

# QUARTERLY PERFORMANCE REPORT

## SAN BERNARDINO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION



**June 30, 2019**

**Allan Martin, Partner**

**Sam Austin, Partner**

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

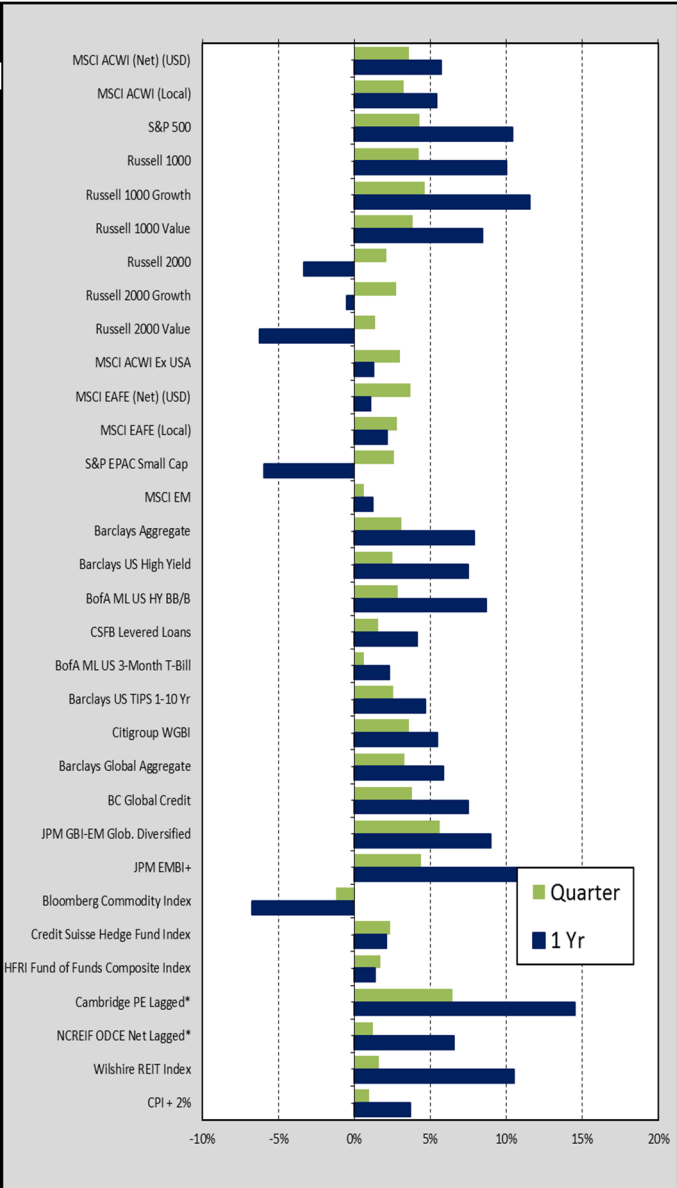
# ECONOMIC ENVIRONMENT

- **Real GDP (first quarter, second estimate) increased at an annual rate of 3.1%.**
  - Retail sales ended May at +2.9% on a YoY basis. In the same period last year the YoY growth rate was 5.9%.
  - Corporate profits (ended January) as a percent of GDP decreased to 9.2% from 9.3% (in October) and remain elevated relative to historical levels.
  - The inventory-to-sales ratio ended May flat at 1.4 from March levels and has remained relatively constant since early 2010.
  - The U.S. trade deficit increased 8.4% ended May as imports increased to their highest level in 2019.
- **The unemployment rate decreased to 3.7% in Q2 from 3.8% in Q1; U-6, a broader measure of unemployment, decreased to 7.2% from 7.3% during the second quarter.**
- **The Case-Shiller Home Price Index (ended April) increased to 207.9 from 204.5 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 1.78% from 1.87% ended Q2; Capacity Utilization decreased to 77.9% from 78.4% in Q2.**
- **Fed Funds rate remained unchanged at a targeted range of 2.25% -to- 2.50%. The 10-year Treasury Yield (constant maturity) finished Q2 down to 2.1% from 2.6%.**
- **The Fed continues its planned reduction in balance sheet size, while the European Central Bank balance sheet continues to grow.**
  - ECB held its benchmark refinance rate at 0%, deposit rates -0.4%.
- **S&P valuations decreased in Q2, remaining above the 10-year and long-term averages.**
  - Cyclically adjusted Shiller PE ratio (27.99x) is above the long-term average of 16.6x and above the 10-year average of 25.1x.



# MARKET ENVIRONMENT – Q2 2019 OVERVIEW

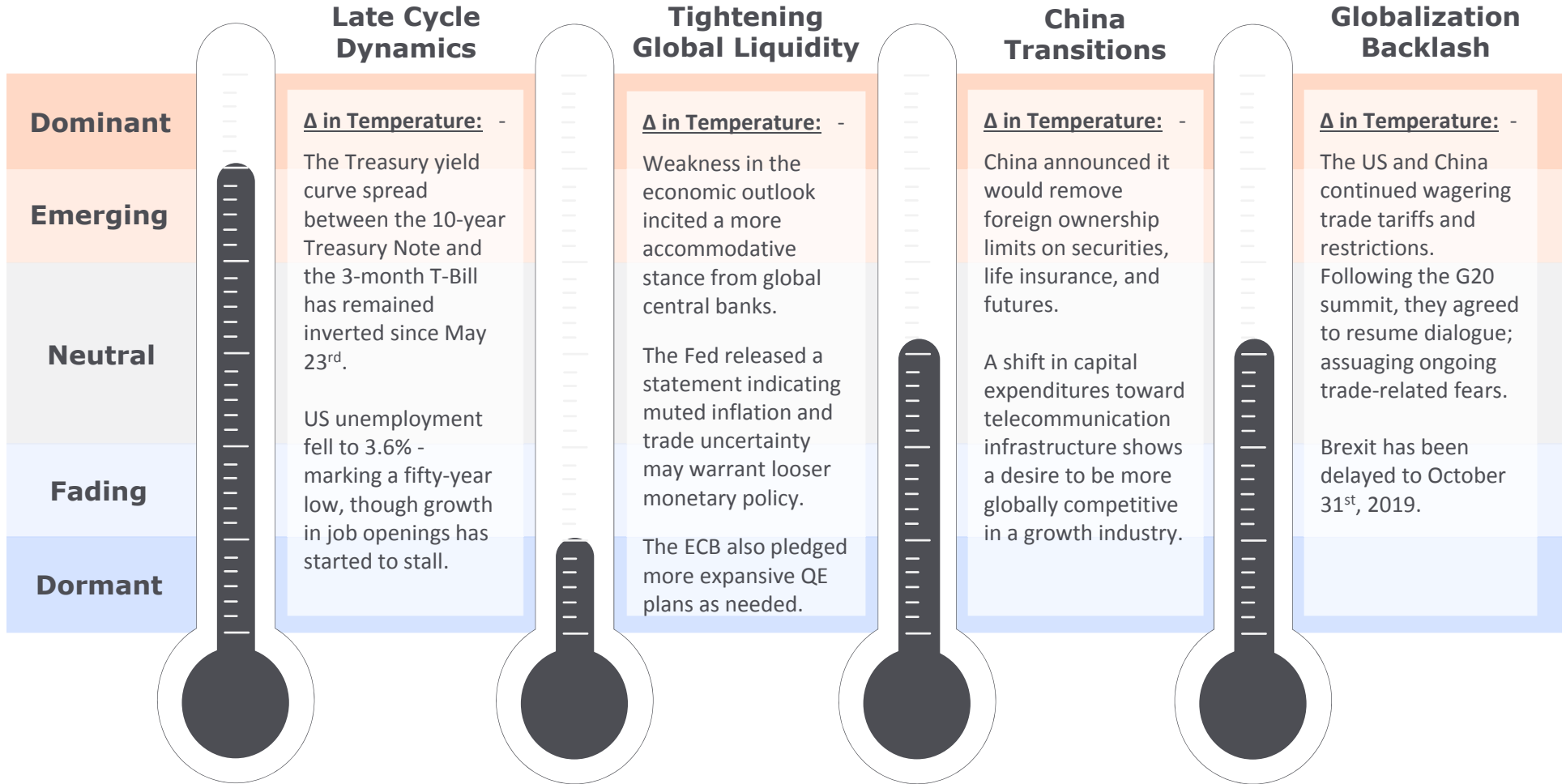
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>World Equity Benchmarks</b>						
MSCI ACWI (Net) (USD)	World w/o Small Cap	3.61%	5.74%	11.62%	6.16%	10.15%
MSCI ACWI (Local)	World (Local Currency)	3.23%	5.41%	11.65%	7.78%	10.77%
MSCI ACWI IMI (Net)	World with Small Cap	3.37%	4.56%	11.42%	6.03%	10.32%
<b>Domestic Equity Benchmarks</b>						
S&P 500	Large Core	4.30%	10.42%	14.19%	10.71%	14.70%
Russell 1000	Large Core	4.25%	10.02%	14.15%	10.45%	14.77%
Russell 1000 Growth	Large Growth	4.64%	11.56%	18.07%	13.39%	16.28%
Russell 1000 Value	Large Value	3.84%	8.46%	10.19%	7.46%	13.19%
Russell 2000	Small Core	2.10%	-3.31%	12.30%	7.06%	13.45%
Russell 2000 Growth	Small Growth	2.75%	-0.49%	14.69%	8.63%	14.41%
Russell 2000 Value	Small Value	1.38%	-6.24%	9.81%	5.39%	12.40%
<b>International Equity Benchmarks</b>						
MSCI ACWI Ex USA	World ex-US	2.98%	1.29%	9.39%	2.16%	6.54%
MSCI EAFE (Net) (USD)	Int'l Developed	3.68%	1.08%	9.11%	2.25%	6.90%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	2.80%	2.17%	9.80%	5.85%	8.35%
S&P EPAC Small Cap	Small Cap Int'l	2.60%	-5.97%	9.04%	4.53%	9.73%
MSCI EM	Emerging Equity	0.61%	1.21%	10.66%	2.49%	5.81%
<b>Domestic Fixed Income Benchmarks</b>						
Barclays Aggregate	Core Bonds	3.08%	7.87%	2.31%	2.95%	3.90%
Barclays US High Yield	High Yield	2.50%	7.48%	7.52%	4.70%	9.24%
BofA ML US HY BB/B	High Yield	2.84%	8.67%	7.16%	4.80%	8.62%
CSFB Levered Loans	Bank Loans	1.58%	4.15%	5.43%	3.85%	6.30%
BofA ML US 3-Month T-Bill	Cash	0.64%	2.31%	1.38%	0.87%	0.49%
Barclays US TIPS 1-10 Yr	Inflation	2.53%	4.67%	1.93%	1.42%	2.93%
<b>Global Fixed Income Benchmarks</b>						
Citigroup WGBI	World Gov. Bonds	3.57%	5.48%	1.00%	0.85%	2.21%
Barclays Global Aggregate	Global Core Bonds	3.30%	5.85%	1.62%	1.20%	2.89%
BC Global Credit	Global Bonds	3.79%	7.49%	3.41%	2.12%	4.54%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	5.64%	8.99%	4.24%	-0.45%	3.41%
JPM EMBI+	Em. Mkt. Bonds	4.36%	11.68%	3.50%	4.21%	7.11%
<b>Alternative Benchmarks</b>						
Bloomberg Commodity Index	Commodities	-1.19%	-6.75%	-2.18%	-9.15%	-3.74%
Credit Suisse Hedge Fund Index	Hedge Fund	2.35%	2.09%	4.22%	2.31%	5.01%
HFRI Fund of Funds Composite Index	Fund of Hedge Funds	1.69%	1.36%	4.32%	2.23%	3.23%
Cambridge PE Lagged*	Private Equity	6.47%	14.52%	16.00%	12.21%	14.84%
NCREIF ODCE Net Lagged*	Real Estate	1.20%	6.55%	7.01%	9.18%	7.73%
Wilshire REIT Index	RET	1.63%	10.52%	4.11%	7.84%	15.66%
CPI + 2%	Inflation/Real Assets	0.95%	3.69%	4.11%	3.51%	3.78%



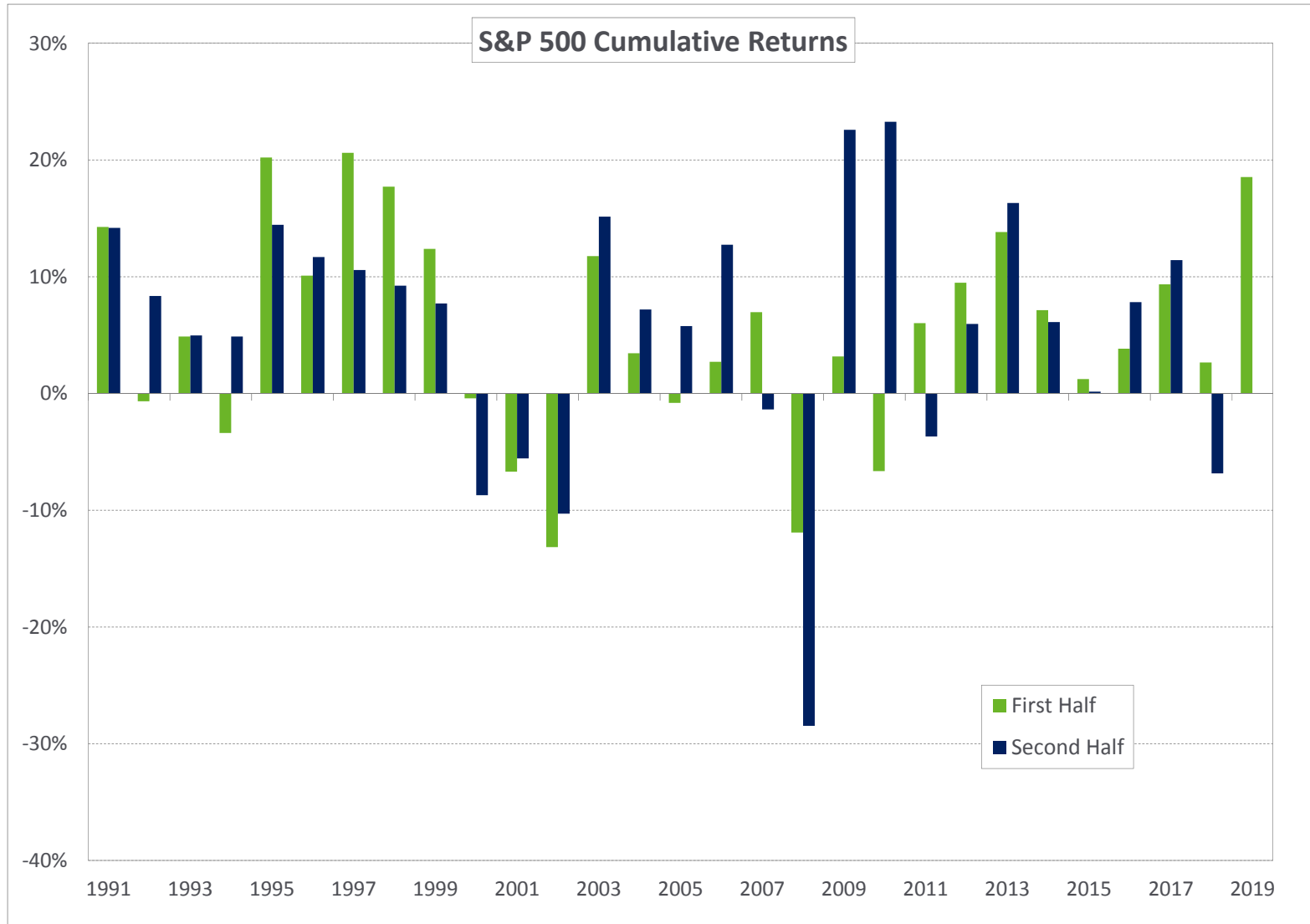
\* As of 3/31/2019

# ASSESSING THE KEY MARKET THEMES

## Current Temperature



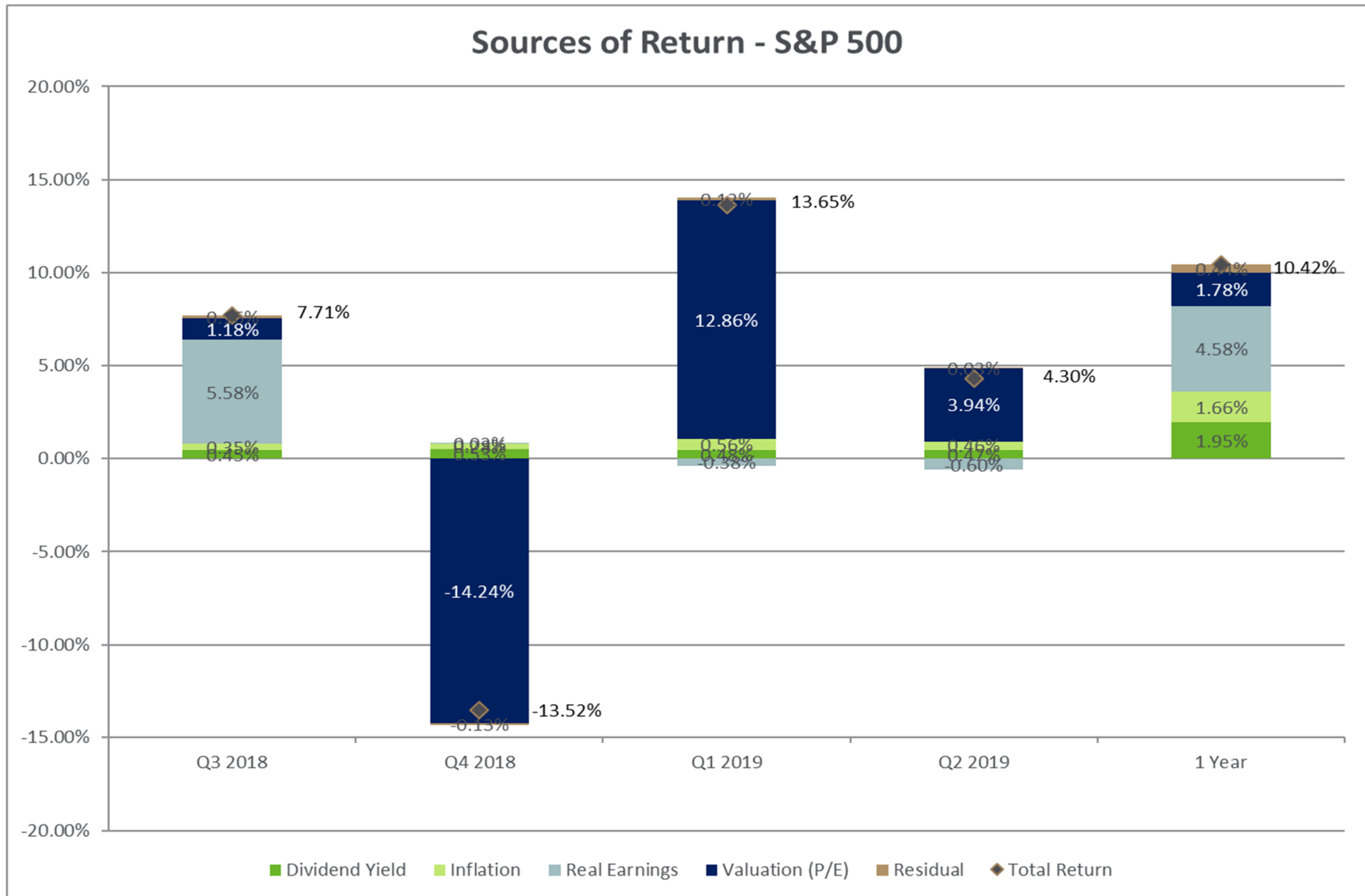
# BEST FIRST HALF SINCE 1997 FOR US STOCKS



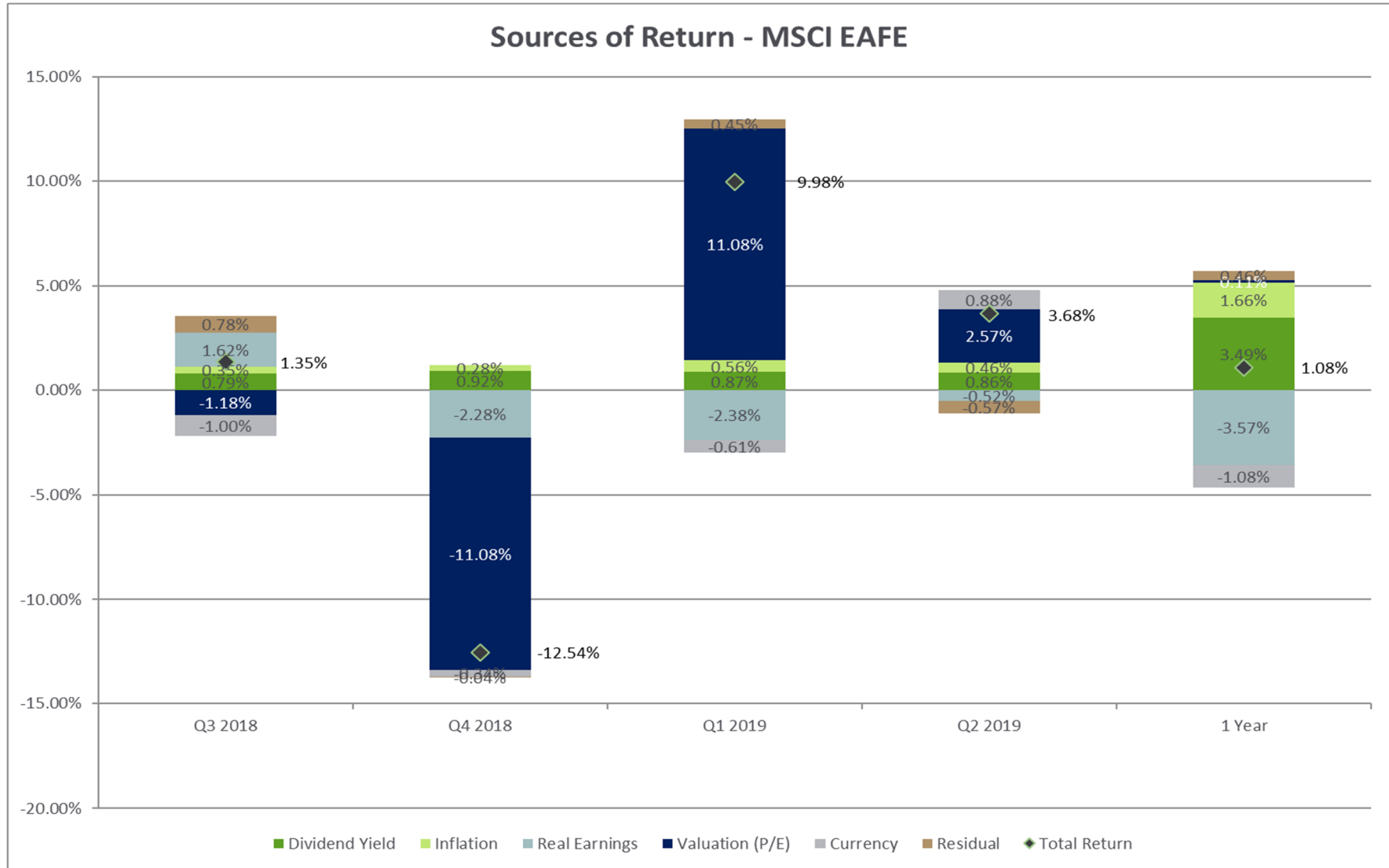
Source: FactSet



# 1 YEAR ATTRIBUTION OF S&P 500 RETURNS



# 1 YEAR ATTRIBUTION OF MSCI EAFE RETURNS



**Spot Rates**

1 USD = 0.861 Euro

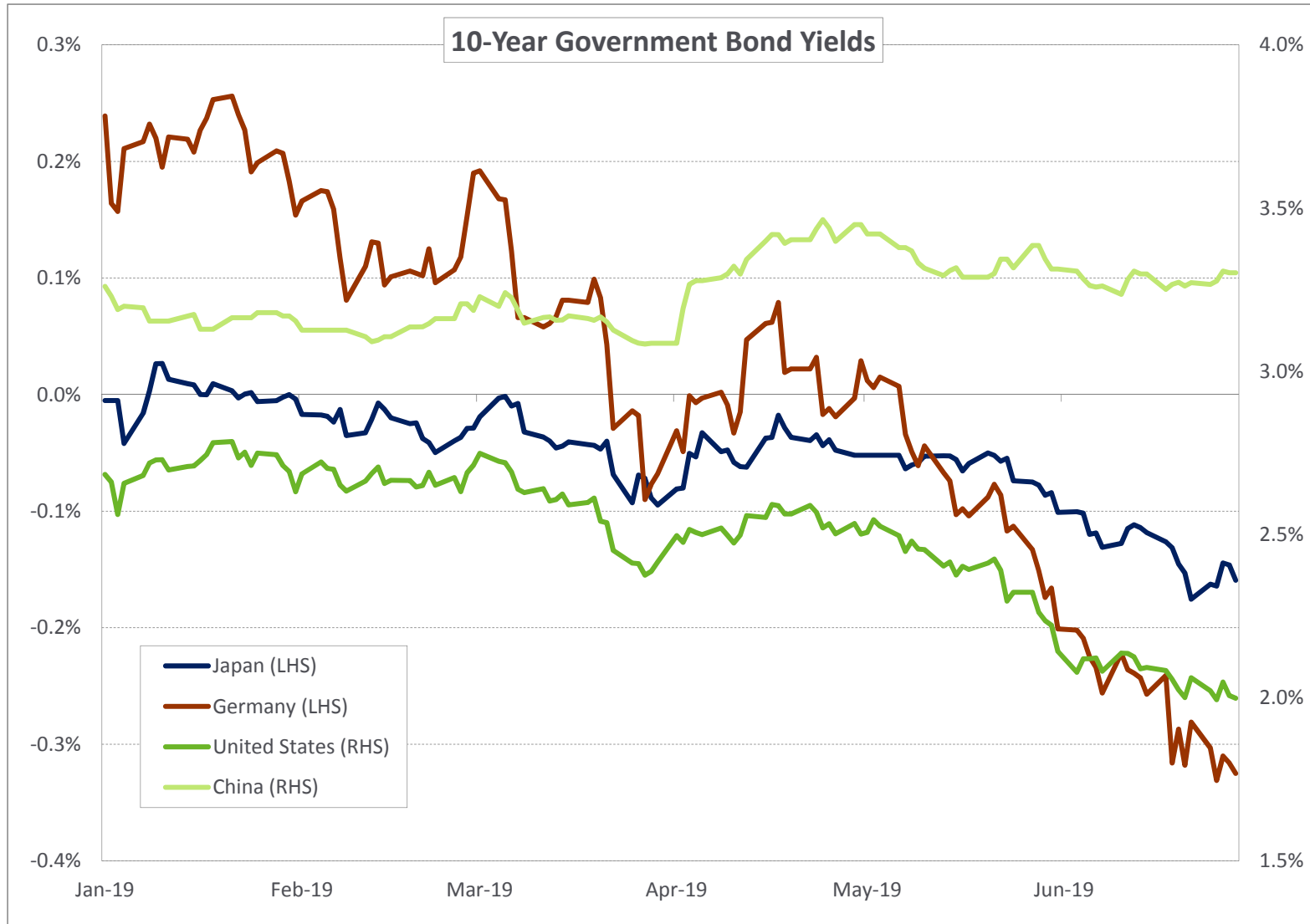
1 USD = 0.874 Euro

1 USD = 0.891 Euro

1 USD = 0.880 Euro



# GLOBAL BOND YIELDS ARE FALLING

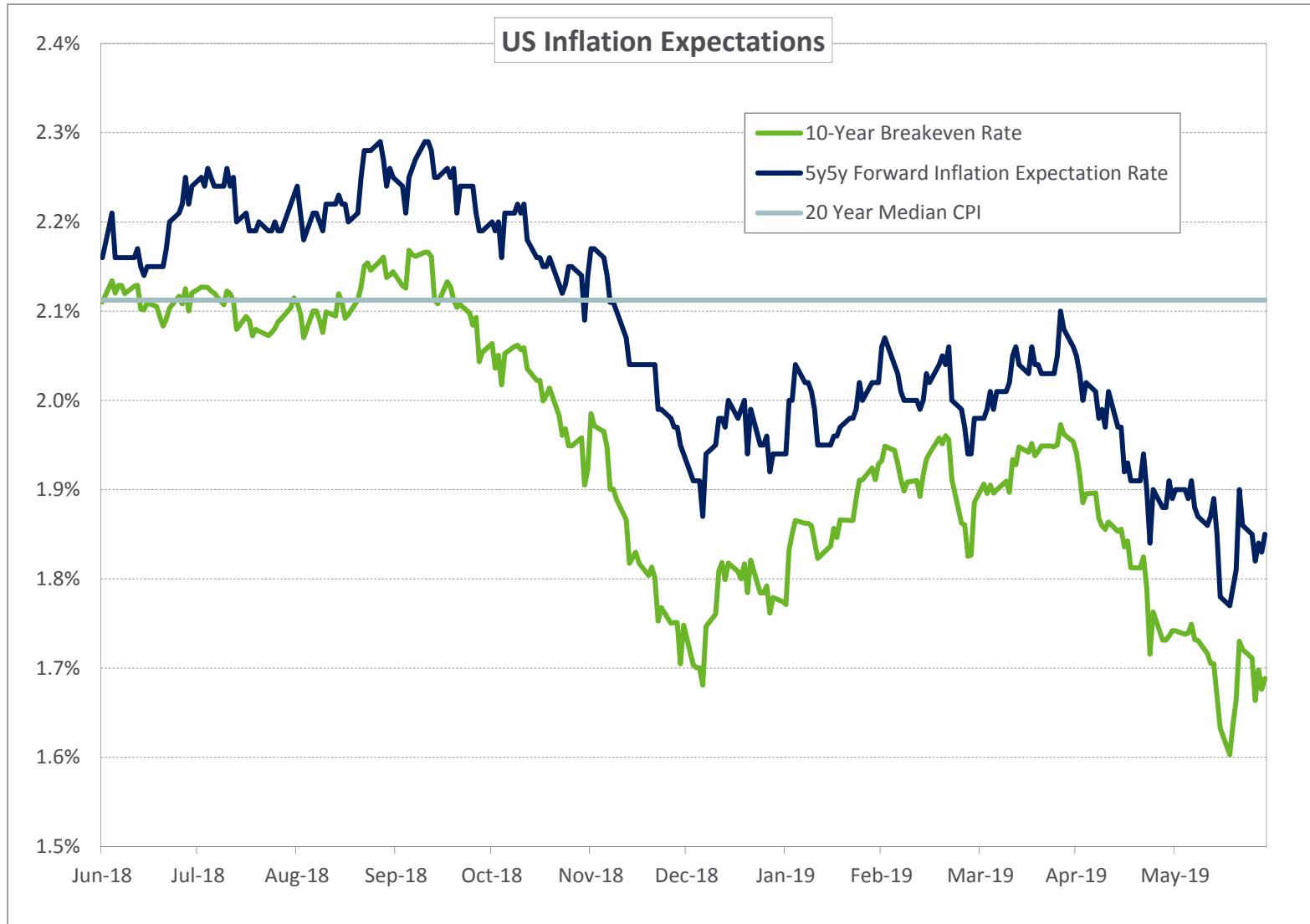


Source: FactSet





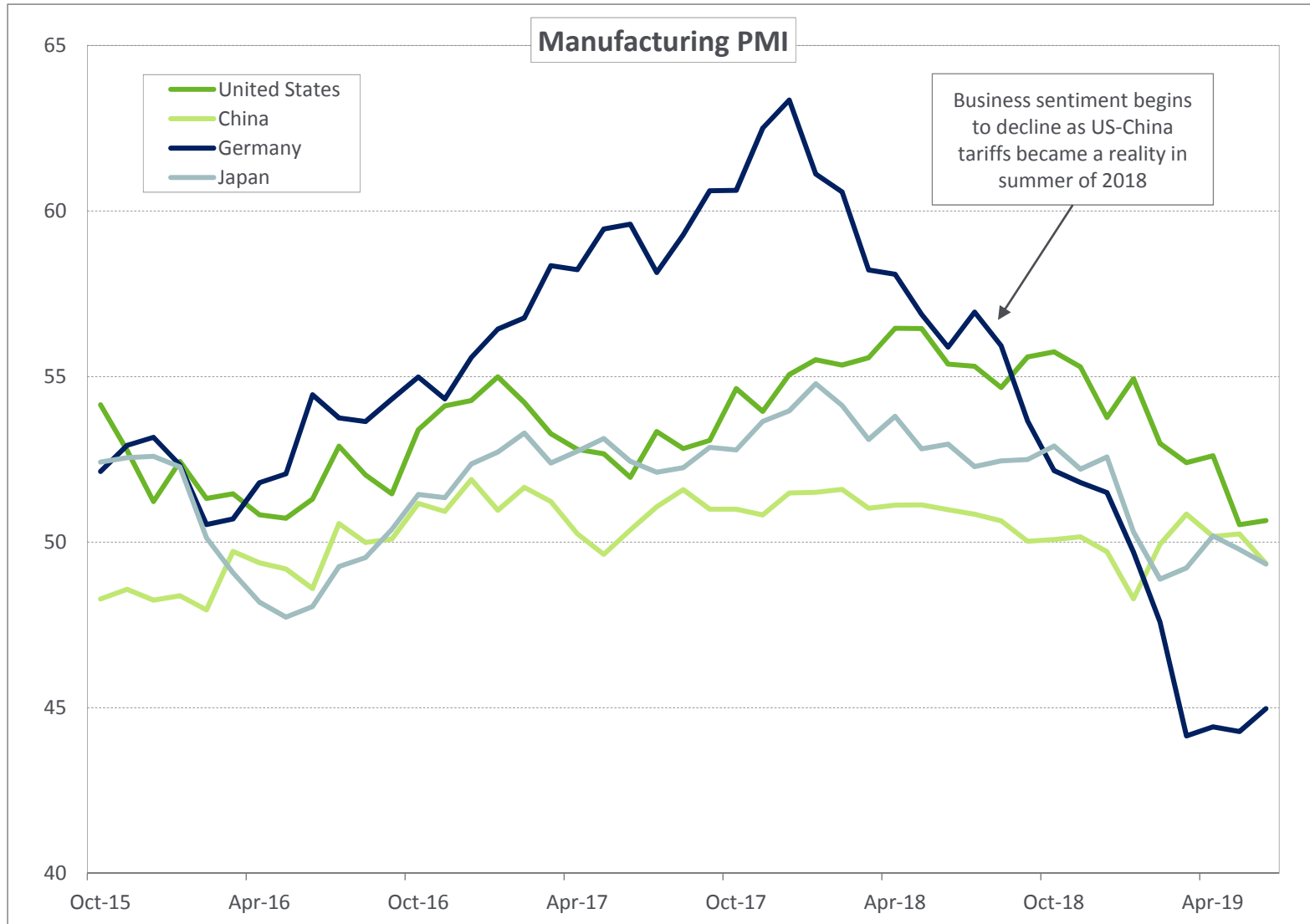
# INFLATION EXPECTATIONS CONTINUE TO FALL



