Wilshire

Retirement Board of Allegheny County

Executive Summary of Investment Performance

Quarter Ending September 30, 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%	Emrg Mrkts 16.4%
U.S. TIPS 13.6%	Developed 17.9%	MLPs 27.6%	U.S. Equity 12.7%	U.S. Equity 0.7%	MLPs 15.9%
REITs 9.2%	REITs 17.6%	Developed 23.3%	Core Bond 6.0%	Core Bond 0.6%	High Yield 15.1%
Core Bond 7.8%	U.S. Equity 16.1%	High Yield 7.4%	MLPs 4.8%	T-Bills 0.1%	REITs 9.7%
High Yield 5.0%	High Yield 15.8%	REITs 1.9%	U.S. TIPS 3.6%	Developed -0.4%	Commodities 8.9%
U.S. Equity 1.0%	U.S. TIPS 7.0%	T-Bills 0.1%	High Yield 2.5%	U.S. TIPS -1.4%	U.S. Equity 8.4%
T-Bills 0.1%	MLPs 4.8%	Core Bond -2.0%	T-Bills 0.0%	High Yield -4.5%	U.S. TIPS 7.3%
Developed -11.7%	Core Bond 4.2%	Emrg Mrkts -2.3%	Emrg Mrkts -1.8%	Emrg Mrkts -14.6%	Core Bond 5.8%
Commodities -13.3%	T-Bills 0.1%	U.S. TIPS -8.6%	Developed -4.5%	Commodities -24.7%	Developed 2.2%
Emrg Mrkts -18.2%	Commodities -1.0%	Commodities -9.5%	Commodities -17.0%	MLPs -32.6%	T-Bills 0.2%

Annualized 5-Year as of Sept '16
U.S. Equity 16.3%
REITs 15.8%
High Yield 8.3%
Developed 7.9%
MLPs 5.0%
Emrg Mrkts 3.4%
Core Bond 3.1%
U.S. TIPS 1.9%
T-Bills 0.1%
Commodities -9.4%

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 quarter by 4.3%. Most of the pricing activity occurred during roughly the first dozen trading days of the quarter. The post-Brexit rebound resulted in a 3.7% gain in the U.S., with a modest net gain thereafter. Strong equity returns this year have coincided with a drop in corporate earnings, although the Energy sector has been particularly weak. However, earnings are historical in nature while equity prices are forward looking, so that earnings growth is not necessary for positive returns, at least in the short term.

Large capitalization stocks underperformed smaller shares while growth stocks led value. Sector performance was varied during the quarter. The best performing sector was Information Technology (+12.6%) while the main laggard was Utilities (-5.7%).

Real GDP growth during the first half of the year equaled 1.1% at an annualized rate. Solid jobs growth and a slow but upward trend in hourly earnings provided a boost as consumer spending contributed 2% to overall real growth. Private investment, despite accounting for less than 20% of GDP, detracted -1%. Investments are down from a year ago while inventories shrank during the second quarter for the first time in five years.

Non-U.S. Equity

Equity markets outside of the U.S. were in positive territory during the quarter, particularly within emerging countries. The European Central Bank maintained their accommodative policies while the Bank of England cut their bank rate to 0.25% and extended their existing quantitative easing. In Japan where the overnight rate is negative, the central bank announced a plan to target the 10-year bond yield near 0%. Emerging market equities have benefitted from strong economic growth, asset inflows and economic resilience in China.

Fixed Income

U.S. Treasury yields were on a slow and steady rise for most of the third quarter. The bellwether 10-year Treasury yield reached a historic low of 1.37% in early July before reversing course and climbing to end the quarter at 1.60%. The Federal Open Market Committee decided to leave the overnight rate unchanged at their September meeting, the sixth consecutive meeting with no interest rate increase. Credit spreads tightened during the quarter in both investment grade and high yield bonds. Sovereign bond yields fell across much of Europe but ticked higher in Japan.

September 2016 Asset Class Assumptions

Wilshire

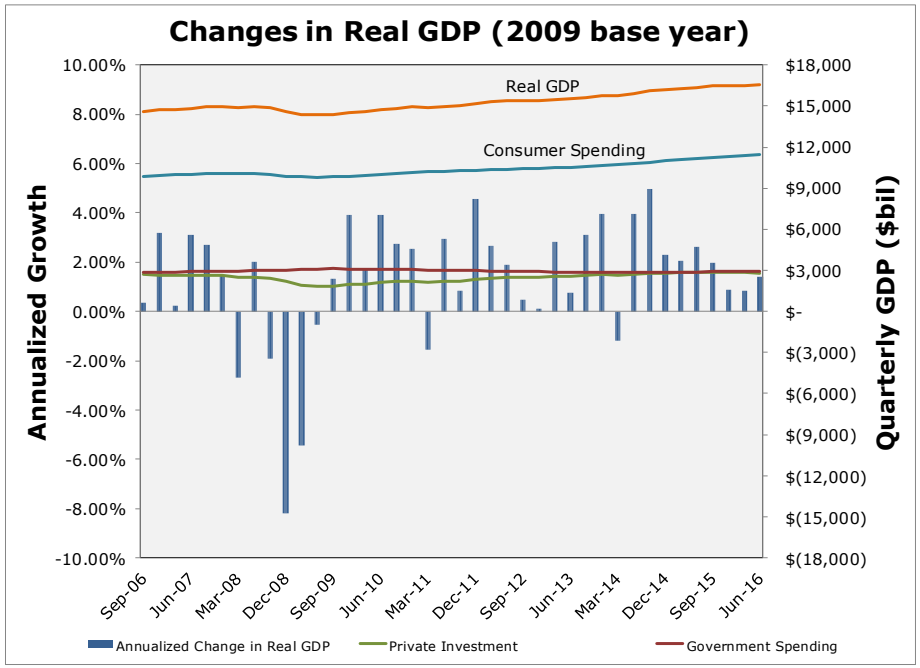
	Total Return (%)			Risk (%)
	Dec. 2015	Q3 2016	Change vs YE	Dec. 2015
Investment Categories:				
U.S. Stocks	6.50	6.25	(0.25)	17.00
Dev ex-U.S. Stocks	6.50	6.25	(0.25)	18.00
Emerging Mkt Stocks	6.50	6.25	(0.25)	26.00
Global Stocks	6.70	6.45	(0.25)	17.10
Private Markets	9.50	8.85	(0.65)	27.50
Cash Equivalents	1.25	1.25	-	1.25
Core Bonds	3.50	2.85	(0.65)	5.00
LT Core Bonds	4.30	3.20	(1.10)	10.00
TIPS	3.25	2.40	(0.85)	6.00
High Yield Bonds	6.35	5.15	(1.20)	10.00
EMD Local Currency (h)	5.60	3.85	(1.75)	5.00
U.S. RE Securities	5.00	4.90	(0.10)	17.00
Private Real Estate	5.80	6.10	0.30	14.00
Commodities	3.55	3.60	0.05	15.00
MLPs	9.65	8.45	(1.20)	17.00
Real Asset Basket	6.40	5.95	(0.45)	8.40
Inflation:	1.55	1.60	0.05	1.75
Returns minus Inflation:				
U.S. Stocks	4.95	4.65	(0.30)	
U.S. Bonds	1.95	1.25	(0.70)	
Cash Equivalents	(0.30)	(0.35)	(0.05)	
Stocks minus Bonds:	3.00	3.40	0.40	
Bonds minus Cash:	2.25	1.60	(0.65)	

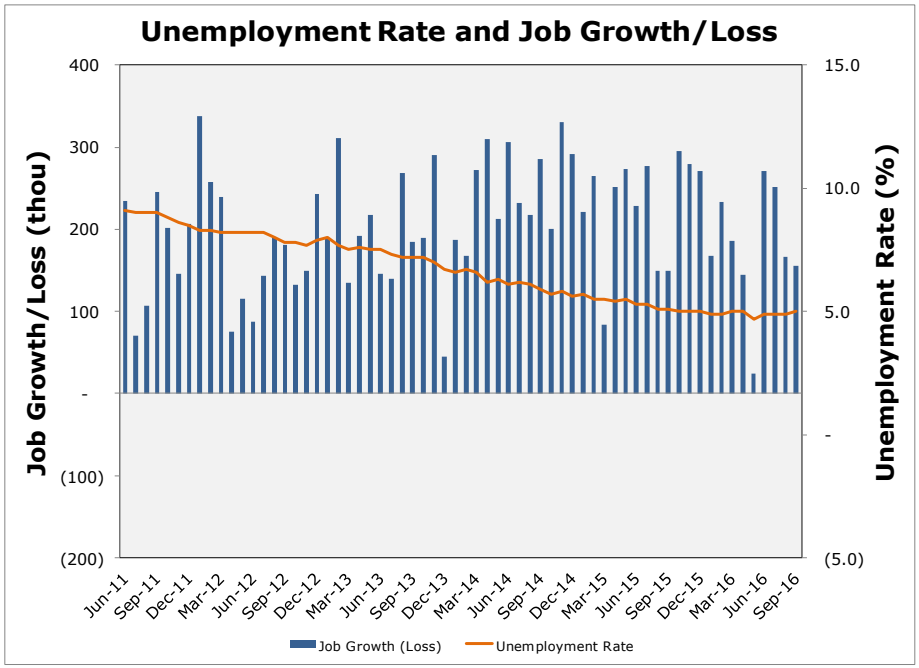
Economic Review

Wilshire

September 30, 2016	Key Economic Indicators			
CPI (all items)	Monthly Change		Cumulative Change	
Seasonally adjusted	Sep-16	0.3	3-Month	0.5
	Aug-16	0.2	12-Month	1.5
	Jul-16	0.0	10-Yr Annual	1.7
Breakeven Inflation	10-Year	1.6		
Consumer Sentiment	Sep-16	91.2		
Unv. of Michigan Survey	Aug-16	89.8		
	1-Yr Ago	87.2	10-Yr Avg	77.9
Manufacturing	Sep-16	51.5	Change in Manufacturing Sector	
Inst. for Supply Mgmt	Aug-16	49.4	>50	Expansion
Purchasing Mngrs' Idx	1-Yr Avg	50.3	<50	Contraction

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



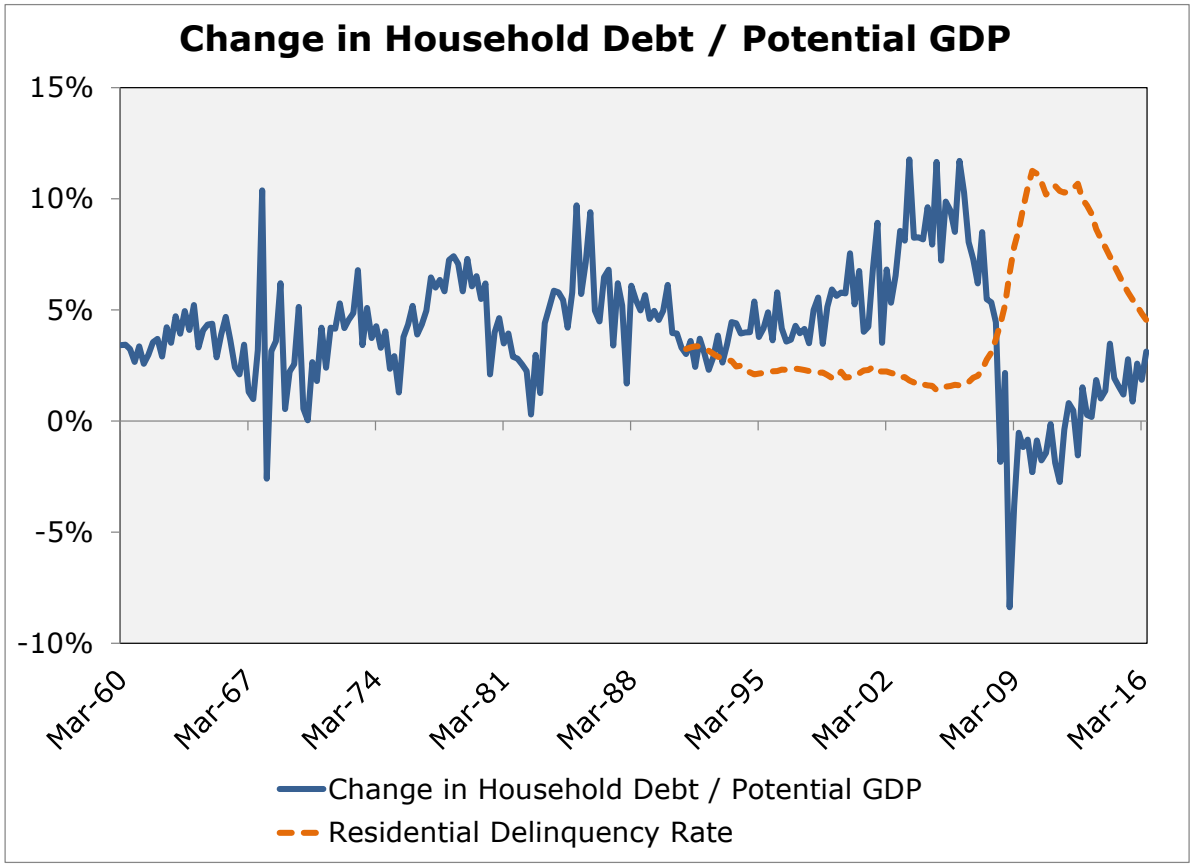


Data sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Bank of St. Louis, Barclays Capital

Debt: Where are we now?

Wilshire

- Eight years since the debt crisis hit in full
- After a period where mortgage defaults dominated net borrowing, consumer credit is beginning to trend just below the historical average



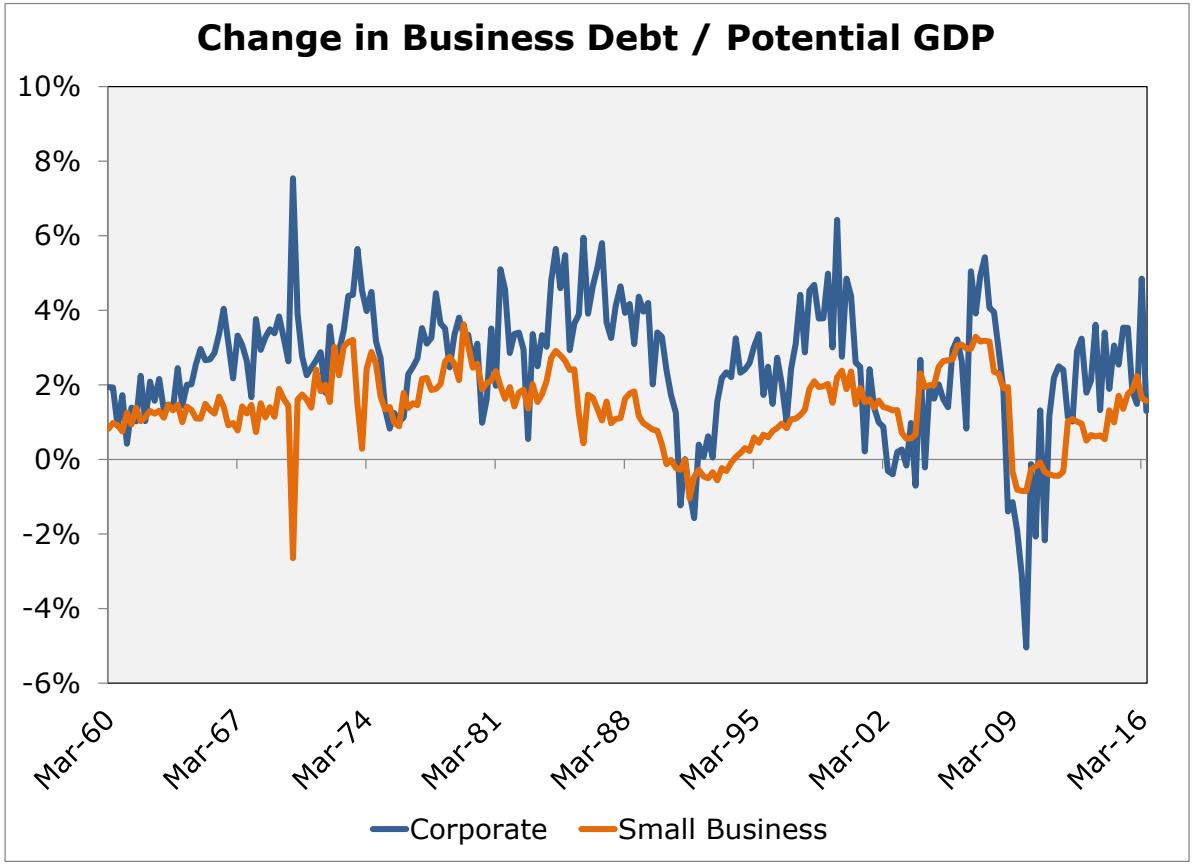
- Note: Potential GDP (estimated GDP at full employment) is utilized as it is more stable than actual GDP, therefore changes are being driven by the debt figure (the numerator)

Source: Federal Reserve, Congressional Budget Office

Debt: Where are we now?

Wilshire

- Debt growth in the private sector has normalized, as well
- Borrowing in small businesses, which are more reliant on U.S. demand, is moving towards the historical average

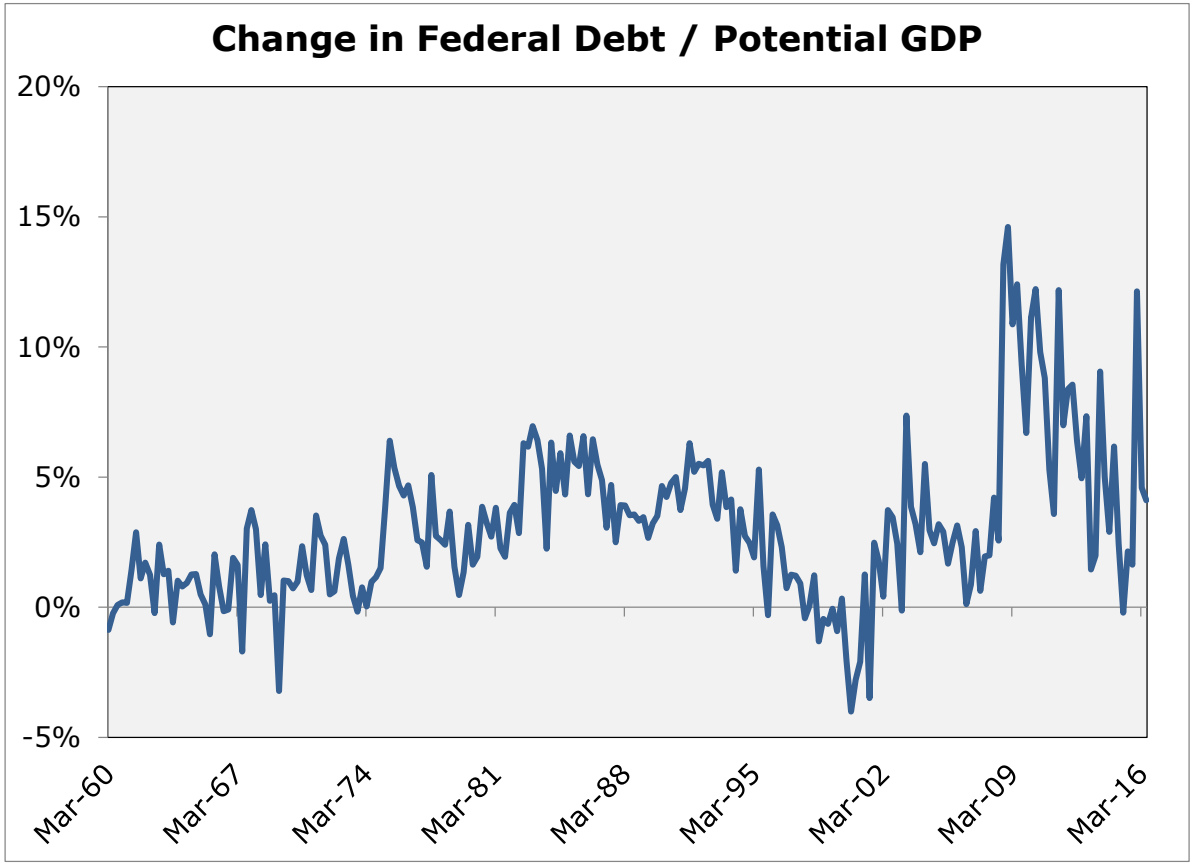


Source: Federal Reserve, Congressional Budget Office

Debt: Where are we now?

Wilshire

- Federal government drove new debt creation after the crisis
- Growth trending downward but with occasional spikes
- Total public debt / GDP has gone from 63% for year-end 2007 to 105% mid-year 2016

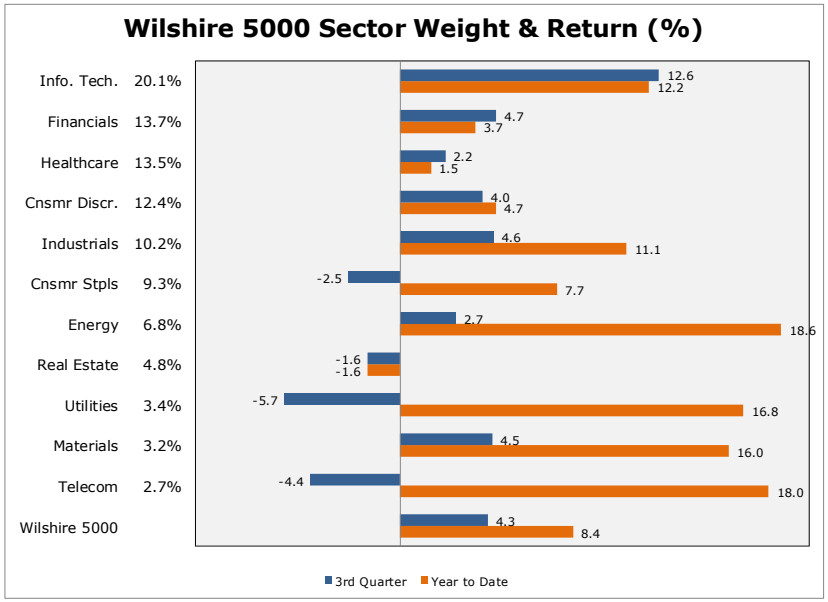


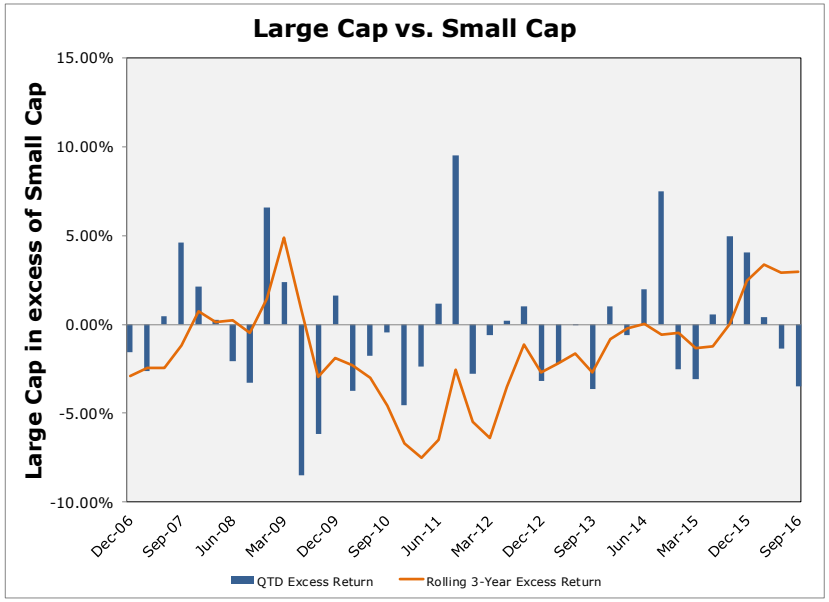
Source: Federal Reserve, Congressional Budget Office

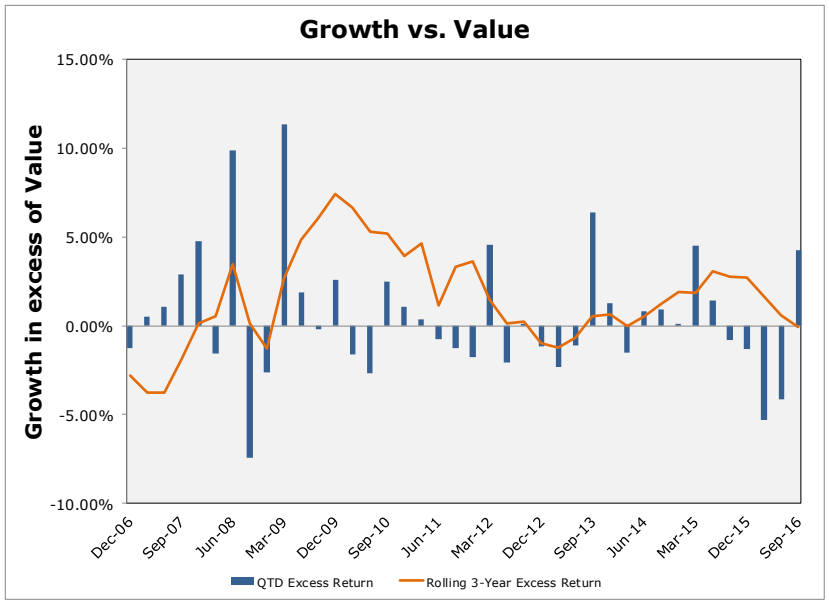
U.S. Equity Market

Wilshire

September 30, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Wilshire 5000	4.3	8.4	15.3	10.7	16.3	7.4
Wilshire U.S. Large Cap	3.9	8.0	15.3	11.0	16.3	7.3
Wilshire U.S. Small Cap	7.7	13.0	16.0	7.8	16.9	8.7
Wilshire U.S. Large Growth	6.2	4.9	11.2	11.2	16.7	8.4
Wilshire U.S. Large Value	1.8	10.6	18.8	10.7	15.8	6.2
Wilshire U.S. Small Growth	9.4	8.7	10.5	5.2	15.4	8.9
Wilshire U.S. Small Value	6.1	17.1	21.2	10.2	18.2	8.5
Wilshire REIT Index	-1.2	9.7	17.9	14.3	15.8	5.9
MSCI USA Minimum Volatility Index	-1.3	9.9	16.6	12.7	15.1	8.0
FTSE RAFI U.S. 1000 Index	4.1	9.6	15.8	10.0	16.6	8.0





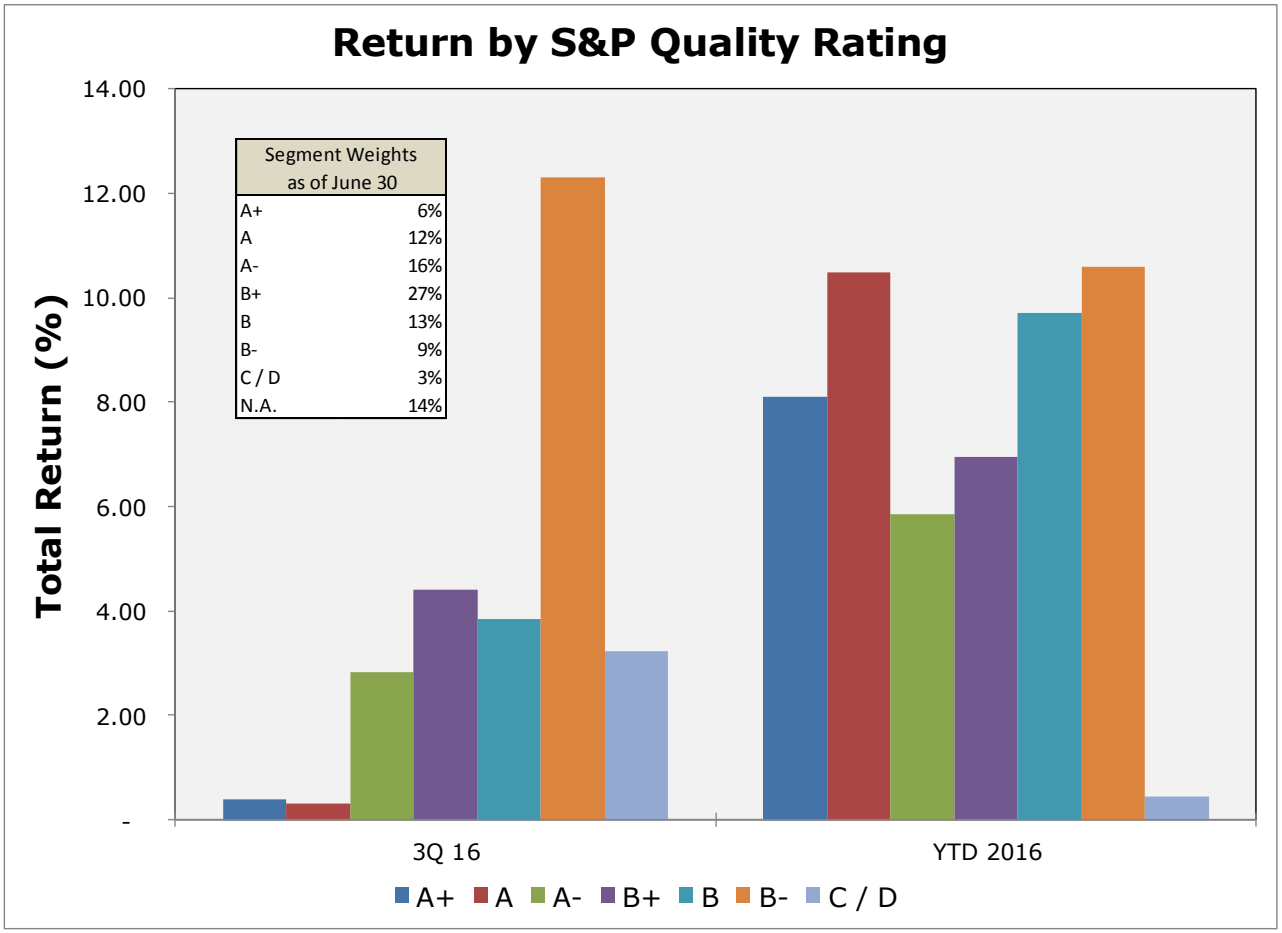


Data sources: Wilshire Compass, Wilshire Atlas

Returns by Quality Segment

Wilshire

Relatively strong returns across most quality ratings for 2016

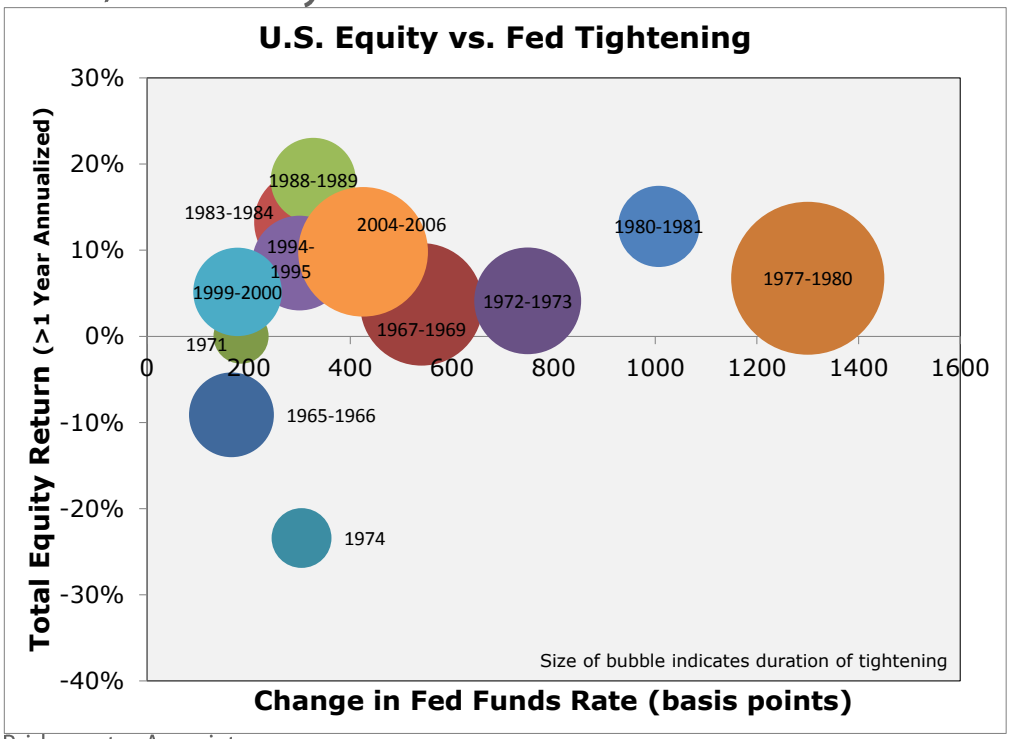


Data sources: Wilshire Atlas

Equity Returns and Fed Tightening

Wilshire

- In 12 tightening cycles of the past 50 years, equity prices have typically fared well
- What might be different today?
  - While in the past corporate earnings were improving before and through the average cycle, EPS is currently on the decline
  - Current cycle may have already started with quantitative easing discontinued
- Except for 2004-2006, recent cycles have been shorter than average

