

QUARTERLY PERFORMANCE REPORT

SAN BERNARDINO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION



September 30, 2019

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

MARKET ENVIRONMENT UPDATE AND OUTLOOK

NEPC, LLC

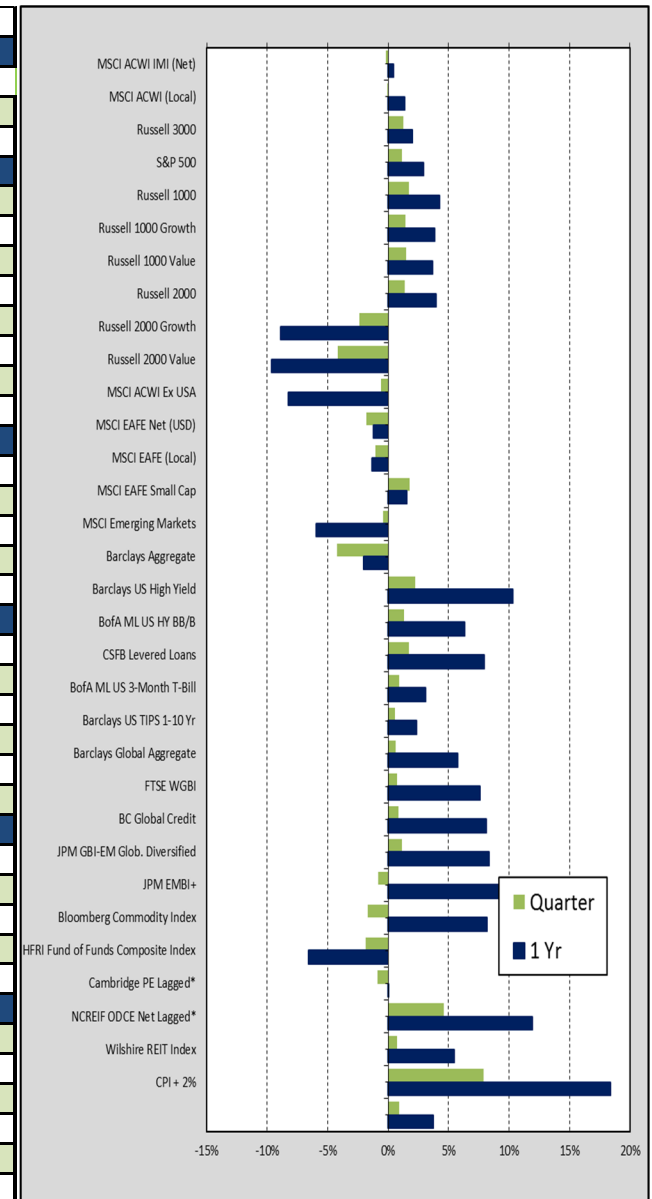
ECONOMIC ENVIRONMENT

- **Q3 Real GDP (advance estimate) increased at an annual rate of 1.9%.**
 - Retail sales ended August at +4.4% on a YoY basis. In the same period last year the YoY growth rate was 3.3%.
 - Corporate profits (ended April) as a percent of GDP increased to 8.7% from 8.5% (in January) and remain elevated relative to historical levels.
 - The inventory-to-sales ratio ended August flat at 1.4 from June levels and has remained relatively constant since early 2010.
 - The U.S. trade deficit widened ended August as imports increased at a faster pace than exports. The trade deficit with China declined sharply (3.1%).
- **The unemployment rate decreased to 3.5% in Q3 from 3.7% in Q2; U-6, a broader measure of unemployment, decreased to 6.9% from 7.2% during the third quarter.**
- **The Case-Shiller Home Price Index (ended August) increased to 212.1 from 210.9 (in June) 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 1.74% from 1.78% ended Q2; Capacity Utilization decreased to 77.5% from 77.7% in Q3.**
- **Fed Funds rate was decreased by 0.50% in Q3 to a targeted range of 1.75%-to-2.00%. The 10-year Treasury Yield (constant maturity) finished Q3 down to 1.7% from 2.1%.**
- **The Fed balance sheet increased in size ended Q3, while the European Central Bank balance sheet continues to grow.**
 - The Fed voted to end (as of July 31), two months earlier than planned, the reduction of bonds held on its balance sheet.
 - ECB held its benchmark refinance rate at 0%, deposit rates were cut to -0.5% from -0.4%.
- **S&P valuations decreased in Q3, remaining above the 10-year and long-term averages.**
 - Cyclically adjusted Shiller PE ratio (28.91x) is above the long-term average of 16.6x and above the 10-year average of 25.3x.



MARKET ENVIRONMENT – Q3 2019 OVERVIEW

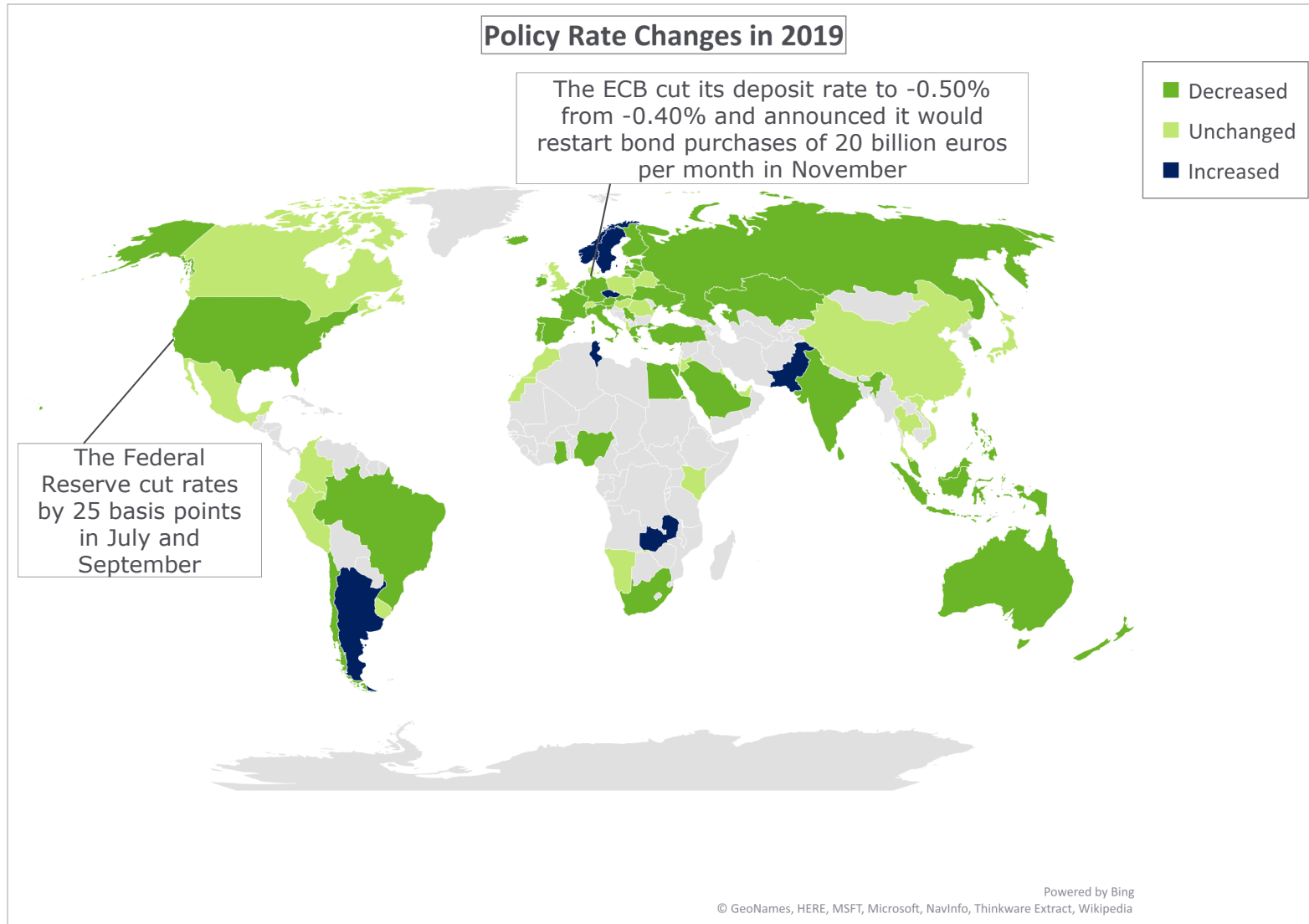
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
World Equity Benchmarks						
MSCI ACWI IMI (Net)	World with Small Cap	-0.18%	0.48%	9.36%	6.61%	8.45%
MSCI ACWI Net (USD)	World W/O Small Cap	-0.03%	1.38%	9.71%	6.65%	8.35%
MSCI ACWI (Local)	World (Local Currency)	1.27%	1.99%	10.29%	7.88%	9.36%
Domestic Equity Benchmarks						
Russell 3000	Domestic All Cap	1.16%	2.92%	12.83%	10.44%	13.08%
S&P 500	Large Core	1.70%	4.25%	13.39%	10.84%	13.24%
Russell 1000	Large Core	1.42%	3.87%	13.19%	10.62%	13.23%
Russell 1000 Growth	Large Growth	1.49%	3.71%	16.89%	13.39%	14.94%
Russell 1000 Value	Large Value	1.36%	4.00%	9.43%	7.79%	11.46%
Russell 2000	Small Core	-2.40%	-8.89%	8.23%	8.19%	11.19%
Russell 2000 Growth	Small Growth	-4.17%	-9.63%	9.79%	9.08%	12.25%
Russell 2000 Value	Small Value	-0.57%	-8.24%	6.54%	7.17%	10.06%
International Equity Benchmarks						
MSCI ACWI Ex USA	World ex-US	-1.80%	-1.23%	6.33%	2.90%	4.46%
MSCI EAFE Net (USD)	Int'l Developed	-1.07%	-1.34%	6.48%	3.27%	4.90%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	1.75%	1.56%	8.30%	6.02%	7.04%
MSCI EAFE Small Cap	Small Cap Int'l	-0.44%	-5.93%	5.94%	6.02%	7.45%
MSCI Emerging Markets	Emerging Equity	-4.25%	-2.02%	5.97%	2.33%	3.37%
Domestic Fixed Income Benchmarks						
Barclays Aggregate	Core Bonds	2.27%	10.30%	2.92%	3.38%	3.75%
Barclays US High Yield	High Yield	1.33%	6.36%	6.07%	5.37%	7.94%
BofA ML US HY BB/B	High Yield	1.71%	7.95%	6.02%	5.50%	7.65%
CSFB Levered Loans	Bank Loans	0.92%	3.11%	4.68%	4.11%	5.38%
BofA ML US 3-Month T-Bill	Cash	0.56%	2.39%	1.54%	0.98%	0.54%
Barclays US TIPS 1-10 Yr	Inflation	0.60%	5.75%	1.94%	1.95%	2.69%
Global Fixed Income Benchmarks						
Barclays Global Aggregate	Global Core Bonds	0.71%	7.60%	1.59%	1.99%	2.34%
FTSE WGBI	World Gov. Bonds	0.85%	8.13%	1.19%	1.80%	1.69%
BC Global Credit	Global Bonds	1.15%	8.36%	3.20%	2.81%	3.82%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	-0.79%	10.13%	3.06%	0.55%	2.47%
JPM EMBI+	Em. Mkt. Bonds	-1.68%	8.20%	1.87%	4.31%	5.89%
Alternative Benchmarks						
Bloomberg Commodity Index	Commodities	-1.84%	-6.58%	-1.50%	-7.18%	-4.32%
HFRI Fund of Funds Composite Index	Fund of Hedge Funds	-0.90%	0.01%	3.16%	1.95%	2.67%
Cambridge PE Lagged*	Private Equity	4.62%	11.93%	15.63%	11.70%	14.67%
NCREIF ODCE Net Lagged*	Real Estate	0.77%	5.47%	6.61%	8.77%	8.87%
Wilshire REIT Index	REIT	7.88%	18.39%	7.21%	10.17%	13.06%
CPI + 2%	Inflation/Real Assets	0.91%	3.76%	4.12%	3.57%	3.77%



