Wilshire

Retirement Board of Allegheny County

Executive Summary of Investment Performance

Quarter Ending December 31, 2016

Capital Markets Review

Asset Class Performance

Wilshire

Annual Asset Class Returns - Best to Worst

2011	2012	2013	2014	2015	**YTD 2016**
MLPs 13.9%	Emrg Mrkts 18.6%	U.S. Equity 33.1%	REITs 31.8%	REITs 4.2%	MLPs 18.3%
U.S. TIPS 13.6%	Developed 17.9%	MLPs 27.6%	U.S. Equity 12.7%	U.S. Equity 0.7%	High Yield 17.1%
REITs 9.2%	REITs 17.6%	Developed 23.3%	Core Bond 6.0%	Core Bond 0.6%	U.S. Equity 13.4%
Core Bond 7.8%	U.S. Equity 16.1%	High Yield 7.4%	MLPs 4.8%	T-Bills 0.1%	Commodities 11.8%
High Yield 5.0%	High Yield 15.8%	REITs 1.9%	U.S. TIPS 3.6%	Developed -0.4%	Emrg Mrkts 11.6%
U.S. Equity 1.0%	U.S. TIPS 7.0%	T-Bills 0.1%	High Yield 2.5%	U.S. TIPS -1.4%	REITs 7.2%
T-Bills 0.1%	MLPs 4.8%	Core Bond -2.0%	T-Bills 0.0%	High Yield -4.5%	U.S. TIPS 4.7%
Developed -11.7%	Core Bond 4.2%	Emrg Mrkts -2.3%	Emrg Mrkts -1.8%	Emrg Mrkts -14.6%	Core Bond 2.6%
Commodities -13.3%	T-Bills 0.1%	U.S. TIPS -8.6%	Developed -4.5%	Commodities -24.7%	Developed 1.5%
Emrg Mrkts -18.2%	Commodities -1.0%	Commodities -9.5%	Commodities -17.0%	MLPs -32.6%	T-Bills 0.3%

Annualized 5-Year as of Dec '16
U.S. Equity 14.7%
REITs 12.0%
High Yield 7.4%
Developed 7.0%
MLPs 2.2%
Core Bond 2.2%
Emrg Mrkts 1.6%
U.S. TIPS 0.9%
T-Bills 0.1%
Commodities -9.0%

Data sources: Wilshire Compass

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

U.S. Equity

The U.S. stock market was up for the fourth quarter by 4.5% and by 13.4% for all of 2016. This marks the fifth straight quarterly gain and, more remarkably, eighth straight annual gain for the broad U.S. market. A portion of that "winning streak" is due to a rebound from the global financial crisis sell-off. However, the market has continued to produce strong returns after the recovery period, with a 14% annualized gain for the past four years. Following a couple of rocky months to begin 2016, U.S. equities trended upward during the rest of the year.

Large capitalization stocks underperformed smaller shares while growth stocks trailed value. Sector performance was varied during the quarter. The best performing sector was Financials (+21.2%) while the main laggard was Health Care (-3.6%).

After trending downward for nearly three years, the 10-Year Treasury yield pushed higher during the fourth quarter, as did the breakeven inflation rate. Both shifts this year occurred largely after November 8th. Whether it was the election or the removal of an unknown that spurred the change is uncertain, but the timing is unmistakable. The Federal Reserve increased the Fed-funds rate in December to a range of 0.5%-0.75%, just the second increase since year-end 2008.

Non-U.S. Equity

Equity markets outside of the U.S. were in mostly positive territory for both the fourth quarter and year-to-date in local currency terms. However, a strong U.S. dollar resulted in losses for U.S. investors. The European Central Bank announced that they would be buying less per month than previously scheduled as part of their current quantitative easing but extended the buying period to December 2017. Despite a strong 2016, emerging market equities suffered during the fourth quarter following the U.S. election as investors feared weakening prospects for global trade and exports from emerging market countries.

Fixed Income

After falling for much of the first half of 2016, U.S. Treasury yields reversed course and moved higher for the remainder of the year. The bellwether 10-year Treasury yield reached a historic low of 1.37% in early July before climbing to end the year at 2.45%, accelerating its rise after the election. The Fed increased their overnight rate by 0.25% at their December meeting while credit spreads tightened during the quarter in both investment grade and high yield bonds. The move was dramatic enough within high yield to result in a net quarterly gain.

December 2016 Asset Class Assumptions

Wilshire

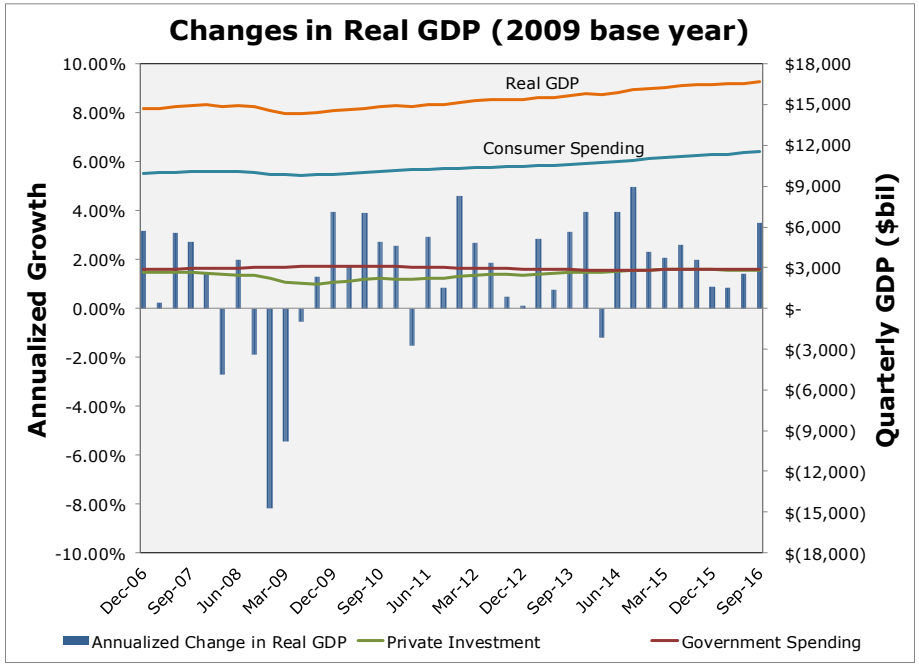
	Equity						Fixed Income						Real Assets					
													Real Estate					
	US Stock	Dev ex-US Stock	Emg Stock	Global ex-US Stock	Global Stock	Private Markets	Cash	Core Bond	LT Core Bond	TIPS	High Yield	ex-US Bond (Hdg)	US RES	Global RES	Private RE	Cmdty	Real Assets	US CPI
Expected Compound Return (%)	6.50	6.50	6.50	6.70	6.70	9.40	1.55	3.65	4.10	2.95	5.35	1.35	5.40	5.60	6.00	3.50	6.30	1.95
Expected Arithmetic Return (%)	7.80	7.95	9.45	8.30	8.05	12.60	1.55	3.80	4.55	3.10	5.80	1.40	6.75	6.75	6.90	4.55	6.65	1.95
Expected Risk (%)	17.00	18.00	26.00	18.75	17.15	27.50	1.25	5.15	9.85	6.00	10.00	3.50	17.00	15.80	14.00	15.00	8.40	1.75
Cash Yield (%)	2.00	3.00	2.25	2.85	2.40	0.00	1.55	3.80	5.05	3.30	8.40	1.80	3.95	3.95	2.85	1.55	2.85	
Correlations:																		
US Stock	1.00																	
Dev ex-US Stock	0.83	1.00																
Emerging Mkt Stock	0.75	0.75	1.00															
Global ex-US Stock	0.85	0.96	0.87	1.00														
Global Stock	0.96	0.94	0.84	0.96	1.00													
Private Markets	0.75	0.65	0.63	0.68	0.74	1.00												
Cash Equivalents	-0.05	-0.09	-0.05	-0.08	-0.07	0.00	1.00											
Core Bond	0.29	0.13	0.00	0.10	0.20	0.32	0.19	1.00										
LT Core Bond	0.32	0.16	0.01	0.12	0.23	0.33	0.11	0.95	1.00									
TIPS	-0.05	0.00	0.15	0.05	0.00	-0.03	0.20	0.61	0.48	1.00								
High Yield Bond	0.55	0.40	0.50	0.45	0.52	0.34	-0.10	0.25	0.33	0.05	1.00							
Non-US Bond (Hdg)	0.16	0.26	-0.01	0.19	0.18	0.27	0.10	0.68	0.65	0.40	0.27	1.00						
US RE Securities	0.60	0.48	0.45	0.50	0.57	0.51	-0.05	0.17	0.23	0.10	0.57	0.05	1.00					
Global RE Securities	0.66	0.60	0.57	0.63	0.67	0.58	-0.05	0.16	0.22	0.11	0.63	0.04	0.96	1.00				
Private Real Estate	0.55	0.45	0.45	0.48	0.53	0.51	-0.05	0.19	0.26	0.09	0.58	0.05	0.79	0.77	1.00			
Commodities	0.15	0.25	0.30	0.28	0.22	0.15	0.00	-0.04	-0.05	0.20	0.20	-0.05	0.26	0.29	0.25	1.00		
Real Asset Basket	0.40	0.41	0.48	0.46	0.45	0.38	0.02	0.24	0.26	0.41	0.51	0.08	0.66	0.70	0.70	0.56	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	0.04	0.05	0.40	0.25	1.00

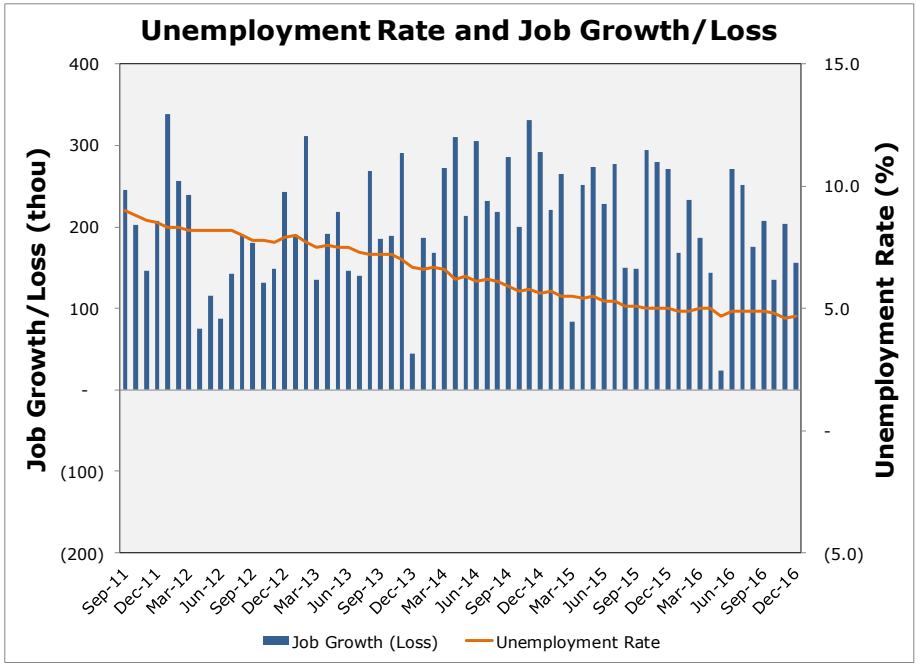
Economic Review

Wilshire

December 31, 2016	Key Economic Indicators			
CPI (all items)	Monthly Change		Cumulative Change	
Seasonally adjusted	Dec-16	0.3	3-Month	0.8
	Nov-16	0.2	12-Month	2.1
	Oct-16	0.4	10-Yr Annual	1.8
Breakeven Inflation	10-Year	2.0		
Consumer Sentiment	Dec-16	98.2		
Unv. of Michigan Survey	Nov-16	93.8		
	1-Yr Ago	92.6	10-Yr Avg	77.9
Manufacturing	Dec-16	54.7	Change in Manufacturing Sector	
Inst. for Supply Mgmt	Nov-16	53.2	>50	Expansion
Purchasing Mngrs' Idx	1-Yr Avg	51.5	<50	Contraction

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





Data sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Bank of St. Louis, Barclays Capital

U.S. Economic Growth

Wilshire

- Current economic expansion began during the second quarter of 2009
- Annualized real growth during that period is 2.1%
- Although it is one of the lengthiest expansions of the past 100+ years, cycles have been trending longer, in general
- Recessions typically last 1-2 years

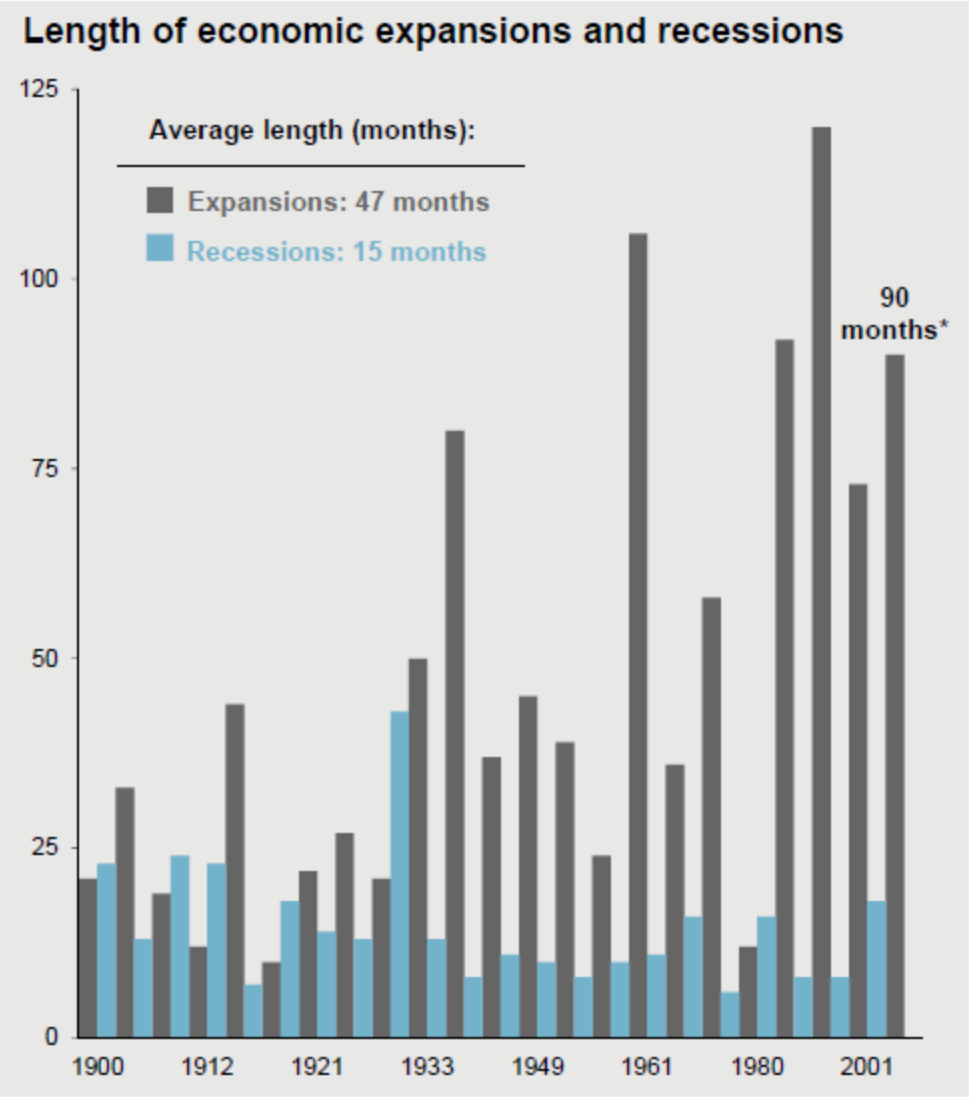


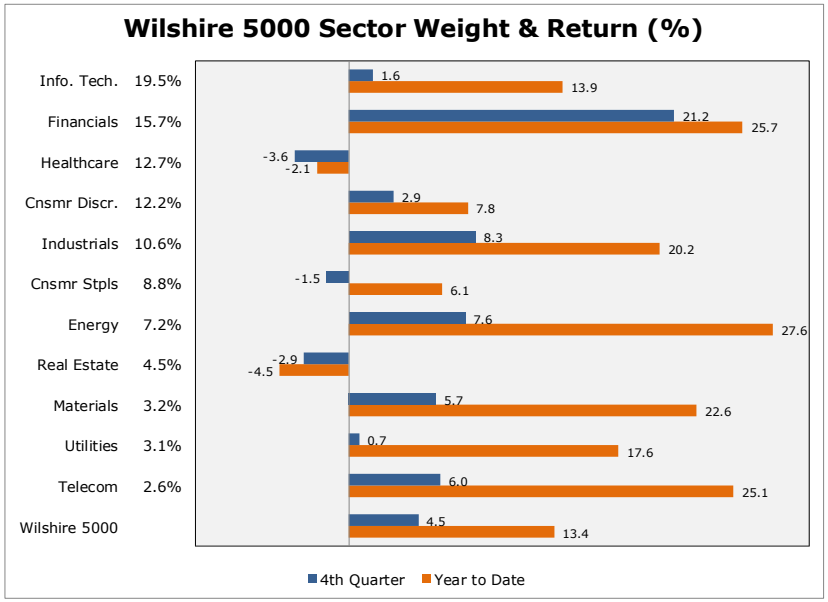
*Chart assumes that growth during Q4 2016 will be positive

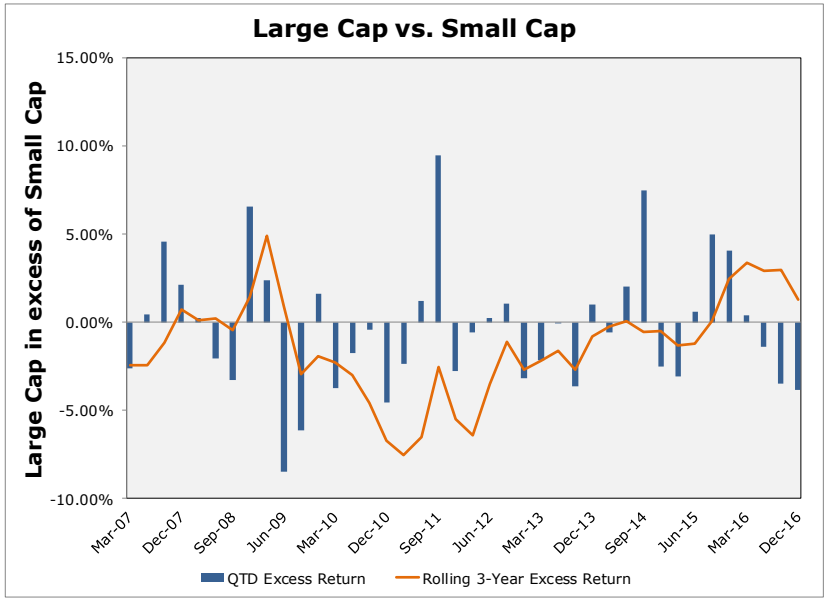
Source: J.P. Morgan Asset Management

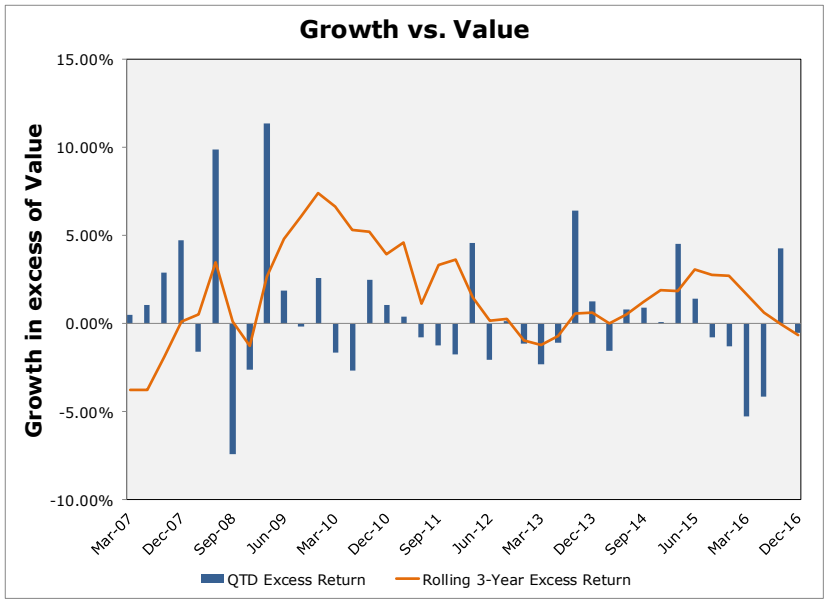
U.S. Equity Market

Wilshire

December 31, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Wilshire 5000	4.5	13.4	13.4	8.8	14.7	7.2
Wilshire U.S. Large Cap	4.1	12.5	12.5	8.9	14.6	7.1
Wilshire U.S. Small Cap	8.3	22.4	22.4	7.5	15.5	8.7
Wilshire U.S. Large Growth	3.9	9.0	9.0	8.7	15.2	8.2
Wilshire U.S. Large Value	4.4	15.4	15.4	9.0	14.1	5.8
Wilshire U.S. Small Growth	7.6	17.0	17.0	4.9	14.1	8.8
Wilshire U.S. Small Value	9.0	27.7	27.7	10.0	16.7	8.5
Wilshire REIT Index	-2.3	7.2	7.2	13.8	12.0	4.8
MSCI USA Minimum Volatility Index	0.0	9.8	9.8	10.1	12.8	7.5
FTSE RAFI U.S. 1000 Index	7.3	17.6	17.6	8.9	15.5	8.0





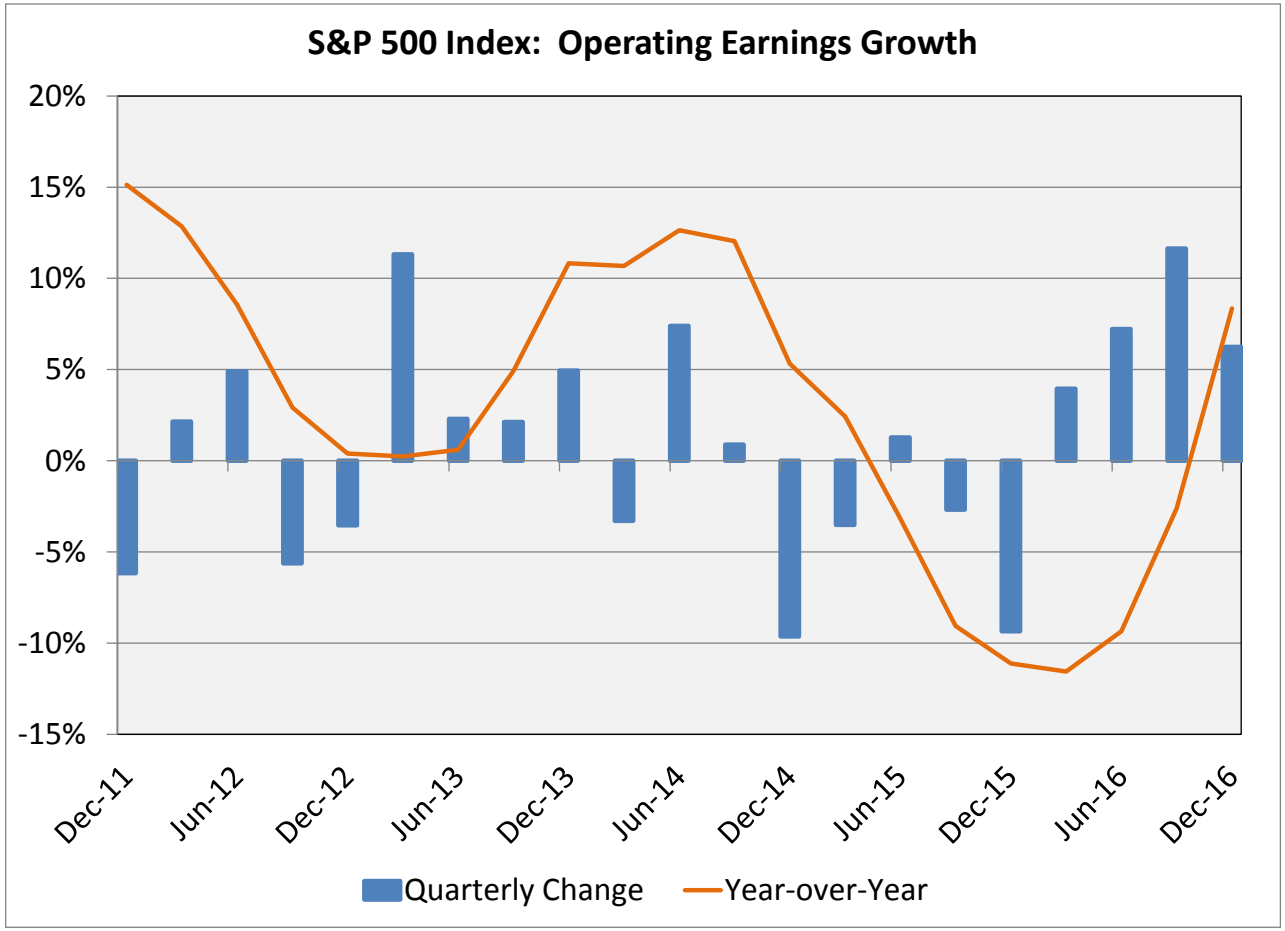


Data sources: Wilshire Compass, Wilshire Atlas

U.S. Corporate Earnings

Wilshire

- Troubling trend in the U.S. equity market reversed course during the year
- Operating earnings had been on the decline for approximately a year and a half before returning to growth in 2016

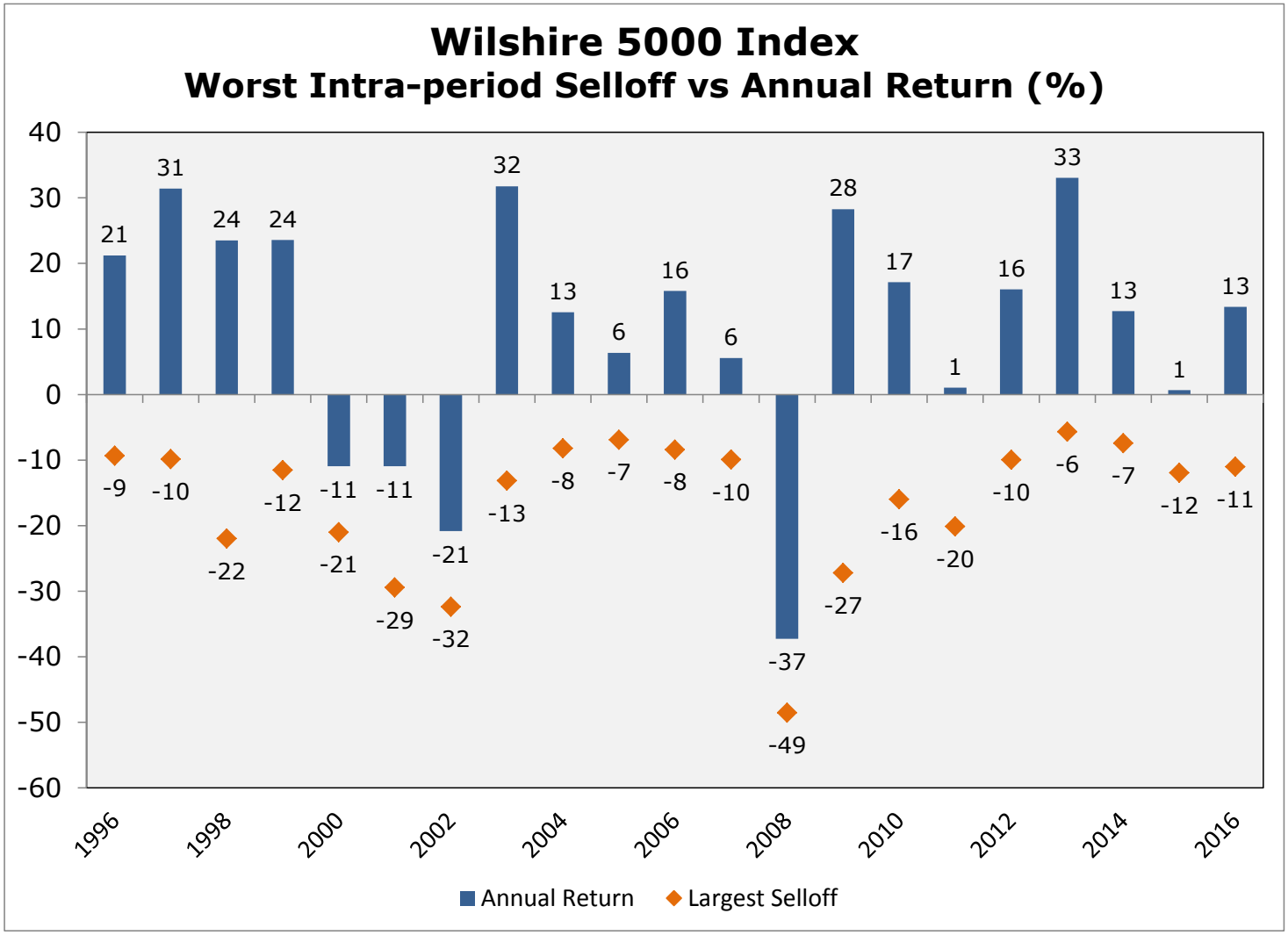


Source: S&P Dow Jones Indices

Annual Equity Returns

Wilshire

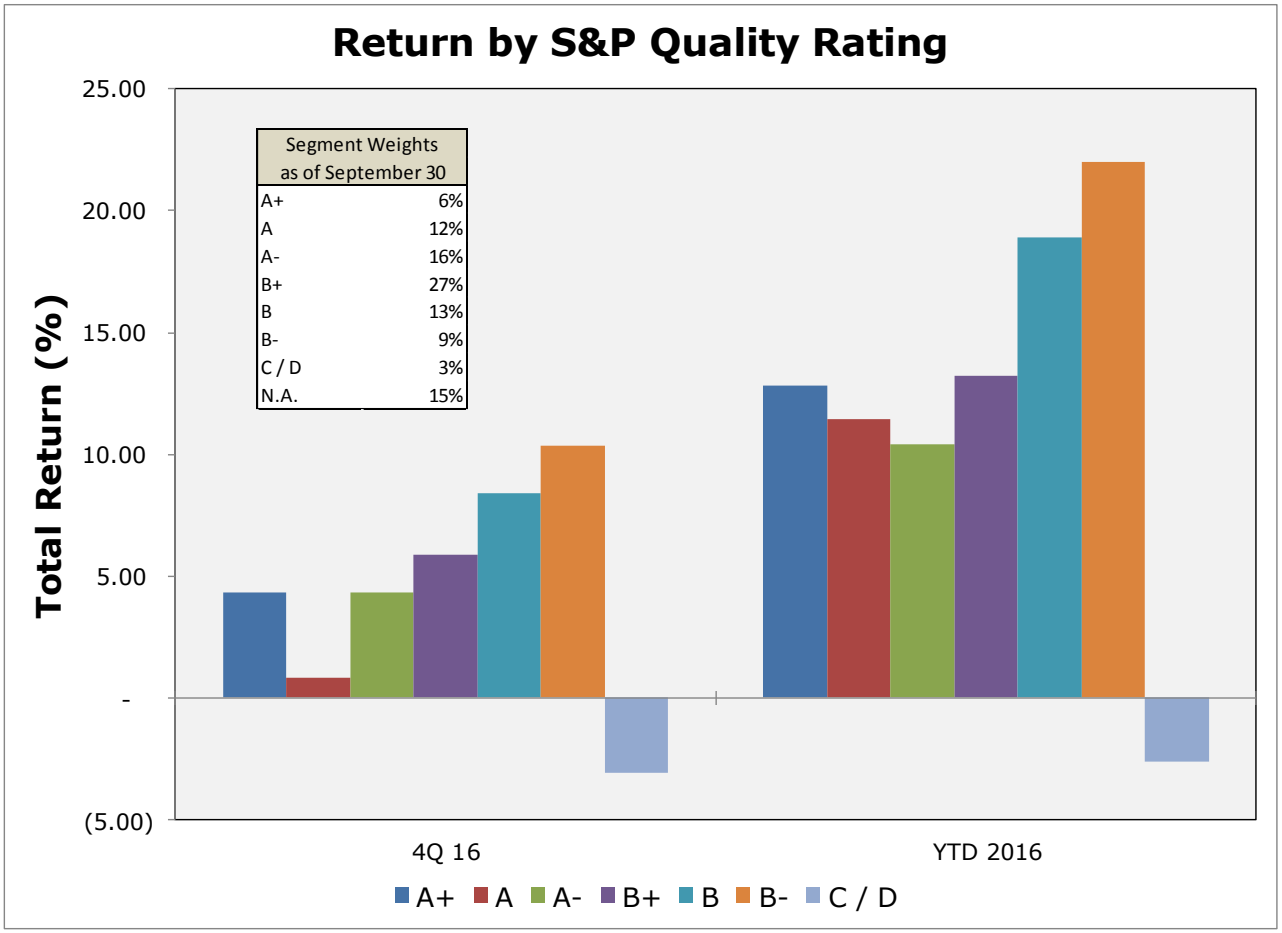
- U.S. Equity has now produced 8 straight years of positive returns since 2008
- Median selloff during the periods included below is -12%



