



California Public Employees' Retirement System
Performance Review – December 31, 2016

December 2016 Asset Class Assumptions



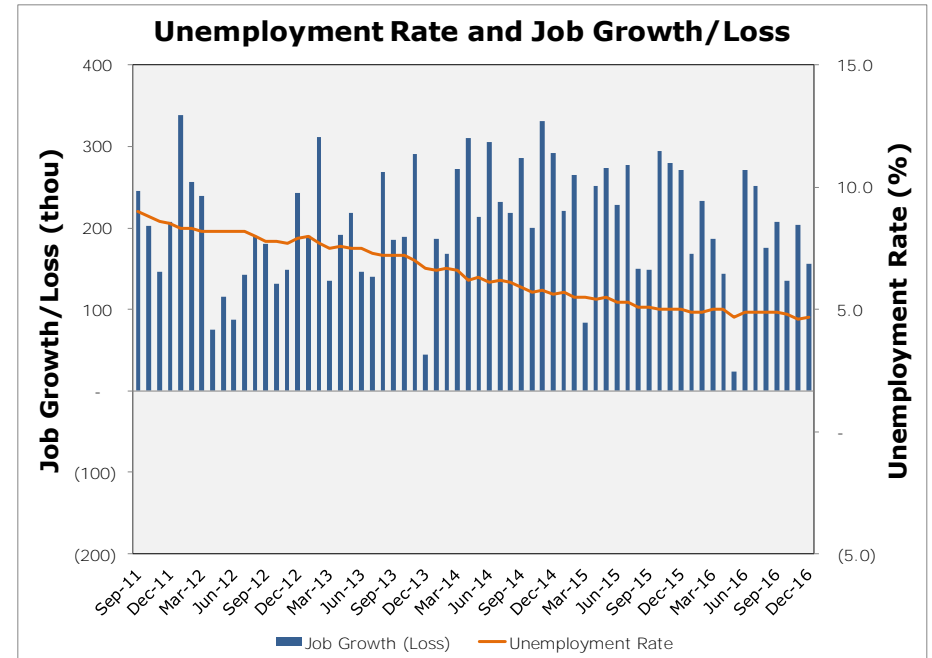
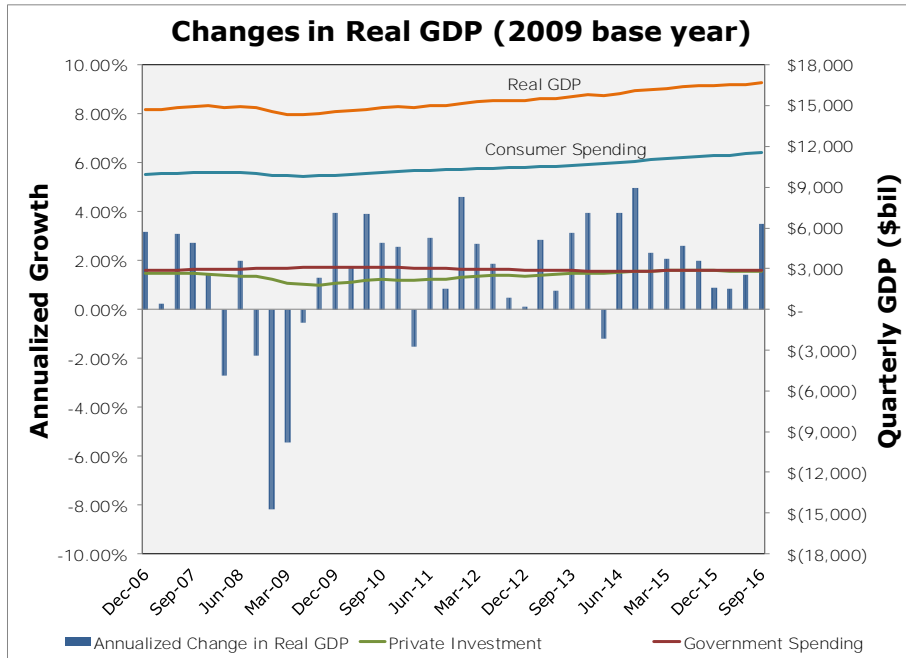
	Equity						Fixed Income						Real Assets					US CPI
	US Stock	Dev	Emg Stock	Global ex-US Stock	Global Stock	Private Markets	Cash	Core Bond	LT		High Yield	ex-US Bond (Hdg)	Real Estate			Cmdty	Real Assets	
		ex-US Stock							Core Bond	Core Bond			TIPS	US RES	Global RES			
Expected Compound Return (%)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

Economic Review



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.

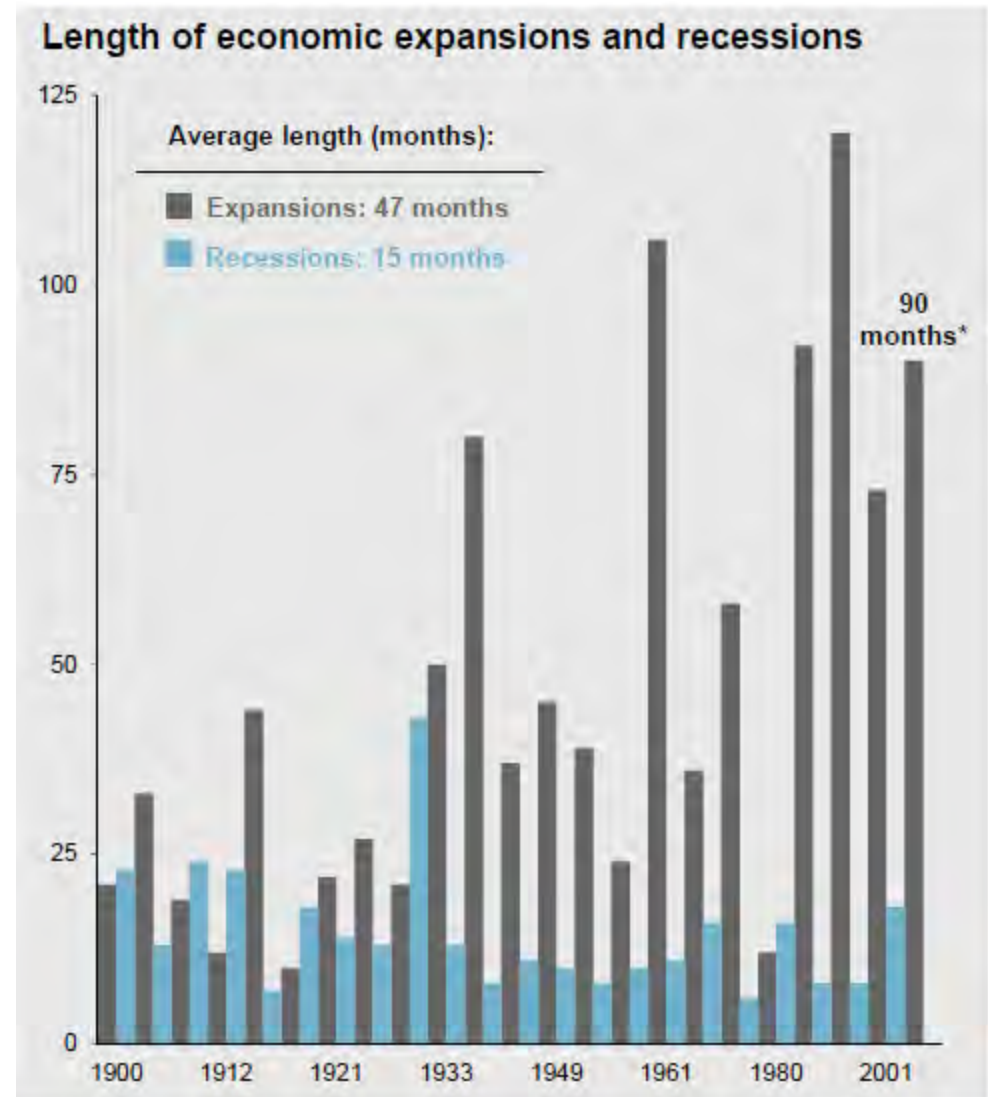


Data sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Bank of St. Louis, Barclays Capital



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

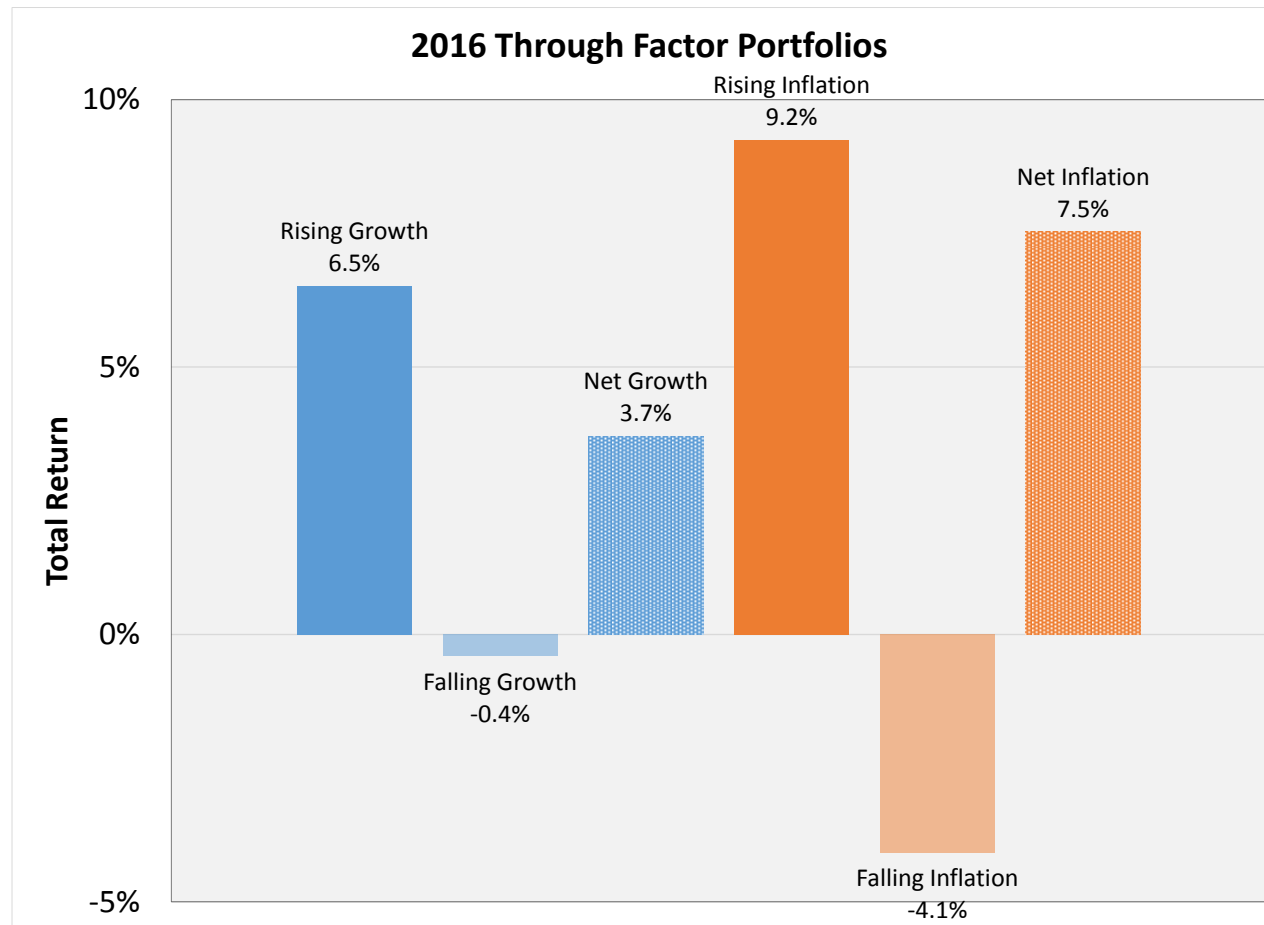


*Chart assumes that growth during Q4 2016 will be positive

Wilshire's Economic Factor Portfolios

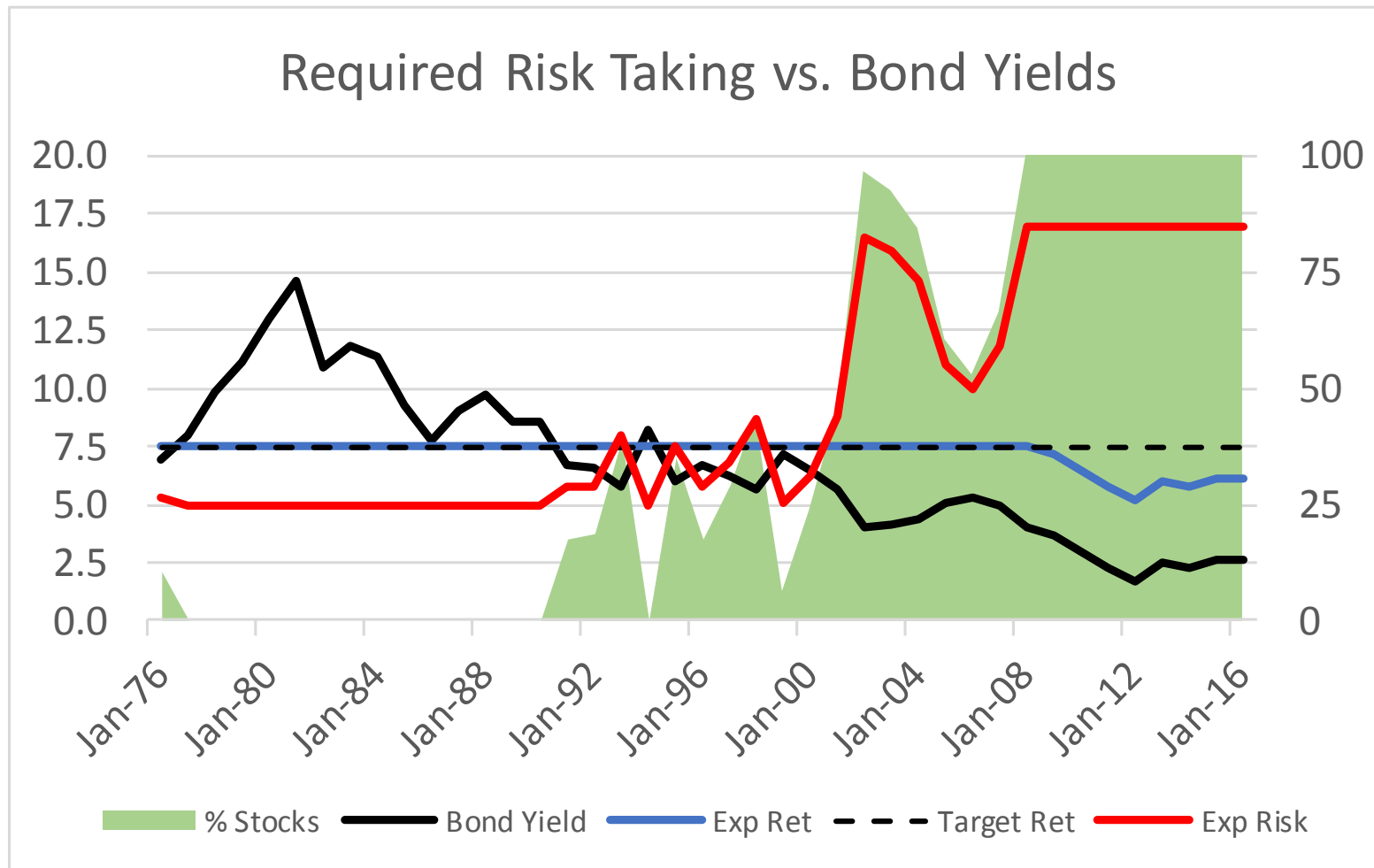


- Helpful to examine market behavior through a broad lens of economic factors
- Market performance during 2016 clearly shows the importance of asset class exposure to inflation expectations



Source: U. S. Department of the Treasury

Challenges of Low/Declining Rate Environment

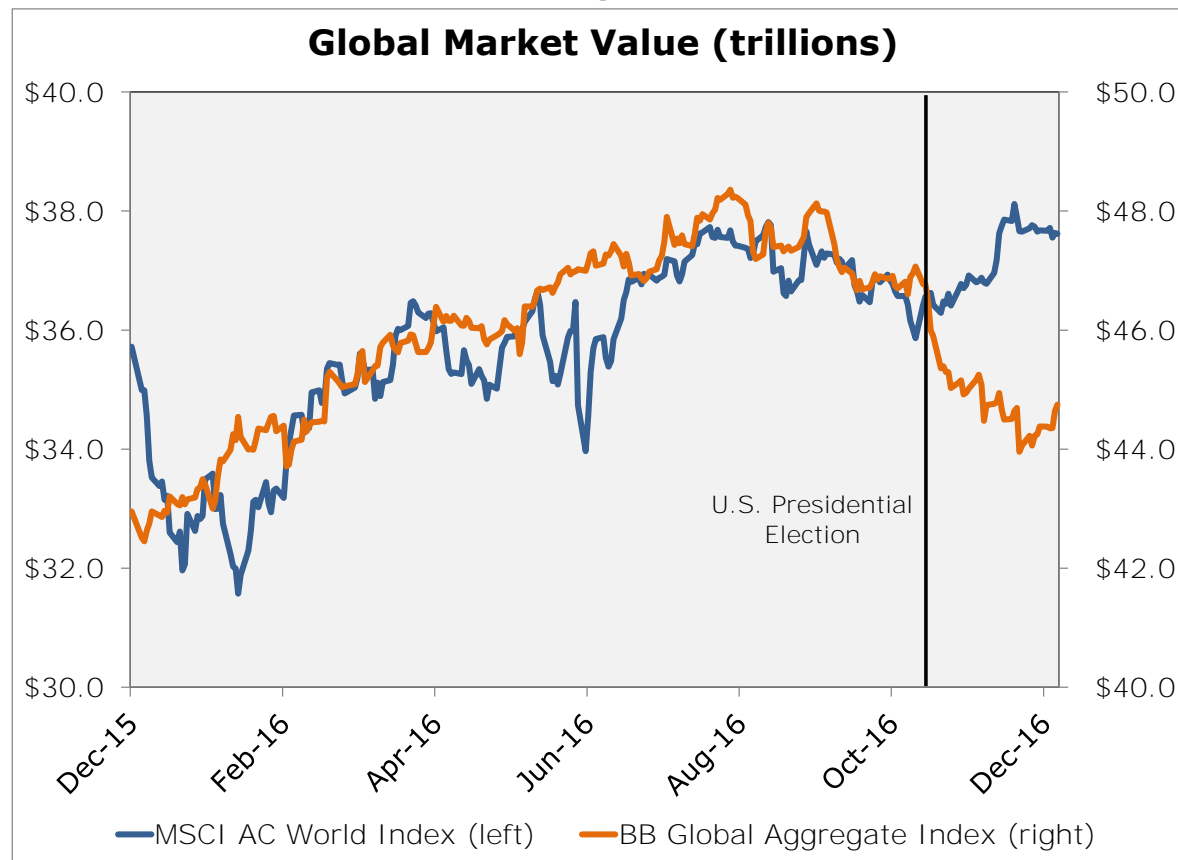


Source: Wilshire Compass, Bloomberg-Barclays

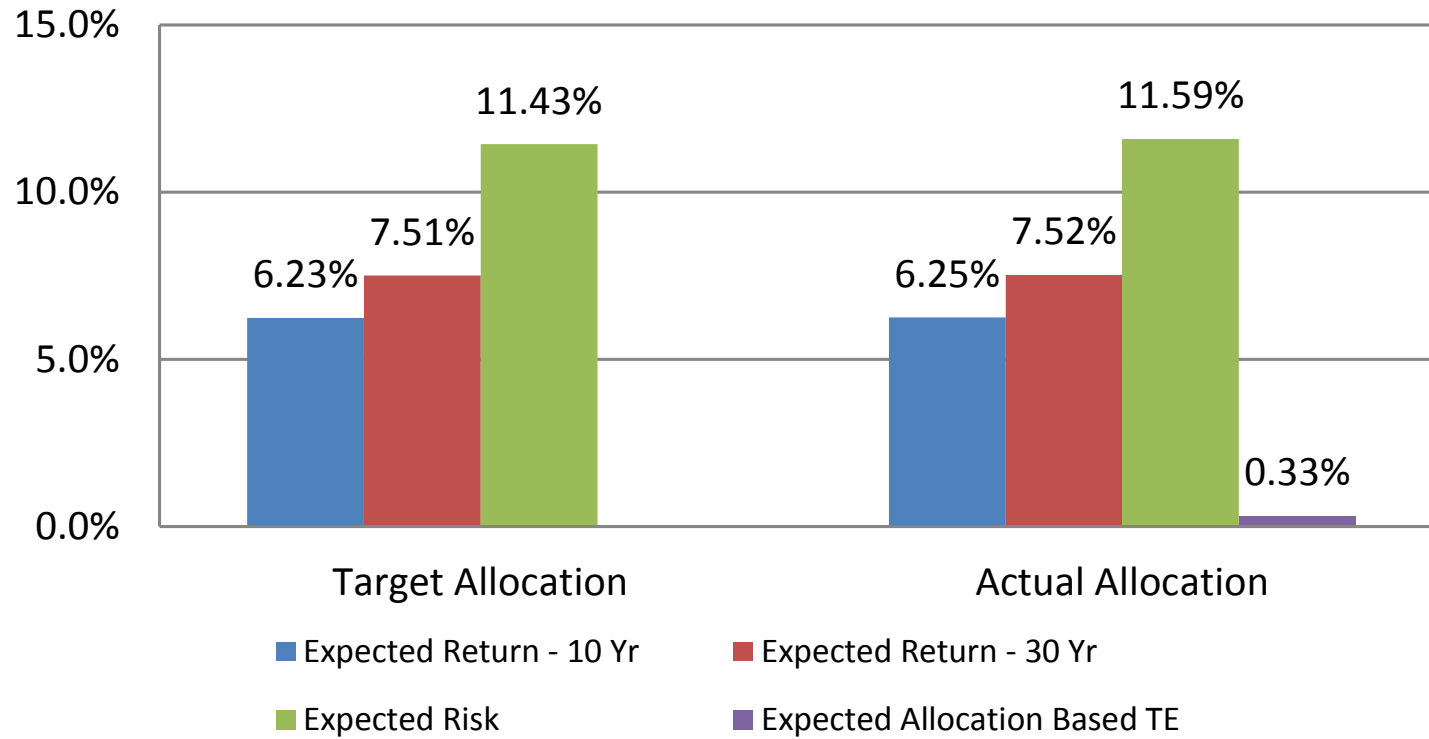
Global Stocks & Bonds



- 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



CalPERS Expected Return and Risk Estimates

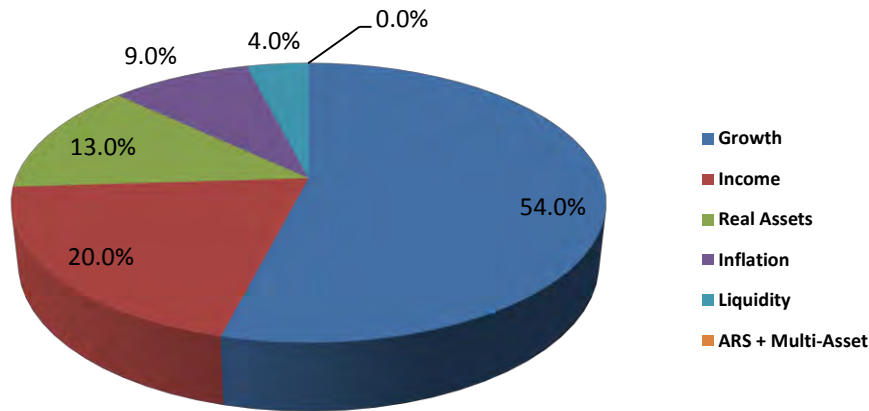


Forecasts using Wilshire's 2017 Asset Class Assumptions.