* As of 6/30/2019



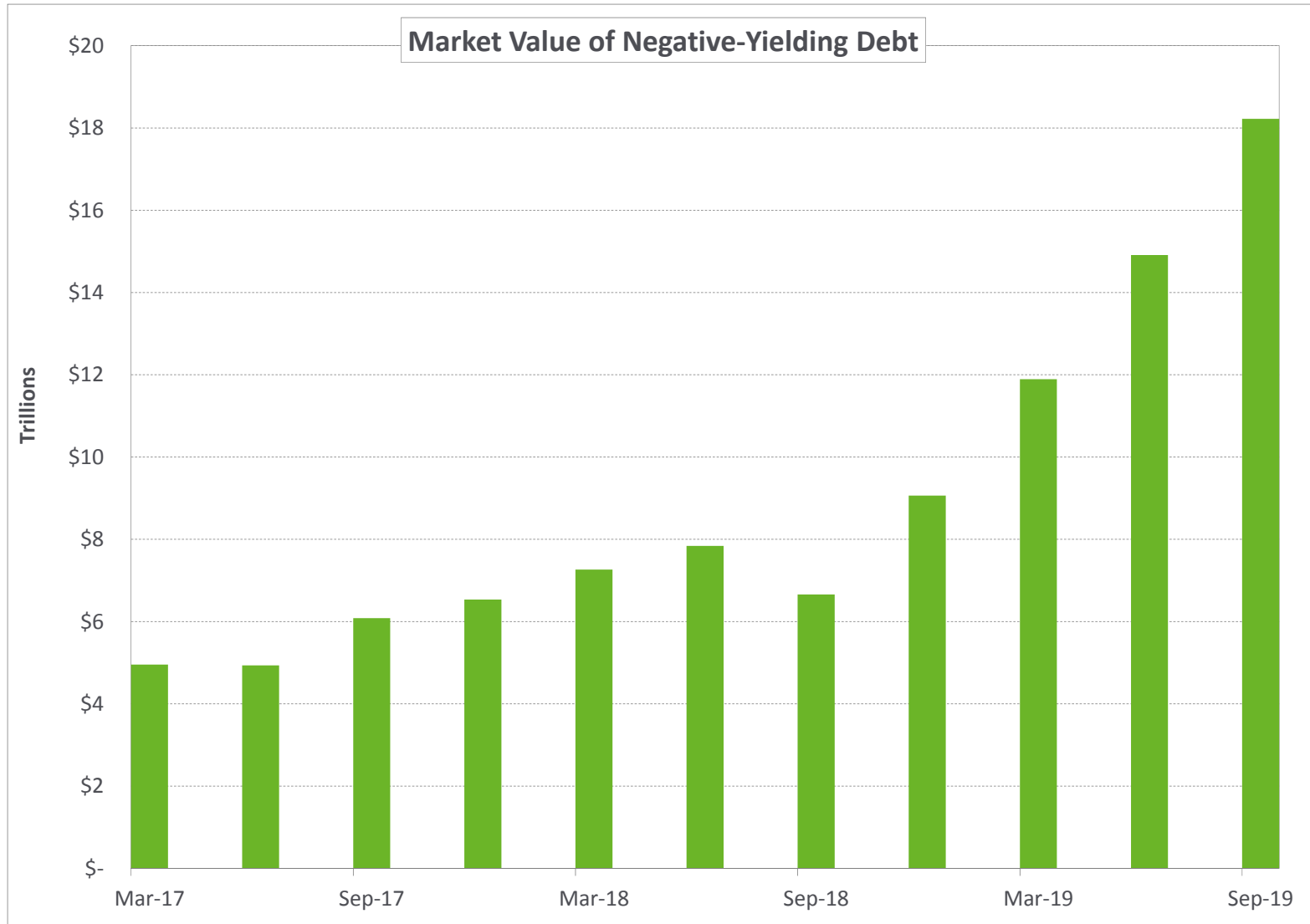
A SHIFT TOWARD EASIER MONETARY POLICY



Source: FactSet



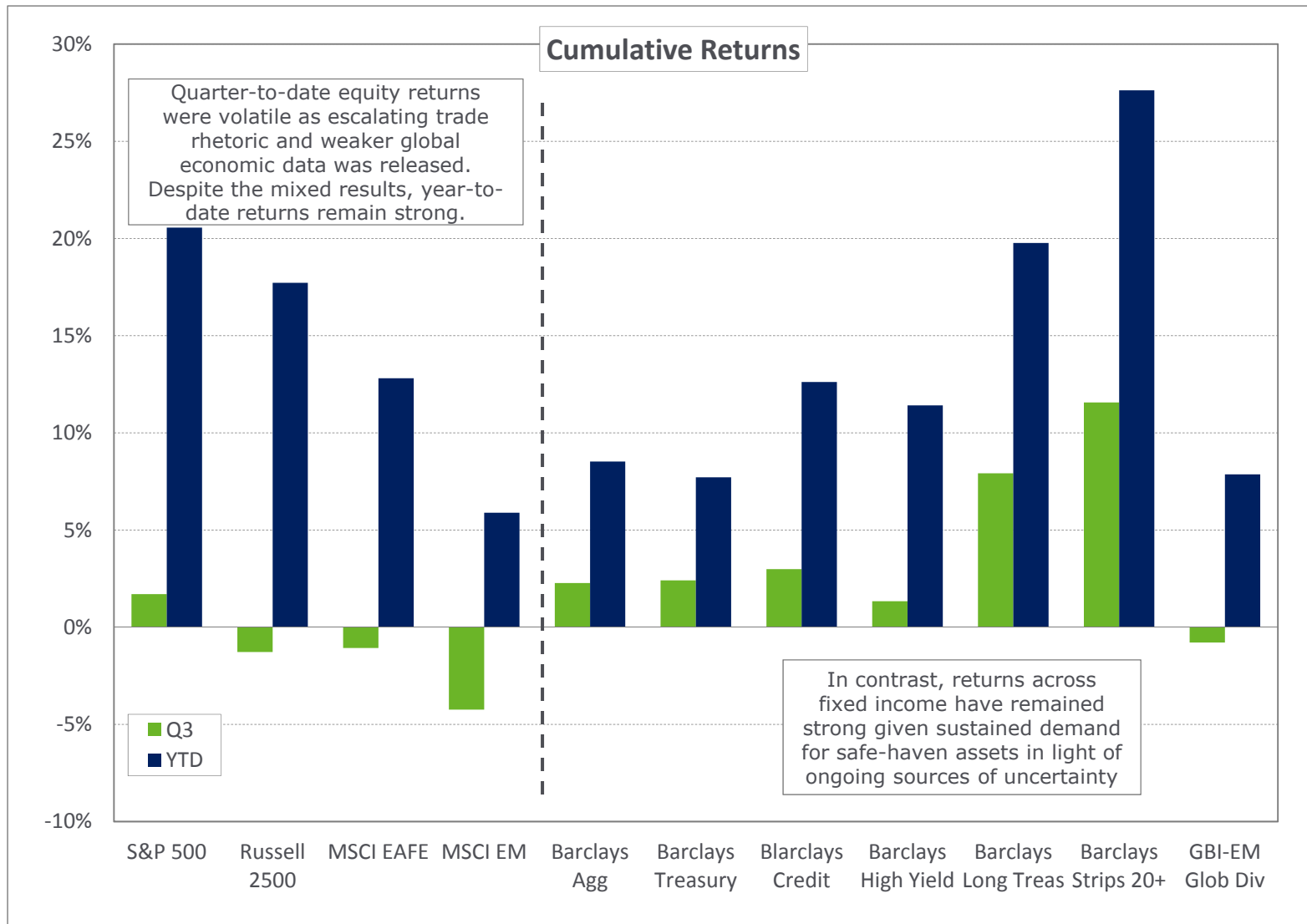
NEGATIVE YIELDS CONTINUE TO SPREAD



Source: FactSet



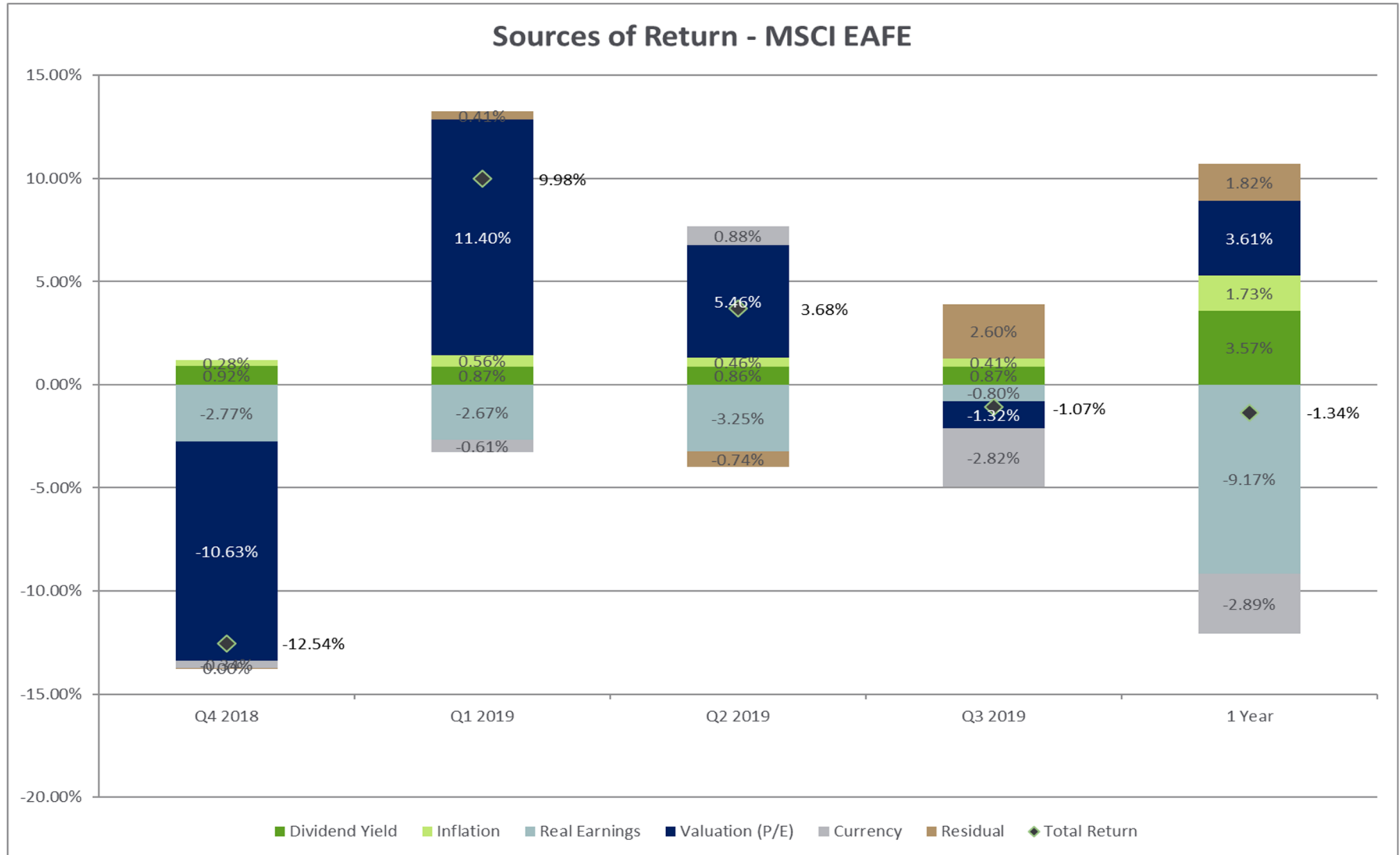
YTD RETURNS HAVE BEEN STRONG, QTD MIXED



Source: S&P, Russell, MSCI, Barclays, JP Morgan, FactSet; as of 09/30/2019



1 YEAR ATTRIBUTION OF MSCI EAFE RETURNS



Spot Rates

1 USD = 0.871 Euro

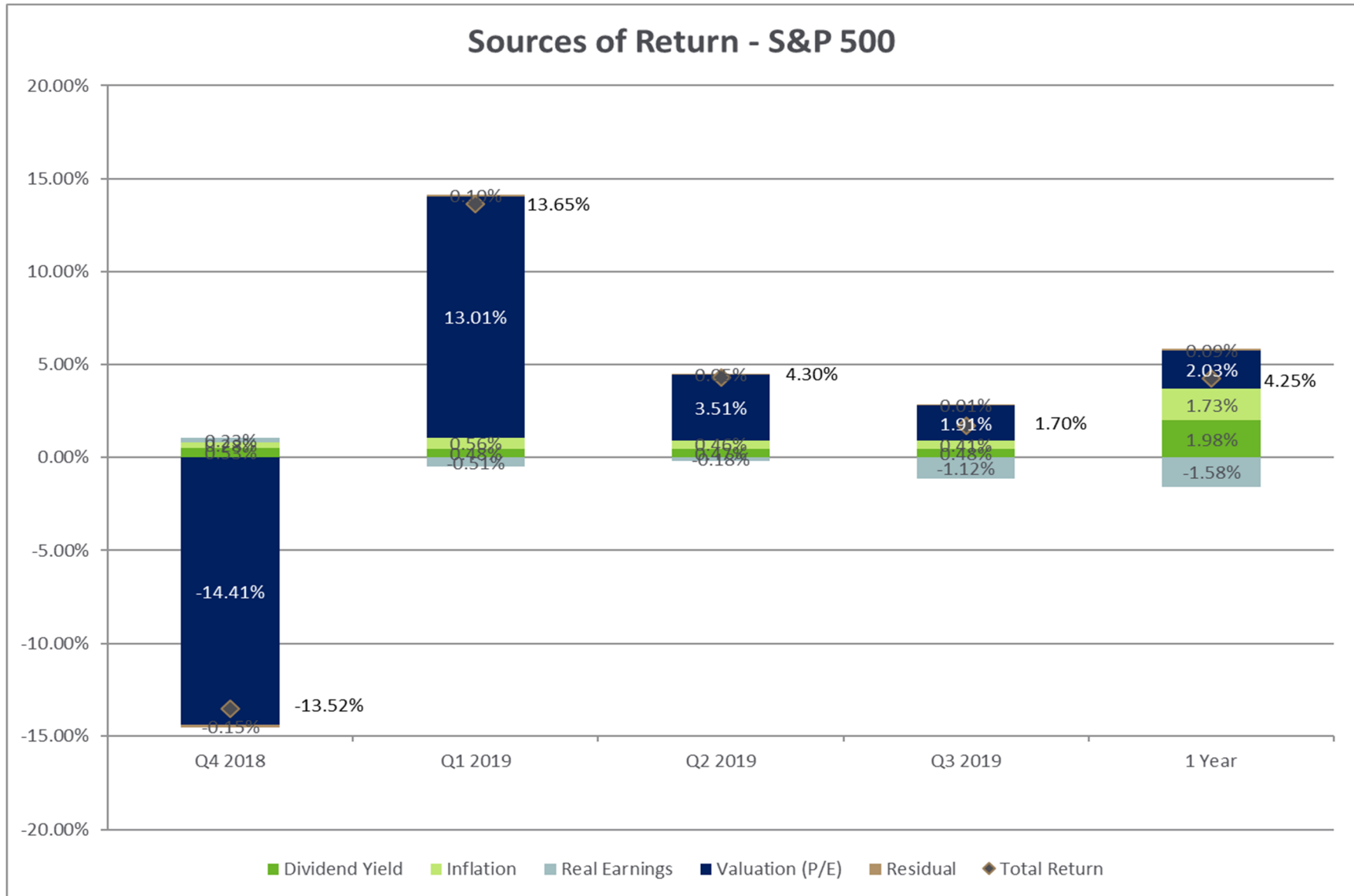
1 USD = 0.890 Euro

1 USD = 0.880 Euro

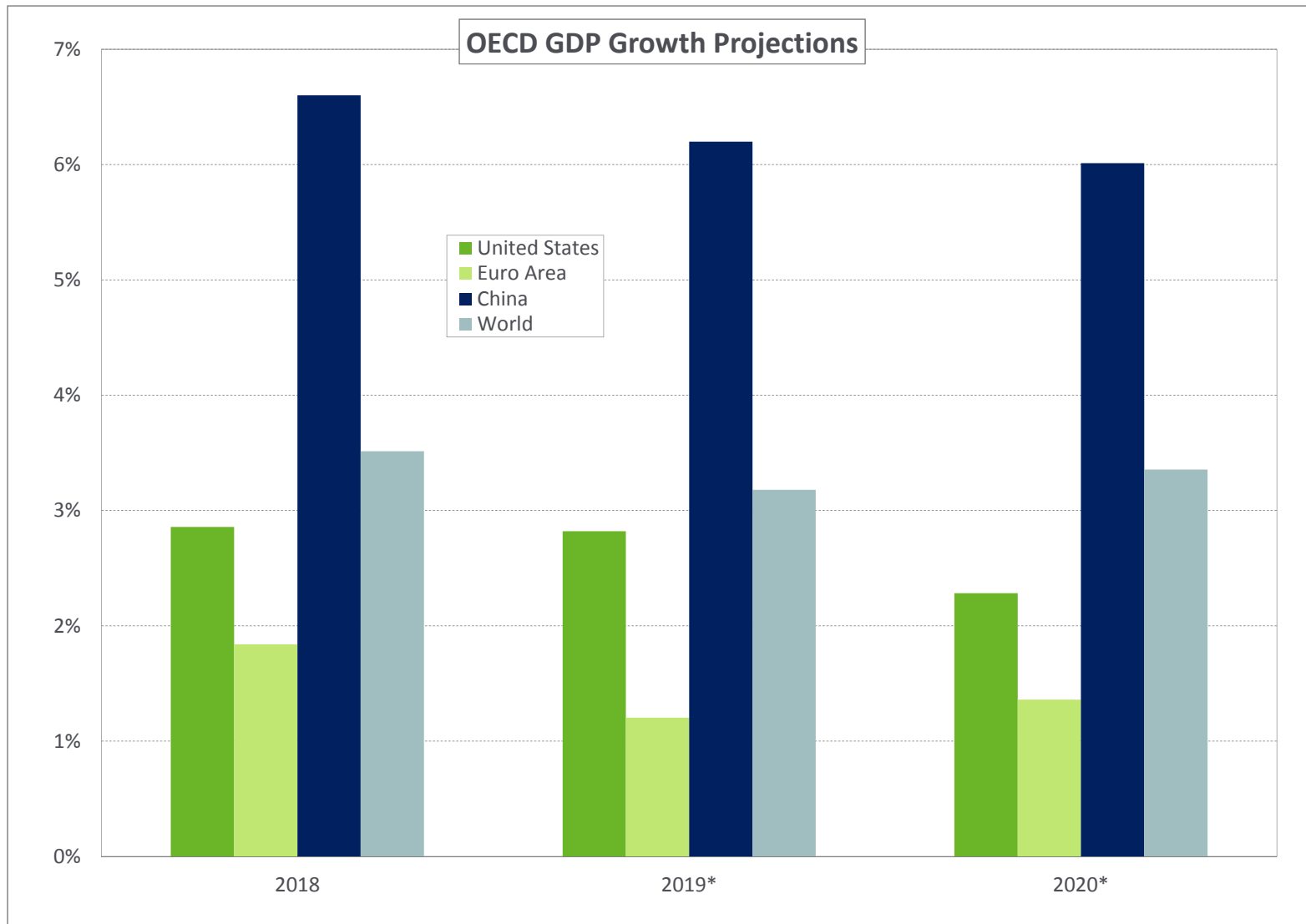
1 USD = 0.912 Euro



1 YEAR ATTRIBUTION OF S&P 500 RETURNS



THE ECONOMIC OUTLOOK HAS DETERIORATED



Source: OECD
2019 and 2020 data represents forecasted data as of 10/7/2019

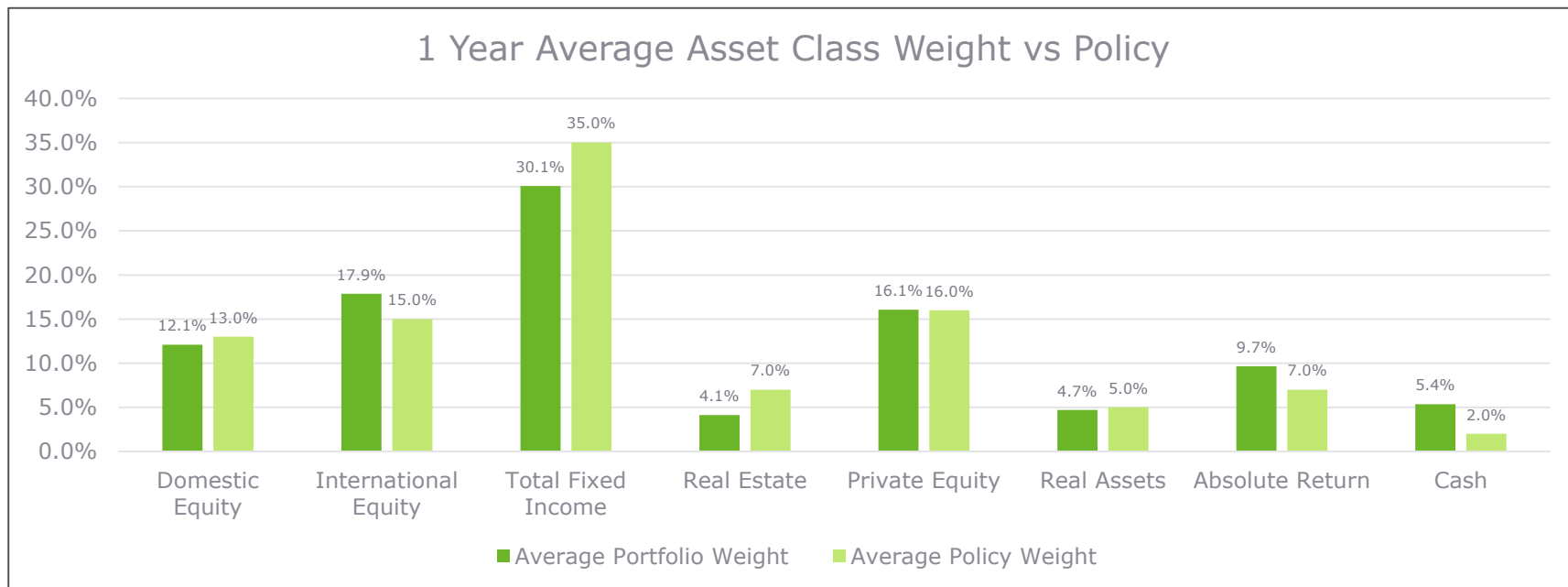


2019 TRADE TIMELINE



BETA OVERLAY CONTRIBUTION TO RETURN

COMPOSITE	3 Months	1 Year	3 Years	5 Years
Total Plan <i>With</i> Beta Overlay	0.88	3.85	7.84	6.24
Total Plan <i>Without</i> Beta Overlay	1.04	4.77	7.43	6.16
Over/Under	-0.16	-0.92	0.41	0.08



TOTAL FUND PERFORMANCE

NEPC, LLC

TOTAL FUND PERFORMANCE SUMMARY (GROSS)

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
Total Fund	\$10,748,847,525	0.9%	25	8.1%	99	3.9%	45	7.9%	56	6.3%	64	8.5%	40
<i>Policy Index</i>		0.6%	51	10.9%	70	4.8%	20	6.3%	99	5.4%	98	7.1%	91
<i>S&P 500</i>		1.7%	2	20.6%	1	4.3%	35	13.4%	1	10.8%	1	13.2%	1
<i>BBgBarc US Aggregate TR</i>		2.3%	1	8.5%	99	10.3%	1	2.9%	99	3.4%	99	3.7%	99
<i>60% MSCI ACWI (Net) / 40% FTSE WGBI</i>		0.4%	69	12.4%	31	4.4%	34	6.4%	98	4.9%	99	5.9%	98
<i>InvMetrics Public DB > \$1B Gross Median</i>		0.6%		11.5%		3.7%		8.0%		6.5%		8.3%	

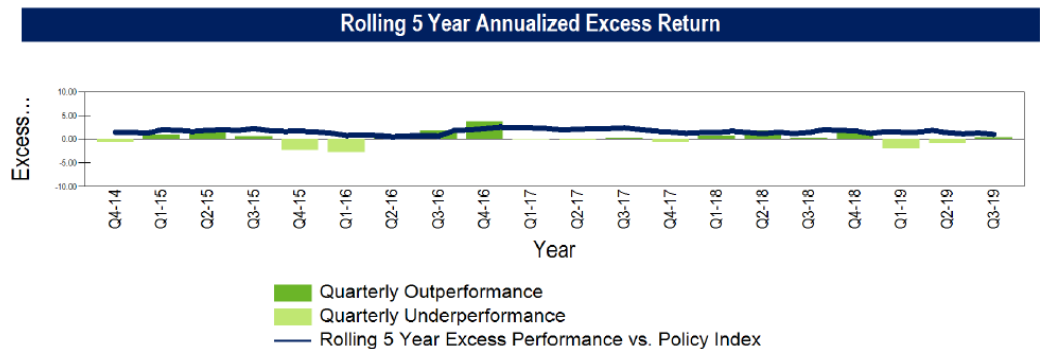
In the year ended September 30, 2019 the Fund return of 3.9% ranked in the 45th percentile of Public Funds > \$1 Billion and underperformed the actuarial assumed rate of 7.25%. The Fund's assets totaled \$10.75 billion, an increase of \$372.5 million from a year ago.

The Fund experienced a net investment gain of \$395.6 million during the year including a net investment gain of \$92.2 million in the third calendar quarter.

In the three-year period ended September 30, 2019 the Fund return of 7.9% ranked in the 56th percentile among its peers. The Sharpe Ratio over this period of 2.6 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 September 30, 2019 the Fund return of 6.3% ranked in the 64th percentile among its peers. On a risk adjusted basis the Fund's Sharpe and Sortino Ratios rank in the 3rd 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 universe contains 46 portfolios with \$375 billion in assets.



3 Years Ending September 30, 2019				
	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	1.9	1	2.6	1
InvMetrics Public DB > \$1B Gross Median	1.0	--	1.4	--

5 Years Ending September 30, 2019				
	Sharpe Ratio	Sharpe Ratio Rank	Sortino Ratio	Sortino Ratio Rank
Total Fund	1.4	3	2.5	3
InvMetrics Public DB > \$1B Gross Median	0.8	--	1.3	--



San Bernardino County Employees' Retirement Association

TOTAL FUND PERFORMANCE SUMMARY

Statistics Summary								
1 Year Ending September 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	3.9%	45	4.8%	3	0.3	12	1.1	9
InvMetrics Public DB > \$1B Gross Median	3.7%	--	10.0%	--	0.2	--	0.7	--

Statistics Summary								
3 Years Ending September 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	7.9%	56	3.3%	3	1.9	1	2.6	1
InvMetrics Public DB > \$1B Gross Median	8.0%	--	6.6%	--	1.0	--	1.4	--

Statistics Summary								
5 Years Ending September 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	6.3%	64	3.7%	3	1.4	3	2.5	3
InvMetrics Public DB > \$1B Gross Median	6.5%	--	6.7%	--	0.8	--	1.3	--

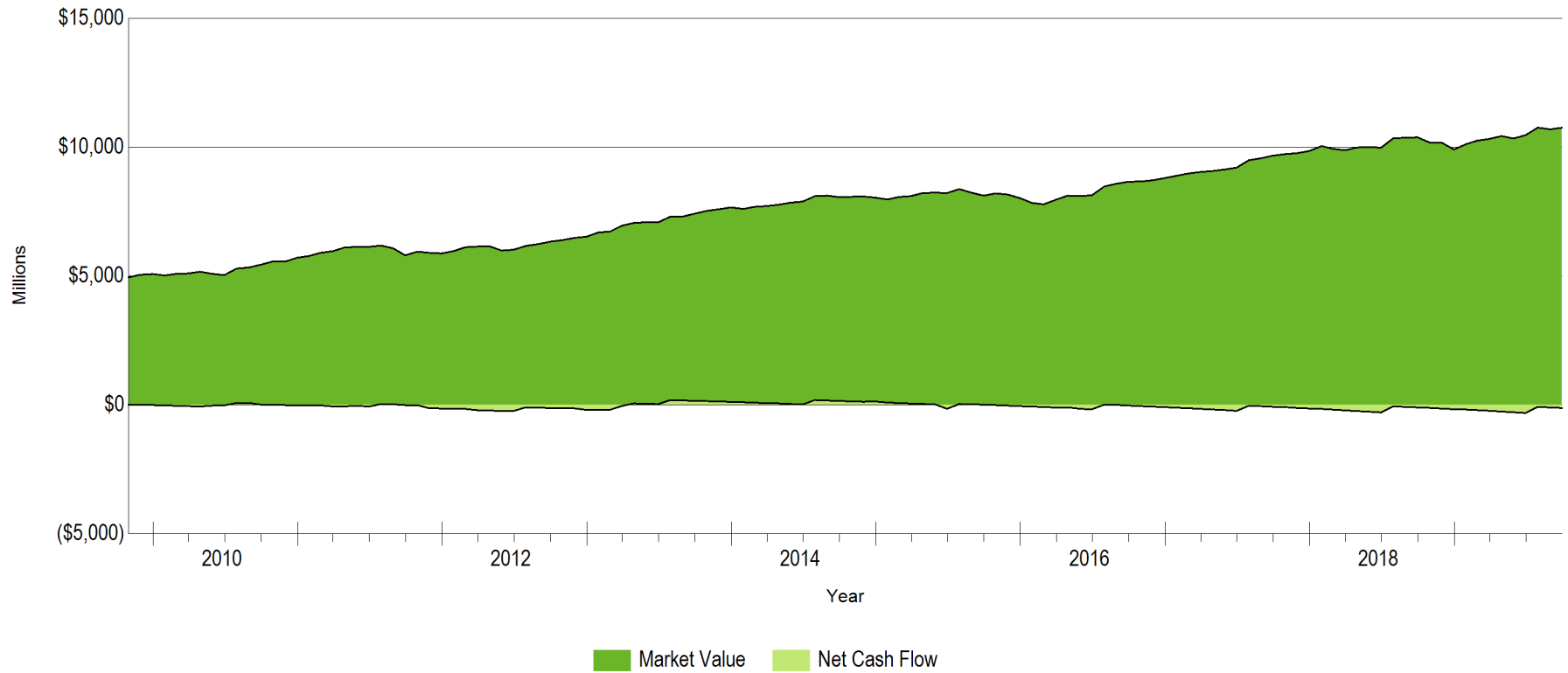
Sortino Ratio requires at least two negative points during the time period in order to calculate



San Bernardino County Employees' Retirement Association

TOTAL FUND ASSET GROWTH SUMMARY

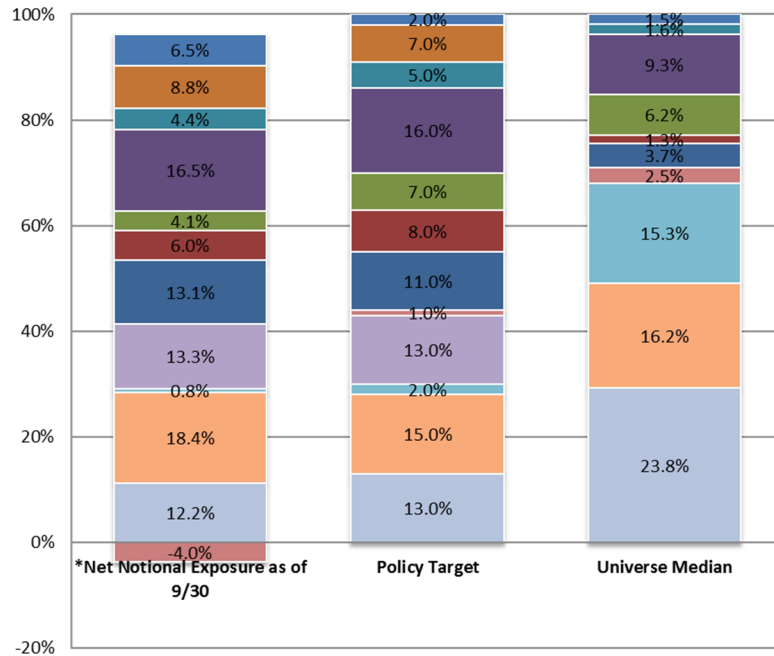
10 Years Ending September 30, 2019



	Last Three Months	Year-To-Date	One Year	Five Years	Ten Years
Beginning Market Value	\$10,459,614,886	\$9,902,558,228	\$10,376,326,840	\$8,056,406,974	\$4,868,941,636
Net Cash Flow	\$197,013,263	\$47,911,959	-\$23,112,456	-\$269,316,413	-\$118,226,127
Net Investment Change	\$92,219,376	\$798,377,338	\$395,633,141	\$2,961,756,964	\$5,998,132,016
Ending Market Value	\$10,748,847,525	\$10,748,847,525	\$10,748,847,525	\$10,748,847,525	\$10,748,847,525



TOTAL FUND PERFORMANCE SUMMARY



	*Net Notional Exposure	*Net Notional Exposure as of 9/30	Policy Target	*Difference	Policy Ranges	Within Range
US Equities	1,308,755	12.2%	13.0%	-0.8%	8%-18%	Yes
Int'l Equities	1,983,084	18.4%	15.0%	3.4%	10%-20%	Yes
U.S. Core Fixed Income	88,400	0.8%	2.0%	-1.2%	-3%-7%	Yes
US Credit	1,427,545	13.3%	13.0%	0.3%	8%-18%	Yes
Non-US Core Fixed Income	(429,954)	-4.0%	1.0%	-5.0%	-4%-6%	Yes
Non-US Credit	1,404,042	13.1%	11.0%	2.1%	6%-16%	Yes
Emerging Market Debt	641,190	6.0%	8.0%	-2.0%	3%-13%	Yes
Real Estate	436,908	4.1%	7.0%	-2.9%	0%-14%	Yes
Private Equity	1,775,540	16.5%	16.0%	0.5%	6%-21%	Yes
Real Assets	469,809	4.4%	5.0%	-0.6%	0%-10%	Yes
Absolute Return	949,865	8.8%	7.0%	1.8%	0%-12%	Yes
Cash	693,663	6.5%	2.0%	4.5%	0%-10%	Yes
	10,748,848	100.0%	100.0%			

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



TOTAL FUND PERFORMANCE SUMMARY

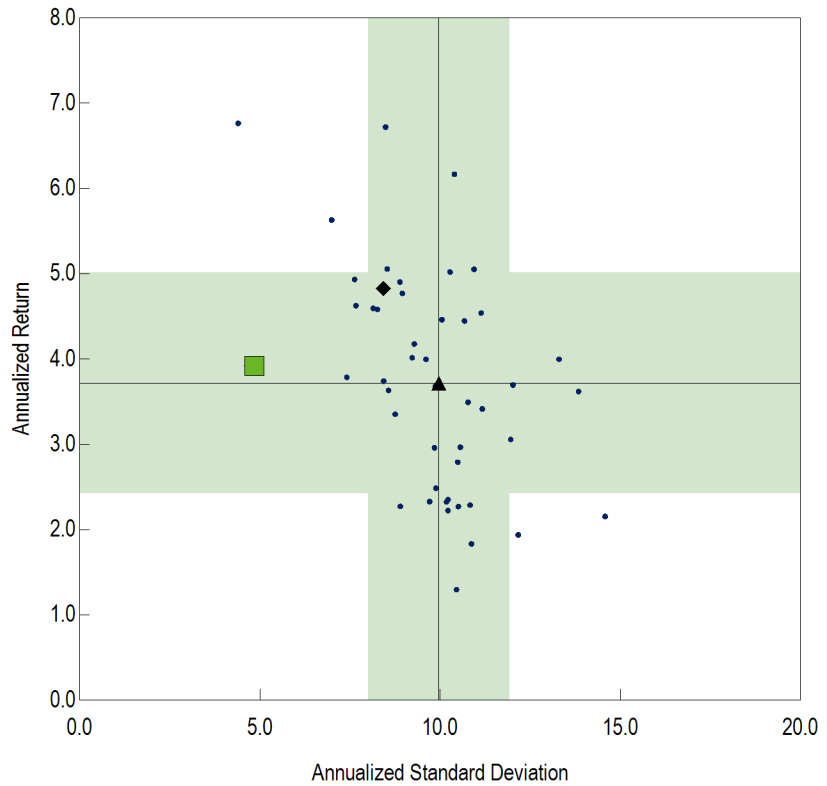
<u>Asset Class</u>	<u>Physical Exposure</u>		<u>Delta Adjusted</u>		<u>Net Position</u>		<u>Overlay Target</u>		<u>Policy Target</u>	
			<u>Synthetic Exposure</u>							
Total Market Value	10,718.8	100.0%	0.0	0.0%	10,718.8	100.0%	10,718.8	100.0%	10,718.8	100.00%
Cash	876.2	8.17%	-894.7	-8.35%	-18.5	-0.17%	0.0	0.0%	0.0	0.00%
Cash	876.2	8.17%	-894.7	-8.35%	-18.5	-0.17%	0.0	0.0%	0.0	0.00%
Equity	1,651.4	15.41%	1,633.9	15.24%	3,285.3	30.65%	3,260.5	30.42%	3,296.0	30.75%
Emerging Markets	426.8	3.98%	415.6	3.88%	842.4	7.86%	848.3	7.91%	857.5	8.00%
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	51.7	0.48%	1,087.8	10.15%	1,139.5	10.63%	1,139.8	10.63%	1,152.3	10.75%
US Large Cap	1,172.7	10.94%	-49.3	-0.46%	1,123.4	10.48%	1,113.3	10.39%	1,125.5	10.50%
US Small Cap	0.2	0.0%	179.7	1.68%	180.0	1.68%	159.0	1.48%	160.8	1.50%
Fixed	3,887.3	36.27%	-739.2	-6.9%	3,148.1	29.37%	3,154.5	29.43%	3,188.8	29.75%
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	2,418.8	22.57%	-827.6	-7.72%	1,591.2	14.85%	1,590.5	14.84%	1,607.8	15.00%
High Yield **	1,109.8	10.35%	0.0	0.0%	1,109.8	10.35%	1,007.3	9.4%	1,018.3	9.50%
US Fixed Income	358.7	3.35%	88.4	0.82%	447.1	4.17%	556.7	5.19%	562.7	5.25%
Other	4,303.9	40.15%	0.0	0.0%	4,303.9	40.15%	4,303.9	40.15%	4,233.9	39.50%
Alternatives	80.7	0.75%	0.0	0.0%	80.7	0.75%	80.7	0.75%	85.8	0.80%
Commodities	207.8	1.94%	0.0	0.0%	207.8	1.94%	207.8	1.94%	203.7	1.90%
Infrastructure	182.9	1.71%	0.0	0.0%	182.9	1.71%	182.9	1.71%	192.9	1.80%
Private Equity	1,731.4	16.15%	0.0	0.0%	1,731.4	16.15%	1,731.4	16.15%	1,672.1	15.60%
Real Estate	450.5	4.2%	0.0	0.0%	450.5	4.2%	450.5	4.2%	428.8	4.00%
Tactical Cash	1,650.7	15.4%	0.0	0.0%	1,650.7	15.4%	1,650.7	15.4%	1,650.7	15.40%



San Bernardino County Employees' Retirement Association

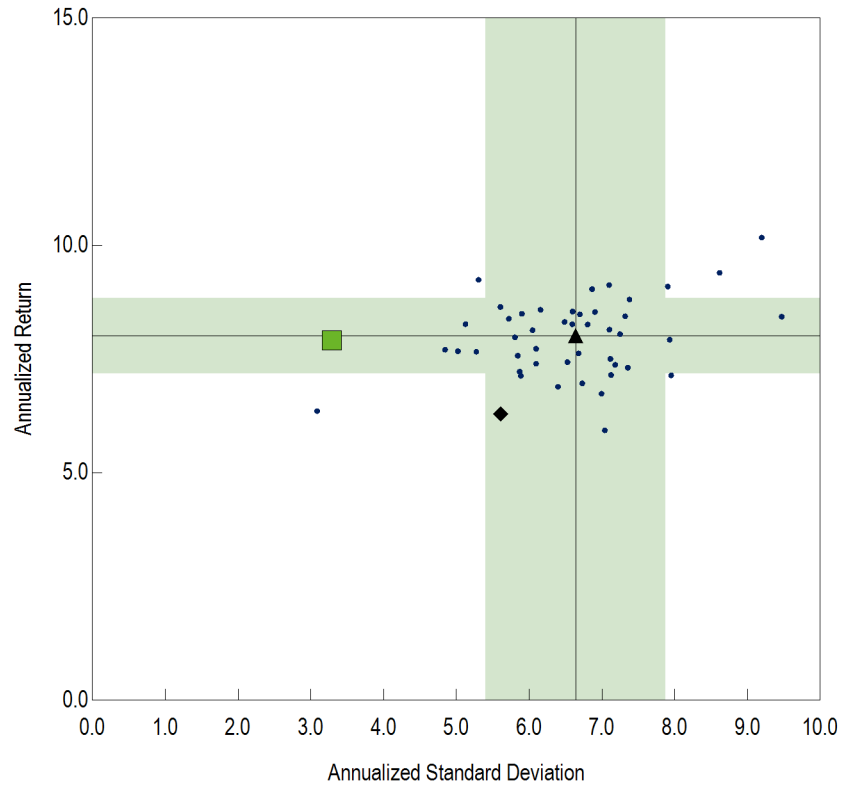
TOTAL FUND RISK/RETURN

1 Year Ending September 30, 2019



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

3 Years Ending September 30, 2019



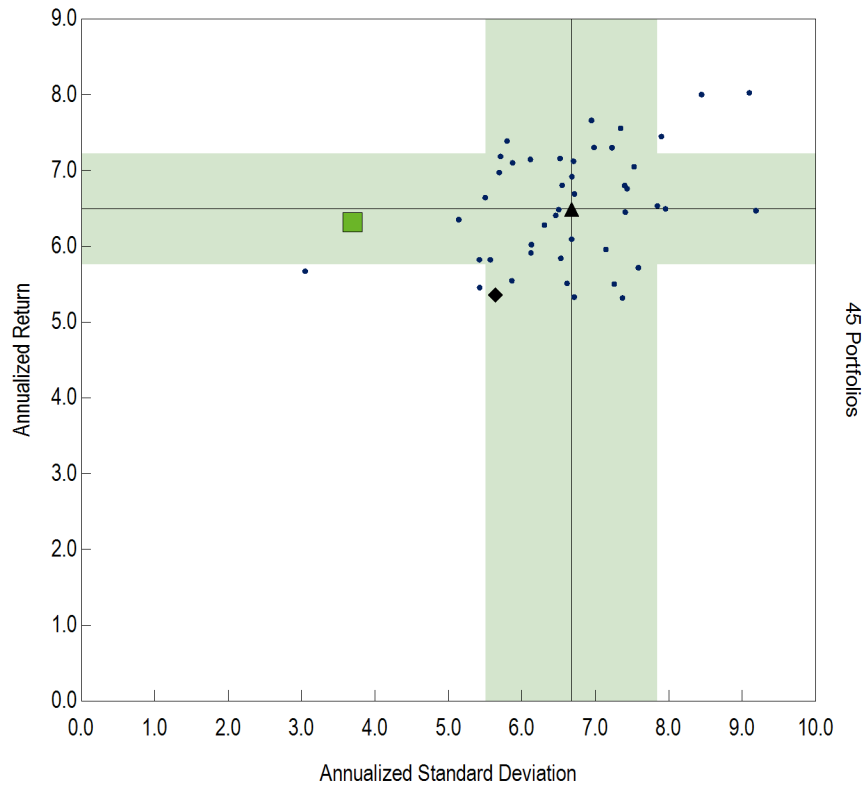
- Total Fund
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB > \$1B Gross



