

# QUARTERLY PERFORMANCE REPORT

## OKLAHOMA STATE PENSION COMMISSION



**June 30, 2019**

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

# **MARKET ENVIRONMENT UPDATE AND OUTLOOK**

NEPC, LLC

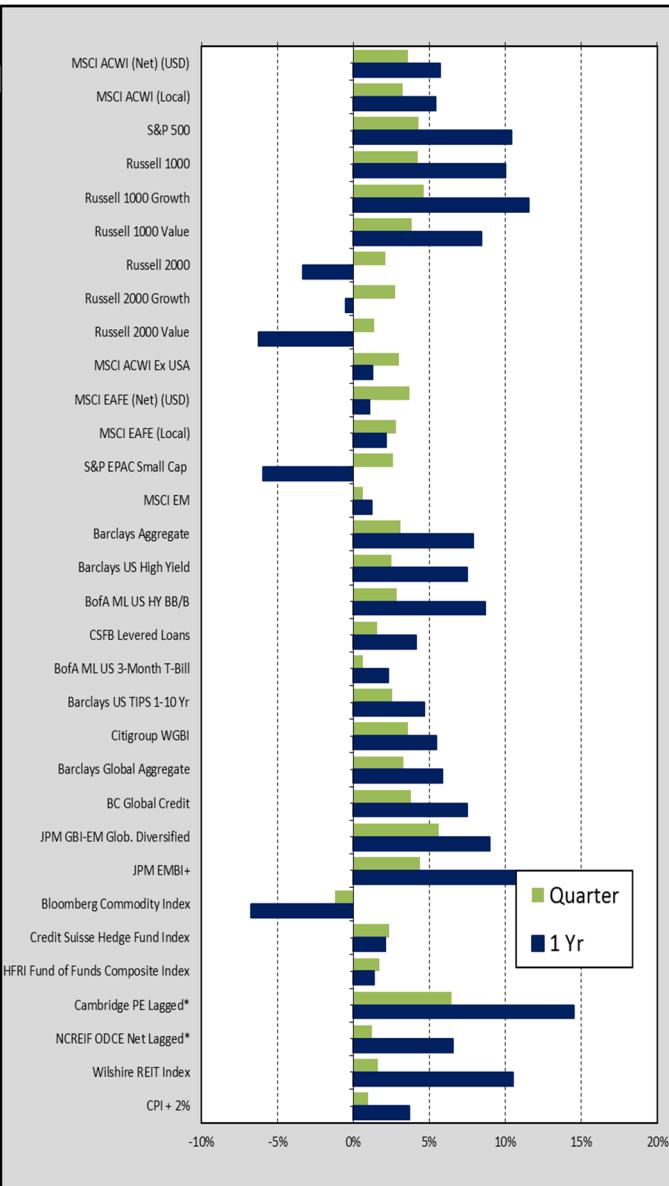
# ECONOMIC ENVIRONMENT

- **Q2 Real GDP (advance estimate) increased at an annual rate of 2.1%.**
  - 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 was lowered by 0.25% to a targeted range of 2.00% -to- 2.25%. 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.**
  - 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 -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

		<u>Qtr.</u>	<u>1 Yr.</u>	<u>3 Yr.</u>	<u>5 Yr.</u>	<u>10 Yr.</u>
<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%	-0.43%	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	REIT	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%

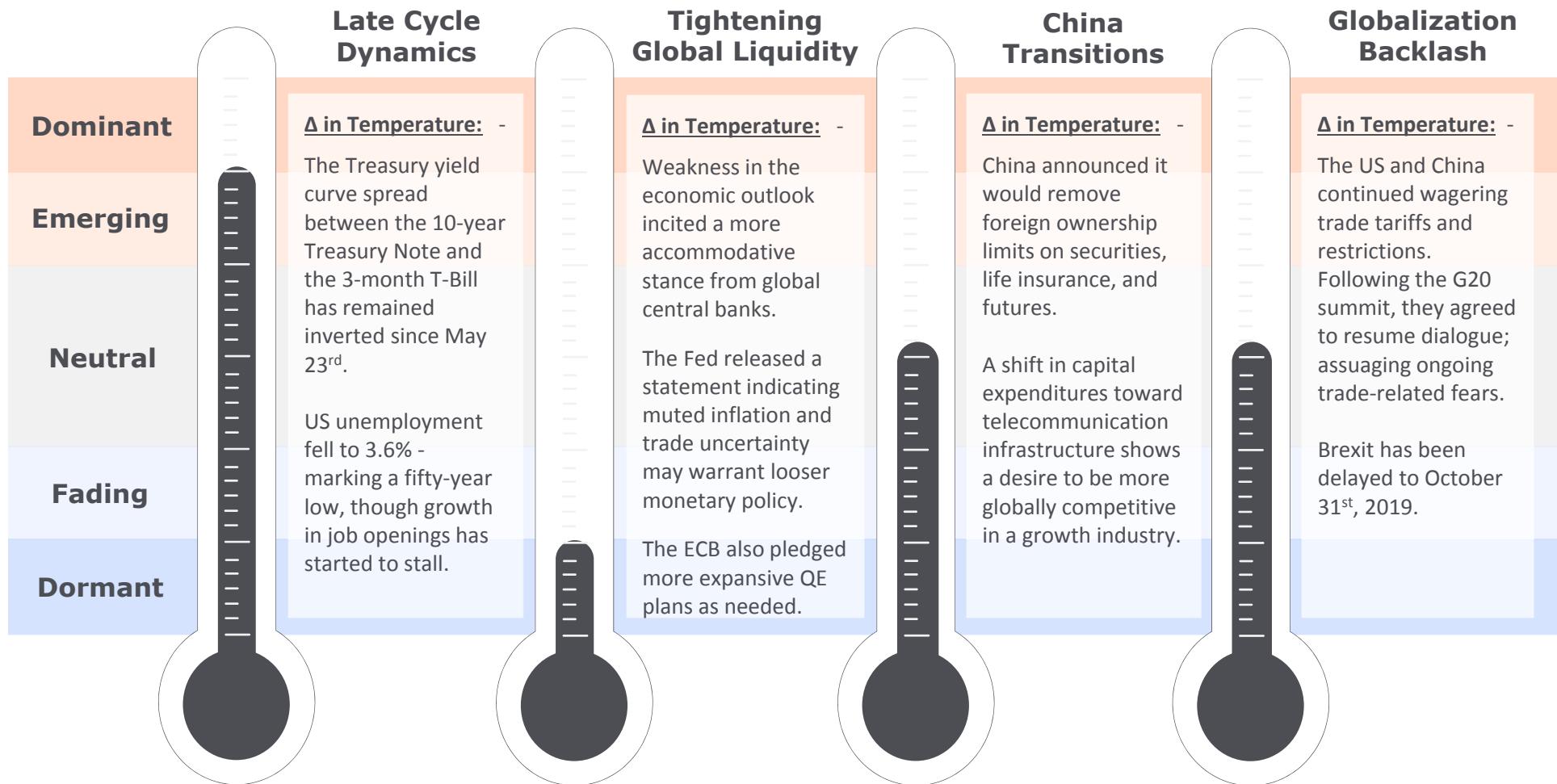


\* As of 3/31/2019

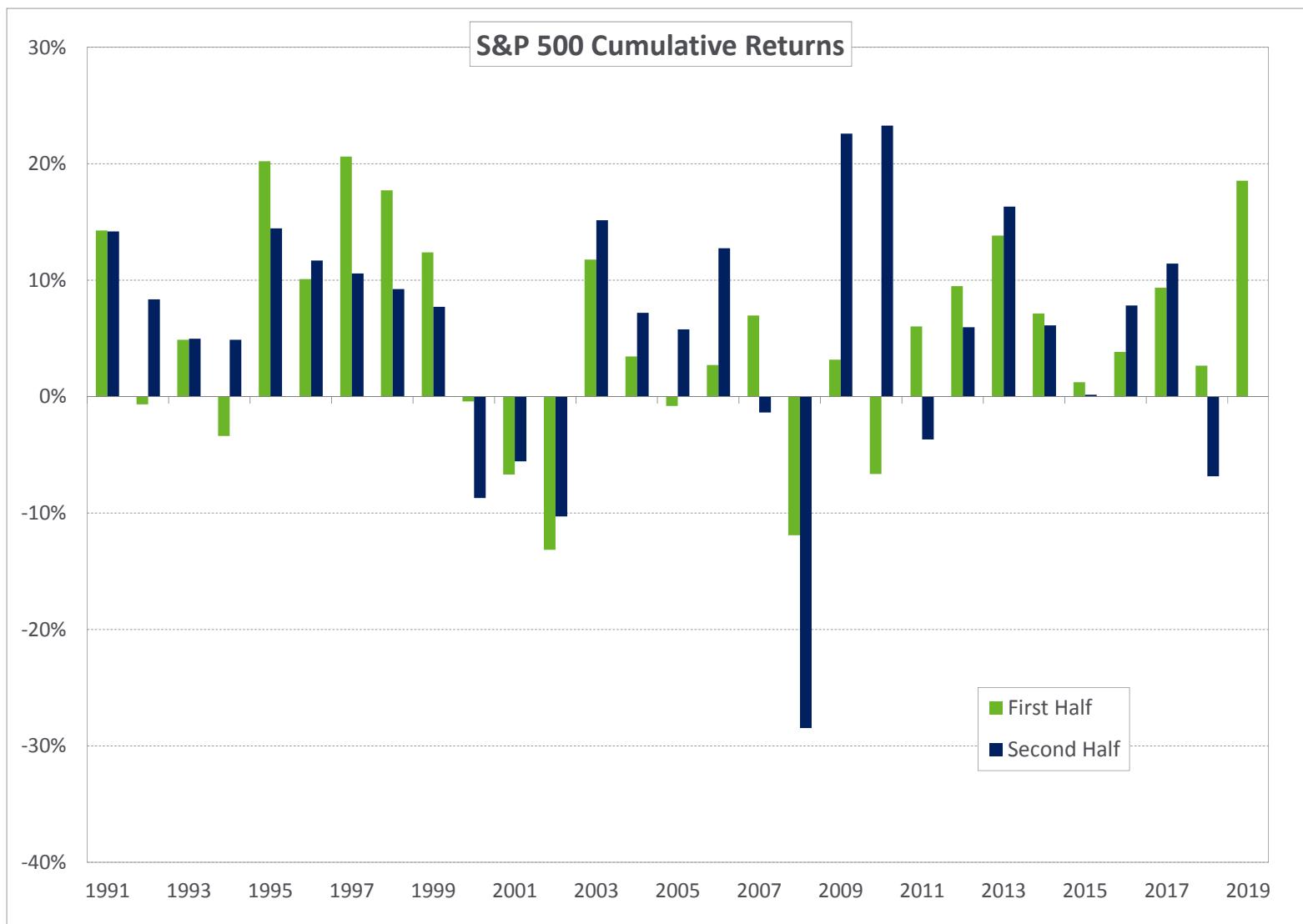


# ASSESSING THE KEY MARKET THEMES

## Current Temperature



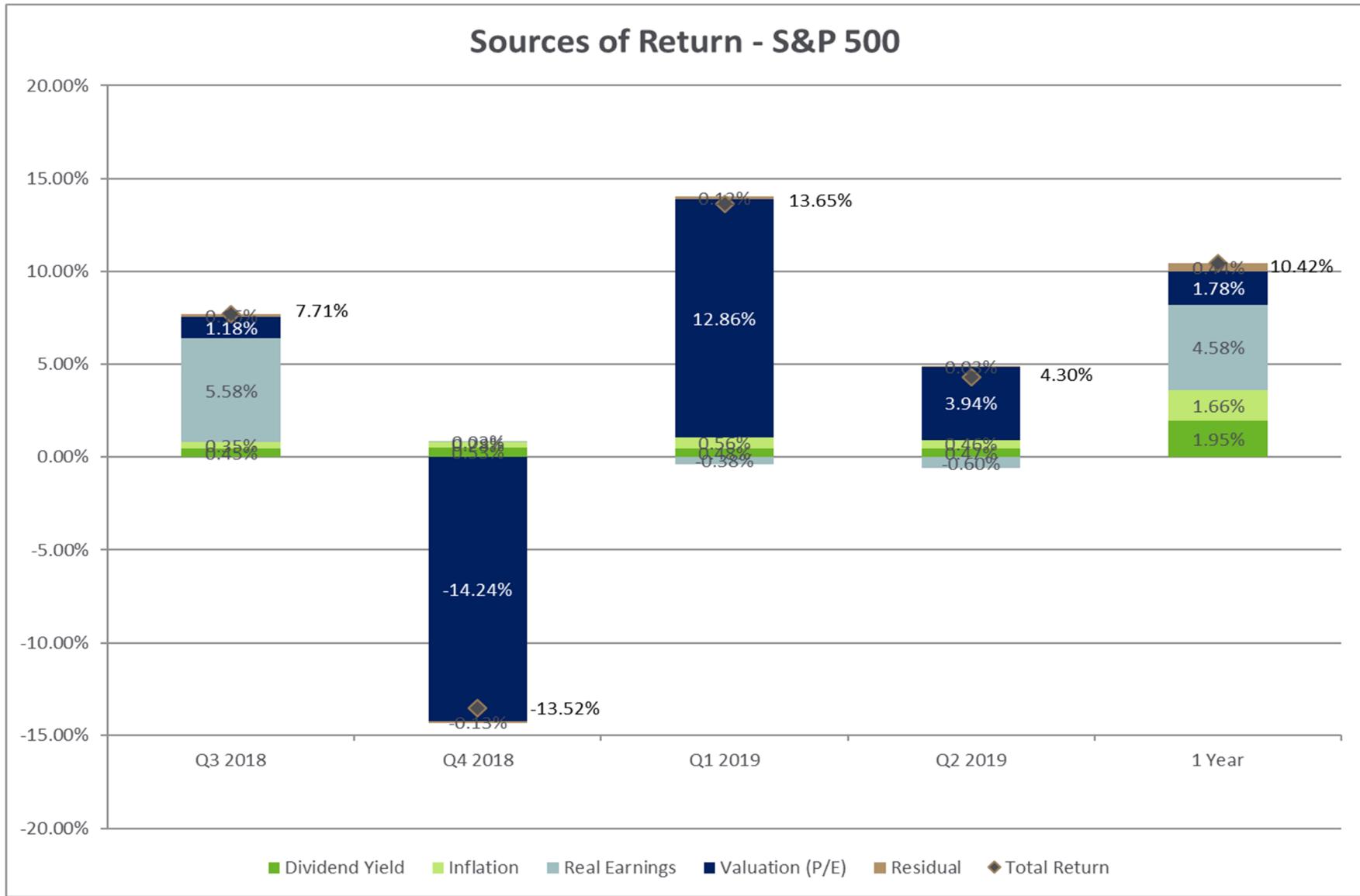
# BEST FIRST HALF SINCE 1997 FOR US STOCKS