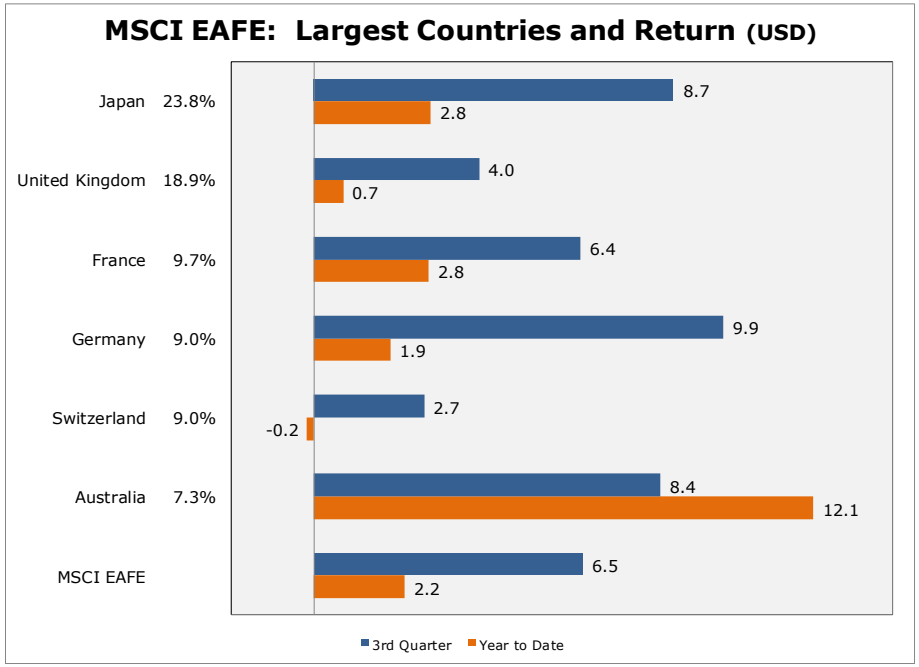


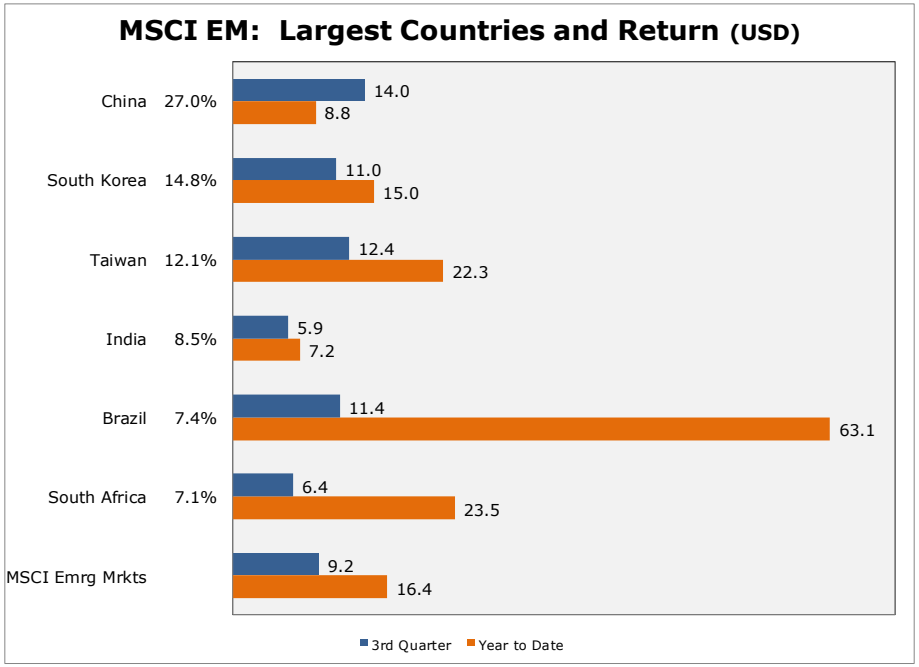
Source: Federal Reserve, Wilshire Compass, Bridgewater Associates

Non-U.S. Equity Market

Wilshire

September 30, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
MSCI ACWI ex-US ($g)	7.0	6.3	9.8	0.6	6.5	2.6
MSCI EAFE ($g)	6.5	2.2	7.1	0.9	7.9	2.3
MSCI Emerging Markets ($g)	9.2	16.4	17.2	-0.2	3.4	4.3
MSCI Frontier Markets ($g)	2.7	2.6	1.4	0.2	5.0	0.3
MSCI ACWI ex-US Growth ($g)	6.1	6.5	11.9	2.6	7.8	3.5
MSCI ACWI ex-US Value ($g)	7.9	6.0	7.6	-1.4	5.2	1.7
MSCI ACWI ex-US Small ($g)	8.5	8.5	14.3	4.0	9.1	5.0
MSCI EAFE Minimum Volatility Idx	2.2	5.4	11.9	7.1	9.9	6.0
FTSE RAFI Developed ex-US Index	7.8	3.4	7.0	0.0	7.0	2.6
MSCI EAFE LC (g)	6.1	-1.2	5.1	5.8	11.7	2.7
MSCI Emerging Markets LC (g)	7.7	11.6	13.4	4.7	7.3	6.3





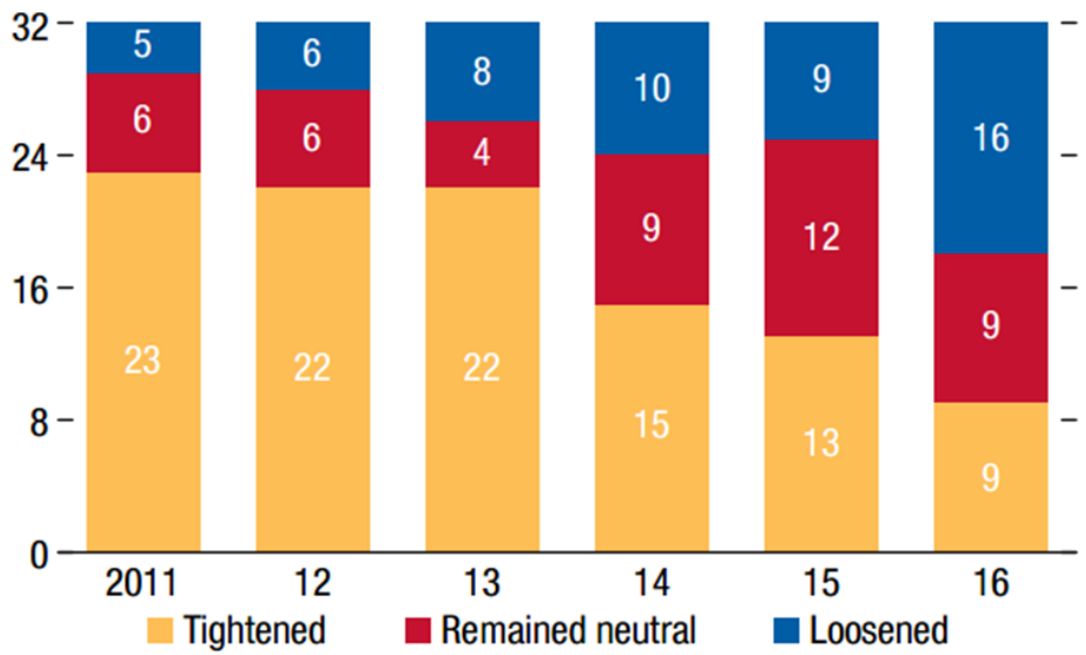
Data sources: Wilshire Compass

Global Fiscal Stimulus

Wilshire

- Governments in many countries are now leaning towards fiscal policy to stimulate growth
- China, Japan and Canada have been among the most aggressive so far
- Fiscal stimulus is a challenge within the Eurozone given their collective rules, such as overly indebted countries cannot run significant fiscal deficits

Number of developed countries in which the fiscal stance was tightened, loosened, or remained neutral

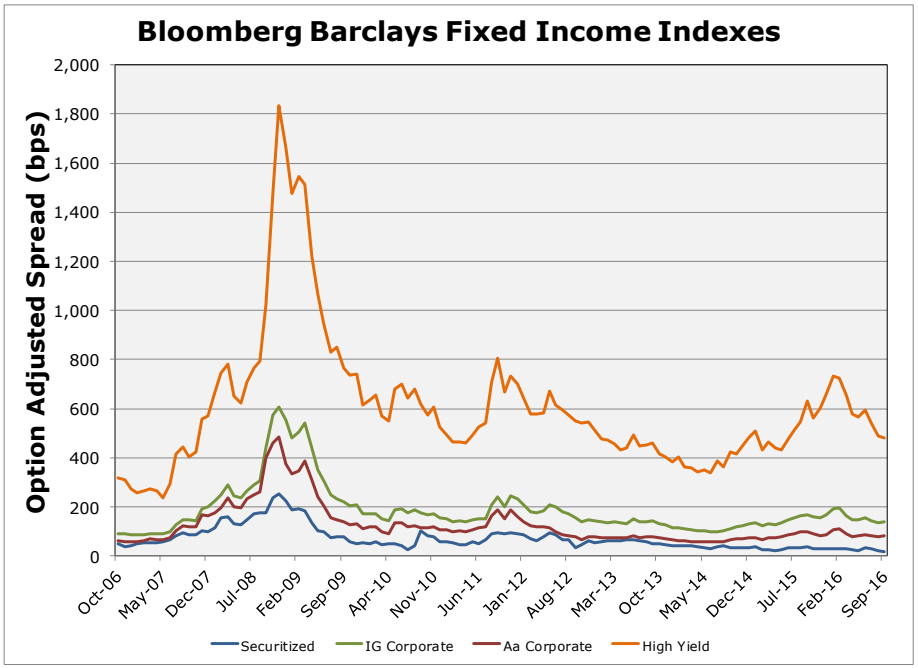


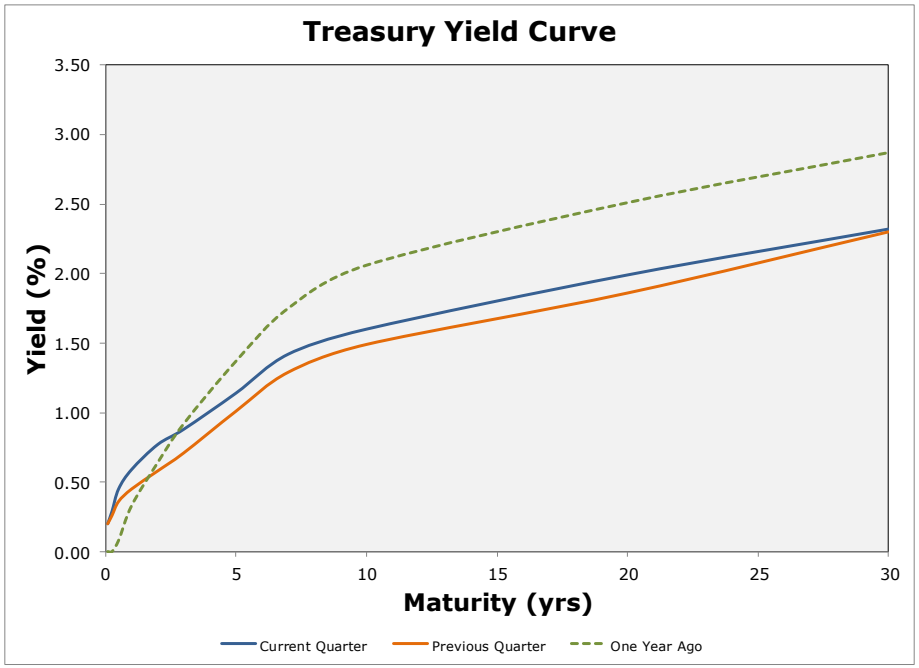
Source: International Monetary Fund

U.S. Fixed Income Market

Wilshire

September 30, 2016	YTM	Duration	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Bloomberg Barclays Aggregate	2.0	5.5	0.5	5.8	5.2	4.0	3.1	4.8
Bloomberg Barclays Treasury	1.3	6.4	-0.3	5.1	4.1	3.4	2.2	4.5
Bloomberg Barclays Gov't-Related	2.0	5.6	0.3	6.0	5.6	3.9	2.9	4.5
Bloomberg Barclays Securitized	2.1	2.7	0.6	3.9	3.7	3.6	2.8	4.6
Bloomberg Barclays Corporate IG	2.8	7.5	1.4	9.2	8.6	5.6	5.1	5.9
Bloomberg Barclays LT Gov't/Credit	3.3	15.6	1.2	15.7	14.7	10.1	6.3	7.8
Bloomberg Barclays LT Treasury	2.2	18.2	-0.4	14.7	13.1	11.2	5.5	8.1
Bloomberg Barclays LT Gov't-Rel.	3.8	12.7	0.9	14.6	14.9	9.4	6.3	7.7
Bloomberg Barclays LT Corp. IG	4.1	14.3	2.6	16.8	15.7	9.5	7.2	7.6
Bloomberg Barclays U.S. TIPS	0.2	8.6	1.0	7.3	6.6	2.4	1.9	4.5
Bloomberg Barclays High Yield	6.6	4.0	5.6	15.1	12.7	5.3	8.3	7.7
Treasury Bills	0.3	0.25	0.1	0.2	0.3	0.1	0.1	0.9



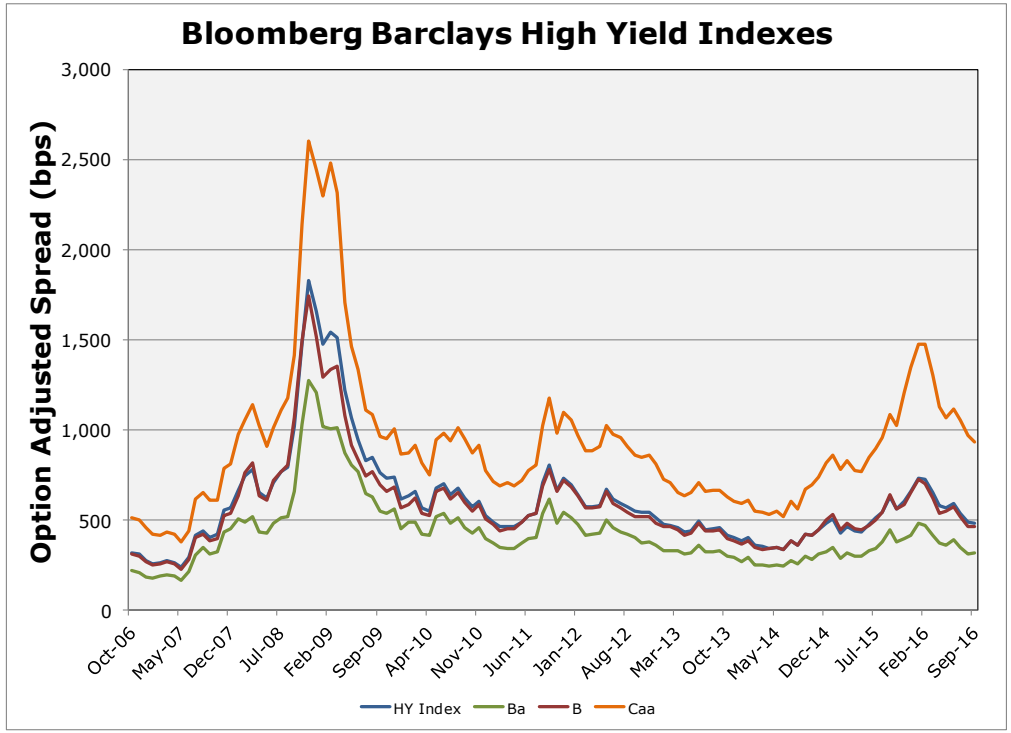


Data sources: Wilshire Compass, Bloomberg Barclays, U.S. Treasury

High Yield Bond Market

Wilshire

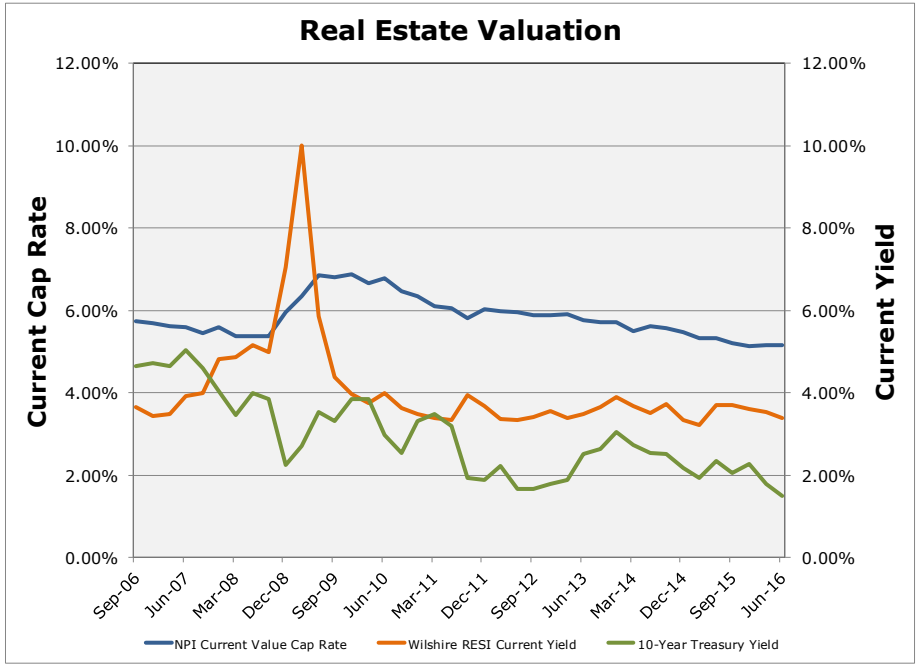
September 30, 2016	Weight	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Bloomberg Barclays High Yield Idx	100%	5.6	15.1	12.7	5.3	8.3	7.7
Quality Distribution							
Ba U.S. High Yield	46.4%	4.4	12.3	12.1	6.5	8.3	8.2
B U.S. High Yield	38.3%	5.7	13.5	11.3	4.4	7.7	6.4
Caa U.S. High Yield	14.4%	8.2	25.5	16.1	4.4	9.8	6.9
Ca to D U.S. High Yield	0.8%	17.1	63.3	27.2	-21.6	-8.0	-2.4
Non-Rated U.S. High Yield	0.1%	-1.9	4.4	-7.5	-3.3	4.7	0.6

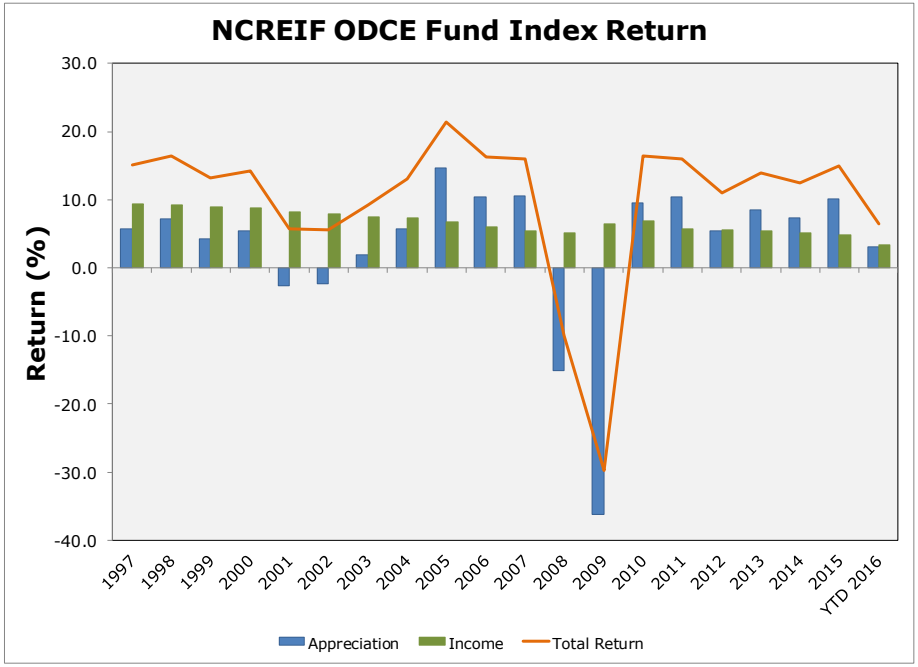


Data sources: Bloomberg Barclays

Real Assets

September 30, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Barclays U.S. TIPS Index	1.0	7.3	6.6	2.4	1.9	4.5
Bloomberg Commodity Index	-3.9	8.9	-2.6	-12.3	-9.4	-5.3
Wilshire Global RESI Index	0.0	10.1	15.5	10.1	13.8	4.9
NCREIF ODCE Fund Index	2.1	6.5	10.1	12.4	12.4	6.0
NCREIF Timberland Index	0.7	1.4	3.3	7.6	6.9	6.4
Alerian MLP Index (Oil & Gas)	1.1	15.9	12.7	-4.8	5.0	9.0





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

Total Fund

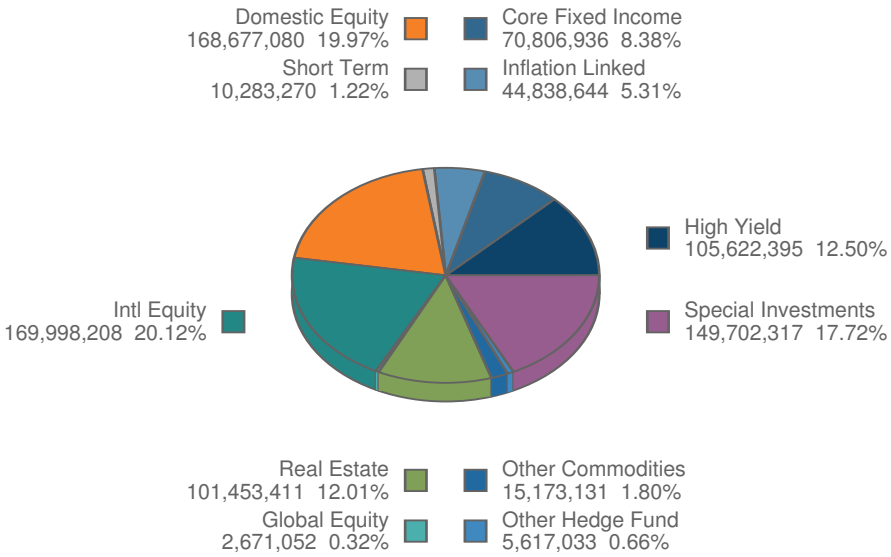
Actual Allocation vs Policy Allocation

Wilshire

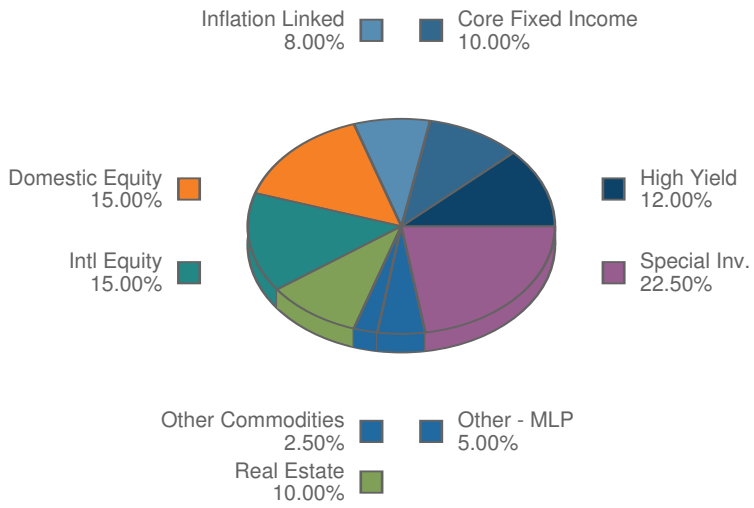
Total Fund Composite

As of September 30, 2016

Total Fund



Policy Index

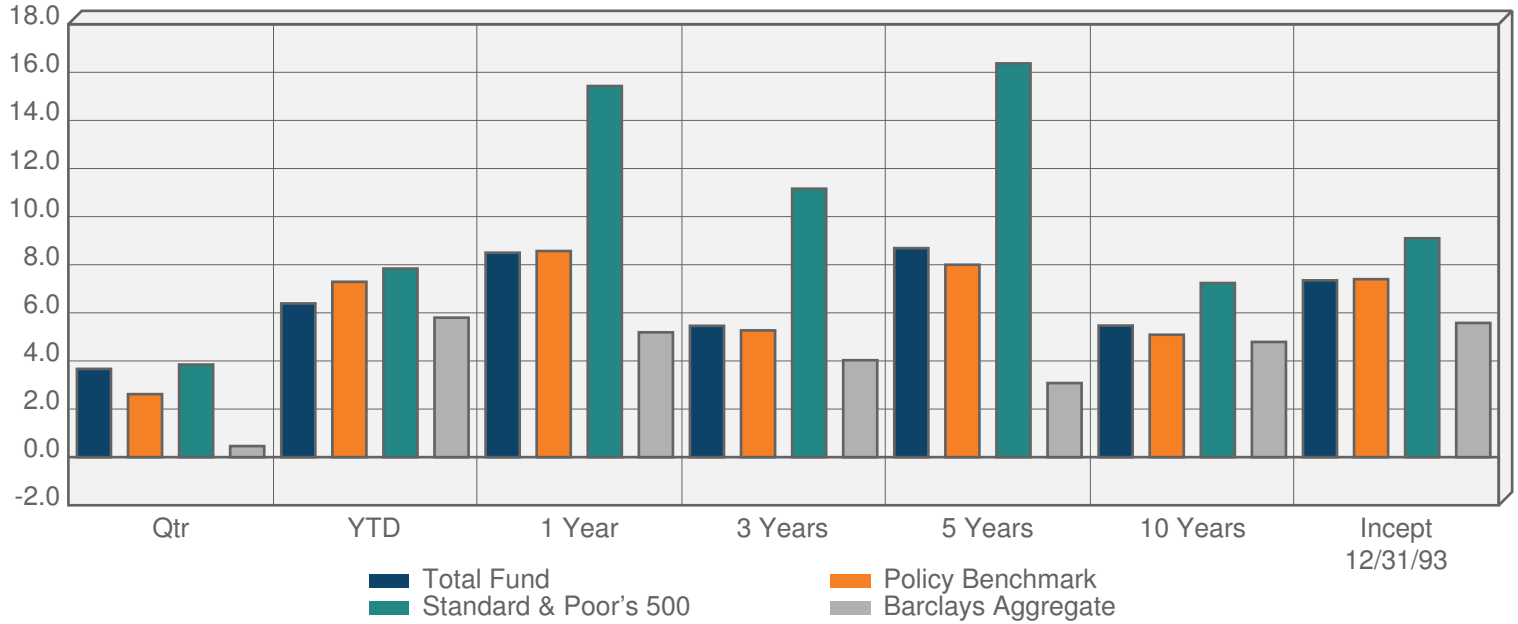


$844,843,476

Wilshire

Total Fund Composite

Periods Ended September 30, 2016

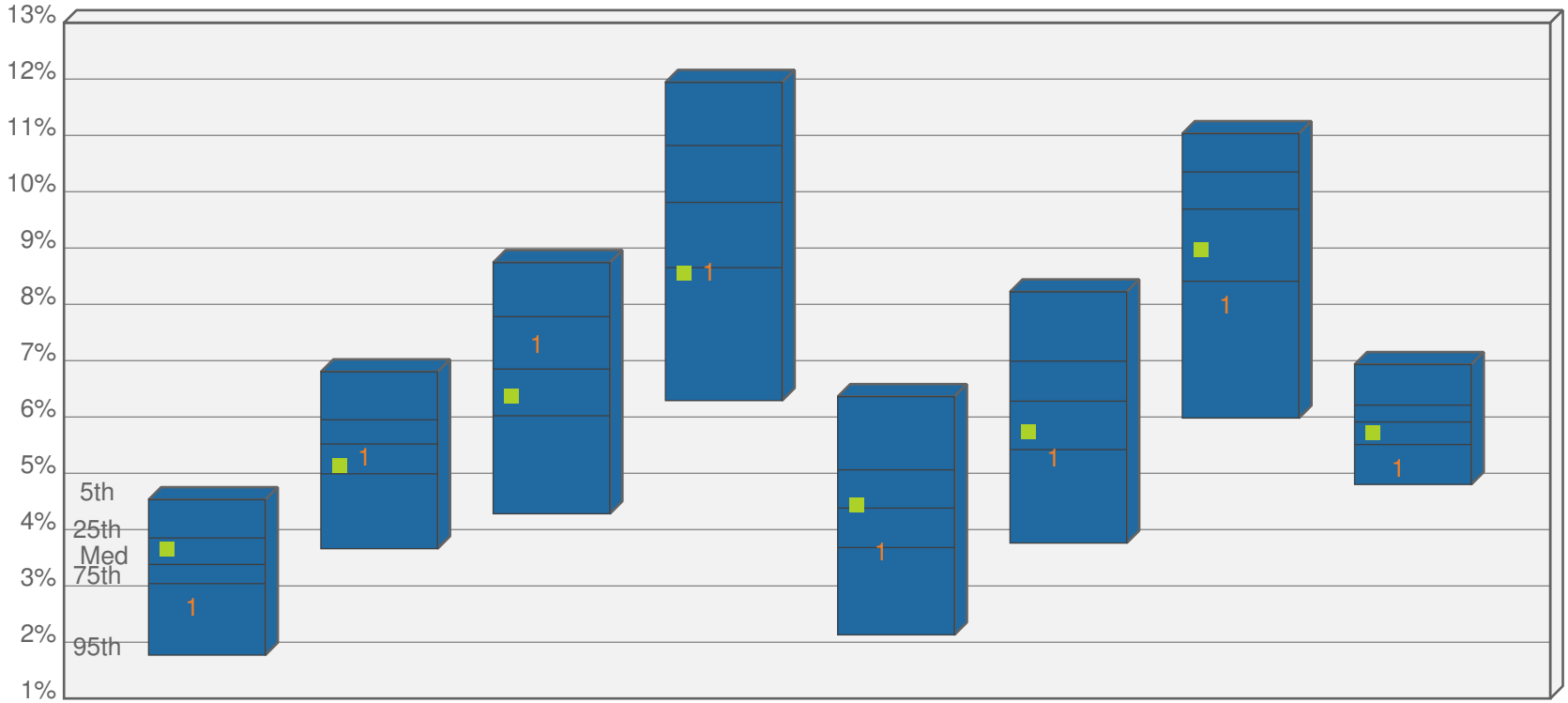


Total Returns	Qtr	YTD	1 Year	3 Years	5 Years	10 Years	Incept 12/31/93
Total Fund	3.67	6.39	8.50	5.46	8.69	5.47	7.35
Policy Benchmark	2.62	7.29	8.57	5.27	8.00	5.09	7.40
Standard & Poor's 500	3.85	7.84	15.43	11.16	16.37	7.24	9.10
Barclays Aggregate	0.46	5.80	5.19	4.03	3.08	4.79	5.58

