



WILSHIRE ASSOCIATES

Wilshire Consulting



Kentucky Retirement Systems Pension

Executive Summary of Investment Performance

June 30, 2019



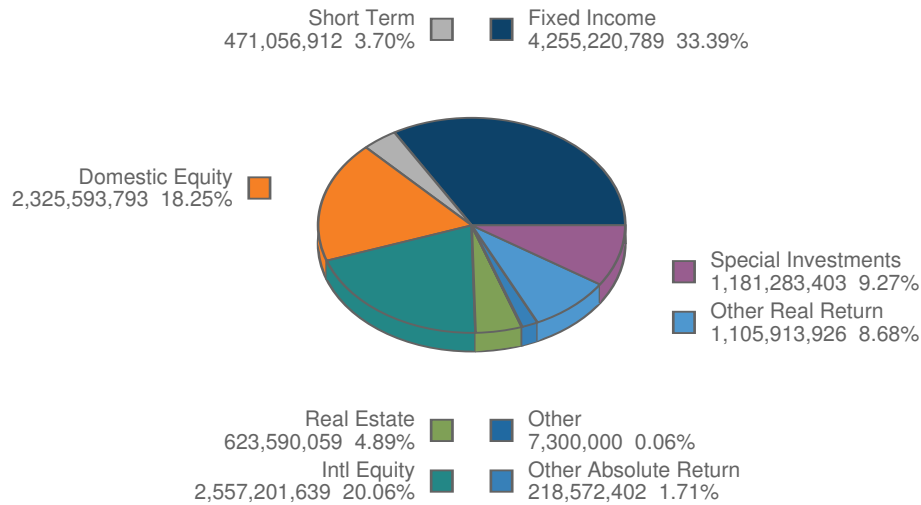
TOTAL FUND

ACTUAL ALLOCATION VS POLICY ALLOCATION

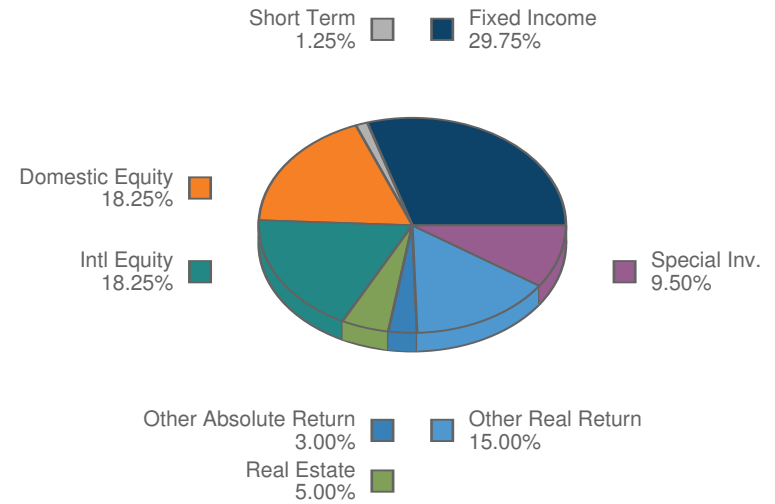
KRS Pension Plan Composite

As of June 30, 2019

Total Fund



Policy Index



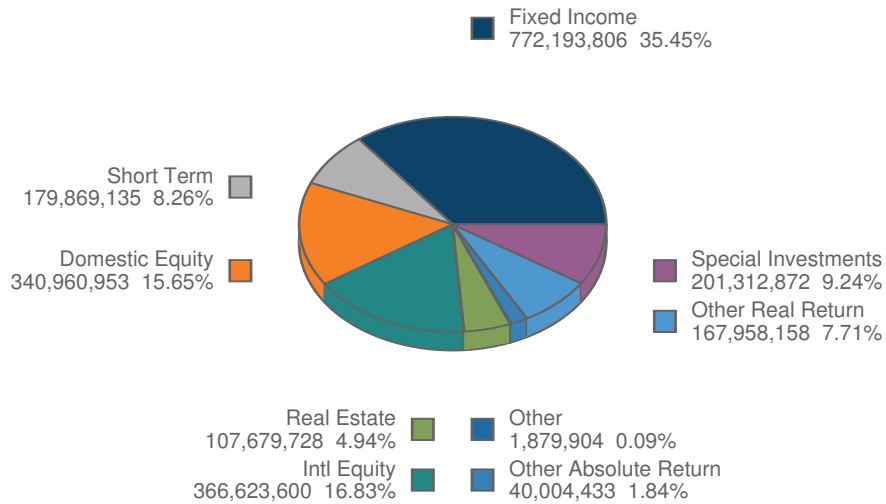
\$12,745,732,924

ACTUAL ALLOCATION VS POLICY ALLOCATION

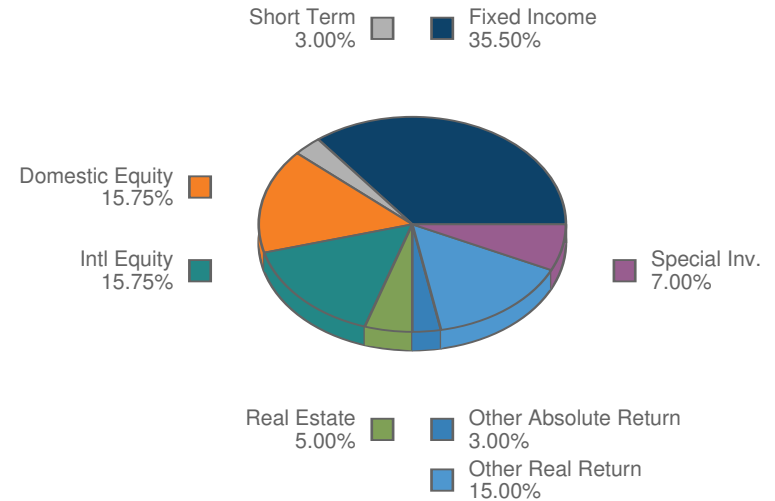
KERS Pension Plan Composite

As of June 30, 2019

Total Fund



Policy Index



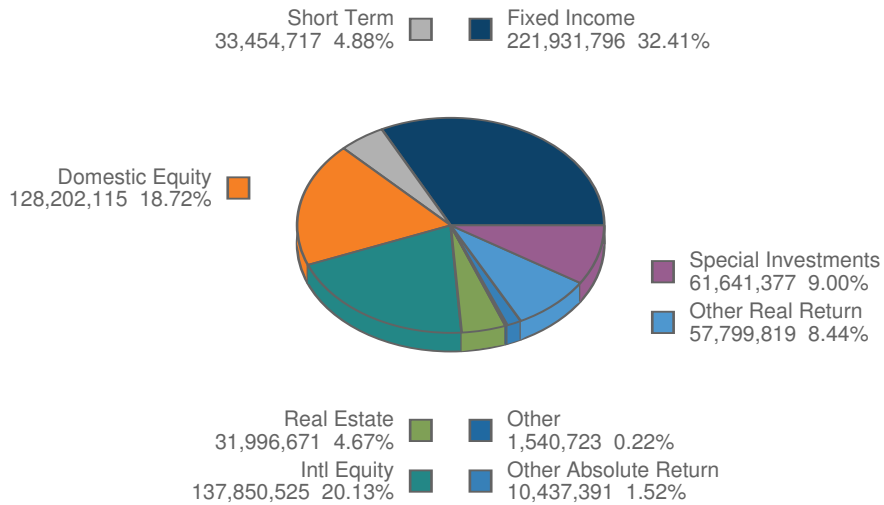
\$2,178,482,589

ACTUAL ALLOCATION VS POLICY ALLOCATION

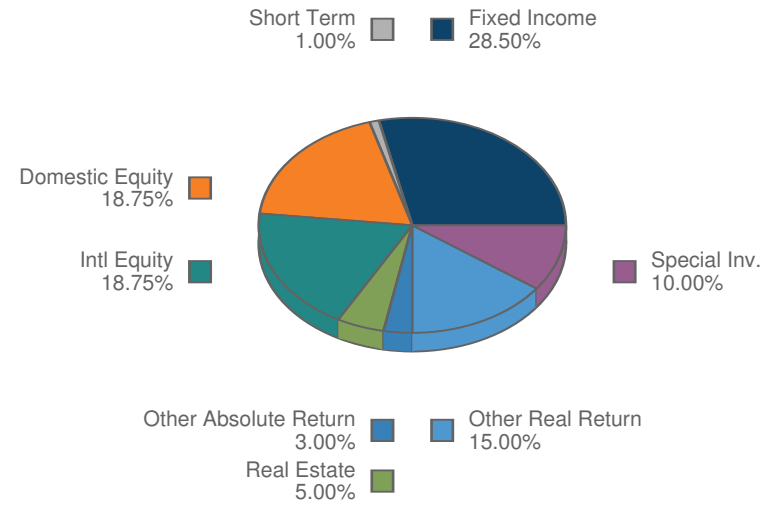
KERS (H) Pension Plan Composite

As of June 30, 2019

Total Fund



Policy Index



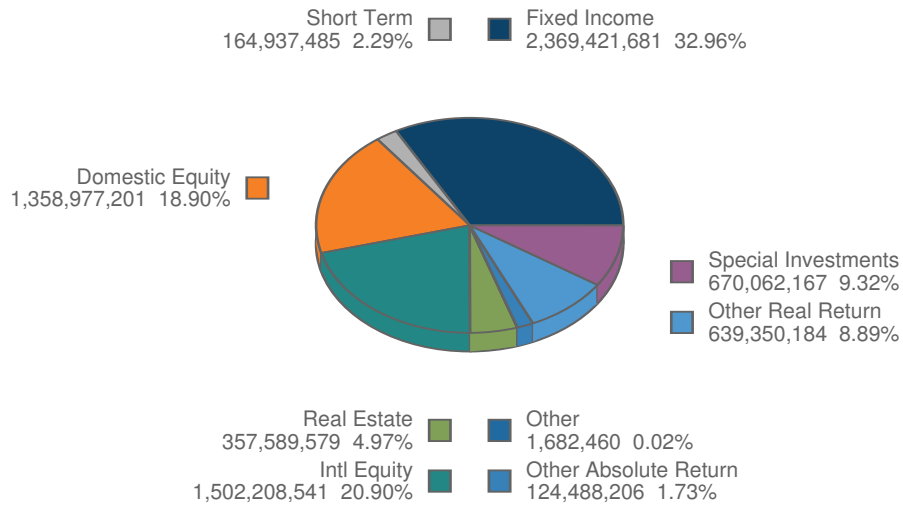
\$684,855,132

ACTUAL ALLOCATION VS POLICY ALLOCATION

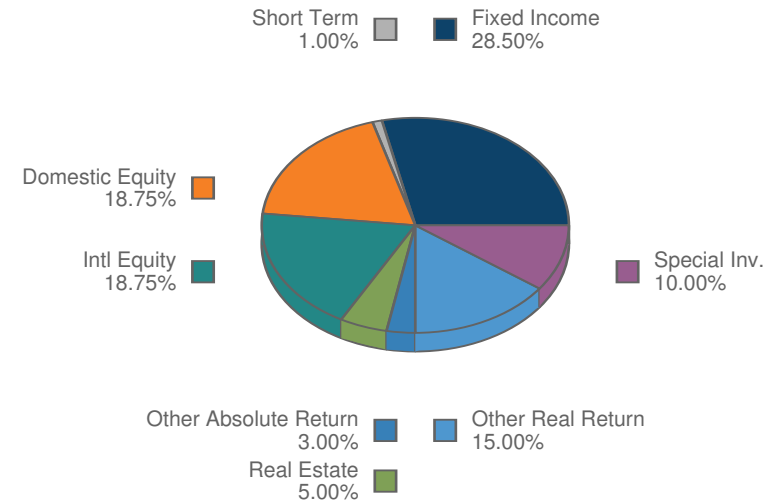
CERS Pension Plan Composite

As of June 30, 2019

Total Fund



Policy Index



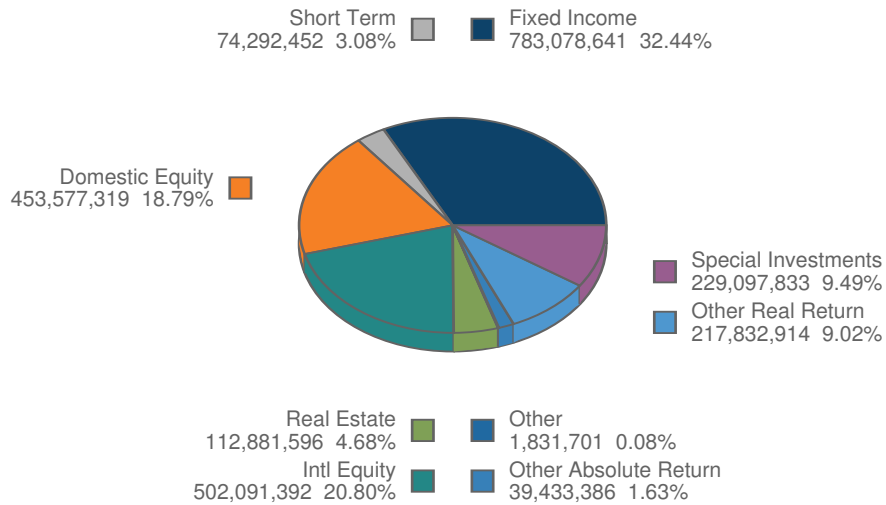
\$7,188,717,503

ACTUAL ALLOCATION VS POLICY ALLOCATION

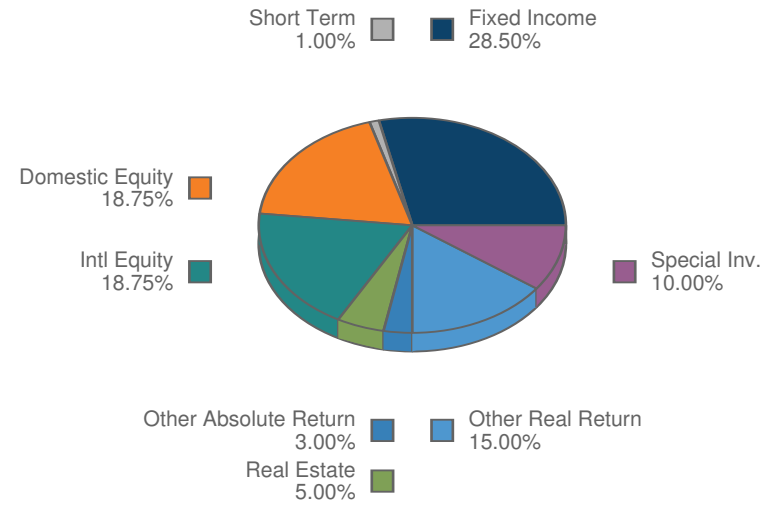
CERS (H) Pension Plan Composite

As of June 30, 2019

Total Fund



Policy Index



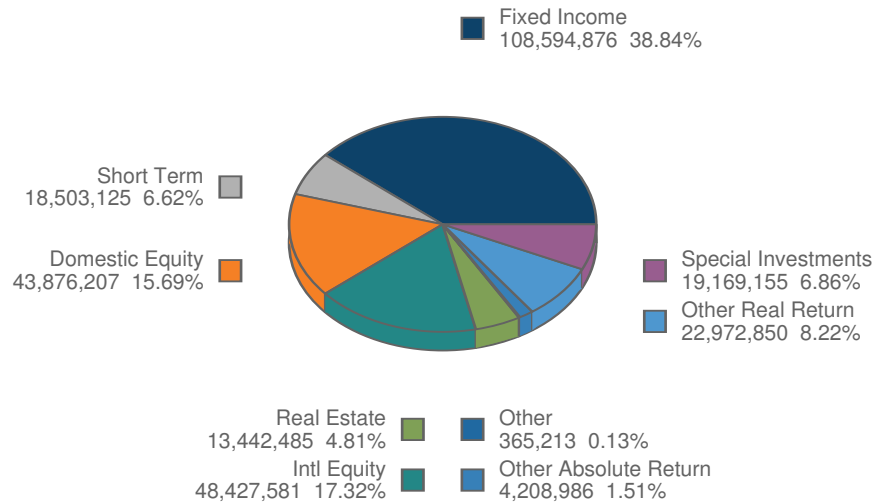
\$2,414,117,233

ACTUAL ALLOCATION VS POLICY ALLOCATION

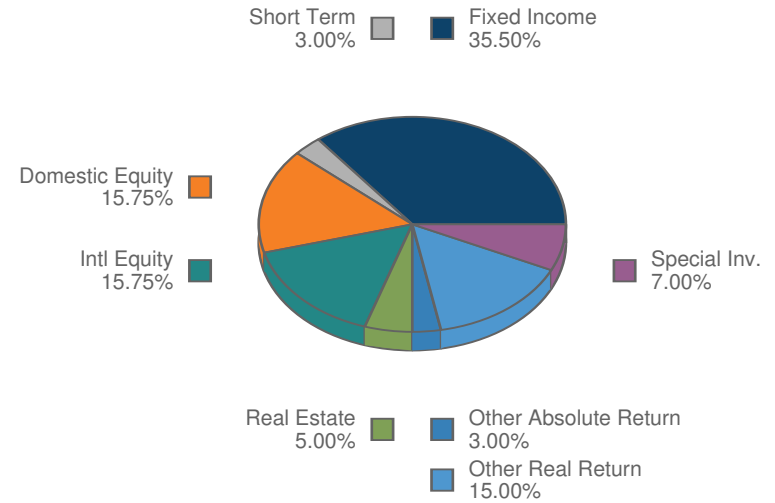
SPRS Pension Plan Composite

As of June 30, 2019

Total Fund



Policy Index

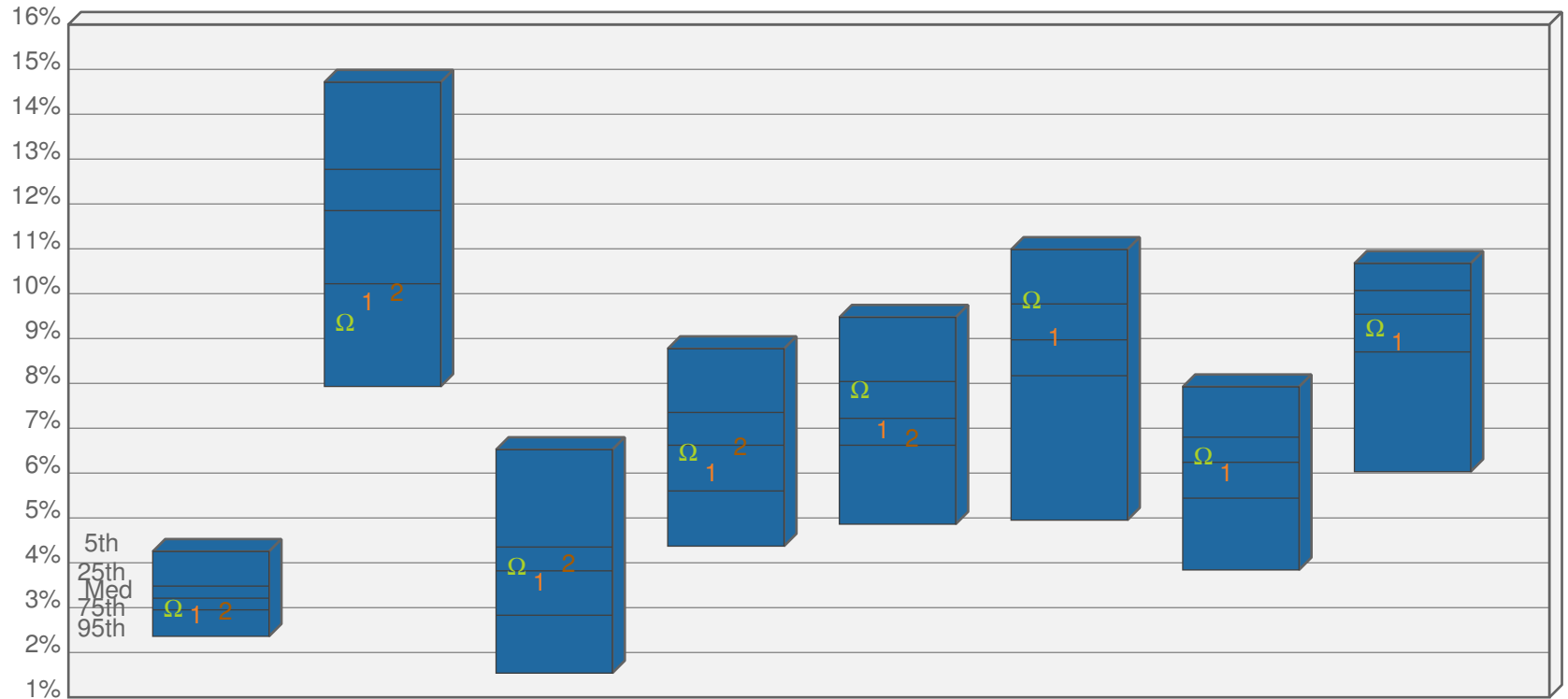


\$279,560,478

PERFORMANCE COMPARISON

KRS Pension Plan Composite

Periods Ended June 30, 2019



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
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Ω KRS Pension Plan
 1 KRS Allocation I
 2 KRS IPS Benchmark

Ω	3.00 (70)	9.37 (84)	3.92 (46)	6.47 (55)	7.87 (30)	9.87 (20)	6.39 (44)	9.23 (64)
1	2.85 (80)	9.82 (79)	3.57 (59)	6.01 (64)	6.97 (64)	9.04 (48)	6.01 (56)	8.92 (71)
2	2.93 (76)	10.04 (77)	4.00 (42)	6.59 (52)	6.78 (70)			

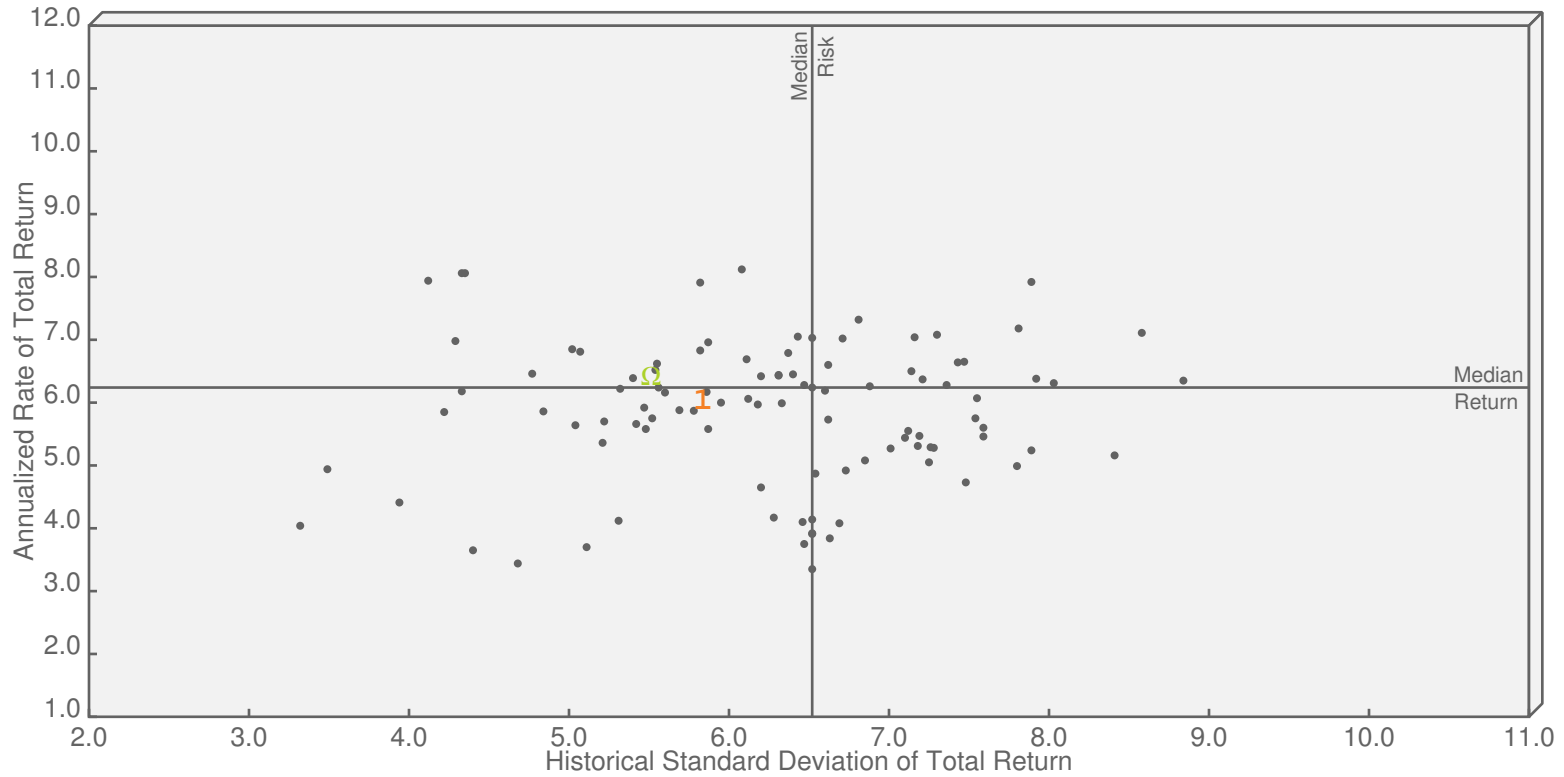
5th %tile	4.25	14.71	6.52	8.77	9.47	10.98	7.92	10.67
25th %tile	3.48	12.77	4.35	7.35	8.04	9.77	6.80	10.07
Median	3.21	11.85	3.82	6.62	7.22	8.97	6.24	9.54
75th %tile	2.95	10.22	2.83	5.60	6.62	8.17	5.44	8.70
95th %tile	2.36	7.93	1.54	4.37	4.86	4.95	3.84	6.03
Number of Funds	148	147	146	146	141	140	132	123

*TUCS Total Ret of Master Trusts - Public Universe - Gross of Fees

RISK / RETURN ANALYSIS

KRS Pension Plan

Five Years Ending June 30, 2019



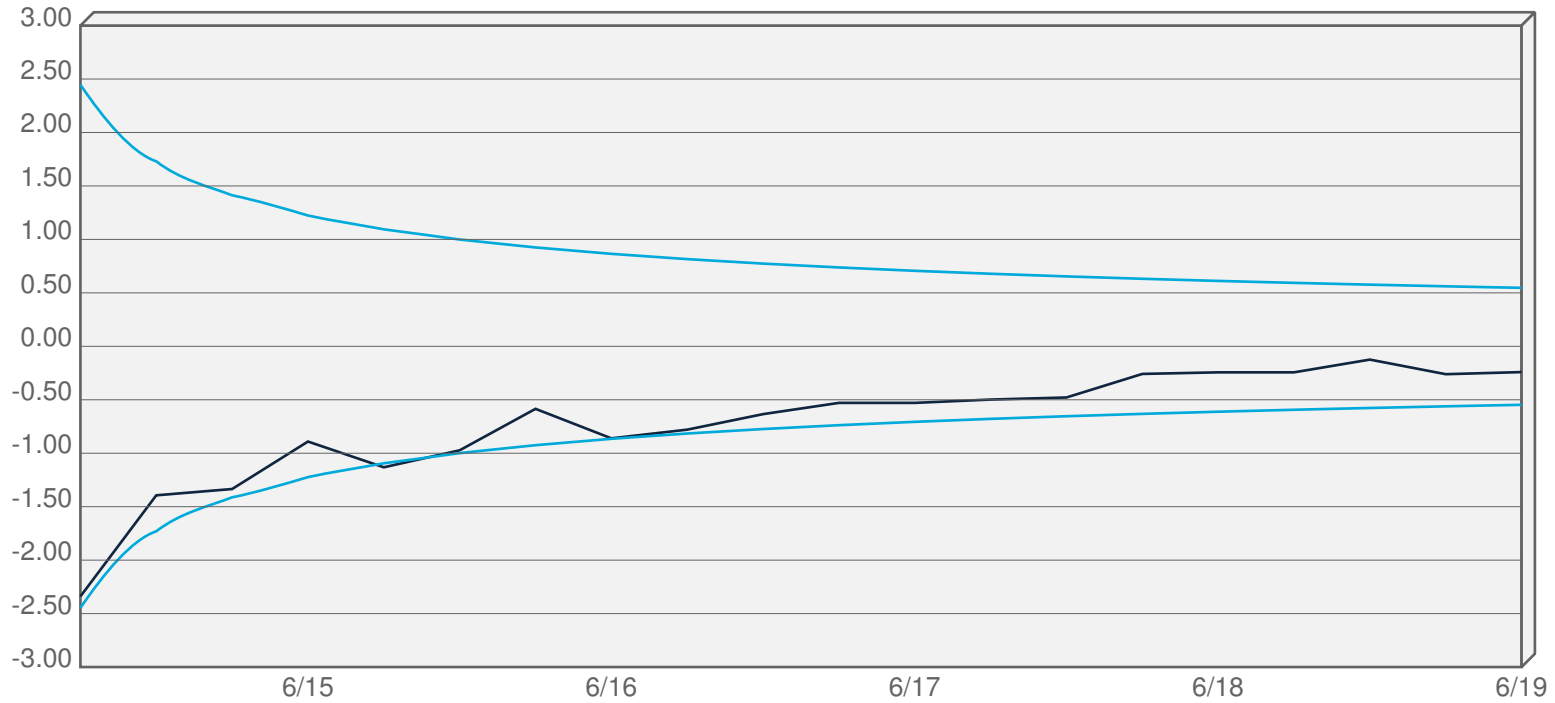
Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
KRS Pension Plan	Ω	6.39	44	5.54	75
KRS Allocation Index	1	6.01	56	5.87	67
Median		6.24		6.52	

*TUCS Total Returns of Master Trusts - Public Universe - Gross of Fees

CUMULATIVE SKILL ANALYSIS

KRS Pension Plan Composite

Five Years Ending June 30, 2019



— Quarterly NOF Value Added vs. KRS Allocation Index

— 80% Confidence Band

Excess Return:	-0.24	Information Ratio:	-0.32
Excess Risk:	0.74	T-Stat:	-0.72

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
KRS Pension Plan									
Net of Fee Return	2.83	9.10	3.46	5.83	9.24	5.76	8.82	3/31/84	9.04
KRS Allocation Index	2.85	9.82	3.57	6.01	9.04	6.01	8.92	3/31/84	9.18
Value Added	-0.02	-0.72	-0.11	-0.18	0.20	-0.25	-0.09	3/31/84	-0.13
KRS IPS Benchmark	2.93	10.04	4.00	6.59					
KERS Pension Plan									
Net of Fee Return	2.58	7.83	3.32	5.72	8.41	5.32	8.59	3/31/84	8.98
KERS Allocation Index	2.76	9.20	3.73	6.17	8.01	5.39	8.61	3/31/84	9.09
Value Added	-0.18	-1.37	-0.41	-0.45	0.40	-0.07	-0.02	3/31/84	-0.11
KERS IPS Benchmark	2.82	9.44	4.17	6.50					
Assumed Rate 5.25%	1.29	2.59	3.91	5.25					
KERS (H) Pension Plan									
Net of Fee Return	2.81	9.13	3.32	5.69	9.21	5.77	8.84	3/31/84	9.05
KERS (H) Allocation Index	2.87	9.89	3.53	6.01	9.37	5.95	8.93	3/31/84	9.18
Value Added	-0.06	-0.76	-0.21	-0.31	-0.16	-0.18	-0.09	3/31/84	-0.13
KERS (H) IPS Benchmark	2.95	10.15	3.96	6.61					
Assumed Rate 6.25%	1.53	3.08	4.65	6.25					
CERS Pension Plan									
Net of Fee Return	2.86	9.32	3.40	5.76	9.39	5.82	8.86	3/31/84	9.05
CERS Allocation Index	2.87	9.91	3.53	6.00	9.39	5.96	8.94	3/31/84	9.18
Value Added	-0.02	-0.59	-0.13	-0.23	0.01	-0.14	-0.08	3/31/84	-0.13
CERS IPS Benchmark	2.96	10.17	3.96	6.60					
Assumed Rate 6.25%	1.53	3.08	4.65	6.25					

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
CERS (H) Pension Plan									
Net of Fee Return	2.87	9.34	3.43	5.81	9.38	5.86	8.87	3/31/84	9.06
CERS (H) Allocation Index	2.88	9.95	3.58	6.05	9.42	5.98	8.95	3/31/84	9.19
Value Added	-0.02	-0.61	-0.14	-0.24	-0.04	-0.12	-0.08	3/31/84	-0.13
CERS (H) IPS Benchmark	2.97	10.21	4.00	6.65					
Assumed Rate 6.25%	1.53	3.08	4.65	6.25					
SPRS Pension Plan									
Net of Fee Return	2.66	8.40	3.50	5.69	8.59	5.14	8.51	3/31/84	8.96
SPRS Allocation Index	2.72	9.00	3.50	6.17	8.82	5.69	8.80	3/31/84	9.14
Value Added	-0.06	-0.60	0.01	-0.47	-0.23	-0.55	-0.28	3/31/84	-0.19
SPRS IPS Benchmark	2.83	9.54	4.23	6.52					
Assumed Rate 5.25%	1.29	2.59	3.91	5.25					

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
US Equity Composite									
Net of Fee Return	4.24	19.10	1.52	7.73	13.33	9.38	14.00	3/31/84	11.26
Russell 3000	4.10	18.71	1.74	8.98	14.02	10.19	14.70	3/31/84	11.32
Value Added	0.14	0.38	-0.22	-1.25	-0.69	-0.81	-0.71	3/31/84	-0.06
Non-US Equity Composite									
Net of Fee Return	3.29	14.82	0.48	1.16	10.47	3.45	7.26	6/30/00	3.30
Policy Index	2.74	13.33	-0.13	0.26	9.36	2.36	6.94	6/30/00	3.36
Value Added	0.55	1.49	0.61	0.90	1.11	1.09	0.32	6/30/00	-0.06
Core Fixed Composite									
Net of Fee Return	2.63	5.47	6.45					9/30/18	6.45
Bloomberg Universal	3.11	6.54	7.78					9/30/18	7.78
Value Added	-0.48	-1.07	-1.33					9/30/18	-1.33
Opportunistic Fixed Composite									
Net of Fee Return	2.45	6.58	5.18					9/30/18	5.18
Bloomberg High Yield	2.50	9.94	4.96					9/30/18	4.96
Value Added	-0.05	-3.36	0.22					9/30/18	0.22
Fixed Income Composite									
Net of Fee Return	2.55	5.99	5.76	7.12	4.89	4.16	5.65	3/31/84	7.48
Policy Index	2.82	8.26	6.41	7.83	5.18	4.92	5.17	3/31/84	7.33
Value Added	-0.27	-2.26	-0.65	-0.71	-0.30	-0.76	0.48	3/31/84	0.14
Bloomberg Global Aggregate	3.29	5.57	6.83	5.85	1.62	1.20	2.89		
Real Return Composite									
Net of Fee Return	2.06	9.01	4.39	5.05	4.82	2.26		6/30/11	3.87
Real Return Index (P)	2.18	8.36	4.67	5.32	3.03	1.66		6/30/11	2.87
Value Added	-0.12	0.65	-0.29	-0.27	1.79	0.60		6/30/11	1.01

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Real Estate Composite									
Net of Fee Return	1.19	2.63	4.47	7.25	8.89	8.74	8.92	6/30/84	6.09
NCREIF ODCE NOF 1 Quarter Lag	1.20	2.74	4.66	6.55	7.01	9.17	7.73		
Value Added	-0.01	-0.10	-0.19	0.70	1.88	-0.43	1.19		
Absolute Return Composite									
Net of Fee Return	-0.49	0.49	-0.65	-0.53	3.43	1.82		3/31/10	3.64
HFRI FOF Div (1 Month Lag)	1.02	3.02	-0.19	0.17	3.48	2.12		3/31/10	2.74
Value Added	-1.52	-2.53	-0.46	-0.70	-0.05	-0.30		3/31/10	0.90
Private Equity Composite									
Net of Fee Return	3.40	1.34	5.77	11.51	12.95	10.74	13.92	6/30/02	11.20
KRS Short Term PE Index	3.40	1.34	5.77	11.51	12.95	10.74	13.92	6/30/02	11.20
Value Added	0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	6/30/02	-0.00
Russell 3000 +3% Qtr Lag	14.86	-0.78	7.07	12.06	17.84	14.35	17.31	6/30/02	11.02
Cash Composite									
Net of Fee Return	0.72	1.41	2.01	2.53	1.83	1.22	0.90	12/31/87	3.56
91-Day Treasury Bill	0.64	1.24	1.82	2.32	1.38	0.87	0.49	12/31/87	3.26
Value Added	0.08	0.17	0.19	0.21	0.44	0.35	0.41	12/31/87	0.30
Other Assets									
Net of Fee Return	0.00	0.00	0.00	0.00	0.00	0.00	0.17	3/31/99	3.00

CUSTOM BENCHMARK SPECIFICATION

KRS Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description
KRS Allocation Index	6/84	6/17	100.00	KRS Allocation Index
	9/17	9/17	10.00	HFRI Diversified Index
			25.20	MSCI ACWI Ex USA IMI Index (\$G)
			25.60	Russell 3000
			7.00	Bloomberg Universal
			7.00	Bloomberg High Yield
			8.00	Real Return Index (P)
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			10.00	KRS Short Term PE Benchmark
			2.20	91-Day Treasury Bill
	12/17	3/18	10.00	HFRI Diversified Index
			9.00	Bloomberg High Yield
			9.00	Bloomberg Universal
2.20			91-Day Treasury Bill	
23.20			MSCI ACWI Ex USA IMI (\$N)	
5.00			NCREIF ODCE NOF 1 Quarter Lag	
8.00			Real Return Index (P)	
10.00			KRS Short Term PE Benchmark	
23.60			Russell 3000	
6/18	6/19	17.00	Russell 3000	
		21.00	MSCI ACWI Ex USA IMI (\$N)	
		10.00	HFRI Diversified Index	
		10.00	Real Return Index (P)	
		12.40	Bloomberg High Yield	
		13.00	Bloomberg Universal	
		5.00	NCREIF ODCE NOF 1 Quarter Lag	
		9.40	KRS Short Term PE Benchmark	
2.20	91-Day Treasury Bill			
KRS IPS Benchmark	9/17	9/17	17.50	Russell 3000

CUSTOM BENCHMARK SPECIFICATION

KRS Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description	
KRS IPS Benchmark (cont.)			17.50	MSCI ACWI Ex USA IMI Index (\$G)	
			22.70	Bloomberg High Yield	
			5.10	Bloomberg Universal	
			10.00	Real Return Index (P)	
			5.00	NCREIF ODCE NOF 1 Quarter Lag	
			10.00	HFRI FOF Div (1 Month Lag)	
			10.00	KRS Short Term PE Benchmark	
			2.20	91-Day Treasury Bill	
		12/17	6/18	2.20	91-Day Treasury Bill
				10.00	KRS Short Term PE Benchmark
				10.00	HFRI FOF Div (1 Month Lag)
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				10.00	Real Return Index (P)
				5.10	Bloomberg Universal
				22.70	Bloomberg High Yield
				17.50	MSCI ACWI Ex USA IMI (\$N)
				17.50	Russell 3000
		9/18	6/19	18.25	Russell 3000
				18.25	MSCI ACWI Ex USA IMI (\$N)
				14.75	Bloomberg Universal
				15.00	Bloomberg High Yield
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				3.00	HFRI Diversified Index
				15.00	Real Return Index (P)
				9.50	KRS Short Term PE Benchmark
				1.25	91-Day Treasury Bill

CUSTOM BENCHMARK SPECIFICATION

KERS Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description
KERS Allocation Index	6/84	6/17	100.00	KERS Allocation Index
	9/17	9/17	10.00	HFRI Diversified Index
			5.00	91-Day Treasury Bill
			10.00	KERS Short Term PE Benchmark
			3.00	NCREIF ODCE NOF 1 Quarter Lag
			10.00	Real Return Index (P)
			5.00	Bloomberg Global Aggregate
			5.00	Bloomberg High Yield
			10.00	Bloomberg Aggregate
			22.00	Russell 3000
			20.00	MSCI ACWI Ex USA IMI Index (\$G)
	12/17	3/18	10.00	HFRI Diversified Index
			20.00	Russell 3000
			10.00	KERS Short Term PE Benchmark
			8.00	Real Return Index (P)
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			18.00	MSCI ACWI Ex USA IMI (\$N)
			3.00	91-Day Treasury Bill
			12.00	Bloomberg Universal
	6/18	6/19	14.00	Bloomberg High Yield
			3.00	91-Day Treasury Bill
			10.00	KERS Short Term PE Benchmark
			5.00	NCREIF ODCE NOF 1 Quarter Lag
15.00			Bloomberg Universal	
15.00			Bloomberg High Yield	
11.50			Real Return Index (P)	
7.00	HFRI Diversified Index			
18.75	MSCI ACWI Ex USA IMI (\$N)			
14.75	Russell 3000			

CUSTOM BENCHMARK SPECIFICATION

KERS Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description
KERS IPS Benchmark	9/17	9/17	17.50	Russell 3000
			17.50	MSCI ACWI Ex USA IMI Index (\$G)
			17.00	Bloomberg High Yield
			10.00	Bloomberg Universal
			10.00	Real Return Index (P)
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			10.00	HFRI FOF Div (1 Month Lag)
			10.00	KERS Short Term PE Benchmark
			3.00	91-Day Treasury Bill
	12/17	6/18	17.50	Russell 3000
			17.50	MSCI ACWI Ex USA IMI (\$N)
			17.00	Bloomberg High Yield
			10.00	Bloomberg Universal
			10.00	Real Return Index (P)
			5.00	NCREIF ODCE NOF 1 Quarter Lag
10.00			HFRI FOF Div (1 Month Lag)	
10.00			KERS Short Term PE Benchmark	
3.00			91-Day Treasury Bill	
9/18	6/19	3.00	91-Day Treasury Bill	
		5.00	NCREIF ODCE NOF 1 Quarter Lag	
		15.75	MSCI ACWI Ex USA IMI (\$N)	
	6/19	15.75	Russell 3000	
		3.00	HFRI Diversified Index	
		15.00	Bloomberg High Yield	
		7.00	KERS Short Term PE Benchmark	
		20.50	Bloomberg Universal	
		15.00	Real Return Index (P)	
Assumed Rate 5.25%	9/17	6/19	100.00	Assumed Rate 5.25%

CUSTOM BENCHMARK SPECIFICATION

KERS (H) Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description
KERS (H) Allocation Index	6/84	6/17	100.00	KERS (H) Allocation Index
	9/17	9/17	10.00	HFRI Diversified Index
			2.00	91-Day Treasury Bill
			10.00	KERS (H) Short Term PE Benchmark
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			8.00	Real Return Index (P)
			6.00	Bloomberg High Yield
			6.00	Bloomberg Universal
			26.50	Russell 3000
	26.50	MSCI ACWI Ex USA IMI Index (\$G)		
	12/17	3/18	10.00	HFRI Diversified Index
			24.50	Russell 3000
			10.00	KERS (H) Short Term PE Benchmark
			8.00	Real Return Index (P)
			5.00	NCREIF ODCE NOF 1 Quarter Lag
24.50			MSCI ACWI Ex USA IMI (\$N)	
2.00			91-Day Treasury Bill	
8.00			Bloomberg Universal	
8.00	Bloomberg High Yield			
6/18	6/19	2.00	91-Day Treasury Bill	
		10.00	KERS (H) Short Term PE Benchmark	
		5.00	NCREIF ODCE NOF 1 Quarter Lag	
		12.00	Bloomberg Universal	
		11.00	Bloomberg High Yield	
		11.00	Real Return Index (P)	
		10.00	HFRI Diversified Index	
		21.50	MSCI ACWI Ex USA IMI (\$N)	
17.50	Russell 3000			
KERS (H) IPS Benchmark	9/17	9/17	17.50	Russell 3000

