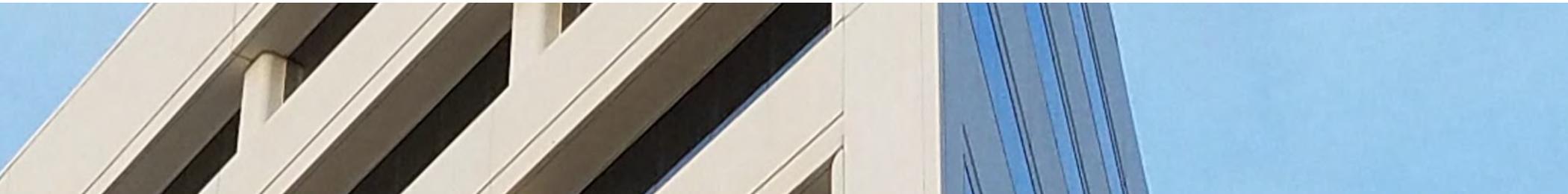




WILSHIRE ASSOCIATES

Wilshire Consulting



California Public Employees' Retirement System
Performance Review – December 31, 2017

Wilshire Consulting



DECEMBER 2017 ASSET CLASS ASSUMPTIONS

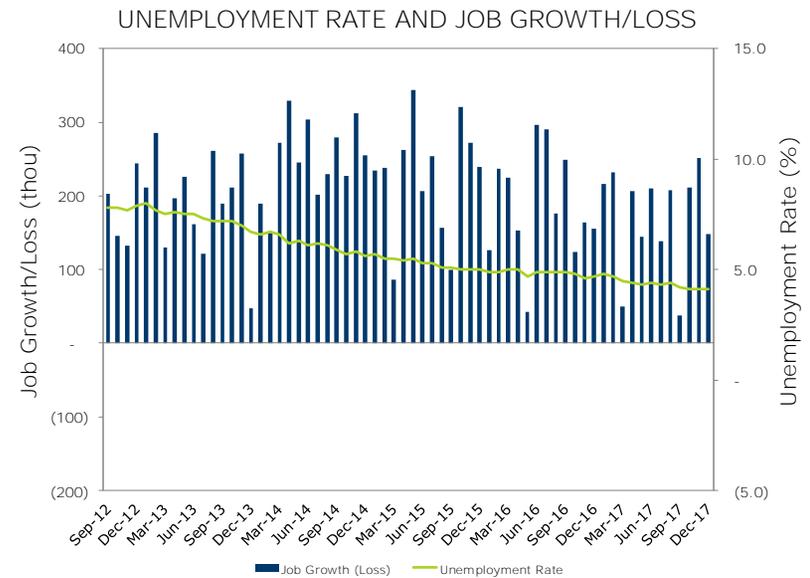
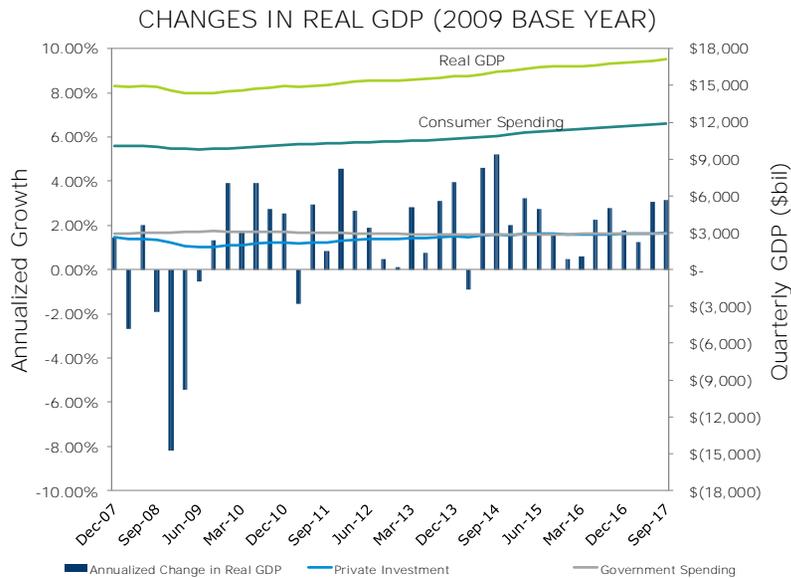
	EQUITY						FIXED INCOME						REAL ASSETS					
	US STOCK	DEV	EMG	GLOBAL		PRIVATE EQUITY	CASH	LT		US TIPS	HIGH YIELD	NON-US BOND (HDG)	REAL ESTATE			REAL ASSETS	US CPI	
		EX-US STOCK	MRKT	EX-US STOCK	GLOBAL STOCK			CORE BOND	CORE BOND				US RES	GLOBAL RES	PRIVATE RE			CMDTY
EXPECTED COMPOUND RETURN (%)	6.25	6.25	6.25	6.45	6.45	8.75	1.75	3.55	3.60	2.95	4.95	1.30	5.40	5.60	6.90	3.70	6.60	1.95
EXPECTED ARITHMETIC RETURN (%)	7.55	7.70	9.20	8.05	7.80	12.10	1.75	3.70	4.05	3.10	5.40	1.35	6.75	6.75	7.80	4.75	6.95	1.95
EXPECTED RISK (%)	17.00	18.00	26.00	18.75	17.15	28.00	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	2.00	2.75	2.35	0.00	1.75	3.55	4.75	3.05	8.15	1.65	3.95	3.95	2.65	1.75	2.85	0.00
CORRELATIONS																		
US STOCK	1.00																	
DEV EX-US STOCK (USD)	0.81	1.00																
EMERGING MARKET STOCK	0.74	0.74	1.00															
GLOBAL EX-US STOCK	0.83	0.96	0.86	1.00														
GLOBAL STOCK	0.94	0.92	0.82	0.94	1.00													
PRIVATE EQUITY	0.74	0.64	0.62	0.67	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	0.09	0.20	0.31	0.19	1.00										
LT CORE BOND	0.31	0.16	0.01	0.12	0.23	0.32	0.11	0.93	1.00									
US TIPS	-0.05	0.00	0.15	0.05	0.00	-0.03	0.20	0.60	0.47	1.00								
HIGH YIELD BOND	0.54	0.39	0.49	0.45	0.51	0.34	-0.10	0.25	0.32	0.05	1.00							
NON-US BOND (HDG)	0.16	0.25	-0.01	0.18	0.18	0.26	0.10	0.67	0.64	0.39	0.26	1.00						
US RE SECURITIES	0.59	0.47	0.44	0.49	0.56	0.50	-0.05	0.17	0.23	0.10	0.56	0.05	1.00					
GLOBAL RE SECURITIES	0.65	0.59	0.56	0.62	0.66	0.58	-0.05	0.17	0.22	0.11	0.62	0.03	0.94	1.00				
PRIVATE REAL ESTATE	0.54	0.44	0.44	0.47	0.52	0.51	-0.05	0.19	0.25	0.09	0.57	0.05	0.77	0.76	1.00			
COMMODITIES	0.25	0.34	0.39	0.38	0.32	0.27	0.00	-0.02	-0.02	0.25	0.29	-0.10	0.25	0.28	0.25	1.00		
REAL ASSET BASKET	0.42	0.43	0.50	0.48	0.47	0.43	0.01	0.24	0.25	0.41	0.53	0.06	0.65	0.69	0.69	0.59	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	0.44	0.26	1.00

ECONOMIC REVIEW

AS OF DECEMBER 31, 2017 KEY ECONOMIC INDICATORS

CPI (ALL ITEMS)	MONTHLY CHANGE		CUMULATIVE CHANGE	
SEASONALLY ADJUSTED	Dec-17	0.1	3-Mo.	0.6
	Nov-17	0.4	12-Mo.	2.1
	Oct-17	0.1	10-Yr. (Annual)	1.6
BREAKEVEN INFLATION	10-Yr.	2.0		
CONSUMER SENTIMENT U. OF MICHIGAN SURVEY	Dec-17	95.9		
	Nov-17	98.5		
	1-Yr. Ago	98.2	10-Yr. Avg	79.1
MANUFACTURING INST. FOR SUPPLY MGMT PURCHASING MNGRS' IDX	Dec-17	59.7	CHANGE IN SECTOR	
	Nov-17	58.2	>50	Expansion
	1-Yr. Avg.	57.6	<50	Contraction

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



Data sources: Bureau of Labor Statistics, U.S. Treasury, University of Michigan, Institute for Supply Management, Bureau of Economic Analysis

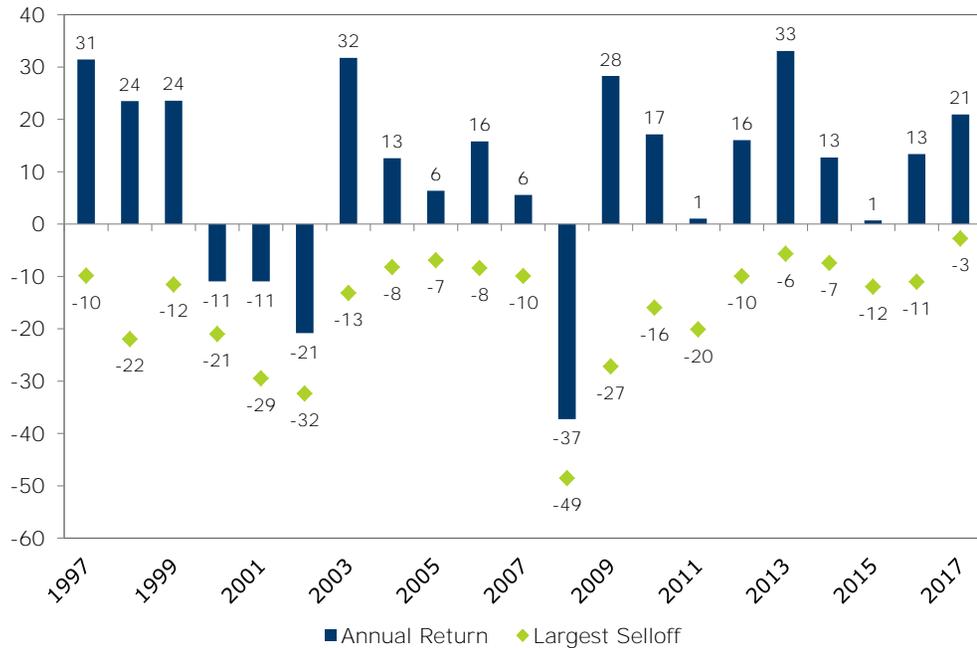


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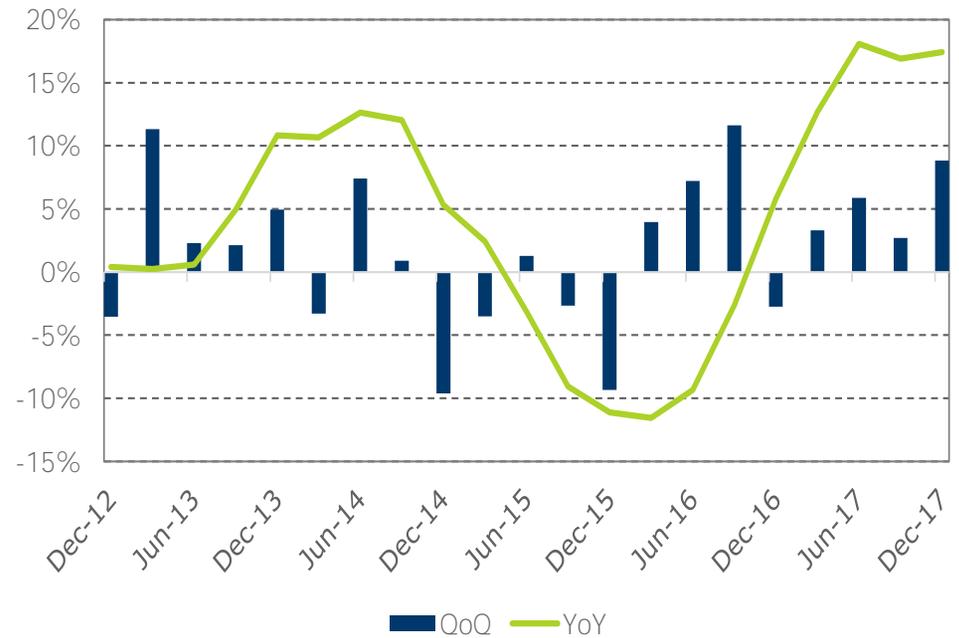
ANNUAL EQUITY RETURNS

- U.S. Equity has now produced 9 straight years of positive returns since 2008
- Wilshire 5000 Total Market Index was up +21.0% in 2017
- EPS growth remained strong in 2017; Operating earnings rose 17.4%

WILSHIRE 5000 INDEX
WORST INTRA-PERIOD SELLOFF VS ANNUAL RETURN (%)



S&P 500 EARNINGS GROWTH (Operating EPS)





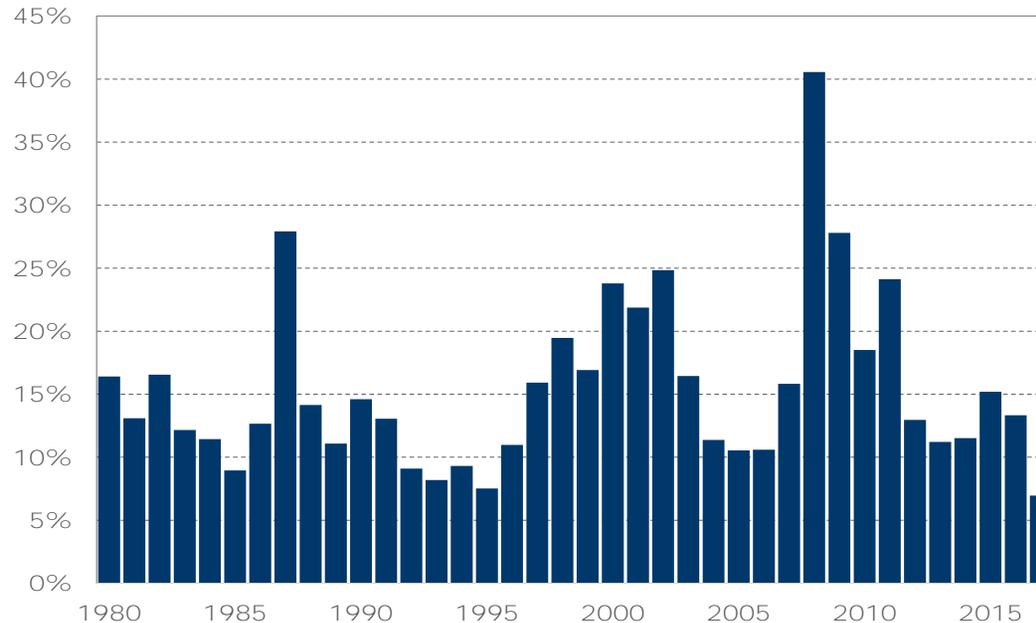
Wilshire Consulting

HISTORICALLY LOW LEVELS OF EQUITY RISK

- 2017 was one of the least volatile years in nearly four decades
 - Largest drawdown for the year was -2.75%
 - Only 4 trading days where the market was down 1% or more

Year	Annual Volatility	Largest Drawdown	Number of Days Down:				Worst Down Day
			1%	2%	3%	4%	
Max Risk	40.56%	-48.54%	71	42	24	17	-17.23%
Avg	15.45%	-13.81%	28.1	7.6	2.3	1.0	-4.00%
Med	13.21%	-9.94%	22.5	4.0	1.0	0.0	-3.29%
Min Risk	6.96%	-2.74%	3	0	0	0	-1.36%
Level	6.96%	-2.75%	4	0	0	0	-1.85%
Rank	1	2	2	1	1	1	7

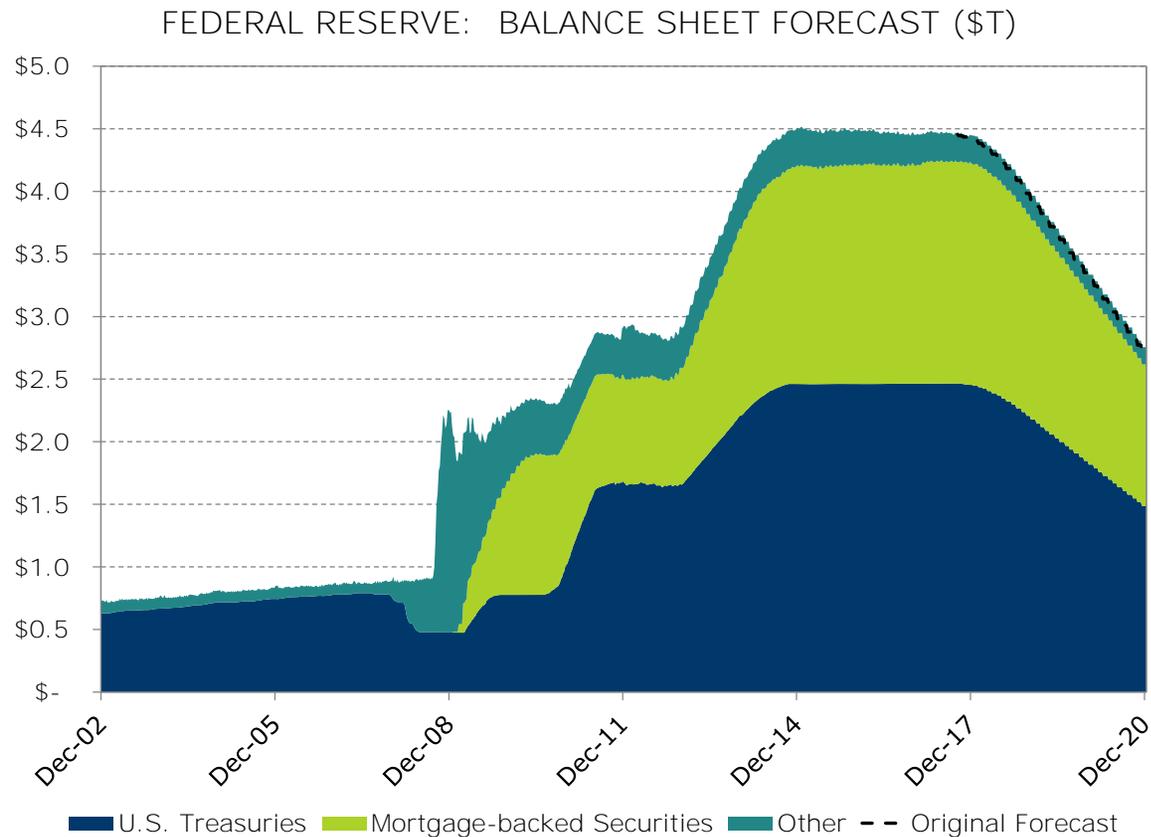
ANNUAL VOLATILITY (WILSHIRE 5000 INDEX)





Wilshire Consulting FEDERAL RESERVE

- Federal Reserve began their balance sheet normalization program during Q4; targeting \$10B in reductions per month with the goal of reaching \$50B per month in Q4 2018
- Total reductions have equaled only \$17B through mid-January 2018

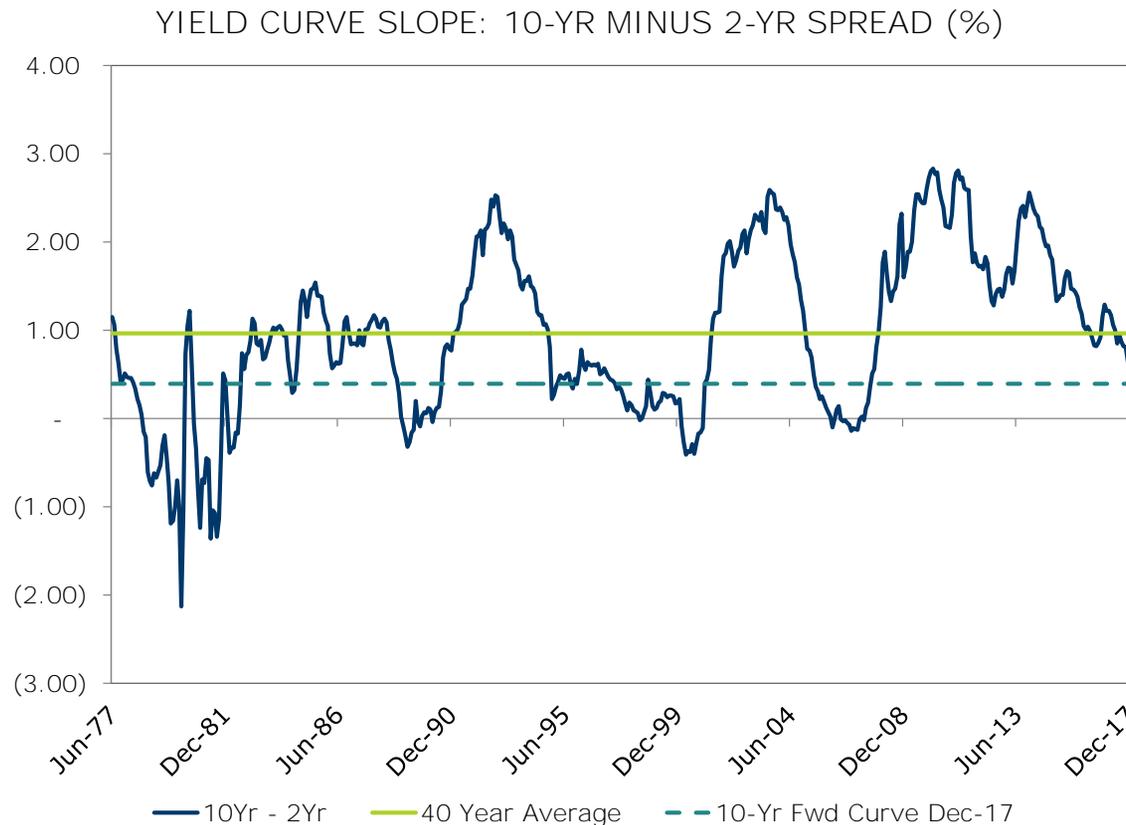


Data sources: Federal Reserve

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U.S. YIELD CURVE

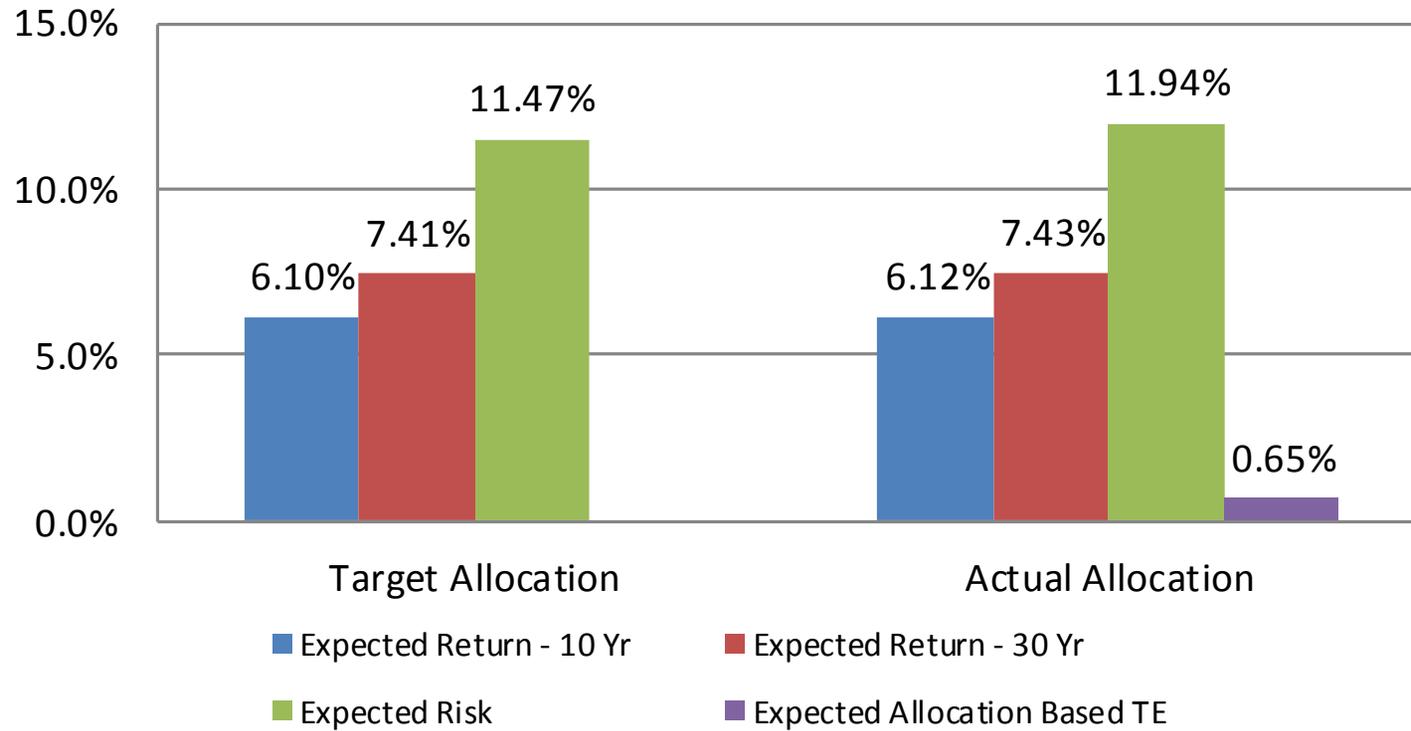
- Shape of the curve had been steep since the global financial crisis; has recently flattened
- Current spread between 10-year and 2-year Treasury is well below average (0.56% vs. 0.96%)
- Tight spread present in 10-year forward curve as well (0.39%)
- Continued strong economic growth will put upward pressure on the long end of the curve