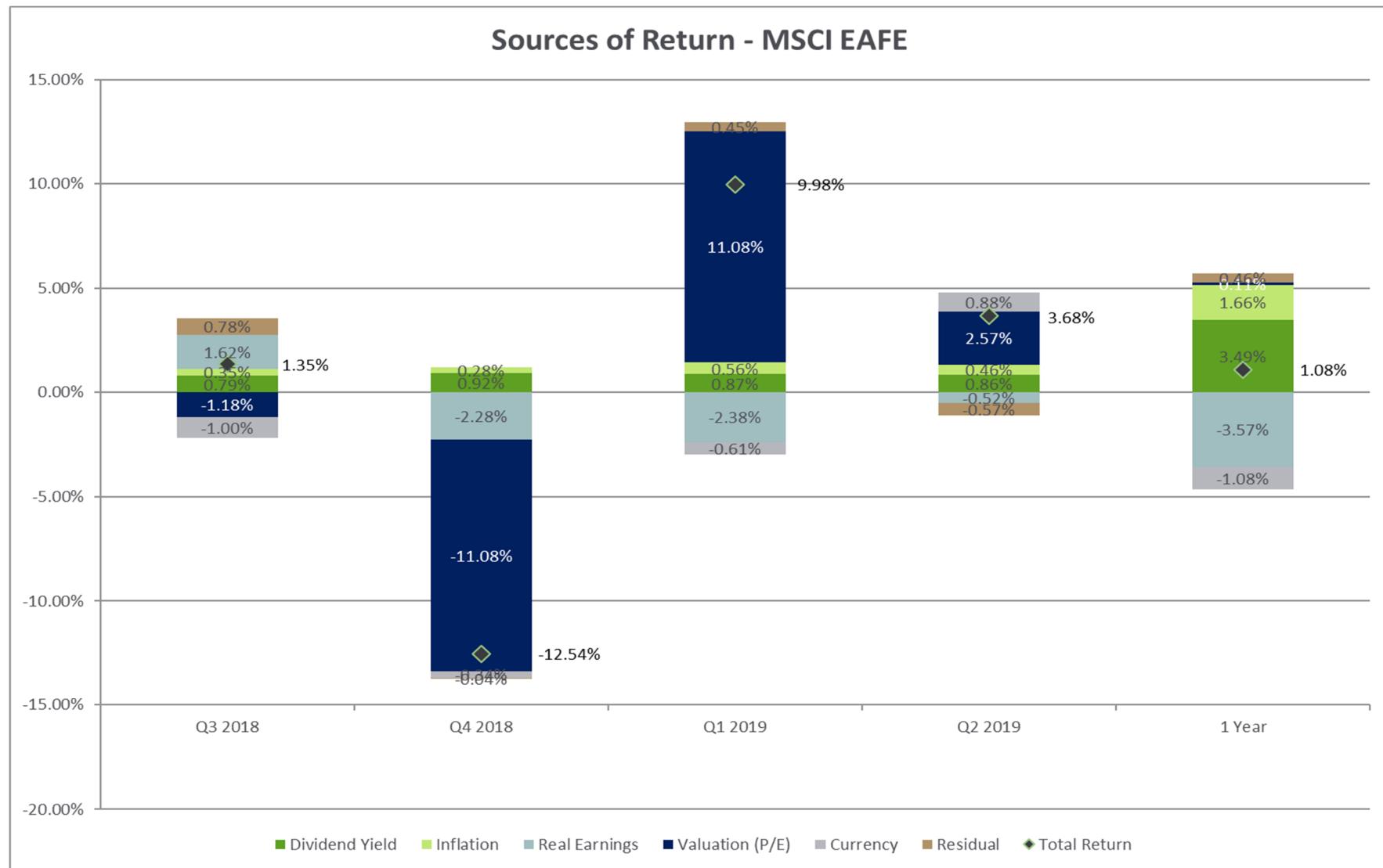
Source: FactSet



# 1 YEAR ATTRIBUTION OF S&P 500 RETURNS



# 1 YEAR ATTRIBUTION OF MSCI EAFE RETURNS



**Spot Rates**

1 USD = 0.861 Euro

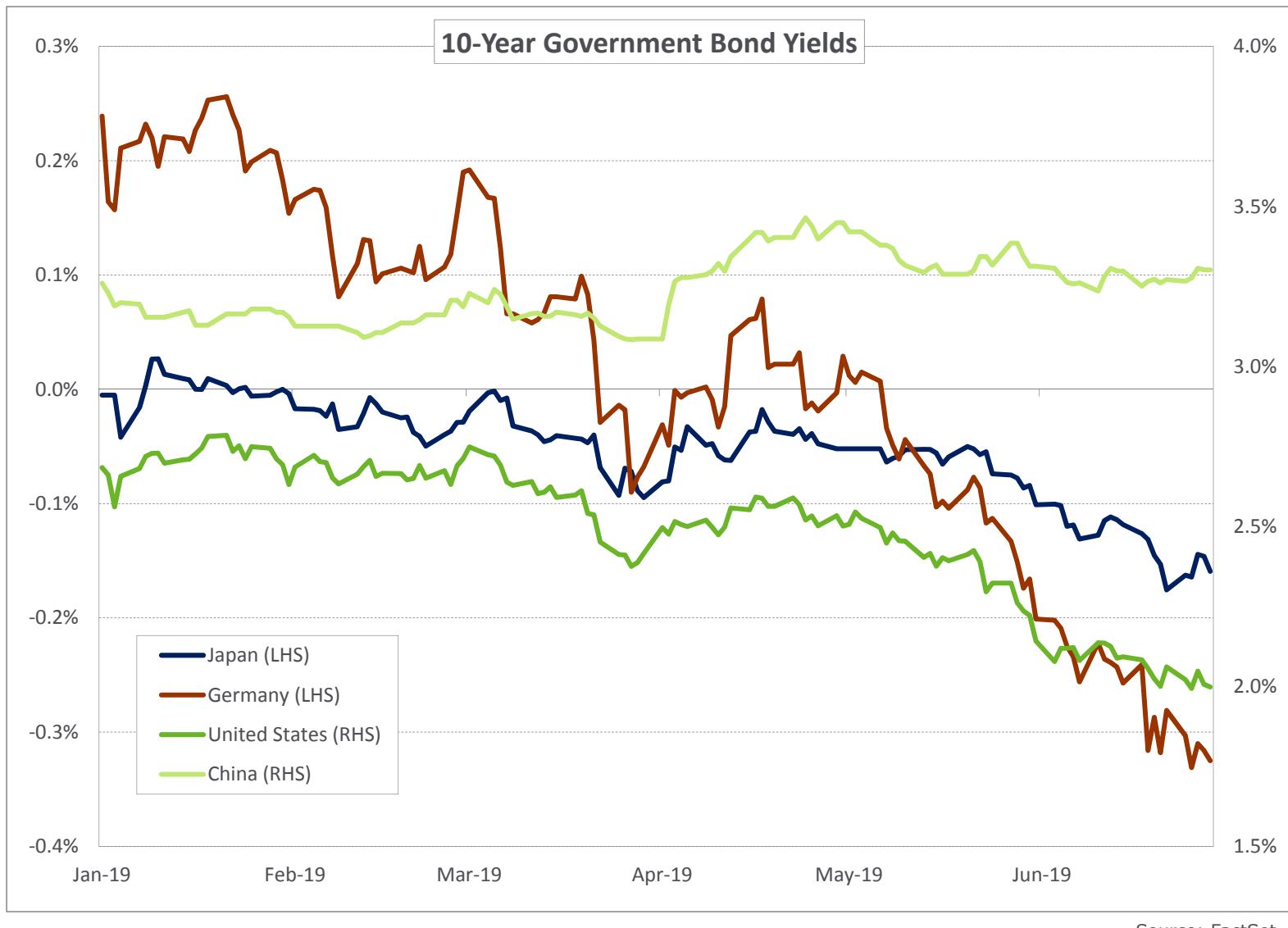
1 USD = 0.874 Euro

1 USD = 0.891 Euro

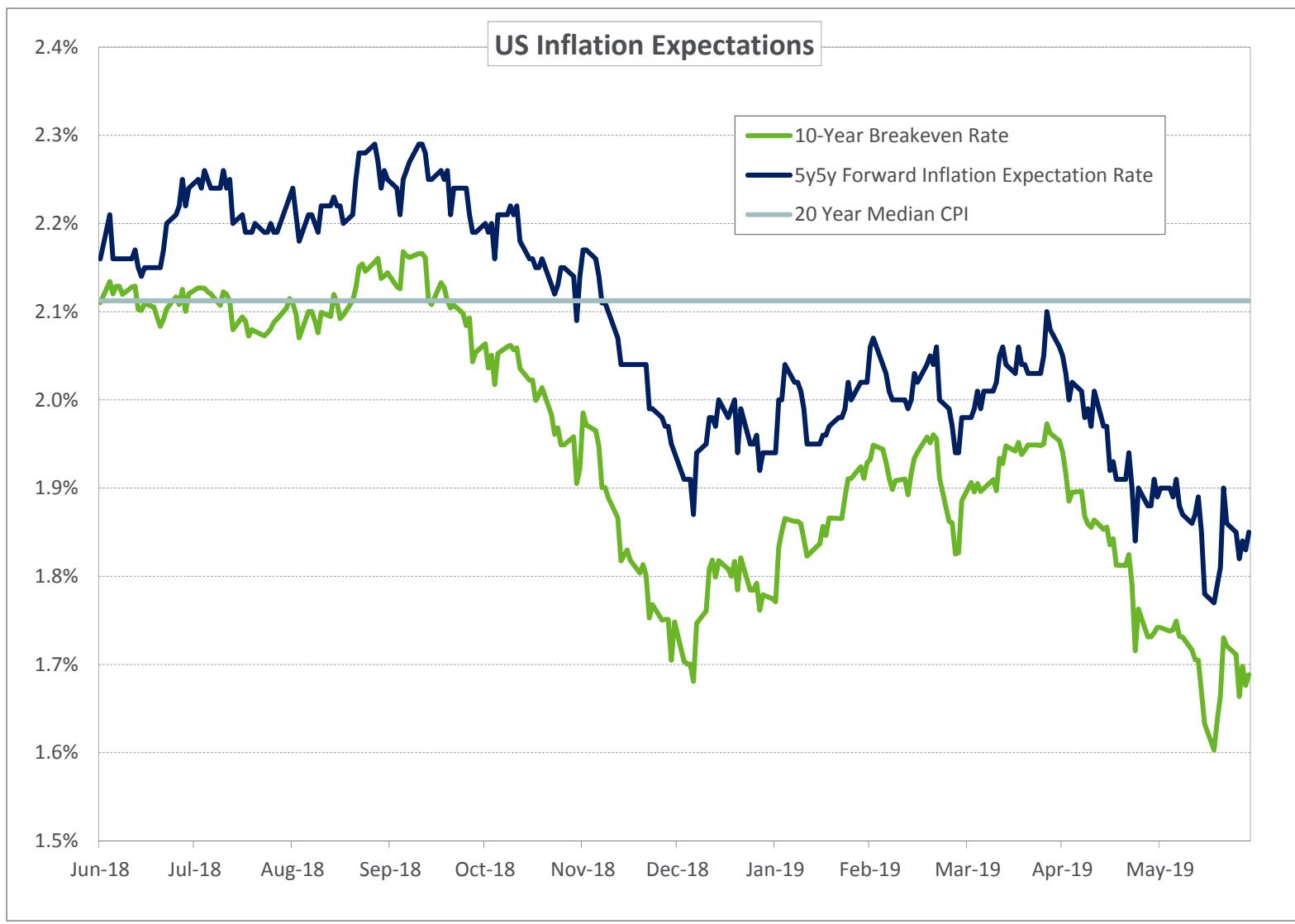
1 USD = 0.880 Euro



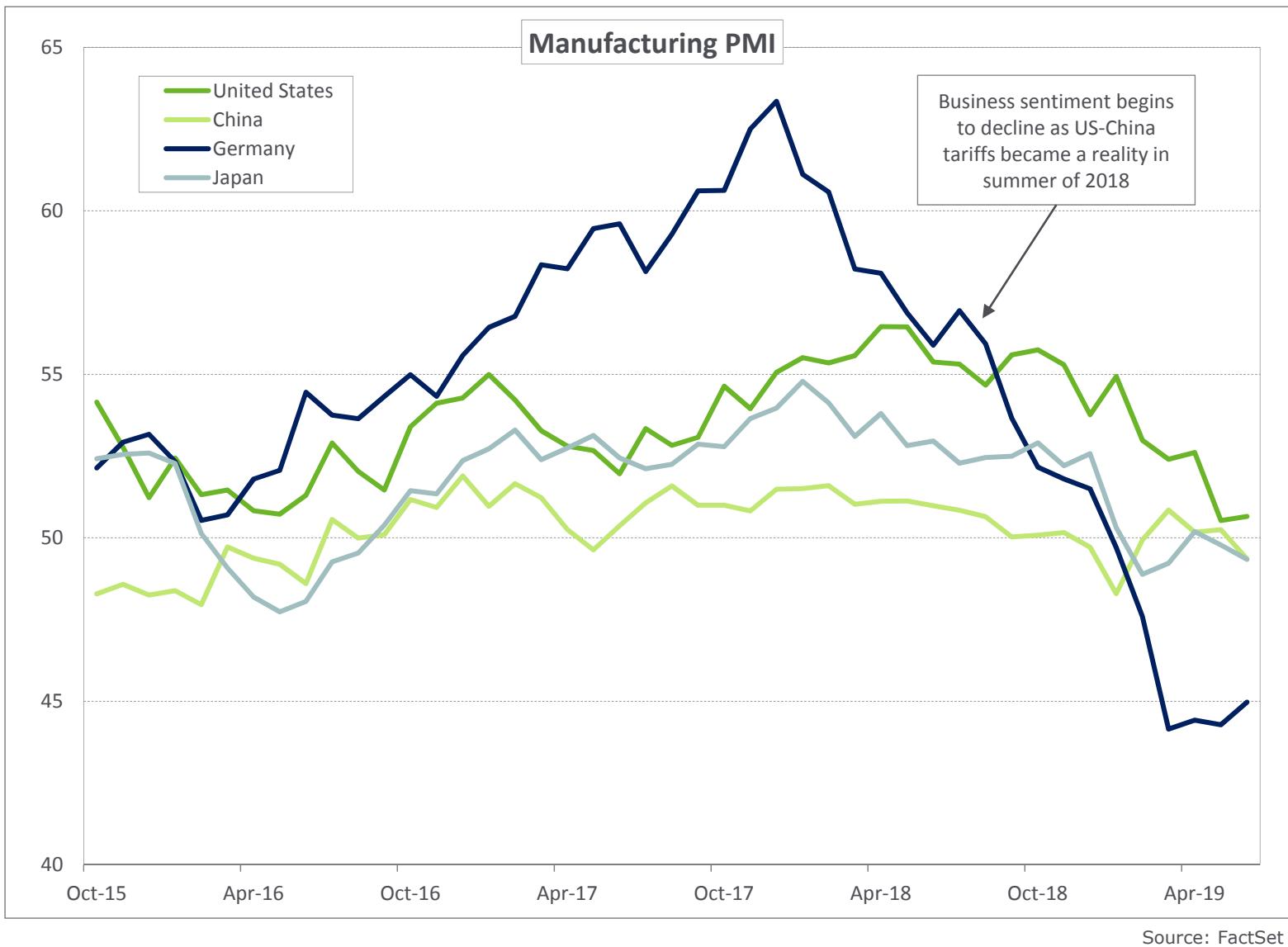
# GLOBAL BOND YIELDS ARE FALLING



# INFLATION EXPECTATIONS CONTINUE TO FALL



# TARIFFS WEIGH ON GLOBAL SENTIMENT



# 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**

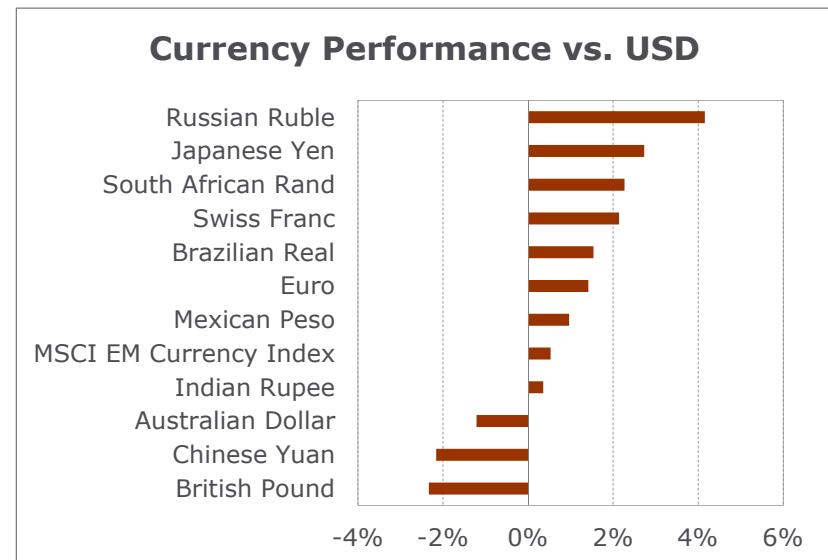
**Global government bond yields continued to decline with the 10-year German yield declining 26 bps – reaching an all-time low**

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

	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



Source: FactSet



# **OK Pension Commission**

NEPC, LLC —

# OKLAHOMA STATE PENSION COMMISSION ASSET ALLOCATION SUMMARY

Key Policy Items		Teachers ^	TRS 6/30/18	PERS*	PERS 6/30/18	Firefighters	FTRS 6/30/18	Police **	POLICE 6/30/18
TOTAL EQUITY		Target <b>57.5%</b> Actual <b>56.9%</b> Range 37.5-73.5	57.5% <b>58.3%</b> 37.5-73.5	68.0% <b>68.2%</b> 59.2-76.8	68.0% <b>68.3%</b> 59.2-76.8	65.0% <b>65.2%</b> 60-70	57.0% <b>65.8%</b> 42-62	50.0% <b>53.9%</b> 25-80	50.0% <b>54.30%</b> 25-80
Large Cap		Target <b>17.0%</b> Actual <b>18.8%</b> Range 12-23	17.0% <b>18.4%</b> 12-23	34.0% <b>34.1%</b> 31.2-36.8	34.0% <b>34.2%</b> 31.2-36.8	39.0% <b>35.4%</b> 34-44	29.4% <b>34.7%</b> 24.4-34.4	15.0% <b>17.9%</b> 10-20	15.0% <b>17.2%</b> 10-20
MidCap		Target <b>13.0%</b> Actual <b>10.7%</b> Range 8-18	13.0% <b>10.8%</b> 8-18	- -	- -	- -	- -	- -	- -
Small Cap		Target <b>10.0%</b> Actual <b>9.5%</b> Range 5-15	10.0% <b>10.0%</b> 5-15	6.0% <b>6.5%</b> 3.2-8.8	6.0% <b>6.6%</b> 3.2-8.8	13.0% <b>13.7%</b> 8-18	12.6% <b>16.5%</b> 7.6-17.6	5.0% <b>7.1%</b> 0-15	5.0% <b>8.2%</b> 0-15
International / Equity		Target <b>17.5%</b> Actual <b>17.9%</b> Range 12.5-22.5	17.5% <b>19.1%</b> 12.5-22.5	28.0% <b>27.6%</b> 25-31	28.0% <b>27.5%</b> 25-31	15.0% <b>16.1%</b> 10-20	15.0% <b>14.6%</b> 10-20	15.0% <b>14.5%</b> 5-25	15.0% <b>14.9%</b> 5-25
Long/Short Equity		Target <b>-</b> Actual <b>-</b> Range -	- -	- -	- -	- -	- -	15.0% <b>14.4%</b> 10-20	15.0% <b>14.0%</b> 10-20
TOTAL FIXED INCOME		Target <b>23.5%</b> Actual <b>21.9%</b> Range 18.5-28.5	23.5% <b>20.9%</b> 18.5-28.5	32.0% <b>31.5%</b> 27.5-36.5	32.0% <b>31.3%</b> 27.5-36.5	27.5% <b>17.4%</b> 22.5-32.5	20.0% <b>14.4%</b> 10-30	15.0% <b>16.6%</b> 10-20	15.0% <b>16.1%</b> 10-20
Dom. Fixed Income/High Yield		Target <b>23.5%</b> Actual <b>21.9%</b> Range 18.5-28.5	23.5% <b>20.9%</b> 18.5-28.5	32.0% <b>31.5%</b> 27.5-36.5	32.0% <b>31.3%</b> 27.5-36.5	17.9% <b>11.4%</b> 12.9-22.9	13.0% <b>8.7%</b> 0-28	- -	- -
Int'l & Global Fixed Income		Target <b>-</b> Actual <b>-</b> Range -	- -	- -	- -	9.6% <b>6.0%</b> 4.6-14.6	7.0% <b>5.7%</b> 2-12	7.5% <b>16.6%</b> 10-20	7.5% <b>16.1%</b> 10-20
TOTAL ALTERNATIVES		Target <b>19.0%</b> Actual <b>20.2%</b> Range 17.1-20.9	19% <b>20.2%</b> 17.1-20.9	0% <b>0.1%</b> 0-5	0% <b>0.1%</b> 0-5	7.5% <b>17.3%</b> 2.5-12.5	23% <b>19.0%</b> 5-40	35.0% <b>29.0%</b> 10-60	35.0% <b>28.2%</b> 10-60
Low Volatility Hedge Funds		Target <b>-</b> Actual <b>-</b> Range -	- -	- -	- -	0.0% <b>2.9%</b> 0-10	5.0% <b>3.1%</b> 0-10	10.0% <b>7.0%</b> 5-15	10.0% <b>7.8%</b> 5-15
Private Equity/MLP's		Target <b>12.0%</b> Actual <b>12.4%</b> Range 7-17	12.0% <b>12.9%</b> 7-17	- -	- -	0.0% <b>3.4%</b> 0-10	8.0% <b>2.9%</b> 0-15	10.0% <b>10.4%</b> 5-15	10.0% <b>8.2%</b> 5-15
Real Estate/Real Assets		Target <b>7.0%</b> Actual <b>7.8%</b> Range 2-12	7% <b>7.3%</b> 2-12	0% <b>0.1%</b> 0-5	0% <b>0.1%</b> 0-5	7.5% <b>11.0%</b> 2.5-12.5	10% <b>13.0%</b> 5-15	15.0% <b>11.6%</b> 0-30	15.0% <b>12.2%</b> 0-30
CASH	Actual	1.0%	0.5%	0.2%	0.2%	0.2%	0.8%	0.7%	1.2%
Actuarial Assumed Rates		7.5%		7.0%		7.5%		7.5%	

^Master Limited Partnerships included in Private Equity allocation.