San Bernardino County Employees' Retirement Association

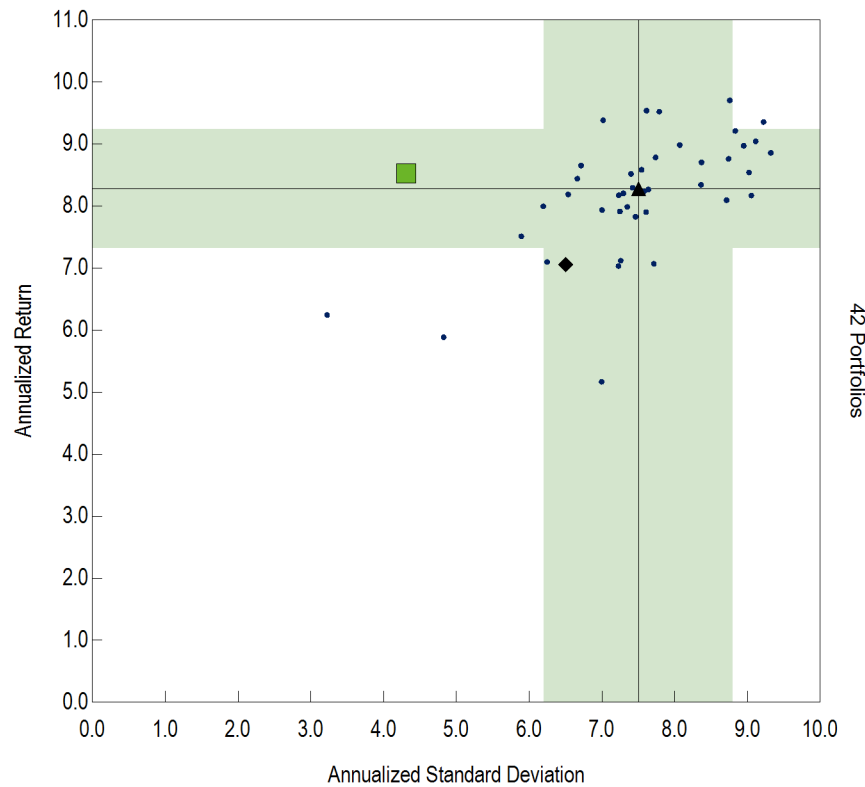
TOTAL FUND RISK/RETURN

5 Years Ending September 30, 2019



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

10 Years Ending September 30, 2019



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

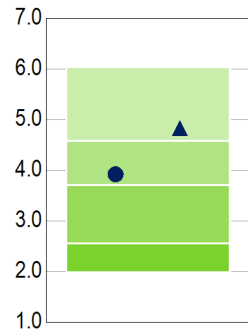


San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

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

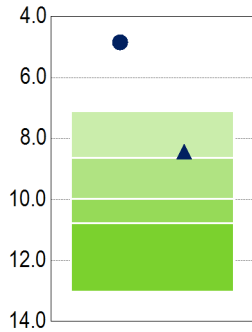
Anlzd Return



● Total Fund	
Value	3.9
Rank	45
▲ Policy Index	
Value	4.8
Rank	20

Universe	
5th %tile	6.0
25th %tile	4.6
Median	3.7
75th %tile	2.6
95th %tile	2.0

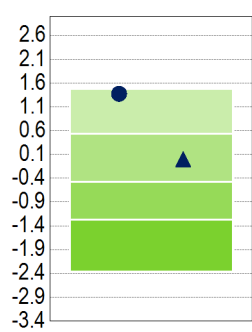
Anlzd Standard Deviation



● Total Fund	
Value	4.8
Rank	3
▲ Policy Index	
Value	8.4
Rank	18

Universe	
5th %tile	7.1
25th %tile	8.6
Median	10.0
75th %tile	10.7
95th %tile	13.0

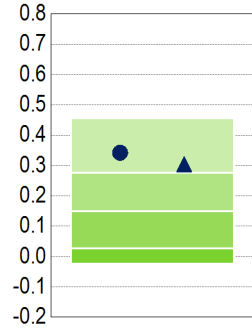
Anlzd Alpha



● Total Fund	
Value	1.4
Rank	7
▲ Policy Index	
Value	0.0
Rank	43

Universe	
5th %tile	1.5
25th %tile	0.6
Median	-0.5
75th %tile	-1.3
95th %tile	-2.4

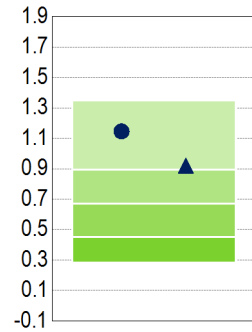
Sharpe Ratio



● Total Fund	
Value	0.3
Rank	12
▲ Policy Index	
Value	0.3
Rank	17

Universe	
5th %tile	0.5
25th %tile	0.3
Median	0.2
75th %tile	0.0
95th %tile	0.0

Sortino Ratio



● Total Fund	
Value	1.1
Rank	9
▲ Policy Index	
Value	0.9
Rank	24

Universe	
5th %tile	1.3
25th %tile	0.9
Median	0.7
75th %tile	0.5
95th %tile	0.3

Sortino Ratio requires at least two negative points during the time period in order to calculate.
Sample size is 46 Portfolios

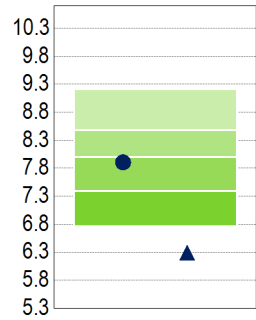


San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

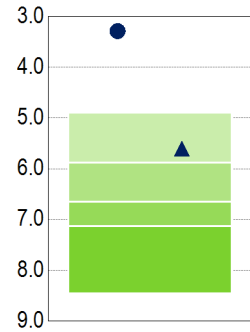
Total Fund vs. InvMetrics Public DB > \$1B Gross (USD)
3 Years

Anlzd Return



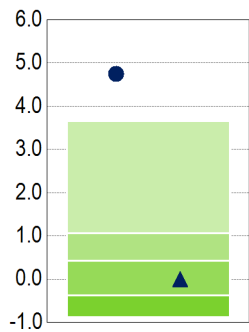
● Total Fund	
Value	7.9
Rank	56
▲ Policy Index	
Value	6.3
Rank	99
Universe	
5th %tile	9.2
25th %tile	8.5
Median	8.0
75th %tile	7.4
95th %tile	6.8

Anlzd Standard Deviation



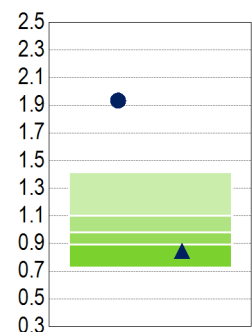
● Total Fund	
Value	3.3
Rank	3
▲ Policy Index	
Value	5.6
Rank	16
Universe	
5th %tile	4.9
25th %tile	5.9
Median	6.6
75th %tile	7.1
95th %tile	8.5

Anlzd Alpha



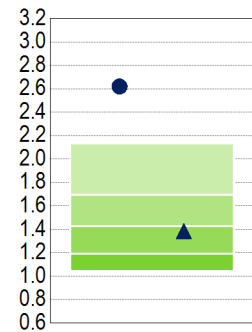
● Total Fund	
Value	4.7
Rank	4
▲ Policy Index	
Value	0.0
Rank	64
Universe	
5th %tile	3.7
25th %tile	1.1
Median	0.4
75th %tile	-0.4
95th %tile	-0.9

Sharpe Ratio



● Total Fund	
Value	1.9
Rank	1
▲ Policy Index	
Value	0.8
Rank	78
Universe	
5th %tile	1.4
25th %tile	1.1
Median	1.0
75th %tile	0.9
95th %tile	0.7

Sortino Ratio



● Total Fund	
Value	2.6
Rank	1
▲ Policy Index	
Value	1.4
Rank	57
Universe	
5th %tile	2.1
25th %tile	1.7
Median	1.4
75th %tile	1.2
95th %tile	1.0

Sortino Ratio requires at least two negative points during the time period in order to calculate.
Sample size is 46 Portfolios

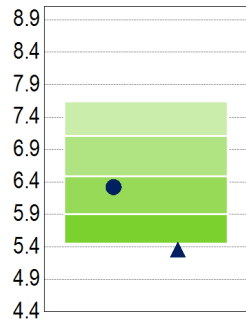


San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

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

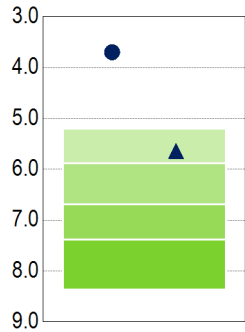
Anlzd Return



● Total Fund	
Value	6.3
Rank	64
▲ Policy Index	
Value	5.4
Rank	98

Universe	
5th %tile	7.6
25th %tile	7.1
Median	6.5
75th %tile	5.9
95th %tile	5.5

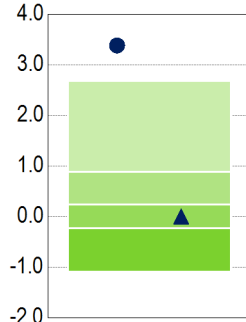
Anlzd Standard Deviation



● Total Fund	
Value	3.7
Rank	3
▲ Policy Index	
Value	5.6
Rank	15

Universe	
5th %tile	5.2
25th %tile	5.9
Median	6.7
75th %tile	7.4
95th %tile	8.3

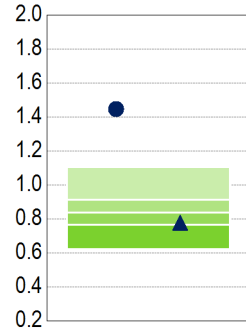
Anlzd Alpha



● Total Fund	
Value	3.4
Rank	4
▲ Policy Index	
Value	0.0
Rank	69

Universe	
5th %tile	2.7
25th %tile	0.9
Median	0.2
75th %tile	-0.2
95th %tile	-1.1

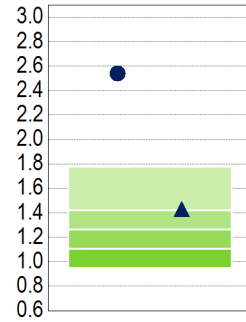
Sharpe Ratio



● Total Fund	
Value	1.4
Rank	3
▲ Policy Index	
Value	0.8
Rank	72

Universe	
5th %tile	1.1
25th %tile	0.9
Median	0.8
75th %tile	0.8
95th %tile	0.6

Sortino Ratio



● Total Fund	
Value	2.5
Rank	3
▲ Policy Index	
Value	1.4
Rank	25

Universe	
5th %tile	1.8
25th %tile	1.4
Median	1.3
75th %tile	1.1
95th %tile	1.0

Sortino Ratio requires at least two negative points during the time period in order to calculate.
Sample size is 46 Portfolios

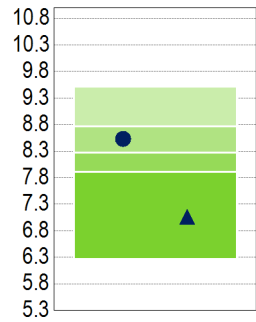


San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

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

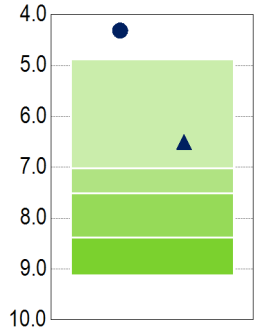
Anlzd Return



● Total Fund	
Value	8.5
Rank	40
▲ Policy Index	
Value	7.1
Rank	91

Universe	
5th %tile	9.5
25th %tile	8.8
Median	8.3
75th %tile	7.9
95th %tile	6.3

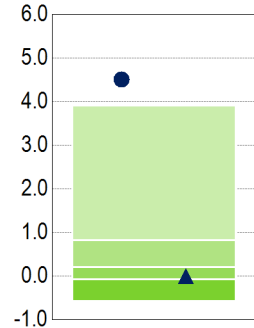
Anlzd Standard Deviation



● Total Fund	
Value	4.3
Rank	3
▲ Policy Index	
Value	6.5
Rank	15

Universe	
5th %tile	4.9
25th %tile	7.0
Median	7.5
75th %tile	8.4
95th %tile	9.1

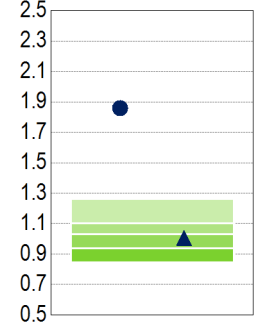
Anlzd Alpha



● Total Fund	
Value	4.5
Rank	4
▲ Policy Index	
Value	0.0
Rank	74

Universe	
5th %tile	3.9
25th %tile	0.8
Median	0.2
75th %tile	-0.1
95th %tile	-0.6

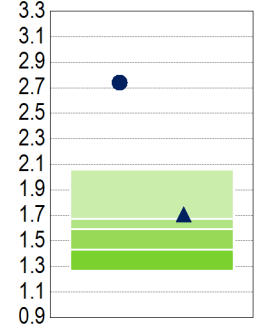
Sharpe Ratio



● Total Fund	
Value	1.9
Rank	1
▲ Policy Index	
Value	1.0
Rank	60

Universe	
5th %tile	1.3
25th %tile	1.1
Median	1.0
75th %tile	0.9
95th %tile	0.9

Sortino Ratio



● Total Fund	
Value	2.7
Rank	3
▲ Policy Index	
Value	1.7
Rank	24

Universe	
5th %tile	2.1
25th %tile	1.7
Median	1.6
75th %tile	1.4
95th %tile	1.3

Sortino Ratio requires at least two negative points during the time period in order to calculate.
Sample size is 46 Portfolios



San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS

1 Years Ending September 30, 2019									
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank	
Domestic Equity With Beta Overlay	12.2%	1.2%	71	17.2%	1	2.8%	-0.6	--	
Russell 3000	--	2.9%	47	19.5%	69	0.0%	--	--	
International Equity With Beta Overlay	18.4%	-1.0%	31	15.1%	19	1.9%	-0.1	--	
MSCI ACWI ex USA Gross	--	-0.7%	26	16.1%	59	0.0%	--	--	
Global Fixed Income With Beta Overlay	29.1%	1.1%	--	3.9%	--	6.5%	-1.0	--	
BBgBarc Global Aggregate TR	--	7.6%	--	4.3%	--	0.0%	--	--	
U.S. Credit Strategies	13.4%	3.9%	85	4.1%	47	5.1%	-0.3	--	
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	5.5%	74	4.9%	76	0.0%	--	--	
Non-U.S. Credit Composite	12.9%	3.1%	--	4.6%	--	9.8%	0.4	--	
ICE BofAML Euro High Yield Constrained TR	--	-1.2%	--	7.9%	--	0.0%	--	--	
Emerging Markets Debt Composite	9.7%	2.3%	97	4.2%	17	7.3%	-1.2	--	
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	10.9%	34	7.0%	56	0.0%	--	--	
Alpha Pool Composite	15.3%	5.2%	3	3.8%	22	3.8%	0.0	40	
91 Day T-Bill + 3%	--	5.3%	3	0.0%	1	0.0%	--	--	

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.5%	13.8%	35	4.4%	32
Cambridge Associates Global All PE (Qtr Lag)	--	10.5%	61	6.3%	72
Real Estate Composite	4.1%	6.9%	48	1.5%	30
NCREIF Property Index 1 Qtr. Lag	--	6.5%	53	2.7%	67
Real Assets Composite	4.4%	-2.4%	73	7.1%	73
Real Assets Custom Blend	--	-2.1%	73	5.0%	41

US Credit and Non-US Credit composites are based on physical assets.



San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS

3 Years Ending September 30, 2019								
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank
Domestic Equity With Beta Overlay	12.2%	7.3%	99	10.6%	1	3.1%	-1.8	--
Russell 3000	--	12.8%	33	12.5%	43	0.0%	--	--
International Equity With Beta Overlay	18.4%	5.9%	59	10.3%	5	2.6%	-0.4	--
MSCI ACWI ex USA Gross	--	6.8%	26	11.4%	33	0.0%	--	--
Global Fixed Income With Beta Overlay	29.1%	2.1%	--	3.0%	--	6.2%	0.1	--
BBgBarc Global Aggregate TR	--	1.6%	--	4.7%	--	0.0%	--	--
U.S. Credit Strategies	13.4%	7.7%	1	3.3%	28	3.9%	0.6	2
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	5.4%	23	3.0%	16	0.0%	--	--
Non-U.S. Credit Composite	12.9%	8.7%	--	3.6%	--	9.1%	0.6	--
ICE BofAML Euro High Yield Constrained TR	--	3.5%	--	8.2%	--	0.0%	--	--
Emerging Markets Debt Composite	9.7%	2.8%	84	4.7%	23	6.6%	-0.2	--
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	3.9%	66	7.3%	60	0.0%	--	--
Alpha Pool Composite	15.3%	6.6%	13	2.6%	9	2.7%	0.8	27
91 Day T-Bill + 3%	--	4.6%	55	0.2%	1	0.0%	--	--

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.5%	15.7%	41	3.8%	1
Cambridge Associates Global All PE (Qtr Lag)	--	14.5%	66	6.5%	52
Real Estate Composite	4.1%	5.9%	96	2.5%	58
NCREIF Property Index 1 Qtr. Lag	--	6.9%	81	2.8%	60
Real Assets Composite	4.4%	1.9%	74	5.4%	38
Real Assets Custom Blend	--	0.8%	80	3.8%	13

US Credit and Non-US Credit composites are based on physical assets.



San Bernardino County Employees' Retirement Association

TOTAL FUND RISK STATISTICS

5 Years Ending September 30, 2019								
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Info Ratio	Rank
Domestic Equity	10.9%	3.0%	--	8.2%	--	10.0%	-0.7	--
Russell 3000	--	10.4%	--	12.2%	--	0.0%	--	--
International Developed	0.5%	1.5%	98	18.8%	99	14.5%	-0.1	--
MSCI EAFE	--	3.3%	57	12.2%	73	0.0%	--	--
International Emerging	4.0%	0.7%	89	12.5%	7	4.8%	-0.3	--
MSCI Emerging Markets	--	2.3%	46	15.6%	74	0.0%	--	--
U.S. Credit Strategies	13.4%	6.0%	9	3.3%	12	3.9%	0.3	9
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	--	4.8%	41	3.7%	39	0.0%	--	--
Non-U.S. Credit Composite	12.9%	6.6%	--	3.6%	--	10.0%	0.5	--
ICE BofAML Euro High Yield Constrained TR	--	1.4%	--	9.3%	--	0.0%	--	--
Emerging Markets Debt Composite	9.7%	3.8%	55	5.3%	23	6.1%	0.1	58
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified	--	3.2%	61	7.8%	60	0.0%	--	--
Alpha Pool Composite	15.3%	4.6%	17	3.5%	21	3.5%	0.2	42
91 Day T-Bill + 3%	--	4.0%	30	0.3%	1	0.0%	--	--

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Private Equity Composite	16.5%	12.9%	56	3.9%	3
Cambridge Associates Global All PE (Qtr Lag)	--	10.9%	78	5.8%	37
Real Estate Composite	4.1%	8.5%	80	2.8%	31
NCREIF Property Index 1 Qtr. Lag	--	8.8%	75	3.8%	59
Real Assets Composite	4.4%	1.3%	58	5.8%	29
Real Assets Custom Blend	--	-1.3%	64	5.7%	29

Percent of Total equals 91.7% 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
		Emerging Markets (6%)	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	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Total Equity	1,655,596,782	15.4	-0.3	76	14.2	96	2.0	56	5.2	99	3.3	99	5.3	99
MSCI ACWI			0.0	69	16.2	76	1.4	70	9.7	74	6.7	87	8.3	94
Excess Return			-0.3		-2.0		0.6		-4.5		-3.4		-3.0	
InvMetrics Public DB Total Eq Gross Median			0.3		17.7		2.4		10.8		8.2		10.6	
Domestic Equity With Beta Overlay	1,308,760,704	12.2	1.0	59	16.8	99	1.2	71	7.3	99	--	--	--	--
Russell 3000			1.2	40	20.1	44	2.9	47	12.8	33	10.4	36	13.1	31
Excess Return			-0.2		-3.3		-1.7		-5.5					
InvMetrics Public DB US Eq Gross Median			1.1		20.0		2.8		12.4		10.2		12.8	
Domestic Equity	1,176,452,011	10.9	1.3	--	18.8	--	4.2	--	4.9	--	3.0	--	4.6	--
Russell 3000			1.2	--	20.1	--	2.9	--	12.8	--	10.4	--	13.1	--
Excess Return			0.1		-1.3		1.3		-7.9		-7.4		-8.5	
Tobam AB US Equity	309,318,900	2.9	0.1	59	18.4	55	0.0	54	--	--	--	--	--	--
Russell 3000			1.2	42	20.1	43	2.9	38	12.8	38	10.4	40	13.1	47
Excess Return			-1.1		-1.7		-2.9							
eV All US Equity Gross Median			0.7		19.0		0.7		11.5		9.7		12.9	
Large Cap Equity	866,887,166	8.1	1.7	30	19.0	50	5.8	21	6.4	91	4.7	96	5.7	99
S&P 500			1.7	30	20.6	38	4.3	29	13.4	32	10.8	33	13.2	42
Excess Return			0.0		-1.6		1.5		-7.0		-6.1		-7.5	
eV All US Equity Gross Median			0.7		19.0		0.7		11.5		9.7		12.9	
SsgA S&P500	863,750,957	8.0	1.7	30	19.1	50	5.8	21	8.5	78	7.1	82	8.2	99
S&P 500			1.7	30	20.6	38	4.3	29	13.4	32	10.8	33	13.2	42
Excess Return			0.0		-1.5		1.5		-4.9		-3.7		-5.0	
eV All US Equity Gross Median			0.7		19.0		0.7		11.5		9.7		12.9	
Russell US Large Cap Volatility	3,136,209	0.0												
Small Cap Equity	245,946	0.0												
Russell US Small Cap Volatility	245,946	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
International Equity With Beta Overlay	1,983,122,167	18.4	-1.0	9	10.7	74	-1.0	31	5.9	59	--	--	--	--
MSCI ACWI ex USA Gross			-1.7	41	12.1	47	-0.7	26	6.8	26	3.4	59	4.9	68
Excess Return			0.7		-1.4		-0.3		-0.9					
InvMetrics Public DB ex-US Eq Gross Median			-1.9		12.0		-2.1		6.2		3.6		5.5	
International Equity	479,144,770	4.5	-4.1	--	4.3	--	-2.7	--	3.5	--	1.8	--	5.2	--
MSCI ACWI			0.0	--	16.2	--	1.4	--	9.7	--	6.7	--	8.3	--
Excess Return			-4.1		-11.9		-4.1		-6.2		-4.9		-3.1	
International Developed	51,357,818	0.5	-1.0	35	5.7	99	-1.6	47	-0.1	99	1.5	98	8.3	10
MSCI EAFE			-1.1	36	12.8	52	-1.3	42	6.5	52	3.3	57	4.9	63
Excess Return			0.1		-7.1		-0.3		-6.6		-1.8		3.4	
InvMetrics Public DB Dev Mkt ex-US Eq Gross Median			-1.5		13.2		-1.8		6.6		3.7		5.9	
Russell International Volatility	4,476,368	0.0												
Tobam AB World Ex-US Equity	46,881,450	0.4	-1.2	29	6.1	94	-4.0	72	--	--	--	--	--	--
MSCI ACWI ex USA			-1.8	52	11.6	67	-1.2	46	6.3	61	2.9	78	4.5	91
Excess Return			0.6		-5.5		-2.8							
eV All ACWI ex-US Equity Gross Median			-1.8		13.1		-1.7		6.8		4.6		6.8	
International Emerging	427,786,953	4.0	-4.5	64	4.1	91	-3.1	91	4.3	64	0.7	89	2.7	88
MSCI Emerging Markets			-4.2	50	5.9	68	-2.0	82	6.0	35	2.3	46	3.4	57
Excess Return			-0.3		-1.8		-1.1		-1.7		-1.6		-0.7	
Mondrian	137,315,404	1.3	-4.8	78	5.3	72	0.0	51	3.5	91	0.5	97	3.4	91
MSCI Emerging Markets			-4.2	62	5.9	66	-2.0	69	6.0	56	2.3	71	3.4	92
Excess Return			-0.6		-0.6		2.0		-2.5		-1.8		0.0	
eV Emg Mkts Equity Gross Median			-3.8		7.9		0.0		6.3		3.4		4.9	
Gramercy Emerging Market Equity	400,250	0.0	0.0	2	0.0	99	0.0	51	9.4	11	4.7	25	--	--
MSCI Emerging Markets			-4.2	62	5.9	66	-2.0	69	6.0	56	2.3	71	3.4	92
Excess Return			4.2		-5.9		2.0		3.4		2.4			
eV Emg Mkts Equity Gross Median			-3.8		7.9		0.0		6.3		3.4		4.9	
Tobam	290,071,298	2.7	-4.3	63	3.6	86	-4.5	89	4.2	84	--	--	--	--
MSCI Emerging Markets			-4.2	62	5.9	66	-2.0	69	6.0	56	2.3	71	3.4	92
Excess Return			-0.1		-2.3		-2.5		-1.8					
eV Emg Mkts Equity Gross Median			-3.8		7.9		0.0		6.3		3.4		4.9	