Data source: Federal Reserve

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CalPERS Expected Return and Risk Estimates

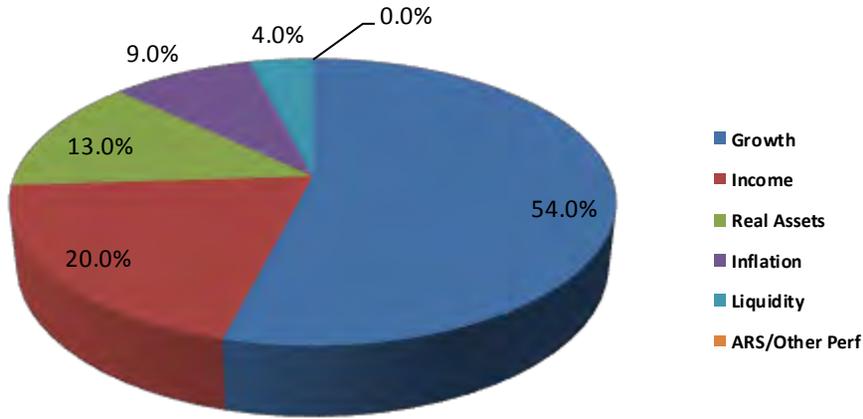




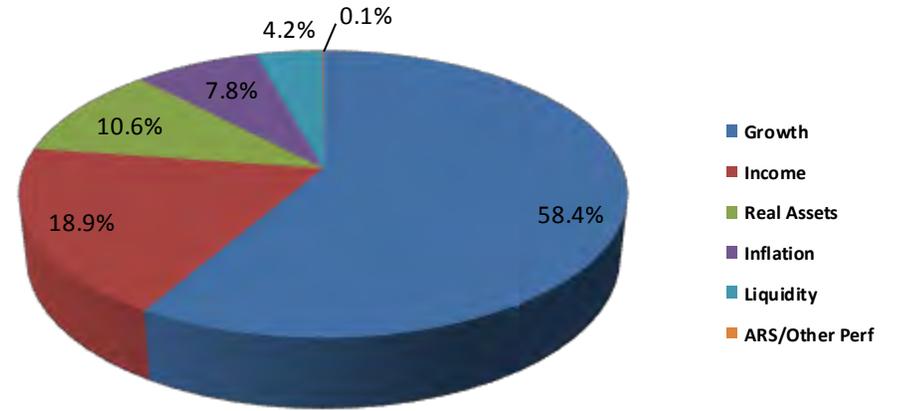
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Asset and Risk Allocation

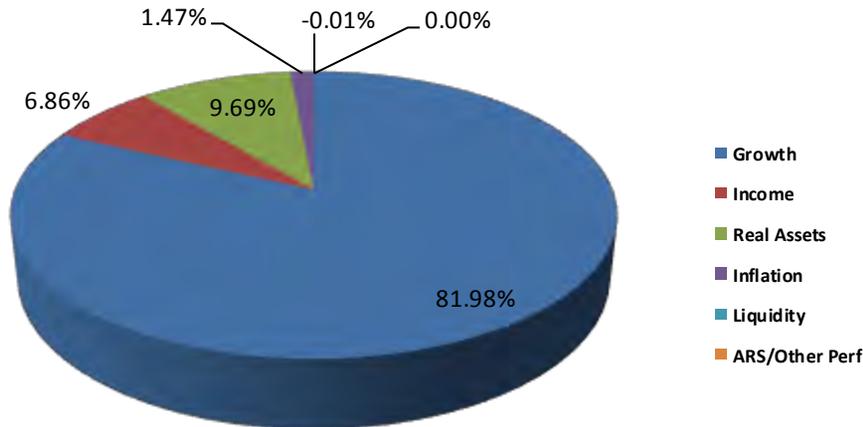
Target Asset Allocation



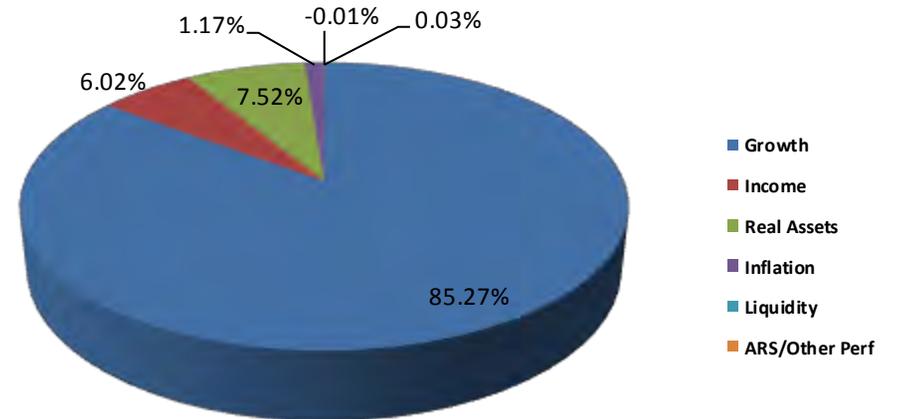
Actual Asset Allocation



Contribution to Total Risk - Target Allocation

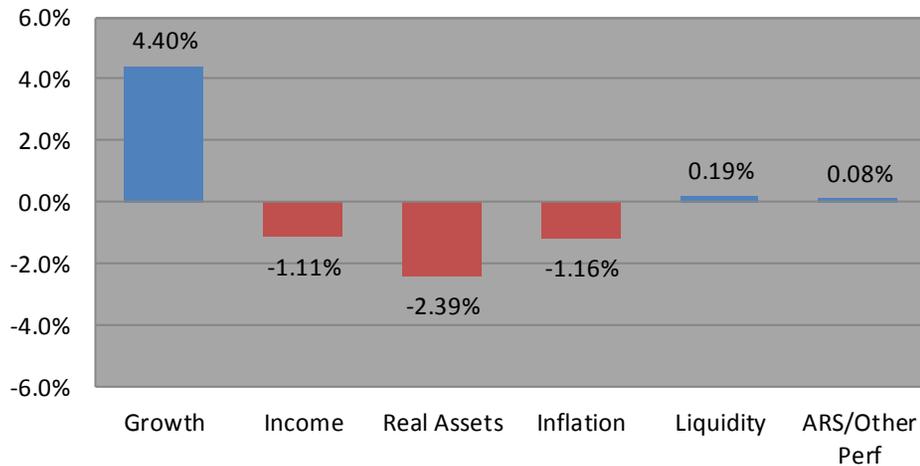


Contribution to Total Risk - Actual Allocation

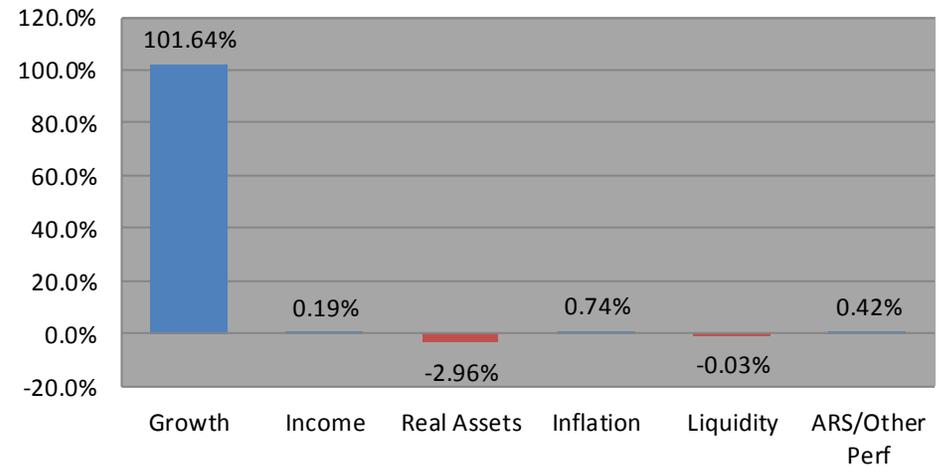


Drivers of Expected Excess Risk

CalPERS Asset Allocation Variance



Contribution to TF Tracking Error



- 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

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Total Fund – Performance

	Market Value	5-Year Ratios							
		Qtr	1-Year	3-Year	5-Year	10-Year	VaR	Sharpe	Info
TOTAL FUND	\$350.0 bil	4.0%	15.7%	7.6%	9.0%	4.9%	\$42.6 bil	1.6	0.2
<i>Total Fund Policy Benchmark</i>		4.0%	15.5%	7.6%	8.8%	6.1%		1.6	0.0
<i>Actuarial Rate</i>		1.8%	7.5%	7.5%	7.5%	7.6%			
GROWTH	203.2	5.6%	23.2%	10.0%	11.9%	6.0%	\$42.7 bil	1.4	-0.2
<i>Growth Policy Benchmark</i>		5.9%	24.2%	10.4%	12.4%	7.1%		1.5	0.0
PUBLIC EQUITY	176.4	5.8%	24.0%	10.0%	11.8%	5.5%	\$36.0 bil	1.2	0.6
<i>Public Equity Policy Benchmark</i>		5.8%	24.4%	9.9%	11.6%	5.8%		1.1	0.0
PRIVATE EQUITY	26.7	4.2%	18.0%	9.9%	12.6%	9.1%	\$9.1 bil	3.6	-0.3
<i>Private Equity Policy Benchmark</i>		6.1%	22.9%	12.0%	15.4%	13.2%		1.5	0.0
INCOME	65.6	1.3%	7.2%	3.7%	3.3%	6.0%	\$7.3 bil	0.6	1.3
<i>Income Policy Benchmark</i>		1.3%	6.6%	3.0%	2.5%	5.3%		0.4	0.0
REAL ASSETS	36.8	2.0%	8.5%	9.4%	10.4%	-0.9%	\$5.1 bil	1.7	0.1
<i>Real Assets Policy Benchmark</i>		1.6%	6.4%	9.1%	9.9%	6.4%		2.4	0.0
INFLATION	27.4	4.0%	6.3%	0.1%	-2.0%	0.1%	\$2.0 bil	-0.4	0.7
<i>Inflation Policy Benchmark</i>		3.9%	6.2%	-0.2%	-2.5%	0.1%		-0.4	0.0
LIQUIDITY	14.7	0.3%	1.2%	0.7%	0.4%	1.1%	\$0.0 bil	0.2	-0.3
<i>Liquidity Policy Benchmark</i>		0.3%	0.9%	0.6%	0.6%	1.2%		0.2	0.0
ABSOLUTE RETURN STRATEGIES	0.3	1.8%	6.4%	0.6%	3.0%	1.5%		0.6	-0.5
<i>Absolute Return Strategies Policy Benchmark</i>		1.2%	5.6%	5.5%	5.4%	5.9%		23.5	0.0
EXTERNAL MULTI-ASSET CLASS COMPOSITE	1.4	4.8%	13.9%	5.8%	7.1%	-.-%		N/A	N/A
<i>Absolute 7.5%</i>		1.8%	7.5%	7.5%	7.5%	-.-%		N/A	N/A
TRUST LEVEL PORTFOLIO MANAGEMENT / OTHER	0.7	-.-%	-.-%	-.-%	-.-%	-.-%		N/A	N/A
TERMINATED AGENCY POOL	0.1	1.8%	5.0%	2.6%	-.-%	-.-%		N/A	N/A
TOTAL FUND PLUS TAP	350.1	4.0%	15.7%	7.6%	9.0%	4.9%		N/A	N/A

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Total Fund – Attribution (Quarter)

**California Public Employees' Retirement System
Total Fund Attribution - Quarter
As of 12/31/2017**

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	57.88	5.61	54.00	5.86	3.88	-0.26	0.07	0.00	-0.15	-0.08
Public Equity	49.96	5.82	46.00	5.82	3.96	0.00	0.07	0.00	0.00	0.07
Private Equity	7.91	4.23	8.00	6.08	-0.09	-1.85	0.00	0.00	-0.15	-0.15
Income	19.02	1.34	20.00	1.28	-0.98	0.06	0.02	0.00	0.01	0.04
Real Assets	10.60	2.05	13.00	1.57	-2.40	0.48	0.06	-0.01	0.06	0.11
Inflation	7.82	4.03	9.00	3.93	-1.18	0.09	0.00	0.00	0.01	0.01
Ext. MAC/ARS/TLPM/Other	0.57	4.83	0.00	1.82	0.57	3.01	-0.01	0.02	0.00	0.00
Liquidity	4.11	0.35	4.00	0.28	0.11	0.06	0.00	0.00	0.00	0.00
Monthly Linked Return	100.00	4.06	100.00	3.98		0.08	0.14	0.00	-0.06	0.08
Trading/Hedging/Other		-0.02		0.00		-0.02				-0.02
Total		4.04		3.98		0.06				0.06

Wilshire Consulting



Total Fund – Attribution (Calendar YTD)

**California Public Employees' Retirement System
Total Fund Attribution - Calendar Year-to-Date
As of 12/31/2017**

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	56.67	23.15	54.00	24.19	2.67	-1.04	0.21	-0.02	-0.52	-0.33
Public Equity	48.56	24.03	46.00	24.38	2.56	-0.35	0.21	-0.01	-0.15	0.06
Private Equity	8.10	18.04	8.00	22.90	0.10	-4.86	0.00	-0.01	-0.38	-0.38
Income	19.00	7.22	20.00	6.57	-1.00	0.65	0.08	-0.01	0.14	0.21
Real Assets	10.88	8.49	13.00	6.41	-2.12	2.09	0.19	-0.05	0.29	0.43
Inflation	8.44	6.33	9.00	6.16	-0.56	0.17	0.01	0.00	0.02	0.02
Ext. MAC/ARS/TLPM/Other	0.51	13.88	0.00	7.50	0.51	6.38	-0.04	0.04	0.00	-0.01
Liquidity	4.50	1.15	4.00	0.86	0.50	0.30	-0.07	0.00	0.01	-0.05
Monthly Linked Return	100.00	15.75	100.00	15.48		0.27	0.38	-0.05	-0.06	0.27
Trading/Hedging/Other		-0.02		0.00		-0.02				-0.02
Total		15.73		15.48		0.25				0.25

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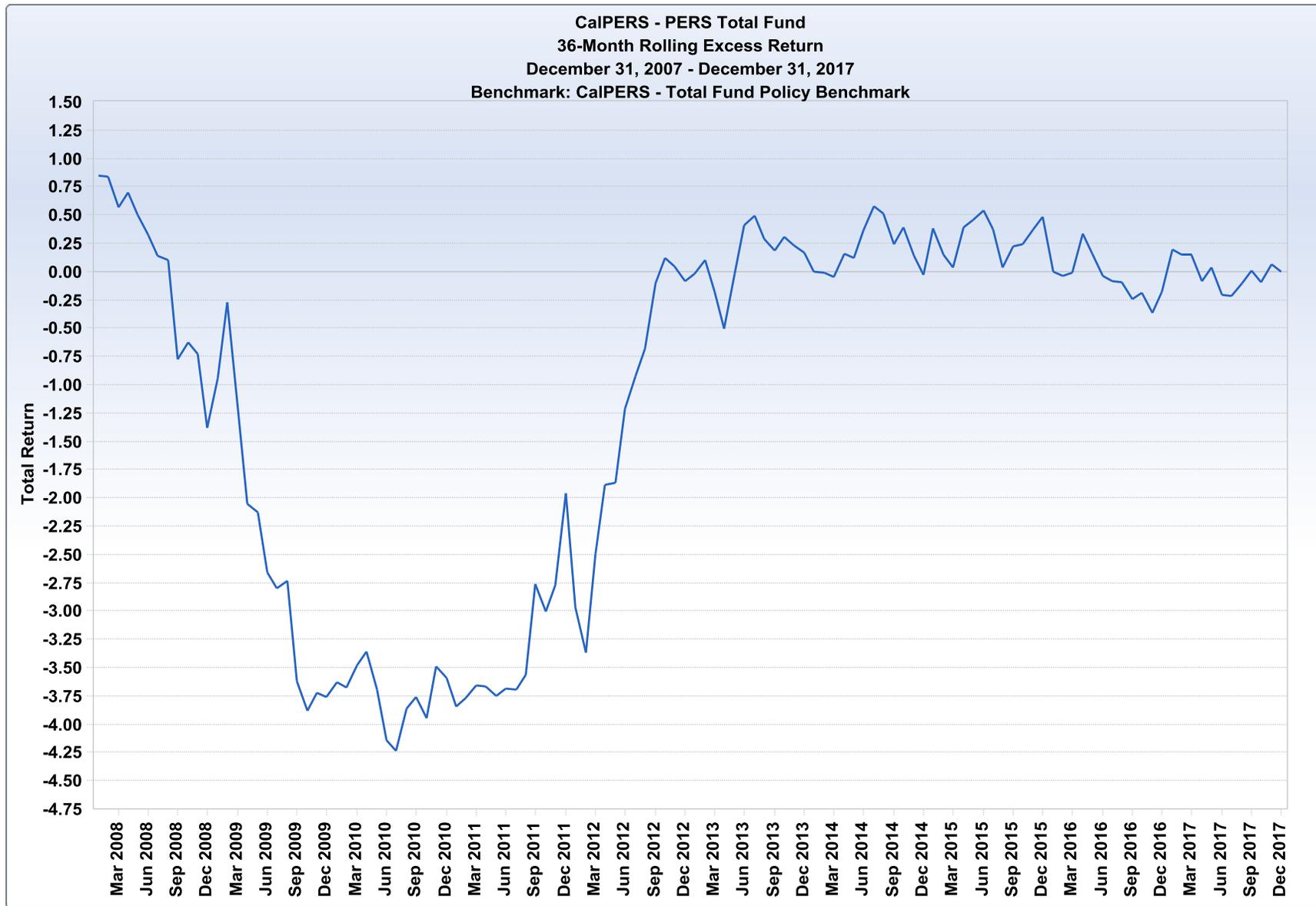


Total Fund – Attribution (Fiscal YTD)

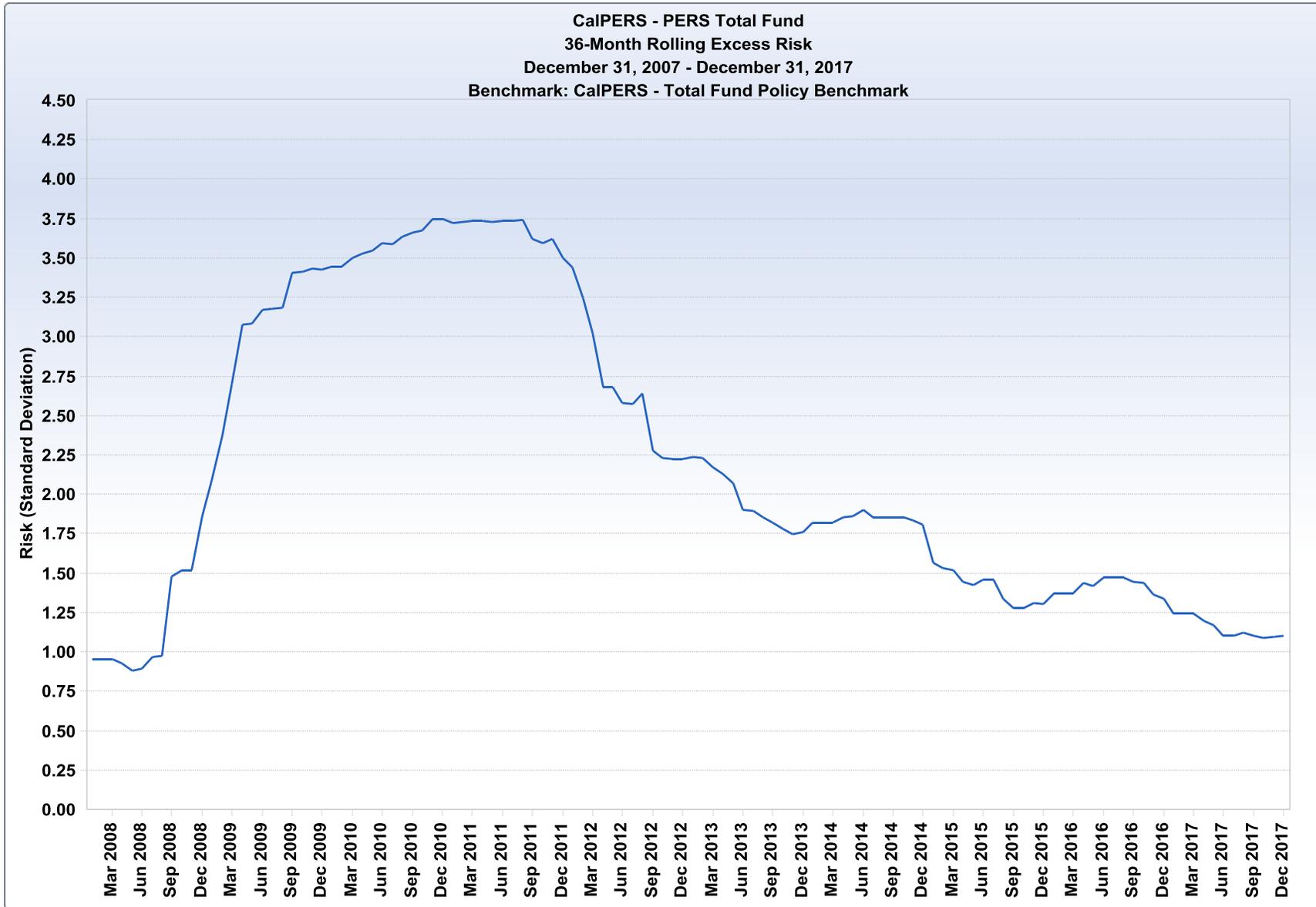
**California Public Employees' Retirement System
Total Fund Attribution - Fiscal Year-to-Date
As of 12/31/2017**

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	57.27	11.35	54.00	11.55	3.27	-0.19	0.12	0.00	-0.11	0.01
Public Equity	49.32	11.62	46.00	11.62	3.32	0.00	0.12	0.00	0.00	0.12
Private Equity	7.95	9.73	8.00	11.11	-0.05	-1.38	0.00	0.00	-0.11	-0.11
Income	19.22	2.71	20.00	2.60	-0.78	0.12	0.03	0.00	0.02	0.06
Real Assets	10.76	4.52	13.00	3.00	-2.24	1.51	0.10	-0.04	0.20	0.27
Inflation	7.83	7.38	9.00	6.99	-1.17	0.39	0.01	0.00	0.04	0.04
Ext. MAC/ARS/TLPM/Other	0.54	9.06	0.00	3.68	0.54	5.38	-0.02	0.03	0.00	0.01
Liquidity	4.38	0.68	4.00	0.55	0.38	0.13	-0.02	0.00	0.01	-0.02
Monthly Linked Return	100.00	8.10	100.00	7.74		0.36	0.22	-0.02	0.16	0.36
Trading/Hedging/Other		-0.01		0.00		-0.01				-0.01
Total		8.09		7.74		0.35				0.35