\*The Russell 3000 index was broken down into Large Cap & Small Cap allocations for the PERS retirement plan

\*\*Real Assets are included in Real Estate

Please note that allocations may not add to 100% due to rounding.

Out of  
Range



# OKLAHOMA STATE PENSION COMMISSION ASSET ALLOCATION SUMMARY

Key Policy Items		Law	Law 6/30/18	Judges	Judges 6/30/18	Wildlife	Wildlife 6/30/18
<b>TOTAL EQUITY</b>	Target	55.0%	55.0%	68.0%	68.0%	50.0%	50.0%
	Actual	59.0%	60.6%	68.7%	70.2%	57.2%	62.4%
	Range	55-65	55-65	59.2-76.8	59.2-76.8	40-65	40-65
<i>Large Cap</i>	Target	20.0%	20.0%	34.0%	34.0%	50.0%	50.0%
	Actual	28.8%	29.7%	34.5%	35.2%	36.9%	44.7%
	Range	15-25	15-25	31.2-36.8	31.2-36.8	40-65	40-65
<i>MidCap</i>	Target	-	-	-	-	0.0%	0.0%
	Actual	-	-	-	-	9.5%	6.2%
	Range	-	-	-	-	0-10	0-10
<i>Small Cap</i>	Target	10.0%	10.0%	6.0%	6.0%	0.0%	0.0%
	Actual	5.9%	6.4%	6.6%	7.1%	4.7%	3.4%
	Range	5-15	5-15	3.2-8.8	3.2-8.8	0-10	0-10
<i>International Equity</i>	Target	15.0%	15.0%	28.0%	28.0%	0.0%	0.0%
	Actual	14.0%	14.0%	27.6%	27.9%	6.1%	8.1%
	Range	5-15	5-15	25-31	25-31	0-15	0-15
<i>Long/Short Equity</i>	Target	10.0%	10.0%	-	-	-	-
	Actual	10.3%	10.5%	-	-	-	-
	Range	5-15	5-15	-	-	-	-
<b>TOTAL FIXED INCOME</b>	Target	30.0%	30.0%	32.0%	32.0%	40.0%	40.0%
	Actual	27.5%	26.0%	31.0%	29.4%	36.9%	34.1%
	Range	25-35	25-35	27.5-36.5	27.5-36.5	35-55	35-55
<i>Dom. Fixed Income/High Yield</i>	Target	20.0%	20.0%	32.0%	32.0%	40.0%	40.0%
	Actual	19.3%	18.3%	31.0%	29.4%	36.9%	41.8%
	Range	15-25	15-25	27.5-36.5	27.5-36.5	35-55	35-55
<i>Int'l &amp; Global Fixed Income</i>	Target	10.0%	10.0%	-	-	-	-
	Actual	8.2%	7.7%	-	-	-	-
	Range	5-15	5-15	-	-	-	-
<b>TOTAL ALTERNATIVES</b>	Target	15.0%	15.0%	-	-	10.0%	10.0%
	Actual	13.4%	13.2%	-	-	5.1%	2.3%
	Range	5-15	5-15	-	-	0-10	0-10
<i>Low Volatility Hedge Funds</i>	Target	-	-	-	-	-	-
	Actual	-	-	-	-	-	-
	Range	-	-	-	-	-	-
<i>Private Equity/MLP's</i>	Target	5.0%	5.0%	-	-	-	-
	Actual	3.1%	2.9%	-	-	-	-
	Range	0-5	0-5	-	-	-	-
<i>Real Estate/Real Assets</i>	Target	10.0%	0.10	-	-	-	-
	Actual	10.3%	10.3%	-	-	-	-
	Range	2-12	2-12	-	-	-	-
CASH	Actual	0.1%	0.1%	0.2%	0.4%	1.0%	1.3%
<b>Actuarial Assumed Rates</b>		7.5%		7.0%		7.0%	

^Master Limited Partnerships included in Private Equity allocation.

\*The Russell 3000 index was broken down into Large Cap & Small Cap allocations for the PERS retirement plan

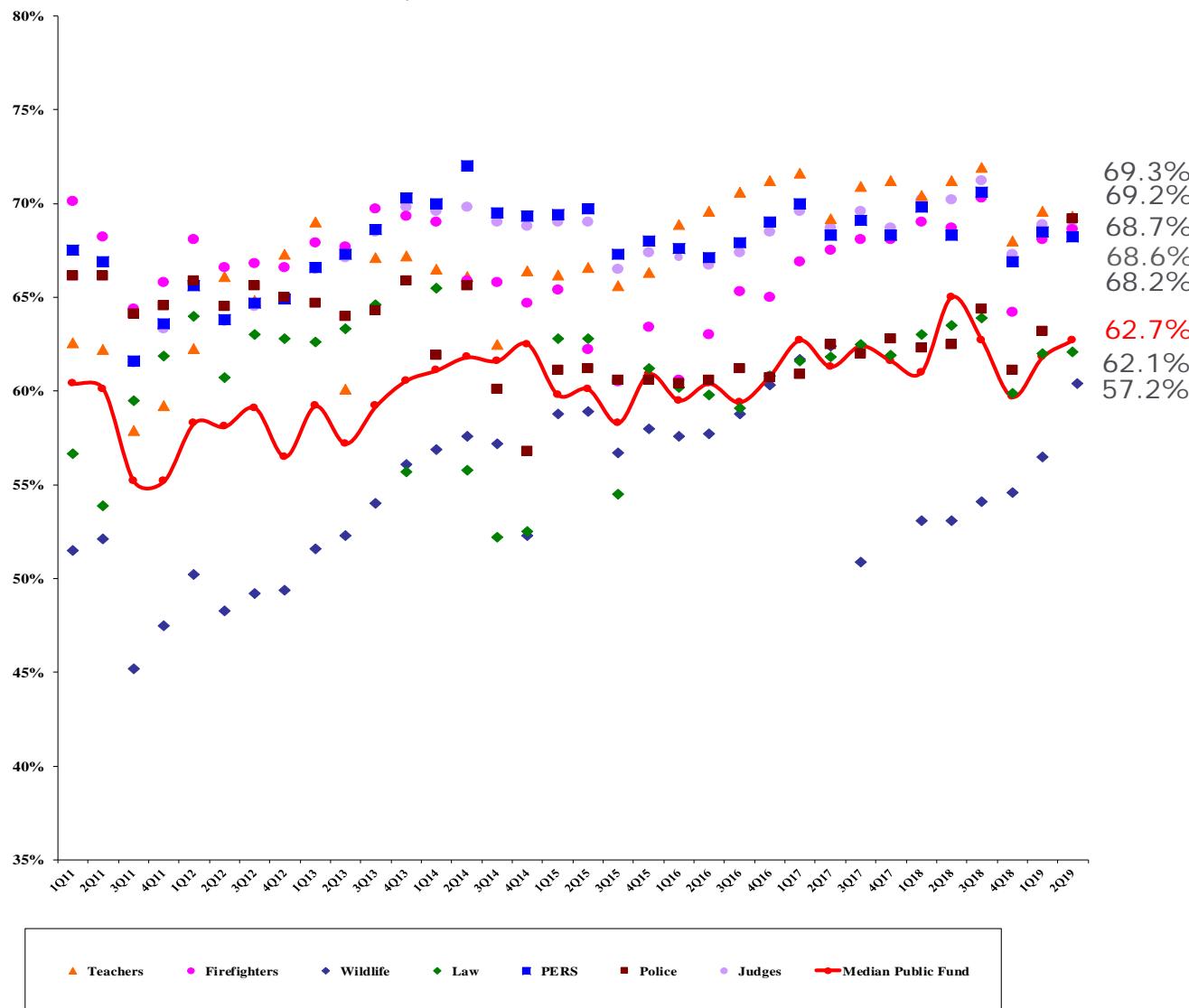
\*\*Real Assets are included in Real Estate

Please note that allocations may not add to 100% due to rounding.

Out of Range



# OKLAHOMA STATE PENSION COMMISSION EQUITY COMMITMENT (PUBLIC EQUITY + PRIVATE EQUITY)



\*Cash allocations not broken out for individual managers.

\*Before Q2 2012, the Median Public Fund assumes 4.6% allocation to private equity



## Oklahoma State Pension Commission

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Oklahoma State Pension Commission	33,929,968,569	100.0	3.6	20	13.0	26	5.7	69	9.7	19	6.3	38	10.2	8
S&P 500			4.3	3	18.5	1	10.4	1	14.2	1	10.7	1	14.7	1
BBgBarc US Aggregate TR			3.1	62	6.1	99	7.9	11	2.3	99	2.9	99	3.9	99
60% S&P 500 / 40% BBgBarc Aggregate			4.0	7	13.6	11	9.9	1	9.5	24	7.7	2	10.5	4
MSCI EAFE			3.7	14	14.0	6	1.1	99	9.1	40	2.2	99	6.9	97
Teachers	17,077,254,542	50.3	3.7	14	13.2	19	5.5	74	10.2	8	6.2	38	11.1	2
TEACHERS Policy Index			3.3	37	13.6	13	6.5	42	9.1	40	5.9	52	10.0	17
PERS	9,939,531,782	29.3	3.6	18	13.5	13	6.1	60	9.0	43	6.0	47	9.6	29
PERS Allocation Index			3.5	24	13.2	20	5.9	64	8.8	55	6.0	51	9.1	52
PERS Policy Index			3.7	14	13.6	13	6.7	39	9.2	37	6.1	43	9.4	42
Firefighters	2,832,994,274	8.3	4.2	3	13.8	10	7.9	11	11.3	2	8.1	1	10.3	8
FIREFIGHTERS Allocation Index			3.0	67	12.6	32	5.7	69	10.0	11	6.8	13	10.1	13
FIREFIGHTERS Policy Index			3.6	16	13.5	13	8.0	9	10.2	8	7.6	3	10.7	3
Police	2,604,662,334	7.7	2.5	91	9.6	92	4.7	84	8.3	75	5.6	69	8.5	72
POLICE Allocation Index			2.1	97	9.4	94	4.0	93	7.7	86	4.9	86	8.9	59
POLICE Policy Index			3.1	60	11.8	55	5.9	64	8.2	76	4.9	86	9.0	56
Law	1,010,316,854	3.0	2.8	79	11.4	66	4.5	87	8.8	55	5.7	66	9.2	46
LAW Allocation Index			3.0	67	10.5	80	5.6	72	8.6	64	6.2	42	9.2	46
LAW Policy Index			3.3	45	11.8	56	5.9	64	8.8	53	6.4	29	9.4	40
Judges	347,518,042	1.0	3.6	19	13.5	13	6.2	57	9.0	43	6.0	48	9.5	34
JUDGES Allocation Index			3.5	23	13.3	17	6.0	63	8.8	54	5.8	56	9.0	56
JUDGES Policy Index			3.7	14	13.6	13	6.7	39	9.2	37	6.1	43	9.4	42
Wildlife	117,690,741	0.3	3.3	41	12.8	29	7.2	23	8.9	51	6.3	32	8.6	68
WILDLIFE Allocation Index			3.5	22	13.0	26	8.0	9	9.0	47	6.5	23	8.8	64
WILDLIFE Policy Index			3.7	14	12.5	38	6.3	51	7.7	86	6.3	33	9.2	51
InvMetrics Public DB Gross Median			3.2		12.0		6.3		8.9		6.0		9.2	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma State Pension Commission

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	2018 (%)	Rank	2017 (%)	Rank	2016 (%)	Rank	2015 (%)	Rank	2014 (%)	Rank
<b>Oklahoma State Pension Commission</b>	<b>33,929,968,569</b>	<b>100.0</b>	<b>-5.0</b>	<b>79</b>	<b>16.4</b>	<b>28</b>	<b>9.5</b>	<b>5</b>	<b>-1.5</b>	<b>83</b>	<b>7.5</b>	<b>12</b>
S&P 500			-4.4	61	21.8	1	12.0	1	1.4	11	13.7	1
BBgBarc US Aggregate TR			0.0	2	3.5	99	2.6	99	0.5	35	6.0	45
60% S&P 500 / 40% BBgBarc Aggregate			-2.3	12	14.2	72	8.3	27	1.3	13	10.6	1
MSCI EAFE			-13.8	99	25.0	1	1.0	99	-0.8	75	-4.9	99
Teachers	17,077,254,542	50.3	-5.0	78	16.1	34	11.4	1	-2.9	98	8.1	4
TEACHERS Policy Index			-5.1	80	14.1	74	10.6	1	-2.5	95	6.7	28
PERS	9,939,531,782	29.3	-6.5	97	17.1	17	7.7	52	-0.8	74	7.4	15
PERS Allocation Index			-6.5	97	16.5	26	8.1	34	-0.9	77	7.0	21
PERS Policy Index			-6.1	94	16.9	21	8.1	34	-0.9	76	7.0	21
Firefighters	2,832,994,274	8.3	-2.4	13	18.7	4	7.3	61	2.1	6	6.9	24
FIREFIGHTERS Allocation Index			-3.9	49	15.6	44	9.4	5	0.5	35	6.1	40
FIREFIGHTERS Policy Index			-3.8	45	16.4	28	8.7	15	1.6	10	8.7	3
Police	2,604,662,334	7.7	-2.4	14	13.2	86	7.5	57	1.0	21	5.1	68
POLICE Allocation Index			-3.7	42	13.8	77	6.7	80	-0.4	63	5.0	70
POLICE Policy Index			-5.3	83	15.5	48	7.1	70	-1.9	89	4.5	79
Law	1,010,316,854	3.0	-4.6	65	14.6	63	7.2	66	-0.4	65	6.8	28
LAW Allocation Index			-3.5	35	14.6	63	8.3	29	0.3	42	7.1	20
LAW Policy Index			-3.7	40	13.4	86	8.6	18	1.0	22	7.0	21
Judges	347,518,042	1.0	-6.4	96	16.9	21	8.1	36	-1.1	79	7.0	22
JUDGES Allocation Index			-6.5	97	16.7	24	7.9	44	-1.2	81	6.7	29
JUDGES Policy Index			-6.1	94	16.9	21	8.1	34	-0.9	76	7.0	21
Wildlife	117,690,741	0.3	-3.5	36	14.3	71	6.6	82	0.1	49	7.9	7
WILDLIFE Allocation Index			-3.7	42	14.4	69	8.0	37	-0.3	61	7.7	10
WILDLIFE Policy Index			-4.6	68	12.8	89	7.2	67	1.0	22	9.5	1
InvMetrics Public DB Gross Median			-4.0		15.3		7.7		0.1		5.8	

Returns are gross of manager fees.