Source: FactSet



# TARIFFS WEIGH ON GLOBAL SENTIMENT















Source: FactSet



# PERFORMANCE OVERVIEW

## Q2 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
											
-1.2%	1.4	-42 bps	4.3%	3.7%	0.6%	3.1%	2.5%	4.1%	-3.3%	9.0%	1.7%

**Global equities broadly increased during the quarter as the market perceived a more dovish policy stance from the Fed**

**Market expectations for several rate cuts from the Fed reached a fever pitch as investors assessed low inflation data, a weaker global growth outlook, and uncertainties of US-China trade tensions**

**The spread between the 10-year Treasury Note and 3-month Treasury Bill remained negative through the end of the quarter as yields for longer duration bonds shifted materially lower**

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 EMBI Global Diversified Index), Crude Oil (WTI Crude Oil Spot), Gold (Gold Price Spot), and REITs (NAREIT Composite Index). Source: FactSet



# MACRO PERFORMANCE OVERVIEW

## Q2 Macro Market Summary

The global growth outlook was revised downward – reflecting slower growth in major developed economies

The Fed signaled possible monetary easing to support economic growth

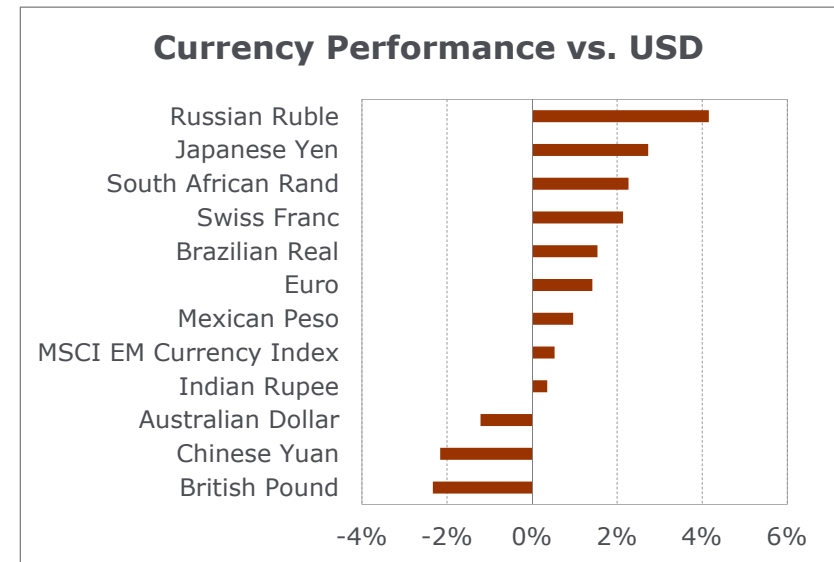
Global government bond yields continued to decline with the 10-year German yield declining 26 bps – reaching an all-time low

	Yield 3/31/19	Yield 6/30/19	Δ
US 10-Yr	2.42%	2.00%	-0.42%
US 30-Yr	2.82%	2.53%	-0.30%
US Real 10-Yr	0.53%	0.31%	-0.22%
German 10-Yr	-0.07%	-0.33%	-0.26%
Japan 10-Yr	-0.09%	-0.16%	-0.06%
China 10-Yr	3.09%	3.30%	0.22%
EM Local Debt	6.16%	5.69%	-0.48%

Source: FactSet

Central Banks	Current Rate	CPI YOY	Notes from the Quarter
Federal Reserve	2.25% - 2.50%	1.8%	The Fed held its benchmark interest rate at 2.25% - 2.50% in June, but signaled possible cuts later this year
European Central Bank	0.00%	1.2%	The ECB maintained its current benchmark interest rate and continued with plans to boost commercial lending
Bank of Japan	-0.10%	0.7%	The BoJ will continue its ultra-easy QE program with inflation remaining well below target

Source: FactSet



Source: FactSet



# EQUITY PERFORMANCE OVERVIEW

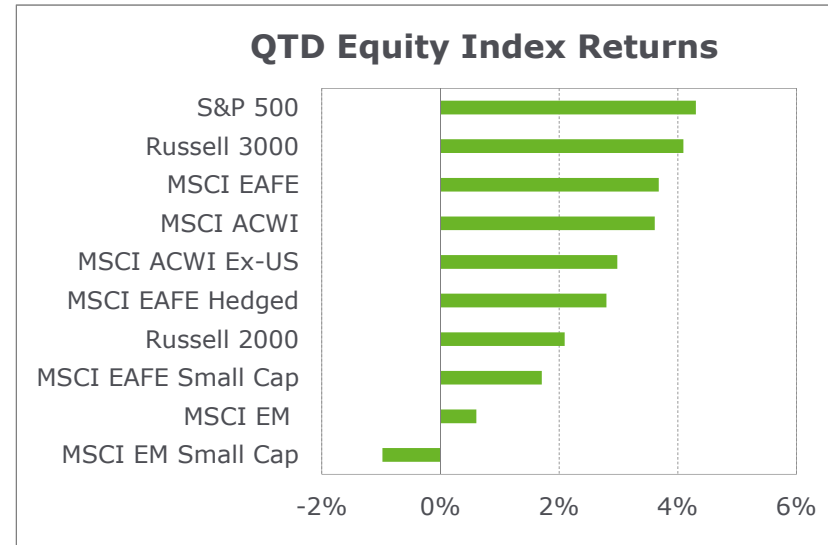
## Q2 Equity Market Summary

**Developed equities outperformed as hopes for easy monetary policy from the Fed and ECB provided a tailwind for local equity markets**

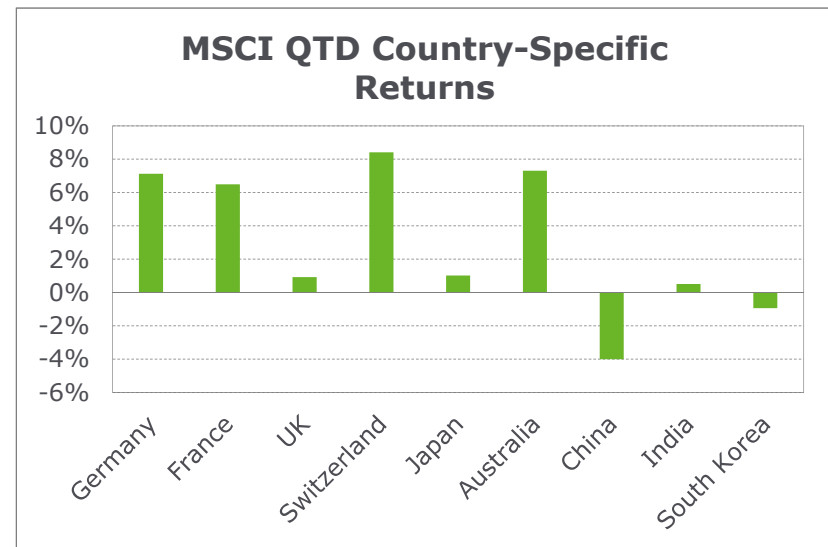
**US-China trade uncertainties and yuan weakness weighed on Chinese equity returns**

Russell 3000 QTD Sector Returns	
Technology	4.0%
Health Care	1.4%
Consumer Discretionary	6.2%
Consumer Staples	1.9%
Energy	-3.7%
Materials & Processing	5.7%
Producer Durables	4.0%
Financial Services	7.0%
Utilities	3.4%

Source: FactSet



Source: FactSet



Source: FactSet



# CREDIT PERFORMANCE OVERVIEW

## Q2 Credit Market Summary

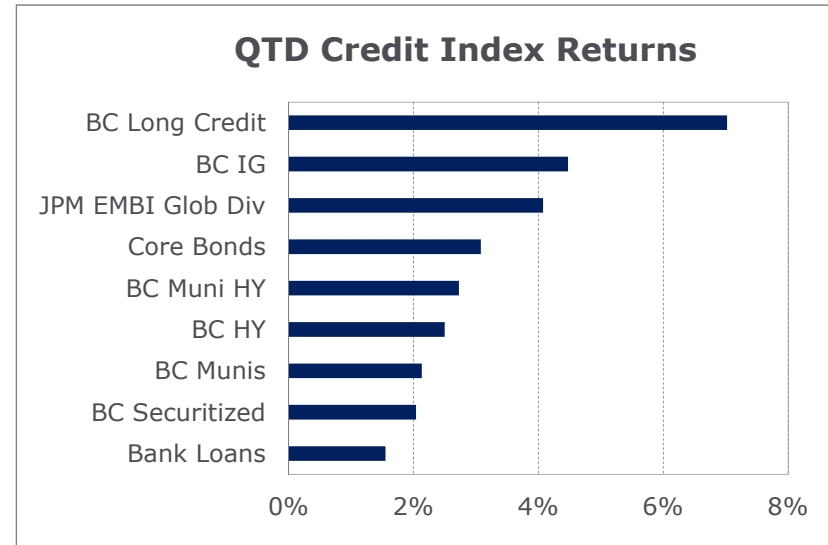
**Global yields continued to decline - reflecting concerns over the global growth outlook**

**Assets with longer duration benefited from the decline of interest rates**

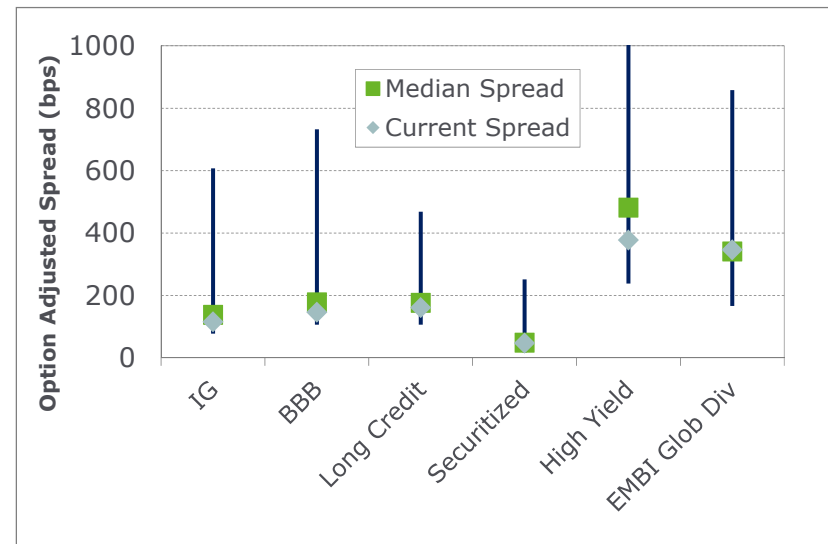
**Broad index credit spreads remain below medians in most areas of the credit market**

Credit Spread (Basis Points)	3/31/19	6/30/19	Δ
BC IG Credit	119	115	-4
BC Long Credit	172	161	-11
BC Securitized	37	47	10
BC High Yield	391	377	-14
Muni HY	238	258	20
JPM EMBI	351	346	-5
Bank Loans - Libor	355	383	29

Source: FactSet



Source: FactSet



Source: FactSet; Ranges calculated since 11/30/2000



# REAL ASSETS PERFORMANCE OVERVIEW

## Q2 Real Assets Market Summary

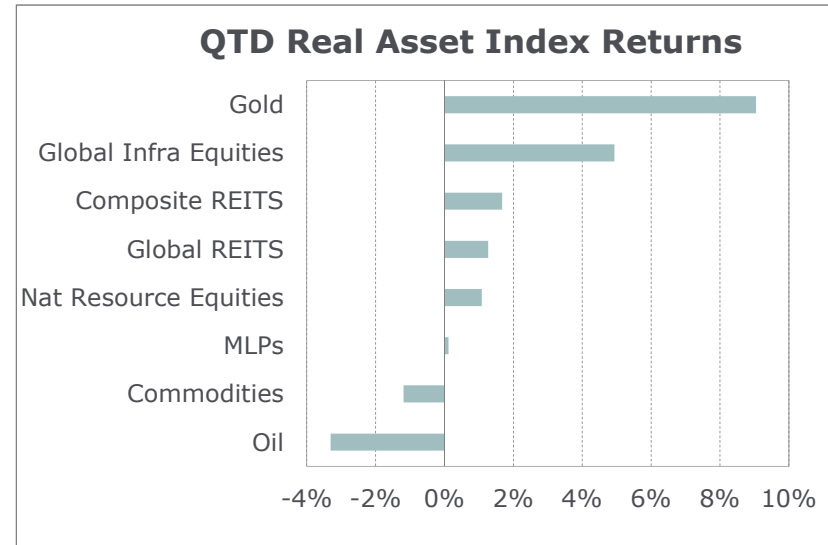
**Spot gold prices increased 9.0% during the quarter as a result of escalating trade tensions and a weaker global economic outlook**

**The US inflation outlook weakened to its lowest level since Q3 2016**

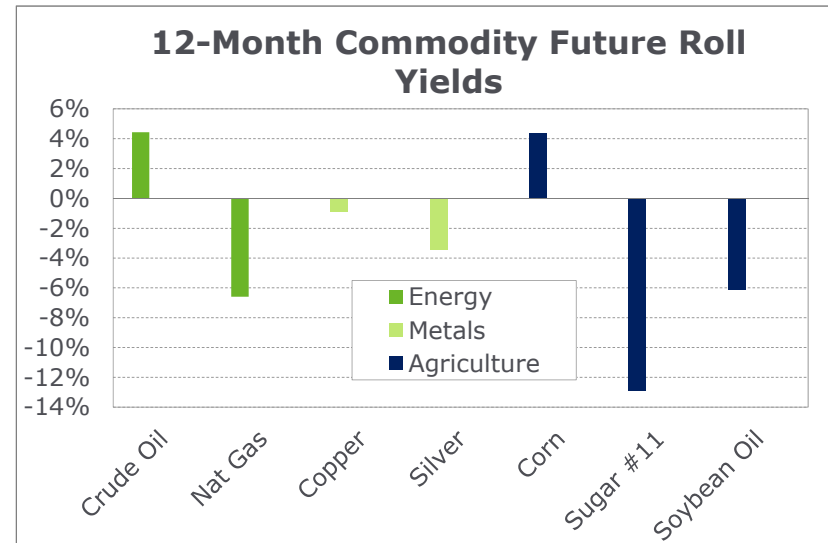
**Midstream equities continue to offer favorable yields with positive industry trends**

Real Asset Yields	3/31/19	6/30/19
MLPs	7.0%	7.7%
Core Real Estate	4.5%	4.4%
Composite REITs	4.1%	4.2%
Global REITs	4.2%	4.2%
Global Infrastructure Equities	4.4%	4.3%
Natural Resource Equities	4.2%	4.2%
US 10-Year Breakeven Inflation	1.97%	1.69%
Commodity Index Roll Yield	-2.7%	-2.0%
10-Year TIPS Real Yield	0.5%	0.3%

Source: FactSet



Source: FactSet



Source: FactSet



# TOTAL FUND PERFORMANCE

NEPC, LLC

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# TOTAL FUND PERFORMANCE SUMMARY (GROSS)

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>Total Fund</b>	<b>\$10,459,614,886</b>	<b>2.3%</b>	<b>84</b>	<b>7.2%</b>	<b>99</b>	<b>5.1%</b>	<b>53</b>	<b>9.2%</b>	<b>33</b>	<b>6.2%</b>	<b>36</b>	<b>8.9%</b>	<b>71</b>
<i>Policy Index</i>		3.3%	20	10.3%	58	6.2%	26	7.0%	95	4.9%	94	8.0%	93
<i>S&amp;P 500</i>		4.3%	1	18.5%	1	10.4%	1	14.2%	1	10.7%	1	14.7%	1
<i>BBgBarc US Aggregate TR</i>		3.1%	32	6.1%	99	7.9%	5	2.3%	99	2.9%	99	3.9%	99
<i>60% MSCI ACWI (Net) / 40% FTSE WGBI</i>		3.7%	9	12.0%	21	6.0%	27	7.4%	94	4.2%	97	7.1%	95
<i>InvMetrics Public DB &gt; \$1B Gross Median</i>		2.7%		10.5%		5.2%		9.0%		6.0%		9.2%	

In the year ended June 30, 2019 the Fund return of 5.1% ranked in the 53<sup>rd</sup> percentile of Public Funds > \$1 Billion and underperformed the actuarial assumed rate of 7.25%. The Fund's assets totaled \$10.46 billion, an increase of \$486.7 million from a year ago.

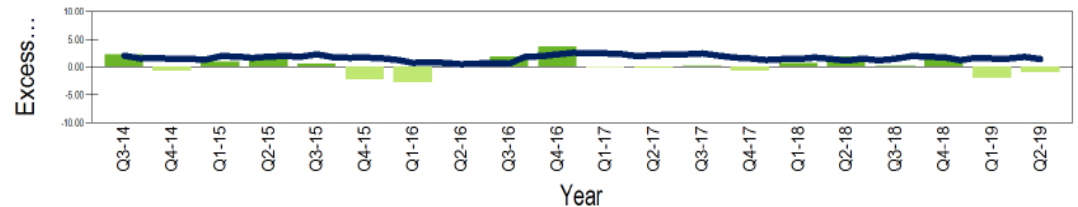
The Fund experienced a net investment gain of \$510.2 million during the year including a net investment gain of \$232.3 million in the second calendar quarter.

In the three-year period ended June 30, 2019 the Fund return of 9.2% ranked in the 33<sup>rd</sup> percentile among its peers. The Sharpe Ratio over this period of 2.3 ranks in the 1<sup>st</sup> 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 June 30, 2019 the Fund return of 6.2% ranked in the 36<sup>th</sup> percentile among its peers. On a risk adjusted basis the Fund's Sharpe and Sortino Ratios rank in the 1<sup>st</sup> 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: InvestMetrics Public Funds >\$1B Gross of Fee prelim universe contains 26 portfolios with \$170 billion in assets.*

## Rolling 5 Year Annualized Excess Return



■ Quarterly Outperformance  
 ■ Quarterly Underperformance  
 — Rolling 5 Year Excess Performance vs. Policy Index

3 Years Ending June 30, 2019				
	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	2.3	1	3.0	1
InvMetrics Public DB > \$1B Gross Median	1.2	--	1.6	--

5 Years Ending June 30, 2019				
	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	1.4	1	2.5	1
InvMetrics Public DB > \$1B Gross Median	0.7	--	1.2	--



San Bernardino County Employees' Retirement Association

# TOTAL FUND PERFORMANCE SUMMARY

Statistics Summary								
1 Year Ending June 30, 2019								
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	5.1%	53	4.9%	1	0.6	15	1.6	33
InvMetrics Public DB > \$1B Gross Median	5.2%	--	9.7%	--	0.3	--	0.9	--

Statistics Summary								
3 Years Ending June 30, 2019								
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	9.2%	33	3.3%	1	2.3	1	3.0	1
InvMetrics Public DB > \$1B Gross Median	9.0%	--	6.3%	--	1.2	--	1.6	--

Statistics Summary								
5 Years Ending June 30, 2019								
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	6.2%	36	3.7%	1	1.4	1	2.5	1
InvMetrics Public DB > \$1B Gross Median	6.0%	--	6.6%	--	0.7	--	1.2	--

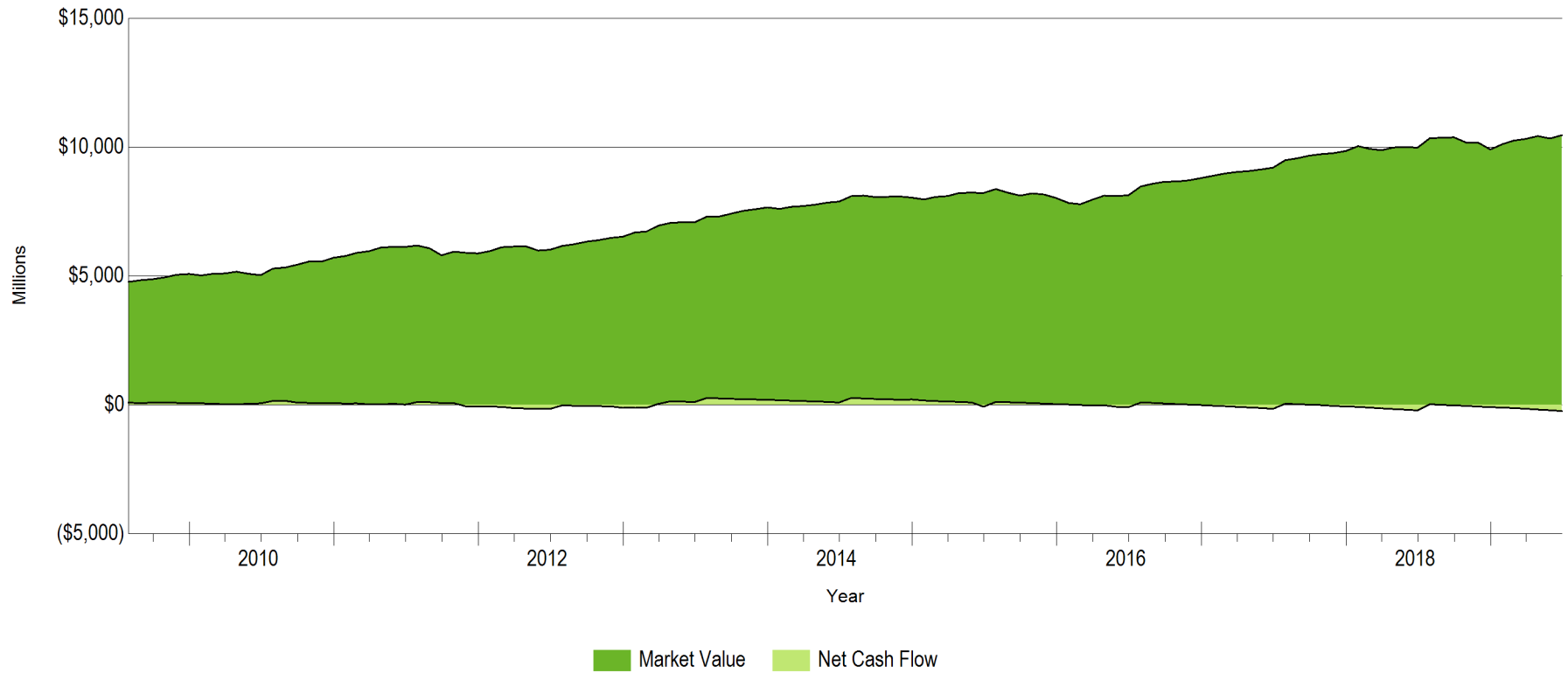
Sortino Ratio requires at least two negative points during the time period in order to calculate



San Bernardino County Employees' Retirement Association

# TOTAL FUND ASSET GROWTH SUMMARY

10 Years Ending June 30, 2019

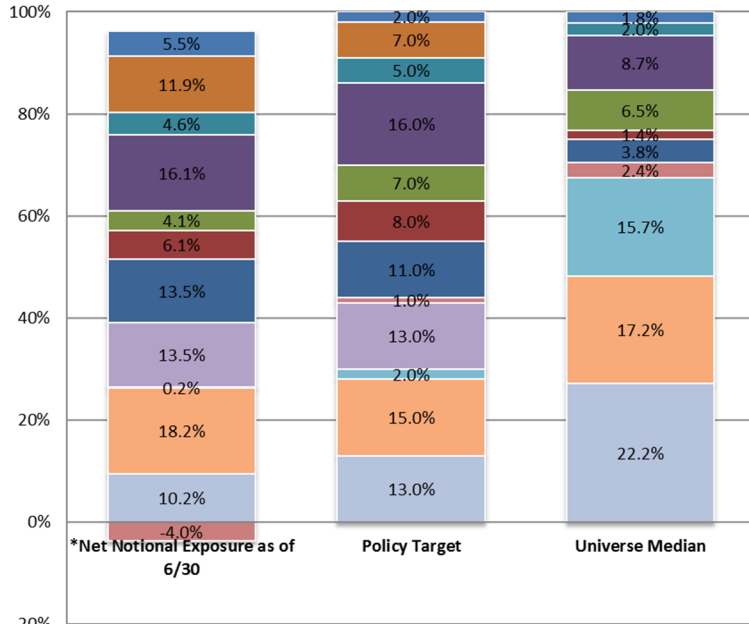


	Last Three Months	Year-To-Date	One Year	Five Years	Ten Years
Beginning Market Value	\$10,315,832,387	\$9,902,558,228	\$9,972,950,140	\$7,881,514,606	\$4,598,538,282
Net Cash Flow	-\$88,516,440	-\$149,101,304	-\$23,558,476	-\$331,165,593	-\$236,451,411
Net Investment Change	\$232,298,939	\$706,157,961	\$510,223,221	\$2,909,265,873	\$6,097,528,015
Ending Market Value	\$10,459,614,886	\$10,459,614,886	\$10,459,614,886	\$10,459,614,886	\$10,459,614,886



San Bernardino County Employees' Retirement Association

TOTAL FUND PERFORMANCE SUMMARY



	*Net Notional Exposure	*Net Notional Exposure as of 6/30	Policy Target	*Difference	Policy Ranges	Within Range
<b>US Equities</b>	1,068,788	<b>10.2%</b>	<b>13.0%</b>	<b>-2.8%</b>	<b>8%-18%</b>	<b>Yes</b>
<b>Int'l Equities</b>	1,906,409	<b>18.2%</b>	<b>15.0%</b>	<b>3.2%</b>	<b>10%-20%</b>	<b>Yes</b>
<b>U.S. Core Fixed Income</b>	23,700	<b>0.2%</b>	<b>2.0%</b>	<b>-1.8%</b>	<b>-3%-7%</b>	<b>Yes</b>
<b>US Credit</b>	1,411,816	<b>13.5%</b>	<b>13.0%</b>	<b>0.5%</b>	<b>8%-18%</b>	<b>Yes</b>
<b>Non-US Core Fixed Income</b>	(418,385)	<b>-4.0%</b>	<b>1.0%</b>	<b>-5.0%</b>	<b>-4%-6%</b>	<b>Yes</b>
<b>Non-US Credit</b>	1,411,643	<b>13.5%</b>	<b>11.0%</b>	<b>2.5%</b>	<b>6%-16%</b>	<b>Yes</b>
<b>Emerging Market Debt</b>	642,308	<b>6.1%</b>	<b>8.0%</b>	<b>-1.9%</b>	<b>3%-13%</b>	<b>Yes</b>
<b>Real Estate</b>	432,371	<b>4.1%</b>	<b>7.0%</b>	<b>-2.9%</b>	<b>0%-14%</b>	<b>Yes</b>
<b>Private Equity</b>	1,681,908	<b>16.1%</b>	<b>16.0%</b>	<b>0.1%</b>	<b>6%-21%</b>	<b>Yes</b>
<b>Real Assets</b>	482,890	<b>4.6%</b>	<b>5.0%</b>	<b>-0.4%</b>	<b>0%-10%</b>	<b>Yes</b>
<b>Absolute Return</b>	1,245,585	<b>11.9%</b>	<b>7.0%</b>	<b>4.9%</b>	<b>0%-12%</b>	<b>Yes</b>
<b>Cash</b>	570,581	<b>5.5%</b>	<b>2.0%</b>	<b>3.5%</b>	<b>0%-10%</b>	<b>Yes</b>
	10,459,615	100.0%	100.0%			