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) 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)
		Credit Strategies/ High Yield Strategies (13%)	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
	Global Fixed Income (20% Target)	International Core (1%)	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
		International Credit (11%)	
		Emerging Market Debt (8%)	



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
Global Fixed Income With Beta Overlay	3,123,597,282	29.1	0.4	--	3.0	--	1.1	--	2.1	--	--	--	--	--
Total Fixed	3,862,776,915	35.9	0.8	91	5.1	96	3.0	99	6.8	1	5.7	1	7.9	1
<i>InvMetrics Public DB Total Fix Inc Gross Median</i>			1.5		8.0		8.4		3.1		3.3		4.3	
U.S. Credit Strategies	1,435,571,671	13.4	1.6	49	6.0	82	3.9	85	7.7	1	6.0	9	9.0	1
<i>50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index</i>			1.3	60	9.3	66	5.5	74	5.4	23	4.8	41	6.5	8
Excess Return			0.3		-3.3		-1.6		2.3		1.2		2.5	
<i>ICE BofAML US High Yield TR</i>			1.3	62	11.5	38	6.4	73	6.1	5	5.4	22	7.9	1
<i>eV Global Credit Fixed Income Gross Median</i>			1.5		11.1		9.8		4.3		3.9		5.0	
Golden Tree Asset Management	424,953,279	4.0	0.0	85	9.5	66	6.6	73	10.9	1	9.4	1	11.4	1
Beach Point Capital (Formerly Post)	163,969,278	1.5	2.3	39	5.9	82	4.5	81	7.6	1	6.9	2	9.1	1
Golden Tree Distressed Debt	21,730,254	0.2	0.0	85	-1.4	99	-1.0	99	3.5	72	5.7	12	--	--
Mackay / Gold Coast	115,678,540	1.1	3.9	2	9.9	63	7.5	71	5.7	6	3.9	50	7.5	1
MD SASS Waterfall Victoria	24,385,226	0.2	4.5	--	-3.6	--	-5.7	--	4.3	--	--	--	--	--
Russell Interest Rate Hedging	8,026,271	0.1	-24.8	99	-64.6	99	-67.6	99	-28.8	99	-31.2	99	-25.2	99
Stone Tower Credit (Apollo)	95,250,776	0.9	0.7	65	4.3	82	5.5	64	7.4	3	5.2	17	--	--
Gold Coast Capital IV	107,831,124	1.0	2.8	--	8.2	--	7.9	--	5.9	--	--	--	--	--
Waterfall Asset Management	60,395,501	0.6	7.3	--	18.5	--	8.2	--	14.9	--	--	--	--	--
Waterfall Victoria	52,603,808	0.5	3.6	--	7.1	--	8.8	--	9.1	--	--	--	--	--
Stone Tower Offshore Credit (Apollo)	360,716,039	3.4	1.8	--	4.6	--	3.8	--	4.9	--	5.1	--	8.7	--
AG Capital	4,718	0.0	0.0	85	-2.8	99	7.5	71	-2.6	99	-3.0	99	4.5	70



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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
Non-U.S. Fixed Income Composite	2,427,205,243	22.6	0.3	94	4.6	98	2.6	99	6.5	1	5.6	1	6.4	2
<i>BBgBarc Global Aggregate TR</i>			<u>0.7</u>	91	6.3	87	<u>7.6</u>	78	<u>1.6</u>	99	<u>2.0</u>	96	<u>2.3</u>	99
Excess Return			-0.4		-1.7		-5.0		4.9		3.6		4.1	
<i>InvMetrics Public DB Total Fix Inc Gross Median</i>			1.5		8.0		8.4		3.1		3.3		4.3	
Non-U.S. Credit Composite	1,388,369,322	12.9	1.8	--	5.2	--	3.1	--	8.7	--	6.6	--	7.5	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-3.0</u>	--	<u>4.1</u>	--	<u>-1.2</u>	--	<u>3.5</u>	--	<u>1.4</u>	--	<u>4.7</u>	--
Excess Return			4.8		1.1		4.3		5.2		5.2		2.8	
Marathon/Gold Coast	255,895,182	2.4	5.4	1	9.9	63	11.7	25	12.9	1	8.7	1	--	--
Halcyon Asset Management	178,380,924	1.7	1.1	67	2.6	99	-2.0	99	6.9	2	--	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-3.0</u>	99	<u>4.1</u>	96	<u>-1.2</u>	99	<u>3.5</u>	72	<u>1.4</u>	87	<u>4.7</u>	65
Excess Return			4.1		-1.5		-0.8		3.4					
<i>eV Global Credit Fixed Income Gross Median</i>			1.5		11.1		9.8		4.3		3.9		5.0	
Caim Composite	412,285,935	3.8	3.0	14	10.4	60	4.6	81	8.4	1	5.9	9	5.3	48
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-3.0</u>	99	<u>4.1</u>	96	<u>-1.2</u>	99	<u>3.5</u>	72	<u>1.4</u>	87	<u>4.7</u>	65
Excess Return			6.0		6.3		5.8		4.9		4.5		0.6	
<i>eV Global Credit Fixed Income Gross Median</i>			1.5		11.1		9.8		4.3		3.9		5.0	
Alcentra - KT1	424,178,527	3.9	-0.7	--	0.8	--	0.4	--	10.5	--	--	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-3.0</u>	--	<u>4.1</u>	--	<u>-1.2</u>	--	<u>3.5</u>	--	<u>1.4</u>	--	<u>4.7</u>	--
Excess Return			2.3		-3.3		1.6		7.0					
Alcentra SP1 - KT1	20,350,405	0.2	1.8	--	14.0	--	14.0	--	--	--	--	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-3.0</u>	--	<u>4.1</u>	--	<u>-1.2</u>	--	<u>3.5</u>	--	<u>1.4</u>	--	<u>4.7</u>	--
Excess Return			4.8		9.9		15.2							
Alcentra SP2 - KT1	21,103,952	0.2	-18.9	--	-24.7	--	-21.9	--	--	--	--	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-3.0</u>	--	<u>4.1</u>	--	<u>-1.2</u>	--	<u>3.5</u>	--	<u>1.4</u>	--	<u>4.7</u>	--
Excess Return			-15.9		-28.8		-20.7							
Alcentra SP3 - KT1	46,170,856	0.4	21.5	--	11.0	--	10.9	--	9.0	--	--	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-3.0</u>	--	<u>4.1</u>	--	<u>-1.2</u>	--	<u>3.5</u>	--	<u>1.4</u>	--	<u>4.7</u>	--
Excess Return			24.5		6.9		12.1		5.5					
Alcentra SP4 - KT1	30,003,540	0.3	0.1	--	--	--	--	--	--	--	--	--	--	--
<i>ICE BofAML Euro High Yield Constrained TR</i>			<u>-3.0</u>	--	<u>4.1</u>	--	<u>-1.2</u>	--	<u>3.5</u>	--	<u>1.4</u>	--	<u>4.7</u>	--
Excess Return			3.1											



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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
Emerging Markets Debt Composite	1,038,835,921	9.7	-1.7	85	4.0	96	2.3	97	2.8	84	3.8	55	4.6	65
50% JPM EMBI Global Diversified/50% JPM GBI - EM Global Diversified			0.4	43	10.4	47	10.9	34	3.9	66	3.2	61	4.7	65
Excess Return			-2.1		-6.4		-8.6		-1.1		0.6		-0.1	
eV All Emg Mkts Fixed Inc Gross Median			0.0		10.3		10.2		4.5		4.2		6.4	
Ashmore Emerging Markets Liquid Investments	178,998,469	1.7	0.4	43	10.4	47	10.9	34	3.9	66	3.2	61	4.7	65
JP Morgan GBI - EM Global Diversified Index			-0.8	66	7.9	76	10.1	52	3.1	80	0.6	87	2.5	87
Excess Return			1.2		2.5		0.8		0.8		2.6		2.2	
eV All Emg Mkts Fixed Inc Gross Median			0.0		10.3		10.2		4.5		4.2		6.4	
Ashmore Local Currency	91,504,926	0.9	-4.2	99	3.0	89	4.7	68	3.2	58	0.0	94	--	--
JP Morgan ELMI+ TR USD			-2.1	91	1.4	94	2.6	84	1.8	79	-0.2	94	0.4	96
Excess Return			-2.1		1.6		2.1		1.4		0.2			
JP Morgan EMBI Global Index			1.3	43	12.1	12	10.7	13	3.8	50	5.1	18	6.5	18
eV All Global Fixed Inc Gross Median			1.1		7.9		7.1		3.8		3.2		4.0	
Gramercy Funds Management LLC	665,127,806	6.2	-1.8	85	1.3	99	-1.8	99	1.4	98	5.5	27	--	--
JP Morgan ELMI+ TR USD			-2.1	89	1.4	99	2.6	97	1.8	95	-0.2	97	0.4	99
Excess Return			0.3		-0.1		-4.4		-0.4		5.7			
JP Morgan EMBI Global Index			1.3	22	12.1	24	10.7	39	3.8	67	5.1	41	6.5	45
eV All Emg Mkts Fixed Inc Gross Median			0.0		10.3		10.2		4.5		4.2		6.4	
PGIM Fixed Income	103,204,720	1.0	2.9	4	13.2	9	15.5	1	5.6	20	4.2	51	--	--
JP Morgan ELMI+ TR USD			-2.1	89	1.4	99	2.6	97	1.8	95	-0.2	97	0.4	99
Excess Return			5.0		11.8		12.9		3.8		4.4			
JP Morgan EMBI Global Index			1.3	22	12.1	24	10.7	39	3.8	67	5.1	41	6.5	45
eV All Emg Mkts Fixed Inc Gross Median			0.0		10.3		10.2		4.5		4.2		6.4	



ABSOLUTE RETURN (ALPHA POOL)

<p>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)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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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
Alpha Pool Composite	1,643,961,552	15.3	0.4	46	6.9	37	5.2	3	6.6	13	4.6	17	7.8	1
<i>91 Day T-Bill + 3%</i>			<u>1.2</u>	26	<u>4.0</u>	76	<u>5.3</u>	3	<u>4.6</u>	55	<u>4.0</u>	30	<u>3.5</u>	66
Excess Return			-0.8		2.9		-0.1		2.0		0.6		4.3	
Alpha Liquidity (Ssga)	163,916,475	1.5	0.6	66	2.1	92	2.7	84	1.8	80	1.2	85	0.8	95
Apollo Global Management	65,084,616	0.6	4.8	1	20.2	1	17.8	1	22.1	1	--	--	--	--
Ares Eco Master Fund II	471,841,724	4.4	1.0	57	10.6	24	3.9	75	5.1	29	--	--	--	--
Birch Grove Credit Strategies	137,225,816	1.3	1.5	34	5.8	72	6.7	55	6.4	9	5.5	11	--	--
Sterling Stamos	286,367,168	2.7	-0.6	81	3.0	89	4.4	71	7.9	2	5.8	9	5.9	24
Zais	134,900,070	1.3	-2.3	93	0.2	96	0.2	92	5.0	30	3.8	41	22.7	1
Zais Group Invest Advisors	298,051,495	2.8	-1.3	86	7.2	58	4.2	73	9.8	1	7.8	1	--	--
Zais Zephyr A 6 LP	43,426,037	0.4	10.2	--	20.8	--	23.6	--	16.6	--	--	--	--	--
Apollo Accord	2,571,890	0.0	0.6	68	-2.8	99	0.1	92	--	--	--	--	--	--
ZAIS Zephyr 8	15,202,575	0.1	1.4	--	--	--	--	--	--	--	--	--	--	--



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

Real Estate Portfolio (7% Target)	Core Real Estate (3.5%)	Core Real Estate	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
	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 PRISA III 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 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	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Private Equity Composite	1,775,540,194	16.5	4.1	21	9.1	30	13.8	35	15.7	41	12.9	56	13.2	70
<i>Cambridge Associates Global All PE (Qtr Lag)</i>			<u>3.5</u>	33	<u>7.0</u>	40	<u>10.5</u>	61	<u>14.5</u>	66	<u>10.9</u>	78	<u>13.7</u>	46
Excess Return			0.6		2.1		3.3		1.2		2.0		-0.5	
<i>Russell 3000</i>			1.2	79	20.1	1	2.9	96	12.8	75	10.4	85	13.1	74
<i>Cambridge Associates US All PE (1 Qtr Lag)</i>			4.6	15	7.8	35	11.9	50	15.6	41	11.7	64	14.7	23
Real Estate Composite	436,908,397	4.1	1.3	69	5.5	47	6.9	48	5.9	96	8.5	80	8.8	90
<i>NCREIF Property Index 1 Qtr. Lag</i>			<u>1.5</u>	61	<u>4.8</u>	53	<u>6.5</u>	53	<u>6.9</u>	81	<u>8.8</u>	75	<u>9.2</u>	83
Excess Return			-0.2		0.7		0.4		-1.0		-0.3		-0.4	
<i>InvMetrics Public DB Real Estate Pub+Priv Gross Median</i>			1.6		5.3		6.8		7.6		9.6		11.4	
Real Assets Composite	469,809,368	4.4	-0.7	73	3.9	73	-2.4	73	1.9	74	1.3	58	2.3	99
<i>Real Assets Custom Blend</i>			<u>-0.8</u>	73	<u>2.2</u>	80	<u>-2.1</u>	73	<u>0.8</u>	80	<u>-1.3</u>	64	<u>0.0</u>	99
Excess Return			0.1		1.7		-0.3		1.1		2.6		2.3	
<i>67% Bloomberg Commodity/ 33% Barclays US TIPS</i>			-0.8	73	4.7	70	-2.1	73	-0.2	90	-3.9	72	-1.6	99
Timber	80,364,841	0.7	0.6	--	-8.1	--	-7.4	--	-3.0	--	-0.7	--	0.7	--
<i>NCREIF Timberland 1 Qtr. Lag</i>			<u>1.0</u>	--	<u>1.9</u>	--	<u>2.9</u>	--	<u>3.3</u>	--	<u>4.6</u>	--	<u>4.0</u>	--
Excess Return			-0.4		-10.0		-10.3		-6.3		-5.3		-3.3	
Infrastructure	175,780,577	1.6	-4.9	--	7.6	--	-10.7	--	5.6	--	3.3	--	5.2	--
<i>Russell 3000</i>			<u>1.2</u>	--	<u>20.1</u>	--	<u>2.9</u>	--	<u>12.8</u>	--	<u>10.4</u>	--	<u>13.1</u>	--
Excess Return			-6.1		-12.5		-13.6		-7.2		-7.1		-7.9	
Commodities	213,663,950	2.0	2.5	--	6.5	--	7.5	--	6.0	--	3.2	--	3.6	--
<i>Bloomberg Commodity Index</i>			<u>-1.8</u>	--	<u>3.1</u>	--	<u>-6.6</u>	--	<u>-1.5</u>	--	<u>-7.2</u>	--	<u>-4.3</u>	--
Excess Return			4.3		3.4		14.1		7.5		10.4		7.9	



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

NEPC, LLC

REAL ESTATE PERFORMANCE ENDED JUNE 30, 2019

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	\$ 112,188	2.18	6.89%
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	\$ 12,198,723	\$ 3,440,335	\$ 13,477,002	1.38	15.08%
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	\$ 15,233,347	\$ -	0.61	-9.31%
Bryanston Real Estate Opportunity Fund II, L.P.	2009	\$ 20,000,000	\$ 8,589,256	\$ 11,847,997	\$ -	1.38	10.19%
Bryanston Retail Opportunity Fund, L.P.	2004	\$ 20,000,000	\$ 8,228,165	\$ 18,828,095	\$ 8,489,324	3.32	70.78%
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	\$ 3,687,253	\$ 21,309,152	\$ 6,525,334	7.06	26.22%
Invesco Asian Real Estate Partners II (USD), LP	2007	\$ 20,000,000	\$ 8,412,833	\$ 11,324,754	\$ 143,567	1.37	7.54%
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	\$ 10,180,821	\$ 63,423,098	1.38	7.30%
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	\$ 6,539,413	\$ 1,034,223	\$ 5,923,628	1.06	6.51%
Kayne Anderson Real Estate Partners V	2017	\$ 10,000,000	\$ 8,857,979	\$ -	\$ 8,607,487	0.99	-1.33%
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	\$ 1,165,045	1.21	6.90%
Oaktree Real Estate Opportunities V	2012	\$ 25,000,000	\$ 25,000,000	\$ 37,781,185	\$ 2,357,099	1.58	13.24%
Partners Group Project Camino	2016	\$ 8,415,776	\$ 5,735,568	\$ -	\$ 7,464,069	1.30	9.55%
Partners Group RE Secondary 2013 (USD) A	2014	\$ 65,000,000	\$ 49,541,590	\$ 18,625,904	\$ 53,644,879	1.47	15.69%
Partners Group RE Secondary 2017 (USD) A	2017	\$ 75,000,000	\$ 22,530,341	\$ 118,130	\$ 24,652,974	1.10	10.63%
Pramerica Real Estate Capital VI	2016	\$ 23,133,514	\$ 13,696,576	\$ 6,345,268	\$ 9,192,205	1.13	9.77%
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	\$ 46,105,553	\$ 169,357,135	1.47	8.10%
Prudential PRISA III	2003	\$ 75,000,000	\$ 54,806,772	\$ 46,506,501	\$ 51,004,784	1.66	18.00%
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	\$ 28,756,613	\$ 128,185	1.46	11.55%
Starwood Capital Hospitality Fund I-2	2006	\$ 30,000,000	\$ 30,000,000	\$ 26,182,035	\$ 4,252,017	1.01	0.19%
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	\$ 2,028,221	0.81	-2.29%
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	\$ 2,847,785	\$ 789,339	0.16	-15.86%
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	\$ 5,893,527	2.23	13.64%
Walton Street Real Estate Fund V, LP	2006	\$ 40,000,000	\$ 40,000,000	\$ 24,654,170	\$ 5,893,527	0.76	-2.97%
Total: San Bernardino		\$1,252,777,960	\$ 1,079,012,114	\$ 957,034,102	\$444,524,634	1.28	4.22%

Note: All metrics are calculated since inception

* Denotes cash adjusted



REAL ASSETS PERFORMANCE ENDED JUNE 30, 2019

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	\$ 13,220,391	\$ 40,328,869	1.18	5.35%
Hancock Timberland VII	2005	\$ 90,000,000	\$ 90,000,000	\$ 77,327,100	\$ 27,420,355	1.16	1.33%
Hancock Timberland VIII	2006	\$ 40,000,000	\$ 40,000,000	\$ 7,221,925	\$ 29,757,793	0.92	-0.76%
Highstar Capital III, L.P.	2007	\$ 60,000,000	\$ 59,119,119	\$ 51,263,318	\$ 12,235,577	1.07	0.92%
Timbervest Crossover Partners II, L.P.	2008	\$ 30,000,000	\$ 30,000,000	\$ 15,495,000	\$ 12,906,961	0.95	-0.85%
Timbervest Partners II, L.P.	2007	\$ 50,000,000	\$ 50,000,000	\$ 40,150,000	\$ 12,944,756	1.06	0.64%
Total: San Bernardino		\$ 315,403,354	\$ 314,522,473	\$ 204,677,734	\$ 135,594,311	1.08	0.91%

Note: All metrics are calculated since inception

** Denotes cash adjusted*



PRIVATE EQUITY PERFORMANCE ENDED JUNE 30, 2019

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Cumulative Distributions	Valuation	TVPI Ratio	IRR
Advantech Capital II, L.P.	2018	3,000,000	1,045,048	-	955,261	0.91	-15.80%
Advent International GPE VIII, LP	2016	10,000,000	8,409,999	-	10,349,955	1.23	15.71%
Apollo Accord Fund, LP	2017	30,000,000	7,500,000	5,511,478	2,571,890	1.08	5.90%
Apollo European Principal Finance Fund (Feeder), LP	2009	53,899,305	46,403,245	69,083,088	293,314	1.49	11.80%
Apollo Investment Fund VII, L.P.	2008	10,000,000	8,756,428	15,706,389	1,633,988	1.98	22.90%
Apollo PCPL Webb V	2010	4,844,398	4,844,398	5,196,757	30,555	1.08	6.36%
Apollo PCPL Webb VIII	2010	4,734,303	4,734,303	12,146,258	2,101	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	47,686,469	199,120	44,478,404	0.94	-3.13%
Aurora Equity Partners III, L.P.	2005	25,000,000	23,544,536	41,738,196	187,019	1.67	13.61%
Aurora Equity Partners IV, L.P.	2012	20,000,000	16,785,610	30,861,074	7,694,557	1.99	18.84%
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	327,076	1.37	12.35%
Blue Point Capital Partners IV, LP	2018	3,550,000	1,020,391	-	1,048,176	1.03	4.93%
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	16,968,459	2.12	9.49%
Catalyst Fund LP IV, L.P.	2015	8,000,000	6,556,305	-	9,246,042	1.41	14.55%
Centerbridge Capital Partners II	2018	2,244,228	1,929,729	91,960	1,120,268	0.63	-39.06%
Charlesbank Equity Fund VIII	2015	7,500,000	6,775,721	4,424,468	5,827,593	1.51	18.32%
Clearlake Capital Partners V, L.P.	2018	10,000,000	4,715,565	61,006	7,147,089	1.53	63.83%
Crestline Portfolio Financing Fund	2018	50,000,000	18,108,110	-	19,692,609	1.09	9.52%
DRI II, L.P.	2009	20,000,000	19,917,669	26,302,807	-	1.33	19.64%
European Strategic Partners 2004	2004	240,974,965	220,679,633	265,791,019	14,627,340	1.27	4.01%
European Strategic Partners 2008	2010	31,441,878	28,273,807	28,212,632	13,305,943	1.46	9.11%
Flywheel Co-investment LLC	2018	8,000,000	6,400,000	796,264	6,397,727	1.12	12.37%
GTCR Fund XII	2018	8,000,000	1,980,800	70,534	1,603,887	0.85	-23.87%
Industry Ventures Direct, LP	2016	25,000,000	17,071,292	1,900,632	17,025,714	1.11	7.74%
Industry Ventures Fund V	2008	10,000,000	9,500,000	22,139,234	6,969,685	3.06	30.21%
Industry Ventures Fund VI	2011	20,000,000	18,400,000	17,915,137	6,294,716	1.32	7.76%
Industry Ventures Partnership Holdings Fund II, L.P.	2012	25,000,000	23,500,000	15,979,999	51,082,786	2.85	23.51%
Industry Ventures Partnership Holdings Fund III, L.P.	2013	25,000,000	23,277,042	4,673,818	40,973,195	1.96	21.89%
Industry Ventures Partnership Holdings Fund III-A, L.P.	2014	12,500,000	10,793,396	3,582,626	7,558,205	1.03	1.04%
Industry Ventures Partnership Holdings IV, LP	2016	25,000,000	16,000,000	1,224,603	17,857,469	1.19	14.25%
Industry Ventures Partnership Holdings V, LP	2018	25,000,000	2,125,000	65,247	2,694,348	1.30	47.55%
Industry Ventures Secondary VII, L.P.	2013	25,000,000	22,500,000	17,417,276	18,737,725	1.61	15.61%
Industry Ventures Secondary VIII	2017	25,000,000	11,750,000	2,748,194	14,840,664	1.50	61.38%
Industry Ventures Special Opportunities II-A	2016	12,500,000	867,500	439,632	1,079,748	1.75	47.47%
Industry Ventures Tech Buyout LP	2018	25,000,000	3,418,023	-	3,064,477	0.90	-10.96%
Insight Venture Partners III Co-Invest	2014	4,000,000	4,000,000	8,864,478	1,883,586	2.69	27.22%
Kayne Anderson Energy Fund VII, L.P.	2017	10,000,000	7,378,811	215,495	7,634,263	1.06	2.85%
Kayne Anderson Private Energy Income Fund II, L.P.	2018	20,000,000	3,820,000	430,171	3,492,677	1.03	2.57%
Kayne Partners Fund IV (QP), LP	2017	20,000,000	10,402,580	-	11,405,123	1.08	8.01%
Kayne Solutions Fund LP	2018	20,000,000	5,331,927	1,746,256	4,302,858	1.13	12.27%
Lexington Capital Partners VI-B	2006	25,000,000	24,591,319	32,662,950	2,368,988	1.42	6.94%
Lexington Capital Partners VII (Offshore)	2011	25,000,000	20,409,757	25,978,274	6,599,889	1.59	15.06%
Lexington Middle Market I	2005	25,000,000	24,771,942	37,697,581	3,049,124	1.64	11.65%
Lexington Middle Market II - Offshore	2008	10,000,000	9,773,736	12,812,563	3,485,390	1.66	14.18%
Madison Dearborn VII	2016	10,000,000	6,158,845	-	7,369,073	1.19	11.23%
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	26,888,038	-	1.54	14.40%
Partners Group Access 1003, L.P.	2018	3,186,023	1,447,387	-	1,626,122	1.12	18.33%
Partners Group Access 1065 LP	2019	7,750,000	6,833,699	-	6,833,699	1.00	0.00%
Partners Group Access 1083 LP	2019	8,040,000	4,400,000	-	4,400,000	1.00	0.00%
Partners Group Access 216 LP	2017	7,236,560	8,893,335	-	14,016,843	1.58	25.68%
Partners Group Access 384, L.P.	2017	8,360,000	8,360,000	-	6,543,479	0.78	-9.50%
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	4,465,137	4,843,537	19,449	4,508,720	0.93	-1.54%

