



California Public Employees' Retirement System

Performance Review – December 31, 2015

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January 2016

December 2015 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	9.50	1.25	3.50	4.30	3.25	6.35	1.65	5.00	5.20	5.80	3.55	6.40	1.55
Expected Arithmetic Return (%)	7.80	7.95	9.45	8.25	8.05	12.70	1.25	3.60	4.75	3.40	6.80	1.70	6.35	6.35	6.70	4.60	6.75	1.55
Expected Risk (%)	17.00	18.00	26.00	18.65	17.10	27.50	1.25	5.00	10.00	6.00	10.00	3.50	17.00	15.75	14.00	15.00	8.40	1.75
Cash Yield (%)	2.25	3.25	2.75	3.15	2.65	0.00	1.25	3.50	4.80	2.95	8.60	2.05	3.85	3.85	2.85	1.25	2.90	0.00
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	0.86	1.00														
Global Stock	0.95	0.93	0.84	0.95	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	0.28	0.13	0.00	0.10	0.20	0.31	0.19	1.00										
LT Core Bond	0.32	0.16	0.01	0.12	0.23	0.32	0.11	0.94	1.00									
TIPS	-0.05	0.00	0.15	0.05	0.00	-0.03	0.20	0.61	0.49	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	0.22	0.10	0.57	0.05	1.00					
Global RE Securities	0.67	0.62	0.59	0.65	0.68	0.60	-0.05	0.16	0.21	0.11	0.64	0.03	0.94	1.00				
Private Real Estate	0.55	0.45	0.45	0.48	0.53	0.51	-0.05	0.19	0.25	0.09	0.58	0.05	0.79	0.76	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	0.30	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	0.52	0.08	0.66	0.71	0.69	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	0.03	0.05	0.40	0.25	1.00

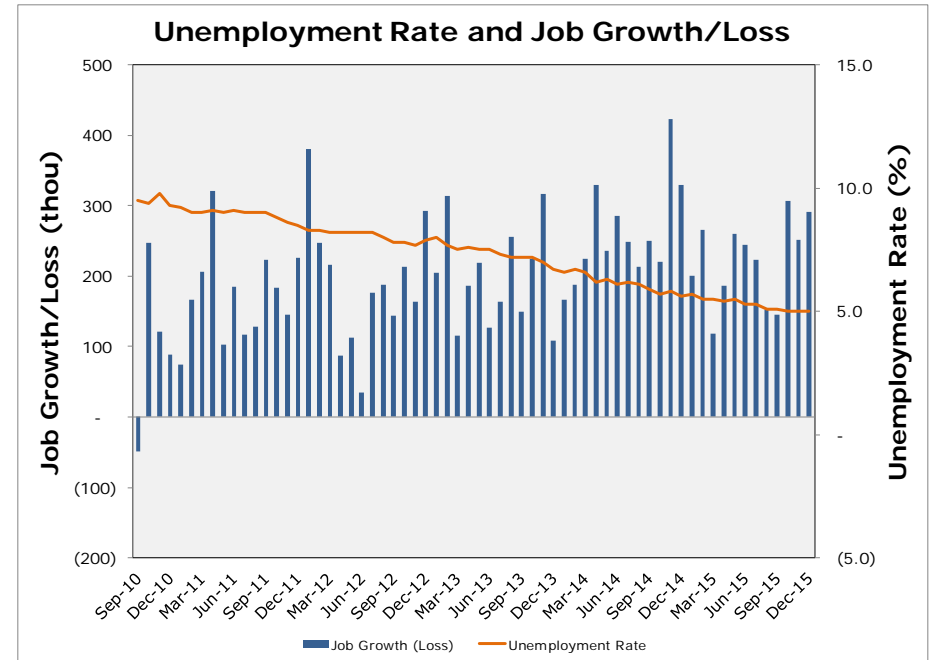
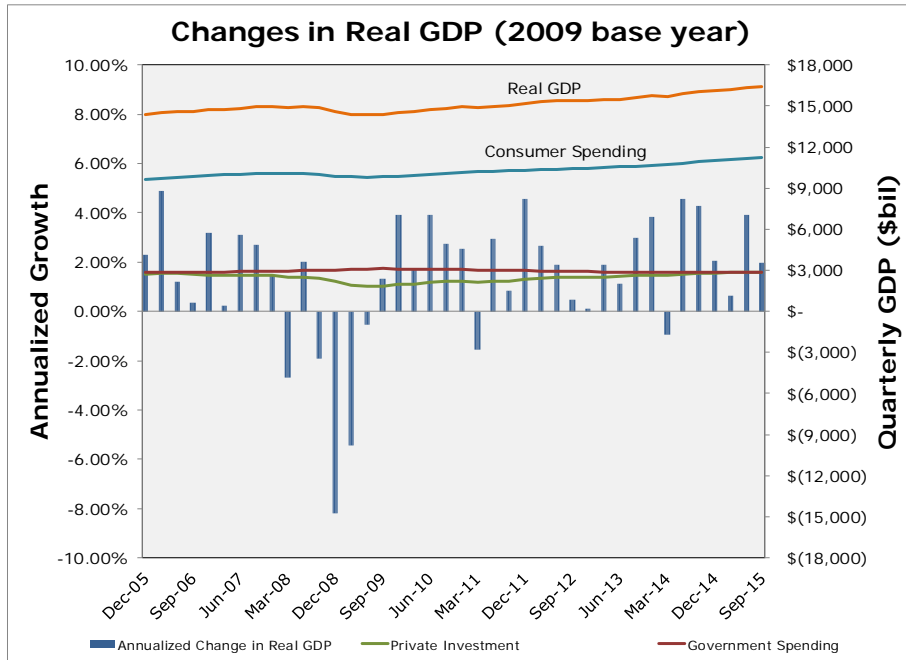


Economic Review



December 31, 2015	Key Economic Indicators			
CPI (all items) Seasonally adjusted	Monthly Change		Cumulative Change	
	Dec-15	-0.1	3-Month	0.1
	Nov-15	0.0	12-Month	0.7
	Oct-15	0.2	10-Yr Annual	1.8
Breakeven Inflation	10-Year	1.6		
Consumer Sentiment Unv. of Michigan Survey	Dec-15	92.6		
	Nov-15	91.3		
	1-Yr Ago	93.6	10-Yr Avg	77.5
Manufacturing Inst. for Supply Mgmt Purchasing Mngrs' Idx	Dec-15	48.2	Change in Manufacturing Sector	
	Nov-15	48.6	>50	Expansion
	1-Yr Avg	51.4	<50	Contraction

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



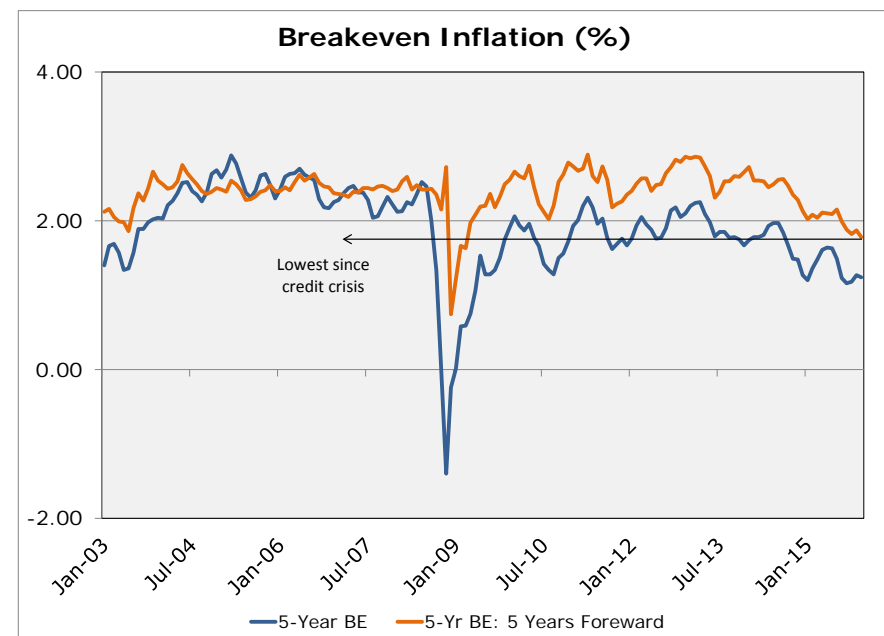
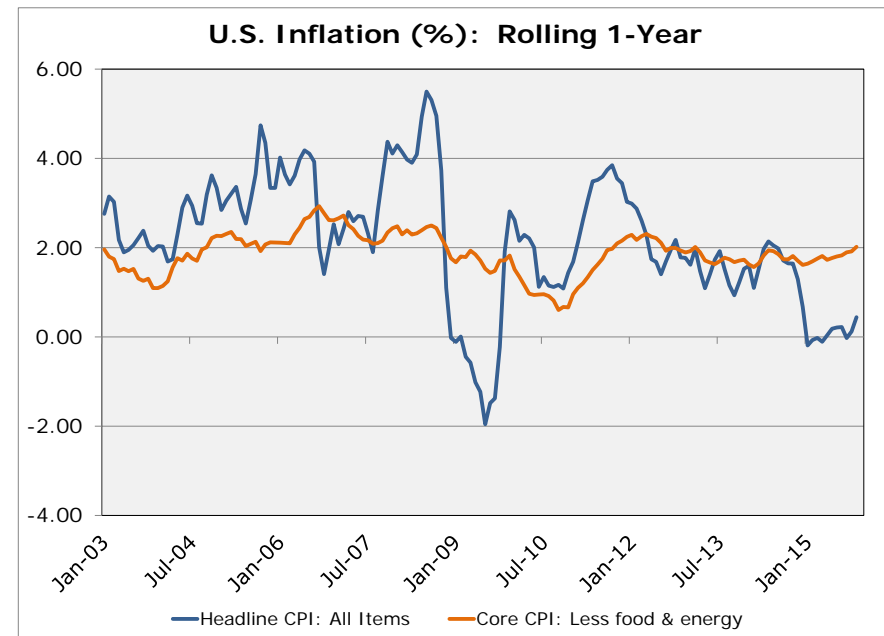
Data sources: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Bank of St. Louis, Barclays Capital





Inflation Environment

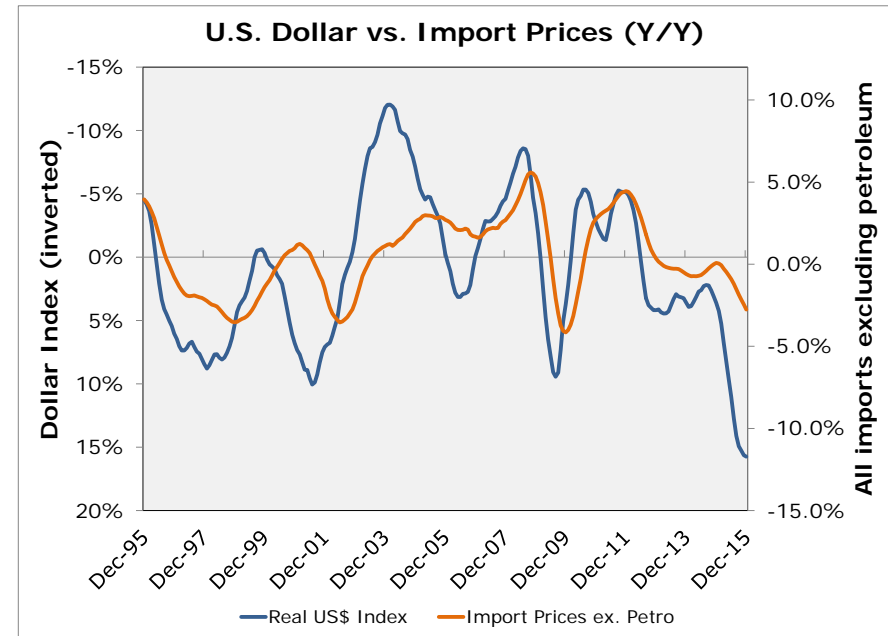
- As the price of oil has fallen, total/headline CPI has been barely positive
- Core CPI (less food and energy) has struggled to maintain the Fed's target inflation of 2%
- Market participants are signaling their belief that mild inflation will continue
- 5-year breakeven, 5-years forward (implied by the 5 and 10 year breakeven) suggests sub-2% inflation in years 6-10 of the next decade
- There are certain trends that are having a mixed effect on inflation, reviewed in the coming slides





Inflation: Weak Import Prices

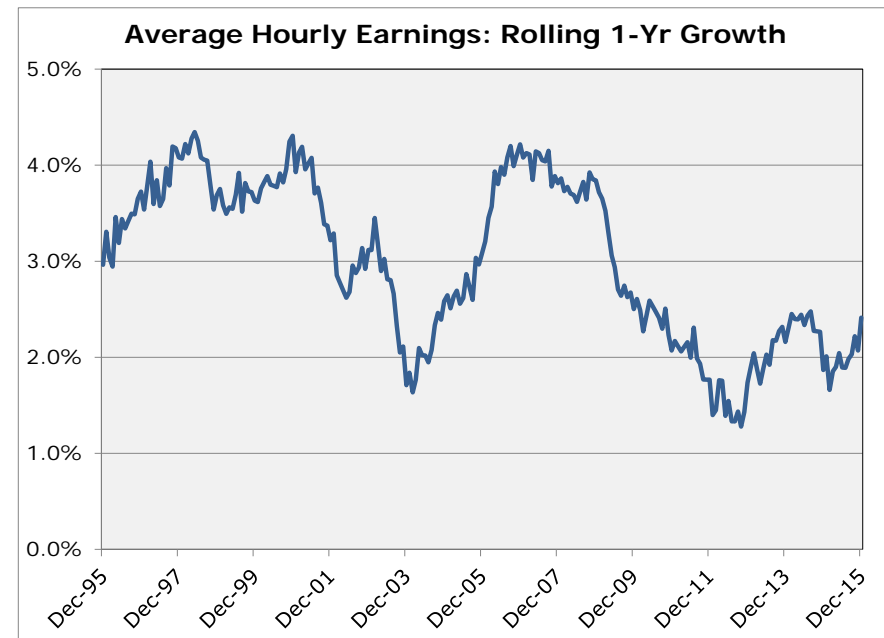
- Falling import prices are reflecting weak global market conditions
- Strong U.S. dollar is weighing on import prices, as are weak inflationary pressures within trading partner home countries
- U.S. consumers increasingly meet their demand with imported goods
- This causes the strong dollar and weak import prices to exert downward pressure on overall U.S. inflation





Inflation: Wage Growth Modest

- Growth in average hourly earnings still modest but trending higher
- Wages are the primary driver of services prices, which could exert upward pressure on CPI *should* the trend continue



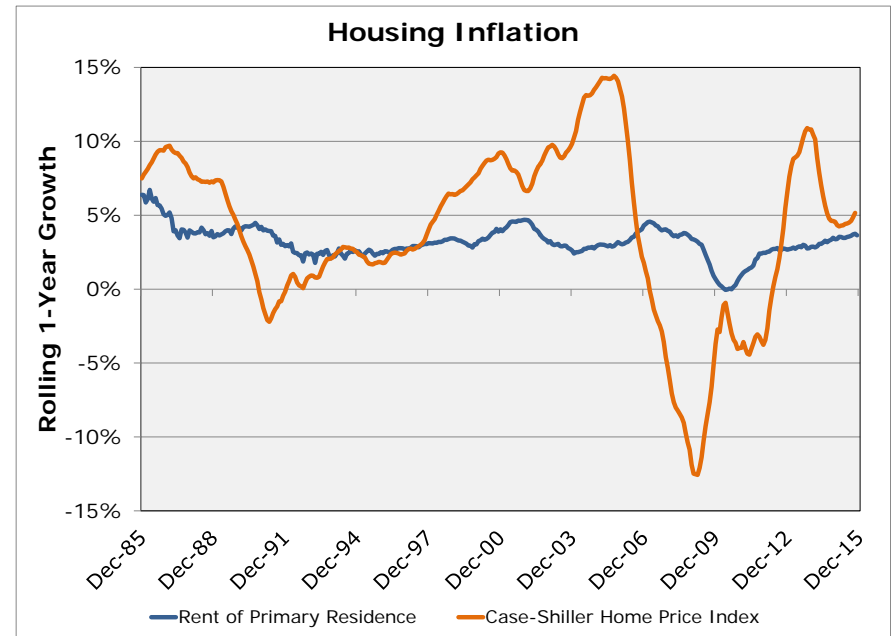
- On the downside, the percentage of workers who report no change in their wages remains stubbornly high
- Reasons for this could be the lack of nominal wage cuts during the recession or a side effect of low actual and expected inflation





Inflation: Housing Prices Improving

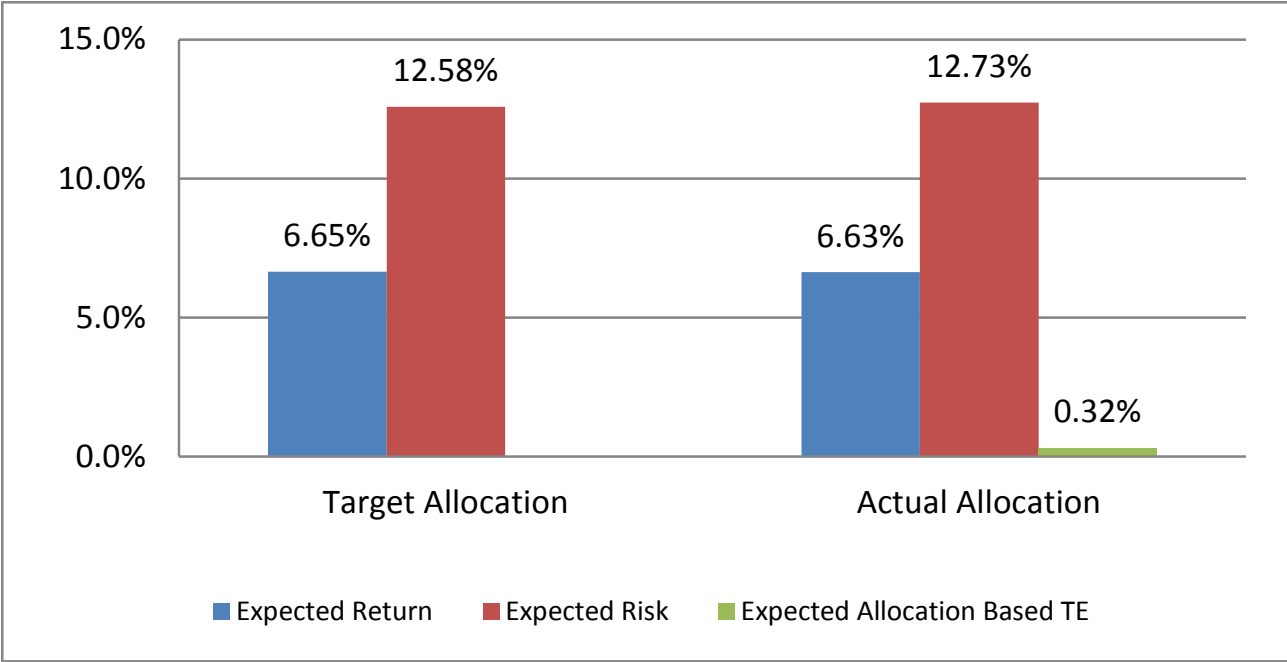
- One area supporting inflation, but not problematic, is housing; a major component of U.S. CPI
- Rent increases, which directly effect CPI, are currently just above the 30-year average
- Growth in home prices also are above the long-term average but still moderate



- One final influence is a major global capacity build-up, mainly in China, that was labor and commodity intensive but is leveling-off
- How these issues continue to develop is yet unknown but investors decreased their expectations for future inflation for much of the second half of 2015



CalPERS Expected Return and Risk Estimates

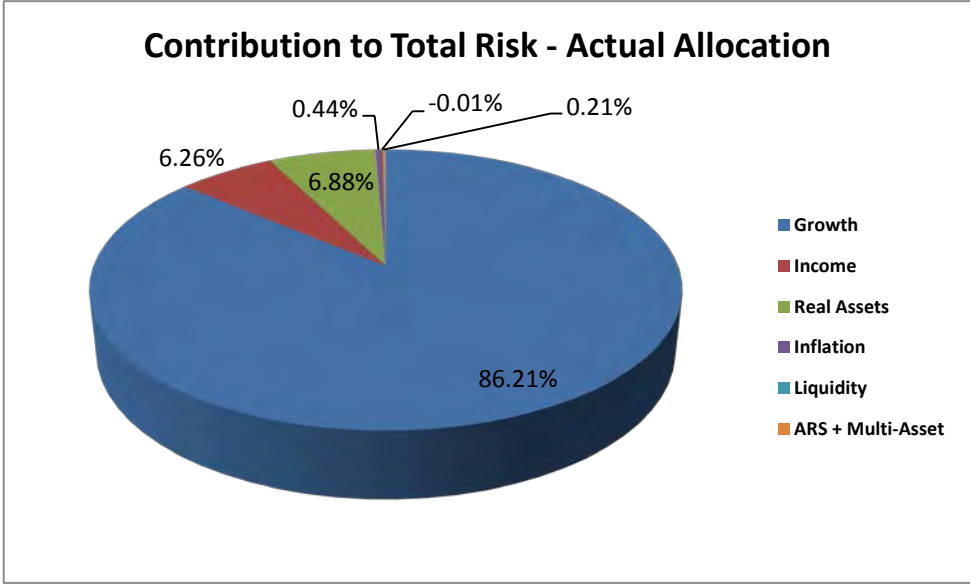
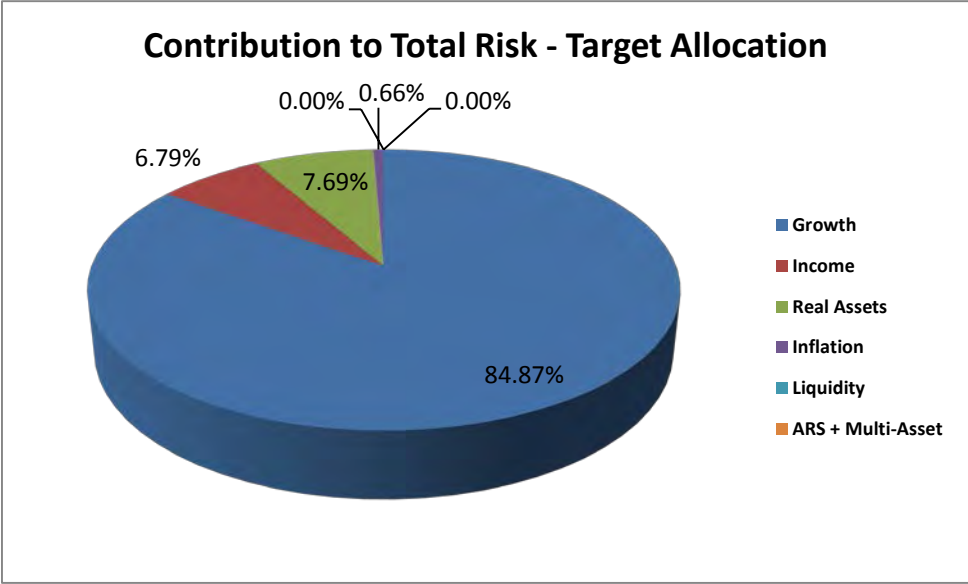
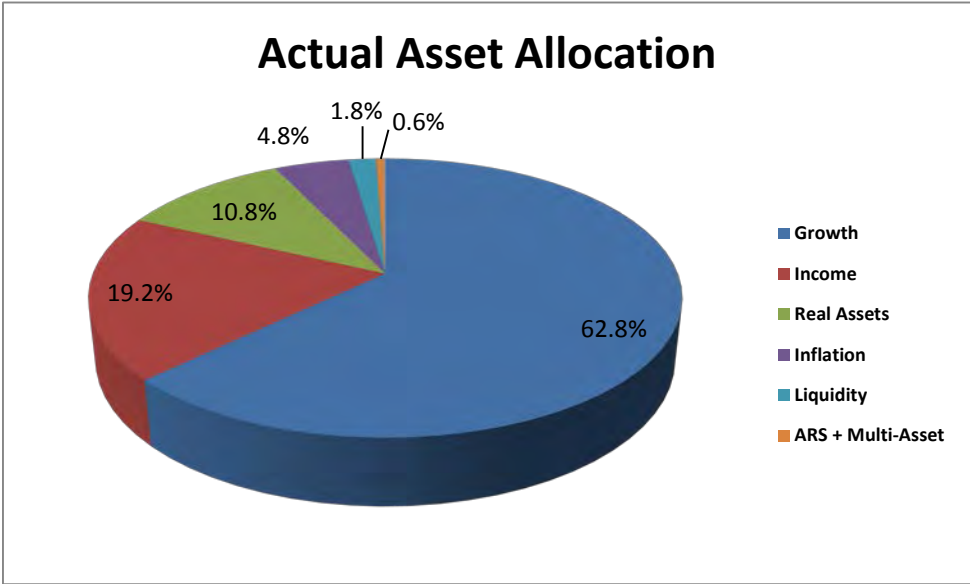
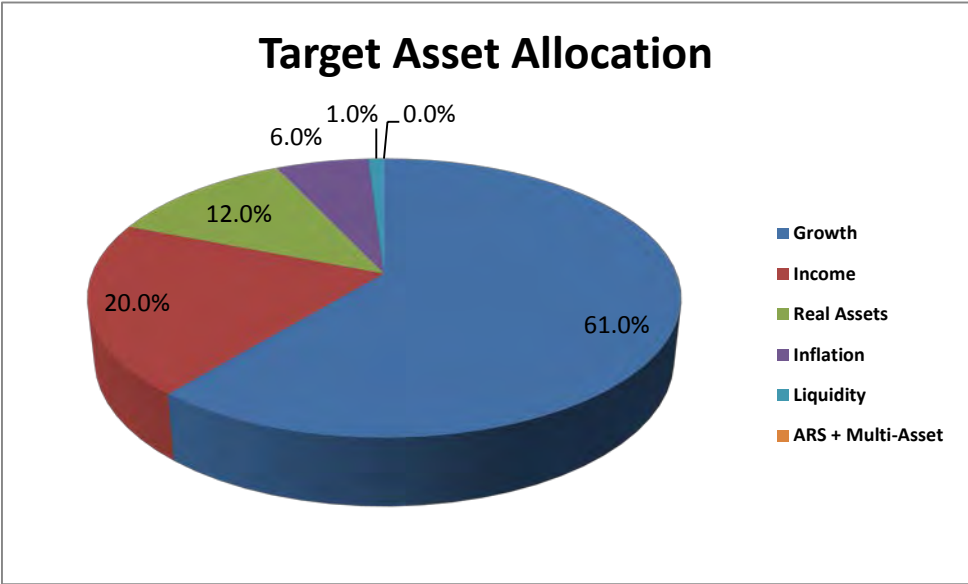


Forecasts using Wilshire's 2016 Asset Class Assumptions.





