



*The City of Grand Rapids – Police and Fire Retirement System
Executive Summary of Investment Performance*

December 31, 2016

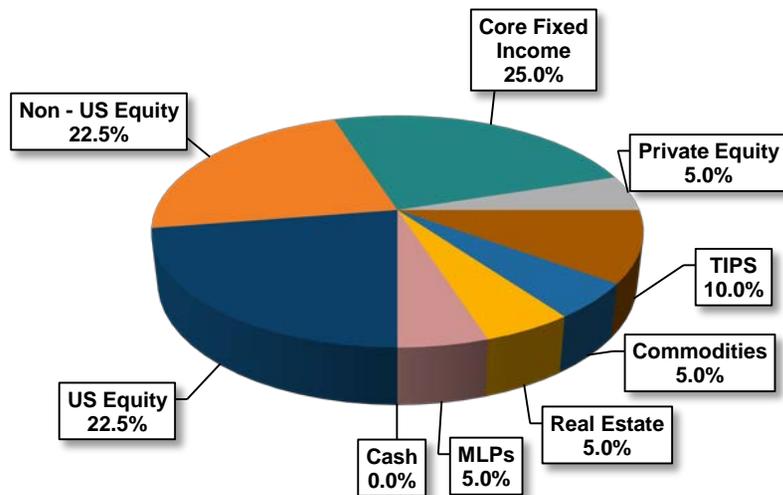
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Total Fund

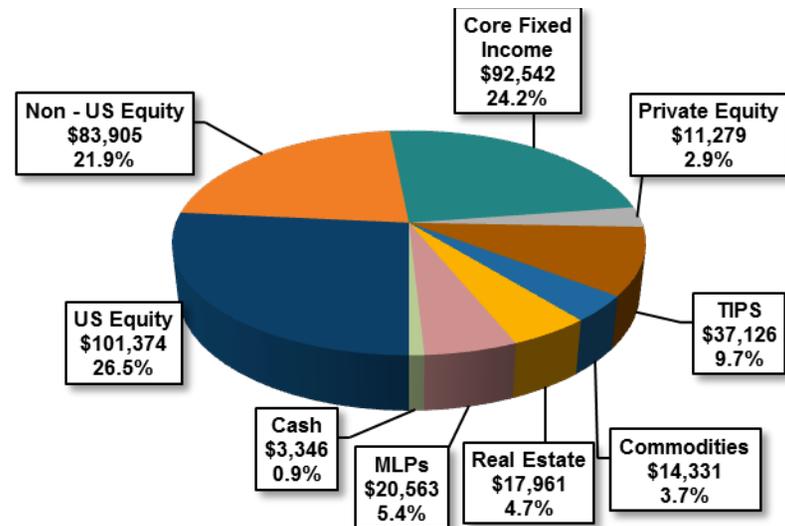
Policy Allocation vs Actual Allocation

Total Fund Composite
As of December 31, 2016

Policy Allocation¹



Actual Allocation (in \$'000s)



Total Assets: \$382,427,585

¹ Effective date: April 1, 2015

Policy Allocation vs Actual Allocation



Total Fund Composite
As of December 31, 2016

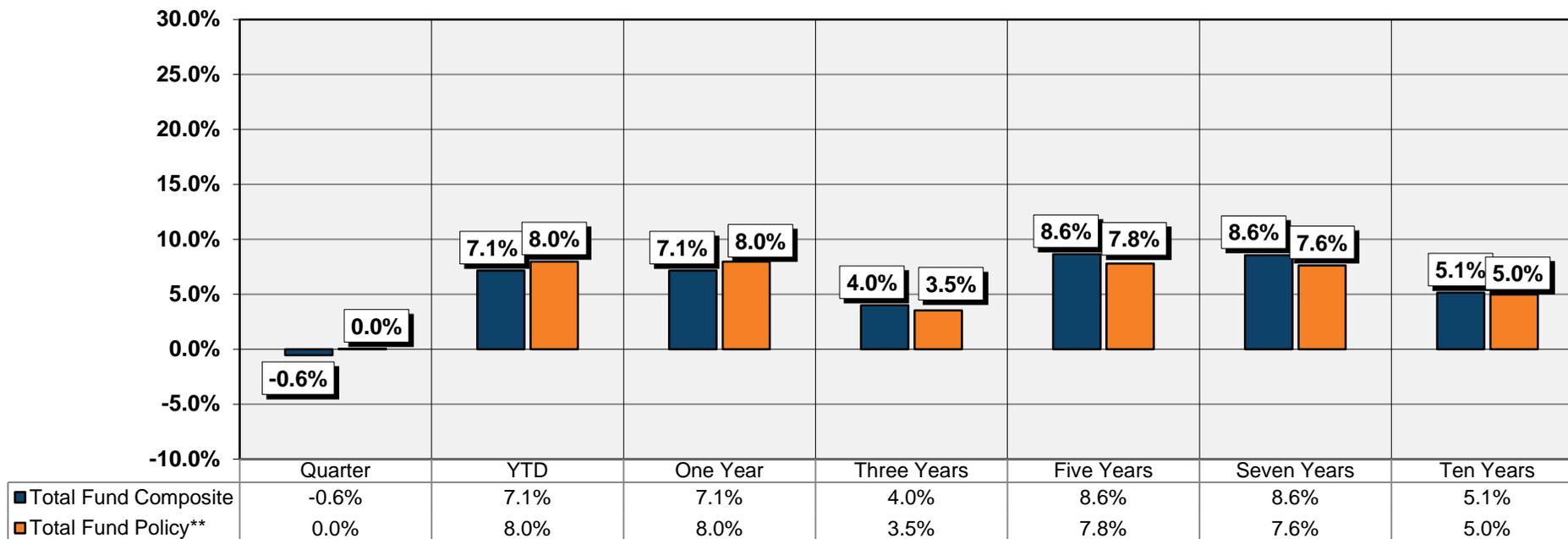
	Market Value (in \$'000)	Asset Allocation	
		Actual	Policy
US Equity	\$101,374	26.51%	22.50%
Non - US Equity	\$83,905	21.94%	22.50%
Core Fixed Income	\$92,542	24.20%	25.00%
Private Equity	\$11,279	2.95%	5.00%
TIPS	\$37,126	9.71%	10.00%
Commodities	\$14,331	3.75%	5.00%
Real Estate	\$17,961	4.70%	5.00%
MLPs	\$20,563	5.38%	5.00%
Cash	\$3,346	0.87%	0.00%
Total Fund Composite	\$382,427	100.00%	100.00%

Investment Performance



Total Fund Composite*

Periods Ended December 31, 2016



*Returns are net of fees

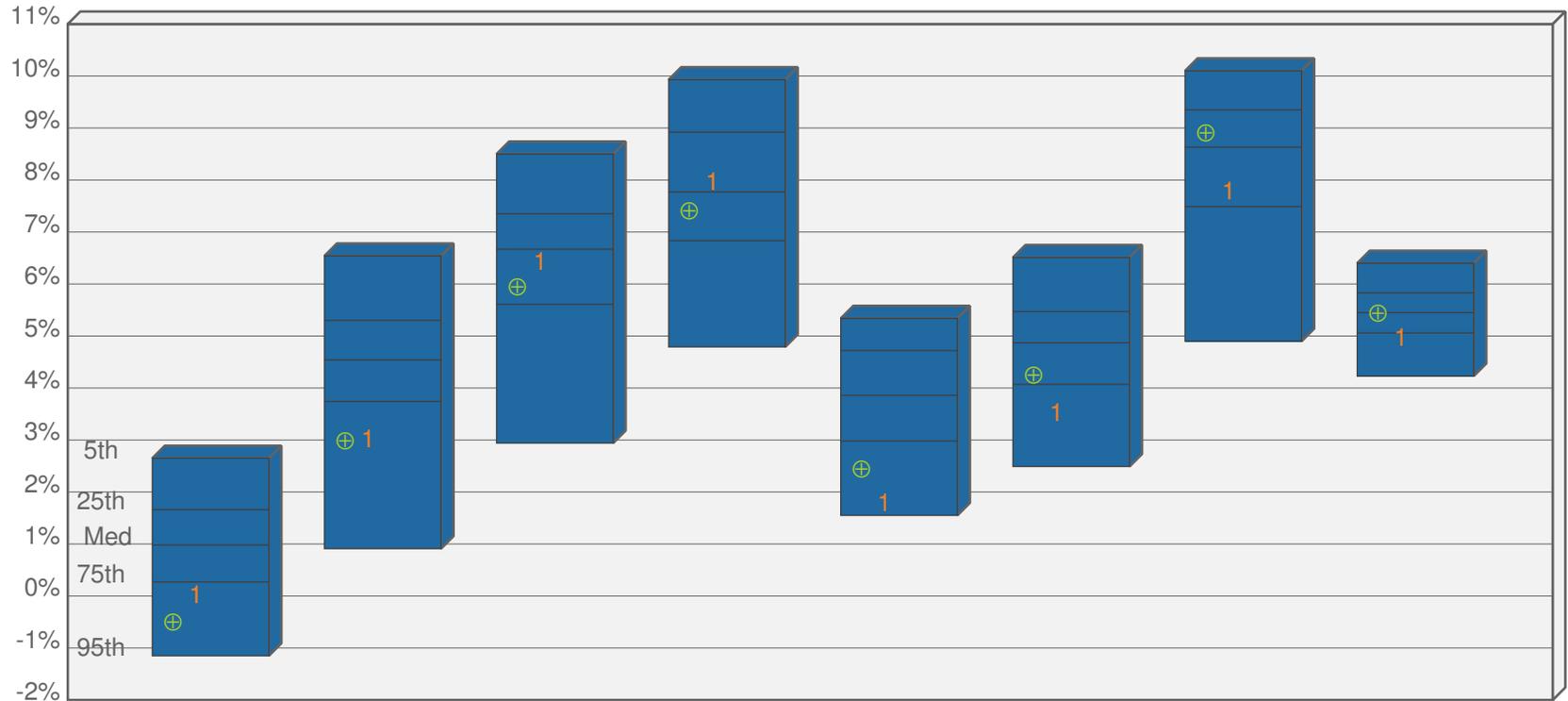
** Policy index = Wilshire 5000 (22.50%), MSCI ACWI ex U.S. (22.50%), Barclays Aggregate (25.00%), Barclays U.S. TIPS (10.00%), FTSE EPRA NAREIT Dev RE (5.00%), Wilshire 5000 +2.5% (5.00%), DJ UBS Commodity Index (5.00%), S&P MLP Index (5.00%)

Performance Comparison



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	-0.49 (88)	2.99 (82)	5.95 (70)	7.41 (60)	2.46 (82)	4.25 (68)	8.91 (43)	5.44 (53)
1 Policy Index	0.03 (80)	3.03 (81)	6.44 (57)	7.97 (44)	1.80 (91)	3.53 (83)	7.79 (71)	4.98 (77)
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

Performance Comparison



Trailing Returns

Periods Ended December 31, 2016

	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
U.S. Equity Composite									
Net of Fee Return	4.92	14.02	14.02	8.98	15.27	13.72	7.58	9/30/87	9.34
Wilshire 5000	4.54	13.37	13.37	8.76	14.71	12.98	7.17	9/30/87	9.32
Value Added	0.37	0.65	0.65	0.22	0.56	0.73	0.40	9/30/87	0.02
Core Fixed Composite									
Net of Fee Return	-2.58	4.57	4.57	4.08	3.87	5.47	5.08	9/30/87	6.98
Barclays Aggregate	-2.98	2.65	2.65	3.03	2.23	3.63	4.35	9/30/87	6.61
Value Added	0.40	1.92	1.92	1.05	1.64	1.85	0.74	9/30/87	0.37
Non-U.S. Equity Composite									
Net of Fee Return	-3.74	0.53	0.53	-0.26	6.81	5.36	0.84	12/31/89	7.78
Policy Benchmark	-1.25	4.50	4.50	-1.77	5.00	2.93	0.96	12/31/89	4.10
Value Added	-2.49	-3.97	-3.97	1.52	1.81	2.43	-0.13	12/31/89	3.68
Real Estate Composite									
Net of Fee Return	-6.12	0.70	0.70	4.24	7.95	6.96		6/30/09	10.41
FTSE EPRA/NAREIT Dev (N)	-5.59	4.06	4.06	5.90	9.48	8.41		6/30/09	11.69
Value Added	-0.52	-3.37	-3.37	-1.66	-1.52	-1.45		6/30/09	-1.28
Commodities Composite									
Net of Fee Return	1.70	15.03	15.03	-10.16				3/31/13	-10.85
Bloomberg Commodity Index	2.66	11.77	11.77	-11.26				3/31/13	-11.24
Value Added	-0.96	3.27	3.27	1.10				3/31/13	0.39
MLP Composite									
Net of Fee Return	1.53	19.99	19.99					3/31/15	-9.42
S&P MLP Index	3.32	21.95	21.95					3/31/15	-10.88
Value Added	-1.79	-1.96	-1.96					3/31/15	1.45

Performance Comparison



Trailing Returns

Periods Ended December 31, 2016

	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
TIPS Composite									
Net of Fee Return	-2.26	4.90	4.90					6/30/15	2.00
Barclays U.S. TIPS	-2.41	4.68	4.68					6/30/15	1.87
Value Added	0.15	0.21	0.21					6/30/15	0.13
Total Real Assets Composite									
Net of Fee Return	-1.63	8.85	8.85					3/31/15	-2.72
Policy Index	-0.89	9.71	9.71					3/31/15	-2.52
Value Added	-0.74	-0.87	-0.87					3/31/15	-0.20
Alternative Investments Composite									
Net of Fee Return	2.85	8.47	8.47	11.21	7.76			6/30/10	6.96
Wilshire 5000 +2.5%	5.16	15.87	15.87	11.26	17.21			6/30/10	17.61
Value Added	-2.31	-7.40	-7.40	-0.04	-9.45			6/30/10	-10.64
Total Fund									
Net of Fee Return	-0.55	7.14	7.14	3.99	8.64	8.55	5.14	9/30/87	8.16
Policy Index	0.03	7.97	7.97	3.53	7.79	7.62	4.98	9/30/87	8.20
Value Added	-0.59	-0.83	-0.83	0.47	0.85	0.94	0.16	9/30/87	-0.05

Custom Benchmark Specification



Total Fund

December 31, 2016

	Quarter Start	Quarter End	Percent	Description
Policy Index	12/79	6/98	55.00	Wilshire 5000
			40.00	Bloomberg Barclays Aggregate
			5.00	MSCI EAFE Index (N)
	9/98	9/02	50.00	Wilshire 5000
			40.00	Bloomberg Barclays Aggregate
			10.00	MSCI EAFE Index (N)
	12/02	3/06	50.00	Wilshire 5000
			35.00	Bloomberg Barclays Aggregate
			15.00	MSCI EAFE Index (N)
	6/06	6/06	55.00	Wilshire 5000
30.00			Bloomberg Barclays Aggregate	
15.00			MSCI EAFE Index (N)	
9/06	6/09	55.00	Wilshire 5000	
		30.00	Bloomberg Barclays Aggregate	
		15.00	MSCI ACWI X US (N)	
9/09	3/10	5.00	FTSE EPRA/NAREIT Dev (N)	
		15.00	MSCI ACWI X US (N)	
		30.00	Bloomberg Barclays Aggregate	
		50.00	Wilshire 5000	
6/10	12/12	5.00	FTSE EPRA/NAREIT Dev (N)	
		5.00	Wilshire 5000 + 2.5%	
		30.00	Bloomberg Barclays Aggregate	
		15.00	MSCI ACWI X US (N)	
		45.00	Wilshire 5000	
3/13	3/15	5.00	FTSE EPRA/NAREIT Dev (N)	
		40.00	Wilshire 5000	
		15.00	MSCI ACWI X US (N)	
		30.00	Bloomberg Barclays Aggregate	
		5.00	Wilshire 5000 + 2.5%	

Custom Benchmark Specification



Total Fund

December 31, 2016

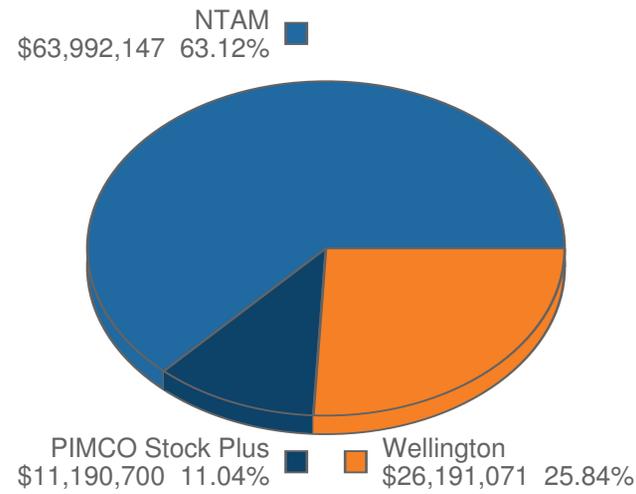
	Quarter Start	Quarter End	Percent	Description
Policy Index (cont.)			5.00	Bloomberg Commodity Index
	6/15	12/16	22.50	Wilshire 5000
			5.00	Wilshire 5000 + 2.5%
			22.50	MSCI ACWI X US (N)
			25.00	Bloomberg Barclays Aggregate
			5.00	FTSE EPRA/NAREIT Dev (N)
			5.00	Bloomberg Commodity Index
		10.00	Bloomberg Barclays U.S. TIPS	
		5.00	S&P MLP Index	

U.S. Equity

Manager Allocation

U.S. Equity Composite

As of December 31, 2016

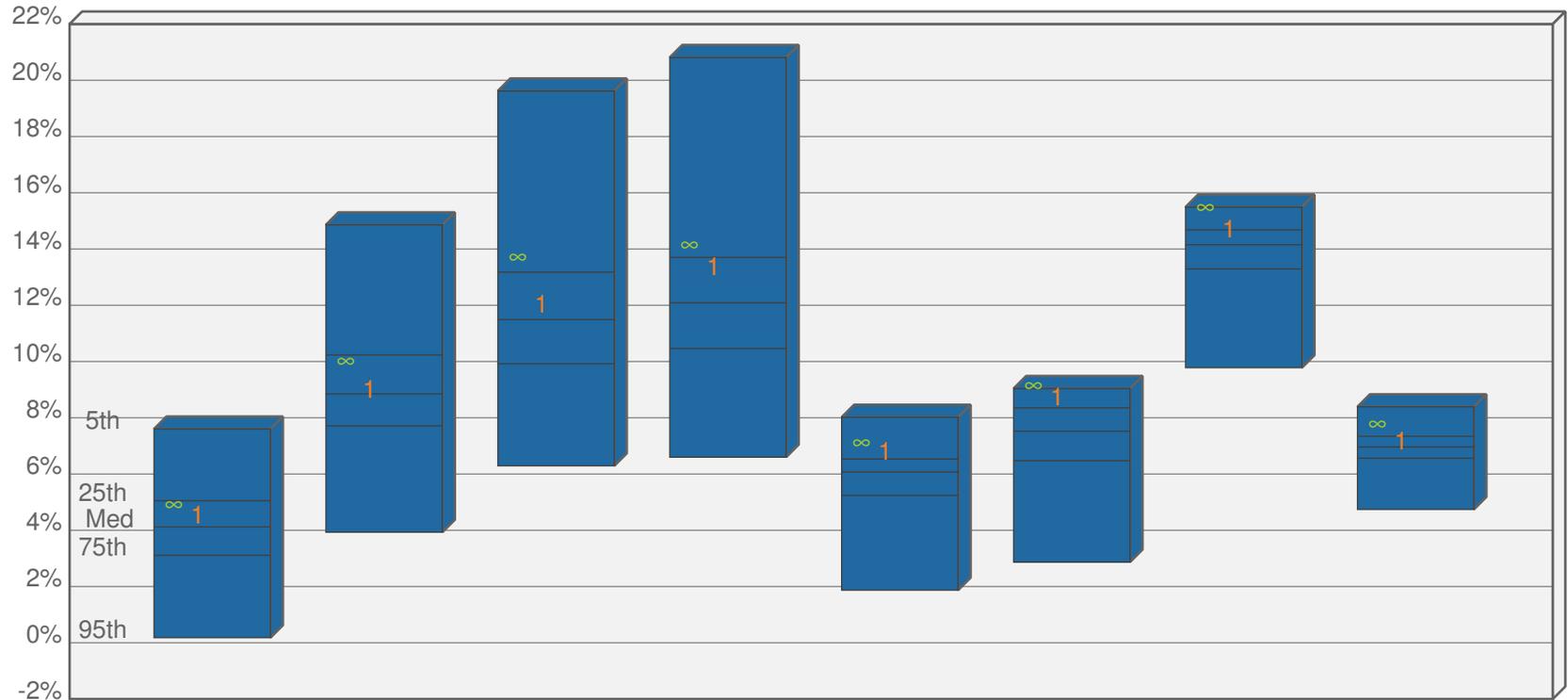


Performance Comparison



U.S. Equity Composite

Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
∞ U.S. Equity Composite	4.97 (26)	10.09 (27)	13.78 (18)	14.23 (20)	7.20 (12)	9.21 (2)	15.55 (3)	7.86 (12)
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 Police & Fire

Performance Comparison



Trailing Returns

Periods Ended December 31, 2016

	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
NTAM									
Net of Fee Return	3.81	11.98	11.98	8.91	14.70	12.85	6.93	9/30/98	6.67
Policy Benchmark	3.82	11.96	11.96	8.87	14.66	12.83	6.97	9/30/98	6.66
Value Added	-0.01	0.02	0.02	0.04	0.04	0.01	-0.04	9/30/98	0.01
PIMCO Stock Plus									
Net of Fee Return	3.87	12.65	12.65	8.72	15.90	14.03	7.76	9/30/00	5.38
Standard & Poor's 500	3.82	11.96	11.96	8.87	14.66	12.83	6.95	9/30/00	4.81
Value Added	0.04	0.69	0.69	-0.15	1.24	1.19	0.81	9/30/00	0.57
Wellington									
Net of Fee Return	8.20	19.91	19.91	8.68	16.98	16.39	9.84	9/30/99	11.41
Russell 2000	8.83	21.31	21.31	6.74	14.46	13.24	7.07	9/30/99	8.36
Value Added	-0.64	-1.40	-1.40	1.93	2.53	3.15	2.77	9/30/99	3.05
U.S. Equity Composite									
Net of Fee Return	4.92	14.02	14.02	8.98	15.27	13.72	7.58	9/30/87	9.34
Wilshire 5000	4.54	13.37	13.37	8.76	14.71	12.98	7.17	9/30/87	9.32
Value Added	0.37	0.65	0.65	0.22	0.56	0.73	0.40	9/30/87	0.02

