



NEPC, LLC

YOU DEMAND MORE. So do we.™



## Vermont Pension Investment Committee

---

### Second Fiscal Quarter 2017 Preliminary Investment Performance Analysis

February 28<sup>th</sup>, 2016

Christopher Levell, ASA, CFA, CAIA, Partner  
Margaret Belmondo, CIMA, Senior Consultant  
Nedelina Petkova, Analyst

255 State Street, Boston, MA 02109 | TEL: 617.374.1300 | FAX: 617.374.1313 | [www.nepc.com](http://www.nepc.com)

BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | SAN FRANCISCO

# NEPC Update



# 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)

## Webinar Replays

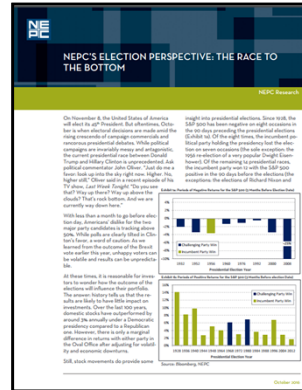
- Investor Insights – Perspectives on the 2016 US Election (November 2016)
- Defined Benefit Plan Trends Survey Results (December 2016)
- Digging Deeper on ESG (December 2016)

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



## 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.

MARK YOUR CALENDAR!

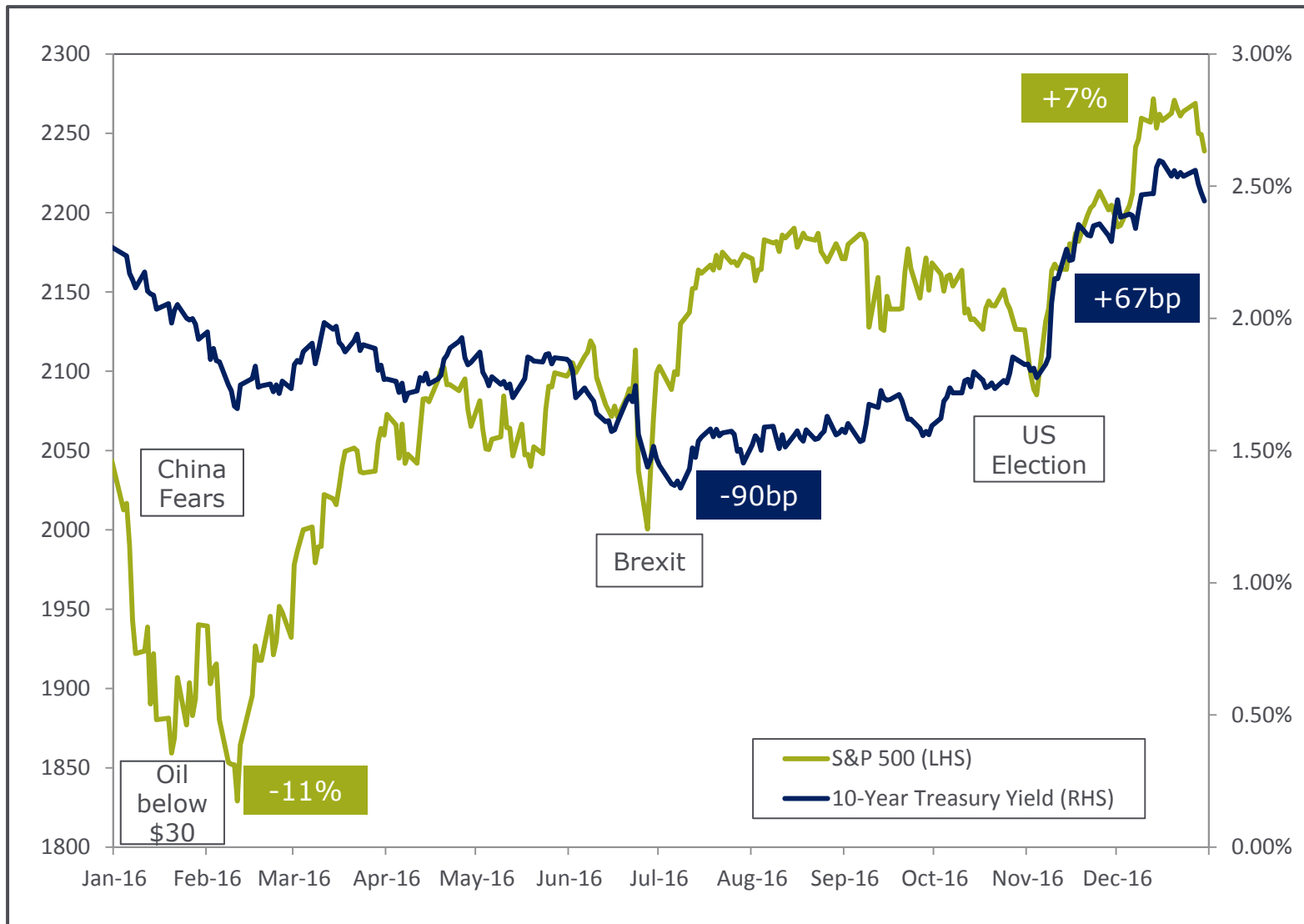
# Market Environment



- **Domestic equity markets led the way in the fourth quarter, shrugging off the appreciating dollar and a rate hike from the Fed.**
  - Large Cap equities, measured by the S&P 500 index, gained 12% for the quarter and ended the year up 11.9%
  - Small Cap equities, measured by the Russell 2000 index, gained 8.8% for the quarter ending the year up 21.3%
  - Value significantly outperformed growth across the market cap spectrum
- **Non-U.S. equity markets suffered losses as investors determine the positives and negatives in potential change in trade policies.**
  - Developed market equities, measured by MSCI EAFE index, fell by -0.7% for the quarter and ending the year up 1%
  - Emerging market equities, measured by MSCI EM index, fell by -4.2% for the quarter and ending the year up 11.2%
  - On a size basis, smaller cap stocks outperformed their larger counterparts

- **Risk takers were rewarded as we saw a rapid narrowing of credit spreads during the year. Lower credit quality such as high yield, emerging market debt and leverage loans outperformed nominal bonds. Optimism for greater economic growth translated to higher interest rates and expectations of rising inflation.**
  - The 10-year treasury yield rose 17.3bps in 2016, the largest rise since 2013
  - High yield and investment grade corporate bonds spreads narrowed to their lowest levels in 10 years
- Barclays Aggregate Bond index fell by -2.9% for the quarter, ending the year up 2.7%
- Barclays TIPS index fell by -2.4% for the quarter, ending the year up 4.7%
- Barclays High Yield Bond index gained 1.8% for the quarter, ending the year up 17.1%
- JPM EMBI Global Diversified index fell by -4.0% for the quarter, ending the year up 10.2%

# 2016: A Rollercoaster of Geopolitical Events



Source: Bloomberg, NEPC

# 2016: A Strong Year for Risk Assets



*\*Private Equity and NCREIF Real Estate lagged one quarter  
 Source: NEPC, Barclays, S&P, Bloomberg, JPM, Russell, MSCI, HFRI, InvestorForce*



**Extended US Economic Cycle**

**Federal Reserve Gradualism**

**China Transitions**

**Globalization Backlash**

## Returns for Key Indices Ranked in Order of Performance

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MSCI EMERGING MARKETS 32.17	MSCI EMERGING MARKETS 39.39	BC AGGREGATE 5.24	MSCI EMERGING MARKETS 78.51	RUSSELL 2000 GROWTH 29.09	BC AGGREGATE 7.84	MSCI EMERGING MARKETS 18.22	RUSSELL 2000 GROWTH 43.30	S&P 500 13.69	RUSSELL 1000 GROWTH 5.67	RUSSELL 2000 VALUE 31.74
MSCI EAFE 26.34	RUSSELL 1000 GROWTH 11.81	RUSSELL 2000 VALUE -28.92	RUSSELL 1000 GROWTH 37.21	RUSSELL 2000 26.85	RUSSELL 1000 GROWTH 2.64	RUSSELL 2000 VALUE 18.05	RUSSELL 2000 38.82	RUSSELL 1000 VALUE 13.45	S&P 500 1.38	RUSSELL 2000 21.31
RUSSELL 1000 VALUE 22.25	MSCI EAFE 11.17	RUSSELL 2000 -33.79	RUSSELL 2000 GROWTH 34.47	RUSSELL 2000 VALUE 24.5	S&P 500 2.11	RUSSELL 1000 VALUE 17.51	RUSSELL 2000 VALUE 34.52	RUSSELL 1000 13.24	RUSSELL 1000 0.92	RUSSELL 1000 VALUE 17.34
RUSSELL 2000 VALUE 23.48	RUSSELL 2000 GROWTH 7.06	RUSSELL 1000 VALUE -36.85	MSCI EAFE 31.78	MSCI EMERGING MARKETS 18.88	RUSSELL 1000 1.50	MSCI EAFE 17.32	RUSSELL 1000 GROWTH 33.48	RUSSELL 1000 GROWTH 13.05	BC AGGREGATE 0.55	RUSSELL 1000 12.05
RUSSELL 2000 18.37	BC AGGREGATE 6.97	S&P 500 -37.0	RUSSELL 1000 28.43	RUSSELL 1000 GROWTH 16.71	RUSSELL 1000 VALUE 0.39	RUSSELL 1000 16.42	RUSSELL 1000 33.11	BC AGGREGATE 5.97	MSCI EAFE -0.81	S&P 500 11.96
S&P 500 15.8	RUSSELL 1000 5.77	RUSSELL 1000 -37.6	RUSSELL 2000 27.16	RUSSELL 1000 16.10	RUSSELL 2000 GROWTH -2.91	RUSSELL 2000 16.35	RUSSELL 1000 VALUE 32.53	RUSSELL 2000 GROWTH 5.60	RUSSELL 2000 GROWTH -1.38	RUSSELL 2000 GROWTH 11.32
RUSSELL 1000 15.46	S&P 500 5.49	RUSSELL 1000 GROWTH -38.44	S&P 500 26.46	RUSSELL 1000 VALUE 15.51	RUSSELL 2000 -4.18	S&P 500 16.00	S&P 500 32.39	RUSSELL 2000 4.89	RUSSELL 1000 VALUE -3.83	MSCI EMERGING MARKETS 11.19
RUSSELL 2000 GROWTH 13.35	RUSSELL 1000 VALUE -0.17	RUSSELL 2000 GROWTH -38.54	RUSSELL 2000 VALUE 20.58	S&P 500 15.06	RUSSELL 2000 VALUE -5.50	RUSSELL 1000 GROWTH 15.26	MSCI EAFE 22.78	RUSSELL 2000 VALUE 4.22	RUSSELL 2000 -4.41	RUSSELL 1000 GROWTH 7.08
RUSSELL 1000 GROWTH 9.07	RUSSELL 2000 -1.56	MSCI EAFE -43.38	RUSSELL 1000 VALUE 19.69	MSCI EAFE 7.75	MSCI EAFE -12.14	RUSSELL 2000 GROWTH 14.59	BC AGGREGATE -2.02	MSCI EMERGING MARKETS -2.19	RUSSELL 2000 VALUE -7.46	BC AGGREGATE 2.65
BC AGGREGATE 4.33	RUSSELL 2000 VALUE -9.78	MSCI EMERGING MARKETS -53.33	BC AGGREGATE 5.93	BC AGGREGATE 6.54	MSCI EMERGING MARKETS -18.42	BC AGGREGATE 4.21	MSCI EMERGING MARKETS -2.60	MSCI EAFE -4.90	MSCI EMERGING MARKETS -14.93	MSCI EAFE 1.00

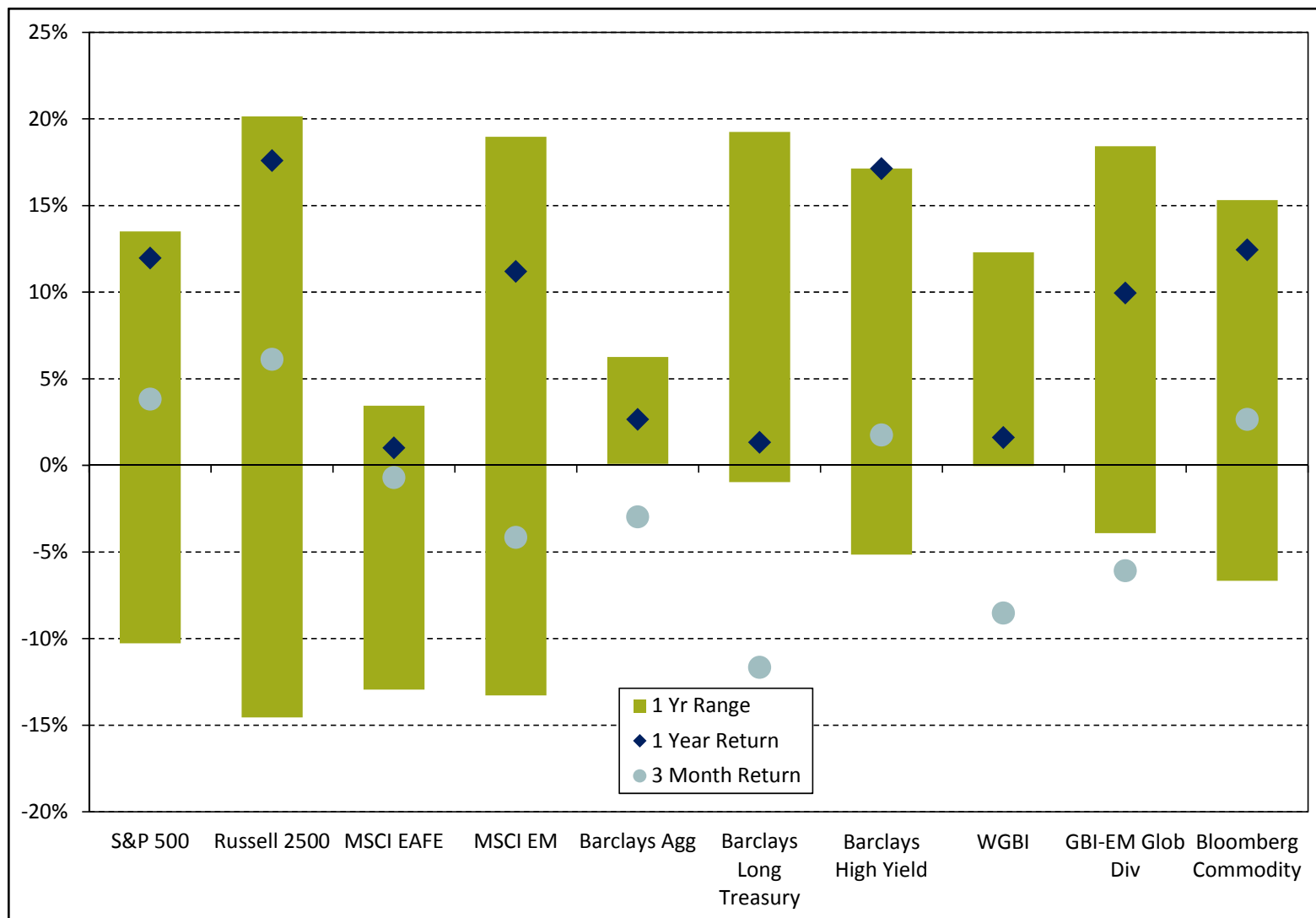
QTD	3 year	5 Year	10 Year
RUSSELL 2000 VALUE 14.07	S&P 500 8.87	RUSSELL 2000 VALUE 15.07	RUSSELL 1000 GROWTH 8.33
RUSSELL 2000 8.83	RUSSELL 1000 8.59	RUSSELL 1000 VALUE 14.80	RUSSELL 2000 GROWTH 7.76
RUSSELL 1000 VALUE 6.68	RUSSELL 1000 VALUE 8.59	RUSSELL 1000 14.69	RUSSELL 1000 7.08
RUSSELL 1000 3.83	RUSSELL 1000 GROWTH 8.55	S&P 500 14.66	RUSSELL 2000 7.07
S&P 500 3.82	RUSSELL 2000 VALUE 8.31	RUSSELL 2000 14.46	S&P 500 6.95
RUSSELL 2000 GROWTH 3.57	RUSSELL 2000 6.74	RUSSELL 1000 GROWTH 14.50	RUSSELL 2000 VALUE 6.26
RUSSELL 1000 GROWTH 1.01	RUSSELL 2000 GROWTH 5.05	RUSSELL 2000 GROWTH 13.74	RUSSELL 1000 VALUE 5.72
MSCI EAFE -0.71	BC AGGREGATE 3.03	MSCI EAFE 6.53	BC AGGREGATE 4.34
BC AGGREGATE -2.98	MSCI EAFE -1.60	BC AGGREGATE 2.23	MSCI EMERGING MARKETS 1.84
MSCI EMERGING MARKETS -4.16	MSCI EMERGING MARKETS -2.55	MSCI EMERGING MARKETS 1.28	MSCI EAFE 0.75

## Index Performance Summary as of 12/30/2016

	2009	2010	2011	2012	2013	2014	2015	Q1	Q2	Q3	Oct	Nov	Dec	Q4	YTD
<b>Russell 2000</b>	27.2%	26.9%	-4.2%	16.3%	38.8%	4.9%	-4.4%	-1.5%	3.8%	9.0%	-4.8%	11.2%	2.8%	8.8%	21.3%
<b>Alerian MLP</b>	76.4%	35.9%	13.9%	4.8%	27.6%	4.8%	-32.6%	-4.2%	19.7%	1.1%	-4.5%	2.3%	4.4%	2.0%	18.3%
<b>Russell 2500</b>	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	0.4%	3.6%	6.6%	-4.1%	8.5%	1.9%	6.1%	17.6%
<b>Barclays US Corp HY</b>	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	3.4%	5.5%	5.6%	0.4%	-0.5%	1.8%	1.8%	17.1%
<b>Russell 1000</b>	28.4%	16.1%	1.5%	16.4%	33.1%	13.2%	0.9%	1.2%	2.5%	4.0%	-2.0%	3.9%	1.9%	3.8%	12.1%
<b>S&amp;P 500</b>	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	1.3%	2.5%	3.9%	-1.8%	3.7%	2.0%	3.8%	12.0%
<b>BBG Commodity</b>	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	0.4%	12.8%	-3.9%	-0.5%	1.3%	1.8%	2.7%	11.8%
<b>MSCI EM</b>	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	5.7%	0.7%	9.0%	0.2%	-4.6%	0.2%	-4.2%	11.2%
<b>Barclays US Long Credit</b>	16.8%	10.7%	17.1%	12.7%	-6.6%	16.4%	-4.6%	6.8%	6.7%	2.3%	-2.1%	-4.9%	1.5%	-5.4%	10.2%
<b>JPM EMBI Global Div</b>	29.8%	12.2%	7.3%	17.4%	-5.3%	7.4%	1.2%	5.0%	5.0%	4.0%	-1.2%	-4.1%	1.3%	-4.0%	10.2%
<b>JPM GBI-EM Global Div</b>	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	11.0%	2.7%	2.7%	-0.8%	-7.0%	1.9%	-6.1%	9.9%
<b>Credit Suisse Lev Loan</b>	44.9%	10.0%	1.8%	9.4%	6.2%	2.1%	-0.4%	1.3%	2.9%	3.1%	0.8%	0.3%	1.1%	2.3%	9.9%
<b>FTSE NAREIT Eqy REITs</b>	28.0%	28.0%	8.3%	18.1%	2.5%	30.1%	3.2%	6.0%	7.0%	-1.4%	-5.7%	-1.7%	4.7%	-2.9%	8.5%
<b>MSCI ACWI</b>	34.6%	12.7%	-7.3%	16.1%	22.8%	4.2%	-2.4%	0.2%	1.0%	5.3%	-1.7%	0.8%	2.2%	1.2%	7.9%
<b>BC Long US Govt/Credit</b>	1.9%	10.2%	22.5%	8.8%	-8.8%	19.3%	-3.3%	7.3%	6.5%	1.2%	-2.8%	-5.8%	0.7%	-7.8%	6.7%
<b>Barclays US Agg Bond</b>	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	3.0%	2.2%	0.5%	-0.8%	-2.4%	0.1%	-3.0%	2.6%
<b>Barclays US Agg Int.</b>	6.5%	6.1%	6.0%	3.6%	-1.0%	4.1%	1.2%	2.3%	1.4%	0.3%	-0.4%	-1.7%	0.0%	-2.0%	2.0%
<b>Citi WGBI</b>	2.6%	5.2%	6.4%	1.6%	-4.0%	-0.5%	-3.6%	7.1%	3.4%	0.3%	-3.4%	-4.6%	-0.7%	-8.5%	1.6%
<b>BC US STRIPS 20+</b>	-36.0%	10.9%	58.5%	3.0%	-21.0%	46.4%	-3.7%	11.4%	9.6%	-0.2%	-6.2%	-10.5%	-0.9%	-16.7%	1.4%
<b>BC US Gov/Cred 1-3 Yr</b>	3.8%	2.8%	1.6%	1.3%	0.6%	0.8%	0.7%	1.0%	0.7%	0.0%	0.0%	-0.4%	0.1%	-0.4%	1.3%
<b>MSCI EAFE</b>	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	-3.0%	-1.5%	6.4%	-2.0%	-2.0%	3.4%	-0.7%	1.0%
<b>CS Hedge Fund</b>	18.6%	10.9%	-2.5%	7.7%	9.7%	4.1%	-0.7%	-2.2%	0.6%	1.7%	-0.2%	-0.2%	-	0.2%	0.3%
<b>Barclays Municipal</b>	12.9%	2.4%	10.7%	6.8%	-2.6%	9.1%	3.3%	1.7%	2.6%	-0.3%	-1.0%	-3.7%	1.2%	-3.6%	0.2%

Source: Bloomberg, Barclays, Alerian, Nareit, MSCI, JP Morgan, Credit Suisse

# 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

# State Employees' Retirement System



# Vermont State Employees

## Total Fund Performance Summary - Net

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	7 Yrs	Rank	10 Yrs	Rank
<b>Employees Composite</b>	<b>\$1,632,076,731</b>	<b>0.1%</b>	<b>83</b>	<b>3.5%</b>	<b>76</b>	<b>9.3%</b>	<b>4</b>	<b>3.6%</b>	<b>73</b>	<b>6.2%</b>	<b>91</b>	<b>6.7%</b>	<b>76</b>	<b>4.0%</b>	<b>86</b>
<i>Policy Index</i>		-0.1%	89	3.3%	79	8.1%	25	3.4%	76	6.0%	95	6.0%	93	4.1%	83
<i>Allocation Index</i>		-0.2%	91	3.4%	77	8.1%	25	3.2%	82	5.9%	95	6.0%	94	4.1%	85
<i>InvestorForce Public DB Net Median</i>		0.7%		4.2%		7.4%		4.1%		7.8%		7.3%		4.9%	

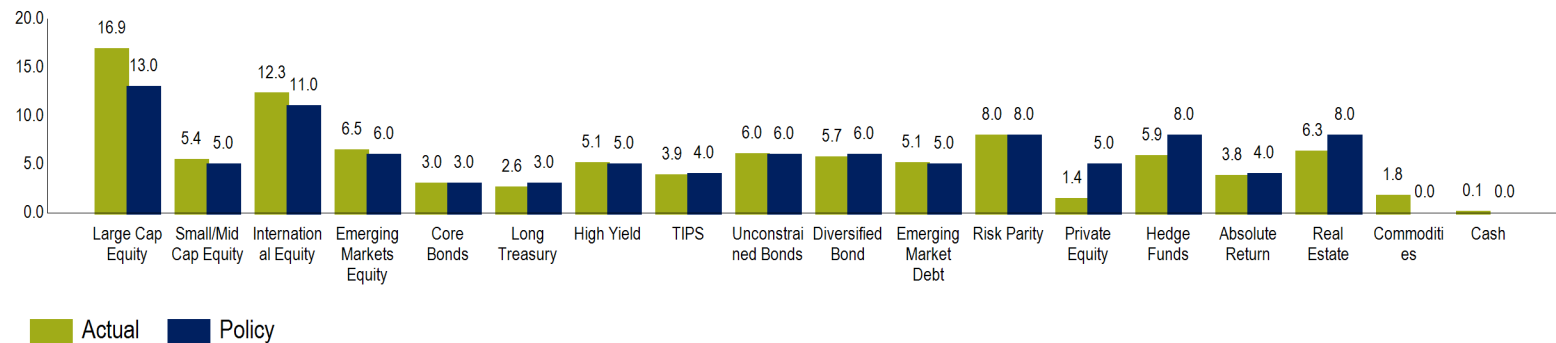
### 3 Years Ending December 31, 2016

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Employees Composite	3.55%	73	5.92%	29	0.58	66	1.08	45
Policy Index	3.45%	76	5.46%	11	0.61	56	1.14	35
Allocation Index	3.15%	82	5.66%	18	0.54	72	0.96	64

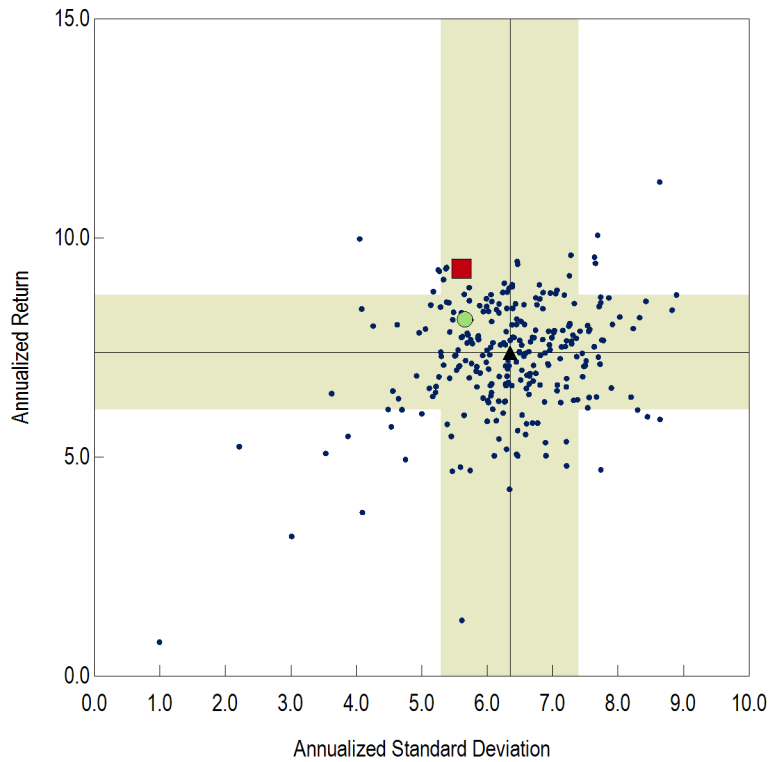
### 5 Years Ending December 31, 2016

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Employees Composite	6.24%	91	6.06%	33	1.01	83	1.71	66
Policy Index	6.03%	95	5.67%	18	1.05	77	1.69	68
Allocation Index	5.92%	95	5.76%	22	1.01	84	1.59	79

### Actual vs Target Allocation (%)



1 Year Ending December 31, 2016

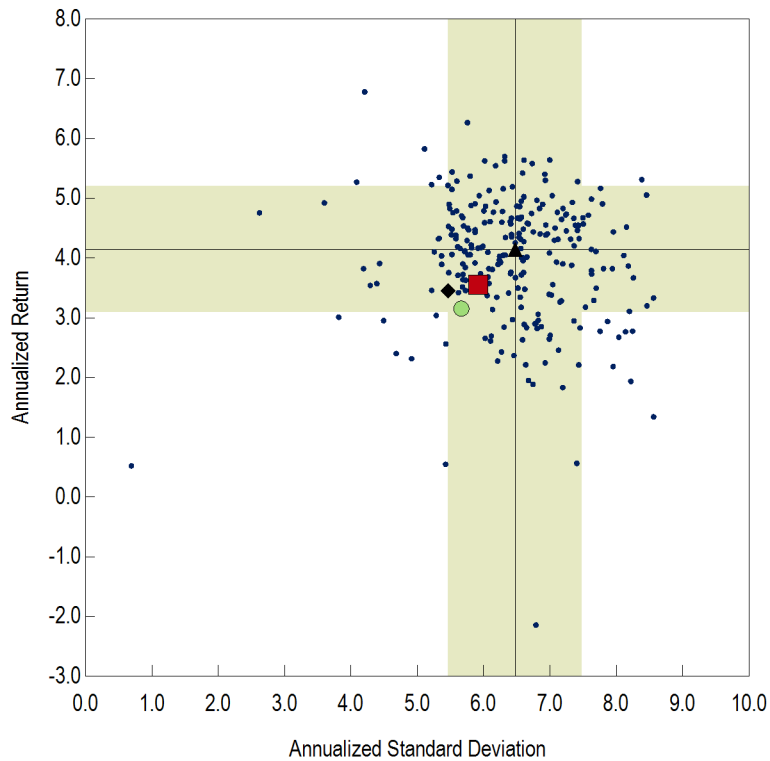


- Employees Composite
- ◆ Policy Index
- Allocation Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Net

1 Year Ending December 31, 2016

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Employees Composite	9.30%	4	5.60%	20	1.61	5
Policy Index	8.13%	25	5.68%	23	1.38	12
S&P 500	11.96%	1	10.29%	99	1.13	46
Citi WGBI	1.60%	99	8.73%	99	0.15	99
MSCI ACWI	7.86%	33	11.25%	99	0.67	98
MSCI ACWI ex USA	4.50%	99	13.37%	99	0.31	99
InvestorForce Public DB Net Median	7.39%	--	6.35%	--	1.09	--