- 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



San Bernardino County Employees' Retirement Association

TOTAL FUND PERFORMANCE SUMMARY

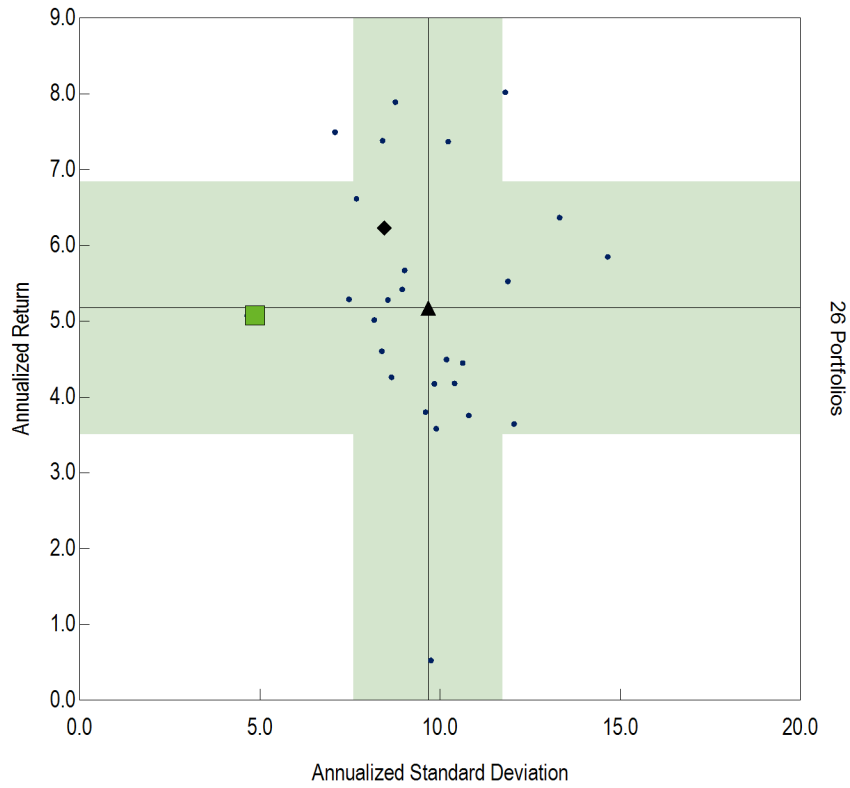
<u>Asset Class</u>	<u>Physical Exposure</u>		<u>Delta Adjusted Synthetic Exposure</u>		<u>Net Position</u>		<u>Overlay Target</u>		<u>Policy Target</u>	
<b>Total Market Value</b>	<b>10,434.0</b>	<b>100.0%</b>	<b>-0.0</b>	<b>0.0%</b>	<b>10,434.0</b>	<b>100.0%</b>	<b>10,434.0</b>	<b>100.0%</b>	<b>10,434.0</b>	<b>100.00%</b>
<b>Cash</b>	<b>556.1</b>	<b>5.33%</b>	<b>-588.3</b>	<b>-5.64%</b>	<b>-32.3</b>	<b>-0.31%</b>	<b>0.0</b>	<b>0.0%</b>	<b>0.0</b>	<b>0.00%</b>
Cash	556.1	5.33%	-588.3	-5.64%	-32.3	-0.31%	0.0	0.0%	0.0	0.00%
<b>Equity</b>	<b>1,622.0</b>	<b>15.55%</b>	<b>1,311.4</b>	<b>12.57%</b>	<b>2,933.5</b>	<b>28.11%</b>	<b>2,930.0</b>	<b>28.08%</b>	<b>2,921.5</b>	<b>28.00%</b>
Emerging Markets	428.9	4.11%	327.7	3.14%	756.6	7.25%	758.7	7.27%	756.5	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	51.4	0.49%	1,078.5	10.34%	1,129.9	10.83%	1,124.9	10.78%	1,121.7	10.75%
US Large Cap	1,141.5	10.94%	-253.5	-2.43%	888.0	8.51%	889.5	8.52%	886.9	8.50%
US Small Cap	0.2	0.0%	158.7	1.52%	159.0	1.52%	157.0	1.5%	156.5	1.50%
<b>Fixed</b>	<b>3,838.8</b>	<b>36.79%</b>	<b>-723.1</b>	<b>-6.93%</b>	<b>3,115.7</b>	<b>29.86%</b>	<b>3,086.9</b>	<b>29.59%</b>	<b>3,078.0</b>	<b>29.50%</b>
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	2,350.7	22.53%	-746.8	-7.16%	1,603.9	15.37%	1,569.6	15.04%	1,565.1	15.00%
High Yield **	1,127.2	10.8%	0.0	0.0%	1,127.2	10.8%	967.9	9.28%	965.1	9.25%
US Fixed Income	360.9	3.46%	23.7	0.23%	384.5	3.69%	549.4	5.27%	547.8	5.25%
<b>Other</b>	<b>4,417.1</b>	<b>42.33%</b>	<b>0.0</b>	<b>0.0%</b>	<b>4,417.1</b>	<b>42.33%</b>	<b>4,417.1</b>	<b>42.33%</b>	<b>4,434.5</b>	<b>42.50%</b>
Alternatives	82.5	0.79%	0.0	0.0%	82.5	0.79%	82.5	0.79%	83.5	0.80%
Commodities	205.5	1.97%	0.0	0.0%	205.5	1.97%	205.5	1.97%	208.7	2.00%
Infrastructure	189.7	1.82%	0.0	0.0%	189.7	1.82%	189.7	1.82%	187.8	1.80%
Private Equity	1,648.6	15.8%	0.0	0.0%	1,648.6	15.8%	1,648.6	15.8%	1,669.4	16.00%
Real Estate	444.1	4.26%	0.0	0.0%	444.1	4.26%	444.1	4.26%	438.2	4.20%
Tactical Cash	1,846.8	17.7%	0.0	0.0%	1,846.8	17.7%	1,846.8	17.7%	1,846.8	17.70%



San Bernardino County Employees' Retirement Association

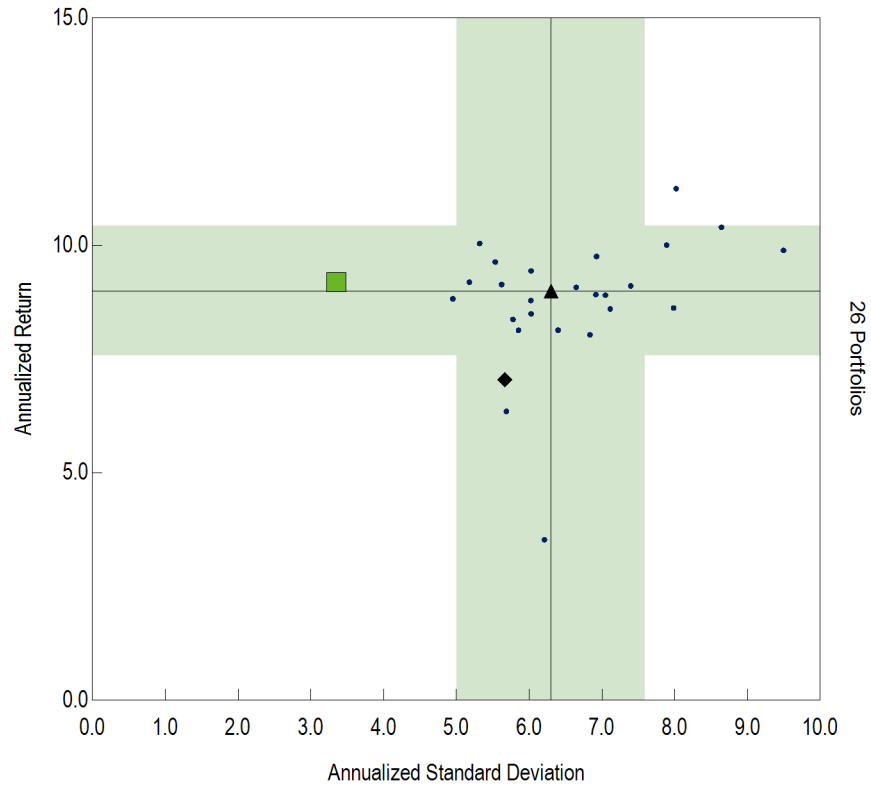
# TOTAL FUND RISK/RETURN

1 Year Ending June 30, 2019



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

3 Years Ending June 30, 2019



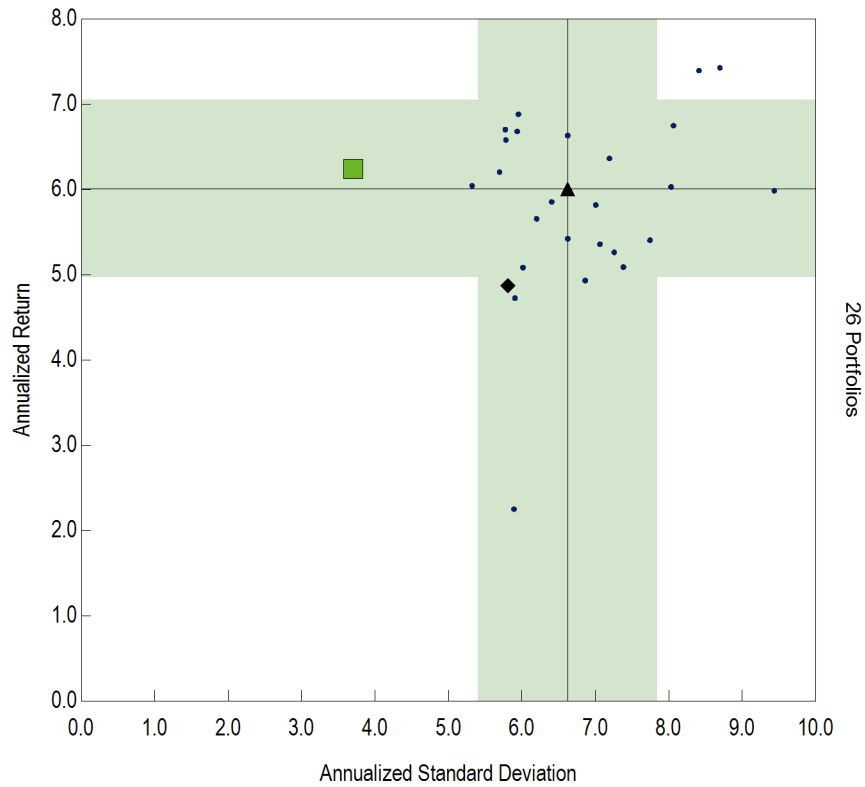
- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB > \$1B Gross



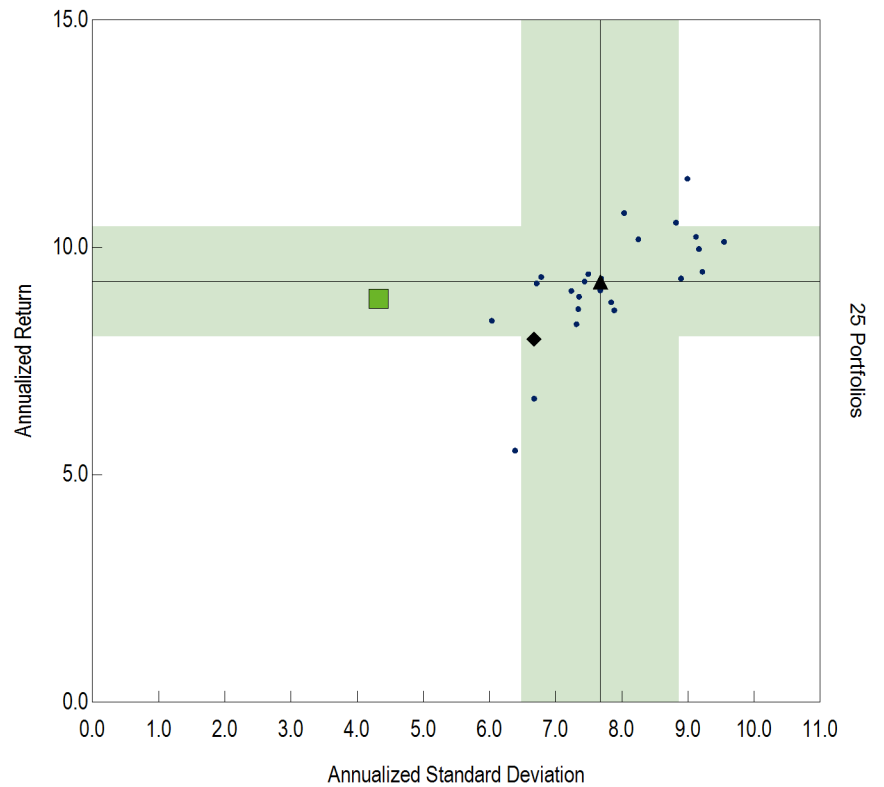
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# TOTAL FUND RISK/RETURN

5 Years Ending June 30, 2019



10 Years Ending June 30, 2019



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

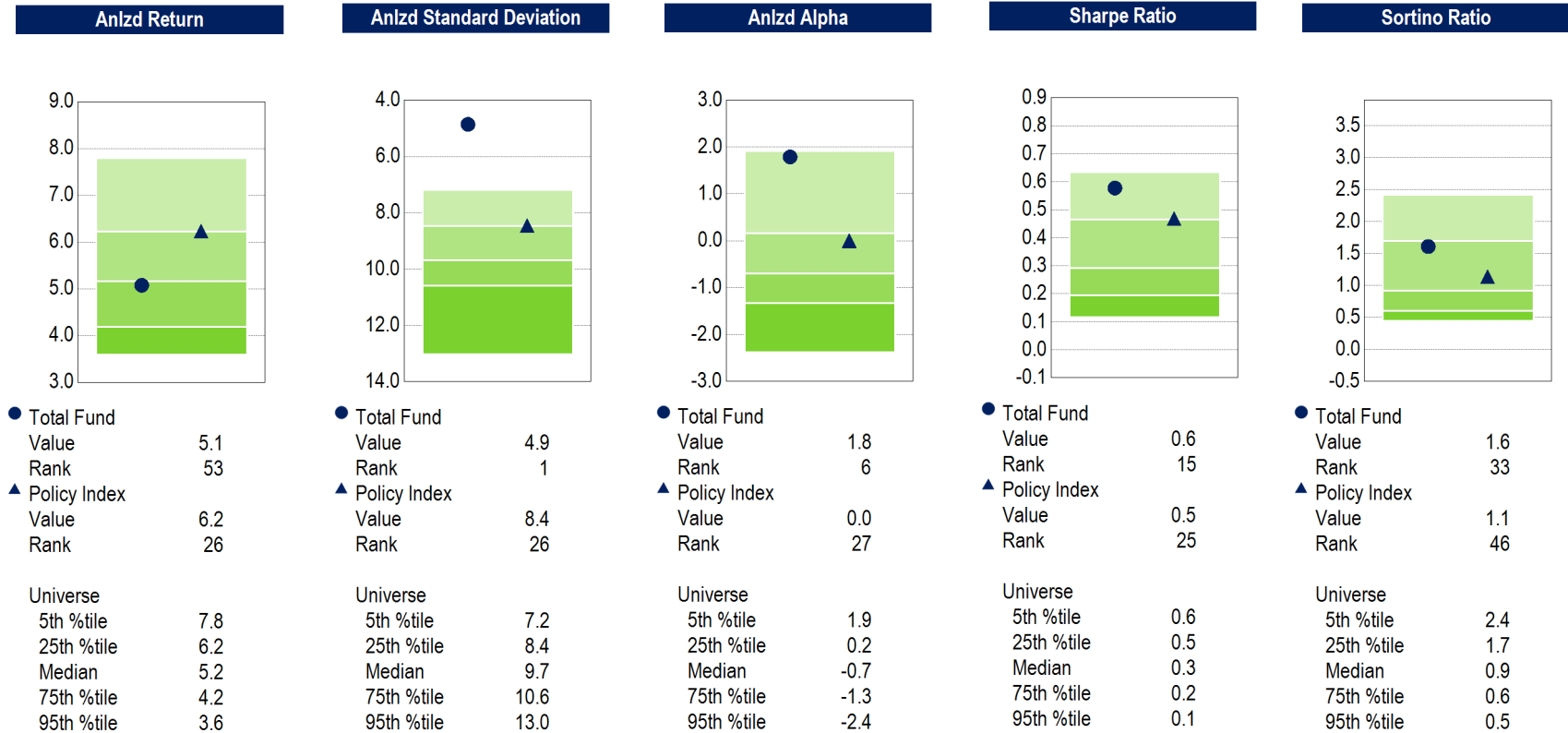
- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB > \$1B Gross



San Bernardino County Employees' Retirement Association

# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

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



Sortino Ratio requires at least two negative points during the time period in order to calculate.  
Sample size is 26 Portfolios



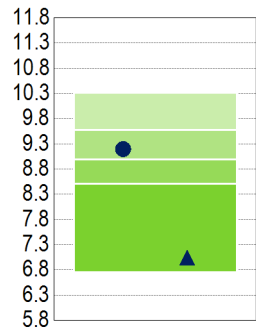


San Bernardino County Employees' Retirement Association

# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

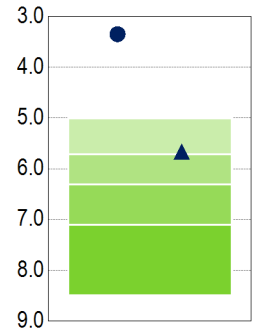
**Total Fund vs. InvestorForce Public DB > \$1B Gross (USD)**  
3 Years

**Anlzd Return**



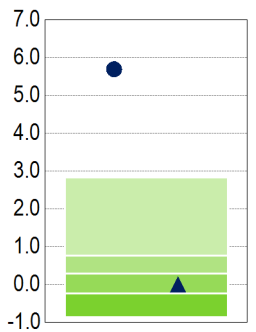
● Total Fund	
Value	9.2
Rank	33
▲ Policy Index	
Value	7.0
Rank	95
Universe	
5th %tile	10.3
25th %tile	9.6
Median	9.0
75th %tile	8.5
95th %tile	6.8

**Anlzd Standard Deviation**



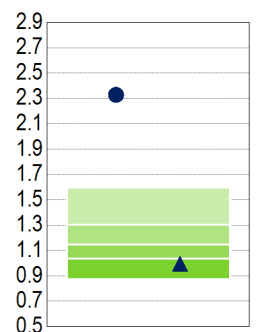
● Total Fund	
Value	3.3
Rank	1
▲ Policy Index	
Value	5.7
Rank	23
Universe	
5th %tile	5.0
25th %tile	5.7
Median	6.3
75th %tile	7.1
95th %tile	8.5

**Anlzd Alpha**



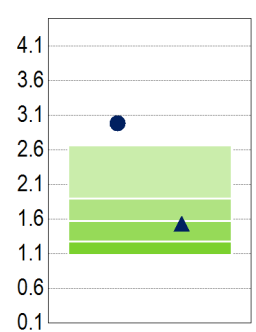
● Total Fund	
Value	5.7
Rank	1
▲ Policy Index	
Value	0.0
Rank	60
Universe	
5th %tile	2.8
25th %tile	0.8
Median	0.3
75th %tile	-0.2
95th %tile	-0.9

**Sharpe Ratio**



● Total Fund	
Value	2.3
Rank	1
▲ Policy Index	
Value	1.0
Rank	82
Universe	
5th %tile	1.6
25th %tile	1.3
Median	1.2
75th %tile	1.0
95th %tile	0.9

**Sortino Ratio**



● Total Fund	
Value	3.0
Rank	1
▲ Policy Index	
Value	1.5
Rank	54
Universe	
5th %tile	2.7
25th %tile	1.9
Median	1.6
75th %tile	1.3
95th %tile	1.1

Sortino Ratio requires at least two negative points during the time period in order to calculate.  
Sample size is 26 Portfolios

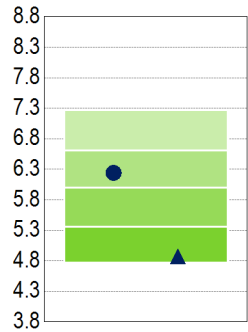


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# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

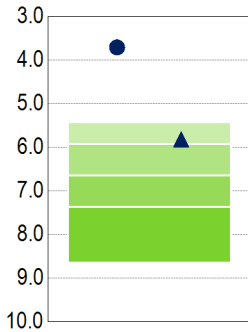
**Total Fund vs. InvestorForce Public DB > \$1B Gross (USD)  
5 Years**

**Anlzd Return**



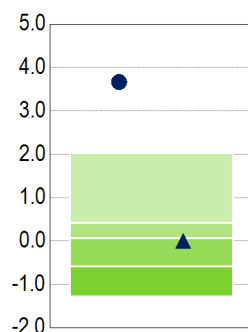
● Total Fund	
Value	6.2
Rank	36
▲ Policy Index	
Value	4.9
Rank	94
Universe	
5th %tile	7.3
25th %tile	6.6
Median	6.0
75th %tile	5.4
95th %tile	4.8

**Anlzd Standard Deviation**



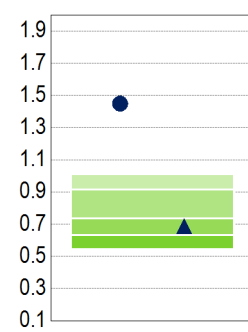
● Total Fund	
Value	3.7
Rank	1
▲ Policy Index	
Value	5.8
Rank	18
Universe	
5th %tile	5.4
25th %tile	5.9
Median	6.6
75th %tile	7.4
95th %tile	8.6

**Anlzd Alpha**



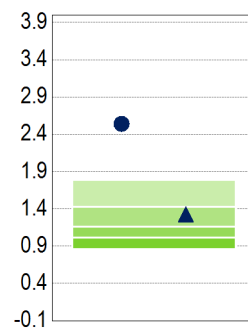
● Total Fund	
Value	3.7
Rank	1
▲ Policy Index	
Value	0.0
Rank	52
Universe	
5th %tile	2.0
25th %tile	0.4
Median	0.1
75th %tile	-0.6
95th %tile	-1.3

**Sharpe Ratio**



● Total Fund	
Value	1.4
Rank	1
▲ Policy Index	
Value	0.7
Rank	64
Universe	
5th %tile	1.0
25th %tile	0.9
Median	0.7
75th %tile	0.6
95th %tile	0.5

**Sortino Ratio**



● Total Fund	
Value	2.5
Rank	1
▲ Policy Index	
Value	1.3
Rank	32
Universe	
5th %tile	1.8
25th %tile	1.4
Median	1.2
75th %tile	1.0
95th %tile	0.9

Sortino Ratio requires at least two negative points during the time period in order to calculate.  
Sample size is 26 Portfolios

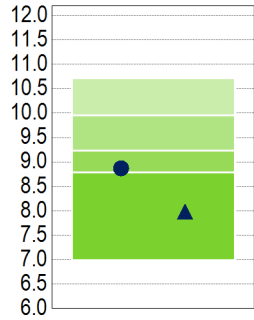


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# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

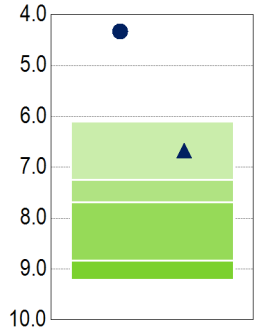
**Total Fund vs. InvestorForce Public DB > \$1B Gross (USD)  
10 Years**

**Anlzd Return**



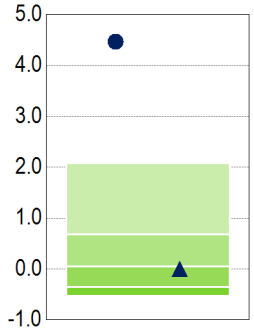
● Total Fund	
Value	8.9
Rank	71
▲ Policy Index	
Value	8.0
Rank	93
Universe	
5th %tile	10.7
25th %tile	10.0
Median	9.2
75th %tile	8.8
95th %tile	7.0

**Anlzd Standard Deviation**



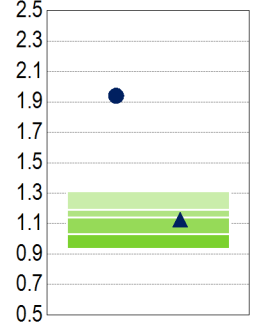
● Total Fund	
Value	4.3
Rank	1
▲ Policy Index	
Value	6.7
Rank	13
Universe	
5th %tile	6.1
25th %tile	7.2
Median	7.7
75th %tile	8.8
95th %tile	9.2

**Anlzd Alpha**



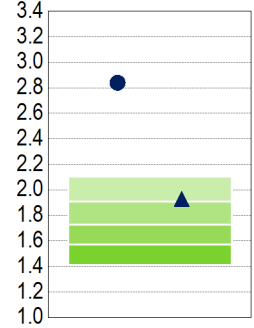
● Total Fund	
Value	4.5
Rank	1
▲ Policy Index	
Value	0.0
Rank	56
Universe	
5th %tile	2.1
25th %tile	0.7
Median	0.1
75th %tile	-0.3
95th %tile	-0.5

**Sharpe Ratio**



● Total Fund	
Value	1.9
Rank	1
▲ Policy Index	
Value	1.1
Rank	53
Universe	
5th %tile	1.3
25th %tile	1.2
Median	1.1
75th %tile	1.0
95th %tile	0.9

**Sortino Ratio**



● Total Fund	
Value	2.8
Rank	1
▲ Policy Index	
Value	1.9
Rank	24
Universe	
5th %tile	2.1
25th %tile	1.9
Median	1.7
75th %tile	1.6
95th %tile	1.4

Sortino Ratio requires at least two negative points during the time period in order to calculate.  
Sample size is 26 Portfolios



San Bernardino County Employees' Retirement Association

**TOTAL FUND RISK STATISTICS**

1 Years Ending June 30, 2019								
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank
Domestic Equity	11.1%	7.2%	--	16.6%	--	3.7%	-0.5	--
Russell 3000	--	9.0%	--	19.7%	--	0.0%	--	--
International Developed	0.5%	-0.2%	85	10.1%	1	7.3%	-0.2	--
MSCI EAFE	--	1.1%	39	15.3%	32	0.0%	--	--
International Emerging	4.3%	0.4%	77	14.5%	22	4.8%	-0.2	--
MSCI Emerging Markets	--	1.2%	66	17.6%	91	0.0%	--	--
U.S. Credit Strategies	13.6%	4.0%	90	4.2%	65	5.2%	-0.5	--
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	6.4%	72	4.9%	81	0.0%	--	--
Non-U.S. Credit Composite	13.3%	3.4%	--	4.1%	--	9.6%	0.0	--
ICE BofAML Euro High Yield Constrained TR	--	3.0%	--	7.9%	--	0.0%	--	--
Emerging Markets Debt Composite	9.3%	2.3%	99	4.1%	10	8.7%	-1.0	--
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	10.8%	48	8.5%	66	0.0%	--	--
Alpha Pool Composite	15.5%	6.1%	1	3.7%	26	3.6%	0.2	33
91 Day T-Bill + 3%	--	5.3%	7	0.0%	1	0.0%	--	--

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.1%	14.9%	--	4.7%	--
Cambridge Associates Global All PE (Qtr Lag)	--	11.8%	--	6.9%	--
Real Estate Composite	4.1%	6.8%	38	1.4%	40
NCREIF Property Index 1 Qtr. Lag	--	6.8%	38	2.9%	77
Real Assets Composite	4.6%	-0.4%	90	7.0%	66
Real Assets Custom Blend	--	-2.1%	92	5.3%	50

Percent of Total equals 92.4% 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 June 30, 2019								
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank
Domestic Equity	11.1%	5.0%	--	10.0%	--	5.0%	-1.8	--
Russell 3000	--	14.0%	--	12.5%	--	0.0%	--	--
International Developed	0.5%	1.8%	99	6.1%	1	7.7%	-0.9	--
MSCI EAFE	--	9.1%	39	11.1%	23	0.0%	--	--
International Emerging	4.3%	7.7%	95	11.6%	2	3.8%	-0.8	--
MSCI Emerging Markets	--	10.7%	32	13.9%	54	0.0%	--	--
U.S. Credit Strategies	13.6%	7.9%	1	3.3%	37	4.1%	0.4	1
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	6.3%	2	3.2%	33	0.0%	--	--
Non-U.S. Credit Composite	13.3%	9.2%	--	3.7%	--	9.3%	0.3	--
ICE BofAML Euro High Yield Constrained TR	--	6.2%	--	8.2%	--	0.0%	--	--
Emerging Markets Debt Composite	9.3%	5.6%	54	5.1%	31	6.8%	0.1	68
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	4.9%	73	7.3%	63	0.0%	--	--
Alpha Pool Composite	15.5%	8.5%	1	3.0%	34	3.1%	1.3	1
91 Day T-Bill + 3%	--	4.4%	52	0.2%	1	0.0%	--	--

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.1%	15.1%	--	3.8%	--
Cambridge Associates Global All PE (Qtr Lag)	--	14.1%	--	6.4%	--
Real Estate Composite	4.1%	6.3%	97	2.6%	56
NCREIF Property Index 1 Qtr. Lag	--	7.1%	63	2.9%	59
Real Assets Composite	4.6%	2.8%	62	5.3%	43
Real Assets Custom Blend	--	0.6%	96	4.3%	10

Percent of Total equals 92.4% 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 June 30, 2019								
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank
Domestic Equity	11.1%	2.9%	--	8.4%	--	11.0%	-0.7	--
Russell 3000	--	10.2%	--	12.3%	--	0.0%	--	--
International Developed	0.5%	1.9%	48	18.8%	99	14.6%	0.0	47
MSCI EAFE	--	2.2%	46	12.3%	72	0.0%	--	--
International Emerging	4.3%	1.1%	94	12.7%	7	4.7%	-0.3	--
MSCI Emerging Markets	--	2.5%	52	15.8%	73	0.0%	--	--
U.S. Credit Strategies	13.6%	5.9%	2	3.3%	21	4.0%	0.4	3
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	4.3%	40	3.8%	46	0.0%	--	--
Non-U.S. Credit Composite	13.3%	6.1%	--	3.5%	--	10.1%	0.6	--
ICE BofAML Euro High Yield Constrained TR	--	0.3%	--	9.6%	--	0.0%	--	--
Emerging Markets Debt Composite	9.3%	3.7%	53	5.3%	22	6.1%	0.2	57
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	2.5%	66	8.0%	63	0.0%	--	--
Alpha Pool Composite	15.5%	4.6%	1	3.5%	26	3.5%	0.2	35
91 Day T-Bill + 3%	--	3.9%	30	0.3%	1	0.0%	--	--

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.1%	12.7%	--	4.0%	--
Cambridge Associates Global All PE (Qtr Lag)	--	11.2%	--	5.9%	--
Real Estate Composite	4.1%	8.8%	85	2.8%	37
NCREIF Property Index 1 Qtr. Lag	--	9.1%	74	3.9%	57
Real Assets Composite	4.6%	1.4%	59	5.7%	27
Real Assets Custom Blend	--	-2.3%	74	5.9%	32

Percent of Total equals 92.4% because Beta Overlay is not included as these statistics are not relevant for alternative asset classes.