CUSTOM BENCHMARK SPECIFICATION

KERS (H) Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description	
KERS (H) IPS Benchmark (cont.)			17.50	MSCI ACWI Ex USA IMI Index (\$G)	
			24.00	Bloomberg High Yield	
			4.00	Bloomberg Universal	
			10.00	Real Return Index (P)	
			5.00	NCREIF ODCE NOF 1 Quarter Lag	
			10.00	HFRI FOF Div (1 Month Lag)	
			10.00	KERS (H) Short Term PE Benchmark	
			2.00	91-Day Treasury Bill	
		12/17	6/18	17.50	Russell 3000
				17.50	MSCI ACWI Ex USA IMI (\$N)
				24.00	Bloomberg High Yield
				4.00	Bloomberg Universal
				10.00	Real Return Index (P)
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				10.00	HFRI FOF Div (1 Month Lag)
				10.00	KERS (H) Short Term PE Benchmark
				2.00	91-Day Treasury Bill
		9/18	6/19	18.75	Russell 3000
				18.75	MSCI ACWI Ex USA IMI (\$N)
				13.50	Bloomberg Universal
				15.00	Bloomberg High Yield
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				3.00	HFRI Diversified Index
				15.00	Real Return Index (P)
			10.00	KERS (H) Short Term PE Benchmark	
			1.00	91-Day Treasury Bill	
Assumed Rate 6.25%	9/17	6/19	100.00	Assumed Rate 6.25%	

CUSTOM BENCHMARK SPECIFICATION

CERS Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description
CERS Allocation Index	6/84	6/17	100.00	CERS Allocation Index
	9/17	9/17	10.00	HFRI Diversified Index
			2.00	91-Day Treasury Bill
			10.00	CERS Short Term PE Benchmark
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			8.00	Real Return Index (P)
			6.00	Bloomberg High Yield
			6.00	Bloomberg Universal
			26.50	Russell 3000
			26.50	MSCI ACWI Ex USA IMI Index (\$G)
			12/17	3/18
	24.50	Russell 3000		
	10.00	CERS Short Term PE Benchmark		
	8.00	Real Return Index (P)		
	5.00	NCREIF ODCE NOF 1 Quarter Lag		
	24.50	MSCI ACWI Ex USA IMI (\$N)		
	2.00	91-Day Treasury Bill		
	8.00	Bloomberg Universal		
	8.00	Bloomberg High Yield		
	6/18	6/19		
10.00			CERS Short Term PE Benchmark	
5.00			NCREIF ODCE NOF 1 Quarter Lag	
12.00			Bloomberg Universal	
11.00			Bloomberg High Yield	
11.00			Real Return Index (P)	
10.00			HFRI Diversified Index	
21.50			MSCI ACWI Ex USA IMI (\$N)	
17.50			Russell 3000	
CERS IPS Benchmark			9/17	9/17

CUSTOM BENCHMARK SPECIFICATION

CERS Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description	
CERS IPS Benchmark (cont.)			17.50	MSCI ACWI Ex USA IMI Index (\$G)	
			24.00	Bloomberg High Yield	
			4.00	Bloomberg Universal	
			10.00	Real Return Index (P)	
			5.00	NCREIF ODCE NOF 1 Quarter Lag	
			10.00	HFRI FOF Div (1 Month Lag)	
			10.00	CERS Short Term PE Benchmark	
			2.00	91-Day Treasury Bill	
		12/17	6/18	17.50	Russell 3000
				17.50	MSCI ACWI Ex USA IMI (\$N)
				24.00	Bloomberg High Yield
				4.00	Bloomberg Universal
				10.00	Real Return Index (P)
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				10.00	HFRI FOF Div (1 Month Lag)
				10.00	CERS Short Term PE Benchmark
				2.00	91-Day Treasury Bill
		9/18	6/19	18.75	Russell 3000
				18.75	MSCI ACWI Ex USA IMI (\$N)
				13.50	Bloomberg Universal
				15.00	Bloomberg High Yield
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				3.00	HFRI Diversified Index
				15.00	Real Return Index (P)
				10.00	CERS Short Term PE Benchmark
				1.00	91-Day Treasury Bill
	Assumed Rate 6.25%	9/17	6/19	100.00	Assumed Rate 6.25%

CUSTOM BENCHMARK SPECIFICATION

CERS (H) Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description
CERS (H) Allocation Index	6/84	6/17	100.00	CERS (H) Allocation Index
	9/17	9/17	10.00	HFRI Diversified Index
			2.00	91-Day Treasury Bill
			10.00	CERS (H) Short Term PE Benchmark
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			8.00	Real Return Index (P)
			6.00	Bloomberg High Yield
			6.00	Bloomberg Universal
			26.50	Russell 3000
	26.50	MSCI ACWI Ex USA IMI Index (\$G)		
	12/17	3/18	10.00	HFRI Diversified Index
			8.00	Bloomberg High Yield
			8.00	Bloomberg Universal
			2.00	91-Day Treasury Bill
			24.50	MSCI ACWI Ex USA IMI (\$N)
5.00			NCREIF ODCE NOF 1 Quarter Lag	
8.00			Real Return Index (P)	
10.00			CERS (H) Short Term PE Benchmark	
24.50	Russell 3000			
6/18	6/19	2.00	91-Day Treasury Bill	
		10.00	CERS (H) Short Term PE Benchmark	
		5.00	NCREIF ODCE NOF 1 Quarter Lag	
		12.00	Bloomberg Universal	
		11.00	Bloomberg High Yield	
		11.00	Real Return Index (P)	
		10.00	HFRI Diversified Index	
		21.50	MSCI ACWI Ex USA IMI (\$N)	
17.50	Russell 3000			
CERS (H) IPS Benchmark	9/17	9/17	17.50	Russell 3000

CUSTOM BENCHMARK SPECIFICATION

CERS (H) Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description	
CERS (H) IPS Benchmark (cont.)			17.50	MSCI ACWI Ex USA IMI Index (\$G)	
			24.00	Bloomberg High Yield	
			4.00	Bloomberg Universal	
			10.00	Real Return Index (P)	
			5.00	NCREIF ODCE NOF 1 Quarter Lag	
			10.00	HFRI FOF Div (1 Month Lag)	
			10.00	CERS (H) Short Term PE Benchmark	
			2.00	91-Day Treasury Bill	
		12/17	6/18	2.00	91-Day Treasury Bill
				10.00	CERS (H) Short Term PE Benchmark
				10.00	HFRI FOF Div (1 Month Lag)
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				10.00	Real Return Index (P)
				4.00	Bloomberg Universal
				24.00	Bloomberg High Yield
				17.50	MSCI ACWI Ex USA IMI (\$N)
				17.50	Russell 3000
		9/18	6/19	18.75	Russell 3000
				18.75	MSCI ACWI Ex USA IMI (\$N)
				13.50	Bloomberg Universal
				15.00	Bloomberg High Yield
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				3.00	HFRI Diversified Index
				15.00	Real Return Index (P)
				10.00	CERS (H) Short Term PE Benchmark
				1.00	91-Day Treasury Bill
	Assumed Rate 6.25%	9/17	6/19	100.00	Assumed Rate 6.25%

CUSTOM BENCHMARK SPECIFICATION

SPRS Pension Plan

June 30, 2019

	Quarter Start	Quarter End	Percent	Description
SPRS Allocation Index	6/84	6/17	100.00	SPRS Allocation Index
	9/17	9/17	10.00	HFRI Diversified Index
			3.00	91-Day Treasury Bill
			10.00	SPRS Short Term PE Benchmark
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			8.00	Real Return Index (P)
			9.00	Bloomberg High Yield
			9.00	Bloomberg Universal
			23.00	Russell 3000
	23.00	MSCI ACWI Ex USA IMI Index (\$G)		
	12/17	3/18	10.00	HFRI Diversified Index
			21.00	Russell 3000
			10.00	SPRS Short Term PE Benchmark
			8.00	Real Return Index (P)
			5.00	NCREIF ODCE NOF 1 Quarter Lag
21.00			MSCI ACWI Ex USA IMI (\$N)	
3.00			91-Day Treasury Bill	
11.00	Bloomberg Universal			
11.00	Bloomberg High Yield			
6/18	6/19	3.00	91-Day Treasury Bill	
		15.00	SPRS Short Term PE Benchmark	
		5.00	NCREIF ODCE NOF 1 Quarter Lag	
		7.00	Bloomberg Universal	
		15.00	Bloomberg High Yield	
		11.50	Real Return Index (P)	
		10.00	HFRI Diversified Index	
		18.75	MSCI ACWI Ex USA IMI (\$N)	
14.75	Russell 3000			
SPRS IPS Benchmark	9/17	9/17	17.50	Russell 3000

CUSTOM BENCHMARK SPECIFICATION

SPRS Pension Plan

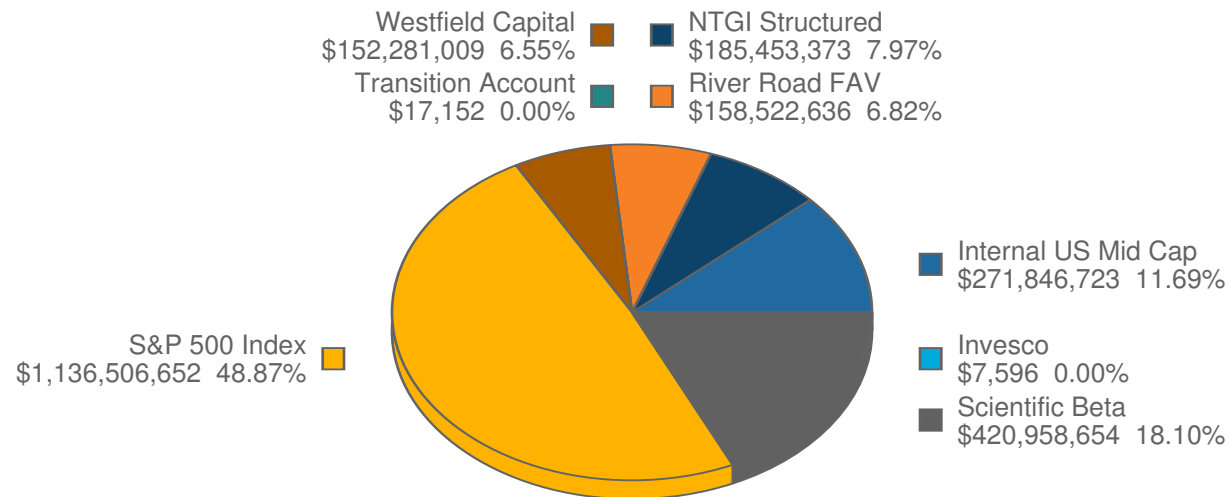
June 30, 2019

	Quarter Start	Quarter End	Percent	Description	
SPRS IPS Benchmark (cont.)			17.50	MSCI ACWI Ex USA IMI Index (\$G)	
			17.00	Bloomberg High Yield	
			10.00	Bloomberg Universal	
			10.00	Real Return Index (P)	
			5.00	NCREIF ODCE NOF 1 Quarter Lag	
			10.00	HFRI FOF Div (1 Month Lag)	
			10.00	SPRS Short Term PE Benchmark	
			3.00	91-Day Treasury Bill	
		12/17	6/18	17.50	Russell 3000
				17.50	MSCI ACWI Ex USA IMI (\$N)
				17.00	Bloomberg High Yield
				10.00	Bloomberg Universal
				10.00	Real Return Index (P)
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				10.00	HFRI FOF Div (1 Month Lag)
				10.00	SPRS Short Term PE Benchmark
				3.00	91-Day Treasury Bill
		9/18	6/19	3.00	91-Day Treasury Bill
				7.00	SPRS Short Term PE Benchmark
				15.00	Real Return Index (P)
				3.00	HFRI Diversified Index
				5.00	NCREIF ODCE NOF 1 Quarter Lag
				15.00	Bloomberg High Yield
				20.50	Bloomberg Universal
			15.75	MSCI ACWI Ex USA IMI (\$N)	
			15.75	Russell 3000	
Assumed Rate 5.25%	9/17	6/19	100.00	Assumed Rate 5.25%	



US EQUITY

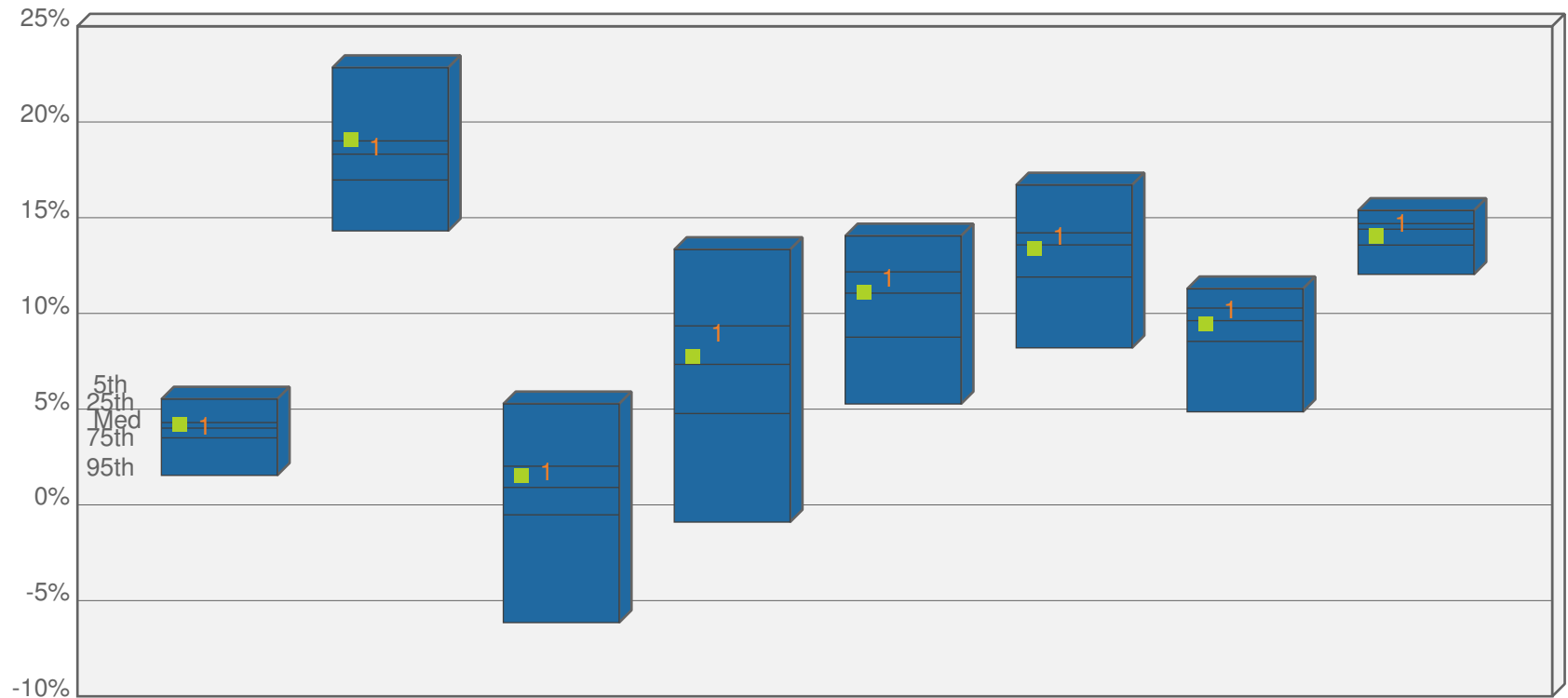
Wilshire Consulting
MANAGER ALLOCATION
 US Equity Composite
As of June 30, 2019



PERFORMANCE COMPARISON

US Equity Composite

Periods Ended June 30, 2019



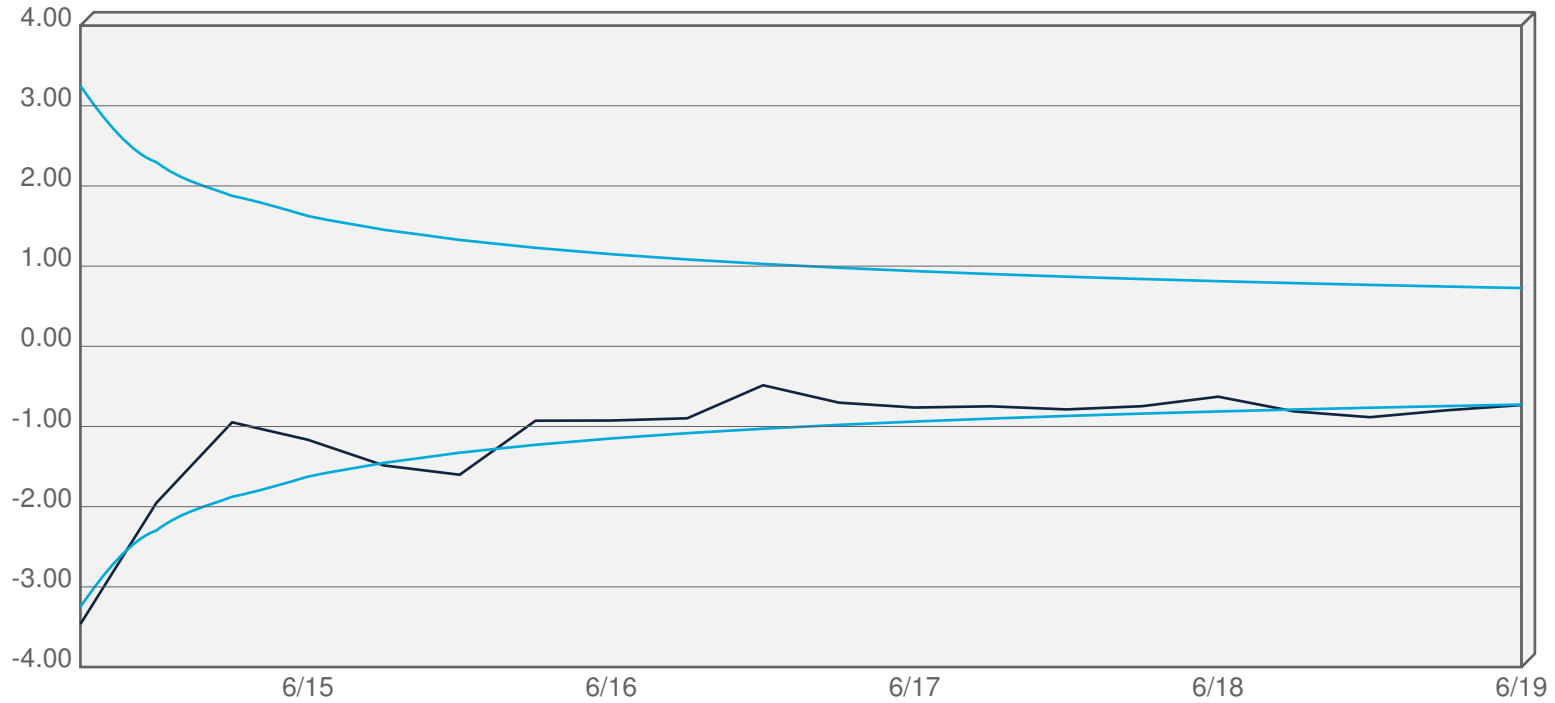
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ US Equity Composite	4.25 (33)	19.14 (21)	1.61 (35)	7.84 (42)	11.19 (43)	13.45 (53)	9.50 (51)	14.10 (61)
┆ Russell 3000	4.10 (42)	18.71 (35)	1.74 (31)	8.98 (29)	11.84 (32)	14.02 (37)	10.19 (29)	14.70 (23)
5th %tile	5.52	22.83	5.27	13.33	14.04	16.70	11.28	15.37
25th %tile	4.30	19.01	2.02	9.35	12.17	14.21	10.28	14.69
Median	4.01	18.32	0.91	7.34	11.06	13.58	9.62	14.40
75th %tile	3.50	16.97	-0.52	4.77	8.76	11.90	8.54	13.57
95th %tile	1.54	14.31	-6.15	-0.90	5.27	8.20	4.86	12.04
Number of Funds	128	128	128	127	113	104	94	73

*TUCS Total Ret of US Equity Investment Pools Universe - Gross of Fees

CUMULATIVE SKILL ANALYSIS

US Equity Composite

Five Years Ending June 30, 2019



— Quarterly NOF Value Added vs. Russell 3000

— 80% Confidence Band

Excess Return:	-0.73	Information Ratio:	-0.74
Excess Risk:	0.99	T-Stat:	-1.66

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
S&P 500 Index									
Net of Fee Return	4.32	18.59	2.71	10.44	14.30	10.75	14.83	6/30/01	7.51
Standard & Poor's 500	4.30	18.54	2.51	10.42	14.19	10.71	14.70	6/30/01	7.11
Value Added	0.02	0.05	0.20	0.02	0.11	0.03	0.13	6/30/01	0.40
Scientific Beta									
Net of Fee Return	4.58	18.83	3.75	9.38	12.08			6/30/16	12.08
Standard & Poor's 500	4.30	18.54	2.51	10.42	14.19			6/30/16	14.19
Value Added	0.28	0.29	1.24	-1.04	-2.11			6/30/16	-2.11
River Road FAV									
Net of Fee Return	4.97	21.45	5.99	13.08	15.98			6/30/16	15.98
Russell 3000 Value	3.68	16.05	1.85	7.34	10.19			6/30/16	10.19
Value Added	1.29	5.40	4.14	5.74	5.79			6/30/16	5.79
Westfield Capital									
Net of Fee Return	5.46	25.36	4.46	12.84	18.45	10.63		6/30/11	13.00
Russell 3000 Growth	4.50	21.41	1.58	10.60	17.81	13.02		6/30/11	14.17
Value Added	0.96	3.95	2.88	2.23	0.64	-2.39		6/30/11	-1.17
Internal US Mid Cap									
Net of Fee Return	3.10	18.14	-2.02	1.89	11.45			9/30/14	9.67
S&P 400 Mid Cap	3.05	17.97	-2.41	1.36	10.90			9/30/14	9.39
Value Added	0.05	0.17	0.38	0.53	0.54			9/30/14	0.28
NTGI Structured									
Net of Fee Return	2.88	17.15	-4.40	-0.74	12.94	8.17	14.95	9/30/99	9.97
Russell 2000	2.10	16.98	-6.65	-3.31	12.30	7.06	13.45	9/30/99	8.23
Value Added	0.79	0.17	2.25	2.57	0.63	1.11	1.50	9/30/99	1.74

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

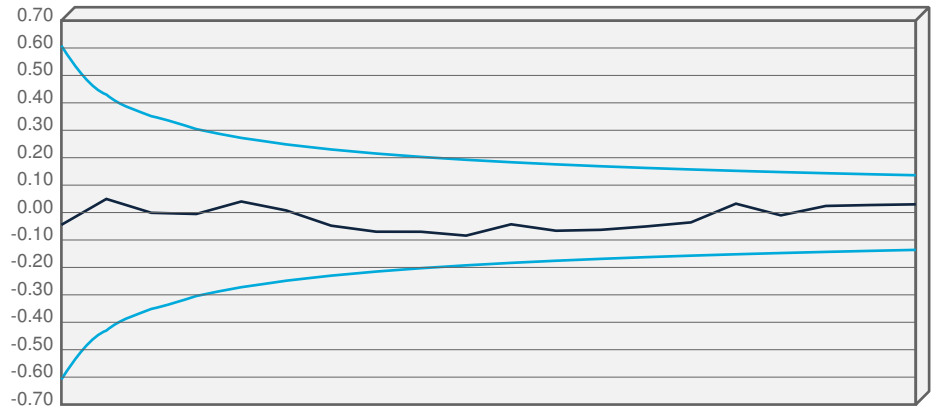
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
US Equity Composite									
Net of Fee Return	4.24	19.10	1.52	7.73	13.33	9.38	14.00	3/31/84	11.26
Russell 3000	4.10	18.71	1.74	8.98	14.02	10.19	14.70	3/31/84	11.32
Value Added	0.14	0.38	-0.22	-1.25	-0.69	-0.81	-0.71	3/31/84	-0.06

INVESTMENT MANAGER ANALYSIS

S&P 500 Index

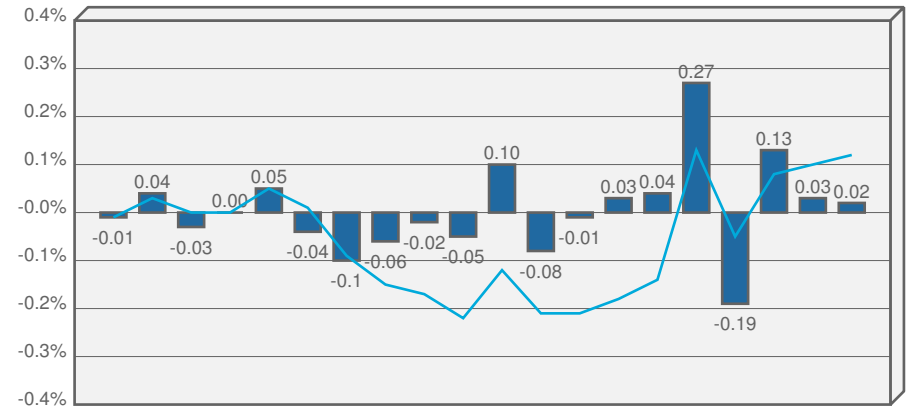
June 30, 2019

Cumulative Skill Analysis vs Benchmark



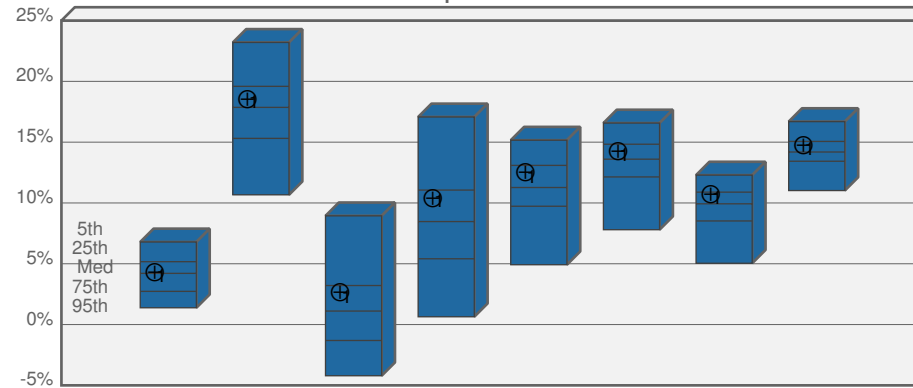
Excess Return:	0.03	Information Ratio:	0.16
Excess Risk:	0.18	T-Stat:	0.36

Value-Added Analysis vs Benchmark



Quarterly NOF Value Added vs. Standard & Poor's 500	0.04	-0.03	0.00	0.05	-0.04	-0.1	-0.06	-0.02	-0.05	0.10	-0.08	-0.01	0.03	0.04	0.27	-0.19	0.13	0.03	0.02
Cumulative Value Added	-0.01	-0.03	0.00	0.05	-0.04	-0.1	-0.06	-0.02	-0.05	0.10	-0.08	-0.01	0.03	0.04	0.27	-0.19	0.13	0.03	0.02

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊕ S&P 500 Index	4.32 (49)	18.59 (41)	2.71 (30)	10.44 (32)	12.58 (31)	14.30 (32)	10.75 (27)	14.83 (32)
⊖ Standard & Poo	4.30 (49)	18.54 (41)	2.51 (32)	10.42 (32)	12.38 (35)	14.19 (34)	10.71 (28)	14.70 (35)
Median	4.21	17.86	1.11	8.47	11.27	13.60	9.93	14.19
Number of Funds	148	148	148	148	147	146	140	120

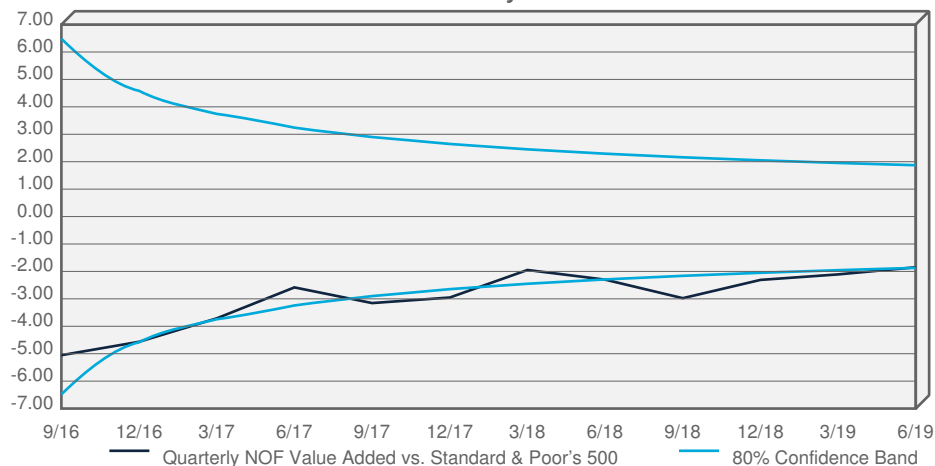
*Compass Total Returns of Active Large Core Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Scientific Beta

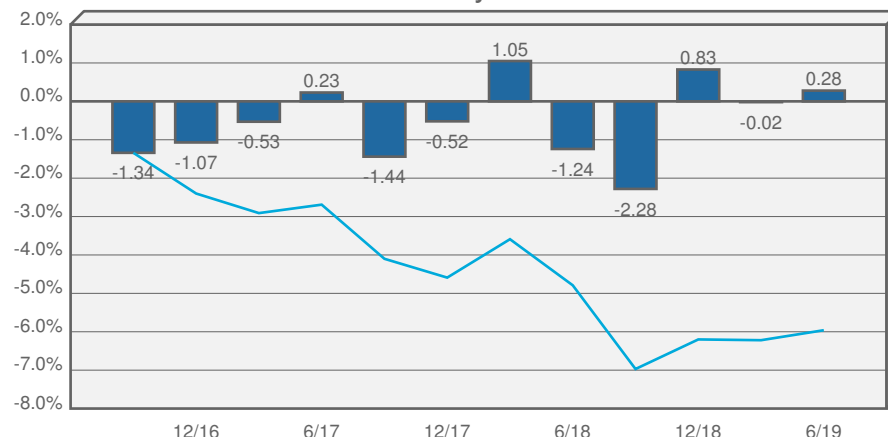
June 30, 2019

Cumulative Skill Analysis vs Benchmark



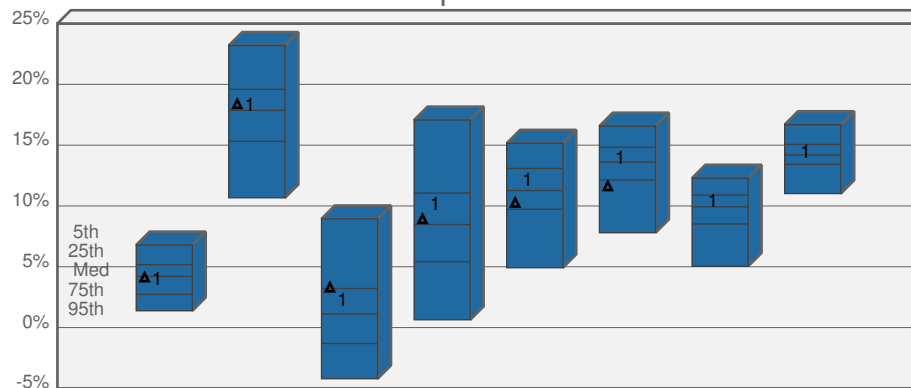
Excess Return:	-1.85	Information Ratio:	-0.94
Excess Risk:	1.97	T-Stat:	-1.62

Value-Added Analysis vs Benchmark



■ Quarterly NOF Value Added vs. Standard & Poor's 500
 — Cumulative Value Added

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▲ Scientific Bet	4.58 (41)	18.83 (37)	3.75 (20)	9.38 (39)	10.72 (60)	12.08 (76)		
■ Standard & Poo	4.30 (49)	18.54 (41)	2.51 (32)	10.42 (32)	12.38 (35)	14.19 (34)	10.71 (28)	14.70 (35)
Median	4.21	17.86	1.11	8.47	11.27	13.60	9.93	14.19
Number of Funds	148	148	148	148	147	146	140	120

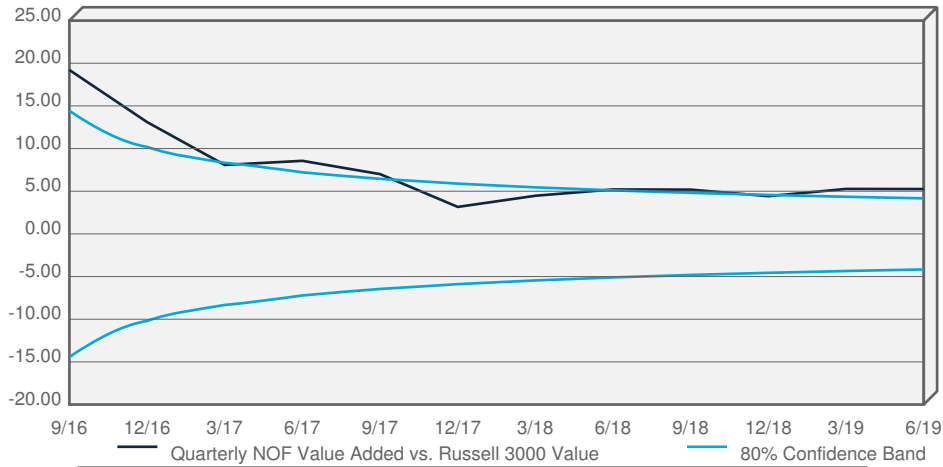
*Compass Total Returns of Active Large Core Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

River Road FAV

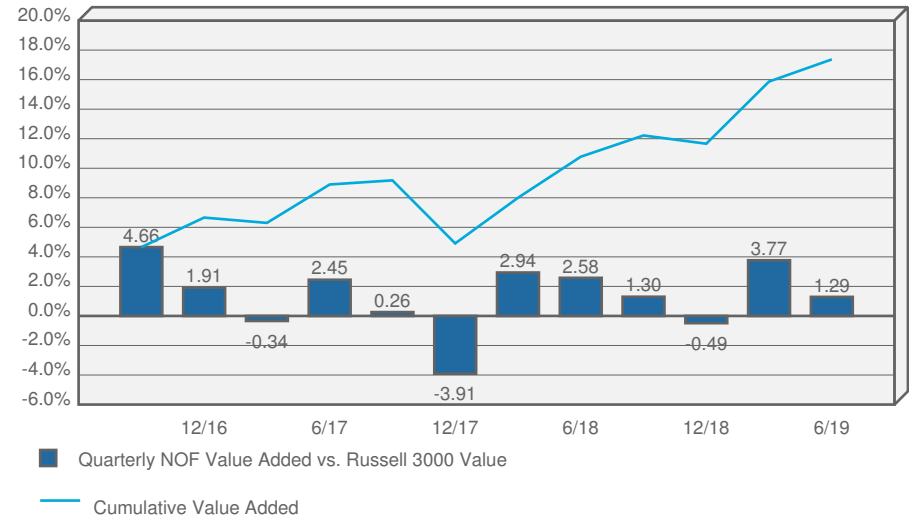
June 30, 2019

Cumulative Skill Analysis vs Benchmark

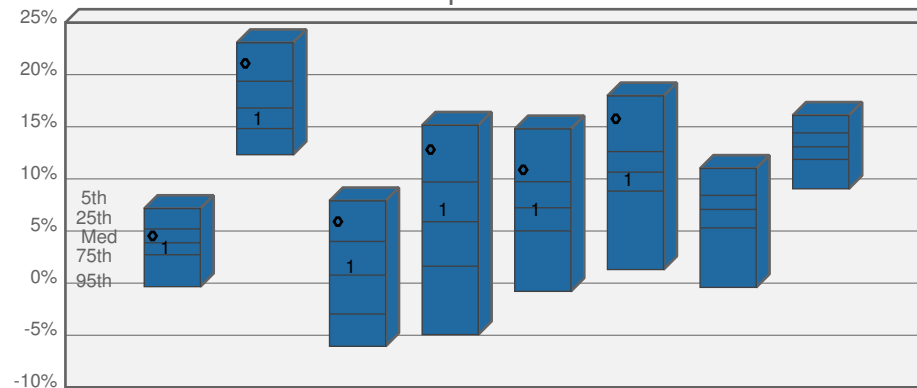


Excess Return:	5.25	Information Ratio:	1.20
Excess Risk:	4.39	T-Stat:	2.08

Value-Added Analysis vs Benchmark



Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◊ River Road FAV	5.04 (26)	21.59 (16)	6.41 (11)	13.32 (7)	11.38 (11)	16.28 (5)		
1 Russell 3000 V	3.68 (52)	16.05 (61)	1.85 (42)	7.34 (42)	7.29 (49)	10.19 (57)		
Median	3.87	16.80	0.77	5.89	7.23	10.65	7.07	13.08
Number of Funds	78	78	78	78	78	78	70	62

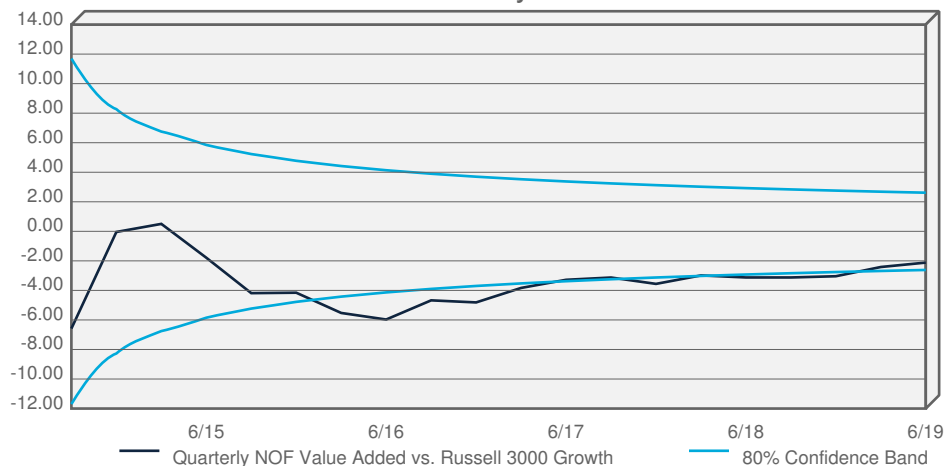
*Compass Total Returns of Active Combination Value Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Westfield Capital

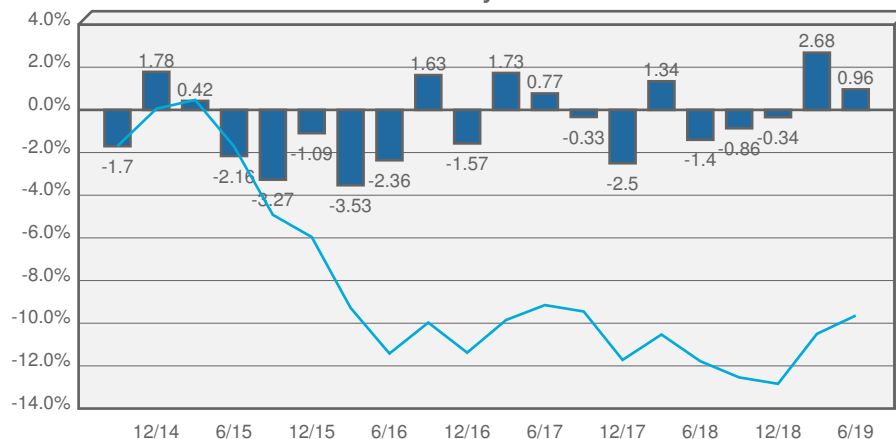
June 30, 2019

Cumulative Skill Analysis vs Benchmark



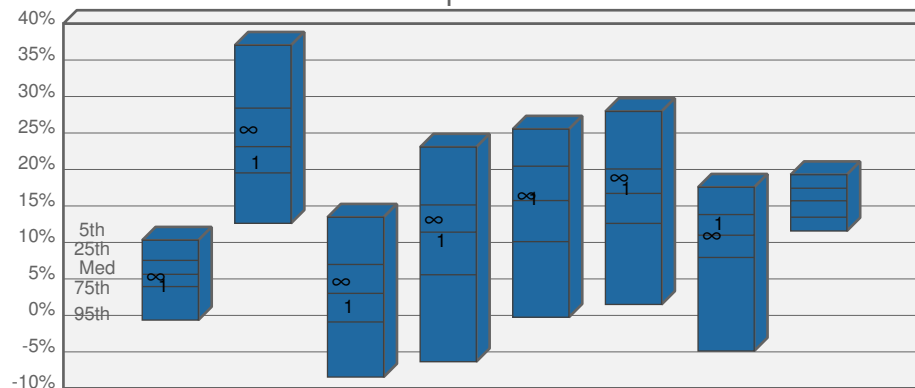
Excess Return:	-2.12	Information Ratio:	-0.60
Excess Risk:	3.56	T-Stat:	-1.33

Value-Added Analysis vs Benchmark



■ Quarterly NOF Value Added vs. Russell 3000 Growth
 — Cumulative Value Added

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
∞ Westfield Capi	5.60 (50)	25.67 (28)	4.90 (37)	13.46 (35)	16.64 (40)	19.09 (32)	11.25 (46)	
1 Russell 3000 G	4.50 (67)	21.41 (69)	1.58 (61)	10.60 (57)	16.39 (44)	17.81 (39)	13.02 (31)	
Median	5.63	23.13	3.02	11.41	15.74	16.72	10.99	15.71
Number of Funds	59	59	59	59	59	58	58	48

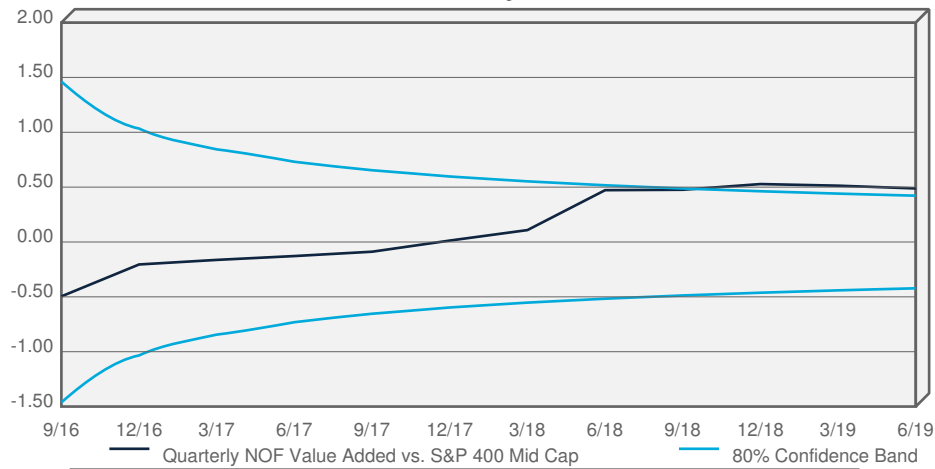
*Compass Total Returns of Active Combination Growth Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Internal US Mid Cap

