Wilshire

WILSHIRE ASSOCIATES

Wilshire Consulting

Kentucky Retirement Systems Pension

Executive Summary of Investment Performance

December 31, 2018

MARKET ENVIRONMENT

ASSET CLASS PERFORMANCE

ASSET CLASS RETURNS - BEST TO WORST						ANNUALIZED 5-YEAR AS OF 12/2018
2013	2014	2015	2016	2017	2018 YTD	
U.S. Equity 33.1%	REITs 31.8%	REITs 4.2%	MLPs 18.3%	Emrg Mrkts 37.7%	T-Bills 1.9%	U.S. Equity 8.1%
MLPs 27.6%	U.S. Equity 12.7%	U.S. Equity 0.7%	High Yield 17.1%	Developed 25.6%	Core Bond 0.0%	REITs 7.9%
Developed 23.3%	Core Bond 6.0%	Core Bond 0.6%	U.S. Equity 13.4%	U.S. Equity 21.0%	U.S. TIPS -1.3%	High Yield 3.8%
High Yield 7.4%	MLPs 4.8%	T-Bills 0.1%	Commodities 11.8%	High Yield 7.5%	High Yield -2.1%	Core Bond 2.5%
REITs 1.9%	U.S. TIPS 3.6%	Developed -0.4%	Emrg Mrkts 11.6%	REITs 4.2%	REITs -4.8%	Emrg Mrkts 2.0%
T-Bills 0.1%	High Yield 2.5%	U.S. TIPS -1.4%	REITs 7.2%	Core Bond 3.6%	U.S. Equity -5.3%	U.S. TIPS 1.7%
Core Bond -2.0%	T-Bills 0.0%	High Yield -4.5%	U.S. TIPS 4.7%	U.S. TIPS 3.0%	Commodities -11.2%	Developed 1.0%
Emrg Mrkts -2.3%	Emrg Mrkts -1.8%	Emrg Mrkts -14.6%	Core Bond 2.6%	Commodities 1.7%	MLPs -12.4%	T-Bills 0.6%
U.S. TIPS -8.6%	Developed -4.5%	Commodities -24.7%	Developed 1.5%	T-Bills 0.8%	Developed -13.4%	MLPs -7.3%
Commodities -9.5%	Commodities -17.0%	MLPs -32.6%	T-Bills 0.3%	MLPs -6.5%	Emrg Mrkts -14.2%	Commodities -8.8%

Data sources: Wilshire Compass

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

MARKET COMMENTARY

U.S. Equity

The U.S. stock market was down -14.3% for the fourth quarter of 2018. This marks the worst quarter for U.S. equities since 2011 and the first down year since the credit crisis sell-off of 2008. Concerns of an economic slowdown weighed on stock prices as did fears that additional rate increases by the Federal Reserve could weaken future prospects for economic growth.

The yield curve ended 2018 with a very unusual shape – which will likely be a source of debate if it persists, largely focusing on the Fed's December rate hike. Some fear that it could be enough to slow the economy and are therefore selling shorter-term bonds, pushing rates higher. Others highlight the fact that the Fed's mandate focuses on both growth and inflation and that a 0.25% increase is not likely to stop the U.S. economy cold. Ultimately, the Fed makes their final decisions based on all available data and can decide to adjust their course of action.

Non-U.S. Equity

Equity markets outside of the U.S. suffered during the quarter, although they generally outperformed U.S. equity. While the EU began the year in sound economic condition, growth declined steadily while gains in unemployment stalled and industrial production reversed course. While there were some positive signals on U.S.-China trade, investors will likely wait until a scheduled meeting in January before fully evaluating the current global trade environment.

Fixed Income

The U.S. Treasury yield curve fell across most maturities with the 10-year Treasury yield at 2.69%, down 37 basis points. The Federal Open Market Committee increased its overnight rate by 25 basis points but adjusted downward their forecast for future rates. Credit spreads widened during the quarter within both the investment grade and high yield markets.

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DECEMBER 2018 ASSET CLASS ASSUMPTIONS

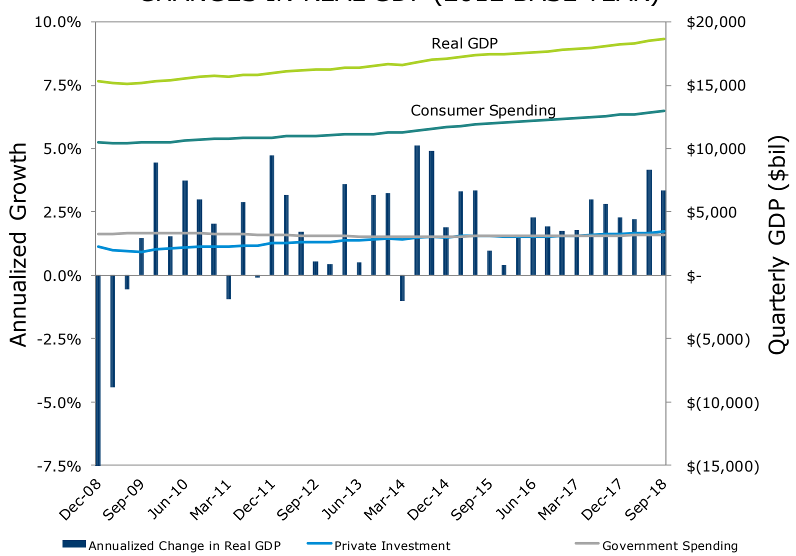
	EQUITY						FIXED INCOME						REAL ASSETS					
													REAL ESTATE					
	US STOCK	DEV EX-US STOCK	EMG MRKT STOCK	GLOBAL EX-US STOCK	GLOBAL STOCK	PRIVATE EQUITY	CASH	CORE BOND	LT CORE BOND	US TIPS	HIGH YIELD	NON-US BOND (HDG)	US RES	GLOBAL RES	PRIVATE RE	CMDTY	REAL ASSETS	US CPI
EXPECTED COMPOUND RETURN (%)	7.00	7.50	7.50	7.75	7.45	10.05	2.65	3.85	4.25	3.00	5.90	1.25	5.65	5.85	6.65	4.35	6.40	1.70
EXPECTED ARITHMETIC RETURN (%)	8.30	8.95	10.45	9.35	8.75	13.35	2.65	4.00	4.70	3.15	6.35	1.30	7.00	7.00	7.55	5.40	6.75	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 (%)	2.15	3.50	2.50	3.25	2.65	0.00	2.65	4.05	5.00	3.55	8.95	1.80	4.40	4.40	2.70	2.65	3.00	0.00
CORRELATIONS																		
US STOCK	1.00																	
DEV EX-US STOCK (USD)	0.81	1.00																
EMERGING MARKET 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									
US 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							
NON-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 ASSET BASKET	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

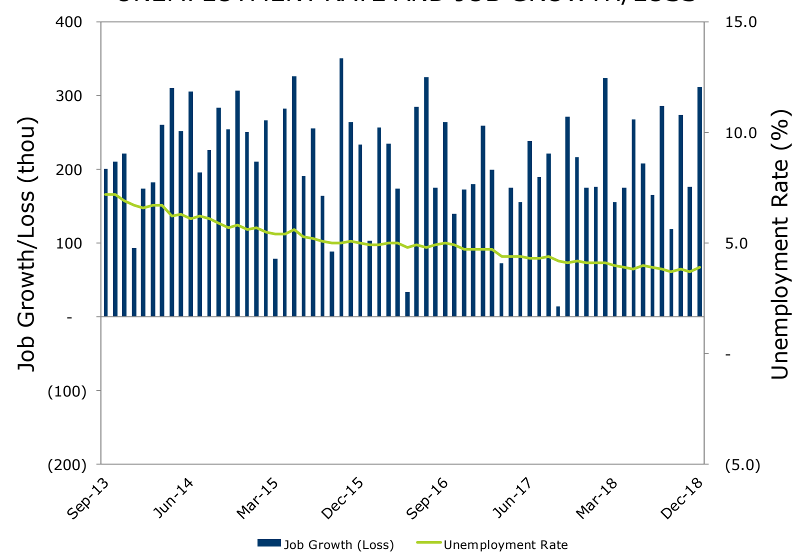
AS OF DEC. 31, 2018	KEY ECONOMIC INDICATORS			
CPI (ALL ITEMS)	MONTHLY CHANGE		CUMULATIVE CHANGE	
SEASONALLY ADJUSTED	Dec-18	-0.1	3-Mo.	0.3
	Nov-18	0.0	12-Mo.	1.9
	Oct-18	0.3	10-Yr. (Annual)	1.8
BREAKEVEN INFLATION	10-Yr.	1.7		
CONSUMER SENTIMENT	Dec-18	98.3		
U. OF MICHIGAN SURVEY	Nov-18	97.5		
	1-Yr. Ago	95.9	10-Yr. Avg	82.5
MANUFACTURING	Dec-18	54.1	CHANGE IN SECTOR	
INST. FOR SUPPLY MGMT	Nov-18	59.3	>50	Expansion
PURCHASING MNGRS' IDX	1-Yr. Avg.	58.8	<50	Contraction

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

CHANGES IN REAL GDP (2012 BASE YEAR)



UNEMPLOYMENT RATE AND JOB GROWTH/LOSS



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

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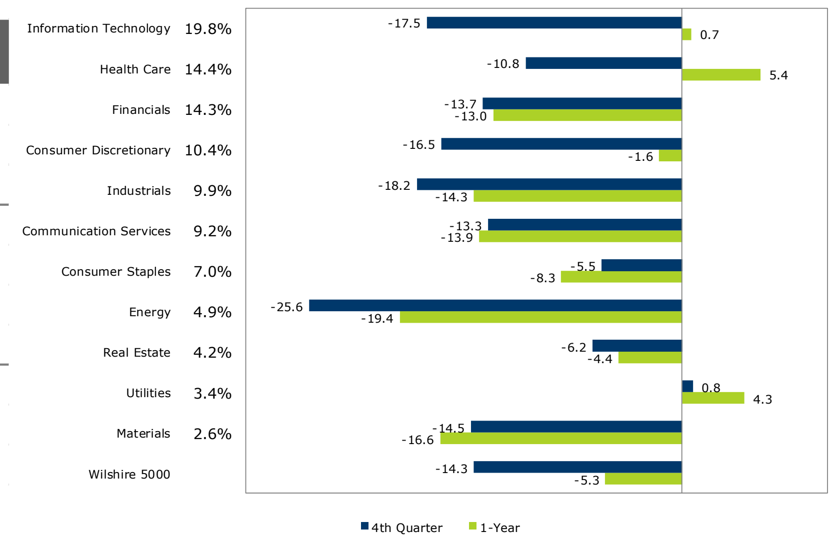
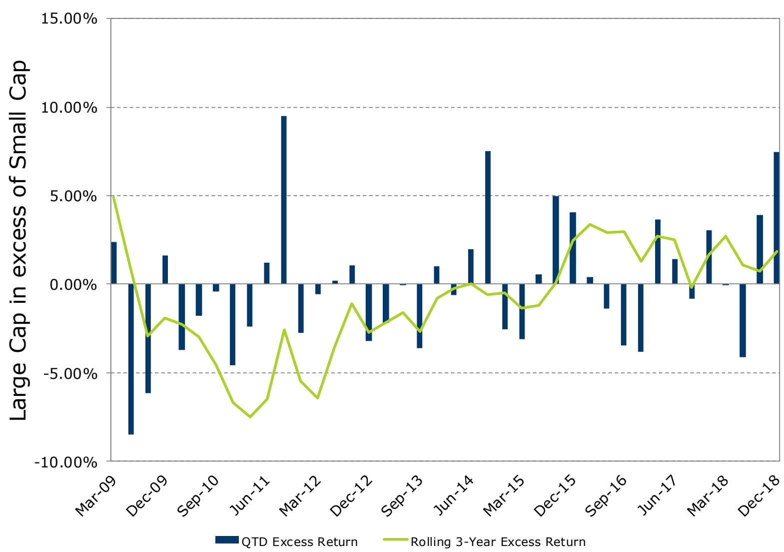
U.S. EQUITY MARKET

AS OF DECEMBER 31, 2018	QTR	YTD	1 YR	3 YR	5 YR	10 YR
WILSHIRE 5000 INDEX	-14.3	-5.3	-5.3	9.1	8.1	13.2
WILSHIRE U.S. LARGE CAP	-13.7	-4.6	-4.6	9.3	8.5	13.1
WILSHIRE U.S. SMALL CAP	-19.7	-10.8	-10.8	7.4	4.7	13.9
WILSHIRE U.S. LARGE GROWTH	-16.8	-3.6	-3.6	10.3	9.6	14.6
WILSHIRE U.S. LARGE VALUE	-10.8	-5.9	-5.9	8.1	7.2	11.6
WILSHIRE U.S. SMALL GROWTH	-20.6	-9.7	-9.7	8.1	4.5	14.7
WILSHIRE U.S. SMALL VALUE	-18.7	-12.0	-12.0	6.5	4.7	12.9
WILSHIRE REIT INDEX	-6.9	-4.8	-4.8	2.1	7.9	12.2
MSCI USA MIN. VOL. INDEX	-7.7	0.9	0.9	9.5	9.8	12.6
FTSE RAFI U.S. 1000 INDEX	-13.8	-8.3	-8.3	7.9	6.6	14.1

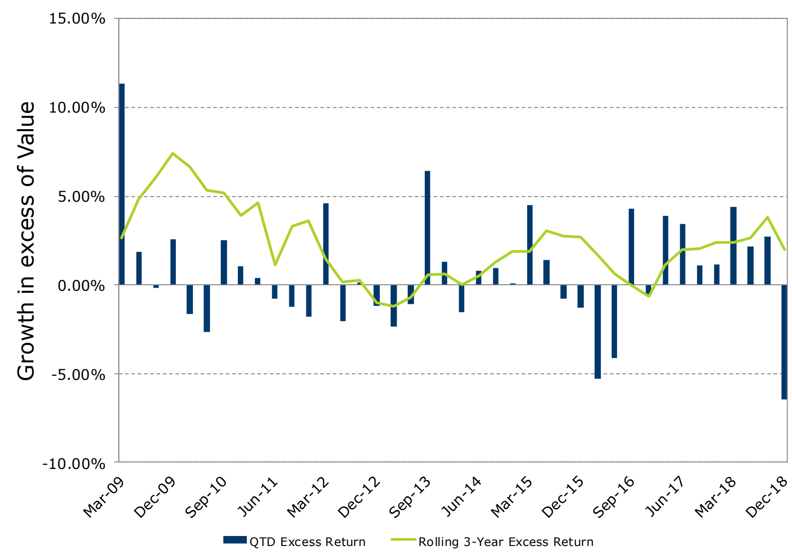
WILSHIRE 5000 SECTOR WEIGHT & RETURN (%)



LARGE CAP VS SMALL CAP



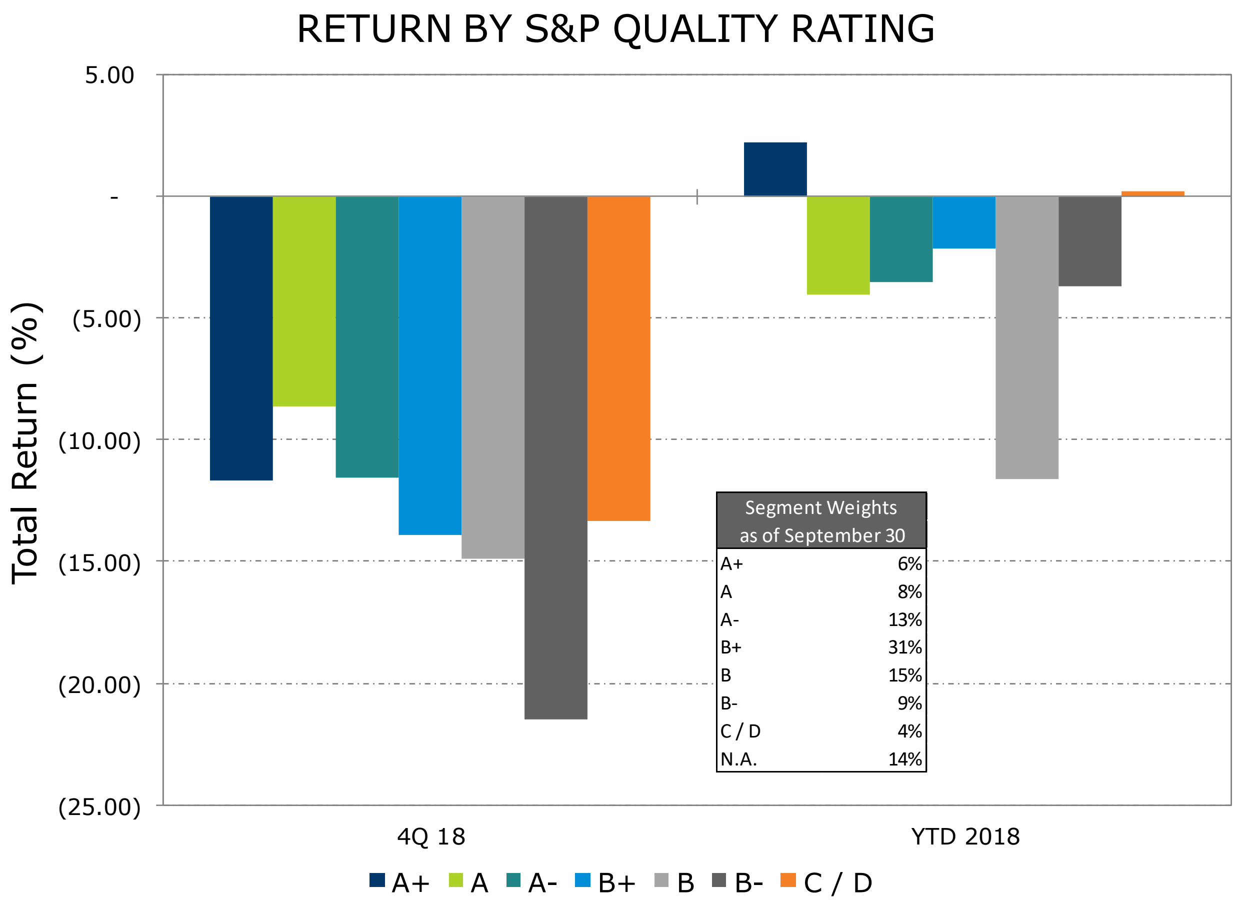
GROWTH VS VALUE



Data sources: Wilshire Compass, Wilshire Atlas

RETURNS BY QUALITY SEGMENT

Highest quality names produced a positive return for the year but are among the lowest weight within the broad market

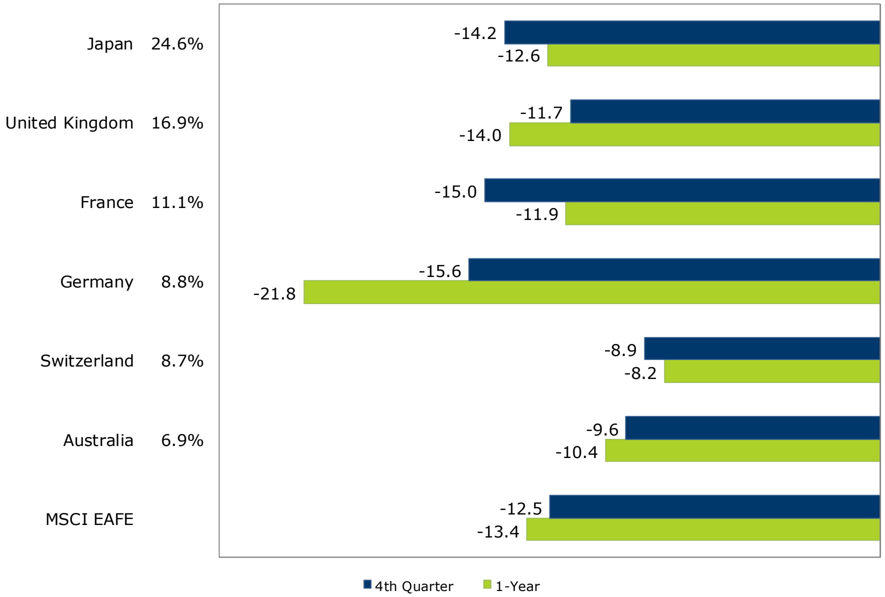


Data sources: Wilshire Atlas

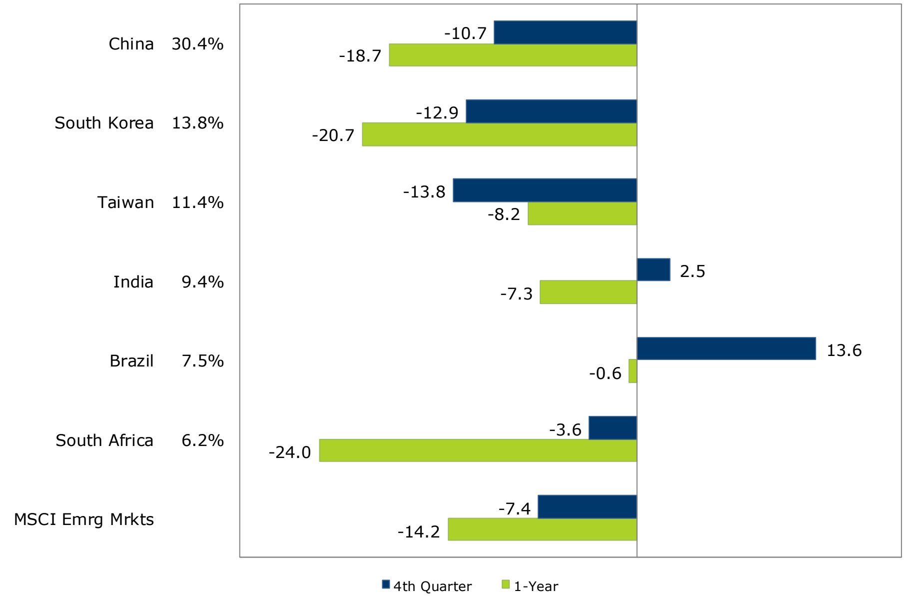
NON-U.S. EQUITY MARKET

AS OF DECEMBER 31, 2018	QTR	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI EX-US ($G)	-11.4	-13.8	-13.8	5.0	1.1	7.1
MSCI EAFE ($G)	-12.5	-13.4	-13.4	3.4	1.0	6.8
MSCI EMERGING MARKETS ($G)	-7.4	-14.2	-14.2	9.6	2.0	8.4
MSCI FRONTIER MARKETS ($G)	-4.3	-16.2	-16.2	4.6	1.1	5.4
MSCI ACWI EX-US GROWTH ($G)	-12.2	-14.1	-14.1	4.6	2.1	7.5
MSCI ACWI EX-US VALUE ($G)	-10.6	-13.4	-13.4	5.4	0.2	6.6
MSCI ACWI EX-US SMALL ($G)	-14.4	-17.9	-17.9	4.4	2.4	10.5
MSCI ACWI MINIMUM VOLATILITY	-6.5	-1.0	-1.0	8.3	7.9	10.5
MSCI EAFE MINIMUM VOLATILITY	-7.3	-5.2	-5.2	4.5	5.4	8.1
FTSE RAFI DEVELOPED EX-US	-12.8	-14.5	-14.5	4.9	0.9	7.3
MSCI EAFE LC (G)	-12.2	-10.5	-10.5	3.1	4.3	8.0

MSCI EAFE: LARGEST COUNTRIES & RETURN (USD)



MSCI EM: LARGEST COUNTRIES & RETURN (USD)



Data sources: Wilshire Compass

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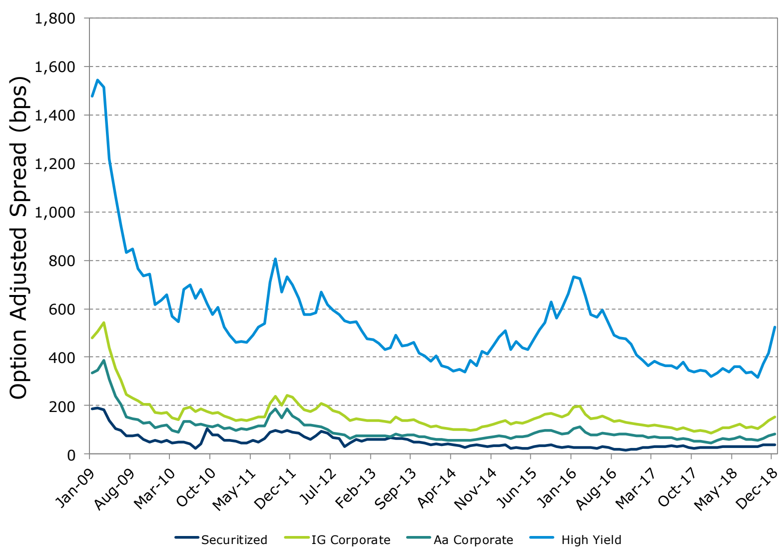
U.S. FIXED INCOME

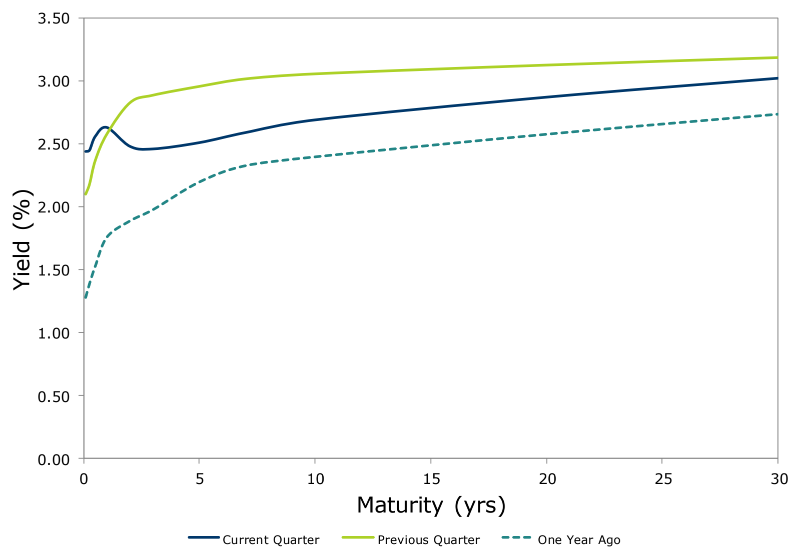
AS OF DECEMBER 31, 2018	YTM	DURATION	QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS AGGREGATE	3.3	5.9	1.6	0.0	0.0	2.1	2.5	3.5
BLOOMBERG BARCLAYS TREASURY	2.6	6.1	2.6	0.9	0.9	1.4	2.0	2.1
BLOOMBERG BARCLAYS GOV'T-REL.	3.4	5.3	1.2	0.3	0.3	2.4	2.6	2.9
BLOOMBERG BARCLAYS SECURITIZED	3.4	4.7	2.0	1.0	1.0	1.8	2.5	3.4
BLOOMBERG BARCLAYS CORPORATE	4.2	7.1	-0.2	-2.5	-2.5	3.3	3.3	5.9
BLOOMBERG BARCLAYS LT G/C	4.1	15.0	0.8	-4.7	-4.7	4.0	5.4	5.9
BLOOMBERG BARCLAYS LT TREASURY	3.0	17.4	4.2	-1.8	-1.8	2.6	5.9	4.1
BLOOMBERG BARCLAYS LT GOV't-REL.	4.6	11.8	0.0	-3.2	-3.2	4.7	5.6	5.7
BLOOMBERG BARCLAYS LT CORP.	4.9	13.5	-1.8	-7.2	-7.2	4.9	5.0	7.6
BLOOMBERG BARCLAYS U.S. TIPS *	2.7	7.6	-0.4	-1.3	-1.3	2.1	1.7	3.6
BLOOMBERG BARCLAYS HIGH YIELD	8.0	4.0	-4.5	-2.1	-2.1	7.2	3.8	11.1
TREASURY BILLS	2.5	0.25	0.6	1.9	1.9	1.0	0.6	0.4

* 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

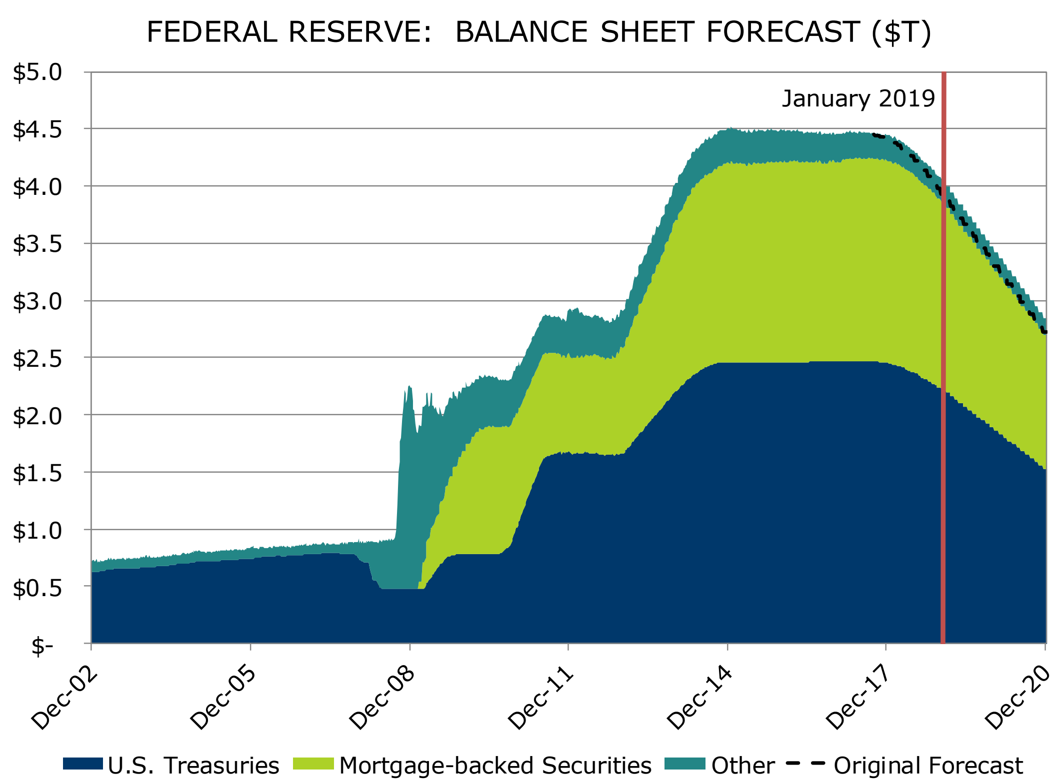


Data sources: Wilshire Compass, Bloomberg Barclays, U.S. Treasury

FEDERAL RESERVE

- 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

- Generally on pace with their initial plan, the Federal Reserve has reduced their total assets by $406 billion through mid-January 2019



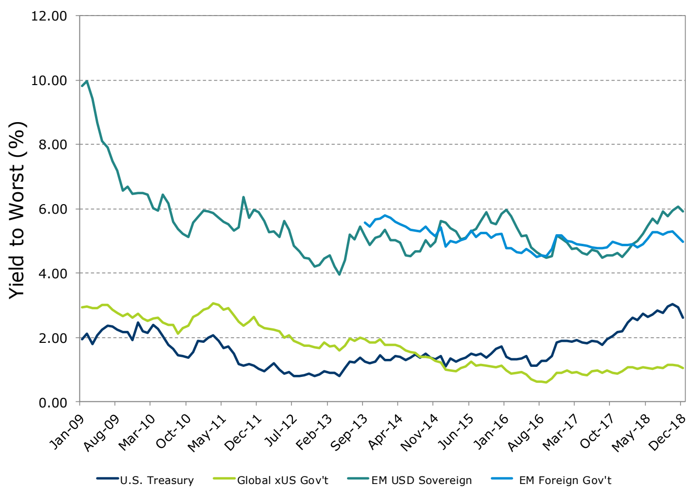
Data sources: Federal Reserve

NON-U.S. FIXED INCOME

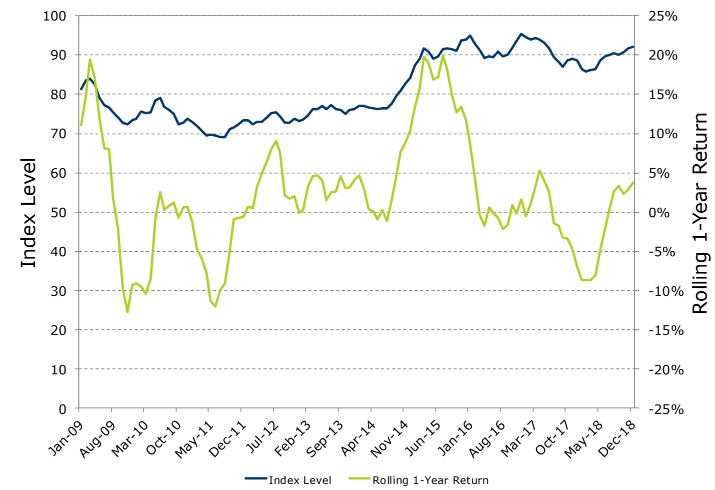
AS OF DECEMBER 31, 2018	QTR	YTD	1 YR	3 YR	5 YR	10 YR
DEVELOPED MARKETS						
BLMBRG BRCLYS GLBL AGGREGATE xUS	0.9	-2.1	-2.1	3.2	0.0	1.7
BLMBRG BRCLYS GLBL AGGREGATE xUS *	1.9	3.2	3.2	3.5	4.1	4.0
BLMBRG BRCLYS GLOBAL INF LNKD xUS	-1.1	-5.9	-5.9	3.1	1.0	3.8
BLMBRG BRCLYS GLOBAL INF LNKD xUS *	1.4	1.3	1.3	6.2	6.3	5.8
EMERGING MARKETS (HARD CURRENCY)						
BLMBRG BRCLYS EM USD AGGREGATE	-0.2	-2.5	-2.5	5.0	4.2	8.5
EMERGING MARKETS (FOREIGN CURRENCY)						
BLMBRG BRCLYS EM LOCAL CURR. GOV'T	2.5	-3.4	-3.4	5.3	0.5	4.1
BLMBRG BRCLYS EM LOCAL CURR. GOV'T *	2.6	2.7	2.7	3.2	2.9	3.2
EURO vs. DOLLAR	-1.6	-4.8	-4.8	1.7	-3.7	-2.0
YEN vs. DOLLAR	3.5	2.7	2.7	3.1	-0.9	-1.9
POUND vs. DOLLAR	-2.3	-5.9	-5.9	-4.7	-5.1	-1.2