Wilshire

Total Fund Composite

Periods Ended September 30, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Total Fund	3.67 (34)	5.16 (68)	6.40 (65)	8.57 (76)	4.46 (45)	5.76 (71)	8.99 (65)	5.75 (63)
1 Policy Benchmark	2.62 (86)	5.30 (62)	7.29 (38)	8.57 (76)	3.61 (75)	5.27 (76)	8.00 (80)	5.09 (89)
5th %tile	4.53	6.80	8.74	11.94	6.36	8.22	11.03	6.93
25th %tile	3.85	5.95	7.78	10.82	5.06	6.99	10.35	6.21
Median	3.38	5.52	6.85	9.81	4.38	6.28	9.69	5.91
75th %tile	3.04	4.99	6.02	8.65	3.68	5.42	8.41	5.51
95th %tile	1.77	3.66	4.28	6.29	2.13	3.76	5.98	4.80
Number of Funds	154	154	148	148	143	141	139	105

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

Performance Comparison

Wilshire

Trailing Returns

Periods Ended September 30, 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	**4.89**	**7.05**	**7.37**	**13.22**	**9.78**	**16.00**	**7.14**	**12/31/93**	**8.36**
Wilshire 5000	4.29	7.19	8.44	15.35	10.65	16.31	7.44	12/31/93	9.09
Value Added	0.60	-0.13	-1.08	-2.13	-0.88	-0.31	-0.30	12/31/93	-0.73
Non US Equity Composite									
Net of Fee Return	**8.88**	**7.67**	**7.01**	**12.21**	**2.19**	**7.66**	**2.65**	**12/31/00**	**4.49**
Policy Index	7.05	6.32	6.08	9.81	0.64	6.33	1.65	12/31/00	3.36
Value Added	1.83	1.35	0.94	2.40	1.55	1.33	1.00	12/31/00	1.12
Global Equity									
Net of Fee Return	**6.08**	**8.32**	**9.75**	**12.16**				**12/31/14**	**2.38**
MSCI ACWI (N)	5.30	6.34	6.59	11.96				12/31/14	2.31
Value Added	0.78	1.98	3.15	0.21				12/31/14	0.07
Core Fixed Composite									
Net of Fee Return	**0.74**	**2.85**	**5.62**	**5.30**	**3.73**	**3.15**	**4.80**	**9/30/82**	**8.12**
Barclays Aggregate	0.46	2.68	5.80	5.19	4.03	3.08	4.79	9/30/82	7.69
Value Added	0.29	0.17	-0.17	0.11	-0.29	0.07	0.01	9/30/82	0.43
High Yield Fixed Composite									
Net of Fee Return	**5.24**	**10.30**	**12.91**	**8.87**	**2.82**	**6.31**		**3/31/08**	**7.65**
Citi High Yield Market Capped	5.39	11.69	15.36	12.47	4.71	7.79		3/31/08	8.07
Value Added	-0.16	-1.39	-2.45	-3.60	-1.89	-1.48		3/31/08	-0.41
TIPS Fixed Composite									
Net of Fee Return	**1.05**	**2.67**	**6.44**	**5.47**	**1.54**	**1.55**		**3/31/08**	**3.32**
Barclays U.S. TIPS	0.96	2.69	7.27	6.58	2.40	1.93		3/31/08	3.48
Value Added	0.09	-0.01	-0.83	-1.11	-0.86	-0.37		3/31/08	-0.16

Performance Comparison

Wilshire

Trailing Returns

Periods Ended September 30, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
ERECT Composite									
Net of Fee Return	**1.58**	**5.88**	**10.07**	**13.43**	**7.94**	**9.27**		**9/30/10**	**7.29**
Real Estate Composite									
Net of Fee Return	**2.02**	**3.47**	**4.85**	**7.64**	**10.46**	**11.67**	**6.02**	**3/31/03**	**8.75**
NCREIF ODCE NOF	1.83	3.77	5.80	9.09	11.42	11.34	5.05	3/31/03	7.35
Value Added	0.19	-0.30	-0.95	-1.45	-0.96	0.33	0.98	3/31/03	1.41
Hedge Fund Composite									
Net of Fee Return	**11.60**	**26.38**	**23.39**	**6.56**	**2.79**	**3.22**		**9/30/11**	**3.22**
91 Day T-Bill Index + 3%	0.84	1.66	2.48	3.27	3.11	3.10		9/30/11	3.10
Value Added	10.76	24.72	20.91	3.29	-0.32	0.12		9/30/11	0.12
Commodities Composite									
Net of Fee Return	**-4.11**	**6.99**	**6.69**	**-5.09**	**-13.31**	**-8.36**		**3/31/07**	**-5.34**
Bloomberg Commodity Index	-3.86	8.42	8.87	-2.58	-12.34	-9.36		3/31/07	-6.56
Value Added	-0.24	-1.44	-2.18	-2.51	-0.97	1.01		3/31/07	1.22
Life Settlement Composite									
Net of Fee Return	**-1.71**	**-4.95**	**-7.99**	**-7.97**	**-3.41**	**4.31**		**9/30/09**	**13.36**
Israel Bonds and Cash									
Net of Fee Return	**0.44**	**0.86**	**1.34**	**1.95**	**2.43**	**1.84**	**3.64**	**3/31/99**	**3.25**
Private Equity Composite									
Net of Fee Return	**0.07**	**0.37**	**3.11**	**5.52**	**11.13**	**11.55**	**8.32**	**3/31/03**	**5.68**
RBAC Custom Private Equity Bench	0.07	0.37	3.11	5.52	11.13	11.55	8.32	3/31/03	5.68
Value Added	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	3/31/03	0.00

Performance Comparison

Wilshire

Trailing Returns

Periods Ended September 30, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Total Fund									
Net of Fee Return	**3.67**	**5.15**	**6.39**	**8.50**	**5.46**	**8.69**	**5.47**	**12/31/93**	**7.35**
Policy Benchmark	2.62	5.30	7.29	8.57	5.27	8.00	5.09	12/31/93	7.40
Value Added	1.04	-0.15	-0.90	-0.07	0.18	0.69	0.38	12/31/93	-0.05

Custom Benchmark Specification

Wilshire

Total Fund

September 30, 2016

	Quarter Start	Quarter End	Percent	Description
Policy Benchmark	12/93	12/06	65.00	Russell 3000
			35.00	Barclays Aggregate
	3/07	6/08	5.00	RBAC Custom Private Equity Benchmark
			45.00	Wilshire 5000
			25.00	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	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	Barclays U.S. TIPS
			5.00	Bloomberg Commodity Index
			7.50	NCREIF ODCE NOF
			15.00	MSCI ACWI X US (N)
			20.00	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	Barclays Aggregate

Custom Benchmark Specification

Wilshire

Total Fund

September 30, 2016

	Quarter Start	Quarter End	Percent	Description
Policy Benchmark (cont.)			10.00	Citi High Yield Market Capped
			10.00	NCREIF ODCE NOF
			7.50	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	Barclays U.S. TIPS
			10.00	NCREIF ODCE NOF
			10.00	Citi High Yield Market Capped
			14.00	Barclays Aggregate
			20.00	Wilshire 5000
			25.00	MSCI ACWI X US (N)
	3/13	9/16	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	Barclays Aggregate
			10.00	NCREIF ODCE NOF
			8.00	Bloomberg Commodity Index
			5.00	Barclays U.S. TIPS

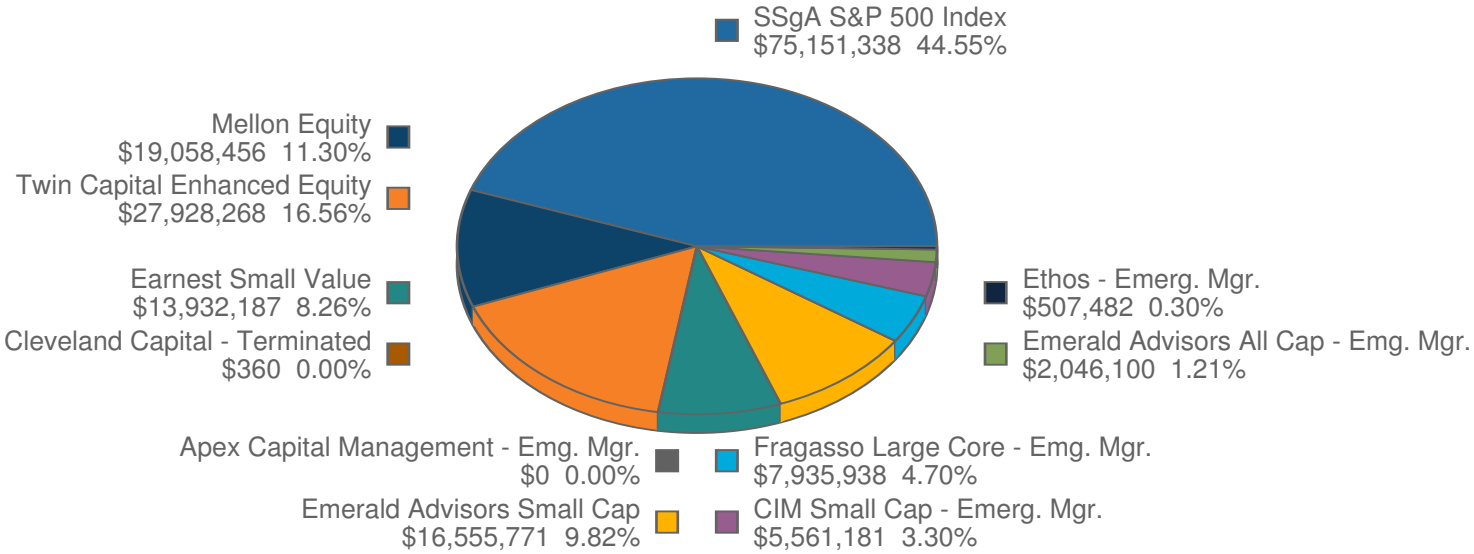
US Equity

Manager Allocation

Wilshire

US Equity Composite

As of September 30, 2016

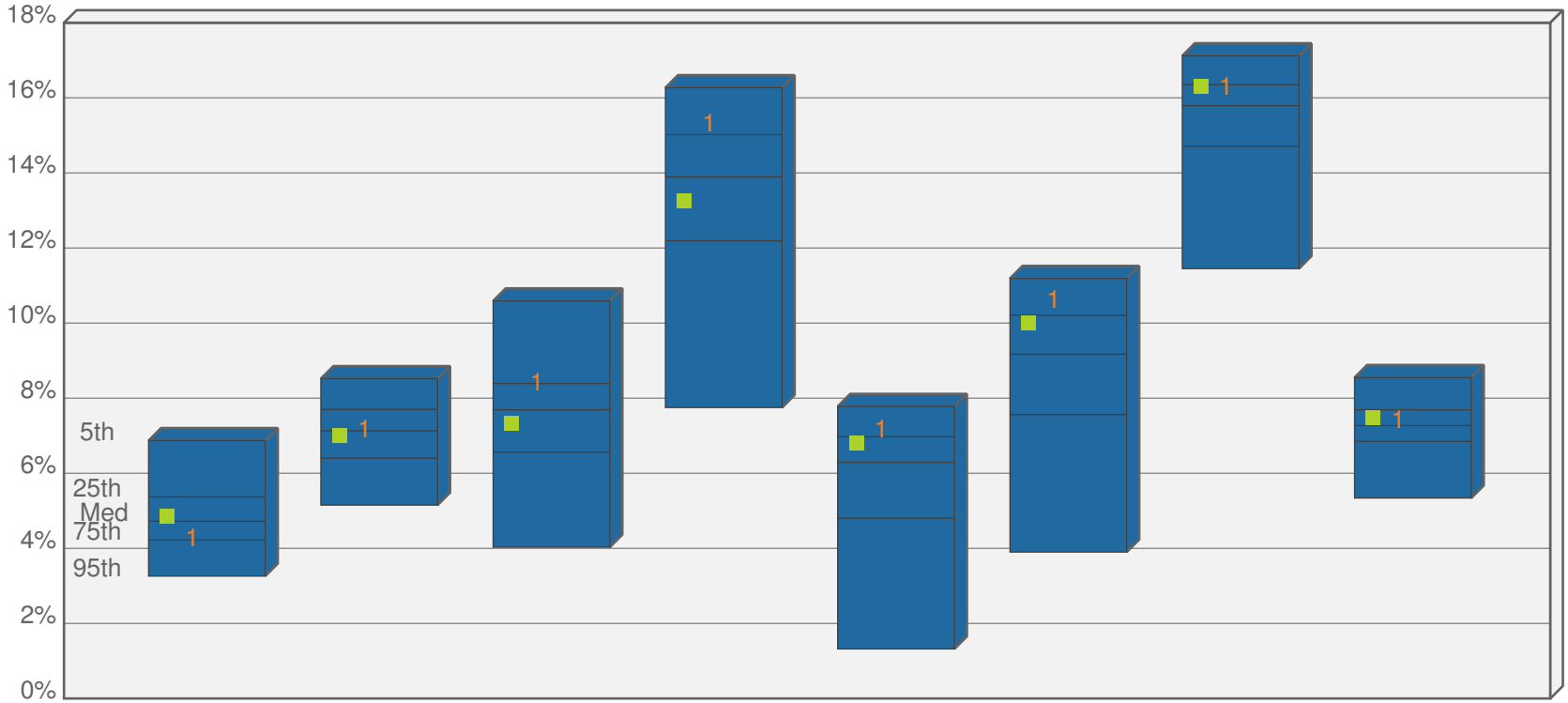


Performance Comparison

Wilshire

US Equity Composite

Periods Ended September 30, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
US Equity Composite	4.89 (44)	7.05 (54)	7.37 (61)	13.28 (59)	6.84 (35)	10.03 (28)	16.34 (27)	7.51 (37)
1 Wilshire 5000	4.29 (71)	7.19 (45)	8.44 (23)	15.35 (12)	7.19 (12)	10.65 (13)	16.31 (28)	7.44 (41)
5th %tile	6.87	8.52	10.59	16.27	7.78	11.19	17.12	8.55
25th %tile	5.37	7.70	8.39	15.02	6.97	10.21	16.35	7.69
Median	4.72	7.13	7.69	13.89	6.29	9.17	15.79	7.27
75th %tile	4.22	6.40	6.56	12.19	4.80	7.56	14.71	6.85
95th %tile	3.26	5.15	4.03	7.75	1.32	3.90	11.45	5.34
Number of Funds	104	102	100	95	94	86	75	55

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

Performance Comparison

Wilshire

Trailing Returns

Periods Ended September 30, 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	**3.88**	**6.42**	**7.87**	**15.49**	**11.18**	**16.39**		**12/31/07**	**6.91**
Standard & Poor's 500	3.85	6.40	7.84	15.43	11.16	16.37		12/31/07	6.85
Value Added	0.03	0.02	0.04	0.06	0.01	0.01		12/31/07	0.05
Mellon Equity									
Net of Fee Return	**3.41**	**3.86**	**5.00**	**10.35**	**9.78**	**15.32**	**7.33**	**3/31/94**	**9.27**
Standard & Poor's 500	3.85	6.40	7.84	15.43	11.16	16.37	7.24	3/31/94	9.39
Value Added	-0.44	-2.54	-2.84	-5.08	-1.38	-1.05	0.09	3/31/94	-0.12
Twin Capital Enhanced Equity									
Net of Fee Return	**3.88**	**5.50**	**6.69**	**14.22**	**11.11**	**16.27**	**7.38**	**12/31/05**	**7.70**
Standard & Poor's 500	3.85	6.40	7.84	15.43	11.16	16.37	7.24	12/31/05	7.53
Value Added	0.03	-0.90	-1.15	-1.21	-0.05	-0.10	0.14	12/31/05	0.17
Earnest Small Value									
Net of Fee Return	**6.89**	**10.52**	**13.73**	**19.94**	**8.50**	**16.50**		**6/30/09**	**15.00**
Russell 2000 Value	8.87	13.55	15.49	18.81	6.77	15.45		6/30/09	14.36
Value Added	-1.98	-3.03	-1.76	1.13	1.72	1.05		6/30/09	0.64
Emerald Advisors Small Cap									
Net of Fee Return	**10.17**	**12.87**	**5.92**	**4.73**	**7.66**	**19.01**	**9.29**	**9/30/04**	**10.09**
Russell 2000 Growth	9.22	12.76	7.48	12.12	6.59	16.14	8.28	9/30/04	8.85
Value Added	0.95	0.11	-1.56	-7.39	1.08	2.87	1.01	9/30/04	1.24
Fragasso Large Core - Emg. Mgr.									
Net of Fee Return	**4.91**	**7.36**	**10.27**	**14.39**	**10.42**			**9/30/12**	**12.04**
Standard & Poor's 500	3.85	6.40	7.84	15.43	11.16			9/30/12	13.16
Value Added	1.06	0.96	2.44	-1.04	-0.75			9/30/12	-1.12

Wilshire

Trailing Returns

Periods Ended September 30, 2016

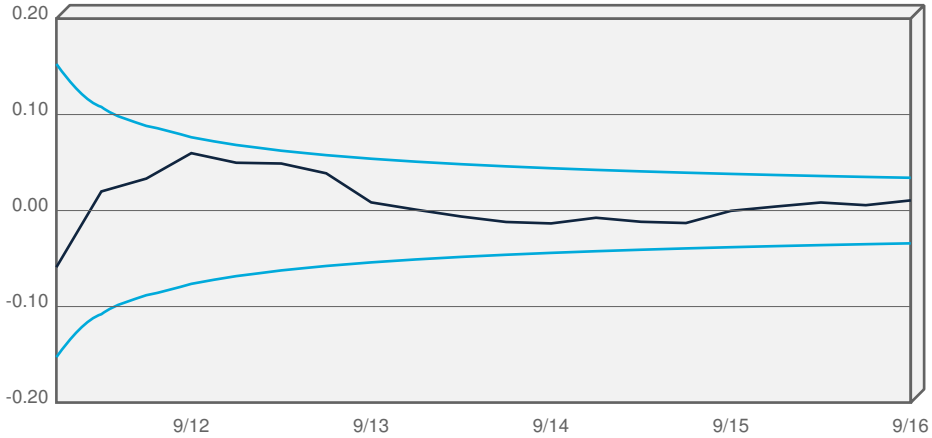
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
CIM Small Cap - Emerg. Mgr.									
Net of Fee Return	**7.31**	**8.93**	**7.62**	**9.88**				**12/31/13**	**2.35**
Russell 2000	9.05	13.18	11.46	15.47				12/31/13	4.12
Value Added	-1.73	-4.25	-3.84	-5.59				12/31/13	-1.78
Emerald Advisors All Cap - Emg. Mgr.									
Net of Fee Return	**10.26**	**9.41**	**2.22**	**2.31**				**9/30/15**	**2.31**
Russell 3000 Growth	4.92	5.76	6.12	13.64				9/30/15	13.64
Value Added	5.34	3.65	-3.90	-11.33				9/30/15	-11.33
US Equity Composite									
Net of Fee Return	**4.89**	**7.05**	**7.37**	**13.22**	**9.78**	**16.00**	**7.14**	**12/31/93**	**8.36**
Wilshire 5000	4.29	7.19	8.44	15.35	10.65	16.31	7.44	12/31/93	9.09
Value Added	0.60	-0.13	-1.08	-2.13	-0.88	-0.31	-0.30	12/31/93	-0.73

Wilshire

SSgA S&P 500 Index

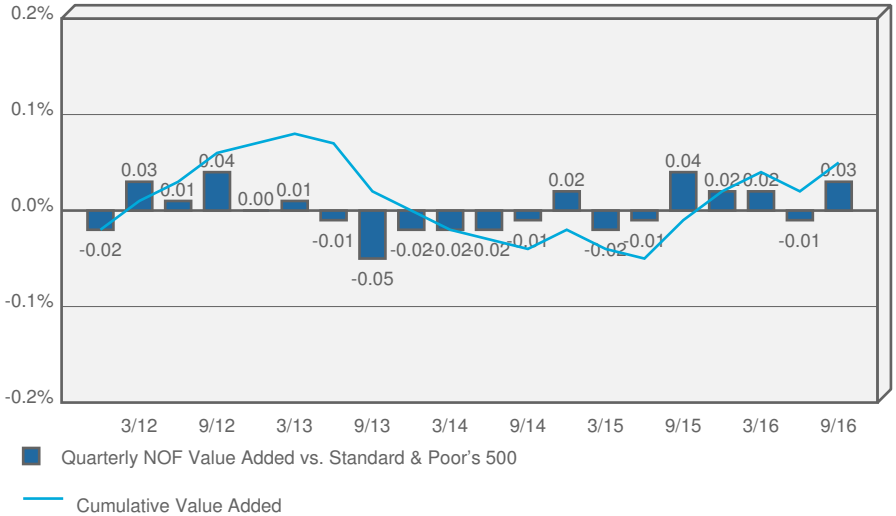
September 30, 2016

Cumulative Skill Analysis vs Benchmark

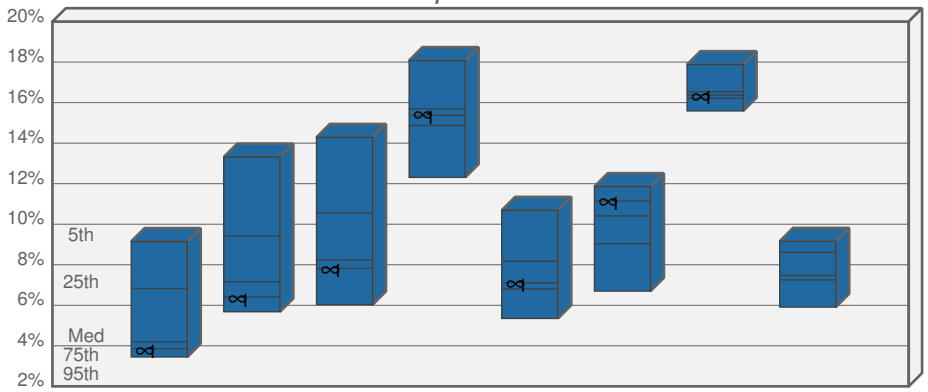


Excess Return:	**0.01**	**Information Ratio:**	**0.23**
Excess Risk:	**0.05**	**T-Stat:**	**0.51**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



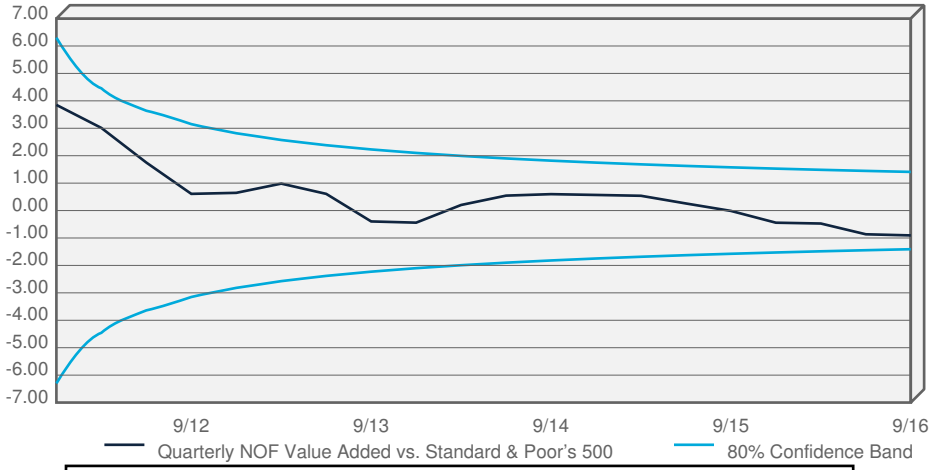
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
∞ SSgA S&P 500 I	3.88 (72)	6.42 (77)	7.87 (64)	15.50 (29)	7.18 (39)	11.20 (11)	16.41 (40)	
1 Standard & Poo	3.85 (84)	6.40 (83)	7.84 (70)	15.43 (43)	7.11 (52)	11.16 (22)	16.37 (51)	
Median	4.20	7.16	8.23	15.37	7.11	10.41	16.37	7.47
Number of Funds	131	131	131	131	128	125	119	99

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

Mellon Equity

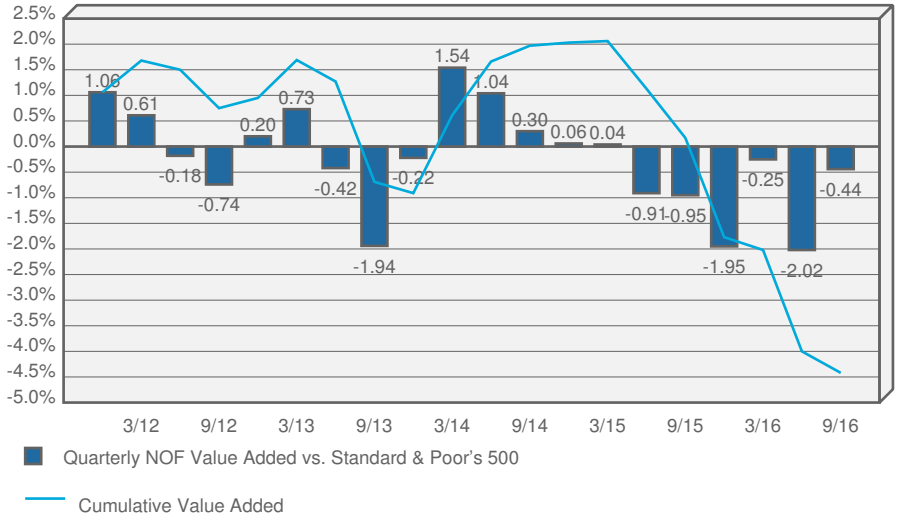
September 30, 2016

Cumulative Skill Analysis vs Benchmark

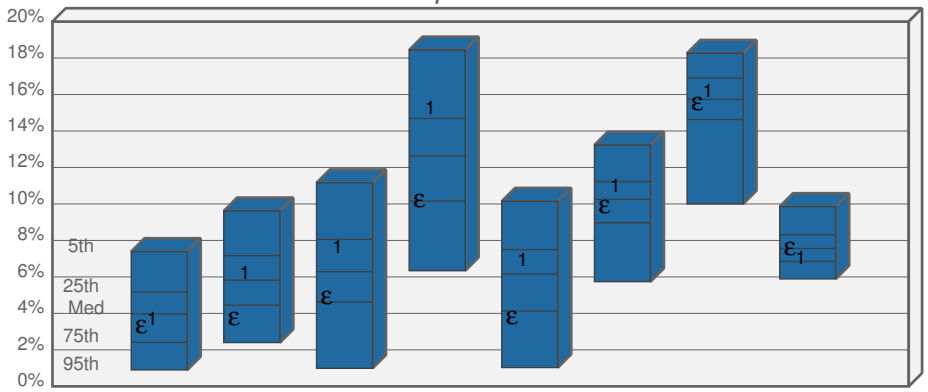


Excess Return:	**-0.91**	**Information Ratio:**	**-0.47**
Excess Risk:	**1.92**	**T-Stat:**	**-1.06**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