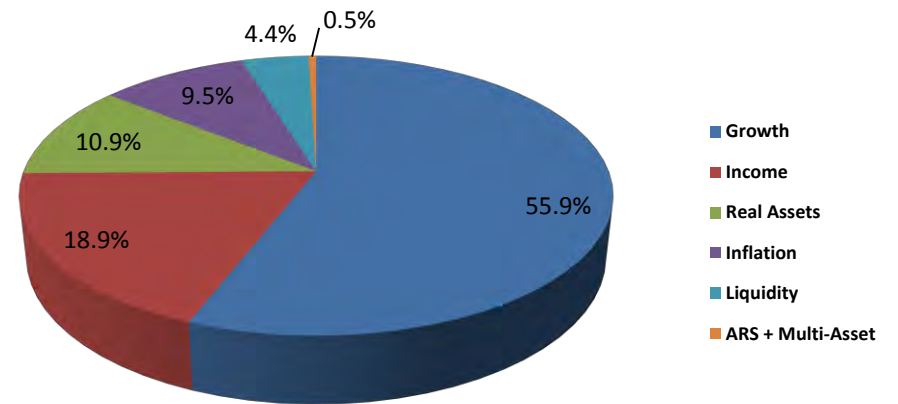


Asset and Risk Allocation

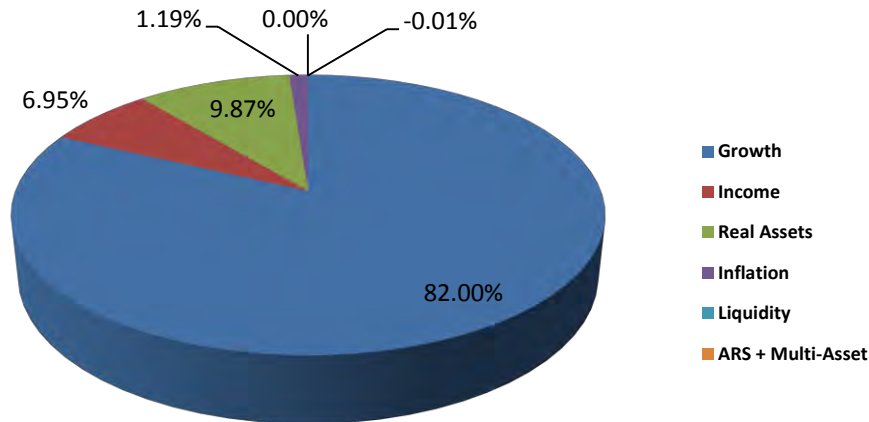
Target Asset Allocation



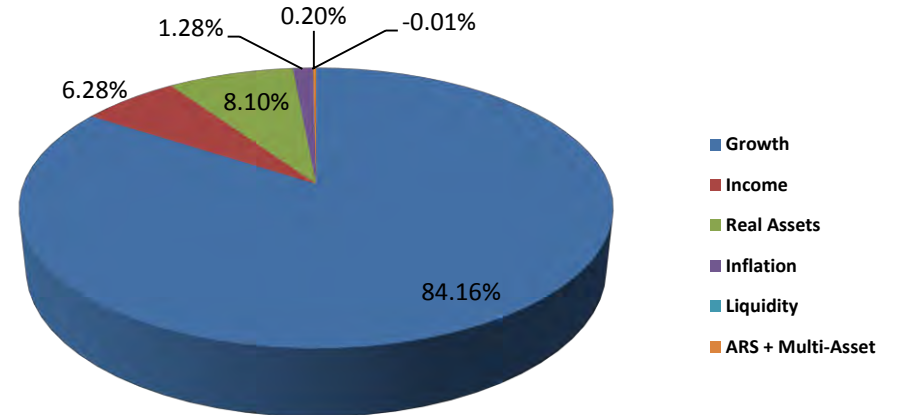
Actual Asset Allocation



Contribution to Total Risk - Target Allocation



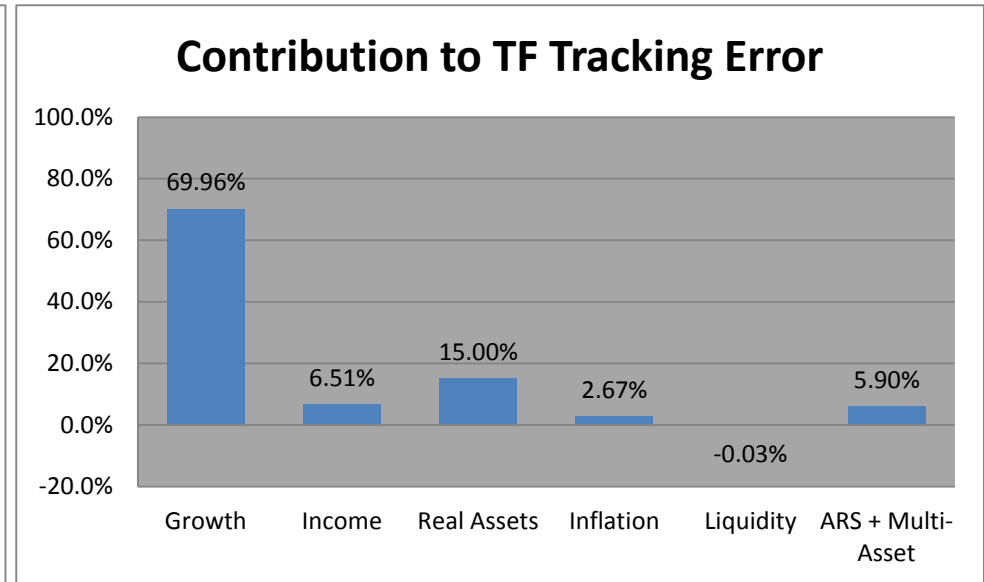
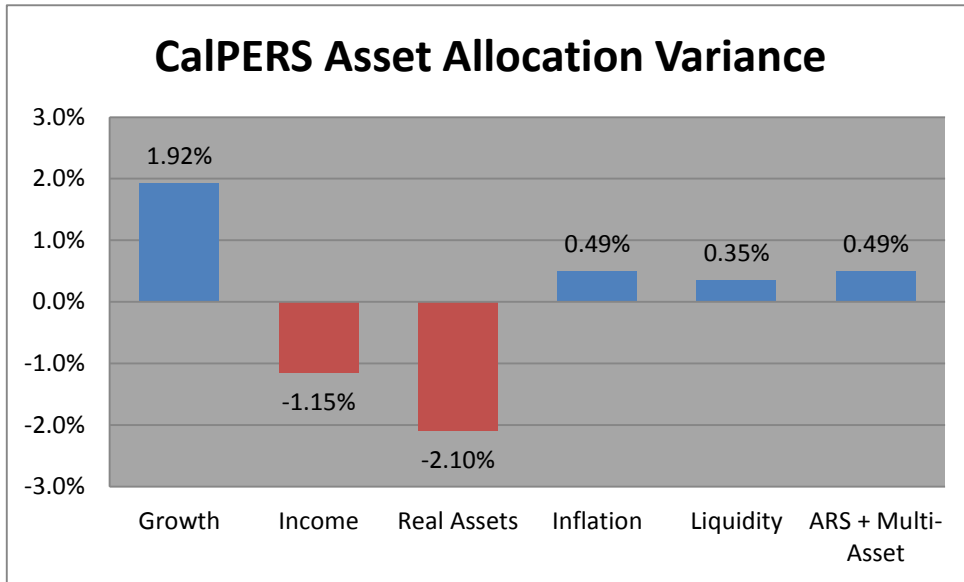
Contribution to Total Risk - Actual Allocation



Forecasts using Wilshire's 2017 Asset Class Assumptions.



Drivers of Expected Excess Risk



- This excess risk forecast is based on asset allocation variance only.
- Other sources of risk (structural within asset classes, manager/program specific source of tracking error, covariance) are not considered here.



Total Fund – Performance

	Market Value	5-Year Ratios							
		Qtr	1-Year	3-Year	5-Year	10-Year	VaR	Sharpe	Info
TOTAL FUND	\$302.8 bil	0.3%	7.7%	4.6%	8.6%	4.4%	\$36.2 bil	1.4	0.0
<i>Total Fund Policy Benchmark</i>		0.2%	8.5%	4.8%	8.6%	5.6%		1.4	0.0
<i>Actuarial Rate</i>		1.8%	7.5%	7.5%	7.5%	7.6%			
GROWTH	169.3	2.2%	9.3%	4.7%	10.6%	4.9%	\$34.9 bil	1.1	-0.4
<i>Growth Policy Benchmark</i>		2.3%	10.5%	5.0%	11.6%	5.9%		1.2	0.0
PUBLIC EQUITY	143.9	1.9%	9.8%	3.9%	10.6%	4.2%	\$29.0 bil	0.9	0.9
<i>Public Equity Policy Benchmark</i>		1.6%	9.0%	3.7%	10.3%	4.5%		0.9	0.0
PRIVATE EQUITY	25.4	4.0%	6.6%	8.8%	11.5%	9.8%	\$8.3 bil	3.1	-0.4
<i>Private Equity Policy Benchmark</i>		6.3%	16.7%	10.2%	16.4%	12.8%		1.4	0.0
INCOME	57.1	-5.3%	5.4%	4.5%	3.4%	6.1%	\$6.1 bil	0.7	1.5
<i>Income Policy Benchmark</i>		-5.4%	4.2%	4.0%	2.4%	5.4%		0.4	0.0
REAL ASSETS	33.0	1.9%	5.8%	10.8%	11.3%	-0.8%	\$4.8 bil	1.6	0.1
<i>Real Assets Policy Benchmark</i>		1.7%	8.3%	10.6%	10.7%	7.4%		2.6	0.0
INFLATION	28.7	-1.6%	6.3%	-3.7%	-2.2%	--%	\$2.0 bil	-0.3	0.2
<i>Inflation Policy Benchmark</i>		-1.6%	6.3%	-4.5%	-2.5%	--%		-0.4	0.0
LIQUIDITY	13.2	0.1%	0.5%	0.8%	0.4%	1.5%	\$0.1 bil	0.3	-0.6
<i>Liquidity Policy Benchmark</i>		0.1%	0.3%	1.2%	0.7%	1.7%		0.4	0.0
ABSOLUTE RETURN STRATEGIES	0.3	-3.5%	-6.5%	0.0%	2.4%	1.8%		0.6	-0.7
<i>Absolute Return Strategies Policy Benchmark</i>		1.3%	5.8%	5.4%	5.3%	6.5%		25.7	0.0
MULTI-ASSET CLASS COMPOSITE	1.2	0.7%	2.9%	4.5%	--%	--%		N/A	N/A
<i>Absolute 7.5%</i>		1.8%	7.5%	7.5%	--%	--%		N/A	N/A
CURRENCY + ASSET ALLOCATION TRANSITION	0.0	--%	--%	--%	--%	--%		N/A	N/A
TERMINATED AGENCY POOL	0.1	-4.6%	5.0%	5.2%	--%	--%		N/A	N/A
TOTAL FUND PLUS TAP	302.9	0.3%	7.7%	4.6%	8.6%	4.4%		N/A	N/A



Total Fund – Attribution (Quarter)

California Public Employees' Retirement System Total Fund Attribution - Quarter As of 12/31/2016

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	55.83	2.19	54.00	2.32	1.83	-0.12	0.00	0.00	-0.06	-0.06
Public Equity	47.37	1.87	46.00	1.61	1.37	0.25	-0.02	0.01	0.11	0.10
Private Equity	8.47	4.03	8.00	6.25	0.47	-2.23	0.02	-0.01	-0.18	-0.16
Income	19.87	-5.27	20.00	-5.43	-0.13	0.17	-0.01	0.00	0.03	0.02
Real Assets	10.86	1.88	13.00	1.69	-2.14	0.19	-0.03	0.00	0.02	-0.01
Inflation	7.90	-1.60	9.00	-1.62	-1.10	0.02	0.04	0.00	0.00	0.04
Absolute Return	0.50	-3.54	0.00	1.28	0.50	-4.82	0.01	-0.02	0.00	-0.02
Liquidity	5.04	0.15	4.00	0.09	1.04	0.06	0.00	0.00	0.00	0.00
Monthly Linked Return	100.00	0.19	100.00	0.22		-0.03	0.00	-0.03	0.00	-0.03
Trading/Hedging/Other		0.09		0.00		0.09				0.09
Total		0.28		0.22		0.06				0.06

Total Fund – Attribution (Calendar YTD)



**California Public Employees' Retirement System
Total Fund Attribution - Calendar Year-to-Date
As of 12/31/2016**

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	60.13	9.32	59.25	10.50	0.88	-1.19	-0.15	0.06	-0.65	-0.74
Public Equity	51.13	9.77	49.75	9.00	1.38	0.76	-0.12	0.01	0.36	0.26
Private Equity	9.01	6.61	9.50	16.66	-0.49	-10.05	-0.01	0.06	-1.06	-1.01
Income	20.02	5.36	20.00	4.17	0.02	1.19	-0.09	0.01	0.24	0.16
Real Assets	10.74	5.77	12.25	8.31	-1.51	-2.54	-0.03	0.02	-0.29	-0.30
Inflation	6.18	6.32	6.75	6.32	-0.57	0.00	0.02	-0.01	0.00	0.02
Absolute Return	0.54	-6.50	0.00	5.79	0.54	-12.29	-0.01	-0.07	0.00	-0.08
Liquidity	2.39	0.55	1.75	0.33	0.64	0.22	-0.02	0.00	0.00	-0.01
Monthly Linked Return	100.00	7.54	100.00	8.49		-0.95	-0.27	0.01	-0.70	-0.95
Trading/Hedging/Other		0.13		0.00		0.13				0.13
Total		7.67		8.49		-0.82				-0.82

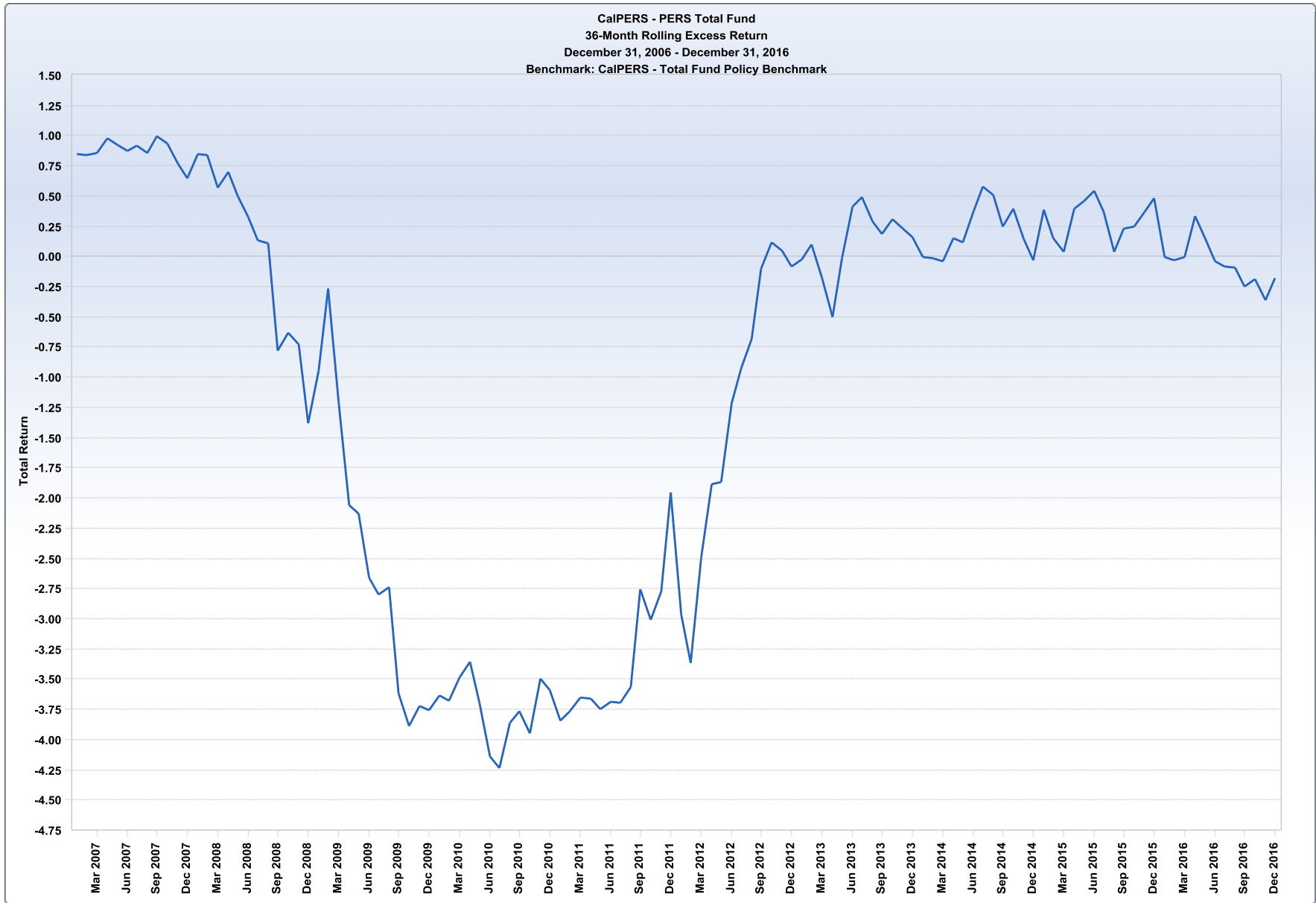


Total Fund – Attribution (Fiscal YTD)

California Public Employees' Retirement System Total Fund Attribution - Fiscal Year-to-Date As of 12/31/2016

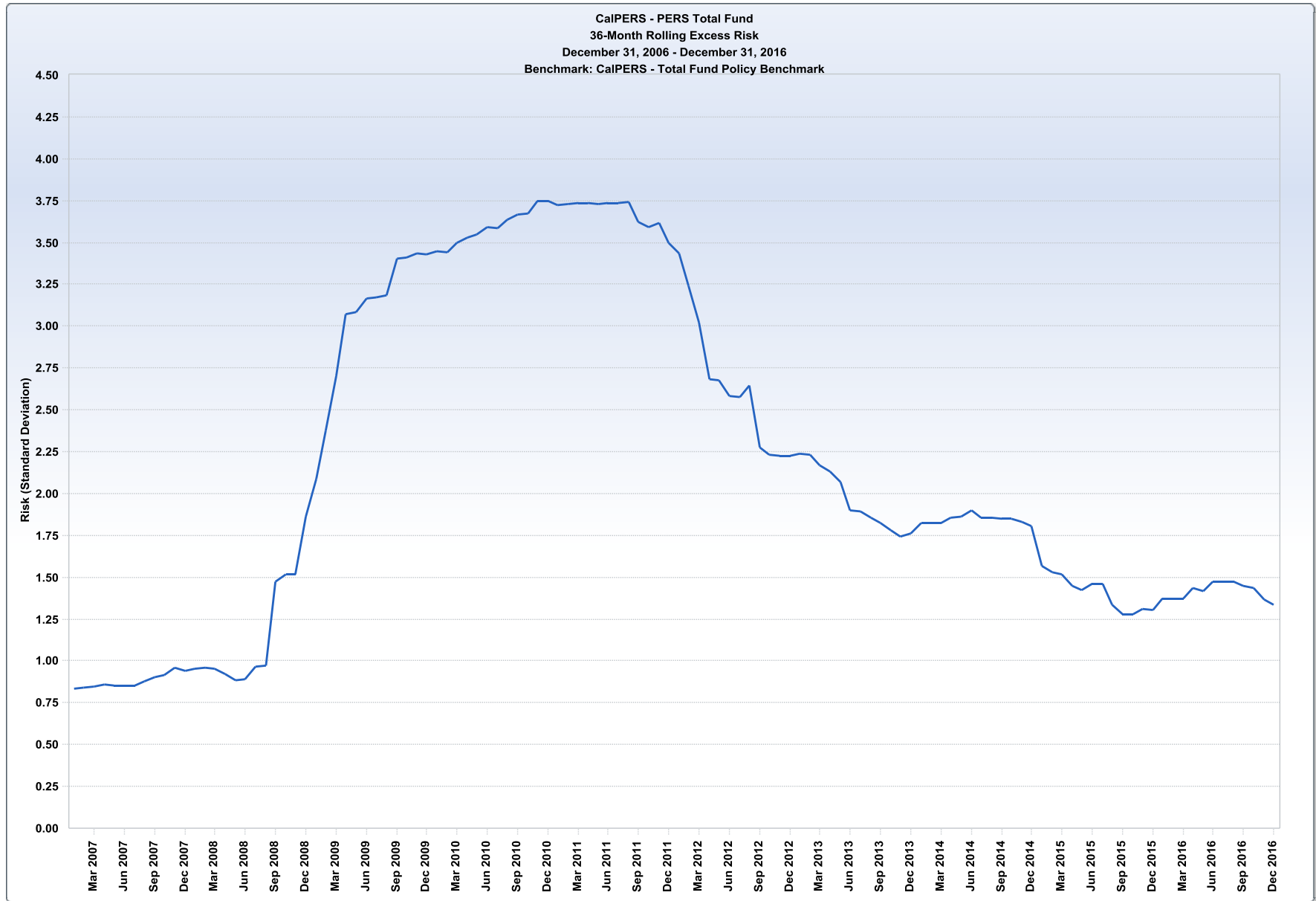
Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	58.22	7.44	57.50	7.70	0.72	-0.26	0.04	0.00	-0.18	-0.15
Public Equity	49.63	7.67	48.50	7.53	1.13	0.14	0.00	0.00	0.06	0.06
Private Equity	8.58	5.92	9.00	8.78	-0.42	-2.86	0.04	-0.01	-0.24	-0.21
Income	20.02	-3.95	20.00	-4.58	0.02	0.63	-0.02	0.00	0.13	0.11
Real Assets	10.72	3.49	12.50	3.58	-1.78	-0.08	-0.01	0.00	-0.01	-0.02
Inflation	6.92	-1.70	7.50	-1.07	-0.58	-0.64	0.03	0.00	-0.04	0.00
Absolute Return	0.51	-7.33	0.00	2.58	0.51	-9.91	-0.01	-0.05	0.00	-0.06
Liquidity	3.62	0.30	2.50	0.18	1.12	0.12	-0.03	0.00	0.00	-0.02
Monthly Linked Return	100.00	3.74	100.00	3.87		-0.14	0.00	-0.05	-0.09	-0.14
Trading/Hedging/Other		0.11		0.00		0.11				0.11
Total		3.85		3.87		-0.02				-0.02

Total Fund – Rolling Excess Returns





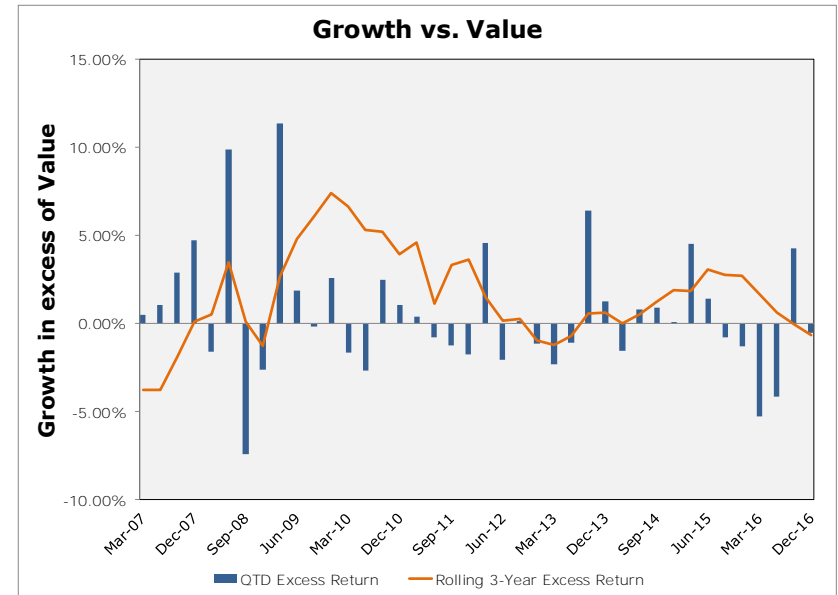
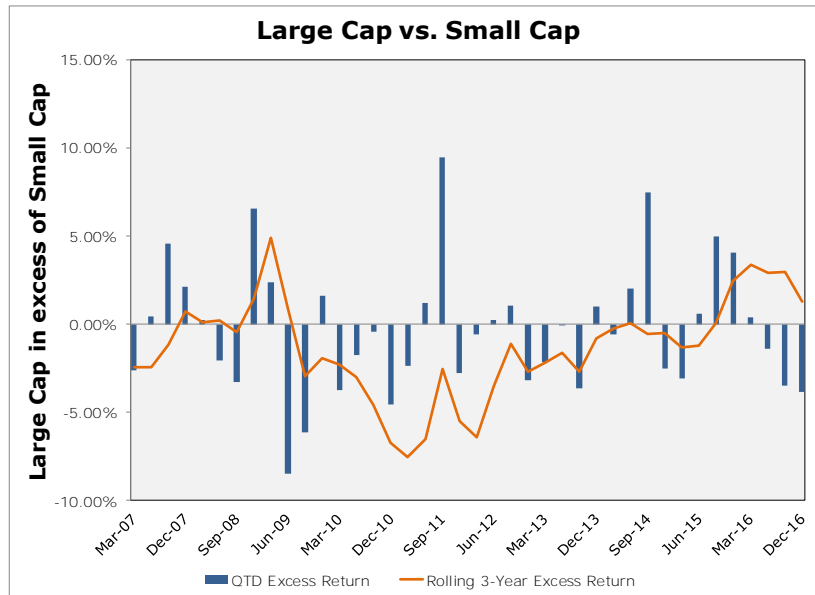
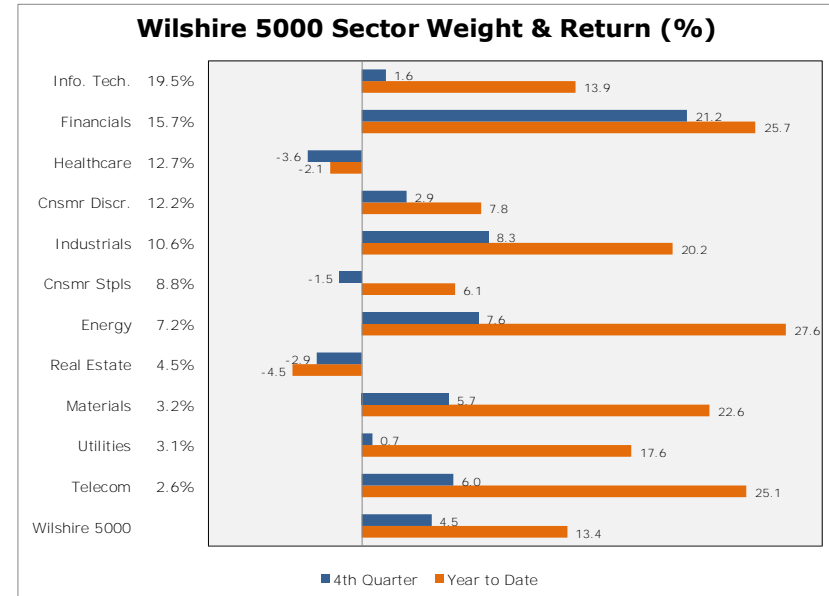
Total Fund – Rolling Tracking Error