Asset and Risk Allocation

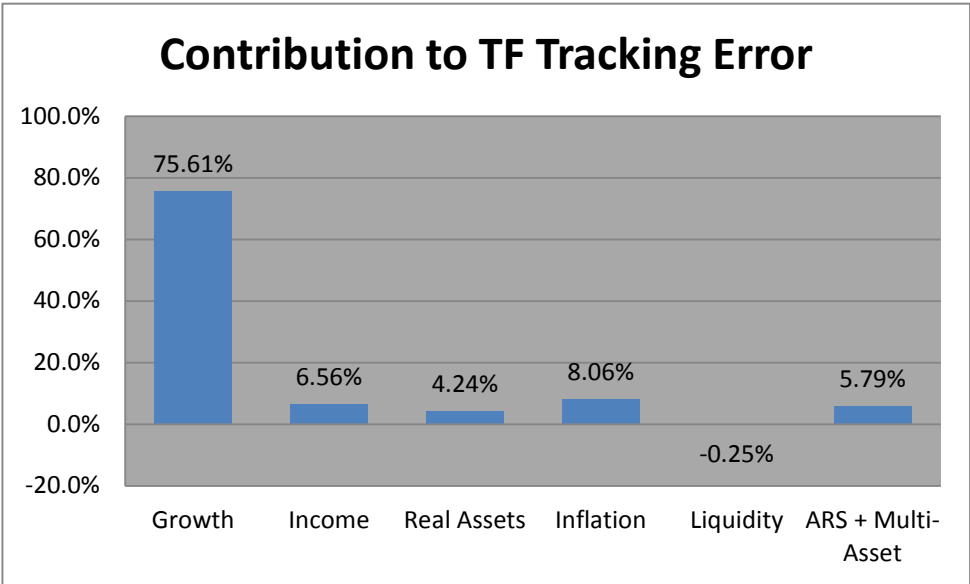
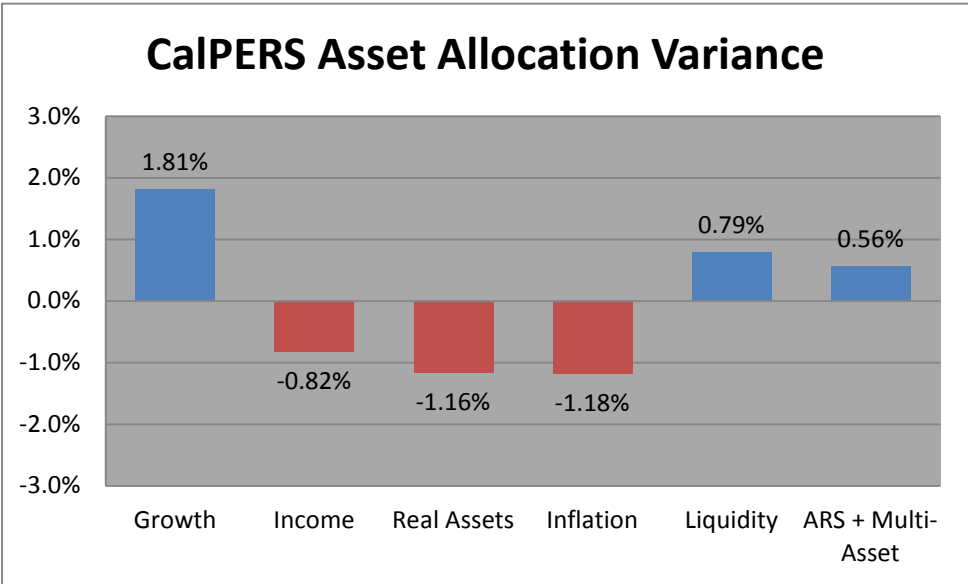


Forecasts using Wilshire's 2016 Asset Class Assumptions.





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.

Forecasts using Wilshire's 2016 Asset Class Assumptions.





Total Fund – Performance

	Market Value	5-Year Ratios							
		Qtr	1-Year	3-Year	5-Year	10-Year	VaR	Sharpe	Info
TOTAL FUND	\$289.9 bil	2.2%	-0.1%	7.3%	7.2%	5.1%	\$38.4 bil	1.1	0.1
<i>Total Fund Policy Benchmark</i>		1.6%	-0.6%	6.8%	7.1%	6.2%		1.0	0.0
<i>Actuarial Rate</i>		1.8%	7.5%	7.5%	7.6%	7.7%			
GROWTH	182.0	3.9%	-1.2%	9.3%	7.9%	5.8%	\$37.5 bil	0.8	-0.1
<i>Growth Policy Benchmark</i>		2.7%	-2.0%	9.4%	8.1%	6.7%		0.7	0.0
PUBLIC EQUITY	154.7	5.0%	-2.3%	8.7%	6.7%	5.0%	\$31.2 bil	0.5	0.5
<i>Public Equity Policy Benchmark</i>		5.0%	-2.2%	8.5%	6.6%	5.4%		0.5	0.0
PRIVATE EQUITY	27.4	-1.9%	5.5%	12.9%	12.7%	11.2%	\$8.9 bil	2.6	0.0
<i>Private Equity Policy Benchmark</i>		-8.5%	-2.0%	12.5%	13.2%	12.9%		1.0	0.0
INCOME	55.6	-1.0%	-1.4%	1.3%	4.7%	6.1%	\$6.5 bil	1.0	0.6
<i>Income Policy Benchmark</i>		-0.8%	-1.5%	0.6%	4.2%	5.4%		0.8	0.0
REAL ASSETS	31.4	2.5%	14.0%	12.7%	12.1%	1.2%	\$4.3 bil	1.7	0.1
<i>Real Assets Policy Benchmark</i>		3.0%	12.6%	11.6%	11.7%	8.3%		2.7	0.0
INFLATION	14.0	-4.7%	-11.3%	-7.1%	-1.8%	-.%	\$1.0 bil	-0.2	0.2
<i>Inflation Policy Benchmark</i>		-5.2%	-12.0%	-8.0%	-2.3%	-.%		-0.3	0.0
LIQUIDITY	5.2	0.3%	0.6%	0.2%	1.1%	2.0%	\$0.0 bil	0.7	-0.7
<i>Liquidity Policy Benchmark</i>		0.0%	0.7%	0.6%	1.5%	2.1%		0.8	0.0
ABSOLUTE RETURN STRATEGIES	0.5	-0.5%	2.5%	5.3%	3.3%	3.7%		1.0	-0.6
<i>Absolute Return Strategies Policy Benchmark</i>		1.1%	5.2%	5.2%	5.3%	6.9%		32.4	0.0
MULTI-ASSET CLASS COMPOSITE	1.2	1.1%	0.9%	6.2%	-.%	-.%		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	-0.9%	-2.1%	-.%	-.%	-.%		N/A	N/A
TOTAL FUND PLUS TAP	290.0	2.2%	-0.1%	7.3%	7.2%	5.1%		N/A	N/A



Total Fund – Attribution (Quarter)

California Public Employees' Retirement System
Total Fund Attribution - Quarter
As of 12/31/2015

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	62.92	3.88	61.00	2.72	1.92	1.15	0.08	-0.05	0.68	0.71
Public Equity	53.25	4.97	51.00	5.02	2.25	-0.06	0.04	0.00	-0.03	0.01
Private Equity	9.68	-1.87	10.00	-8.54	-0.32	6.68	0.04	-0.04	0.70	0.70
Income	19.32	-0.99	20.00	-0.85	-0.68	-0.14	0.00	0.00	-0.03	-0.03
Real Assets	10.83	2.46	12.00	2.98	-1.17	-0.52	-0.04	0.01	-0.06	-0.09
Inflation	5.01	-4.69	6.00	-5.20	-0.99	0.51	0.07	-0.01	0.03	0.09
Absolute Return	0.59	-0.52	0.00	1.06	0.59	-1.58	0.00	-0.01	0.00	-0.01
Liquidity	1.32	0.30	1.00	0.03	0.32	0.27	0.01	0.00	0.00	0.02
Monthly Linked Return	100.00	2.27	100.00	1.58		0.69	0.11	-0.05	0.62	0.69
Trading/Hedging/Other		-0.04		0.00		-0.04				-0.04
Total		2.23		1.58		0.65				0.65



Total Fund – Attribution (Calendar YTD)



**California Public Employees' Retirement System
Total Fund Attribution - Calendar Year-to-Date
As of 12/31/2015**

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	63.29	-1.15	61.00	-2.01	2.29	0.85	-0.10	0.01	0.55	0.46
Public Equity	53.54	-2.32	51.00	-2.17	2.54	-0.15	-0.11	0.00	-0.08	-0.19
Private Equity	9.75	5.48	10.00	-1.96	-0.25	7.44	-0.01	-0.06	0.71	0.65
Income	18.57	-1.06	19.50	-1.47	-0.93	0.41	-0.08	0.00	0.07	0.00
Real Assets	10.34	14.03	12.00	12.63	-1.66	1.39	-0.21	-0.06	0.17	-0.10
Inflation	5.07	-11.31	6.00	-11.99	-0.93	0.68	0.11	-0.01	0.05	0.15
Absolute Return	0.85	2.48	0.00	5.16	0.85	-2.68	0.03	-0.01	0.00	0.03
Liquidity	1.87	0.58	1.50	0.75	0.37	-0.17	0.03	0.00	-0.01	0.03
Monthly Linked Return	100.00	-0.06	100.00	-0.62		0.56	-0.22	-0.06	0.84	0.56
Trading/Hedging/Other		-0.03		0.00		-0.03				-0.03
Total		-0.09		-0.62		0.54				0.54



Total Fund – Attribution (Fiscal YTD)



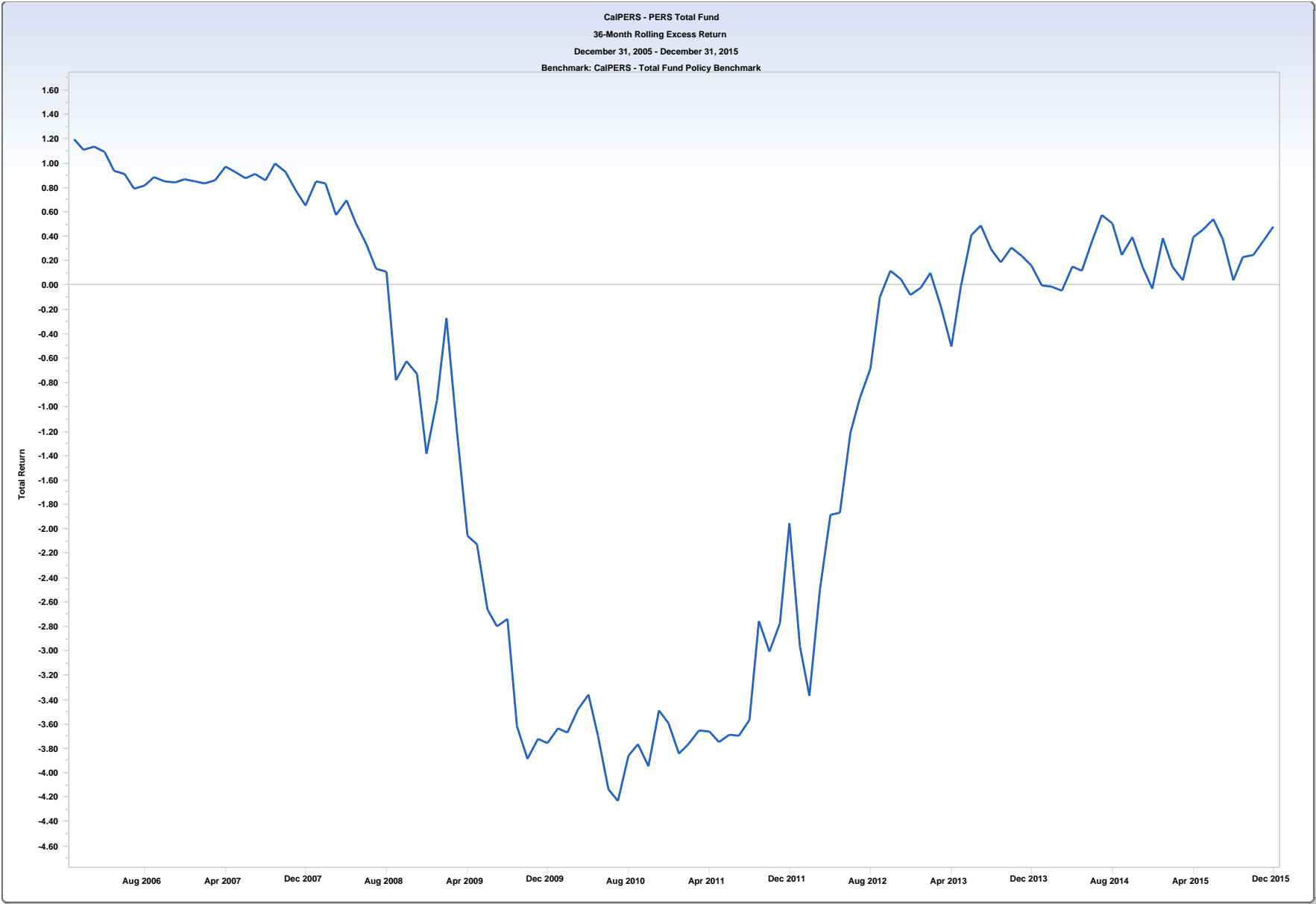
California Public Employees' Retirement System
 Total Fund Attribution - Fiscal Year-to-Date
 As of 12/31/2015

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	63.08	-4.25	61.00	-5.55	2.08	1.30	-0.08	-0.04	0.87	0.75
Public Equity	53.38	-5.22	51.00	-5.26	2.38	0.04	-0.09	0.00	0.02	-0.07
Private Equity	9.70	1.04	10.00	-7.53	-0.30	8.57	0.01	-0.04	0.85	0.82
Income	18.89	-0.01	20.00	0.13	-1.11	-0.14	-0.08	0.00	-0.03	-0.10
Real Assets	10.74	3.72	12.00	6.28	-1.26	-2.56	-0.13	0.03	-0.29	-0.40
Inflation	5.06	-10.91	6.00	-11.60	-0.94	0.69	0.08	-0.01	0.04	0.11
Absolute Return	0.65	-2.55	0.00	2.41	0.65	-4.96	0.04	-0.03	0.00	0.01
Liquidity	1.57	0.19	1.00	0.04	0.57	0.15	0.03	0.00	0.00	0.03
Monthly Linked Return	100.00	-2.87	100.00	-3.28		0.41	-0.14	-0.05	0.59	0.41
Trading/Hedging/Other		-0.08		0.00		-0.08				-0.08
Total		-2.96		-3.28		0.32				0.32



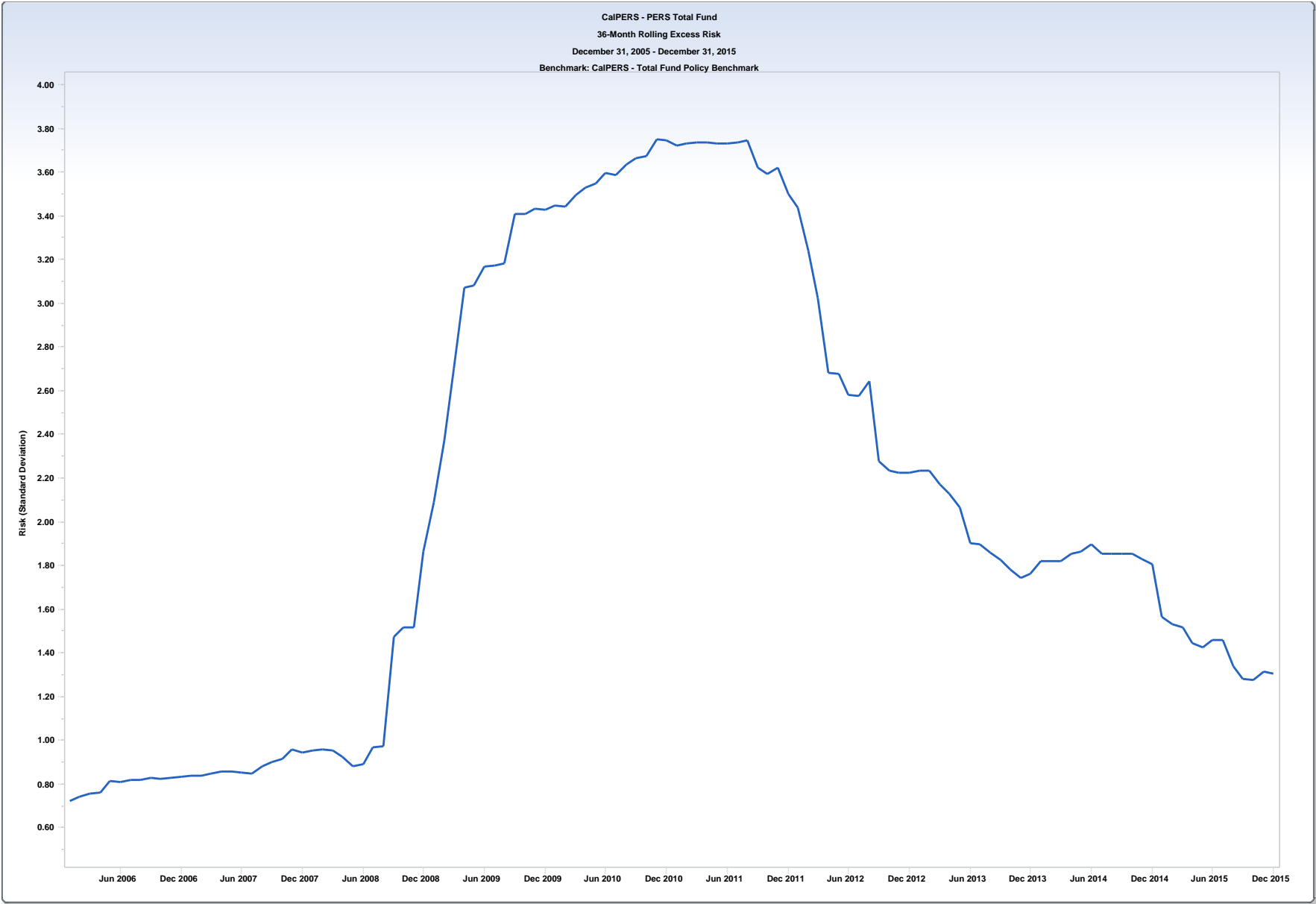


Total Fund – Rolling Excess Returns





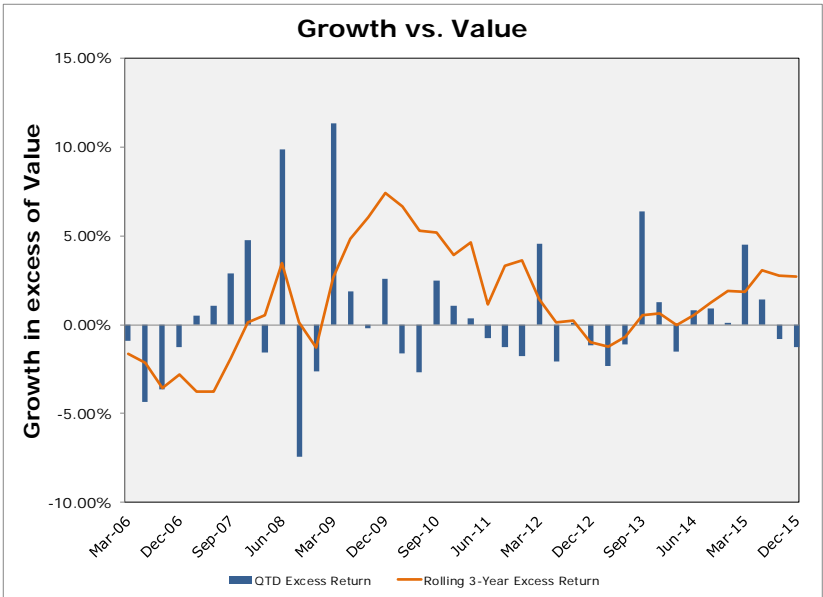
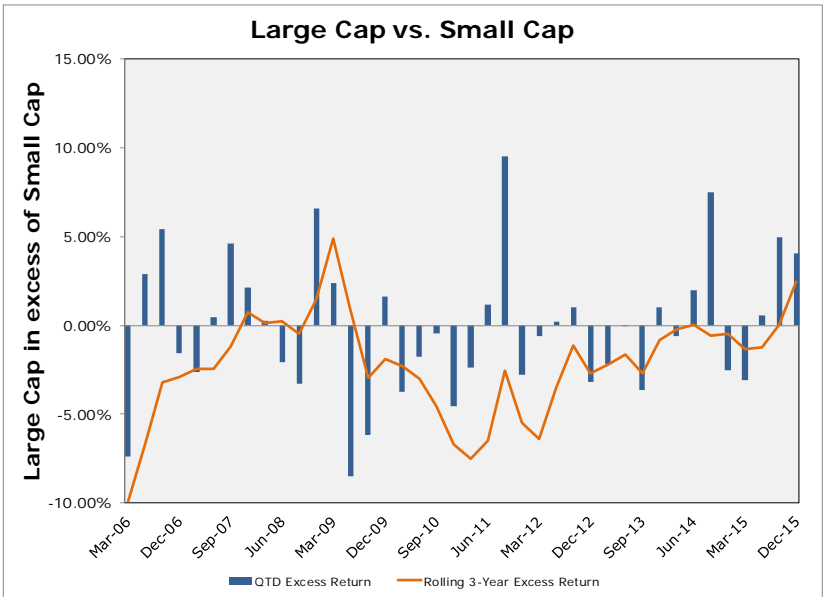
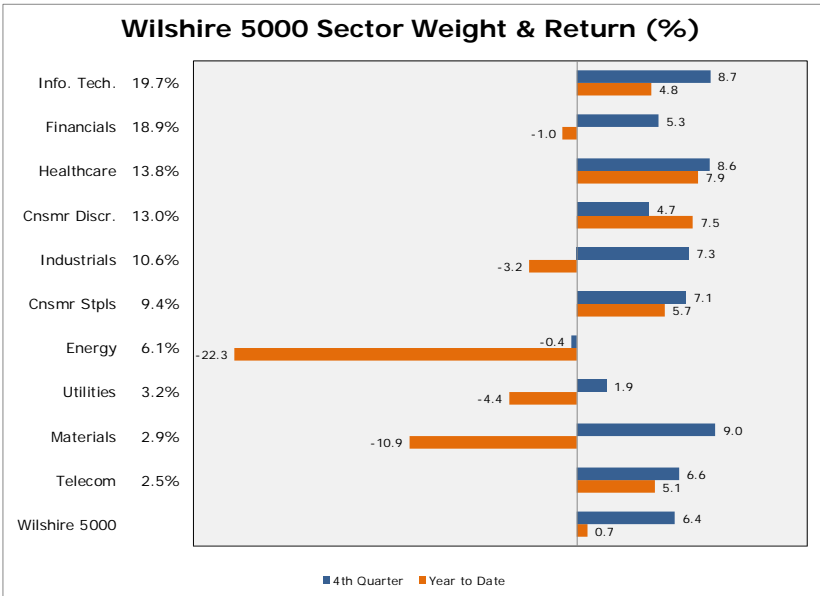
Total Fund – Rolling Tracking Error





U.S. Equity Market

December 31, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Wilshire 5000	6.4	0.7	0.7	14.7	12.1	7.4
Wilshire U.S. Large Cap	6.8	1.3	1.3	15.0	12.3	7.3
Wilshire U.S. Small Cap	2.6	-4.9	-4.9	12.2	10.1	8.2
Wilshire U.S. Large Growth	6.1	3.5	3.5	16.8	13.1	8.2
Wilshire U.S. Large Value	7.4	-0.8	-0.8	13.5	11.7	6.4
Wilshire U.S. Small Growth	1.7	-5.3	-5.3	12.7	10.3	8.5
Wilshire U.S. Small Value	3.5	-4.4	-4.4	11.8	9.9	7.8
Wilshire REIT Index	7.5	4.2	4.2	11.8	12.4	7.3
MSCI USA Minimum Volatility Index	6.1	4.9	4.9	14.7	13.3	7.7
FTSE RAFI U.S. 1000 Index	5.7	-2.5	-2.5	14.2	11.8	8.2



