



NEPC, LLC

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## Ventura County Employees' Retirement Association

**Investment Summary**  
**Quarter Ending December 31, 2016**

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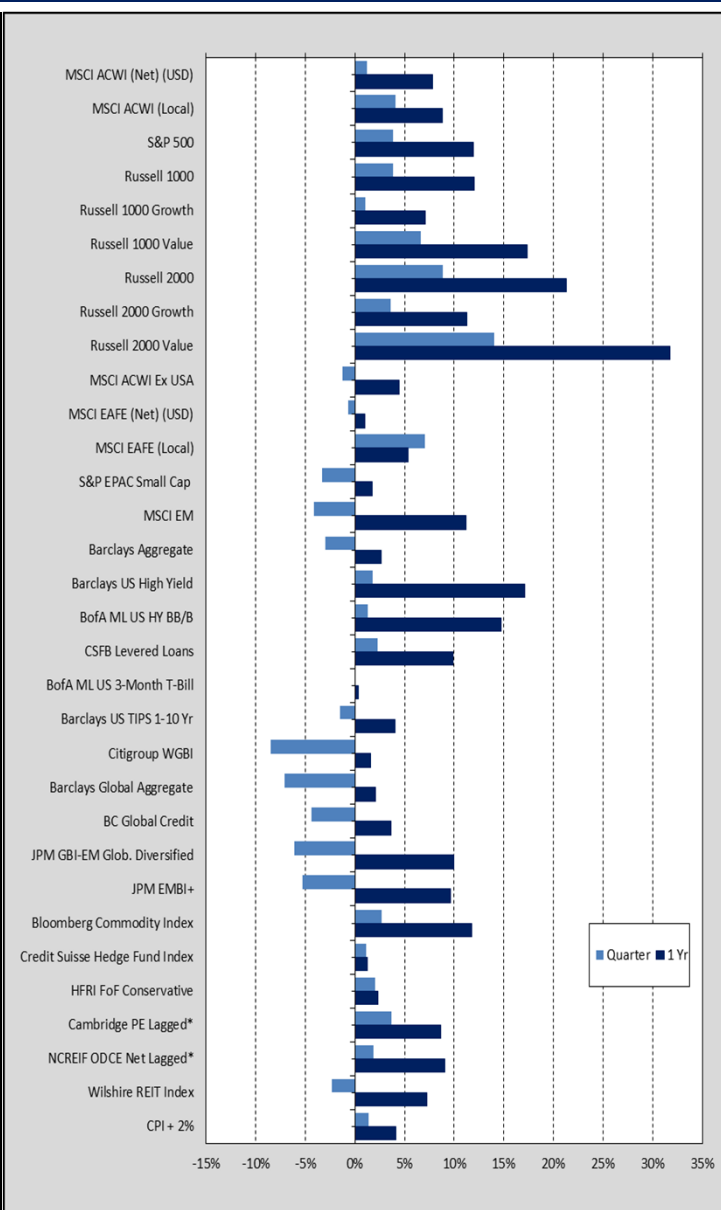
# Market Environment and Outlook

## Economic Environment

- **Fourth quarter GDP growth rate (advance estimate) printed at a modest 1.9%.**
  - Retail sales ended November at +3.7% on a YoY basis. In the same period last year the YoY growth rate was 1.0%.
  - The inventory-to-sales ratio ended November flat at 1.4 and has remained relatively flat since early 2010.
  - Corporate profits (ended July) as a percent of GDP increased to 9.0% from 8.5% (in April) and remain elevated relative to historical levels.
  - The U.S. trade deficit widened ended November as the rate of change in imports increased to a 15 month high.
- **The unemployment rate decreased to 4.7% in Q4 from 4.9% in Q3; U-6, a broader measure of unemployment, decreased to 9.1% during the fourth quarter from 9.7%.**
- **The Case-Shiller Home Price Index (ended October) increased to 185.06 from 183.3 in July and is at levels higher than that of pre-financial crisis levels of 150.9.**
- **Rolling 12-month seasonally adjusted CPI saw an uptick to 2.09% at the end of December; Capacity Utilization was flat at 75.5% ended Q4.**
- **Fed Funds rate was increased +0.25% to a targeted range of 0.50% - to - 0.75%. The 10-year Treasury Yield (constant maturity) finished Q4 at 2.5% up 0.9% from Q3.**
- **The Fed balance sheet decreased slightly during Q4 2016, while the European Central Bank balance sheet continues to increase.**
  - ECB held its benchmark refinance rate at 0%, deposit rates -0.4% and asset purchases at €80 billion per month of corporate and public securities, announced slowing of bond purchase pace in 2017.
- **S&P valuations increased slightly in Q4 remaining above the 10-year and long-term averages.**
  - Cyclically adjusted Shiller PE ratio (27.84x) is above the long-term average of 16.71x and above the 10-year average of 24.46x.

# Market Environment – Q4 2016 Overview

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>World Equity Benchmarks</b>						
MSCI ACWI (Net) (USD)	World	1.2%	7.9%	3.1%	9.4%	3.6%
MSCI ACWI (Local)	World (Local Currency)	4.1%	8.8%	6.4%	11.9%	4.3%
<b>Domestic Equity Benchmarks</b>						
S&P 500	Large Core	3.8%	12.0%	8.9%	14.7%	6.9%
Russell 1000	Large Core	3.8%	12.1%	8.6%	14.7%	7.1%
Russell 1000 Growth	Large Growth	1.0%	7.1%	8.6%	14.5%	8.3%
Russell 1000 Value	Large Value	6.7%	17.3%	8.6%	14.8%	5.7%
Russell 2000	Small Core	8.8%	21.3%	6.7%	14.5%	7.1%
Russell 2000 Growth	Small Growth	3.6%	11.3%	5.1%	13.7%	7.8%
Russell 2000 Value	Small Value	14.1%	31.7%	8.3%	15.1%	6.3%
<b>International Equity Benchmarks</b>						
MSCI ACWI Ex USA	World ex-US	-1.3%	4.5%	-1.8%	5.0%	1.0%
MSCI EAFE (Net) (USD)	Int'l Developed	-0.7%	1.0%	-1.6%	6.5%	0.7%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	7.1%	5.3%	5.5%	11.8%	2.2%
S&P EPAC Small Cap	Small Cap Int'l	-3.3%	1.7%	2.4%	10.7%	3.1%
MSCI EM	Emerging Equity	-4.2%	11.2%	-2.6%	1.3%	1.8%
<b>Domestic Fixed Income Benchmarks</b>						
Barclays Aggregate	Core Bonds	-3.0%	2.6%	3.0%	2.2%	4.3%
Barclays US High Yield	High Yield	1.8%	17.1%	4.7%	7.4%	7.5%
BofA ML US HY BB/B	High Yield	1.3%	14.7%	4.9%	7.1%	6.9%
CSFB Levered Loans	Bank Loans	2.3%	9.9%	3.8%	5.3%	4.3%
BofA ML US 3-Month T-Bill	Cash	0.1%	0.3%	0.1%	0.1%	0.8%
Barclays US TIPS 1-10 Yr	Inflation	-1.5%	4.0%	1.5%	0.7%	3.8%
<b>Global Fixed Income Benchmarks</b>						
Citigroup WGBI	World Gov. Bonds	-8.5%	1.6%	-0.8%	-1.0%	3.0%
Barclays Global Aggregate	Global Core Bonds	-7.1%	2.1%	-0.2%	0.2%	3.3%
BC Global Credit	Global Bonds	-4.4%	3.7%	1.0%	2.6%	3.9%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	-6.1%	9.9%	-4.1%	-1.3%	3.8%
JPM EMBI+	Em. Mkt. Bonds	-5.3%	9.6%	5.8%	5.1%	6.6%
<b>Alternative Benchmarks</b>						
Bloomberg Commodity Index	Commodities	2.7%	11.8%	-11.3%	-9.0%	-5.6%
Credit Suisse Hedge Fund Index	Hedge Fund	1.1%	1.3%	1.6%	4.4%	3.8%
HFRI FoF Conservative	Fund of Hedge Funds	2.0%	2.3%	1.9%	3.5%	1.3%
Cambridge PE Lagged*	Private Equity	3.7%	8.6%	10.7%	13.1%	10.8%
NCREIF ODCE Net Lagged*	Real Estate	1.8%	9.1%	11.4%	11.3%	5.0%
Wilshire REIT Index	REIT	-2.3%	7.2%	13.8%	12.0%	4.8%
CPI + 2%	Inflation/Real Assets	1.3%	4.1%	3.2%	3.4%	3.8%



\* As of 9/30/2016



### Global Equity

- **U.S. equities posted modest gains in the fourth quarter (+3.8%) according to the S&P 500. Volatility related to political change and economic uncertainty continued in the quarter.**
- **Small cap stocks outperformed large cap stocks during the quarter, with the Russell 2000 Index returning 8.8% and the Russell 1000 Index returning 3.8%.**
- **International equities underperformed U.S. markets during the quarter, returning -1.3%, as measured by the MSCI ACWI ex-U.S. Index. Emerging markets returned -4.2% as measured by the MSCI Emerging Markets Index in U.S. dollar terms.**
  - Developed international markets returned -0.7% in USD terms, while in local currency terms returned +7.1% as measured by the MSCI EAFE Index.

### Private Equity

- **Total fundraising in 2016 was as follows:**
  - Private equity fundraising totaled \$395.4 billion.
  - Buyout and Special Situations fundraising totaled \$219.7 billion.
    - While leverage multiples are nearly as high as pre-GFC levels, companies' abilities to service their debt is stronger than in prior years.
  - Venture capital fundraising totaled \$56.8 billion.
    - Fundraising continues to be strong, largest amounts since the dot-com era.
  - Fund of fund and multi-manager co-investment fundraising totaled \$52.8 billion.
  - Growth equity fundraising totaled \$23.9 billion.

### Fixed Income

- **The nominal yield curve steepened in Q4. Intermediate yields increased 79 –to- 85 basis points and long duration yields increased 74 basis points.**
- **The spread between two and 10-year rates increased to 125 basis points from 83 basis points in Q3. Treasury Inflation-Protected Securities, or TIPS, returned -1.5% during the quarter, as measured by the BBg Barclays US TIPS 1-10 Yr Index.**
- **The BBg Barclays Long Duration Credit Index lost -5.02% as the long end of the curve ended the quarter 74 basis points higher.**
- **Long Treasuries lost -11.67% and investment-grade US corporate debt lost -2.98%.**
- **The BBg Barclays 1-3 year Government/ Credit Index returned -0.39%. US high yield bonds gained +1.8% driven by Energy names and tighter spreads.**
- **Emerging markets debt sustained moderate losses.**
  - US dollar-denominated debt, as measured by the JP Morgan EMBI Index, lost -5.3%; local currency debt lost -6.1%, according to the JP Morgan GBI-EM BD Index.
  - Inflows in 2016 have not made up for outflows since 2013 in local currency EMD.

### Real Assets/Inflation-Linked Assets

- **Energy remains attractive.**
  - Private equity and debt opportunities are attractive.
  - Fire sale prices never materialized but focusing on assets outside of the hottest zip codes provides potential for strong returns as market normalizes.
- **Infrastructure – select opportunities to access growth markets.**
  - High quality assets are receiving premium bids from direct investors (Pension Funds and Sovereigns) with low costs of capital and long hold horizons; focus on mismanaged or niche opportunities.
- **Metals & Mining – have commodity prices bottomed?**
  - Peak capex occurred in 2012, lagging commodity price drops that began in 2011.
  - Diverse demand drivers for underlying commodity prices.
- **Timber – low return potential and limited opportunity for outperformance.**
- **Agriculture – near-term slowdown in price appreciation creates opportunity to invest in a strong (very) long term outlook supported by demographic trends.**

### Commodities

- **Commodities ended the quarter up +2.3% as measured by the Bloomberg Commodity Index.**
  - Weakness in Gold (lost -12.5%) in the fourth quarter outweighed by positive performance in the broader basket of commodities.

### Real Estate

- **NEPC continues to be neutral on core real estate in the US and remains positive on non-core real estate, that is, value-add and opportunistic strategies.**
- **Real estate fundamentals (rent growth, occupancy, net absorption) remain strong; however, valuations are high on an absolute and relative basis.**
  - Rising interest rates have been baked into existing valuations but excess cap rate expansion (beyond general expectations) will reset valuations.
- **Overall, the non-core real estate investment environment in the U.S. is normalizing; however, select areas remain attractive.**
- **REITs, at Q4, are trading below NAV but have been volatile and are still at historically high FFO multiples.**
- **Europe is viewed as the best place for a marginal dollar of non-core real estate investment.**
  - Current US-dollar denominated investors with currency exposure will feel near-term impact of Brexit, but new investors may benefit from a strong US-dollar. Long-term Brexit implications, however, are unclear.

**Extended US Economic Cycle**

**Economic cycles don't die of old age**

We believe the US economy is in an extended expansionary cycle despite being eight years removed from the last recession

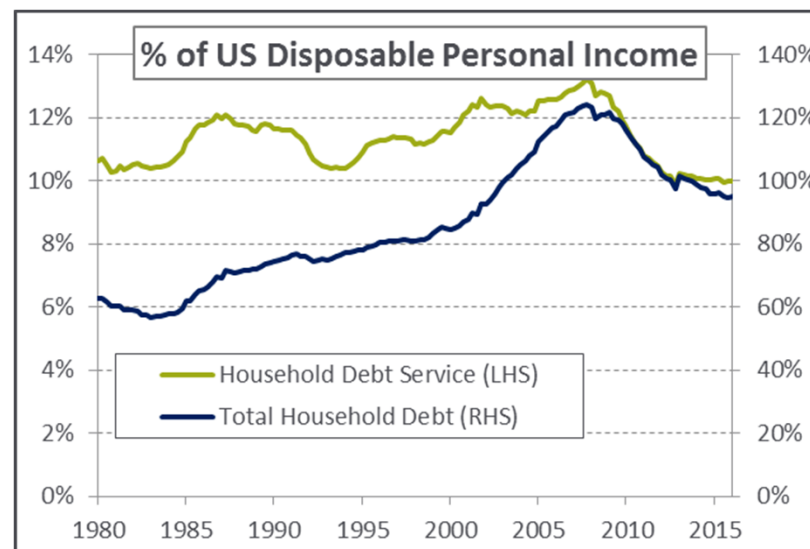
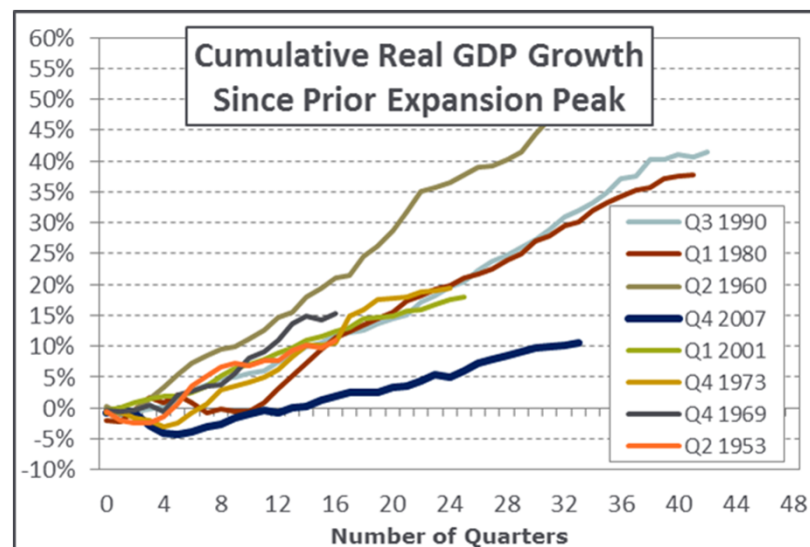
The health of US consumers continue to drive economic growth given relatively low debt levels

A prolonged US economic expansion can support a continued rally for US equities despite elevated valuation levels

**We anticipate inflation will shift marginally higher in the coming years**

Improvements in wage growth and the ongoing recovery in housing further support modest upticks in inflation

The strength of the US dollar is likely to restrain inflationary pressures and offset the potential impact of fiscal stimulus in the US



Source: (Top) Federal Reserve Bank of St. Louis  
Source: (Bottom) FRED

## Extended US Economic Cycle

### US recession concerns are muted

The US economy is likely to experience slow and steady growth as excess capacity is gradually absorbed by the economy

The labor market recovery has been robust but excess capacity remains as many have yet to return to the workforce

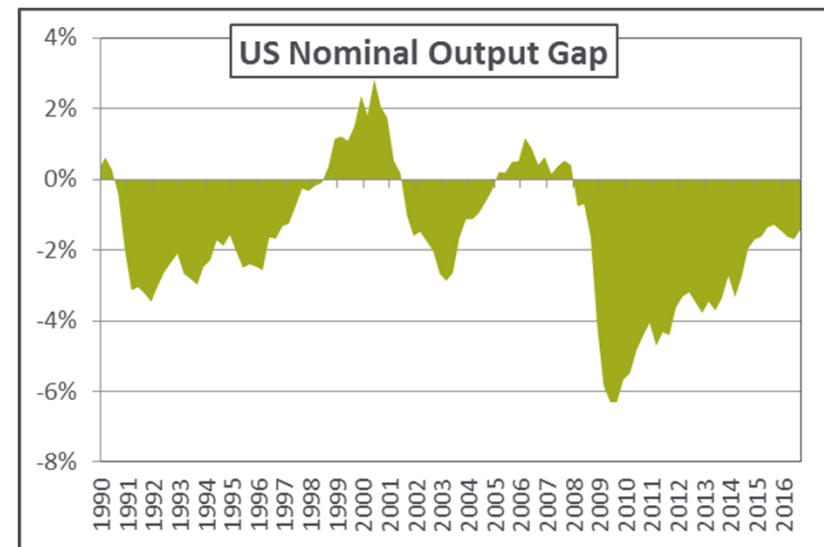
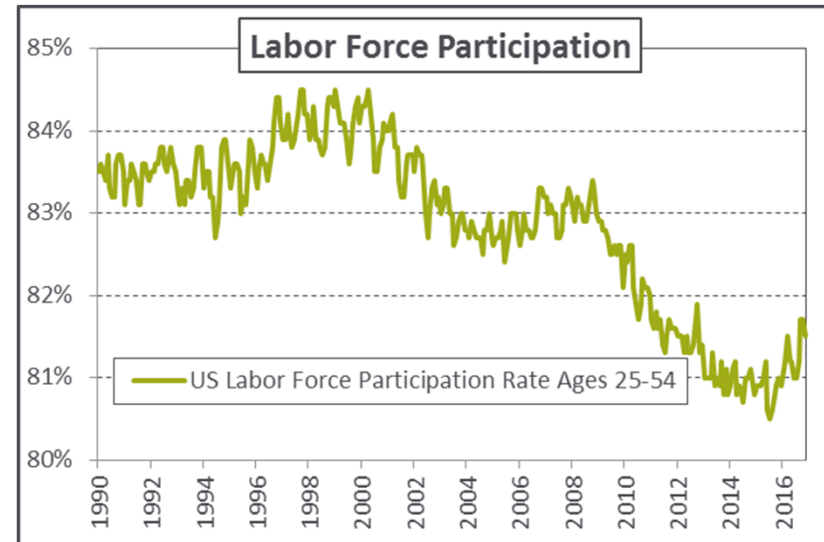
US dollar strength and corporate profitability trends are the primary sources of concern for potential weakness

### Fiscal stimulus unlikely to push economic growth into a higher gear

Tax cuts and infrastructure spending modestly improve the US growth profile

The potential of higher US growth is likely muted by corresponding dollar strength

US stimulus may benefit non-US developed economies as marginally higher US growth weakens their currencies and improves competitiveness



Source: (Top) FRED  
Source: (Bottom) Congressional Budget Office, Bloomberg

**Federal Reserve Gradualism**

**The Federal Reserve is expected to slowly increase interest rates**

Expected path of Fed policy through 2019 matters more than timing of the next hike

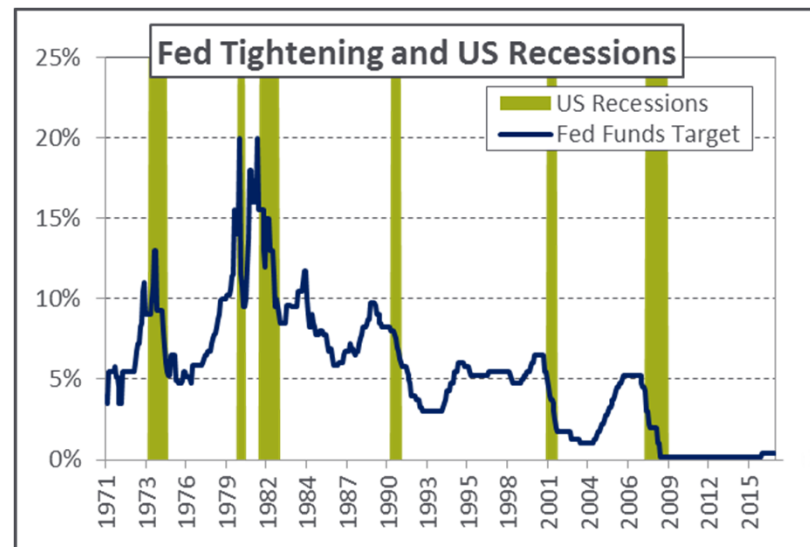
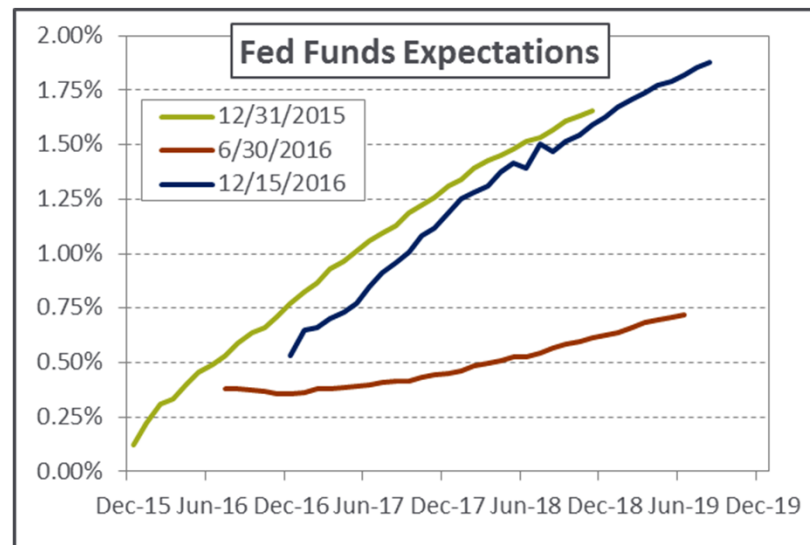
Fed has stated a willingness to let the economy “run hot” and accept some inflation to repair the deflationary effects of the past eight years

A relatively accommodative Fed is likely to continue, unless there is a dramatic acceleration in inflation

**Historically, rapid tightening of Fed policy precedes a US recession**

Tighter monetary policy slows inflation by decreasing economic activity

The Fed’s monetary policy statements are closely scrutinized and deviations from “lower for longer” can materially impact the market outlook



Source: (Top) Federal Reserve, Bloomberg  
Source: (Bottom) Federal Reserve, NBER, Bloomberg



**Federal Reserve Gradualism**

**US dollar strength is interconnected with Federal Reserve policy**

The US dollar is sensitive to changes in Fed rate expectations and interest rate differentials relative to the rest of the world

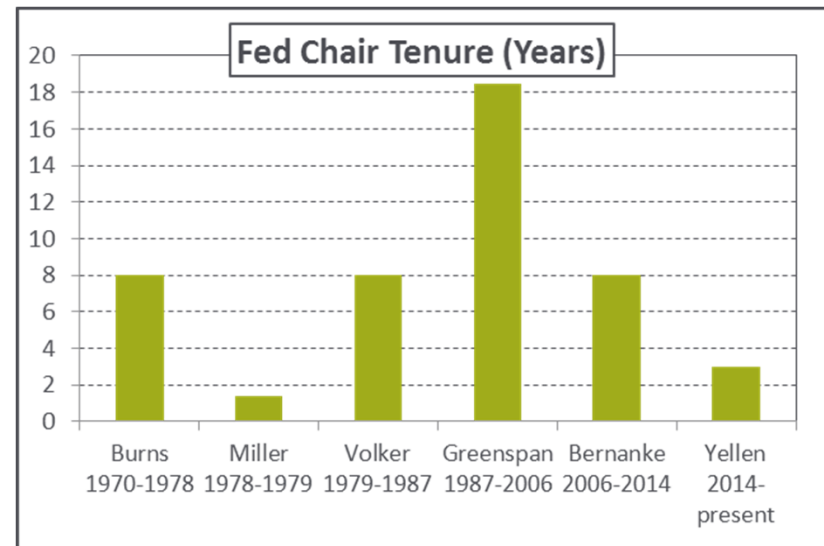
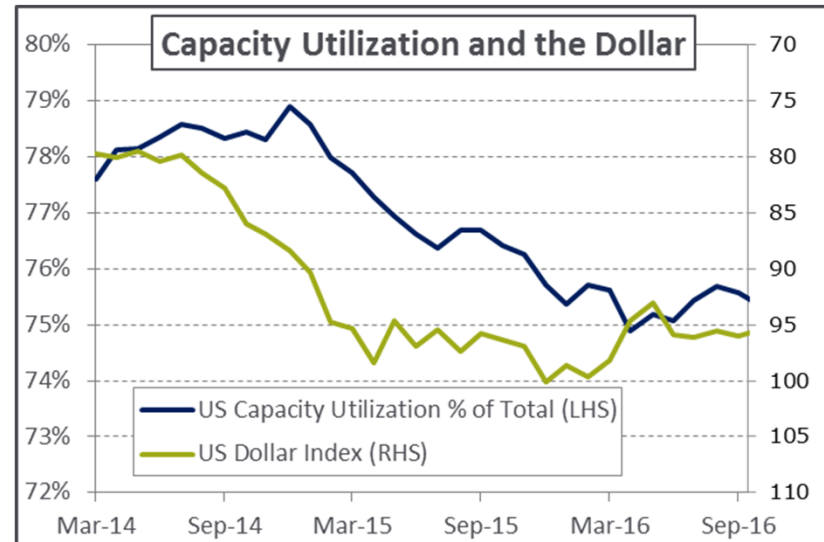
Fed must balance the path of future interest rate increases with the disruptive effects of a strong dollar on global markets

Dollar strength weakens the outlook for US corporate earnings and rapid dollar appreciation likely strains US profit margins

**2017 is likely to be a year for greater uncertainty regarding Fed policy**

Politics could intersect with Fed policy due to more vocal executive branch and conclusion of Janet Yellen’s term in February 2018

The path of Fed rate hikes in 2017 and beyond is less clear due to the potential impact of fiscal stimulus



Source: (Top) Federal Reserve, Bloomberg  
Source: (Bottom) Federal Reserve

**China Transitions**

**The PBOC is tasked with straddling a delicate path as the economy evolves**

China maintains control of its currency and monetary policy but would have to make concessions to open its capital account and allow the free movement of capital

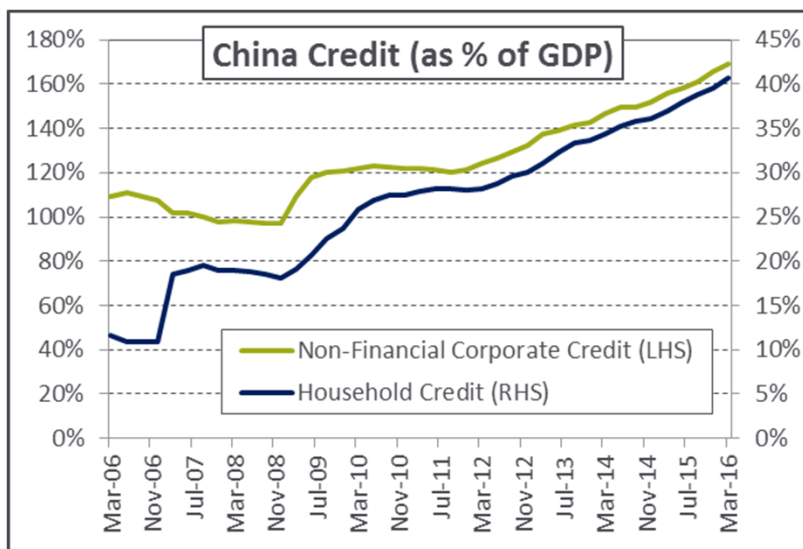
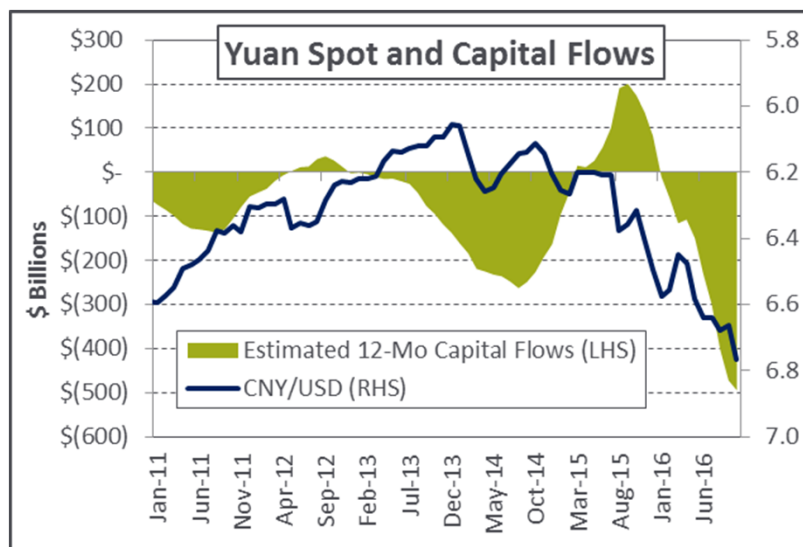
Restrictions on capital markets are slowly being eased, with an eye towards limiting social disruption

Concerns of a rapid currency devaluation have forced a more managed transition process that likely delays the opening of equity and bond markets to global investors

**Managed policy transitions come with significant risks which require balance**

Fiscal policy: Consequences of unsustainable credit growth if too accommodative or a hard economic landing if too austere

Monetary policy: Potential for asset price bubbles in real estate and capital markets if policy changes slowly or move rapidly and spur capital flight



Source: (Top) SAFE, Bloomberg  
Source: (Bottom) Bank for International Settlements

## Globalization Backlash

### Weak economic growth and uneven wage gains over the last decade have fueled political discontent in the West

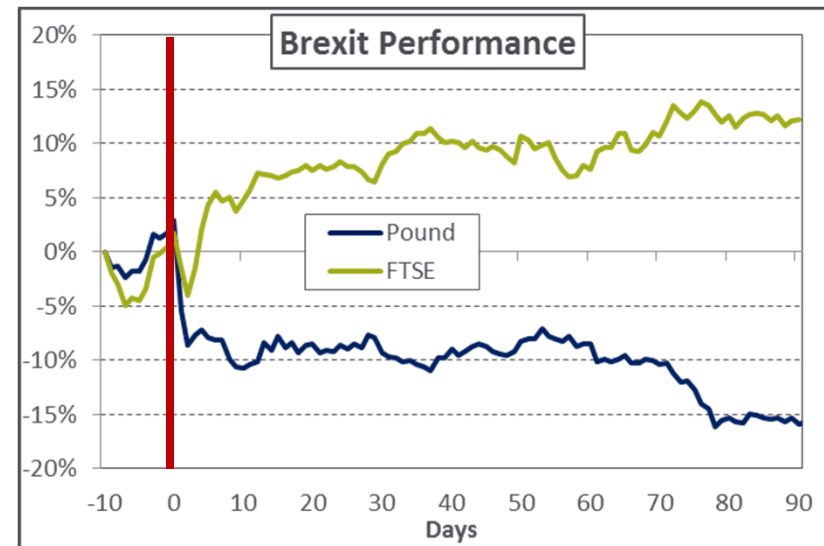
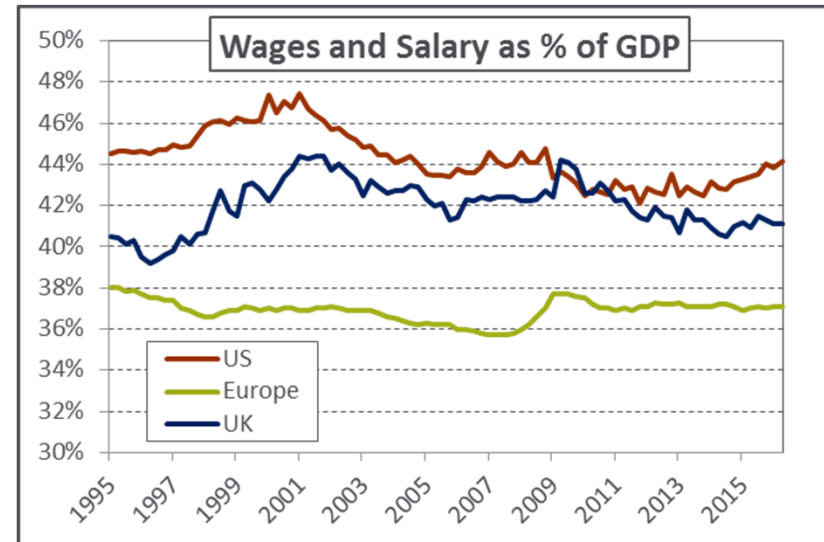
The backlash against globalization does not materially alter the fundamentals of the global capital markets, but does increase economic and market uncertainty

### Populist movements destabilize the established political order but are not inevitably bearish for equity markets

Political uncertainty intensifies currency volatility and in cases of depreciation may stimulate local equity markets (e.g. UK)

May bring increased fiscal spending and higher inflation, a welcome benefit for developed market economies

However, a shift away from political orthodoxy heightens low probability political tail-risks such as a US-China trade war or a dissolution of the euro



Source: (Top) Bureau of Economic Analysis, Eurostat, Bloomberg  
Source: (Bottom) Bloomberg

# Highlights of Fourth Quarter Happenings at NEPC

December 2016

## NEPC Insights

- NEPC's Election Perspective: The Race to the Bottom (October 2016)
- Interest Rate Risk and Asset/Liability Management for Cash Balance Plans (October 2016)
- 2016 3<sup>rd</sup> Quarter Market Thoughts (October 2016)
- Behind The Curtain: Operational Capabilities Are A Must for OCIOs (November 2016)
- NEPC's 2016 Hedge Fund Operational Due Diligence Survey Results (November 2016)
- NEPC Market Chatter: To PE or not to PE... That is the Question (November 2016)
- Caution: Construction Ahead – Healthcare Organizations Use Private Equity Investments to Support Innovation (December 2016)



## Upcoming Events

NEPC's 22<sup>nd</sup> Annual Investment Conference will be held on May 9-10, 2017 at the InterContinental Hotel in Boston, MA. Details to come in the upcoming months!