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

BLOOMBERG BARCLAYS FIXED INCOME INDEXES



U.S. DOLLAR INDEX: MAJOR CURRENCIES



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

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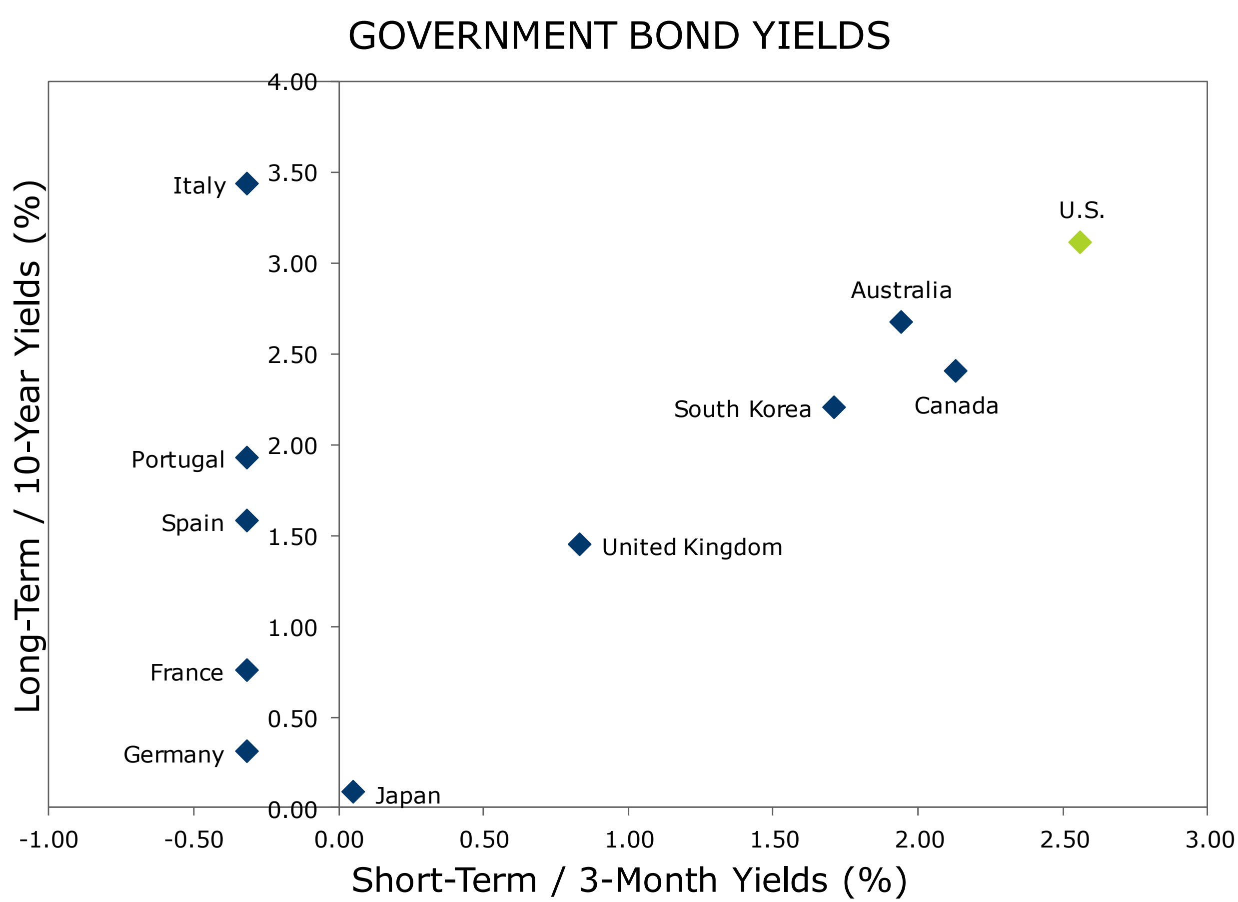
GLOBAL INTEREST RATES

Negative short-term rates remain in Europe; Long rates jumped in Italy during the quarter

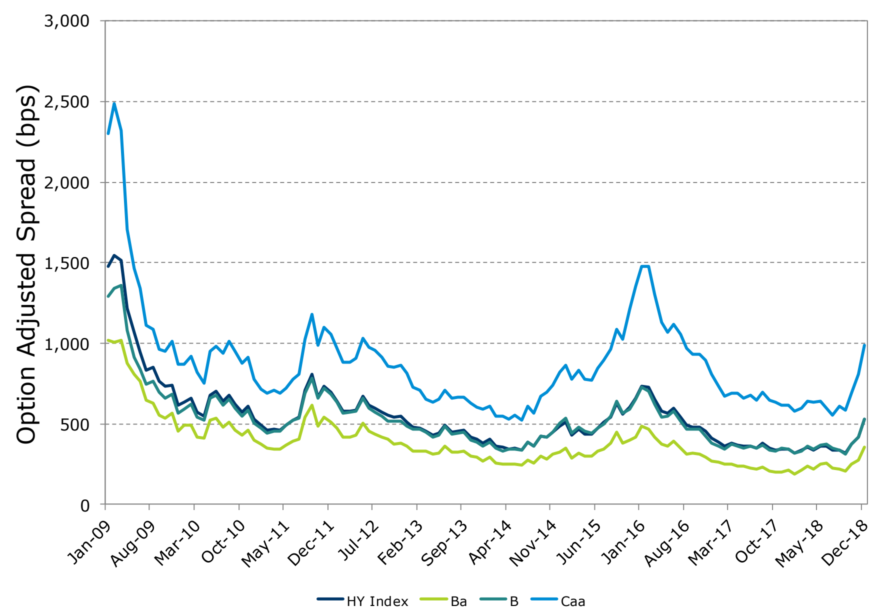


Data sources: Organization for Economic Co-operation and Development

HIGH YIELD BOND MARKET

AS OF DECEMBER 31, 2018		QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS HIGH YIELD		-4.5	-2.1	-2.1	7.2	3.8	11.1
CREDIT SUISSE LEVERAGED LOAN		-3.1	1.1	1.1	5.0	3.3	8.3
HIGH YIELD QUALITY DISTRIBUTION	WEIGHT						
Ba U.S. HIGH YIELD	46.1%	-2.9	-2.4	-2.4	5.7	4.3	10.2
B U.S. HIGH YIELD	39.7%	-4.4	-1.3	-1.3	6.8	3.3	9.7
Caa U.S. HIGH YIELD	13.3%	-9.3	-3.8	-3.8	11.7	3.9	13.9
Ca to D U.S. HIGH YIELD	0.6%	-24.1	-1.3	-1.3	27.2	-11.2	7.4
Non-Rated U.S. HIGH YIELD	0.2%	-1.7	1.2	1.2	5.3	-0.5	6.9

BLOOMBERG BARCLAYS HIGH YIELD INDEXES



Data sources: Wilshire Compass, Bloomberg Barclays

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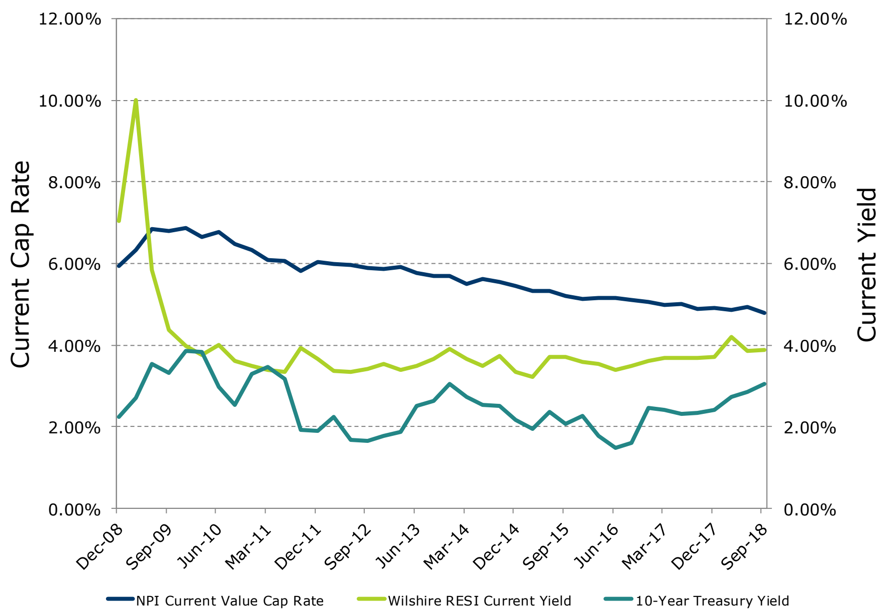
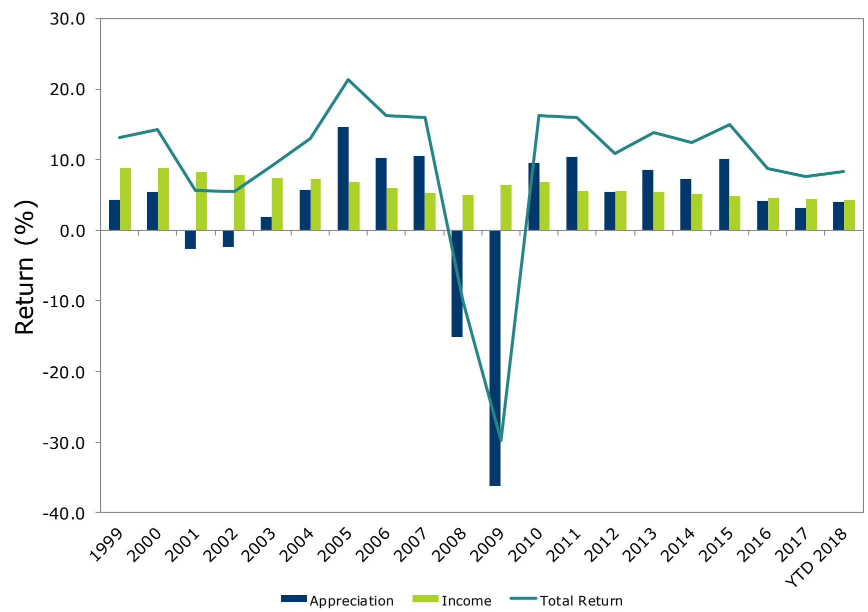
REAL ASSETS

AS OF DECEMBER 31, 2018	QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS U.S. TIPS	-0.4	-1.3	-1.3	2.1	1.7	3.6
BLOOMBERG COMMODITY INDEX	-9.4	-11.2	-11.2	0.3	-8.8	-3.8
WILSHIRE GLOBAL RESI INDEX	-6.1	-5.4	-5.4	3.3	6.1	11.6
NCREIF ODCE FUND INDEX	1.8	8.3	8.3	8.2	10.4	7.0
NCREIF TIMBERLAND INDEX	1.0	3.4	3.4	3.2	5.0	3.8
ALERIAN MLP INDEX (OIL & GAS)	-17.3	-12.4	-12.4	-1.1	-7.3	9.6

REAL ESTATE VALUATION



NCREIF ODCE FUND INDEX RETURN



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

TOTAL FUND

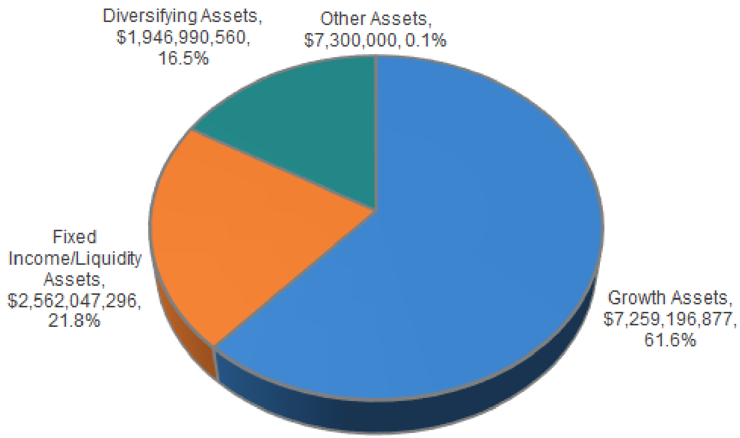
ACTUAL ALLOCATION VS POLICY ALLOCATION

KRS Pension Plan Composite

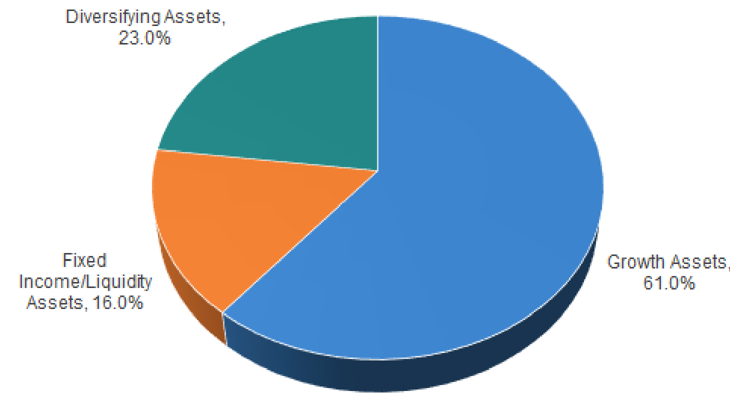
Asset Class Bucketing

As of December 31, 2018

Total Fund



Policy Index



$11,775,534,733

ACTUAL ALLOCATION VS POLICY ALLOCATION

KRS Pension Plan Composite

Asset Class Bucketing

As of December 31, 2018

Asset Class / Bucket	Total Pension Allocation		Policy Index	Relative (+/-)
	($)	(%)		
U.S. Equity	$1,925,754,801	16.4%	18.3%	-1.9%
Non-U.S. Equity	$2,256,324,693	19.2%	18.3%	0.9%
Private Equity	$1,246,960,042	10.6%	9.5%	1.1%
Credit / High Yield	$1,830,157,341	15.5%	15.0%	0.5%
Growth Assets	**$7,259,196,877**	**61.6%**	**61.0%**	**0.6%**
Core Fixed Income	$2,028,643,697	17.2%	14.8%	2.5%
Cash	$533,403,599	4.5%	1.3%	3.3%
Fixed Income/Liquidity Assets	**$2,562,047,296**	**21.8%**	**16.0%**	**5.8%**
Real Estate	$628,086,794	5.3%	5.0%	0.3%
Real Return	$1,000,858,671	8.5%	15.0%	-6.5%
Absolute Return	$318,045,095	2.7%	3.0%	-0.3%
Diversifying Assets	**$1,946,990,560**	**16.5%**	**23.0%**	**-6.5%**
Other Assets	**$7,300,000**	**0.1%**	**0.0%**	**0.1%**
Total Fund	**$11,775,534,733**	**100.0%**	**100.0%**	**0.0%**

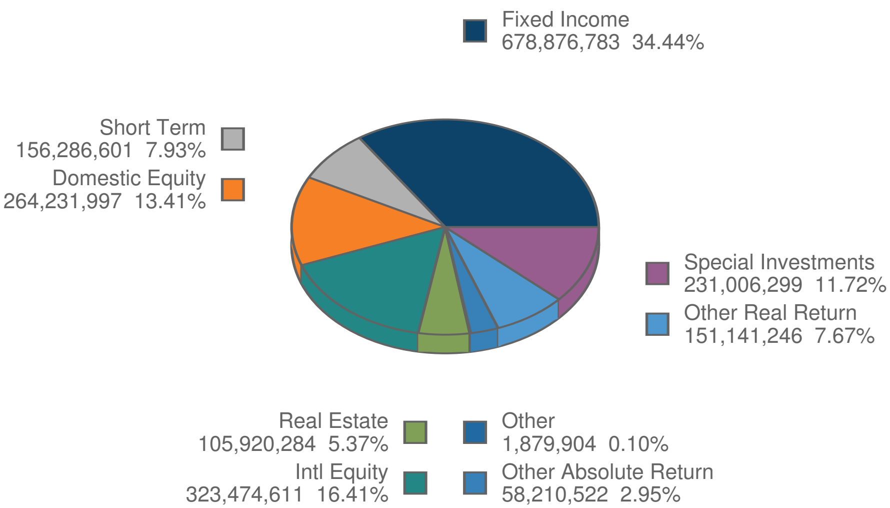
Wilshire Consulting

ACTUAL ALLOCATION VS POLICY ALLOCATION

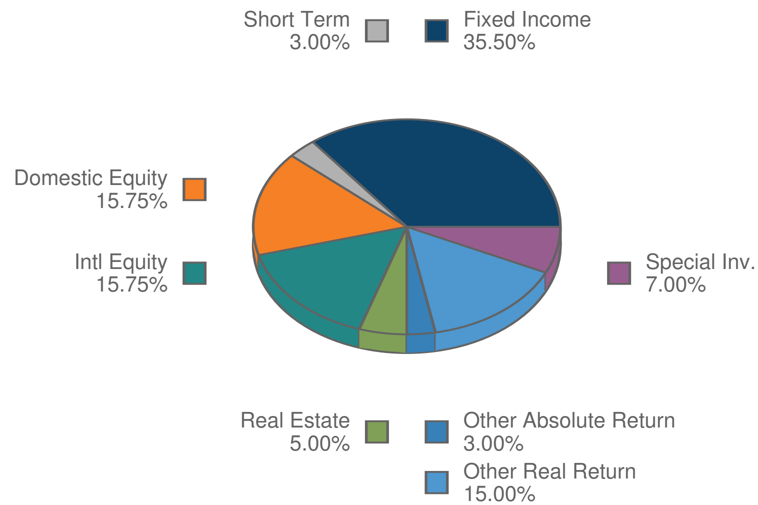
KERS Pension Plan Composite

As of December 31, 2018

Total Fund



Policy Index



$1,971,028,247

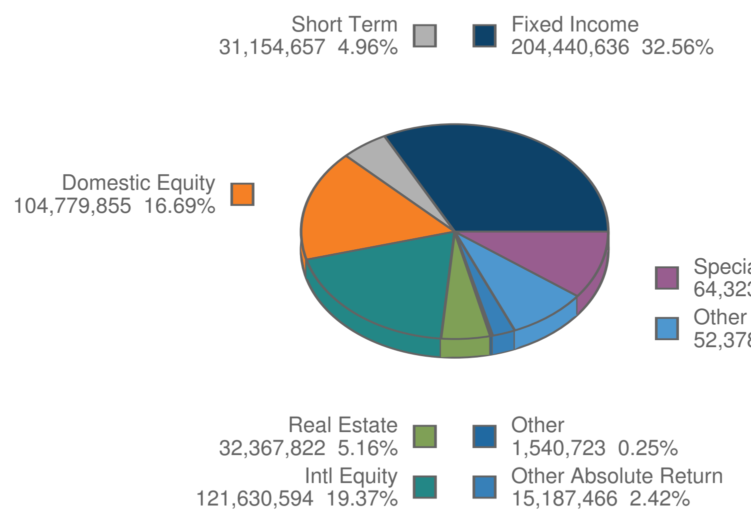
Wilshire Consulting

ACTUAL ALLOCATION VS POLICY ALLOCATION

KERS (H) Pension Plan Composite

As of December 31, 2018

Total Fund



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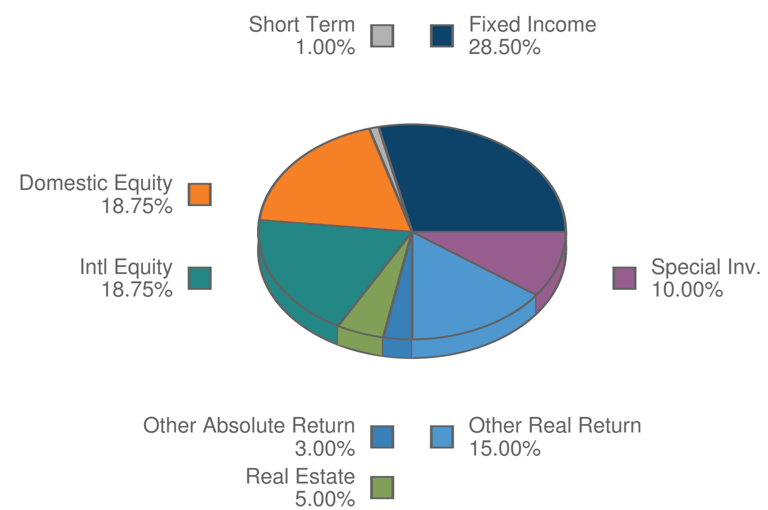


$627,804,077

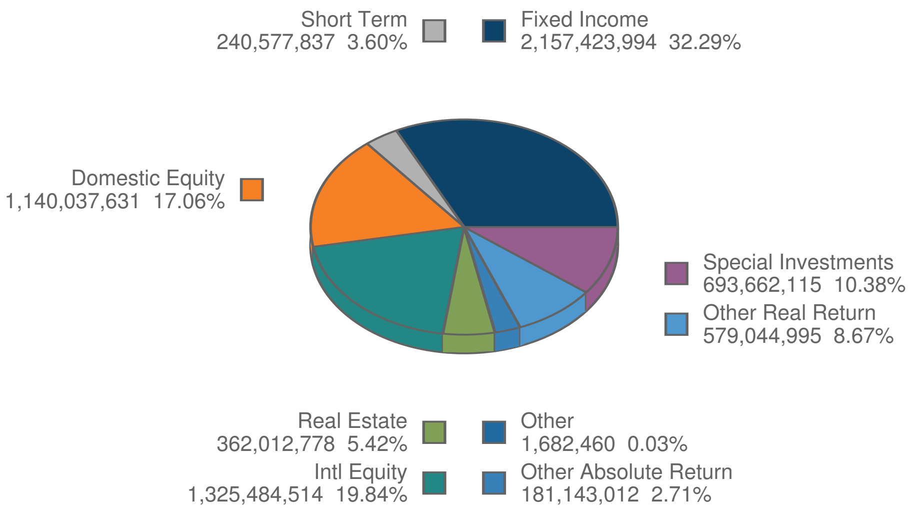
Wilshire Consulting

ACTUAL ALLOCATION VS POLICY ALLOCATION

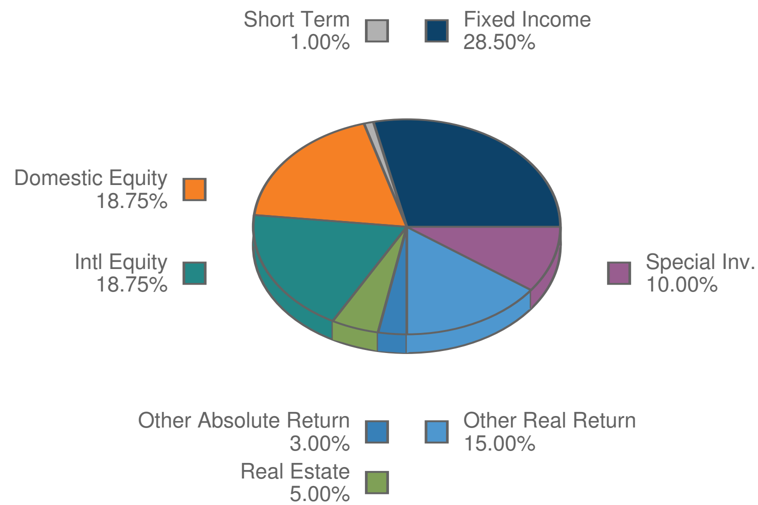
CERS Pension Plan Composite

As of December 31, 2018

Total Fund



Policy Index



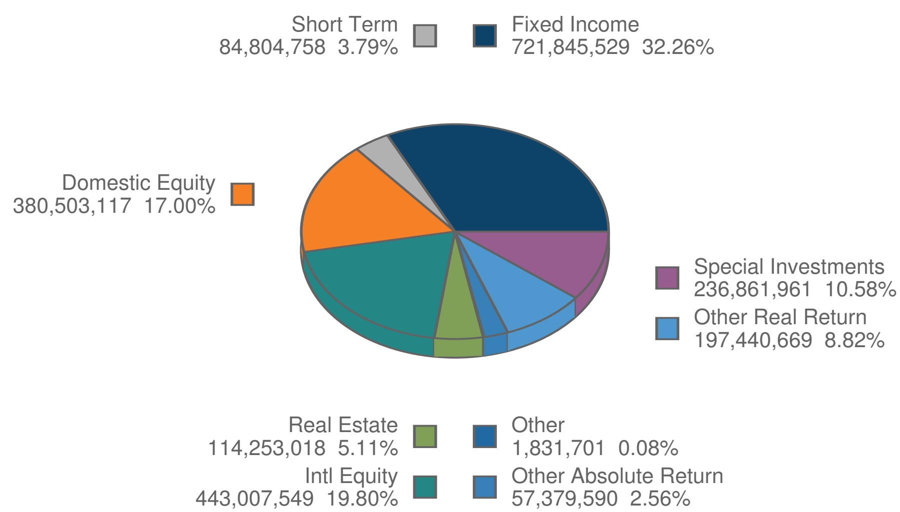
$6,681,069,336

ACTUAL ALLOCATION VS POLICY ALLOCATION

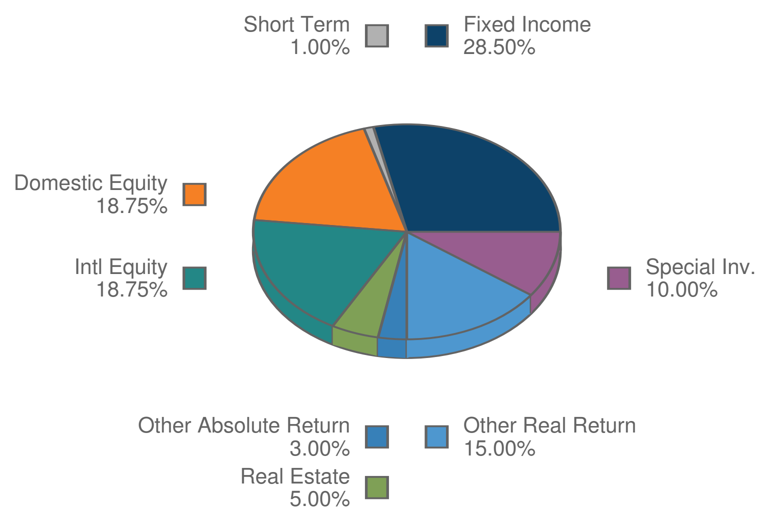
CERS (H) Pension Plan Composite

As of December 31, 2018

Total Fund



Policy Index



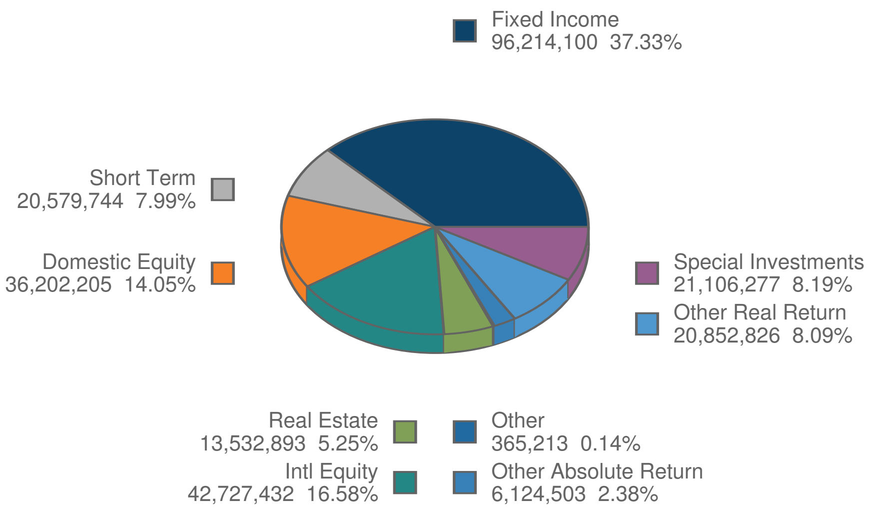
$2,237,927,892

ACTUAL ALLOCATION VS POLICY ALLOCATION

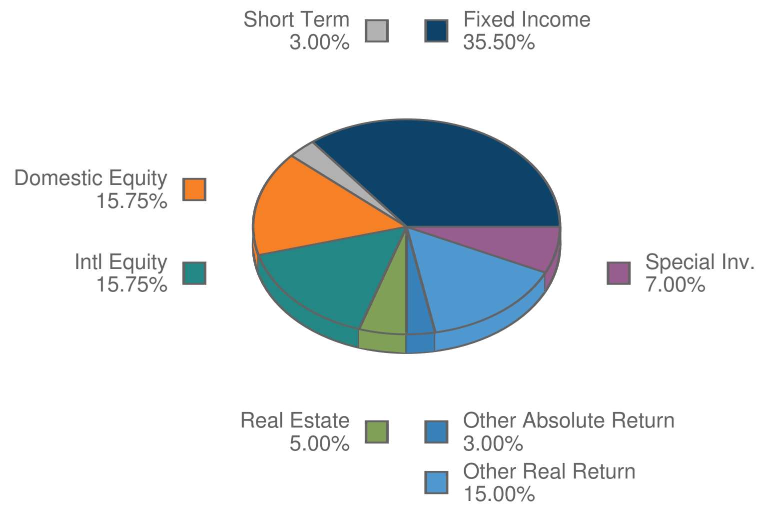
SPRS Pension Plan Composite

As of December 31, 2018

Total Fund



Policy Index



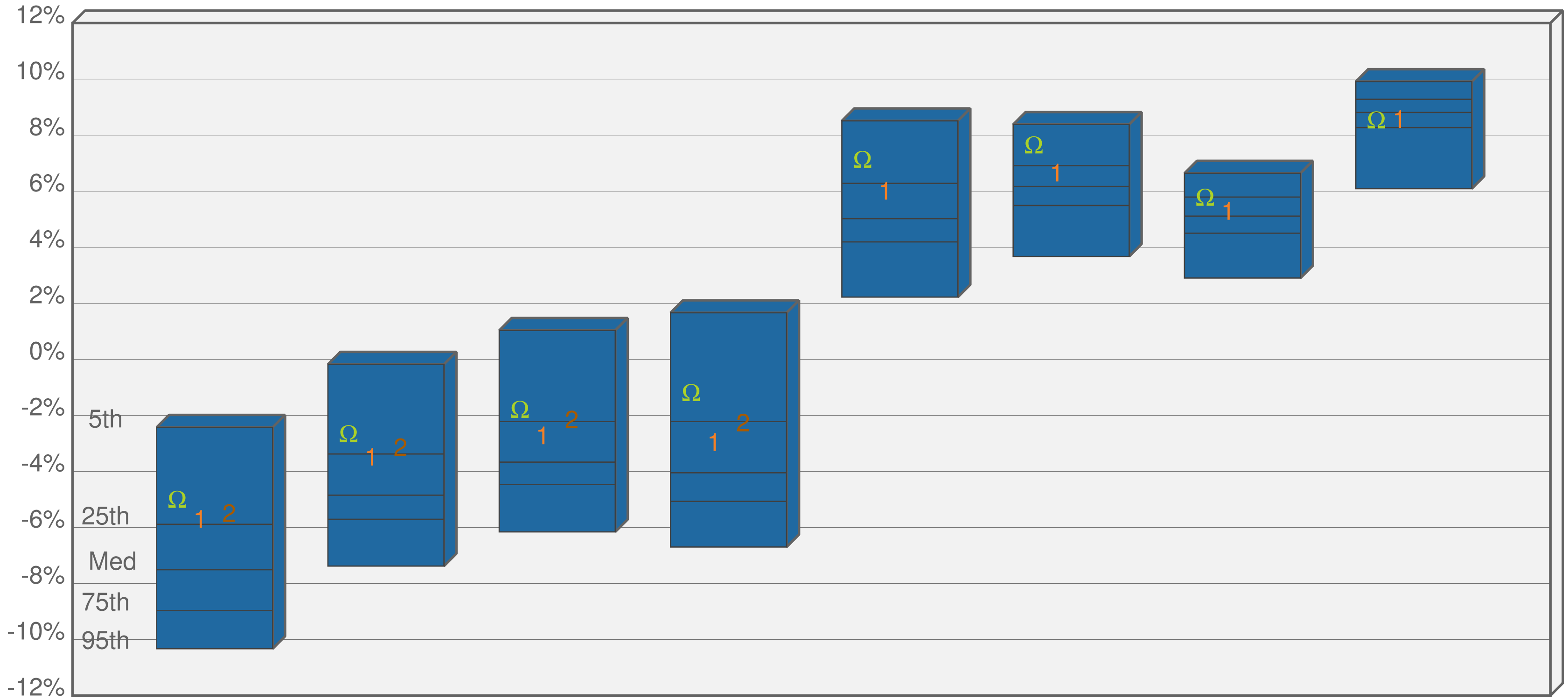
$257,705,192

Wilshire Consulting

PERFORMANCE COMPARISON

KRS Pension Plan Composite

Periods Ended December 31, 2018



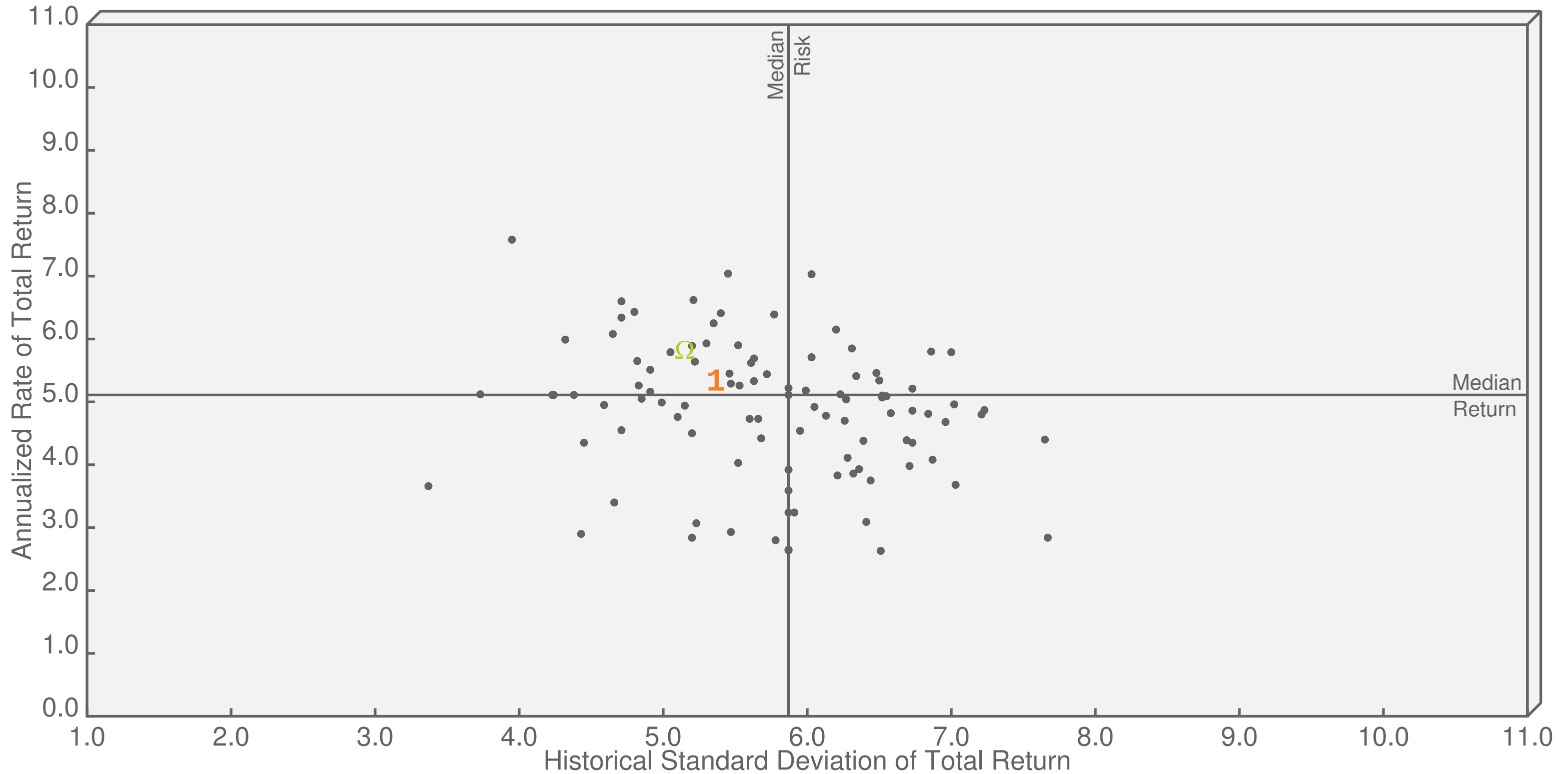
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Ω KRS Pension Plan	-4.99 (17)	-2.65 (15)	-1.78 (18)	-1.18 (14)	7.14 (13)	7.66 (11)	5.79 (25)	8.55 (64)
1 KRS Allocation I	-5.70 (21)	-3.48 (27)	-2.72 (32)	-2.96 (34)	6.01 (32)	6.66 (32)	5.29 (40)	8.57 (63)
2 KRS IPS Benchmar	-5.49 (20)	-3.14 (21)	-2.15 (23)	-2.26 (25)				
5th %tile	-2.43	-0.18	1.03	1.66	8.51	8.38	6.64	9.91
25th %tile	-5.89	-3.38	-2.22	-2.22	6.28	6.91	5.79	9.28
Median	-7.51	-4.85	-3.67	-4.05	5.02	6.17	5.11	8.81
75th %tile	-8.97	-5.71	-4.47	-5.07	4.19	5.49	4.50	8.27
95th %tile	-10.33	-7.38	-6.16	-6.70	2.22	3.67	2.90	6.09
Number of Funds	150	149	149	147	142	137	131	119

