

QUARTERLY PERFORMANCE REPORT

SAN BERNARDINO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION



December 31, 2018

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

MARKET ENVIRONMENT UPDATE AND OUTLOOK

NEPC, LLC

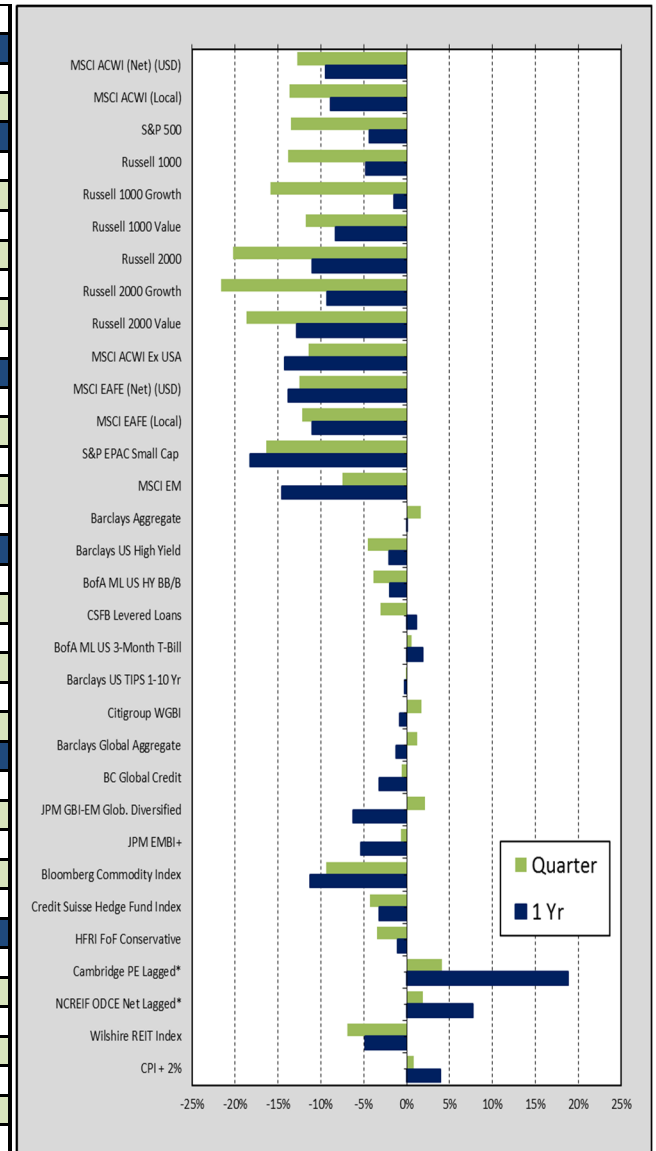
ECONOMIC ENVIRONMENT

- **Real GDP (third quarter) increased at an annual rate of 3.4%.**
 - Retail sales ended October at +3.7% on a YoY basis. In the same period last year the YoY growth rate was 5.9%.
 - Corporate profits (ended July) as a percent of GDP decreased to 9.59% from 9.61% (in April) and remain elevated relative to historical levels.
 - The inventory-to-sales ratio ended October up to 1.4 from 1.3 in July and has remained relatively constant since early 2010.
 - The U.S. trade deficit widened 7.3% as exports in soy and aircraft fell.
- **The unemployment rate increased slightly to 3.9% from to 3.7% ended Q4; U-6, a broader measure of unemployment, increased to 7.6% from 7.5% during the fourth quarter.**
- **The Case-Shiller Home Price Index (ended October) increased to 206.3 from 205.4 and remains at levels higher than that of pre-financial crisis levels of 150.9.**
- **Rolling 12-month seasonally-adjusted CPI saw a down-tick to 1.9% from 2.3% ended December; Capacity Utilization increased to 78.7% from 78.4% in Q4.**
- **Fed Funds rate was increased 0.25% to a targeted range of 2.25% -to- 2.50%. The 10-year Treasury Yield (constant maturity) finished Q4 down to 2.8% from 3.0%.**
- **The Fed continues its planned reduction in balance sheet size, while the European Central Bank balance sheet increased.**
 - ECB held its benchmark refinance rate at 0%, deposit rates -0.4% and has ended its bond purchase program.
- **S&P valuations decreased in Q4, remaining above the 10-year and long-term averages.**
 - Cyclically adjusted Shiller PE ratio (28.41x) is above the long-term average of 16.6x and above the 10-year average of 24.3x.



MARKET ENVIRONMENT – Q4 2018 OVERVIEW

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
World Equity Benchmarks						
MSCI ACWI (Net) (USD)	World	-12.8%	-9.4%	6.6%	4.3%	9.5%
MSCI ACWI (Local)	World (Local Currency)	-13.6%	-8.9%	5.9%	5.6%	9.8%
Domestic Equity Benchmarks						
S&P 500	Large Core	-13.5%	-4.4%	9.3%	8.5%	13.1%
Russell 1000	Large Core	-13.8%	-4.8%	9.1%	8.2%	13.3%
Russell 1000 Growth	Large Growth	-15.9%	-1.5%	11.1%	10.4%	15.3%
Russell 1000 Value	Large Value	-11.7%	-8.3%	7.0%	5.9%	11.2%
Russell 2000	Small Core	-20.2%	-11.0%	7.4%	4.4%	12.0%
Russell 2000 Growth	Small Growth	-21.7%	-9.3%	7.2%	5.1%	13.5%
Russell 2000 Value	Small Value	-18.7%	-12.9%	7.4%	3.6%	10.4%
International Equity Benchmarks						
MSCI ACWI Ex USA	World ex-US	-11.5%	-14.2%	4.5%	0.7%	6.6%
MSCI EAFE (Net) (USD)	Int'l Developed	-12.5%	-13.8%	2.9%	0.5%	6.3%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	-12.2%	-11.0%	2.6%	3.8%	7.5%
S&P EPAC Small Cap	Small Cap Int'l	-16.4%	-18.3%	3.7%	3.3%	10.2%
MSCI EM	Emerging Equity	-7.5%	-14.6%	9.2%	1.6%	8.0%
Domestic Fixed Income Benchmarks						
Barclays Aggregate	Core Bonds	1.6%	0.0%	2.1%	2.5%	3.5%
Barclays US High Yield	High Yield	-4.5%	-2.1%	7.2%	3.8%	11.1%
BofA ML US HY BB/B	High Yield	-3.8%	-2.0%	6.4%	3.9%	10.0%
CSFB Levered Loans	Bank Loans	-3.1%	1.1%	5.0%	3.3%	8.3%
BofA ML US 3-Month T-Bill	Cash	0.6%	1.9%	1.0%	0.6%	0.4%
Barclays US TIPS 1-10 Yr	Inflation	-0.1%	-0.3%	1.9%	1.2%	3.1%
Global Fixed Income Benchmarks						
Citigroup WGBI	World Gov. Bonds	1.8%	-0.8%	2.7%	0.8%	1.5%
Barclays Global Aggregate	Global Core Bonds	1.2%	-1.2%	2.7%	1.1%	2.5%
BC Global Credit	Global Bonds	-0.6%	-3.2%	3.0%	1.7%	4.5%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	2.1%	-6.2%	5.9%	-1.0%	3.5%
JPM EMBI+	Em. Mkt. Bonds	-0.7%	-5.3%	4.0%	4.0%	7.3%
Alternative Benchmarks						
Bloomberg Commodity Index	Commodities	-9.4%	-11.2%	0.3%	-8.8%	-3.8%
Credit Suisse Hedge Fund Index	Hedge Fund	-4.3%	-3.2%	1.6%	1.7%	5.1%
HFRI FoF Conservative	Fund of Hedge Funds	-3.4%	-1.1%	1.6%	1.7%	3.1%
Cambridge PE Lagged*	Private Equity	4.1%	18.9%	14.8%	13.6%	12.1%
NCREIF ODCE Net Lagged*	Real Estate	1.9%	7.7%	7.8%	9.7%	4.6%
Wilshire REIT Index	REIT	-6.9%	-4.8%	2.1%	7.9%	12.2%
CPI + 2%	Inflation/Real Assets	0.8%	4.0%	4.1%	3.5%	3.8%















* As of 9/30/2018



PERFORMANCE OVERVIEW

Q4 Market Summary

Macro			Equity			Credit			Real Assets		
US Dollar	VIX	US 10-Yr	S&P 500	MSCI EAFE	MSCI EM	US Agg.	High Yield	Dollar EMD	Oil	Gold	REITS
											
1.1%	13.3	-38 bps	-13.5%	-12.5%	-7.5%	1.6%	-4.5%	-1.2%	-38.0%	7.7%	-6.0%

- **Global equities sold-off during the quarter due to concerns related to fed funds rate increases , fears of a global slowdown, and trade uncertainties**
- **The sharp decline in crude oil prices weighed on commodities overall and US high-yield bonds, which have meaningful portion to the energy sector**
- **The Federal Reserve hiked rates for the fourth time in 2018 with one to two additional rate increases expected for 2019**

Market segment (index representation) as follows: US Dollar (DXY Index), VIX (CBOE Volatility Index), US 10-Year (US 10-Year Treasury Yield), S&P 500 (US Equity), MSCI EAFE Index (International Developed Equity), MSCI Emerging Markets (Emerging Markets Equity), US Agg (Barclays US Aggregate Bond Index), High Yield (Barclays US High Yield Index), Dollar EMD (JPM Emerging Market Bond Index), Crude Oil (WTI Crude Oil Spot), Gold (Gold Price Spot), and REITs (NAREIT Composite Index).



MACRO PERFORMANCE OVERVIEW

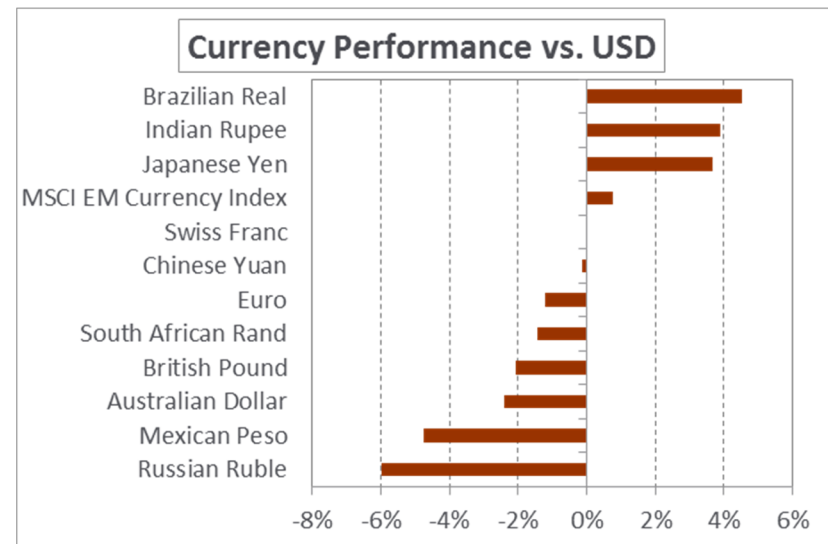
Q4 Macro Market Summary

- **Global growth has been revised lower and the outlook is likely to moderate in 2019**
- **Developed government bond yields decreased as demand for safe haven assets increased**
- **Global liquidity tightened as the Fed raised rates and the ECB ended the expansion of its QE program**

Central Banks	Current Rate	CPI YOY	Notes from the Quarter
Federal Reserve	2.25% - 2.50%	2.2%	The Fed increased its benchmark interest rate 0.25% to 2.25% - 2.50% in December
European Central Bank	0.0%	1.9%	The ECB maintained its current benchmark interest rate, but ended the expansion of its QE bond-buying program
Bank of Japan	-0.1%	0.8%	The BoJ will continue its ultra-easy QE program with inflation remaining well below target

	Yield 09/29/18	Yield 12/31/18	Δ
US 10-Yr	3.06%	2.68%	-0.38%
US 30-Yr	3.21%	3.01%	-0.19%
US Real 10-Yr	0.92%	0.97%	0.05%
German 10-Yr	0.47%	0.24%	-0.23%
Japan 10-Yr	0.13%	0.00%	-0.13%
China 10-Yr	3.63%	3.31%	-0.32%
EM Local Debt	6.62%	6.46%	-0.17%

Source: Bloomberg



Source: Bloomberg



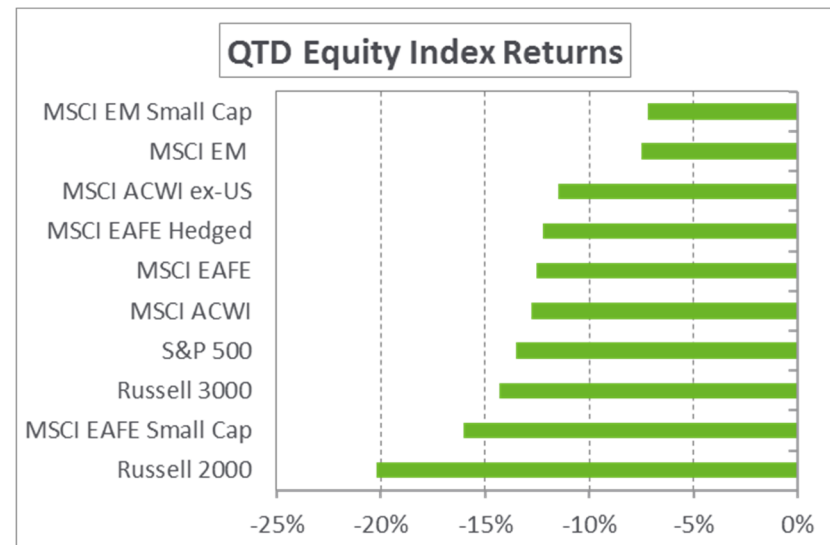
EQUITY PERFORMANCE OVERVIEW

Q4 Equity Market Summary

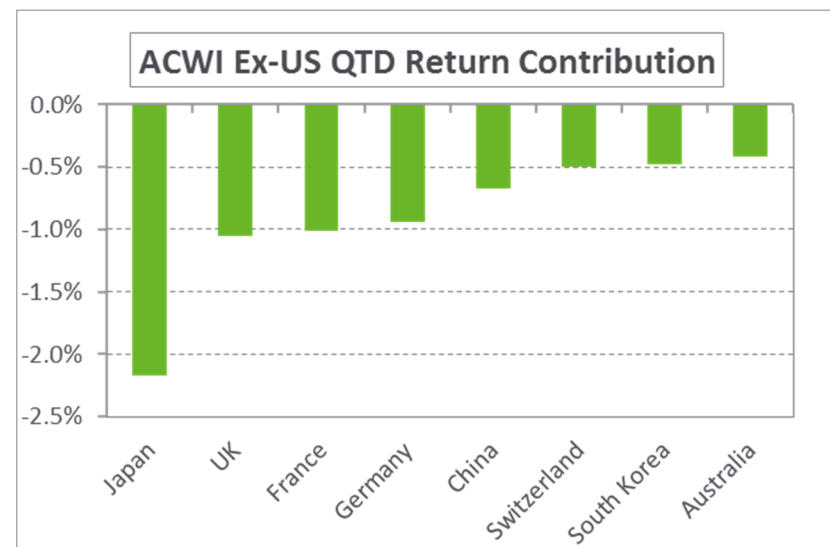
- **US equities led the global equity sell-off and developed market indices moved into a bear market**
- **Equities markets were volatile as ongoing trade concerns and fears of global growth slowdown weighed on investor sentiment**

Russell 3000 QTD Sector Return Contribution	
Information Technology	-3.35%
Consumer Discretionary	-1.80%
Financials	-1.80%
Industrials	-1.82%
Consumer Staples	-0.35%
Energy	-1.42%
Materials	-0.43%
Health Care	-1.52%
Real Estate	-0.22%
Communication Services	-1.64%
Utilities	0.02%

Source: Russell, Bloomberg



Source: MSCI, Russell, S&P, Bloomberg



Source: MSCI, Bloomberg. QTD top country contributors to index return



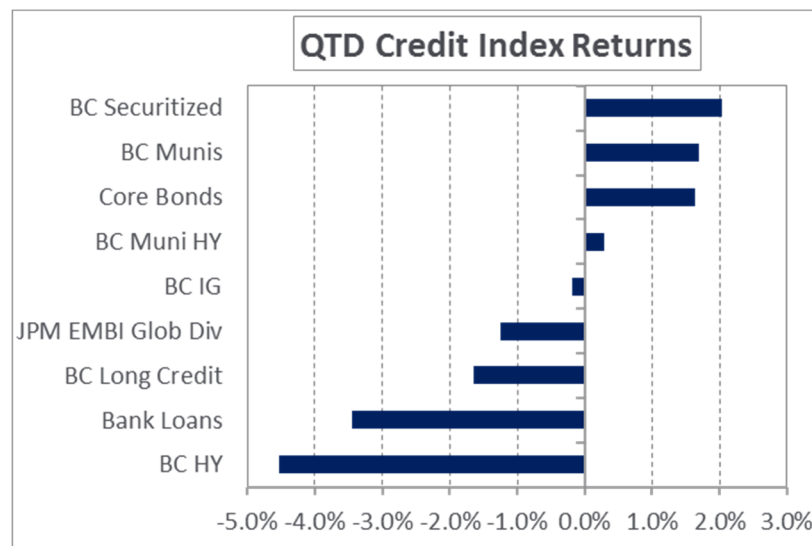
CREDIT PERFORMANCE OVERVIEW

Q4 Credit Market Summary

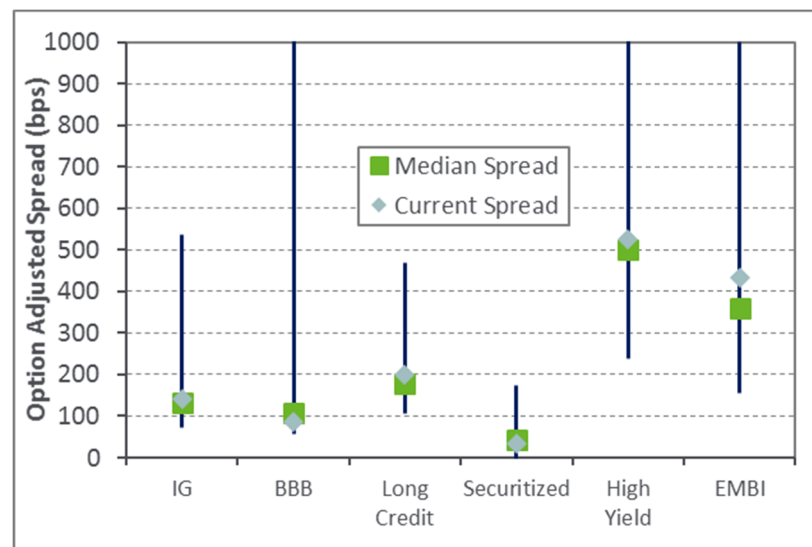
- **Credit spreads broadly increased across most areas of the market**
- **Riskier assets underperformed as demand for high quality and safe-haven assets increased**
- **Bank loans declined by 3.5% as market outflows weighed on asset prices**

Credit Spread (Basis Points)	09/30/18	12/31/18	Δ
BC IG Credit	100	143	43
BC Long Credit	153	200	47
BC Securitized	28	35	7
BC High Yield	316	526	210
Muni HY	184	236	52
JPM EMBI	362	435	73
Bank Loans - Libor	281	414	133

Source: Barclays, Merrill Lynch, JPM, Bloomberg, NEPC



Source: Barclays, JPM, S&P, Bloomberg



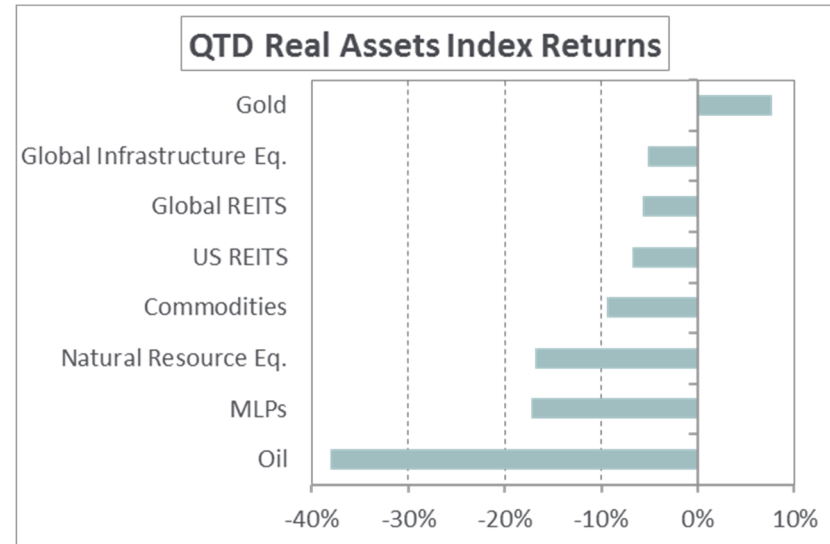
Source: Barclays, JPM, S&P, Bloomberg; as of 01/31/2000



REAL ASSETS PERFORMANCE OVERVIEW

Q4 Real Assets Market Summary

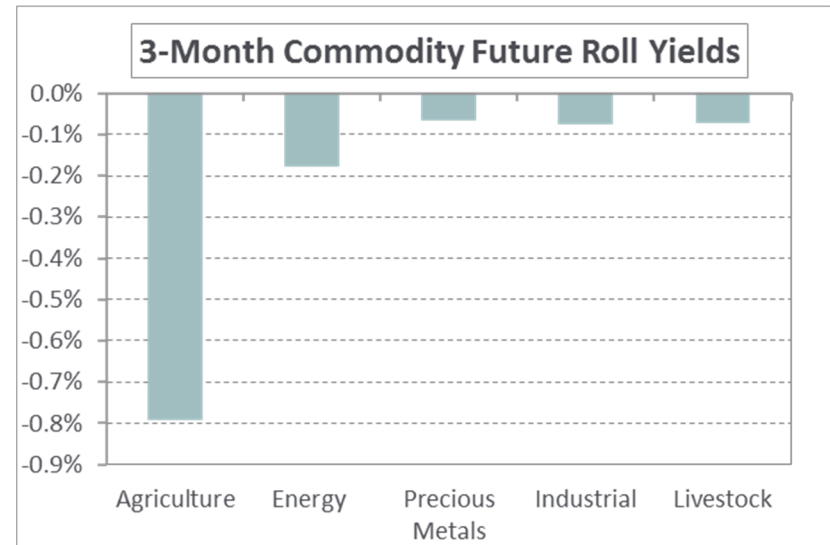
- **Oil declined 38% for the quarter due to an increase in supply led by US shale production**
- **MLPs decreased 17.3% under pressure from falling energy prices and investor outflows**
- **Commodities declined overall due to the substantial decline in oil markets**



Source: S&P, NAREIT, Alerian, Bloomberg

Real Asset Yields	09/30/18	12/31/18
MLPs	8.0%	9.0%
Core Real Estate	4.4%	4.5%
US REITs	4.2%	4.6%
Global REITs	3.7%	3.9%
Global Infrastructure Equities	4.5%	4.6%
Natural Resource Equities	3.5%	4.5%
US 10-Yr Breakeven Inflation	2.1%	1.7%
Commodity Index Roll Yield	-1.2%	-6.1%

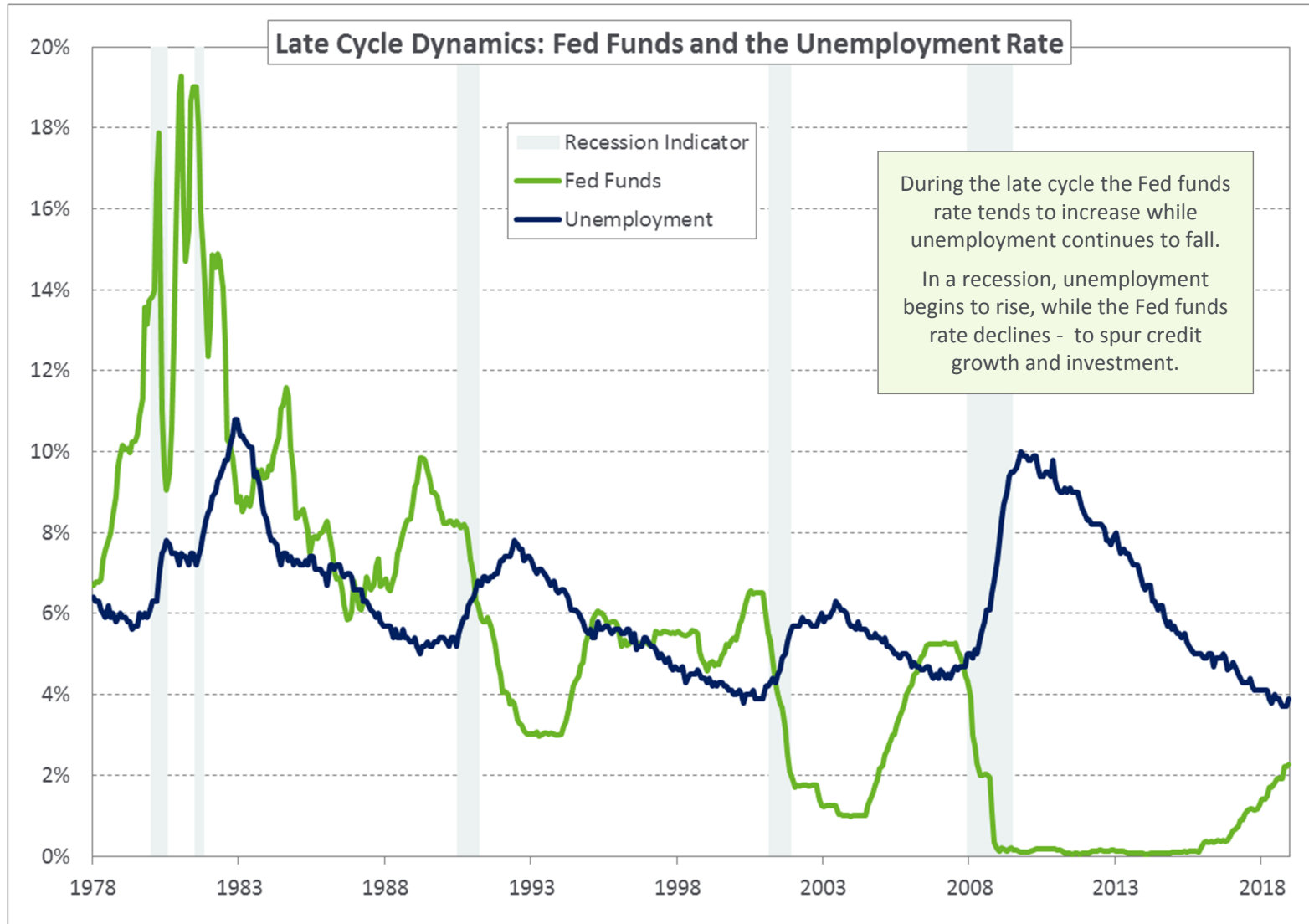
Source: NCREIF, Alerian, NAREIT, S&P, Bloomberg



Source: Bloomberg, NEPC Calculated as of 09/28/2018



THE ECONOMIC CYCLE IS IN TRANSITION



Source: St. Louis Federal Reserve, NBER



KEY MARKET THEMES

Late Cycle Dynamics

The US economy has transitioned from a mid- to late-cycle environment

Late cycle does not mean end of cycle; equity markets can offer strong returns and abandoning risk assets early may detract from long-term results

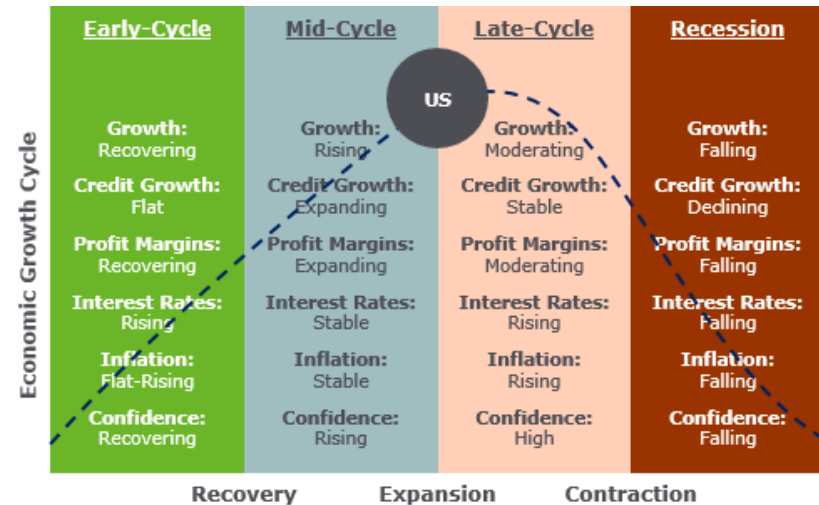
Positive economic data can support continued US economic expansion and further equity gains

However, moving into a late cycle negatively skews the range of outcomes and our investment outlook reflects a more risk-averse posture with a bias toward selling low quality credit and increasing safe-haven fixed income exposure

Trends among key indicators suggest a transition to late-cycle has occurred

These indicators provide a useful guide to recognize changes in the economic cycle

Despite the recent trend, there is minimal evidence in economic/financial indicators to suggest that a US recession is imminent

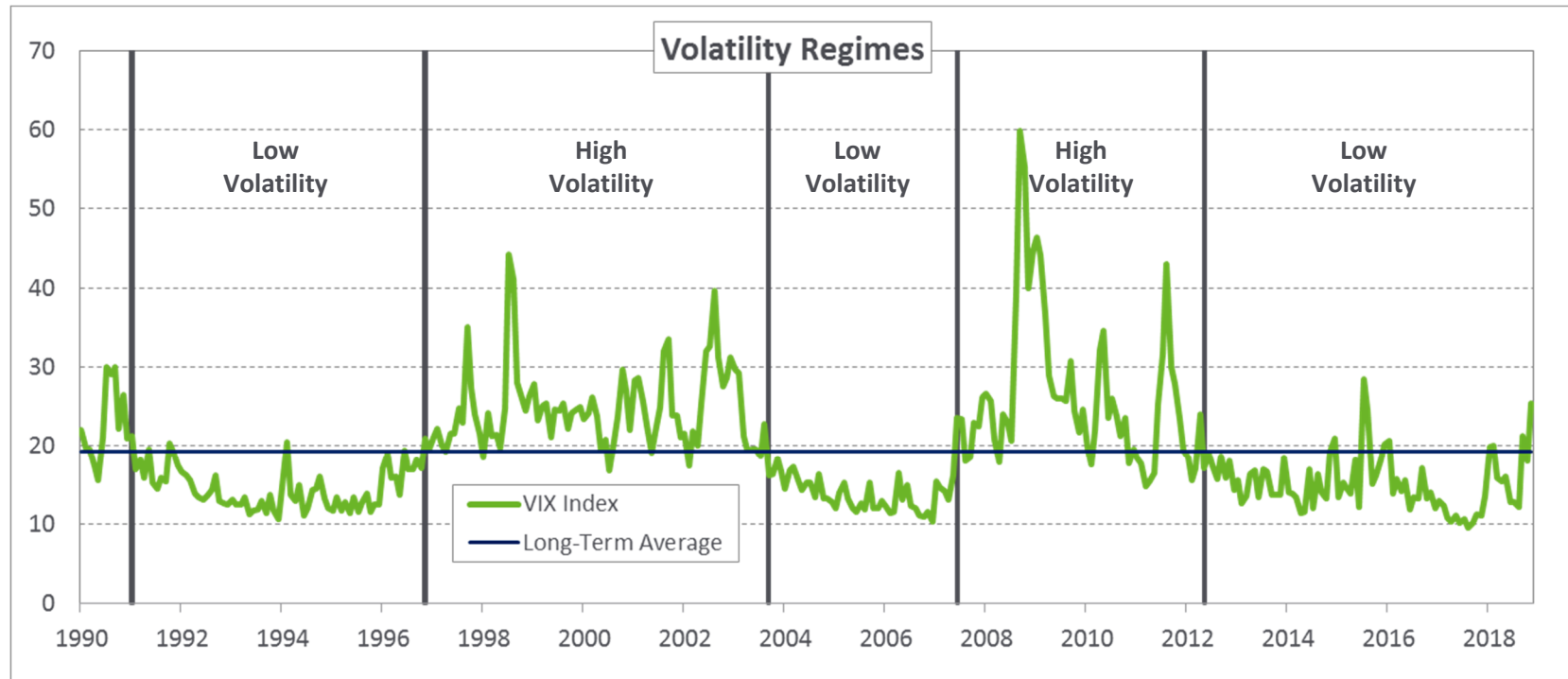


US Indicators	Late-Cycle Trend	Current Trend
Equities	Peaking	Uncertain
Interest Rates	Rising	Yes
Yield Curve	Flattening	Yes
Inflation	Rising	Yes
GDP Growth	Moderating	Uncertain
Credit Spreads	Stable/Rising	Yes
Output Gap	Near/Above Potential	Yes
Unemployment	Falling/Bottoming	Uncertain

Source: (Top) NEPC
Source: (Bottom) NEPC



BRACE FOR HIGHER VOLATILITY IN 2019



Source: S&P, CBOE, Bloomberg, NEPC

Equity volatility regimes tend to persist over prolonged periods and 2018 was witness to a material shift higher in equity volatility

We encourage investors to raise “safe haven” fixed income exposure as trends associated with each of our key market themes suggest higher volatility is on the horizon

2019 may prove to be a difficult year for markets but higher volatility can also offer a greater number of opportunities for dynamic investors

Investors should be prepared to act in a higher volatility regime, as dynamic opportunities may arise to deploy safe-haven assets back into US equity and other risk assets



KEY MARKET THEMES

Tightening Global Liquidity

The Fed has shifted from a “lower for longer” policy to a more balanced posture of raising rates in line with higher inflation

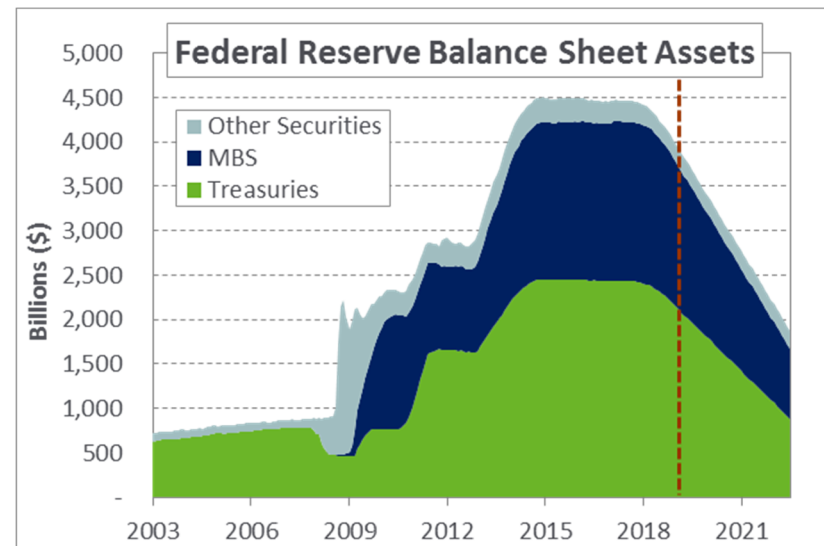
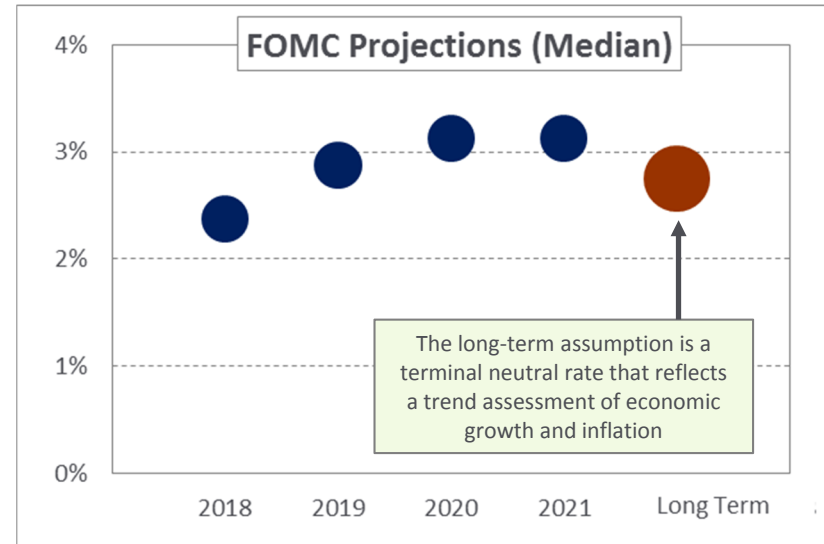
Based on the FOMC projections, the Fed is communicating a tightening path as their forecast for interest rate hikes moves beyond the long-term neutral rate

Markets are discounting a muted pace of hikes relative to Fed projections, creating potential for capital market disruption. However, the Fed’s bias appears to be to raise rates in the absence of market turmoil

The Fed’s balance sheet has shrunk by \$400B and will continue to decline by a monthly maximum target of \$50B

Normalization of the balance sheet is a form of monetary policy tightening as liquidity is methodically extracted from the system

The impact of the balance sheet reduction is untested – potentially mirroring how the Fed’s balance sheet expansion (QE) had easing effects



Source: (Top) Bloomberg, NEPC
Source: (Bottom) Bloomberg, NEPC



KEY MARKET THEMES

China Transitions

China is the global growth engine but faces fundamental transitions

China's economy is transitioning from a focus on production and investment to a service and consumption based economy

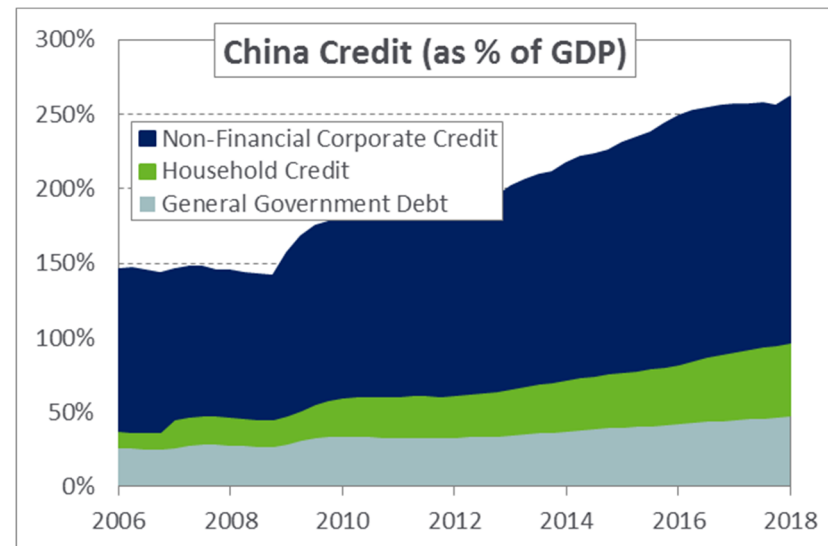
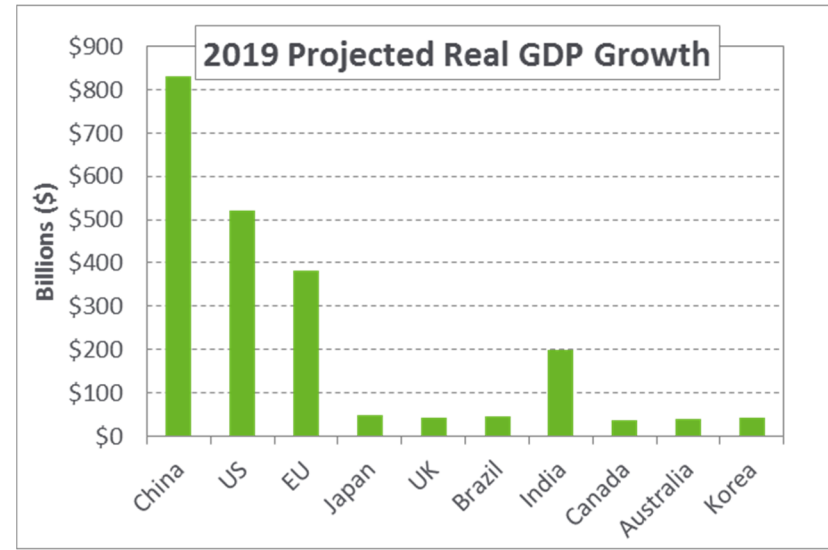
Fixed investment and credit expansion is needed to sustain the "old" production-based economy and support employment as the population shifts to urban centers

Any disruption to these transitions will be transmitted globally due to China's outsized role in the world economy

Policy makers must continue to balance goals of moderating credit expansion against sustaining healthy economic growth rates

Recent shifts in policy suggest a tilt away from credit moderation to offset the harmful effects of the US-China trade dispute

However, an uncontrolled expansion of credit growth and real estate development pose a future systemic risk to the economy



Source: (Top) Bloomberg, NEPC
Source: (Bottom) BIS, NEPC



HIGHLIGHTS OF FOURTH QUARTER HAPPENINGS AT NEPC

NEPC INSIGHTS

NEPC, LLC PRESENTS

ACTIVE MANAGERS & MARRIAGE

WHAT THEY HAVE IN COMMON AND WHY WE DON'T ALL JUST INDEX

1. YOU EXPECT TO MARRY
Marriage (active management) is the oldest and most universal institution.

2. FIRST COMES LOVE, THEN COMES MARRIAGE
You're in love (great 3-5 year track record). Past performance is not indicative of future results.

