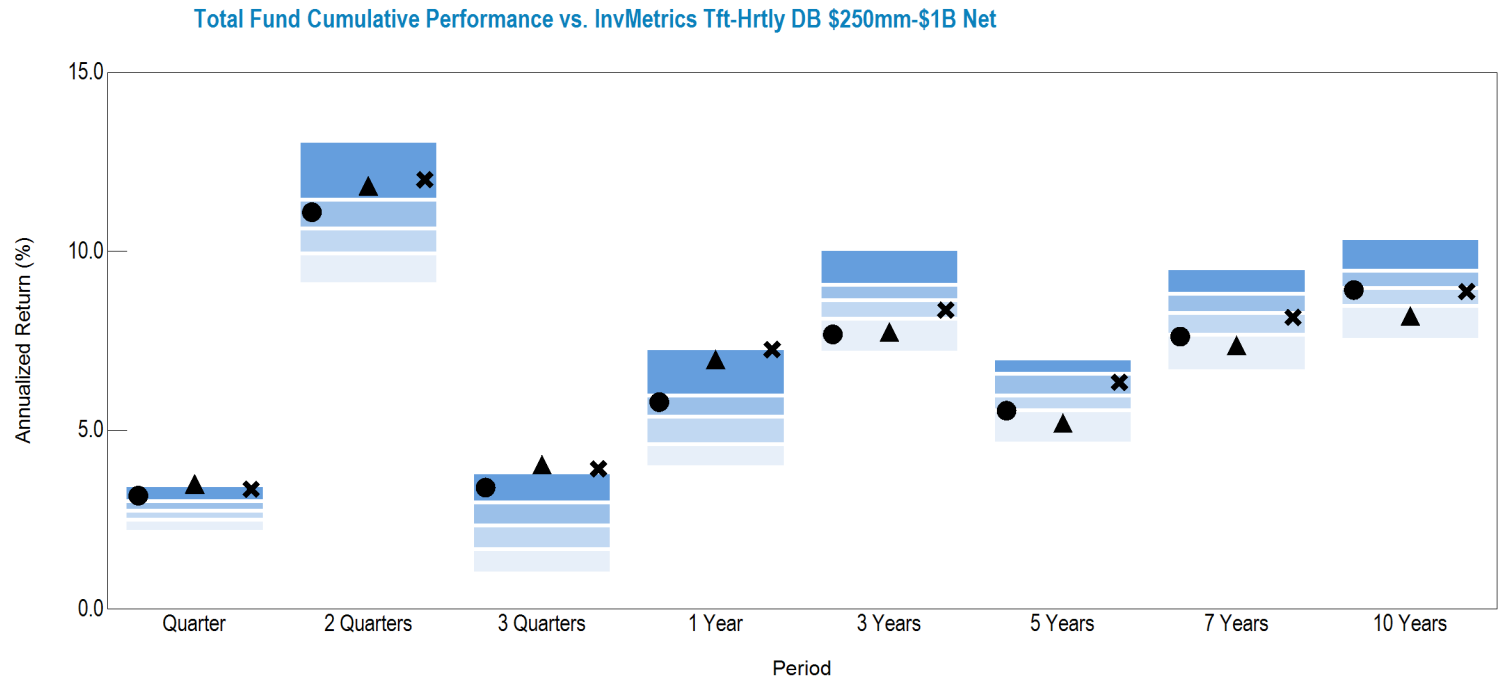
Rule 3 - Manager has underperformed the benchmark index for the five year period.

Rule 4 - Manager has underperformed the 50th percentile in the appropriate style universe for the five year period.

Rule 5 - 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.

Rule 6 - Index Fund Tracking Error exceeds 0.25% of the appropriate benchmark over the one year period.

Brandes: Firm founder and significant equity holder Charles Brandes stepped down early 2018 in order to focus on personal matters.



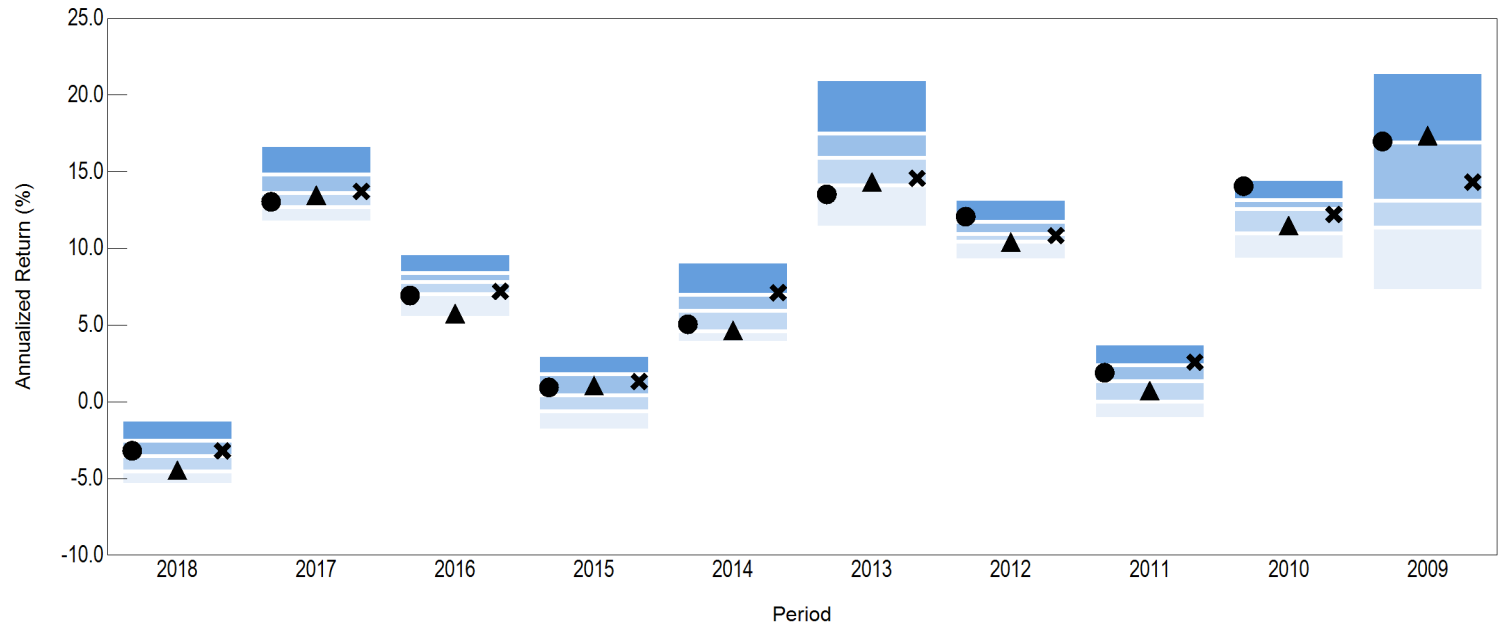
	Quarter		2 Quarters		3 Quarters		1 Year		3 Years		5 Years		7 Years		10 Years	
5th Percentile	3.5	(14)	13.1	(33)	3.8	(15)	7.3	(32)	10.1	(89)	7.0	(79)	9.5	(81)	10.4	(54)
25th Percentile	3.0	(4)	11.5	(18)	3.0	(2)	6.0	(7)	9.1	(88)	6.6	(86)	8.8	(90)	9.5	(84)
Median	2.8	(8)	10.7	(17)	2.3	(3)	5.4	(6)	8.6	(63)	6.0	(34)	8.3	(57)	9.0	(56)
75th Percentile	2.5		10.0		1.7		4.6		8.1		5.6		7.7		8.5	
95th Percentile	2.2		9.1		1.0		4.0		7.2		4.6		6.7		7.5	
# of Portfolios	89		89		89		88		83		83		78		69	
● Total Fund	3.2	(14)	11.1	(33)	3.4	(15)	5.8	(32)	7.7	(89)	5.5	(79)	7.6	(81)	8.9	(54)
▲ Total Fund Policy Index	3.5	(4)	11.8	(18)	4.0	(2)	7.0	(7)	7.7	(88)	5.2	(86)	7.4	(90)	8.2	(84)
✕ Target Asset Allocation Policy Index	3.4	(8)	12.0	(17)	3.9	(3)	7.3	(6)	8.4	(63)	6.3	(34)	8.2	(57)	8.9	(56)