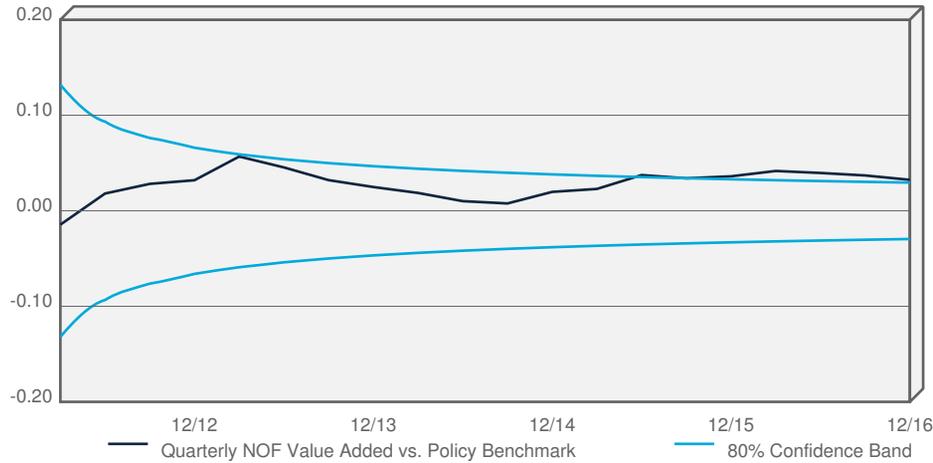
Investment Manager Analysis



NTAM

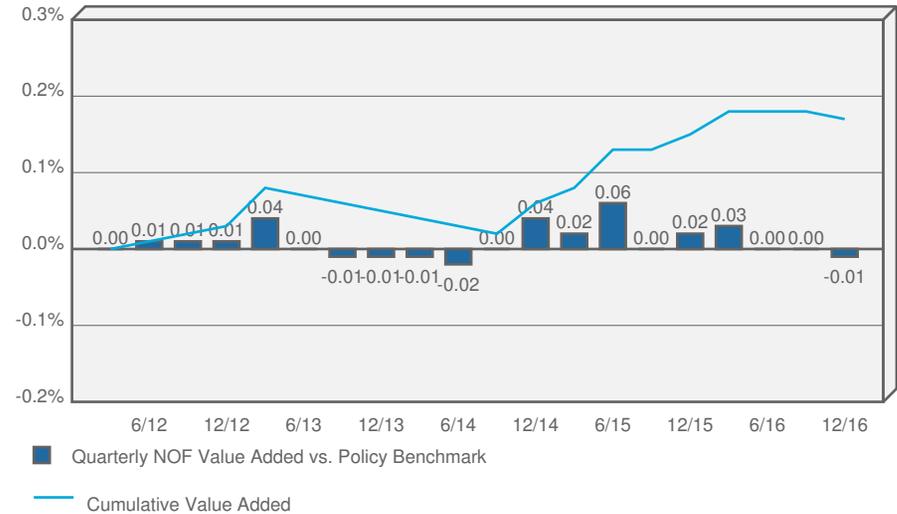
December 31, 2016

Cumulative Skill Analysis vs Benchmark

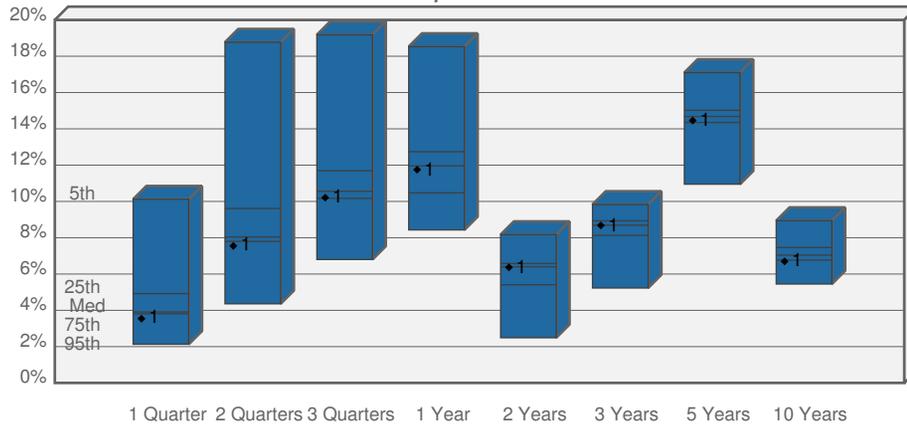


Excess Return:	0.03	Information Ratio:	0.81
Excess Risk:	0.04	T-Stat:	1.80

Value-Added Analysis vs Benchmark

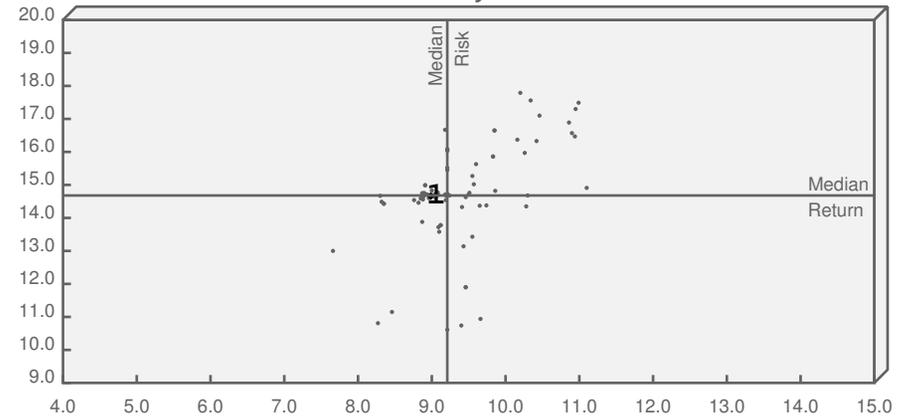


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
◆ NTAM	3.83 (64)	7.84 (64)	10.50 (55)	12.04 (41)	6.66 (20)	8.97 (22)	14.75 (34)	6.99 (62)
1 Policy Benchmark	3.82 (71)	7.82 (67)	10.47 (59)	11.96 (50)	6.54 (31)	8.87 (32)	14.66 (55)	6.97 (64)
Median	3.91	8.04	10.56	11.96	6.40	8.69	14.68	7.04
Number of Funds	238	237	235	231	227	223	192	112

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
NTAM	◆	14.75	34	9.13	53
Policy Benchmark	1	14.66	55	9.13	53
Median		14.68		9.21	

*TUCS Total Returns of Large Neutral Equity Portfolios Universe - Gross of Fees

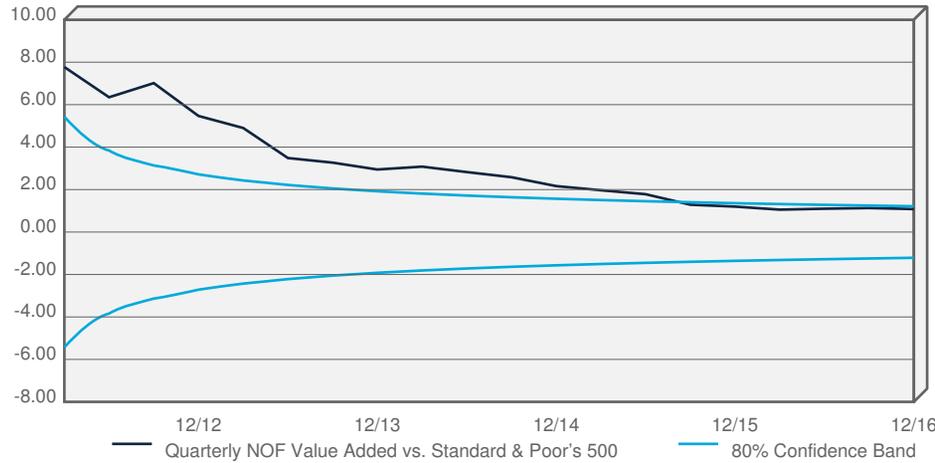
Investment Manager Analysis



PIMCO Stock Plus

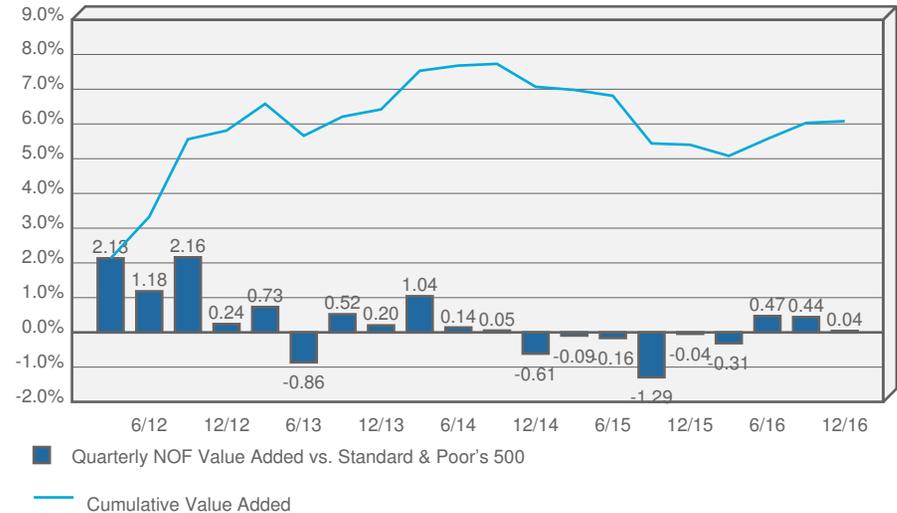
December 31, 2016

Cumulative Skill Analysis vs Benchmark

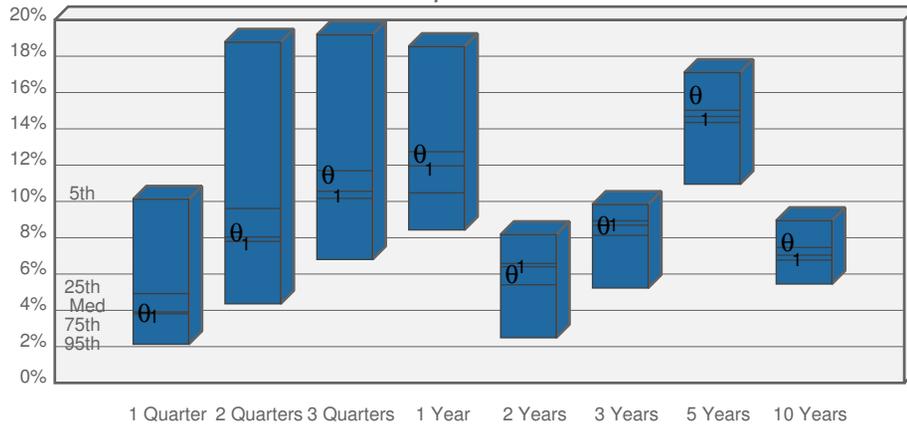


Excess Return:	1.08	Information Ratio:	0.66
Excess Risk:	1.65	T-Stat:	1.47

Value-Added Analysis vs Benchmark

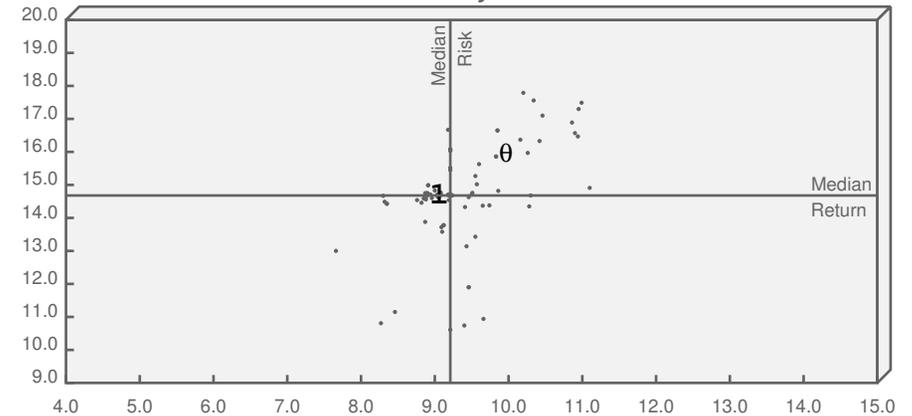


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
θ PIMCO Stock Plus	3.87 (52)	8.32 (45)	11.49 (31)	12.65 (28)	5.99 (65)	8.72 (48)	15.90 (16)	7.76 (14)
$\mathbf{1}$ Standard & Poor	3.82 (71)	7.82 (67)	10.47 (59)	11.96 (50)	6.54 (31)	8.87 (32)	14.66 (55)	6.95 (66)
Median	3.91	8.04	10.56	11.96	6.40	8.69	14.68	7.04
Number of Funds	238	237	235	231	227	223	192	112

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
PIMCO Stock Plus	θ	15.90	16	10.07	21
Standard & Poor's 500	$\mathbf{1}$	14.66	55	9.13	53
Median		14.68		9.21	

*TUCS Total Returns of Large Neutral Equity Portfolios Universe - Gross of Fees

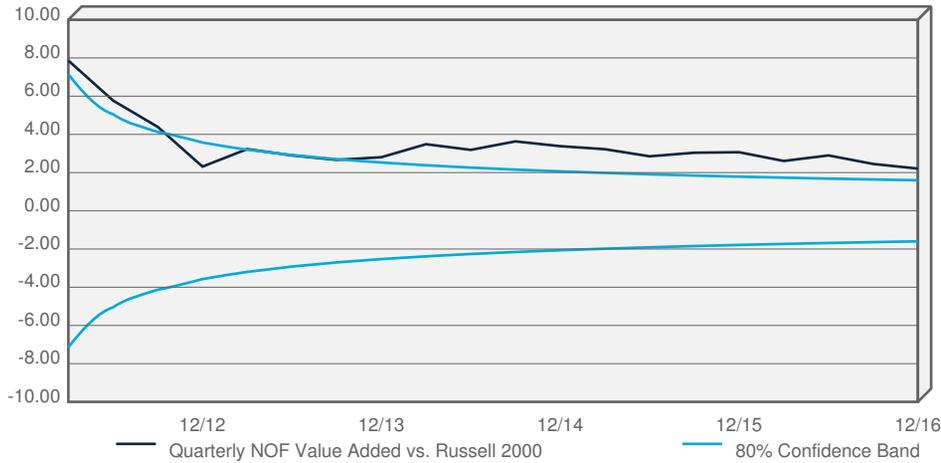
Investment Manager Analysis



Wellington

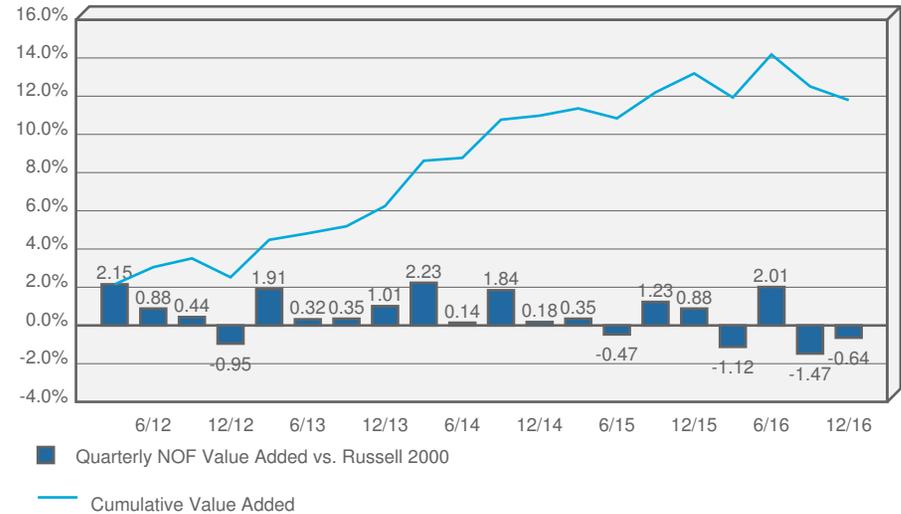
December 31, 2016

Cumulative Skill Analysis vs Benchmark

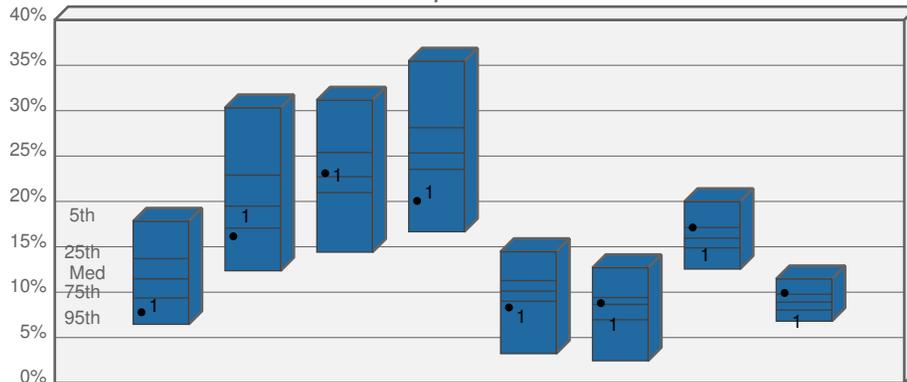


Excess Return:	2.21	Information Ratio:	1.02
Excess Risk:	2.17	T-Stat:	2.27

Value-Added Analysis vs Benchmark

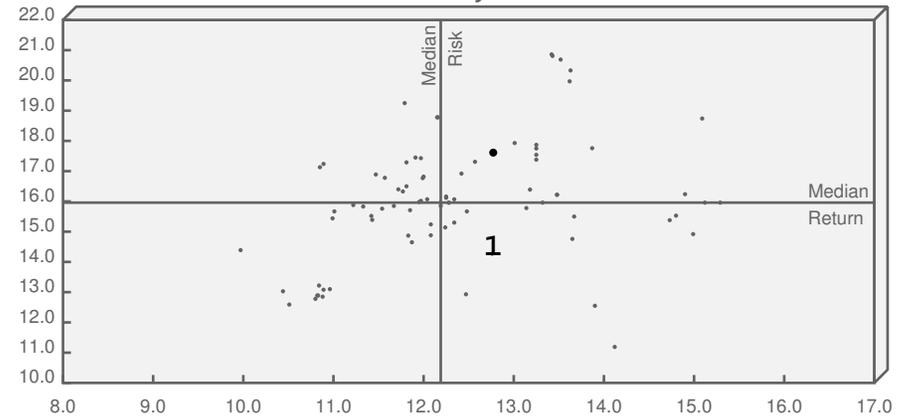


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
● Wellington	8.37 (89)	16.74 (77)	23.69 (41)	20.64 (86)	8.90 (75)	9.38 (26)	17.71 (15)	10.50 (16)
1 Russell 2000	8.83 (86)	18.68 (63)	23.18 (45)	21.31 (84)	7.68 (80)	6.74 (79)	14.46 (79)	7.07 (91)
Median	11.47	19.48	22.72	25.34	10.11	8.65	15.96	8.90
Number of Funds	112	112	112	110	105	103	84	43

Five Year Risk/Return Analysis vs Peer Universe*



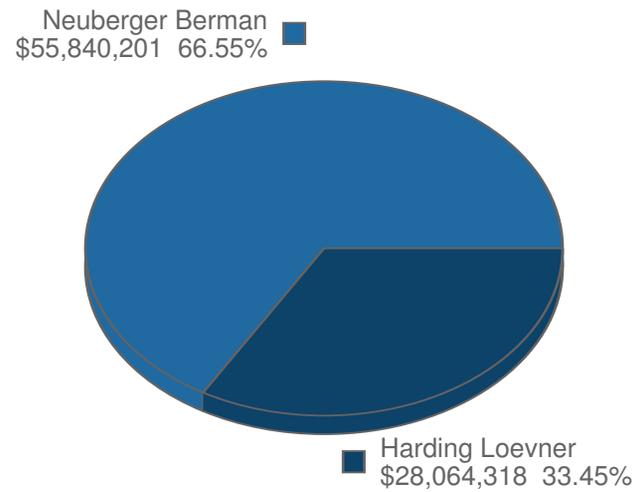
Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
Wellington	●	17.71	15	12.89	34
Russell 2000	1	14.46	79	12.83	34
Median		15.96		12.19	

*TUCS Total Returns of Small Neutral Equity Portfolios Universe - Gross of Fees

Non - U.S. Equity

Manager Allocation

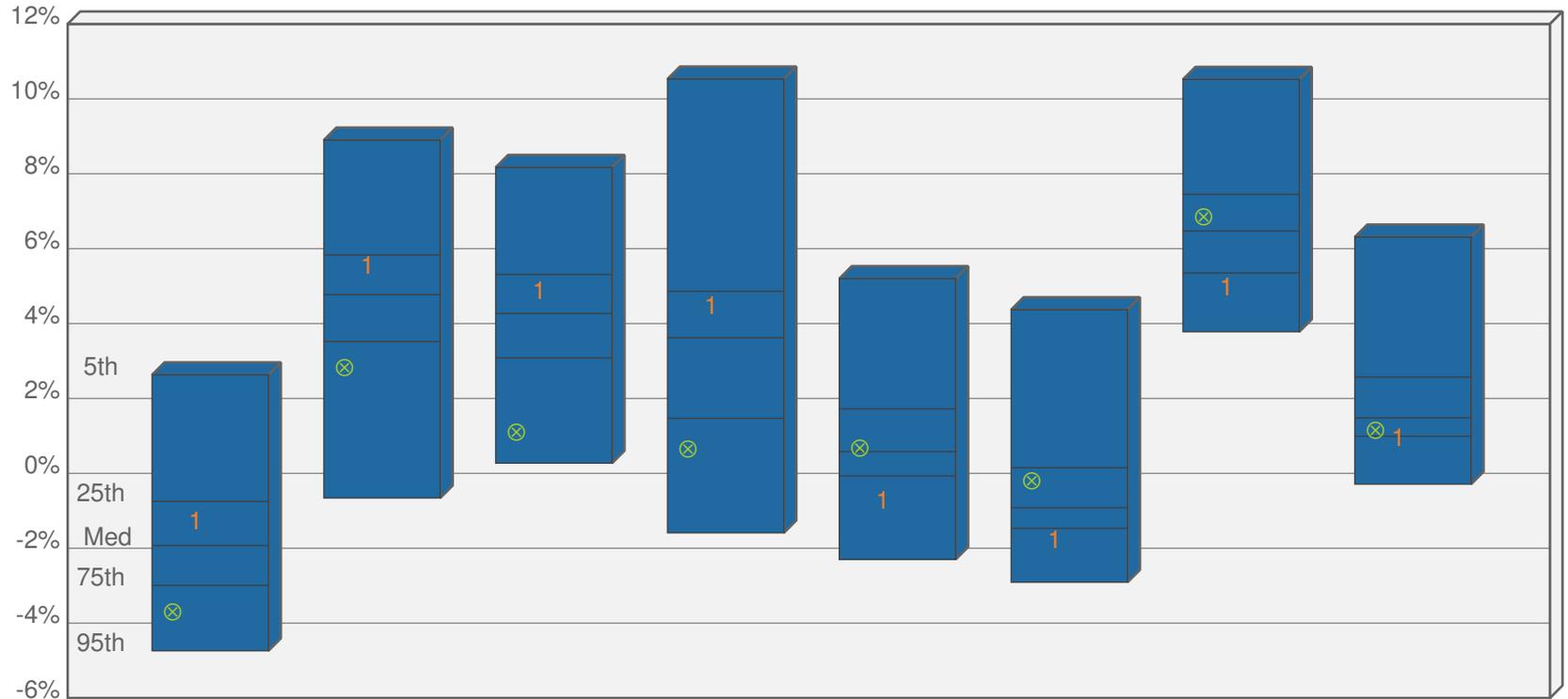
Non-U.S. Equity Composite As of December 31, 2016