3. YOU SAY FOR BETTER OR FOR WORSE, BUT YOU DON'T MEAN IT
You know 50% of marriages (active managers) fail.

4. THERE ARE UPS AND DOWNS
You didn't really consider volatility. Where's the person (manager) you remember from a few years ago?

5. YOU WANT WHAT OTHER COUPLES HAVE
Other managers' results look better than yours.

6. SOME MARRIAGES SUCCEED
Some fail. It can take time to bring back that lovin' feeling.

7. THE PAYOFF IS WORTH IT
Enduring the ups and downs of any relationship can be well worth it in the long-run. We believe in active management, but go forth with reasonable expectations.

Authored by Tim Fitzgerald, longtime husband and active investor (often struggling with both), and never married, ever patient investor Christine Loughlin. In their roles as defined contribution consultants, they regularly advise clients about active and passive management. All opinions expressed are solely their own and do not reflect the opinions of NEPC, LLC. Look for their companion piece on In-Laws and Income Solutions.

nepc.com f t in G+

- Defined Contribution Financial Wellness Results: Is All Well(ness) and Good?
- Low-Basis Assets: Developing a Plan to Avoid Investor Inertia
- Defined Contribution: Active Management and Marriage, Part 1
- Defined Contribution: In-Laws & Income Solutions, Part 2
- Taking Stock: NEPC Drops Fed Gradualism Theme
- It's November: Year-End Tax-Planning Starts Now
- 2018 Third Quarter Market Thoughts
- Partial Annuitizations: The Go-To Strategy for Pension Risk Transfers
- NEPC 2018 Corporate DB Outlook Results: Plans to De-Risk Portfolio and Invest in Alternative Assets
- Taking Stock: Hedge Funds: A New World Post-Crisis
- Don't Let the Tail Wag the Dog: For Insurers, It's Investment Discipline First, Capital Efficiency Second
- Taking Stock: Decision Time for Pension Plans and Q3 Liability Performance
- NEPC's 2018 Hedge Fund Operational Due Diligence Survey Results
- Make an Impact in the Season of Giving
- NEPC's Year-End 2018 Endowments & Foundations Survey Results: Storms Ahead, But Staying the Course
- Taking Stock: Making Sense of Recent Market Movements

WEBINAR REPLAYS

- NEPC's Third Quarter 2018 Quarterly Markets Call
- Total Enterprise Management for Endowments and Foundations

To download NEPC's recent insights and webinar replays, visit: www.NEPC.com/insights



SAVE THE DATE



MAY 7-8, 2019 | BOSTON PARK PLAZA | #NEPC_CONFERENCE



NEPC's 24th Annual Investment Conference

- Gradual or dramatic, the economic and political worlds around us are going through major transition. Whether it be global resources, climate, political power, technology, demographics or personal habits, adapting and advancing through these shifts has become a regularity. Most importantly, as we transition our daily processes, so do we transition our investment approaches. Please join us for **NEPC's 24th Annual Investment Conference on May 7-8, 2019** at the Boston Park Plaza Hotel, as we address the 'Transitions' we are experiencing and what lies ahead.
- Please reach out to Sarah Winrow at swinrow@nepc.com if you have any questions.



TOTAL FUND PERFORMANCE

NEPC, LLC

TOTAL FUND PERFORMANCE SUMMARY (GROSS)

	Market Value	3 Mo	Rank	Fiscal YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
Total Fund	\$9,902,558,228	-3.9%	1	-1.9%	1	0.8%	1	7.7%	1	5.7%	8	8.0%	78
Policy Index		-5.5%	5	-3.7%	8	-3.3%	27	5.4%	92	4.0%	86	7.6%	82
S&P 500		-13.5%	99	-6.9%	93	-4.4%	48	9.3%	1	8.5%	1	13.1%	1
BBgBarc US Aggregate TR		1.6%	1	1.7%	1	0.0%	1	2.1%	99	2.5%	99	3.5%	99
60% MSCI ACWI (Net) / 40% FTSE WGBI		-7.1%	36	-5.3%	48	-5.8%	72	5.2%	94	3.0%	99	6.5%	94
InvestorForce Public DB > \$1B Gross Median		-7.7%		-5.5%		-4.6%		6.0%		4.8%		8.6%	

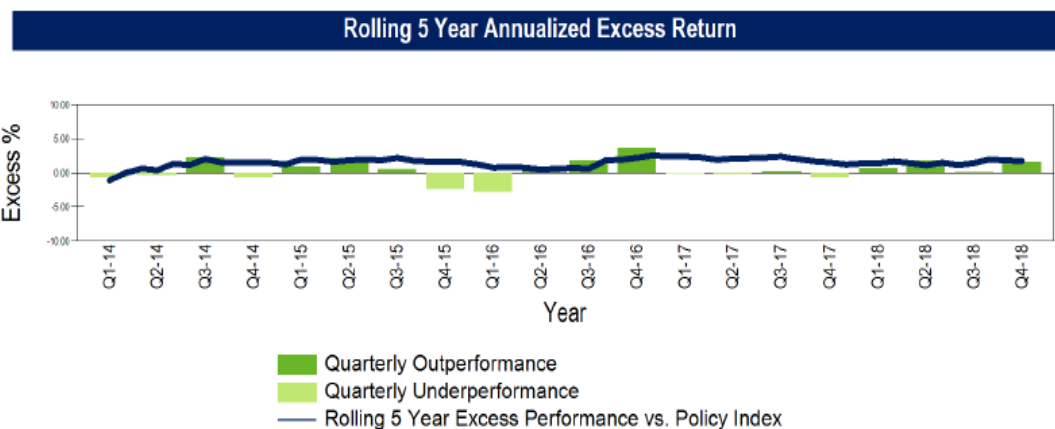
In the year ended December 31, 2018 the Fund return of 0.8% ranked in the 1st percentile of Public Funds > \$1 Billion and underperformed the actuarial assumed rate of 7.25%. The Fund's assets totaled \$9.90 billion, an increase of \$57.9 million from a year ago.

The Fund experienced a net investment gain of \$85.0 million during the year including a net investment loss of \$402.8 million in the fourth calendar quarter.

In the three-year period ended December 31, 2018 the Fund return of 7.7% ranked in the 1st percentile among its peers. The Sharpe Ratio over this period of 1.8 ranks in the 1st percentile, indicating that the Fund earned a higher rate of return for each incremental unit of risk taken during the period versus its peers.

In the five-year period ended December 31, 2018 the Fund return of 5.7% per annum ranked in the 8th percentile among its peers. On a risk adjusted basis the Fund's Sharpe and Sortino Ratios rank in the 1st percentile indicating both strong returns per unit of risk taken and strong returns per unit of downside risk experienced when compared to a universe of public fund peers >\$1B.

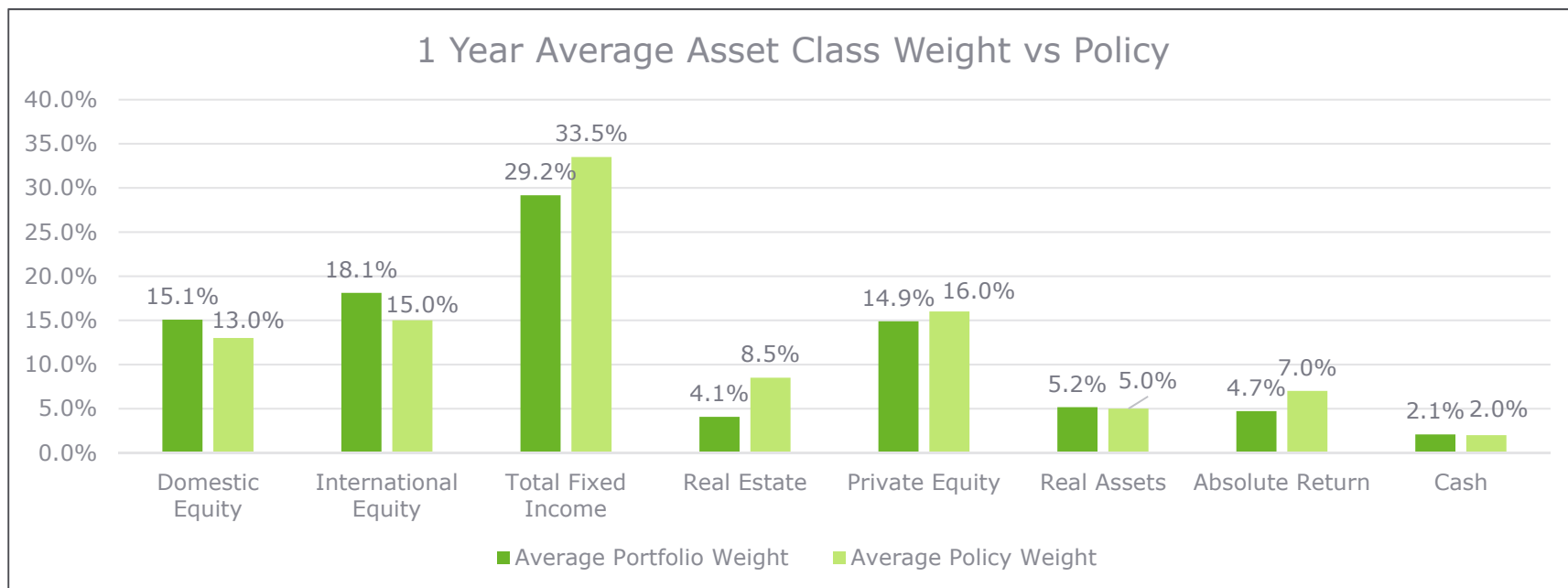
Note: InvestorForce Public Funds >\$1B Gross of Fee prelim universe contains 14 portfolios with \$112 billion in assets.



Statistics Summary				
3 Years Ending December 31, 2018				
	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	1.8	1	2.4	1
InvestorForce Public DB > \$1B Gross Median	0.8	--	1.0	--
5 Years Ending December 31, 2018				
	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	1.4	1	2.3	1
InvestorForce Public DB > \$1B Gross Median	0.7	--	1.0	--

BETA OVERLAY CONTRIBUTION TO RETURN

COMPOSITE	3 Months	1 Year	3 Years	5 Years
Total Plan <i>With</i> Beta Overlay	-3.92	0.74	7.74	5.62
Total Plan <i>Without</i> Beta Overlay	-2.40	2.42	7.23	5.81
<i>Over/Under</i>	-1.52	-1.68	0.51	-0.19



San Bernardino County Employees' Retirement Association

TOTAL FUND PERFORMANCE SUMMARY

Statistics Summary								
1 Year Ending December 31, 2018								
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	0.8%	1	4.4%	1	-0.2	1	0.3	1
InvestorForce Public DB > \$1B Gross Median	-4.6%	--	7.6%	--	-0.9	--	-0.8	--

Statistics Summary								
3 Years Ending December 31, 2018								
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	7.7%	1	3.7%	1	1.8	1	2.4	1
InvestorForce Public DB > \$1B Gross Median	6.0%	--	6.2%	--	0.8	--	1.0	--

Statistics Summary								
5 Years Ending December 31, 2018								
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	5.7%	8	3.6%	1	1.4	1	2.3	1
InvestorForce Public DB > \$1B Gross Median	4.8%	--	6.2%	--	0.7	--	1.0	--

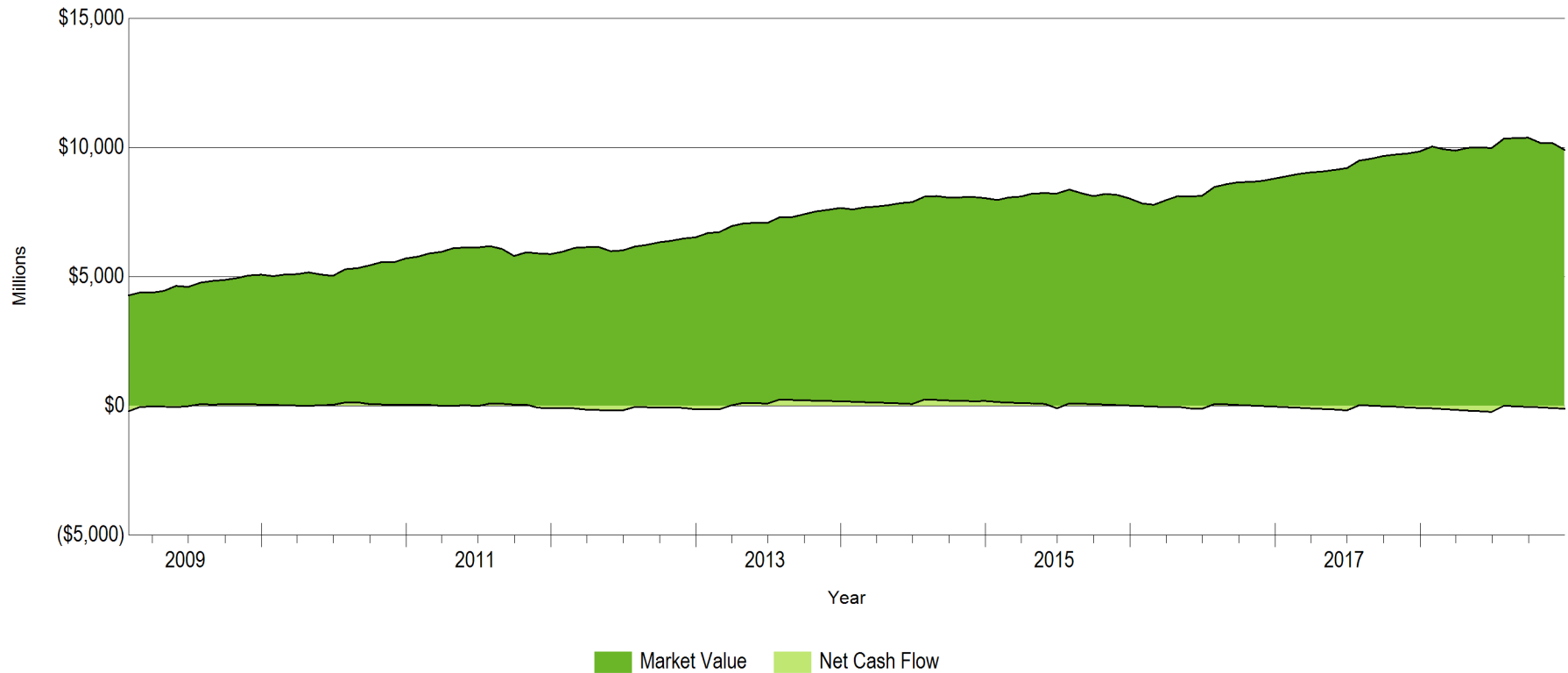
Sortino Ratio requires at least two negative points during the time period in order to calculate



San Bernardino County Employees' Retirement Association

TOTAL FUND ASSET GROWTH SUMMARY

10 Years Ending December 31, 2018

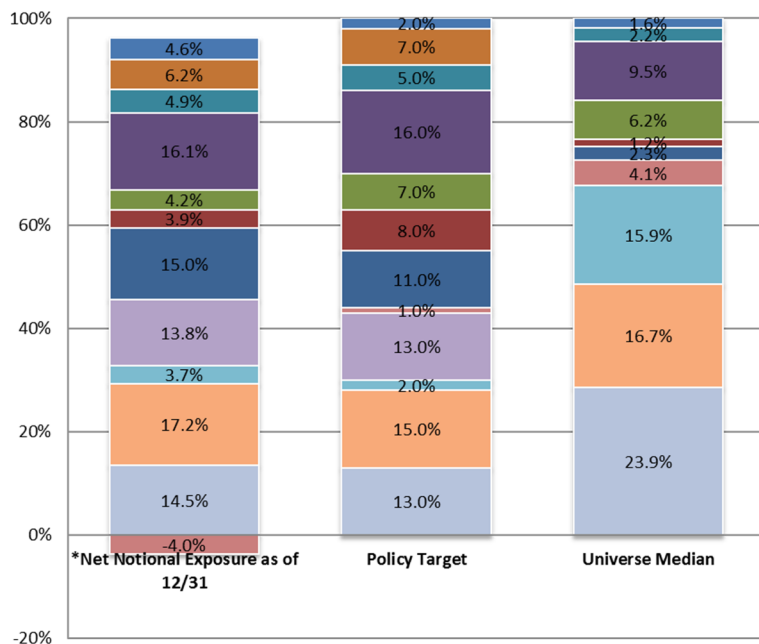


	Last Three Months	Fiscal Year-To-Date	One Year	Five Years	Ten Years
Beginning Market Value	\$10,376,326,840	\$9,972,950,140	\$9,844,615,850	\$7,655,400,312	\$4,649,536,703
Net Cash Flow	-\$71,024,415	\$125,542,828	-\$27,030,962	-\$285,849,935	-\$105,486,868
Net Investment Change	-\$402,744,196	-\$195,934,740	\$84,973,340	\$2,533,007,850	\$5,358,508,393
Ending Market Value	\$9,902,558,228	\$9,902,558,228	\$9,902,558,228	\$9,902,558,228	\$9,902,558,228



San Bernardino County Employees' Retirement Association

TOTAL FUND PERFORMANCE SUMMARY



- US Equities
- US Credit
- Emerging Market Debt
- Real Assets
- Int'l Equities
- Non-US Core Fixed Income
- Real Estate
- Absolute Return
- U.S. Core
- Non-US Credit
- Private Equity
- Cash

	*Net Notional Exposure	*Net Notional Exposure as of 12/31	Policy Target	*Difference	Policy Ranges	Within Range
US Equities	1,438,945	14.5%	13.0%	1.5%	8%-18%	Yes
Int'l Equities	1,702,236	17.2%	15.0%	2.2%	10%-20%	Yes
U.S. Core	363,100	3.7%	2.0%	1.7%	-3%-7%	Yes
US Credit	1,365,124	13.8%	13.0%	0.8%	8%-18%	Yes
Non-US Core Fixed Income	(396,102)	-4.0%	1.0%	-5.0%	-4%-6%	Yes
Non-US Credit	1,480,681	15.0%	11.0%	4.0%	6%-16%	Yes
Emerging Market Debt	385,661	3.9%	8.0%	-4.1%	3%-13%	Yes
Real Estate	412,743	4.2%	7.0%	-2.8%	0%-14%	Yes
Private Equity	1,594,531	16.1%	16.0%	0.1%	6%-21%	Yes
Real Assets	487,953	4.9%	5.0%	-0.1%	0%-10%	Yes
Absolute Return	610,622	6.2%	7.0%	-0.8%	0%-12%	Yes
Cash	457,064	4.6%	2.0%	2.6%	0%-10%	Yes
	9,902,558	100.0%	100.0%			



San Bernardino County Employees' Retirement Association

TOTAL FUND PERFORMANCE SUMMARY

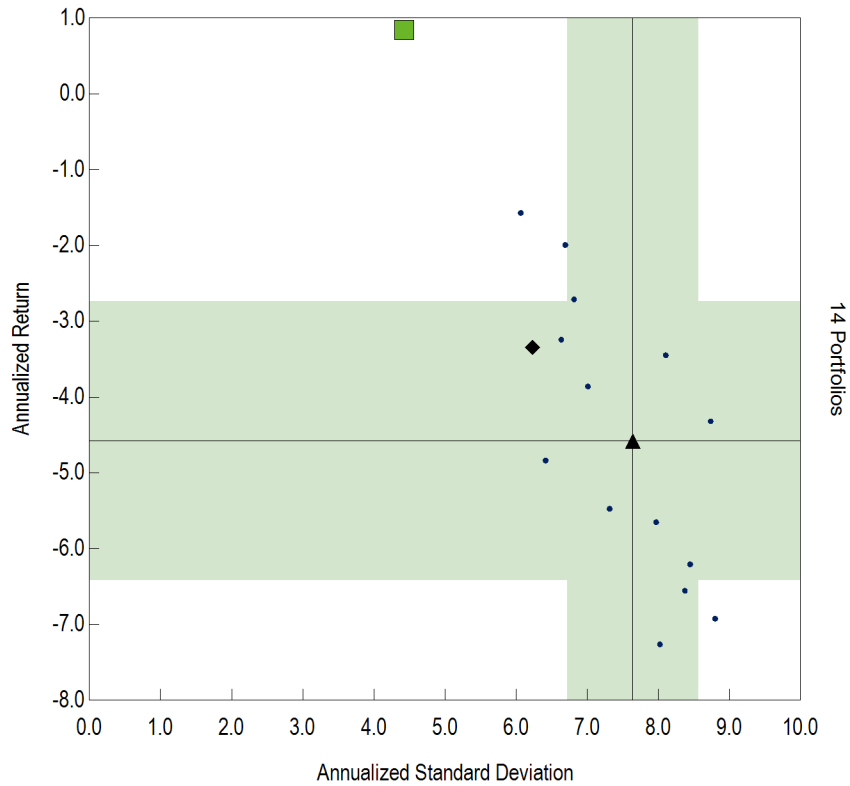
<u>Asset Class</u>	<u>Physical Exposure</u>		<u>Delta Adjusted</u>		<u>Net Position</u>		<u>Overlay Target</u>		<u>Policy Target</u>	
			<u>Synthetic Exposure</u>							
Total Market Value	9,778.3	100.0%	-0.0	0.0%	9,778.3	100.0%	9,778.3	100.0%	9,778.3	100.00%
Cash	1,020.6	10.44%	-1,141.8	-11.68%	-121.2	-1.24%	0.0	0.0%	0.0	0.00%
Cash	1,020.6	10.44%	-1,141.8	-11.68%	-121.2	-1.24%	0.0	0.0%	0.0	0.00%
Equity	1,510.2	15.44%	1,668.8	17.07%	3,178.9	32.51%	3,007.1	30.75%	2,953.0	30.20%
Emerging Markets	418.0	4.28%	303.4	3.1%	721.4	7.38%	721.9	7.38%	708.9	7.25%
Equity Delta Hedge	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.00%
International Developed	52.0	0.53%	938.7	9.6%	990.7	10.13%	1,070.4	10.95%	1,051.2	10.75%
US Large Cap	1,039.9	10.63%	160.2	1.64%	1,200.1	12.27%	1,035.6	10.59%	1,016.9	10.40%
US Small Cap	0.2	0.0%	266.4	2.72%	266.6	2.73%	179.2	1.83%	176.0	1.80%
Fixed	3,413.8	34.91%	-526.9	-5.39%	2,886.9	29.52%	2,937.4	30.04%	2,884.6	29.50%
EM High Yield CDX	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.00%
Global ex US Fixed Income	2,358.1	24.12%	-890.0	-9.1%	1,468.1	15.01%	1,493.6	15.27%	1,466.7	15.00%
High Yield **	1,055.7	10.8%	0.0	0.0%	1,055.7	10.8%	921.1	9.42%	904.5	9.25%
US Fixed Income	0.0	0.0%	363.1	3.71%	363.1	3.71%	522.8	5.35%	513.4	5.25%
Other	3,833.7	39.21%	0.0	0.0%	3,833.7	39.21%	3,833.7	39.21%	3,940.6	40.30%
Alternatives	103.6	1.06%	0.0	0.0%	103.6	1.06%	103.6	1.06%	127.1	1.30%
Commodities	195.9	2.0%	0.0	0.0%	195.9	2.0%	195.9	2.0%	205.3	2.10%
Infrastructure	183.4	1.88%	0.0	0.0%	183.4	1.88%	183.4	1.88%	185.8	1.90%
Private Equity	1,229.4	12.57%	0.0	0.0%	1,229.4	12.57%	1,229.4	12.57%	1,476.5	15.10%
Real Estate	566.6	5.79%	0.0	0.0%	566.6	5.79%	566.6	5.79%	391.1	4.00%
Tactical Cash	1,554.7	15.9%	0.0	0.0%	1,554.7	15.9%	1,554.7	15.9%	1,554.7	15.90%



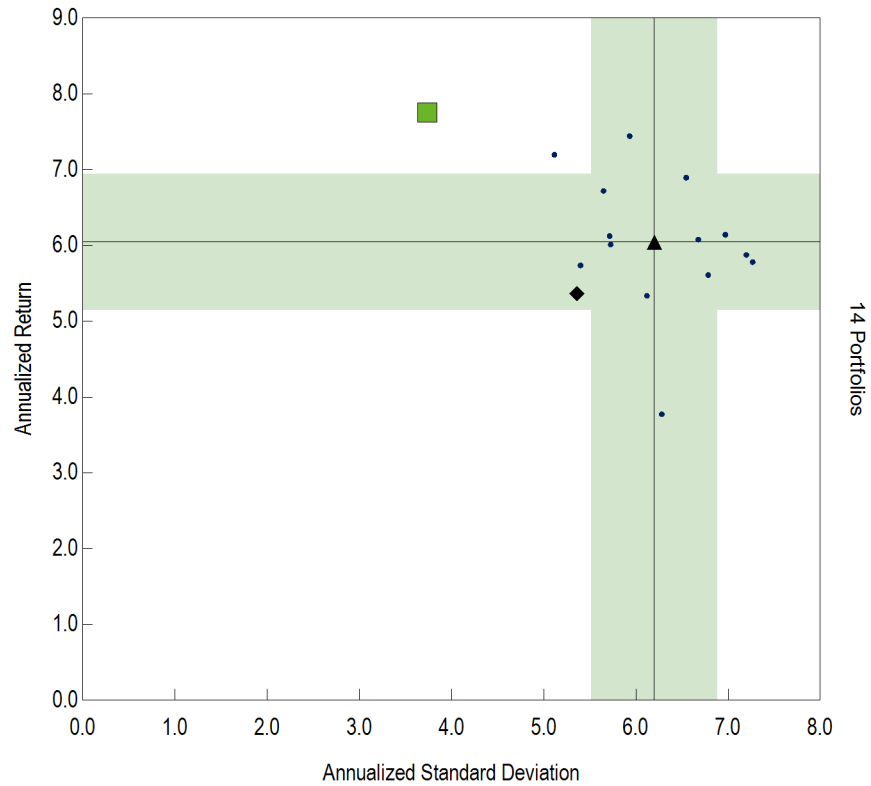
San Bernardino County Employees' Retirement Association

TOTAL FUND RISK/RETURN

1 Year Ending December 31, 2018



3 Years Ending December 31, 2018



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

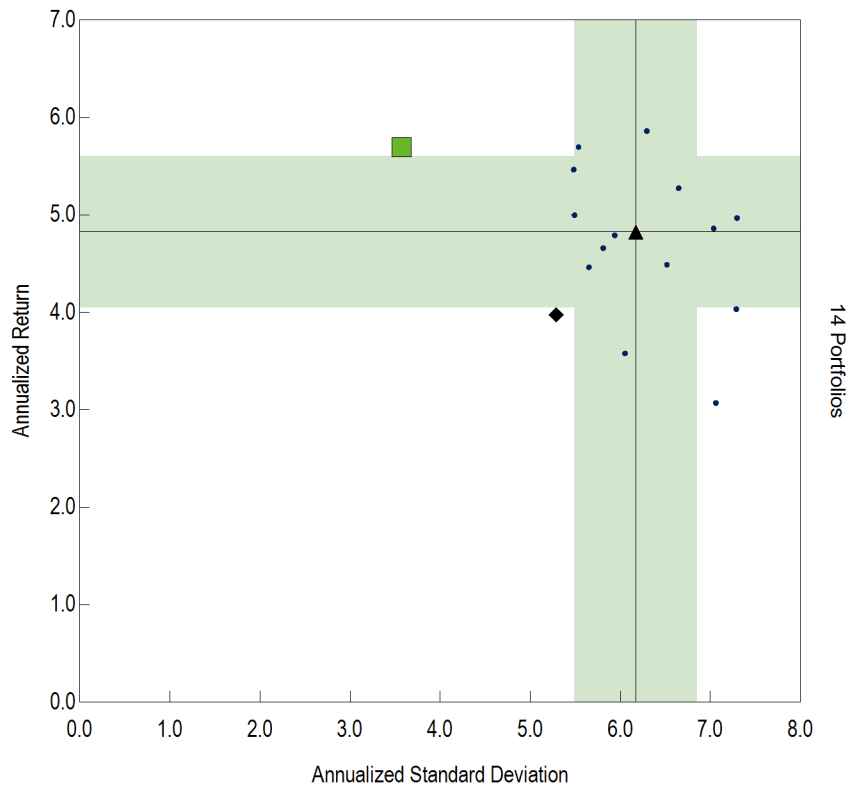
- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Gross



San Bernardino County Employees' Retirement Association

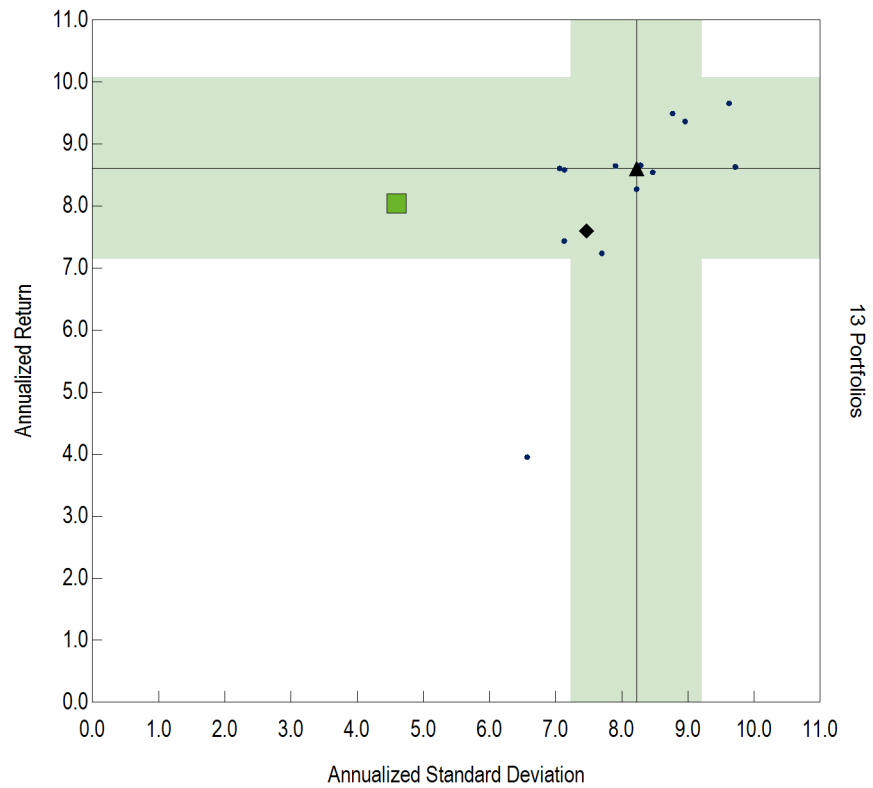
TOTAL FUND RISK/RETURN

5 Years Ending December 31, 2018



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

10 Years Ending December 31, 2018



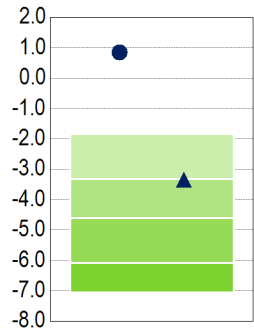
- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB > \$1B Gross



TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

**Total Fund vs. InvestorForce Public DB > \$1B Gross (USD)
1 Year**

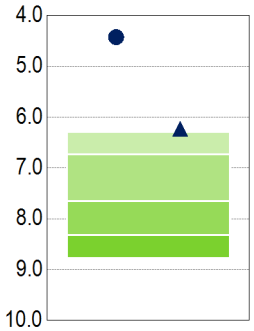
Anlzd Return



● Total Fund	
Value	0.8
Rank	1
▲ Policy Index	
Value	-3.3
Rank	27

Universe	
5th %tile	-1.8
25th %tile	-3.3
Median	-4.6
75th %tile	-6.1
95th %tile	-7.0

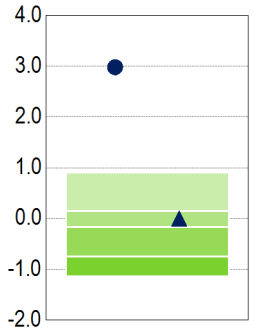
Anlzd Standard Deviation



● Total Fund	
Value	4.4
Rank	1
▲ Policy Index	
Value	6.2
Rank	4

Universe	
5th %tile	6.3
25th %tile	6.7
Median	7.6
75th %tile	8.3
95th %tile	8.8

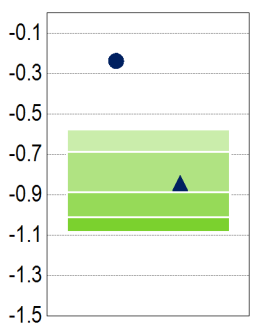
Anlzd Alpha



● Total Fund	
Value	3.0
Rank	1
▲ Policy Index	
Value	0.0
Rank	32

Universe	
5th %tile	0.9
25th %tile	0.2
Median	-0.2
75th %tile	-0.7
95th %tile	-1.1

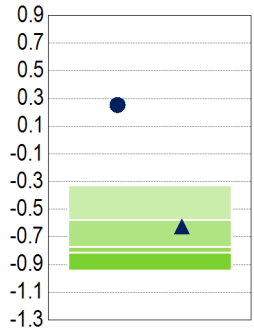
Sharpe Ratio



● Total Fund	
Value	-0.2
Rank	1
▲ Policy Index	
Value	-0.8
Rank	48

Universe	
5th %tile	-0.6
25th %tile	-0.7
Median	-0.9
75th %tile	-1.0
95th %tile	-1.1

Sortino Ratio



● Total Fund	
Value	0.3
Rank	1
▲ Policy Index	
Value	-0.6
Rank	40

Universe	
5th %tile	-0.3
25th %tile	-0.6
Median	-0.8
75th %tile	-0.8
95th %tile	-0.9

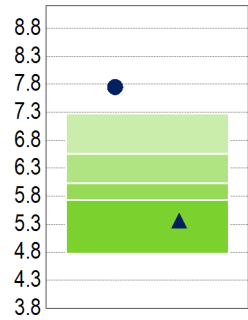
Sortino Ratio requires at least two negative points during the time period in order to calculate.
Sample size is 14 Portfolios



TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

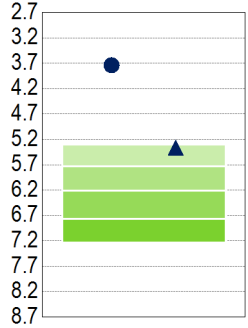
Total Fund vs. InvestorForce Public DB > \$1B Gross (USD)
3 Years

Anlzd Return



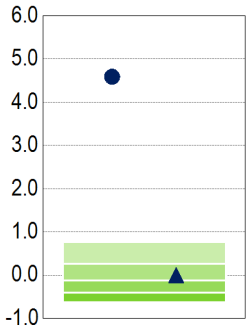
● Total Fund	
Value	7.7
Rank	1
▲ Policy Index	
Value	5.4
Rank	92
Universe	
5th %tile	7.3
25th %tile	6.6
Median	6.0
75th %tile	5.7
95th %tile	4.8

Anlzd Standard Deviation



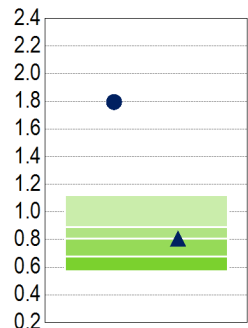
● Total Fund	
Value	3.7
Rank	1
▲ Policy Index	
Value	5.4
Rank	7
Universe	
5th %tile	5.3
25th %tile	5.7
Median	6.2
75th %tile	6.8
95th %tile	7.2

Anlzd Alpha



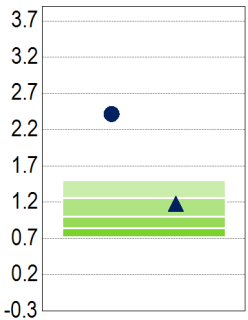
● Total Fund	
Value	4.6
Rank	1
▲ Policy Index	
Value	0.0
Rank	43
Universe	
5th %tile	0.8
25th %tile	0.3
Median	-0.1
75th %tile	-0.4
95th %tile	-0.6

Sharpe Ratio



● Total Fund	
Value	1.8
Rank	1
▲ Policy Index	
Value	0.8
Rank	51
Universe	
5th %tile	1.1
25th %tile	0.9
Median	0.8
75th %tile	0.7
95th %tile	0.6

Sortino Ratio



● Total Fund	
Value	2.4
Rank	1
▲ Policy Index	
Value	1.2
Rank	30
Universe	
5th %tile	1.5
25th %tile	1.3
Median	1.0
75th %tile	0.9
95th %tile	0.7

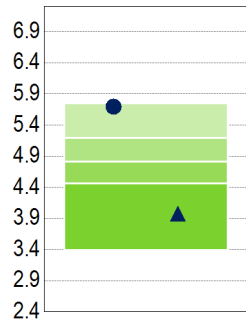
Sortino Ratio requires at least two negative points during the time period in order to calculate.
Sample size is 14 Portfolios



TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

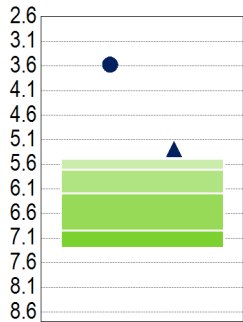
Total Fund vs. InvestorForce Public DB > \$1B Gross (USD) 5 Years

Anlzd Return



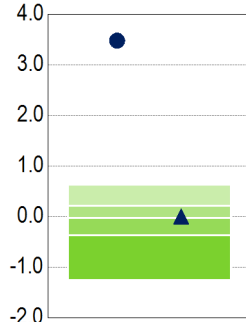
● Total Fund	
Value	5.7
Rank	8
▲ Policy Index	
Value	4.0
Rank	86
Universe	
5th %tile	5.8
25th %tile	5.2
Median	4.8
75th %tile	4.5
95th %tile	3.4

Anlzd Standard Deviation



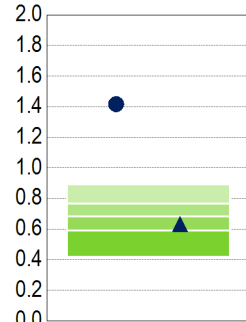
● Total Fund	
Value	3.6
Rank	1
▲ Policy Index	
Value	5.3
Rank	1
Universe	
5th %tile	5.5
25th %tile	5.7
Median	6.2
75th %tile	6.9
95th %tile	7.3

Anlzd Alpha



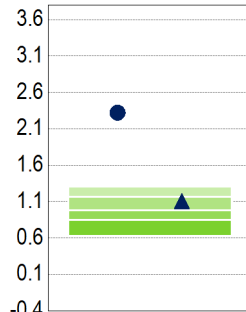
● Total Fund	
Value	3.5
Rank	1
▲ Policy Index	
Value	0.0
Rank	48
Universe	
5th %tile	0.6
25th %tile	0.2
Median	0.0
75th %tile	-0.4
95th %tile	-1.2

Sharpe Ratio



● Total Fund	
Value	1.4
Rank	1
▲ Policy Index	
Value	0.6
Rank	59
Universe	
5th %tile	0.9
25th %tile	0.8
Median	0.7
75th %tile	0.6
95th %tile	0.4

Sortino Ratio



● Total Fund	
Value	2.3
Rank	1
▲ Policy Index	
Value	1.1
Rank	31
Universe	
5th %tile	1.3
25th %tile	1.2
Median	1.0
75th %tile	0.9
95th %tile	0.6

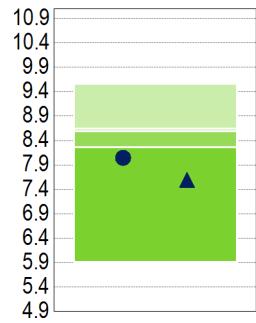
Sortino Ratio requires at least two negative points during the time period in order to calculate.
Sample size is 14 Portfolios



TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

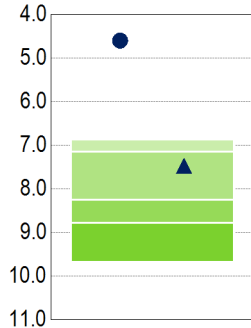
Total Fund vs. InvestorForce Public DB > \$1B Gross (USD)
10 Years

Anlzd Return



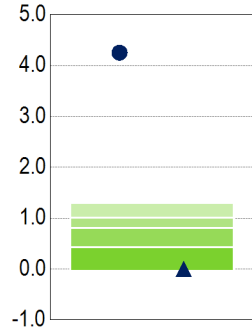
● Total Fund	
Value	8.0
Rank	78
▲ Policy Index	
Value	7.6
Rank	82
Universe	
5th %tile	9.6
25th %tile	8.7
Median	8.6
75th %tile	8.3
95th %tile	5.9

Anlzd Standard Deviation



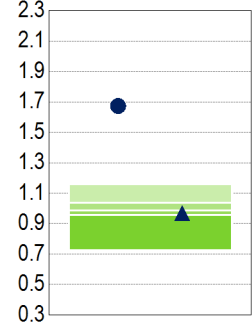
● Total Fund	
Value	4.6
Rank	1
▲ Policy Index	
Value	7.5
Rank	30
Universe	
5th %tile	6.9
25th %tile	7.1
Median	8.2
75th %tile	8.8
95th %tile	9.7

Anlzd Alpha



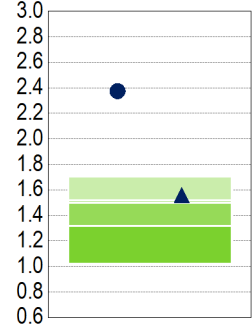
● Total Fund	
Value	4.3
Rank	1
▲ Policy Index	
Value	0.0
Rank	95
Universe	
5th %tile	1.3
25th %tile	1.0
Median	0.8
75th %tile	0.4
95th %tile	0.0

Sharpe Ratio



● Total Fund	
Value	1.7
Rank	1
▲ Policy Index	
Value	1.0
Rank	58
Universe	
5th %tile	1.2
25th %tile	1.0
Median	1.0
75th %tile	1.0
95th %tile	0.7

Sortino Ratio



● Total Fund	
Value	2.4
Rank	1
▲ Policy Index	
Value	1.6
Rank	22
Universe	
5th %tile	1.7
25th %tile	1.5
Median	1.5
75th %tile	1.3
95th %tile	1.0

Sortino Ratio requires at least two negative points during the time period in order to calculate.
Sample size is 14 Portfolios



San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS

1 Years Ending December 31, 2018								
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank
Domestic Equity	10.2%	-7.9%	--	11.8%	--	4.9%	-0.6	--
Russell 3000	--	-5.2%	--	15.5%	--	0.0%	--	--
International Developed	0.5%	-6.7%	1	6.1%	1	9.3%	0.8	15
MSCI EAFE	--	-13.8%	27	12.4%	64	0.0%	--	--
International Emerging	4.2%	-12.0%	--	13.7%	--	3.3%	0.8	--
MSCI Emerging Markets	--	-14.6%	--	15.5%	--	0.0%	--	--
U.S. Credit Strategies	14.0%	4.8%	1	3.5%	71	2.4%	2.2	1
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	-0.4%	11	3.0%	50	0.0%	--	--
Non-U.S. Credit Composite	14.8%	4.5%	--	3.2%	--	9.4%	1.4	--
ICE BofAML Euro High Yield Constrained TR	--	-8.3%	--	8.5%	--	0.0%	--	--
Emerging Markets Debt Composite	8.9%	-4.6%	44	3.5%	16	7.9%	0.1	48
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	-5.2%	52	7.8%	65	0.0%	--	--
Alpha Pool Composite	15.5%	2.8%	1	2.4%	1	2.4%	-0.9	--
91 Day T-Bill + 3%	--	4.9%	1	0.1%	1	0.0%	--	--

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.1%	16.1%	--	3.7%	--
Cambridge Associates Global All PE (Qtr Lag)	--	16.6%	--	6.9%	--
Real Estate Composite	4.2%	7.7%	27	2.3%	32
NCREIF Property Index 1 Qtr. Lag	--	7.2%	36	3.0%	53
Real Assets Composite	4.9%	-2.4%	50	7.0%	52
Real Assets Custom Blend	--	-3.8%	56	4.4%	25

Percent of Total equals 93.3% because Beta Overlay is not included as these statistics are not relevant for alternative asset classes.



San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS

3 Years Ending December 31, 2018								
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank
Domestic Equity	10.2%	0.2%	--	7.3%	--	8.2%	-1.1	--
Russell 3000	--	9.0%	--	11.3%	--	0.0%	--	--
International Developed	0.5%	9.9%	1	17.1%	99	15.2%	0.5	1
MSCI EAFE	--	2.9%	92	11.4%	69	0.0%	--	--
International Emerging	4.2%	6.2%	--	12.5%	--	3.6%	-0.8	--
MSCI Emerging Markets	--	9.2%	--	14.8%	--	0.0%	--	--
U.S. Credit Strategies	14.0%	7.4%	1	3.5%	40	3.7%	0.4	1
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	5.7%	1	3.3%	28	0.0%	--	--
Non-U.S. Credit Composite	14.8%	8.9%	--	3.6%	--	10.3%	0.3	--
ICE BofAML Euro High Yield Constrained TR	--	5.7%	--	9.3%	--	0.0%	--	--
Emerging Markets Debt Composite	8.9%	6.3%	37	5.7%	36	6.7%	0.1	46
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	5.6%	63	7.9%	65	0.0%	--	--
Alpha Pool Composite	15.5%	6.6%	1	3.5%	38	3.5%	0.7	12
91 Day T-Bill + 3%	--	4.1%	1	0.2%	1	0.0%	--	--

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.1%	14.6%	--	3.6%	--
Cambridge Associates Global All PE (Qtr Lag)	--	13.6%	--	5.9%	--
Real Estate Composite	4.2%	7.7%	45	2.9%	36
NCREIF Property Index 1 Qtr. Lag	--	7.8%	43	3.2%	42
Real Assets Composite	4.9%	1.9%	90	5.2%	1
Real Assets Custom Blend	--	2.0%	89	4.9%	1

Percent of Total equals 93.3% because Beta Overlay is not included as these statistics are not relevant for alternative asset classes.



San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS

5 Years Ending December 31, 2018								
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank
Domestic Equity	10.2%	-1.2%	--	6.5%	--	11.5%	-0.8	--
Russell 3000	--	7.9%	--	11.2%	--	0.0%	--	--
International Developed	0.5%	0.7%	24	18.5%	99	14.7%	0.0	22
MSCI EAFE	--	0.5%	25	11.8%	63	0.0%	--	--
International Emerging	4.2%	0.6%	--	12.5%	--	4.5%	-0.2	--
MSCI Emerging Markets	--	1.6%	--	15.2%	--	0.0%	--	--
U.S. Credit Strategies	14.0%	5.6%	1	3.1%	24	3.5%	0.6	1
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	3.6%	43	3.4%	34	0.0%	--	--
Non-U.S. Credit Composite	14.8%	6.4%	--	3.3%	--	9.6%	0.7	--
ICE BofAML Euro High Yield Constrained TR	--	-0.2%	--	9.5%	--	0.0%	--	--
Emerging Markets Debt Composite	8.9%	3.5%	50	5.6%	31	5.7%	0.3	55
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	2.0%	64	7.8%	63	0.0%	--	--
Alpha Pool Composite	15.5%	3.9%	1	3.2%	9	3.2%	0.1	46
91 Day T-Bill + 3%	--	3.7%	1	0.2%	1	0.0%	--	--

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.1%	13.6%	--	4.0%	--
Cambridge Associates Global All PE (Qtr Lag)	--	12.8%	--	6.4%	--
Real Estate Composite	4.2%	9.3%	87	3.3%	36
NCREIF Property Index 1 Qtr. Lag	--	9.6%	84	4.0%	51
Real Assets Composite	4.9%	1.0%	52	5.6%	4
Real Assets Custom Blend	--	-1.4%	61	6.1%	13

Percent of Total equals 93.3% because Beta Overlay is not included as these statistics are not relevant for alternative asset classes.



PUBLIC EQUITY PORTFOLIO

Public Equity Portfolio (28% Target)	US Equities (13% Target)	Large Cap (8%)	Russell Investments (Russell1000 Index) StateStreet Global Advisors S&P500 Buy/Write Call Option Strategy TOBAM Anti-Benchmark US Equity Fund
		Small Cap (2%)	Russell Investments (Russell2000 Index)
		Volatility (3%)	Russell Investments (Russell1000 Index)
	International Equities (15% Target)	Developed Markets (6%)	Russell Investments (MSCI EAFE Index) TOBAM Anti-Benchmark World ex-US Fund
		Volatility (3%)	Mondrian Emerging Markets Equity Fund LP Russell Investments (MSCI EM Index) TOBAM Anti-Benchmark EM Equity Fund
		Volatility (3%)	Russell Investments (MSCI EAFE Index)



San Bernardino County Employees' Retirement Association

GLOBAL EQUITY STRATEGIES - GROSS

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Total Equity	1,470,082,546	14.8	-10.7	1	-8.4	32	-8.7	73	4.0	99	0.3	99	6.3	99
MSCI ACWI			-12.8	26	-9.0	70	-9.4	84	6.6	93	4.3	85	9.5	91
Excess Return			2.1		0.6		0.7		-2.6		-4.0		-3.2	
InvestorForce Public DB Total Eq Gross Median			-13.1		-8.6		-7.6		7.5		5.7		11.3	
Domestic Equity With Beta Overlay*	1,438,944,744	14.5	-13.3	13	-9.6	71	-5.8	45	3.8	99	--	--	--	--
Russell 3000			-14.3	46	-8.2	27	-5.2	34	9.0	26	7.9	27	13.2	32
Excess Return			1.0		-1.4		-0.6		-5.2					
InvestorForce Public DB US Eq Gross Median			-14.4		-8.8		-6.0		8.7		7.3		12.9	
Domestic Equity	1,010,476,115	10.2	-12.3	--	-8.7	--	-7.9	--	0.2	--	-1.2	--	3.9	--
Russell 3000			-14.3	--	-8.2	--	-5.2	--	9.0	--	7.9	--	13.2	--
Excess Return			2.0		-0.5		-2.7		-8.8		-9.1		-9.3	
Tobam AB US Equity	261,268,500	2.6	-15.6	48	-14.3	71	--	--	--	--	--	--	--	--
Russell 3000			-14.3	36	-8.2	33	-5.2	40	9.0	37	7.9	34	13.2	56
Excess Return			-1.3		-6.1									
eV All US Equity Gross Median			-15.8		-10.6		-6.9		8.1		6.7		13.4	
Large Cap Equity	748,966,095	7.6	-11.1	11	-6.5	18	-5.5	41	2.5	97	0.2	99	4.9	99
S&P 500			-13.5	26	-6.9	22	-4.4	33	9.3	32	8.5	23	13.1	59
Excess Return			2.4		0.4		-1.1		-6.8		-8.3		-8.2	
eV All US Equity Gross Median			-15.8		-10.6		-6.9		8.1		6.7		13.4	
SsgA S&P500	745,886,318	7.5	-11.2	11	-6.5	18	-5.4	41	4.0	92	4.2	82	7.4	99
S&P 500			-13.5	26	-6.9	22	-4.4	33	9.3	32	8.5	23	13.1	59
Excess Return			2.3		0.4		-1.0		-5.3		-4.3		-5.7	
eV All US Equity Gross Median			-15.8		-10.6		-6.9		8.1		6.7		13.4	
Russell US Large Cap Volatility	3,079,777	0.0												
Small Cap Equity	241,520	0.0												
Russell US Small Cap Volatility	241,520	0.0												

*Based on data provided by Russell Investment



San Bernardino County Employees' Retirement Association

GLOBAL EQUITY STRATEGIES - GROSS

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
International Equity With Beta Overlay*	1,702,233,302	17.2	-10.5	34	-10.0	88	-12.7	91	5.4	81	--	--	--	--
MSCI ACWI ex USA Gross			<u>-11.4</u>	37	<u>-10.7</u>	90	<u>-13.8</u>	91	<u>5.0</u>	84	<u>1.1</u>	96	<u>7.1</u>	1
Excess Return			0.9		0.7		1.1		0.4					
InvestorForce Public DB Gbl Eq Gross Median			-11.5		-7.6		-7.1		7.5		6.2		6.5	
International Equity	459,606,431	4.6	-6.7	--	-7.3	--	-10.7	--	9.4	--	1.5	--	8.0	--
MSCI ACWI			<u>-12.8</u>	--	<u>-9.0</u>	--	<u>-9.4</u>	--	<u>6.6</u>	--	<u>4.3</u>	--	<u>9.5</u>	--
Excess Return			6.1		1.7		-1.3		2.8		-2.8		-1.5	
International Developed	48,593,122	0.5	-6.9	1	-6.6	1	-6.7	1	9.9	1	0.7	24	10.1	1
MSCI EAFE			<u>-12.5</u>	85	<u>-11.4</u>	75	<u>-13.8</u>	27	<u>2.9</u>	92	<u>0.5</u>	25	<u>6.3</u>	56
Excess Return			5.6		4.8		7.1		7.0		0.2		3.8	
InvestorForce Public DB Dev Mkt ex-US Eq Gross Median			-11.9		-11.0		-14.3		3.4		0.1		6.5	
Russell International Volatility	4,395,822	0.0												
Tobam AB World Ex-US Equity	44,197,300	0.4	-9.5	7	-9.5	10	--	--	--	--	--	--	--	--
MSCI ACWI ex USA			<u>-11.5</u>	21	<u>-10.8</u>	24	<u>-14.2</u>	42	<u>4.5</u>	50	<u>0.7</u>	80	<u>6.6</u>	87
Excess Return			2.0		1.3									
eV All ACWI ex-US Equity Gross Median			-13.3		-12.9		-15.1		4.4		1.9		9.0	
International Emerging	411,013,309	4.2	-6.9	--	-7.8	--	-12.0	--	6.2	--	0.6	--	7.2	--
MSCI Emerging Markets			<u>-7.5</u>	--	<u>-8.5</u>	--	<u>-14.6</u>	--	<u>9.2</u>	--	<u>1.6</u>	--	<u>8.0</u>	--
Excess Return			0.6		0.7		2.6		-3.0		-1.0		-0.8	
Mondrian	130,392,550	1.3	-5.1	15	-4.5	10	-13.2	23	6.1	86	0.2	94	7.7	91
MSCI Emerging Markets			<u>-7.5</u>	52	<u>-8.5</u>	38	<u>-14.6</u>	39	<u>9.2</u>	44	<u>1.6</u>	70	<u>8.0</u>	85
Excess Return			2.4		4.0		1.4		-3.1		-1.4		-0.3	
eV Emg Mkts Equity Gross Median			-7.4		-9.8		-15.6		8.9		2.4		9.6	
Gramercy Emerging Market Equity	400,250	0.0	0.0	1	0.0	1	2.9	1	13.5	6	6.6	1	--	--
MSCI Emerging Markets			<u>-7.5</u>	52	<u>-8.5</u>	38	<u>-14.6</u>	39	<u>9.2</u>	44	<u>1.6</u>	70	<u>8.0</u>	85
Excess Return			7.5		8.5		17.5		4.3		5.0			
eV Emg Mkts Equity Gross Median			-7.4		-9.8		-15.6		8.9		2.4		9.6	
Tobam	280,121,342	2.8	-7.8	58	-9.3	46	-12.1	17	--	--	--	--	--	--
MSCI Emerging Markets			<u>-7.5</u>	52	<u>-8.5</u>	38	<u>-14.6</u>	39	<u>9.2</u>	44	<u>1.6</u>	70	<u>8.0</u>	85
Excess Return			-0.3		-0.8		2.5							
eV Emg Mkts Equity Gross Median			-7.4		-9.8		-15.6		8.9		2.4		9.6	

*Based on data provided by Russell Investment



GLOBAL DEBT STRATEGIES

Global Debt Strategies (35% Target)	US Fixed Income (15% Target)	Core Fixed Income (2%)	Russell Investments (Bloomberg Barclays US Agg. Bond TR Index)
		Credit Strategies/ High Yield Strategies (13%)	Apollo Credit Strategies Fund LP (MCA) Beach Point Select Fund LP GoldenTree Credit Opportunities - Gold Coast X GoldenTree Distressed Debt Fund 2010 GoldenTree Asset Management SMA - Gold Coast X Halcyon Direct Portfolio (MCA) Halcyon Solutions Fund LP (MCA) MacKay Shields High Yield Bond Strategy - Gold Coast III Manulife Asset Management - Gold Coast IV Tricadia Credit Strategies LTD Waterfall - Sutherland REIT Holdings LP (MCA) Waterfall Asset Management SMA (MCA) Waterfall Victoria Fund LP (MCA)
	Global Fixed Income (20% Target)	International Core (1%)	Russell Investments (Barclays Global Aggregate ex US Unhedged)
		International Credit (11%)	Alcentra Clareant European Direct Lending Fund - Kneiff Tower Alcentra Clareant Strategic Credit Fund - Kneiff Tower Alcentra Limited SMA - Kneiff Tower Alcentra Mezzanine III/Alcentra Capital Corp. - Kneiff Tower Alcentra Structured Credit Opportunity Fund III - Kneiff Tower Cairn Capital Limited SMA - Kneiff Tower Cairn European CLO Strategy - Kneiff Tower Cairn Loan Investments - Kneiff Tower Cairn Special Opportunities Credit Fund - Kneiff Tower Cairn Strata Credit Fund - Kneiff Tower Cairn Subordinated Financials Fund II - Kneiff Tower Halcyon European Credit Opportunities Fund Ltd. (MCA) Marathon Asset Management SMA - Gold Coast I Marathon CLO Equity Fund - Gold Coast I Marathon Distressed Debt Fund - Gold Coast I Marathon European Credit Opportunity Fund II - Gold Coast I Marathon European Credit Opportunity Fund III - Gold Coast I Marathon Structured Product Strategies Fund - Gold Coast I York Global Credit Income Fund
		Emerging Market Debt (8%)	Ashmore Emerging Markets MCA Gramercy Distressed Argentina Fund III Private (MCA) Gramercy Distressed Opportunity Fund II (MCA) Gramercy Distressed Opportunity Fund III (MCA) Gramercy Emerging Markets Debt Allocation Fund (MCA) Gramercy Separate Account (MCA) Gramercy Venezuela Opportunity Fund (MCA) Marathon Global Emerging Markets Fund - Gold Coast I PGIM Emerging Market Debt Opportunities Fund



San Bernardino County Employees' Retirement Association

GLOBAL DEBT STRATEGIES - GROSS

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Global Fixed Income With Beta Overlay*	3,204,741,210	32.4	-1.8	--	-1.3	--	1.6	--	1.0	--	--	--	--	--
Total Fixed	3,731,681,785	37.7	-2.0	98	-1.0	98	2.2	1	7.7	1	5.4	1	10.4	1
<i>InvestorForce Public DB Total Fix Inc Gross Median</i>			1.3		1.6		0.7		2.1		2.5		4.6	
U.S. Credit Strategies	1,387,770,433	14.0	-2.0	80	-0.3	57	4.8	1	7.4	1	5.6	1	12.2	1
<i>50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index</i>			-3.5	99	-1.4	85	-0.4	11	5.7	1	3.6	43	9.2	1
<i>Excess Return</i>			1.5		1.1		5.2		1.7		2.0		3.0	
<i>ICE BofAML US High Yield TR</i>			-4.6	99	-2.3	89	-2.2	45	7.3	1	3.8	38	11.0	1
<i>eV Global Credit Fixed Income Gross Median</i>			-0.9		-0.2		-2.6		3.7		2.8		5.5	
Golden Tree Asset Management	396,279,296	4.0	-2.6	93	-1.3	84	6.2	1	10.1	1	9.3	1	--	--
Beach Point Capital (Formerly Post)	154,771,929	1.6	-1.4	66	0.6	26	4.2	1	8.3	1	7.1	1	--	--
Golden Tree Distressed Debt	22,636,336	0.2	0.4	4	-3.9	99	-3.1	61	2.1	98	11.1	1	--	--
Mackay / Gold Coast	104,411,478	1.1	-2.2	83	-0.6	70	-2.2	45	5.4	1	3.5	44	10.0	1
Mariner Tricadia	1,771,075	0.0	-1.2	58	-1.7	87	-1.0	22	1.9	98	2.1	68	7.4	1
MD SASS Waterfall Victoria	27,328,270	0.3	-2.2	--	0.6	--	6.4	--	7.6	--	--	--	--	--
Russell Interest Rate Hedging	22,646,603	0.2	-8.6	99	-3.7	98	27.9	1	-12.5	99	-24.4	99	--	--
Stone Tower Credit (Apollo)	91,344,203	0.9	1.1	17	3.7	1	6.8	1	8.5	1	5.4	3	--	--
Gold Coast Capital IV	99,563,450	1.0	-0.3	--	0.7	--	2.8	--	4.5	--	--	--	--	--
Waterfall Asset Management	55,452,655	0.6	-8.7	--	-5.1	--	5.0	--	18.1	--	--	--	--	--
Waterfall Victoria	49,107,645	0.5	1.6	--	3.0	--	10.9	--	9.6	--	--	--	--	--
Stone Tower Offshore Credit (Apollo)	362,389,691	3.7	-0.8	--	0.7	--	2.5	--	6.0	--	5.1	--	--	--

*Based on data provided by Russell Investment



San Bernardino County Employees' Retirement Association

GLOBAL DEBT STRATEGIES - GROSS

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Non-U.S. Fixed Income Composite	2,343,911,352	23.7	-1.9	97	-1.2	99	1.1	22	7.9	1	5.4	1	7.9	3
<i>BBgBarc Global Aggregate TR</i>			<u>1.2</u>	59	<u>0.3</u>	84	<u>-1.2</u>	90	<u>2.7</u>	41	<u>1.1</u>	99	<u>2.5</u>	95
Excess Return			-3.1		-1.5		2.3		5.2		4.3		5.4	
<i>InvestorForce Public DB Total Fix Inc Gross Median</i>			1.3		1.6		0.7		2.1		2.5		4.6	
Non-U.S. Credit Composite	1,464,352,445	14.8	-2.0	--	0.0	--	4.5	--	8.9	--	6.4	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-5.1</u>	--	<u>-4.0</u>	--	<u>-8.3</u>	--	<u>5.7</u>	--	<u>-0.2</u>	--	<u>10.5</u>	--
Excess Return			3.1		4.0		12.8		3.2		6.6			
Marathon/Gold Coast	233,515,526	2.4	1.7	1	4.4	1	10.9	1	9.1	1	8.0	1	--	--
Alcentra Core European Credit	510,635,140	5.2	-0.1	15	2.5	1	8.8	1	11.6	1	11.2	1	--	--
Halcyon Asset Management	186,904,270	1.9	-4.5	99	-1.2	83	8.7	1	10.4	1	--	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-5.1</u>	99	<u>-4.0</u>	99	<u>-8.3</u>	92	<u>5.7</u>	1	<u>-0.2</u>	92	<u>10.5</u>	1
Excess Return			0.6		2.8		17.0		4.7					
<i>eV Global Credit Fixed Income Gross Median</i>			-0.9		-0.2		-2.6		3.7		2.8		5.5	
York Global Credit	118,741,410	1.2	-0.8	48	1.1	2	3.6	1	8.5	1	6.5	1	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-5.1</u>	99	<u>-4.0</u>	99	<u>-8.3</u>	92	<u>5.7</u>	1	<u>-0.2</u>	92	<u>10.5</u>	1
Excess Return			4.3		5.1		11.9		2.8		6.7			
<i>eV Global Credit Fixed Income Gross Median</i>			-0.9		-0.2		-2.6		3.7		2.8		5.5	
Cairn Composite	414,556,099	4.2	-5.3	99	-4.7	99	-4.2	79	7.3	1	3.8	39	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-5.1</u>	99	<u>-4.0</u>	99	<u>-8.3</u>	92	<u>5.7</u>	1	<u>-0.2</u>	92	<u>10.5</u>	1
Excess Return			-0.2		-0.7		4.1		1.6		4.0			
<i>eV Global Credit Fixed Income Gross Median</i>			-0.9		-0.2		-2.6		3.7		2.8		5.5	



San Bernardino County Employees' Retirement Association

GLOBAL DEBT STRATEGIES - GROSS

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Emerging Markets Debt Composite	879,558,907	8.9	-1.6	81	-3.2	99	-4.6	44	6.3	37	3.5	50	6.2	61
<i>50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified</i>			<u>0.4</u>	30	<u>0.7</u>	38	<u>-5.2</u>	52	<u>5.6</u>	63	<u>2.0</u>	64	<u>5.9</u>	62
Excess Return			-2.0		-3.9		0.6		0.7		1.5		0.3	
<i>eV All Emg Mkts Fixed Inc Gross Median</i>			-0.5		0.4		-5.1		5.9		3.4		8.0	
Ashmore Emerging Markets Liquid Investments	139,416,859	1.4	0.4	30	0.7	38	-5.2	52	5.6	63	2.0	64	5.9	62
<i>JP Morgan GBI - EM Global Diversified Index</i>			<u>2.1</u>	9	<u>0.2</u>	54	<u>-6.2</u>	68	<u>5.9</u>	52	<u>-1.0</u>	90	<u>3.5</u>	92
Excess Return			-1.7		0.5		1.0		-0.3		3.0		2.4	
<i>eV All Emg Mkts Fixed Inc Gross Median</i>			-0.5		0.4		-5.1		5.9		3.4		8.0	
Ashmore Local Currency	114,873,204	1.2	1.7	8	1.6	5	-4.6	85	8.1	1	-0.1	90	--	--
<i>JPM ELMi+ TR USD</i>			<u>1.2</u>	16	<u>0.1</u>	40	<u>-3.3</u>	70	<u>3.7</u>	44	<u>-0.8</u>	94	<u>1.2</u>	99
Excess Return			0.5		1.5		-1.3		4.4		0.7			
<i>JP Morgan EMBI Global Index</i>			-1.2	57	0.7	23	-4.6	85	4.7	28	4.2	15	7.8	21
<i>eV All Global Fixed Inc Gross Median</i>			-0.7		-0.4		-1.7		3.5		2.4		4.7	
Gramercy Funds Management LLC	534,066,924	5.4	-3.1	97	-4.8	99	-4.3	38	5.4	68	5.5	5	--	--
<i>JPM ELMi+ TR USD</i>			<u>1.2</u>	22	<u>0.1</u>	60	<u>-3.3</u>	27	<u>3.7</u>	96	<u>-0.8</u>	87	<u>1.2</u>	99
Excess Return			-4.3		-4.9		-1.0		1.7		6.3			
<i>JP Morgan EMBI Global Index</i>			-1.2	75	0.7	39	-4.6	44	4.7	86	4.2	38	7.8	53
<i>eV All Emg Mkts Fixed Inc Gross Median</i>			-0.5		0.4		-5.1		5.9		3.4		8.0	
PGIM Fixed Income	91,201,920	0.9	2.0	9	-5.0	99	-8.1	88	6.8	27	--	--	--	--
<i>JPM ELMi+ TR USD</i>			<u>1.2</u>	22	<u>0.1</u>	60	<u>-3.3</u>	27	<u>3.7</u>	96	<u>-0.8</u>	87	<u>1.2</u>	99
Excess Return			0.8		-5.1		-4.8		3.1					
<i>JP Morgan EMBI Global Index</i>			-1.2	75	0.7	39	-4.6	44	4.7	86	4.2	38	7.8	53
<i>eV All Emg Mkts Fixed Inc Gross Median</i>			-0.5		0.4		-5.1		5.9		3.4		8.0	



ABSOLUTE RETURN (ALPHA POOL)

<p style="text-align: center;">Absolute Return (Alpha Pool) (7% Target)</p>	<p>Core & Credit Strategies (7%)</p> <ul style="list-style-type: none">Apollo Accord Fund (MCA)Apollo Global SMA (MCA)Apollo MicCap Financial Holdings Trust (MCA)Apollo Offshore Credit Fund LTD (MCA)Apollo Structured Credit Recovery Fund III (MCA)Ares Enhanced Credit Opportunites Master Fund II, LTD (MCA)Birch Grove Credit Strategies FundCorrum Capital Global Credit Opportunities FundCorrum Capital GCO Co-Invest FundStateStreet Global Advisors Short Term Treasury Strategy SMAZais Group SMAZais Opportunity Fund, LTDZais Zephyr A-6, LP
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San Bernardino County Employees' Retirement Association

ALPHA POOL STRATEGIES - GROSS

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Alpha Pool Composite	1,531,615,659	15.5	-1.6	6	-0.4	5	2.8	1	6.6	1	3.9	1	9.0	1
91 Day T-Bill + 3%			1.3	1	2.5	1	4.9	1	4.1	1	3.7	1	3.4	99
Excess Return			-2.9		-2.9		-2.1		2.5		0.2		5.6	
Alpha Liquidity (Ssga)	160,616,939	1.6	0.6	26	1.1	13	2.0	5	1.2	95	0.8	82	0.7	99
Apollo Global Management	48,778,094	0.5	-2.0	67	1.8	4	10.8	1	18.3	1	--	--	--	--
Ares Eco Master Fund II	419,991,681	4.2	-6.0	98	-5.6	99	-3.8	77	--	--	--	--	--	--
Birch Grove Credit Strategies	129,685,552	1.3	0.8	22	2.7	1	6.7	1	5.4	20	5.4	3	--	--
Sterling Stamos	262,071,921	2.6	1.4	12	3.3	1	9.8	1	8.4	1	6.0	1	5.2	44
Zais	134,597,202	1.4	0.0	38	0.2	39	2.4	4	7.0	5	5.2	4	25.1	1
Zais Group Invest Advisors	277,532,251	2.8	-2.9	79	-1.9	78	2.4	4	14.4	1	7.6	1	--	--
Zais Zephyr A 6 LP	70,323,703	0.7	2.3	--	4.7	--	10.7	--	--	--	--	--	--	--
Apollo Accord	2,644,629	0.0	2.9	1	3.5	1	8.4	1	--	--	--	--	--	--



PRIVATE ASSETS

Private Assets (16% Target)	Private Equity	Diversified	Partners Group SMA (MCA) Pathway Capital SMA (MCA) Pathway PE Fund VII LLC SL Capital European Strategic Partners 2004 SL Capital European Strategic Partners 2008
		Buyout Funds	Aurora Equity Partners IV Kayne Partners Fund IV LP (MCA) Partners Group Direct Equity 2016 (MCA) Partners Group Direct Investments 2012 LP (MCA) Partners Group European Buyout 2005 (A) LP (MCA) Waterfall Sentinel Fund (MCA)
		Venture Funds	Industry Ventures Direct LP (MCA) Industry Ventures Fund V LP (MCA) Industry Ventures Fund VI LP (MCA) Industry Ventures Partnership Holdings II LP (MCA) Industry Ventures Partnership Holdings III LP (MCA) Industry Ventures Partnership Holdings III-A LP (MCA) Industry Ventures Partnership Holdings IV LP (MCA) Industry Ventures Special Opportunities Fund II-A LP (MCA)
		Secondary Funds	Industry Ventures Secondary VII LP (MCA) Industry Ventures Secondary VIII LP (MCA) Lexington Capital Partners VI Lexington Capital Partners VII Lexington Middle Market Investors I Lexington Middle Market Investors II Newberger Berman Secondary Opportunities Fund II Partners Group Secondary 2004 LP (MCA) Partners Group Secondary 2006 LP (MCA) Partners Group Secondary 2008 LP (MCA) SL Capital Secondary Opportunities Fund I SL Capital Secondary Opportunities Fund II SL Capital Secondary Opportunities Fund III
		Sector Specific Funds	Kayne Anderson Energy Fund VII LP (MCA) Tennenbaum Energy Opportunities Fund LP (MCA)
		Direct Lending	Ares Private Credit Solutions Fund (MCA) Tennenbaum Lending Fund VIII LLC (MCA) Tennenbaum Waterman Fund LP (MCA)
	Private Debt	Mezzanine Funds	Crescent Mezzanine Partners V Partners Group European Mezzanine 2005 (MCA)
		Credit/Distressed/ Opportunistic/ Special Situations	Apollo Private Equity Fund VII Ares European Loan Funding LP (MCA) Ares ICOF II (MCA) Ares ICOF III (MCA) Ares SMA (MCA) Ares Special Situations Fund IV (MCA) Catalyst Fund LP II Crestline Portfolio Financing Fund Sigular Guff Distressed Opportunity Fund III LP Tennenbaum Opportunities Fund V LLC (MCA) Tennenbaum Opportunities Fund VI LLC (MCA) Tennenbaum Special Situations Fund IX LLC (MCA)