Returns by Quality Segment

Wilshire

Relatively strong returns across most quality ratings for 2016; best performers in the B-range

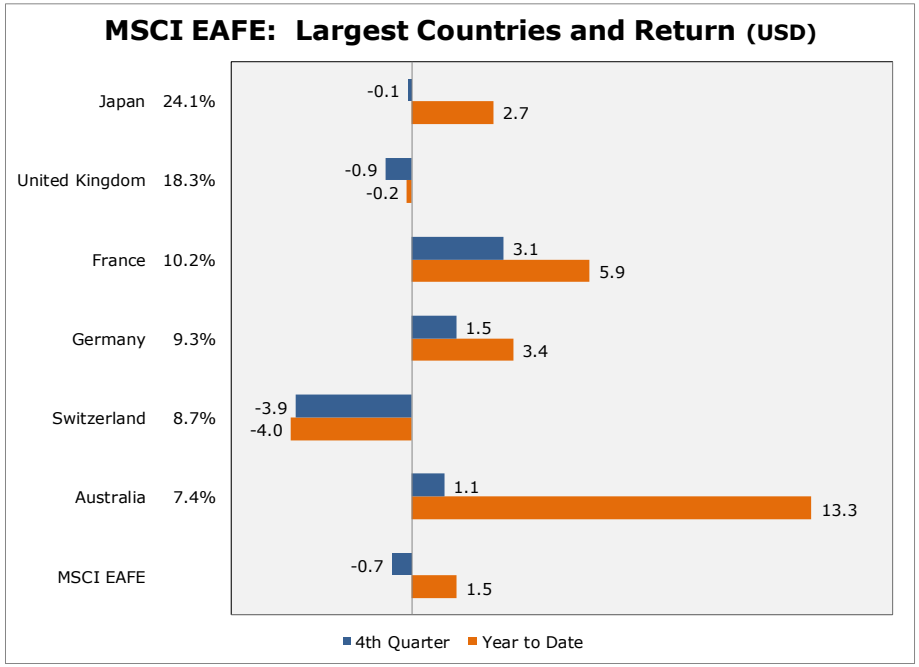


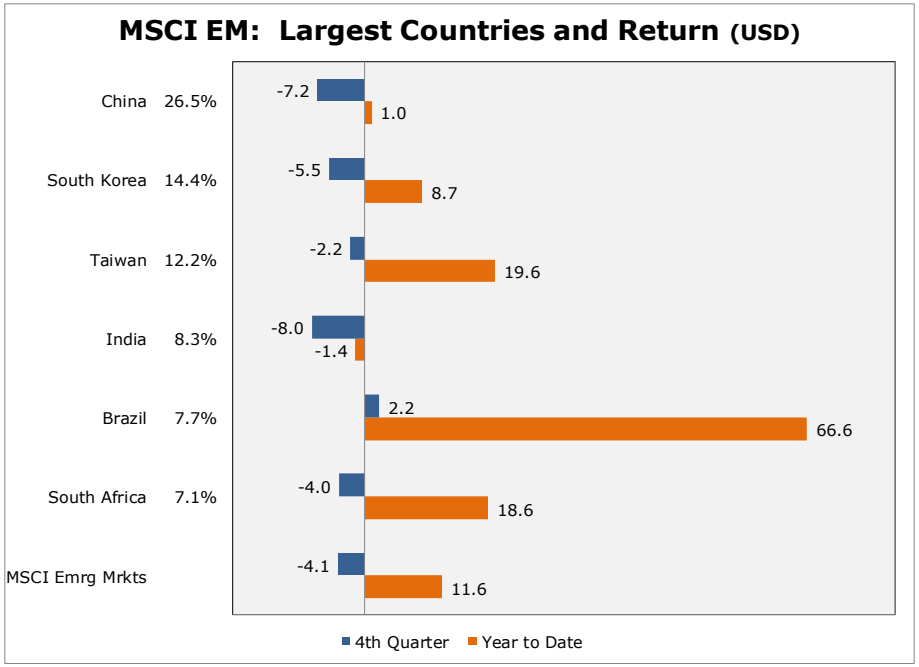
Data sources: Wilshire Atlas

Non-U.S. Equity Market

Wilshire

December 31, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
MSCI ACWI ex-US ($g)	-1.2	5.0	5.0	-1.3	5.5	1.4
MSCI EAFE ($g)	-0.7	1.5	1.5	-1.2	7.0	1.2
MSCI Emerging Markets ($g)	-4.1	11.6	11.6	-2.2	1.6	2.2
MSCI Frontier Markets ($g)	0.5	3.2	3.2	-1.7	5.6	0.0
MSCI ACWI ex-US Growth ($g)	-5.7	0.5	0.5	-0.9	5.7	1.9
MSCI ACWI ex-US Value ($g)	3.4	9.6	9.6	-1.9	5.2	0.9
MSCI ACWI ex-US Small ($g)	-3.5	4.8	4.8	1.3	8.2	3.3
MSCI EAFE Minimum Volatility Idx	-6.5	-1.4	-1.4	3.9	8.0	4.2
FTSE RAFI Developed ex-US Index	3.7	7.3	7.3	-0.9	7.2	1.9
MSCI EAFE LC (g)	7.1	5.9	5.9	6.0	12.4	2.7
MSCI Emerging Markets LC (g)	-1.4	10.1	10.1	3.2	6.0	4.7



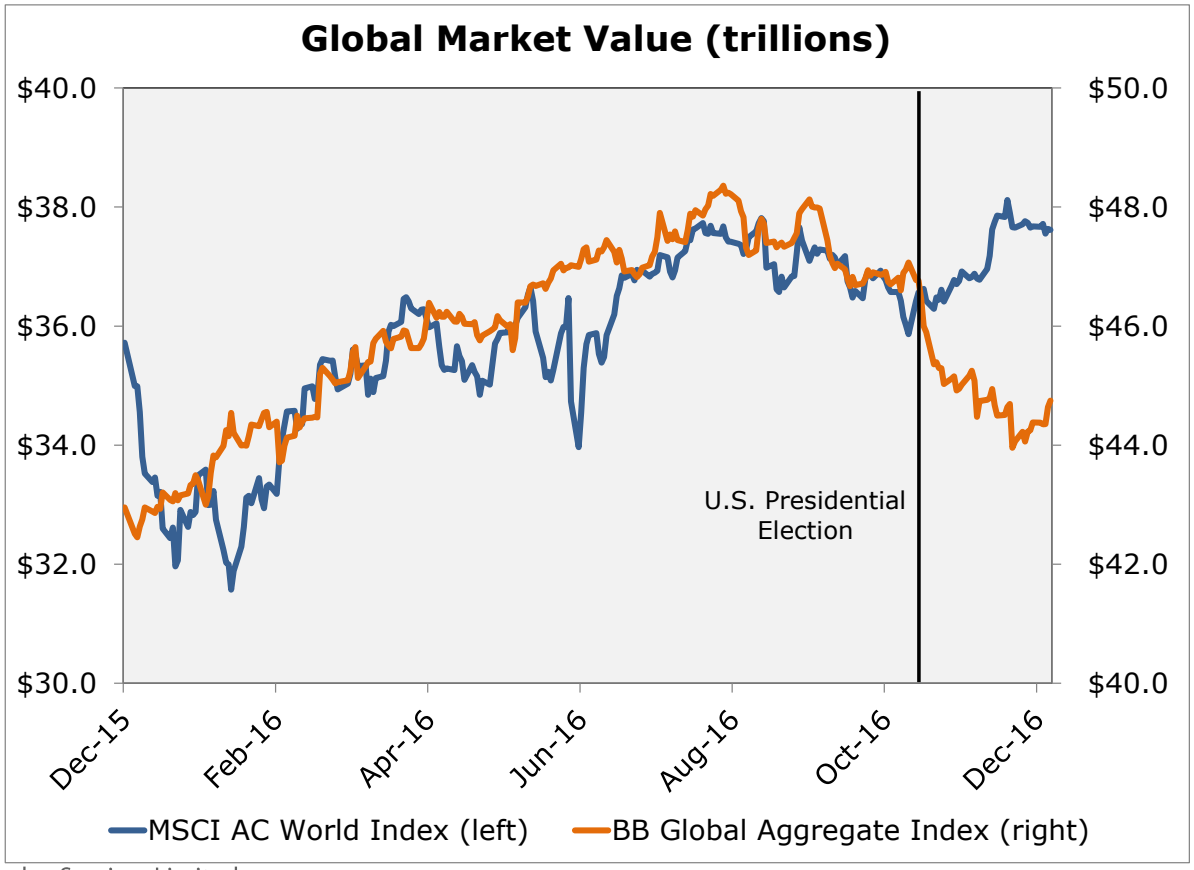


Data sources: Wilshire Compass

Global Stocks & Bonds

Wilshire

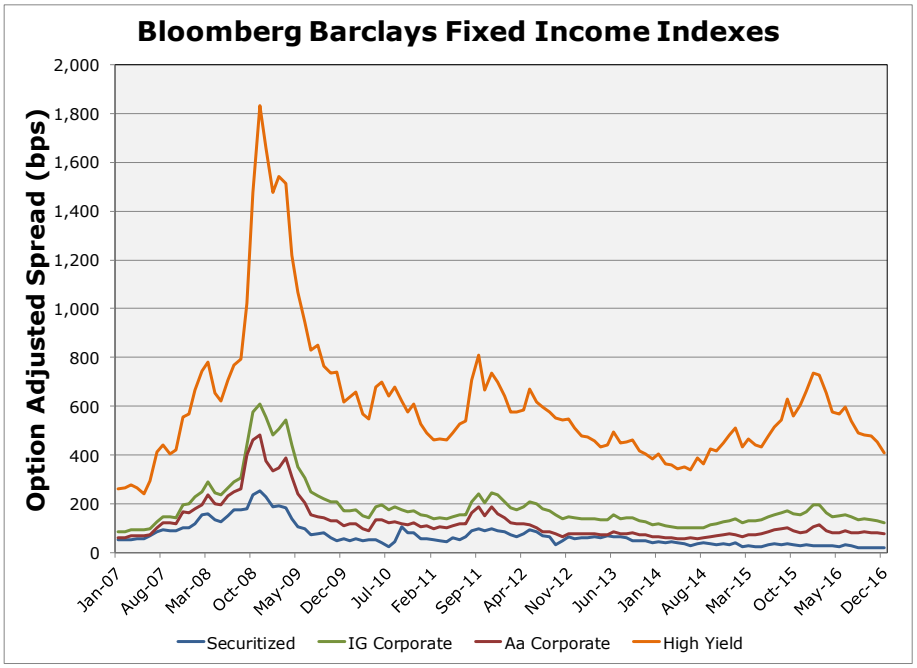
- Major shift in asset values since November 8th
  - Global equity up $1 trillion
  - Global investment grade fixed income down $2 trillion
- Various sources have reported strong fund flows into equities

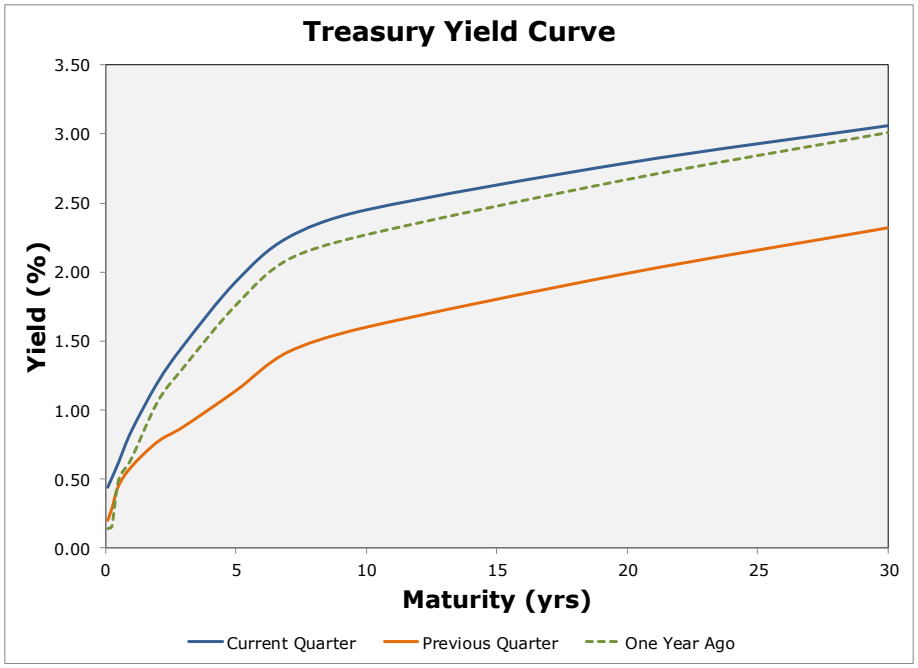


Source: Wilshire Atlas, Bloomberg Index Services Limited

U.S. Fixed Income Market

December 31, 2016	YTM	Duration	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Bloomberg Barclays Aggregate	2.6	5.9	-3.0	2.6	2.6	3.0	2.2	4.3
Bloomberg Barclays Treasury	1.9	6.1	-3.8	1.0	1.0	2.3	1.2	4.0
Bloomberg Barclays Govt-Related	2.6	5.4	-3.1	2.7	2.7	2.8	2.1	4.1
Bloomberg Barclays Securitized	2.8	4.6	-2.0	1.8	1.8	3.0	2.1	4.2
Bloomberg Barclays Corporate IG	3.4	7.3	-2.8	6.1	6.1	4.2	4.1	5.5
Bloomberg Barclays LT Govt/Credit	4.0	15.0	-7.8	6.7	6.7	7.2	4.1	6.9
Bloomberg Barclays LT Treasury	3.0	17.4	-11.7	1.3	1.3	7.8	2.5	6.7
Bloomberg Barclays LT Govt-Rel.	4.5	12.0	-7.5	6.0	6.0	6.6	4.2	6.7
Bloomberg Barclays LT Corp. IG	4.5	13.8	-5.0	11.0	11.0	7.0	5.4	6.9
Bloomberg Barclays U.S. TIPS	0.6	8.2	-2.4	4.7	4.7	2.3	0.9	4.4
Bloomberg Barclays High Yield	6.5	4.1	1.8	17.1	17.1	4.7	7.4	7.4
Treasury Bills	0.5	0.25	0.1	0.3	0.3	0.1	0.1	0.8





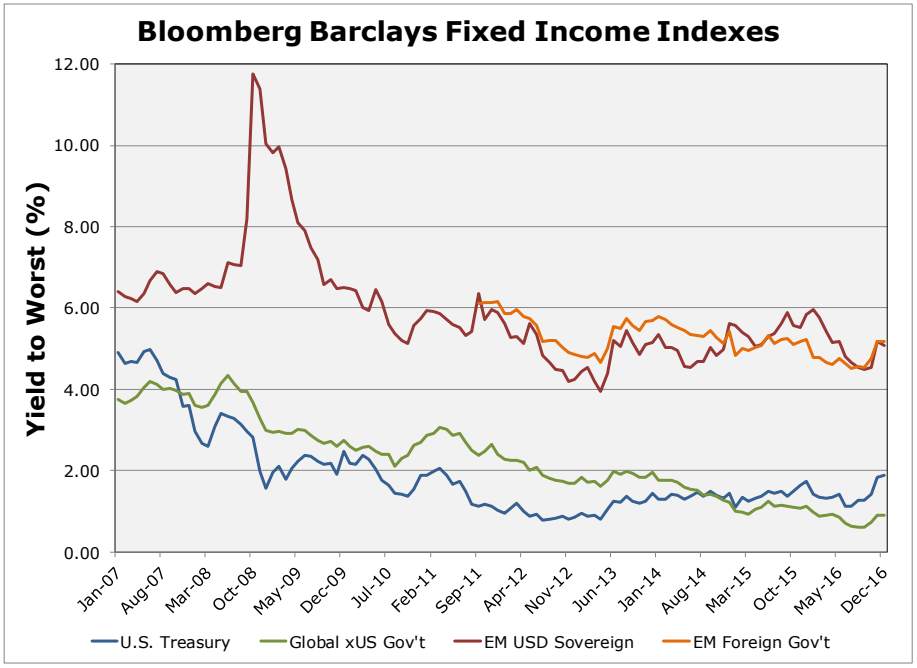
Data sources: Wilshire Compass, Bloomberg Barclays, U.S. Treasury

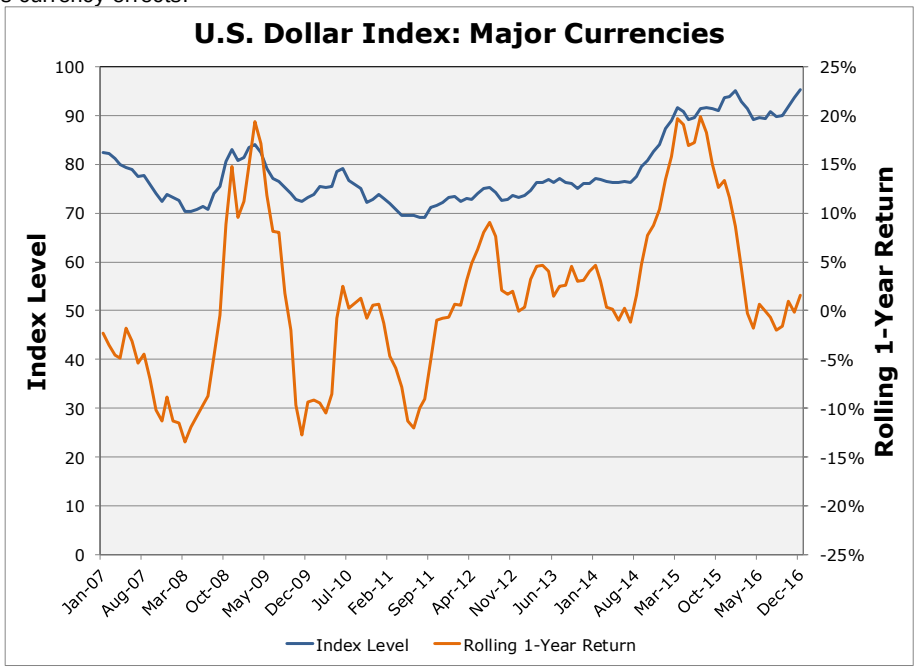
Non-U.S. Fixed Income Market

Wilshire

December 31, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Developed Markets						
Bloomberg Barclays Global Aggregate xUS	-10.3	1.5	1.5	-2.6	-1.4	2.4
Bloomberg Barclays Global Aggregate xUS *	-1.9	4.9	4.9	5.0	4.5	4.4
Bloomberg Barclays Wrld Govt xUS IL Bond	-7.4	3.3	3.3	-0.2	1.1	3.0
Bloomberg Barclays Wrld Govt xUS IL Bond *	-1.8	14.4	14.4	9.0	5.9	5.9
Emerging Mrkts (Hard Currency)						
Bloomberg Barclays EM USD Aggregate	-2.6	9.9	9.9	5.3	5.7	6.7
Emerging Mrkts (Foreign Currency)						
Bloomberg Barclays EM Local Currency Gov't	-7.5	5.9	5.9	-2.4	0.5	n.a.
Bloomberg Barclays EM Local Currency Gov't *	-2.8	3.3	3.3	2.7	2.5	n.a.
Euro vs. Dollar	-6.1	-2.9	-2.9	-8.5	-4.1	-2.2
Yen vs. Dollar	-13.2	3.1	3.1	-3.4	-8.0	0.2
Pound vs. Dollar	-4.9	-16.2	-16.2	-9.3	-4.5	-4.5

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



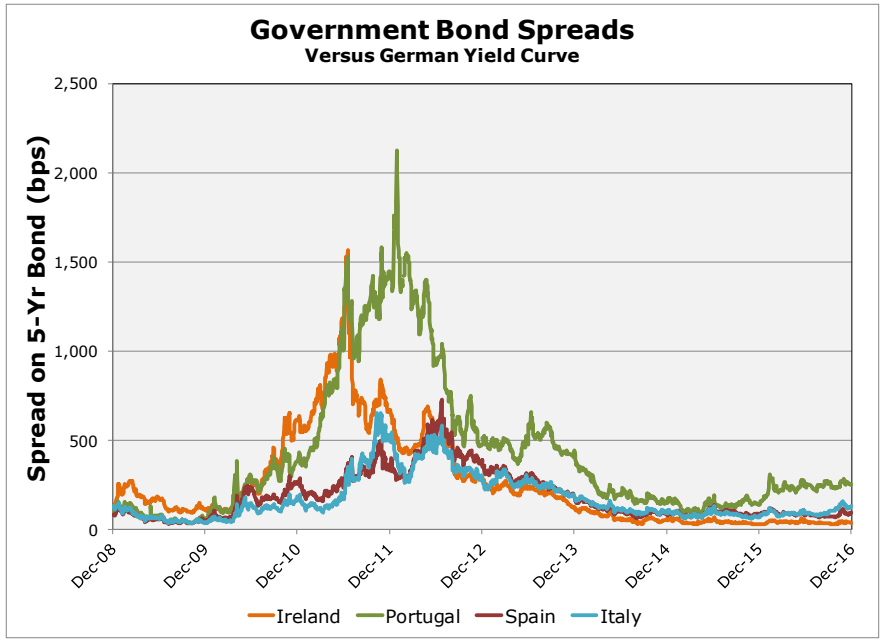


Data sources: Wilshire Compass, Bloomberg Barclays

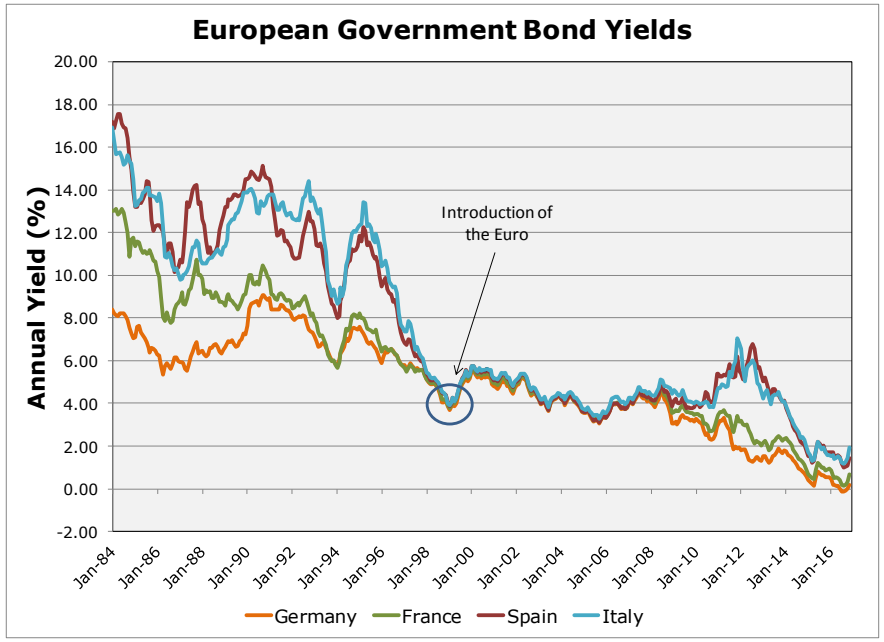
European Debt

Wilshire

- Spreads on Portugal's government debt have risen as the country faces the possibility of a downgrade, which would disqualify them from the European Central Bank's bond purchase program



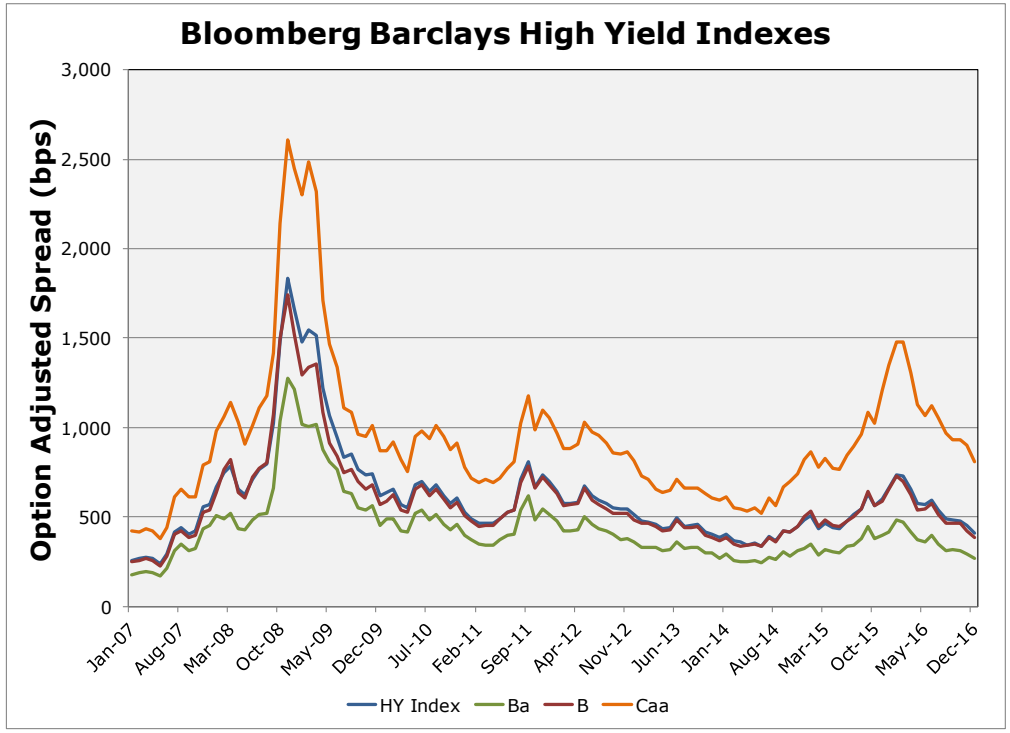
- Yields on government bonds have edged higher with German yields back above zero



Source: Bloomberg Barclays, International Monetary Fund

High Yield Bond Market

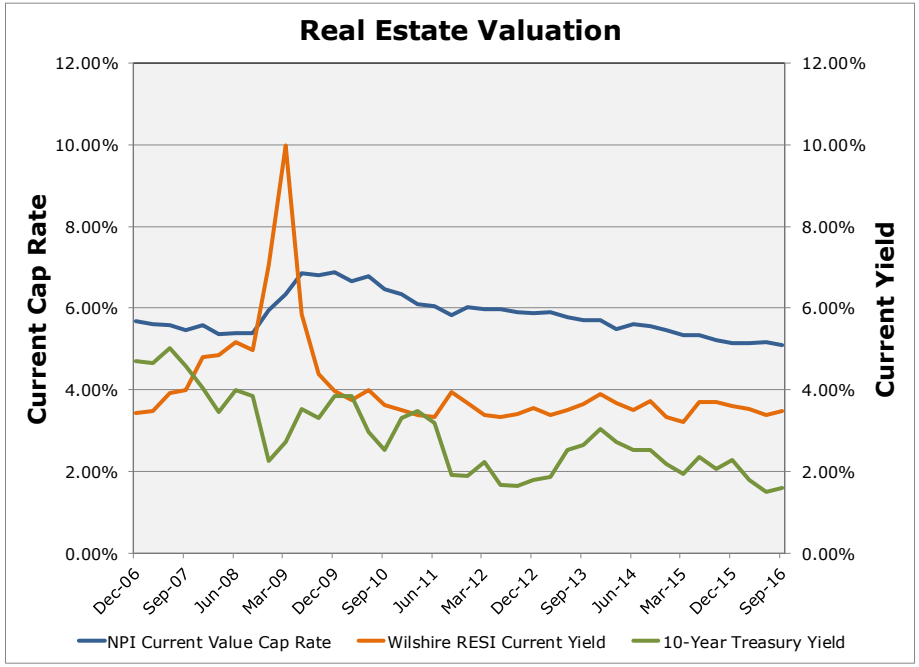
December 31, 2016	Weight	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Bloomberg Barclays High Yield Idx	100%	1.8	17.1	17.1	4.7	7.4	7.4
Quality Distribution							
Ba U.S. High Yield	45.4%	0.4	12.8	12.8	5.6	7.2	7.8
B U.S. High Yield	38.1%	2.0	15.8	15.8	3.8	6.8	6.2
Caa U.S. High Yield	15.6%	4.7	31.5	31.5	4.5	9.0	6.7
Ca to D U.S. High Yield	0.7%	12.2	83.1	83.1	-21.1	-7.7	-2.4
Non-Rated U.S. High Yield	0.3%	1.4	5.8	5.8	-4.0	3.2	0.3

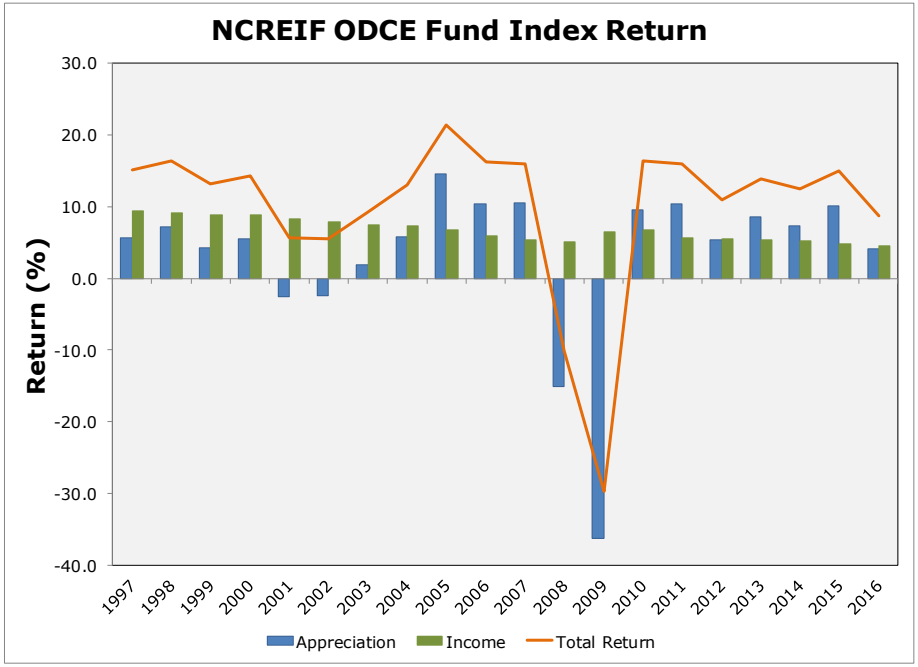


Data sources: Bloomberg Barclays

Real Assets

December 31, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Barclays U.S. TIPS Index	-2.4	4.7	4.7	2.3	0.9	4.4
Bloomberg Commodity Index	2.7	11.8	11.8	-11.3	-9.0	-5.6
Wilshire Global RESI Index	-3.9	5.8	5.8	9.0	11.2	3.2
NCREIF ODCE Fund Index	2.1	8.7	8.7	12.0	12.2	5.8
NCREIF Timberland Index	1.2	2.6	2.6	6.0	7.1	5.8
Alerian MLP Index (Oil & Gas)	2.0	18.3	18.3	-5.8	2.2	8.0