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

RISK / RETURN ANALYSIS

KRS Pension Plan

Five Years Ending December 31, 2018



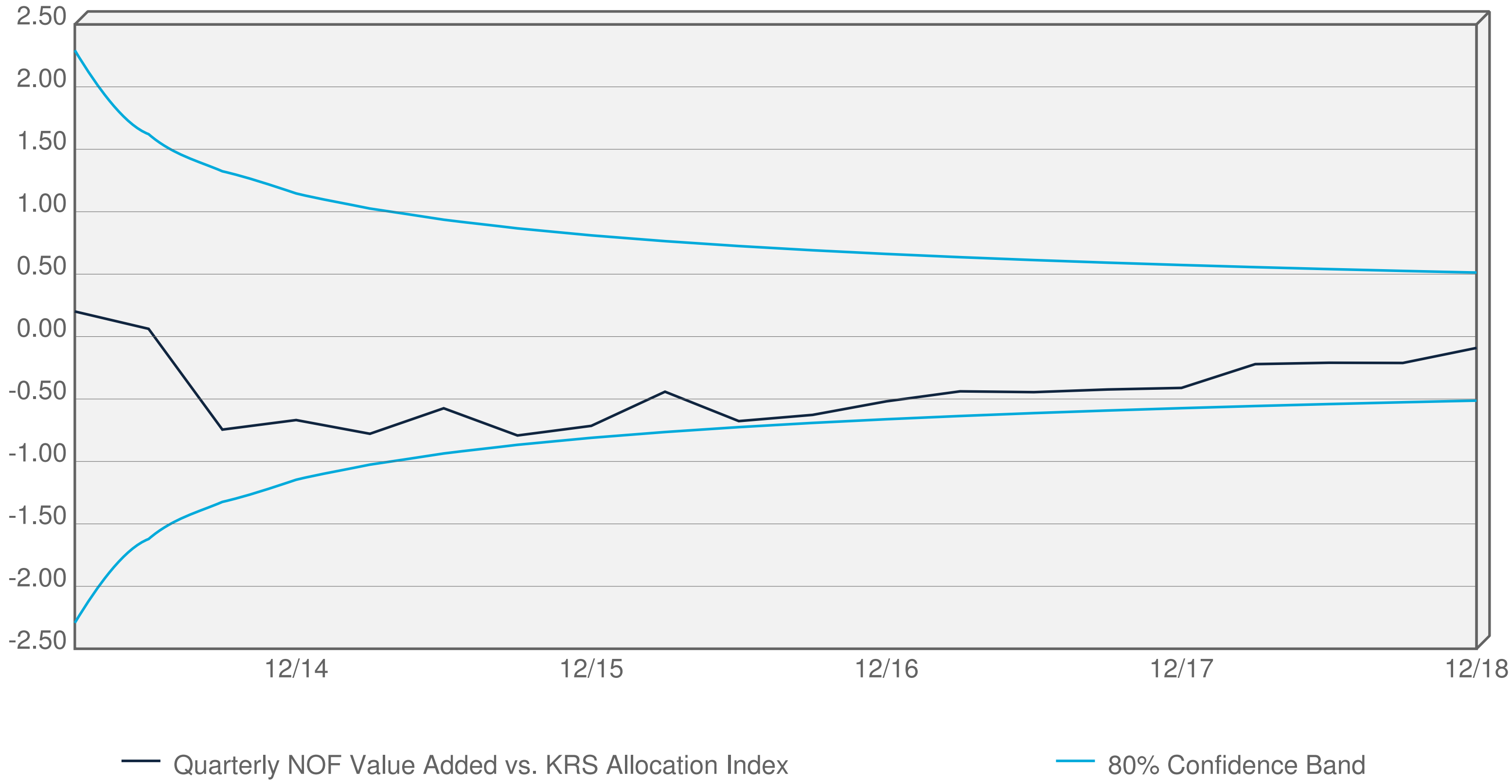
Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
KRS Pension Plan	Ω	5.79	25	5.18	74
KRS Allocation Index	1	5.29	40	5.40	66
Median		5.11		5.87	

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

CUMULATIVE SKILL ANALYSIS

KRS Pension Plan Composite

Five Years Ending December 31, 2018



Excess Return:	-0.09	Information Ratio:	-0.13
Excess Risk:	0.70	T-Stat:	-0.29

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
KRS Pension Plan									
Net of Fee Return	**-5.11**	**-2.93**	**-2.18**	**-1.78**	**7.02**	**5.20**	**8.18**	**3/31/84**	**8.91**
KRS Allocation Index	-5.70	-3.48	-2.72	-2.96	6.66	5.29	8.57	3/31/84	9.02
Value Added	0.59	0.55	0.54	1.19	0.36	-0.09	-0.39	3/31/84	-0.11
KRS IPS Benchmark	-5.49	-3.14	-2.15	-2.26					
KERS Pension Plan									
Net of Fee Return	**-4.01**	**-1.78**	**-1.13**	**-0.84**	**6.37**	**5.12**	**8.09**	**3/31/84**	**8.88**
KERS Allocation Index	-5.01	-2.78	-2.15	-2.60	5.95	4.78	8.33	3/31/84	8.95
Value Added	1.01	1.00	1.02	1.76	0.43	0.34	-0.24	3/31/84	-0.07
KERS IPS Benchmark	-4.82	-2.69	-1.92	-2.24					
Assumed Rate 5.25%	1.29	2.59	3.91	5.25					
KERS (H) Pension Plan									
Net of Fee Return	**-5.28**	**-3.10**	**-2.35**	**-1.97**	**7.08**	**5.20**	**8.20**	**3/31/84**	**8.91**
KERS (H) Allocation Index	-5.80	-3.55	-2.75	-2.97	6.91	5.24	8.58	3/31/84	9.02
Value Added	0.52	0.45	0.40	1.00	0.17	-0.05	-0.38	3/31/84	-0.11
KERS (H) IPS Benchmark	-5.63	-3.22	-2.21	-2.29					
Assumed Rate 6.25%	1.53	3.08	4.65	6.25					
CERS Pension Plan									
Net of Fee Return	**-5.38**	**-3.21**	**-2.45**	**-2.04**	**7.15**	**5.19**	**8.19**	**3/31/84**	**8.91**
CERS Allocation Index	-5.81	-3.57	-2.75	-2.95	6.92	5.25	8.58	3/31/84	9.02
Value Added	0.44	0.36	0.31	0.91	0.23	-0.06	-0.39	3/31/84	-0.11
CERS IPS Benchmark	-5.64	-3.24	-2.21	-2.27					
Assumed Rate 6.25%	1.53	3.08	4.65	6.25					

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	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	**-5.37**	**-3.20**	**-2.40**	**-1.99**	**7.15**	**5.22**	**8.20**	**3/31/84**	**8.91**
CERS (H) Allocation Index	-5.81	-3.56	-2.71	-2.90	6.94	5.26	8.59	3/31/84	9.03
Value Added	0.44	0.36	0.32	0.91	0.21	-0.04	-0.39	3/31/84	-0.11
CERS (H) IPS Benchmark	-5.64	-3.24	-2.18	-2.22					
Assumed Rate 6.25%	1.53	3.08	4.65	6.25					
SPRS Pension Plan									
Net of Fee Return	**-4.44**	**-2.41**	**-1.78**	**-1.55**	**6.38**	**4.70**	**7.94**	**3/31/84**	**8.84**
SPRS Allocation Index	-5.07	-2.62	-1.78	-2.14	6.77	5.15	8.53	3/31/84	9.01
Value Added	0.63	0.20	0.00	0.59	-0.40	-0.45	-0.59	3/31/84	-0.17
SPRS IPS Benchmark	-4.85	-2.75	-1.91	-2.14					
Assumed Rate 5.25%	1.29	2.59	3.91	5.25					

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
US Equity Composite									
Net of Fee Return	**-14.76**	**-9.54**	**-5.75**	**-6.40**	**8.40**	**6.93**	**12.35**	**3/31/84**	**10.87**
Russell 3000	-14.30	-8.20	-4.63	-5.24	8.97	7.91	13.12	3/31/84	10.94
Value Added	-0.46	-1.34	-1.12	-1.16	-0.57	-0.99	-0.77	3/31/84	-0.07
Non-US Equity Composite									
Net of Fee Return	**-12.49**	**-11.90**	**-13.51**	**-13.35**	**5.21**	**1.54**	**7.07**	**6/30/00**	**2.62**
Policy Index	-11.88	-11.53	-13.84	-14.76	4.69	0.98	6.90	6/30/00	2.76
Value Added	-0.61	-0.37	0.33	1.41	0.52	0.56	0.17	6/30/00	-0.14
Core Fixed Composite									
Net of Fee Return	**0.93**							**9/30/18**	**0.93**
Bloomberg Universal	1.17							9/30/18	1.17
Value Added	-0.24							9/30/18	-0.24
Opportunistic Fixed Composite									
Net of Fee Return	**-1.32**							**9/30/18**	**-1.32**
Bloomberg High Yield	-4.53							9/30/18	-4.53
Value Added	3.21							9/30/18	3.21
Fixed Income Composite									
Net of Fee Return	**-0.22**	**1.07**	**0.96**	**0.66**	**4.60**	**3.93**	**5.42**	**3/31/84**	**7.41**
Policy Index	-1.70	-0.39	-0.02	-1.14	4.90	4.12	4.66	3/31/84	7.20
Value Added	1.48	1.46	0.97	1.80	-0.30	-0.20	0.75	3/31/84	0.21
Bloomberg Global Aggregate	1.20	0.26	-2.53	-1.20	2.70	1.08	2.49		
Real Return Composite									
Net of Fee Return	**-4.24**	**-3.61**	**-3.40**	**-3.89**	**4.65**	**2.15**		**6/30/11**	**2.95**
Real Return Index (P)	-3.40	-2.80	-1.23	-3.04	2.46	1.22		6/30/11	1.96
Value Added	-0.84	-0.81	-2.18	-0.85	2.19	0.94		6/30/11	0.98

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Real Estate Composite									
Net of Fee Return	**1.79**	**4.50**	**6.64**	**9.10**	**9.68**	**9.35**	**8.65**	**6/30/84**	**6.10**
NCREIF ODCE NOF 1 Quarter Lag	1.87	3.71	5.76	7.71	7.83	9.71	4.62		
Value Added	-0.08	0.79	0.88	1.39	1.85	-0.36	4.03		
Absolute Return Composite									
Net of Fee Return	**-1.14**	**-0.93**	**-0.37**	**1.20**	**2.08**	**2.55**		**3/31/10**	**3.80**
HFRI FOF Div (1 Month Lag)	-3.16	-2.81	-2.39	-0.97	1.53	2.01		3/31/10	2.54
Value Added	2.02	1.88	2.02	2.17	0.55	0.54		3/31/10	1.26
Private Equity Composite									
Net of Fee Return	**4.36**	**10.03**	**12.89**	**16.73**	**13.08**	**13.31**	**11.48**	**6/30/02**	**11.47**
KRS Short Term PE Index	4.36	10.03	12.89	16.73	13.09	13.31	11.48	6/30/02	11.47
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	7.91	12.94	13.05	21.10	21.33	17.61	18.39	6/30/02	11.42
Cash Composite									
Net of Fee Return	**0.59**	**1.11**	**1.56**	**2.14**	**1.48**	**0.96**	**0.81**	**12/31/87**	**3.57**
91-Day Treasury Bill	0.57	1.06	1.52	1.88	1.02	0.63	0.37	12/31/87	3.27
Value Added	0.02	0.05	0.04	0.26	0.46	0.33	0.44	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**	**3.08**

CUSTOM BENCHMARK SPECIFICATION

KRS Pension Plan

December 31, 2018

	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	12/18	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

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CUSTOM BENCHMARK SPECIFICATION

KRS Pension Plan

December 31, 2018

	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	12/18	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

Wilshire Consulting

CUSTOM BENCHMARK SPECIFICATION

KERS Pension Plan

December 31, 2018

	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
			14.00	Bloomberg High Yield
	6/18	12/18	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

December 31, 2018

	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	12/18	3.00	91-Day Treasury Bill
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			15.75	MSCI ACWI Ex USA IMI ($N)
		12/18	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	12/18	100.00	Assumed Rate 5.25%

Wilshire Consulting

CUSTOM BENCHMARK SPECIFICATION

KERS (H) Pension Plan

December 31, 2018

	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	12/18	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

December 31, 2018

	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	12/18	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	12/18	100.00	Assumed Rate 6.25%

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CUSTOM BENCHMARK SPECIFICATION

CERS Pension Plan

December 31, 2018

	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 ($G)
	12/17	3/18	10.00	HFRI Diversified Index
			24.50	Russell 3000
			10.00	CERS Short Term PE Benchmark
			8.00	Real Return Index (P)
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			24.50	MSCI ACWI Ex USA IMI ($N)
			2.00	91-Day Treasury Bill
			8.00	Bloomberg Universal
			8.00	Bloomberg High Yield
	6/18	12/18	2.00	91-Day Treasury Bill
			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	17.50	Russell 3000

Wilshire Consulting

CUSTOM BENCHMARK SPECIFICATION

CERS Pension Plan

December 31, 2018

	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	12/18	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	12/18	100.00	Assumed Rate 6.25%

CUSTOM BENCHMARK SPECIFICATION

CERS (H) Pension Plan

December 31, 2018

	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	12/18	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

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CUSTOM BENCHMARK SPECIFICATION

CERS (H) Pension Plan

December 31, 2018

	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	12/18	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	12/18	100.00	Assumed Rate 6.25%

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CUSTOM BENCHMARK SPECIFICATION

SPRS Pension Plan

December 31, 2018

	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	12/18	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

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CUSTOM BENCHMARK SPECIFICATION

SPRS Pension Plan

December 31, 2018

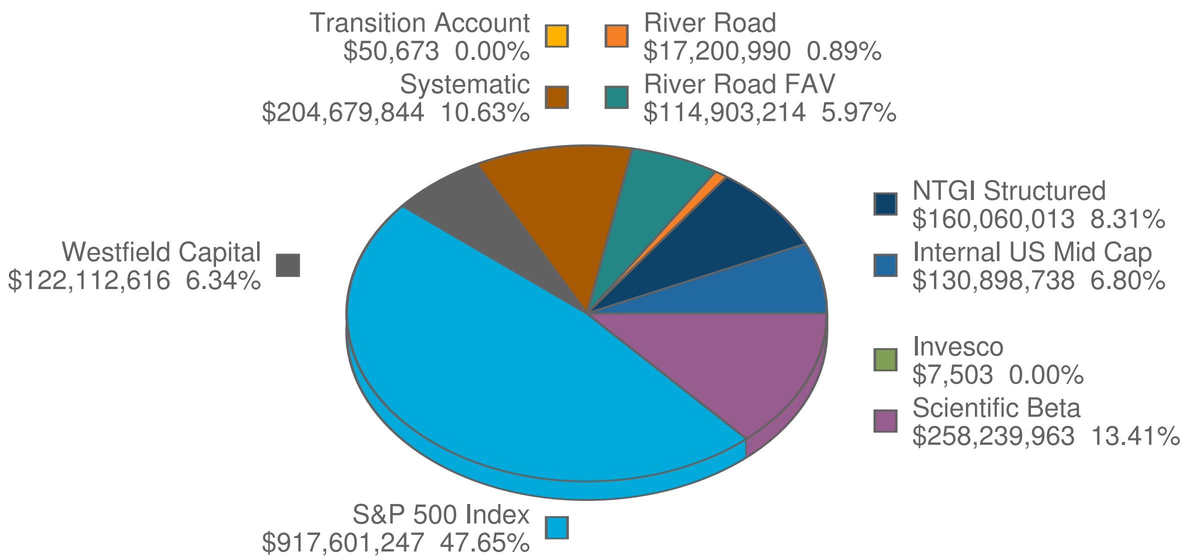
	Quarter Start	Quarter End	Percent	Description
SPRS IPS Benchmark (cont.)			17.50	MSCI ACWI Ex USA IMI Index ($G)
			17.00	Bloomberg High Yield
			10.00	Bloomberg Universal
			10.00	Real Return Index (P)
			5.00	NCREIF ODCE NOF 1 Quarter Lag
			10.00	HFRI FOF Div (1 Month Lag)
			10.00	SPRS Short Term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

US EQUITY

MANAGER ALLOCATION

US Equity Composite

As of December 31, 2018



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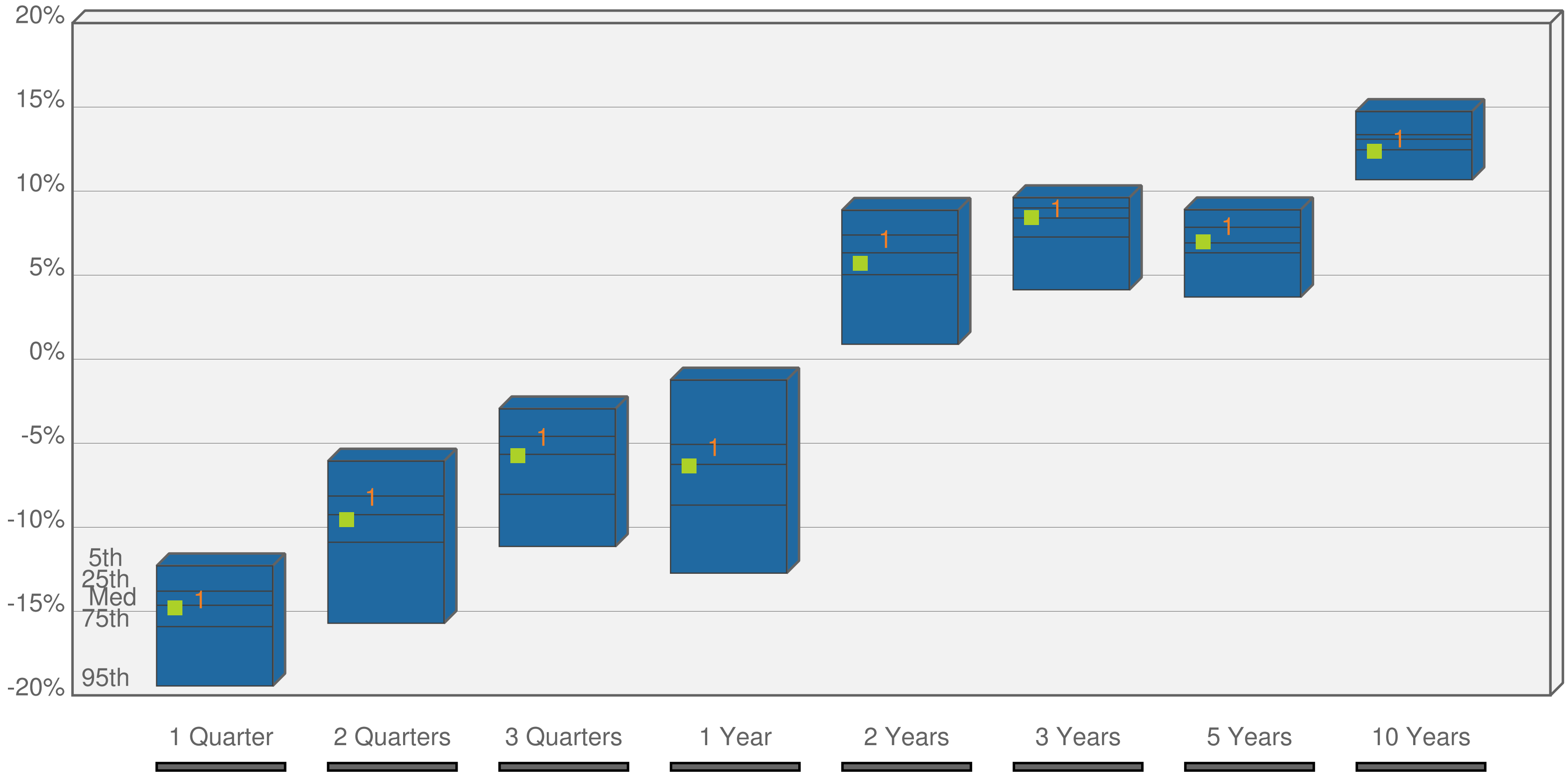
PERFORMANCE COMPARISON

US Equity Composite

Periods Ended December 31, 2018



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ US Equity Composite	-14.71 (54)	-9.48 (55)	-5.66 (50)	-6.28 (52)	5.78 (67)	8.51 (46)	7.05 (47)	12.45 (75)
1 Russell 3000	-14.30 (39)	-8.20 (27)	-4.63 (27)	-5.24 (32)	7.14 (31)	8.97 (25)	7.91 (23)	13.12 (48)
5th %tile	-12.30	-6.07	-2.96	-1.25	8.85	9.60	8.88	14.73
25th %tile	-13.80	-8.14	-4.59	-5.07	7.39	9.00	7.85	13.36
Median	-14.64	-9.25	-5.66	-6.26	6.33	8.40	6.92	13.09
75th %tile	-15.91	-10.89	-8.04	-8.68	5.03	7.27	6.33	12.46
95th %tile	-19.44	-15.71	-11.14	-12.73	0.89	4.13	3.70	10.68
Number of Funds	142	141	138	134	121	117	108	80

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

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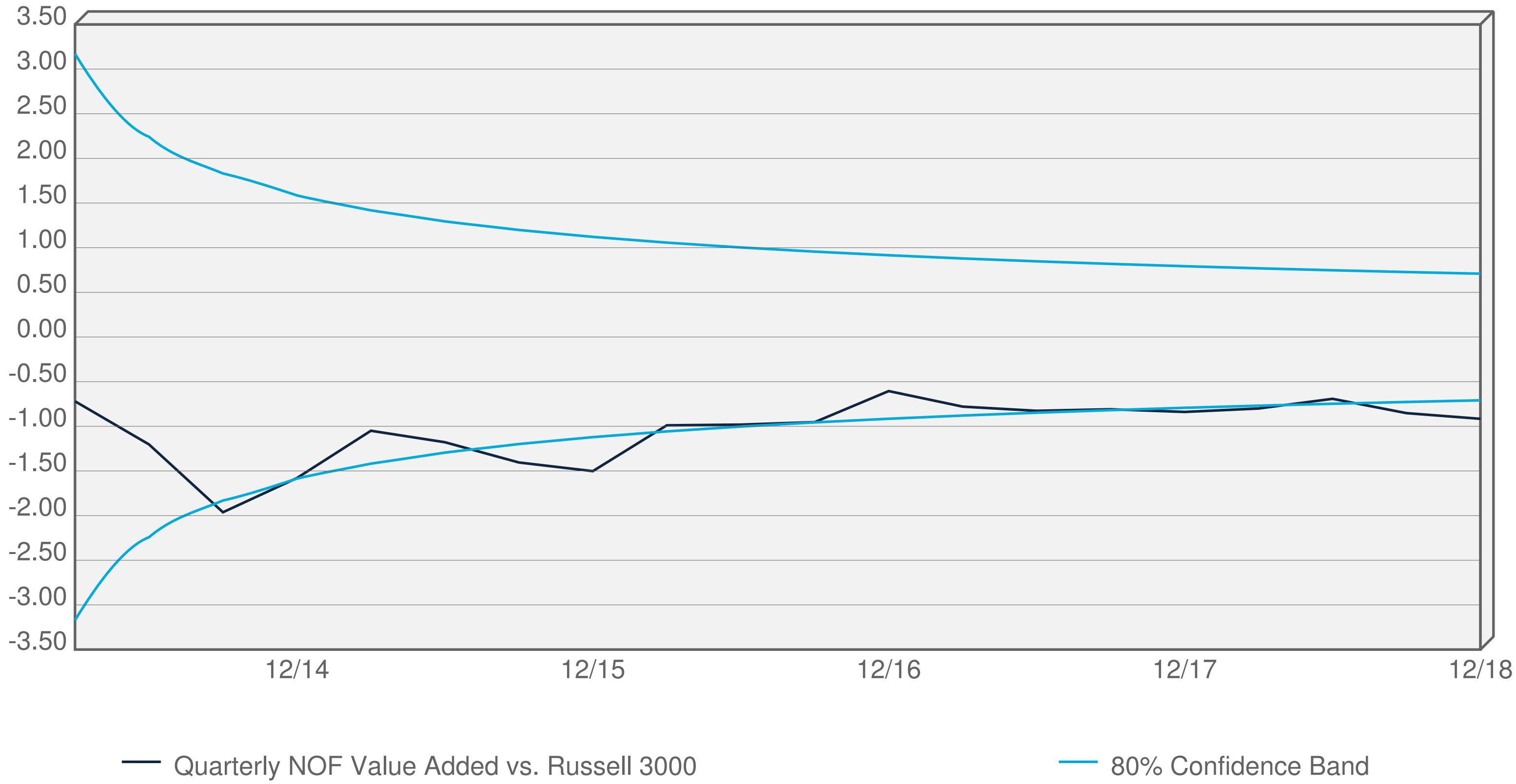
CUMULATIVE SKILL ANALYSIS

US Equity Composite

Five Years Ending December 31, 2018



Excess Return:	-0.92	Information Ratio:	-0.95
Excess Risk:	0.96	T-Stat:	-2.12

Wilshire

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	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	**-13.39**	**-6.87**	**-3.42**	**-4.11**	**9.29**	**8.50**	**13.22**	**6/30/01**	**6.69**
Standard & Poor's 500	-13.52	-6.85	-3.65	-4.38	9.26	8.50	13.12	6/30/01	6.29
Value Added	0.13	-0.02	0.23	0.27	0.04	0.00	0.10	6/30/01	0.41
Scientific Beta									
Net of Fee Return	**-12.72**	**-7.98**	**-5.96**	**-5.69**				**6/30/16**	**7.00**
Standard & Poor's 500	-13.52	-6.85	-3.65	-4.38				6/30/16	9.55
Value Added	0.80	-1.13	-2.31	-1.31				6/30/16	-2.54
River Road									
Net of Fee Return								**6/30/11**	
Russell 3000 Value								6/30/11	
Value Added								6/30/11	
River Road FAV									
Net of Fee Return	**-12.73**	**-6.90**	**-2.90**	**-2.78**				**6/30/16**	**10.53**
Russell 3000 Value	-12.24	-7.51	-5.92	-8.58				6/30/16	5.85
Value Added	-0.49	0.61	3.02	5.79				6/30/16	4.68
Westfield Capital									
Net of Fee Return	**-16.67**	**-9.99**	**-5.96**	**-3.30**	**8.11**	**6.96**		**6/30/11**	**10.54**
Russell 3000 Growth	-16.33	-8.90	-3.55	-2.12	10.85	9.99		6/30/11	12.24
Value Added	-0.34	-1.09	-2.41	-1.18	-2.75	-3.03		6/30/11	-1.70
Systematic									
Net of Fee Return	**-18.95**	**-16.52**	**-13.79**	**-16.59**	**5.04**	**2.96**		**6/30/12**	**8.48**
Russell Mid Cap Value	-14.95	-12.15	-10.04	-12.29	6.06	5.44		6/30/12	10.49
Value Added	-3.99	-4.37	-3.75	-4.30	-1.02	-2.48		6/30/12	-2.01

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

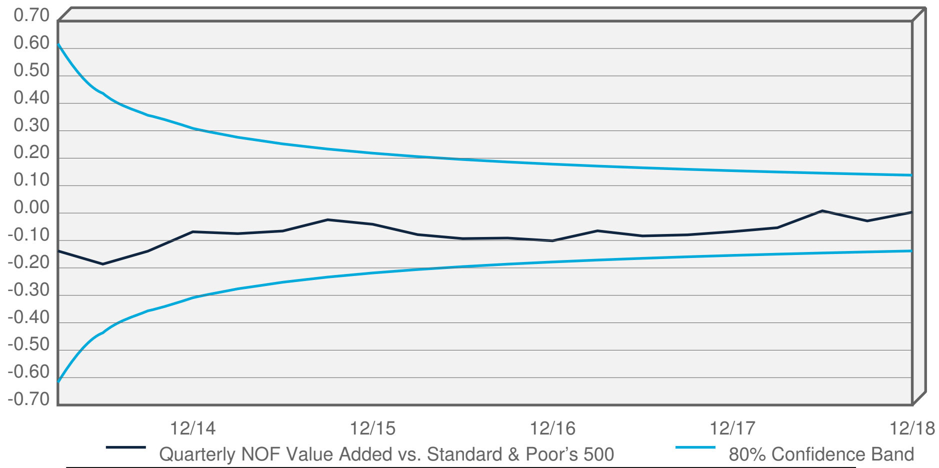
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Internal US Mid Cap									
Net of Fee Return	**-17.07**	**-13.76**	**-9.38**	**-9.92**	**8.13**			**9/30/14**	**6.60**
S&P 400 Mid Cap	-17.28	-14.08	-10.39	-11.08	7.66			9/30/14	6.34
Value Added	0.21	0.32	1.02	1.16	0.47			9/30/14	0.26
NTGI Structured									
Net of Fee Return	**-18.40**	**-15.27**	**-8.44**	**-8.47**	**8.41**	**5.62**	**13.73**	**9/30/99**	**9.34**
Russell 2000	-20.20	-17.35	-10.94	-11.01	7.36	4.41	11.97	9/30/99	7.57
Value Added	1.80	2.07	2.50	2.54	1.05	1.21	1.76	9/30/99	1.77
US Equity Composite									
Net of Fee Return	**-14.76**	**-9.54**	**-5.75**	**-6.40**	**8.40**	**6.93**	**12.35**	**3/31/84**	**10.87**
Russell 3000	-14.30	-8.20	-4.63	-5.24	8.97	7.91	13.12	3/31/84	10.94
Value Added	-0.46	-1.34	-1.12	-1.16	-0.57	-0.99	-0.77	3/31/84	-0.07