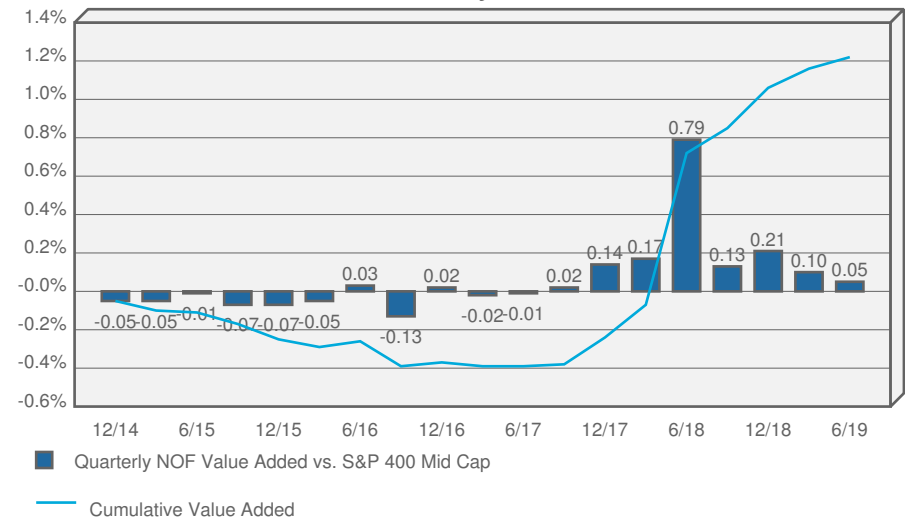
June 30, 2019

Cumulative Skill Analysis vs Benchmark

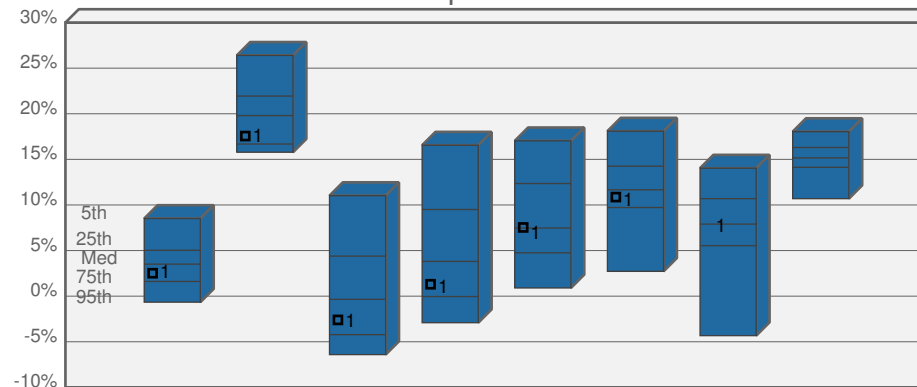


Excess Return:	0.49	Information Ratio:	1.10
Excess Risk:	0.44	T-Stat:	1.90

Value-Added Analysis vs Benchmark



Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Internal US Mi	3.10 (52)	18.14 (52)	-2.02 (57)	1.89 (57)	8.12 (43)	11.45 (55)		
S&P 400 Mid Ca	3.05 (52)	17.97 (54)	-2.41 (63)	1.36 (61)	7.26 (57)	10.90 (59)	8.02 (49)	
Median	3.51	19.80	-0.35	3.81	7.47	11.66	7.90	15.16
Number of Funds	51	51	50	50	50	50	48	39

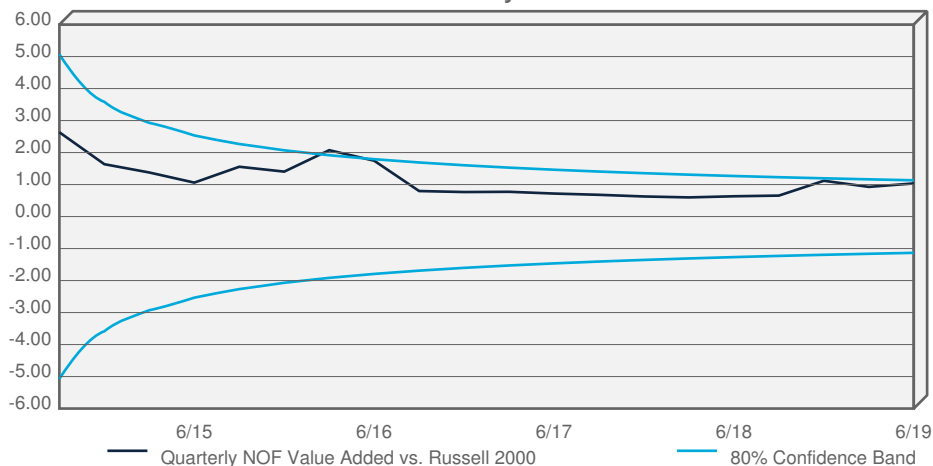
*Compass Total Returns of Active Midcap Core Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

NTGI Structured

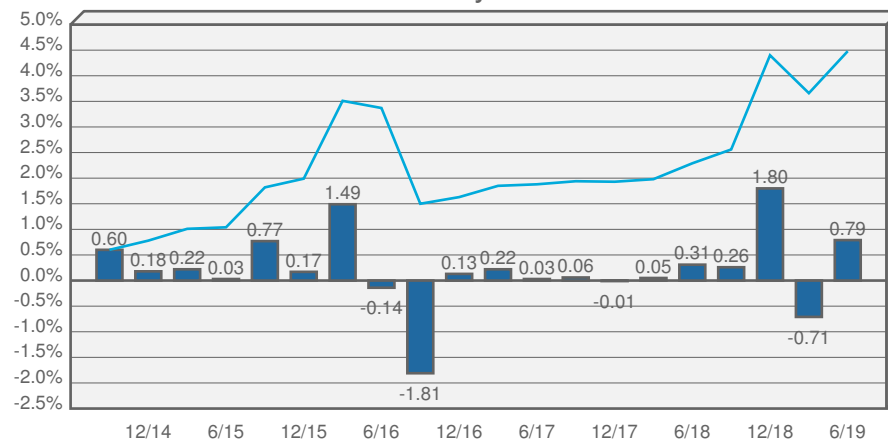
June 30, 2019

Cumulative Skill Analysis vs Benchmark



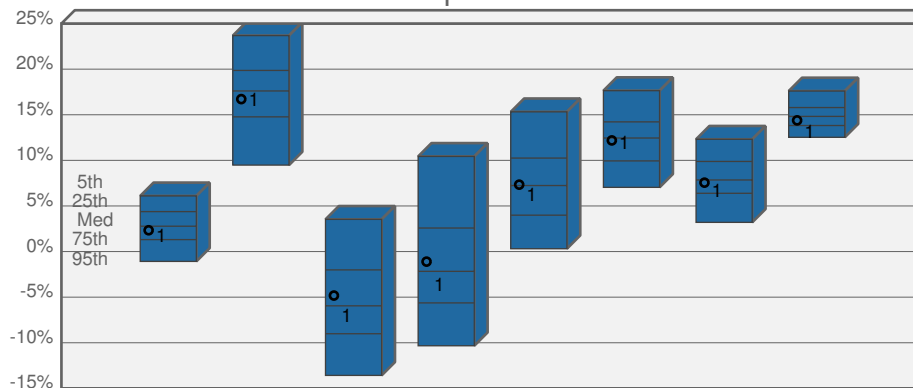
Excess Return:	1.04	Information Ratio:	0.67
Excess Risk:	1.54	T-Stat:	1.50

Value-Added Analysis vs Benchmark



■ Quarterly NOF Value Added vs. Russell 2000
 — Cumulative Value Added

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
○ NTGI Structure	2.92 (47)	17.30 (52)	-4.24 (39)	-0.52 (40)	7.92 (42)	12.77 (40)	8.14 (47)	14.97 (42)
■ Russell 2000	2.10 (59)	16.98 (56)	-6.65 (57)	-3.31 (59)	6.62 (56)	12.30 (50)	7.06 (67)	13.45 (79)
Median	2.78	17.61	-5.95	-2.17	7.24	12.45	7.85	14.82
Number of Funds	121	121	120	120	119	119	117	105

*Compass Total Returns of Active Small Cap Core Equity Portfolios Universe - Gross of Fees

CUSTOM BENCHMARK SPECIFICATION

US Equity Composite

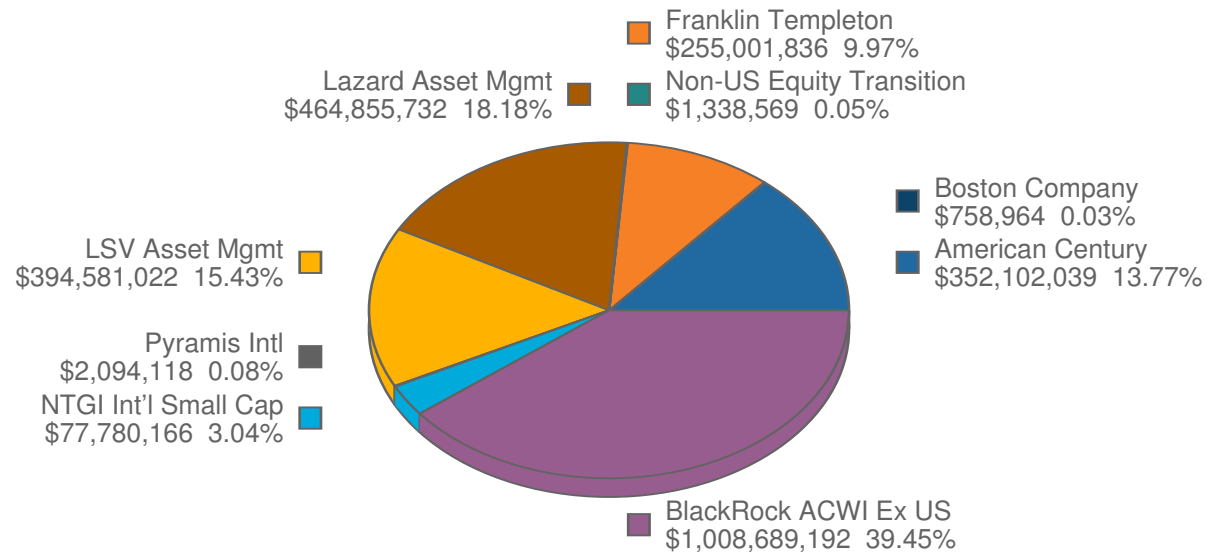
June 30, 2019

	Quarter Start	Quarter End	Percent	Description
Russell 3000	6/84	6/14	100.00	Blended US Equity Index
	9/14	6/19	100.00	Russell 3000



NON-US EQUITY

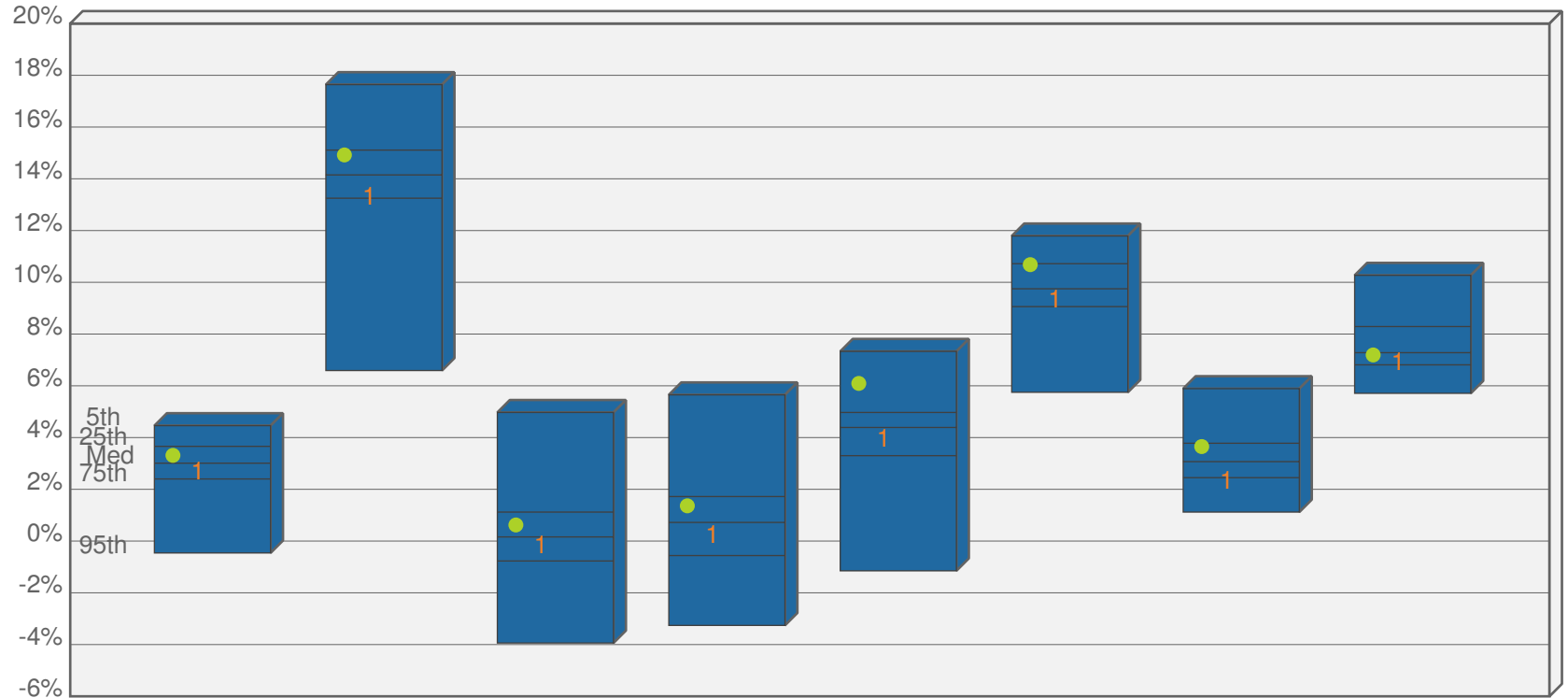
Wilshire Consulting
MANAGER ALLOCATION
 Non-US Equity Composite
As of June 30, 2019



PERFORMANCE COMPARISON

Non-US Equity Composite

Periods Ended June 30, 2019

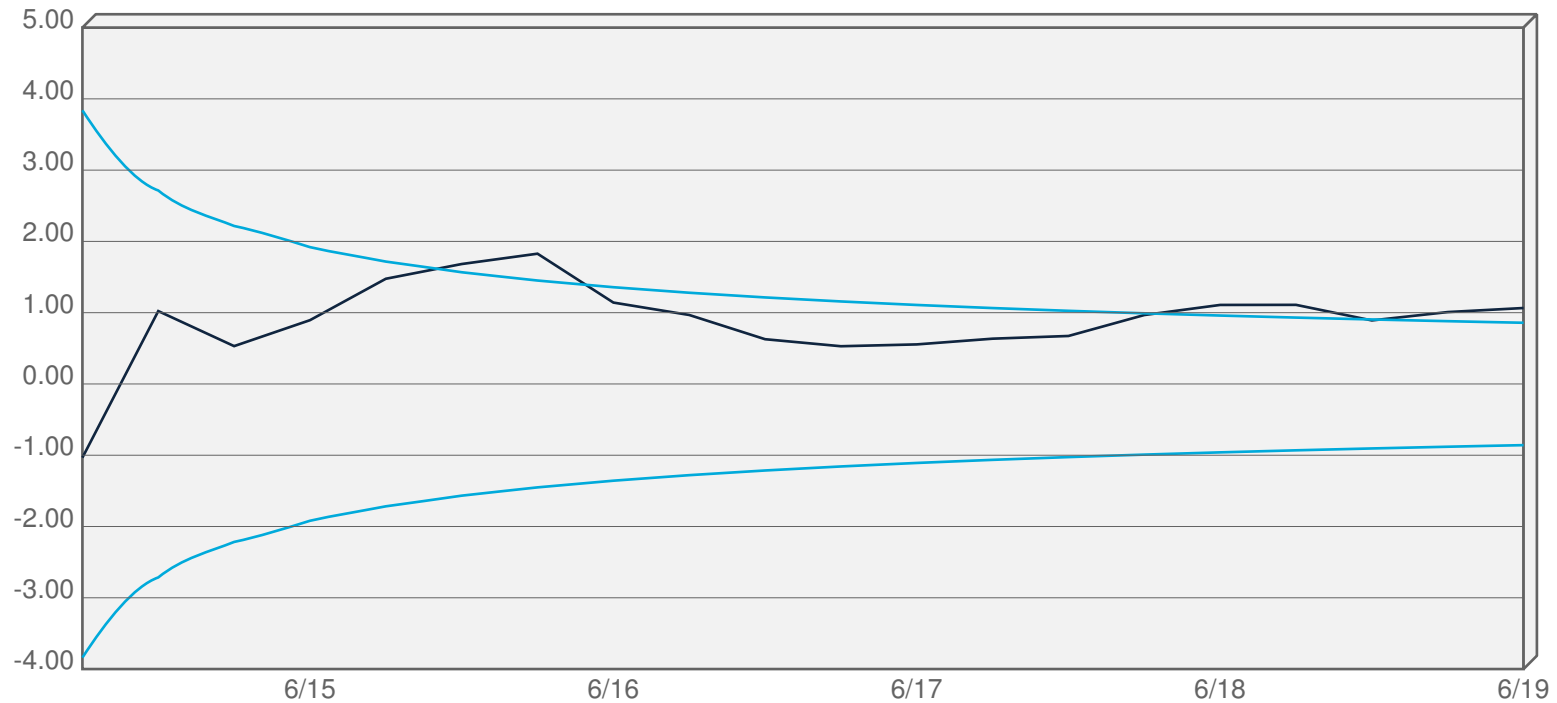


	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
● Non-US Equity Composite	3.36 (30)	14.97 (29)	0.67 (36)	1.41 (36)	6.14 (11)	10.73 (23)	3.70 (26)	7.24 (59)
1 Policy Index	2.74 (61)	13.33 (73)	-0.13 (56)	0.26 (58)	3.98 (56)	9.36 (63)	2.36 (75)	6.94 (68)
5th %tile	4.46	17.64	4.97	5.65	7.33	11.79	5.89	10.27
25th %tile	3.66	15.11	1.12	1.72	4.97	10.72	3.78	8.29
Median	3.01	14.15	0.16	0.72	4.39	9.75	3.07	7.28
75th %tile	2.40	13.25	-0.77	-0.56	3.30	9.06	2.45	6.81
95th %tile	-0.46	6.59	-3.94	-3.26	-1.15	5.75	1.12	5.71
Number of Funds	73	73	73	72	65	63	58	47

*TUCS Total Ret of Non-US Equity Investment Pools Universe - Gross of Fees

CUMULATIVE SKILL ANALYSIS

Non-US Equity Composite
Five Years Ending June 30, 2019



— Quarterly NOF Value Added vs. Policy Index

— 80% Confidence Band

Excess Return:	1.07	Information Ratio:	0.91
Excess Risk:	1.17	T-Stat:	2.04

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
BlackRock ACWI Ex US									
Net of Fee Return	3.14	13.82	0.81	1.53	9.69	2.43	6.78	6/30/09	6.78
MSCI ACWI X US (N)	2.98	13.60	0.58	1.29	9.39	2.16	6.54	6/30/09	6.54
Value Added	0.16	0.21	0.23	0.25	0.30	0.27	0.24	6/30/09	0.24
American Century									
Net of Fee Return	5.47	20.21	1.58	1.15	12.95	4.78		6/30/14	4.78
Policy Index	2.74	13.33	-0.13	0.26	9.33	2.32		6/30/14	2.32
Value Added	2.72	6.88	1.71	0.89	3.62	2.45		6/30/14	2.45
Franklin Templeton									
Net of Fee Return	3.86	20.33	-0.81	-3.00	13.71	6.23		6/30/14	6.23
Policy Index	2.74	13.33	-0.13	0.26	9.33	2.32		6/30/14	2.32
Value Added	1.12	7.00	-0.68	-3.26	4.38	3.91		6/30/14	3.91
Lazard Asset Mgmt									
Net of Fee Return	3.42	14.69	2.45	3.19	9.36	3.87		6/30/14	3.87
Policy Index	2.74	13.33	-0.13	0.26	9.33	2.32		6/30/14	2.32
Value Added	0.68	1.36	2.57	2.93	0.03	1.55		6/30/14	1.55
LSV Asset Mgmt									
Net of Fee Return	1.63	10.28	-2.11	1.55	10.21	2.25		6/30/14	2.25
Policy Index	2.74	13.33	-0.13	0.26	9.33	2.32		6/30/14	2.32
Value Added	-1.11	-3.05	-1.98	1.29	0.88	-0.08		6/30/14	-0.08
NTGI Int'l Small Cap									
Net of Fee Return	1.36	11.96	-4.08	-5.54	8.06	3.06	8.47	12/31/08	10.52
MSCI ACWI X US Small Cap (N)	1.21	11.60	-4.50	-5.94	7.76	2.77	8.48	12/31/08	10.67
Value Added	0.15	0.36	0.42	0.41	0.31	0.29	-0.01	12/31/08	-0.15

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

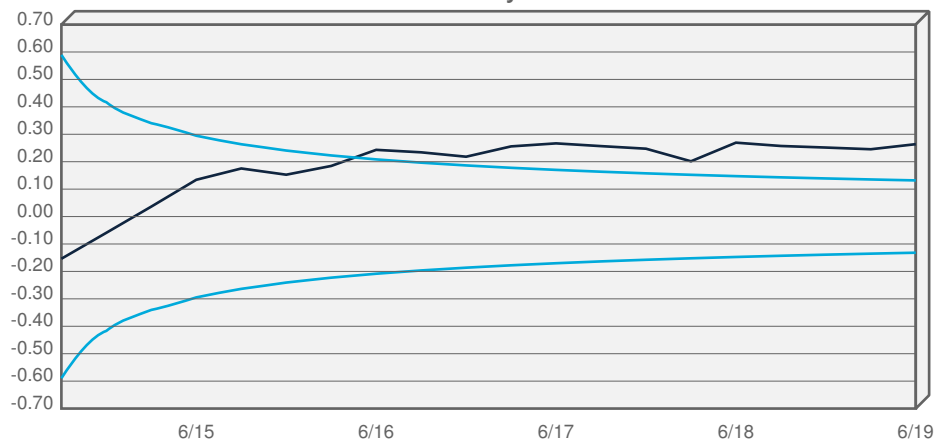
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Non-US Equity Composite									
Net of Fee Return	3.29	14.82	0.48	1.16	10.47	3.45	7.26	6/30/00	3.30
Policy Index	2.74	13.33	-0.13	0.26	9.36	2.36	6.94	6/30/00	3.36
Value Added	0.55	1.49	0.61	0.90	1.11	1.09	0.32	6/30/00	-0.06

INVESTMENT MANAGER ANALYSIS

BlackRock ACWI Ex US

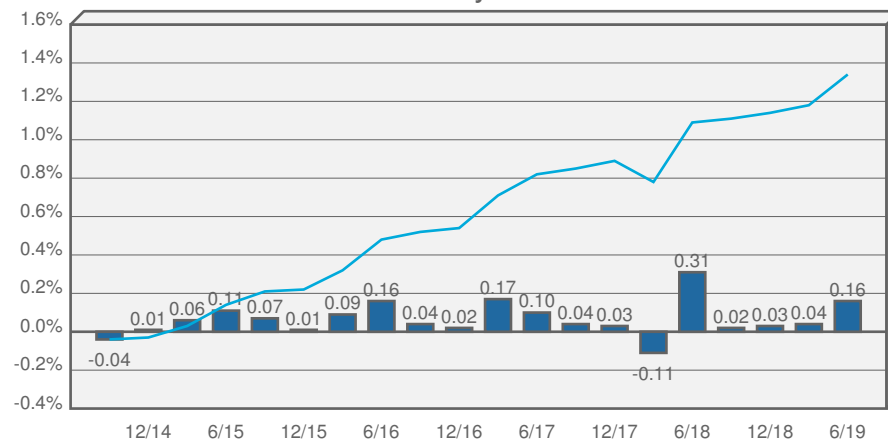
June 30, 2019

Cumulative Skill Analysis vs Benchmark



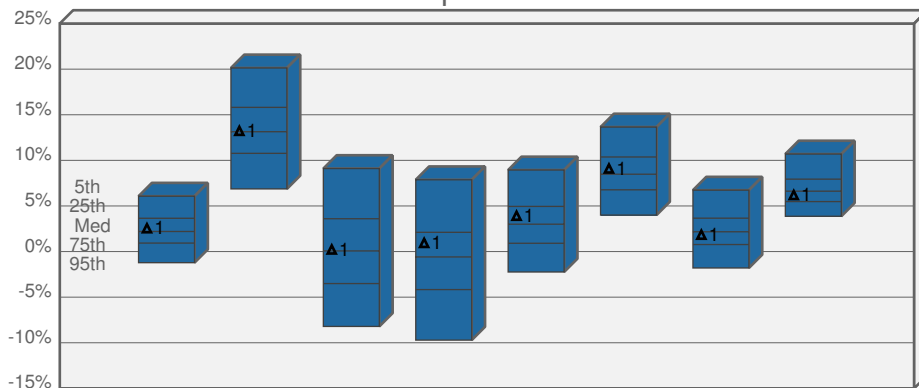
Excess Return:	0.26	Information Ratio:	1.47
Excess Risk:	0.18	T-Stat:	3.29

Value-Added Analysis vs Benchmark



■ Quarterly NOF Value Added vs. MSCI ACWI X US (N)
 — Cumulative Value Added

Performance Comparison vs Peer Universe*

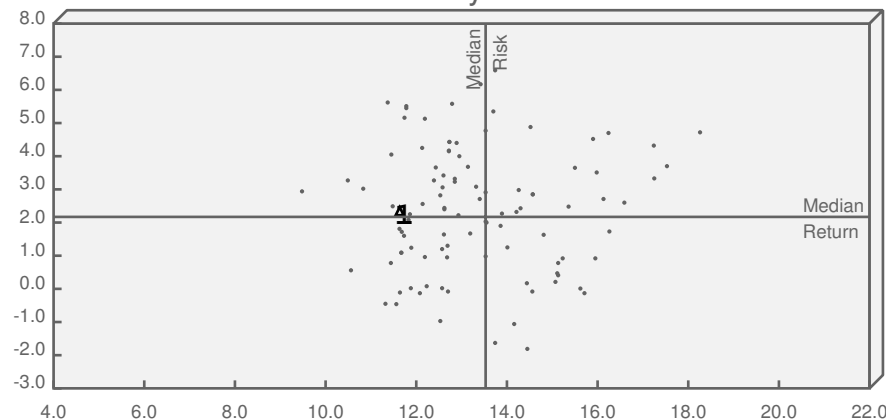


1 Quarter 2 Quarters 3 Quarters 1 Year 2 Years 3 Years 5 Years 10 Years

▲ BlackRock ACWI	3.14 (33)	13.82 (41)	0.81 (43)	1.53 (29)	4.51 (28)	9.69 (32)	2.43 (43)	6.78 (46)
■ MSCI ACWI X US	2.98 (36)	13.60 (43)	0.58 (45)	1.29 (31)	4.24 (31)	9.38 (35)	2.16 (50)	6.54 (52)

Median	2.20	13.14	0.07	-0.59	3.00	8.48	2.17	6.62
Number of Funds	2511	2476	2373	2327	2184	2005	1614	956

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Net Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
BlackRock ACWI Ex US	▲	2.43	43	11.87	83
MSCI ACWI X US (N)	■	2.16	50	11.85	83
Median		2.17		13.53	

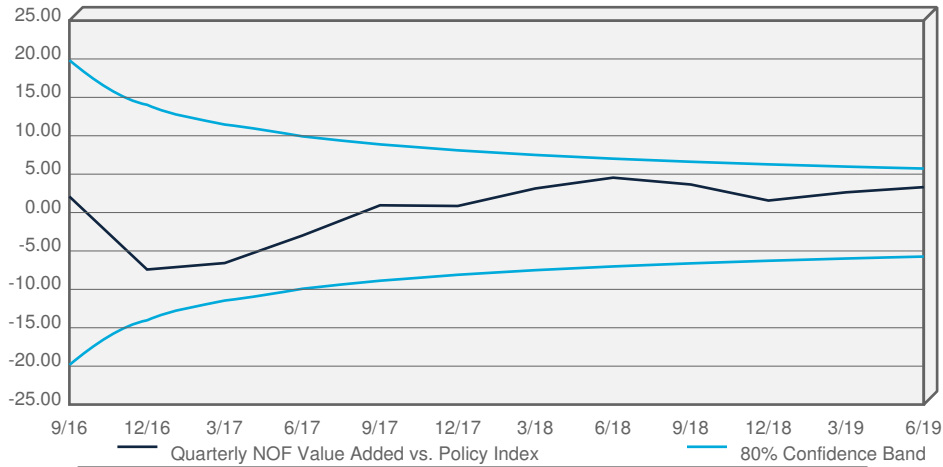
*Lipper Total Returns of International Equity Mutual Funds Universe - Net of Fees

INVESTMENT MANAGER ANALYSIS

American Century

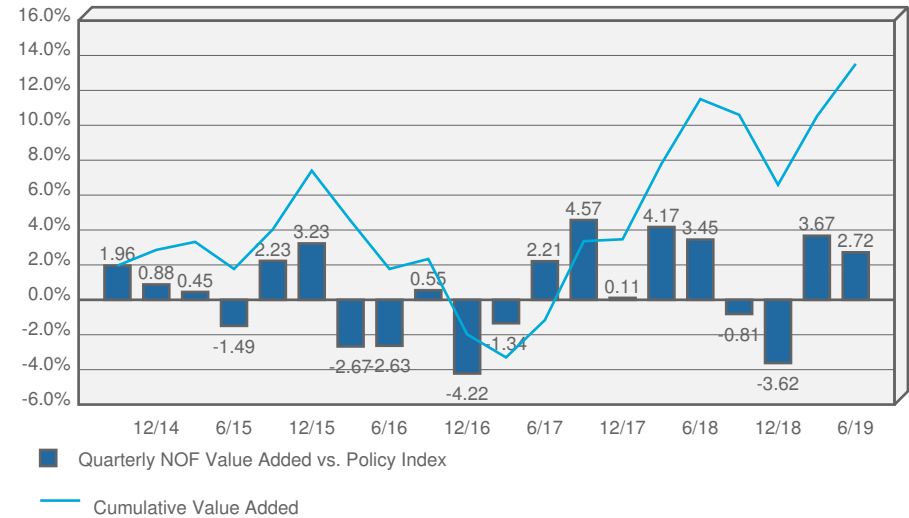
June 30, 2019

Cumulative Skill Analysis vs Benchmark

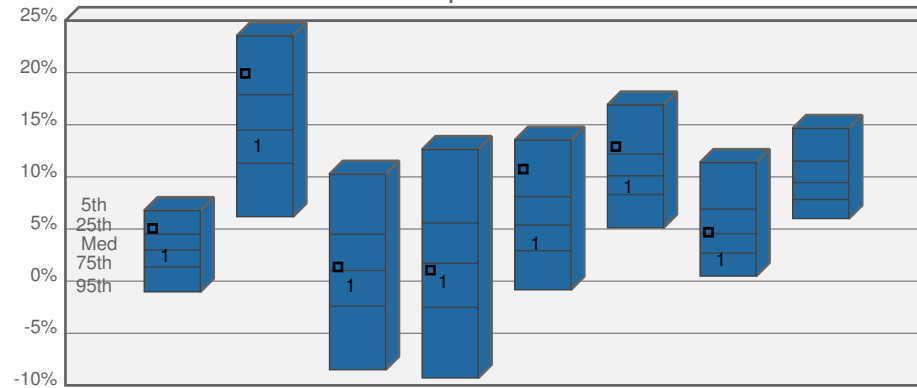


Excess Return:	3.31	Information Ratio:	0.55
Excess Risk:	6.03	T-Stat:	0.95

Value-Added Analysis vs Benchmark



Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
□ American Centu	5.57 (12)	20.44 (12)	1.87 (42)	1.56 (50)	11.26 (9)	13.42 (16)	5.20 (42)	
1 Policy Index	2.74 (54)	13.33 (61)	-0.13 (60)	0.26 (60)	3.93 (65)	9.33 (60)	2.32 (81)	
Median	2.99	14.52	1.02	1.71	5.38	10.10	4.56	9.46
Number of Funds	1563	1560	1551	1536	1498	1465	1320	889

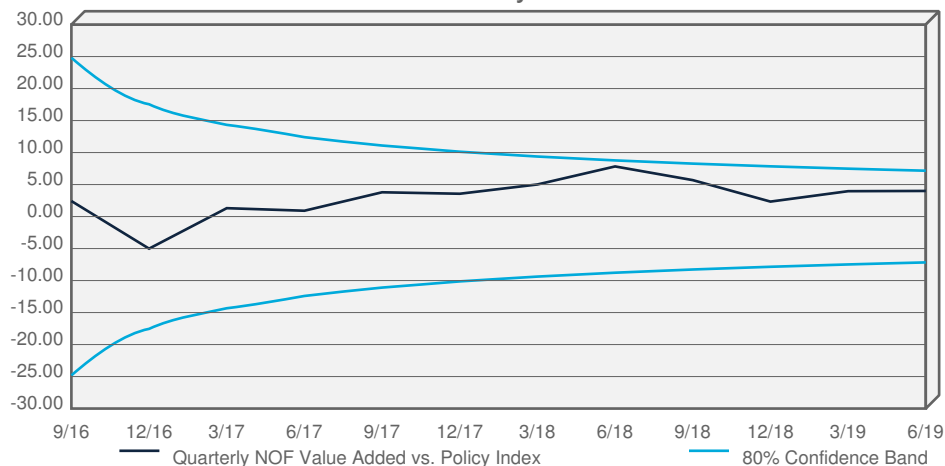
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Franklin Templeton

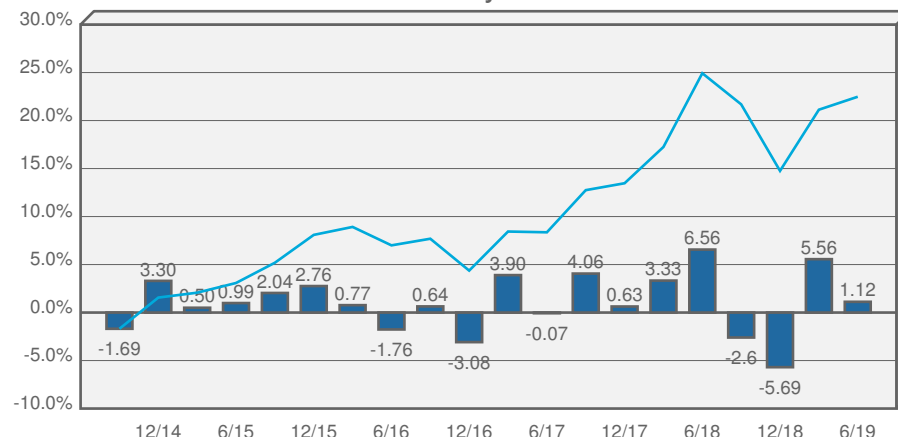
June 30, 2019

Cumulative Skill Analysis vs Benchmark



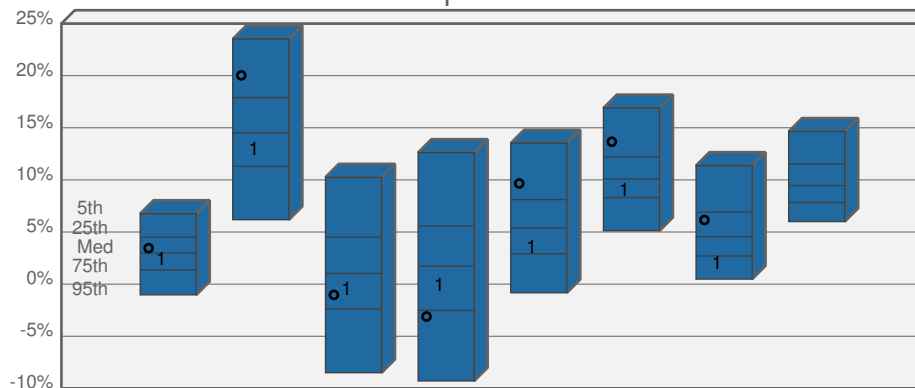
Excess Return:	4.00	Information Ratio:	0.53
Excess Risk:	7.54	T-Stat:	0.92

Value-Added Analysis vs Benchmark



■ Quarterly NOF Value Added vs. Policy Index
 — Cumulative Value Added

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
○ Franklin Templ	3.96 (32)	20.54 (11)	-0.52 (63)	-2.60 (75)	10.17 (13)	14.17 (12)	6.67 (27)	
■ Policy Index	2.74 (54)	13.33 (61)	-0.13 (60)	0.26 (60)	3.93 (65)	9.33 (60)	2.32 (81)	
Median	2.99	14.52	1.02	1.71	5.38	10.10	4.56	9.46
Number of Funds	1563	1560	1551	1536	1498	1465	1320	889

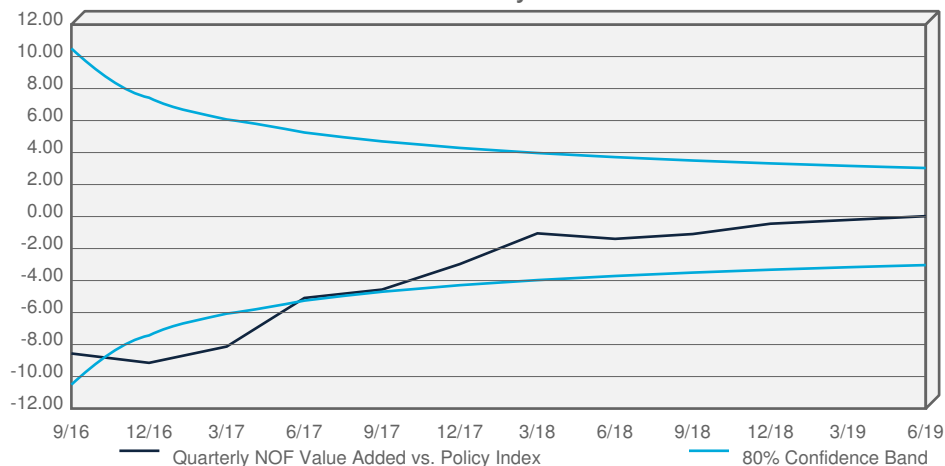
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Lazard Asset Mgmt

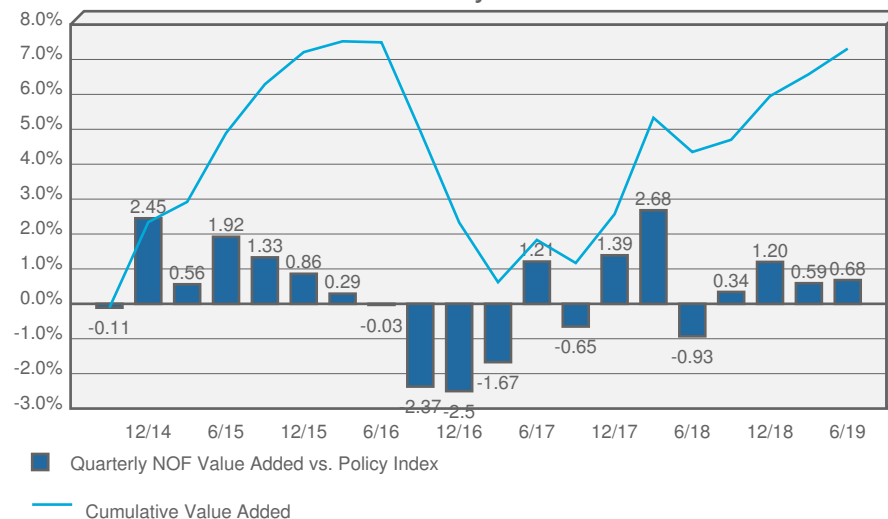
June 30, 2019

Cumulative Skill Analysis vs Benchmark

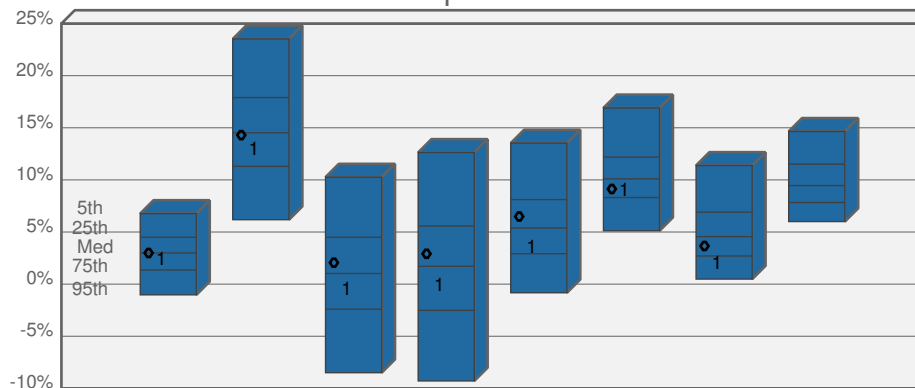


Excess Return:	0.02	Information Ratio:	0.01
Excess Risk:	3.19	T-Stat:	0.01

Value-Added Analysis vs Benchmark



Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◊ Lazard Asset Mgmt	3.50 (41)	14.81 (47)	2.57 (37)	3.42 (37)	7.00 (35)	9.64 (55)	4.17 (55)	
1 Policy Index	2.74 (54)	13.33 (61)	-0.13 (60)	0.26 (60)	3.93 (65)	9.33 (60)	2.32 (81)	
Median	2.99	14.52	1.02	1.71	5.38	10.10	4.56	9.46
Number of Funds	1563	1560	1551	1536	1498	1465	1320	889

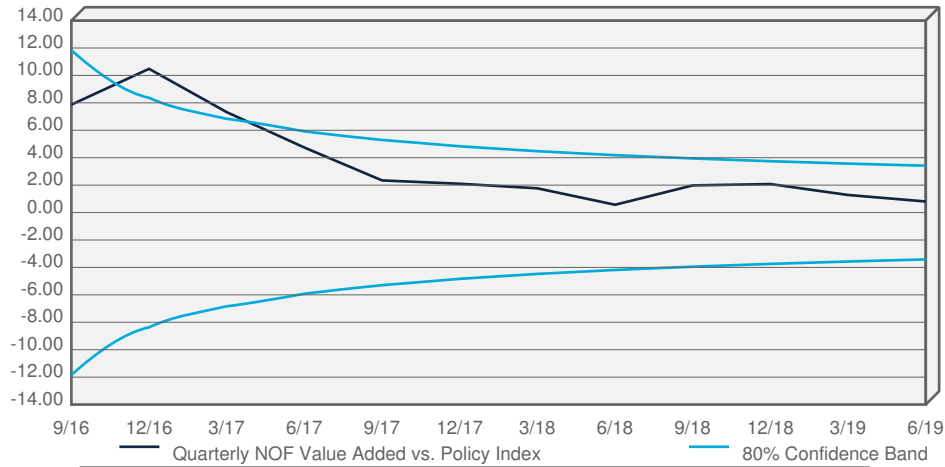
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