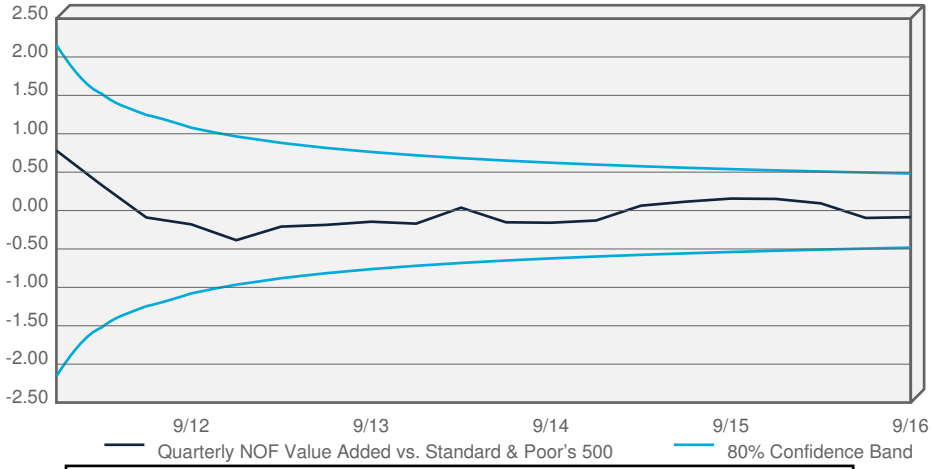
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
ε Mellon Equity	3.41 (58)	3.86 (80)	5.00 (66)	10.35 (73)	3.93 (78)	10.02 (58)	15.66 (52)	7.71 (44)
1 Standard & Poo	3.85 (51)	6.40 (40)	7.84 (26)	15.43 (17)	7.11 (33)	11.16 (27)	16.37 (35)	7.24 (62)
Median	3.97	5.82	6.29	12.63	6.16	10.26	15.73	7.56
Number of Funds	174	174	173	172	171	170	163	136

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

Twin Capital Enhanced Equity

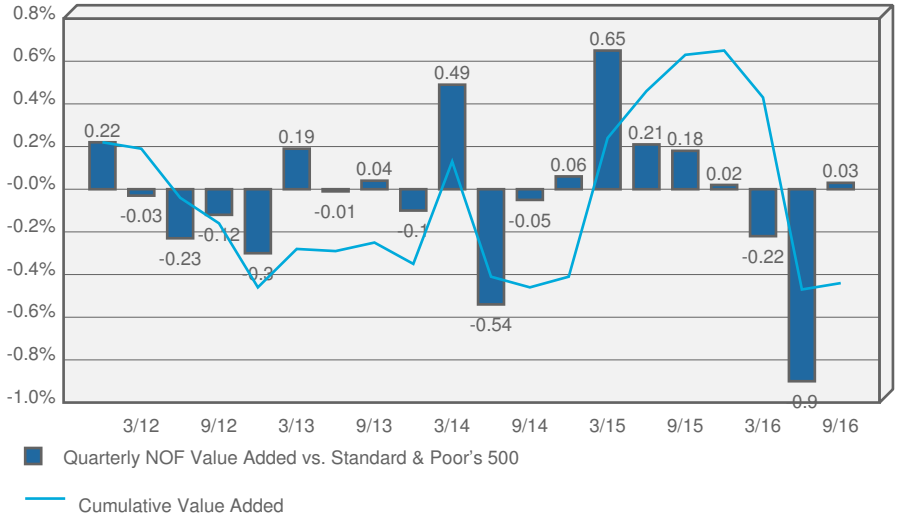
September 30, 2016

Cumulative Skill Analysis vs Benchmark

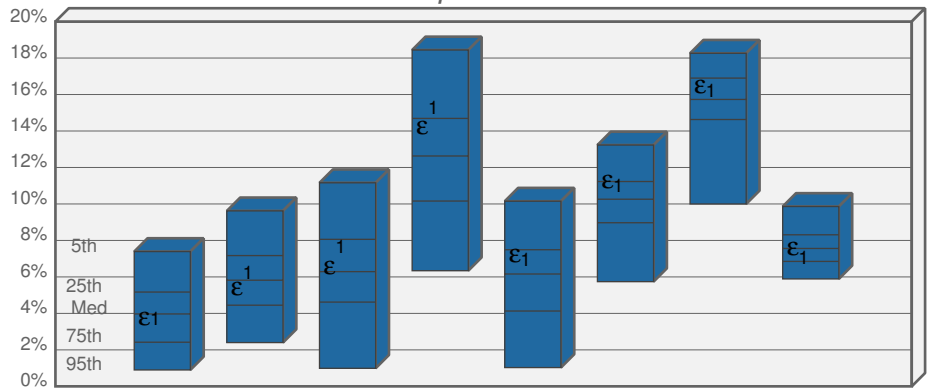


Excess Return:	**-0.09**	**Information Ratio:**	**-0.13**
Excess Risk:	**0.66**	**T-Stat:**	**-0.29**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



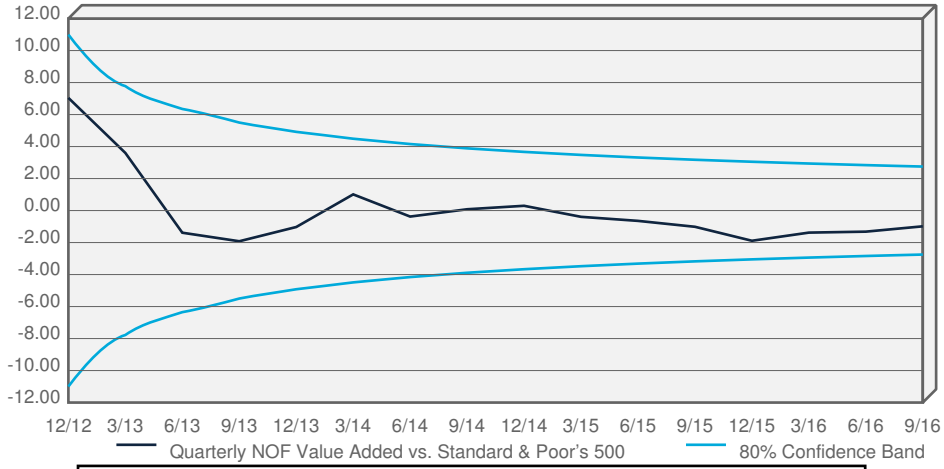
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
ε Twin Capital E	3.88 (51)	5.50 (58)	6.69 (42)	14.32 (29)	7.32 (28)	11.39 (22)	16.59 (28)	7.71 (44)
1 Standard & Poo	3.85 (51)	6.40 (40)	7.84 (26)	15.43 (17)	7.11 (33)	11.16 (27)	16.37 (35)	7.24 (62)
Median	3.97	5.82	6.29	12.63	6.16	10.26	15.73	7.56
Number of Funds	174	174	173	172	171	170	163	136

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

Fragasso Large Core - Emg. Mgr.

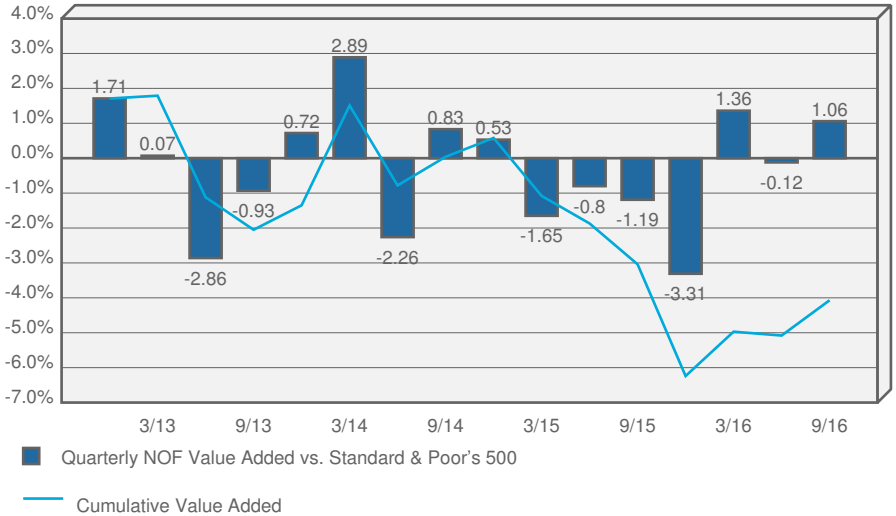
September 30, 2016

Cumulative Skill Analysis vs Benchmark

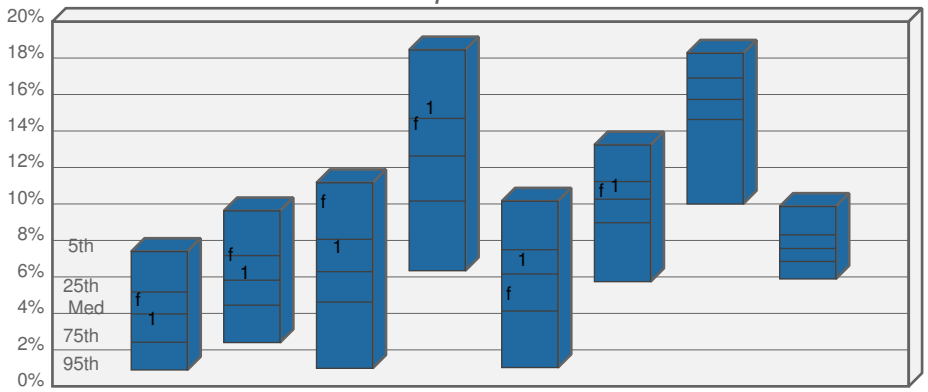


Excess Return:	**-0.99**	**Information Ratio:**	**-0.29**
Excess Risk:	**3.34**	**T-Stat:**	**-0.59**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



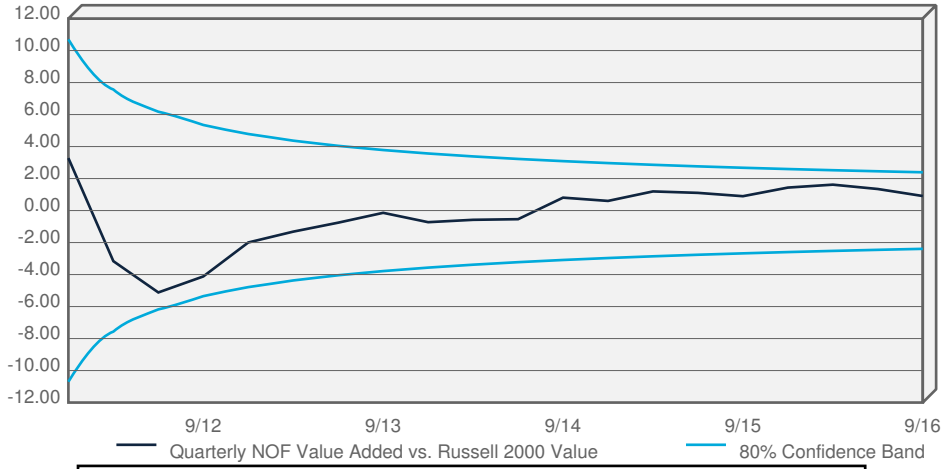
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
f Fragasso Large	4.91 (29)	7.36 (22)	10.27 (7)	14.55 (26)	5.27 (57)	10.87 (37)		
1 Standard & Poo	3.85 (51)	6.40 (40)	7.84 (26)	15.43 (17)	7.11 (33)	11.16 (27)		
Median	3.97	5.82	6.29	12.63	6.16	10.26	15.73	7.56
Number of Funds	174	174	173	172	171	170	163	136

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

Earnest Small Value

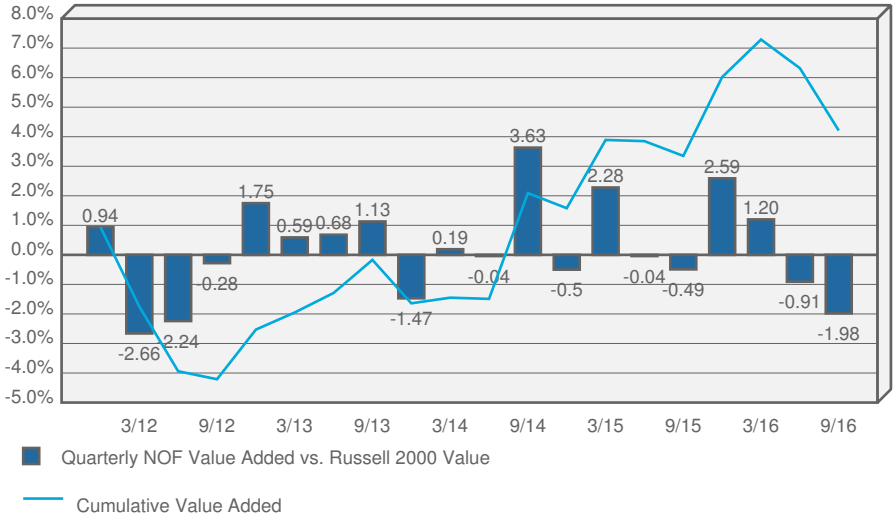
September 30, 2016

Cumulative Skill Analysis vs Benchmark

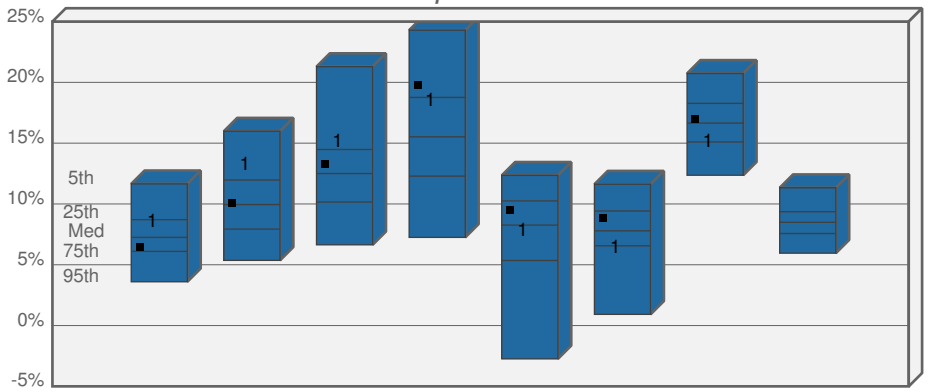


Excess Return:	**0.91**	**Information Ratio:**	**0.28**
Excess Risk:	**3.25**	**T-Stat:**	**0.62**

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
■ Earnest Small	6.89 (57)	10.52 (41)	13.73 (33)	20.21 (12)	9.91 (29)	9.26 (28)	17.46 (36)	
1 Russell 2000 V	8.87 (23)	13.55 (13)	15.49 (20)	18.81 (24)	8.12 (52)	6.77 (73)	15.45 (70)	
Median	7.25	9.95	12.50	15.52	8.26	7.79	16.65	8.49
Number of Funds	174	172	172	172	171	168	158	130

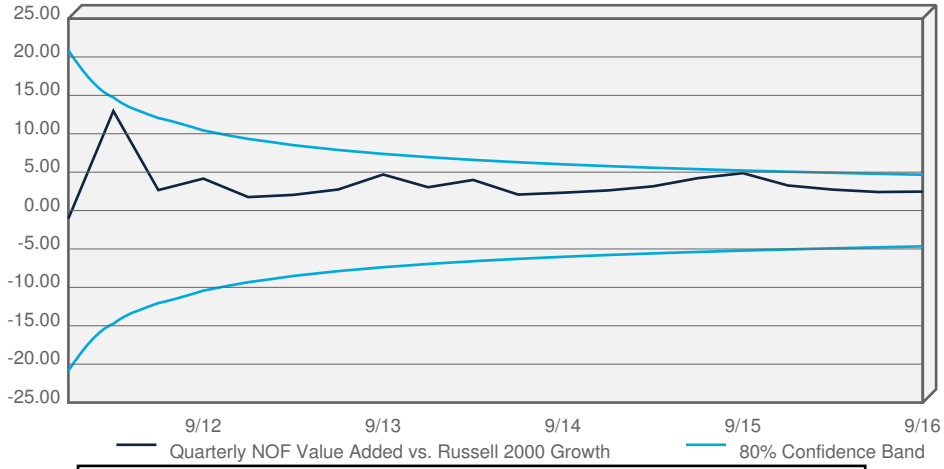
*Compass Total Returns of Active Small Cap Value Equity Portfolios Universe - Gross of Fees

Wilshire

Emerald Advisors Small Cap

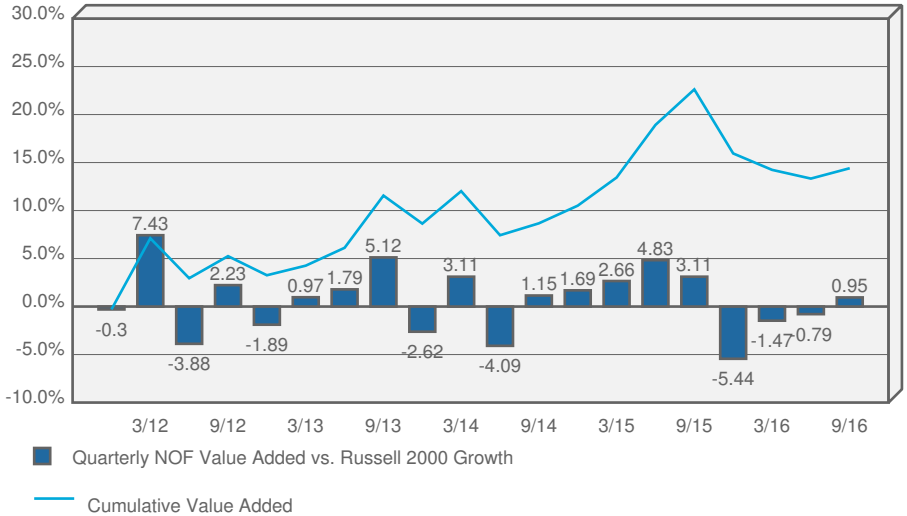
September 30, 2016

Cumulative Skill Analysis vs Benchmark

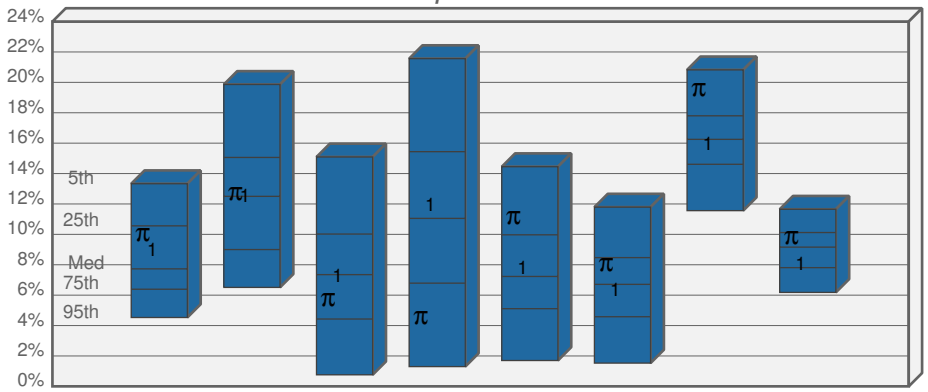


Excess Return:	**2.47**	**Information Ratio:**	**0.39**
Excess Risk:	**6.34**	**T-Stat:**	**0.87**

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	10.17 (26)	12.87 (45)	5.92 (63)	4.73 (85)	11.31 (17)	8.21 (26)	19.71 (8)	10.00 (28)
1 Russell 2000 G	9.22 (36)	12.76 (49)	7.48 (49)	12.12 (44)	8.01 (44)	6.59 (51)	16.14 (53)	8.28 (66)
Median	7.73	12.50	7.35	11.05	7.23	6.71	16.25	9.16
Number of Funds	146	146	146	146	144	144	141	122

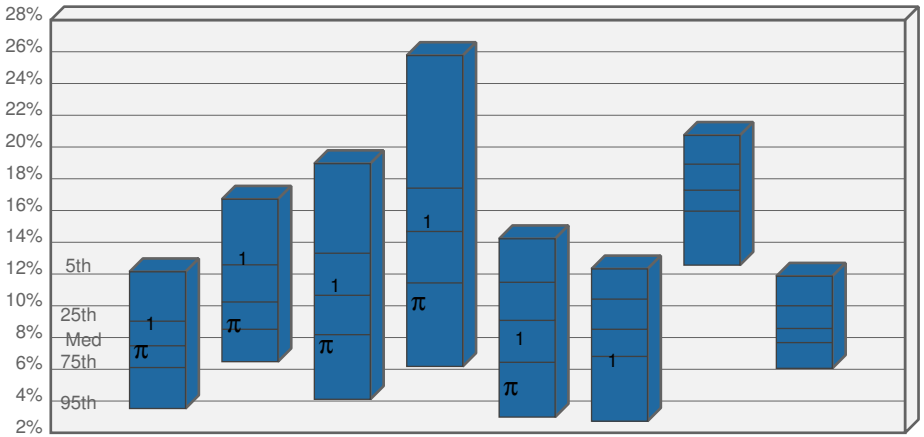
*Compass Total Returns of Active Small Cap Growth Equity Portfolios Universe - Gross of Fees

Wilshire

CIM Small Cap - Emerg. Mgr.

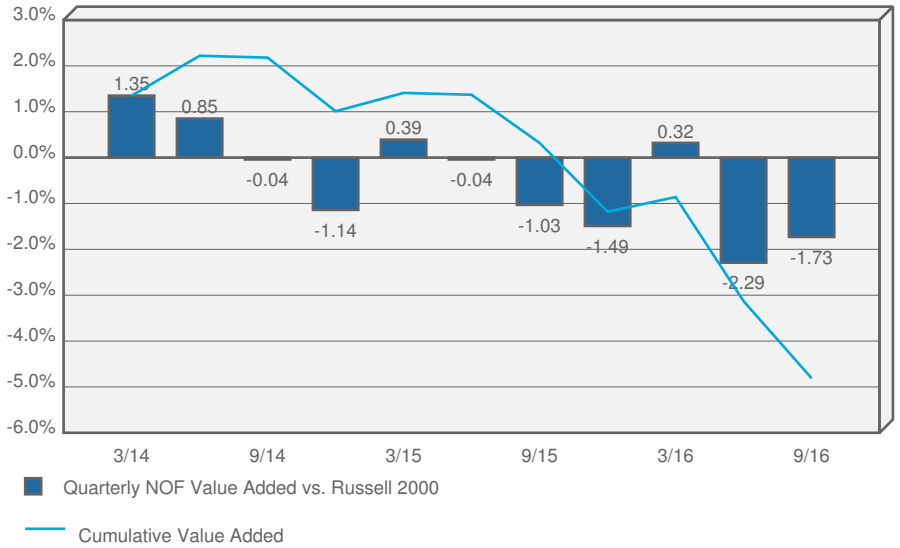
September 30, 2016

*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	7.31 (54)	8.93 (70)	7.62 (80)	10.30 (82)	4.94 (90)			
1 Russell 2000	9.05 (24)	13.18 (17)	11.46 (39)	15.47 (44)	8.12 (64)	6.71 (77)		
Median	7.48	10.24	10.66	14.68	9.08	8.52	17.28	8.57
Number of Funds	126	126	126	126	123	122	120	95

Value-Added Analysis vs Benchmark



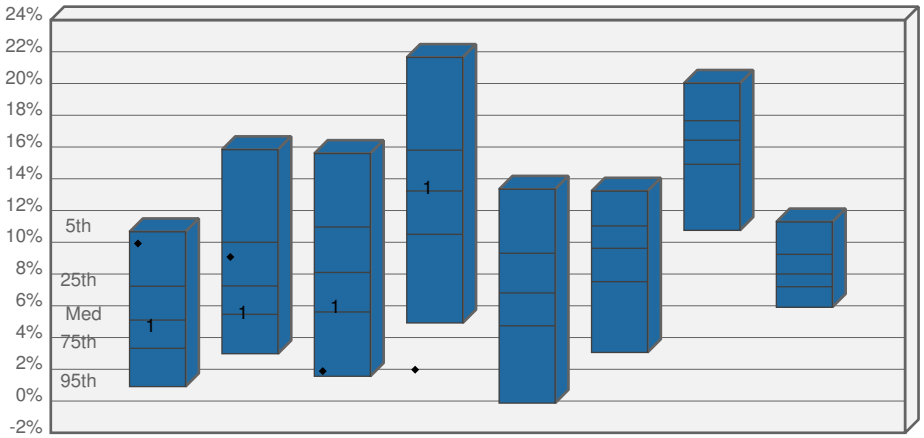
*Compass Total Returns of Active Small Cap Core Equity Portfolios Universe - Gross of Fees

Wilshire

Emerald Advisors All Cap - Emg. Mgr.

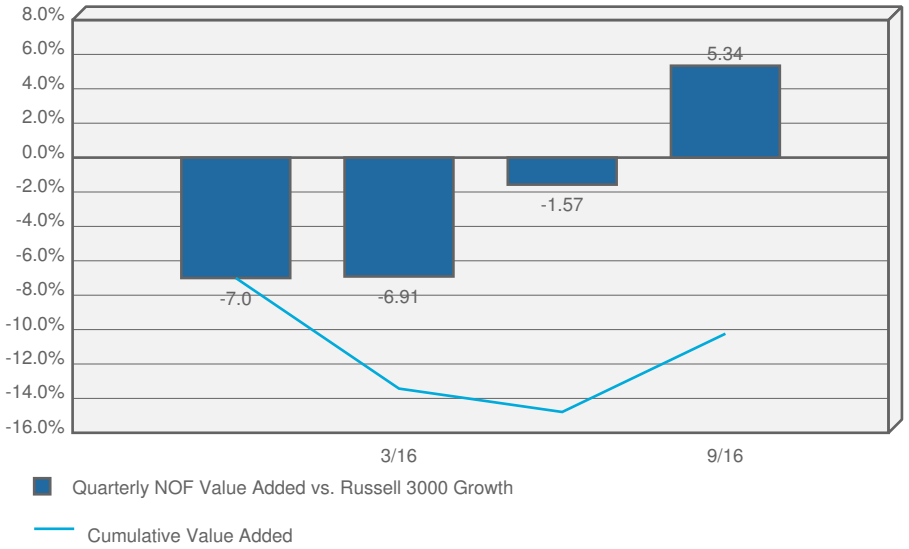
September 30, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◆ Emerald Adviso	10.26 (5)	9.41 (29)	2.22 (93)	2.31 (98)				
1 Russell 3000 G	4.92 (53)	5.76 (70)	6.12 (70)	13.64 (45)				
Median	5.10	7.25	8.10	13.23	6.81	9.62	16.43	8.00
Number of Funds	484	484	483	480	473	466	441	352

Value-Added Analysis vs Benchmark



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

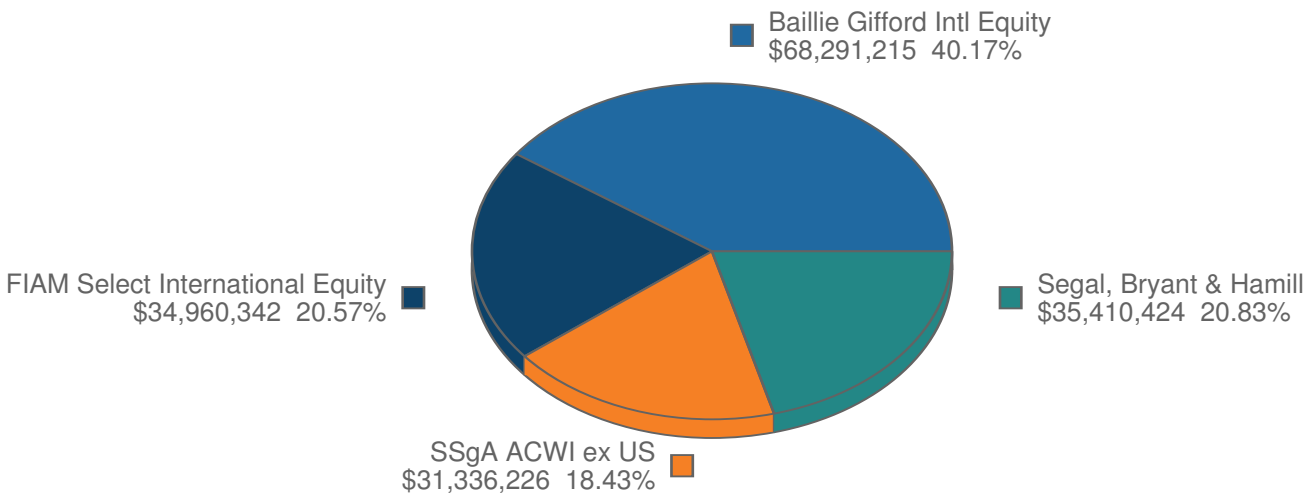
Non US Equity

Manager Allocation

Wilshire

Non US Equity Composite

As of September 30, 2016

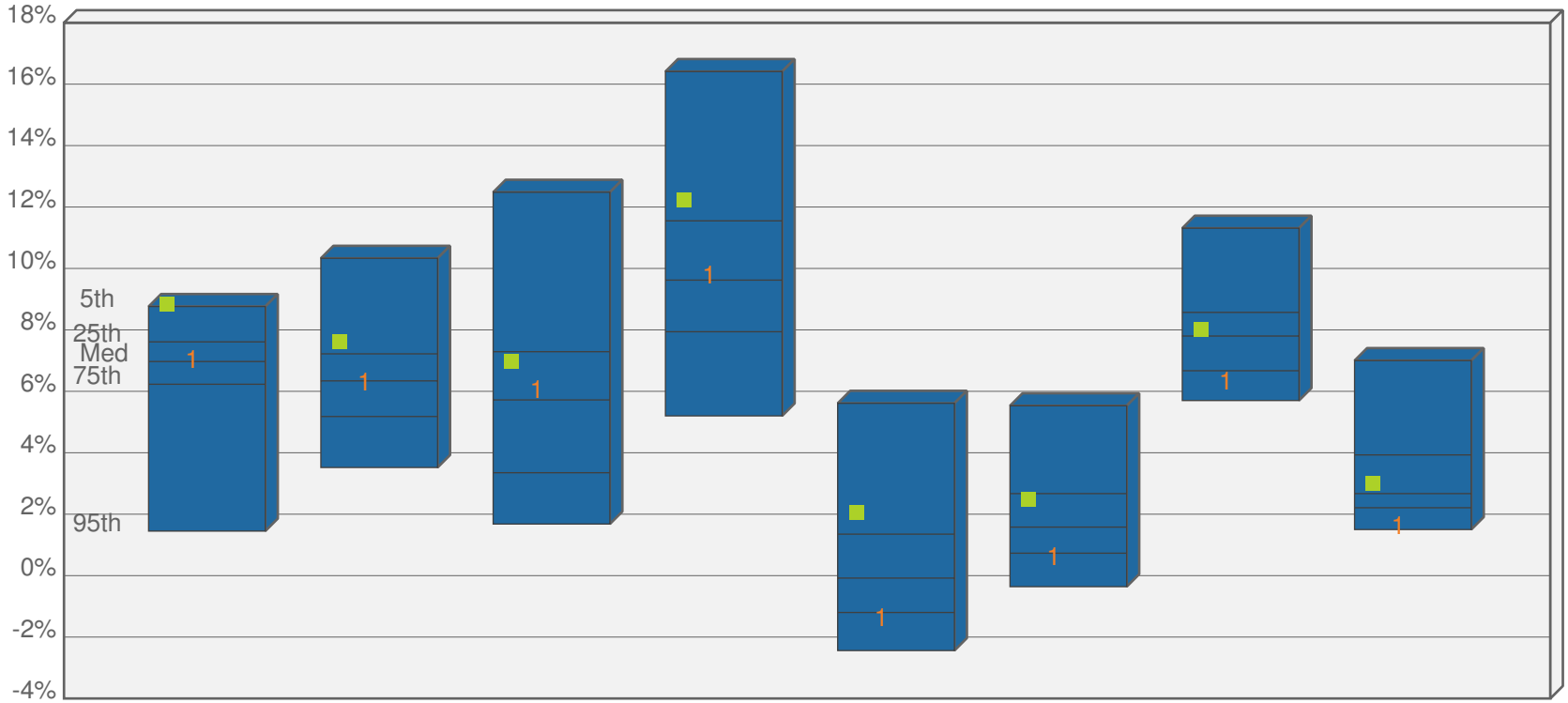


Performance Comparison

Wilshire

Non US Equity Composite

Periods Ended September 30, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Non US Equity Composite	8.88 (3)	7.67 (22)	7.01 (28)	12.26 (15)	2.09 (14)	2.51 (29)	8.06 (42)	3.03 (36)
1 Policy Index	7.05 (44)	6.32 (52)	6.08 (46)	9.81 (44)	-1.37 (79)	0.64 (77)	6.33 (84)	1.65 (92)
5th %tile	8.76	10.33	12.48	16.41	5.61	5.53	11.31	7.00
25th %tile	7.61	7.22	7.29	11.55	1.35	2.67	8.57	3.93
Median	6.97	6.34	5.72	9.62	-0.08	1.58	7.80	2.67
75th %tile	6.23	5.18	3.35	7.94	-1.20	0.73	6.67	2.21
95th %tile	1.45	3.52	1.68	5.20	-2.44	-0.36	5.70	1.50
Number of Funds	118	115	115	110	104	99	85	62