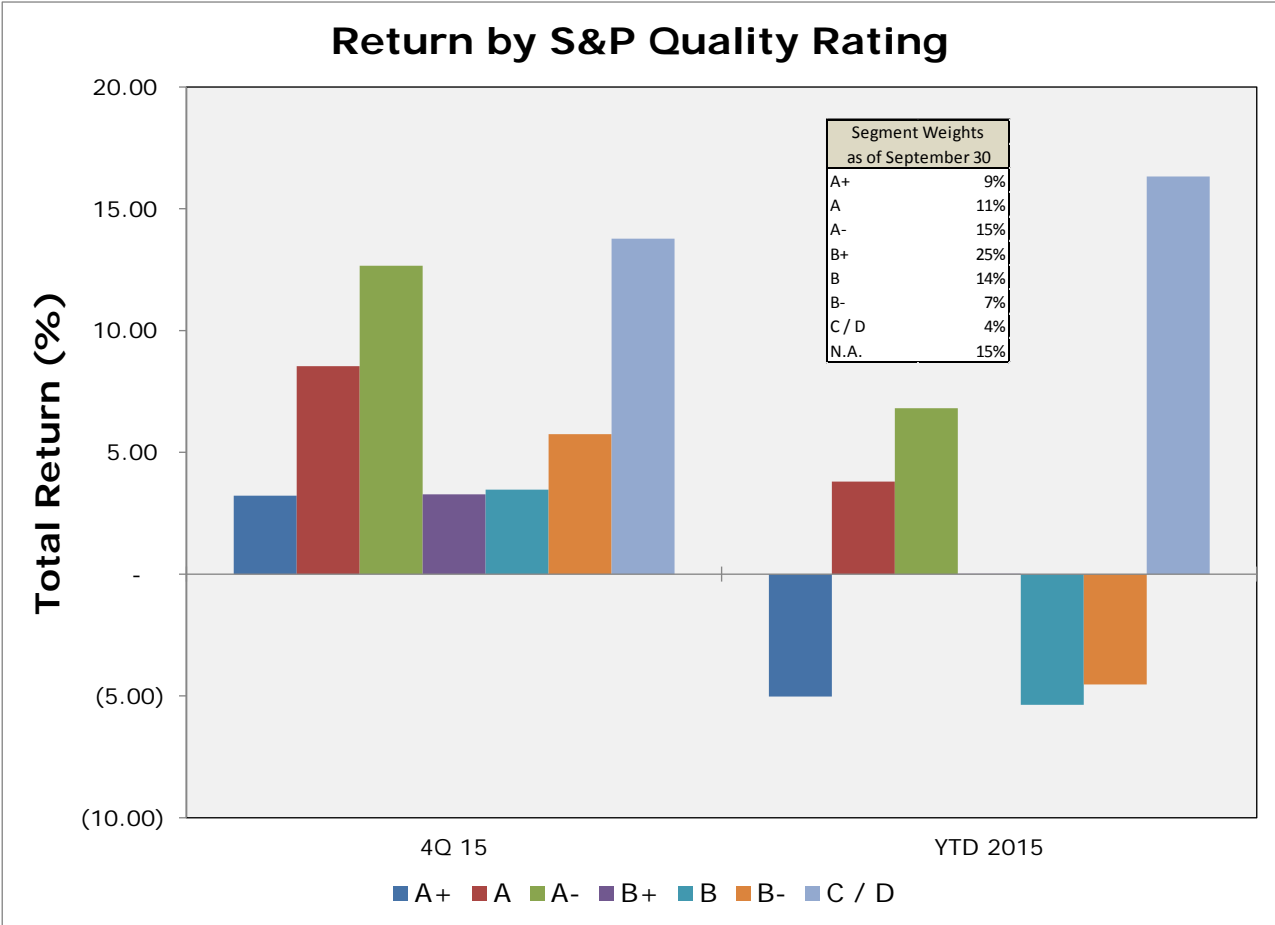
Data sources: Wilshire Compass, Wilshire Atlas





Returns by Quality Segment

Performance by quality ranking was mixed in 2015, the highest quality names underperformed while the lowest rated names produced a double-digit return



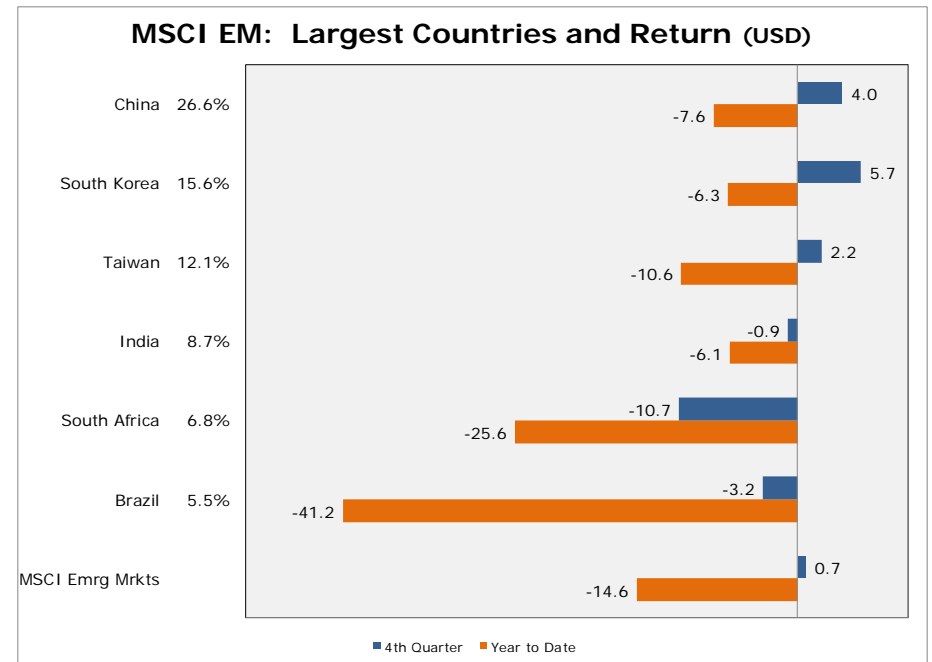
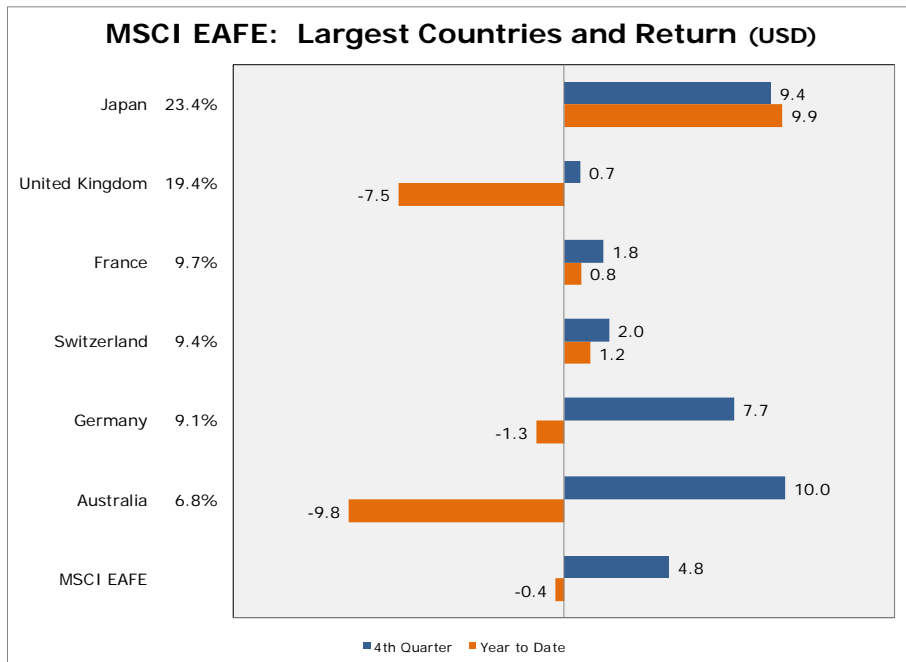
Data sources: Wilshire Atlas



Non-U.S. Equity Market



December 31, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
MSCI ACWI ex-US (\$g)	3.3	-5.3	-5.3	1.9	1.5	3.4
MSCI EAFE (\$g)	4.8	-0.4	-0.4	5.5	4.1	3.5
MSCI Emerging Markets (\$g)	0.7	-14.6	-14.6	-6.4	-4.5	3.9
MSCI Frontier Markets (\$g)	-1.2	-14.1	-14.1	5.2	0.7	-1.3
MSCI ACWI ex-US Growth (\$g)	5.0	-0.9	-0.9	3.9	2.5	4.0
MSCI ACWI ex-US Value (\$g)	1.5	-9.6	-9.6	-0.1	0.5	2.7
MSCI ACWI ex-US Small (\$g)	5.3	3.0	3.0	6.0	3.0	5.4
MSCI EAFE Minimum Volatility Idx	6.1	8.4	8.4	10.0	8.3	7.3
FTSE RAFI Developed ex-US Index	3.5	-4.8	-4.8	4.4	2.4	3.8
MSCI EAFE LC (g)	6.4	5.8	5.8	12.8	8.3	3.7
MSCI Emerging Markets LC (g)	1.6	-5.4	-5.4	1.2	1.3	6.4



Data sources: Wilshire Compass



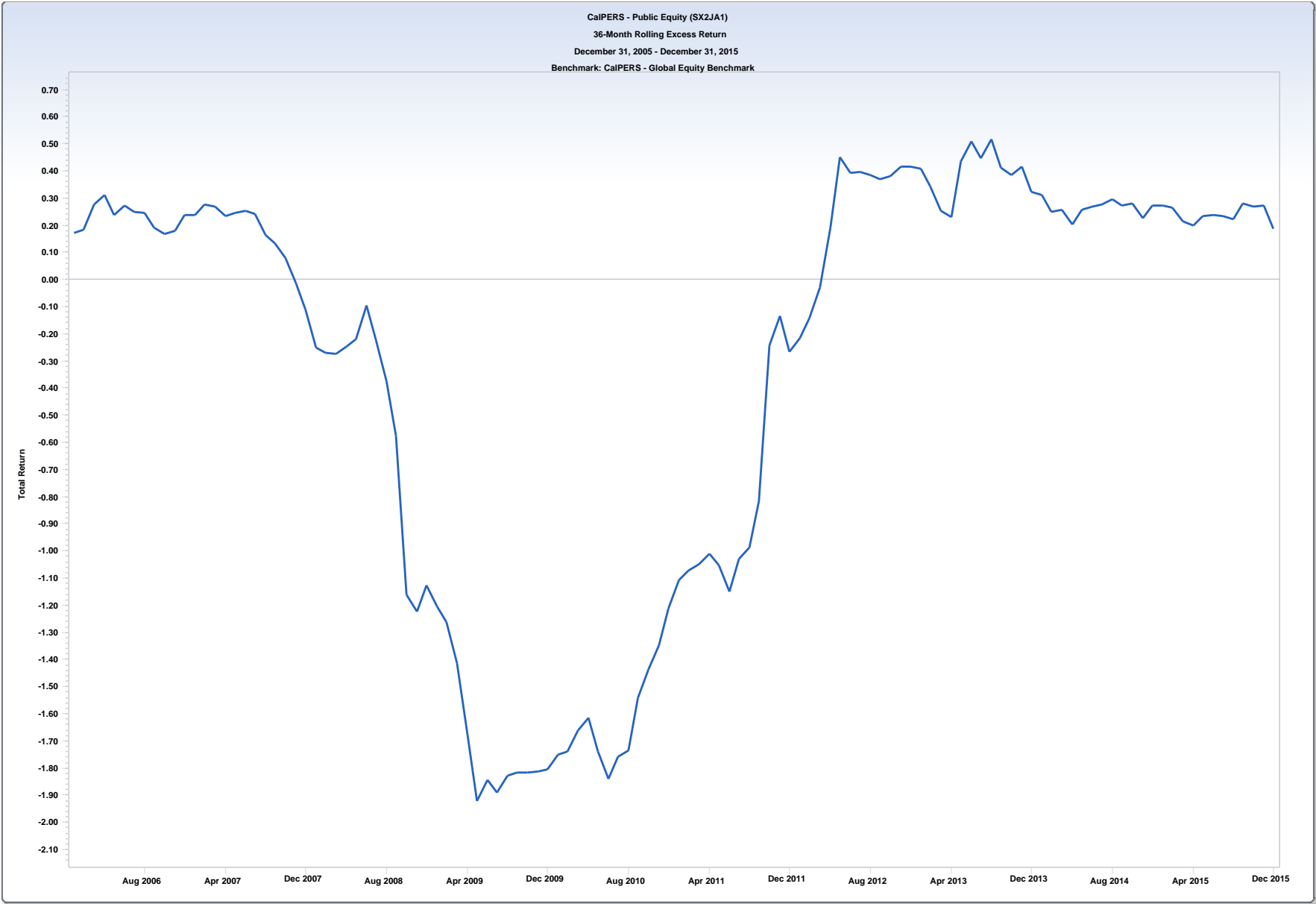
Growth: Public Equity – Performance



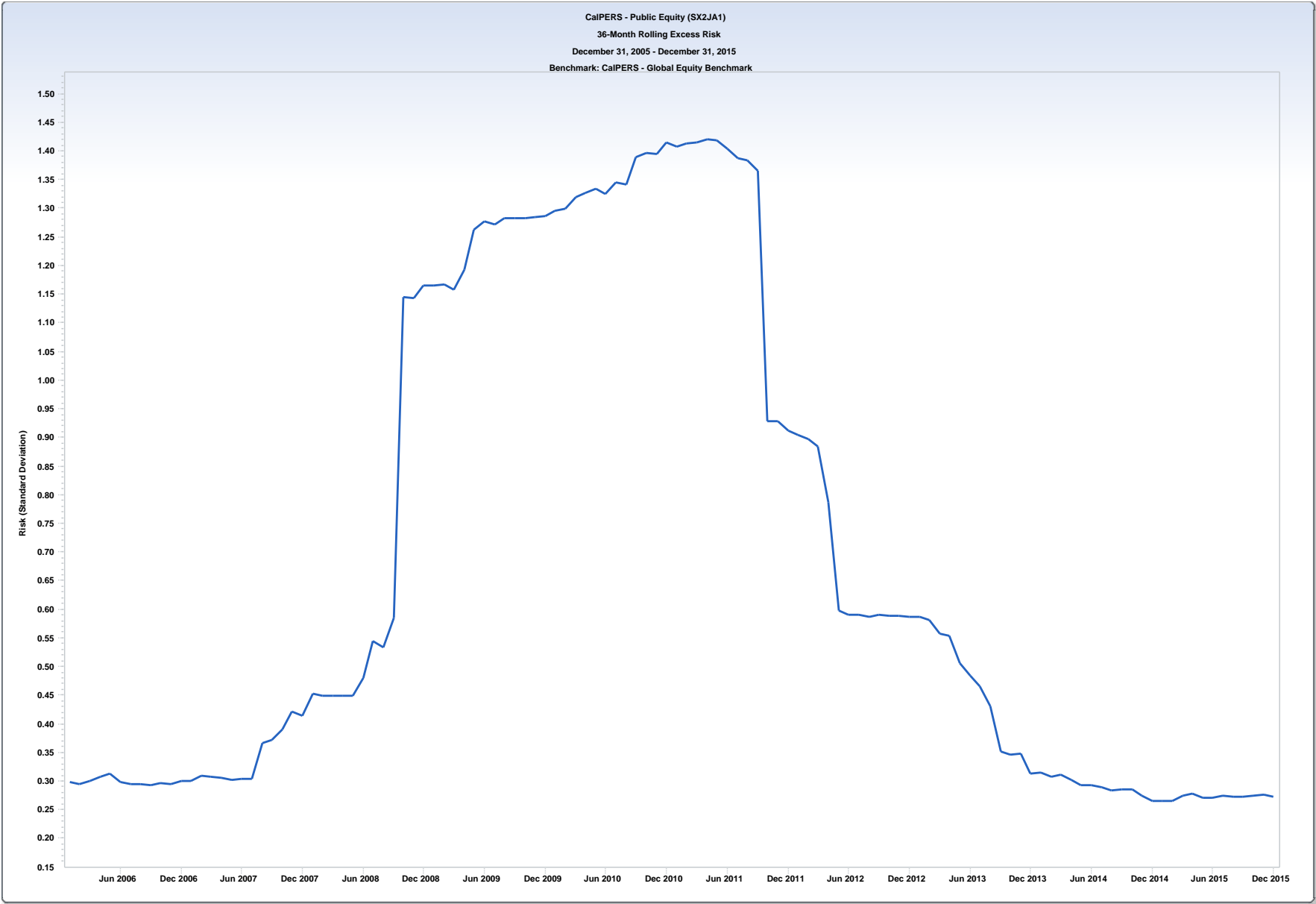
	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
PUBLIC EQUITY	154.7	5.0%	-2.3%	8.7%	6.7%	5.0%	\$31.2 bil	0.5	0.5
<i>Public Equity Policy Benchmark</i>		5.0%	-2.2%	8.5%	6.6%	5.4%		0.5	0.0
<i>Value Added</i>		0.0%	-0.1%	0.2%	0.1%	-0.4%			
US Equity Composite	80.8	6.0%	-0.8%	14.7%	11.9%	7.2%		1.0	0.2
<i>Custom US Equity Benchmark</i>		6.2%	-0.4%	14.5%	11.9%	7.3%		1.0	0.0
<i>Value Added</i>		-0.2%	-0.4%	0.2%	0.0%	-0.1%			
Total Int'l Equity	73.9	3.9%	-4.1%	3.0%	2.0%	3.6%		0.1	-0.4
<i>Custom Int'l Equity Benchmark</i>		3.8%	-3.9%	3.4%	2.4%	3.4%		0.2	0.0
<i>Value Added</i>		0.1%	-0.2%	-0.4%	-0.4%	0.2%			



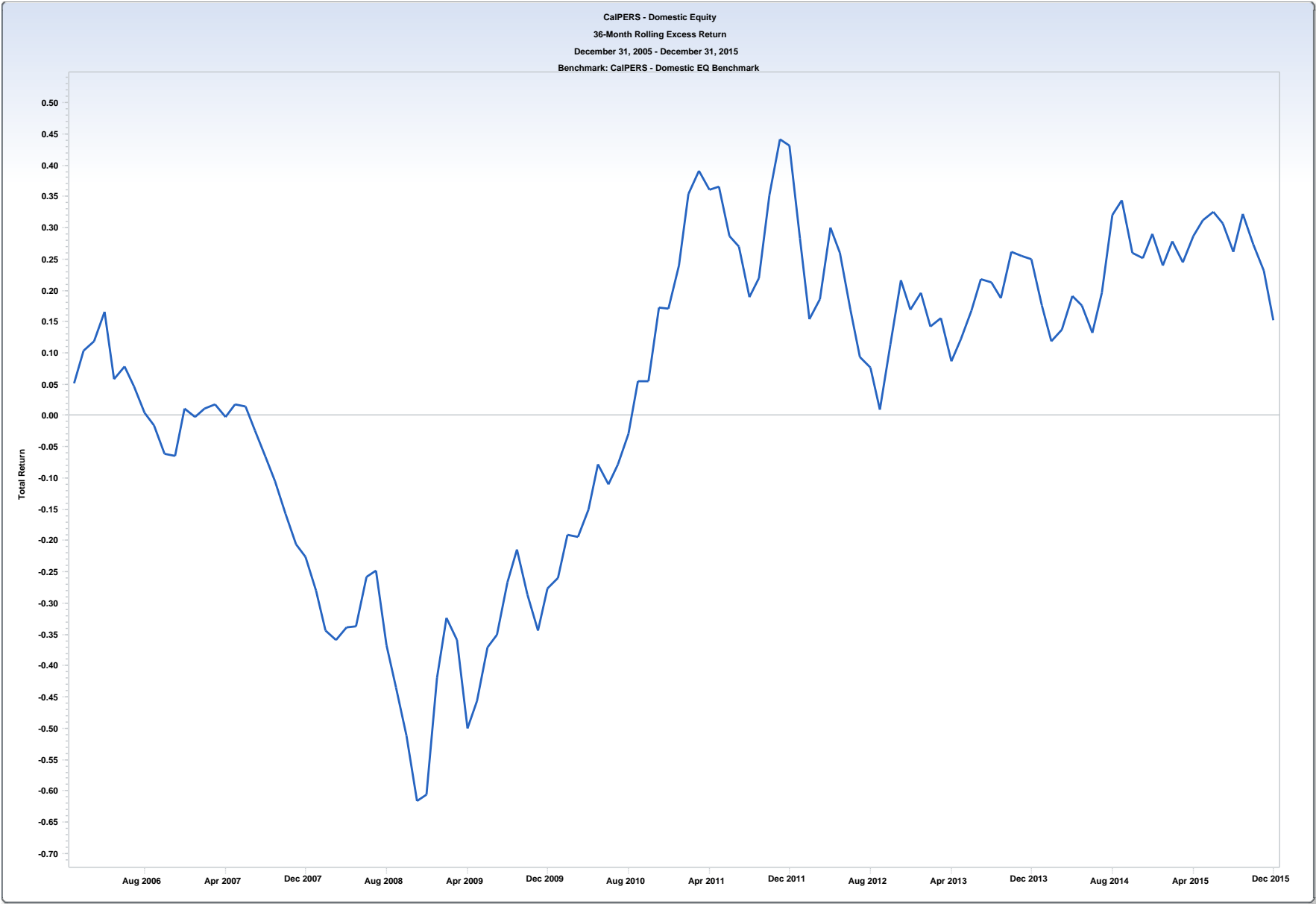
Growth: Public Equity – Rolling Excess Returns



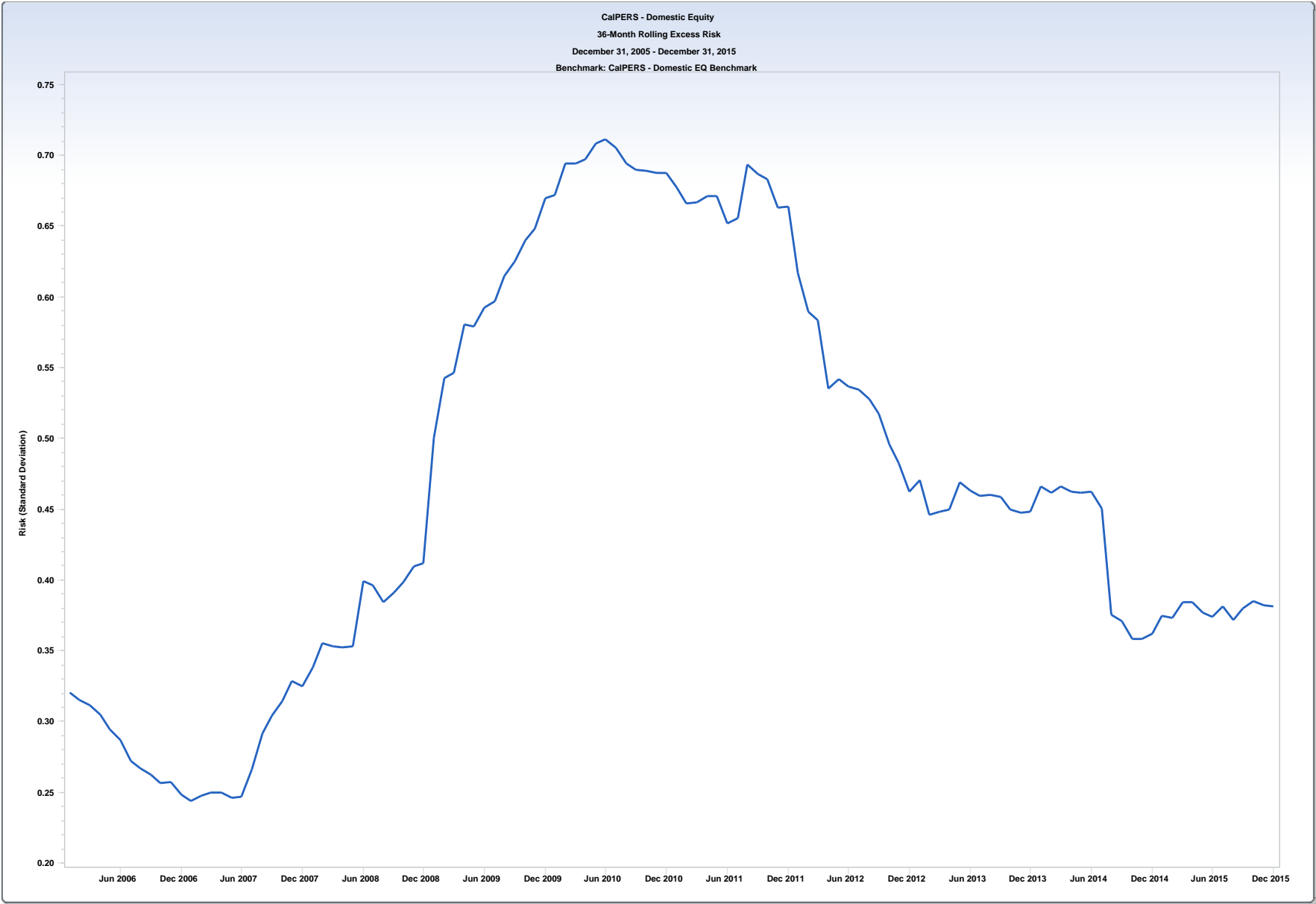
Growth: Public Equity – Rolling Tracking Error