LSV Asset Mgmt

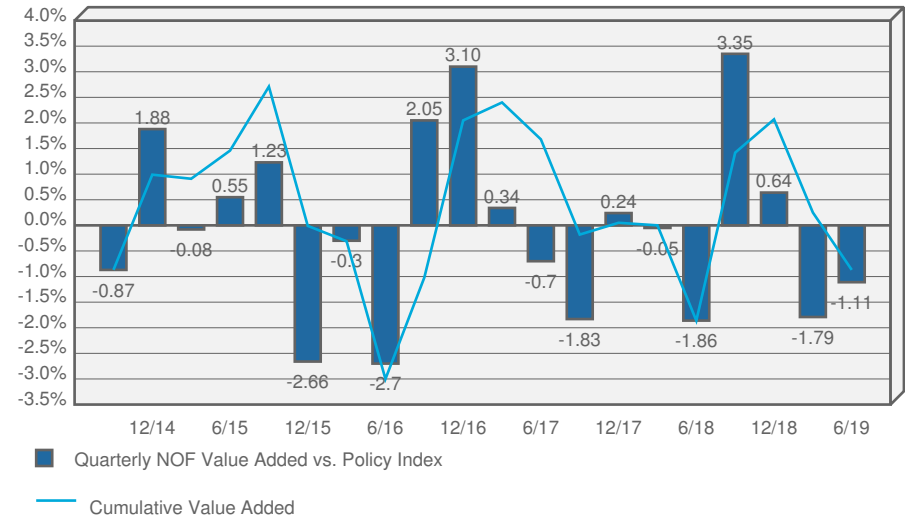
June 30, 2019

Cumulative Skill Analysis vs Benchmark

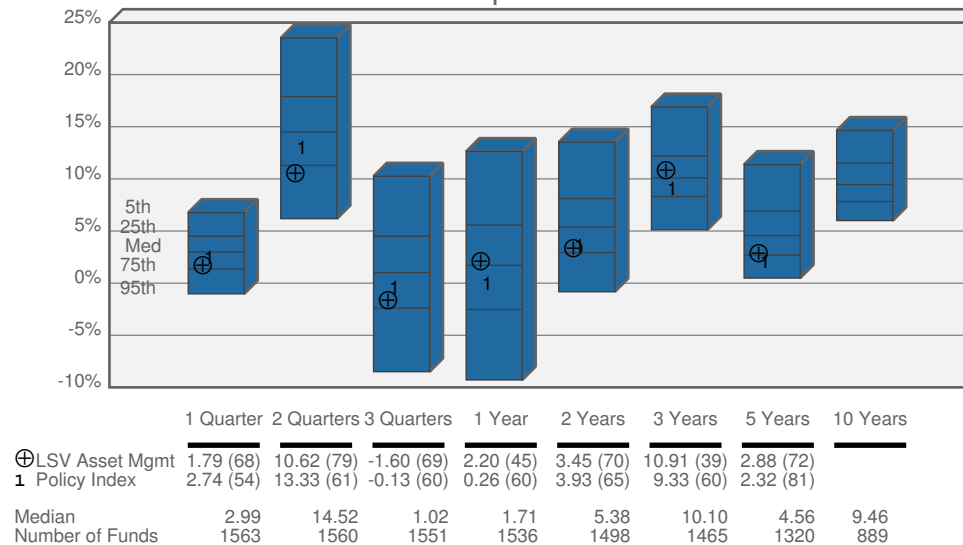


Excess Return:	0.81	Information Ratio:	0.22
Excess Risk:	3.60	T-Stat:	0.39

Value-Added Analysis vs Benchmark



Performance Comparison vs Peer Universe*



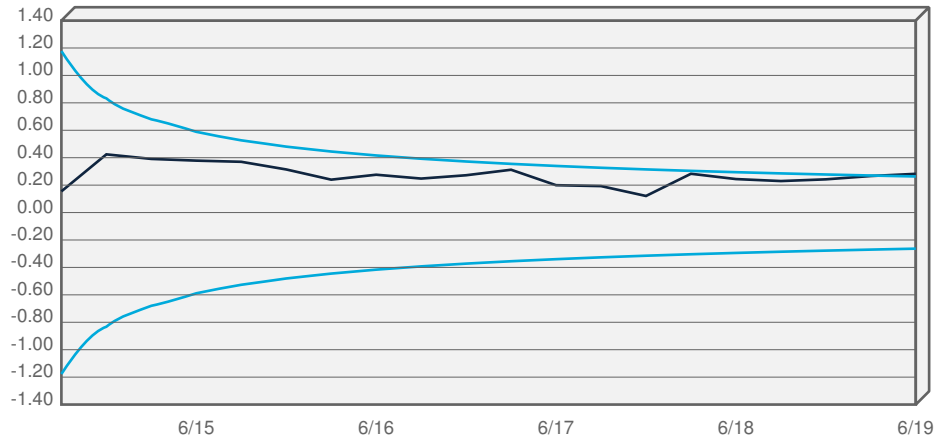
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

NTGI Int'l Small Cap

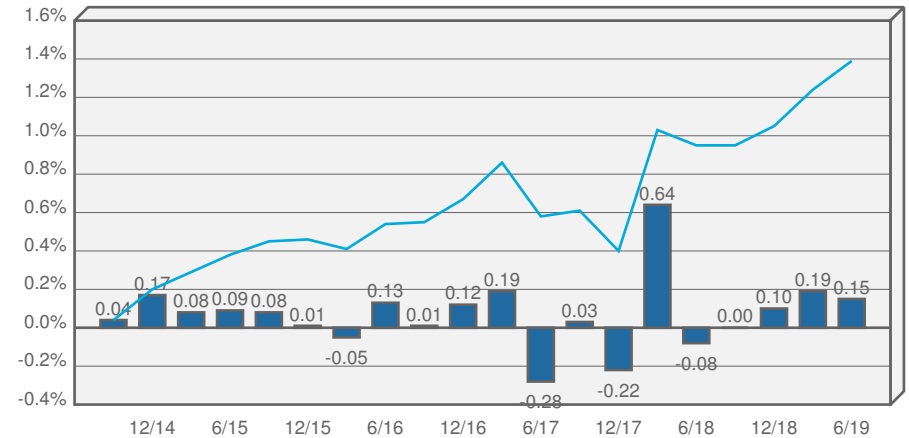
June 30, 2019

Cumulative Skill Analysis vs Benchmark



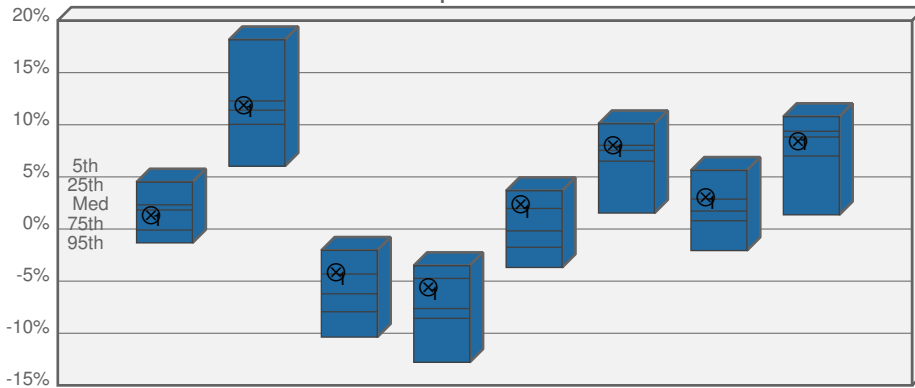
Excess Return:	0.28	Information Ratio:	0.79
Excess Risk:	0.36	T-Stat:	1.76

Value-Added Analysis vs Benchmark



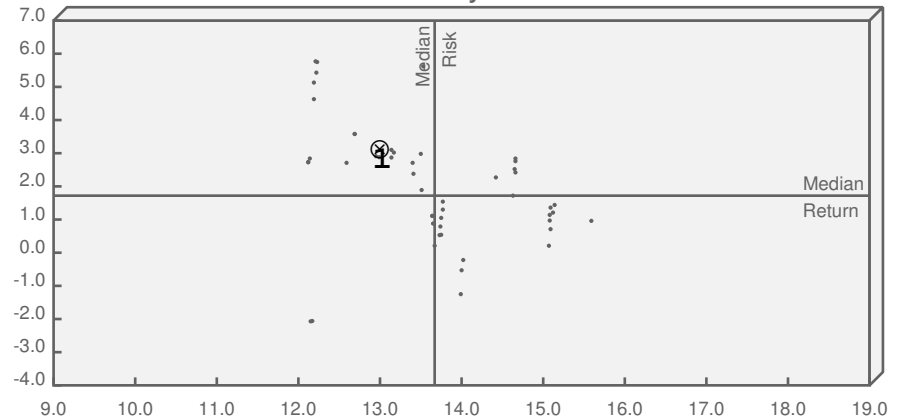
■ Quarterly NOF Value Added vs. MSCI ACWI X US Small Cap (N)
 — Cumulative Value Added

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊗ NTGI Int'l Sma	1.36 (56)	11.96 (34)	-4.08 (20)	-5.54 (25)	2.39 (19)	8.06 (23)	3.06 (15)	8.47 (53)
1 MSCI ACWI X US	1.21 (62)	11.60 (47)	-4.50 (26)	-5.94 (26)	1.98 (23)	7.76 (37)	2.77 (29)	8.48 (53)
Median	1.83	11.40	-6.22	-7.63	-0.18	7.54	1.72	8.83
Number of Funds	72	71	69	68	65	57	50	32

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Net Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
NTGI Int'l Small Cap	⊗	3.06	15	13.05	70
MSCI ACWI X US Small Cap (N)	1	2.77	29	13.09	70
Median		1.72		13.67	

*Lipper Total Returns of Intl Equity Small/Mid Core Mutual Funds Universe - Net of Fees

CUSTOM BENCHMARK SPECIFICATION

Non-US Equity Composite

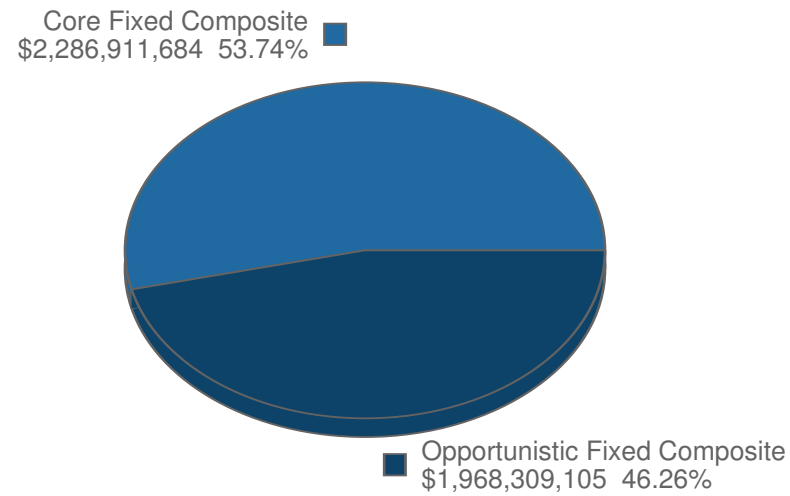
June 30, 2019

	Quarter Start	Quarter End	Percent	Description
Policy Index	9/00	6/17	100.00	Blended Non-US Benchmark
	9/17	9/17	100.00	MSCI ACWI Ex USA IMI Index (\$G)
	12/17	6/19	100.00	MSCI ACWI Ex USA IMI (\$N)



FIXED INCOME

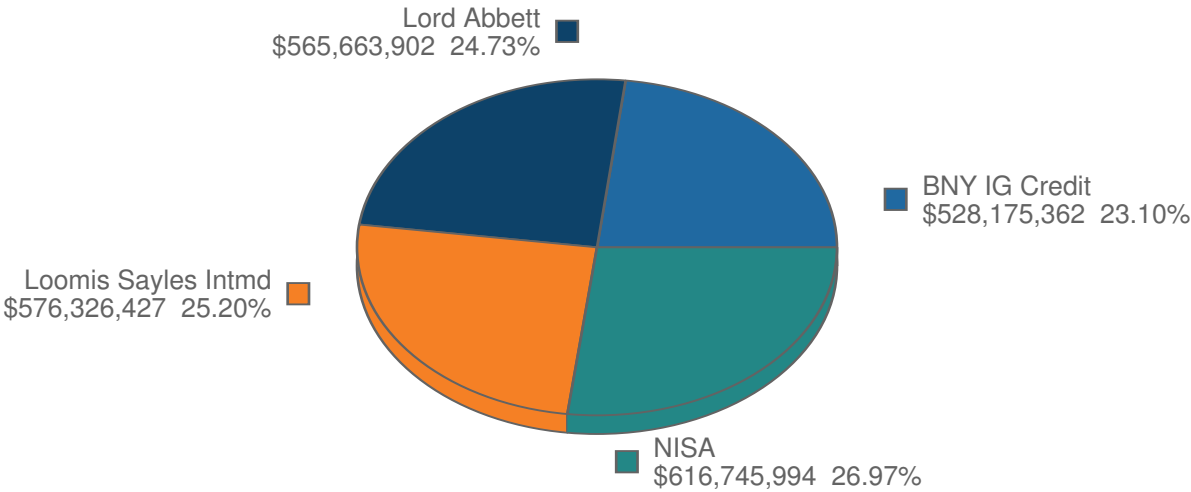
Wilshire Consulting
MANAGER ALLOCATION
Fixed Income Composite
As of June 30, 2019



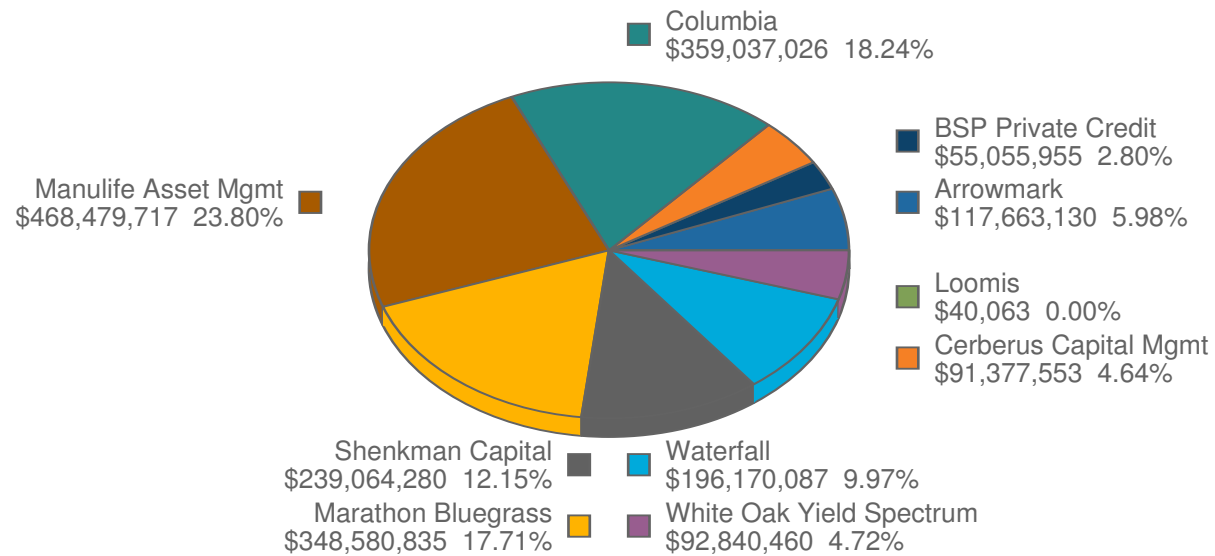
MANAGER ALLOCATION

Core Fixed Composite

As of June 30, 2019



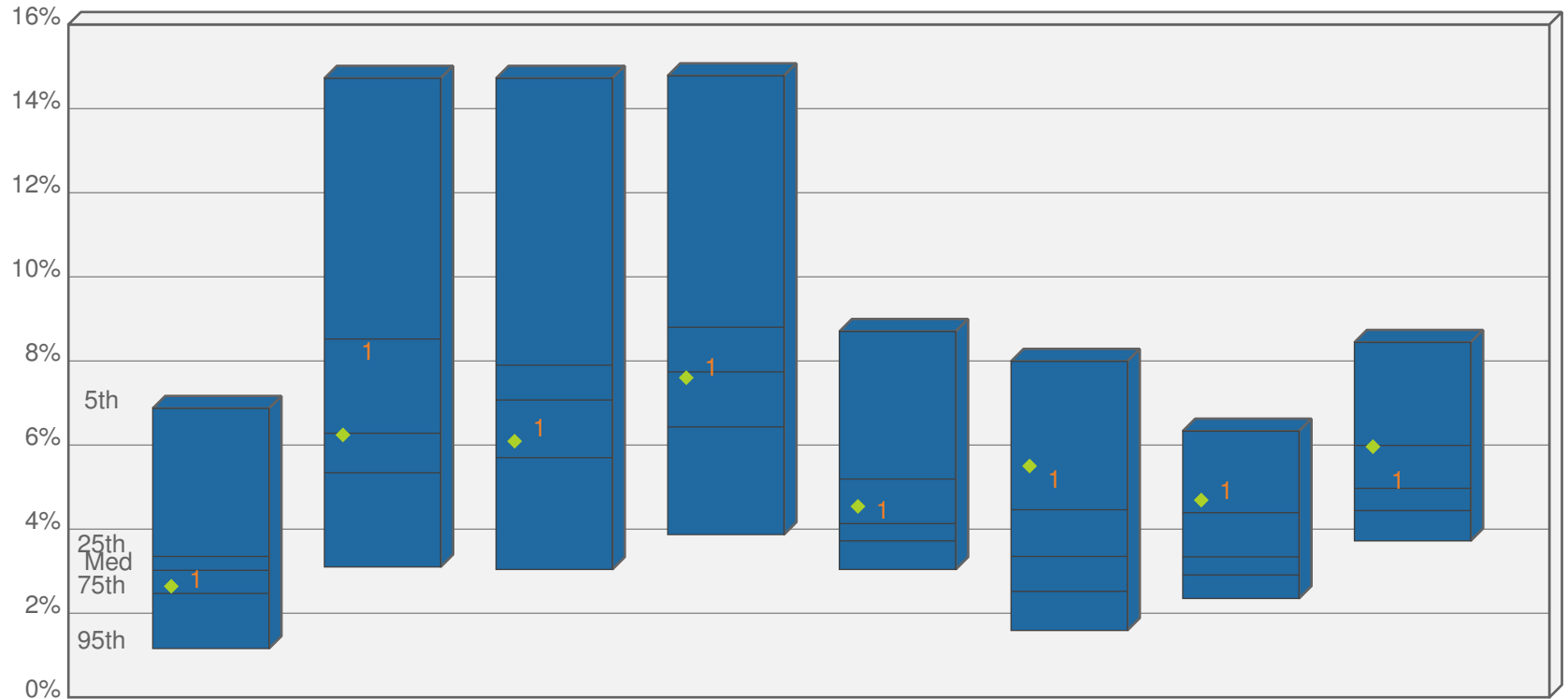
Wilshire Consulting
MANAGER ALLOCATION
 Opportunistic Fixed Composite
 As of June 30, 2019



PERFORMANCE COMPARISON

Fixed Income Composite

Periods Ended June 30, 2019

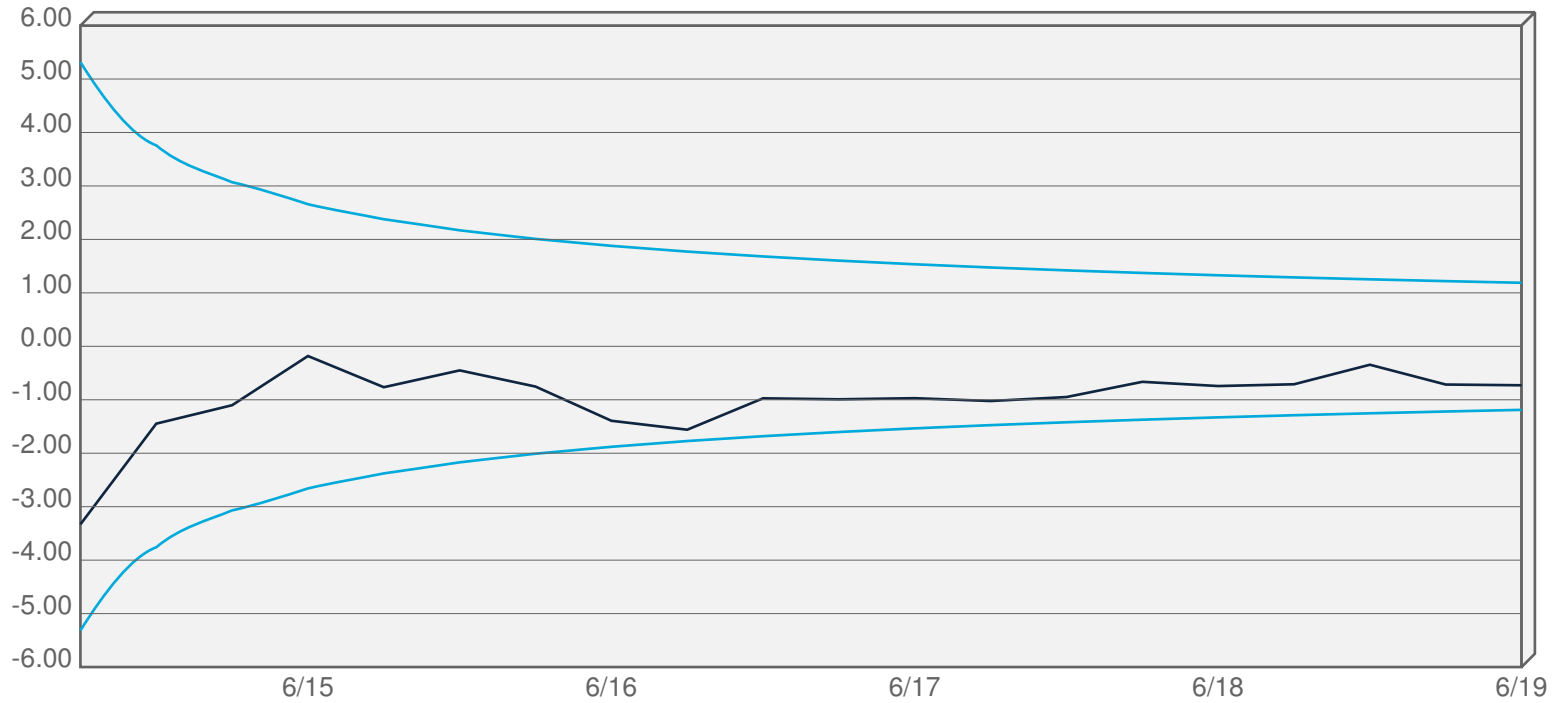


	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◆ Fixed Income Composite	2.67 (69)	6.27 (51)	6.12 (68)	7.63 (56)	4.57 (38)	5.53 (11)	4.72 (16)	5.99 (25)
1 Policy Index	2.81 (66)	8.24 (25)	6.42 (59)	7.85 (46)	4.45 (39)	5.18 (13)	4.92 (15)	5.17 (44)
5th %tile	6.87	14.72	14.72	14.78	8.70	7.99	6.33	8.44
25th %tile	3.35	8.52	7.90	8.80	5.19	4.46	4.39	5.99
Median	3.02	6.28	7.07	7.74	4.13	3.35	3.34	4.97
75th %tile	2.47	5.34	5.70	6.43	3.72	2.52	2.91	4.44
95th %tile	1.16	3.10	3.04	3.87	3.04	1.59	2.35	3.72
Number of Funds	118	118	115	114	87	77	71	52

*TUCS Total Ret of Fixed Income Investment Pools Universe - Gross of Fees

CUMULATIVE SKILL ANALYSIS

Fixed Income Composite
Five Years Ending June 30, 2019



— Quarterly NOF Value Added vs. Policy Index

— 80% Confidence Band

Excess Return:	-0.73	Information Ratio:	-0.45
Excess Risk:	1.62	T-Stat:	-1.01

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
BNY IG Credit									
Net of Fee Return	3.02	6.71	7.51	8.30				12/31/17	4.45
Bloomberg Int Credit	2.99	6.65	7.45	8.23				12/31/17	4.39
Value Added	0.02	0.06	0.06	0.08				12/31/17	0.06
Loomis Sayles Intmd									
Net of Fee Return	2.46							3/31/19	2.46
Bloomberg Intermediate Agg.	2.39							3/31/19	2.39
Value Added	0.07							3/31/19	0.07
Lord Abbett									
Net of Fee Return	1.87	4.02	4.57					9/30/18	4.57
Bloomberg Aggregate	3.08	6.11	7.85					9/30/18	7.85
Value Added	-1.21	-2.10	-3.28					9/30/18	-3.28
NISA									
Net of Fee Return	3.17	6.27	7.95	7.89	2.46	3.20	4.10	3/31/09	4.14
Bloomberg Aggregate	3.08	6.11	7.85	7.87	2.31	2.95	3.90	3/31/09	3.98
Value Added	0.10	0.16	0.10	0.02	0.14	0.25	0.20	3/31/09	0.16
Core Fixed Composite									
Net of Fee Return	2.63	5.47	6.45					9/30/18	6.45
Bloomberg Universal	3.11	6.54	7.78					9/30/18	7.78
Value Added	-0.48	-1.07	-1.33					9/30/18	-1.33
Arrowmark									
Net of Fee Return	2.20	5.54	7.84	10.62				6/30/18	10.62
S&P LSTA Leverage Loan Index	1.68	5.74	2.09	3.97				6/30/18	3.97
Value Added	0.52	-0.20	5.74	6.65				6/30/18	6.65

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
BSP Private Credit									
Net of Fee Return	3.20	1.59	4.05	4.42				3/31/18	3.28
S&P LSTA Leverage Loan Index	1.68	5.74	2.09	3.97				3/31/18	3.74
Value Added	1.52	-4.15	1.96	0.45				3/31/18	-0.46
Cerberus Capital Mgmt									
Net of Fee Return	2.27	4.46	7.33	10.21	8.57			9/30/14	8.60
S&P LSTA Leverage Loan	1.68	5.74	2.09	3.97	5.24			9/30/14	3.98
Value Added	0.59	-1.28	5.24	6.24	3.33			9/30/14	4.62
Columbia									
Net of Fee Return	3.24	11.74	6.49	9.74	7.00	5.03		12/31/11	7.04
Bloomberg High Yield	2.50	9.94	4.96	7.48	7.52	4.70		12/31/11	6.91
Value Added	0.74	1.80	1.53	2.26	-0.52	0.33		12/31/11	0.13
Manulife Asset Mgmt									
Net of Fee Return	2.97	7.41	5.94	6.86	2.90	2.73		12/31/11	4.13
Policy Index	3.11	6.54	7.78	8.07	2.84	1.24		12/31/11	1.83
Value Added	-0.14	0.87	-1.84	-1.21	0.06	1.49		12/31/11	2.31
Marathon Bluegrass									
Net of Fee Return	1.45	3.87	4.05	7.50	7.24			12/31/15	7.41
Bloomberg High Yield	2.50	9.94	4.96	7.48	7.52			12/31/15	9.08
Value Added	-1.05	-6.07	-0.90	0.02	-0.28			12/31/15	-1.67
Shenkman Capital									
Net of Fee Return	1.53	6.04	2.48	4.57	4.94	3.21		9/30/10	4.68
S&P LSTA Leverage Loan	1.68	5.74	2.09	3.97	5.24	3.68		9/30/10	5.48
Value Added	-0.15	0.29	0.39	0.60	-0.31	-0.47		9/30/10	-0.80

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

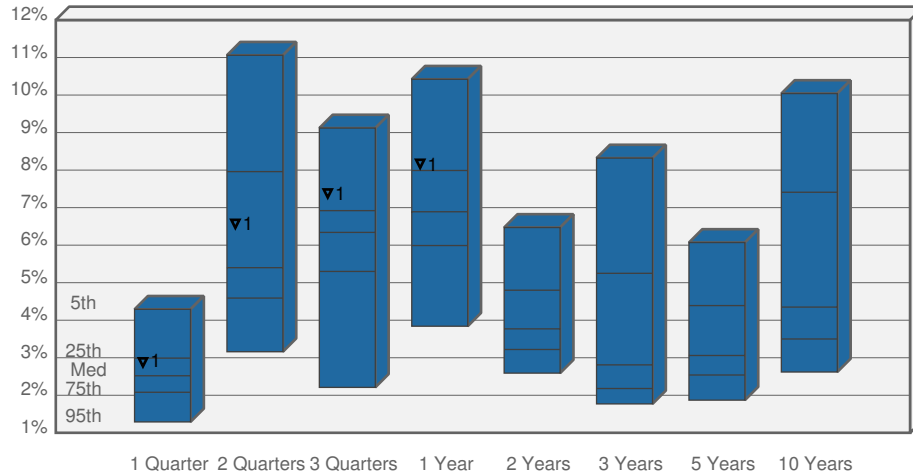
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Waterfall									
Net of Fee Return	2.94	5.29	5.94	7.76	11.79	8.81		3/31/10	11.34
Policy Index	1.78	6.55	3.71	5.52	5.92	3.71		3/31/10	5.09
Value Added	1.16	-1.26	2.23	2.24	5.87	5.10		3/31/10	6.25
White Oak Yield Spectrum									
Net of Fee Return	1.85	2.47	3.67	4.95				3/31/18	4.22
S&P LSTA Leverage Loan Index	1.68	5.74	2.09	3.97				3/31/18	3.74
Value Added	0.17	-3.27	1.58	0.98				3/31/18	0.48
Opportunistic Fixed Composite									
Net of Fee Return	2.45	6.58	5.18					9/30/18	5.18
Bloomberg High Yield	2.50	9.94	4.96					9/30/18	4.96
Value Added	-0.05	-3.36	0.22					9/30/18	0.22
Fixed Income Composite									
Net of Fee Return	2.55	5.99	5.76	7.12	4.89	4.16	5.65	3/31/84	7.48
Policy Index	2.82	8.26	6.41	7.83	5.18	4.92	5.17	3/31/84	7.33
Value Added	-0.27	-2.26	-0.65	-0.71	-0.30	-0.76	0.48	3/31/84	0.14
Bloomberg Global Aggregate	3.29	5.57	6.83	5.85	1.62	1.20	2.89		

INVESTMENT MANAGER ANALYSIS

BNY IG Credit

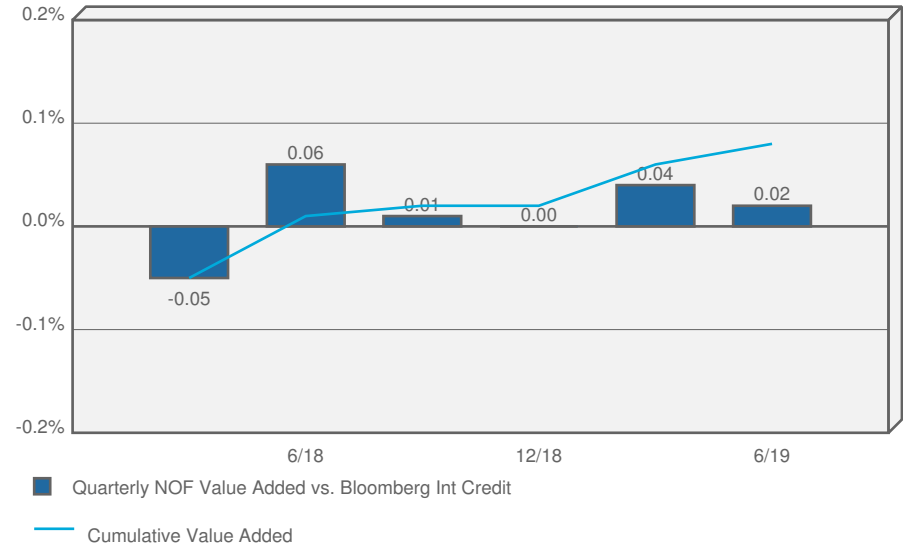
June 30, 2019

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▼ BNY IG Credit	3.02 (23)	6.71 (33)	7.52 (17)	8.31 (20)				
1 Bloomberg Int	2.99 (25)	6.65 (34)	7.45 (18)	8.23 (21)				
Median	2.52	5.40	6.34	6.89	3.77	2.81	3.06	4.35
Number of Funds	453	453	451	450	443	443	425	365

Value-Added Analysis vs Benchmark



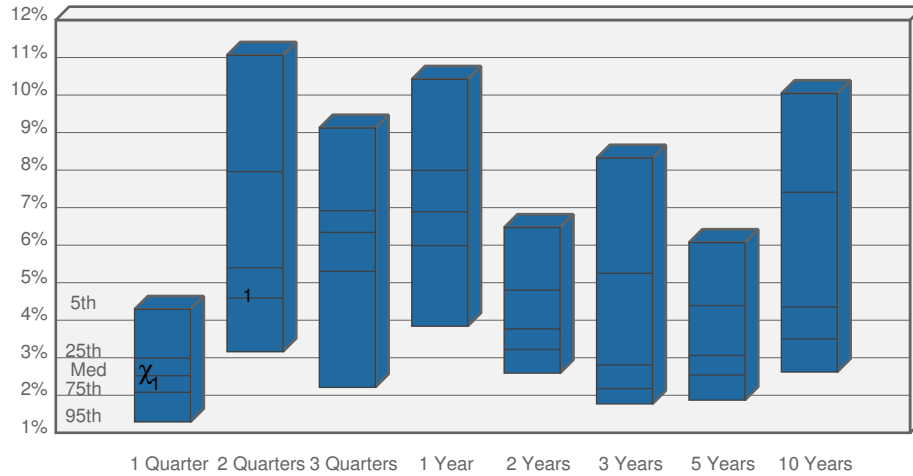
*Compass Total Returns of Active Intermediate Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Loomis Sayles Intmd

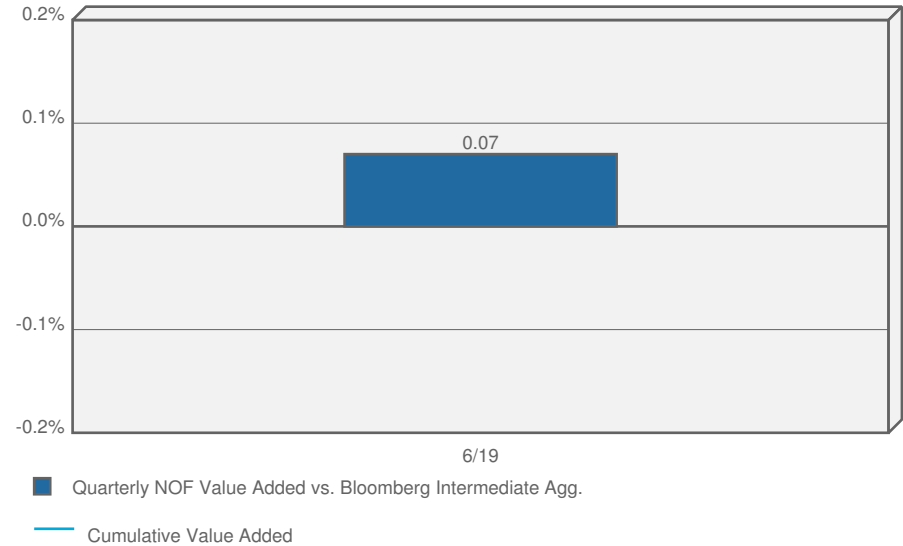
June 30, 2019

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
X Loomis Sayles	2.49 (54)							
1 Bloomberg Inte	2.39 (62)	4.73 (71)						
Median	2.52	5.40	6.34	6.89	3.77	2.81	3.06	4.35
Number of Funds	453	453	451	450	443	443	425	365

Value-Added Analysis vs Benchmark



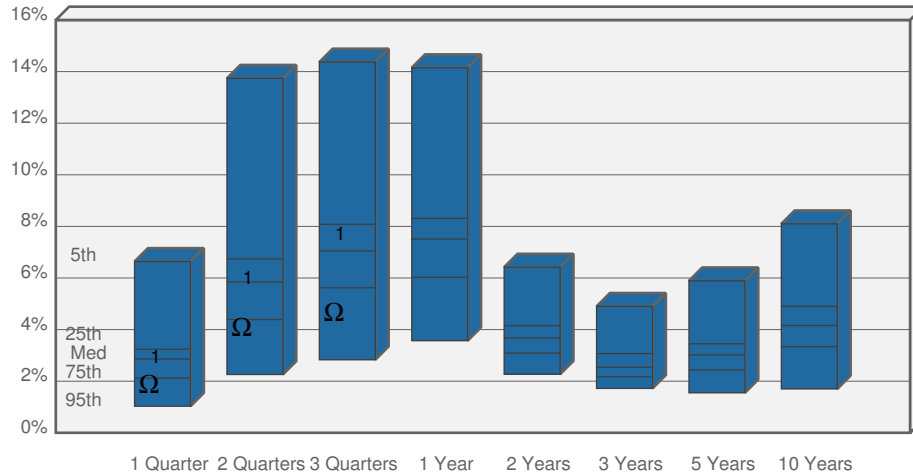
*Compass Total Returns of Active Intermediate Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Lord Abbett

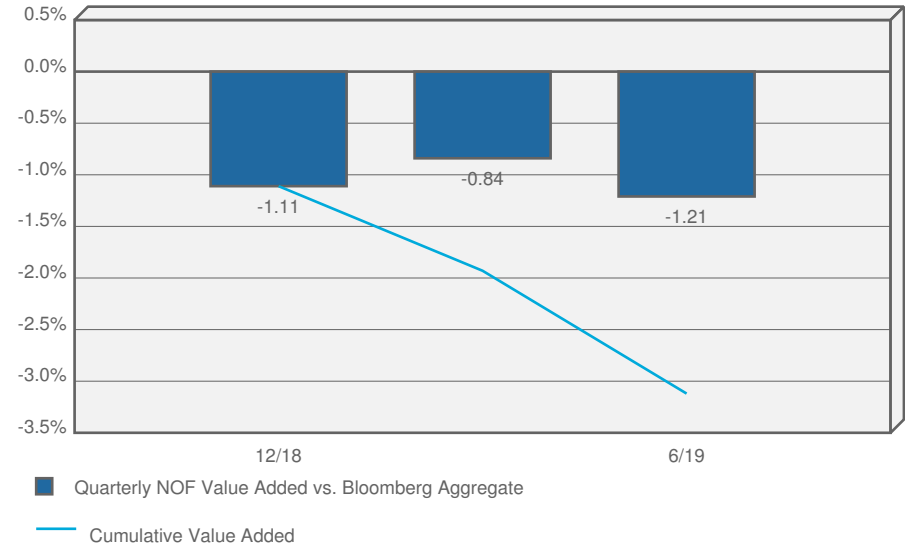
June 30, 2019

Performance Comparison vs Peer Universe*



Ω Lord Abbett	1.90 (77)	4.13 (76)	4.69 (78)					
1 Bloomberg Aggr	3.08 (37)	6.11 (45)	7.85 (35)					
Median	2.86	5.85	7.05	7.51	3.68	2.54	3.02	4.16
Number of Funds	435	434	434	434	428	421	409	352

Value-Added Analysis vs Benchmark



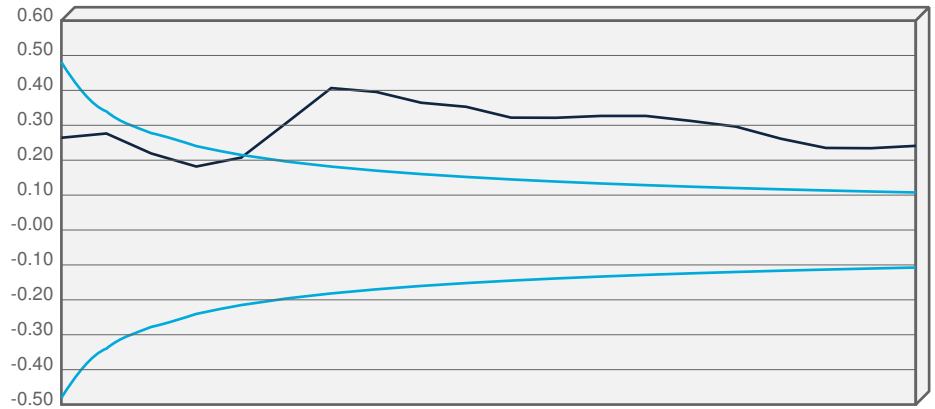
*Compass Total Returns of Active Core Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

NISA

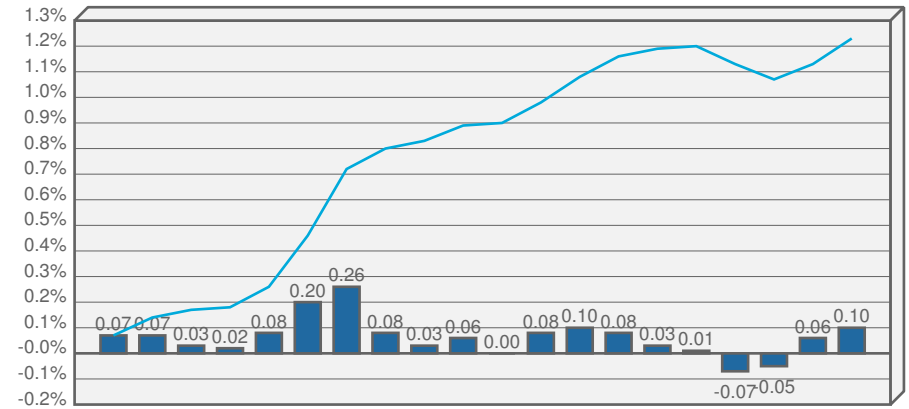
June 30, 2019

Cumulative Skill Analysis vs Benchmark



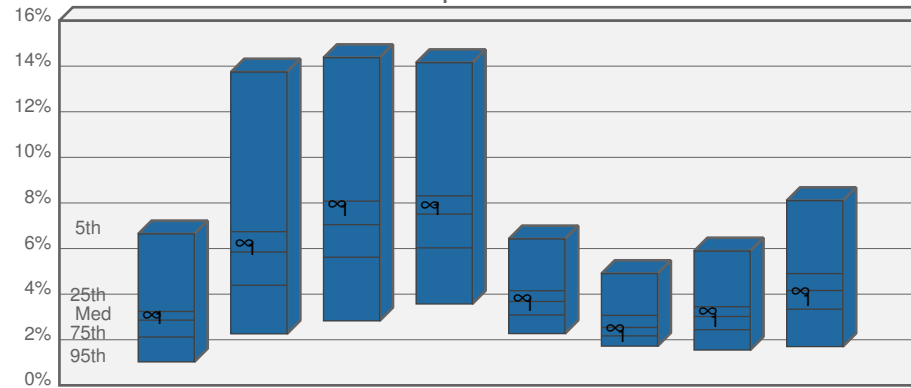
Excess Return:	0.24	Information Ratio:	1.65
Excess Risk:	0.15	T-Stat:	3.69