## NEPC Gives Back

- NEPC employees sorted and prepared 6,853 pounds of food during a volunteer day at the Greater Boston Food Bank, an organization that works to end hunger in the area by providing people in need with healthy food and resources.
- During the month of November, NEPC's November team raised over \$5,000 to support men's health research.
- In support of Breast Cancer Awareness Month, NEPC employees wore their favorite pair of jeans with a purpose and participated in the American Cancer Society Denim Day by sporting denim and the color pink. Together, we raised over \$2,500.
- As part of our Annual United Way campaign, over 50 NEPC employees assembled Literacy Kits for children during the holiday season. The kits were filled with developmental games, arts and crafts supplies, and reading materials.

## Webinar Replays

- Investor Insights – Perspectives on the 2016 US Election (November 2016)
- Defined Benefit Plan Trends Survey Results (December 2016)
- Digging Deeper on ESG (December 2016)

To download NEPC's recent white papers and webinar replays, visit: [www.NEPC.com/research](http://www.NEPC.com/research)

## Client Awards

We'd like to congratulate the following clients for their recent award wins at *Chief Investment Officer's* 7th Annual 2016 Industry Innovation Awards:

- Texas Tech University System's CIO, Tim Barrett as 2016 recipient of the Endowment Award
- MoDot & Patrol Employees' Retirement System's CIO, Larry Krummen as the 2016 recipient of the Public Defined Benefit Plan Below \$15 Billion Award
- State of Wisconsin Investment Board's CIO, David Villa as the 2016 recipient of the Public Defined Benefit Plan Above \$100 Billion Award



MARK YOUR CALENDAR!

# Total Fund Performance Summary

# Ventura County Employees' Retirement Association

## Total Fund Performance Summary (Net)

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank	Return	Since
<b>Total Fund</b>	<b>\$4,668,717,739</b>	<b>1.2%</b>	<b>32</b>	<b>4.9%</b>	<b>44</b>	<b>8.6%</b>	<b>15</b>	<b>4.6%</b>	<b>37</b>	<b>9.0%</b>	<b>14</b>	<b>5.0%</b>	<b>37</b>	<b>7.9%</b>	<b>Apr-94</b>
Policy Index		1.2%	31	4.9%	42	8.4%	25	5.3%	13	9.1%	13	5.3%	17	7.9%	Apr-94
Allocation Index		1.6%	13	5.3%	27	8.5%	24	4.9%	26	8.5%	38	4.9%	43	--	Apr-94
60% MSCI ACWI (Net)/40% CITI WGBI		-2.8%	99	0.4%	99	5.5%	95	1.7%	97	5.3%	95	3.7%	91	--	Apr-94
InvestorForce Public DB > \$1B Net Median		0.8%		4.6%		7.7%		4.1%		8.1%		4.8%		7.2%	Apr-94

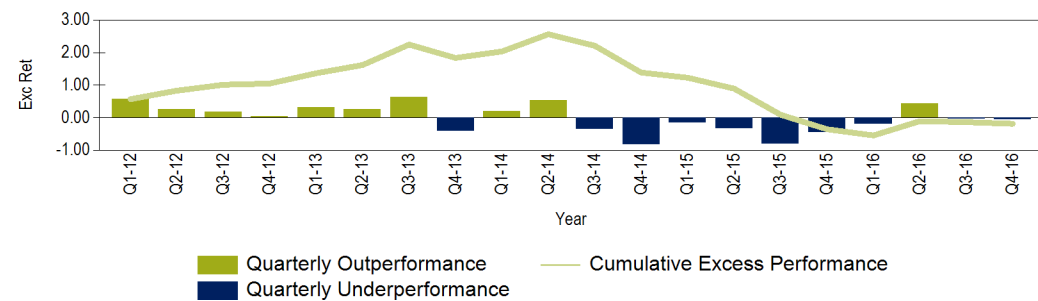
- For the five-year period ending December 31, 2016, the Fund returned 9.0%, trailing the policy index by 0.1% and ranking in the 14th percentile of its peers and outperforming the actuarial assumed rate of 7.5%. The Fund's volatility, as measured by standard deviation, ranked in the 78th percentile of its peers, and the risk-adjusted return, or Sharpe Ratio, ranks in the 43rd percentile. This means that the Fund has earned more return per unit of volatility taken than 57% of its peers.

- For the three-year period, the Fund returned 4.6%, trailing the policy index by 0.7% and ranking in the 37th percentile of its peers. The Fund's volatility ranks in the third quartile of its peers over this period, with the Fund's Sharpe Ratio ranking in the 46th percentile.

- For the one-year period, the Fund returned 8.6%, outperforming the policy index by 0.2% and ranking in the 15th percentile of the InvestorForce Public Funds > \$1 Billion Universe (Net of Fees).

- For the one-year period, the Fund experienced a net investment gain of \$386 million, which includes a net investment gain of \$61 million in the quarter. Assets increased from \$4.29 billion one year ago to \$4.67 billion.

### Quarterly and Cumulative Excess Performance



### 3 Years Ending December 31, 2016

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Total Fund	4.6%	37	6.9%	75	0.6	46	1.2	36
Policy Index	5.3%	13	6.6%	68	0.8	26	1.3	20
InvestorForce Public DB > \$1B Net Median	4.1%	--	6.2%	--	0.6	--	1.1	--

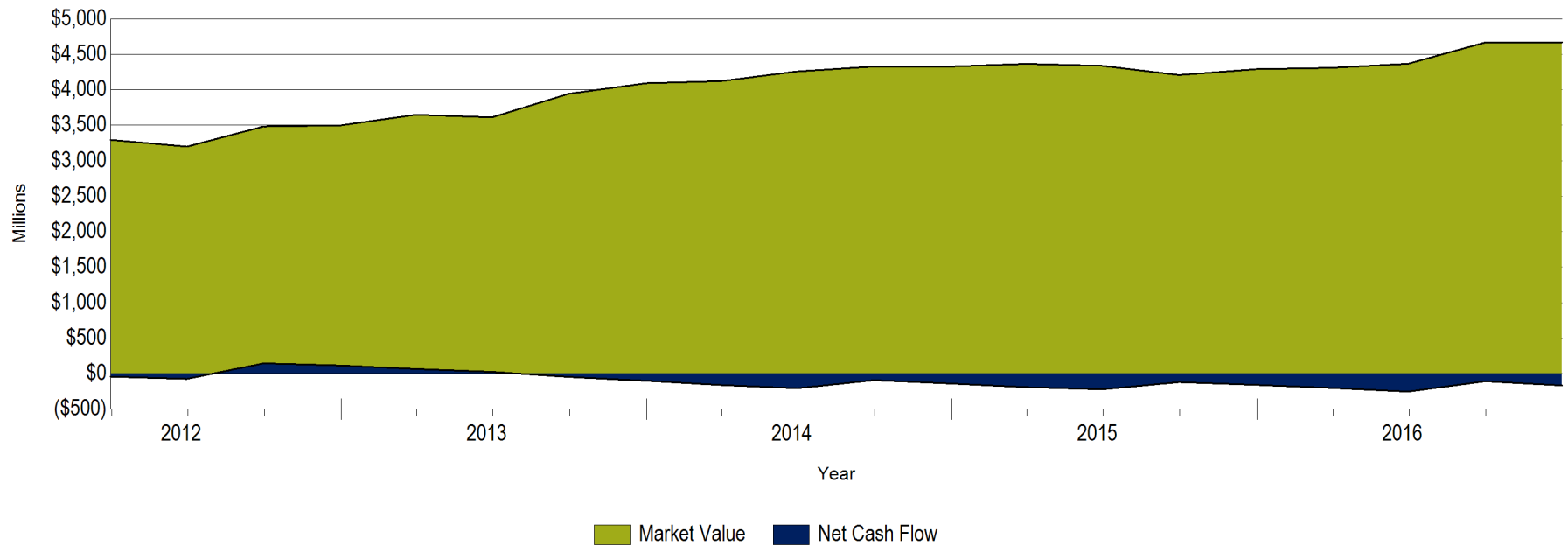
### 5 Years Ending December 31, 2016

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Total Fund	9.0%	14	7.0%	78	1.3	43	2.0	28
Policy Index	9.1%	13	6.9%	72	1.3	36	2.0	33
InvestorForce Public DB > \$1B Net Median	8.1%	--	6.3%	--	1.2	--	1.8	--

Policy Index as of January 2016: 28% Russell 3000, 20% Barclays Aggregate, 15% MSCI ACWI ex U.S., 10% MSCI ACWI, 10% DJ U.S. Total Stock Market Index + 3%, 10% CPI+4% Index, and 7% NCREIF ODCE Real Estate Index.

**Total Fund Asset Growth Summary**

**Market Value History**  
5 Years Ending December 31, 2016

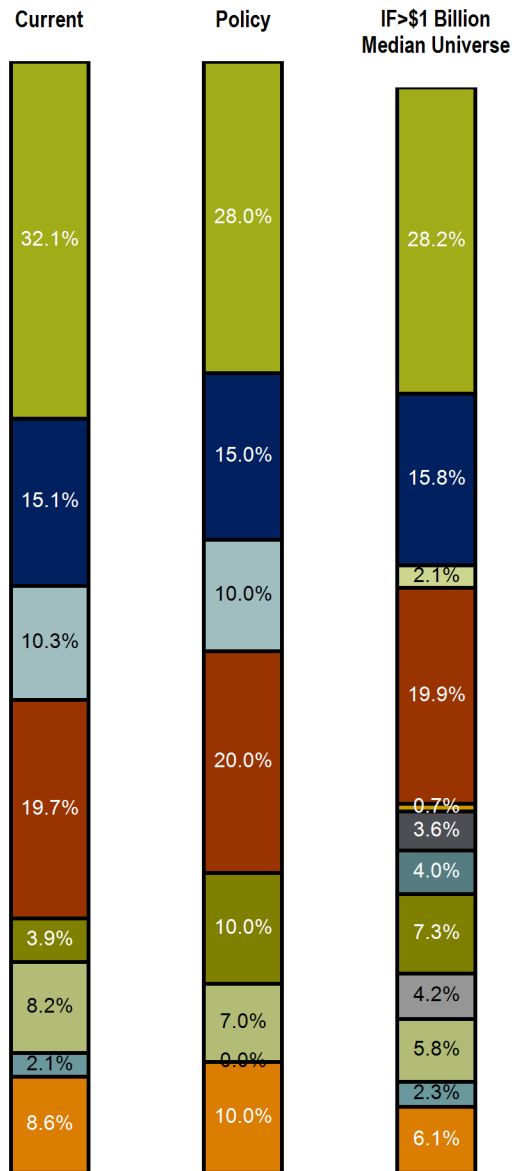


**Summary of Cash Flows**

	Last Three Months	Fiscal Year-To-Date	One Year	Three Years	Five Years
Beginning Market Value	\$4,666,540,419	\$4,367,190,644	\$4,290,811,595	\$4,092,440,847	\$3,069,762,197
Net Cash Flow	-\$58,429,267	\$86,849,161	-\$8,084,147	-\$65,733,390	-\$166,782,939
Net Investment Change	\$60,606,587	\$214,677,933	\$385,990,291	\$642,010,281	\$1,765,738,481
Ending Market Value	\$4,668,717,739	\$4,668,717,739	\$4,668,717,739	\$4,668,717,739	\$4,668,717,739



Total Fund Asset Allocation vs. Policy Targets



	Current	Current	Policy	Difference*	Policy Range	Within Range
U.S. Equity	\$1,497,012,239	32.1%	28.0%	4.1%	24.0% - 32.0%	No
Non-US Equity	\$703,258,824	15.1%	15.0%	0.1%	12.0% - 18.0%	Yes
Emerging Markets Equity	--	--	--	0.0%	--	--
Global Equity	\$481,253,407	10.3%	10.0%	0.3%	7.0% - 13.0%	Yes
U.S. Fixed Income	\$918,240,759	19.7%	20.0%	-0.3%	16.0% - 24.0%	Yes
Fixed Income - Emerging	--	--	--	0.0%	--	--
Fixed Income - Global	--	--	--	0.0%	--	--
Global Asset Allocation	--	--	--	0.0%	--	--
Private Equity	\$183,125,480	3.9%	10.0%	-6.1%	0.0% - 12.0%	Yes
Hedge Funds	--	--	--	0.0%	--	--
Real Estate	\$382,552,273	8.2%	7.0%	1.2%	4.0% - 10.0%	Yes
Cash	\$99,623,281	2.1%	0.0%	2.1%	0.0% - 3.0%	Yes
Liquid Alternatives	\$403,651,475	8.6%	10.0%	-1.4%	5.0% - 15.0%	Yes
<b>Total</b>	<b>\$4,668,717,739</b>	<b>100.0%</b>	<b>100.0%</b>			

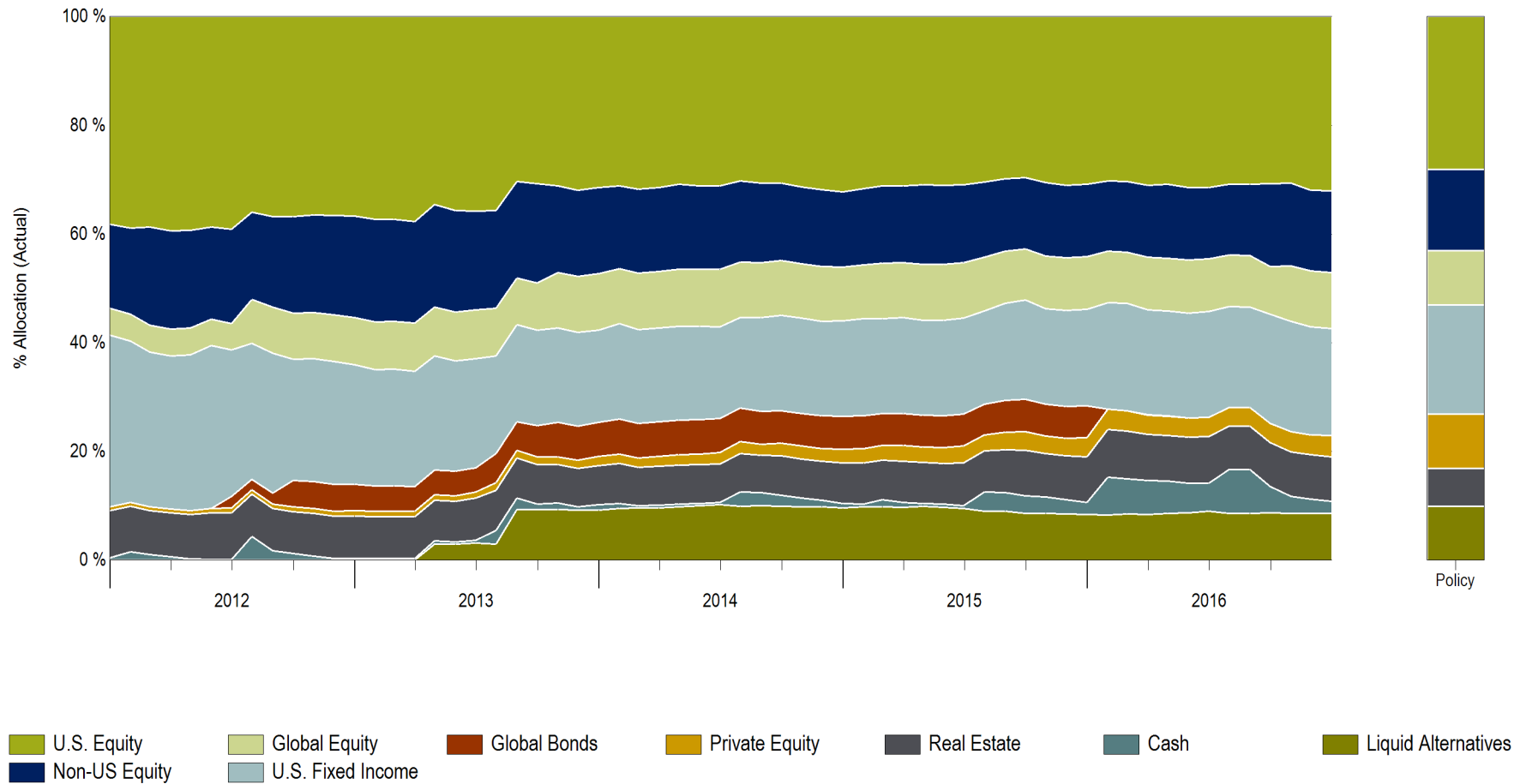
\*Difference between Policy and Current Allocation

Cash represents asset in Parametric Overlay.

Policy Index as of January 2016: 28% Russell 3000, 20% Barclays Aggregate, 15% MSCI ACWI ex U.S., 10% MSCI ACWI, 10% DJ U.S. Total Stock Market Index + 3%, 10% CPI+4% Index, and 7% NCREIF ODCE Real Estate Index.

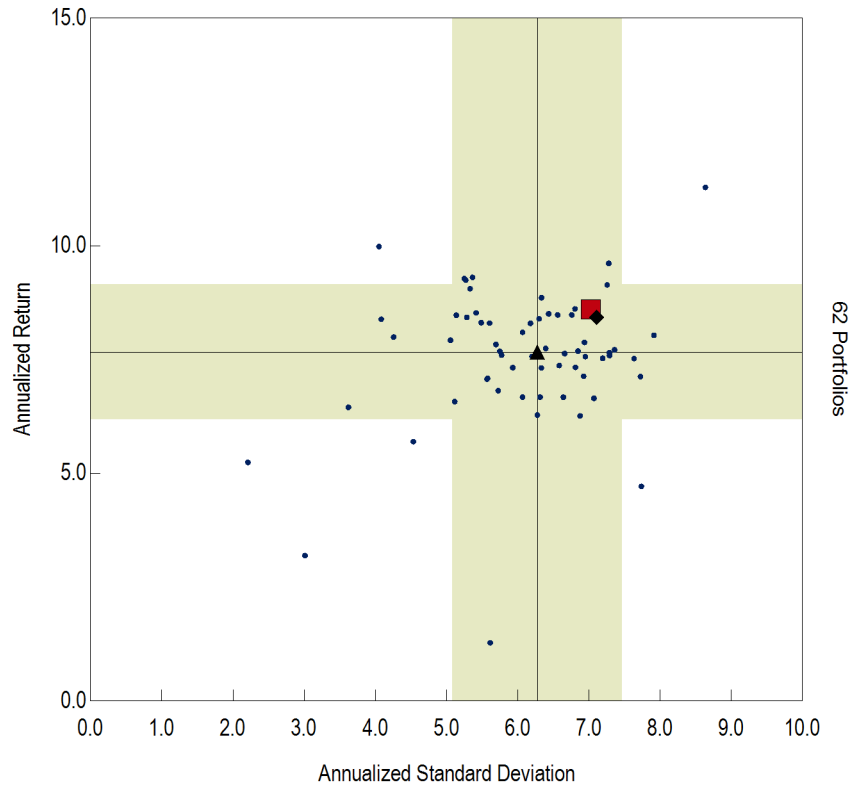
**Total Fund Allocation History**

Asset Allocation History  
5 Years Ending December 31, 2016



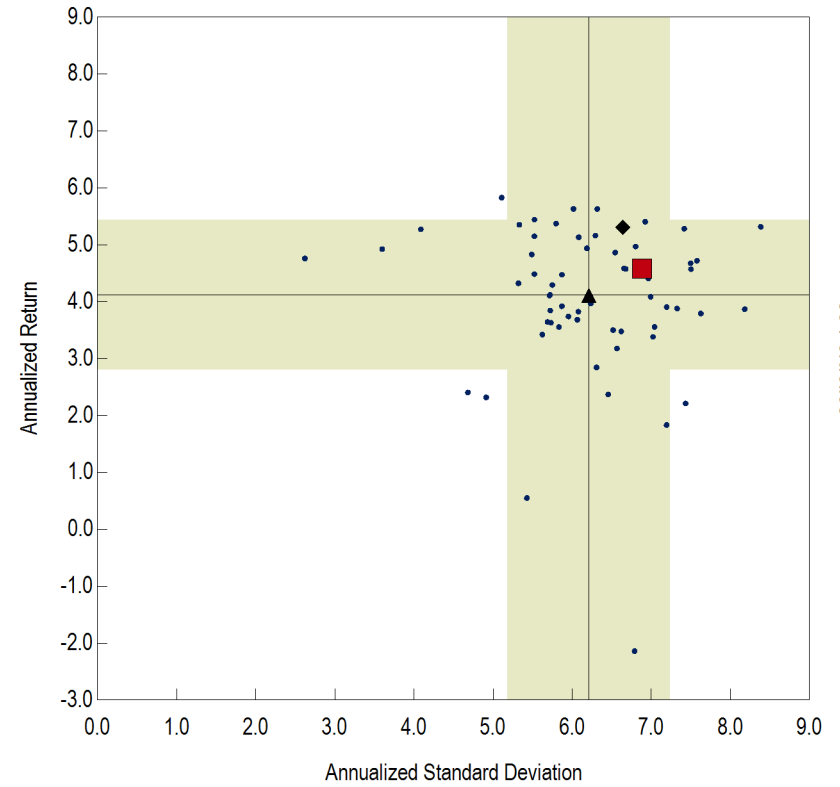
Policy Index shown is most recently approved index

1 Years Ending December 31, 2016



- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Net

3 Years Ending December 31, 2016

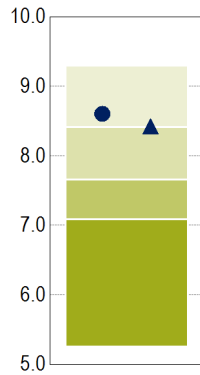


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Net

Total Fund Risk Statistics vs. Peer Universe

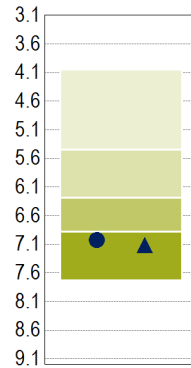
Total Fund vs. InvestorForce Public DB > \$1B Net  
1 Year

Anlzd Return



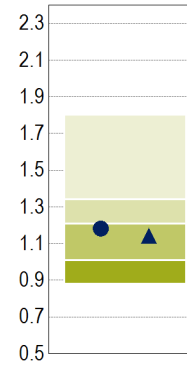
● Total Fund	
Value	8.6
Rank	15
▲ Policy Index	
Value	8.4
Rank	25
Universe	
5th %tile	9.3
25th %tile	8.4
Median	7.7
75th %tile	7.1
95th %tile	5.3

Anlzd Standard Deviation



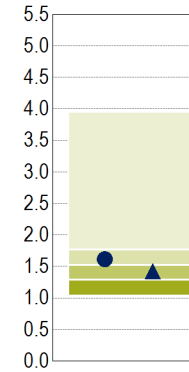
● Total Fund	
Value	7.0
Rank	82
▲ Policy Index	
Value	7.1
Rank	83
Universe	
5th %tile	4.1
25th %tile	5.4
Median	6.3
75th %tile	6.9
95th %tile	7.7

Sharpe Ratio



● Total Fund	
Value	1.2
Rank	55
▲ Policy Index	
Value	1.1
Rank	61
Universe	
5th %tile	1.8
25th %tile	1.3
Median	1.2
75th %tile	1.0
95th %tile	0.9

Sortino Ratio

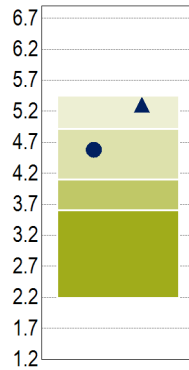


● Total Fund	
Value	1.6
Rank	42
▲ Policy Index	
Value	1.4
Rank	65
Universe	
5th %tile	4.0
25th %tile	1.8
Median	1.5
75th %tile	1.3
95th %tile	1.0

Total Fund Risk Statistics vs. Peer Universe

Total Fund vs. InvestorForce Public DB > \$1B Net  
3 Years

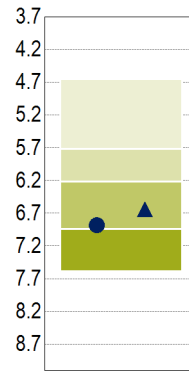
Anlzd Return



● Total Fund	
Value	4.6
Rank	37
▲ Policy Index	
Value	5.3
Rank	13

Universe	
5th %tile	5.4
25th %tile	4.9
Median	4.1
75th %tile	3.6
95th %tile	2.2

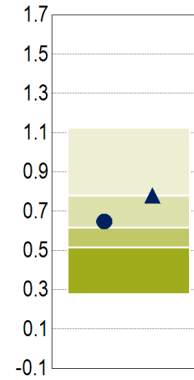
Anlzd Standard Deviation



● Total Fund	
Value	6.9
Rank	75
▲ Policy Index	
Value	6.6
Rank	68

Universe	
5th %tile	4.7
25th %tile	5.7
Median	6.2
75th %tile	6.9
95th %tile	7.6

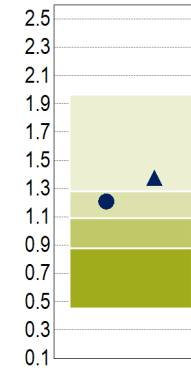
Sharpe Ratio



● Total Fund	
Value	0.6
Rank	46
▲ Policy Index	
Value	0.8
Rank	26

Universe	
5th %tile	1.1
25th %tile	0.8
Median	0.6
75th %tile	0.5
95th %tile	0.3

Sortino Ratio

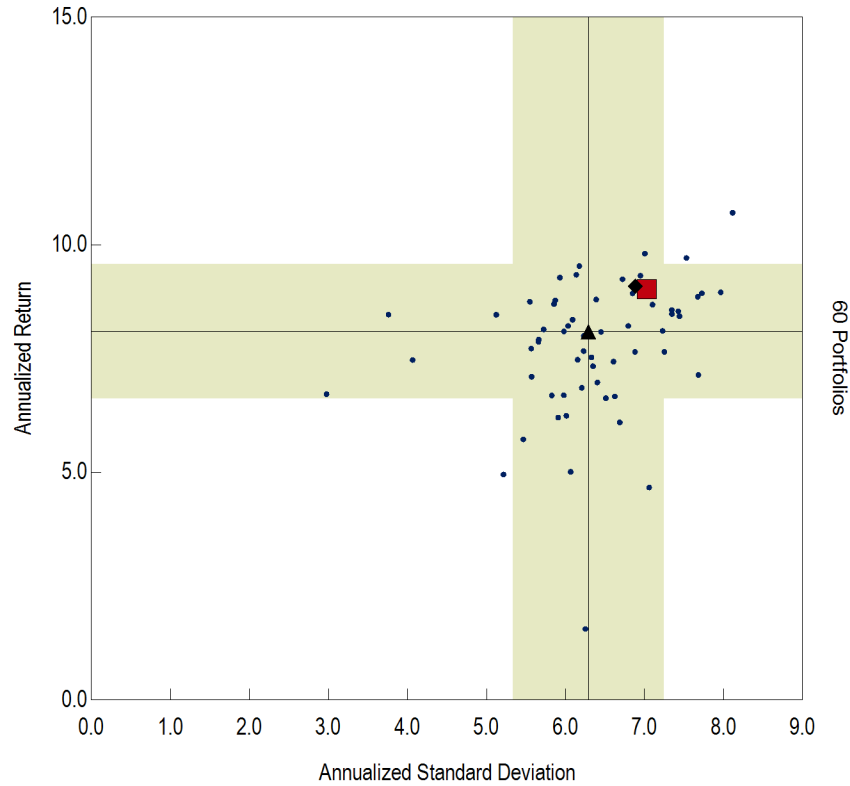


● Total Fund	
Value	1.2
Rank	36
▲ Policy Index	
Value	1.4
Rank	21

Universe	
5th %tile	2.0
25th %tile	1.3
Median	1.1
75th %tile	0.9
95th %tile	0.5

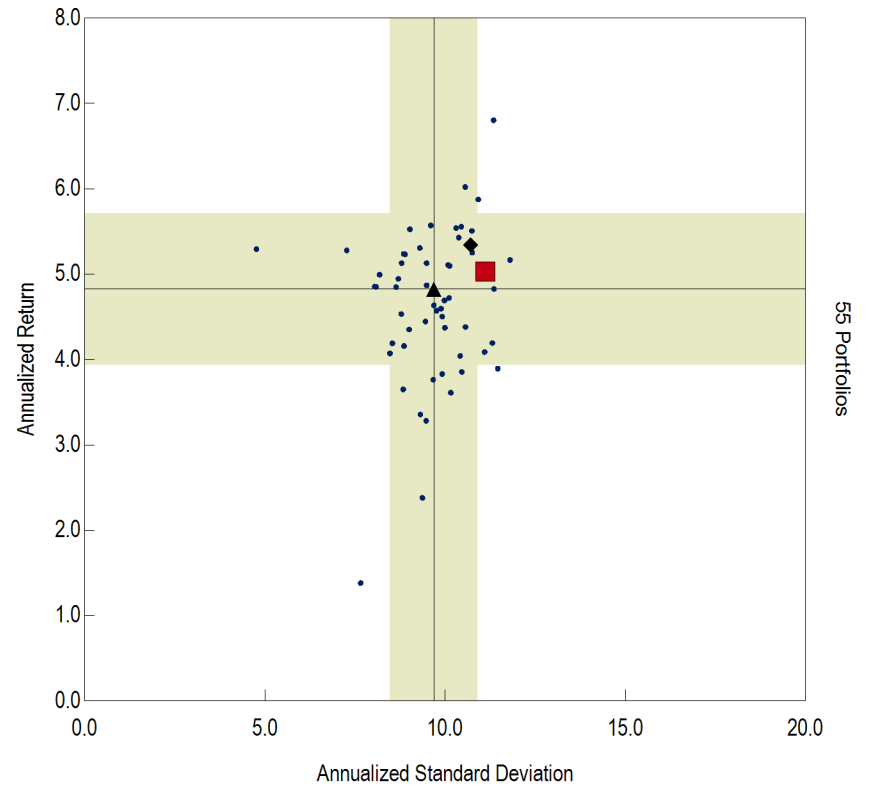
Total Fund Risk/Return

5 Years Ending December 31, 2016



- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Net

10 Years Ending December 31, 2016

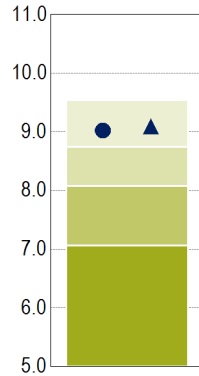


- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Net

Total Fund Risk Statistics vs. Peer Universe

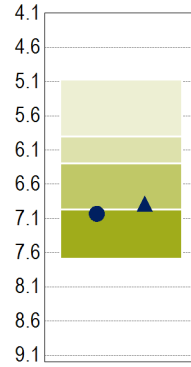
Total Fund vs. InvestorForce Public DB > \$1B Net  
5 Years

Anlzd Return



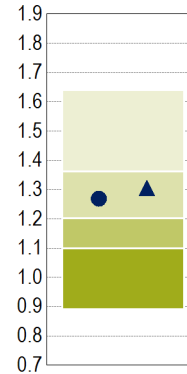
● Total Fund	
Value	9.0
Rank	14
▲ Policy Index	
Value	9.1
Rank	13
Universe	
5th %tile	9.5
25th %tile	8.8
Median	8.1
75th %tile	7.1
95th %tile	5.0

Anlzd Standard Deviation



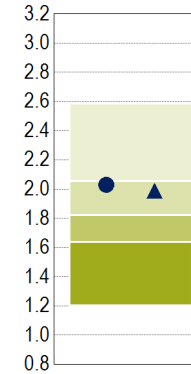
● Total Fund	
Value	7.0
Rank	78
▲ Policy Index	
Value	6.9
Rank	72
Universe	
5th %tile	5.1
25th %tile	5.9
Median	6.3
75th %tile	7.0
95th %tile	7.7

Sharpe Ratio



● Total Fund	
Value	1.3
Rank	43
▲ Policy Index	
Value	1.3
Rank	36
Universe	
5th %tile	1.6
25th %tile	1.4
Median	1.2
75th %tile	1.1
95th %tile	0.9

Sortino Ratio



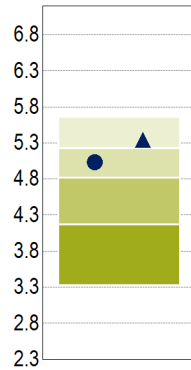
● Total Fund	
Value	2.0
Rank	28
▲ Policy Index	
Value	2.0
Rank	33
Universe	
5th %tile	2.6
25th %tile	2.1
Median	1.8
75th %tile	1.6
95th %tile	1.2



Total Fund Risk Statistics vs. Peer Universe

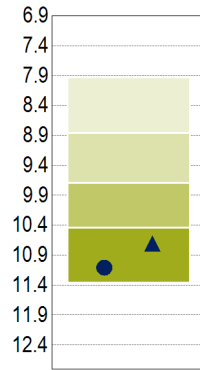
Total Fund vs. InvestorForce Public DB > \$1B Net  
10 Years

Anlzd Return



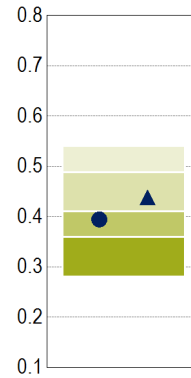
● Total Fund	
Value	5.0
Rank	37
▲ Policy Index	
Value	5.3
Rank	17
Universe	
5th %tile	5.7
25th %tile	5.2
Median	4.8
75th %tile	4.2
95th %tile	3.3