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

Total Fund

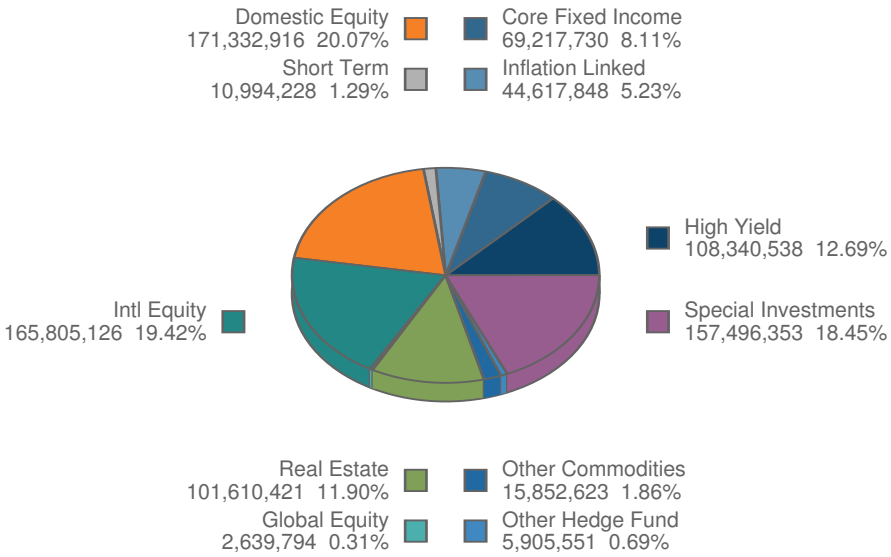
Actual Allocation vs Policy Allocation

Wilshire

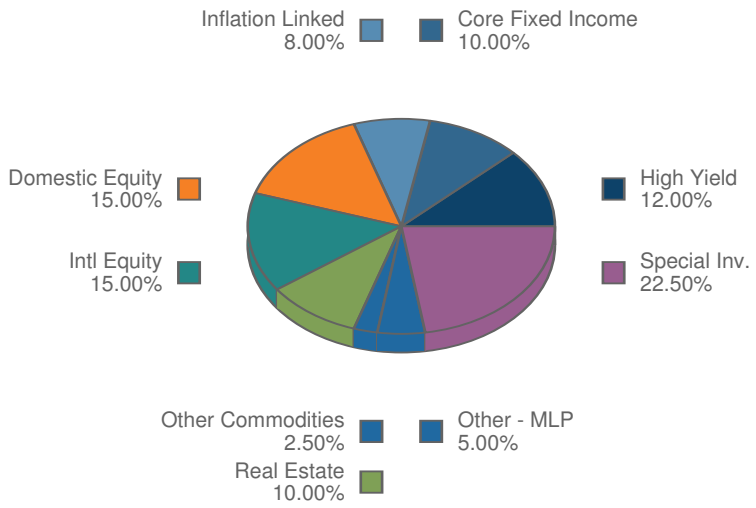
Total Fund Composite

As of December 31, 2016

Total Fund



Policy Index

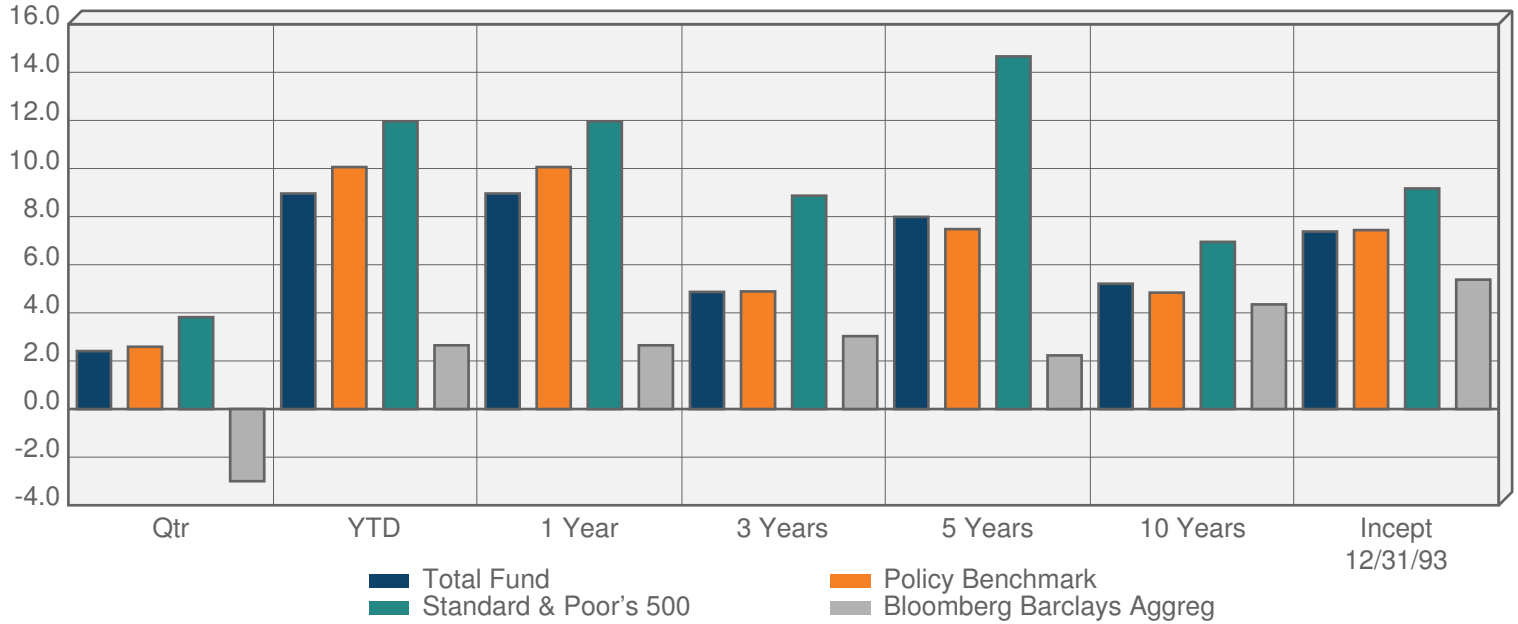


$860,745,015

Wilshire

Total Fund Composite

Periods Ended December 31, 2016

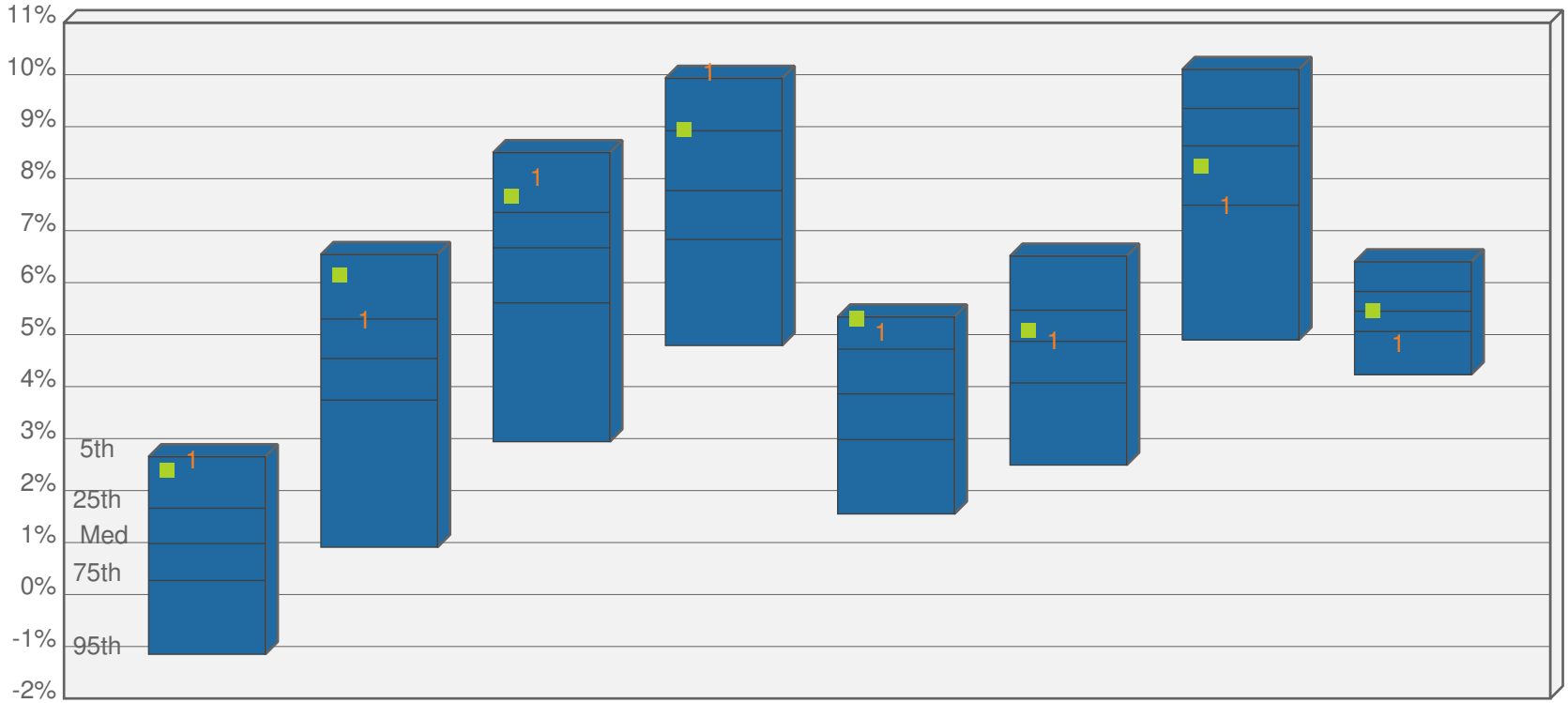


Total Returns	Qtr	YTD	1 Year	3 Years	5 Years	10 Years	Incept 12/31/93
Total Fund	2.41	8.96	8.96	4.87	7.99	5.21	7.38
Policy Benchmark	2.59	10.06	10.06	4.89	7.48	4.84	7.44
Standard & Poor's 500	3.82	11.96	11.96	8.87	14.66	6.95	9.17
Bloomberg Barclays Aggregate	-2.98	2.65	2.65	3.03	2.23	4.35	5.38

Wilshire

Total Fund Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Total Fund	2.41 (8)	6.17 (10)	7.69 (18)	8.97 (21)	5.34 (5)	5.10 (43)	8.27 (65)	5.48 (48)
1 Policy Benchmark	2.59 (5)	5.28 (26)	8.03 (11)	10.06 (4)	5.06 (12)	4.89 (49)	7.48 (76)	4.84 (84)
5th %tile	2.65	6.54	8.50	9.93	5.34	6.51	10.10	6.40
25th %tile	1.66	5.30	7.35	8.92	4.72	5.47	9.35	5.83
Median	0.98	4.54	6.67	7.77	3.86	4.87	8.63	5.45
75th %tile	0.27	3.74	5.61	6.83	2.98	4.07	7.49	5.06
95th %tile	-1.15	0.91	2.94	4.79	1.55	2.49	4.90	4.23
Number of Funds	178	178	178	173	169	168	166	136

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

Performance Comparison

Wilshire

Trailing Returns

Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
US Equity Composite									
Net of Fee Return	**4.75**	**9.87**	**12.13**	**12.46**	**8.11**	**14.27**	**6.99**	**12/31/93**	**8.48**
Wilshire 5000	4.54	9.03	12.06	13.37	8.76	14.71	7.17	12/31/93	9.20
Value Added	0.20	0.84	0.08	-0.91	-0.64	-0.44	-0.18	12/31/93	-0.72
Non US Equity Composite									
Net of Fee Return	**-2.15**	**6.54**	**5.36**	**4.71**	**-0.26**	**6.23**	**1.30**	**12/31/00**	**4.27**
Policy Index	-1.57	5.37	4.65	4.41	-1.44	5.22	0.49	12/31/00	3.21
Value Added	-0.58	1.18	0.71	0.31	1.17	1.01	0.81	12/31/00	1.07
Global Equity									
Net of Fee Return	**-1.17**	**4.84**	**7.06**	**8.46**				**12/31/14**	**1.48**
MSCI ACWI (N)	1.19	6.55	7.61	7.86				12/31/14	2.62
Value Added	-2.36	-1.71	-0.55	0.60				12/31/14	-1.14
Core Fixed Composite									
Net of Fee Return	**-2.24**	**-1.51**	**0.55**	**3.26**	**2.89**	**2.43**	**4.44**	**9/30/82**	**7.99**
Barclays Aggregate	-2.98	-2.53	-0.37	2.65	3.03	2.23	4.35	9/30/82	7.53
Value Added	0.74	1.02	0.92	0.61	-0.14	0.19	0.10	9/30/82	0.45
High Yield Fixed Composite									
Net of Fee Return	**2.57**	**7.95**	**13.14**	**15.82**	**2.50**	**5.66**		**3/31/08**	**7.74**
Citi High Yield Market Capped	1.90	7.40	13.82	17.56	4.21	6.84		3/31/08	8.06
Value Added	0.67	0.55	-0.68	-1.74	-1.71	-1.18		3/31/08	-0.32
TIPS Fixed Composite									
Net of Fee Return	**-0.66**	**0.39**	**2.00**	**5.74**	**2.02**	**0.94**		**3/31/08**	**3.15**
Barclays U.S. TIPS	-2.41	-1.47	0.22	4.68	2.26	0.89		3/31/08	3.09
Value Added	1.75	1.85	1.78	1.06	-0.24	0.04		3/31/08	0.05

Performance Comparison

Wilshire

Trailing Returns

Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
ERECT Composite									
Net of Fee Return	**-0.74**	**0.83**	**5.10**	**9.26**	**6.97**	**7.07**		**9/30/10**	**6.86**
Real Estate Composite									
Net of Fee Return	**2.89**	**4.97**	**6.46**	**7.88**	**10.68**	**11.66**	**5.88**	**3/31/03**	**8.81**
NCREIF ODCE NOF	1.88	3.74	5.73	7.79	11.04	11.16	4.84	3/31/03	7.35
Value Added	1.01	1.23	0.73	0.09	-0.36	0.50	1.03	3/31/03	1.46
Hedge Fund Composite									
Net of Fee Return	**5.14**	**17.33**	**32.87**	**29.73**	**3.65**	**4.97**		**9/30/11**	**4.05**
91 Day T-Bill Index + 3%	0.83	1.67	2.49	3.33	3.14	3.12		9/30/11	3.11
Value Added	4.31	15.66	30.38	26.41	0.51	1.85		9/30/11	0.94
Commodities Composite									
Net of Fee Return	**4.48**	**0.19**	**11.78**	**11.47**	**-11.71**	**-8.03**		**3/31/07**	**-4.78**
Bloomberg Commodity Index	2.66	-1.31	11.30	11.77	-11.26	-8.95		3/31/07	-6.15
Value Added	1.82	1.50	0.48	-0.30	-0.45	0.92		3/31/07	1.36
Life Settlement Composite									
Net of Fee Return	**-1.75**	**-3.43**	**-6.61**	**-9.60**	**-4.97**	**1.76**		**9/30/09**	**12.60**
Israel Bonds and Cash									
Net of Fee Return	**-0.73**	**-0.30**	**0.12**	**0.60**	**2.01**	**1.56**	**3.43**	**3/31/99**	**3.16**
Private Equity Composite									
Net of Fee Return	**9.49**	**9.57**	**9.90**	**12.90**	**13.19**	**12.64**	**9.19**	**3/31/03**	**6.27**
RBAC Custom Private Equity Bench	9.49	9.57	9.90	12.90	13.19	12.64	9.19	3/31/03	6.27
Value Added	0.00	-0.00	0.00	0.00	0.00	0.00	0.00	3/31/03	0.00

Wilshire

Trailing Returns

Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Total Fund									
Net of Fee Return	**2.41**	**6.17**	**7.69**	**8.96**	**4.87**	**7.99**	**5.21**	**12/31/93**	**7.38**
Policy Benchmark	2.59	5.28	8.03	10.06	4.89	7.48	4.84	12/31/93	7.44
Value Added	-0.17	0.89	-0.34	-1.10	-0.01	0.51	0.37	12/31/93	-0.06

Custom Benchmark Specification

Wilshire

Total Fund

December 31, 2016

	Quarter Start	Quarter End	Percent	Description
Policy Benchmark	12/93	12/06	65.00	Russell 3000
			35.00	Bloomberg Barclays Aggregate
	3/07	6/08	5.00	RBAC Custom Private Equity Benchmark
			45.00	Wilshire 5000
			25.00	Bloomberg Barclays Aggregate
			10.00	MSCI EAFE Index (N)
			5.00	Bloomberg Commodity Index
			5.00	91-Day T-Bill + 3.0% Ann (Monthly)
			5.00	NCREIF ODCE NOF
	9/08	9/08	5.00	RBAC Custom Private Equity Benchmark
			5.00	NCREIF ODCE NOF
			5.00	91-Day T-Bill + 3.0% Ann (Monthly)
			5.00	Bloomberg Commodity Index
			10.00	MSCI ACWI X US (N)
			25.00	Bloomberg Barclays Aggregate
			45.00	Wilshire 5000
	12/08	6/09	5.00	RBAC Custom Private Equity Benchmark
			2.50	91-Day T-Bill + 3.0% Ann (Monthly)
			5.00	Citi High Yield Market Capped
			5.00	Bloomberg Barclays U.S. TIPS
			5.00	Bloomberg Commodity Index
			7.50	NCREIF ODCE NOF
			15.00	MSCI ACWI X US (N)
			20.00	Bloomberg Barclays Aggregate
			35.00	Wilshire 5000
	9/09	3/10	5.00	RBAC Custom Private Equity Benchmark
			30.00	Wilshire 5000
			20.00	MSCI ACWI X US (N)
			15.00	Bloomberg Barclays Aggregate

Custom Benchmark Specification

Wilshire

Total Fund

December 31, 2016

	Quarter Start	Quarter End	Percent	Description
Policy Benchmark (cont.)			10.00	Citi High Yield Market Capped
			10.00	NCREIF ODCE NOF
			7.50	Bloomberg Barclays U.S. TIPS
			2.50	Bloomberg Commodity Index
	6/10	12/12	10.00	RBAC Custom Private Equity Benchmark
			5.00	Bloomberg Commodity Index
			6.00	Bloomberg Barclays U.S. TIPS
			10.00	NCREIF ODCE NOF
			10.00	Citi High Yield Market Capped
			14.00	Bloomberg Barclays Aggregate
			20.00	Wilshire 5000
			25.00	MSCI ACWI X US (N)
	3/13	12/16	20.00	RBAC Custom Private Equity Benchmark
			18.90	MSCI ACWI X US (N)
			16.10	Wilshire 5000
			12.00	Citi High Yield Market Capped
			10.00	Bloomberg Barclays Aggregate
			10.00	NCREIF ODCE NOF
			8.00	Bloomberg Commodity Index
			5.00	Bloomberg Barclays U.S. TIPS

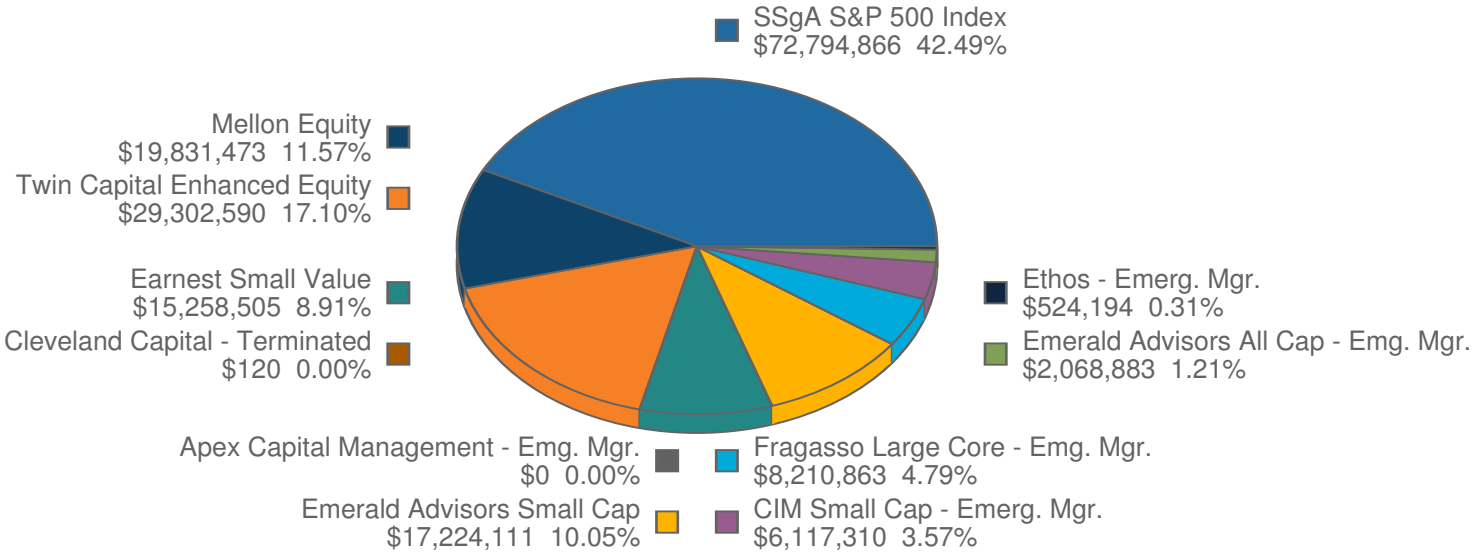
US Equity

Manager Allocation

Wilshire

US Equity Composite

As of December 31, 2016

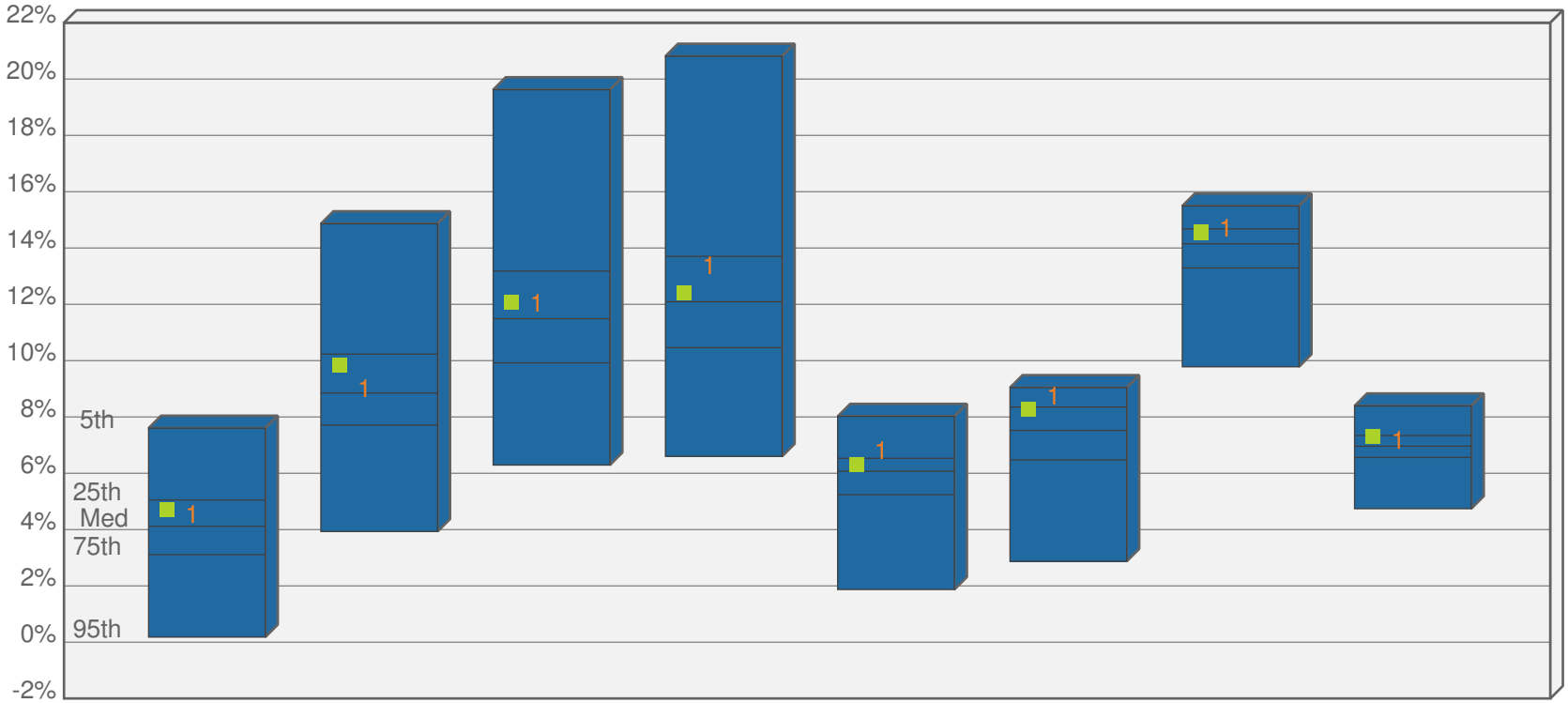


Performance Comparison

Wilshire

US Equity Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
US Equity Composite	4.75 (31)	9.87 (30)	12.13 (35)	12.46 (45)	6.34 (38)	8.31 (27)	14.59 (36)	7.35 (23)
1 Wilshire 5000	4.54 (34)	9.03 (43)	12.06 (37)	13.37 (26)	6.83 (16)	8.76 (13)	14.71 (23)	7.17 (40)
5th %tile	7.60	14.86	19.62	20.81	8.02	9.04	15.49	8.39
25th %tile	5.05	10.23	13.18	13.70	6.53	8.35	14.68	7.34
Median	4.12	8.85	11.49	12.09	6.07	7.52	14.15	6.96
75th %tile	3.11	7.71	9.92	10.46	5.24	6.47	13.29	6.56
95th %tile	0.18	3.93	6.29	6.60	1.87	2.87	9.78	4.74
Number of Funds	181	175	172	165	153	146	121	88

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

Performance Comparison

Wilshire

Trailing Returns

Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
SSgA S&P 500 Index									
Net of Fee Return	**3.85**	**7.88**	**10.52**	**12.03**	**8.90**	**14.68**		**12/31/07**	**7.16**
Standard & Poor's 500	3.82	7.82	10.47	11.96	8.87	14.66		12/31/07	7.10
Value Added	0.03	0.06	0.05	0.07	0.03	0.02		12/31/07	0.05
Mellon Equity									
Net of Fee Return	**4.06**	**7.61**	**8.07**	**9.26**	**7.67**	**13.46**	**7.09**	**3/31/94**	**9.35**
Standard & Poor's 500	3.82	7.82	10.47	11.96	8.87	14.66	6.95	3/31/94	9.47
Value Added	0.23	-0.22	-2.40	-2.70	-1.20	-1.20	0.14	3/31/94	-0.11
Twin Capital Enhanced Equity									
Net of Fee Return	**4.92**	**8.99**	**10.69**	**11.94**	**9.24**	**14.76**	**7.20**	**12/31/05**	**7.99**
Standard & Poor's 500	3.82	7.82	10.47	11.96	8.87	14.66	6.95	12/31/05	7.72
Value Added	1.10	1.17	0.22	-0.02	0.36	0.10	0.26	12/31/05	0.27
Earnest Small Value									
Net of Fee Return	**9.52**	**17.06**	**21.04**	**24.55**	**9.06**	**14.98**		**6/30/09**	**15.86**
Russell 2000 Value	14.07	24.19	29.54	31.74	8.31	15.07		6/30/09	15.87
Value Added	-4.55	-7.12	-8.49	-7.19	0.76	-0.08		6/30/09	-0.00
Emerald Advisors Small Cap									
Net of Fee Return	**4.04**	**14.62**	**17.42**	**10.20**	**7.14**	**16.71**	**9.17**	**9/30/04**	**10.23**
Russell 2000 Growth	3.57	13.12	16.79	11.32	5.05	13.74	7.75	9/30/04	8.98
Value Added	0.47	1.50	0.64	-1.12	2.09	2.97	1.42	9/30/04	1.26
Fragasso Large Core - Emg. Mgr.									
Net of Fee Return	**3.46**	**8.55**	**11.08**	**14.09**	**7.78**			**9/30/12**	**12.19**
Standard & Poor's 500	3.82	7.82	10.47	11.96	8.87			9/30/12	13.33
Value Added	-0.36	0.72	0.61	2.13	-1.09			9/30/12	-1.14

Wilshire

Trailing Returns

Periods Ended December 31, 2016

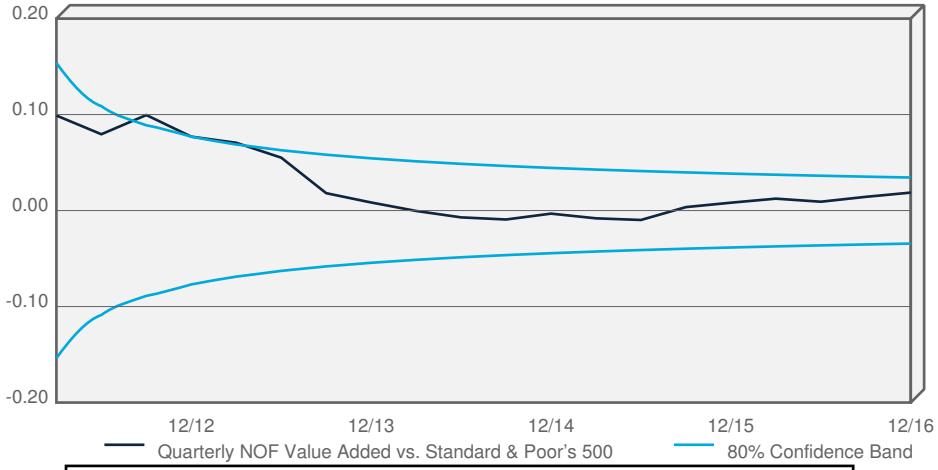
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
CIM Small Cap - Emerg. Mgr.									
Net of Fee Return	**10.00**	**18.04**	**19.82**	**18.38**	**5.45**			**12/31/13**	**5.45**
Russell 2000	8.83	18.68	23.18	21.31	6.74			12/31/13	6.74
Value Added	1.17	-0.64	-3.36	-2.93	-1.30			12/31/13	-1.30
Emerald Advisors All Cap - Emg. Mgr.									
Net of Fee Return	**1.11**	**11.49**	**10.63**	**3.36**				**9/30/15**	**2.75**
Russell 3000 Growth	1.20	6.18	7.03	7.39				9/30/15	11.83
Value Added	-0.09	5.31	3.60	-4.04				9/30/15	-9.09
US Equity Composite									
Net of Fee Return	**4.75**	**9.87**	**12.13**	**12.46**	**8.11**	**14.27**	**6.99**	**12/31/93**	**8.48**
Wilshire 5000	4.54	9.03	12.06	13.37	8.76	14.71	7.17	12/31/93	9.20
Value Added	0.20	0.84	0.08	-0.91	-0.64	-0.44	-0.18	12/31/93	-0.72