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

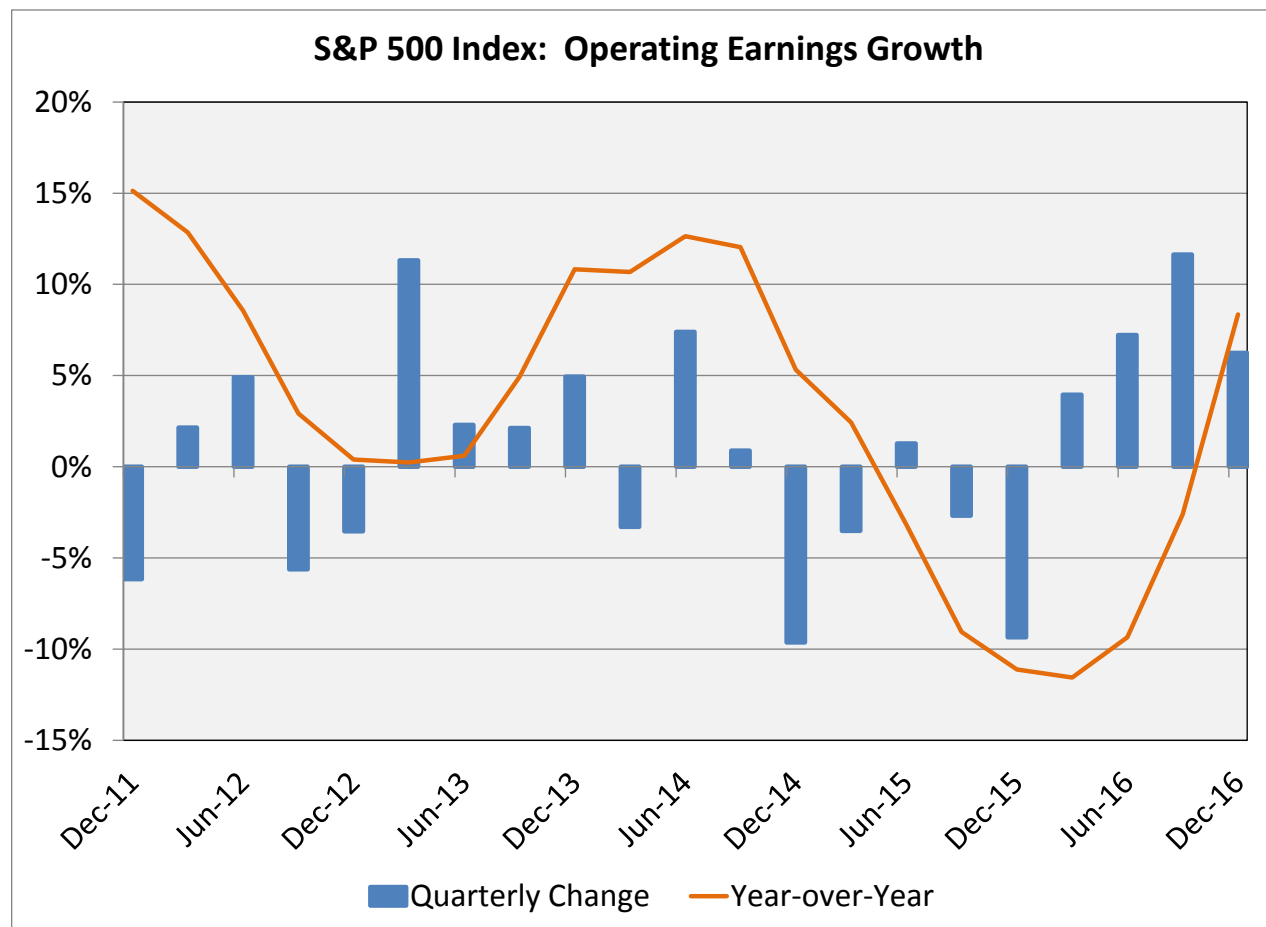


Data sources: Wilshire Compass, Wilshire Atlas



U.S. Corporate Earnings

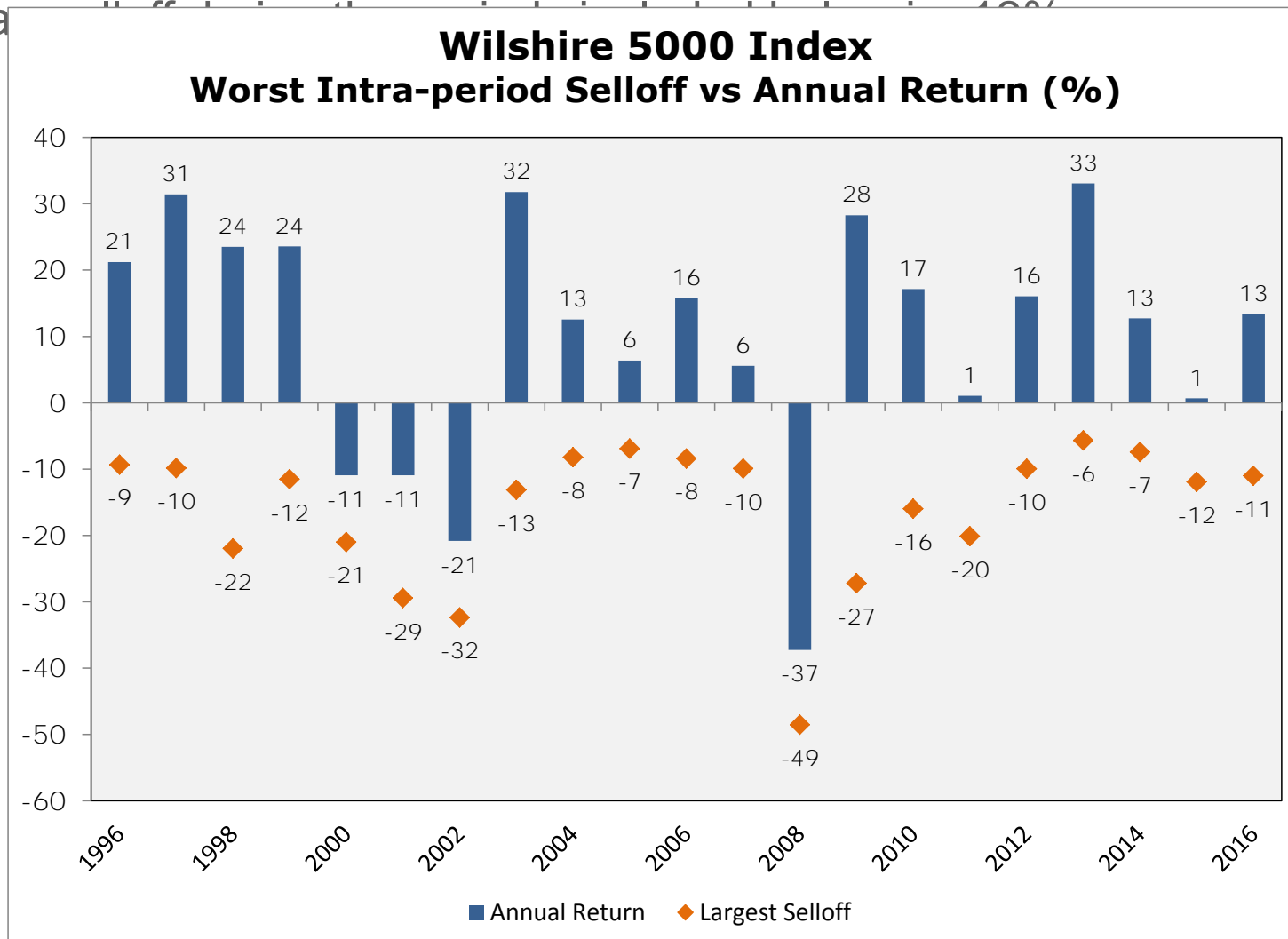
- Troubling trend in the U.S. equity market reversed course during the year
- Operating earnings had been on the decline for approximately a year and a half before returning to growth in 2016



Annual Equity Returns



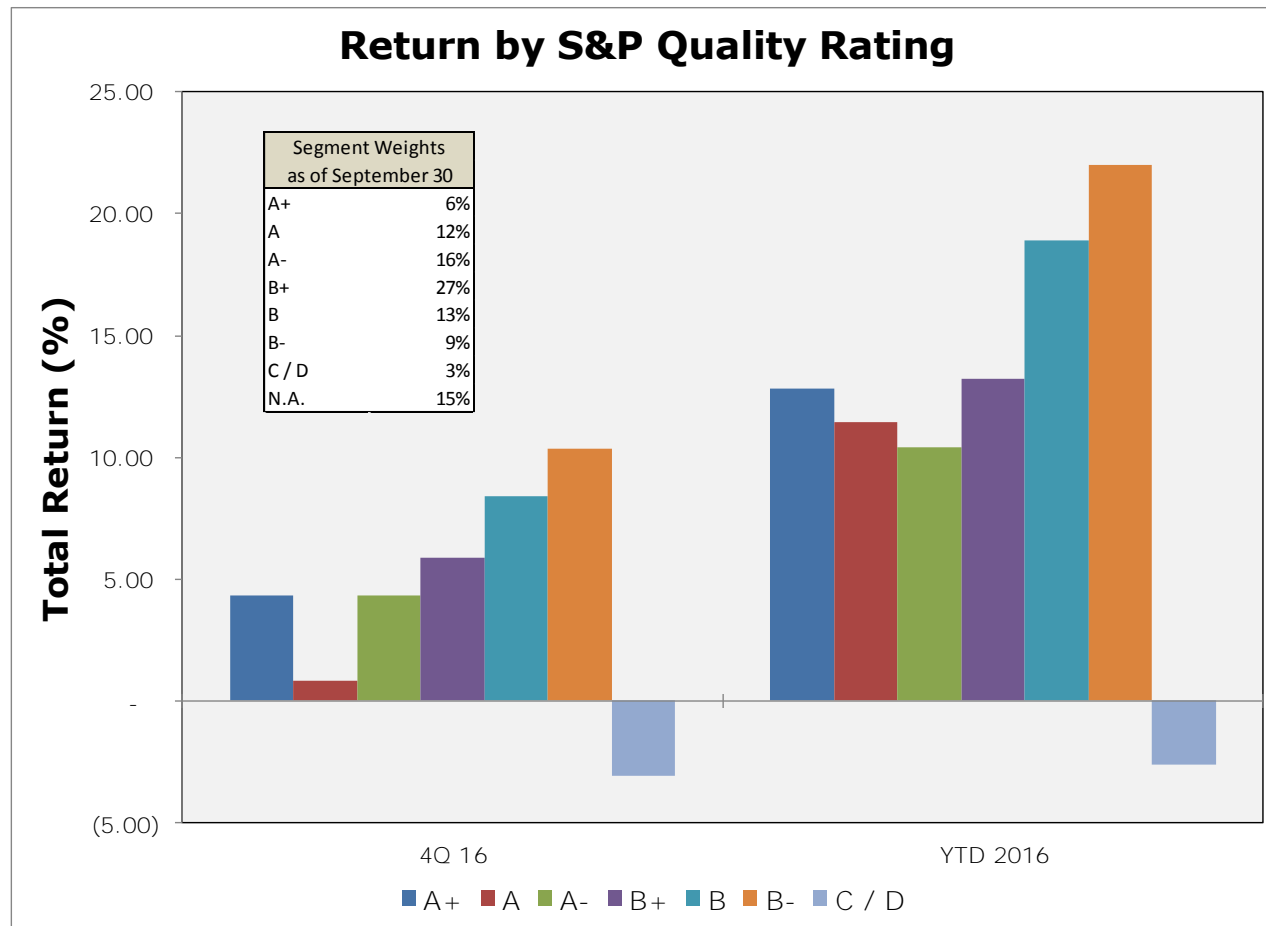
- U.S. Equity has now produced 8 straight years of positive returns since 2008
- Media





Returns by Quality Segment

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

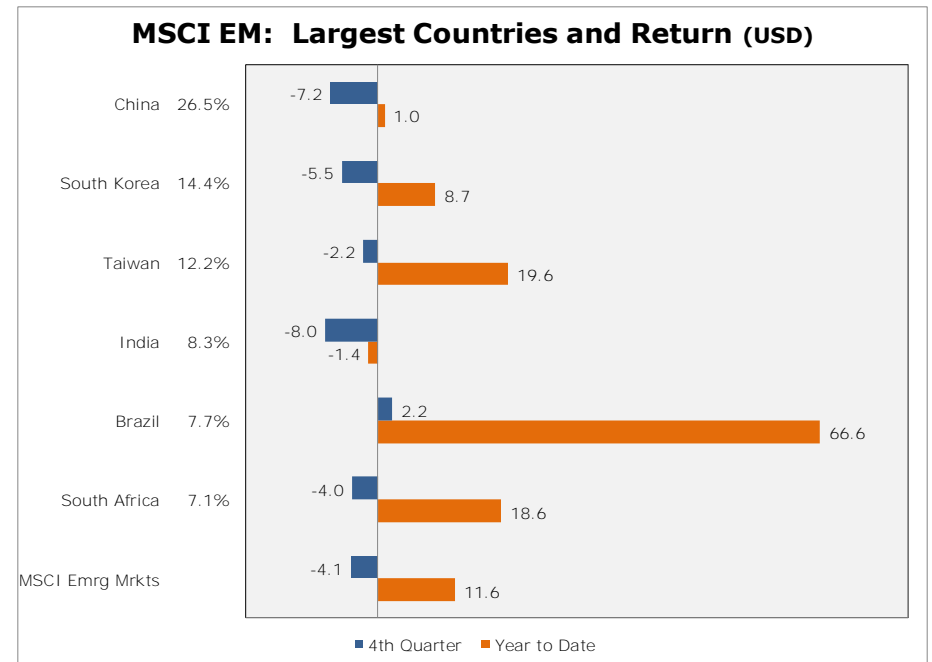
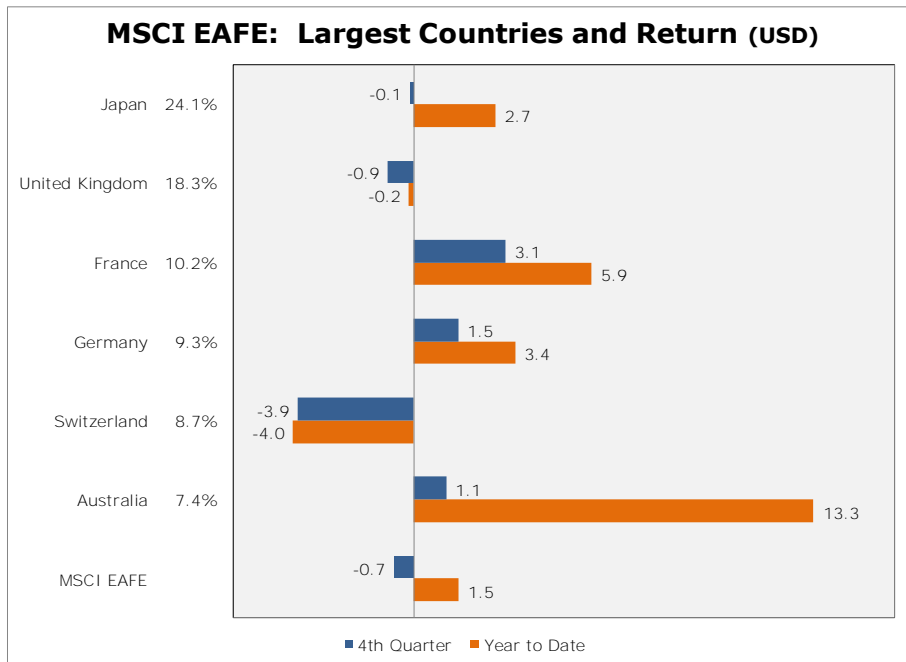


Data sources: Wilshire Atlas

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



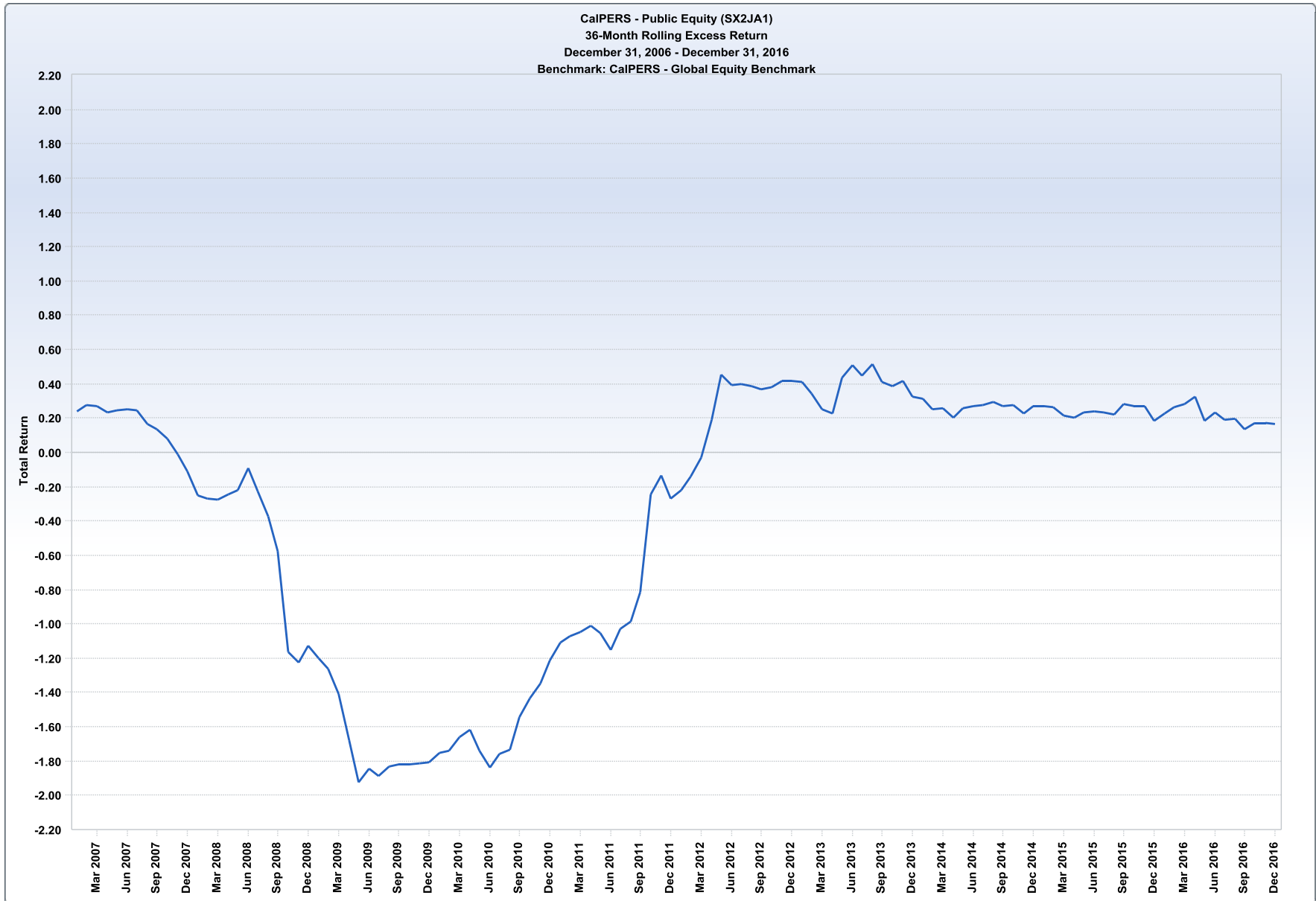
Data sources: Wilshire Compass

Growth: Public Equity – Performance

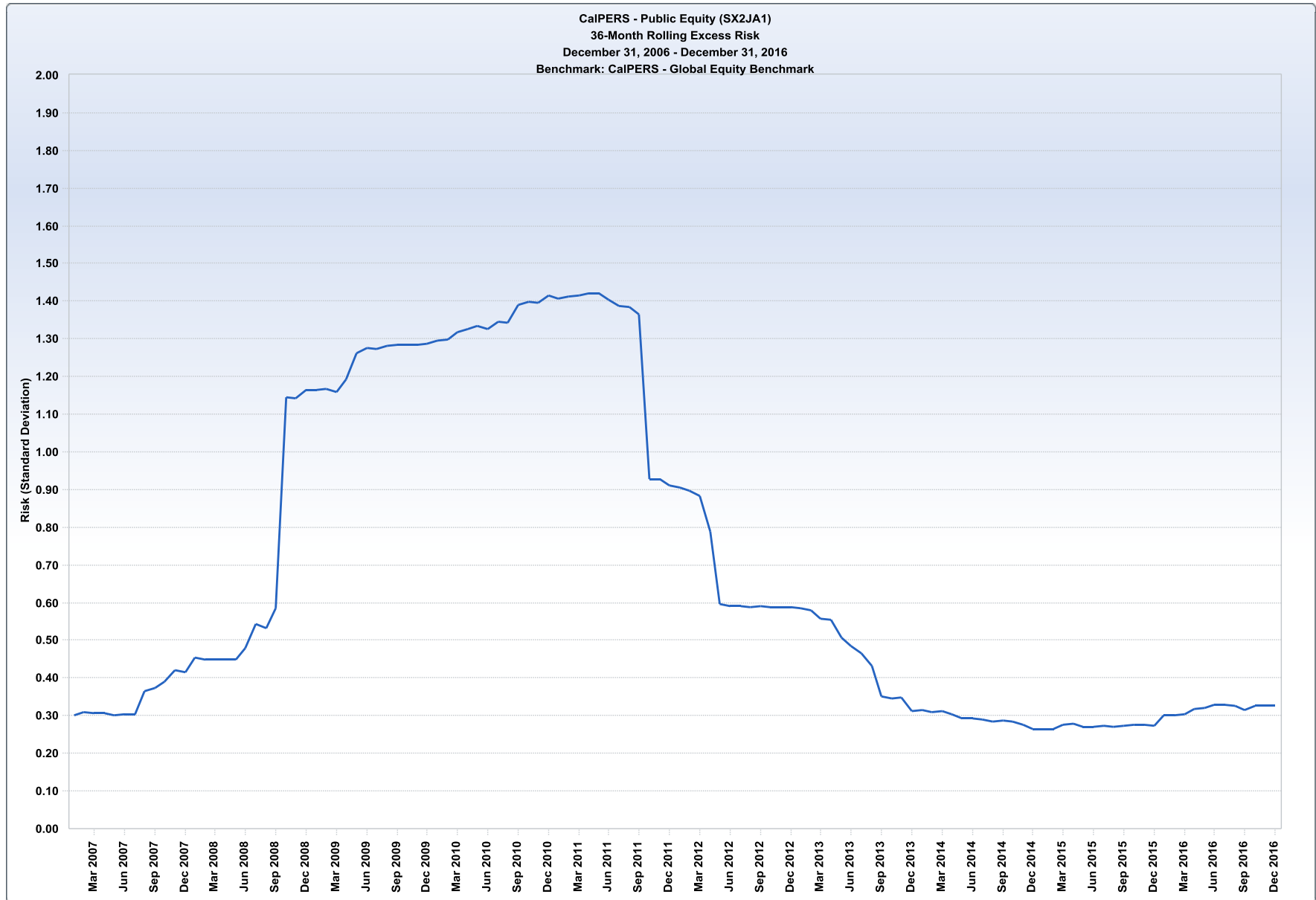


	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
PUBLIC EQUITY	143.9	1.9%	9.8%	3.9%	10.6%	4.2%	\$29.0 bil	0.9	0.9
<i>Public Equity Policy Benchmark</i>		1.6%	9.0%	3.7%	10.3%	4.5%		0.9	0.0
<i>Value Added</i>		0.3%	0.8%	0.2%	0.3%	-0.3%			
USEquity Composite	77.7	4.5%	13.4%	8.1%	14.7%	7.1%		1.3	0.5
<i>Custom USEquity Benchmark</i>		3.9%	12.5%	8.0%	14.5%	7.0%		1.3	0.0
<i>Value Added</i>		0.6%	0.9%	0.1%	0.2%	0.1%			
Total Int'l Equity	66.2	-1.0%	5.8%	-0.5%	6.4%	1.7%		0.5	-0.2
<i>Custom Int'l Equity Benchmark</i>		-0.8%	5.4%	-0.6%	6.5%	1.6%		0.5	0.0
<i>Value Added</i>		-0.2%	0.4%	0.1%	-0.1%	0.1%			

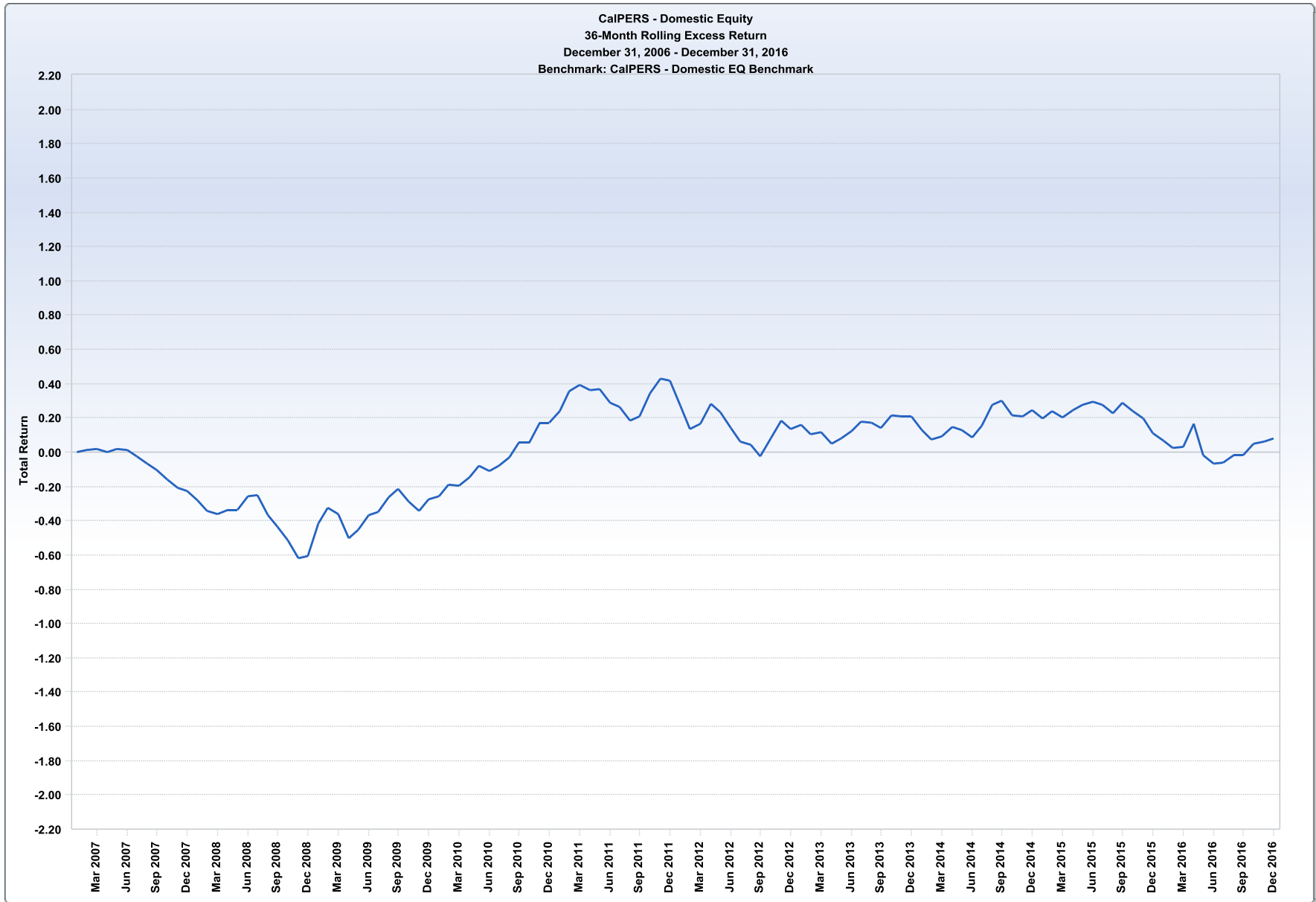
Growth: Public Equity – Rolling Excess Returns