Total Fund – Rolling Excess Returns



Total Fund – Rolling Tracking Error

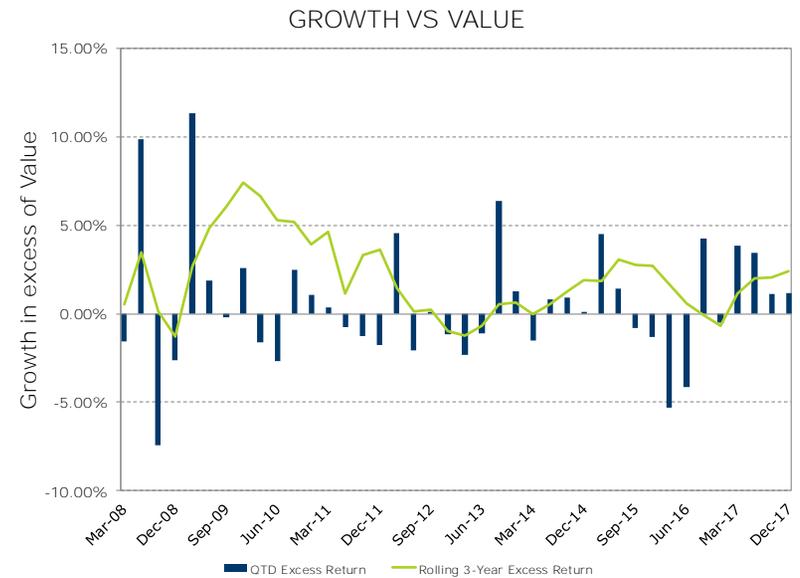
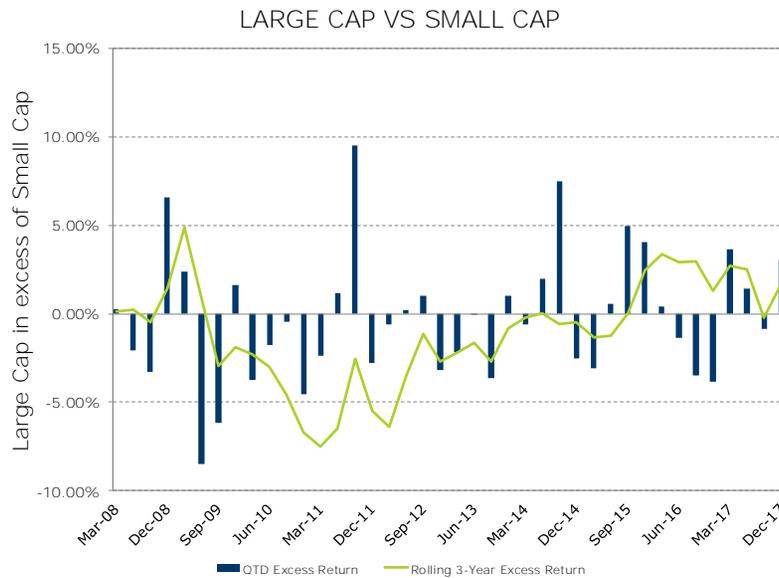
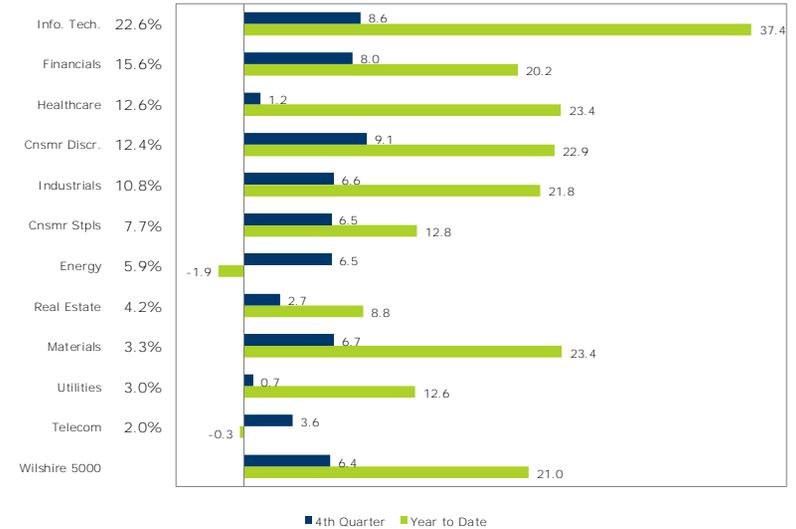


Wilshire Consulting U.S. EQUITY MARKET



AS OF DECEMBER 31, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
WILSHIRE 5000 INDEX	6.4	21.0	21.0	11.4	15.7	8.6
WILSHIRE U.S. LARGE CAP	6.7	21.8	21.8	11.5	15.8	8.5
WILSHIRE U.S. SMALL CAP	3.6	13.5	13.5	9.7	14.4	9.9
WILSHIRE U.S. LARGE GROWTH	7.3	27.7	27.7	12.9	17.3	9.7
WILSHIRE U.S. LARGE VALUE	6.1	16.3	16.3	10.0	14.4	7.2
WILSHIRE U.S. SMALL GROWTH	4.2	19.6	19.6	9.8	14.9	9.9
WILSHIRE U.S. SMALL VALUE	3.0	7.4	7.4	9.5	13.9	9.8
WILSHIRE REIT INDEX	1.7	4.2	4.2	5.2	9.3	7.3
MSCI USA MIN. VOL. INDEX	5.2	18.4	18.4	10.9	14.5	8.8
FTSE RAFI U.S. 1000 INDEX	6.5	16.4	16.4	10.1	15.3	9.4

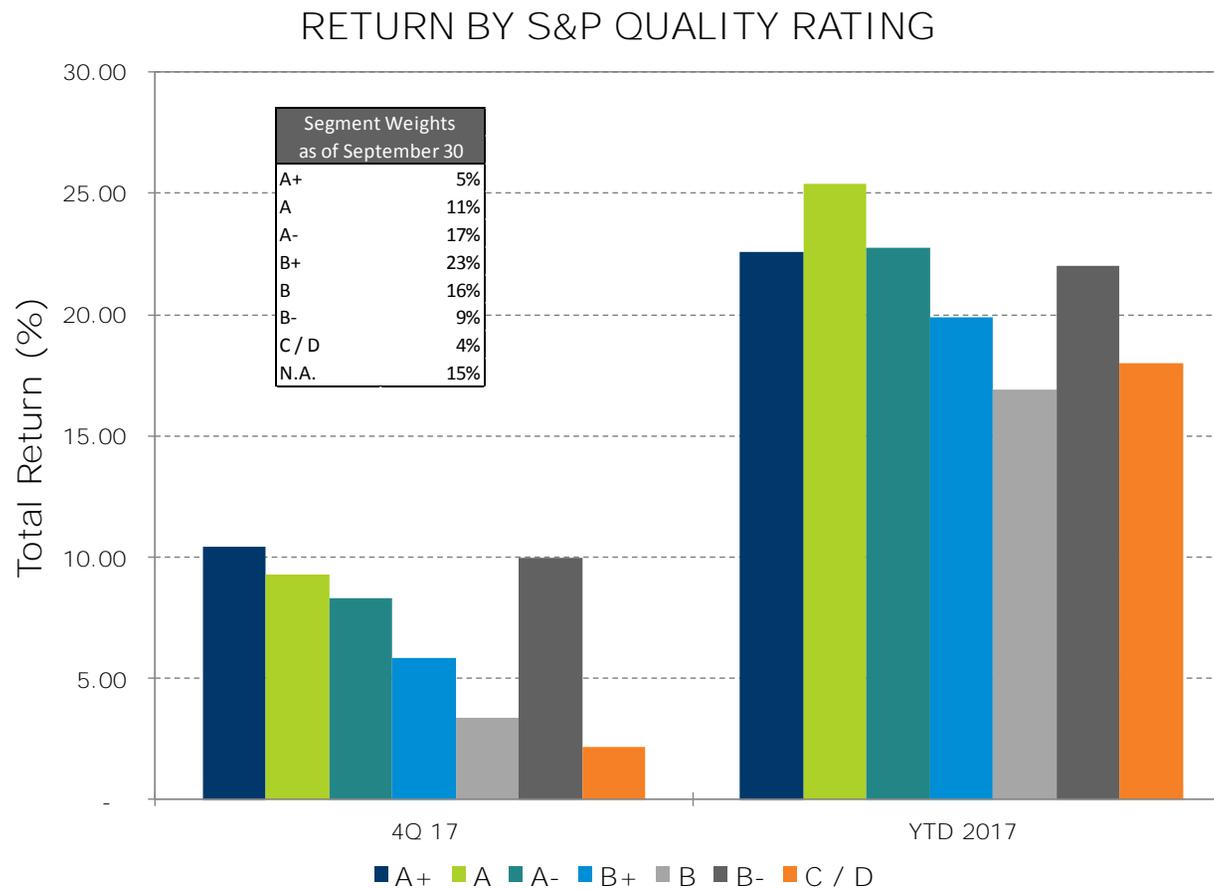
WILSHIRE 5000 SECTOR WEIGHT & RETURN (%)



Data sources: Wilshire Compass, Wilshire Atlas

RETURNS BY QUALITY SEGMENT

Generally speaking, higher quality names led the market for both the fourth quarter and 2017



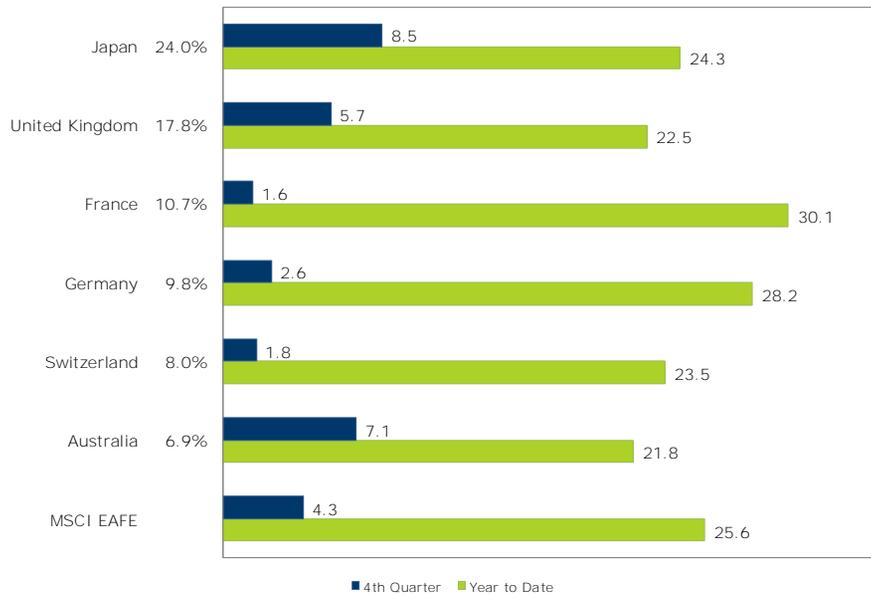
Data sources: Wilshire Atlas

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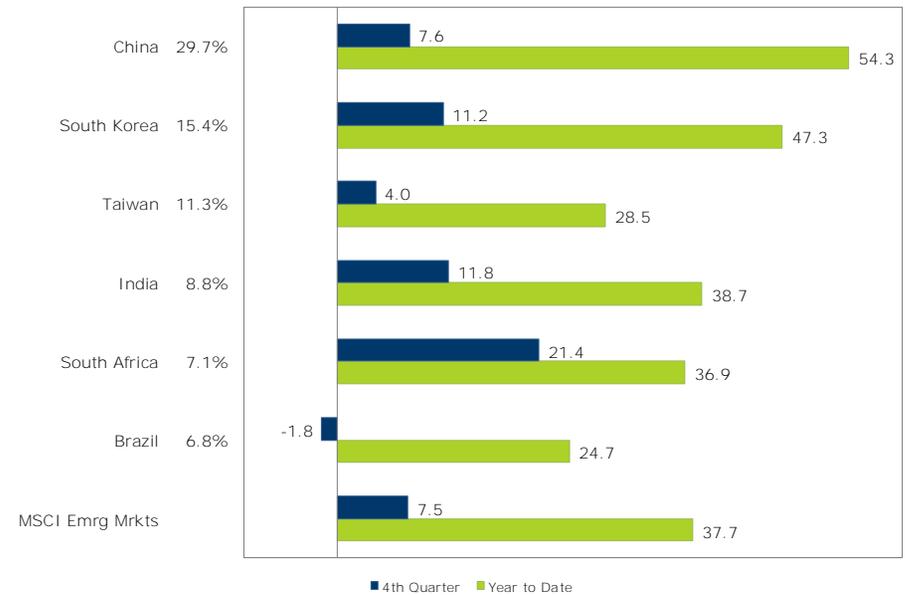
NON-U.S. EQUITY MARKET

AS OF DECEMBER 31, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI EX-US (\$G)	5.1	27.8	27.8	8.3	7.3	2.3
MSCI EAFE (\$G)	4.3	25.6	25.6	8.3	8.4	2.4
MSCI EMERGING MARKETS (\$G)	7.5	37.7	37.7	9.5	4.7	2.0
MSCI FRONTIER MARKETS (\$G)	5.6	32.3	32.3	5.5	9.7	-0.7
MSCI ACWI EX-US GROWTH (\$G)	5.8	32.5	32.5	9.7	8.4	2.8
MSCI ACWI EX-US VALUE (\$G)	4.3	23.4	23.4	6.9	6.2	1.8
MSCI ACWI EX-US SMALL (\$G)	6.6	32.1	32.1	12.5	10.5	5.2
MSCI EAFE MINIMUM VOLATILITY	3.6	22.2	22.2	9.3	9.9	5.2
FTSE RAFI DEVELOPED EX-US	4.7	25.7	25.7	8.7	8.9	2.8
MSCI EAFE LC (G)	3.7	15.8	15.8	9.0	11.9	3.8
MSCI EMERGING MARKETS LC (G)	5.7	31.0	31.0	10.9	8.4	4.5

MSCI EAFE: LARGEST COUNTRIES & RETURN (USD)



MSCI EM: LARGEST COUNTRIES & RETURN (USD)



Data sources: Wilshire Compass



Wilshire Consulting

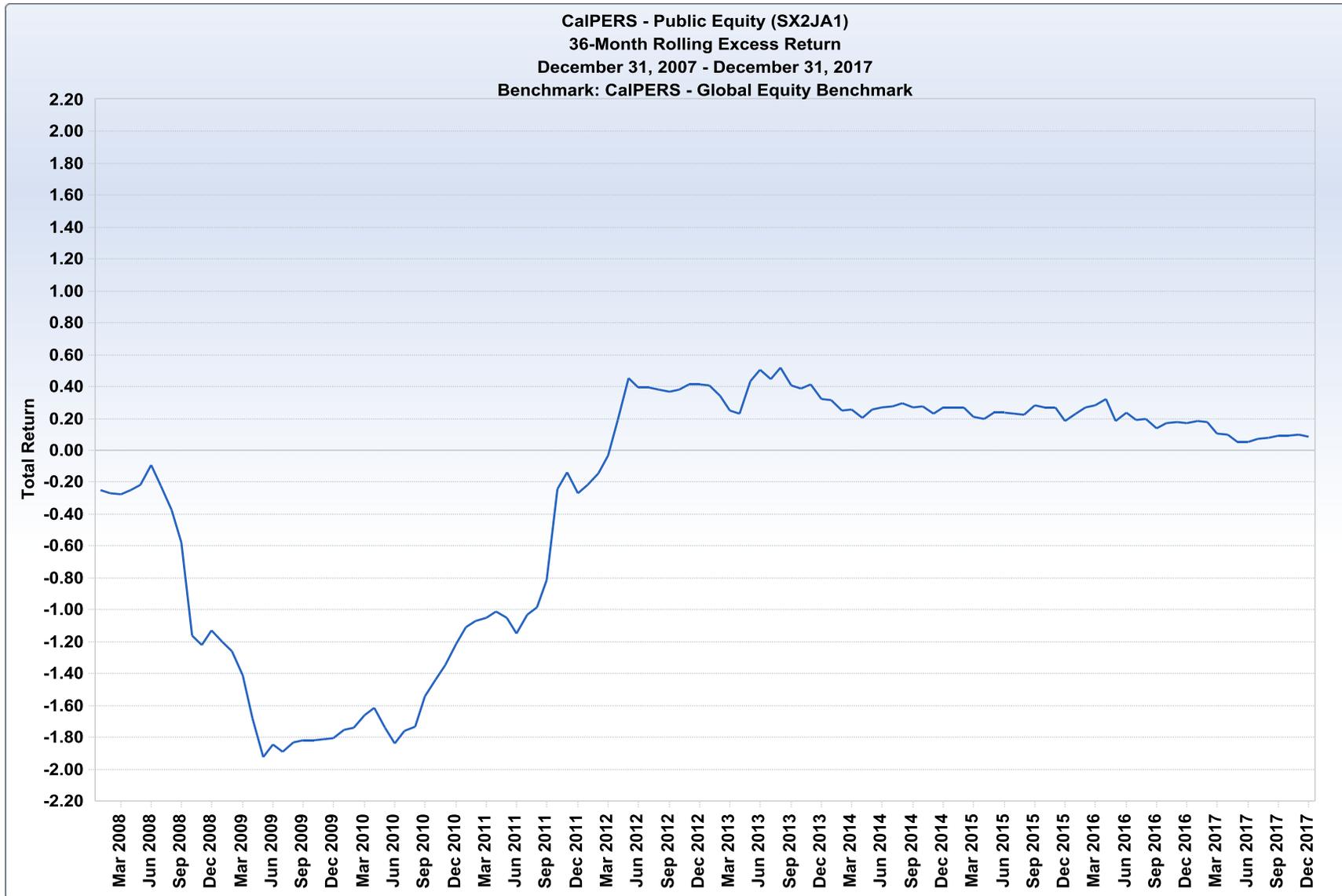
Growth: Public Equity – Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
PUBLIC EQUITY	176.4	5.8%	24.0%	10.0%	11.8%	5.5%	\$36.0 bil	1.2	0.6
<i>Public Equity Policy Benchmark</i>		5.8%	24.4%	9.9%	11.6%	5.8%		1.1	0.0
<i>Value Added</i>		0.0%	-0.4%	0.1%	0.2%	-0.3%			
US Equity Composite	88.9	6.4%	21.2%	10.9%	15.7%	8.5%		1.5	0.3
<i>Custom US Equity Benchmark</i>		6.3%	21.7%	10.9%	15.5%	8.5%		1.5	0.0
<i>Value Added</i>		0.1%	-0.5%	0.0%	0.2%	0.0%			
Total Int'l Equity	87.5	5.2%	27.5%	9.0%	8.1%	2.7%		0.7	-0.2
<i>Custom Int'l Equity Benchmark</i>		5.4%	27.2%	8.8%	8.2%	2.6%		0.7	0.0
<i>Value Added</i>		-0.2%	0.3%	0.2%	-0.1%	0.1%			



Wilshire Consulting

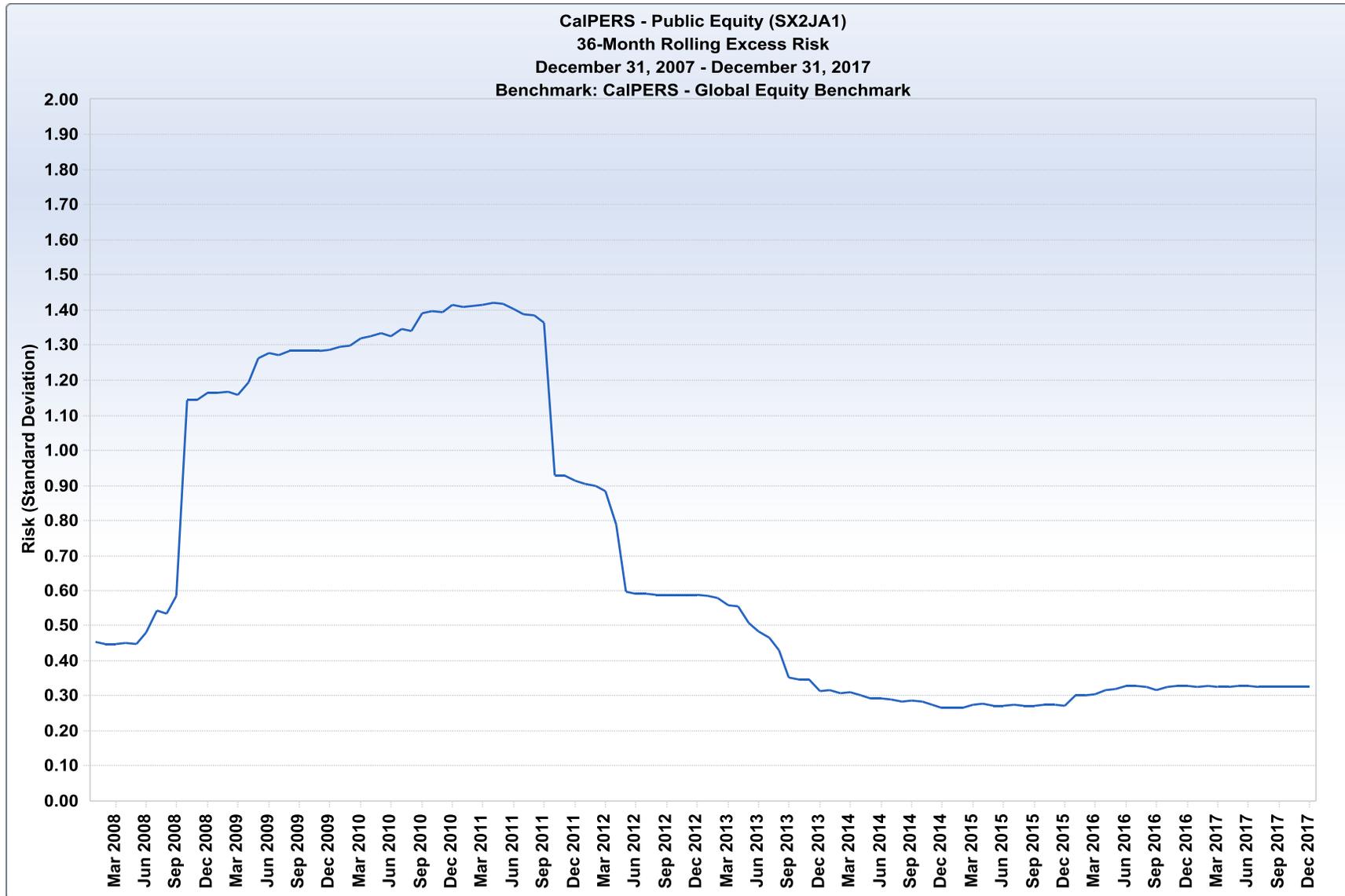
Growth: Public Equity – Rolling Excess Returns





Wilshire Consulting

Growth: Public Equity – Rolling Tracking Error

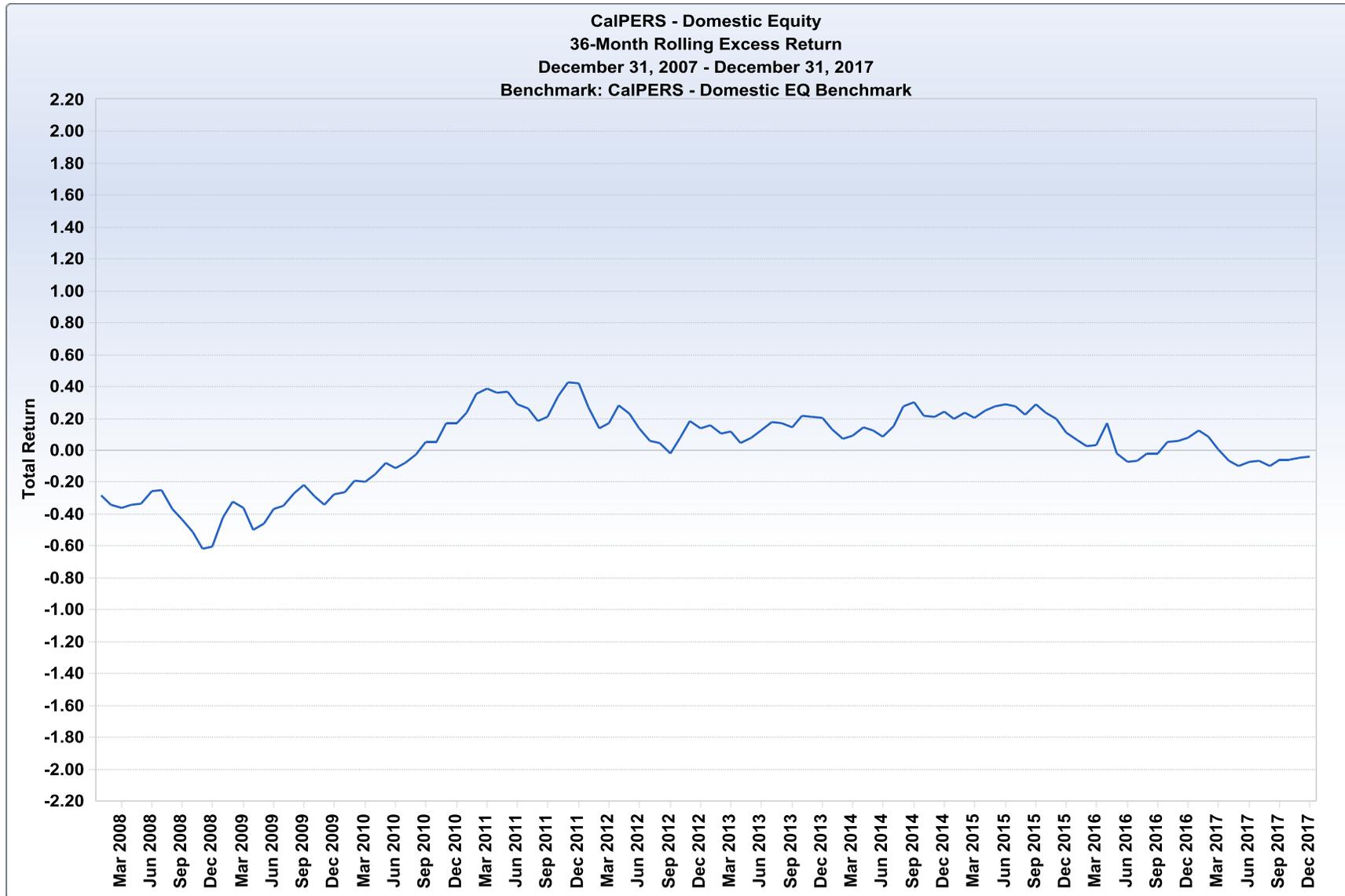




Wilshire Consulting

Growth:

U.S. Equity – Rolling Excess Returns

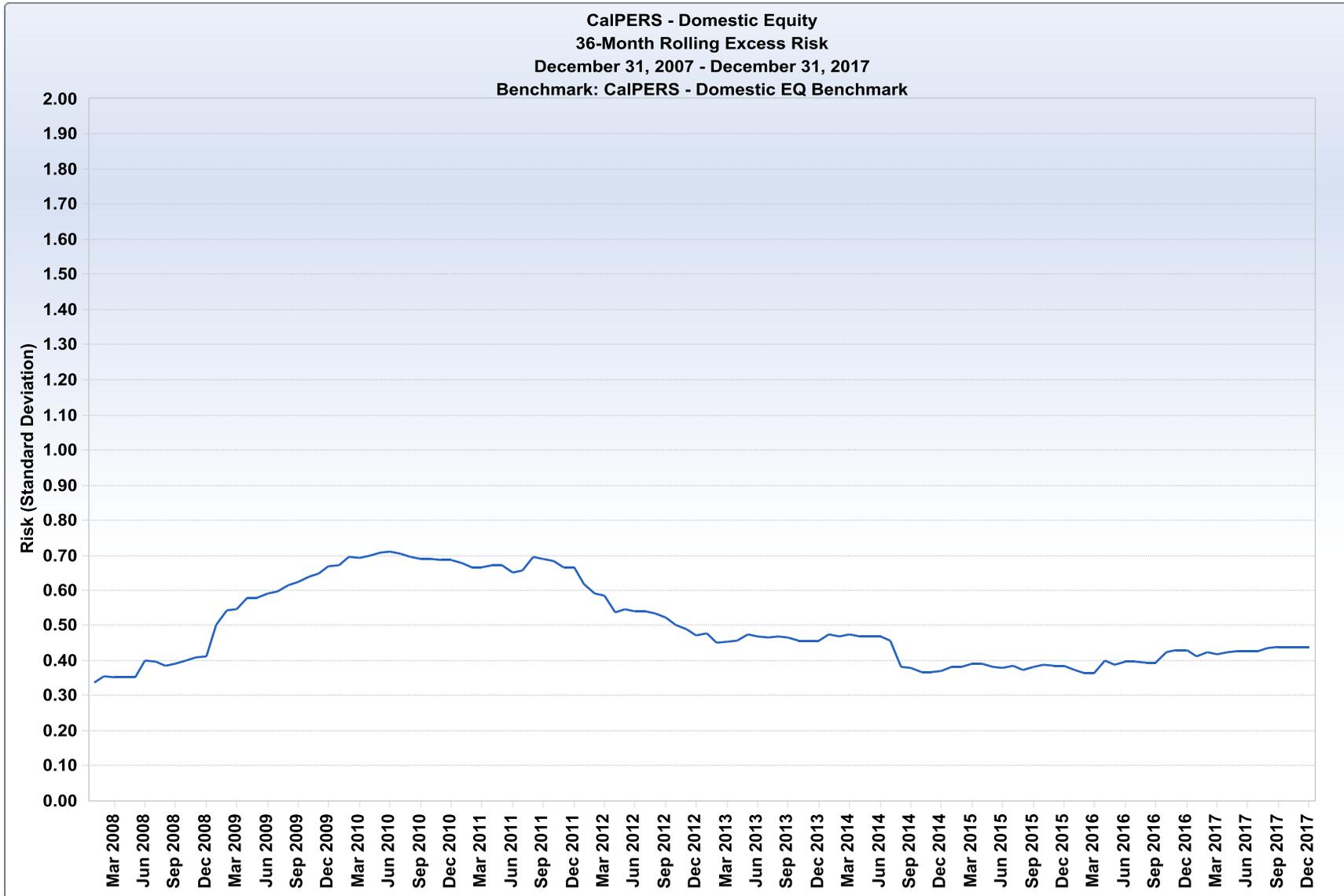


Wilshire Consulting



Growth:

U.S. Equity – Rolling Tracking Error

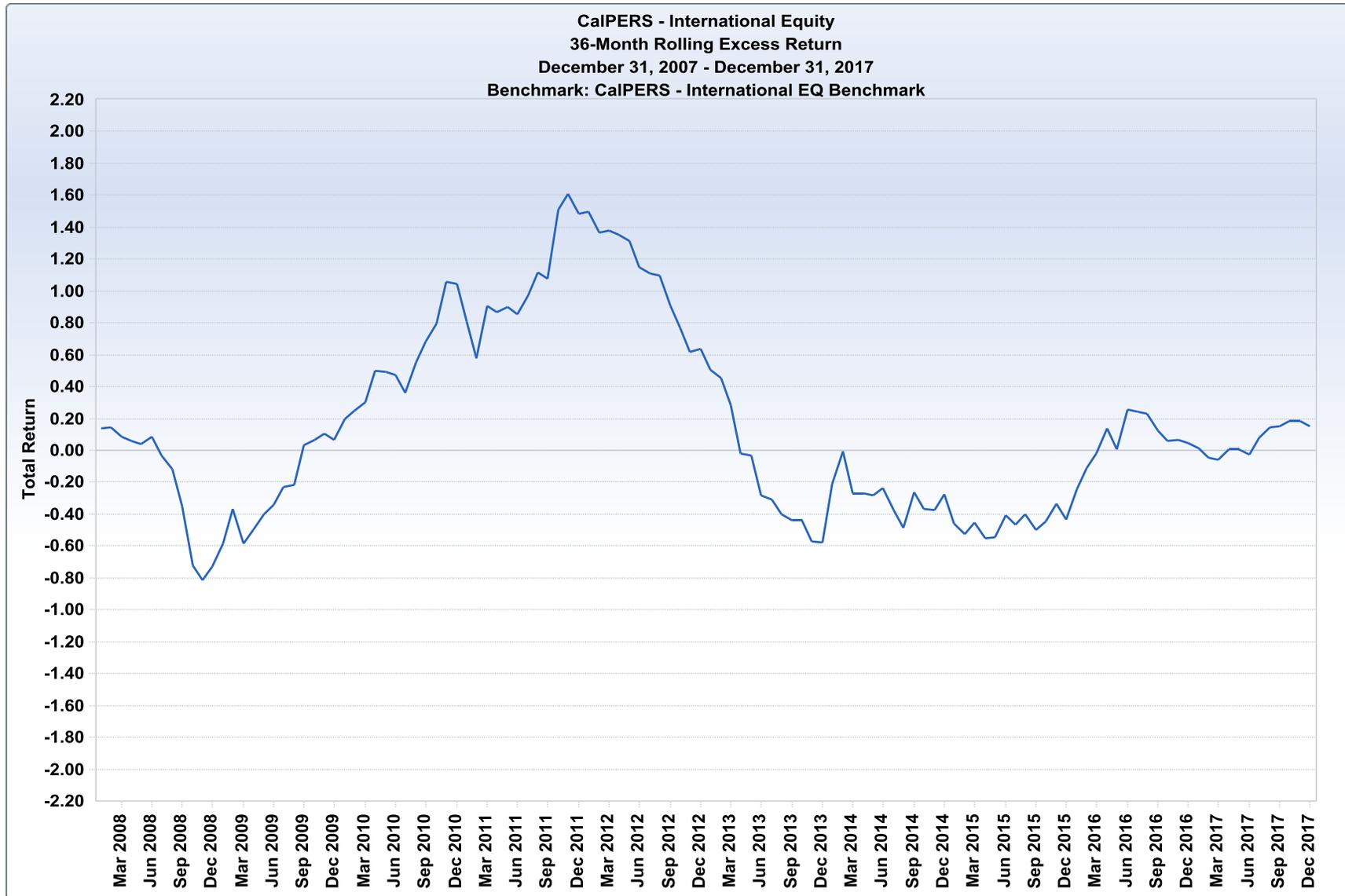




Wilshire Consulting

Growth:

International Equity – Rolling Excess Returns

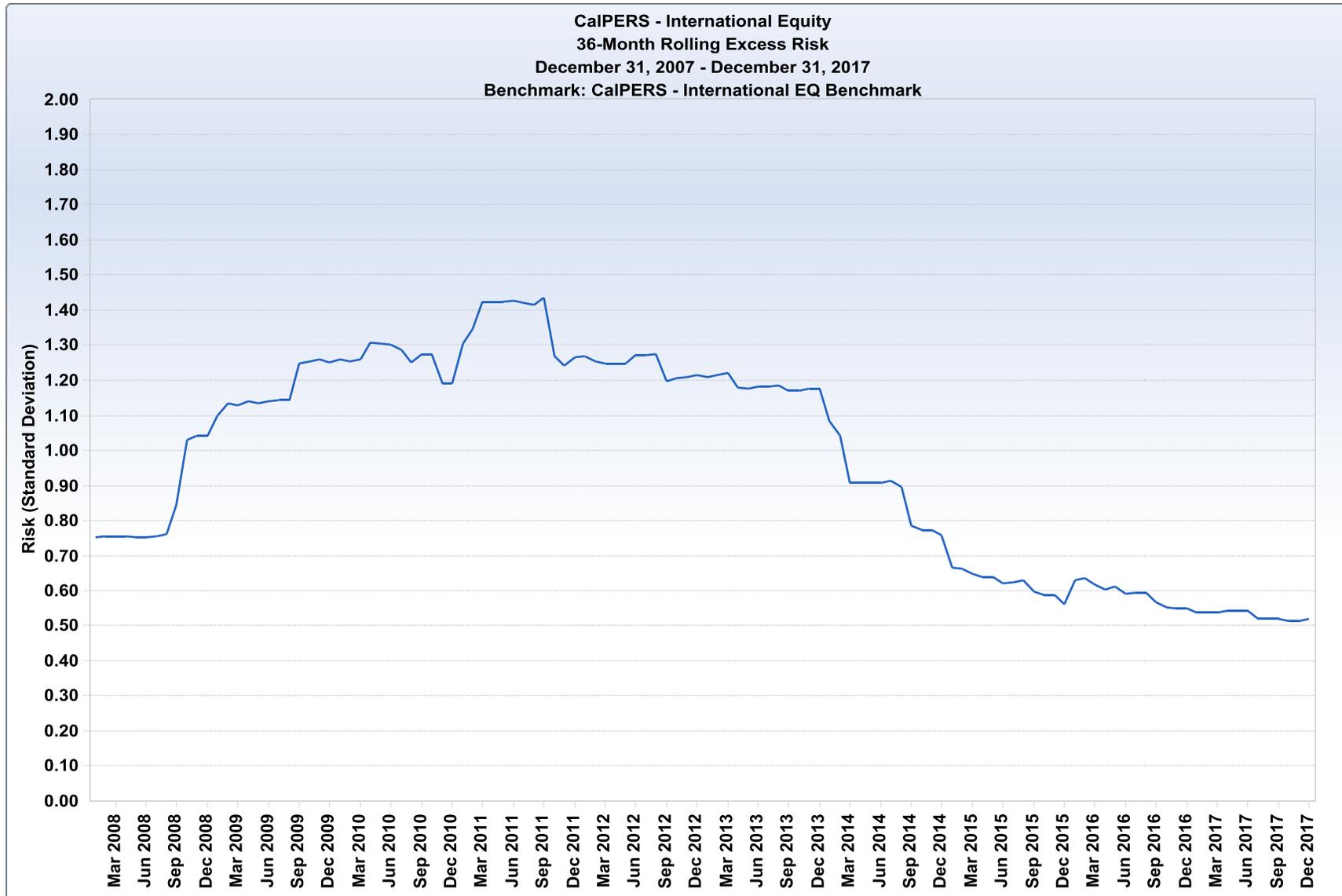




Wilshire Consulting

Growth:

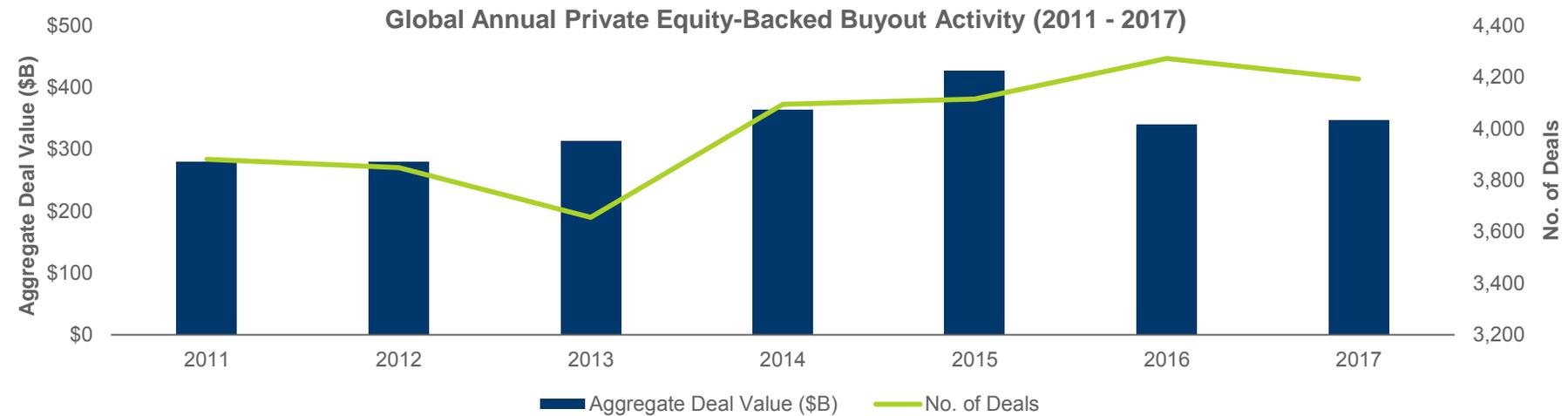
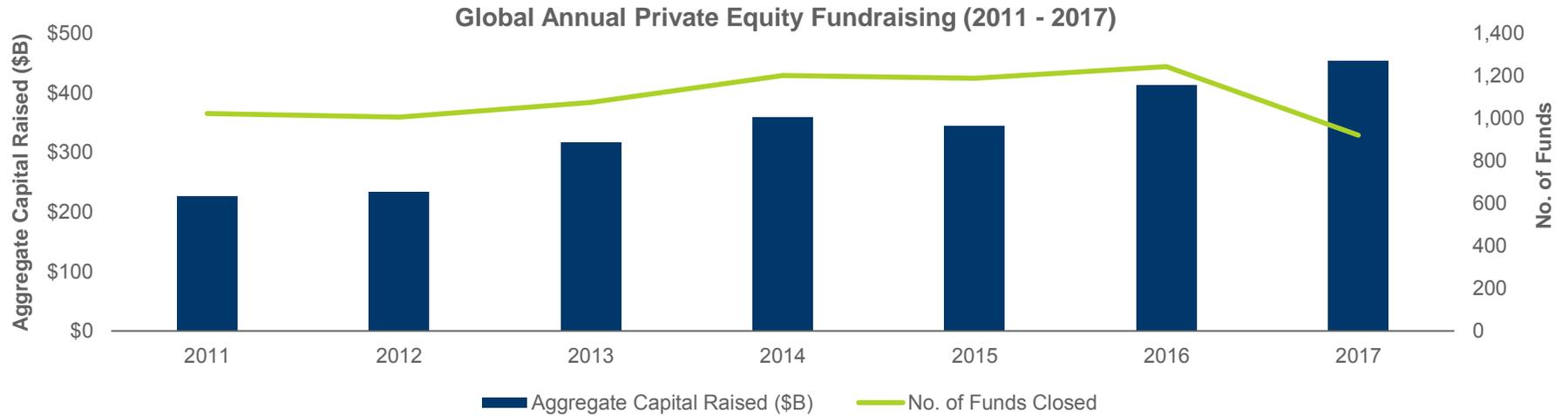
International Equity – Rolling Tracking Error



Wilshire Private Markets



PRIVATE EQUITY – FUNDRAISING & INVESTMENT ACTIVITY

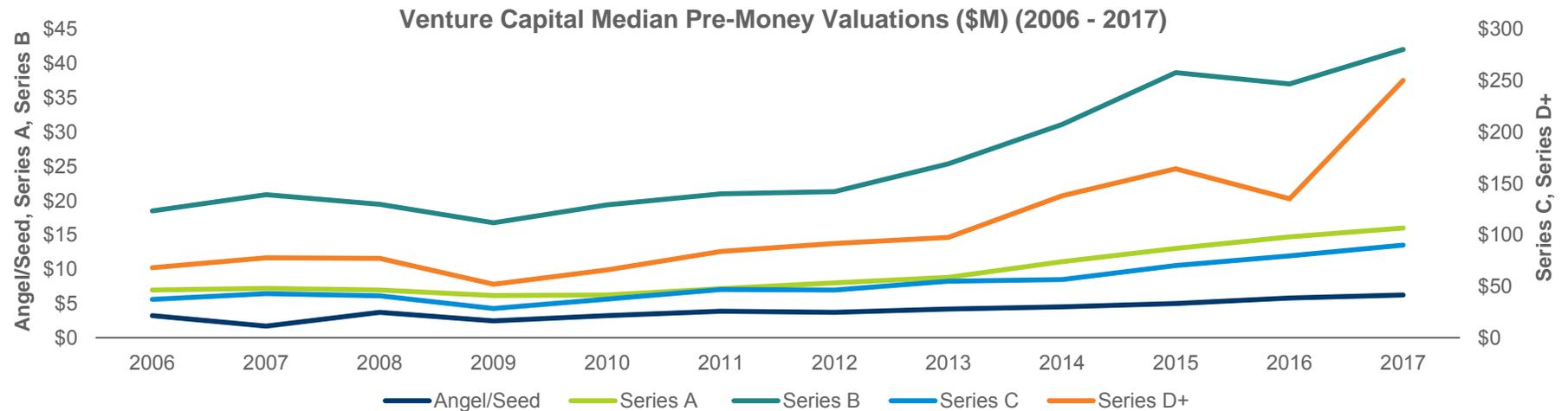


Source: Preqin, as of December 31, 2017.
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Wilshire Private Markets

PRIVATE EQUITY – PRICING & VALUATIONS

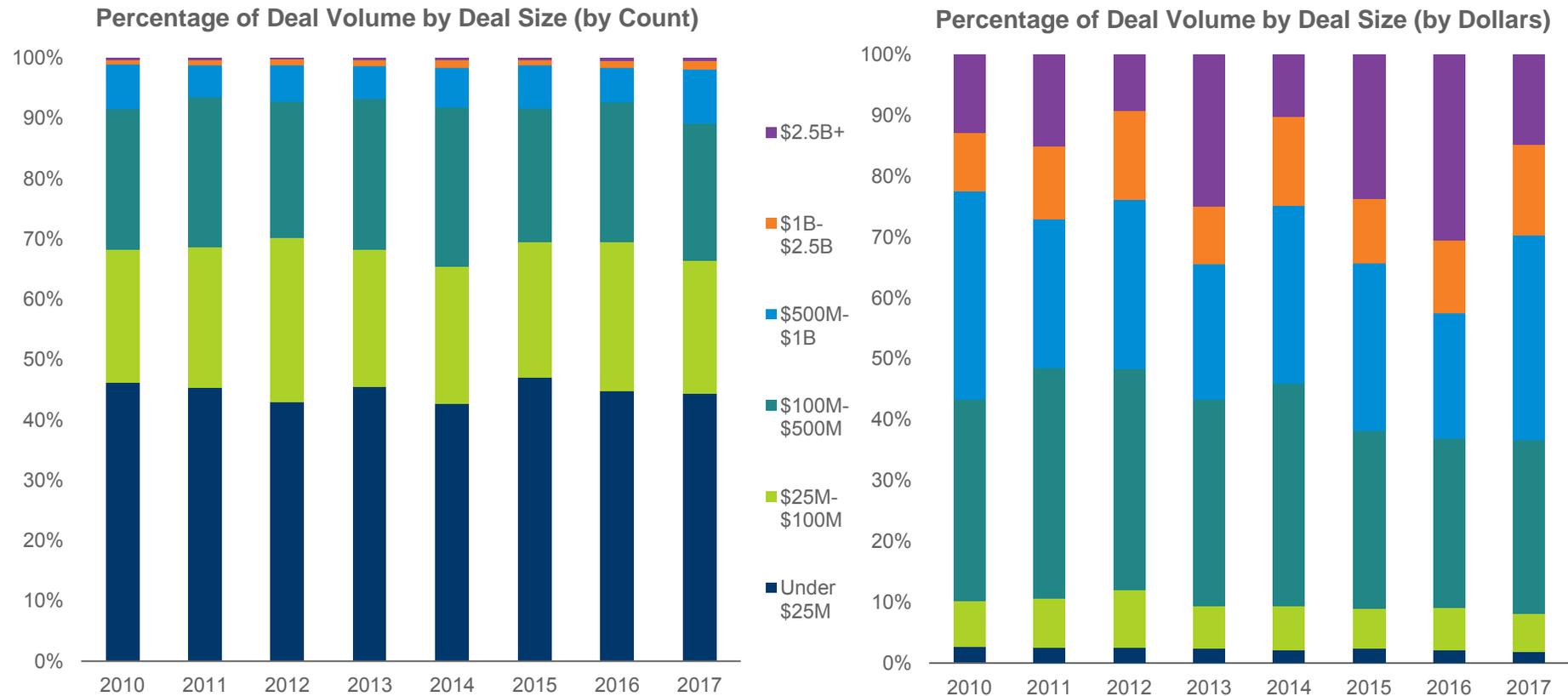


Source: S&P LBO; Pitchbook, as of December 31, 2017
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Wilshire Private Markets

U.S. INVESTMENT ACTIVITY BY DEAL SIZE



- Smaller investments again comprised a majority of deal volume in 2017 while there continues to be a limited number of deals over \$2.5 billion
- More capital was invested into deals in the \$500 million to \$1 billion range in 2017 than in prior years

Source: PitchBook, as of December 31, 2017

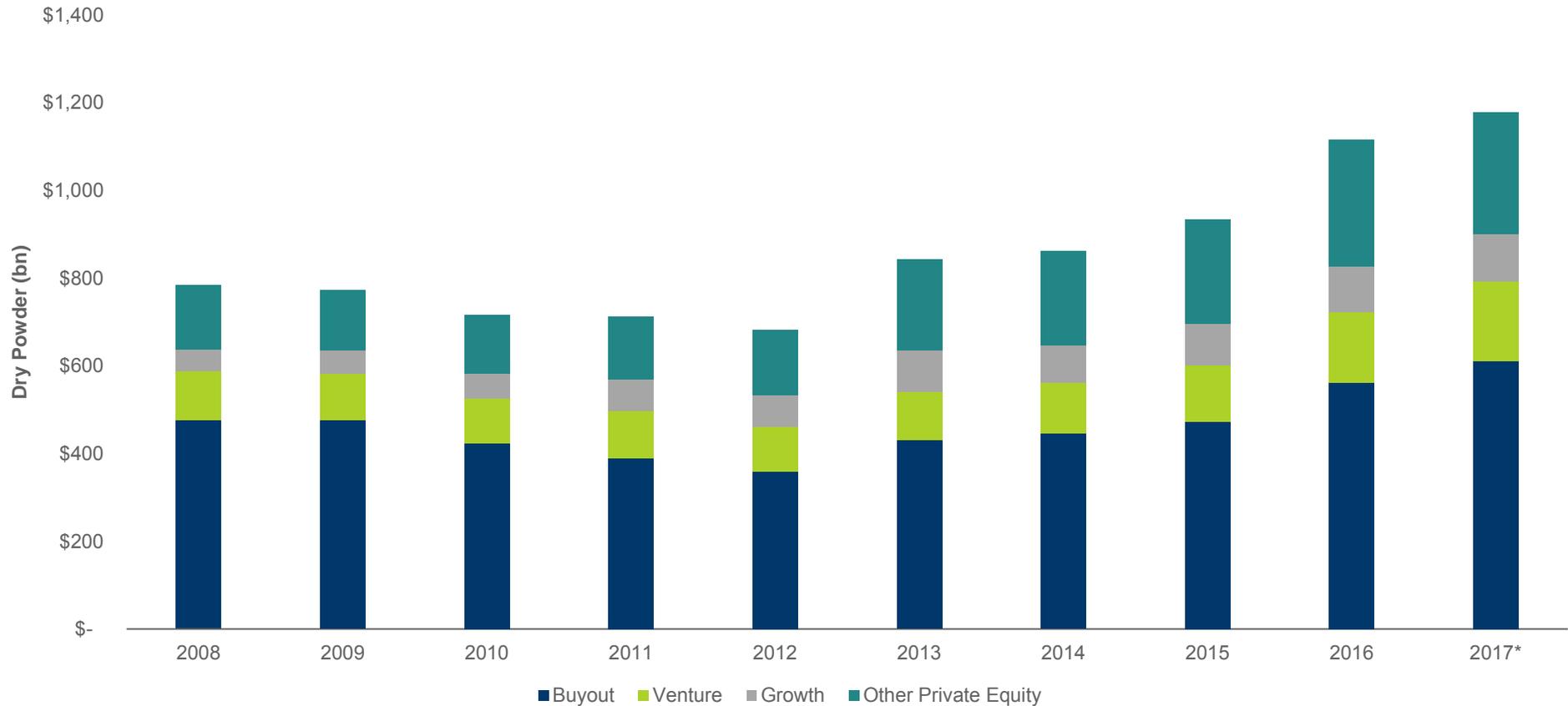
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Wilshire Private Markets