Value-Added Analysis vs Benchmark



Quarterly NOF Value Added vs. Bloomberg Aggregate
Cumulative Value Added

Performance Comparison vs Peer Universe*



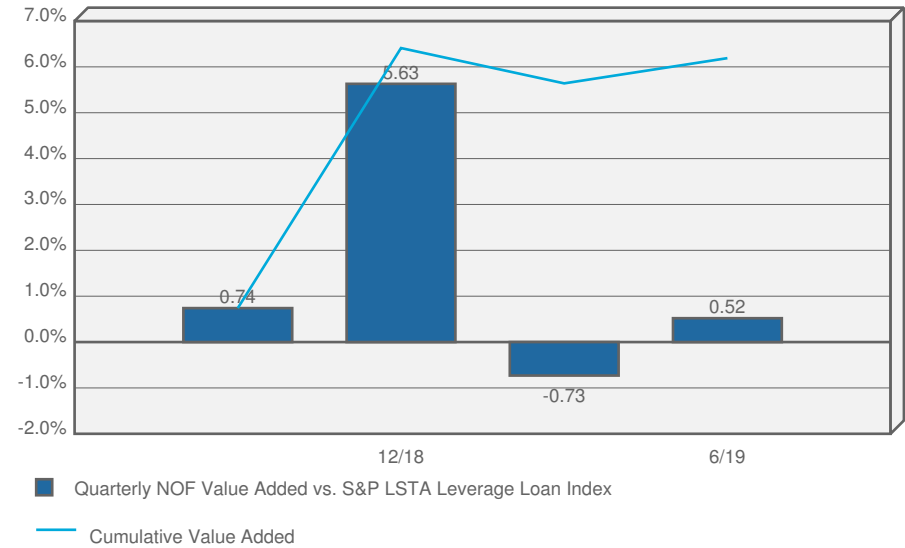
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
∞ NISA	3.21 (27)	6.34 (37)	8.05 (26)	8.03 (34)	3.92 (36)	2.60 (46)	3.36 (30)	4.23 (46)
1 Bloomberg Aggr	3.08 (37)	6.11 (45)	7.85 (35)	7.87 (41)	3.65 (52)	2.31 (66)	2.95 (52)	3.90 (59)
Median	2.86	5.85	7.05	7.51	3.68	2.54	3.02	4.16
Number of Funds	435	434	434	434	428	421	409	352

*Compass Total Returns of Active Core Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Arrowmark
June 30, 2019

Value-Added Analysis vs Benchmark

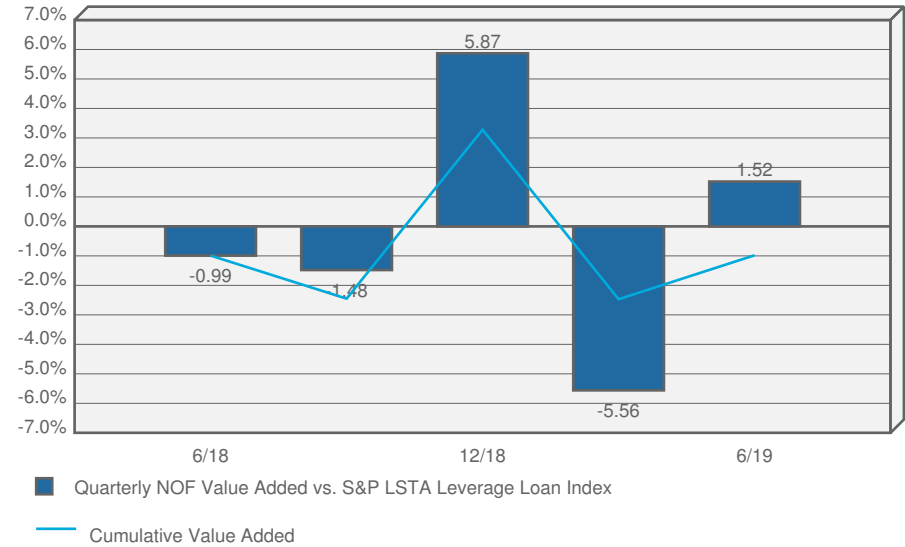


INVESTMENT MANAGER ANALYSIS

BSP Private Credit

June 30, 2019

Value-Added Analysis vs Benchmark

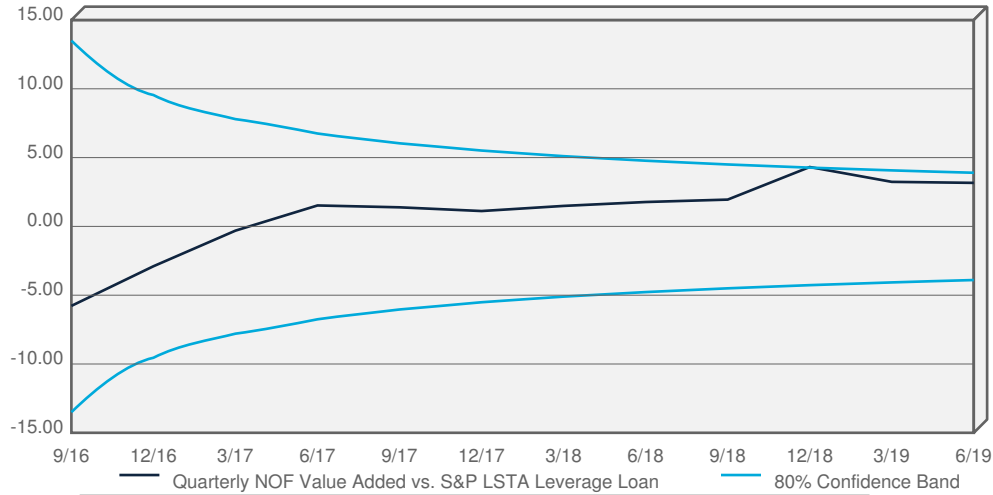


INVESTMENT MANAGER ANALYSIS

Cerberus Capital Mgmt

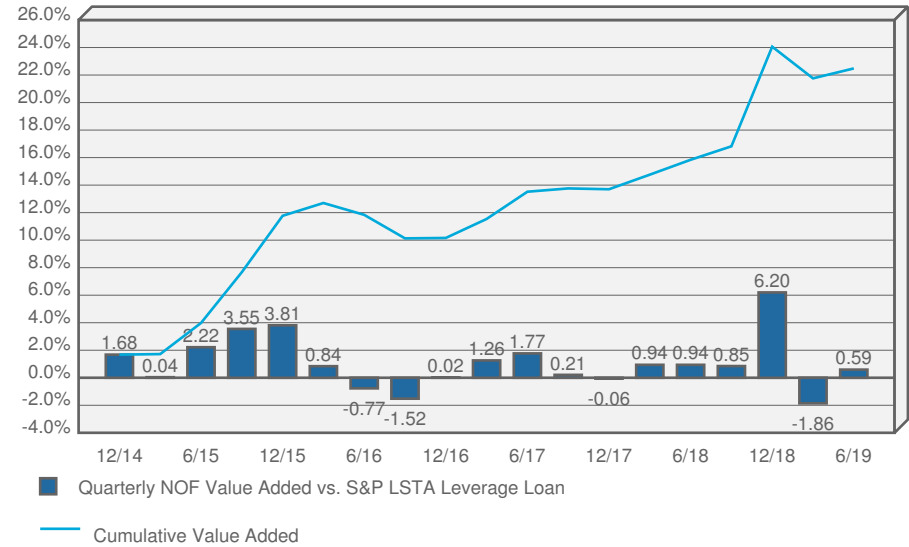
June 30, 2019

Cumulative Skill Analysis vs Benchmark



Excess Return:	3.16	Information Ratio:	0.77
Excess Risk:	4.10	T-Stat:	1.34

Value-Added Analysis vs Benchmark

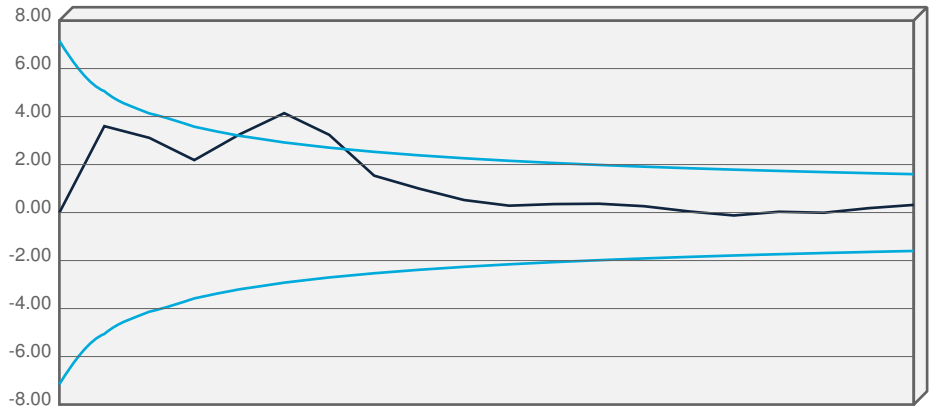


INVESTMENT MANAGER ANALYSIS

Columbia

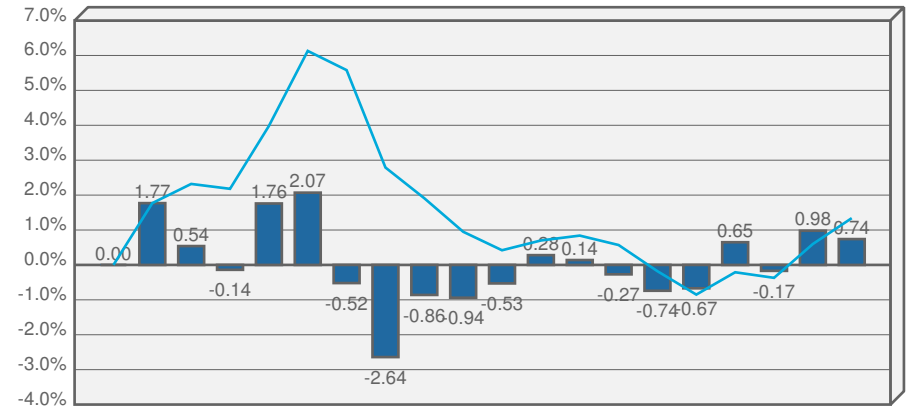
June 30, 2019

Cumulative Skill Analysis vs Benchmark



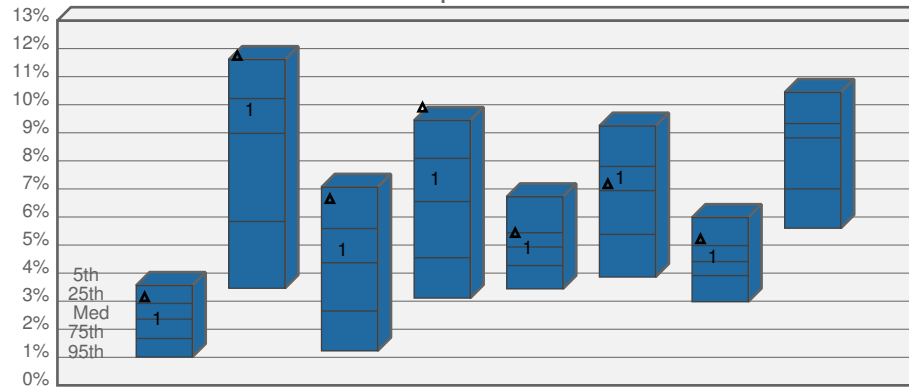
Excess Return:	0.32	Information Ratio:	0.15
Excess Risk:	2.17	T-Stat:	0.33

Value-Added Analysis vs Benchmark



Quarterly NOF Value Added vs. Bloomberg High Yield
Cumulative Value Added

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▲ Columbia	3.34 (7)	11.94 (2)	6.84 (7)	10.10 (2)	5.63 (19)	7.37 (40)	5.41 (12)	
■ Bloomberg High	2.50 (44)	9.94 (31)	4.96 (36)	7.48 (35)	5.02 (45)	7.52 (34)	4.70 (37)	
Median	2.36	8.98	4.37	6.55	4.93	6.94	4.41	8.82
Number of Funds	245	244	242	240	239	231	216	145

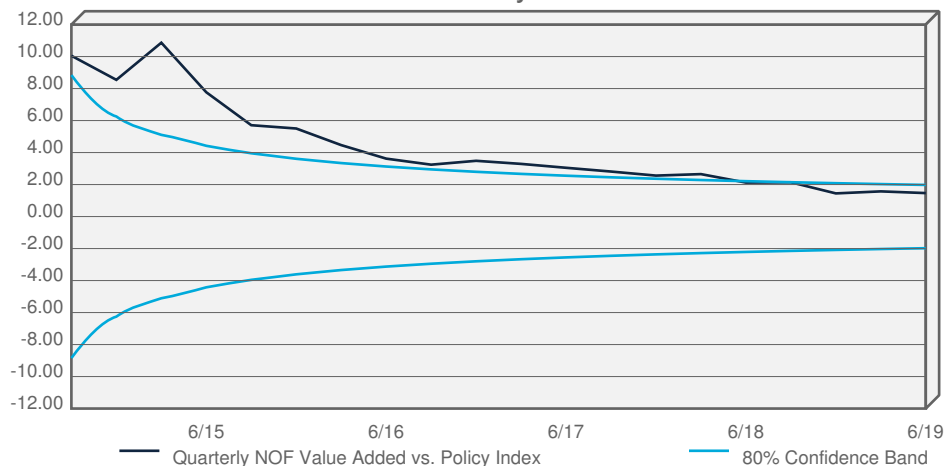
*Compass Total Returns of Active High Yield Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Manulife Asset Mgmt

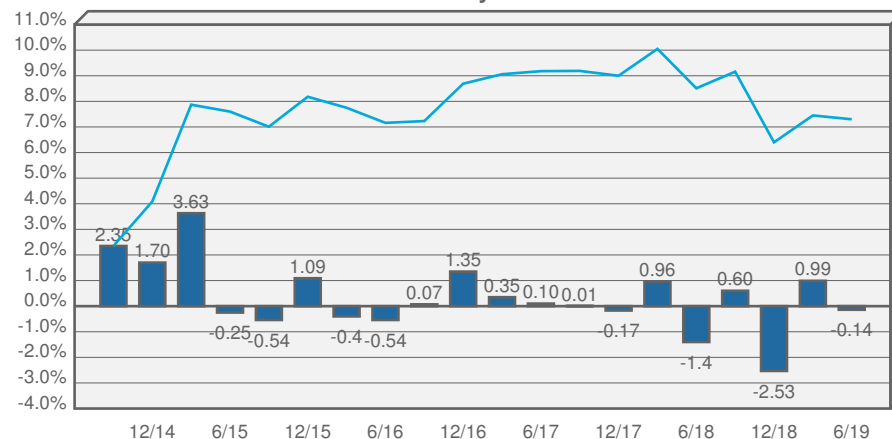
June 30, 2019

Cumulative Skill Analysis vs Benchmark



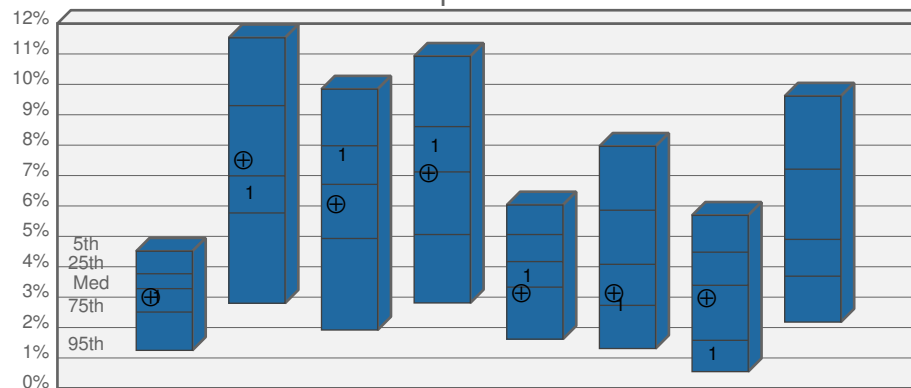
Excess Return:	1.47	Information Ratio:	0.55
Excess Risk:	2.69	T-Stat:	1.22

Value-Added Analysis vs Benchmark



■ Quarterly NOF Value Added vs. Policy Index
 — Cumulative Value Added

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊕ Manulife Asset	3.01 (59)	7.52 (39)	6.09 (59)	7.09 (50)	3.15 (80)	3.15 (65)	2.99 (57)	
1 Policy Index	3.11 (55)	6.54 (60)	7.78 (28)	8.07 (30)	3.82 (62)	2.84 (73)	1.24 (85)	
Median	3.28	6.99	6.71	7.12	4.17	4.08	3.39	4.90
Number of Funds	269	266	265	263	252	248	233	134

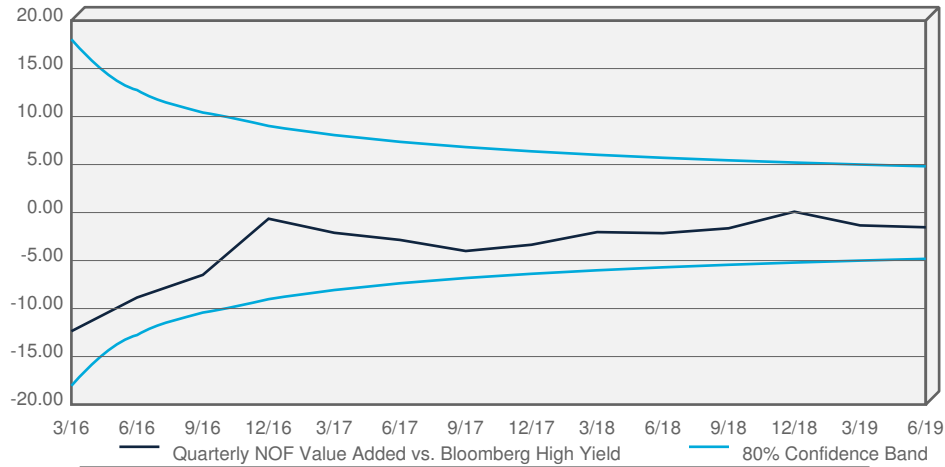
*Compass Total Returns of Active Global Intl Fixed Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Marathon Bluegrass

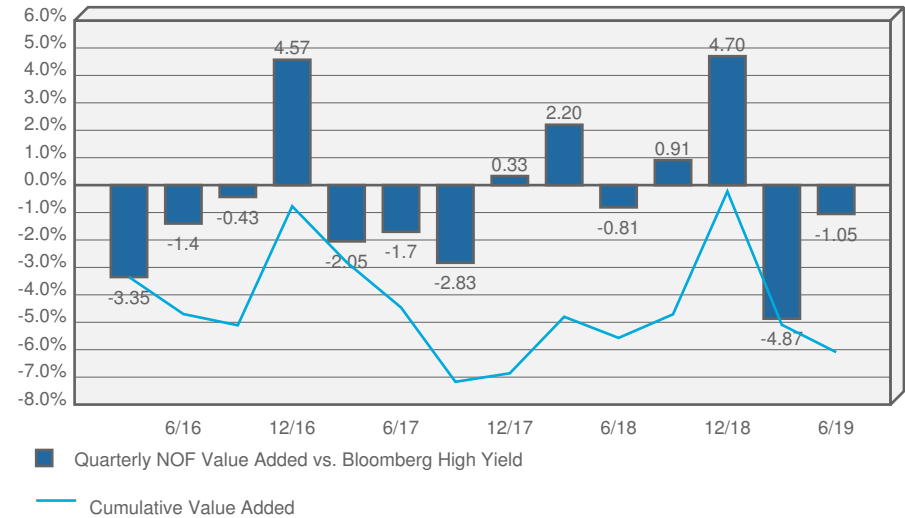
June 30, 2019

Cumulative Skill Analysis vs Benchmark

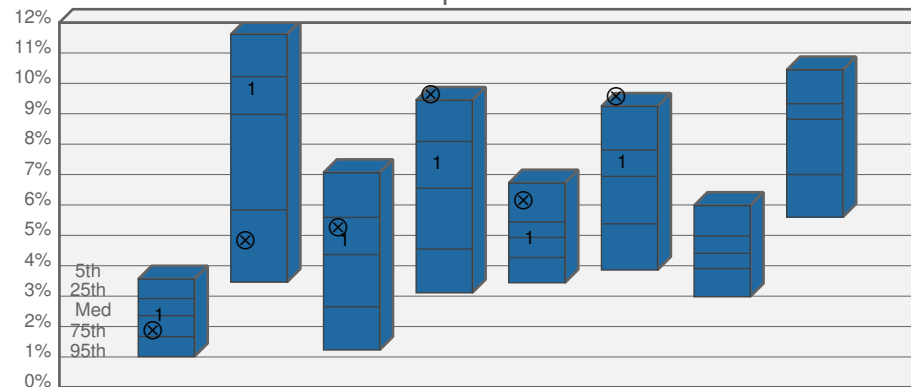


Excess Return:	-1.53	Information Ratio:	-0.28
Excess Risk:	5.48	T-Stat:	-0.48

Value-Added Analysis vs Benchmark



Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊗ Marathon Blueg	1.90 (63)	4.86 (89)	5.29 (31)	9.65 (2)	6.17 (7)	9.59 (4)		
1 Bloomberg High	2.50 (44)	9.94 (31)	4.96 (36)	7.48 (35)	5.02 (45)	7.52 (34)		
Median	2.36	8.98	4.37	6.55	4.93	6.94	4.41	8.82
Number of Funds	245	244	242	240	239	231	216	145

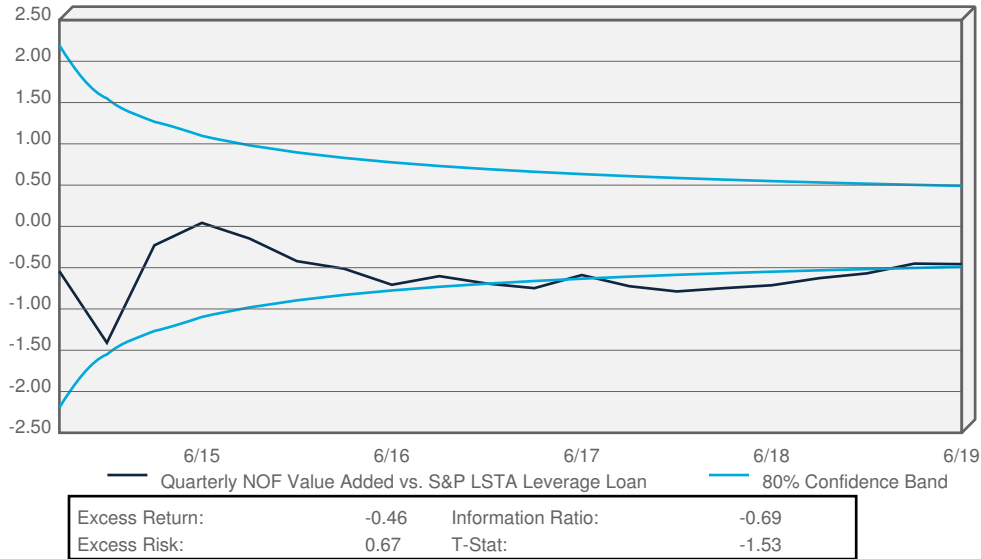
*Compass Total Returns of Active High Yield Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

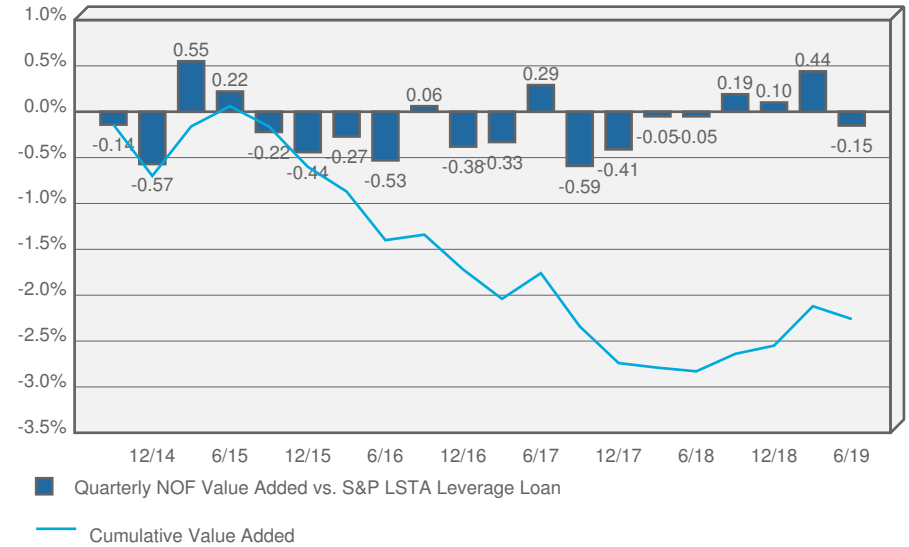
Shenkman Capital

June 30, 2019

Cumulative Skill Analysis vs Benchmark



Value-Added Analysis vs Benchmark

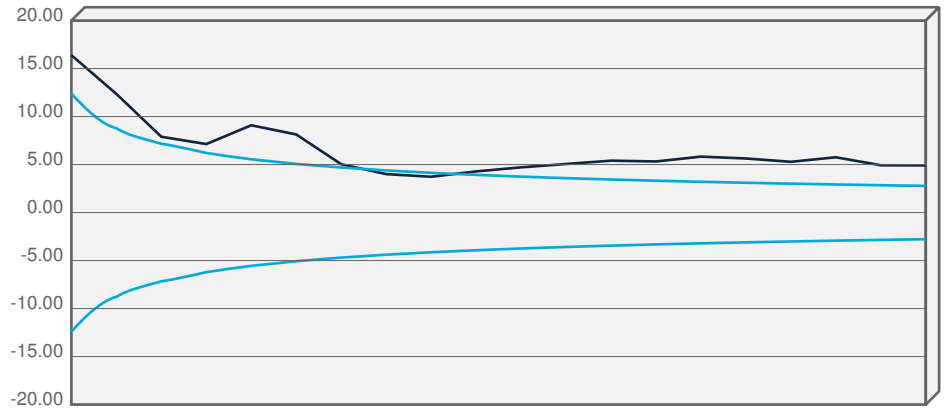


INVESTMENT MANAGER ANALYSIS

Waterfall

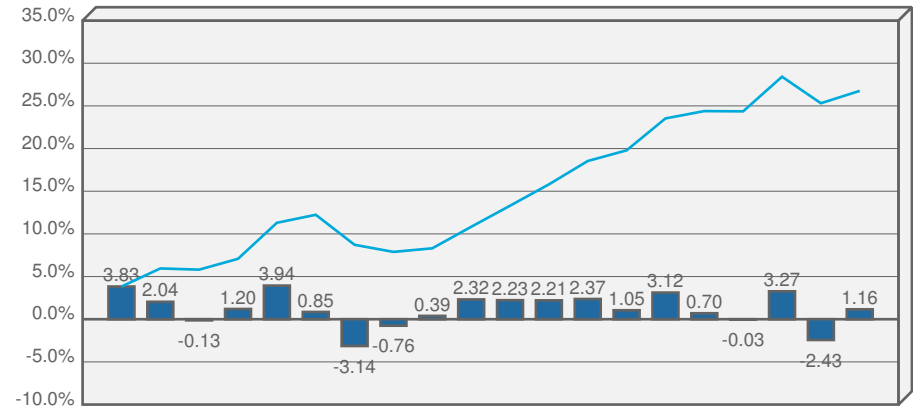
June 30, 2019

Cumulative Skill Analysis vs Benchmark



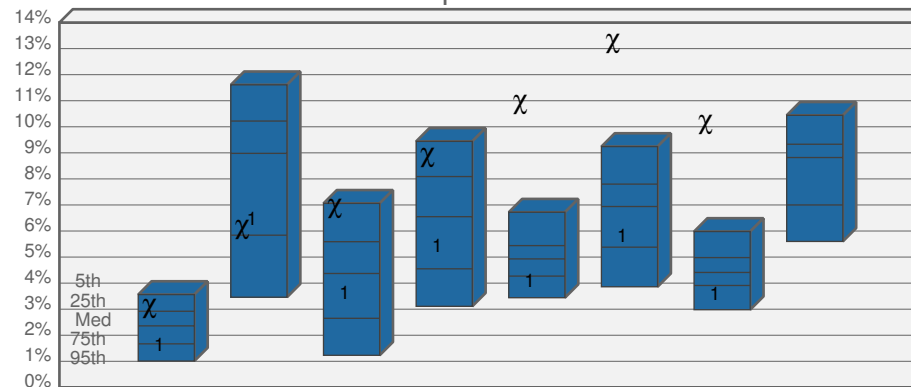
Excess Return:	4.91	Information Ratio:	1.30
Excess Risk:	3.77	T-Stat:	2.91

Value-Added Analysis vs Benchmark



Quarterly NOF Value Added vs. Policy Index
Cumulative Value Added

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
χ Waterfall	2.93 (24)	5.99 (70)	6.77 (7)	8.74 (11)	10.76 (1)	13.11 (1)	10.00 (1)	
1 Policy Index	1.77 (69)	6.57 (62)	3.75 (59)	5.56 (60)	4.21 (77)	5.93 (64)	3.71 (80)	
Median	2.36	8.98	4.37	6.55	4.93	6.94	4.41	8.82
Number of Funds	245	244	242	240	239	231	216	145

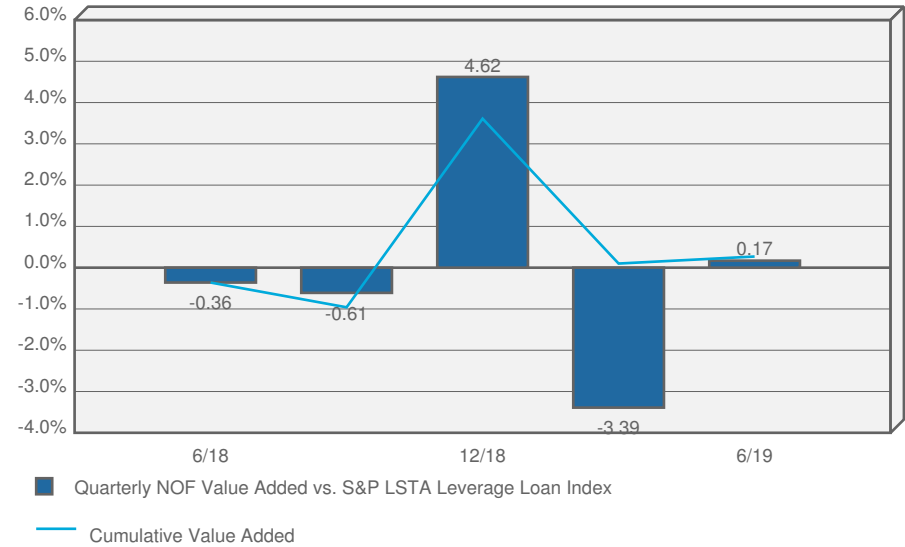
*Compass Total Returns of Active High Yield Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

White Oak Yield Spectrum

June 30, 2019

Value-Added Analysis vs Benchmark



CUSTOM BENCHMARK SPECIFICATION

Fixed Income Composite

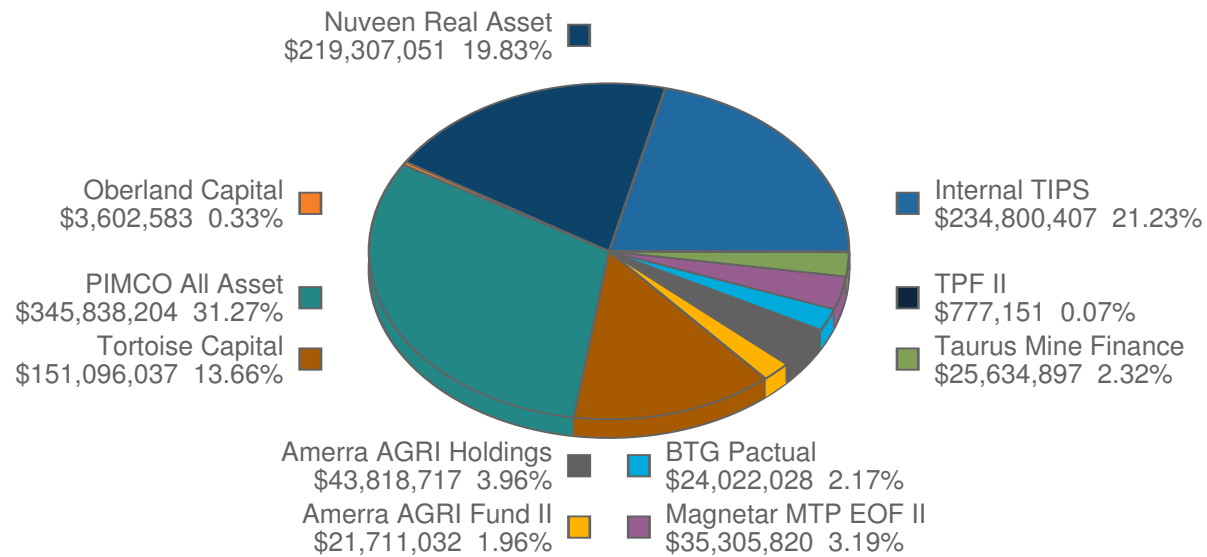
June 30, 2019

	Quarter Start	Quarter End	Percent	Description
Policy Index	6/84	6/17	100.00	Blended Fixed Benchmark
	9/17	6/19	50.00	Bloomberg Universal
			50.00	Bloomberg High Yield
Bloomberg Global Aggregate	6/84	6/19	100.00	Bloomberg Global Aggregate



REAL RETURN

Wilshire Consulting
MANAGER ALLOCATION
 Real Return Composite
 As of June 30, 2019



PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Internal TIPS									
Net of Fee Return	1.93	3.94	4.05	3.85	1.74	1.55	3.55	6/30/02	4.65
Bloomberg 1-10 Yrs TIPS	2.53	5.17	5.11	4.67	1.93	1.41	3.46	6/30/02	4.59
Value Added	-0.60	-1.22	-1.06	-0.82	-0.19	0.14	0.09	6/30/02	0.06
PIMCO All Asset									
Net of Fee Return	2.68	8.21	4.64	4.99	6.64	2.72		12/31/11	5.35
Bloomberg 1-10 Yrs TIPS	2.53	5.17	5.11	4.67	1.93	1.42		12/31/11	1.36
Value Added	0.14	3.05	-0.47	0.32	4.70	1.30		12/31/11	3.99
Tortoise Capital									
Net of Fee Return	-0.62	17.70	-1.38	1.49	1.16	-5.31		9/30/09	10.45
Alerian MLP	0.12	16.96	-3.27	3.09	-0.42	-7.20		9/30/09	6.98
Value Added	-0.74	0.74	1.89	-1.60	1.57	1.90		9/30/09	3.47
Nuveen Real Asset									
Net of Fee Return	3.33	14.61	8.61	10.24	6.91			3/31/15	6.06
Policy Index	3.02	15.55	9.37	9.12	6.34			3/31/15	5.92
Value Added	0.31	-0.93	-0.76	1.12	0.57			3/31/15	0.13
Amerra AGRI Fund II									
Net of Fee Return	0.98	1.60	3.06	1.61	-0.11	4.23		12/31/12	3.83
Amerra AGRI Holdings									
Net of Fee Return	0.71	-0.24	-0.76	-2.56	-2.17			9/30/15	-1.59
BTG Pactual									
Net of Fee Return	0.01	3.62	8.77	1.17	3.86			12/31/14	-7.44

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

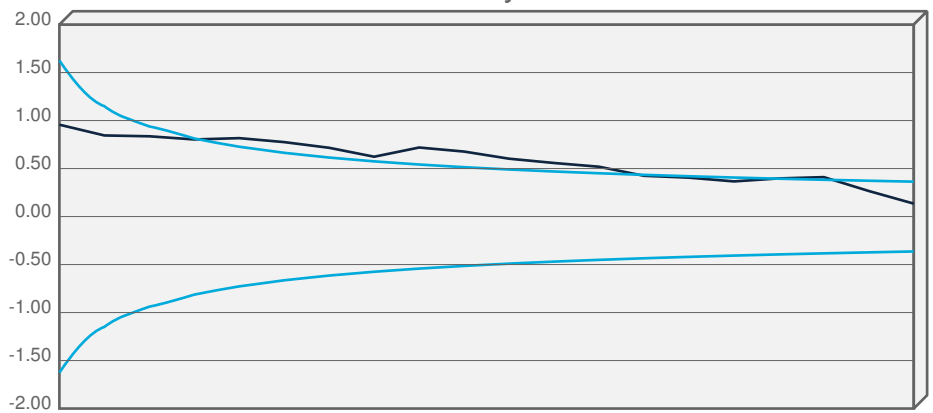
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Magnetar MTP EOF II Net of Fee Return	2.56	1.61	4.48	7.97	10.59			9/30/15	3.31
Oberland Capital Net of Fee Return	0.00	-6.90	14.89					9/30/18	14.89
Taurus Mine Finance Net of Fee Return	4.14	8.99	11.40	19.36	15.34			3/31/15	14.64
TPF II Net of Fee Return	14.36	14.36	14.02	13.65	9.70	0.99	-0.80	9/30/08	-2.12
Real Return Composite Net of Fee Return	2.06	9.01	4.39	5.05	4.82	2.26		6/30/11	3.87
Real Return Index (P)	2.18	8.36	4.67	5.32	3.03	1.66		6/30/11	2.87
Value Added	-0.12	0.65	-0.29	-0.27	1.79	0.60		6/30/11	1.01

INVESTMENT MANAGER ANALYSIS

Internal TIPS

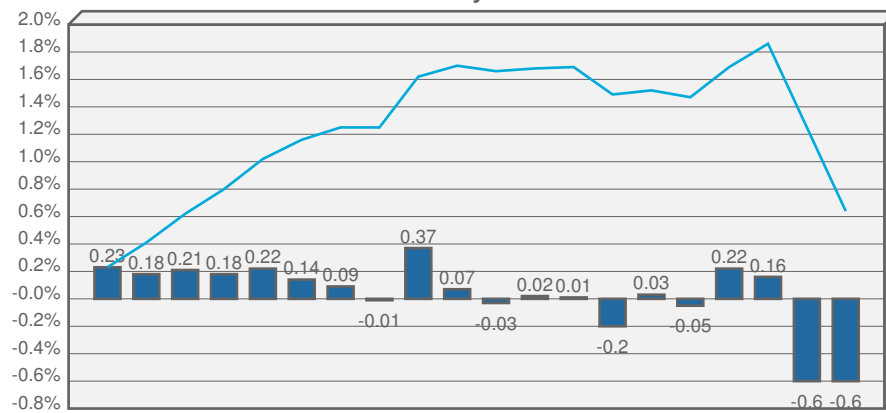
June 30, 2019

Cumulative Skill Analysis vs Benchmark



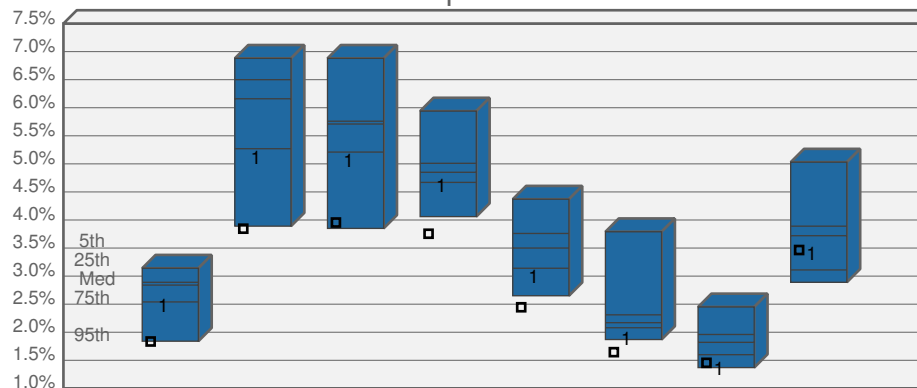
—	Quarterly NOF Value Added vs. Bloomberg 1-10 Yrs TIPS	—	80% Confidence Band
Excess Return:	0.13	Information Ratio:	0.27
Excess Risk:	0.49	T-Stat:	0.61

Value-Added Analysis vs Benchmark



■	Quarterly NOF Value Added vs. Bloomberg 1-10 Yrs TIPS	—	Cumulative Value Added
---	---	---	------------------------

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
□ Internal TIPS	1.93 (94)	3.94 (94)	4.05 (94)	3.85 (97)	2.54 (97)	1.74 (97)	1.55 (79)	3.56 (72)
▮ Bloomberg 1-10	2.53 (82)	5.17 (81)	5.11 (81)	4.67 (81)	3.05 (91)	1.93 (91)	1.41 (91)	3.46 (72)
Median	2.84	6.16	5.71	4.85	3.50	2.17	1.82	3.72
Number of Funds	39	38	38	37	36	36	35	29

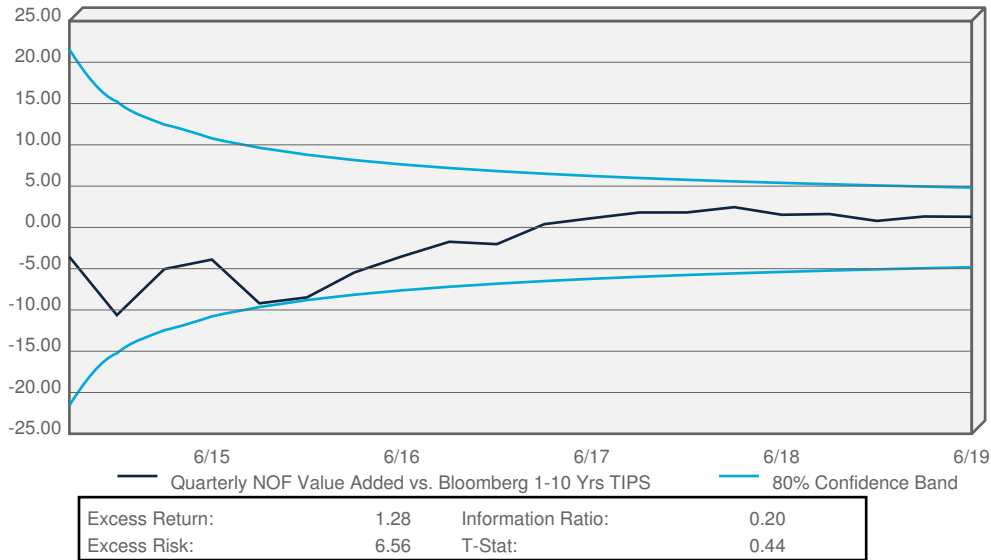
*Compass Total Returns of Active TIPS Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