INVESTMENT MANAGER ANALYSIS

S&P 500 Index

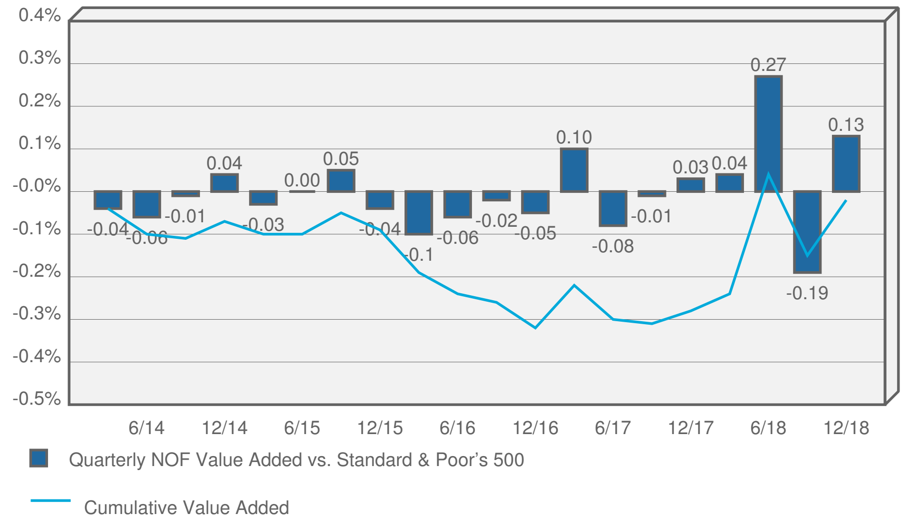
December 31, 2018

Cumulative Skill Analysis vs Benchmark

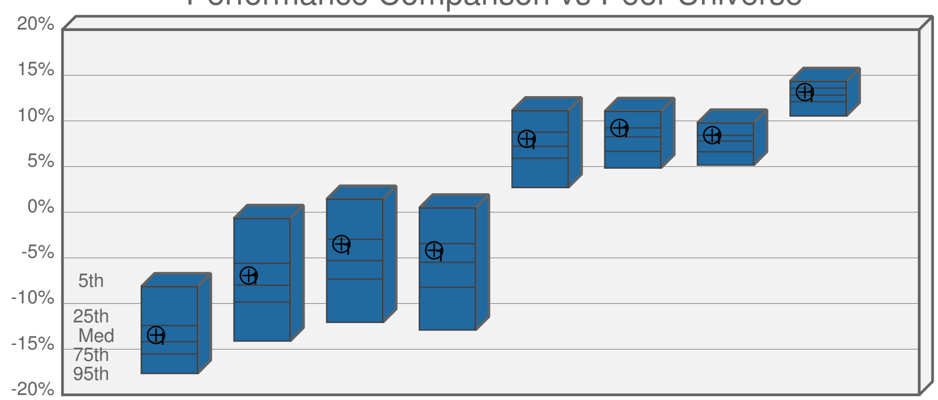


Excess Return:	0.00	Information Ratio:	0.02
Excess Risk:	0.19	T-Stat:	0.04

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
⊕ S&P 500 Index	-13.39 (33)	-6.87 (38)	-3.42 (27)	-4.11 (31)	8.10 (33)	9.29 (22)	8.50 (21)	13.22 (36)
1 Standard & Poo	-13.52 (37)	-6.85 (38)	-3.65 (28)	-4.38 (36)	7.93 (36)	9.26 (24)	8.50 (21)	13.12 (37)
Median	-14.18	-7.99	-5.30	-5.49	7.23	8.25	7.79	12.82
Number of Funds	119	119	119	119	118	117	114	99

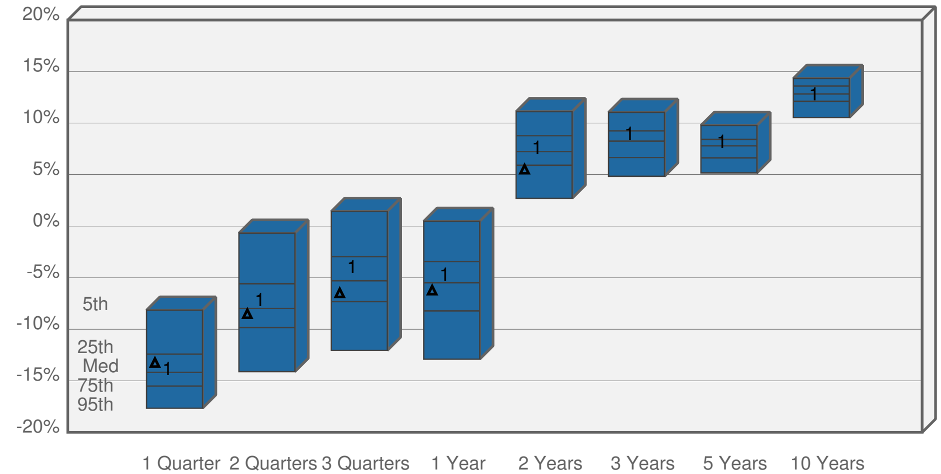
*Compass Total Returns of Active Large Core Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Scientific Beta

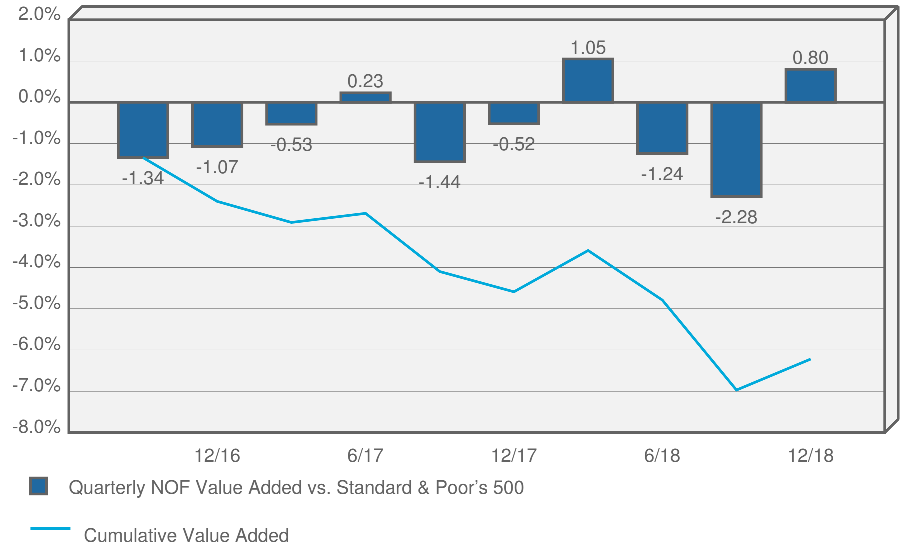
December 31, 2018

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▲ Scientific Bet	-12.72 (25)	-7.98 (49)	-5.96 (58)	-5.69 (53)	6.04 (74)			
1 Standard & Poo	-13.52 (37)	-6.85 (38)	-3.65 (28)	-4.38 (36)	7.93 (36)	9.26 (24)	8.50 (21)	13.12 (37)
Median	-14.18	-7.99	-5.30	-5.49	7.23	8.25	7.79	12.82
Number of Funds	119	119	119	119	118	117	114	99

Value-Added Analysis vs Benchmark



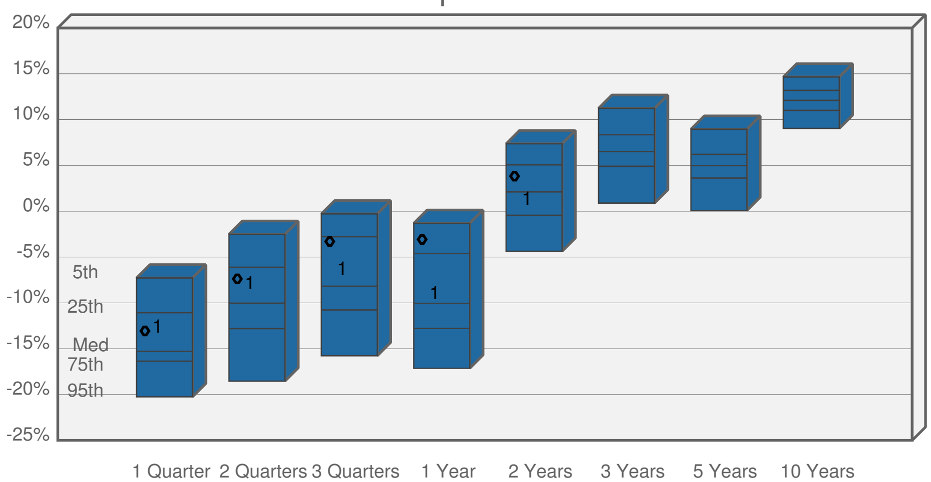
*Compass Total Returns of Active Large Core Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

River Road FAV

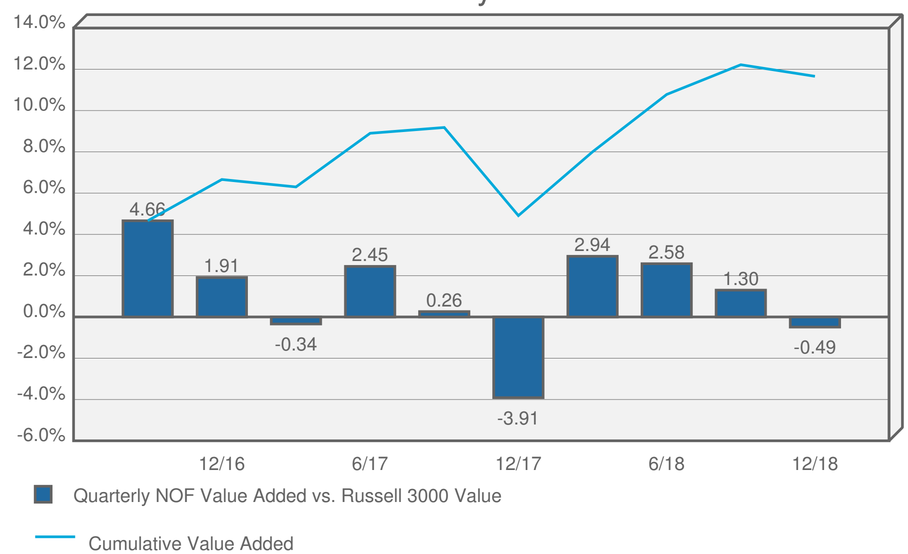
December 31, 2018

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
River Road FAV	-12.48 (33)	-6.80 (29)	-2.72 (22)	-2.49 (9)	4.41 (32)			
1 Russell 3000 V	-12.24 (33)	-7.51 (32)	-5.92 (40)	-8.58 (43)	1.73 (53)			
Median	-15.29	-10.03	-8.18	-10.05	2.11	6.52	4.98	12.10
Number of Funds	62	62	62	62	62	62	57	50

Value-Added Analysis vs Benchmark



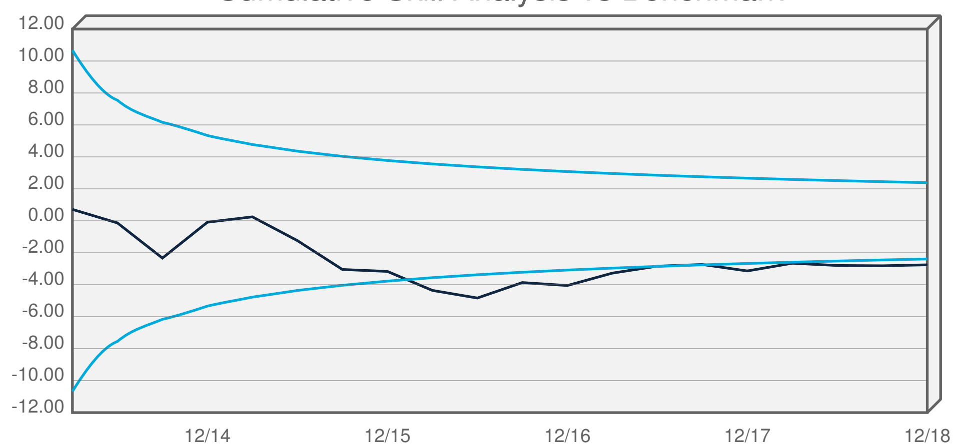
*Compass Total Returns of Active Combination Value Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Westfield Capital

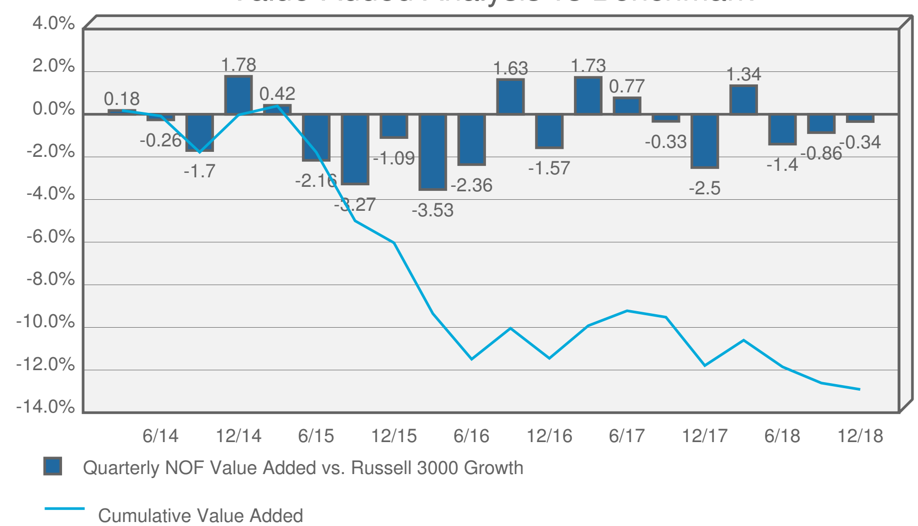
December 31, 2018

Cumulative Skill Analysis vs Benchmark

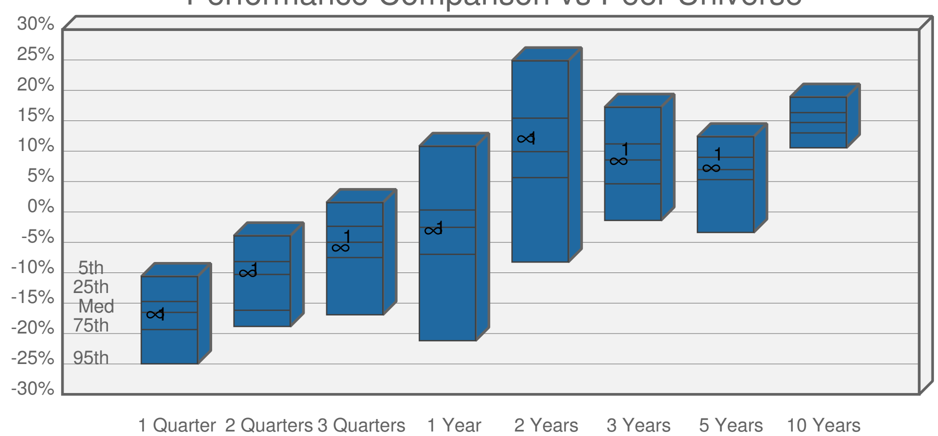


Excess Return:	-2.75	Information Ratio:	-0.85
Excess Risk:	3.24	T-Stat:	-1.90

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
∞ Westfield Capi	-16.53 (52)	-9.72 (45)	-5.54 (56)	-2.73 (52)	12.38 (35)	8.71 (46)	7.57 (43)	
1 Russell 3000 G	-16.33 (45)	-8.90 (33)	-3.55 (39)	-2.12 (49)	12.62 (35)	10.85 (25)	9.99 (17)	
Median	-16.52	-10.28	-4.98	-2.53	9.92	8.55	6.97	14.71
Number of Funds	48	48	48	48	48	47	46	40

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

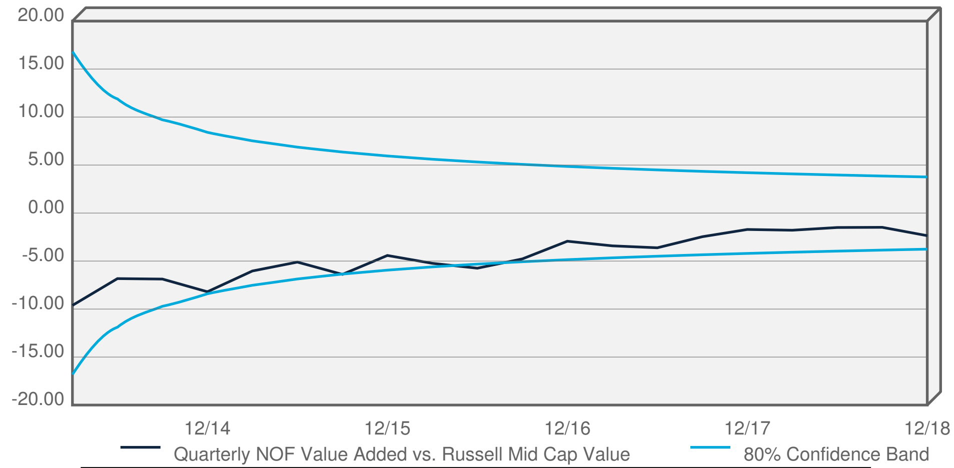
Wilshire Consulting

INVESTMENT MANAGER ANALYSIS

Systematic

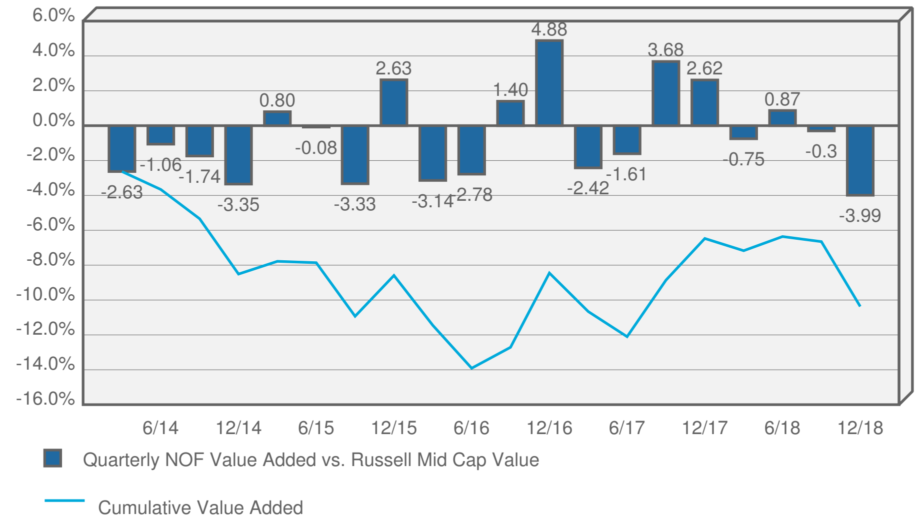
December 31, 2018

Cumulative Skill Analysis vs Benchmark

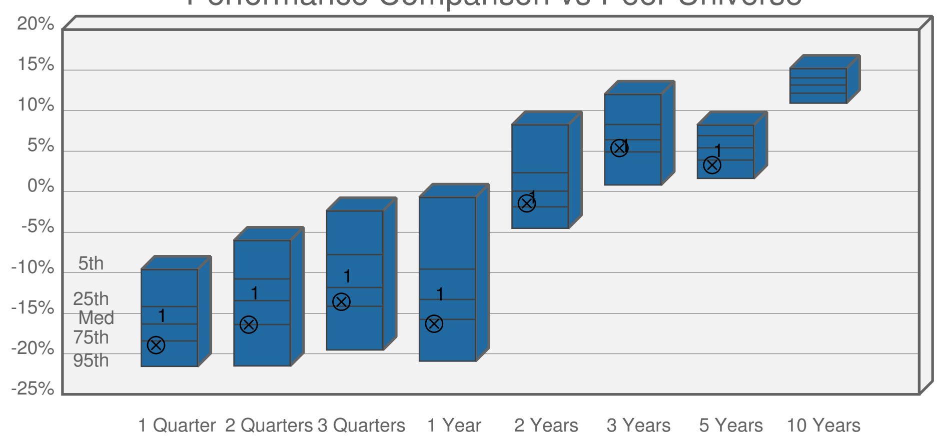


Excess Return:	-2.36	Information Ratio:	-0.46
Excess Risk:	5.11	T-Stat:	-1.03

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
⊗ Systematic	-18.85 (81)	-16.33 (73)	-13.51 (72)	-16.22 (79)	-1.37 (72)	5.45 (66)	3.36 (80)	
1 Russell Mid Ca	-14.95 (36)	-12.15 (34)	-10.04 (36)	-12.29 (43)	-0.29 (54)	6.06 (58)	5.44 (47)	
Median	-16.33	-13.44	-11.82	-13.29	0.07	6.41	5.41	13.16
Number of Funds	72	72	72	72	72	72	71	66

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

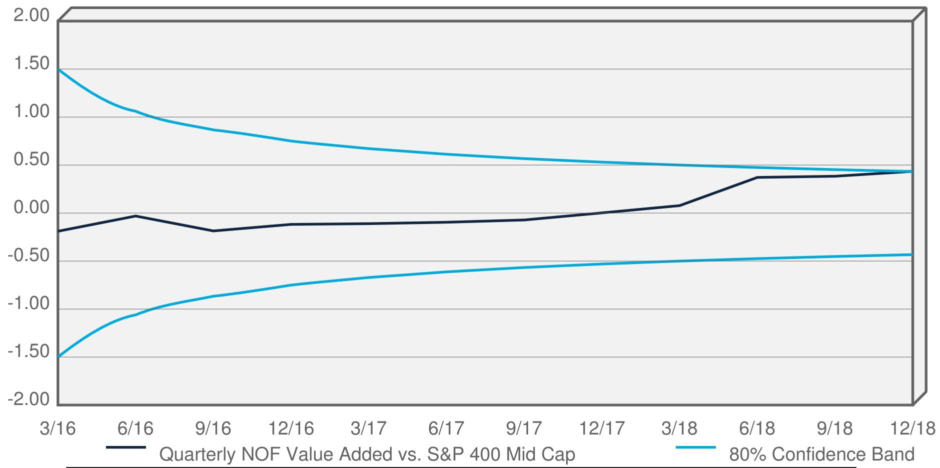
Wilshire Consulting

INVESTMENT MANAGER ANALYSIS

Internal US Mid Cap

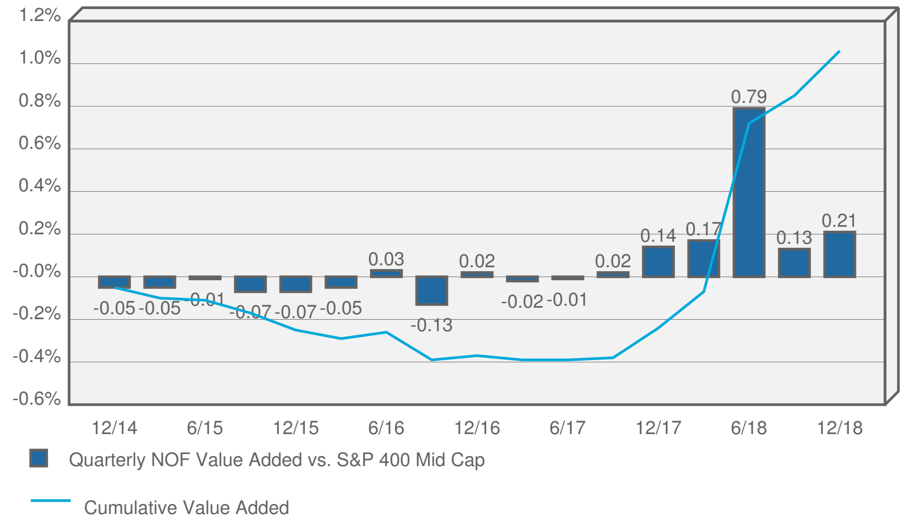
December 31, 2018

Cumulative Skill Analysis vs Benchmark

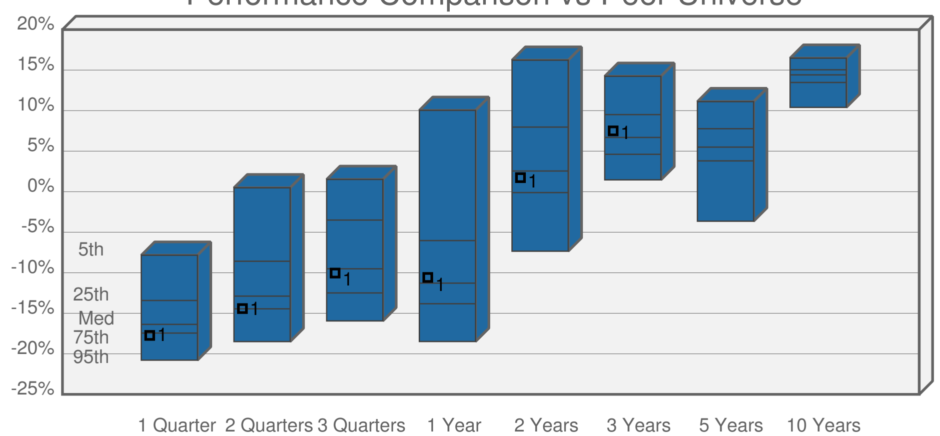


Excess Return:	0.43	Information Ratio:	0.95
Excess Risk:	0.46	T-Stat:	1.65

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	-17.07 (64)	-13.76 (64)	-9.38 (46)	-9.92 (39)	2.39 (51)	8.16 (28)		
1 S&P 400 Mid Ca	-17.28 (66)	-14.08 (66)	-10.39 (59)	-11.08 (46)	1.67 (59)	7.66 (33)		
Median	-16.37	-12.88	-9.51	-11.28	2.55	6.69	5.50	14.41
Number of Funds	45	45	45	45	45	45	44	36

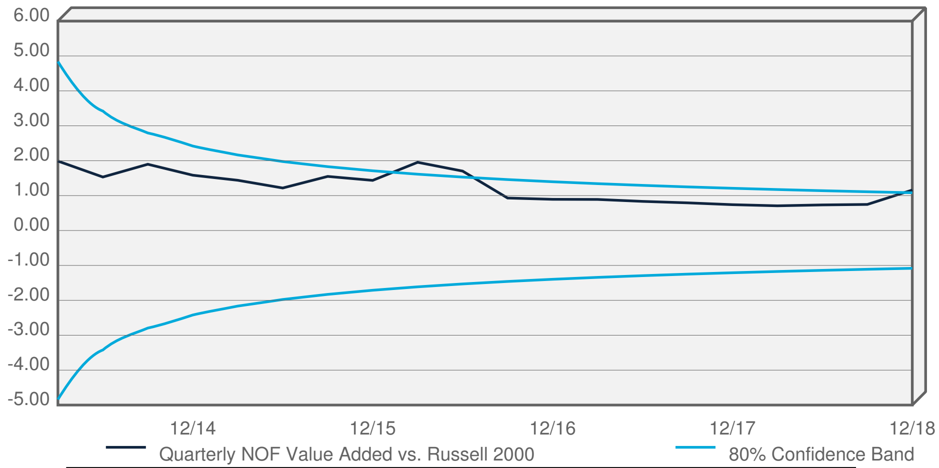
*Compass Total Returns of Active Midcap Core Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

NTGI Structured

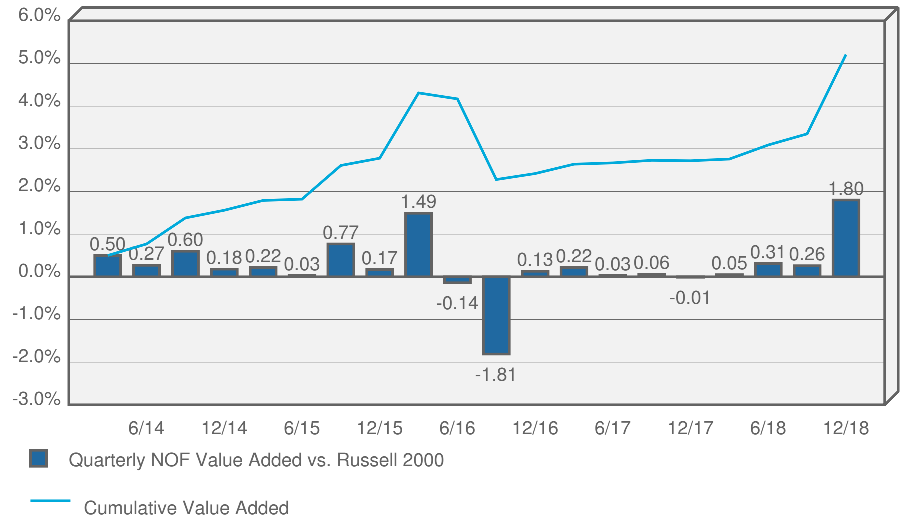
December 31, 2018

Cumulative Skill Analysis vs Benchmark

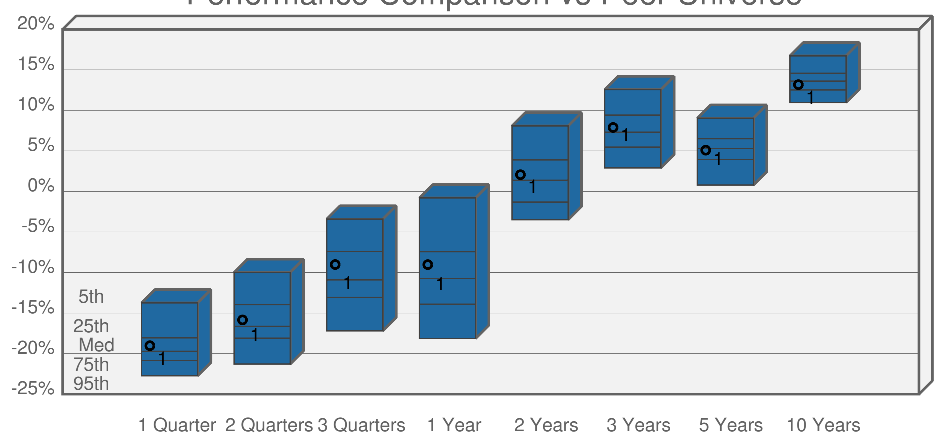


Excess Return:	1.16	Information Ratio:	0.79
Excess Risk:	1.47	T-Stat:	1.76

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
o NTGI Structure	-18.37 (27)	-15.19 (37)	-8.36 (31)	-8.37 (30)	2.72 (33)	8.55 (30)	5.75 (37)	13.83 (44)
1 Russell 2000	-20.20 (58)	-17.35 (59)	-10.94 (50)	-11.01 (52)	1.00 (55)	7.36 (49)	4.41 (67)	11.97 (90)
Median	-19.72	-16.64	-10.91	-10.73	1.38	7.31	5.30	13.61
Number of Funds	104	104	104	104	103	102	99	88

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

CUSTOM BENCHMARK SPECIFICATION

US Equity Composite

December 31, 2018

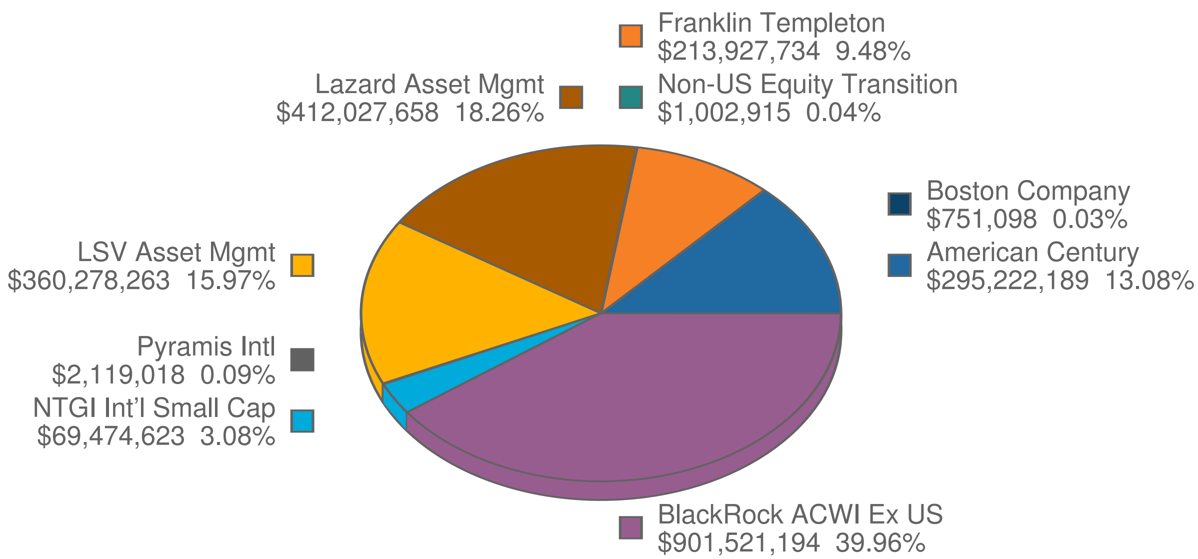
	Quarter Start	Quarter End	Percent	Description
Russell 3000	6/84	6/14	100.00	Blended US Equity Index
	9/14	12/18	100.00	Russell 3000