PRIVATE EQUITY DRY POWDER

Private Equity Dry Powder by Fund Type (2008 - Q3 2017)



- Global private equity dry powder continues to increase, topping \$1.1 trillion across all fund types
- This abundant capital should continue to fuel private equity deal flow over the next few years

*Source: Preqin, as of September 30, 2017

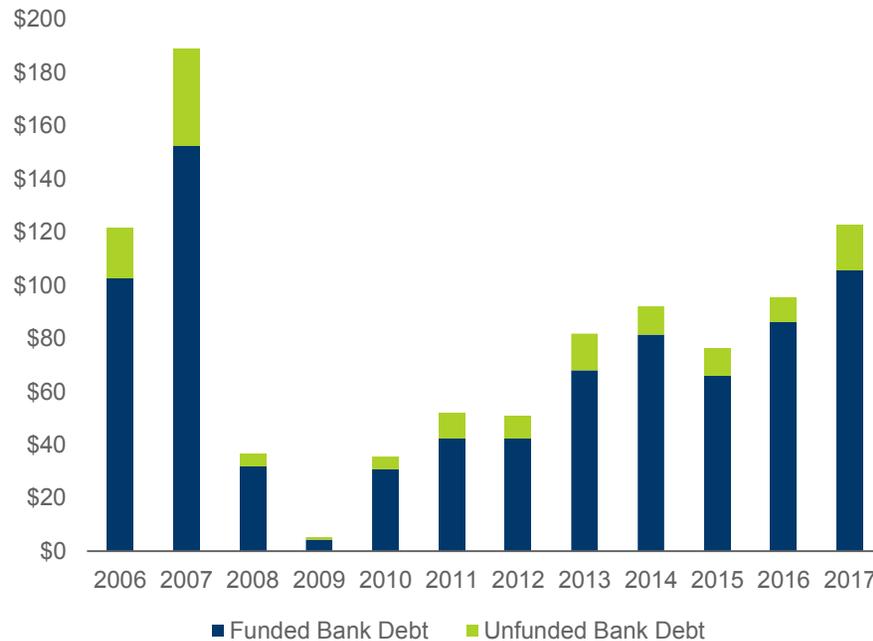
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PRIVATE EQUITY - U.S. DEBT MARKETS

Total U.S. LBO Loan Volume (\$B) (2006 - 2017)



Percentage of Debt Used in LBOs



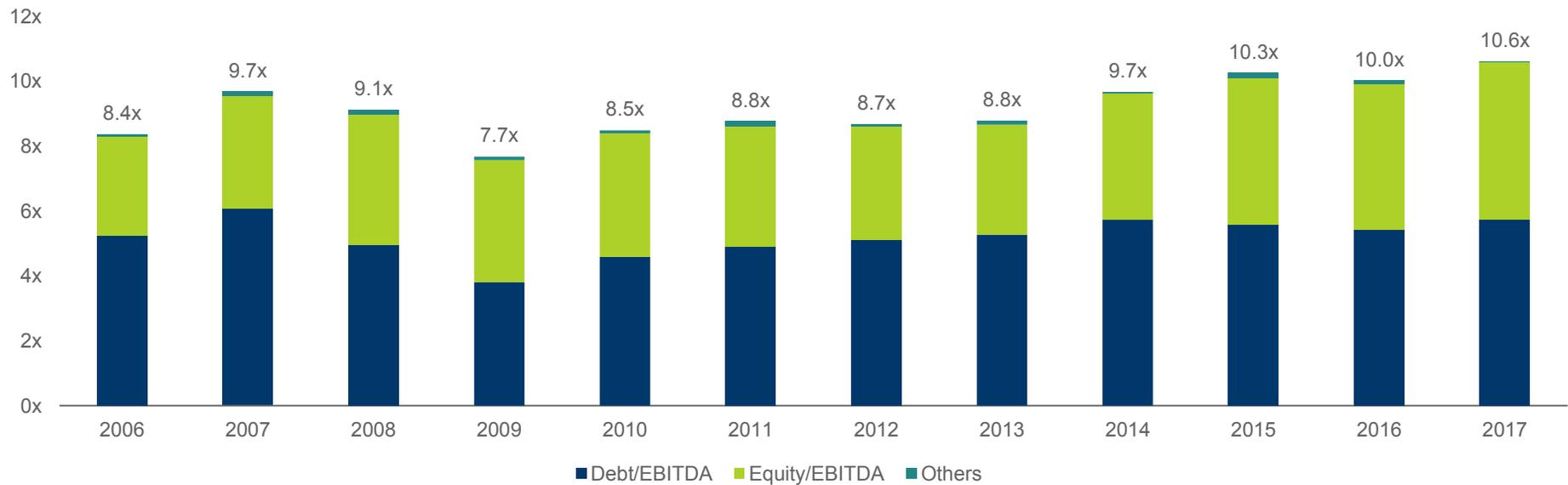
- The amount of capital available for leverage in LBOs has decreased considerably since its peak volume in 2007; however, loan volume in 2017 increased by approximately \$27 billion from 2016
- LBOs of companies with under \$50 million of EBITDA were financed with less debt than in prior years



Wilshire Private Markets

PRIVATE EQUITY- U.S. LBO PURCHASE PRICE MULTIPLES

Purchase Price Multiples of U.S. LBO Transactions (2006 - 2017)



- As debt remains readily available, purchase price multiples for U.S. LBOs continue to increase and remain high relative to 2009's low



Wilshire Consulting

Growth: Private Equity – Performance

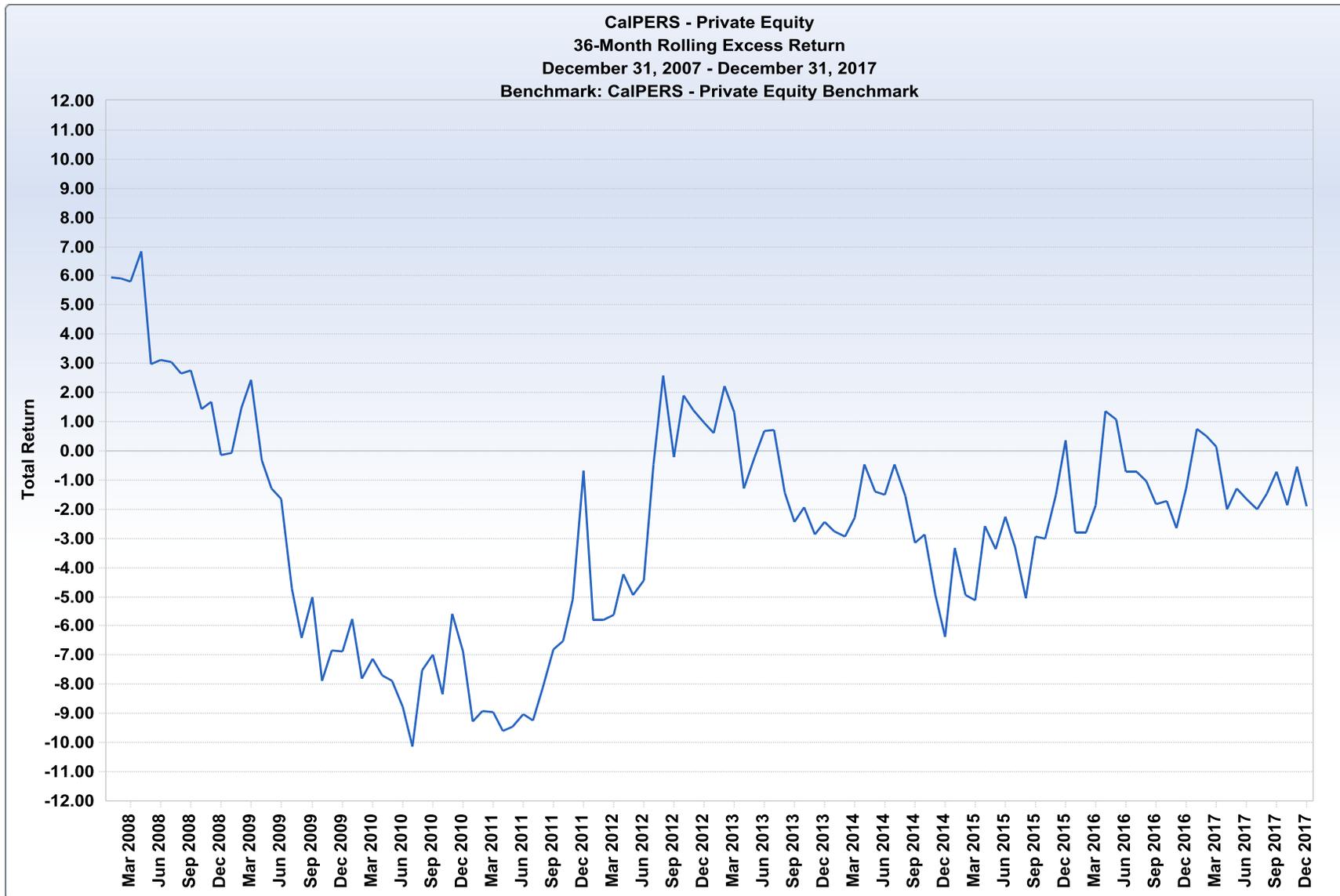
	<u>Market Value</u>	<u>Qtr</u>	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>	<u>10-Year</u>	<u>VaR</u>	<u>5-year Sharpe Ratio</u>	<u>5-year Info Ratio</u>
PRIVATE EQUITY	26.7	4.2%	18.0%	9.9%	12.6%	9.1%	\$9.1 bil	3.6	-0.3
<i>PE Policy Benchmark</i>		6.1%	22.9%	12.0%	15.4%	13.2%		1.5	0.0
<i>Value Added</i>		-1.9%	-4.9%	-2.1%	-2.8%	-4.1%			
Private Equity Partnership Investments	26.5	4.2%	18.0%	10.0%	12.7%	9.3%			
Private Equity Distribution Stock	0.2	8.7%	53.8%	-18.8%	-13.2%	-9.3%			



Wilshire Consulting

Growth:

Private Equity – Rolling Excess Returns

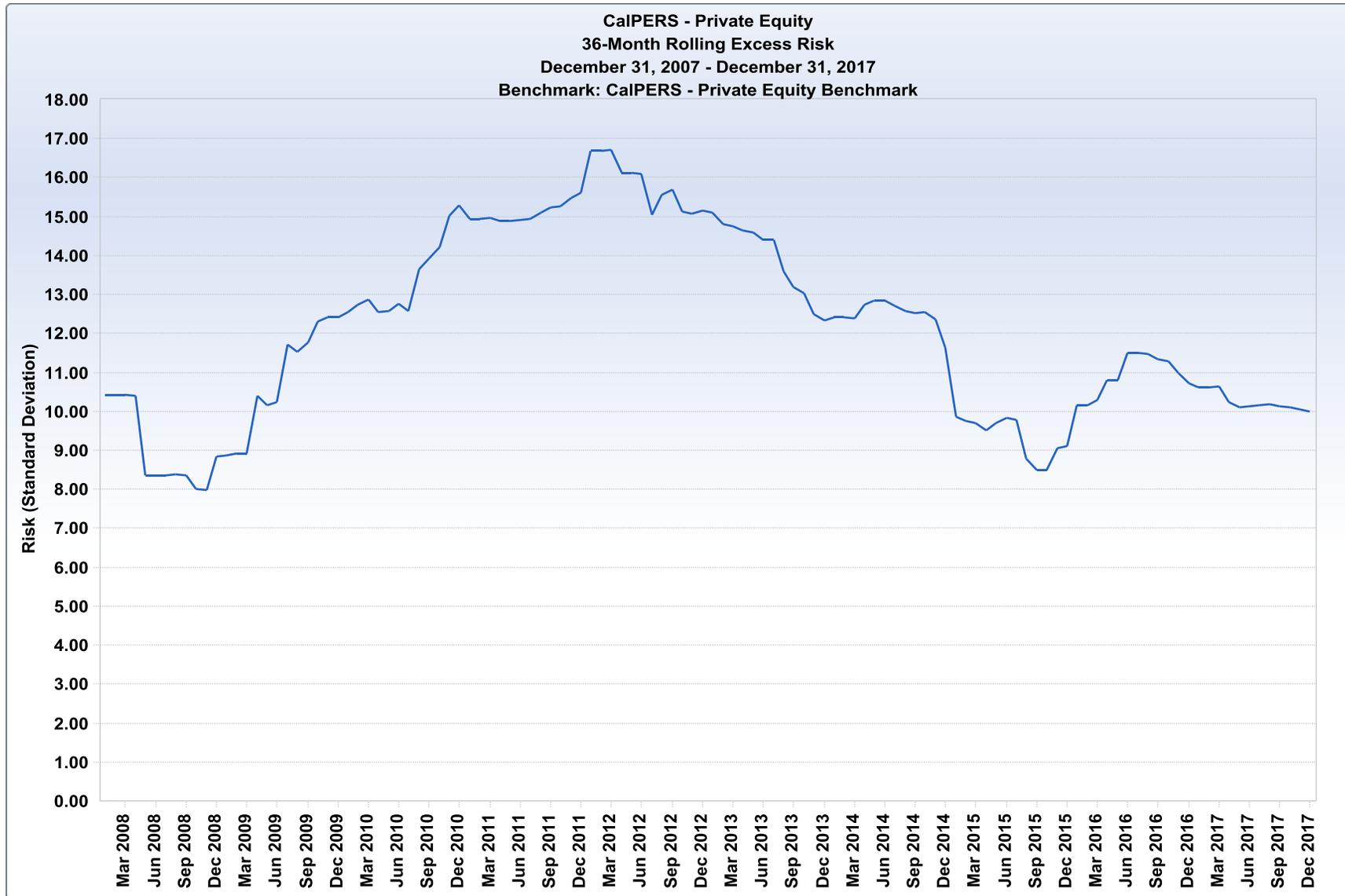




Wilshire Consulting

Growth:

Private Equity – Rolling Tracking Error

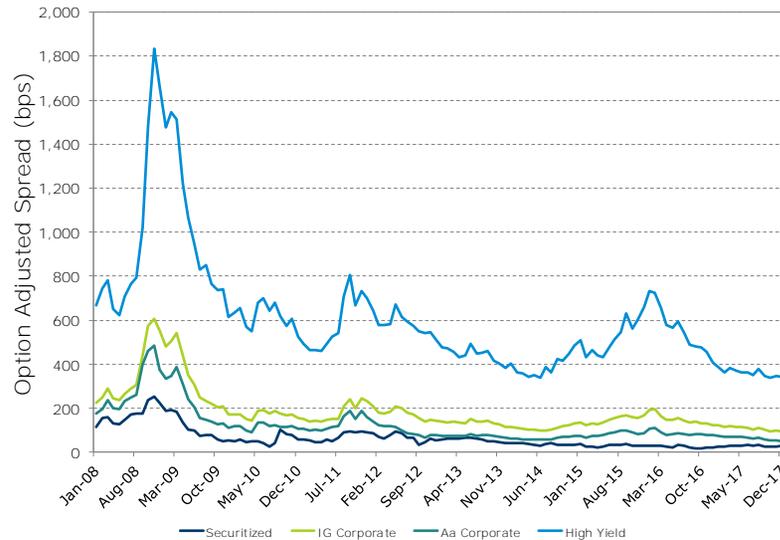


U.S. FIXED INCOME

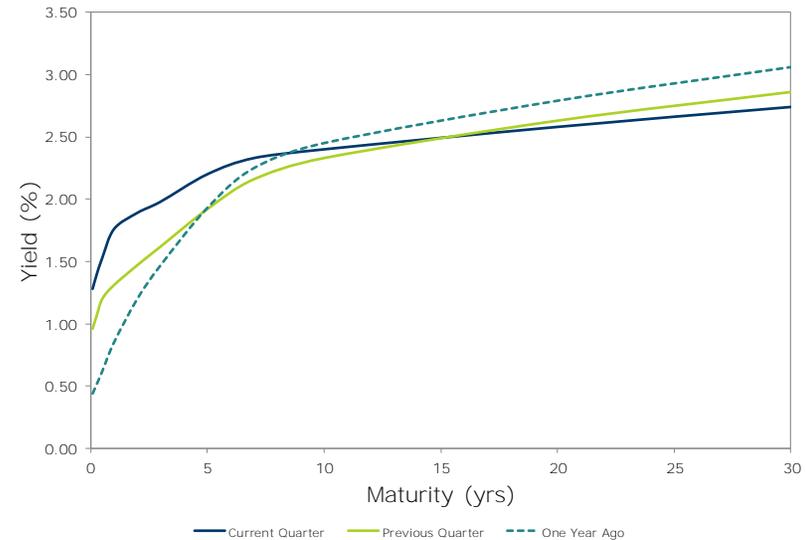
AS OF DECEMBER 31, 2017	YTM	DURATION	QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS AGGREGATE	2.7	6.0	0.4	3.6	3.6	2.2	2.1	4.0
BLOOMBERG BARCLAYS TREASURY	2.2	6.2	0.1	2.3	2.3	1.4	1.3	3.3
BLOOMBERG BARCLAYS GOV'T-REL.	2.7	5.5	0.3	4.2	4.2	2.2	1.9	3.7
BLOOMBERG BARCLAYS SECURITIZED	2.9	4.4	0.2	2.5	2.5	1.9	2.0	3.8
BLOOMBERG BARCLAYS CORPORATE	3.3	7.6	1.2	6.4	6.4	3.9	3.5	5.7
BLOOMBERG BARCLAYS LT G/C	3.5	15.4	2.8	10.7	10.7	4.5	4.4	7.3
BLOOMBERG BARCLAYS LT TREASURY	2.7	17.6	2.4	8.5	8.5	2.8	3.5	6.6
BLOOMBERG BARCLAYS LT GOV'T-REL.	4.0	12.6	2.1	11.9	11.9	4.5	4.1	7.0
BLOOMBERG BARCLAYS LT CORP.	4.0	14.3	3.3	12.1	12.1	5.9	5.3	7.8
BLOOMBERG BARCLAYS U.S. TIPS *	2.4	7.7	1.3	3.0	3.0	2.0	0.1	3.5
BLOOMBERG BARCLAYS HIGH YIELD	6.2	3.9	0.5	7.5	7.5	6.3	5.8	8.0
TREASURY BILLS	1.4	0.25	0.3	0.8	0.8	0.4	0.3	0.4

* Yield and Duration statistics are for a proxy index based on similar maturity, the Bloomberg Barclays U.S. Treasury 7-10 Year Index

BLOOMBERG BARCLAYS FIXED INCOME INDEXES



TREASURY YIELD CURVE

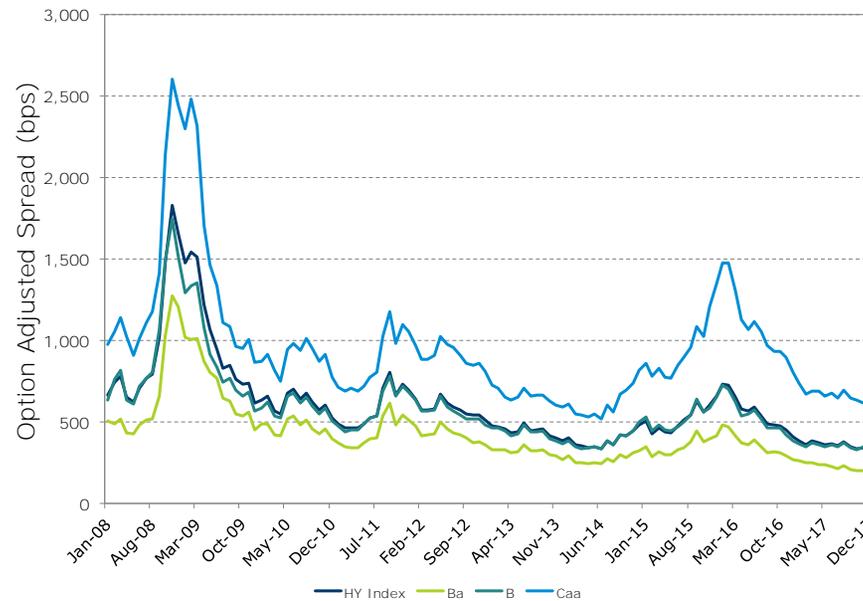


Data sources: Wilshire Compass, Bloomberg Barclays, U.S. Treasury

HIGH YIELD BOND MARKET

AS OF DECEMBER 31, 2017		QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS HIGH YIELD		0.5	7.5	7.5	6.3	5.8	8.0
CREDIT SUISSE LEVERAGED LOAN		1.2	4.2	4.2	4.5	4.3	4.6
HIGH YIELD QUALITY DISTRIBUTION	WEIGHT						
Ba U.S. HIGH YIELD	44.1%	0.4	7.3	7.3	6.2	5.8	8.4
B U.S. HIGH YIELD	40.3%	0.4	6.5	6.5	5.5	5.1	6.5
Caa U.S. HIGH YIELD	14.4%	1.0	10.4	10.4	8.4	7.5	7.8
Ca to D U.S. HIGH YIELD	1.1%	0.8	13.8	13.8	-3.0	-10.1	-0.4
Non-Rated U.S. HIGH YIELD	0.2%	-2.0	9.2	9.2	-2.5	0.9	1.3

BLOOMBERG BARCLAYS HIGH YIELD INDEXES

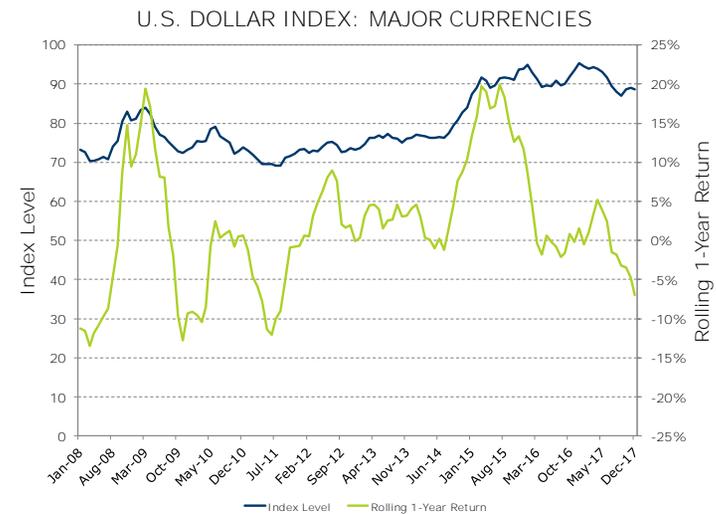
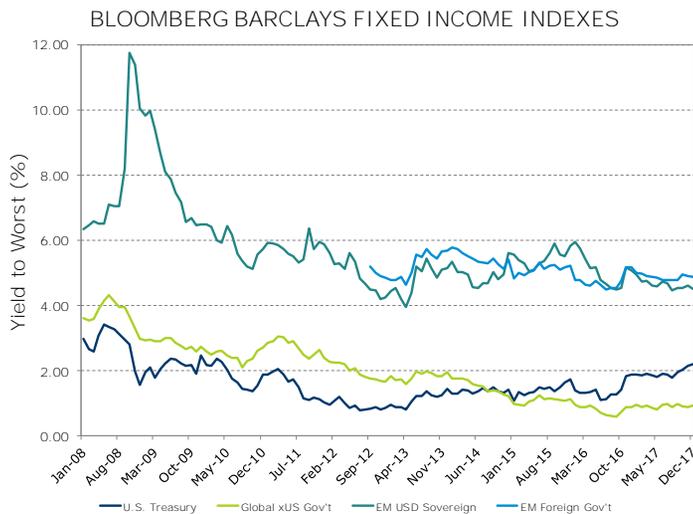


Data sources: Wilshire Compass, Bloomberg Barclays

NON-U.S. FIXED INCOME

AS OF DECEMBER 31, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
DEVELOPED MARKETS						
BLMBRG BRCLYS GBL AGGREGATE xUS	1.6	10.5	10.5	1.8	-0.2	2.4
BLMBRG BRCLYS GBL AGGREGATE xUS *	1.1	2.5	2.5	2.9	3.7	4.2
BLMBRG BRCLYS GLOBAL INF LNKD xUS	3.9	12.8	12.8	2.6	2.4	3.3
BLMBRG BRCLYS GLOBAL INF LNKD xUS *	3.4	3.3	3.3	5.7	5.8	5.8
EMERGING MARKETS (HARD CURRENCY)						
BLMBRG BRCLYS EM USD AGGREGATE	0.6	8.2	8.2	6.4	3.9	7.0
EMERGING MARKETS (FOREIGN CURRENCY)						
BLMBRG BRCLYS EM LOCAL CURR. GOVT	2.2	14.3	14.3	2.7	0.3	n.a.
BLMBRG BRCLYS EM LOCAL CURR. GOVT *	0.0	3.6	3.6	2.3	1.8	n.a.
EURO vs. DOLLAR	1.6	13.8	13.8	-0.3	-1.9	-2.0
YEN vs. DOLLAR	-0.1	3.5	3.5	2.1	-5.2	-0.1
POUND vs. DOLLAR	0.8	9.5	9.5	-4.6	-3.6	-3.8