Total Fund

Peer Universe Comparison: Consecutive Periods (Net of Fees)

Period Ending: June 30, 2019

Total Fund Consecutive Periods vs. InvMetrics Tft-Hrtly DB \$250mm-\$1B Net



	Return (Rank)									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
5th Percentile	-1.2	16.7	9.7	3.0	9.1	21.0	13.2	3.8	14.5	21.5
25th Percentile	-2.5	14.9	8.4	1.8	7.0	17.5	11.8	2.4	13.2	16.9
Median	-3.5	13.6	7.8	0.4	6.0	15.9	11.0	1.4	12.6	13.1
75th Percentile	-4.5	12.7	7.0	-0.6	4.6	14.2	10.4	0.0	11.0	11.4
95th Percentile	-5.4	11.7	5.5	-1.9	3.9	11.4	9.3	-1.1	9.3	7.2
# of Portfolios	84	69	56	58	55	49	37	34	32	31
● Total Fund	-3.2 (45)	13.0 (64)	6.9 (80)	0.9 (38)	5.1 (70)	13.5 (79)	12.1 (20)	1.9 (40)	14.1 (10)	17.0 (25)
▲ Total Fund Policy Index	-4.5 (73)	13.5 (51)	5.8 (93)	1.1 (37)	4.7 (75)	14.3 (70)	10.4 (79)	0.7 (60)	11.5 (66)	17.4 (24)
✕ Target Asset Allocation Policy Index	-3.2 (45)	13.7 (46)	7.2 (69)	1.3 (36)	7.1 (21)	14.6 (66)	10.8 (63)	2.6 (20)	12.2 (58)	14.3 (44)

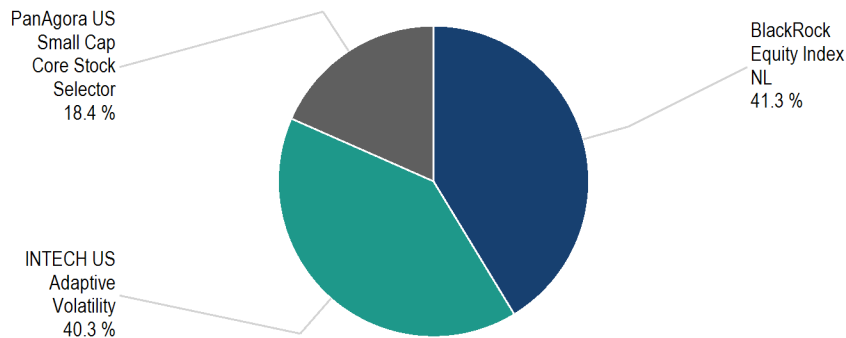
Domestic Equity

Total Domestic Equity Performance Summary (Net of Fees)

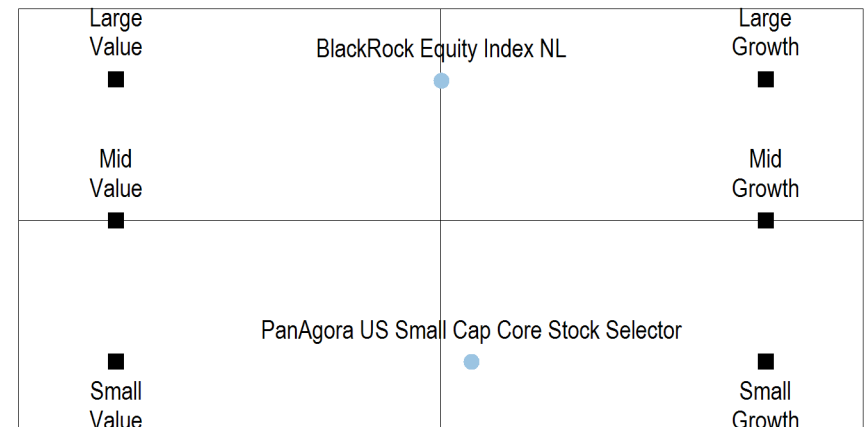
Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Domestic Equity	80,801,962	100.0	3.5	17.6	5.2	12.1	9.4	14.3	-5.9	19.4	11.5	0.7	12.5
<i>Dow Jones U.S. Total Stock Market</i>			4.1	18.7	8.9	14.0	10.1	14.7	-5.3	21.2	12.6	0.4	12.5
<i>InvMetrics Tff-Hrtly DB US Eq Net Rank</i>			81	77	83	86	45	29	34	71	61	30	10
Domestic Equity	80,801,962	100.0											
BlackRock Equity Index NL	33,391,402	41.3	4.3	18.6	10.4	14.2	10.7	--	-4.4	21.8	11.9	1.3	13.8
<i>S&P 500</i>			4.3	18.5	10.4	14.2	10.7	--	-4.4	21.8	12.0	1.4	13.7
<i>eV US Large Cap Core Equity Net Rank</i>			44	36	38	25	19	--	32	46	21	37	33
INTECH US Adaptive Volatility	32,562,476	40.3	3.2	16.9	--	--	--	--	--	--	--	--	--
<i>Russell 1000</i>			4.2	18.8	--	--	--	--	--	--	--	--	--
<i>eV US Large Cap Core Equity Net Rank</i>			68	55	--	--	--	--	--	--	--	--	--
PanAgora US Small Cap Core Stock Selector	14,848,085	18.4	2.4	17.0	-6.3	11.3	--	--	-9.2	10.8	20.3	--	--
<i>Russell 2000</i>			2.1	17.0	-3.3	12.3	--	--	-11.0	14.6	21.3	--	--
<i>eV US Small Cap Core Equity Net Rank</i>			53	47	76	52	--	--	36	83	41	--	--