REAL ESTATE

Real Estate Portfolio (7% Target)	Core Real Estate (3.5%)	Core Real Estate	PRISA II 348 West Hospitality Invesco Real Estate Asia Fund
	Non-Core Real Estate (3.5%)	Enhanced Real Estate/ High Return	Apollo Real Estate Fund II LP (MCA) Bryanston Retail Opportunity Fortress Japan Opportunity Fund II Kayne Anderson Real Estate Partners V LP (MCA) Morgan Stanley RE Fund V International Oaktree RE Opportunities Fund V Starwood Global Opportunity Fund VII-A Starwood Opportunity Fund VII Walton Street Real Estate Fund V
		Real Estate Secondaries	Partners Group Real Estate Secondary 2013 A LP (MCA) Partners Group Real Estate Secondary 2017 A LP (MCA)
		Real Estate Debt	Kayne Anderson Real Estate Debt III (MCA) Marathon Real Estate Debt Fund Pramerica Real Estate Capital VI LP Square Mile Partners III Tri Continental Capital VII



REAL ASSETS

Real Asset Portfolio (5% Target)	Commodities (2% Target)	Energy Spectrum Partners VI LP
		Pinnacle Natural Resources LP
		Pinnacle Physicals & Financing LTD
		Starwood Energy Infrastructure Fund
	Infrastructure (1% Target)	Fortress Worldwide Transportation & Infrastructure LP
		Highstar Capital III
		Kayne Anderson MLP Strategy (MCA)
	Timber (2% Target)	Hancock Timberland VII & VIII LP
		Timbervest Crossover Partners II LP
Timbervest Partners II LP		



San Bernardino County Employees' Retirement Association

ALTERNATIVES - GROSS

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Private Equity Composite	1,594,531,277	16.1	4.2	--	9.6	--	16.1	--	14.6	--	13.6	--	10.4	--
Cambridge Associates Global All PE (Qtr Lag)			<u>3.4</u>	--	<u>8.1</u>	--	<u>16.6</u>	--	<u>13.6</u>	--	<u>12.8</u>	--	<u>11.1</u>	--
Excess Return			0.8		1.5		-0.5		1.0		0.8		-0.7	
Russell 3000			-14.3	--	-8.2	--	-5.2	--	9.0	--	7.9	--	13.2	--
Cambridge Associates US All PE (1 Qtr Lag)			4.1	--	10.1	--	18.9	--	14.8	--	13.6	--	12.1	--
Real Estate Composite	412,743,423	4.2	1.3	14	2.5	39	7.7	27	7.7	45	9.3	87	2.9	99
NCREIF Property Index 1 Qtr. Lag			<u>1.7</u>	4	<u>3.5</u>	21	<u>7.2</u>	36	<u>7.8</u>	43	<u>9.6</u>	84	<u>6.4</u>	82
Excess Return			-0.4		-1.0		0.5		-0.1		-0.3		-3.5	
InvestorForce Public DB Real Estate Pub+Priv Gross Median			0.1		2.3		6.3		7.7		10.2		14.1	
Real Assets Composite	487,953,342	4.9	-6.1	67	-4.9	65	-2.4	50	1.9	90	1.0	52	1.9	--
Real Assets Custom Blend			<u>-4.3</u>	61	<u>-5.0</u>	65	<u>-3.8</u>	56	<u>2.0</u>	89	<u>-1.4</u>	61	<u>0.3</u>	--
Excess Return			-1.8		0.1		1.4		-0.1		2.4		1.6	
NCREIF Timberland 1 Qtr. Lag			1.0	7	1.5	34	4.0	25	3.6	78	6.0	9	4.0	--
Timber	103,571,934	1.0	0.8	--	1.0	--	3.9	--	1.4	--	2.6	--	1.3	--
NCREIF Timberland 1 Qtr. Lag			<u>1.0</u>	--	<u>1.5</u>	--	<u>4.0</u>	--	<u>3.6</u>	--	<u>6.0</u>	--	<u>4.0</u>	--
Excess Return			-0.2		-0.5		-0.1		-2.2		-3.4		-2.7	
Infrastructure	179,651,664	1.8	-17.0	--	-14.4	--	-19.4	--	7.7	--	-0.7	--	3.3	--
Russell 3000			-14.3	--	-8.2	--	-5.2	--	9.0	--	7.9	--	13.2	--
Excess Return			-2.7		-6.2		-14.2		-1.3		-8.6		-9.9	
Commodities	204,729,744	2.1	1.0	--	1.1	--	9.9	--	3.4	--	2.2	--	4.2	--
Bloomberg Commodity Index			<u>-9.4</u>	--	<u>-11.2</u>	--	<u>-11.2</u>	--	<u>0.3</u>	--	<u>-8.8</u>	--	<u>-3.8</u>	--
Excess Return			10.4		12.3		21.1		3.1		11.0		8.0	



APPENDIX: PRIVATE EQUITY, REAL ESTATE AND REAL ASSETS PERFORMANCE

NEPC, LLC

REAL ESTATE PERFORMANCE ENDED SEPT. 30, 2018

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Cumulative Distributions	Valuation	TVPI Ratio	IRR
American Realty Advisors	1996	\$ 128,009,773	\$ 128,009,773	\$ 278,401,963	\$ 459,622	2.18	6.90%
American Realty Value Add	2006	\$ 13,125,215	\$ 13,125,215	\$ 32,080,321	\$ -	2.44	10.92%
Apollo US Real Estate Fund II	2015	\$ 20,000,000	\$ 8,463,110	\$ 2,813,583	\$ 10,152,059	1.53	18.38%
Beacon Capital Strategic Partners IV, L.P.	2006	\$ 39,000,000	\$ 38,000,000	\$ 31,402,655	\$ 14,450	0.83	-3.26%
Beacon Capital Strategic Partners V, L.P.	2007	\$ 20,000,000	\$ 18,000,000	\$ 11,167,865	\$ 7,355	0.62	-7.86%
BlackRock Diamond Property Fund	2005	\$ 25,000,000	\$ 25,000,000	\$ 15,216,267	\$ 19,682	0.61	-9.31%
Bryanston Real Estate Opportunity Fund II, L.P.	2009	\$ 20,000,000	\$ 8,589,256	\$ 11,842,516	\$ -	1.38	10.18%
Bryanston Retail Opportunity Fund, L.P.	2004	\$ 20,000,000	\$ 8,228,165	\$ 18,828,095	\$ 6,769,092	3.11	70.79%
CBRE Strategic Partners III	2003	\$ 10,000,000	\$ 10,000,000	\$ 12,698,783	\$ -	1.27	8.02%
CBRE Strategic Partners IV	2005	\$ 40,000,000	\$ 40,000,000	\$ 2,609,685	\$ -	0.07	-27.76%
Fillmore East Fund	2006	\$ 25,000,000	\$ 31,403,818	\$ 20,777,177	\$ -	0.66	-9.78%
Fillmore West Fund	2008	\$ 20,000,000	\$ 19,561,557	\$ 21,175,799	\$ -	1.08	1.14%
Fortress Japan Opportunity Fund II	2012	\$ 21,739,130	\$ 3,357,256	\$ 17,523,390	\$ 8,241,682	7.23	26.03%
Invesco Asian Real Estate Partners II (USD), LP	2007	\$ 20,000,000	\$ 8,412,833	\$ 11,324,754	\$ 146,631	1.37	7.55%
Invesco High Yield Debt Fund I	2007	\$ 20,000,000	\$ 20,000,000	\$ 8,567,605	\$ -	0.43	-35.57%
Invesco Real Estate Asia Fund	2014	\$ 51,732,500	\$ 51,732,500	\$ 7,802,194	\$ 61,814,279	1.32	7.14%
INVESCO Real Estate Fund I	2005	\$ 10,000,000	\$ 9,248,390	\$ 10,015,656	\$ -	1.08	1.54%
Kayne Anderson Real Estate Debt III	2018	\$ 20,000,000	\$ 3,780,000	\$ 328,964	\$ 3,681,671	1.06	4.14%
Kayne Anderson Real Estate Partners V	2017	\$ 10,000,000	\$ 7,000,000	\$ -	\$ 6,267,505	0.91	-17.19%
LaSalle Income & Growth Fund IV	2005	\$ 20,000,000	\$ 19,469,417	\$ 13,482,024	\$ -	0.69	-5.51%
North Haven Real Estate Fund V International	2005	\$ 27,500,000	\$ 27,377,414	\$ 31,921,668	\$ 1,346,785	1.21	6.97%
Oaktree Real Estate Opportunities V	2012	\$ 25,000,000	\$ 25,000,000	\$ 37,221,185	\$ 2,950,090	1.58	13.39%
Partners Group Project Camino	2016	\$ 8,415,776	\$ 5,652,121	\$ -	\$ 6,539,347	1.16	6.96%
Partners Group RE Secondary 2013 (USD) A	2014	\$ 65,000,000	\$ 49,541,590	\$ 18,625,904	\$ 51,089,254	1.42	17.92%
Partners Group RE Secondary 2017 (USD) A	2017	\$ 75,000,000	\$ 13,311,238	\$ 13,502	\$ 13,531,401	1.01	2.65%
Pramerica Real Estate Capital VI	2016	\$ 24,237,650	\$ 10,064,128	\$ 4,068,236	\$ 8,079,695	1.20	16.29%
Prologis Japan Fund	2005	\$ 25,290,819	\$ 25,290,819	\$ 33,126,118	\$ -	1.31	4.81%
Prudential PRISA II	2004	\$ 140,000,000	\$ 140,000,000	\$ 41,929,793	\$ 166,635,306	1.43	8.38%
Prudential PRISA III	2003	\$ 75,000,000	\$ 50,960,618	\$ 46,122,538	\$ 45,193,109	1.67	18.58%
RREEF America REIT III	2004	\$ 20,000,000	\$ 20,539,309	\$ 23,658,675	\$ -	1.15	3.00%
Square Mile Partners II	2007	\$ 20,000,000	\$ 19,831,232	\$ 5,311,330	\$ 29,255	0.27	-18.93%
Square Mile Partners III LP	2008	\$ 20,000,000	\$ 19,730,190	\$ 28,441,949	\$ 513,846	1.47	11.62%
Starwood Capital Hospitality Fund I-2	2006	\$ 30,000,000	\$ 30,000,000	\$ 26,182,035	\$ 3,555,957	0.99	-0.12%
Starwood Debt Fund II, LP	2008	\$ 20,000,000	\$ 17,599,882	\$ 21,912,511	\$ -	1.25	6.45%
Starwood Opportunity Fund VII - A	2006	\$ 25,000,000	\$ 25,000,000	\$ 18,224,737	\$ 1,719,097	0.80	-2.49%
Structured Real Estate III, LP (Guggenheim)	2008	\$ 20,000,000	\$ 20,000,000	\$ 16,320,664	\$ -	0.82	-4.99%
Tri Continental Capital VII	2005	\$ 23,000,000	\$ 22,277,928	\$ 2,696,824	\$ 796,961	0.16	-16.62%
Tuckerman Multi-Family Development Fund III	2002	\$ 10,000,000	\$ 10,219,311	\$ 16,939,699	\$ -	1.66	26.67%
Walton Street Real Estate Fund IV, LP	2003	\$ 10,000,000	\$ 9,770,890	\$ 15,885,696	\$ 135,086	1.64	10.74%
Walton Street Real Estate Fund V, LP	2006	\$ 40,000,000	\$ 40,000,000	\$ 22,399,244	\$ 9,067,721	0.79	-2.68%
Total: San Bernardino		\$ 1,257,050,864	\$ 1,053,547,960	\$ 939,061,607	\$ 408,756,939	1.27	4.07%

Note: All metrics are calculated since inception

* Denotes cash adjusted



REAL ASSETS PERFORMANCE ENDED SEPT. 30, 2018

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Cumulative Distributions	Valuation	TVPI Ratio	IRR
Fortress Transportation Infrastructure LLC	2015	\$ 45,403,354	\$ 45,403,354	\$ 10,576,313	\$ 48,554,889	1.30	10.66%
Hancock Timberland VII	2005	\$ 90,000,000	\$ 90,000,000	\$ 64,772,100	\$ 42,401,935	1.19	1.56%
Hancock Timberland VIII	2006	\$ 40,000,000	\$ 40,000,000	\$ 5,271,925	\$ 33,973,920	0.98	-0.20%
Highstar Capital III, L.P.	2007	\$ 60,000,000	\$ 59,119,119	\$ 37,729,377	\$ 28,331,593	1.12	1.46%
Timbervest Crossover Partners II, L.P.	2008	\$ 30,000,000	\$ 30,000,000	\$ 14,415,000	\$ 13,500,318	0.93	-1.18%
Timbervest Partners II, L.P.	2007	\$ 50,000,000	\$ 50,000,000	\$ 28,650,000	\$ 27,910,759	1.13	1.34%
Total: San Bernardino		\$ 315,403,354	\$ 314,522,473	\$ 161,414,715	\$ 194,673,414	1.13	1.48%

Note: All metrics are calculated since inception

** Denotes cash adjusted*



PRIVATE EQUITY PERFORMANCE ENDED SEPT. 30, 2018

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Cumulative Distributions	Valuation	TVPI Ratio	IRR
Advent International GPE VIII, LP	2016	\$ 10,000,000	\$ 6,490,000	\$ -	\$ 7,528,363	1.16	16.14%
Apollo Accord Fund, LP	2017	\$ 30,000,000	\$ 7,500,000	\$ 5,511,478	\$ 2,644,628	1.09	8.06%
Apollo European Principal Finance Fund (Feeder), L	2009	\$ 54,054,969	\$ 46,373,293	\$ 68,835,428	\$ 496,553	1.49	11.81%
Apollo Investment Fund VII, L.P.	2008	\$ 10,000,000	\$ 8,573,628	\$ 15,290,251	\$ 2,240,196	2.05	23.41%
Apollo PCPL Webb V	2010	\$ 4,844,398	\$ 4,844,398	\$ 5,196,757	\$ 35,013	1.08	6.42%
Apollo PCPL Webb VIII	2010	\$ 4,734,303	\$ 4,734,303	\$ 12,146,258	\$ 2,407	2.57	46.47%
ARES European Loan Opp Fund	2015	\$ 15,000,000	\$ 8,413,136	\$ 7,613,498	\$ -	0.90	-6.02%
Ares Special Situations Fund IV, LP	2015	\$ 50,000,000	\$ 38,775,578	\$ 122,768	\$ 34,741,730	0.90	-6.10%
Aurora Equity Partners III, L.P.	2005	\$ 25,000,000	\$ 23,544,536	\$ 41,738,196	\$ 187,959	1.67	13.62%
Aurora Equity Partners IV, L.P.	2012	\$ 20,000,000	\$ 15,995,098	\$ 25,383,037	\$ 11,902,192	2.01	19.11%
Aurora Resurgence Fund, L.P.	2008	\$ 15,000,000	\$ 5,653,009	\$ 10,350,965	\$ -	1.82	17.60%
Baring Asia Private Equity Fund IV, L.P.	2015	\$ 2,931,918	\$ 2,591,669	\$ 3,221,120	\$ 221,067	1.33	11.49%
BNY Mellon - Alcentra Mezzanine III	2012	\$ 25,000,000	\$ 23,254,658	\$ 26,736,979	\$ -	1.15	12.73%
Catalyst Fund II, L.P.	2007	\$ 10,000,000	\$ 9,927,306	\$ 4,259,103	\$ 17,498,552	2.18	10.47%
Catalyst Fund LP IV, L.P.	2015	\$ 8,000,000	\$ 5,664,390	\$ -	\$ 7,210,610	1.27	12.51%
Charlesbank Equity Fund VIII	2015	\$ 7,500,000	\$ 6,469,593	\$ 3,117,539	\$ 6,380,375	1.47	19.88%
DRI II, L.P.	2009	\$ 20,000,000	\$ 19,917,669	\$ 26,302,807	\$ -	1.33	19.64%
European Strategic Partners 2004	2004	\$ 241,399,208	\$ 220,526,197	\$ 263,507,481	\$ 15,479,335	1.26	3.97%
European Strategic Partners 2008	2010	\$ 31,506,440	\$ 28,338,464	\$ 24,185,897	\$ 17,262,977	1.45	9.60%
Industry Ventures Direct, LP	2016	\$ 25,000,000	\$ 14,471,739	\$ 1,900,632	\$ 13,327,787	1.05	5.98%
Industry Ventures Fund V	2008	\$ 10,000,000	\$ 9,500,000	\$ 21,628,640	\$ 7,481,150	3.06	30.75%
Industry Ventures Fund VI	2011	\$ 20,000,000	\$ 18,400,000	\$ 14,730,140	\$ 9,754,002	1.33	8.57%
Industry Ventures Partnership Holdings Fund II, L.P.	2012	\$ 25,000,000	\$ 23,500,000	\$ 9,874,683	\$ 51,916,931	2.63	24.75%
Industry Ventures Partnership Holdings Fund III, L.P.	2013	\$ 25,000,000	\$ 22,125,000	\$ 4,001,806	\$ 31,248,024	1.59	18.02%
Industry Ventures Partnership Holdings Fund III-A, L.P.	2014	\$ 12,500,000	\$ 10,437,500	\$ 3,466,172	\$ 6,711,756	0.98	-0.96%
Industry Ventures Partnership Holdings IV, LP	2016	\$ 25,000,000	\$ 8,625,000	\$ 102,308	\$ 10,407,726	1.22	14.67%
Industry Ventures Secondary VII, L.P.	2013	\$ 25,000,000	\$ 22,500,000	\$ 9,192,279	\$ 23,037,917	1.43	13.86%
Industry Ventures Secondary VIII	2017	\$ 25,000,000	\$ 5,000,000	\$ 393,622	\$ 7,116,170	1.50	90.21%
Industry Ventures Special Opportunities II-A	2016	\$ 12,500,000	\$ 781,250	\$ -	\$ 1,234,840	1.58	64.50%
Insight Venture Partners III Co-Invest	2014	\$ 4,000,000	\$ 4,000,000	\$ 2,299,693	\$ 6,667,146	2.24	24.33%
Kayne Anderson Energy Fund VII, L.P.	2017	\$ 10,000,000	\$ 7,078,811	\$ 118,129	\$ 9,077,444	1.30	18.34%
Kayne Partners Fund IV (QP), LP	2017	\$ 20,000,000	\$ 6,296,085	\$ -	\$ 6,785,921	1.06	7.90%
Kayne Solutions Fund LP	2018	\$ 20,000,000	\$ 5,574,050	\$ 205,503	\$ 5,658,753	1.05	4.93%
Lexington Capital Partners VI-B	2006	\$ 25,000,000	\$ 24,591,319	\$ 31,944,462	\$ 3,017,033	1.42	6.97%
Lexington Capital Partners VII (Offshore)	2011	\$ 25,000,000	\$ 20,202,136	\$ 24,192,480	\$ 8,010,040	1.59	15.54%
Lexington Middle Market I	2005	\$ 25,000,000	\$ 24,771,942	\$ 36,867,713	\$ 3,918,630	1.65	11.76%
Lexington Middle Market II - Offshore	2008	\$ 10,000,000	\$ 9,773,736	\$ 11,693,049	\$ 4,213,345	1.62	14.16%
Madison Dearborn VII	2016	\$ 10,000,000	\$ 5,149,135	\$ 355,075	\$ 5,836,022	1.20	16.88%
NB Secondary Opportunities I, LP	2005	\$ 20,000,000	\$ 18,500,843	\$ 24,183,590	\$ 164,109	1.32	6.50%
NB Secondary Opportunities II, LP	2008	\$ 20,000,000	\$ 17,080,642	\$ 24,068,666	\$ 2,745,026	1.53	14.43%
Partners Group Access 216 LP	2017	\$ 7,210,957	\$ 8,498,837	\$ -	\$ 10,998,665	1.30	21.93%
Partners Group Access 384, L.P.	2017	\$ 8,360,000	\$ 8,360,000	\$ -	\$ 7,975,802	0.95	-2.72%
Partners Group Access 632, L.P.	2014	\$ 2,782,028	\$ 2,782,028	\$ 4,627,741	\$ 1	1.65	16.01%
Partners Group Access 648, L.P.	2014	\$ 4,404,548	\$ 4,843,537	\$ 19,449	\$ 3,607,327	0.75	-7.80%

Note: All metrics are calculated since inception

* Denotes Cash adjusted value



PRIVATE EQUITY PERFORMANCE ENDED SEPT. 30, 2018

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Cumulative Distributions	Valuation	TVPI Ratio	IRR
Partners Group Access 680 L.P.	2015	\$ 7,278,375	\$ 7,202,719	\$ -	\$ 13,074,202	1.82	23.59%
Partners Group Access 906, L.P.	2017	\$ 15,000,000	\$ 15,000,000	\$ 17,269	\$ 16,551,079	1.10	10.45%
Partners Group CA Infrastructure, LP Inc	2016	\$ 6,246,500	\$ 2,630,627	\$ -	\$ 3,060,322	1.16	13.46%
Partners Group Client Access 8 LP	2014	\$ 5,531,585	\$ 5,531,585	\$ 30,646,223	\$ 52,166	5.55	69.65%
Partners Group Direct Equity 2016 USD A	2016	\$ 20,000,000	\$ 11,005,566	\$ 3,277	\$ 15,187,313	1.40	24.21%
Partners Group Direct Investment 2012, L.P.	2013	\$ 18,222,819	\$ 16,509,621	\$ 13,841,499	\$ 15,763,171	1.79	19.85%
Partners Group European Mandate, L.P.	2004	\$ 239,170,339	\$ 196,155,787	\$ 247,457,434	\$ 18,333,841	1.37	5.75%
Partners Group European Mezzanine 2005	2005	\$ 101,076,654	\$ 101,076,654	\$ 121,118,042	\$ 991,555	1.21	3.08%
Partners Group Global Opp Limited	2017	\$ 4,001,119	\$ 4,001,119	\$ 888,306	\$ 5,511,143	1.60	45.56%
Partners Group Princess Learning IC LTD	2014	\$ 9,031,620	\$ 4,511,879	\$ -	\$ 10,584,989	2.35	29.33%
Partners Group Seabras Holdings, LLC	2015	\$ 4,660,000	\$ 3,332,156	\$ -	\$ 3,455,037	1.04	1.39%
Partners Group Secondary 2006 LP	2006	\$ 54,552,244	\$ 51,077,528	\$ 55,468,290	\$ 4,881,389	1.18	3.43%
Partners Group Secondary 2008, L.P.	2009	\$ 26,722,110	\$ 23,690,725	\$ 31,763,966	\$ 3,685,191	1.49	9.12%
Partners Group Starfrost Limited	2014	\$ 6,342,571	\$ 3,736,806	\$ 1,880,411	\$ 4,008,084	1.58	11.39%
Pathway Private Equity Fund VII, L.P.	2004	\$ 904,500,000	\$ 812,500,146	\$ 992,331,259	\$ 419,035,699	1.70	10.51%
Quad-C Partners IX, LP	2017	\$ 8,000,000	\$ 2,086,840	\$ 1,773	\$ 2,129,466	1.02	2.73%
Quantum Energy Partners IV, L.P.	2014	\$ 2,907,301	\$ 2,359,080	\$ 1,153,386	\$ 574,830	0.64	-15.75%
Quantum Energy Partners VI, L.P.	2015	\$ 8,000,000	\$ 4,688,480	\$ 1,766,985	\$ 7,048,257	1.88	45.64%
Quantum Energy Partners VII Co-Investment Fund, LP	2017	\$ 1,300,000	\$ 386,462	\$ 525	\$ 382,995	0.99	-0.98%
Quantum Energy Partners VII, LP	2017	\$ 6,700,000	\$ 2,300,564	\$ 109,137	\$ 2,172,201	0.99	-1.30%
Quantum Parallel Partners VI-C, LP	2015	\$ 3,290,000	\$ 1,778,996	\$ 215,034	\$ 2,523,971	1.54	38.81%
Siguler Guff DOF II	2006	\$ 30,000,000	\$ 30,000,000	\$ 42,308,298	\$ 320,352	1.43	8.73%
Siguler Guff DOF III	2008	\$ 10,000,000	\$ 9,700,000	\$ 13,738,513	\$ 1,769,965	1.60	10.69%
SL Capital SOF I LP	2014	\$ 25,000,000	\$ 20,293,684	\$ 13,050,451	\$ 14,332,644	1.35	12.72%
SL Capital SOF III LP	2017	\$ 25,000,000	\$ 4,874,450	\$ -	\$ 7,721,313	1.58	86.31%
TCP Direct Lending Fund VIII-L, LLC	2016	\$ 40,000,000	\$ 13,220,417	\$ -	\$ 14,436,105	1.09	5.78%
TCV IX, L.P.	2016	\$ 10,000,000	\$ 3,981,000	\$ -	\$ 4,063,201	1.02	2.50%
TCW/Crescent Mezzanine IV, L.P.	2006	\$ 40,000,000	\$ 39,590,976	\$ 44,955,179	\$ 101,146	1.14	3.03%
TCW/Crescent Mezzanine V, L.P.	2008	\$ 20,000,000	\$ 19,949,723	\$ 25,279,574	\$ 1,425,239	1.34	9.52%
Tennenbaum Energy Opportunities Fund, LP	2016	\$ 20,000,000	\$ 15,903,555	\$ 3,162,610	\$ 16,563,772	1.24	18.10%
Tennenbaum Opportunities Fund V, L.P.	2007	\$ 10,000,000	\$ 10,000,000	\$ 11,224,122	\$ 3,258,668	1.45	5.61%
Tennenbaum Opportunities Fund VI, L.P.	2011	\$ 20,000,000	\$ 12,332,075	\$ 10,725,321	\$ 9,188,444	1.61	8.50%
Tennenbaum Special Situations Fund IX	2015	\$ 50,000,000	\$ 31,128,271	\$ 8,402,055	\$ 29,411,690	1.21	11.16%
Tennenbaum Waterman Fund, LP	2012	\$ 70,000,000	\$ 70,000,000	\$ 37,137,234	\$ 70,958,404	1.54	11.22%
The Huron Fund V	2017	\$ 10,000,000	\$ 1,075,000	\$ -	\$ 837,170	0.78	-22.12%
The Resolute Fund II - Secondary	2016	\$ 1,720,184	\$ 7,760,939	\$ 664,794	\$ 7,107,954	1.00	0.35%
The Resolute Fund III	2014	\$ 8,000,000	\$ 7,232,375	\$ 2,079,561	\$ 8,275,253	1.43	21.36%
The Resolute Fund IV, L.P.	2018	\$ 6,000,000	\$ -	\$ -	\$ -	0.00	N/A
Thoma Bravo Discover Fund I	2015	\$ 3,000,000	\$ 2,243,313	\$ 315,308	\$ 3,103,305	1.52	26.80%
Thoma Bravo XI	2014	\$ 8,000,000	\$ 7,086,492	\$ 3,338,830	\$ 12,364,190	2.22	26.43%
Thoma Bravo XII	2016	\$ 10,000,000	\$ 8,854,355	\$ -	\$ 9,714,318	1.10	8.66%
Towerbrook III 2ndry	2017	\$ 1,520,778	\$ 383,292	\$ 248,474	\$ 238,226	1.25	23.93%
Towerbrook IV (OS) 2ndry	2017	\$ 760,389	\$ 401,349	\$ 19,863	\$ 513,896	1.33	29.01%
Vista Foundation Fund III	2016	\$ 10,000,000	\$ 4,977,037	\$ -	\$ 5,199,415	1.04	4.27%
Total: San Bernardino		\$ 2,883,263,356	\$ 2,382,982,156	\$ 2,484,698,396	\$ 1,134,655,095	1.50	8.98%

Note: All metrics are calculated since inception. * Denotes Cash adjusted value



MARKET OUTLOOK

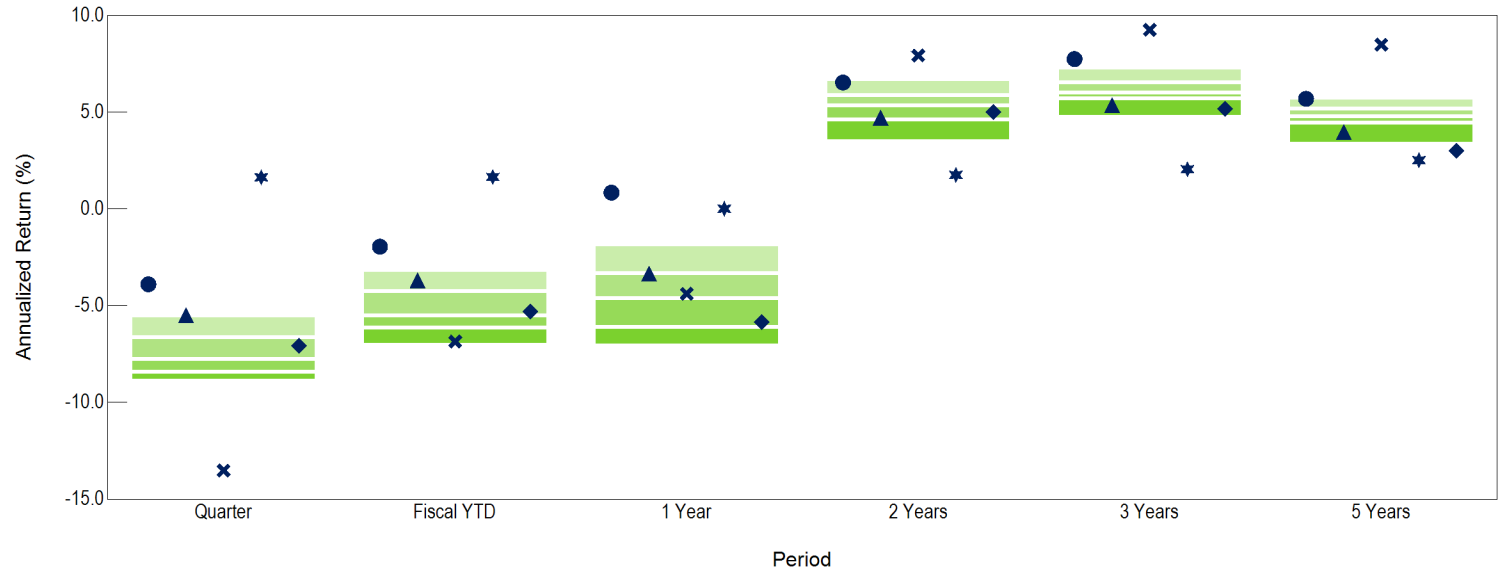
NEPC, LLC

APPENDIX

NEPC, LLC

TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

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



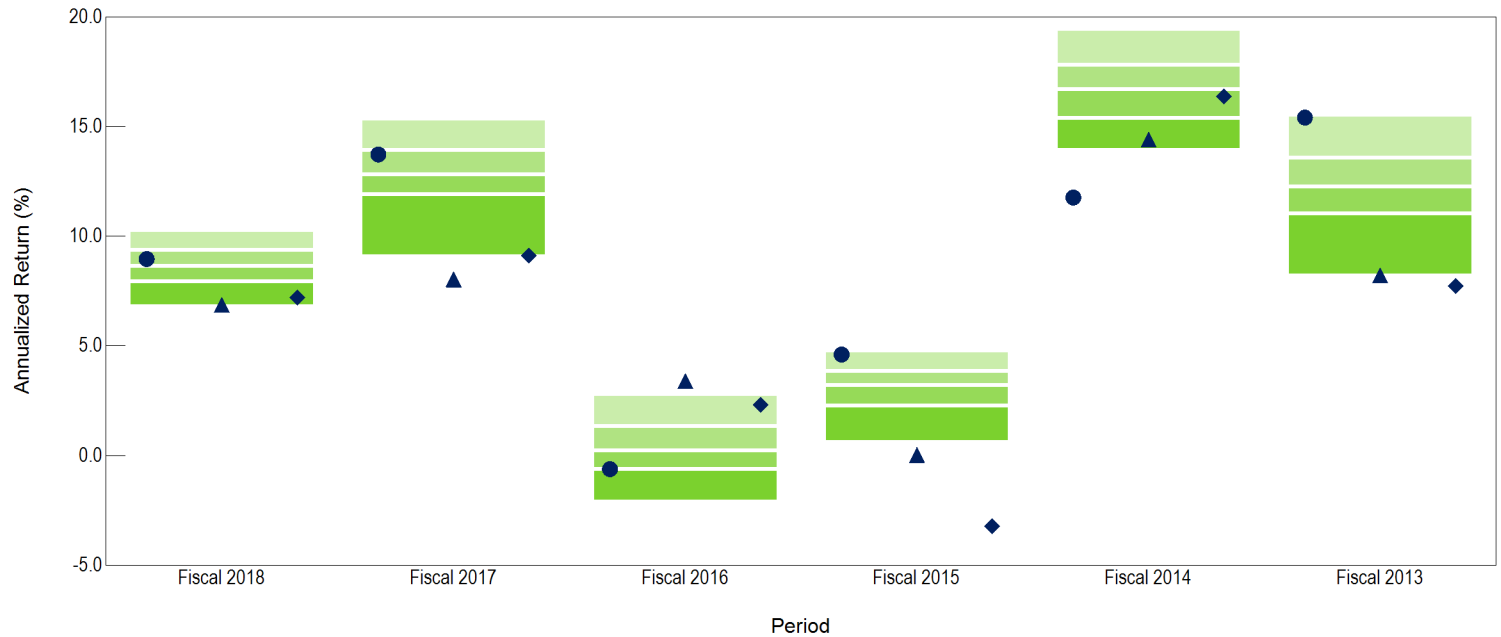
	Return (Rank)											
5th Percentile	-5.5		-3.2		-1.8		6.7		7.3		5.8	
25th Percentile	-6.6		-4.2		-3.3		5.9		6.6		5.2	
Median	-7.7		-5.5		-4.6		5.4		6.0		4.8	
75th Percentile	-8.4		-6.1		-6.1		4.6		5.7		4.5	
95th Percentile	-8.9		-7.0		-7.0		3.5		4.8		3.4	
# of Portfolios	14		14		14		14		14		14	
● Total Fund	-3.9	(1)	-1.9	(1)	0.8	(1)	6.5	(12)	7.7	(1)	5.7	(8)
▲ Policy Index	-5.5	(5)	-3.7	(8)	-3.3	(27)	4.7	(74)	5.4	(92)	4.0	(86)
× S&P 500	-13.5	(99)	-6.9	(93)	-4.4	(48)	7.9	(1)	9.3	(1)	8.5	(1)
* BBgBarc US Aggregate TR	1.6	(1)	1.7	(1)	0.0	(1)	1.8	(99)	2.1	(99)	2.5	(99)
◆ 60% MSCI ACWI (Net) / 40% FTSE WGBI	-7.1	(36)	-5.3	(48)	-5.8	(72)	5.0	(64)	5.2	(94)	3.0	(99)



San Bernardino County Employees' Retirement Association

TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

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



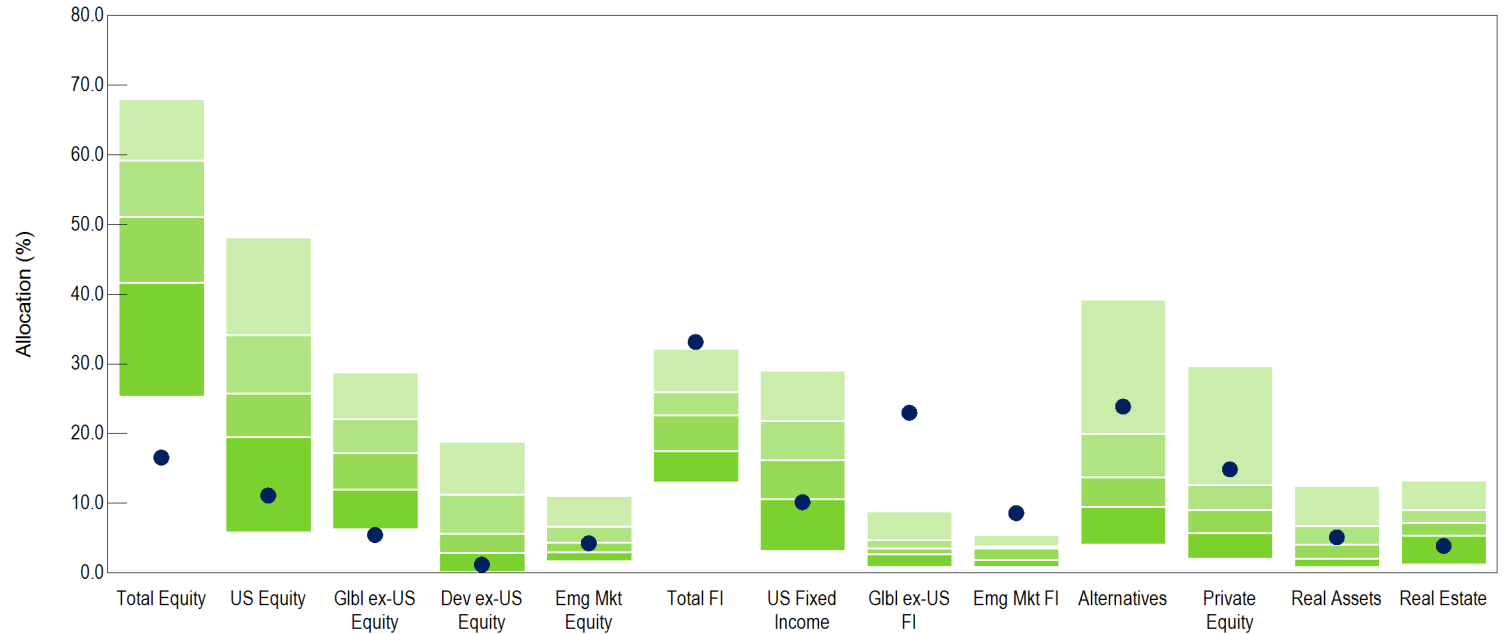
	Fiscal 2018		Fiscal 2017		Fiscal 2016		Fiscal 2015		Fiscal 2014		Fiscal 2013	
	Return	(Rank)	Return	(Rank)	Return	(Rank)	Return	(Rank)	Return	(Rank)	Return	(Rank)
5th Percentile	10.3		15.3		2.8		4.8		19.4		15.5	
25th Percentile	9.4		14.0		1.4		3.9		17.8		13.6	
Median	8.7		12.9		0.3		3.2		16.7		12.3	
75th Percentile	8.0		11.9		-0.6		2.3		15.4		11.0	
95th Percentile	6.8		9.1		-2.1		0.6		13.9		8.2	
# of Portfolios	62		108		91		92		65		78	
● Total Fund	9.0	(38)	13.7	(29)	-0.6	(77)	4.6	(7)	11.8	(99)	15.4	(7)
▲ Policy Index	6.9	(94)	8.0	(97)	3.4	(3)	0.0	(97)	14.4	(87)	8.2	(96)
◆ 60% MSCI ACWI (Net) / 40% FTSE WGBI	7.2	(90)	9.1	(95)	2.3	(11)	-3.2	(99)	16.4	(58)	7.7	(97)



San Bernardino County Employees' Retirement Association

TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE

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



	Allocation (Rank)													
5th Percentile	68.0	48.1	28.8	18.8	11.0	32.2	29.1	8.9	5.4	39.2	29.7	12.5	13.3	--
25th Percentile	59.3	34.2	22.2	11.3	6.7	26.0	21.9	4.8	3.9	20.0	12.7	6.8	9.1	--
Median	51.2	25.9	17.3	5.7	4.4	22.7	16.2	3.6	3.6	13.8	9.1	4.1	7.3	--
75th Percentile	41.7	19.6	12.0	2.9	3.0	17.5	10.7	2.8	2.0	9.6	5.8	2.1	5.4	--
95th Percentile	25.4	5.9	6.3	0.2	1.7	13.0	3.2	0.9	0.9	4.2	2.1	0.9	1.3	--
# of Portfolios	70	60	64	32	44	71	61	30	25	62	50	37	60	--
● Total Fund	16.5 (99)	11.1 (90)	5.4 (96)	1.2 (92)	4.3 (53)	33.1 (4)	10.2 (79)	23.0 (1)	8.6 (1)	23.9 (21)	14.9 (19)	5.1 (39)	3.9 (85)	--

The Total Fund Asset Allocation universe comparison is as of 9/30/2018. Data as of 12/31/2018 is currently unavailable.