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

Performance Comparison

Wilshire

Trailing Returns

Periods Ended September 30, 2016

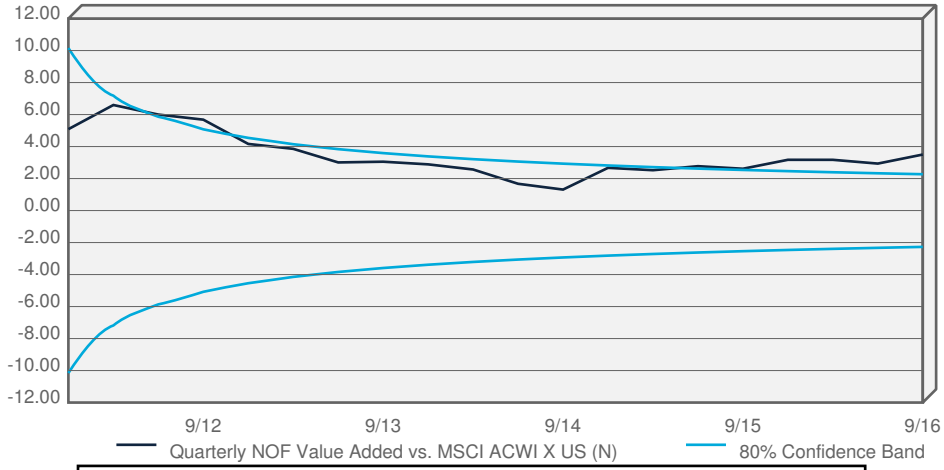
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Baillie Gifford Intl Equity									
Net of Fee Return	**10.68**	**9.63**	**10.07**	**17.05**	**3.99**	**9.75**		**9/30/09**	**7.39**
MSCI ACWI X US (N)	6.91	6.22	5.82	9.26	0.18	6.04		9/30/09	3.66
Value Added	3.77	3.41	4.25	7.79	3.81	3.71		9/30/09	3.73
FIAM Select International Equity									
Net of Fee Return	**6.23**	**6.32**	**4.63**	**7.28**	**0.41**	**6.49**	**1.81**	**12/31/00**	**3.94**
Policy Benchmark	6.91	6.22	5.82	9.26	0.18	6.04	1.51	12/31/00	3.28
Value Added	-0.68	0.10	-1.20	-1.98	0.23	0.45	0.30	12/31/00	0.67
SSgA ACWI ex US									
Net of Fee Return	**6.36**	**5.44**	**3.50**	**7.53**				**6/30/15**	**-3.07**
MSCI World X-US (N)	6.29	5.17	3.12	7.16				6/30/15	-3.35
Value Added	0.06	0.26	0.37	0.36				6/30/15	0.28
Segal, Bryant & Hamill									
Net of Fee Return	**10.39**	**7.15**	**6.67**	**12.29**				**6/30/15**	**4.00**
MSCI EAFE Small Cap (N)	8.64	5.82	5.19	12.33				6/30/15	3.71
Value Added	1.75	1.33	1.48	-0.03				6/30/15	0.30
Non US Equity Composite									
Net of Fee Return	**8.88**	**7.67**	**7.01**	**12.21**	**2.19**	**7.66**	**2.65**	**12/31/00**	**4.49**
Policy Index	7.05	6.32	6.08	9.81	0.64	6.33	1.65	12/31/00	3.36
Value Added	1.83	1.35	0.94	2.40	1.55	1.33	1.00	12/31/00	1.12

Wilshire

Baillie Gifford Intl Equity

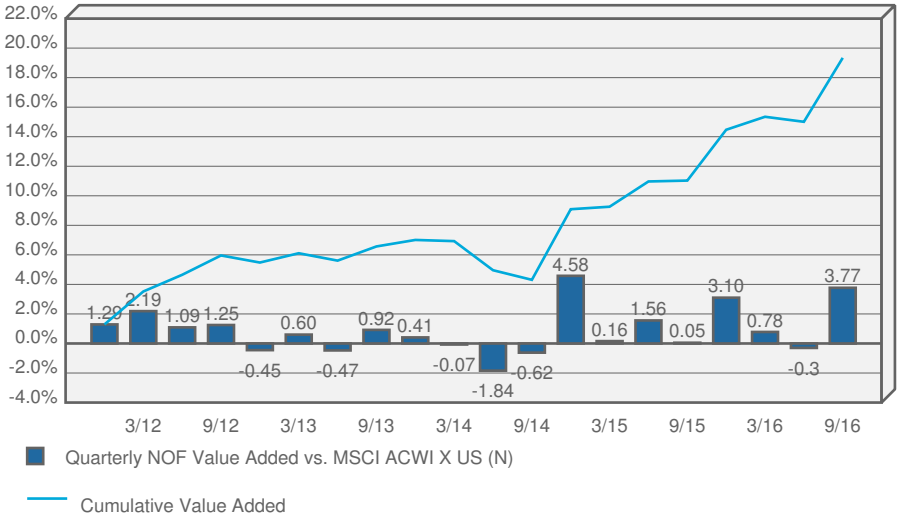
September 30, 2016

Cumulative Skill Analysis vs Benchmark

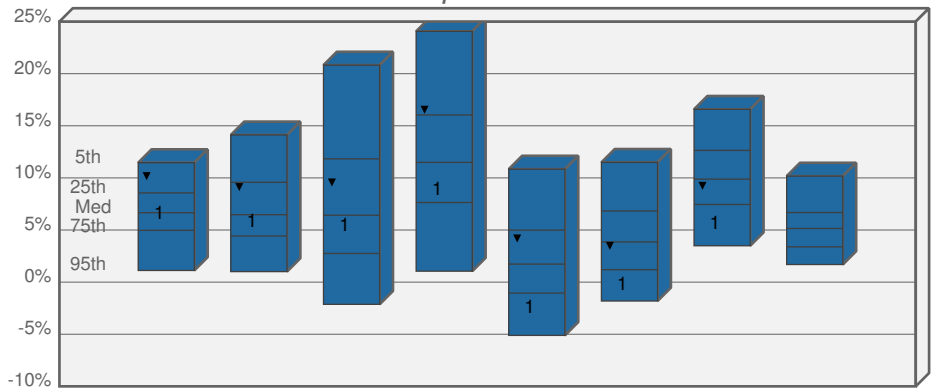


Excess Return:	**3.50**	**Information Ratio:**	**1.13**
Excess Risk:	**3.09**	**T-Stat:**	**2.54**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



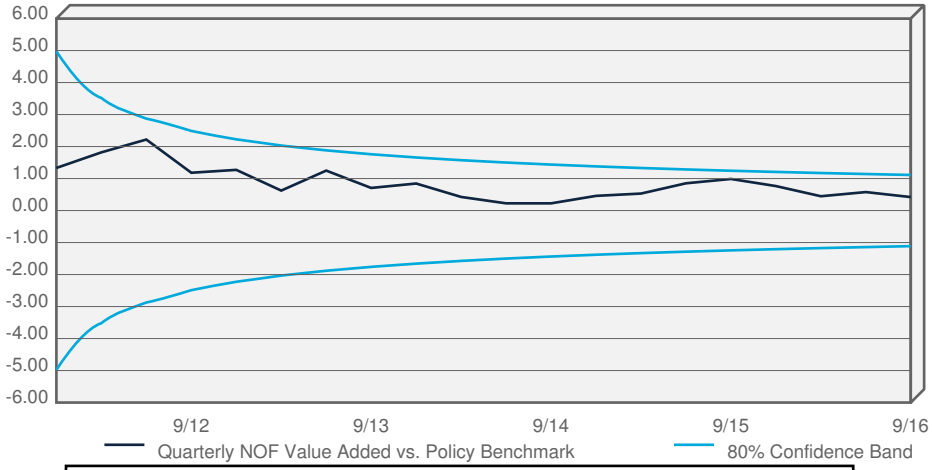
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▼ Baillie Giffor	10.68 (8)	9.63 (24)	10.07 (31)	17.05 (19)	4.70 (27)	3.99 (48)	9.75 (51)	
1 MSCI ACWI X US	6.91 (45)	6.22 (52)	5.82 (54)	9.26 (63)	-2.04 (82)	0.18 (85)	6.04 (85)	
Median	6.66	6.47	6.42	11.49	1.73	3.86	9.88	5.15
Number of Funds	1540	1537	1527	1519	1459	1389	1197	761

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

FIAM Select International Equity

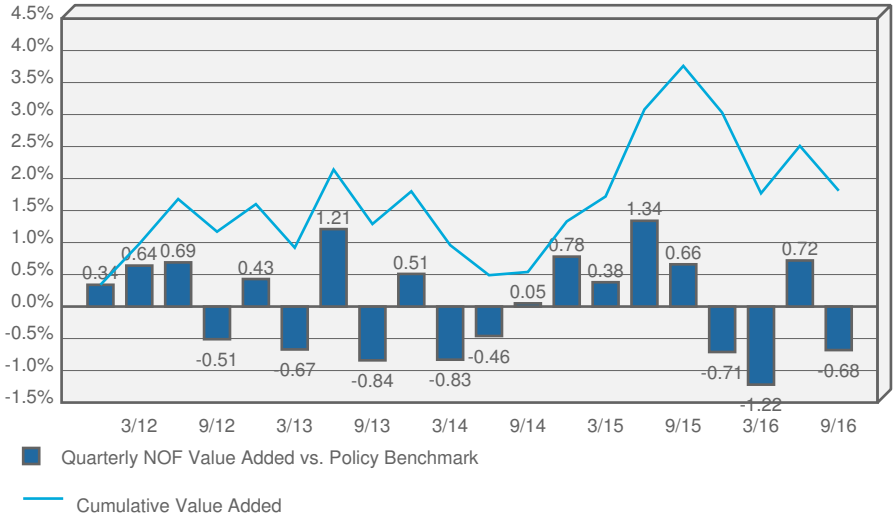
September 30, 2016

Cumulative Skill Analysis vs Benchmark

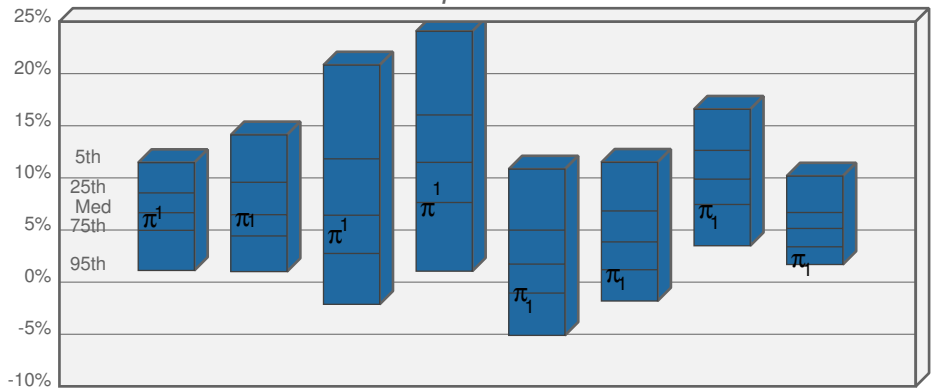


Excess Return:	**0.42**	**Information Ratio:**	**0.28**
Excess Risk:	**1.51**	**T-Stat:**	**0.62**

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
π FIAM Select In	6.23 (58)	6.32 (52)	4.63 (62)	7.28 (77)	-0.93 (73)	0.94 (77)	7.06 (78)	2.35 (88)
1 Policy Benchma	6.91 (45)	6.22 (52)	5.82 (54)	9.26 (63)	-2.04 (82)	0.18 (85)	6.04 (85)	1.51 (95)
Median	6.66	6.47	6.42	11.49	1.73	3.86	9.88	5.15
Number of Funds	1540	1537	1527	1519	1459	1389	1197	761

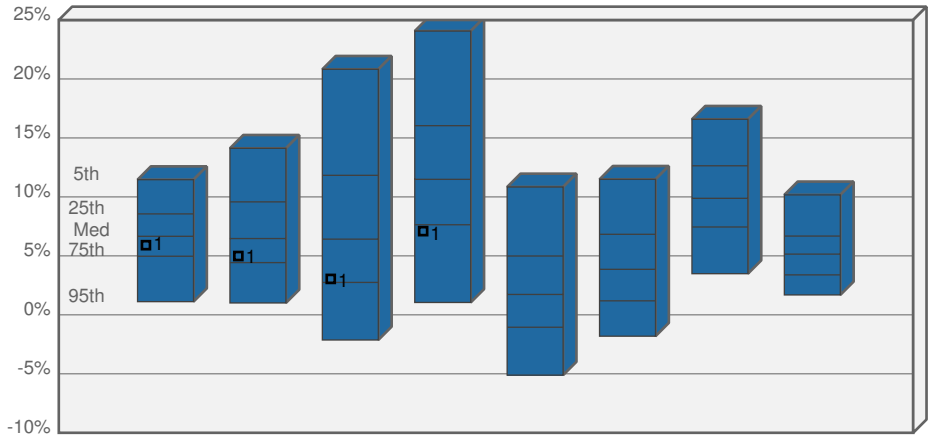
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

Wilshire

SSgA ACWI ex US

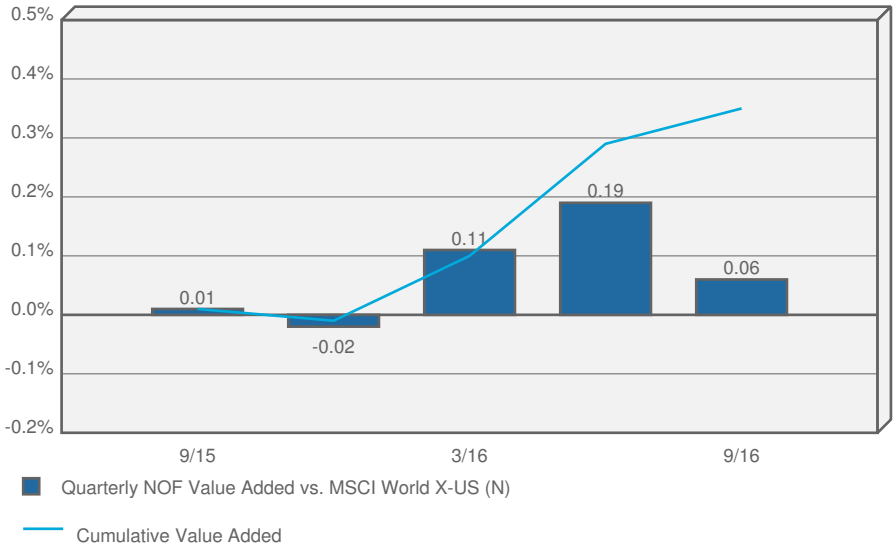
September 30, 2016

*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	6.36 (56)	5.44 (63)	3.50 (69)	7.55 (75)				
1 MSCI World X-U	6.29 (57)	5.17 (66)	3.12 (72)	7.16 (77)				
Median	6.66	6.47	6.42	11.49	1.73	3.86	9.88	5.15
Number of Funds	1540	1537	1527	1519	1459	1389	1197	761

Value-Added Analysis vs Benchmark



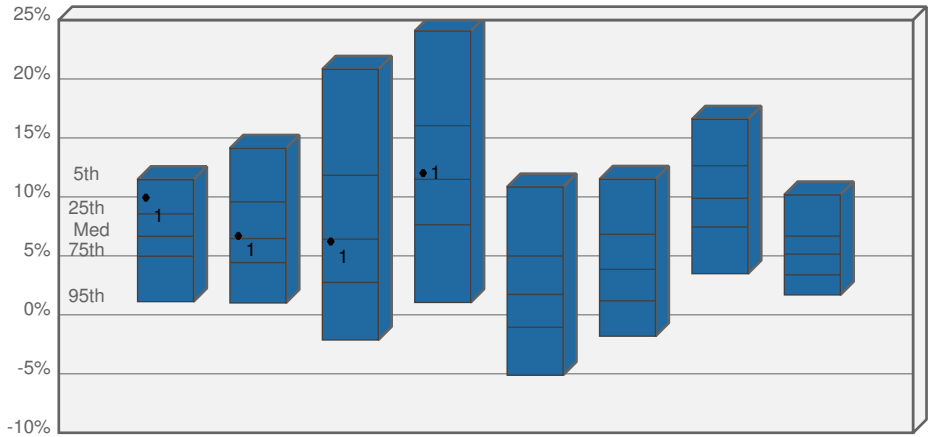
*Compass Total Returns of International Equity Portfolios Universe - Gross of Fees

Wilshire

Segal, Bryant & Hamill

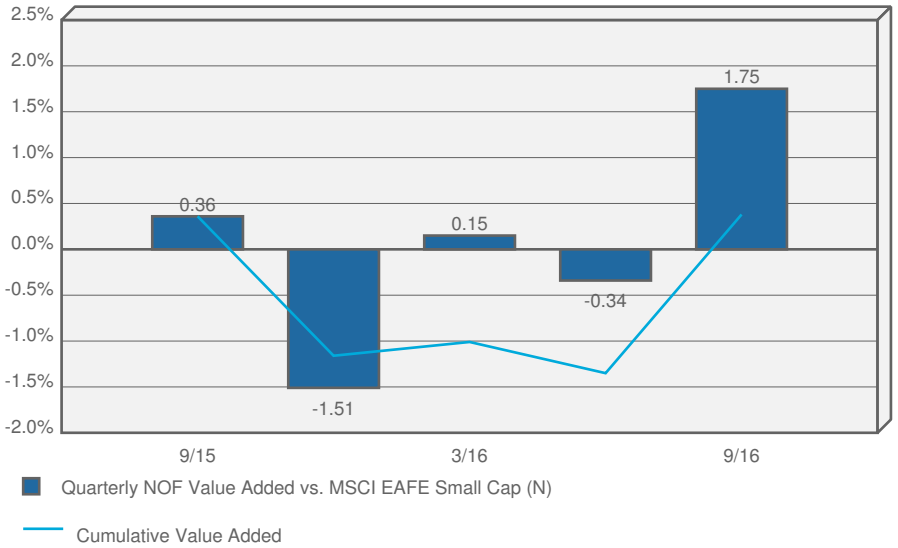
September 30, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◆ Segal, Bryant	10.39 (9)	7.15 (43)	6.67 (47)	12.47 (44)				
1 MSCI EAFE Smal	8.64 (24)	5.82 (58)	5.19 (58)	12.32 (45)				
Median	6.66	6.47	6.42	11.49	1.73	3.86	9.88	5.15
Number of Funds	1540	1537	1527	1519	1459	1389	1197	761

Value-Added Analysis vs Benchmark



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

Custom Benchmark Specification

Wilshire

Non US Equity Composite

September 30, 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	9/16	100.00	MSCI ACWI X US IMI Index (N)

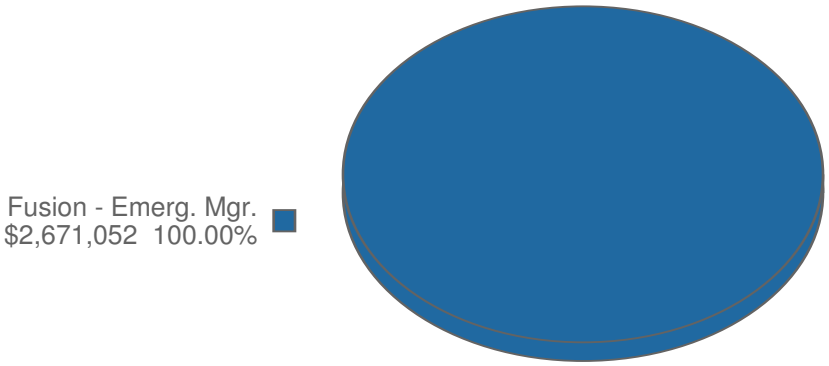
Global Equity

Manager Allocation

Wilshire

Global Equity Composite

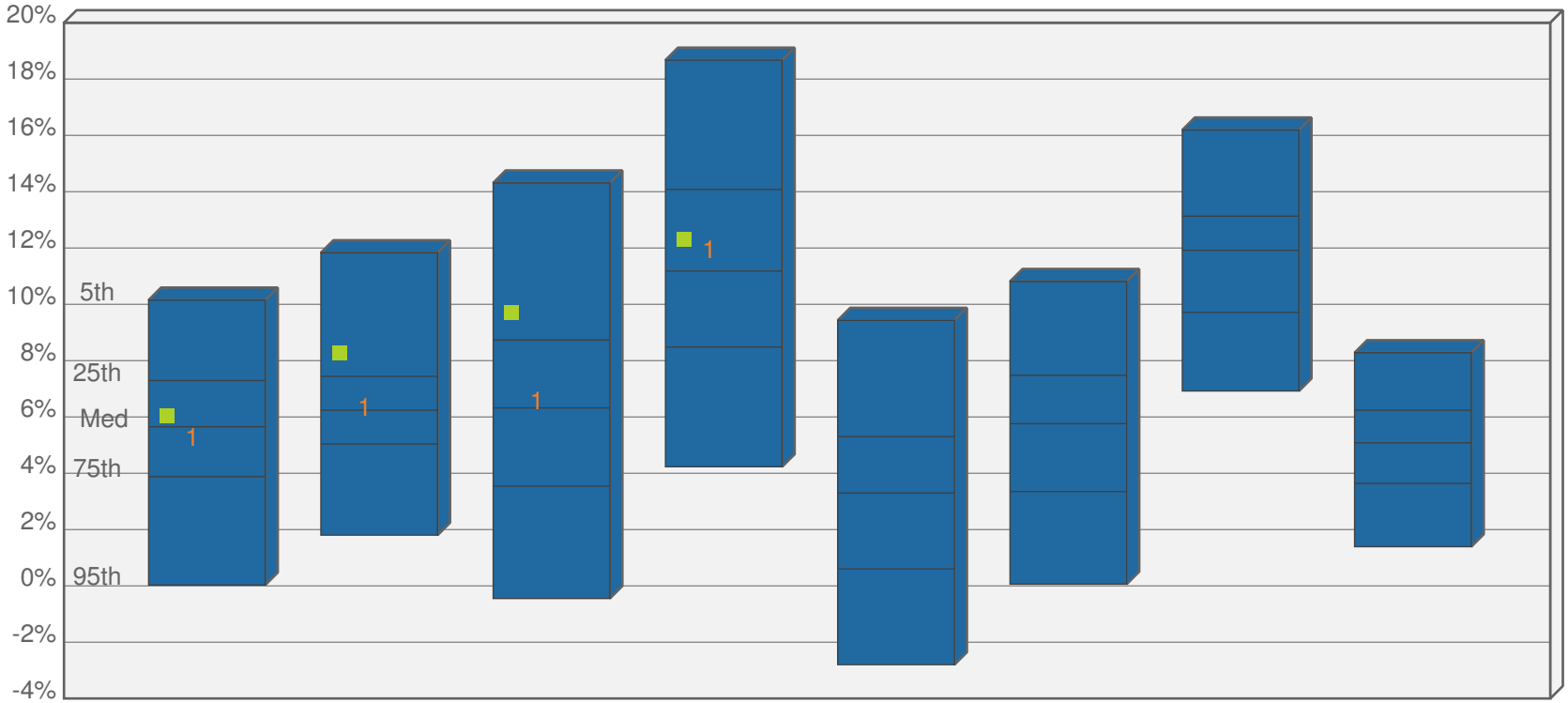
As of September 30, 2016



Wilshire

Global Equity Composite

Periods Ended September 30, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Global Equity	6.08 (44)	8.32 (19)	9.75 (20)	12.36 (40)				
1 MSCI ACWI (N)	5.30 (55)	6.34 (48)	6.59 (46)	11.96 (42)				
5th %tile	10.15	11.83	14.31	18.67	9.43	10.81	16.19	8.28
25th %tile	7.29	7.44	8.73	14.08	5.30	7.48	13.13	6.24
Median	5.65	6.24	6.32	11.18	3.30	5.76	11.92	5.08
75th %tile	3.88	5.04	3.54	8.48	0.60	3.35	9.71	3.64
95th %tile	0.03	1.80	-0.45	4.23	-2.80	0.06	6.92	1.39
Number of Funds	344	342	337	333	315	282	254	111

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

Wilshire

Trailing Returns

Periods Ended September 30, 2016

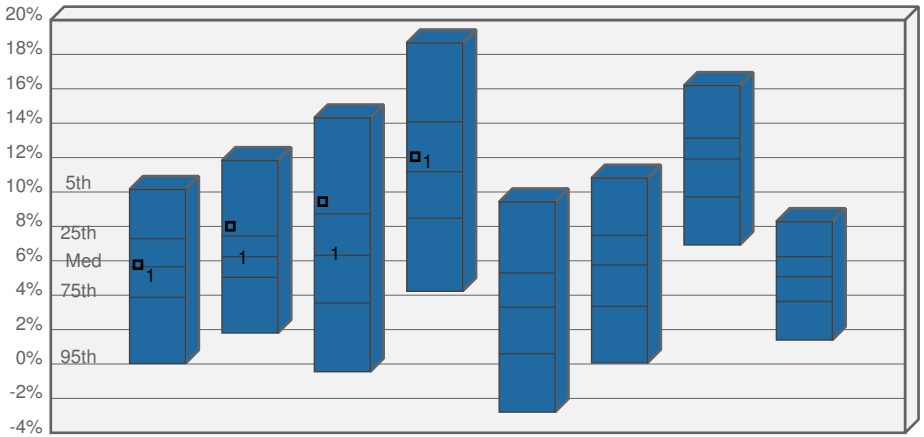
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Fusion - Emerg. Mgr.									
Net of Fee Return	**6.08**	**8.32**	**9.75**	**12.16**				**12/31/14**	**2.38**
MSCI ACWI (N)	5.30	6.34	6.59	11.96				12/31/14	2.31
Value Added	0.78	1.98	3.15	0.21				12/31/14	0.07
Global Equity									
Net of Fee Return	**6.08**	**8.32**	**9.75**	**12.16**				**12/31/14**	**2.38**
MSCI ACWI (N)	5.30	6.34	6.59	11.96				12/31/14	2.31
Value Added	0.78	1.98	3.15	0.21				12/31/14	0.07

Wilshire

Fusion - Emerg. Mgr.