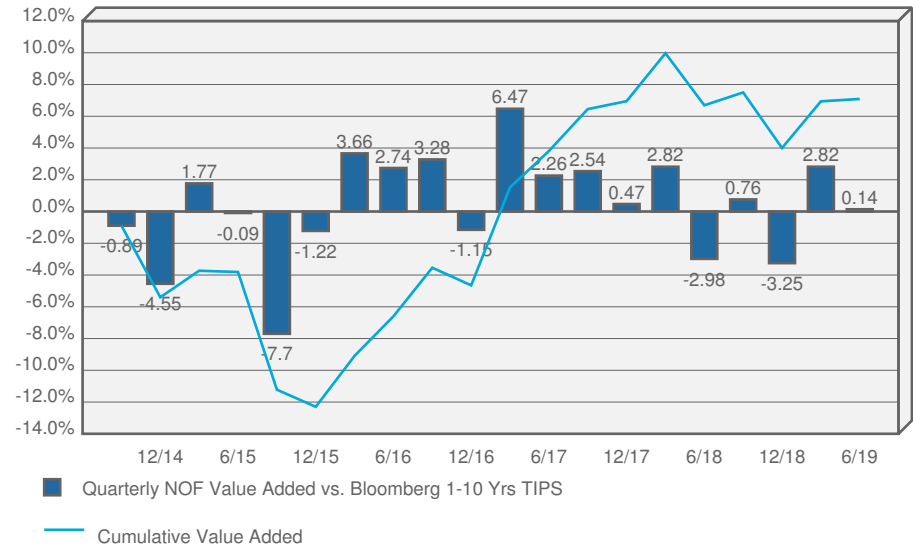
PIMCO All Asset

June 30, 2019

Cumulative Skill Analysis vs Benchmark



Value-Added Analysis vs Benchmark

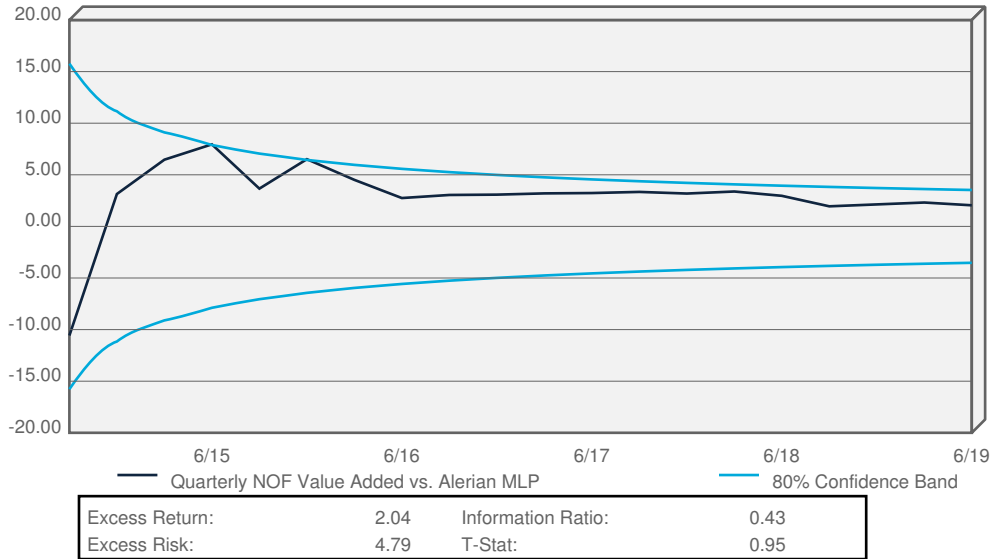


INVESTMENT MANAGER ANALYSIS

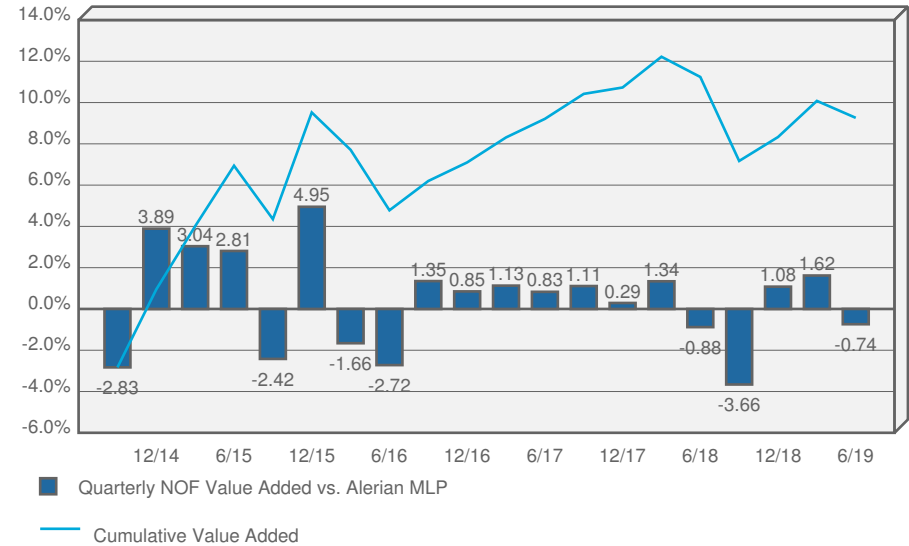
Tortoise Capital

June 30, 2019

Cumulative Skill Analysis vs Benchmark



Value-Added Analysis vs Benchmark

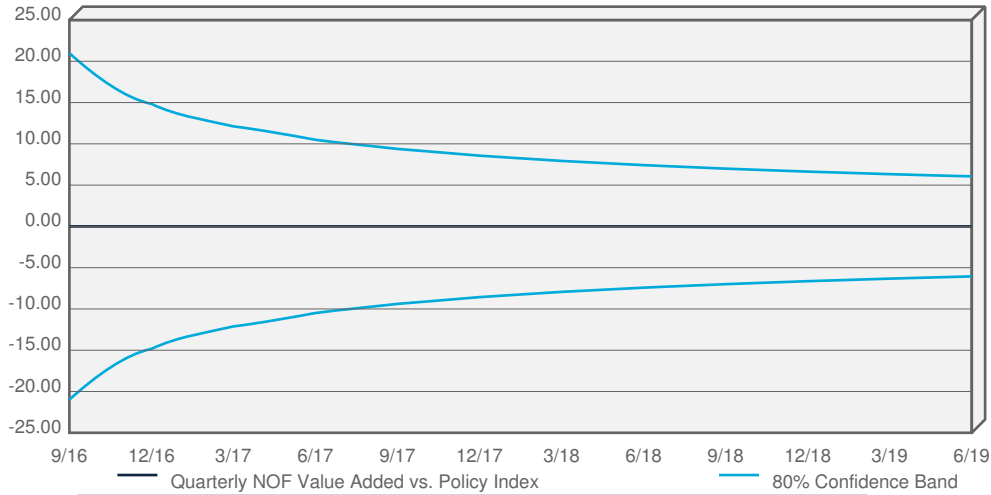


INVESTMENT MANAGER ANALYSIS

Nuveen Real Asset

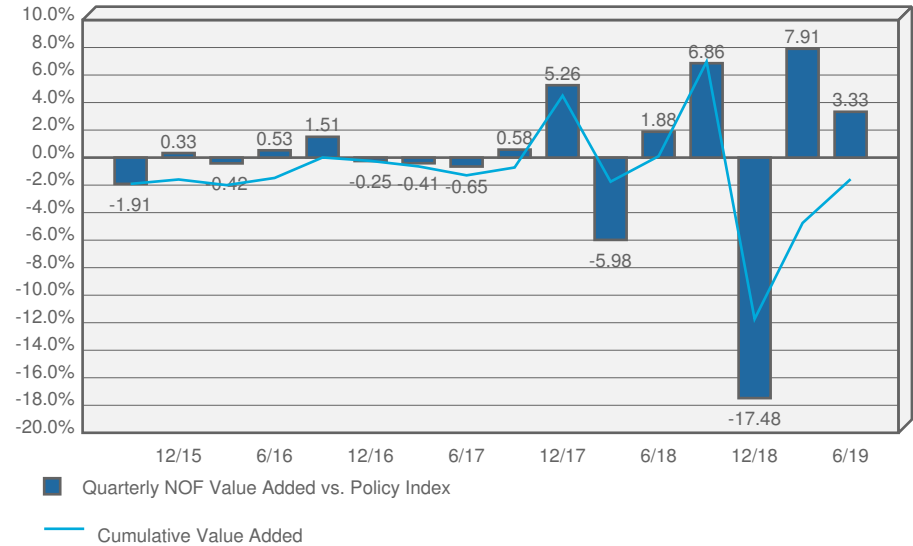
June 30, 2019

Cumulative Skill Analysis vs Benchmark



Excess Return:	-0.21	Information Ratio:	-0.03
Excess Risk:	6.38	T-Stat:	-0.06

Value-Added Analysis vs Benchmark



CUSTOM BENCHMARK SPECIFICATION

Real Return Composite

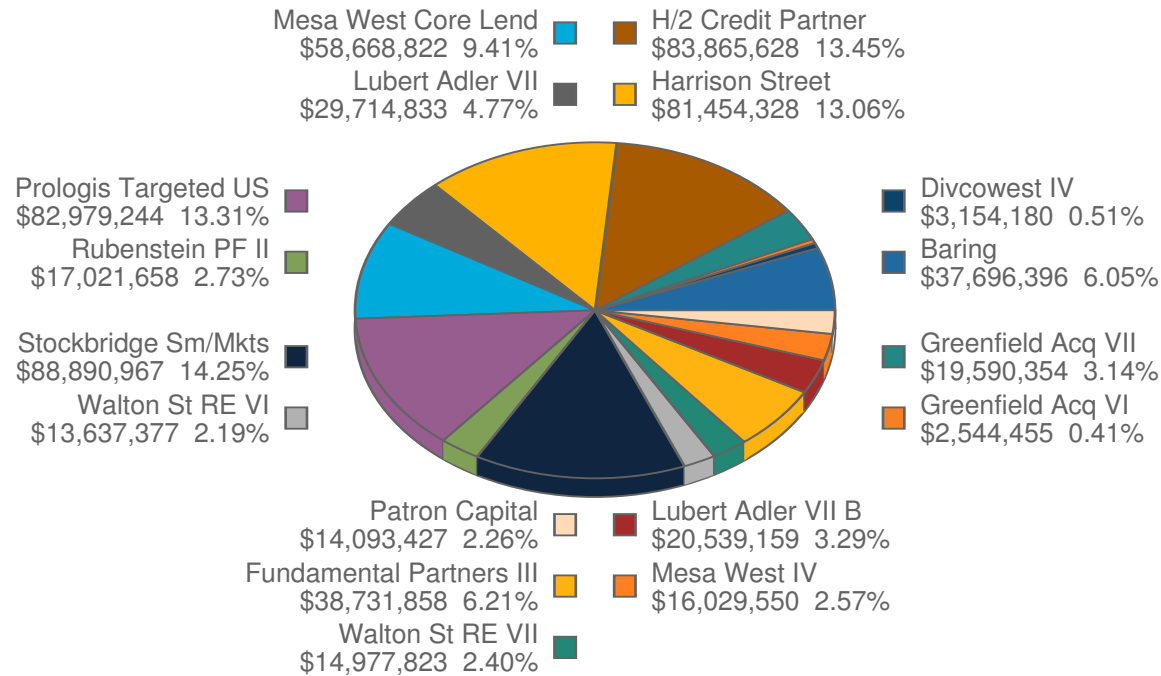
June 30, 2019

	Quarter Start	Quarter End	Percent	Description
Real Return Index (P)	9/11	6/19	100.00	Real Return Index (P)



REAL ESTATE

Wilshire Consulting
MANAGER ALLOCATION
 Real Estate Composite
As of June 30, 2019



PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Baring									
Net of Fee Return	1.41	-0.39						12/31/18	-0.39
Divcowest IV									
Net of Fee Return	0.00	-0.30	2.37	9.96	17.91	21.05		3/31/14	19.61
Greenfield Acq VI									
Net of Fee Return	-0.39	-17.40	-17.73	-26.91	-10.90	-1.09		12/31/12	2.04
Greenfield Acq VII									
Net of Fee Return	0.28	4.98	5.46	10.95	12.47	11.62		6/30/14	11.62
H/2 Credit Partner									
Net of Fee Return	-1.90	-2.17	-2.86	-1.71	4.74	3.95		6/30/11	5.13
Harrison Street									
Net of Fee Return	1.34	1.34	3.21	6.77	8.55	9.22		6/30/12	8.76
Lubert Adler VII									
Net of Fee Return	1.11	9.71	9.97	13.21	10.45	0.63		6/30/14	0.63
Mesa West Core Lend									
Net of Fee Return	1.86	1.86	3.83	7.30	7.64	7.00		6/30/13	6.92
Prologis Targeted US									
Net of Fee Return	2.90	6.41	9.98	15.63	16.93			9/30/14	15.44
Rubenstein PF II									
Net of Fee Return	0.00	2.46	6.47	11.64	11.01	9.65		6/30/13	13.37

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Stockbridge Sm/Mkts Net of Fee Return	2.07	4.00	7.63	9.39	8.63	9.60		6/30/14	9.60
Walton St RE VI Net of Fee Return	1.35	-2.21	-0.06	2.17	2.39	5.54	-16.64	6/30/09	-16.64
Walton St RE VII Net of Fee Return	0.00	-1.49	-1.57	-1.31	6.73	10.39		6/30/13	10.63
Fundamental Partners III Net of Fee Return	1.97	4.80	8.31	10.16				6/30/17	6.76
Lubert Adler VII B Net of Fee Return	2.40	8.11	8.51	10.81				6/30/17	3.61
Mesa West IV Net of Fee Return	0.00	1.42	4.07	6.54				3/31/17	4.79
Patron Capital Net of Fee Return	1.89	6.65	9.62	12.13				9/30/16	3.08
Real Estate Composite Net of Fee Return	1.19	2.63	4.47	7.25	8.89	8.74	8.92	6/30/84	6.09
NCREIF ODCE NOF 1 Quarter Lag	1.20	2.74	4.66	6.55	7.01	9.17	7.73		
Value Added	-0.01	-0.10	-0.19	0.70	1.88	-0.43	1.19		

CUSTOM BENCHMARK SPECIFICATION

Real Estate Composite

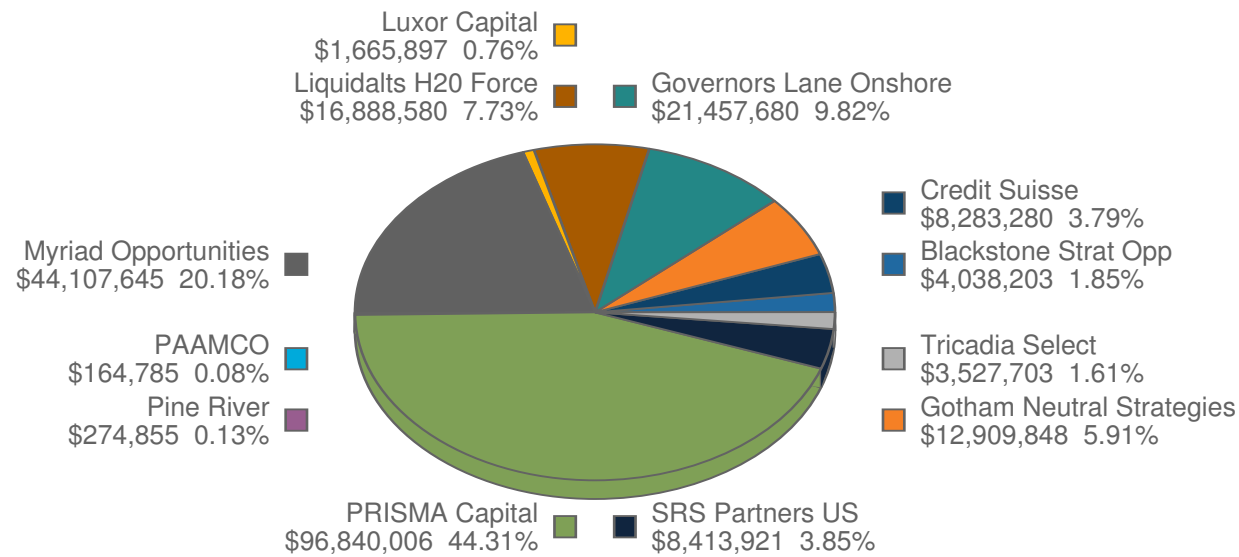
June 30, 2019

	Quarter Start	Quarter End	Percent	Description
NCREIF ODCE NOF 1 Quarter Lag	9/84	6/19	100.00	NCREIF ODCE NOF 1 Quarter Lag



ABSOLUTE RETURN

Wilshire Consulting
MANAGER ALLOCATION
 Absolute Return Composite
 As of June 30, 2019



PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Blackstone Strat Opp Net of Fee Return	-2.93	-4.69	-4.36	-3.17				9/30/17	0.63
Credit Suisse Net of Fee Return	1.75	3.30	5.35	6.97				6/30/17	7.03
Gotham Neutral Strategies Net of Fee Return	-3.22	-3.00	-2.76	-3.89				3/31/17	-2.80
Governors Lane Onshore Net of Fee Return	1.18	2.74	-2.71	-0.88				3/31/17	-0.03
Liquidalts H20 Force Net of Fee Return	0.12	0.21	3.30	5.06				9/30/16	5.33
Luxor Capital Net of Fee Return	9.35	9.29	19.66	19.97	23.90	4.91		3/31/14	4.85
Myriad Opportunities Net of Fee Return	-3.64	-4.08	-6.22	-9.85	2.62			6/30/16	2.62
PAAMCO Net of Fee Return	0.00	27.96	-56.67	-56.74	-29.25	-19.56		9/30/11	-10.36
Pine River Net of Fee Return	10.33	10.65	15.84	10.49	4.16	2.01		6/30/14	2.01
PRISMA Capital Net of Fee Return	0.00	1.44	0.25	1.10	4.02	2.24		9/30/11	3.57

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended June 30, 2019

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
SRS Partners US									
Net of Fee Return	5.68	4.94	12.96	3.91				9/30/17	5.28
Tricadia Select									
Net of Fee Return	0.76	1.14	-2.09	-7.58				9/30/17	-13.98
Absolute Return Composite									
Net of Fee Return	-0.49	0.49	-0.65	-0.53	3.43	1.82		3/31/10	3.64
HFRI FOF Div (1 Month Lag)	1.02	3.02	-0.19	0.17	3.48	2.12		3/31/10	2.74
Value Added	-1.52	-2.53	-0.46	-0.70	-0.05	-0.30		3/31/10	0.90

CUSTOM BENCHMARK SPECIFICATION

Absolute Return Composite

June 30, 2019

	Quarter Start	Quarter End	Percent	Description
HFRI FOF Div (1 Month Lag)	6/10	6/19	100.00	HFRI FOF Div (1 Month Lag)



MARKET ENVIRONMENT

MARKET COMMENTARY

U.S. Equity

The U.S. stock market was up 4.0% for the second quarter of 2019 and 18.66% for the year. This marks the strongest first half-year for U.S. equities in 24 years. Markets have been quite volatile this year as trade concerns and a possible global economic slowdown continue to sway the markets. Equity prices are also responding to actions and statements by the Federal Reserve, who has softened its monetary policy stance in the past few months.

Talk of what the Federal Open Market Committee will do at their next meeting is likely to dominate headlines during July. After three years of steady increases in the federal funds rate, the Fed appears to be at a pivotal moment. They have left the rate unchanged during 2019 and are forecasting no changes for the second half of the year. The open market, however, is currently far more aggressive on monetary policy and expects two or three 0.25% reductions.

Non-U.S. Equity

Equity markets outside of the U.S. continue to enjoy a strong 2019. Indicators out of Europe are still gloomy as recent data show that the manufacturing sector in Germany has weakened. News out of Japan is also troubling as consumption and capital spending shows little or no growth. Trade negotiations between the U.S. and China, the world's two largest economies, continue with both countries maintaining firm stances before the G20.

Fixed Income

The U.S. Treasury yield curve fell across all maturities during the quarter. The 10-year Treasury yield ended the quarter at 2.00%, down 41 basis points from March. The FOMC left its overnight rate unchanged during the quarter at a range of 2.25% to 2.50%. The committee softened some of their messaging to indicate that they are at least willing to ease should conditions deteriorate.

JUNE 2019 ASSET CLASS ASSUMPTIONS

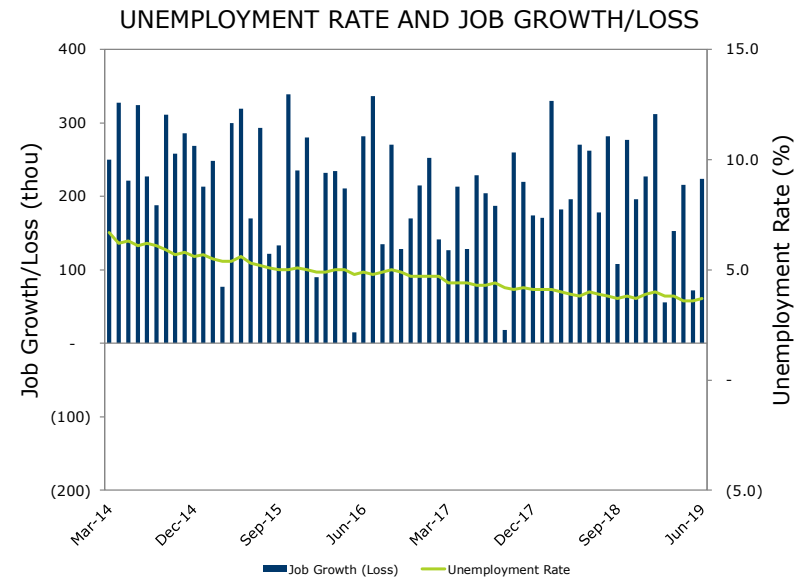
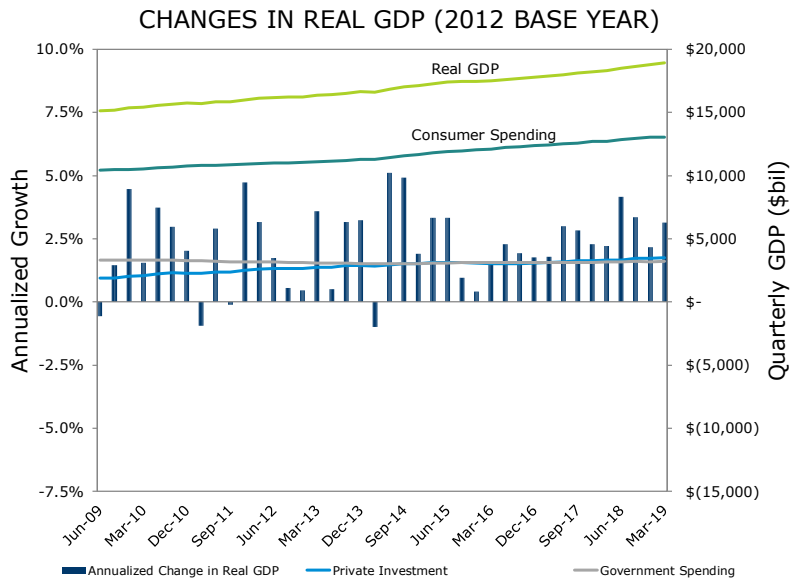
	EQUITY						FIXED INCOME						REAL ASSETS					
	US Stock	Dev ex-US Stock	Emg Stock	Global ex-US Stock	Global Stock	Private Equity	Cash	Core Bond	LT		High Yield	Dev ex-US Bond (Hdg)	Real Estate			Comdty	Real Assets	US CPI
		US RES	Global RES	Private RE	Core Bond	TIPS			US RES	Global RES			Private RE					
COMPOUND RETURN (%)	6.00	6.50	6.50	6.75	6.45	8.35	1.90	3.05	3.45	2.00	4.30	0.90	5.05	5.25	6.55	3.60	5.80	1.70
ARITHMETIC RETURN (%)	7.30	7.95	9.45	8.35	7.75	11.70	1.90	3.20	3.90	2.20	4.75	0.95	6.40	6.40	7.45	4.65	6.15	1.70
EXPECTED RISK (%)	17.00	18.00	26.00	18.80	17.05	28.00	1.25	5.15	9.85	6.00	10.00	3.50	17.00	15.80	14.00	15.00	8.75	1.75
CASH YIELD (%)	2.00	3.50	2.50	3.25	2.55	0.00	1.90	3.30	4.50	2.80	7.55	1.60	3.75	3.75	2.55	1.90	2.50	0.00
CORRELATIONS																		
US Stock	1.00																	
Dev ex-US Stock (USD)	0.81	1.00																
Emerging Mkt Stock	0.74	0.74	1.00															
Global ex-US Stock	0.83	0.96	0.86	1.00														
Global Stock	0.94	0.92	0.82	0.94	1.00													
Private Equity	0.74	0.64	0.62	0.67	0.74	1.00												
Cash Equivalents	-0.05	-0.09	-0.05	-0.08	-0.07	0.00	1.00											
Core Bond	0.28	0.13	0.00	0.09	0.20	0.31	0.19	1.00										
LT Core Bond	0.31	0.16	0.01	0.12	0.23	0.32	0.11	0.93	1.00									
TIPS	-0.05	0.00	0.15	0.05	0.00	-0.03	0.20	0.60	0.47	1.00								
High Yield Bond	0.54	0.39	0.49	0.45	0.51	0.34	-0.10	0.25	0.32	0.05	1.00							
Dev ex-US Bond (Hdg)	0.16	0.25	-0.01	0.18	0.18	0.26	0.10	0.67	0.66	0.39	0.26	1.00						
US RE Securities	0.59	0.47	0.44	0.49	0.56	0.50	-0.05	0.17	0.23	0.10	0.56	0.05	1.00					
Global RE Securities	0.65	0.59	0.56	0.62	0.66	0.58	-0.05	0.17	0.22	0.11	0.62	0.03	0.94	1.00				
Private Real Estate	0.54	0.44	0.44	0.47	0.52	0.51	-0.05	0.19	0.25	0.09	0.57	0.05	0.77	0.76	1.00			
Commodities	0.25	0.34	0.39	0.38	0.32	0.27	0.00	-0.02	-0.02	0.25	0.29	-0.10	0.25	0.28	0.25	1.00		
Real Assets	0.42	0.43	0.50	0.48	0.47	0.43	0.01	0.24	0.25	0.41	0.53	0.06	0.65	0.69	0.69	0.59	1.00	
Inflation (CPI)	-0.10	-0.15	-0.13	-0.15	-0.13	-0.10	0.10	-0.12	-0.12	0.15	-0.08	-0.08	0.05	0.03	0.05	0.44	0.26	1.00

ECONOMIC REVIEW

AS OF JUNE 30, 2019 KEY ECONOMIC INDICATORS

CPI (ALL ITEMS)	MONTHLY CHANGE		CUMULATIVE CHANGE	
SEASONALLY ADJUSTED	Jun-19	0.1	3-Mo.	0.5
	May-19	0.1	12-Mo.	1.7
	Apr-19	0.3	10-Yr. (Annual)	1.7
BREAKEVEN INFLATION	10-Yr.	1.7		
CONSUMER SENTIMENT	Jun-19	98.2		
U. OF MICHIGAN SURVEY	May-19	100.0		
	1-Yr. Ago	98.2	10-Yr. Avg	84.2
MANUFACTURING	Jun-19	51.7	CHANGE IN SECTOR	
INST. FOR SUPPLY MGMT	May-19	52.1	>50	Expansion
PURCHASING MNGRS' IDX	1-Yr. Avg.	56.0	<50	Contraction

Note: Seasonally adjusted CPI data is utilized to better reflect short-term pricing activity.

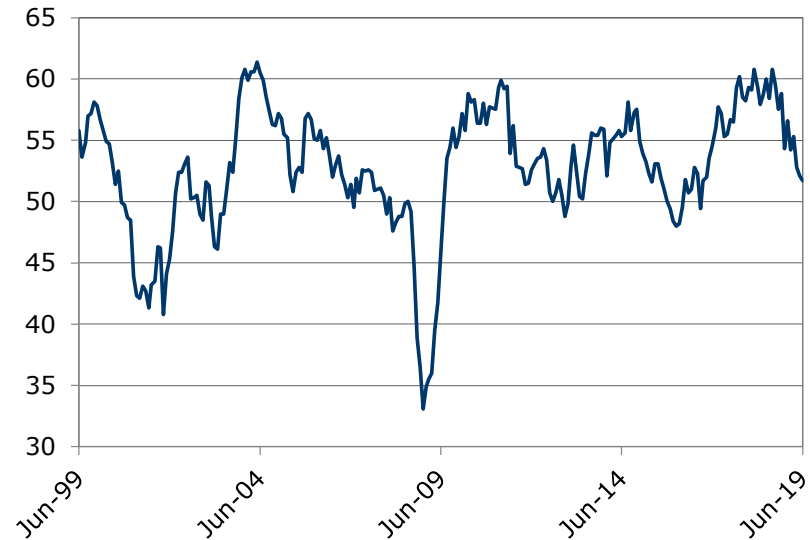


Data sources: Bureau of Labor Statistics, U.S. Treasury, University of Michigan, Institute for Supply Management, Bureau of Economic Analysis

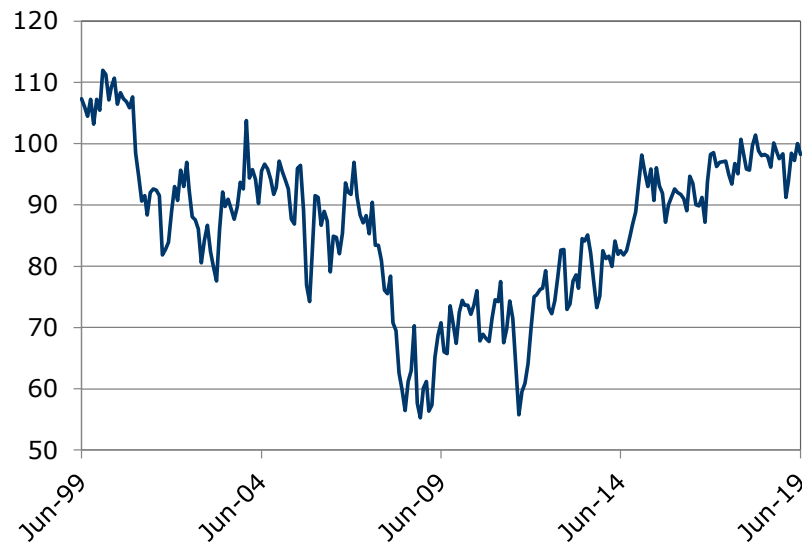
SIGNS OF SLOWING

- Surveys provide up-to-date proxy for economic activity
- Business activity continues to grow but has slowed; Consumer confidence proxies future demand
- Rate-sensitive sectors are slowing

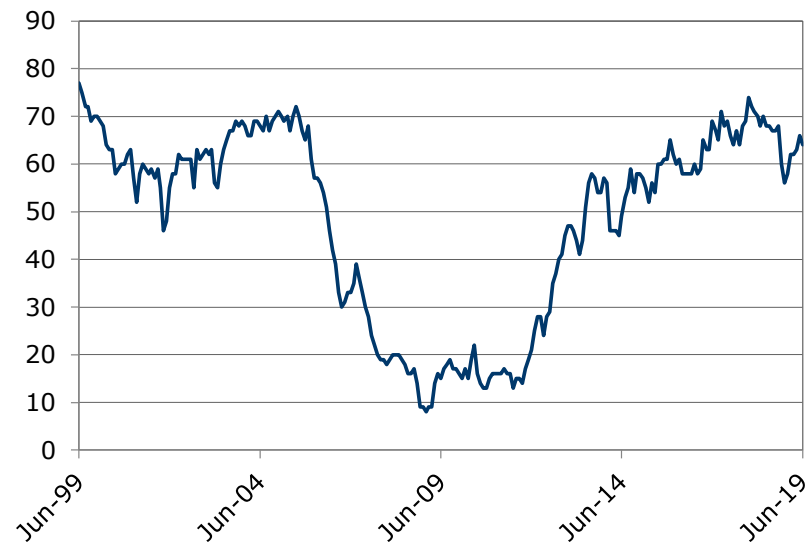
ISM MANUFACTURING INDEX



U. OF MI CONSUMER SENTIMENT INDEX

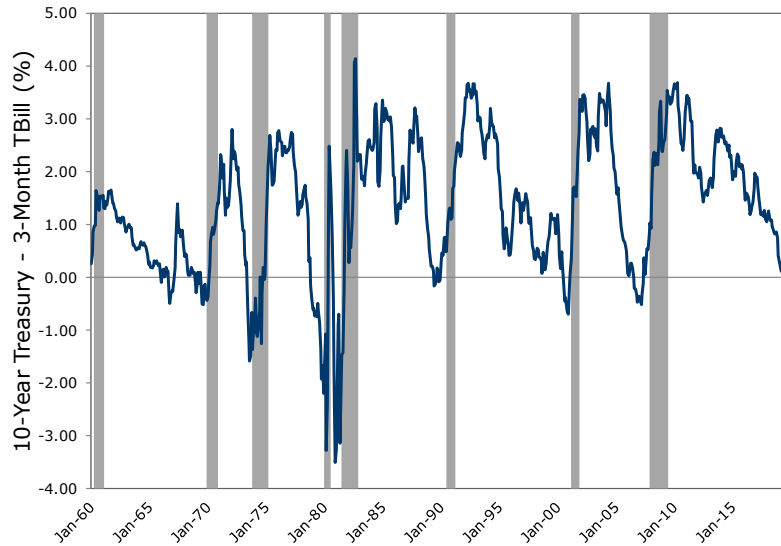


HOME BUILDERS HOME MARKET INDEX

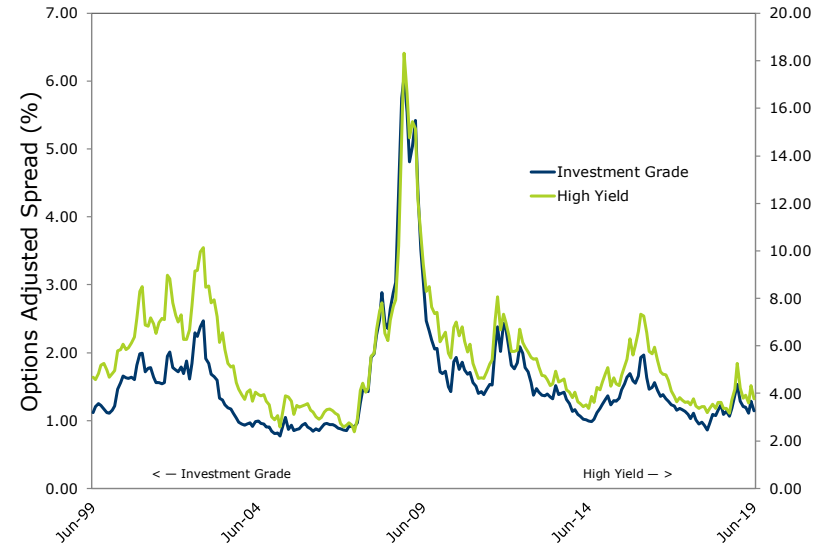


RISK MONITOR

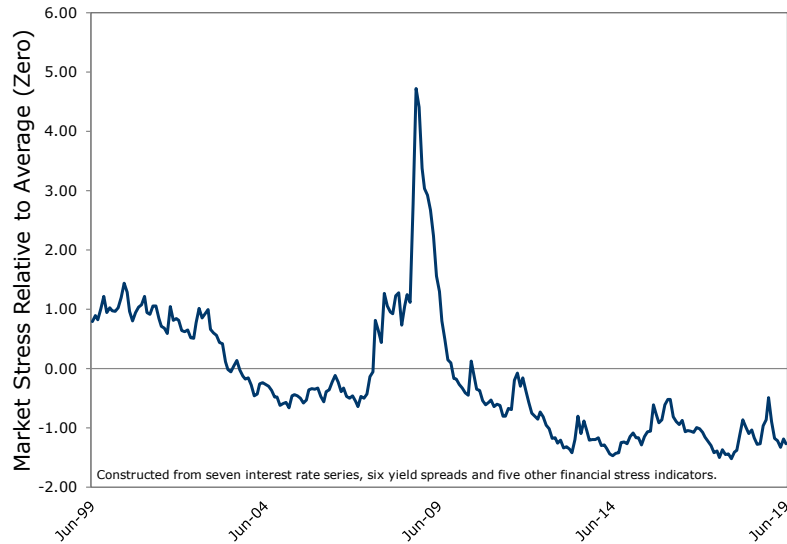
YIELD CURVE SLOPE VS RECESSIONS (IN GRAY)



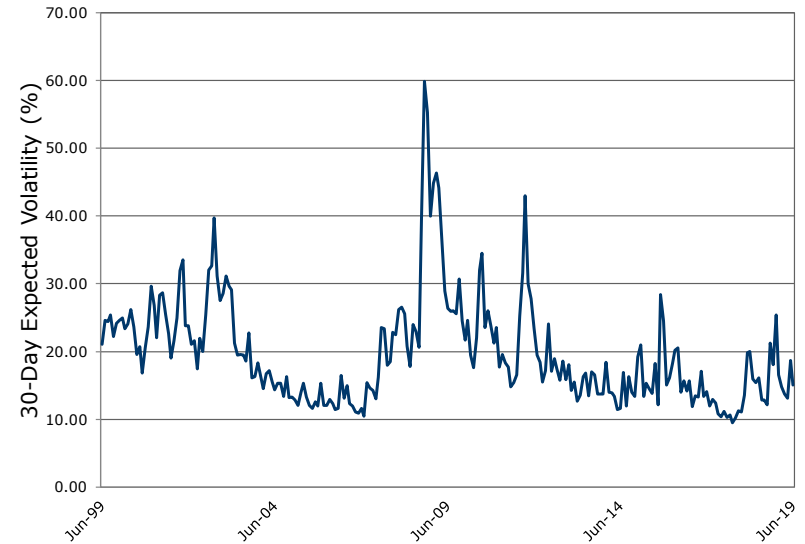
BLOOMBERG BARCLAYS CREDIT INDEXES



ST. LOUIS FED FINANCIAL STRESS INDEX



CBOE VOLATILITY INDEX

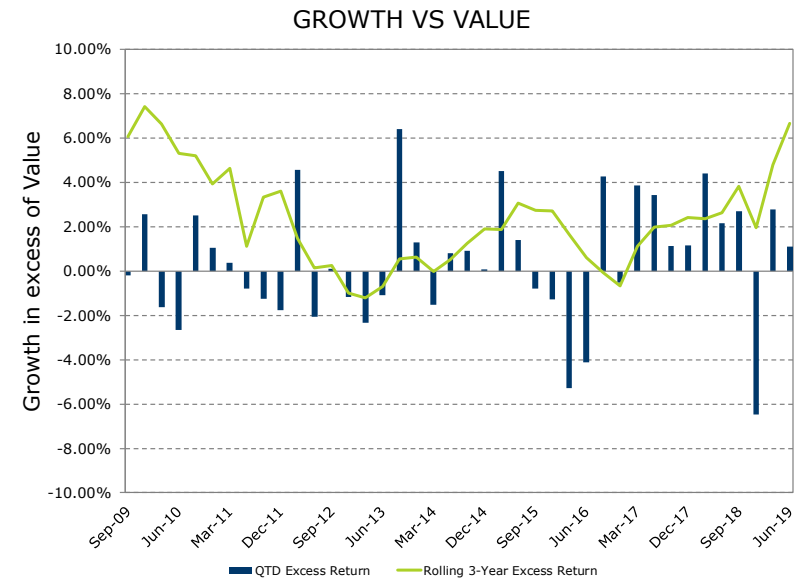
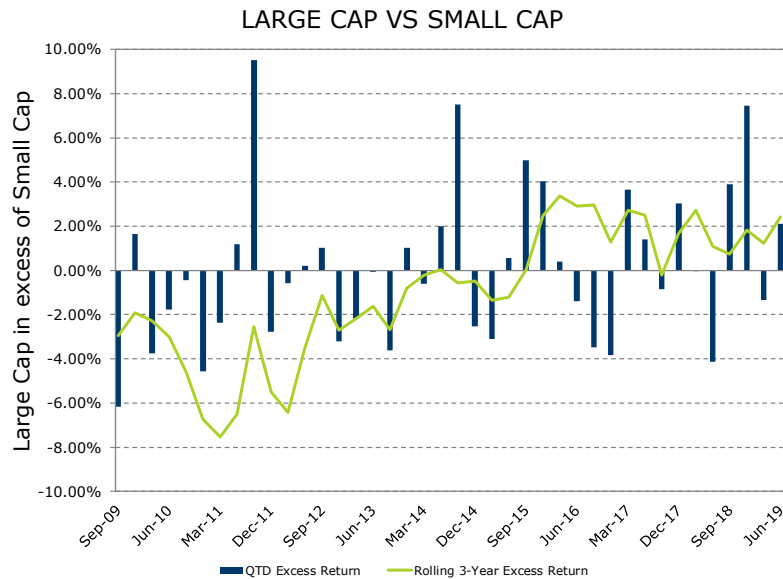
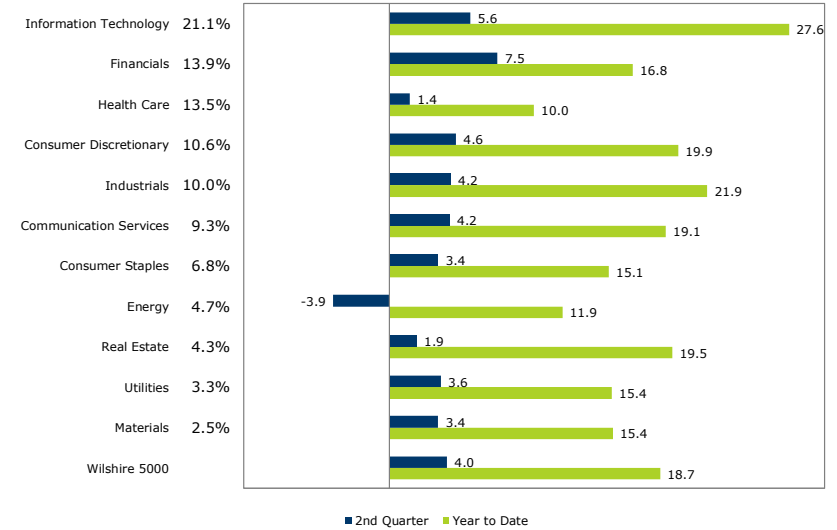


Data sources: Federal Reserve, Bloomberg Barclays

U.S. EQUITY MARKET

AS OF JUNE 30, 2019	QTR	YTD	1 YR	3 YR	5 YR	10 YR
WILSHIRE 5000 INDEX	4.0	18.7	9.1	14.0	10.3	14.7
WILSHIRE U.S. LARGE CAP	4.2	18.7	10.4	14.3	10.7	14.7
WILSHIRE U.S. SMALL CAP	2.0	17.9	-1.9	11.6	7.0	14.6
WILSHIRE U.S. LARGE GROWTH	4.7	21.1	10.0	18.1	12.4	15.7
WILSHIRE U.S. LARGE VALUE	3.8	16.7	10.7	10.7	9.0	13.6
WILSHIRE U.S. SMALL GROWTH	3.9	20.9	1.1	15.4	7.6	15.0
WILSHIRE U.S. SMALL VALUE	0.3	14.9	-4.7	7.9	6.3	14.0
WILSHIRE REIT INDEX	1.6	17.9	10.5	4.1	7.8	15.7
MSCI USA MIN. VOL. INDEX	5.5	18.6	18.0	11.8	12.3	14.6
FTSE RAFI U.S. 1000 INDEX	3.5	16.2	6.2	11.5	8.3	14.7