Performance Comparison



Non-U.S. Equity Composite Periods Ended December 31, 2016



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊗ Non-U.S. Equity Composite	-3.69 (84)	2.84 (82)	1.12 (91)	0.66 (86)	0.70 (45)	-0.18 (31)	6.86 (40)	1.16 (64)
1 Policy Benchmark	-1.25 (34)	5.57 (34)	4.89 (33)	4.50 (36)	-0.71 (83)	-1.77 (84)	5.00 (83)	0.96 (76)
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 & Fire

Performance Comparison



Trailing Returns

Periods Ended December 31, 2016

	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
Neuberger Berman									
Net of Fee Return	-3.61	-1.06	-1.06	-0.30	6.79	5.34	0.82	6/30/06	2.11
MSCI ACWI X US (N)	-1.25	4.50	4.50	-1.77	5.00	2.93	0.96	6/30/06	2.31
Value Added	-2.36	-5.55	-5.55	1.48	1.79	2.41	-0.14	6/30/06	-0.20
Harding Loevner									
Net of Fee Return	-3.99	3.67	3.67					3/31/15	-1.47
MSCI ACWI X US (N)	-1.25	4.50	4.50					3/31/15	-2.74
Value Added	-2.74	-0.82	-0.82					3/31/15	1.27
Non-U.S. Equity Composite									
Net of Fee Return	-3.74	0.53	0.53	-0.26	6.81	5.36	0.84	12/31/89	7.78
Policy Benchmark	-1.25	4.50	4.50	-1.77	5.00	2.93	0.96	12/31/89	4.10
Value Added	-2.49	-3.97	-3.97	1.52	1.81	2.43	-0.13	12/31/89	3.68

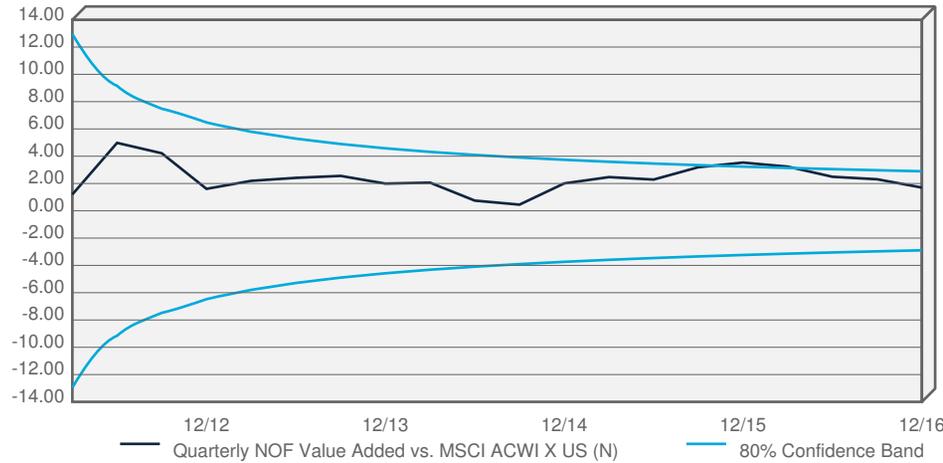
Investment Manager Analysis



Neuberger Berman

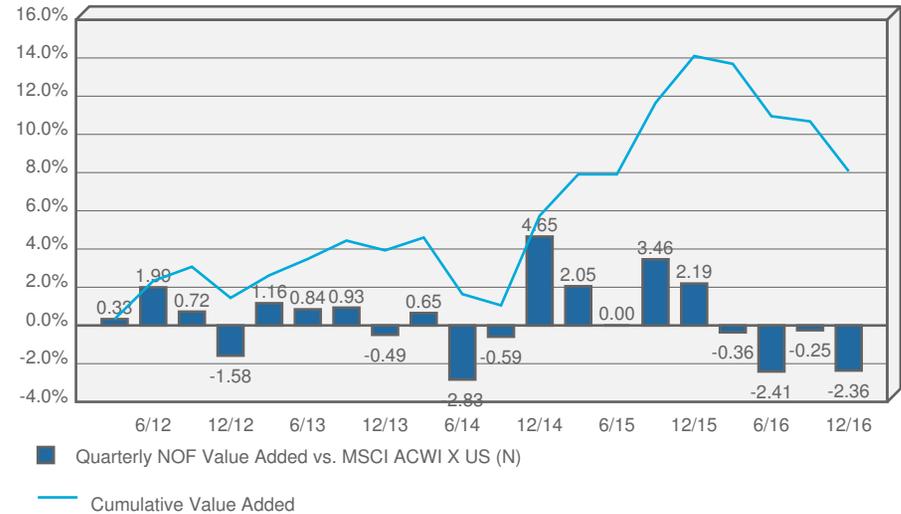
December 31, 2016

Cumulative Skill Analysis vs Benchmark

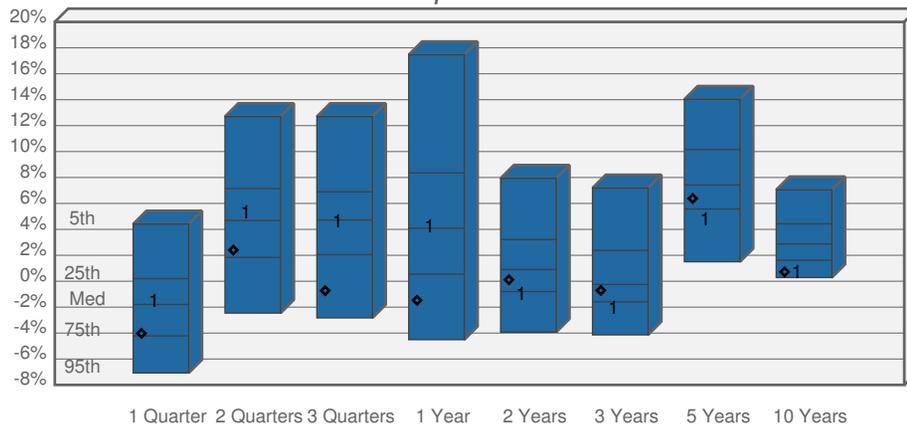


Excess Return:	1.70	Information Ratio:	0.43
Excess Risk:	3.94	T-Stat:	0.97

Value-Added Analysis vs Benchmark

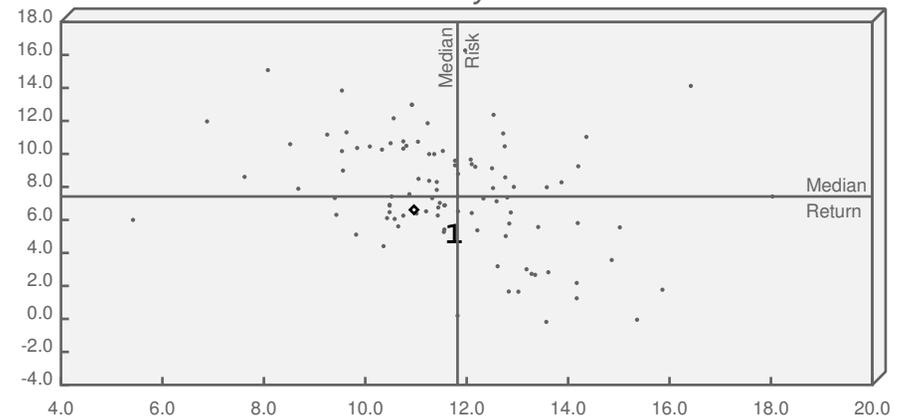


Performance Comparison vs Peer Universe*



◆ Neuberger Berm	-3.61 (67)	2.81 (69)	-0.32 (87)	-1.06 (83)	0.52 (55)	-0.30 (50)	6.79 (62)	1.13 (85)
1 MSCI ACWI X US	-1.25 (42)	5.57 (40)	4.89 (47)	4.50 (48)	-0.71 (73)	-1.77 (78)	5.00 (81)	0.96 (88)
Median	-1.79	4.69	4.72	4.09	0.90	-0.25	7.42	2.88
Number of Funds	1736	1713	1700	1688	1619	1539	1316	664

Five Year Risk/Return Analysis vs Peer Universe*



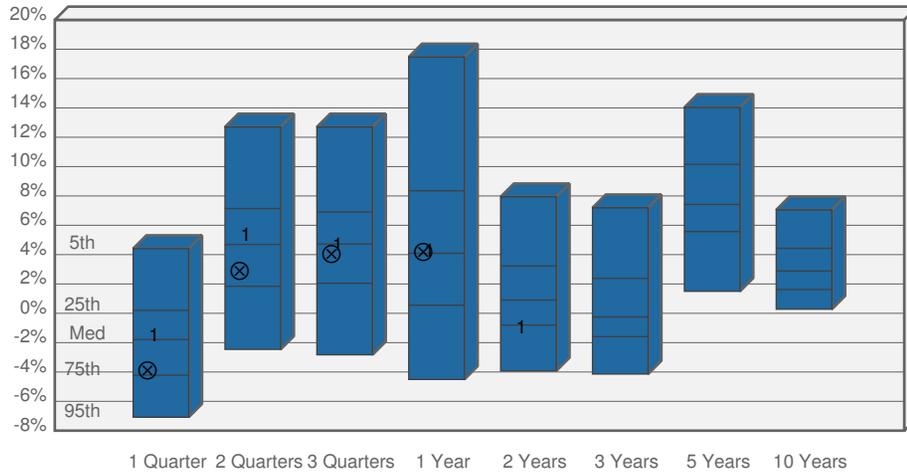
Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
Neuberger Berman	◆	6.79	62	11.17	69
MSCI ACWI X US (N)	1	5.00	81	11.86	49
Median		7.42		11.82	

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

Harding Loevner

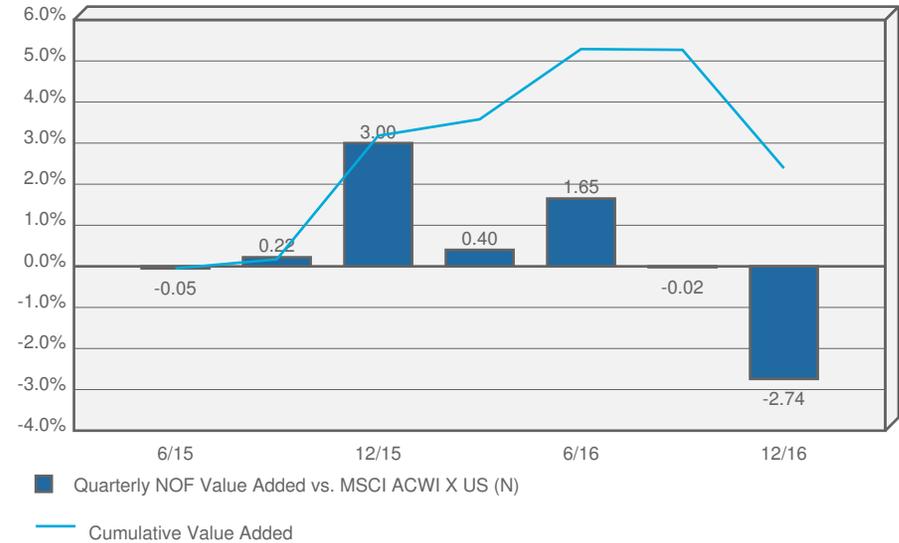
December 31, 2016

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊗ Harding Loevne	-3.86 (70)	2.90 (68)	4.07 (58)	4.24 (49)	-0.71 (73)	-0.25	7.42	2.88
1 MSCI ACWI X US	-1.25 (42)	5.57 (40)	4.89 (47)	4.50 (48)	-0.71 (73)	-0.25	7.42	2.88
Median	-1.79	4.69	4.72	4.09	0.90	-0.25	7.42	2.88
Number of Funds	1736	1713	1700	1688	1619	1539	1316	664

Value-Added Analysis vs Benchmark



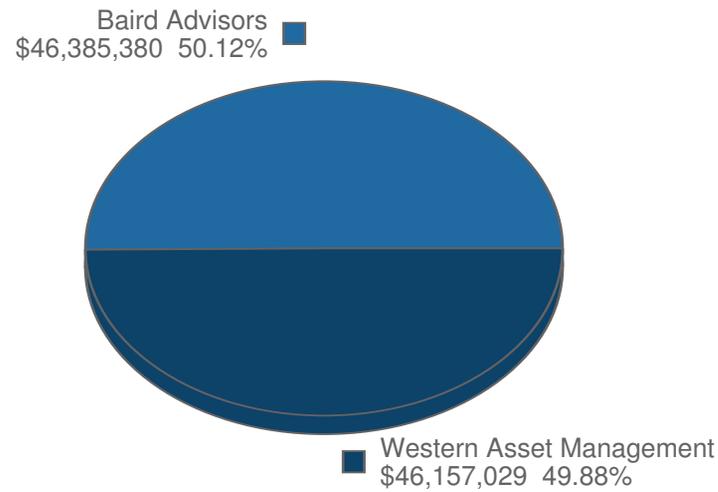
*TUCS Total Returns of International Equity Portfolios Universe - Gross of Fees

Core Fixed Income

Manager Allocation

Core Fixed Composite

As of December 31, 2016

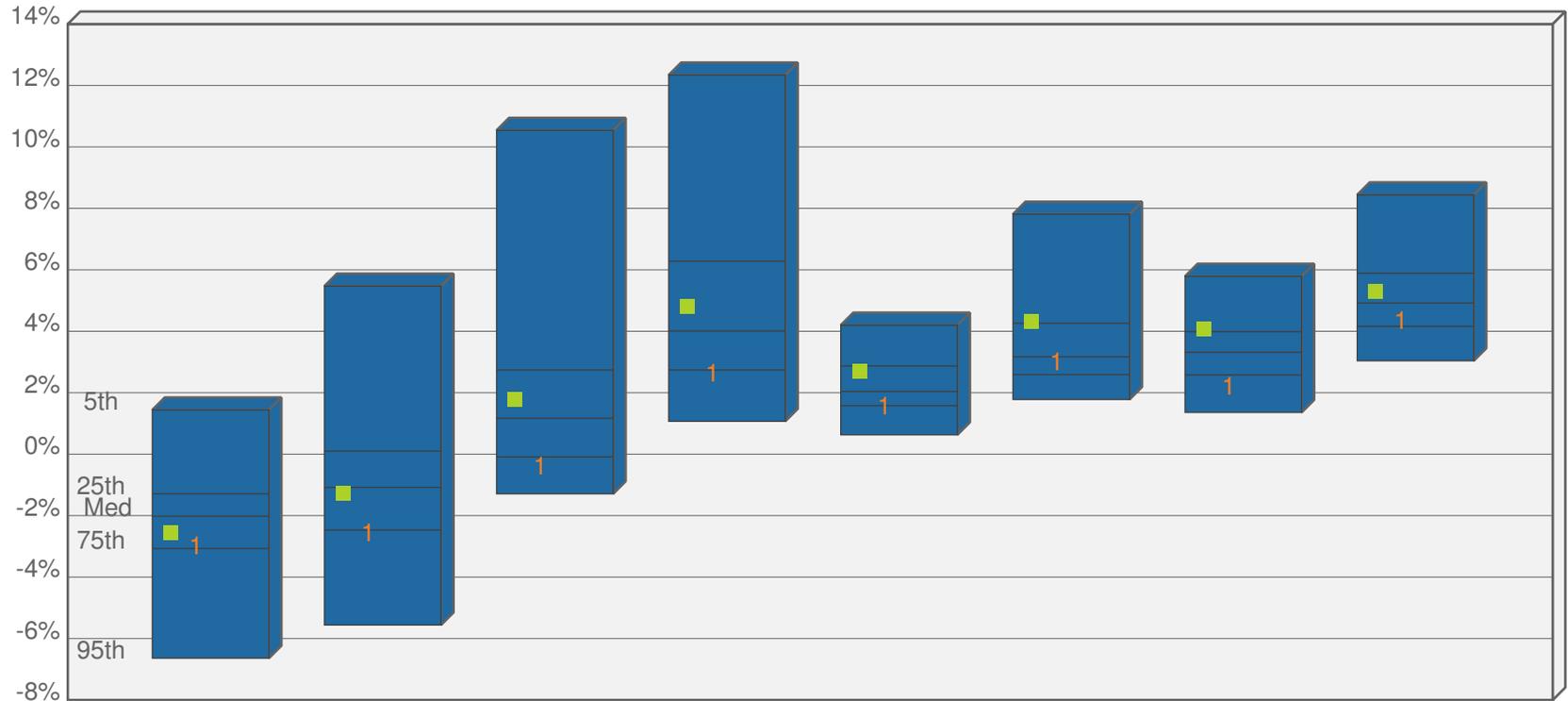


Performance Comparison



Core Fixed Composite

Periods Ended December 31, 2016



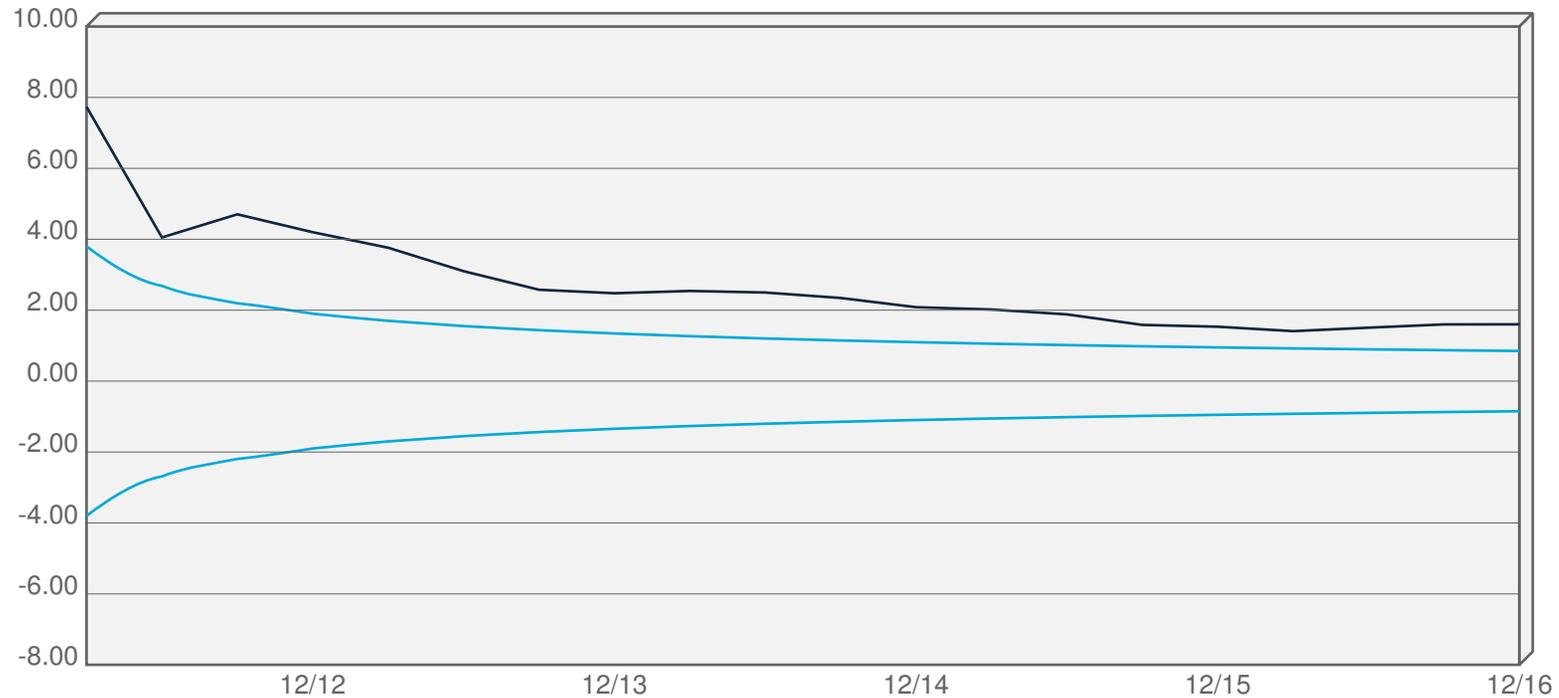
	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
■ Core Fixed Composite	-2.51 (60)	-1.22 (53)	1.83 (35)	4.84 (39)	2.75 (26)	4.35 (22)	4.12 (21)	5.34 (38)
┆ Barclays Aggrega	-2.98 (70)	-2.53 (77)	-0.37 (82)	2.65 (76)	1.59 (74)	3.03 (56)	2.23 (84)	4.35 (68)
5th %tile	1.44	5.47	10.54	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 & Fire