NON-US EQUITY

MANAGER ALLOCATION

Non-US Equity Composite

As of December 31, 2018

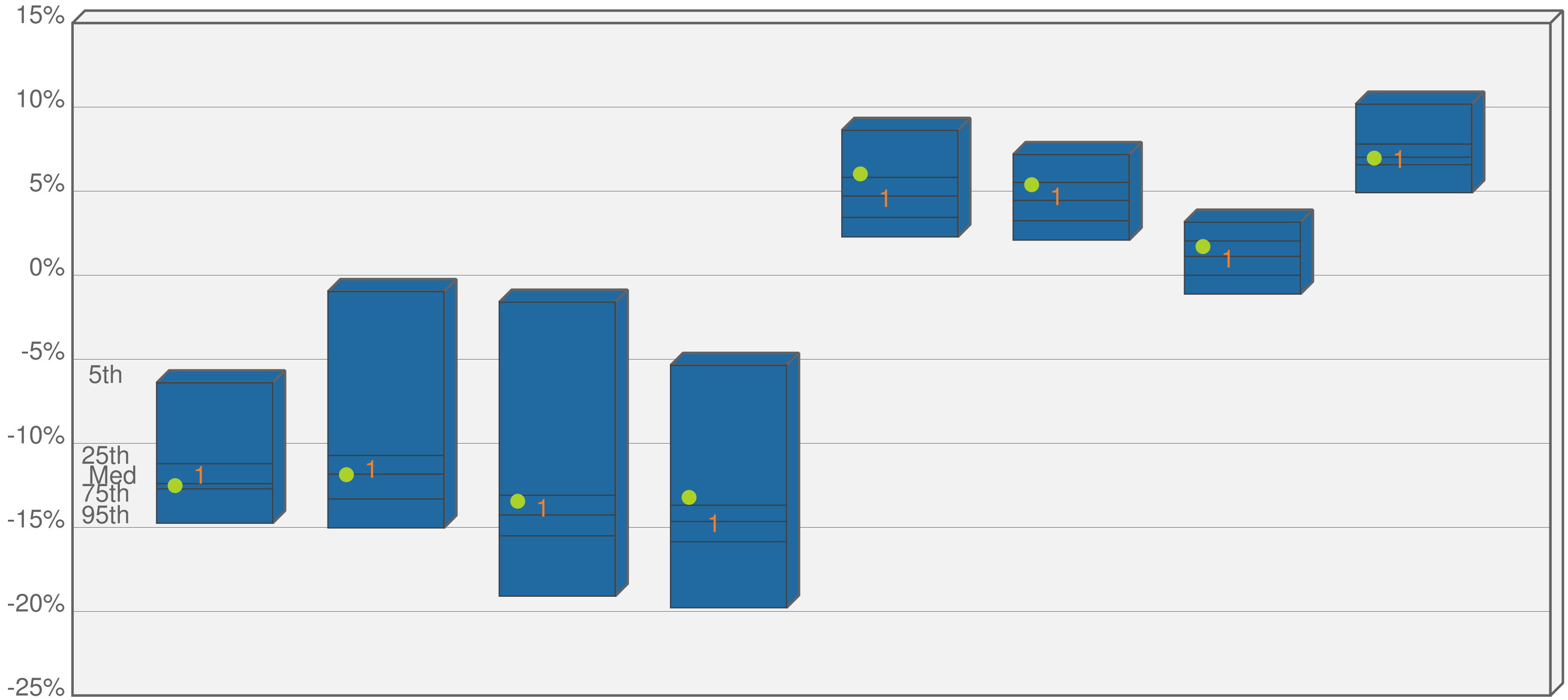


Wilshire Consulting

PERFORMANCE COMPARISON

Non-US Equity Composite

Periods Ended December 31, 2018



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
● Non-US Equity Composite	-12.44 (63)	-11.79 (48)	-13.37 (32)	-13.14 (17)	6.10 (19)	5.46 (25)	1.78 (32)	7.04 (45)
1 Policy Index	-11.88 (37)	-11.53 (42)	-13.84 (36)	-14.76 (56)	4.58 (53)	4.69 (39)	0.98 (57)	6.90 (54)
5th %tile	-6.40	-0.97	-1.60	-5.36	8.62	7.18	3.16	10.18
25th %tile	-11.21	-10.72	-13.09	-13.68	5.82	5.52	2.04	7.80
Median	-12.40	-11.83	-14.26	-14.65	4.71	4.45	1.12	7.02
75th %tile	-12.71	-13.31	-15.50	-15.85	3.44	3.24	0.00	6.57
95th %tile	-14.75	-15.03	-19.09	-19.78	2.28	2.09	-1.12	4.91
Number of Funds	87	86	84	81	76	75	70	49

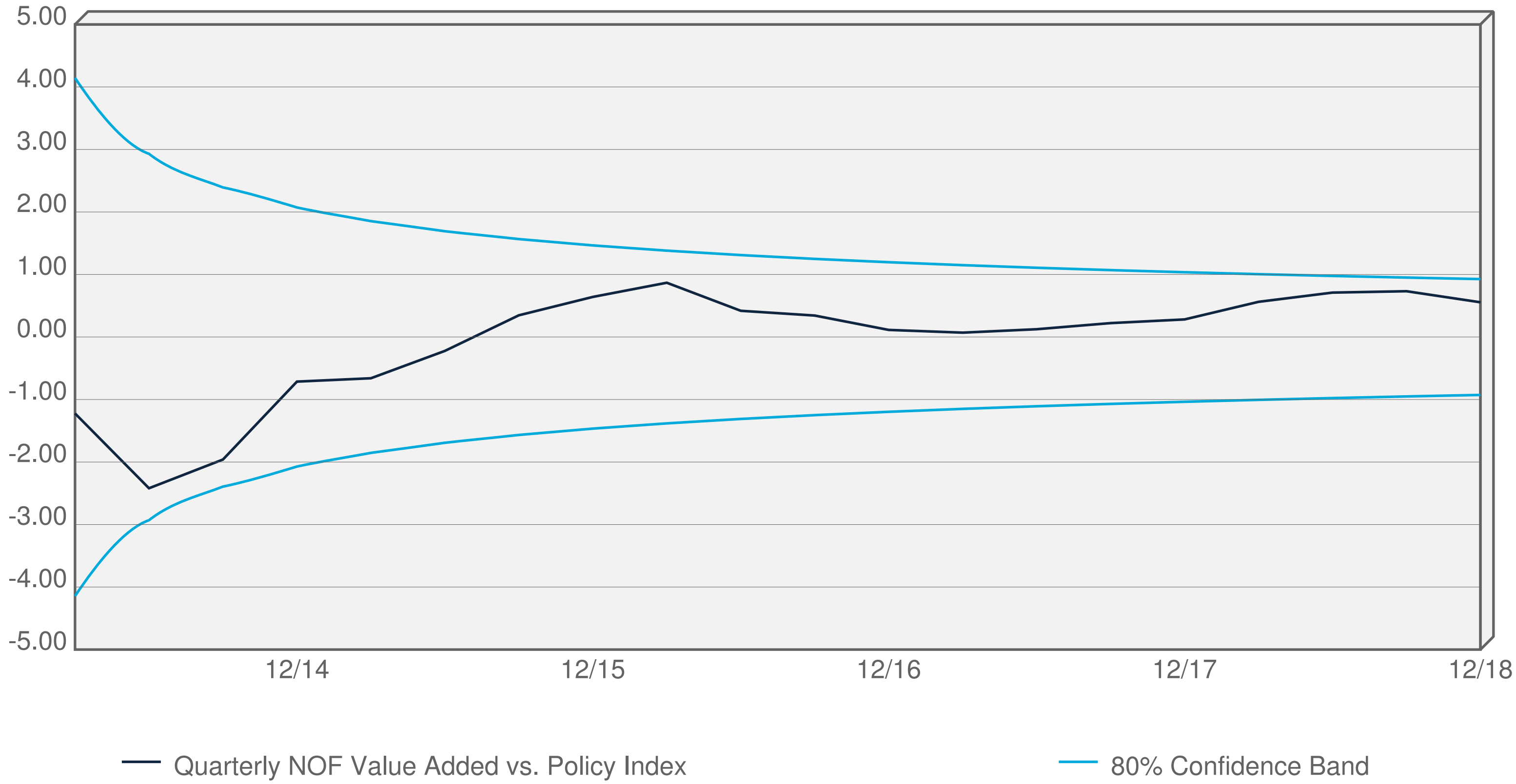
*TUCS Total Ret of Non-US Equity Investment Pools Universe - Gross of Fees

Wilshire Consulting

CUMULATIVE SKILL ANALYSIS

Non-US Equity Composite

Five Years Ending December 31, 2018



Excess Return:	0.56	Information Ratio:	0.44
Excess Risk:	1.26	T-Stat:	0.99

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	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	**-11.43**	**-10.79**	**-12.84**	**-13.97**	**4.79**	**0.91**		**6/30/09**	**5.70**
MSCI ACWI X US (N)	-11.46	-10.84	-13.17	-14.20	4.48	0.68		6/30/09	5.47
Value Added	0.03	0.05	0.33	0.23	0.31	0.24		6/30/09	0.22
American Century									
Net of Fee Return	**-15.50**	**-15.85**	**-15.15**	**-12.51**	**4.10**			**6/30/14**	**1.10**
Policy Index	-11.88	-11.53	-13.84	-14.76	4.63			6/30/14	-0.23
Value Added	-3.62	-4.32	-1.31	2.25	-0.53			6/30/14	1.33
Franklin Templeton									
Net of Fee Return	**-17.57**	**-19.39**	**-16.21**	**-14.31**	**6.30**			**6/30/14**	**2.63**
Policy Index	-11.88	-11.53	-13.84	-14.76	4.63			6/30/14	-0.23
Value Added	-5.69	-7.86	-2.37	0.45	1.67			6/30/14	2.86
Lazard Asset Mgmt									
Net of Fee Return	**-10.68**	**-10.03**	**-13.21**	**-11.81**	**4.33**			**6/30/14**	**1.18**
Policy Index	-11.88	-11.53	-13.84	-14.76	4.63			6/30/14	-0.23
Value Added	1.20	1.50	0.63	2.95	-0.30			6/30/14	1.41
LSV Asset Mgmt									
Net of Fee Return	**-11.24**	**-7.90**	**-12.02**	**-13.00**	**5.37**			**6/30/14**	**0.30**
Policy Index	-11.88	-11.53	-13.84	-14.76	4.63			6/30/14	-0.23
Value Added	0.64	3.63	1.82	1.76	0.74			6/30/14	0.53
NTGI Int'l Small Cap									
Net of Fee Return	**-14.33**	**-15.63**	**-17.89**	**-17.65**	**4.03**	**2.19**	**9.83**	**12/31/08**	**9.83**
MSCI ACWI X US Small Cap (N)	-14.43	-15.72	-17.91	-18.20	3.82	1.96	10.02	12/31/08	10.02
Value Added	0.10	0.10	0.02	0.55	0.21	0.24	-0.19	12/31/08	-0.19

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

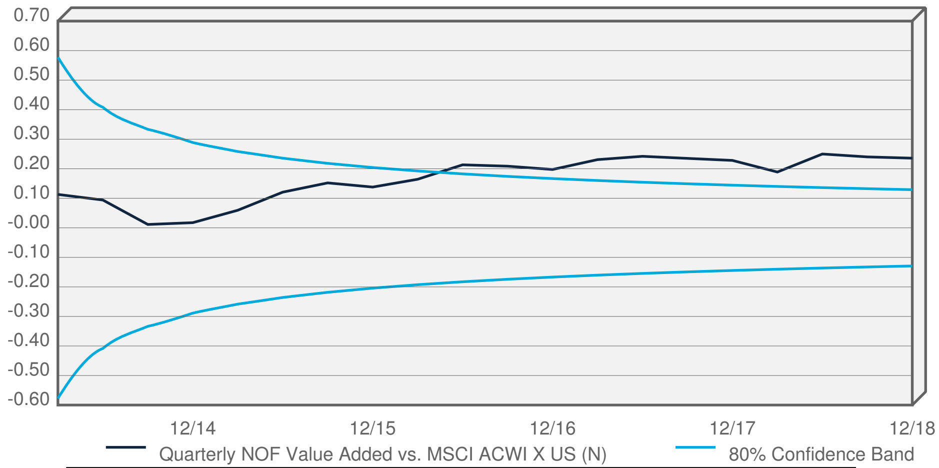
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Non-US Equity Composite									
Net of Fee Return	**-12.49**	**-11.90**	**-13.51**	**-13.35**	**5.21**	**1.54**	**7.07**	**6/30/00**	**2.62**
Policy Index	-11.88	-11.53	-13.84	-14.76	4.69	0.98	6.90	6/30/00	2.76
Value Added	-0.61	-0.37	0.33	1.41	0.52	0.56	0.17	6/30/00	-0.14

INVESTMENT MANAGER ANALYSIS

BlackRock ACWI Ex US

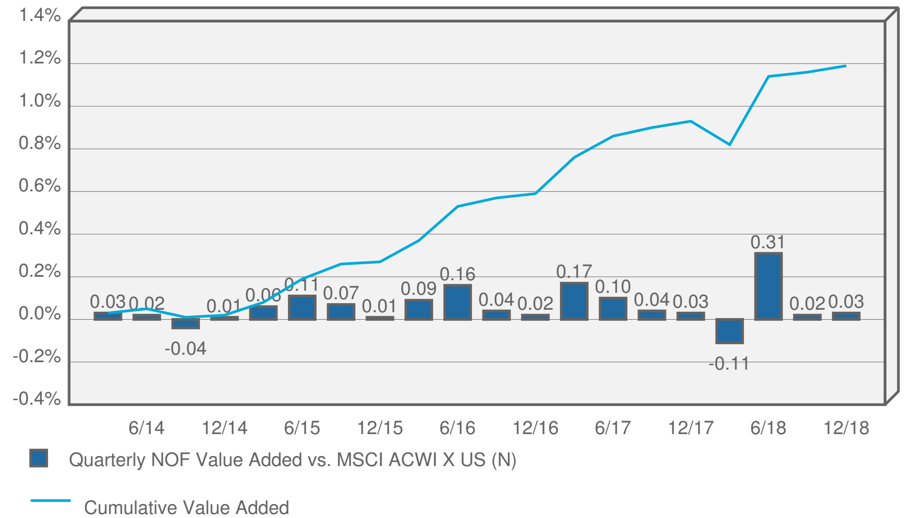
December 31, 2018

Cumulative Skill Analysis vs Benchmark

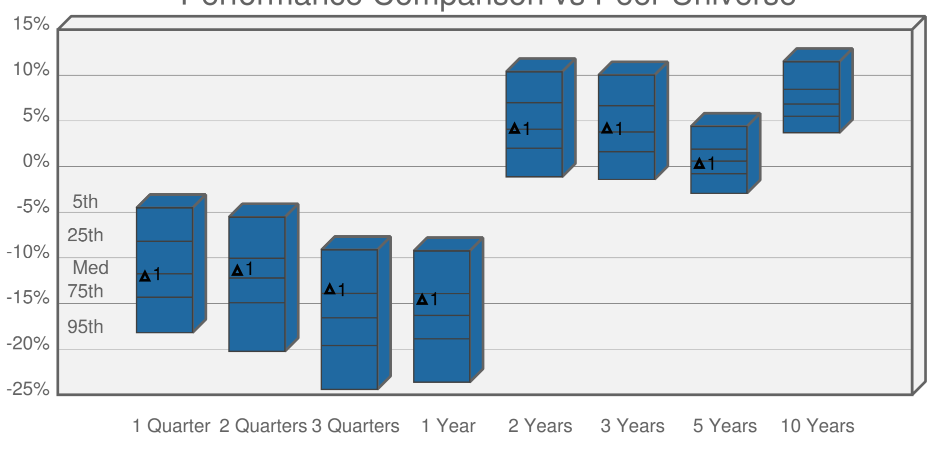


Excess Return:	0.24	Information Ratio:	1.34
Excess Risk:	0.18	T-Stat:	3.00

Value-Added Analysis vs Benchmark

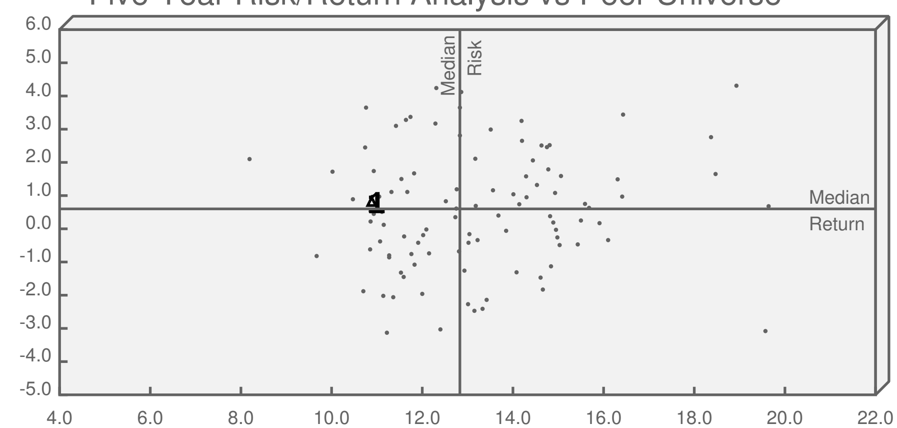


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▲ BlackRock ACWI	-11.43 (46)	-10.79 (32)	-12.84 (17)	-13.97 (25)	4.77 (42)	4.79 (41)	0.91 (42)	
1 MSCI ACWI X US	-11.46 (46)	-10.84 (33)	-13.17 (20)	-14.20 (28)	4.47 (45)	4.48 (44)	0.68 (48)	
Median	-11.75	-12.21	-16.57	-16.30	4.09	3.79	0.60	6.85
Number of Funds	2532	2485	2447	2408	2220	2050	1588	957

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Net Fee Ret Value	Net Fee Ret Rank	Standard Deviation Value	Standard Deviation Rank
BlackRock ACWI Ex US	▲	0.91	42	11.12	81
MSCI ACWI X US (N)	1	0.68	48	11.10	82
Median		0.60		12.83	

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

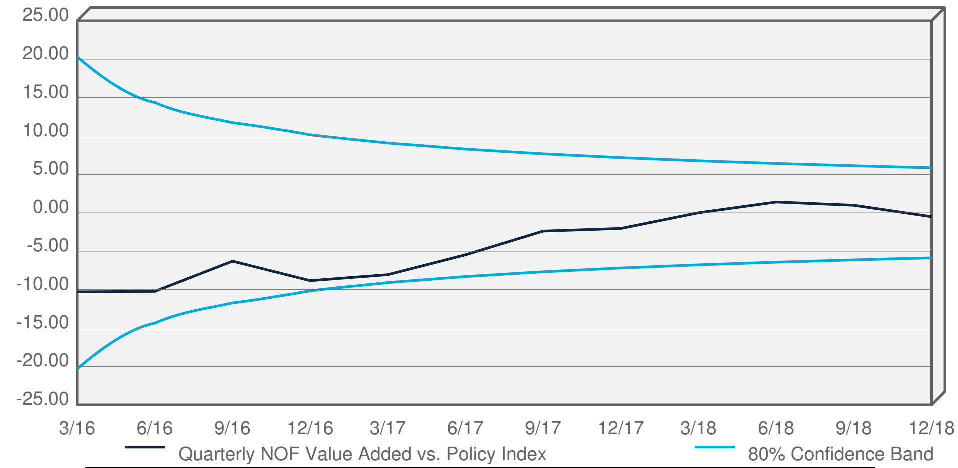
Wilshire Consulting

INVESTMENT MANAGER ANALYSIS

American Century

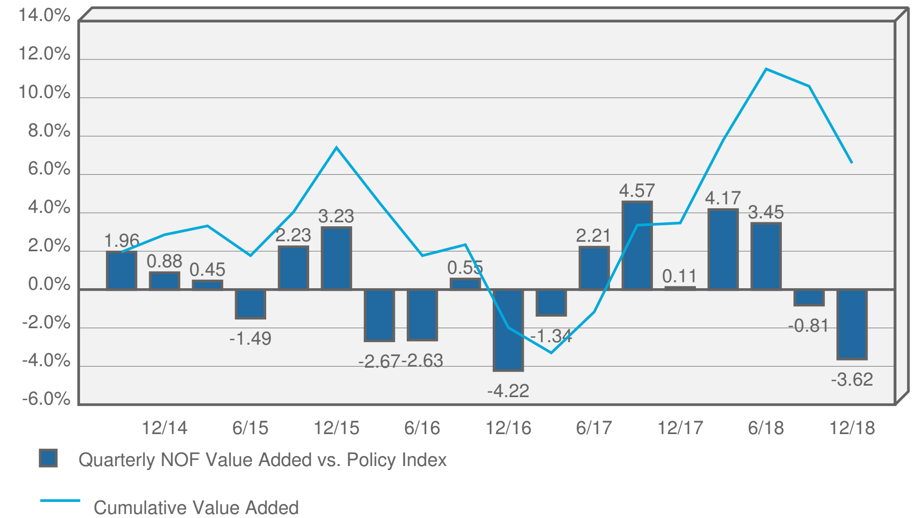
December 31, 2018

Cumulative Skill Analysis vs Benchmark

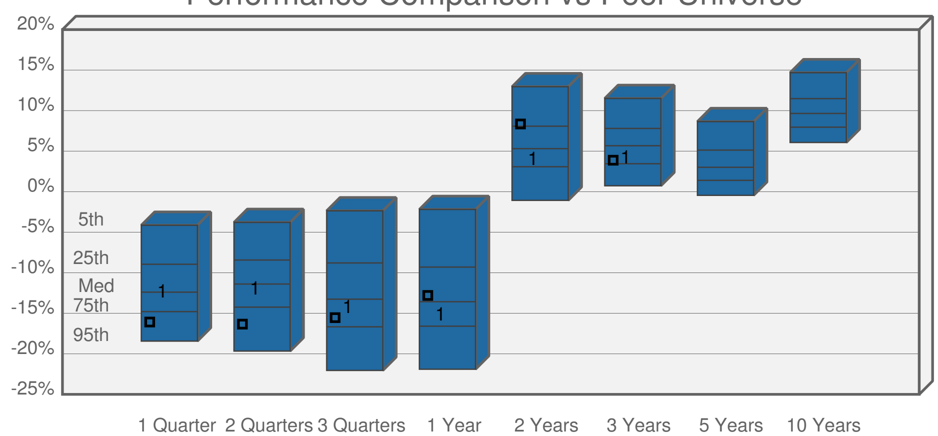


Excess Return:	-0.50	Information Ratio:	-0.08
Excess Risk:	6.18	T-Stat:	-0.14

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	-15.42 (79)	-15.68 (82)	-14.88 (62)	-12.14 (39)	9.01 (18)	4.54 (63)		
1 Policy Index	-11.88 (45)	-11.53 (51)	-13.84 (54)	-14.76 (61)	4.44 (60)	4.63 (62)		
Median	-12.39	-11.39	-13.26	-13.57	5.31	5.67	3.01	9.65
Number of Funds	1188	1182	1180	1177	1156	1131	1010	685

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

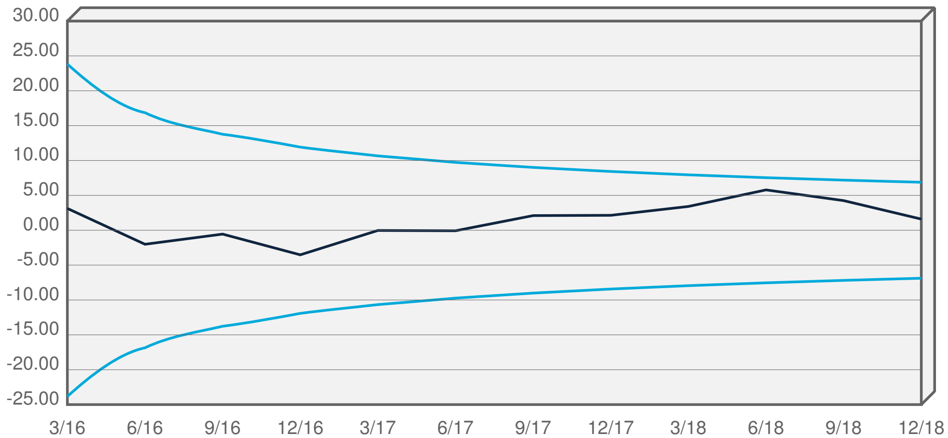
Wilshire Consulting

INVESTMENT MANAGER ANALYSIS

Franklin Templeton

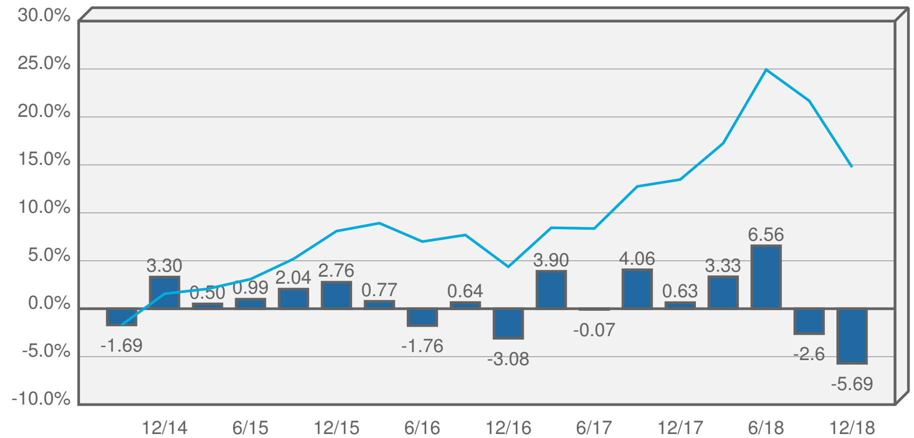
December 31, 2018

Cumulative Skill Analysis vs Benchmark

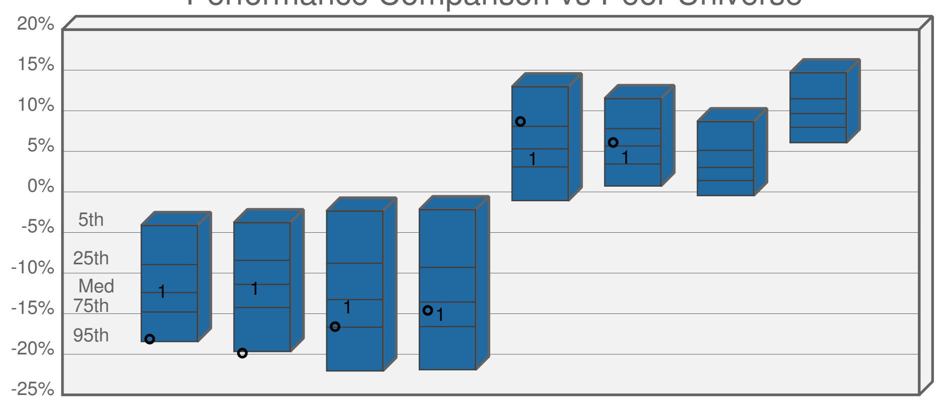


Excess Return:	1.60	Information Ratio:	0.22
Excess Risk:	7.25	T-Stat:	0.38

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
o Franklin Templ	-17.47 (91)	-19.20 (94)	-15.94 (69)	-13.94 (53)	9.34 (16)	6.75 (36)		
1 Policy Index	-11.88 (45)	-11.53 (51)	-13.84 (54)	-14.76 (61)	4.44 (60)	4.63 (62)		
Median	-12.39	-11.39	-13.26	-13.57	5.31	5.67	3.01	9.65
Number of Funds	1188	1182	1180	1177	1156	1131	1010	685

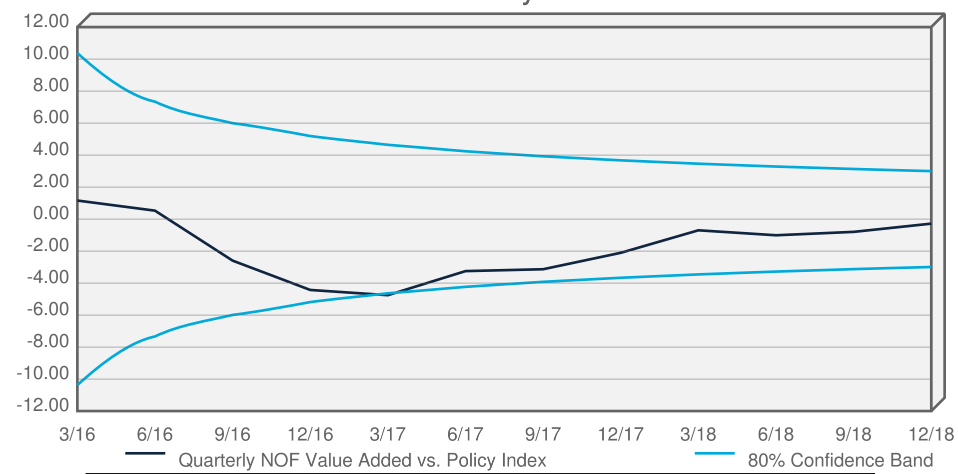
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Lazard Asset Mgmt

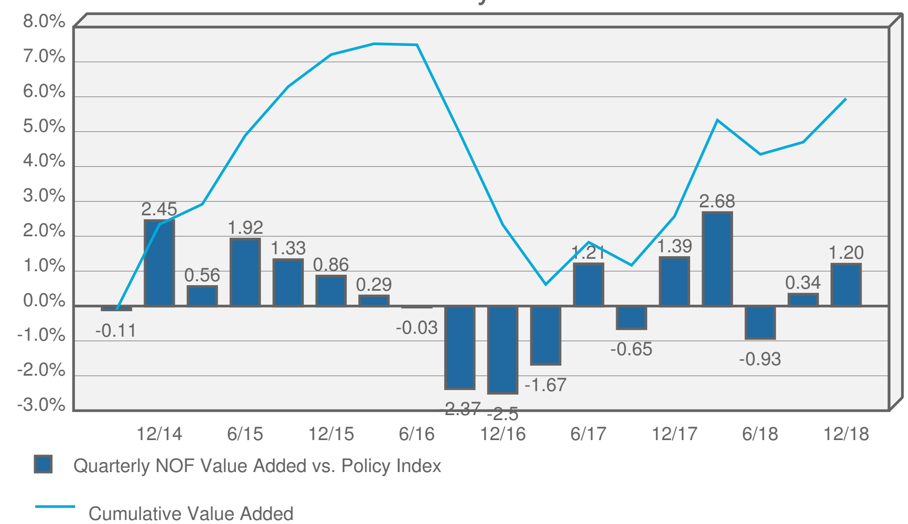
December 31, 2018

Cumulative Skill Analysis vs Benchmark

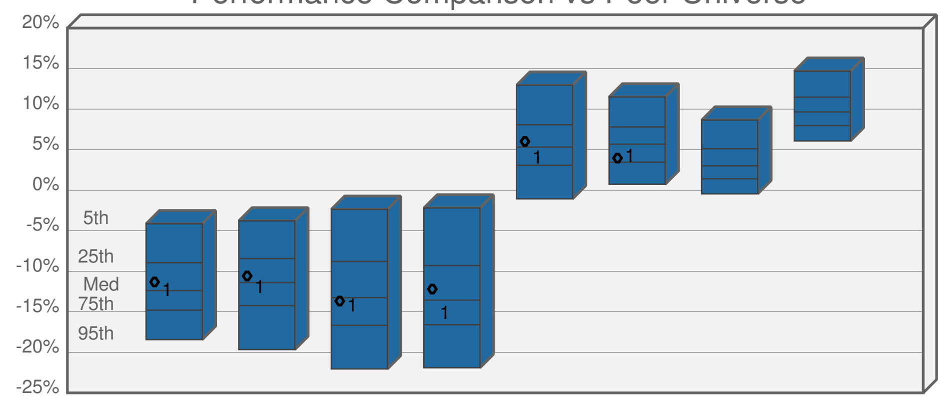


Excess Return:	-0.29	Information Ratio:	-0.09
Excess Risk:	3.15	T-Stat:	-0.16

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
o Lazard Asset M	-10.66 (35)	-9.92 (34)	-13.02 (48)	-11.54 (35)	6.67 (36)	4.61 (62)		
1 Policy Index	-11.88 (45)	-11.53 (51)	-13.84 (54)	-14.76 (61)	4.44 (60)	4.63 (62)		
Median	-12.39	-11.39	-13.26	-13.57	5.31	5.67	3.01	9.65
Number of Funds	1188	1182	1180	1177	1156	1131	1010	685

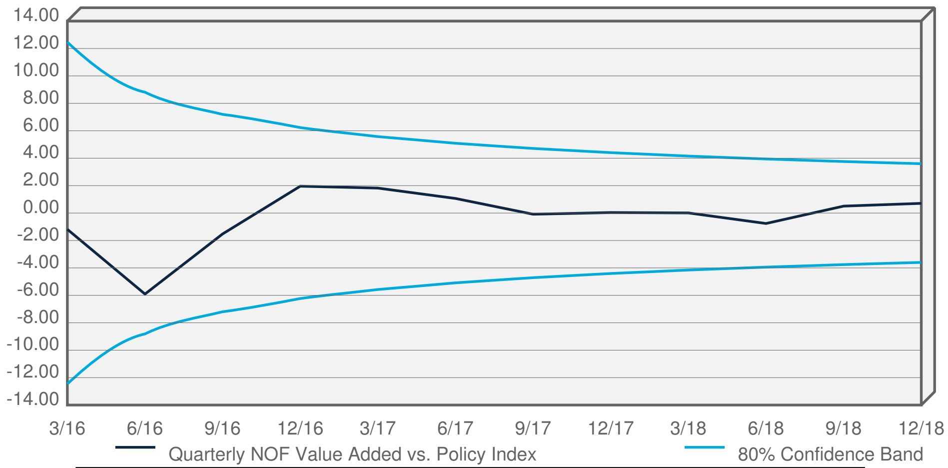
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

LSV Asset Mgmt

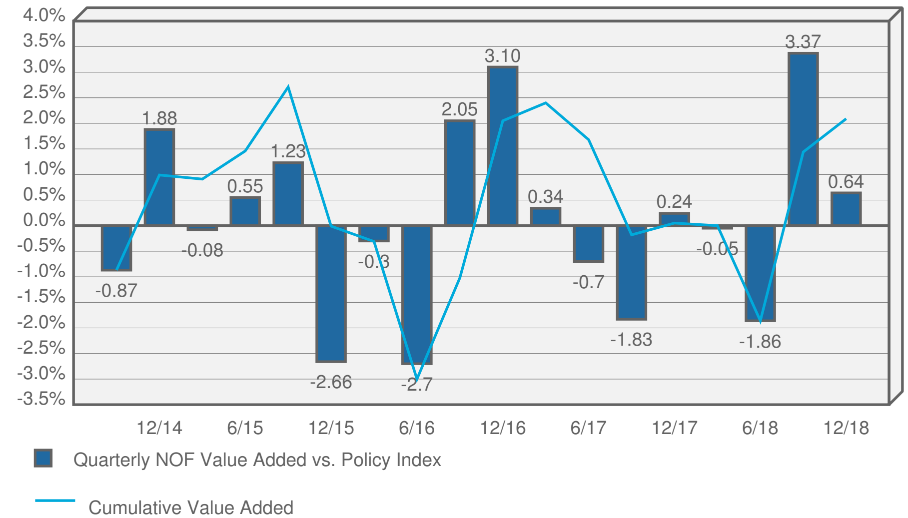
December 31, 2018

Cumulative Skill Analysis vs Benchmark

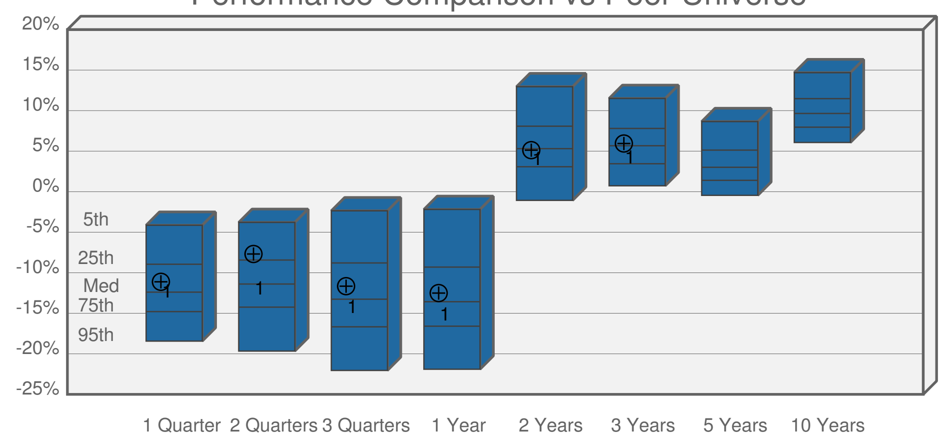


Excess Return:	0.71	Information Ratio:	0.19
Excess Risk:	3.79	T-Stat:	0.32

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
⊕ LSV Asset Mgmt	-11.05 (37)	-7.62 (19)	-11.59 (38)	-12.44 (41)	5.19 (51)	6.01 (45)		
1 Policy Index	-11.88 (45)	-11.53 (51)	-13.84 (54)	-14.76 (61)	4.44 (60)	4.63 (62)		
Median	-12.39	-11.39	-13.26	-13.57	5.31	5.67	3.01	9.65
Number of Funds	1188	1182	1180	1177	1156	1131	1010	685