Wilshire

SSgA S&P 500 Index

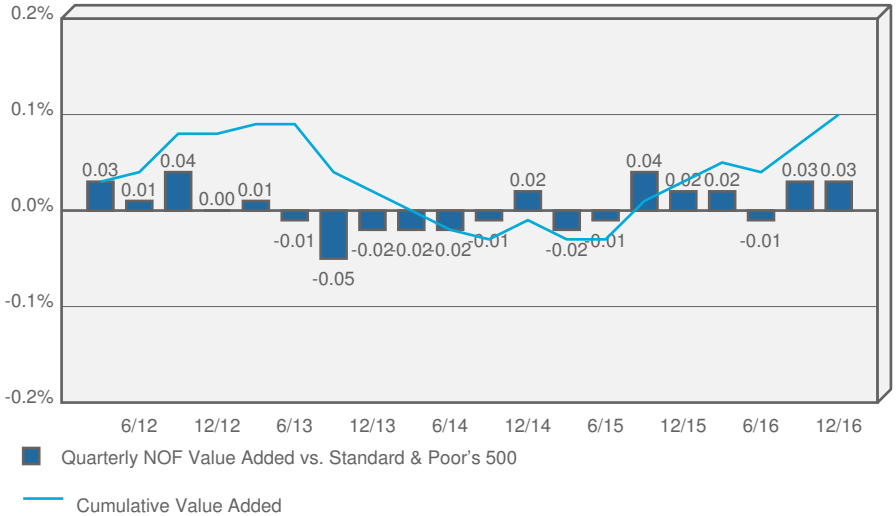
December 31, 2016

Cumulative Skill Analysis vs Benchmark

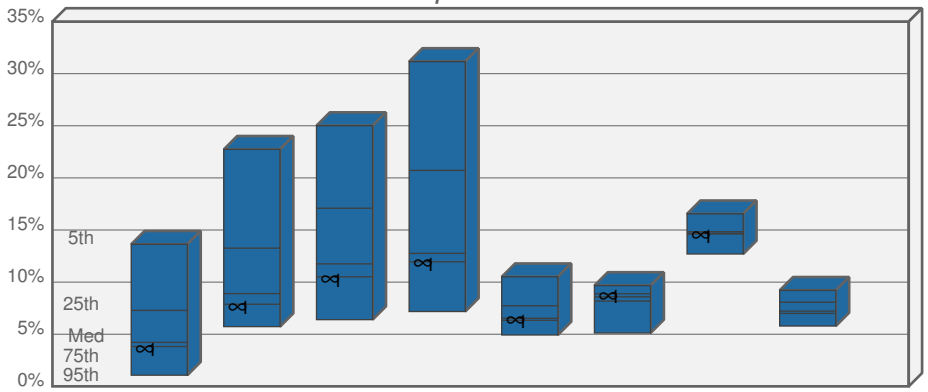


Excess Return:	**0.02**	**Information Ratio:**	**0.40**
Excess Risk:	**0.05**	**T-Stat:**	**0.90**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



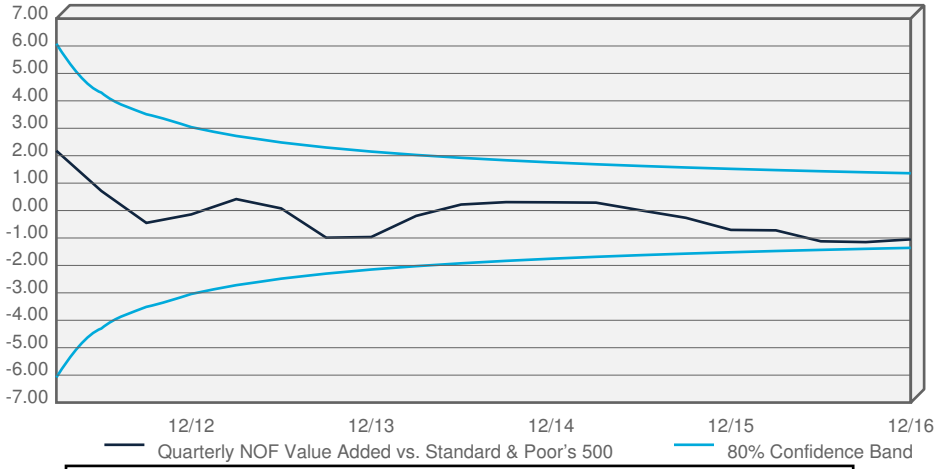
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
∞ SSgA S&P 500 I	3.85 (61)	7.88 (75)	10.52 (74)	12.03 (63)	6.61 (36)	8.92 (16)	14.70 (47)	
1 Standard & Poo	3.82 (78)	7.82 (86)	10.47 (85)	11.96 (74)	6.54 (48)	8.87 (28)	14.66 (64)	
Median	4.22	8.90	11.75	12.76	6.53	8.59	14.69	7.22
Number of Funds	83	83	83	83	82	78	76	69

*Compass Total Returns of Passive U.S. Equity Portfolios Universe - Gross of Fees

Mellon Equity

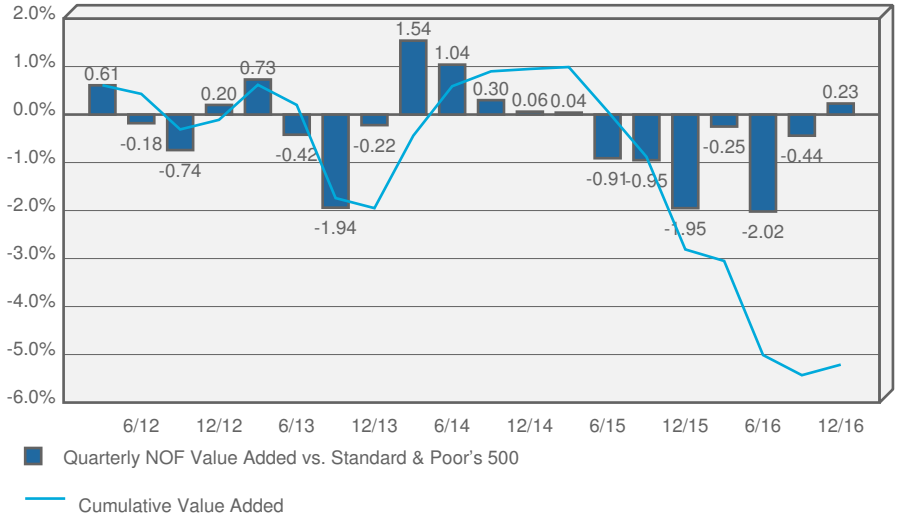
December 31, 2016

Cumulative Skill Analysis vs Benchmark

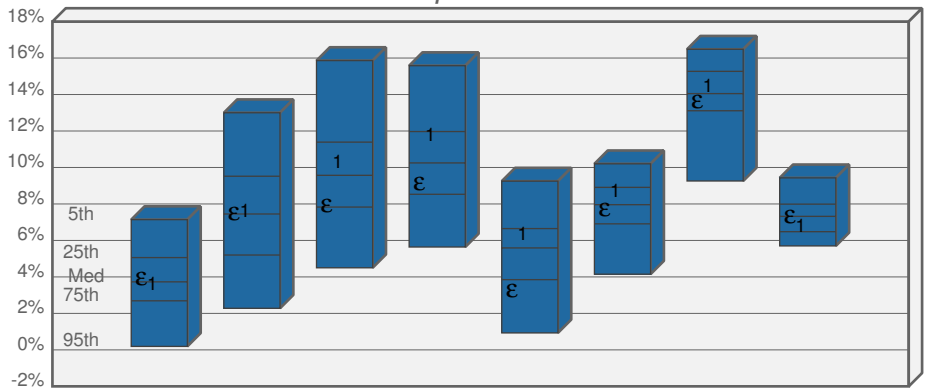


Excess Return:	**-1.05**	**Information Ratio:**	**-0.57**
Excess Risk:	**1.85**	**T-Stat:**	**-1.27**

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
ε Mellon Equity	4.06 (42)	7.61 (46)	8.07 (71)	9.26 (63)	3.41 (81)	7.86 (54)	13.77 (62)	7.46 (46)
1 Standard & Poo	3.82 (48)	7.82 (43)	10.47 (37)	11.96 (25)	6.54 (26)	8.87 (27)	14.66 (33)	6.95 (64)
Median	3.73	7.45	9.57	10.25	5.59	7.96	14.05	7.32
Number of Funds	121	121	121	121	118	117	113	94

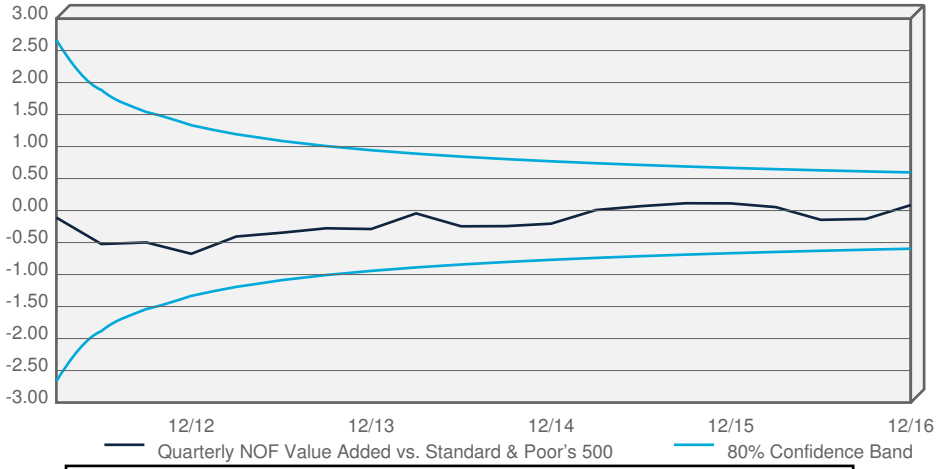
*Compass Total Returns of Active Large Core Equity Portfolios Universe - Gross of Fees

Wilshire

Twin Capital Enhanced Equity

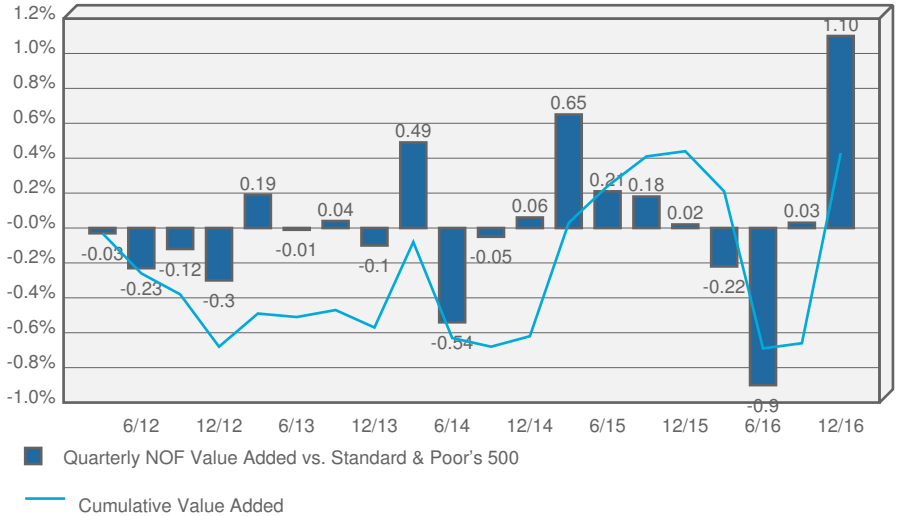
December 31, 2016

Cumulative Skill Analysis vs Benchmark

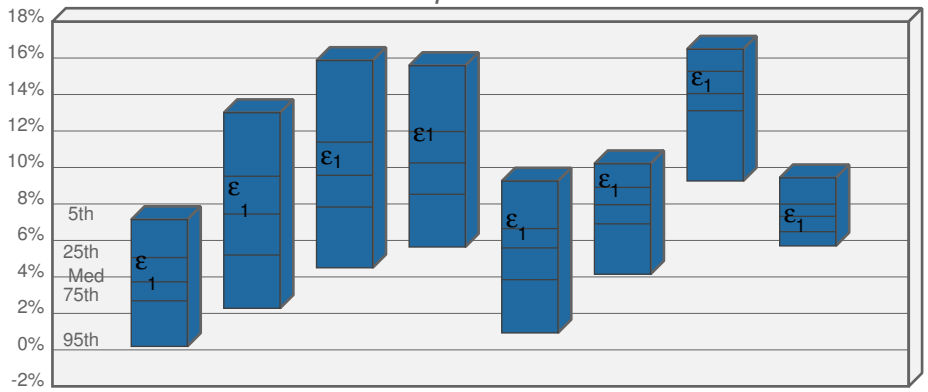


Excess Return:	**0.09**	**Information Ratio:**	**0.11**
Excess Risk:	**0.81**	**T-Stat:**	**0.24**

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
ε Twin Capital E	4.92 (26)	8.99 (28)	10.69 (34)	11.94 (26)	7.24 (13)	9.46 (11)	15.05 (25)	7.52 (44)
1 Standard & Poo	3.82 (48)	7.82 (43)	10.47 (37)	11.96 (25)	6.54 (26)	8.87 (27)	14.66 (33)	6.95 (64)
Median	3.73	7.45	9.57	10.25	5.59	7.96	14.05	7.32
Number of Funds	121	121	121	121	118	117	113	94

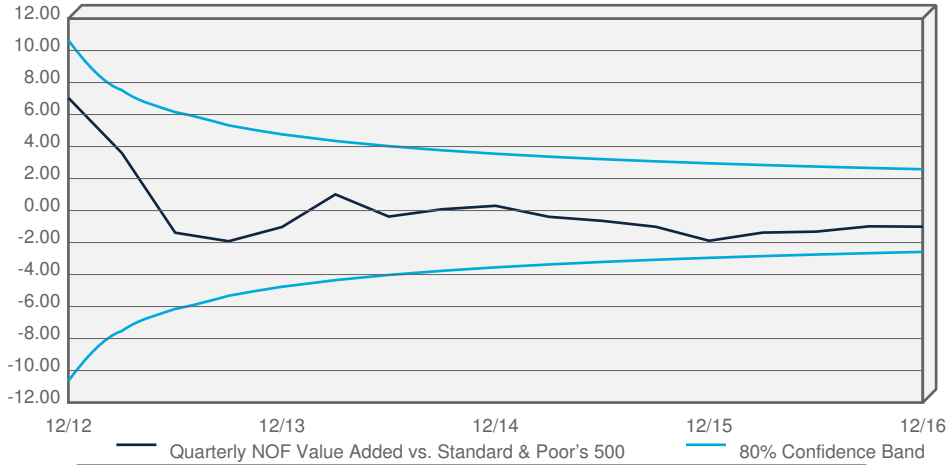
*Compass Total Returns of Active Large Core Equity Portfolios Universe - Gross of Fees

Wilshire

Fragasso Large Core - Emg. Mgr.

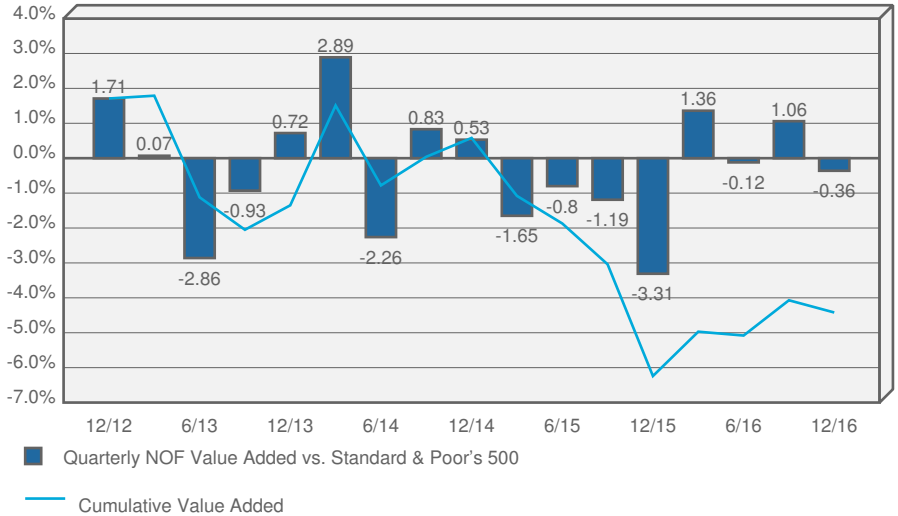
December 31, 2016

Cumulative Skill Analysis vs Benchmark

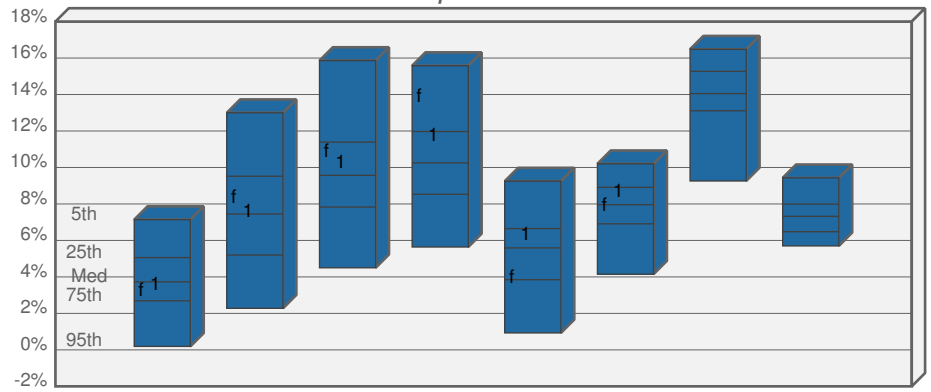


Excess Return:	**-1.01**	**Information Ratio:**	**-0.31**
Excess Risk:	**3.24**	**T-Stat:**	**-0.62**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



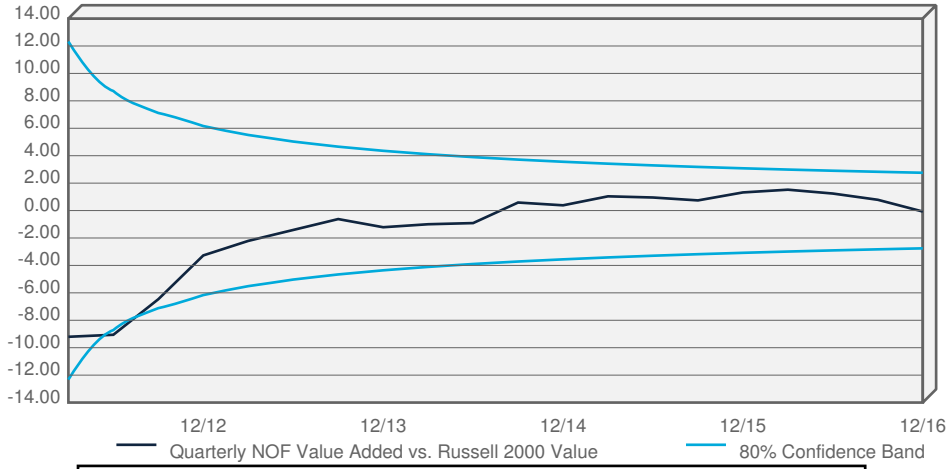
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
f Fragasso Large	3.46 (57)	8.55 (33)	11.08 (28)	14.09 (8)	4.20 (70)	8.12 (46)		
1 Standard & Poo	3.82 (48)	7.82 (43)	10.47 (37)	11.96 (25)	6.54 (26)	8.87 (27)		
Median	3.73	7.45	9.57	10.25	5.59	7.96	14.05	7.32
Number of Funds	121	121	121	121	118	117	113	94

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

Earnest Small Value

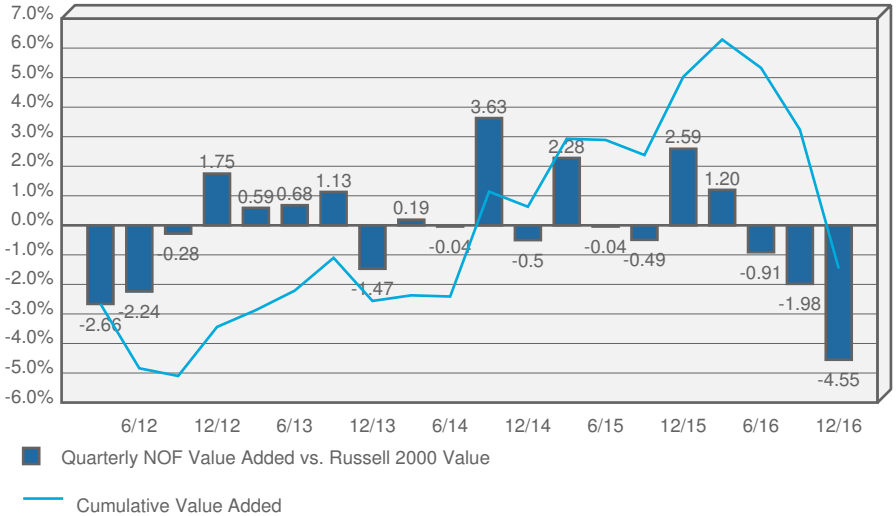
December 31, 2016

Cumulative Skill Analysis vs Benchmark

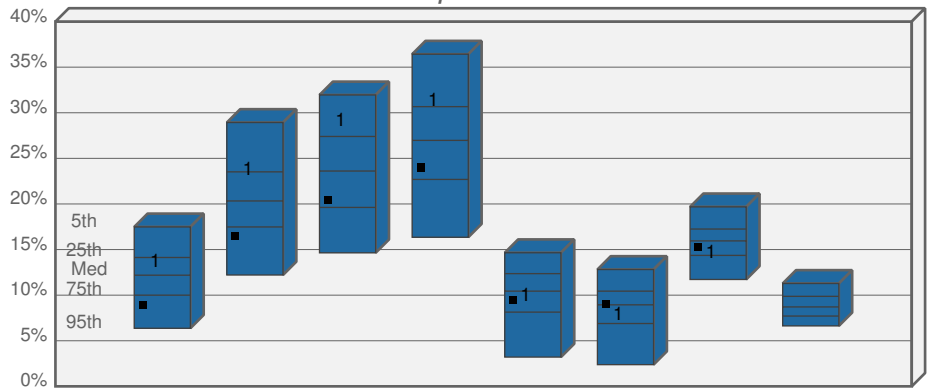


Excess Return:	**-0.07**	**Information Ratio:**	**-0.02**
Excess Risk:	**3.75**	**T-Stat:**	**-0.04**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



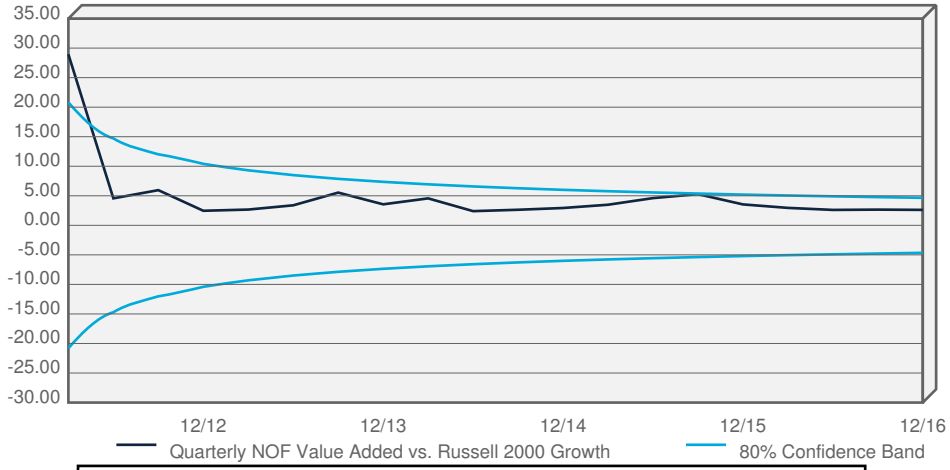
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ Earnest Small	9.52 (78)	17.06 (76)	21.04 (65)	24.55 (63)	10.10 (56)	9.66 (36)	15.88 (50)	
1 Russell 2000 V	14.07 (26)	24.19 (21)	29.54 (12)	31.74 (18)	10.41 (50)	8.31 (60)	15.07 (66)	
Median	12.19	20.33	23.61	26.97	10.44	8.94	15.95	8.71
Number of Funds	141	141	141	141	139	136	128	111

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

Emerald Advisors Small Cap

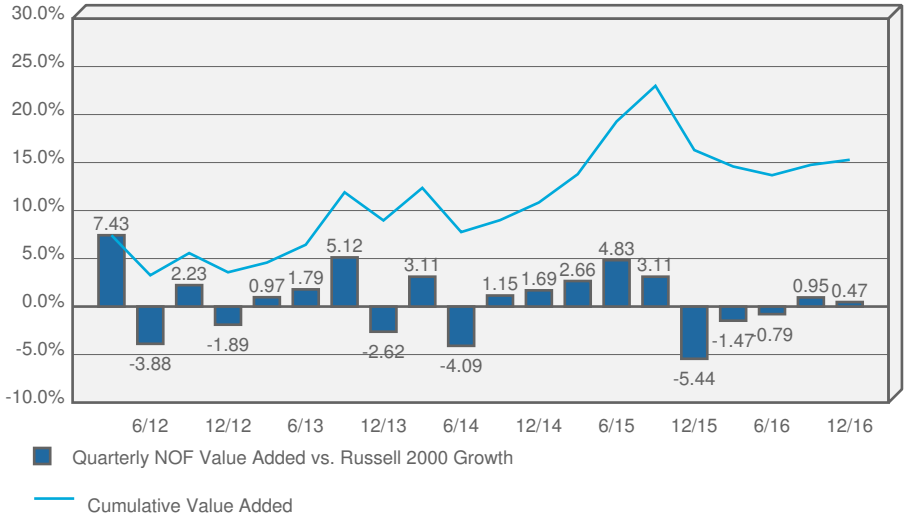
December 31, 2016

Cumulative Skill Analysis vs Benchmark

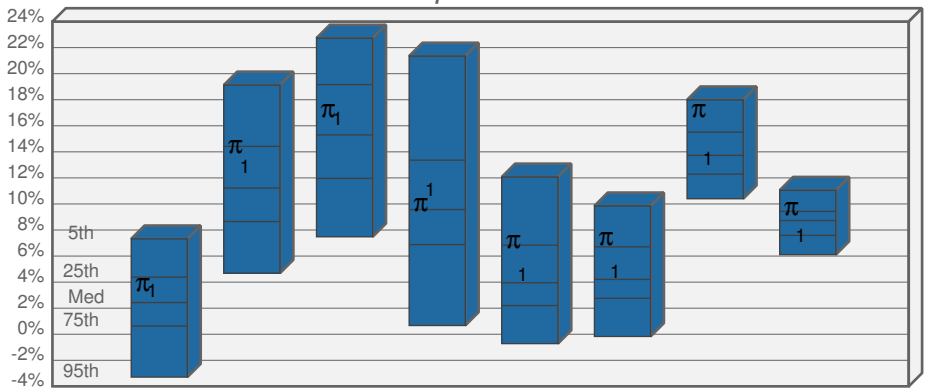


Excess Return:	**2.62**	**Information Ratio:**	**0.41**
Excess Risk:	**6.33**	**T-Stat:**	**0.92**

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
π Emerald Adviso	4.04 (29)	14.62 (22)	17.42 (32)	10.20 (43)	7.31 (21)	7.54 (18)	17.36 (10)	9.87 (17)
1 Russell 2000 G	3.57 (32)	13.12 (34)	16.79 (38)	11.32 (39)	4.78 (42)	5.05 (40)	13.74 (49)	7.76 (73)
Median	2.43	11.22	15.30	9.57	3.95	4.21	13.73	8.73
Number of Funds	100	100	100	100	98	98	95	80

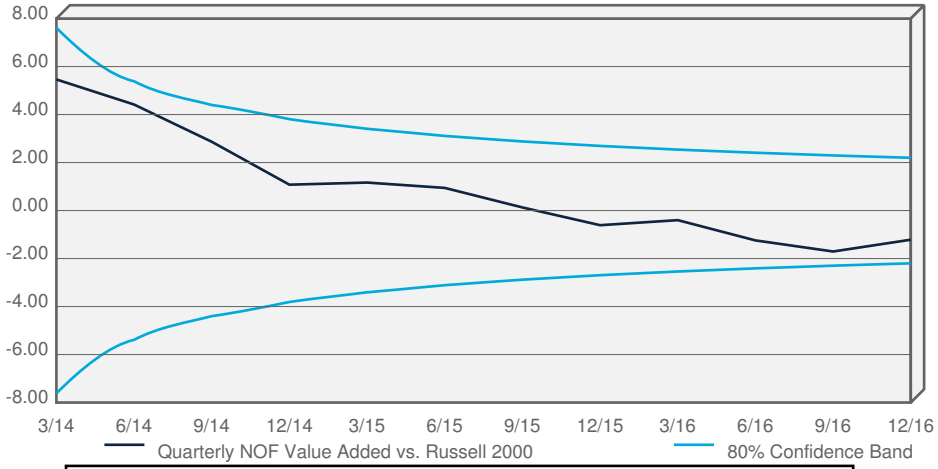
*Compass Total Returns of Active Small Cap Growth Equity Portfolios Universe - Gross of Fees

Wilshire

CIM Small Cap - Emerg. Mgr.

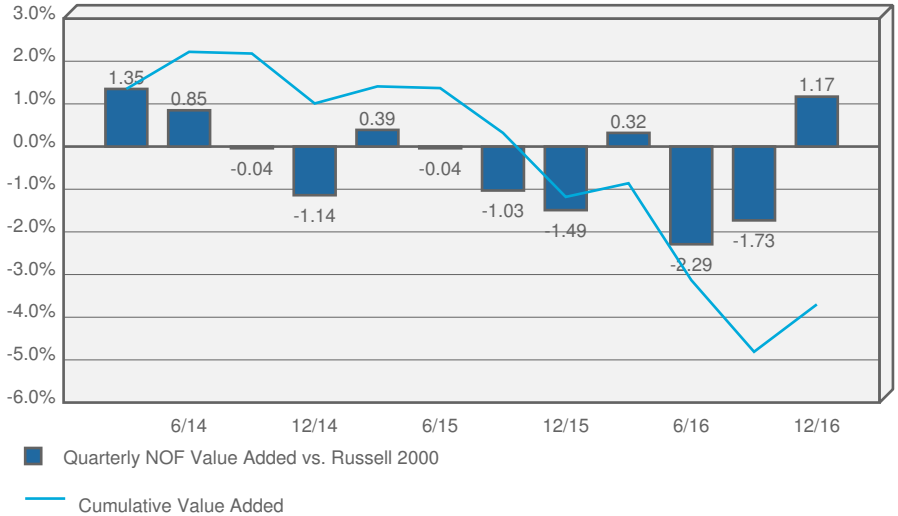
December 31, 2016

Cumulative Skill Analysis vs Benchmark

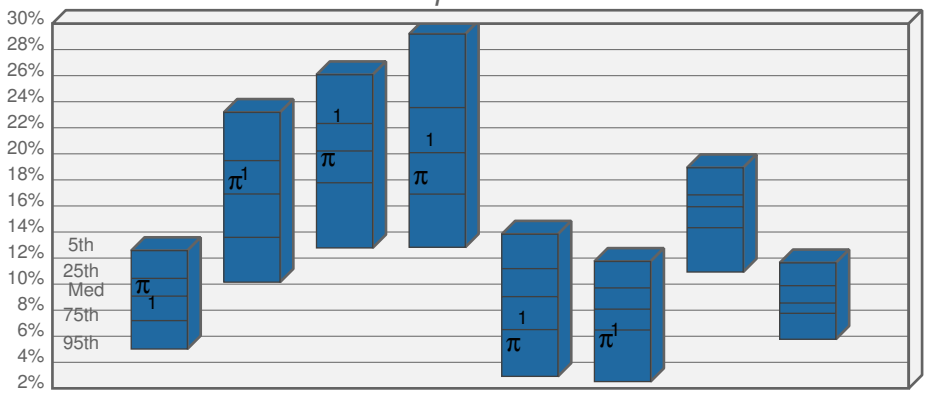


Excess Return:	**-1.21**	**Information Ratio:**	**-0.52**
Excess Risk:	**2.32**	**T-Stat:**	**-0.91**

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
π CIM Small Cap	10.00 (35)	18.04 (42)	19.82 (55)	18.38 (70)	5.62 (81)	5.86 (80)		
1 Russell 2000	8.83 (53)	18.68 (34)	23.18 (23)	21.31 (38)	7.68 (62)	6.74 (67)		
Median	9.08	16.92	20.22	20.09	9.04	8.08	15.94	8.55
Number of Funds	88	88	88	88	86	84	80	68

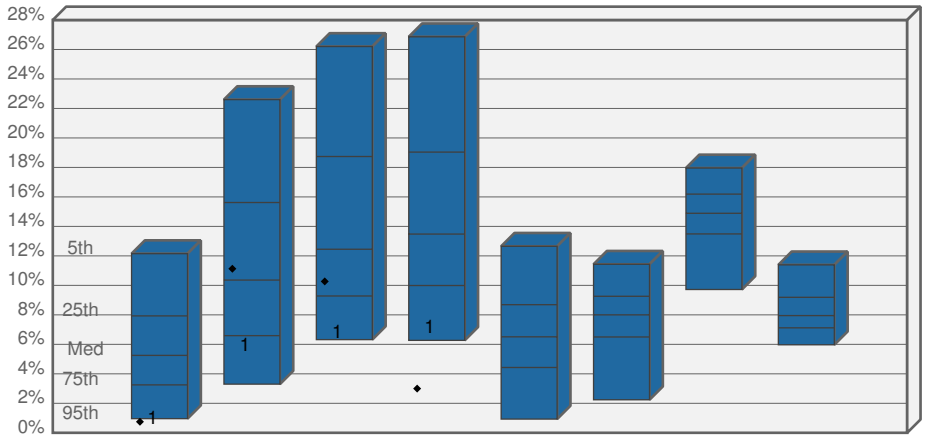
*Compass Total Returns of Active Small Cap Core Equity Portfolios Universe - Gross of Fees

Wilshire

Emerald Advisors All Cap - Emg. Mgr.