3 Years Ending December 31, 2016



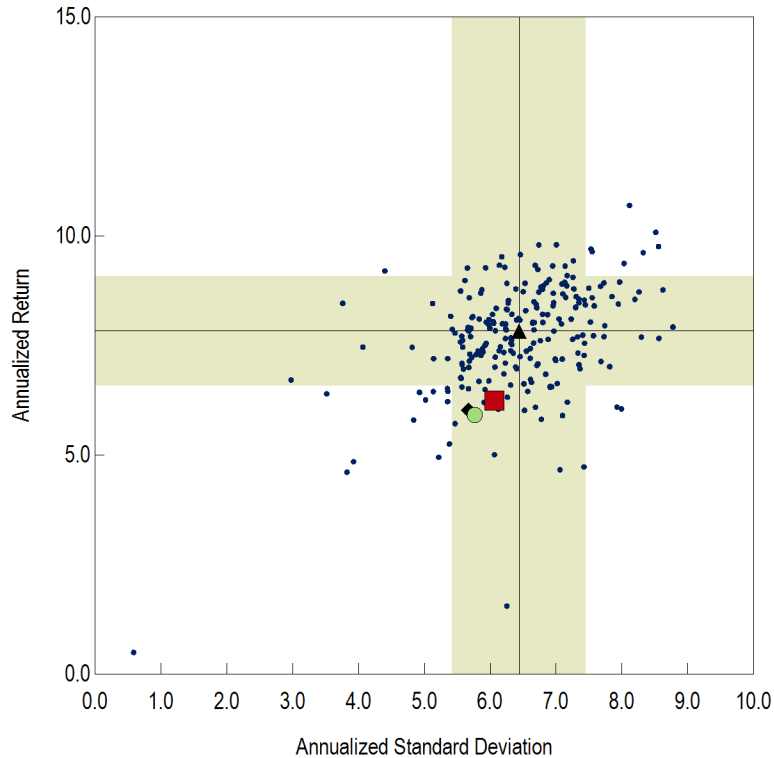
- Employees Composite
- ◆ Policy Index
- Allocation Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Net

3 Years Ending December 31, 2016

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Employees Composite	3.55%	73	5.92%	29	0.58	66
Policy Index	3.45%	76	5.46%	11	0.61	56
S&P 500	8.87%	1	10.74%	99	0.81	11
Citi WGBI	-0.84%	99	5.98%	31	-0.16	99
MSCI ACWI	3.13%	82	11.21%	99	0.27	98
MSCI ACWI ex USA	-1.78%	99	12.69%	99	-0.15	99
InvestorForce Public DB Net Median	4.15%	--	6.48%	--	0.62	--



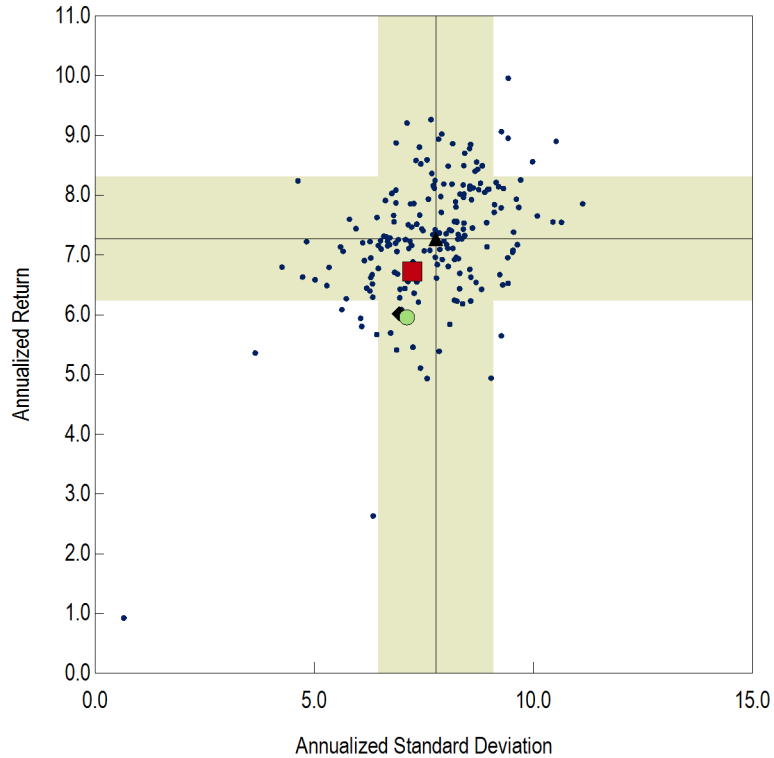
5 Years Ending December 31, 2016



5 Years Ending December 31, 2016

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Employees Composite	6.24%	91	6.06%	33	1.01	83
Policy Index	6.03%	95	5.67%	18	1.05	77
S&P 500	14.66%	1	10.37%	99	1.40	11
Citi WGBI	-0.99%	99	5.34%	7	-0.20	99
MSCI ACWI	9.36%	5	11.39%	99	0.81	98
MSCI ACWI ex USA	5.00%	98	13.35%	99	0.37	99
InvestorForce Public DB Net Median	7.83%	--	6.44%	--	1.20	--

7 Years Ending December 31, 2016

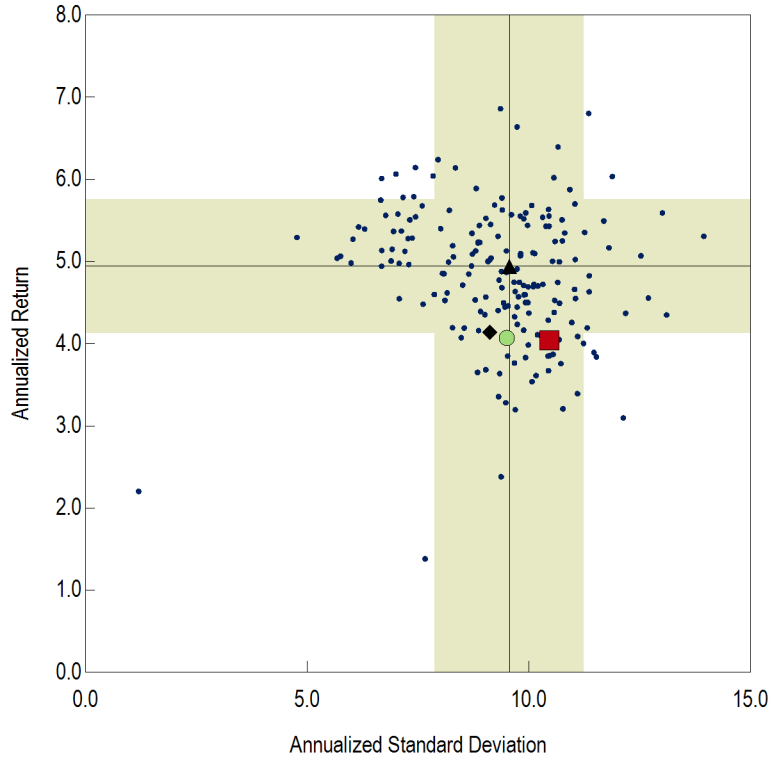


- Employees Composite
- ◆ Policy Index
- Allocation Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Net

7 Years Ending December 31, 2016

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Employees Composite	6.72%	76	7.24%	35	0.92	57
Policy Index	6.02%	93	6.94%	27	0.85	77
S&P 500	12.83%	1	12.67%	99	1.01	36
Citi WGBI	0.89%	99	5.71%	6	0.14	99
MSCI ACWI	7.26%	53	13.95%	99	0.51	99
MSCI ACWI ex USA	2.93%	99	15.77%	99	0.18	99
InvestorForce Public DB Net Median	7.27%	--	7.77%	--	0.94	--

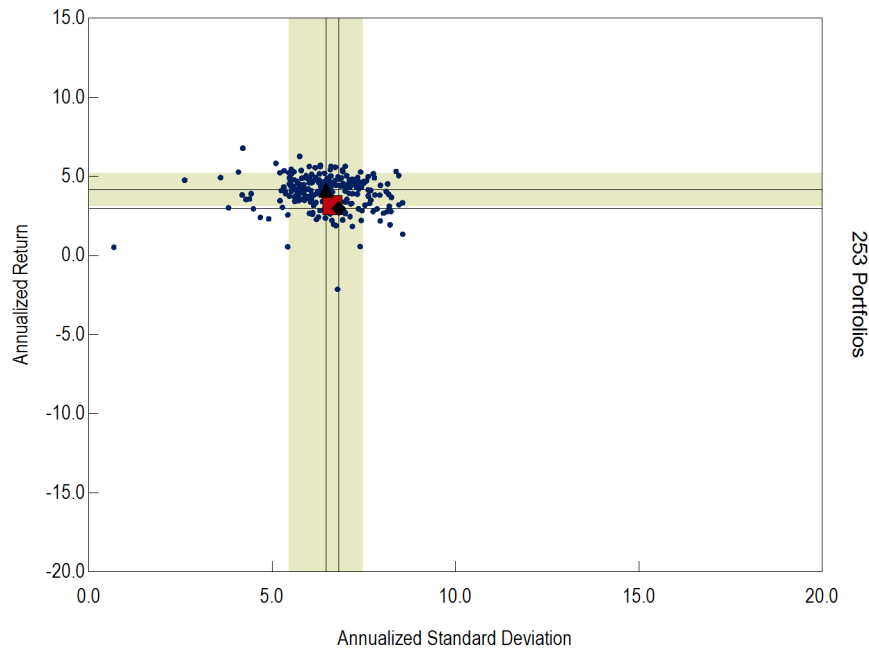
10 Years Ending December 31, 2016



10 Years Ending December 31, 2016

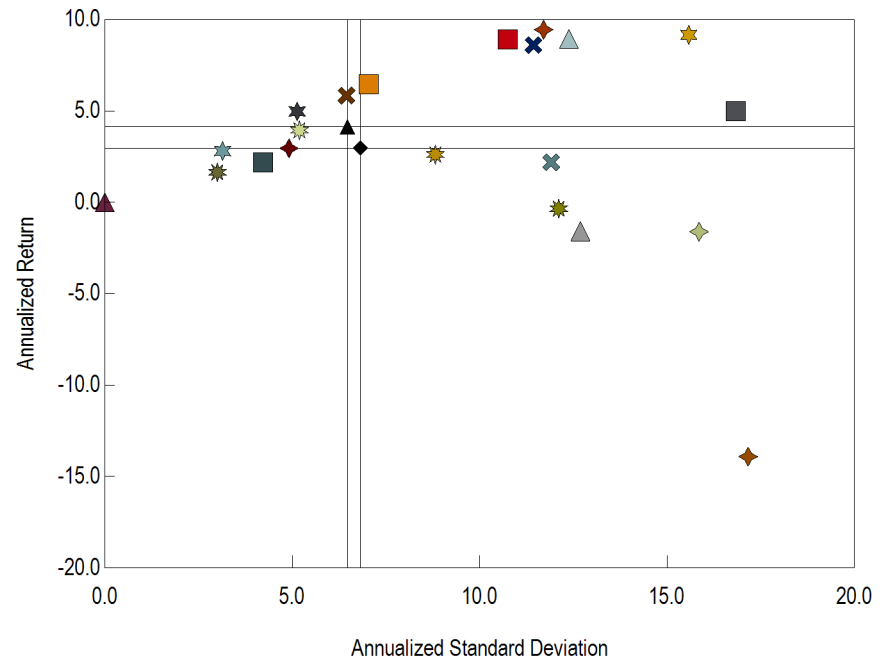
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Employees Composite	4.04%	86	10.46%	77	0.32	86
Policy Index	4.14%	83	9.12%	39	0.38	73
S&P 500	6.95%	1	15.28%	99	0.41	60
Citi WGBI	2.99%	99	6.87%	8	0.34	81
MSCI ACWI	3.56%	95	16.98%	99	0.17	99
MSCI ACWI ex USA	0.96%	99	19.14%	99	0.02	99
InvestorForce Public DB Net Median	4.94%	--	9.55%	--	0.44	--

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending December 31, 2016



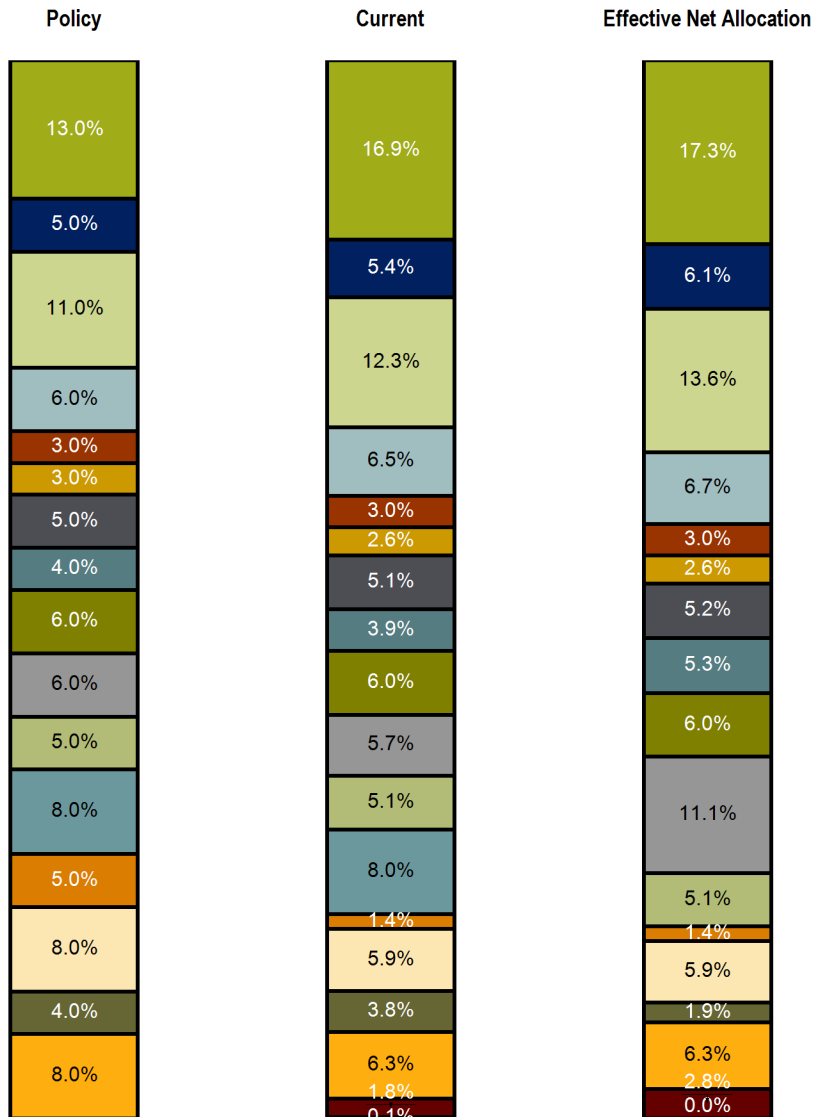
- Total Marketable Assets
- ◆ Total Marketable Assets Custom Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB Net

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending December 31, 2016



- SSgA S&P 500 Cap-Wgt
- ◆ SSgA S&P 500 Equal-Wgt
- ▲ T. Rowe
- ▲ SSgA S&P 400
- ◆ Champlain
- Wellington
- SSgA Russell 2000 Growth
- ◆ Acadian
- ◆ Mondrian
- ▲ SSgA ACWI Ex US
- ◆ Aberdeen
- ◆ PIMCO Core Plus
- Wellington DAS
- ◆ PIMCO Unconstrained
- ◆ KDP
- ◆ Guggenheim
- BlackRock TIPS
- ◆ Wellington Opportunistic EMD
- ◆ AQR Global Risk Premium
- ▲ Vermont Cash
- ◆ Schroder
- ◆ Total Marketable Assets Custom Index
- ▲ Universe Median
- 68% Confidence Interval

Total Fund Asset Allocation vs. Policy Targets



Asset Allocation vs. Target

	Policy	Current	Effective Net Allocation
Large Cap Equity	13.0%	16.9%	17.3%
Small/Mid Cap Equity	5.0%	5.4%	6.1%
International Equity	11.0%	12.3%	13.6%
Emerging Markets Equity	6.0%	6.5%	6.7%
Core Bonds	3.0%	3.0%	3.0%
Long Treasury	3.0%	2.6%	2.6%
High Yield	5.0%	5.1%	5.2%
TIPS	4.0%	3.9%	5.3%
Unconstrained Bonds	6.0%	6.0%	6.0%
Diversified Bond	6.0%	5.7%	11.1%
Emerging Market Debt	5.0%	5.1%	5.1%
Risk Parity	8.0%	8.0%	--
Private Equity	5.0%	1.4%	1.4%
Hedge Funds	8.0%	5.9%	5.9%
Absolute Return	4.0%	3.8%	1.9%
Real Estate	8.0%	6.3%	6.3%
Commodities	--	1.8%	2.8%
Cash	--	0.1%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

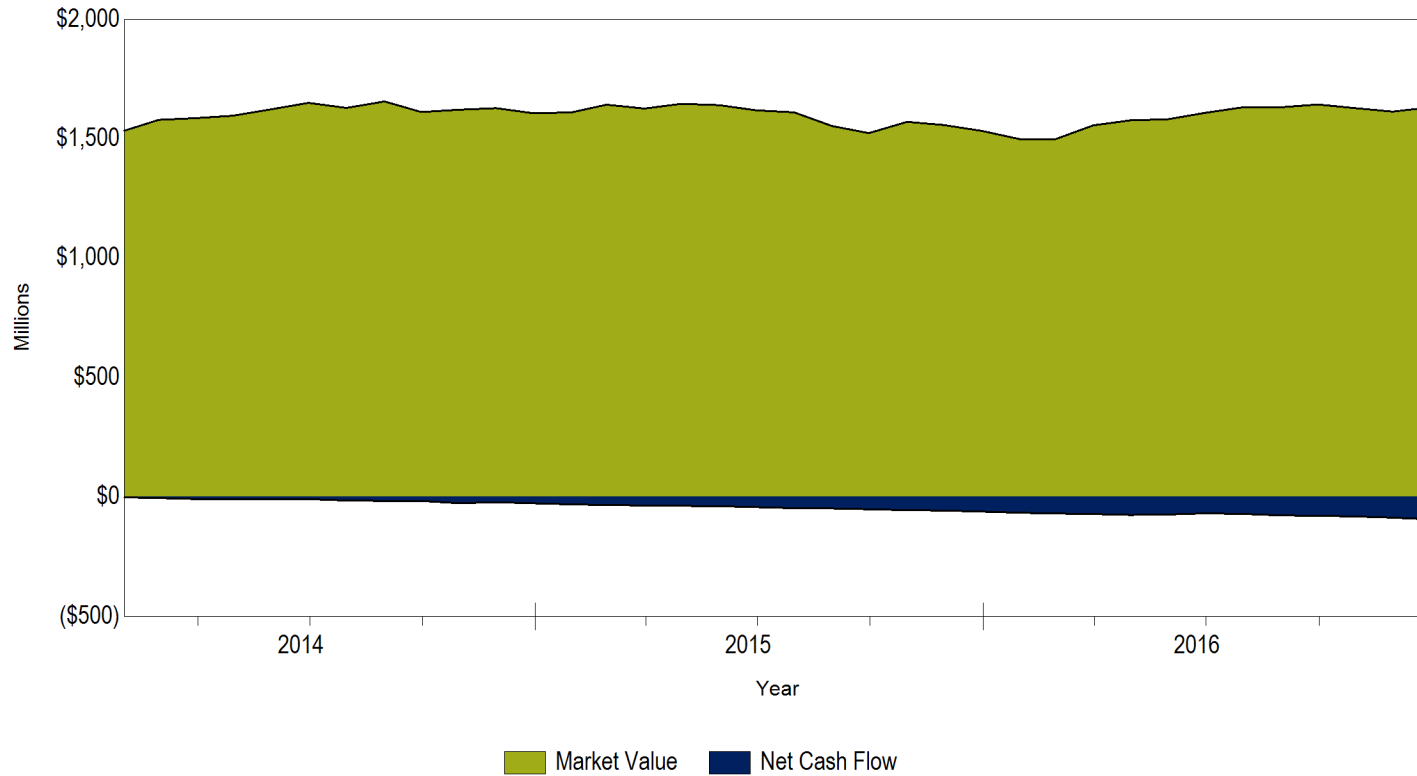
Effective Net Allocation breaks out the exposures of AQR Global Risk Premium and Mellon Dynamic Growth.

Hedge Funds include Grosvenor and Pinnacle Natural Resources, L.P.

Absolute Return includes Mellon Dynamic Growth and Allianz Structured Alpha.

Total Fund Asset Growth Summary

3 Years Ending December 31, 2016



	Last Three Months	Fiscal Year-To-Date	One Year	Three Years
Beginning Market Value	\$1,643,822,689	\$1,608,681,493	\$1,533,232,267	\$1,554,748,707
Withdrawals	-\$25,142,020	-\$60,343,446	-\$352,979,901	-\$770,626,232
Contributions	\$10,193,234	\$34,919,775	\$320,369,139	\$676,399,567
Net Cash Flow	-\$14,948,786	-\$25,423,671	-\$32,610,762	-\$94,226,665
Net Investment Change	\$3,202,829	\$48,818,910	\$131,455,226	\$171,554,689
Ending Market Value	\$1,632,076,731	\$1,632,076,731	\$1,632,076,731	\$1,632,076,731

## Vermont State Employees

### Total Fund Asset Growth Summary by Manager

	Quarter Ending December 31, 2016					Ending Market Value
	Beginning Market Value	Withdrawals	Contributions	Net Cash Flow	Net Investment Change	
Aberdeen	\$111,400,797	-\$206,533	\$206,533	\$0	-\$5,813,863	\$105,586,934
Acadian	\$68,323,066	-\$3,084,239	\$84,239	-\$3,000,000	\$209,728	\$65,532,793
Allianz Structured Alpha	\$30,388,665	-\$152,840	\$0	-\$152,840	\$571,409	\$30,807,235
AQR Global Risk Premium	\$133,201,952	-\$133,202	\$133,202	\$0	-\$3,039,264	\$130,162,689
BlackRock TIPS	\$65,407,812	-\$11,960	\$11,960	\$0	-\$1,563,929	\$63,843,883
Champlain	\$32,921,405	-\$66,984	\$66,984	\$0	\$1,404,740	\$34,326,145
GAM	\$165,487	\$0	\$0	\$0	\$1	\$165,487
GAM Unconstrained Bond	\$56,805,160	-\$48,196	\$48,196	\$0	\$656,374	\$57,461,533
Grosvenor	\$83,084,037	-\$5,858,771	\$0	-\$5,858,771	\$1,661,425	\$78,886,690
Guggenheim	\$64,984,548	-\$81,970	\$81,970	\$0	\$2,112,677	\$67,097,224
Harbourvest Dover VIII Fund	\$7,679,571	\$0	\$0	\$0	-\$364,278	\$7,315,293
Harbourvest Partners IX Buyout Fund	\$6,221,996	\$0	\$0	\$0	-\$86,136	\$6,135,860
Harbourvest Partners IX Credit Opportunities	\$855,148	\$0	\$0	\$0	\$54,558	\$909,706
Harbourvest Partners IX Venture Fund	\$4,532,031	\$0	\$0	\$0	\$163,436	\$4,695,467
Harbourvest Partners X Buyout Fund	\$1,084,042	\$0	\$673,074	\$673,074	-\$11,444	\$1,745,672
Harbourvest Partners X Venture Fund	\$549,800	\$0	\$247,252	\$247,252	-\$4,014	\$793,038
HIPEP VII	\$1,427,239	\$0	\$250,041	\$250,041	-\$44,539	\$1,632,742
KDP	\$16,654,019	-\$25,968	\$25,968	\$0	\$140,017	\$16,794,035
Mellon Dynamic Growth	\$32,428,060	-\$52,904	\$52,904	\$0	-\$457,957	\$31,970,103
Mondrian	\$65,078,069	-\$61,882	\$61,882	\$0	-\$305,174	\$64,772,895
Morgan Stanley Prime Property	\$46,142,642	-\$96,900	\$0	-\$96,900	\$1,205,236	\$47,250,978
PIMCO Core Plus	\$96,579,316	-\$70,303	\$70,303	\$0	-\$2,928,897	\$93,650,419
PIMCO Unconstrained	\$40,536,931	-\$61,040	\$61,040	\$0	\$639,194	\$41,176,125
Pinnacle Natural Resources, L.P.	\$7,081,178	\$0	\$9,039,168	\$9,039,168	\$543,362	\$16,663,707
RREEF America REIT III	\$207,530	-\$804	\$0	-\$804	\$72	\$206,798

## Vermont State Employees

### Total Fund Asset Growth Summary by Manager

	Quarter Ending December 31, 2016					Ending Market Value
	Beginning Market Value	Withdrawals	Contributions	Net Cash Flow	Net Investment Change	
Schroder	\$36,875,523	-\$9,039,168	\$0	-\$9,039,168	\$767,106	\$28,603,461
Siguler Guff	\$12,972,511	-\$8,521	\$3,712,791	\$3,704,270	\$0	\$16,676,781
SSgA ACWI Ex US	\$71,194,013	-\$9,107	\$9,107	\$0	-\$878,435	\$70,315,578
SSgA Barclays Aggregate Index	\$50,786,088	-\$5,908	\$5,908	\$0	-\$1,508,162	\$49,277,926
SSgA Russell 2000 Growth	\$7,396,571	-\$1,341	\$1,341	\$0	\$260,218	\$7,656,789
SSgA S&P 400	\$8,774,716	-\$1,457	\$1,457	\$0	\$648,289	\$9,423,005
SSgA S&P 500 Cap-Wgt	\$207,692,777	-\$5,014,462	-\$6,485,538	-\$11,500,000	\$7,942,582	\$204,135,359
SSgA S&P 500 Equal-Wgt	\$68,839,360	-\$7,071	\$7,071	\$0	\$2,530,479	\$71,369,839
T. Rowe	\$3,137	\$0	\$0	\$0	-\$52	\$3,085
Transwestern / Aslan III	\$102,653	\$0	\$0	\$0	\$0	\$102,653
UBS Trumbull	\$38,600,309	-\$79,764	\$0	-\$79,764	\$644,861	\$39,165,406
Vermont Cash	\$924,584	-\$894,659	\$1,760,313	\$865,654	\$0	\$1,790,238
Wellington	\$33,160,121	-\$66,068	\$66,068	\$0	\$4,275,240	\$37,435,361
Wellington DAS	\$46,453,960	\$0	\$0	\$0	-\$3,707,286	\$42,746,674
Wellington Opportunistic EMD	\$86,305,868	\$0	\$0	\$0	-\$2,514,743	\$83,791,125
<b>Total</b>	<b>\$1,643,822,689</b>	<b>-\$25,142,020</b>	<b>\$10,193,234</b>	<b>-\$14,948,786</b>	<b>\$3,202,829</b>	<b>\$1,632,076,731</b>



# Vermont State Employees

## 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
<b>Employees Composite</b>	<b>1,632,076,731</b>	<b>100.0</b>	<b>100.0</b>	<b>0.1</b>	<b>83</b>	<b>3.5</b>	<b>76</b>	<b>9.3</b>	<b>4</b>	<b>3.6</b>	<b>73</b>	<b>6.2</b>	<b>91</b>	<b>4.0</b>	<b>86</b>
<i>Policy Index</i>				-0.1	89	3.3	79	8.1	25	3.4	76	6.0	95	4.1	83
<i>Allocation Index</i>				-0.2	91	3.4	77	8.1	25	3.2	82	5.9	95	4.1	85
<i>InvestorForce Public DB Net Median</i>				0.7		4.2		7.4		4.1		7.8		4.9	
<b>Total Marketable Assets</b>	<b>1,346,953,116</b>	<b>82.5</b>	<b>--</b>	<b>-0.1</b>	<b>89</b>	<b>3.4</b>	<b>76</b>	<b>10.0</b>	<b>1</b>	<b>3.2</b>	<b>81</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Total Marketable Assets Custom Index</i>				-0.3	93	3.4	77	8.5	18	3.0	84	--	--	--	--
<i>InvestorForce Public DB Net Median</i>				0.7		4.2		7.4		4.1		7.8		4.9	
<b>US Equity</b>	<b>364,349,583</b>	<b>22.3</b>	<b>18.0</b>	<b>4.7</b>	<b>46</b>	<b>9.3</b>	<b>50</b>	<b>14.5</b>	<b>38</b>	<b>8.5</b>	<b>24</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Russell 3000</i>				4.2	51	8.8	54	12.7	45	8.4	25	14.7	32	7.1	53
<i>eA All US Equity Net Median</i>				4.2		9.3		11.7		6.8		13.5		7.2	
<b>Large Cap Comp</b>	<b>275,508,284</b>	<b>16.9</b>	<b>13.0</b>	<b>3.8</b>	<b>43</b>	<b>8.1</b>	<b>40</b>	<b>12.9</b>	<b>27</b>	<b>8.7</b>	<b>14</b>	<b>14.9</b>	<b>16</b>	<b>7.6</b>	<b>25</b>
<i>S&amp;P 500</i>				3.8	43	7.8	42	12.0	33	8.9	12	14.7	22	6.9	44
<i>eA US Large Cap Equity Net Median</i>				3.3		6.9		9.4		6.9		13.3		6.8	
<i>SSgA S&amp;P 500 Cap-Wgt</i>	204,135,359	12.5	10.0	3.9	42	7.9	42	12.0	32	8.9	12	14.7	21	--	--
<i>S&amp;P 500</i>				3.8	43	7.8	42	12.0	33	8.9	12	14.7	22	6.9	44
<i>SSgA S&amp;P 500 Equal-Wgt</i>	71,369,839	4.4	3.0	3.7	45	8.6	35	15.2	17	8.6	16	15.4	9	8.1	16
<i>S&amp;P 500 Equal Weighted</i>				3.8	43	8.5	36	14.8	18	8.7	14	15.5	8	8.4	11
<i>T. Rowe</i>	3,085	0.0	0.0												
<b>Small/Mid Cap Comp</b>	<b>88,841,299</b>	<b>5.4</b>	<b>5.0</b>	<b>7.8</b>	<b>30</b>	<b>13.5</b>	<b>37</b>	<b>20.0</b>	<b>22</b>	<b>8.8</b>	<b>12</b>	<b>15.3</b>	<b>19</b>	<b>8.6</b>	<b>31</b>
<i>Russell 2000</i>				8.8	22	18.7	12	21.3	15	6.7	37	14.5	28	7.1	65
<i>eA US Small-Mid Cap Equity Net Median</i>				5.3		11.2		15.1		5.7		13.4		7.7	
<i>SSgA S&amp;P 400</i>	9,423,005	0.6	0.5	7.4	18	11.8	26	20.6	16	8.9	18	15.3	19	--	--
<i>S&amp;P 400 MidCap</i>				7.4	17	11.9	26	20.7	15	9.0	17	15.3	18	9.2	16
<i>eA US Mid Cap Equity Net Median</i>				3.6		7.4		10.6		6.3		13.5		7.8	
<i>Champlain</i>	34,326,145	2.1	2.0	4.1	48	9.6	38	19.2	18	9.4	13	15.2	22	--	--
<i>Russell 2500</i>				6.1	28	13.1	18	17.6	21	6.9	45	14.5	31	7.7	58
<i>eA US Mid Cap Equity Net Median</i>				3.6		7.4		10.6		6.3		13.5		7.8	