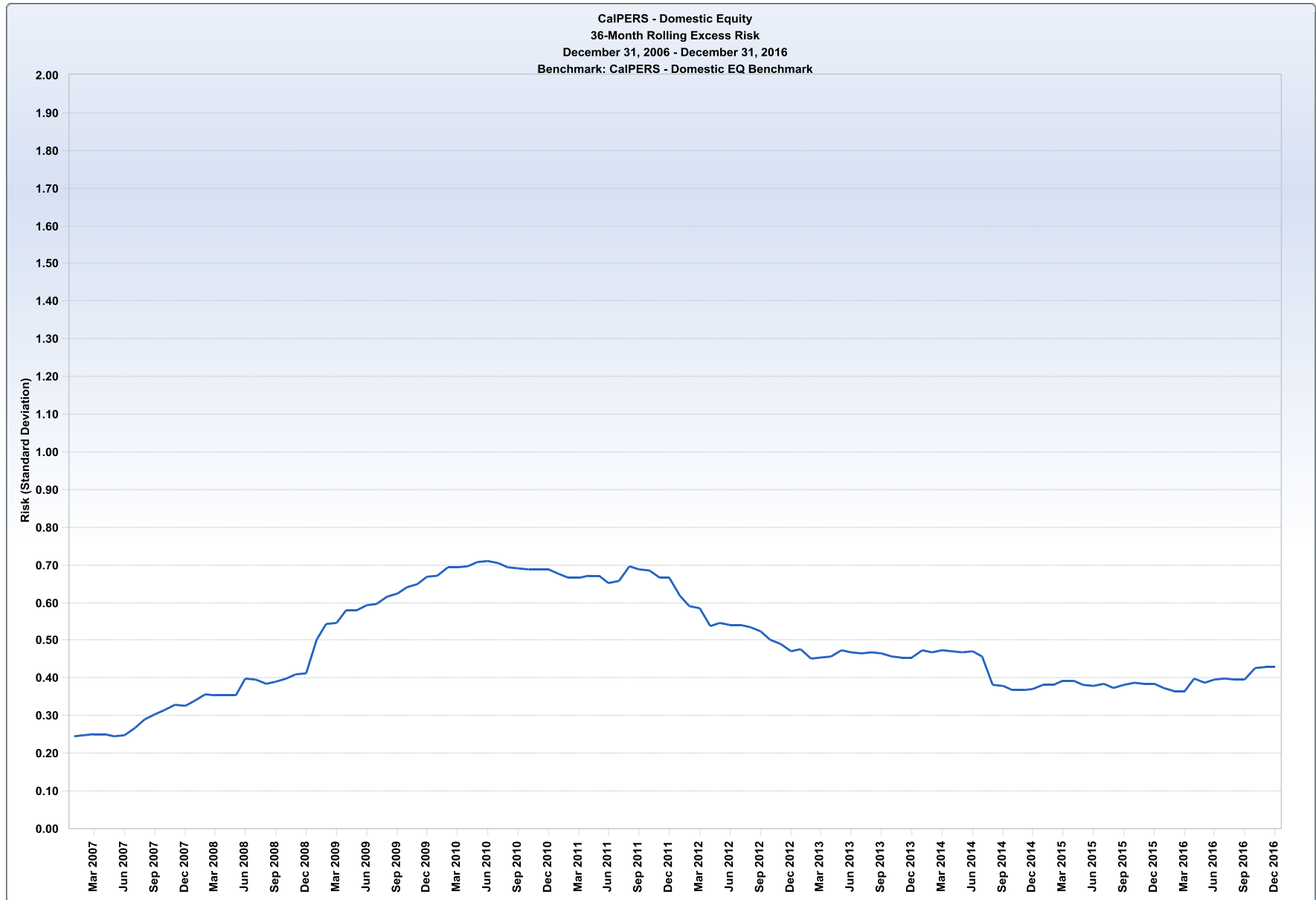
Growth: Public Equity – Rolling Tracking Error



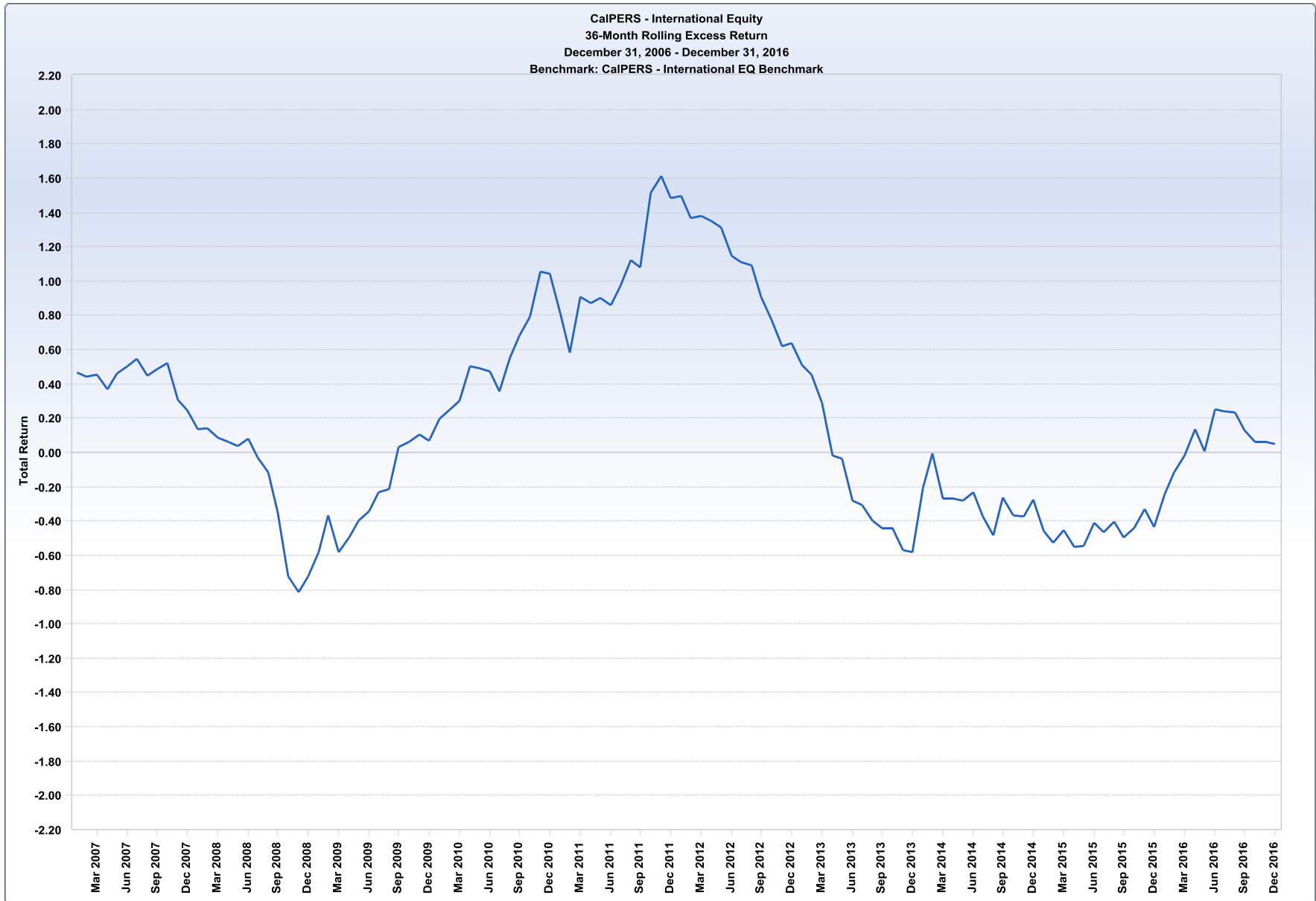
Growth: US Equity – Rolling Excess Returns



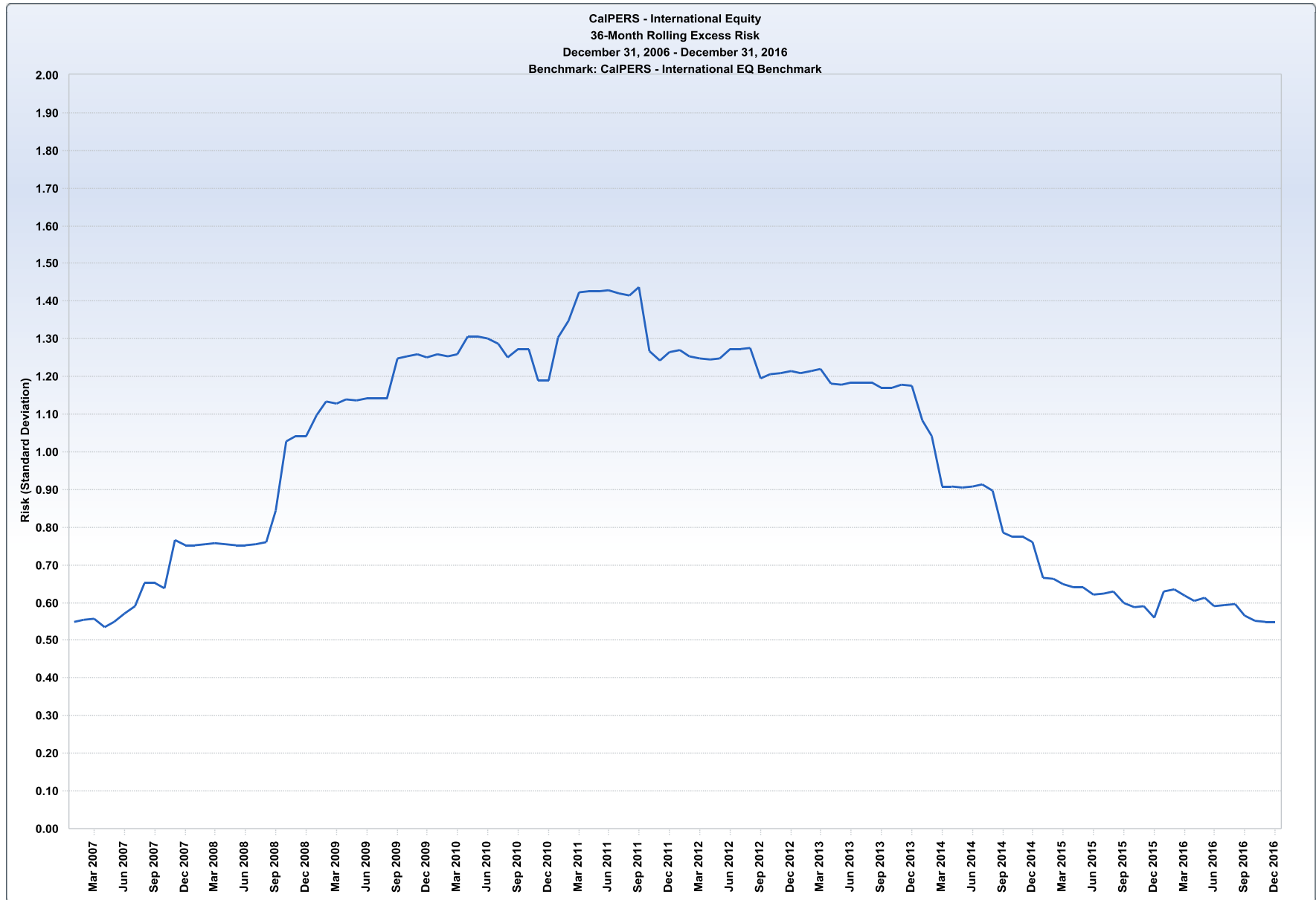
Growth: US Equity – Rolling Tracking Error



Growth: International Equity – Rolling Excess Returns



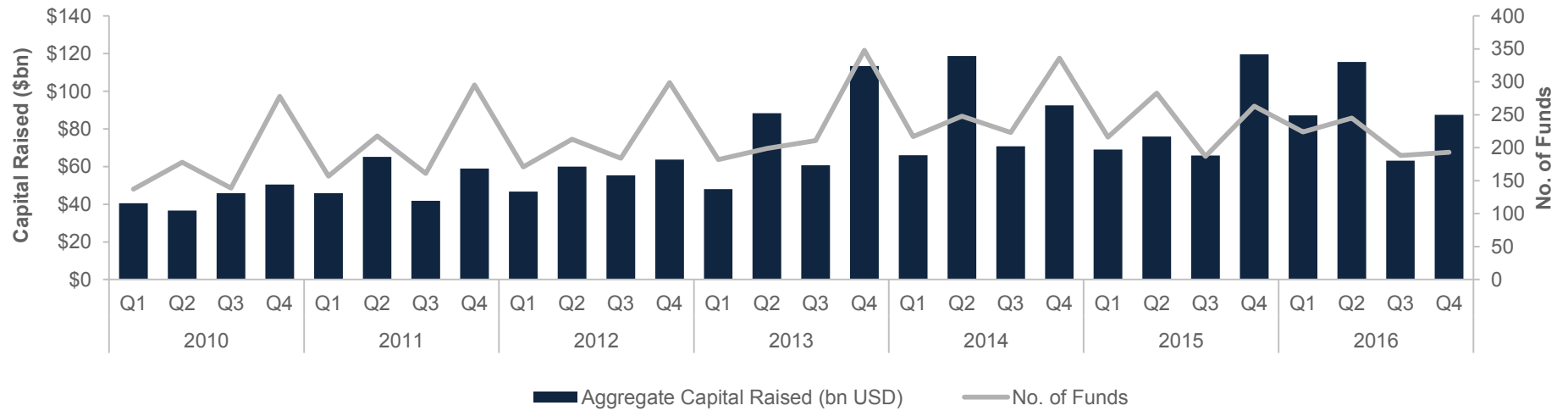
Growth: International Equity – Rolling Tracking Error



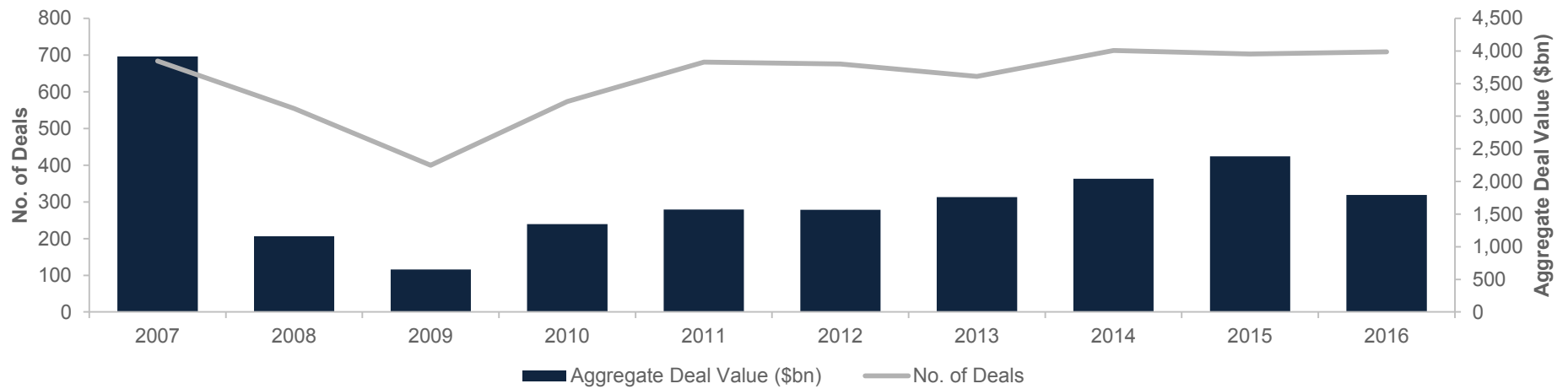
Private Equity – Fundraising & Investment Activity



Global Quarterly Private Equity Fundraising (2010 - 2016)



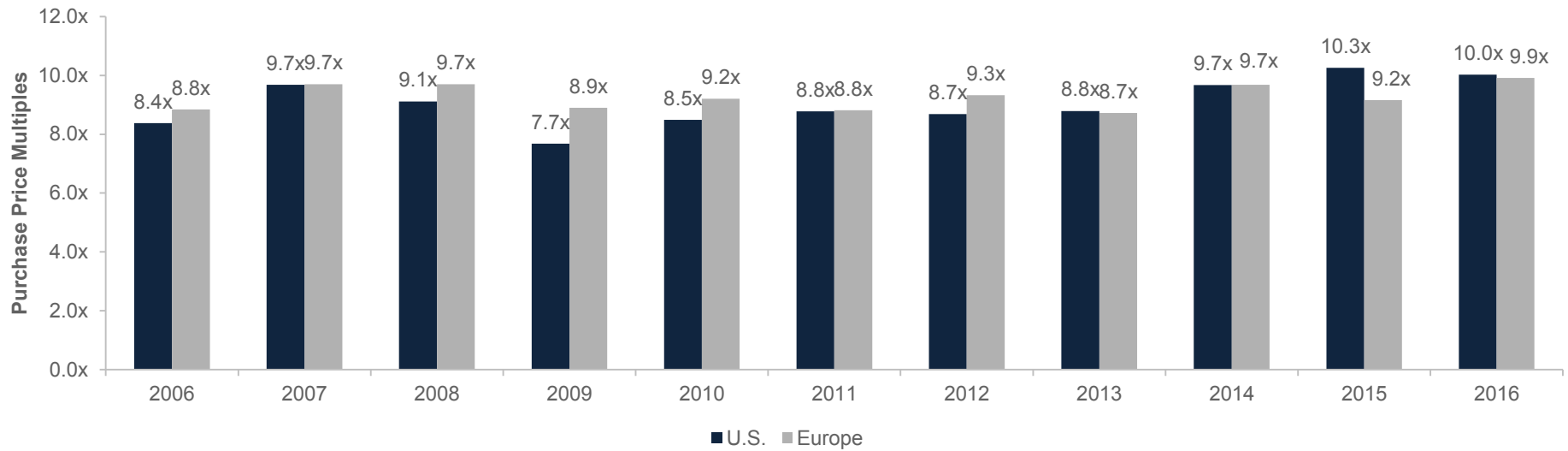
Global Private Equity-Backed Buyout Activity (2007 – 2016)



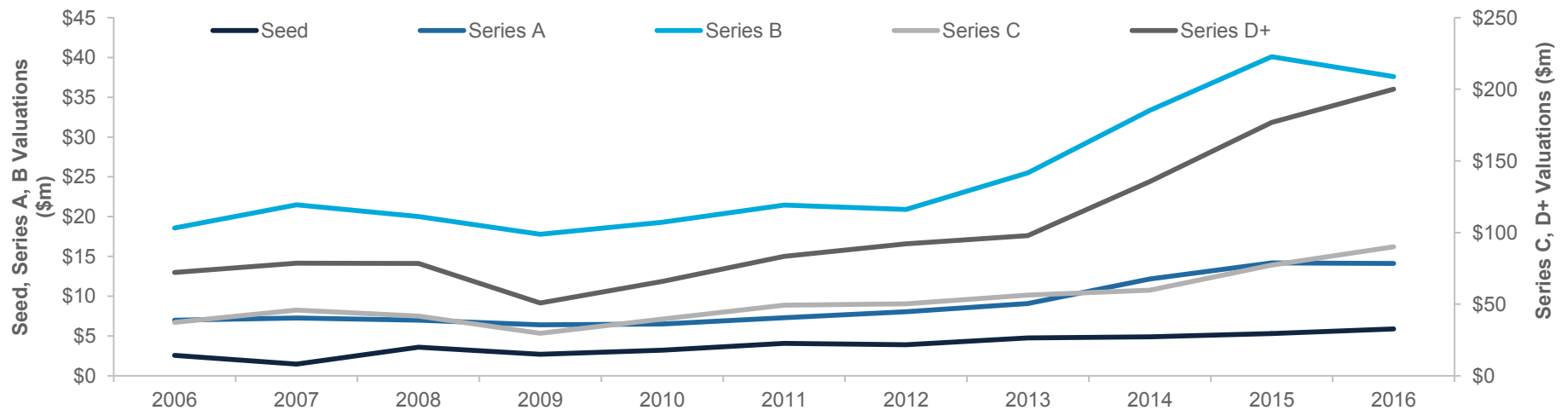
Private Equity – Pricing & Valuations



Global LBO Multiples (2006 – 2016)



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

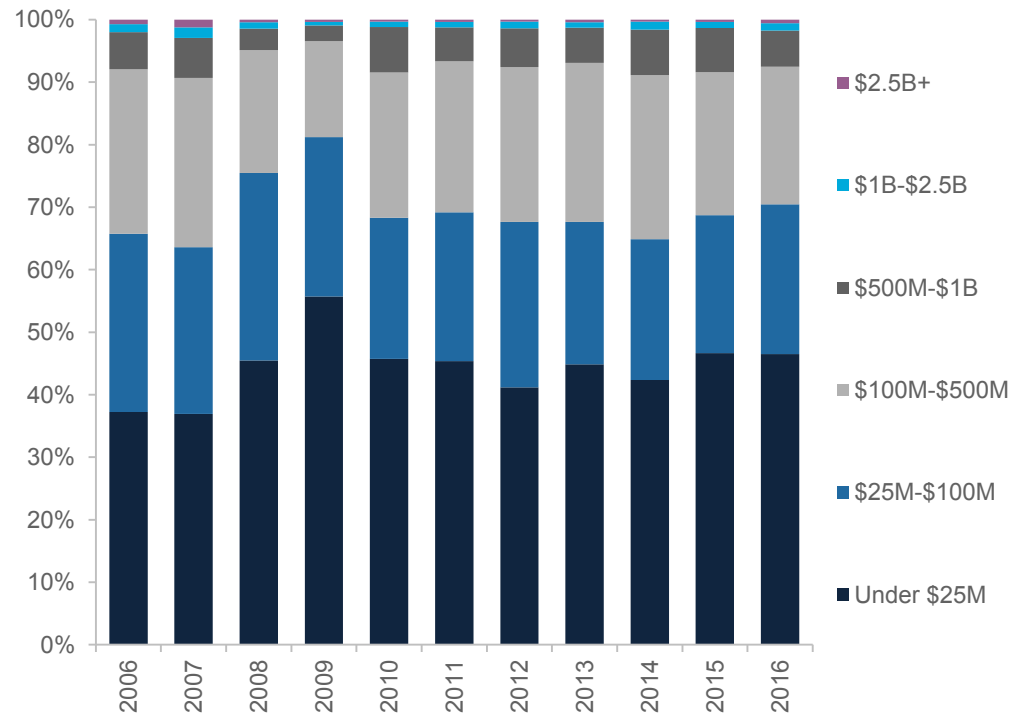


Sources: S&P LCD, through December 31, 2016; PitchBook, as of August 1, 2016.