Anlzd Standard Deviation



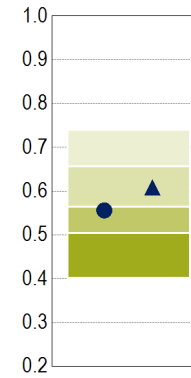
● Total Fund	
Value	11.1
Rank	91
▲ Policy Index	
Value	10.7
Rank	83
Universe	
5th %tile	7.9
25th %tile	8.9
Median	9.7
75th %tile	10.4
95th %tile	11.3

Sharpe Ratio



● Total Fund	
Value	0.4
Rank	68
▲ Policy Index	
Value	0.4
Rank	45
Universe	
5th %tile	0.5
25th %tile	0.5
Median	0.4
75th %tile	0.4
95th %tile	0.3

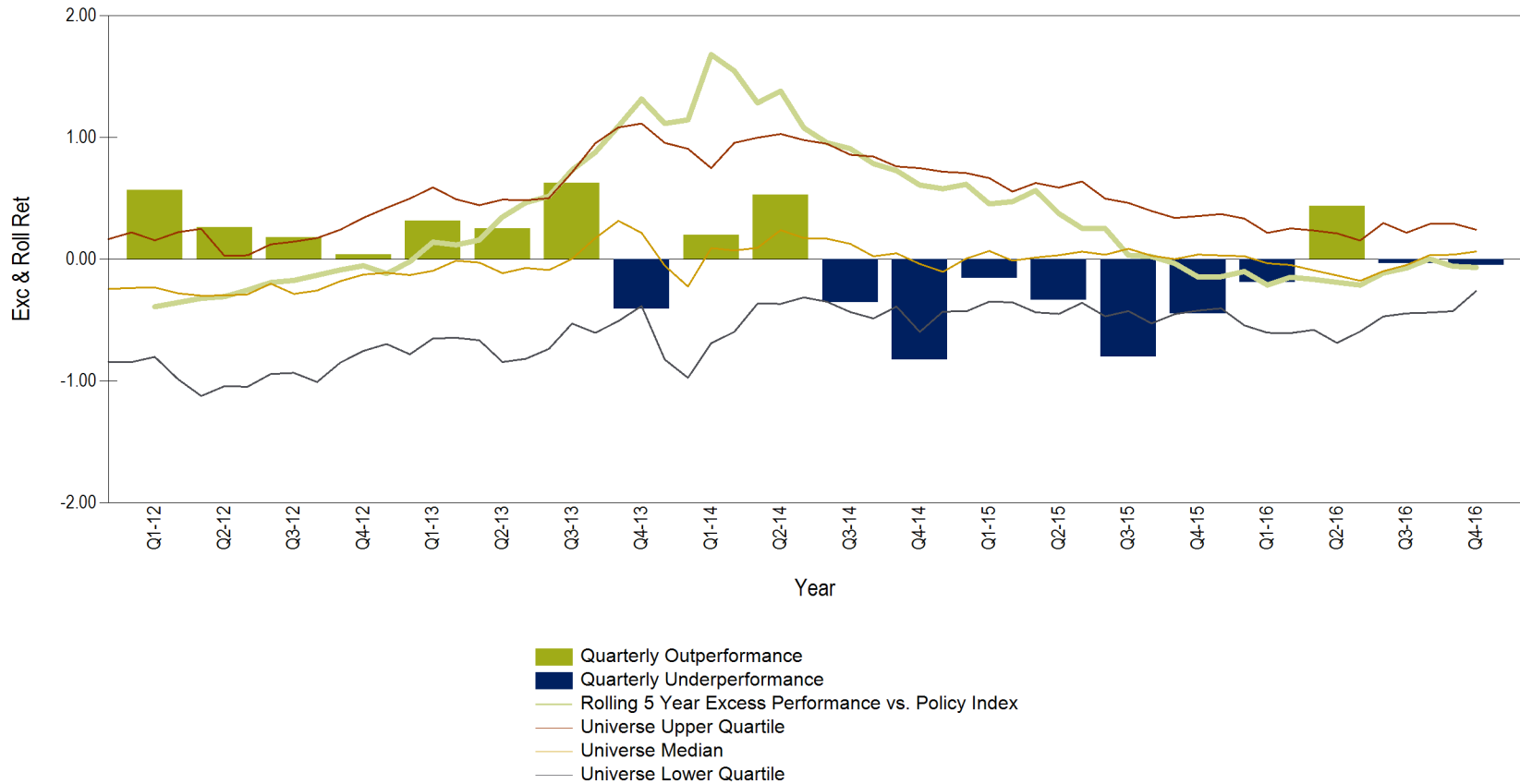
Sortino Ratio



● Total Fund	
Value	0.6
Rank	59
▲ Policy Index	
Value	0.6
Rank	39
Universe	
5th %tile	0.7
25th %tile	0.7
Median	0.6
75th %tile	0.5
95th %tile	0.4

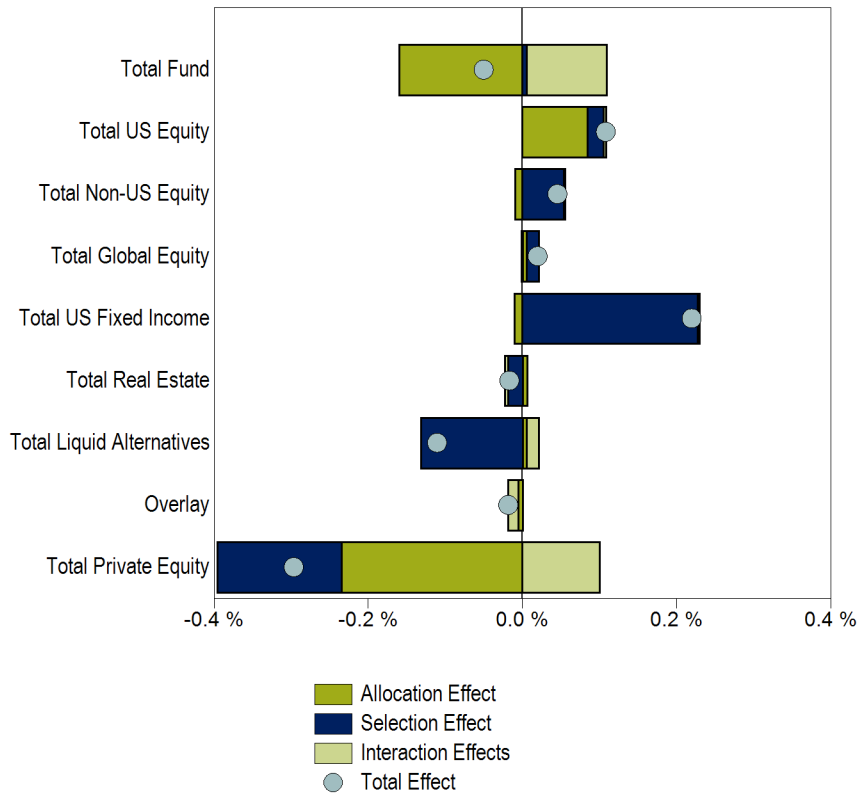
Rolling 5 Year Excess Returns- Net of Fees

Rolling Annualized Excess Performance



**Total Fund Attribution Analysis**

**Attribution Effects**  
3 Months Ending December 31, 2016

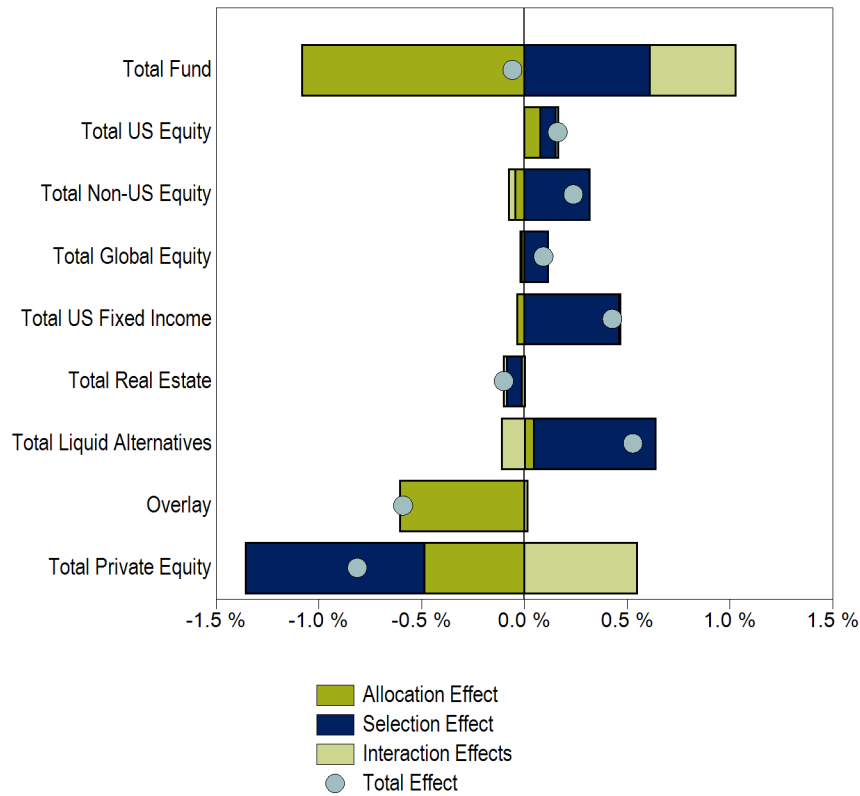


**Attribution Summary**  
3 Months Ending December 31, 2016

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total US Equity	4.3%	4.2%	0.1%	0.0%	0.1%	0.0%	0.1%
Total Non-US Equity	-0.9%	-1.3%	0.4%	0.1%	0.0%	0.0%	0.0%
Total Global Equity	1.3%	1.2%	0.1%	0.0%	0.0%	0.0%	0.0%
Total US Fixed Income	-1.9%	-3.0%	1.1%	0.2%	0.0%	0.0%	0.2%
Total Real Estate	1.6%	1.9%	-0.3%	0.0%	0.0%	0.0%	0.0%
Total Liquid Alternatives	-0.4%	1.0%	-1.3%	-0.1%	0.0%	0.0%	-0.1%
Overlay	-0.2%	0.1%	-0.3%	0.0%	0.0%	0.0%	0.0%
Total Private Equity	3.4%	4.9%	-1.5%	-0.2%	-0.2%	0.1%	-0.3%
<b>Total</b>	<b>1.2%</b>	<b>1.2%</b>	<b>-0.1%</b>	<b>0.0%</b>	<b>-0.2%</b>	<b>0.1%</b>	<b>-0.1%</b>

**Total Fund Attribution Analysis**

**Attribution Effects**  
1 Year Ending December 31, 2016

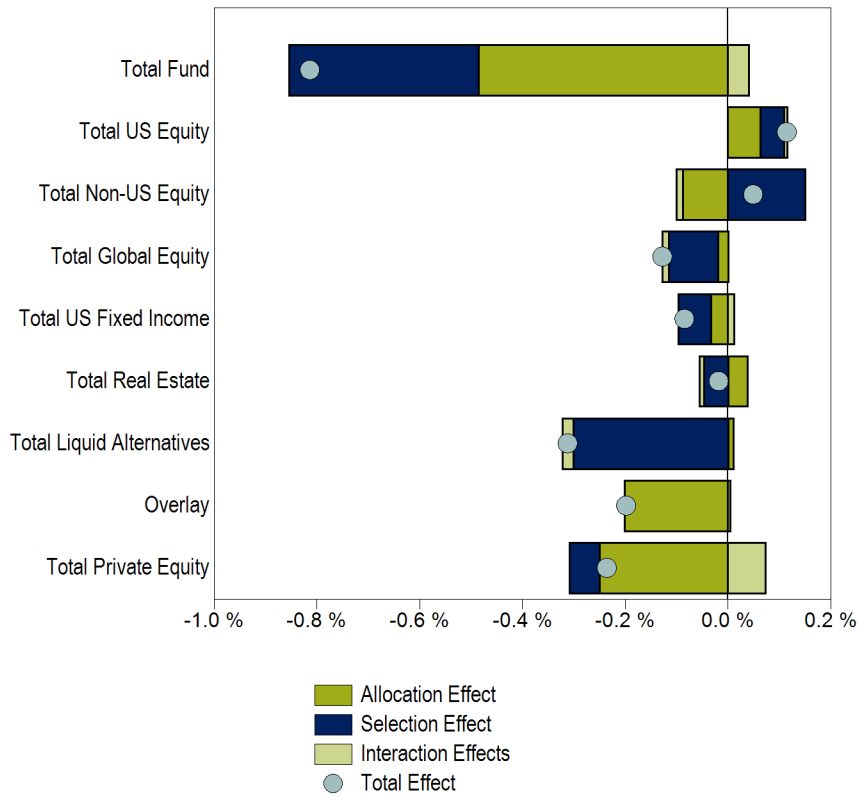


**Attribution Summary**  
1 Year Ending December 31, 2016

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total US Equity	13.0%	12.7%	0.3%	0.1%	0.1%	0.0%	0.2%
Total Non-US Equity	6.6%	4.5%	2.1%	0.3%	0.0%	0.0%	0.2%
Total Global Equity	9.0%	7.9%	1.1%	0.1%	0.0%	0.0%	0.1%
Total US Fixed Income	4.9%	2.6%	2.2%	0.5%	0.0%	0.0%	0.4%
Total Real Estate	6.8%	7.8%	-1.0%	-0.1%	0.0%	0.0%	-0.1%
Total Liquid Alternatives	11.7%	6.2%	5.6%	0.6%	0.0%	-0.1%	0.5%
Overlay	0.5%	0.3%	0.2%	0.0%	-0.6%	0.0%	-0.6%
Total Private Equity	7.6%	16.0%	-8.4%	-0.9%	-0.5%	0.5%	-0.8%
<b>Total</b>	<b>8.4%</b>	<b>8.4%</b>	<b>-0.1%</b>	<b>0.6%</b>	<b>-1.1%</b>	<b>0.4%</b>	<b>-0.1%</b>

**Total Fund Attribution Analysis**

**Attribution Effects**  
3 Years Ending December 31, 2016

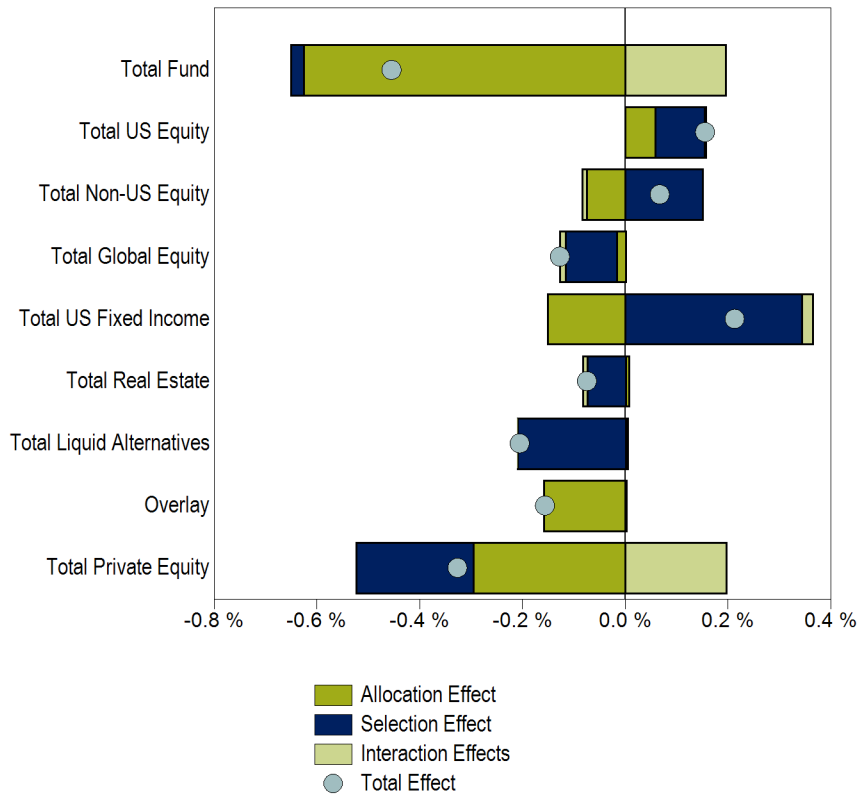


**Attribution Summary**  
3 Years Ending December 31, 2016

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total US Equity	8.5%	8.4%	0.2%	0.0%	0.1%	0.0%	0.1%
Total Non-US Equity	-0.7%	-1.8%	1.0%	0.1%	-0.1%	0.0%	0.0%
Total Global Equity	2.2%	3.1%	-0.9%	-0.1%	0.0%	0.0%	-0.1%
Total US Fixed Income	2.7%	3.0%	-0.3%	-0.1%	0.0%	0.0%	-0.1%
Total Real Estate	10.3%	11.0%	-0.7%	0.0%	0.0%	0.0%	0.0%
Total Liquid Alternatives	2.0%	5.2%	-3.2%	-0.3%	0.0%	0.0%	-0.3%
Overlay	0.1%	0.1%	0.0%	0.0%	-0.2%	0.0%	-0.2%
Total Private Equity	13.6%	11.6%	2.1%	-0.1%	-0.3%	0.1%	-0.2%
<b>Total</b>	<b>4.7%</b>	<b>5.3%</b>	<b>-0.7%</b>	<b>-0.4%</b>	<b>-0.5%</b>	<b>0.0%</b>	<b>-0.8%</b>

**Total Fund Attribution Analysis**

**Attribution Effects**  
5 Years Ending December 31, 2016



**Attribution Summary**  
5 Years Ending December 31, 2016

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total US Equity	14.9%	14.6%	0.3%	0.1%	0.1%	0.0%	0.2%
Total Non-US Equity	6.0%	5.0%	1.0%	0.2%	-0.1%	0.0%	0.1%
Total Global Equity	8.3%	9.4%	-1.1%	-0.1%	0.0%	0.0%	-0.1%
Total US Fixed Income	3.5%	2.2%	1.3%	0.3%	-0.2%	0.0%	0.2%
Total Real Estate	10.1%	11.2%	-1.0%	-0.1%	0.0%	0.0%	-0.1%
Total Liquid Alternatives	--	--	--	-0.2%	0.0%	0.0%	-0.2%
Overlay	--	--	--	0.0%	-0.2%	0.0%	-0.2%
Total Private Equity	13.8%	18.0%	-4.2%	-0.2%	-0.3%	0.2%	-0.3%
<b>Total</b>	<b>9.0%</b>	<b>9.2%</b>	<b>-0.3%</b>	<b>0.0%</b>	<b>-0.6%</b>	<b>0.2%</b>	<b>-0.5%</b>

# Ventura County Employees' Retirement Association

## Total Fund Risk Statistics

1 Year Ending December 31, 2016

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Tracking Error	Rank	Info Ratio	Rank	Beta
Total Equity	57.4%	10.6%	62	11.1%	30	2.9%	64	1.5%		1.8	8	1.0
MSCI ACWI	--	7.9%	76	11.2%	33		76	0.0%		--	--	1.0
Total US Equity	32.1%	13.0%	44	11.3%	32	0.2%	41	0.1%		2.6	2	1.0
Russell 3000	--	12.7%	45	11.3%	31		42	0.0%		--	--	1.0
Total Non-US Equity	15.1%	6.6%	14	12.7%	63	2.4%	17	1.4%	7	1.5	5	0.9
MSCI ACWI ex USA	--	4.5%	44	13.4%	88		53	0.0%		--	--	1.0
Total Global Equity	10.3%	9.0%	22	11.3%	65	1.1%	33	0.8%	4	1.3	10	1.0
MSCI ACWI	--	7.9%	30	11.2%	64		48	0.0%		--	--	1.0
Total Fixed Income	19.7%	4.9%	42	3.5%	66	3.8%	17	4.5%	93	0.6	46	0.4
BBgBarc Global Aggregate TR	--	2.1%	77	7.3%	99		74	0.0%		--	--	1.0
Total US Fixed Income	19.7%	4.9%	39	3.5%	68	2.8%	35	2.3%	73	1.0	49	0.8
BBgBarc US Aggregate TR	--	2.6%	69	3.7%	79		87	0.0%		--	--	1.0
Total Liquid Alternatives	8.6%	11.7%	--	9.1%	--	-15.6%	--	8.8%	--	0.6	--	4.6
CPI + 4% (Unadjusted)	--	6.2%	--	0.7%	--		--	0.0%	--	--	--	1.0

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Total Real Estate	8.2%	6.8%	84	2.8%	37
NCREIF ODCE Net	--	7.8%	64	3.2%	49
Total Private Equity	3.9%	7.6%	47	4.6%	56
DJ U.S. Total Stock Market Index + 3%	--	16.0%	1	11.3%	99

Total U.S. Equity Benchmark: Russell 3000 Index. Prior to January 2016, the Benchmark is a dynamic hybrid using the respective managers' market value weights within the U.S. Equity component toward their benchmark. Prior to May 2013, the Dow Jones U.S. Total Stock Market Index. Prior to May 2007, the Russell 3000 Index.

Total Non-U.S. Equity Benchmark: MSCI ACWI ex US Free, prior to May 2002, the MSCI EAFE.

Composite rankings are used for Total Equity (InvestorForce Public DB Total Eq consists of 88 portfolios), Total US Equity (InvestorForce Public DB US Eq consists of 166 portfolios), Total Non-US Equity (InvestorForce Public DB ex-US Eq consists of 126 portfolios), Total Global Equity (InvestorForce Public DB Gbl Eq consists of 32 portfolios), Total Fixed Income (InvestorForce Public DB Total Fix Inc consists of 103 portfolios), Total US Fixed Income (InvestorForce Public DB US Fix Inc consists of 93 portfolios), Total Real Estate (InvestorForce Public DB Real Estate Pub+Priv consists of 50 portfolios) and Total Private Equity (InvestorForce Public DB Private Eq consists of 29 portfolios).



# Ventura County Employees' Retirement Association

## Total Fund Risk Statistics

3 Years Ending December 31, 2016

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Tracking Error	Rank	Info Ratio	Rank	Beta
Total Equity	57.4%	4.9%	82	10.9%	24	1.9%	82	1.3%		1.3	10	1.0
MSCI ACWI	--	3.1%	91	11.2%	30		91	0.0%		--	--	1.0
Total US Equity	32.1%	8.5%	24	11.1%	24	0.1%	24	0.1%		1.9	1	1.0
Russell 3000	--	8.4%	26	11.0%	23		26	0.0%		--	--	1.0
Total Non-US Equity	15.1%	-0.7%	28	12.0%	45	0.9%	25	1.2%	5	0.9	6	0.9
MSCI ACWI ex USA	--	-1.8%	69	12.7%	79		57	0.0%		--	--	1.0
Total Global Equity	10.3%	2.2%	74	11.3%	64	-0.9%	99	1.2%	8	-0.8	99	1.0
MSCI ACWI	--	3.1%	71	11.2%	63		86	0.0%		--	--	1.0
Total Fixed Income	19.7%	2.3%	55	2.5%	40	2.3%	7	3.3%	83	0.8	6	0.4
BBgBarc Global Aggregate TR	--	-0.2%	99	5.0%	99		63	0.0%		--	--	1.0
Total US Fixed Income	19.7%	2.7%	65	2.4%	28	1.0%	32	2.2%	82	-0.1	73	0.6
BBgBarc US Aggregate TR	--	3.0%	53	3.0%	59		76	0.0%		--	--	1.0
Total Liquid Alternatives	8.6%	2.0%	--	10.3%	--	-11.9%	--	10.0%	--	-0.3	--	2.7
CPI + 4% (Unadjusted)	--	5.2%	--	1.1%	--		--	0.0%	--	--	--	1.0

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Total Real Estate	8.2%	10.3%	76	4.3%	46
NCREIF ODCE Net	--	11.0%	66	4.6%	52
Total Private Equity	3.9%	13.6%	27	6.8%	69
DJ U.S. Total Stock Market Index + 3%	--	11.6%	39	11.0%	96

Total U.S. Equity Benchmark: Russell 3000 Index. Prior to January 2016, the Benchmark is a dynamic hybrid using the respective managers' market value weights within the U.S. Equity component toward their benchmark. Prior to May 2013, the Dow Jones U.S. Total Stock Market Index. Prior to May 2007, the Russell 3000 Index.

Total Non-U.S. Equity Benchmark: MSCI ACWI ex US Free, prior to May 2002, the MSCI EAFE.

Composite rankings are used for Total Equity (InvestorForce Public DB Total Eq consists of 75 portfolios), Total US Equity (InvestorForce Public DB US Eq consists of 151 portfolios), Total Non-US Equity (InvestorForce Public DB ex-US Eq consists of 116 portfolios), Total Global Equity (InvestorForce Public DB Gbl Eq consists of 28 portfolios), Total Fixed Income (InvestorForce Public DB Total Fix Inc consists of 93 portfolios), Total US Fixed Income (InvestorForce Public DB US Fix Inc consists of 86 portfolios), Total Real Estate (InvestorForce Public DB Real Estate Pub+Priv consists of 45 portfolios) and Total Private Equity (InvestorForce Public DB Private Eq consists of 28 portfolios).

# Ventura County Employees' Retirement Association

## Total Fund Risk Statistics

### 5 Years Ending December 31, 2016

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Tracking Error	Rank	Info Ratio	Rank	Beta
Total Equity	57.4%	11.3%	91	10.8%	24	2.5%	93	1.6%		1.3	10	0.9
MSCI ACWI	--	9.4%	97	11.4%	38		99	0.0%		--	--	1.0
Total US Equity	32.1%	14.9%	28	10.7%	21	0.2%	24	0.3%		1.1	1	1.0
Russell 3000	--	14.6%	33	10.7%	20		27	0.0%		--	--	1.0
Total Non-US Equity	15.1%	6.0%	43	12.5%	25	1.3%	29	1.3%	9	0.8	12	0.9
MSCI ACWI ex USA	--	5.0%	69	13.4%	80		65	0.0%		--	--	1.0
Total Global Equity	10.3%	8.3%	64	11.1%	32	-0.8%	89	1.4%		-0.8	99	1.0
MSCI ACWI	--	9.4%	60	11.4%	53		85	0.0%		--	--	1.0
Total Fixed Income	19.7%	3.2%	30	2.7%	39	3.0%	11	2.9%	81	1.0	16	0.5
BBgBarc Global Aggregate TR	--	0.2%	99	4.6%	98		83	0.0%		--	--	1.0
Total US Fixed Income	19.7%	3.5%	26	2.7%	41	1.9%	17	2.0%	79	0.6	41	0.7
BBgBarc US Aggregate TR	--	2.2%	63	2.9%	56		82	0.0%		--	--	1.0
Total Liquid Alternatives	8.6%	--	--	--	--	--	--	--	--	--	--	--
CPI + 4% (Unadjusted)	--	9.6%	--	8.2%	--		--	0.0%	--	--	--	1.0

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Total Real Estate	8.2%	10.1%	75	4.2%	34
NCREIF ODCE Net	--	11.2%	65	4.6%	44

Total U.S. Equity Benchmark: Russell 3000 Index. Prior to January 2016, the Benchmark is a dynamic hybrid using the respective managers' market value weights within the U.S. Equity component toward their benchmark. Prior to May 2013, the Dow Jones U.S. Total Stock Market Index. Prior to May 2007, the Russell 3000 Index.

Total Non-U.S. Equity Benchmark: MSCI ACWI ex US Free, prior to May 2002, the MSCI EAFE.

Composite rankings are used for Total Equity (InvestorForce Public DB Total Eq consists of 57 portfolios), Total US Equity (InvestorForce Public DB US Eq consists of 124 portfolios), Total Non-US Equity (InvestorForce Public DB ex-US Eq consists of 100 portfolios), Total Global Equity (InvestorForce Public DB Gbl Eq consists of 17 portfolios), Total Fixed Income (InvestorForce Public DB Total Fix Inc consists of 75 portfolios), Total US Fixed Income (InvestorForce Public DB US Fix Inc consists of 76 portfolios), Total Real Estate (InvestorForce Public DB Real Estate Pub+Priv consists of 37 portfolios).

# Ventura County Employees' Retirement Association

## Total Fund Performance Detail (Net)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total Fund</b>	<b>4,668,717,739</b>	<b>100.0</b>	<b>100.0</b>	<b>1.2</b>	<b>32</b>	<b>4.9</b>	<b>44</b>	<b>8.6</b>	<b>15</b>	<b>4.6</b>	<b>37</b>	<b>9.0</b>	<b>14</b>	<b>5.0</b>	<b>37</b>	<b>7.9</b>	<b>Apr-94</b>
Policy Index				1.2	31	4.9	42	8.4	25	5.3	13	9.1	13	5.3	17	7.9	Apr-94
Over/Under				0.0		0.0		0.2		-0.7		-0.1		-0.3		0.0	
Allocation Index				1.6	13	5.3	27	8.5	24	4.9	26	8.5	38	4.9	43	--	Apr-94
60% MSCI ACWI (Net)/40% CITI WGBI				-2.8	99	0.4	99	5.5	95	1.7	97	5.3	95	3.7	91	--	Apr-94
InvestorForce Public DB > \$1B Net Median				0.8		4.6		7.7		4.1		8.1		4.8		7.2	Apr-94
<b>Total Fund ex Parametric</b>	<b>4,565,095,433</b>	<b>97.8</b>	<b>--</b>	<b>1.1</b>	<b>--</b>	<b>4.4</b>	<b>--</b>	<b>8.3</b>	<b>--</b>	<b>4.5</b>	<b>--</b>	<b>8.9</b>	<b>--</b>	<b>4.9</b>	<b>--</b>	<b>7.8</b>	<b>Apr-94</b>
<b>Total Fund ex Private Equity</b>	<b>4,485,592,258</b>	<b>96.1</b>	<b>--</b>	<b>1.1</b>	<b>37</b>	<b>4.8</b>	<b>47</b>	<b>8.6</b>	<b>15</b>	<b>4.3</b>	<b>46</b>	<b>8.4</b>	<b>41</b>	<b>--</b>	<b>--</b>	<b>8.4</b>	<b>Jan-12</b>
Policy Index				1.2	31	4.9	42	8.4	25	5.3	13	9.1	13	5.3	17	9.1	Jan-12
Over/Under				-0.1		-0.1		0.2		-1.0		-0.7				-0.7	
InvestorForce Public DB > \$1B Net Median				0.8		4.6		7.7		4.1		8.1		4.8		8.1	Jan-12
<b>Total US Equity</b>	<b>1,497,012,239</b>	<b>32.1</b>	<b>28.0</b>	<b>4.3</b>	<b>50</b>	<b>9.0</b>	<b>53</b>	<b>13.0</b>	<b>44</b>	<b>8.5</b>	<b>24</b>	<b>14.9</b>	<b>28</b>	<b>6.8</b>	<b>60</b>	<b>8.9</b>	<b>Dec-93</b>
Russell 3000				4.2	51	8.8	54	12.7	45	8.4	26	14.6	33	7.2	50	9.2	Dec-93
Over/Under				0.1		0.2		0.3		0.1		0.3		-0.4		-0.3	
eA All US Equity Net Median				4.2		9.3		11.7		6.8		13.5		7.2		10.0	Dec-93
BlackRock Equity Market Fund	1,283,784,079	27.5		4.2	50	8.9	53	12.8	45	8.5	24	14.7	32	--	--	7.4	Dec-07
Dow Jones U.S. Total Stock Market				4.1	51	8.8	54	12.6	46	8.4	26	14.6	33	7.2	50	7.4	Dec-07
Over/Under				0.1		0.1		0.2		0.1		0.1				0.0	
eA All US Equity Net Median				4.2		9.3		11.7		6.8		13.5		7.2		7.3	Dec-07
Western U.S. Index Plus	160,786,886	3.4		4.2	51	8.6	55	13.8	41	9.5	13	16.1	12	--	--	4.3	May-07
S&P 500				3.8	55	7.8	60	12.0	49	8.9	19	14.7	32	6.9	56	6.3	May-07
Over/Under				0.4		0.8		1.8		0.6		1.4				-2.0	
eA All US Equity Net Median				4.2		9.3		11.7		6.8		13.5		7.2		6.4	May-07
BlackRock Extended Equity Index	52,441,274	1.1		5.7	46	13.2	38	16.1	43	6.5	41	14.6	26	8.0	43	11.6	Oct-02
Dow Jones U.S. Completion Total Stock Market				5.5	47	13.1	39	15.7	48	6.4	44	14.4	30	7.9	46	11.6	Oct-02
Over/Under				0.2		0.1		0.4		0.1		0.2		0.1		0.0	
eA US Small-Mid Cap Equity Net Median				5.3		11.2		15.1		5.7		13.4		7.7		11.3	Oct-02

Color Coding: PERFORMANCE: Green-Over performance, Red-Under performance / Color Coding: RANKS: 1 - 25 Green - Positive Result, 26 - 50 Yellow, 51 - 75 Orange, 76 - 100 Red - Negative Result.

Policy Index: Currently, 28% Russell 3000 Index, 20% Barclays Aggregate, 15% MSCI ACWI ex U.S., 10% MSCI ACWI, 10% DJ U.S. Total Stock Market Index + 3%, 10% CPI+4% Index, and 7% NCREIF ODCE Real Estate Index.

Total U.S. Equity Benchmark: Russell 3000 Index. Prior to January 2016, the Benchmark is a dynamic hybrid using the respective managers' market value weights within the U.S. Equity component toward their benchmark. Prior to May 2013, the Dow Jones U.S. Total Stock Market Index. Prior to May 2007, the Russell 3000 Index.