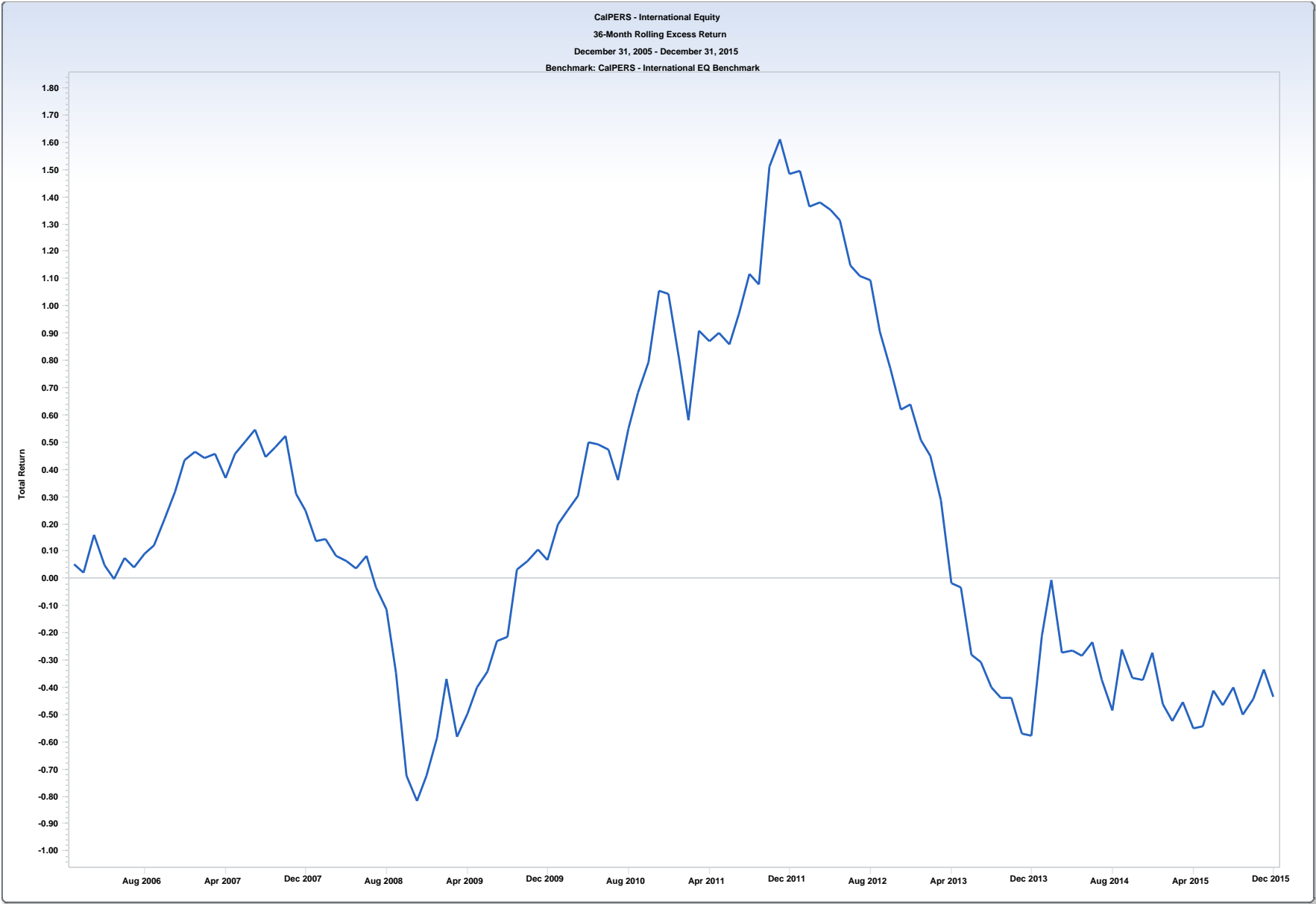
Growth: US Equity – Rolling Excess Returns



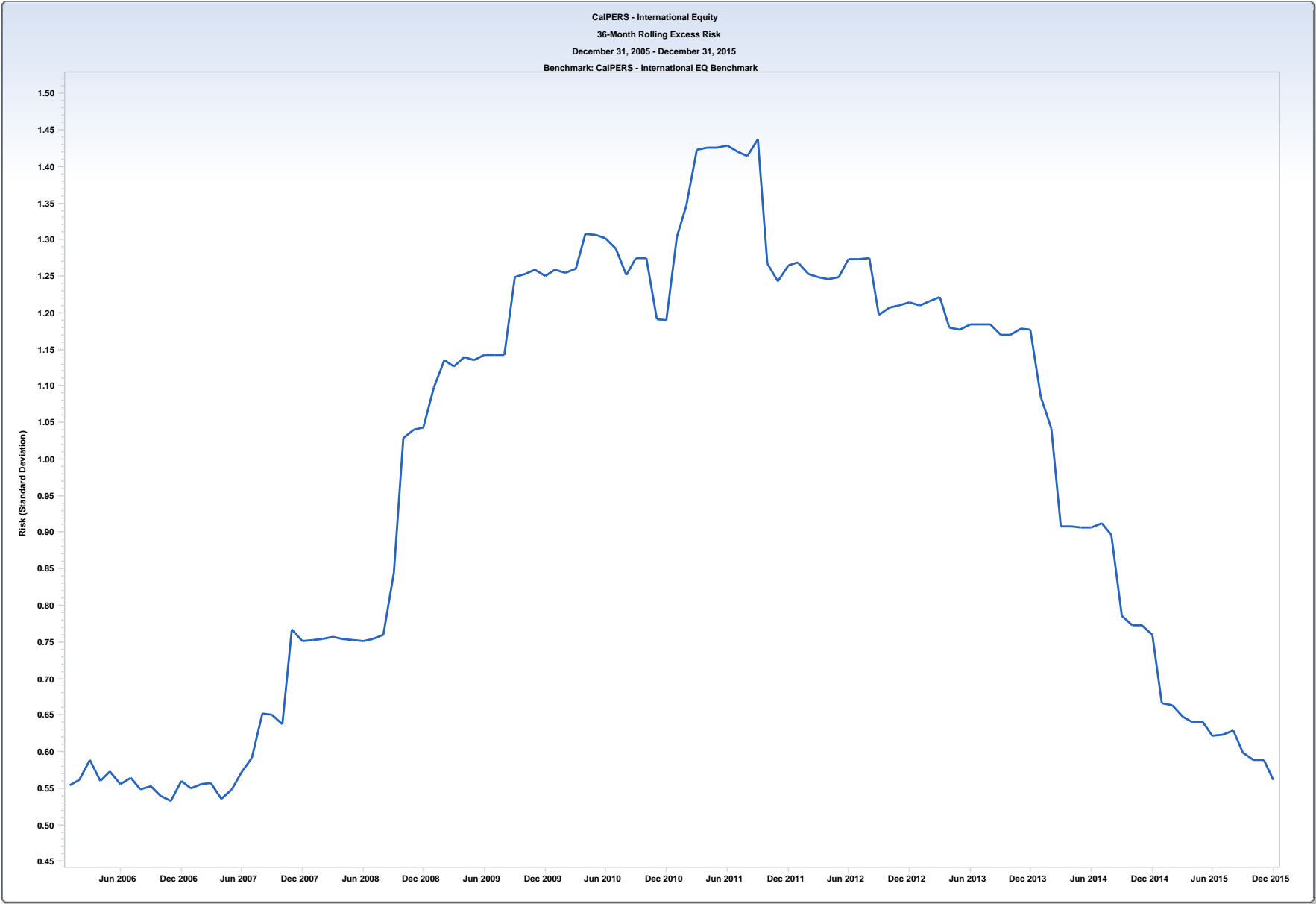
Growth: US Equity – Rolling Tracking Error



Growth: International Equity – Rolling Excess Returns



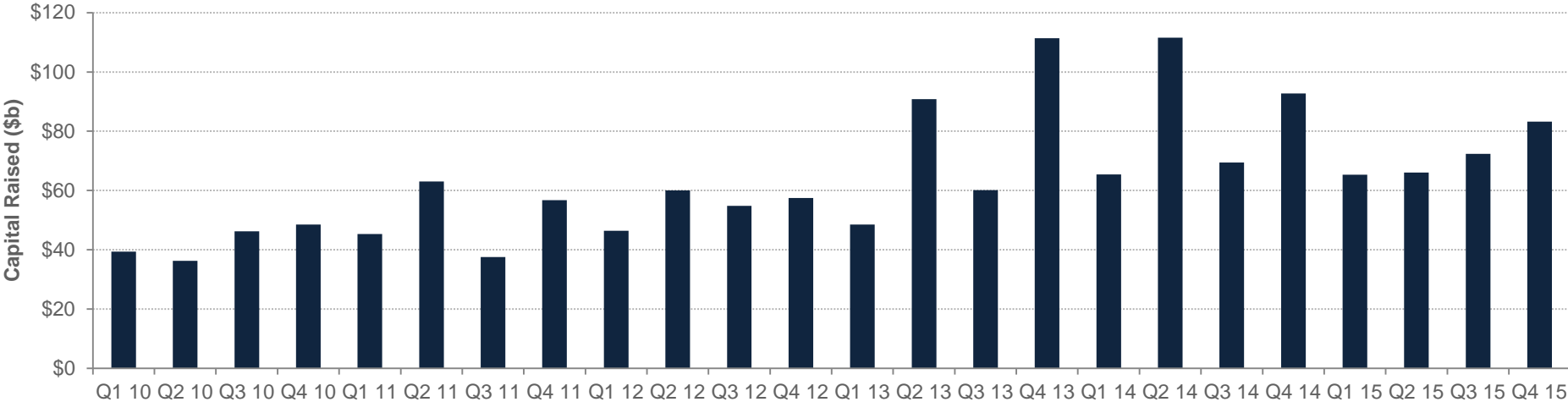
Growth: International Equity – Rolling Tracking Error



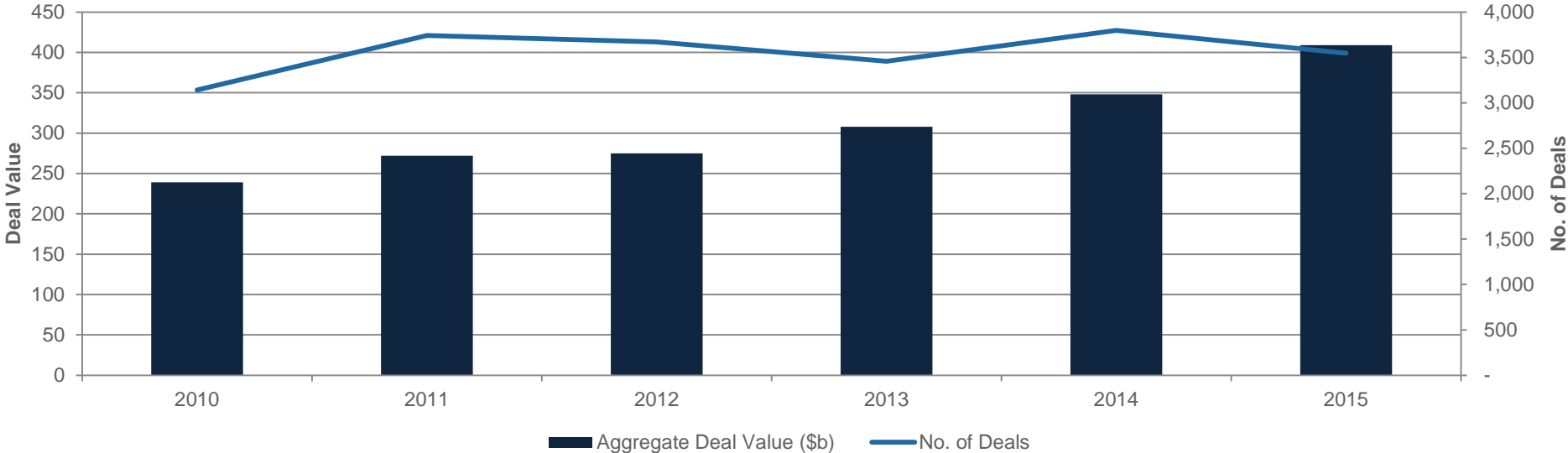
Private Equity – Fundraising & Investment Activity



Global Private Equity Fundraising (Q1 2010 – Q4 2015)



Global Private Equity-Backed Buyout Activity (2010 – 2015)



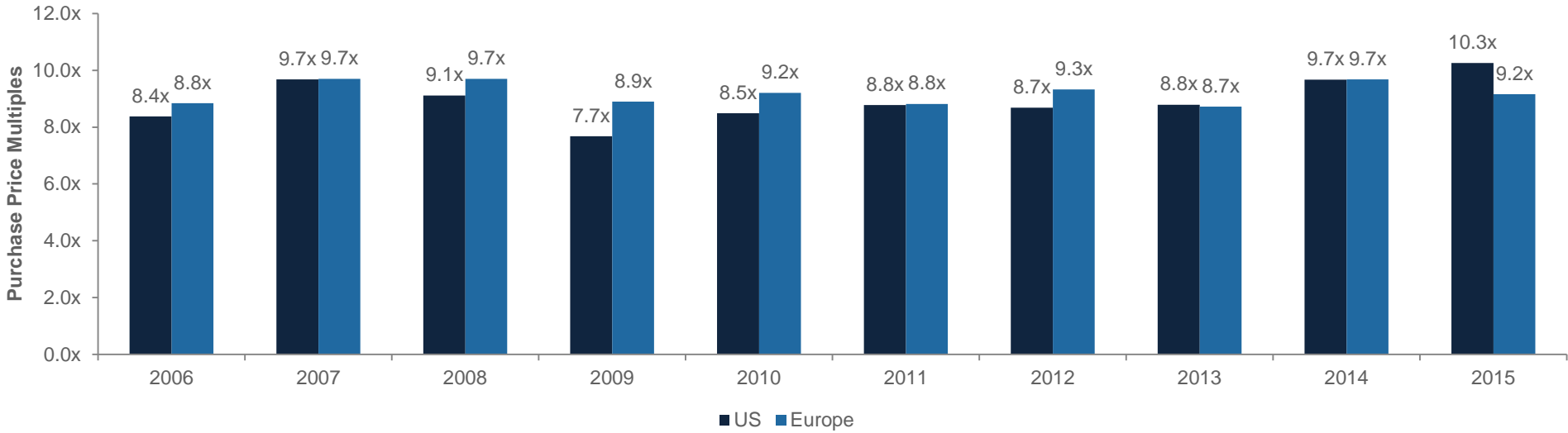
Sources: Preqin.



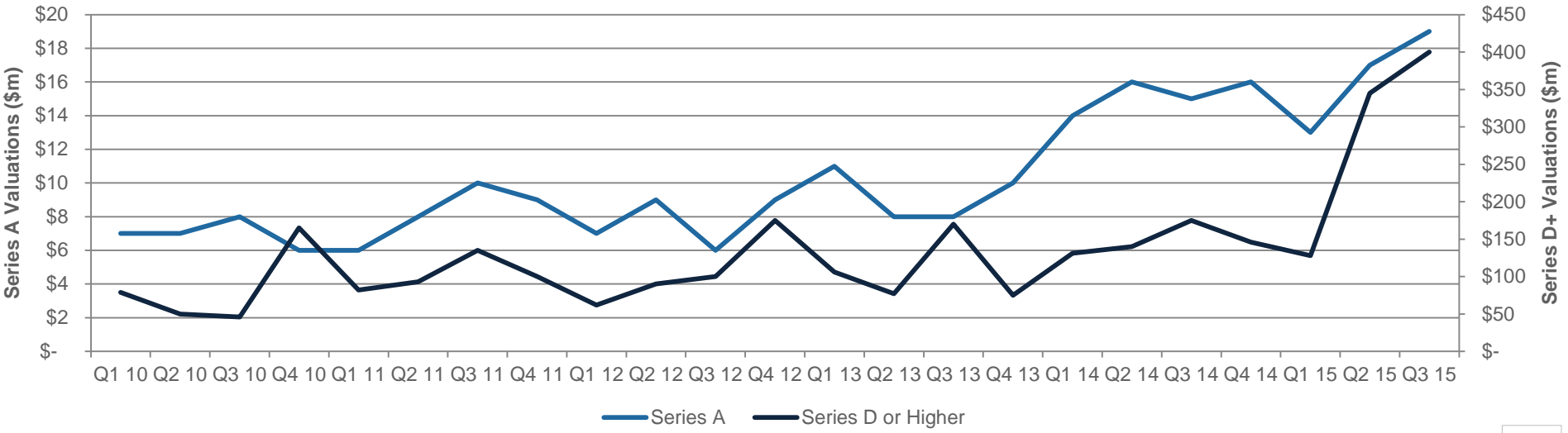
Private Equity – Pricing & Valuations



Global LBO Multiples (2006 – 2015)



U.S. Venture Capital Median Pre-Money Valuations (Q1 2010 – Q3 2015)



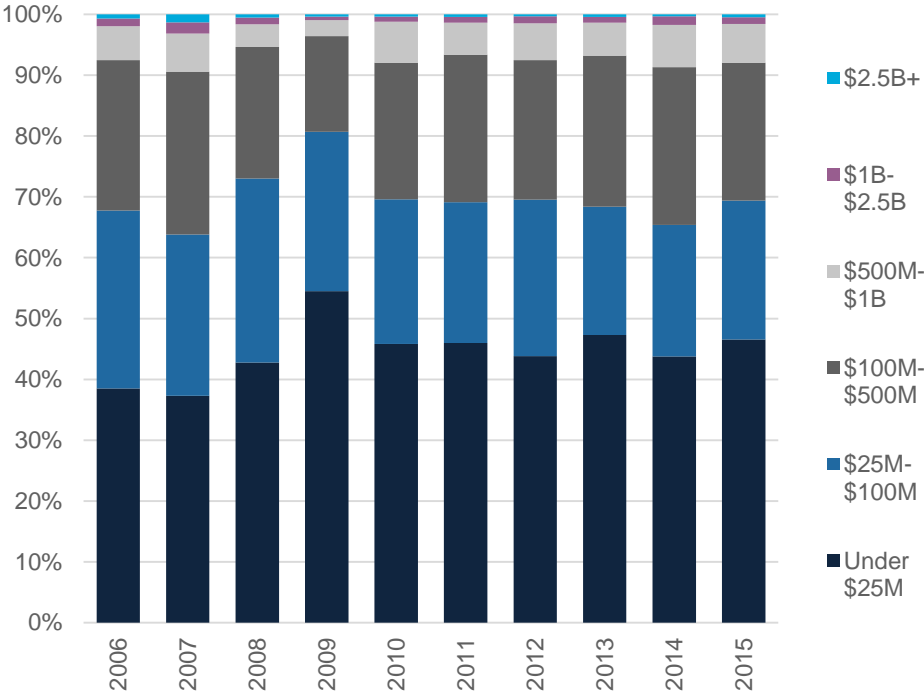
Source: S&P LCD; Cooley.



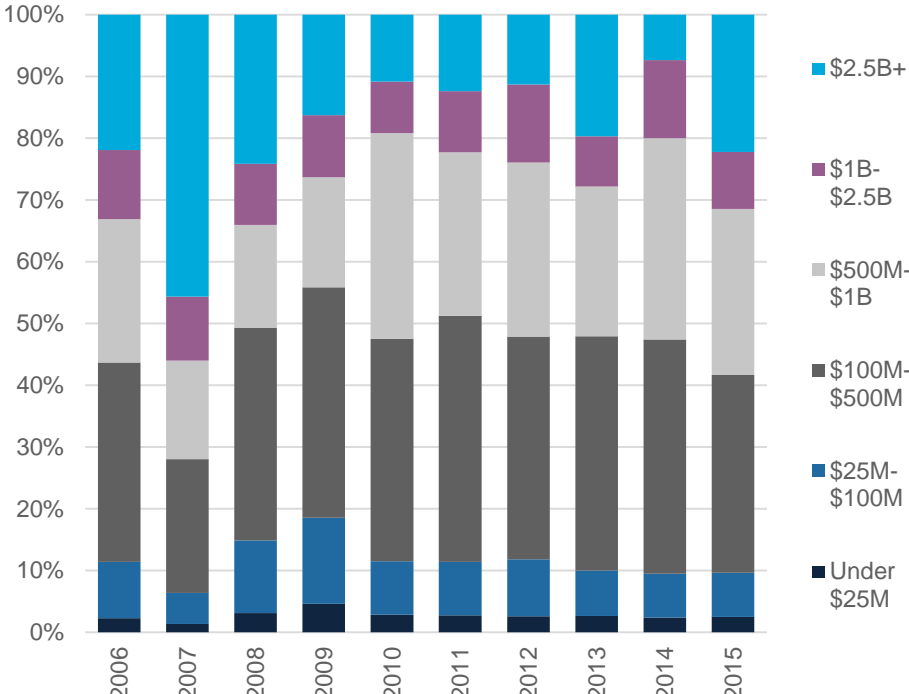
Private Equity – U.S. Investment Activity by Deal Size



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
- Significantly more mega transaction (\$2.5B+) volume in 2015

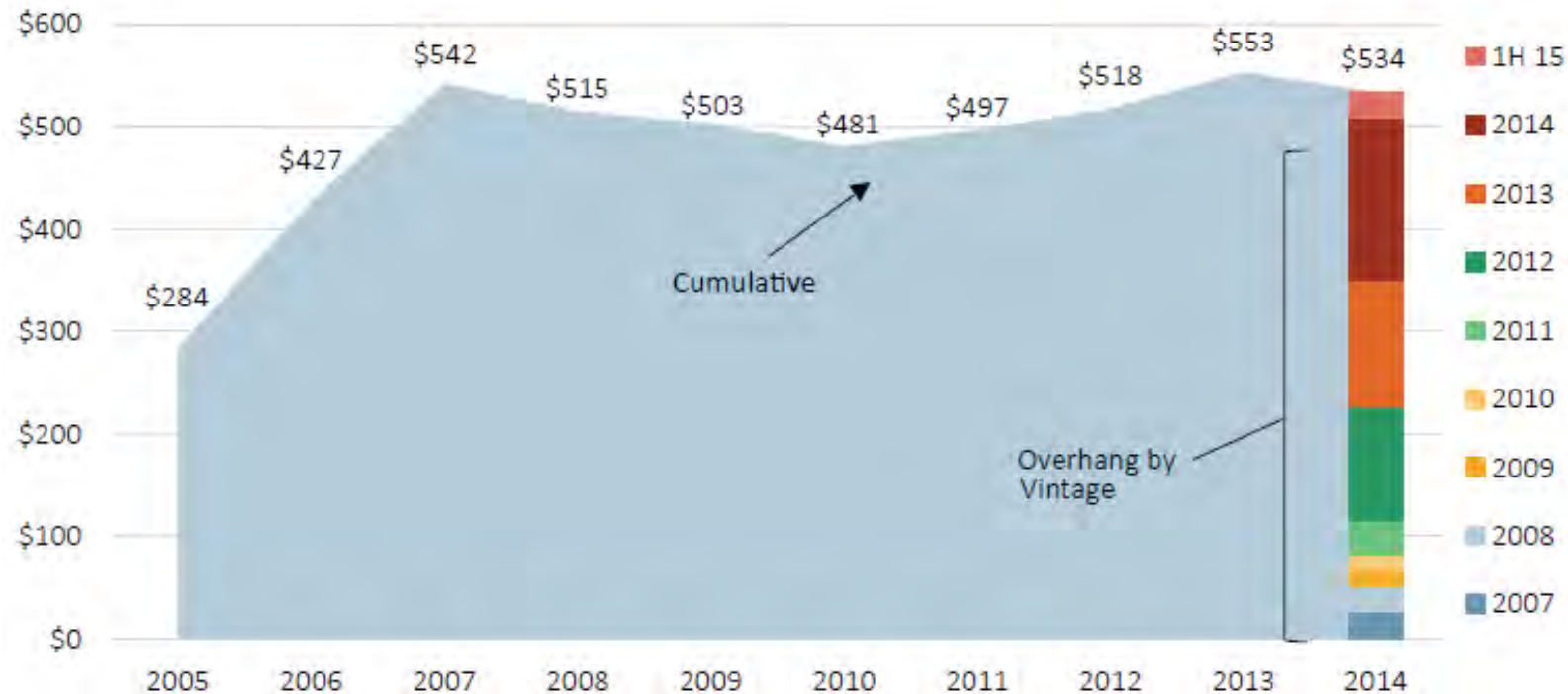
Source: Pitchbook.