Note: All metrics are calculated since inception

* Denotes Cash adjusted value



PRIVATE EQUITY PERFORMANCE ENDED JUNE 30, 2019

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Cumulative Distributions	Valuation	TVPI Ratio	IRR
Partners Group Access 680 L.P.	2015	7,276,842	7,202,719	3,544	12,851,966	1.78	17.66%
Partners Group Access 780 LP	2018	5,922,000	1,113,863	-	2,619,154	2.35	136.41%
Partners Group Access 906, L.P.	2017	15,000,000	15,000,000	17,269	20,300,363	1.35	19.49%
Partners Group Access 932, L.P.	2018	7,395,010	6,628,136	-	7,002,927	1.06	8.95%
Partners Group Access 952 LP	2018	6,097,115	6,092,930	206,881	5,690,580	0.97	-2.96%
Partners Group Access 967 L.P.	2018	14,727,006	14,727,006	-	15,868,715	1.08	8.06%
Partners Group Access 990 LP	2018	14,438,450	13,980,450	-	16,087,678	1.15	14.89%
Partners Group Borssele Access 2, L.P.	2018	14,041,787	1,071,804	-	863,989	0.81	-25.23%
Partners Group CA Infrastructure, LP Inc	2016	6,246,500	2,630,627	-	3,486,118	1.32	15.52%
Partners Group Client Access 28 LP	2018	7,361,897	7,361,897	1,586	7,938,518	1.08	8.08%
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	19,649,768	1.58	24.02%
Partners Group Direct Investment 2012, L.P.	2013	18,188,103	16,509,621	13,841,499	16,854,797	1.86	18.82%
Partners Group European Mandate, L.P.	2004	238,298,688	196,155,787	261,514,414	3,827,850	1.36	5.70%
Partners Group European Mezzanine 2005	2005	101,076,654	101,076,654	121,118,042	1,058,975	1.21	3.09%
Partners Group Global Opp Limited	2017	4,001,119	4,001,119	4,816,866	2,144,097	1.74	37.83%
Partners Group Greenlink Access 2, L.P.	2019	10,447,929	784,406	-	789,788	1.01	0.69%
Partners Group Hawthorne Holdings LLC	2018	9,000,000	2,432,384	-	2,343,651	0.96	-5.24%
Partners Group Lock Access, L.P.	2018	6,004,797	2,849,911	-	3,601,018	1.26	26.83%
Partners Group Princess Learning IC LTD	2014	8,936,785	6,593,355	-	17,127,562	2.60	33.92%
Partners Group Seabras Holdings, LLC	2015	4,660,000	3,355,016	-	3,134,195	0.93	-2.02%
Partners Group Secondary 2006 LP	2006	54,481,832	51,077,528	59,438,017	739,232	1.18	3.37%
Partners Group Secondary 2008, L.P.	2009	26,660,682	23,690,725	32,261,012	2,987,787	1.48	8.91%
Partners Group Starfrost Limited	2014	6,289,767	3,736,806	1,880,411	3,979,275	1.57	10.06%
Pathway Private Equity Fund VII, L.P.	2004	904,500,000	817,633,742	1,085,532,925	367,800,579	1.74	10.58%
Quad-C Partners IX, LP	2017	8,000,000	3,180,979	17,427	3,296,078	1.04	3.40%
Quantum Energy Partners IV, L.P.	2014	2,907,301	2,359,080	1,184,616	346,936	0.57	-19.01%
Quantum Energy Partners VI, L.P.	2015	8,000,000	5,918,261	2,845,111	7,356,996	1.72	34.10%
Quantum Energy Partners VII Co-Investment Fund, LP	2017	1,300,000	473,811	525	467,597	0.99	-0.98%
Quantum Energy Partners VII, LP	2017	6,700,000	2,885,401	117,410	2,861,412	1.03	2.81%
Quantum Parallel Partners VI-C, LP	2015	3,290,000	2,073,691	153,819	2,886,836	1.46	23.20%
Redview Capital II L.P.	2018	3,000,000	375,579	3,126	104,344	0.29	-98.84%
Riverside Micro-Cap Fund V, L.P.	2018	4,700,000	408,480	-	314,854	0.77	-22.92%
Siguler Guff DOF II	2006	30,000,000	30,000,000	42,439,715	-	1.42	8.66%
Siguler Guff DOF III	2008	10,000,000	9,700,000	13,937,532	1,565,579	1.60	10.55%
SL Capital SOF I LP	2014	25,000,000	20,721,610	15,791,950	12,163,568	1.35	11.39%
SL Capital SOF III LP	2017	25,000,000	10,483,161	23,253	14,578,838	1.39	44.49%
Spectrum Equity Investors VIII-A	2018	8,000,000	1,840,000	-	2,097,616	1.14	40.95%
TCP Direct Lending Fund VIII-L, LLC	2016	40,000,000	31,377,482	1,721,775	31,917,815	1.07	6.10%
TCV IX, L.P.	2016	10,000,000	7,356,000	-	7,767,497	1.06	4.85%
TCW/Crescent Mezzanine IV, L.P.	2006	40,000,000	39,590,976	44,955,179	87,644	1.14	3.03%
TCW/Crescent Mezzanine V, L.P.	2008	20,000,000	20,291,044	26,182,895	604,667	1.32	9.24%
Tennenbaum Energy Opportunities Fund, LP	2016	20,000,000	13,163,829	4,513,906	13,682,779	1.38	15.96%
Tennenbaum Opportunities Fund V, L.P.	2007	10,000,000	10,000,000	11,678,297	2,370,968	1.40	5.12%
Tennenbaum Opportunities Fund VI, L.P.	2011	20,000,000	11,633,962	11,278,455	6,964,688	1.57	7.25%
Tennenbaum Special Situations Fund IX	2015	50,000,000	45,678,928	10,710,072	45,042,240	1.22	11.74%
Tennenbaum Waterman Fund, LP	2012	70,000,000	70,000,000	43,766,234	69,815,586	1.62	11.17%
The Huron Fund V	2017	10,000,000	2,585,000	-	2,915,222	1.13	16.91%
The Resolute Fund II - Secondary	2016	9,330,964	7,821,224	1,130,418	7,322,765	1.08	7.03%
The Resolute Fund III	2014	8,000,000	7,244,772	2,863,553	8,408,202	1.56	20.03%
The Resolute Fund IV, L.P.	2018	6,000,000	1,232,681	328,297	1,435,320	1.43	63.85%
Thoma Bravo Discover Fund I	2015	3,000,000	2,469,789	315,308	4,356,228	1.89	31.28%
Thoma Bravo Discover Fund II	2018	4,000,000	933,576	-	880,898	0.94	-7.03%
Thoma Bravo XI	2014	8,000,000	7,086,492	4,406,939	12,923,135	2.45	25.45%
Thoma Bravo XII	2016	10,000,000	9,305,612	-	11,784,303	1.27	13.93%
Thoma Bravo XIII	2018	8,000,000	2,857,965	-	2,824,797	0.99	-1.85%
Towerbrook III 2ndry	2017	1,520,778	379,714	302,058	177,644	1.25	18.24%
Towerbrook IV (OS) 2ndry	2017	760,389	528,528	60,831	669,199	1.38	24.75%
Vista Foundation Fund III	2016	10,000,000	7,029,890	-	9,731,826	1.38	25.67%
Waterfall Sentinel Co-Investments	2019	30,000,000	15,000,000	-	14,958,501	1.00	-0.28%
Waterfall Sentinel Fund	2019	30,000,000	12,359,551	-	12,259,322	0.99	-0.81%
Total: San Bernardino		3,246,034,722	2,625,077,324	2,674,744,883	1,298,898,303	1.50	9.13%

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



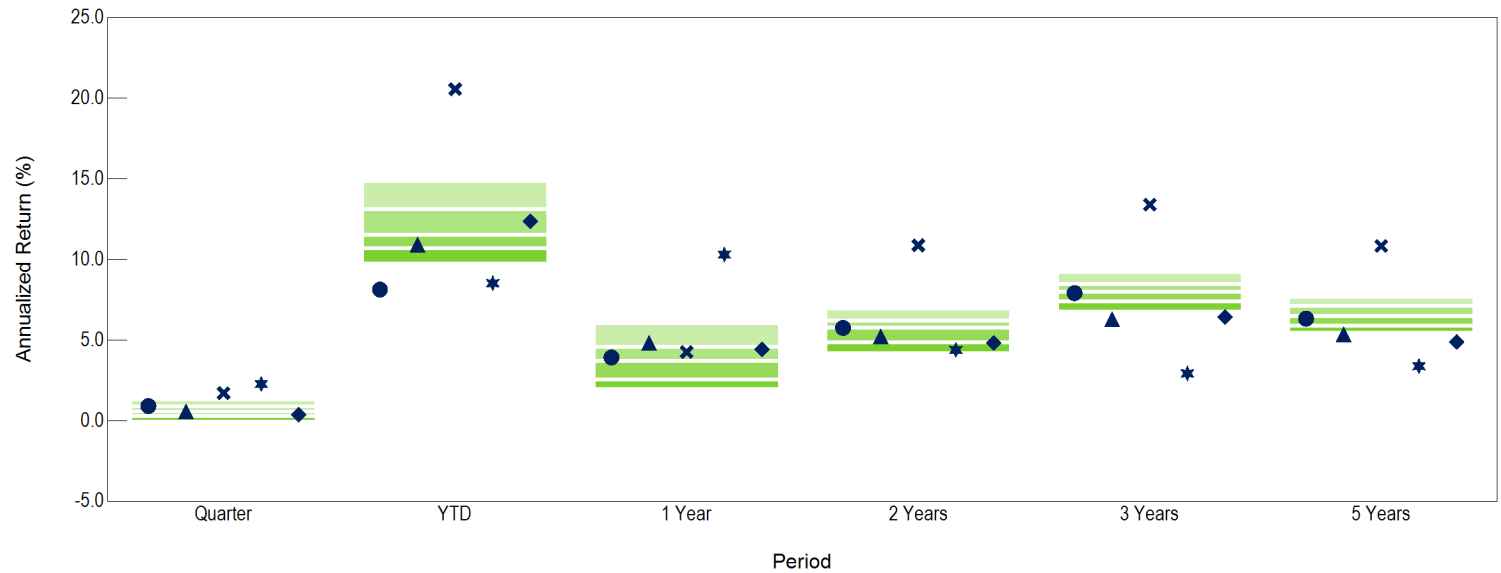
APPENDIX MARKET OUTLOOK

NEPC, LLC

San Bernardino County Employees' Retirement Association

TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

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



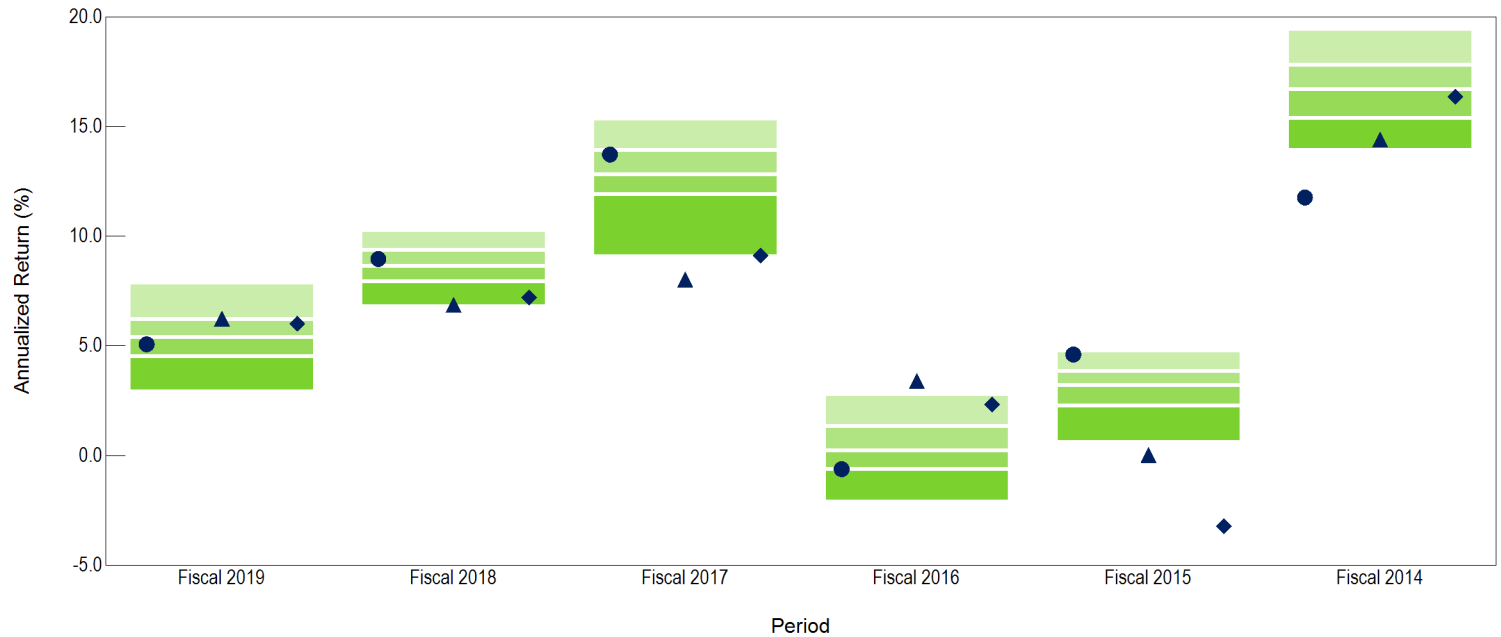
	Return (Rank)											
5th Percentile	1.3		14.8		6.0		6.9		9.2		7.6	
25th Percentile	0.9		13.1		4.6		6.2		8.5		7.1	
Median	0.6		11.5		3.7		5.8		8.0		6.5	
75th Percentile	0.3		10.7		2.6		4.9		7.4		5.9	
95th Percentile	0.0		9.7		2.0		4.2		6.8		5.5	
# of Portfolios	46		46		46		46		46		45	
● Total Fund	0.9	(25)	8.1	(99)	3.9	(45)	5.7	(56)	7.9	(56)	6.3	(64)
▲ Policy Index	0.6	(51)	10.9	(70)	4.8	(20)	5.2	(71)	6.3	(99)	5.4	(98)
× S&P 500	1.7	(2)	20.6	(1)	4.3	(35)	10.9	(1)	13.4	(1)	10.8	(1)
* BBgBarc US Aggregate TR	2.3	(1)	8.5	(99)	10.3	(1)	4.4	(88)	2.9	(99)	3.4	(99)
◆ 60% MSCI ACWI (Net) / 40% FTSE WGBI	0.4	(69)	12.4	(31)	4.4	(34)	4.8	(76)	6.4	(98)	4.9	(99)



San Bernardino County Employees' Retirement Association

TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

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



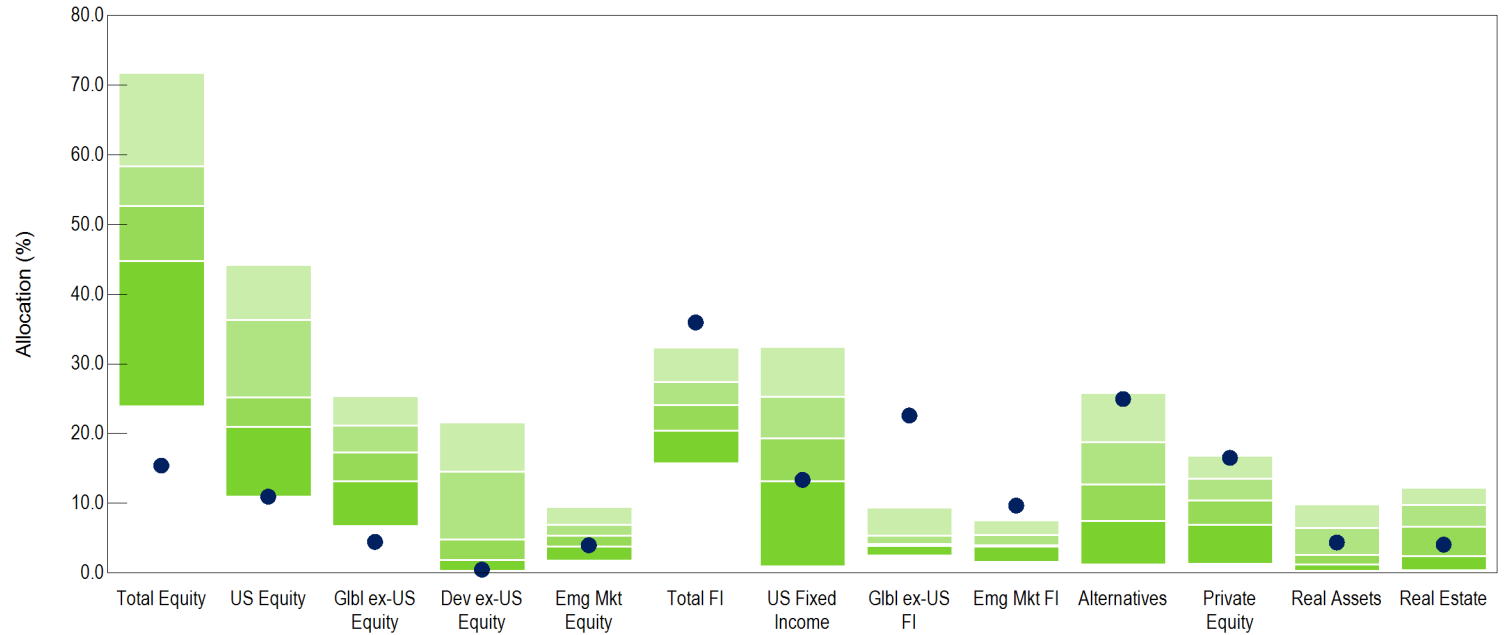
	Return (Rank)											
5th Percentile	7.9		10.3		15.3		2.8		4.8		19.4	
25th Percentile	6.2		9.4		14.0		1.4		3.9		17.8	
Median	5.4		8.7		12.9		0.3		3.2		16.7	
75th Percentile	4.5		8.0		11.9		-0.6		2.3		15.4	
95th Percentile	2.9		6.8		9.1		-2.1		0.6		13.9	
# of Portfolios	88		62		108		91		92		65	
● Total Fund	5.1	(59)	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	(35)	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

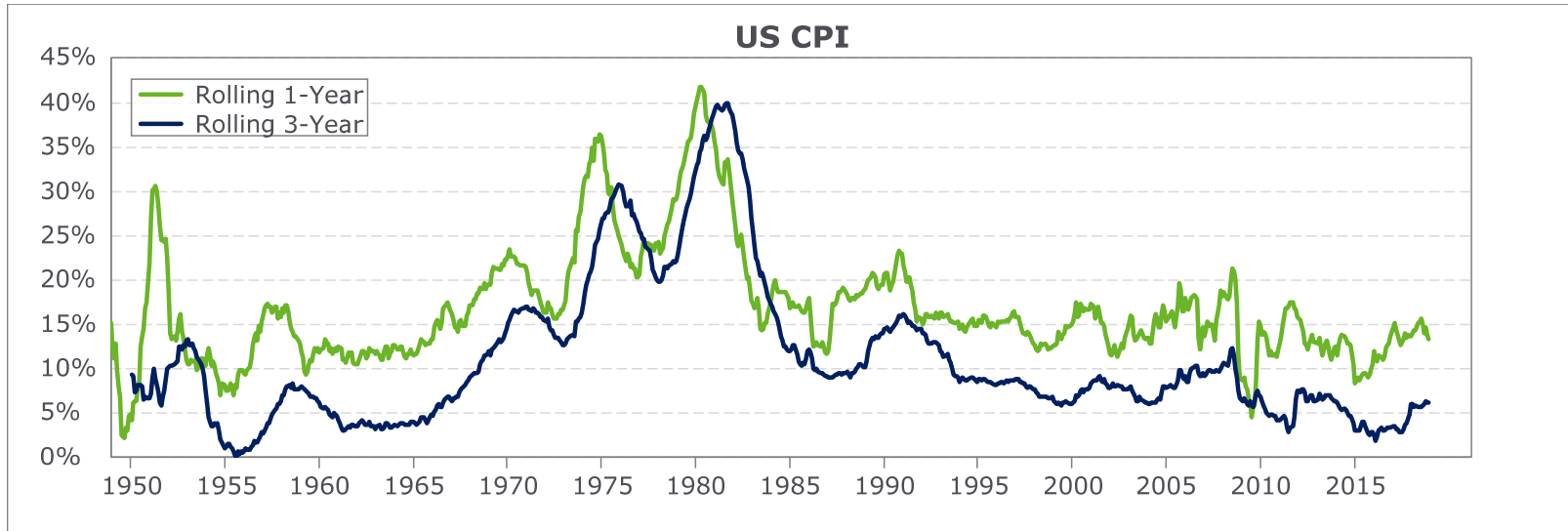
Total Plan Allocation vs. InvMetrics Public DB > \$1B Gross



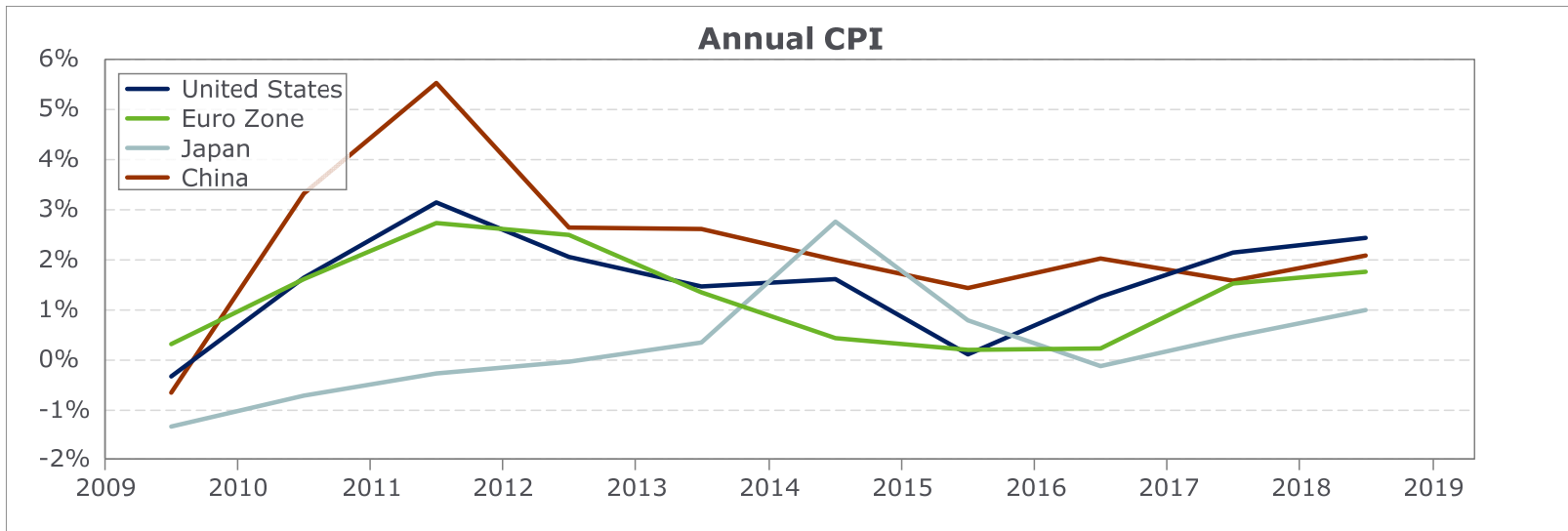
	Allocation (Rank)													
5th Percentile	71.7	44.2	25.4	21.6	9.5	32.3	32.5	9.4	7.6	25.8	16.8	9.9	12.3	--
25th Percentile	58.4	36.4	21.2	14.7	7.0	27.4	25.3	5.4	5.6	18.8	13.6	6.6	9.8	--
Median	52.7	25.3	17.4	4.9	5.4	24.2	19.4	4.3	4.1	12.8	10.5	2.7	6.8	--
75th Percentile	44.8	21.1	13.3	2.0	3.9	20.5	13.2	4.0	3.9	7.5	7.0	1.3	2.5	--
95th Percentile	24.0	11.0	6.8	0.4	1.9	15.8	1.1	2.6	1.7	1.3	1.4	0.4	0.5	--
# of Portfolios	38	30	37	17	25	38	31	16	15	32	25	14	35	--
● Total Fund	15.4 (99)	10.9 (97)	4.5 (99)	0.5 (94)	4.0 (71)	35.9 (3)	13.4 (70)	22.6 (1)	9.7 (1)	25.0 (10)	16.5 (7)	4.4 (31)	4.1 (67)	--