# Ventura County Employees' Retirement Association

## Total Fund Performance Detail (Net)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total Non-US Equity</b>	<b>703,258,824</b>	<b>15.1</b>	<b>15.0</b>	<b>-0.9</b>	<b>21</b>	<b>6.1</b>	<b>20</b>	<b>6.6</b>	<b>14</b>	<b>-0.7</b>	<b>28</b>	<b>6.0</b>	<b>43</b>	<b>1.2</b>	<b>42</b>	<b>6.0</b>	<b>Mar-94</b>
MSCI ACWI ex USA				-1.3	27	5.6	27	4.5	44	-1.8	69	5.0	69	1.0	46	4.7	Mar-94
Over/Under				0.4		0.5		2.1		1.1		1.0		0.2		1.3	
MSCI EAFE				-0.7	18	5.7	24	1.0	89	-1.6	64	6.5	30	0.7	62	4.4	Mar-94
MSCI ACWI ex USA Local Currency				4.9	1	11.6	1	7.0	7	4.9	1	10.1	1	2.6	11	--	Mar-94
MSCI EAFE Local Currency				7.1	1	13.5	1	5.3	28	5.5	1	11.8	1	2.2	19	4.7	Mar-94
InvestorForce Public DB ex-US Eq Net Median				-2.4		4.3		4.3		-1.3		5.5		0.8		5.1	Mar-94
<b>BlackRock ACWI ex-U.S. Index</b>	<b>341,371,584</b>	<b>7.3</b>		<b>-1.6</b>	<b>28</b>	<b>5.4</b>	<b>28</b>	<b>4.7</b>	<b>24</b>	<b>-1.3</b>	<b>53</b>	<b>5.5</b>	<b>77</b>	<b>--</b>	<b>--</b>	<b>1.1</b>	<b>Mar-07</b>
MSCI ACWI ex USA				-1.3	25	5.6	27	4.5	24	-1.8	58	5.0	85	1.0	71	0.6	Mar-07
Over/Under				-0.3		-0.2		0.2		0.5		0.5				0.5	
MSCI ACWI ex USA Local Currency				4.9	1	11.6	2	7.0	13	4.9	2	10.1	4	2.6	33	2.3	Mar-07
eA ACWI ex-US All Cap Equity Net Median				-3.5		2.7		1.7		-0.7		7.1		1.8		1.7	Mar-07
<b>Sprucegrove</b>	<b>184,817,177</b>	<b>4.0</b>		<b>2.6</b>	<b>1</b>	<b>11.6</b>	<b>2</b>	<b>11.9</b>	<b>3</b>	<b>-0.5</b>	<b>46</b>	<b>6.2</b>	<b>72</b>	<b>1.7</b>	<b>52</b>	<b>7.0</b>	<b>Mar-02</b>
MSCI ACWI ex USA				-1.3	25	5.6	27	4.5	24	-1.8	58	5.0	85	1.0	71	5.9	Mar-02
Over/Under				3.9		6.0		7.4		1.3		1.2		0.7		1.1	
MSCI EAFE				-0.7	21	5.7	27	1.0	55	-1.6	56	6.5	58	0.7	80	5.3	Mar-02
MSCI ACWI ex USA Local Currency				4.9	1	11.6	2	7.0	13	4.9	2	10.1	4	2.6	33	4.9	Mar-02
MSCI EAFE Local Currency				7.1	1	13.5	1	5.3	20	5.5	1	11.8	2	2.2	46	4.2	Mar-02
eA ACWI ex-US All Cap Equity Net Median				-3.5		2.7		1.7		-0.7		7.1		1.8		6.4	Mar-02
<b>Hexavest</b>	<b>79,915,903</b>	<b>1.7</b>		<b>-0.8</b>	<b>33</b>	<b>3.3</b>	<b>54</b>	<b>3.8</b>	<b>20</b>	<b>-0.7</b>	<b>59</b>	<b>6.0</b>	<b>79</b>	<b>--</b>	<b>--</b>	<b>3.2</b>	<b>Dec-10</b>
MSCI EAFE				-0.7	31	5.7	27	1.0	46	-1.6	63	6.5	66	0.7	76	3.2	Dec-10
Over/Under				-0.1		-2.4		2.8		0.9		-0.5				0.0	
MSCI EAFE Local Currency				7.1	1	13.5	1	5.3	12	5.5	1	11.8	3	2.2	34	7.4	Dec-10
eA EAFE All Cap Equity Net Median				-2.4		3.6		0.6		-0.6		7.1		1.6		4.1	Dec-10
<b>Walter Scott</b>	<b>97,154,160</b>	<b>2.1</b>		<b>-4.9</b>	<b>74</b>	<b>1.0</b>	<b>72</b>	<b>5.1</b>	<b>23</b>	<b>0.3</b>	<b>31</b>	<b>6.3</b>	<b>65</b>	<b>--</b>	<b>--</b>	<b>3.6</b>	<b>Dec-10</b>
MSCI ACWI ex USA				-1.3	25	5.6	27	4.5	24	-1.8	58	5.0	85	1.0	71	1.6	Dec-10
Over/Under				-3.6		-4.6		0.6		2.1		1.3				2.0	
MSCI ACWI ex USA Local Currency				4.9	1	11.6	2	7.0	13	4.9	2	10.1	4	2.6	33	6.0	Dec-10
eA ACWI ex-US All Cap Equity Net Median				-3.5		2.7		1.7		-0.7		7.1		1.8		3.6	Dec-10

# Ventura County Employees' Retirement Association

## Total Fund Performance Detail (Net)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total Global Equity</b>	<b>481,253,407</b>	<b>10.3</b>	<b>10.0</b>	<b>1.3</b>	<b>28</b>	<b>7.0</b>	<b>28</b>	<b>9.0</b>	<b>22</b>	<b>2.2</b>	<b>74</b>	<b>8.3</b>	<b>64</b>	<b>2.8</b>	<b>38</b>	<b>5.0</b>	<b>May-05</b>
MSCI ACWI				1.2	28	6.6	41	7.9	30	3.1	71	9.4	60	3.6	29	6.0	May-05
Over/Under				0.1		0.4		1.1		-0.9		-1.1		-0.8		-1.0	
InvestorForce Public DB Gbl Eq Net Median				-0.8		6.0		6.1		4.3		10.9		1.4		5.2	May-05
<b>BlackRock MSCI ACWI Equity Index</b>	<b>481,253,407</b>	<b>10.3</b>		<b>1.3</b>	<b>36</b>	<b>6.8</b>	<b>36</b>	<b>8.4</b>	<b>30</b>	<b>3.6</b>	<b>45</b>	--	--	--	--	<b>9.4</b>	<b>Aug-12</b>
MSCI ACWI				1.2	36	6.6	37	7.9	34	3.1	50	9.4	67	3.6	56	9.0	Aug-12
Over/Under				0.1		0.2		0.5		0.5						0.4	
eA All Global Equity Net Median				-0.1		4.7		5.9		3.1		10.1		3.7		9.3	Aug-12

\*GMO was terminated on September 19th with assets transitioned to the BlackRock MSCI ACWI Equity Index Fund in early October.

# Ventura County Employees' Retirement Association

## Private Equity Limited Partnership Performance

Fund Name	Vintage Year	Initial Investment Date	Commitment	Capital Called to Date <sup>1</sup>	Outstanding Commitment <sup>1</sup>	Call Ratio	Add'l Fees <sup>2</sup>	Distributions to Date	Valuation	Total Value	Net Benefit	IRR	Since Inception	
													Distributions to Paid In Multiple (DPI)	Total Value to Paid In Multiple (TVPI)
Adams Street 2010 U.S. Fund	2010	5/21/2010	\$42,500,000	\$32,852,500	\$9,647,500	77%	\$15,213	\$14,394,035	\$33,872,065	\$48,266,100	\$15,398,387	6.1%	0.44x	1.47x
Adams Street 2010 Non-U.S. Dev. Mkts Fund	2010	5/21/2010	\$25,500,000	\$20,591,249	\$4,908,751	81%	\$1,589	\$8,141,472	\$16,744,994	\$24,886,466	\$4,293,628	7.7%	0.4x	1.21x
Adams Street 2010 Non-U.S. Emg Mkts Fund	2010	1/3/2011	\$8,500,000	\$6,621,500	\$1,878,500	78%	\$0	\$738,789	\$7,833,407	\$8,572,196	\$1,950,696	9.4%	0.11x	1.29x
Adams Street 2010 Direct Fund	2010	5/21/2010	\$8,500,000	\$7,879,500	\$620,500	93%	\$6,697	\$4,831,957	\$7,407,542	\$12,239,499	\$4,353,302	12.0%	0.61x	1.55x
<b>Total Adams Street 2010</b>	<b>2010</b>	<b>5/21/2010</b>	<b>\$85,000,000</b>	<b>\$67,944,749</b>	<b>\$17,055,251</b>	<b>80%</b>	<b>\$23,499</b>	<b>\$28,106,253</b>	<b>\$65,858,008</b>	<b>\$93,964,261</b>	<b>\$25,996,013</b>	<b>11.7%</b>	<b>0.41x</b>	<b>1.38x</b>
Adams Street 2013 Global Fund	2013	6/27/2013	\$75,000,000	\$44,250,000	\$30,750,000	59%	\$10,728	\$3,108,905	\$44,395,263	\$47,504,168	\$3,243,440	4.4%	0.07x	1.07x
Adams Street 2016 Global Fund	2016	12/22/2016	\$60,000,000	\$1,500,000	\$58,500,000	3%	\$0	\$0	\$1,594,044	\$1,594,044	\$94,044	0.0%	0x	1.06x
Drive Capital Fund II	2016	9/1/2016	\$15,000,000	\$449,382	\$14,550,618	3%	\$3,210	\$0	\$317,822	\$317,822	(\$134,770)	0.0%	--	0.7x
HarbourVest - Dover Street VIII	2013	5/30/2013	\$67,500,000	\$56,362,500	\$11,137,500	84%	\$84,954	\$29,369,898	\$47,534,125	\$76,904,023	\$20,456,569	22.7%	0.52x	1.36x
HarbourVest - Dover Street IX	2016	12/16/2016	\$60,000,000	\$2,400,000	\$57,600,000	4%	\$0	\$841,532	\$1,737,342	\$2,578,874	\$178,874	4.0%	--	--
Pantheon Global Secondary Fund IV	2010	8/20/2010	\$15,000,000	\$9,960,000	\$5,040,000	66%	\$0	\$8,805,001	\$5,690,350	\$14,495,351	\$4,535,351	13.4%	0.88x	1.46x
Pantheon Global Secondary Fund V	2015	2/26/2015	\$50,000,000	\$13,391,510	\$36,608,490	27%	(\$87,343)	\$12,568	\$16,199,876	\$16,212,444	\$2,908,277	77.7%	--	1.22x
<b>Total VCERA Private Equity Program</b>	<b>--</b>	<b>5/21/2010</b>	<b>\$427,500,000</b>	<b>\$196,258,141</b>	<b>\$231,241,859</b>	<b>46%</b>	<b>\$35,048</b>	<b>\$70,244,157</b>	<b>\$183,326,830</b>	<b>\$253,570,987</b>	<b>\$57,277,798</b>	<b>13.0%</b>	<b>0.36x</b>	<b>1.29x</b>

1. Includes recycled/recallable distributions received to date.

2. Add'l Fees represents notional interest paid/(received).

2. Add'l Fees for Pantheon Global Secondary Fund V includes notional interest paid/(received) and management fee rebates paid to VCERA.

Note: Private equity performance data is reported net of fees.

Performance shown is based on 9/30/2016 NAVs cash-adjusted for cash flows through 12/31/2016.



# Ventura County Employees' Retirement Association

## Total Fund Performance Detail (Net)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total US Fixed Income</b>	<b>918,240,759</b>	<b>19.7</b>	<b>20.0</b>	<b>-1.9</b>	<b>40</b>	<b>-0.6</b>	<b>40</b>	<b>4.9</b>	<b>39</b>	<b>2.7</b>	<b>65</b>	<b>3.5</b>	<b>26</b>	<b>5.6</b>	<b>9</b>	<b>6.0</b>	<b>Feb-94</b>
<i>BBgBarc US Aggregate TR</i>				-3.0	92	-2.5	92	2.6	69	3.0	53	2.2	63	4.3	49	5.4	Feb-94
<i>Over/Under</i>				1.1		1.9		2.3		-0.3		1.3		1.3		0.6	
<i>InvestorForce Public DB US Fix Inc Net Median</i>				-2.0		-1.0		4.1		3.1		2.7		4.3		5.5	Feb-94
<b>BlackRock U.S. Debt Fund</b>	<b>215,199,689</b>	<b>4.6</b>		<b>-3.0</b>	<b>81</b>	<b>-2.5</b>	<b>81</b>	<b>2.7</b>	<b>57</b>	<b>3.1</b>	<b>48</b>	<b>2.3</b>	<b>62</b>	<b>4.4</b>	<b>50</b>	<b>5.3</b>	<b>Nov-95</b>
<i>BBgBarc US Aggregate TR</i>				-3.0	80	-2.5	81	2.6	57	3.0	50	2.2	64	4.3	54	5.3	Nov-95
<i>Over/Under</i>				0.0		0.0		0.1		0.1		0.1		0.1		0.0	
<i>eA All US Fixed Inc Net Median</i>				-1.8		-1.0		3.3		3.0		2.9		4.4		5.1	Nov-95
<b>Western</b>	<b>281,028,251</b>	<b>6.0</b>		<b>-3.1</b>	<b>83</b>	<b>-1.8</b>	<b>68</b>	<b>4.1</b>	<b>42</b>	<b>4.1</b>	<b>27</b>	<b>4.1</b>	<b>37</b>	<b>5.2</b>	<b>31</b>	<b>6.2</b>	<b>Dec-96</b>
<i>BBgBarc US Aggregate TR</i>				-3.0	80	-2.5	81	2.6	57	3.0	50	2.2	64	4.3	54	5.3	Dec-96
<i>Over/Under</i>				-0.1		0.7		1.5		1.1		1.9		0.9		0.9	
<i>eA All US Fixed Inc Net Median</i>				-1.8		-1.0		3.3		3.0		2.9		4.4		5.2	Dec-96
<b>Reams</b>	<b>301,131,501</b>	<b>6.4</b>		<b>-0.3</b>	<b>32</b>	<b>0.6</b>	<b>26</b>	<b>6.0</b>	<b>31</b>	<b>0.8</b>	<b>90</b>	<b>2.9</b>	<b>50</b>	<b>5.8</b>	<b>24</b>	<b>5.6</b>	<b>Sep-01</b>
<i>Reams Custom Index</i>				0.2	21	0.4	27	0.7	89	0.4	96	1.0	87	3.7	68	4.1	Sep-01
<i>Over/Under</i>				-0.5		0.2		5.3		0.4		1.9		2.1		1.5	
<i>BBgBarc US Aggregate TR</i>				-3.0	80	-2.5	81	2.6	57	3.0	50	2.2	64	4.3	54	4.5	Sep-01
<i>3-Month LIBOR + 3%</i>				1.0	15	1.9	21	3.8	46	3.4	38	3.4	44	4.2	57	4.8	Sep-01
<i>eA All US Fixed Inc Net Median</i>				-1.8		-1.0		3.3		3.0		2.9		4.4		4.6	Sep-01
<b>Loomis Strategic Alpha</b>	<b>44,432,213</b>	<b>1.0</b>		<b>1.7</b>	<b>10</b>	<b>3.5</b>	<b>18</b>	<b>6.1</b>	<b>31</b>	<b>2.4</b>	<b>63</b>	--	--	--	--	<b>2.6</b>	<b>Jul-13</b>
<i>BBgBarc US Aggregate TR</i>				-3.0	80	-2.5	81	2.6	57	3.0	50	2.2	64	4.3	54	2.7	Jul-13
<i>Over/Under</i>				4.7		6.0		3.5		-0.6						-0.1	
<i>3-Month LIBOR + 3%</i>				1.0	15	1.9	21	3.8	46	3.4	38	3.4	44	4.2	57	3.4	Jul-13
<i>eA All US Fixed Inc Net Median</i>				-1.8		-1.0		3.3		3.0		2.9		4.4		2.9	Jul-13
<b>Loomis Sayles Multi Strategy</b>	<b>76,449,106</b>	<b>1.6</b>		<b>-2.0</b>	<b>57</b>	<b>1.5</b>	<b>23</b>	<b>8.2</b>	<b>21</b>	<b>4.1</b>	<b>26</b>	<b>6.0</b>	<b>15</b>	<b>6.4</b>	<b>16</b>	<b>6.4</b>	<b>Jul-05</b>
<i>Loomis Custom Index</i>				-1.5	46	0.4	28	7.0	26	3.4	39	3.7	42	5.2	31	5.2	Jul-05
<i>Over/Under</i>				-0.5		1.1		1.2		0.7		2.3		1.2		1.2	
<i>BBgBarc US Govt/Credit TR</i>				-3.4	87	-3.0	87	3.0	52	3.0	49	2.3	63	4.4	51	4.2	Jul-05
<i>eA All US Fixed Inc Net Median</i>				-1.8		-1.0		3.3		3.0		2.9		4.4		4.3	Jul-05

Reams Custom Index: Merrill Lynch 3 Month Libor Constant Maturity Index, prior to February 2013 the Barclays Aggregate

Loomis Custom Index: 65% Barclays Aggregate, 30% Citigroup High Yield Market Index and 5% JPM Non-US Hedged Bond Index

As of January 2016, Loomis Strategic Alpha was moved from the Total Global Fixed Income composite to the Total US Fixed Income composite.

# Ventura County Employees' Retirement Association

## Total Fund Performance Detail (Net)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total Real Estate</b>	<b>382,552,273</b>	<b>8.2</b>	<b>7.0</b>	<b>1.6</b>	<b>45</b>	<b>3.2</b>	<b>52</b>	<b>6.8</b>	<b>84</b>	<b>10.3</b>	<b>76</b>	<b>10.1</b>	<b>75</b>	<b>3.4</b>	<b>79</b>	<b>7.9</b>	<b>Mar-94</b>
NCREIF ODCE Net				1.9	34	3.7	40	7.8	64	11.0	66	11.2	65	4.8	36	8.2	Mar-94
Over/Under				-0.3		-0.5		-1.0		-0.7		-1.1		-1.4		-0.3	
InvestorForce Public DB Real Estate Pub+Priv Net Median				1.5		3.3		8.1		11.6		11.6		4.2		7.2	Mar-94
Prudential Real Estate	135,101,380	2.9		2.3		4.2		8.2		11.7		11.5		4.6		6.1	Jun-04
NCREIF ODCE Net				1.9	--	3.7	--	7.8	--	11.0	--	11.2	--	4.8	--	7.1	Jun-04
Over/Under				0.4		0.5		0.4		0.7		0.3		-0.2		-1.0	
NCREIF ODCE				2.1	--	4.2	--	8.8	--	12.1	--	12.2	--	5.8	--	8.1	Jun-04
UBS Real Estate	247,269,383	5.3		1.2		2.7		6.2		9.5		9.4		4.9		7.6	Mar-03
NCREIF ODCE Net				1.9	--	3.7	--	7.8	--	11.0	--	11.2	--	4.8	--	7.4	Mar-03
Over/Under				-0.7		-1.0		-1.6		-1.5		-1.8		0.1		0.2	
NCREIF ODCE				2.1	--	4.2	--	8.8	--	12.1	--	12.2	--	5.8	--	8.4	Mar-03
RREEF	181,509	0.0		-0.4		-12.9		-16.5		4.1		9.9		--		-6.3	Sep-07
NCREIF ODCE Net				1.9	--	3.7	--	7.8	--	11.0	--	11.2	--	4.8	--	3.9	Sep-07
Over/Under				-2.3		-16.6		-24.3		-6.9		-1.3				-10.2	
NCREIF ODCE				2.1	--	4.2	--	8.8	--	12.1	--	12.2	--	5.8	--	4.8	Sep-07

Total Real Estate Benchmark: NCREIF ODCE; prior to January 2006, the NCREIF Property Index



# Ventura County Employees' Retirement Association

## Total Fund Performance Detail (Net)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total Liquid Alternatives</b>	<b>403,651,475</b>	<b>8.6</b>	<b>10.0</b>	<b>-0.4</b>	--	<b>2.7</b>	--	<b>11.7</b>	--	<b>2.0</b>	--	--	--	--	--	<b>4.6</b>	<b>Apr-13</b>
<i>CPI + 4% (Unadjusted)</i>				<i>1.0</i>	--	<i>2.2</i>	--	<i>6.2</i>	--	<i>5.2</i>	--	<i>9.6</i>	--	--	--	<i>6.2</i>	<i>Apr-13</i>
Over/Under				-1.4		0.5		5.5		-3.2						-1.6	
Bridgewater All Weather Fund	281,132,456	6.0		<b>-1.7</b>	--	<b>1.5</b>	--	<b>10.0</b>	--	<b>3.3</b>	--	--	--	--	--	<b>4.0</b>	<b>Aug-13</b>
<i>CPI + 5% (Unadjusted)</i>				<i>1.2</i>	--	<i>2.6</i>	--	<i>7.2</i>	--	<i>6.2</i>	--	--	--	--	--	<i>6.0</i>	<i>Aug-13</i>
Over/Under				-2.9		-1.1		2.8		-2.9						-2.0	
Tortoise Energy Infrastructure	122,519,020	2.6		<b>2.9</b>	--	<b>5.4</b>	--	<b>15.9</b>	--	<b>-0.8</b>	--	--	--	--	--	<b>2.6</b>	<b>Apr-13</b>
<i>Wells Fargo MLP Index</i>				<i>3.5</i>	--	<i>6.6</i>	--	<i>21.0</i>	--	<i>-4.9</i>	--	<i>3.2</i>	--	--	--	<i>-2.2</i>	<i>Apr-13</i>
Over/Under				-0.6		-1.2		-5.1		4.1						4.8	
<b>Overlay</b>	<b>99,623,281</b>	<b>2.1</b>	<b>0.0</b>														
Parametric	99,623,281	2.1															

Overlay performance is not applicable on an individual account level.

Color Coding: PERFORMANCE: Green-Over performance, Red-Under performance

Color Coding: RANKS: 1 - 25 Green - Positive Result, 26 - 50 Yellow, 50 - 75 Orange, 76 - 100 Red - Negative Result

# Ventura County Employees' Retirement Association

## Total Fund Performance Detail (Net)

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total Private Equity</b>	<b>183,125,480</b>	<b>3.9</b>	<b>10.0</b>	<b>3.4</b>	<b>33</b>	<b>7.1</b>	<b>21</b>	<b>7.6</b>	<b>47</b>	<b>13.6</b>	<b>27</b>	<b>13.8</b>	<b>22</b>	--	--	<b>13.8</b>	<b>Jan-12</b>
<i>DJ U.S. Total Stock Market Index + 3%</i>				<u>4.9</u>	7	<u>10.4</u>	5	<u>16.0</u>	1	<u>11.6</u>	39	<u>18.0</u>	1	--	--	<u>18.0</u>	<i>Jan-12</i>
Over/Under				-1.5		-3.3		-8.4		2.0		-4.2				-4.2	
<i>InvestorForce Public DB Private Eq Net Median</i>				2.5		5.0		7.5		10.8		11.4		7.7		11.4	<i>Jan-12</i>
<b>Adams Street Global Fund Series</b>	<b>111,847,290</b>	<b>2.4</b>		<b>3.2</b>	--	<b>6.5</b>	--	<b>7.1</b>	--	<b>12.2</b>	--	<b>12.6</b>	--	--	--	<b>12.6</b>	<b>Jan-12</b>
<i>DJ U.S. Total Stock Market Index + 3%</i>				<u>4.9</u>	--	<u>10.4</u>	--	<u>16.0</u>	--	<u>11.6</u>	--	<u>18.0</u>	--	--	--	<u>18.0</u>	<i>Jan-12</i>
Over/Under				-1.7		-3.9		-8.9		0.6		-5.4				-5.4	
<b>Harbourvest- Dover Street VIII</b>	<b>49,057,580</b>	<b>1.1</b>		<b>3.1</b>	--	<b>5.6</b>	--	<b>6.7</b>	--	<b>17.5</b>	--	--	--	--	--	<b>18.2</b>	<b>Aug-13</b>
<i>DJ U.S. Total Stock Market Index + 3%</i>				<u>4.9</u>	--	<u>10.4</u>	--	<u>16.0</u>	--	<u>11.6</u>	--	<u>18.0</u>	--	--	--	<u>13.9</u>	<i>Aug-13</i>
Over/Under				-1.8		-4.8		-9.3		5.9						4.3	
<b>Pantheon Global Secondary Funds</b>	<b>21,902,789</b>	<b>0.5</b>		<b>5.7</b>	--	<b>17.5</b>	--	<b>15.5</b>	--	<b>12.7</b>	--	<b>10.7</b>	--	--	--	<b>10.7</b>	<b>Jan-12</b>
<i>DJ U.S. Total Stock Market Index + 3%</i>				<u>4.9</u>	--	<u>10.4</u>	--	<u>16.0</u>	--	<u>11.6</u>	--	<u>18.0</u>	--	--	--	<u>18.0</u>	<i>Jan-12</i>
Over/Under				0.8		7.1		-0.5		1.1		-7.3				-7.3	

Private equity performance shown above is calculated using a time-weighted return methodology. Market values shown are cash-adjusted based on the current period's cash flows.

Adams Street Global Fund Series includes Adams Street 2010 U.S. Fund, 2010 Non-U.S. Developed Markets Fund, 2010 Non-U.S. Emerging Markets Fund, 2010 Direct Fund, and 2013 Global Fund.

Pantheon Global Secondary Funds includes Pantheon Global Secondary Fund IV and Global Secondary Fund V.

Drive Captial Fund, funded 9/1/2016.

# Manager Due Diligence

## Due Diligence Monitor

The items below summarize the recent quarter's performance and any changes or announcements from the Plan's managers/products. A "-" indicates there were no material announcements. A "Yes" indicates there was an announcement and a brief summary is provided on the following pages. NEPC's Due Diligence Committee meets every two weeks to review events as they relate to investment managers and determine if any action should be taken (by NEPC and/or by our clients). Events are rated: No Action, Watch, Hold, Client Review or Terminate. NEPC's recommendation in view of the recent quarter's developments (performance, manager events, and any of the longer-term trending data) is refreshed quarterly.

Investment Options	Performance (Recent Quarter)	Changes/ Announcements (Recent Quarter)	NEPC DD Committee Rec.	Plan Rec.	Comments	Last Onsite Conducted
<b>BlackRock Equity Market Index</b>	-	-	-	-		10/2013
<b>Western U.S. Index Plus</b>	-	-	-	-		6/2014
<b>BlackRock Extended Equity Index</b>	-	-	-	-		10/2013
<b>BlackRock MSCI ACWI ex-U.S. Index</b>	-	-	-	-		10/2013
<b>Sprucegrove</b>	Top Decile	-	Hold	Watch (Board Driven)	3Q 2014 Departure & Performance	N/A
<b>Hexavest</b>	-	-	-	-		1/2013
<b>Walter Scott</b>	-	-	-	-		10/2012
<b>BlackRock MSCI ACWI Index</b>	-	-	-	-		10/2013
<b>Adams Street</b>	N/A	-	-	-		11/2013
<b>HarbourVest</b>	N/A	-	-	-		3/2014
<b>Pantheon</b>	N/A	-	-	-		1/2015
<b>BlackRock U.S. Debt Fund</b>	Bottom Quartile	-	-	-		10/2013
<b>Western</b>	Bottom Quartile	-	-	-		6/2014
<b>Reams</b>	-	-	-	-		11/2013
<b>Loomis Sayles Multi-Sector Full Discretion</b>	-	-	-	-		11/2013
<b>Loomis Sayles Strategic Alpha</b>	Top Decile	-	-	-		11/2013

Due Diligence Monitor Continued

	Performance (Recent Quarter)	Changes/ Announcements (Recent Quarter)	NEPC DD Committee Rec.	Plan Rec.	Comments	Last Onsite Conducted
Prudential	N/A	-	-	-		7/2014
RREEF	N/A	-	-	-		7/2013
UBS	N/A	-	-	-		8/2011
Bridgewater	N/A	-	-	-		9/2012
Tortoise	N/A	-	-	-		8/2013
Parametric/Clifton	N/A	-	-	-		7/2013

**NEPC Due Diligence Committee Recommendation Key**

<b>No Action</b>	Informational items have surfaced; no action is recommended.
<b>Watch</b>	Issues have surfaced to be concerned over; manager can participate in future searches, but current and prospective clients must be made aware of the issues.
<b>Hold</b>	Serious issues have surfaced to be concerned over; manager cannot participate in future searches unless a client specifically requests, but current and prospective clients must be made aware of the issues.
<b>Client Review</b>	Very serious issues have surfaced with an Investment Manager; manager cannot participate in future searches unless a client specifically requests. Current clients must be advised to review the manager.
<b>Terminate</b>	We have lost all confidence in the product; manager would not be recommended for searches and clients would be discouraged from using. The manager cannot participate in future searches unless a client specifically requests. Current clients must be advised to replace the manager.

Below is a summary of managers that remain on Hold:

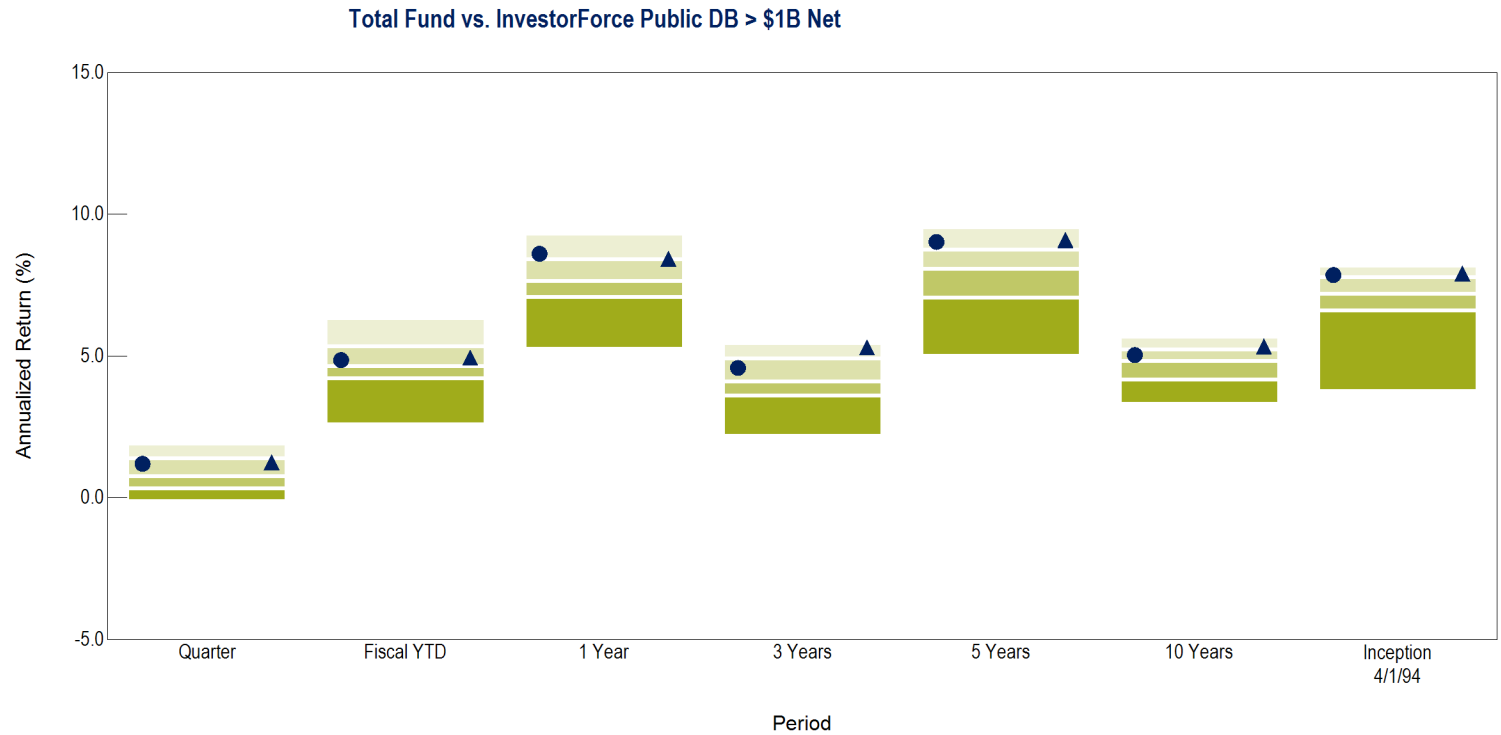
**Sprucegrove**

On July 27<sup>th</sup> Sprucegrove announced that they will open all products at the firm for new investment. They had been closed for a number of years, but following a period of poor performance and asset outflows they now have capacity. While this is a positive event, it triggers an opportunity to reconsider any allocation to the products. Assets have been declining. YTD performance has rebounded, but longer term numbers remain challenged.