Private Equity – Capital Overhang



Cumulative Vintage Year Overhang



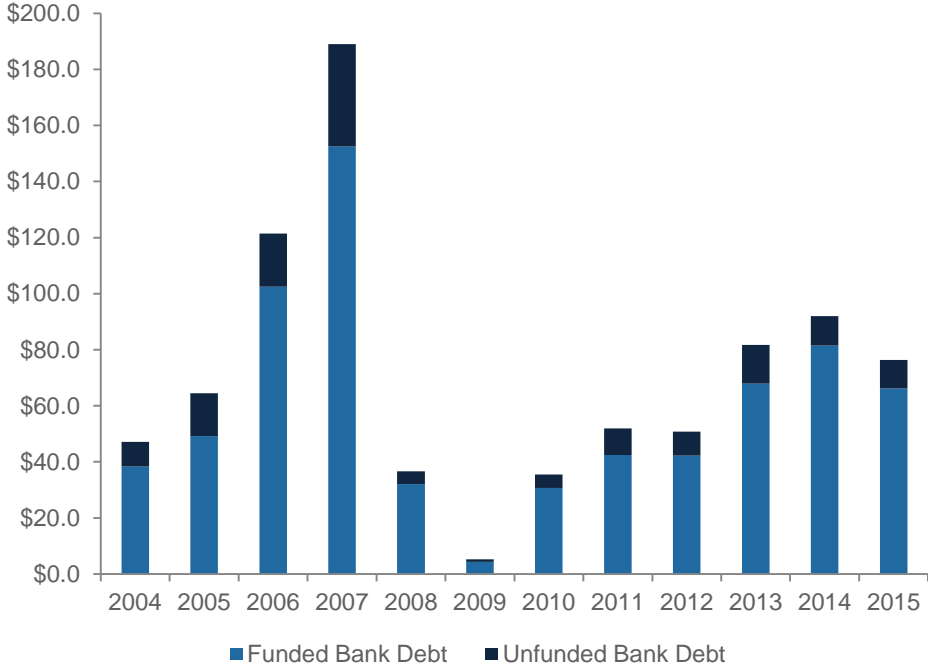
- Total private equity overhang significantly grew to an estimated \$542 billion during the run-up to the financial crisis
- While the overhang slightly decreased across 2007 through 2010, the overhang has generally increased since then



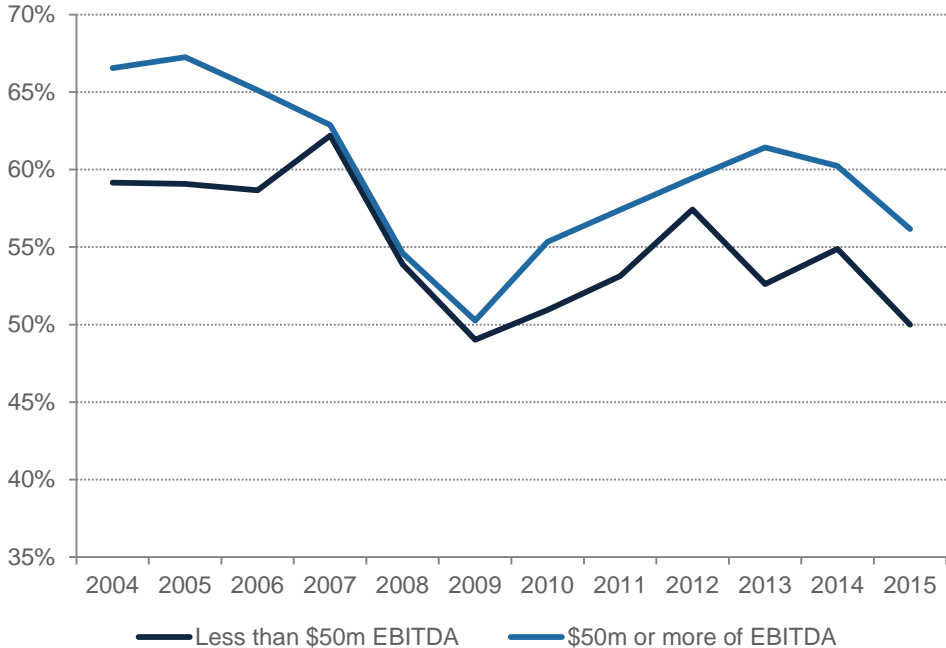


Private Equity – U.S. Debt Markets

Total U.S. Leveraged Buyout Loan Volume (\$b)



Percentage of Debt Used in Buyouts



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

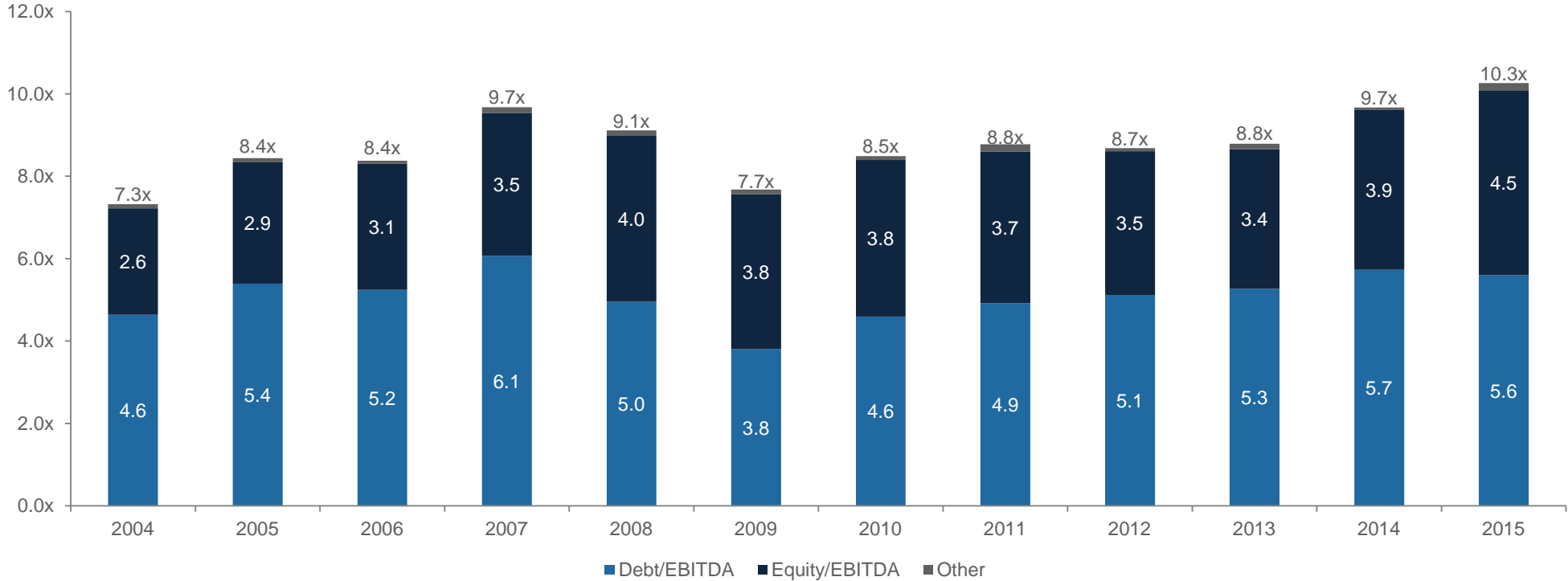
Source: S&P LCD.



Private Equity – U.S. LBO Purchase Price Multiples



Purchase Price Multiples of U.S. LBO Transactions



- As debt has become more readily available, purchase price multiples have increased from the low point in 2009
- Pricing in 2015 has eclipsed the 10.x threshold, which is a recent high

Source: S&P LCD.



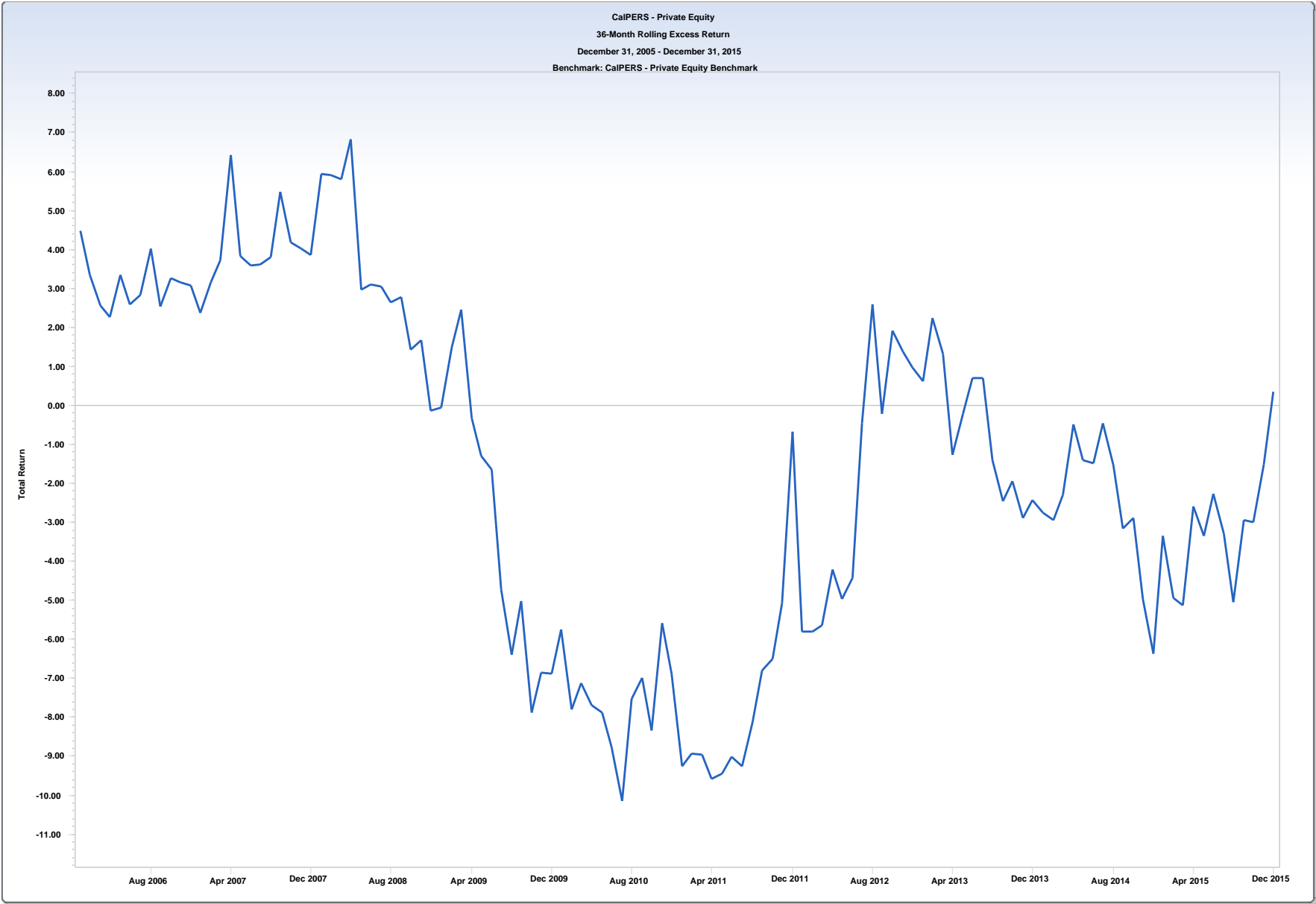
Growth: Private Equity – Performance



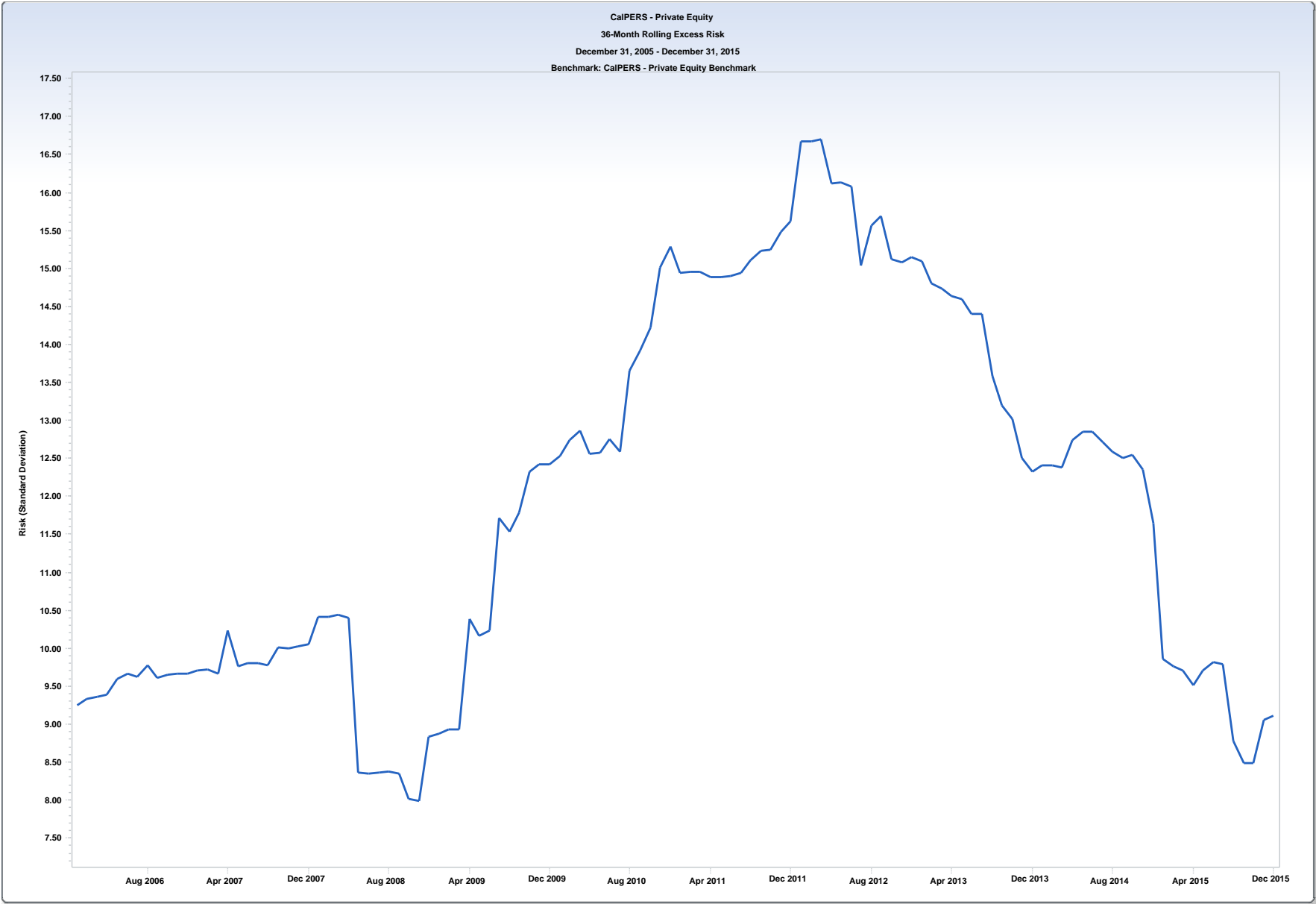
	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
PRIVATE EQUITY	27.4	-1.9%	5.5%	12.9%	12.7%	11.2%	\$8.9 bil	2.6	0.0
<i>PE Policy Benchmark</i>		-8.5%	-2.0%	12.5%	13.2%	12.9%		1.0	0.0
<i>Value Added</i>		6.6%	7.5%	0.4%	-0.5%	-1.7%			
Private Equity Partnership Investments	27.4	-1.8%	5.6%	12.9%	12.8%	11.3%			
Private Equity Distribution Stock	0.0	-4.0%	-44.2%	-20.0%	-26.6%	-7.3%			



Growth: Private Equity – Rolling Excess Returns



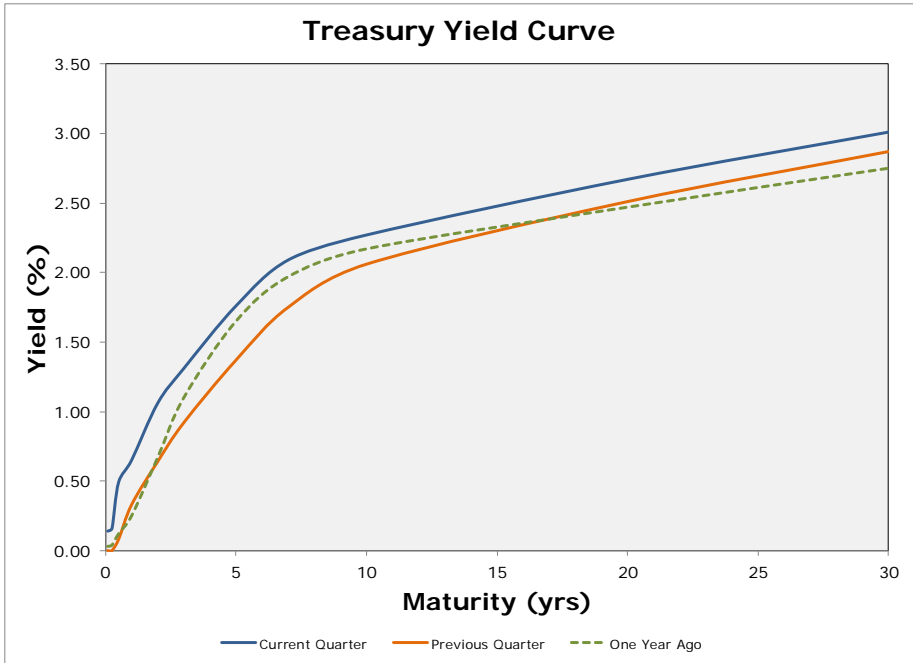
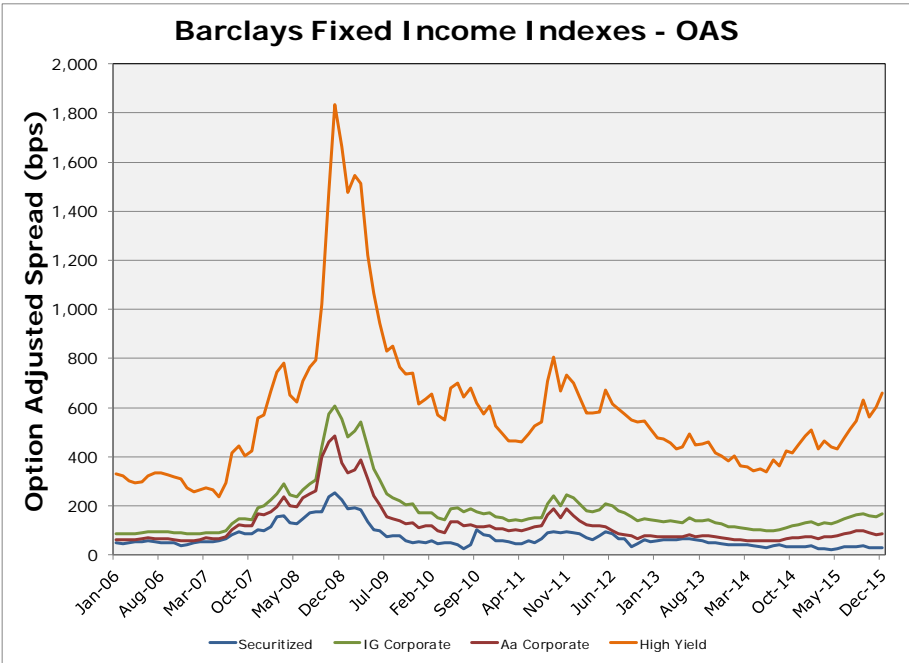
Growth: Private Equity – Rolling Tracking Error





U.S. Fixed Income Market

December 31, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Barclays Aggregate Bond Index	-0.6	0.6	0.6	1.4	3.2	4.5
Barclays Treasury Index	-0.9	0.8	0.8	1.0	2.9	4.2
Barclays Gov't-Related Index	-0.4	-0.4	-0.4	0.9	2.9	4.2
Barclays Securitized Index	-0.2	1.5	1.5	2.0	3.0	4.6
Barclays Corporate IG Index	-0.6	-0.7	-0.7	1.7	4.5	5.3
Barclays LT Govt/Credit Index	-0.9	-3.3	-3.3	1.7	7.0	6.4
Barclays LT Treasury Index	-1.4	-1.2	-1.2	2.6	7.7	6.7
Barclays LT Govt-Related Index	0.3	-3.8	-3.8	1.1	7.0	6.4
Barclays LT Corporate IG Index	-1.0	-4.6	-4.6	1.4	6.3	6.2
Barclays U.S. TIPS Index	-0.6	-1.4	-1.4	-2.3	2.6	3.9
Barclays High Yield Index	-2.1	-4.5	-4.5	1.7	5.0	7.0
Treasury Bills	0.0	0.1	0.1	0.1	0.1	1.2



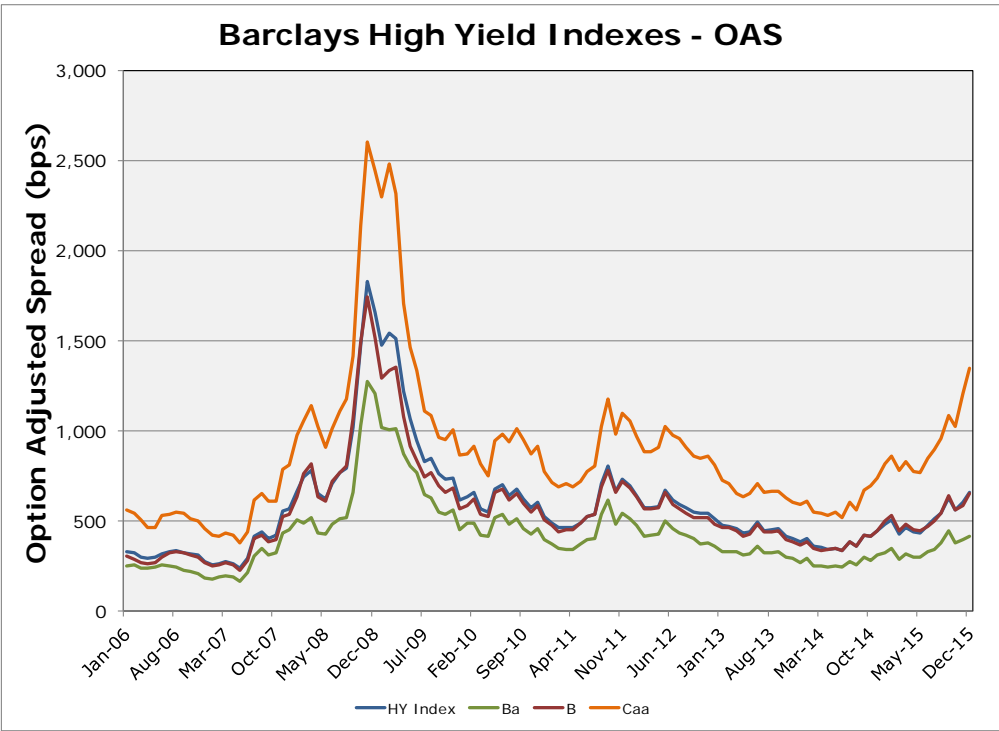
Data sources: Wilshire Compass, Barclays Capital, U.S. Treasury





High Yield Bond Market

December 31, 2015	Weight	Qtr	Ytd	1 Yr	3 Yr
Barclays High Yield Index	100%	-2.1	-4.5	-4.5	1.7
Quality Distribution					
Ba U.S. High Yield	45.8%	-0.1	-1.0	-1.0	3.1
B U.S. High Yield	39.6%	-2.0	-4.7	-4.7	1.2
Caa U.S. High Yield	14.1%	-7.5	-12.1	-12.1	-0.4
Ca to D U.S. High Yield	0.3%	-22.1	-56.1	-56.1	-34.5
Non-Rated U.S. High Yield	0.2%	-11.4	-19.8	-19.8	-3.3



Data sources: Barclays Capital

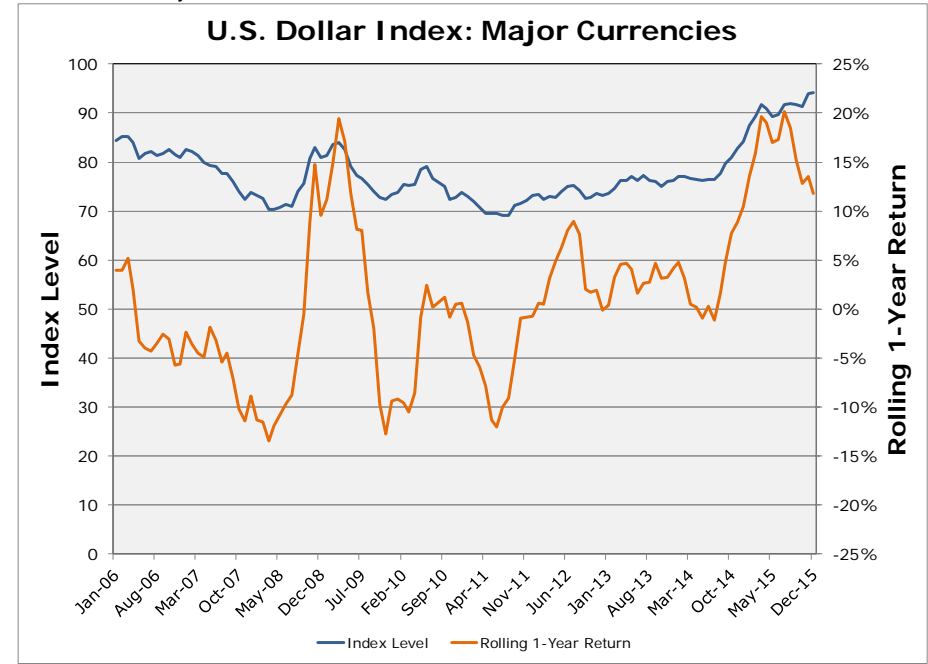
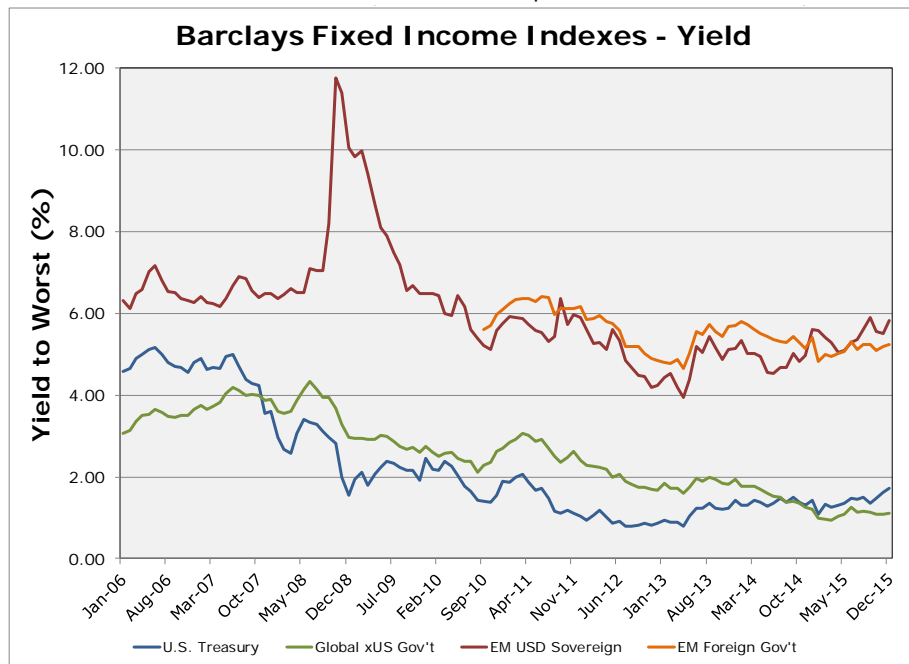




Non-U.S. Fixed Income Market

December 31, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
<i>Developed Markets</i>						
Barclays Global Aggregate xUS	-1.3	-6.0	-6.0	-4.1	-0.8	3.1
Barclays Global Aggregate xUS *	0.6	1.4	1.4	3.7	4.3	4.2
Barclays Wrld Govt xUS IL Bond	-3.6	-7.2	-7.2	-1.5	2.1	3.8
Barclays Wrld Govt xUS IL Bond *	-1.3	-0.2	-0.2	3.6	5.1	4.5
<i>Emerging Mkts (Hard Currency)</i>						
Barclays EM USD Aggregate	1.0	1.3	1.3	0.6	5.1	6.8
<i>Emerging Mkts (Foreign Currency)</i>						
Barclays EM Local Currency Govt	1.0	-10.4	-10.4	-5.6	-0.6	n.a.
Barclays EM Local Currency Govt *	0.5	0.2	0.2	0.7	2.7	n.a.
Euro vs. Dollar	-2.7	-10.2	-10.2	-6.3	-4.1	-0.8
Yen vs. Dollar	-0.4	-0.3	-0.3	-10.4	-7.6	-0.2
Pound vs. Dollar	-2.7	-5.5	-5.5	-3.2	-1.2	-1.5