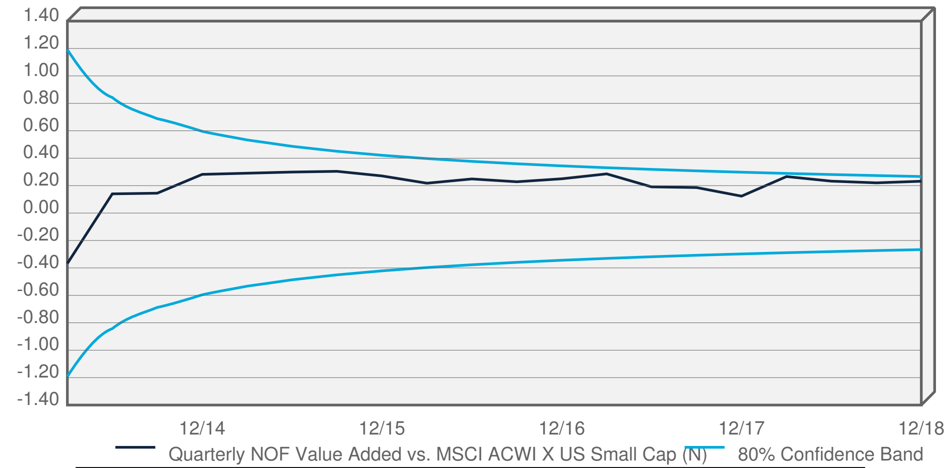
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

NTGI Int'l Small Cap

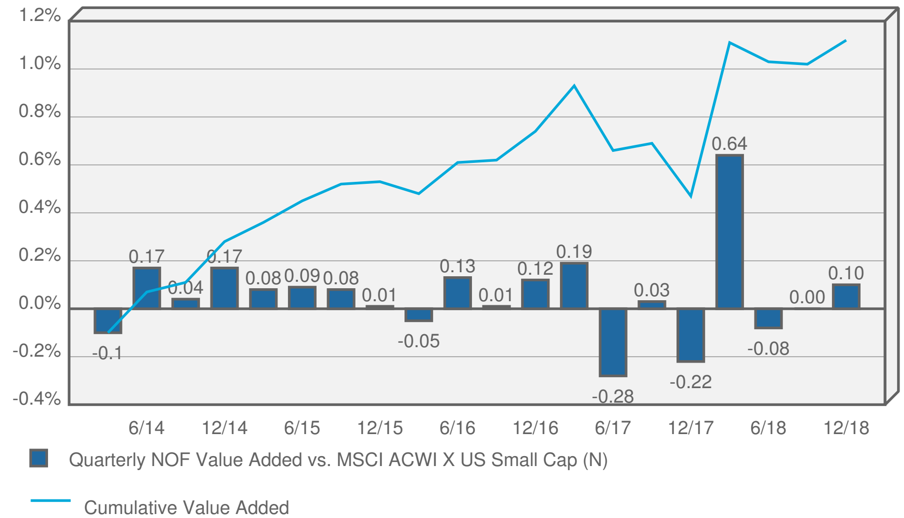
December 31, 2018

Cumulative Skill Analysis vs Benchmark

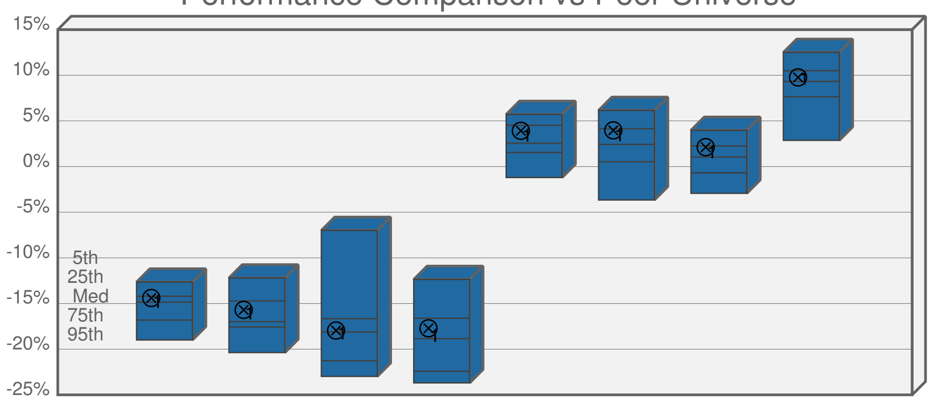


Excess Return:	0.23	Information Ratio:	0.64
Excess Risk:	0.36	T-Stat:	1.43

Value-Added Analysis vs Benchmark

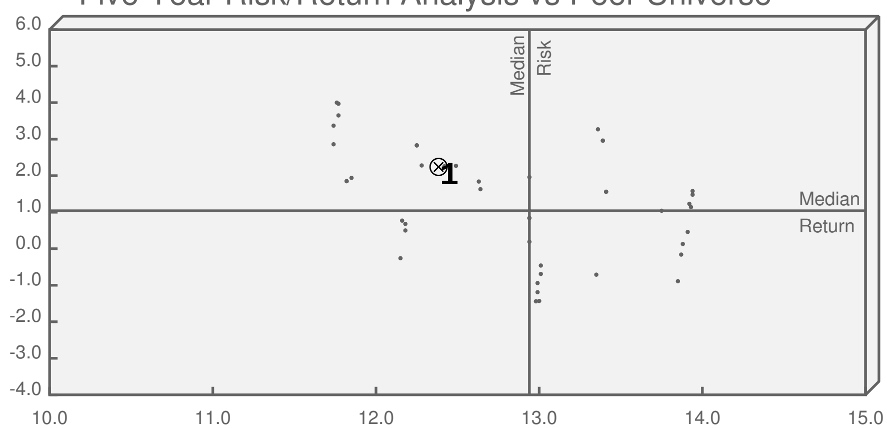


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊗ NTGI Int'l Sma	-14.33 (32)	-15.63 (39)	-17.89 (43)	-17.65 (37)	3.98 (28)	4.03 (26)	2.19 (25)	9.83 (28)
1 MSCI ACWI X US	14.43 (35)	-15.72 (39)	-17.91 (45)	-18.20 (39)	3.77 (28)	3.82 (28)	1.96 (27)	10.02 (25)
Median	-14.85	-16.98	-18.11	-18.84	2.56	2.43	1.04	9.32
Number of Funds	65	64	63	63	60	52	44	27

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Net Fee Ret Value	Net Fee Ret Rank	Standard Deviation Value	Standard Deviation Rank
NTGI Int'l Small Cap	⊗	2.19	25	12.41	59
MSCI ACWI X US Small Cap (N)	1	1.96	27	12.48	56
Median		1.04		12.94	

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

Wilshire Consulting

CUSTOM BENCHMARK SPECIFICATION

Non-US Equity Composite

December 31, 2018

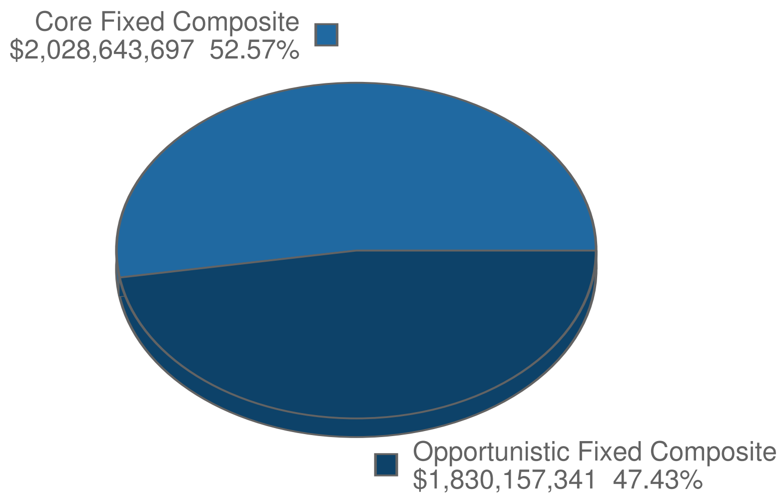
	Quarter Start	Quarter End	Percent	Description
Policy Index	9/00	6/17	100.00	Blended Non-US Benchmark
	9/17	9/17	100.00	MSCI ACWI Ex USA IMI Index ($G)
	12/17	12/18	100.00	MSCI ACWI Ex USA IMI ($N)

FIXED INCOME

MANAGER ALLOCATION

Fixed Income Composite

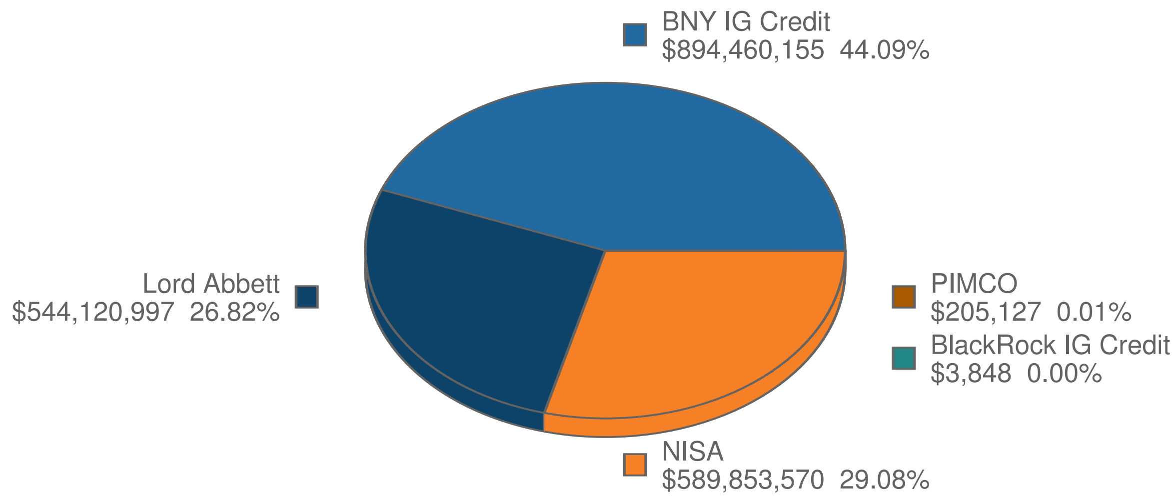
As of December 31, 2018



MANAGER ALLOCATION

Core Fixed Composite

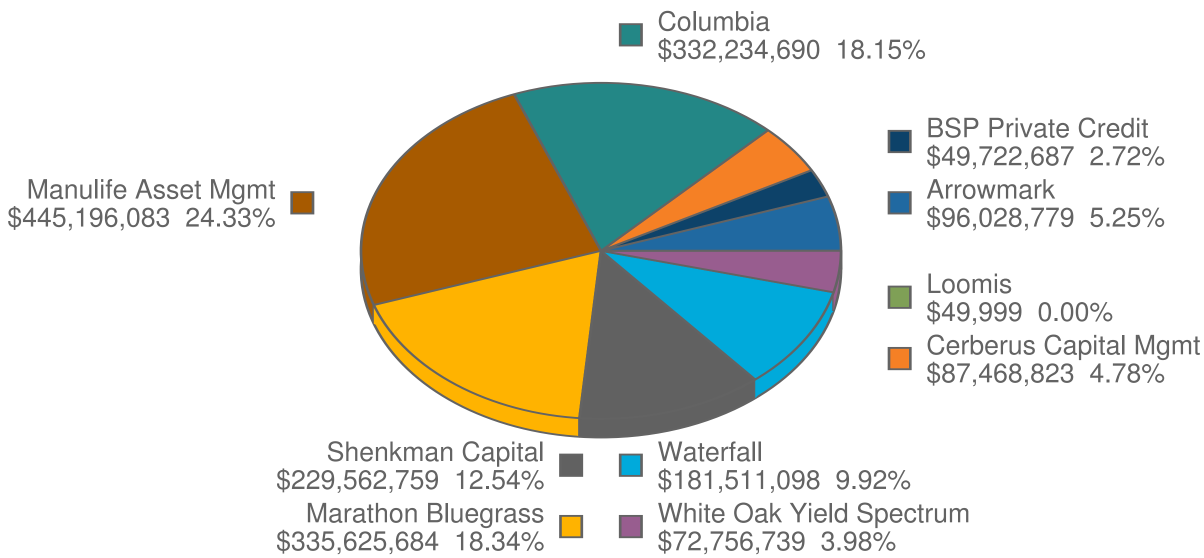
As of December 31, 2018



MANAGER ALLOCATION

Opportunistic Fixed Composite

As of December 31, 2018

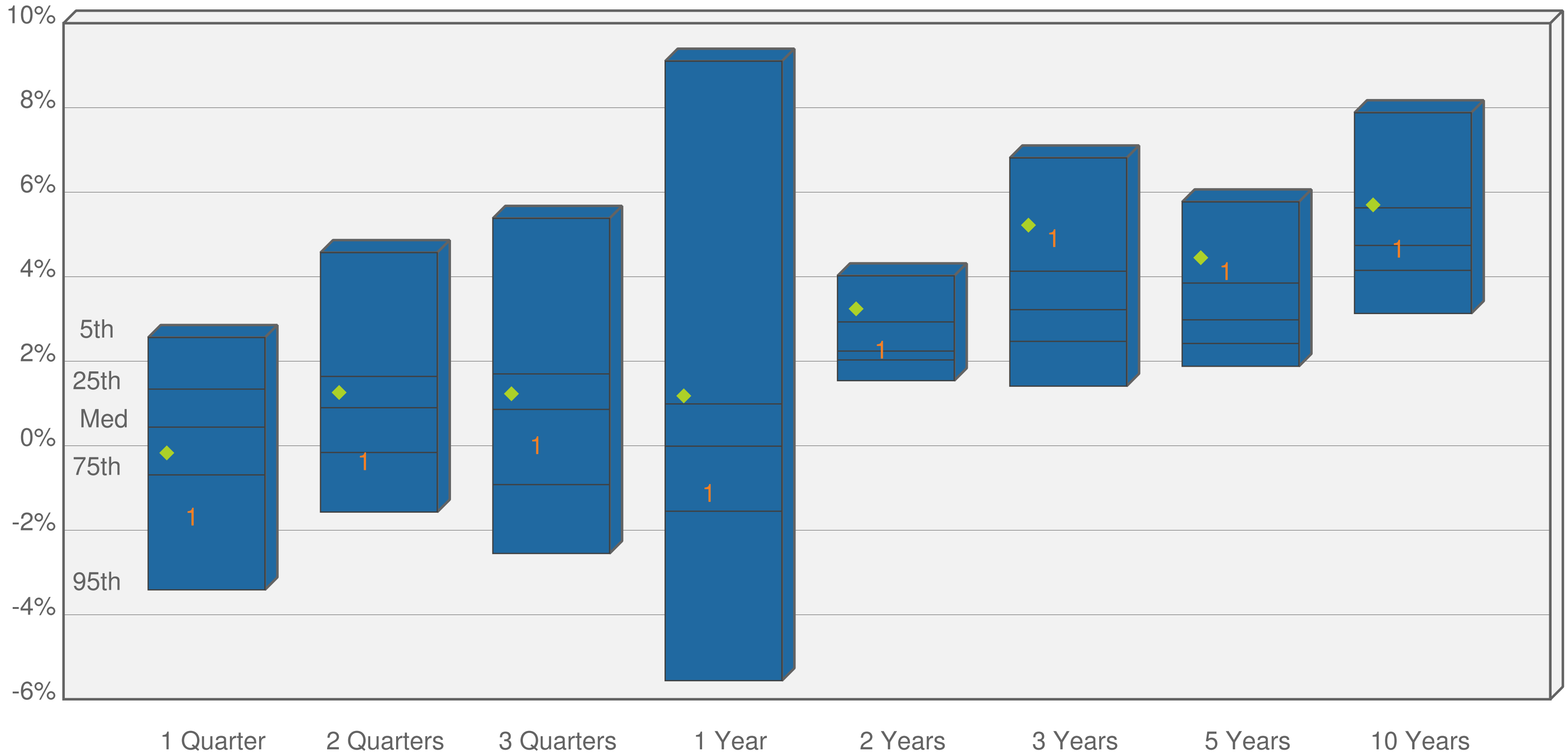


Wilshire Consulting

PERFORMANCE COMPARISON

Fixed Income Composite

Periods Ended December 31, 2018



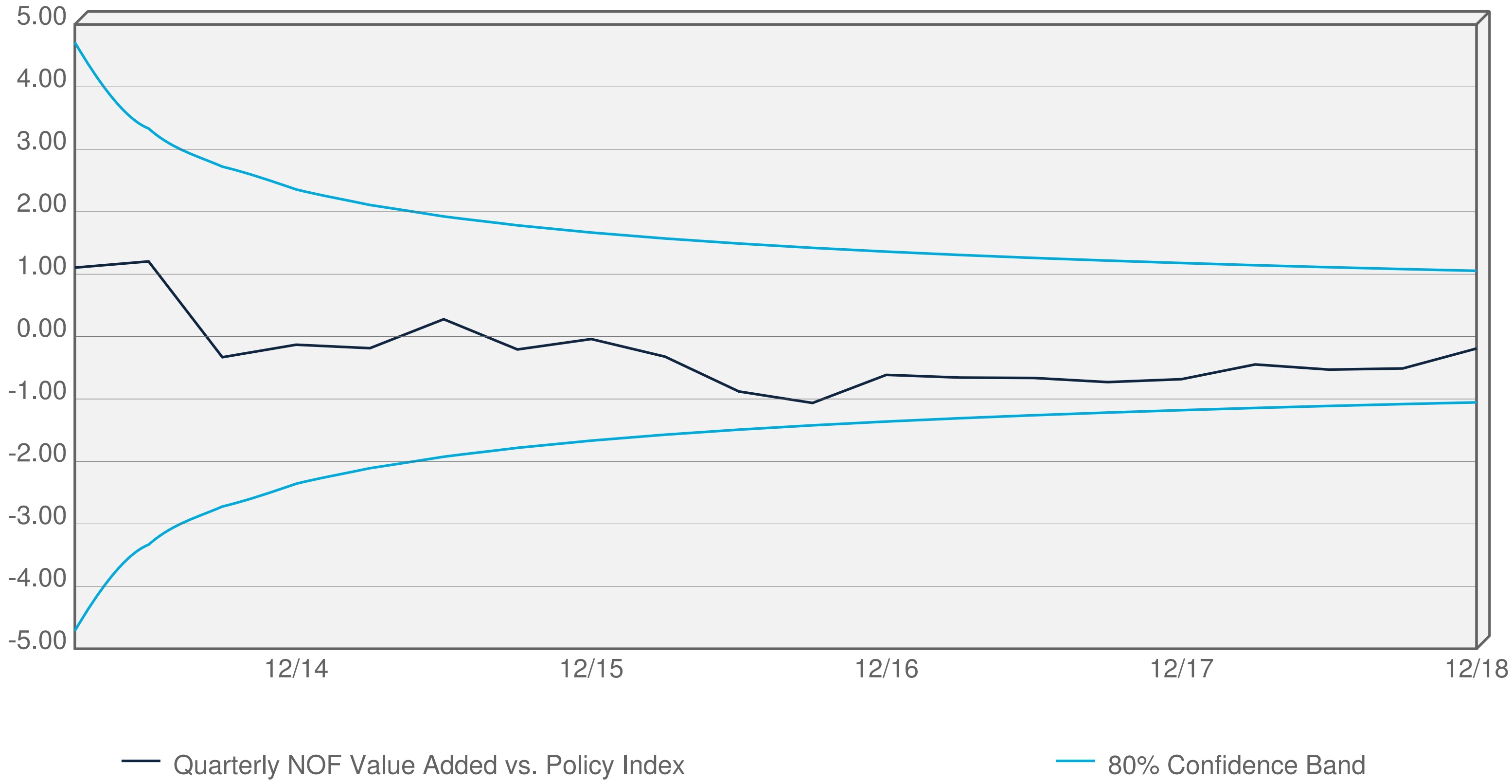
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◆ Fixed Income Composite	-0.14 (58)	1.29 (40)	1.26 (42)	1.21 (19)	3.27 (17)	5.25 (10)	4.48 (10)	5.73 (23)
1 Policy Index	-1.68 (89)	-0.37 (83)	0.01 (62)	-1.12 (71)	2.27 (47)	4.91 (14)	4.13 (13)	4.66 (57)
5th %tile	2.56	4.57	5.38	9.10	4.02	6.81	5.77	7.88
25th %tile	1.34	1.64	1.70	0.99	2.93	4.13	3.85	5.63
Median	0.44	0.90	0.86	-0.01	2.24	3.22	2.98	4.74
75th %tile	-0.69	-0.16	-0.92	-1.55	2.03	2.47	2.42	4.15
95th %tile	-3.41	-1.57	-2.55	-5.56	1.54	1.41	1.88	3.13
Number of Funds	137	135	132	126	100	95	89	59

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

CUMULATIVE SKILL ANALYSIS

Fixed Income Composite

Five Years Ending December 31, 2018



Excess Return:	-0.19	Information Ratio:	-0.13
Excess Risk:	1.43	T-Stat:	-0.30

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
BNY IG Credit									
Net of Fee Return	**0.75**	**1.49**	**1.47**	**0.03**				**12/31/17**	**0.03**
Bloomberg Int Credit	0.75	1.48	1.40	0.01				12/31/17	0.01
Value Added	-0.00	0.01	0.07	0.02				12/31/17	0.02
Lord Abbett									
Net of Fee Return	**0.53**							**9/30/18**	**0.53**
Bloomberg Aggregate	1.64							9/30/18	1.64
Value Added	-1.11							9/30/18	-1.11
NISA									
Net of Fee Return	**1.58**	**1.53**	**1.38**	**-0.07**	**2.26**	**2.77**		**3/31/09**	**3.71**
Bloomberg Aggregate	1.64	1.66	1.49	0.01	2.06	2.52		3/31/09	3.56
Value Added	-0.05	-0.13	-0.12	-0.09	0.20	0.25		3/31/09	0.15
Core Fixed Composite									
Net of Fee Return	**0.93**							**9/30/18**	**0.93**
Bloomberg Universal	1.17							9/30/18	1.17
Value Added	-0.24							9/30/18	-0.24
Arrowmark									
Net of Fee Return	**2.17**	**4.81**						**6/30/18**	**4.81**
S&P LSTA Leverage Loan Index	-3.45	-1.68						6/30/18	-1.68
Value Added	5.63	6.49						6/30/18	6.49
BSP Private Credit									
Net of Fee Return	**2.42**	**2.79**	**2.49**					**3/31/18**	**2.49**
S&P LSTA Leverage Loan Index	-3.45	-1.68	-0.99					3/31/18	-0.99
Value Added	5.87	4.47	3.48					3/31/18	3.48

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Cerberus Capital Mgmt									
Net of Fee Return	**2.74**	**5.50**	**7.23**	**9.79**	**8.61**			**9/30/14**	**8.54**
S&P LSTA Leverage Loan	-3.45	-1.68	-0.99	0.44	4.83			9/30/14	3.10
Value Added	6.20	7.18	8.22	9.35	3.78			9/30/14	5.45
Columbia									
Net of Fee Return	**-4.70**	**-1.80**	**-1.44**	**-3.02**	**5.06**	**3.84**		**12/31/11**	**5.87**
Bloomberg High Yield	-4.53	-2.24	-1.24	-2.08	7.23	3.83		12/31/11	5.98
Value Added	-0.17	0.44	-0.21	-0.94	-2.17	0.01		12/31/11	-0.11
Manulife Asset Mgmt									
Net of Fee Return	**-1.37**	**-0.51**	**-2.17**	**-2.60**	**2.03**	**2.12**		**12/31/11**	**3.37**
Policy Index	1.17	1.44	1.17	-0.25	2.56	0.95		12/31/11	1.04
Value Added	-2.53	-1.95	-3.33	-2.35	-0.54	1.17		12/31/11	2.33
Marathon Bluegrass									
Net of Fee Return	**0.17**	**3.49**	**3.72**	**5.11**	**7.33**			**12/31/15**	**7.33**
Bloomberg High Yield	-4.53	-2.24	-1.24	-2.08	7.23			12/31/15	7.23
Value Added	4.70	5.73	4.95	7.19	0.10			12/31/15	0.10
Shenkman Capital									
Net of Fee Return	**-3.35**	**-1.39**	**-0.75**	**0.65**	**4.16**	**2.68**		**9/30/10**	**4.22**
S&P LSTA Leverage Loan	-3.45	-1.68	-0.99	0.44	4.83	3.33		9/30/10	5.10
Value Added	0.10	0.29	0.25	0.20	-0.67	-0.65		9/30/10	-0.88
Waterfall									
Net of Fee Return	**0.62**	**2.35**	**3.99**	**6.99**	**10.39**	**8.97**		**3/31/10**	**11.37**
Policy Index	-2.67	-0.97	-0.07	-0.31	5.54	3.16		3/31/10	4.63
Value Added	3.28	3.32	4.06	7.30	4.86	5.82		3/31/10	6.74

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

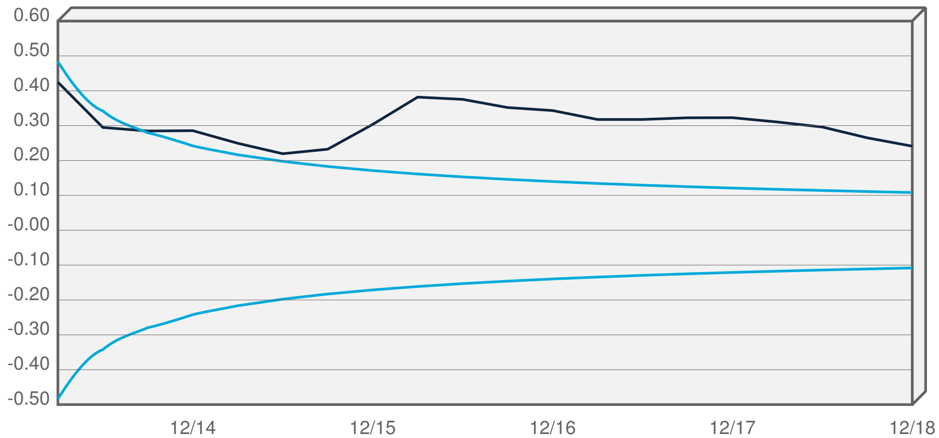
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
White Oak Yield Spectrum									
Net of Fee Return	**1.17**	**2.41**	**2.76**					**3/31/18**	**2.76**
S&P LSTA Leverage Loan Index	-3.45	-1.68	-0.99					3/31/18	-0.99
Value Added	4.62	4.09	3.75					3/31/18	3.75
Opportunistic Fixed Composite									
Net of Fee Return	**-1.32**							**9/30/18**	**-1.32**
Bloomberg High Yield	-4.53							9/30/18	-4.53
Value Added	3.21							9/30/18	3.21
Fixed Income Composite									
Net of Fee Return	**-0.22**	**1.07**	**0.96**	**0.66**	**4.60**	**3.93**	**5.42**	**3/31/84**	**7.41**
Policy Index	-1.70	-0.39	-0.02	-1.14	4.90	4.12	4.66	3/31/84	7.20
Value Added	1.48	1.46	0.97	1.80	-0.30	-0.20	0.75	3/31/84	0.21
Bloomberg Global Aggregate	1.20	0.26	-2.53	-1.20	2.70	1.08	2.49		

INVESTMENT MANAGER ANALYSIS

NISA

December 31, 2018

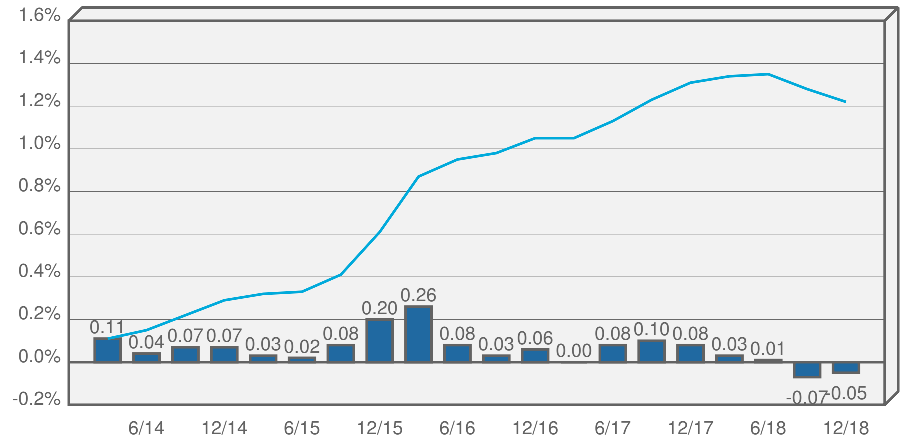
Cumulative Skill Analysis vs Benchmark



Quarterly NOF Value Added vs. Bloomberg Aggregate
80% Confidence Band

Excess Return:	0.24	Information Ratio:	1.64
Excess Risk:	0.15	T-Stat:	3.66

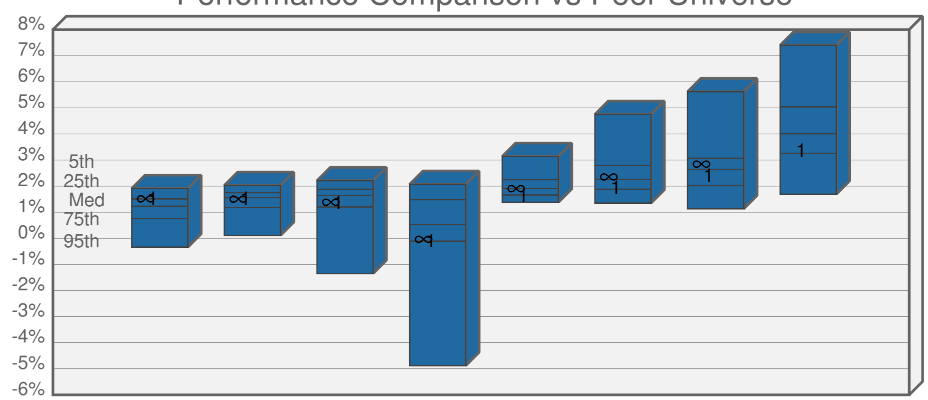
Value-Added Analysis vs Benchmark



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	1.60 (18)	1.59 (45)	1.47 (63)	0.05 (67)	1.99 (40)	2.44 (39)	2.93 (31)	
1 Bloomberg Aggr	1.64 (14)	1.65 (37)	1.49 (61)	0.01 (69)	1.76 (63)	2.06 (62)	2.52 (55)	3.48 (69)
Median	1.23	1.56	1.64	0.53	1.91	2.26	2.64	4.01
Number of Funds	335	334	331	331	329	325	313	271

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

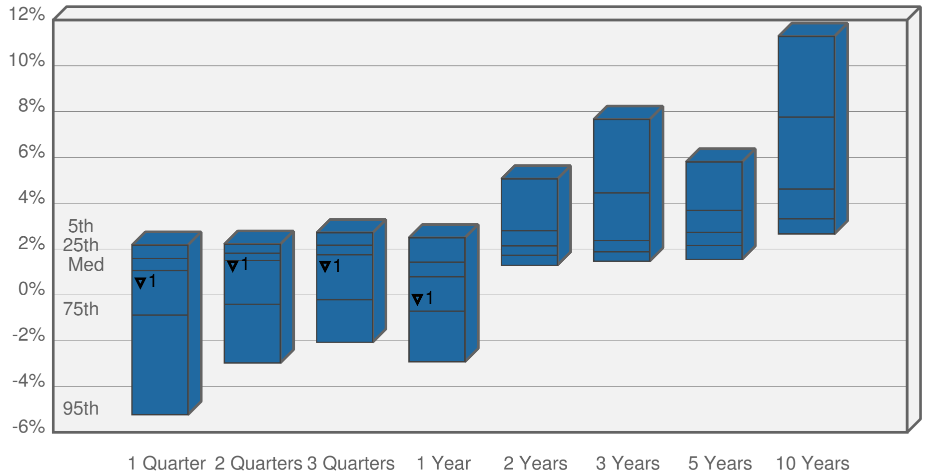
Wilshire Consulting

INVESTMENT MANAGER ANALYSIS

BNY IG Credit

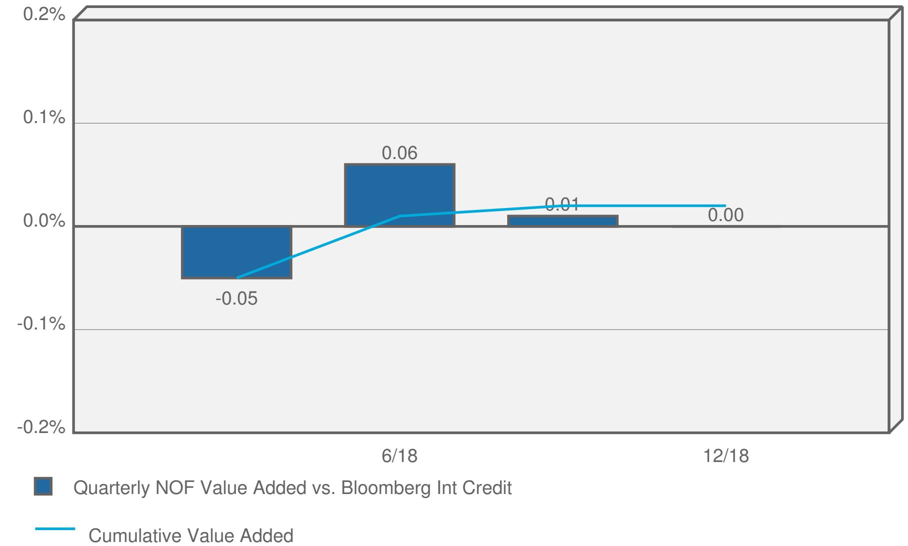
December 31, 2018

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▼ BNY IG Credit	0.76 (57)	1.50 (50)	1.48 (57)	0.04 (65)				
1 Bloomberg Int	0.75 (57)	1.48 (50)	1.40 (59)	0.01 (65)				
Median	1.06	1.50	1.75	0.79	2.14	2.37	2.73	4.62
Number of Funds	353	353	350	350	348	346	329	288