***NEPC recommends maintaining a Hold rating at this time. We will continue to monitor the situation and provide updates as necessary.***

# Ventura County Employees' Retirement Association

## Total Fund Return Summary vs. Peer Universe

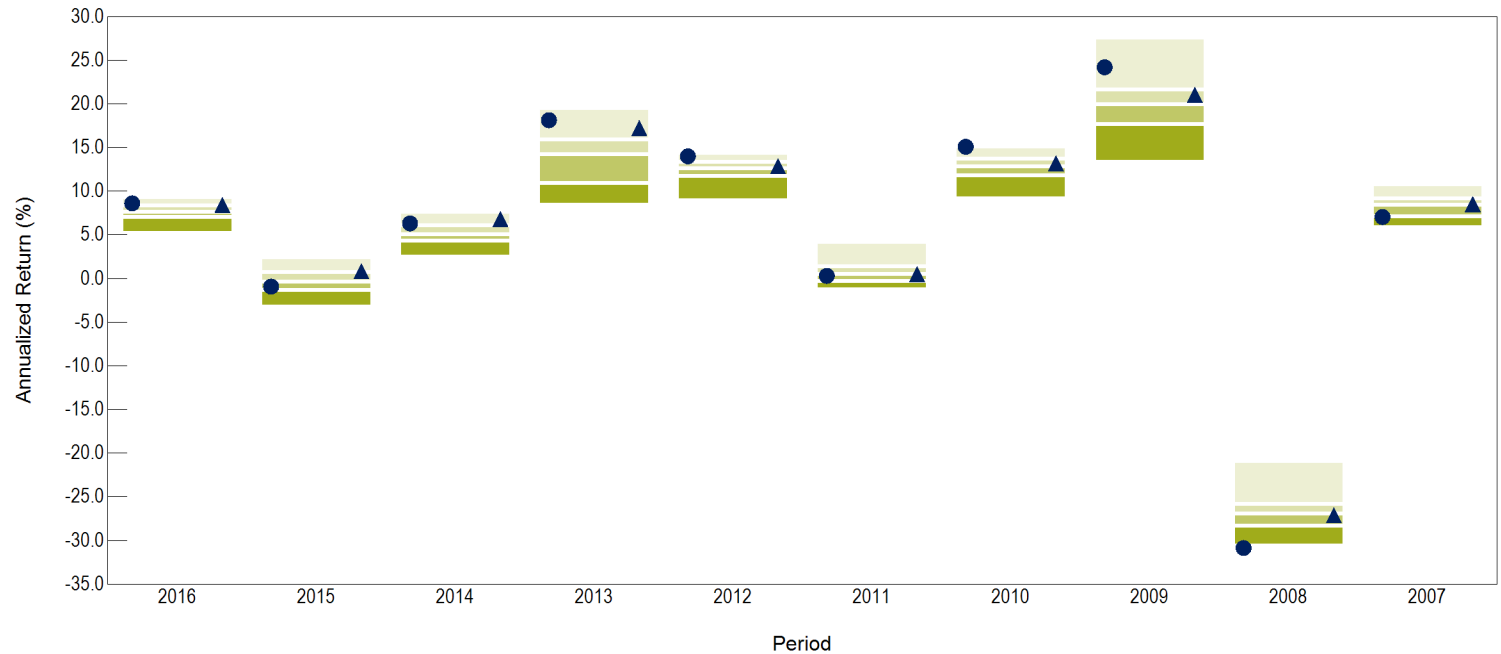


	Return (Rank)													
5th Percentile	1.9		6.3		9.3		5.4		9.5		5.7		8.2	
25th Percentile	1.4		5.4		8.4		4.9		8.8		5.2		7.8	
Median	0.8		4.6		7.7		4.1		8.1		4.8		7.2	
75th Percentile	0.3		4.2		7.1		3.6		7.1		4.2		6.6	
95th Percentile	-0.1		2.6		5.3		2.2		5.0		3.3		3.8	
# of Portfolios	62		62		62		60		60		55		36	
● Total Fund	1.2	(32)	4.9	(44)	8.6	(15)	4.6	(37)	9.0	(14)	5.0	(37)	7.9	(20)
▲ Policy Index	1.2	(31)	4.9	(42)	8.4	(25)	5.3	(13)	9.1	(13)	5.3	(17)	7.9	(19)

# Ventura County Employees' Retirement Association

## Total Fund Return Summary vs. Peer Universe

Total Fund vs. InvestorForce Public DB > \$1B Net



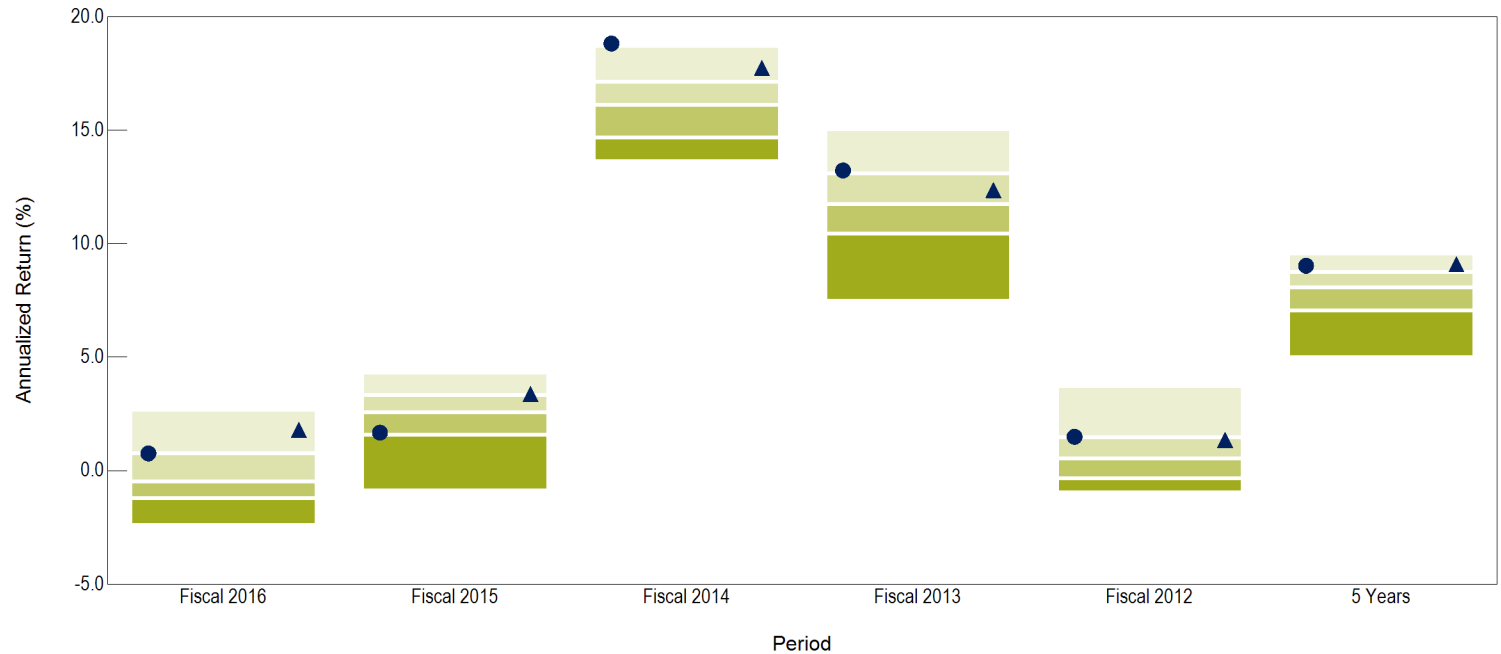
	Return (Rank)																			
5th Percentile	9.3	2.4	7.6	19.5	14.3	4.2	15.1	27.5	-20.9	10.7										
25th Percentile	8.4	0.8	6.1	16.0	13.4	1.5	13.8	21.7	-25.7	9.2										
Median	7.7	-0.4	5.1	14.3	12.7	0.6	12.8	20.0	-26.9	8.5										
75th Percentile	7.1	-1.3	4.4	11.0	11.8	-0.3	11.8	17.7	-28.3	7.1										
95th Percentile	5.3	-3.2	2.6	8.5	9.0	-1.2	9.3	13.4	-30.5	5.9										
# of Portfolios	62	57	55	48	44	42	41	40	39	39										
● Total Fund	8.6	(15)	-0.9	(65)	6.3	(20)	18.1	(10)	14.0	(15)	0.3	(61)	15.1	(6)	24.2	(16)	-30.9	(98)	7.0	(77)
▲ Policy Index	8.4	(25)	0.8	(25)	6.8	(12)	17.2	(14)	12.9	(41)	0.5	(55)	13.2	(44)	21.0	(33)	-27.1	(54)	8.5	(50)



# Ventura County Employees' Retirement Association

## Total Fund Return Summary vs. Peer Universe

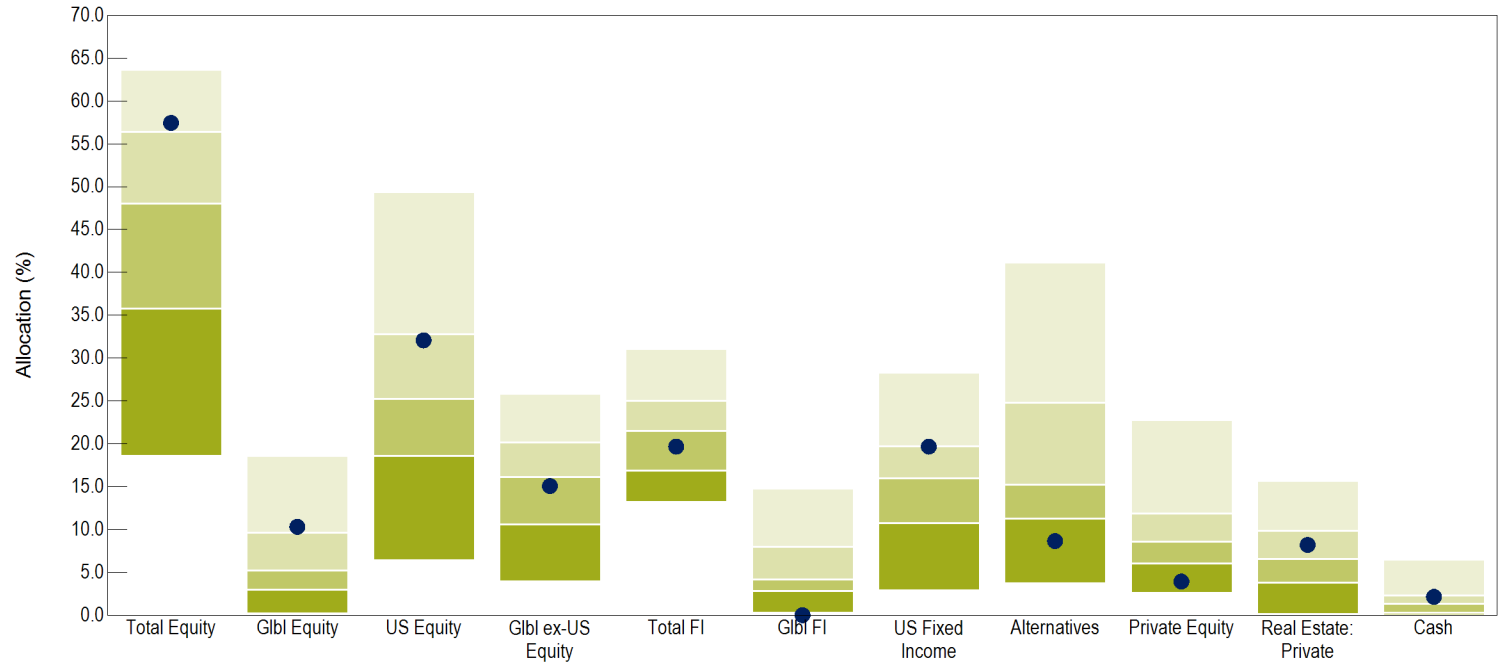
Total Fund vs. InvestorForce Public DB > \$1B Net



	Fiscal 2016		Fiscal 2015		Fiscal 2014		Fiscal 2013		Fiscal 2012		5 Years	
	Return	(Rank)	Return	(Rank)	Return	(Rank)	Return	(Rank)	Return	(Rank)	Return	(Rank)
5th Percentile	2.7		4.3		18.7		15.0		3.7		9.5	
25th Percentile	0.8		3.3		17.2		13.1		1.5		8.8	
Median	-0.5		2.6		16.1		11.8		0.5		8.1	
75th Percentile	-1.2		1.6		14.7		10.5		-0.3		7.1	
95th Percentile	-2.4		-0.9		13.6		7.5		-0.9		5.0	
# of Portfolios	55		53		43		56		41		60	
● Total Fund	0.8	(26)	1.7	(71)	18.8	(4)	13.2	(22)	1.5	(25)	9.0	(14)
▲ Policy Index	1.8	(9)	3.4	(25)	17.7	(19)	12.4	(39)	1.4	(27)	9.1	(13)

Total Fund Allocations vs. Peer Universe

Total Plan Allocation vs. InvestorForce Public DB > \$1B Net

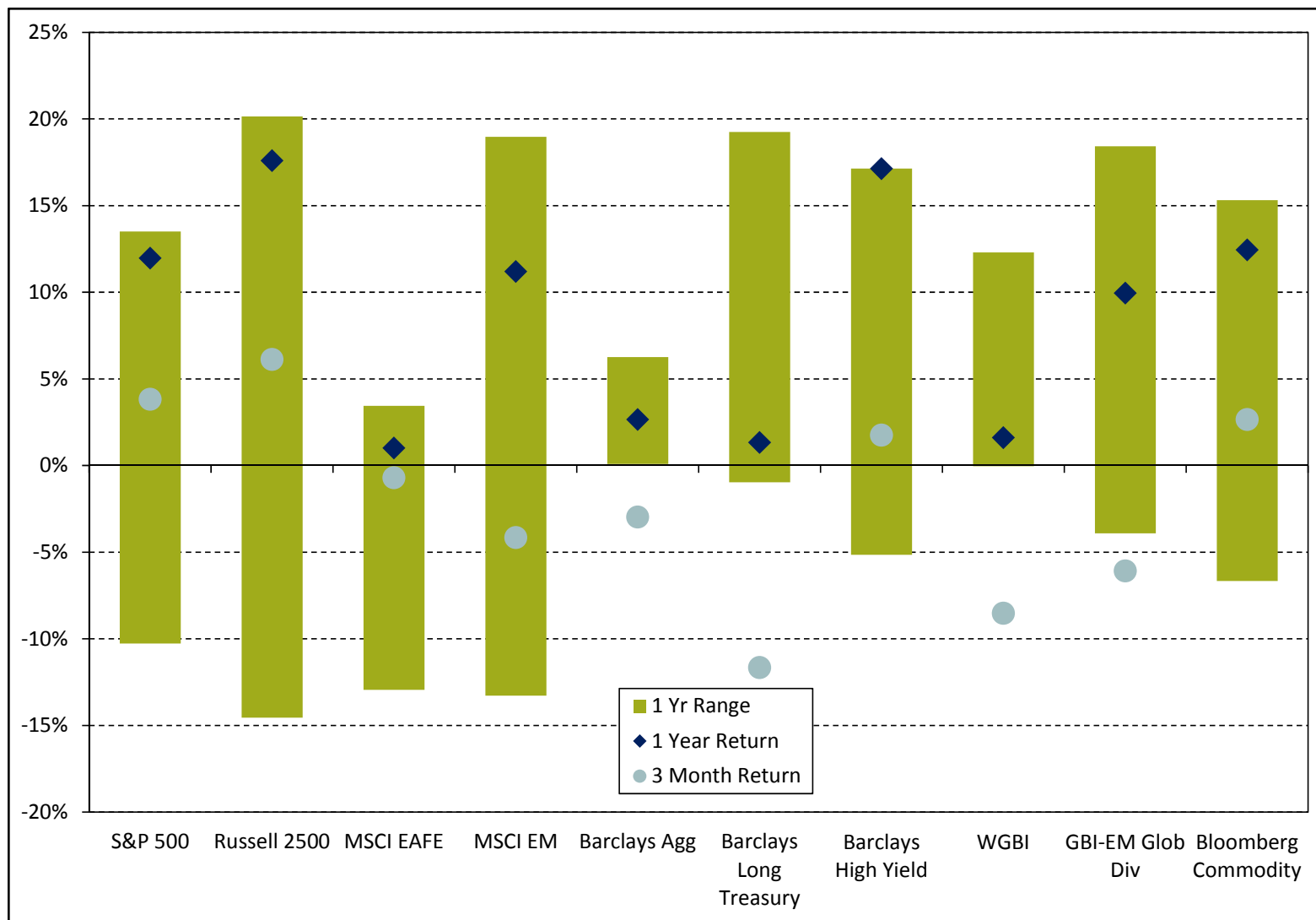


	Total Equity		Gbl Equity		US Equity		Gbl ex-US Equity		Total FI		Gbl FI		US Fixed Income		Alternatives		Private Equity		Real Estate: Private		Cash	
<b>5th Percentile</b>	63.7	18.6	49.3	25.8	31.0	14.8	28.3	41.1	22.8	15.7	6.5	--										
<b>25th Percentile</b>	56.5	9.7	32.8	20.2	25.1	8.0	19.8	24.9	11.9	9.9	2.4	--										
<b>Median</b>	48.1	5.3	25.3	16.2	21.6	4.2	16.1	15.3	8.7	6.7	1.4	--										
<b>75th Percentile</b>	35.9	3.0	18.7	10.7	17.0	2.9	10.8	11.3	6.1	3.9	0.4	--										
<b>95th Percentile</b>	18.6	0.3	6.5	4.0	13.3	0.3	3.0	3.8	2.7	0.2	0.1	--										
<b># of Portfolios</b>	58	23	53	51	59	28	57	56	53	48	55	--										
<b>• Total Fund</b>	57.4	(20)	10.3	(21)	32.1	(28)	15.1	(53)	19.7	(59)	0.0	(97)	19.7	(29)	8.6	(85)	3.9	(87)	8.2	(39)	2.1	(28)

# Appendix: Market Environment

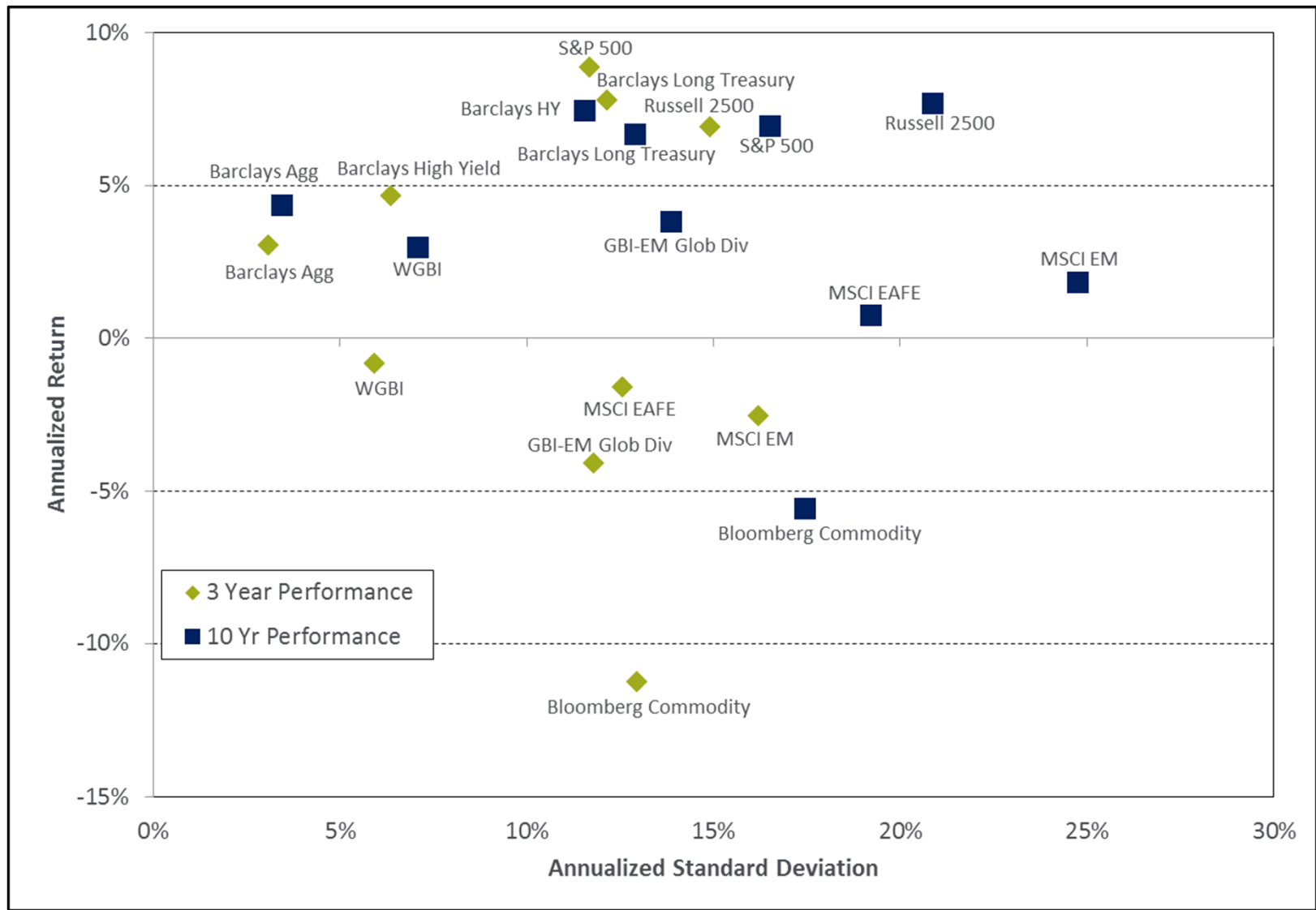


# Near Term Broad Market Performance Summary as of 12/30/2016



Source: Bloomberg, Standard and Poors, Russell, MSCI, Barclays, Citigroup, JP Morgan  
 \*1 Yr Range: Represents range of cumulative high/low daily index returns for an investment made one year ago

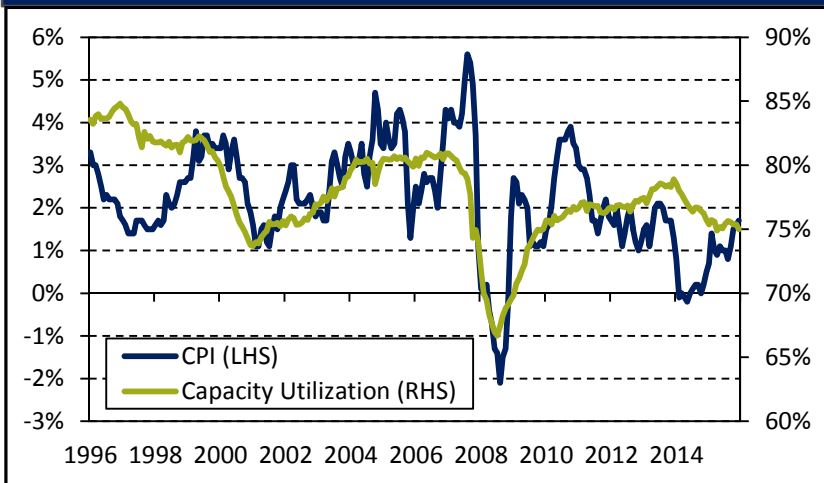
# Long Term Broad Market Performance Summary as of 12/30/2016



Source: Bloomberg, Standard and Poors, Russell, MSCI, Barclays, Citigroup, JP Morgan

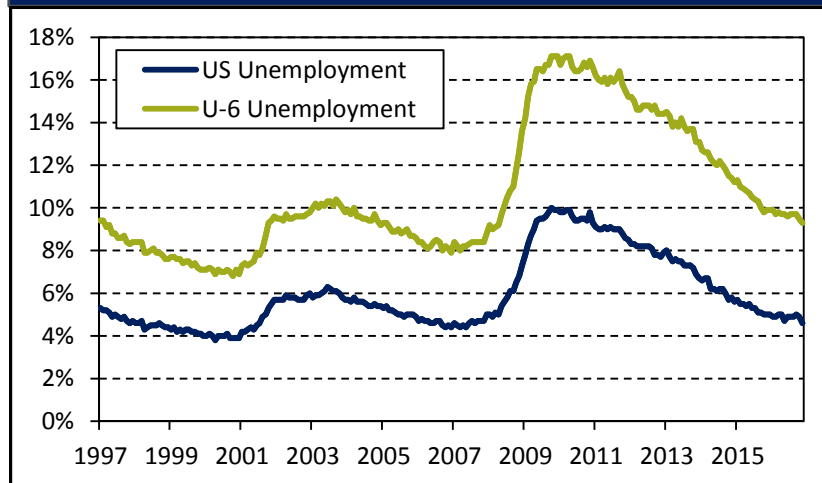
# US Economic Indicators

## Inflation continues rising



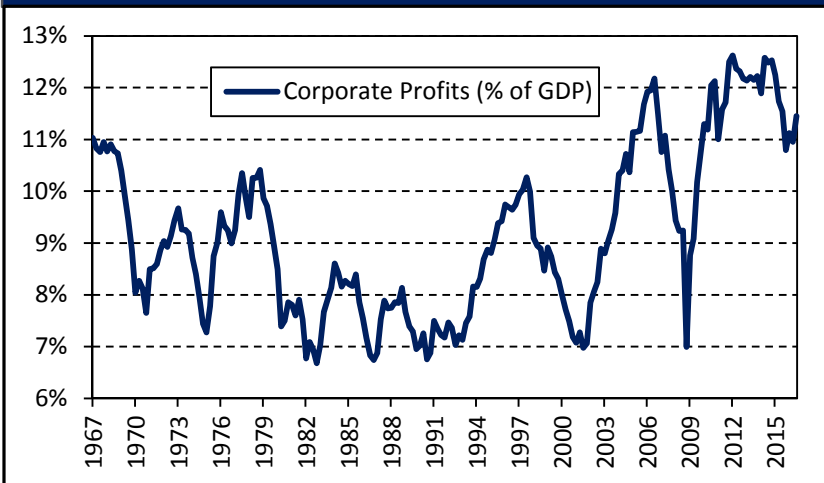
Source: Bloomberg, Federal Reserve, Bureau of Labor Statistics

## Unemployment has steadied



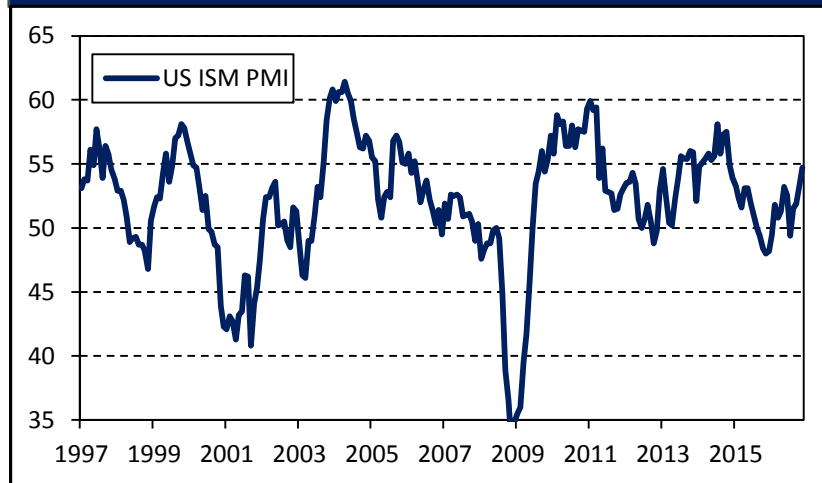
Source: Bloomberg, Bureau of Labor Statistics

## Corporate profits experience an uptick



Source: Bloomberg, Bureau of Economic Analysis

## Manufacturing shows modest strength

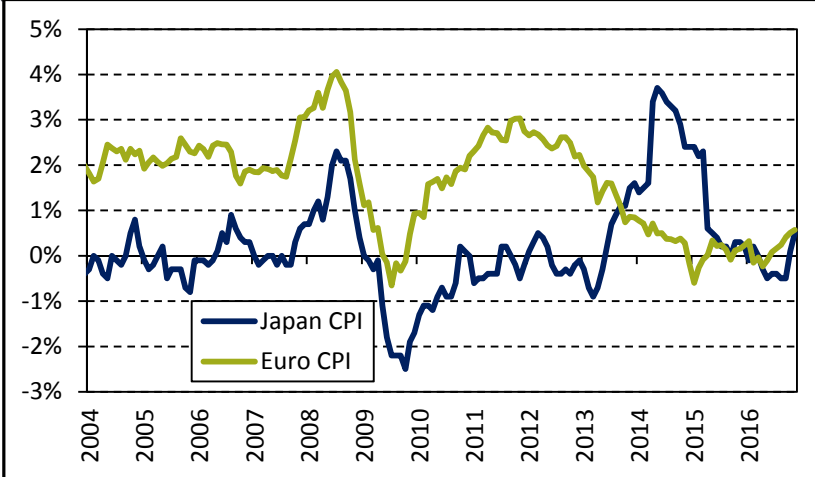


Source: Bloomberg, Institute for Supply Management



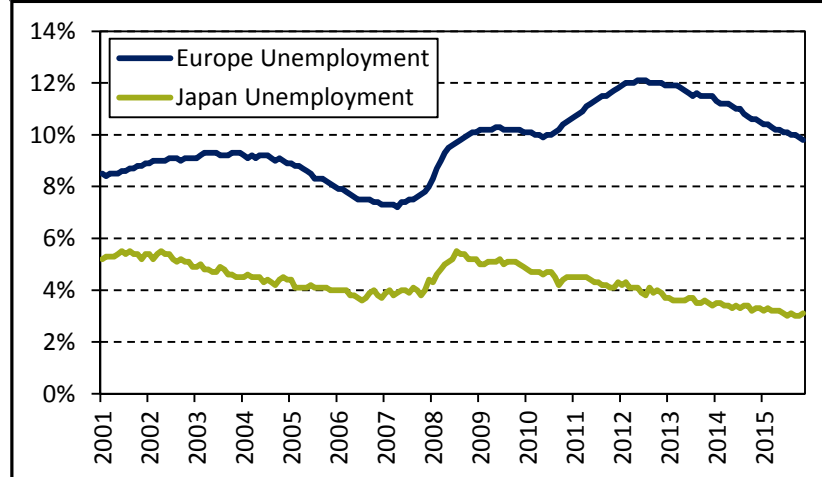
# International Economic Indicators

## Inflation has increased



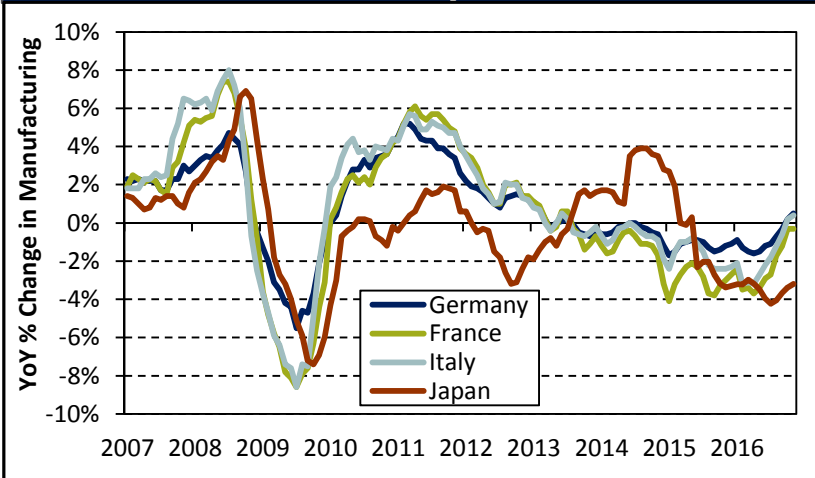
Source: Bloomberg, Japan Ministry of Internal Affairs and Communications, Eurostat

## Europe unemployment edges lower



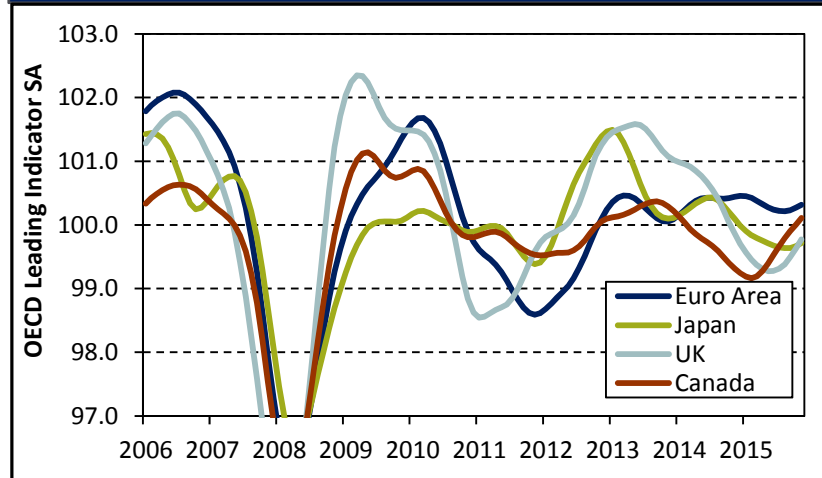
Source: Bloomberg, Japan Ministry of Internal Affairs and Communications, Eurostat