CALENDAR YEAR INDEX PERFORMANCE

	2010	2011	2012	2013	2014	2015	2016	2017	Q1	Q2	Q3	Oct	Nov	Dec	Q4	YTD
US Large Cap	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	-0.8%	3.4%	7.7%	-6.8%	2.0%	-9.0%	-13.5%	-4.4%
US Small/Mid Cap	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	16.8%	-0.2%	5.7%	4.7%	-10.2%	1.9%	-11.0%	-18.5%	-10.0%
Int'l Developed Equity	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	25.0%	-1.5%	-1.2%	1.4%	-8.0%	-0.1%	-4.9%	-12.5%	-13.8%
Emerging Market Equity	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	37.3%	1.4%	-8.0%	-1.1%	-8.7%	4.1%	-2.7%	-7.5%	-14.6%
US Aggregate	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	3.5%	-1.5%	-0.2%	0.0%	-0.8%	0.6%	1.8%	1.6%	0.0%
US High Yield	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	7.5%	-0.9%	1.0%	2.4%	-1.6%	-0.9%	-2.1%	-4.5%	-2.1%
US Long Treasuries	9.4%	29.9%	3.6%	-12.7%	25.1%	-1.2%	1.3%	8.5%	-3.3%	0.3%	-2.9%	-3.0%	1.9%	5.5%	4.2%	-1.8%
EM Local Credit	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	15.2%	4.4%	-10.4%	-1.8%	-2.0%	2.8%	1.3%	2.1%	-6.2%
Global Credit	-5.3%	-5.3%	-4.1%	2.7%	-0.6%	3.3%	2.1%	7.4%	1.4%	-2.8%	-0.9%	-1.1%	0.3%	2.0%	1.2%	-1.2%
Commodities	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	1.7%	-0.4%	0.4%	-2.0%	-2.2%	-0.6%	-6.9%	-9.4%	-11.2%

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

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



CALENDAR YEAR INDEX PERFORMANCE

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Q1	Q2	Q3	Oct	Nov	Dec	Q4	YTD
S&P 500	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	-0.8%	3.4%	7.7%	-6.8%	2.0%	-9.0%	-13.5%	-4.4%
Russell 1000	28.4%	16.1%	1.5%	16.4%	33.1%	13.2%	0.9%	12.1%	21.7%	-0.7%	3.6%	7.4%	-7.1%	2.0%	-9.1%	-13.8%	-4.8%
Russell 2000	27.2%	26.9%	-4.2%	16.3%	38.8%	4.9%	-4.4%	21.3%	14.6%	-0.1%	7.8%	3.6%	-10.9%	1.6%	-11.9%	-20.2%	-11.0%
Russell 2500	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	16.8%	-0.2%	5.7%	4.7%	-10.2%	1.9%	-11.0%	-18.5%	-10.0%
MSCI EAFE	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	25.0%	-1.5%	-1.2%	1.4%	-8.0%	-0.1%	-4.9%	-12.5%	-13.8%
MSCI EM	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	37.3%	1.4%	-8.0%	-1.1%	-8.7%	4.1%	-2.7%	-7.5%	-14.6%
MSCI ACWI	34.6%	12.7%	-7.3%	16.1%	22.8%	4.2%	-2.4%	7.9%	24.0%	-1.0%	0.5%	4.3%	-7.5%	1.5%	-7.0%	-12.8%	-9.4%
Private Equity*	13.7%	19.7%	7.9%	12.5%	20.6%	12.7%	9.6%	8.3%	19.9%	3.3%	4.8%	-	-	-	-	-	8.2%
BC TIPS	11.4%	6.3%	13.6%	7.0%	-8.6%	3.6%	-1.4%	4.7%	3.0%	-0.8%	0.8%	-0.8%	-1.4%	0.5%	0.5%	-0.4%	-1.3%
BC Municipal Bond	12.9%	2.4%	10.7%	6.8%	-2.6%	9.1%	3.3%	0.2%	5.4%	-1.1%	0.9%	-0.2%	-0.6%	1.1%	1.2%	1.7%	1.3%
BC Muni High Yield	32.7%	7.8%	9.2%	18.1%	-5.5%	13.8%	1.8%	3.0%	9.7%	0.6%	3.1%	0.8%	-1.3%	0.7%	0.9%	0.3%	4.8%
BC US Corp High Yield	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	7.5%	-0.9%	1.0%	2.4%	-1.6%	-0.9%	-2.1%	-4.5%	-2.1%
BC US Aggregate	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	3.5%	-1.5%	-0.2%	0.0%	-0.8%	0.6%	1.8%	1.6%	0.0%
BC Global Aggregate	2.6%	5.2%	6.4%	1.6%	-4.0%	-0.5%	-3.6%	1.6%	7.5%	1.4%	-2.8%	-0.9%	-1.1%	0.3%	2.0%	1.2%	-1.2%
BC Long Treasuries	-12.9%	9.4%	29.9%	3.6%	-12.7%	25.1%	-1.2%	1.3%	8.5%	-3.3%	0.3%	-2.9%	-3.0%	1.9%	5.5%	4.2%	-1.8%
BC US Long Credit	16.8%	10.7%	17.1%	12.7%	-6.6%	16.4%	-4.6%	10.2%	12.2%	-3.8%	-2.7%	1.3%	-3.6%	-0.4%	2.5%	-1.6%	-6.8%
BC US STRIPS 20+ Yr	-36.0%	10.9%	58.5%	3.0%	-21.0%	46.4%	-3.7%	1.4%	13.7%	-4.6%	0.9%	-4.7%	-5.3%	2.4%	7.8%	4.6%	-4.1%
JPM GBI-EM Glob Div	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	15.2%	4.4%	-10.4%	-1.8%	-2.0%	2.8%	1.3%	2.1%	-6.2%
JPM EMBI Glob Div	29.8%	12.2%	7.3%	17.4%	-5.3%	7.4%	1.2%	10.2%	10.1%	-1.7%	-3.5%	2.3%	-2.2%	-0.4%	1.4%	-1.3%	-4.3%
CS Leveraged Loan	44.9%	10.0%	1.8%	9.4%	6.2%	2.1%	-0.4%	9.9%	4.2%	1.6%	0.8%	1.9%	0.0%	-0.8%	-2.3%	-3.1%	1.1%
CS Hedge Fund	18.6%	10.9%	-2.5%	7.7%	9.7%	4.1%	-0.7%	1.2%	7.1%	0.5%	0.1%	0.6%	-2.6%	-0.6%	-	-	-2.0%
BBG Commodity	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	1.7%	-0.4%	0.4%	-2.0%	-2.2%	-0.6%	-6.9%	-9.4%	-11.2%
Alerian MLP	76.4%	35.9%	13.9%	4.8%	27.6%	4.8%	-32.6%	18.3%	-6.5%	-11.1%	11.8%	6.6%	-8.0%	-0.8%	-9.4%	-17.3%	-12.4%
FTSE NAREIT Eq REITs	28.0%	28.0%	8.3%	18.1%	2.5%	30.1%	3.2%	8.5%	5.2%	-8.2%	10.0%	0.8%	-3.0%	4.7%	-8.2%	-6.7%	-4.6%

Source: Bloomberg, Barclays, Alerian, Nareit, MSCI, JP Morgan, Credit Suisse, Thomson One
 *Private Equity return represents calendar year pooled IRR and is subject to a one quarter lag



TRAILING ANNUAL INDEX PERFORMANCE

Equity							
	Dec-18	Q4	YTD	1 YR	3 YR	5 YR	10 YR
Global Equity	-7.0%	-12.8%	-9.4%	-9.4%	6.6%	4.3%	9.5%
US Large Cap	-9.0%	-13.5%	-4.4%	-4.4%	9.3%	8.5%	13.1%
US Small/Mid Cap	-11.0%	-18.5%	-10.0%	-10.0%	7.3%	5.1%	13.2%
Int'l Developed Equity	-4.9%	-12.5%	-13.8%	-13.8%	2.9%	0.5%	6.3%
Emerging Market Equity	-2.7%	-7.5%	-14.6%	-14.6%	9.2%	1.6%	8.0%

Rates/Credit							
	Dec-18	Q4	YTD	1 YR	3 YR	5 YR	10 YR
Global Aggregate	2.0%	1.2%	-1.2%	-1.2%	2.7%	1.1%	2.5%
US Aggregate	1.8%	1.6%	0.0%	0.0%	2.1%	2.5%	3.5%
US Credit	1.5%	-0.2%	-2.5%	-2.5%	3.3%	3.3%	5.9%
US High Yield	-2.1%	-4.5%	-2.1%	-2.1%	7.2%	3.8%	11.1%
EM Local Debt	1.3%	2.1%	-6.2%	-6.2%	5.9%	-1.0%	3.5%

Real Assets							
	Dec-18	Q4	YTD	1 YR	3 YR	5 YR	10 YR
Commodities	-6.9%	-9.4%	-11.2%	-11.2%	0.3%	-8.8%	-3.8%
MLPs	-9.4%	-17.3%	-12.4%	-12.4%	-1.1%	-7.3%	9.5%

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



TRAILING ANNUAL INDEX PERFORMANCE

Equity							
	Dec-18	Q4	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI	-7.0%	-12.8%	-9.4%	-9.4%	6.6%	4.3%	9.5%
S&P 500	-9.0%	-13.5%	-4.4%	-4.4%	9.3%	8.5%	13.1%
Russell 1000	-9.1%	-13.8%	-4.8%	-4.8%	9.1%	8.2%	13.3%
Russell 2000	-11.9%	-20.2%	-11.0%	-11.0%	7.3%	4.4%	12.0%
Russell 2500	-11.0%	-18.5%	-10.0%	-10.0%	7.3%	5.1%	13.2%
MSCI EAFE	-4.9%	-12.5%	-13.8%	-13.8%	2.9%	0.5%	6.3%
MSCI EM	-2.7%	-7.5%	-14.6%	-14.6%	9.2%	1.6%	8.0%

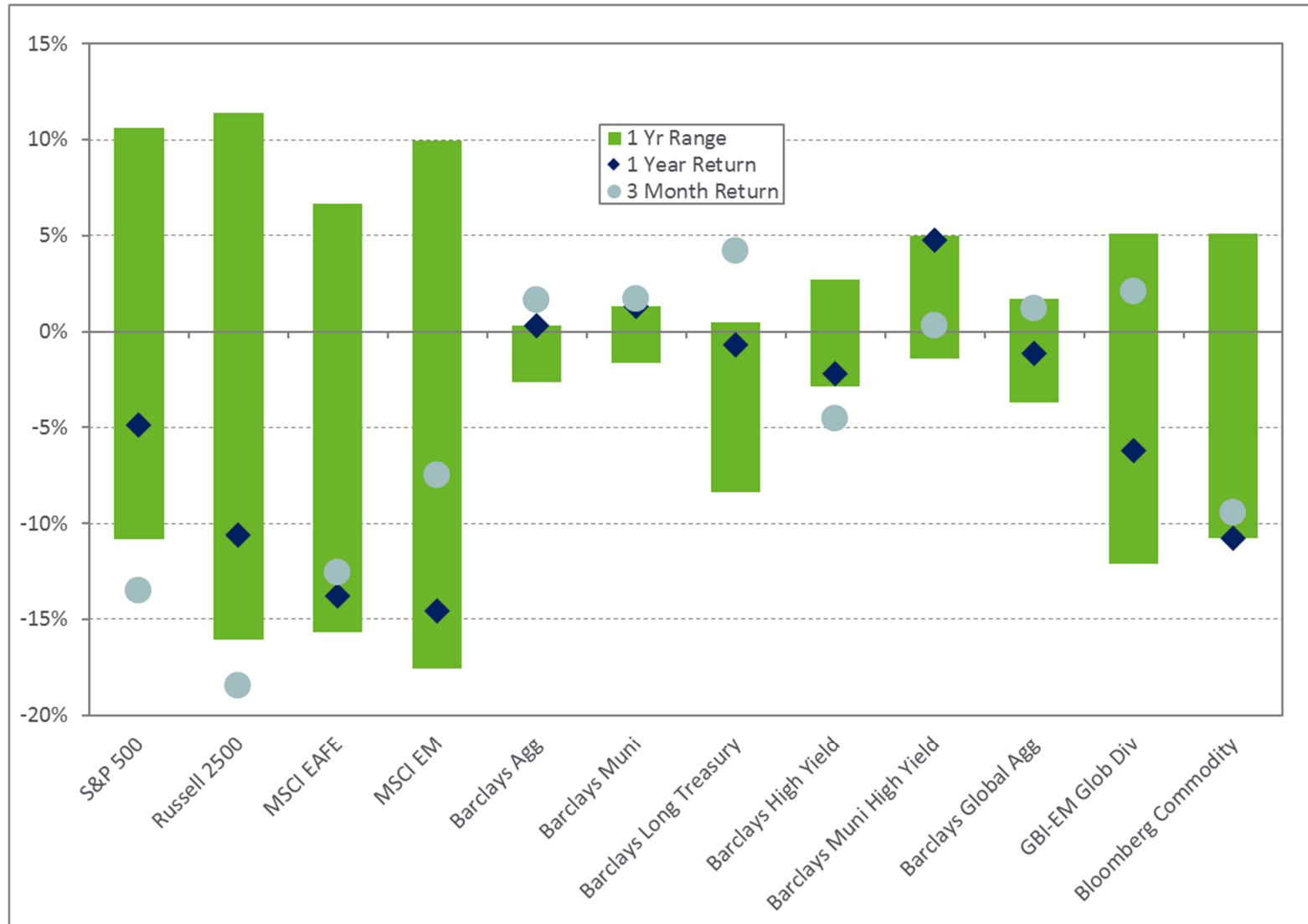
Credit							
	Dec-18	Q4	YTD	1 YR	3 YR	5 YR	10 YR
BC Global Agg	2.0%	1.2%	-1.2%	-1.2%	2.7%	1.1%	2.5%
BC US Agg	1.8%	1.6%	0.0%	0.0%	2.1%	2.5%	3.5%
BC Corp Credit	1.5%	-0.2%	-2.5%	-2.5%	3.3%	3.3%	5.9%
BC US HY	-2.1%	-4.5%	-2.1%	-2.1%	7.2%	3.8%	11.1%
BC Muni	1.2%	1.7%	1.3%	1.3%	2.3%	3.8%	4.9%
BC Muni HY	0.9%	0.3%	4.8%	4.8%	5.8%	6.5%	9.1%
BC TIPS	0.5%	-0.4%	-1.3%	-1.3%	2.1%	1.7%	3.6%
BC 20+ STRIPS	7.8%	4.6%	-4.1%	-4.1%	3.4%	9.3%	3.6%
BC Long Treasuries	5.5%	4.2%	-1.8%	-1.8%	2.6%	5.9%	4.1%
BC Long Credit	2.5%	-1.6%	-6.8%	-6.8%	4.9%	5.1%	7.4%
BC Govt/Credit 1-3 Yr	0.8%	1.2%	1.6%	1.6%	1.2%	1.0%	1.5%
CS Lev Loan	-2.3%	-3.1%	1.1%	1.1%	5.0%	3.3%	8.3%
JPM EMBI Glob Div	1.4%	-1.3%	-4.3%	-4.3%	5.2%	4.8%	8.2%
JPM GBI-EM Glob Div	1.3%	2.1%	-6.2%	-6.2%	5.9%	-1.0%	3.5%

Real Assets							
	Dec-18	Q4	YTD	1 YR	3 YR	5 YR	10 YR
BBG Commodity	-6.9%	-9.4%	-11.2%	-11.2%	0.3%	-8.8%	-3.8%
Alerian MLP	-9.4%	-17.3%	-12.4%	-12.4%	-1.1%	-7.3%	9.5%
FTSE NAREIT Equity REITs	-8.2%	-6.7%	-4.6%	-4.6%	2.9%	7.9%	12.1%

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



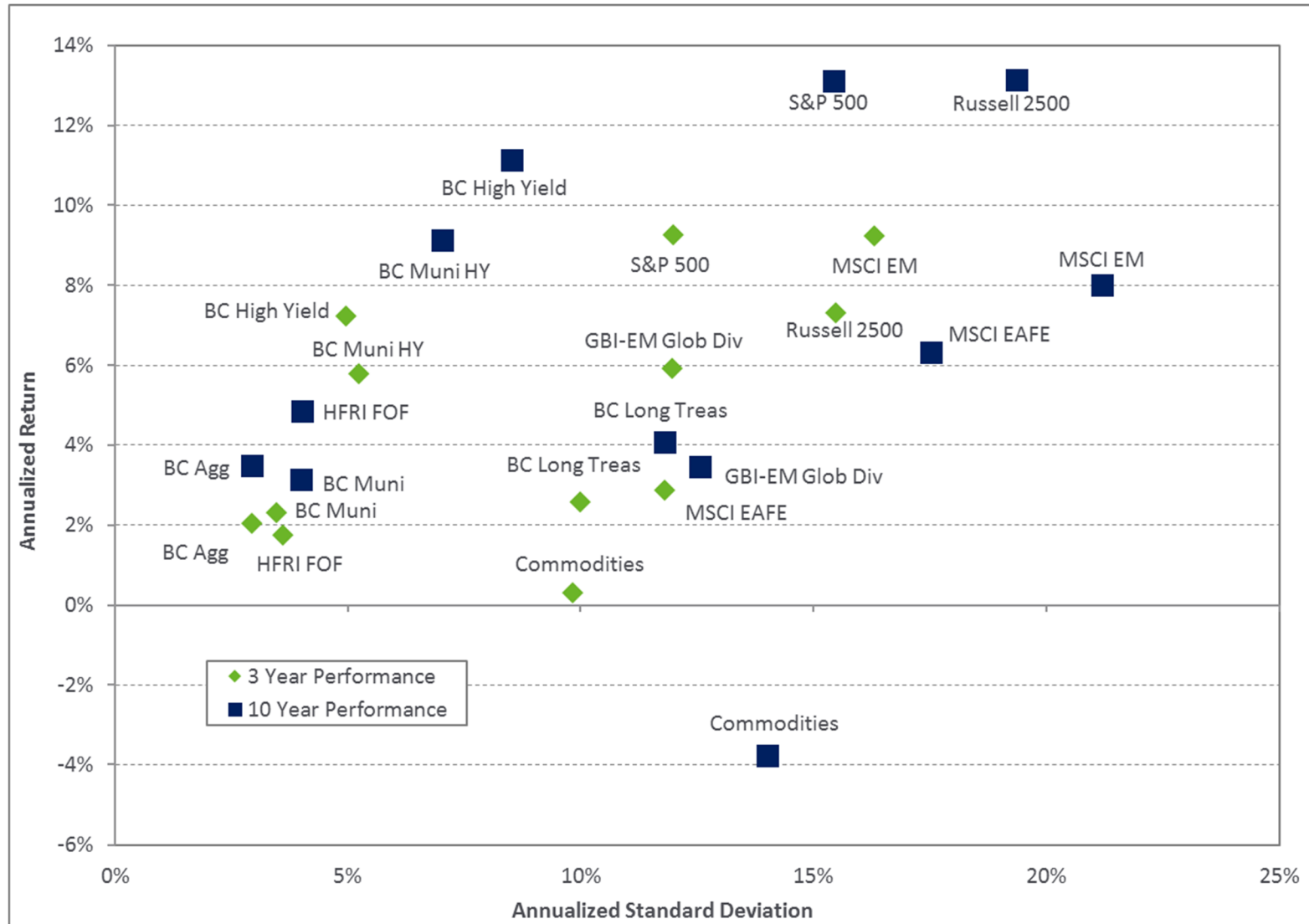
SHORT-TERM PERFORMANCE SUMMARY



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



LONG-TERM PERFORMANCE SUMMARY



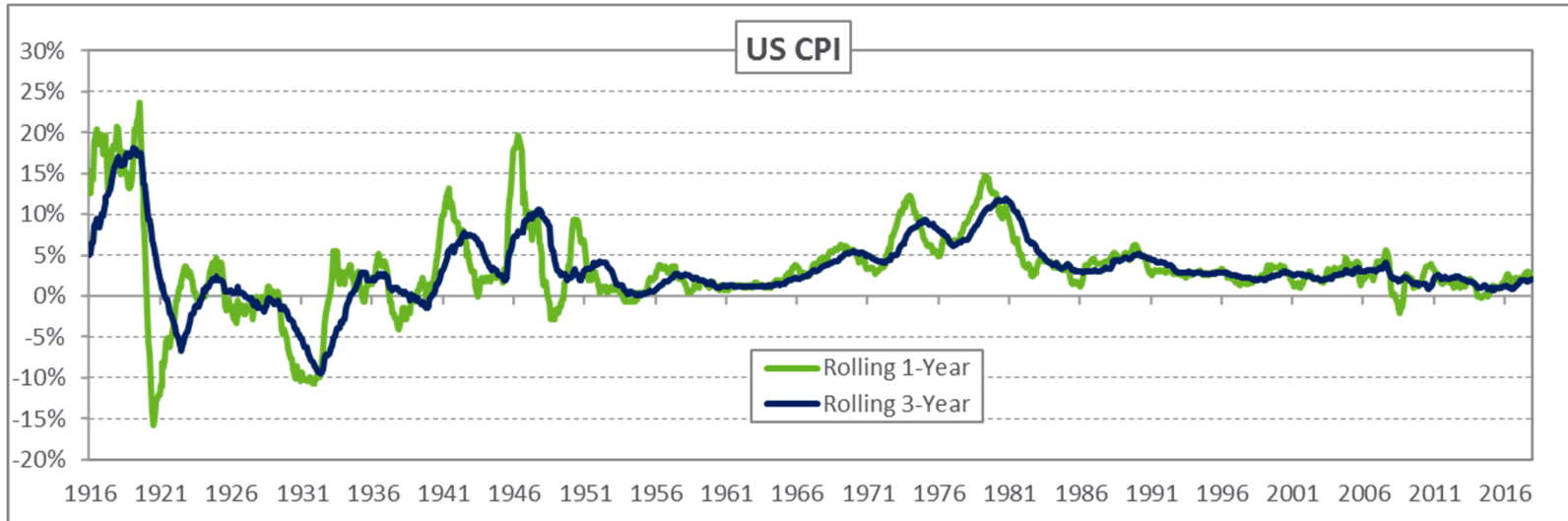
Source: Bloomberg, Standard and Poor's, Russell, MSCI, Barclays, JP Morgan



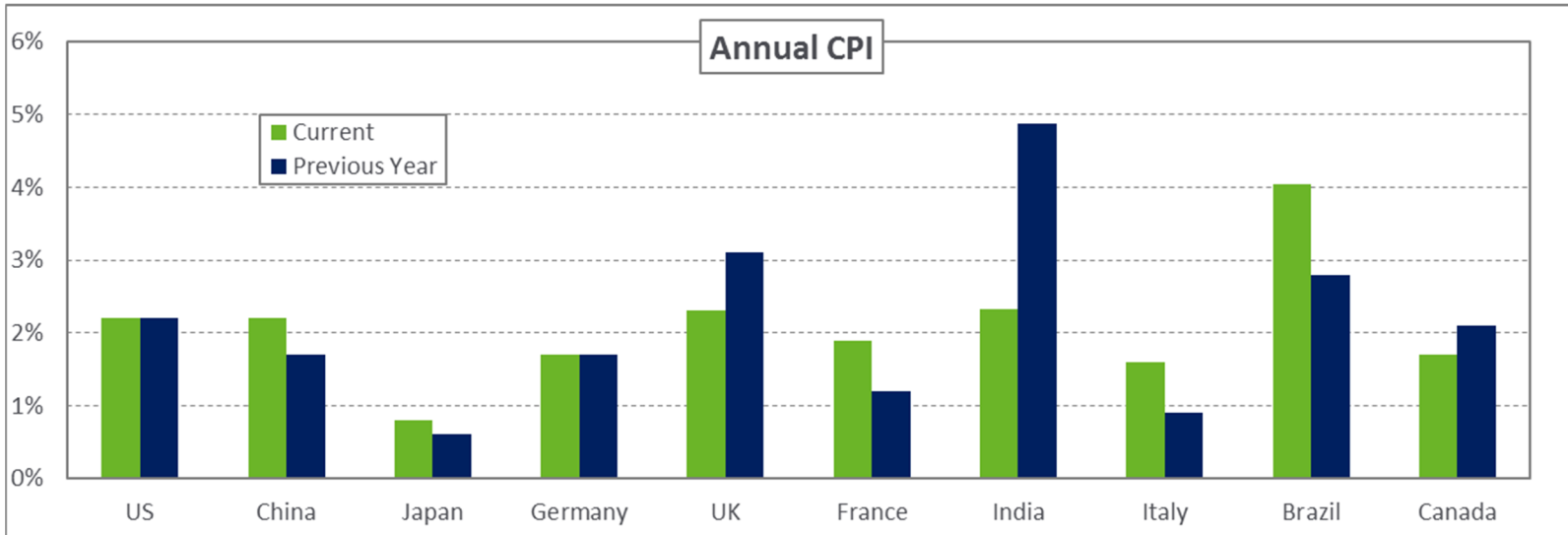
MACRO

NEPC, LLC

INFLATION



Source: Bureau of Labor Statistics, Bloomberg, NEPC



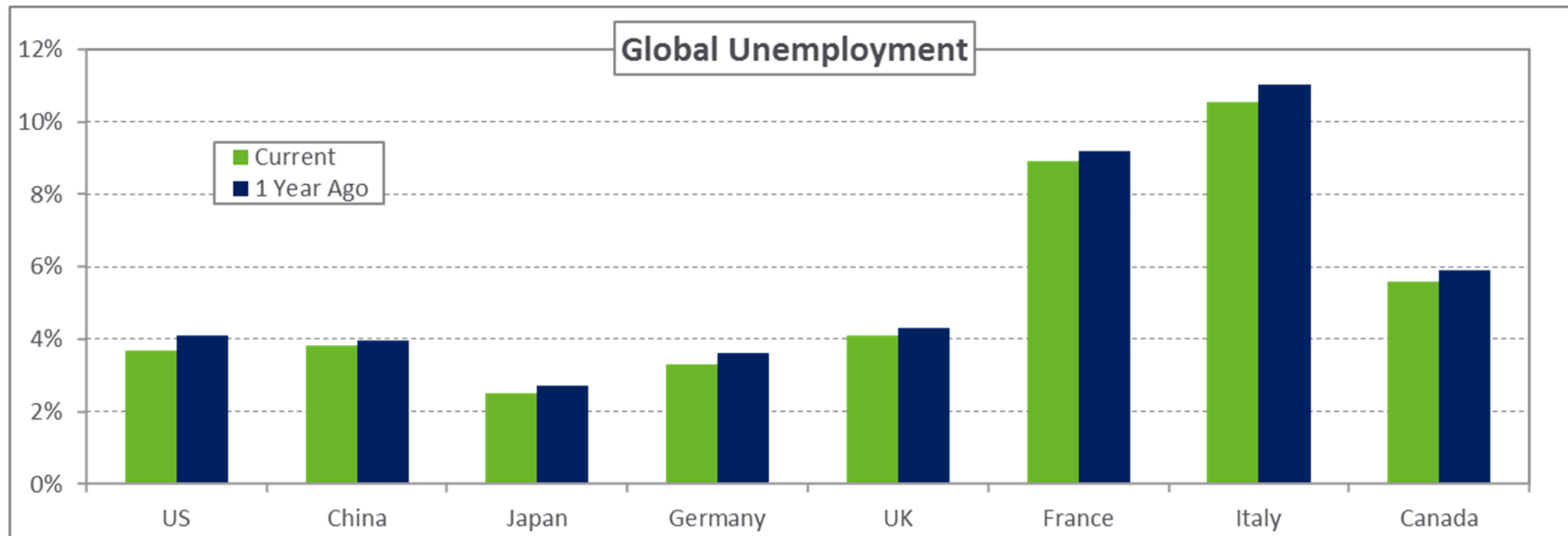
Source: Bureau of Labor Statistics, National Bureau of Statistics of China, Ministry of Internal Affairs and Communications (Japan), German Federal Statistics Office, UK Office for National Statistics, National Statistics Office of France, India Central Statistical Organization, ISTAT, IBGE, STCA, Bloomberg



UNEMPLOYMENT



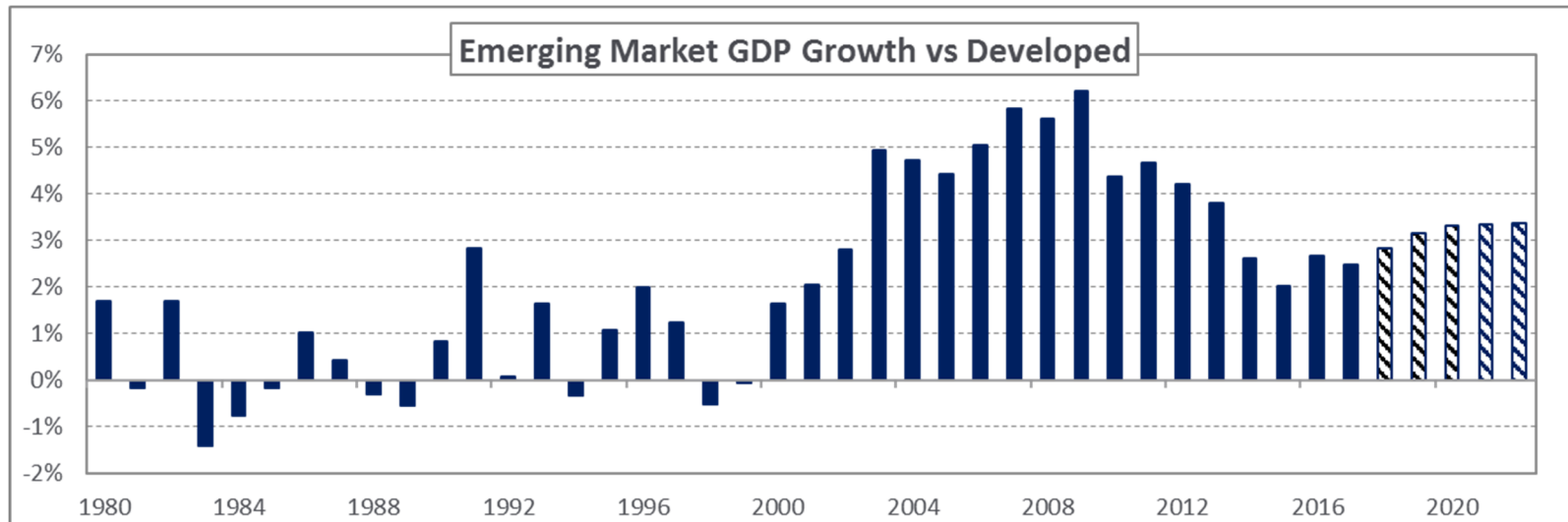
Source: Bureau of Labor Statistics, Bloomberg



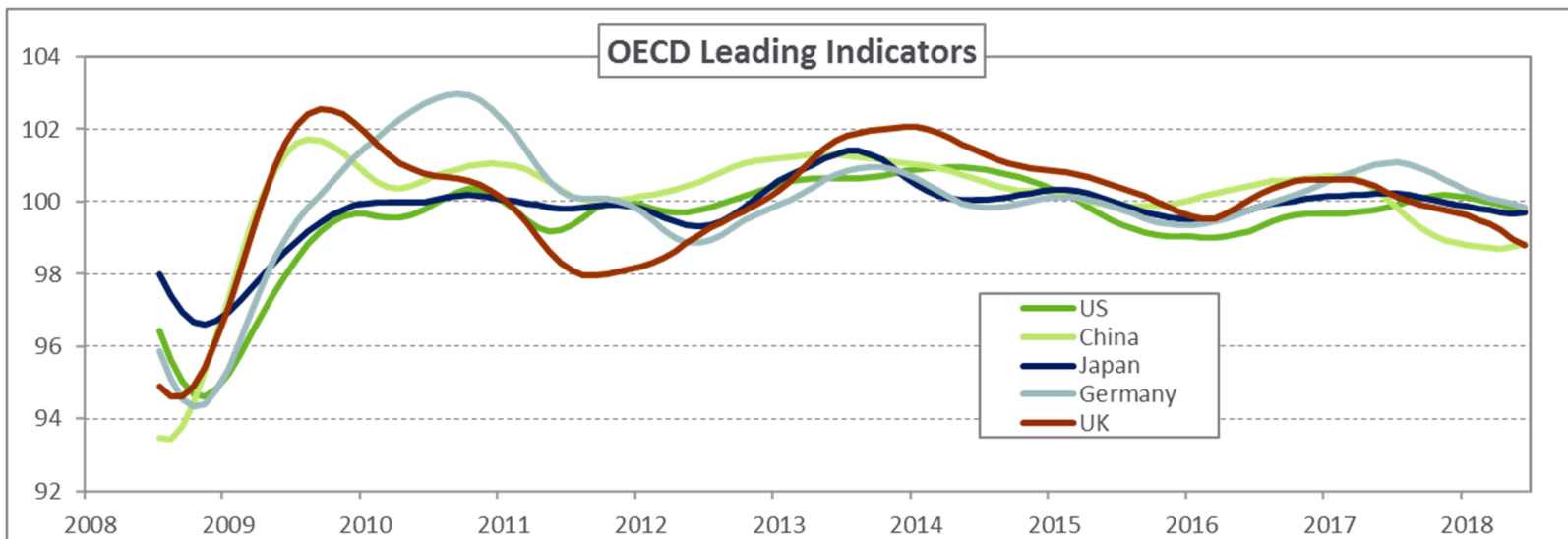
Source: Bureau of Labor Statistics, STA, National Bureau of Statistics of China, Ministry of Internal Affairs and Communications (Japan), German Federal Statistics Office, UK Office for National Statistics, National Statistics Office of France, ISTAT, IBGE, Bloomberg