**Total Domestic Equity
Current Allocation**

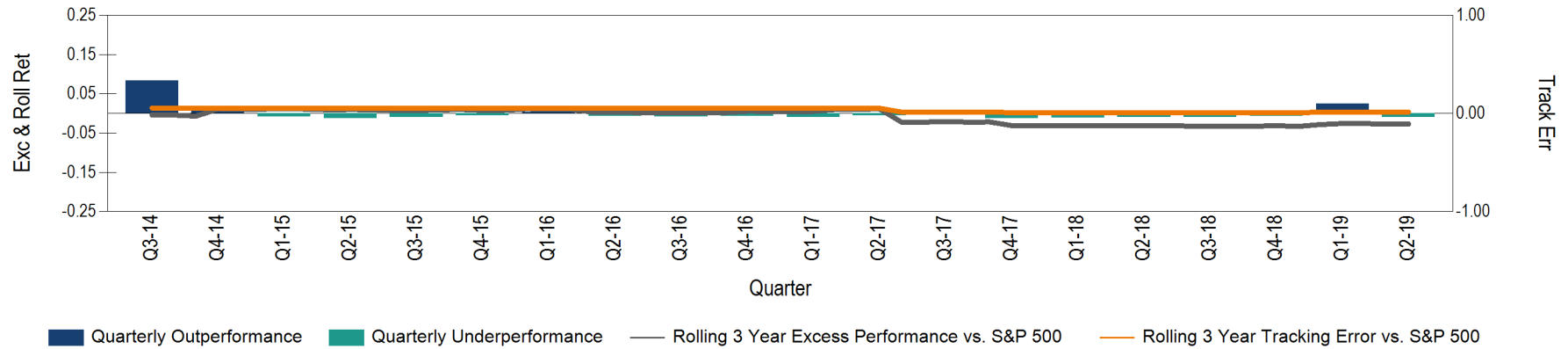


**Domestic Effective Style Map
3 Years**

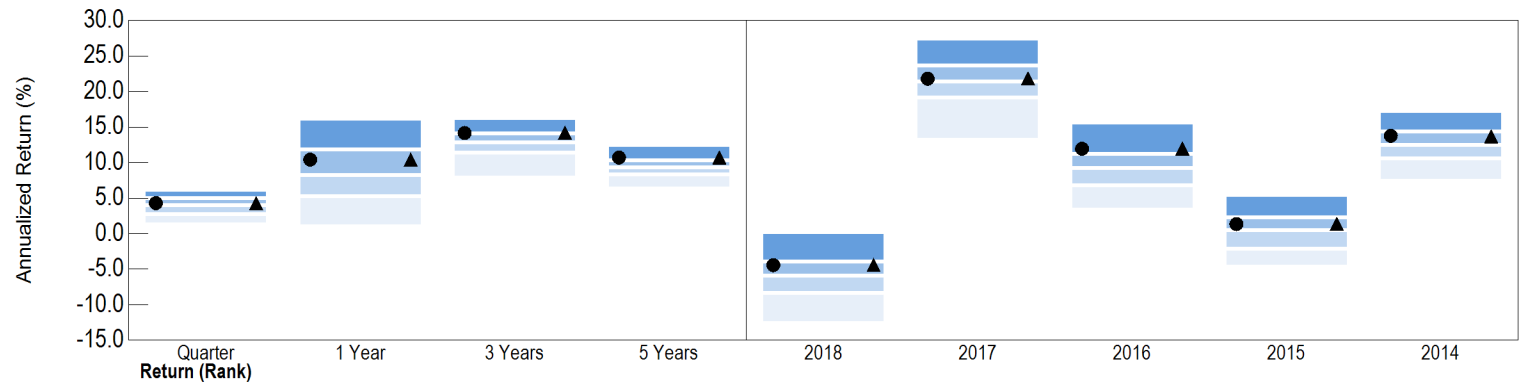


Style map requires 3 years of returns. INTECH US Adaptive Volatility replaced INTECH US Managed Volatility on 8/3/2018.

Rolling Annualized Excess Performance and Tracking Error



BlackRock Equity Index NL vs. eV US Large Cap Core Equity Net Universe

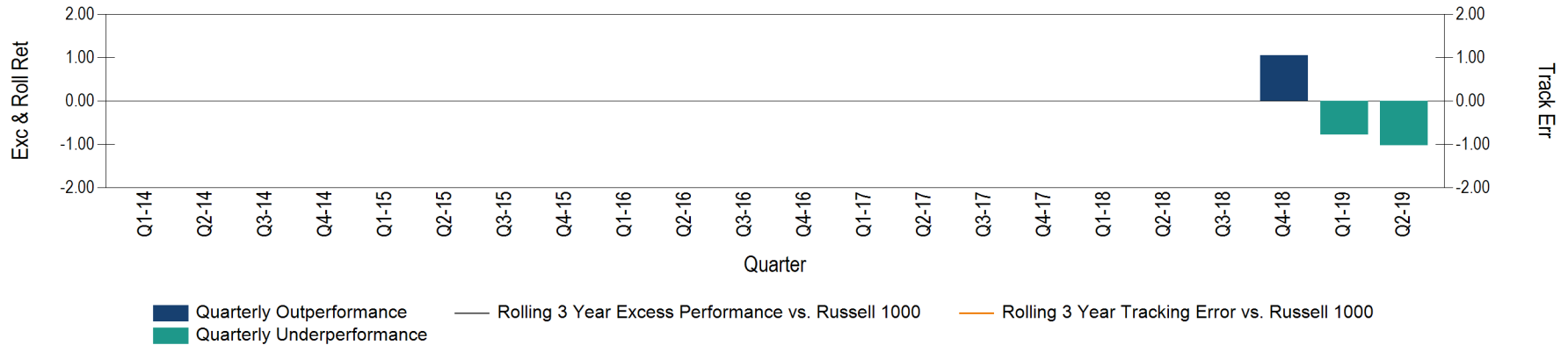


	Quarter	1 Year	3 Years	5 Years	2018	2017	2016	2015	2014
5th Percentile	6.2	16.1	16.2	12.4	0.1	27.4	15.6	5.4	17.2
25th Percentile	5.1	11.9	14.1	10.4	-3.8	23.7	11.3	2.4	14.4
Median	4.1	8.3	12.9	9.3	-5.8	21.4	9.3	0.6	12.5
75th Percentile	2.8	5.3	11.5	8.4	-8.3	19.2	6.9	-2.0	10.6
95th Percentile	1.4	1.1	7.9	6.4	-12.5	13.2	3.4	-4.6	7.5
# of Portfolios	199	195	186	174	189	188	177	142	140
● BlackRock Equity Index NL	4.3 (44)	10.4 (38)	14.2 (25)	10.7 (19)	-4.4 (32)	21.8 (46)	11.9 (21)	1.3 (37)	13.8 (33)
▲ S&P 500	4.3 (44)	10.4 (38)	14.2 (25)	10.7 (19)	-4.4 (32)	21.8 (46)	12.0 (21)	1.4 (37)	13.7 (33)

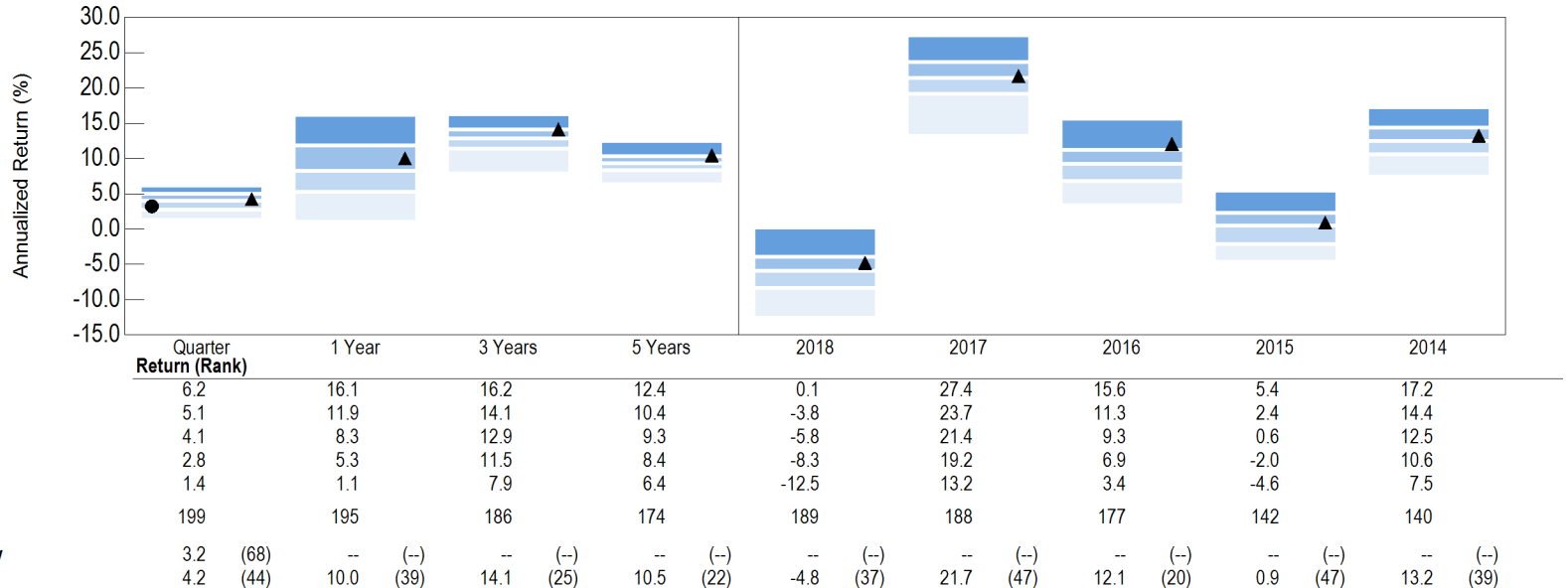
INTECH US Adaptive Volatility Performance Summary (Net of Fees)