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



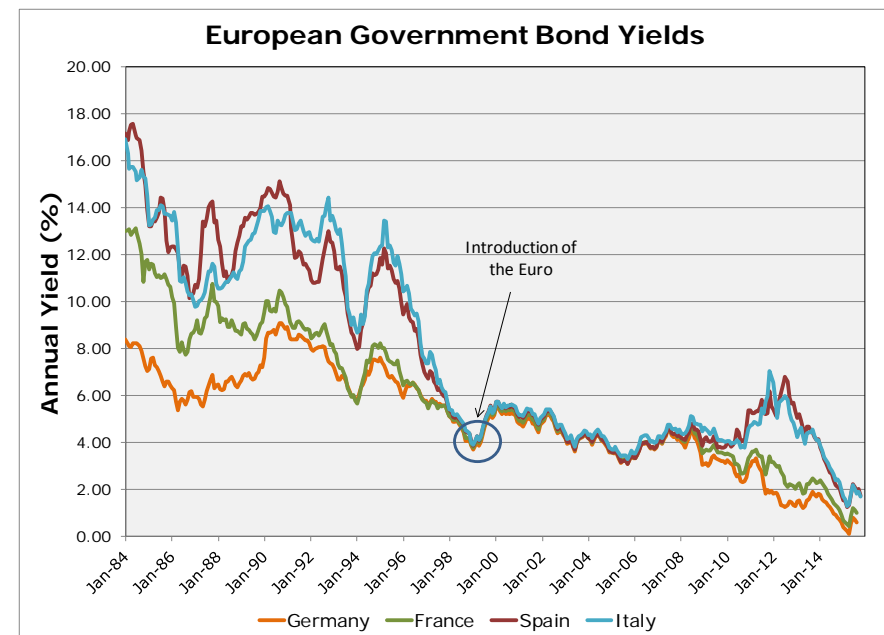
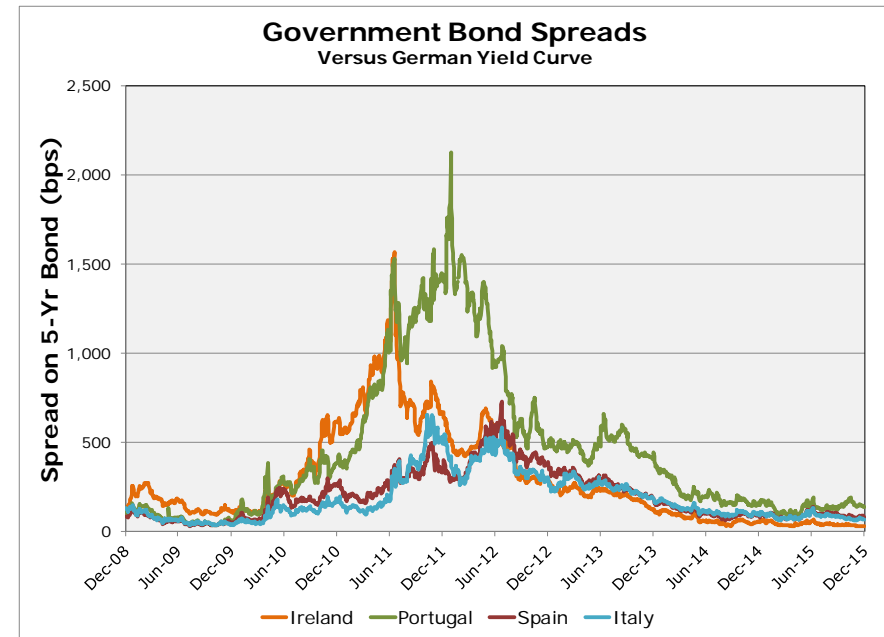
Data sources: Wilshire Compass, Barclays Capital





European Debt Issues

- Although an economic slowdown has affected much of Europe, relative government yields have not widened dramatically
- Yields on government bonds in the most dominant European economies, Germany and France, have bounced off zero but may be ticking back down



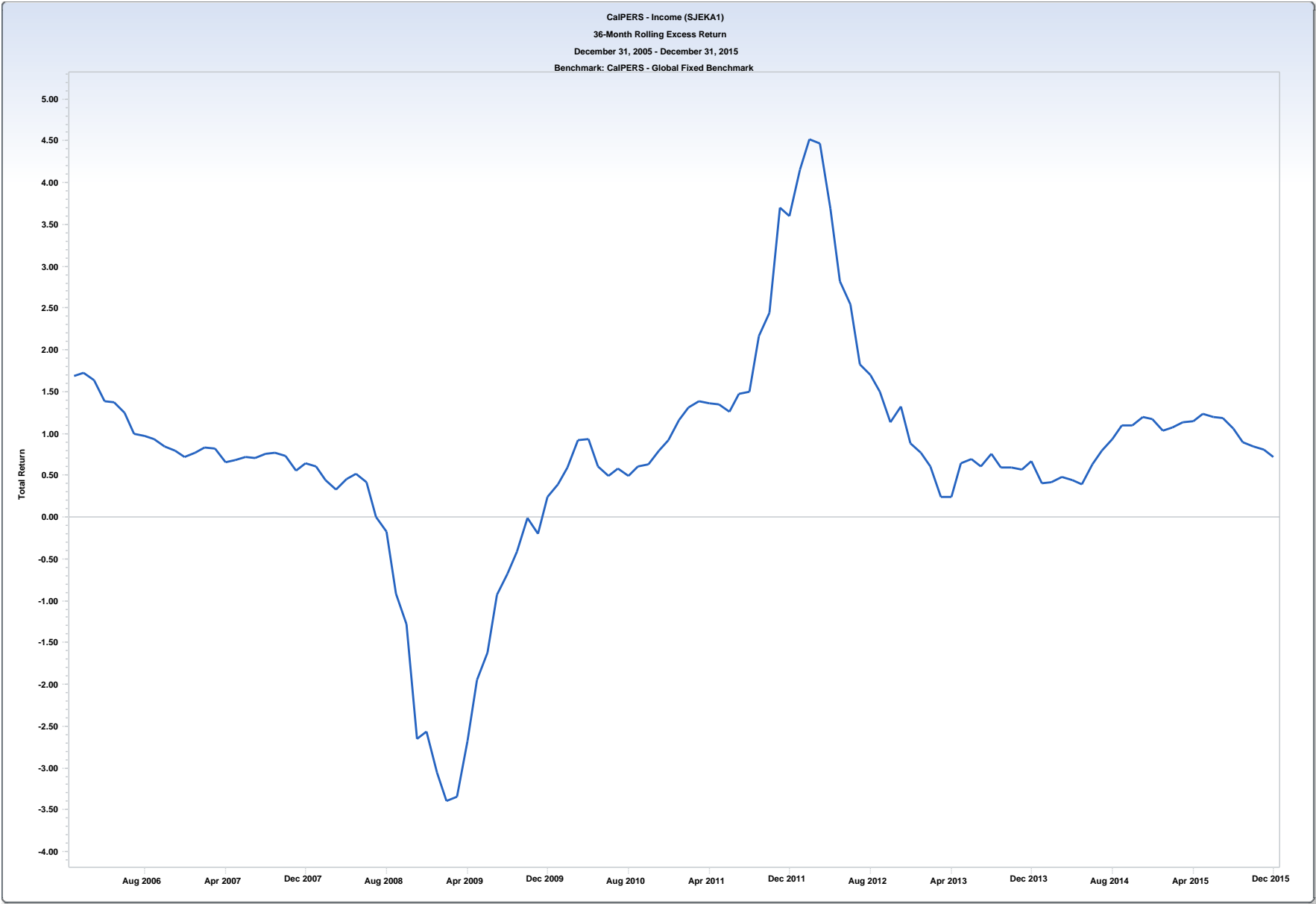


Income – Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
INCOME	55.6	-1.0%	-1.4%	1.3%	4.7%	6.1%	\$6.5 bil	1.0	0.6
<i>Income Policy Benchmark</i>		-0.8%	-1.5%	0.6%	4.2%	5.4%		0.8	0.0
<i>Value Added</i>		-0.2%	0.1%	0.7%	0.5%	0.7%			
U.S. Income	50.6	-1.0%	-0.7%	2.1%	5.4%	6.3%		1.1	0.4
<i>U.S. Income Policy Benchmark</i>		-0.8%	-0.8%	1.3%	4.9%	5.7%		0.9	0.0
<i>Value Added</i>		-0.2%	0.1%	0.8%	0.5%	0.6%			
Non-U.S. Income	5.0	-1.2%	-8.4%	-5.6%	-1.5%	3.3%		-0.2	1.1
<i>Non-US Income Policy Benchmark</i>		-1.2%	-7.9%	-6.0%	-2.4%	2.5%		-0.4	0.0
<i>Value Added</i>		0.0%	-0.5%	0.4%	0.9%	0.8%			