Value-Added Analysis vs Benchmark



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

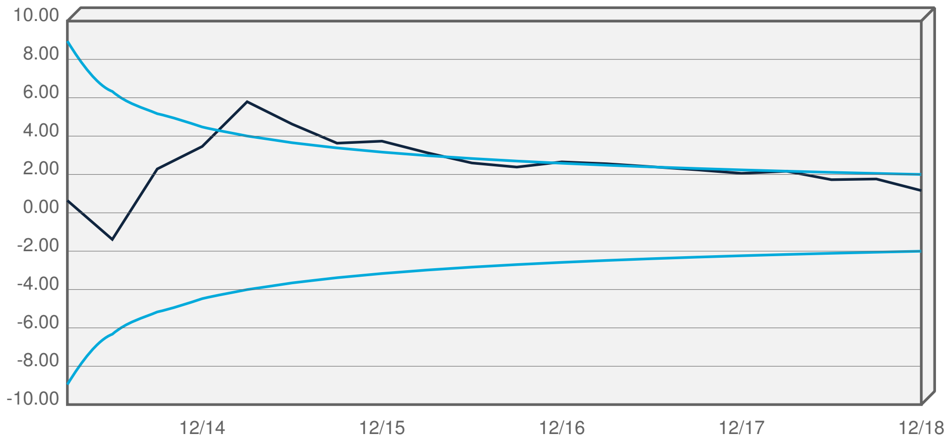
Wilshire Consulting

INVESTMENT MANAGER ANALYSIS

Manulife Asset Mgmt

December 31, 2018

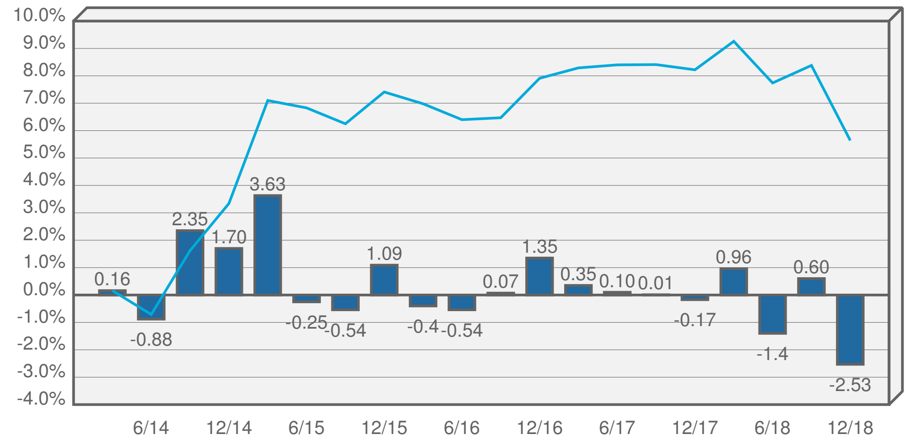
Cumulative Skill Analysis vs Benchmark



Quarterly NOF Value Added vs. Policy Index   80% Confidence Band

Excess Return:	1.16	Information Ratio:	0.43
Excess Risk:	2.72	T-Stat:	0.95

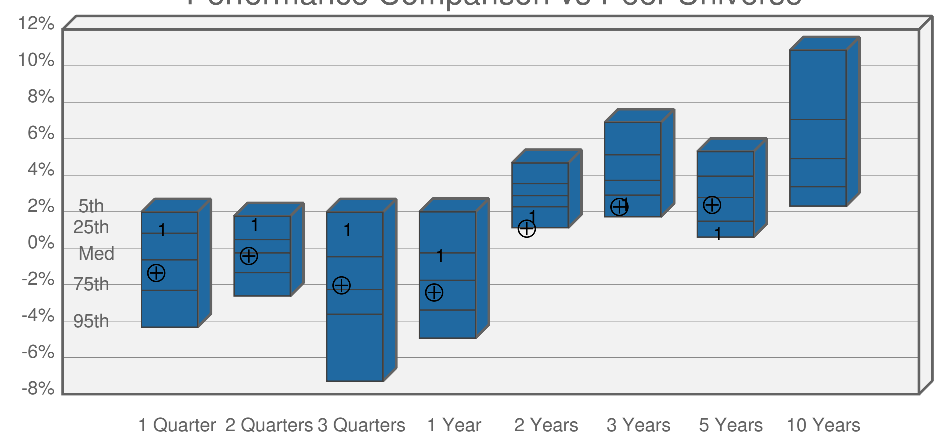
Value-Added Analysis vs Benchmark



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	-1.33 (63)	-0.40 (54)	-2.01 (47)	-2.40 (61)	1.10 (95)	2.29 (90)	2.40 (55)	
1 Policy Index	1.17 (18)	1.44 (9)	1.17 (12)	-0.25 (24)	1.89 (81)	2.56 (83)	0.95 (91)	
Median	-0.64	-0.26	-2.27	-1.76	2.88	3.72	2.78	4.91
Number of Funds	193	191	191	190	187	181	172	92

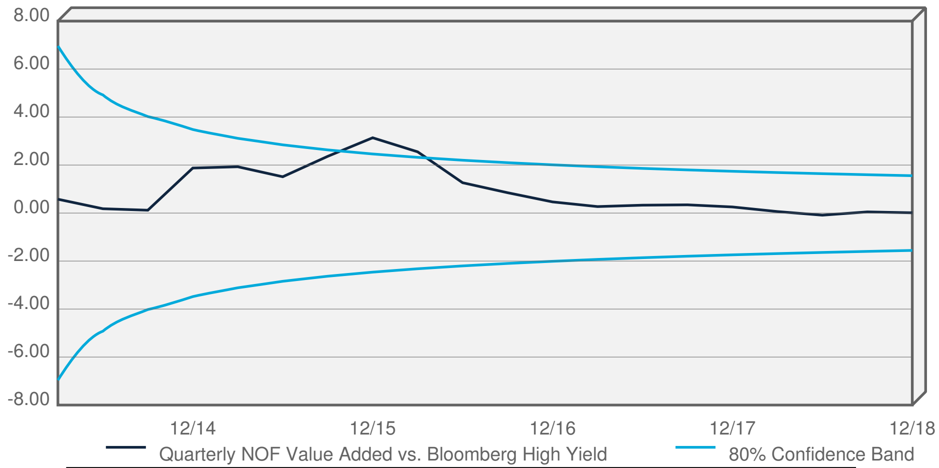
*Compass Total Returns of Active Global Intl Fixed Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Columbia

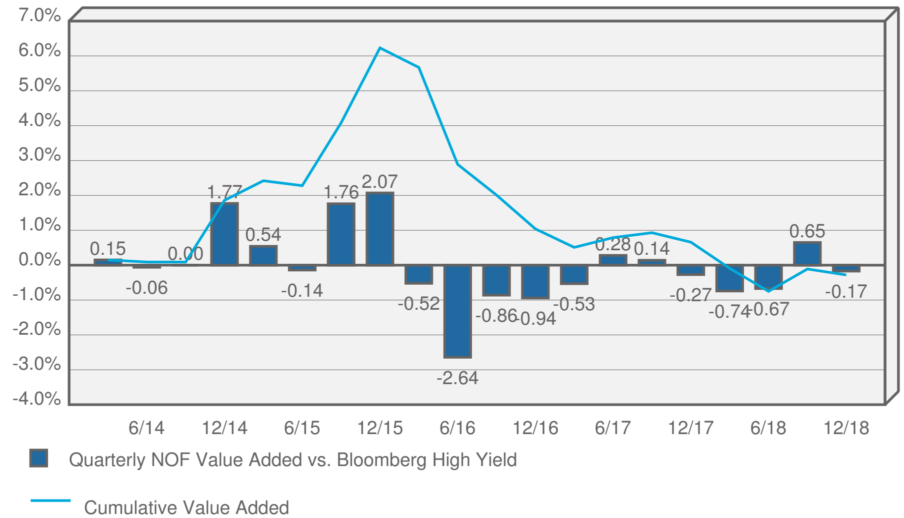
December 31, 2018

Cumulative Skill Analysis vs Benchmark

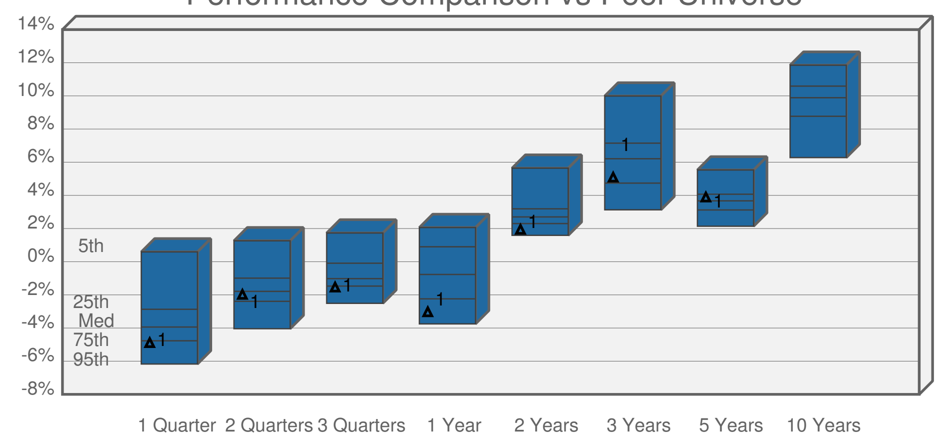


Excess Return:	0.01	Information Ratio:	0.01
Excess Risk:	2.12	T-Stat:	0.01

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
▲ Columbia	-4.56 (70)	-1.65 (44)	-1.21 (60)	-2.70 (86)	2.27 (77)	5.42 (63)	4.22 (23)	
1 Bloomberg High	-4.53 (70)	-2.24 (70)	-1.24 (63)	-2.08 (71)	2.60 (56)	7.23 (24)	3.83 (36)	
Median	-3.94	-1.79	-1.02	-0.77	2.70	6.21	3.67	9.89
Number of Funds	182	182	182	182	179	176	165	108

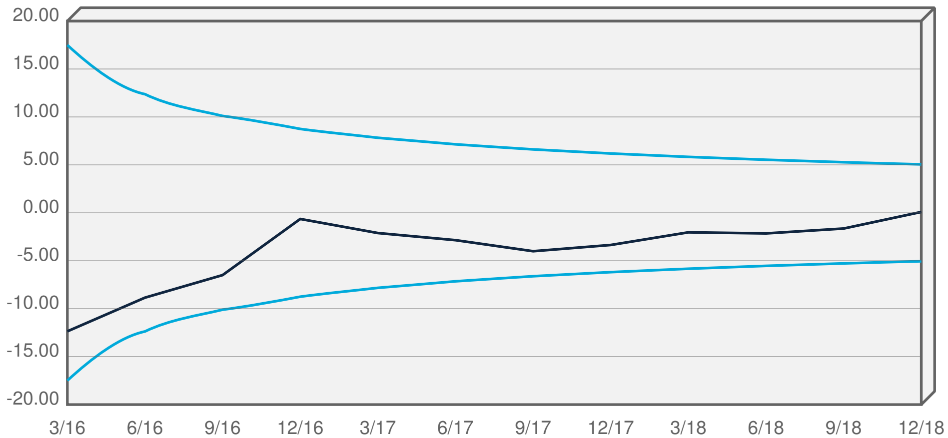
*Compass Total Returns of Active High Yield Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Marathon Bluegrass

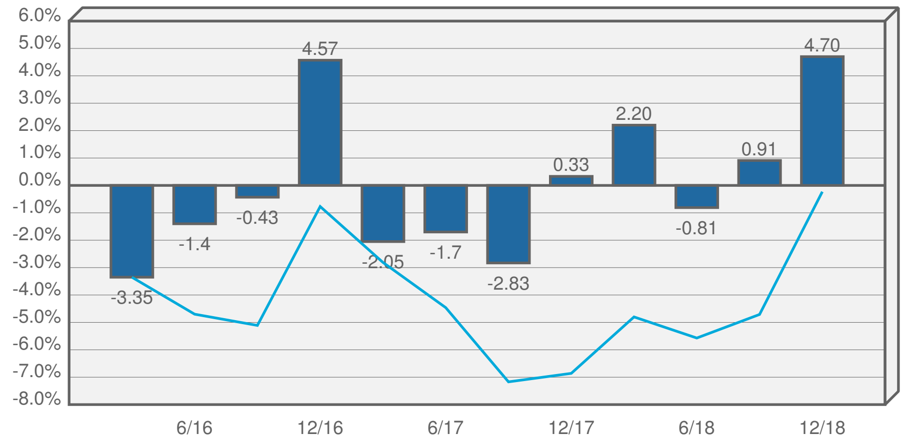
December 31, 2018

Cumulative Skill Analysis vs Benchmark

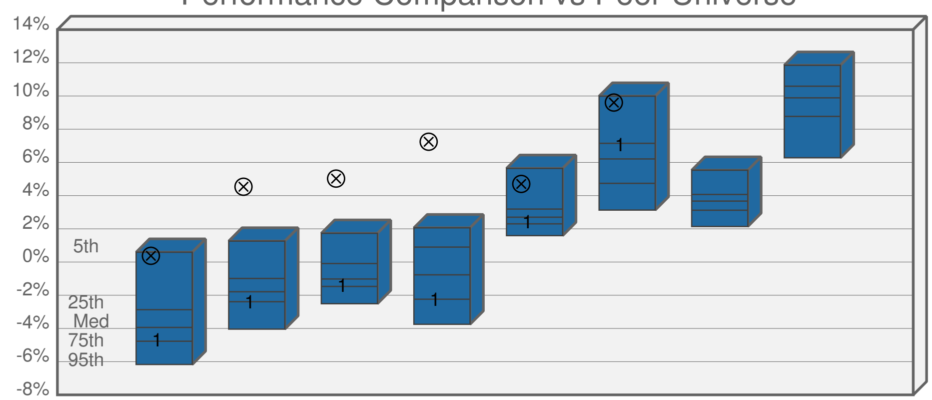


Excess Return:	0.09	Information Ratio:	0.02
Excess Risk:	5.32	T-Stat:	0.03

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	0.41 (5)	4.57 (1)	5.06 (1)	7.28 (1)	4.74 (7)	9.64 (5)		
1 Bloomberg High	-4.53 (70)	-2.24 (70)	-1.24 (63)	-2.08 (71)	2.60 (56)	7.23 (24)		
Median	-3.94	-1.79	-1.02	-0.77	2.70	6.21	3.67	9.89
Number of Funds	182	182	182	182	179	176	165	108

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

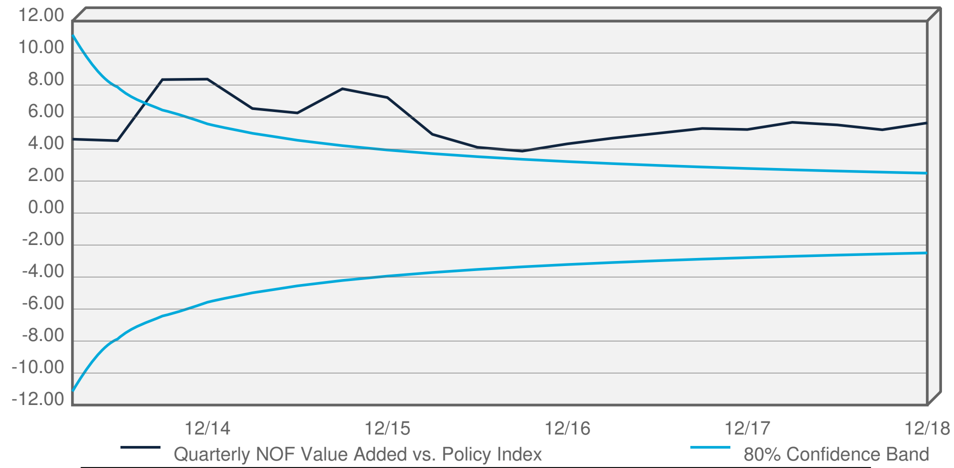
Wilshire Consulting

INVESTMENT MANAGER ANALYSIS

Waterfall

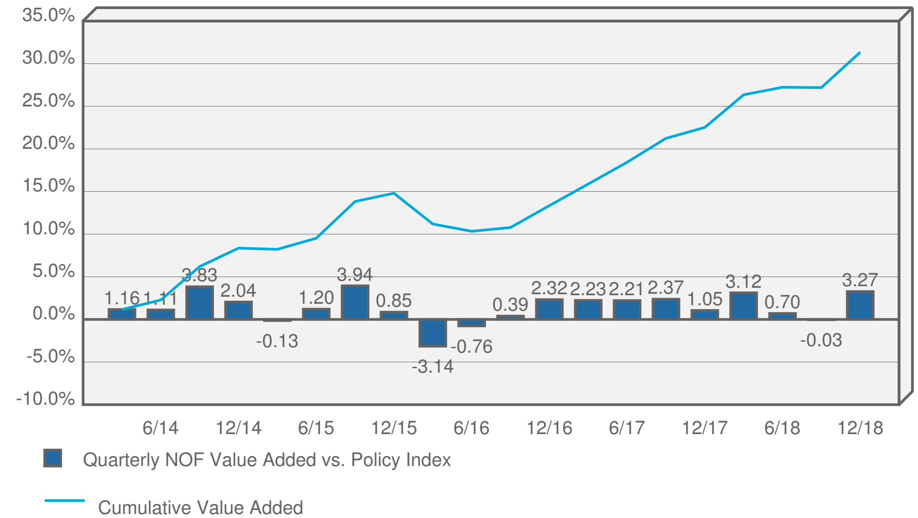
December 31, 2018

Cumulative Skill Analysis vs Benchmark

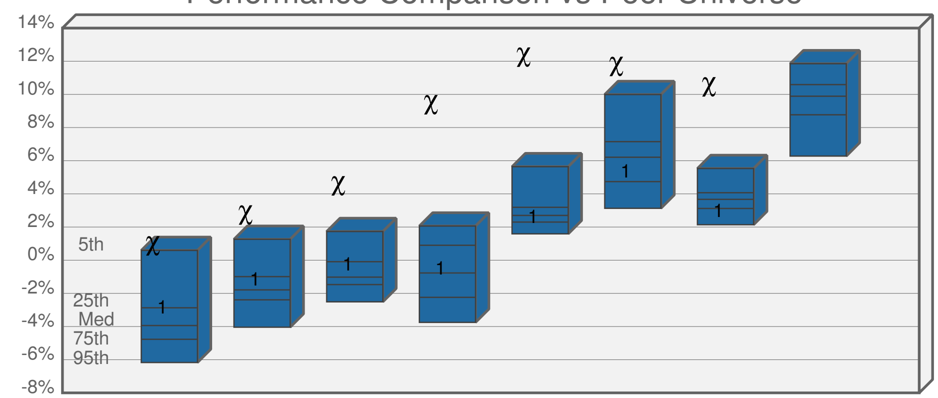


Excess Return:	5.63	Information Ratio:	1.66
Excess Risk:	3.39	T-Stat:	3.72

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
χ Waterfall	0.73 (2)	2.59 (1)	4.35 (1)	9.24 (1)	12.11 (1)	11.55 (2)	10.32 (1)	
1 Policy Index	-2.65 (22)	-0.95 (24)	-0.05 (23)	-0.29 (46)	2.82 (44)	5.55 (61)	3.16 (73)	
Median	-3.94	-1.79	-1.02	-0.77	2.70	6.21	3.67	9.89
Number of Funds	182	182	182	182	179	176	165	108

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

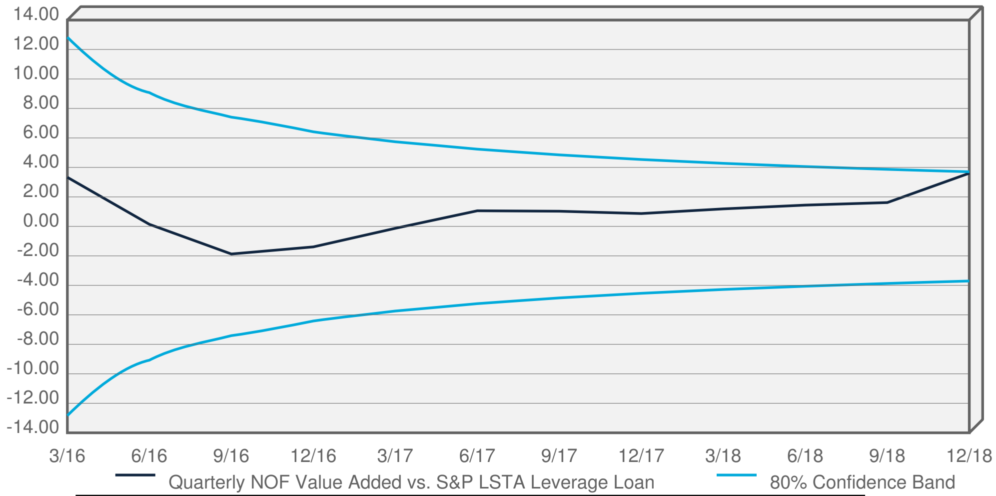
Wilshire Consulting

INVESTMENT MANAGER ANALYSIS

Cerberus Capital Mgmt

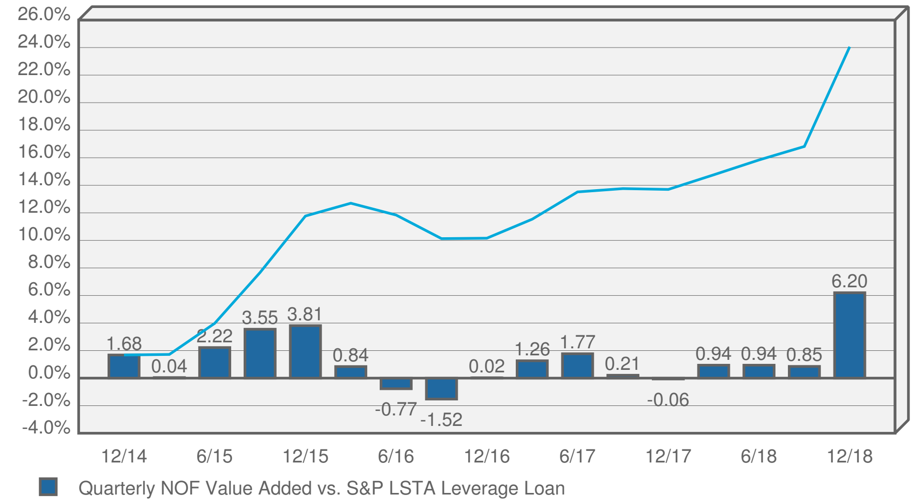
December 31, 2018

Cumulative Skill Analysis vs Benchmark



Excess Return:	3.61	Information Ratio:	0.92
Excess Risk:	3.90	T-Stat:	1.60

Value-Added Analysis vs Benchmark

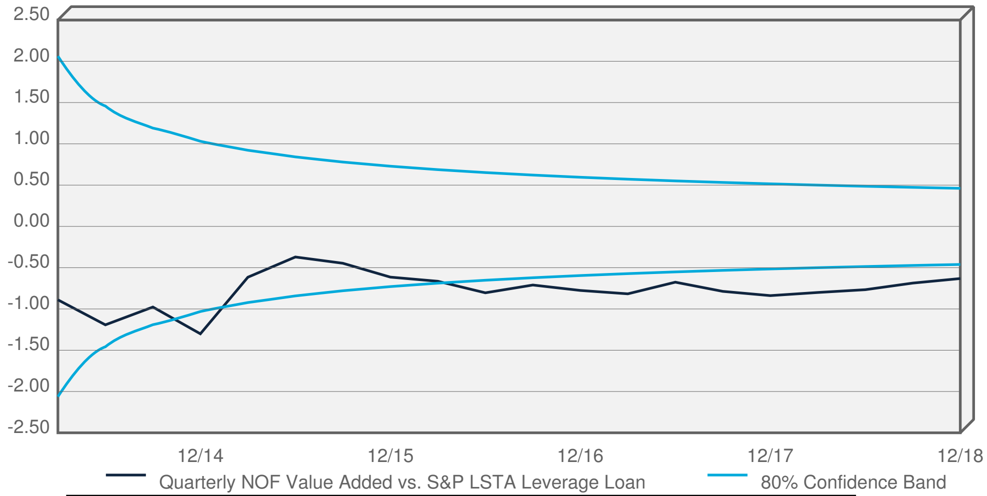


INVESTMENT MANAGER ANALYSIS

Shenkman Capital

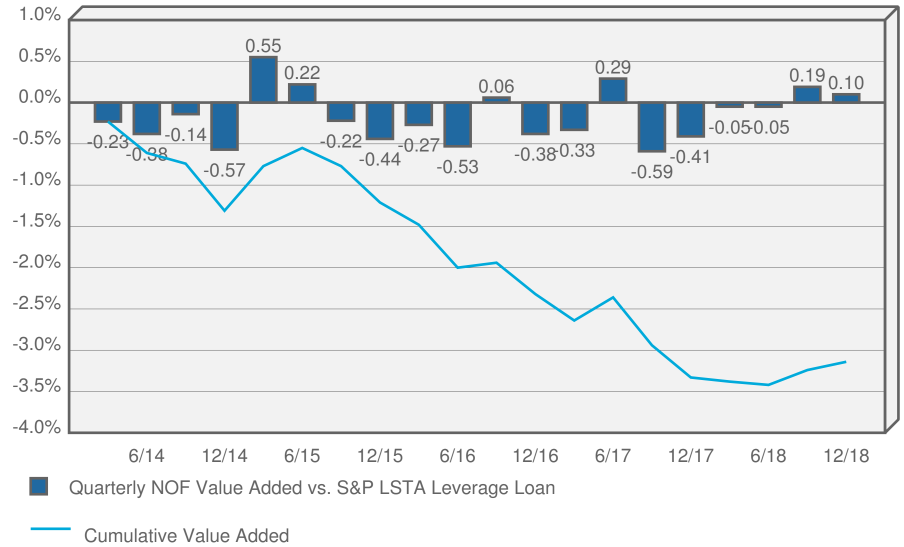
December 31, 2018

Cumulative Skill Analysis vs Benchmark



Excess Return:	-0.63	Information Ratio:	-1.01
Excess Risk:	0.63	T-Stat:	-2.25

Value-Added Analysis vs Benchmark

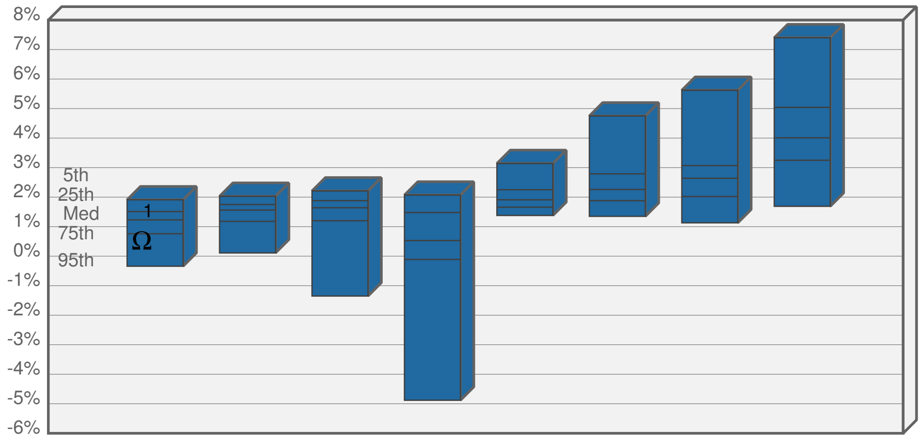


INVESTMENT MANAGER ANALYSIS

Lord Abbett

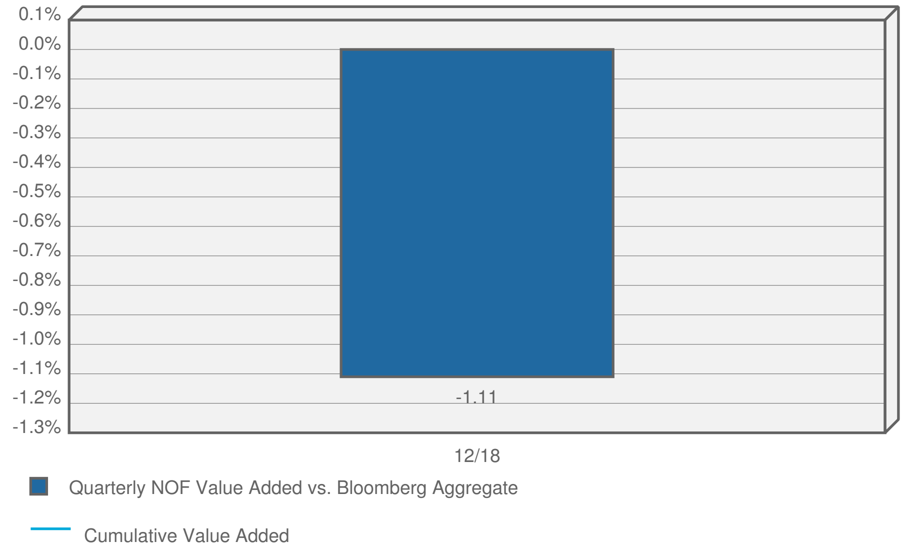
December 31, 2018

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Ω Lord Abbett	0.54 (85)							
1 Bloomberg Aggr	1.64 (14)							
Median	1.23	1.56	1.64	0.53	1.91	2.26	2.64	4.01
Number of Funds	335	334	331	331	329	325	313	271

Value-Added Analysis vs Benchmark

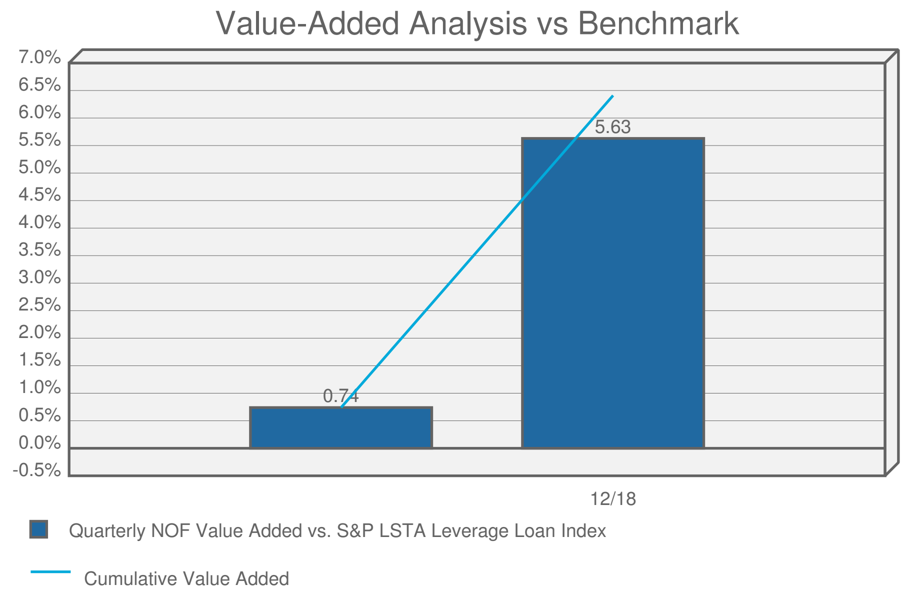


*Compass Total Returns of Active Core Fixed Income Portfolios Universe - Gross of Fees

INVESTMENT MANAGER ANALYSIS

Arrowmark

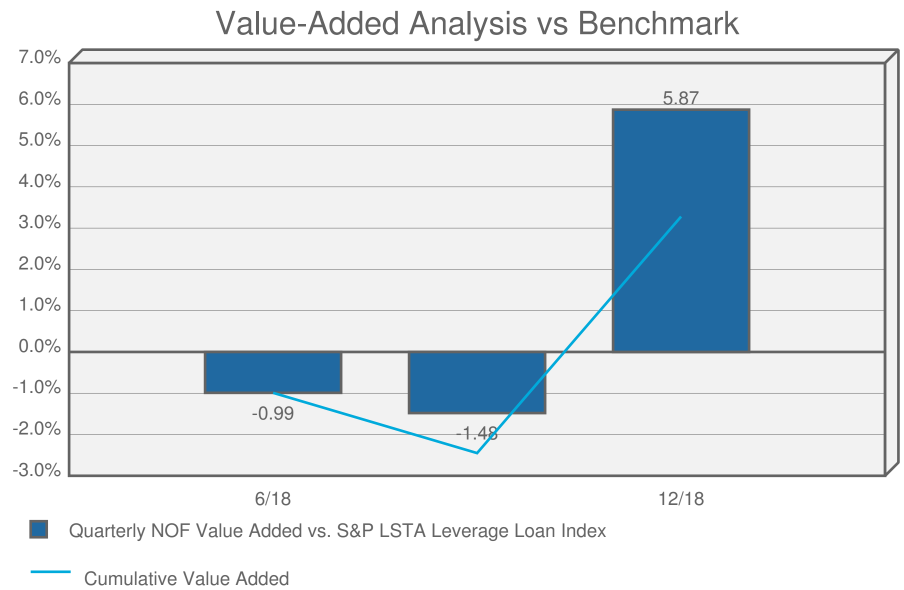
December 31, 2018



INVESTMENT MANAGER ANALYSIS

BSP Private Credit

December 31, 2018



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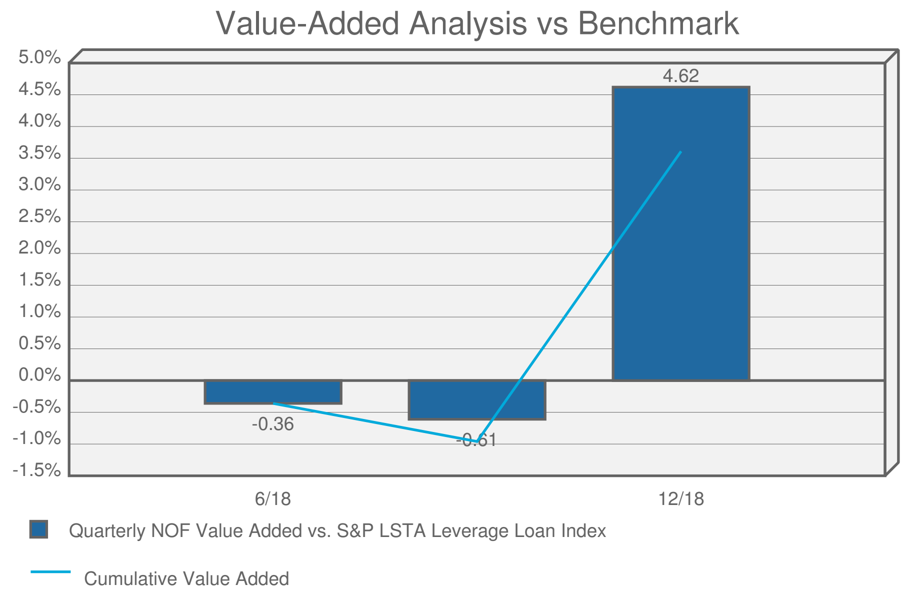
INVESTMENT MANAGER ANALYSIS