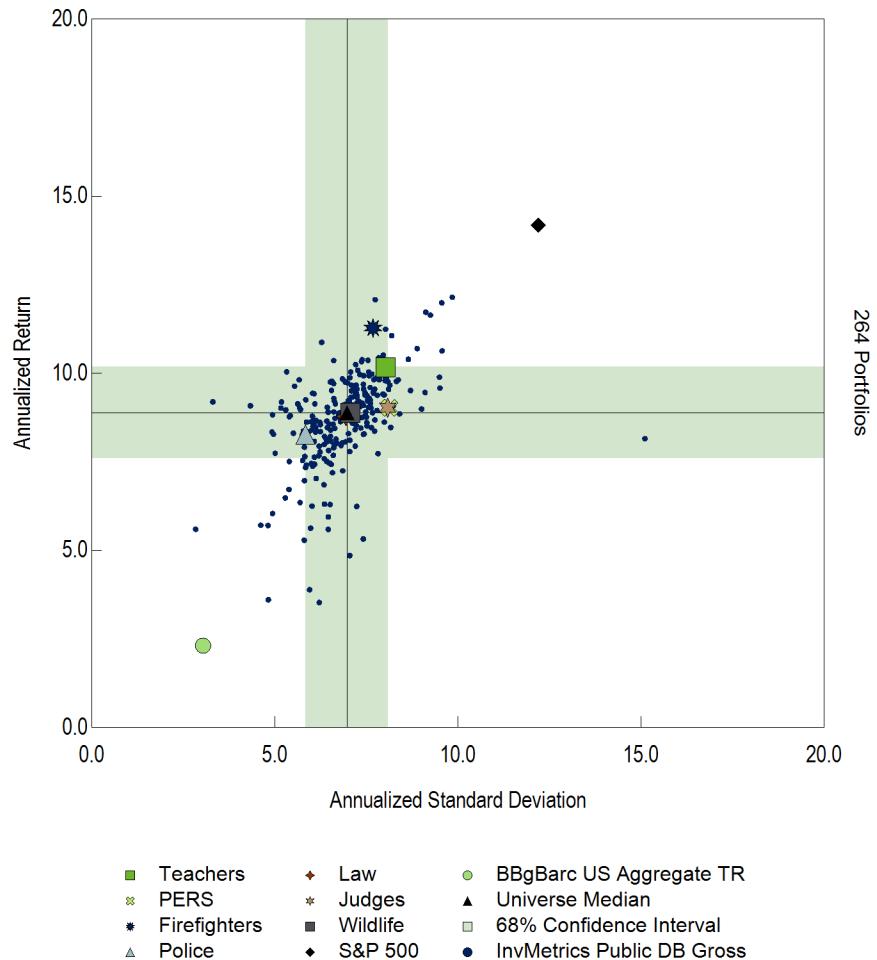


June 30, 2019

## Oklahoma State Pension Commission

# TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending June 30, 2019



3 Years Ending June 30, 2019

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Oklahoma State Pension Commission	9.69%	19	7.77%	86
Teachers	10.16%	8	8.02%	91
PERS	9.03%	43	8.13%	93
Firefighters	11.28%	2	7.68%	83
Police	8.27%	75	5.83%	14
Law	8.79%	55	6.94%	50
Judges	9.03%	43	8.08%	92
Wildlife	8.89%	51	7.06%	56

3 Years Ending June 30, 2019

	Sharpe Ratio	Rank	Sortino Ratio	Rank
Oklahoma State Pension Commission	1.07	53	1.37	61
Teachers	1.09	43	1.58	29
PERS	0.94	86	1.25	83
Firefighters	1.29	10	1.59	28
Police	1.18	21	1.49	39
Law	1.06	54	1.30	75
Judges	0.94	84	1.23	83
Wildlife	1.06	54	1.41	53

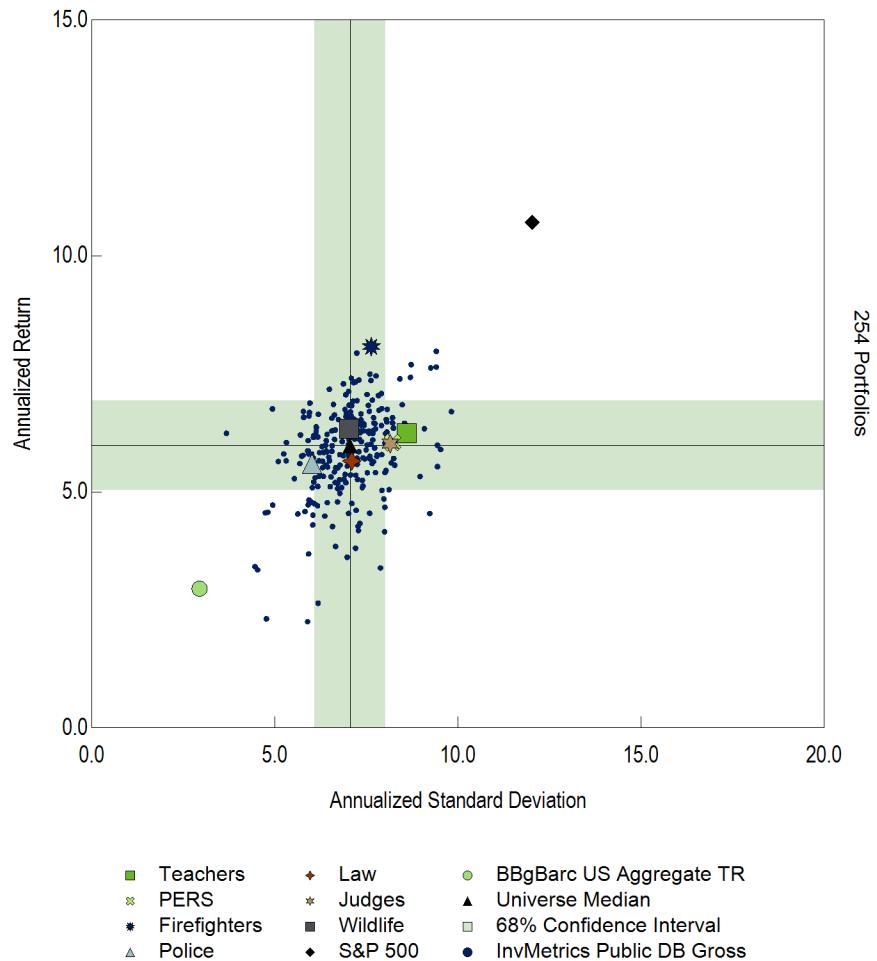


June 30, 2019

## Oklahoma State Pension Commission

# TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending June 30, 2019



5 Years Ending June 30, 2019

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Oklahoma State Pension Commission	6.26%	38	8.08%	91
Teachers	6.25%	38	8.60%	96
PERS	6.05%	47	8.21%	93
Firefighters	8.08%	1	7.63%	77
Police	5.60%	69	6.01%	15
Law	5.65%	66	7.10%	54
Judges	6.02%	48	8.15%	92
Wildlife	6.34%	32	7.03%	50

5 Years Ending June 30, 2019

	Sharpe Ratio	Rank	Sortino Ratio	Rank
Oklahoma State Pension Commission	0.67	68	1.06	68
Teachers	0.62	78	1.00	80
PERS	0.63	78	1.01	79
Firefighters	0.94	5	1.41	11
Police	0.79	32	1.29	29
Law	0.67	65	1.07	66
Judges	0.63	77	1.01	79
Wildlife	0.78	36	1.22	41

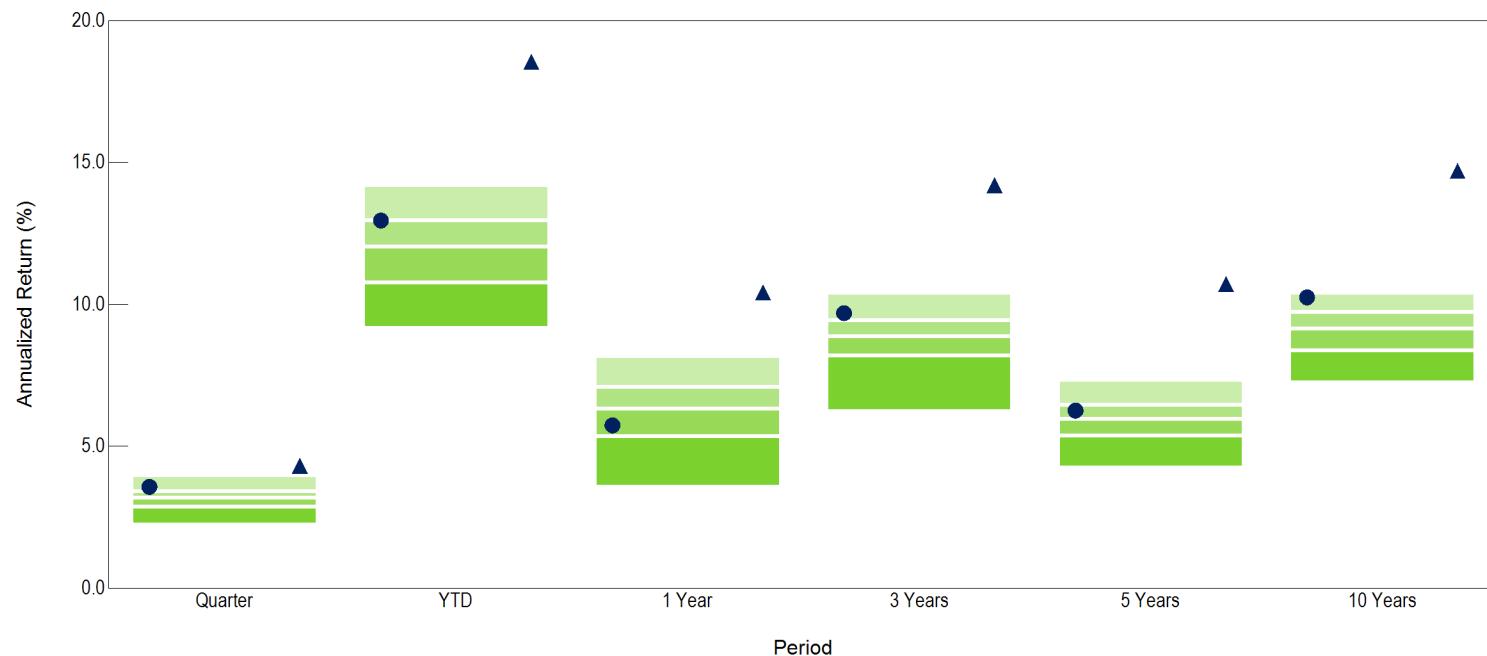


June 30, 2019

## Oklahoma State Pension Commission

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

Oklahoma State Pension Commission vs. InvMetrics Public DB Gross



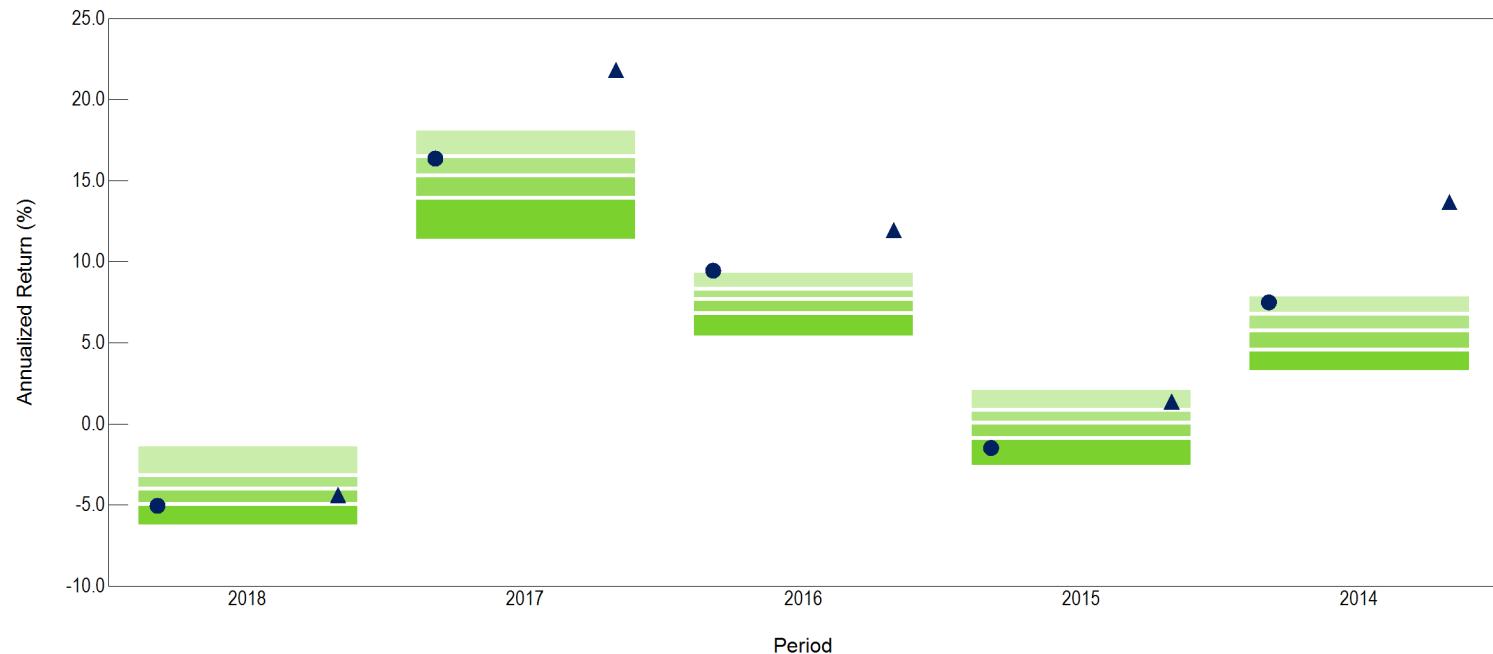
	Return (Rank)					
5th Percentile	4.0	14.2	8.2	10.4	7.3	10.4
25th Percentile	3.4	13.0	7.1	9.5	6.5	9.7
Median	3.2	12.0	6.3	8.9	6.0	9.2
75th Percentile	2.9	10.8	5.4	8.2	5.4	8.4
95th Percentile	2.3	9.2	3.6	6.2	4.3	7.3
# of Portfolios	279	278	273	264	254	217
● Oklahoma State Pension Commission	3.6	(20)	13.0	(26)	5.7	(69)
▲ S&P 500	4.3	(3)	18.5	(1)	10.4	(1)



June 30, 2019

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

Oklahoma State Pension Commission vs. InvMetrics Public DB Gross



	Return (Rank)					
5th Percentile	-1.3	18.2	9.4	2.2	8.0	
25th Percentile	-3.1	16.5	8.4	0.9	6.8	
Median	-4.0	15.3	7.7	0.1	5.8	
75th Percentile	-4.9	14.0	6.9	-0.9	4.6	
95th Percentile	-6.3	11.3	5.3	-2.6	3.2	
# of Portfolios	319	304	305	316	248	
● Oklahoma State Pension Commission	-5.0	(79)	(28)	(5)	(83)	7.5 (12)
▲ S&P 500	-4.4	(61)	(1)	(1)	(11)	13.7 (1)



June 30, 2019

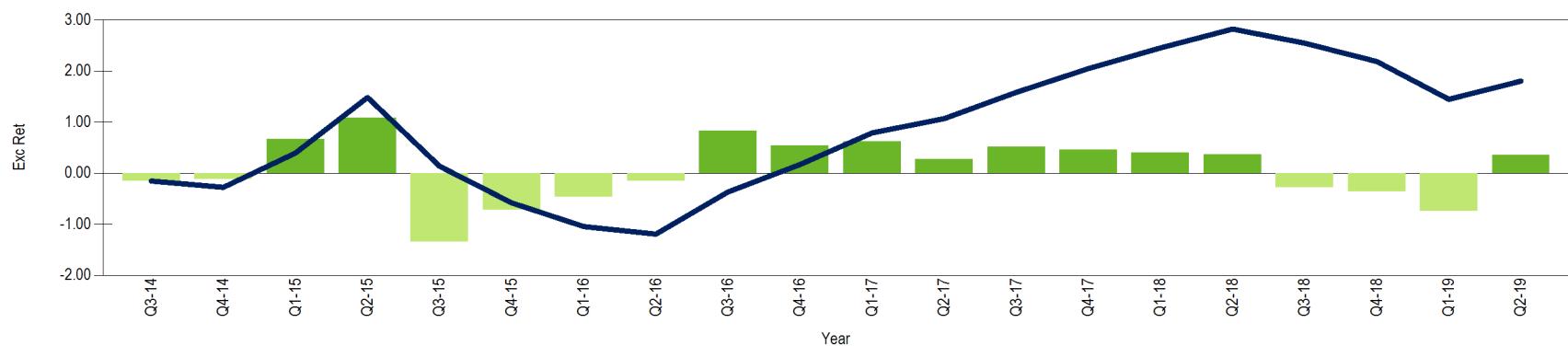
# OKLAHOMA TEACHERS



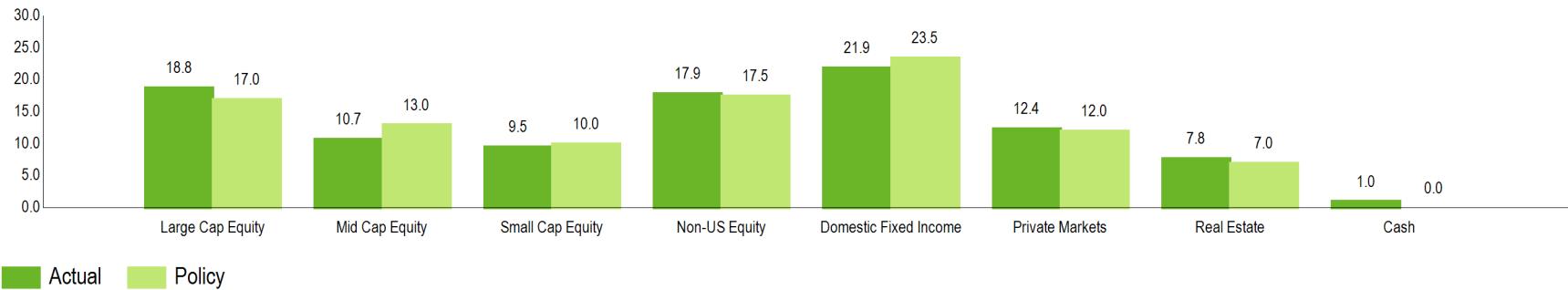
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK TEACHERS</b>	<b>\$17,081,664,542</b>	<b>3.7%</b>	<b>14</b>	<b>13.2%</b>	<b>19</b>	<b>5.5%</b>	<b>74</b>	<b>10.2%</b>	<b>8</b>	<b>6.3%</b>	<b>38</b>	<b>11.1%</b>	<b>2</b>
TEACHERS Policy Index		3.3%	37	13.6%	13	6.5%	42	9.1%	40	5.9%	52	10.0%	17
InvMetrics Public DB Gross Median		3.2%		12.0%		6.3%		8.9%		6.0%		9.2%	

Quarterly and Cumulative Excess Performance



Actual vs Target Allocation (%)



Returns are gross of manager fees.