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



Data sources: Wilshire Compass, Bloomberg Barclays, Federal Reserve Bank of St. Louis

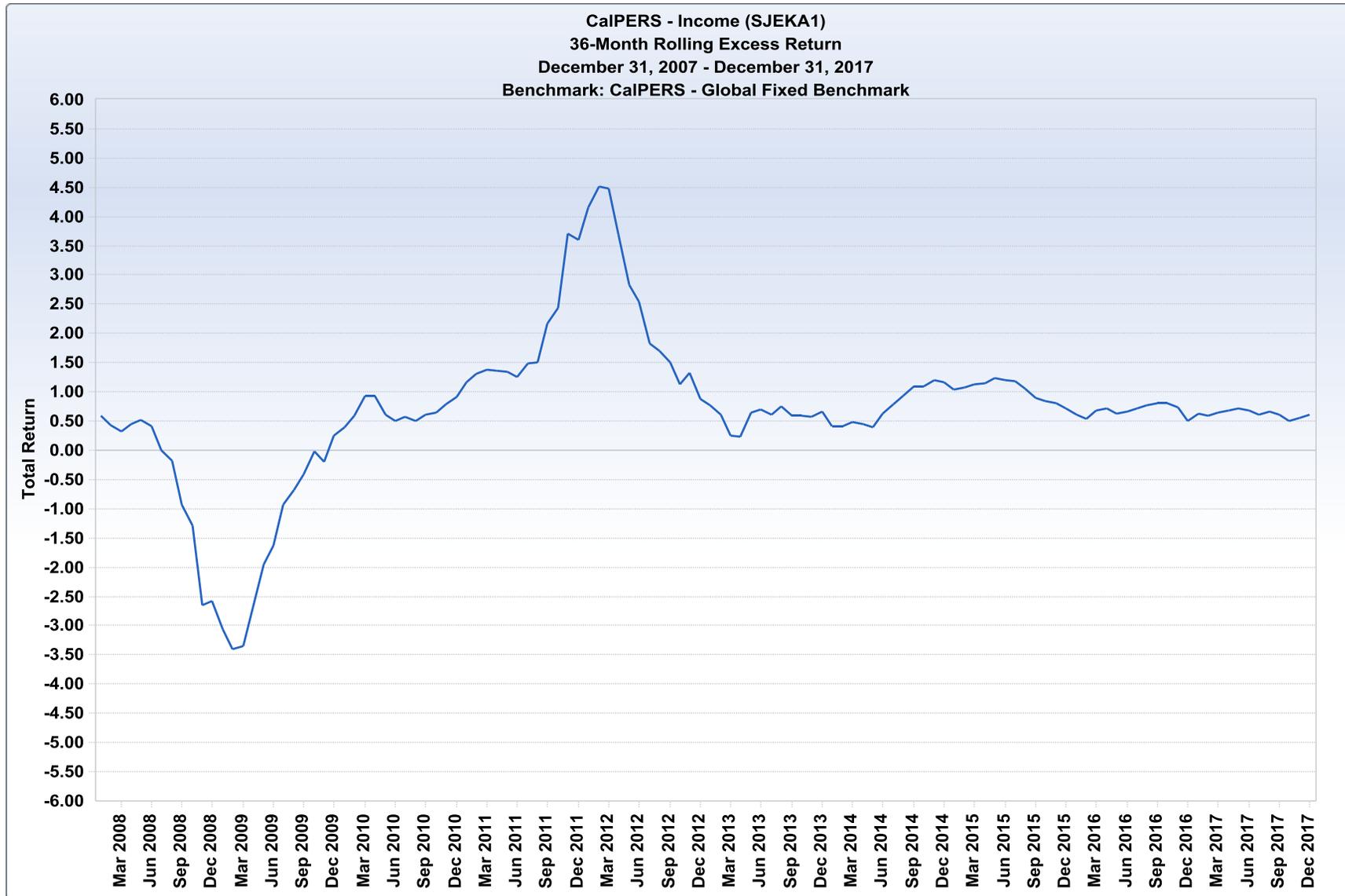


Wilshire Consulting

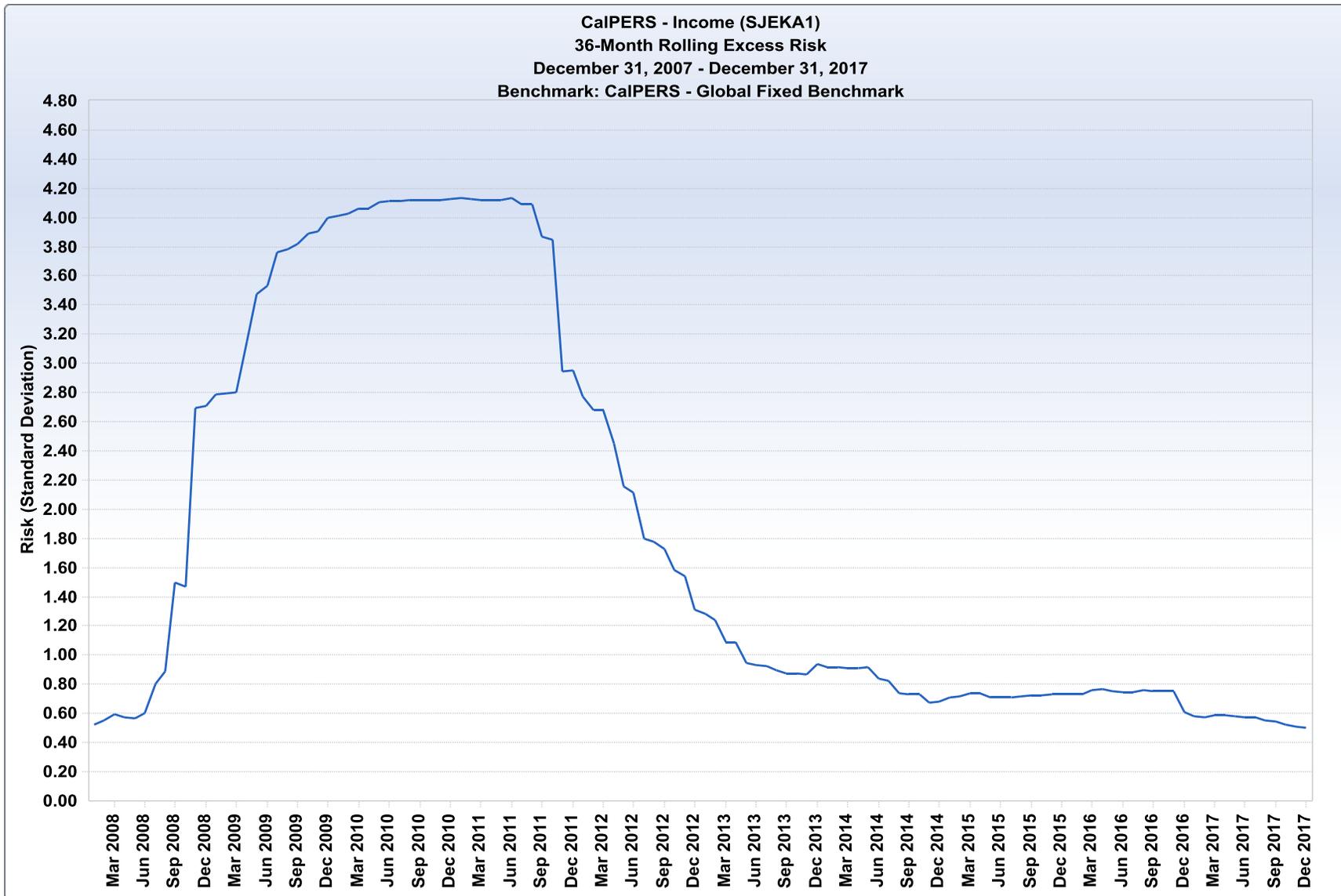
Income – Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR	5-year Sharpe Ratio	5-year Info Ratio
INCOME	65.6	1.3%	7.2%	3.7%	3.3%	6.0%	\$7.3 bil	0.6	1.3
<i>Income Policy Benchmark</i>		1.3%	6.6%	3.0%	2.5%	5.3%		0.4	0.0
<i>Value Added</i>		0.0%	0.6%	0.7%	0.8%	0.7%			
U.S. Income	59.8	1.4%	6.7%	3.9%	3.7%	6.3%		0.8	1.4
<i>U.S. Income Policy Benchmark</i>		1.3%	6.0%	3.2%	2.9%	5.6%		0.5	0.0
<i>Value Added</i>		0.1%	0.7%	0.7%	0.8%	0.7%			
Non-U.S. Income	5.7	1.2%	12.6%	2.0%	-0.5%	3.1%		-0.2	0.8
<i>Non-US Income Policy Benchmark</i>		1.3%	11.6%	1.8%	-1.0%	2.1%		-0.2	0.0
<i>Value Added</i>		-0.1%	1.0%	0.2%	0.5%	1.0%			

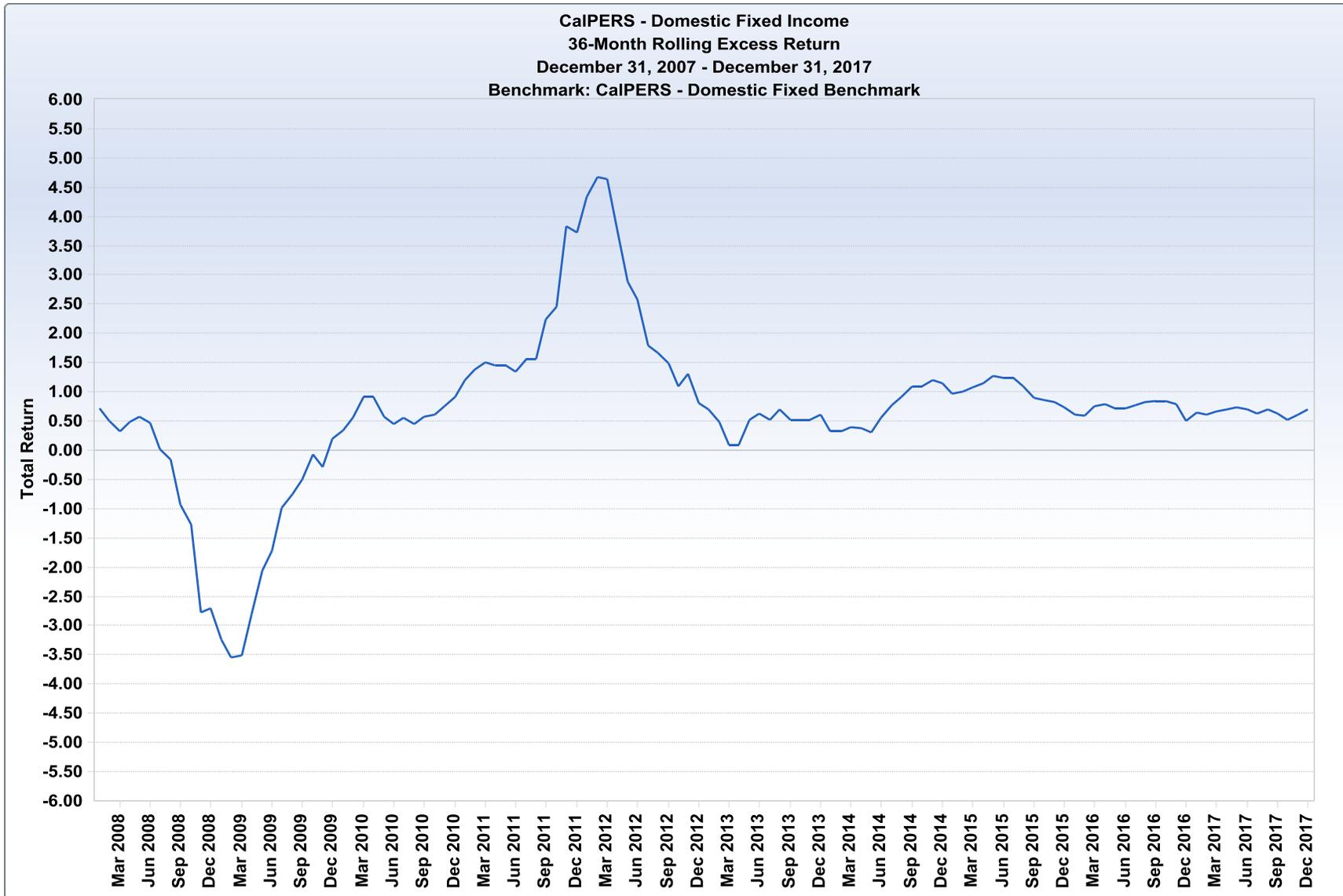
Income – Rolling Excess Returns



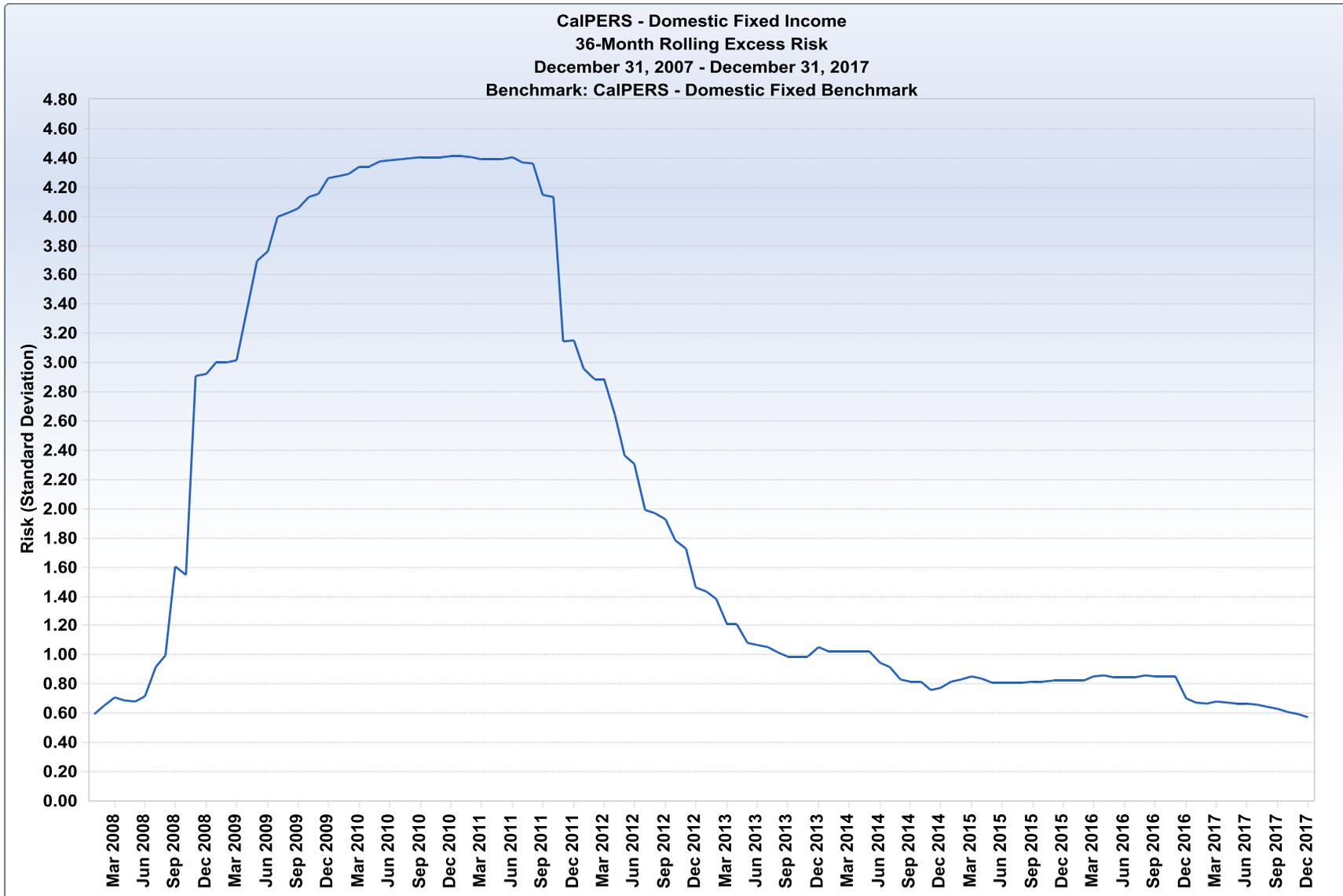
Income – Rolling Tracking Error



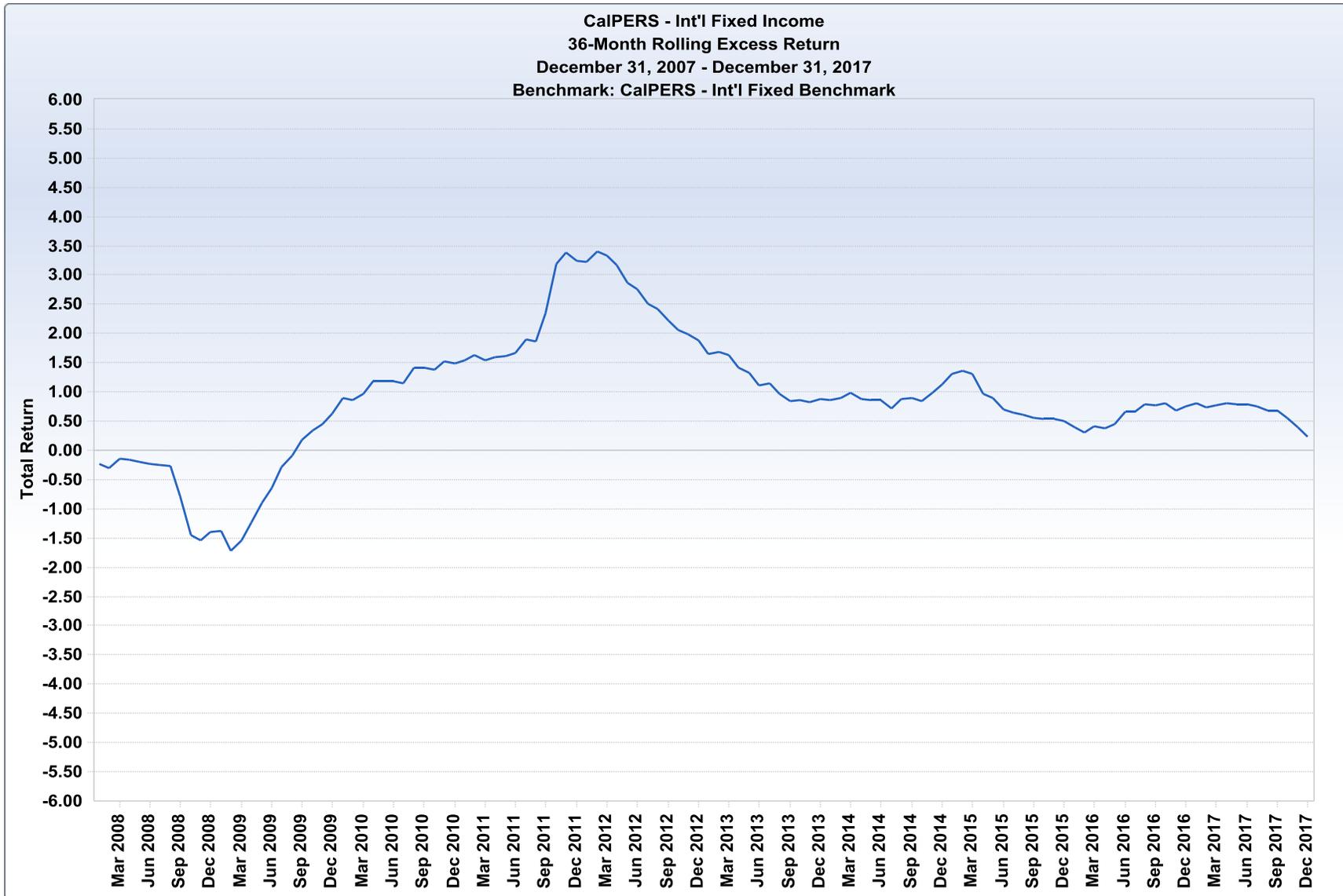
U.S. Income – Rolling Excess Returns



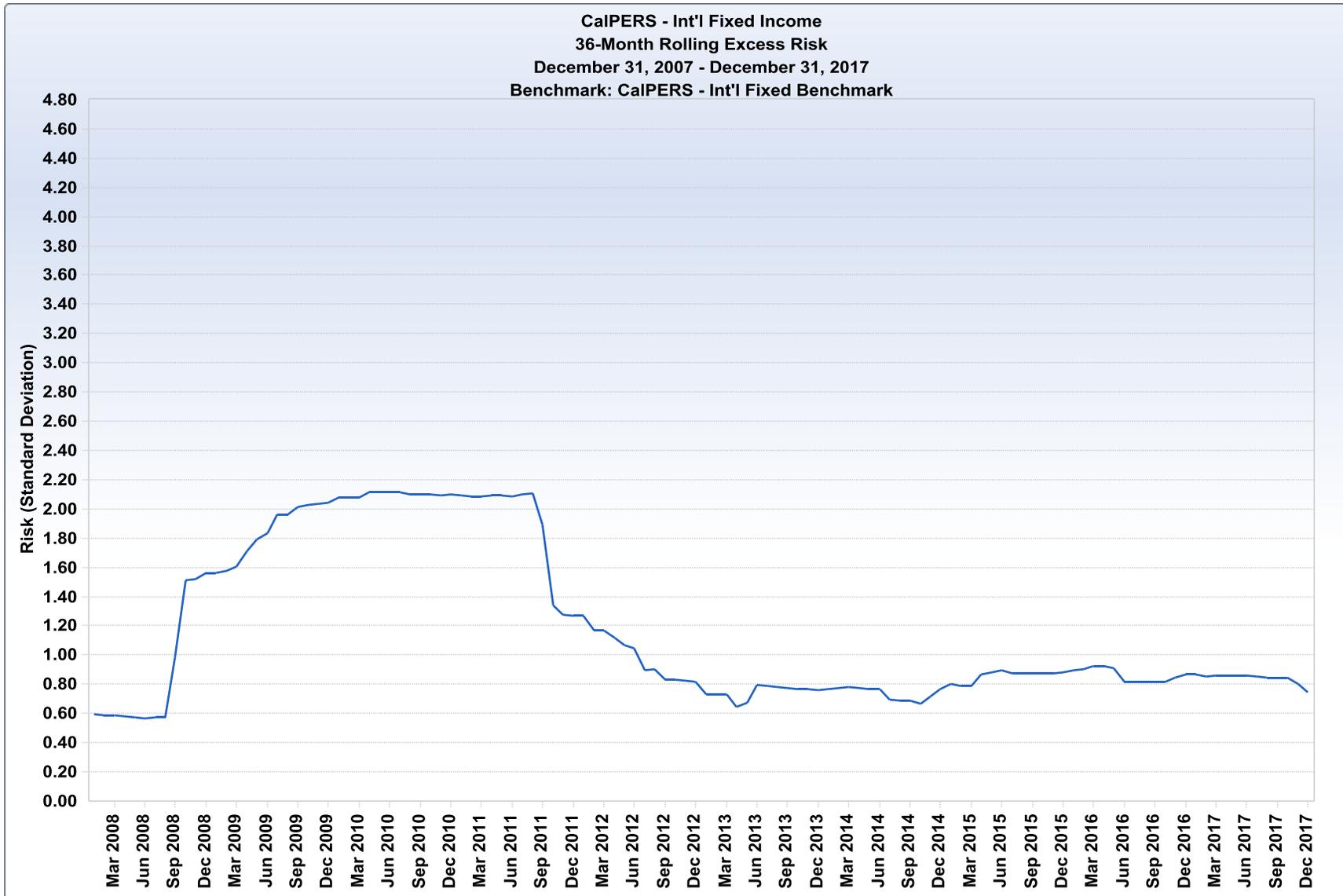
U.S. Income – Rolling Tracking Error



International Income – Rolling Excess Returns



International Income – Rolling Tracking Error

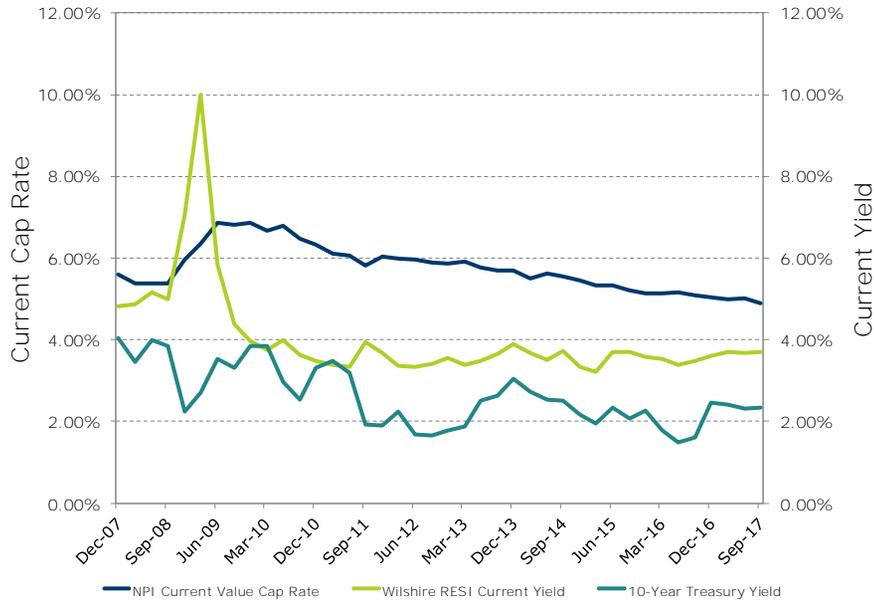


Wilshire Consulting REAL ASSETS

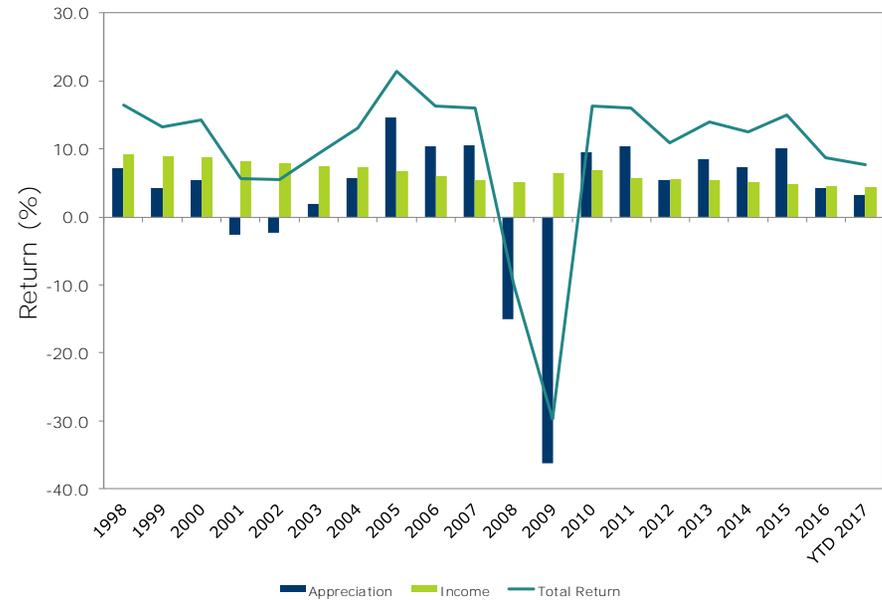


AS OF DECEMBER 31, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
BLOOMBERG BARCLAYS U.S. TIPS	1.3	3.0	3.0	2.0	0.1	3.5
BLOOMBERG COMMODITY INDEX	4.7	1.7	1.7	-5.0	-8.5	-6.8
WILSHIRE GLOBAL RESI INDEX	3.2	10.0	10.0	5.8	8.0	5.4
NCREIF ODCE FUND INDEX	2.1	7.6	7.6	10.4	11.5	5.0
NCREIF TIMBERLAND INDEX	1.5	3.6	3.6	3.7	6.2	4.4
ALERIAN MLP INDEX (OIL & GAS)	-1.0	-6.5	-6.5	-9.3	-0.1	6.0