# PUBLIC EQUITY PORTFOLIO

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



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**GLOBAL EQUITY STRATEGIES - GROSS**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Total Equity</b>	<b>1,661,369,509</b>	<b>15.9</b>	<b>3.0</b>	<b>94</b>	<b>14.6</b>	<b>92</b>	<b>5.0</b>	<b>81</b>	<b>6.3</b>	<b>99</b>	<b>3.4</b>	<b>99</b>	<b>6.7</b>	<b>99</b>
MSCI ACWI			3.6	81	16.2	82	5.7	77	11.6	85	6.2	89	10.1	93
Excess Return			-0.6		-1.6		-0.7		-5.3		-2.8		-3.4	
InvMetrics Public DB Total Eq Gross Median			3.9		17.1		6.9		12.3		7.8		12.1	
<b>Domestic Equity With Beta Overlay</b>	<b>1,068,799,426</b>	<b>10.2</b>	<b>3.8</b>	<b>80</b>	<b>15.7</b>	<b>99</b>	<b>4.5</b>	<b>97</b>	<b>8.3</b>	<b>99</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
Russell 3000			4.1	57	18.7	57	9.0	45	14.0	33	10.2	29	14.7	30
Excess Return			-0.3		-3.0		-4.5		-5.7					
InvMetrics Public DB US Eq Gross Median			4.1		18.9		8.8		13.6		9.8		14.4	
<b>Domestic Equity</b>	<b>1,161,696,470</b>	<b>11.1</b>	<b>4.3</b>	<b>--</b>	<b>17.3</b>	<b>--</b>	<b>7.2</b>	<b>--</b>	<b>5.0</b>	<b>--</b>	<b>2.9</b>	<b>--</b>	<b>5.1</b>	<b>--</b>
Russell 3000			4.1	--	18.7	--	9.0	--	14.0	--	10.2	--	14.7	--
Excess Return			0.2		-1.4		-1.8		-9.0		-7.3		-9.6	
Tobam AB US Equity	309,038,400	3.0	4.3	42	18.3	51	1.3	72	--	--	--	--	--	--
Russell 3000			4.1	47	18.7	45	9.0	38	14.0	41	10.2	37	14.7	51
Excess Return			0.2		-0.4		-7.7							
eV All US Equity Gross Median			3.9		18.3		6.7		13.0		9.1		14.7	
<b>Large Cap Equity</b>	<b>852,413,525</b>	<b>8.1</b>	<b>4.3</b>	<b>41</b>	<b>17.0</b>	<b>61</b>	<b>9.4</b>	<b>35</b>	<b>6.6</b>	<b>96</b>	<b>4.3</b>	<b>94</b>	<b>6.2</b>	<b>99</b>
S&P 500			4.3	42	18.5	47	10.4	29	14.2	38	10.7	30	14.7	49
Excess Return			0.0		-1.5		-1.0		-7.6		-6.4		-8.5	
eV All US Equity Gross Median			3.9		18.3		6.7		13.0		9.1		14.7	
SsgA S&P500	849,295,184	8.1	4.3	41	17.1	61	9.4	35	9.1	86	7.1	74	8.7	99
S&P 500			4.3	42	18.5	47	10.4	29	14.2	38	10.7	30	14.7	49
Excess Return			0.0		-1.4		-1.0		-5.1		-3.6		-6.0	
eV All US Equity Gross Median			3.9		18.3		6.7		13.0		9.1		14.7	
Russell US Large Cap Volatility	3,118,341	0.0												
<b>Small Cap Equity</b>	<b>244,544</b>	<b>0.0</b>												
Russell US Small Cap Volatility	244,544	0.0												





San Bernardino County Employees' Retirement Association

# GLOBAL EQUITY STRATEGIES - GROSS

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>International Equity With Beta Overlay</b>	<b>1,906,418,315</b>	<b>18.2</b>	<b>1.8</b>	<b>96</b>	<b>11.8</b>	<b>93</b>	<b>0.6</b>	<b>34</b>	<b>8.5</b>	<b>66</b>	--	--	--	--
MSCI ACWI ex USA Gross			<u>3.2</u>	28	<u>14.0</u>	44	<u>1.8</u>	20	<u>9.9</u>	23	<u>2.6</u>	52	<u>7.0</u>	68
Excess Return			-1.4		-2.2		-1.2		-1.4					
InvMetrics Public DB ex-US Eq Gross Median			2.8		13.7		-0.3		8.9		2.7		7.5	
<b>International Equity</b>	<b>499,673,040</b>	<b>4.8</b>	<b>0.1</b>	--	<b>8.7</b>	--	<b>0.7</b>	--	<b>6.7</b>	--	<b>2.4</b>	--	<b>7.4</b>	--
MSCI ACWI			<u>3.6</u>	--	<u>16.2</u>	--	<u>5.7</u>	--	<u>11.6</u>	--	<u>6.2</u>	--	<u>10.1</u>	--
Excess Return			-3.5		-7.5		-5.0		-4.9		-3.8		-2.7	
<b>International Developed</b>	<b>51,891,065</b>	<b>0.5</b>	<b>-0.1</b>	<b>99</b>	<b>6.8</b>	<b>99</b>	<b>-0.2</b>	<b>85</b>	<b>1.8</b>	<b>99</b>	<b>1.9</b>	<b>48</b>	<b>10.1</b>	<b>1</b>
MSCI EAFE			<u>3.7</u>	29	<u>14.0</u>	41	<u>1.1</u>	39	<u>9.1</u>	39	<u>2.2</u>	46	<u>6.9</u>	88
Excess Return			-3.8		-7.2		-1.3		-7.3		-0.3		3.2	
InvMetrics Public DB Dev Mkt ex-US Eq Gross Median			2.5		13.5		0.3		8.6		1.8		7.6	
Russell International Volatility	4,450,865	0.0												
Tobam AB World Ex-US Equity	47,440,200	0.5	-0.2	93	7.3	97	-2.9	76	--	--	--	--	--	--
MSCI ACWI ex USA			<u>3.0</u>	60	<u>13.6</u>	64	<u>1.3</u>	39	<u>9.4</u>	63	<u>2.2</u>	77	<u>6.5</u>	92
Excess Return			-3.2		-6.3		-4.2							
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		10.0		3.8		8.9	
<b>International Emerging</b>	<b>447,781,975</b>	<b>4.3</b>	<b>0.1</b>	<b>99</b>	<b>8.9</b>	<b>95</b>	<b>0.4</b>	<b>77</b>	<b>7.7</b>	<b>95</b>	<b>1.1</b>	<b>94</b>	<b>5.1</b>	<b>99</b>
MSCI Emerging Markets			<u>0.6</u>	79	<u>10.6</u>	64	<u>1.2</u>	66	<u>10.7</u>	32	<u>2.5</u>	52	<u>5.8</u>	43
Excess Return			-0.5		-1.7		-0.8		-3.0		-1.4		-0.7	
Mondrian	144,194,658	1.4	0.3	84	10.6	66	5.6	17	6.5	93	0.5	97	5.7	97
MSCI Emerging Markets			<u>0.6</u>	76	<u>10.6</u>	66	<u>1.2</u>	58	<u>10.7</u>	49	<u>2.5</u>	73	<u>5.8</u>	95
Excess Return			-0.3		0.0		4.4		-4.2		-2.0		-0.1	
eV Emg Mkts Equity Gross Median			1.4		12.1		1.8		10.6		3.4		7.5	
Gramercy Emerging Market Equity	400,250	0.0	0.0	88	0.0	99	0.0	69	12.9	20	5.9	13	--	--
MSCI Emerging Markets			<u>0.6</u>	76	<u>10.6</u>	66	<u>1.2</u>	58	<u>10.7</u>	49	<u>2.5</u>	73	<u>5.8</u>	95
Excess Return			-0.6		-10.6		-1.2		2.2		3.4			
eV Emg Mkts Equity Gross Median			1.4		12.1		1.8		10.6		3.4		7.5	
Tobam	303,087,899	2.9	0.0	88	8.2	89	-1.9	82	7.4	89	--	--	--	--
MSCI Emerging Markets			<u>0.6</u>	76	<u>10.6</u>	66	<u>1.2</u>	58	<u>10.7</u>	49	<u>2.5</u>	73	<u>5.8</u>	95
Excess Return			-0.6		-2.4		-3.1		-3.3					
eV Emg Mkts Equity Gross Median			1.4		12.1		1.8		10.6		3.4		7.5	



# GLOBAL DEBT STRATEGIES

<b>Global Debt Strategies (35% Target)</b>	<b>US Fixed Income (15% Target)</b>	<b>Core Fixed Income (2%)</b>	Russell Investments (Bloomberg Barclays US Agg. Bond TR Index) 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 Waterfall - Sutherland REIT Holdings LP (MCA) Waterfall Asset Management SMA (MCA) Waterfall Victoria Fund LP (MCA)
		<b>Credit Strategies/ High Yield Strategies (13%)</b>	Russell Investments (Barclays Global Aggregate ex US Unhedged) 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 Opportunities Fund - Gold Coast I Marathon European Credit Opportunity Fund II - Gold Coast I Marathon European Credit Opportunity Fund III - Gold Coast I Marathon Loan Opportunities Fund - Gold Coast I Marathon Structured Product Strategies Fund - Gold Coast I York Global Credit Income Fund
	<b>Global Fixed Income (20% Target)</b>	<b>International Core (1%)</b>	Ashmore Emerging Markets MCA Gramercy Capital Solutions Fund (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
		<b>International Credit (11%)</b>	
		<b>Emerging Market Debt (8%)</b>	



San Bernardino County Employees' Retirement Association

**GLOBAL DEBT STRATEGIES - GROSS**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Global Fixed Income With Beta Overlay</b>	<b>3,066,282,718</b>	<b>29.3</b>	<b>0.4</b>	<b>--</b>	<b>2.5</b>	<b>--</b>	<b>1.2</b>	<b>--</b>	<b>2.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>Total Fixed</b>	<b>3,789,357,053</b>	<b>36.2</b>	<b>1.2</b>	<b>99</b>	<b>4.3</b>	<b>93</b>	<b>3.3</b>	<b>99</b>	<b>7.8</b>	<b>1</b>	<b>5.5</b>	<b>1</b>	<b>9.0</b>	<b>1</b>
<i>InvMetrics Public DB Total Fix Inc Gross Median</i>			2.7		5.8		7.0		2.4		3.0		4.4	
<b>U.S. Credit Strategies</b>	<b>1,422,495,981</b>	<b>13.6</b>	<b>1.6</b>	<b>88</b>	<b>4.4</b>	<b>87</b>	<b>4.0</b>	<b>90</b>	<b>7.9</b>	<b>1</b>	<b>5.9</b>	<b>2</b>	<b>10.3</b>	<b>1</b>
<i>50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index</i>			2.2	82	7.9	75	6.4	72	6.3	2	4.3	40	7.5	1
Excess Return			-0.6		-3.5		-2.4		1.6		1.6		2.8	
<i>ICE BofAML US High Yield TR</i>			2.6	81	10.2	10	7.6	64	7.6	1	4.7	27	9.2	1
<i>eV Global Credit Fixed Income Gross Median</i>			4.0		8.9		8.8		4.4		3.0		5.9	
Golden Tree Asset Management	427,391,464	4.1	2.7	80	9.5	26	8.1	58	11.3	1	10.0	1	--	--
Beach Point Capital (Formerly Post)	160,296,344	1.5	2.2	82	3.6	95	4.2	85	8.4	1	6.6	1	9.5	1
Golden Tree Distressed Debt	21,862,754	0.2	3.3	73	-1.4	99	-5.2	99	3.2	78	7.1	1	--	--
Mackay / Gold Coast	110,429,212	1.1	1.4	91	5.8	85	5.1	74	6.3	2	3.4	47	8.4	1
MD SASS Waterfall Victoria	23,998,425	0.2	-12.7	--	-7.8	--	-7.3	--	3.4	--	--	--	--	--
Russell Interest Rate Hedging	10,680,321	0.1	-30.0	99	-52.8	99	-54.6	99	-23.2	99	-29.3	99	-23.2	99
Stone Tower Credit (Apollo)	94,593,959	0.9	2.6	71	3.6	90	7.4	38	8.3	4	5.3	7	--	--
Gold Coast Capital IV	104,780,517	1.0	2.0	--	5.2	--	6.0	--	6.0	--	--	--	--	--
Waterfall Asset Management	57,480,639	0.5	2.8	--	10.5	--	4.9	--	12.3	--	--	--	--	--
Waterfall Victoria	50,799,192	0.5	1.5	--	3.4	--	6.5	--	8.7	--	--	--	--	--
Stone Tower Offshore Credit (Apollo)	360,151,852	3.4	1.8	--	2.8	--	3.5	--	5.5	--	5.0	--	9.9	--
AG Capital	4,384	0.0	-2.8	99	-2.8	99	9.1	47	2.4	91	-2.6	99	6.0	48



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**GLOBAL DEBT STRATEGIES - GROSS**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Non-U.S. Fixed Income Composite</b>	<b>2,366,861,072</b>	<b>22.6</b>	<b>1.0</b>	<b>99</b>	<b>4.3</b>	<b>93</b>	<b>3.0</b>	<b>99</b>	<b>7.9</b>	<b>1</b>	<b>5.3</b>	<b>1</b>	<b>7.1</b>	<b>10</b>
<i>BbgBarc Global Aggregate TR</i>			<u>3.3</u>	11	<u>5.6</u>	53	<u>5.8</u>	90	<u>1.6</u>	97	<u>1.2</u>	99	<u>2.9</u>	98
Excess Return			-2.3		-1.3		-2.8		6.3		4.1		4.2	
<i>InvMetrics Public DB Total Fix Inc Gross Median</i>			2.7		5.8		7.0		2.4		3.0		4.4	
<b>Non-U.S. Credit Composite</b>	<b>1,396,137,608</b>	<b>13.3</b>	<b>0.5</b>	<b>--</b>	<b>3.4</b>	<b>--</b>	<b>3.4</b>	<b>--</b>	<b>9.2</b>	<b>--</b>	<b>6.1</b>	<b>--</b>	<b>8.1</b>	<b>--</b>
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>3.8</u>	--	<u>7.3</u>	--	<u>3.0</u>	--	<u>6.2</u>	--	<u>0.3</u>	--	<u>7.6</u>	--
Excess Return			-3.3		-3.9		0.4		3.0		5.8		0.5	
Marathon/Gold Coast	243,502,925	2.3	1.1	96	4.3	88	8.9	50	11.7	1	7.8	1	--	--
Alcentra Core European Credit	534,306,749	5.1	1.3	92	1.0	99	3.5	95	10.5	1	9.7	1	--	--
Halcyon Asset Management	193,101,122	1.8	4.2	38	1.6	99	0.3	99	9.2	1	--	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>3.8</u>	64	<u>7.3</u>	76	<u>3.0</u>	98	<u>6.2</u>	2	<u>0.3</u>	88	<u>7.6</u>	1
Excess Return			0.4		-5.7		-2.7		3.0					
<i>eV Global Credit Fixed Income Gross Median</i>			4.0		8.9		8.8		4.4		3.0		5.9	
York Global Credit	39,779,015	0.4	2.1	83	3.5	96	4.7	81	8.7	1	5.6	4	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>3.8</u>	64	<u>7.3</u>	76	<u>3.0</u>	98	<u>6.2</u>	2	<u>0.3</u>	88	<u>7.6</u>	1
Excess Return			-1.7		-3.8		1.7		2.5		5.3			
<i>eV Global Credit Fixed Income Gross Median</i>			4.0		8.9		8.8		4.4		3.0		5.9	
Cairn Composite	385,447,797	3.7	-2.8	99	7.1	78	2.1	99	8.4	1	5.0	18	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>3.8</u>	64	<u>7.3</u>	76	<u>3.0</u>	98	<u>6.2</u>	2	<u>0.3</u>	88	<u>7.6</u>	1
Excess Return			-6.6		-0.2		-0.9		2.2		4.7			
<i>eV Global Credit Fixed Income Gross Median</i>			4.0		8.9		8.8		4.4		3.0		5.9	



San Bernardino County Employees' Retirement Association

**GLOBAL DEBT STRATEGIES - GROSS**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Emerging Markets Debt Composite</b>	<b>970,723,464</b>	<b>9.3</b>	<b>1.9</b>	<b>99</b>	<b>5.7</b>	<b>94</b>	<b>2.3</b>	<b>99</b>	<b>5.6</b>	<b>54</b>	<b>3.7</b>	<b>53</b>	<b>5.3</b>	<b>65</b>
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified			4.9	30	10.0	48	10.8	48	4.9	73	2.5	66	5.6	64
Excess Return			-3.0		-4.3		-8.5		0.7		1.2		-0.3	
eV All Emg Mkts Fixed Inc Gross Median			4.3		9.9		10.7		5.7		4.2		7.6	
<b>Ashmore Emerging Markets Liquid Investments</b>	<b>174,919,155</b>	<b>1.7</b>	<b>4.9</b>	<b>30</b>	<b>10.0</b>	<b>48</b>	<b>10.8</b>	<b>48</b>	<b>4.9</b>	<b>73</b>	<b>2.5</b>	<b>66</b>	<b>5.6</b>	<b>64</b>
JP Morgan GBI - EM Global Diversified Index			5.6	16	8.7	80	9.0	74	4.2	87	-0.5	91	3.4	91
Excess Return			-0.7		1.3		1.8		0.7		3.0		2.2	
eV All Emg Mkts Fixed Inc Gross Median			4.3		9.9		10.7		5.7		4.2		7.6	
<b>Ashmore Local Currency</b>	<b>104,237,425</b>	<b>1.0</b>	<b>4.2</b>	<b>11</b>	<b>7.5</b>	<b>39</b>	<b>9.3</b>	<b>12</b>	<b>6.0</b>	<b>22</b>	<b>0.1</b>	<b>88</b>	<b>--</b>	<b>--</b>
JPM ELMi+ TR USD			2.1	79	3.6	90	3.7	84	3.0	65	-0.6	92	1.0	97
Excess Return			2.1		3.9		5.6		3.0		0.7			
JP Morgan EMBI Global Index			3.8	23	10.6	6	11.3	1	4.6	40	4.5	20	7.4	19
eV All Global Fixed Inc Gross Median			3.2		6.7		6.5		3.9		2.7		4.6	
Gramercy Funds Management LLC	591,228,164	5.7	0.9	99	3.1	99	-1.8	99	4.9	74	5.9	8	--	--
JPM ELMi+ TR USD			2.1	99	3.6	99	3.7	98	3.0	96	-0.6	93	1.0	99
Excess Return			-1.2		-0.5		-5.5		1.9		6.5			
JP Morgan EMBI Global Index			3.8	74	10.6	38	11.3	37	4.6	78	4.5	46	7.4	53
eV All Emg Mkts Fixed Inc Gross Median			4.3		9.9		10.7		5.7		4.2		7.6	
PGIM Fixed Income	100,338,720	1.0	0.4	99	10.0	48	4.5	98	7.9	8	3.6	56	--	--
JPM ELMi+ TR USD			2.1	99	3.6	99	3.7	98	3.0	96	-0.6	93	1.0	99
Excess Return			-1.7		6.4		0.8		4.9		4.2			
JP Morgan EMBI Global Index			3.8	74	10.6	38	11.3	37	4.6	78	4.5	46	7.4	53
eV All Emg Mkts Fixed Inc Gross Median			4.3		9.9		10.7		5.7		4.2		7.6	



# ABSOLUTE RETURN (ALPHA POOL)

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

**ALPHA POOL STRATEGIES - GROSS**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Alpha Pool Composite</b>	<b>1,616,544,618</b>	<b>15.5</b>	<b>2.7</b>	<b>8</b>	<b>6.5</b>	<b>27</b>	<b>6.1</b>	<b>1</b>	<b>8.5</b>	<b>1</b>	<b>4.6</b>	<b>1</b>	<b>8.8</b>	<b>1</b>
<i>91 Day T-Bill + 3%</i>			<u>1.3</u>	56	<u>2.7</u>	89	<u>5.3</u>	7	<u>4.4</u>	52	<u>3.9</u>	30	<u>3.5</u>	64
Excess Return			1.4		3.8		0.8		4.1		0.7		5.3	
Alpha Liquidity (Ssga)	162,911,067	1.6	0.7	96	1.4	99	2.6	88	1.6	87	1.1	81	0.7	98
Apollo Global Management	54,437,218	0.5	5.9	1	14.8	1	16.8	1	22.5	1	--	--	--	--
Ares Eco Master Fund II	465,634,378	4.5	1.9	82	9.5	17	3.4	85	--	--	--	--	--	--
Birch Grove Credit Strategies	135,157,362	1.3	3.7	27	4.2	86	7.1	42	9.8	1	5.5	5	--	--
Sterling Stamos	276,636,075	2.6	3.6	31	3.6	90	7.0	43	9.5	1	6.5	1	6.6	26
Zais	138,142,480	1.3	1.8	83	2.6	95	2.8	88	10.0	1	5.1	9	25.7	1
Zais Group Invest Advisors	301,280,116	2.9	3.2	50	8.7	27	6.6	49	14.7	1	8.4	1	--	--
Zais Zephyr A 6 LP	39,415,366	0.4	3.7	--	9.7	--	14.8	--	14.8	--	--	--	--	--
Apollo Accord	2,556,869	0.0	2.9	61	-3.3	99	0.0	97	--	--	--	--	--	--
ZAIS Zephyr 8	15,000,000	0.1												



# 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 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	Aberdeen Standard Secondary Opportunities Fund IV 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 Partners Group Secondary 2004 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
		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 Kayne Anderson Solutions Fund (MCA) Sigular Guff Distressed Opportunity Fund III LP Tennenbaum Co-Invest (MCA) Tennenbaum Opportunities Fund V LLC (MCA) Tennenbaum Opportunities Fund VI LLC (MCA) Tennenbaum Special Situations Fund IX LLC (MCA)





# REAL ESTATE

<b>Real Estate Portfolio (7% Target)</b>	<b>Core Real Estate (3.5%)</b>	<b>Core Real Estate</b>	PRISA II 348 West Hospitality Invesco Real Estate Asia Fund Kayne Anderson Real Estate Debt III (MCA) Marathon Real Estate Debt Fund Pramerica Real Estate Capital VI LP
	<b>Non-Core Real Estate (3.5%)</b>	<b>Enhanced Real Estate/ High Return</b>	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 PRISA III Starwood Global Opportunity Fund VII-A Starwood Opportunity Fund VII Walton Street Real Estate Fund V
		<b>Real Estate Secondaries</b>	Partners Group Real Estate Secondary 2013 A LP (MCA) Partners Group Real Estate Secondary 2017 A LP (MCA)



# REAL ASSETS

Real Asset Portfolio (5% Target)	<b>Commodities (2% Target)</b>	Energy Spectrum Partners VI LP Pinnacle Natural Resources LP Pinnacle Physicals & Financing LTD Starwood Energy Infrastructure Fund
	<b>Infrastructure (1% Target)</b>	Fortress Worldwide Transportation & Infrastructure LP Highstar Capital III Kayne Anderson MLP Strategy (MCA)
	<b>Timber (2% Target)</b>	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	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Private Equity Composite</b>	<b>1,681,907,856</b>	<b>16.1</b>	<b>5.2</b>	<b>--</b>	<b>4.8</b>	<b>--</b>	<b>14.9</b>	<b>--</b>	<b>15.1</b>	<b>--</b>	<b>12.7</b>	<b>--</b>	<b>12.4</b>	<b>--</b>
Cambridge Associates Global All PE (Qtr Lag)			<u>4.8</u>	--	<u>3.6</u>	--	<u>11.8</u>	--	<u>14.1</u>	--	<u>11.2</u>	--	<u>14.1</u>	--
Excess Return			0.4		1.2		3.1		1.0		1.5		-1.7	
Russell 3000			4.1	--	18.7	--	9.0	--	14.0	--	10.2	--	14.7	--
Cambridge Associates US All PE (1 Qtr Lag)			6.5	--	4.7	--	14.5	--	16.0	--	12.2	--	14.8	--
<b>Real Estate Composite</b>	<b>432,370,912</b>	<b>4.1</b>	<b>2.1</b>	<b>11</b>	<b>4.2</b>	<b>25</b>	<b>6.8</b>	<b>38</b>	<b>6.3</b>	<b>97</b>	<b>8.8</b>	<b>85</b>	<b>6.7</b>	<b>99</b>
NCREIF Property Index 1 Qtr. Lag			<u>1.8</u>	14	<u>3.2</u>	41	<u>6.8</u>	38	<u>7.1</u>	63	<u>9.1</u>	74	<u>8.5</u>	93
Excess Return			0.3		1.0		0.0		-0.8		-0.3		-1.8	
InvMetrics Public DB Real Estate Pub+Priv Gross Median			1.3		3.0		6.7		7.7		9.7		10.5	
<b>Real Assets Composite</b>	<b>482,889,824</b>	<b>4.6</b>	<b>-1.3</b>	<b>99</b>	<b>4.7</b>	<b>53</b>	<b>-0.4</b>	<b>90</b>	<b>2.8</b>	<b>62</b>	<b>1.4</b>	<b>59</b>	<b>2.3</b>	<b>99</b>
Real Assets Custom Blend			<u>-0.5</u>	95	<u>3.0</u>	80	<u>-2.1</u>	92	<u>0.6</u>	96	<u>-2.3</u>	74	<u>0.2</u>	99
Excess Return			-0.8		1.7		1.7		2.2		3.7		2.1	
67% Bloomberg Commodity/ 33% Barclays US TIPS			0.2	68	5.5	48	-2.9	93	-0.7	99	-5.5	85	-1.2	99
Timber	82,499,313	0.8	-2.7	--	-8.7	--	-7.8	--	-3.4	--	-0.9	--	0.5	--
NCREIF Timberland 1 Qtr. Lag			<u>0.1</u>	--	<u>0.9</u>	--	<u>2.4</u>	--	<u>3.3</u>	--	<u>4.6</u>	--	<u>3.8</u>	--
Excess Return			-2.8		-9.6		-10.2		-6.7		-5.5		-3.3	
<b>Infrastructure</b>	<b>191,625,515</b>	<b>1.8</b>	<b>-2.6</b>	<b>--</b>	<b>13.1</b>	<b>--</b>	<b>-3.1</b>	<b>--</b>	<b>12.8</b>	<b>--</b>	<b>5.1</b>	<b>--</b>	<b>5.1</b>	<b>--</b>
Russell 3000			<u>4.1</u>	--	<u>18.7</u>	--	<u>9.0</u>	--	<u>14.0</u>	--	<u>10.2</u>	--	<u>14.7</u>	--
Excess Return			-6.7		-5.6		-12.1		-1.2		-5.1		-9.6	
<b>Commodities</b>	<b>208,764,996</b>	<b>2.0</b>	<b>0.6</b>	<b>--</b>	<b>3.9</b>	<b>--</b>	<b>5.0</b>	<b>--</b>	<b>4.9</b>	<b>--</b>	<b>2.3</b>	<b>--</b>	<b>3.6</b>	<b>--</b>
Bloomberg Commodity Index			<u>-1.2</u>	--	<u>5.1</u>	--	<u>-6.8</u>	--	<u>-2.2</u>	--	<u>-9.1</u>	--	<u>-3.7</u>	--
Excess Return			1.8		-1.2		11.8		7.1		11.4		7.3	



**APPENDIX: PRIVATE EQUITY, REAL ESTATE AND  
REAL ASSETS PERFORMANCE**

NEPC, LLC

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## REAL ESTATE PERFORMANCE ENDED DEC. 31, 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	\$ 367,671	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	\$ 10,173,339	1.53	17.03%
Beacon Capital Strategic Partners IV, L.P.	2006	\$ 38,000,000	\$ 38,000,000	\$ 31,424,699	\$ -	0.83	-3.26%
Beacon Capital Strategic Partners V, L.P.	2007	\$ 18,000,000	\$ 18,000,000	\$ 11,174,695	\$ -	0.62	-7.87%
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	\$ 11,843,327	\$ -	1.38	10.18%
Bryanston Retail Opportunity Fund, L.P.	2004	\$ 20,000,000	\$ 8,228,165	\$ 18,828,095	\$ 8,505,414	3.32	70.81%
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	\$ 9,026,905	7.45	26.19%
Invesco Asian Real Estate Partners II (USD), LP	2007	\$ 20,000,000	\$ 8,412,833	\$ 11,324,754	\$ 145,811	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	\$ 9,118,321	\$ 62,381,000	1.35	7.38%
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	\$ 4,011,177	\$ 440,343	\$ 3,864,833	1.07	5.87%
Kayne Anderson Real Estate Partners V	2017	\$ 10,000,000	\$ 6,857,979	\$ -	\$ 6,255,256	0.93	-9.60%
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	\$ 32,070,486	\$ 1,186,666	1.21	6.94%
Oaktree Real Estate Opportunities V	2012	\$ 25,000,000	\$ 25,000,000	\$ 37,421,185	\$ 2,608,842	1.57	13.27%
Partners Group Project Camino	2016	\$ 8,415,776	\$ 5,735,568	\$ -	\$ 6,821,664	1.19	7.53%
Partners Group RE Secondary 2013 (USD) A	2014	\$ 65,000,000	\$ 49,541,590	\$ 18,625,904	\$ 52,215,922	1.44	17.24%
Partners Group RE Secondary 2017 (USD) A	2017	\$ 75,000,000	\$ 16,618,682	\$ 118,130	\$ 17,255,777	1.04	6.71%
Pramerica Real Estate Capital VI	2016	\$ 25,686,585	\$ 12,550,133	\$ 5,680,345	\$ 7,212,827	1.02	2.10%
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	\$ 43,197,387	\$ 167,349,922	1.44	8.25%
Prudential PRISA III	2003	\$ 75,000,000	\$ 54,806,772	\$ 46,166,456	\$ 49,676,697	1.64	18.38%
RREEF America REIT III	2004	\$ 20,000,000	\$ 20,539,309	\$ 23,658,675	\$ -	1.15	3.00%
Square Mile Partners II	2007	\$ 19,831,232	\$ 19,831,232	\$ 5,311,330	\$ -	0.27	-19.11%
Square Mile Partners III LP	2008	\$ 20,000,000	\$ 19,730,190	\$ 28,462,236	\$ 431,143	1.46	11.57%
Starwood Capital Hospitality Fund I-2	2006	\$ 30,000,000	\$ 30,000,000	\$ 26,182,035	\$ 3,582,808	0.99	-0.11%
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	\$ 1,704,151	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	\$ 2,764,047	\$ 752,380	0.16	-16.44%
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	\$ 15,939,604	\$ 77,736	1.64	10.74%
Walton Street Real Estate Fund V, LP	2006	\$ 40,000,000	\$ 40,000,000	\$ 22,399,244	\$ 8,383,986	0.77	-2.91%
<b>Total: San Bernardino</b>		<b>\$ 1,255,331,030</b>	<b>\$ 1,063,360,166</b>	<b>\$ 944,037,283</b>	<b>\$ 420,000,432</b>	<b>1.27</b>	<b>4.09%</b>

Note: All metrics are calculated since inception

\* Denotes cash adjusted



## REAL ASSETS PERFORMANCE ENDED DEC. 31, 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	\$ 11,457,672	\$ 38,299,071	1.10	3.36%
Hancock Timberland VII	2005	\$ 90,000,000	\$ 90,000,000	\$ 77,327,100	\$ 27,687,192	1.17	1.37%
Hancock Timberland VIII	2006	\$ 40,000,000	\$ 40,000,000	\$ 6,931,925	\$ 30,169,922	0.93	-0.75%
Highstar Capital III, L.P.	2007	\$ 60,000,000	\$ 59,119,119	\$ 41,639,333	\$ 24,030,693	1.11	1.37%
Timbervest Crossover Partners II, L.P.	2008	\$ 30,000,000	\$ 30,000,000	\$ 14,415,000	\$ 13,428,160	0.93	-1.19%
Timbervest Partners II, L.P.	2007	\$ 50,000,000	\$ 50,000,000	\$ 28,650,000	\$ 24,327,258	1.06	0.62%
<b>Total: San Bernardino</b>		<b>\$ 315,403,354</b>	<b>\$ 314,522,473</b>	<b>\$ 180,421,030</b>	<b>\$ 157,942,296</b>	<b>1.08</b>	<b>0.86%</b>