# Vermont State Employees

## 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
Wellington	37,435,361	2.3	2.0	12.7	45	17.4	76	22.3	71	9.2	28	15.1	49	9.2	13
<i>Russell 2000 Value</i>				14.1	28	24.2	17	31.7	15	8.3	44	15.1	49	6.3	84
<i>eA US Small Cap Value Equity Net Median</i>				12.0		20.6		26.2		8.0		14.9		7.6	
SSgA Russell 2000 Growth	7,656,789	0.5	0.5	3.5	36	13.2	35	11.3	44	5.0	44	13.7	41	7.5	53
<i>Russell 2000 Growth</i>				3.6	36	13.1	36	11.3	44	5.1	43	13.7	40	7.8	45
<i>eA US Small Cap Growth Equity Net Median</i>				2.7		11.4		10.4		4.0		12.8		7.5	
<b>Int'l Equity Comp</b>	<b>200,621,266</b>	<b>12.3</b>	<b>11.0</b>	<b>-0.5</b>	<b>27</b>	<b>5.6</b>	<b>38</b>	<b>5.5</b>	<b>12</b>	<b>0.4</b>	<b>33</b>	<b>7.2</b>	<b>57</b>	<b>0.8</b>	<b>75</b>
<i>MSCI EAFE</i>				-0.7	30	5.7	36	1.0	44	-1.6	65	6.5	69	0.7	77
<i>eA All EAFE Equity Net Median</i>				-2.3		4.6		0.6		-0.6		7.6		1.8	
Acadian	65,532,793	4.0	4.0	0.2	19	7.6	17	7.5	5	2.2	13	9.5	23	0.7	77
Mondrian	64,772,895	4.0	4.0	-0.6	28	3.5	59	4.4	16	-0.3	42	6.0	84	1.4	63
<i>MSCI EAFE</i>				-0.7	30	5.7	36	1.0	44	-1.6	65	6.5	69	0.7	77
SSgA ACWI Ex US	70,315,578	4.3	3.0	-1.2	25	5.6	27	4.7	24	-1.6	56	5.2	84	--	--
<i>MSCI ACWI ex USA</i>				-1.3	25	5.6	27	4.5	24	-1.8	58	5.0	85	1.0	71
<i>eA ACWI ex-US All Cap Equity Net Median</i>				-3.5		2.7		1.7		-0.7		7.1		1.8	
<b>Emerging Market Comp</b>	<b>105,586,934</b>	<b>6.5</b>	<b>6.0</b>	<b>-5.4</b>	<b>53</b>	<b>-0.1</b>	<b>75</b>	<b>12.5</b>	<b>26</b>	<b>-1.6</b>	<b>40</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
Aberdeen	105,586,934	6.5	6.0	-5.4	53	-0.1	75	12.5	26	-1.6	40	2.2	61	--	--
<i>MSCI Emerging Markets</i>				-4.2	35	4.5	33	11.2	34	-2.6	61	1.3	79	1.8	68
<i>eA Emg Mkts Equity Net Median</i>				-5.2		2.5		8.2		-2.0		2.5		2.6	
<b>US Fixed Income</b>	<b>432,047,820</b>	<b>26.5</b>	<b>27.0</b>	<b>-1.5</b>	<b>46</b>	<b>0.4</b>	<b>29</b>	<b>6.0</b>	<b>31</b>	<b>3.8</b>	<b>30</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</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
<i>eA All US Fixed Inc Net Median</i>				-1.8		-1.0		3.3		3.0		2.9		4.4	
<b>Diversified Fixed</b>	<b>284,312,677</b>	<b>17.4</b>	<b>18.0</b>	<b>-2.4</b>	<b>66</b>	<b>-1.3</b>	<b>56</b>	<b>3.7</b>	<b>46</b>	<b>3.7</b>	<b>32</b>	<b>3.0</b>	<b>50</b>	<b>3.7</b>	<b>67</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
<i>eA All US Fixed Inc Net Median</i>				-1.8		-1.0		3.3		3.0		2.9		4.4	
PIMCO Core Plus	93,650,419	5.7	6.0	-3.1	84	-2.1	45	2.6	75	2.8	76	2.5	62	--	--
<i>BBgBarc US Aggregate TR</i>				-3.0	71	-2.5	74	2.6	71	3.0	60	2.2	79	4.3	78
Wellington DAS	42,746,674	2.6	3.0	-8.0	99	-7.8	99	-0.1	99	6.4	1	4.6	4	--	--
<i>Wellington Custom Benchmark*</i>				-7.2	99	-7.8	99	1.7	95	5.5	2	2.5	55	5.6	8

\*Wellington Custom Benchmark is comprised of equal weighted zero coupon bonds targeting a 10 year duration. Instruments include swaps from 7/1/07 thru 12/18/08, swaps and US Treasury STRIPS from 12/19/08 thru 12/29/08, and US Treasury STRIPS since 12/30/08.

# Vermont State Employees

## 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
SSgA Barclays Aggregate Index	49,277,926	3.0	3.0	-3.0	71	-2.6	76	2.6	72	--	--	--	--	--	--
<i>BBgBarc US Aggregate TR</i>				-3.0	71	-2.5	74	2.6	71	3.0	60	2.2	79	4.3	78
<i>3-Month Libor Total Return USD</i>				0.2	1	0.4	2	0.7	99	0.4	99	0.4	99	1.2	99
<i>eA US Core Fixed Inc Net Median</i>				-2.8		-2.1		3.1		3.1		2.7		4.6	
<b>Unconstrained Fixed Income</b>	<b>98,637,658</b>	<b>6.0</b>	<b>6.0</b>	<b>1.2</b>	<b>27</b>	<b>3.4</b>	<b>33</b>	<b>5.9</b>	<b>43</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>25% HY, 25% EMD, 50% BC Agg</i>				-2.1	85	0.4	79	8.1	26	4.1	10	4.3	45	5.8	18
<i>BBgBarc Global Aggregate TR</i>				-7.1	99	-6.3	99	2.1	90	-0.2	88	0.2	95	3.3	89
<i>eA Global Unconstrained Fixed Inc Net Median</i>				0.2		2.9		5.4		2.5		3.8		5.0	
PIMCO Unconstrained	41,176,125	2.5	2.5	1.3	24	3.9	23	5.3	60	1.6	69	1.3	91	--	--
<i>25% HY, 25% EMD, 50% BC Agg</i>				-2.1	85	0.4	79	8.1	26	4.1	10	4.3	45	5.8	18
<i>3-Month Libor Total Return USD</i>				0.2	51	0.4	78	0.7	92	0.4	84	0.4	95	1.2	99
GAM Unconstrained Bond	57,461,533	3.5	3.5	1.1	28	3.1	47	6.3	39	--	--	--	--	--	--
<i>3-Month LIBOR + 3%</i>				1.0	30	1.9	62	3.8	85	3.4	22	3.4	67	4.2	70
<i>eA Global Unconstrained Fixed Inc Net Median</i>				0.2		2.9		5.4		2.5		3.8		5.0	
<b>High Yield Comp</b>	<b>83,891,260</b>	<b>5.1</b>	<b>5.0</b>	<b>2.6</b>	<b>19</b>	<b>7.7</b>	<b>25</b>	<b>15.3</b>	<b>27</b>	<b>4.6</b>	<b>30</b>	<b>7.1</b>	<b>31</b>	<b>7.1</b>	<b>35</b>
<i>BBgBarc US High Yield TR</i>				1.8	46	7.4	31	17.1	12	4.7	26	7.4	24	7.5	17
<i>eA US High Yield Fixed Inc Net Median</i>				1.6		6.6		13.5		4.0		6.6		6.7	
KDP	16,794,035	1.0	1.0	0.7	89	4.3	82	11.0	76	3.0	80	5.0	92	--	--
<i>BBgBarc US High Yield TR</i>				1.8	46	7.4	31	17.1	12	4.7	26	7.4	24	7.5	17
<i>BofA Merrill Lynch US High Yield BB-B Rated</i>				1.3	67	6.3	58	14.7	39	4.9	23	7.1	31	6.9	36
Guggenheim	67,097,224	4.1	4.0	3.1	10	8.6	16	16.4	17	5.0	19	--	--	--	--
<i>BBgBarc US High Yield TR</i>				1.8	46	7.4	31	17.1	12	4.7	26	7.4	24	7.5	17
<i>eA US High Yield Fixed Inc Net Median</i>				1.6		6.6		13.5		4.0		6.6		6.7	

# Vermont State Employees

## 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
<b>TIPS</b>	<b>63,843,883</b>	<b>3.9</b>	<b>4.0</b>												
BlackRock TIPS	63,843,883	3.9	4.0	-2.4	--	-1.5	--	4.7	--	2.2	--	0.8	--	--	--
<i>BBqBarc US TIPS TR</i>				-2.4	--	-1.5	--	4.7	--	2.3	--	0.9	--	4.4	--
<b>Emerging Market Debt</b>	<b>83,791,125</b>	<b>5.1</b>	<b>5.0</b>												
Wellington Opportunistic EMD	83,791,125	5.1	5.0	-2.9	34	2.0	14	12.8	18	5.8	5	6.1	18	--	--
<i>JP Morgan EMBI Global TR</i>				-4.2	60	-0.6	56	10.2	51	5.6	8	5.4	23	6.8	32
<i>eA All Emg Mkts Fixed Inc Net Median</i>				-4.0		-0.2		10.2		3.5		4.0		5.9	
<b>Risk Parity/GAA</b>	<b>130,162,689</b>	<b>8.0</b>	<b>8.0</b>	<b>-2.4</b>	<b>78</b>	<b>-0.2</b>	<b>74</b>	<b>8.6</b>	<b>18</b>	<b>1.8</b>	<b>46</b>	<b>4.4</b>	<b>48</b>	<b>3.8</b>	<b>60</b>
<b>Risk Parity</b>	<b>130,162,689</b>	<b>8.0</b>	<b>8.0</b>	<b>-2.4</b>	<b>78</b>	<b>-0.2</b>	<b>74</b>	<b>10.5</b>	<b>5</b>	<b>2.6</b>	<b>22</b>	<b>4.0</b>	<b>53</b>	<b>--</b>	<b>--</b>
<i>eA Global TAA Net Median</i>				-0.8		2.1		3.4		1.4		4.3		4.2	
AQR Global Risk Premium	130,162,689	8.0	8.0	-2.4	78	-0.2	74	10.5	5	2.6	22	4.0	53	--	--
<i>60% MSCI World (Net) / 40% CITI WGBI</i>				-2.4	78	0.6	69	5.3	37	2.1	31	5.9	23	3.8	59
<b>Cash</b>	<b>1,790,238</b>	<b>0.1</b>	<b>0.0</b>												
Vermont Cash	1,790,238	0.1	0.0	0.0	--	0.0	--	0.0	--	0.0	--	0.0	--	1.0	--
<i>91 Day T-Bills</i>				0.1	--	0.2	--	0.3	--	0.1	--	0.1	--	0.7	--
<b>Commodities</b>	<b>28,603,461</b>	<b>1.8</b>	<b>3.0</b>												
Schroder	28,603,461	1.8	3.0	2.8	--	0.6	--	16.8	--	-13.9	--	-10.4	--	--	--
<i>Bloomberg Commodity Index</i>				2.7	--	-1.3	--	11.8	--	-11.3	--	-9.0	--	-5.6	--
<b>Total Real Estate</b>	<b>103,402,616</b>	<b>6.3</b>	<b>8.0</b>	<b>1.6</b>	<b>--</b>	<b>3.7</b>	<b>--</b>	<b>8.0</b>	<b>--</b>	<b>11.7</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>NCREIF Property Index</i>				1.7	--	3.5	--	8.0	--	11.0	--	10.9	--	6.9	--
<i>NCREIF ODCE</i>				2.1	--	4.2	--	8.8	--	12.1	--	12.2	--	5.8	--
Morgan Stanley Prime Property	47,250,978	2.9		2.4	--	4.7	--	9.2	--	12.9	--	13.3	--	6.2	--
UBS Trumbull	39,165,406	2.4		1.5	--	3.2	--	7.2	--	10.1	--	9.7	--	5.4	--
RREEF America REIT III	206,798	0.0		-0.4	--	-13.2	--	-16.8	--	4.6	--	10.2	--	-4.2	--
Transwestern / Aslan III	102,653	0.0		0.0	--	0.0	--	0.0	--	5.4	--	14.3	--	-21.2	--
Siguler Guff	16,676,781	1.0		0.0	--	4.0	--	9.9	--	--	--	--	--	--	--

Risk Parity Composite formerly shown as Risk Parity/GAA.

Real Estate performance reported on a quarterly basis. NCREIF Property is available 25 days after quarter end.

Real Estate values are finalized as of 12/31/2016, except for Siguler Guff, it is preliminary.

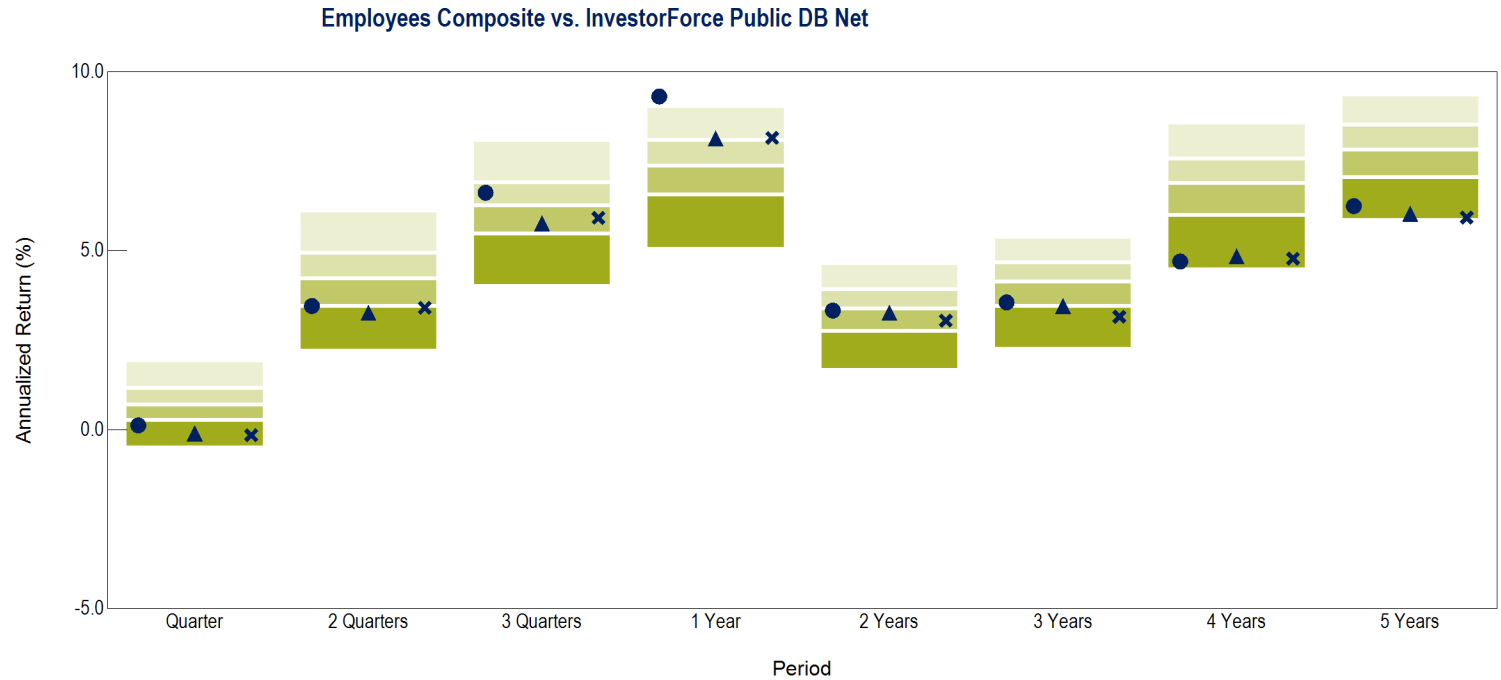
## Vermont State Employees

### 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
<b>Absolute Return</b>	<b>158,493,223</b>	<b>9.7</b>	<b>9.0</b>	<b>1.3</b>	<b>47</b>	<b>3.2</b>	<b>56</b>	<b>0.7</b>	<b>57</b>	<b>0.9</b>	<b>66</b>	<b>5.1</b>	<b>48</b>	<b>--</b>	<b>--</b>
<i>HFRI Fund of Funds Composite Index</i>				0.9	61	3.2	57	0.5	59	1.2	57	3.4	77	1.3	92
<i>eV Alt Fund of Funds - Multi-Strategy Median</i>				1.2		3.7		1.3		1.6		4.9		3.3	
Grosvenor	78,886,690	4.8	5.0	2.1	28	5.0	34	2.3	39	1.9	46	5.8	33	--	--
Mellon Dynamic Growth	31,970,103	2.0	2.0	-1.6	91	-0.7	91	0.1	62	3.0	32	6.2	23	2.7	67
<i>Mellon Dynamic Growth Benchmark</i>				-2.1	92	1.2	80	5.5	13	2.0	45	5.4	39	3.3	48
Allianz Structured Alpha	30,807,235	1.9	2.0	1.4	47	2.7	64	9.9	4	10.1	3	7.5	14	--	--
<i>91 Day T-Bills</i>				0.1	75	0.2	88	0.3	61	0.1	79	0.1	99	0.7	97
<i>eV Alt Fund of Funds - Multi-Strategy Median</i>				1.2		3.7		1.3		1.6		4.9		3.3	
Pinnacle Natural Resources, L.P.	16,663,707	1.0		3.4	--	1.7	--	--	--	--	--	--	--	--	--
<i>Bloomberg Commodity Index</i>				2.7	--	-1.3	--	11.8	--	-11.3	--	-9.0	--	-5.6	--
<i>eA Commodities Net Median</i>				--		--		--		--		--		--	
GAM	165,487	0.0	0.0												
<b>Private Equity</b>	<b>23,227,777</b>	<b>1.4</b>	<b>5.0</b>	<b>-1.2</b>	<b>--</b>	<b>4.0</b>	<b>--</b>	<b>10.5</b>	<b>--</b>	<b>16.6</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>Cambridge Associates US All PE</i>				0.0	--	3.8	--	8.1	--	8.2	--	11.9	--	9.5	--
Harbourvest Partners IX Credit Opportunities	909,706	0.1													
Harbourvest Partners IX Venture Fund	4,695,467	0.3													
Harbourvest Partners IX Buyout Fund	6,135,860	0.4													
Harbourvest Partners X Venture Fund	793,038	0.0													
Harbourvest Partners X Buyout Fund	1,745,672	0.1													
Harbourvest Dover VIII Fund	7,315,293	0.4													
HIPEP VII	1,632,742	0.1													

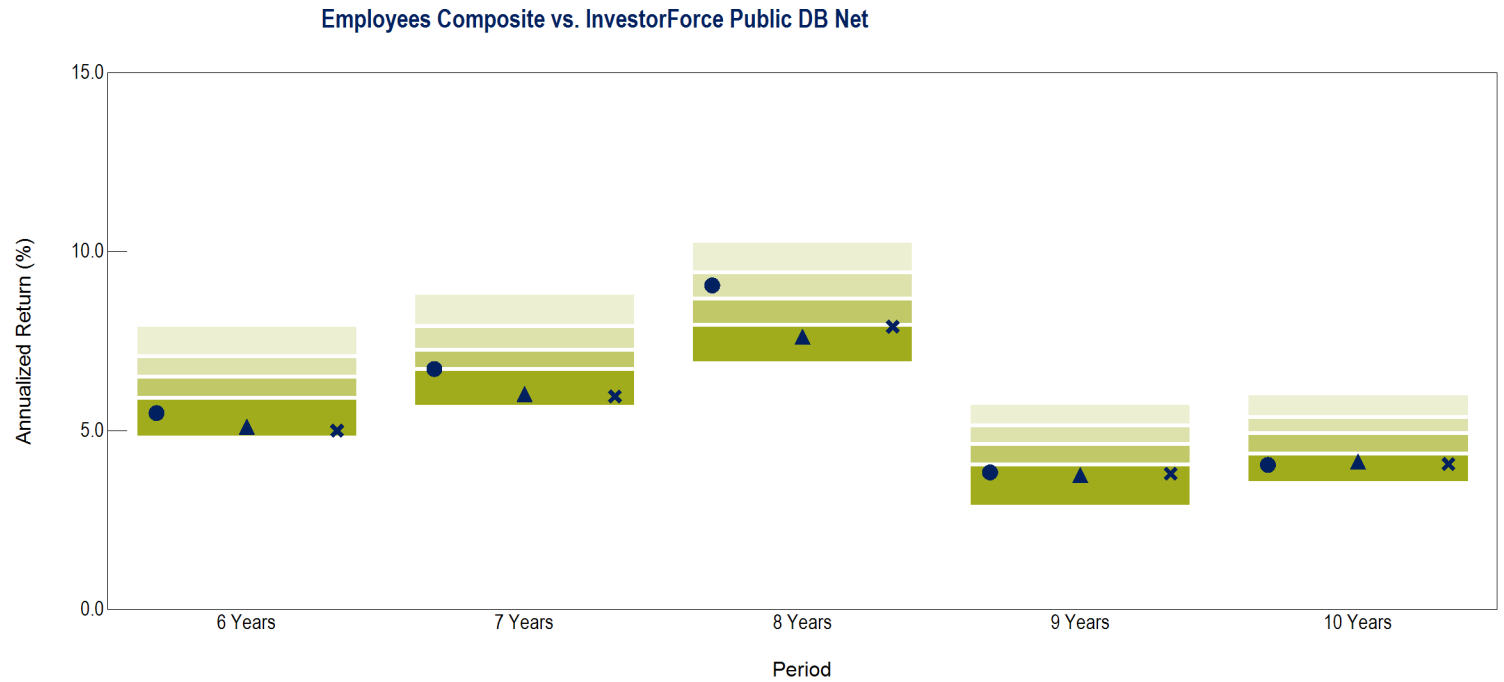
Absolute Return composite formerly shown as Hedge Funds composite. As of 04/01/2016, Absolute Return includes Mellon Dynamic Growth and Allianz Structured Alpha. Mellon Dynamic Growth was included in Risk Parity/GAA composite prior to 04/01/2016. Allianz Structured Alpha was included Diversified Fixed income composite prior to 04/01/2016. Mellon Dynamic Growth Benchmark: 60% MSCI All Country World Index IMI / 40% Citigroup GDP Weighted. Harbourvest values based on final Capital Account Statements for Q3, and preliminary values for Q4.

Total Fund Return Summary vs. Peer Universe - Net



	Return (Rank)													
5th Percentile	1.9	6.1	8.1	9.0	4.7	5.4	8.6	9.4						
25th Percentile	1.2	5.0	6.9	8.1	3.9	4.7	7.6	8.5						
Median	0.7	4.2	6.3	7.4	3.4	4.1	6.9	7.8						
75th Percentile	0.3	3.5	5.5	6.6	2.8	3.5	6.0	7.1						
95th Percentile	-0.5	2.2	4.0	5.0	1.7	2.3	4.5	5.9						
# of Portfolios	270	270	269	269	264	253	241	232						
● Employees Composite	0.1 (83)	3.5 (76)	6.6 (38)	9.3 (4)	3.3 (54)	3.6 (73)	4.7 (94)	6.2 (91)						
▲ Policy Index	-0.1 (89)	3.3 (79)	5.8 (65)	8.1 (25)	3.3 (56)	3.4 (76)	4.8 (93)	6.0 (95)						
× Allocation Index	-0.2 (91)	3.4 (77)	5.9 (58)	8.1 (25)	3.0 (67)	3.2 (82)	4.8 (93)	5.9 (95)						

Total Fund Return Summary vs. Peer Universe - Net



	Return (Rank)									
5th Percentile	8.0		8.8		10.3		5.8		6.0	
25th Percentile	7.1		7.9		9.4		5.1		5.4	
Median	6.5		7.3		8.7		4.6		4.9	
75th Percentile	5.9		6.7		8.0		4.1		4.4	
95th Percentile	4.8		5.7		6.9		2.9		3.5	
# of Portfolios	214		204		196		191		184	
● Employees Composite	5.5	(86)	6.7	(76)	9.1	(40)	3.8	(80)	4.0	(86)
▲ Policy Index	5.1	(93)	6.0	(93)	7.6	(83)	3.8	(82)	4.1	(83)
× Allocation Index	5.0	(93)	6.0	(94)	7.9	(77)	3.8	(81)	4.1	(85)

Total Fund Return Summary vs. Peer Universe - Net

Employees Composite vs. InvestorForce Public DB Net

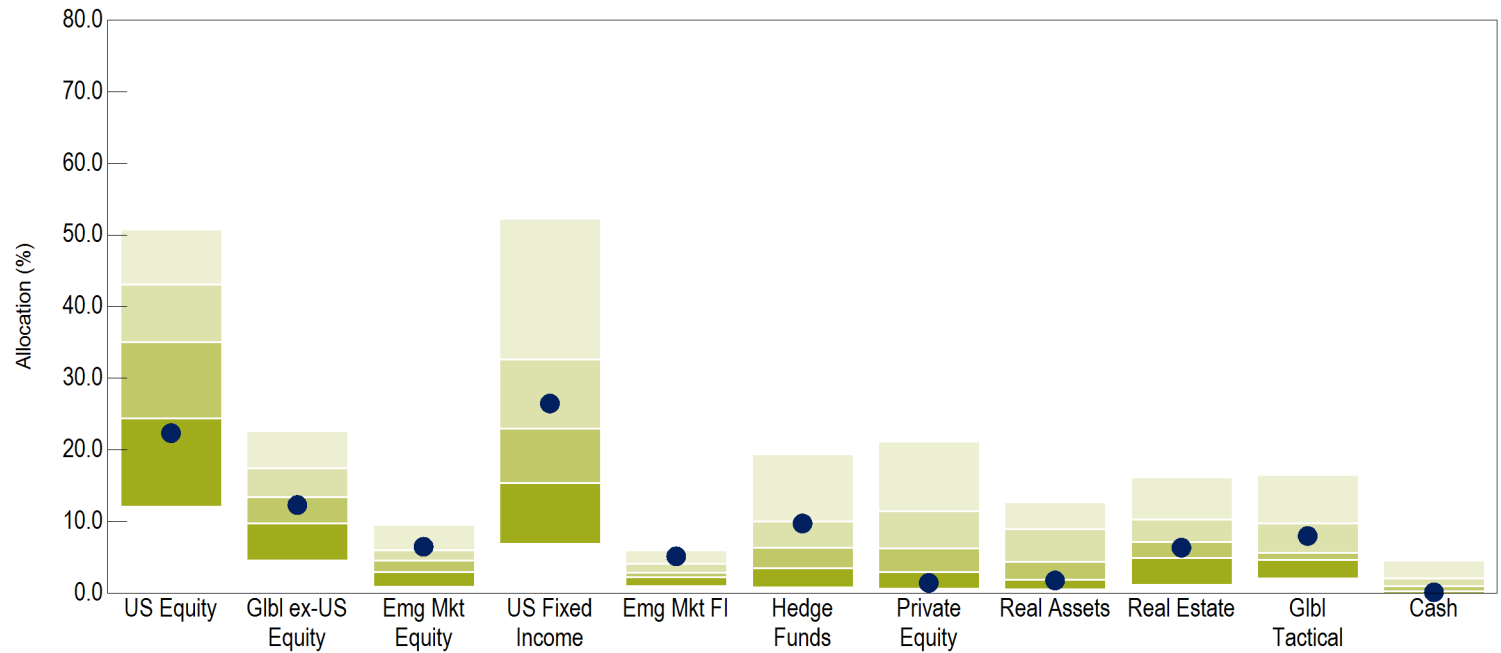


	Return (Rank)					
	Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011
5th Percentile	2.8	4.4	18.6	15.0	4.4	24.4
25th Percentile	1.4	3.6	16.7	12.9	1.9	22.1
Median	0.4	2.8	15.5	11.3	0.9	19.5
75th Percentile	-0.9	1.6	14.1	9.9	0.0	15.9
95th Percentile	-2.9	-0.1	11.9	7.4	-2.9	12.2
# of Portfolios	258	231	173	192	147	137
● Employees Composite	1.1 (32)	-0.4 (97)	14.1 (75)	8.2 (93)	1.9 (26)	20.4 (39)
▲ Policy Index	1.4 (25)	0.1 (94)	13.7 (84)	7.7 (94)	0.8 (52)	18.5 (61)
× Allocation Index	0.9 (36)	0.0 (95)	13.4 (89)	8.2 (93)	0.2 (70)	18.9 (57)