Period Ending: June 30, 2019

Rolling Annualized Excess Performance and Tracking Error



INTECH US Adaptive Volatility vs. eV US Large Cap Core Equity Net Universe

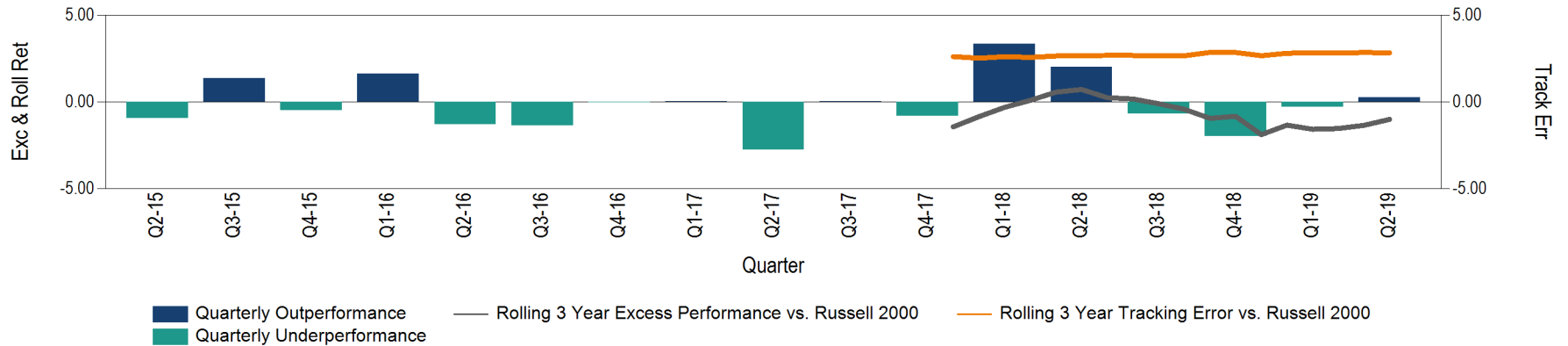


INTECH US Adaptive Volatility replaced INTECH US Managed Volatility on 8/3/2018.

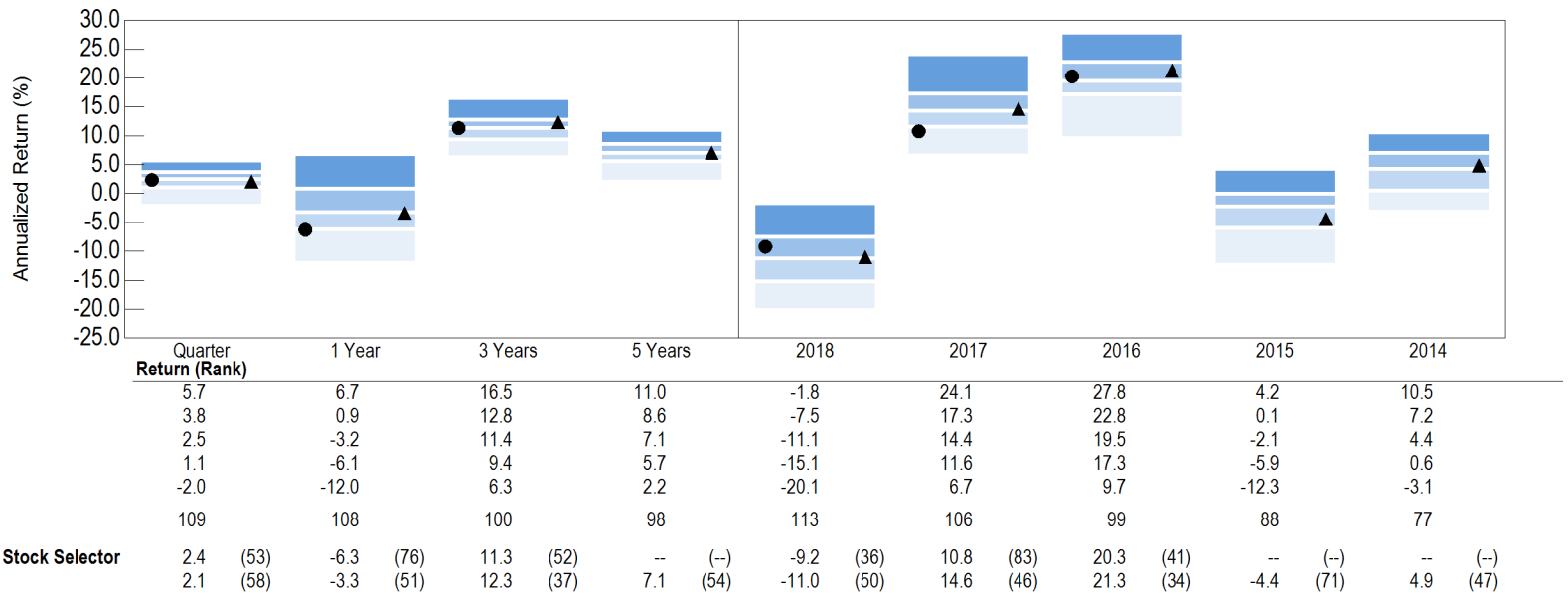
PanAgora US Small Cap Core Stock Selector Performance Summary (Net of Fees)

Period Ending: June 30, 2019

Rolling Annualized Excess Performance and Tracking Error



PanAgora US Small Cap Core Stock Selector vs. eV US Small Cap Core Equity Net Universe



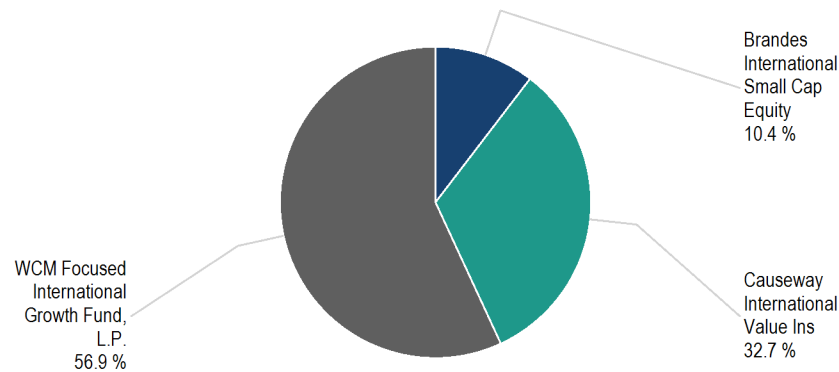
International Equity

Total International Equity Performance Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total International Equity	57,544,731	100.0	5.5	17.1	3.9	9.5	2.5	5.9	-13.0	26.6	0.9	-4.5	-3.8
<i>Total Public Int'l Equity Benchmark (MSCI ACWI ex US IMI)</i>			2.7	13.3	0.3	9.2	2.2	6.4	-14.8	27.8	4.4	-4.6	-3.9
<i>InvMetrics Tft-Hrtly DB ex-US Eq Net Rank</i>			4	11	4	28	29	79	14	71	82	51	59
International Equity	57,544,731	100.0											
WCM Focused International Growth Fund, L.P.	32,734,797	56.9	9.9	24.2	12.2	13.7	--	--	-7.4	31.1	--	--	--
<i>MSCI ACWI ex USA</i>			3.0	13.6	1.3	9.4	--	--	-14.2	27.2	--	--	--
<i>eV ACWI ex-US All Cap Growth Eq Net Rank</i>			1	12	1	18	--	--	1	71	--	--	--
Causeway International Value Ins	18,802,658	32.7	0.1	10.4	-4.7	--	--	--	-18.6	27.2	--	--	--
<i>MSCI EAFE</i>			3.7	14.0	1.1	--	--	--	-13.8	25.0	--	--	--
<i>Foreign Large Value MStar MF Rank</i>			93	58	71	--	--	--	91	14	--	--	--
Brandes International Small Cap Equity	6,007,275	10.4	0.8	4.8	-7.9	--	--	--	-17.6	11.6	--	--	--
<i>S&P Developed Ex-U.S. SmallCap</i>			2.6	13.3	-5.7	--	--	--	-18.4	32.4	--	--	--
<i>eV ACWI ex-US Small Cap Equity Net Rank</i>			81	91	72	--	--	--	39	99	--	--	--