*Note: All metrics are calculated since inception*

*\* Denotes cash adjusted*



## PRIVATE EQUITY PERFORMANCE ENDED DEC. 31, 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	\$ -	\$ 7,217,028	1.11	9.00%
Apollo Accord Fund, LP	2017	\$ 30,000,000	\$ 7,500,000	\$ 5,511,478	\$ 2,483,838	1.07	5.72%
Apollo European Principal Finance Fund (Feeder), L	2009	\$ 53,950,355	\$ 46,373,293	\$ 68,835,428	\$ 512,174	1.50	11.81%
Apollo Investment Fund VII, L.P.	2008	\$ 10,000,000	\$ 8,641,627	\$ 15,506,536	\$ 1,783,202	2.00	23.08%
Apollo PCPL Webb V	2010	\$ 4,844,398	\$ 4,844,398	\$ 5,196,757	\$ 34,232	1.08	6.40%
Apollo PCPL Webb VIII	2010	\$ 4,734,303	\$ 4,734,303	\$ 12,146,258	\$ 2,353	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	\$ 40,425,743	\$ 144,589	\$ 33,909,359	0.84	-8.95%
Aurora Equity Partners III, L.P.	2005	\$ 25,000,000	\$ 23,544,536	\$ 41,738,196	\$ 187,758	1.67	13.61%
Aurora Equity Partners IV, L.P.	2012	\$ 20,000,000	\$ 15,995,098	\$ 30,861,074	\$ 6,258,395	2.00	18.81%
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	\$ 295,538	1.36	12.21%
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	\$ 17,262,559	2.15	10.09%
Catalyst Fund LP IV, L.P.	2015	\$ 8,000,000	\$ 6,198,391	\$ -	\$ 7,998,429	1.29	12.66%
Charlesbank Equity Fund VIII	2015	\$ 7,500,000	\$ 6,735,684	\$ 4,374,698	\$ 5,035,795	1.40	16.58%
DRI II, L.P.	2009	\$ 20,000,000	\$ 19,917,669	\$ 26,302,807	\$ -	1.33	19.64%
European Strategic Partners 2004	2004	\$ 241,114,947	\$ 220,526,197	\$ 263,507,481	\$ 15,299,222	1.26	3.95%
European Strategic Partners 2008	2010	\$ 31,463,367	\$ 28,273,807	\$ 25,597,224	\$ 15,272,562	1.44	9.11%
Industry Ventures Direct, LP	2016	\$ 25,000,000	\$ 15,396,515	\$ 1,900,632	\$ 14,998,697	1.10	9.25%
Industry Ventures Fund V	2008	\$ 10,000,000	\$ 9,500,000	\$ 21,727,664	\$ 8,312,429	3.16	30.89%
Industry Ventures Fund VI	2011	\$ 20,000,000	\$ 18,400,000	\$ 15,243,240	\$ 9,117,146	1.32	8.22%
Industry Ventures Partnership Holdings Fund II, L.P.	2012	\$ 25,000,000	\$ 23,500,000	\$ 9,874,683	\$ 55,338,249	2.78	24.92%
Industry Ventures Partnership Holdings Fund III, L.P.	2013	\$ 25,000,000	\$ 22,500,000	\$ 4,138,214	\$ 34,088,481	1.70	19.26%
Industry Ventures Partnership Holdings Fund III-A, L.P.	2014	\$ 12,500,000	\$ 10,553,954	\$ 3,582,626	\$ 6,414,877	0.95	-1.98%
Industry Ventures Partnership Holdings IV, LP	2016	\$ 25,000,000	\$ 9,951,458	\$ 156,091	\$ 12,231,424	1.24	15.65%
Industry Ventures Secondary VII, L.P.	2013	\$ 25,000,000	\$ 22,500,000	\$ 9,556,023	\$ 24,658,843	1.52	15.20%
Industry Ventures Secondary VIII	2017	\$ 25,000,000	\$ 10,000,000	\$ 424,672	\$ 12,854,650	1.33	73.64%
Industry Ventures Special Opportunities II-A	2016	\$ 12,500,000	\$ 867,500	\$ 181,944	\$ 1,230,669	1.63	58.43%
Insight Venture Partners III Co-Invest	2014	\$ 4,000,000	\$ 4,000,000	\$ 2,299,693	\$ 7,785,576	2.52	26.69%
Kayne Anderson Energy Fund VII, L.P.	2017	\$ 10,000,000	\$ 7,278,811	\$ 118,129	\$ 8,360,854	1.16	9.10%
Kayne Partners Fund IV (QP), LP	2017	\$ 20,000,000	\$ 6,867,514	\$ -	\$ 7,232,708	1.04	3.84%
Kayne Solutions Fund LP	2018	\$ 20,000,000	\$ 5,342,893	\$ 348,640	\$ 5,433,985	1.08	7.85%
Lexington Capital Partners VI-B	2006	\$ 25,000,000	\$ 24,591,319	\$ 32,223,517	\$ 2,704,742	1.42	6.93%
Lexington Capital Partners VII (Offshore)	2011	\$ 25,000,000	\$ 20,202,136	\$ 24,658,280	\$ 7,641,142	1.59	15.39%
Lexington Middle Market I	2005	\$ 25,000,000	\$ 24,771,942	\$ 37,367,931	\$ 3,453,309	1.65	11.73%
Lexington Middle Market II - Offshore	2008	\$ 10,000,000	\$ 9,773,736	\$ 12,459,682	\$ 3,700,016	1.65	14.31%
Madison Dearborn VII	2016	\$ 10,000,000	\$ 5,208,161	\$ -	\$ 5,939,902	1.14	9.66%
NB Secondary Opportunities I, LP	2005	\$ 20,000,000	\$ 18,500,843	\$ 24,330,105	\$ -	1.32	6.49%
NB Secondary Opportunities II, LP	2008	\$ 20,000,000	\$ 17,080,642	\$ 26,692,122	\$ 195,916	1.54	14.41%
Partners Group Access 216 LP	2017	\$ 7,228,497	\$ 8,498,837	\$ -	\$ 10,850,462	1.28	17.15%
Partners Group Access 384, L.P.	2017	\$ 8,360,000	\$ 8,360,000	\$ -	\$ 5,164,353	0.62	-21.80%
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	\$ 4,361,671	\$ 4,843,537	\$ 19,449	\$ 3,920,415	0.81	-5.25%

Note: All metrics are calculated since inception

\* Denotes Cash adjusted value



# PRIVATE EQUITY PERFORMANCE ENDED DEC. 31, 2018

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Cumulative Distributions	Valuation	TVPI Ratio	IRR
Partners Group Access 680 L.P.	2015	\$ 7,277,345	\$ 7,202,719	\$ -	\$ 10,911,560	1.51	14.50%
Partners Group Access 906, L.P.	2017	\$ 15,000,000	\$ 15,000,000	\$ 17,269	\$ 16,827,464	1.12	10.08%
Partners Group CA Infrastructure, LP Inc	2016	\$ 6,246,500	\$ 2,630,627	\$ -	\$ 3,050,085	1.16	10.76%
Partners Group Client Access 8 LP	2014	\$ 5,531,585	\$ 5,531,585	\$ 30,646,223	\$ -	5.54	69.61%
Partners Group Direct Equity 2016 USD A	2016	\$ 20,000,000	\$ 12,602,005	\$ 3,277	\$ 16,783,395	1.35	20.34%
Partners Group Direct Investment 2012, L.P.	2013	\$ 18,199,488	\$ 16,509,621	\$ 13,841,499	\$ 15,411,767	1.77	18.75%
Partners Group European Mandate, L.P.	2004	\$ 238,584,542	\$ 196,155,787	\$ 257,224,908	\$ 7,923,855	1.36	5.70%
Partners Group European Mezzanine 2005	2005	\$ 101,076,654	\$ 101,076,654	\$ 121,118,042	\$ 1,119,541	1.21	3.10%
Partners Group Global Opp Limited	2017	\$ 4,001,119	\$ 4,001,119	\$ 888,306	\$ 6,394,824	1.82	50.09%
Partners Group Princess Learning IC LTD	2014	\$ 8,970,067	\$ 4,511,879	\$ -	\$ 12,716,950	2.82	33.51%
Partners Group Seabras Holdings, LLC	2015	\$ 4,660,000	\$ 3,332,156	\$ -	\$ 3,411,810	1.02	0.83%
Partners Group Secondary 2006 LP	2006	\$ 54,504,924	\$ 51,077,528	\$ 56,491,288	\$ 3,712,633	1.18	3.38%
Partners Group Secondary 2008, L.P.	2009	\$ 26,680,827	\$ 23,690,725	\$ 31,763,966	\$ 3,483,716	1.48	8.98%
Partners Group Starfrost Limited	2014	\$ 6,307,084	\$ 3,736,806	\$ 1,880,411	\$ 5,233,340	1.90	15.51%
Pathway Private Equity Fund VII, L.P.	2004	\$ 904,500,000	\$ 814,433,348	\$ 1,024,888,319	\$ 388,861,496	1.70	10.41%
Quad-C Partners IX, LP	2017	\$ 8,000,000	\$ 2,787,539	\$ 3,546	\$ 2,835,682	1.02	2.22%
Quantum Energy Partners IV, L.P.	2014	\$ 2,907,301	\$ 2,359,080	\$ 1,184,616	\$ 388,894	0.59	-18.91%
Quantum Energy Partners VI, L.P.	2015	\$ 8,000,000	\$ 4,965,620	\$ 2,108,543	\$ 7,475,105	1.93	44.27%
Quantum Energy Partners VII Co-Investment Fund, LP	2017	\$ 1,300,000	\$ 473,811	\$ 525	\$ 469,224	0.99	-1.17%
Quantum Energy Partners VII, LP	2017	\$ 6,700,000	\$ 2,582,864	\$ 117,410	\$ 2,586,912	1.05	5.98%
Quantum Parallel Partners VI-C, LP	2015	\$ 3,290,000	\$ 1,826,630	\$ 153,819	\$ 2,644,089	1.53	30.67%
Siguler Guff DOF II	2006	\$ 30,000,000	\$ 30,000,000	\$ 42,309,048	\$ 292,079	1.42	8.71%
Siguler Guff DOF III	2008	\$ 10,000,000	\$ 9,700,000	\$ 13,738,513	\$ 1,776,371	1.60	10.65%
SL Capital SOF I LP	2014	\$ 25,000,000	\$ 20,326,601	\$ 13,801,645	\$ 13,281,957	1.33	11.65%
SL Capital SOF III LP	2017	\$ 25,000,000	\$ 6,662,537	\$ -	\$ 9,584,069	1.44	60.14%
TCP Direct Lending Fund VIII-L, LLC	2016	\$ 40,000,000	\$ 17,028,778	\$ 863,867	\$ 17,642,348	1.08	5.96%
TCV IX, L.P.	2016	\$ 10,000,000	\$ 6,948,000	\$ -	\$ 6,964,481	1.00	0.34%
TCW/Crescent Mezzanine IV, L.P.	2006	\$ 40,000,000	\$ 39,590,976	\$ 44,955,179	\$ 100,173	1.14	3.03%
TCW/Crescent Mezzanine V, L.P.	2008	\$ 20,000,000	\$ 19,949,723	\$ 25,279,574	\$ 1,163,420	1.33	9.28%
Tennenbaum Energy Opportunities Fund, LP	2016	\$ 20,000,000	\$ 16,314,514	\$ 3,652,011	\$ 16,835,078	1.26	16.79%
Tennenbaum Opportunities Fund V, L.P.	2007	\$ 10,000,000	\$ 10,000,000	\$ 11,462,679	\$ 2,690,961	1.42	5.27%
Tennenbaum Opportunities Fund VI, L.P.	2011	\$ 20,000,000	\$ 12,218,868	\$ 11,242,461	\$ 7,865,052	1.56	7.74%
Tennenbaum Special Situations Fund IX	2015	\$ 50,000,000	\$ 37,095,835	\$ 9,073,615	\$ 33,257,345	1.14	7.92%
Tennenbaum Waterman Fund, LP	2012	\$ 70,000,000	\$ 70,000,000	\$ 38,677,234	\$ 70,322,826	1.56	10.99%
The Huron Fund V	2017	\$ 10,000,000	\$ 1,420,000	\$ -	\$ 1,290,210	0.91	-10.90%
The Resolute Fund II - Secondary	2016	\$ 1,720,184	\$ 7,819,367	\$ 1,039,660	\$ 7,045,632	1.03	4.76%
The Resolute Fund III	2014	\$ 8,000,000	\$ 7,244,772	\$ 2,117,437	\$ 8,693,013	1.49	21.50%
The Resolute Fund IV, L.P.	2018	\$ 6,000,000	\$ 761,543	\$ -	\$ 944,585	1.24	24.04%
Thoma Bravo Discover Fund I	2015	\$ 3,000,000	\$ 2,469,789	\$ 315,308	\$ 3,443,997	1.52	25.30%
Thoma Bravo XI	2014	\$ 8,000,000	\$ 7,086,492	\$ 4,406,939	\$ 10,862,787	2.15	23.96%
Thoma Bravo XII	2016	\$ 10,000,000	\$ 8,854,355	\$ -	\$ 9,780,337	1.10	7.56%
Towerbrook III 2ndry	2017	\$ 1,520,778	\$ 379,714	\$ 302,058	\$ 180,691	1.25	21.73%
Towerbrook IV (OS) 2ndry	2017	\$ 760,389	\$ 418,091	\$ 23,984	\$ 516,593	1.29	21.74%
Vista Foundation Fund III	2016	\$ 10,000,000	\$ 4,977,037	\$ -	\$ 5,150,257	1.03	2.62%
<b>Total: San Bernardino</b>		<b>2,882,010,271</b>	<b>2,415,067,444</b>	<b>2,549,428,448</b>	<b>1,107,107,894</b>	<b>1.50</b>	<b>8.89%</b>

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





# APPENDIX MARKET OUTLOOK

NEPC, LLC

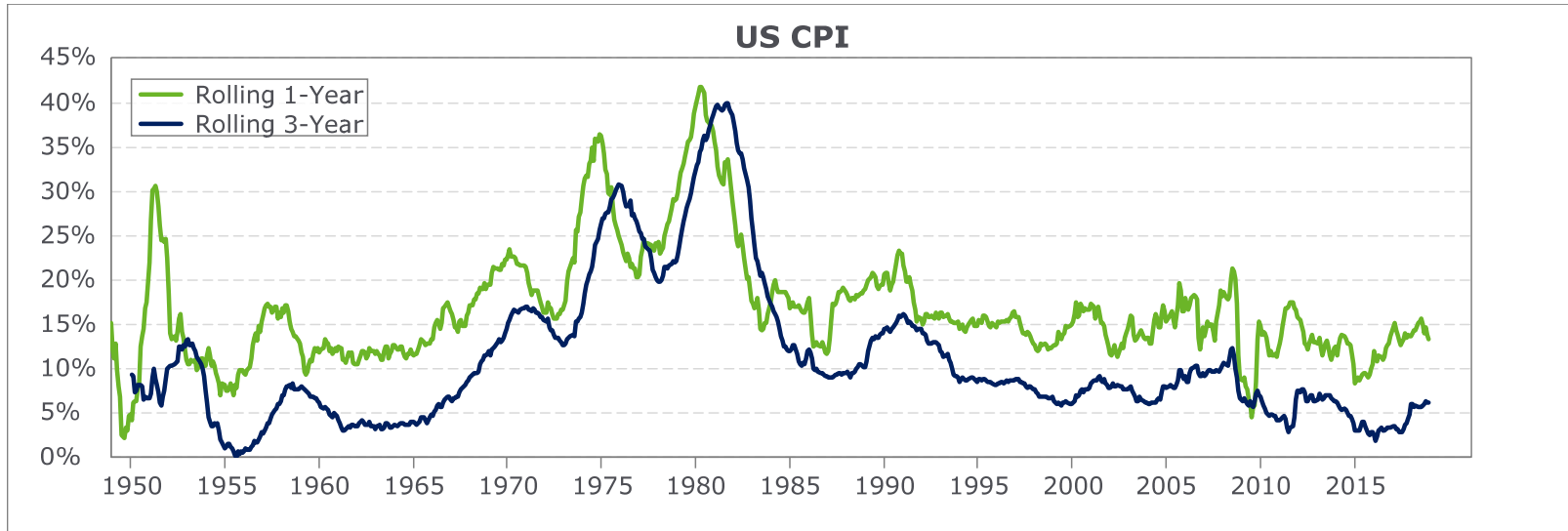
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# MACRO

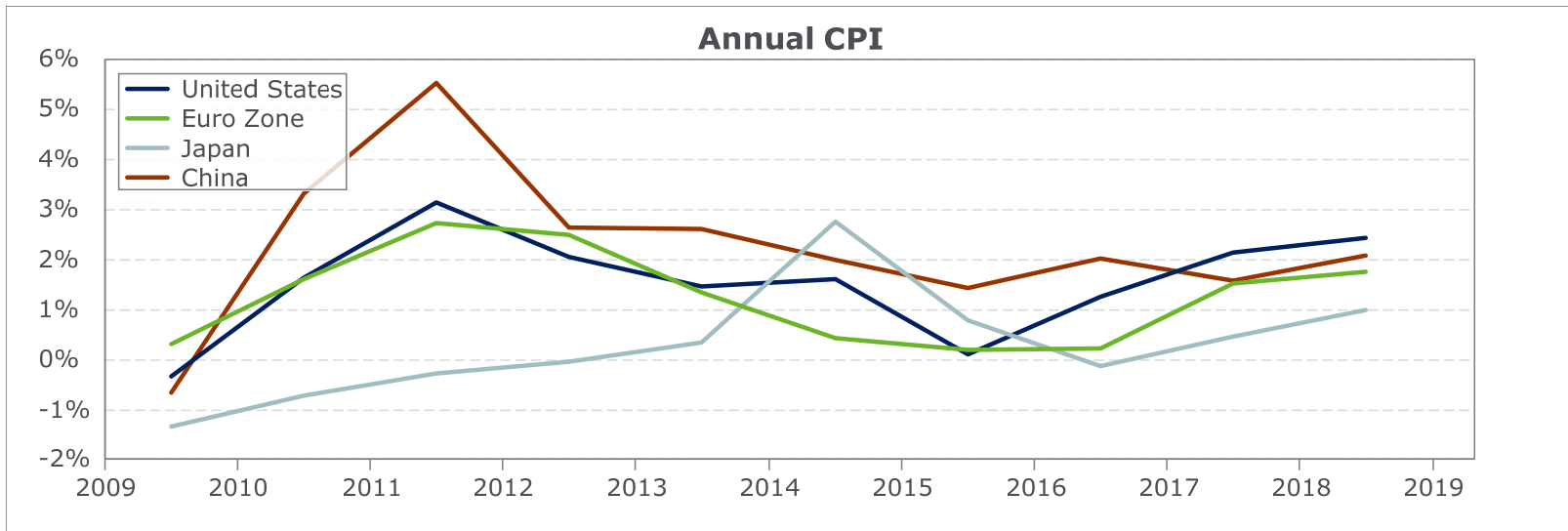
NEPC, LLC

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# INFLATION



Source: FactSet



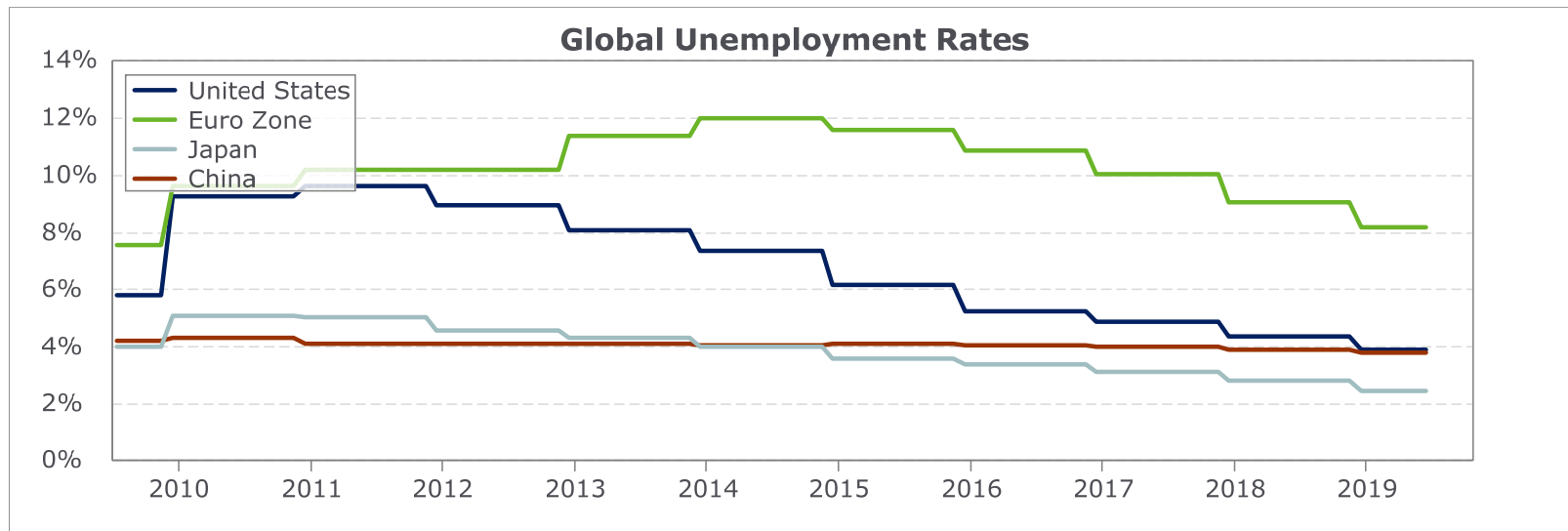
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# UNEMPLOYMENT



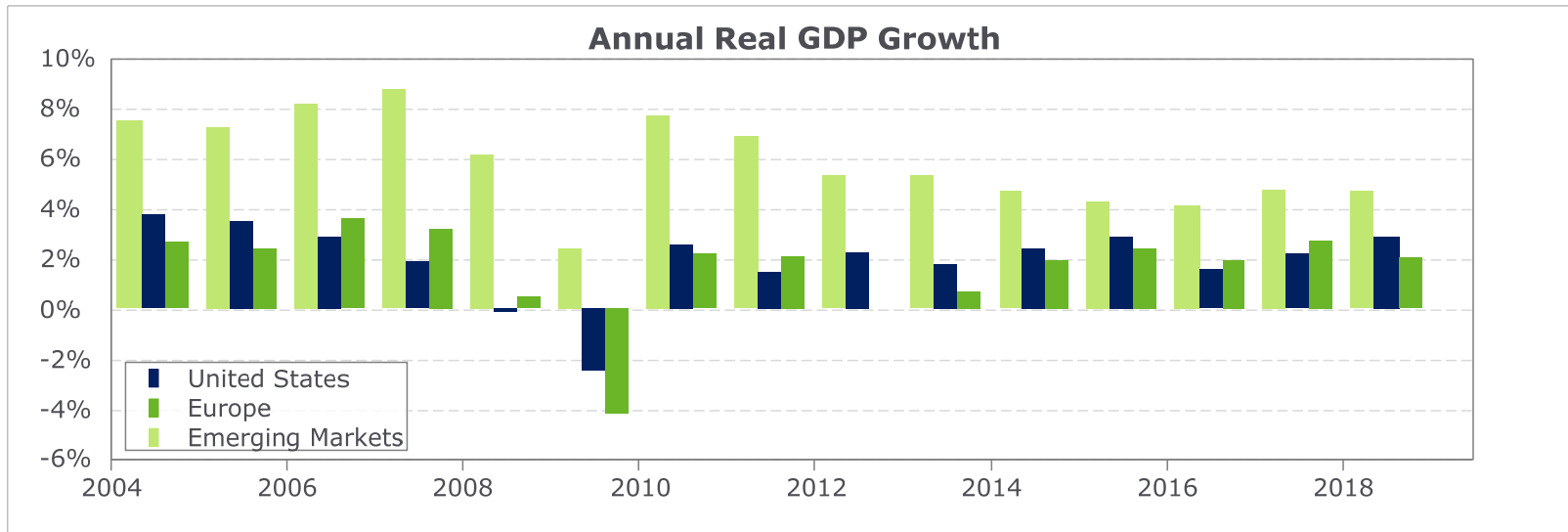
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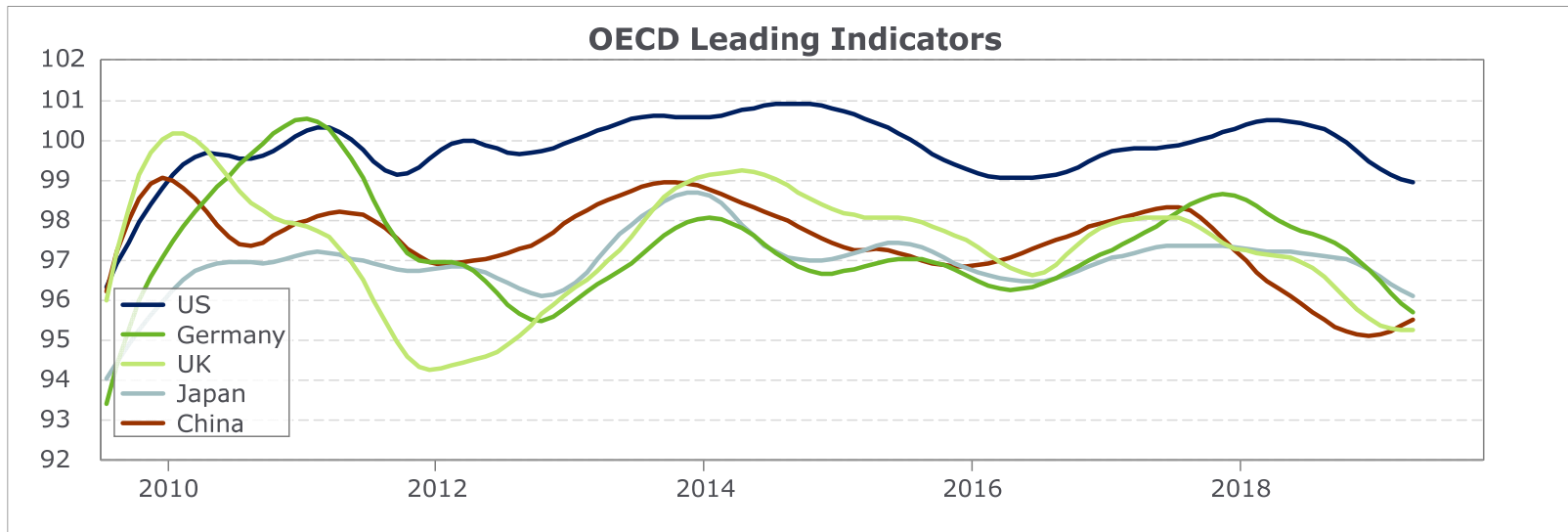
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# ECONOMIC INDICATORS



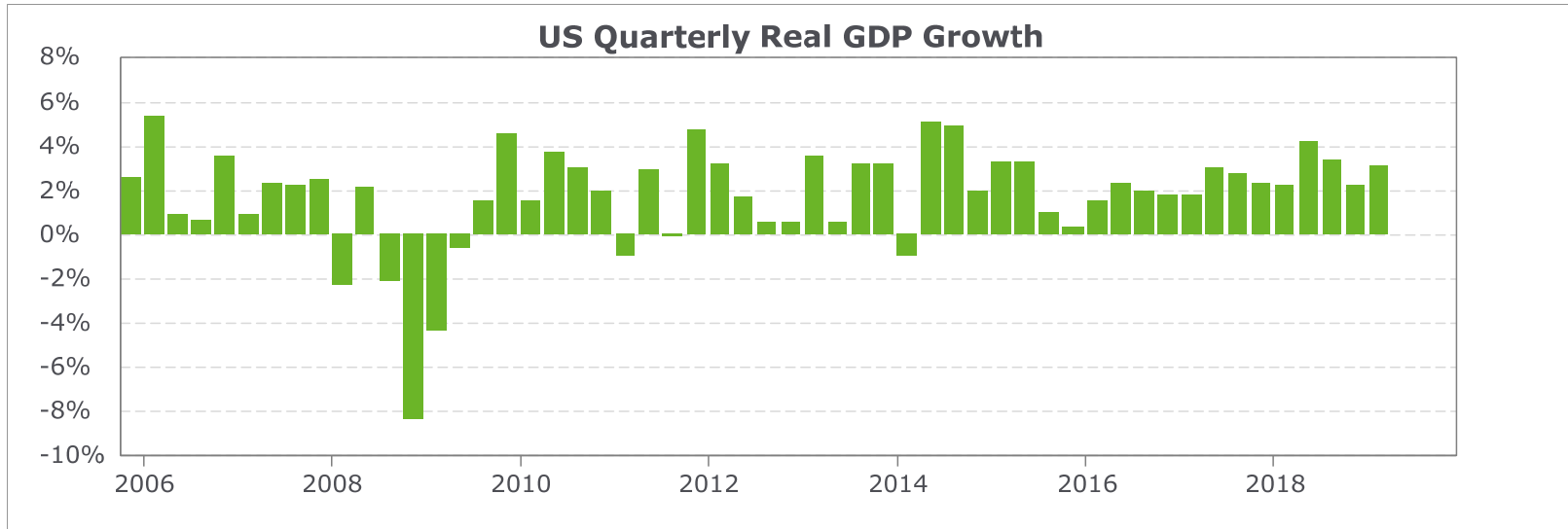
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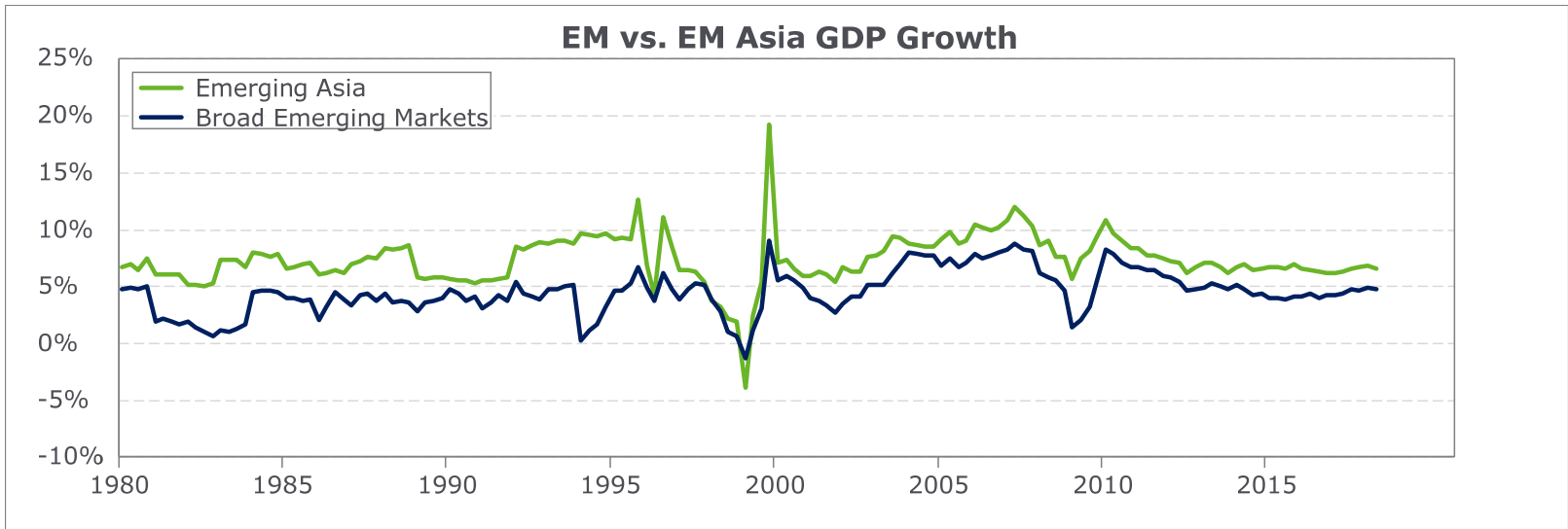
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# GROSS DOMESTIC PRODUCT