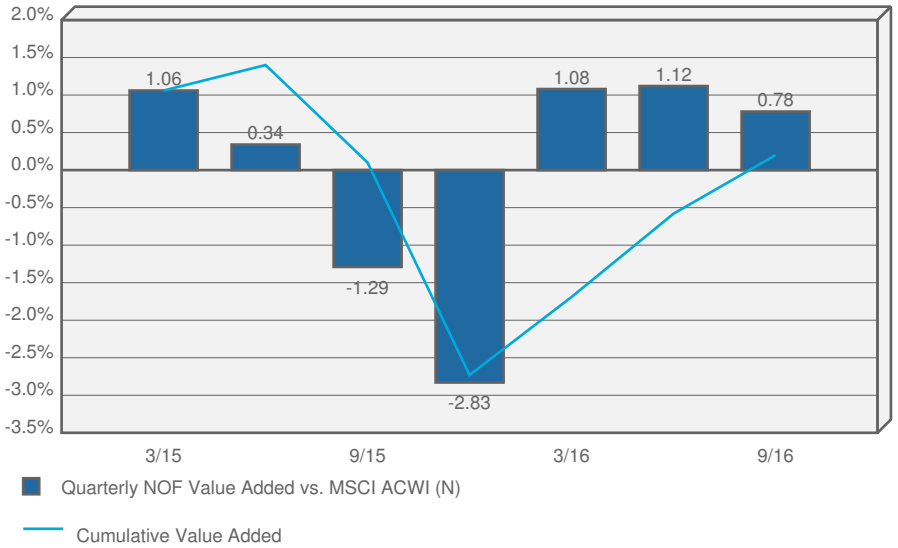
September 30, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◘ Fusion - Emerg	6.08 (44)	8.32 (19)	9.75 (20)	12.36 (40)				
1 MSCI ACWI (N)	5.30 (55)	6.34 (48)	6.59 (46)	11.96 (42)				
Median	5.65	6.24	6.32	11.18	3.30	5.76	11.92	5.08
Number of Funds	344	342	337	333	315	282	254	111

Value-Added Analysis vs Benchmark



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

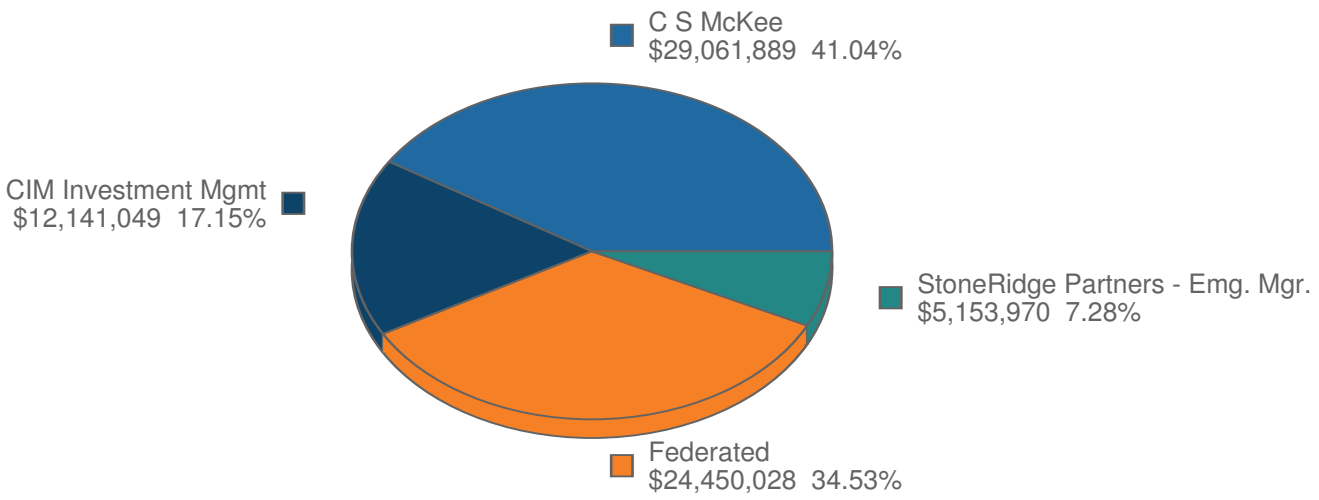
Core Fixed Income

Manager Allocation

Wilshire

Core Fixed Composite

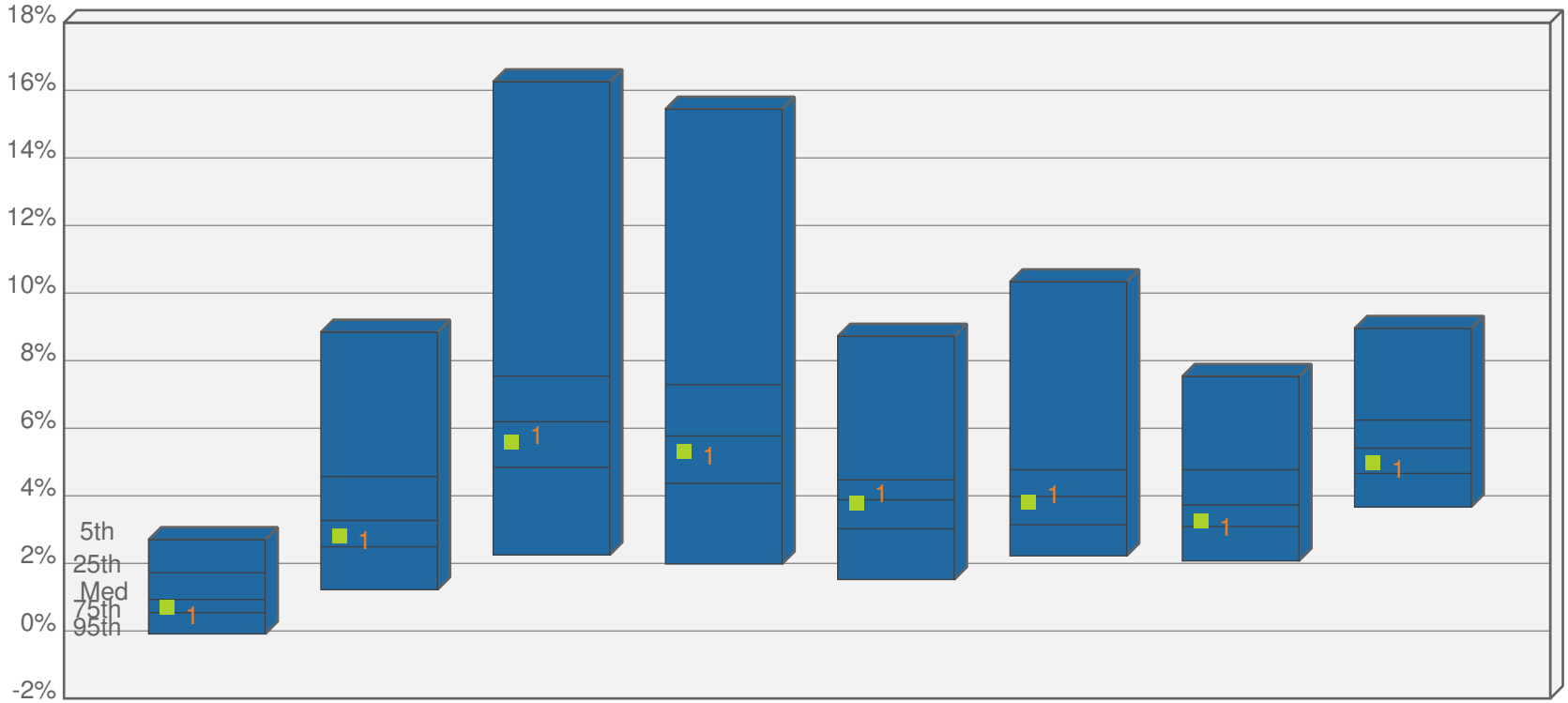
As of September 30, 2016



Wilshire

Core Fixed Composite

Periods Ended September 30, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Core Fixed Composite	0.74 (60)	2.86 (65)	5.63 (62)	5.34 (60)	3.83 (50)	3.85 (54)	3.30 (68)	5.02 (65)
1 Barclays Aggrega	0.46 (80)	2.68 (70)	5.80 (56)	5.19 (64)	4.06 (42)	4.03 (46)	3.08 (76)	4.79 (71)
5th %tile	2.70	8.84	16.25	15.44	8.72	10.33	7.53	8.95
25th %tile	1.72	4.57	7.54	7.29	4.47	4.77	4.77	6.24
Median	0.93	3.27	6.19	5.77	3.88	3.98	3.73	5.41
75th %tile	0.54	2.49	4.84	4.37	3.02	3.14	3.09	4.66
95th %tile	-0.09	1.22	2.25	1.98	1.52	2.22	2.07	3.67
Number of Funds	132	131	129	128	125	121	101	61

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

Performance Comparison

Wilshire

Trailing Returns

Periods Ended September 30, 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	**0.45**	**2.38**	**5.84**	**5.65**	**4.37**	**3.62**	**5.43**	**12/31/82**	**7.86**
Barclays Aggregate	0.46	2.68	5.80	5.19	4.03	3.08	4.79	12/31/82	7.49
Value Added	-0.00	-0.30	0.04	0.45	0.34	0.54	0.64	12/31/82	0.37
CIM Investment Mgmt									
Net of Fee Return	**0.34**	**1.49**	**3.15**	**2.76**	**2.28**	**2.11**	**3.78**	**12/31/05**	**3.75**
Barclays Int Govt/Credit	0.16	1.75	4.24	3.52	2.80	2.45	4.17	12/31/05	4.16
Value Added	0.18	-0.25	-1.09	-0.76	-0.52	-0.34	-0.39	12/31/05	-0.41
Federated									
Net of Fee Return	**1.32**	**4.29**	**6.98**	**6.46**	**3.96**	**3.41**	**5.38**	**9/30/06**	**5.38**
Barclays Aggregate	0.46	2.68	5.80	5.19	4.03	3.08	4.79	9/30/06	4.79
Value Added	0.86	1.61	1.18	1.26	-0.06	0.33	0.59	9/30/06	0.59
StoneRidge Partners - Emg. Mgr.									
Net of Fee Return	**0.65**	**1.96**	**3.57**	**3.68**				**9/30/15**	**3.68**
Policy Index	0.36	2.14	4.73	4.10				9/30/15	4.10
Value Added	0.29	-0.18	-1.16	-0.41				9/30/15	-0.41
Core Fixed Composite									
Net of Fee Return	**0.74**	**2.85**	**5.62**	**5.30**	**3.73**	**3.15**	**4.80**	**9/30/82**	**8.12**
Barclays Aggregate	0.46	2.68	5.80	5.19	4.03	3.08	4.79	9/30/82	7.69
Value Added	0.29	0.17	-0.17	0.11	-0.29	0.07	0.01	9/30/82	0.43

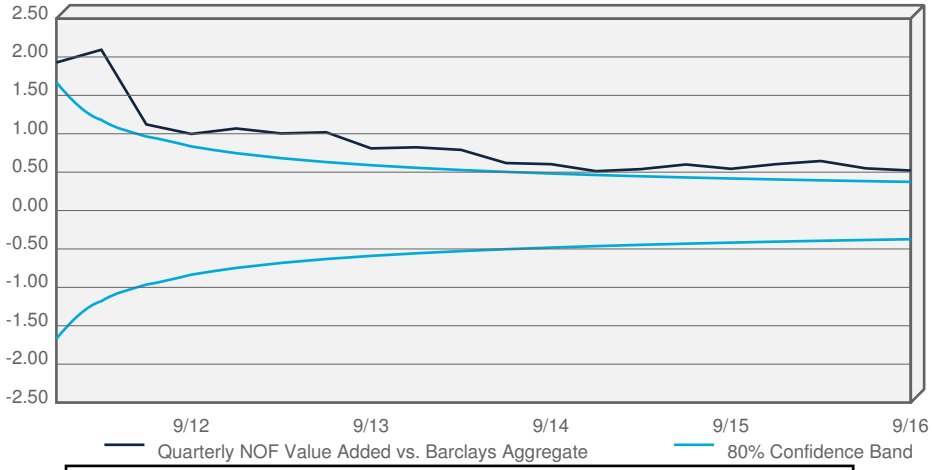
Investment Manager Analysis

Wilshire

C S McKee

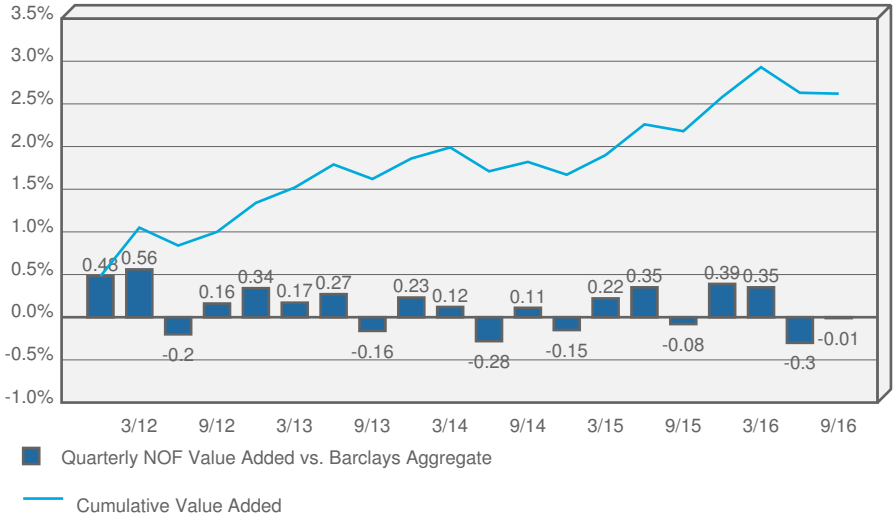
September 30, 2016

Cumulative Skill Analysis vs Benchmark

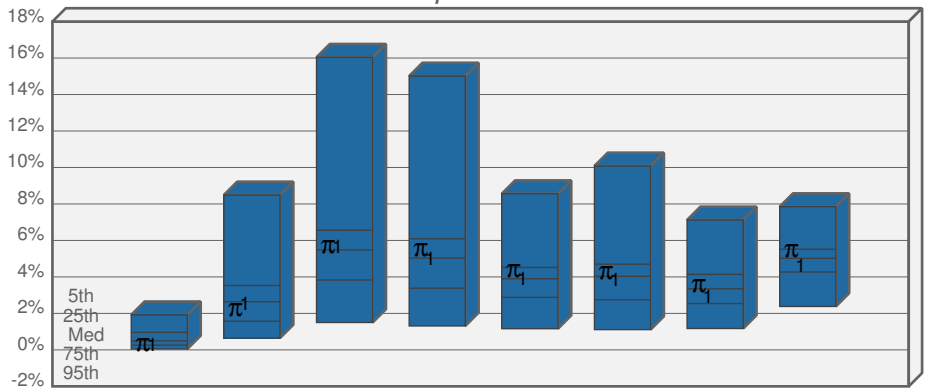


Excess Return:	**0.52**	**Information Ratio:**	**1.03**
Excess Risk:	**0.51**	**T-Stat:**	**2.29**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



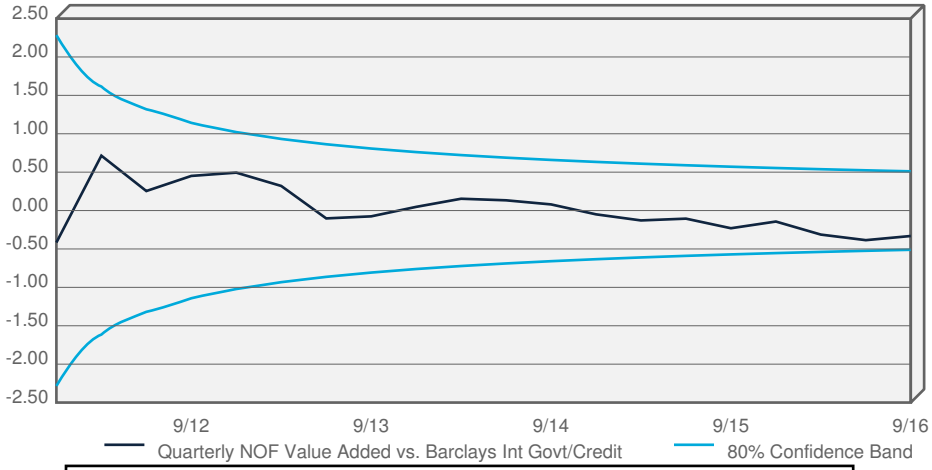
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
π C S McKee	0.45 (56)	2.38 (56)	5.84 (42)	5.67 (34)	4.51 (25)	4.39 (33)	3.70 (37)	5.60 (23)
1 Barclays Aggre	0.46 (55)	2.68 (48)	5.80 (43)	5.19 (47)	4.06 (45)	4.03 (50)	3.08 (60)	4.79 (58)
Median	0.50	2.64	5.48	5.03	3.90	4.03	3.35	5.02
Number of Funds	441	436	434	434	428	420	405	347

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

CIM Investment Mgmt

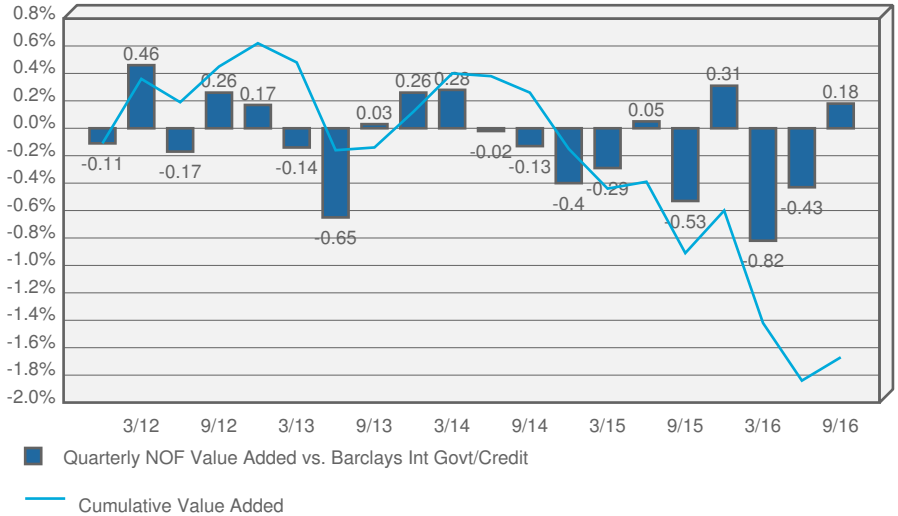
September 30, 2016

Cumulative Skill Analysis vs Benchmark

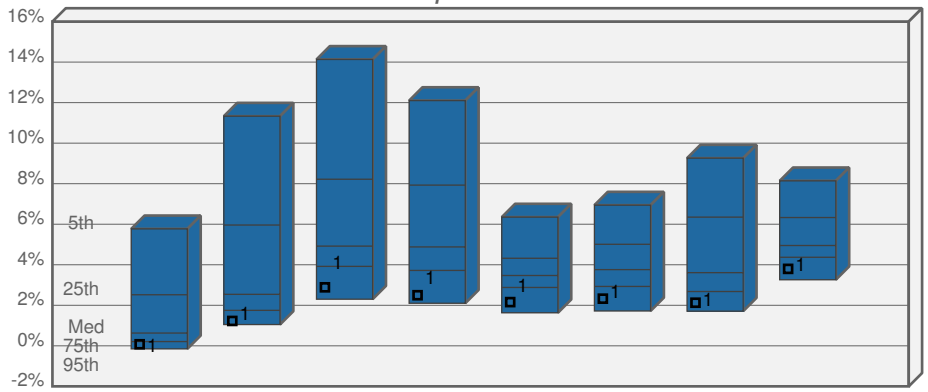


Excess Return:	**-0.33**	**Information Ratio:**	**-0.48**
Excess Risk:	**0.69**	**T-Stat:**	**-1.07**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



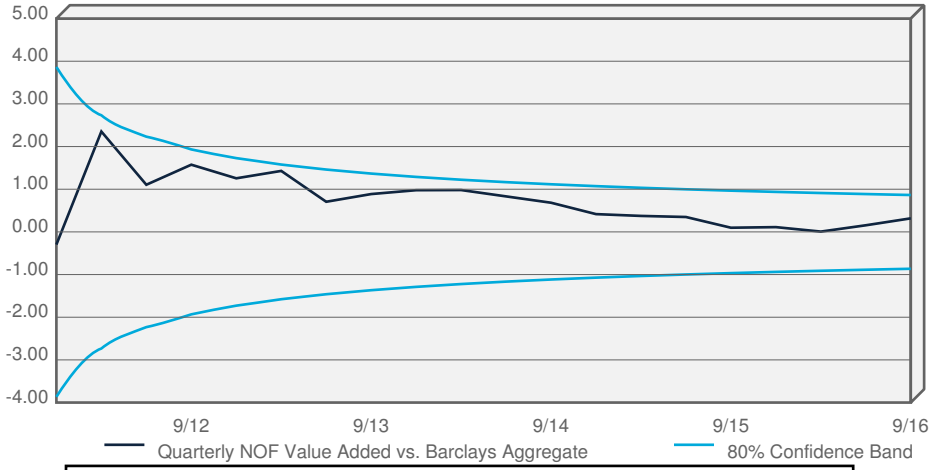
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◻ CIM Investment	0.34 (67)	1.49 (83)	3.15 (85)	2.76 (91)	2.42 (84)	2.59 (84)	2.39 (83)	4.06 (83)
1 Barclays Int G	0.16 (77)	1.75 (75)	4.24 (66)	3.52 (79)	3.10 (65)	2.80 (79)	2.45 (82)	4.17 (81)
Median	0.63	2.54	4.92	4.88	3.47	3.76	3.61	4.95
Number of Funds	451	449	445	445	435	425	407	336

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

Federated

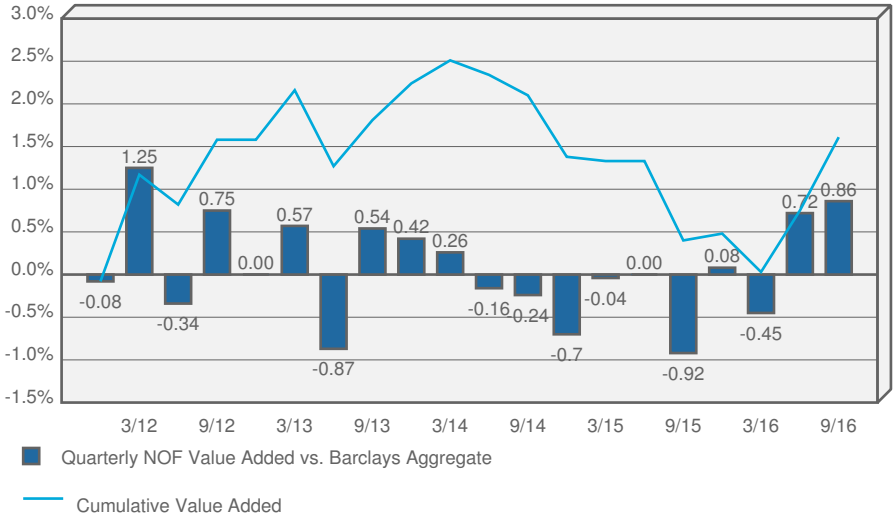
September 30, 2016

Cumulative Skill Analysis vs Benchmark

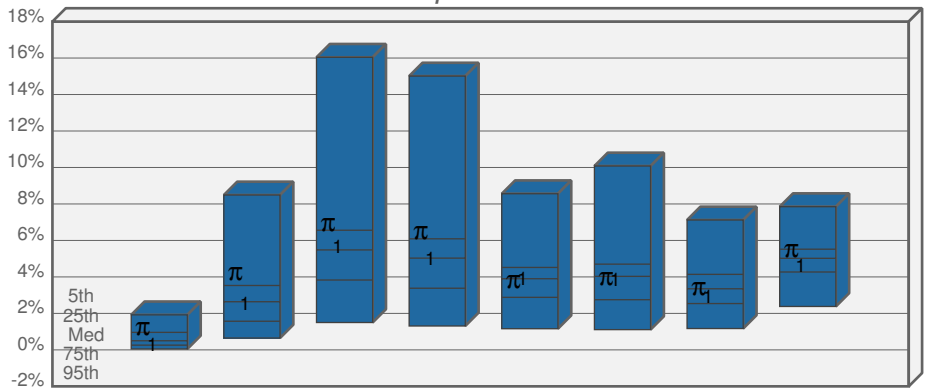


Excess Return:	**0.32**	**Information Ratio:**	**0.27**
Excess Risk:	**1.18**	**T-Stat:**	**0.60**

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	1.32 (14)	4.36 (14)	7.05 (17)	6.57 (18)	3.92 (49)	4.06 (48)	3.54 (43)	5.58 (23)
1 Barclays Aggre	0.46 (55)	2.68 (48)	5.80 (43)	5.19 (47)	4.06 (45)	4.03 (50)	3.08 (60)	4.79 (58)
Median	0.50	2.64	5.48	5.03	3.90	4.03	3.35	5.02
Number of Funds	441	436	434	434	428	420	405	347

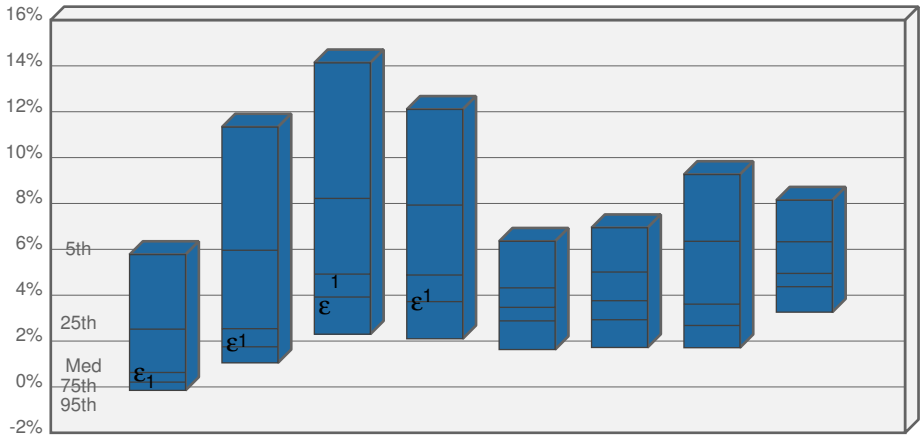
*Compass Total Returns of Active Core Fixed Income Portfolios Universe - Gross of Fees

Wilshire

StoneRidge Partners - Emg. Mgr.

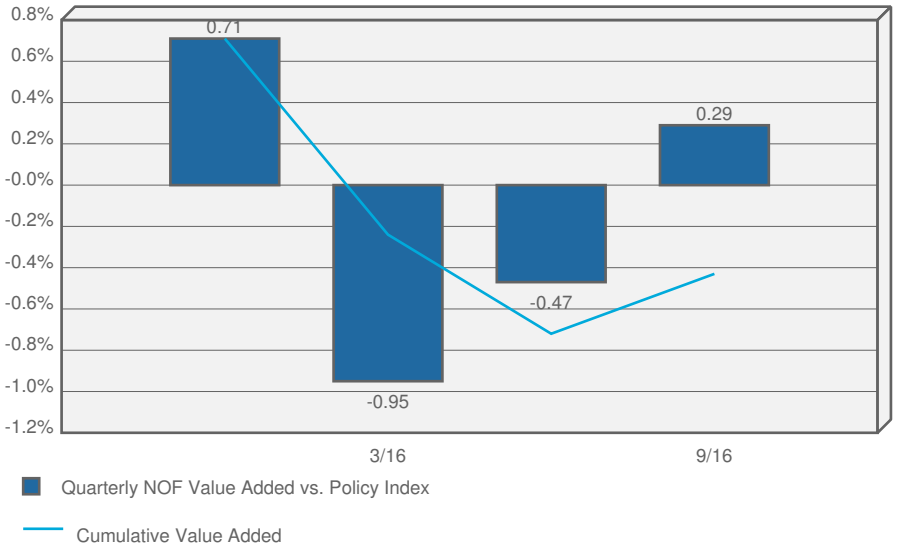
September 30, 2016

*Performance Comparison vs Peer Universe**



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
ε StoneRidge Par	0.65 (49)	1.96 (64)	3.57 (80)	3.76 (73)				
1 Policy Index	0.37 (65)	2.14 (58)	4.73 (52)	4.10 (60)				
Median	0.63	2.54	4.92	4.88	3.47	3.76	3.61	4.95
Number of Funds	451	449	445	445	435	425	407	336

Value-Added Analysis vs Benchmark



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

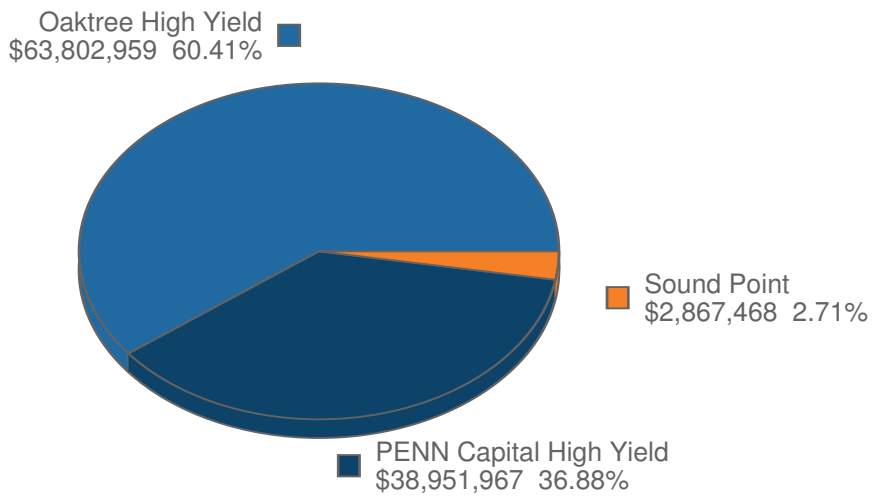
High Yield

Manager Allocation

Wilshire

High Yield Fixed Composite

As of September 30, 2016

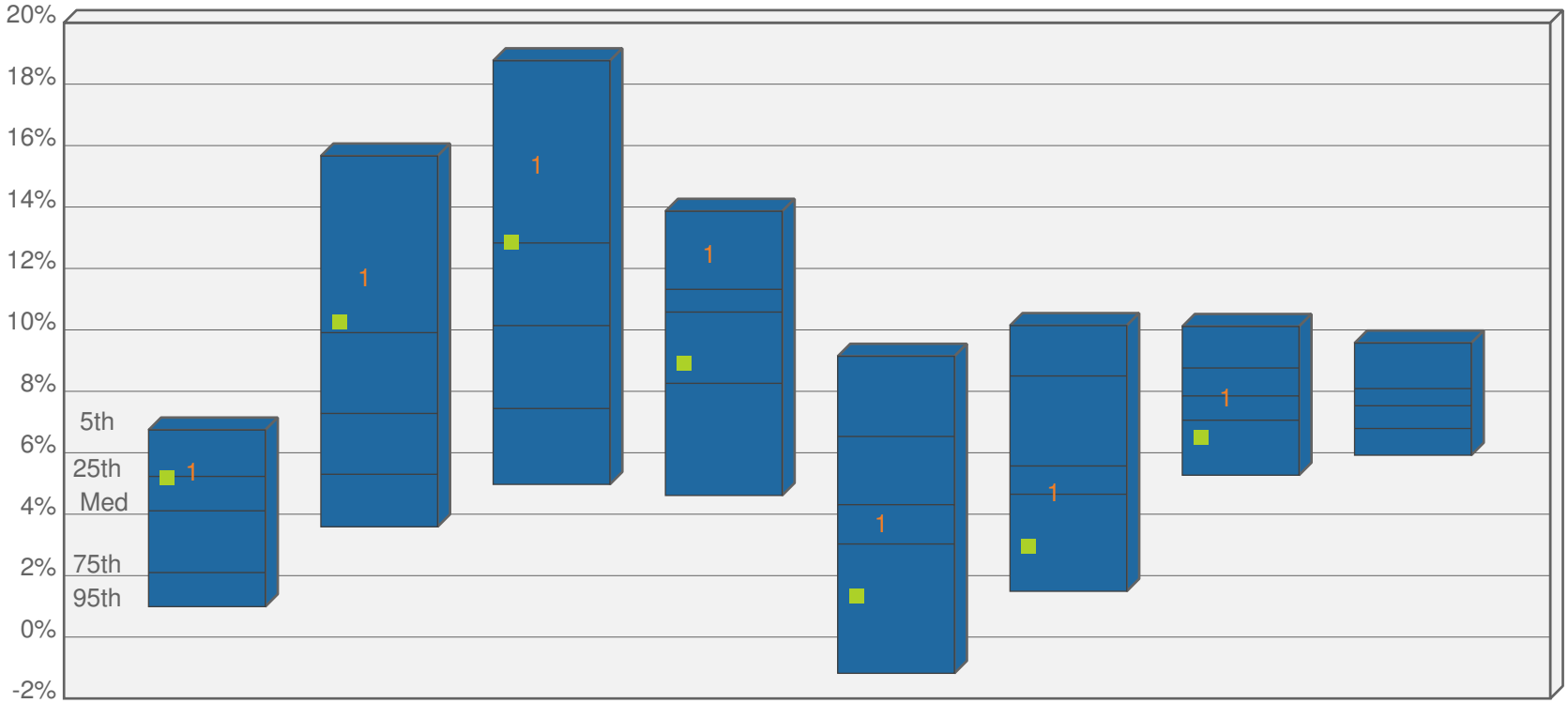


Performance Comparison

Wilshire

High Yield Fixed Composite

Periods Ended September 30, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
High Yield Fixed Composi	5.24 (24)	10.30 (19)	12.91 (24)	8.94 (64)	1.39 (85)	3.01 (88)	6.53 (87)	
1 Citi High Yield	5.39 (20)	11.69 (12)	15.36 (10)	12.47 (16)	3.69 (65)	4.71 (73)	7.79 (53)	
5th %tile	6.74	15.66	18.76	13.86	9.14	10.14	10.11	9.57
25th %tile	5.23	9.91	12.83	11.32	6.53	8.50	8.76	8.09
Median	4.11	7.28	10.14	10.58	4.31	5.57	7.85	7.53
75th %tile	2.10	5.30	7.44	8.26	3.03	4.65	7.06	6.79
95th %tile	0.99	3.59	4.97	4.61	-1.18	1.49	5.27	5.92
Number of Funds	98	98	97	93	87	77	63	25