## Manufacturing steadies after showing modest improvement



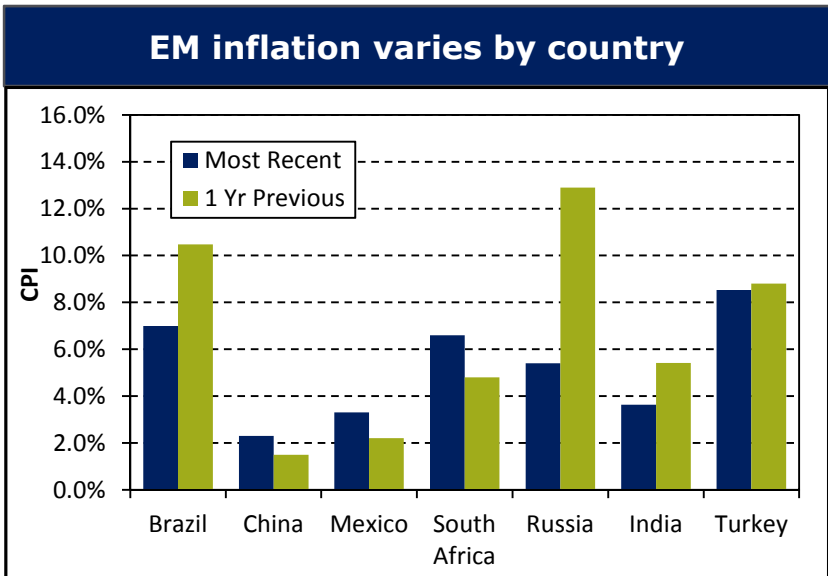
Source: Bloomberg, OECD, Eurostat

## Leading indicators mostly trending higher

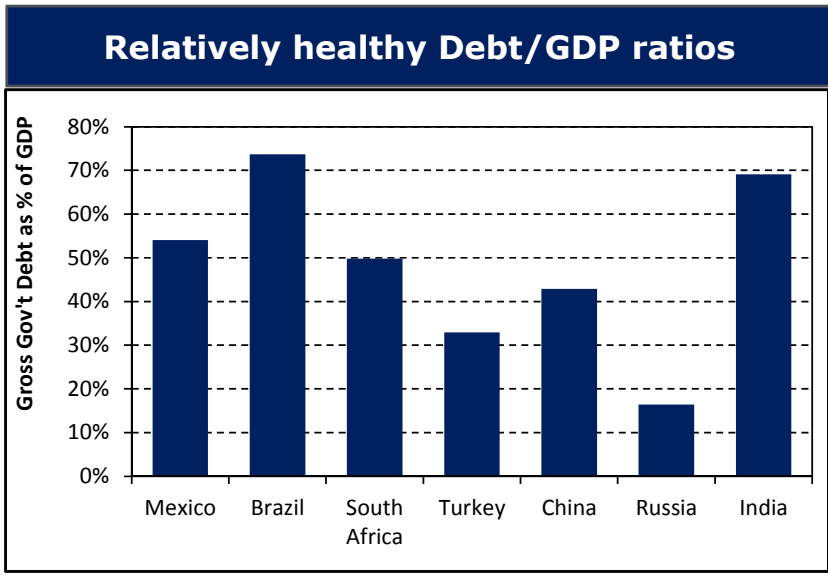


Source: Bloomberg, OECD

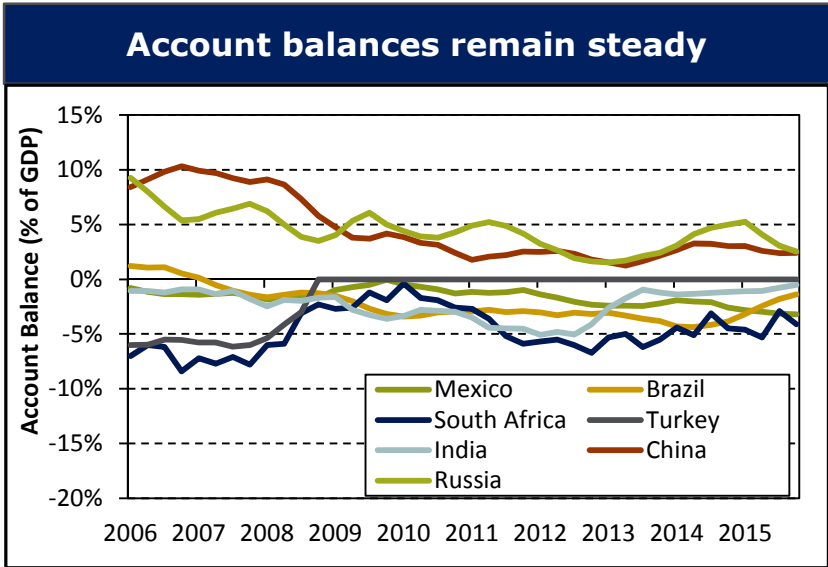
# Emerging Market Economic Indicators



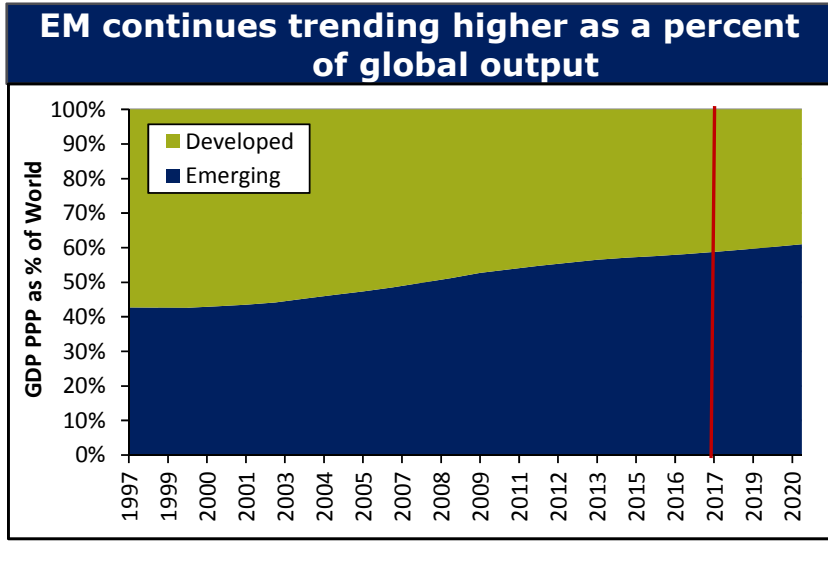
Source: Bloomberg



Source: Bloomberg, IMF



Source: Bloomberg

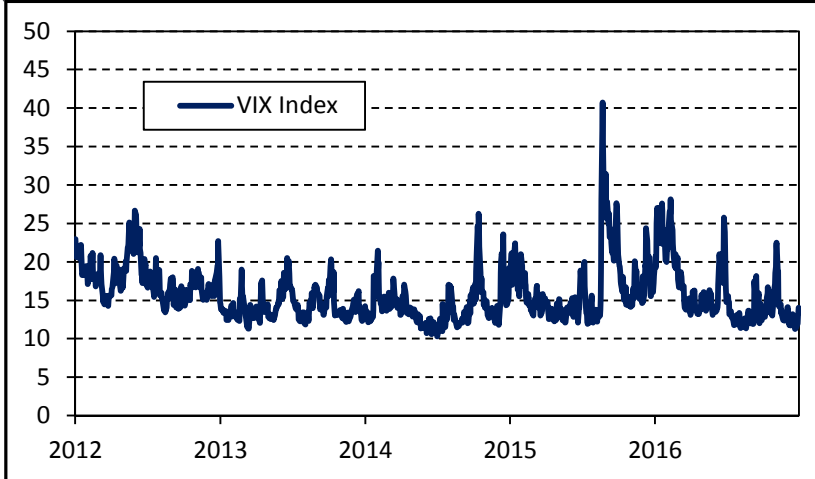


Source: Bloomberg, IMF



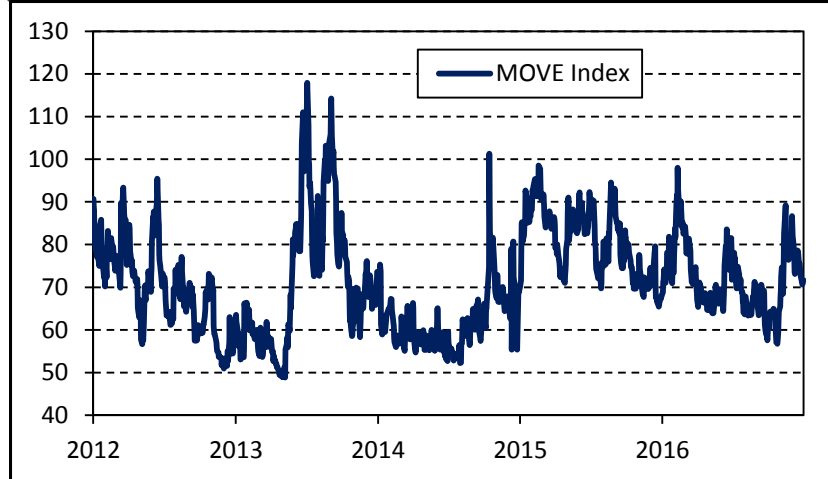
# Volatility

## Equity volatility remains low



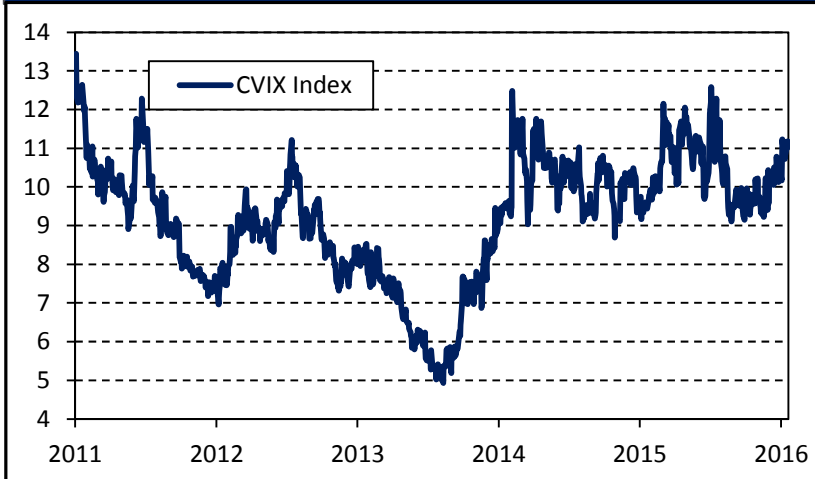
Source: Bloomberg, CBOE

## Treasury volatility continues to be elevated



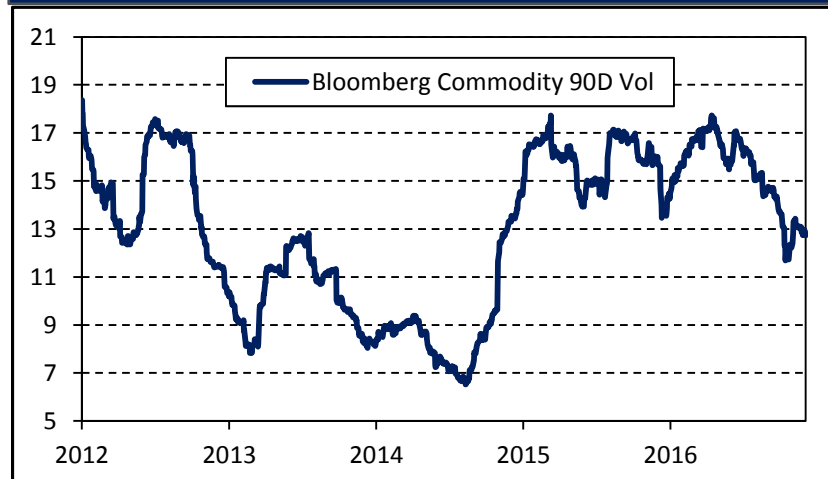
Source: Bloomberg, Merrill Lynch

## Currency volatility increased



Source: Bloomberg, Deutsche Bank

## Commodity volatility has subsided

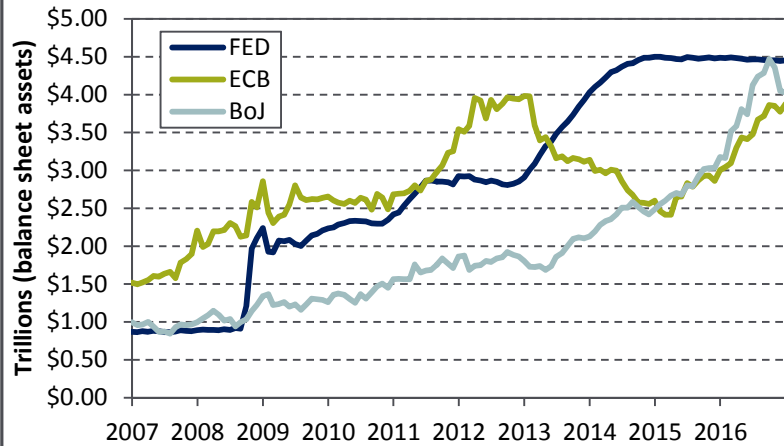


Source: Bloomberg, Merrill Lynch



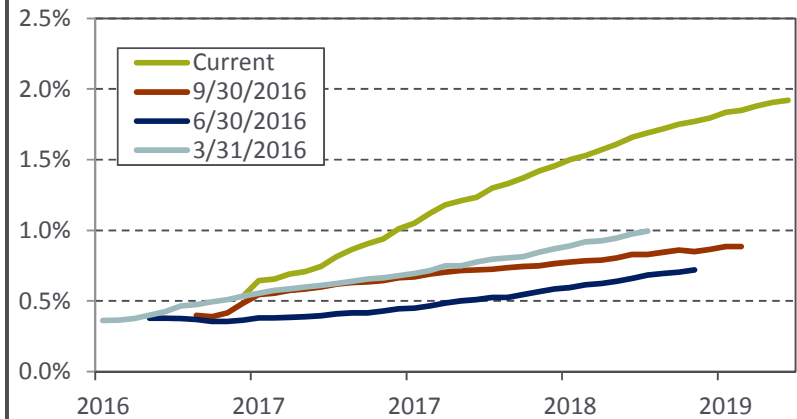
# Central Banks

## Yen depreciation has decreased the value of BoJ's balance sheet



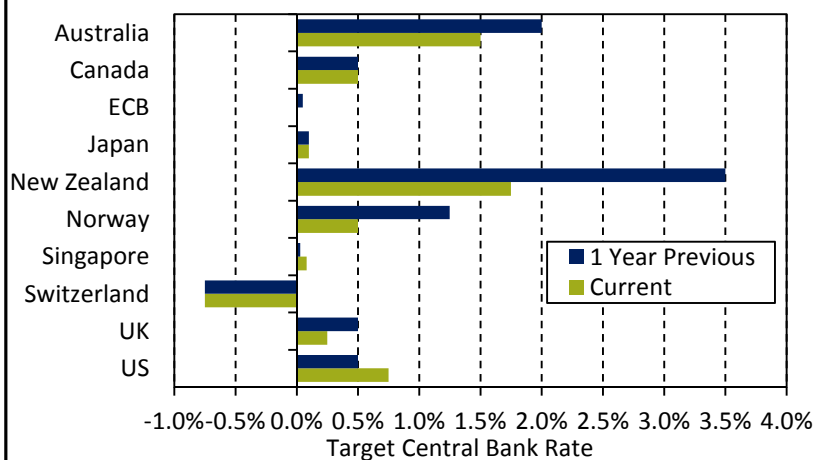
Source: Bloomberg, Federal Reserve, Bank of Japan, ECB, NEPC

## Market expectations for interest rates have increased dramatically post rate hike



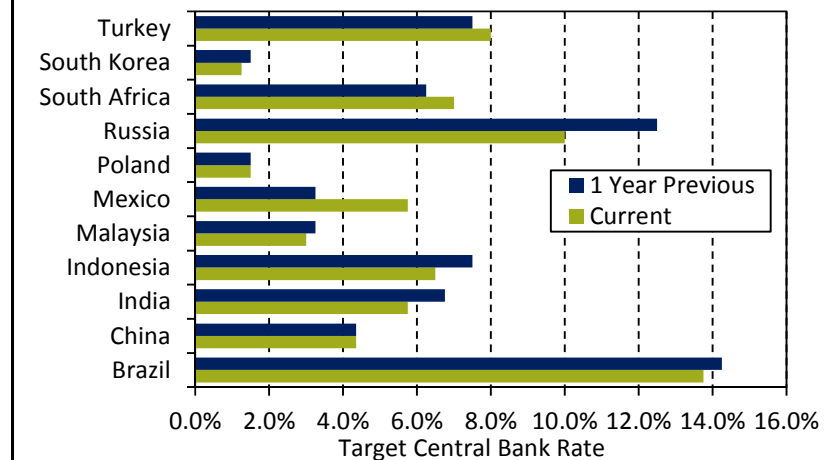
Source: Bloomberg, Federal Reserve

## Developed market interest rates are mostly lower than the previous year



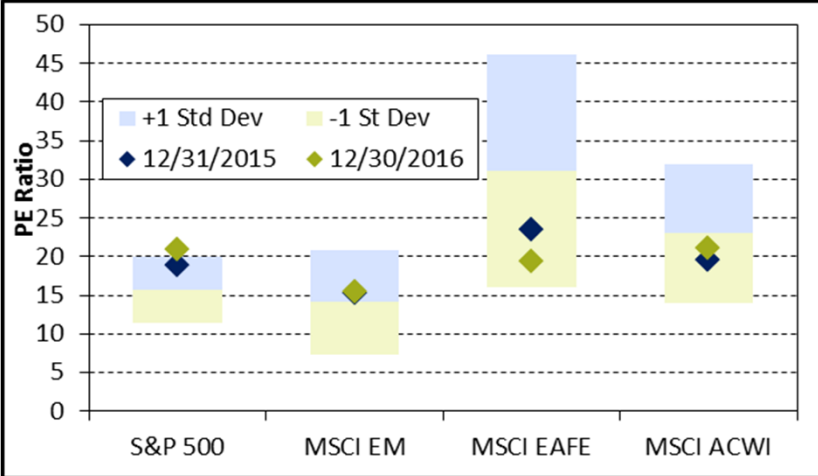
Source: Bloomberg

## EM central bank policies vary by country-specific economic conditions



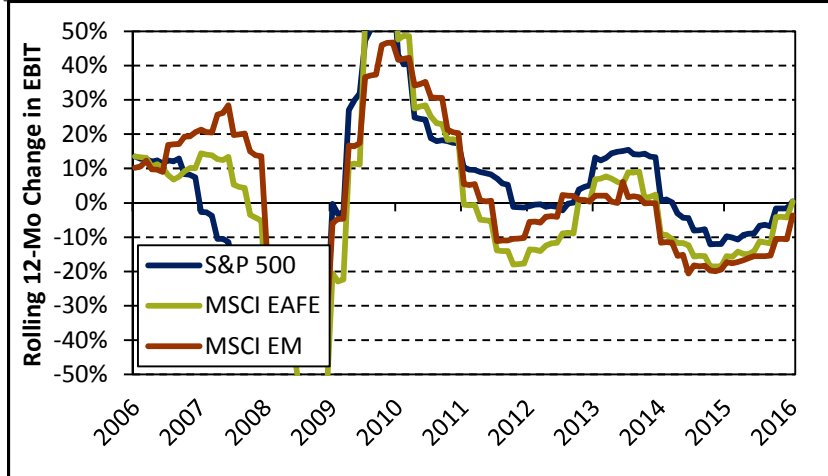
Source: Bloomberg

**EAFE's current valuation is lower than the previous year**



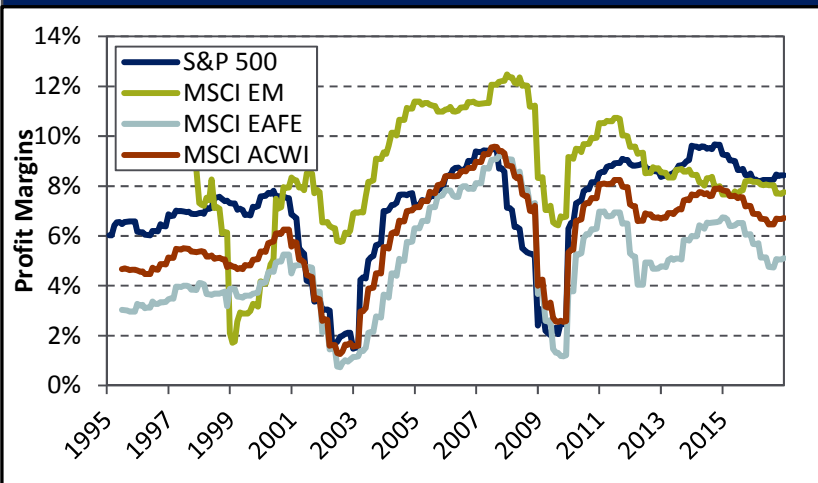
Source: Bloomberg, Standard and Poors, MSCI \*MSCI EAFE is ex UK Telecom  
\*Standard deviation calculations on 20 years of data except S&P 500 (30 years)

**Rolling annual earnings growth trending upwards off lows**



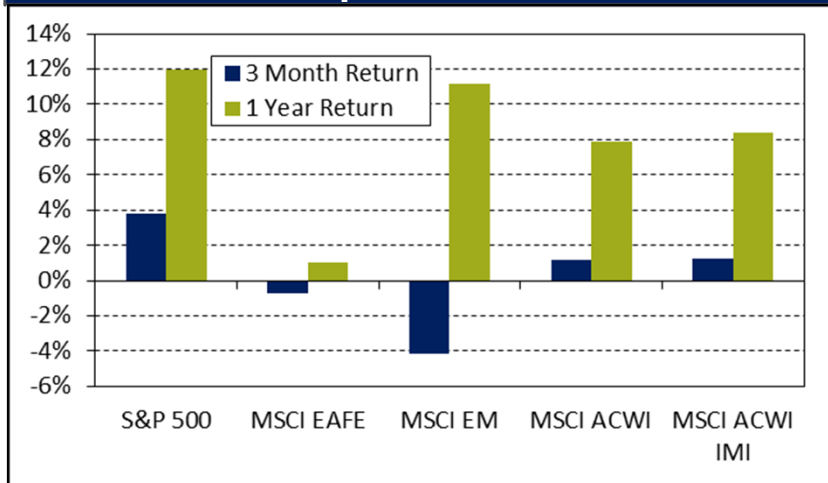
Source: Bloomberg, Standard and Poors, MSCI

**Profit margins slightly increased**



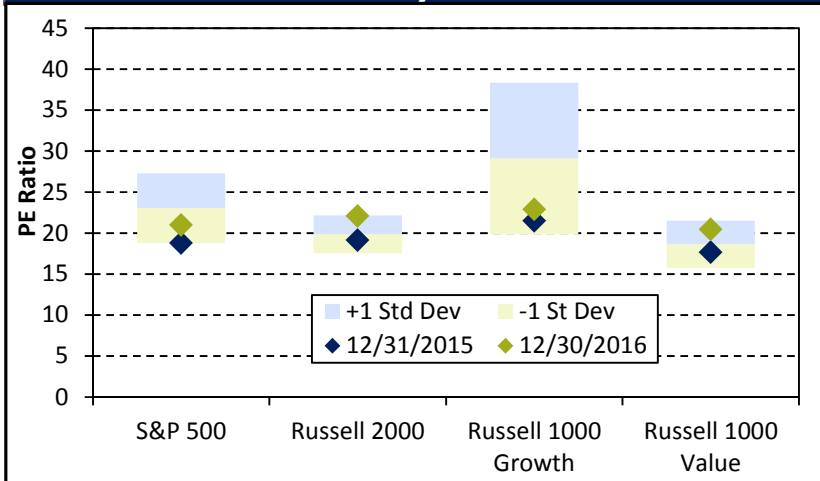
Source: Bloomberg, MSCI

**EM has experienced lack-luster short-term performance**



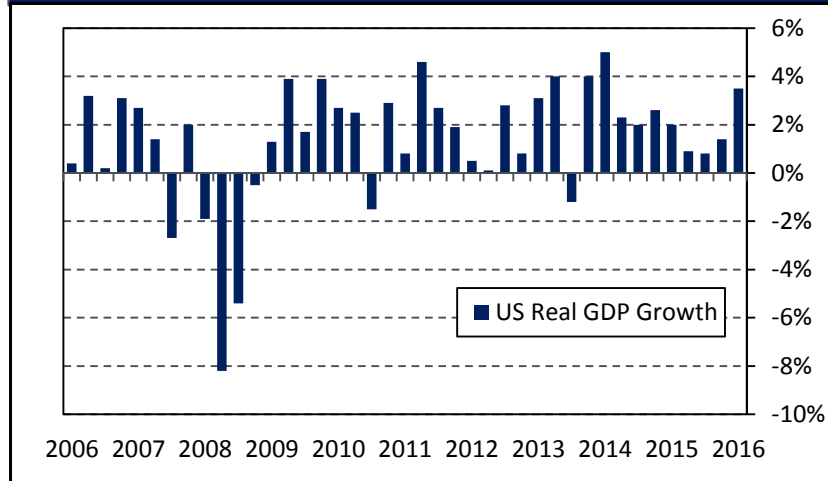
Source: Bloomberg, MSCI

## US equity valuations are higher than last year



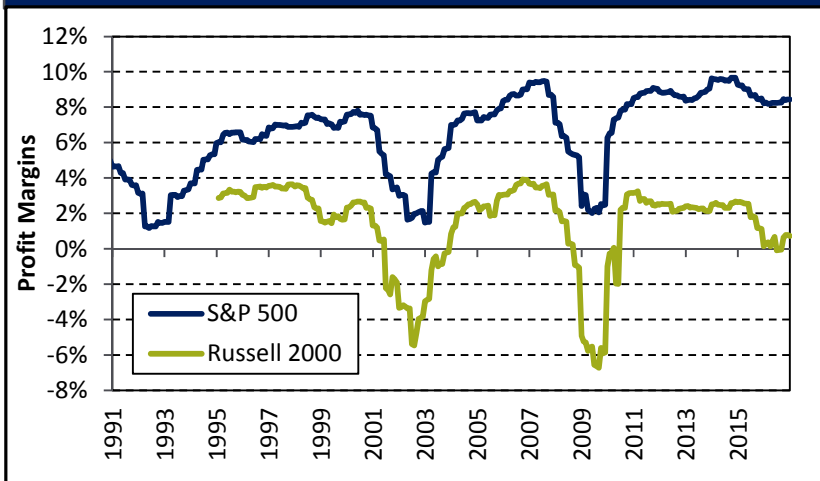
Source: Bloomberg, Standard and Poors, Russell \*Russell 2000 PE is index adjusted positive\* Standard deviation calculations based on 20 years of data

## GDP growth remains strong



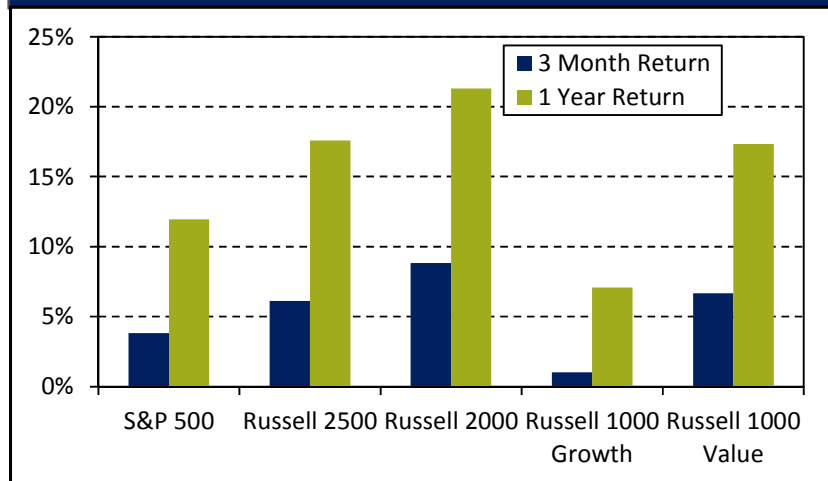
Source: Bloomberg, Bureau of Economic Analysis

## Profit margins hold steady



Source: Bloomberg, Standard and Poors, Russell

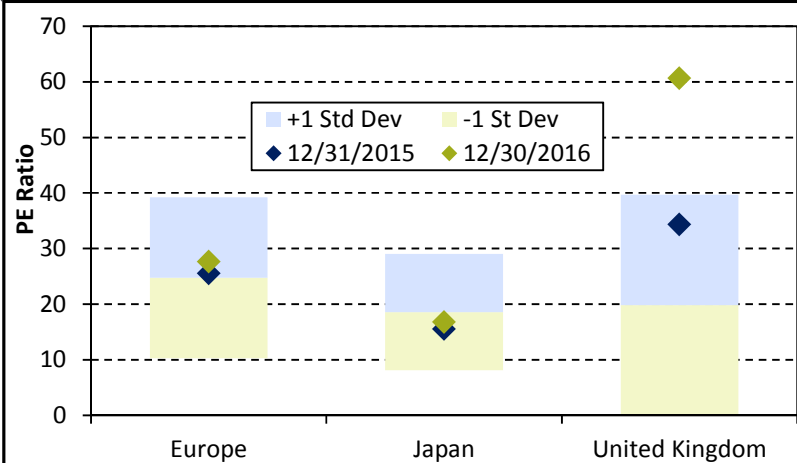
## US equity posts positive short-term returns



Source: Bloomberg, Standard and Poors, Russell

# International Equity

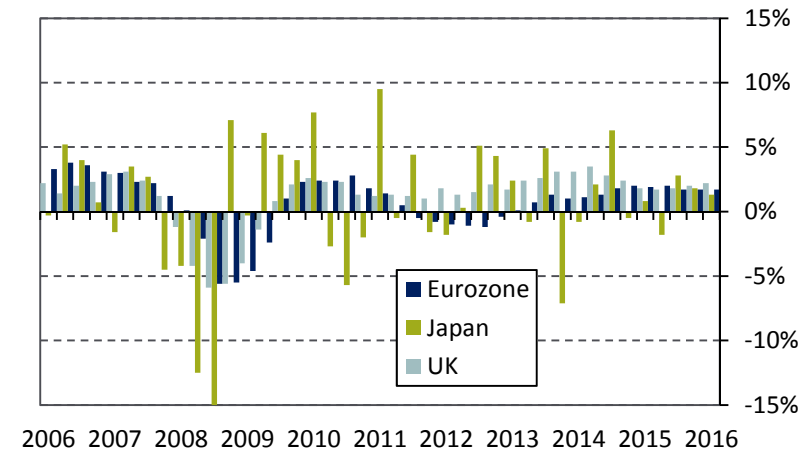
## UK PE ratios remain elevated



Source: Bloomberg, MSCI, FTSE \*UK represented by FTSE 100 Index

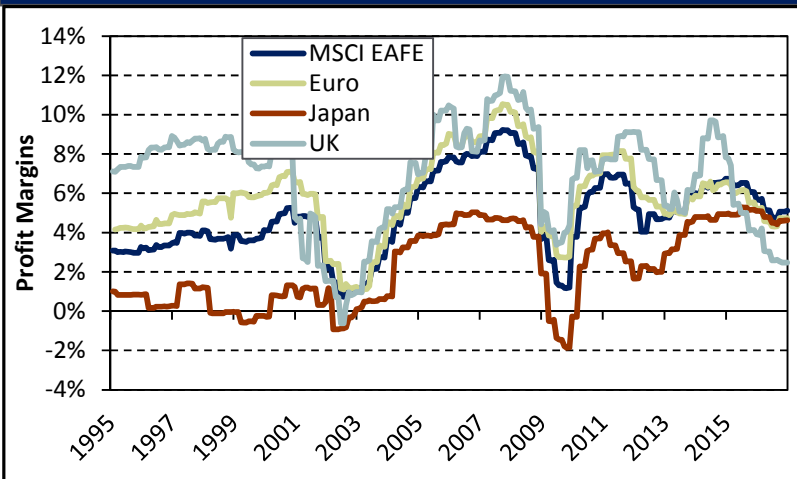
\*Standard deviation calculations based on 20 years of data, with Europe since 12/1998

## International growth steadies



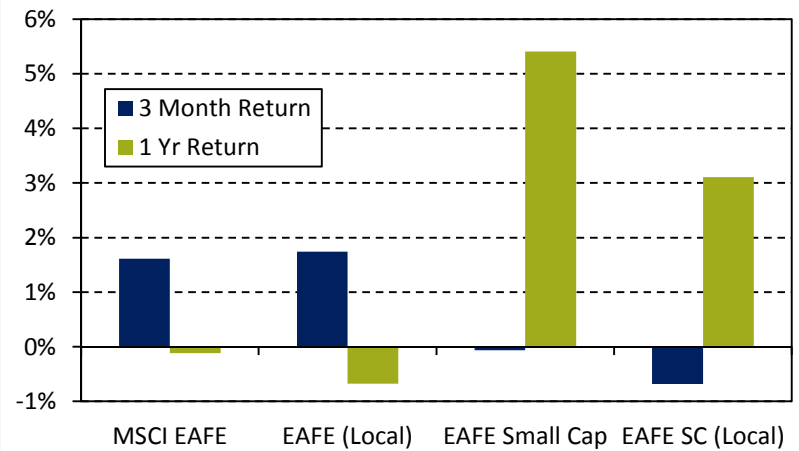
Source: Bloomberg

## UK margins continue to decline



Source: Bloomberg, MSCI

## Short-term small cap returns have been lack-luster

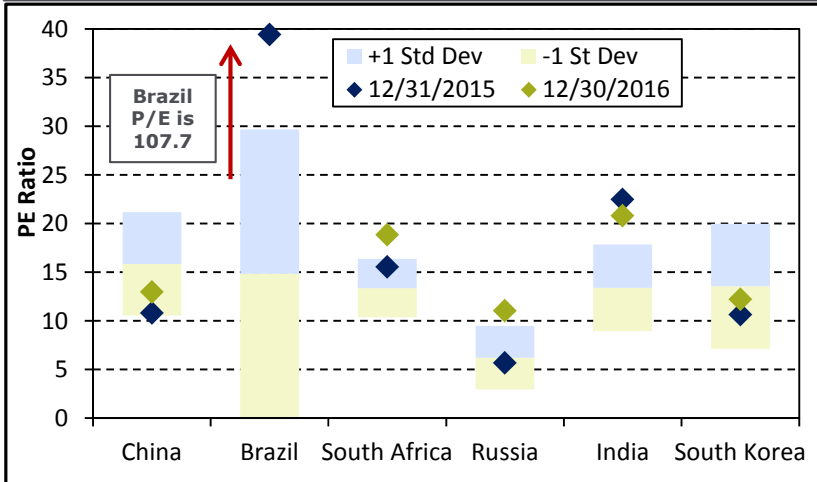


Source: Bloomberg, MSCI



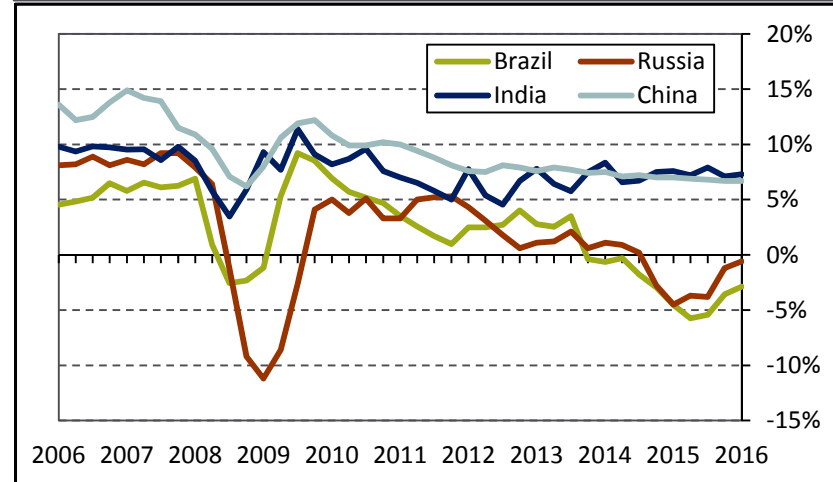
# Emerging Markets Equity

## Regional valuations similar year over year with the exception of Brazil

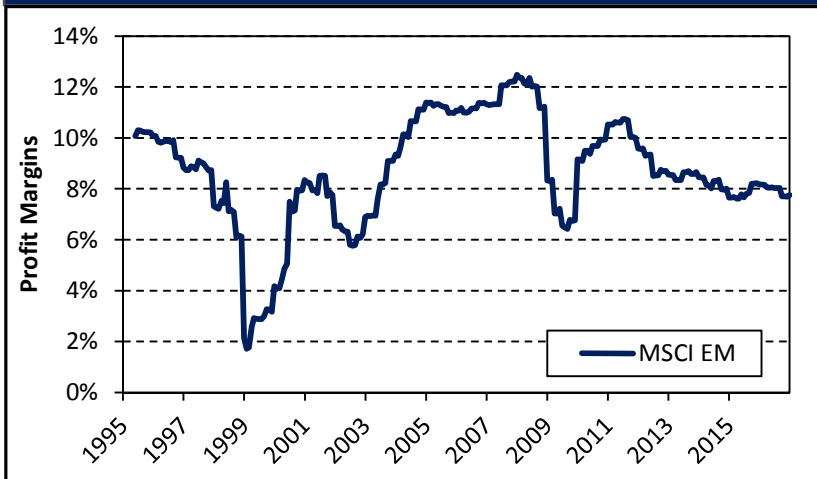


\*Standard deviation calculations based on 20 years of data, with Russia since 01/1998