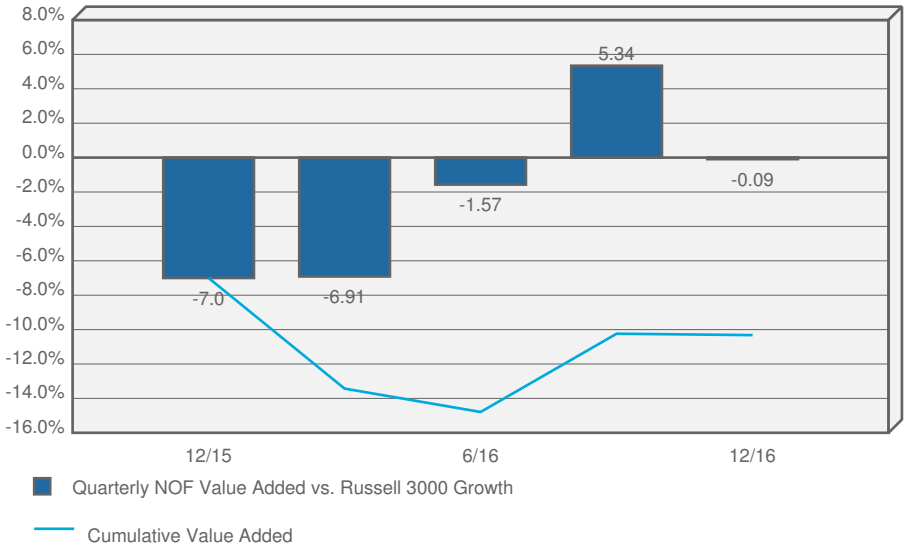
December 31, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◆ Emerald Adviso	1.11 (93)	11.49 (41)	10.63 (63)	3.36 (99)				
1 Russell 3000 G	1.20 (93)	6.18 (78)	7.03 (91)	7.39 (91)				
Median	5.25	10.36	12.45	13.48	6.51	8.00	14.89	7.95
Number of Funds	337	337	337	337	328	322	303	247

Value-Added Analysis vs Benchmark



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

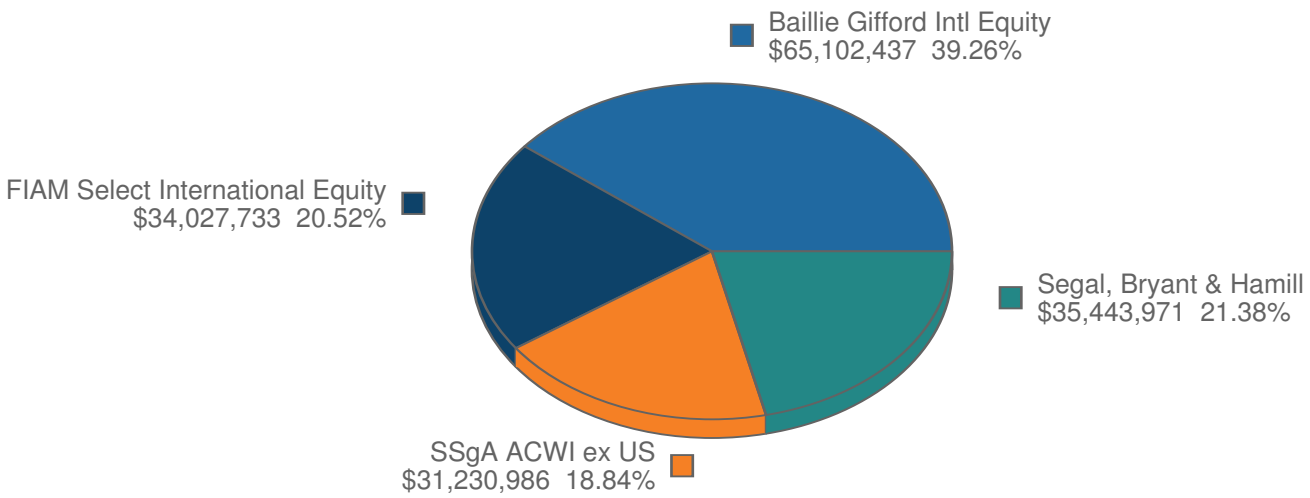
Non US Equity

Manager Allocation

Wilshire

Non US Equity Composite

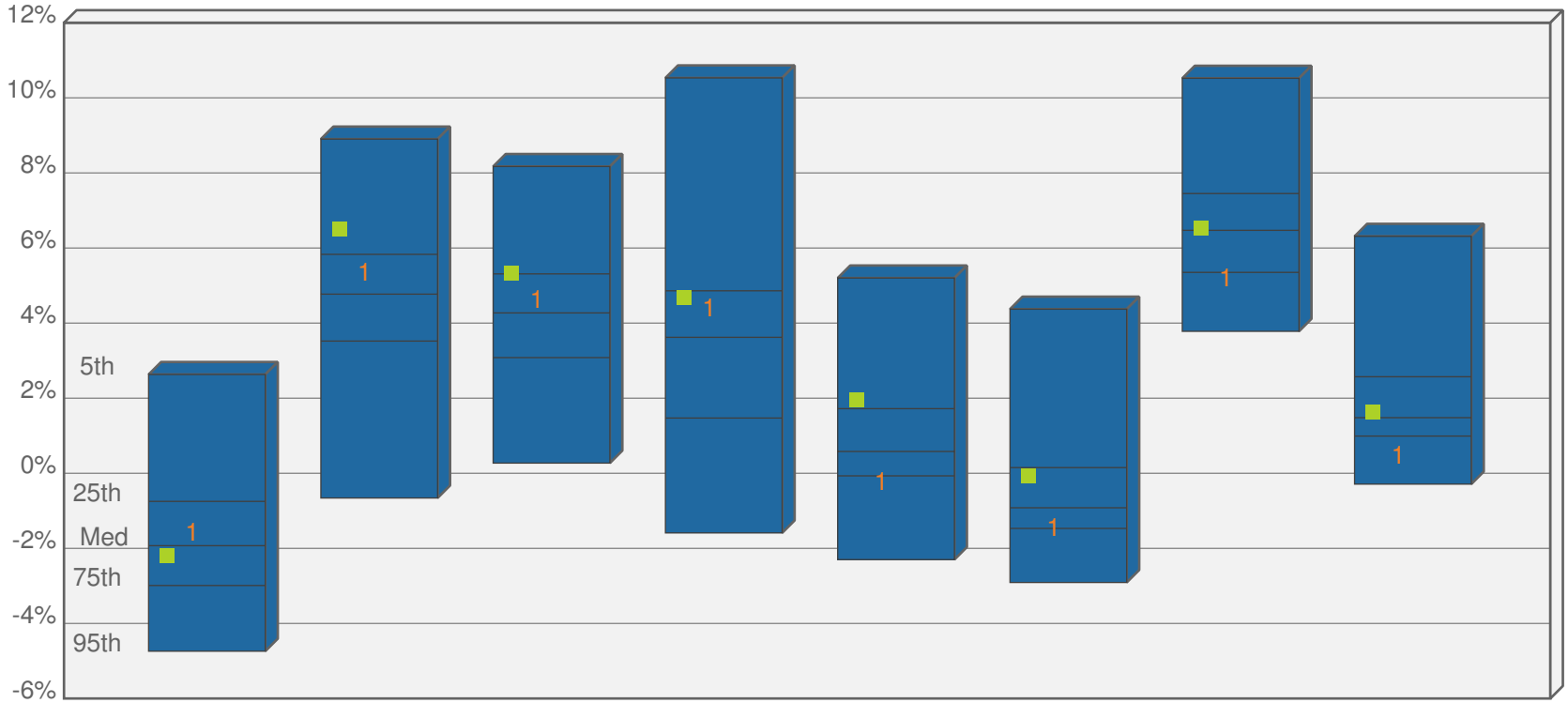
As of December 31, 2016



Wilshire

Non US Equity Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Non US Equity Composite	-2.15 (62)	6.54 (18)	5.36 (23)	4.71 (27)	2.00 (22)	-0.03 (28)	6.57 (47)	1.66 (43)
1 Policy Index	-1.57 (40)	5.37 (40)	4.65 (41)	4.41 (37)	-0.20 (76)	-1.44 (72)	5.22 (80)	0.49 (86)
5th %tile	2.63	8.90	8.17	10.53	5.20	4.37	10.52	6.31
25th %tile	-0.75	5.83	5.31	4.86	1.72	0.15	7.45	2.57
Median	-1.93	4.77	4.27	3.62	0.58	-0.92	6.47	1.48
75th %tile	-2.99	3.52	3.08	1.47	-0.07	-1.47	5.35	0.99
95th %tile	-4.74	-0.66	0.27	-1.59	-2.30	-2.91	3.78	-0.29
Number of Funds	141	138	133	129	114	111	95	71

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

Trailing Returns

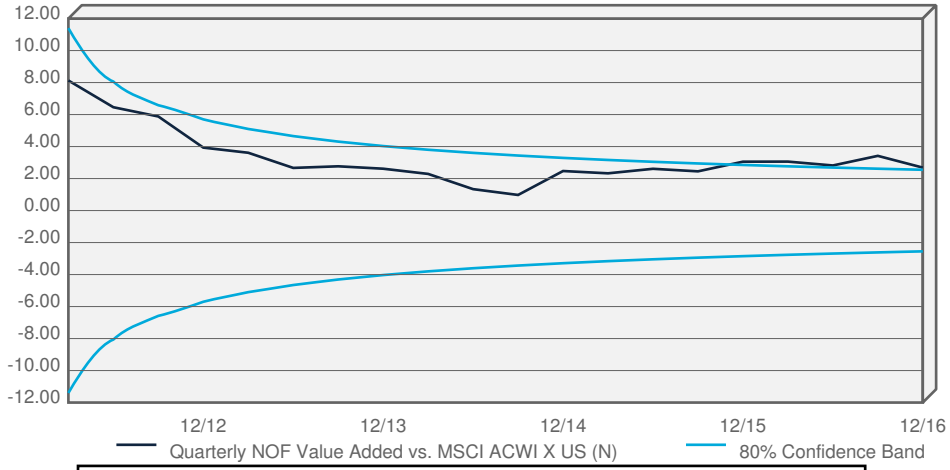
Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Baillie Gifford Intl Equity									
Net of Fee Return	**-3.91**	**6.35**	**5.35**	**5.77**	**0.91**	**7.82**		**9/30/09**	**6.54**
MSCI ACWI X US (N)	-1.25	5.57	4.89	4.50	-1.77	5.00		9/30/09	3.35
Value Added	-2.65	0.79	0.46	1.27	2.68	2.82		9/30/09	3.19
FIAM Select International Equity									
Net of Fee Return	**-2.67**	**3.40**	**3.48**	**1.83**	**-2.18**	**5.07**	**0.41**	**12/31/00**	**3.70**
Policy Benchmark	-1.25	5.57	4.89	4.50	-1.77	5.00	0.39	12/31/00	3.14
Value Added	-1.41	-2.17	-1.41	-2.66	-0.40	0.07	0.03	12/31/00	0.56
SSgA ACWI ex US									
Net of Fee Return	**-0.34**	**6.00**	**5.09**	**3.15**				**6/30/15**	**-2.78**
MSCI World X-US (N)	-0.36	5.91	4.79	2.75				6/30/15	-3.03
Value Added	0.03	0.09	0.29	0.40				6/30/15	0.25
Segal, Bryant & Hamill									
Net of Fee Return	**0.09**	**10.50**	**7.25**	**6.77**				**6/30/15**	**3.39**
MSCI EAFE Small Cap (N)	-2.85	5.54	2.79	2.18				6/30/15	1.11
Value Added	2.95	4.96	4.45	4.58				6/30/15	2.28
Non US Equity Composite									
Net of Fee Return	**-2.15**	**6.54**	**5.36**	**4.71**	**-0.26**	**6.23**	**1.30**	**12/31/00**	**4.27**
Policy Index	-1.57	5.37	4.65	4.41	-1.44	5.22	0.49	12/31/00	3.21
Value Added	-0.58	1.18	0.71	0.31	1.17	1.01	0.81	12/31/00	1.07

Baillie Gifford Intl Equity

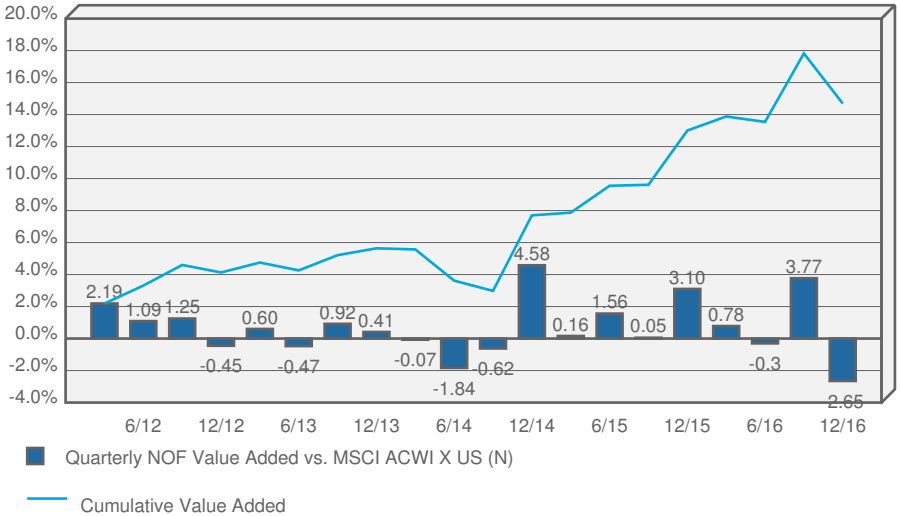
December 31, 2016

Cumulative Skill Analysis vs Benchmark

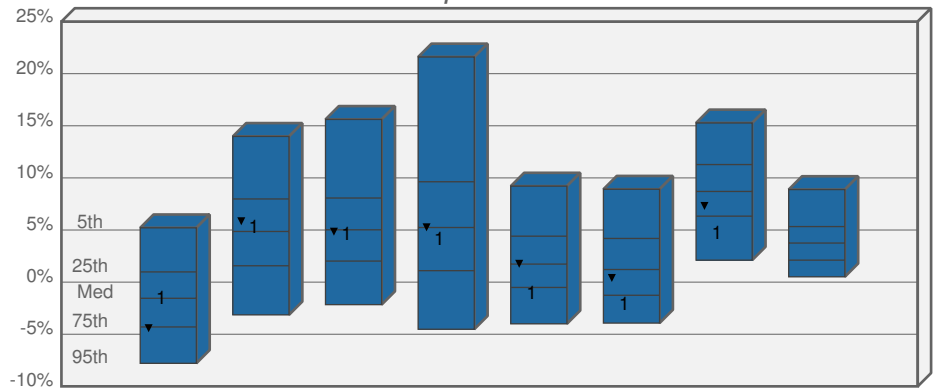


Excess Return:	**2.68**	**Information Ratio:**	**0.77**
Excess Risk:	**3.47**	**T-Stat:**	**1.73**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



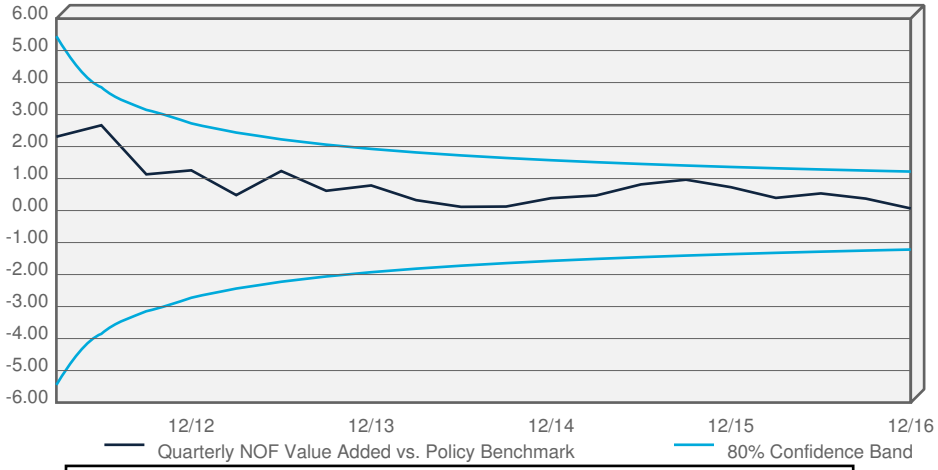
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▼ Baillie Giffor	-3.91 (70)	6.35 (36)	5.35 (45)	5.77 (46)	2.27 (44)	0.91 (52)	7.82 (57)	
1 MSCI ACWI X US	-1.25 (47)	5.57 (44)	4.89 (52)	4.50 (54)	-0.71 (76)	-1.77 (81)	5.00 (83)	
Median	-1.55	4.86	5.02	5.24	1.73	1.21	8.70	3.75
Number of Funds	1171	1171	1170	1167	1128	1072	919	566

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

FIAM Select International Equity

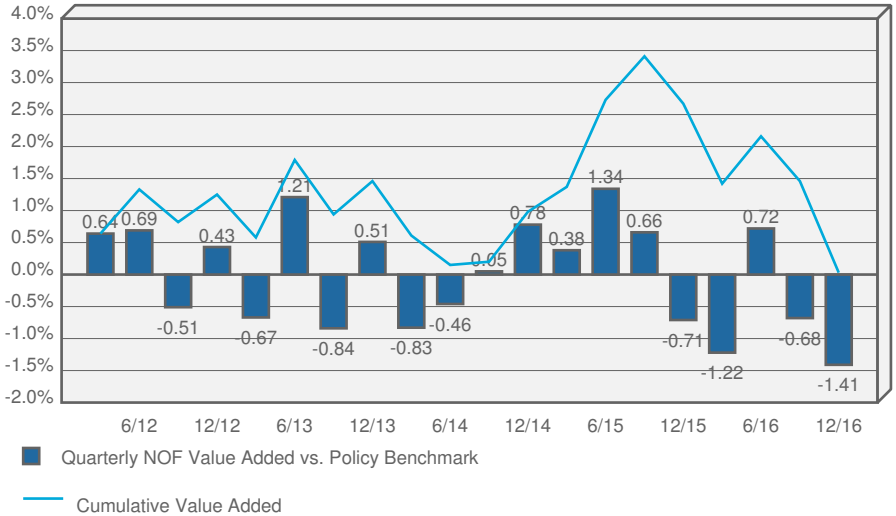
December 31, 2016

Cumulative Skill Analysis vs Benchmark

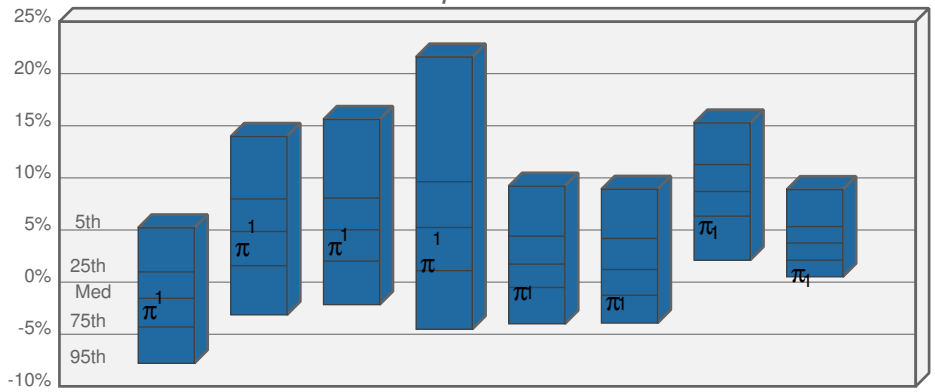


Excess Return:	**0.07**	**Information Ratio:**	**0.04**
Excess Risk:	**1.66**	**T-Stat:**	**0.09**

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
π FIAM Select In	-2.67 (60)	3.40 (61)	3.48 (65)	1.83 (70)	-0.80 (76)	-1.80 (81)	5.56 (79)	0.93 (92)
1 Policy Benchma	-1.25 (47)	5.57 (44)	4.89 (52)	4.50 (54)	-0.71 (76)	-1.77 (81)	5.00 (83)	0.39 (95)
Median	-1.55	4.86	5.02	5.24	1.73	1.21	8.70	3.75
Number of Funds	1171	1171	1170	1167	1128	1072	919	566

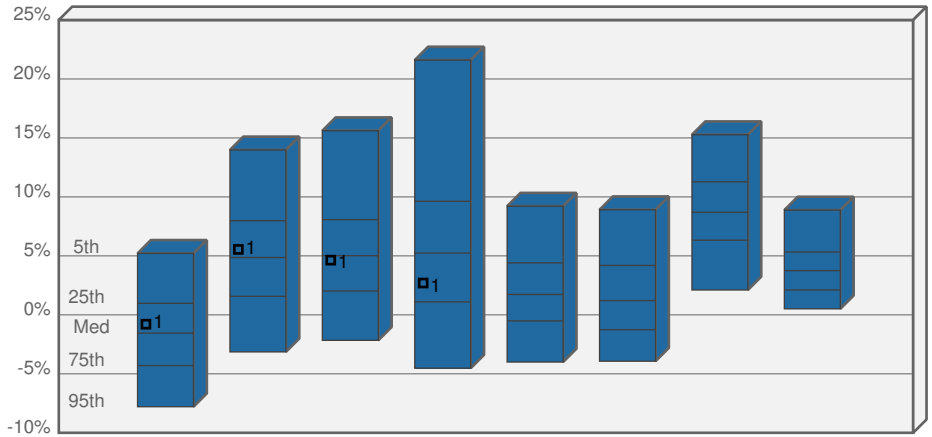
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

Wilshire

SSgA ACWI ex US

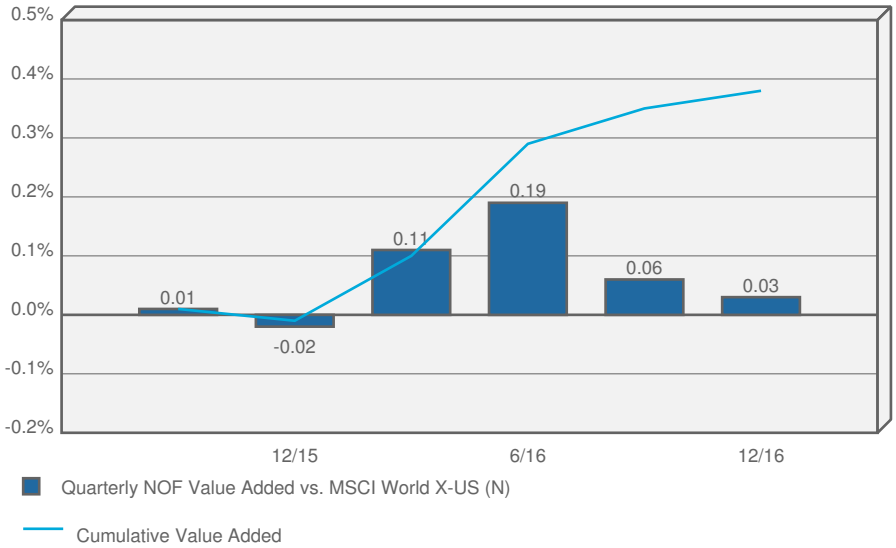
December 31, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◻ SSgA ACWI ex U	-0.34 (36)	6.00 (39)	5.09 (49)	3.15 (61)				
1 MSCI World X-U	-0.36 (36)	5.91 (39)	4.79 (52)	2.75 (64)				
Median	-1.55	4.86	5.02	5.24	1.73	1.21	8.70	3.75
Number of Funds	1171	1171	1170	1167	1128	1072	919	566

Value-Added Analysis vs Benchmark



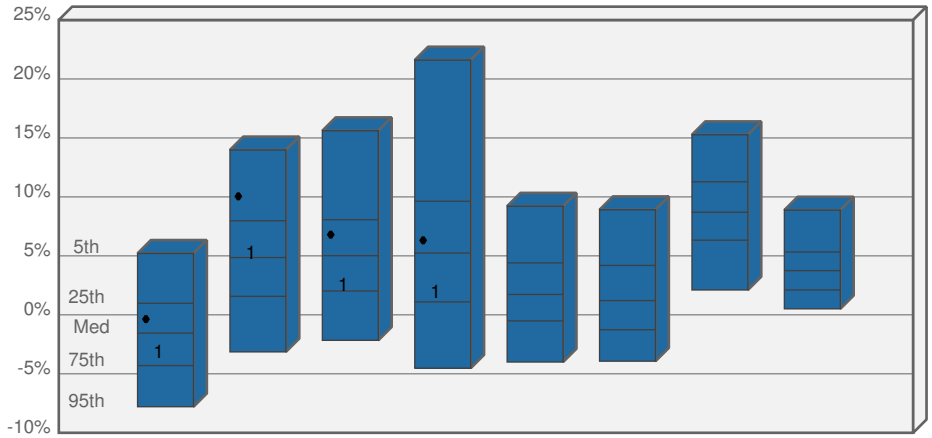
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

Wilshire

Segal, Bryant & Hamill

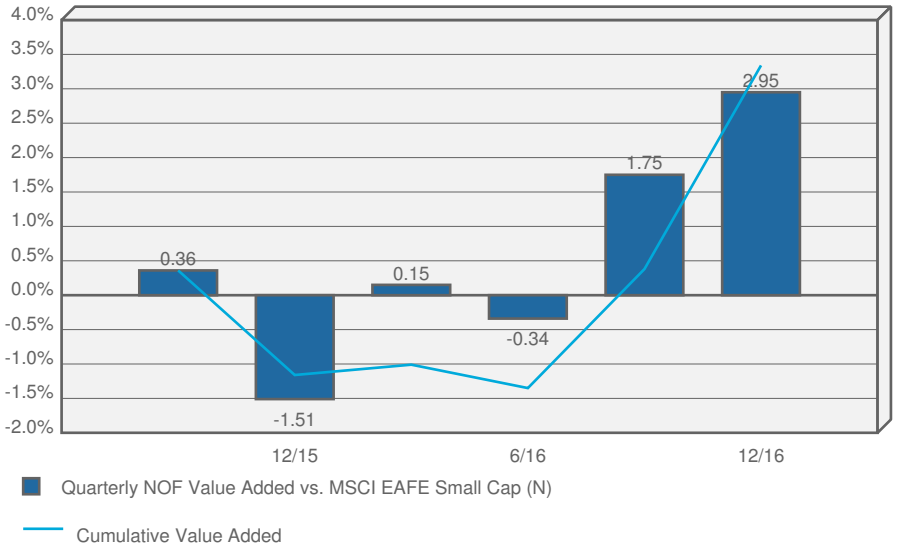
December 31, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
♦ Segal, Bryant	0.09 (31)	10.50 (12)	7.25 (30)	6.77 (40)				
1 MSCI EAFE Smal	-2.85 (62)	5.54 (44)	2.79 (70)	2.18 (67)				
Median	-1.55	4.86	5.02	5.24	1.73	1.21	8.70	3.75
Number of Funds	1171	1171	1170	1167	1128	1072	919	566

Value-Added Analysis vs Benchmark



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

Custom Benchmark Specification

Wilshire

Non US Equity Composite

December 31, 2016

	Quarter Start	Quarter End	Percent	Description
Policy Index	12/00	6/08	100.00	MSCI EAFE Index (N)
	9/08	12/14	100.00	MSCI ACWI X US (N)
	3/15	12/16	100.00	MSCI ACWI X US IMI Index (N)