Cumulative Skill Analysis

Core Fixed Composite

Five Years Ending December 31, 2016



— Quarterly NOF Value Added vs. Barclays Aggregate

— 80% Confidence Band

Excess Return:	1.60	Information Ratio:	1.39
Excess Risk:	1.16	T-Stat:	3.10

Performance Comparison



Trailing Returns

Periods Ended December 31, 2016

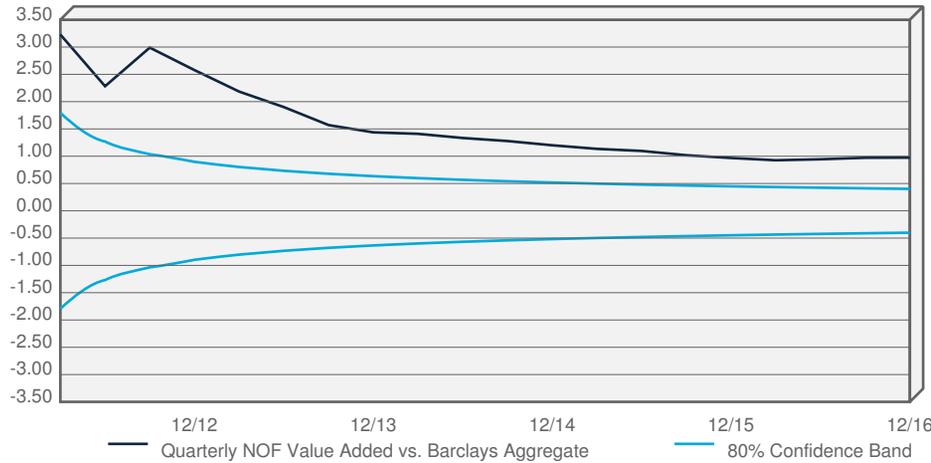
	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
Baird Advisors									
Net of Fee Return	-2.73	3.67	3.67	3.72	3.23	4.73	4.69	3/31/03	4.52
Barclays Aggregate	-2.98	2.65	2.65	3.03	2.23	3.63	4.35	3/31/03	4.16
Value Added	0.25	1.03	1.03	0.69	1.00	1.11	0.34	3/31/03	0.36
Western Asset Management									
Net of Fee Return	-2.43	5.45	5.45	4.44	4.45	6.13	5.36	3/31/04	5.10
Barclays Aggregate	-2.98	2.65	2.65	3.03	2.23	3.63	4.35	3/31/04	4.07
Value Added	0.55	2.80	2.80	1.41	2.22	2.50	1.01	3/31/04	1.03
Core Fixed Composite									
Net of Fee Return	-2.58	4.57	4.57	4.08	3.87	5.47	5.08	9/30/87	6.98
Barclays Aggregate	-2.98	2.65	2.65	3.03	2.23	3.63	4.35	9/30/87	6.61
Value Added	0.40	1.92	1.92	1.05	1.64	1.85	0.74	9/30/87	0.37

Investment Manager Analysis



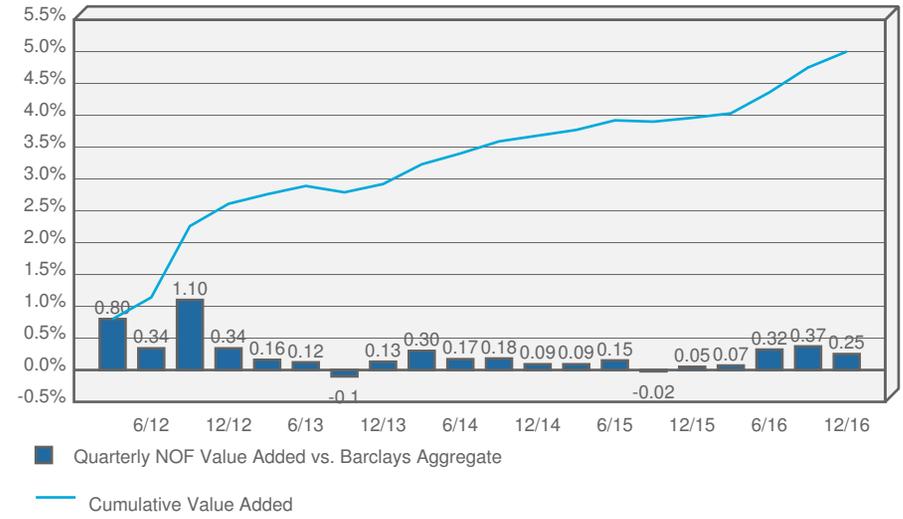
Baird Advisors December 31, 2016

Cumulative Skill Analysis vs Benchmark

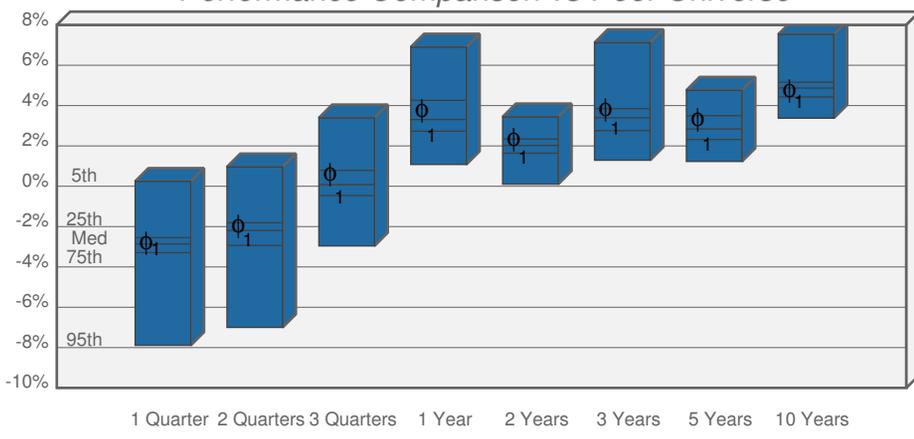


Excess Return:	0.97	Information Ratio:	1.79
Excess Risk:	0.55	T-Stat:	3.99

Value-Added Analysis vs Benchmark

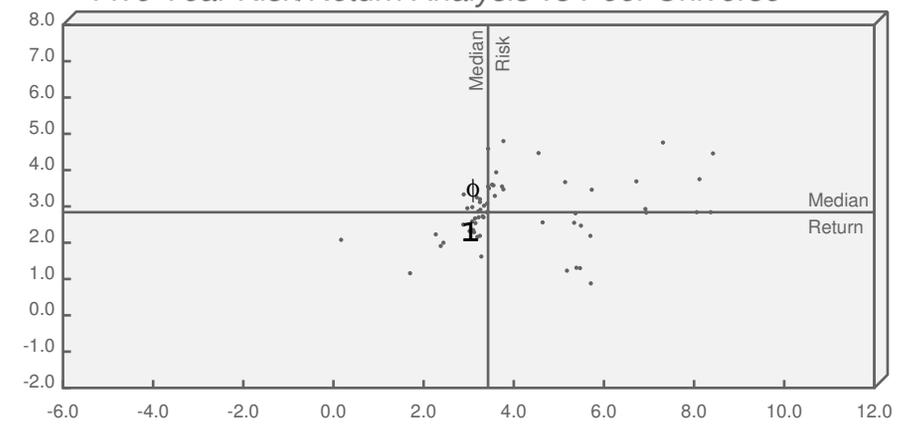


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
Φ Baird Advisors	-2.68 (35)	-1.82 (25)	0.72 (25)	3.90 (32)	2.46 (19)	3.94 (19)	3.45 (28)	4.91 (46)
1 Barclays Aggre	-2.98 (58)	-2.53 (60)	-0.37 (72)	2.65 (75)	1.59 (77)	3.03 (65)	2.23 (78)	4.35 (78)
Median	-2.86	-2.19	0.08	3.31	2.02	3.40	2.84	4.87
Number of Funds	83	83	83	79	78	73	60	34

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
Baird Advisors	Φ	3.45	28	3.27	60
Barclays Aggregate	1	2.23	78	3.16	73
Median		2.84		3.43	

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

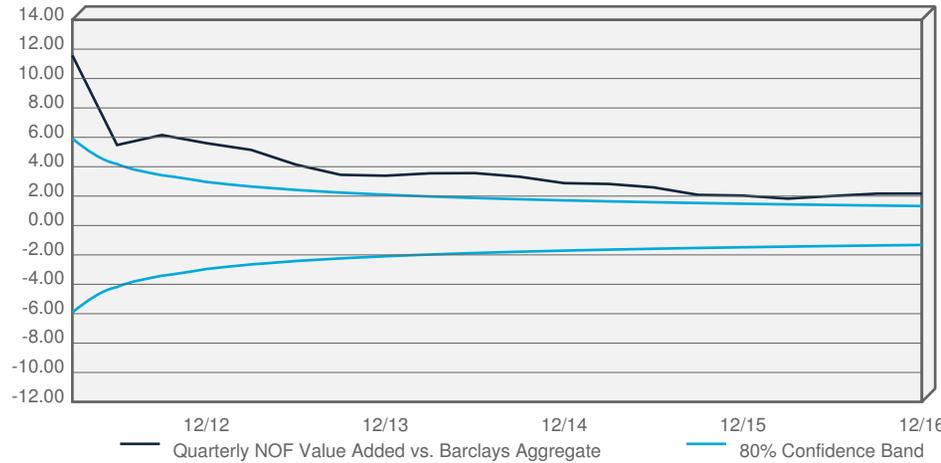
Investment Manager Analysis



Western Asset Management

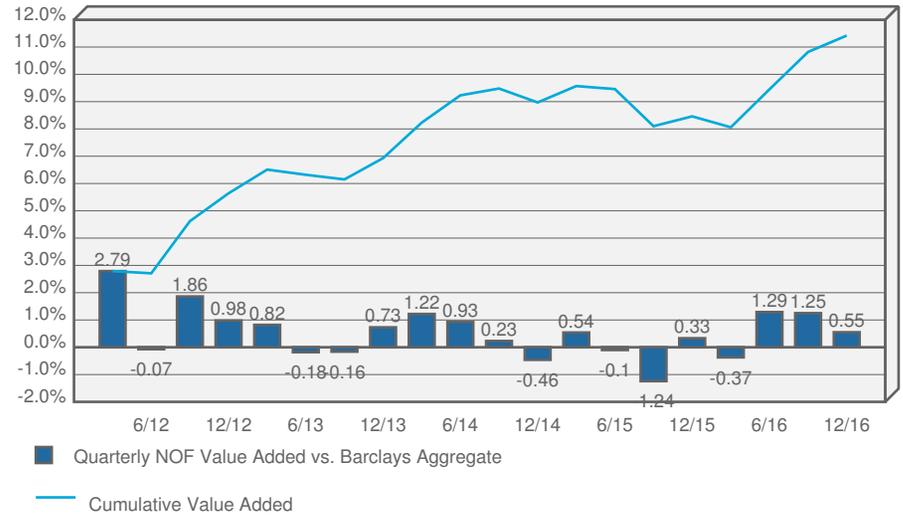
December 31, 2016

Cumulative Skill Analysis vs Benchmark

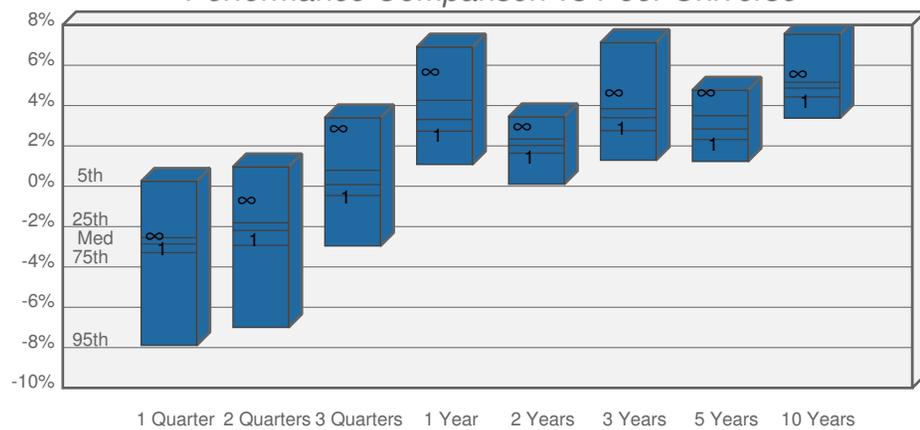


Excess Return:	2.17	Information Ratio:	1.21
Excess Risk:	1.80	T-Stat:	2.70

Value-Added Analysis vs Benchmark

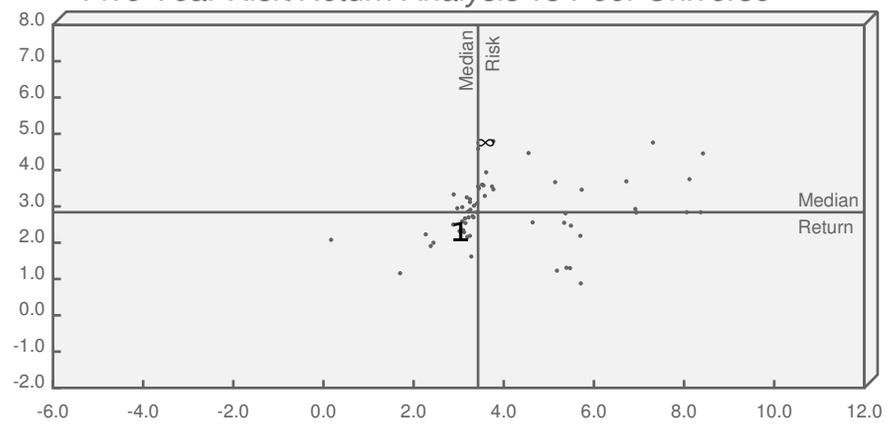


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
∞ Western Asset	-2.35 (16)	-0.61 (8)	2.94 (7)	5.77 (8)	3.04 (6)	4.75 (7)	4.76 (5)	5.67 (19)
1 Barclays Aggre	-2.98 (58)	-2.53 (60)	-0.37 (72)	2.65 (75)	1.59 (77)	3.03 (65)	2.23 (78)	4.35 (78)
Median	-2.86	-2.19	0.08	3.31	2.02	3.40	2.84	4.87
Number of Funds	83	83	83	79	78	73	60	34

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
Western Asset Management	∞	4.76	5	3.71	40
Barclays Aggregate	1	2.23	78	3.16	73
Median		2.84		3.43	

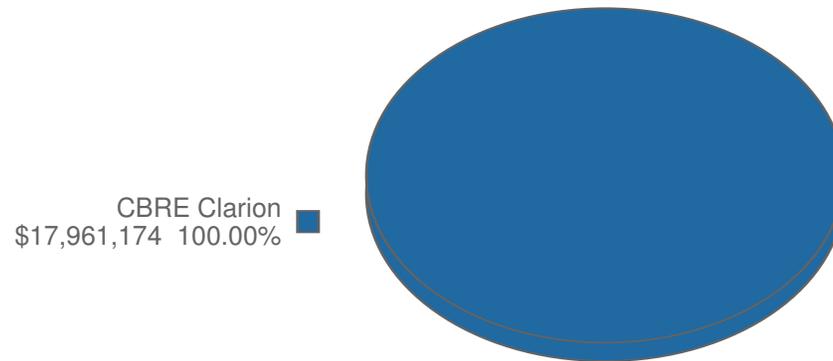
*TUCS Total Returns of Fixed Income Portfolios - Core Universe - Gross of Fees

Real Estate

Manager Allocation

Real Estate Composite

As of December 31, 2016

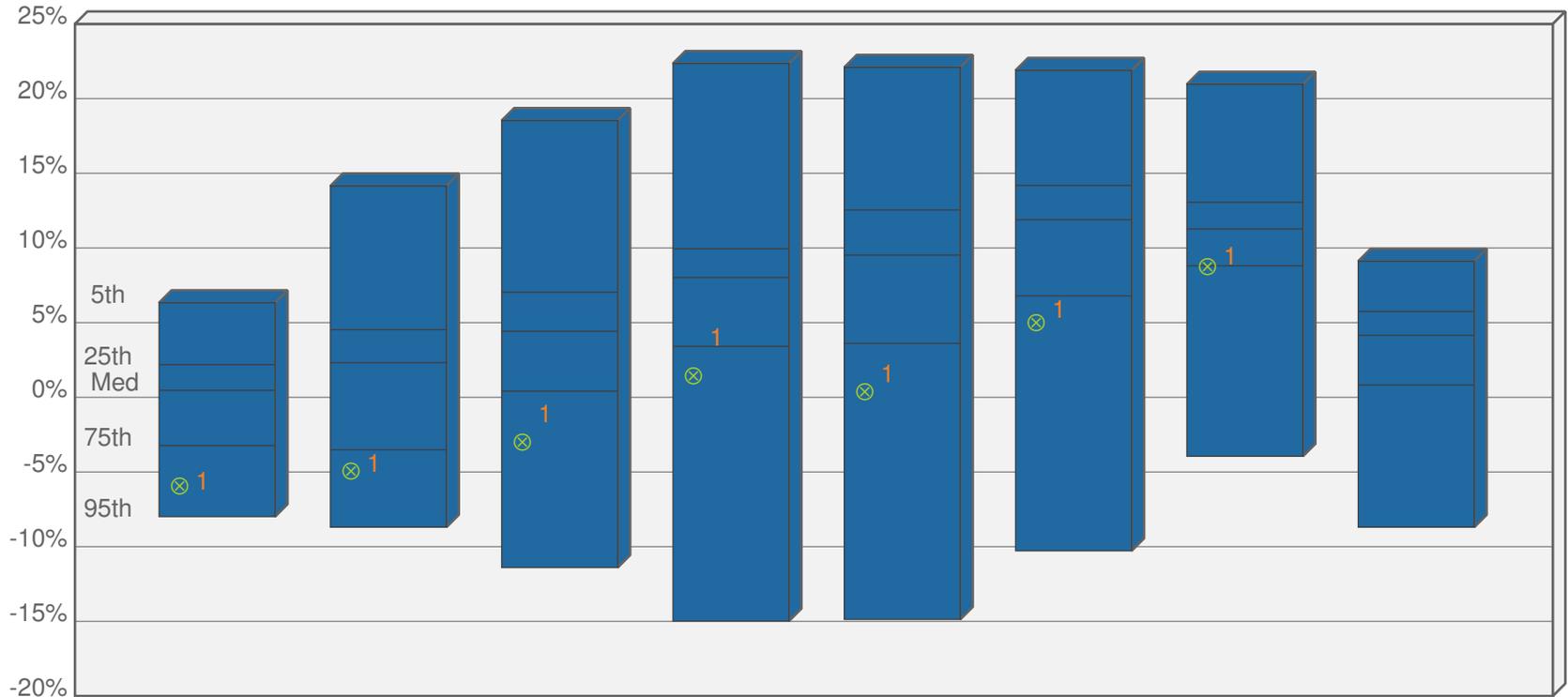


Performance Comparison



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	-5.92 (88)	-4.90 (89)	-2.98 (86)	1.47 (79)	0.43 (80)	5.03 (78)	8.80 (75)	
1 FTSE EPRA/NAREIT	-5.59 (86)	-4.41 (86)	-1.11 (83)	4.06 (72)	1.61 (78)	5.90 (76)	9.48 (70)	
5th %tile	6.33	14.15	18.53	22.35	22.09	21.89	20.96	9.11
25th %tile	2.18	4.53	7.03	9.94	12.54	14.18	13.05	5.74
Median	0.47	2.32	4.42	8.02	9.52	11.89	11.27	4.15
75th %tile	-3.23	-3.52	0.41	3.41	3.61	6.79	8.80	0.82
95th %tile	-7.99	-8.70	-11.40	-14.98	-14.87	-10.28	-3.95	-8.70
Number of Funds	517	546	540	537	498	472	320	145

Performance Comparison



Trailing Returns

Periods Ended December 31, 2016

	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
CBRE Clarion									
Net of Fee Return	-6.12	0.70	0.70	4.24	7.95	6.96		6/30/09	10.41
FTSE EPRA/NAREIT Dev (N)	-5.59	4.06	4.06	5.90	9.48	8.41		6/30/09	11.69
Value Added	-0.52	-3.37	-3.37	-1.66	-1.52	-1.45		6/30/09	-1.28
Real Estate Composite									
Net of Fee Return	-6.12	0.70	0.70	4.24	7.95	6.96		6/30/09	10.41
FTSE EPRA/NAREIT Dev (N)	-5.59	4.06	4.06	5.90	9.48	8.41		6/30/09	11.69
Value Added	-0.52	-3.37	-3.37	-1.66	-1.52	-1.45		6/30/09	-1.28