INFLATION



Source: FactSet



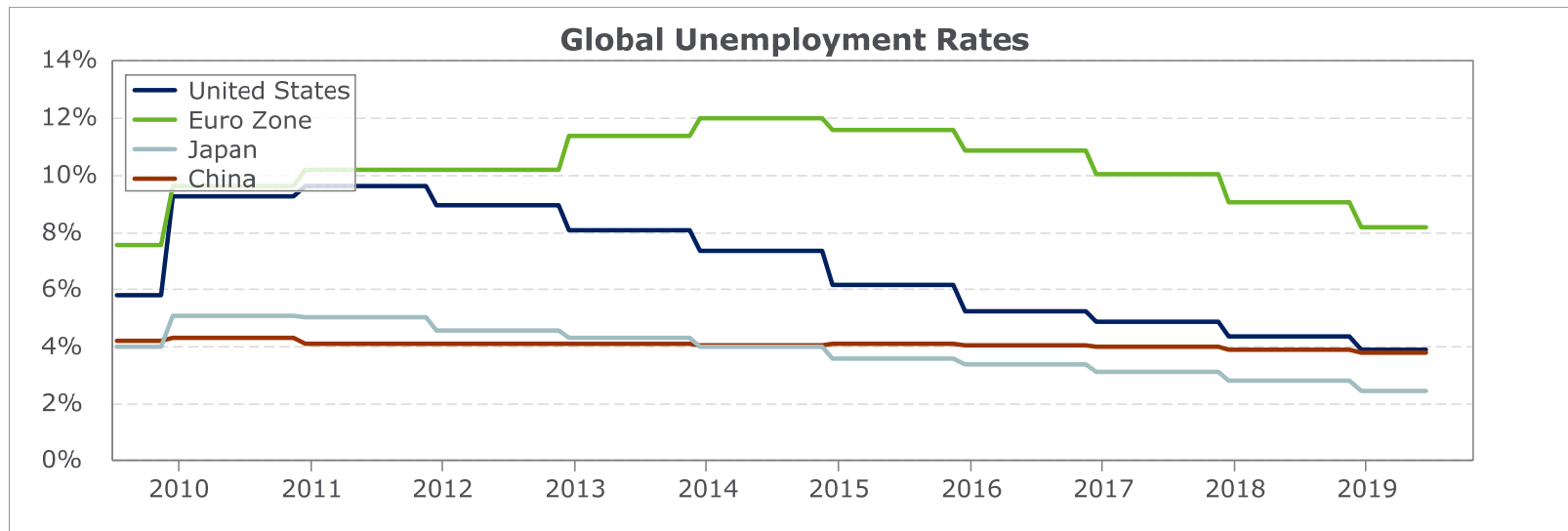
Source: FactSet



UNEMPLOYMENT



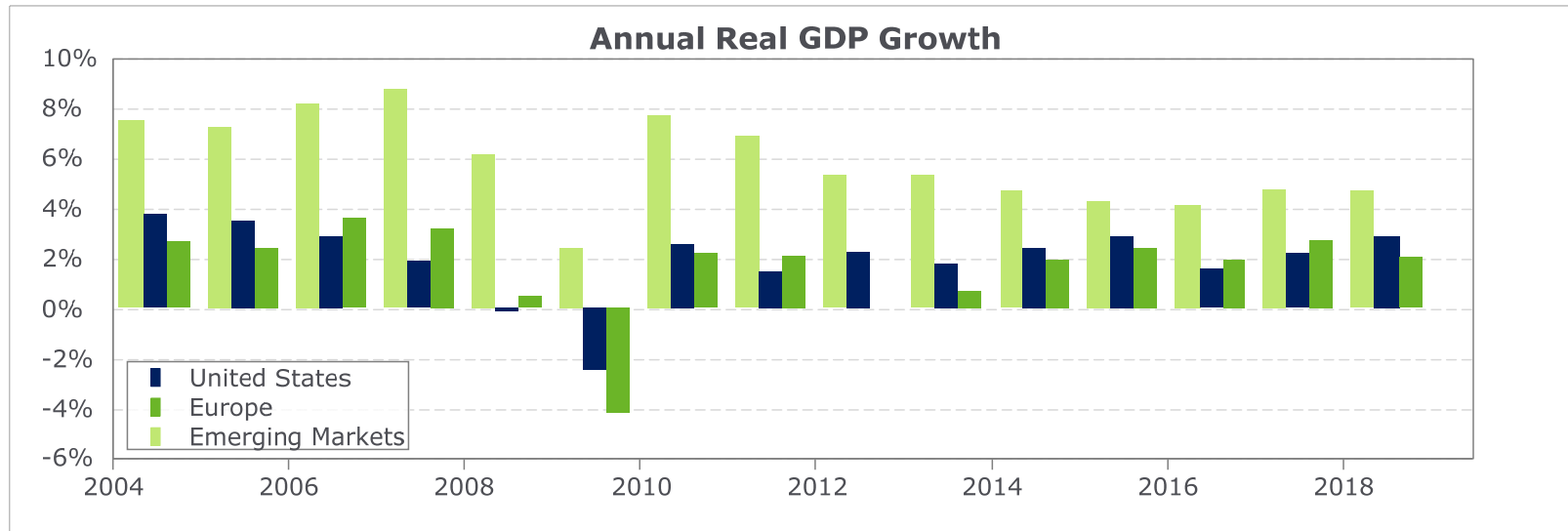
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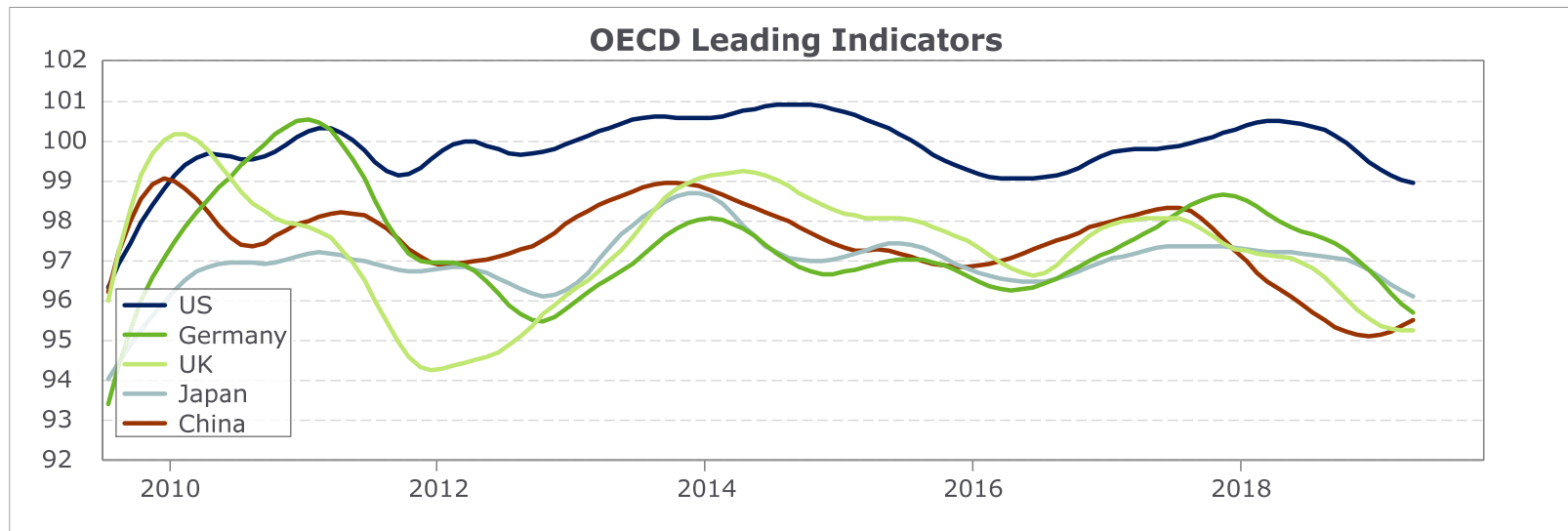
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ECONOMIC INDICATORS



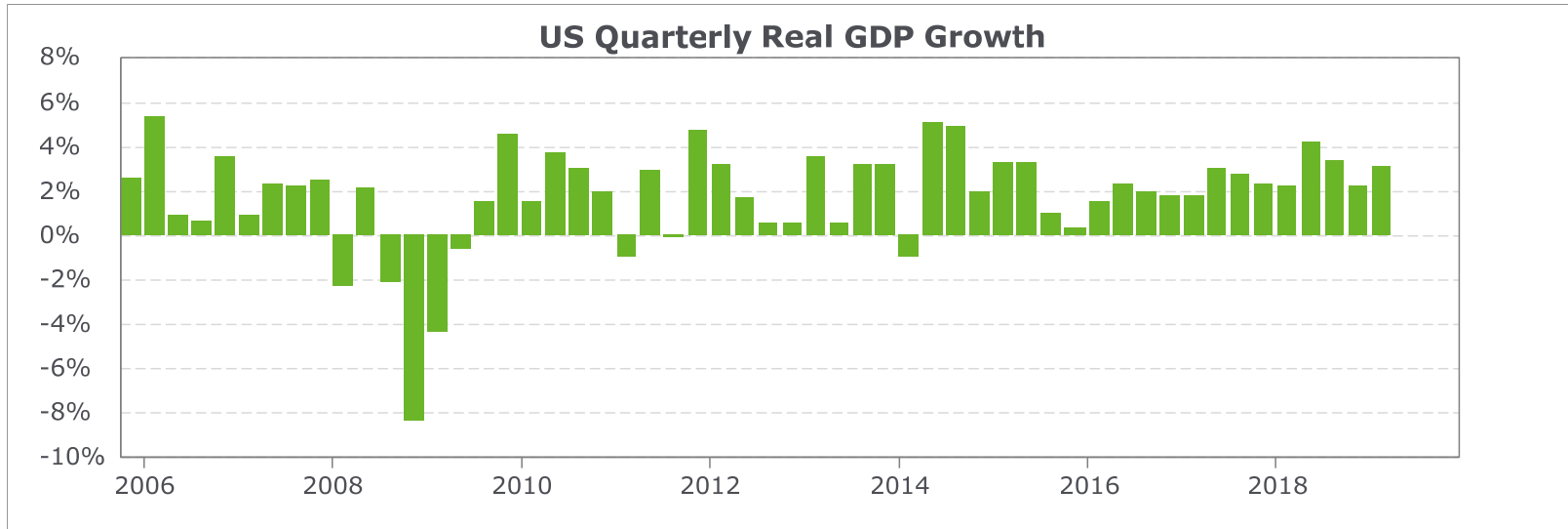
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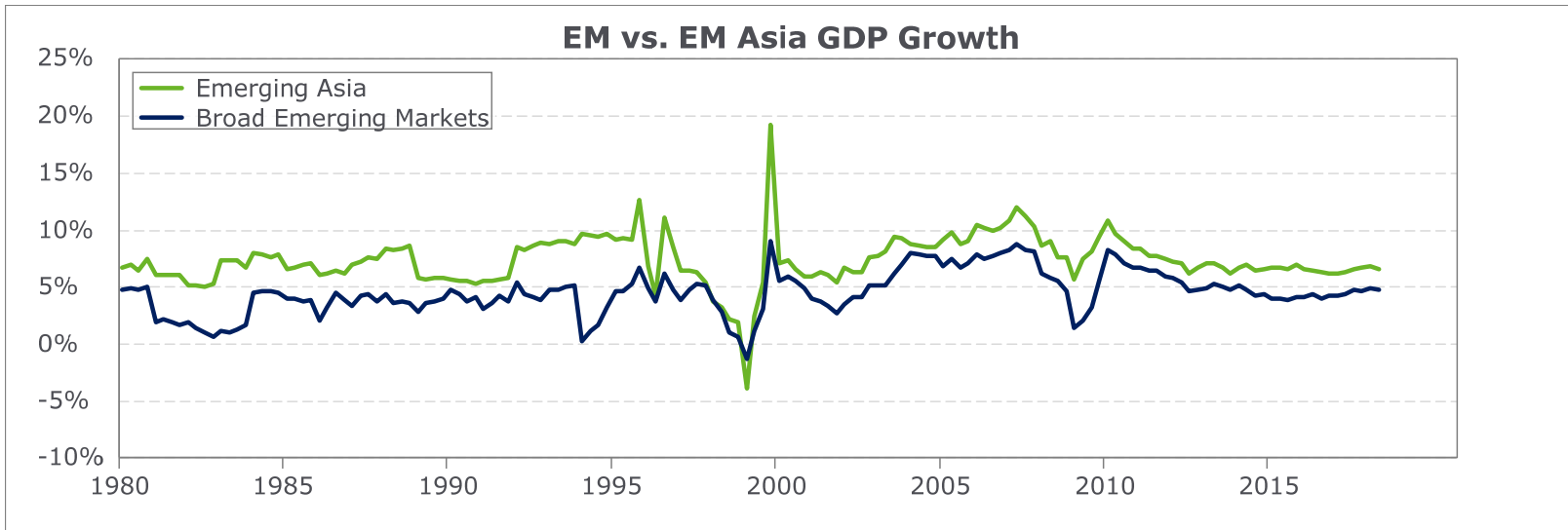
Source: FactSet



GROSS DOMESTIC PRODUCT



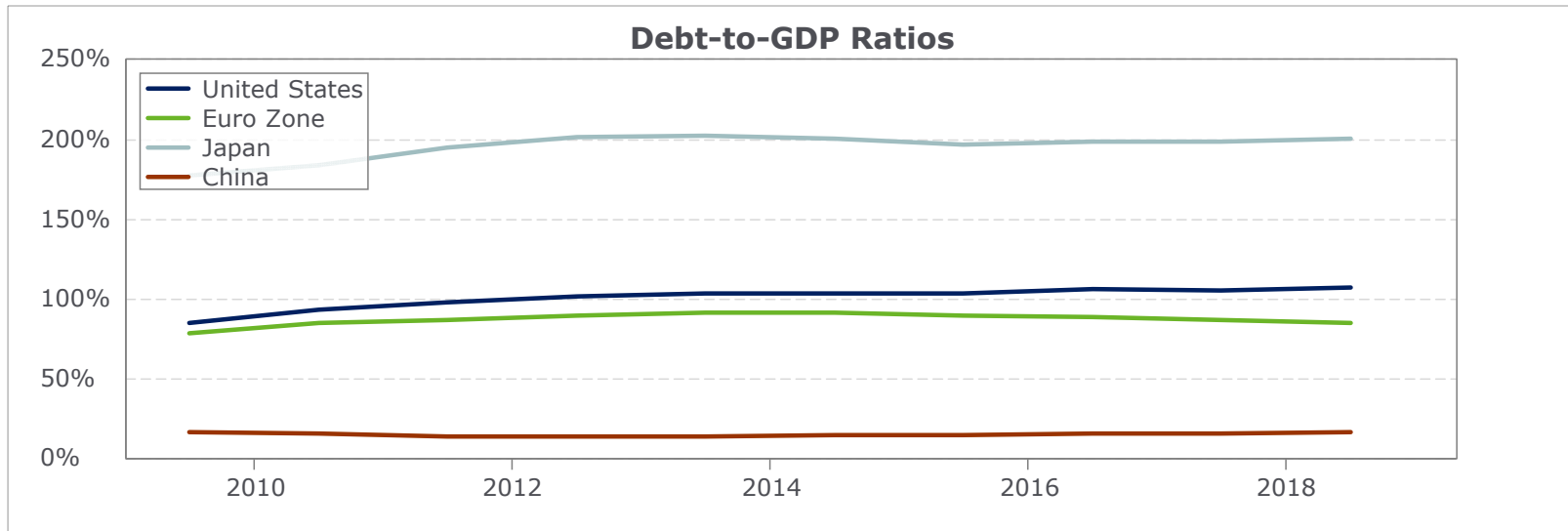
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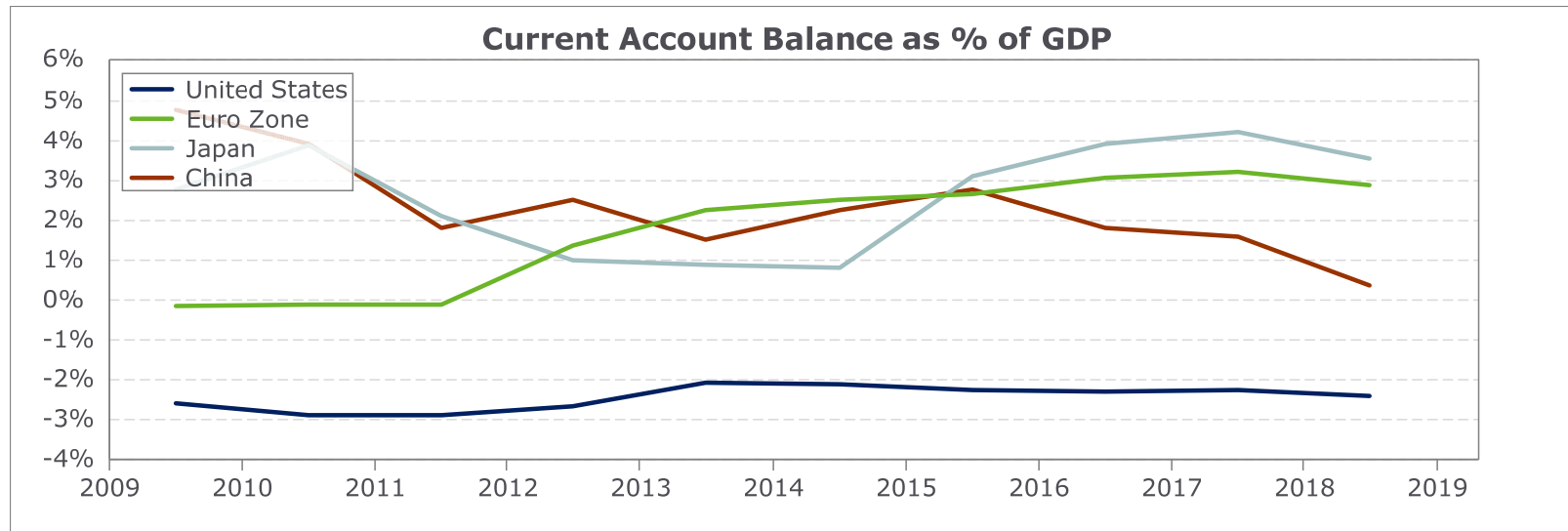
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GROSS DOMESTIC PRODUCT METRICS



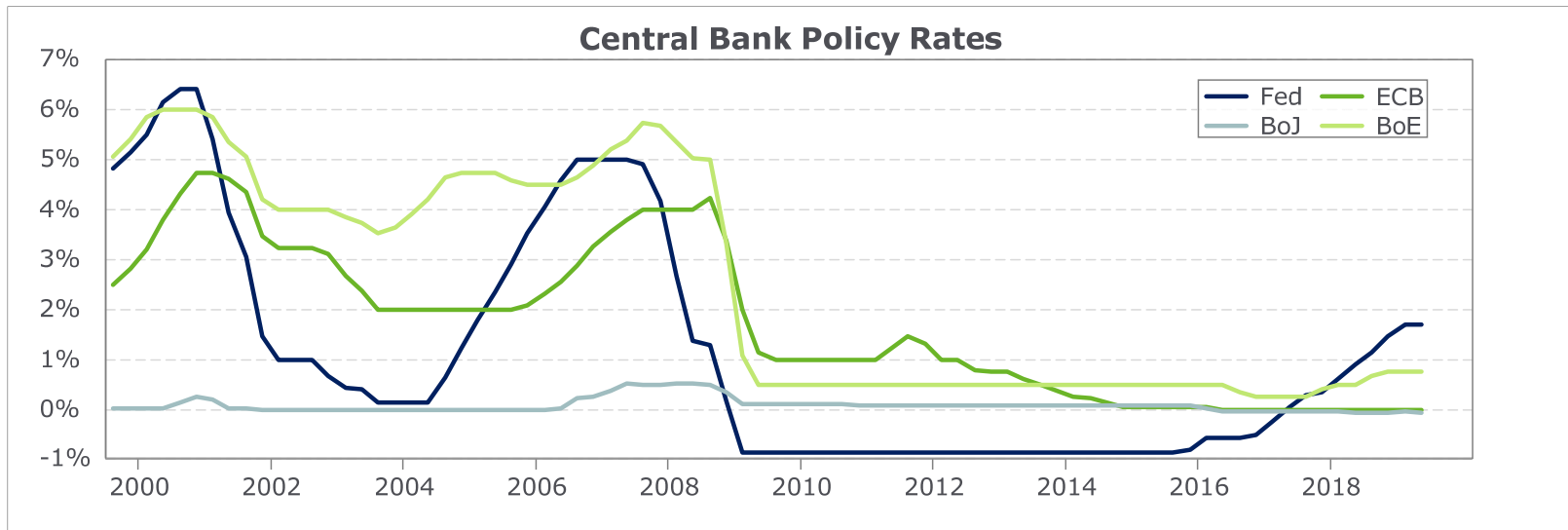
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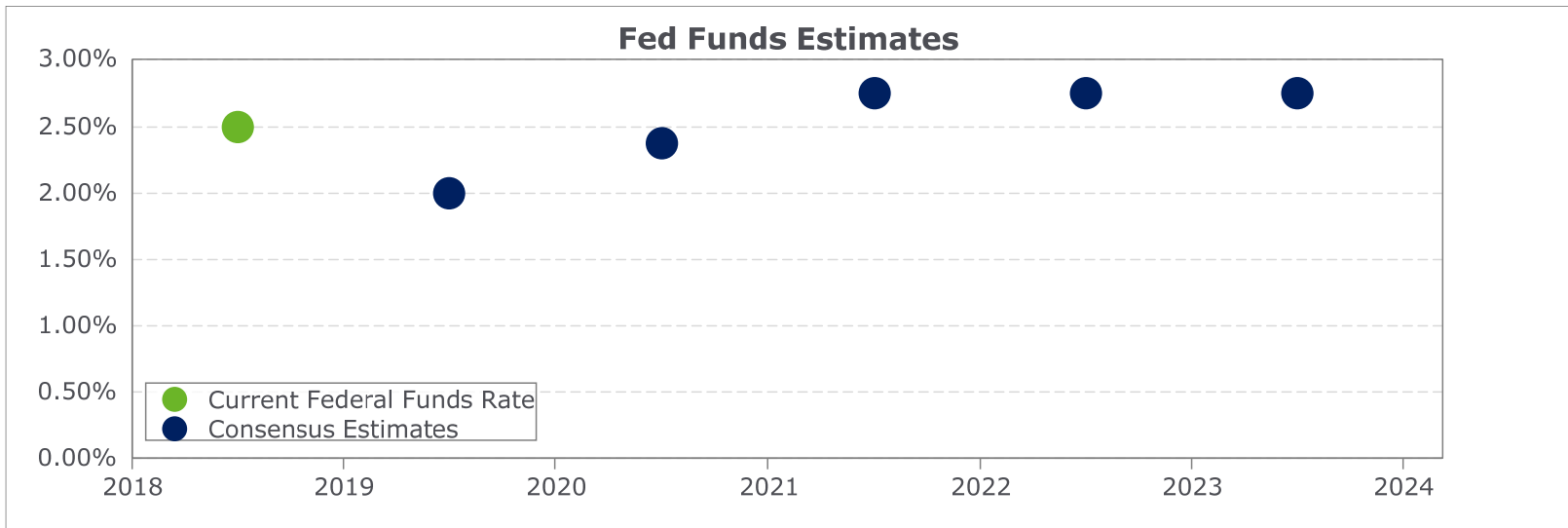
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CENTRAL BANK RATES



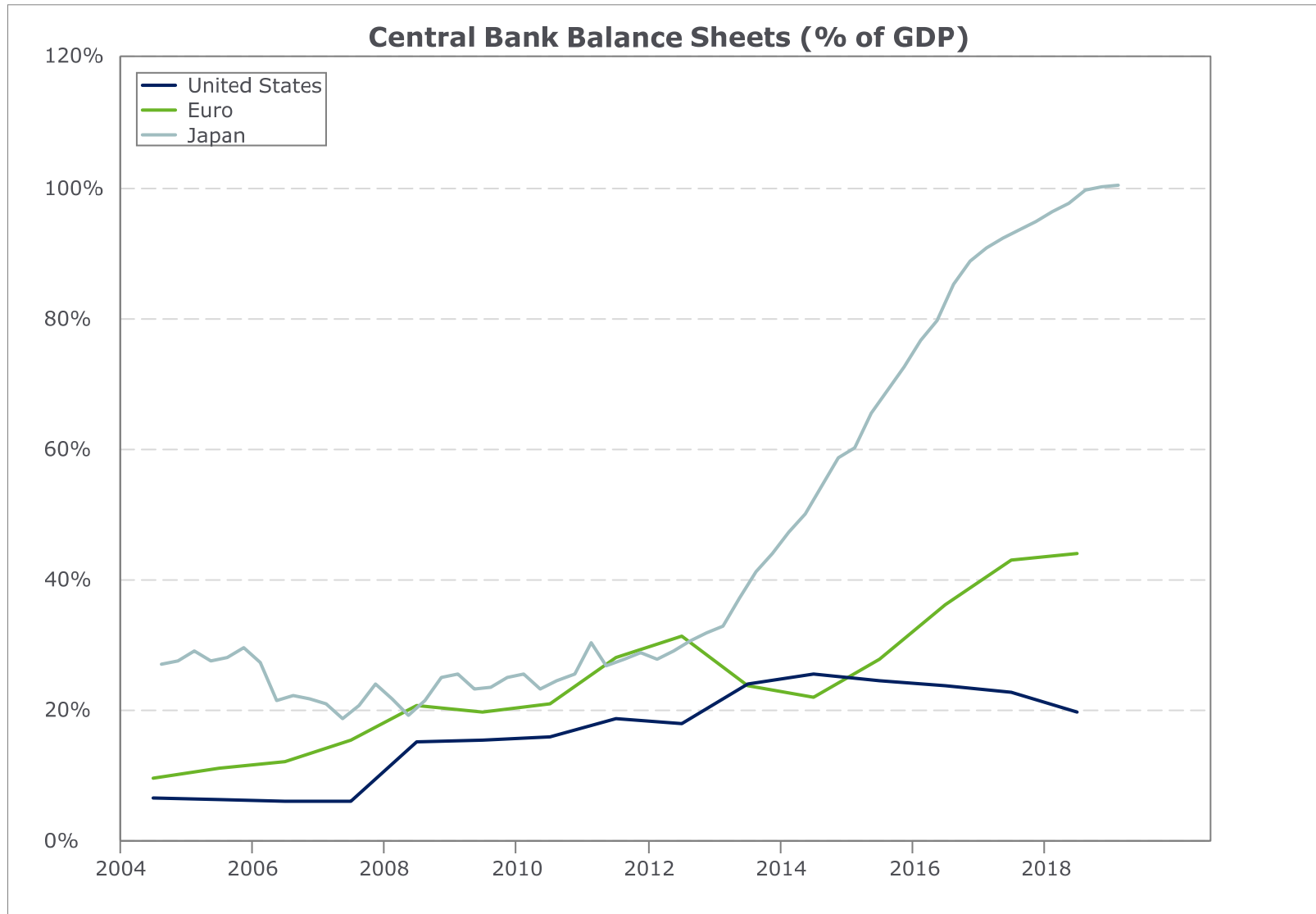
Source: FactSet



Source: FactSet



CENTRAL BANK BALANCE SHEETS



Source: FactSet



CURRENCIES

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

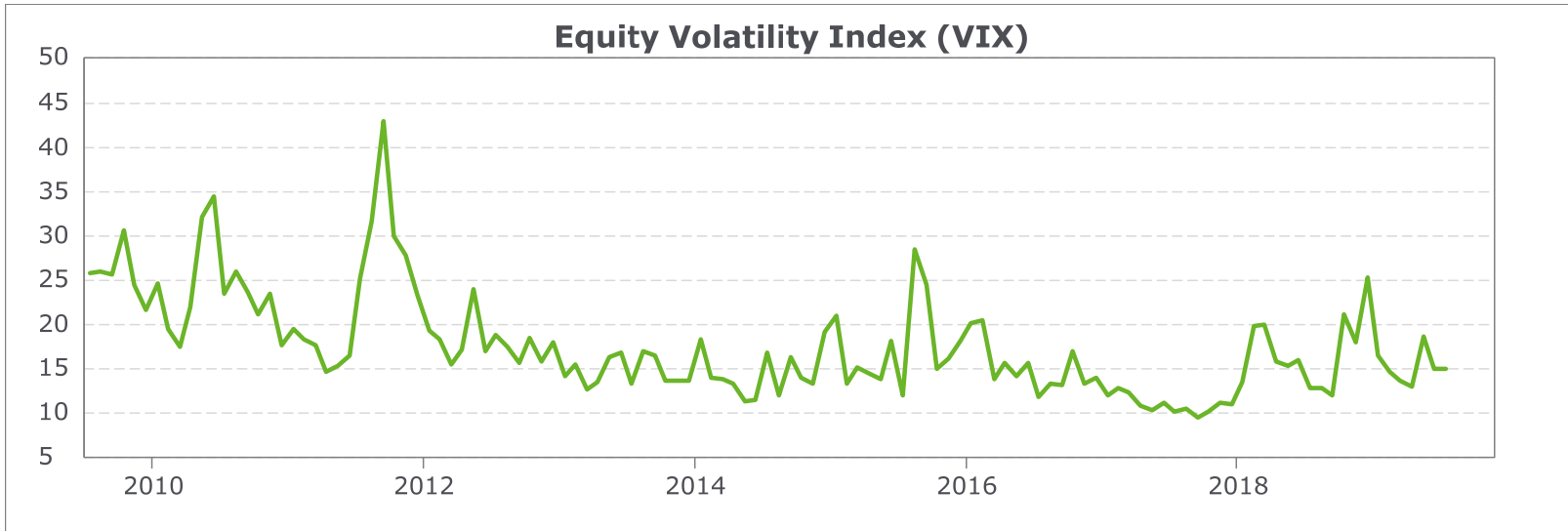
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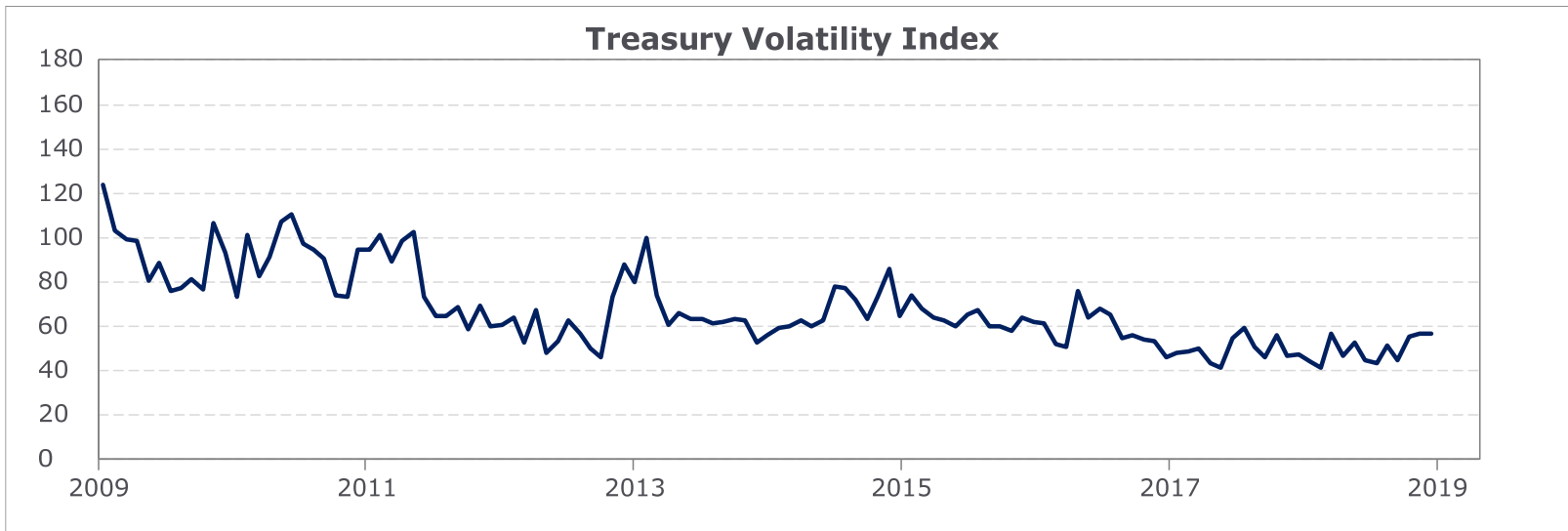
Source: FactSet