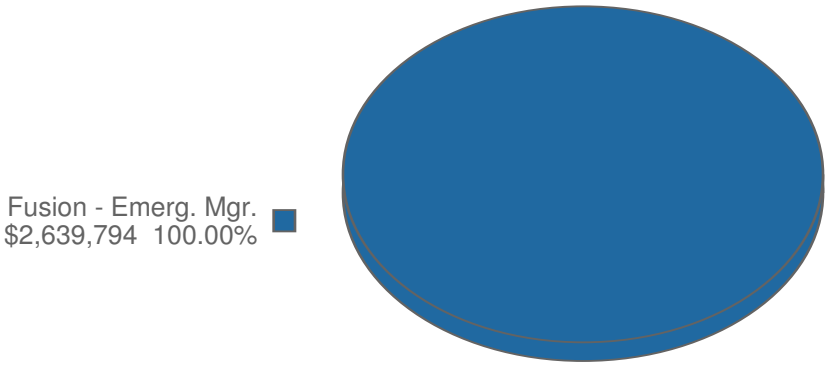
Global Equity

Manager Allocation

Wilshire

Global Equity Composite

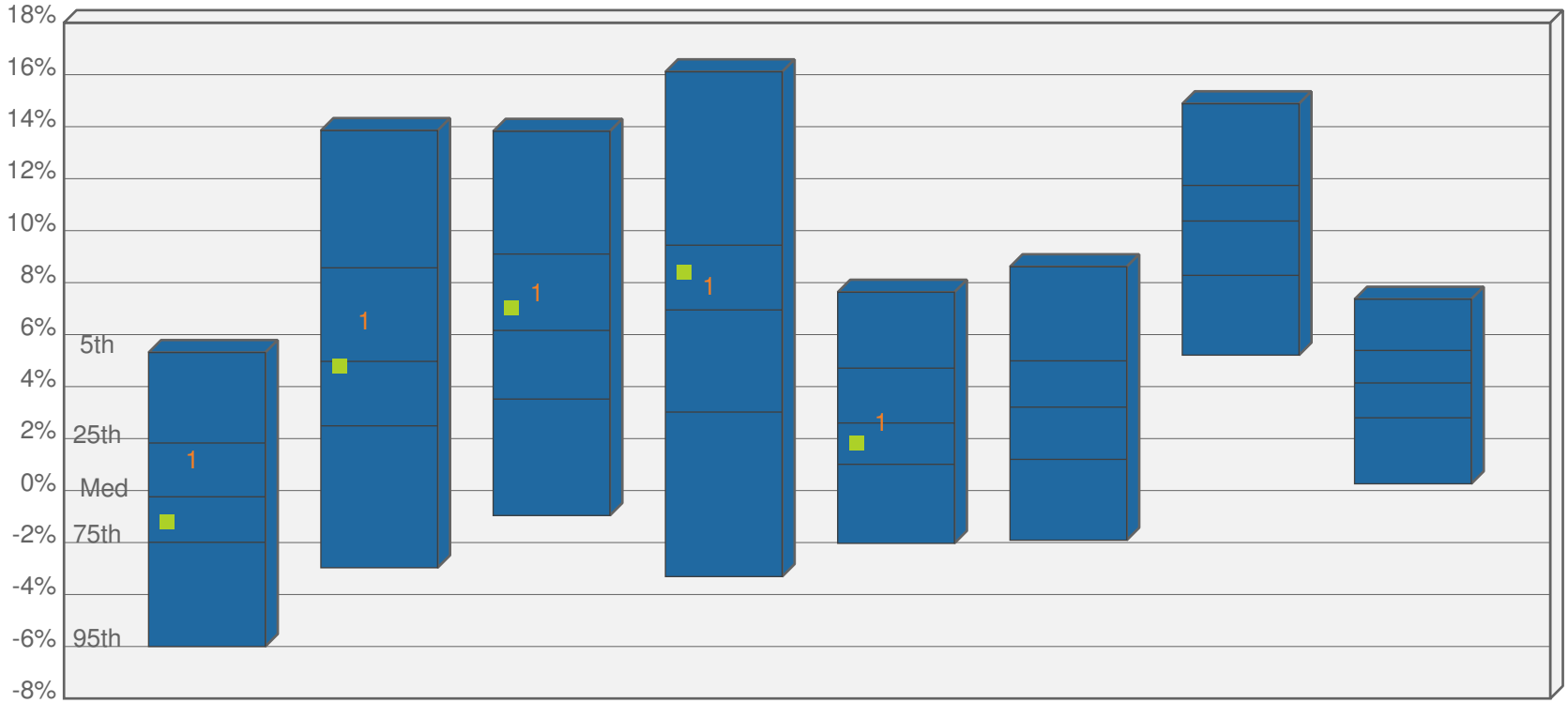
As of December 31, 2016



Wilshire

Global Equity Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Global Equity	-1.17 (62)	4.84 (51)	7.06 (40)	8.46 (34)	1.87 (64)			
1 MSCI ACWI (N)	1.19 (33)	6.55 (36)	7.61 (38)	7.86 (40)	2.62 (49)			
5th %tile	5.31	13.85	13.82	16.11	7.63	8.61	14.88	7.36
25th %tile	1.83	8.57	9.10	9.44	4.71	4.99	11.74	5.39
Median	-0.24	4.97	6.16	6.95	2.60	3.21	10.37	4.14
75th %tile	-1.99	2.49	3.52	3.02	1.01	1.20	8.28	2.80
95th %tile	-6.00	-2.97	-0.96	-3.31	-2.03	-1.91	5.21	0.26
Number of Funds	338	337	335	332	314	288	253	115

*TUCS Total Ret of Global Equity Portfolios Universe - Gross of Fees

Wilshire

Trailing Returns

Periods Ended December 31, 2016

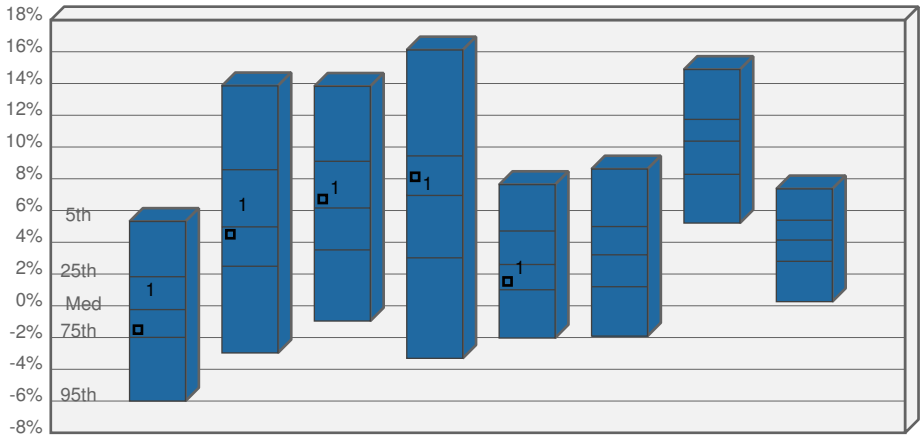
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Fusion - Emerg. Mgr.									
Net of Fee Return	**-1.17**	**4.84**	**7.06**	**8.46**				**12/31/14**	**1.48**
MSCI ACWI (N)	1.19	6.55	7.61	7.86				12/31/14	2.62
Value Added	-2.36	-1.71	-0.55	0.60				12/31/14	-1.14
Global Equity									
Net of Fee Return	**-1.17**	**4.84**	**7.06**	**8.46**				**12/31/14**	**1.48**
MSCI ACWI (N)	1.19	6.55	7.61	7.86				12/31/14	2.62
Value Added	-2.36	-1.71	-0.55	0.60				12/31/14	-1.14

Wilshire

Fusion - Emerg. Mgr.

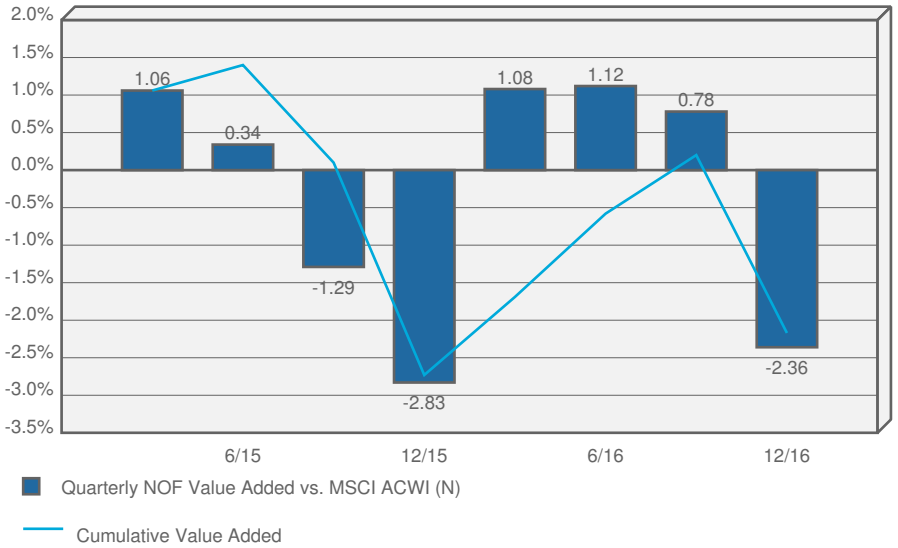
December 31, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◘ Fusion - Emerg	-1.17 (62)	4.84 (51)	7.06 (40)	8.46 (34)	1.87 (64)			
1 MSCI ACWI (N)	1.19 (33)	6.55 (36)	7.61 (38)	7.86 (40)	2.62 (49)			
Median	-0.24	4.97	6.16	6.95	2.60	3.21	10.37	4.14
Number of Funds	338	337	335	332	314	288	253	115

Value-Added Analysis vs Benchmark



*TUCS Total Returns of Global Equity Portfolios Universe - Gross of Fees

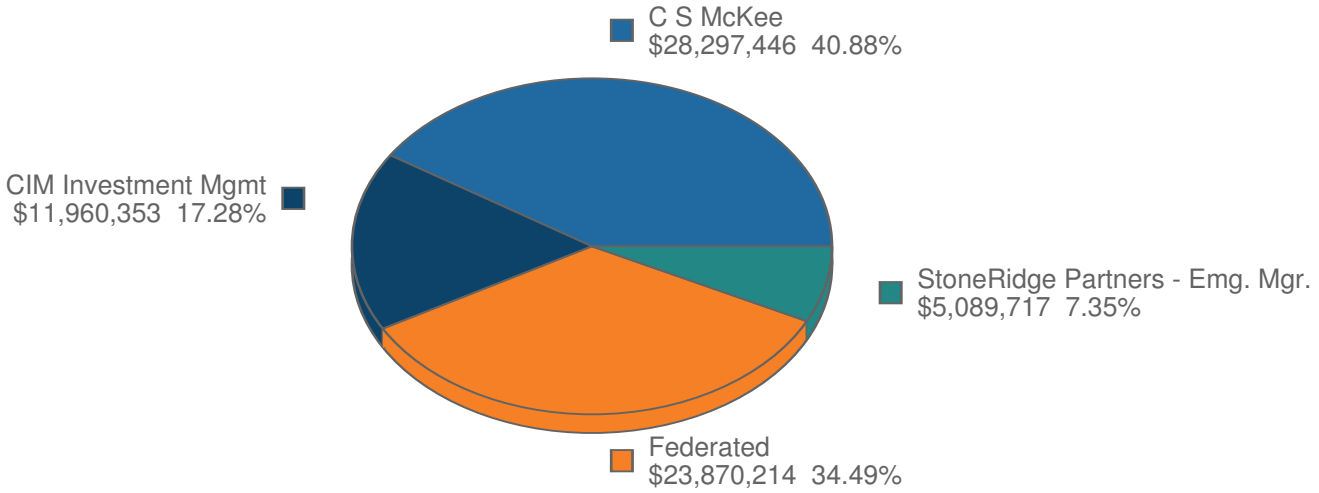
Core Fixed Income

Manager Allocation

Wilshire

Core Fixed Composite

As of December 31, 2016

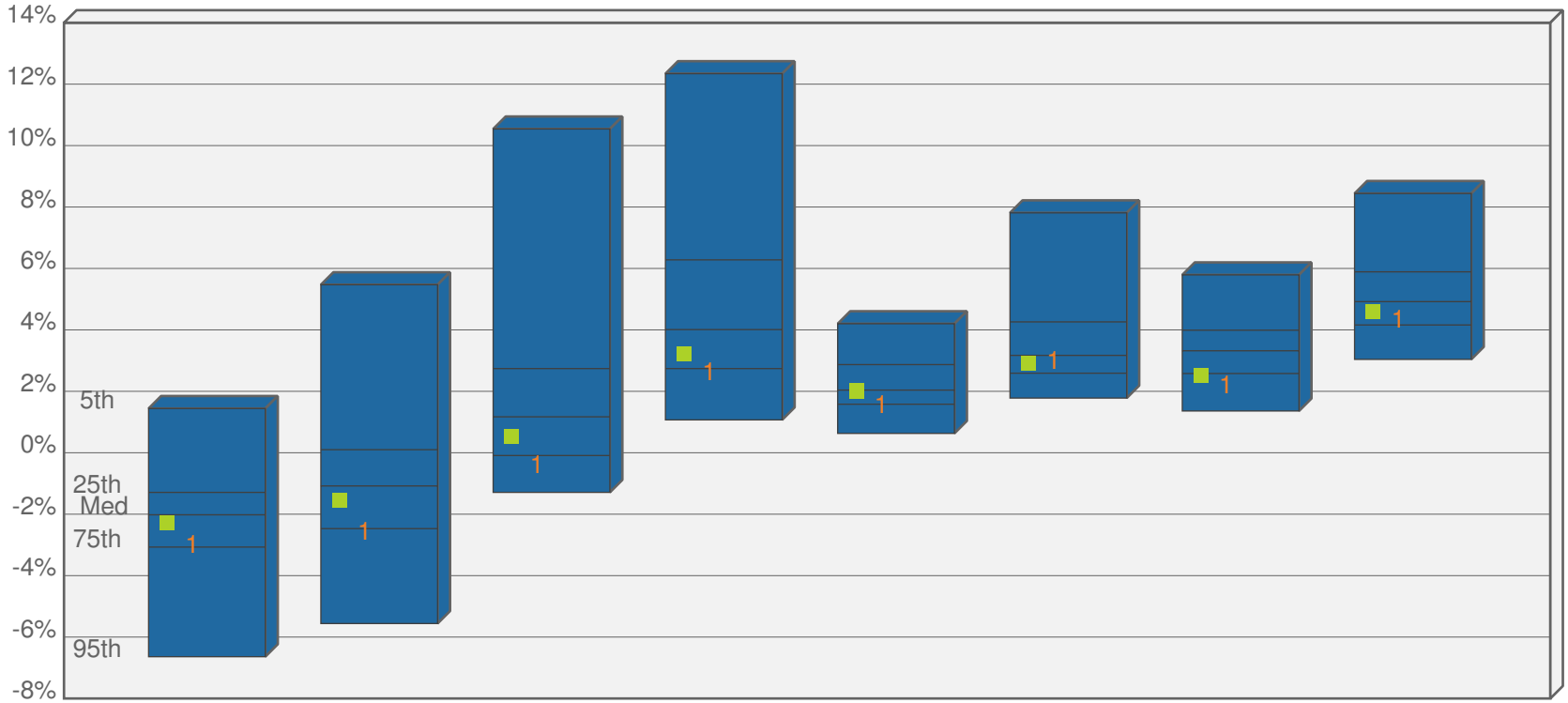


Performance Comparison

Wilshire

Core Fixed Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Core Fixed Composite	-2.24 (54)	-1.51 (59)	0.56 (58)	3.27 (64)	2.04 (51)	2.97 (57)	2.56 (75)	4.65 (61)
1 Barclays Aggrega	-2.98 (70)	-2.53 (77)	-0.37 (82)	2.65 (76)	1.59 (74)	3.03 (56)	2.23 (84)	4.35 (68)
5th %tile	1.44	5.47	10.54	12.34	4.20	7.81	5.79	8.44
25th %tile	-1.29	0.10	2.74	6.28	2.87	4.26	3.99	5.89
Median	-2.02	-1.08	1.17	4.01	2.04	3.17	3.32	4.92
75th %tile	-3.07	-2.47	-0.09	2.74	1.58	2.59	2.58	4.16
95th %tile	-6.64	-5.56	-1.29	1.07	0.63	1.78	1.36	3.04
Number of Funds	170	165	161	157	148	143	112	72

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

Performance Comparison

Wilshire

Trailing Returns

Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
C S McKee									
Net of Fee Return	**-2.74**	**-2.30**	**-0.43**	**2.94**	**3.37**	**2.72**	**5.00**	**12/31/82**	**7.71**
Barclays Aggregate	-2.98	-2.53	-0.37	2.65	3.03	2.23	4.35	12/31/82	7.34
Value Added	0.23	0.23	-0.05	0.29	0.34	0.48	0.65	12/31/82	0.38
CIM Investment Mgmt									
Net of Fee Return	**-1.49**	**-1.16**	**-0.02**	**1.61**	**1.69**	**1.65**	**3.51**	**12/31/05**	**3.52**
Barclays Int Govt/Credit	-2.07	-1.91	-0.36	2.08	2.09	1.85	3.84	12/31/05	3.86
Value Added	0.58	0.75	0.34	-0.47	-0.40	-0.20	-0.33	12/31/05	-0.35
Federated									
Net of Fee Return	**-2.23**	**-0.94**	**1.96**	**4.59**	**3.09**	**2.73**	**5.02**	**9/30/06**	**5.01**
Barclays Aggregate	-2.98	-2.53	-0.37	2.65	3.03	2.23	4.35	9/30/06	4.36
Value Added	0.75	1.59	2.34	1.94	0.06	0.50	0.67	9/30/06	0.65
StoneRidge Partners - Emg. Mgr.									
Net of Fee Return	**-1.25**	**-0.60**	**0.69**	**2.28**				**9/30/15**	**1.91**
Policy Index	-2.01	-1.66	0.09	2.63				9/30/15	1.60
Value Added	0.77	1.05	0.60	-0.34				9/30/15	0.31
Core Fixed Composite									
Net of Fee Return	**-2.24**	**-1.51**	**0.55**	**3.26**	**2.89**	**2.43**	**4.44**	**9/30/82**	**7.99**
Barclays Aggregate	-2.98	-2.53	-0.37	2.65	3.03	2.23	4.35	9/30/82	7.53
Value Added	0.74	1.02	0.92	0.61	-0.14	0.19	0.10	9/30/82	0.45

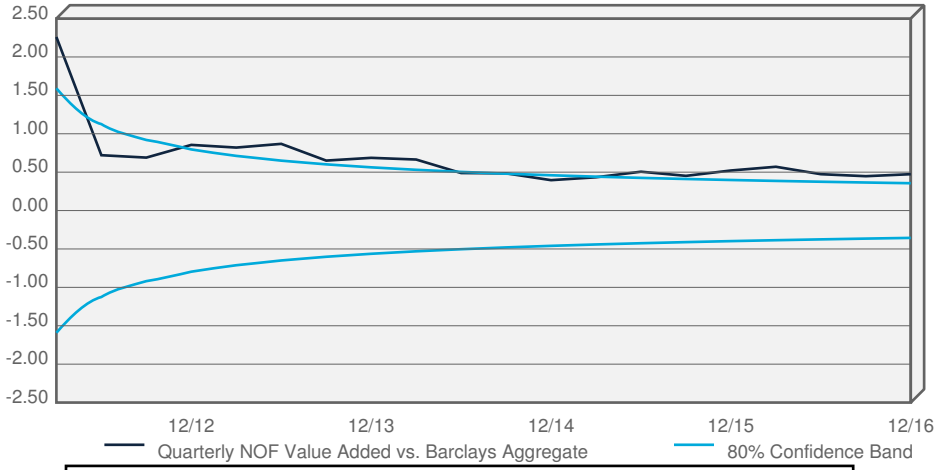
Investment Manager Analysis

Wilshire

C S McKee

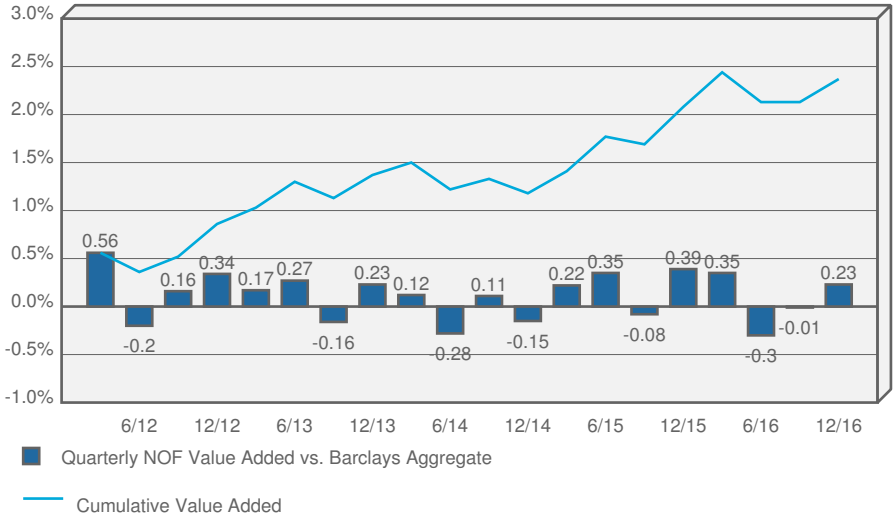
December 31, 2016

Cumulative Skill Analysis vs Benchmark

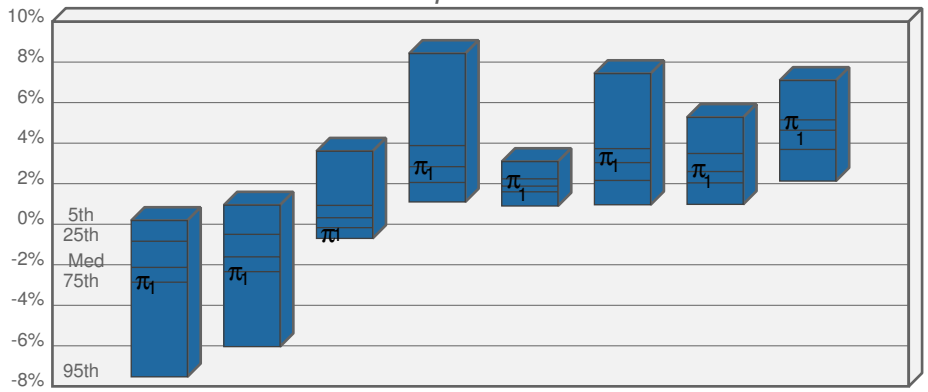


Excess Return:	**0.47**	**Information Ratio:**	**0.98**
Excess Risk:	**0.48**	**T-Stat:**	**2.19**

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
π C S McKee	-2.74 (69)	-2.30 (74)	-0.43 (87)	2.94 (46)	2.23 (25)	3.40 (34)	2.78 (43)	5.16 (24)
1 Barclays Aggre	-2.98 (79)	-2.53 (80)	-0.37 (85)	2.65 (57)	1.59 (76)	3.03 (50)	2.23 (68)	4.35 (61)
Median	-2.13	-1.61	0.32	2.84	1.88	3.04	2.60	4.64
Number of Funds	302	301	300	300	293	288	275	232

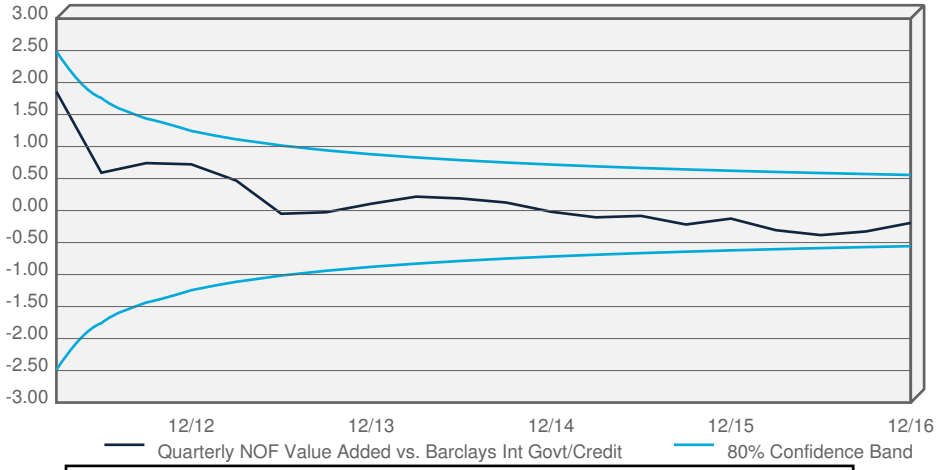
*Compass Total Returns of Active Core Fixed Income Portfolios Universe - Gross of Fees

Wilshire

CIM Investment Mgmt

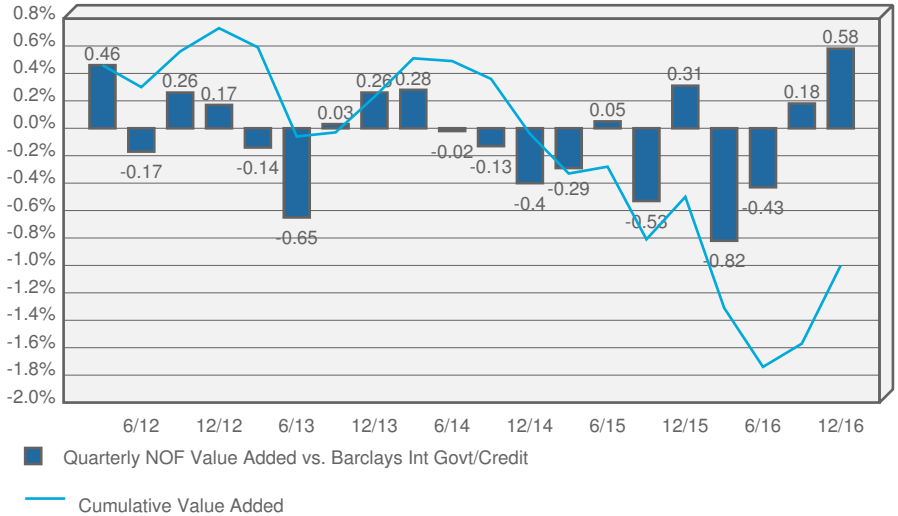
December 31, 2016

Cumulative Skill Analysis vs Benchmark

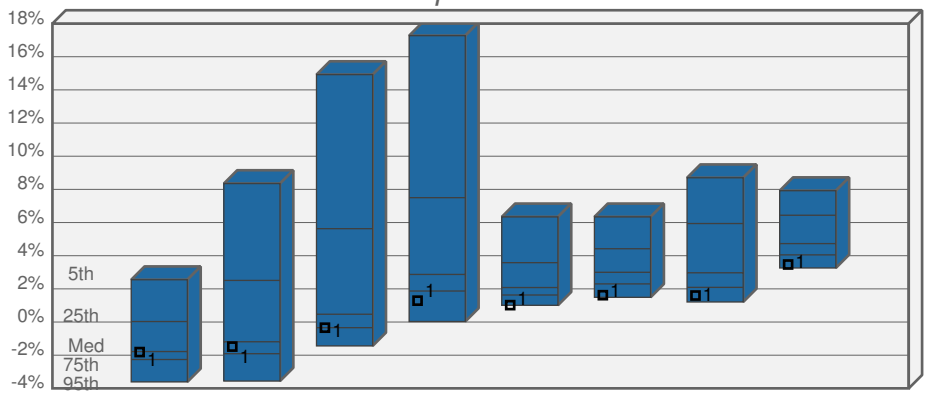


Excess Return:	**-0.19**	**Information Ratio:**	**-0.25**
Excess Risk:	**0.76**	**T-Stat:**	**-0.57**

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
◻ CIM Investment	-1.49 (39)	-1.16 (49)	-0.02 (64)	1.61 (77)	1.34 (87)	1.94 (88)	1.92 (79)	3.79 (84)
1 Barclays Int G	-2.07 (66)	-1.91 (75)	-0.36 (75)	2.08 (68)	1.57 (78)	2.09 (84)	1.85 (82)	3.84 (83)
Median	-1.78	-1.19	0.47	2.87	2.08	3.00	2.97	4.73
Number of Funds	310	310	309	306	300	294	279	225

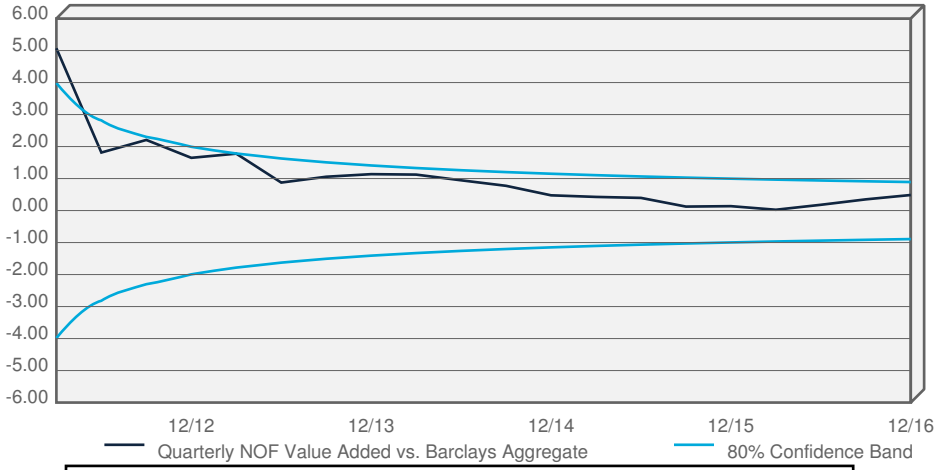
*Compass Total Returns of Active Intermediate Fixed Income Portfolios Universe - Gross of Fees

Wilshire

Federated

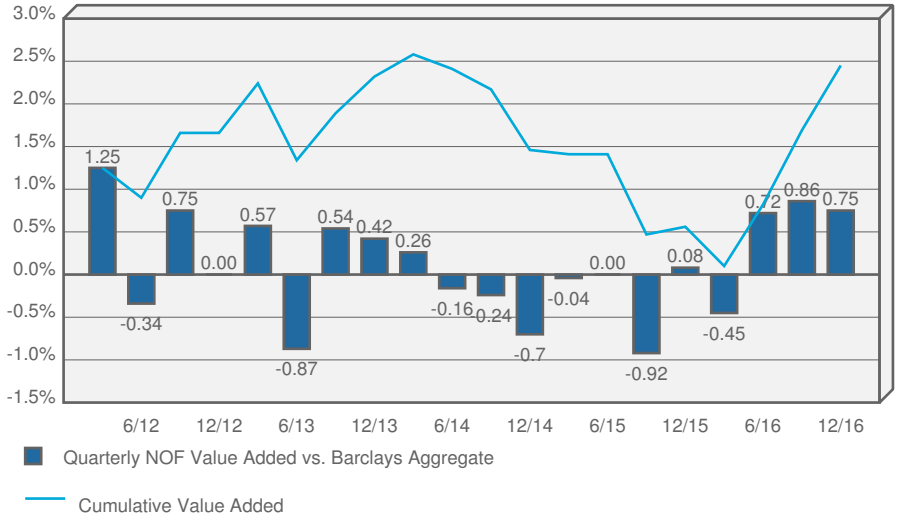
December 31, 2016

Cumulative Skill Analysis vs Benchmark

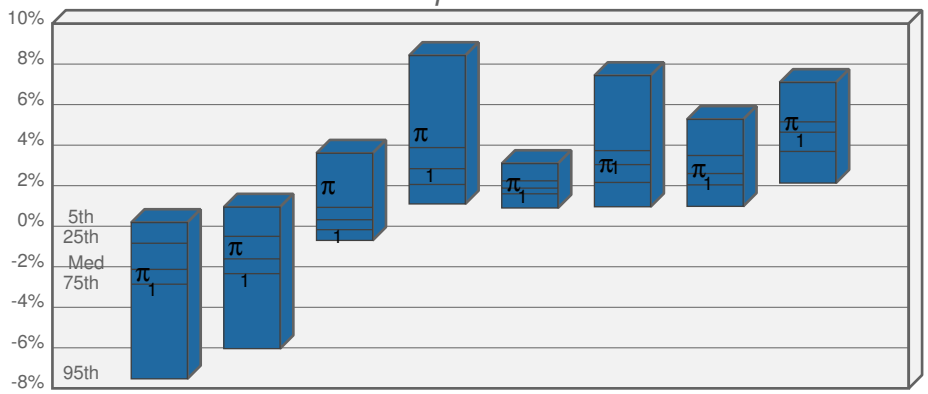


Excess Return:	**0.49**	**Information Ratio:**	**0.40**
Excess Risk:	**1.21**	**T-Stat:**	**0.90**

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
π Federated	-2.23 (52)	-0.94 (32)	2.03 (9)	4.66 (18)	2.19 (27)	3.15 (45)	2.87 (39)	5.22 (22)
1 Barclays Aggre	-2.98 (79)	-2.53 (80)	-0.37 (85)	2.65 (57)	1.59 (76)	3.03 (50)	2.23 (68)	4.35 (61)
Median	-2.13	-1.61	0.32	2.84	1.88	3.04	2.60	4.64
Number of Funds	302	301	300	300	293	288	275	232

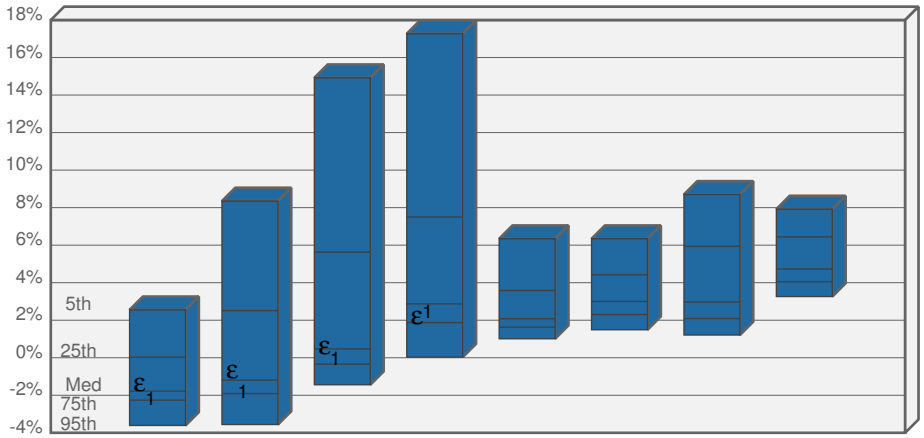
*Compass Total Returns of Active Core Fixed Income Portfolios Universe - Gross of Fees

Wilshire

StoneRidge Partners - Emg. Mgr.