White Oak Yield Spectrum

December 31, 2018



CUSTOM BENCHMARK SPECIFICATION

Fixed Income Composite

December 31, 2018

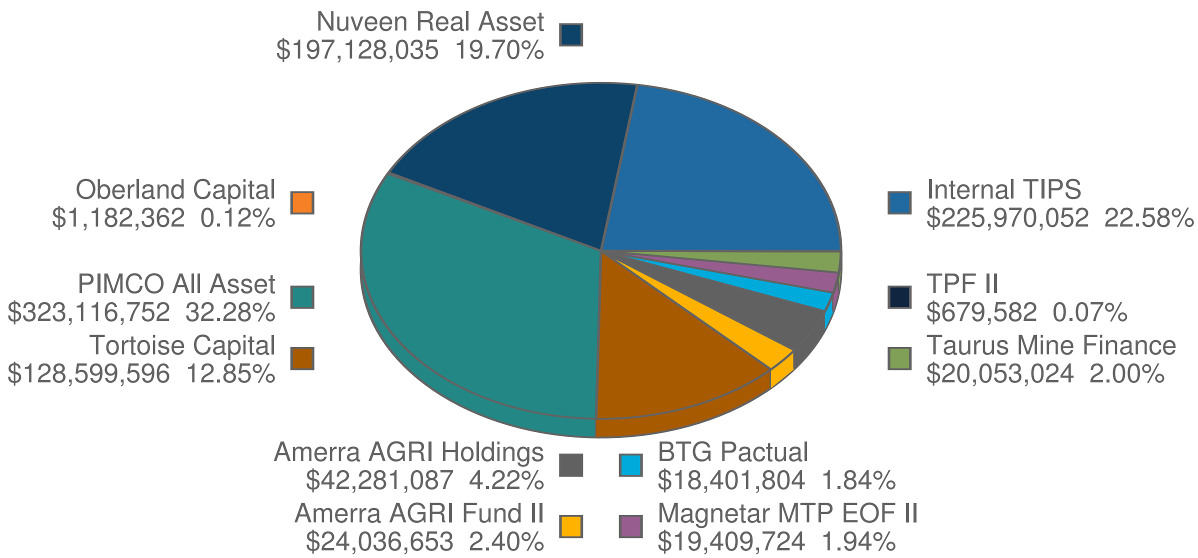
	Quarter Start	Quarter End	Percent	Description
Policy Index	6/84	6/17	100.00	Blended Fixed Benchmark
	9/17	12/18	50.00	Bloomberg Universal
			50.00	Bloomberg High Yield
Bloomberg Global Aggregate	6/84	12/18	100.00	Bloomberg Global Aggregate

REAL RETURN

MANAGER ALLOCATION

Real Return Composite

As of December 31, 2018



Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Internal TIPS									
Net of Fee Return	**0.11**	**-0.09**	**0.47**	**0.11**	**2.10**	**1.91**	**3.63**	**6/30/02**	**4.55**
Bloomberg 1-10 Yrs TIPS	-0.05	-0.47	0.15	-0.25	1.87	1.54	3.56	6/30/02	4.41
Value Added	0.16	0.38	0.33	0.36	0.23	0.37	0.07	6/30/02	0.13
PIMCO All Asset									
Net of Fee Return	**-3.30**	**-2.97**	**-5.27**	**-2.97**	**7.74**	**2.98**		**12/31/11**	**4.56**
Bloomberg 1-10 Yrs TIPS	-0.05	-0.47	0.15	-0.25	1.87	1.20		12/31/11	0.73
Value Added	-3.25	-2.51	-5.41	-2.72	5.87	1.79		12/31/11	3.82
Tortoise Capital									
Net of Fee Return	**-16.22**	**-13.77**	**-4.36**	**-13.71**	**-1.05**	**-3.97**		**9/30/09**	**9.11**
Alerian MLP	-17.30	-11.86	-1.46	-12.42	-1.06	-7.31		9/30/09	5.57
Value Added	1.08	-1.91	-2.89	-1.29	0.01	3.34		9/30/09	3.54
Nuveen Real Asset									
Net of Fee Return	**-5.24**	**-3.81**	**-2.23**	**-5.01**	**5.57**			**3/31/15**	**3.07**
Policy Index	-5.27	-5.47	-2.50	-6.22	4.73			3/31/15	2.73
Value Added	0.03	1.66	0.27	1.22	0.85			3/31/15	0.34
Amerra AGRI Fund II									
Net of Fee Return	**1.44**	**0.01**	**-2.30**	**-3.07**	**0.04**	**4.66**		**12/31/12**	**3.88**
Amerra AGRI Holdings									
Net of Fee Return	**-0.52**	**-2.33**	**-2.86**	**-3.98**	**-1.79**			**9/30/15**	**-1.76**
BTG Pactual									
Net of Fee Return	**4.97**	**-2.37**	**-2.66**	**-6.76**	**-6.20**			**12/31/14**	**-9.14**

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	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	**2.83**	**6.26**	**5.92**	**9.58**	**3.61**			**9/30/15**	**3.33**
Oberland Capital									
Net of Fee Return	**23.41**							**9/30/18**	**23.41**
Taurus Mine Finance									
Net of Fee Return	**2.21**	**9.51**	**9.86**	**14.24**	**17.72**			**3/31/15**	**14.09**
TPF II									
Net of Fee Return	**-0.29**	**-0.62**	**-0.91**	**-1.19**	**-7.83**	**-1.93**	**-2.33**	**9/30/08**	**-3.50**
Real Return Composite									
Net of Fee Return	**-4.24**	**-3.61**	**-3.40**	**-3.89**	**4.65**	**2.15**		**6/30/11**	**2.95**
Real Return Index (P)	-3.40	-2.80	-1.23	-3.04	2.46	1.22		6/30/11	1.96
Value Added	-0.84	-0.81	-2.18	-0.85	2.19	0.94		6/30/11	0.98

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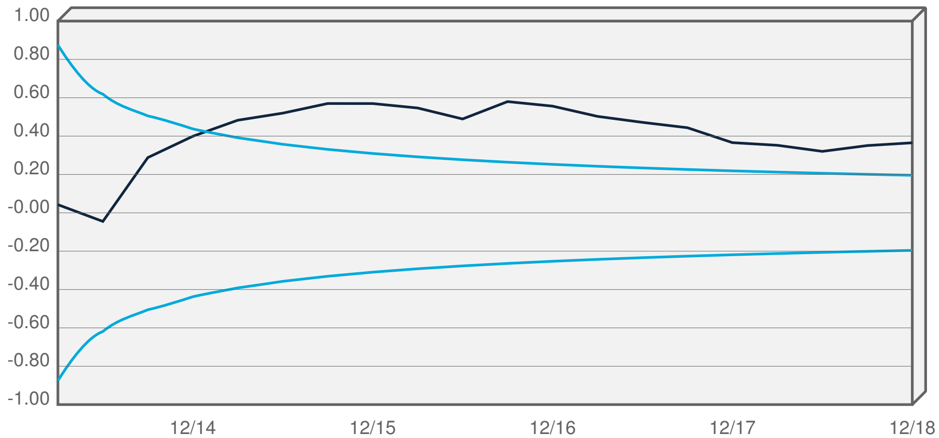
INVESTMENT MANAGER ANALYSIS

Internal TIPS

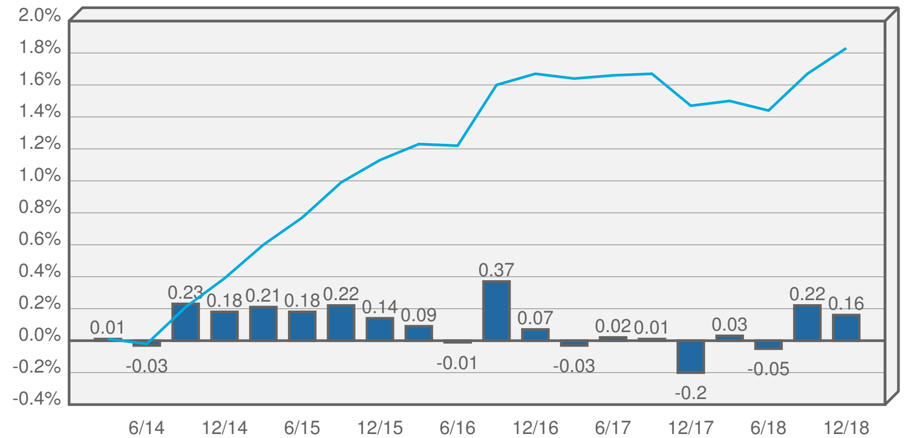
December 31, 2018

Cumulative Skill Analysis vs Benchmark

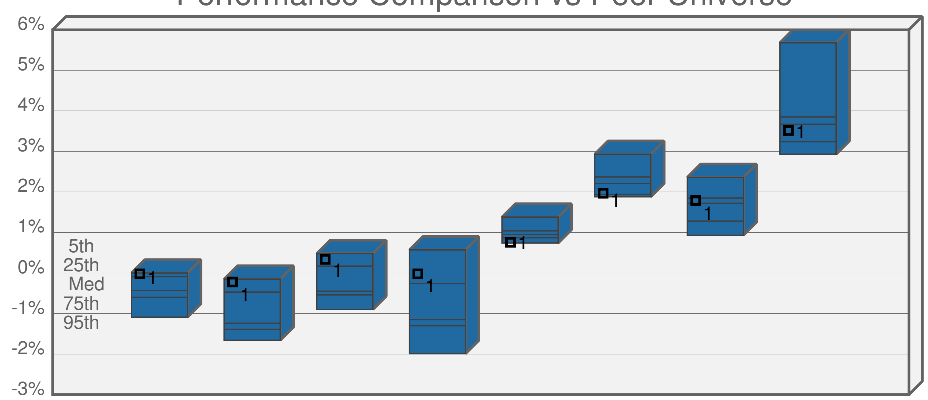


Excess Return:	0.37	Information Ratio:	1.37
Excess Risk:	0.27	T-Stat:	3.07

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 TIPS	0.11 (3)	-0.09 (1)	0.47 (6)	0.11 (6)	0.89 (67)	2.10 (63)	1.92 (19)	3.65 (55)
1 Bloomberg 1-10	-0.05 (9)	-0.47 (28)	0.14 (31)	-0.25 (24)	0.82 (83)	1.87 (96)	1.54 (63)	3.56 (59)
Median	-0.43	-1.24	-0.45	-1.15	0.95	2.21	1.72	3.67
Number of Funds	32	32	32	32	31	30	30	25

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

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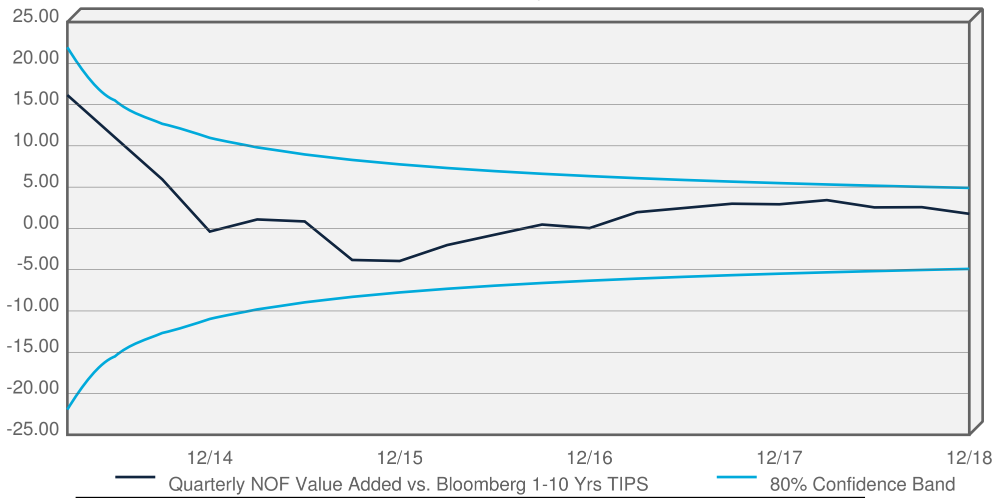
INVESTMENT MANAGER ANALYSIS

PIMCO All Asset

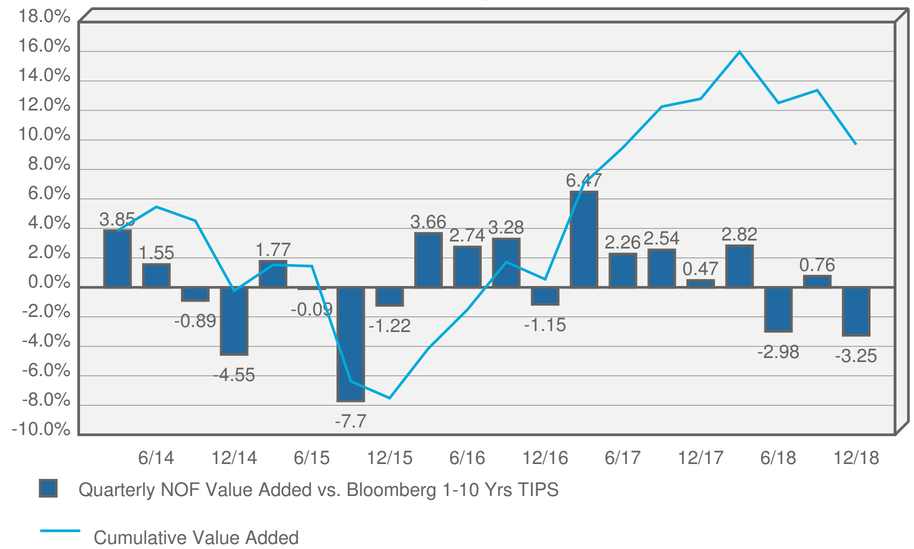
December 31, 2018

Cumulative Skill Analysis vs Benchmark



Excess Return:	1.77	Information Ratio:	0.26
Excess Risk:	6.67	T-Stat:	0.59

Value-Added Analysis vs Benchmark



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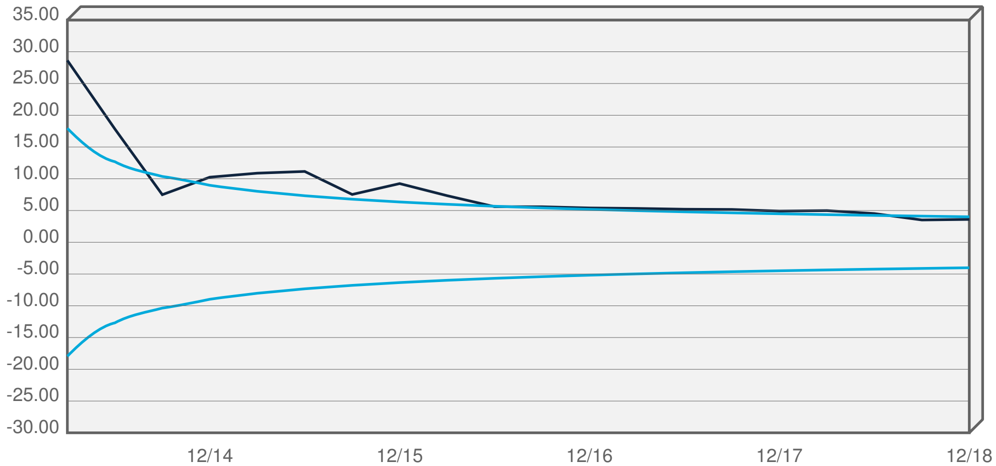
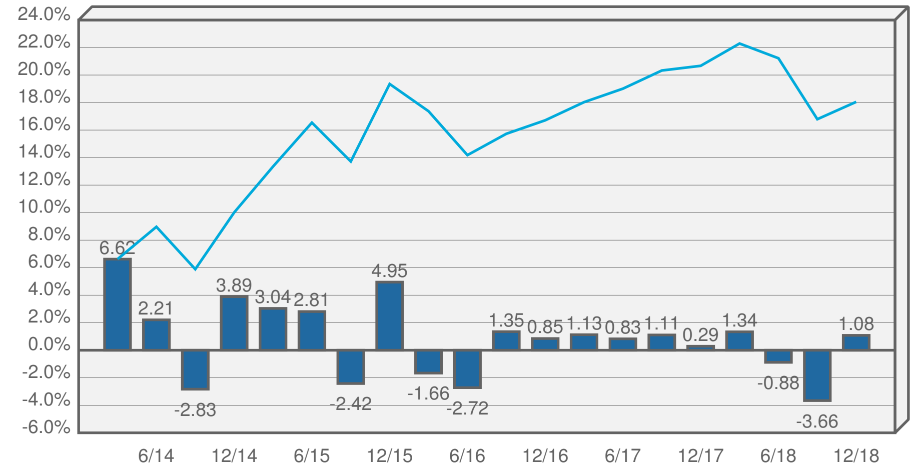
INVESTMENT MANAGER ANALYSIS

Tortoise Capital

December 31, 2018



Excess Return:	3.60	Information Ratio:	0.66
Excess Risk:	5.46	T-Stat:	1.48



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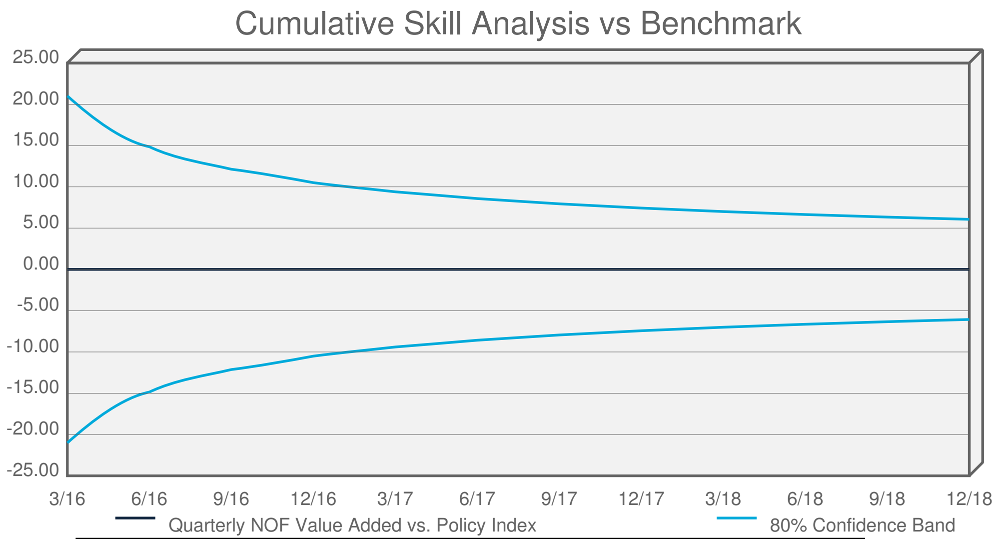
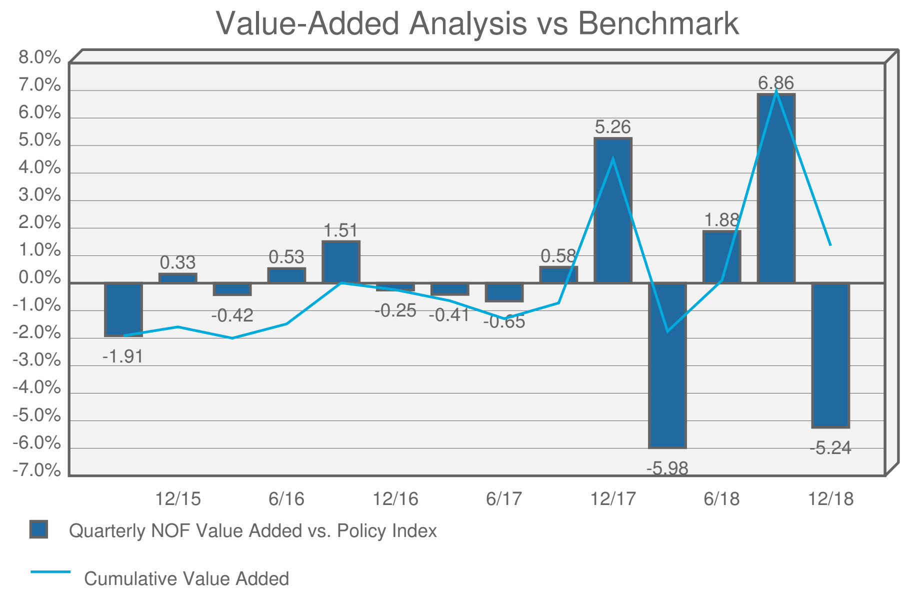
INVESTMENT MANAGER ANALYSIS

Nuveen Real Asset

December 31, 2018



Excess Return:	-0.31	Information Ratio:	-0.05
Excess Risk:	6.39	T-Stat:	-0.08



CUSTOM BENCHMARK SPECIFICATION

Real Return Composite

December 31, 2018

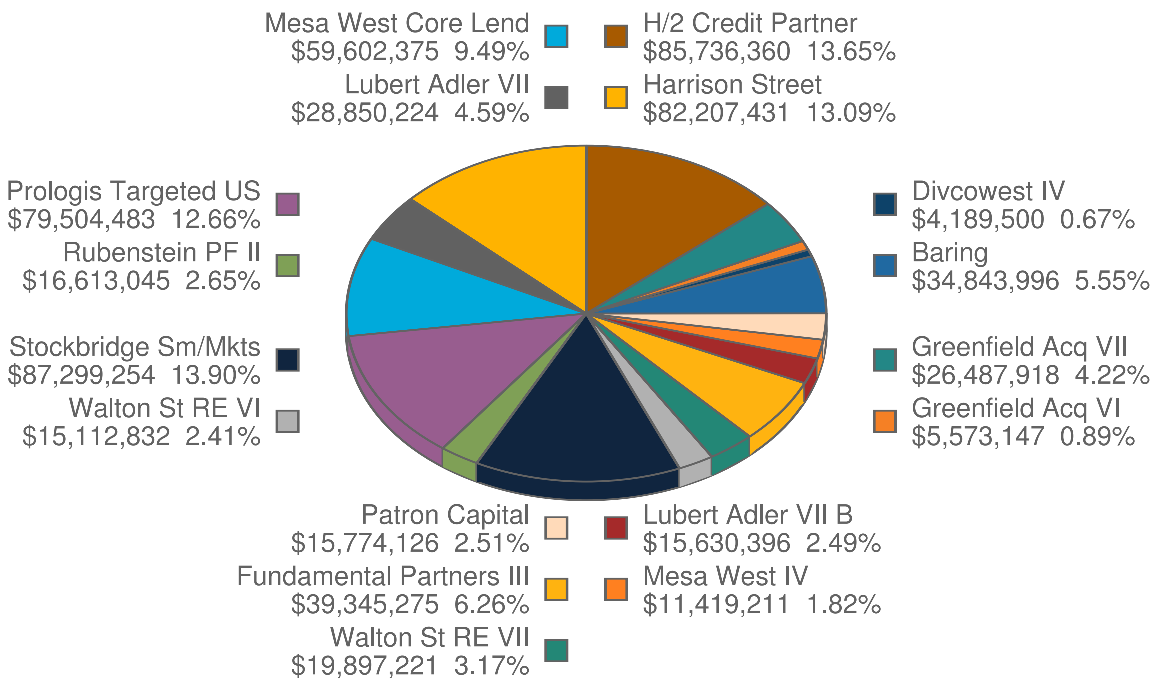
	Quarter Start	Quarter End	Percent	Description
Real Return Index (P)	9/11	12/18	100.00	Real Return Index (P)

REAL ESTATE

MANAGER ALLOCATION

Real Estate Composite

As of December 31, 2018



Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Divcowest IV									
Net of Fee Return	**2.68**	**10.29**	**15.69**	**28.88**	**27.42**			**3/31/14**	**24.08**
Greenfield Acq VI									
Net of Fee Return	**-0.39**	**-11.51**	**-8.49**	**-19.88**	**-3.61**	**4.40**		**12/31/12**	**5.52**
Greenfield Acq VII									
Net of Fee Return	**0.45**	**5.68**	**6.40**	**12.94**	**13.54**			**6/30/14**	**11.77**
H/2 Credit Partner									
Net of Fee Return	**-0.70**	**0.47**	**1.38**	**1.44**	**6.15**	**5.41**		**6/30/11**	**5.79**
Harrison Street									
Net of Fee Return	**1.85**	**5.36**	**7.41**	**9.95**	**10.14**	**10.01**		**6/30/12**	**9.24**
Lubert Adler VII									
Net of Fee Return	**0.23**	**3.19**	**6.72**	**8.28**	**7.20**			**6/30/14**	**-1.35**
Mesa West Core Lend									
Net of Fee Return	**1.93**	**5.34**	**7.12**	**9.03**	**8.16**	**7.37**		**6/30/13**	**7.21**
Prologis Targeted US									
Net of Fee Return	**3.36**	**8.66**	**14.13**	**18.48**	**17.45**			**9/30/14**	**15.71**
Rubenstein PF II									
Net of Fee Return	**3.91**	**8.96**	**12.61**	**16.11**	**10.15**	**16.51**		**6/30/13**	**14.16**
Stockbridge Sm/Mkts									
Net of Fee Return	**3.49**	**5.19**	**6.99**	**9.03**	**9.07**			**6/30/14**	**9.76**

Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Walton St RE VI									
Net of Fee Return	**2.20**	**4.48**	**6.90**	**9.40**	**4.05**	**8.18**		**6/30/09**	**-17.24**
Walton St RE VII									
Net of Fee Return	**-0.08**	**0.18**	**1.97**	**4.52**	**9.08**	**11.78**		**6/30/13**	**11.77**
Fundamental Partners III									
Net of Fee Return	**3.34**	**5.11**	**5.12**	**6.76**				**6/30/17**	**5.75**
Lubert Adler VII B									
Net of Fee Return	**0.37**	**2.50**	**4.11**	**3.54**				**6/30/17**	**-0.47**
Mesa West IV									
Net of Fee Return	**2.61**	**5.05**	**6.67**	**9.04**				**3/31/17**	**5.35**
Patron Capital									
Net of Fee Return	**2.79**	**5.14**	**4.47**	**25.90**				**9/30/16**	**0.85**
Real Estate Composite									
Net of Fee Return	**1.79**	**4.50**	**6.64**	**9.10**	**9.68**	**9.35**	**8.65**	**6/30/84**	**6.10**
NCREIF ODCE NOF 1 Quarter Lag	1.87	3.71	5.76	7.71	7.83	9.71	4.62		
Value Added	-0.08	0.79	0.88	1.39	1.85	-0.36	4.03		

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CUSTOM BENCHMARK SPECIFICATION

Real Estate Composite

December 31, 2018

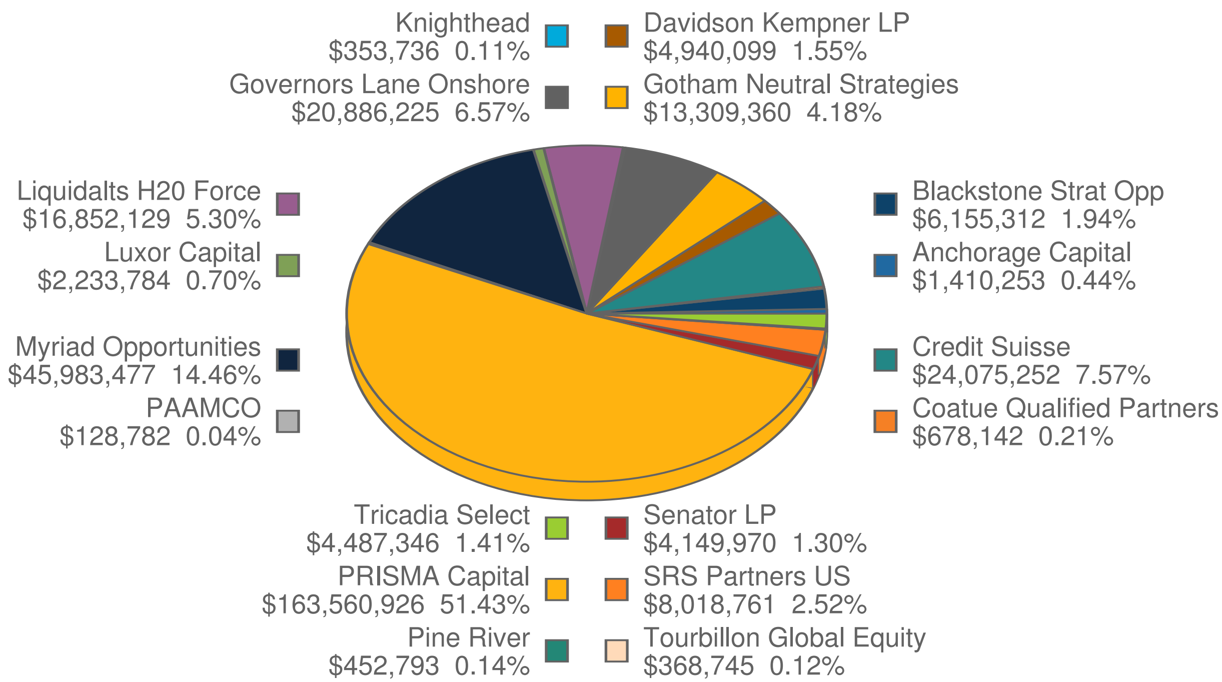
	Quarter Start	Quarter End	Percent	Description
NCREIF ODCE NOF 1 Quarter Lag	9/84	12/18	100.00	NCREIF ODCE NOF 1 Quarter Lag

ABSOLUTE RETURN

MANAGER ALLOCATION

Absolute Return Composite

As of December 31, 2018



Wilshire Consulting

PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Anchorage Capital									
Net of Fee Return	**0.46**	**1.76**	**2.41**	**3.05**				**9/30/16**	**5.37**
Blackstone Strat Opp									
Net of Fee Return	**0.35**	**1.60**	**3.39**	**4.71**				**9/30/17**	**4.84**
Coatue Qualified Partners									
Net of Fee Return	**0.00**	**0.00**	**2.63**	**8.58**	**12.49**			**6/30/15**	**12.43**
Credit Suisse									
Net of Fee Return	**1.98**	**3.55**	**5.50**	**7.11**				**6/30/17**	**7.14**
Davidson Kempner LP									
Net of Fee Return	**0.00**	**0.76**	**0.28**	**2.33**				**3/31/16**	**5.80**
Gotham Neutral Strategies									
Net of Fee Return	**0.25**	**-0.92**	**-1.22**	**1.39**				**3/31/17**	**-1.90**
Governors Lane Onshore									
Net of Fee Return	**-5.31**	**-3.53**	**-4.92**	**-5.05**				**3/31/17**	**-1.57**
Knighthead									
Net of Fee Return	**0.00**	**-0.08**	**0.17**	**1.63**	**5.26**	**2.03**		**12/31/13**	**2.03**
Liquidalts H20 Force									
Net of Fee Return	**3.08**	**4.84**	**1.65**	**4.93**				**9/30/16**	**6.46**
Luxor Capital									
Net of Fee Return	**9.48**	**9.76**	**10.71**	**18.28**	**14.35**			**3/31/14**	**3.42**

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PERFORMANCE COMPARISON

Trailing Returns

Periods Ended December 31, 2018

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Myriad Opportunities									
Net of Fee Return	**-2.23**	**-6.02**	**-6.52**	**-5.29**				**6/30/16**	**4.88**
PAAMCO									
Net of Fee Return								**9/30/11**	
Pine River									
Net of Fee Return								**6/30/14**	
PRISMA Capital									
Net of Fee Return	**-1.17**	**-0.34**	**0.45**	**2.83**	**2.03**	**2.38**		**9/30/11**	**3.61**
SRS Partners US									
Net of Fee Return	**7.64**	**-0.98**	**0.83**	**1.24**				**9/30/17**	**3.41**
Senator LP									
Net of Fee Return	**-8.63**	**-7.82**	**-6.27**	**-8.52**				**9/30/16**	**1.68**
Tourbillon Global Equity									
Net of Fee Return	**-4.13**	**-5.24**	**0.02**	**-5.65**	**-9.36**			**12/31/15**	**-9.36**
Tricadia Select									
Net of Fee Return	**-3.19**	**-8.63**	**-21.58**	**-20.87**				**9/30/17**	**-19.75**
Absolute Return Composite									
Net of Fee Return	**-1.14**	**-0.93**	**-0.37**	**1.20**	**2.08**	**2.55**		**3/31/10**	**3.80**
HFRI FOF Div (1 Month Lag)	-3.16	-2.81	-2.39	-0.97	1.53	2.01		3/31/10	2.54
Value Added	2.02	1.88	2.02	2.17	0.55	0.54		3/31/10	1.26

Wilshire Consulting

CUSTOM BENCHMARK SPECIFICATION

Absolute Return Composite

December 31, 2018

	Quarter Start	Quarter End	Percent	Description
HFRI FOF Div (1 Month Lag)	6/10	12/18	100.00	HFRI FOF Div (1 Month Lag)