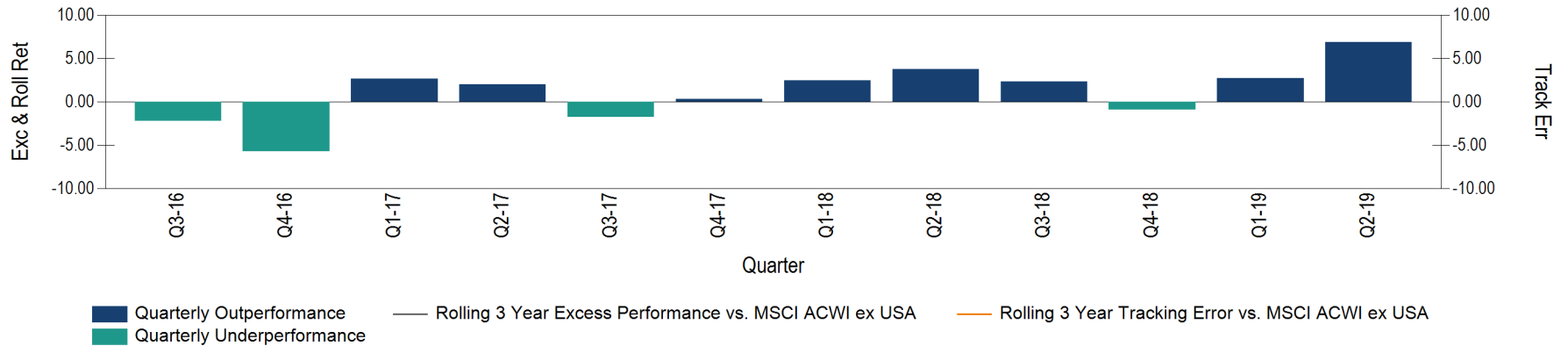
Total International Equity
Current Allocation



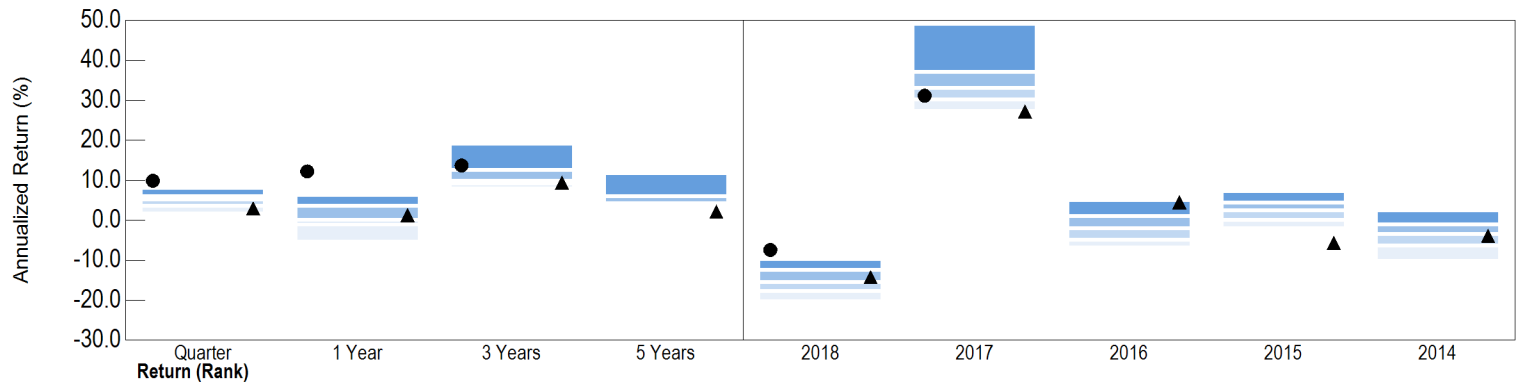
WCM Focused International Growth Fund, L.P.
Performance Summary (Net of Fees)

Period Ending: June 30, 2019

Rolling Annualized Excess Performance and Tracking Error



WCM Focused International Growth Fund, L.P. vs. eV ACWI ex-US All Cap Growth Eq Net Universe

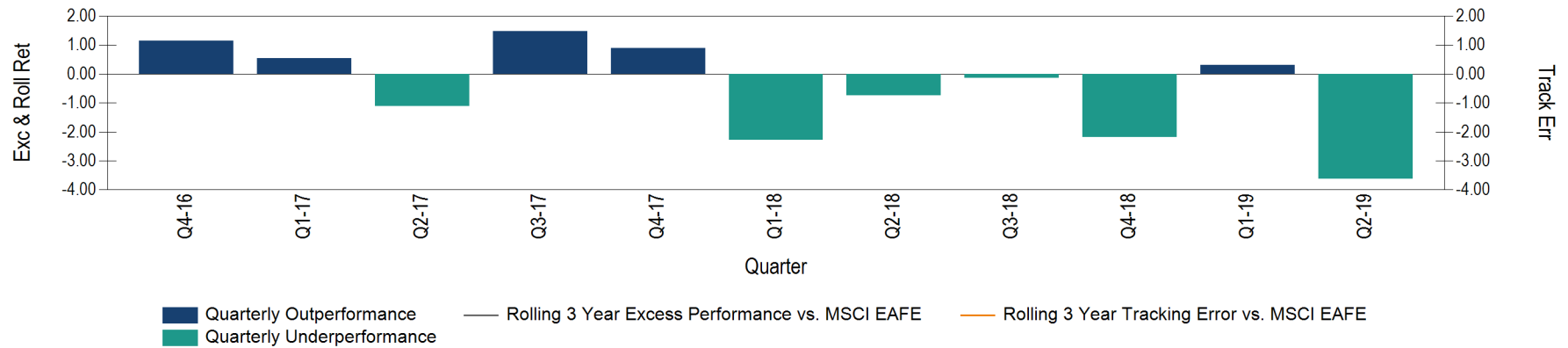


	Quarter	1 Year	3 Years	5 Years	2018	2017	2016	2015	2014
Return (Rank)									
5th Percentile	8.0	6.3	19.1	11.7	-9.7	49.1	5.0	7.2	2.5
25th Percentile	6.1	3.7	12.7	6.1	-12.3	37.2	1.2	4.5	-0.9
Median	5.3	0.3	9.9	4.4	-15.3	33.2	-2.0	2.5	-3.4
75th Percentile	3.7	-1.0	9.4	3.5	-17.5	30.4	-4.7	0.2	-6.3
95th Percentile	1.9	-5.2	8.0	2.9	-20.2	27.5	-6.6	-1.9	-10.1
# of Portfolios	27	27	26	25	26	27	25	18	16
● WCM Focused International Growth Fund, L.P.	9.9 (1)	12.2 (1)	13.7 (18)	-- (--)	-7.4 (1)	31.1 (71)	-- (--)	-- (--)	-- (--)
▲ MSCI ACWI ex USA	3.0 (83)	1.3 (35)	9.4 (75)	2.2 (98)	-14.2 (49)	27.2 (96)	4.5 (8)	-5.7 (99)	-3.9 (57)

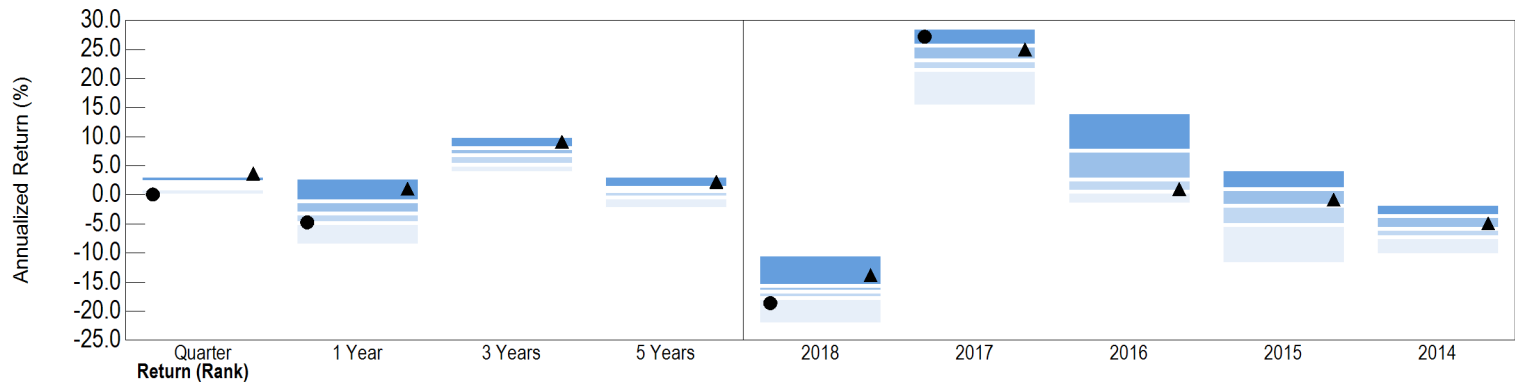
Causeway International Value Ins Performance Summary (Net of Fees)