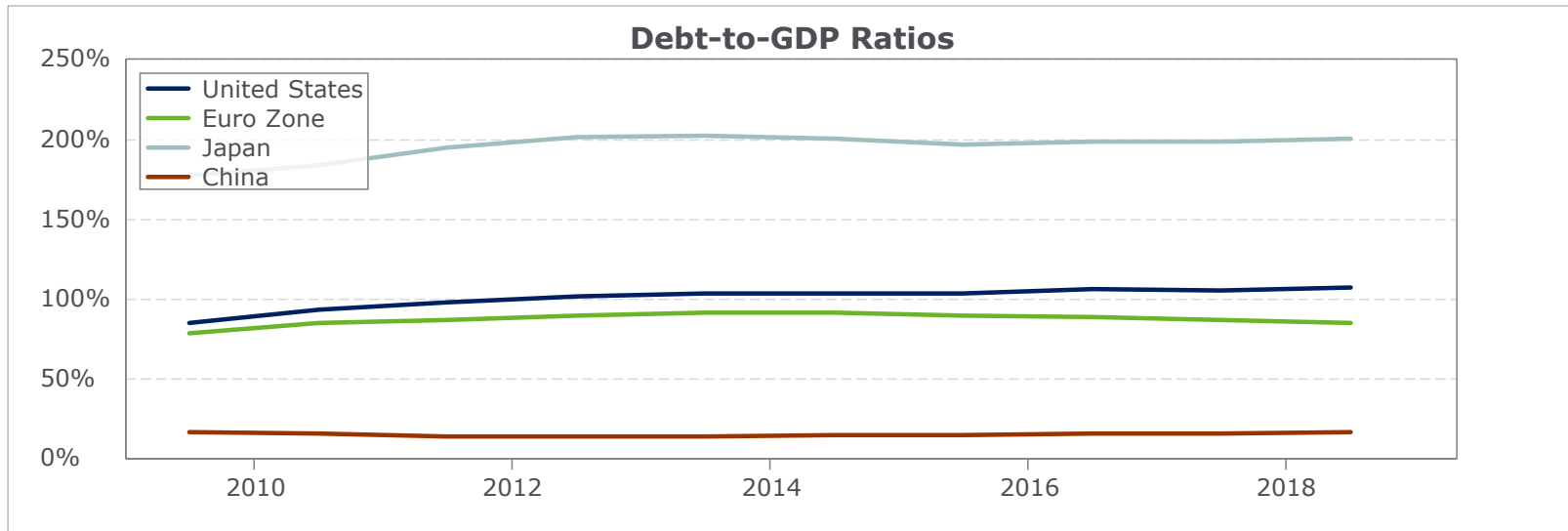
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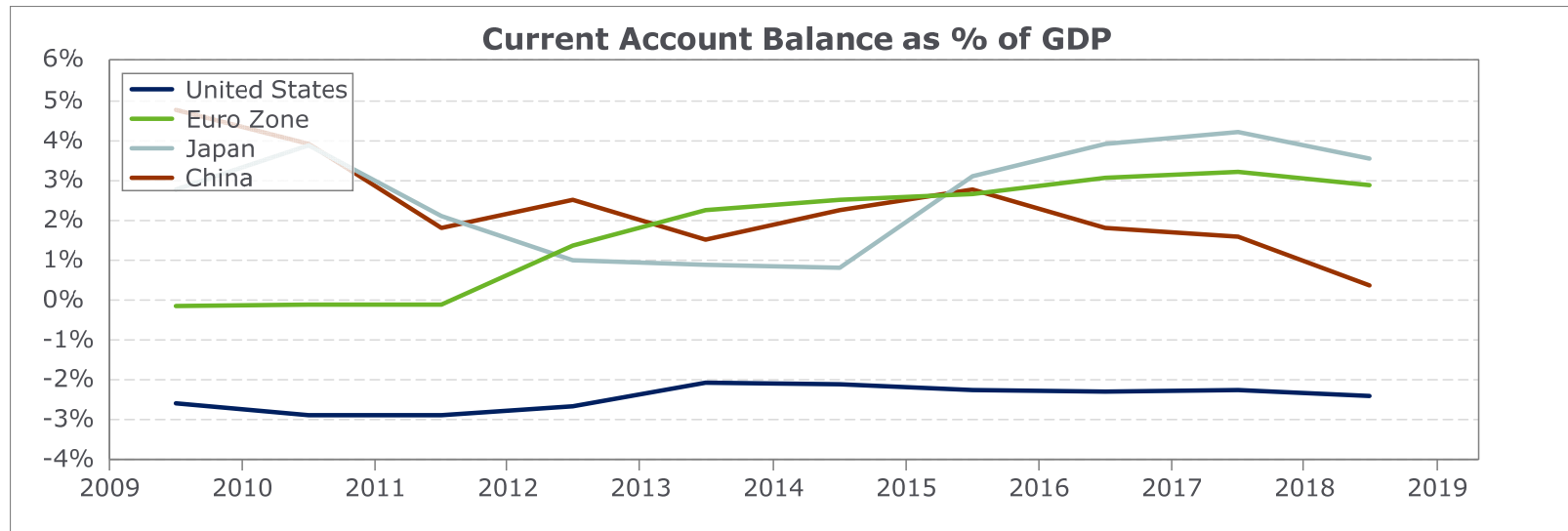
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# GROSS DOMESTIC PRODUCT METRICS



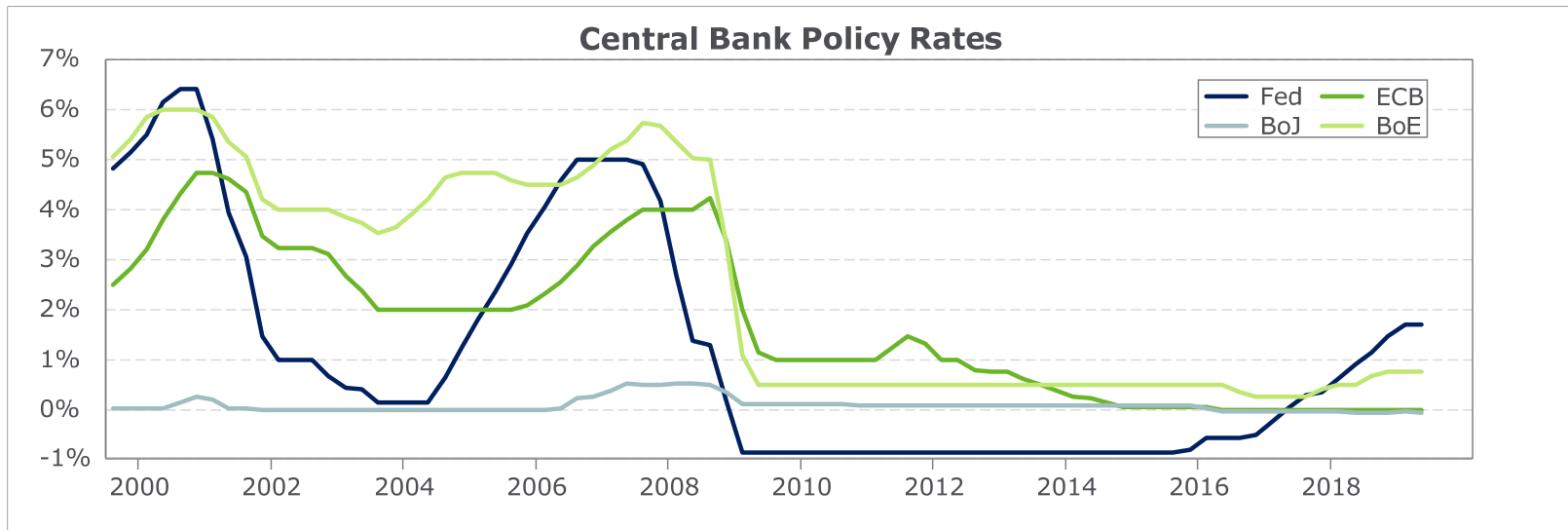
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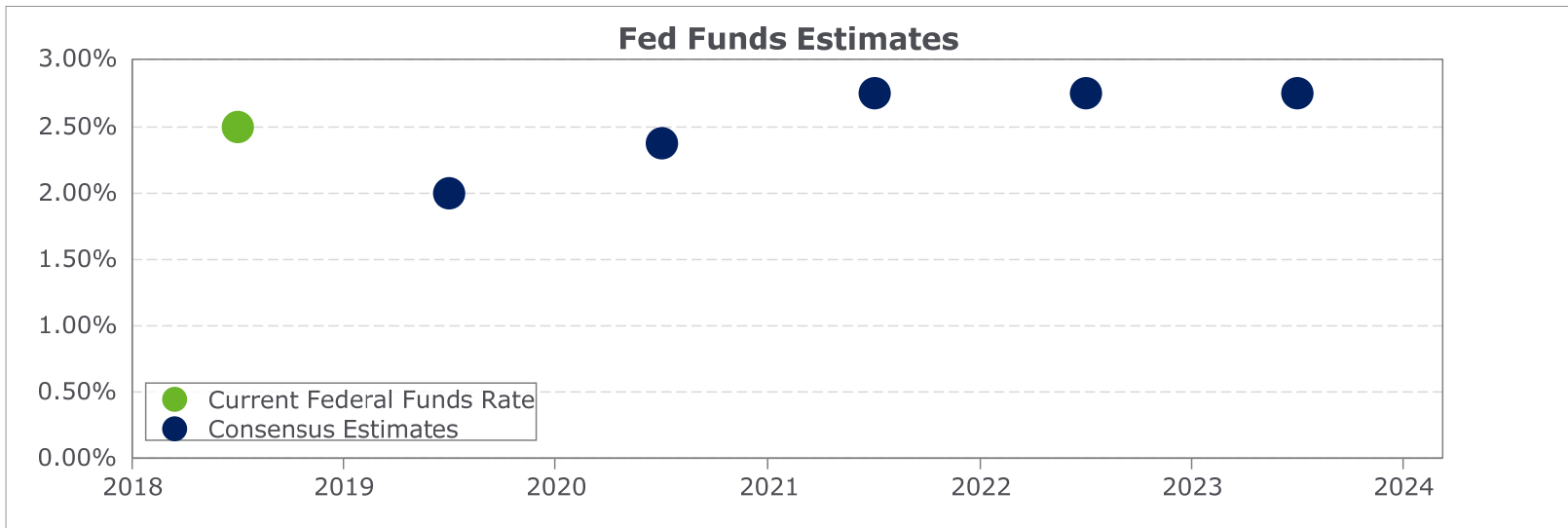
Source: FactSet



# CENTRAL BANK RATES



Source: FactSet

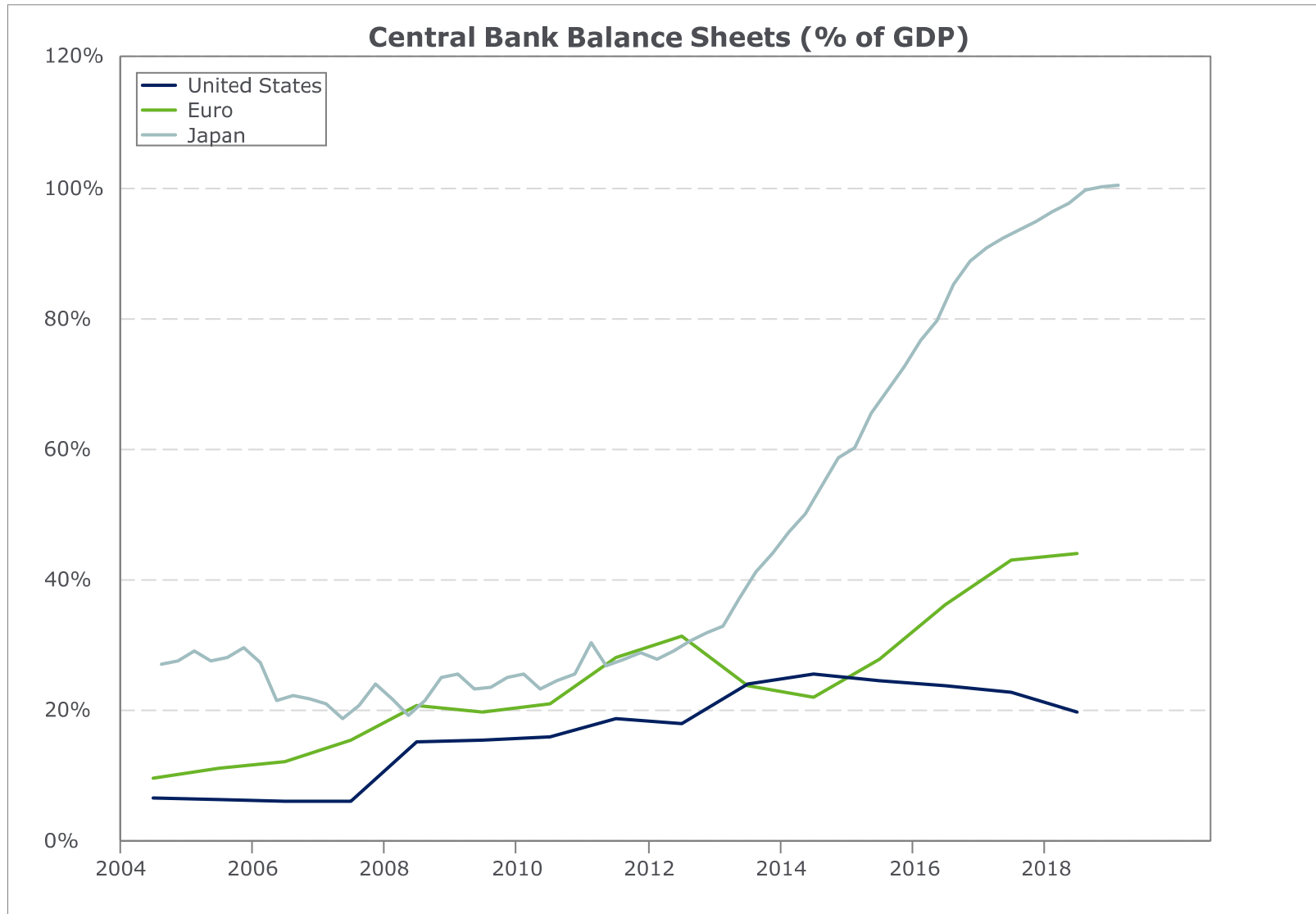


Source: FactSet





# CENTRAL BANK BALANCE SHEETS



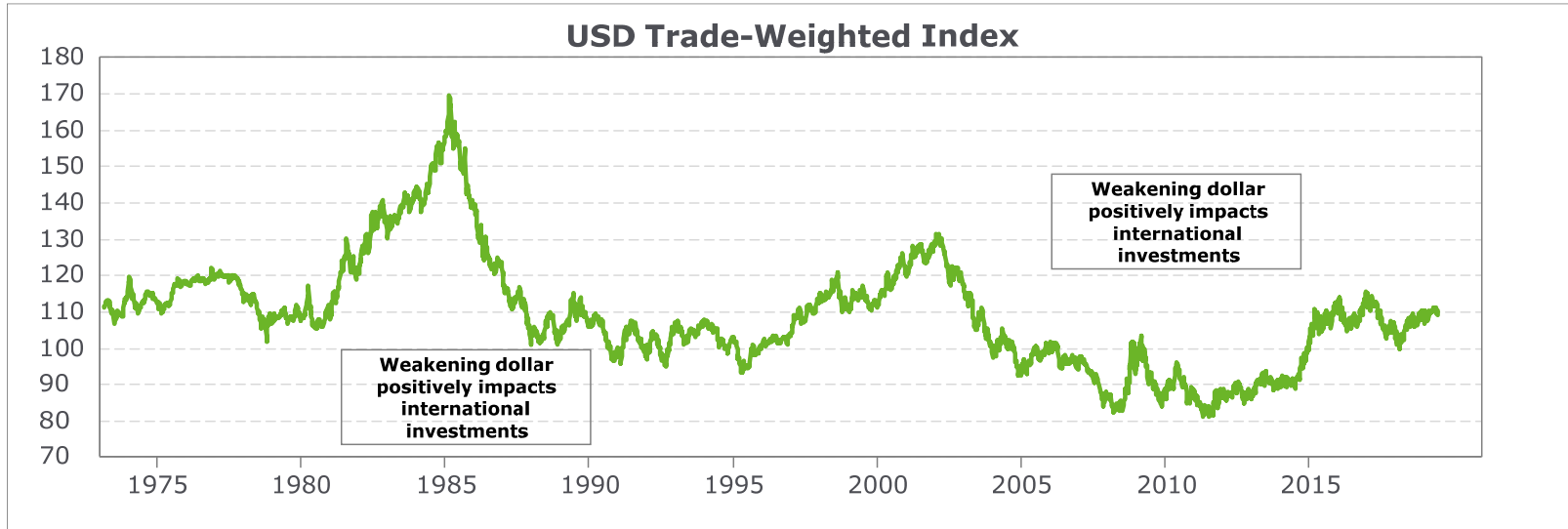
Source: FactSet



# CURRENCIES

Currencies	Spot	% Change Relative to USD		
		1 Month	YTD	1 Year
<b>Euro</b>	<b>1.14</b>	1.92%	-0.38%	-1.64%
<b>British Pound</b>	<b>1.27</b>	0.41%	-0.07%	-2.80%
<b>Japanese Yen</b>	<b>107.74</b>	-1.63%	-1.80%	-2.39%
<b>Swiss Franc</b>	<b>0.98</b>	-3.35%	-1.10%	-2.30%
<b>Australian Dollar</b>	<b>1.43</b>	-1.25%	0.32%	4.69%
<b>Chinese Yuan</b>	<b>6.87</b>	-0.65%	0.04%	3.65%
<b>Brazilian Real</b>	<b>3.83</b>	-4.81%	-1.11%	-0.23%
<b>Russian Ruble</b>	<b>63.08</b>	-2.56%	-9.08%	-0.01%
<b>Indian Rupee</b>	<b>69.03</b>	-0.94%	-1.13%	0.43%
<b>Mexican Peso</b>	<b>19.21</b>	0.16%	-2.45%	-3.53%
<b>South African Rand</b>	<b>14.10</b>	-4.32%	-1.97%	1.65%

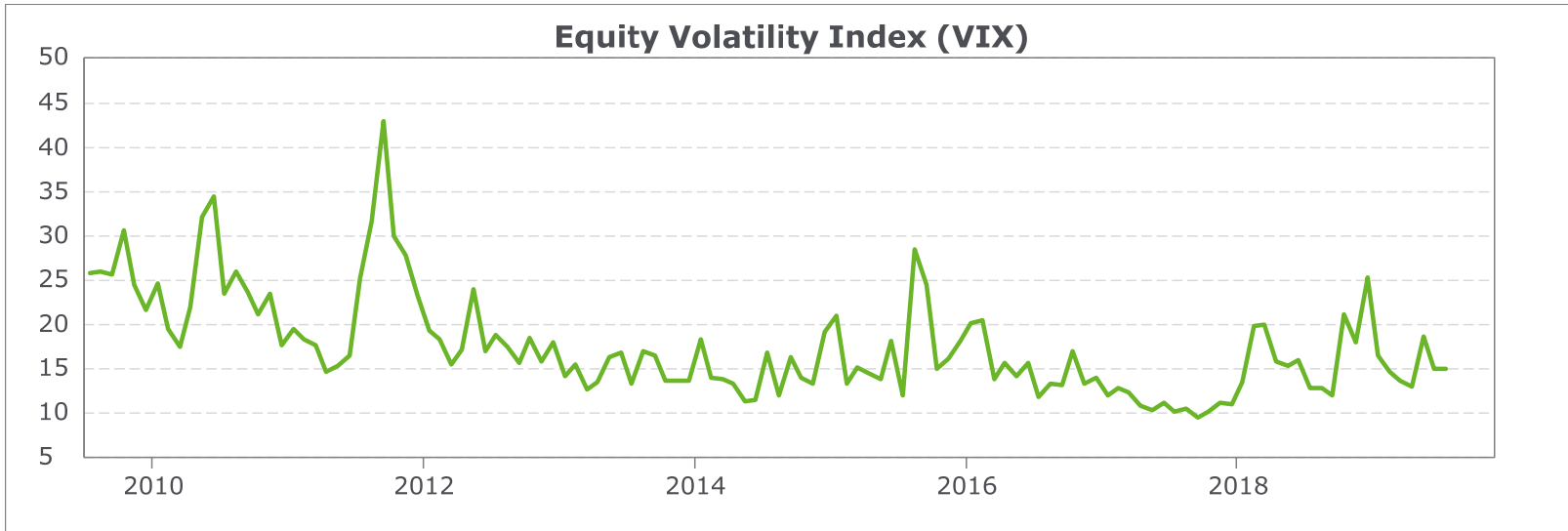
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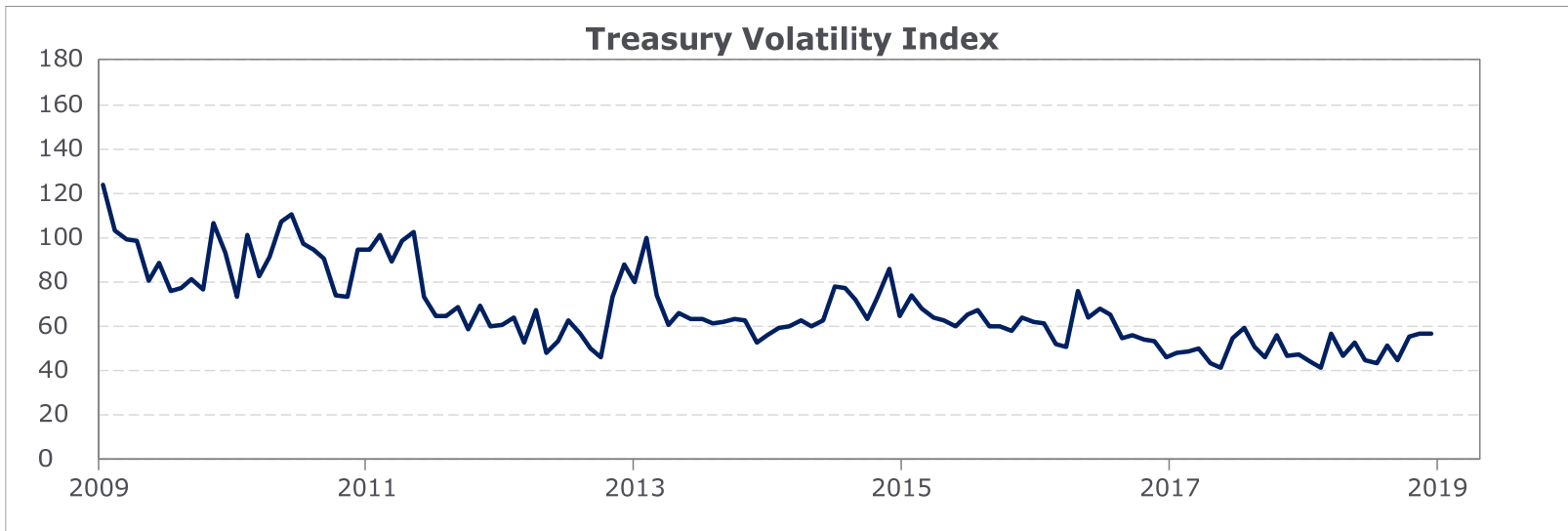
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# VOLATILITY



Source: FactSet



Source: FactSet

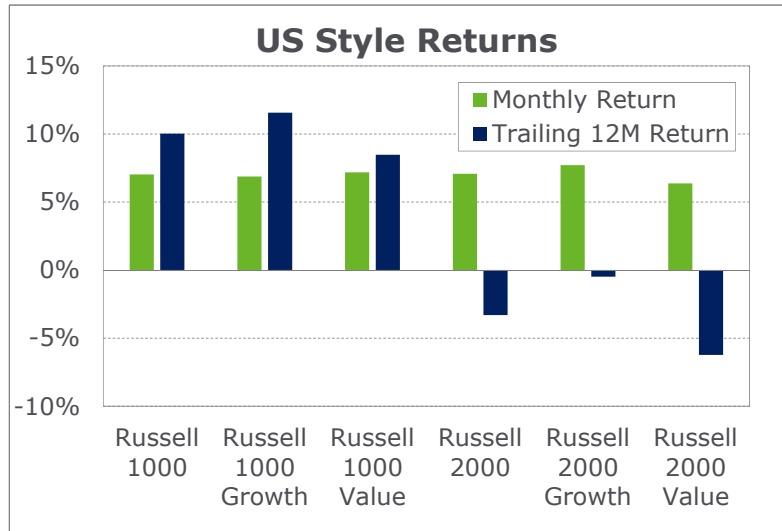


# EQUITY

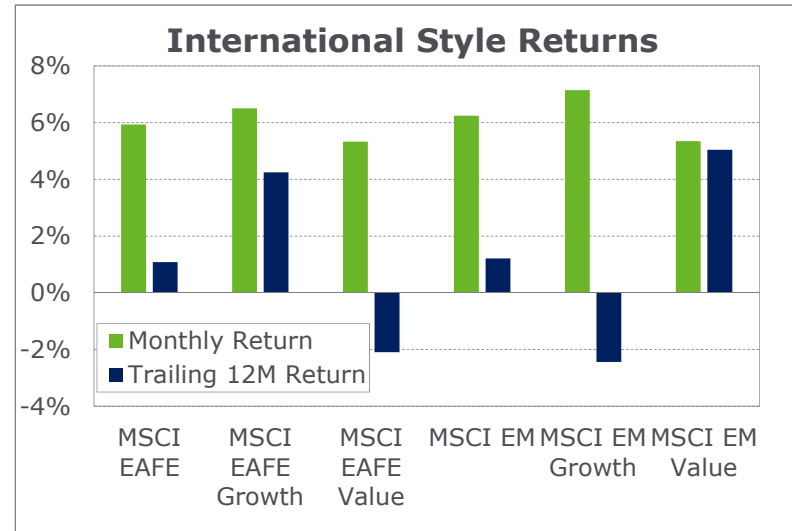
NEPC, LLC

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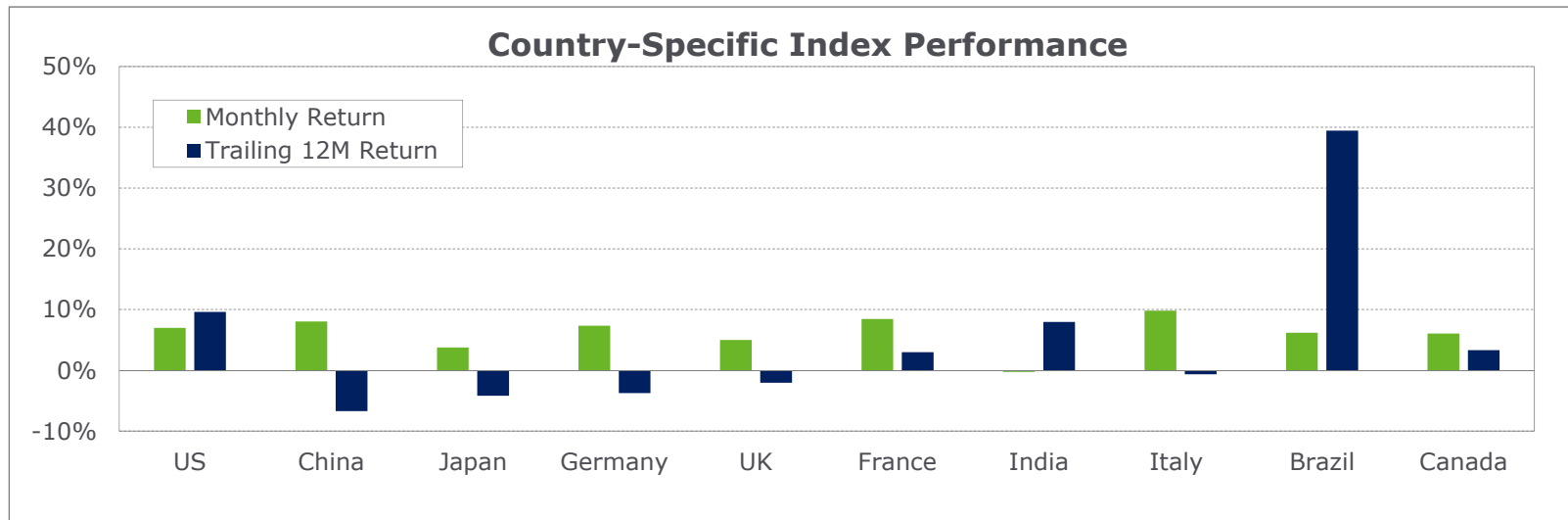
# EQUITY INDEX PERFORMANCE



Source: FactSet



Source: FactSet



Source: FactSet



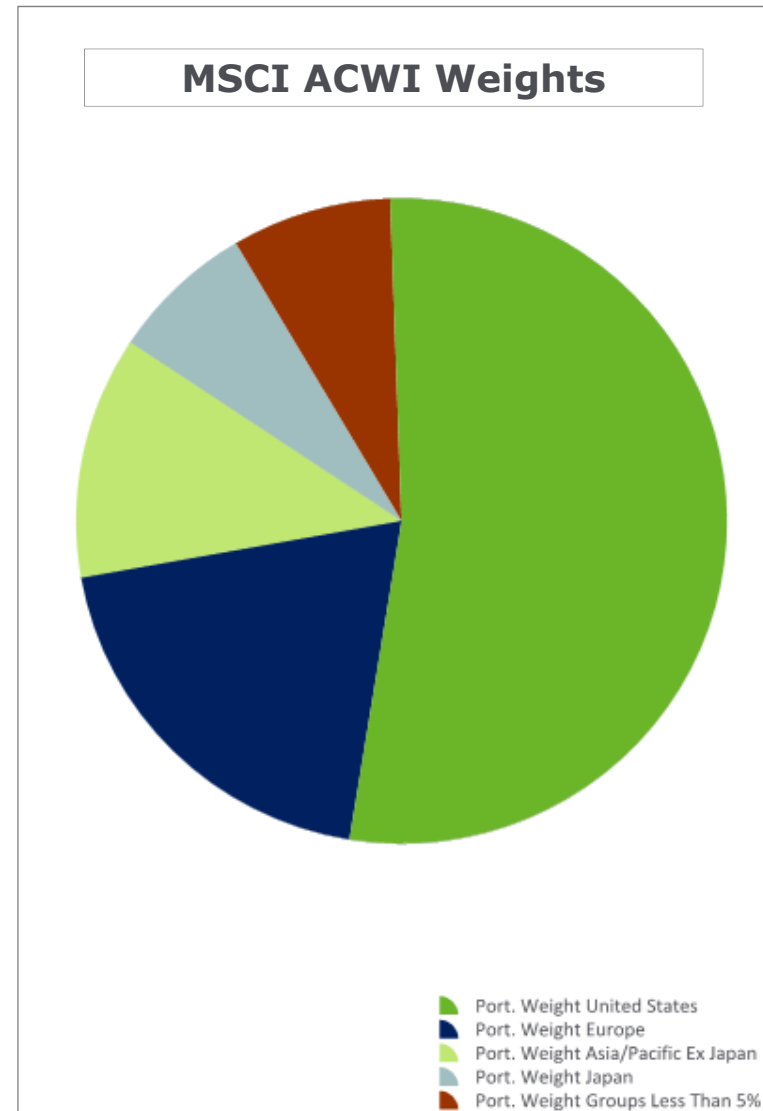
# INDEX COMPOSITION

Return Contribution	MTD	QTD	YTD	Index Weight
<b>S&amp;P 500</b>	<b>7.0%</b>	<b>4.3%</b>	<b>18.5%</b>	<b>100.0%</b>
Communication Services	0.4%	0.4%	1.9%	10.2%
Consumer Discretionary	0.8%	0.5%	2.2%	10.2%
Consumer Staples	0.4%	0.3%	1.2%	7.3%
Energy	0.5%	-0.2%	0.8%	5.0%
Financials	0.9%	1.0%	2.3%	13.1%
Health Care	0.9%	0.2%	1.3%	14.2%
Industrials	0.7%	0.3%	2.0%	9.4%
Information Technology	1.9%	1.3%	5.3%	21.5%
Materials	0.3%	0.2%	0.5%	2.8%
Real Estate	0.1%	0.1%	0.6%	3.1%
Utilities	0.1%	0.1%	0.5%	3.3%