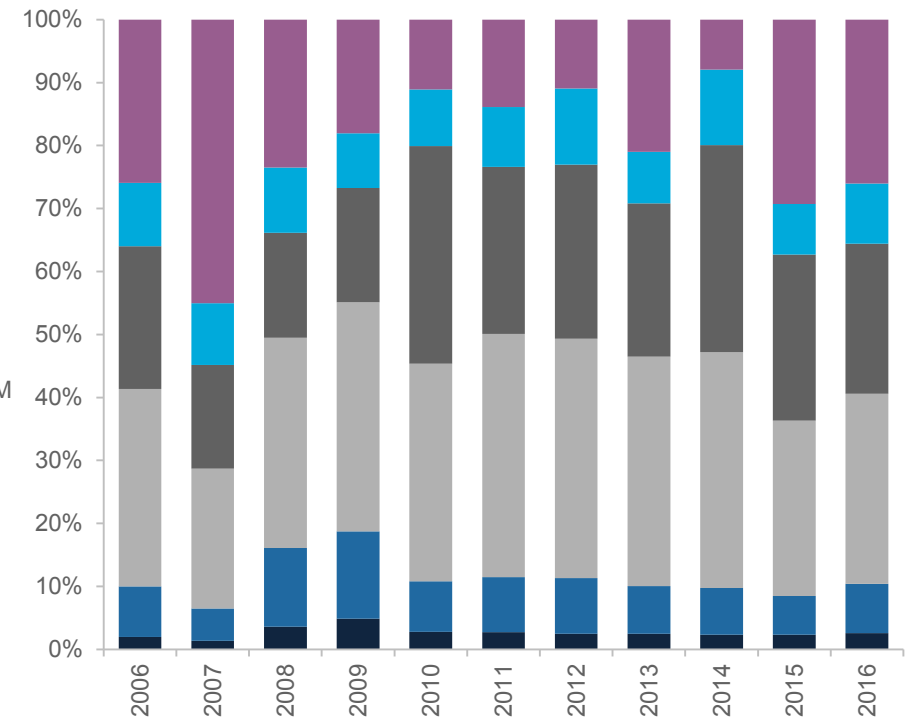
Private Equity – U.S. Investment Activity by Deal Size



Percentage of Deal Volume (count) by Deal Size



Percentage of Deal Volume (dollars) by Deal Size

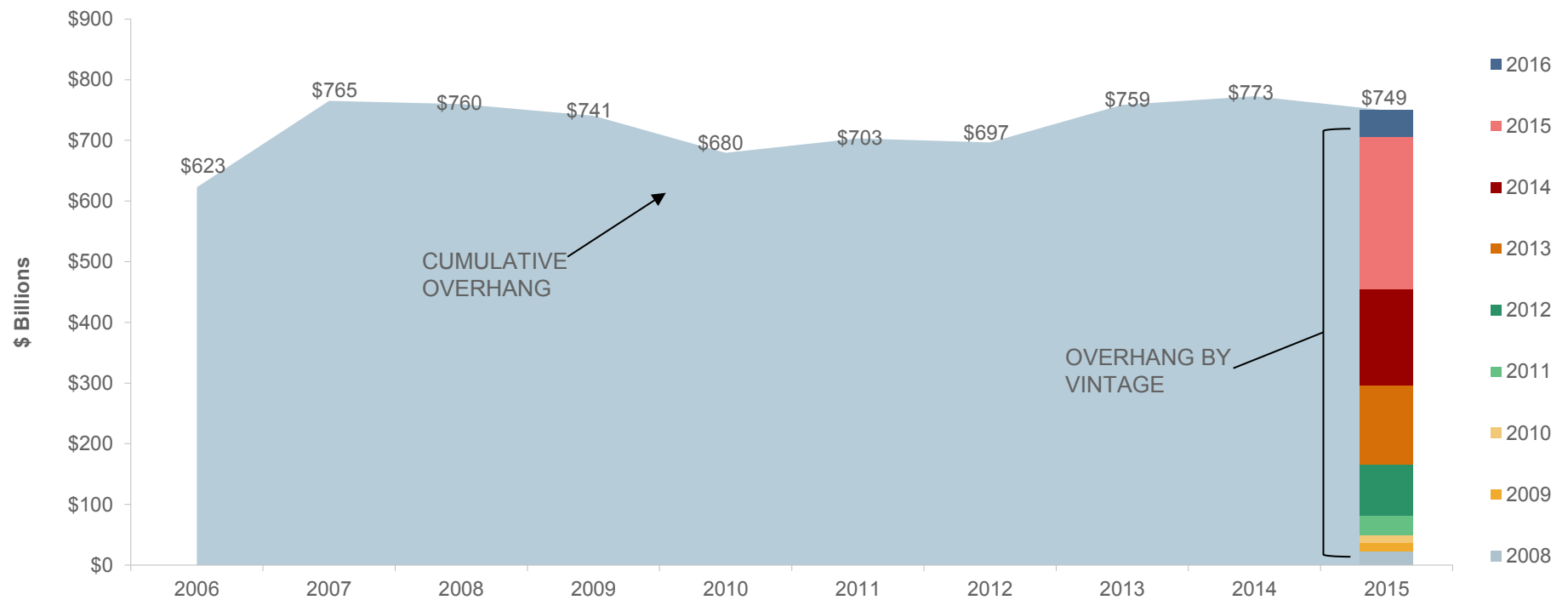


- Smaller deals continue to dominant deal activity by count
- Deals between \$100 million-\$1 billion make up the majority of deal volume by size in 2016

Private Equity – Capital Overhang



Private Equity Overhang by Vintage Year

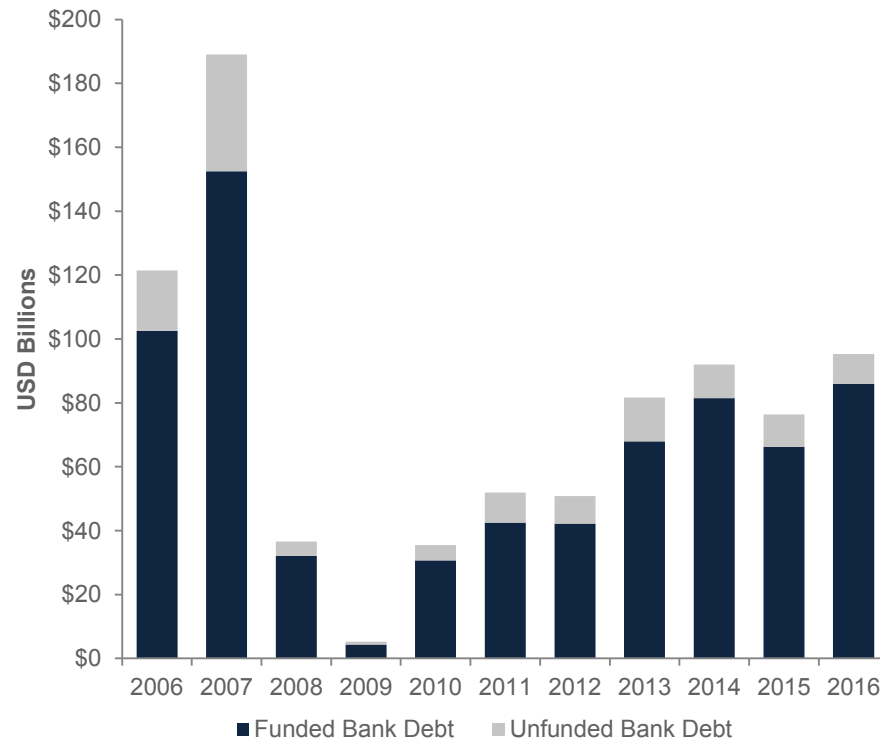


- As of December 31, 2015, aggregate private equity dry powder across North America and Europe remains elevated at \$749 billion, a 3% decline from the end of 2014
- While the overhang slightly decreased across 2007 to 2010, the overhang has increased back to 2007-2008 peak levels

Private Equity – U.S. Debt Markets



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



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

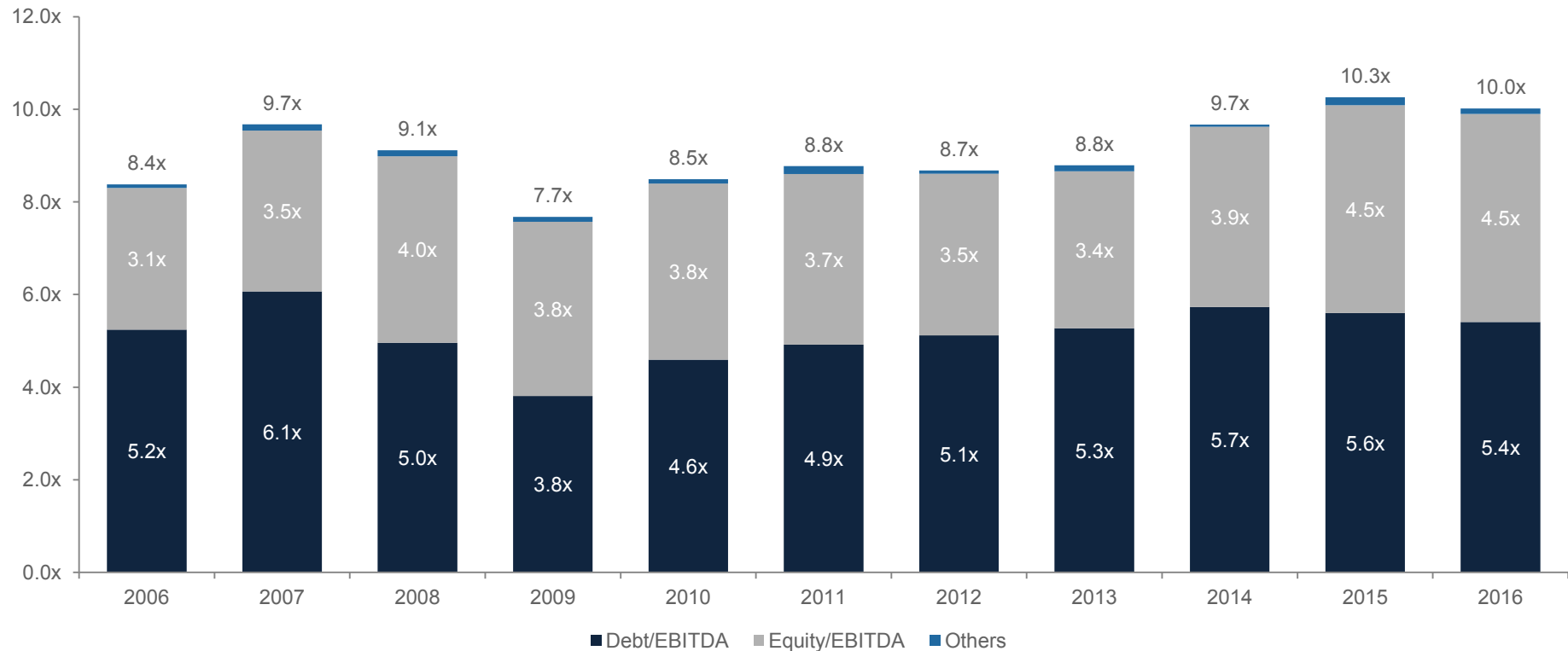


- The amount of capital available for leverage has decreased considerably since its peak volume in 2007; loan volume appears consistent in the last few years
- Historically, middle-market transactions apply less leverage than large-cap deals

Private Equity – U.S. LBO Purchase Price Multiples



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



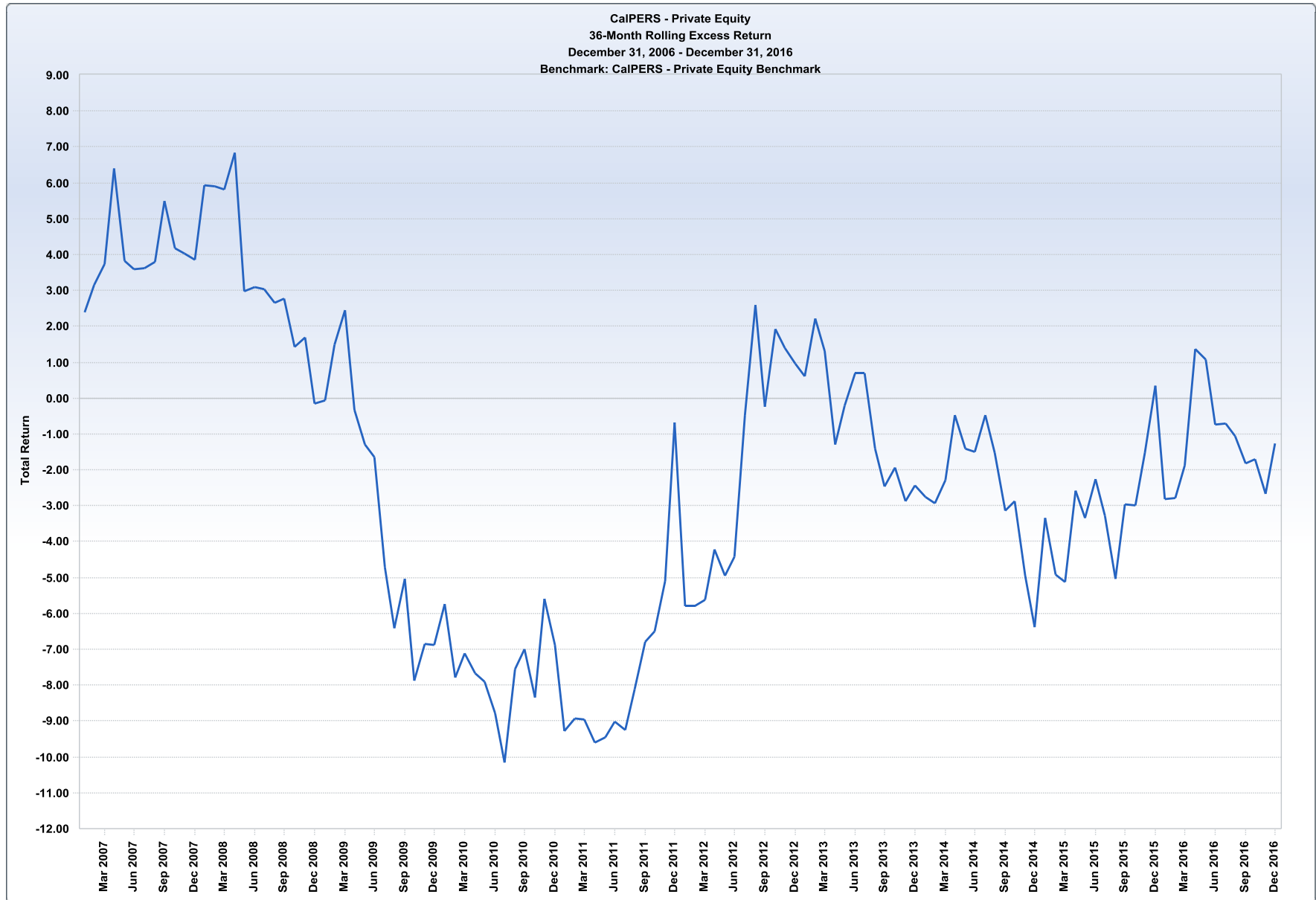
- As debt has become more readily available, purchase price multiples have increased and remained high from the low point in 2009
- Pricing in 2016 decreased slightly by 0.3x from the recent high in 2015

Growth: Private Equity – Performance

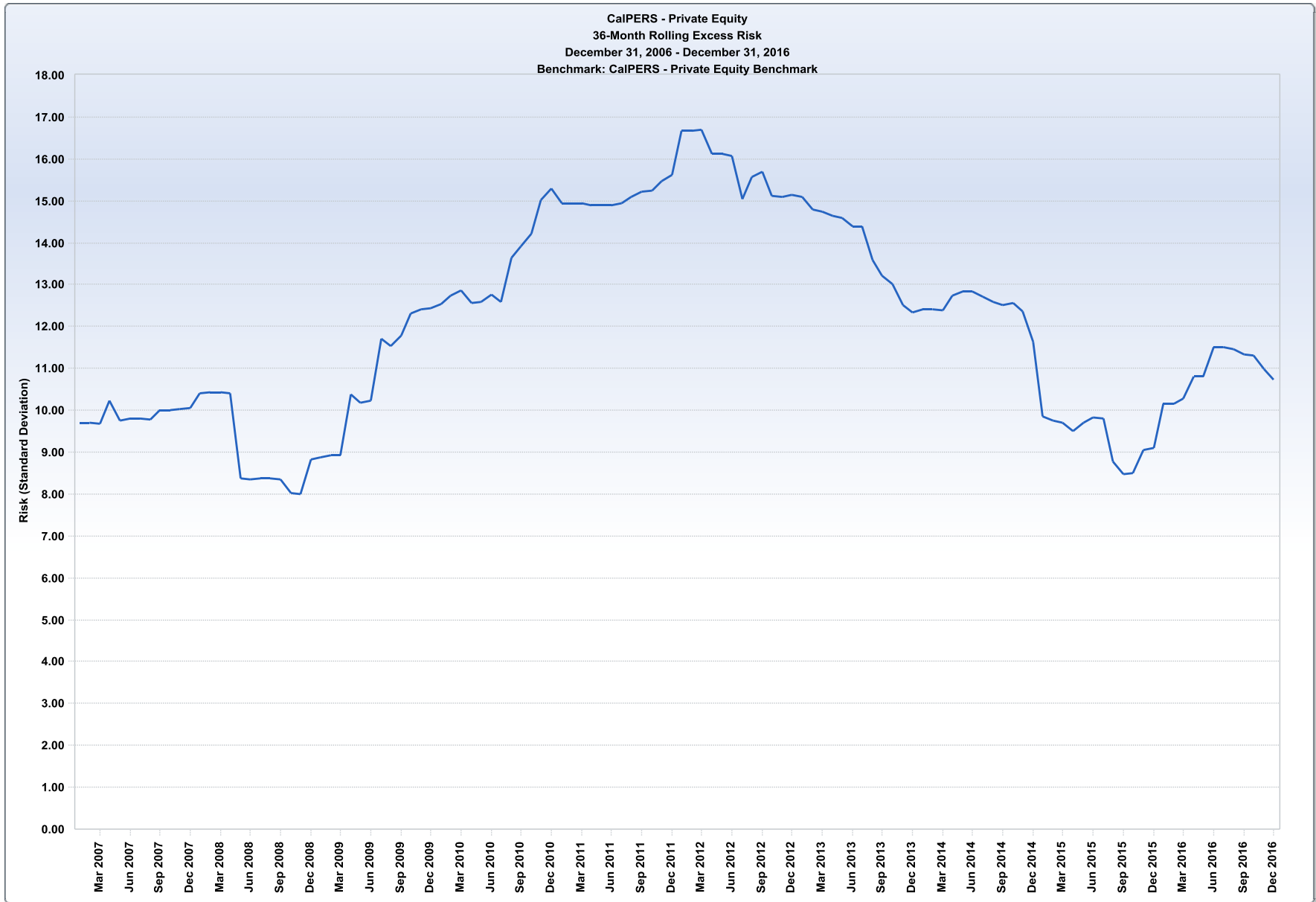


	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
PRIVATE EQUITY	25.4	4.0%	6.6%	8.8%	11.5%	9.8%	\$8.3 bil	3.1	-0.4
<i>PE Policy Benchmark</i>		6.3%	16.7%	10.2%	16.4%	12.8%		1.4	0.0
<i>Value Added</i>		-2.3%	-10.1%	-1.4%	-4.9%	-3.0%			
Private Equity Partnership Investments	25.4	4.1%	6.7%	8.9%	11.6%	9.9%			
Private Equity Distribution Stock	0.0	-19.5%	-37.6%	-35.1%	-31.5%	-13.7%			

Growth: Private Equity – Rolling Excess Returns



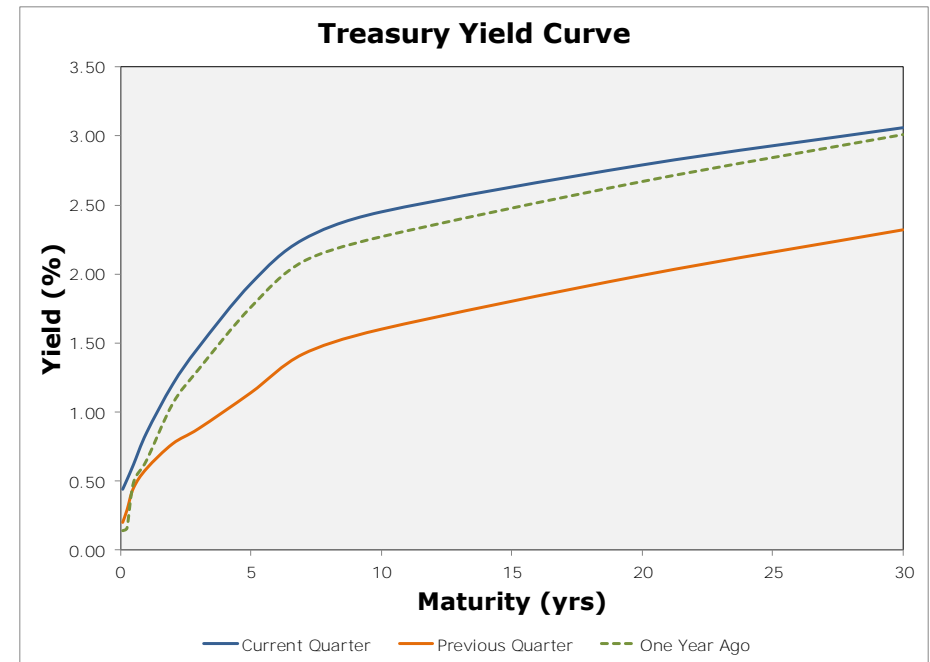
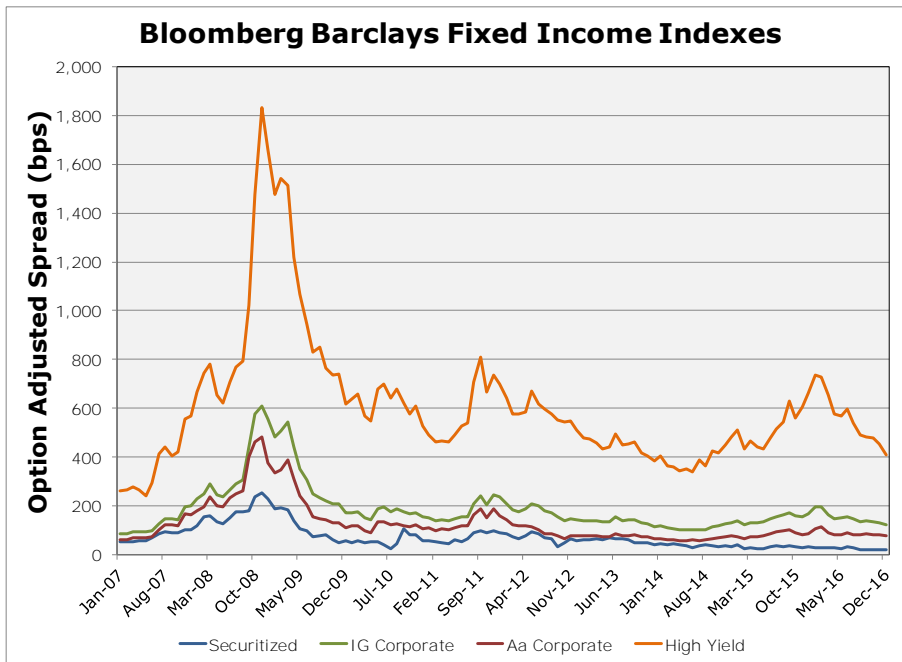
Growth: Private Equity – Rolling Tracking Error



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

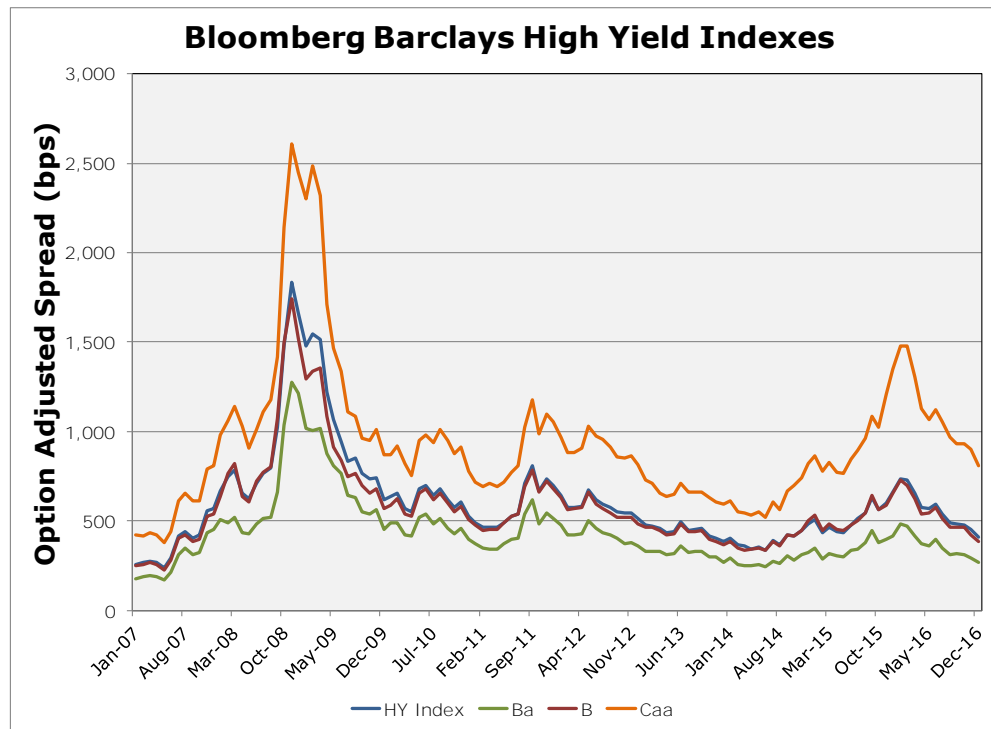


Data sources: Wilshire Compass, Bloomberg Barclays, U.S. Treasury

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



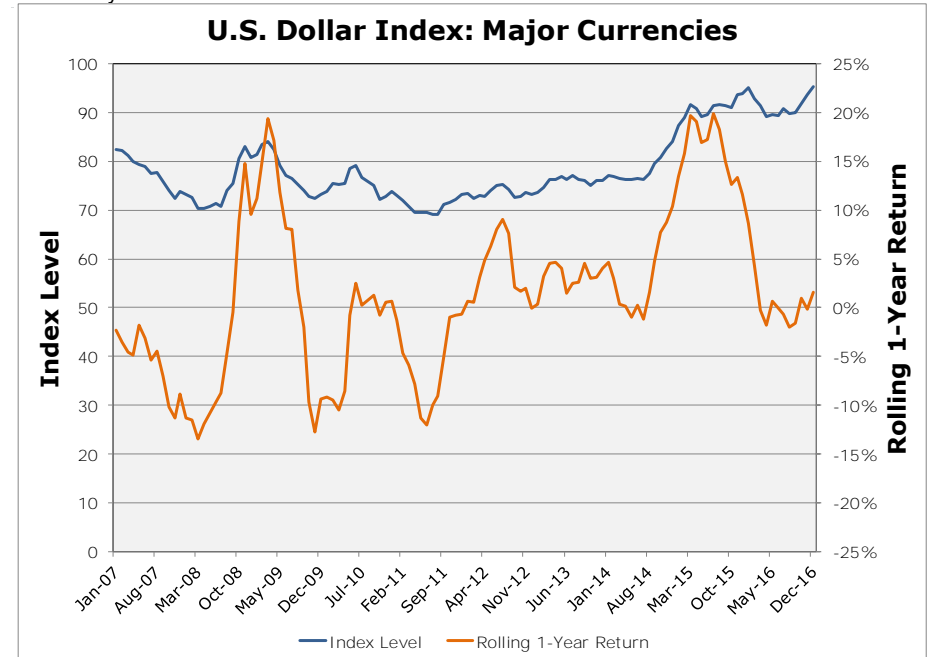
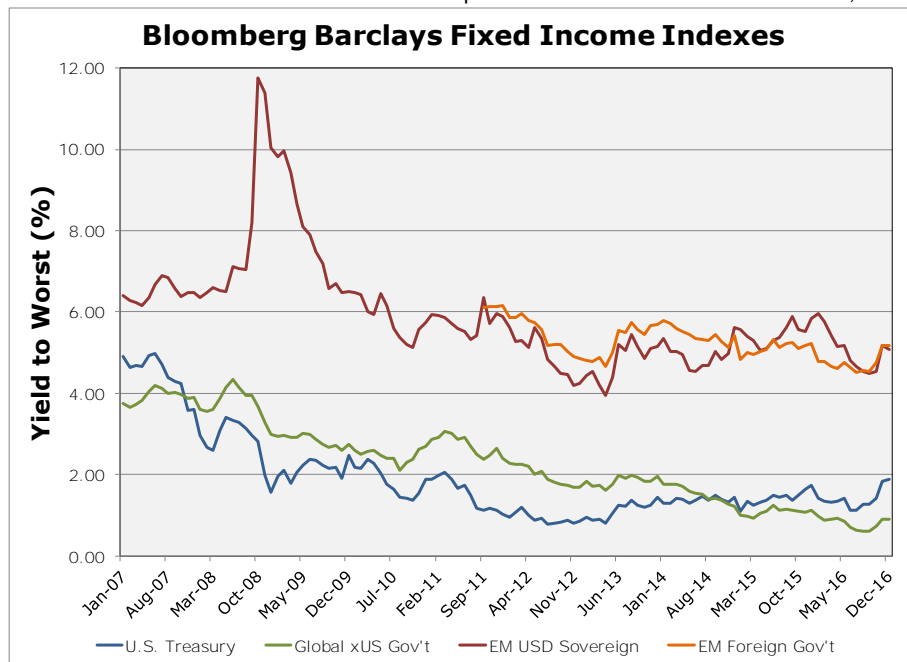
Data sources: Bloomberg Barclays

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 Mkts (Hard Currency)</i>						
Bloomberg Barclays EM USD Aggregate	-2.6	9.9	9.9	5.3	5.7	6.7
<i>Emerging Mkts (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.