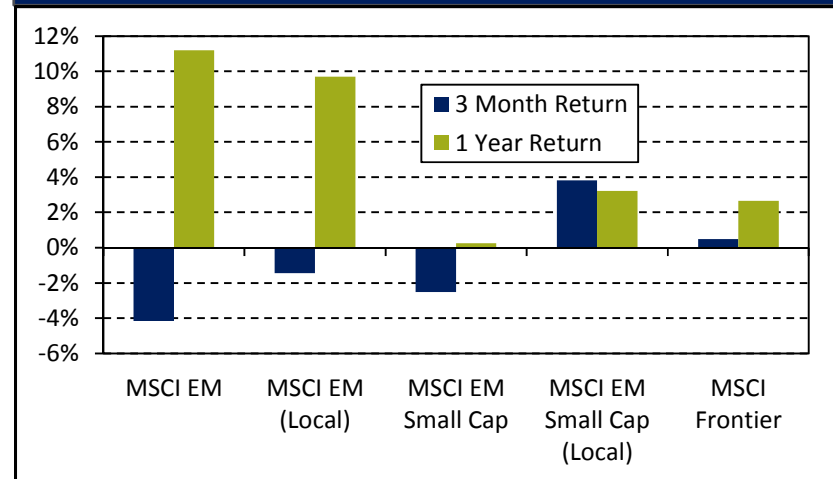
## Russia and Brazil experience rebounds off earnings contractions



## Profit margins in line with history

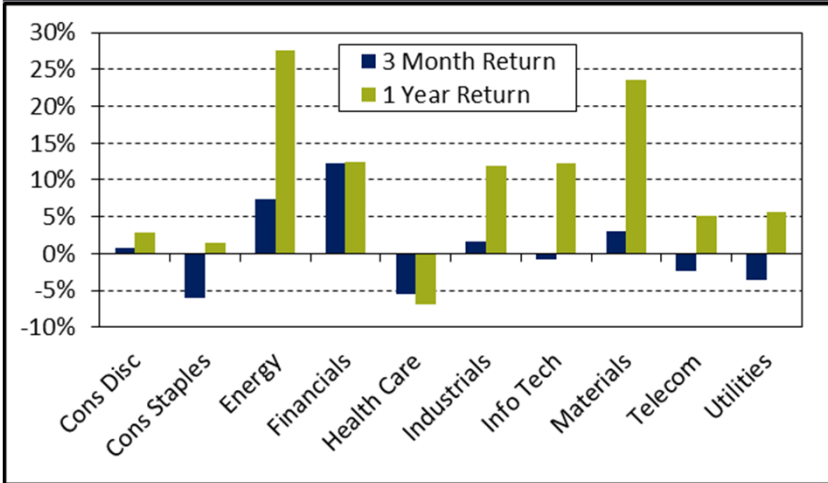


## EM local indices have outperformed dollar-denominated



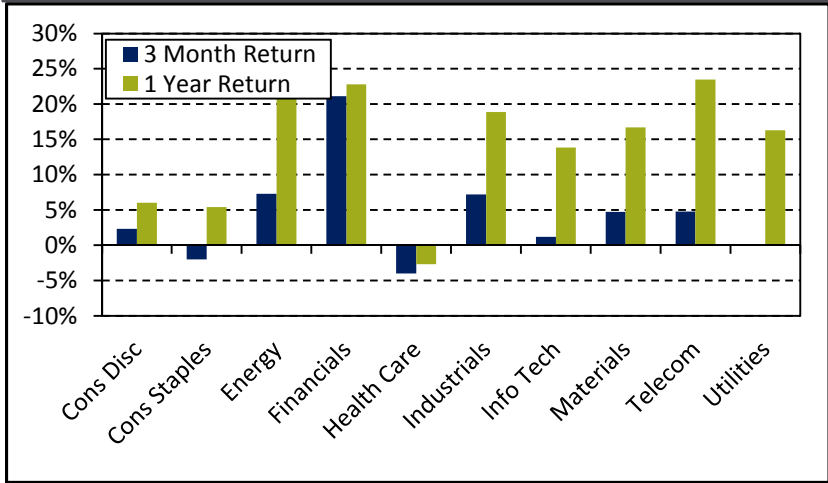
# Global Equity by Sector

**Energy and Financials lead MSCI ACWI short-term returns**



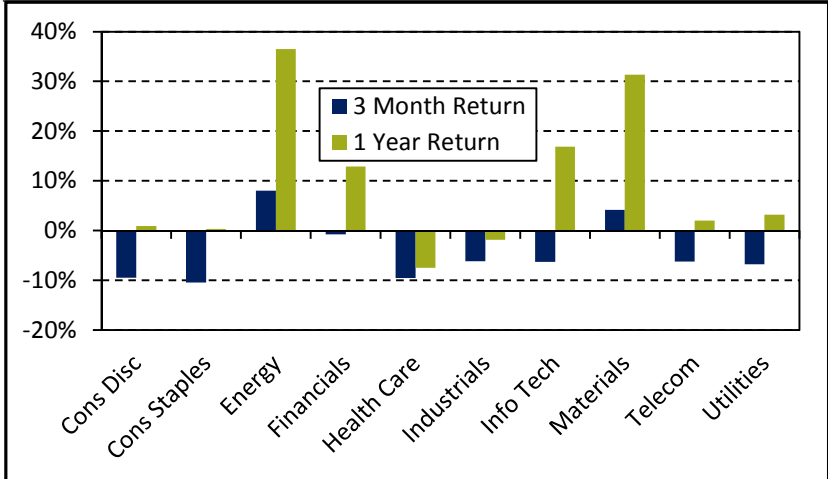
Source: Bloomberg, MSCI

**Healthcare and Consumer Staples drag S&P 500 short-term returns**



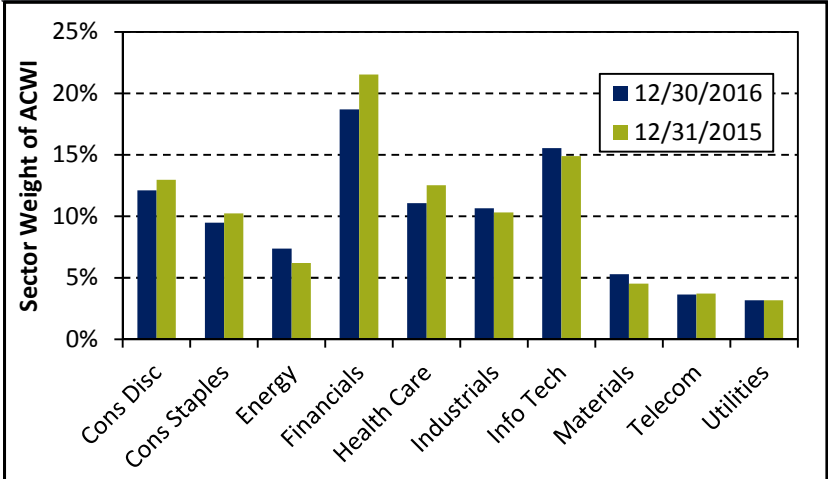
Source: Bloomberg, Standard and Poors

**Energy and Materials continue their strong performance in EM**



Source: Bloomberg, MSCI

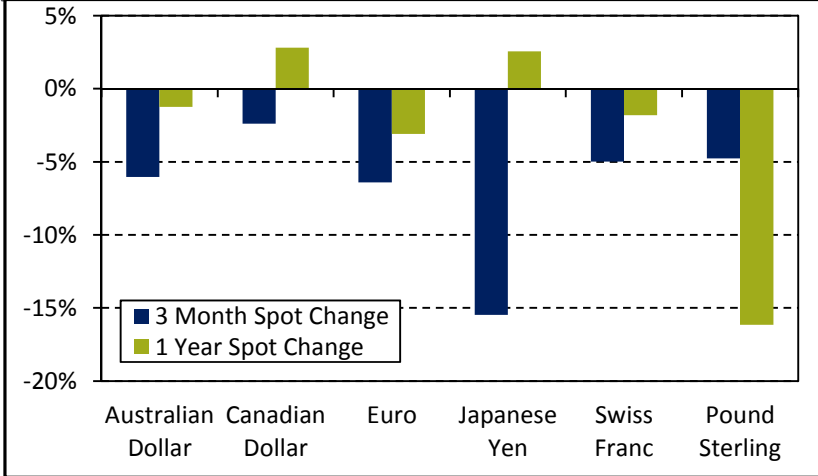
**Financials sector weight has decreased significantly**



Source: Bloomberg, MSCI

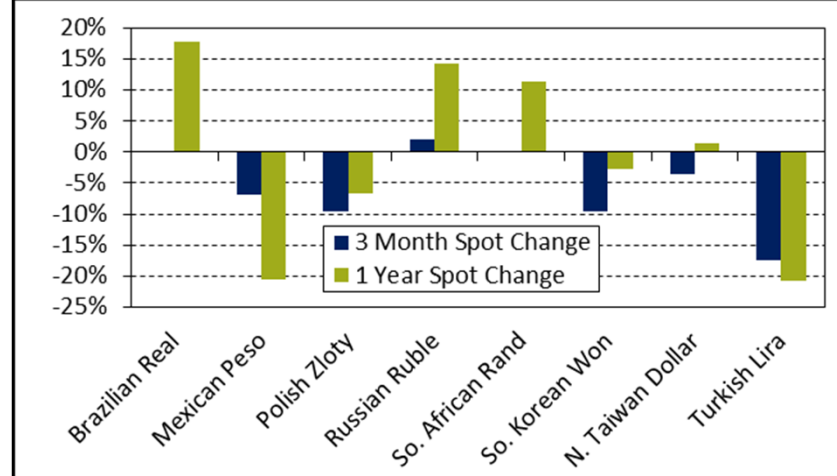
# Currencies

## Developed currencies have declined versus the dollar



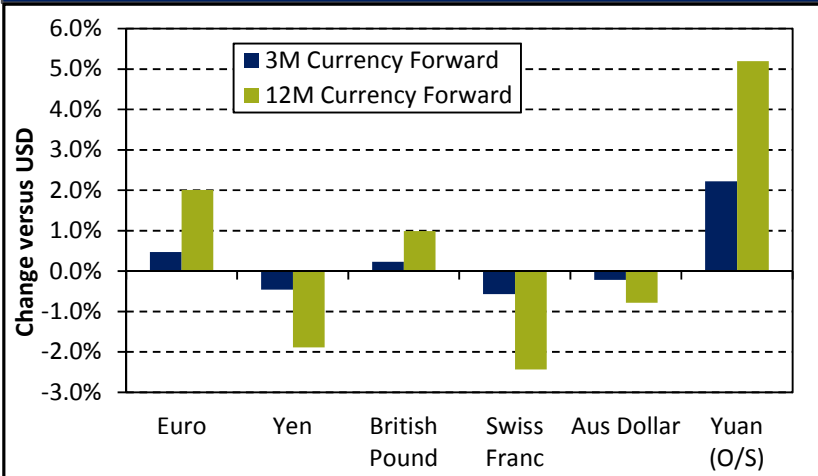
Source: Bloomberg

## A number of currencies have experienced sharp depreciation



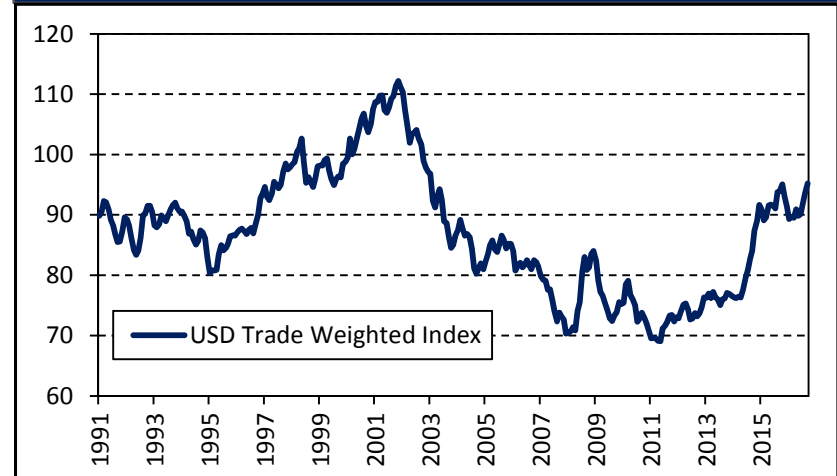
Source: Bloomberg

## USD expectations vary across developed markets



Source: Bloomberg

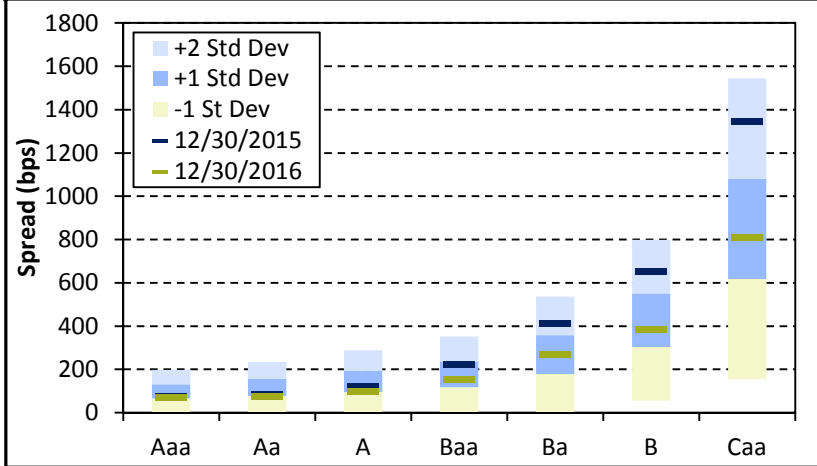
## Dollar strength persists



Source: Bloomberg, Federal Reserve



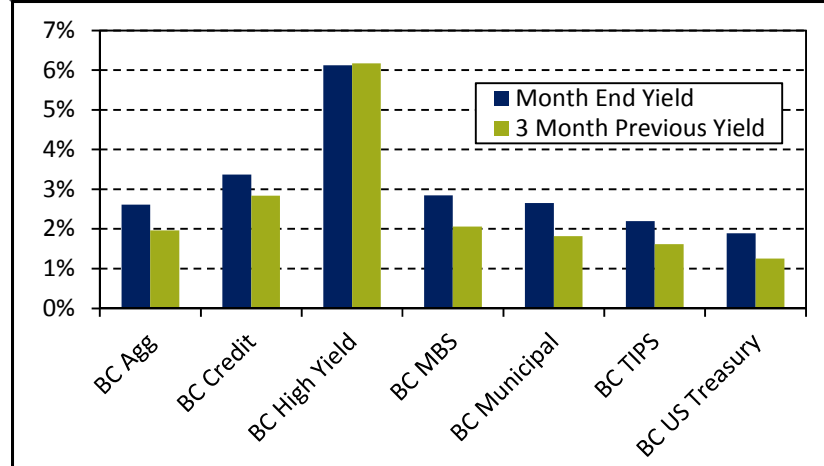
## Spreads remain lower than the previous year



Source: Bloomberg, Barclays

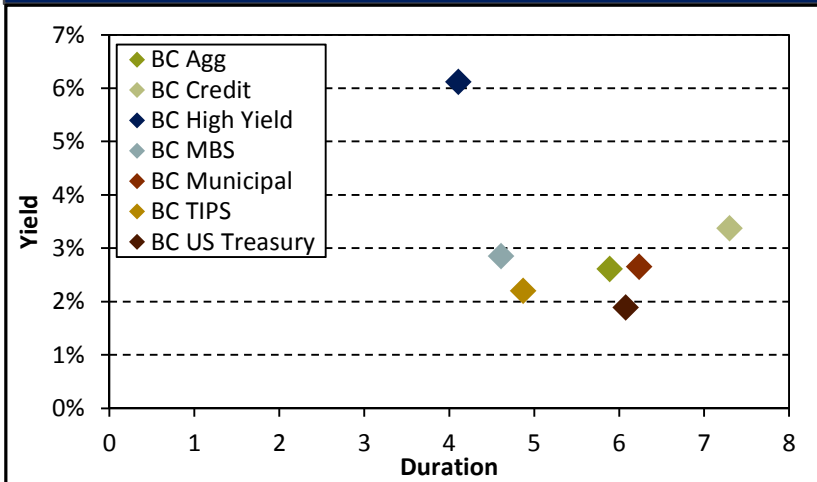
\*Standard deviation calculations based on 20 years of data

## Fixed income yields have increased



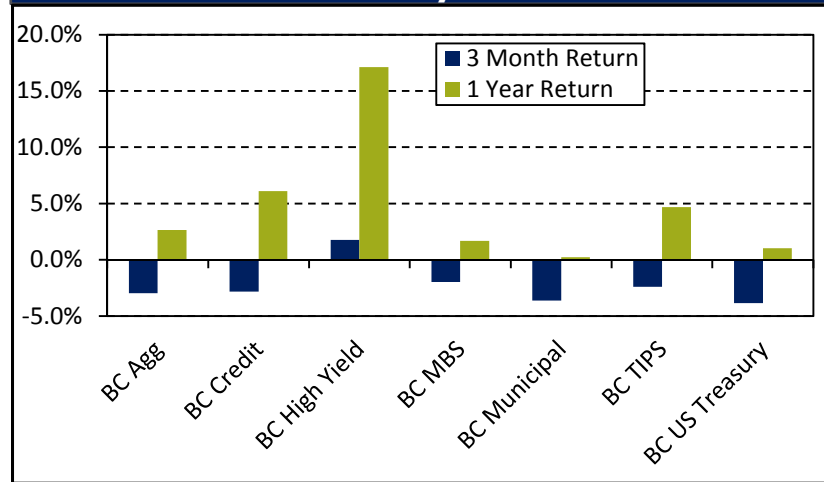
Source: Bloomberg, Barclays

## Similar duration/yield profiles among core indices



Source: Bloomberg, Barclays

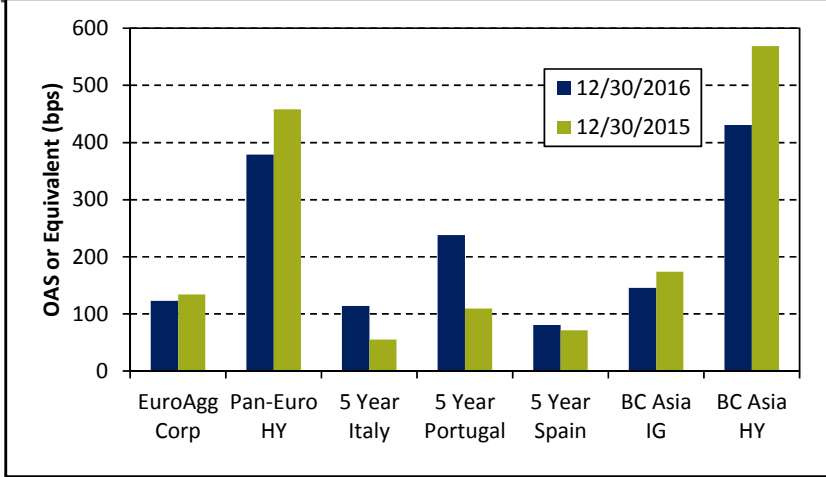
## Fixed income returns have broadly declined with recent yield increases



Source: Bloomberg, Barclays

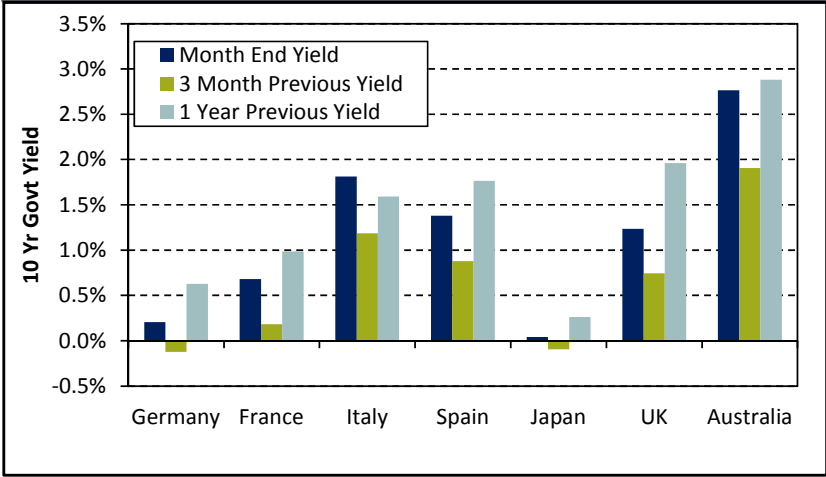
# International Developed Fixed Income

## European periphery yields vary relative to Germany



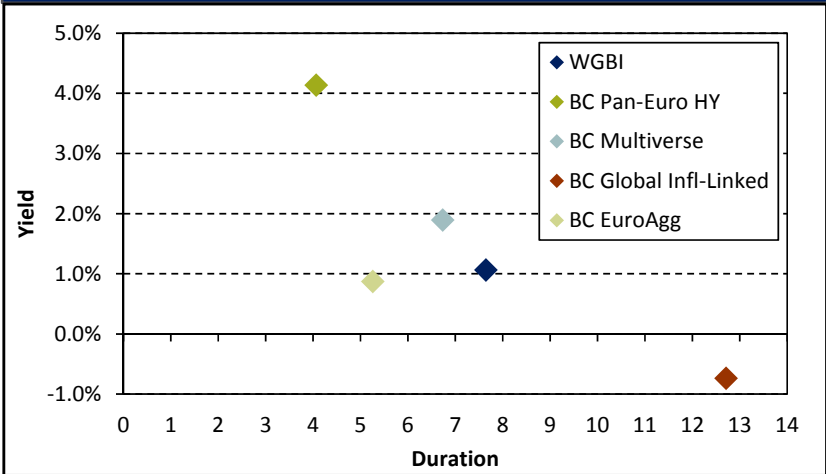
Source: Barclays, Bloomberg, \*European periphery spreads are over equivalent German Bund

## Global yields have increased post rate hike



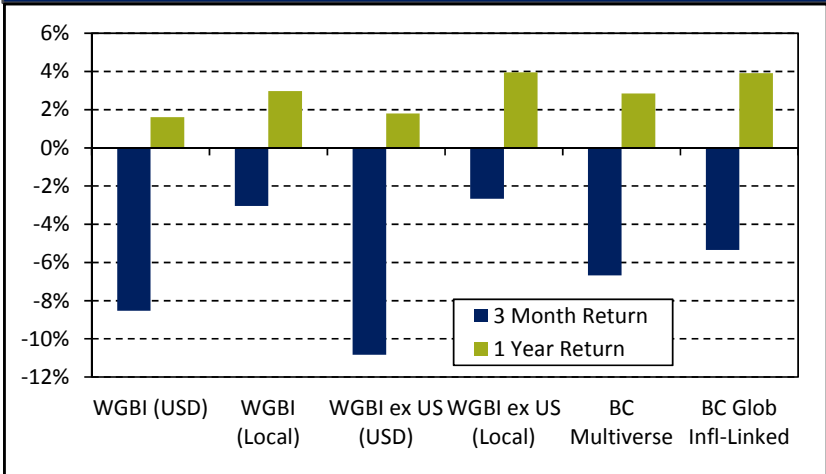
Source: Bloomberg

## Low yields persist in global bond universe



Source: Bloomberg, Citigroup, Barclays

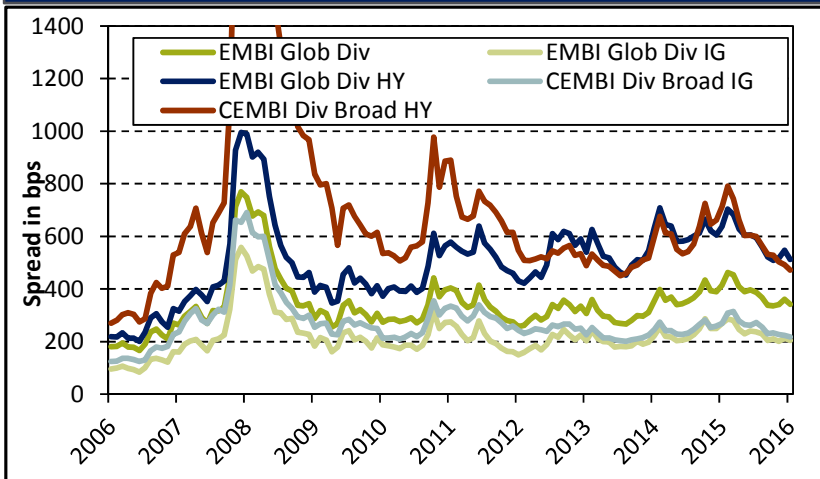
## Global bond returns hurt by rising yields



Source: Bloomberg, Citigroup, Barclays

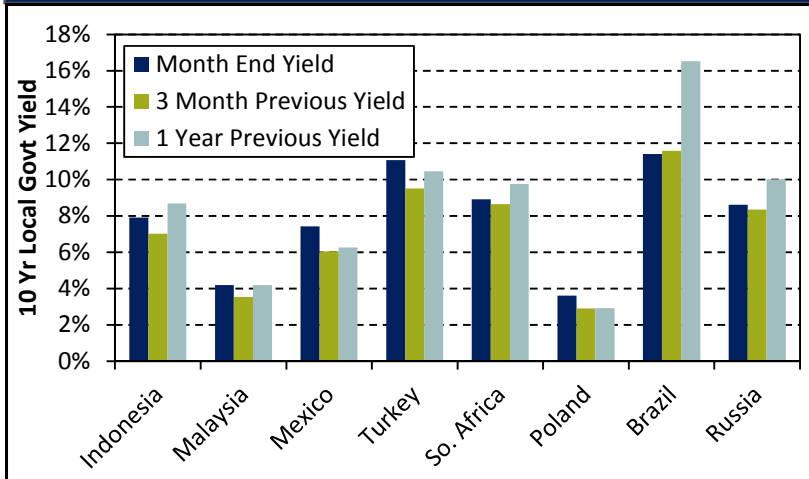
# Emerging Markets Fixed Income

## Spreads continue to decline



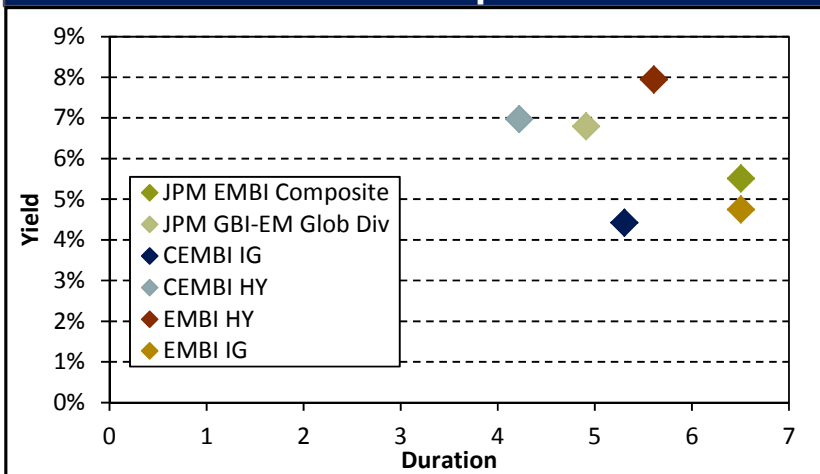
Source: Bloomberg, JP Morgan

## EM local bond yields increased slightly



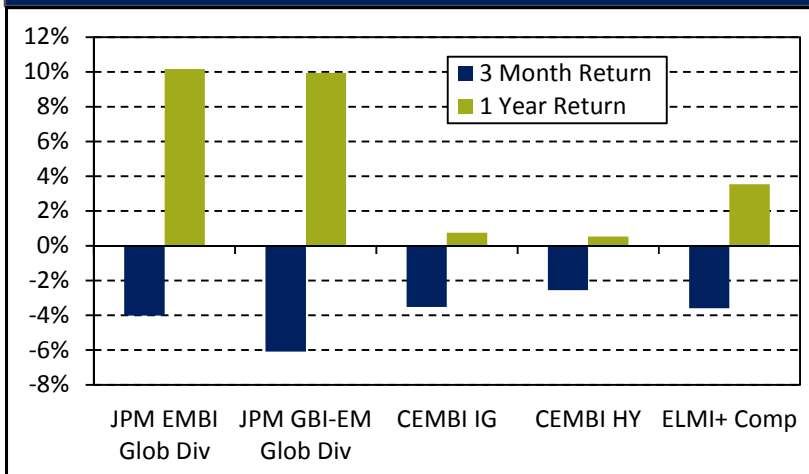
Source: Bloomberg

## EM yields remain attractive versus global counterparts



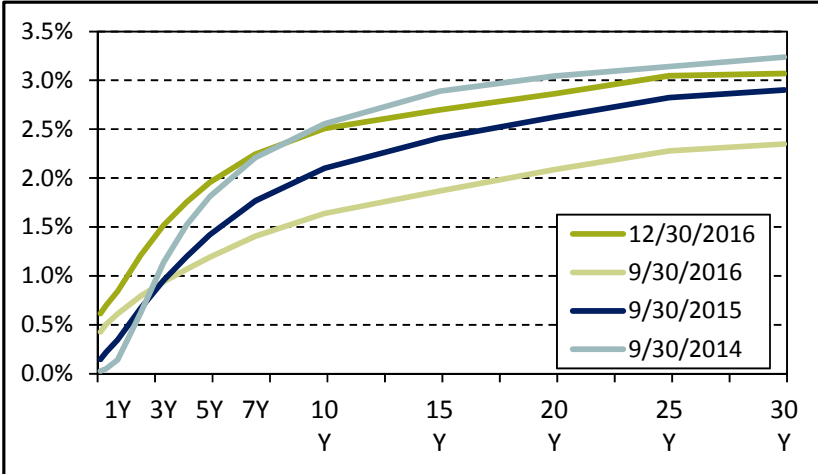
Source: Bloomberg, JP Morgan

## EM debt posts negative short-term returns



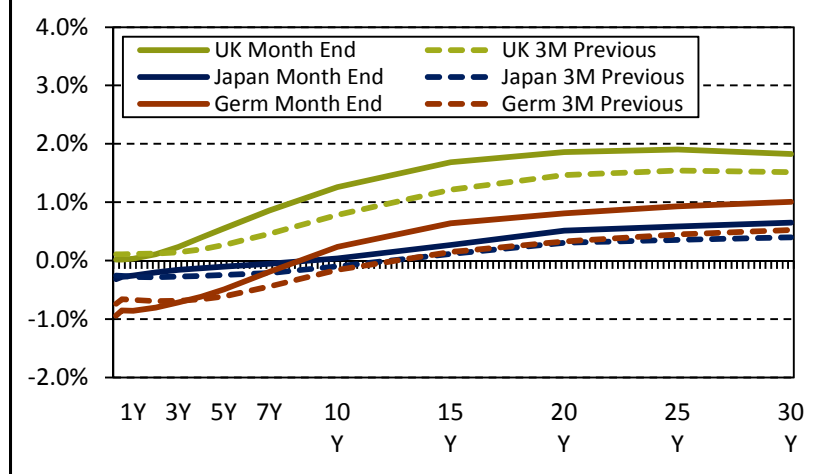
Source: Bloomberg, JP Morgan

**Rate expectations have increased relative to three months prior**



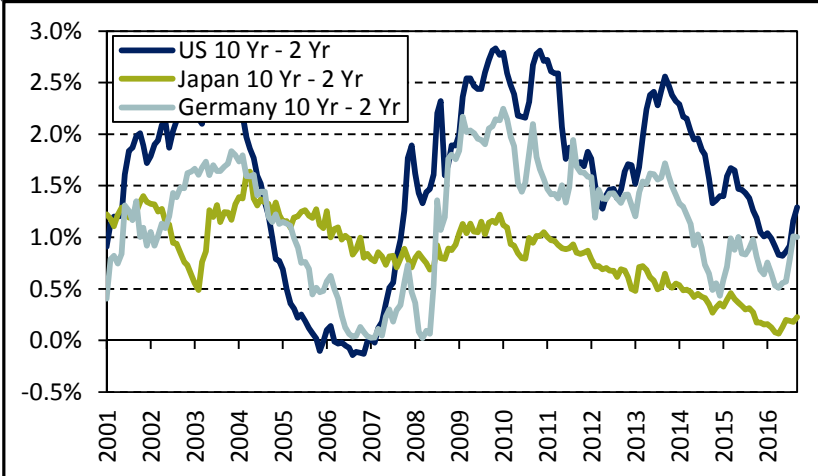
Source: Bloomberg

**Interest rate expectations continue increasing**



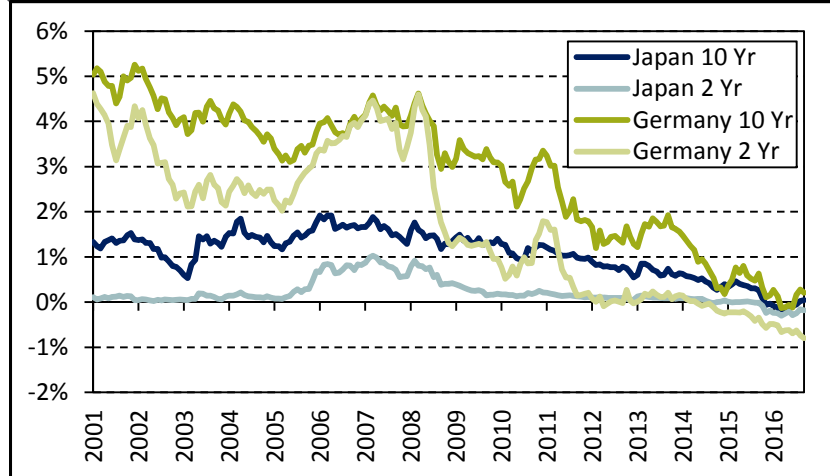
Source: Bloomberg

**10-2 spreads spiked with recent increase in yield**



Source: Bloomberg

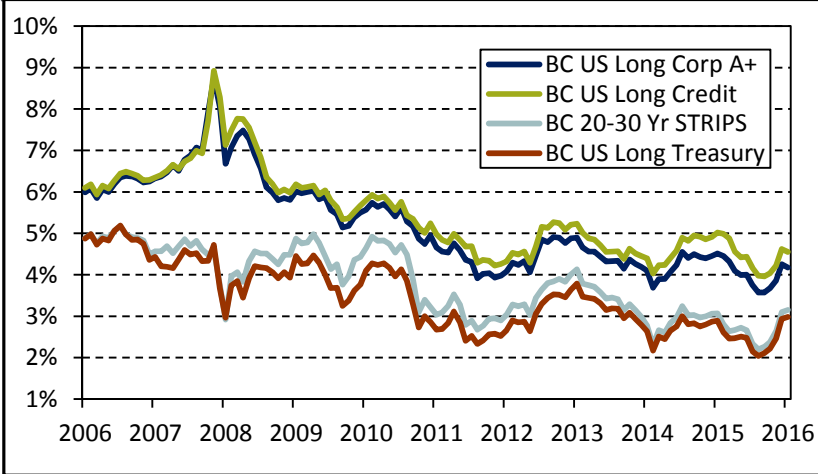
**Sovereign bond yields remain in negative or neutral territory**