Total Fund Allocation vs. Peer Universe - Net

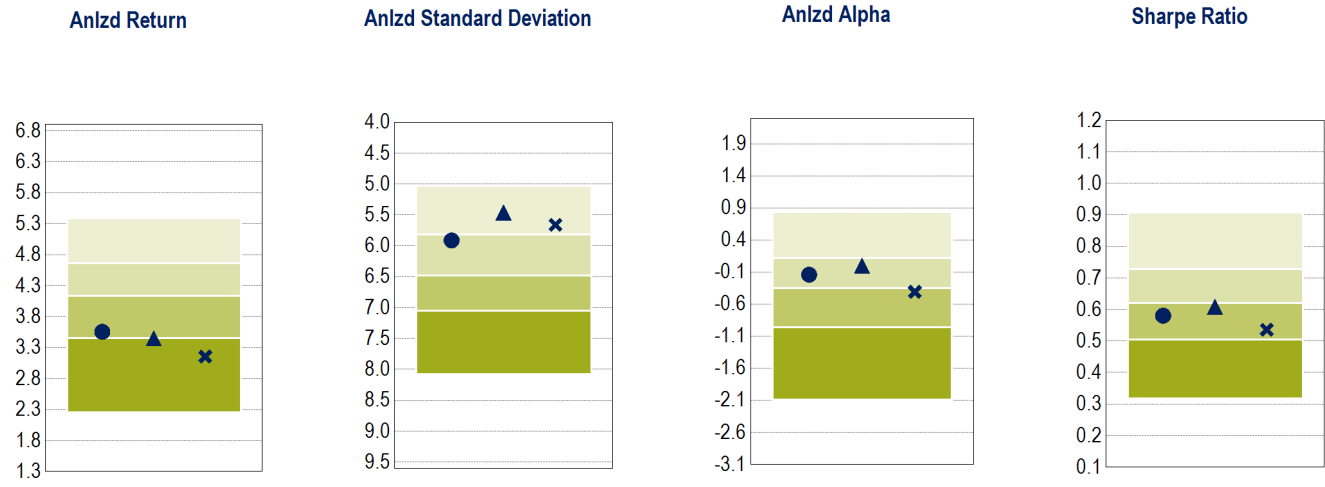
Total Plan Allocation vs. InvestorForce Public DB Net  
As of December 31, 2016



	Allocation (Rank)											
	US Equity	Gbl ex-US Equity	Emg Mkt Equity	US Fixed Income	Emg Mkt FI	Hedge Funds	Private Equity	Real Assets	Real Estate	Gbl Tactical	Cash	
5th Percentile	50.8	22.6	9.5	52.3	5.9	19.3	21.2	12.7	16.2	16.5	4.6	--
25th Percentile	43.2	17.5	6.1	32.7	4.1	10.1	11.5	9.0	10.4	9.8	2.2	--
Median	35.1	13.5	4.6	23.1	2.9	6.4	6.3	4.4	7.3	5.7	1.1	--
75th Percentile	24.5	9.8	3.0	15.4	2.3	3.6	3.0	2.0	5.0	4.8	0.3	--
95th Percentile	12.1	4.7	1.0	6.9	1.0	0.9	0.7	0.6	1.3	2.1	0.0	--
# of Portfolios	227	217	127	230	46	92	123	69	160	69	232	--
● Employees Composite	22.3 (81)	12.3 (58)	6.5 (20)	26.5 (39)	5.1 (13)	9.7 (28)	1.4 (91)	1.8 (85)	6.3 (56)	8.0 (40)	0.1 (88)	--

Total Fund Risk Statistics vs. Peer Universe - Net

Employees Composite vs. IFx Public DB Net  
3 Years



● Employees Composite	
Value	3.55
Rank	73
▲ Policy Index	
Value	3.45
Rank	76
✕ Allocation Index	
Value	3.15
Rank	82
Universe	
5th %tile	5.38
25th %tile	4.67
Median	4.15
75th %tile	3.46
95th %tile	2.26

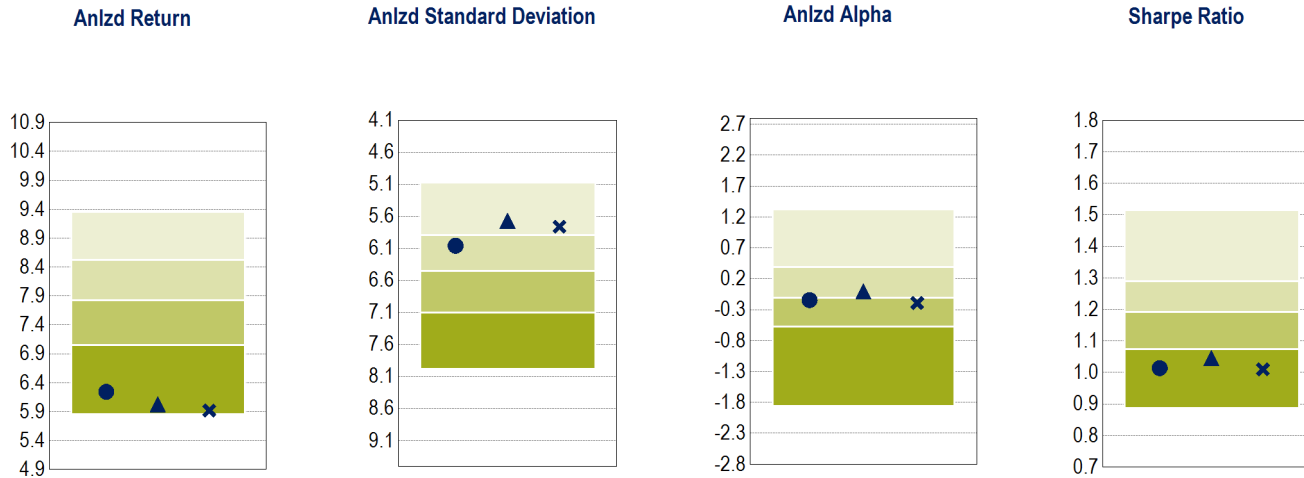
● Employees Composite	
Value	5.92
Rank	29
▲ Policy Index	
Value	5.46
Rank	11
✕ Allocation Index	
Value	5.66
Rank	18
Universe	
5th %tile	5.03
25th %tile	5.81
Median	6.48
75th %tile	7.04
95th %tile	8.07

● Employees Composite	
Value	-0.14
Rank	38
▲ Policy Index	
Value	0.00
Rank	32
✕ Allocation Index	
Value	-0.41
Rank	54
Universe	
5th %tile	0.84
25th %tile	0.13
Median	-0.34
75th %tile	-0.95
95th %tile	-2.08

● Employees Composite	
Value	0.58
Rank	66
▲ Policy Index	
Value	0.61
Rank	56
✕ Allocation Index	
Value	0.54
Rank	72
Universe	
5th %tile	0.91
25th %tile	0.73
Median	0.62
75th %tile	0.51
95th %tile	0.32

Total Fund Risk Statistics vs. Peer Universe - Net

Employees Composite vs. I/Fx Public DB Net  
5 Years



● Employees Composite	
Value	6.24
Rank	91
▲ Policy Index	
Value	6.03
Rank	95
× Allocation Index	
Value	5.92
Rank	95
Universe	
5th %tile	9.36
25th %tile	8.53
Median	7.83
75th %tile	7.06
95th %tile	5.87

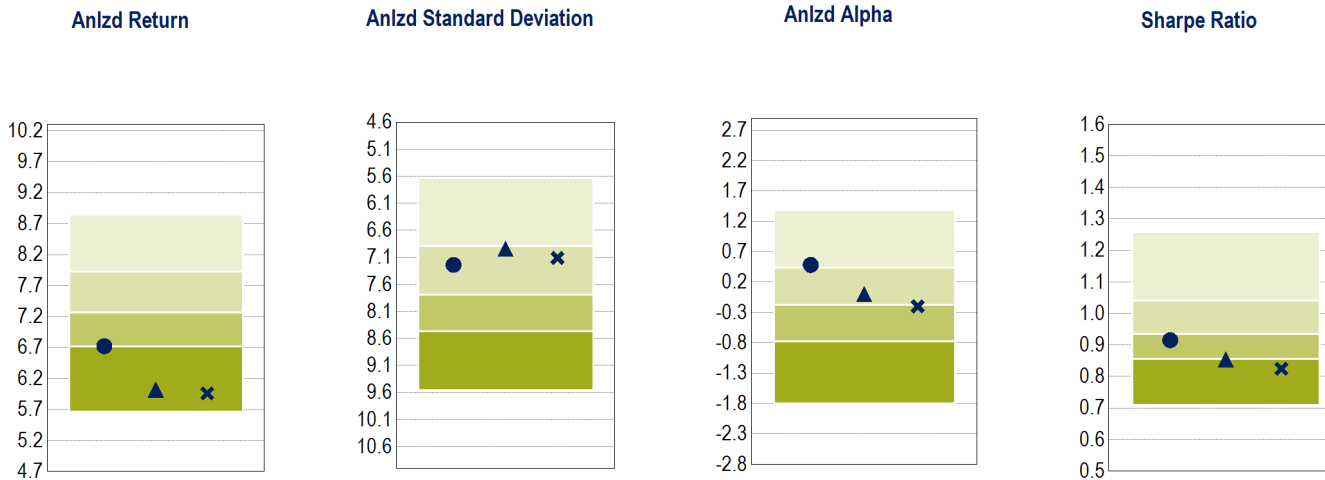
● Employees Composite	
Value	6.06
Rank	33
▲ Policy Index	
Value	5.67
Rank	18
× Allocation Index	
Value	5.76
Rank	22
Universe	
5th %tile	5.08
25th %tile	5.88
Median	6.44
75th %tile	7.09
95th %tile	7.98

● Employees Composite	
Value	-0.15
Rank	53
▲ Policy Index	
Value	0.00
Rank	43
× Allocation Index	
Value	-0.19
Rank	55
Universe	
5th %tile	1.32
25th %tile	0.41
Median	-0.10
75th %tile	-0.57
95th %tile	-1.85

● Employees Composite	
Value	1.01
Rank	83
▲ Policy Index	
Value	1.05
Rank	77
× Allocation Index	
Value	1.01
Rank	84
Universe	
5th %tile	1.52
25th %tile	1.29
Median	1.20
75th %tile	1.08
95th %tile	0.89

Total Fund Risk Statistics vs. Peer Universe - Net

Employees Composite vs. IFx Public DB Net  
7 Years



● Employees Composite	
Value	6.72
Rank	76
▲ Policy Index	
Value	6.02
Rank	93
✕ Allocation Index	
Value	5.96
Rank	94
Universe	
5th %tile	8.84
25th %tile	7.93
Median	7.27
75th %tile	6.73
95th %tile	5.67

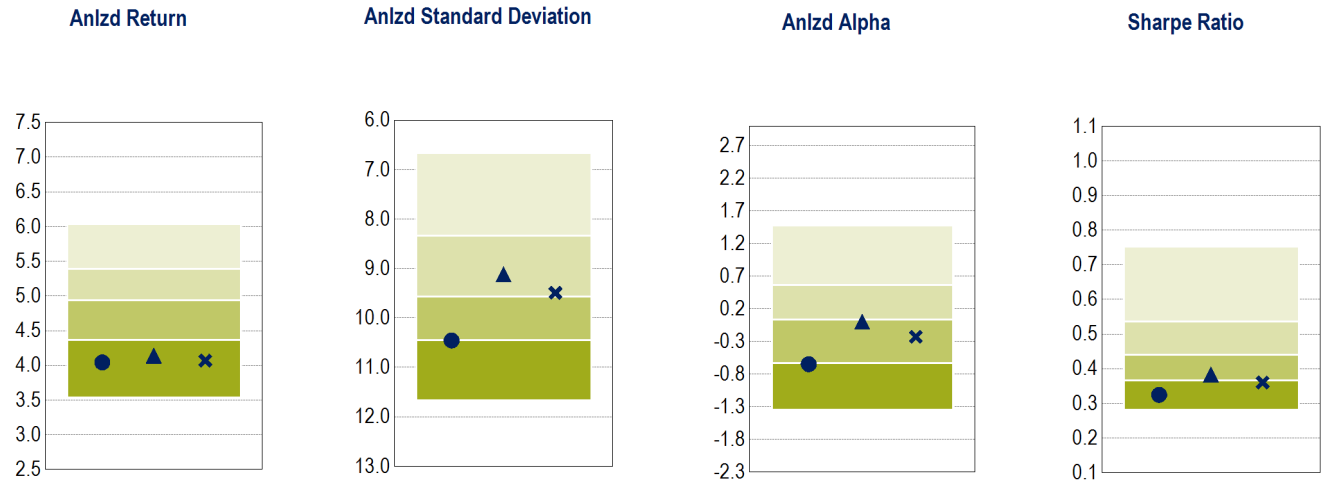
● Employees Composite	
Value	7.24
Rank	35
▲ Policy Index	
Value	6.94
Rank	27
✕ Allocation Index	
Value	7.11
Rank	30
Universe	
5th %tile	5.63
25th %tile	6.88
Median	7.77
75th %tile	8.46
95th %tile	9.54

● Employees Composite	
Value	0.48
Rank	22
▲ Policy Index	
Value	0.00
Rank	43
✕ Allocation Index	
Value	-0.20
Rank	52
Universe	
5th %tile	1.38
25th %tile	0.45
Median	-0.16
75th %tile	-0.77
95th %tile	-1.79

● Employees Composite	
Value	0.92
Rank	57
▲ Policy Index	
Value	0.85
Rank	77
✕ Allocation Index	
Value	0.82
Rank	84
Universe	
5th %tile	1.26
25th %tile	1.04
Median	0.94
75th %tile	0.86
95th %tile	0.71

Total Fund Risk Statistics vs. Peer Universe - Net

Employees Composite vs. I/Fx Public DB Net  
10 Years



● Employees Composite	
Value	4.04
Rank	86
▲ Policy Index	
Value	4.14
Rank	83
✕ Allocation Index	
Value	4.07
Rank	85
Universe	
5th %tile	6.03
25th %tile	5.40
Median	4.94
75th %tile	4.38
95th %tile	3.55

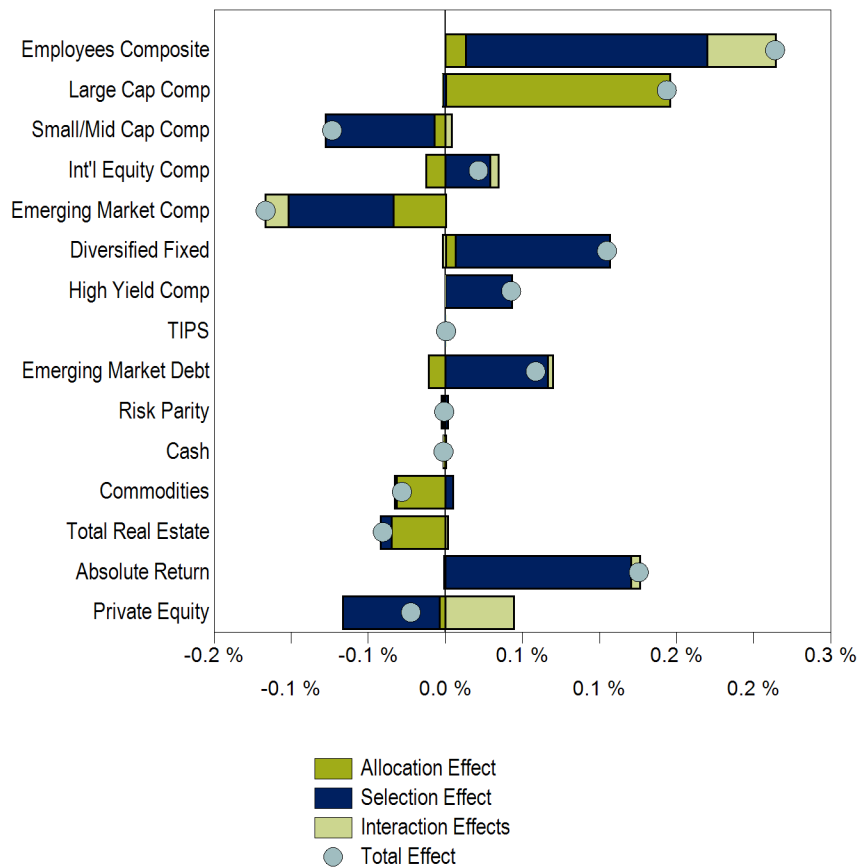
● Employees Composite	
Value	10.46
Rank	77
▲ Policy Index	
Value	9.12
Rank	39
✕ Allocation Index	
Value	9.50
Rank	49
Universe	
5th %tile	6.67
25th %tile	8.33
Median	9.55
75th %tile	10.44
95th %tile	11.66

● Employees Composite	
Value	-0.65
Rank	77
▲ Policy Index	
Value	0.00
Rank	53
✕ Allocation Index	
Value	-0.23
Rank	62
Universe	
5th %tile	1.48
25th %tile	0.57
Median	0.04
75th %tile	-0.62
95th %tile	-1.35

● Employees Composite	
Value	0.32
Rank	86
▲ Policy Index	
Value	0.38
Rank	73
✕ Allocation Index	
Value	0.36
Rank	77
Universe	
5th %tile	0.75
25th %tile	0.54
Median	0.44
75th %tile	0.37
95th %tile	0.28

Total Fund Attribution Analysis - Net

Attribution Effects Relative to Policy Index  
3 Months Ending December 31, 2016



Attribution Summary  
3 Months Ending December 31, 2016

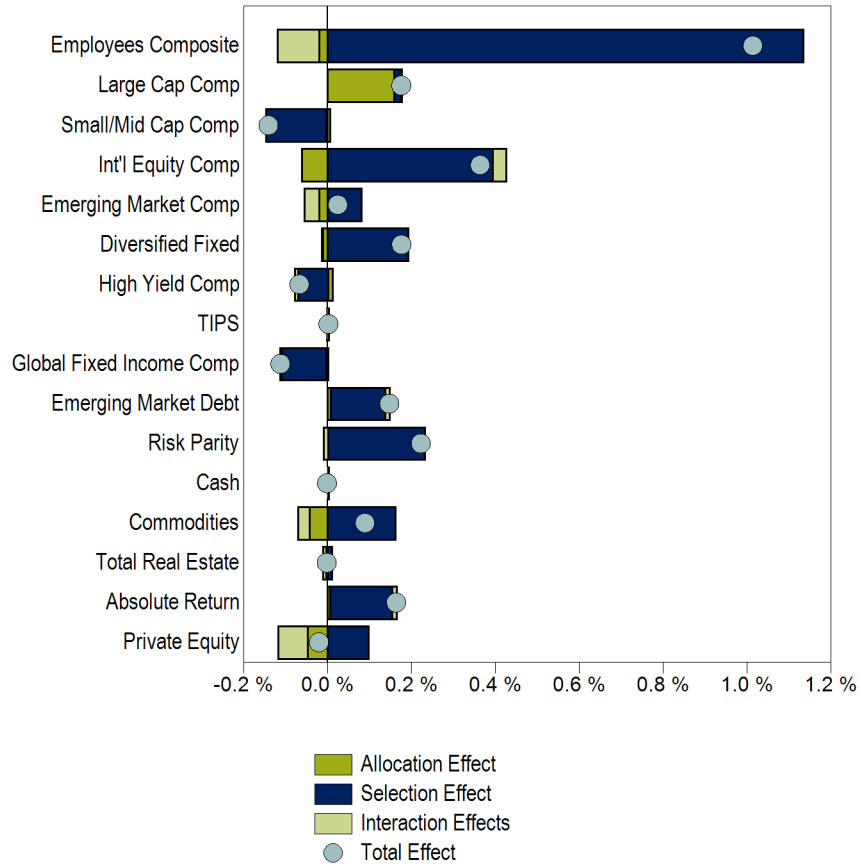
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Large Cap Comp	3.8%	3.8%	0.0%	0.0%	0.1%	0.0%	0.1%
Small/Mid Cap Comp	7.8%	9.1%	-1.3%	-0.1%	0.0%	0.0%	-0.1%
Int'l Equity Comp	-0.5%	-0.8%	0.3%	0.0%	0.0%	0.0%	0.0%
Emerging Market Comp	-5.4%	-4.2%	-1.2%	-0.1%	0.0%	0.0%	-0.1%
Diversified Fixed	-2.4%	-3.0%	0.5%	0.1%	0.0%	0.0%	0.1%
High Yield Comp	2.6%	1.8%	0.9%	0.0%	0.0%	0.0%	0.0%
TIPS	-2.4%	-2.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Emerging Market Debt	-2.9%	-4.2%	1.3%	0.1%	0.0%	0.0%	0.1%
Risk Parity	-2.4%	-2.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Cash	0.0%	0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%
Commodities	2.8%	2.7%	0.2%	0.0%	0.0%	0.0%	0.0%
Total Real Estate	1.6%	1.7%	-0.1%	0.0%	0.0%	0.0%	0.0%
Absolute Return	1.3%	0.0%	1.3%	0.1%	0.0%	0.0%	0.1%
Private Equity	-1.2%	0.0%	-1.2%	-0.1%	0.0%	0.0%	0.0%
<b>Total</b>	<b>0.1%</b>	<b>-0.1%</b>	<b>0.2%</b>	<b>0.2%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.2%</b>

Note: Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total returns shown may vary from the calculated returns shown on the performance report.  
The target return shown for each composite is a custom index, based on aggregated policy indices. This policy index asset weights the underlying policy indices of each option in the plan and the respective benchmark.  
The allocation, selection, and interaction effects are calculated using the custom index described above along with the policy or target weight of each composite.  
May not add up due to rounding.

Absolute Return's Wtd. index Return is calculated using a weighting of the respective benchmarks for each underlying strategy part of the composite.

Total Fund Attribution Analysis - Net

Attribution Effects Relative to Policy Index  
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
Large Cap Comp	12.9%	12.7%	0.1%	0.0%	0.2%	0.0%	0.2%
Small/Mid Cap Comp	20.0%	22.8%	-2.8%	-0.1%	0.0%	0.0%	-0.1%
Int'l Equity Comp	5.5%	1.7%	3.8%	0.4%	-0.1%	0.0%	0.4%
Emerging Market Comp	12.5%	11.2%	1.3%	0.1%	0.0%	0.0%	0.0%
Diversified Fixed	3.7%	2.6%	1.1%	0.2%	0.0%	0.0%	0.2%
High Yield Comp	15.3%	17.1%	-1.8%	-0.1%	0.0%	0.0%	-0.1%
TIPS	4.7%	4.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Global Fixed Income Comp	--	7.1%	--	-0.1%	0.0%	0.0%	-0.1%
Emerging Market Debt	12.8%	10.2%	2.7%	0.1%	0.0%	0.0%	0.1%
Risk Parity	8.6%	5.7%	2.9%	0.2%	0.0%	0.0%	0.2%
Cash	0.0%	0.3%	-0.3%	0.0%	0.0%	0.0%	0.0%
Commodities	16.8%	11.8%	5.0%	0.2%	0.0%	0.0%	0.1%
Total Real Estate	8.0%	8.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Absolute Return	0.7%	-0.4%	1.1%	0.1%	0.0%	0.0%	0.2%
Private Equity	10.5%	8.1%	2.3%	0.1%	0.0%	-0.1%	0.0%
<b>Total</b>	<b>9.1%</b>	<b>8.1%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>0.0%</b>	<b>-0.1%</b>	<b>1.0%</b>

Note: Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total returns shown may vary from the calculated returns shown on the performance report.

The target return shown for each composite is a custom index, based on aggregated policy indices. This policy index asset weights the underlying policy indices of each option in the plan and the respective benchmark.

The allocation, selection, and interaction effects are calculated using the custom index described above along with the policy or target weight of each composite.

May not add up due to rounding.

Absolute Return's Wtd. index Return is calculated using a weighting of the respective benchmarks for each underlying strategy part of the composite.

**Asset Allocation Effect** - Measures VPIC's ability to effectively allocate their portfolio's assets to various asset classes. The allocation effect determines whether the overweighting or underweighting of asset classes relative to a benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is overweighted in an asset class that outperforms the benchmark. Negative allocation occurs when the portfolio is overweighted in an asset class that underperforms the benchmark and underweighted in an asset class that outperforms the benchmark.

**Selection Effect** - Measures VPIC's ability to select managers within a given asset class relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by VPIC's allocation to the asset class. The weight of the manager in the portfolio determines the size of the effect -- the larger the manager, the larger the effect is, positive or negative.

**Interaction Effect** - The interaction effect measures the combined impact of VPIC's manager selection and manager allocation decisions within an asset class. For example, if VPIC had superior manager selection and overweighted that particular asset class, the interaction effect is positive. If VPIC had superior manager selection, but underweighted that asset class, the interaction effect is negative. In this case, VPIC did not take advantage of the superior manager selection by allocating more assets to that asset class.