REAL ESTATE VALUATION



NCREIF ODCE FUND INDEX RETURN



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

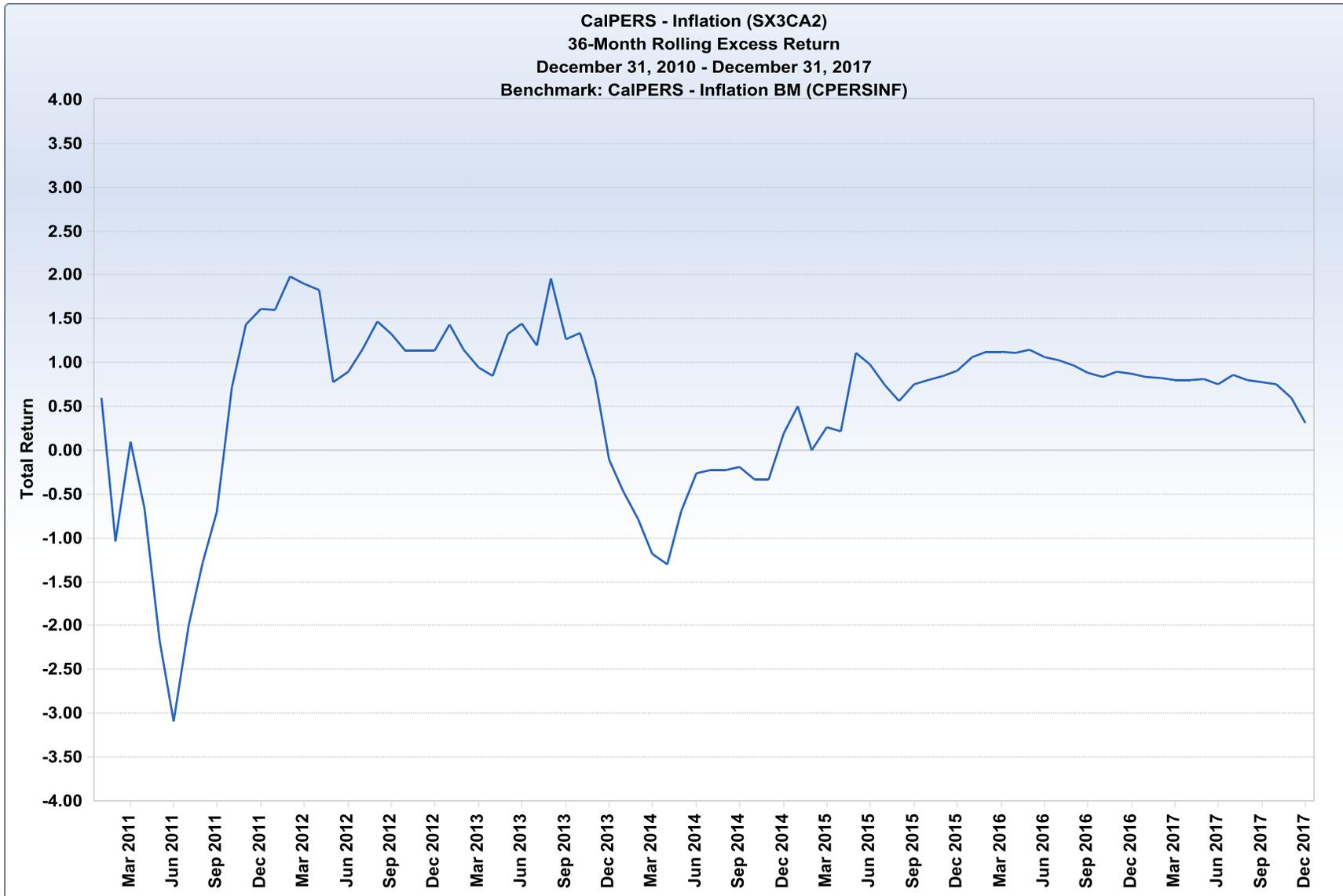


Wilshire Consulting

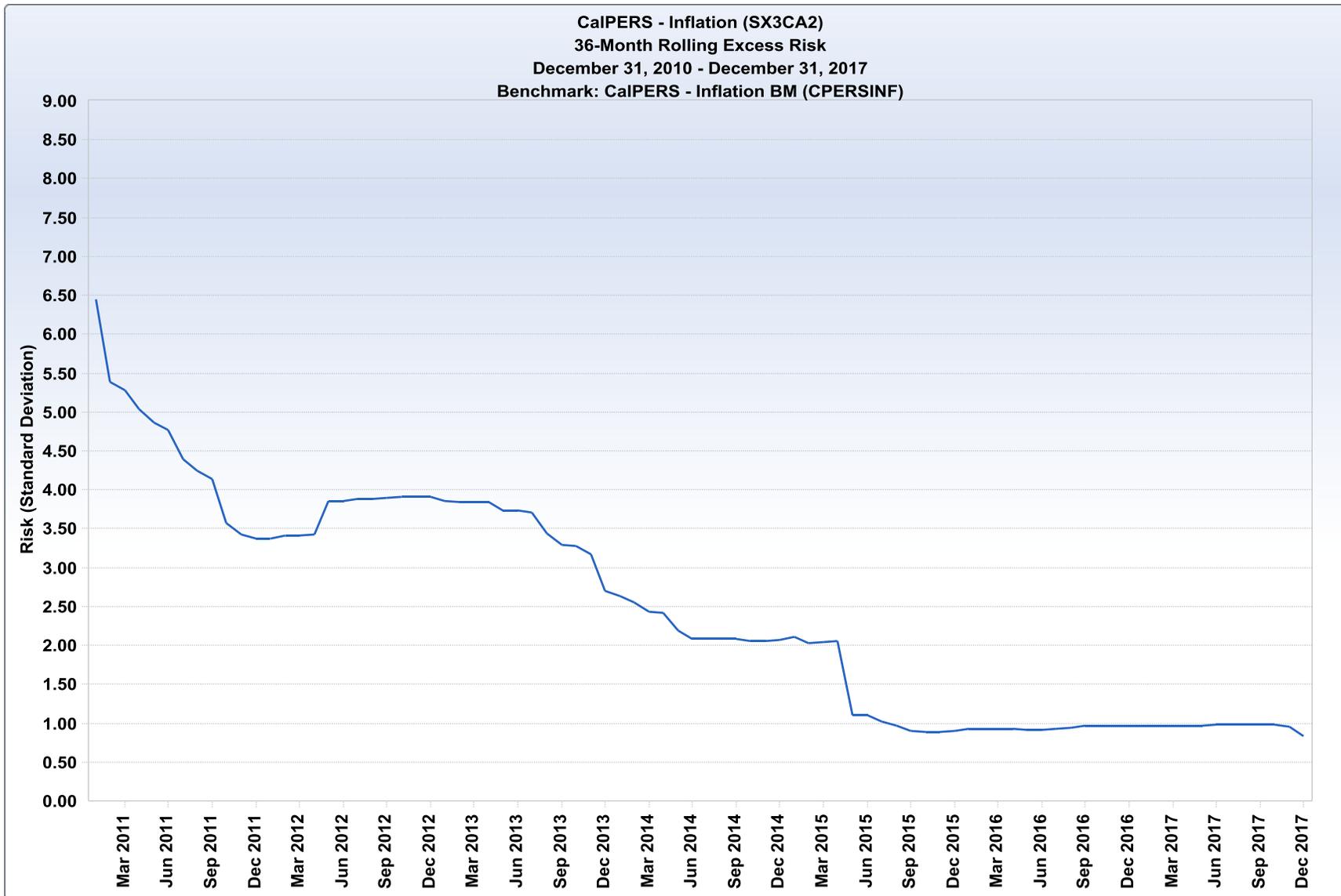
Inflation – Performance

	<u>Market Value</u>	<u>Qtr</u>	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>	<u>10-Year</u>	<u>VaR</u>	<u>5-year Sharpe Ratio</u>	<u>5-year Info Ratio</u>
INFLATION	27.4	4.0%	6.3%	0.1%	-2.0%	0.1%	\$2.0 bil	-0.4	0.7
<i>Inflation Policy Benchmark</i>		3.9%	6.2%	-0.2%	-2.5%	0.1%		-0.4	0.0
<i>Value Added</i>		0.1%	0.1%	0.3%	0.5%	-.-%			
Internal Commodities	4.8	9.9%	5.9%	-7.5%	-12.3%	-.-%			
<i>GSCI Total Return Index</i>		9.9%	5.8%	-7.5%	-12.2%	-.-%			
<i>Value Added</i>		0.0%	0.1%	0.0%	-0.1%	-.-%			
Core Inflation Linked Bonds	18.4	1.9%	6.7%	1.8%	0.8%	-.-%			
<i>Custom Benchmark</i>		2.1%	6.6%	1.8%	0.6%	-.-%			
<i>Value Added</i>		-0.2%	0.1%	0.0%	0.2%	-.-%			
Tactical Commodities	2.1	11.3%	7.0%	-7.7%	-.-%	-.-%			
<i>GSCI Total Return Index</i>		9.9%	5.8%	-7.5%	-.-%	-.-%			
<i>Value Added</i>		1.4%	1.2%	-0.2%	-.-%	-.-%			
Tactical TIPS	2.1	1.2%	2.9%	1.8%	-.-%	-.-%			
<i>CalPERS TIPS</i>		1.3%	3.0%	2.1%	-.-%	-.-%			
<i>Value Added</i>		-0.1%	-0.1%	-0.3%	-.-%	-.-%			

Inflation – Rolling Excess Returns



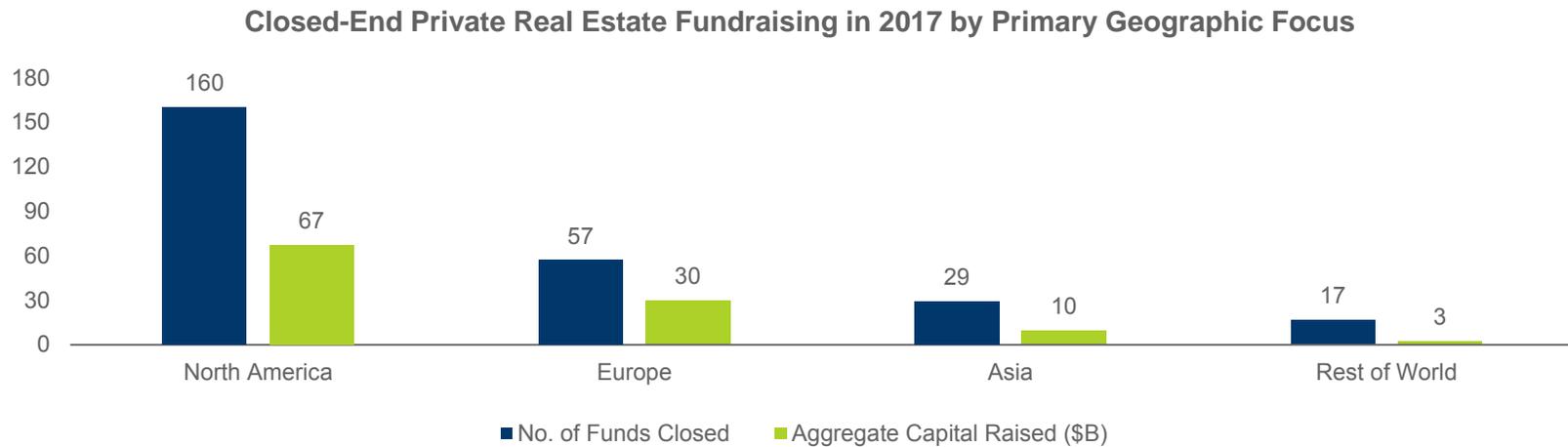
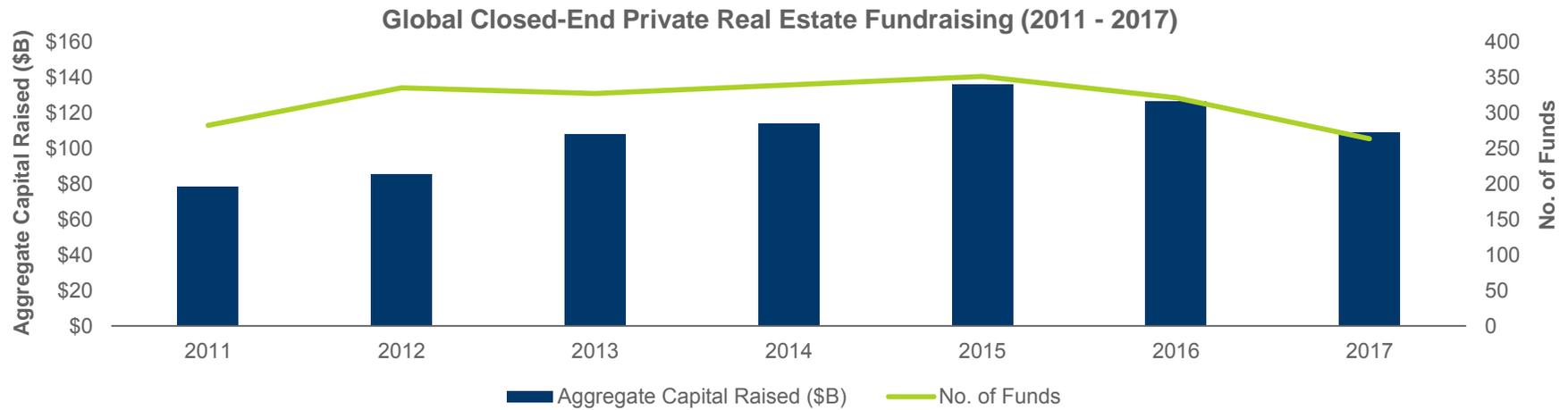
Inflation – Rolling Tracking Error





Wilshire Private Markets

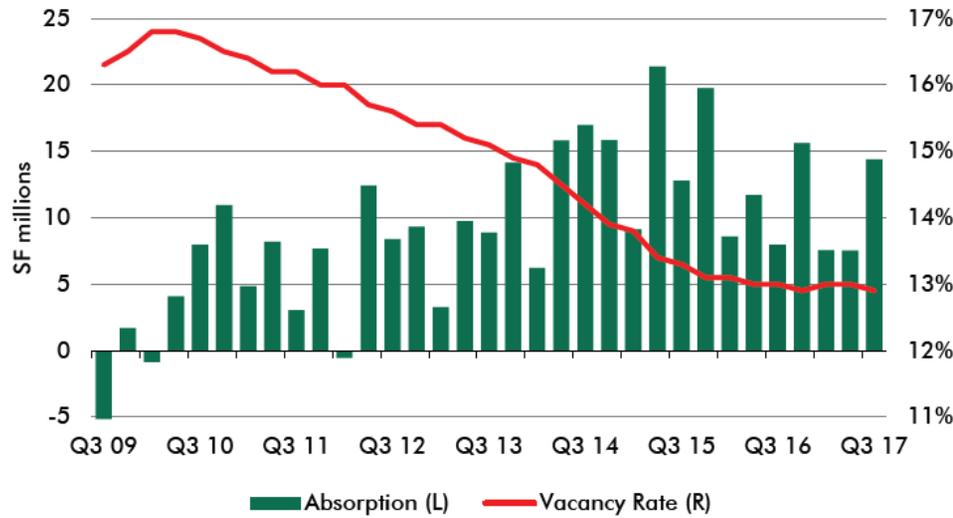
PRIVATE REAL ESTATE – FUNDRAISING ACTIVITY



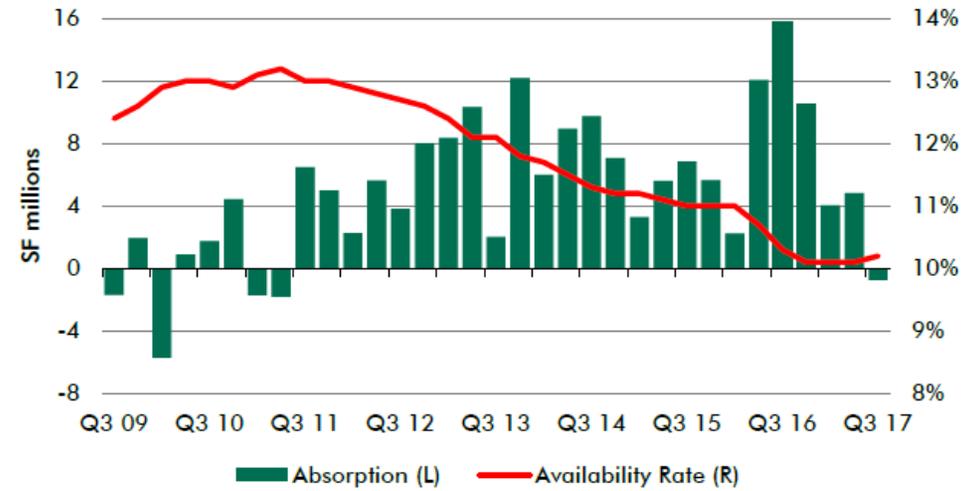
Source: Preqin, as of December 31, 2017
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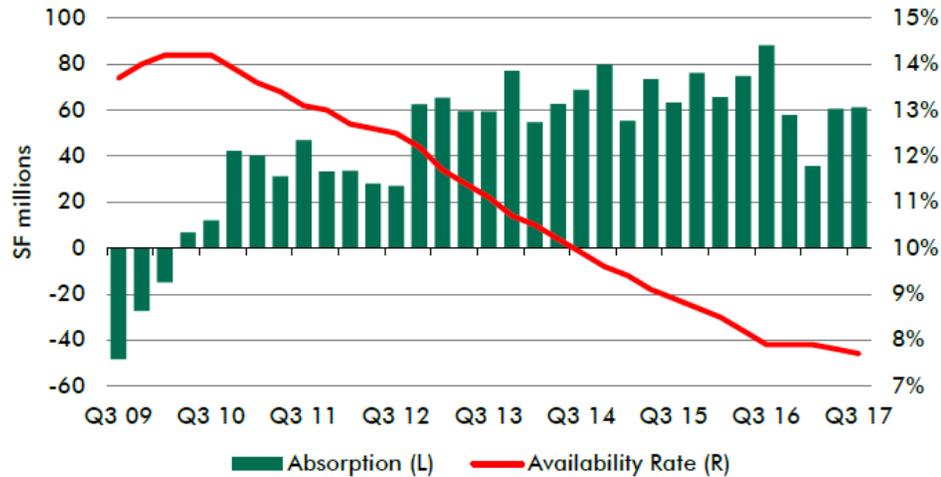
OFFICE



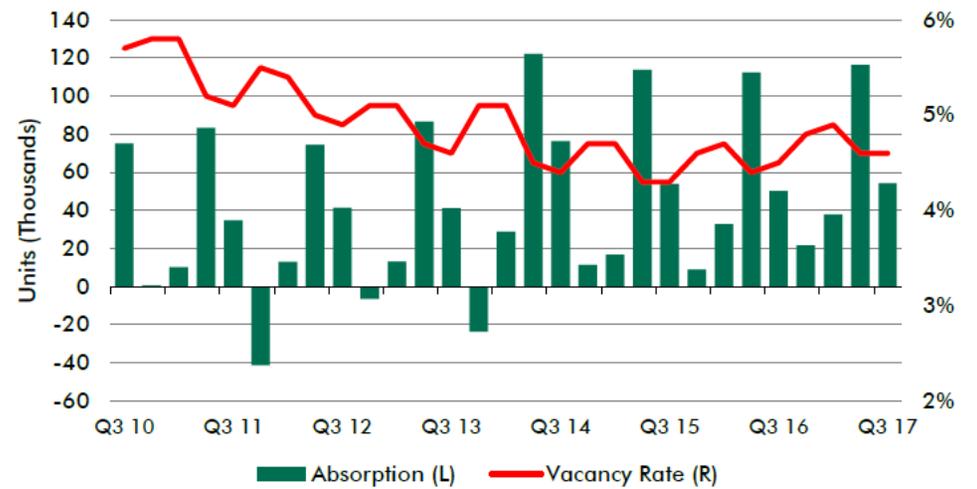
RETAIL



INDUSTRIAL



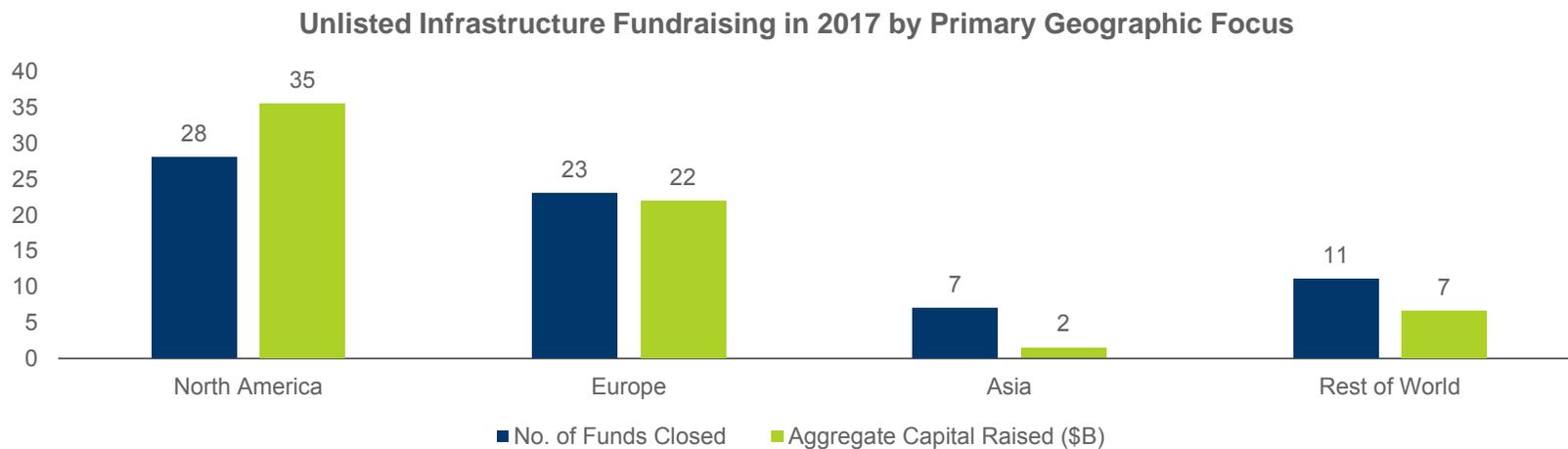
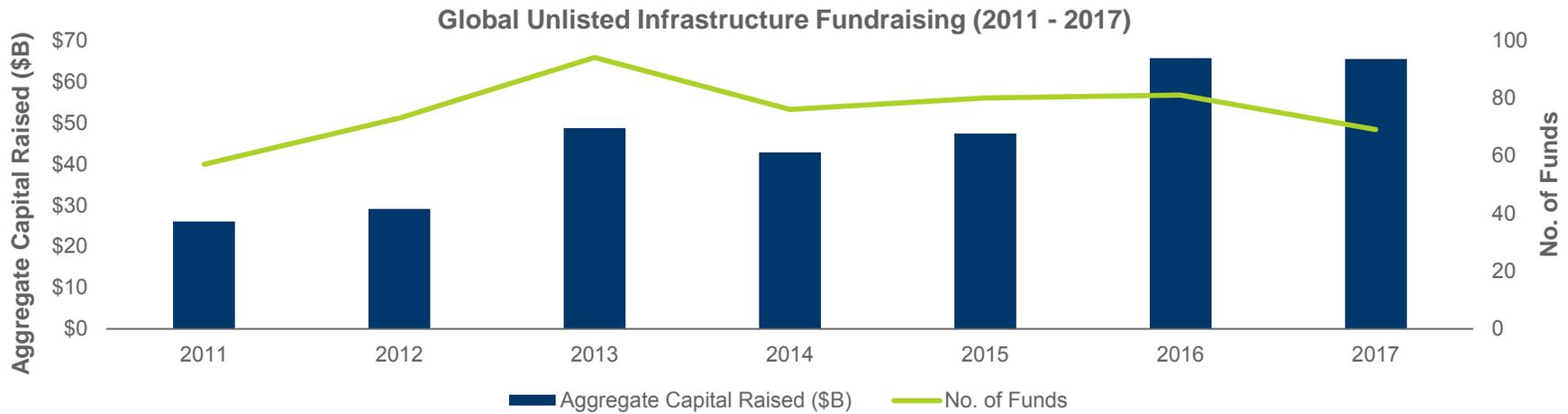
APARTMENTS