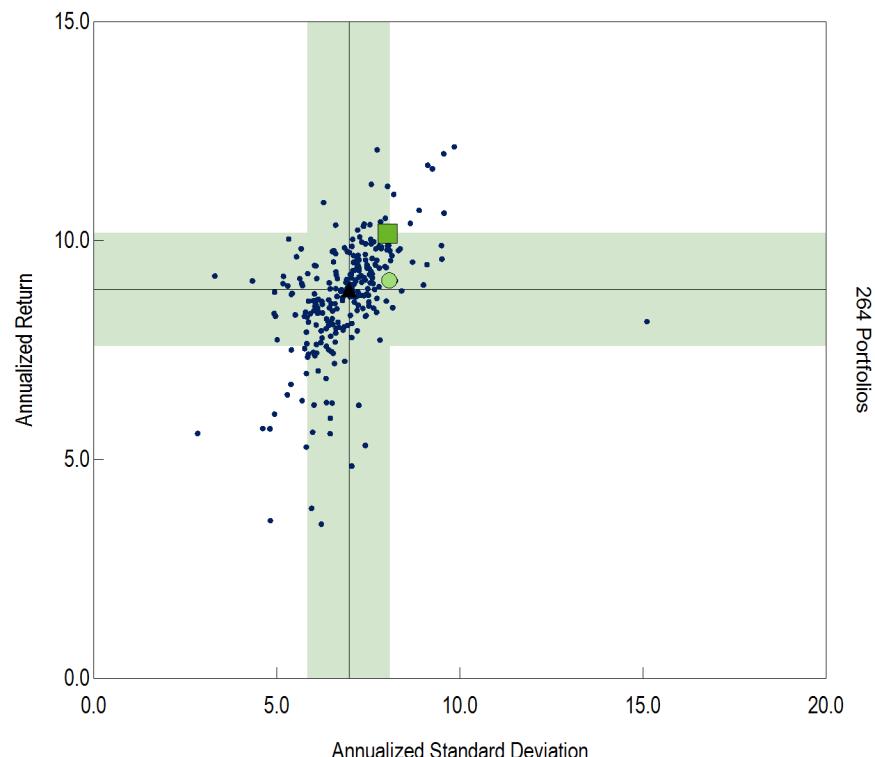


June 30, 2019

## Oklahoma Teachers

# TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending June 30, 2019



	3 Years Ending June 30, 2019			
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK TEACHERS	10.16%	8	8.02%	91
TEACHERS Allocation Index	--	--	--	--
TEACHERS Policy Index	9.10%	40	8.07%	92

	3 Years Ending June 30, 2019			
	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK TEACHERS	1.09	43	1.58	29
TEACHERS Allocation Index	--	--	--	--
TEACHERS Policy Index	0.95	83	1.24	83

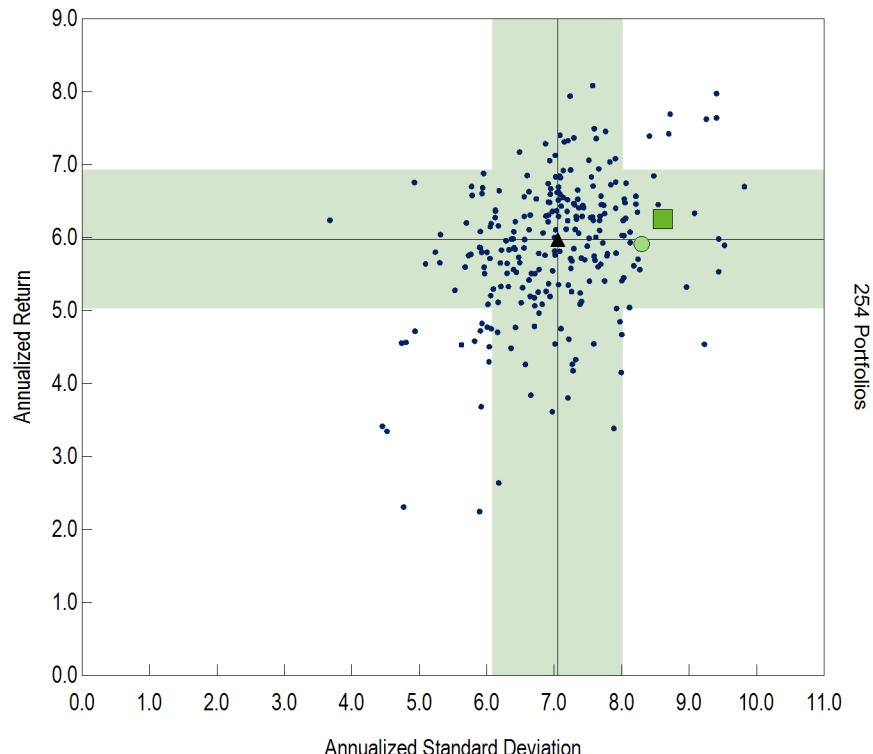


June 30, 2019

## Oklahoma Teachers

# TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending June 30, 2019



5 Years Ending June 30, 2019

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK TEACHERS	6.26%	38	8.60%	96
TEACHERS Allocation Index	--	--	--	--
TEACHERS Policy Index	5.92%	52	8.30%	94

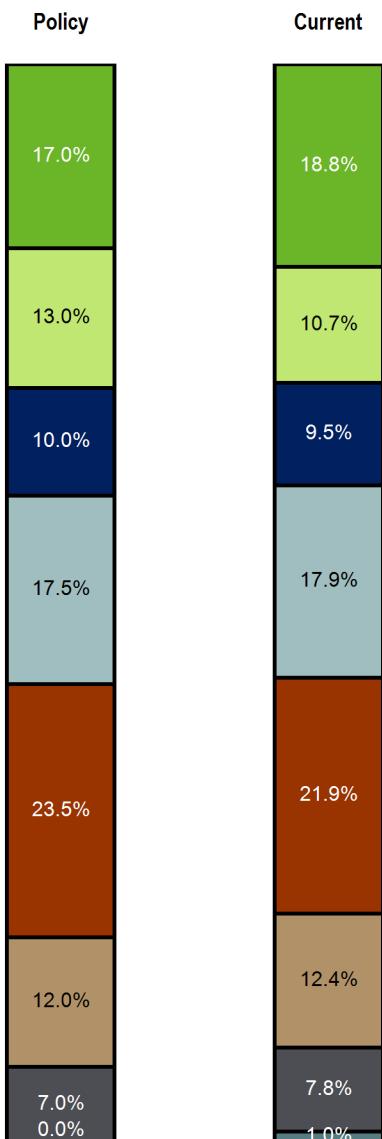
5 Years Ending June 30, 2019

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK TEACHERS	0.63	78	1.00	80
TEACHERS Allocation Index	--	--	--	--
TEACHERS Policy Index	0.61	82	1.00	80



June 30, 2019

# TOTAL FUND ASSET ALLOCATION VS. POLICY

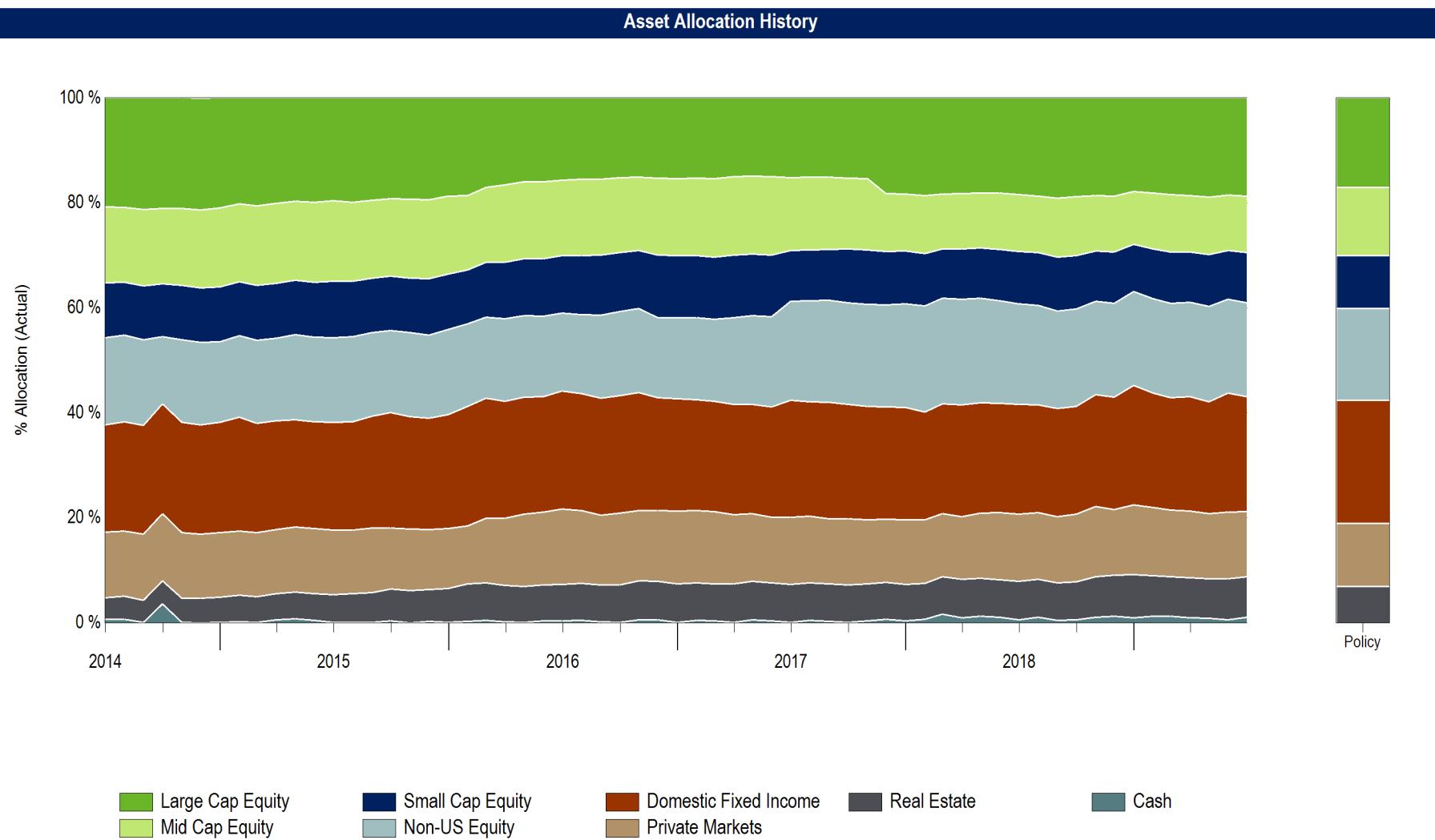


Asset Allocation vs. Target						
	Current	Policy	Current Difference*	Policy Range		Within Range
Large Cap Equity	\$3,206,575,977	17.0%	18.8%	1.8%	12.0% - 23.0%	Yes
Mid Cap Equity	\$1,833,037,817	13.0%	10.7%	-2.3%	8.0% - 18.0%	Yes
Small Cap Equity	\$1,630,568,282	10.0%	9.5%	-0.5%	5.0% - 15.0%	Yes
Non-US Equity	\$3,050,776,666	17.5%	17.9%	0.4%	12.5% - 22.5%	Yes
Domestic Fixed Income	\$3,738,289,978	23.5%	21.9%	-1.6%	18.5% - 28.5%	Yes
Private Markets	\$2,123,869,302	12.0%	12.4%	0.4%	7.0% - 17.0%	Yes
Real Estate	\$1,326,209,594	7.0%	7.8%	0.8%	2.0% - 12.0%	Yes
Cash	\$172,336,926	0.0%	1.0%	1.0%	0.0% - 5.0%	Yes
<b>Total</b>	<b>\$17,081,664,542</b>	<b>100.0%</b>	<b>100.0%</b>			

\*Difference between Policy and Current Allocation



# TOTAL FUND ASSET ALLOCATION HISTORY



## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>OK TEACHERS</b>	<b>17,081,664,542</b>	<b>100.0</b>	<b>3.7</b>	<b>14</b>	<b>13.2</b>	<b>19</b>	<b>5.5</b>	<b>74</b>	<b>10.2</b>	<b>8</b>	<b>6.3</b>	<b>38</b>	<b>11.1</b>	<b>2</b>
TEACHERS Policy Index			3.3	37	13.6	13	6.5	42	9.1	40	5.9	52	10.0	17
InvMetrics Public DB Gross Median			3.2		12.0		6.3		8.9		6.0		9.2	
<b>Total Equity Composite</b>	<b>9,720,958,742</b>	<b>56.9</b>	<b>3.4</b>	<b>55</b>	<b>17.6</b>	<b>39</b>	<b>2.9</b>	<b>70</b>	<b>12.6</b>	<b>34</b>	<b>7.2</b>	<b>41</b>	<b>12.6</b>	<b>27</b>
Russell 3000			4.1	40	18.7	31	9.0	30	14.0	21	10.2	14	14.7	9
Over/Under			-0.7		-1.1		-6.1		-1.4		-3.0		-2.1	
eV All Global Equity Gross Median			3.6		16.3		5.8		11.3		6.8		11.5	
<b>U.S. Equity Comp</b>	<b>6,670,182,076</b>	<b>39.0</b>	<b>3.8</b>	<b>53</b>	<b>19.6</b>	<b>37</b>	<b>5.7</b>	<b>55</b>	<b>14.2</b>	<b>38</b>	<b>8.9</b>	<b>53</b>	<b>14.4</b>	<b>58</b>
S&P 500			4.3	41	18.5	47	10.4	29	14.2	38	10.7	30	14.7	50
Over/Under			-0.5		1.1		-4.7		0.0		-1.8		-0.3	
eV All US Equity Gross Median			3.9		18.3		6.7		13.0		9.2		14.7	
Sawgrass Large Growth	765,164,424	4.5	4.6	62	18.3	88	16.9	14	15.3	84	12.0	64	15.5	61
Russell 1000 Growth			4.6	62	21.5	53	11.6	55	18.1	49	13.4	41	16.3	39
Over/Under			0.0		-3.2		5.3		-2.8		-1.4		-0.8	
eV US Large Cap Growth Equity Gross Median			5.2		21.8		12.1		18.0		12.9		15.9	
Hotchkis & Wiley Large Cap Value	740,834,065	4.3	4.6	25	20.2	9	3.5	76	13.4	14	7.9	51	14.7	15
Russell 1000 Value			3.8	49	16.2	40	8.5	33	10.2	71	7.5	60	13.2	58
Over/Under			0.8		4.0		-5.0		3.2		0.4		1.5	
eV US Large Cap Value Equity Gross Median			3.7		15.6		6.7		11.2		7.9		13.4	
Aronson Mid Cap	439,887,899	2.6	3.2	70	17.6	74	2.2	68	12.1	55	7.1	71	14.9	58
Russell MidCap			4.1	55	21.3	44	7.8	48	12.2	55	8.6	53	15.2	51
Over/Under			-0.9		-3.7		-5.6		-0.1		-1.5		-0.3	
eV US Mid Cap Equity Gross Median			4.5		20.3		7.1		12.7		8.8		15.2	
Frontier	491,680,336	2.9	3.5	86	24.6	71	13.4	59	15.3	74	10.6	68	15.2	78
Russell MidCap Growth			5.4	69	26.1	62	13.9	57	16.5	60	11.1	62	16.0	54
Over/Under			-1.9		-1.5		-0.5		-1.2		-0.5		-0.8	
Wellington	512,936,751	3.0	7.0	40	28.2	41	15.8	39	20.8	19	11.1	62	15.6	63
Russell MidCap Growth			5.4	69	26.1	62	13.9	57	16.5	60	11.1	62	16.0	54
Over/Under			1.6		2.1		1.9		4.3		0.0		-0.4	
eV US Mid Cap Growth Equity Gross Median			6.5		27.4		14.6		17.0		11.5		16.1	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Hotchkis & Wiley Mid Cap	388,532,831	2.3	-3.2	99	12.4	96	-13.2	99	7.9	85	2.1	97	14.5	39
Russell MidCap Value			3.2	61	18.0	56	3.7	36	8.9	75	6.7	54	14.6	39
Over/Under			-6.4		-5.6		-16.9		-1.0		-4.6		-0.1	
eV US Mid Cap Value Equity Gross Median			3.6		18.3		1.3		10.2		6.9		14.1	
Shapiro Capital	740,521,122	4.3	2.1	53	18.7	18	-6.0	59	12.9	14	6.7	34	15.5	15
Russell 2000 Value			1.4	68	13.5	72	-6.2	60	9.8	51	5.4	63	12.4	85
Over/Under			0.7		5.2		0.2		3.1		1.3		3.1	
Frontier Capital Management Small Cap Value	211,686,579	1.2	4.0	20	19.0	14	-3.7	40	10.7	36	7.1	26	--	--
Russell 2000 Value			1.4	68	13.5	72	-6.2	60	9.8	51	5.4	63	12.4	85
Over/Under			2.6		5.5		2.5		0.9		1.7			
Neumeier Poma Investment Counsel Small Cap Value	247,707,352	1.5	2.9	38	15.9	42	0.5	15	14.8	8	11.6	1	--	--
Russell 2000 Value			1.4	68	13.5	72	-6.2	60	9.8	51	5.4	63	12.4	85
Over/Under			1.5		2.4		6.7		5.0		6.2			
eV US Small Cap Value Equity Gross Median			2.2		15.1		-4.8		9.8		5.9		13.9	
Geneva Capital Management Small Cap Growth	214,337,568	1.3	6.5	30	23.4	49	10.2	29	18.6	46	14.6	13	--	--
Russell 2000 Growth			2.7	79	20.4	65	-0.5	80	14.7	77	8.6	81	14.4	86
Over/Under			3.8		3.0		10.7		3.9		6.0			
Wasatch Advisors Small Cap Growth	216,315,661	1.3	7.9	16	25.7	40	11.2	27	21.2	31	14.2	15	--	--
Russell 2000 Growth			2.7	79	20.4	65	-0.5	80	14.7	77	8.6	81	14.4	86
Over/Under			5.2		5.3		11.7		6.5		5.6			
eV US Small Cap Growth Equity Gross Median			4.4		22.9		5.5		18.3		10.8		16.5	

Returns are gross of manager fees.



## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Domestic Passive Equity</b>	<b>1,700,577,488</b>	<b>10.0</b>	<b>4.0</b>	--	<b>18.1</b>	--	<b>9.8</b>	--	<b>13.3</b>	--	<b>9.6</b>	--	--	--
S&P 500			4.3	--	18.5	--	10.4	--	14.2	--	10.7	--	14.7	--
Over/Under			-0.3		-0.4		-0.6		-0.9		-1.1			
Northern Trust Russell 1000	674,739,403	4.0	4.2	--	18.8	--	10.0	--	--	--	--	--	--	--
Russell 1000			4.2	--	18.8	--	10.0	--	14.1	--	10.5	--	14.8	--
Over/Under			0.0		0.0		0.0							
Sci Beta US HFE MBMS	1,025,838,085	6.0	3.9	--	17.6	--	9.7	--	--	--	--	--	--	--
S&P 500			4.3	--	18.5	--	10.4	--	14.2	--	10.7	--	14.7	--
Over/Under			-0.4		-0.9		-0.7							
<b>International Equity Composite</b>	<b>3,050,776,666</b>	<b>17.9</b>	<b>2.4</b>	<b>69</b>	<b>13.4</b>	<b>67</b>	<b>-2.9</b>	<b>76</b>	<b>9.3</b>	<b>64</b>	<b>3.2</b>	<b>62</b>	<b>7.7</b>	<b>74</b>
MSCI ACWI ex USA			3.0	60	13.6	63	1.3	41	9.4	62	2.2	76	6.5	90
Over/Under			-0.6		-0.2		-4.2		-0.1		1.0		1.2	
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
Causeway - Value	455,969,704	2.7	1.6	62	12.8	30	-1.9	36	9.5	36	2.1	52	8.1	52
MSCI EAFE			3.7	18	14.0	15	1.1	23	9.1	42	2.2	48	6.9	68
Over/Under			-2.1		-1.2		-3.0		0.4		-0.1		1.2	
eV EAFE Value Equity Gross Median			2.3		11.5		-3.1		8.6		2.1		8.4	
Allianz Intl	988,410,830	5.8	1.6	82	10.8	84	-0.4	59	10.0	50	--	--	--	--
MSCI ACWI ex USA			3.0	61	13.6	64	1.3	42	9.4	64	2.2	77	6.5	92
Over/Under			-1.4		-2.8		-1.7		0.6					
eV ACWI ex-US Equity Unhedged Gross Median			3.5		15.2		0.2		10.0		4.0		9.0	
Wellington Intl	513,087,167	3.0	4.8	27	19.1	26	3.8	18	12.5	19	--	--	--	--
MSCI ACWI ex USA			3.0	61	13.6	64	1.3	42	9.4	64	2.2	77	6.5	92
Over/Under			1.8		5.5		2.5		3.1					
eV ACWI ex-US Equity Unhedged Gross Median			3.5		15.2		0.2		10.0		4.0		9.0	
Northern Trust Intl - Liquidating	15,651	0.0												
<b>International Small Cap Equity</b>	<b>1,093,293,314</b>	<b>6.4</b>	<b>2.4</b>	<b>63</b>	<b>13.5</b>	<b>57</b>	<b>-8.1</b>	<b>77</b>	<b>7.3</b>	<b>83</b>	<b>3.0</b>	<b>76</b>	--	--
MSCI ACWI ex USA			3.0	57	13.6	56	1.3	16	9.4	61	2.2	82	6.5	99
Over/Under			-0.6		-0.1		-9.4		-2.1		0.8			
eV ACWI ex-US Small Cap Equity Gross Median			3.2		14.3		-5.0		10.2		5.6		11.4	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Advisory Research Int'l Small Cap	913,962	0.0	1.5	79	0.1	99	-1.0	24	7.0	84	1.3	88	--	--
<i>MSCI ACWI ex USA</i>			<u>3.0</u>	57	<u>13.6</u>	56	<u>1.3</u>	16	<u>9.4</u>	61	<u>2.2</u>	82	<u>6.5</u>	99
Over/Under			<u>-1.5</u>		<u>-13.5</u>		<u>-2.3</u>		<u>-2.4</u>		<u>-0.9</u>			
EPOCH Int'l Small Cap	255,884,851	1.5	1.0	81	11.1	79	-12.9	94	6.7	84	1.7	85	--	--
<i>MSCI ACWI ex USA</i>			<u>3.0</u>	57	<u>13.6</u>	56	<u>1.3</u>	16	<u>9.4</u>	61	<u>2.2</u>	82	<u>6.5</u>	99
Over/Under			<u>-2.0</u>		<u>-2.5</u>		<u>-14.2</u>		<u>-2.7</u>		<u>-0.5</u>			
Wasatch Int'l Small Cap	310,308,775	1.8	5.7	13	21.8	12	-2.9	31	9.7	57	7.4	21	--	--
<i>MSCI ACWI ex USA</i>			<u>3.0</u>	57	<u>13.6</u>	56	<u>1.3</u>	16	<u>9.4</u>	61	<u>2.2</u>	82	<u>6.5</u>	99
Over/Under			2.7		8.2		<u>-4.2</u>		0.3		5.2			
Wellington Int'l Small Cap	254,583,443	1.5	2.1	66	12.5	68	-13.0	95	5.1	88	1.3	88	--	--
<i>MSCI ACWI ex USA</i>			<u>3.0</u>	57	<u>13.6</u>	56	<u>1.3</u>	16	<u>9.4</u>	61	<u>2.2</u>	82	<u>6.5</u>	99
Over/Under			<u>-0.9</u>		<u>-1.1</u>		<u>-14.3</u>		<u>-4.3</u>		<u>-0.9</u>			
<i>eV ACWI ex-US Small Cap Equity Gross Median</i>			3.2		14.3		-5.0		10.2		5.6		11.4	
SSGA Emerging Market Small Cap	271,602,283	1.6	0.6	85	8.1	89	-3.8	36	--	--	--	--	--	--
<i>MSCI Emerging Markets Small Cap Gross</i>			<u>-0.9</u>	91	<u>6.8</u>	91	<u>-4.8</u>	48	<u>5.8</u>	86	<u>0.8</u>	93	<u>6.2</u>	99
Over/Under			1.5		1.3		1.0							
<i>eV ACWI ex-US Small Cap Equity Gross Median</i>			3.2		14.3		-5.0		10.2		5.6		11.4	
<b>Fixed Composite</b>	<b>3,738,289,978</b>	<b>21.9</b>	<b>3.8</b>	<b>15</b>	<b>8.6</b>	<b>24</b>	<b>8.8</b>	<b>20</b>	<b>4.5</b>	<b>28</b>	<b>4.1</b>	<b>31</b>	<b>6.7</b>	<b>27</b>
<i>BBgBarc US Aggregate TR</i>			<u>3.1</u>	33	<u>6.1</u>	49	<u>7.9</u>	37	<u>2.3</u>	69	<u>2.9</u>	61	<u>3.9</u>	63
Over/Under			0.7		2.5		0.9		2.2		1.2		2.8	
<i>eV All US Fixed Inc Gross Median</i>			2.6		5.9		7.0		2.9		3.3		4.6	
Loomis Sayles Core Plus	1,036,911,231	6.1	3.0	80	7.2	45	6.6	95	3.8	41	3.1	88	6.4	18
<i>BBgBarc US Aggregate TR</i>			<u>3.1</u>	74	<u>6.1</u>	92	<u>7.9</u>	77	<u>2.3</u>	99	<u>2.9</u>	97	<u>3.9</u>	99
Over/Under			<u>-0.1</u>		1.1		<u>-1.3</u>		1.5		0.2		2.5	
Mackay Shields Core Plus	1,037,134,192	6.1	3.1	67	8.4	6	8.0	72	3.4	64	2.7	98	5.4	65
<i>BBgBarc US Aggregate TR</i>			<u>3.1</u>	74	<u>6.1</u>	92	<u>7.9</u>	77	<u>2.3</u>	99	<u>2.9</u>	97	<u>3.9</u>	99
Over/Under			0.0		2.3		0.1		1.1		<u>-0.2</u>		1.5	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Lord Abbett Core Plus	1,057,492,123	6.2	3.6	11	7.9	18	8.2	61	3.3	66	3.4	63	5.5	60
BBgBarc US Aggregate TR			3.1	74	6.1	92	7.9	77	2.3	99	2.9	97	3.9	99
Over/Under			0.5		1.8		0.3		1.0		0.5		1.6	
eV US Core Plus Fixed Inc Gross Median			3.2		7.1		8.3		3.6		3.6		5.6	
Hoisington Long Bonds	606,672,657	3.6	6.9	38	12.6	89	12.9	91	1.1	99	6.3	25	7.4	96
BBgBarc US Aggregate TR			3.1	99	6.1	99	7.9	99	2.3	95	2.9	99	3.9	99
Over/Under			3.8		6.5		5.0		-1.2		3.4		3.5	
eV US Long Duration Fixed Inc Gross Median			6.8		14.4		14.4		4.8		6.0		8.7	
Lord Abbett High Yield - Liquidating	79,775	0.0												
<b>Total Private Equity</b>	<b>1,502,644,719</b>	<b>8.8</b>	<b>6.7</b>	--	<b>5.9</b>	--	<b>17.0</b>	--	<b>17.1</b>	--	<b>14.7</b>	--	--	--
Cambridge Associates US All PE			0.0	--	6.5	--	8.7	--	14.5	--	11.0	--	14.3	--
Over/Under			6.7		-0.6		8.3		2.6		3.7			
Legacy LP - Aldus PE	15,293,982	0.1	-3.2	--	-3.2	--	-0.5	--	1.7	--	2.9	--	6.9	--
Pimco Bravo	2,019,100	0.0	-17.6	--	-38.2	--	-43.2	--	7.4	--	7.1	--	--	--
PIMCO Bravo 2	84,070,792	0.5	6.2	--	-1.0	--	3.4	--	8.1	--	9.2	--	--	--
OK - OTRS/Franklin Park	1,214,334,584	7.1	7.4	--	7.4	--	19.9	--	19.2	--	16.1	--	--	--
Pimco COF II	67,871,015	0.4	5.2	--	0.2	--	7.7	--	--	--	--	--	--	--
PIMCO Bravo 3	119,055,246	0.7	2.3	--	1.9	--	10.0	--	--	--	--	--	--	--
<b>Master Limited Partnerships</b>	<b>621,224,583</b>	<b>3.6</b>	<b>-1.3</b>	--	<b>17.2</b>	--	<b>-2.9</b>	--	<b>0.1</b>	--	<b>-6.6</b>	--	--	--
Alerian MLP Index			0.1	--	17.0	--	3.1	--	-0.4	--	-7.2	--	8.2	--
Over/Under			-1.4		0.2		-6.0		0.5		0.6			
Chickasaw Capital Management	207,272,163	1.2	-1.7	--	19.0	--	-3.2	--	-0.6	--	-6.6	--	--	--
Alerian MLP Index			0.1	--	17.0	--	3.1	--	-0.4	--	-7.2	--	8.2	--
Over/Under			-1.8		2.0		-6.3		-0.2		0.6			
Swank Capital Cushing	413,952,420	2.4	-1.1	--	16.3	--	-2.7	--	1.0	--	-6.0	--	--	--
Alerian MLP Index			0.1	--	17.0	--	3.1	--	-0.4	--	-7.2	--	8.2	--
Over/Under			-1.2		-0.7		-5.8		1.4		1.2			

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Total Core Real Estate</b>	<b>1,326,209,594</b>	<b>7.8</b>	<b>5.1</b>	--	<b>5.8</b>	--	<b>9.9</b>	--	<b>8.1</b>	--	<b>9.9</b>	--	--	--
NCREIF Property Index			<u>1.5</u>	--	<u>3.3</u>	--	<u>6.5</u>	--	<u>6.9</u>	--	<u>8.8</u>	--	<u>9.2</u>	--
Over/Under			3.6		2.5		3.4		1.2		1.1			
<b>L &amp; B Real Estate</b>	<b>286,526,280</b>	<b>1.7</b>	<b>-0.1</b>	--	<b>0.2</b>	--	<b>4.3</b>	--	<b>6.5</b>	--	<b>9.6</b>	--	--	--
NCREIF ODCE			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			<u>-1.1</u>		<u>-2.2</u>		<u>-2.1</u>		<u>-1.1</u>		<u>-0.2</u>			
<b>Heitman Real Estate</b>	<b>324,366,028</b>	<b>1.9</b>	<b>1.0</b>	--	<b>1.8</b>	--	<b>5.2</b>	--	<b>7.9</b>	--	<b>9.7</b>	--	--	--
NCREIF ODCE			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			0.0		<u>-0.6</u>		<u>-1.2</u>		0.3		<u>-0.1</u>			
<b>AEW Real Estate</b>	<b>319,124,527</b>	<b>1.9</b>	<b>2.5</b>	--	<b>3.2</b>	--	<b>8.0</b>	--	<b>7.1</b>	--	<b>9.0</b>	--	--	--
NCREIF ODCE			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			1.5		0.8		1.6		<u>-0.5</u>		<u>-0.8</u>			
<b>L &amp; B Gold Driller</b>	<b>103,721,031</b>	<b>0.6</b>	<b>39.6</b>	--	<b>39.6</b>	--	<b>39.6</b>	--	<b>13.8</b>	--	--	--	--	--
NCREIF ODCE			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			38.6		37.2		33.2		6.2					
<b>Greenoak Real Estate II</b>	<b>37,652,258</b>	<b>0.2</b>	<b>-0.3</b>	--	<b>2.2</b>	--	<b>10.3</b>	--	<b>7.1</b>	--	--	--	--	--
NCREIF ODCE			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			<u>-1.3</u>		<u>-0.2</u>		3.9		<u>-0.5</u>					
<b>Greenoak Real Estate III</b>	<b>11,196,405</b>	<b>0.1</b>	<b>-0.2</b>	--	<b>0.5</b>	--	<b>-29.7</b>	--	--	--	--	--	--	--
<b>Lyrical-OTRS Realty Partner IV</b>	<b>62,731,800</b>	<b>0.4</b>	<b>52.7</b>	--	<b>52.7</b>	--	<b>47.9</b>	--	<b>9.0</b>	--	--	--	--	--
NCREIF ODCE			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			51.7		50.3		41.5		1.4					
<b>Dune Real Estate</b>	<b>57,631,038</b>	<b>0.3</b>	<b>1.8</b>	--	<b>4.5</b>	--	<b>16.0</b>	--	<b>12.9</b>	--	--	--	--	--
NCREIF ODCE			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			0.8		2.1		9.6		5.3					
<b>Landmark Realty</b>	<b>17,897,724</b>	<b>0.1</b>	<b>-0.8</b>	--	<b>-0.8</b>	--	<b>1.1</b>	--	<b>5.2</b>	--	--	--	--	--
NCREIF ODCE			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			<u>-1.8</u>		<u>-3.2</u>		<u>-5.3</u>		<u>-2.4</u>					

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Teachers

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
American Realty	63,966,330	0.4	2.6	--	4.5	--	9.7	--	10.0	--	--	--	--	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			1.6		2.1		3.3		2.4					
Starwood Capital	22,376,660	0.1	0.7	--	1.6	--	12.8	--	15.5	--	--	--	--	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			-0.3		-0.8		6.4		7.9					
Starwood Opportunity XI	5,665,548	0.0	12.7	--	18.1	--	--	--	--	--	--	--	--	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			11.7		15.7									
FCP Realty Fund IV, L.P.	3,037,263	0.0	-11.9	--	-30.6	--	--	--	--	--	--	--	--	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			-12.9		-33.0									
Harbert European Real Estate V	1,540,506	0.0	-14.0	--	-27.4	--	--	--	--	--	--	--	--	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			-15.0		-29.8									
Artemis Real Estate III	4,366,196	0.0	-0.6	--	--	--	--	--	--	--	--	--	--	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			-1.6											
Angelo Gordon VAL FD X	4,410,000	0.0	--	--	--	--	--	--	--	--	--	--	--	--

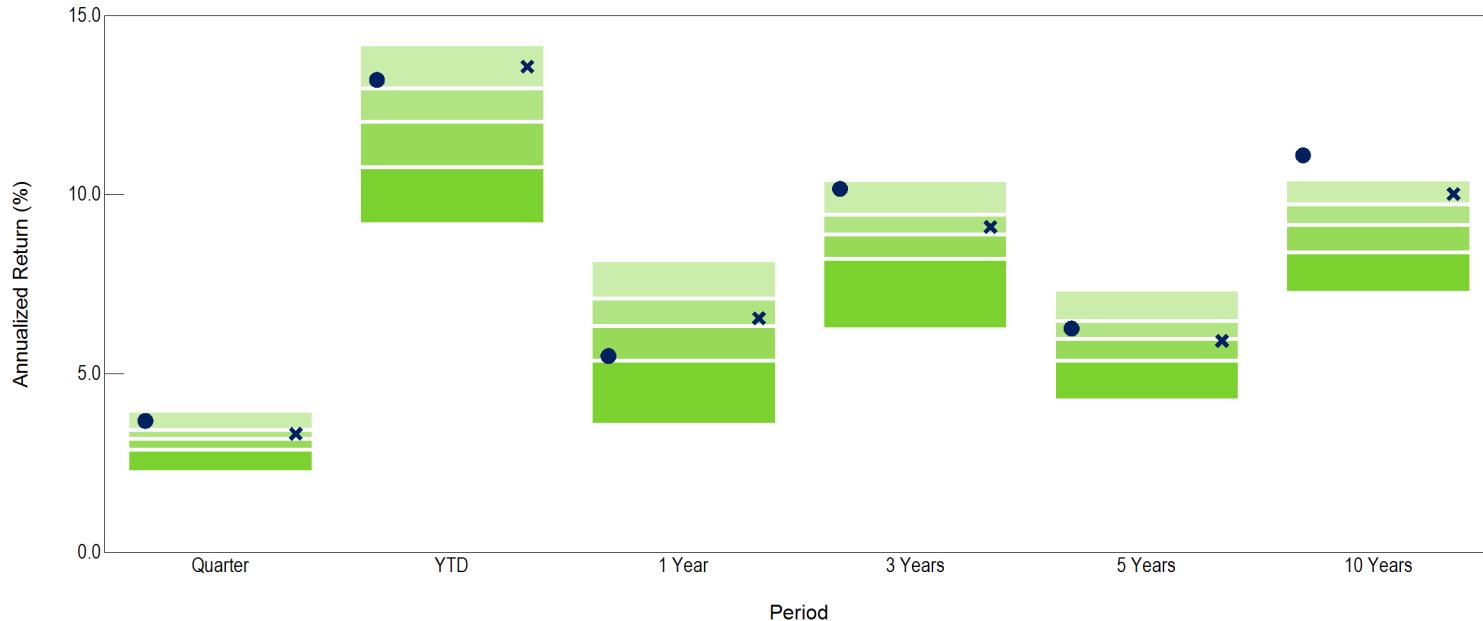
Returns are gross of manager fees.