Source: Bloomberg

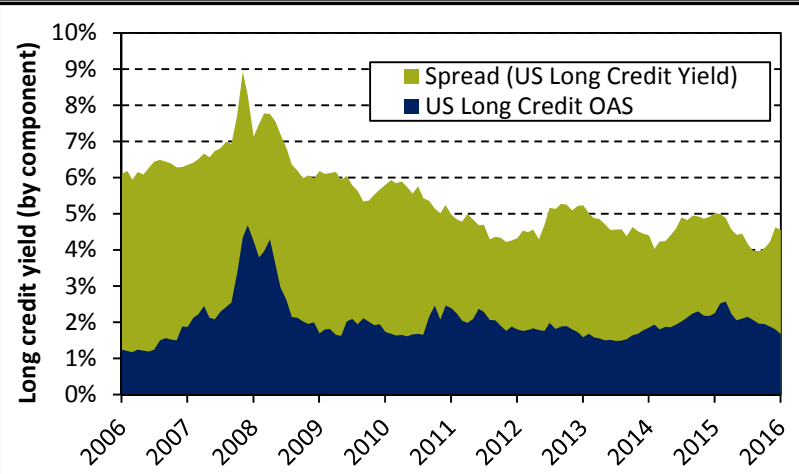
# Long Rates and Liability

## Long duration yields have steadied



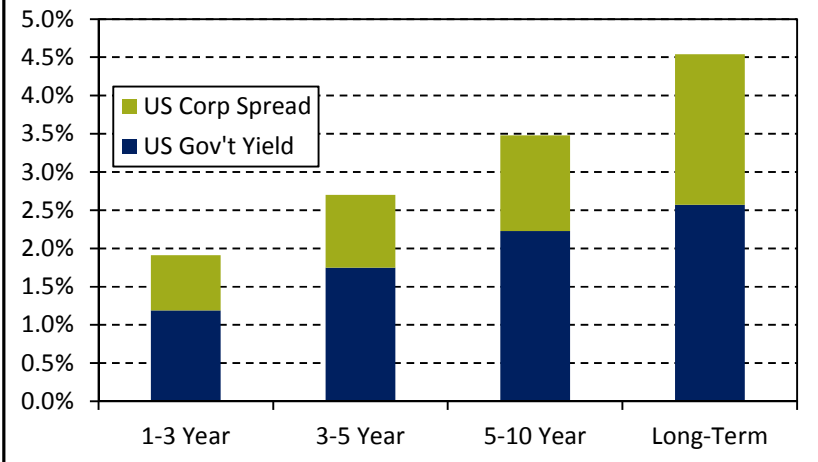
Source: Bloomberg, Citigroup, Barclays

## Long credit yield increases



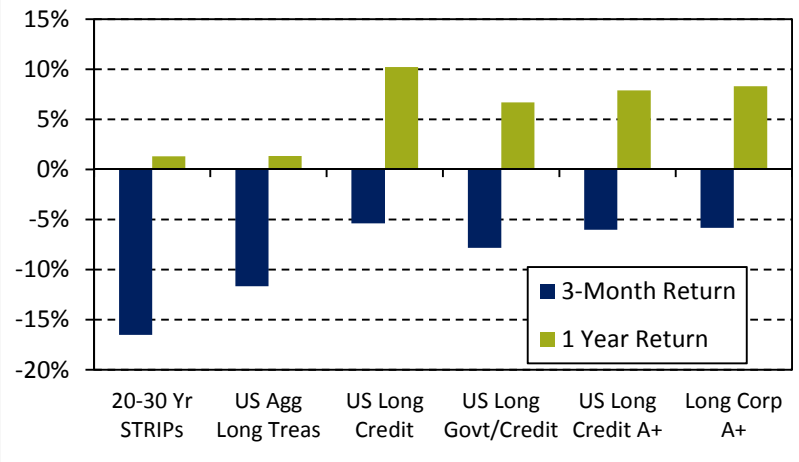
Source: Bloomberg, US Treasury, Barclays, NEPC

## Yield and spread components continue to offer modest returns



Source: Bloomberg, Barclays

## Long duration fixed income posted large short-term losses

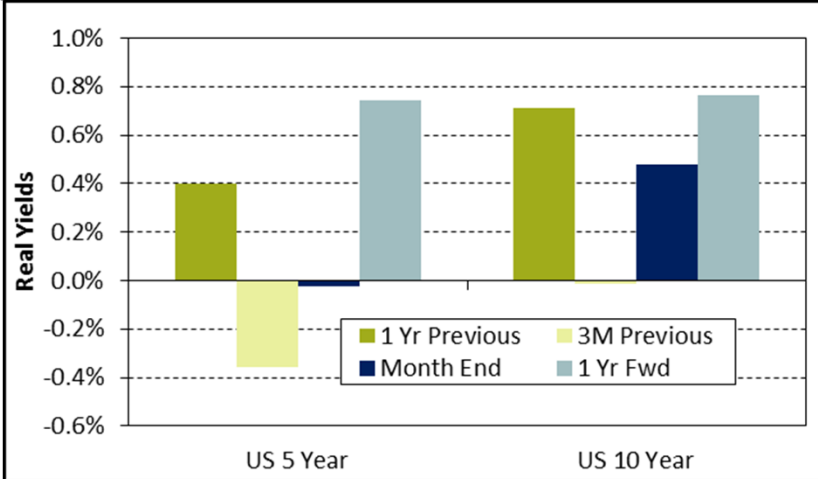


Source: Bloomberg, Barclays



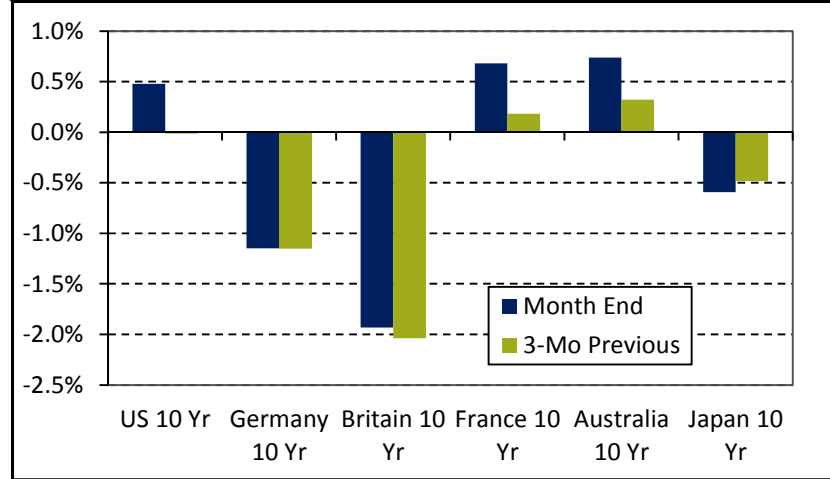
# Inflation and Real Rates

## US 10-year real yields increased from three months prior



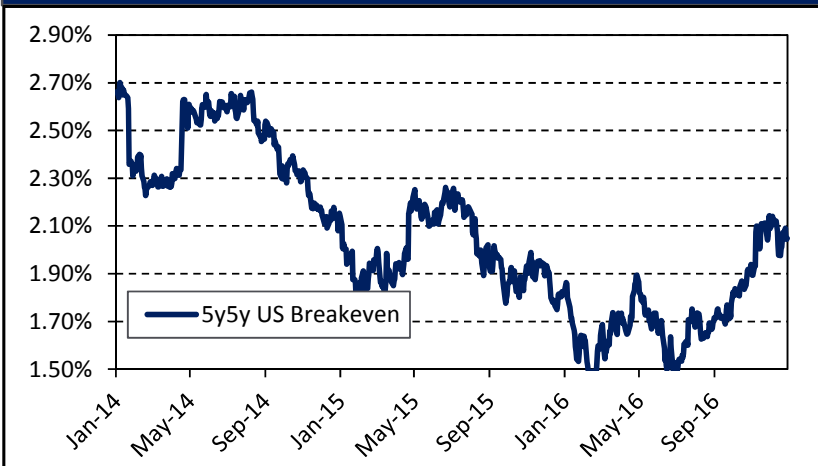
Source: Bloomberg

## With the exception of Japan, global real yields have increased



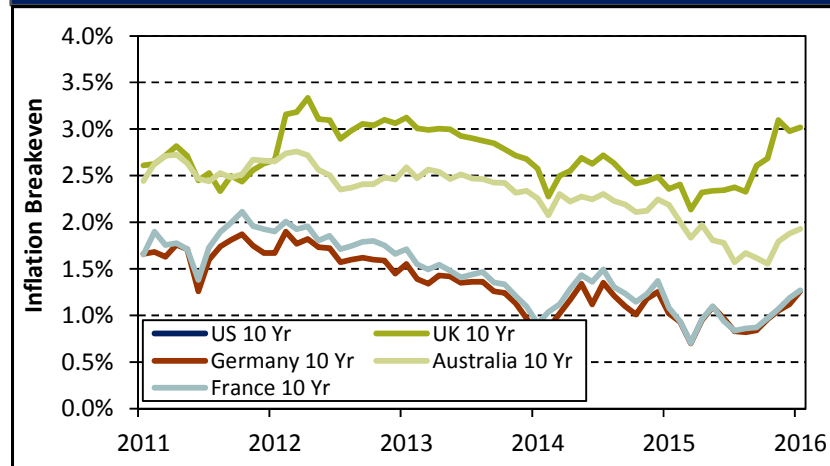
Source: Bloomberg

## US inflation expectations have increased but remain low



Source: Bloomberg

## Global inflation expectations continue to increase

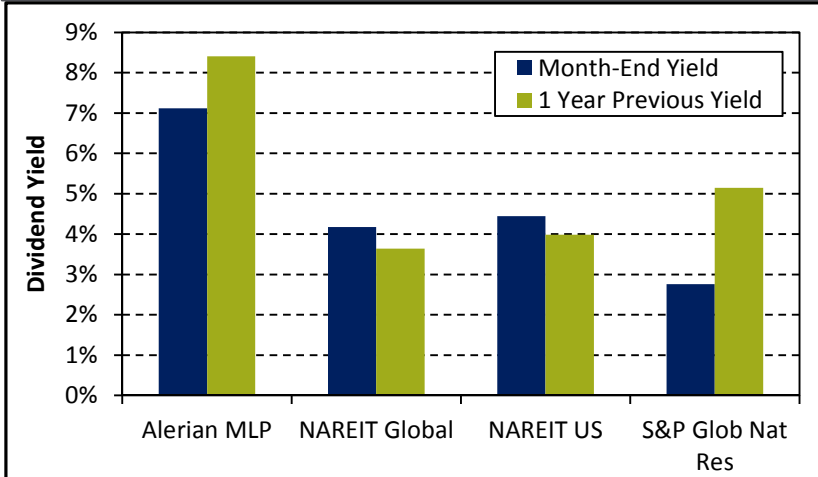


Source: Bloomberg



# Inflation Sensitive Growth Assets

## REITs yields are higher than the previous year



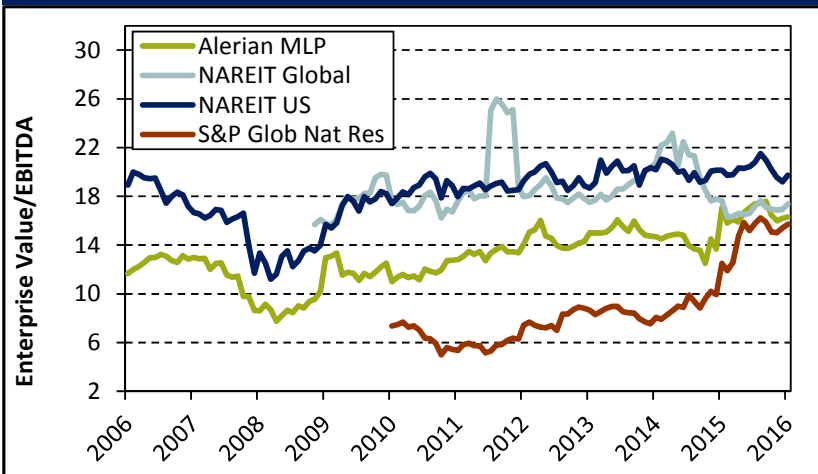
Source: Bloomberg, Alerian, Nareit, Standard and Poors

## Sustained recovery in commercial real estate occupancy rates



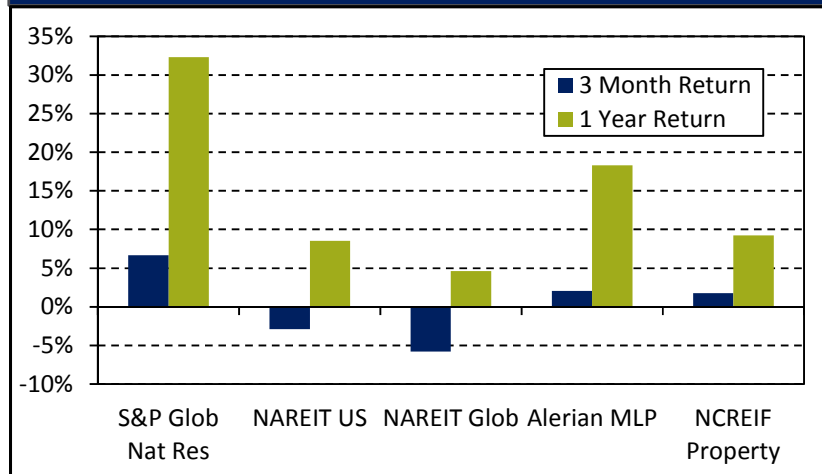
Source: NCREIF

## US REIT valuations have steadied



Source: Bloomberg, US Census Bureau

## REITs have underperformed in recent months

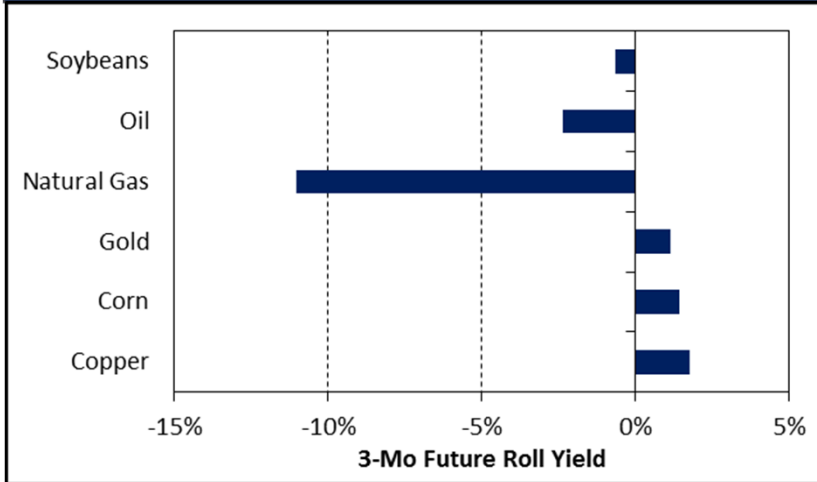


Source: Bloomberg, Alerian, Nareit, Standard and Poors



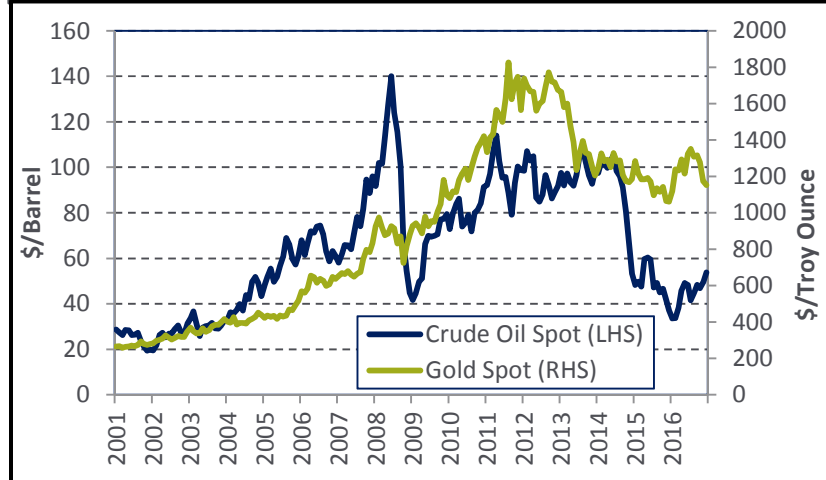
# Commodities

## Negative roll yields remain a hurdle for investing directly in oil and natural gas



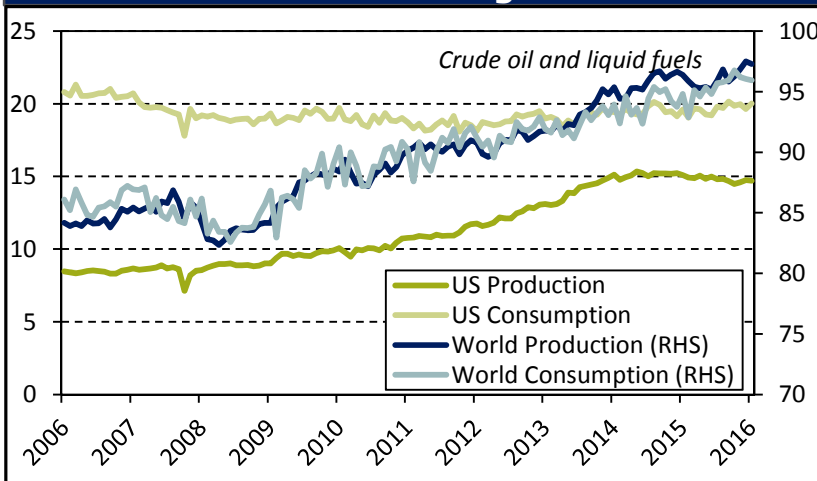
Source: Bloomberg

## Gold continues to decline post-election



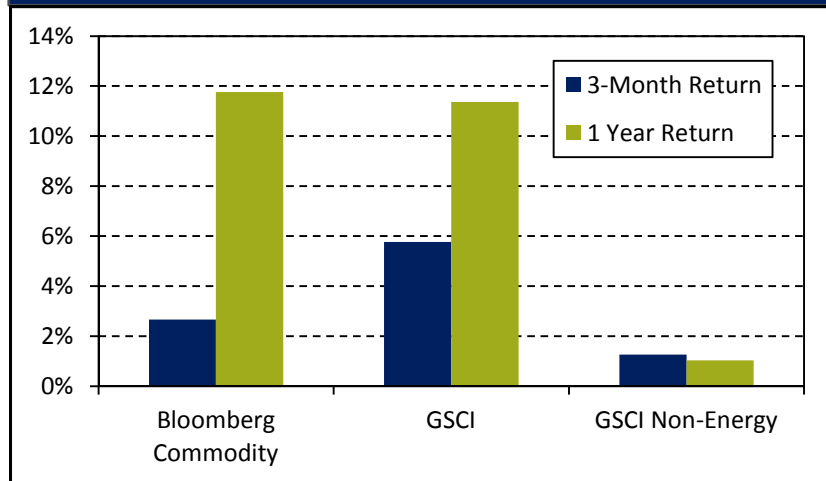
Source: Bloomberg

## World production has slightly declined with recent OPEC agreement



Source: Bloomberg, US Department of Energy \*Crude oil and liquid fuels

## Commodities post strong short-term returns



Source: Bloomberg, Standard and Poors





## Glossary of Investment Terminology—Risk Statistics

**Alpha** - Measures the relationship between the fund performance and the performance of another fund or benchmark index and equals the excess return while the other fund or benchmark index is zero.

**Alpha Jensen** - The average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio's beta and the average market return. Also known as the abnormal return or the risk adjusted excess return.

**Annualized Excess Return over Benchmark** - Annualized fund return minus the annualized benchmark return for the calculated return.

**Annualized Return** - A statistical technique whereby returns covering periods greater than one year are converted to cover a 12 month time span.

**Beta** - Measures the volatility or systematic risk and is equal to the change in the fund's performance in relation to the change in the assigned index's performance.

**Information Ratio** - A measure of the risk adjusted return of a financial security, asset, or portfolio.

*Formula:*

*(Annualized Return of Portfolio - Annualized Return of Benchmark)/Annualized Standard Deviation(Period Portfolio Return - Period Benchmark Return). To annualize standard deviation, multiply the deviation by the square root of the number of periods per year where monthly returns per year equals 12 and quarterly returns is four periods per year.*

**R-Squared** - Represents the percentage of a fund's movements that can be explained by movements in an index. R-Squared values range from 0 to 100. An R-Squared of 100 denotes that all movements of a fund are completely explained by movements in the index.

**Sharpe Ratio** - A measure of the excess return or risk premium per unit of risk in an investment asset or trading strategy.

**Sortino Ratio** - A method to differentiate between good and bad volatility in the Sharpe Ratio. The differentiation of up and down volatility allows the calculation to provide a risk adjusted measure of a security or fund's performance without upward price change penalties.

*Formula:*

*Calculation Average (X-Y)/Downside Deviation (X-Y) \* 2  
Where X=Return Series X Y = Return Series Y which is the risk free return (91 day T-bills)*

**Standard Deviation** - The standard deviation is a statistical term that describes the distribution of results. It is a commonly used measure of volatility of returns of a portfolio, asset class, or security. The higher the standard deviation the more volatile the returns are.

*Formula:*

*(Annualized Return of Portfolio - Annualized Return of Risk Free) / Annualized Standard Deviation (Portfolio Returns)*

**Tracking Error** - Tracking error, also known as residual risk, is a measure of the degree to which a portfolio tracks its benchmark. It is also a measure of consistency of excess returns. Tracking error is computed as the annualized standard deviation of the difference between a portfolio's return and that of its benchmark.

*Formula:*

*Tracking Error = Standard Deviation (X-Y) \*  $\sqrt{(\# \text{ of periods per year})}$   
Where X = periods portfolio return and Y = the period's benchmark return  
For monthly returns, the periods per year = 12  
For quarterly returns, the periods per year = 4*

**Treynor Ratio** - A risk-adjusted measure of return based on systematic risk. Similar to the Sharpe ratio with the difference being the Treynor ratio uses beta as the measurement of volatility.

*Formula:*

*(Portfolio Average Return - Average Return of Risk-Free Rate)/Portfolio Beta*

**Up/Down Capture Ratio** - A measure of what percentage of a market's returns is "captured" by a portfolio. For example, if the market declines 10% over some period, and the manager declines only 9%, then his or her capture ratio is 90%. In down markets, it is advantageous for a manager to have as low a capture ratio as possible. For up markets, the higher the capture ratio the better. Looking at capture ratios can provide insight into how a manager achieves excess returns. A value manager might typically have a lower capture ratio in both up and down markets, achieving excess returns by protecting on the downside, whereas a growth manager might fall more than the overall market in down markets, but achieve above-market returns in a rising market.

*UpsideCapture = TotalReturn(FundReturns)/TotalReturns(BMReturn) when Period Benchmark Return is > = 0*

*DownsideCapture = TotalReturn(FundReturns)/TotalReturns(BMReturn) when Benchmark < 0*

Data Source: InvestorForce

## Glossary of Investment Terminology

**# Of Portfolios/Observations<sup>1</sup>** – The total number of data points that make up a specified universe

**Allocation Index<sup>3</sup>** - The allocation index measures the value added (or subtracted) to each portfolio by active management. It is calculated monthly: The portfolio asset allocation to each category from the prior month-end is multiplied by a specified market index.

**Asset Allocation Effect<sup>2</sup>** - Measures an investment manager's ability to effectively allocate their portfolio's assets to various sectors. The allocation effect determines whether the overweighting or underweighting of sectors relative to a benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is over weighted in a sector that outperforms the benchmark and underweighted in a sector that underperforms the benchmark. Negative allocation occurs when the portfolio is over weighted in a sector that underperforms the benchmark and under weighted in a sector that outperforms the benchmark.

**Agency Bonds (Agencies)<sup>3</sup>** - The full faith and credit of the United States government is normally not pledged to payment of principal and interest on the majority of government agencies issuing these bonds, with maturities of up to ten years. Their yields, therefore, are normally higher than government and their marketability is good, thereby qualifying them as a low risk-high liquidity type of investment. They are eligible as security for advances to the member banks by the Federal Reserve, which attests to their standing.

**Asset Backed Securities (ABS)<sup>3</sup>** - Bonds which are similar to mortgage-backed securities but are collateralized by assets other than mortgages; commonly backed by credit card receivables, auto loans, or other types of consumer financing.

**Attribution<sup>3</sup>** - Attribution is an analytical technique that allows us to evaluate the performance of the portfolio relative to the benchmark. A proper attribution tells us where value was added or subtracted as a result of the manager's decisions.

**Average Effective Maturity<sup>4</sup>** - For a single bond, it is a measure of maturity that takes into account the possibility that a bond might be called back to the issuer.

For a portfolio of bonds, average effective maturity is the weighted average of the maturities of the underlying bonds. The measure is computed by weighing each bond's maturity by its market value with respect to the portfolio and the likelihood of any of the bonds being called. In a pool of mortgages, this would also account for the likelihood of prepayments on the mortgages.

**Batting Average<sup>1</sup>** - A measurement representing an investment manager's ability to meet or beat an index.

*Formula: Divide the number of days (or months, quarters, etc.) in which the manager beats or matches the index by the total number of days (or months, quarters, etc.) in the period of question and multiply that factor by 100.*

**Brinson Fachler (BF) Attribution<sup>1</sup>** - The BF methodology is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance. The main advantage of the BF methodology is that rather than using the overall return of the benchmark, it goes a level deeper than BHB and measures whether the benchmark sector, country, etc. outperformed/or underperformed the overall benchmark.

**Brinson Hood Beebower (BHB) Attribution<sup>1</sup>** - The BHB methodology shows that excess return must be equal to the sum of all other factors (i.e., allocation effect, selection effect, interaction effect, etc.). The advantage to using the BHB methodology is that it is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance.

**Corporate Bond (Corp)<sup>4</sup>** - A debt security issued by a corporation and sold to investors. The backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations. In some cases, the company's physical assets may be used as collateral for bonds.

**Correlation<sup>1</sup>** - A range of statistical relationships between two or more random variables or observed data values. A correlation is a single number that describes the degree of relationship between variables.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net

## Glossary of Investment Terminology

**Coupon<sup>4</sup>** – The interest rate stated on a bond when it is issued. The coupon is typically paid semiannually. This is also referred to as the "coupon rate" or "coupon percent rate."

**Currency Effect<sup>1</sup>** - Is the effect that changes in currency exchange rates over time affect excess performance.

**Derivative Instrument<sup>3</sup>** - A financial obligation that derives its precise value from the value of one or more other instruments (or assets) at the same point of time. For example, the relationship between the value of an S&P 500 futures contract (the derivative instrument in this case) is determined by the value of the S&P 500 Index and the value of a U.S. Treasury bill that matures at the expiration of the futures contract.

**Downside Deviation<sup>1</sup>** - Equals the standard deviation of negative return or the measure of downside risk focusing on the standard deviation of negative returns.

*Formula:*

*Annualized Standard Deviation (Fund Return - Average Fund Return) where average fund return is greater than individual fund returns, monthly or quarterly.*

**Duration<sup>3</sup>** - Duration is a measure of interest rate risk. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates. A bond's duration is inversely related to interest rates and directly related to time to maturity.

**Equity/Debt/Cash Ratio<sup>1</sup>** – The percentage of an investment or portfolio that is in Equity, Debt, and/or Cash (i.e. A 7/89/4 ratio represents an investment that is made up of 7% Equity, 89% Debt, and 4% Cash).

**Foreign Bond<sup>3</sup>** - A bond that is issued in a domestic market by a foreign entity, in the domestic market's currency. A foreign bond is most often issued by a foreign firm to raise capital in a domestic market that would be most interested in purchasing the firm's debt. For foreign firms doing a large amount of business in the domestic market, issuing foreign bonds is a common practice.

**Hard Hurdle<sup>5</sup>** – is a hurdle rate that once beaten allows a fund manager to charge a performance fee on only the funds above the specified hurdle rate.

**High-Water Mark<sup>4</sup>** - The highest peak in value that an investment fund/account has reached. This term is often used in the context of fund manager compensation, which is performance based. Some performance-based fees only get paid when fund performance exceeds the high-water mark. The high-water mark ensures that the manager does not get paid large sums for poor performance.

**Hurdle Rate<sup>4</sup>** - The minimum rate of return on an investment required, in order for a manager to collect incentive fees from the investor, which is usually tied to a benchmark.

**Interaction Effects<sup>2</sup>** - The interaction effect measures the combined impact of an investment manager's selection and allocation decisions within a sector. For example, if an investment manager had superior selection and over weighted that particular sector, the interaction effect is positive. If an investment manager had superior selection, but underweighted that sector, the interaction effect is negative. In this case, the investment manager did not take advantage of the superior selection by allocating more assets to that sector. Since many investment managers consider the interaction effect to be part of the selection or the allocation, it is often combined with the either effect.

**Median<sup>3</sup>** - The value (rate of return, market sensitivity, etc.) that exceeds one-half of the values in the population and that is exceeded by one-half of the values. The median has a percentile rank of 50.

**Modified Duration<sup>3</sup>** - The percentage change in the price of a fixed income security that results from a change in yield.

**Mortgage Backed Securities (MBS)<sup>3</sup>** - Bonds which are a general obligation of the issuing institution but are also collateralized by a pool of mortgages.

**Municipal Bond (Muni)<sup>4</sup>** - A debt security issued by a state, municipality or county to finance its capital expenditures.

**Net Investment Change<sup>1</sup>** – Is the change in an investment after accounting for all Net Cash Flows.

**Performance Fee<sup>4</sup>** - A payment made to a fund manager for generating positive returns. The performance fee is generally calculated as a percentage of investment profits, often both realized and unrealized.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net

## Glossary of Investment Terminology

**Policy Index<sup>3</sup>** - A custom benchmark designed to indicate the returns that a passive investor would earn by consistently following the asset allocation targets set forth in this investment policy statement.

**Price to Book (P/B)<sup>4</sup>** - A ratio used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share, also known as the "price-equity ratio".

**Price to Earnings (P/E)<sup>3</sup>** - The weighted equity P/E is based on current price and trailing 12 months earnings per share (EPS).

**Price to Sales (P/S)<sup>4</sup>** - A ratio for valuing a stock relative to its own past performance, other companies, or the market itself. Price to sales is calculated by dividing a stock's current price by its revenue per share for the trailing 12 months.

**Return on Equity (ROE)<sup>4</sup>** - The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

**Selection (or Manager) Effect<sup>2</sup>** - Measures the investment manager's ability to select securities within a given sector relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by the manager's allocation to the sector. The weight of the sector in the portfolio determines the size of the effect—the larger the sector, the larger the effect is, positive or negative.

**Soft Hurdle rate<sup>5</sup>** - is a hurdle rate that once beaten allows a fund manager to charge a performance fee based on the entire annualized return.

**Tiered Fee<sup>1</sup>** - A fee structure that is paid to fund managers based on the size of the investment (i.e. 1.00% fee on the first \$10M invested, 0.90% on the next \$10M, and 0.80% on the remaining balance).

**Total Effects<sup>2</sup>** - The active management (total) effect is the sum of the selection, allocation, and interaction effects. It is also the difference between the total portfolio return and the total benchmark return. You can use the active management effect to determine the amount the investment manager has added to a portfolio's return.

**Total Return<sup>1</sup>** - The actual rate of return of an investment over a specified time period. Total return includes interest, capital gains, dividends, and distributions realized over a defined time period.

**Universe<sup>3</sup>** - The list of all assets eligible for inclusion in a portfolio.

**Upside Deviation<sup>1</sup>** - Standard Deviation of Positive Returns

**Weighted Avg. Market Cap.<sup>4</sup>** - A stock market index weighted by the market capitalization of each stock in the index. In such a weighting scheme, larger companies account for a greater portion of the index. Most indexes are constructed in this manner, with the best example being the S&P 500.

**Yield (%)<sup>3</sup>** - The current yield of a security is the current indicated annual dividend rate divided by current price.

**Yield to Maturity<sup>3</sup>** -The discount rate that equates the present value of cash flows, both principal and interest, to market price.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net

- **Past performance is no guarantee of future results.**
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