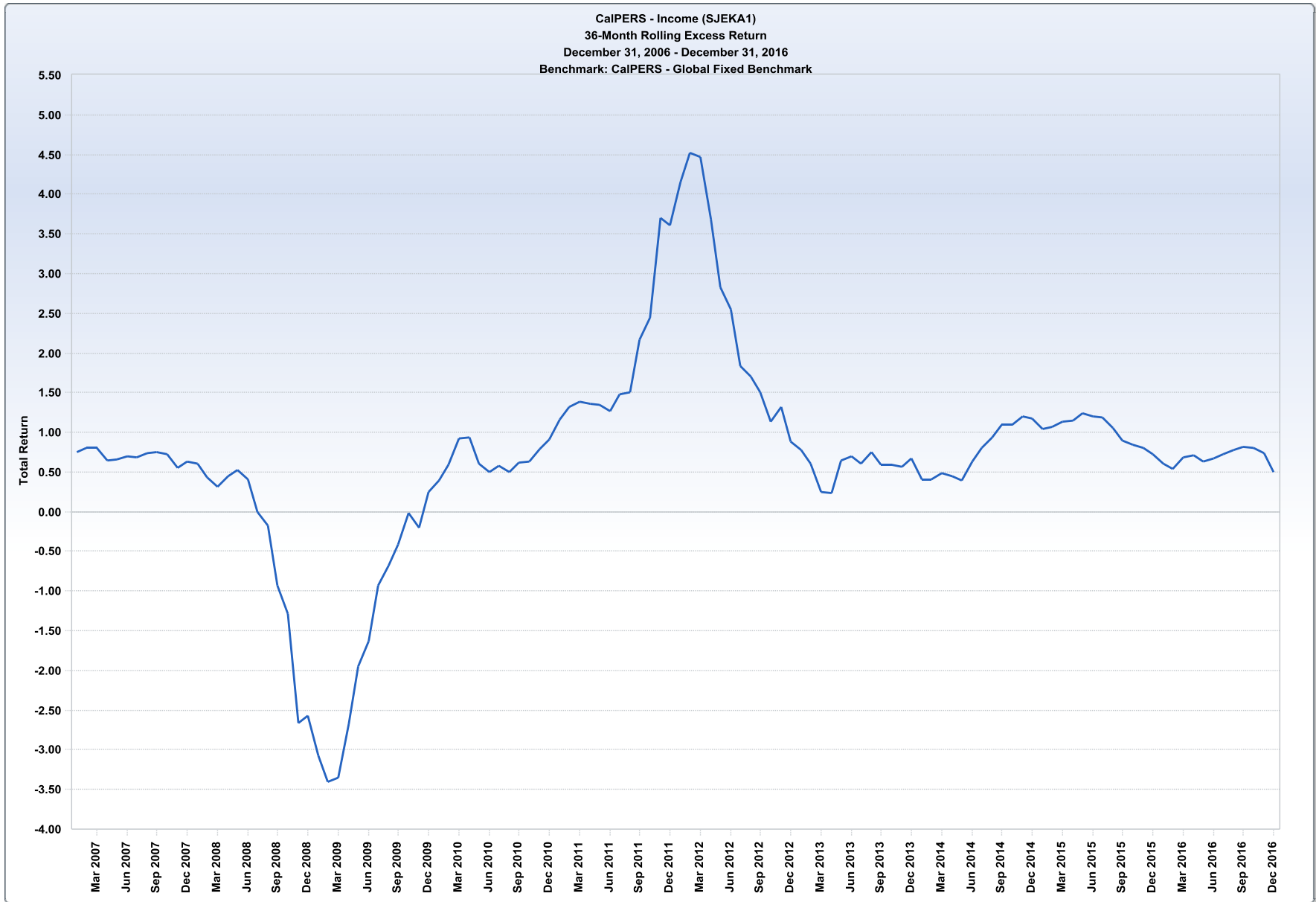
Data sources: Wilshire Compass, Bloomberg Barclays



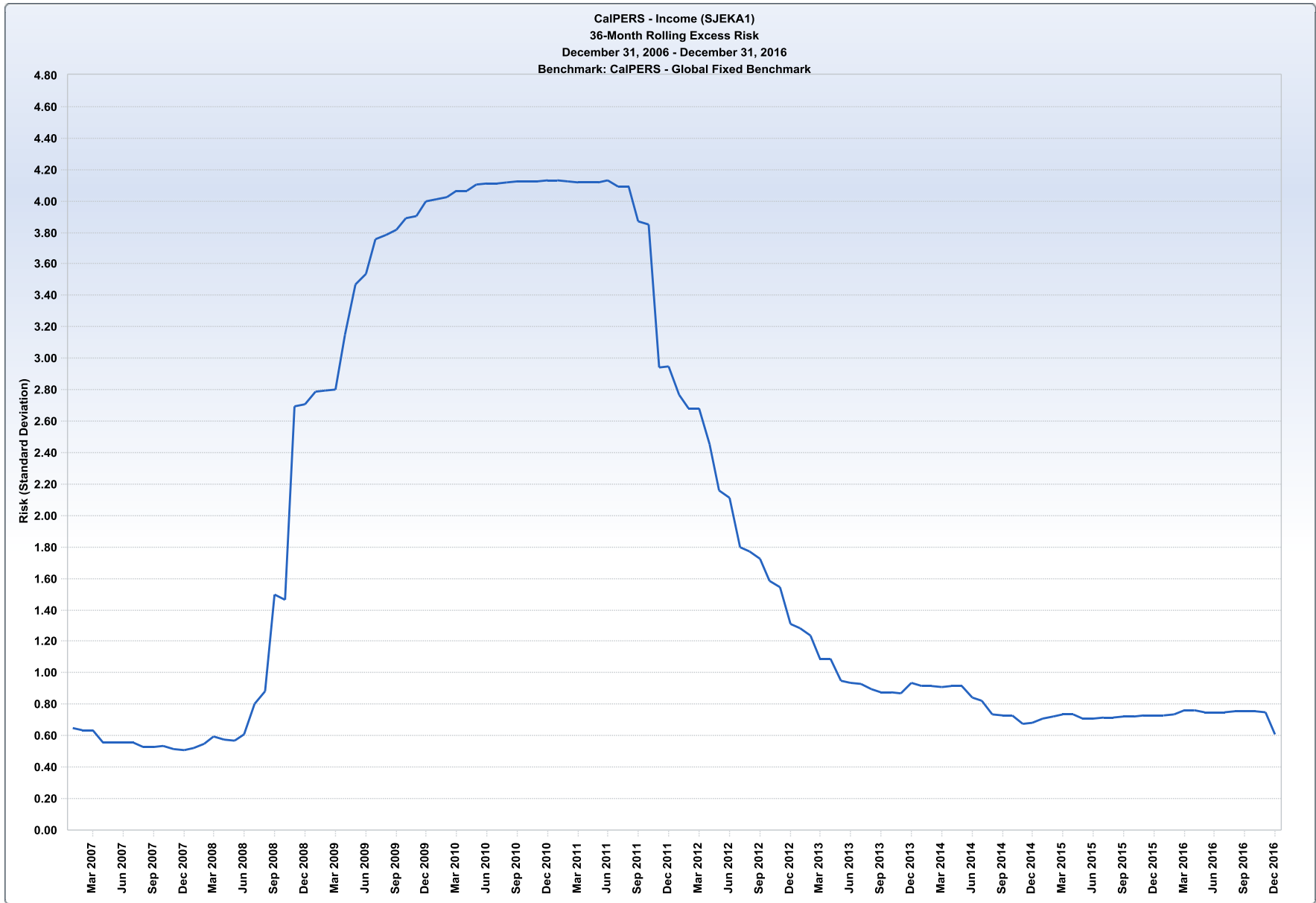
Income – Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
INCOME	57.1	-5.3%	5.4%	4.5%	3.4%	6.1%	\$6.1 bil	0.7	1.5
<i>Income Policy Benchmark</i>		-5.4%	4.2%	4.0%	2.4%	5.4%		0.4	0.0
<i>Value Added</i>		0.1%	1.2%	0.5%	1.0%	0.7%			
U.S. Income	51.4	-4.9%	5.7%	5.4%	4.0%	6.4%		0.8	1.3
<i>U.S. Income Policy Benchmark</i>		-5.1%	4.3%	4.9%	3.0%	5.7%		0.5	0.0
<i>Value Added</i>		0.2%	1.4%	0.5%	1.0%	0.7%			
Non-U.S. Income	5.7	-8.4%	2.9%	-3.0%	-2.3%	3.0%		-0.3	0.8
<i>Non-US Income Policy Benchmark</i>		-8.6%	2.6%	-3.7%	-2.9%	2.0%		-0.4	0.0
<i>Value Added</i>		0.2%	0.3%	0.7%	0.6%	1.0%			