VOLATILITY



Source: FactSet



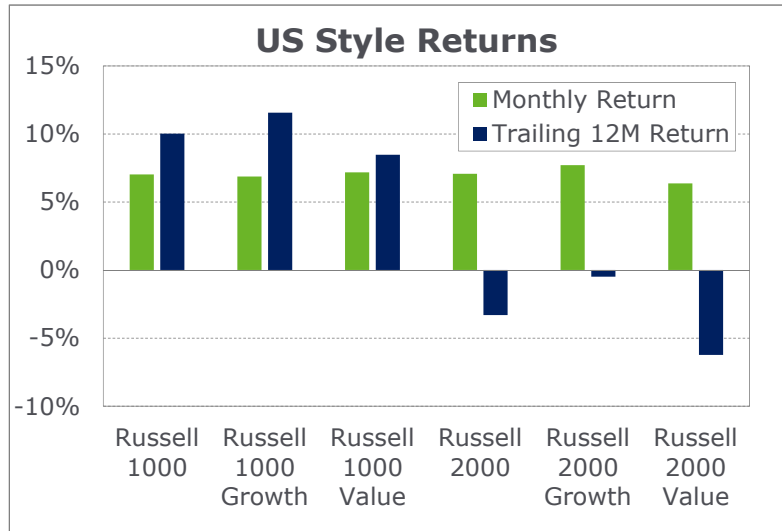
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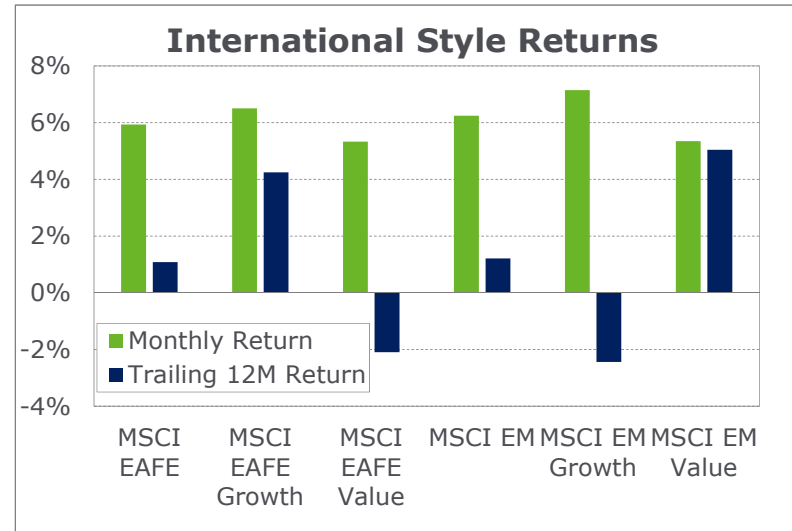
EQUITY

NEPC, LLC

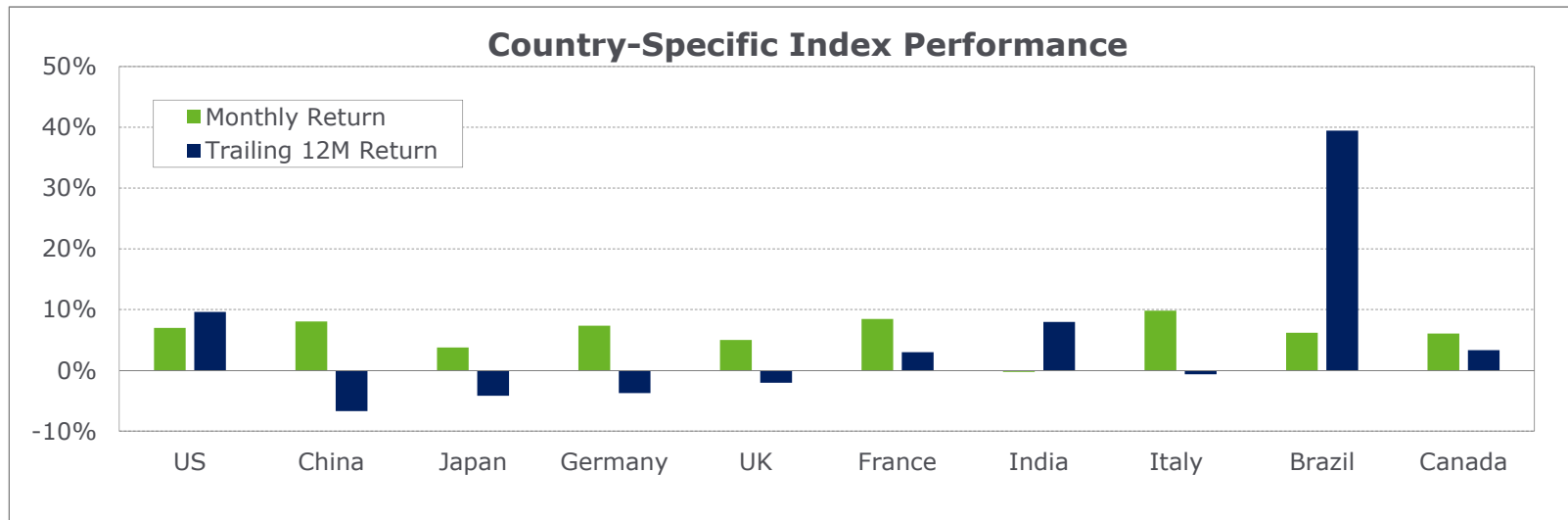
EQUITY INDEX PERFORMANCE



Source: FactSet



Source: FactSet



Source: FactSet



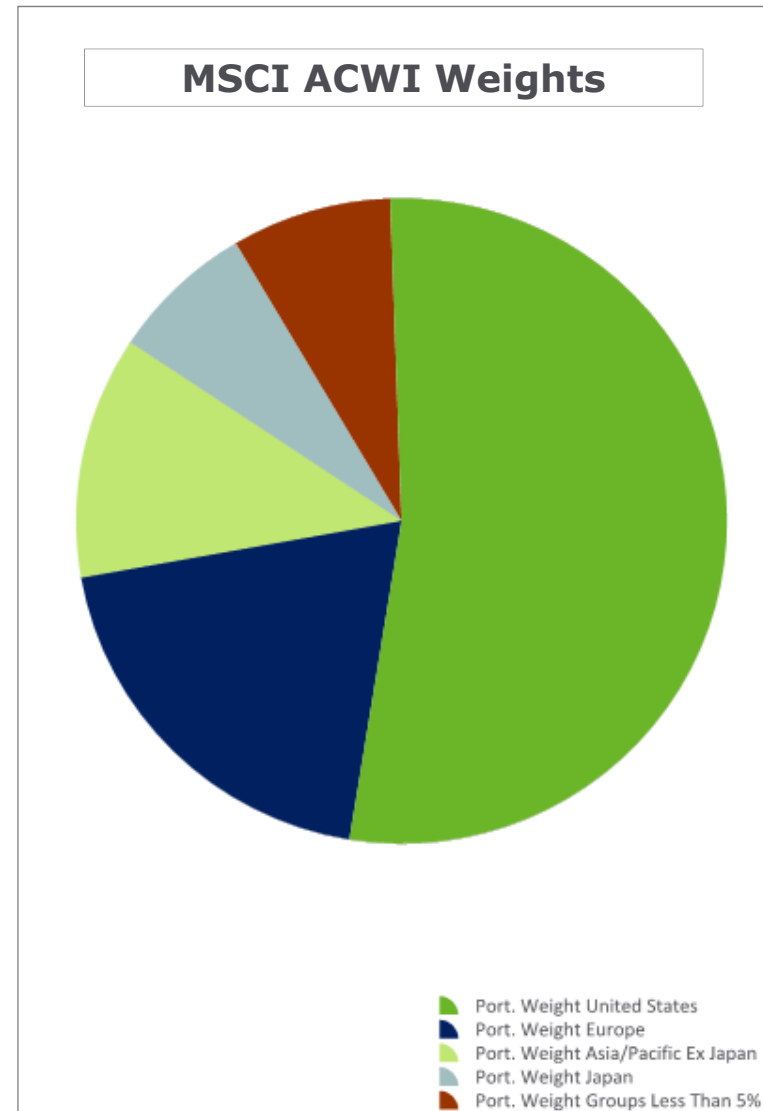
INDEX COMPOSITION

Return Contribution	MTD	QTD	YTD	Index Weight
S&P 500	7.0%	4.3%	18.5%	100.0%
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
MSCI ACWI	6.5%	3.6%	16.2%	100.0%
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%

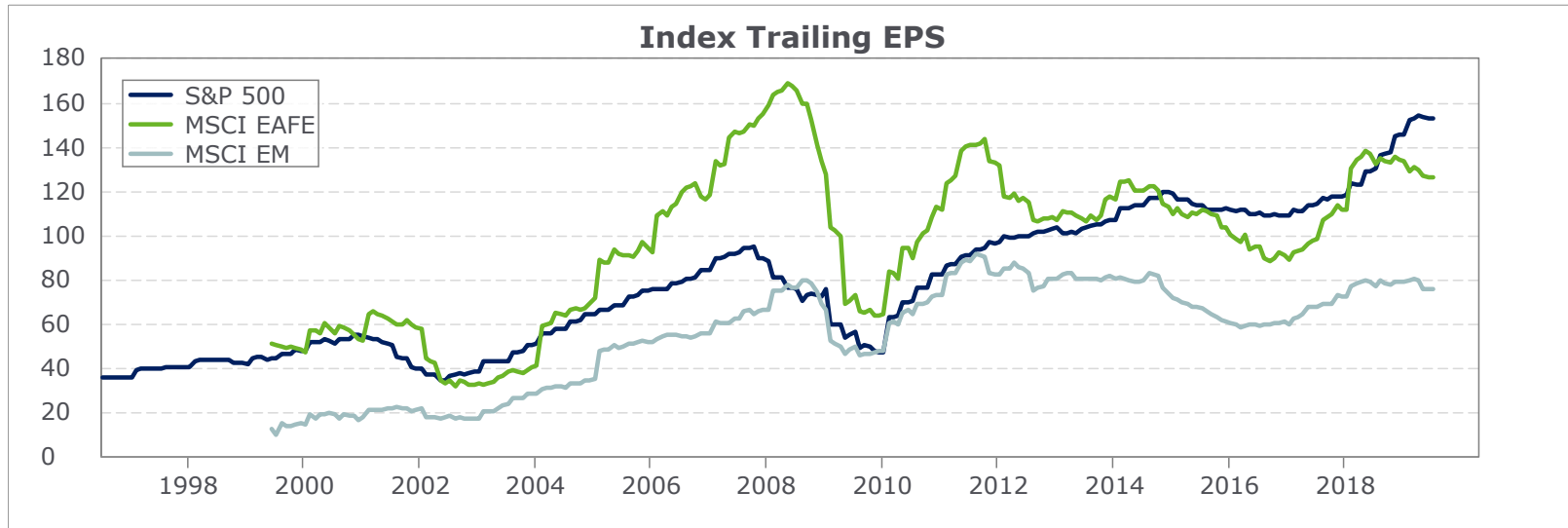
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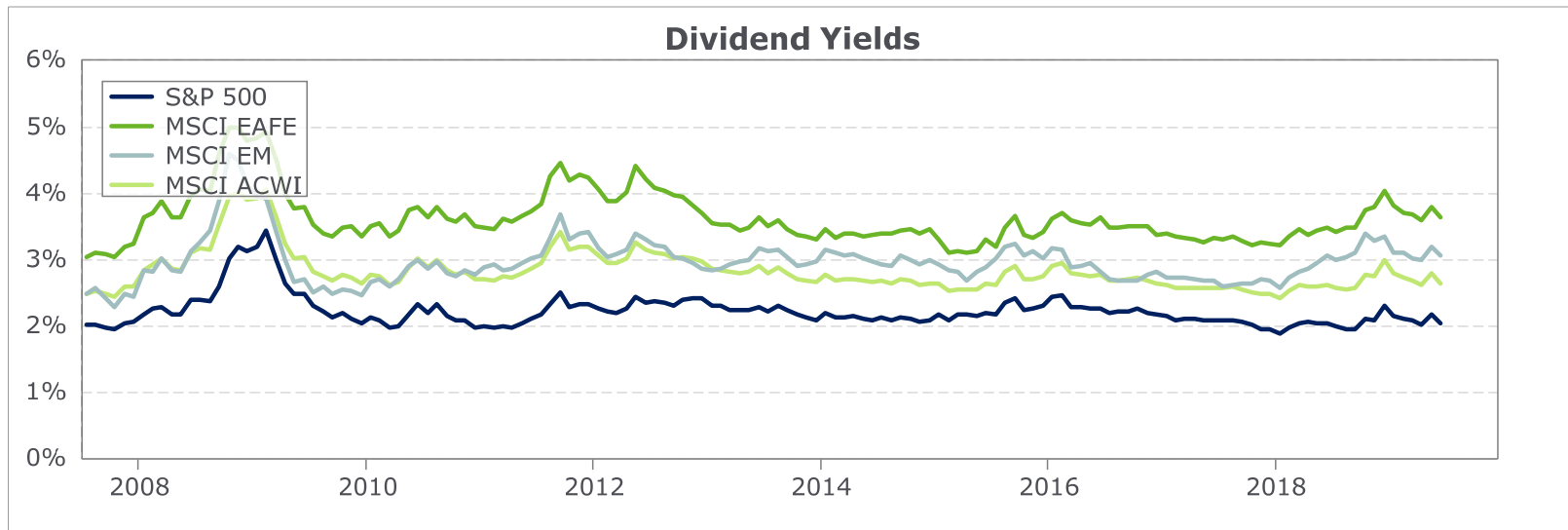
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EARNINGS & YIELDS



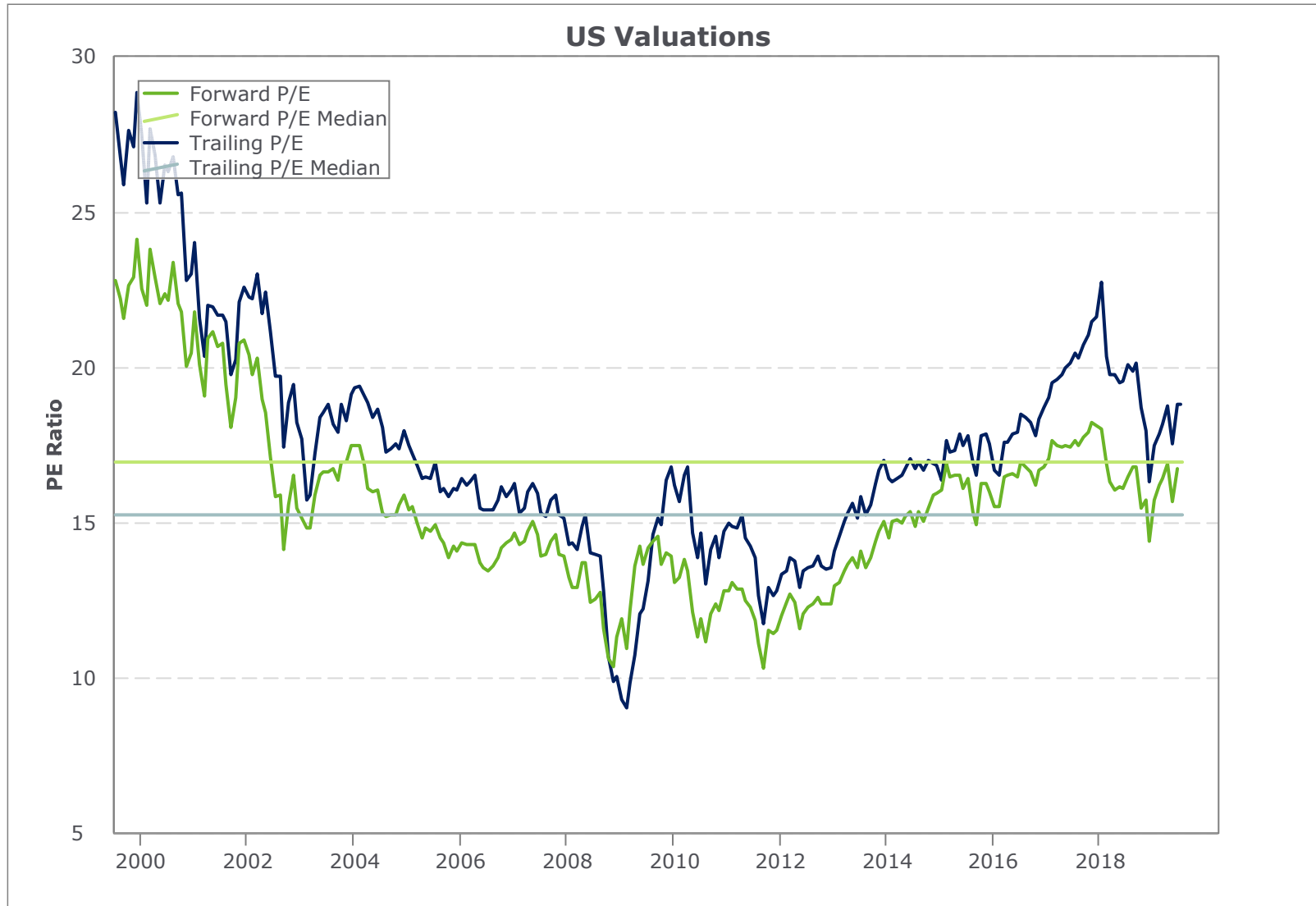
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Source: FactSet