Period Ending: June 30, 2019

Rolling Annualized Excess Performance and Tracking Error



Causeway International Value Ins vs. Foreign Large Value MStar MF Universe

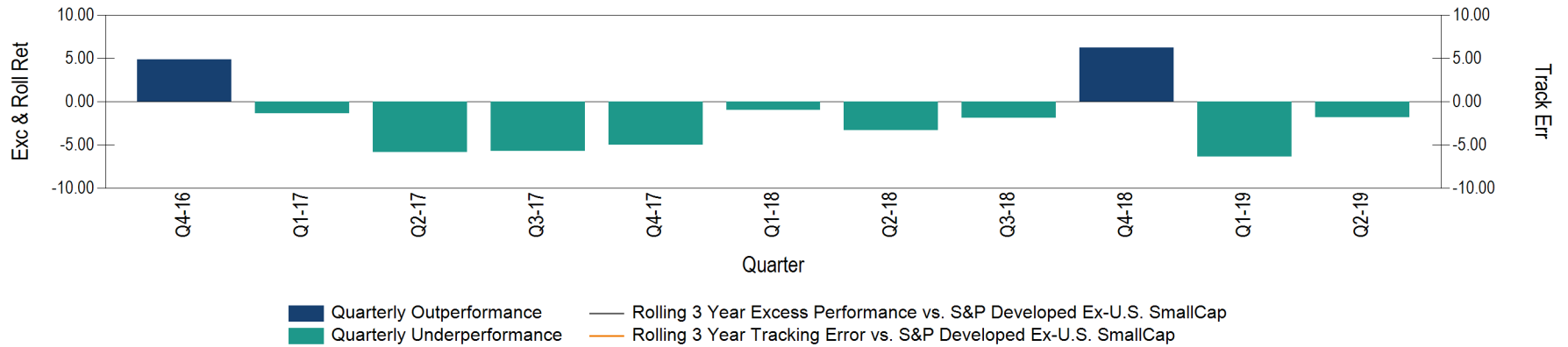


	Quarter	1 Year	3 Years	5 Years	2018	2017	2016	2015	2014
5th Percentile	3.3	2.9	10.0	3.2	-10.4	28.7	14.1	4.4	-1.5
25th Percentile	2.3	-1.1	8.1	1.2	-15.6	25.7	7.7	1.1	-3.6
Median	1.6	-3.2	6.8	0.7	-16.5	23.2	2.7	-1.8	-5.7
75th Percentile	1.2	-4.8	5.2	-0.4	-17.7	21.5	0.6	-5.1	-7.2
95th Percentile	-0.1	-8.7	3.8	-2.4	-22.2	15.3	-1.6	-11.9	-10.3
# of Portfolios	85	81	79	70	74	74	78	76	73
● Causeway International Value Ins	0.1 (93)	-4.7 (71)	-- (--)	-- (--)	-18.6 (91)	27.2 (14)	-- (--)	-- (--)	-- (--)
▲ MSCI EAFE	3.7 (2)	1.1 (8)	9.1 (15)	2.2 (19)	-13.8 (17)	25.0 (30)	1.0 (69)	-0.8 (43)	-4.9 (36)

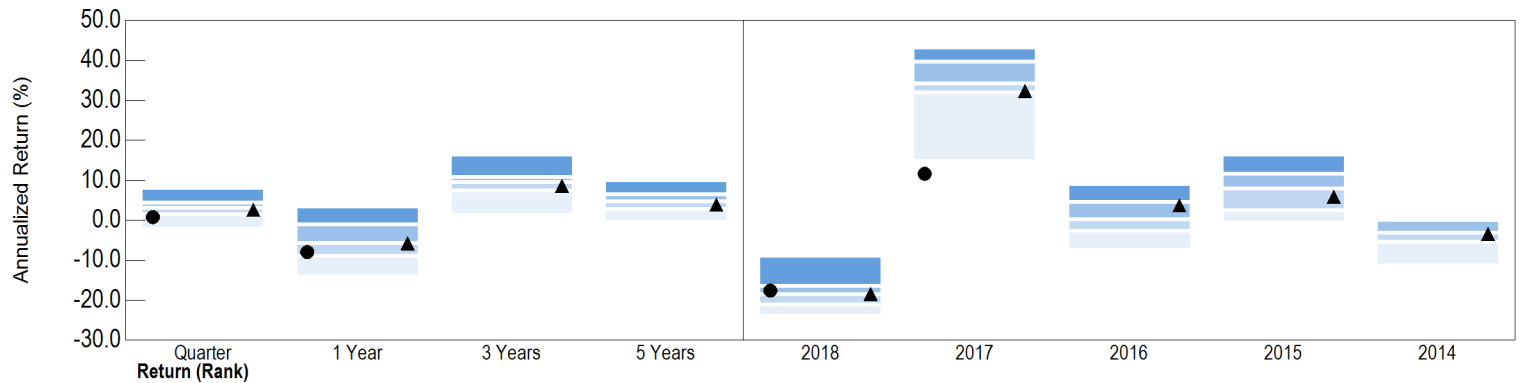
Brandes International Small Cap Equity
Performance Summary (Net of Fees)

Period Ending: June 30, 2019

Rolling Annualized Excess Performance and Tracking Error



Brandes International Small Cap Equity vs. eV ACWI ex-US Small Cap Equity Net Universe



	Quarter	1 Year	3 Years	5 Years	2018	2017	2016	2015	2014
5th Percentile	8.0	3.5	16.3	9.9	-9.0	43.1	9.0	16.3	1.0
25th Percentile	4.5	-1.0	11.0	6.5	-16.3	39.7	4.7	11.8	0.3
Median	3.2	-5.6	9.7	4.8	-18.5	34.4	0.4	8.0	-3.0
75th Percentile	1.6	-8.7	7.6	2.9	-20.9	32.1	-2.6	2.6	-5.2
95th Percentile	-2.1	-13.9	1.5	-0.2	-23.8	14.9	-7.4	-0.5	-11.2
# of Portfolios	45	44	41	32	45	45	42	27	16
● Brandes International Small Cap Equity	0.8 (81)	-7.9 (72)	-- (--)	-- (--)	-17.6 (39)	11.6 (99)	-- (--)	-- (--)	-- (--)
▲ S&P Developed Ex-U.S. SmallCap	2.6 (62)	-5.7 (52)	8.6 (63)	3.9 (61)	-18.4 (50)	32.4 (68)	3.8 (29)	5.9 (57)	-3.4 (62)