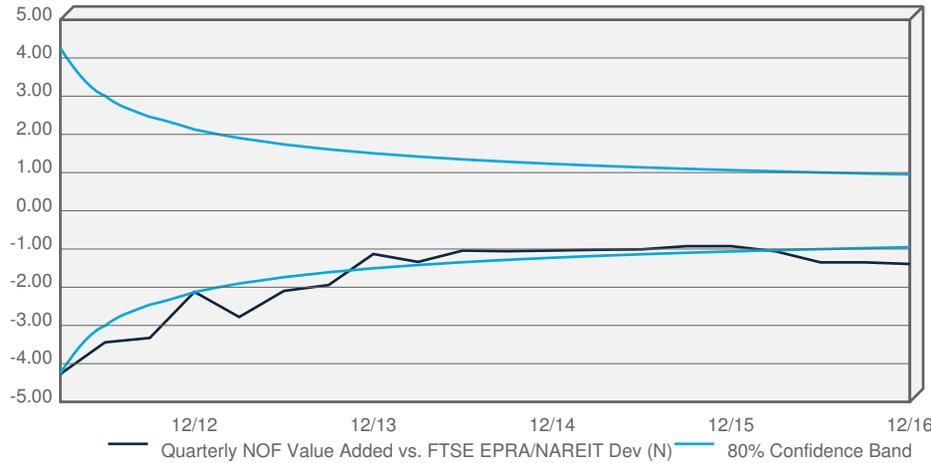
Investment Manager Analysis



CBRE Clarion

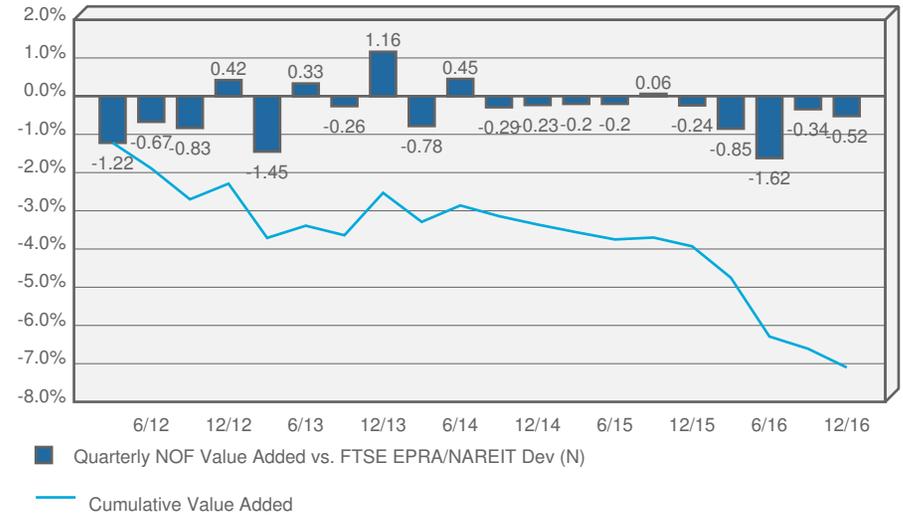
December 31, 2016

Cumulative Skill Analysis vs Benchmark

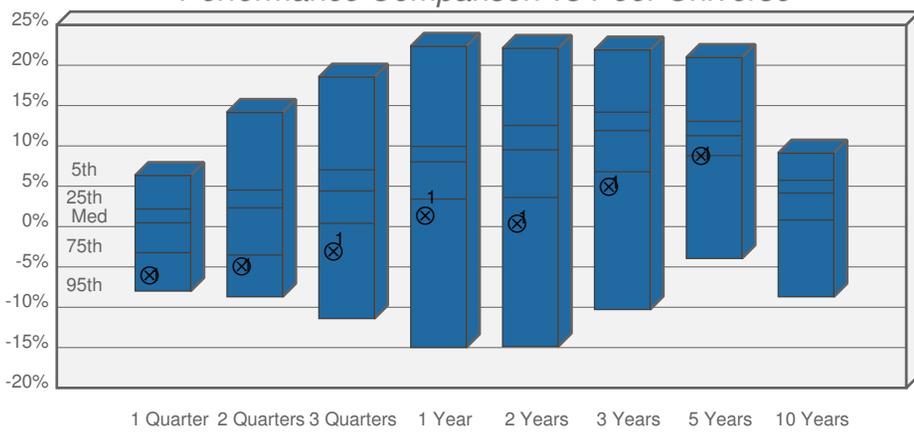


Excess Return:	-1.39	Information Ratio:	-1.08
Excess Risk:	1.29	T-Stat:	-2.41

Value-Added Analysis vs Benchmark

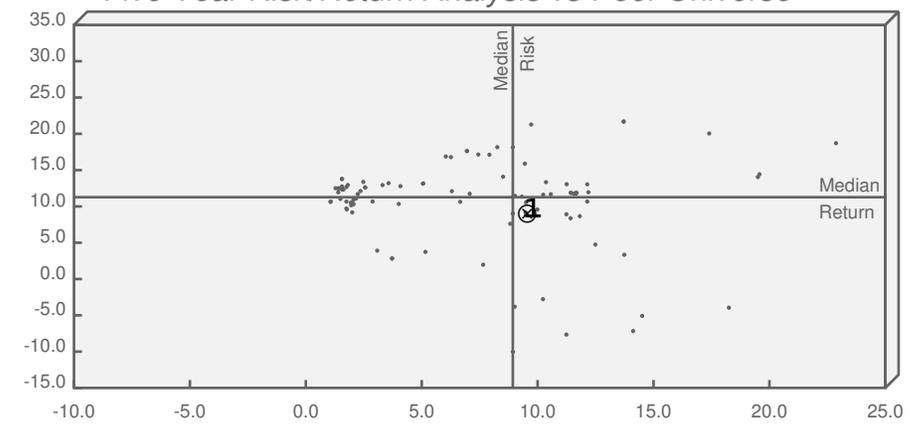


Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊗ CBRE Clarion	-5.92 (88)	-4.90 (89)	-2.98 (86)	1.47 (79)	0.43 (80)	5.03 (78)	8.80 (75)	
1 FTSE EPRA/NAREIT Dev (N)	-5.59 (86)	-4.41 (86)	-1.11 (83)	4.06 (72)	1.61 (78)	5.90 (76)	9.48 (70)	
Median	0.47	2.32	4.42	8.02	9.52	11.89	11.27	4.15
Number of Funds	517	546	540	537	498	472	320	145

Five Year Risk/Return Analysis vs Peer Universe*



Description	Legend	Gross Fee Ret		Standard Deviation	
		Value	Rank	Value	Rank
CBRE Clarion	⊗	8.80	75	9.74	42
FTSE EPRA/NAREIT Dev (N)	1	9.48	70	10.04	41
Median		11.27		8.93	

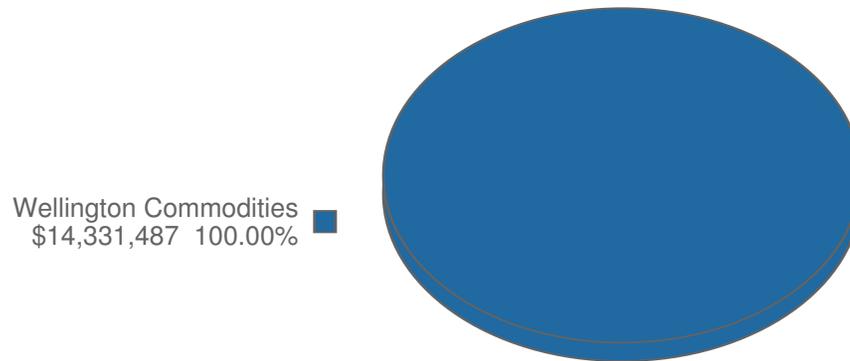
*TUCS Total Returns of Real Estate Portfolios Universe - Gross of Fees Police & Fire

Commodities

Manager Allocation

Commodities Composite

As of December 31, 2016



Performance Comparison



Trailing Returns

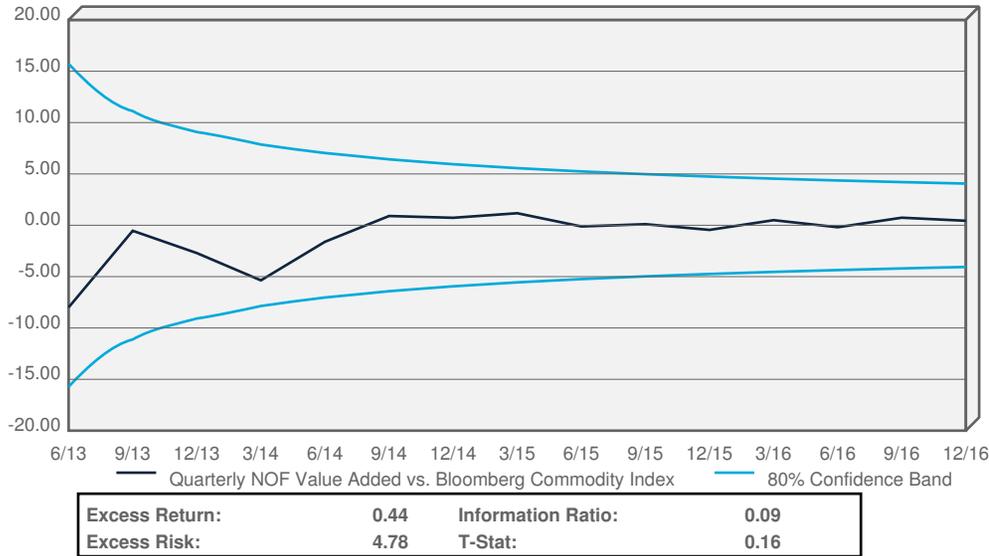
Periods Ended December 31, 2016

	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
Wellington Commodities									
Net of Fee Return	1.70	15.03	15.03	-10.16				3/31/13	-10.85
Bloomberg Commodity Index	2.66	11.77	11.77	-11.26				3/31/13	-11.24
Value Added	-0.96	3.27	3.27	1.10				3/31/13	0.39
Commodities Composite									
Net of Fee Return	1.70	15.03	15.03	-10.16				3/31/13	-10.85
Bloomberg Commodity Index	2.66	11.77	11.77	-11.26				3/31/13	-11.24
Value Added	-0.96	3.27	3.27	1.10				3/31/13	0.39

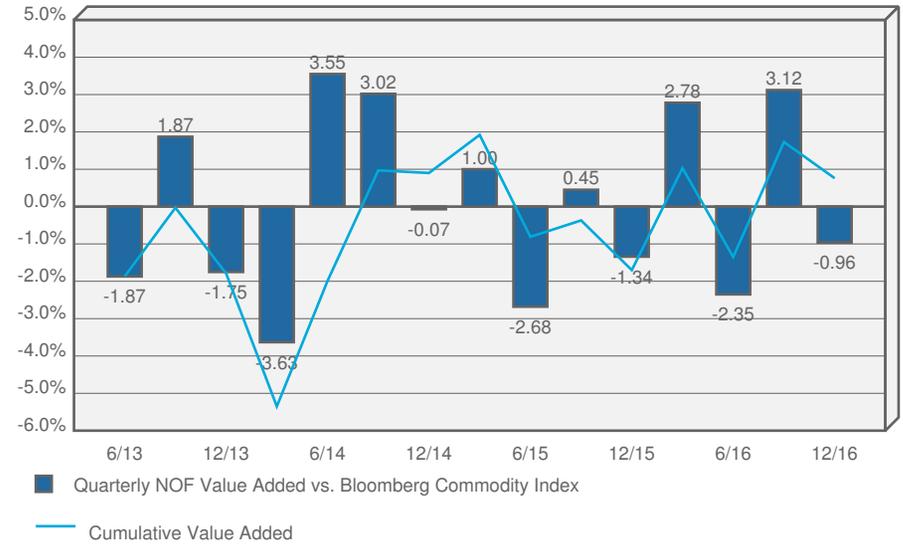
Wellington Commodities

December 31, 2016

Cumulative Skill Analysis vs Benchmark



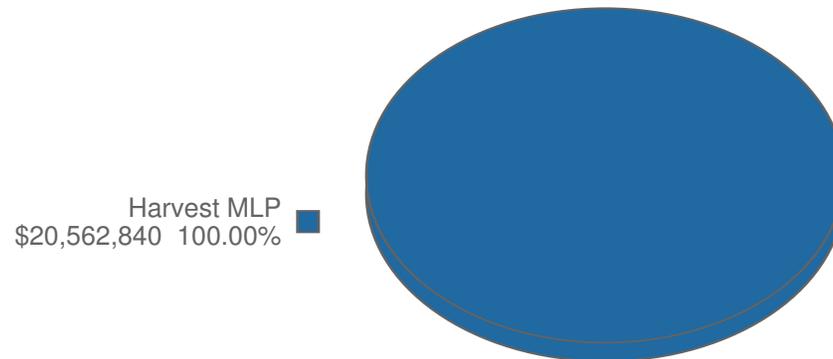
Value-Added Analysis vs Benchmark



MLP

MLP Composite

As of December 31, 2016



Performance Comparison



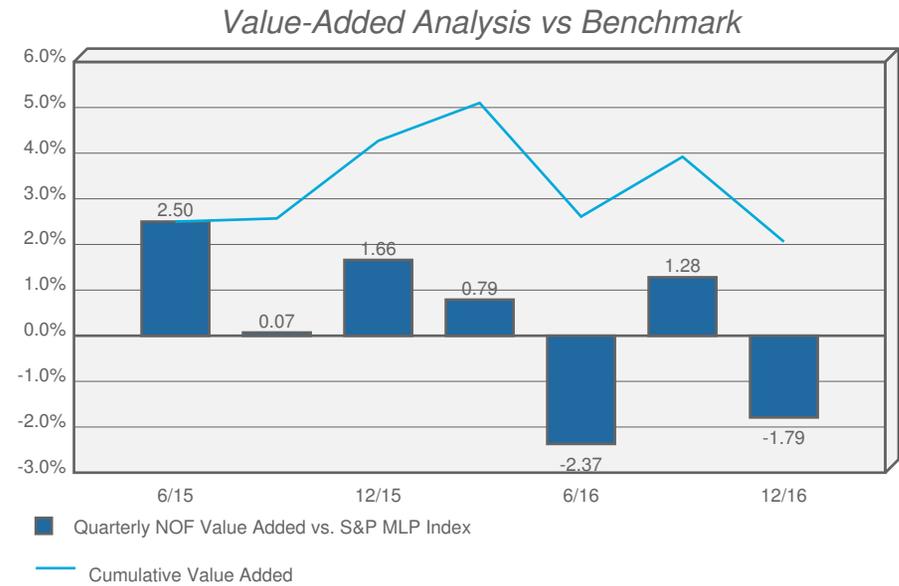
Trailing Returns

Periods Ended December 31, 2016

	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
Harvest MLP									
Net of Fee Return	1.53	19.99	19.99					3/31/15	-9.42
S&P MLP Index	3.32	21.95	21.95					3/31/15	-10.88
Value Added	-1.79	-1.96	-1.96					3/31/15	1.45
MLP Composite									
Net of Fee Return	1.53	19.99	19.99					3/31/15	-9.42
S&P MLP Index	3.32	21.95	21.95					3/31/15	-10.88
Value Added	-1.79	-1.96	-1.96					3/31/15	1.45

Harvest MLP

December 31, 2016

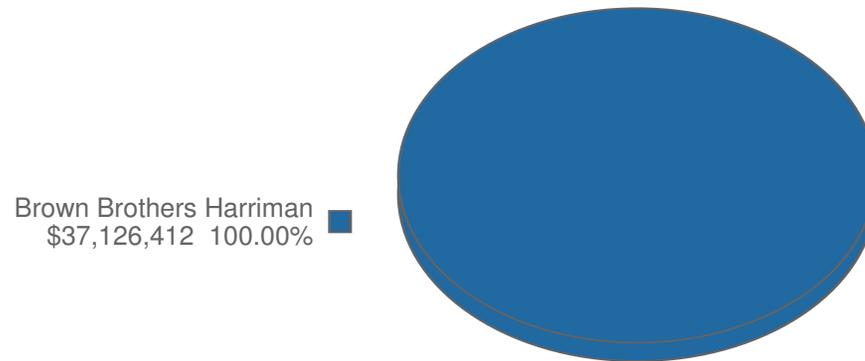


TIPS

Manager Allocation

TIPS Composite

As of December 31, 2016



Performance Comparison



Trailing Returns

Periods Ended December 31, 2016

	1 Qtr	YTD	1 Year	3 Yrs	5 Yrs	7 Yrs	10 Yrs	Incept Date	Incept Ret
Brown Brothers Harriman									
Net of Fee Return	-2.26	4.90	4.90					6/30/15	2.00
Barclays U.S. TIPS	-2.41	4.68	4.68					6/30/15	1.87
Value Added	0.15	0.21	0.21					6/30/15	0.13
TIPS Composite									
Net of Fee Return	-2.26	4.90	4.90					6/30/15	2.00
Barclays U.S. TIPS	-2.41	4.68	4.68					6/30/15	1.87
Value Added	0.15	0.21	0.21					6/30/15	0.13

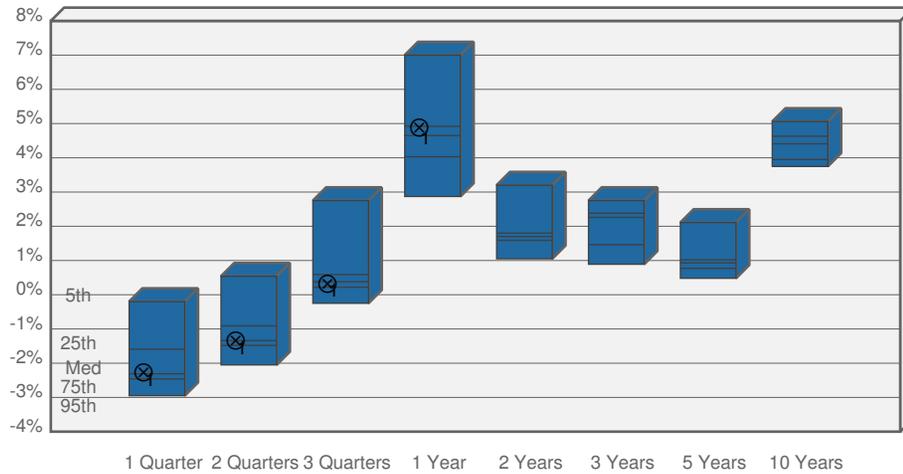
Investment Manager Analysis



Brown Brothers Harriman

December 31, 2016

Performance Comparison vs Peer Universe*



	1 Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	5 Years	10 Years
⊗ Brown Brothers	-2.26 (48)	-1.31 (44)	0.33 (60)	4.90 (28)				
1 Barclays U.S.	-2.41 (58)	-1.47 (72)	0.22 (78)	4.68 (46)				
Median	-2.31	-1.34	0.38	4.65	1.70	2.26	0.93	4.41
Number of Funds	29	29	28	28	28	28	28	22

Value-Added Analysis vs Benchmark



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

Private Equity

Investment Manager Performance



Private Partnerships

As of December 31, 2016

Partnership	Commitment Value	Inception Date	Capital Called		Capital Distributed		Fair Value	Total Value / Paid-In Capital ¹	Annualized IRR
			Amount	%	Amount	%			
Adams Street Direct 2010 Fund	\$500,000	April 27, 2010	\$461,236	92%	\$330,451	66%	\$387,087	1.56	12.30%
Adams Street Non-US Dev. 2010 Fund	\$1,500,000	April 27, 2010	\$839,035	56%	\$102,111	7%	\$977,622	1.29	7.37%
Adams Street Non-US EM 2010 Fund	\$500,000	January 3, 2011	\$346,444	69%	\$0	0%	\$457,761	1.32	9.10%
Adams Street US 2010 Fund	\$2,500,000	April 27, 2010	\$1,222,912	49%	\$128,878	5%	\$1,980,599	1.72	13.74%
Adams Street 2013 Global Fund	\$5,000,000	July 3, 2013	\$2,743,455	55%	\$0	0%	\$2,917,185	1.06	3.60%
Aberdeen Global Partners	\$5,000,000	January 17, 2012	\$3,750,000	75%	\$487,375	10%	\$3,836,519	1.15	6.34%
Adams Street 2015 Global	\$6,500,000	September 30, 2015	\$532,614	8%	\$0	0%	\$722,155	1.36	49.29%
Alternative Investments Composite	\$21,500,000	April 27, 2010	\$9,895,696	46%	\$1,048,815	5%	\$11,278,928	1.25	8.96%

¹ TVPI = Fair Value + Capital Distributed / Capital Called

Capital Market Review

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.

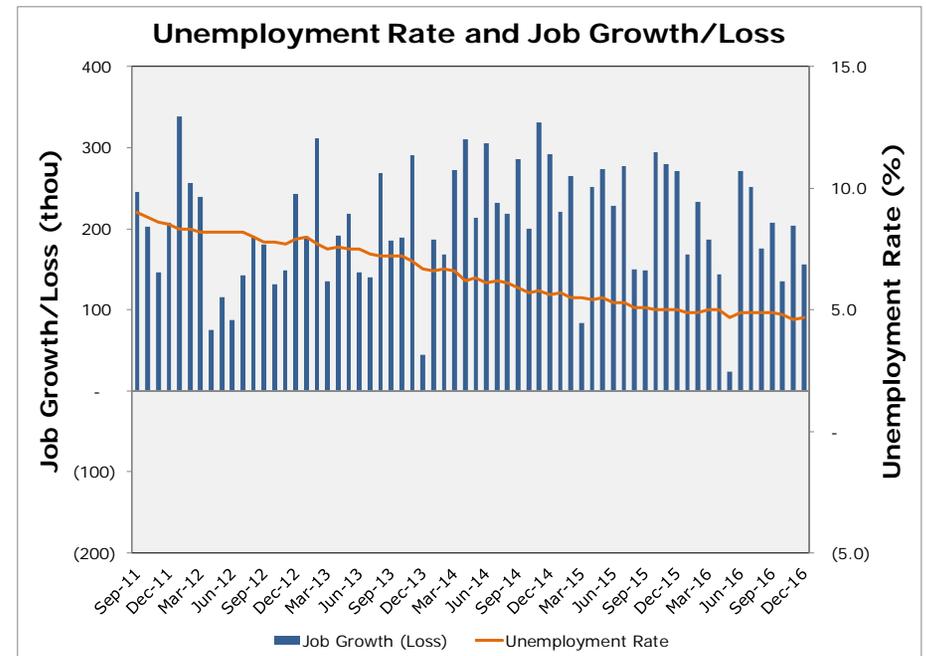
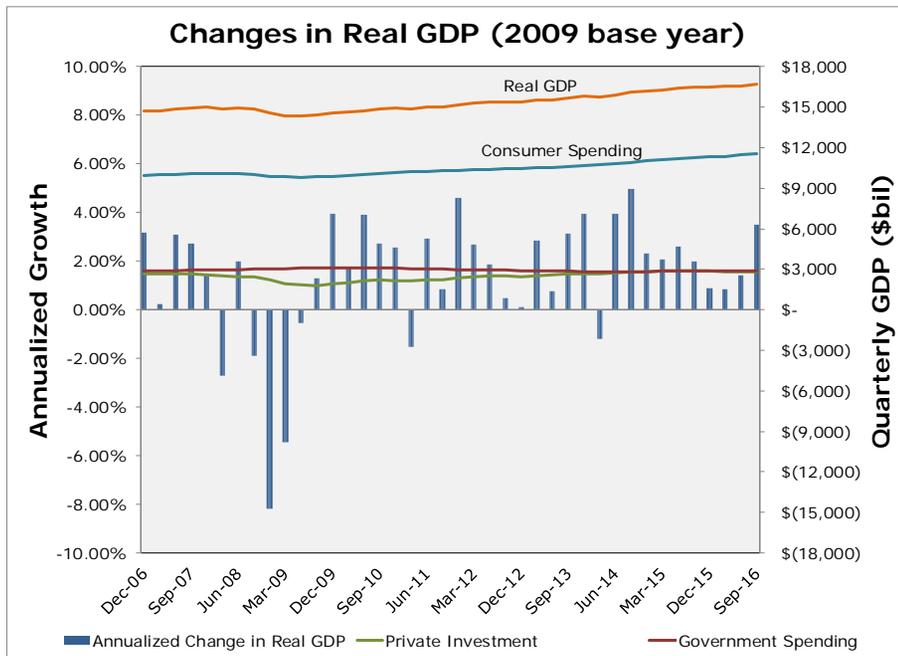
December 2016 Asset Class Assumptions