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

Performance Comparison

Wilshire

Trailing Returns

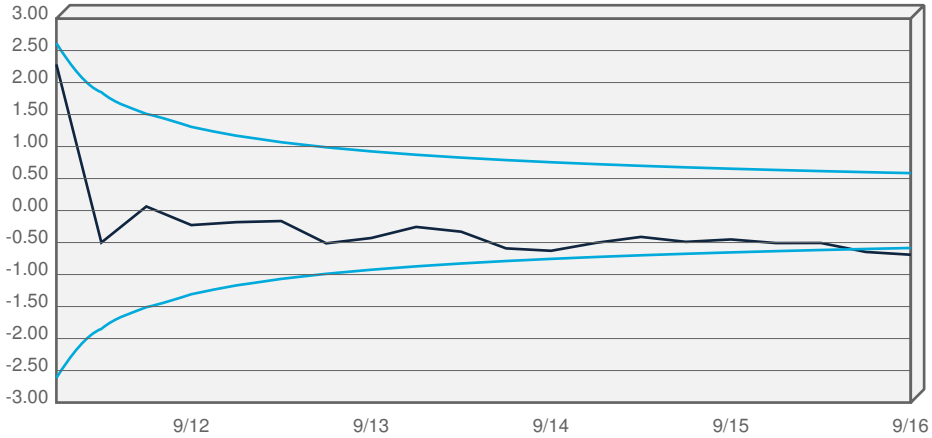
Periods Ended September 30, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Oaktree High Yield									
Net of Fee Return	**4.96**	**10.29**	**13.69**	**10.59**	**3.79**	**6.99**		**3/31/08**	**7.91**
Citigroup HY Cash Pay Capped	5.36	11.60	15.18	12.43	4.69	7.74		3/31/08	8.01
Value Added	-0.40	-1.31	-1.49	-1.84	-0.90	-0.74		3/31/08	-0.09
PENN Capital High Yield									
Net of Fee Return	**5.93**	**10.78**	**12.26**	**6.55**	**1.22**	**5.20**		**6/30/08**	**7.14**
ML High Yield Master II	5.49	11.69	15.32	12.82	5.27	8.24		6/30/08	8.60
Value Added	0.44	-0.91	-3.06	-6.27	-4.05	-3.05		6/30/08	-1.46
Sound Point									
Net of Fee Return	**2.19**	**4.47**	**5.18**	**3.62**	**4.46**			**9/30/13**	**4.46**
CSFB Leveraged Loan	3.10	6.05	7.46	5.35	3.61			9/30/13	3.61
Value Added	-0.91	-1.57	-2.27	-1.72	0.85			9/30/13	0.85
High Yield Fixed Composite									
Net of Fee Return	**5.24**	**10.30**	**12.91**	**8.87**	**2.82**	**6.31**		**3/31/08**	**7.65**
Citi High Yield Market Capped	5.39	11.69	15.36	12.47	4.71	7.79		3/31/08	8.07
Value Added	-0.16	-1.39	-2.45	-3.60	-1.89	-1.48		3/31/08	-0.41

Oaktree High Yield

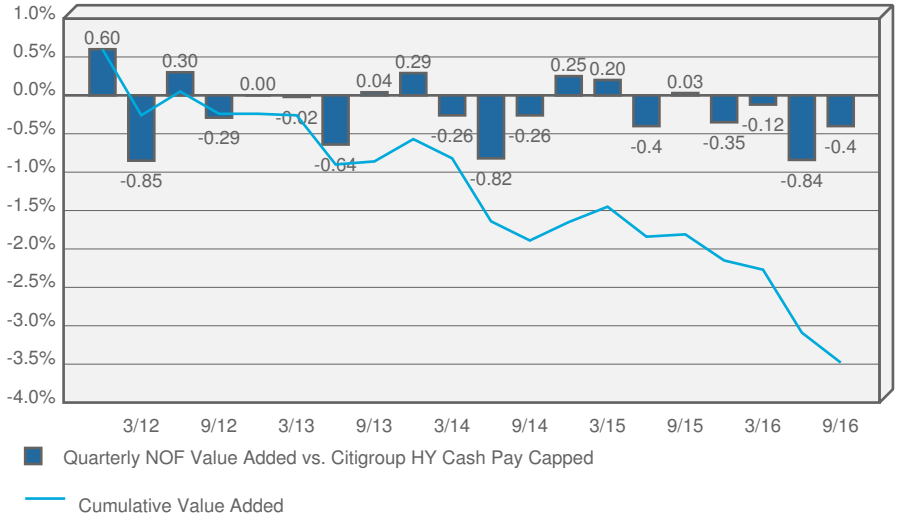
September 30, 2016

Cumulative Skill Analysis vs Benchmark

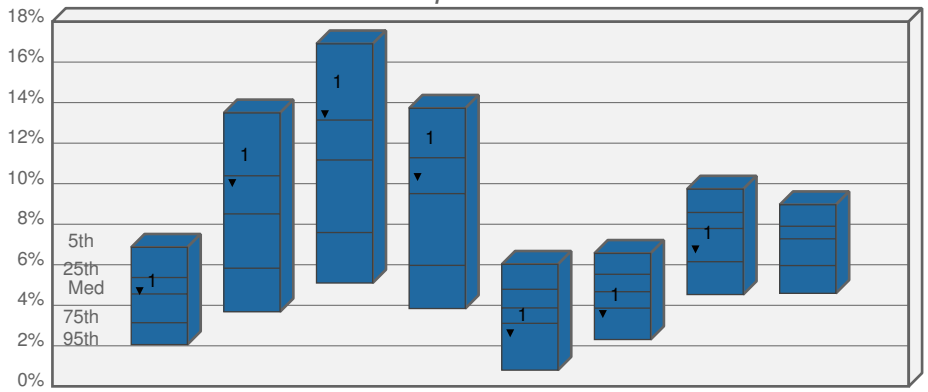


Excess Return:	**-0.69**	**Information Ratio:**	**-0.87**
Excess Risk:	**0.79**	**T-Stat:**	**-1.94**

Value-Added Analysis vs Benchmark



*Performance Comparison vs Peer Universe**



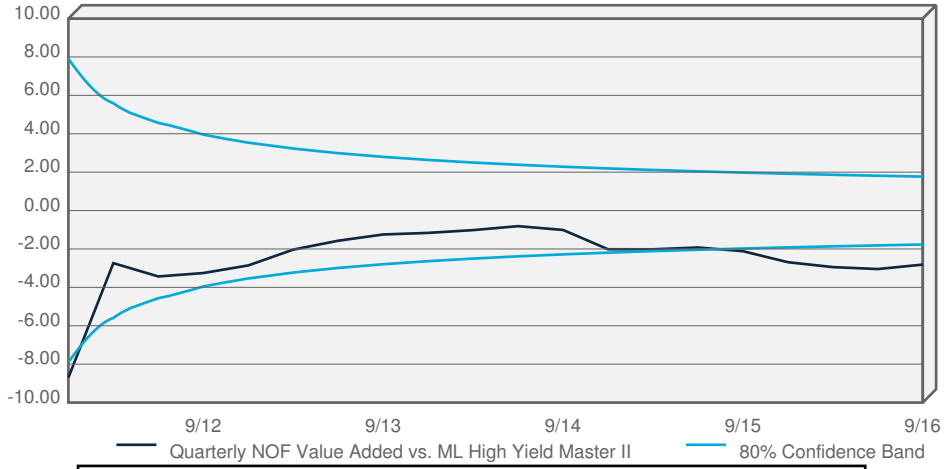
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
▼ Oaktree High Y	4.96 (36)	10.29 (26)	13.69 (18)	10.59 (34)	2.88 (80)	3.83 (75)	7.02 (60)	
1 Citigroup HY C	5.36 (25)	11.60 (13)	15.18 (8)	12.43 (11)	3.70 (59)	4.69 (49)	7.74 (52)	
Median	4.56	8.51	11.17	9.51	3.87	4.67	7.79	7.28
Number of Funds	217	217	217	217	211	206	179	127

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

PENN Capital High Yield

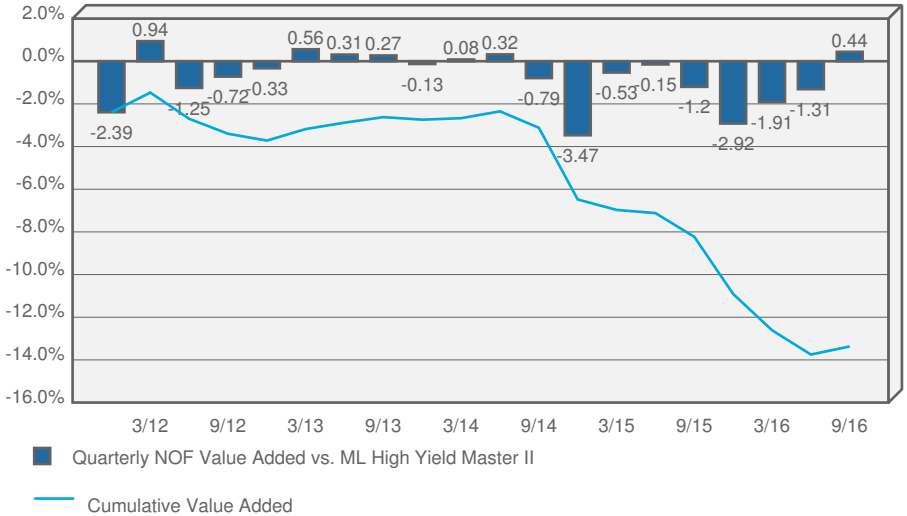
September 30, 2016

Cumulative Skill Analysis vs Benchmark

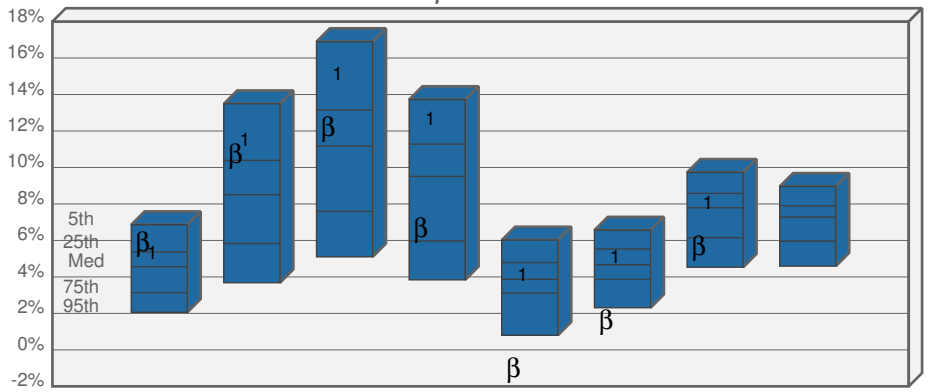


Excess Return:	**-2.81**	**Information Ratio:**	**-1.17**
Excess Risk:	**2.40**	**T-Stat:**	**-2.62**

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
β PENN Capital H	5.93 (13)	10.78 (20)	12.26 (37)	6.72 (67)	-1.00 (98)	1.66 (97)	5.72 (82)	
1 ML High Yield	5.49 (23)	11.69 (13)	15.32 (8)	12.82 (8)	4.30 (33)	5.27 (32)	8.24 (35)	
Median	4.56	8.51	11.17	9.51	3.87	4.67	7.79	7.28
Number of Funds	217	217	217	217	211	206	179	127

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

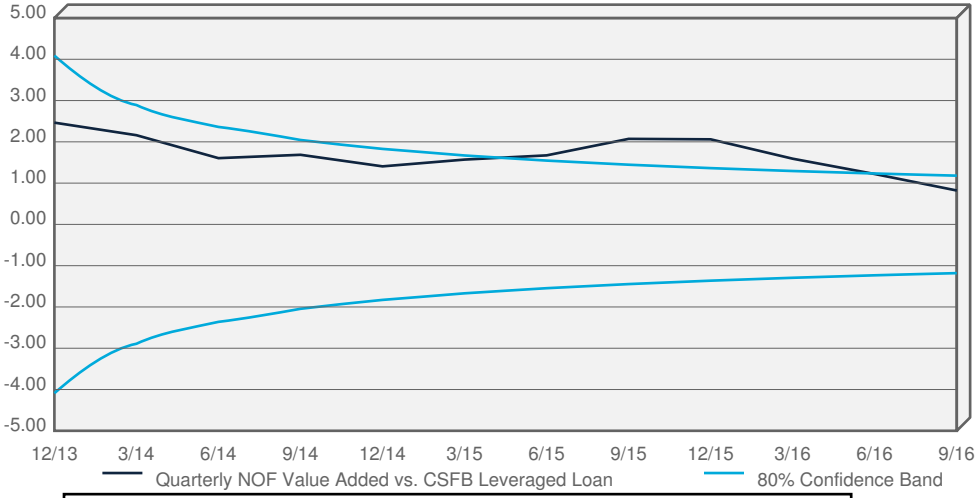
Investment Manager Analysis

Wilshire

Sound Point

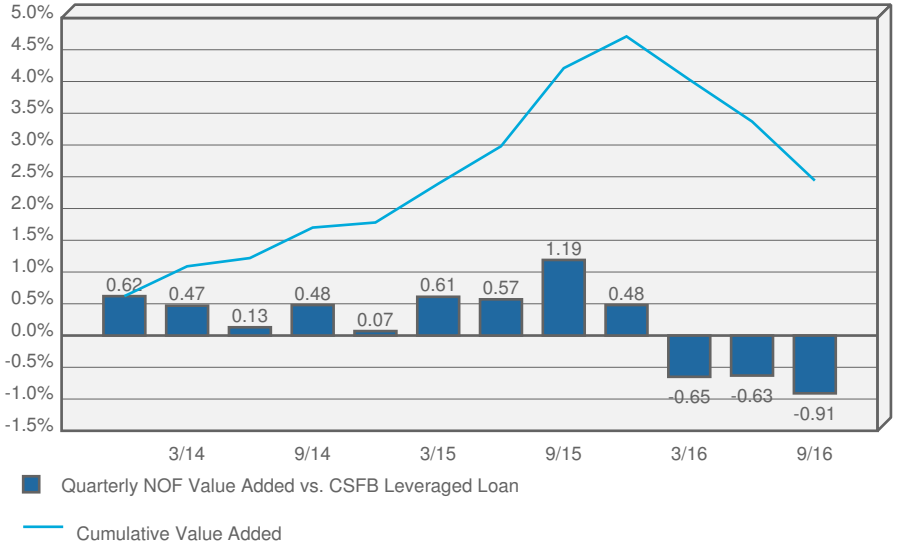
September 30, 2016

Cumulative Skill Analysis vs Benchmark



Excess Return:	**0.82**	**Information Ratio:**	**0.66**
Excess Risk:	**1.24**	**T-Stat:**	**1.14**

Value-Added Analysis vs Benchmark



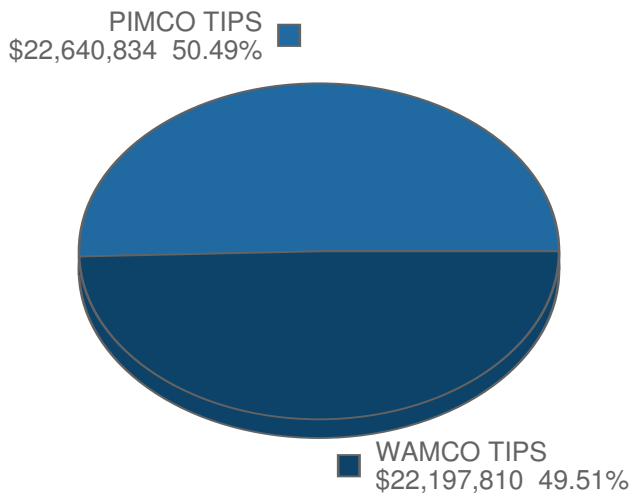
TIPS

Manager Allocation

Wilshire

TIPS Fixed Composite

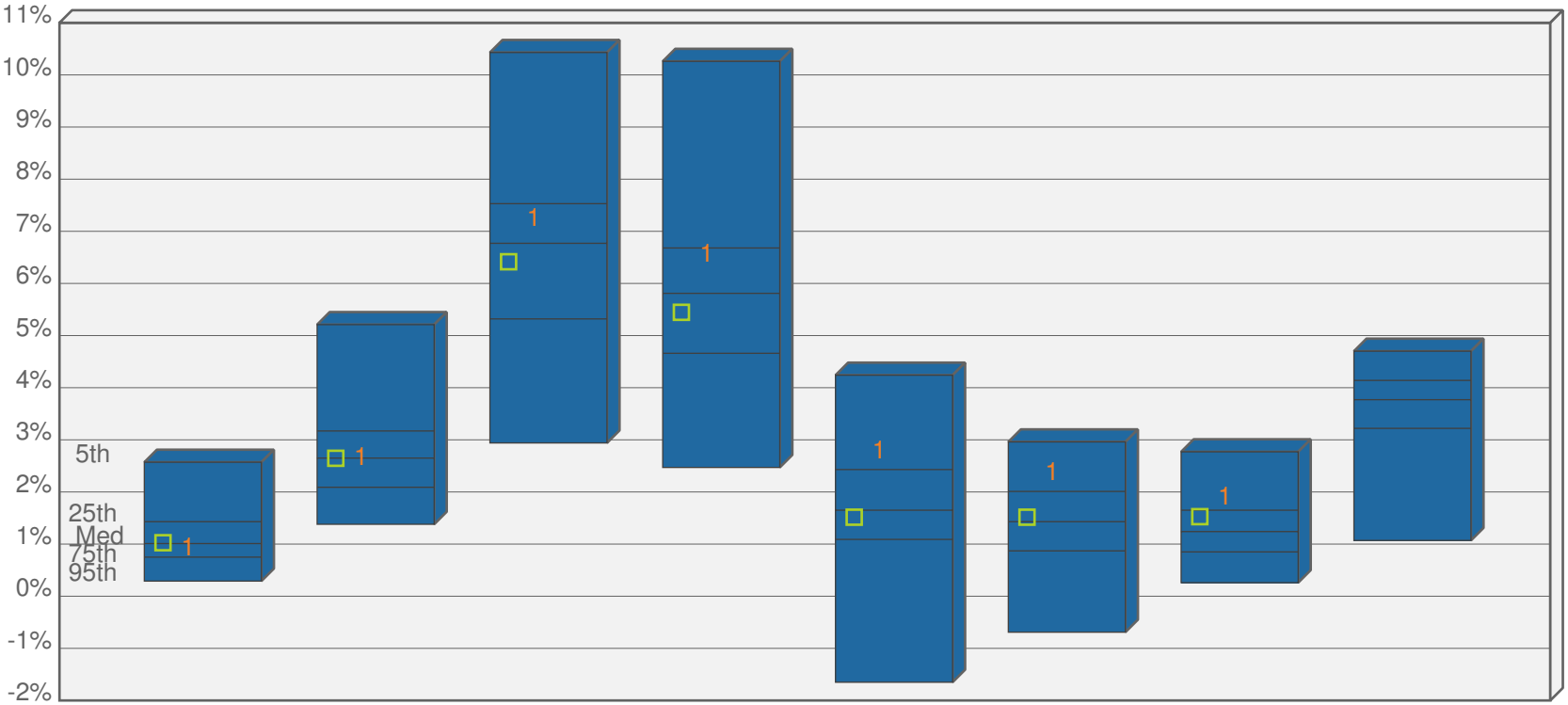
As of September 30, 2016



Wilshire

TIPS Fixed Composite

Periods Ended September 30, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
□ TIPS Fixed Composite	1.05 (46)	2.67 (49)	6.44 (56)	5.47 (57)	1.54 (53)	1.54 (44)	1.55 (32)	
1 Barclays U.S. TI	0.96 (59)	2.69 (48)	7.27 (34)	6.58 (30)	2.81 (15)	2.40 (13)	1.93 (11)	
5th %tile	2.57	5.21	10.43	10.26	4.24	2.96	2.77	4.70
25th %tile	1.43	3.17	7.53	6.68	2.43	2.01	1.65	4.14
Median	1.01	2.65	6.77	5.81	1.65	1.43	1.24	3.77
75th %tile	0.75	2.09	5.32	4.66	1.09	0.87	0.85	3.22
95th %tile	0.29	1.38	2.94	2.47	-1.65	-0.69	0.26	1.07
Number of Funds	189	188	188	179	174	171	158	93

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

Wilshire

Trailing Returns

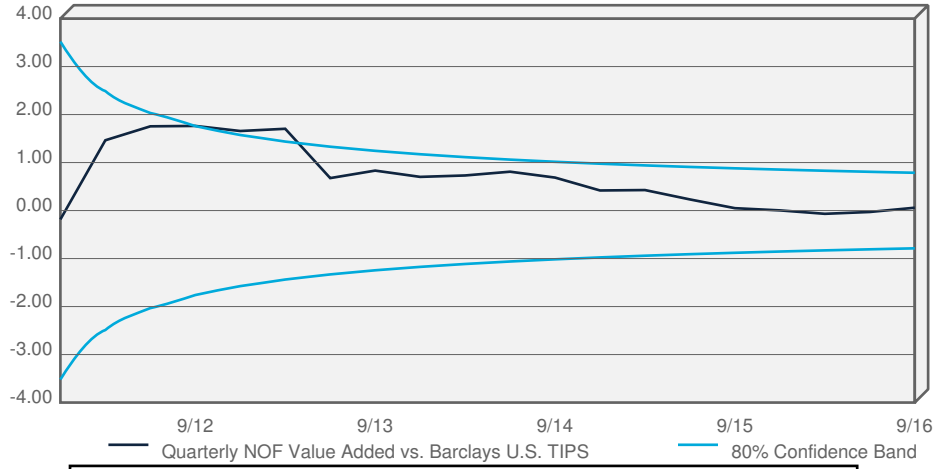
Periods Ended September 30, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
PIMCO TIPS									
Net of Fee Return	**1.41**	**3.31**	**7.57**	**6.69**	**1.94**	**1.99**		**3/31/08**	**3.72**
Barclays U.S. TIPS	0.96	2.69	7.27	6.58	2.40	1.93		3/31/08	3.48
Value Added	0.44	0.62	0.30	0.10	-0.46	0.06		3/31/08	0.24
WAMCO TIPS									
Net of Fee Return	**0.69**	**2.04**	**5.31**	**4.26**	**1.14**	**1.12**		**3/31/08**	**2.91**
Barclays U.S. TIPS	0.96	2.69	7.27	6.58	2.40	1.93		3/31/08	3.48
Value Added	-0.27	-0.65	-1.95	-2.32	-1.26	-0.80		3/31/08	-0.57
TIPS Fixed Composite									
Net of Fee Return	**1.05**	**2.67**	**6.44**	**5.47**	**1.54**	**1.55**		**3/31/08**	**3.32**
Barclays U.S. TIPS	0.96	2.69	7.27	6.58	2.40	1.93		3/31/08	3.48
Value Added	0.09	-0.01	-0.83	-1.11	-0.86	-0.37		3/31/08	-0.16

PIMCO TIPS

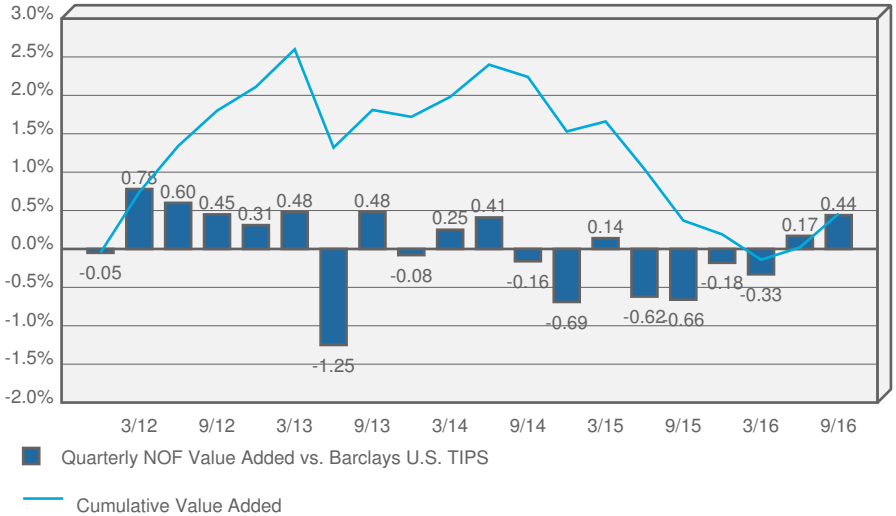
September 30, 2016

Cumulative Skill Analysis vs Benchmark

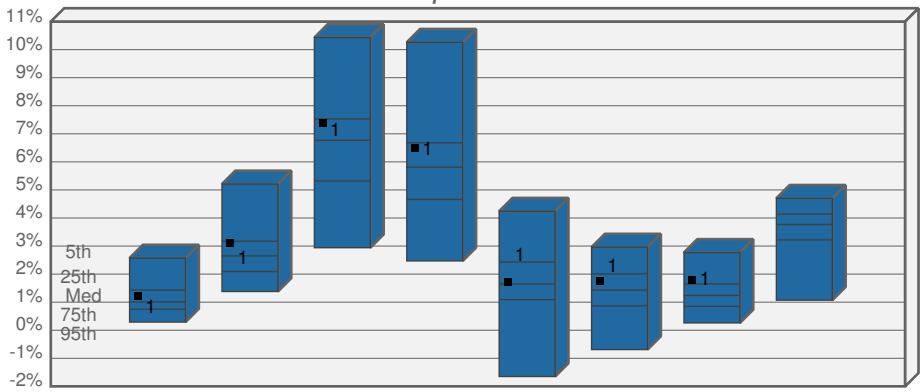


Excess Return:	**0.06**	**Information Ratio:**	**0.06**
Excess Risk:	**1.07**	**T-Stat:**	**0.12**

Value-Added Analysis vs Benchmark

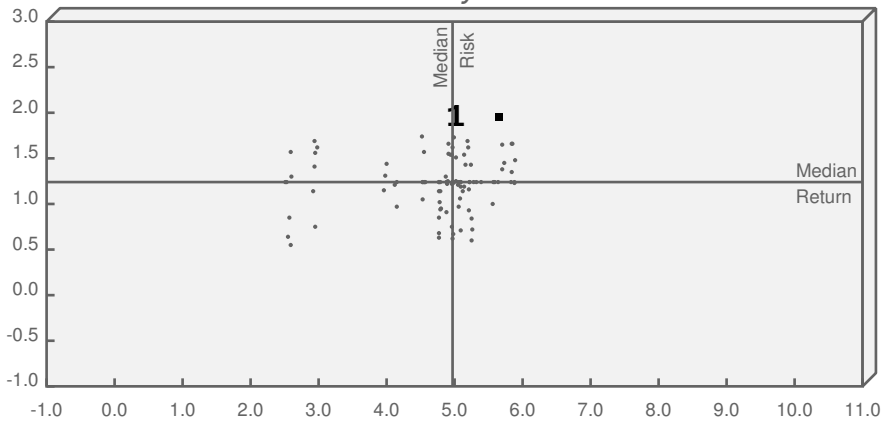


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ PIMCO TIPS	1.41 (25)	3.31 (23)	7.57 (23)	6.69 (23)	1.91 (39)	1.94 (27)	1.99 (9)	
1 Barclays U.S.	0.96 (59)	2.69 (48)	7.27 (34)	6.58 (30)	2.81 (15)	2.40 (13)	1.93 (11)	
Median	1.01	2.65	6.77	5.81	1.65	1.43	1.24	3.77
Number of Funds	189	188	188	179	174	171	158	93