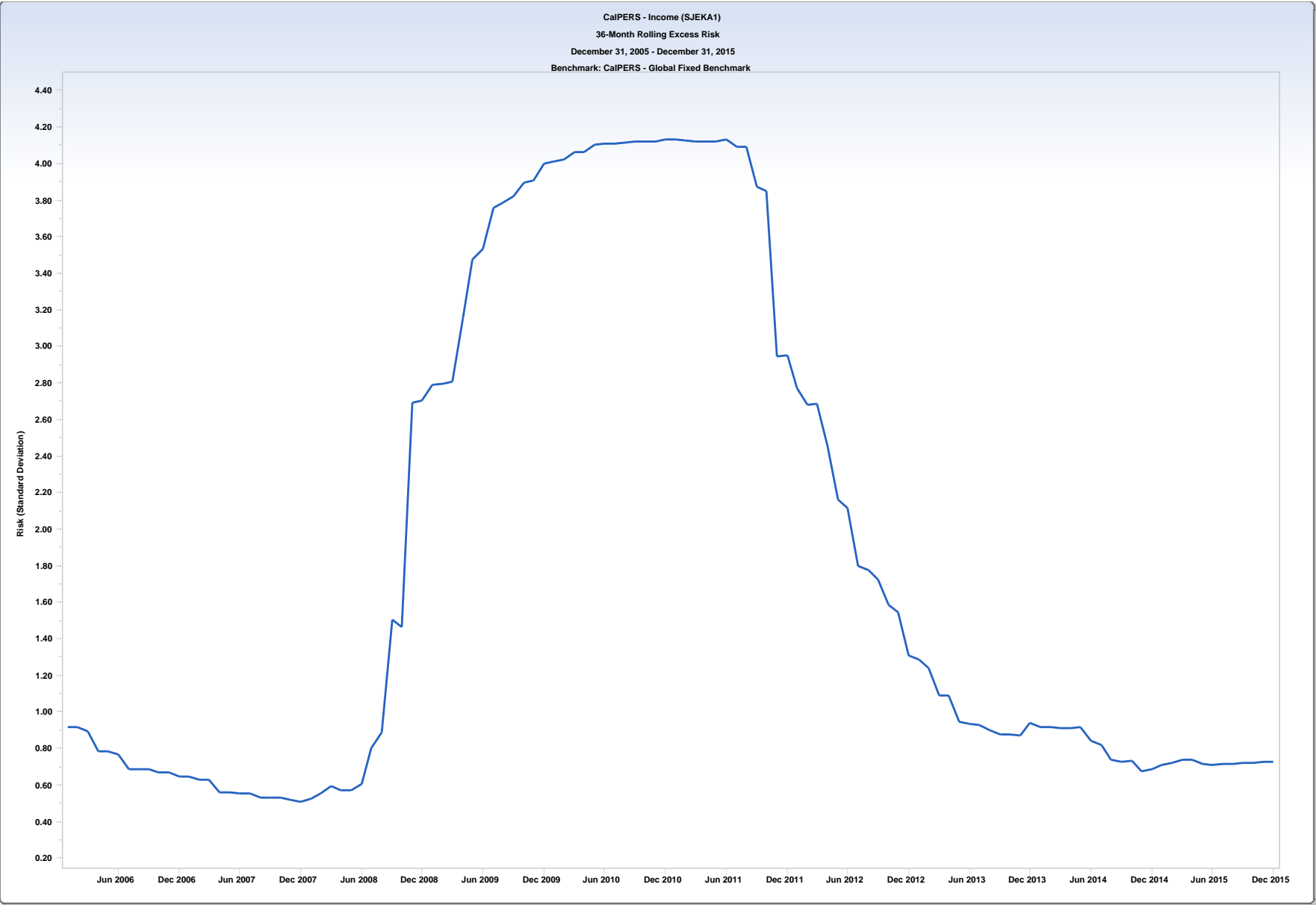


Income – Rolling Excess Returns



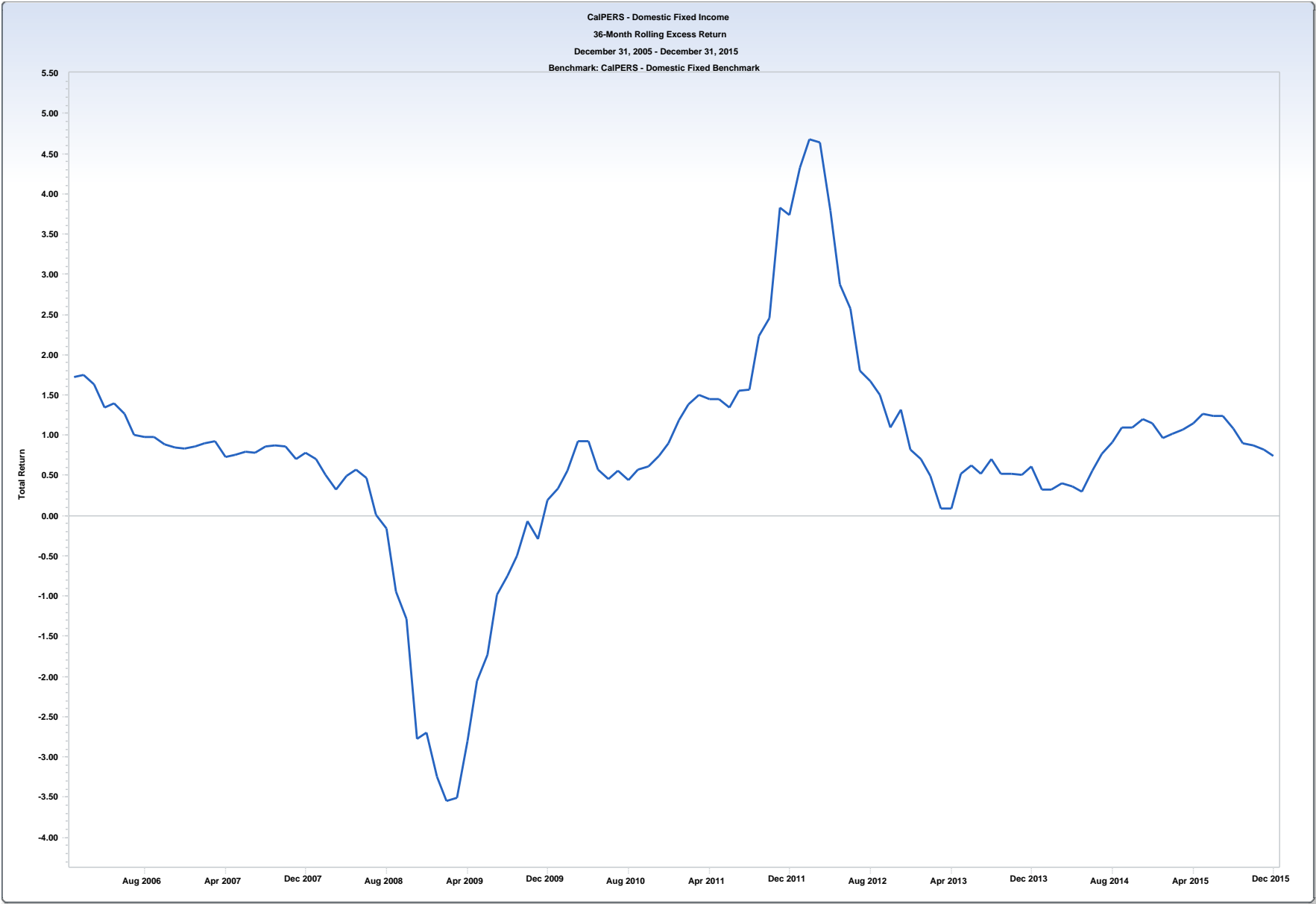


Income – Rolling Tracking Error



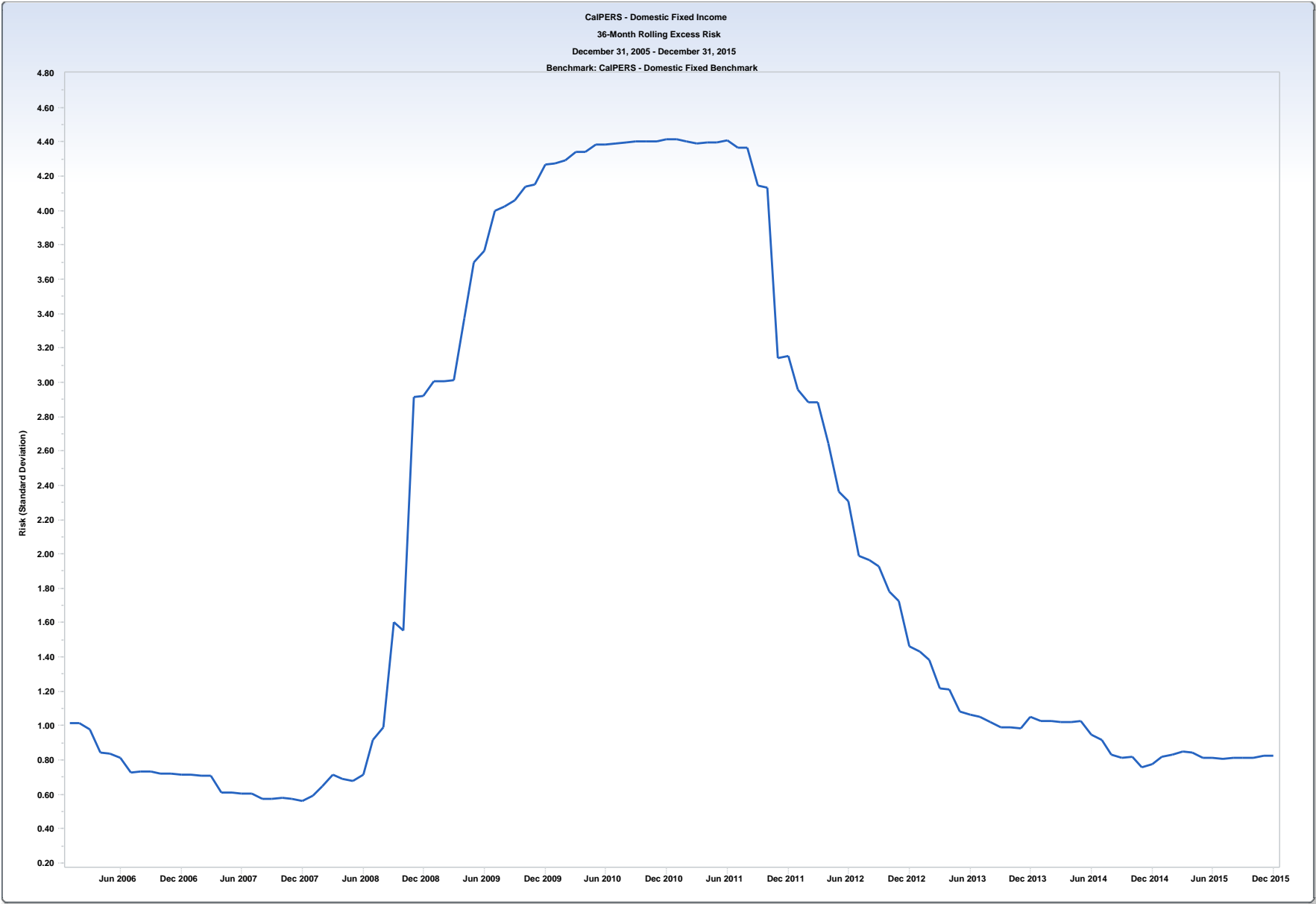


US Income – Rolling Excess Returns

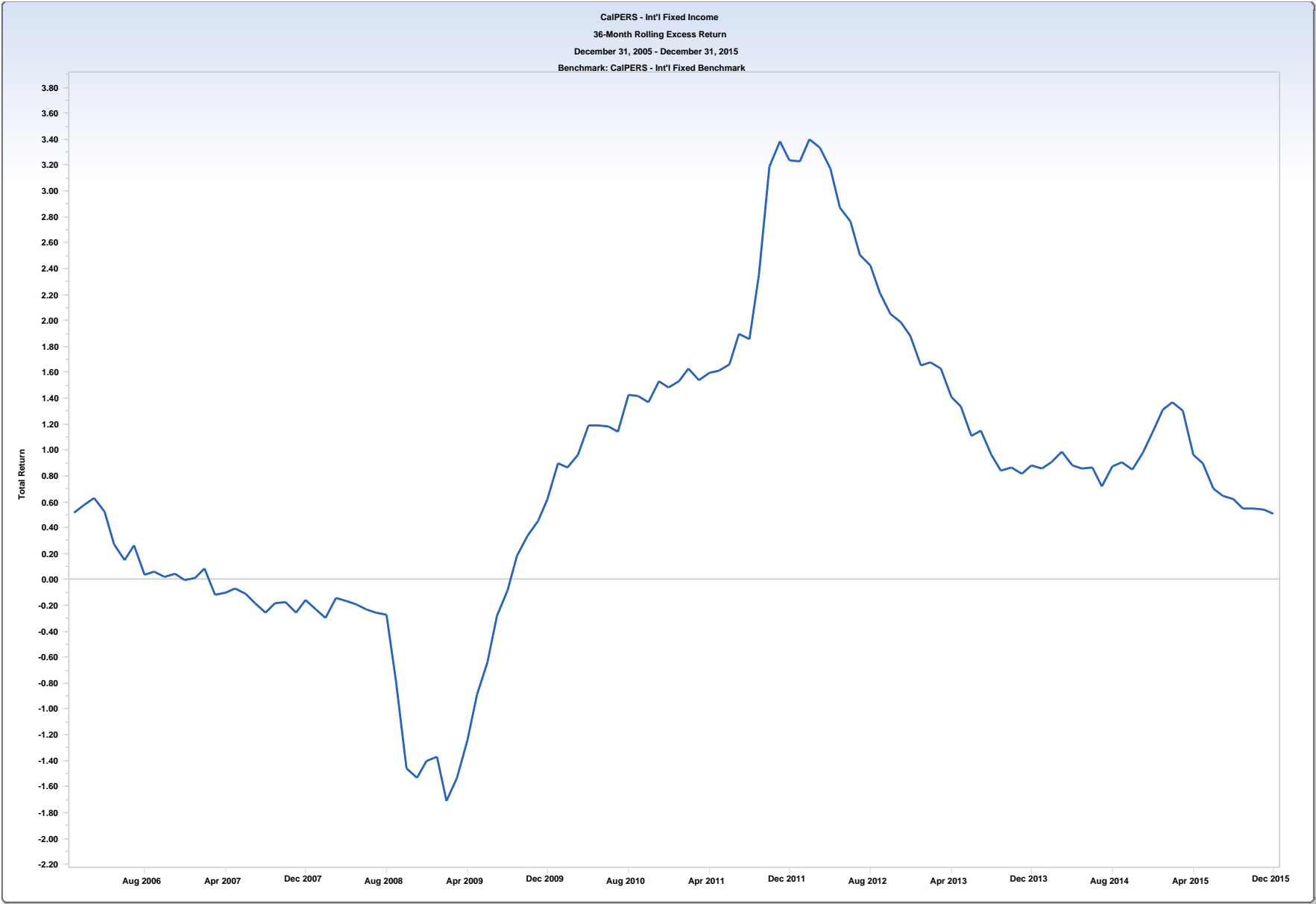




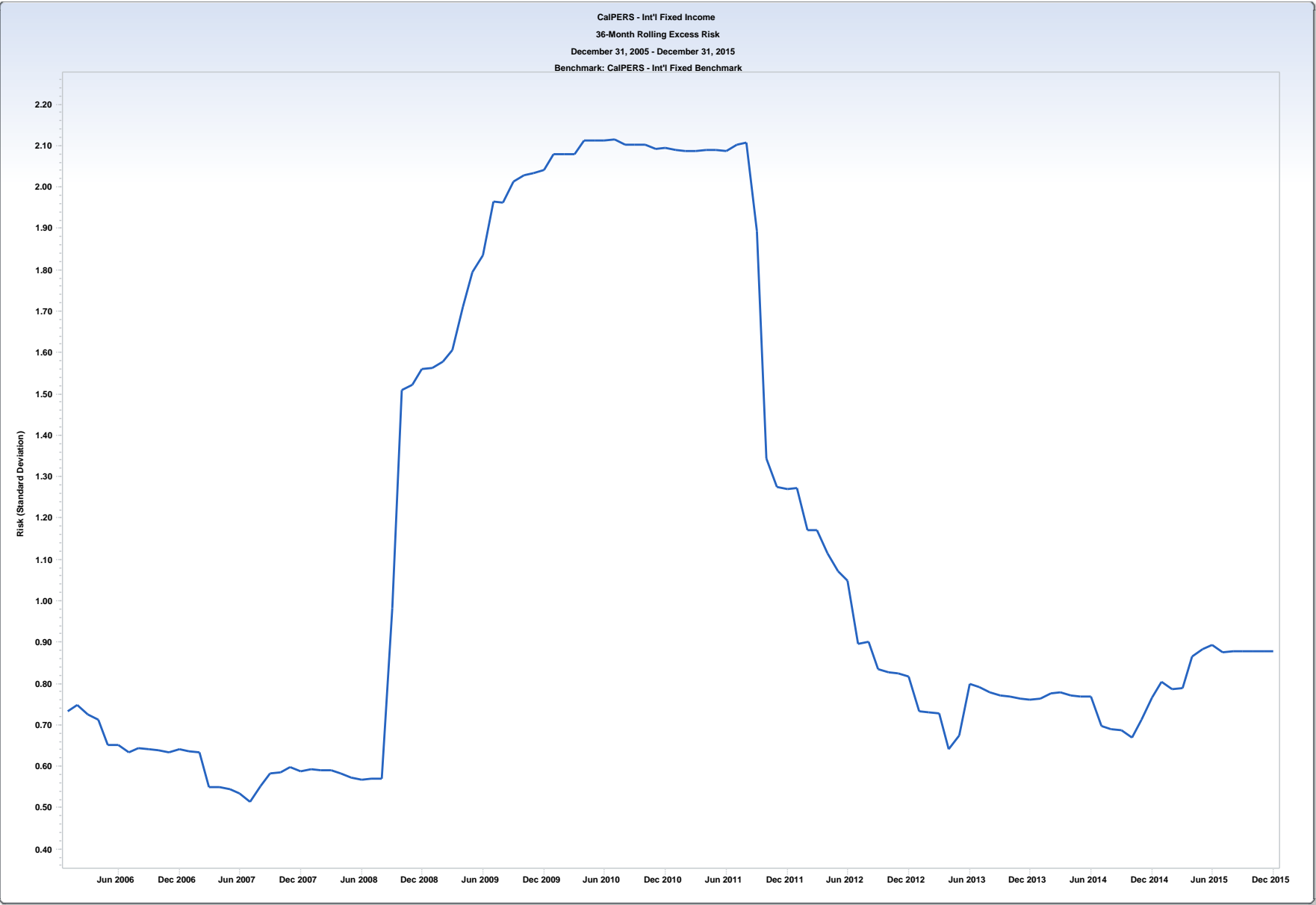
US Income – Rolling Tracking Error



International Income – Rolling Excess Returns



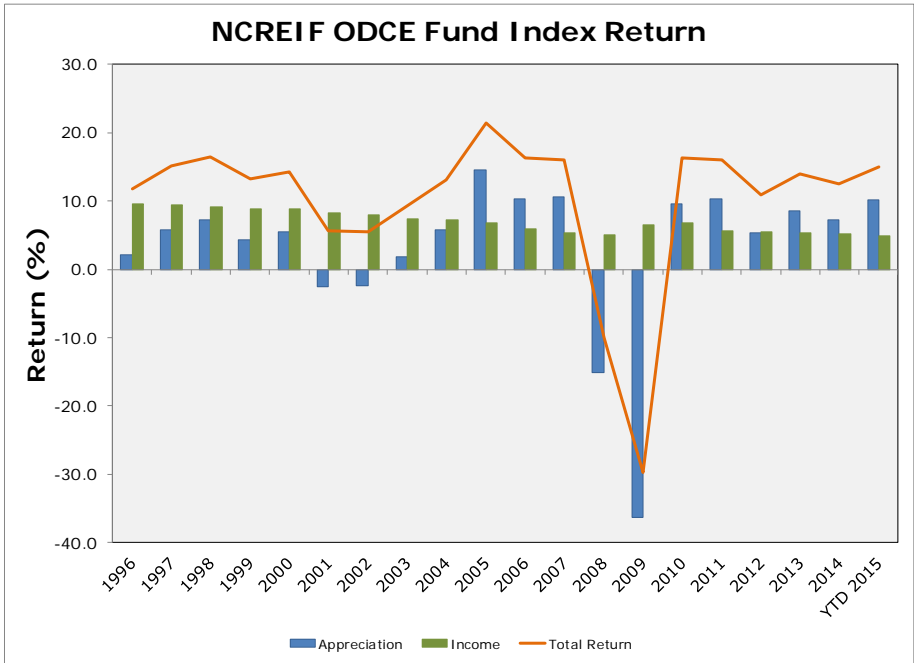
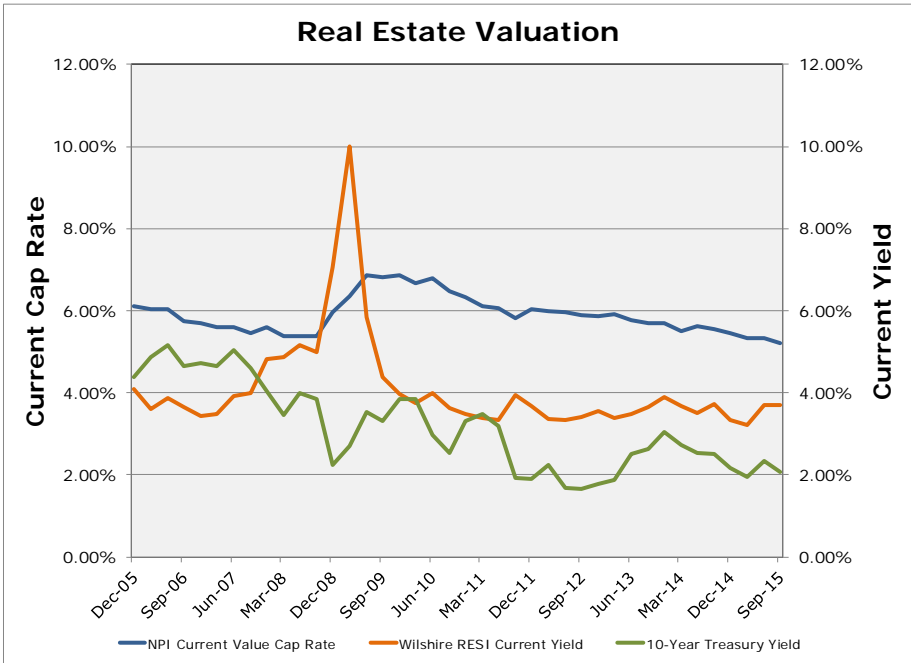
International Income – Rolling Tracking Error





Real Assets

December 31, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
Barclays U.S. TIPS Index	-0.6	-1.4	-1.4	-2.3	2.6	3.9
Bloomberg Commodity Index	-10.5	-24.7	-24.7	-17.3	-13.5	-6.4
Wilshire Global REIT Index	5.5	2.2	2.2	9.2	10.7	6.7
NCREIF ODCE Fund Index	3.3	15.0	15.0	13.8	13.7	6.5
NCREIF Timberland Index	1.9	5.0	5.0	8.4	6.8	6.9
Alerian MLP Index (Oil & Gas)	-2.8	-32.6	-32.6	-3.4	1.5	8.7



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



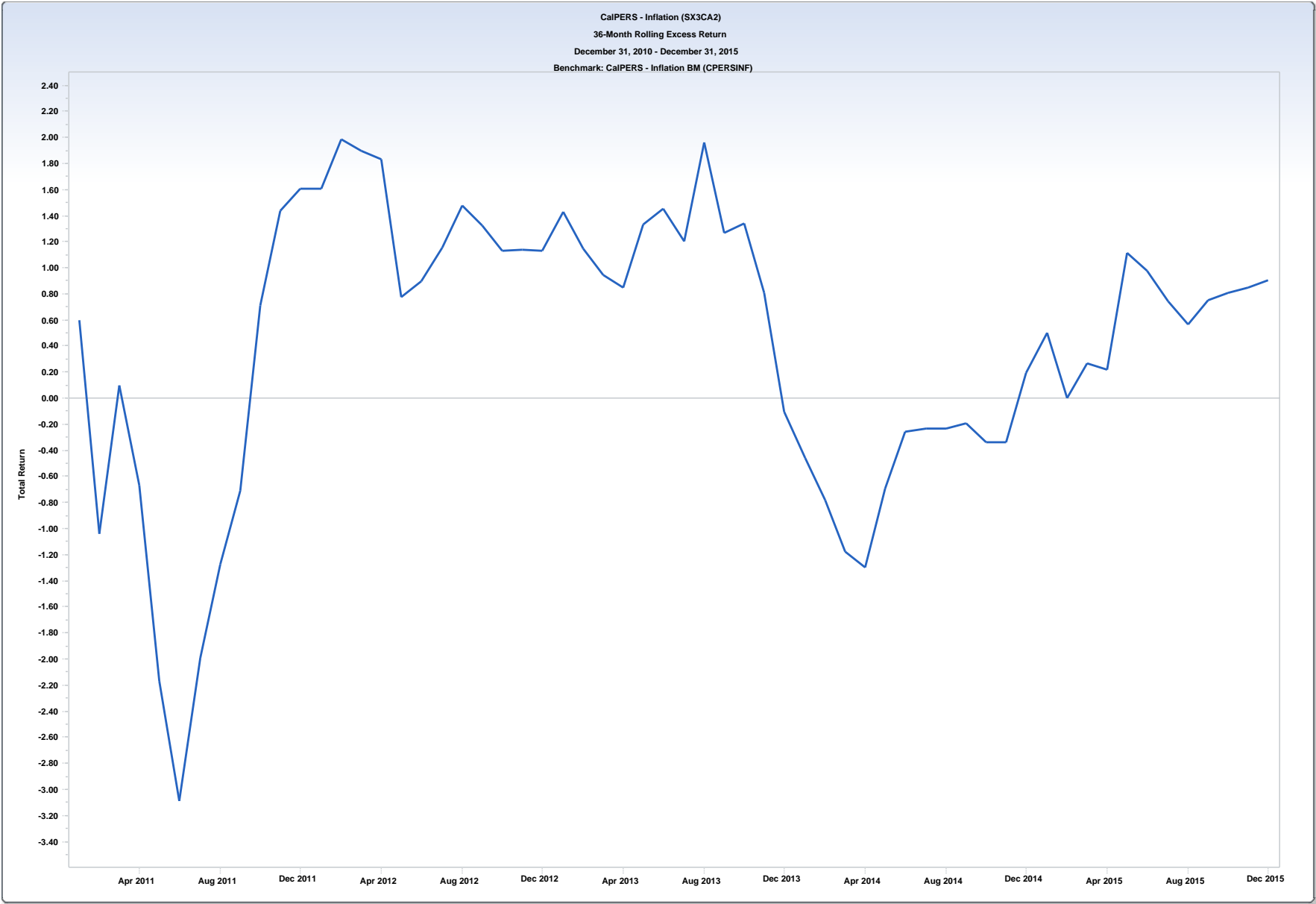


Inflation – Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
INFLATION	14.0	-4.7%	-11.3%	-7.1%	-1.8%	-.-%	\$1.0 bil	-0.2	0.2
<i>Inflation Policy Benchmark</i>		-5.2%	-12.0%	-8.0%	-2.3%	-.-%		-0.3	0.0
<i>Value Added</i>		0.5%	0.7%	0.9%	0.5%	-.-%			
Internal Commodities	1.9	-16.5%	-32.6%	-23.8%	-15.2%	-.-%			
<i>GSCI Total Return Index</i>		-16.6%	-32.9%	-23.7%	-15.2%	-.-%			
<i>Value Added</i>		0.1%	0.3%	-0.1%	0.0%	-.-%			
Core Inflation Linked Bonds	10.2	-1.3%	-4.9%	-2.0%	2.8%	-.-%			
<i>Custom Benchmark</i>		-1.3%	-4.9%	-2.5%	2.3%	-.-%			
<i>Value Added</i>		0.0%	0.0%	0.5%	0.5%	-.-%			
Tactical Commodities	0.9	-16.6%	-33.0%	-.-%	-.-%	-.-%			
<i>GSCI Total Return Index</i>		-16.6%	-32.9%	-.-%	-.-%	-.-%			
<i>Value Added</i>		0.0%	-0.1%	-.-%	-.-%	-.-%			
Tactical TIPS	1.0	-0.6%	-1.7%	-.-%	-.-%	-.-%			
<i>CalPERS TIPS</i>		-0.6%	-1.4%	-.-%	-.-%	-.-%			
<i>Value Added</i>		0.0%	-0.3%	-.-%	-.-%	-.-%			



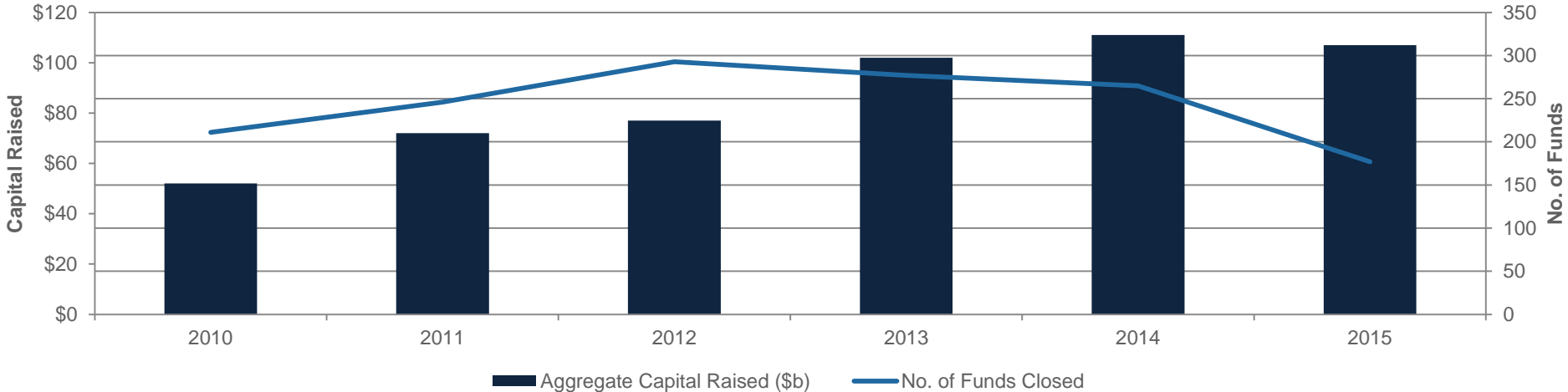
Inflation – Rolling Excess Returns



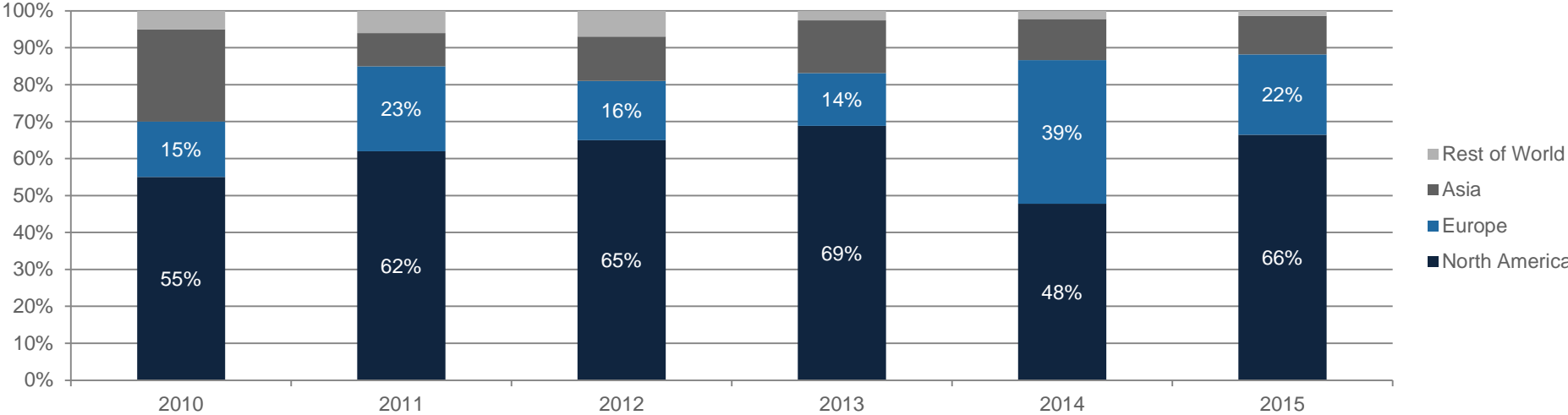
Private Real Estate – Fundraising Activity



Quarterly Closed-End Private Real Estate Fundraising (2010 – 2015)



Proportion of Aggregate Capital Raised by Closed-End Private Real Estate Funds by Fund Geographic Focus (2010 – 2015)



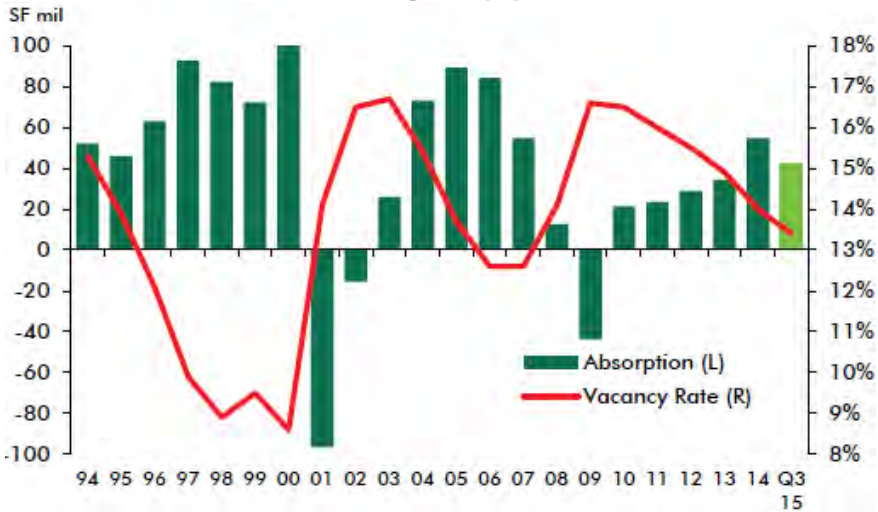
Sources: Preqin.



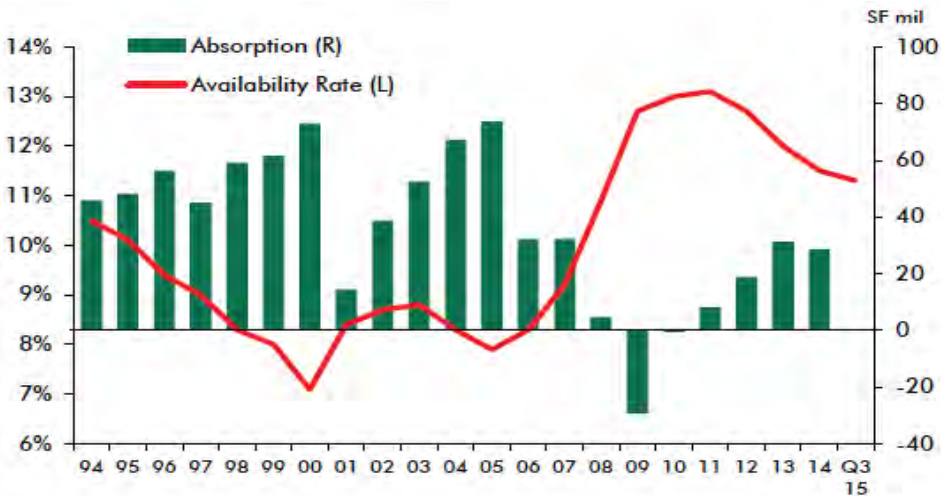


Commercial Property (as of 3Q 2015)

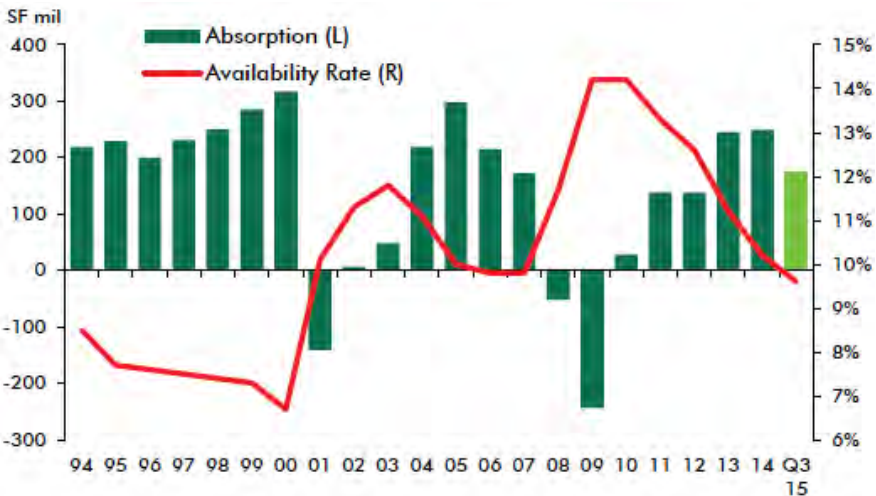
Office



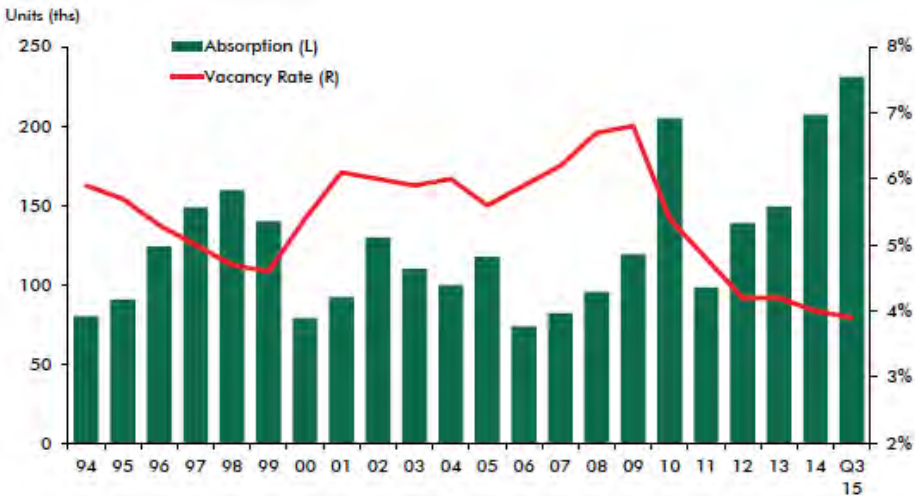
Retail



Industrial



Apartment



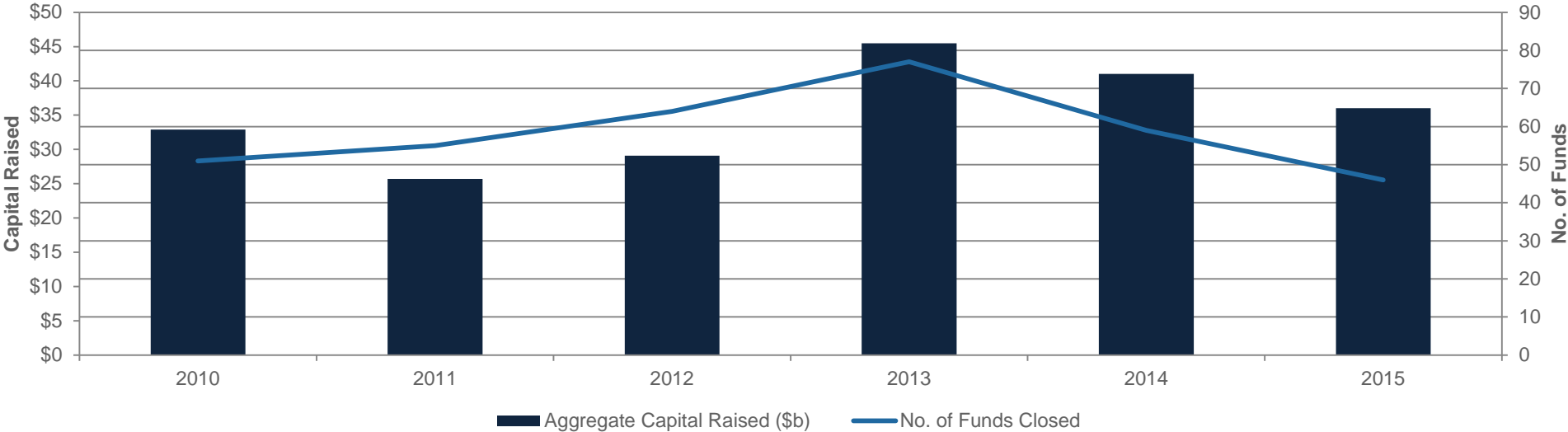
Source: CB Richard Ellis



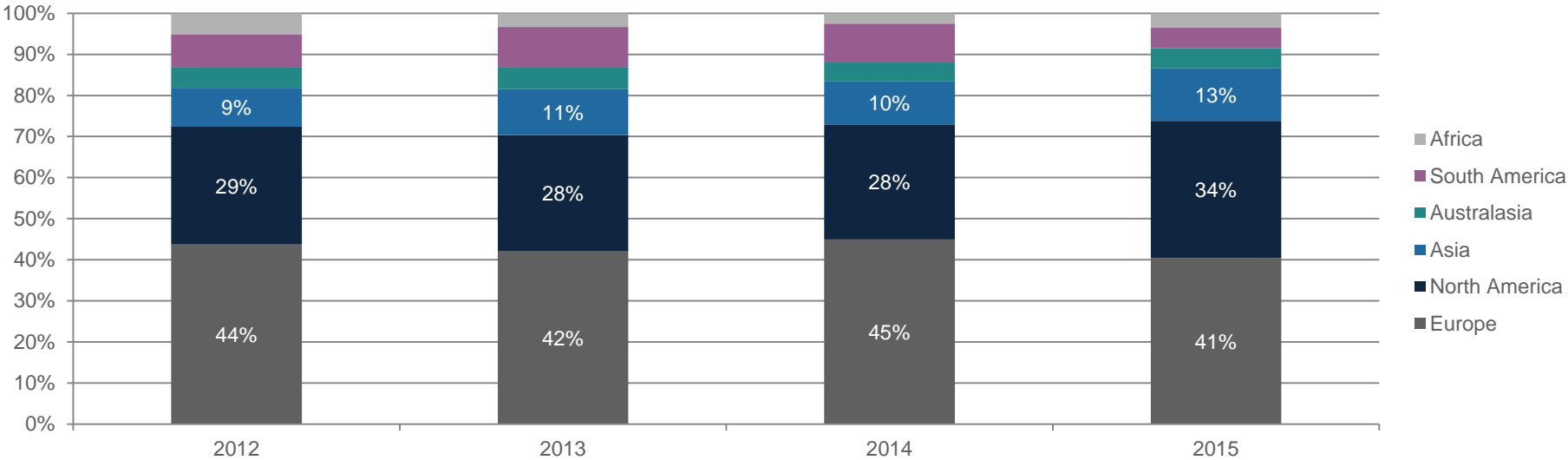
Unlisted Infrastructure – Fundraising & Investment Activity



Unlisted Infrastructure Fundraising (2010 – 2015)



Breakdown of Unlisted Infrastructure Deals by Region (2012 –2015)



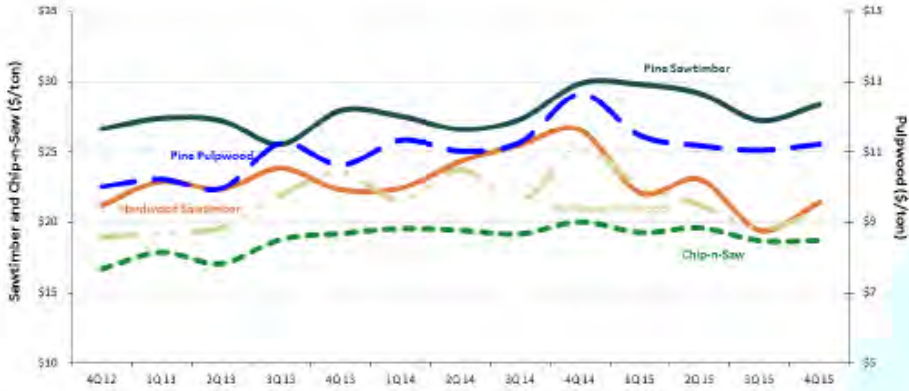
Sources: Preqin.