	Equity						Fixed Income						Real Assets					US CPI
	US Stock	Dev	Emg Stock	Global ex-US Stock	Global Stock	Private Markets	Cash	Core Bond	LT		High Yield	ex-US Bond (Hdg)	Real Estate			Cmdty	Real Assets	
		ex-US Stock							Core Bond	Core Bond			TIPS	US RES	Global RES			
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

December 31, 2016	Key Economic Indicators			
CPI (all items) Seasonally adjusted	Monthly Change		Cumulative Change	
	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 Unv. of Michigan Survey	Dec-16	98.2		
	Nov-16	93.8		
	1-Yr Ago	92.6	10-Yr Avg	77.9
Manufacturing Inst. for Supply Mgmt Purchasing Mngrs' Idx	Dec-16	54.7	Change in Manufacturing Sector	
	Nov-16	53.2	>50	Expansion
	1-Yr Avg	51.5	<50	Contraction

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

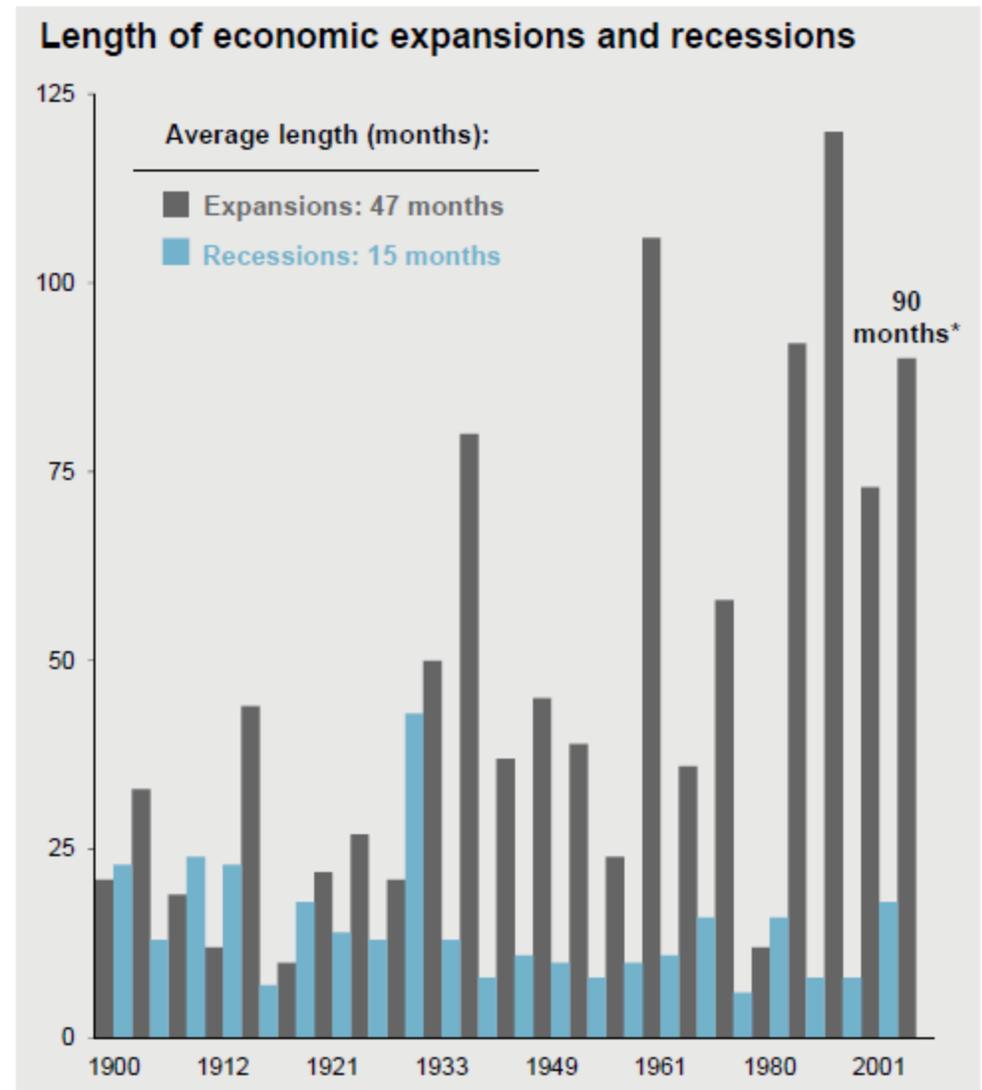


Data sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Bank of St. Louis, Barclays Capital

U.S. Economic Growth



- 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

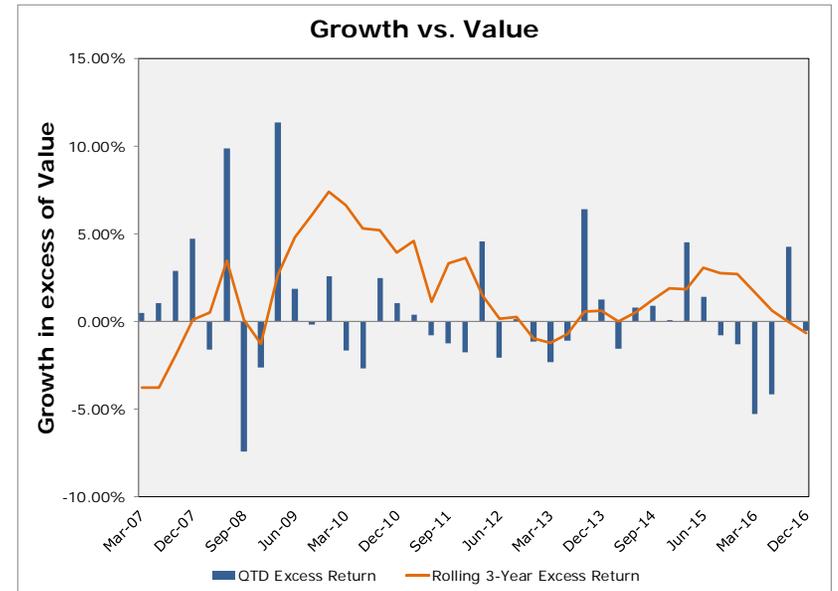
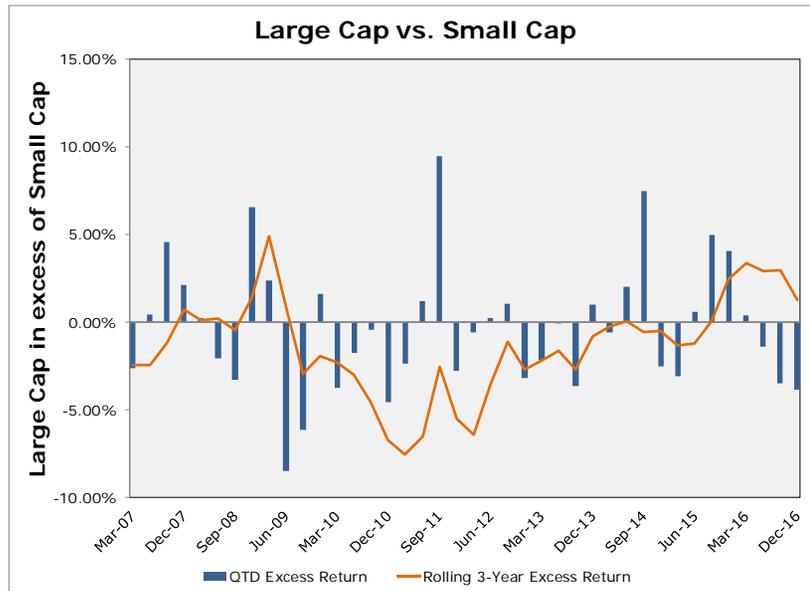
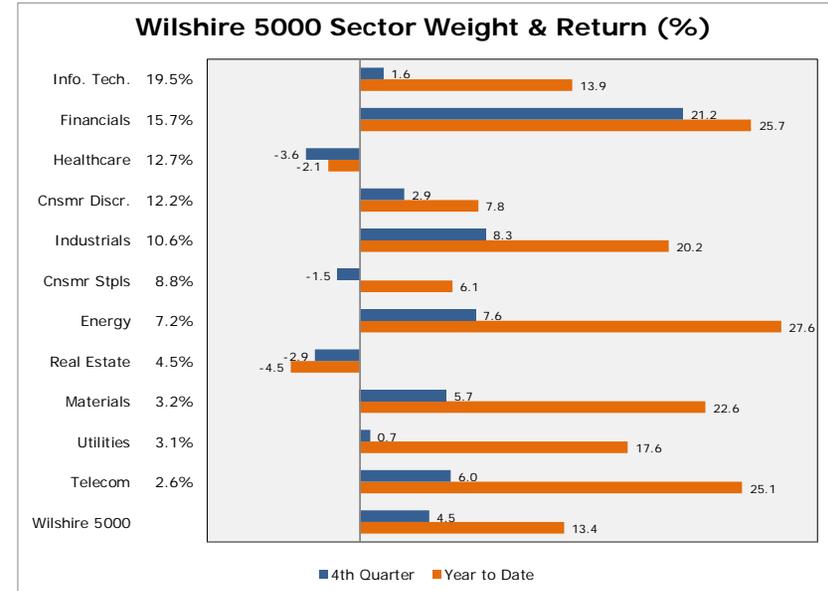


*Chart assumes that growth during Q4 2016 will be positive

U.S. Equity Market



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

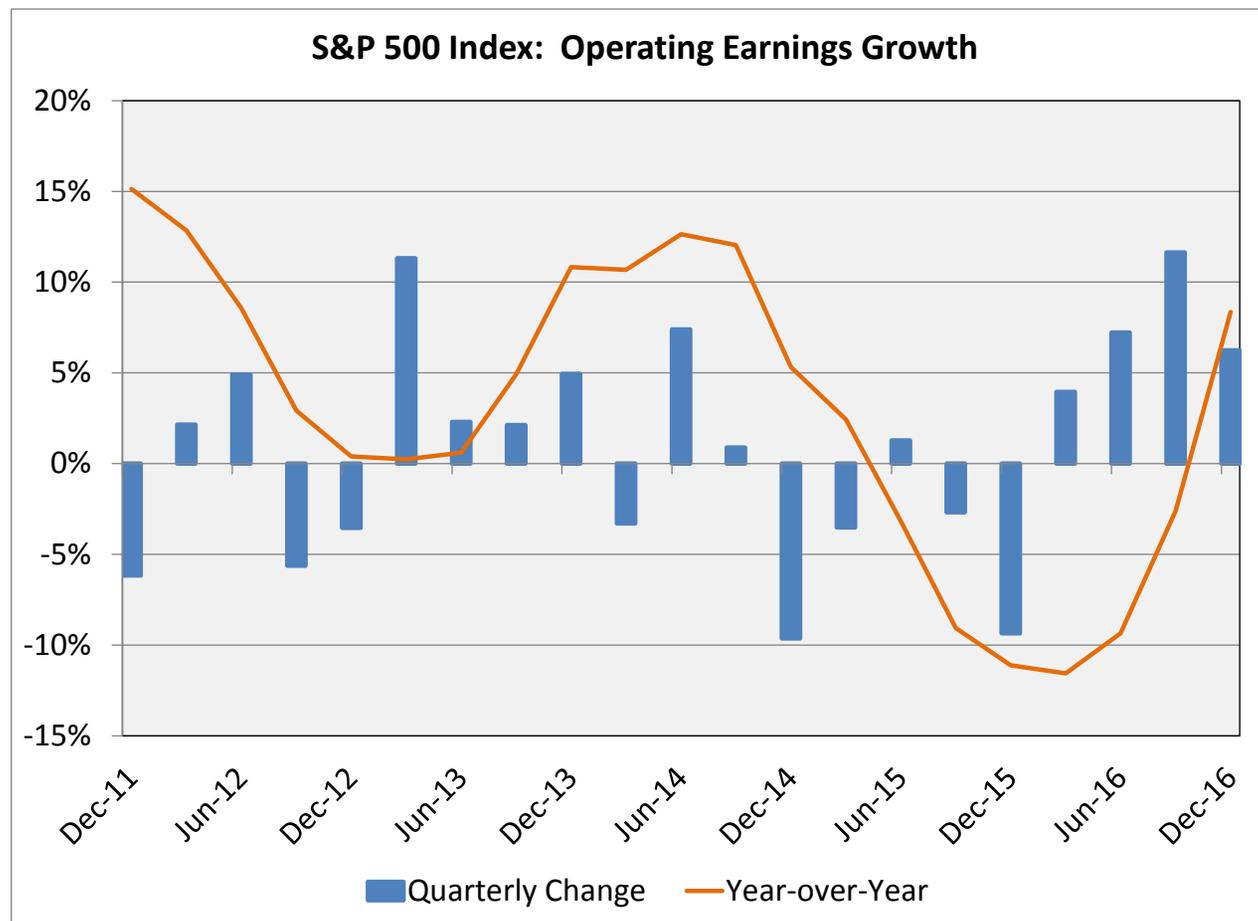


Data sources: Wilshire Compass, Wilshire Atlas

U.S. Corporate Earnings



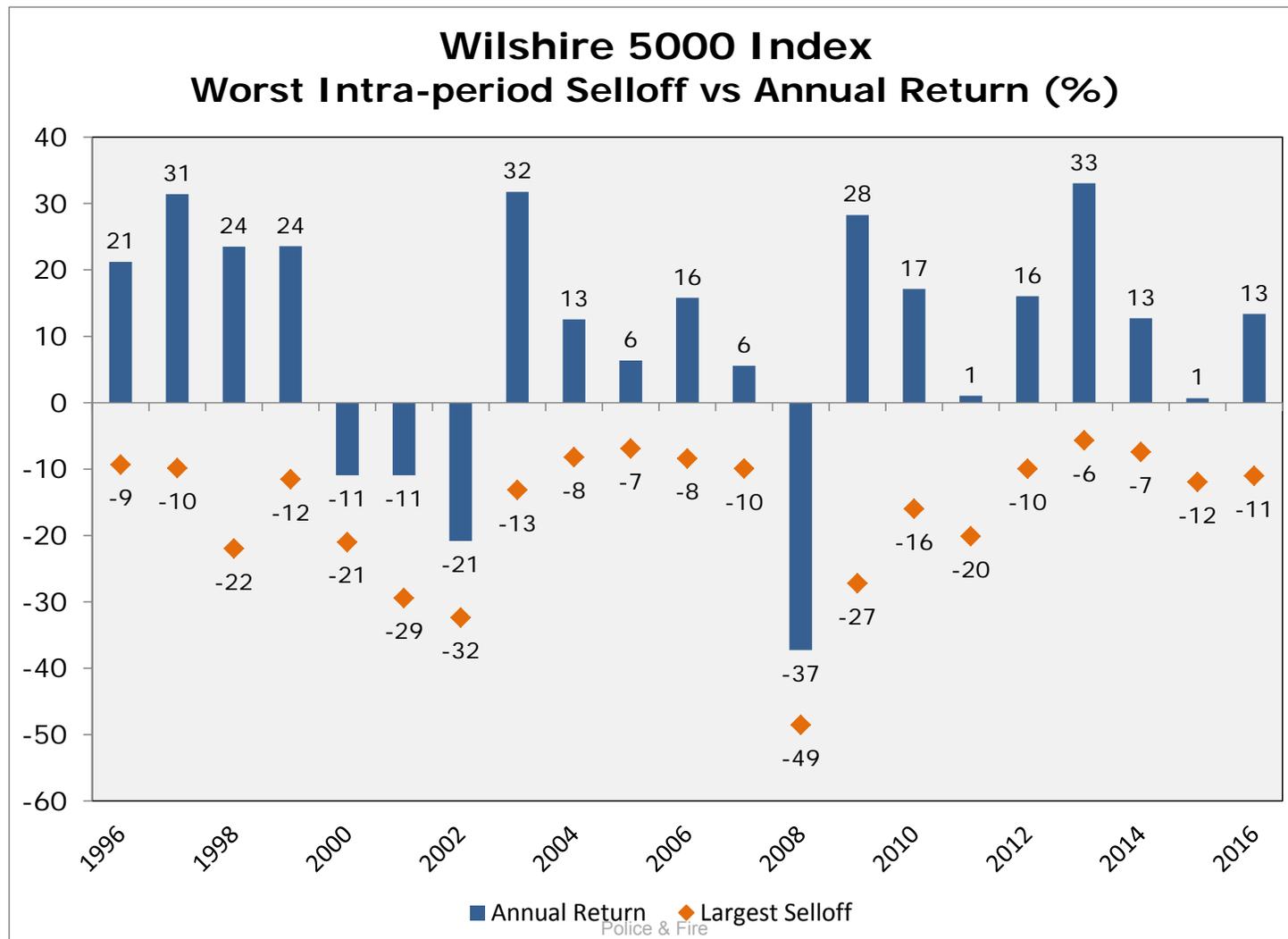
- Troubling trend in the U.S. equity market reversed course during the year
- Operating earnings had been on the decline for approximately a year and a half before returning to growth in 2016



Annual Equity Returns



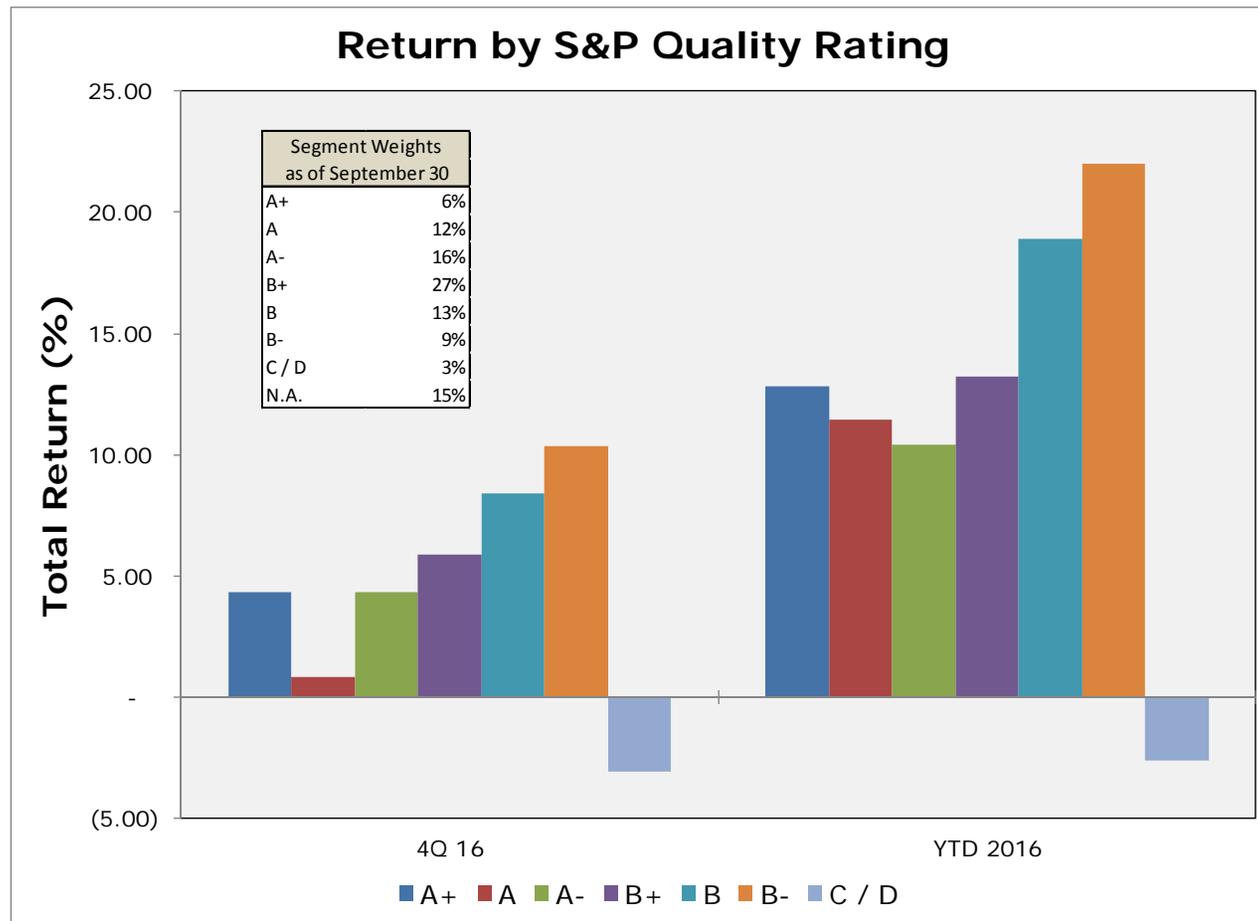
- U.S. Equity has now produced 8 straight years of positive returns since 2008
- Median selloff during the periods included below is -12%