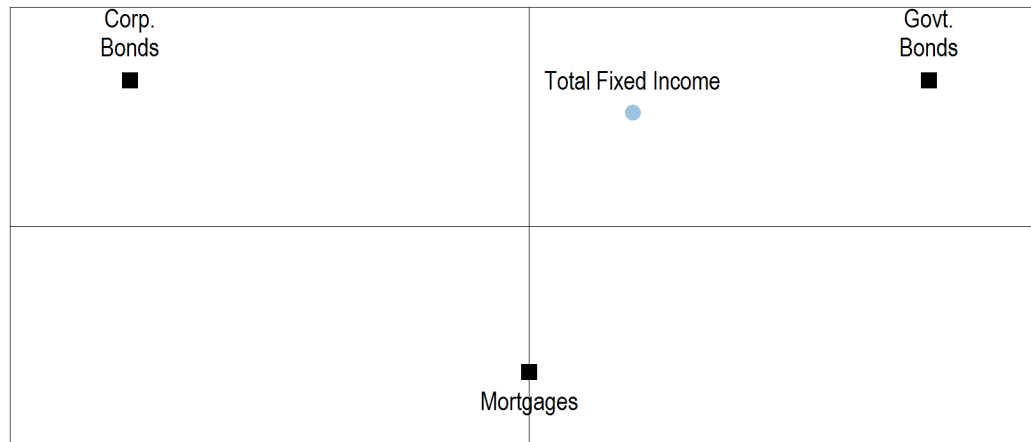
Domestic Fixed Income

Total Fixed Income
Performance Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Fixed Income	67,958,757	100.0	3.1	6.7	7.2	4.2	3.3	6.3	-0.4	5.6	7.5	-2.1	5.9
<i>Total Fixed Income Benchmark (BBgBarc Aggregate)</i>			3.1	6.1	7.9	2.3	2.9	3.9	0.0	3.5	2.6	0.5	6.0
<i>InvMetrics Tff-Hrtly DB US Fix Inc Net Rank</i>			15	25	35	21	29	9	75	18	9	93	10
Fixed Income	67,958,757	100.0											
Loomis Sayles Core Plus	67,958,757	100.0	3.1	6.7	7.2	--	--	--	-0.4	--	--	--	--
<i>BBgBarc US Aggregate TR</i>			3.1	6.1	7.9	--	--	--	0.0	--	--	--	--
<i>eV US Core Plus Fixed Inc Net Rank</i>			60	60	83	--	--	--	40	--	--	--	--

Fixed Income Style Map
3 Years



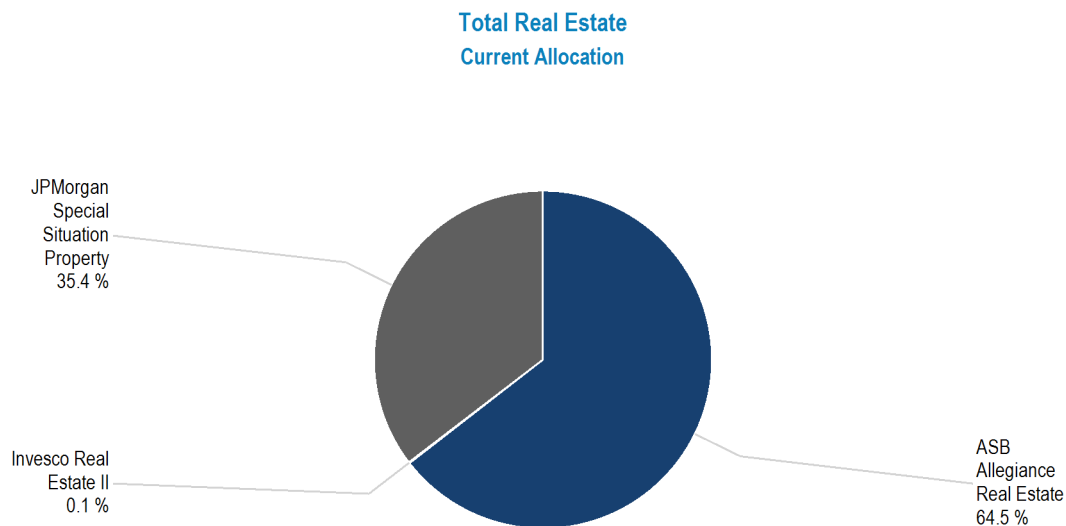
Loomis Sayles Core Plus replaced Loomis Sayles Full Discretion 3/21/2017.

Alternatives

Total Real Estate Performance Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Real Estate	41,163,303	100.0	0.9	2.8	6.6	5.9	8.6	9.2	7.8	5.0	5.4	16.9	11.2
<i>NCREIF-ODCE</i>			1.0	2.4	6.4	7.6	9.8	9.9	8.3	7.6	8.8	15.0	12.5
Real Estate	41,163,303	100.0											
ASB Allegiance Real Estate	26,563,621	64.5	1.4	3.4	7.0	5.5	--	--	7.1	3.9	4.5	--	--
<i>NCREIF-ODCE</i>			1.0	2.4	6.4	7.6	--	--	8.3	7.6	8.8	--	--
Invesco Real Estate II	42,450	0.1	-1.3	-1.4	-4.8	-1.2	1.7	9.3	-6.1	4.8	1.2	6.1	11.5
<i>NCREIF-ODCE</i>			1.0	2.4	6.4	7.6	9.8	9.9	8.3	7.6	8.8	15.0	12.5
JPMorgan Special Situation Property	14,557,232	35.4	0.0	1.6	5.9	7.4	--	--	9.6	7.9	8.7	18.9	--
<i>NCREIF-ODCE</i>			1.0	2.4	6.4	7.6	--	--	8.3	7.6	8.8	15.0	--

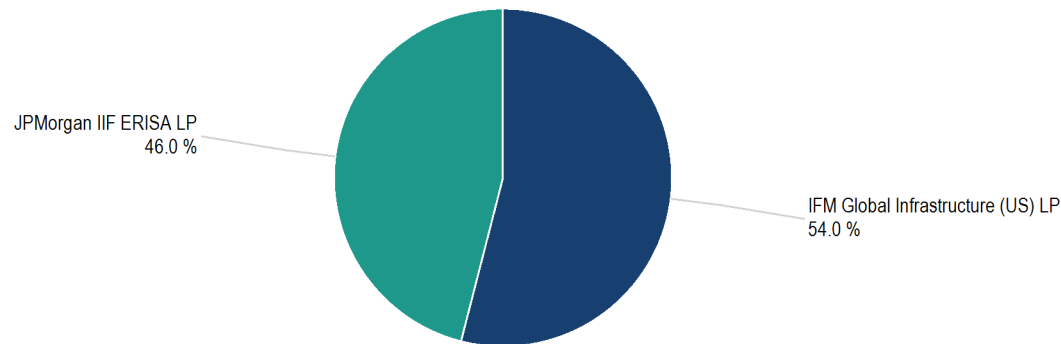


Total Infrastructure Performance Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Infrastructure	17,917,982	100.0	3.0	4.9	10.6	11.1	7.1	7.7	10.2	17.9	3.8	4.2	-0.3
<i>CPI + 5%</i>			2.0	4.5	6.7	7.1	6.5	6.8	7.0	7.2	7.2	5.8	5.8
Infrastructure	17,917,982	100.0											
IFM Global Infrastructure (US) LP	9,680,497	54.0	3.8	6.6	14.9	14.9	9.9	9.7	15.8	21.1	6.1	5.2	1.3
<i>CPI + 5%</i>			2.0	4.5	6.7	7.1	6.5	6.8	7.0	7.2	7.2	5.8	5.8
JPMorgan IIF ERISA LP	8,237,484	46.0	2.0	3.1	6.0	6.9	4.1	--	4.2	14.2	1.2	3.4	-1.6
<i>CPI + 5%</i>			2.0	4.5	6.7	7.1	6.5	--	7.0	7.2	7.2	5.8	5.8

Total Infrastructure
Current Allocation



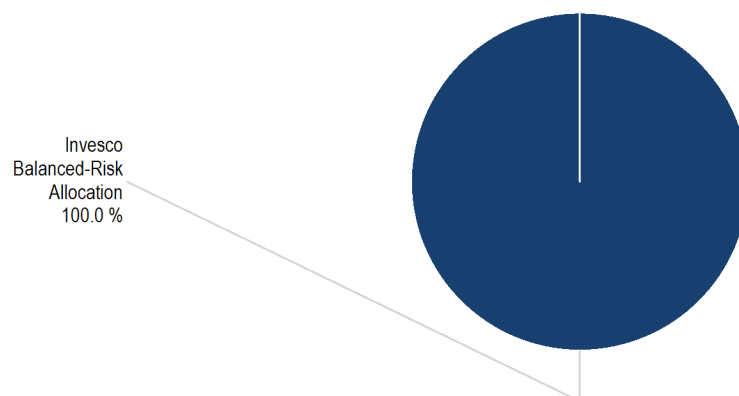
JP Morgan IIF ERISA market value as of 3/31/2018.