Source: FactSet

Return Contribution	MTD	QTD	YTD	Index Weight
<b>MSCI ACWI</b>	<b>6.5%</b>	<b>3.6%</b>	<b>16.2%</b>	<b>100.0%</b>
Communication Services	0.4%	0.3%	1.3%	8.7%
Consumer Discretionary	0.9%	0.5%	1.9%	10.8%
Consumer Staples	0.4%	0.2%	1.2%	8.3%
Energy	0.4%	-0.1%	0.9%	5.9%
Financials	1.0%	1.0%	2.5%	16.9%
Health Care	0.8%	0.2%	1.2%	11.4%
Industrials	0.8%	0.5%	2.0%	10.5%
Information Technology	1.3%	0.8%	3.6%	16.0%
Materials	0.5%	0.2%	0.8%	4.9%
Real Estate	0.1%	0.0%	0.5%	3.2%
Utilities	0.1%	0.1%	0.4%	3.3%

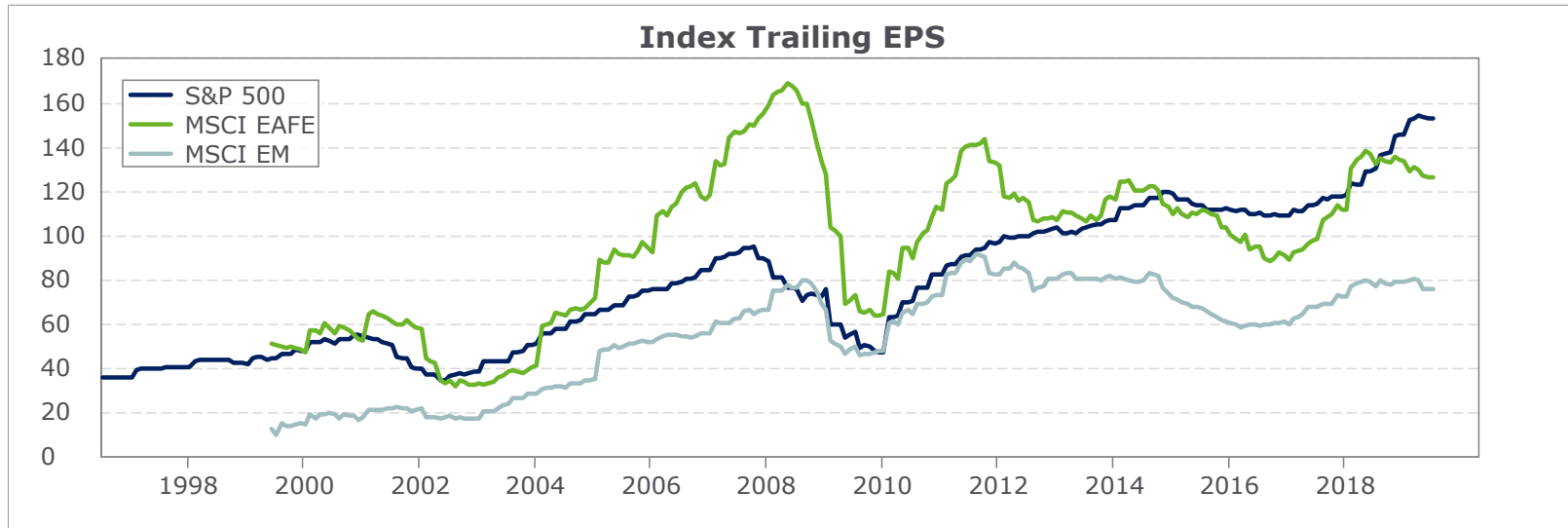
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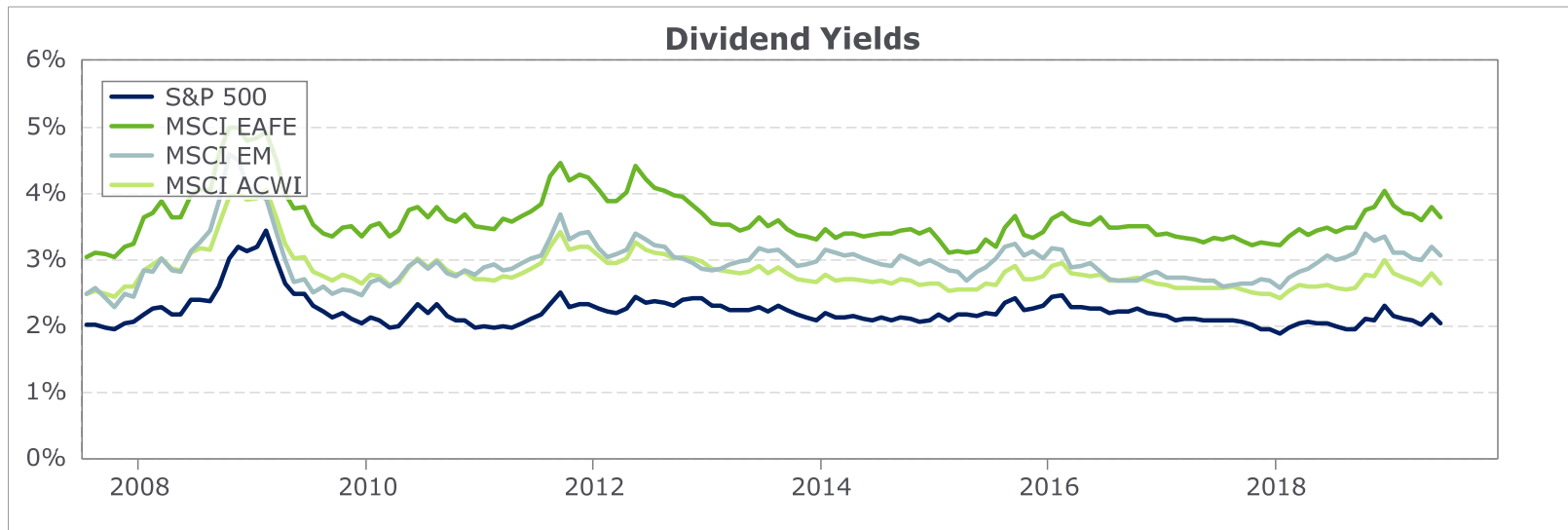
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# EARNINGS & YIELDS



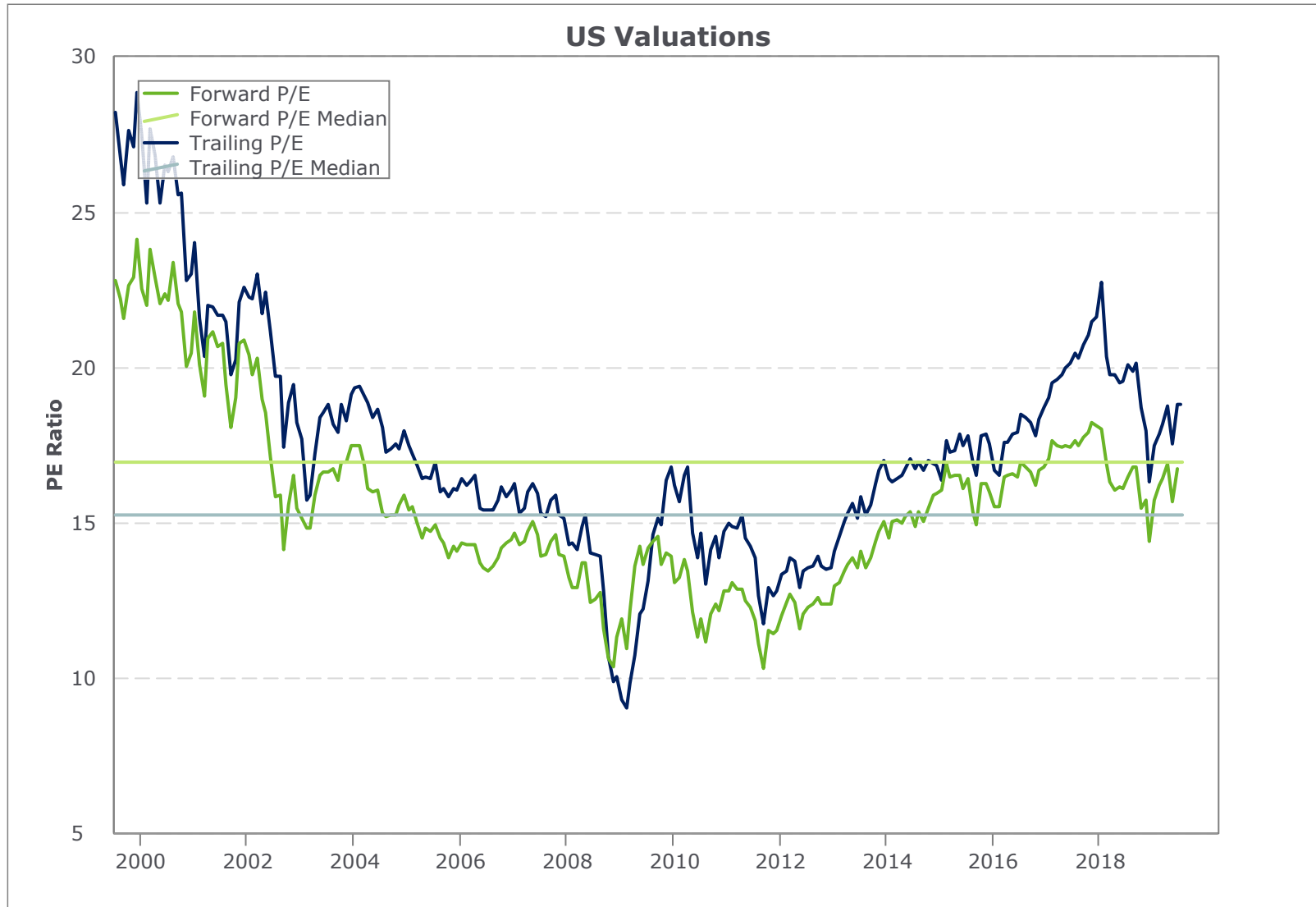
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Source: FactSet



# US EQUITY VALUATIONS

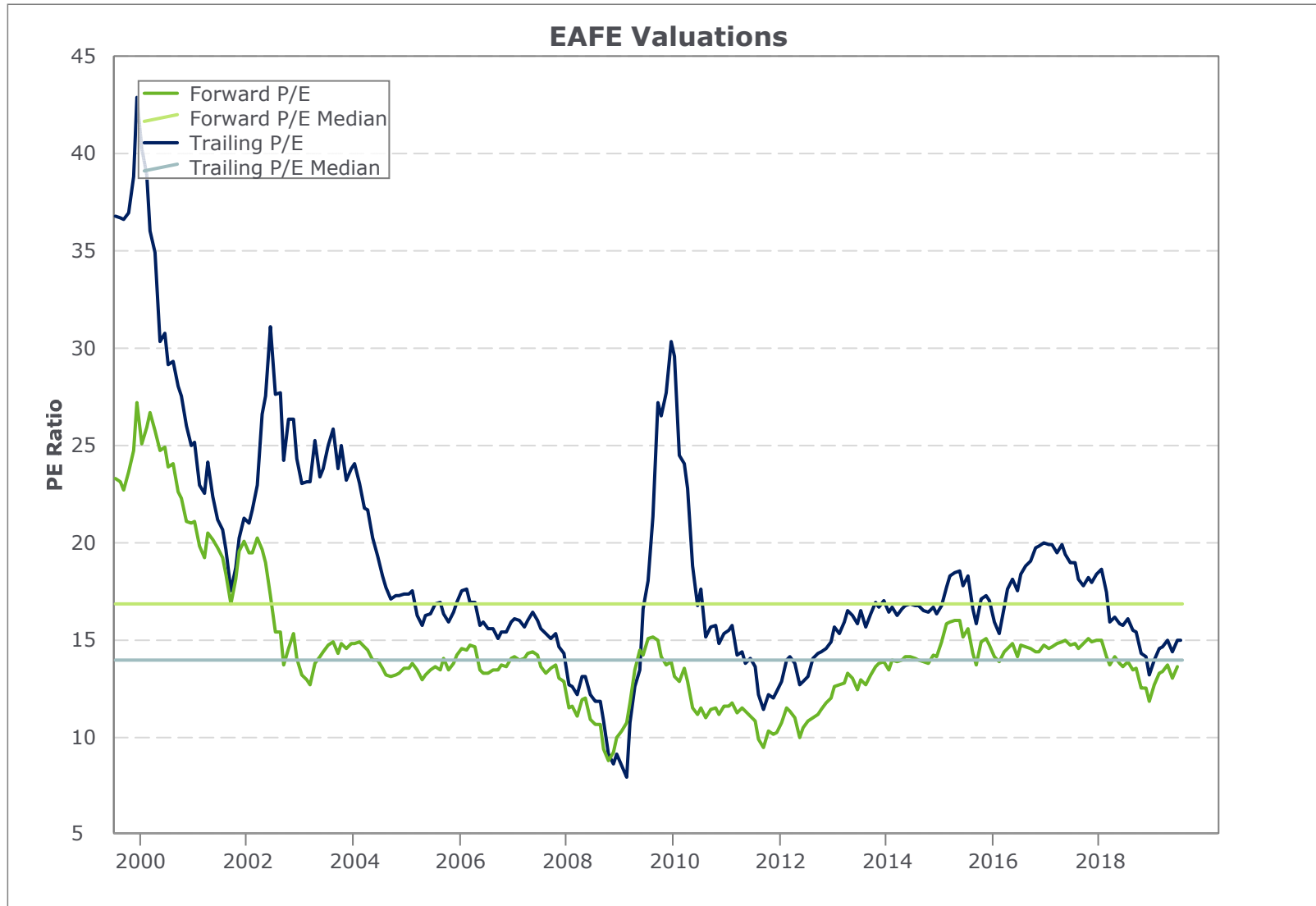


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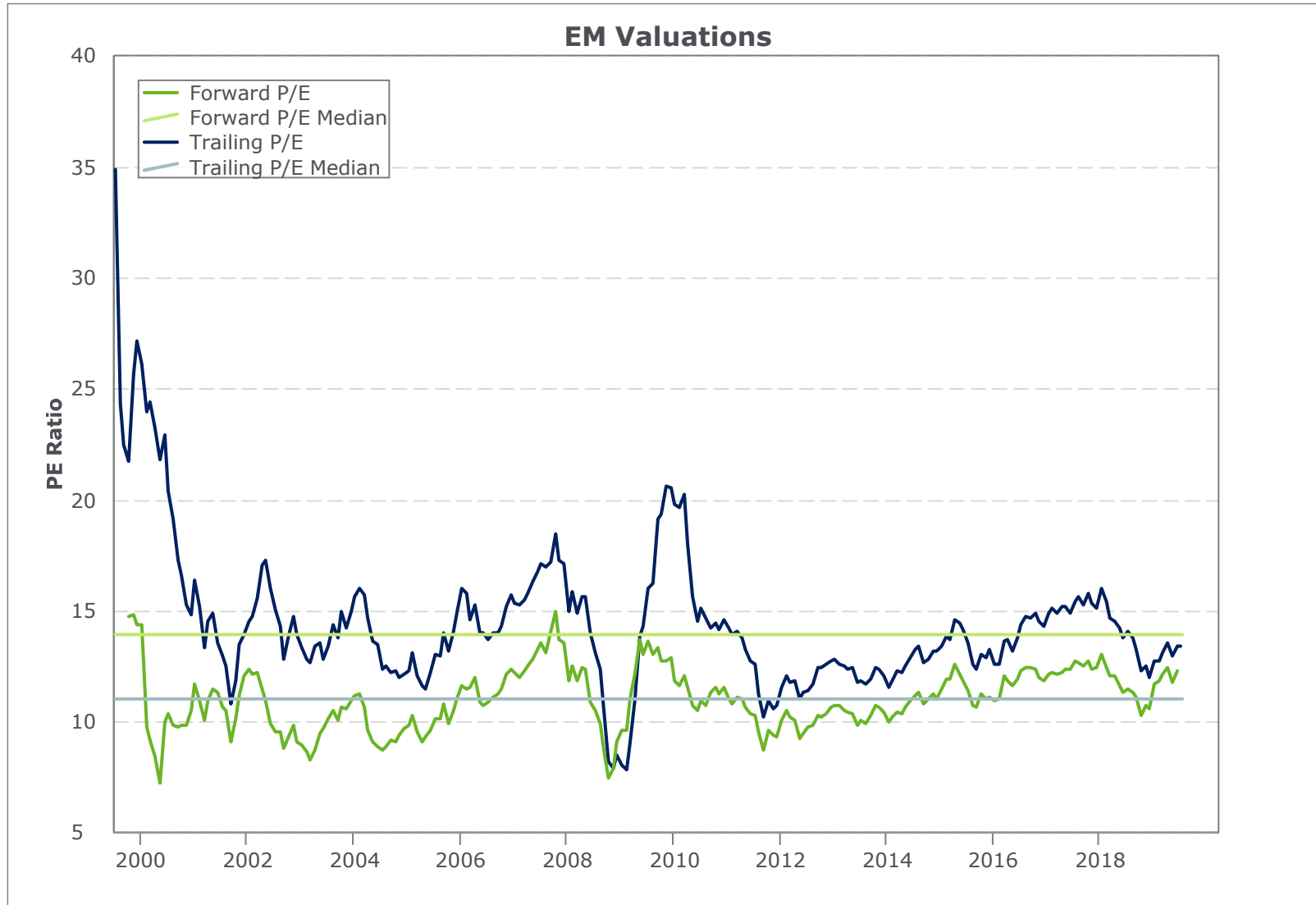
# EAFE EQUITY VALUATIONS



Source: FactSet



# EM EQUITY VALUATIONS



Source: FactSet



# CREDIT

NEPC, LLC

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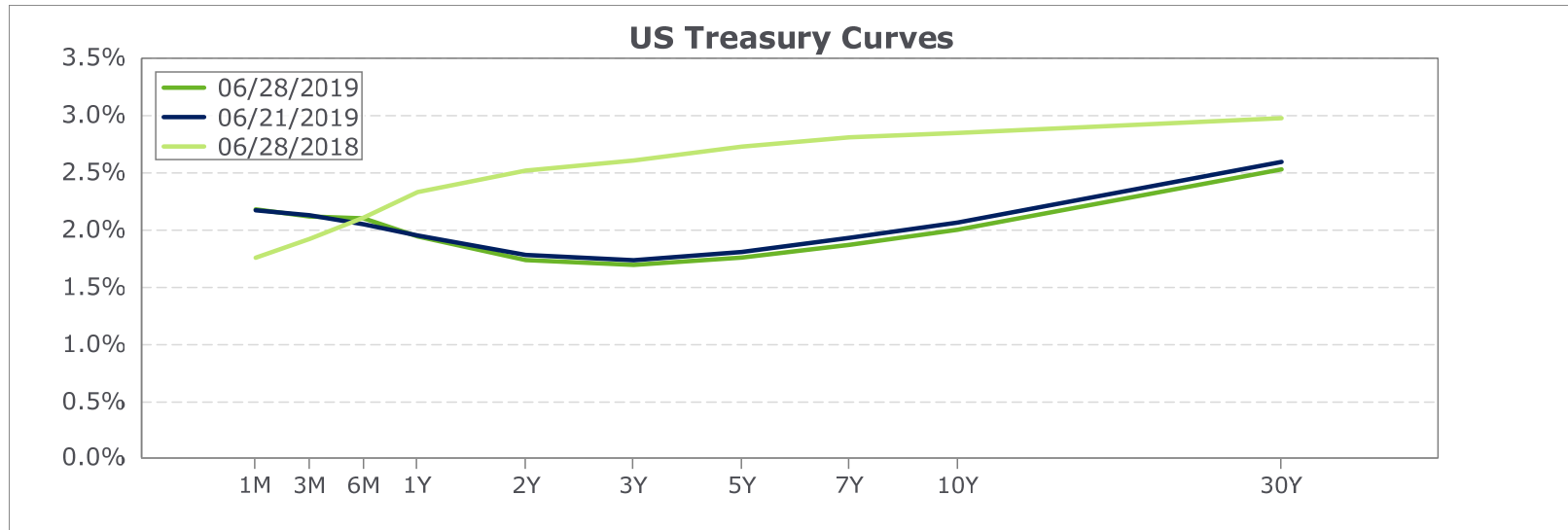
# FIXED INCOME CHARACTERISTICS

	Averages			Total Returns (%)		
	Yield to Worst	Spread (bps)	Duration (Years)	1-Month	YTD	1-Year
<b>Barclays Aggregate</b>	2.49%	46	5.7	1.3%	6.1%	7.9%
<b>Barclays Treasury</b>	1.92%	-	6.4	0.9%	5.2%	7.2%
<b>Barclays Agency</b>	2.07%	14	4.0	0.7%	4.2%	6.1%
<b>Barclays MBS</b>	2.70%	46	3.2	0.7%	4.2%	6.2%
<b>Barclays ABS</b>	2.21%	41	2.2	0.4%	3.2%	5.0%
<b>Barclays CMBS</b>	2.38%	52	5.4	1.0%	6.1%	8.6%
<b>Barclays Corp IG</b>	3.16%	115	7.6	2.4%	9.9%	10.7%
<b>Barclays Muni</b>	2.02%	-	5.5	0.4%	5.1%	6.7%
<b>Barclays HY Muni</b>	4.41%	-	8.0	0.5%	6.7%	7.8%
<b>Barclays TIPS</b>	2.11%	-	1.1	0.9%	6.2%	4.8%
<b>Barclays HY</b>	5.87%	377	3.2	2.3%	9.9%	7.5%
<b>Barclays Global Agg</b>	1.48%	46	7.1	2.2%	5.6%	5.8%
<b>JPM EMBI Glob Div</b>	-	345	7.1	3.4%	11.3%	12.4%
<b>JPM GBI - EM</b>	5.23%	-	5.3	5.5%	8.7%	9.0%

Source: FactSet



# TREASURIES



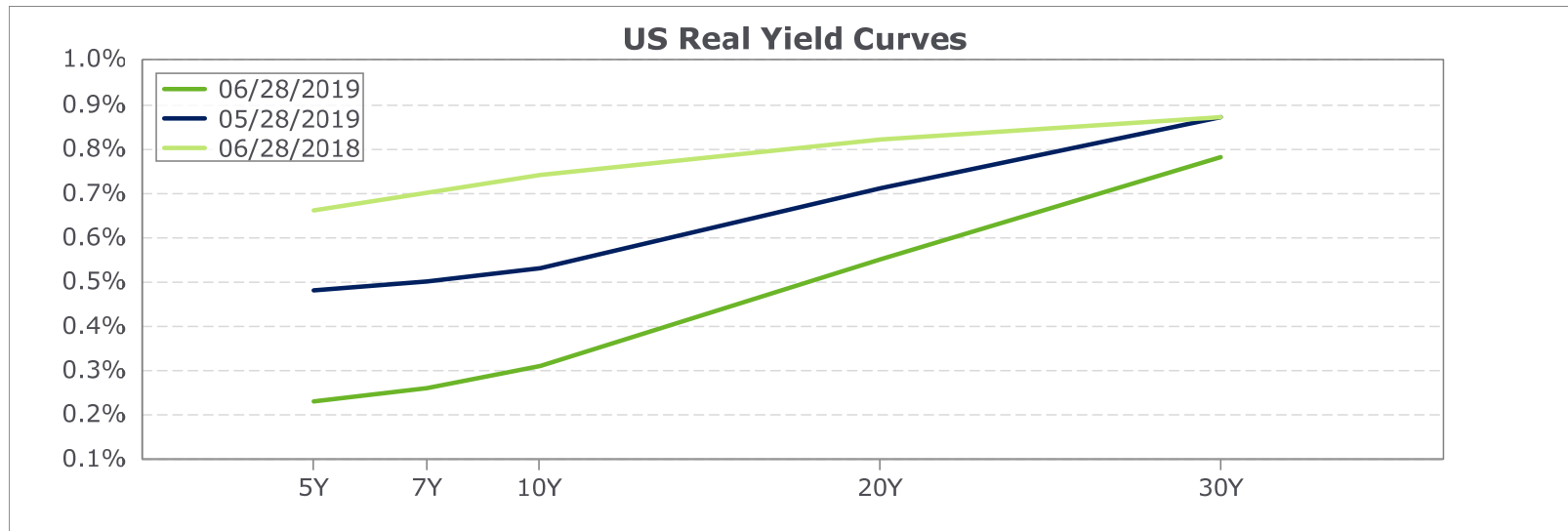
Source: FactSet

	Yield (%)			Total Return (%)	
	Current	1 Month Ago	12 Months Ago	1 Month	12 Months
<b>3M Treasury</b>	2.12%	2.35%	1.91%	0.23%	2.26%
<b>6M Treasury</b>	2.10%	2.36%	2.11%	0.24%	2.40%
<b>2Y Treasury</b>	1.73%	1.95%	2.52%	0.77%	3.40%
<b>5Y Treasury</b>	1.75%	1.93%	2.73%	1.79%	6.30%
<b>10Y Treasury</b>	2.00%	2.14%	2.85%	3.35%	8.81%
<b>30Y Treasury</b>	2.53%	2.58%	2.99%	7.52%	11.65%

Source: FactSet



# REAL YIELDS



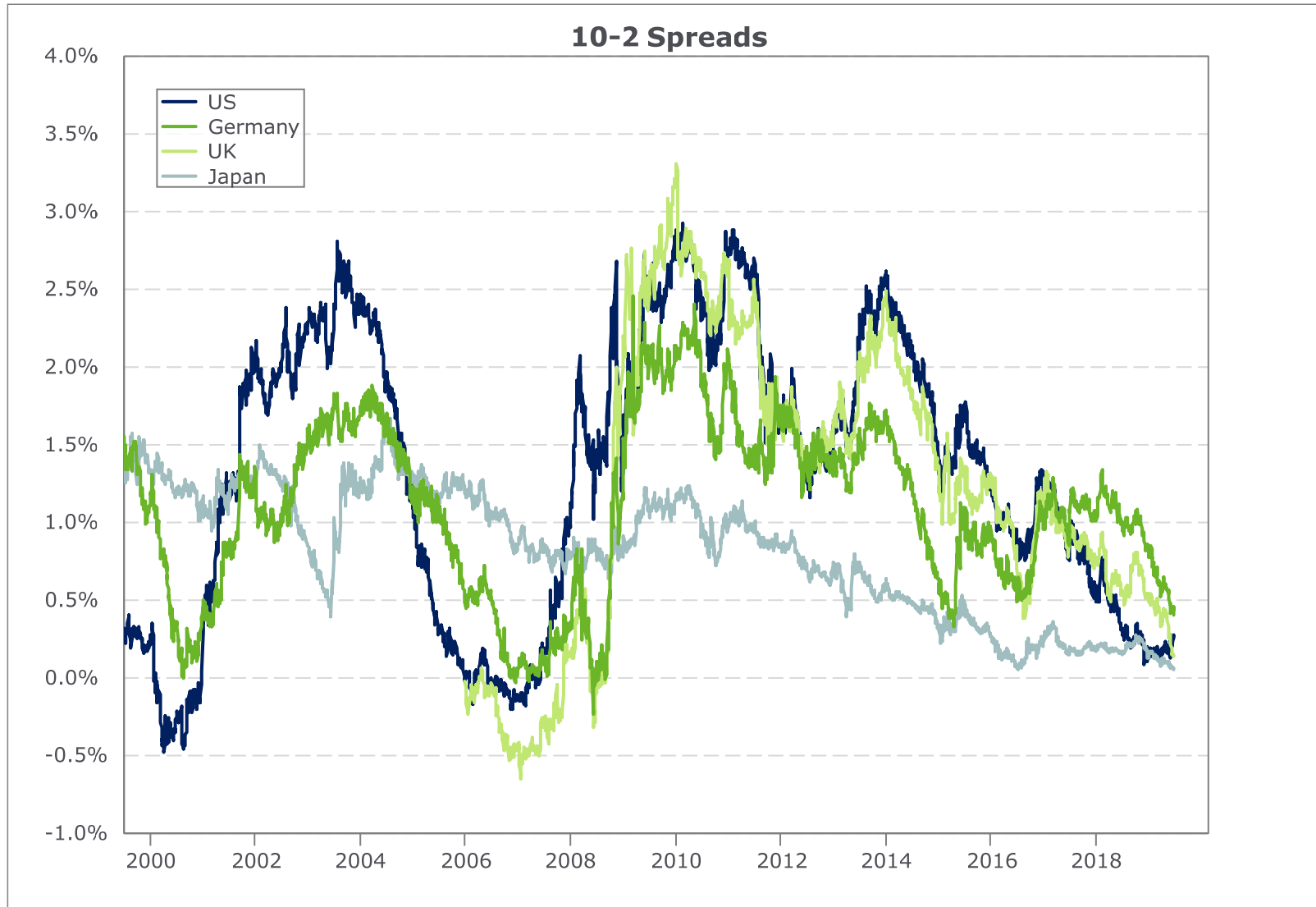
Source: FactSet

	Real Rates			Breakeven Rates	
	Current	1 Month Ago	12 Months Ago	Current	12 Months Ago
<b>2-Year</b>	-0.35%	0.04%	-0.42%	1.39%	2.09%
<b>5-Year</b>	-0.39%	-0.02%	-0.33%	1.30%	2.27%
<b>10-Year</b>	-0.33%	0.00%	-0.21%	1.43%	2.51%
<b>20-Year</b>	-0.21%	0.08%	-0.13%	1.65%	2.68%
<b>30-Year</b>	-0.08%	0.18%	-0.09%	1.92%	2.75%