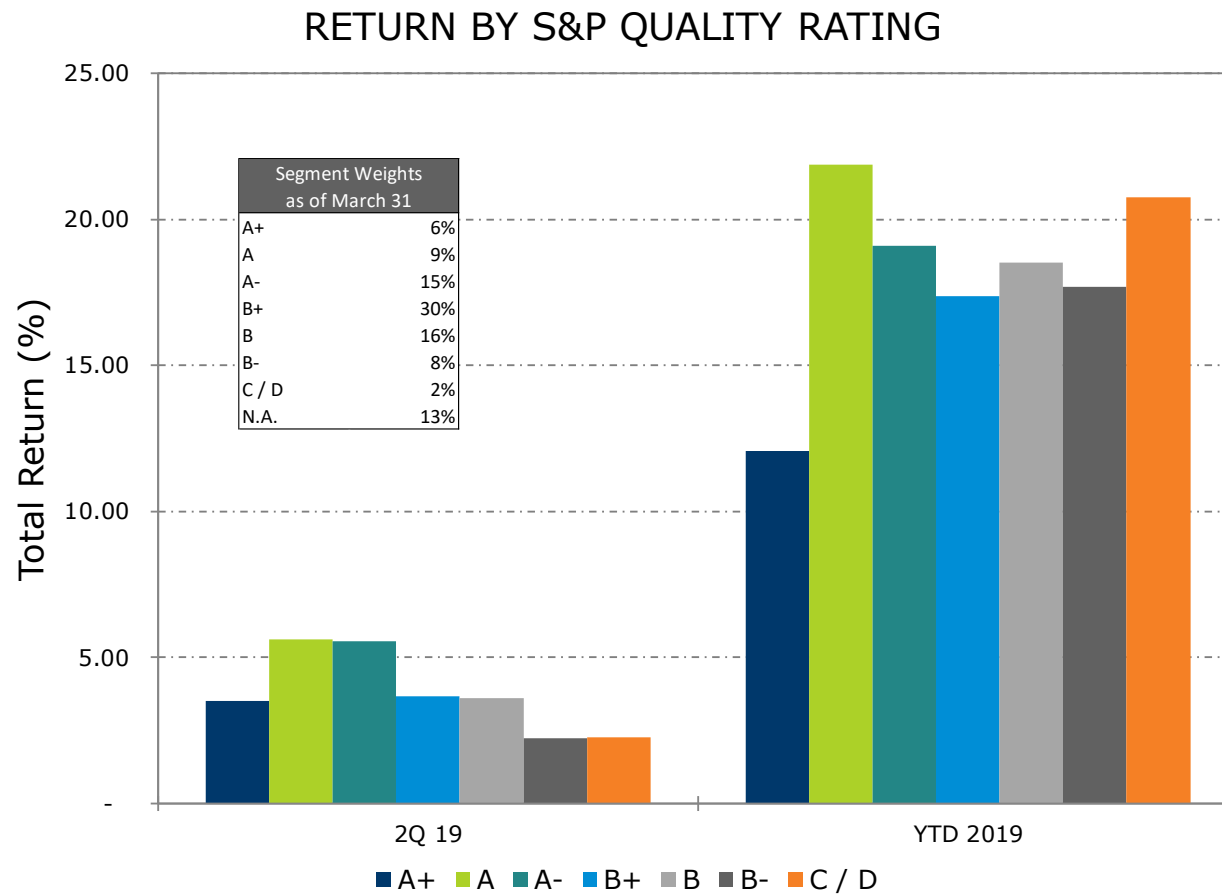
WILSHIRE 5000 SECTOR WEIGHT & RETURN (%)



Data sources: Wilshire Compass, Wilshire Atlas

RETURNS BY QUALITY SEGMENT

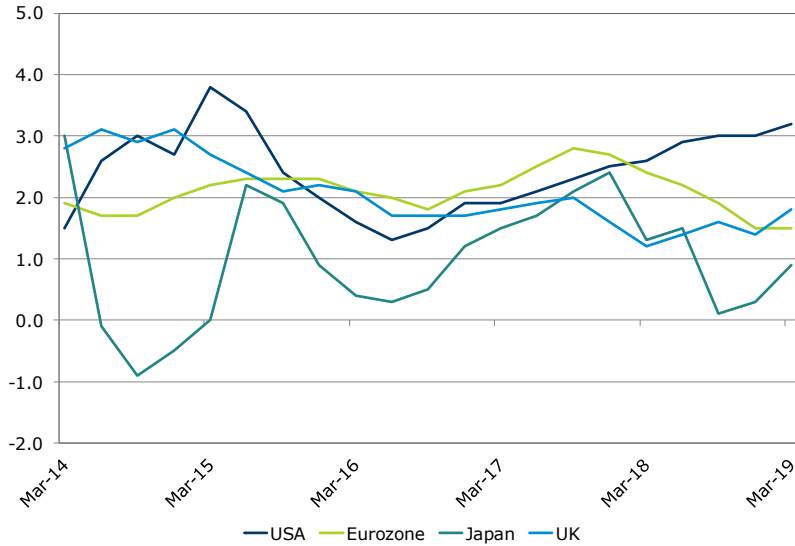
Higher quality names led the market during the second quarter



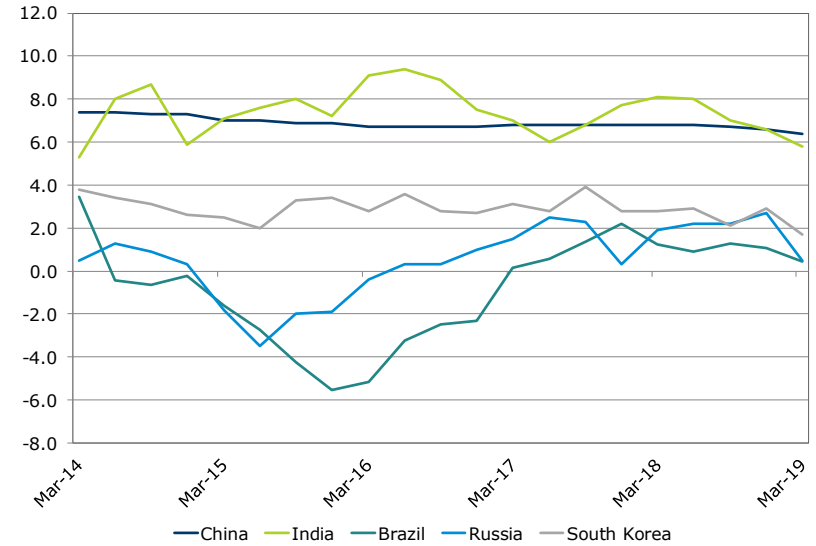
Data sources: Wilshire Atlas

NON-U.S. GROWTH AND INFLATION

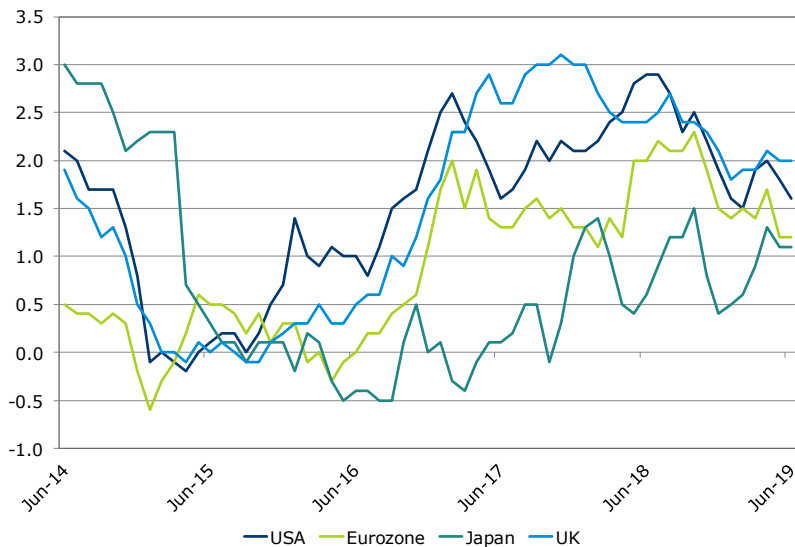
DEVELOPED MARKETS REAL GDP GROWTH YoY (%)



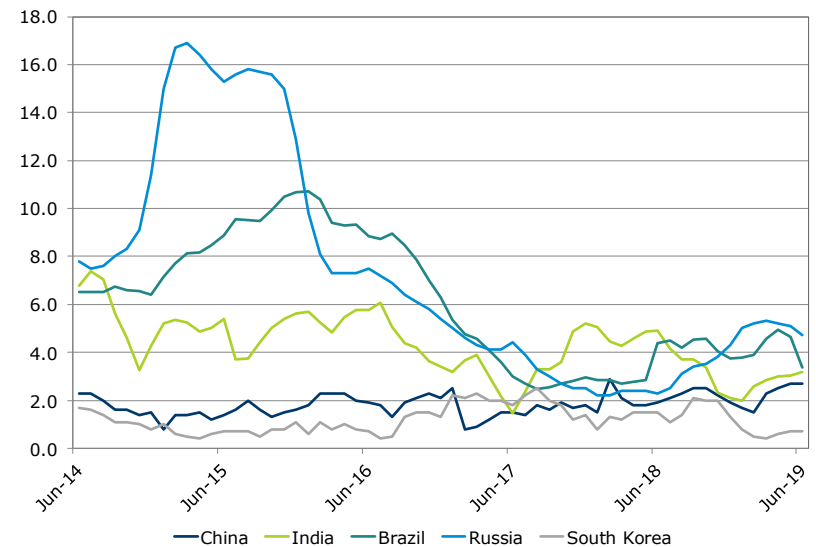
EMERGING MARKETS REAL GDP GROWTH YoY (%)



DEVELOPED MARKETS CPI GROWTH YoY (%)



EMERGING MARKETS CPI GROWTH YoY (%)



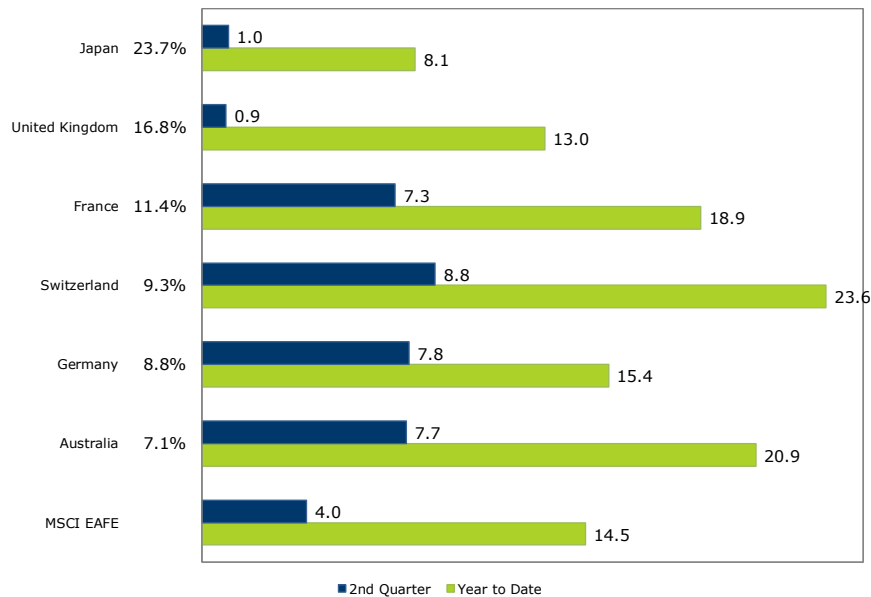
Data sources: Bloomberg

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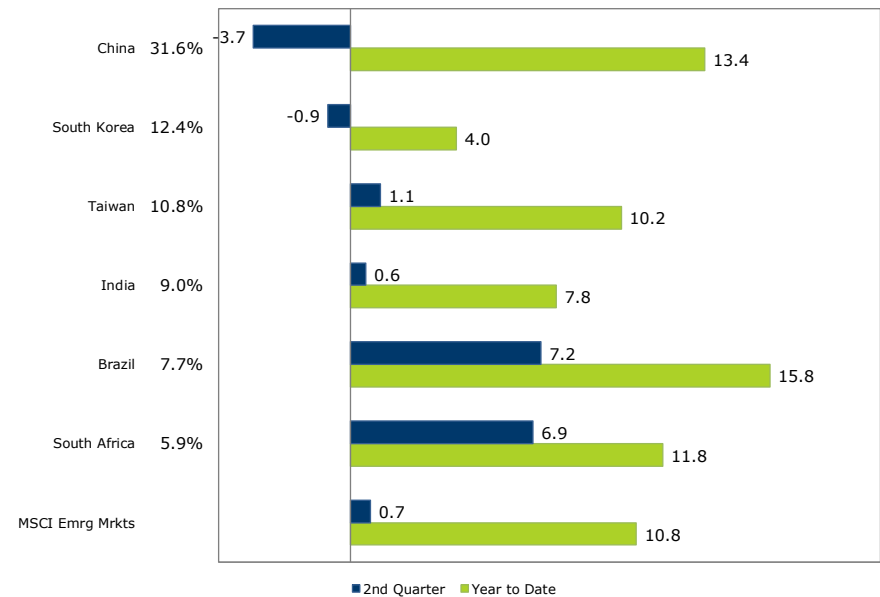
NON-U.S. EQUITY MARKET

AS OF JUNE 30, 2019	QTR	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI EX-US (\$G)	3.2	14.0	1.8	9.9	2.6	7.0
MSCI EAFE (\$G)	4.0	14.5	1.6	9.6	2.7	7.4
MSCI EMERGING MARKETS (\$G)	0.7	10.8	1.6	11.1	2.9	6.2
MSCI FRONTIER MARKETS (\$G)	4.9	12.1	5.2	8.7	-0.4	5.5
MSCI ACWI EX-US GROWTH (\$G)	4.6	17.5	3.0	10.2	4.4	8.0
MSCI ACWI EX-US VALUE (\$G)	1.9	10.5	0.6	9.6	0.9	6.0
MSCI ACWI EX-US SMALL (\$G)	1.4	11.9	-5.5	8.3	3.2	9.0
MSCI ACWI MINIMUM VOLATILITY	4.3	14.8	13.7	9.4	9.5	12.0
MSCI EAFE MINIMUM VOLATILITY	3.1	11.4	5.5	7.2	5.8	9.2
FTSE RAFI DEVELOPED EX-US	2.4	11.3	-1.5	10.2	1.7	6.9
MSCI EAFE LC (G)	3.1	14.2	2.7	10.3	6.4	8.8

MSCI EAFE: LARGEST COUNTRIES & RETURN (USD)



MSCI EM: LARGEST COUNTRIES & RETURN (USD)



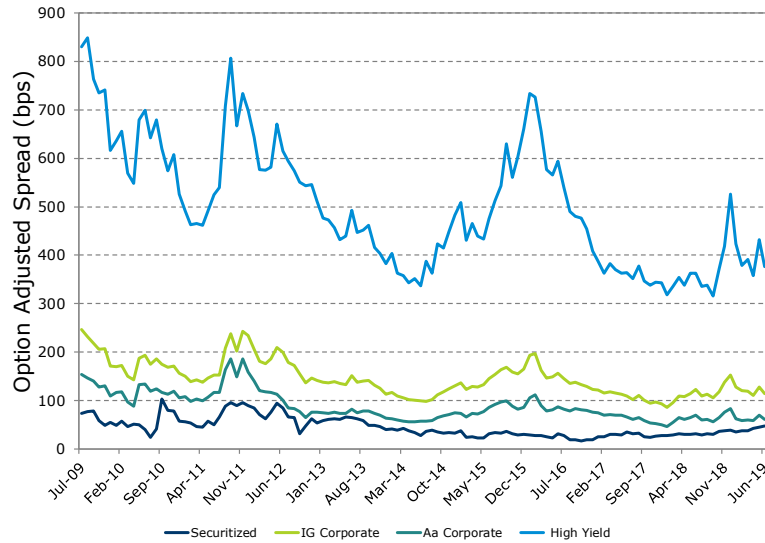
Data sources: Wilshire Compass

U.S. FIXED INCOME

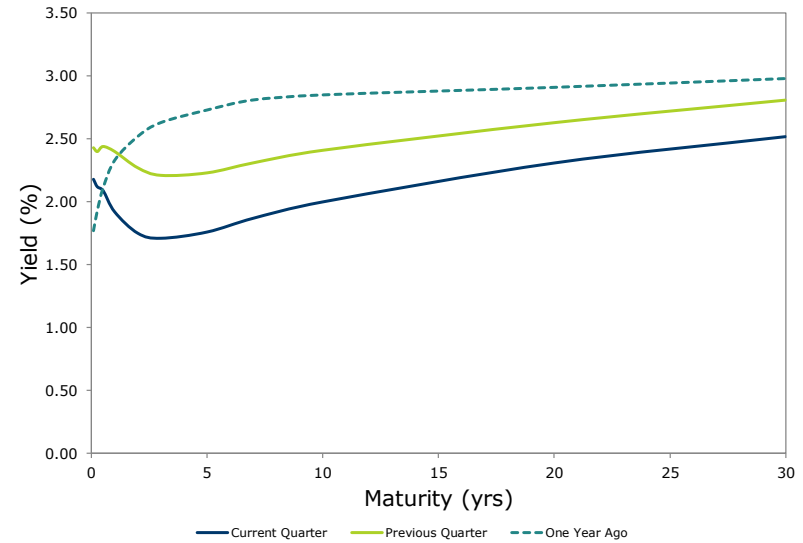
AS OF JUNE 30, 2019	YTM	DURATION	QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS AGGREGATE	2.5	5.7	3.1	6.1	7.9	2.3	3.0	3.9
BLOOMBERG BARCLAYS TREASURY	1.9	6.4	3.0	5.2	7.3	1.3	2.5	3.0
BLOOMBERG BARCLAYS GOV'T-REL.	2.6	5.6	3.0	6.2	7.9	2.5	2.9	3.5
BLOOMBERG BARCLAYS SECURITIZED	2.7	3.3	2.0	4.3	6.4	2.1	2.6	3.5
BLOOMBERG BARCLAYS CORPORATE	3.2	7.6	4.5	9.9	10.7	3.9	4.1	6.1
BLOOMBERG BARCLAYS LT G/C	3.3	15.6	6.6	13.5	13.8	3.8	5.7	7.6
BLOOMBERG BARCLAYS LT TREASURY	2.5	18.0	6.0	11.0	12.3	1.3	5.7	6.5
BLOOMBERG BARCLAYS LT GOV't-REL.	3.8	12.5	5.5	12.5	13.2	4.4	5.5	7.5
BLOOMBERG BARCLAYS LT CORP.	4.0	14.2	7.2	15.8	15.2	5.5	5.8	8.5
BLOOMBERG BARCLAYS U.S. TIPS *	1.9	7.6	2.9	6.1	4.8	2.1	1.8	3.6
BLOOMBERG BARCLAYS HIGH YIELD	6.3	3.2	2.5	9.9	7.5	7.5	4.7	9.2
TREASURY BILLS	2.1	0.25	0.6	1.2	2.3	1.4	0.9	0.5

* Yield and Duration statistics are for a proxy index based on similar maturity, the Bloomberg Barclays U.S. Treasury 7-10 Year Index

BLOOMBERG BARCLAYS FIXED INCOME INDEXES



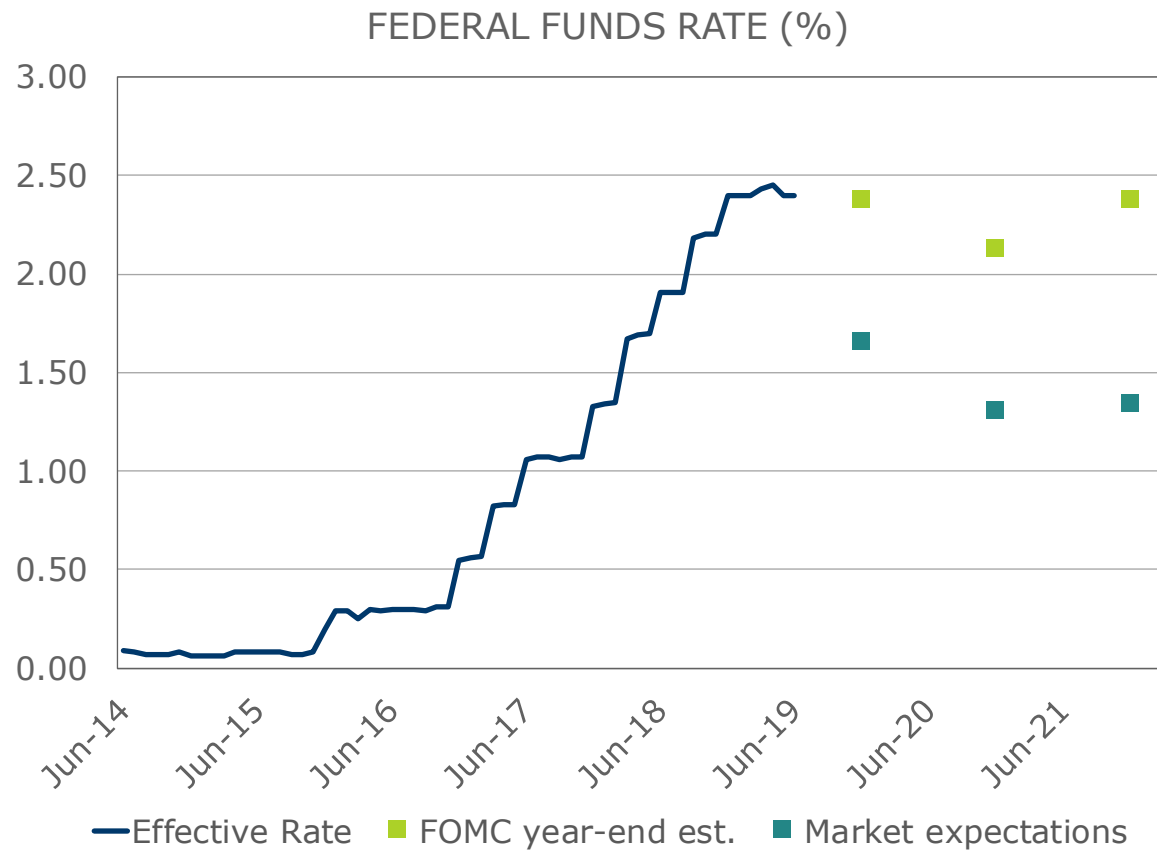
TREASURY YIELD CURVE



Data sources: Wilshire Compass, Bloomberg Barclays, U.S. Treasury

SHORT-TERM RATES

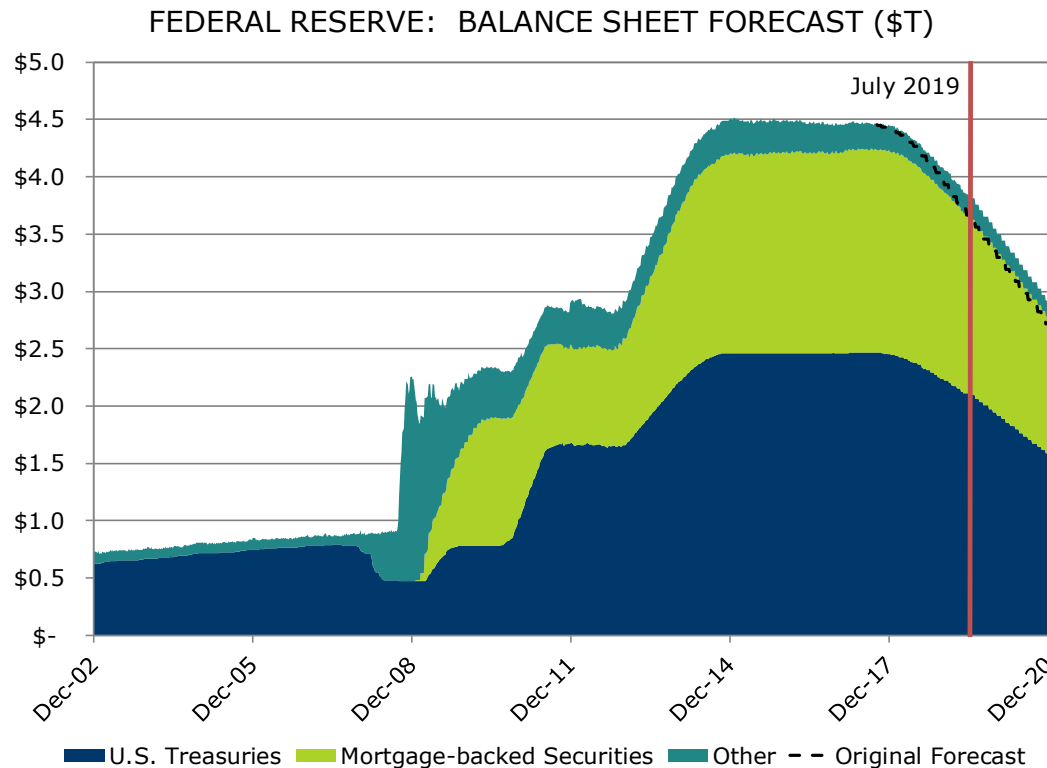
- Federal Reserve maintained their forecast for rate increases for 2019 at zero
- Markets are far more dovish, expecting rate decreases to equal ~ 0.75% in 2019



Data sources: U.S. Treasury, J.P. Morgan

FED BALANCE SHEET

- Federal Reserve began their balance sheet normalization program during October 2017; targeting \$10B in reductions per month while increasing to \$50B per month in Q4 2018
- Fed stated in early January that future reductions will be data dependent; total reductions so far equal \$640 billion

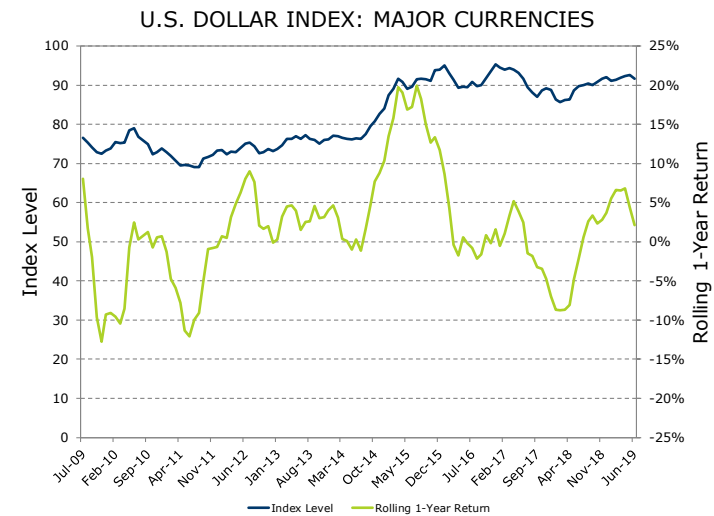
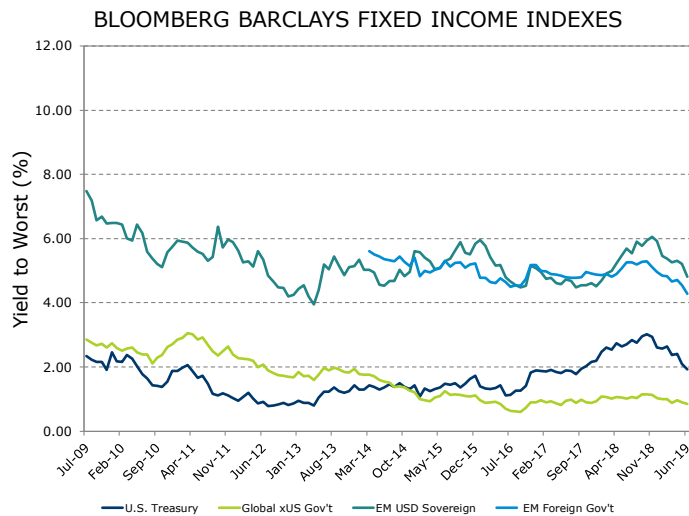


Data sources: Federal Reserve

NON-U.S. FIXED INCOME

AS OF JUNE 30, 2019	QTR	YTD	1 YR	3 YR	5 YR	10 YR
DEVELOPED MARKETS						
BLMBRG BRCLYS GLBL AGGREGATE xUS	3.4	5.0	4.1	1.0	-0.1	2.1
BLMBRG BRCLYS GLBL AGGREGATE xUS *	2.8	5.8	7.6	3.3	4.4	4.4
BLMBRG BRCLYS GLOBAL INF LNKD xUS	1.8	6.2	2.9	3.0	0.8	3.7
BLMBRG BRCLYS GLOBAL INF LNKD xUS *	2.9	7.4	8.0	5.4	6.7	6.3
EMERGING MARKETS (HARD CURRENCY)						
BLMBRG BRCLYS EM USD AGGREGATE	3.8	9.4	10.9	5.0	4.6	7.7
EMERGING MARKETS (FOREIGN CURRENCY)						
BLMBRG BRCLYS EM LOCAL CURR. GOV'T	3.4	5.9	8.2	3.7	0.3	4.2
BLMBRG BRCLYS EM LOCAL CURR. GOV'T *	2.8	5.0	8.3	3.1	3.3	3.7
CURRENCY EXCHANGE RATES						
EURO vs. DOLLAR	1.4	-0.4	-2.5	0.8	-3.6	-2.1
YEN vs. DOLLAR	2.7	1.8	2.8	-1.6	-1.2	-1.1
POUND vs. DOLLAR	-2.3	-0.1	-3.6	-1.6	-5.7	-2.5

* Returns are reported in terms of local market investors, which removes currency effects.

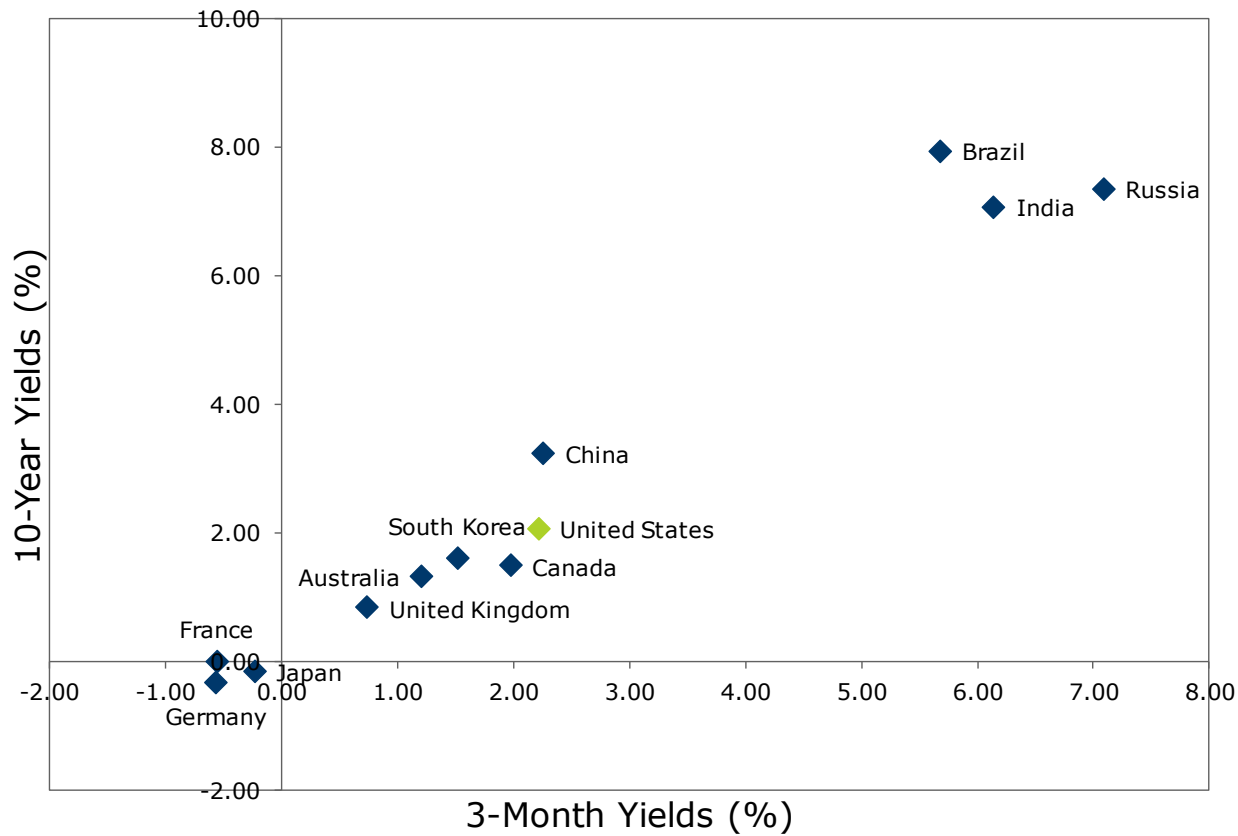


Data sources: Wilshire Compass, Bloomberg Barclays, Federal Reserve Bank of St. Louis

GLOBAL INTEREST RATES

Much of Europe and Japan exhibit negative rates; Long rates are down globally during the past six months

GOVERNMENT BOND YIELDS

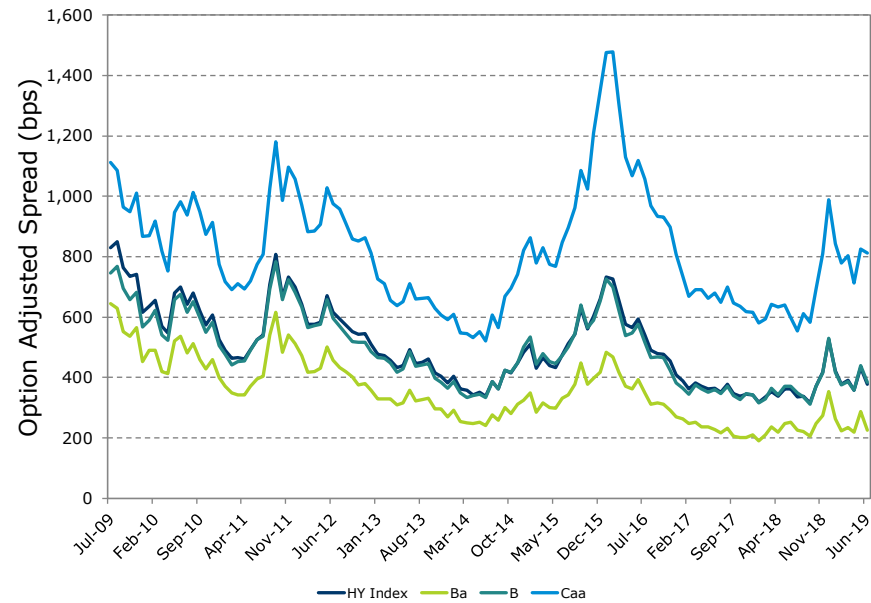


Data sources: Bloomberg

HIGH YIELD BOND MARKET

AS OF JUNE 30, 2019		QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS HIGH YIELD		2.5	9.9	7.5	7.5	4.7	9.2
CREDIT SUISSE LEVERAGED LOAN		1.6	5.4	4.1	5.4	3.9	6.3
HIGH YIELD QUALITY DISTRIBUTION	WEIGHT						
Ba U.S. HIGH YIELD	47.0%	3.1	10.5	9.8	6.6	5.2	8.8
B U.S. HIGH YIELD	39.5%	2.7	10.1	7.7	7.6	4.3	8.3
Caa U.S. HIGH YIELD	12.4%	0.3	7.5	0.1	8.9	4.3	10.5
Ca to D U.S. HIGH YIELD	0.8%	-1.8	15.4	-6.3	19.4	-8.0	4.4
Non-Rated U.S. HIGH YIELD	0.2%	1.2	4.8	4.5	4.8	-1.4	6.8

BLOOMBERG BARCLAYS HIGH YIELD INDEXES



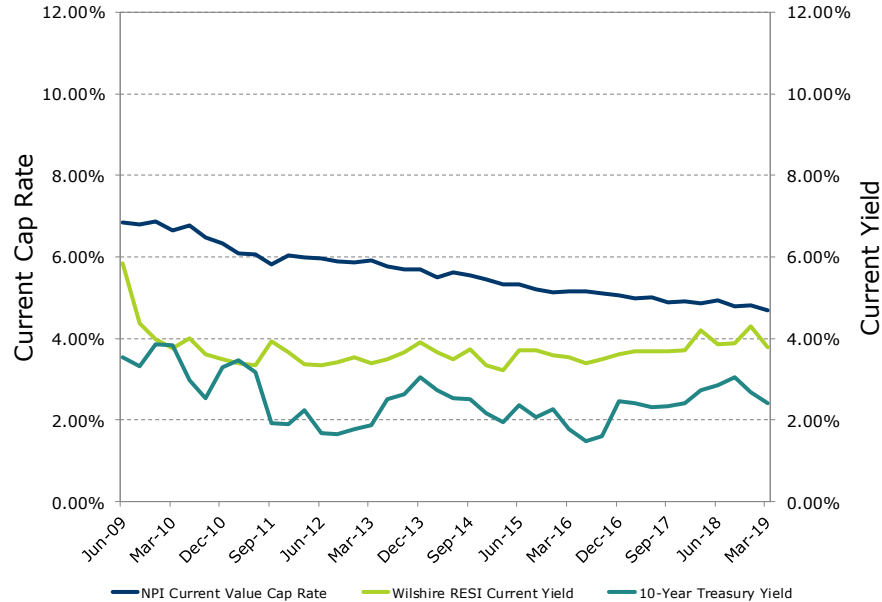
Data sources: Wilshire Compass, Bloomberg Barclays

Wilshire Consulting REAL ASSETS

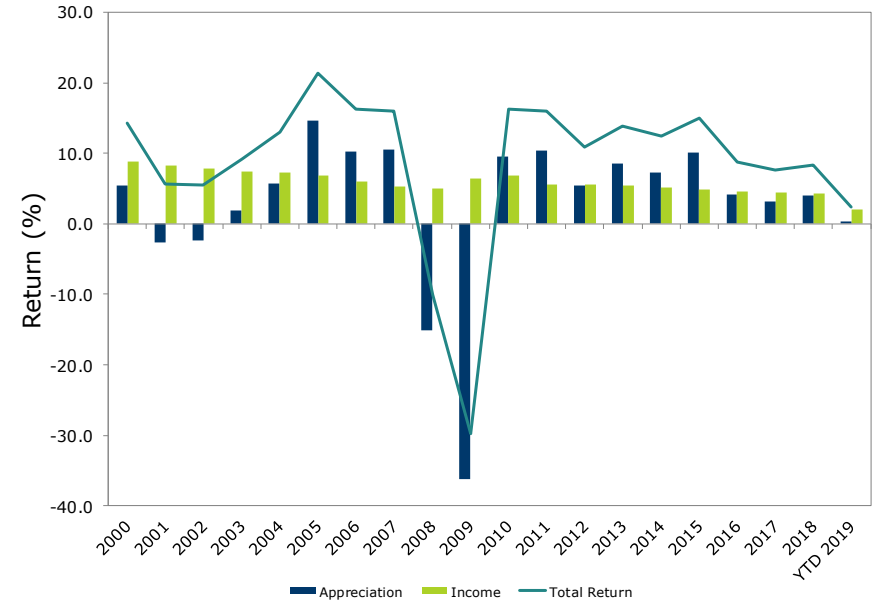


AS OF JUNE 30, 2019	QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS U.S. TIPS	2.9	6.1	4.8	2.1	1.8	3.6
BLOOMBERG COMMODITY INDEX	-1.2	5.1	-6.8	-2.2	-9.1	-3.7
WILSHIRE GLOBAL RESI INDEX	1.5	16.7	9.9	5.3	6.5	13.2
NCREIF ODCE FUND INDEX	1.0	2.4	6.4	7.6	9.8	9.9
NCREIF TIMBERLAND INDEX	1.0	1.2	2.9	3.3	4.6	4.0
ALERIAN MLP INDEX (OIL & GAS)	0.1	17.0	3.1	-0.4	-7.2	8.2

REAL ESTATE VALUATION



NCREIF ODCE FUND INDEX RETURN



Data sources: Wilshire Compass, National Council of Real Estate Investment Fiduciaries

ASSET CLASS PERFORMANCE

ASSET CLASS RETURNS - BEST TO WORST						ANNUALIZED 5-YEAR AS OF 6/2019
2014	2015	2016	2017	2018	2019 YTD	
REITs 31.8%	REITs 4.2%	MLPs 18.3%	Emrg Mrkts 37.7%	T-Bills 1.9%	U.S. Equity 18.7%	U.S. Equity 10.3%
U.S. Equity 12.7%	U.S. Equity 0.7%	High Yield 17.1%	Developed 25.6%	Core Bond 0.0%	REITs 17.9%	REITs 7.8%
Core Bond 6.0%	Core Bond 0.6%	U.S. Equity 13.4%	U.S. Equity 21.0%	U.S. TIPS -1.3%	MLPs 17.0%	High Yield 4.7%
MLPs 4.8%	T-Bills 0.1%	Commodities 11.8%	High Yield 7.5%	High Yield -2.1%	Developed 14.5%	Core Bond 3.0%
U.S. TIPS 3.6%	Developed -0.4%	Emrg Mrkts 11.6%	REITs 4.2%	REITs -4.8%	Emrg Mrkts 10.8%	Emrg Mrkts 2.9%
High Yield 2.5%	U.S. TIPS -1.4%	REITs 7.2%	Core Bond 3.6%	U.S. Equity -5.3%	High Yield 9.9%	Developed 2.7%
T-Bills 0.0%	High Yield -4.5%	U.S. TIPS 4.7%	U.S. TIPS 3.0%	Commodities -11.2%	U.S. TIPS 6.1%	U.S. TIPS 1.8%
Emrg Mrkts -1.8%	Emrg Mrkts -14.6%	Core Bond 2.6%	Commodities 1.7%	MLPs -12.4%	Core Bond 6.1%	T-Bills 0.9%
Developed -4.5%	Commodities -24.7%	Developed 1.5%	T-Bills 0.8%	Developed -13.4%	Commodities 5.1%	MLPs -7.2%
Commodities -17.0%	MLPs -32.6%	T-Bills 0.3%	MLPs -6.5%	Emrg Mrkts -14.2%	T-Bills 1.2%	Commodities -9.1%

Data sources: Wilshire Compass

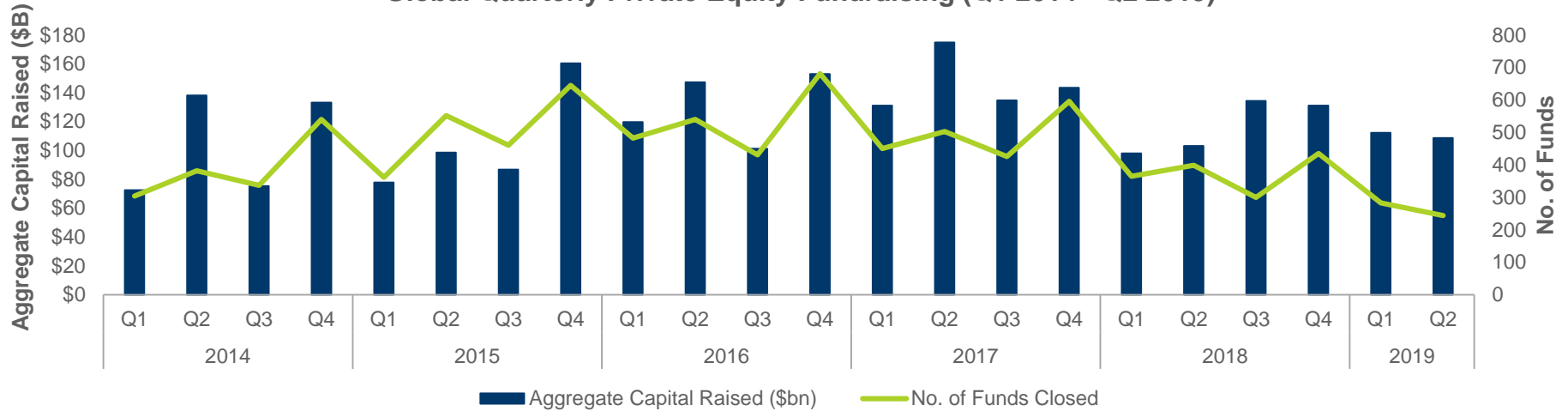
Note: Developed asset class is developed equity markets ex-U.S., ex-Canada



APPENDIX: PRIVATE MARKETS UPDATE

PRIVATE EQUITY – FUNDRAISING & INVESTMENT ACTIVITY

Global Quarterly Private Equity Fundraising (Q1 2014 - Q2 2019)



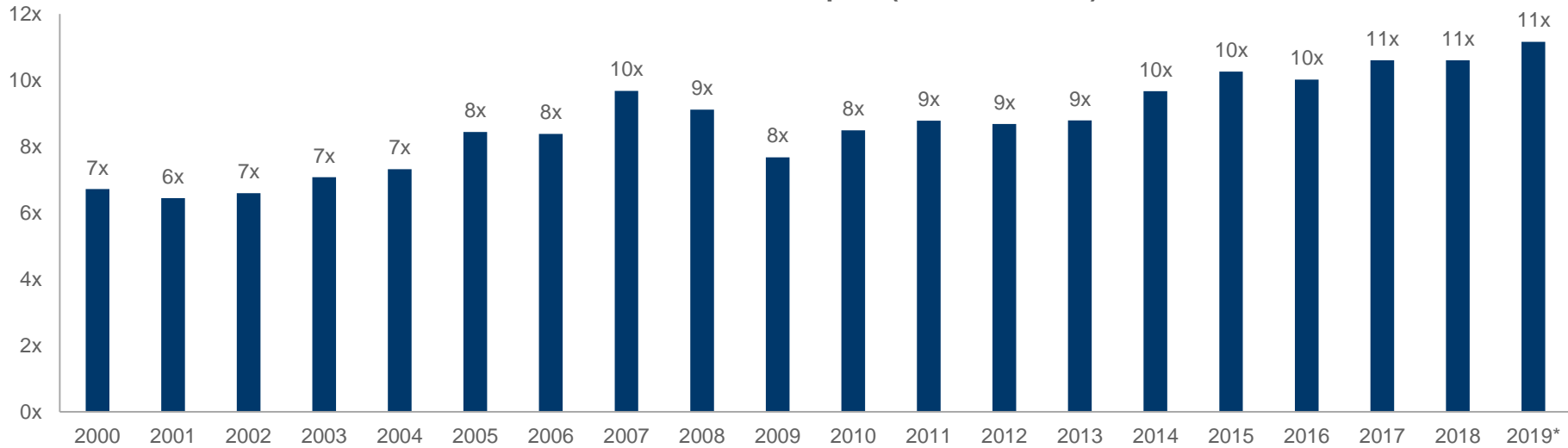
Global Quarterly Private Equity-Backed Buyout Deals (Q1 2014 - Q2 2019)



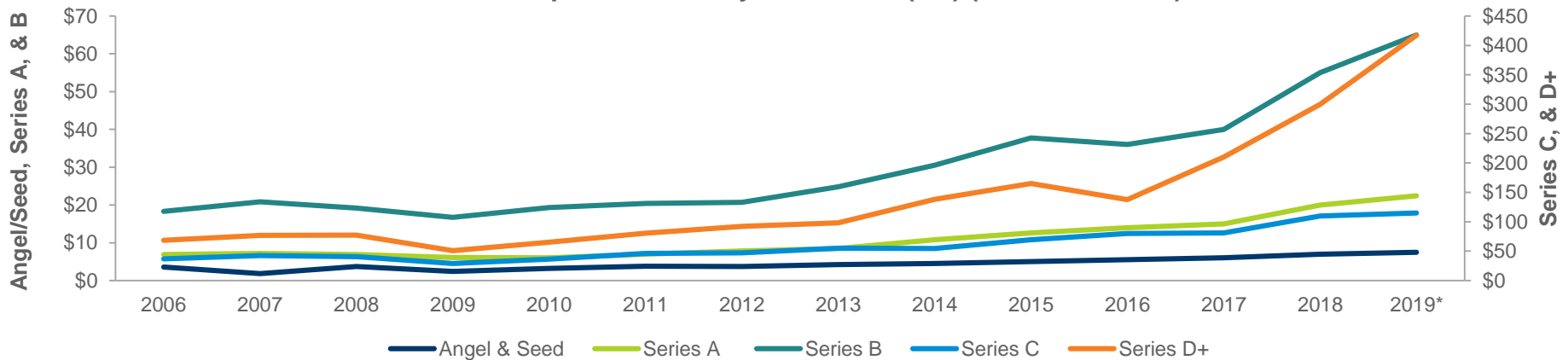
Source: Preqin, as of June 30, 2019.