Five Year Risk/Return Analysis vs Peer Universe*



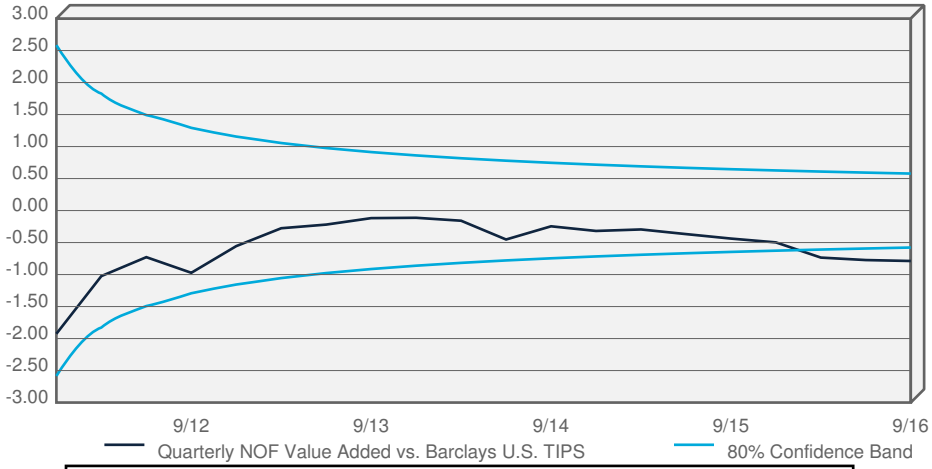
Description	Legend	Net Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
PIMCO TIPS	■	1.99	9	5.81	13
Barclays U.S. TIPS	1	1.93	11	5.09	40
Median		1.24		4.97	

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

WAMCO TIPS

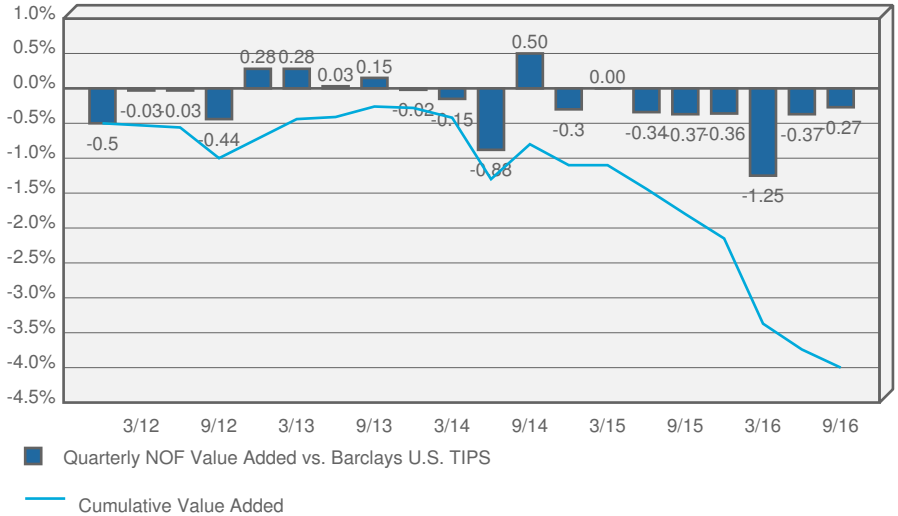
September 30, 2016

Cumulative Skill Analysis vs Benchmark

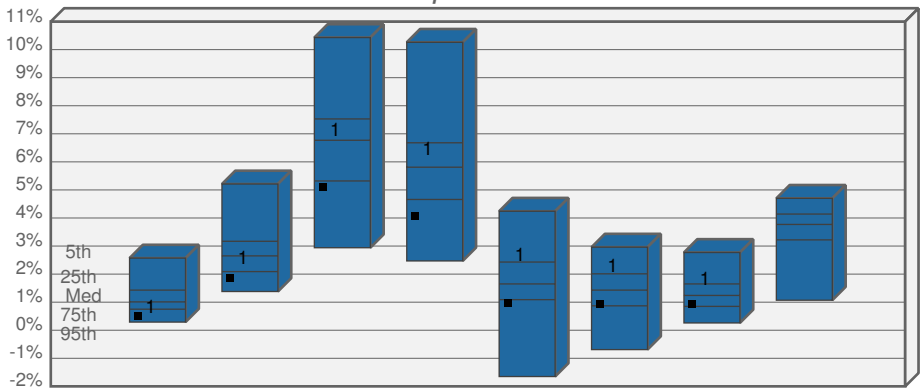


Excess Return:	**-0.79**	**Information Ratio:**	**-1.00**
Excess Risk:	**0.79**	**T-Stat:**	**-2.24**

Value-Added Analysis vs Benchmark

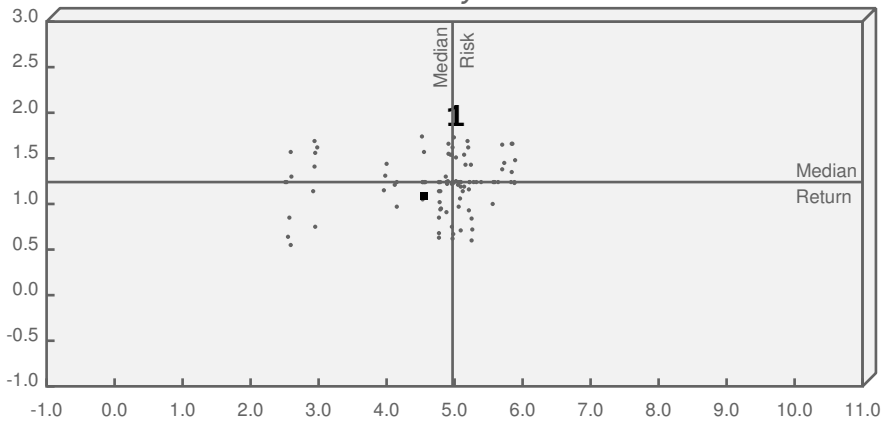


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ WAMCO TIPS	0.69 (79)	2.04 (77)	5.31 (75)	4.26 (82)	1.17 (73)	1.14 (66)	1.12 (62)	
1 Barclays U.S.	0.96 (59)	2.69 (48)	7.27 (34)	6.58 (30)	2.81 (15)	2.40 (13)	1.93 (11)	
Median	1.01	2.65	6.77	5.81	1.65	1.43	1.24	3.77
Number of Funds	189	188	188	179	174	171	158	93

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Net Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
WAMCO TIPS	■	1.12	62	4.71	74
Barclays U.S. TIPS	1	1.93	11	5.09	40
Median		1.24		4.97	

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

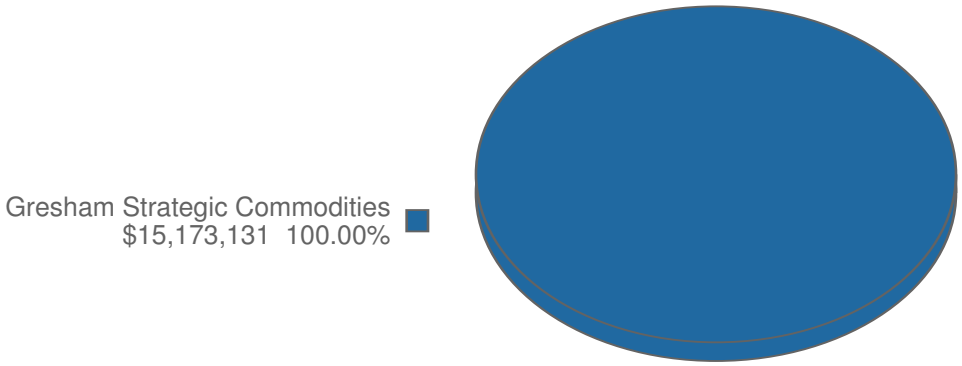
Commodities

Manager Allocation

Wilshire

Commodities Composite

As of September 30, 2016



Wilshire

Trailing Returns

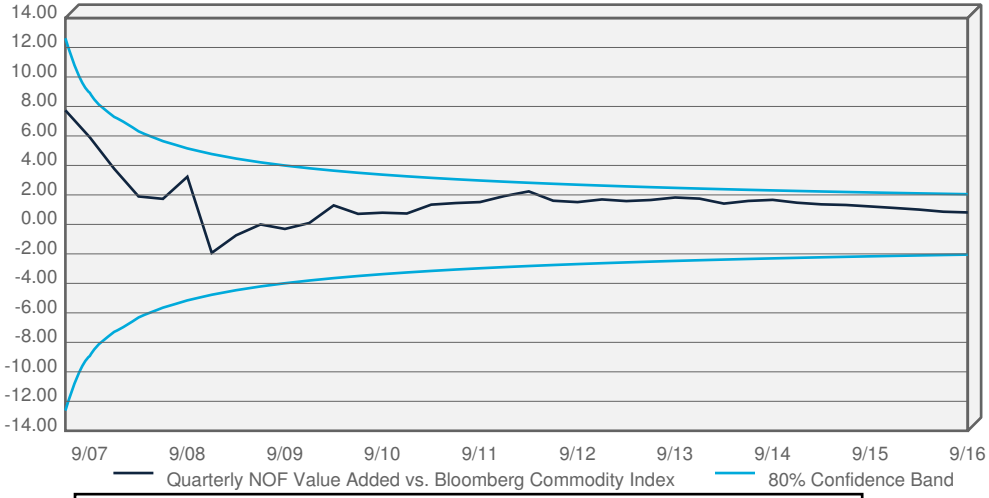
Periods Ended September 30, 2016

	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Gresham Strategic Commodities									
Net of Fee Return	**-4.11**	**6.99**	**6.69**	**-5.09**	**-13.53**	**-9.20**		**3/31/07**	**-5.80**
Bloomberg Commodity Index	-3.86	8.42	8.87	-2.58	-12.34	-9.36		3/31/07	-6.56
Value Added	-0.24	-1.44	-2.18	-2.51	-1.19	0.16		3/31/07	0.76
Commodities Composite									
Net of Fee Return	**-4.11**	**6.99**	**6.69**	**-5.09**	**-13.31**	**-8.36**		**3/31/07**	**-5.34**
Bloomberg Commodity Index	-3.86	8.42	8.87	-2.58	-12.34	-9.36		3/31/07	-6.56
Value Added	-0.24	-1.44	-2.18	-2.51	-0.97	1.01		3/31/07	1.22

Gresham Strategic Commodities

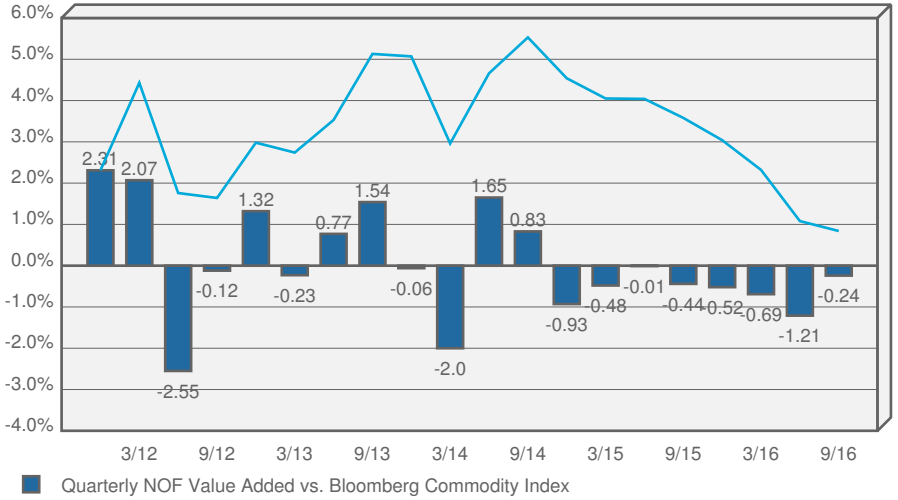
September 30, 2016

Cumulative Skill Analysis vs Benchmark



Excess Return:	**0.81**	**Information Ratio:**	**0.21**
Excess Risk:	**3.84**	**T-Stat:**	**0.63**

Value-Added Analysis vs Benchmark



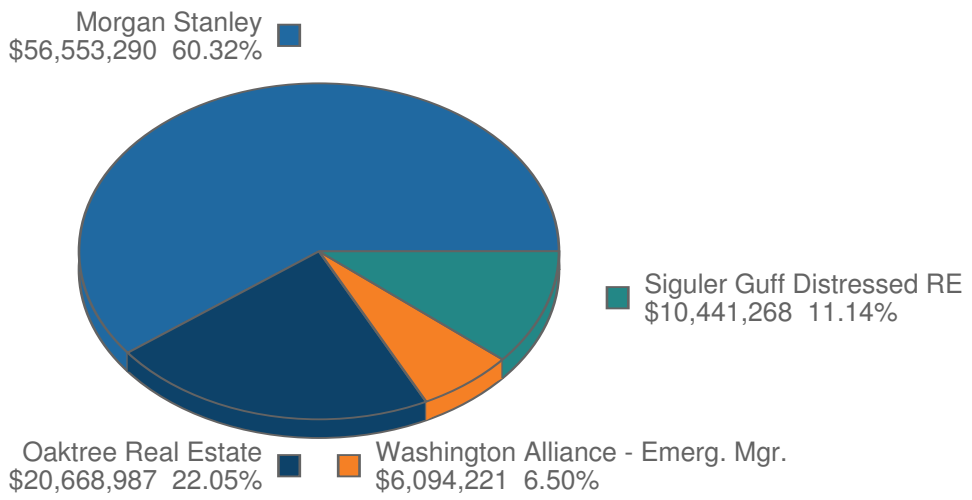
Real Estate

Manager Allocation

Wilshire

Real Estate Composite

As of September 30, 2016

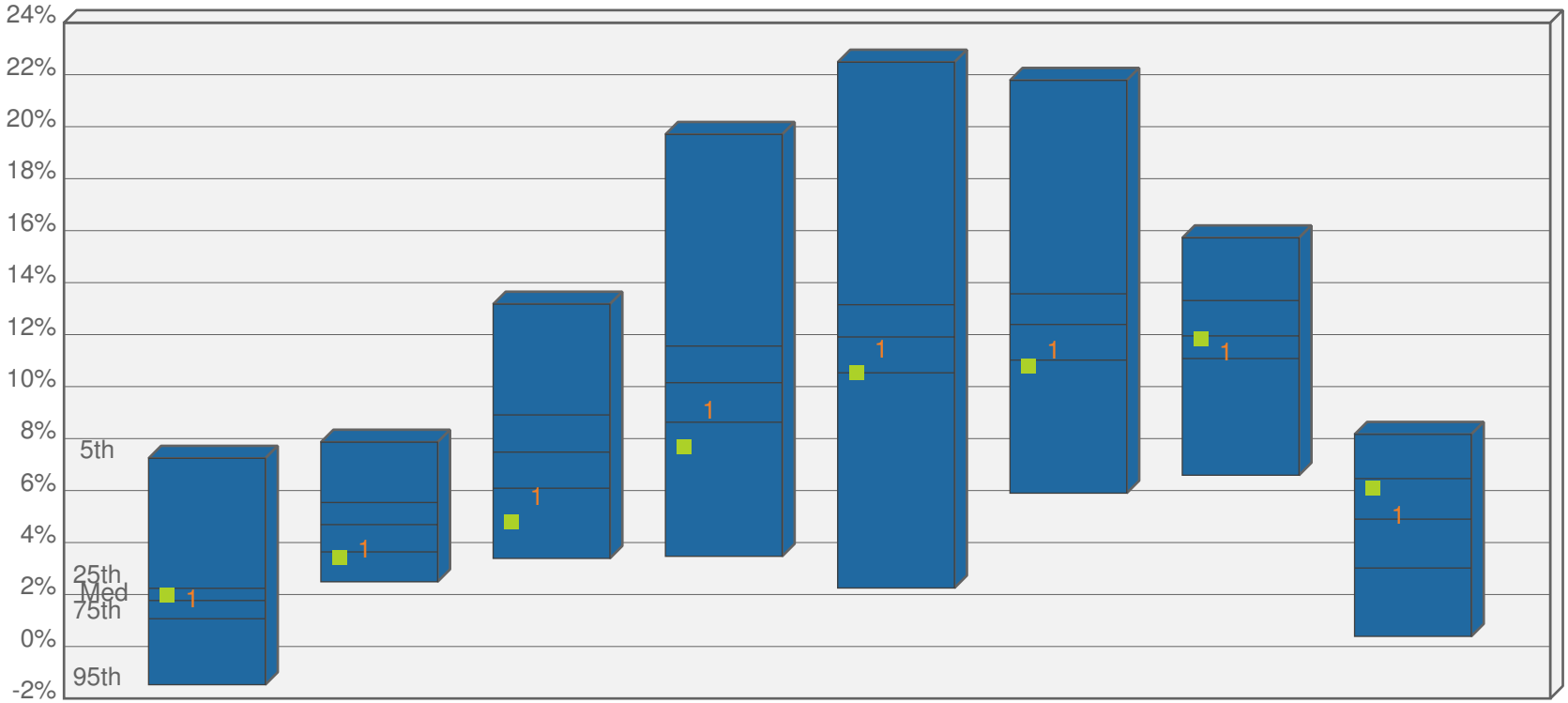


Performance Comparison

Wilshire

Real Estate Composite

Periods Ended September 30, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Real Estate Composite	2.02 (37)	3.47 (82)	4.85 (91)	7.72 (81)	10.60 (72)	10.85 (77)	11.90 (55)	6.15 (25)
1 NCREIF ODCE NOF	1.83 (46)	3.77 (69)	5.80 (80)	9.09 (68)	11.44 (60)	11.42 (59)	11.34 (63)	5.05 (42)
5th %tile	7.24	7.86	13.17	19.70	22.48	21.78	15.72	8.16
25th %tile	2.24	5.54	8.91	11.56	13.15	13.57	13.31	6.46
Median	1.77	4.69	7.48	10.15	11.91	12.39	11.95	4.90
75th %tile	1.07	3.64	6.09	8.63	10.53	11.02	11.08	3.02
95th %tile	-1.47	2.49	3.39	3.47	2.25	5.90	6.59	0.39
Number of Funds	55	54	54	51	48	45	38	27

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

Performance Comparison

Wilshire

Trailing Returns

Periods Ended September 30, 2016

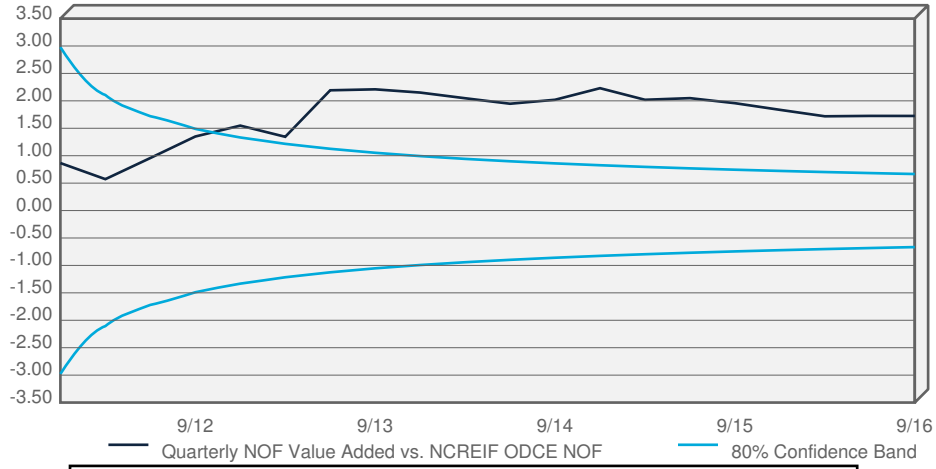
	Quarter	2 Quarters	3 Quarters	1 Year	3 Years	5 Years	10 Years	Incept Date	Incept Ret
Morgan Stanley									
Net of Fee Return	**2.26**	**4.69**	**6.67**	**9.96**	**12.99**	**13.26**	**6.41**	**3/31/03**	**8.94**
NCREIF ODCE NOF	1.83	3.77	5.80	9.09	11.42	11.34	5.05	3/31/03	7.35
Value Added	0.43	0.92	0.87	0.87	1.57	1.92	1.36	3/31/03	1.60
Oaktree Real Estate									
Net of Fee Return								**9/30/13**	**7.32**
Siguler Guff Distressed RE									
Net of Fee Return								**3/31/14**	**2.76**
Washington Alliance - Emerg. Mgr.									
Net of Fee Return								**9/30/13**	**8.13**
Real Estate Composite									
Net of Fee Return	**2.02**	**3.47**	**4.85**	**7.64**	**10.46**	**11.67**	**6.02**	**3/31/03**	**8.75**
NCREIF ODCE NOF	1.83	3.77	5.80	9.09	11.42	11.34	5.05	3/31/03	7.35
Value Added	0.19	-0.30	-0.95	-1.45	-0.96	0.33	0.98	3/31/03	1.41
ERECT Composite									
Net of Fee Return	**1.58**	**5.88**	**10.07**	**13.43**	**7.94**	**9.27**		**9/30/10**	**7.29**
ERECT Fund II									
Net of Fee Return	**1.58**	**5.88**	**10.07**	**13.43**	**7.94**	**12.81**	**6.15**	**6/30/05**	**7.13**
Consumer Price Index	0.16	1.38	2.07	1.46	1.02	1.25	1.75	6/30/05	1.94
Value Added	1.42	4.50	8.00	11.98	6.91	11.56	4.40	6/30/05	5.19

Real Estate Composites returns do not include ERECT Funds

Morgan Stanley

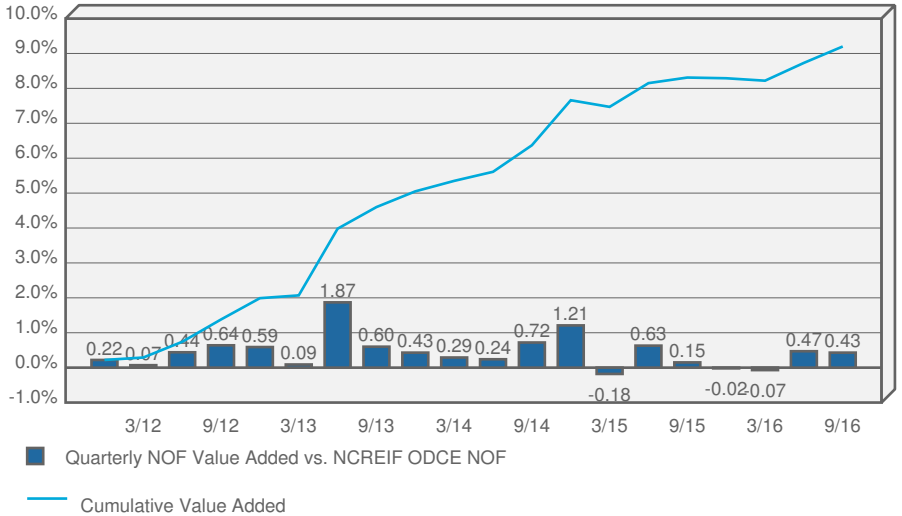
September 30, 2016

Cumulative Skill Analysis vs Benchmark

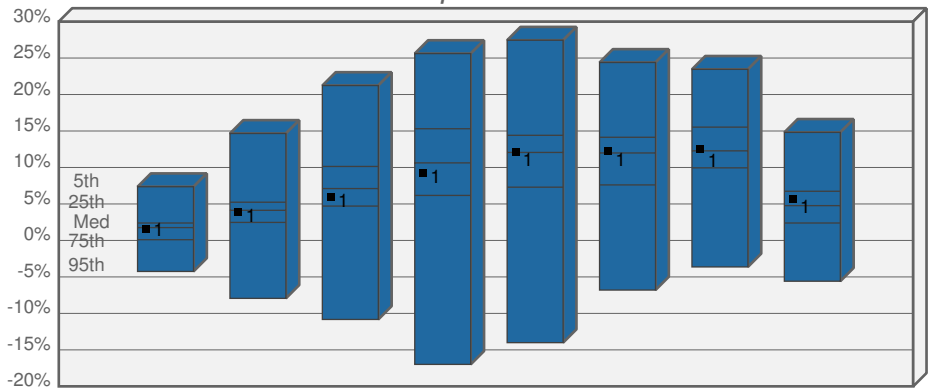


Excess Return:	**1.72**	**Information Ratio:**	**1.90**
Excess Risk:	**0.91**	**T-Stat:**	**4.26**

Value-Added Analysis vs Benchmark

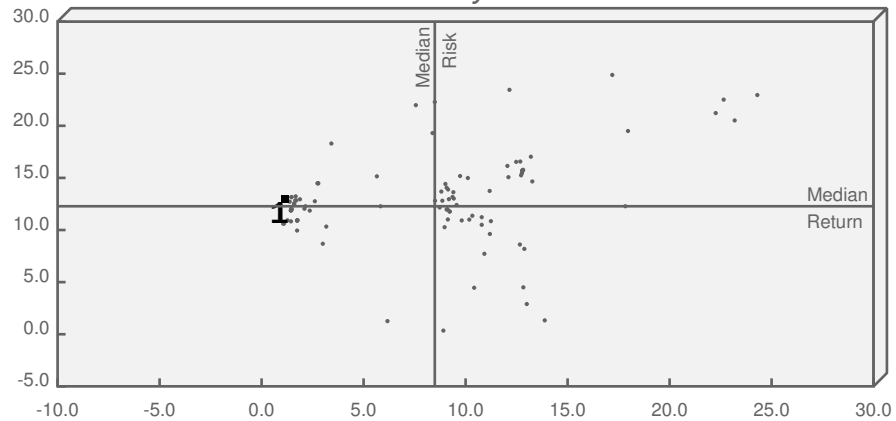


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ Morgan Stanley	2.26 (27)	4.69 (37)	6.67 (54)	9.96 (55)	12.87 (38)	12.99 (38)	13.26 (38)	6.43 (29)
1 NCREIF ODCE NO	0.83 (45)	3.77 (56)	5.80 (68)	9.09 (65)	11.44 (56)	11.42 (56)	11.34 (62)	5.05 (45)
Median	1.76	4.13	7.11	10.63	12.06	11.99	12.28	4.77
Number of Funds	669	655	647	626	586	475	360	142

Five Year Risk/Return Analysis vs Peer Universe*



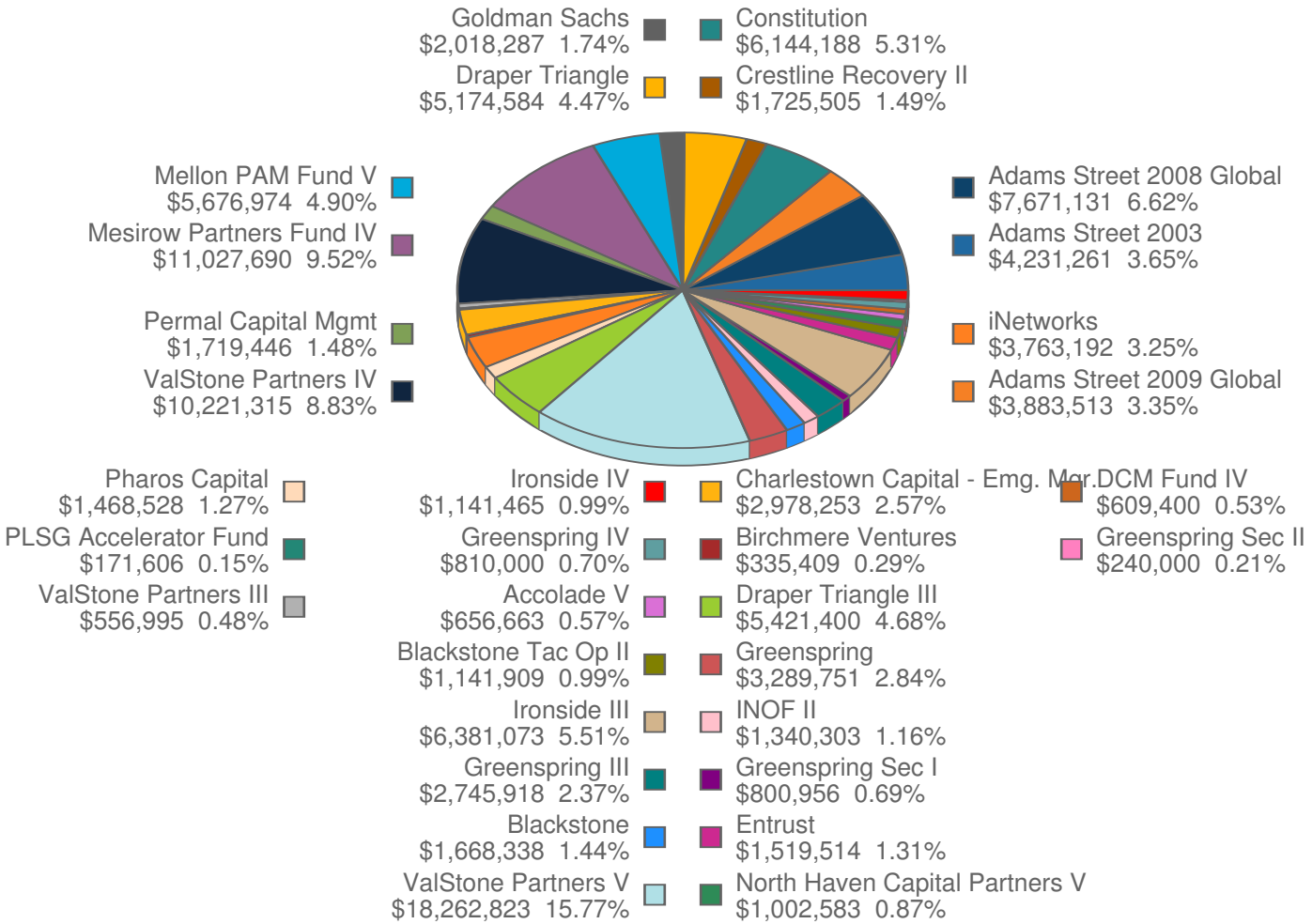
Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
Morgan Stanley	■	13.26	38	1.68	87
NCREIF ODCE NOF	1	11.34	62	1.12	99
Median		12.28		8.49	

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

Alternative Investments

Manager Allocation

Wilshire

Private Equity Composite

As of September 30, 2016