## Vermont State Employees

### Risk Statistics - 3 Years Ending December 31, 2016 - Net

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank	Tracking Error	Rank
Employees Composite	100.00%	3.55%	73	5.92%	29	-0.14%	37	0.58	66	1.08	45	0.91%	31
Policy Index	--	3.45%	76	5.46%	11	0.00%	32	0.61	56	1.14	35	0.00%	1
US Equity	22.32%	8.52%	24	11.31%	30	-0.04%	26	0.74	19	1.40	19	1.49%	2
Russell 3000	--	8.43%	25	11.04%	23	0.00%	25	0.75	18	1.33	23	0.00%	1
Large Cap Comp	16.88%	8.74%	14	10.88%	37	-0.23%	19	0.79	15	1.55	11	0.74%	1
S&P 500	--	8.87%	12	10.74%	30	0.00%	16	0.81	13	1.44	15	0.00%	1
Small/Mid Cap Comp	5.44%	8.83%	12	13.46%	47	3.25%	14	0.65	16	1.38	11	3.91%	2
Russell 2000	--	6.74%	37	15.99%	92	0.00%	53	0.41	51	0.74	50	0.00%	1
Int'l Equity Comp	12.29%	0.37%	33	11.91%	44	1.85%	30	0.02	33	0.04	33	2.20%	7
MSCI EAFE	--	-1.60%	65	12.64%	83	0.00%	65	-0.14	66	-0.24	65	0.00%	1
Emerging Market Comp	6.47%	-1.61%	40	15.86%	69	0.73%	40	-0.11	40	-0.21	46	5.37%	56
MSCI Emerging Markets	--	-2.55%	61	16.30%	81	0.00%	58	-0.16	59	-0.31	63	0.00%	1
US Fixed Income	26.47%	3.85%	30	3.09%	60	1.20%	30	1.21	28	1.85	29	1.67%	35
BBgBarc US Aggregate TR	--	3.03%	50	3.02%	59	0.00%	74	0.96	56	1.36	65	0.00%	1
Diversified Fixed	17.42%	3.75%	32	3.14%	62	0.83%	37	1.16	33	1.57	48	1.19%	23
BBgBarc US Aggregate TR	--	3.03%	50	3.02%	59	0.00%	74	0.96	56	1.36	65	0.00%	1
Unconstrained Fixed Income	6.04%	--	--	--	--	--	--	--	--	--	--	--	--
25% HY, 25% EMD, 50% BC Agg	--	4.12%	10	3.76%	52	0.00%	40	1.06	19	1.92	22	0.00%	1
High Yield Comp	5.14%	4.56%	30	5.04%	41	0.78%	36	0.88	37	1.62	46	1.63%	36
BBgBarc US High Yield TR	--	4.66%	26	6.09%	82	0.00%	63	0.75	60	1.77	35	0.00%	1
TIPS	3.91%	2.19%	38	4.21%	70	-0.10%	30	0.49	31	0.93	22	0.18%	3
BBgBarc US TIPS TR	--	2.26%	30	4.14%	65	0.00%	23	0.52	26	0.98	19	0.00%	1
Emerging Market Debt	5.13%	5.84%	5	6.45%	29	0.34%	15	0.89	15	1.48	13	1.33%	7
JP Morgan EMBI Global TR	--	5.59%	8	6.42%	29	0.00%	20	0.85	16	1.36	18	0.00%	1
Total Real Estate	6.34%	11.74%	--	4.99%	--	0.50%	--	0.90	--	0.85	--	1.39%	--
NCREIF Property Index	--	11.01%	--	4.53%	--	0.00%	--	0.83	--	0.72	--	0.00%	--
Absolute Return	9.71%	0.90%	66	3.39%	28	-0.20%	62	0.23	58	0.30	62	1.26%	1
HFRI Fund of Funds Composite Index	--	1.20%	57	3.49%	31	0.00%	58	0.31	51	0.41	54	0.00%	1
Risk Parity	7.98%	1.76%	46	7.67%	64	-0.09%	44	0.21	44	0.37	45	4.43%	38
60% MSCI World (Net) / 40% CITI WGBI	--	2.10%	31	7.24%	50	0.00%	41	0.27	40	0.58	29	0.00%	1

## Vermont State Employees

### Risk Statistics - 5 Years Ending December 31, 2016 - Net

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank	Tracking Error	Rank
Employees Composite	100.00%	6.24%	91	6.06%	33	-0.14%	53	1.01	83	1.71	66	0.86%	21
Policy Index	--	6.03%	95	5.67%	18	0.00%	43	1.05	77	1.69	68	0.00%	1
US Equity	22.32%	--	--	--	--	--	--	--	--	--	--	--	--
Russell 3000	--	14.67%	32	10.65%	20	0.00%	26	1.37	13	2.27	17	0.00%	1
Large Cap Comp	16.88%	14.91%	16	10.55%	31	0.02%	18	1.40	11	2.44	9	0.80%	1
S&P 500	--	14.66%	22	10.37%	25	0.00%	19	1.40	10	2.34	14	0.00%	1
Small/Mid Cap Comp	5.44%	15.27%	19	12.69%	46	2.96%	28	1.20	21	2.27	10	3.39%	1
Russell 2000	--	14.46%	28	14.61%	85	0.00%	75	0.98	62	1.66	54	0.00%	1
Int'l Equity Comp	12.29%	7.19%	57	12.74%	40	1.10%	59	0.56	57	0.85	55	2.20%	6
MSCI EAFE	--	6.53%	69	13.51%	77	0.00%	80	0.48	77	0.73	73	0.00%	1
Emerging Market Comp	6.47%	--	--	--	--	--	--	--	--	--	--	--	--
MSCI Emerging Markets	--	1.28%	79	16.16%	71	0.00%	80	0.07	80	0.12	78	0.00%	1
US Fixed Income	26.47%	--	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US Aggregate TR	--	2.23%	64	2.91%	51	0.00%	83	0.73	78	1.03	76	0.00%	1
Diversified Fixed	17.42%	2.99%	50	3.30%	63	0.63%	56	0.88	65	1.19	66	1.16%	23
BBgBarc US Aggregate TR	--	2.23%	64	2.91%	51	0.00%	83	0.73	78	1.03	76	0.00%	1
Unconstrained Fixed Income	6.04%	--	--	--	--	--	--	--	--	--	--	--	--
25% HY, 25% EMD, 50% BC Agg	--	4.35%	45	3.88%	53	0.00%	71	1.10	47	1.68	42	0.00%	1
High Yield Comp	5.14%	7.07%	31	4.57%	29	1.10%	27	1.53	25	2.60	42	1.43%	38
BBgBarc US High Yield TR	--	7.36%	24	5.52%	72	0.00%	65	1.32	59	2.60	42	0.00%	1
TIPS	3.91%	--	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US TIPS TR	--	0.89%	45	4.76%	68	0.00%	47	0.17	46	0.23	44	0.00%	1
Emerging Market Debt	5.13%	--	--	--	--	--	--	--	--	--	--	--	--
JP Morgan EMBI Global TR	--	5.44%	23	7.16%	31	0.00%	30	0.75	27	1.11	28	0.00%	1
Total Real Estate	6.34%	--	--	--	--	--	--	--	--	--	--	--	--
NCREIF Property Index	--	10.91%	--	4.41%	--	0.00%	--	0.00	--	0.00	--	0.00%	--
Absolute Return	9.71%	5.06%	48	3.66%	39	1.71%	46	1.36	30	2.04	31	1.34%	1
HFRI Fund of Funds Composite Index	--	3.42%	77	3.48%	34	0.00%	73	0.96	57	1.37	55	0.00%	1
Risk Parity	7.98%	4.41%	48	7.76%	66	-0.88%	79	0.56	72	0.85	71	4.17%	40
60% MSCI World (Net) / 40% CITI WGBI	--	5.88%	23	7.35%	56	0.00%	55	0.79	28	1.35	19	0.00%	1

# Appendix



## Index Performance Summary as of 12/30/2016

	2009	2010	2011	2012	2013	2014	2015	Q1	Q2	Q3	Oct	Nov	Dec	Q4	YTD
<b>US Small/Mid Cap</b>	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	0.4%	3.6%	6.6%	-4.1%	8.5%	1.9%	6.1%	17.6%
<b>US High Yield</b>	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	3.4%	5.5%	5.6%	0.4%	-0.5%	1.8%	1.8%	17.1%
<b>EM Equity</b>	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	5.7%	0.7%	9.0%	0.2%	-4.6%	0.2%	-4.2%	11.2%
<b>US Large Cap</b>	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	1.3%	2.5%	3.9%	-1.8%	3.7%	2.0%	3.8%	12.0%
<b>Commodities</b>	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	0.4%	12.8%	-3.9%	-0.5%	1.3%	1.8%	2.7%	11.8%
<b>EM Local Credit</b>	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	11.0%	2.7%	2.7%	-0.8%	-7.0%	1.9%	-6.1%	9.9%
<b>US Credit</b>	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	3.0%	2.2%	0.5%	-0.8%	-2.4%	0.1%	-3.0%	2.6%
<b>Global Credit</b>	2.6%	5.2%	6.4%	1.6%	-4.0%	-0.5%	-3.6%	7.1%	3.4%	0.3%	-3.4%	-4.6%	-0.7%	-8.5%	1.6%
<b>US Long Treasuries</b>	-12.9%	9.4%	29.9%	3.6%	-12.7%	25.1%	-1.2%	8.2%	6.4%	-0.4%	-4.1%	-7.4%	-0.5%	-11.7%	1.3%
<b>Int'l Developed Equity</b>	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	-3.0%	-1.5%	6.4%	-2.0%	-2.0%	3.4%	-0.7%	1.0%

S&P 500 = US Large Cap  
 Russell 2500 = US Small/Mid Cap  
 MSCI EAFE = International Developed Equity  
 MSCI EM = Emerging Market Equity  
 Barclays Agg = US Credit  
 Barclays Long Treasury = US Long Treasuries  
 Barclays High Yield = US HY  
 WGBI = Global Credit  
 GBI-EM Global Diversified = EM Local Credit  
 Bloomberg Commodity = Commodities

Source: Bloomberg, Barclays, S&P, Russell, MSCI, JP Morgan, Credit Suisse



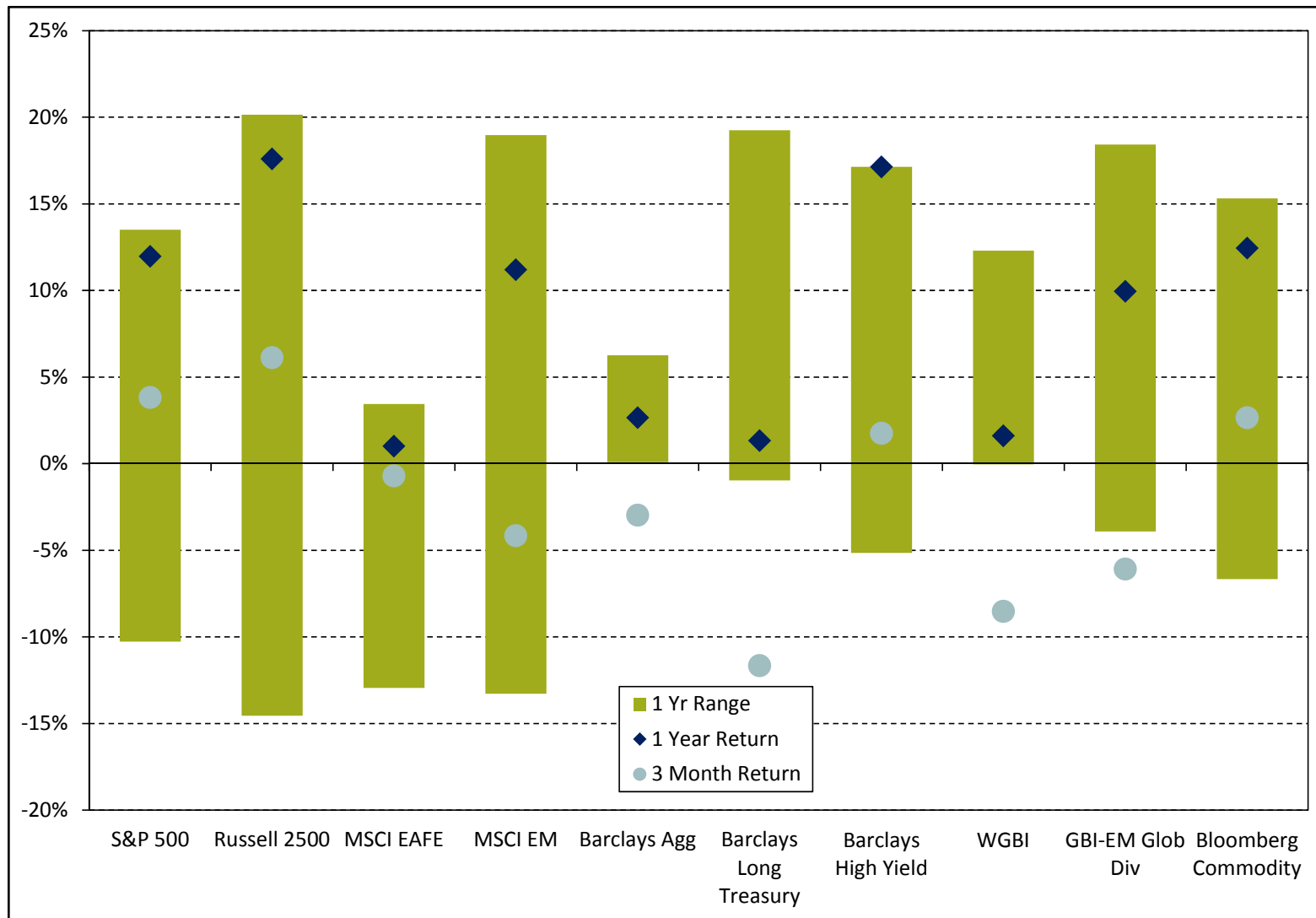
NEPC, LLC

## Index Performance Summary as of 12/30/2016

	2009	2010	2011	2012	2013	2014	2015	Q1	Q2	Q3	Oct	Nov	Dec	Q4	YTD
<b>Russell 2000</b>	27.2%	26.9%	-4.2%	16.3%	38.8%	4.9%	-4.4%	-1.5%	3.8%	9.0%	-4.8%	11.2%	2.8%	8.8%	21.3%
<b>Alerian MLP</b>	76.4%	35.9%	13.9%	4.8%	27.6%	4.8%	-32.6%	-4.2%	19.7%	1.1%	-4.5%	2.3%	4.4%	2.0%	18.3%
<b>Russell 2500</b>	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	0.4%	3.6%	6.6%	-4.1%	8.5%	1.9%	6.1%	17.6%
<b>Barclays US Corp HY</b>	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	3.4%	5.5%	5.6%	0.4%	-0.5%	1.8%	1.8%	17.1%
<b>Russell 1000</b>	28.4%	16.1%	1.5%	16.4%	33.1%	13.2%	0.9%	1.2%	2.5%	4.0%	-2.0%	3.9%	1.9%	3.8%	12.1%
<b>S&amp;P 500</b>	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	1.3%	2.5%	3.9%	-1.8%	3.7%	2.0%	3.8%	12.0%
<b>BBG Commodity</b>	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	0.4%	12.8%	-3.9%	-0.5%	1.3%	1.8%	2.7%	11.8%
<b>MSCI EM</b>	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	5.7%	0.7%	9.0%	0.2%	-4.6%	0.2%	-4.2%	11.2%
<b>Barclays US Long Credit</b>	16.8%	10.7%	17.1%	12.7%	-6.6%	16.4%	-4.6%	6.8%	6.7%	2.3%	-2.1%	-4.9%	1.5%	-5.4%	10.2%
<b>JPM EMBI Global Div</b>	29.8%	12.2%	7.3%	17.4%	-5.3%	7.4%	1.2%	5.0%	5.0%	4.0%	-1.2%	-4.1%	1.3%	-4.0%	10.2%
<b>JPM GBI-EM Global Div</b>	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	11.0%	2.7%	2.7%	-0.8%	-7.0%	1.9%	-6.1%	9.9%
<b>Credit Suisse Lev Loan</b>	44.9%	10.0%	1.8%	9.4%	6.2%	2.1%	-0.4%	1.3%	2.9%	3.1%	0.8%	0.3%	1.1%	2.3%	9.9%
<b>FTSE NAREIT Eqy REITs</b>	28.0%	28.0%	8.3%	18.1%	2.5%	30.1%	3.2%	6.0%	7.0%	-1.4%	-5.7%	-1.7%	4.7%	-2.9%	8.5%
<b>MSCI ACWI</b>	34.6%	12.7%	-7.3%	16.1%	22.8%	4.2%	-2.4%	0.2%	1.0%	5.3%	-1.7%	0.8%	2.2%	1.2%	7.9%
<b>BC Long US Govt/Credit</b>	1.9%	10.2%	22.5%	8.8%	-8.8%	19.3%	-3.3%	7.3%	6.5%	1.2%	-2.8%	-5.8%	0.7%	-7.8%	6.7%
<b>Barclays US Agg Bond</b>	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	3.0%	2.2%	0.5%	-0.8%	-2.4%	0.1%	-3.0%	2.6%
<b>Barclays US Agg Int.</b>	6.5%	6.1%	6.0%	3.6%	-1.0%	4.1%	1.2%	2.3%	1.4%	0.3%	-0.4%	-1.7%	0.0%	-2.0%	2.0%
<b>Citi WGBI</b>	2.6%	5.2%	6.4%	1.6%	-4.0%	-0.5%	-3.6%	7.1%	3.4%	0.3%	-3.4%	-4.6%	-0.7%	-8.5%	1.6%
<b>BC US STRIPS 20+</b>	-36.0%	10.9%	58.5%	3.0%	-21.0%	46.4%	-3.7%	11.4%	9.6%	-0.2%	-6.2%	-10.5%	-0.9%	-16.7%	1.4%
<b>BC US Gov/Cred 1-3 Yr</b>	3.8%	2.8%	1.6%	1.3%	0.6%	0.8%	0.7%	1.0%	0.7%	0.0%	0.0%	-0.4%	0.1%	-0.4%	1.3%
<b>MSCI EAFE</b>	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	-3.0%	-1.5%	6.4%	-2.0%	-2.0%	3.4%	-0.7%	1.0%
<b>CS Hedge Fund</b>	18.6%	10.9%	-2.5%	7.7%	9.7%	4.1%	-0.7%	-2.2%	0.6%	1.7%	-0.2%	-0.2%	-	0.2%	0.3%
<b>Barclays Municipal</b>	12.9%	2.4%	10.7%	6.8%	-2.6%	9.1%	3.3%	1.7%	2.6%	-0.3%	-1.0%	-3.7%	1.2%	-3.6%	0.2%

Source: Bloomberg, Barclays, Alerian, Nareit, MSCI, JP Morgan, Credit Suisse

# 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

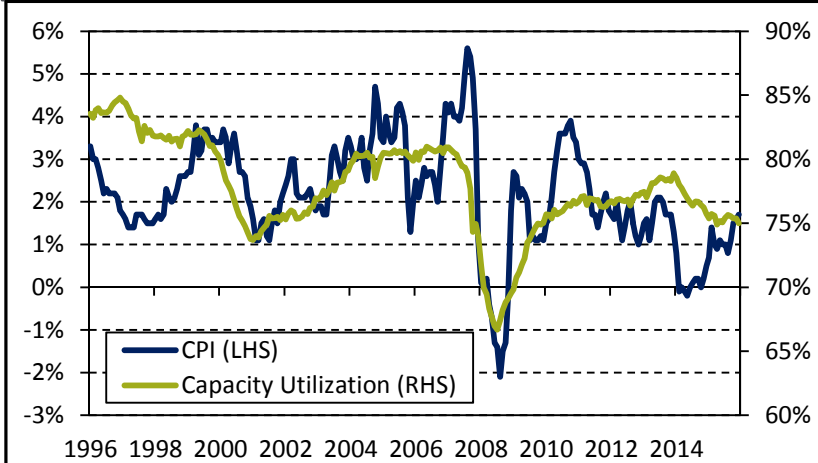
# Long Term Broad Market Performance Summary as of 12/30/2016



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

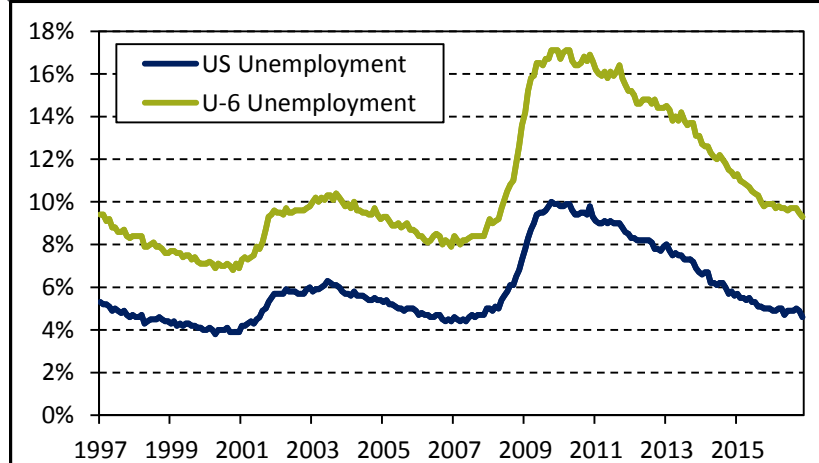
# US Economic Indicators

## Inflation continues rising



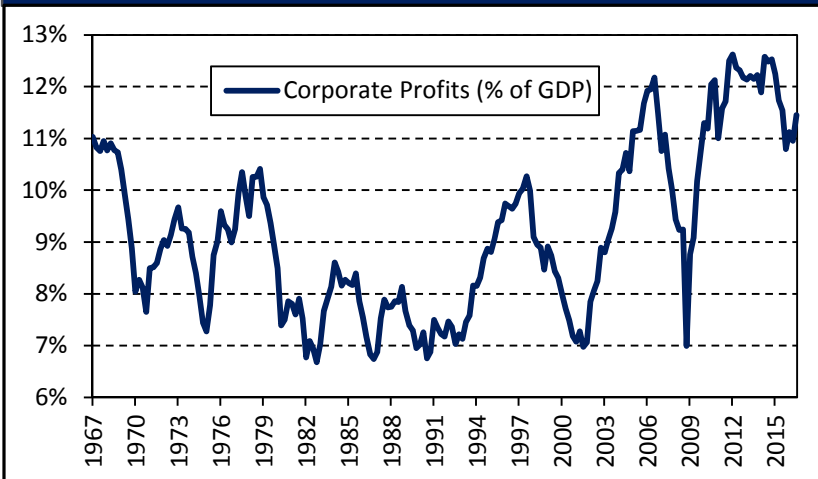
Source: Bloomberg, Federal Reserve, Bureau of Labor Statistics

## Unemployment has steadied



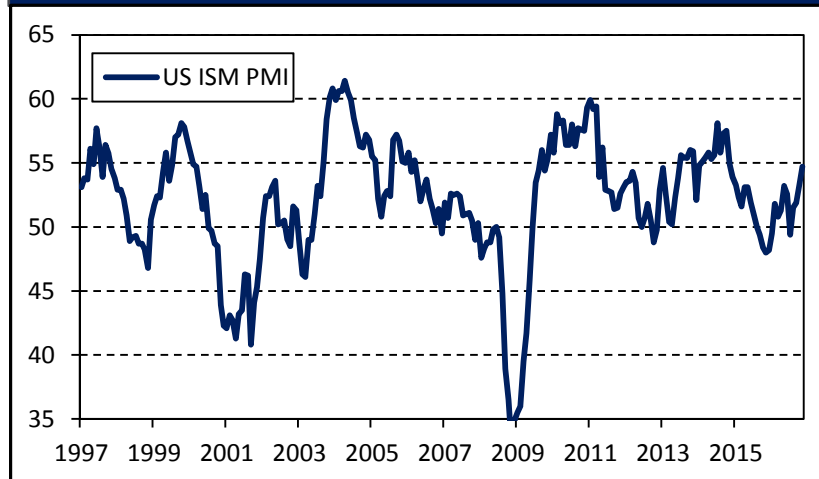
Source: Bloomberg, Bureau of Labor Statistics

## Corporate profits experience an uptick



Source: Bloomberg, Bureau of Economic Analysis

## Manufacturing shows modest strength



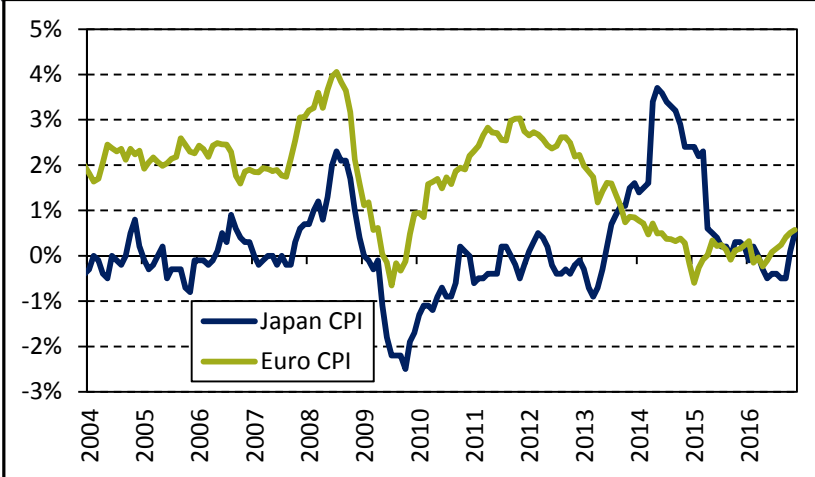
Source: Bloomberg, Institute for Supply Management





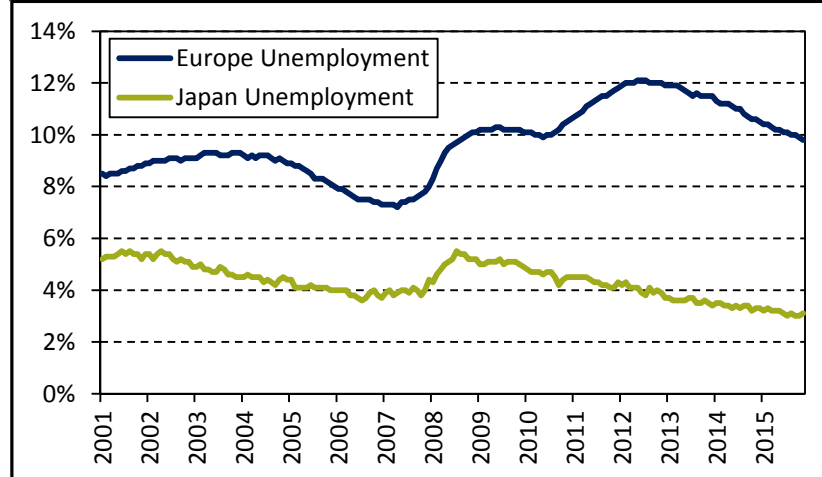
# International Economic Indicators

## Inflation has increased



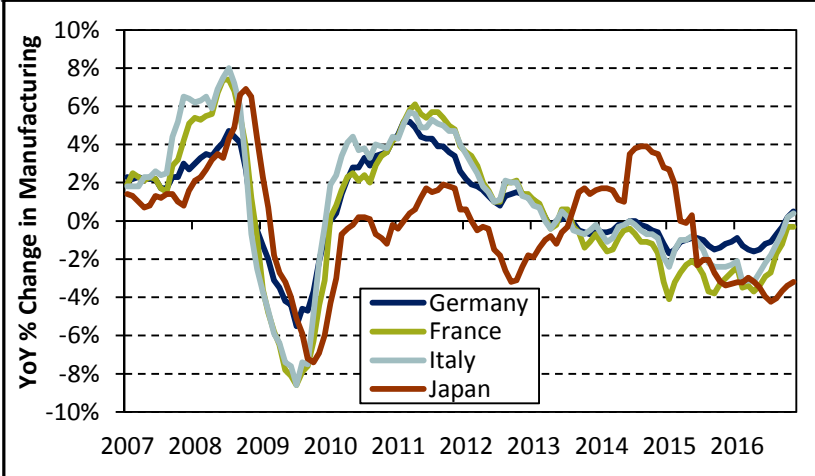
Source: Bloomberg, Japan Ministry of Internal Affairs and Communications, Eurostat

## Europe unemployment edges lower



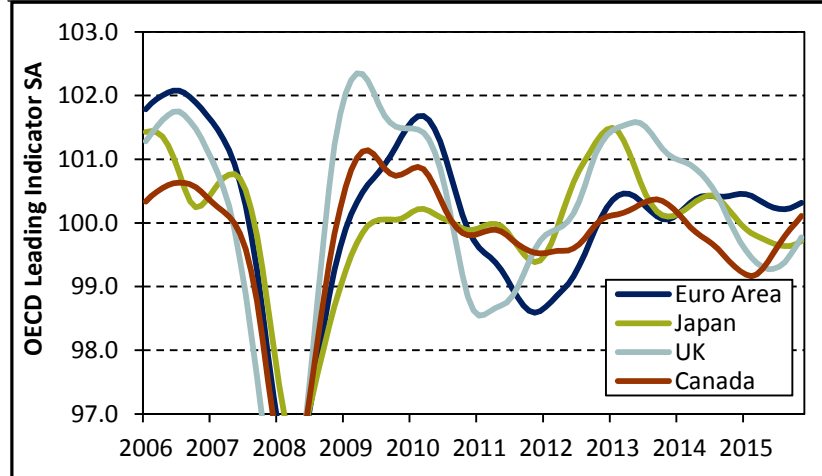
Source: Bloomberg, Japan Ministry of Internal Affairs and Communications, Eurostat

## Manufacturing steadies after showing modest improvement



Source: Bloomberg, OECD, Eurostat

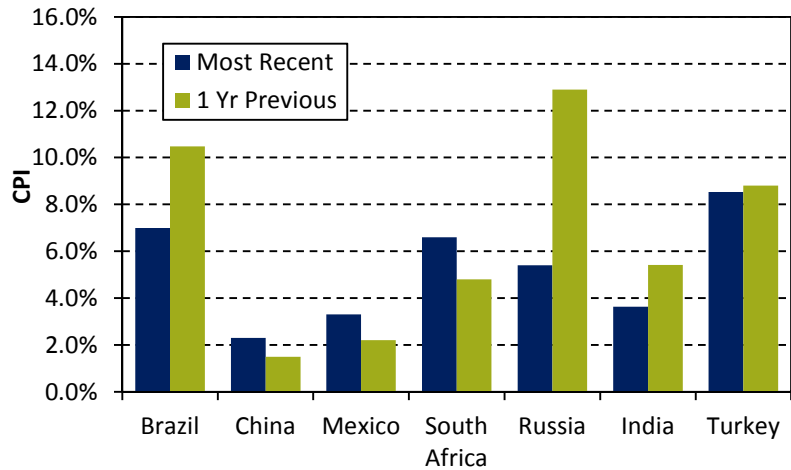
## Leading indicators mostly trending higher