June 30, 2019

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK TEACHERS vs. InvMetrics Public DB Gross



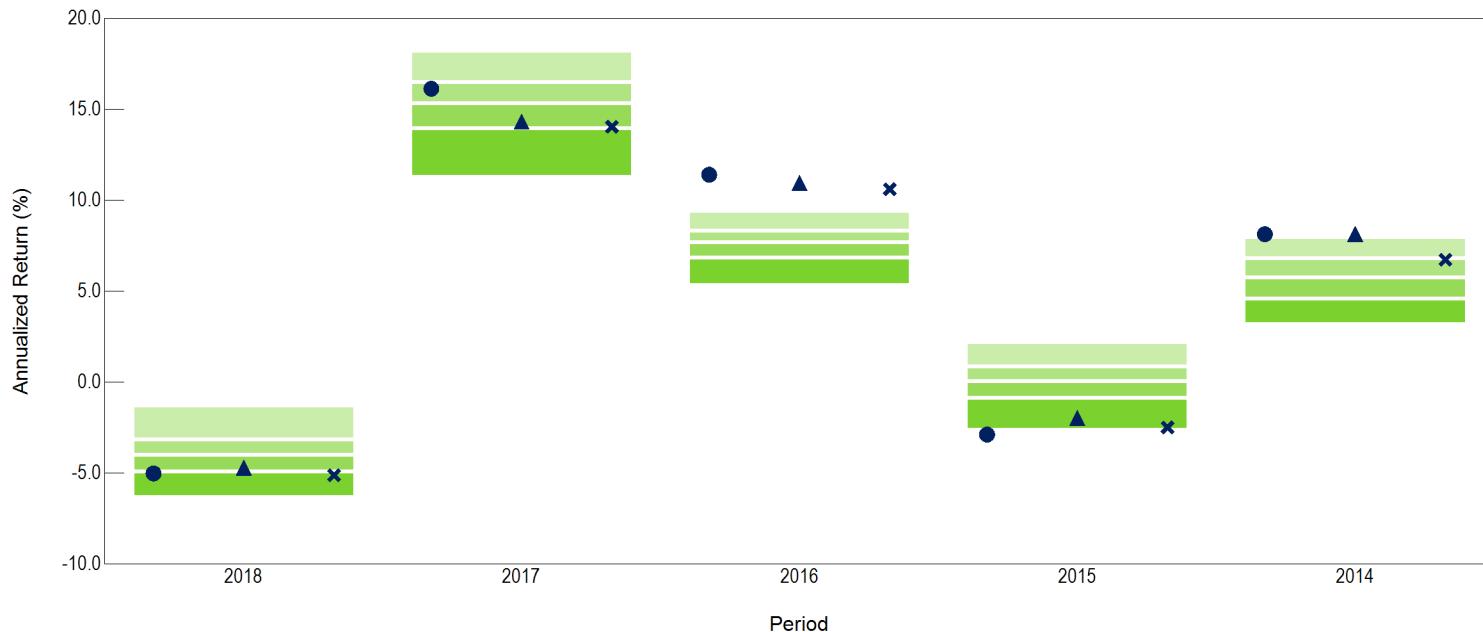
	Return (Rank)									
5th Percentile	4.0	14.2	8.2	10.4	7.3	10.4				
25th Percentile	3.4	13.0	7.1	9.5	6.5	9.7				
Median	3.2	12.0	6.3	8.9	6.0	9.2				
75th Percentile	2.9	10.8	5.4	8.2	5.4	8.4				
95th Percentile	2.3	9.2	3.6	6.2	4.3	7.3				
# of Portfolios	279	278	273	264	254	217				
● OK TEACHERS	3.7	(14)	13.2	(19)	5.5	(74)	10.2	(8)	6.3	(38)
▲ TEACHERS Allocation Index	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)
✖ TEACHERS Policy Index	3.3	(37)	13.6	(13)	6.5	(42)	9.1	(40)	5.9	(52)



June 30, 2019

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK TEACHERS vs. InvMetrics Public DB Gross



	Return (Rank)								
5th Percentile	-1.3		18.2		9.4		2.2		8.0
25th Percentile	-3.1		16.5		8.4		0.9		6.8
Median	-4.0		15.3		7.7		0.1		5.8
75th Percentile	-4.9		14.0		6.9		-0.9		4.6
95th Percentile	-6.3		11.3		5.3		-2.6		3.2
# of Portfolios	319		304		305		316		248
● OK TEACHERS	-5.0	(78)	16.1	(34)	11.4	(1)	-2.9	(97)	8.1 (4)
▲ TEACHERS Allocation Index	-4.7	(70)	14.3	(70)	11.0	(1)	-2.0	(89)	8.2 (4)
✖ TEACHERS Policy Index	-5.1	(80)	14.1	(74)	10.6	(1)	-2.5	(95)	6.7 (28)



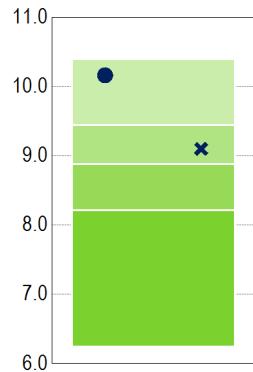
## Oklahoma Teachers

# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

OK TEACHERS vs. InvMetrics Public DB Gross

3 Years

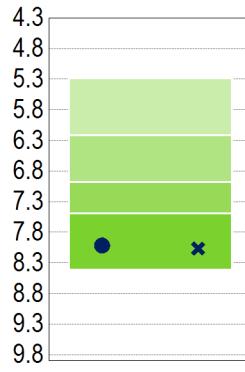
Anlzd Return



● OK TEACHERS	
Value	10.16
Rank	8
▲ TEACHERS Allocation Index	
Value	--
Rank	--
✖ TEACHERS Policy Index	
Value	9.10
Rank	40

Universe	
5th %tile	10.39
25th %tile	9.45
Median	8.89
75th %tile	8.22
95th %tile	6.24

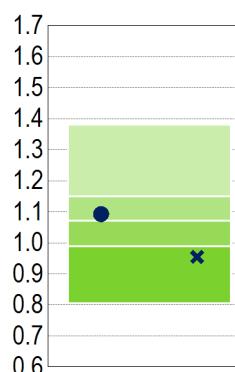
Anlzd Standard Deviation



● OK TEACHERS	8.02
Value	8.02
Rank	91
▲ TEACHERS Allocation Index	--
Value	--
Rank	--
✖ TEACHERS Policy Index	
Value	8.07
Rank	92

Universe	
5th %tile	5.28
25th %tile	6.21
Median	6.97
75th %tile	7.48
95th %tile	8.40

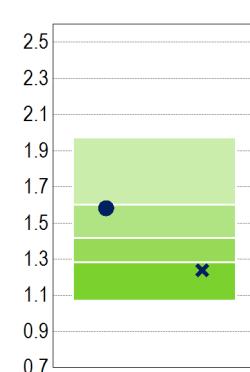
Sharpe Ratio



● OK TEACHERS	1.09
Value	1.09
Rank	43
▲ TEACHERS Allocation Index	--
Value	--
Rank	--
✖ TEACHERS Policy Index	
Value	0.95
Rank	83

Universe	
5th %tile	1.38
25th %tile	1.15
Median	1.07
75th %tile	0.99
95th %tile	0.81

Sortino Ratio



● OK TEACHERS	1.58
Value	1.58
Rank	29
▲ TEACHERS Allocation Index	--
Value	--
Rank	--
✖ TEACHERS Policy Index	
Value	1.24
Rank	83

Universe	
5th %tile	1.97
25th %tile	1.61
Median	1.42
75th %tile	1.29
95th %tile	1.07

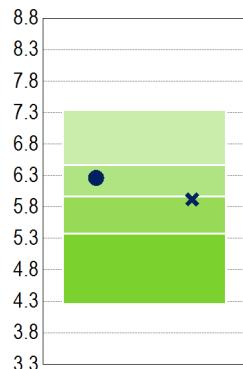


## Oklahoma Teachers

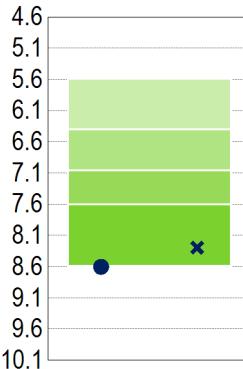
# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

OK TEACHERS vs. InvMetrics Public DB Gross  
5 Years

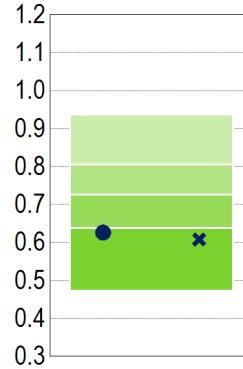
Anlzd Return



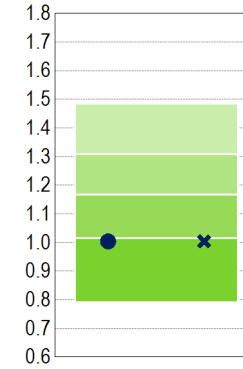
Anlzd Standard Deviation



Sharpe Ratio



Sortino Ratio



● OK TEACHERS	
Value	6.26
Rank	38
▲ TEACHERS Allocation Index	
Value	--
Rank	--
✖ TEACHERS Policy Index	
Value	5.92
Rank	52

Universe	
5th %tile	7.34
25th %tile	6.48
Median	5.98
75th %tile	5.38
95th %tile	4.27

● OK TEACHERS	Value 8.60
Rank	96
▲ TEACHERS Allocation Index	Value --
Rank	--
✖ TEACHERS Policy Index	Value 8.30
Rank	94

Universe	
5th %tile	5.59
25th %tile	6.39
Median	7.05
75th %tile	7.59
95th %tile	8.57

● OK TEACHERS	Value 0.63
Rank	78
▲ TEACHERS Allocation Index	Value --
Rank	--
✖ TEACHERS Policy Index	Value 0.61
Rank	82

Universe	
5th %tile	0.94
25th %tile	0.81
Median	0.73
75th %tile	0.64
95th %tile	0.48

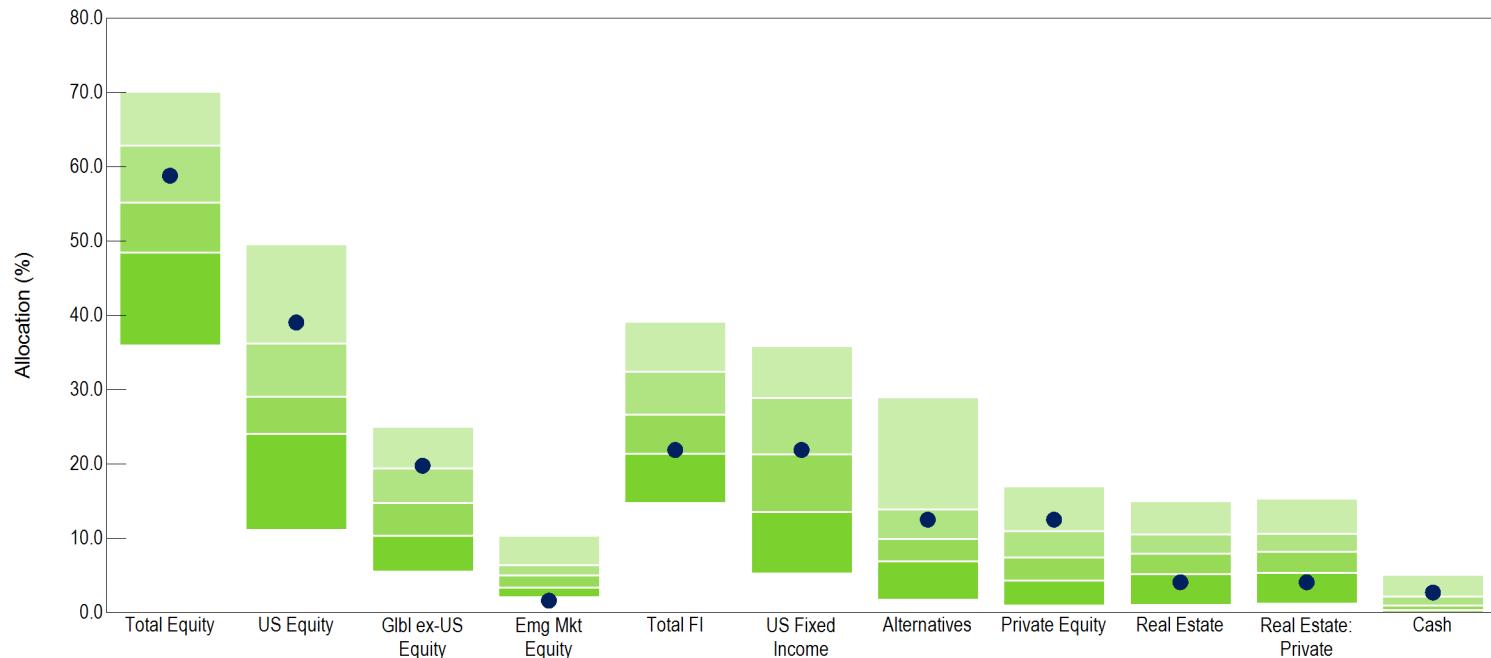
● OK TEACHERS	Value 1.00
Rank	80
▲ TEACHERS Allocation Index	Value --
Rank	--
✖ TEACHERS Policy Index	Value 1.00
Rank	80

Universe	
5th %tile	1.48
25th %tile	1.31
Median	1.17
75th %tile	1.02
95th %tile	0.79



# TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE

Total Plan Allocation vs. InvMetrics Public DB Gross



Allocation (Rank)

5th Percentile	70.1	49.6	25.0	10.4	39.1	35.9	29.0	17.0	15.0	15.3	5.0	--
25th Percentile	63.0	36.3	19.5	6.4	32.5	28.9	14.0	11.0	10.6	10.7	2.2	--
Median	55.3	29.2	14.8	5.0	26.7	21.4	10.0	7.4	8.0	8.3	1.0	--
75th Percentile	48.6	24.2	10.5	3.5	21.4	13.6	7.0	4.4	5.3	5.4	0.4	--
95th Percentile	36.0	11.2	5.6	2.1	14.8	5.3	1.8	1.0	1.1	1.3	0.1	--
# of Portfolios	200	132	165	88	199	117	126	86	134	99	186	--
● OK TEACHERS	58.8	(40)	39.0	(22)	19.8	(25)	1.6	(99)	21.9	(74)	21.9	(48)
												(31)
												(19)
												(86)
												(89)
												(22)
												--



June 30, 2019

# OK TEACHERS

	Performance Attribution		
	Last 3 Mo.	YTD	1 Yr
Wtd. Actual Return	3.7%	13.2%	5.5%
Wtd. Index Return *	3.3%	13.6%	6.5%
<b>Excess Return</b>	<b>0.4%</b>	<b>-0.3%</b>	<b>-1.1%</b>
Selection Effect	0.3%	0.4%	-0.4%
Allocation Effect	0.0%	-0.1%	-0.1%
Interaction Effect	0.0%	-0.6%	-0.6%
 Returns by Asset Class			
OK TEACHERS	3.7%	13.2%	5.5%
Total Equity Composite	3.4%	17.6%	2.9%
U.S. Equity Comp	3.8%	19.6%	5.7%
Domestic Passive Equity	4.0%	18.1%	9.8%
International Equity Composite	2.4%	13.4%	-2.9%
International Small Cap Equity	2.4%	13.5%	-8.1%
Fixed Composite	3.8%	8.6%	8.8%
Total Private Equity	6.7%	5.9%	17.0%
Master Limited Partnerships	-1.3%	17.2%	-2.9%
Total Core Real Estate	5.1%	5.8%	9.9%
Other	1.5%	2.1%	3.2%

\*Calculated from benchmark returns and weightings of each component.