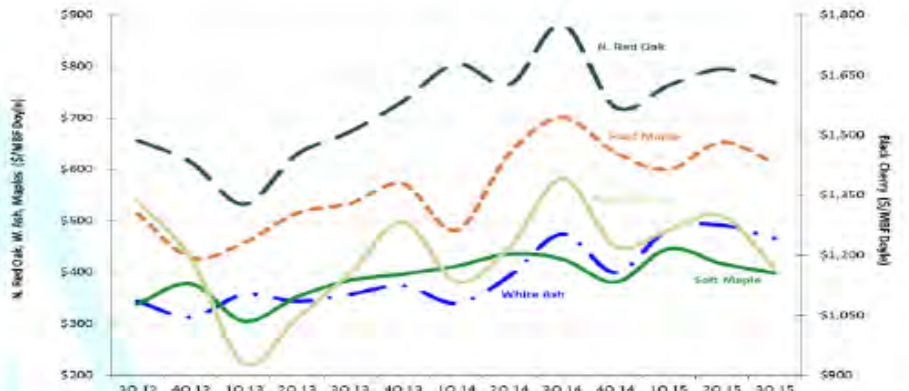
Timber

Southeastern Timber Prices



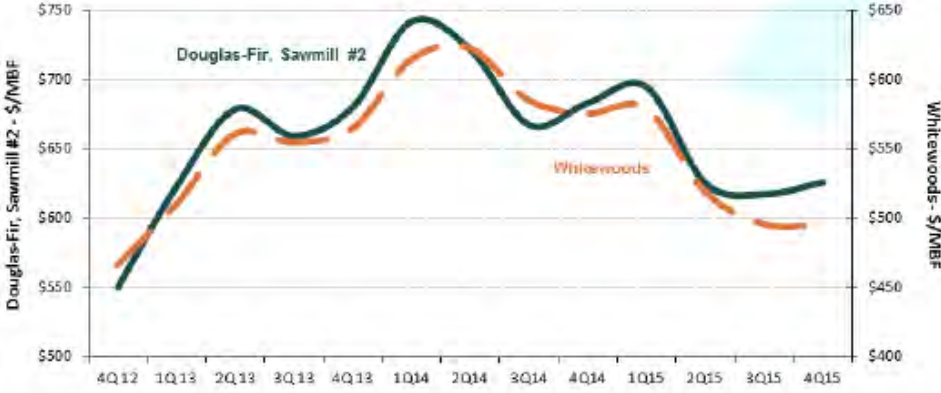
Source: Forest2Market®

Northeastern Hardwood Timber Prices



Source: Pennsylvania Woodlands Timber Market Report - Northwest Region

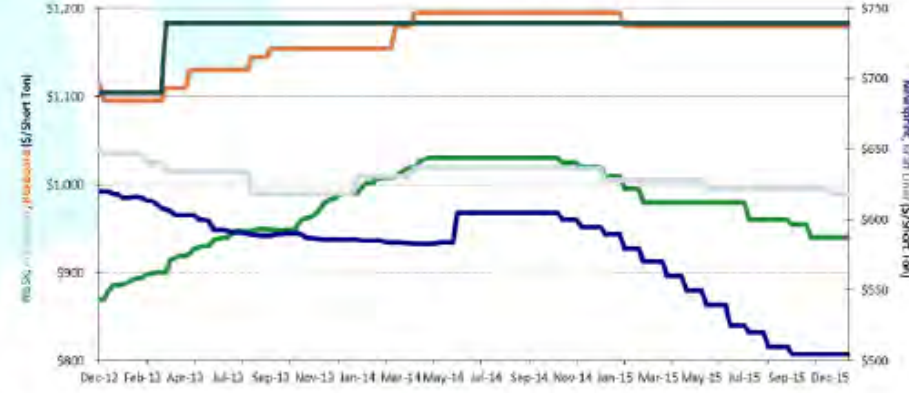
Pacific Northwest Timber Prices



Source: Log Lines®

Source: Forest Investment Associates

Pulp and Paper



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



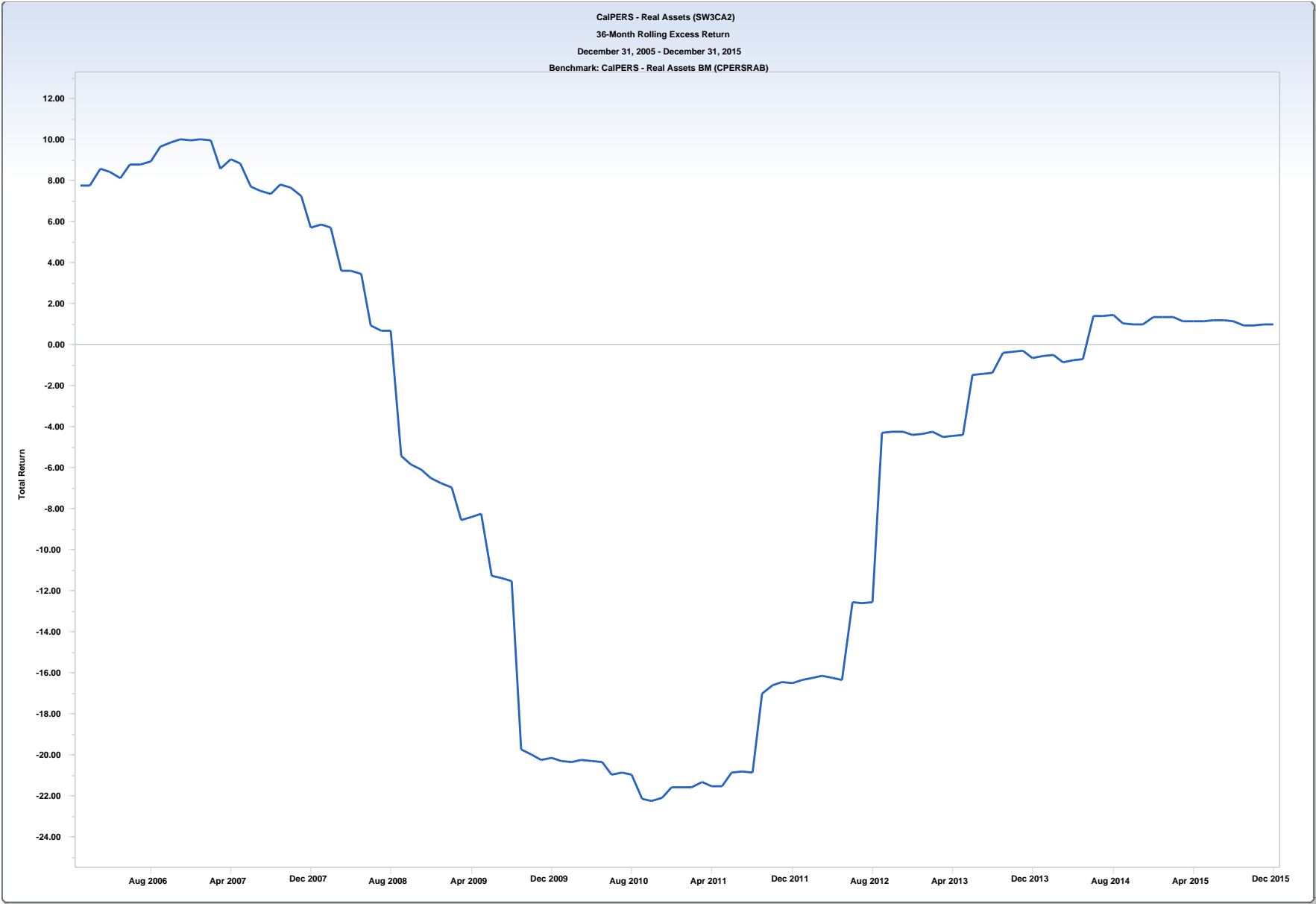


Real Assets – Performance

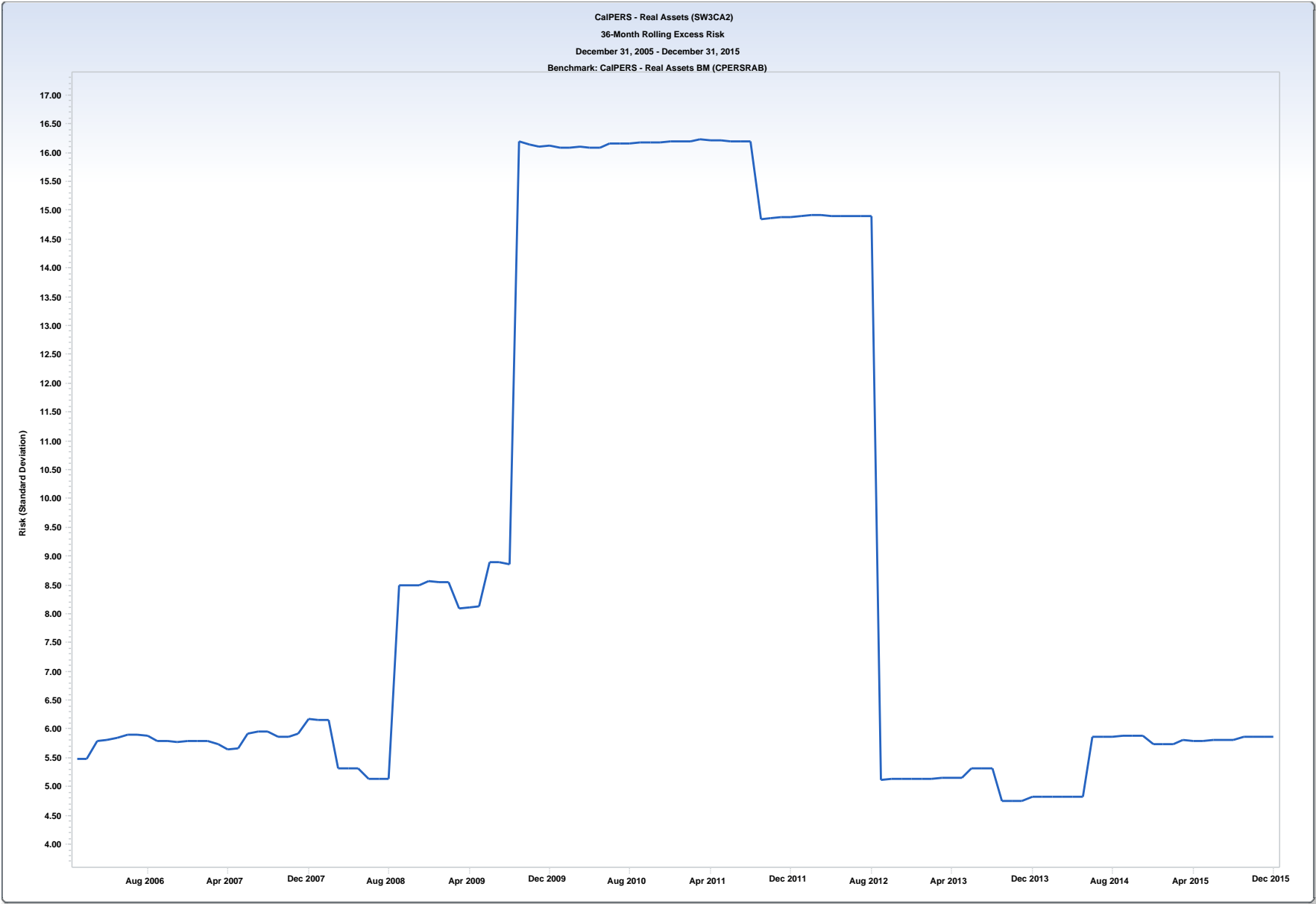
	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
REAL ASSETS	31.4	2.5%	14.0%	12.7%	12.1%	1.2%	\$4.3 bil	1.7	0.1
<i>Real Assets Policy Benchmark</i>		3.0%	12.6%	11.6%	11.7%	8.3%		2.7	0.0
<i>Value Added</i>		-0.5%	1.4%	1.1%	0.4%	-7.1%			
Real Estate	26.9	2.6%	15.5%	13.4%	13.4%	0.7%	\$4.4 bil	1.7	0.1
<i>Real Estate Policy Benchmark</i>		3.4%	13.9%	12.4%	12.9%	9.1%		2.6	0.0
<i>Value Added</i>		-0.8%	1.6%	1.0%	0.5%	-8.4%			
Forestland	2.2	0.0%	0.0%	2.8%	-1.3%	-.-%			
<i>NCREIF Timberland Index</i>		0.8%	9.3%	9.8%	6.3%	-.-%			
<i>Value Added</i>		-0.8%	-9.3%	-6.9%	-7.6%	-.-%			
Infrastructure	2.3	3.2%	11.0%	15.0%	19.1%	-.-%			
<i>CPI + 400 BPS 1Qtr Lag</i>		0.7%	4.0%	5.0%	6.1%	-.-%			
<i>Value Added</i>		2.5%	7.0%	10.0%	13.0%	-.-%			



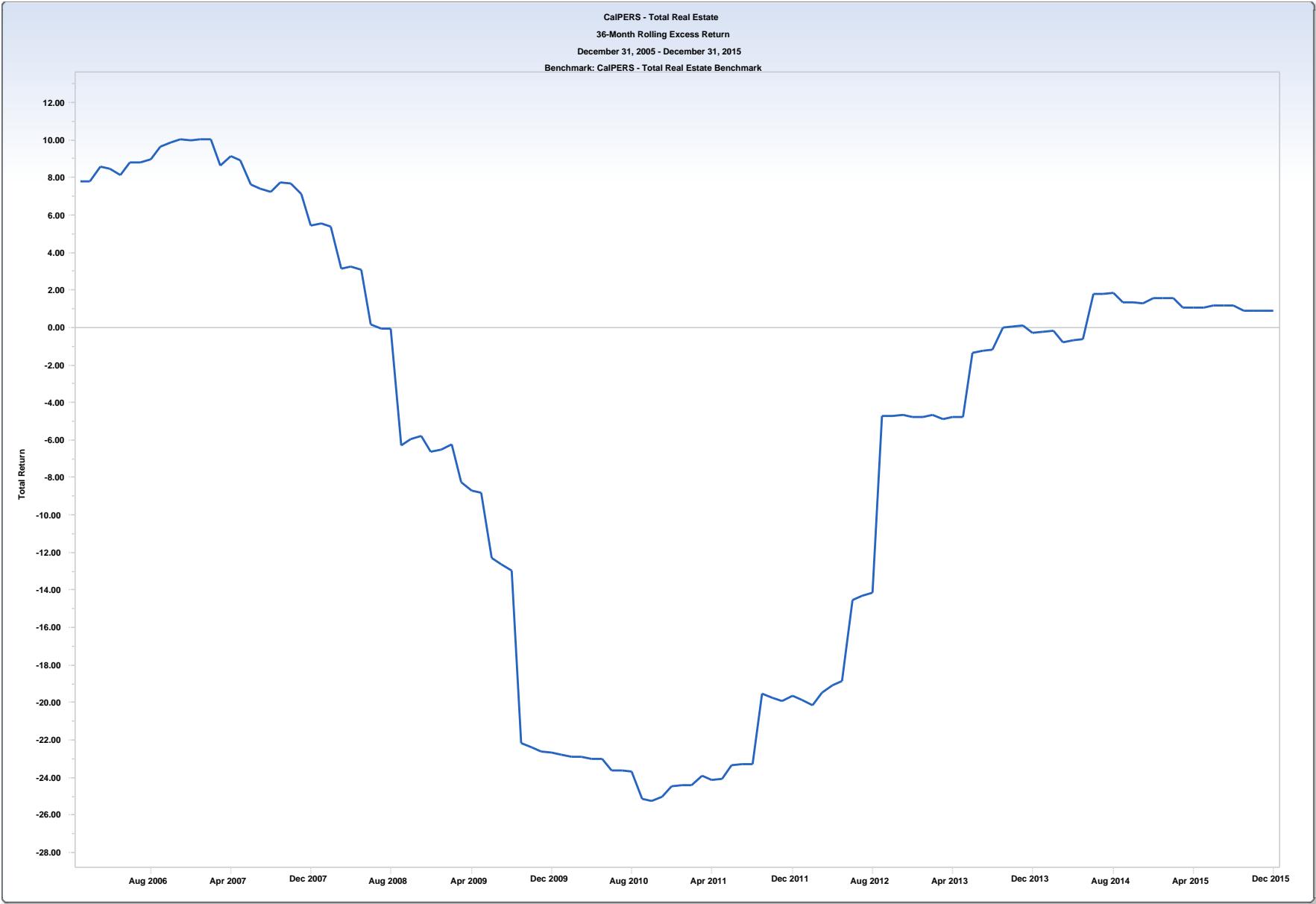
Real Assets – Rolling Excess Returns



Real Assets – Rolling Tracking Error

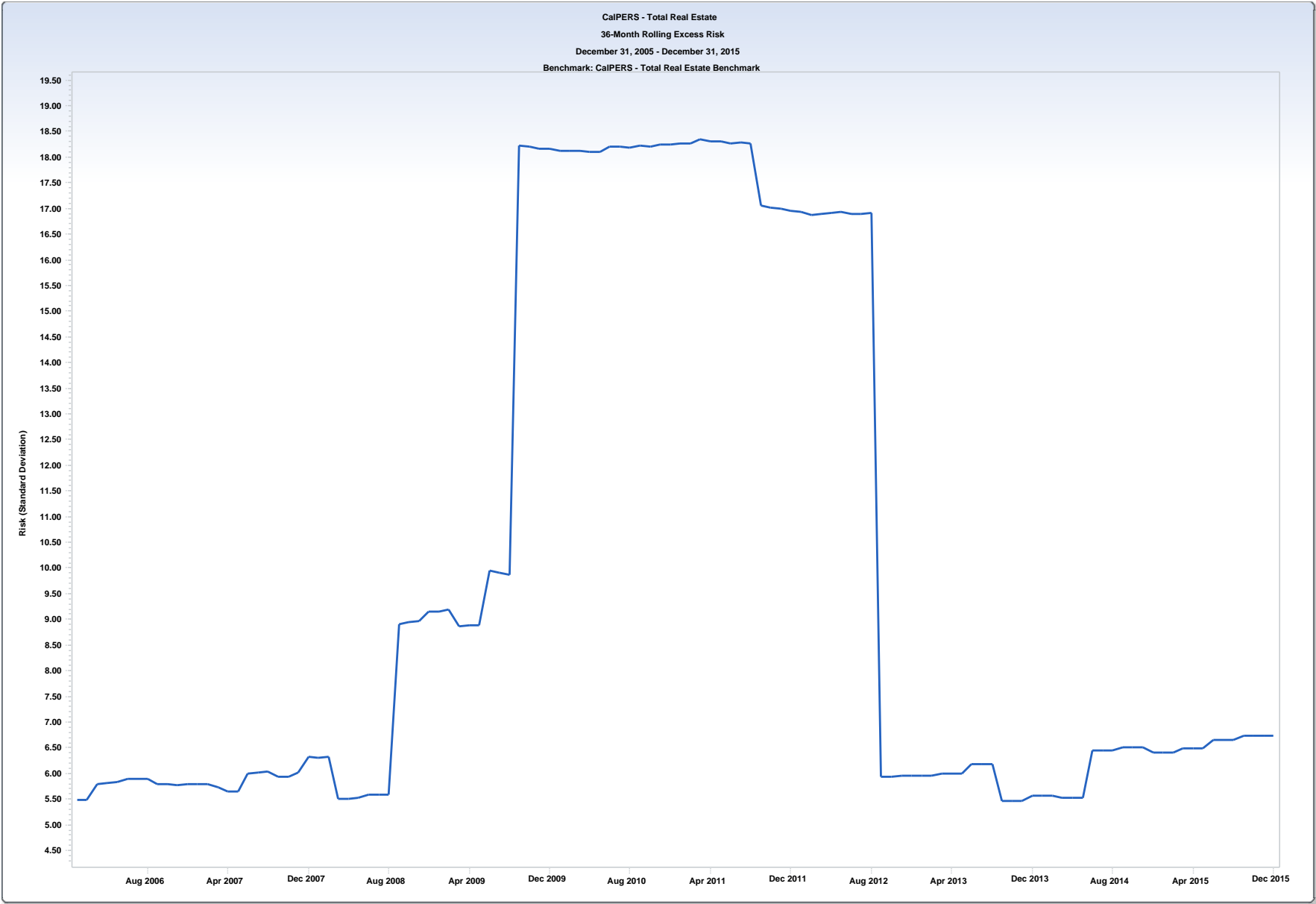


Real Estate – Rolling Excess Returns





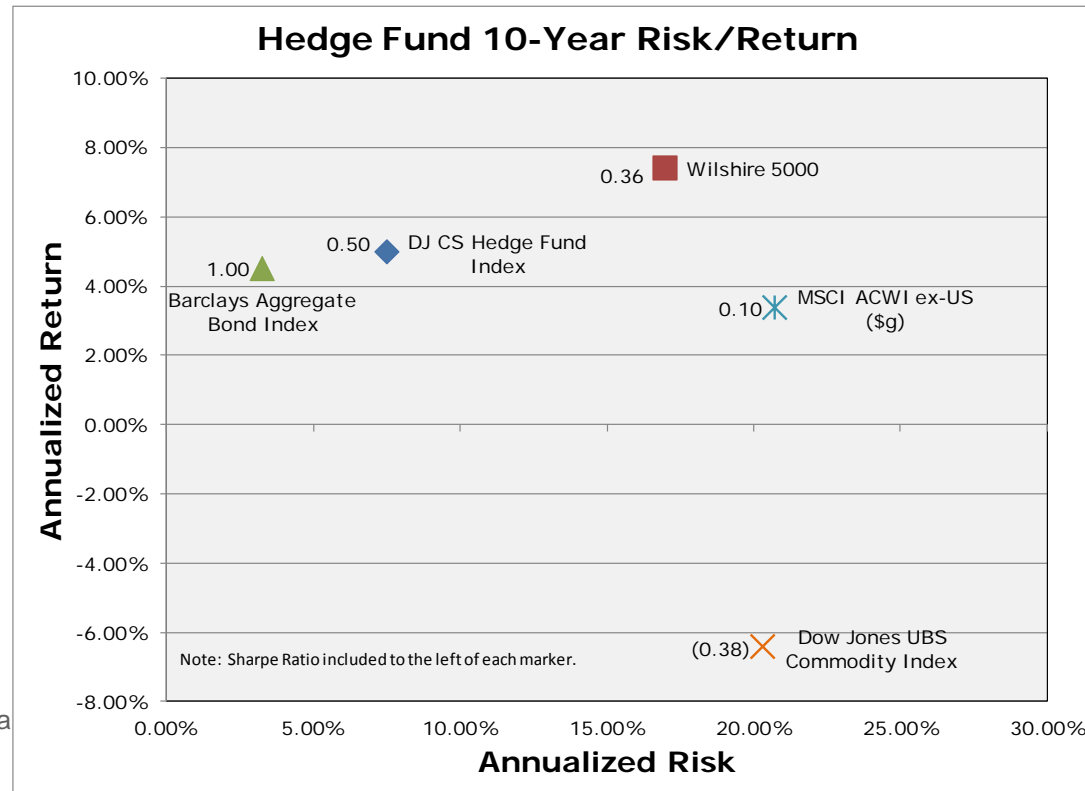
Real Estate – Rolling Tracking Error



Hedge Fund Performance



December 31, 2015	Qtr	Ytd	1 Yr	3 Yr	5 Yr	10 Yr
DJ CS Hedge Fund Index	-0.1	-0.7	-0.7	4.3	3.6	5.0
Event Driven Index	-2.3	-6.3	-6.3	3.2	2.0	4.9
Global Macro Index	0.6	0.2	0.2	2.5	3.7	6.8
Long/Short Equity Index	1.6	3.5	3.5	8.8	5.2	5.8
Multi-Strategy Index	0.5	3.8	3.8	7.0	6.8	6.2
Wilshire 5000	6.4	0.7	0.7	14.7	12.1	7.4
MSCI ACWI ex-US (\$g)	3.3	-5.3	-5.3	1.9	1.5	3.4
Barclays Aggregate Bond Index	-0.6	0.6	0.6	1.4	3.2	4.5
Dow Jones UBS Commodity Index	-10.5	-24.7	-24.7	-17.3	-13.5	-6.4



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	0.5	-0.5%	2.5%	5.3%	3.3%	3.7%	-0.6	0.6	1.0	1.4
<i>ARS Policy Benchmark</i>		1.1%	5.2%	5.2%	5.3%	6.9%				
<i>Value Added</i>		-1.6%	-2.7%	0.1%	-2.0%	-3.2%				
Total Direct Investments	0.4	-1.0%	1.7%	5.1%	3.5%	4.2%				
Total Funds of Funds	0.0	9.3%	16.2%	8.9%	4.8%	3.3%				
HFRI Fund of Funds Index		0.6%	-0.4%	3.9%	2.1%	2.3%				