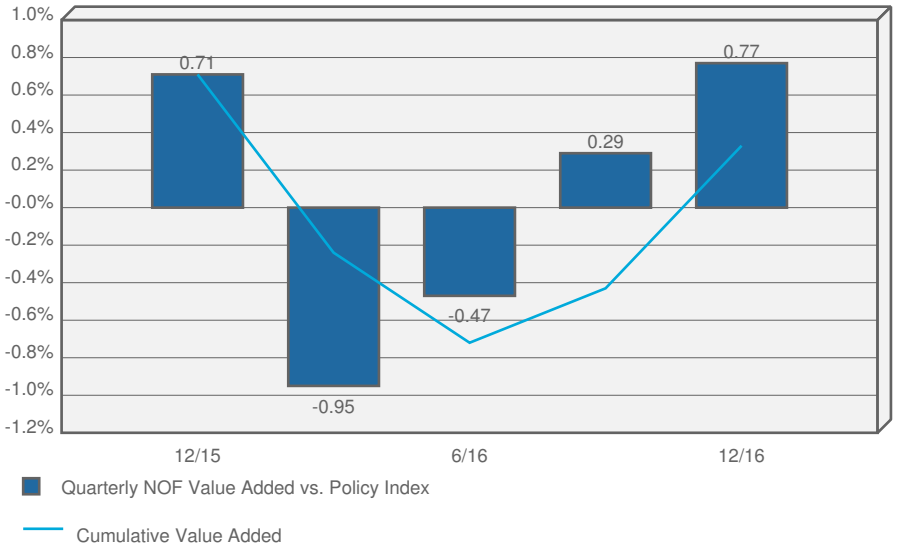
December 31, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
ε StoneRidge Par	-1.25 (34)	-0.60 (37)	0.69 (47)	2.28 (62)				
1 Policy Index	-2.01 (61)	-1.65 (67)	0.09 (61)	2.62 (53)				
Median	-1.78	-1.19	0.47	2.87	2.08	3.00	2.97	4.73
Number of Funds	310	310	309	306	300	294	279	225

Value-Added Analysis vs Benchmark



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

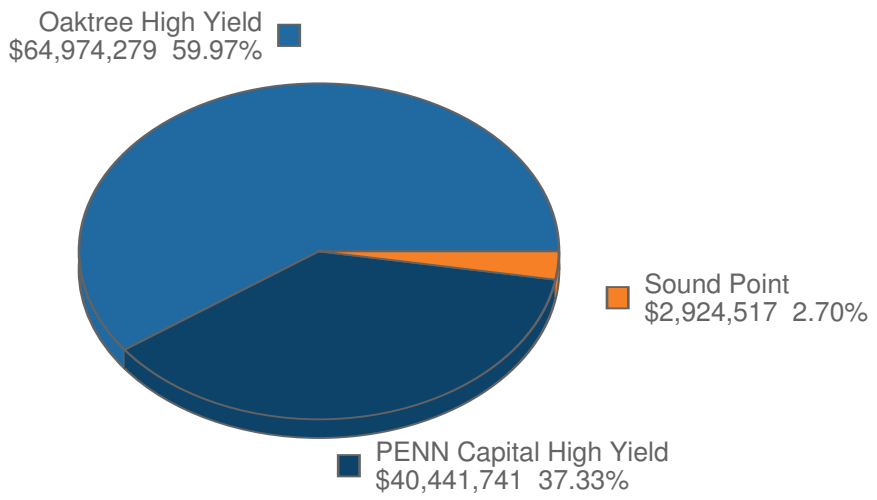
High Yield

Manager Allocation

Wilshire

High Yield Fixed Composite

As of December 31, 2016

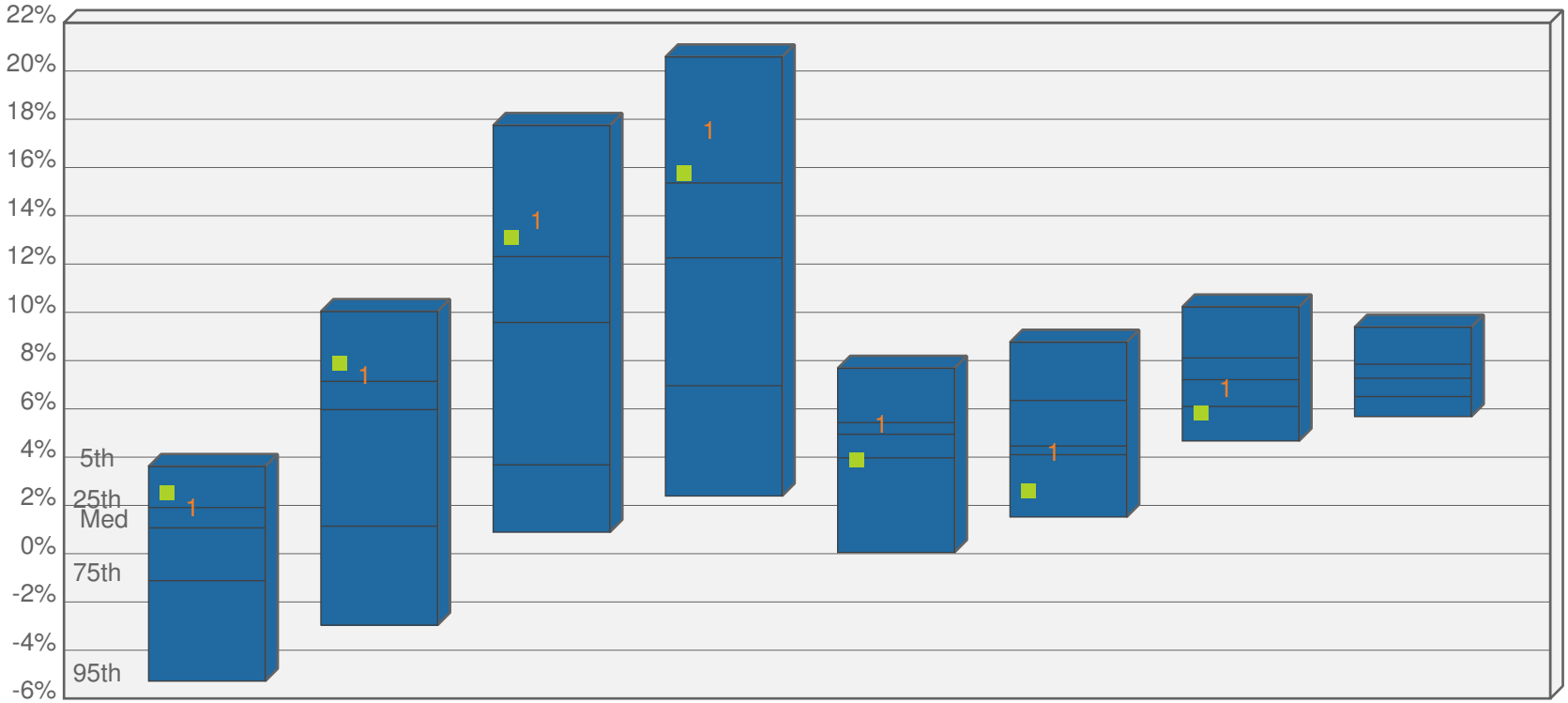


Performance Comparison

Wilshire

High Yield Fixed Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
High Yield Fixed Composi	2.57 (12)	7.95 (17)	13.14 (19)	15.82 (20)	3.93 (76)	2.65 (93)	5.87 (87)	
1 Citi High Yield	1.90 (25)	7.40 (22)	13.82 (18)	17.56 (11)	5.38 (35)	4.21 (69)	6.84 (55)	
5th %tile	3.61	10.03	17.74	20.58	7.68	8.76	10.22	9.38
25th %tile	1.91	7.14	12.31	15.36	5.43	6.35	8.11	7.85
Median	1.07	5.97	9.58	12.26	4.95	4.46	7.21	7.27
75th %tile	-1.12	1.14	3.68	6.96	3.97	4.10	6.10	6.51
95th %tile	-5.28	-2.96	0.89	2.39	0.05	1.52	4.67	5.68
Number of Funds	163	161	157	156	142	128	93	35

*TUCS Total Ret of Fixed Income Portfolios - High Yield Universe - Gross of Fees

Performance Comparison

Wilshire

Trailing Returns

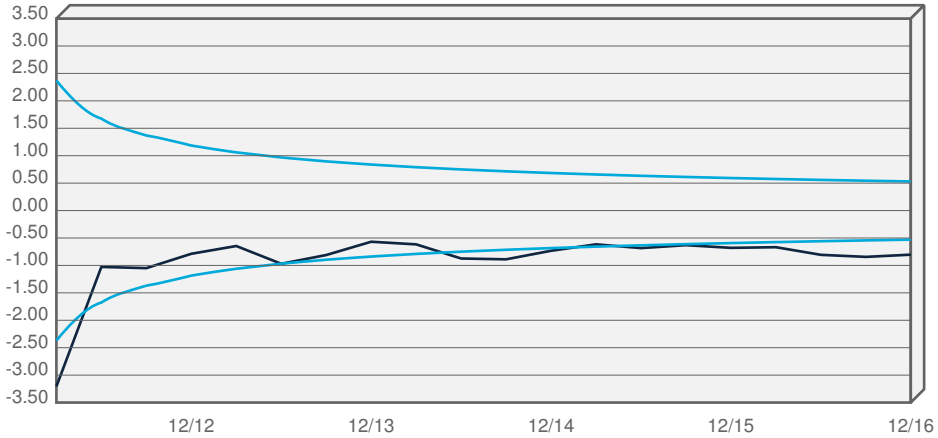
Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Oaktree High Yield									
Net of Fee Return	**1.84**	**6.89**	**12.31**	**15.78**	**3.18**	**5.92**		**3/31/08**	**7.90**
Citigroup HY Cash Pay Capped	1.84	7.30	13.65	17.30	4.18	6.78		3/31/08	7.99
Value Added	-0.01	-0.42	-1.34	-1.52	-1.00	-0.86		3/31/08	-0.09
PENN Capital High Yield									
Net of Fee Return	**3.82**	**9.98**	**15.01**	**16.56**	**1.37**	**5.20**		**6/30/08**	**7.40**
ML High Yield Master II	1.88	7.47	13.79	17.49	4.72	7.35		6/30/08	8.58
Value Added	1.94	2.51	1.22	-0.93	-3.35	-2.15		6/30/08	-1.18
Sound Point									
Net of Fee Return	**1.99**	**4.23**	**6.55**	**7.28**	**4.31**			**9/30/13**	**4.75**
CSFB Leveraged Loan	2.25	5.42	8.44	9.88	3.76			9/30/13	4.04
Value Added	-0.26	-1.20	-1.88	-2.60	0.55			9/30/13	0.70
High Yield Fixed Composite									
Net of Fee Return	**2.57**	**7.95**	**13.14**	**15.82**	**2.50**	**5.66**		**3/31/08**	**7.74**
Citi High Yield Market Capped	1.90	7.40	13.82	17.56	4.21	6.84		3/31/08	8.06
Value Added	0.67	0.55	-0.68	-1.74	-1.71	-1.18		3/31/08	-0.32

Oaktree High Yield

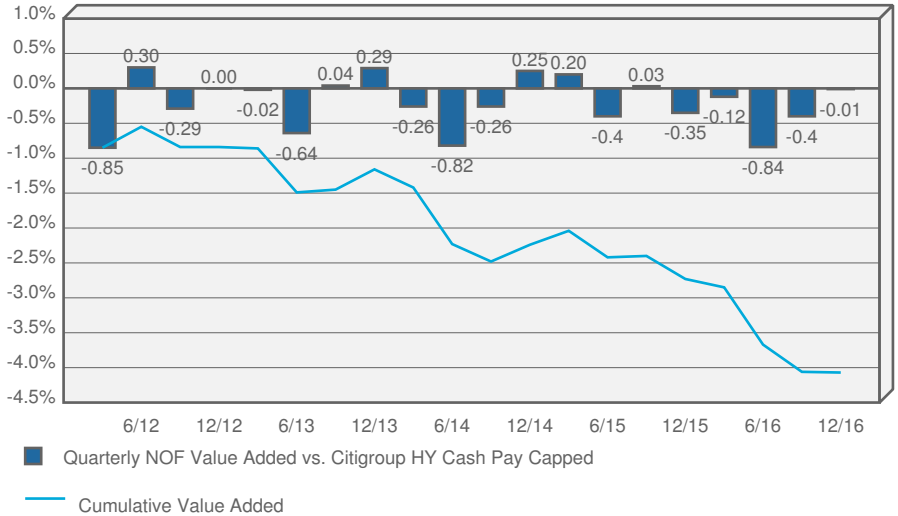
December 31, 2016

Cumulative Skill Analysis vs Benchmark

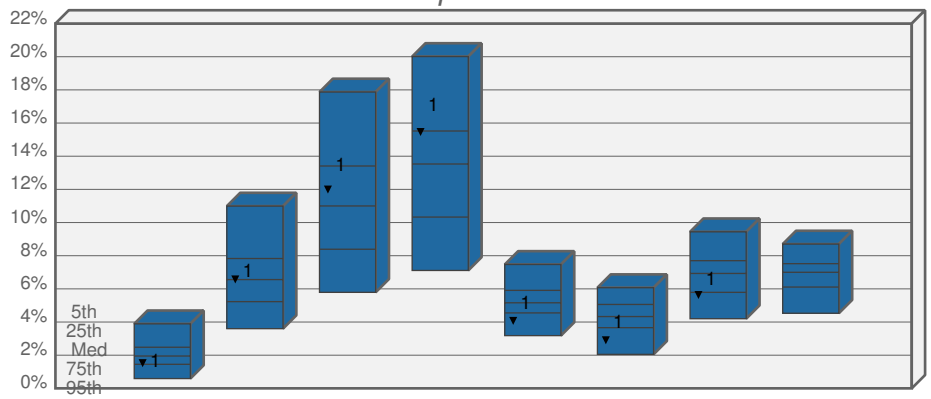


Excess Return:	**-0.80**	**Information Ratio:**	**-1.12**
Excess Risk:	**0.72**	**T-Stat:**	**-2.49**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



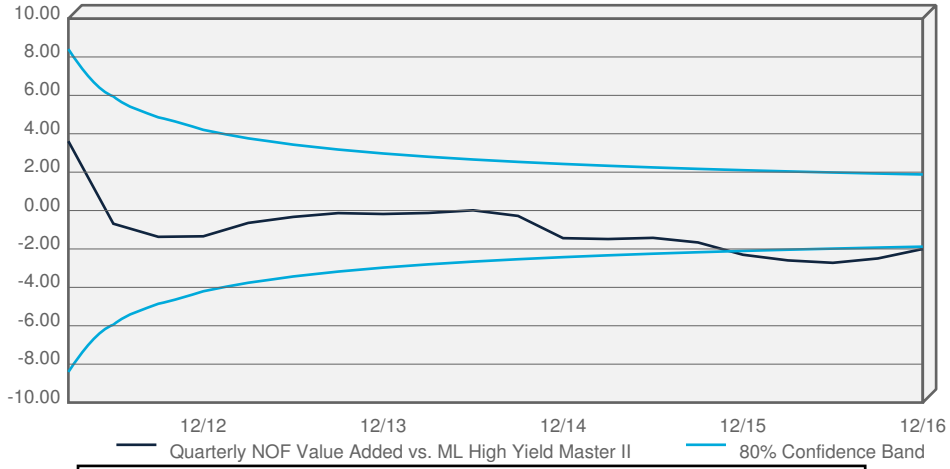
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▼ Oaktree High Y	1.84 (53)	6.89 (42)	12.31 (33)	15.78 (24)	4.39 (79)	3.22 (85)	5.95 (71)	
1 Citigroup HY C	1.84 (53)	7.30 (36)	13.65 (22)	17.30 (13)	5.35 (44)	4.18 (53)	6.78 (55)	
Median	1.95	6.56	11.00	13.53	5.16	4.33	6.93	7.00
Number of Funds	145	145	144	144	144	143	127	89

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

PENN Capital High Yield

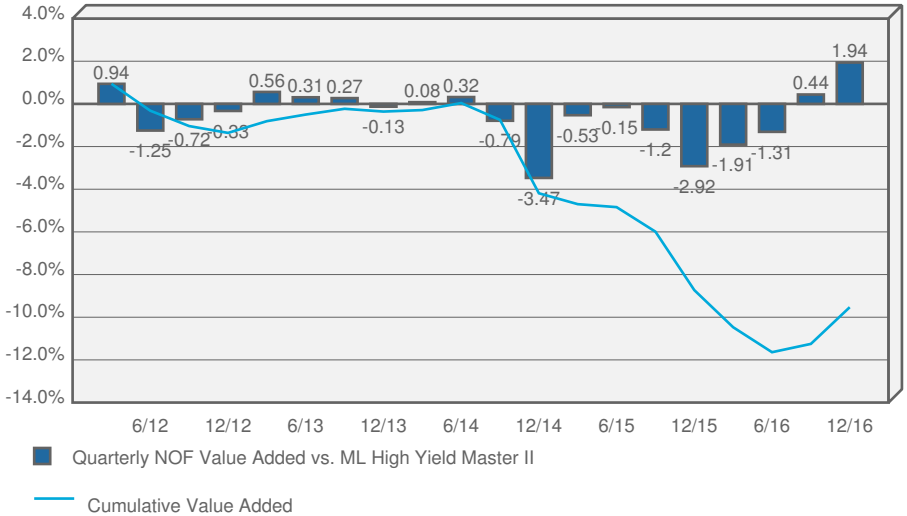
December 31, 2016

Cumulative Skill Analysis vs Benchmark

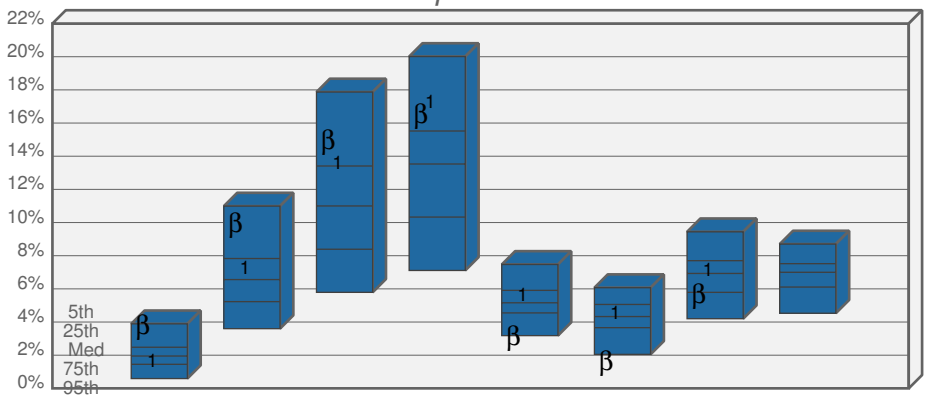


Excess Return:	**-2.00**	**Information Ratio:**	**-0.78**
Excess Risk:	**2.56**	**T-Stat:**	**-1.75**

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
β PENN Capital H	3.82 (6)	9.98 (7)	15.01 (12)	16.56 (17)	3.16 (95)	1.70 (96)	5.70 (77)	
1 ML High Yield	1.88 (51)	7.47 (32)	13.79 (19)	17.49 (12)	5.85 (27)	4.72 (33)	7.35 (37)	
Median	1.95	6.56	11.00	13.53	5.16	4.33	6.93	7.00
Number of Funds	145	145	144	144	144	143	127	89

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

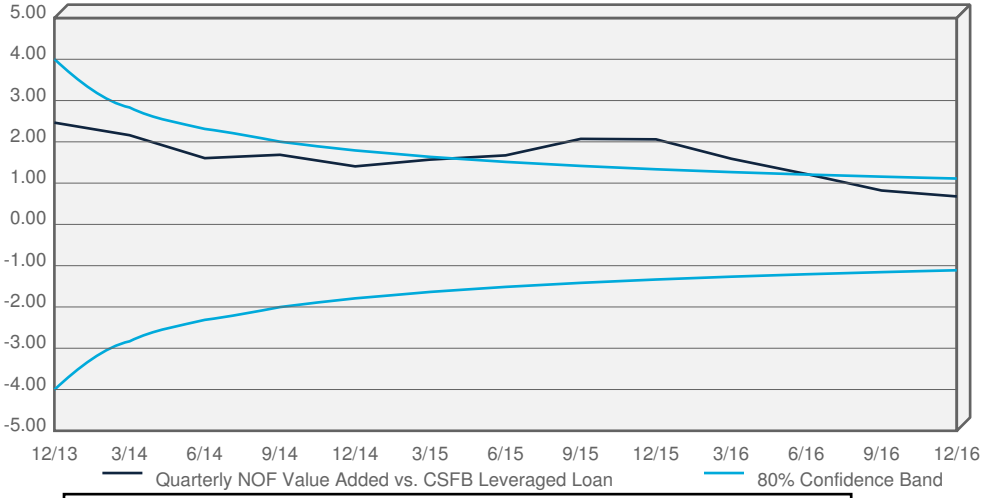
Investment Manager Analysis

Wilshire

Sound Point

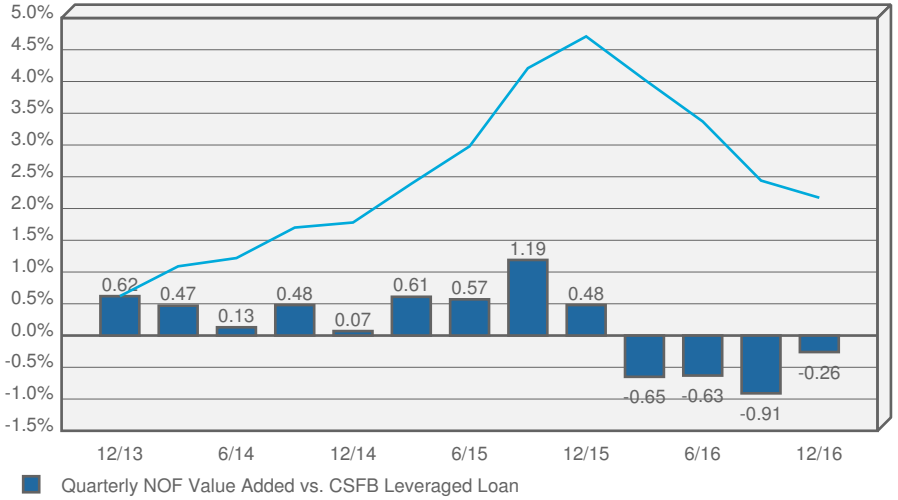
December 31, 2016

Cumulative Skill Analysis vs Benchmark



Excess Return:	**0.68**	**Information Ratio:**	**0.56**
Excess Risk:	**1.22**	**T-Stat:**	**0.96**

Value-Added Analysis vs Benchmark

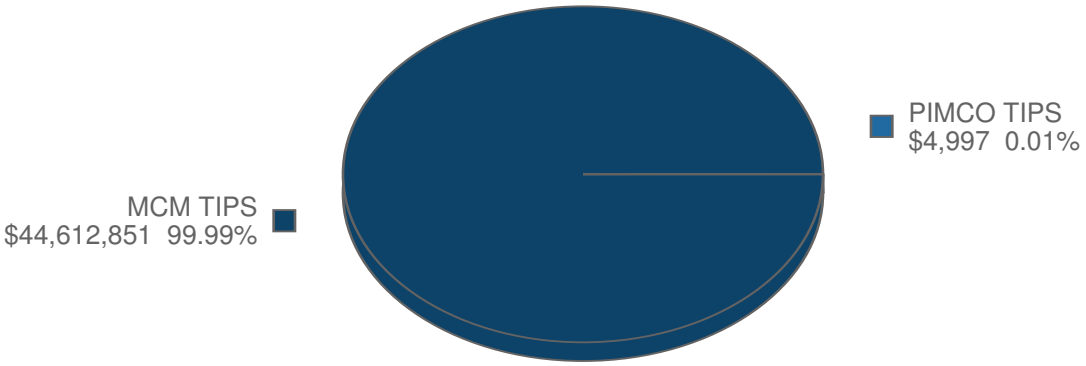


TIPS

Manager Allocation

TIPS Fixed Composite

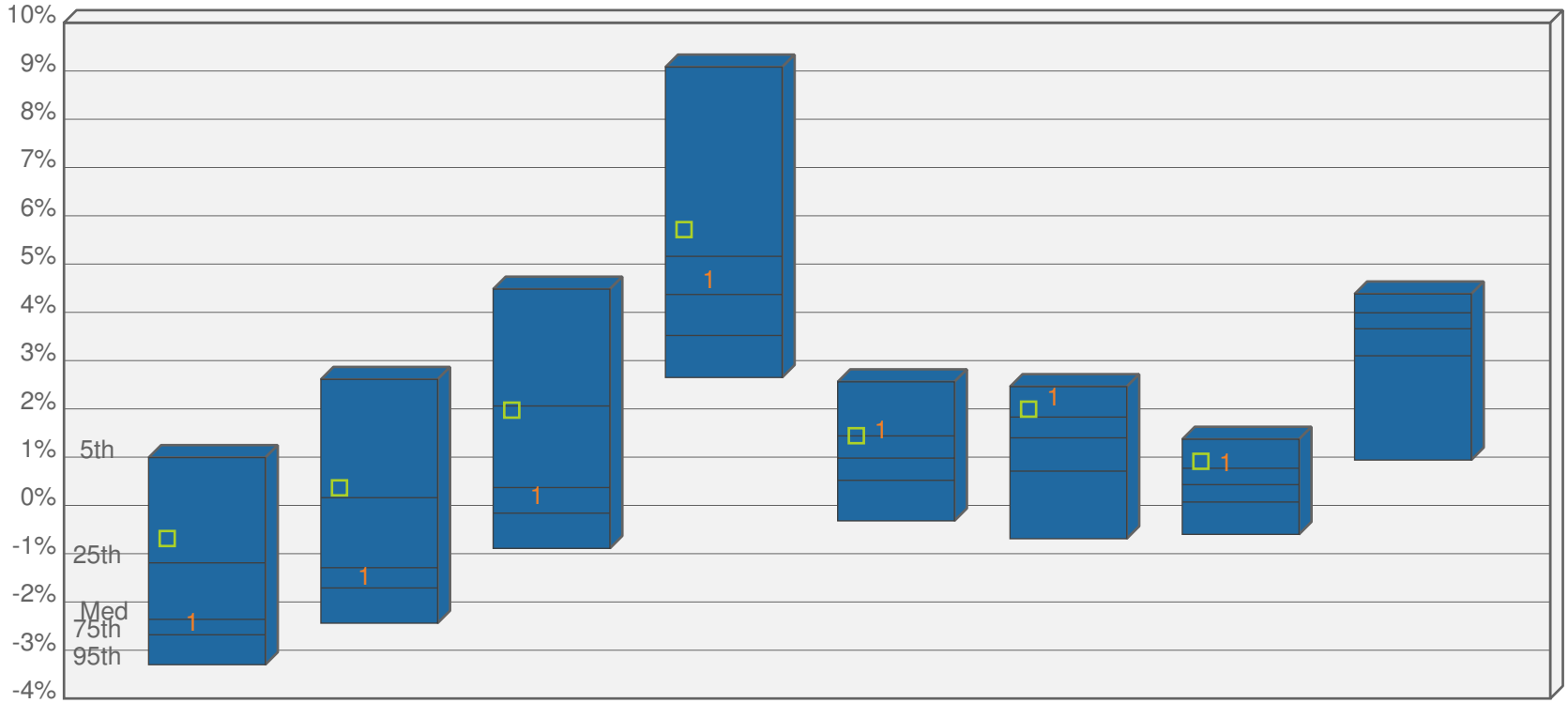
As of December 31, 2016



Wilshire

TIPS Fixed Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
□ TIPS Fixed Composite	-0.66 (14)	0.39 (17)	2.00 (25)	5.74 (17)	1.47 (23)	2.02 (19)	0.94 (16)	
1 Barclays U.S. TI	-2.41 (53)	-1.47 (58)	0.22 (56)	4.68 (40)	1.58 (18)	2.26 (8)	0.89 (16)	
5th %tile	0.99	2.61	4.48	9.08	2.56	2.46	1.37	4.38
25th %tile	-1.19	0.16	2.06	5.16	1.44	1.83	0.77	3.99
Median	-2.36	-1.29	0.37	4.37	0.98	1.40	0.43	3.66
75th %tile	-2.68	-1.71	-0.16	3.52	0.52	0.71	0.07	3.10
95th %tile	-3.30	-2.44	-0.89	2.65	-0.32	-0.69	-0.60	0.94
Number of Funds	184	184	183	183	170	167	153	97

*Total Returns of TIPS Mutual Funds Universe - Net of Fees

Wilshire

Trailing Returns

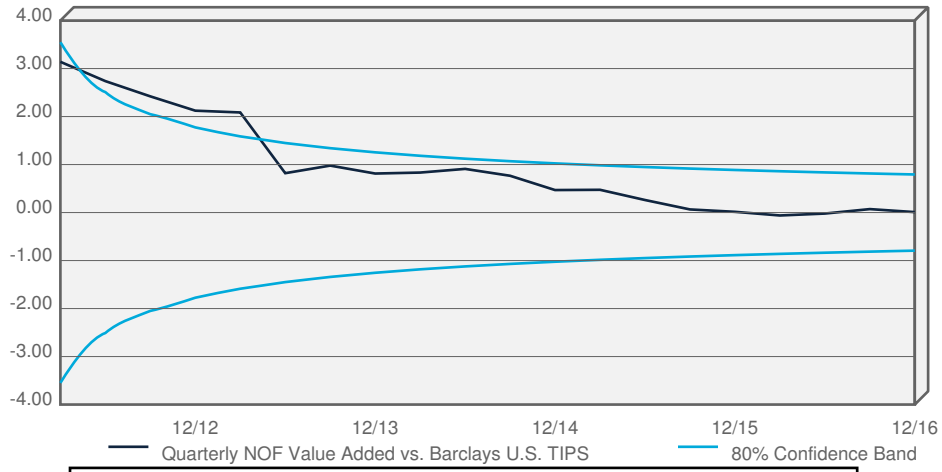
Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
PIMCO TIPS									
Net of Fee Return	**-2.69**	**-1.33**	**0.52**	**4.67**	**1.73**	**0.90**		**3/31/08**	**3.29**
Barclays U.S. TIPS	-2.41	-1.47	0.22	4.68	2.26	0.89		3/31/08	3.09
Value Added	-0.29	0.14	0.31	-0.02	-0.53	0.01		3/31/08	0.20
WAMCO TIPS									
Net of Fee Return	**-3.04**	**-2.37**	**-1.07**	**2.11**	**0.79**	**0.06**		**3/31/08**	**2.46**
Barclays U.S. TIPS	-2.41	-1.47	0.22	4.68	2.26	0.89		3/31/08	3.09
Value Added	-0.64	-0.91	-1.29	-2.58	-1.47	-0.83		3/31/08	-0.63
TIPS Fixed Composite									
Net of Fee Return	**-0.66**	**0.39**	**2.00**	**5.74**	**2.02**	**0.94**		**3/31/08**	**3.15**
Barclays U.S. TIPS	-2.41	-1.47	0.22	4.68	2.26	0.89		3/31/08	3.09
Value Added	1.75	1.85	1.78	1.06	-0.24	0.04		3/31/08	0.05