Source: FactSet



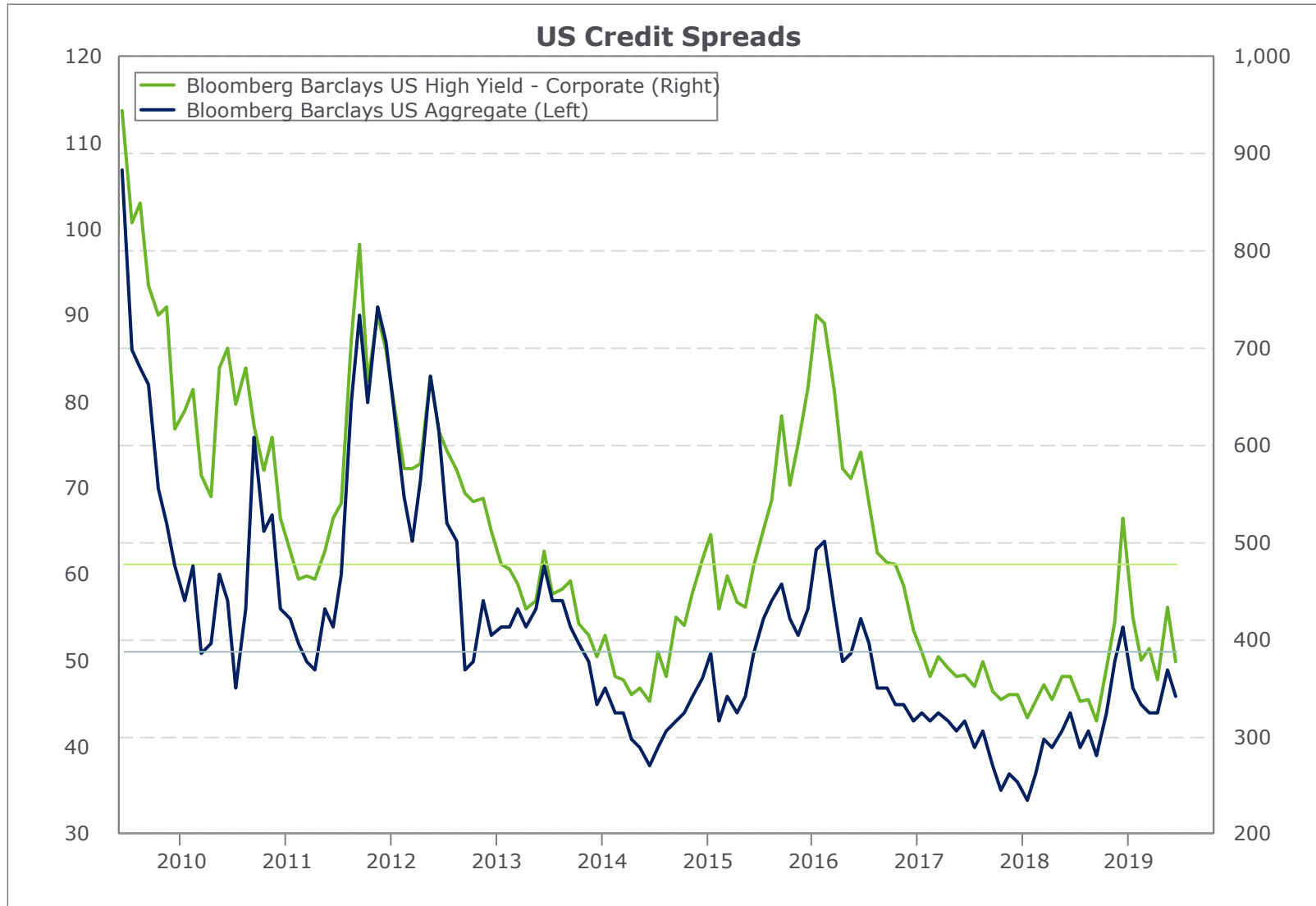
# NOMINAL YIELDS



Source: FactSet



# CREDIT SPREADS

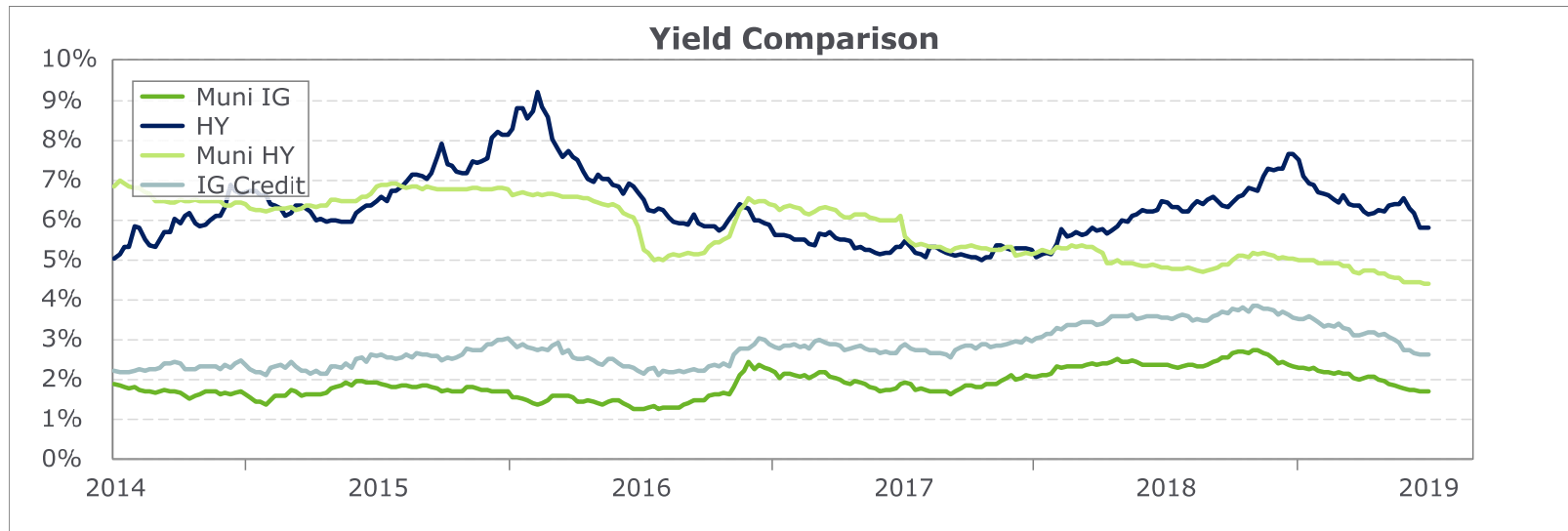


Source: FactSet

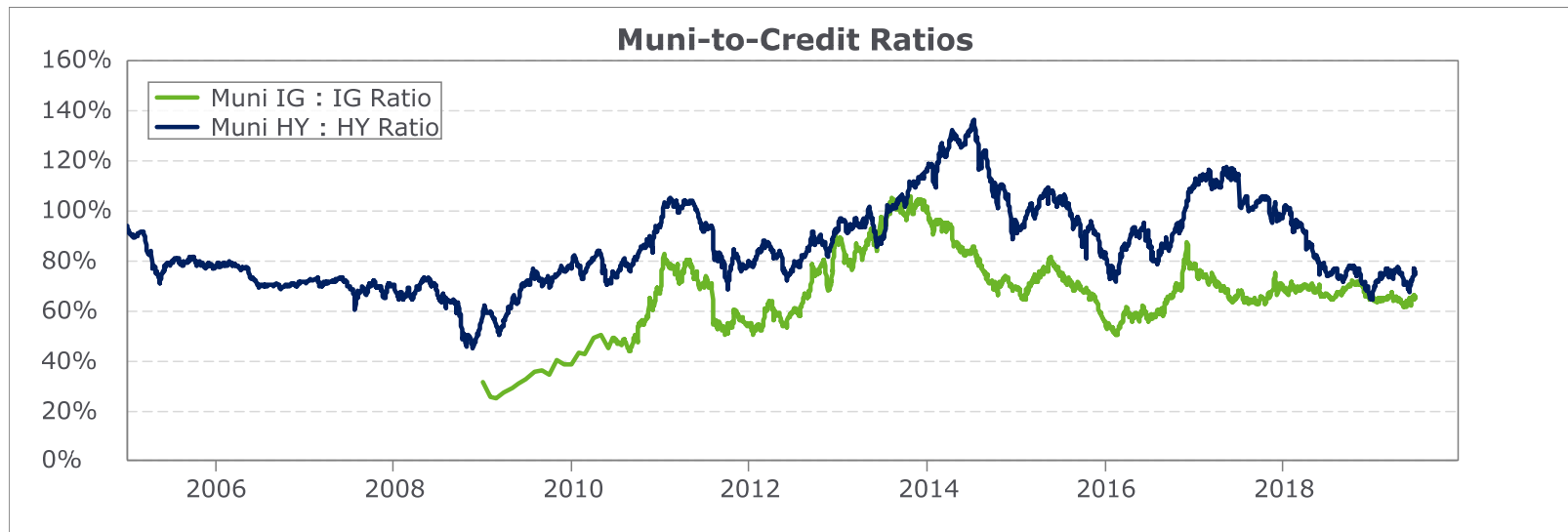




# MUNICIPAL BOND RATIOS



Source: FactSet



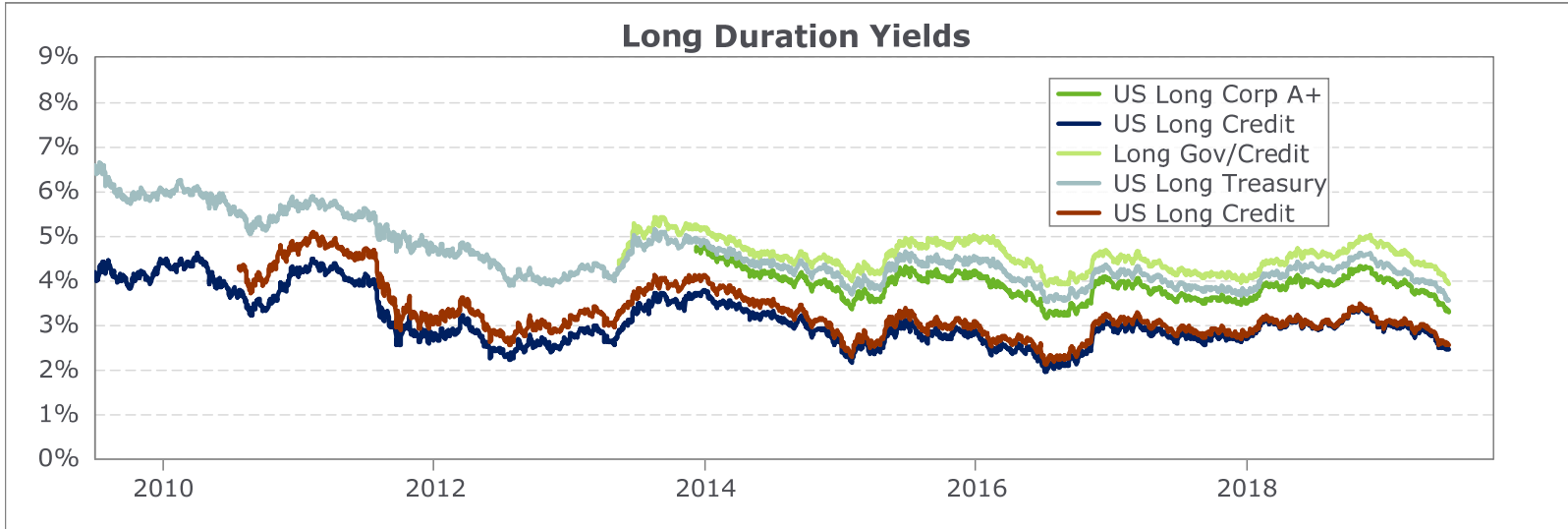
Source: FactSet



# LONG DURATION

Index	Month-End Yield	1 Month Prior Yield	1 Year Prior Yield	Duration
Barclays Long Treasury	2.5%	2.9%	3.0%	17.9
Barclays 20+ STRIPS	2.6%	3.0%	3.0%	26.2
Barclays Long Gov/Credit	3.9%	4.2%	4.7%	13.9
Barclays Long Credit	3.3%	3.5%	4.0%	15.6
Barclays Long Corp A+	3.6%	3.8%	4.3%	14.8

Source: FactSet



Source: FactSet



# REAL ASSETS

NEPC, LLC

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# REAL ASSETS INDEX PERFORMANCE

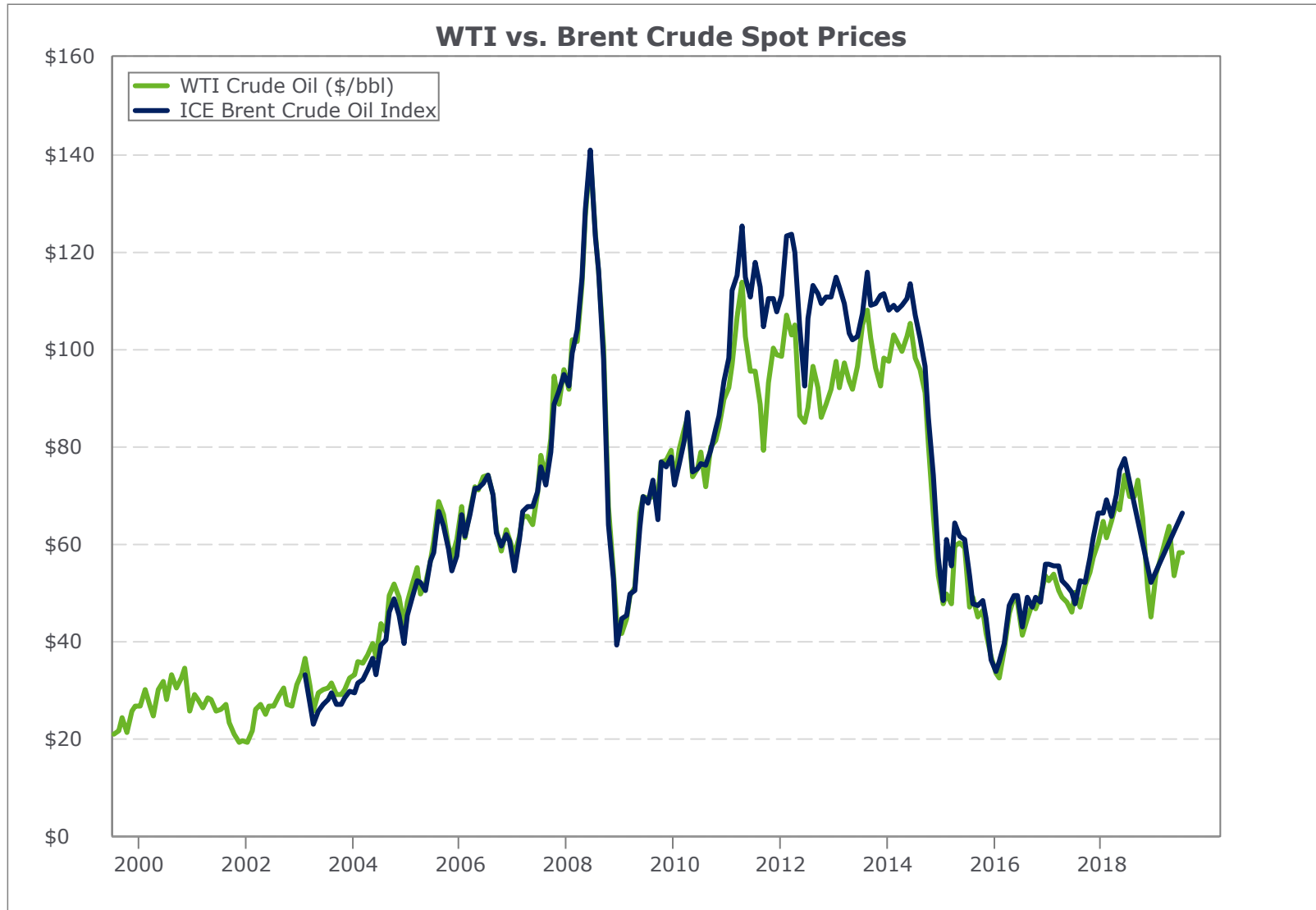
Index	1 Month	3 Month	YTD	1 Year	3 Year	5 Year
<b>Bloomberg Commodity Index</b>	<b>2.7%</b>	<b>-1.2%</b>	<b>5.1%</b>	<b>-6.8%</b>	<b>-2.2%</b>	<b>-9.1%</b>
<b>Bloomberg Agriculture Index</b>	<b>0.5%</b>	<b>4.5%</b>	<b>1.2%</b>	<b>-4.2%</b>	<b>-10.3%</b>	<b>-9.7%</b>
Coffee	2.2%	10.6%	0.2%	-15.6%	-17.8%	-17.6%
Corn	-2.2%	14.9%	7.6%	6.1%	-6.3%	-10.1%
Cotton	-2.0%	-14.2%	-8.9%	-22.4%	1.3%	-1.9%
Soybean	2.1%	0.3%	-1.8%	-2.0%	-12.0%	-7.4%
Soybean Oil	2.3%	-1.2%	0.1%	-6.7%	-7.1%	-9.6%
Sugar	2.4%	-1.7%	4.0%	-3.4%	-18.8%	-14.1%
Wheat	4.2%	14.0%	3.8%	-0.6%	-7.7%	-11.4%
<b>Bloomberg Energy</b>	<b>4.0%</b>	<b>-4.6%</b>	<b>10.6%</b>	<b>-14.3%</b>	<b>-0.5%</b>	<b>-18.1%</b>
Brent Crude	6.0%	-0.9%	24.1%	-14.2%	8.3%	-16.1%
Heating Oil	5.1%	-1.8%	17.2%	-10.4%	6.9%	-11.7%
Natural Gas	-6.1%	-16.2%	-22.8%	-20.6%	-19.2%	-27.5%
Unleaded Gas	8.5%	5.2%	33.2%	-12.0%	4.8%	-13.5%
WTI Crude Oil	8.8%	-2.8%	26.5%	-18.4%	2.5%	-19.8%
<b>Bloomberg Industrial Metals</b>	<b>2.0%</b>	<b>-7.2%</b>	<b>4.7%</b>	<b>-11.0%</b>	<b>6.4%</b>	<b>-3.0%</b>
Aluminum	0.0%	-6.8%	-3.8%	-16.5%	2.1%	-3.2%
Copper	2.9%	-7.3%	3.8%	-8.1%	6.1%	-4.2%
Nickel	5.7%	-2.2%	18.8%	-14.9%	9.5%	-8.8%
Zinc	-0.6%	-11.9%	6.2%	-4.2%	9.5%	3.6%
<b>Bloomberg Precious Metals</b>	<b>7.3%</b>	<b>7.1%</b>	<b>7.2%</b>	<b>7.6%</b>	<b>-0.8%</b>	<b>-1.3%</b>
Gold	8.0%	9.0%	10.0%	12.1%	1.5%	0.7%
Silver	5.0%	1.0%	-1.8%	-6.2%	-7.4%	-7.3%
<b>Bloomberg Livestock</b>	<b>-3.5%</b>	<b>-11.0%</b>	<b>-6.8%</b>	<b>-3.5%</b>	<b>-2.5%</b>	<b>-7.1%</b>
Lean Hogs	-10.0%	-13.9%	-8.0%	-10.9%	-9.1%	-14.6%
Live Cattle	1.4%	-8.9%	-6.8%	-0.1%	1.3%	-2.8%

Source: FactSet

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



# OIL MARKETS



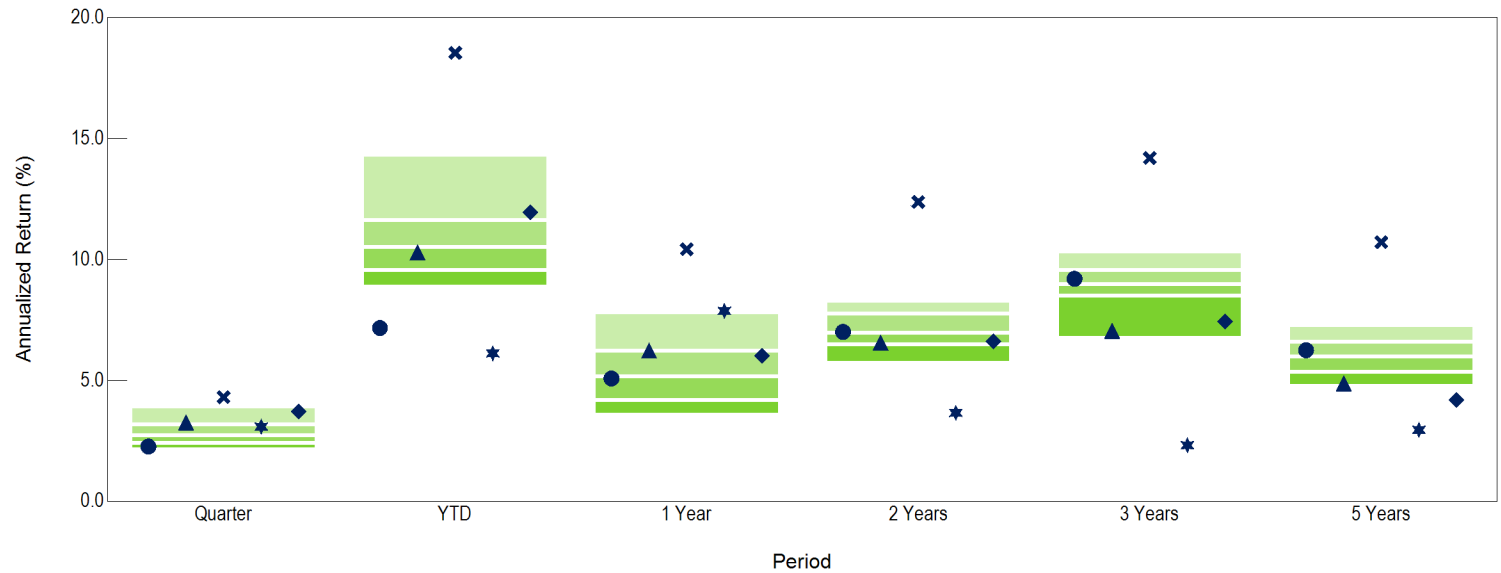
Source: FactSet



San Bernardino County Employees' Retirement Association

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

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



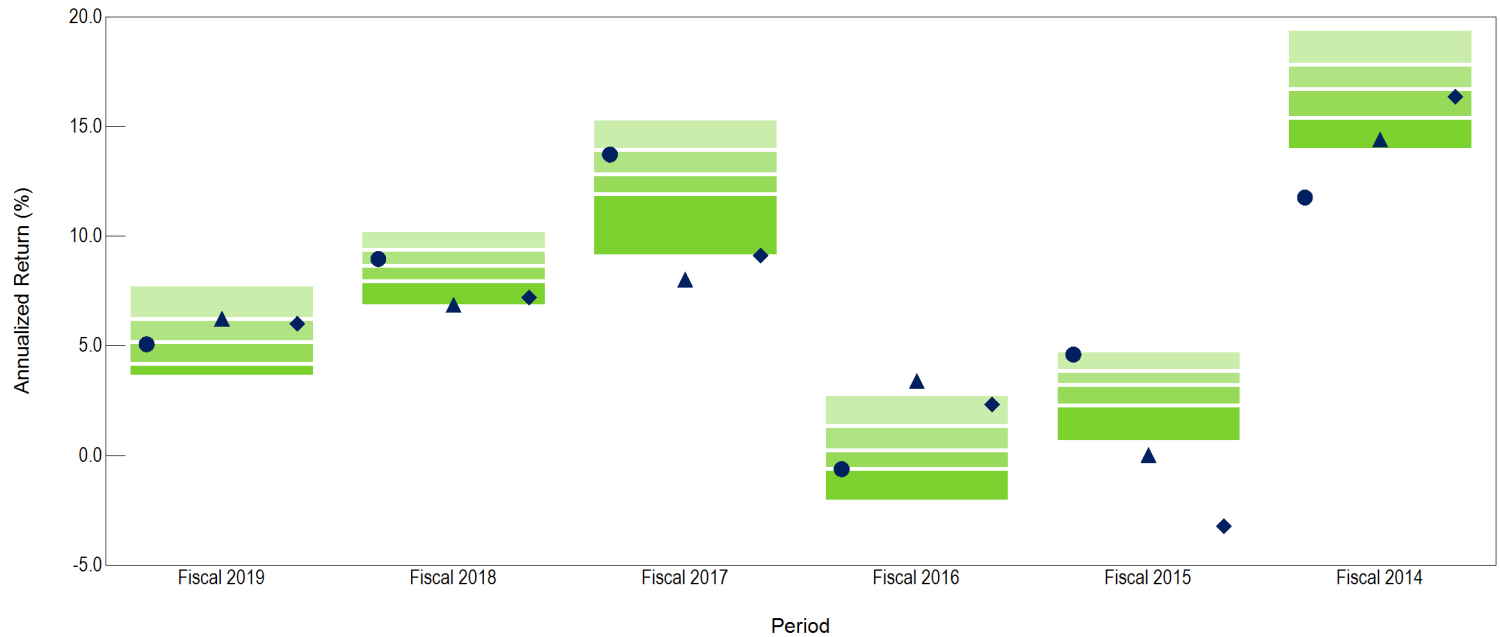
	Return (Rank)											
5th Percentile	3.9		14.3		7.8		8.3		10.3		7.3	
25th Percentile	3.2		11.6		6.2		7.8		9.6		6.6	
Median	2.7		10.5		5.2		7.0		9.0		6.0	
75th Percentile	2.4		9.6		4.2		6.5		8.5		5.4	
95th Percentile	2.1		8.9		3.6		5.7		6.8		4.8	
# of Portfolios	26		26		26		26		26		26	
● Total Fund	2.3	(84)	7.2	(99)	5.1	(53)	7.0	(48)	9.2	(33)	6.2	(36)
▲ Policy Index	3.3	(20)	10.3	(58)	6.2	(26)	6.6	(72)	7.0	(95)	4.9	(94)
× S&P 500	4.3	(1)	18.5	(1)	10.4	(1)	12.4	(1)	14.2	(1)	10.7	(1)
* BBG US Aggregate TR	3.1	(32)	6.1	(99)	7.9	(5)	3.7	(99)	2.3	(99)	2.9	(99)
◆ 60% MSCI ACWI (Net) / 40% FTSE WGBI	3.7	(9)	12.0	(21)	6.0	(27)	6.6	(69)	7.4	(94)	4.2	(97)



San Bernardino County Employees' Retirement Association

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

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



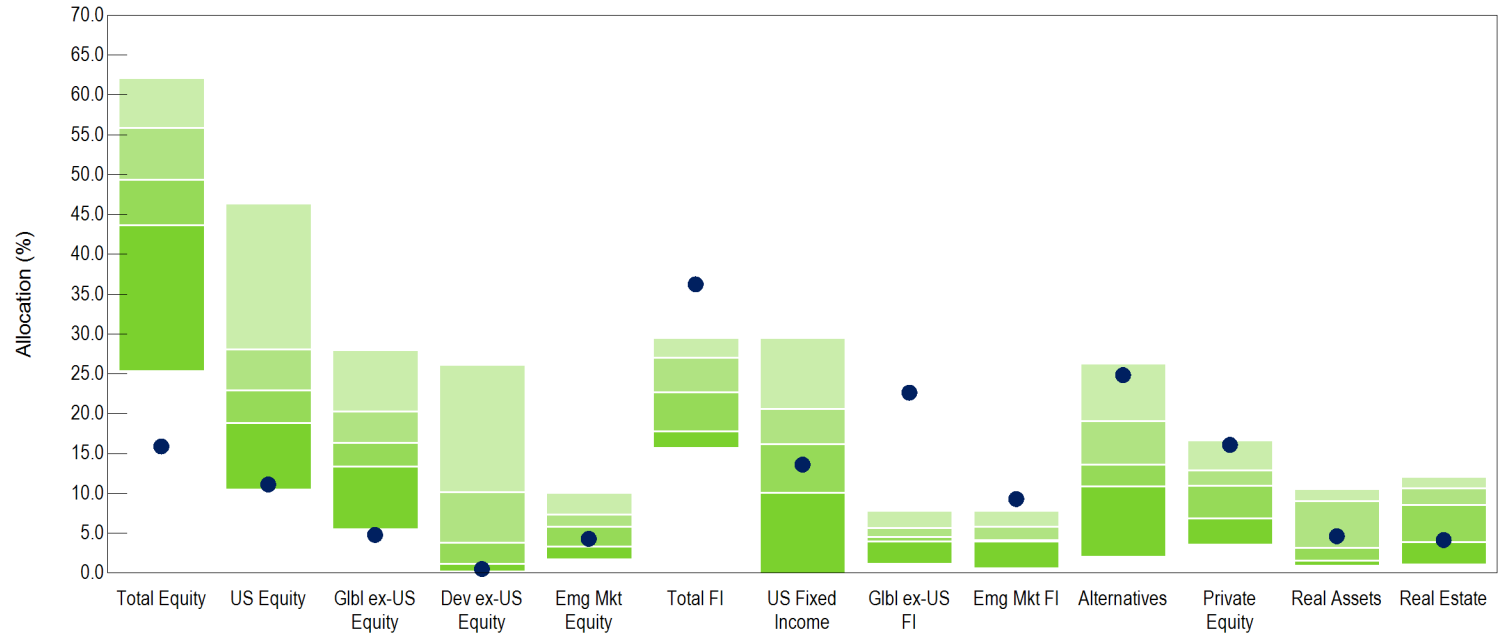
	Fiscal 2019		Fiscal 2018		Fiscal 2017		Fiscal 2016		Fiscal 2015		Fiscal 2014	
<b>Return (Rank)</b>												
5th Percentile	7.8	(53)	10.3	(38)	15.3	(29)	2.8	(77)	4.8	(7)	19.4	(99)
25th Percentile	6.2	(26)	9.4	(94)	14.0	(97)	1.4	(3)	3.9	(97)	17.8	(87)
Median	5.2	(27)	8.7	(90)	12.9	(95)	0.3	(11)	3.2	(99)	16.7	(58)
75th Percentile	4.2		8.0		11.9		-0.6		2.3		15.4	
95th Percentile	3.6		6.8		9.1		-2.1		0.6		13.9	
# of Portfolios	26		62		108		91		92		65	
● Total Fund	5.1	(53)	9.0	(38)	13.7	(29)	-0.6	(77)	4.6	(7)	11.8	(99)
▲ Policy Index	6.2	(26)	6.9	(94)	8.0	(97)	3.4	(3)	0.0	(97)	14.4	(87)
◆ 60% MSCI ACWI (Net) / 40% FTSE WGBI	6.0	(27)	7.2	(90)	9.1	(95)	2.3	(11)	-3.2	(99)	16.4	(58)



San Bernardino County Employees' Retirement Association

# TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE

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



	Allocation (Rank)													
5th Percentile	62.1	46.4	28.0	26.1	10.1	29.5	29.5	7.8	7.8	26.3	16.7	10.6	12.1	--
25th Percentile	55.9	28.2	20.3	10.3	7.4	27.1	20.6	5.7	5.9	19.1	13.0	9.1	10.7	--
Median	49.4	23.0	16.4	3.9	5.9	22.7	16.3	4.6	4.2	13.7	11.0	3.2	8.6	--
75th Percentile	43.7	18.9	13.4	1.2	3.4	17.9	10.1	4.1	4.0	10.9	6.9	1.6	3.9	--
95th Percentile	25.4	10.5	5.5	0.3	1.8	15.8	0.0	1.3	0.6	2.1	3.7	1.0	1.1	--
# of Portfolios	21	17	19	12	17	21	16	10	9	20	17	9	18	--
● Total Fund	15.9 (99)	11.1 (94)	4.8 (97)	0.5 (91)	4.3 (63)	36.2 (1)	13.6 (60)	22.6 (1)	9.3 (1)	24.8 (7)	16.1 (8)	4.6 (44)	4.1 (75)	--





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