Source: Bloomberg, OECD

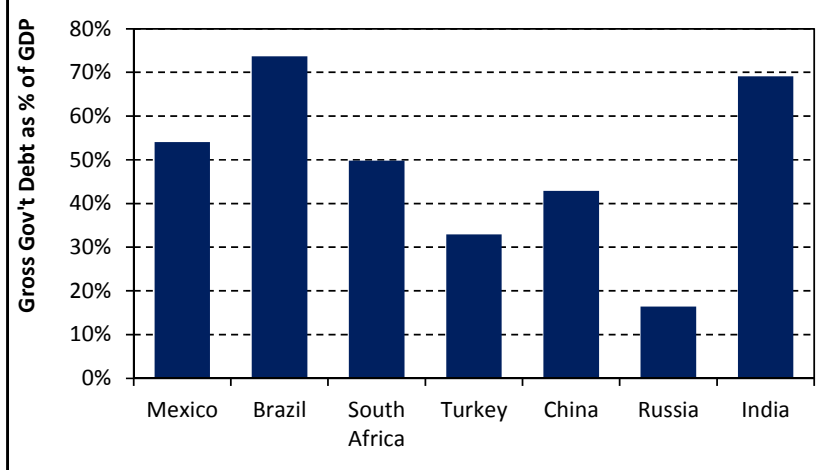
# Emerging Market Economic Indicators

## EM inflation varies by country



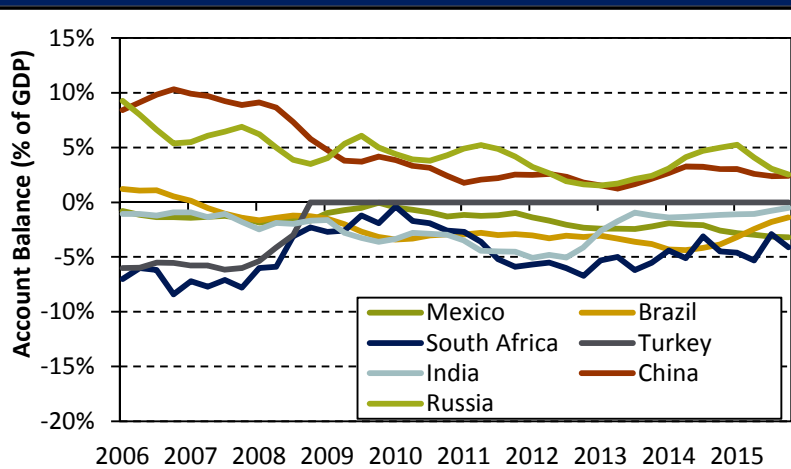
Source: Bloomberg

## Relatively healthy Debt/GDP ratios



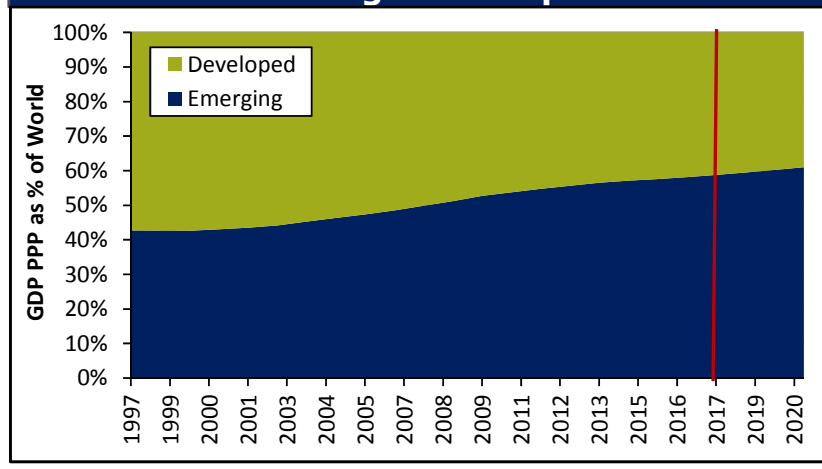
Source: Bloomberg, IMF

## Account balances remain steady



Source: Bloomberg

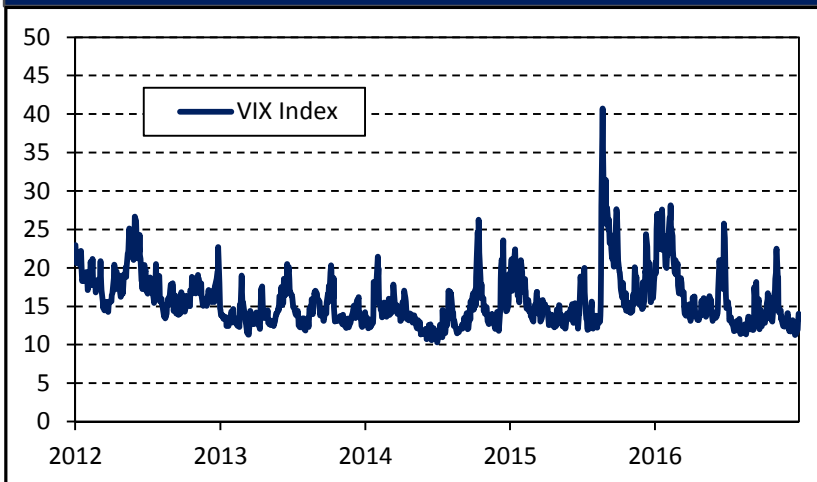
## EM continues trending higher as a percent of global output



Source: Bloomberg, IMF

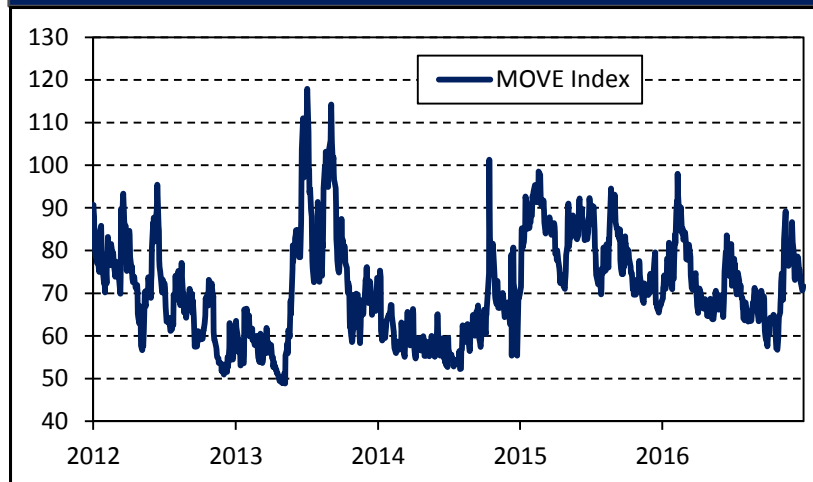
# Volatility

## Equity volatility remains low



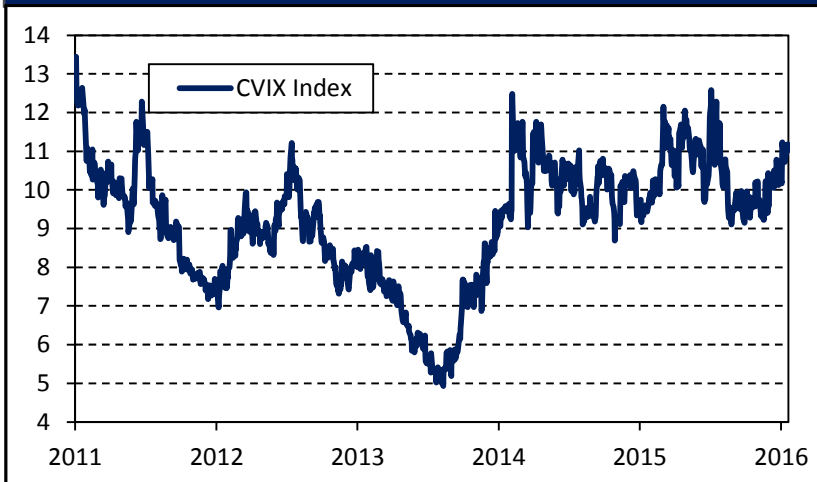
Source: Bloomberg, CBOE

## Treasury volatility continues to be elevated



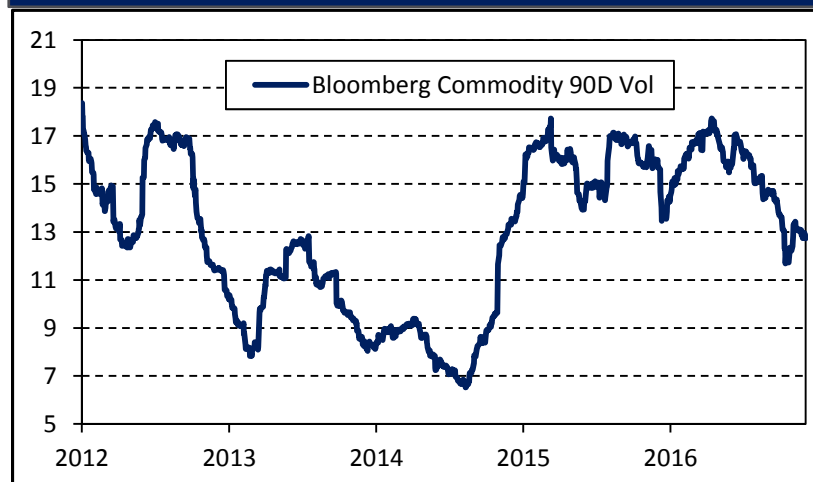
Source: Bloomberg, Merrill Lynch

## Currency volatility increased



Source: Bloomberg, Deutsche Bank

## Commodity volatility has subsided

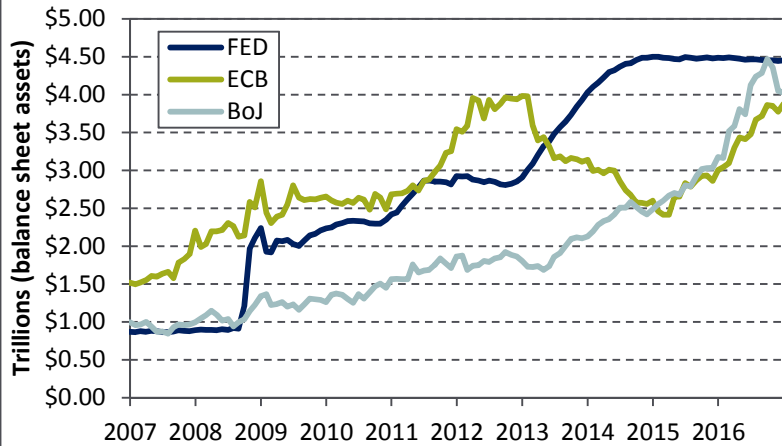


Source: Bloomberg, Merrill Lynch



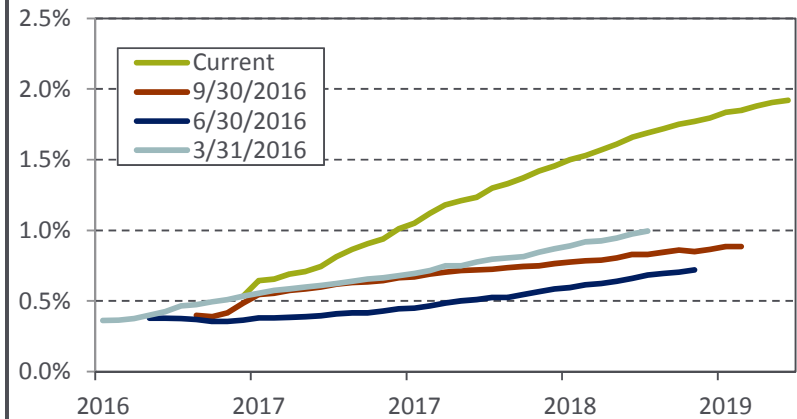
# Central Banks

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



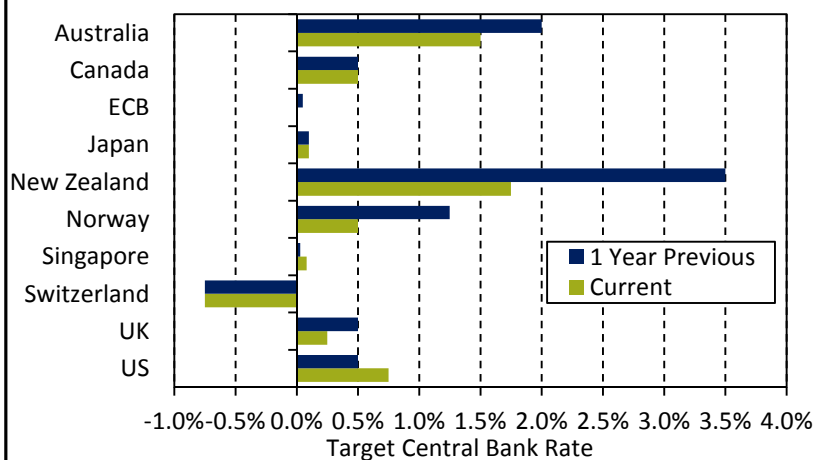
Source: Bloomberg, Federal Reserve, Bank of Japan, ECB, NEPC

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



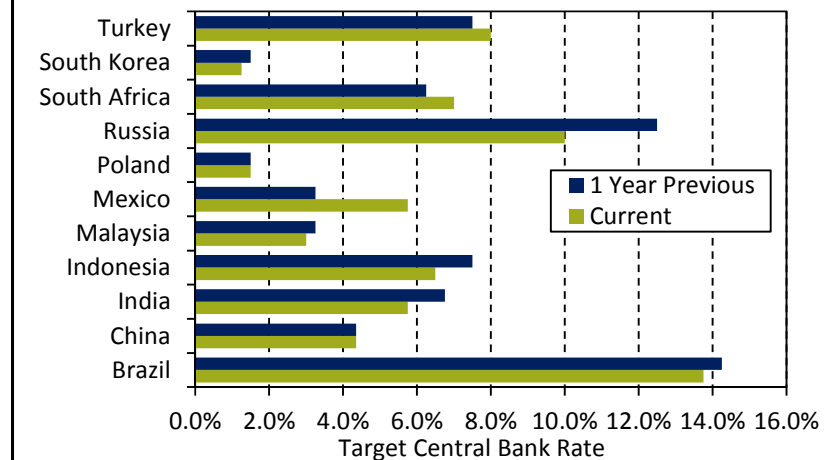
Source: Bloomberg, Federal Reserve

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



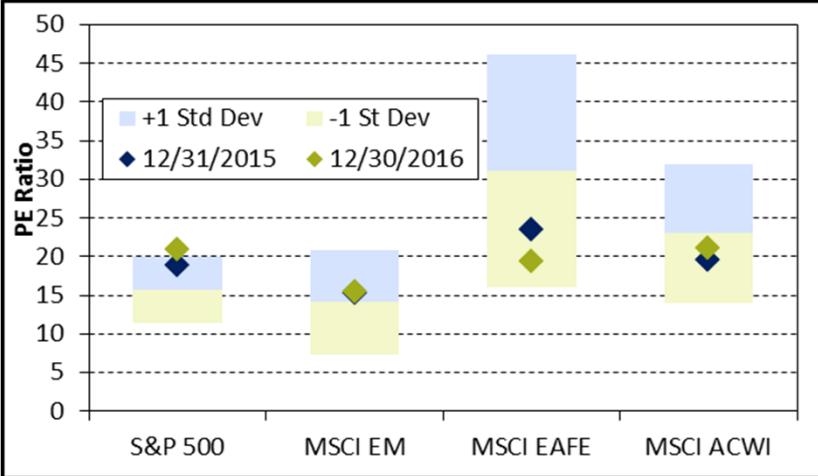
Source: Bloomberg

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



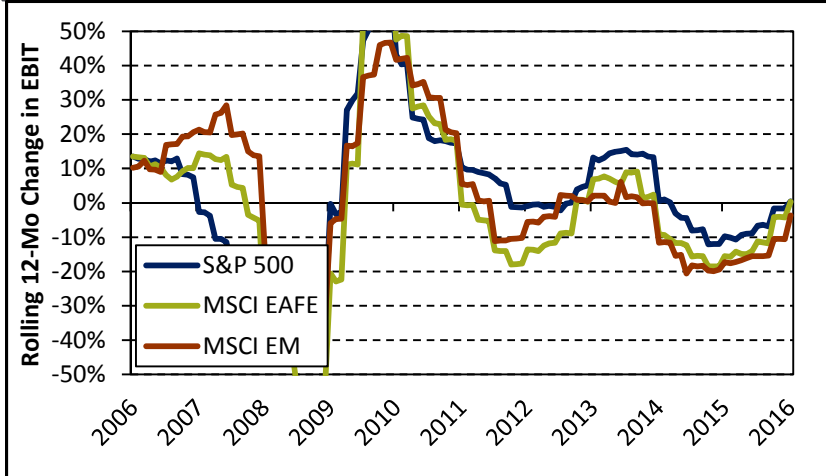
Source: Bloomberg

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



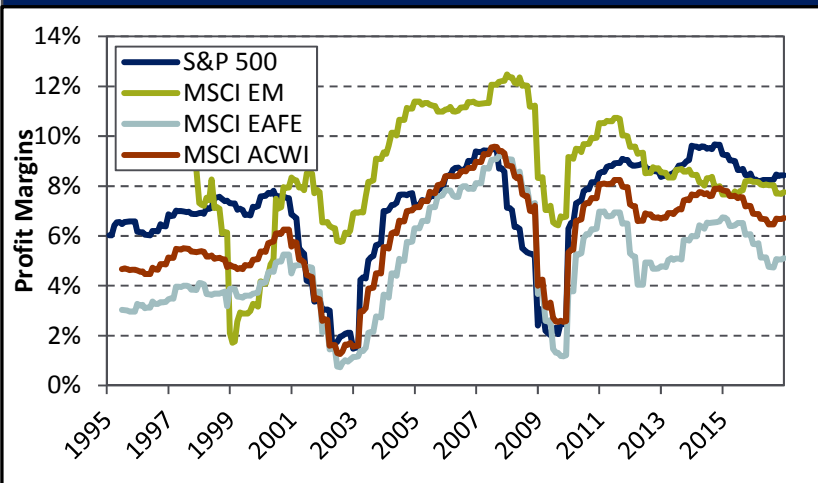
Source: Bloomberg, Standard and Poors, MSCI \*MSCI EAFE is ex UK Telecom  
\*Standard deviation calculations on 20 years of data except S&P 500 (30 years)

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



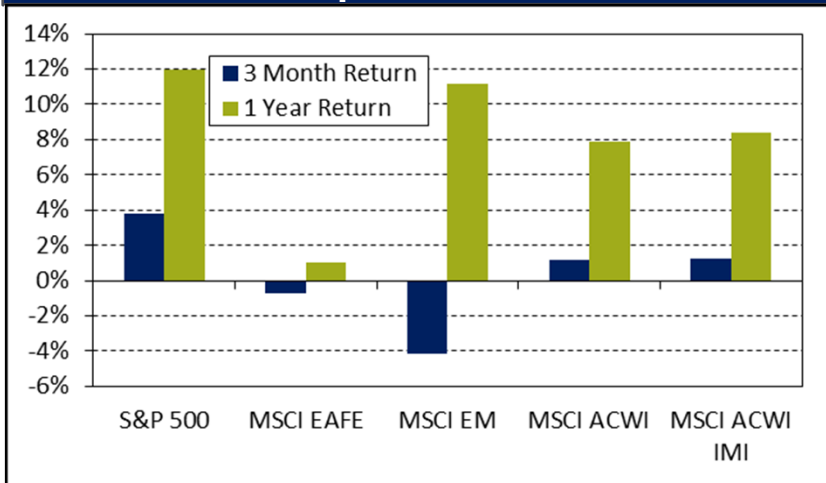
Source: Bloomberg, Standard and Poors, MSCI

**Profit margins slightly increased**



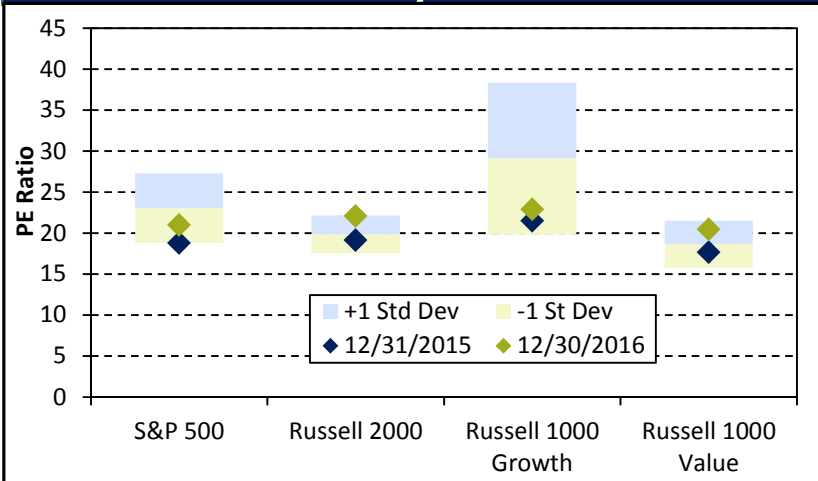
Source: Bloomberg, MSCI

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



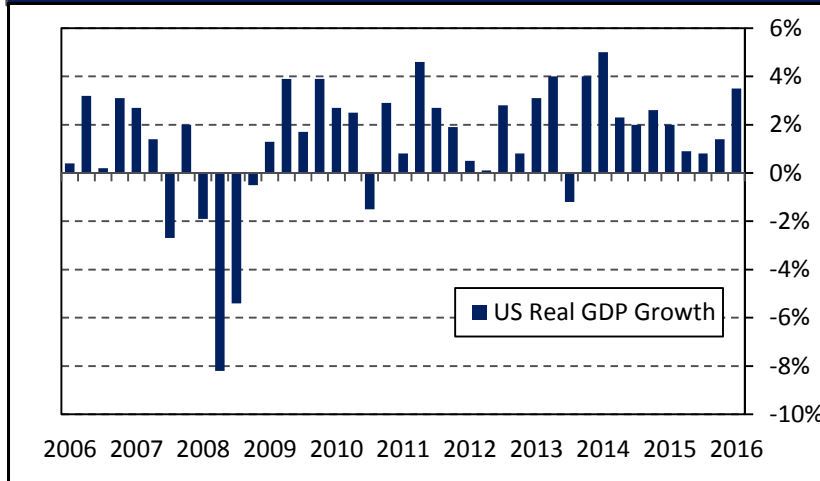
Source: Bloomberg, MSCI

**US equity valuations are higher than last year**



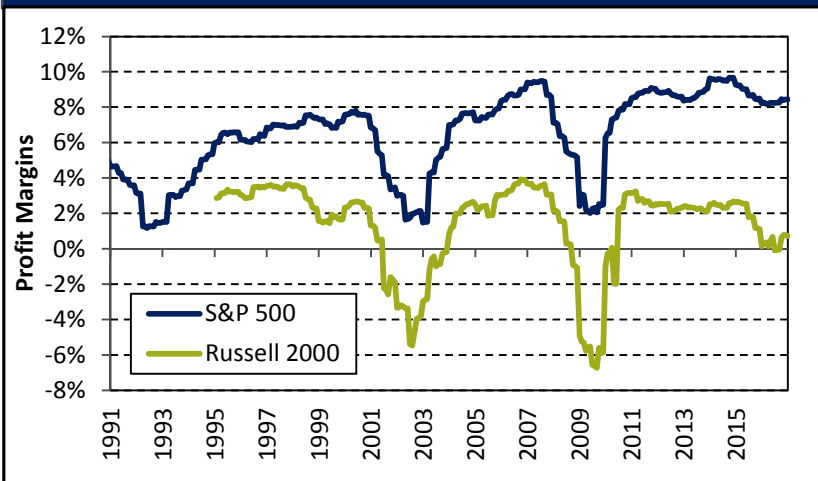
Source: Bloomberg, Standard and Poors, Russell \*Russell 2000 PE is index adjusted positive\* Standard deviation calculations based on 20 years of data

**GDP growth remains strong**



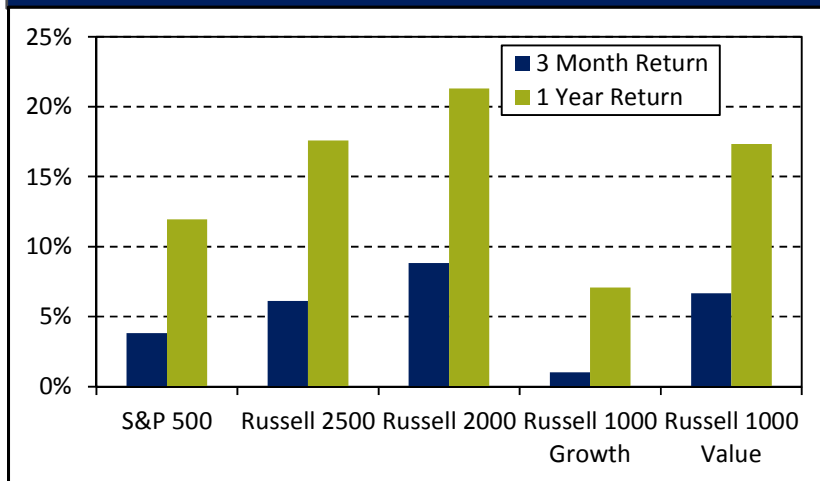
Source: Bloomberg, Bureau of Economic Analysis

**Profit margins hold steady**



Source: Bloomberg, Standard and Poors, Russell

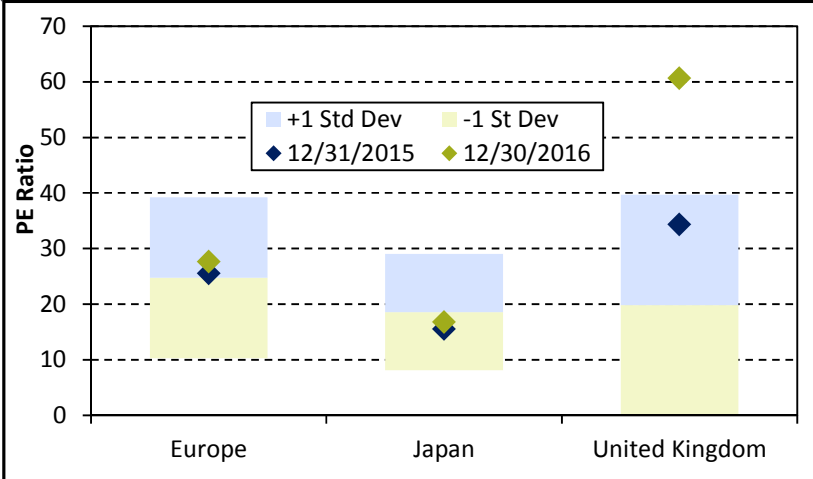
**US equity posts positive short-term returns**



Source: Bloomberg, Standard and Poors, Russell

# International Equity

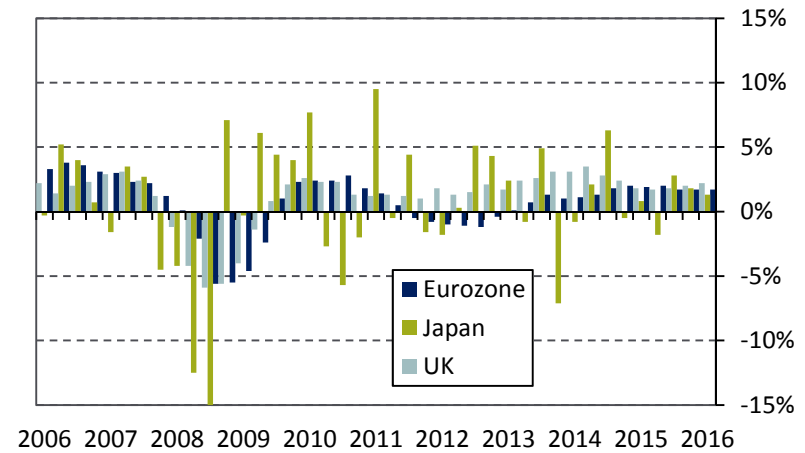
## UK PE ratios remain elevated



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

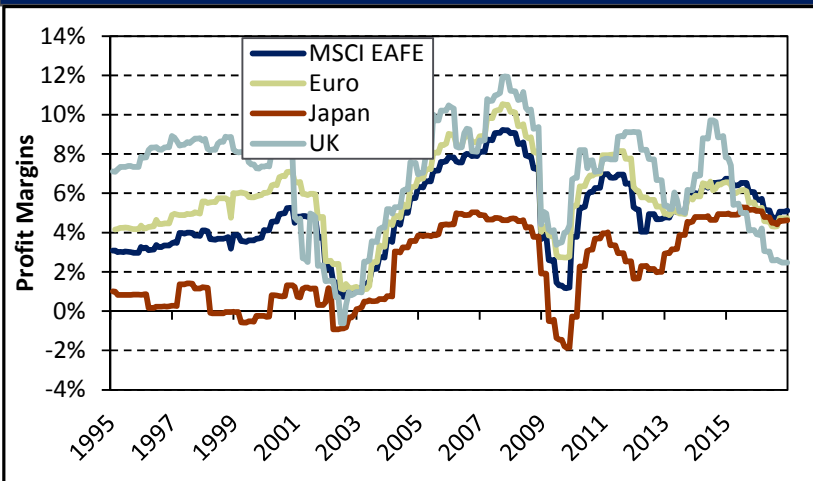
\*Standard deviation calculations based on 20 years of data, with Europe since 12/1998

## International growth steadies



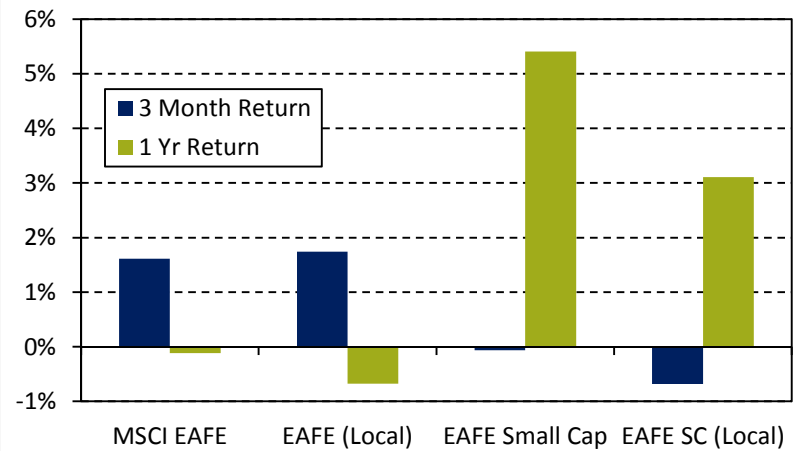
Source: Bloomberg

## UK margins continue to decline



Source: Bloomberg, MSCI

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

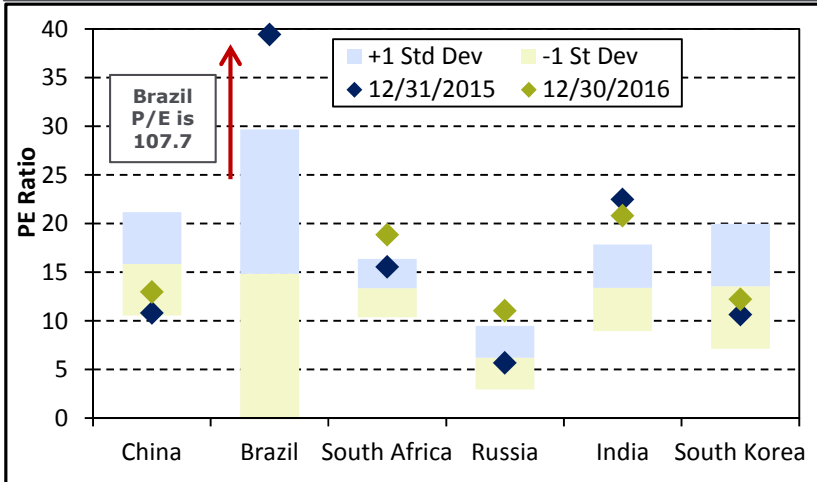


Source: Bloomberg, MSCI



# Emerging Markets Equity

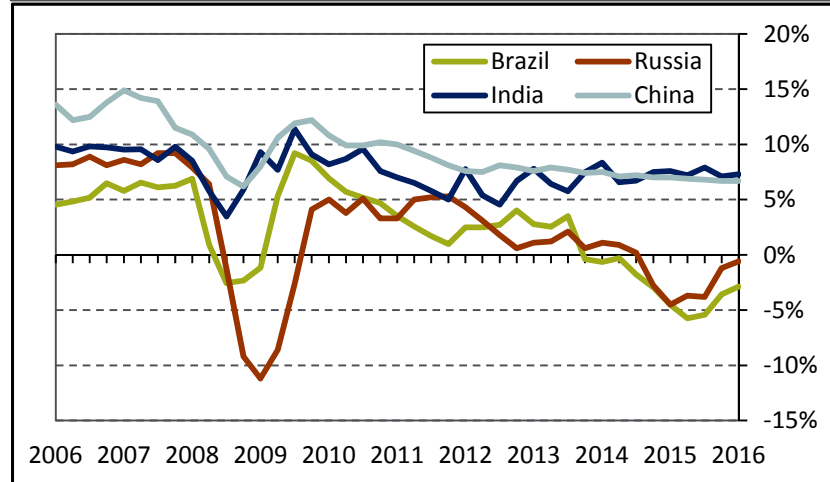
## Regional valuations similar year over year with the exception of Brazil