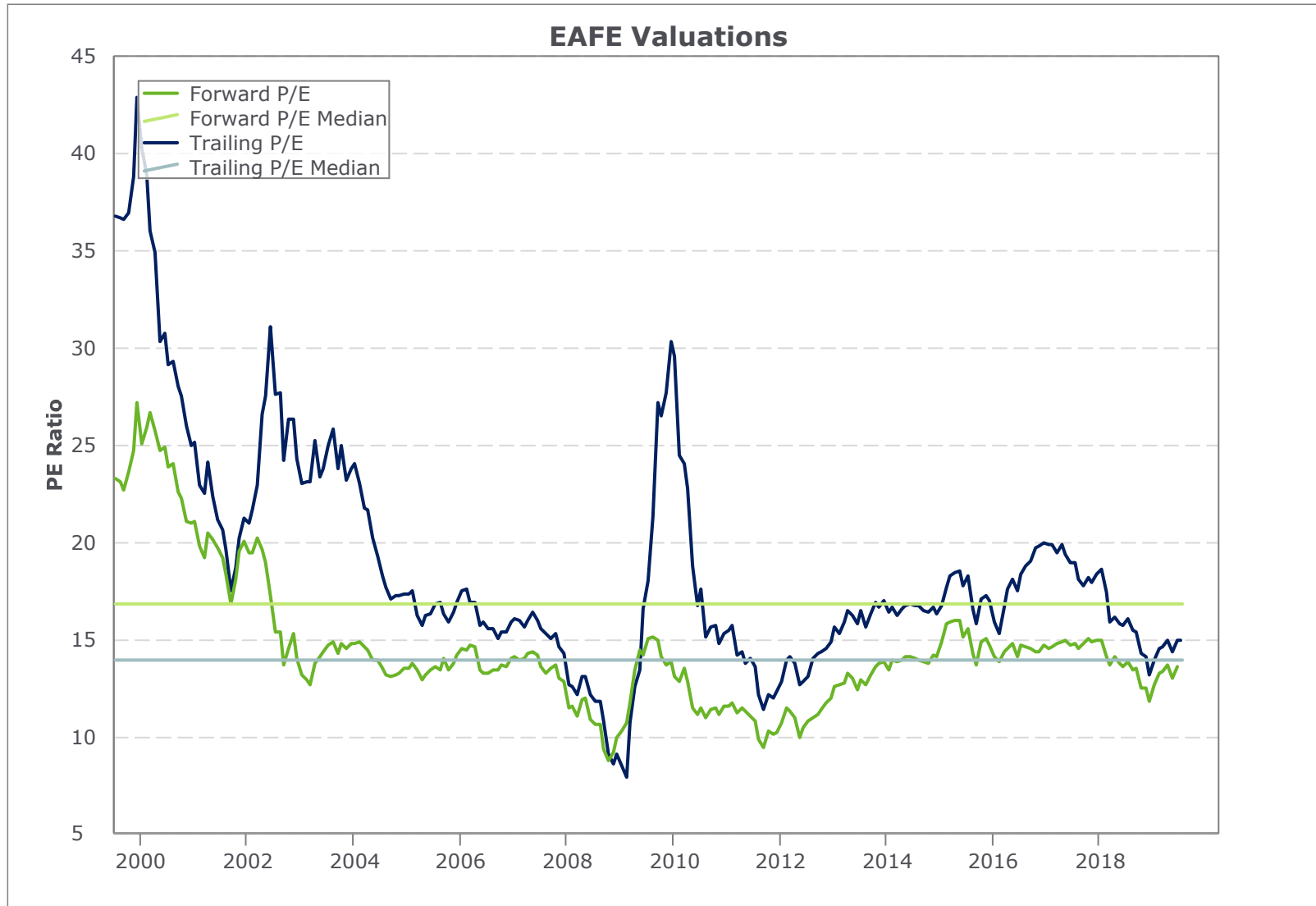
US EQUITY VALUATIONS



Source: FactSet



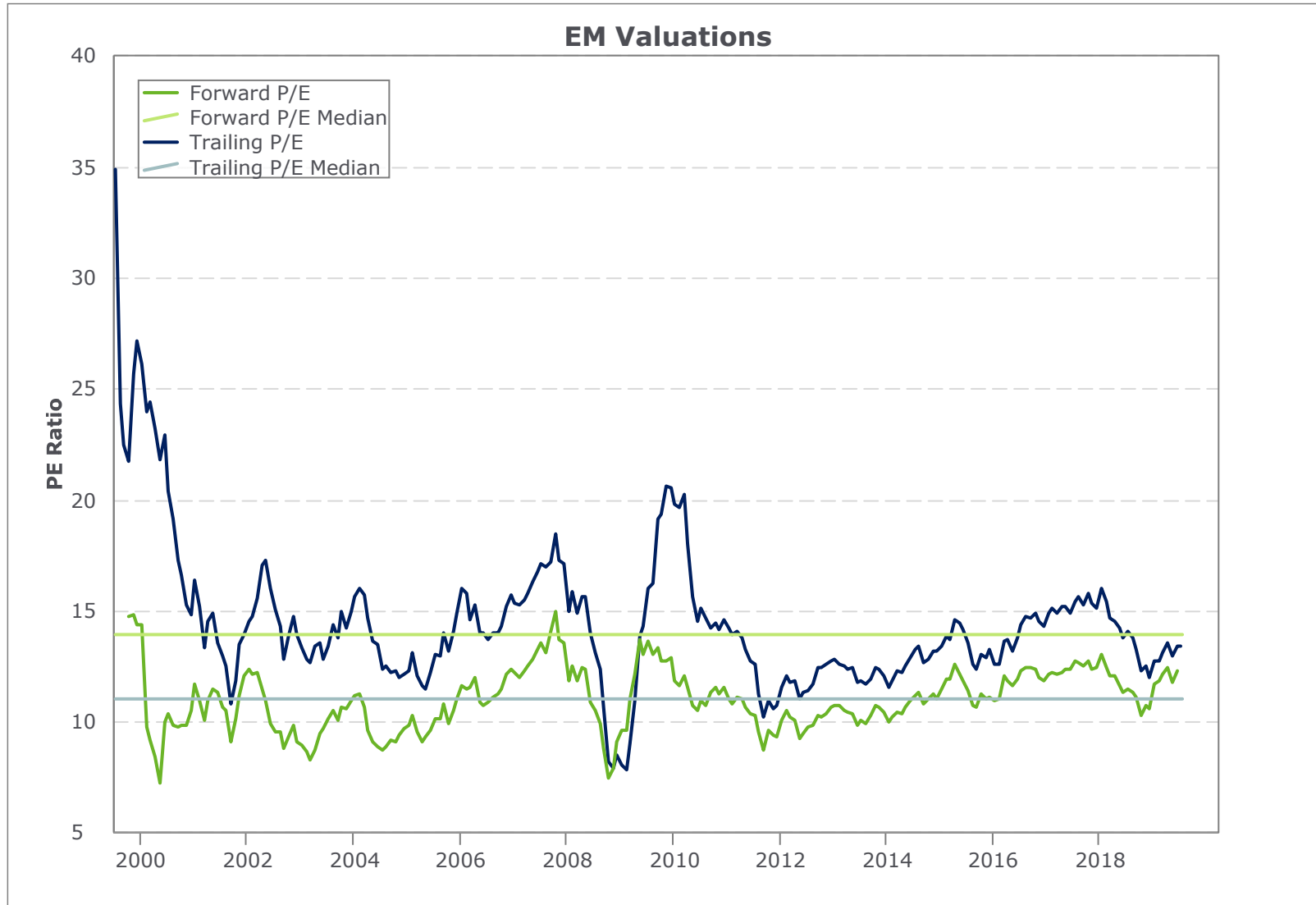
EAFE EQUITY VALUATIONS



Source: FactSet



EM EQUITY VALUATIONS



Source: FactSet



CREDIT

NEPC, LLC

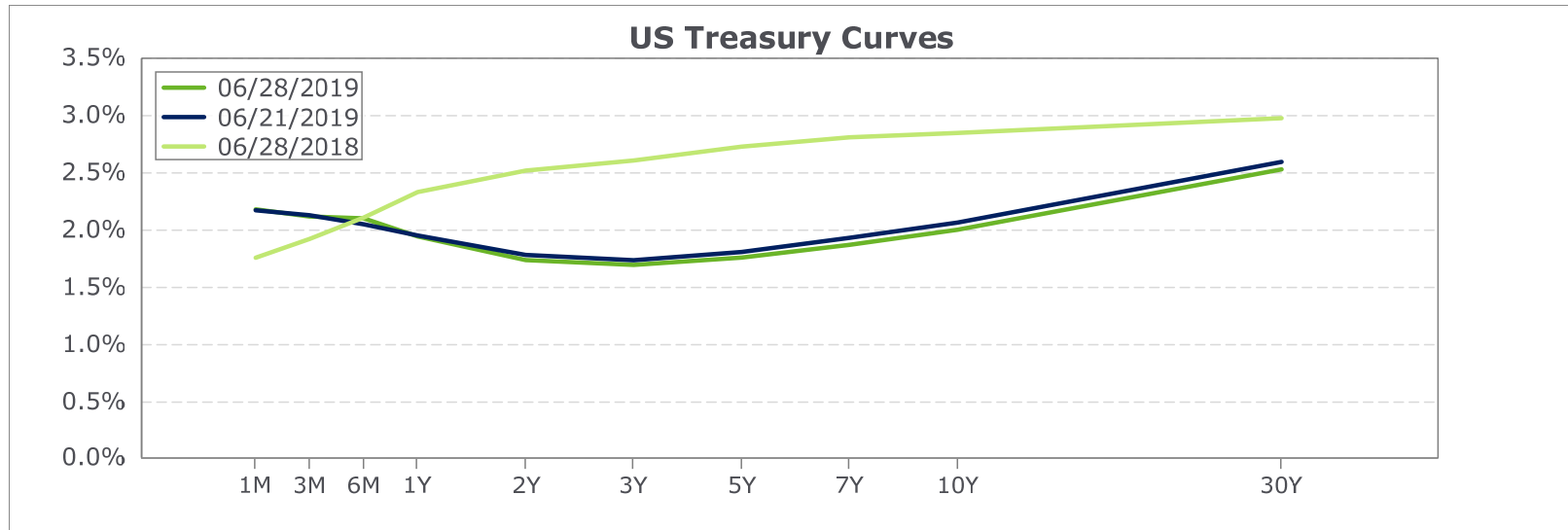
FIXED INCOME CHARACTERISTICS

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

Source: FactSet



TREASURIES



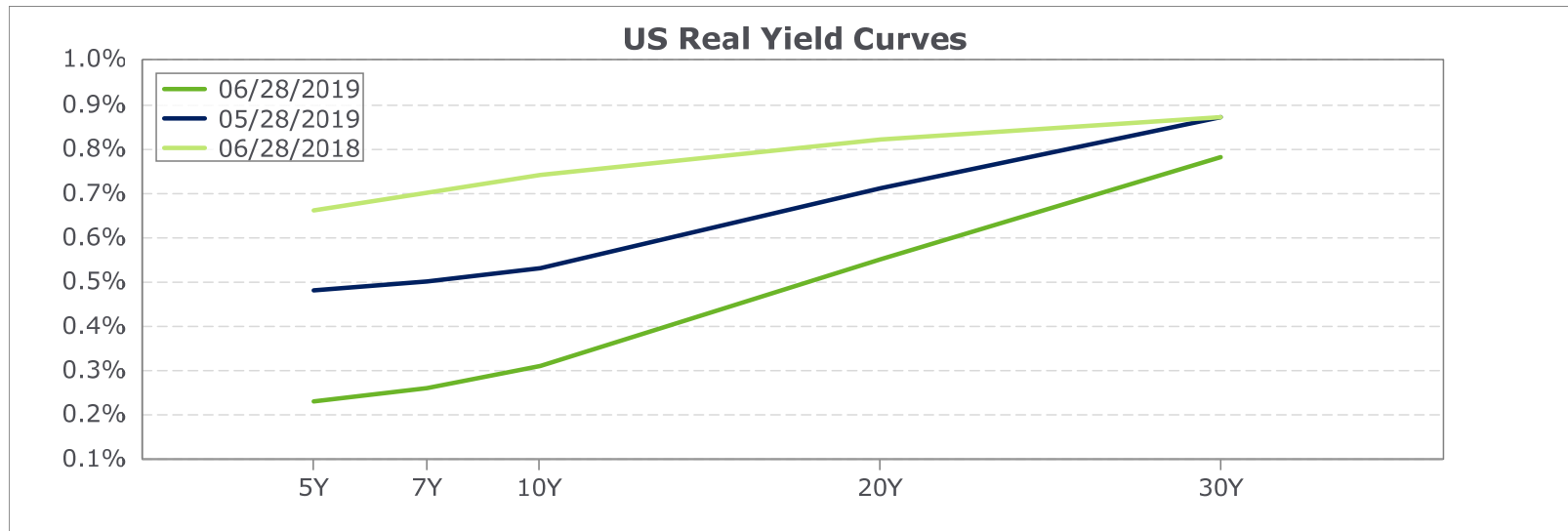
Source: FactSet

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

Source: FactSet



REAL YIELDS



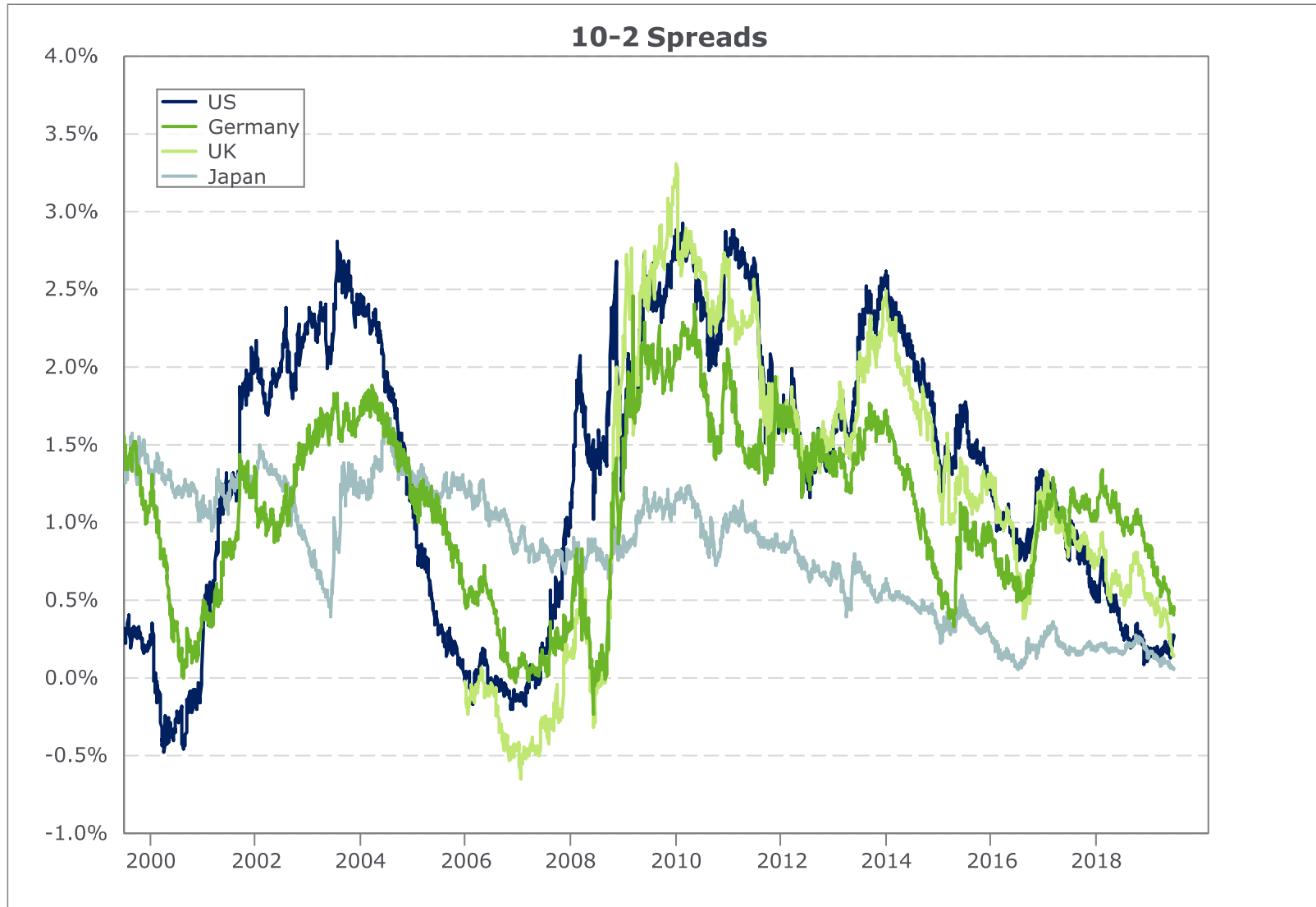
Source: FactSet

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

Source: FactSet



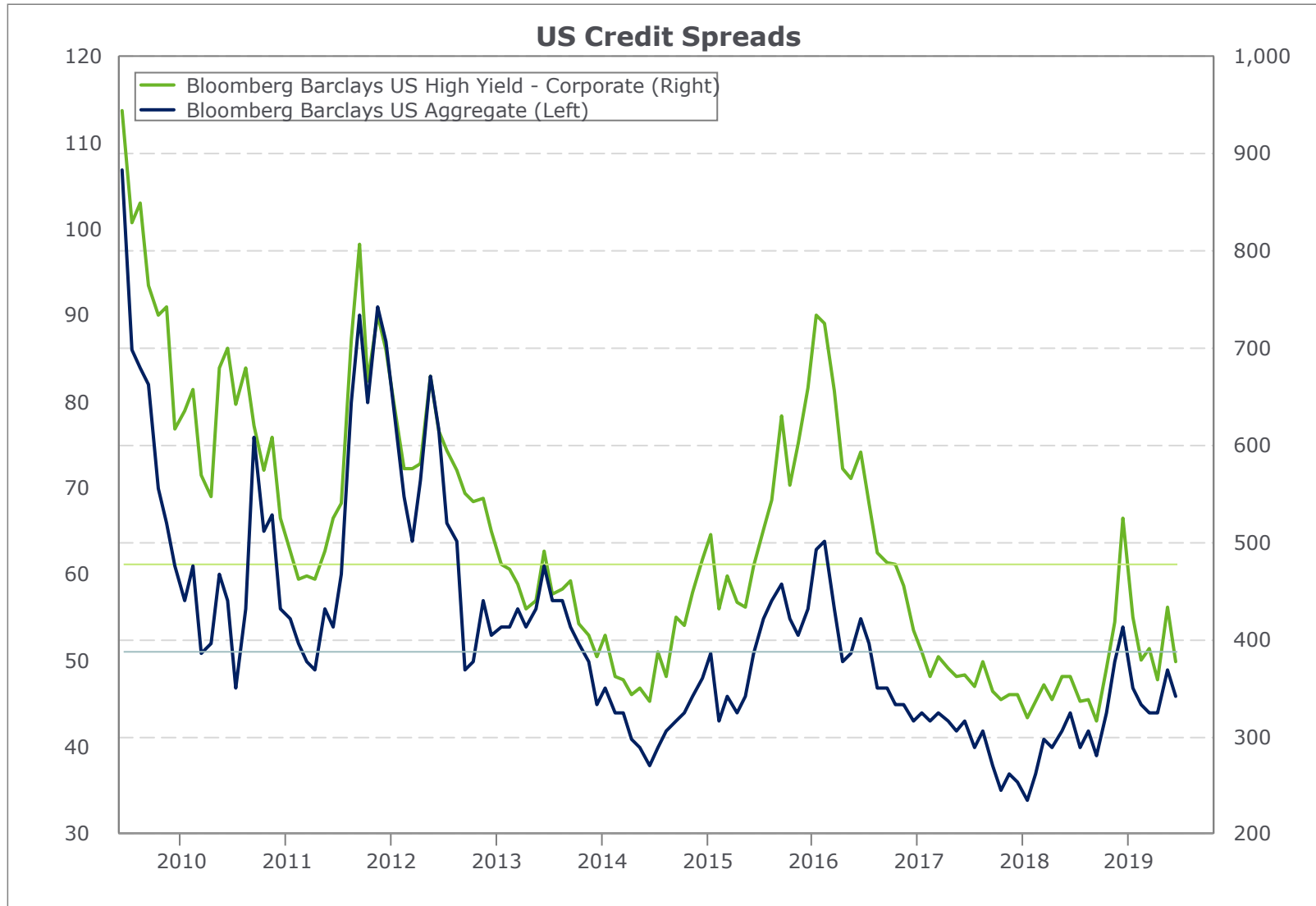
NOMINAL YIELDS



Source: FactSet



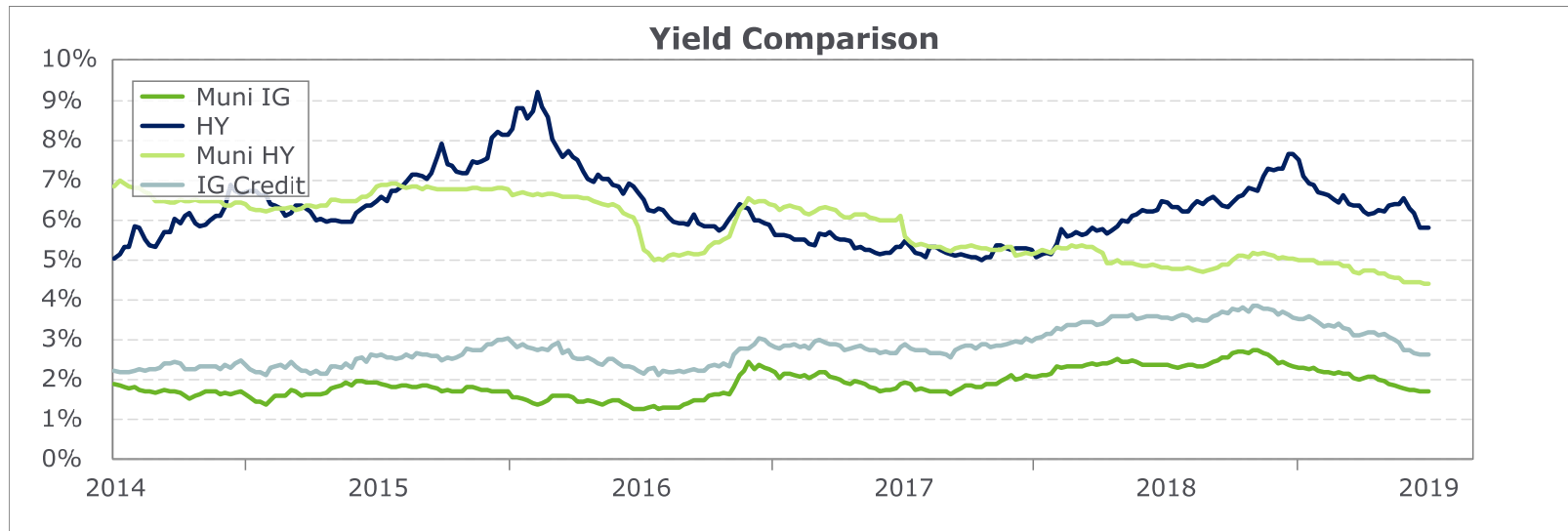
CREDIT SPREADS



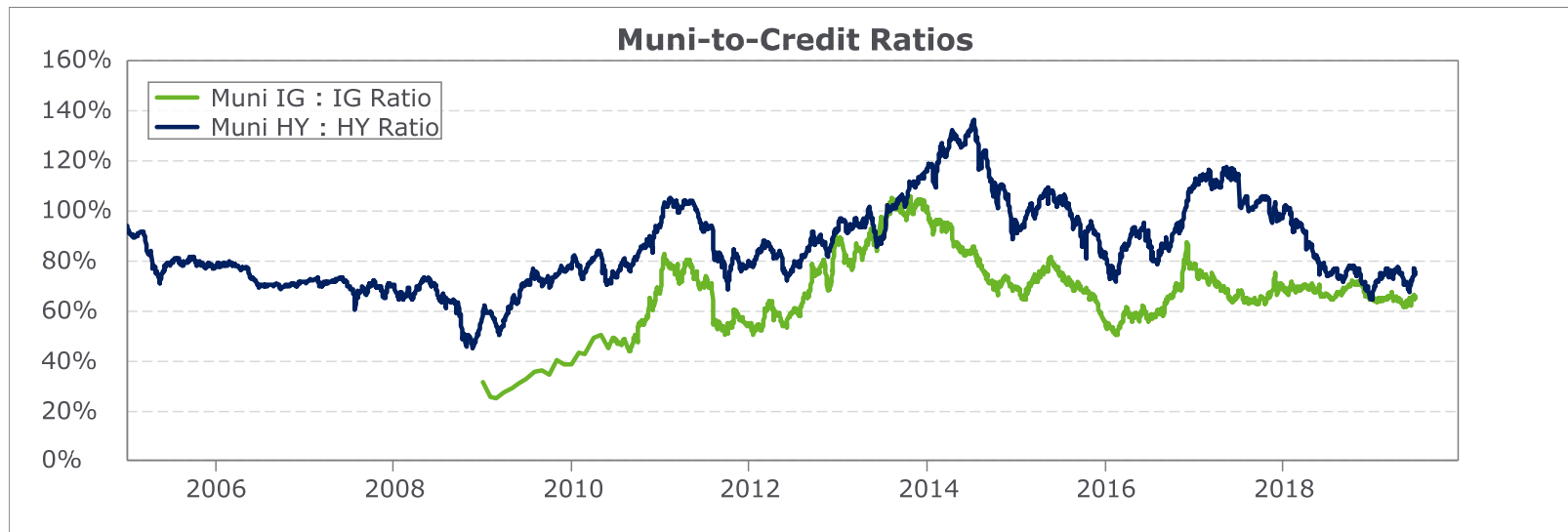
Source: FactSet



MUNICIPAL BOND RATIOS



Source: FactSet



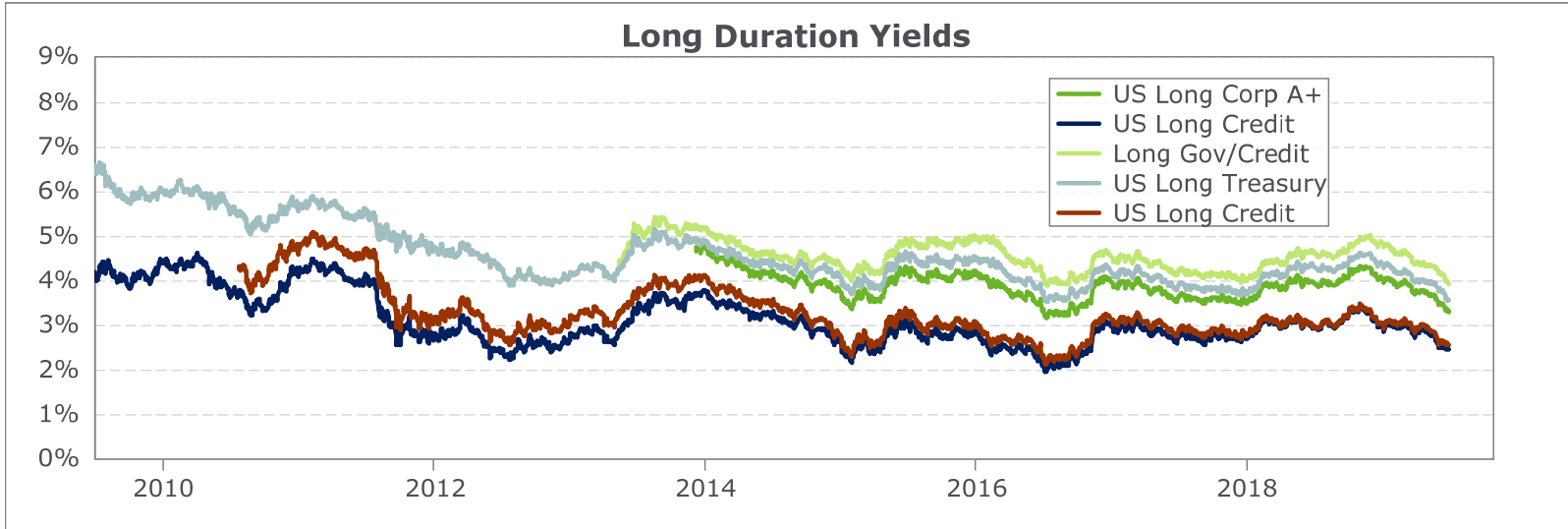
Source: FactSet



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

REAL ASSETS INDEX PERFORMANCE

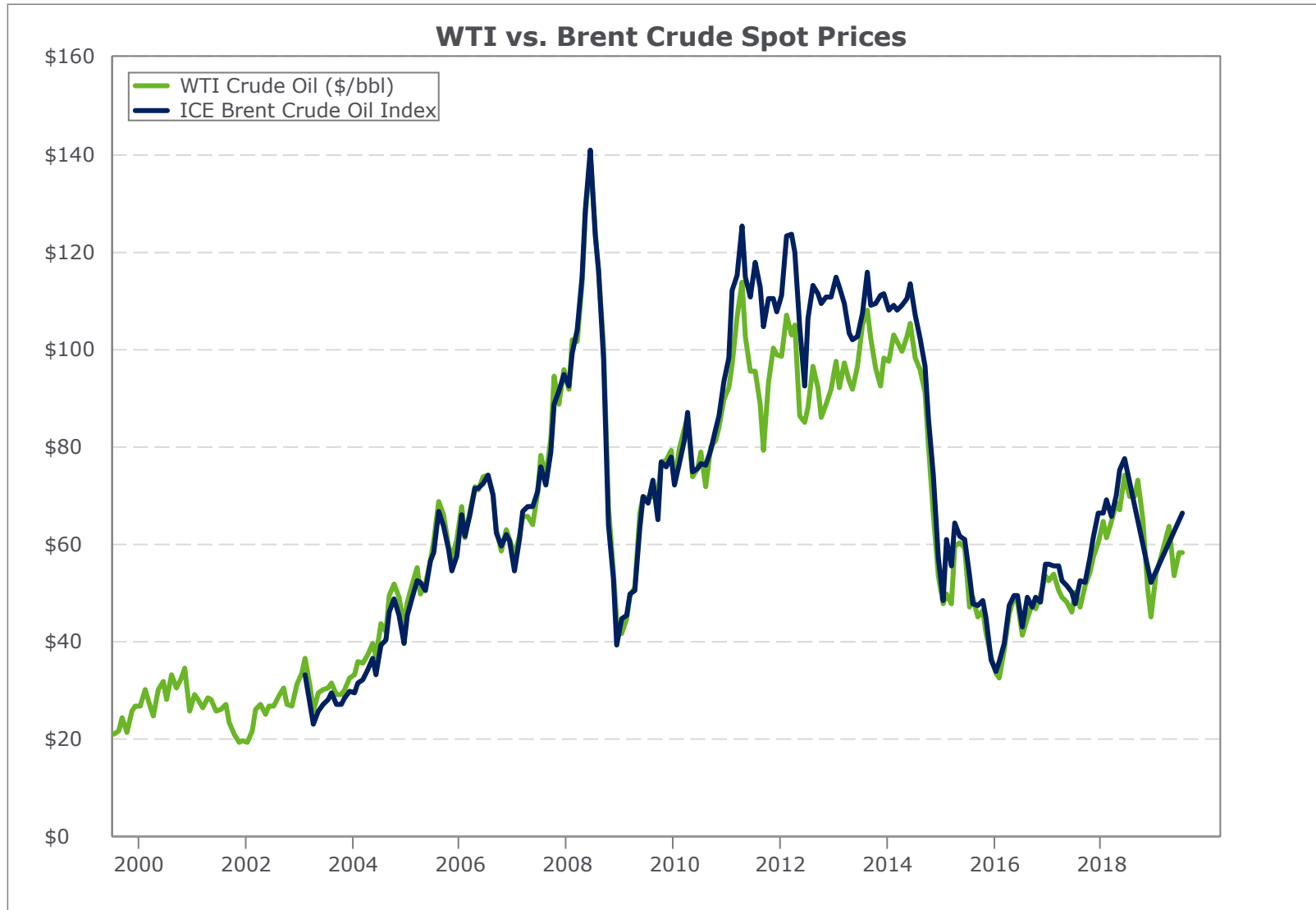
Index	1 Month	3 Month	YTD	1 Year	3 Year	5 Year
Bloomberg Commodity Index	2.7%	-1.2%	5.1%	-6.8%	-2.2%	-9.1%
Bloomberg Agriculture Index	0.5%	4.5%	1.2%	-4.2%	-10.3%	-9.7%
Coffee	2.2%	10.6%	0.2%	-15.6%	-17.8%	-17.6%
Corn	-2.2%	14.9%	7.6%	6.1%	-6.3%	-10.1%
Cotton	-2.0%	-14.2%	-8.9%	-22.4%	1.3%	-1.9%
Soybean	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%
Bloomberg Energy	4.0%	-4.6%	10.6%	-14.3%	-0.5%	-18.1%
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%
Bloomberg Industrial Metals	2.0%	-7.2%	4.7%	-11.0%	6.4%	-3.0%
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%
Bloomberg Precious Metals	7.3%	7.1%	7.2%	7.6%	-0.8%	-1.3%
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%
Bloomberg Livestock	-3.5%	-11.0%	-6.8%	-3.5%	-2.5%	-7.1%
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



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- **The goal of this report is to provide a basis for monitoring financial markets. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
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