ECONOMIC INDICATORS



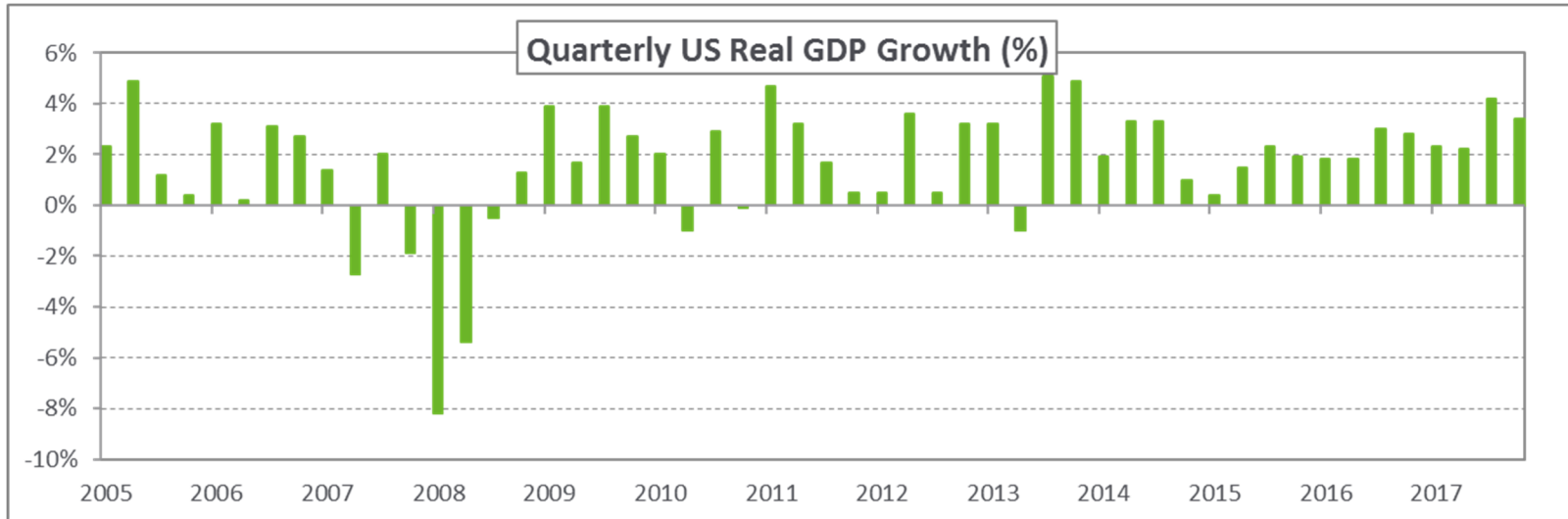
Source: IMF



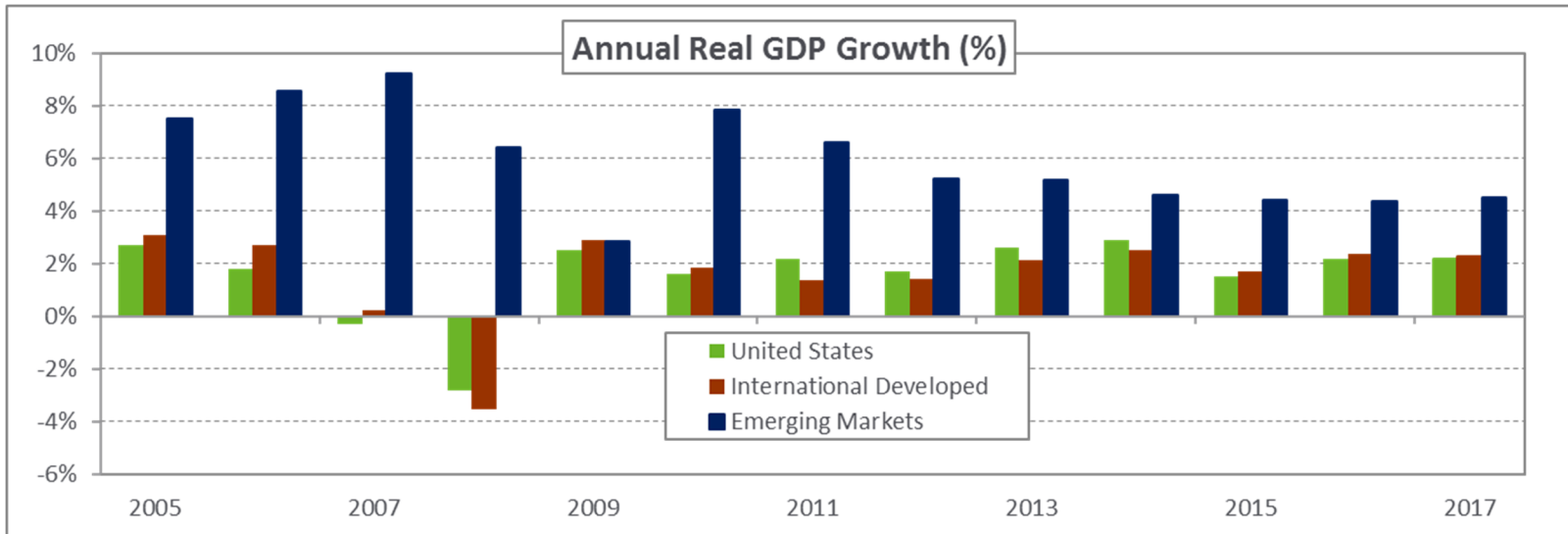
Source: OECD, Bloomberg



GROSS DOMESTIC PRODUCT



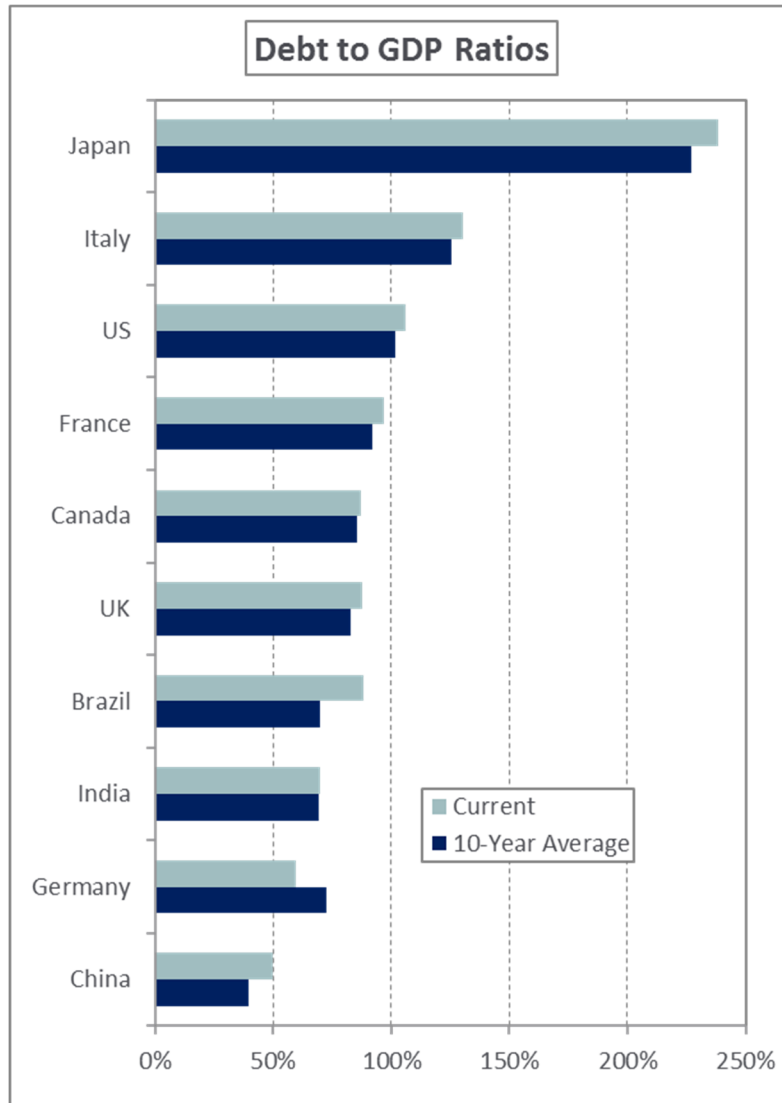
Source: Bloomberg



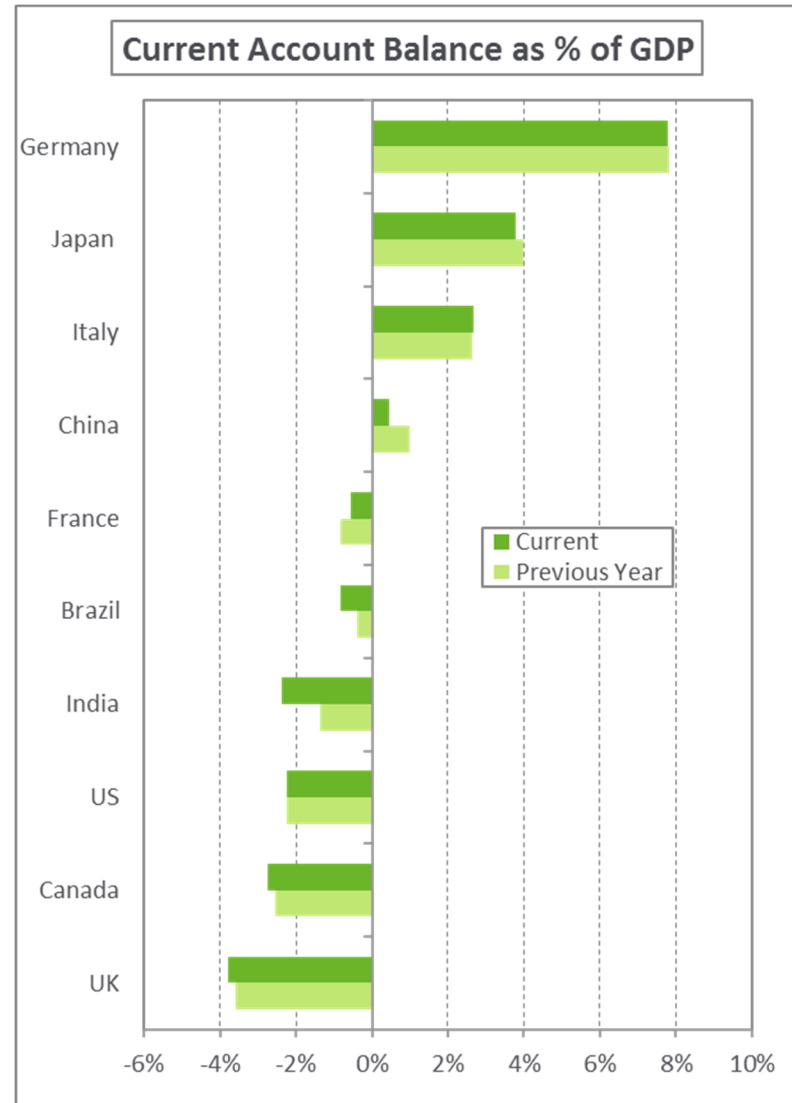
Source: Bloomberg



GROSS DOMESTIC PRODUCT METRICS



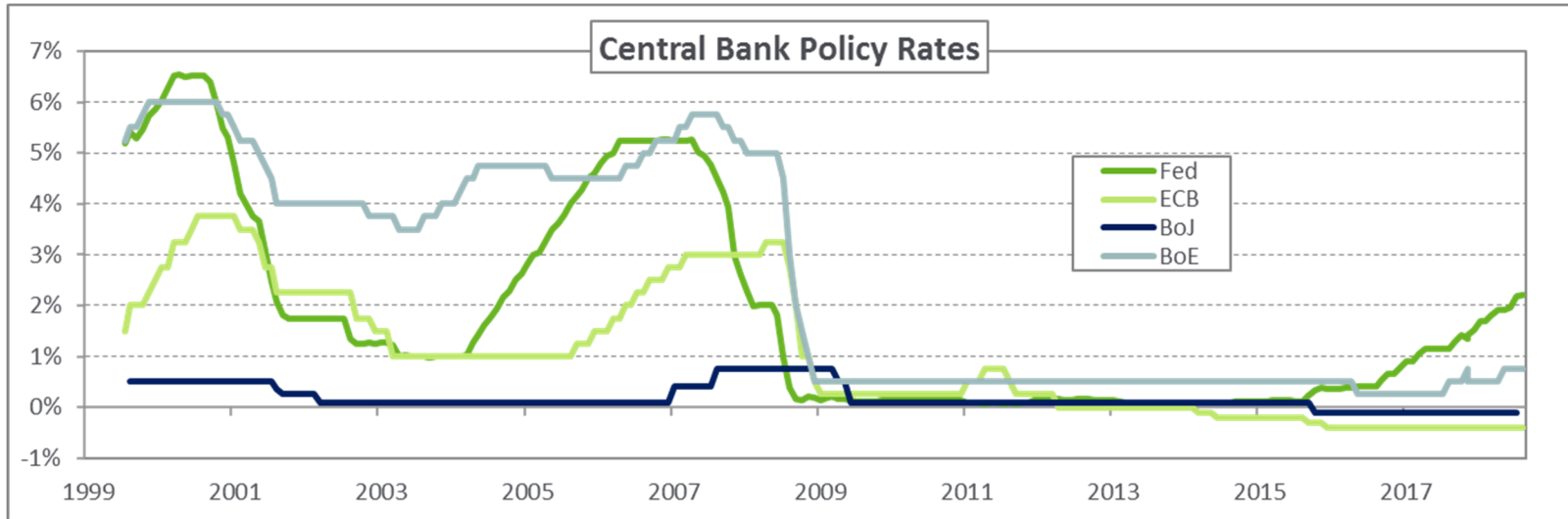
Source: IMF, Bloomberg



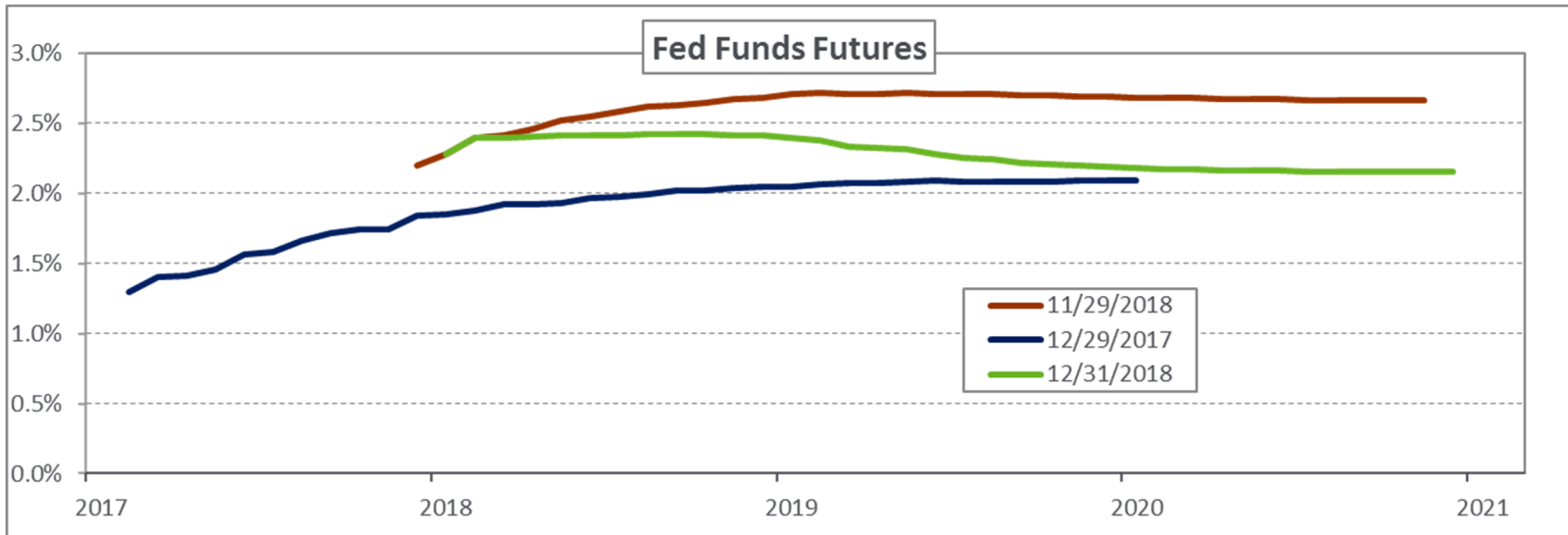
Source: Bloomberg



CENTRAL BANK RATES



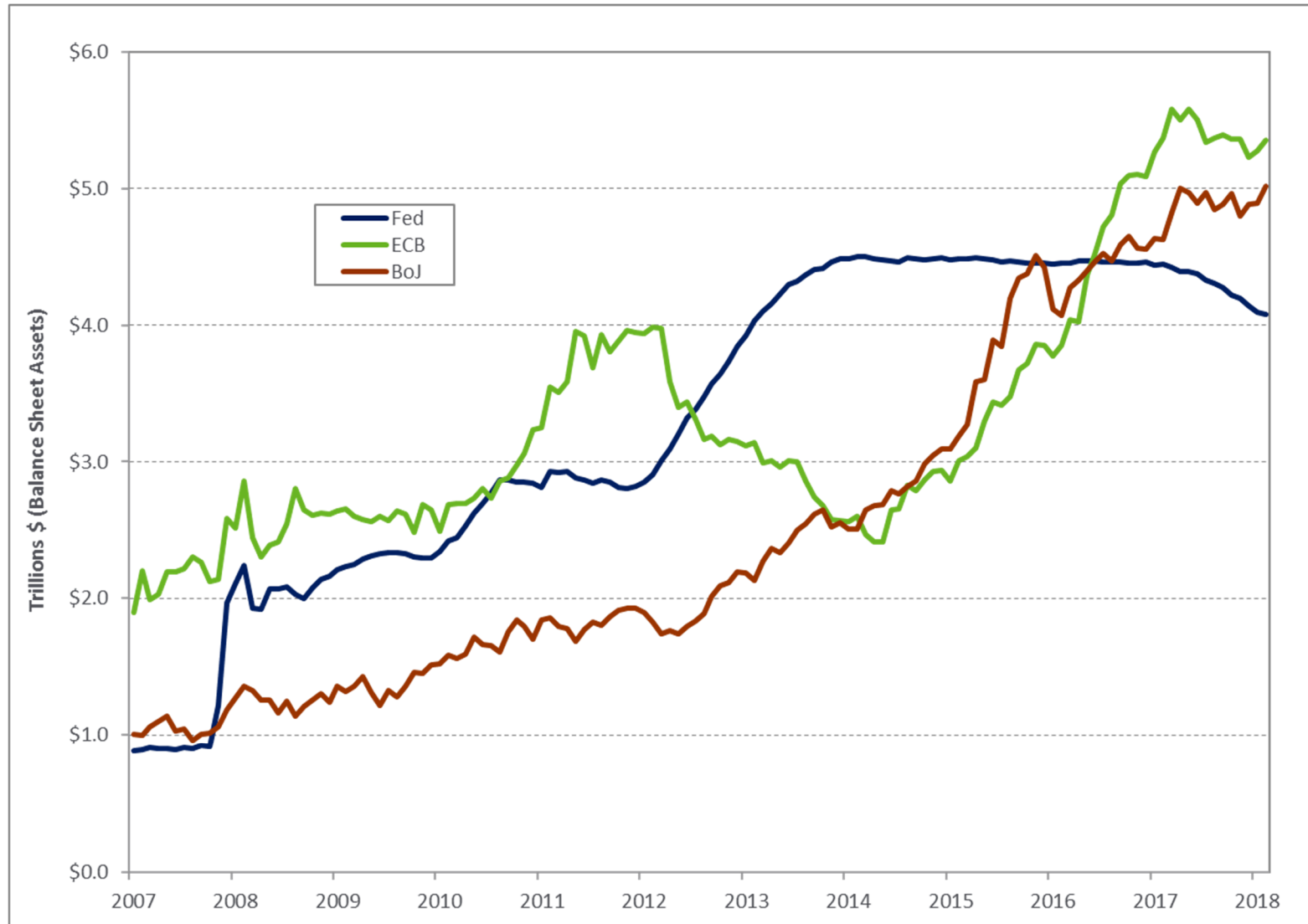
Source: Federal Reserve, ECB, Bank of Japan, Bank of England, Bloomberg



Source: Bloomberg



CENTRAL BANK BALANCE SHEETS



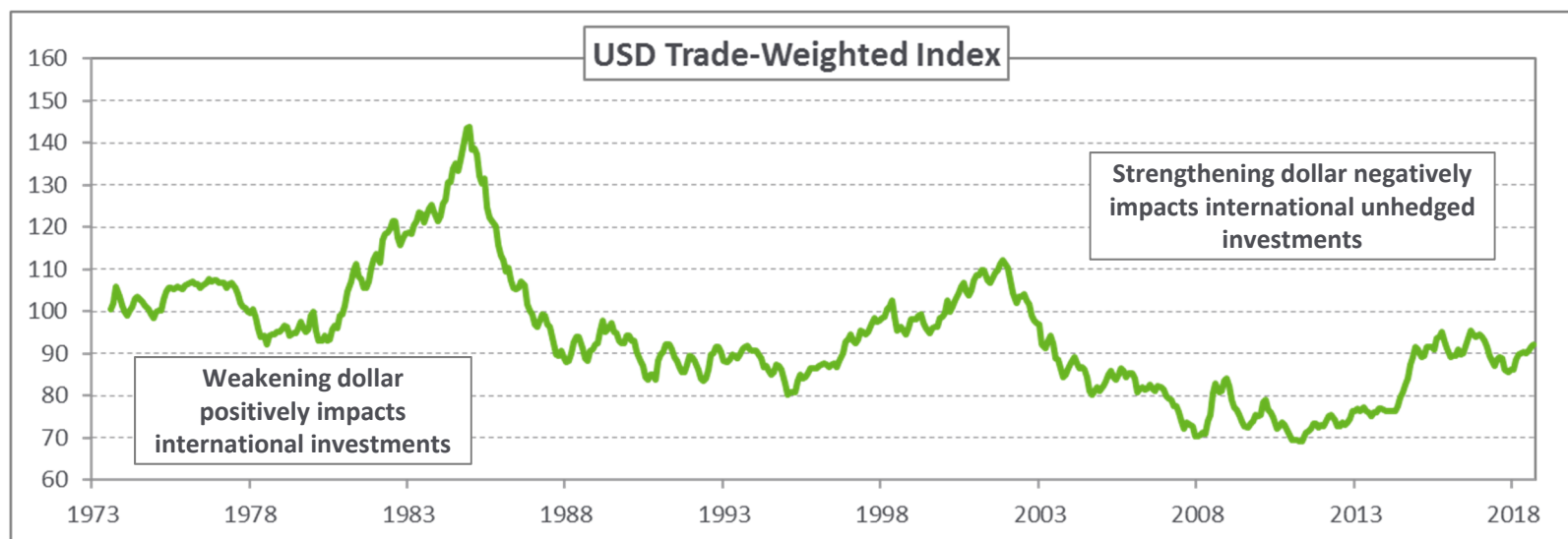
Source: Federal Reserve, Bank of Japan, ECB, Bloomberg, NEPC



CURRENCIES

Currencies	% Change Relative to USD			
	Spot	1 Month	YTD	1 Year
Euro	1.15	1.3%	-4.5%	-4.5%
British Pound	1.28	0.0%	-5.6%	-5.6%
Japanese Yen	109.69	3.5%	2.7%	2.7%
Swiss Franc	0.98	1.6%	-0.8%	-0.8%
Australian Dollar	0.70	-3.5%	-9.7%	-9.7%
Chinese Yuan	6.88	1.2%	-5.4%	-5.4%
Brazilian Real	3.87	-0.2%	-14.6%	-14.6%
Russian Ruble	69.72	-3.9%	-17.3%	-17.3%
Indian Rupee	69.77	-0.3%	-8.5%	-8.5%
Mexican Peso	19.65	3.6%	0.0%	0.0%
South African Rand	14.35	-3.3%	-13.7%	-13.7%

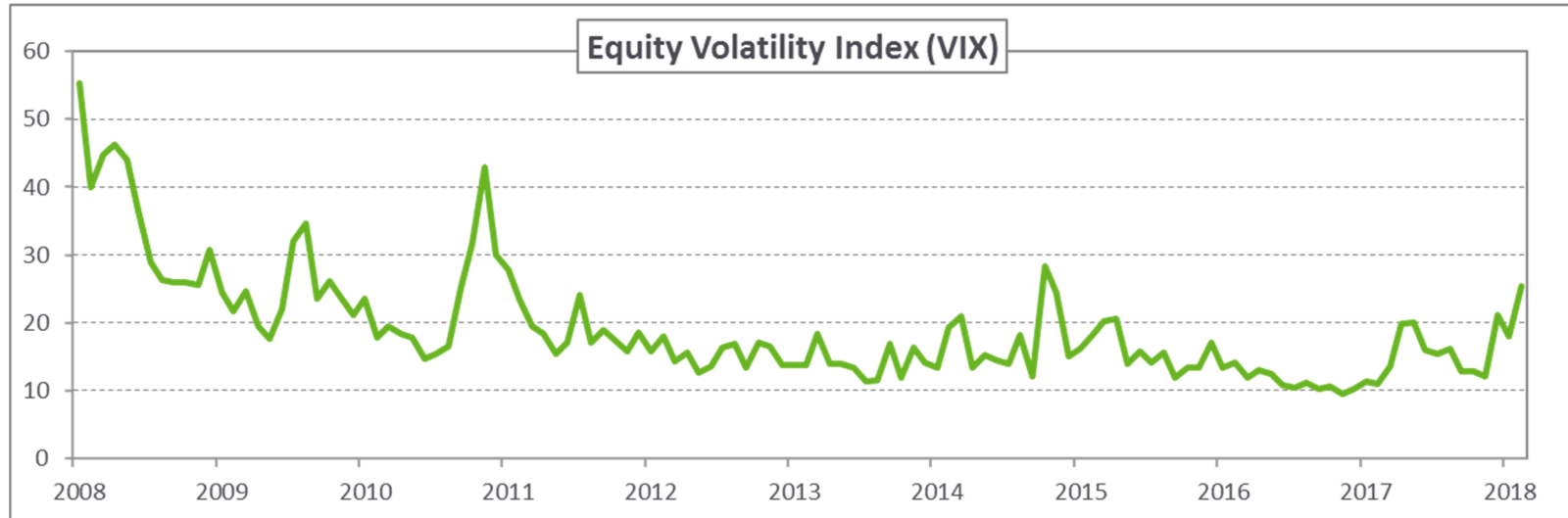
Source: Bloomberg



Source: Bloomberg



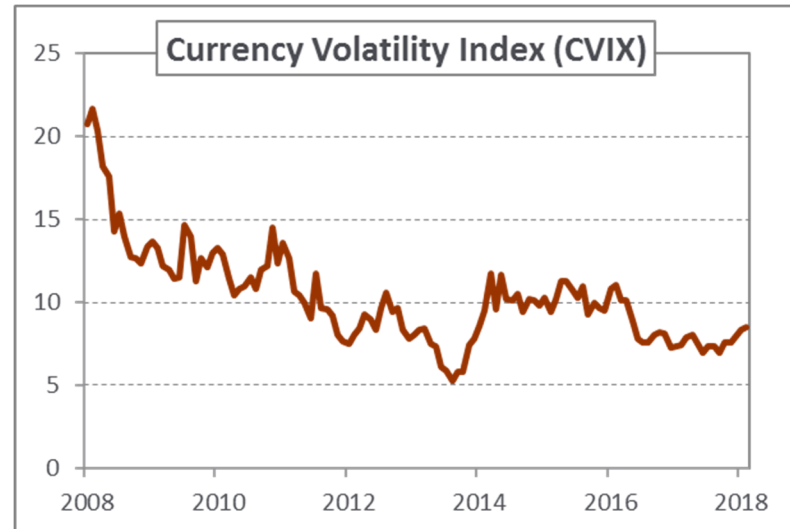
VOLATILITY



Source: CBOE, Bloomberg



Source: Merrill Lynch, Bloomberg



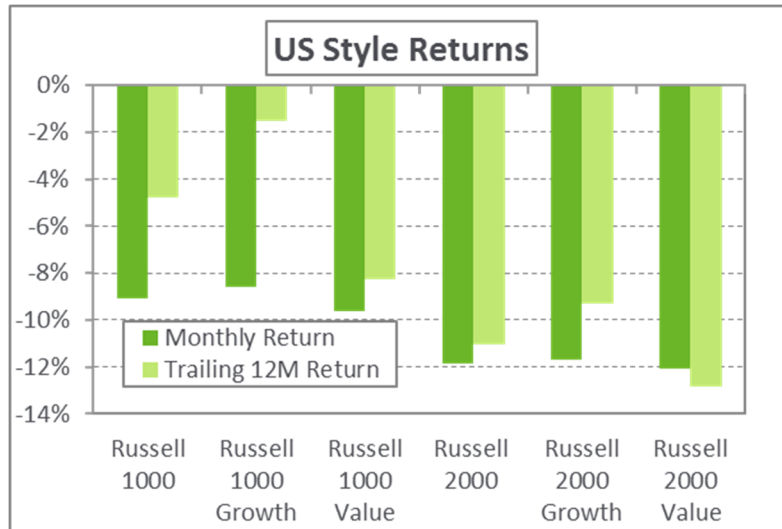
Source: Deutsche Bank, Bloomberg



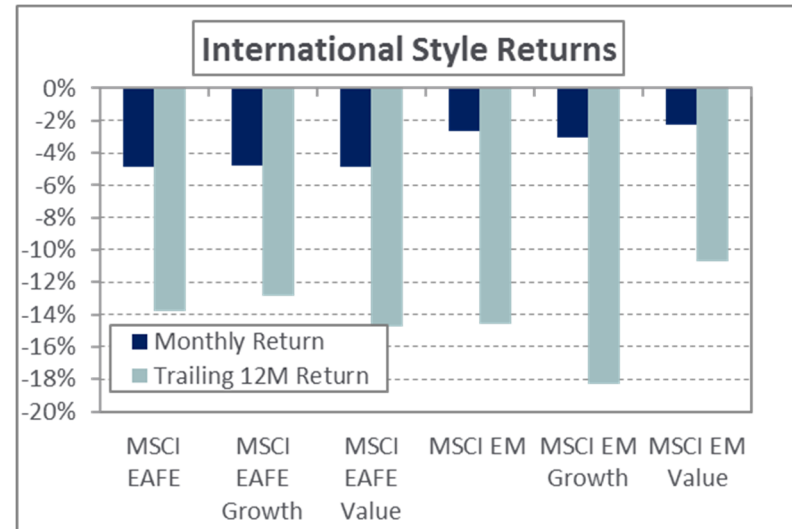
EQUITY

NEPC, LLC

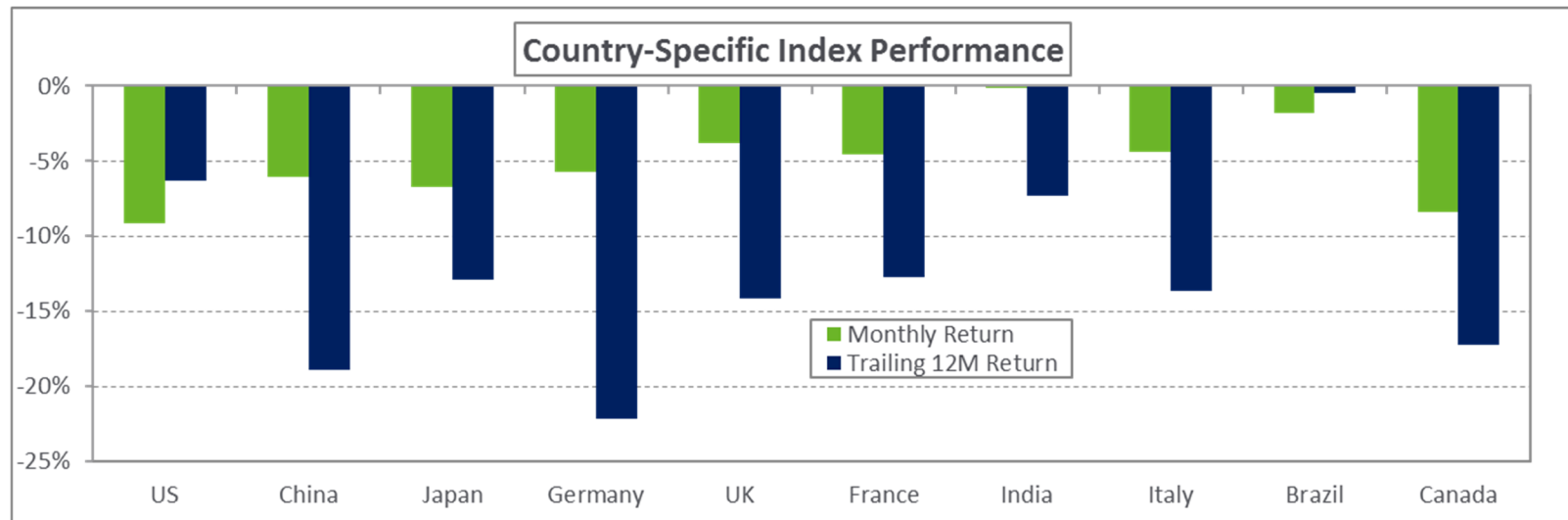
EQUITY INDEX PERFORMANCE



Source: Russell, Bloomberg



Source: MSCI, Bloomberg



Source: MSCI, Bloomberg
Represents returns in USD

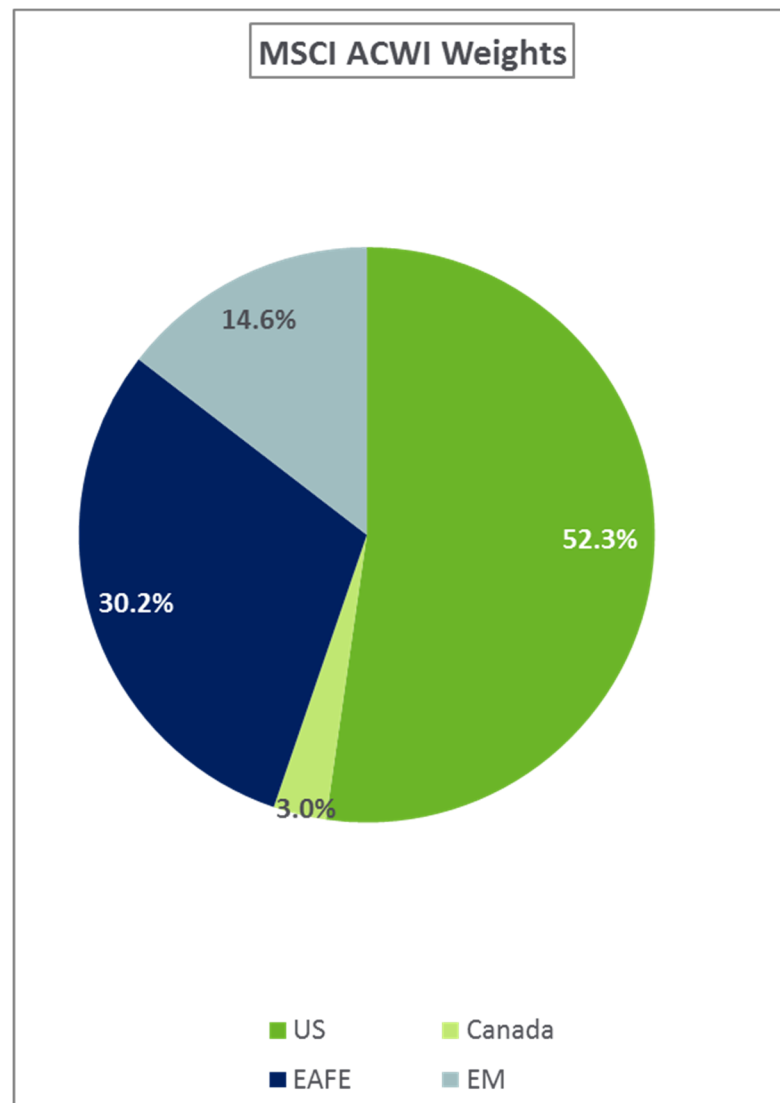


INDEX COMPOSITION

	MTD	QTD	YTD	Index Weight
S&P 500	-9.0%	-13.5%	-4.4%	100%
Cons Disc	-8.4%	-16.5%	0.4%	10.0%
Cons Staples	-9.2%	-5.4%	-9.2%	7.5%
Energy	-12.7%	-24.0%	-18.8%	5.4%
Financials	-11.3%	-13.3%	-13.5%	12.7%
Health Care	-8.6%	-8.8%	5.9%	15.8%
Industrials	-10.7%	-17.4%	-13.8%	9.3%
Info Tech	-8.5%	-17.4%	-0.7%	20.0%
Materials	-7.0%	-12.5%	-15.2%	2.8%
Real Estate	-7.6%	-4.1%	-3.3%	3.0%
Telecom	-7.3%	-13.3%	-13.7%	10.2%
Utilities	-4.1%	1.1%	3.0%	3.4%

	MTD	QTD	YTD	Index Weight
MSCI ACWI	-7.0%	-12.7%	-9.0%	100%
Cons Disc	-7.0%	-14.4%	-8.3%	10.8%
Cons Staples	-6.1%	-6.6%	-10.5%	8.4%
Energy	-9.0%	-20.2%	-13.3%	6.0%
Financials	-7.9%	-11.9%	-15.7%	17.7%
Health Care	-8.1%	-9.6%	1.7%	11.8%
Industrials	-7.9%	-15.6%	-14.4%	10.7%
Info Tech	-7.6%	-17.1%	-5.8%	14.1%
Materials	-3.5%	-13.4%	-16.0%	5.0%
Real Estate	-4.9%	-4.0%	-7.7%	3.2%
Telecom	-6.0%	-6.2%	-10.9%	8.9%
Utilities	-2.0%	0.7%	1.4%	3.4%