Total Multi-Asset Performance Summary (Net of Fees)

Period Ending: June 30, 2019

	Market Value	% of Portfolio	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2018	2017	2016	2015	2014
Total Multi-Asset	46,790,261	100.0	2.4	11.1	4.7	5.2	4.7	8.8	-5.8	10.6	7.4	-1.0	6.7
60% MSCI ACWI Net/40% FTSE WGBI			3.7	12.0	6.0	7.4	4.2	7.1	-5.8	17.1	5.5	-2.6	2.3
eV Global Balanced Net Rank			90	72	65	96	64	47	22	99	54	38	31
Multi-Asset	46,790,261	100.0											
Invesco Balanced-Risk Allocation	46,790,261	100.0	2.4	11.1	4.7	5.5	4.5	--	-5.8	10.5	12.2	-3.5	6.3
60% MSCI ACWI Net/40% FTSE WGBI			3.7	12.0	6.0	7.4	4.2	--	-5.8	17.1	5.5	-2.6	2.3
FTSE 3-Month T-bill +6%			2.1	4.2	8.4	7.4	6.9	--	8.0	6.9	6.3	6.0	6.0
eV Global Balanced Net Rank			90	72	65	94	72	--	22	99	19	74	37

Total Multi-Asset
Current Allocation

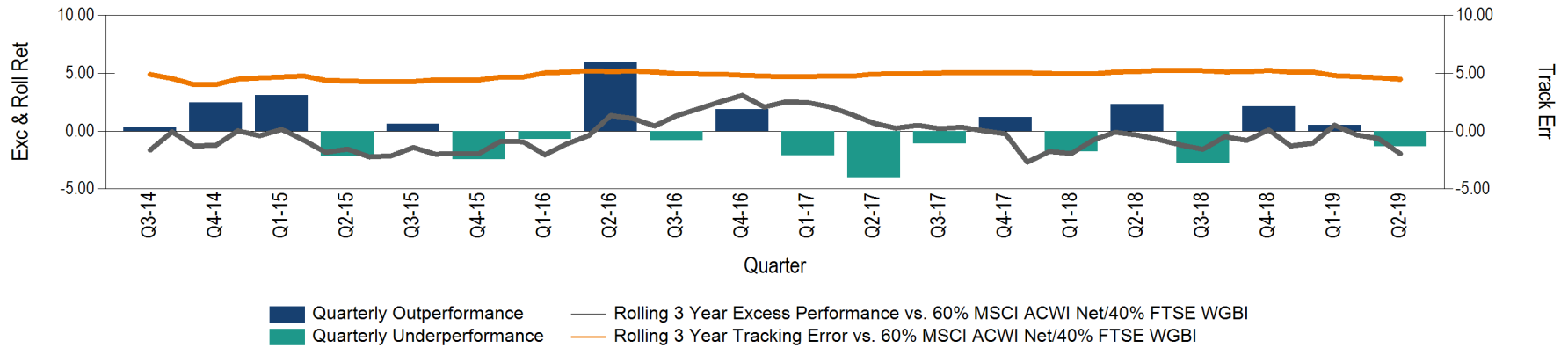


Mellon Dynamic liquidated 5/5/2017.

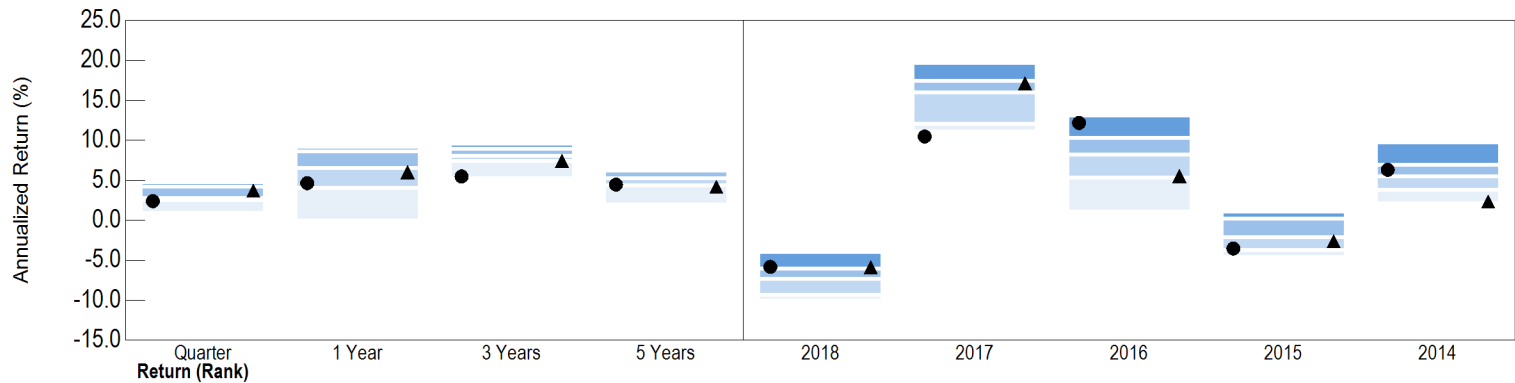
Invesco Balanced-Risk Allocation Performance Summary (Net of Fees)

Period Ending: June 30, 2019

Rolling Annualized Excess Performance and Tracking Error



Invesco Balanced-Risk Allocation vs. eV Global Balanced Net Universe



	Quarter	1 Year	3 Years	5 Years	2018	2017	2016	2015	2014
5th Percentile	4.8	9.1	9.5	6.6	-4.0	19.6	13.1	1.1	9.7
25th Percentile	4.3	8.7	9.0	6.3	-6.0	17.5	10.3	0.2	7.0
Median	2.8	6.6	8.1	5.3	-7.3	16.1	8.2	-2.0	5.6
75th Percentile	2.6	4.1	7.5	4.4	-9.3	12.2	5.4	-3.7	3.9
95th Percentile	1.0	0.0	5.3	2.0	-10.0	11.1	1.1	-4.6	2.2
# of Portfolios	10	10	10	10	10	9	13	13	14
● Invesco Balanced-Risk Allocation	2.4 (90)	4.7 (65)	5.5 (94)	4.5 (72)	-5.8 (22)	10.5 (99)	12.2 (19)	-3.5 (74)	6.3 (37)
▲ 60% MSCI ACWI Net/40% FTSE WGBI	3.7 (34)	6.0 (57)	7.4 (78)	4.2 (81)	-5.8 (22)	17.1 (29)	5.5 (68)	-2.6 (64)	2.3 (94)

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

<u>Manager</u>	<u>Fund Incepted</u>	<u>Data Source</u>	<u>Manager</u>	<u>Fund Incepted</u>	<u>Data Source</u>
BlackRock Equity Index NL	4/30/2010	BlackRock	Invesco Real Estate II	6/30/2008	Invesco
INTECH US Adaptive Volatility	8/3/2018	INTECH	JPMorgan SSP	12/31/2014	JP Morgan
PanAgora US Small Cap	1/31/2015	PanAgora	Grosvenor Instl Partners LP	10/31/2009	Grosvenor
WCM Focused International Growth	7/1/2016	WCM	IFM Global Infrastructure (US) LP	1/31/2009	IFM
Causeway International Value	7/27/2016	US Bank	JPMorgan IIF ERISA LP	9/30/2010	JP Morgan
Brandes International Small Cap II	8/1/2016	Brandes	Invesco Balanced-Risk Allocation	1/31/2010	Invesco
Loomis Sayles Core Plus	3/21/2017	Loomis Sayles	US Bank Checking Account	N/A	US Bank
ASB Allegiance Real Estate	3/31/2015	ASB	US Bank Clearing Account	N/A	US Bank

Policy & Custom Index Composition

Policy Index: 45% MSCI World, 25% BBgBarc Aggregate, 10% NCREIF-ODCE, 20% (60%MSCI ACWI Net/40% CITI WGBI)

Target Asset Allocation Policy: 25% Dow Jones US Total Stock, 20% MSCI ACWI ex US IMI, 20% BBgBarc Aggregate, 10% NCREIF-ODCE, 5% CPI + 5%, and 20% (60%MSCI ACWI Net/40% CITI WGBI).

Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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