PRIVATE EQUITY – PRICING & VALUATIONS

LBO Purchase Price Multiples (2000 - Q2 2019)



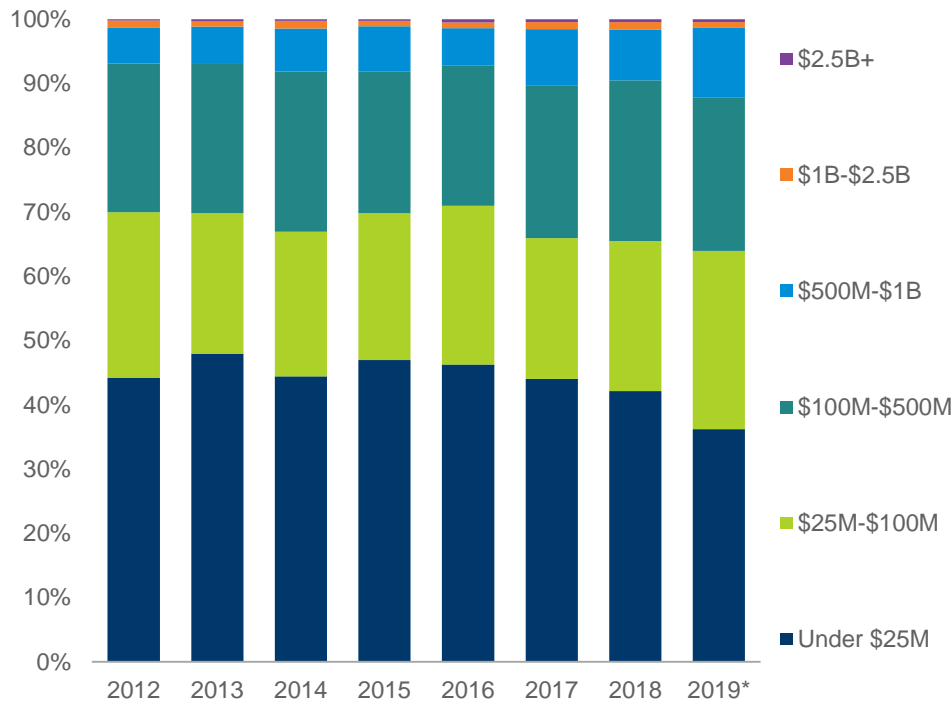
Venture Capital Pre-Money Valuations (\$M) (2006 – Q2 2019)



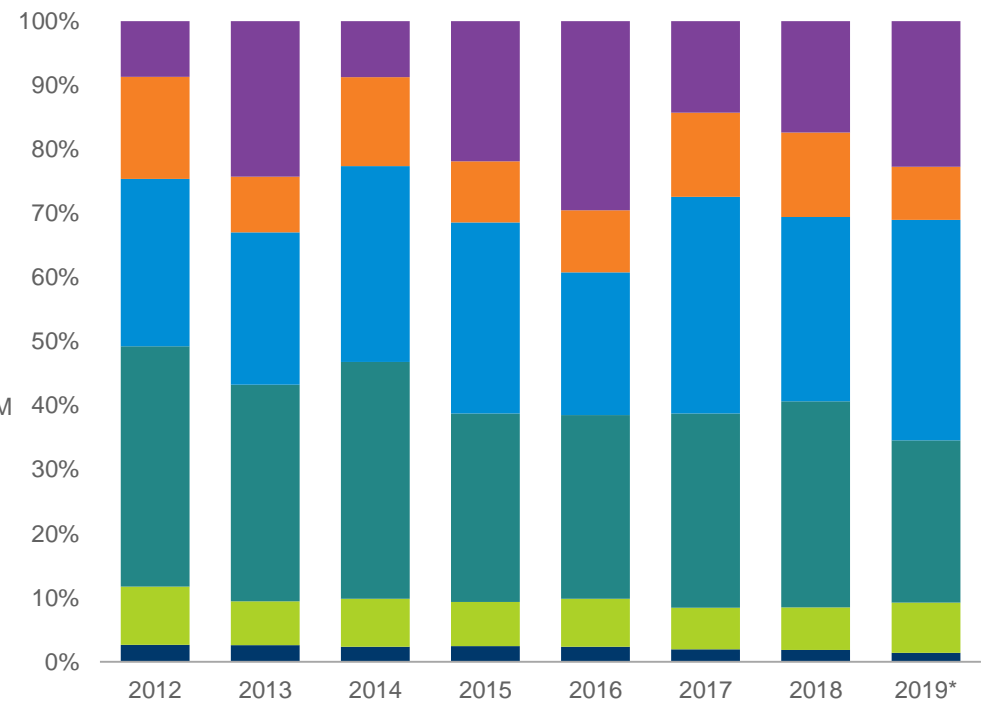
Source: S&P LBO; PitchBook, *as of June 30, 2019.

U.S. INVESTMENT ACTIVITY BY DEAL SIZE

Percentage of Deal Volume by Deal Size (by Count)



Percentage of Deal Volume by Deal Size (by Dollars)

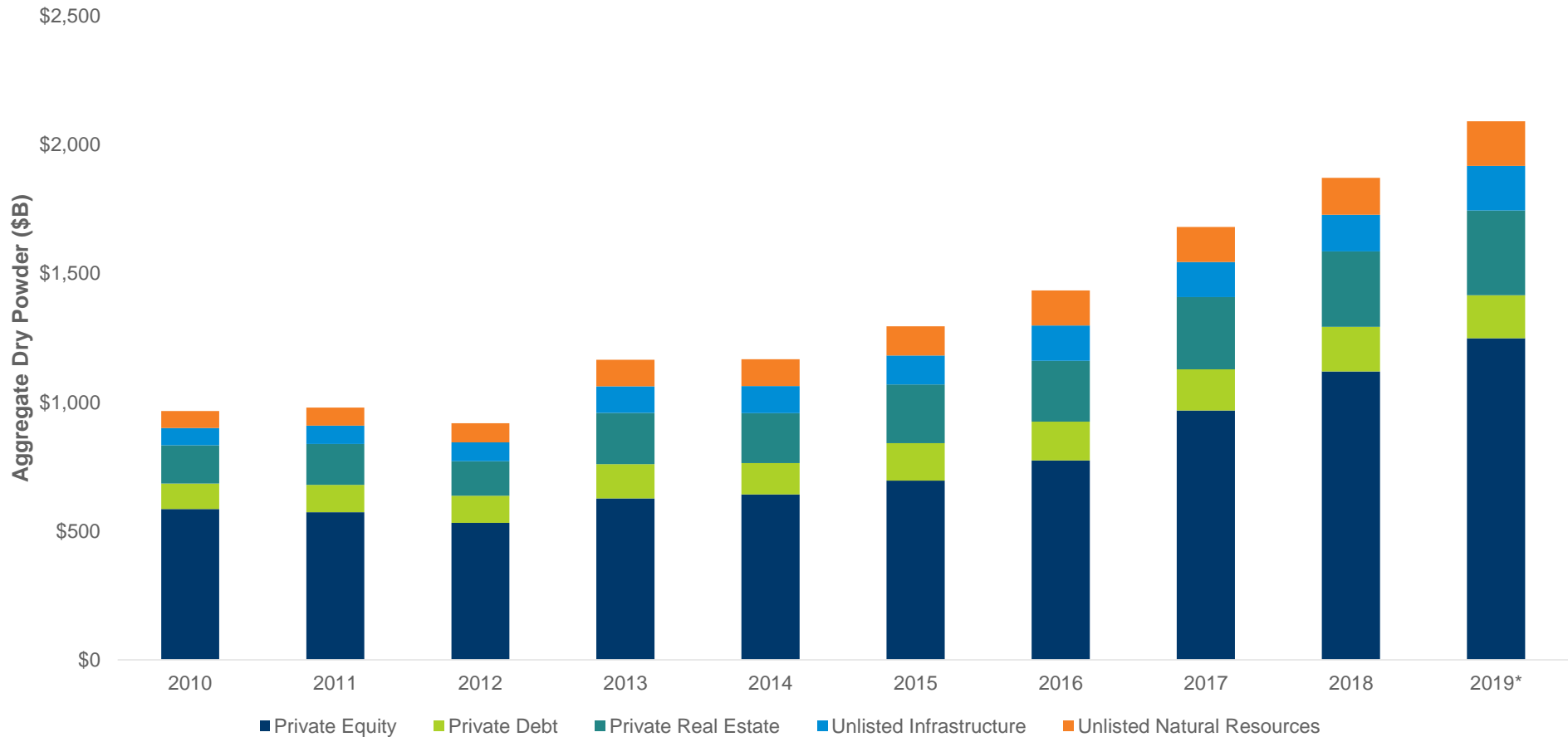


- Deal volume continues to be dominated by lower middle market deals with investment sizes below \$100 million through the second quarter of 2019
- However, deals with below \$100 million check sizes comprised only 9% of all deal volume by amount of capital invested in the second quarter of 2019

Source: PitchBook, *as of June 30, 2019.

PRIVATE CAPITAL DRY POWDER

Private Capital Dry Powder by Fund Type (2010 - Q2 2019)

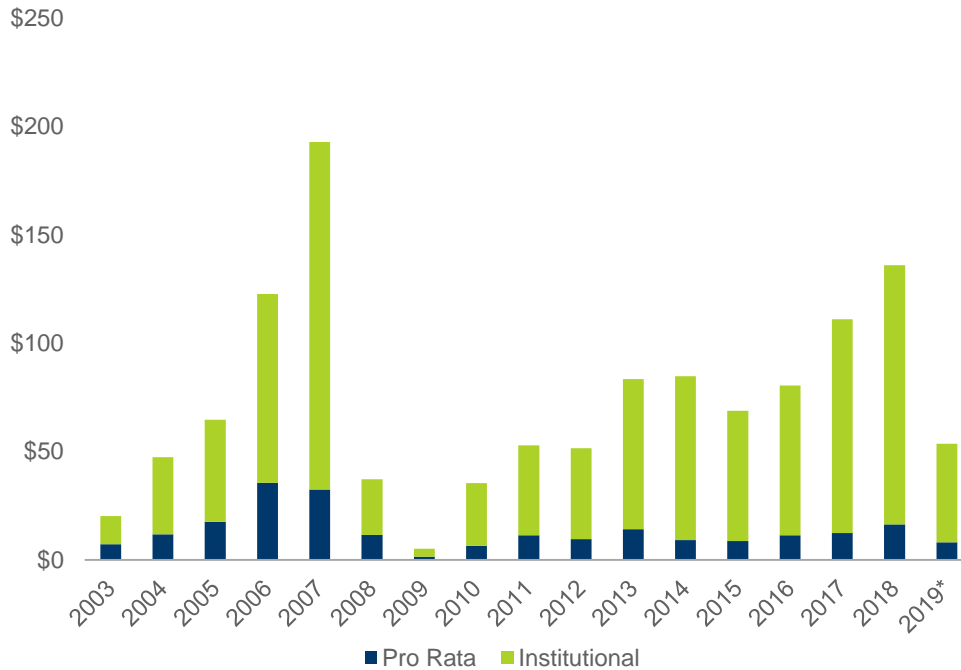


- Global private capital dry powder continues to increase, topping \$2 trillion across all fund types
- Private equity comprises just under 60% of total dry powder in the market as of Q2 2019

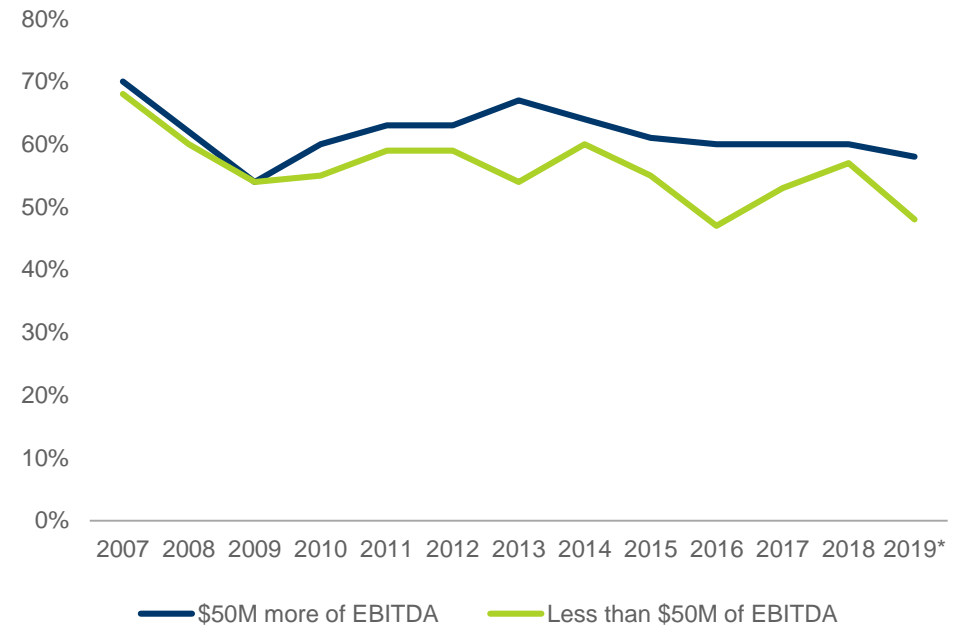
Source: Preqin, as of *July 1, 2019.

PRIVATE EQUITY - U.S. DEBT MARKETS

Total U.S. LBO Loan Volume (\$B) (2003 - Q2 2019)



Percentage of Debt Used in LBOs (2007 - Q2 2019)

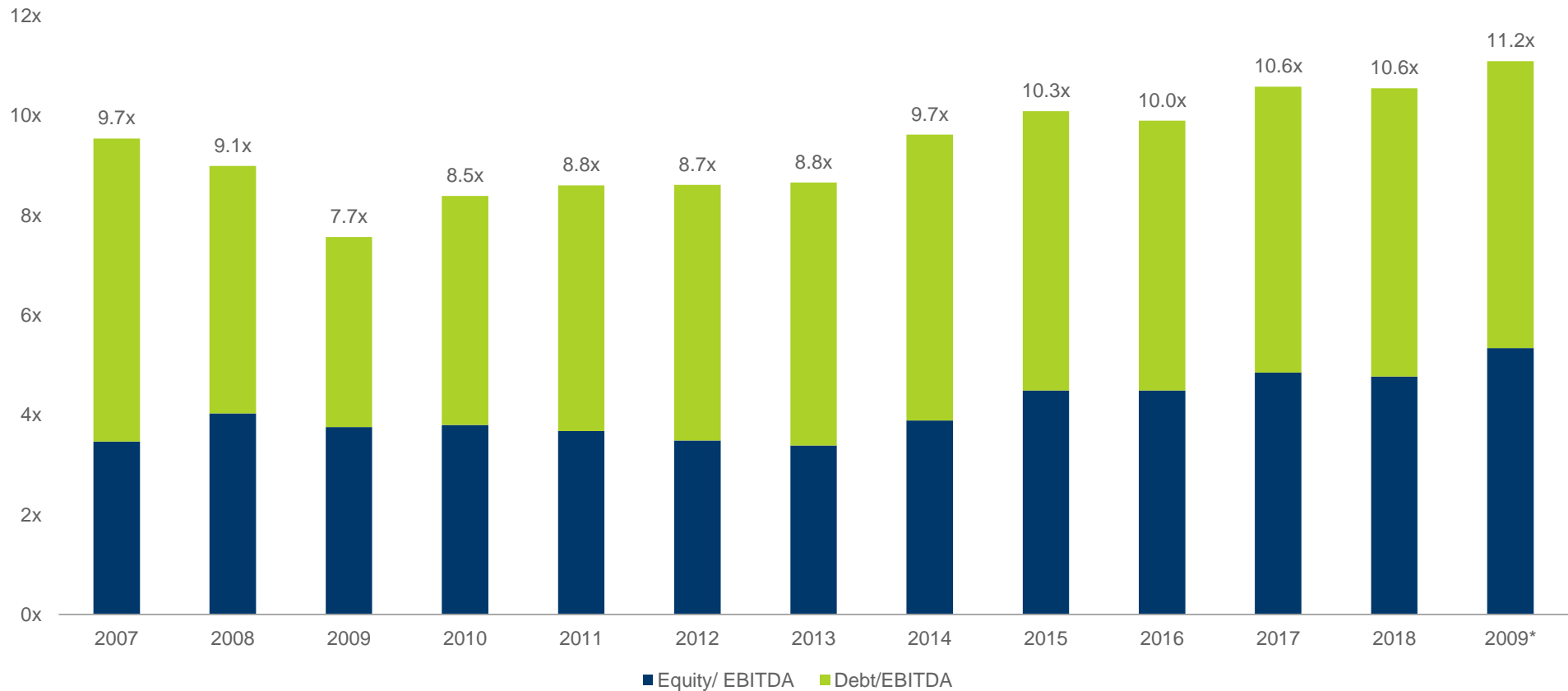


- 2019 began with approximately \$45 billion in loan volume and is on pace to once again increase year-over-year through the first quarter of 2019
- As debt capital becomes less available, the percentage of debt used to finance leveraged buyouts of less than \$50 million of EBITDA through the second quarter of 2019 has dropped from 2018 marks

Source: S&P LBO, as of *June 30, 2019.

PRIVATE EQUITY - U.S. LBO PURCHASE PRICE MULTIPLES

Purchase Price Multiples of U.S. LBO Transactions (2007 - Q2 2019)

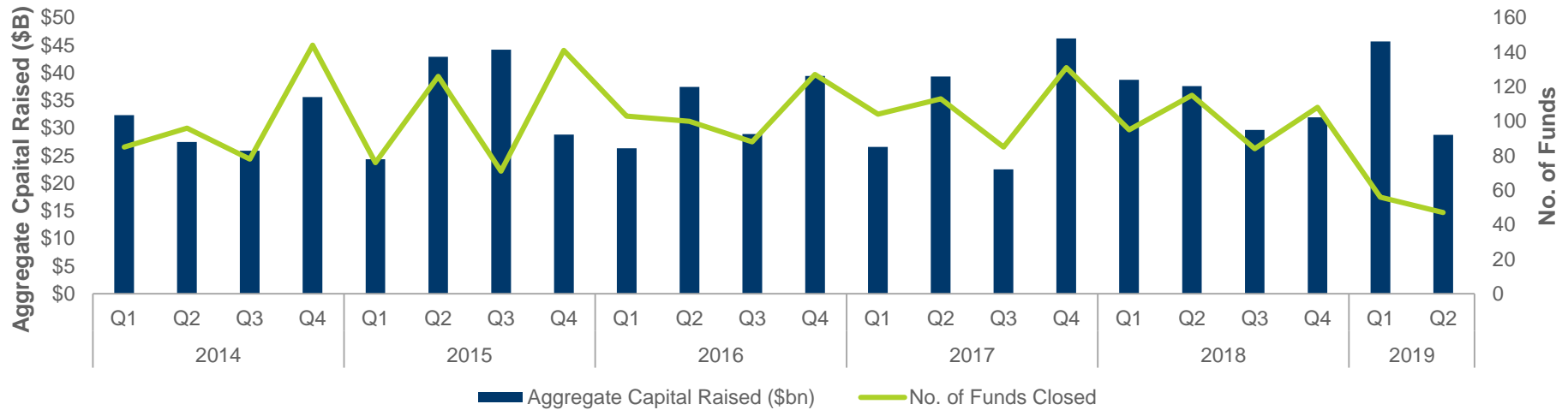


- Due to the amount of equity that is readily available, purchase price multiples for U.S. LBOs have risen slightly through Q2 2019 relative to 2018 levels.

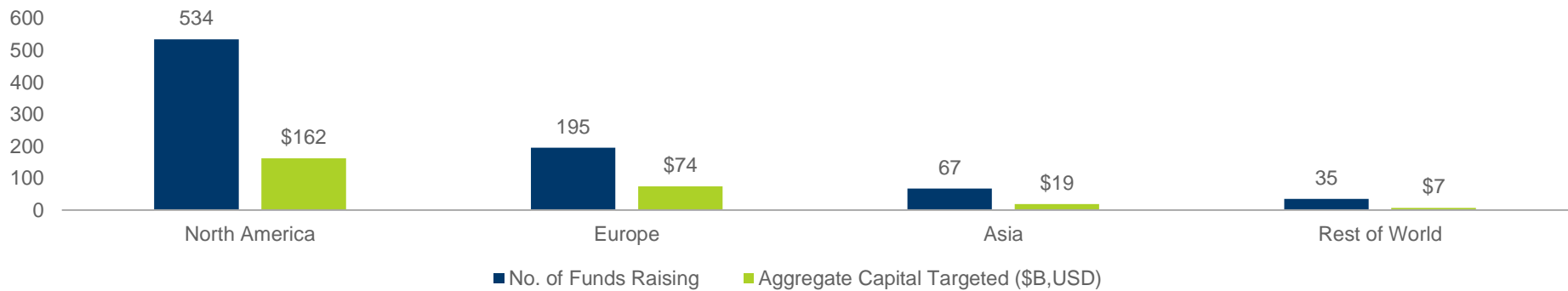
Source: S&P LBO, as of *June 30, 2019.

PRIVATE REAL ESTATE – FUNDRAISING ACTIVITY

Global Quarterly Closed-End Private Real Estate Fundraising (Q1 2014 – Q2 2019)



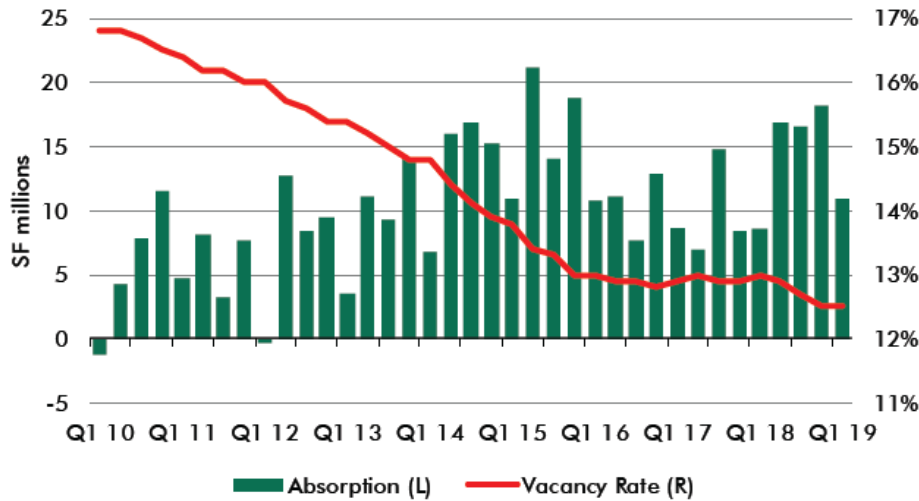
Closed-End Private Real Estate Fund Actively in Market in Q2 2019 by Primary Geographic Focus



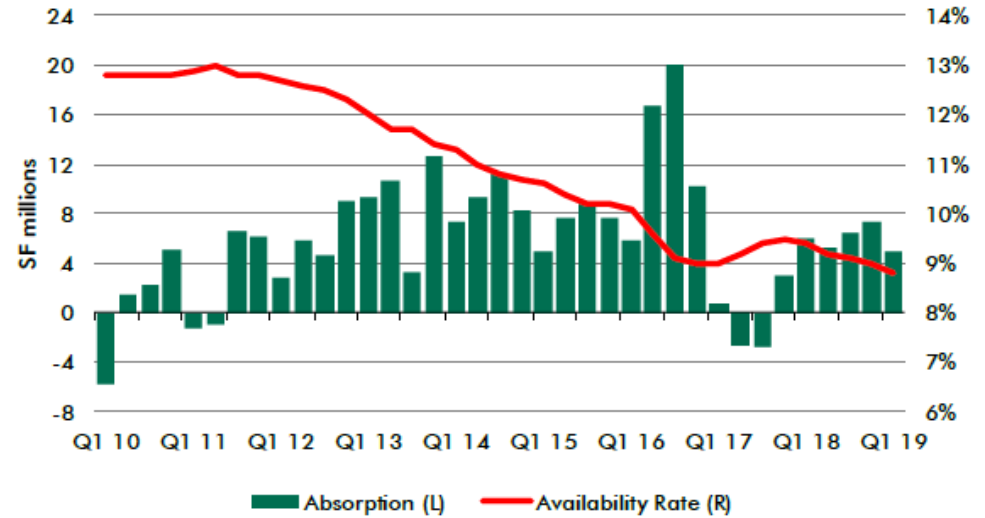
Source: Preqin, as of June 30, 2019.

COMMERCIAL PROPERTY

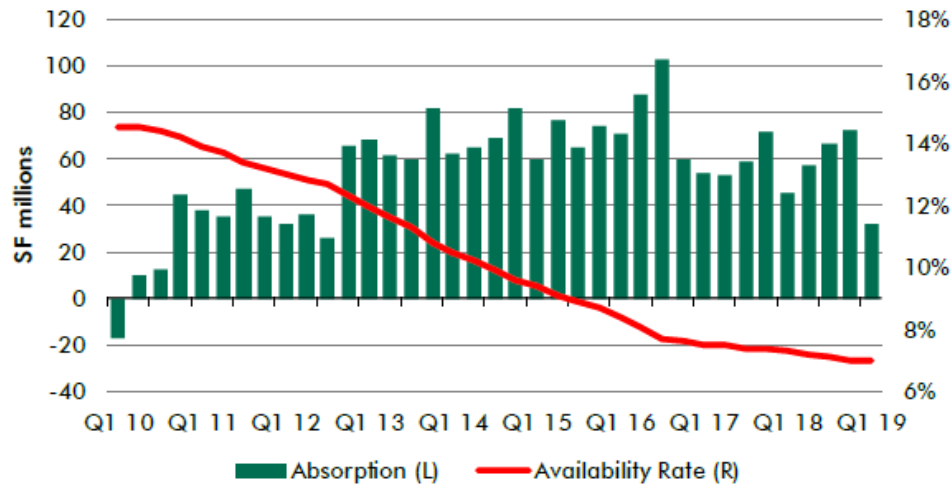
OFFICE



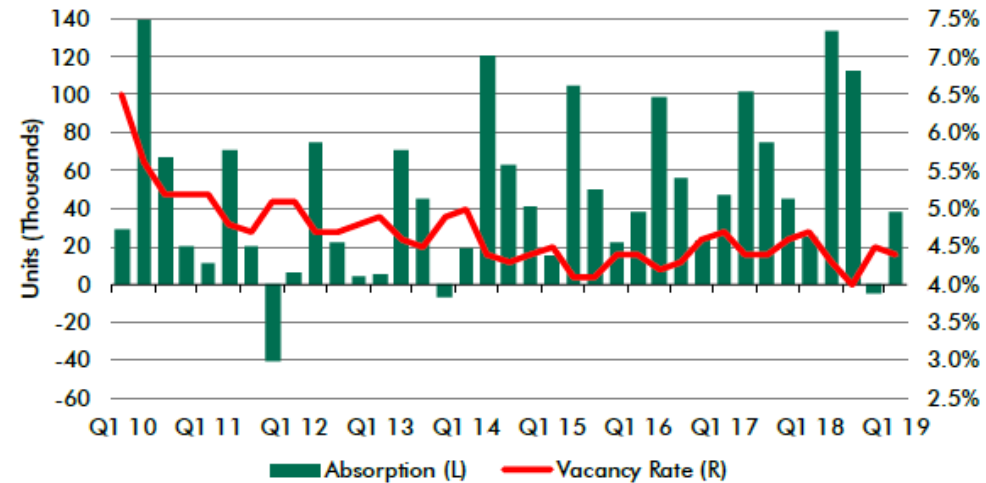
RETAIL



INDUSTRIAL



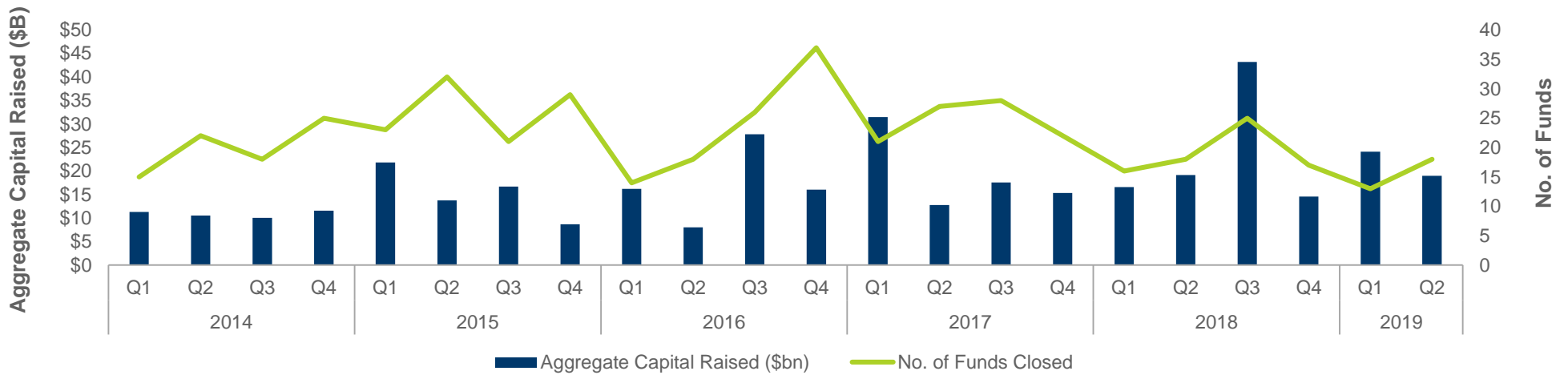
APARTMENTS



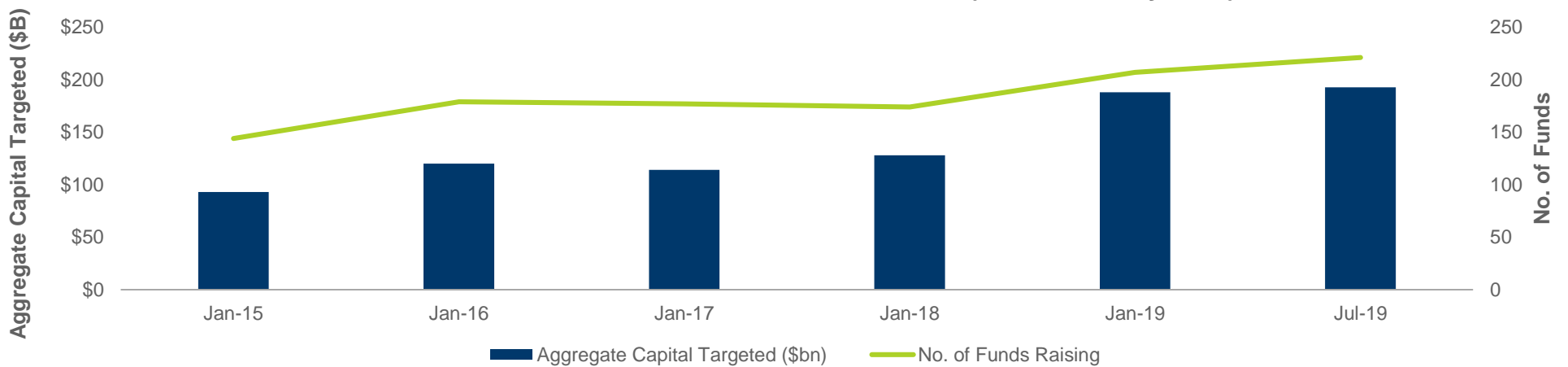
Data sources: CB Richard Ellis

UNLISTED INFRASTRUCTURE – FUNDRAISING & INVESTMENT ACTIVITY

Global Quarterly Unlisted Infrastructure Fundraising (Q1 2014 – Q2 2019)

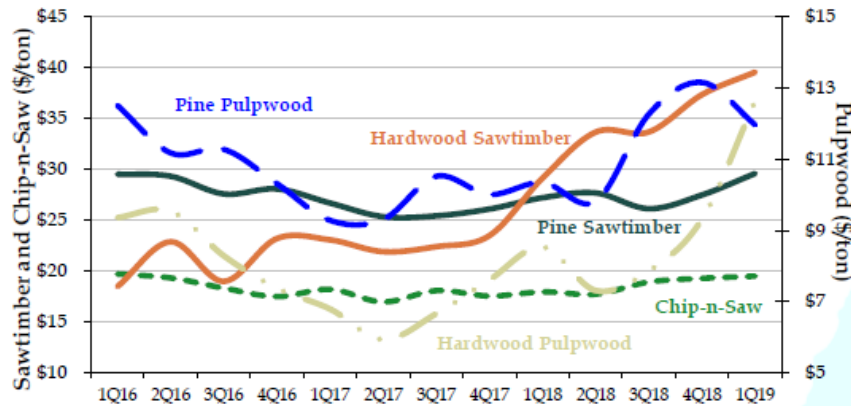


Unlisted Infrastructure Funds in Market over Time (Jan 2015 - July 2019)



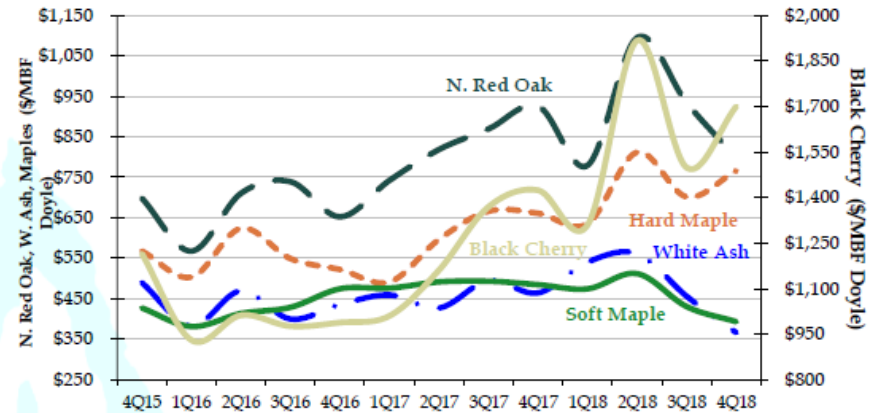
Source: Preqin, as of June 30, 2019.

Southeastern Timber Prices



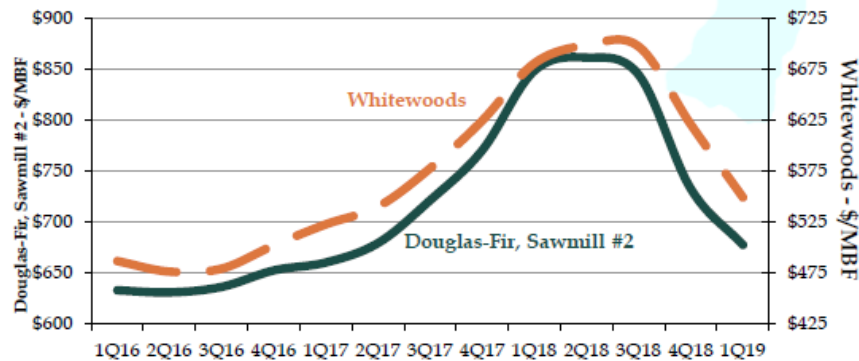
Source: Forest2Market®

Northeastern Hardwood Timber Prices



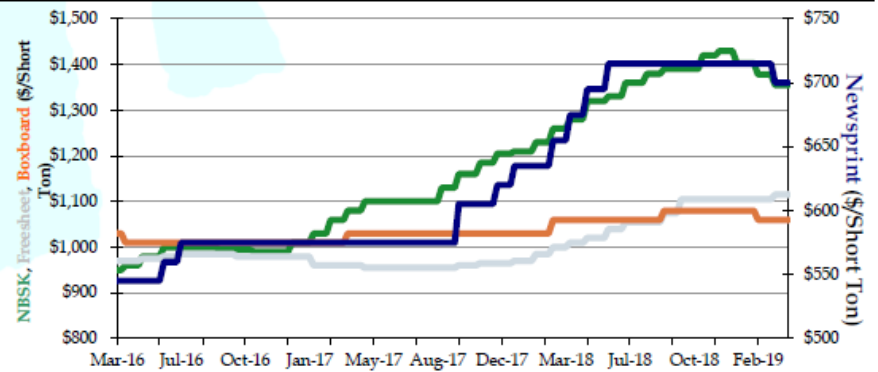
Source: Pennsylvania Woodlands Timber Market Report - Northwest Region

Pacific Northwest Timber Prices



Source: Log Lines®

Pulp and Paper



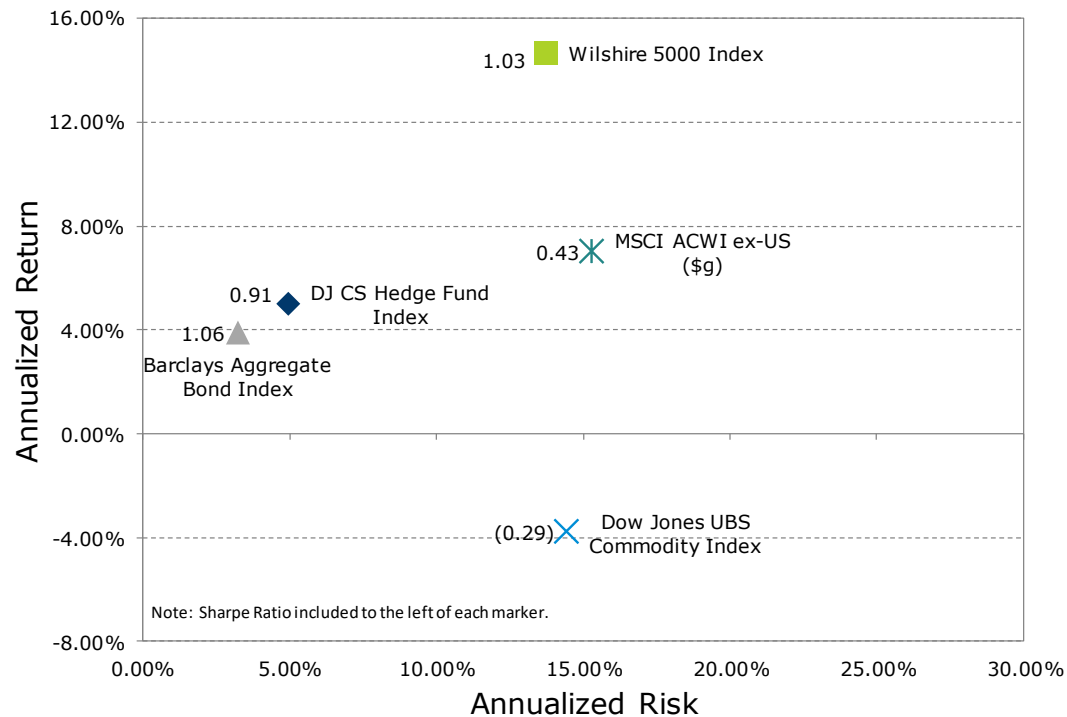
Source: FOEX Indexes, Ltd., RISI Pulp & Paper Week

Data sources: Forest Investment Associates

HEDGE FUND PERFORMANCE

AS OF JUNE 30, 2019	QTR	YTD	1 YR	3 YR	5 YR	10 YR
DJ CS HEDGE FUND INDEX	2.3	6.4	2.5	4.3	2.4	5.0
EVENT DRIVEN	2.4	7.5	1.9	4.9	0.3	4.7
GLOBAL MACRO	4.6	7.3	5.2	4.8	3.0	5.2
LONG/SHORT EQUITY	1.2	6.7	1.1	5.5	3.4	5.7
MULTI-STRATEGY	2.1	5.2	2.2	4.9	4.4	6.9
WILSHIRE 5000	4.0	18.7	9.1	14.0	10.3	14.7
MSCI ACWI EX-US (\$G)	3.2	14.0	1.8	9.9	2.6	7.0
BLOOMBERG BARCLAYS AGGREGATE	3.1	6.1	7.9	2.3	3.0	3.9
DOW JONES UBS COMMODITY	-1.2	5.1	-6.8	-2.2	-9.1	-3.7

HEDGE FUND 10-YEAR RISK/RETURN



Data sources: Wilshire Compass