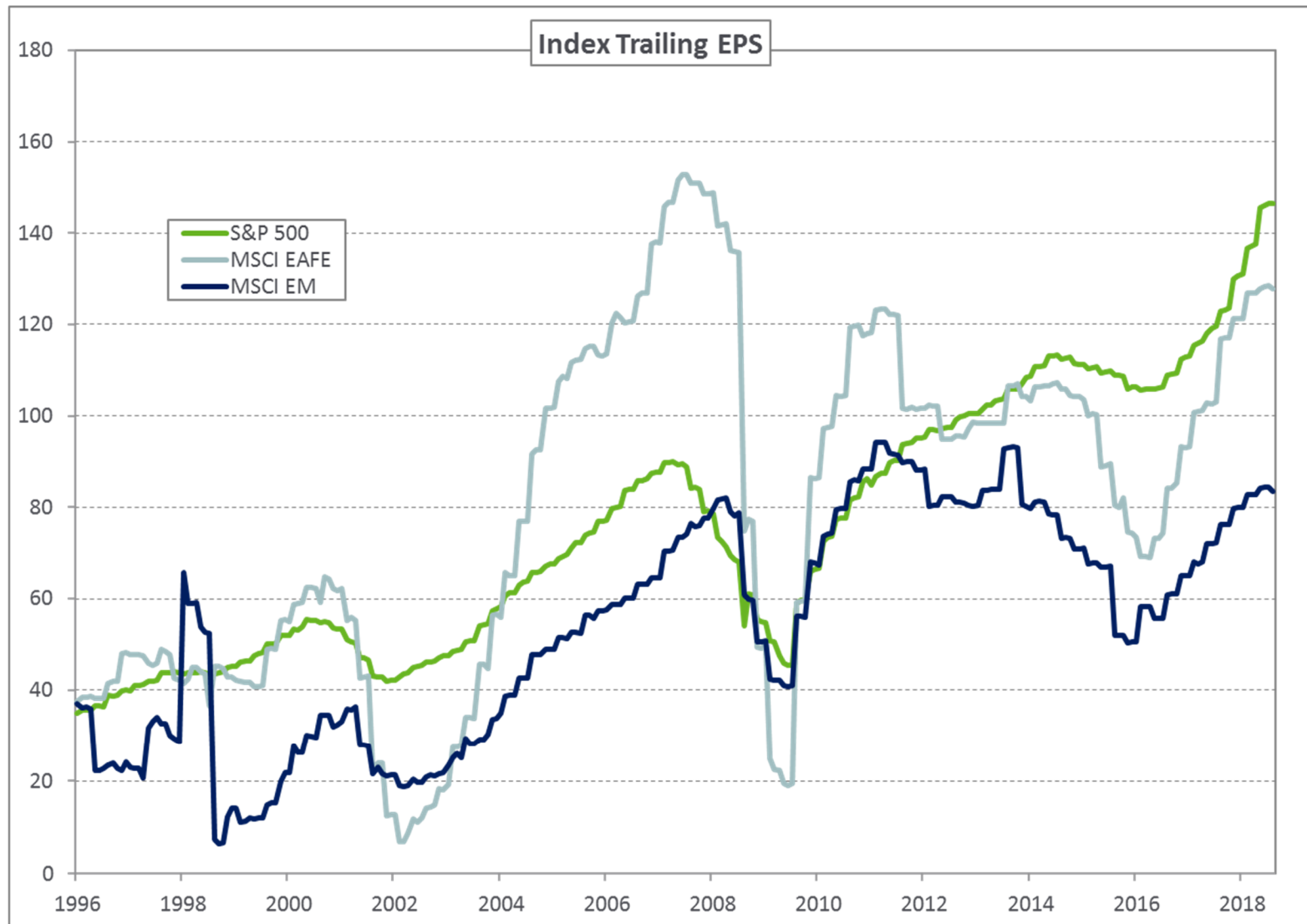
Source: S&P, MSCI, Bloomberg



Source: MSCI, Bloomberg



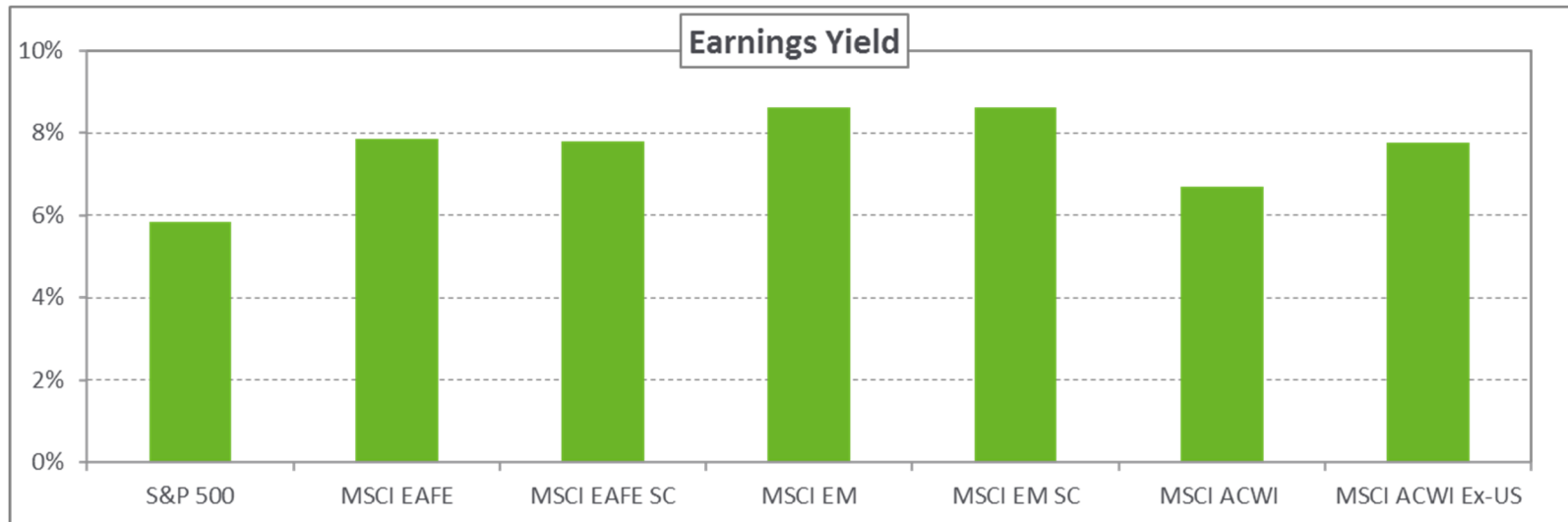
EARNINGS



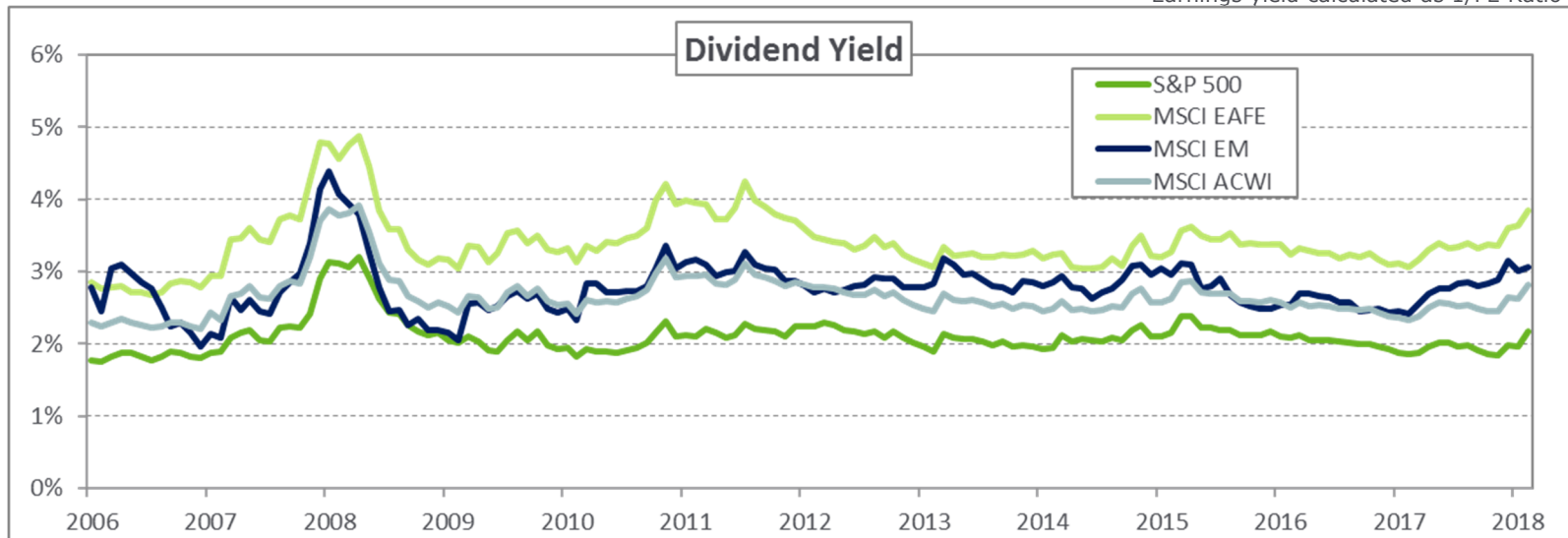
Source: S&P, MSCI, Bloomberg



YIELDS



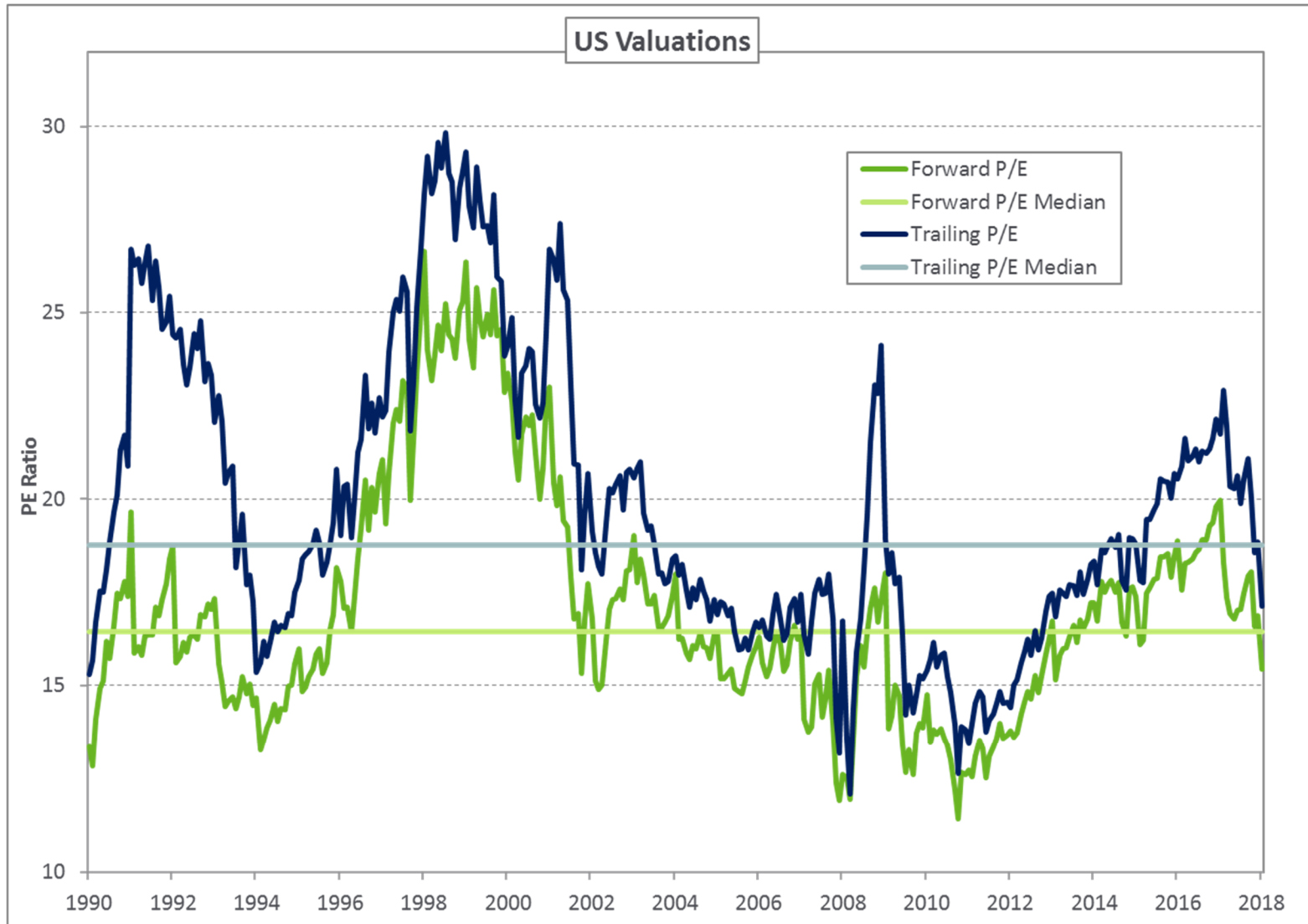
Source: S&P, MSCI, Bloomberg
Earnings yield calculated as 1/PE Ratio



Source: S&P, MSCI, Bloomberg



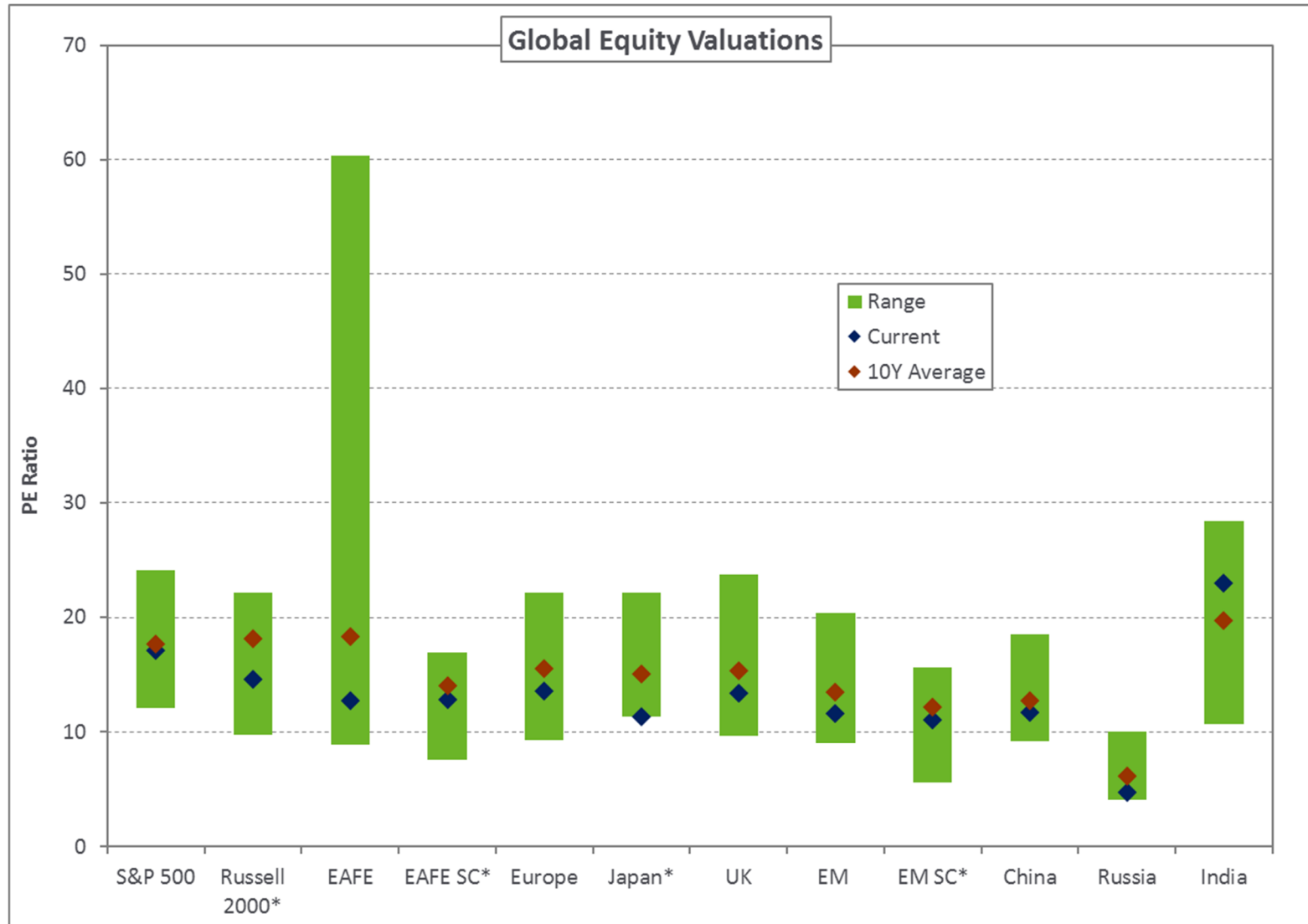
US EQUITY VALUATIONS



Source: S&P, Bloomberg
Medians calculated as of 01/31/1990



GLOBAL EQUITY VALUATIONS



Source: S&P, Russell, MSCI, Bloomberg, NEPC
 *Denotes the use of index-adjusted positive PE ratio
 Ranges calculated using trailing 10-year figures



CREDIT

NEPC, LLC

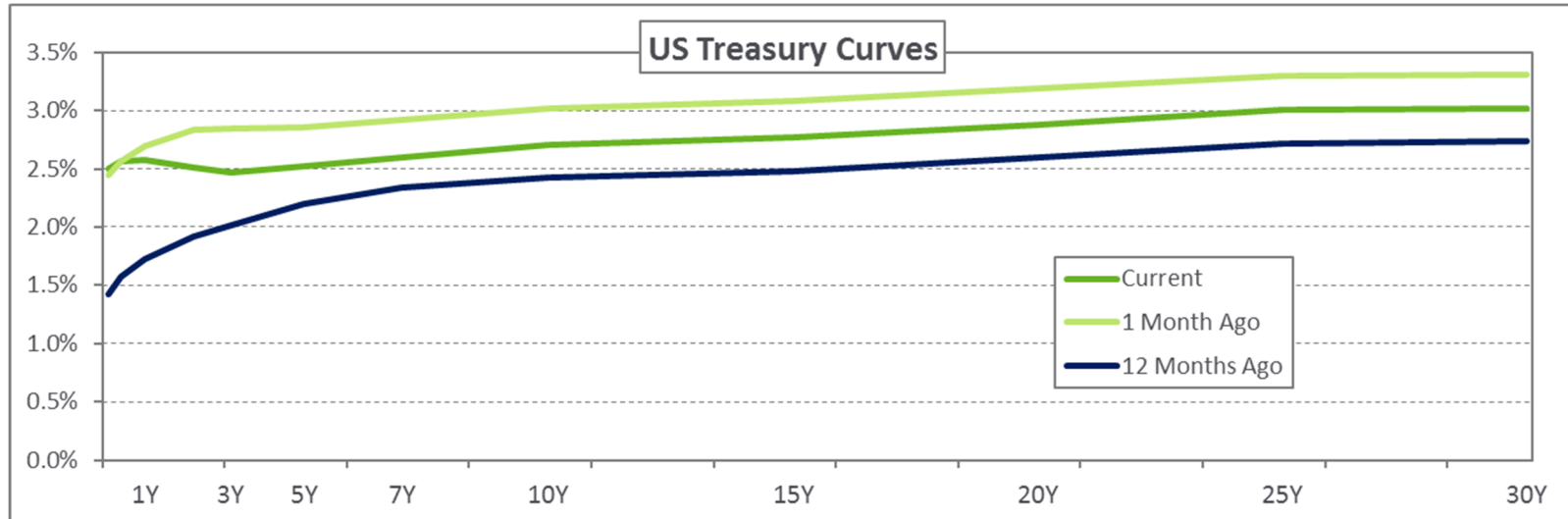
FIXED INCOME CHARACTERISTICS

	Averages			Total Returns (%)		
	Yield to Worst	Spread (bps)	Duration (Years)	1-Month	YTD	1-Year
Barclays Aggregate	3.3%	54	5.9	1.8%	1.6%	0.0%
Barclays Treasury	2.6%	-	6.1	2.2%	2.6%	0.9%
Barclays Agency	2.8%	16	4.0	1.4%	1.9%	1.3%
Barclays MBS	3.4%	35	4.7	1.8%	2.1%	1.0%
Barclays ABS	3.0%	47	2.3	0.9%	1.3%	1.7%
Barclays CMBS	3.4%	86	5.3	1.6%	1.7%	0.8%
Barclays Corp IG	4.2%	153	7.1	1.5%	-0.2%	-2.5%
Barclays Muni	2.7%	-	6.2	1.2%	1.7%	1.3%
Barclays HY Muni	5.0%	-	8.9	0.9%	0.3%	4.8%
Barclays TIPS	2.8%	-	5.3	0.5%	-0.4%	-1.3%
Barclays HY	8.0%	526	4.0	-2.1%	-4.5%	-2.1%
Barclays Global Agg	2.0%	55	7.0	2.0%	1.2%	-1.2%
JPM EMBI Glob Div	7.0%	434.61	7.1	1.3%	-1.3%	-4.3%
JPM CEMBI Broad	5.3%	337.93	4.5	0.7%	0.0%	-1.6%
JPM GBI - EM	6.5%	-	5.1	1.3%	2.1%	-6.2%

Source: Barclays, JPM, Bloomberg



TREASURIES



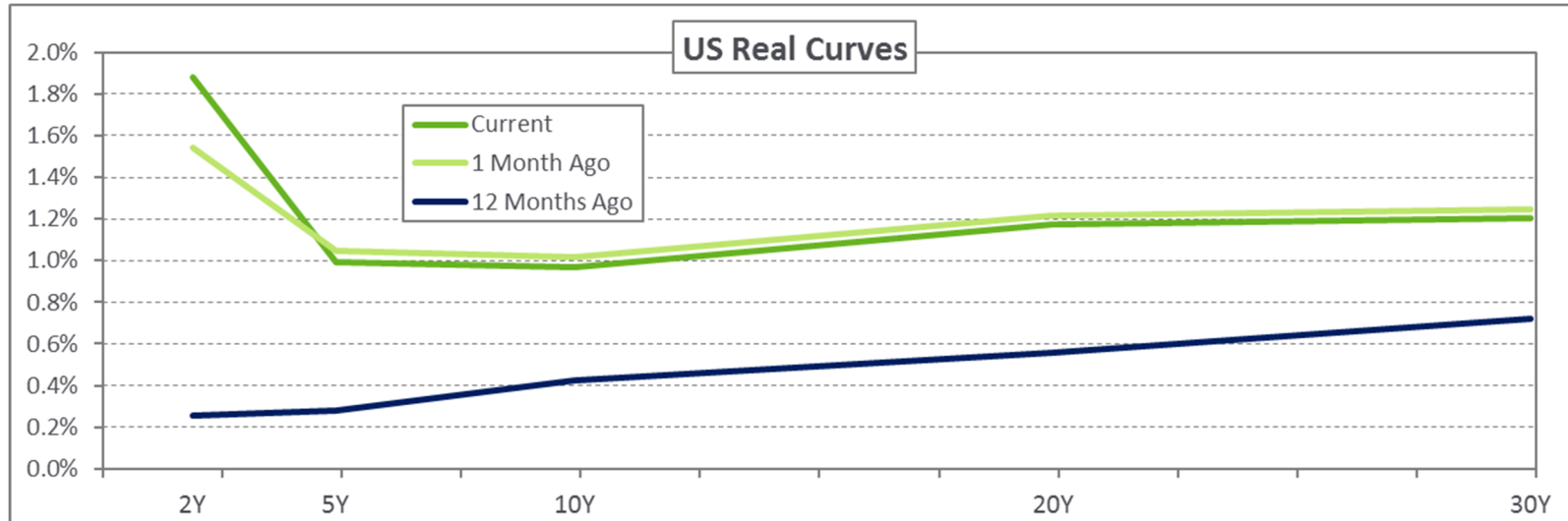
Source: Bloomberg

	Yield (%)			Total Return (%)	
	Current	1 Month Ago	12 Months Ago	1 Month	12 Months
3M Treasury	2.51%	2.45%	1.42%	0.19%	1.83%
6M Treasury	2.57%	2.56%	1.57%	0.22%	1.92%
2Y Treasury	2.51%	2.83%	1.92%	0.81%	1.40%
5Y Treasury	2.52%	2.86%	2.20%	1.86%	1.42%
10Y Treasury	2.70%	3.02%	2.42%	3.01%	0.00%
30Y Treasury	3.02%	3.31%	2.74%	5.94%	-2.72%

Source: Barclays, Bloomberg



REAL YIELDS



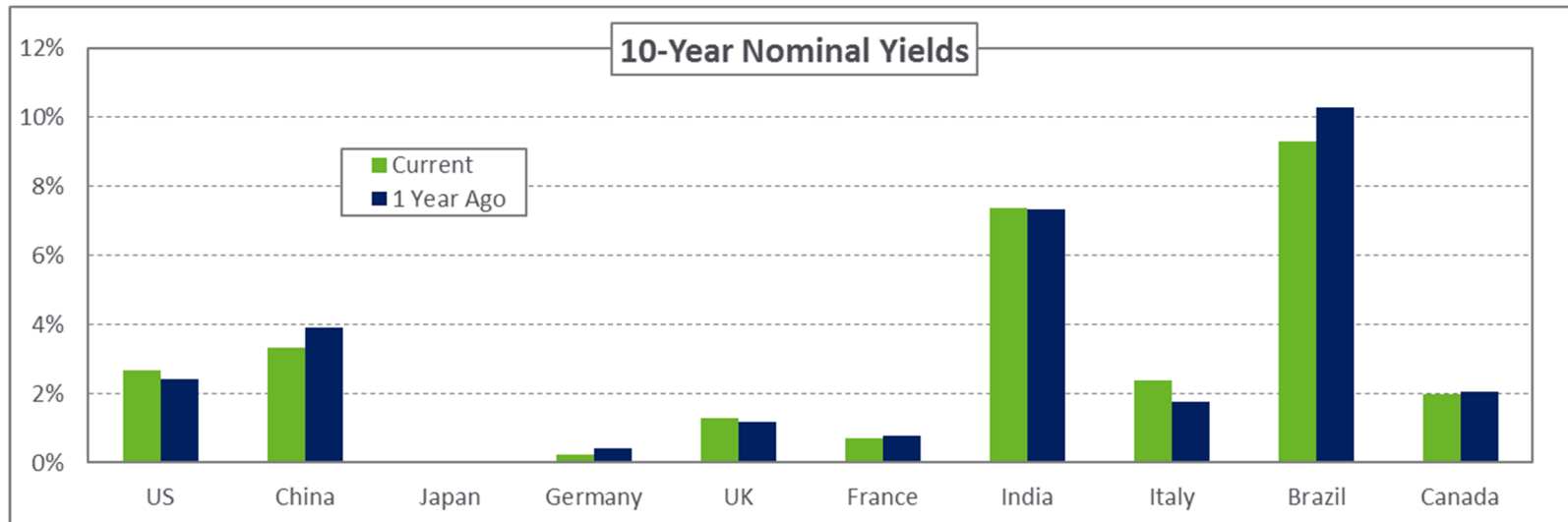
Source: Bloomberg

	Real Rates			Breakeven Rates	
	Current	1 Month Ago	12 Months Ago	Current	12 Months Ago
2Y Treasury	1.88%	1.54%	0.25%	0.66%	1.56%
5Y Treasury	0.99%	1.05%	0.28%	1.49%	1.88%
10Y Treasury	0.97%	1.02%	0.42%	1.71%	1.98%
20Y Treasury	1.17%	1.22%	0.56%	1.66%	1.86%
30Y Treasury	1.21%	1.25%	0.72%	1.82%	2.02%

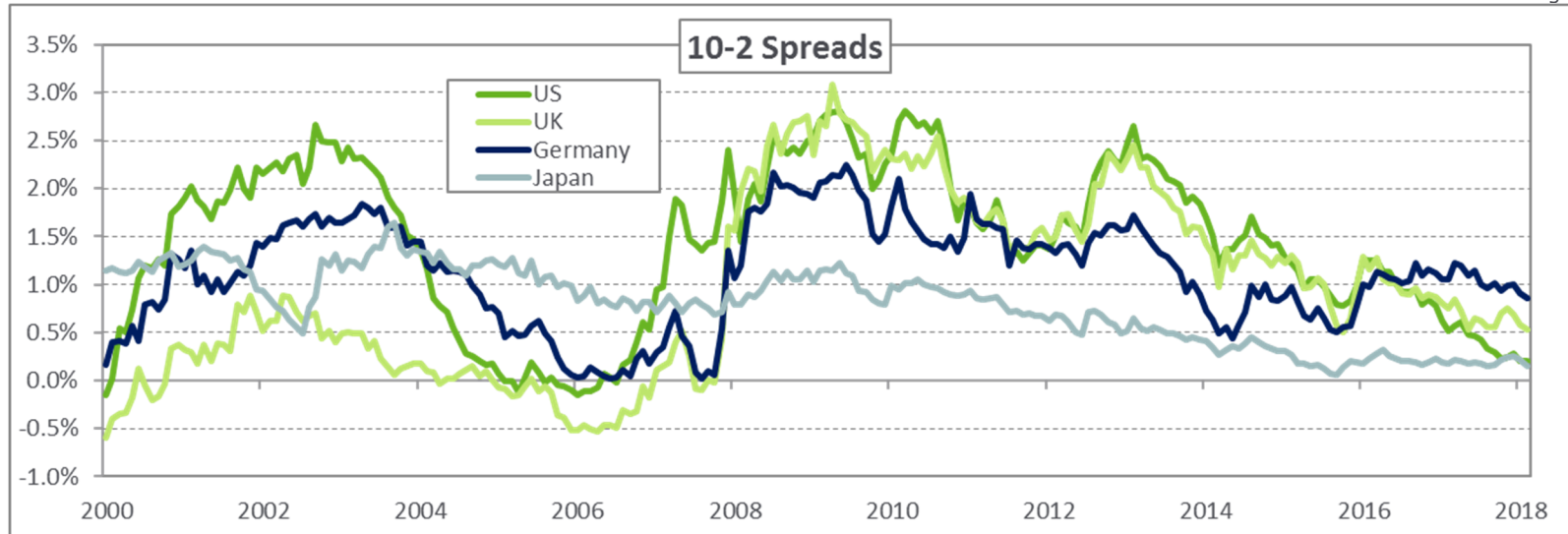
Source: Barclays, Bloomberg



NOMINAL YIELDS



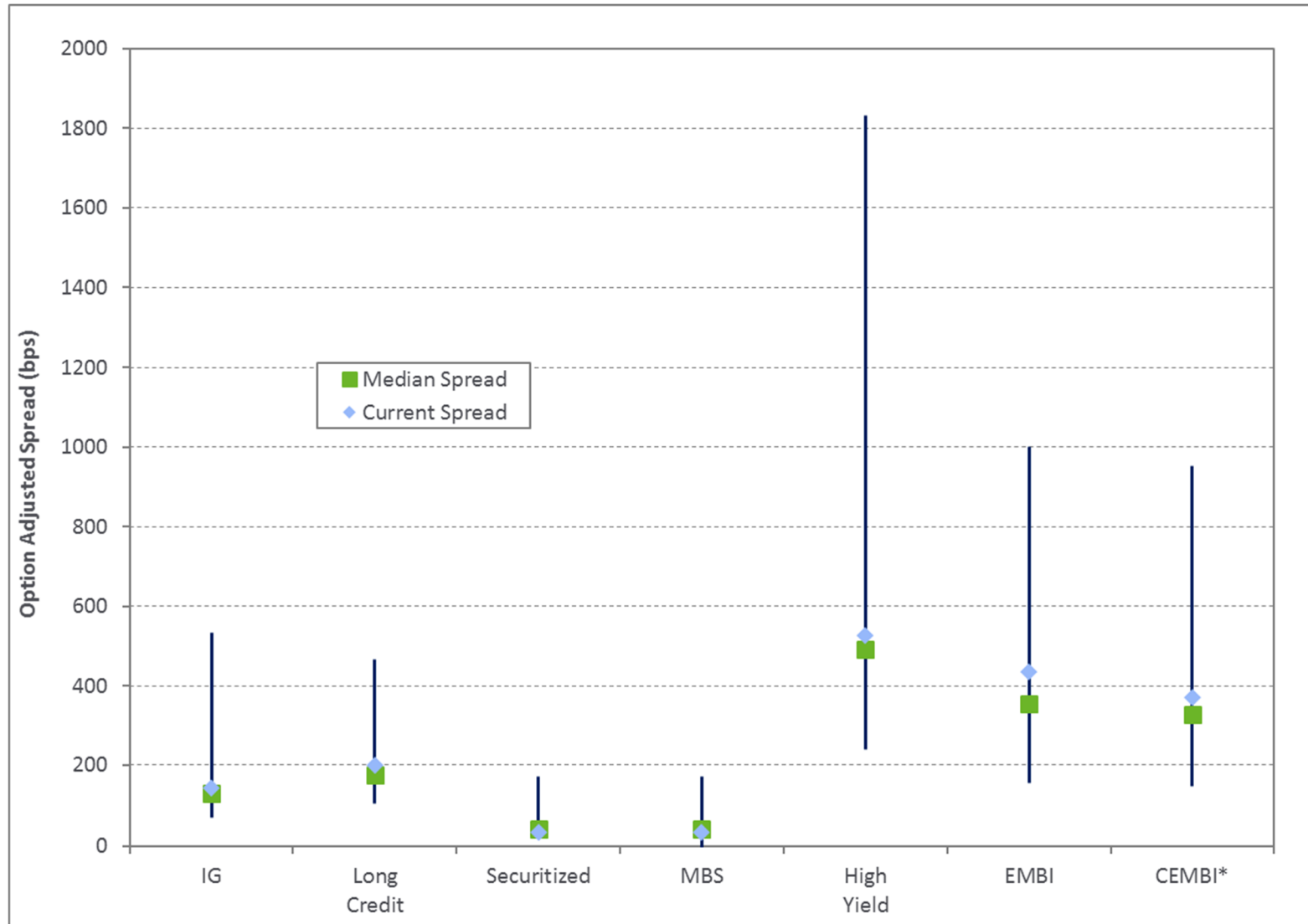
Source: Bloomberg



Source: Bloomberg



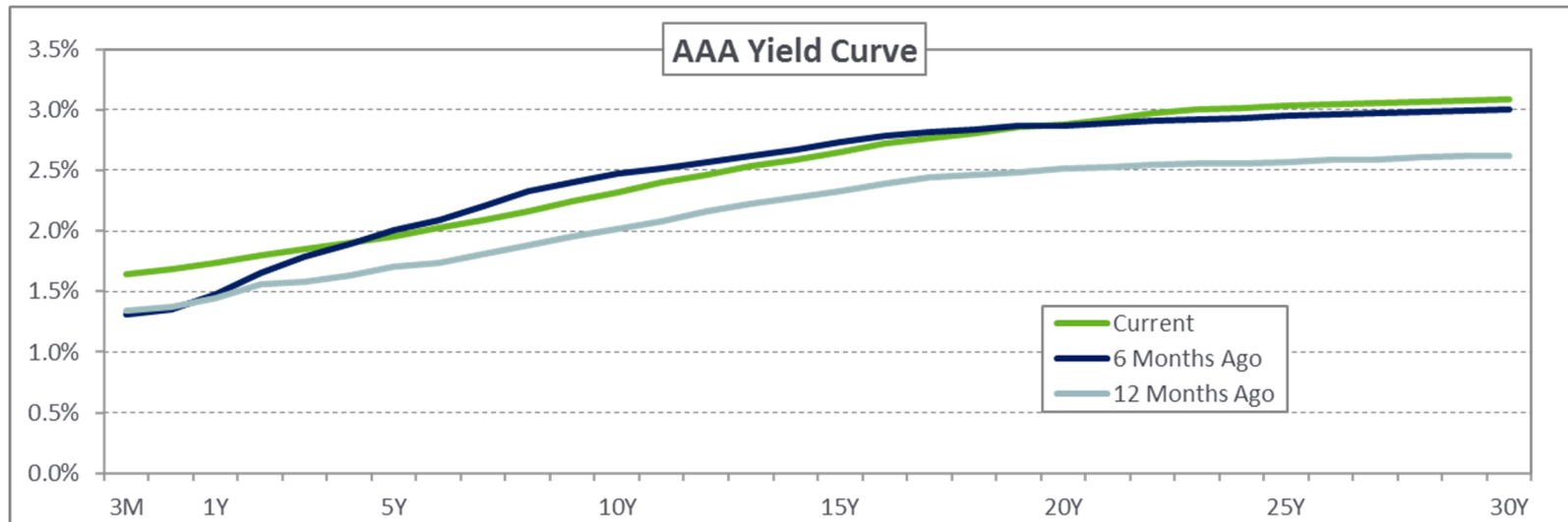
CREDIT SPREADS



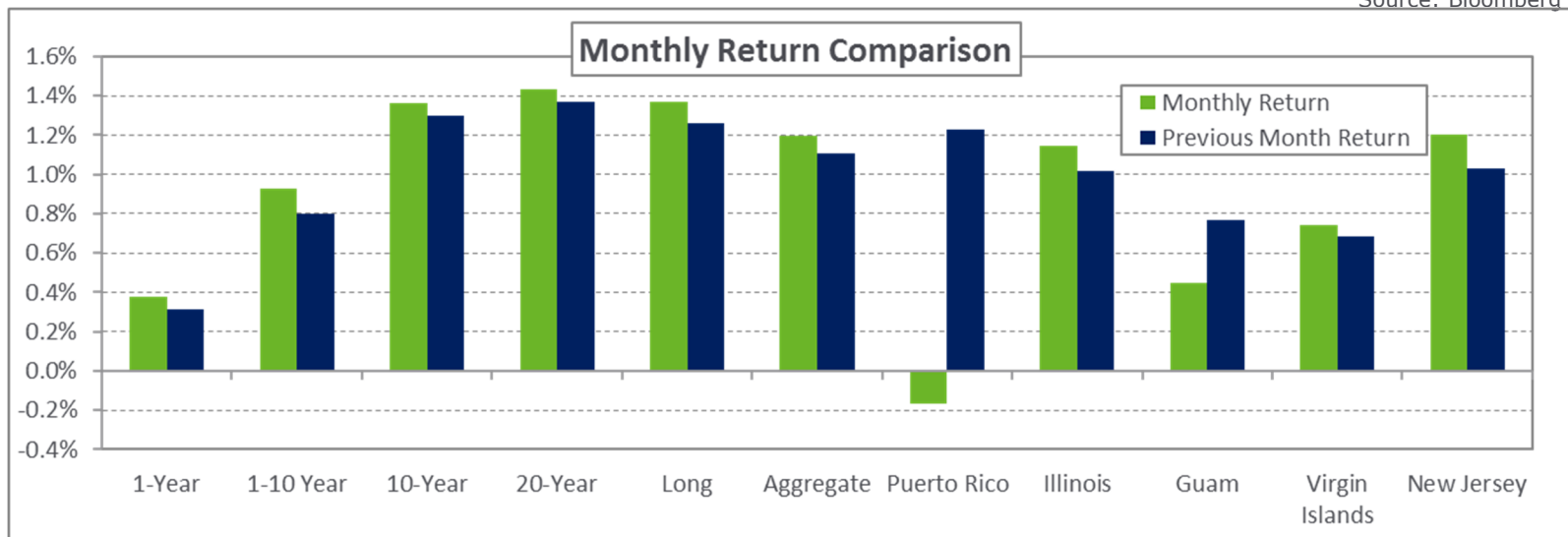
Source: Barclays, JPM, Bloomberg
 Data range: 01/31/2000 through month-end
 *JPM CEMBI calculated since 12/31/2001