Returns by Quality Segment



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

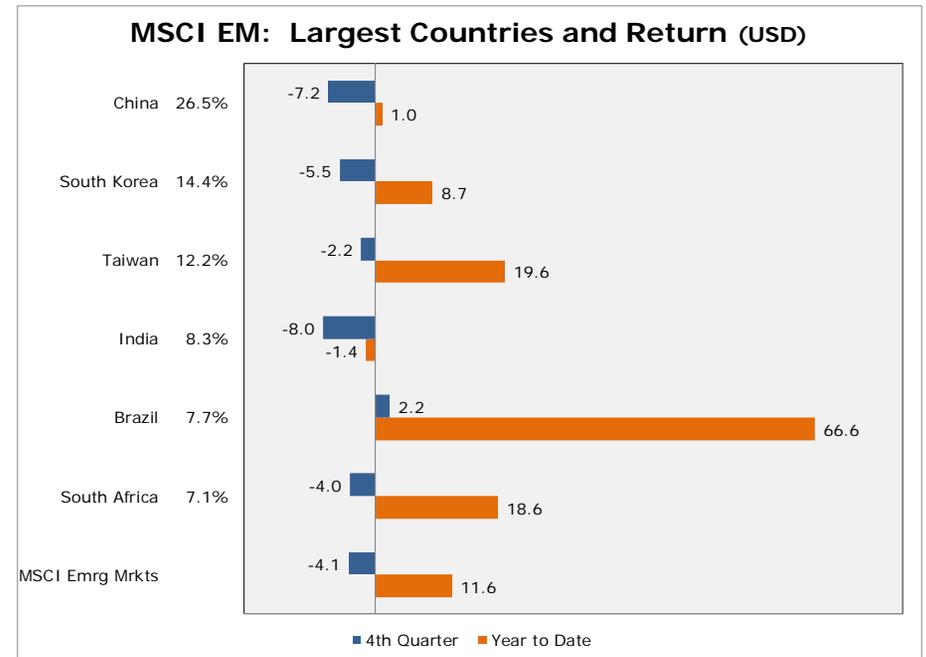
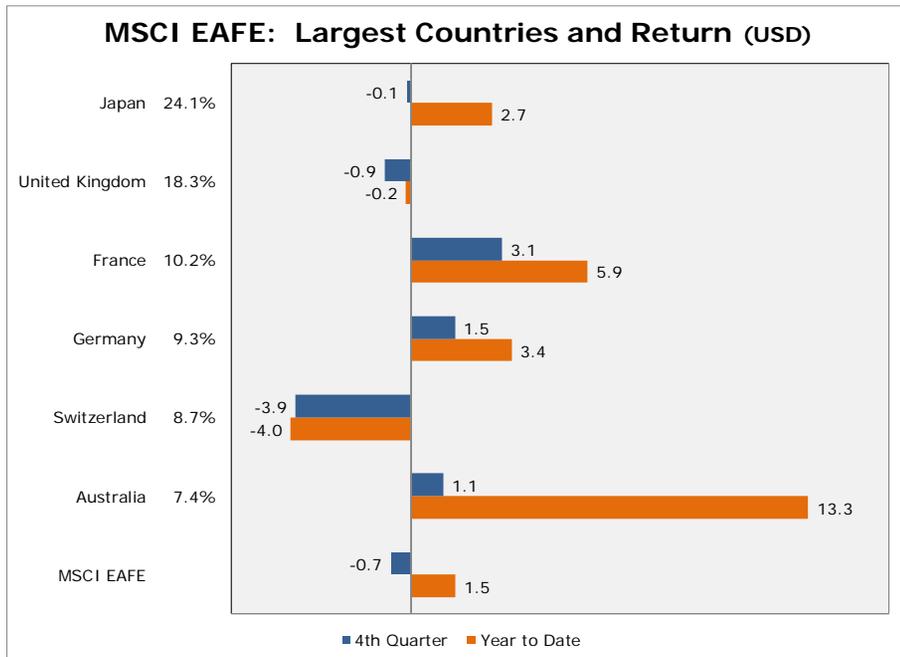


Data sources: Wilshire Atlas

Non-U.S. Equity Market



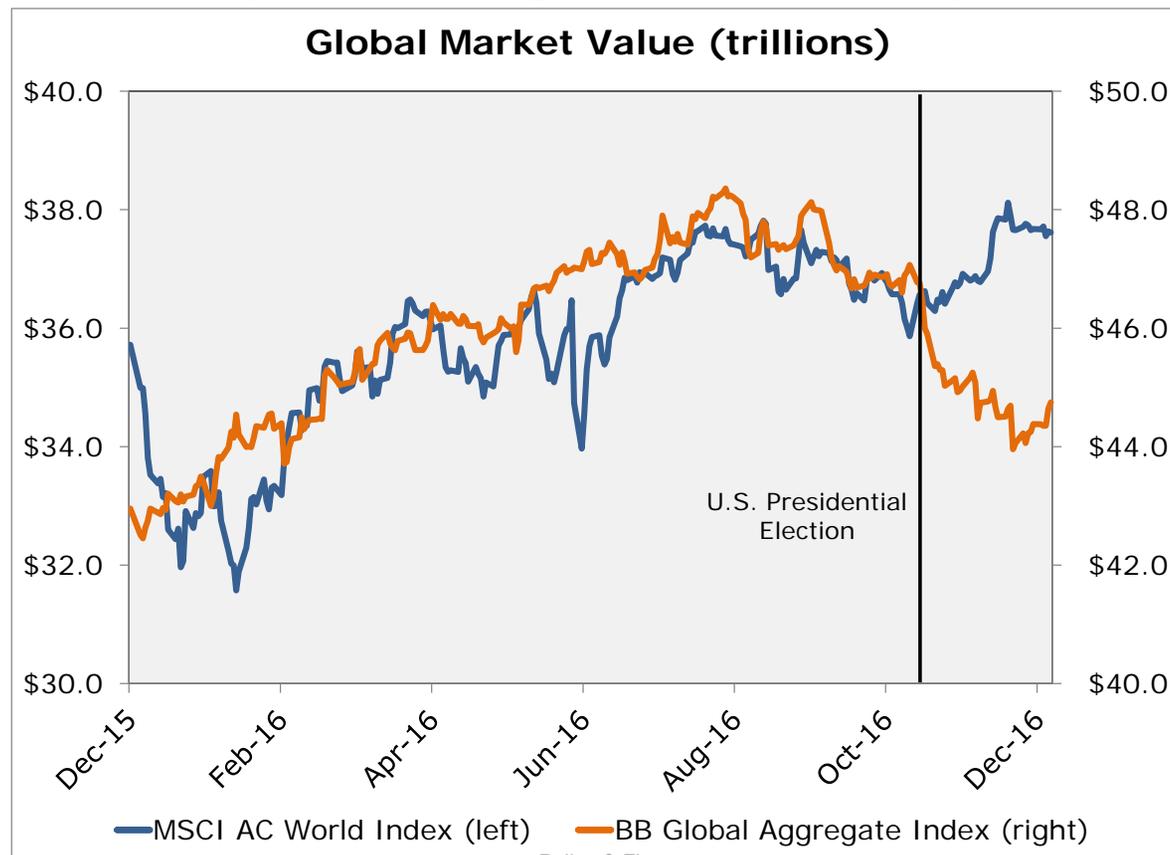
December 31, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
MSCI ACWI ex-US (\$g)	-1.2	5.0	5.0	-1.3	5.5	1.4
MSCI EAFE (\$g)	-0.7	1.5	1.5	-1.2	7.0	1.2
MSCI Emerging Markets (\$g)	-4.1	11.6	11.6	-2.2	1.6	2.2
MSCI Frontier Markets (\$g)	0.5	3.2	3.2	-1.7	5.6	0.0
MSCI ACWI ex-US Growth (\$g)	-5.7	0.5	0.5	-0.9	5.7	1.9
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

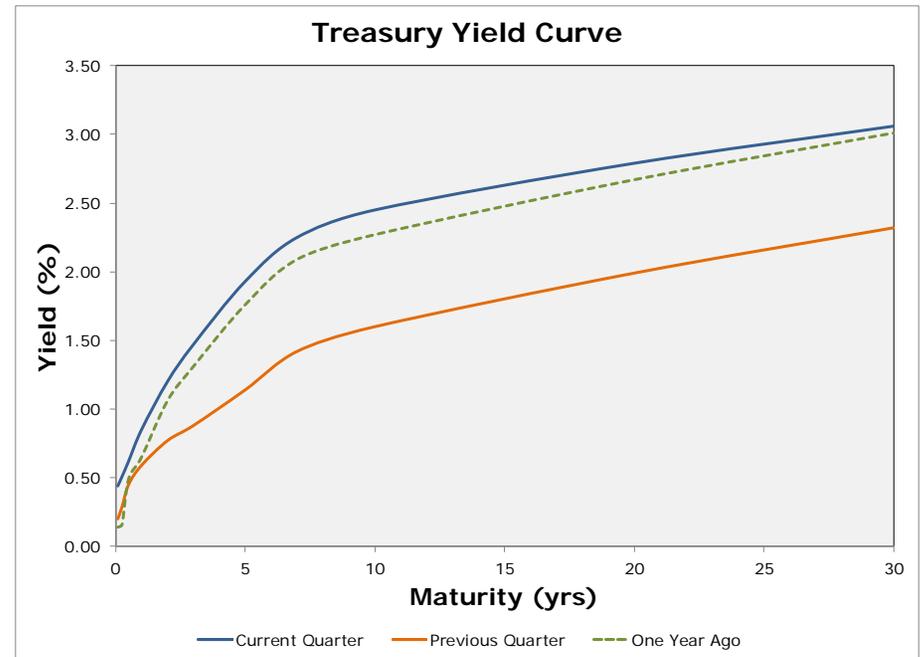
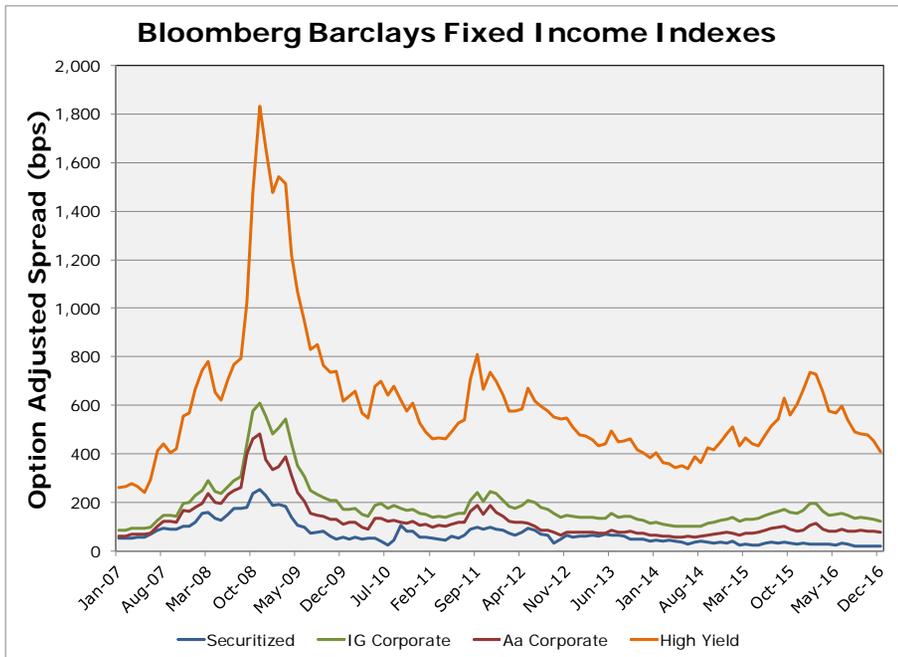
- Major shift in asset values since November 8th
 - Global equity up \$1 trillion
 - Global investment grade fixed income down \$2 trillion
- Various sources have reported strong fund flows into equities



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



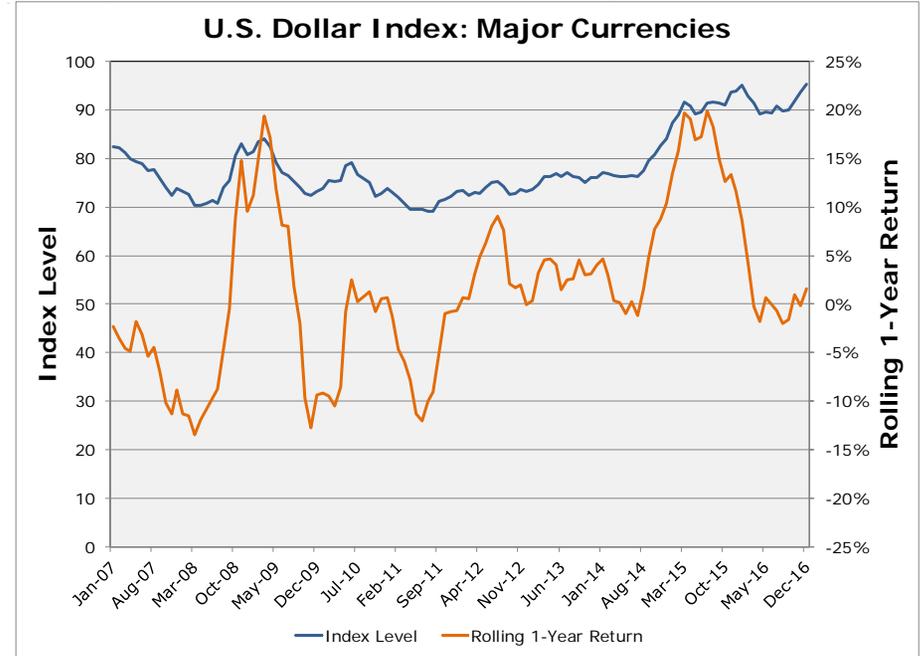
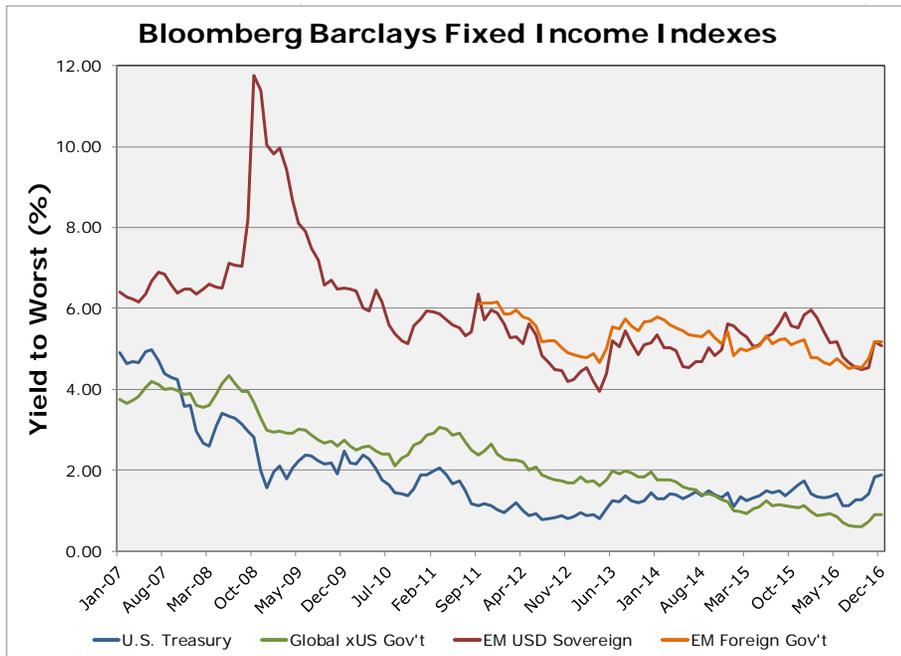
Data sources: Wilshire Compass, Bloomberg Barclays, U.S. Treasury

Non-U.S. Fixed Income Market



December 31, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
<i>Developed Markets</i>						
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
<i>Emerging Mrkts (Hard Currency)</i>						
Bloomberg Barclays EM USD Aggregate	-2.6	9.9	9.9	5.3	5.7	6.7
<i>Emerging Mrkts (Foreign Currency)</i>						
Bloomberg Barclays EM Local Currency Govt	-7.5	5.9	5.9	-2.4	0.5	n.a.
Bloomberg Barclays EM Local Currency Govt *	-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

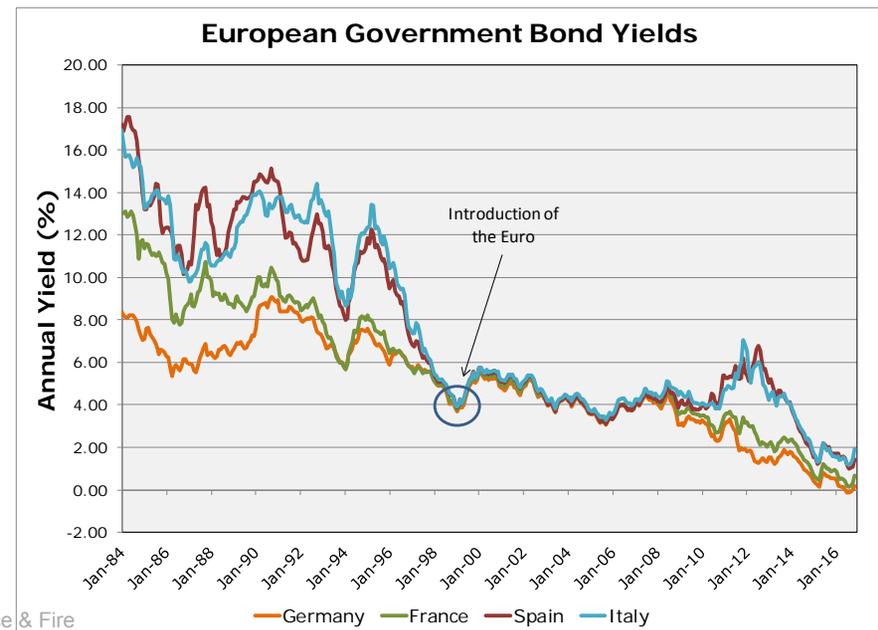
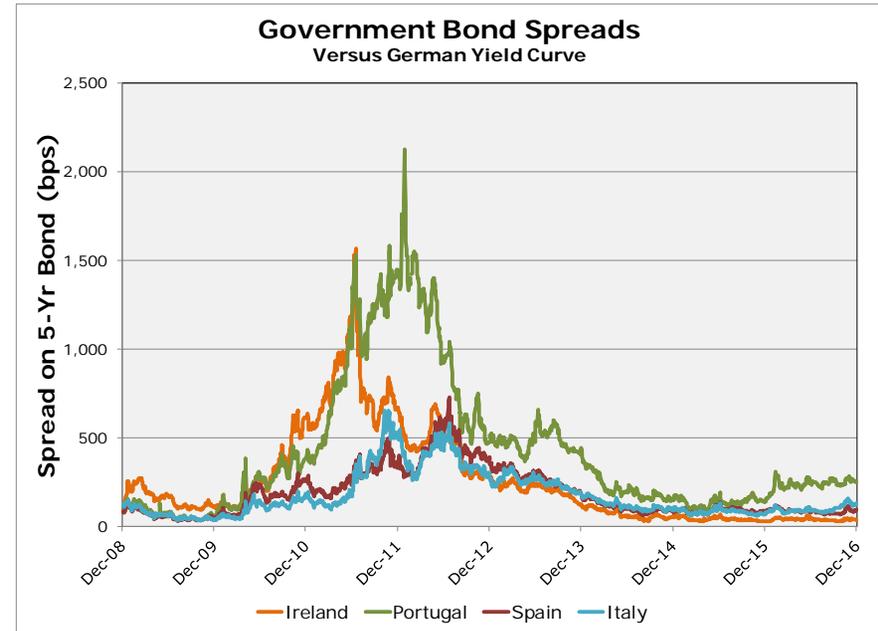
* Returns are reported in terms of local market investors, which removes currency effects.



Data sources: Wilshire Compass, Bloomberg Barclays

European Debt

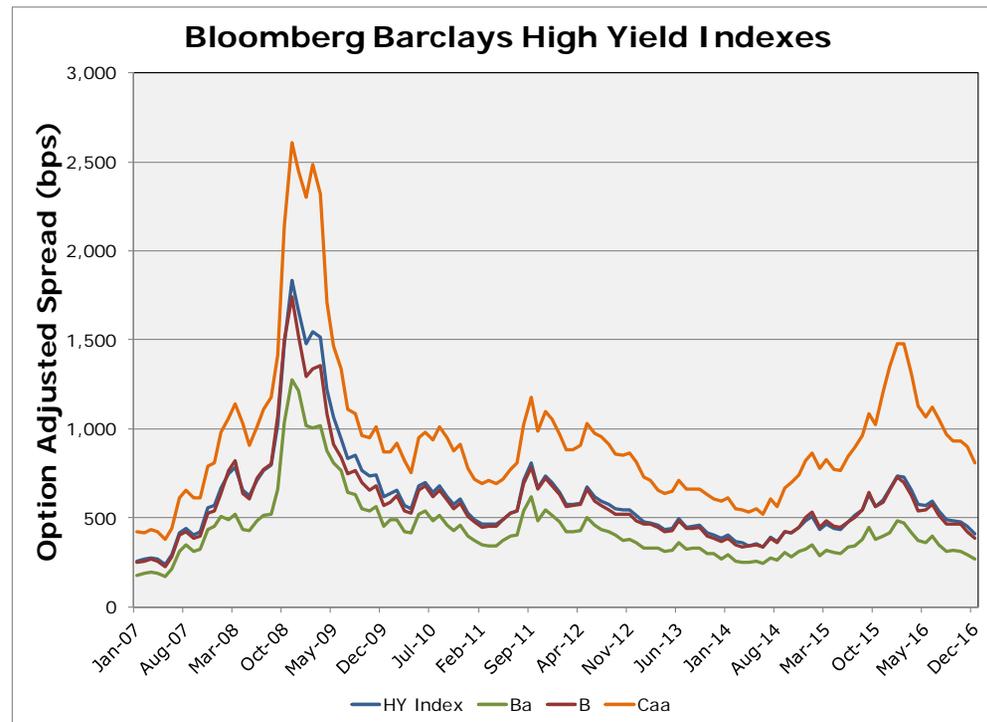
- Spreads on Portugal's government debt have risen as the country faces the possibility of a downgrade, which would disqualify them from the European Central Bank's bond purchase program
- Yields on government bonds have edged higher with German yields back above zero



High Yield Bond Market

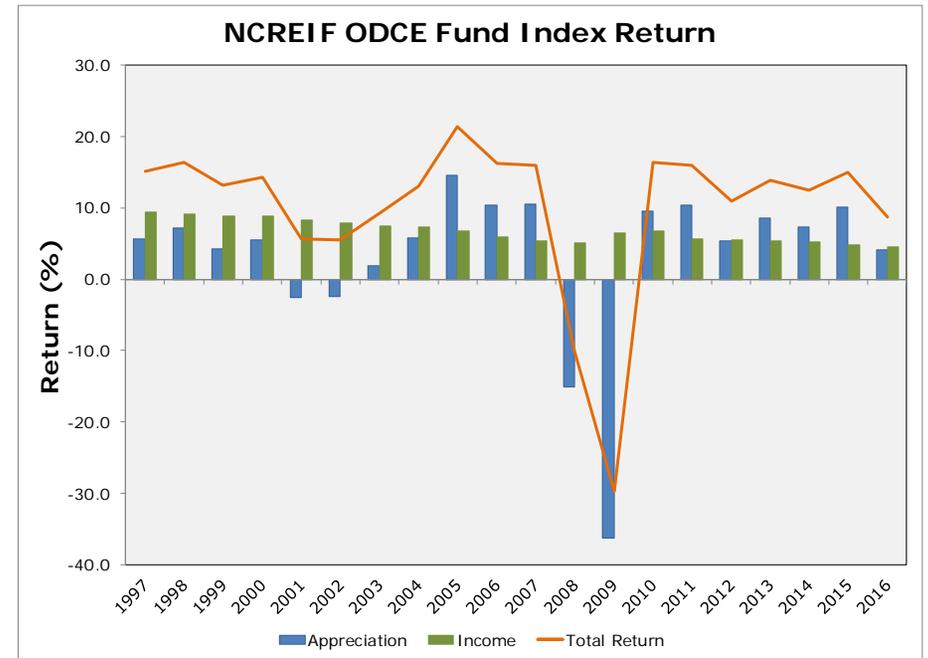
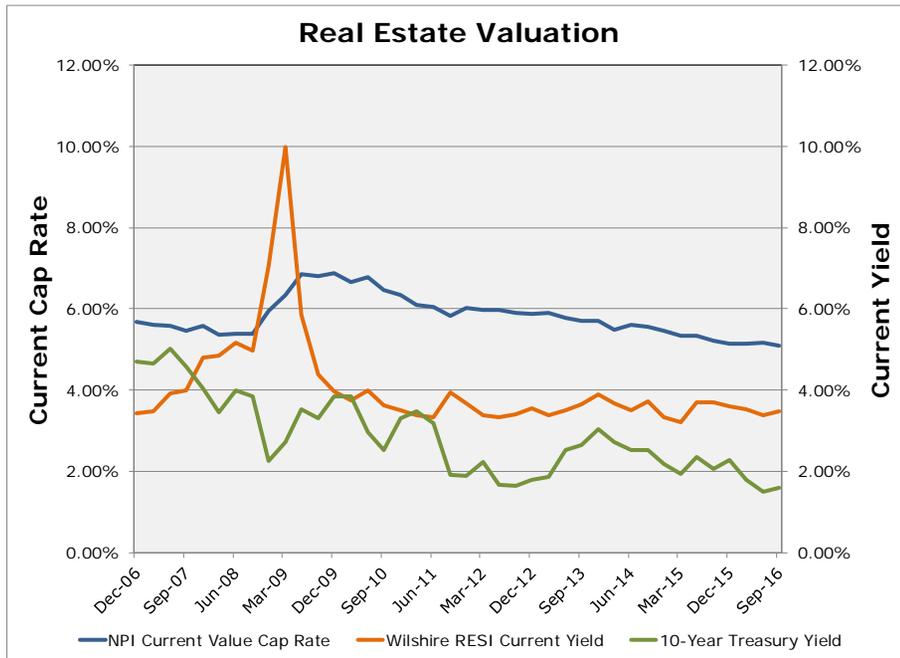


December 31, 2016	Weight	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Bloomberg Barclays High Yield Idx	100%	1.8	17.1	17.1	4.7	7.4	7.4
Quality Distribution							
Ba U.S. High Yield	45.4%	0.4	12.8	12.8	5.6	7.2	7.8
B U.S. High Yield	38.1%	2.0	15.8	15.8	3.8	6.8	6.2
Caa U.S. High Yield	15.6%	4.7	31.5	31.5	4.5	9.0	6.7
Ca 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

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

Asset Class Performance



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.