PIMCO TIPS

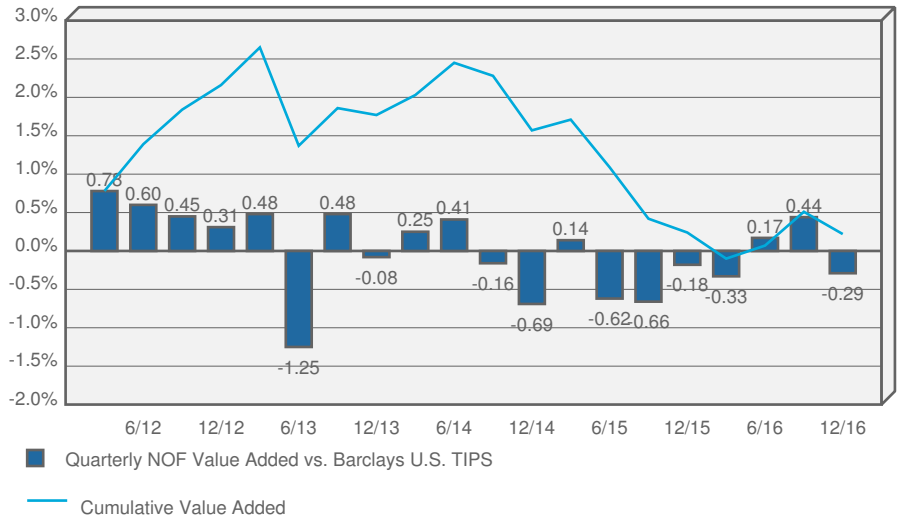
December 31, 2016

Cumulative Skill Analysis vs Benchmark

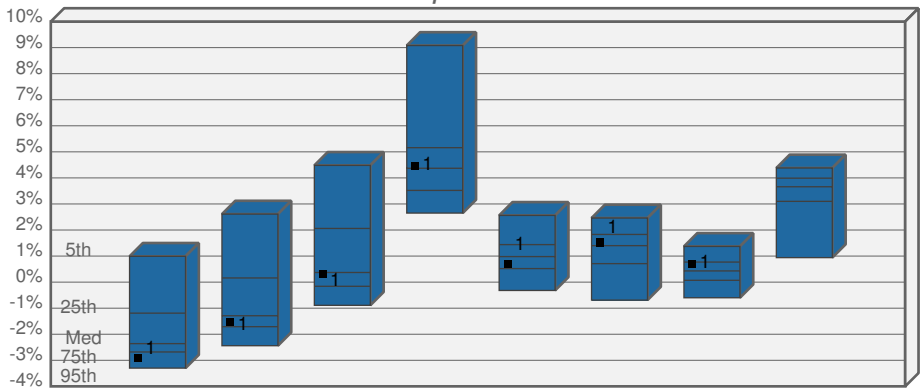


Excess Return:	**0.01**	**Information Ratio:**	**0.01**
Excess Risk:	**1.08**	**T-Stat:**	**0.02**

Value-Added Analysis vs Benchmark

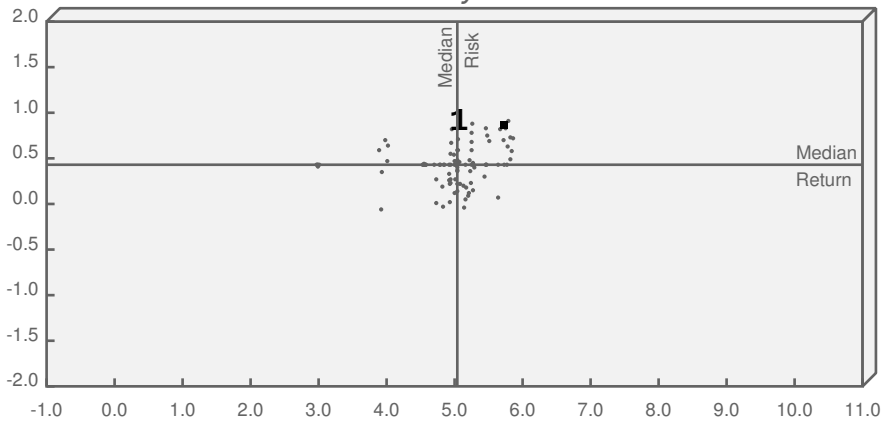


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ PIMCO TIPS	-2.69 (77)	-1.33 (54)	0.52 (43)	4.67 (40)	0.89 (58)	1.73 (30)	0.90 (16)	
1 Barclays U.S.	-2.41 (53)	-1.47 (58)	0.22 (56)	4.68 (40)	1.58 (18)	2.26 (8)	0.89 (16)	
Median	-2.36	-1.29	0.37	4.37	0.98	1.40	0.43	3.66
Number of Funds	184	184	183	183	170	167	153	97

Five Year Risk/Return Analysis vs Peer Universe*



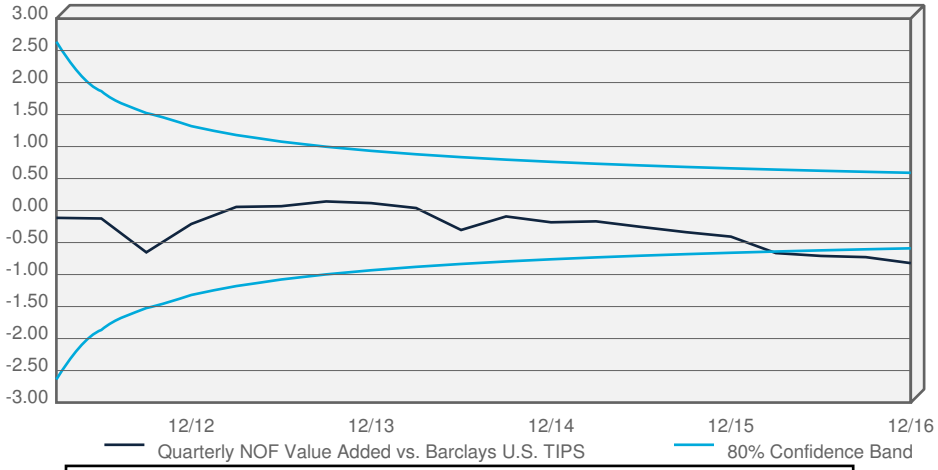
Description	Legend	Net Fee Ret Value	Net Fee Ret Rank	Standard Deviation Value	Standard Deviation Rank
PIMCO TIPS	■	0.90	16	5.89	5
Barclays U.S. TIPS	1	0.89	16	5.14	42
Median		0.43		5.04	

*Lipper Total Returns of TIPS Mutual Funds Universe - Net of Fees

WAMCO TIPS

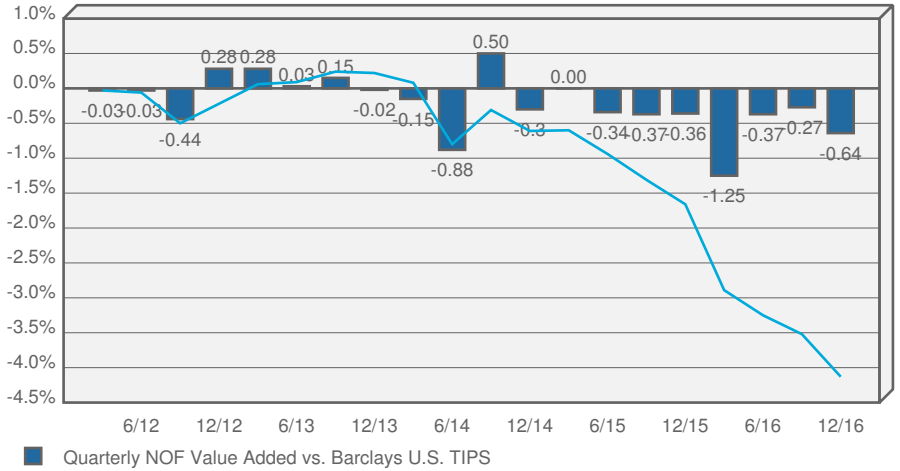
December 31, 2016

Cumulative Skill Analysis vs Benchmark

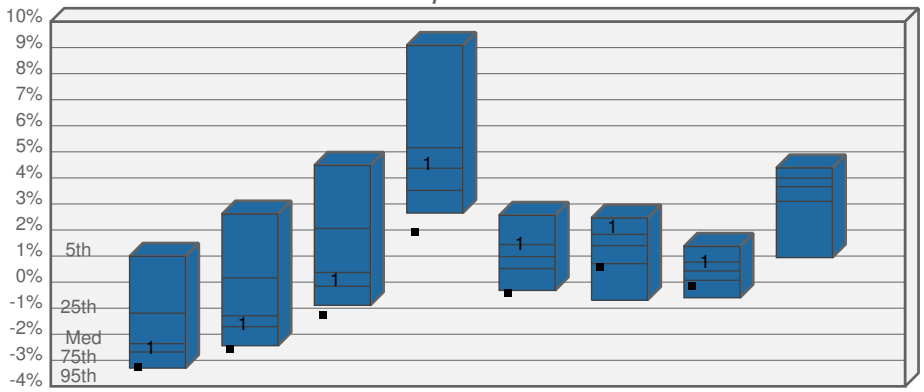


Excess Return:	**-0.82**	**Information Ratio:**	**-1.02**
Excess Risk:	**0.80**	**T-Stat:**	**-2.29**

Value-Added Analysis vs Benchmark

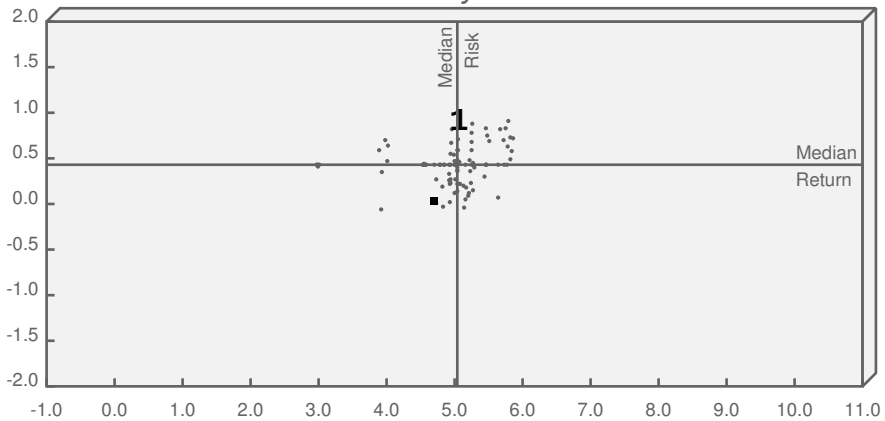


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ WAMCO TIPS	-3.04 (94)	-2.37 (93)	-1.07 (96)	2.11 (98)	-0.22 (93)	0.79 (73)	0.06 (76)	
1 Barclays U.S.	-2.41 (53)	-1.47 (58)	0.22 (56)	4.68 (40)	1.58 (18)	2.26 (8)	0.89 (16)	
Median	-2.36	-1.29	0.37	4.37	0.98	1.40	0.43	3.66
Number of Funds	184	184	183	183	170	167	153	97

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Net Fee Ret Value	Net Fee Ret Rank	Standard Deviation Value	Standard Deviation Rank
WAMCO TIPS	■	0.06	76	4.85	68
Barclays U.S. TIPS	1	0.89	16	5.14	42
Median		0.43		5.04	

*Lipper Total Returns of TIPS Mutual Funds Universe - Net of Fees

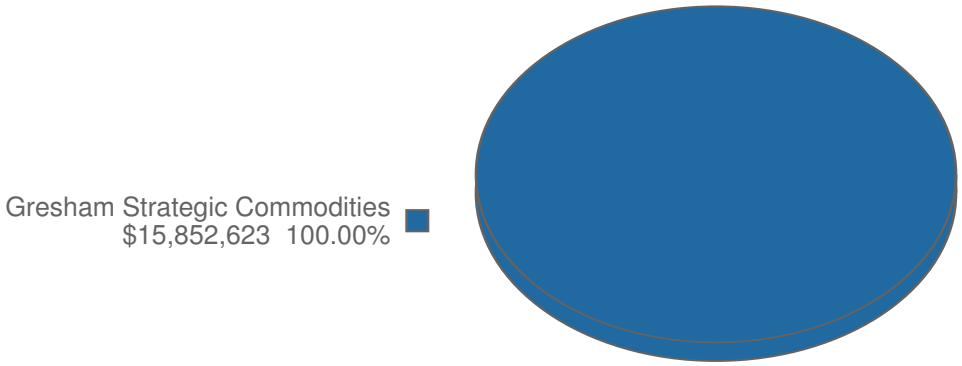
Commodities

Manager Allocation

Wilshire

Commodities Composite

As of December 31, 2016



Wilshire

Trailing Returns

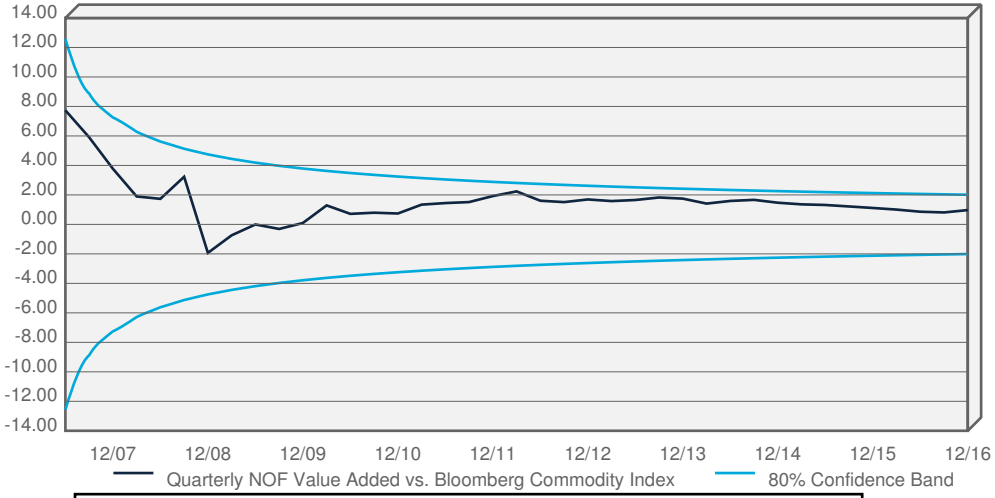
Periods Ended December 31, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Gresham Strategic Commodities									
Net of Fee Return	**4.48**	**0.19**	**11.78**	**11.47**	**-11.93**	**-8.88**		**3/31/07**	**-5.24**
Bloomberg Commodity Index	2.66	-1.31	11.30	11.77	-11.26	-8.95		3/31/07	-6.15
Value Added	1.82	1.50	0.48	-0.30	-0.67	0.07		3/31/07	0.91
Commodities Composite									
Net of Fee Return	**4.48**	**0.19**	**11.78**	**11.47**	**-11.71**	**-8.03**		**3/31/07**	**-4.78**
Bloomberg Commodity Index	2.66	-1.31	11.30	11.77	-11.26	-8.95		3/31/07	-6.15
Value Added	1.82	1.50	0.48	-0.30	-0.45	0.92		3/31/07	1.36

Gresham Strategic Commodities

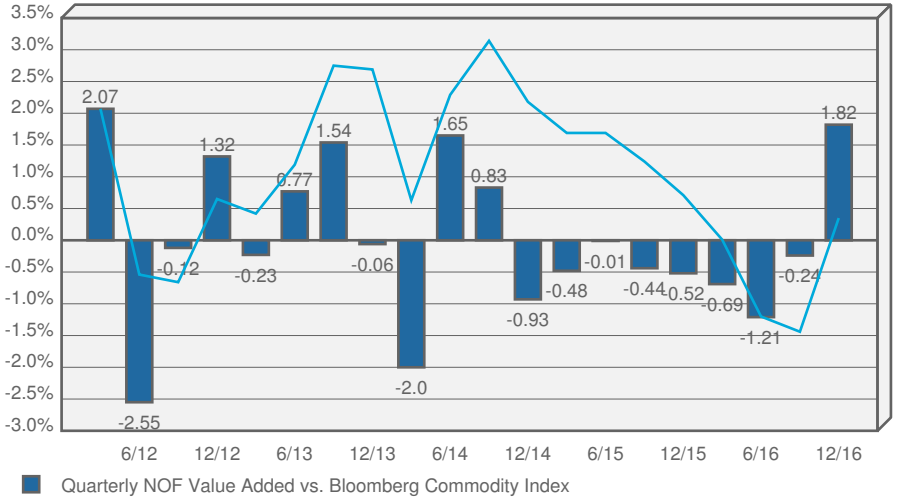
December 31, 2016

Cumulative Skill Analysis vs Benchmark



Excess Return:	**0.97**	**Information Ratio:**	**0.25**
Excess Risk:	**3.82**	**T-Stat:**	**0.76**

Value-Added Analysis vs Benchmark



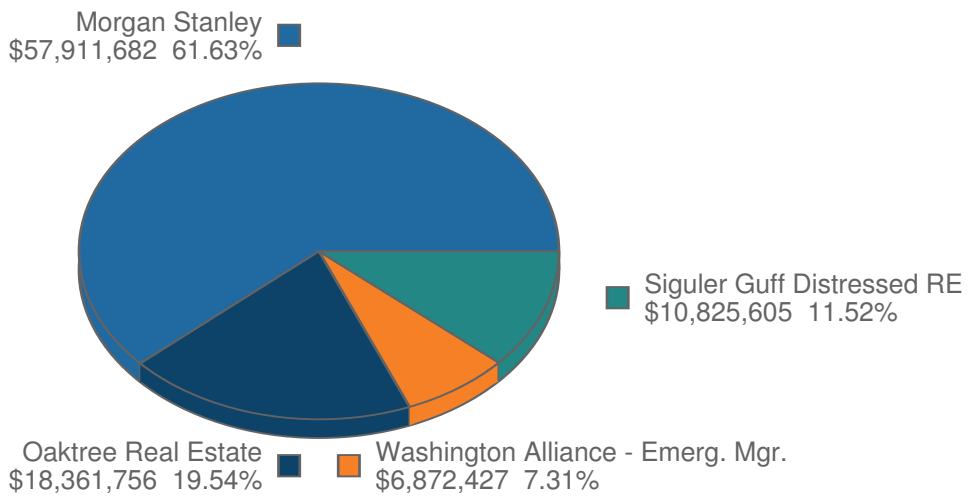
Real Estate

Manager Allocation

Wilshire

Real Estate Composite

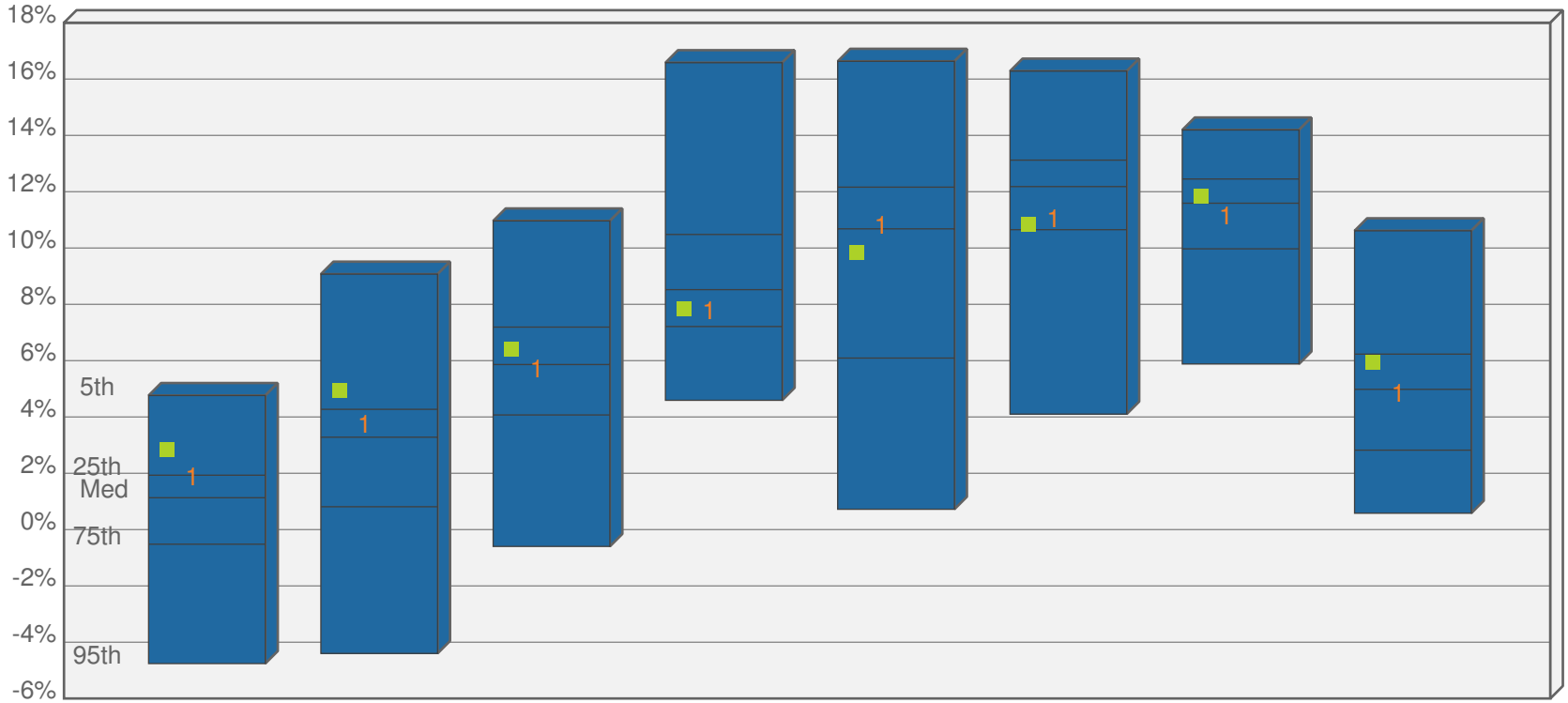
As of December 31, 2016



Wilshire

Real Estate Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Real Estate Composite	2.89 (9)	4.97 (17)	6.46 (38)	7.88 (60)	9.90 (59)	10.87 (73)	11.89 (42)	5.99 (27)
1 NCREIF ODCE NOF	1.88 (26)	3.74 (42)	5.73 (51)	7.79 (63)	10.82 (43)	11.04 (73)	11.16 (59)	4.84 (52)
5th %tile	4.76	9.07	10.96	16.58	16.63	16.28	14.19	10.61
25th %tile	1.93	4.27	7.19	10.48	12.16	13.12	12.45	6.23
Median	1.13	3.28	5.86	8.52	10.68	12.18	11.59	4.98
75th %tile	-0.52	0.81	4.07	7.21	6.09	10.65	9.97	2.82
95th %tile	-4.76	-4.40	-0.60	4.59	0.72	4.10	5.88	0.58
Number of Funds	77	76	71	71	64	62	53	36

*TUCS Total Ret of Real Estate Investment Pools Universe - Gross of Fees

Performance Comparison

Wilshire

Trailing Returns

Periods Ended December 31, 2016

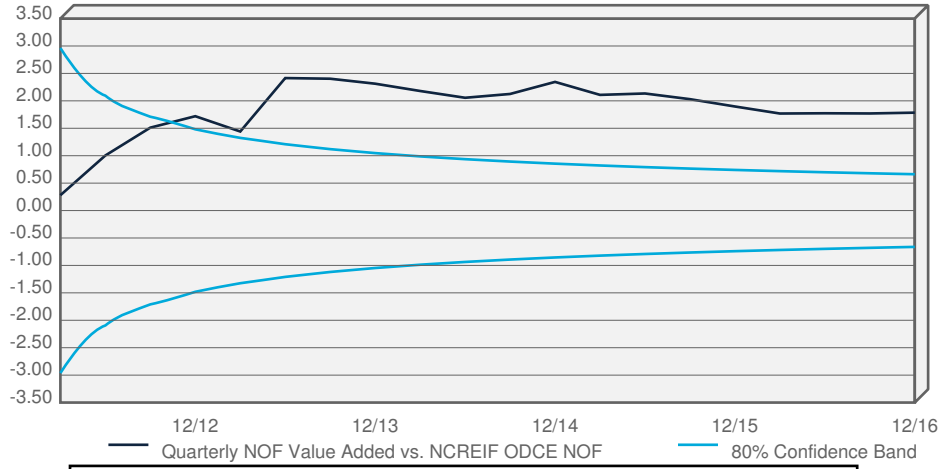
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Morgan Stanley									
Net of Fee Return	**2.40**	**4.72**	**7.21**	**9.23**	**12.63**	**13.14**	**6.18**	**3/31/03**	**8.96**
NCREIF ODCE NOF	1.88	3.74	5.73	7.79	11.04	11.16	4.84	3/31/03	7.35
Value Added	0.52	0.97	1.48	1.44	1.59	1.99	1.34	3/31/03	1.61
Oaktree Real Estate									
Net of Fee Return								**9/30/13**	**7.61**
Siguler Guff Distressed RE									
Net of Fee Return								**3/31/14**	**2.50**
Washington Alliance - Emerg. Mgr.									
Net of Fee Return								**9/30/13**	**11.53**
Real Estate Composite									
Net of Fee Return	**2.89**	**4.97**	**6.46**	**7.88**	**10.68**	**11.66**	**5.88**	**3/31/03**	**8.81**
NCREIF ODCE NOF	1.88	3.74	5.73	7.79	11.04	11.16	4.84	3/31/03	7.35
Value Added	1.01	1.23	0.73	0.09	-0.36	0.50	1.03	3/31/03	1.46
ERECT Fund II									
Net of Fee Return	**-0.74**	**0.83**	**5.10**	**9.26**	**6.97**	**8.63**	**6.01**	**6/30/05**	**6.90**
Consumer Price Index	0.00	0.17	1.39	2.07	1.18	1.36	1.81	6/30/05	1.90
Value Added	-0.74	0.66	3.72	7.18	5.79	7.27	4.20	6/30/05	5.00
ERECT Composite									
Net of Fee Return	**-0.74**	**0.83**	**5.10**	**9.26**	**6.97**	**7.07**		**9/30/10**	**6.86**

Real Estate Composites returns do not include ERECT Funds

Morgan Stanley

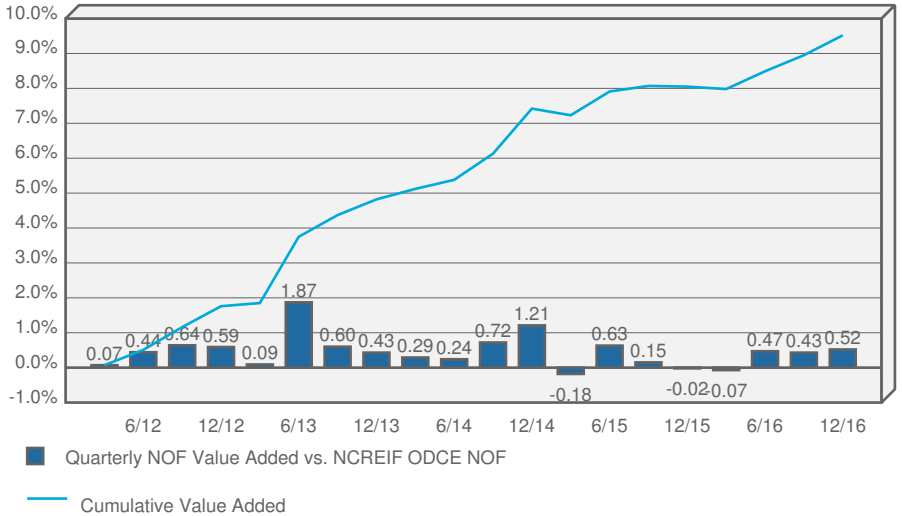
December 31, 2016

Cumulative Skill Analysis vs Benchmark

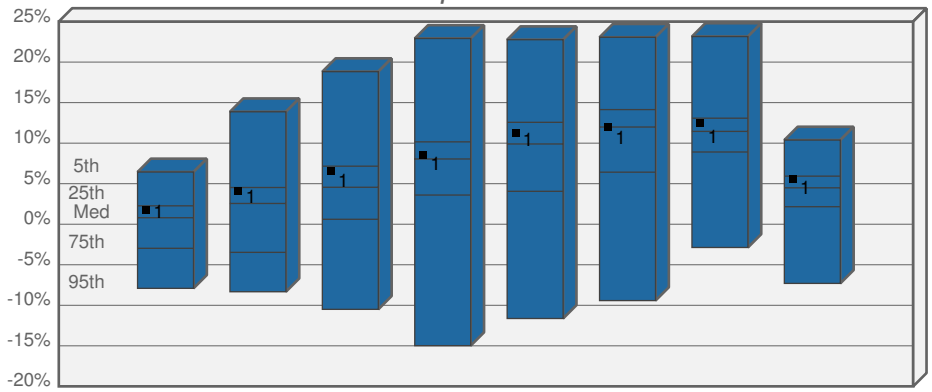


Excess Return:	**1.78**	**Information Ratio:**	**1.98**
Excess Risk:	**0.90**	**T-Stat:**	**4.43**

Value-Added Analysis vs Benchmark

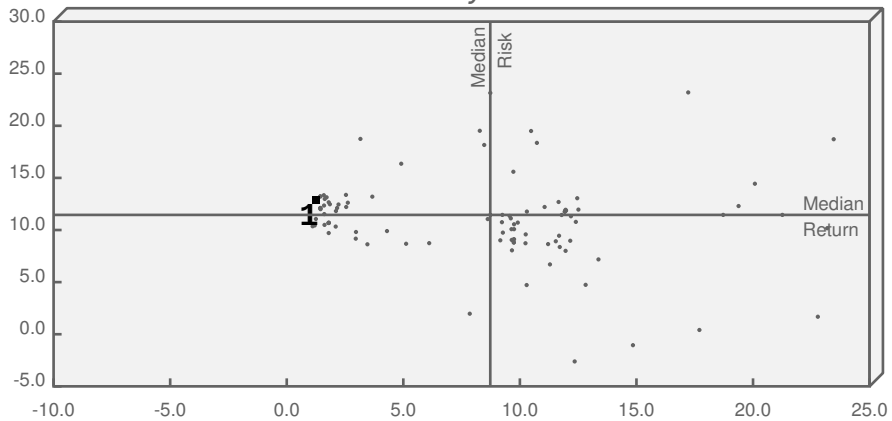


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ Morgan Stanley	2.40 (23)	4.72 (21)	7.21 (24)	9.23 (33)	11.88 (30)	12.63 (40)	13.14 (24)	6.18 (23)
1 NCREIF ODCE NO	0.88 (30)	3.74 (35)	5.73 (39)	7.79 (53)	10.82 (42)	11.04 (58)	11.16 (52)	4.85 (44)
Median	0.80	2.56	4.56	8.05	9.90	11.99	11.45	4.49
Number of Funds	697	687	671	664	606	553	374	155

Five Year Risk/Return Analysis vs Peer Universe*



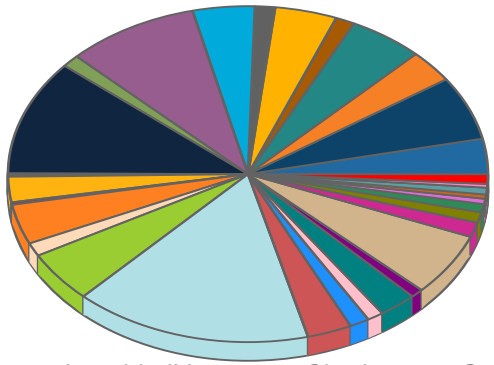
Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
Morgan Stanley	■	13.14	24	1.71	89
NCREIF ODCE NOF	1	11.16	52	1.18	99
Median		11.45		8.73	

*Wilcop Total Returns of Real Estate Portfolios Universe - Gross of Fees

Alternative Investments

Manager Allocation

Wilshire

Private Equity Composite

As of December 31, 2016