MUNICIPAL BONDS



Source: Bloomberg



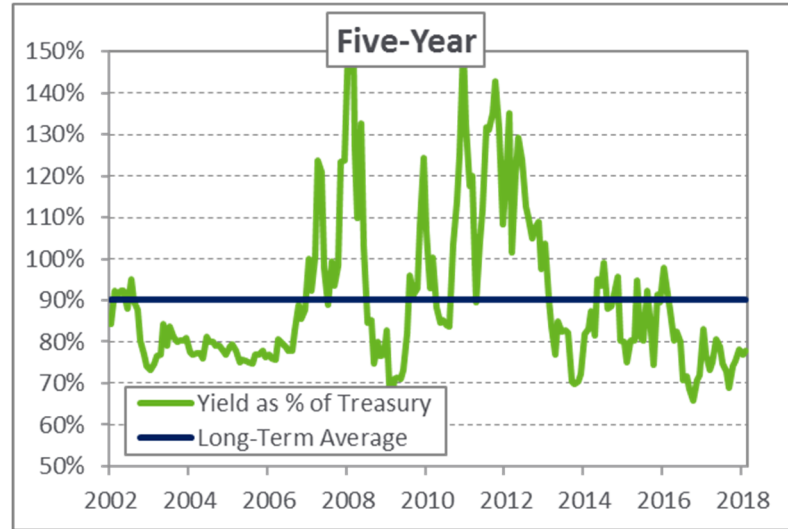
Source: Barclays, Bloomberg



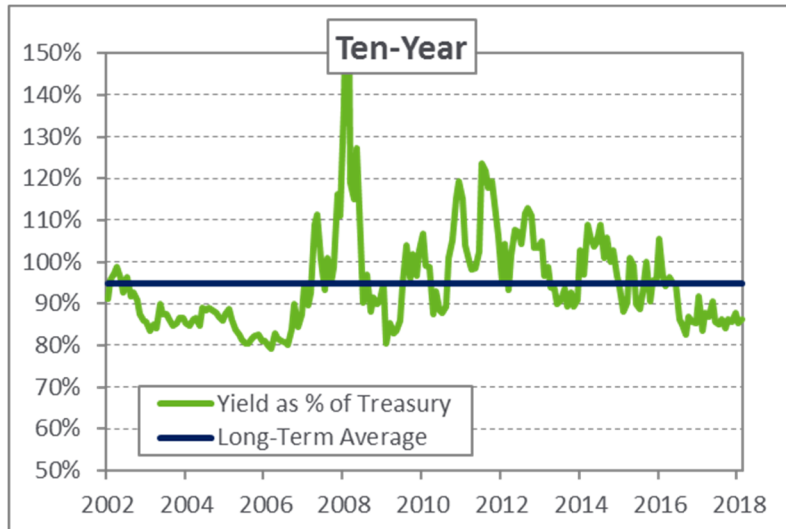
MUNICIPAL BOND YIELDS



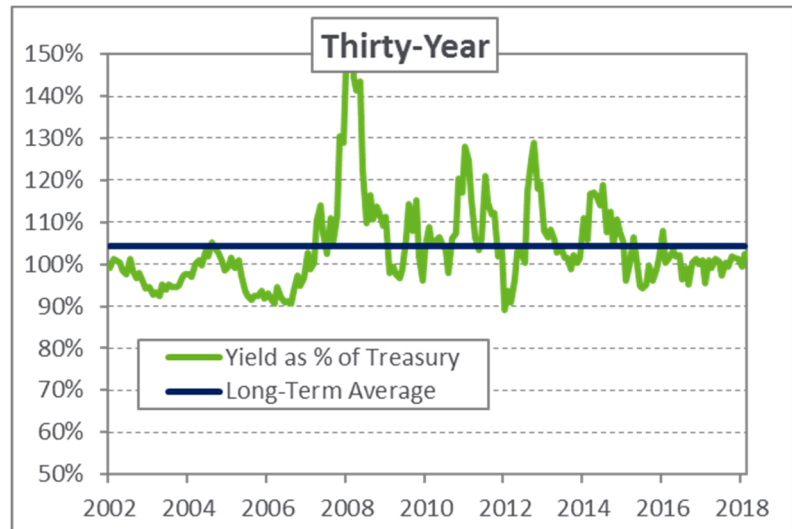
Source: Bloomberg
Long-term average calculated since 11/29/2002



Source: Bloomberg
Long-term average calculated since 11/29/2002



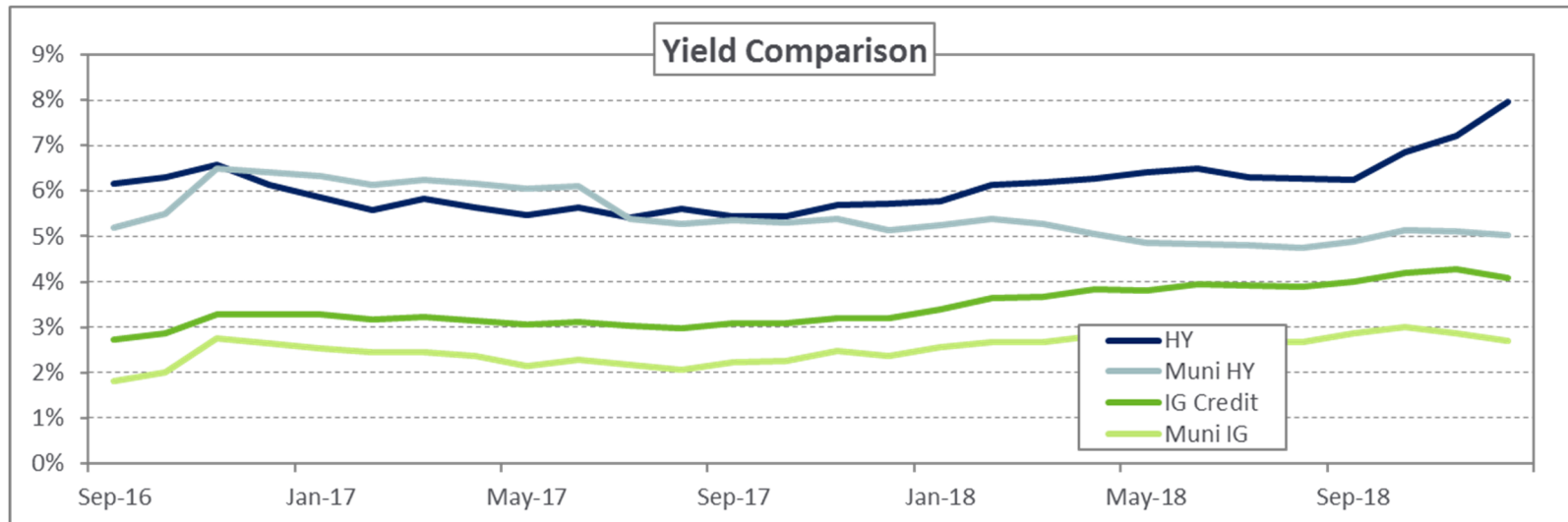
Source: Bloomberg
Long-term average calculated since 11/29/2002



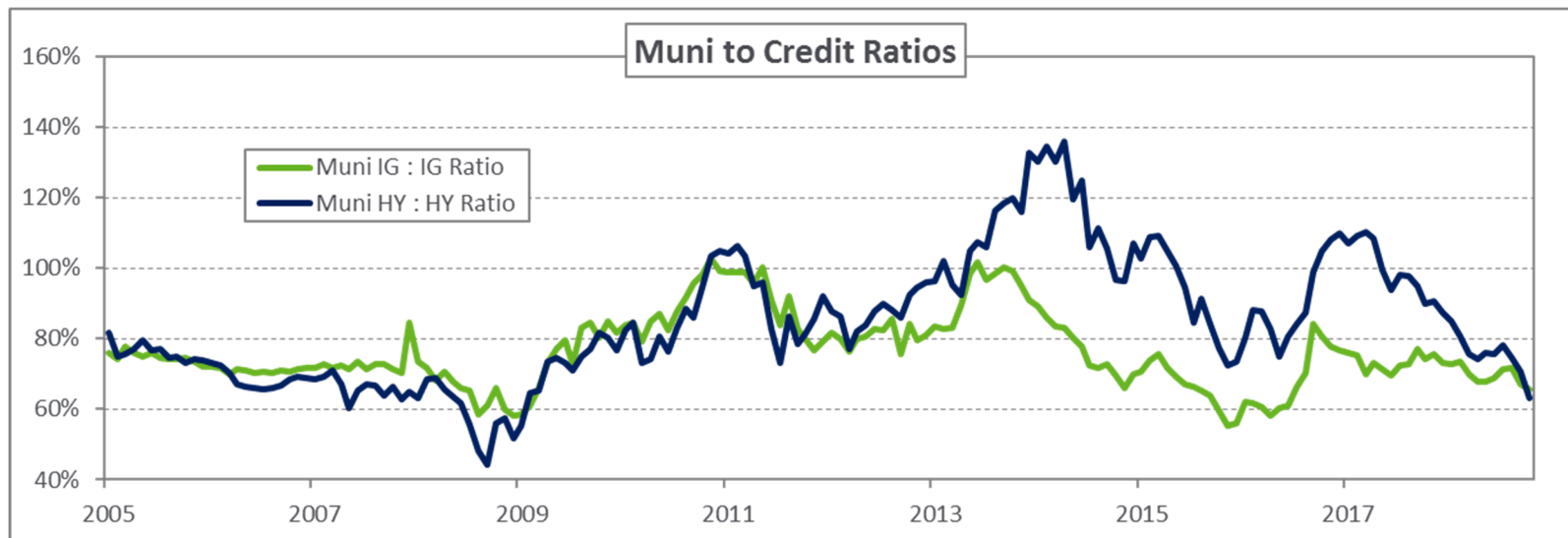
Source: Bloomberg
Long-term average calculated since 11/29/2002



MUNICIPAL BOND RATIOS



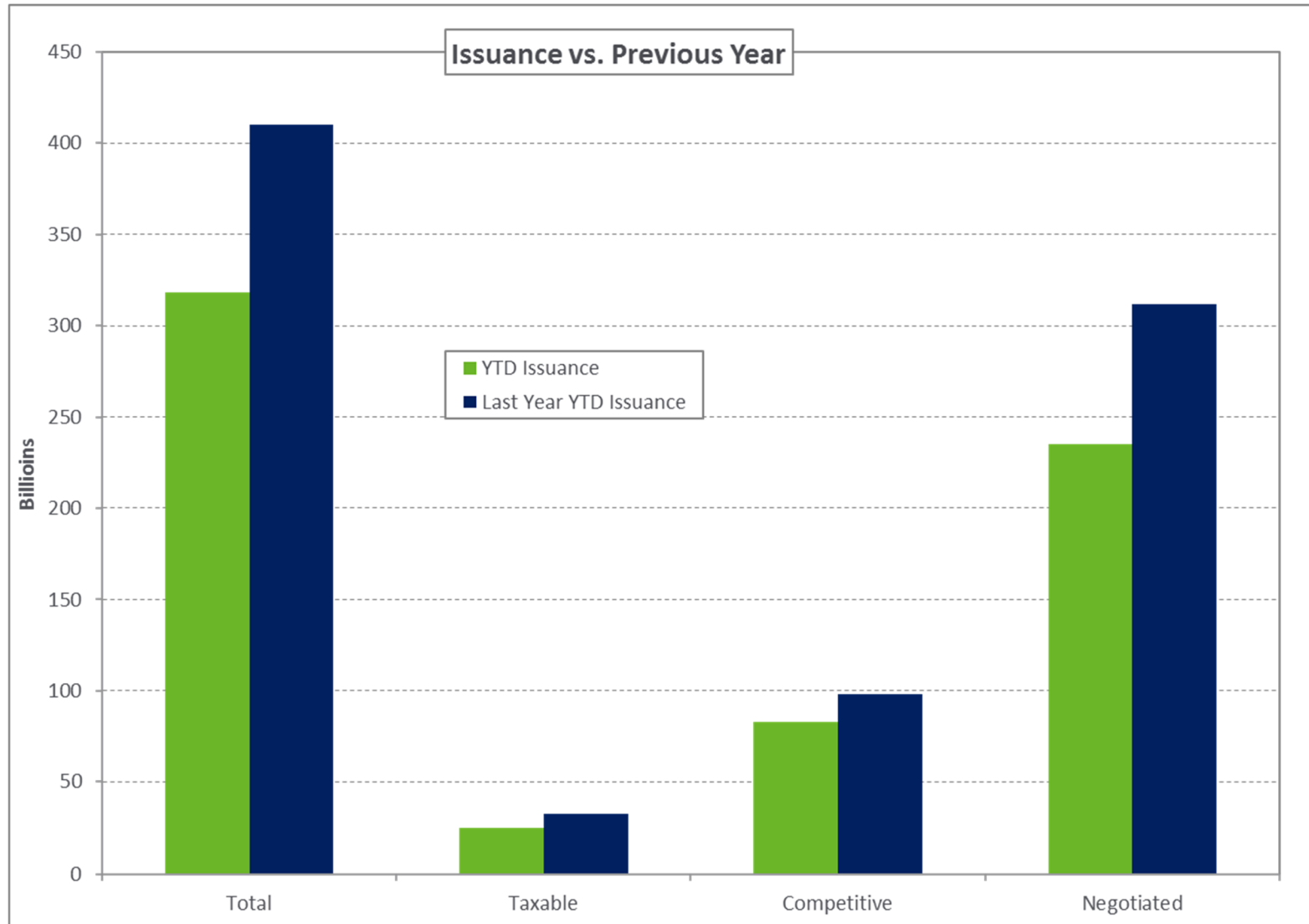
Source: Barclays, Bloomberg



Source: Barclays, Bloomberg, NEPC



MUNICIPAL BOND ISSUANCE



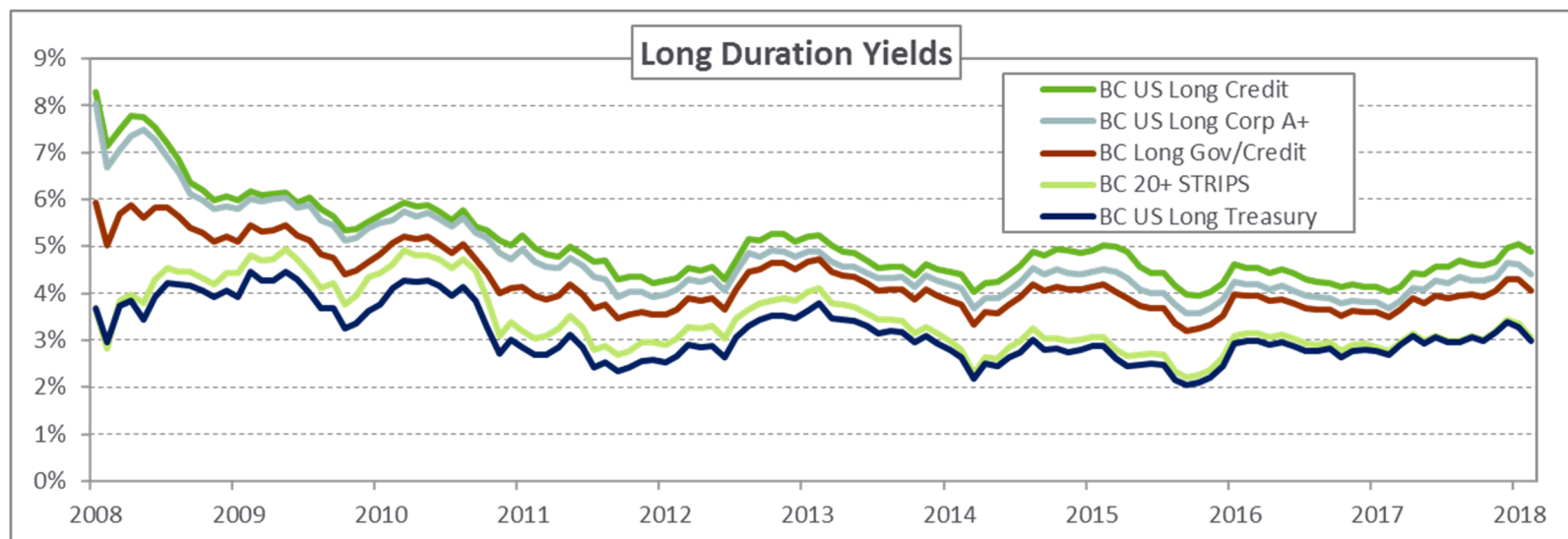
Source: Bloomberg



LONG DURATION

Index	Month-End Yield	1 Month Prior Yield	1 Year Prior Yield	Duration
Barclays Long Treasury	3.0%	3.3%	2.7%	17.4
Barclays 20+ STRIPS	3.1%	3.4%	2.8%	25.8
Barclays Long Gov/Credit	4.1%	4.3%	3.5%	15.0
Barclays Long Credit	4.9%	5.0%	4.0%	13.3
Barclays Long Corp A+	4.4%	4.6%	3.7%	14.2

Source: Barclays, Bloomberg



Source: Barclays, Bloomberg



REAL ASSETS

NEPC, LLC

REAL ASSETS INDEX PERFORMANCE

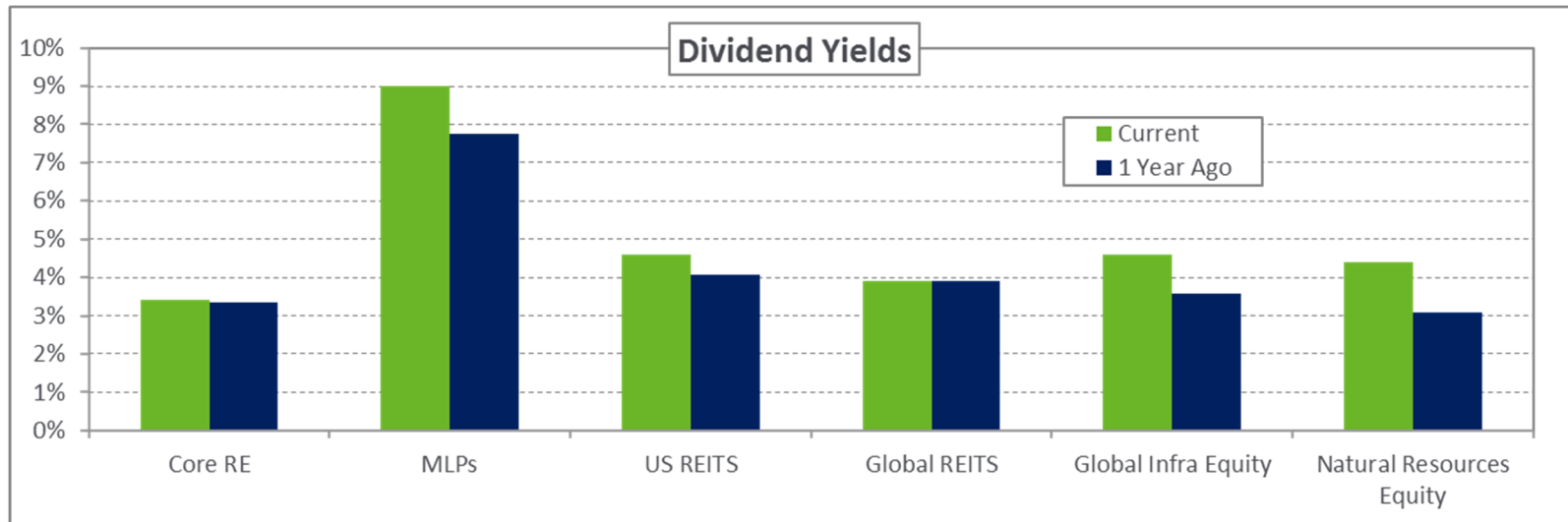
Index	1 Month	3 Month	YTD	1 Year	3 Year	5 Year
Bloomberg Commodity Index	-6.9%	-9.4%	-11.2%	-11.2%	0.3%	-8.8%
Bloomberg Sub Agriculture Index	-2.4%	0.2%	-10.8%	-10.8%	-6.8%	-9.1%
Coffee	-5.1%	-3.1%	-26.5%	-26.5%	-15.2%	-10.5%
Corn	-0.5%	2.7%	-4.6%	-4.6%	-8.9%	-11.9%
Cotton	-8.3%	-6.9%	-7.3%	-7.3%	4.9%	-1.3%
Soybean	-1.4%	2.7%	-13.4%	-13.4%	-3.4%	-6.2%
Soybean Oil	-1.6%	-5.5%	-20.8%	-20.8%	-7.9%	-10.6%
Sugar	-6.1%	8.1%	-26.1%	-26.1%	-12.2%	-14.9%
Wheat	-2.2%	-2.5%	3.5%	3.5%	-11.7%	-13.5%
Bloomberg Sub Energy	-18.7%	-25.8%	-12.7%	-12.7%	-1.0%	-18.5%
Brent Crude	-9.5%	-34.6%	-14.9%	-14.9%	6.8%	-19.1%
Heating Oil	-7.7%	-27.9%	-15.7%	-15.7%	9.0%	-14.7%
Natural Gas	-33.0%	0.0%	-0.1%	-0.1%	-11.2%	-21.8%
Unleaded Gas	-7.3%	-37.4%	-28.3%	-28.3%	-7.8%	-17.4%
WTI Crude Oil	-10.8%	-37.5%	-20.5%	-20.5%	-3.6%	-21.9%
Bloomberg Sub Industrial Metals	-5.1%	-8.7%	-19.5%	-19.5%	7.7%	-3.2%
Aluminum	-6.3%	-10.9%	-16.9%	-16.9%	6.2%	-2.2%
Copper	-5.4%	-6.2%	-21.2%	-21.2%	5.6%	-6.0%
Nickel	-4.7%	-15.1%	-16.4%	-16.4%	5.5%	-6.3%
Zinc	-2.9%	-3.8%	-21.4%	-21.4%	17.1%	3.7%
Bloomberg Sub Precious Metals	5.8%	6.8%	-4.6%	-4.6%	5.1%	-0.9%
Gold	4.7%	7.2%	-2.8%	-2.8%	5.7%	0.7%
Silver	9.5%	5.4%	-10.2%	-10.2%	2.7%	-5.5%
Bloomberg Sub Livestock	-0.9%	0.7%	-1.7%	-1.7%	-0.4%	-2.2%
Lean Hogs	-9.5%	-2.4%	-11.0%	-11.0%	-3.9%	-8.9%
Live Cattle	3.0%	1.9%	2.6%	2.6%	1.2%	1.6%

Source: Bloomberg

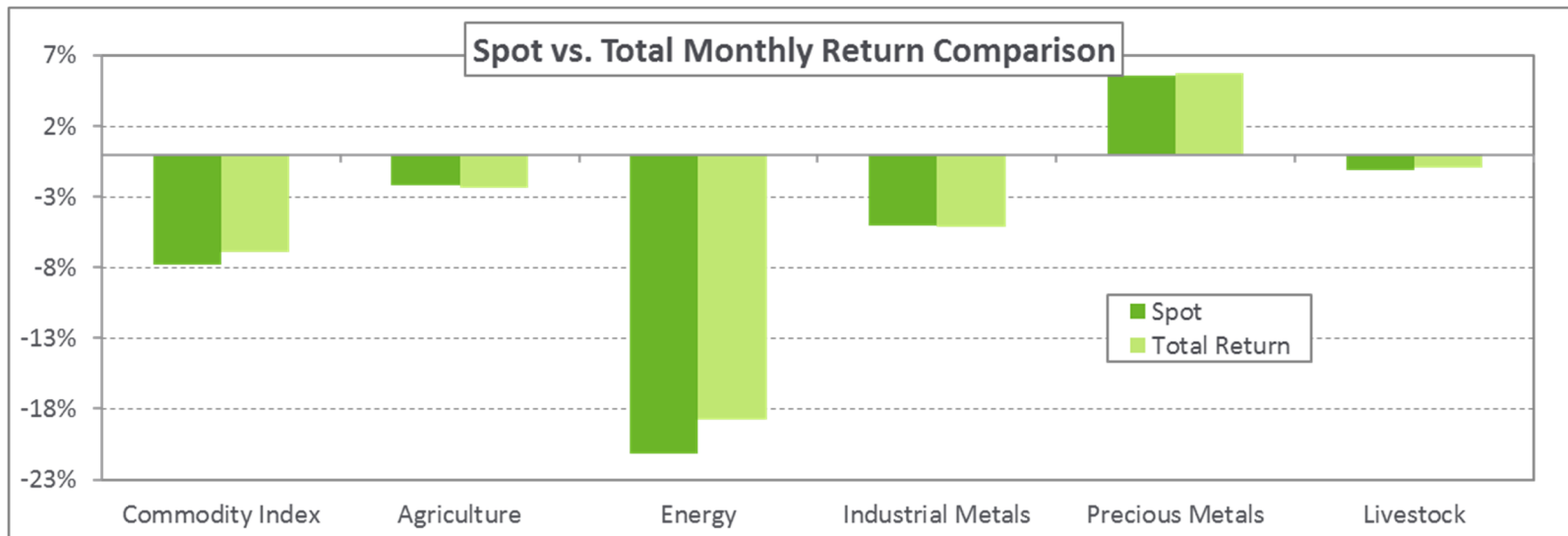
Bloomberg subindex total return indices reflects the return of the underlying one month commodity futures price movements



INCOME YIELD



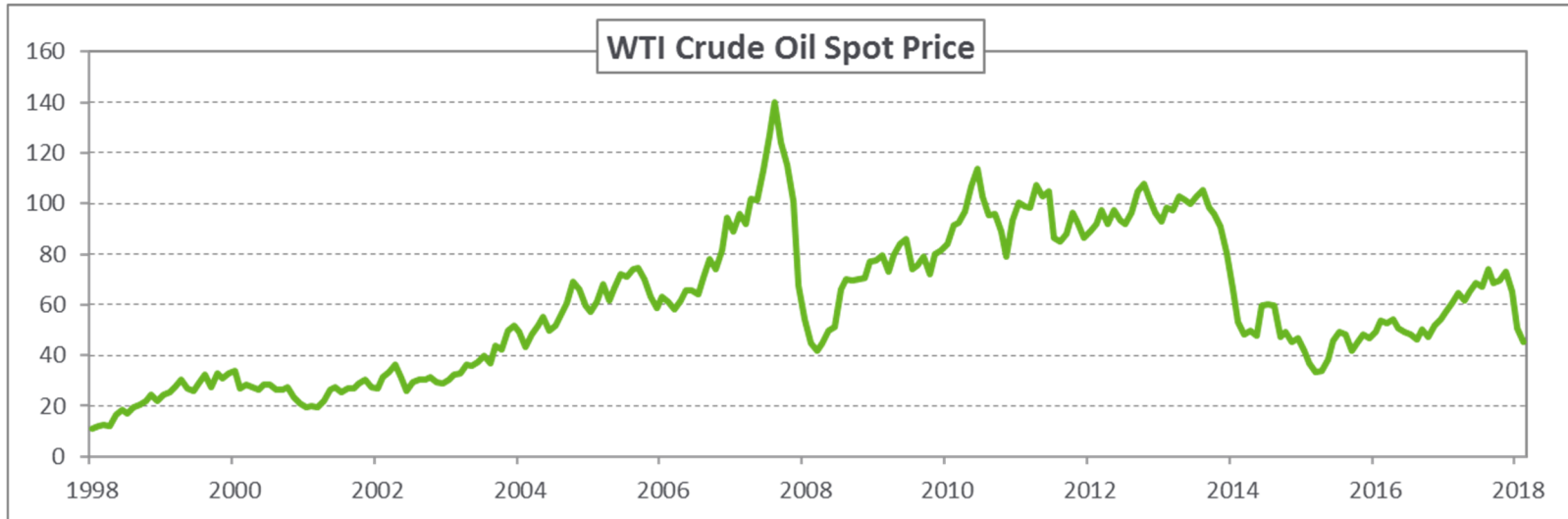
Source: Alerian, NAREIT, S&P, Bloomberg



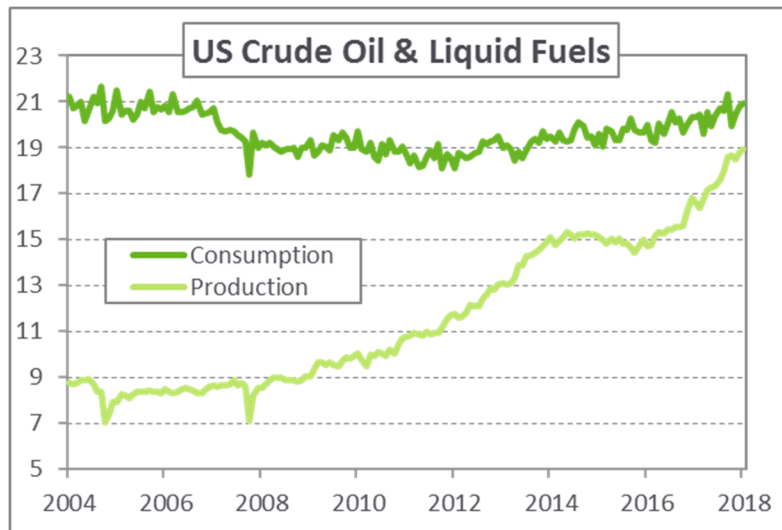
Source: Bloomberg, NEPC



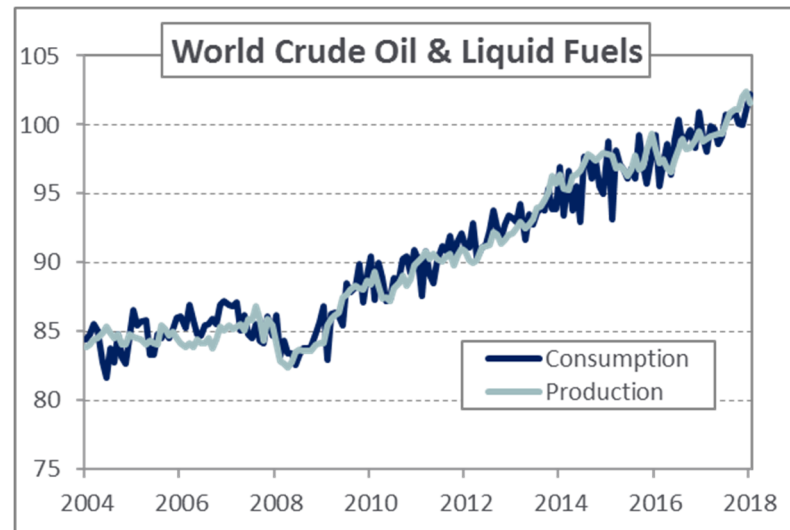
OIL MARKETS



Source: New York Mercantile Exchange, Bloomberg



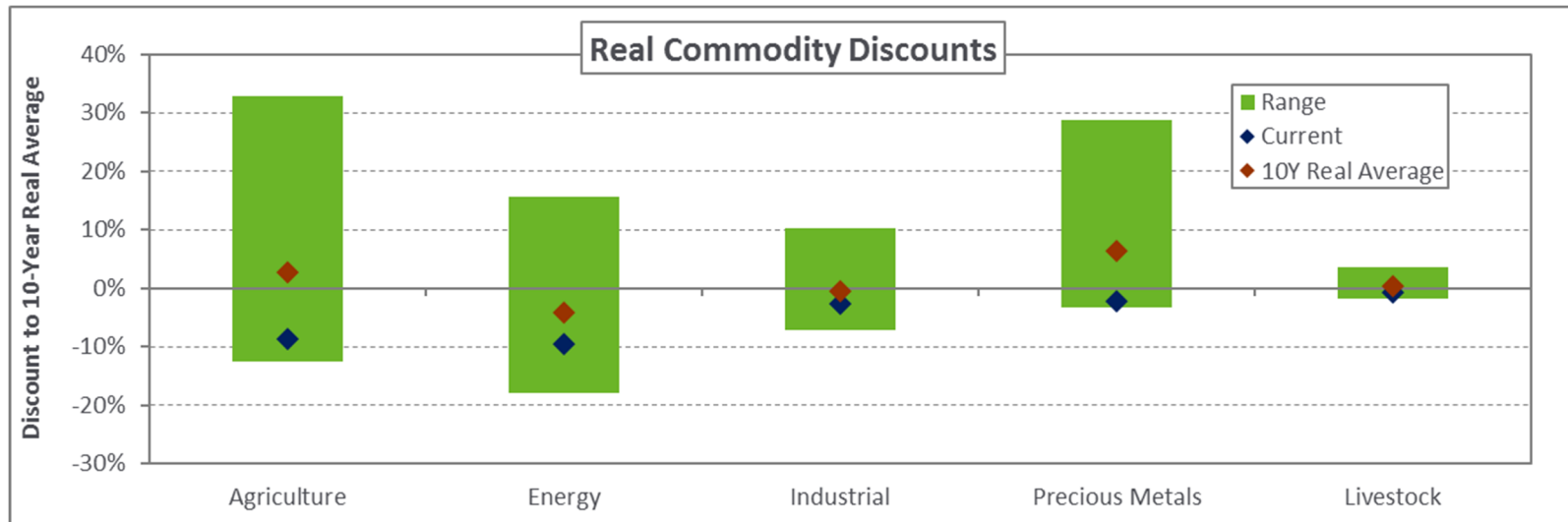
Source: US Department of Energy, Bloomberg



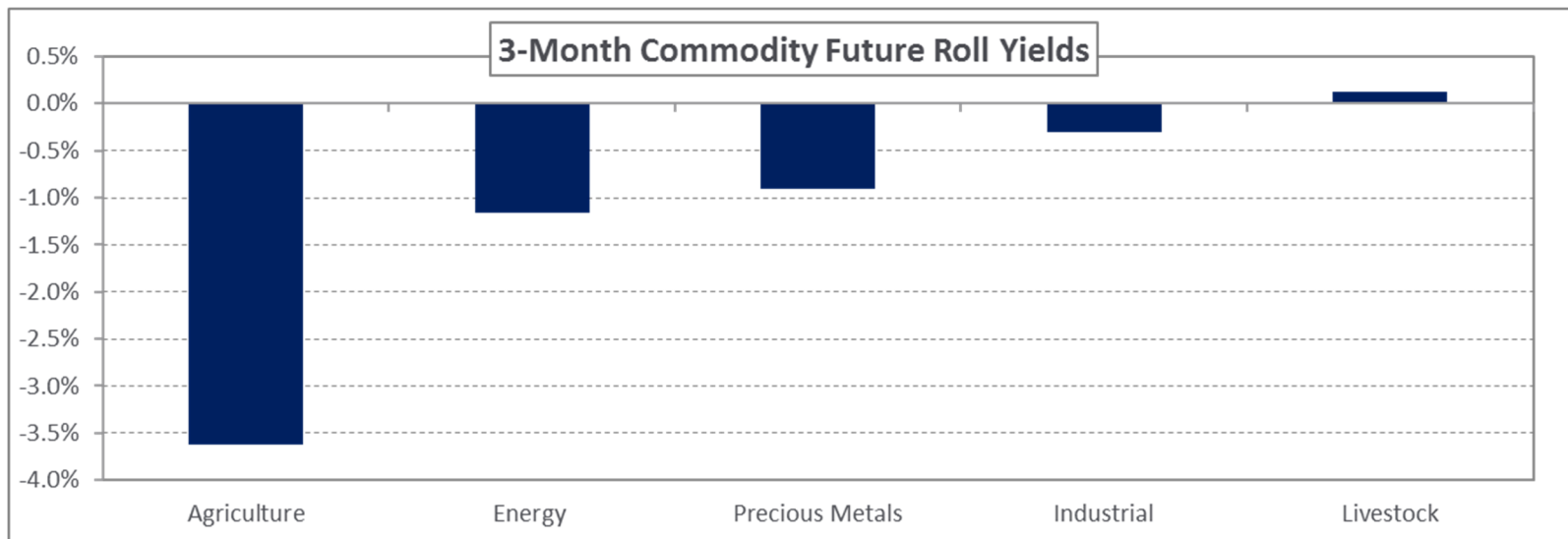
Source: OECD, Bloomberg



VALUATIONS



Source: Bloomberg, NEPC



Source: Bloomberg



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