Data sources: CB Richard Ellis

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UNLISTED INFRASTRUCTURE – FUNDRAISING & INVESTMENT ACTIVITY



Source: Preqin, as of December 31, 2017
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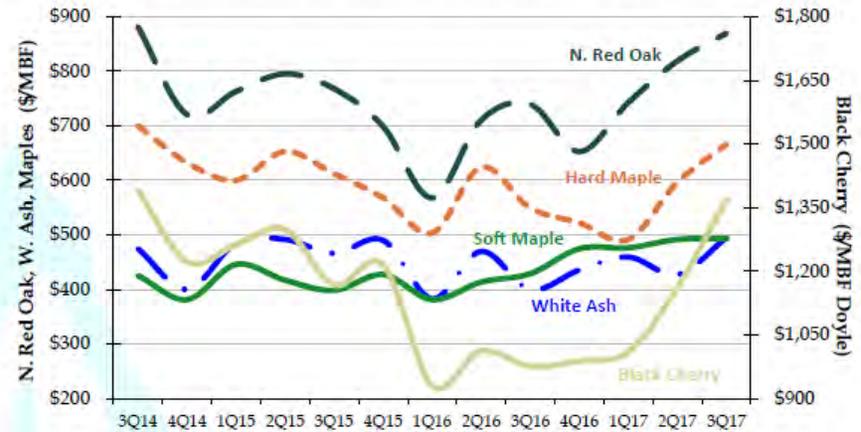


Southeastern Timber Prices



Source: Forest2Market®

Northeastern Hardwood Timber Prices



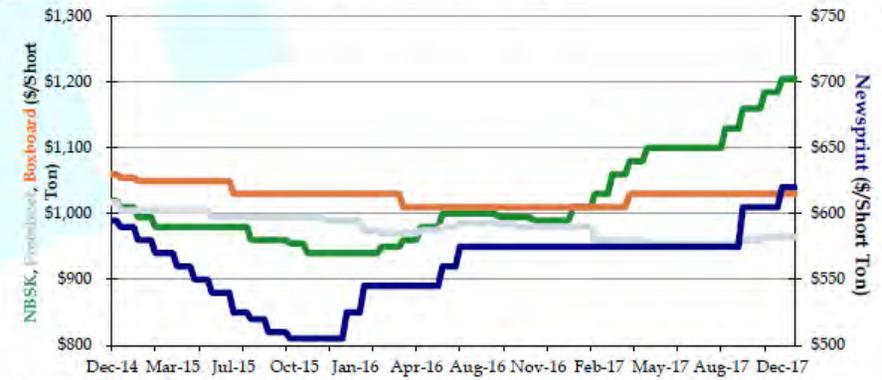
Source: Pennsylvania Woodlands Timber Market Report - Northwest Region

Pacific Northwest Timber Prices



Source: Log Lines®

Pulp and Paper



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

Data sources: Forest Investment Associates

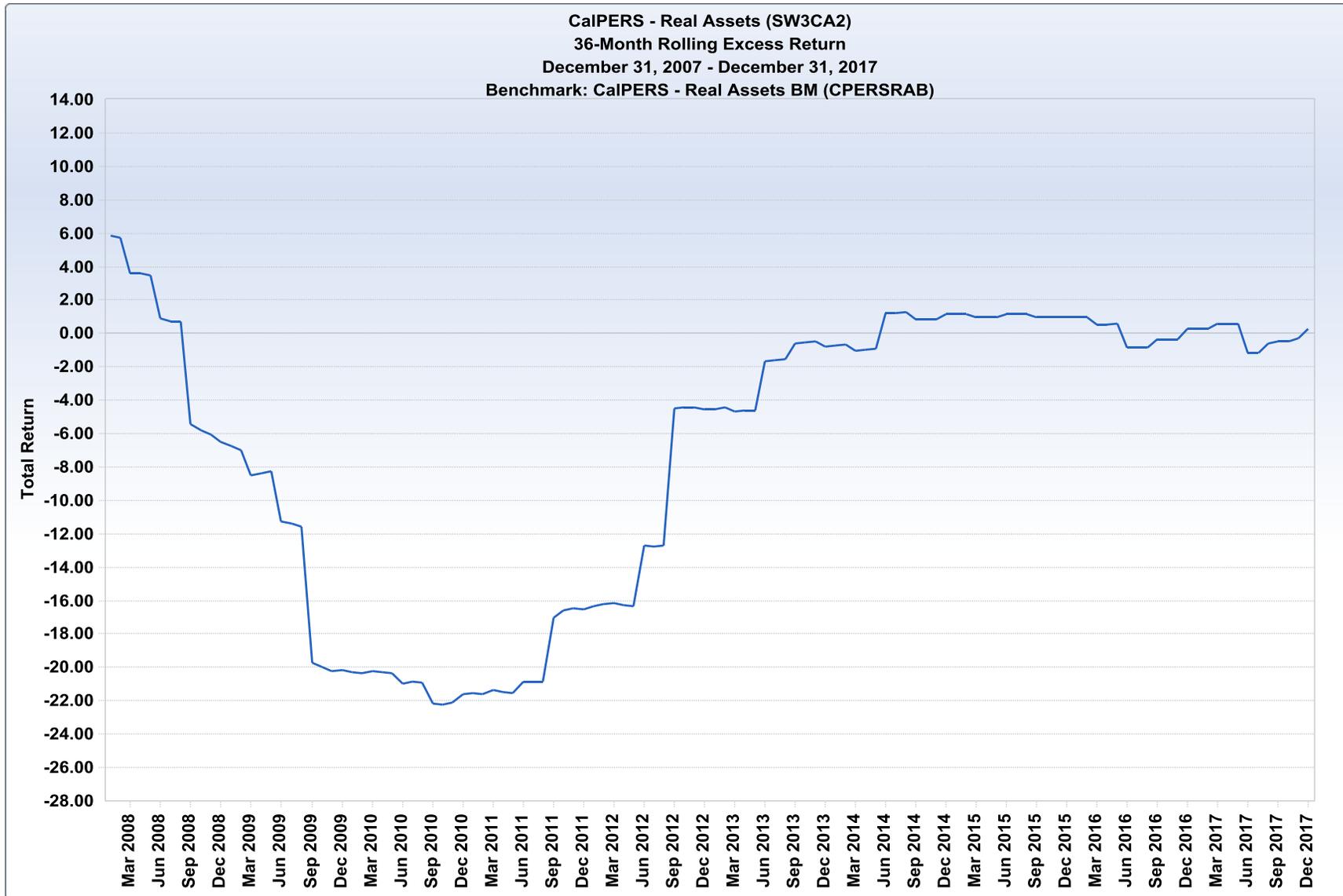


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Real Assets – Performance

	<u>Market Value</u>	<u>Qtr</u>	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>	<u>10-Year</u>	<u>VaR</u>	<u>5-year Sharpe Ratio</u>	<u>5-year Info Ratio</u>
REAL ASSETS	36.8	2.0%	8.5%	9.4%	10.4%	-0.9%	\$5.1 bil	1.7	0.1
<i>Real Assets Policy Benchmark</i>		1.6%	6.4%	9.1%	9.9%	6.4%		2.4	0.0
<i>Value Added</i>		0.4%	2.1%	0.3%	0.5%	-7.3%			
Real Estate	30.7	1.4%	7.8%	10.0%	10.9%	-1.3%	\$4.7 bil	1.6	0.1
<i>Real Estate Policy Benchmark</i>		1.6%	6.7%	9.8%	10.6%	7.2%		2.3	0.0
<i>Value Added</i>		-0.2%	1.1%	0.2%	0.3%	-8.5%			
Forestland	2.0	-0.1%	0.8%	-3.0%	-0.1%	-0.4%			
<i>NCREIF Timberland Index</i>		0.6%	3.3%	5.2%	7.1%	5.2%			
<i>Value Added</i>		-0.7%	-2.5%	-8.2%	-7.2%	-5.6%			
Infrastructure	4.2	8.2%	18.2%	12.4%	14.3%	13.3%			
<i>CPI + 400 BPS 1Qtr Lag</i>		1.8%	6.3%	5.3%	5.3%	6.2%			
<i>Value Added</i>		6.4%	11.9%	7.1%	9.0%	7.1%			

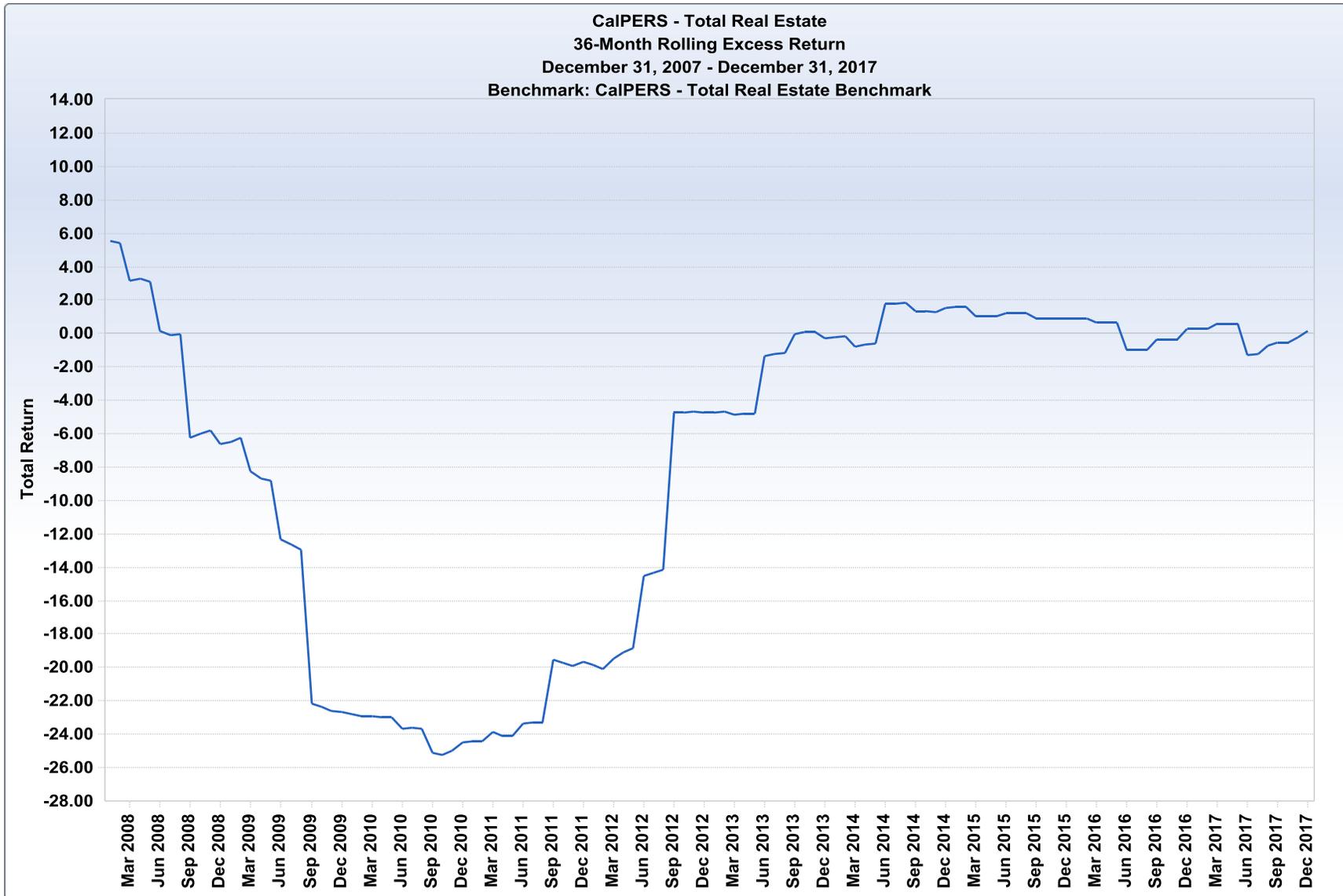
Real Assets – Rolling Excess Returns



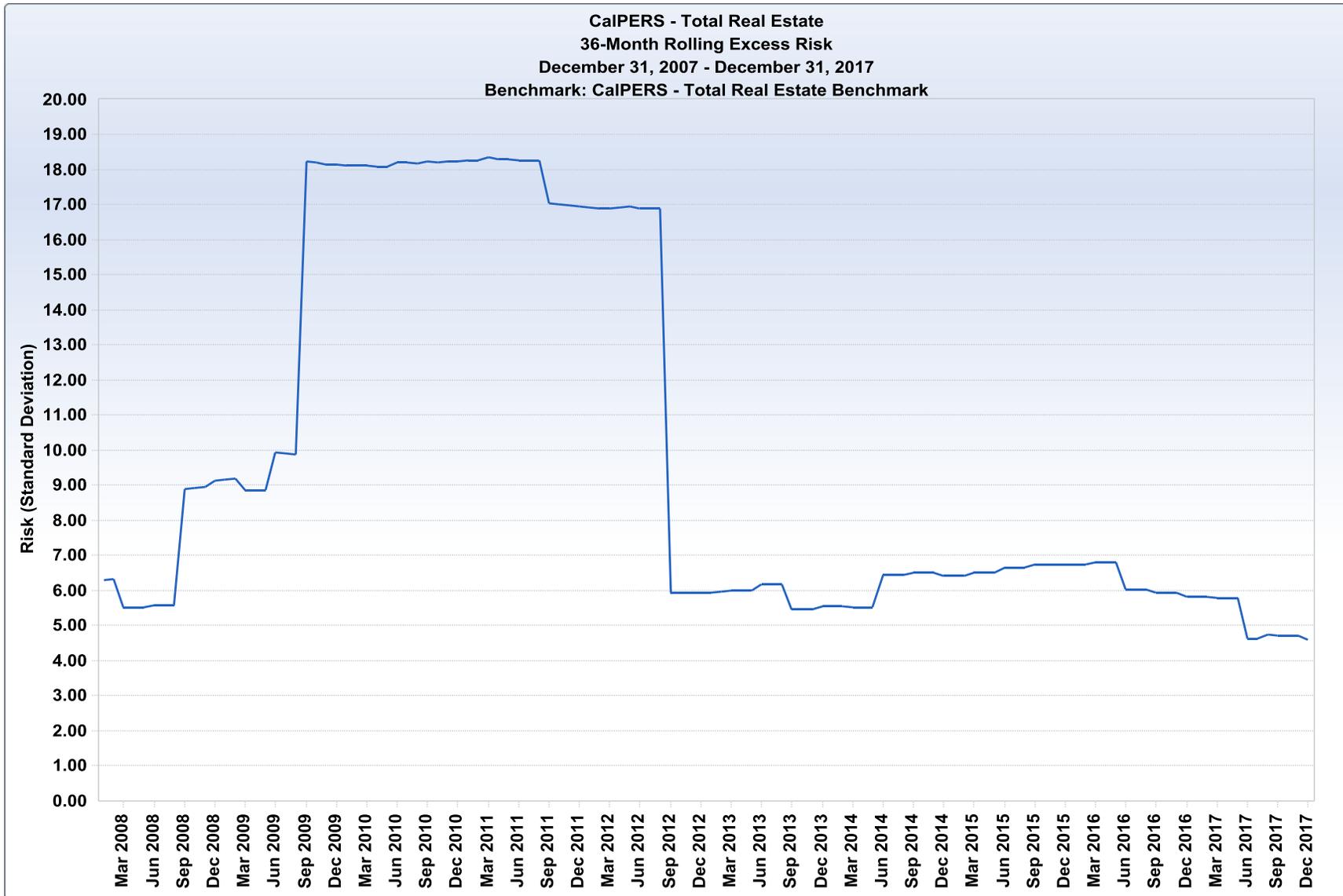
Real Assets – Rolling Tracking Error



Real Estate – Rolling Excess Returns



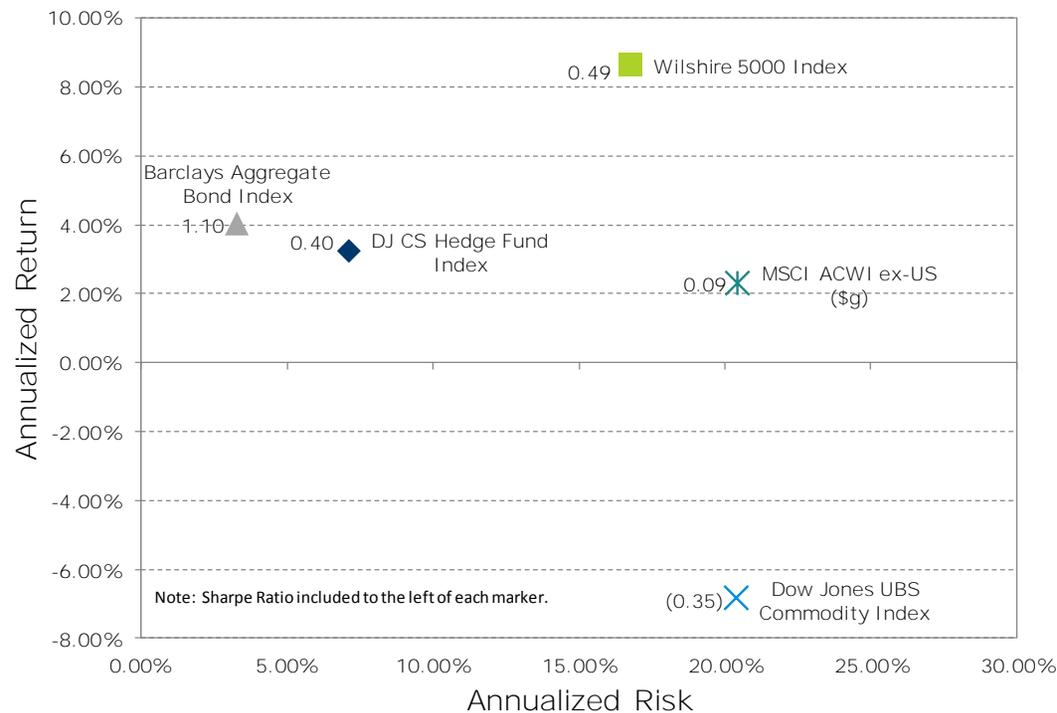
Real Estate – Rolling Tracking Error



HEDGE FUND PERFORMANCE

AS OF DECEMBER 31, 2017	QTR	YTD	1 YR	3 YR	5 YR	10 YR
DJ CS HEDGE FUND INDEX	2.3	7.1	7.1	2.5	4.2	3.2
EVENT DRIVEN	1.5	6.3	6.3	0.8	3.7	3.0
GLOBAL MACRO	1.9	2.2	2.2	2.0	2.7	4.4
LONG/SHORT EQUITY	3.3	13.4	13.4	4.3	7.1	4.0
MULTI-STRATEGY	0.3	6.8	6.8	5.0	6.4	4.9
WILSHIRE 5000	6.4	21.0	21.0	11.4	15.7	8.6
MSCI ACWI EX-US (\$G)	5.1	27.8	27.8	8.3	7.3	2.3
BLOOMBERG BARCLAYS AGGREGATE	0.4	3.6	3.6	2.2	2.1	4.0
DOW JONES UBS COMMODITY	4.7	1.7	1.7	-5.0	-8.5	-6.8

HEDGE FUND 10-YEAR RISK/RETURN



Data sources: Wilshire Compass

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ARS – Distribution of Performance

	Market						5-Year	5-Year Up	5-Year	5-Year
	Value	Qtr	1-Year	3-Year	5-Year	10-Year	Info	Capture	Sharpe	Sortino
							Ratio	Ratio	Ratio	Ratio
Absolute Return Strategies	0.3	1.8%	6.4%	0.6%	3.0%	1.5%	-0.5	0.5	0.6	0.9
<i>ARS Policy Benchmar</i>		1.2%	5.6%	5.5%	5.4%	5.9%				
<i>Value Added</i>		0.6%	0.8%	-4.9%	-2.4%	-4.4%				
Total Direct Investments	0.3	1.8%	6.1%	0.4%	2.9%	1.7%				
Total Funds of Funds	0.0	0.0%	30.6%	9.3%	7.7%	3.3%				
HFRI Fund of Funds Index		0.6%	-0.4%	3.9%	2.1%	2.3%				

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ASSET CLASS PERFORMANCE

ASSET CLASS RETURNS - BEST TO WORST						ANNUALIZED 5-YEAR AS OF 12/2017
2012	2013	2014	2015	2016	2017	
Emrg Mrkts 18.6%	U.S. Equity 33.1%	REITs 31.8%	REITs 4.2%	MLPs 18.3%	Emrg Mrkts 37.7%	U.S. Equity 15.7%
Developed 17.9%	MLPs 27.6%	U.S. Equity 12.7%	U.S. Equity 0.7%	High Yield 17.1%	Developed 25.6%	REITs 9.3%
REITs 17.6%	Developed 23.3%	Core Bond 6.0%	Core Bond 0.6%	U.S. Equity 13.4%	U.S. Equity 21.0%	Developed 8.4%
U.S. Equity 16.1%	High Yield 7.4%	MLPs 4.8%	T-Bills 0.1%	Commodities 11.8%	High Yield 7.5%	High Yield 5.8%
High Yield 15.8%	REITs 1.9%	U.S. TIPS 3.6%	Developed -0.4%	Emrg Mrkts 11.6%	REITs 4.2%	Emrg Mrkts 4.7%
U.S. TIPS 7.0%	T-Bills 0.1%	High Yield 2.5%	U.S. TIPS -1.4%	REITs 7.2%	Core Bond 3.6%	Core Bond 2.1%
MLPs 4.8%	Core Bond -2.0%	T-Bills 0.0%	High Yield -4.5%	U.S. TIPS 4.7%	U.S. TIPS 3.0%	T-Bills 0.3%
Core Bond 4.2%	Emrg Mrkts -2.3%	Emrg Mrkts -1.8%	Emrg Mrkts -14.6%	Core Bond 2.6%	Commodities 1.7%	U.S. TIPS 0.1%
T-Bills 0.1%	U.S. TIPS -8.6%	Developed -4.5%	Commodities -24.7%	Developed 1.5%	T-Bills 0.8%	MLPs -0.1%
Commodities -1.0%	Commodities -9.5%	Commodities -17.0%	MLPs -32.6%	T-Bills 0.3%	MLPs -6.5%	Commodities -8.5%

Data sources: Wilshire Compass

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

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