Appendix: Private Markets Update

Private Equity – Fundraising & Investment Activity



Global Quarterly Private Equity Fundraising (2010 - 2016)



Global Private Equity-Backed Buyout Activity (2007 - 2016)



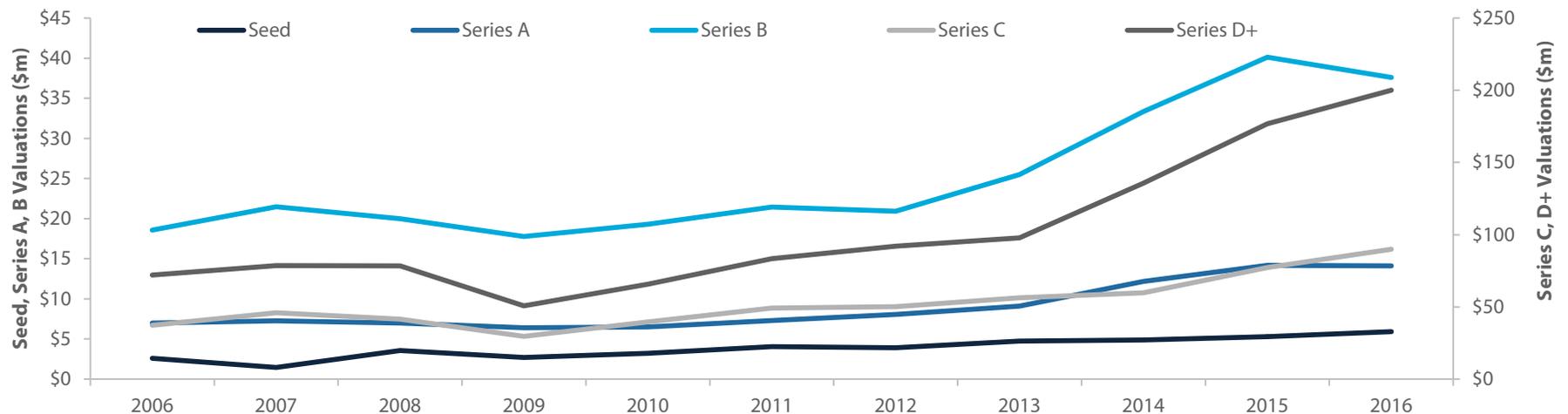
Private Equity – Pricing & Valuations



Global LBO Multiples (2006 – 2016)



U.S. Venture Capital Median Pre-Money Valuations (2006 – August 2016)

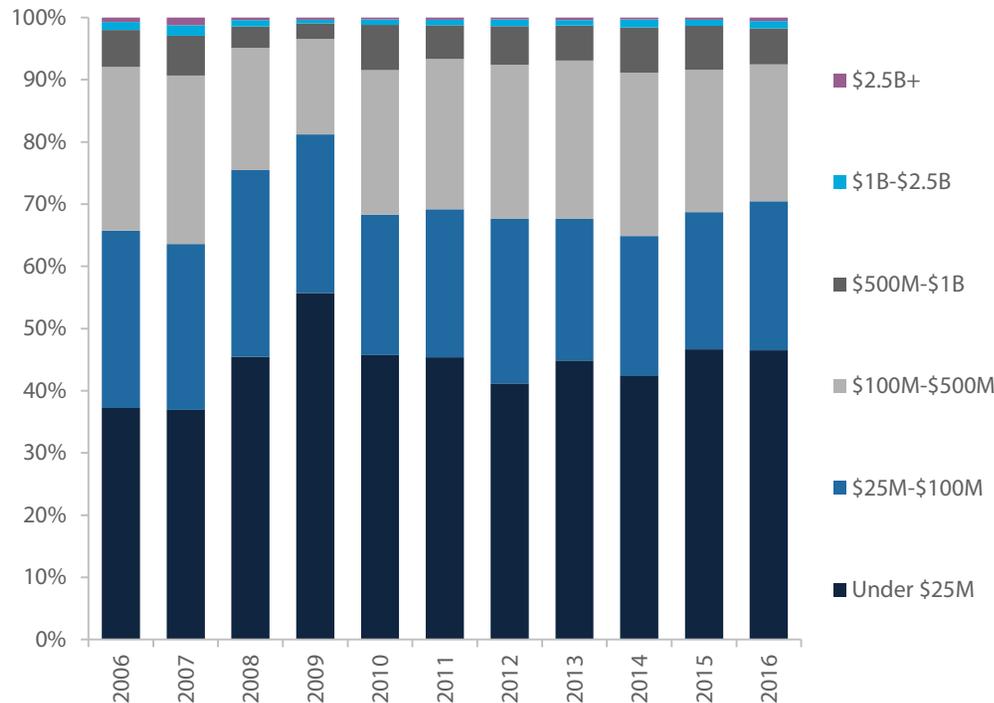


Sources: S&P LCD, through December 31, 2016; PitchBook, as of August 1, 2016.

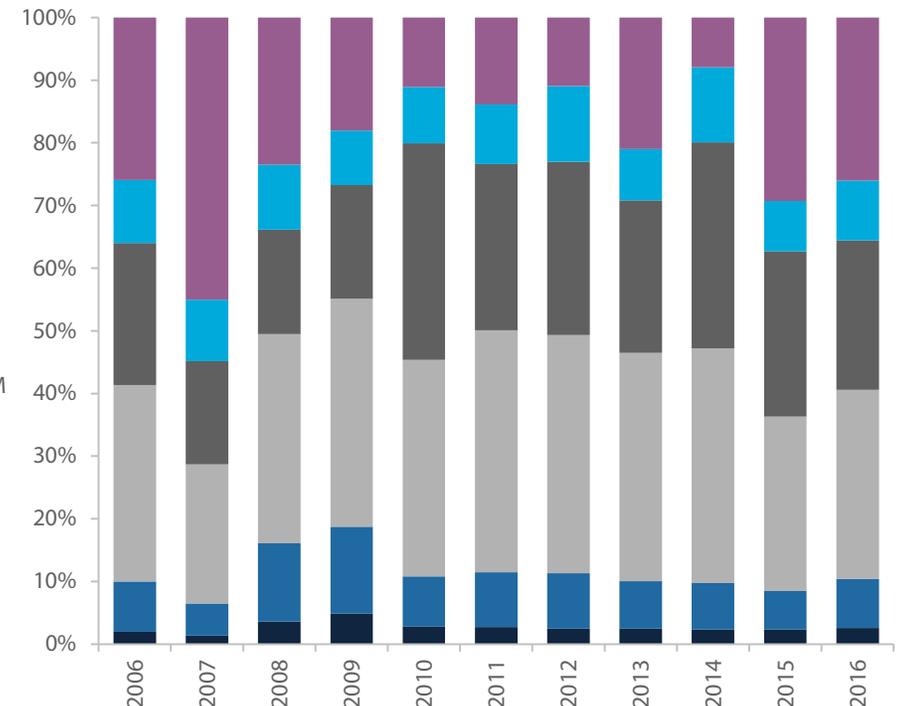
Private Equity – U.S. Investment Activity by Deal Size



Percentage of Deal Volume (count) by Deal Size



Percentage of Deal Volume (dollars) by Deal Size

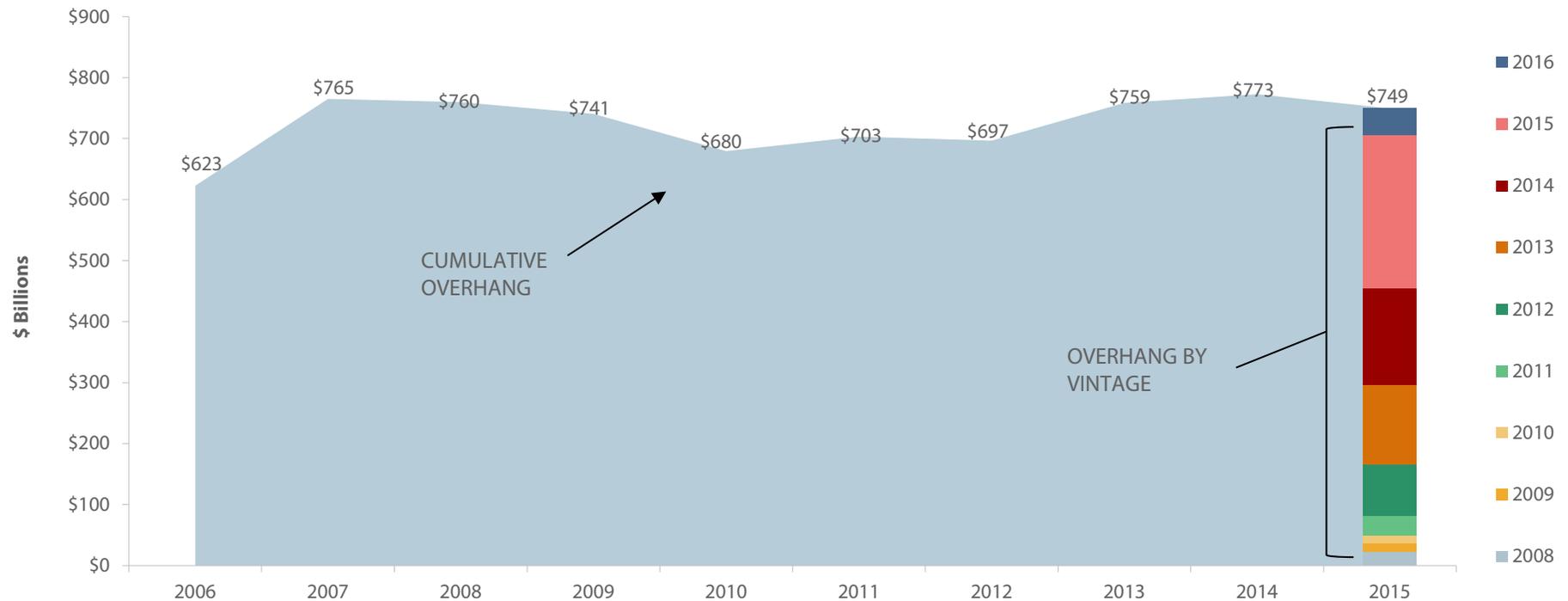


- Smaller deals continue to dominant deal activity by count
- Deals between \$100 million-\$1 billion make up the majority of deal volume by size in 2016

Private Equity – Capital Overhang



Private Equity Overhang by Vintage Year

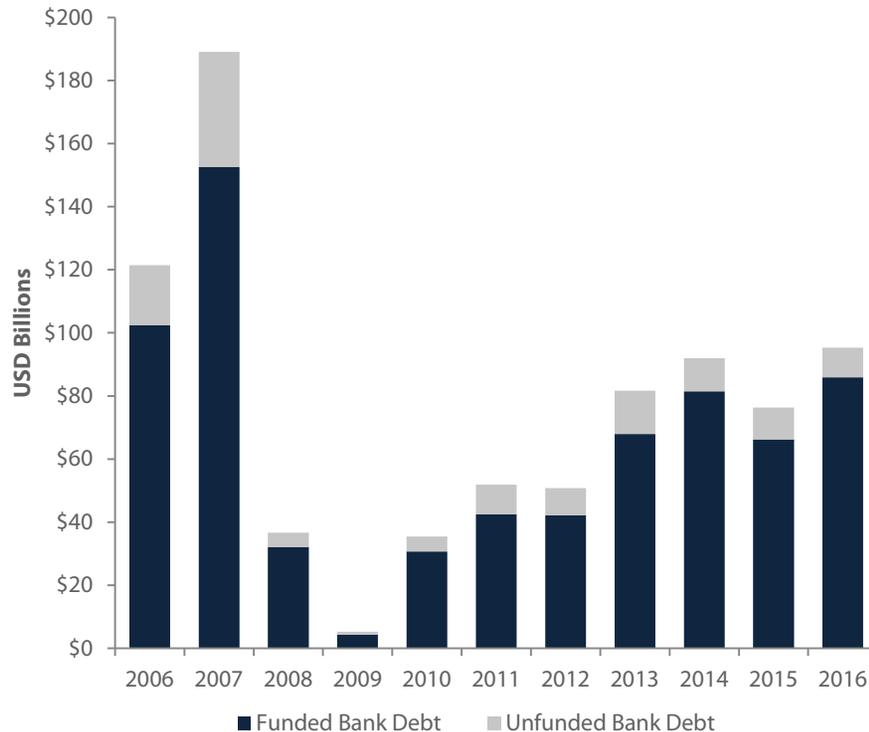


- As of December 31, 2015, aggregate private equity dry powder across North America and Europe remains elevated at \$749 billion, a 3% decline from the end of 2014
- While the overhang slightly decreased across 2007 to 2010, the overhang has increased back to 2007-2008 peak levels

Private Equity – U.S. Debt Markets



**Total U.S. Leveraged Buyout Loan Volume (\$bn)
(2006 – 2016)**



**Percentage of Debt Used in Buyouts
(2006 – 2016)**

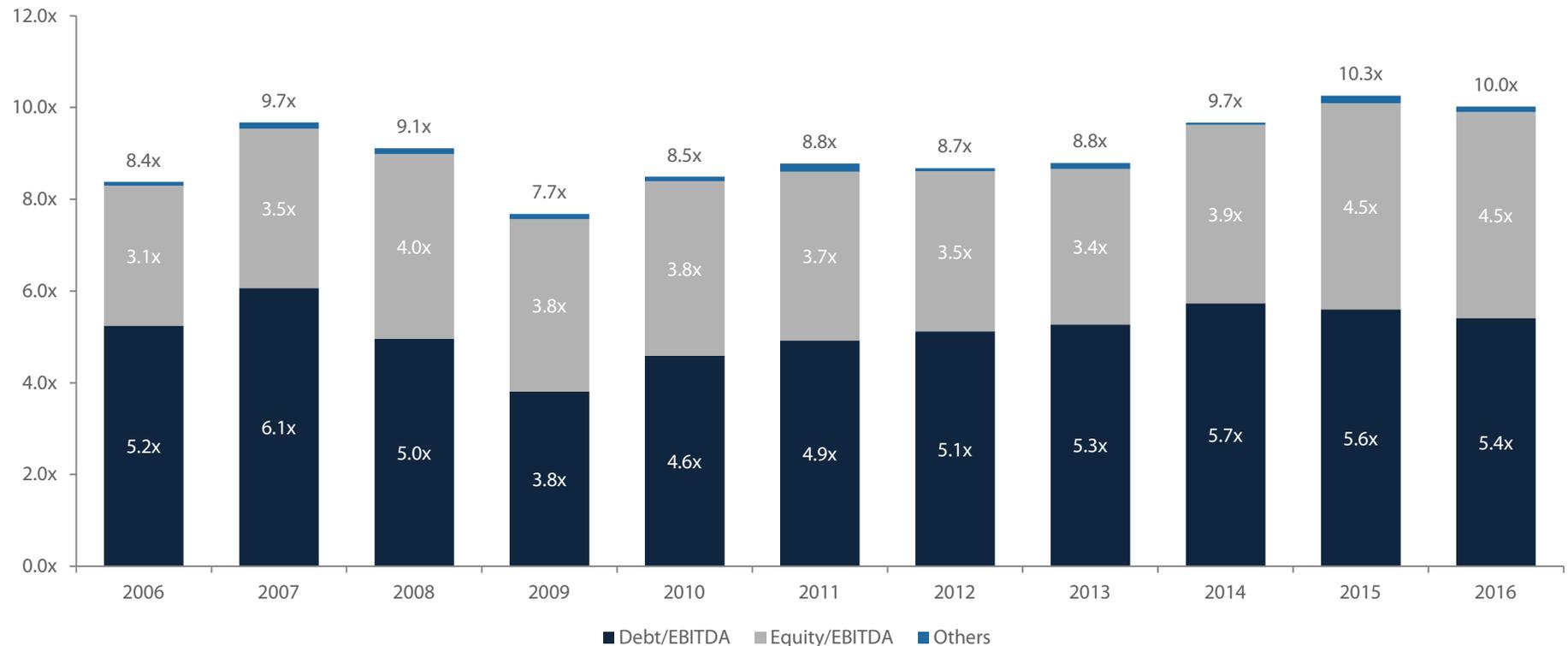


- The amount of capital available for leverage has decreased considerably since its peak volume in 2007; loan volume appears consistent in the last few years
- Historically, middle-market transactions apply less leverage than large-cap deals

Private Equity – U.S. LBO Purchase Price Multiples



Purchase Price Multiples of U.S. LBO Transactions (2006 – 2016)



- As debt has become more readily available, purchase price multiples have increased and remained high from the low point in 2009
- Pricing in 2016 decreased slightly by 0.3x from the recent high in 2015

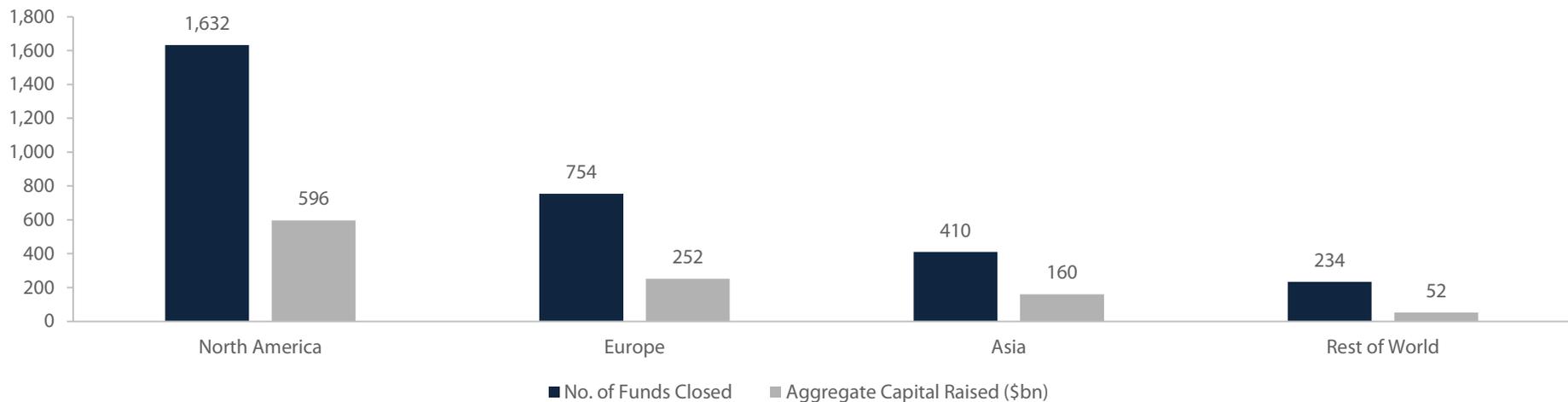
Private Real Estate – Fundraising Activity



Global Quarterly Closed-End Private Real Estate Fundraising (2010 – 2016)



Closed-End Private Real Estate Fundraising by Primary Geographic Focus (2006 - 2016)



Source: Prequin, as of December 31, 2016.

Appendix

Cumulative Skill Graph

- Graphical representation of the statistical significance of excess returns over a specified benchmark for the cumulative time period being analyzed.
- Positive cumulative excess performance is shown when the dark blue line is above the “0.00” line measured on the left Y axis.
- The light blue lines that form a channel, or the shape of a trumpet horn, represent the boundaries of the statistical significance test.
- The width of the channel is calculated based on the amount of “Excess Risk” that the manager takes over the benchmark.