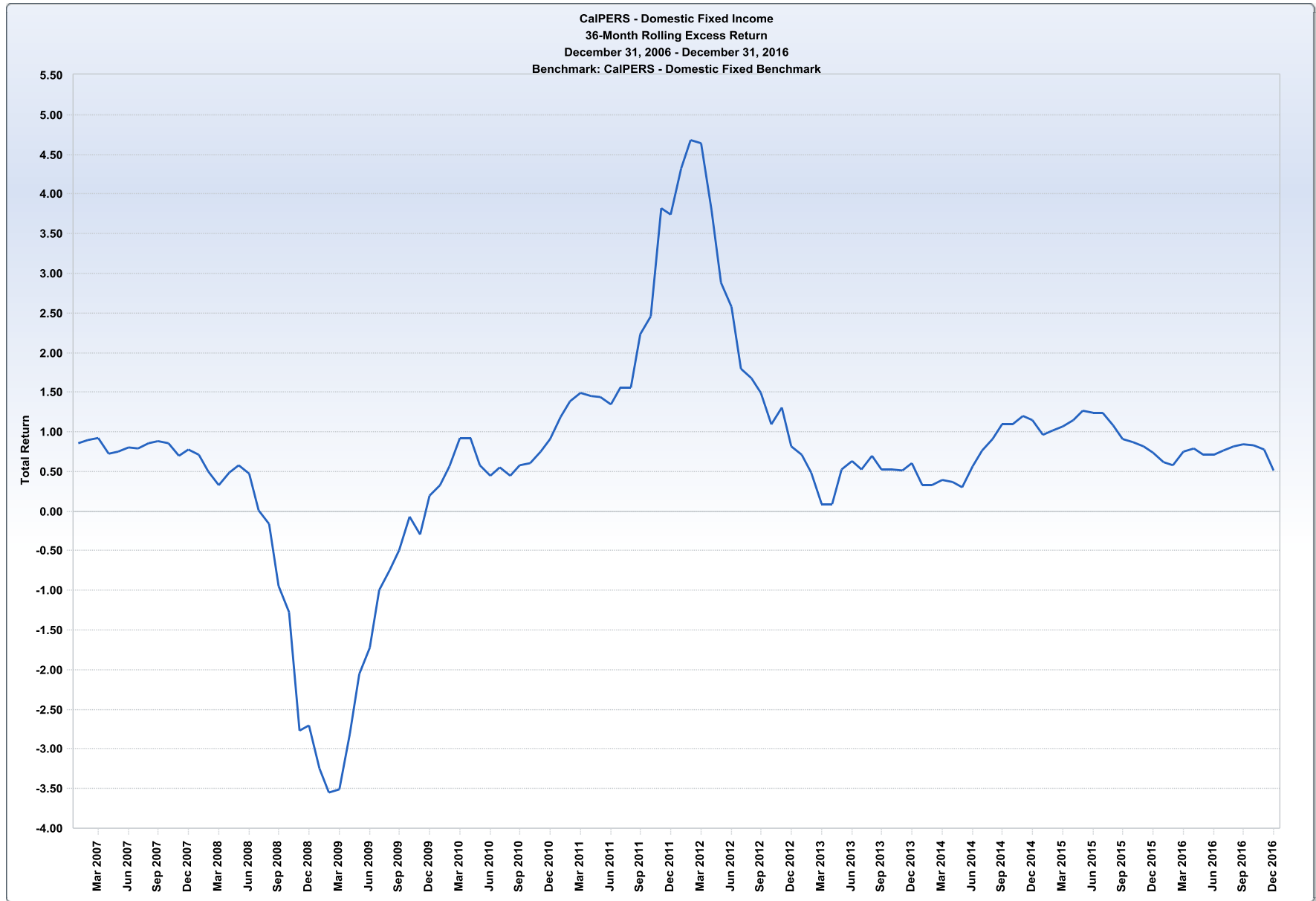
Income – Rolling Excess Returns



Income – Rolling Tracking Error

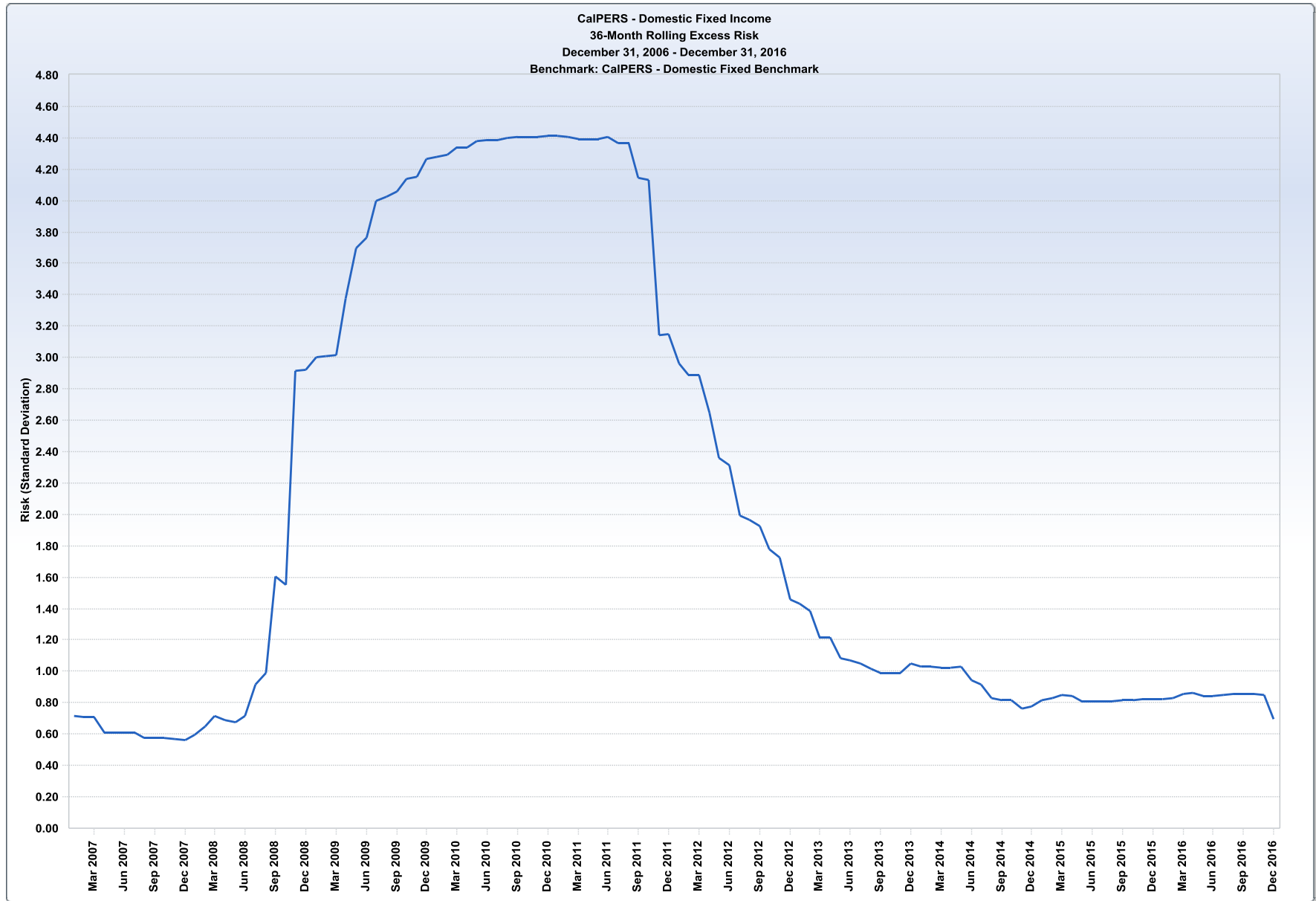


US Income – Rolling Excess Returns

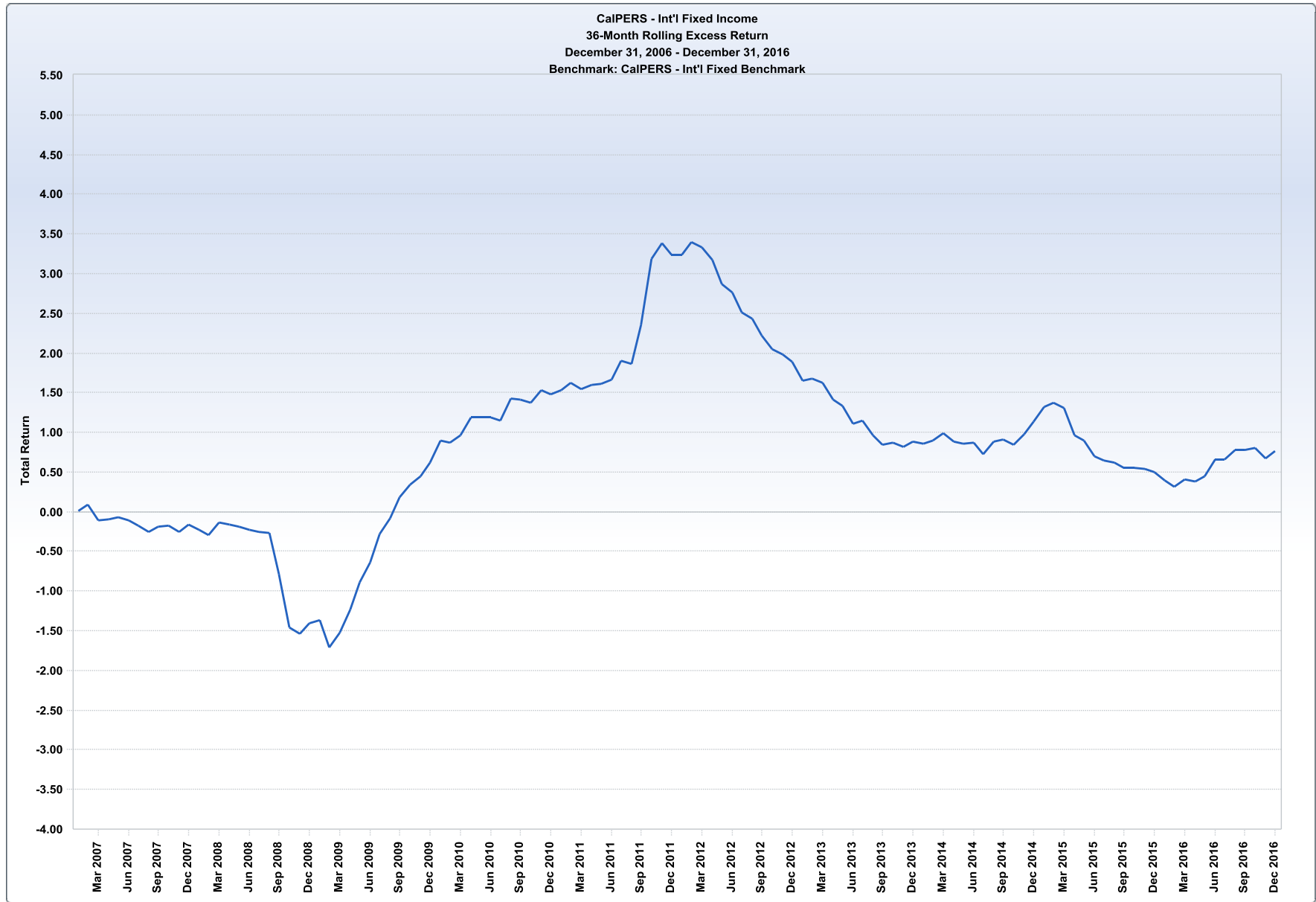




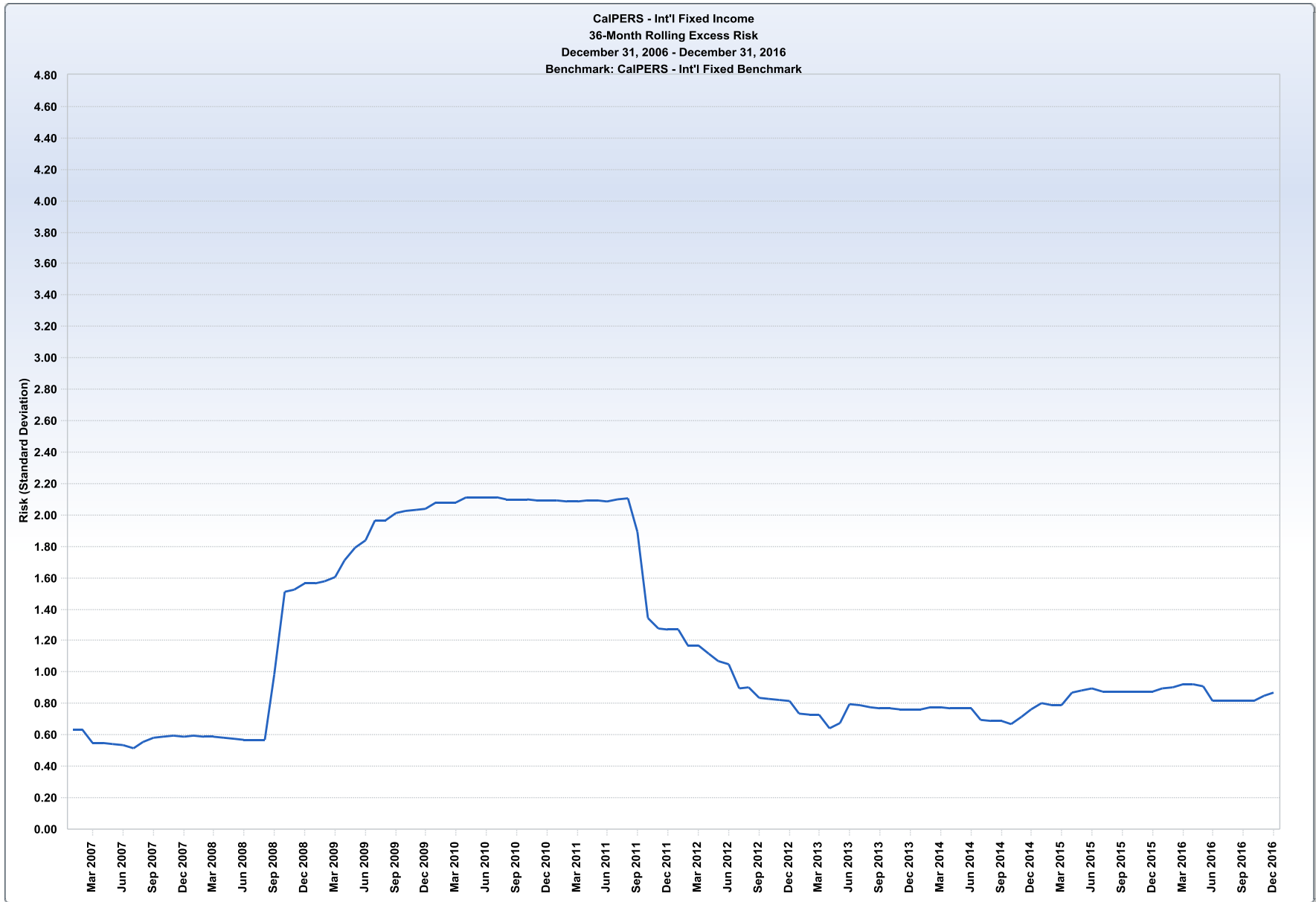
US Income – Rolling Tracking Error



International Income – Rolling Excess Returns



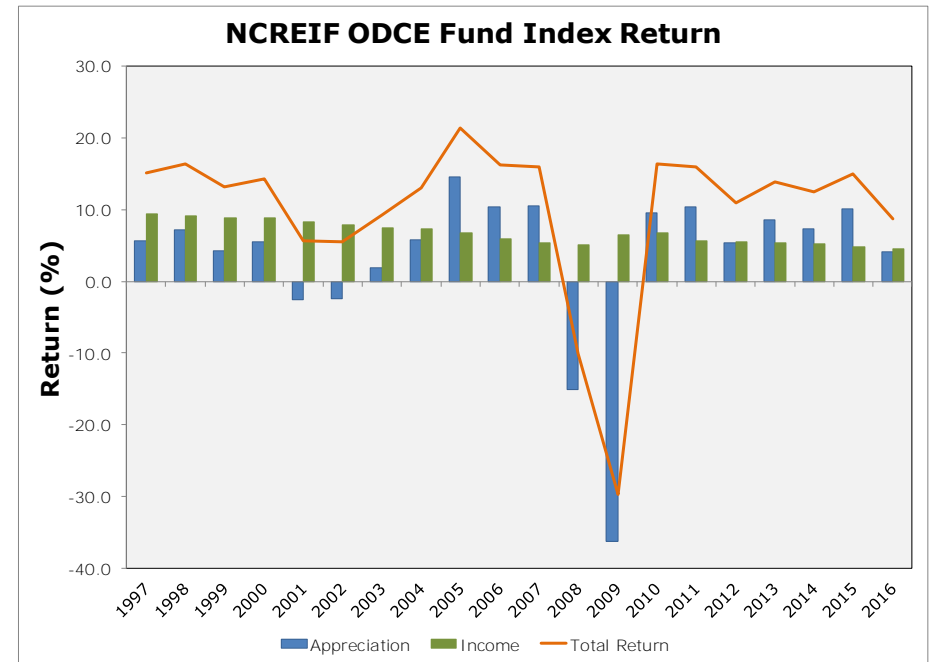
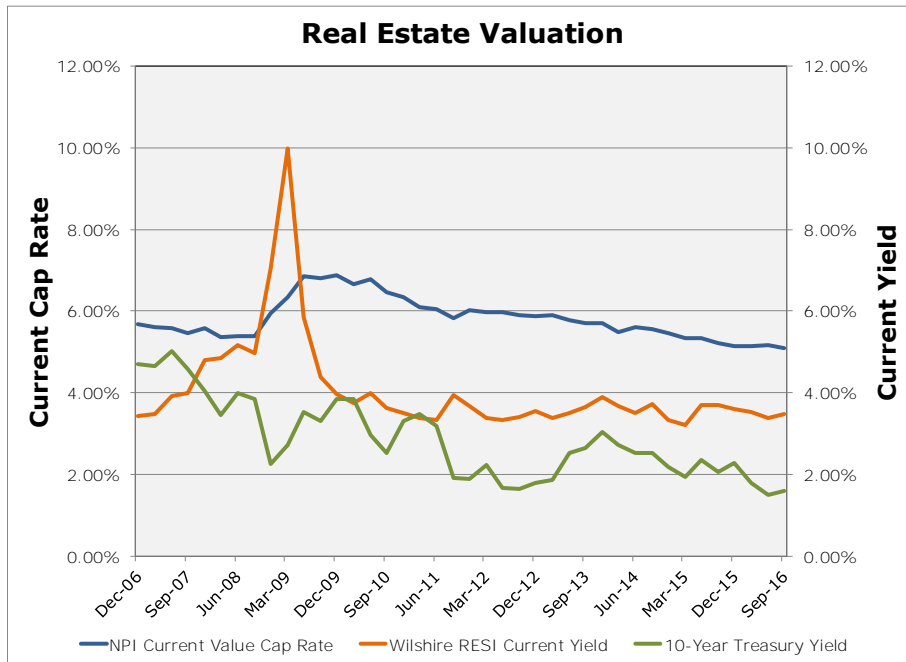
International Income – Rolling Tracking Error



Real Assets



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



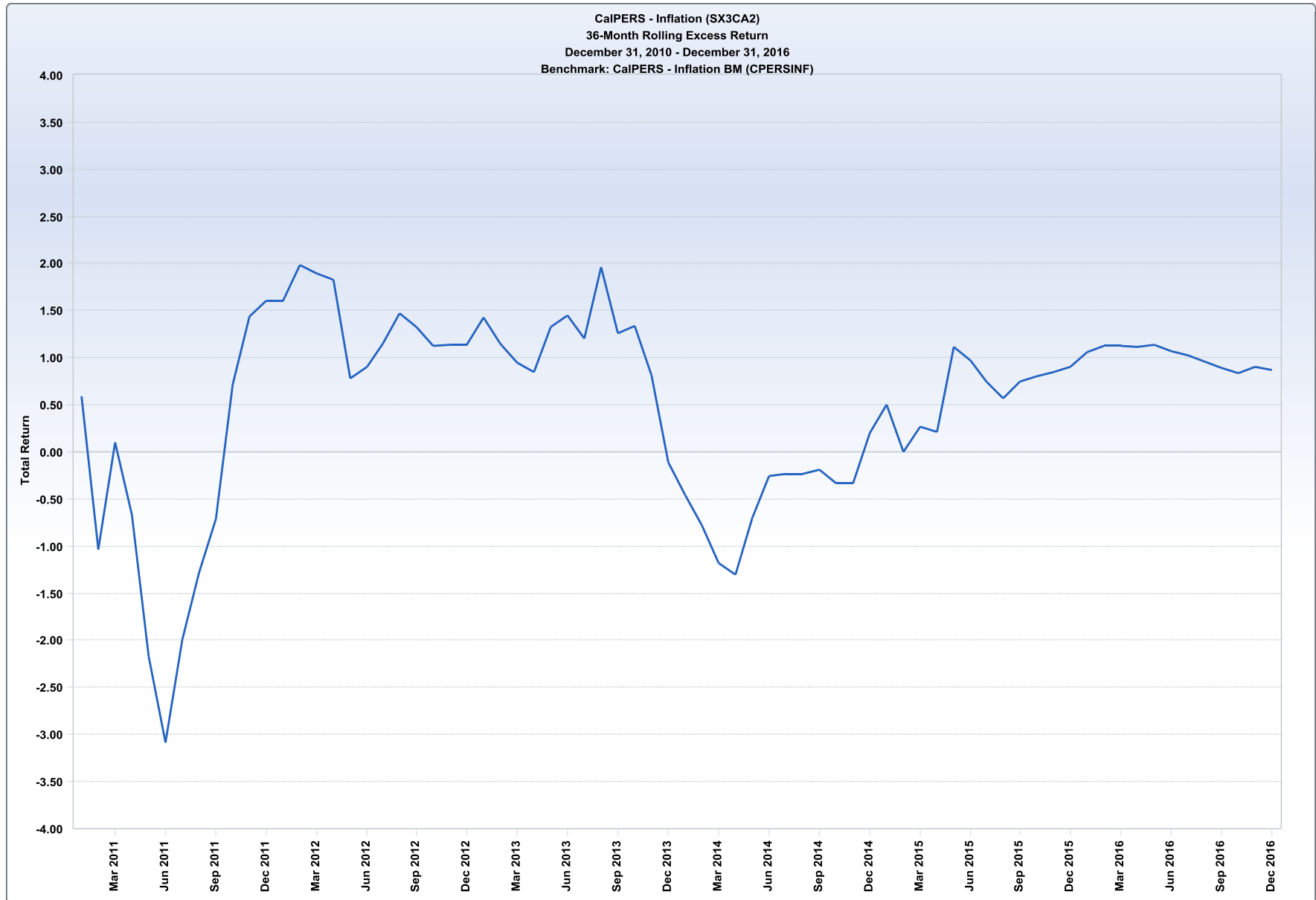
Data sources: Wilshire Compass, National Council of Real Estate Investment Fiduciaries



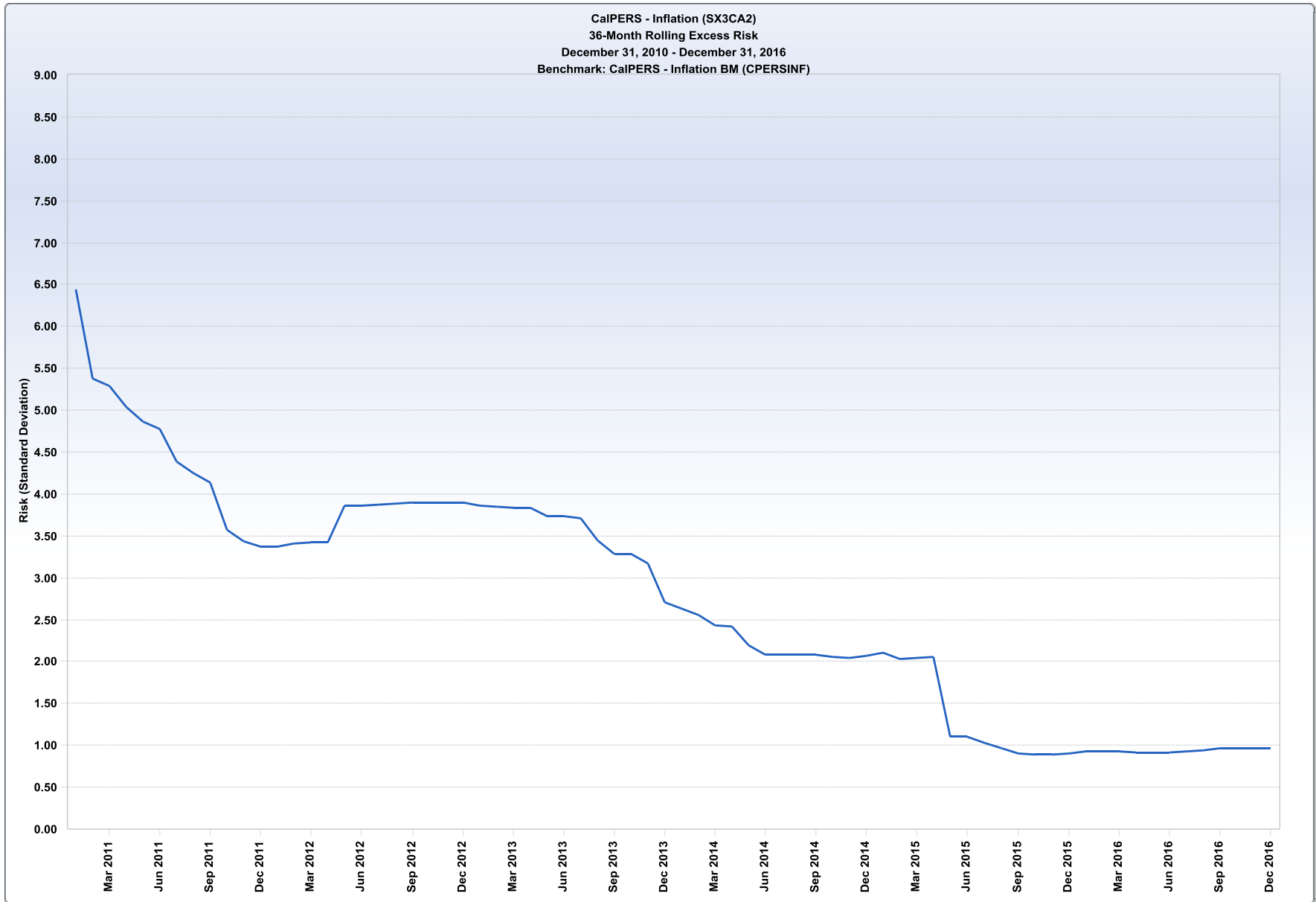
Inflation – Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
INFLATION	28.7	-1.6%	6.3%	-3.7%	-2.2%	-.-%	\$2.0 bil	-0.3	0.2
<i>Inflation Policy Benchmark</i>		-1.6%	6.3%	-4.5%	-2.5%	-.-%		-0.4	0.0
<i>Value Added</i>		0.0%	0.0%	0.8%	0.3%	-.-%			
Internal Commodities	5.3	5.8%	10.9%	-20.4%	-13.3%	-.-%			
<i>GSCI Total Return Index</i>		5.8%	11.4%	-20.6%	-13.1%	-.-%			
<i>Value Added</i>		0.0%	-0.5%	0.2%	-0.2%	-.-%			
Core Inflation Linked Bonds	18.9	-4.3%	4.0%	1.2%	1.1%	-.-%			
<i>Custom Benchmark</i>		-4.2%	4.2%	0.8%	0.9%	-.-%			
<i>Value Added</i>		-0.1%	-0.2%	0.4%	0.2%	-.-%			
Tactical Commodities	2.5	7.9%	9.8%	-20.9%	-.-%	-.-%			
<i>GSCI Total Return Index</i>		5.8%	11.4%	-20.6%	-.-%	-.-%			
<i>Value Added</i>		2.1%	-1.6%	-0.3%	-.-%	-.-%			
Tactical TIPS	2.0	-2.4%	4.3%	2.1%	-.-%	-.-%			
<i>CalPERS TIPS</i>		-2.4%	4.7%	2.3%	-.-%	-.-%			
<i>Value Added</i>		0.0%	-0.4%	-0.2%	-.-%	-.-%			

Inflation – Rolling Excess Returns



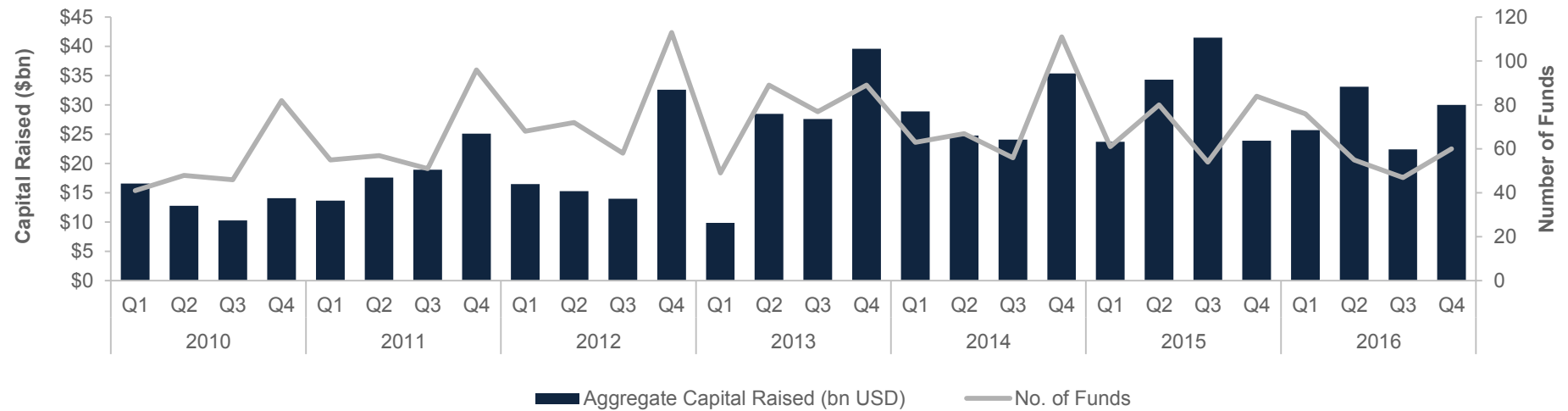
Inflation – Rolling Tracking Error



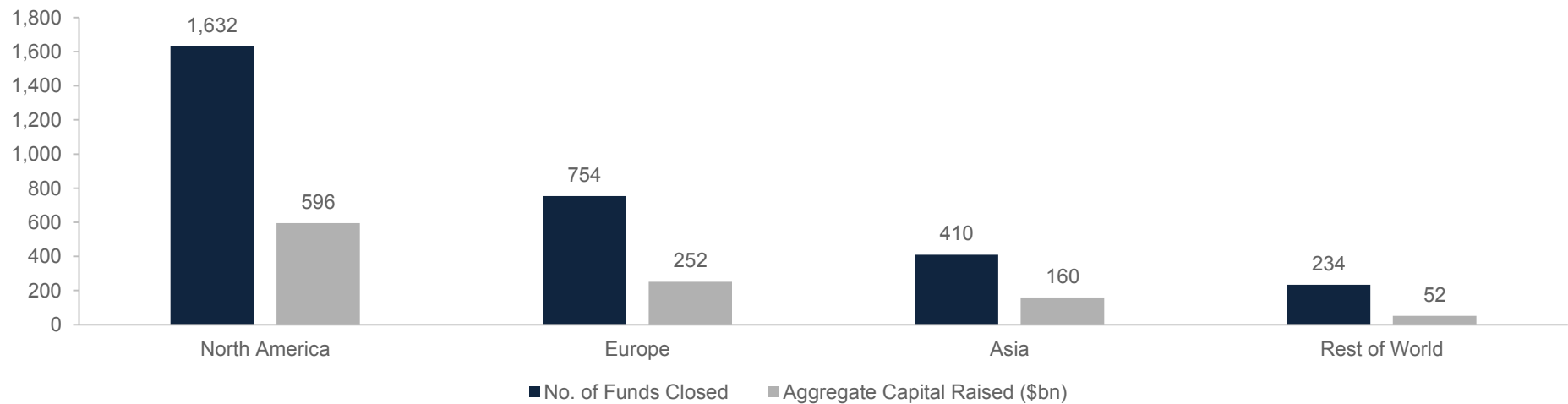
Private Real Estate – Fundraising Activity



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



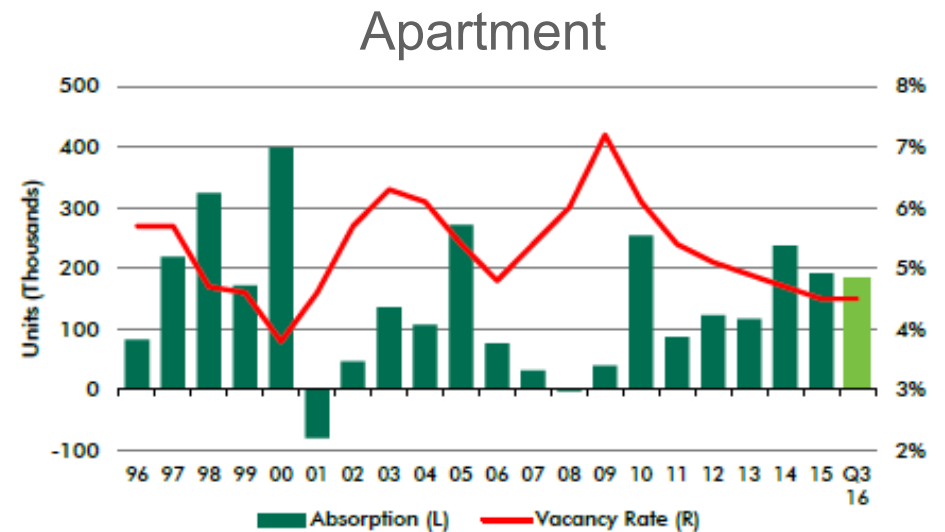
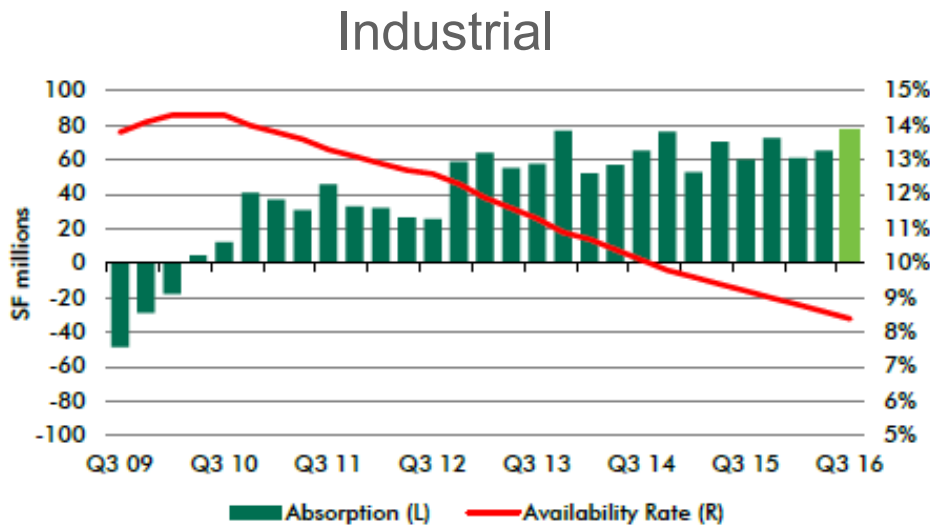
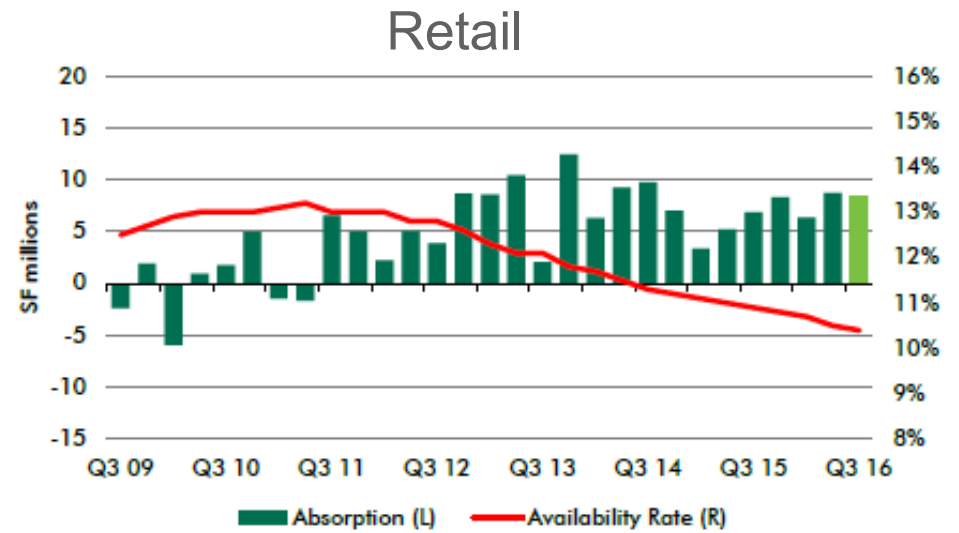
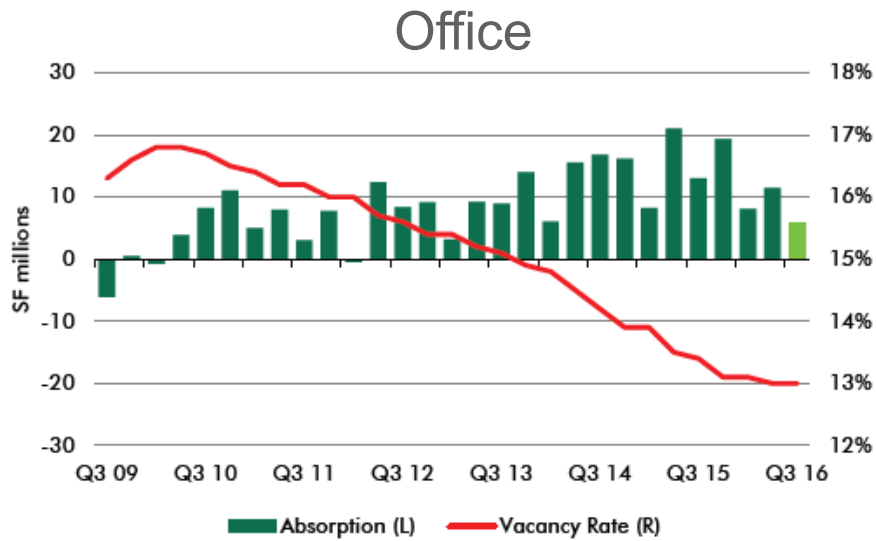
Closed-End Private Real Estate Fundraising by Primary Geographic Focus (2006 - 2016)



Source: Preqin, as of December 31, 2016.