Source: Bloomberg, MSCI

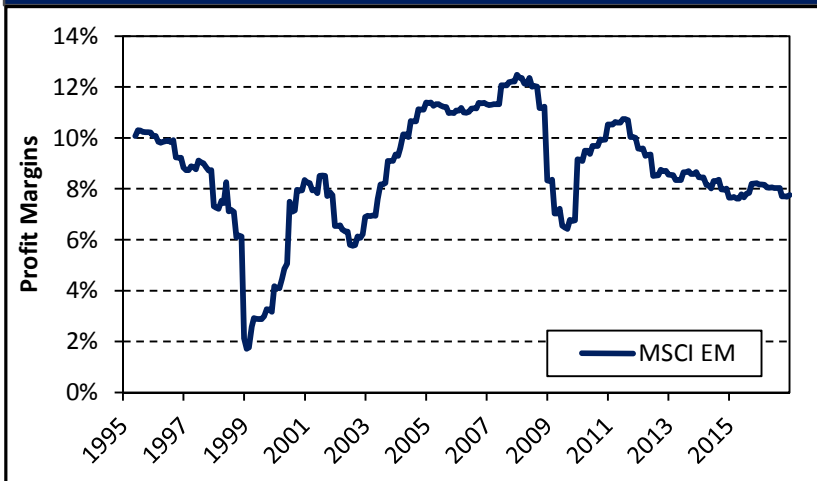
\*Standard deviation calculations based on 20 years of data, with Russia since 01/1998

## Russia and Brazil experience rebounds off earnings contractions



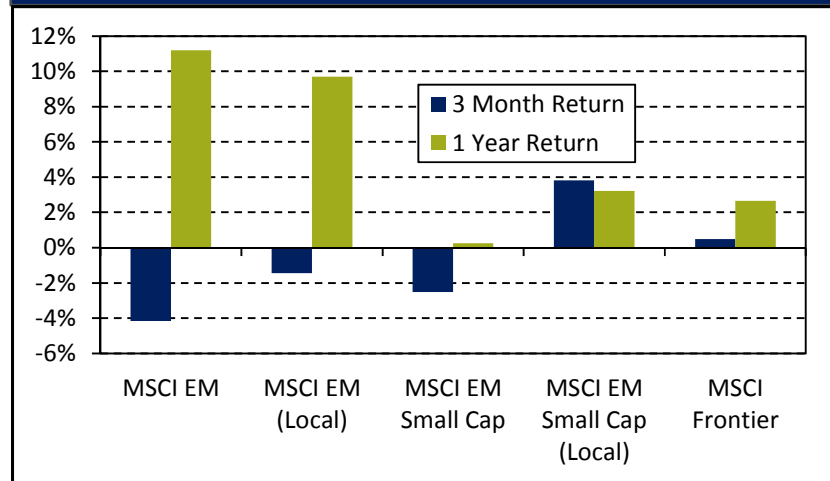
Source: Bloomberg

## Profit margins in line with history



Source: Bloomberg, MSCI

## EM local indices have outperformed dollar-denominated



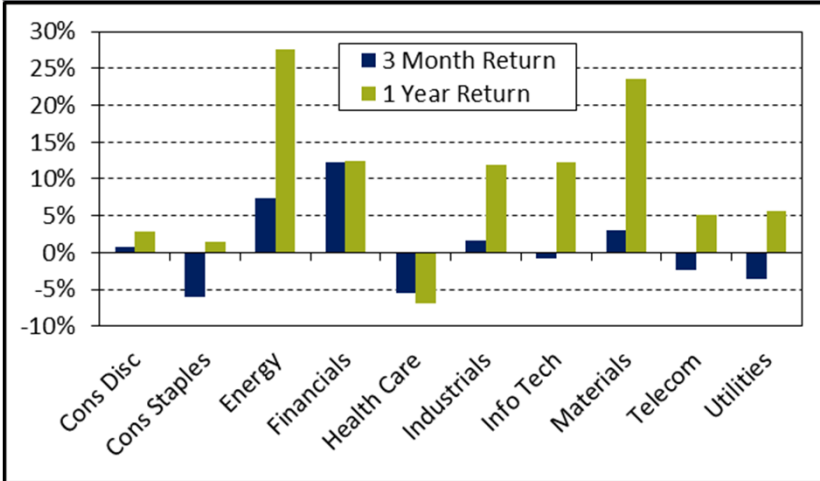
Source: Bloomberg, MSCI





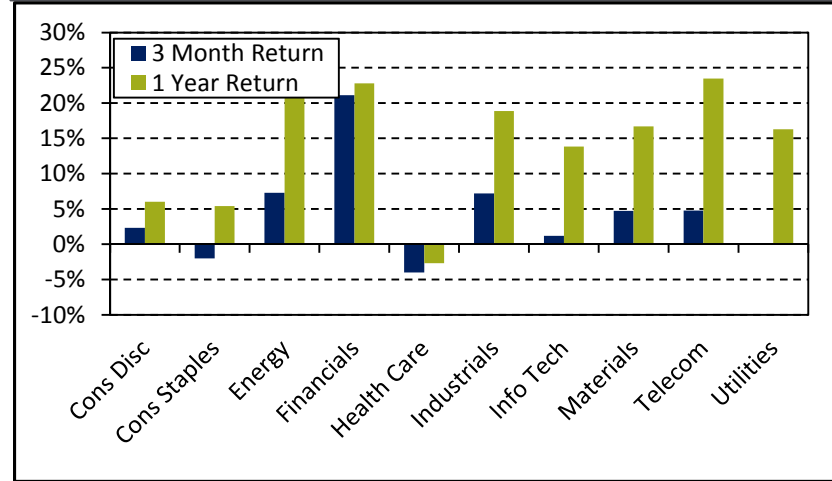
# Global Equity by Sector

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



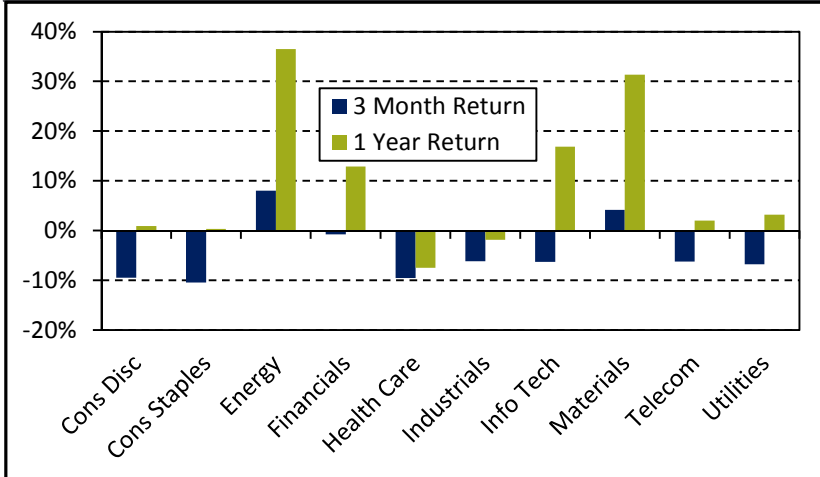
Source: Bloomberg, MSCI

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



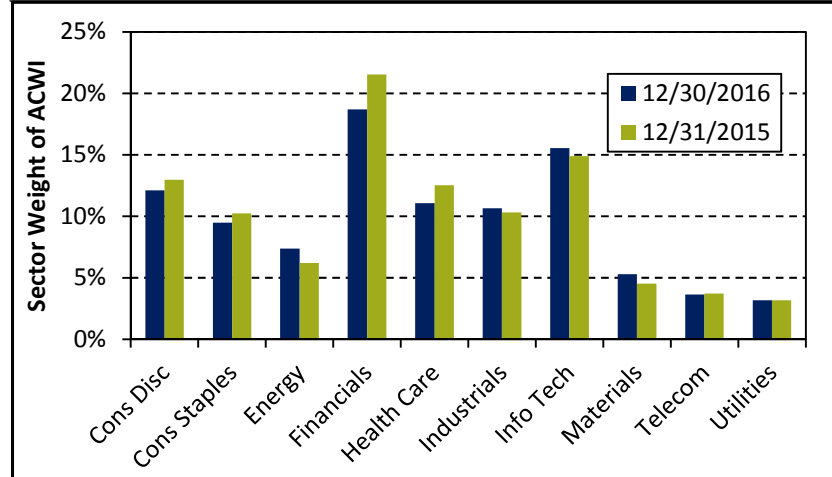
Source: Bloomberg, Standard and Poors

## Energy and Materials continue their strong performance in EM



Source: Bloomberg, MSCI

## Financials sector weight has decreased significantly

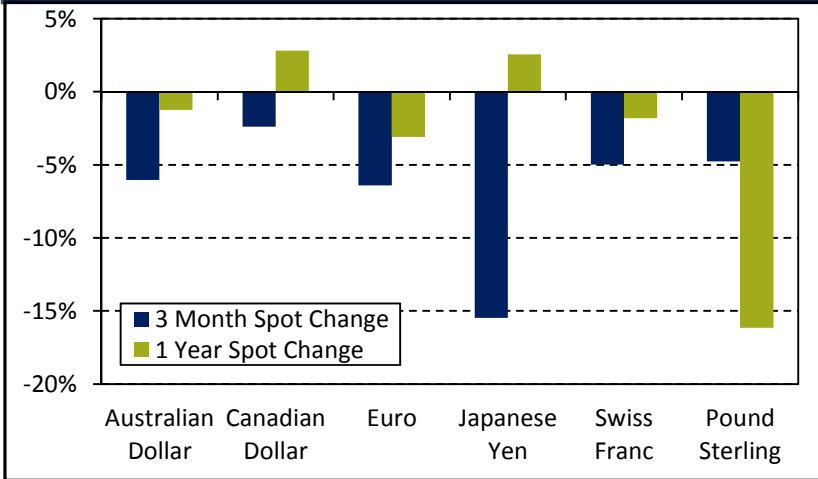


Source: Bloomberg, MSCI



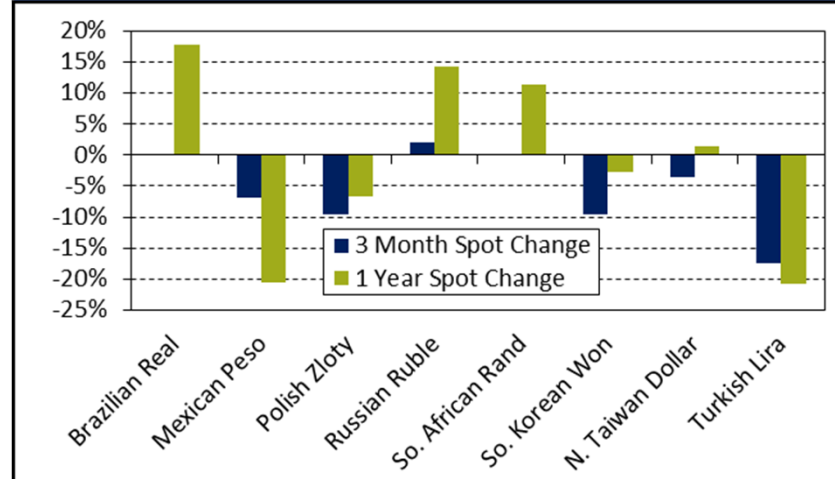
# Currencies

## Developed currencies have declined versus the dollar



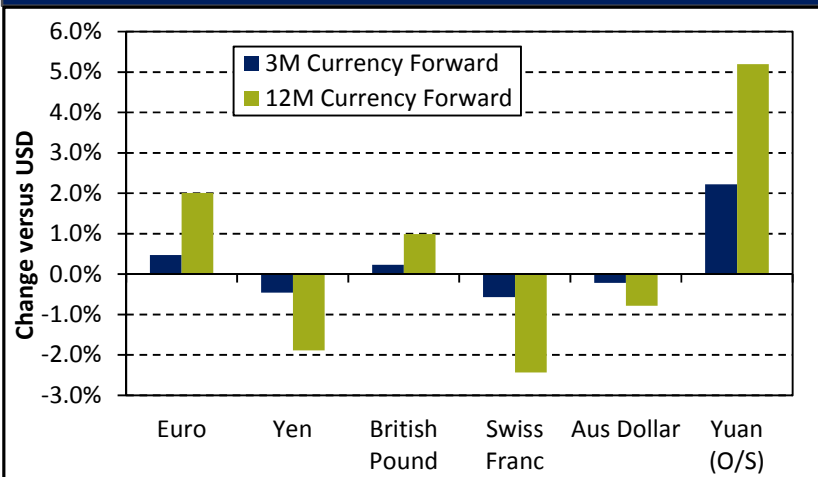
Source: Bloomberg

## A number of currencies have experienced sharp depreciation



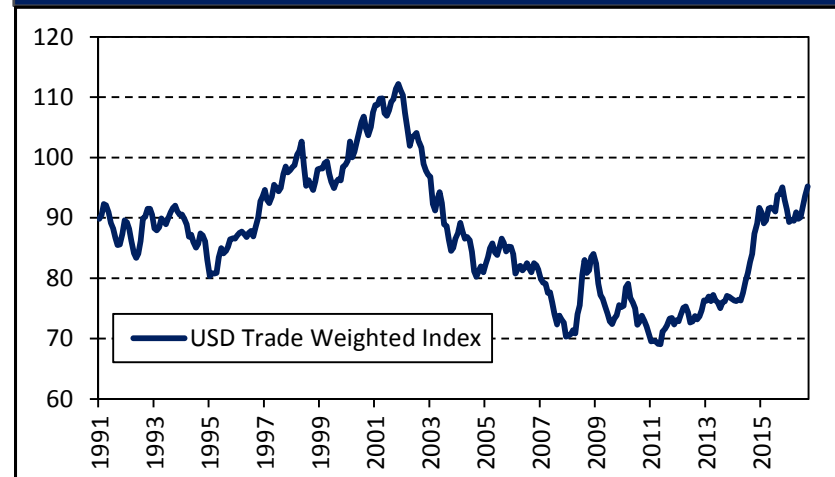
Source: Bloomberg

## USD expectations vary across developed markets



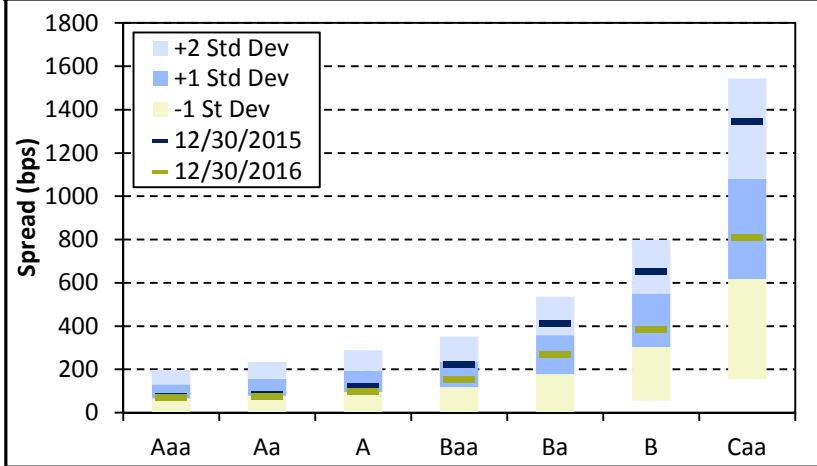
Source: Bloomberg

## Dollar strength persists



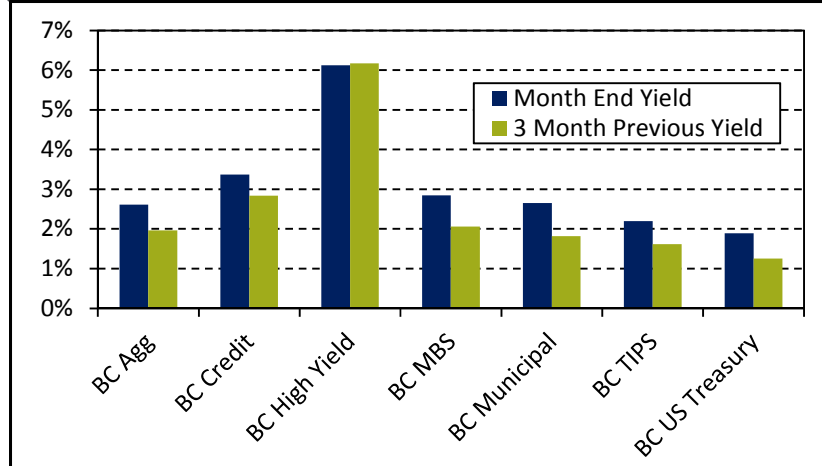
Source: Bloomberg, Federal Reserve

**Spreads remain lower than the previous year**



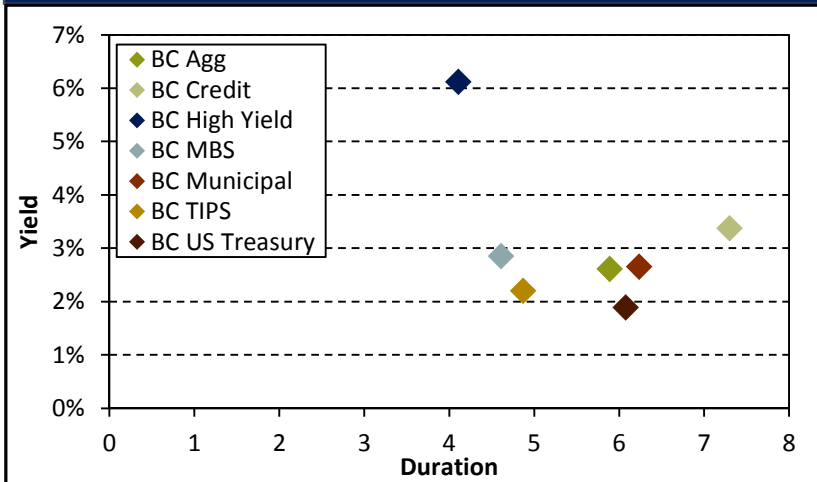
Source: Bloomberg, Barclays  
\*Standard deviation calculations based on 20 years of data

**Fixed income yields have increased**



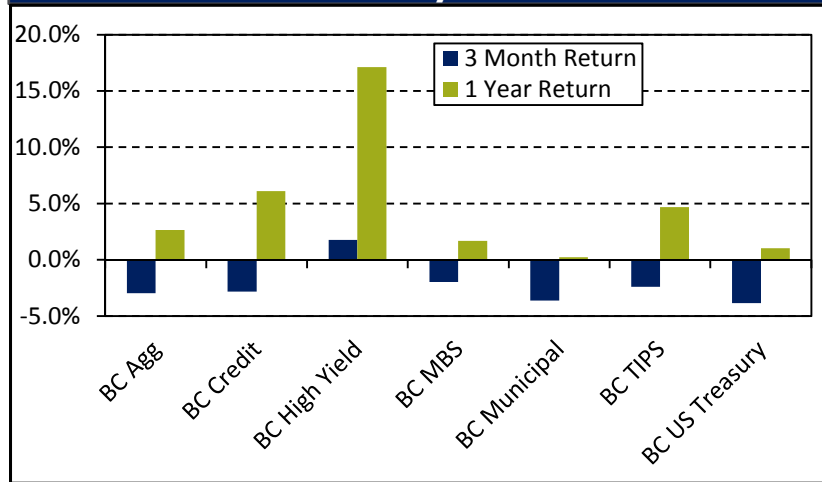
Source: Bloomberg, Barclays

**Similar duration/yield profiles among core indices**



Source: Bloomberg, Barclays

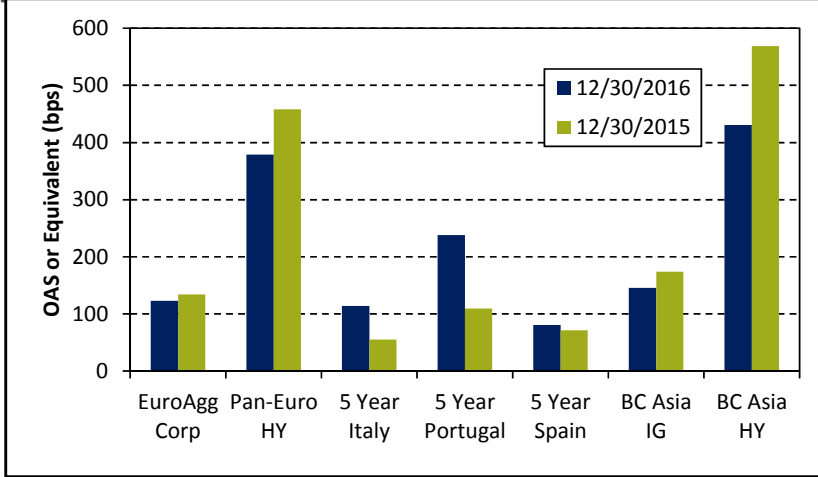
**Fixed income returns have broadly declined with recent yield increases**



Source: Bloomberg, Barclays

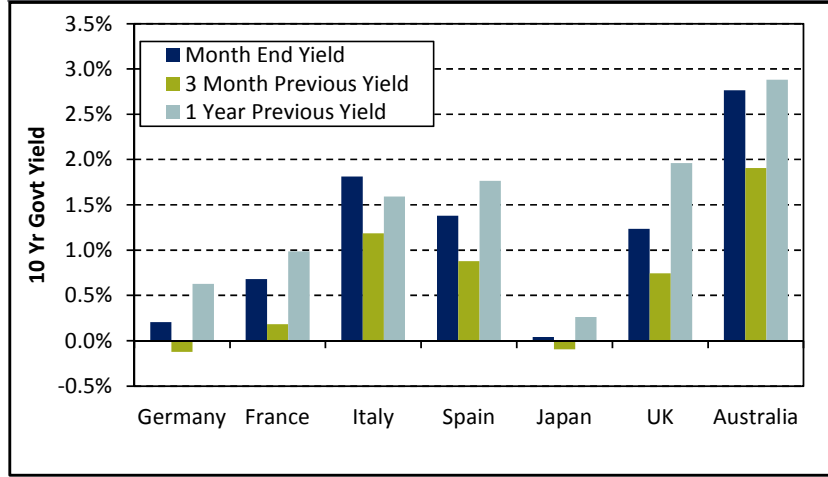
# International Developed Fixed Income

## European periphery yields vary relative to Germany



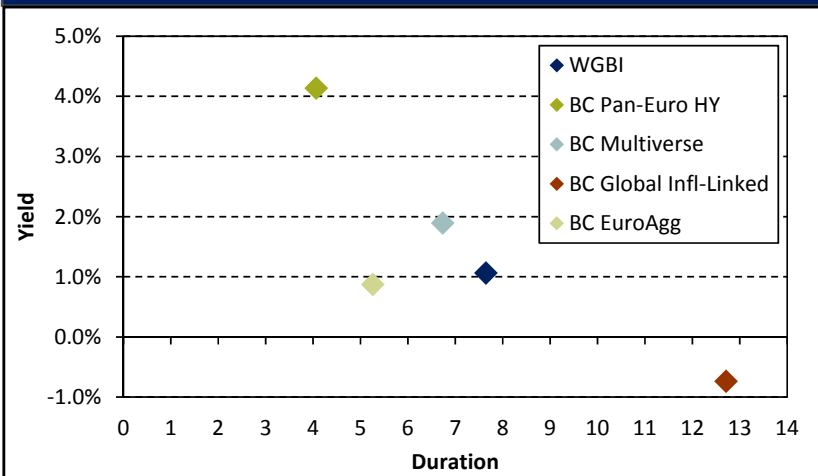
Source: Barclays, Bloomberg, \*European periphery spreads are over equivalent German Bund

## Global yields have increased post rate hike



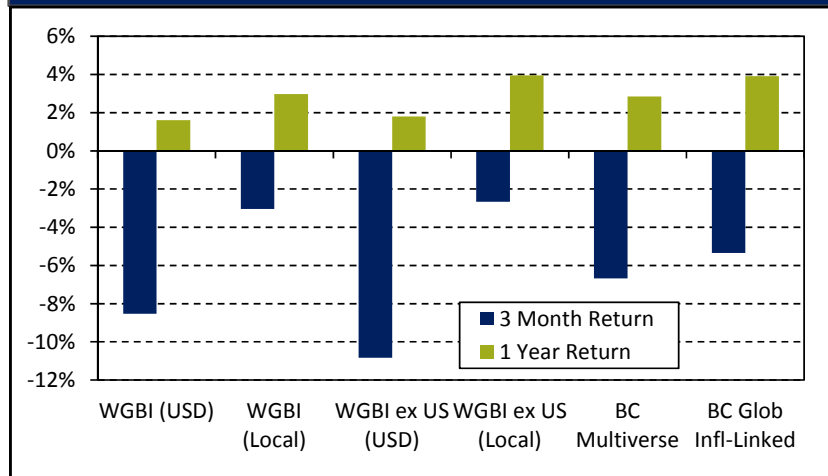
Source: Bloomberg

## Low yields persist in global bond universe



Source: Bloomberg, Citigroup, Barclays

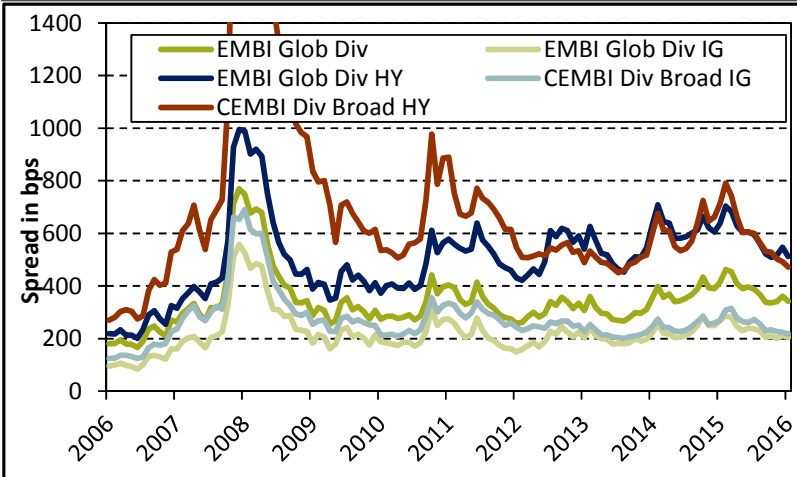
## Global bond returns hurt by rising yields