Commercial Property (as of Q3 2016)

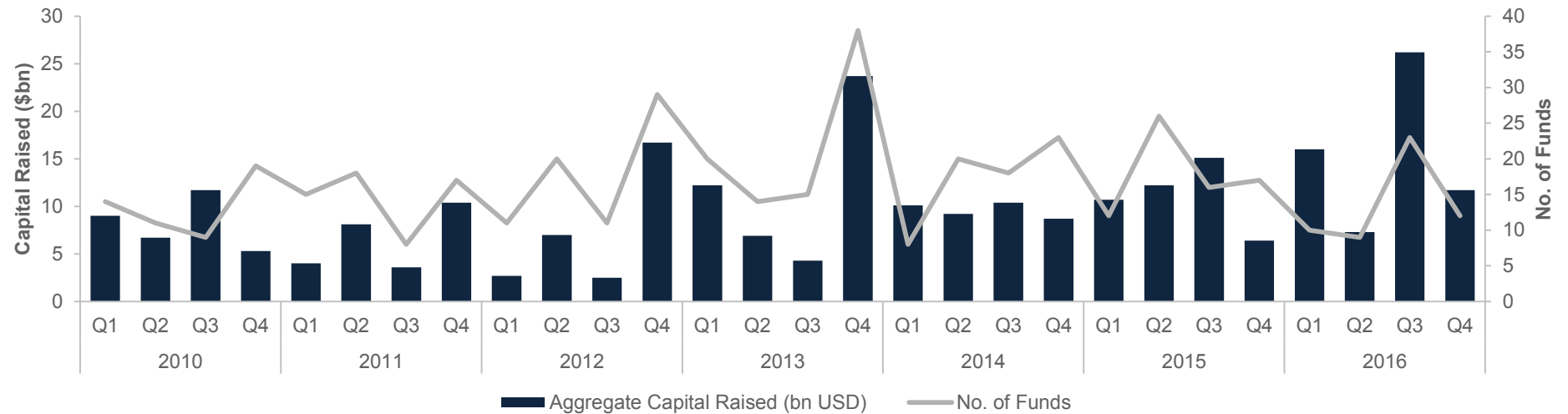


Source: CB Richard Ellis

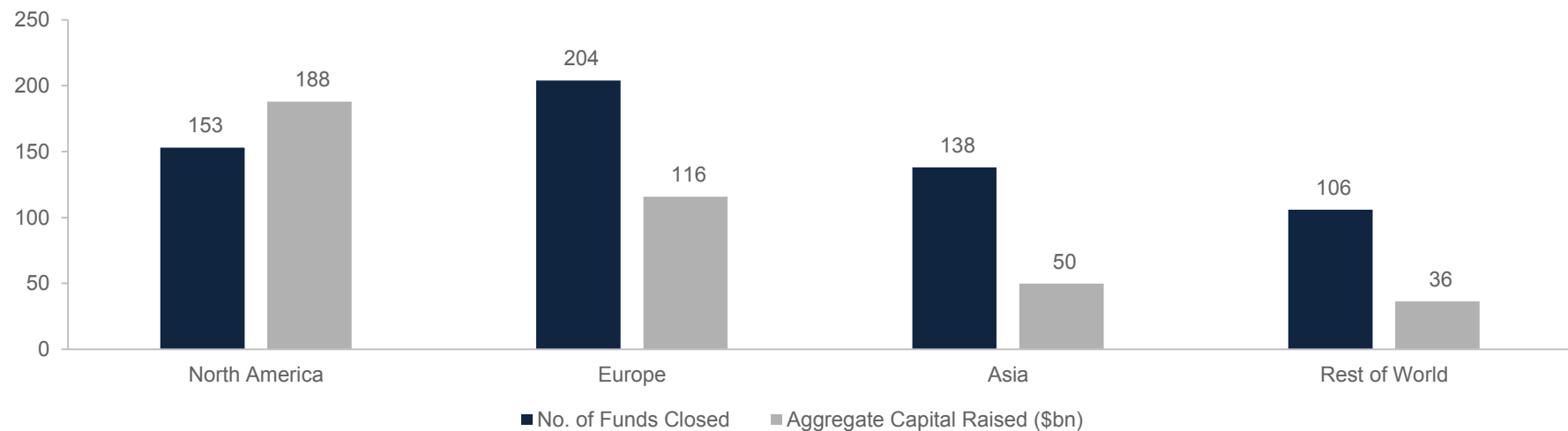
Unlisted Infrastructure – Fundraising & Investment Activity



Global Quarterly Unlisted Infrastructure Fundraising (2010 - 2016)



Unlisted Infrastructure Fundraising by Primary Geographic Focus (2006 - 2016)



Source: Preqin, as of December 31, 2016.

Timber

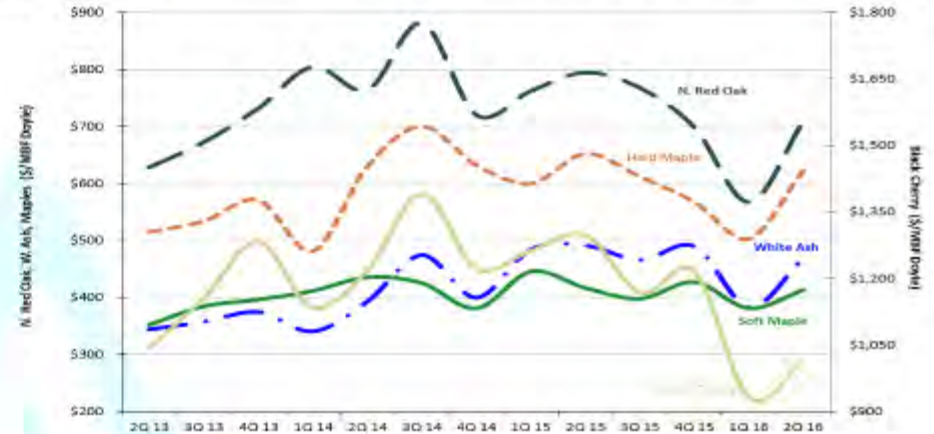


Southeastern Timber Prices



Source: Forest2Market®

Northeastern Hardwood Timber Prices



Source: Pennsylvania Woodlands Timber Market Report - Northwest Region

Pacific Northwest Timber Prices



Source: Log Lines®

Pulp and Paper



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

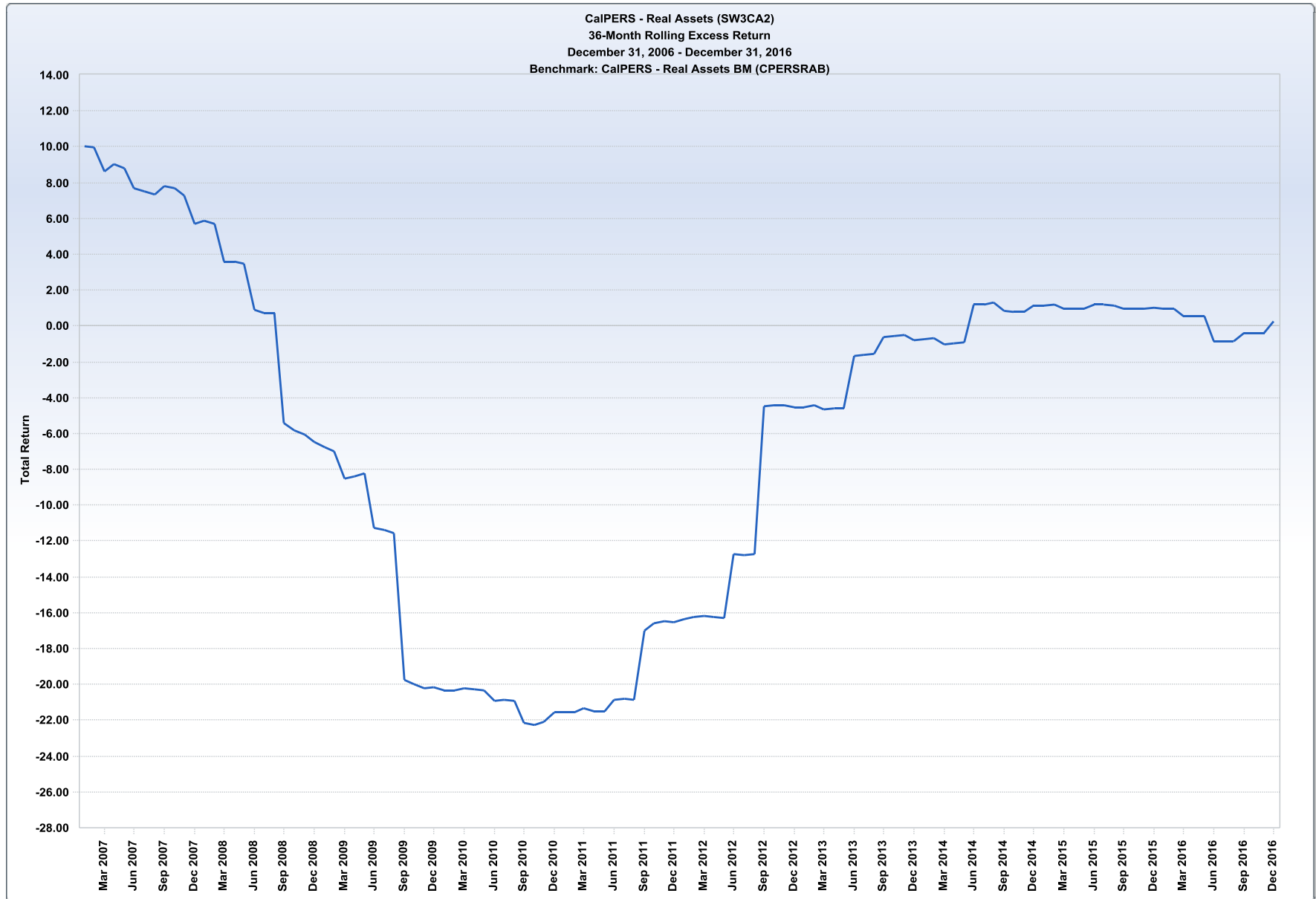
Source: Forest Investment Associates

Real Assets – Performance



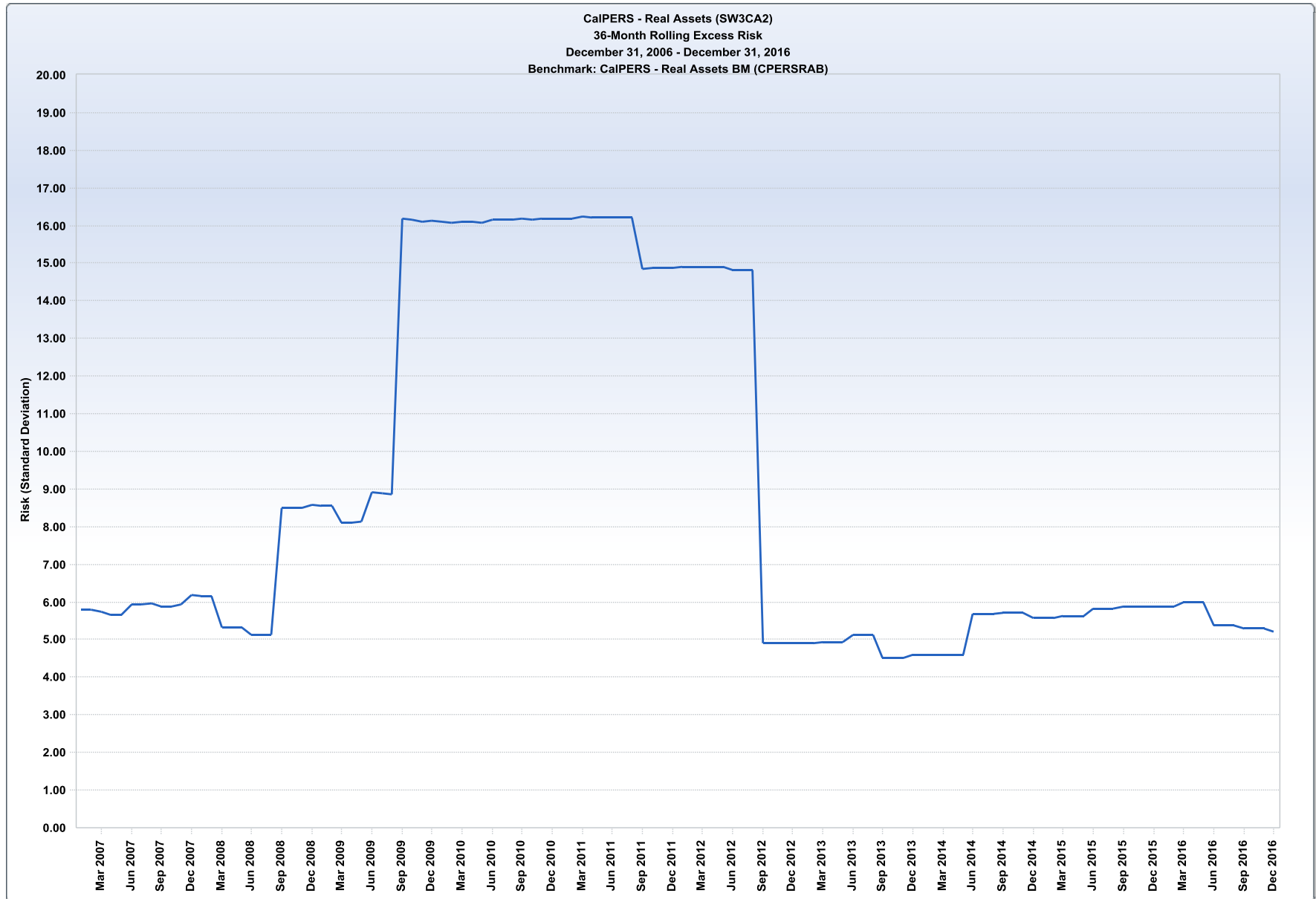
	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
REAL ASSETS	33.0	1.9%	5.8%	10.8%	11.3%	-0.8%	\$4.8 bil	1.6	0.1
<i>Real Assets Policy Benchmark</i>		1.7%	8.3%	10.6%	10.7%	7.4%		2.6	0.0
<i>Value Added</i>		0.2%	-2.5%	0.2%	0.6%	-8.2%			
Real Estate	27.9	1.8%	6.8%	11.7%	12.5%	-1.2%	\$4.5 bil	1.6	0.1
<i>Real Estate Policy Benchmark</i>		1.8%	9.1%	11.4%	11.6%	8.3%		2.5	0.0
<i>Value Added</i>		0.0%	-2.3%	0.3%	0.9%	-9.5%			
Forestland	2.0	0.4%	-9.4%	-2.1%	-1.8%	-.-%			
<i>NCREIF Timberland Index</i>		0.7%	3.3%	7.6%	6.9%	-.-%			
<i>Value Added</i>		-0.3%	-12.7%	-9.7%	-8.7%	-.-%			
Infrastructure	3.1	4.0%	8.3%	14.0%	12.0%	-.-%			
<i>CPI + 400 BPS 1Qtr Lag</i>		1.2%	5.5%	5.1%	5.3%	-.-%			
<i>Value Added</i>		2.8%	2.8%	8.9%	6.7%	-.-%			

Real Assets – Rolling Excess Returns

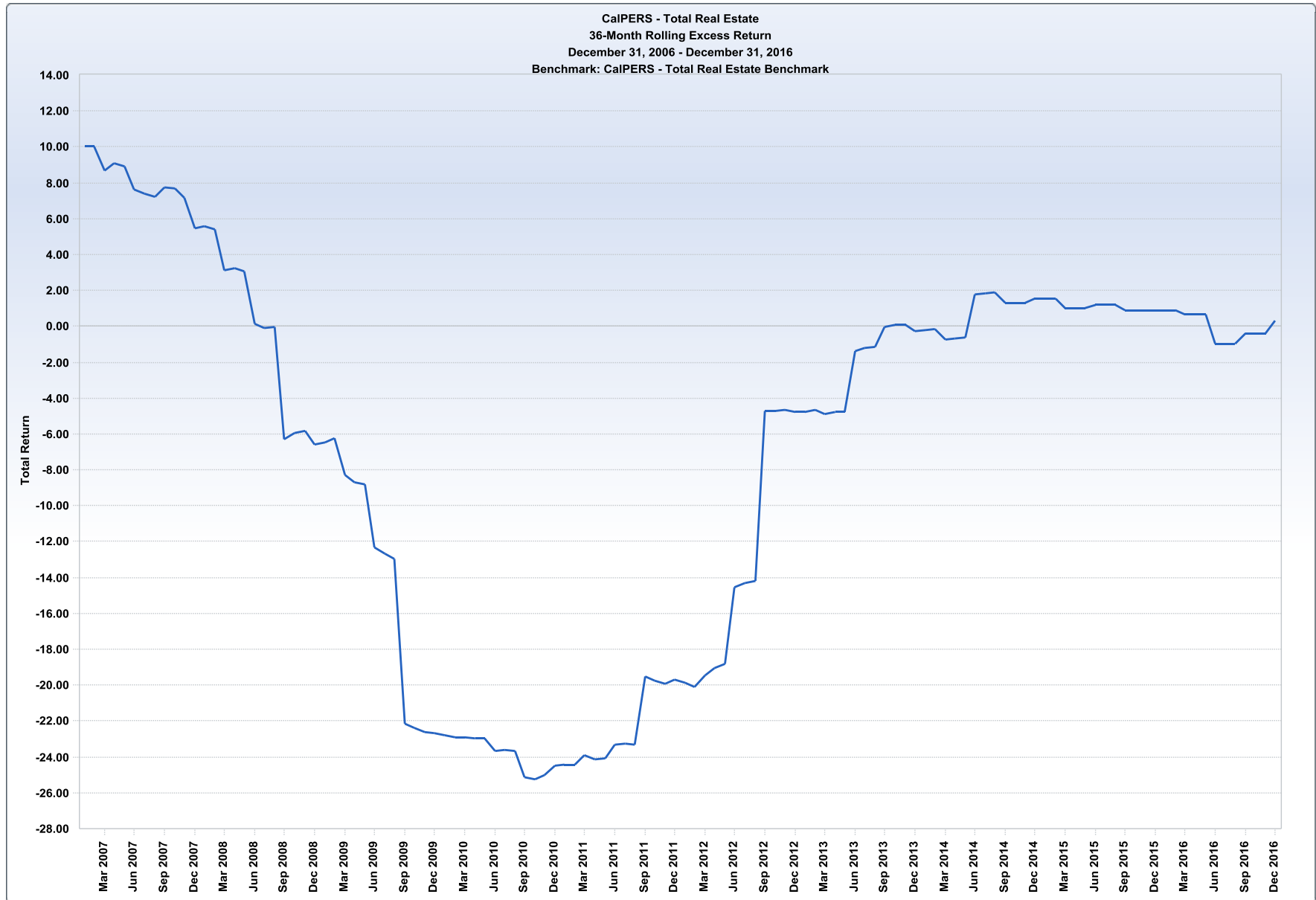




Real Assets – Rolling Tracking Error

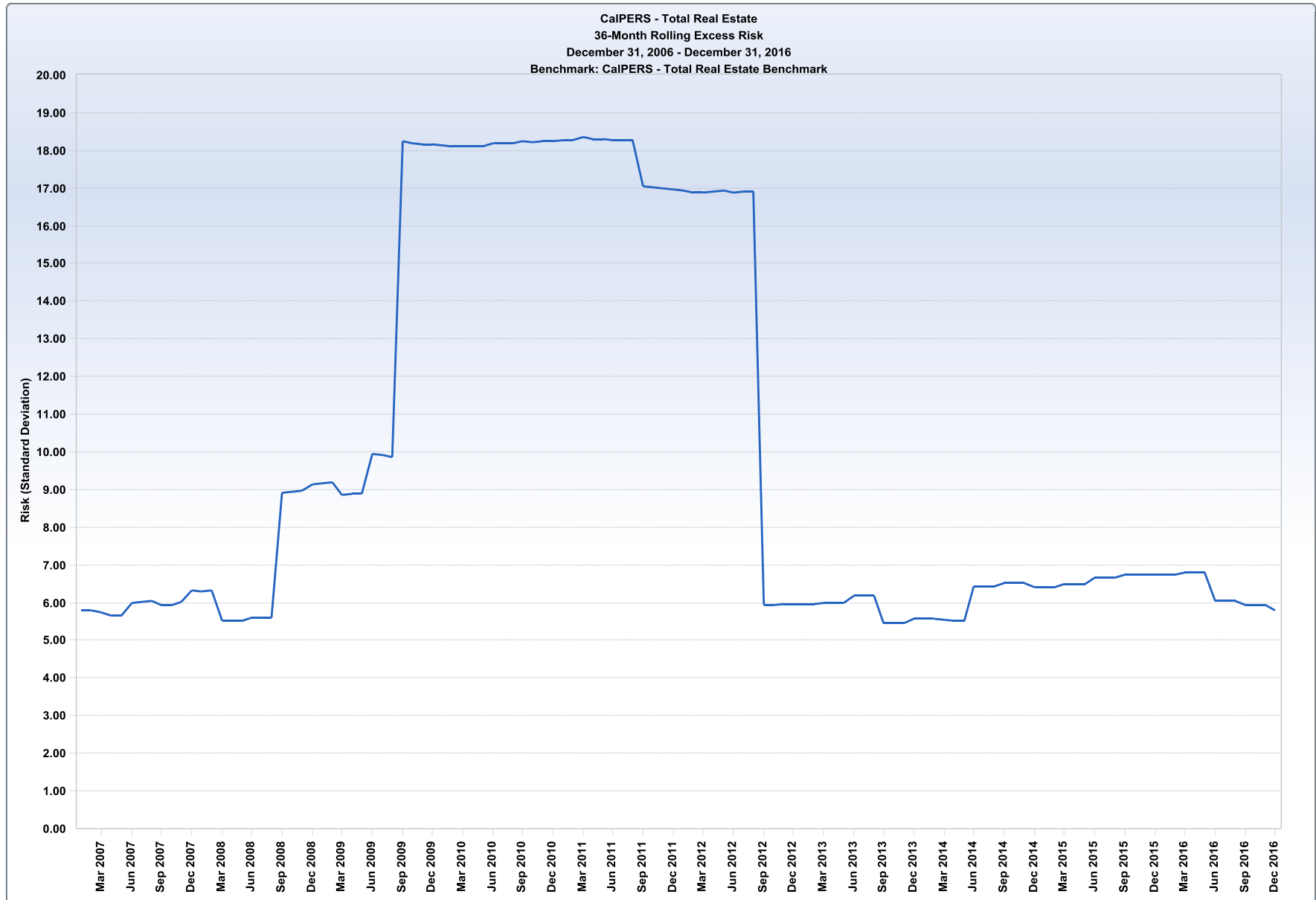


Real Estate – Rolling Excess Returns





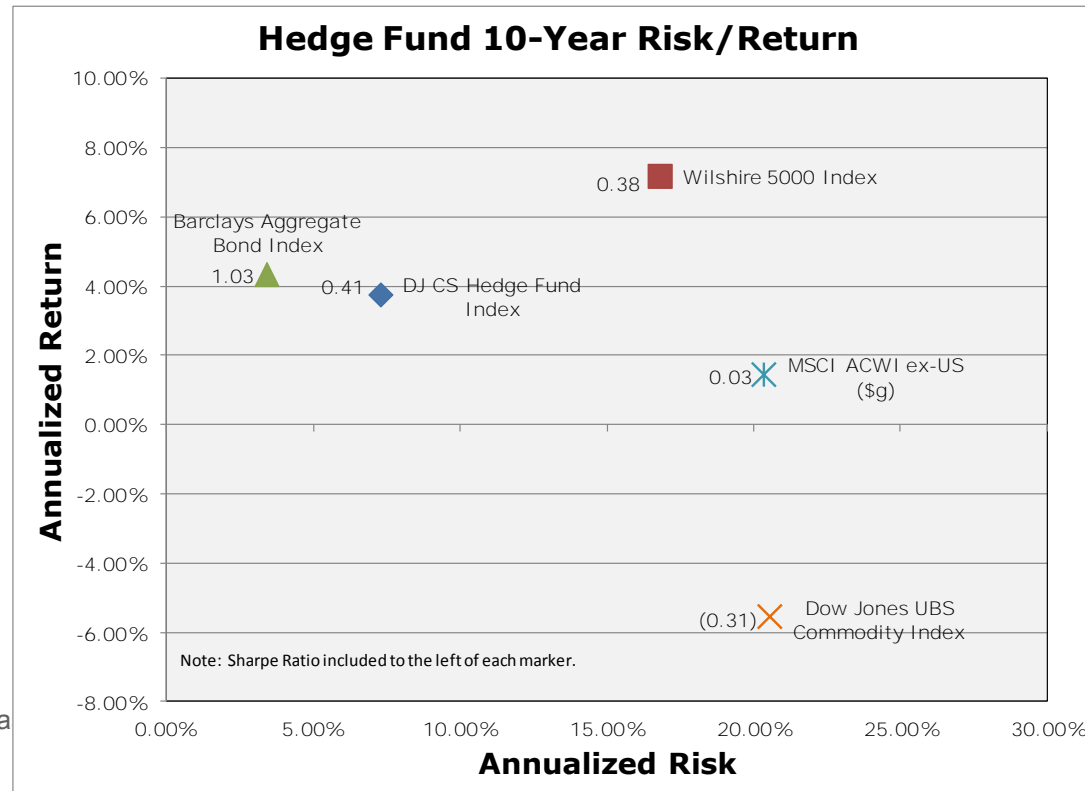
Real Estate – Rolling Tracking Error



Hedge Fund Performance



December 31, 2016	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
DJ CS Hedge Fund Index	1.2	1.2	1.2	1.5	4.3	3.8
Event Driven Index	2.3	2.7	2.7	-0.8	4.5	3.7
Global Macro Index	4.6	3.6	3.6	2.3	3.1	5.8
Long/Short Equity Index	-0.2	-3.4	-3.4	1.8	6.1	4.0
Multi-Strategy Index	1.2	4.4	4.4	4.8	7.3	5.2
Wilshire 5000	4.5	13.4	13.4	8.8	14.7	7.2
MSCI ACWI ex-US (\$g)	-1.2	5.0	5.0	-1.3	5.5	1.4
Barclays Aggregate Bond Index	-3.0	2.6	2.6	3.0	2.2	4.3
Dow Jones UBS Commodity Index	2.7	11.8	11.8	-11.3	-9.0	-5.6



Data sources: Wilshire Compa



ARS – Distribution of Performance

	<u>Market</u>						<u>5-Year</u>	<u>5-Year Up</u>	<u>5-Year</u>	<u>5-Year</u>
	<u>Value</u>	<u>Qtr</u>	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>	<u>10-Year</u>	<u>Info</u>	<u>Capture</u>	<u>Sharpe</u>	<u>Sortino</u>
							<u>Ratio</u>	<u>Ratio</u>	<u>Ratio</u>	<u>Ratio</u>
Absolute Return Strategies	0.3	-3.5%	-6.5%	0.0%	2.4%	1.8%	-0.7	0.4	0.6	0.8
<i>ARSPolicy Benchmark</i>		1.3%	5.8%	5.4%	5.3%	6.5%				
<i>Value Added</i>		-4.8%	-12.3%	-5.4%	-2.9%	-4.7%				
Total Direct Investments	0.3	-3.5%	-6.2%	0.0%	2.4%	2.1%				
Total Funds of Funds	0.0	-6.4%	-14.1%	0.5%	2.7%	1.3%				
HFRF Fund of Funds Index		0.6%	-0.4%	3.9%	2.1%	2.3%				