Source: Bloomberg, Citigroup, Barclays

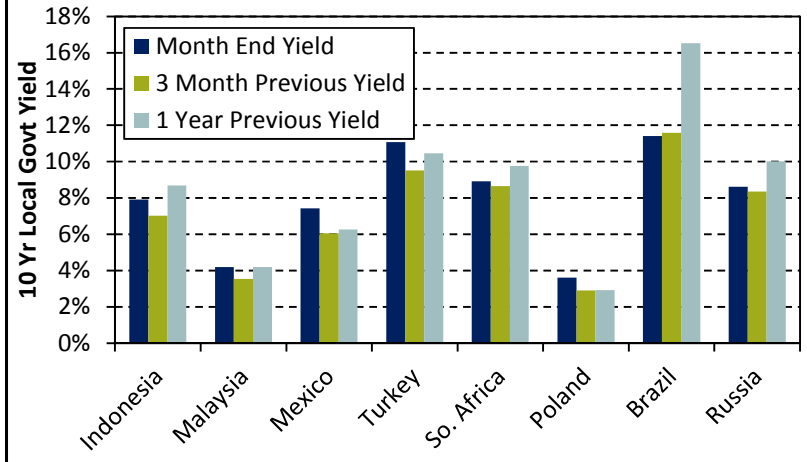
# Emerging Markets Fixed Income

## Spreads continue to decline



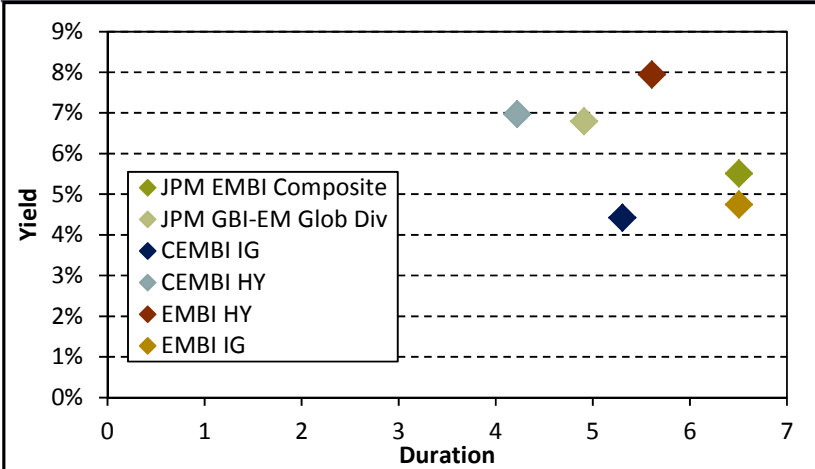
Source: Bloomberg, JP Morgan

## EM local bond yields increased slightly



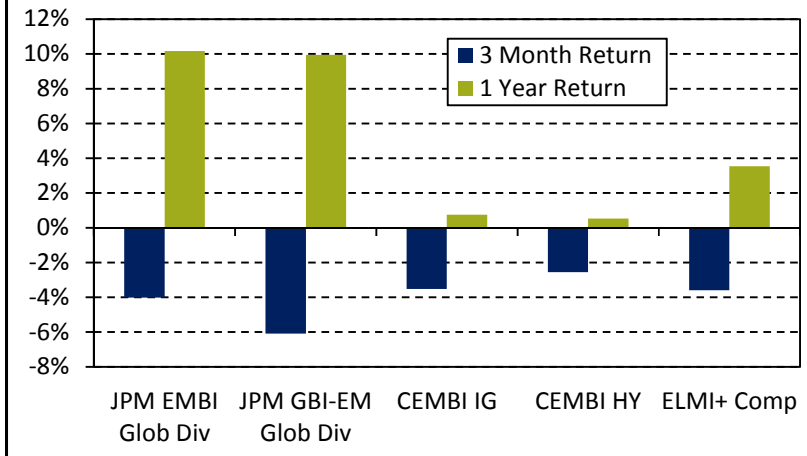
Source: Bloomberg

## EM yields remain attractive versus global counterparts



Source: Bloomberg, JP Morgan

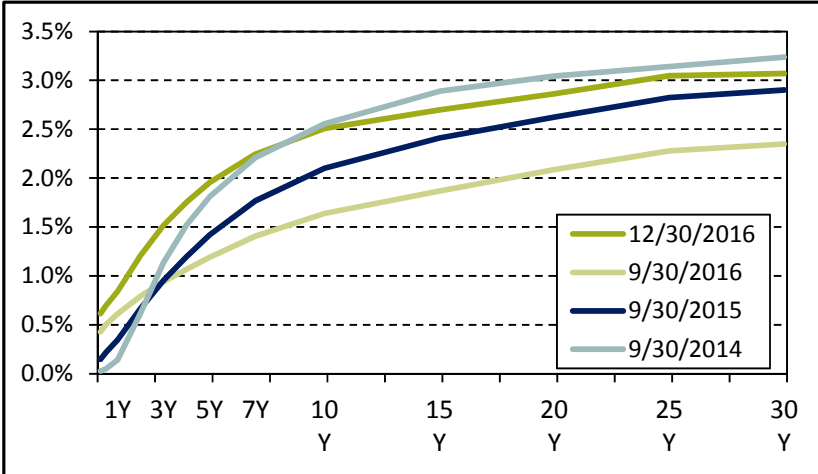
## EM debt posts negative short-term returns



Source: Bloomberg, JP Morgan

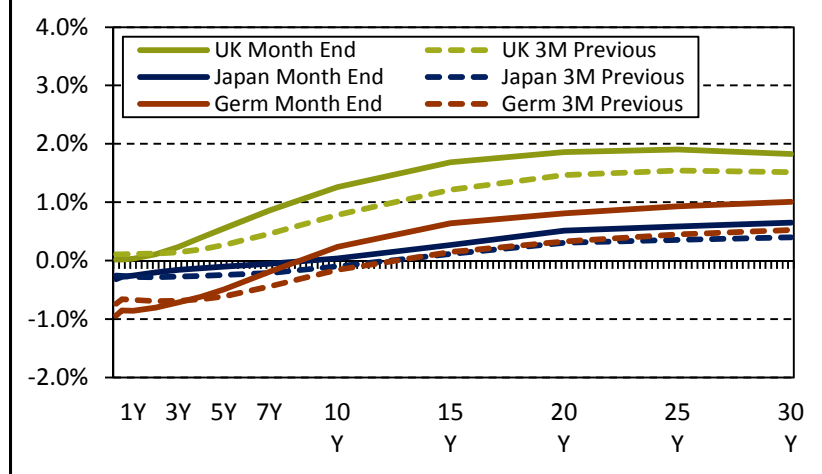


**Rate expectations have increased relative to three months prior**



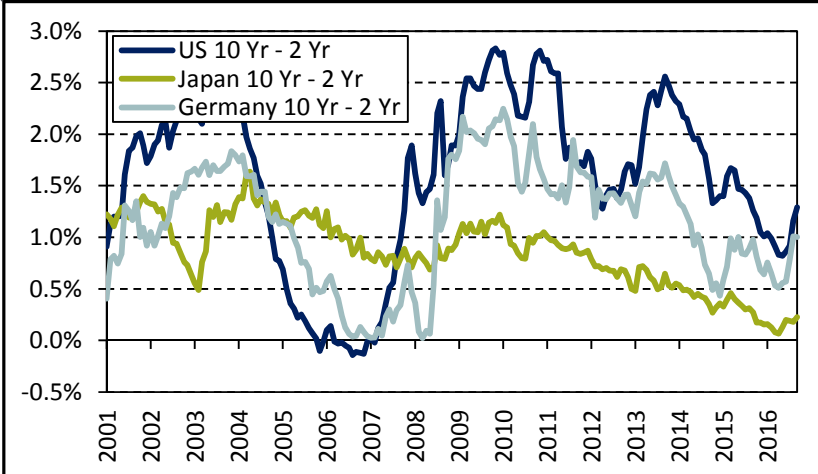
Source: Bloomberg

**Interest rate expectations continue increasing**



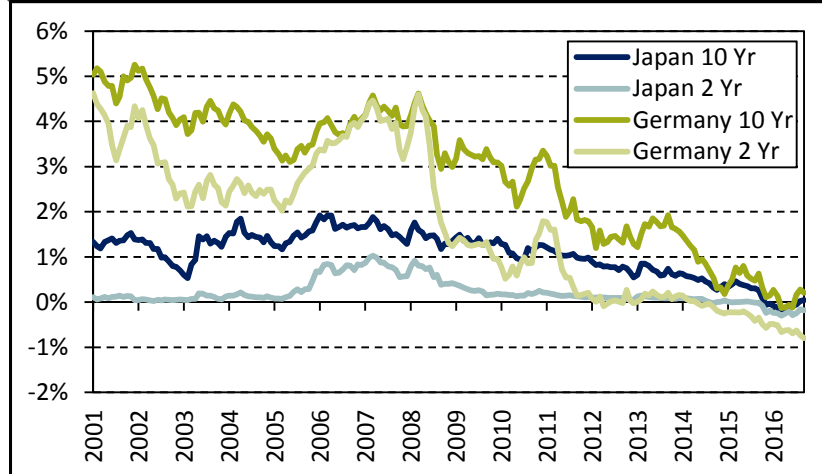
Source: Bloomberg

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



Source: Bloomberg

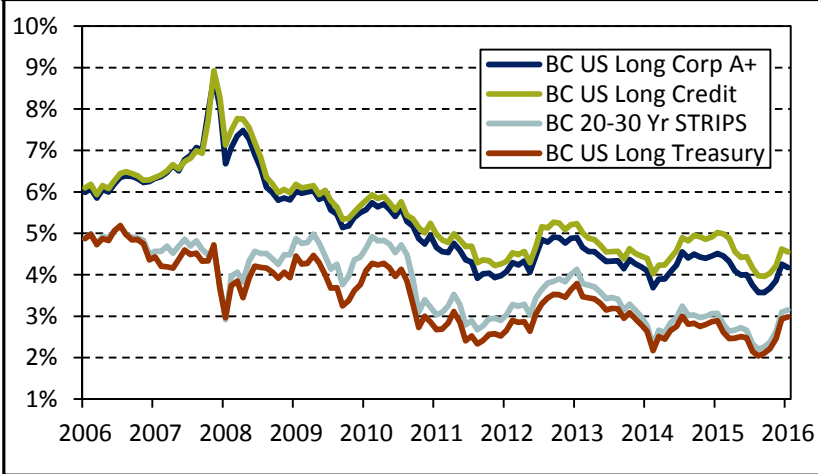
**Sovereign bond yields remain in negative or neutral territory**



Source: Bloomberg

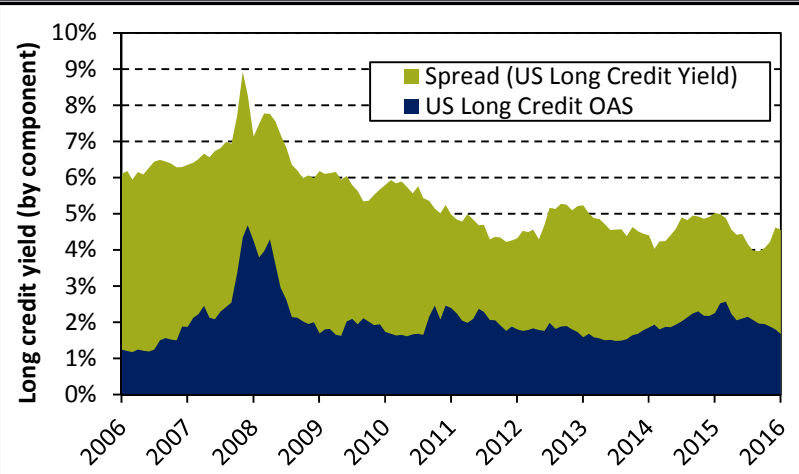
# Long Rates and Liability

## Long duration yields have steadied



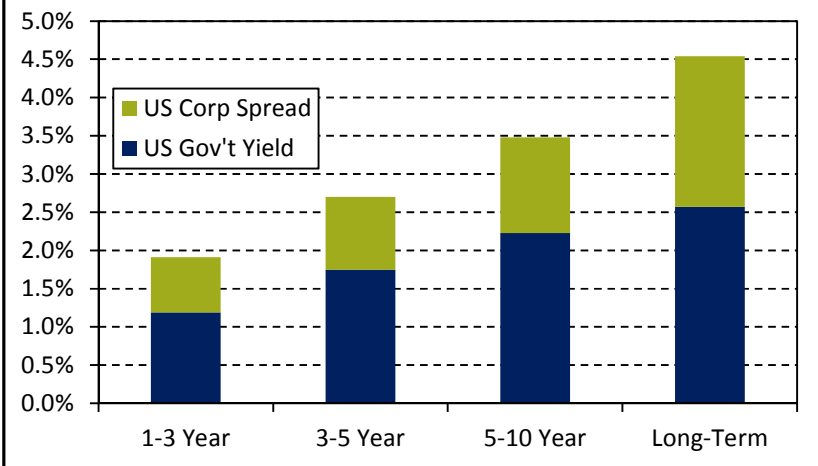
Source: Bloomberg, Citigroup, Barclays

## Long credit yield increases



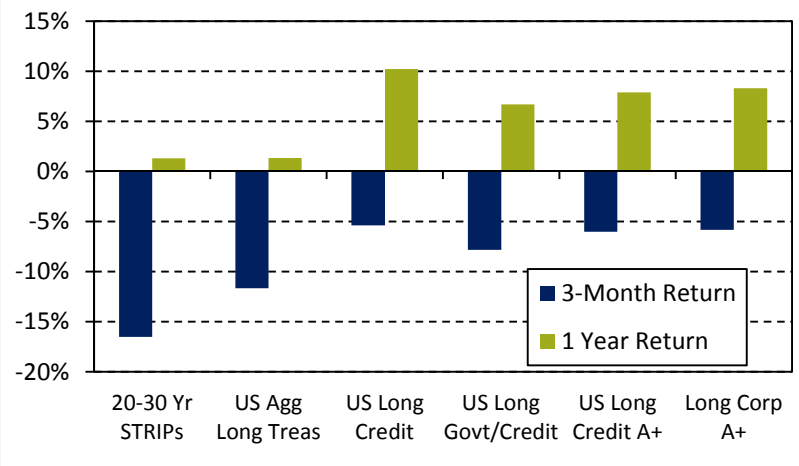
Source: Bloomberg, US Treasury, Barclays, NEPC

## Yield and spread components continue to offer modest returns



Source: Bloomberg, Barclays

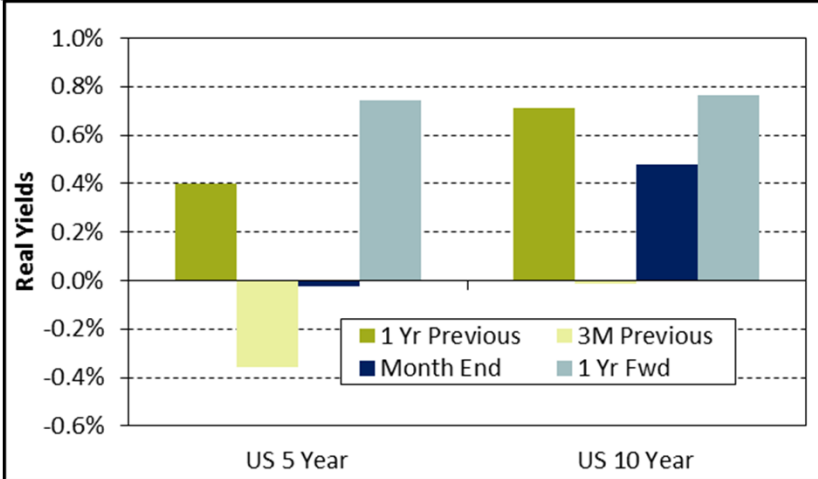
## Long duration fixed income posted large short-term losses



Source: Bloomberg, Barclays

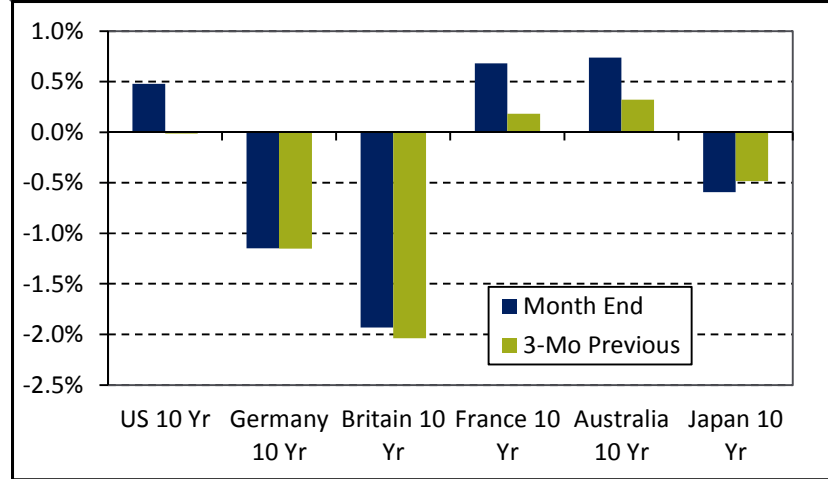
# Inflation and Real Rates

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



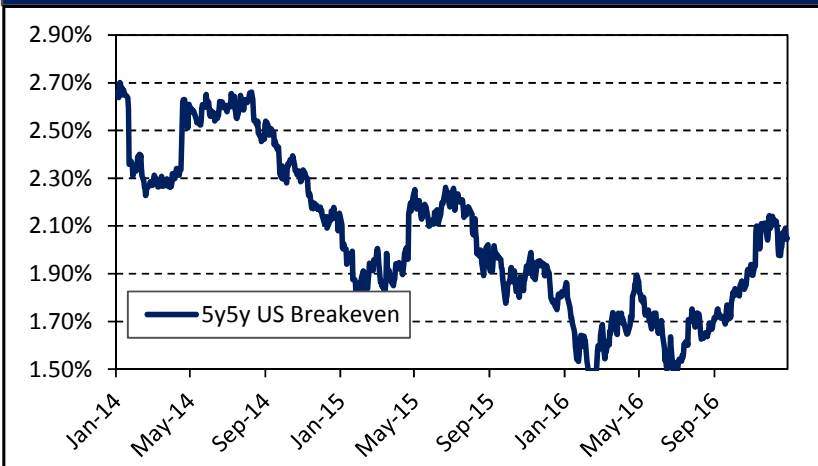
Source: Bloomberg

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



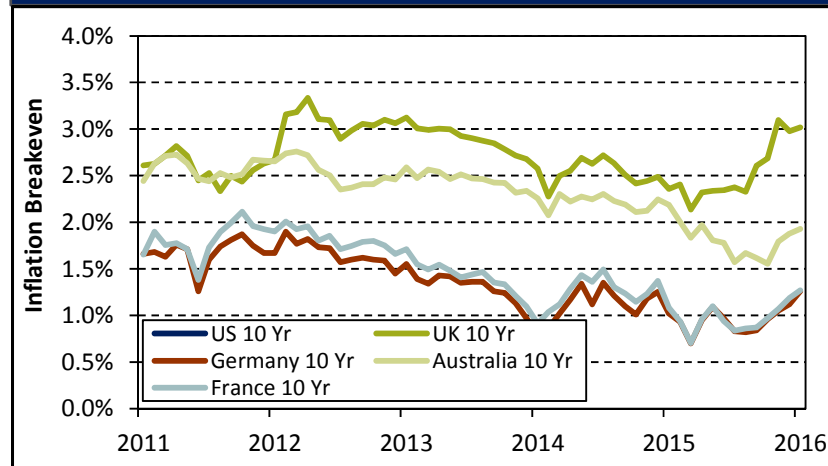
Source: Bloomberg

## US inflation expectations have increased but remain low



Source: Bloomberg

## Global inflation expectations continue to increase



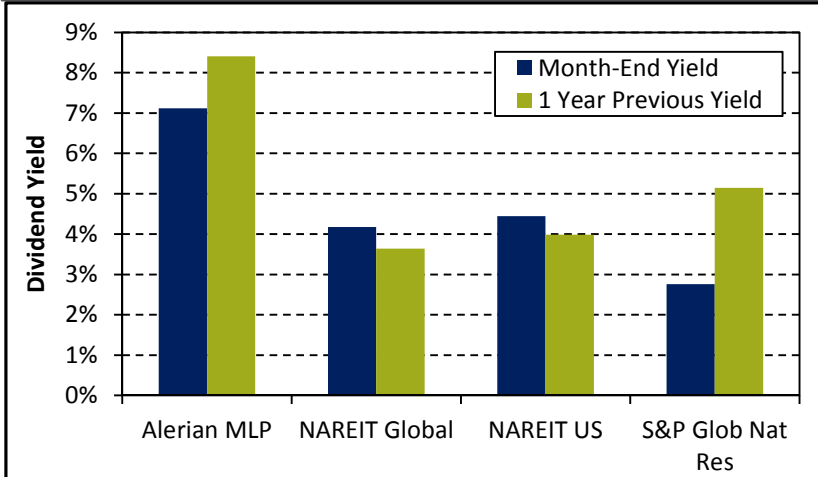
Source: Bloomberg





# Inflation Sensitive Growth Assets

## REITs yields are higher than the previous year



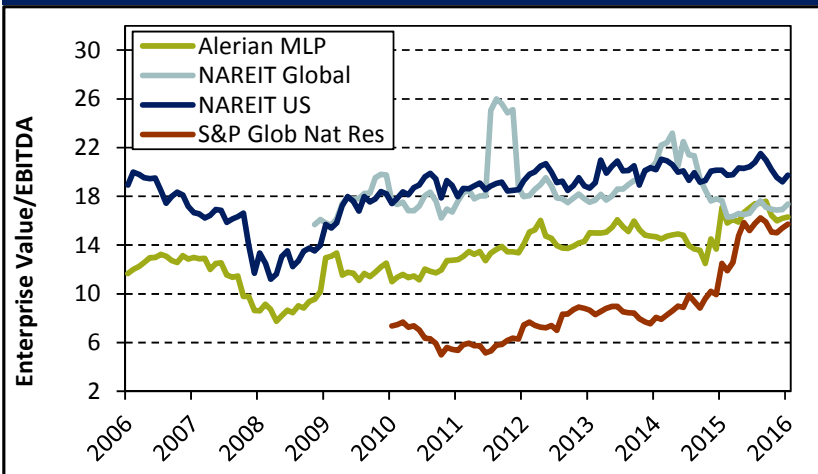
Source: Bloomberg, Alerian, Nareit, Standard and Poors

## Sustained recovery in commercial real estate occupancy rates



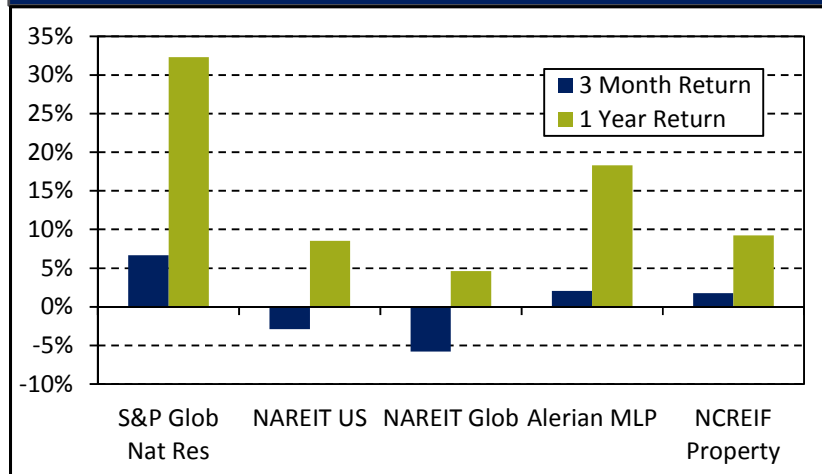
Source: NCREIF

## US REIT valuations have steadied



Source: Bloomberg, US Census Bureau

## REITs have underperformed in recent months

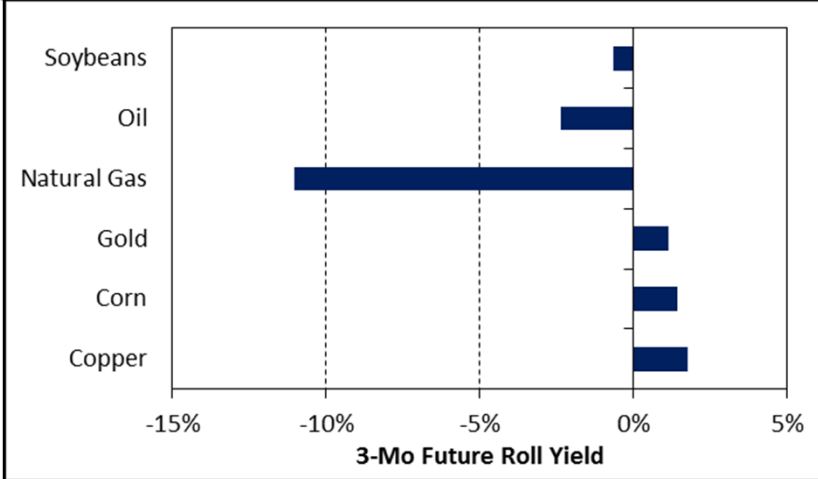


Source: Bloomberg, Alerian, Nareit, Standard and Poors



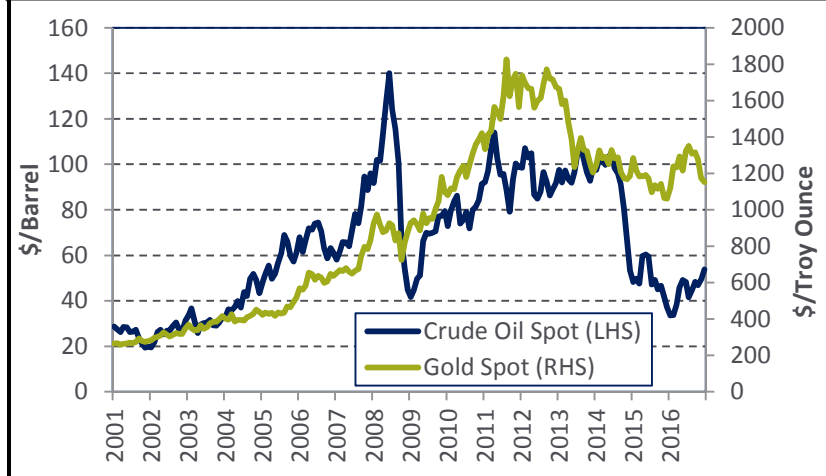
# Commodities

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



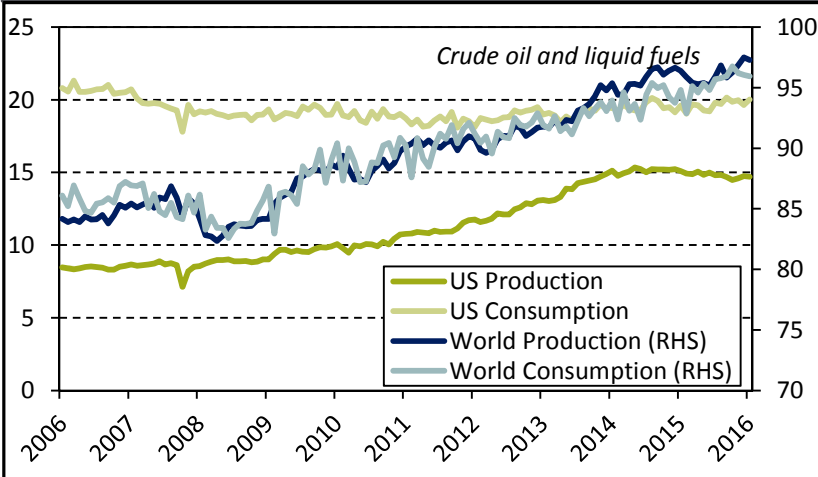
Source: Bloomberg

## Gold continues to decline post-election



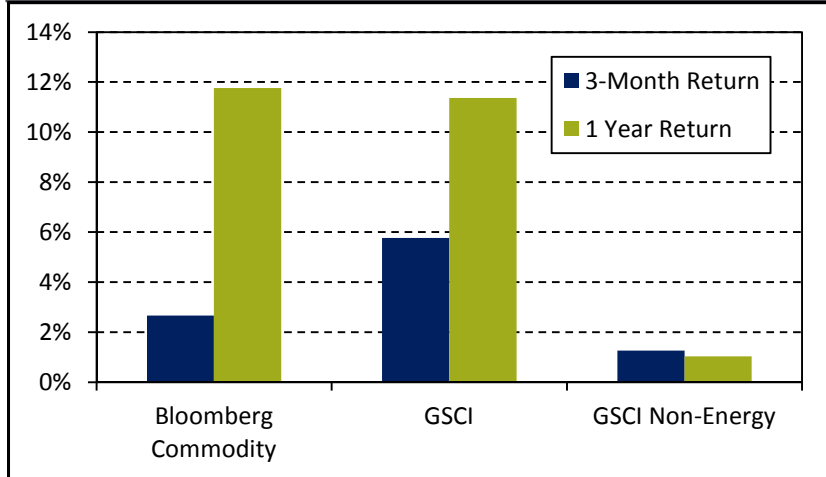
Source: Bloomberg

## 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

The calculation methodology for each measure of performance is outlined below.

Measurement	Description	Equation
<b>Policy Target</b>	Measures policy allocation decisions.	= TARGET ASSET WEIGHTS X INDEX RETURNS
<b>Allocation Index</b>	Measures actual allocation decisions. Deviations from the policy target can be derived. (Allocation Index – Policy Index)	= ACTUAL ASSET WEIGHTS X INDEX RETURNS
<b>Composite (Total Return)</b>	Measures actual performance and can derive active management decisions. (Composite – Allocation Index)	= ACTUAL ASSET WEIGHTS X ACTUAL RETURNS

The calculation methodology for each measure of attribution is outlined below.

Measurement	Description	Equation
<b>Allocation Effect</b>	Measure the effects of overweighting or underweighting managers and asset classes.	= (ACTUAL MANAGER WEIGHT – POLICY TARGET WEIGHT) X POLICY INDEX RETURN
<b>Selection Effect</b>	Measures the managers’ ability to add excess return relative to the policy index.	= (ACTUAL MANAGER RETURN – INDEX RETURN) X POLICY TARGET WEIGHT
<b>Interaction Effect</b>	Measures the cross correlation of both selection and allocation affects and is often referred to as an “error term”.	= (ACTUAL MANAGER RETURN X (ACTUAL MANAGER WEIGHT – POLICY TARGET WEIGHT)) – ((MANAGER WEIGHT – POLICY TARGET WEIGHT) X INDEX RETURN)

- **Past performance is no guarantee of future results.**
- **The goal of this report is to provide a basis for monitoring financial markets. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
- **Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**
- **All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.**
- **This report is provided as a management aid for the client's internal use only. This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.**