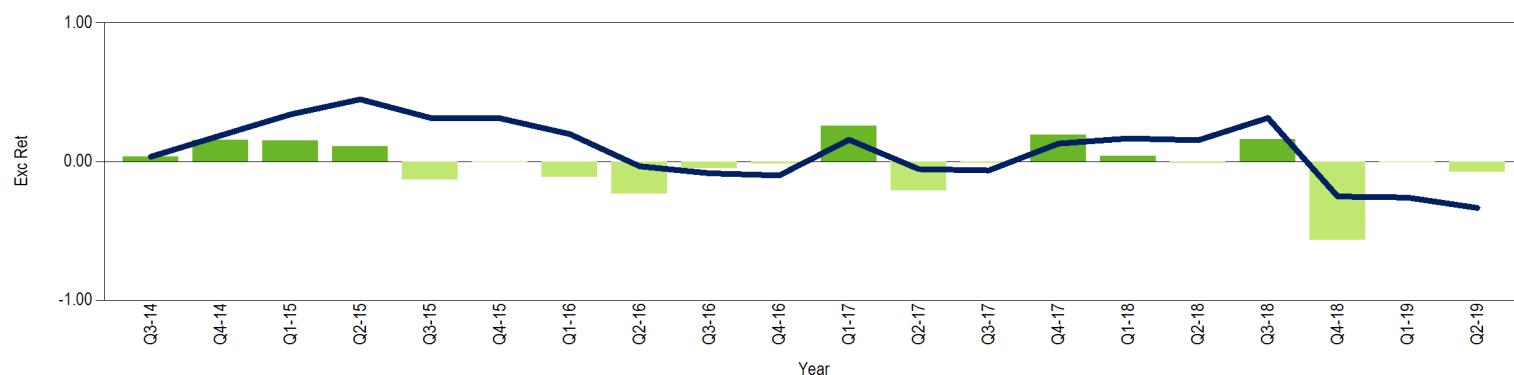
# OKLAHOMA PERS



# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
OK PERS	\$9,939,531,782	3.6%	18	13.5%	13	6.1%	60	9.0%	43	6.1%	47	9.6%	29
PERS Allocation Index		3.5%	24	13.2%	20	5.9%	64	8.8%	55	6.0%	51	9.1%	52
PERS Policy Index		3.7%	14	13.6%	13	6.7%	39	9.2%	37	6.1%	43	9.4%	42
InvMetrics Public DB Gross Median		3.2%		12.0%		6.3%		8.9%		6.0%		9.2%	

Quarterly and Cumulative Excess Performance



Actual vs Target Allocation (%)

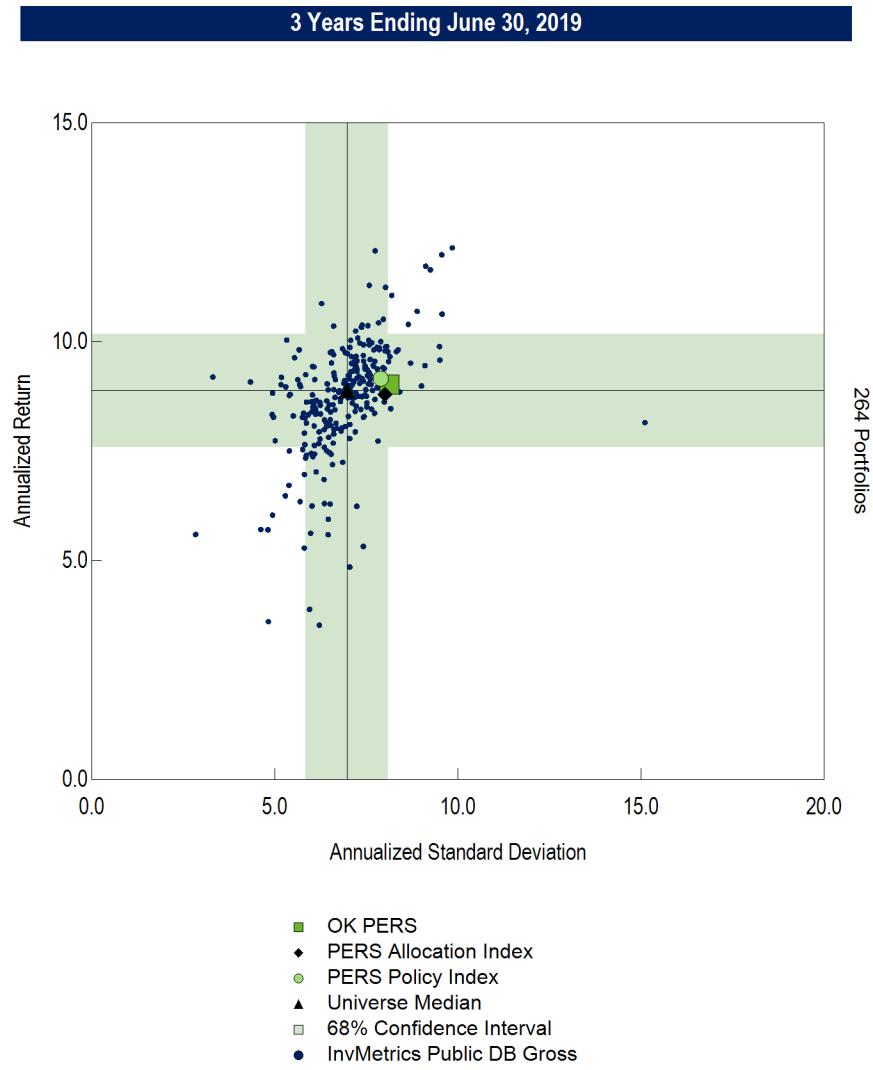


Returns are gross of manager fees.



June 30, 2019

# TOTAL FUND RISK/RETURN - 3 YEARS



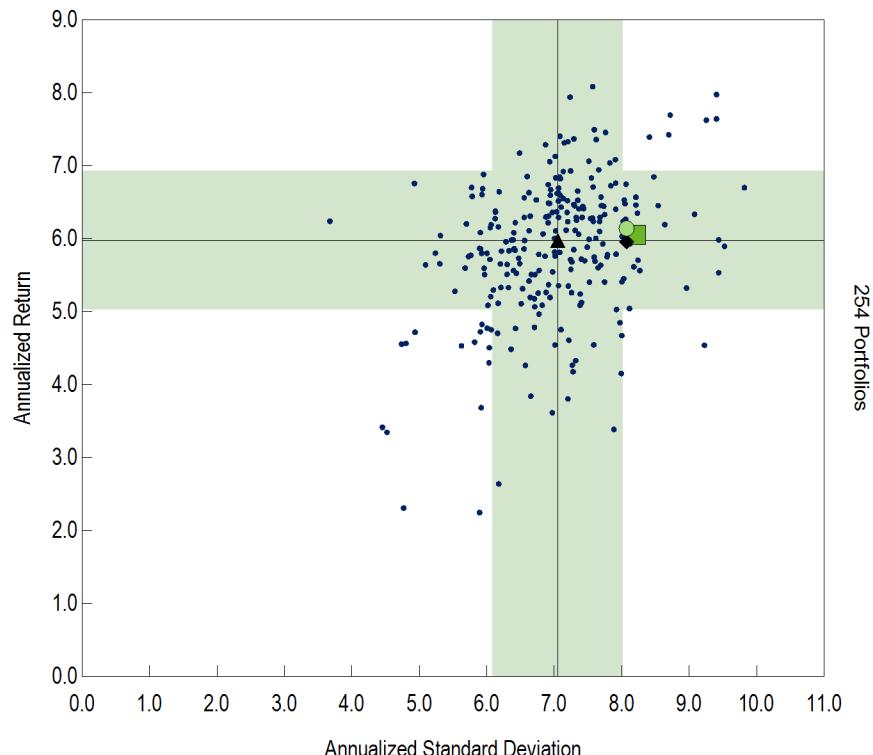
3 Years Ending June 30, 2019				
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK PERS	9.03%	43	8.13%	93
PERS Allocation Index	8.80%	55	8.00%	90
PERS Policy Index	9.16%	37	7.89%	88

3 Years Ending June 30, 2019				
	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK PERS	0.94	86	1.25	83
PERS Allocation Index	0.92	88	1.21	85
PERS Policy Index	0.98	78	1.31	73



# TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending June 30, 2019



5 Years Ending June 30, 2019

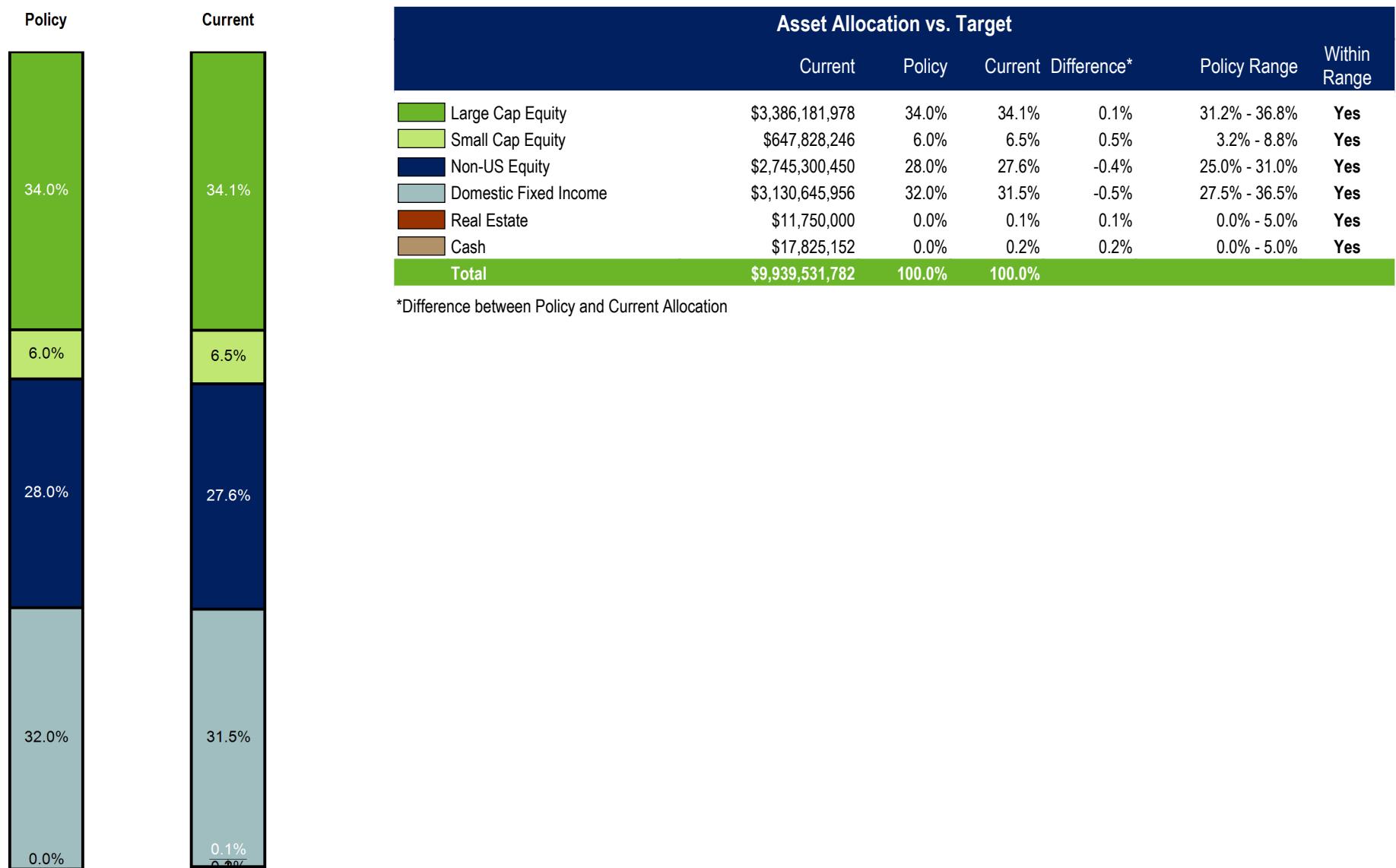
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK PERS	6.06%	47	8.21%	93
PERS Allocation Index	5.96%	51	8.08%	91
PERS Policy Index	6.14%	43	8.07%	91

5 Years Ending June 30, 2019

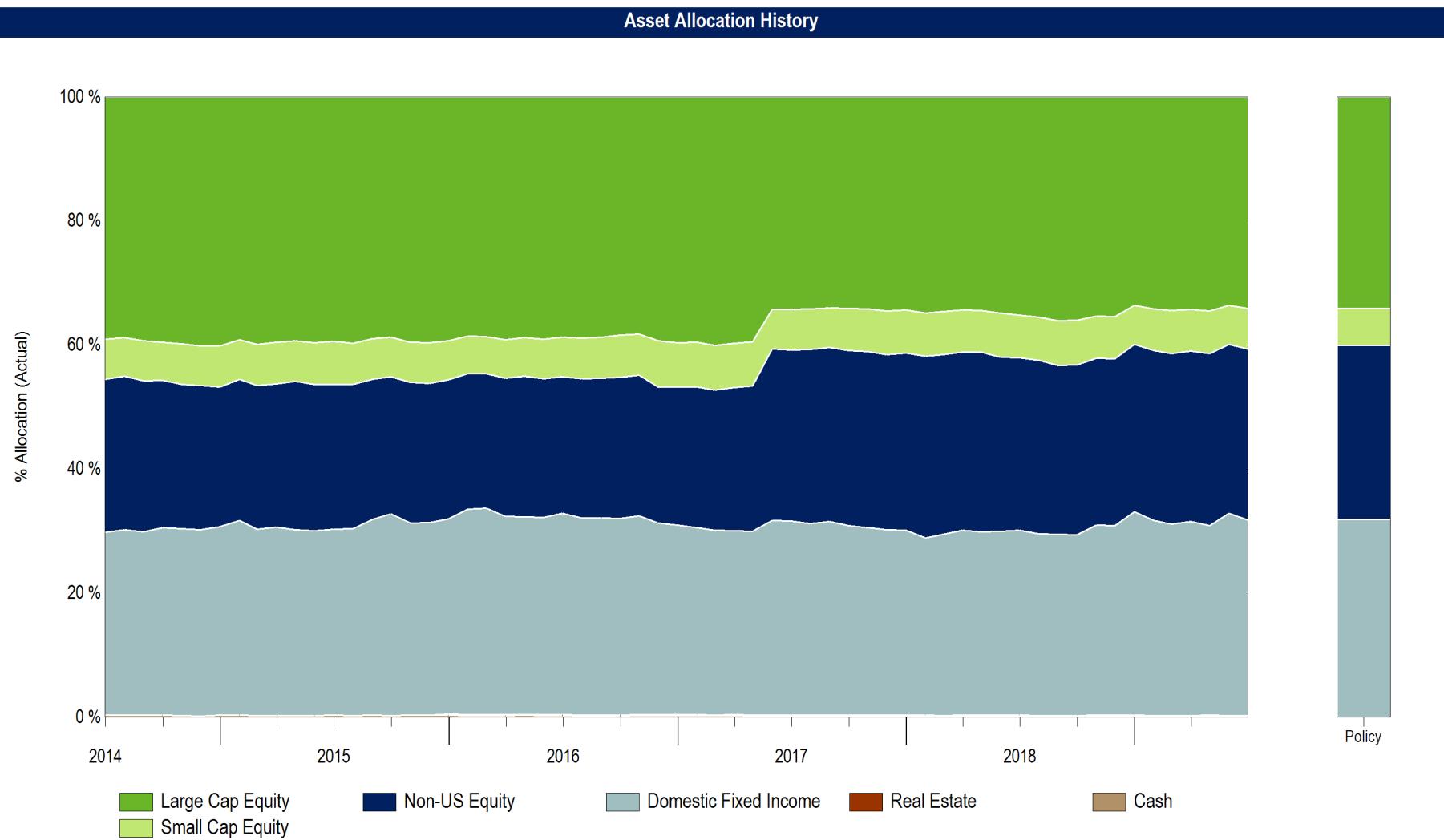
	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK PERS	0.63	77	1.01	79
PERS Allocation Index	0.63	78	1.01	80
PERS Policy Index	0.65	70	1.06	67



# TOTAL FUND ASSET ALLOCATION VS. POLICY



# TOTAL FUND ASSET ALLOCATION HISTORY



## Oklahoma PERS

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>OK PERS</b>	<b>9,939,531,782</b>	<b>100.0</b>	<b>3.6</b>	<b>18</b>	<b>13.5</b>	<b>13</b>	<b>6.1</b>	<b>60</b>	<b>9.0</b>	<b>43</b>	<b>6.1</b>	<b>47</b>	<b>9.6</b>	<b>29</b>
PERS Allocation Index			3.5	24	13.2	20	5.9	64	8.8	55	6.0	51	9.1	52
Over/Under			0.1		0.3		0.2		0.2		0.1		0.5	
PERS Policy Index			3.7	14	13.6	13	6.7	39	9.2	37	6.1	43	9.4	42
InvMetrics Public DB Gross Median			3.2		12.0		6.3		8.9		6.0		9.2	
<b>Domestic Equity Composite</b>	<b>4,034,010,223</b>	<b>40.6</b>	<b>3.9</b>	<b>50</b>	<b>18.3</b>	<b>50</b>	<b>7.2</b>	<b>48</b>	<b>14.0</b>	<b>41</b>	<b>9.8</b>	<b>43</b>	<b>14.7</b>	<b>51</b>
Domestic Equity Benchmark			4.0	49	18.6	46	8.3	42	14.0	42	10.1	39	14.6	52
Over/Under			-0.1		-0.3		-1.1		0.0		-0.3		0.1	
eV All US Equity Gross Median			3.9		18.3		6.7		13.0		9.2		14.7	
Aronson Johnson & Ortiz	305,217,117	3.1	3.7	51	14.5	69	2.5	81	10.6	67	6.2	82	12.8	70
Russell 1000 Value			3.8	49	16.2	40	8.5	33	10.2	71	7.5	60	13.2	58
Over/Under			-0.1		-1.7		-6.0		0.4		-1.3		-0.4	
eV US Large Cap Value Equity Gross Median			3.7		15.6		6.7		11.2		7.9		13.4	
Mellon	549,201,777	5.5	1.1	98	13.6	92	3.7	91	12.2	79	8.5	86	14.1	64
Russell 1000			4.2	47	18.8	37	10.0	42	14.1	40	10.5	42	14.8	38
Over/Under			-3.1		-5.2		-6.3		-1.9		-2.0		-0.7	
State Street Enhanced Index	549,238,174	5.5	4.3	47	17.8	49	9.8	44	13.9	47	10.4	43	14.9	31
Russell 1000			4.2	47	18.8	37	10.0	42	14.1	40	10.5	42	14.8	38
Over/Under			0.1		-1.0		-0.2		-0.2		-0.1		0.1	
Blackrock Russell 1000	1,675,704,926	16.9	4.3	47	18.9	37	10.0	42	14.2	39	10.5	41	--	--
Russell 1000			4.2	47	18.8	37	10.0	42	14.1	40	10.5	42	14.8	38
Over/Under			0.1		0.1		0.0		0.1		0.0		0.0	
eV US Large Cap Core Equity Gross Median			4.1		17.7		9.2		13.8		10.2		14.5	
UBS Global Asset Mgmt	223,995,810	2.3	7.1	23	29.2	25	7.6	41	19.7	39	10.6	53	17.7	25
Russell 2000 Growth			2.7	79	20.4	65	-0.5	80	14.7	77	8.6	81	14.4	86
Over/Under			4.4		8.8		8.1		5.0		2.0		3.3	
eV US Small Cap Growth Equity Gross Median			4.4		22.9		5.5		18.3		10.8		16.5	

Domestic Equity Benchmark is 86.4% Russell 1000 and 13.6% Russell 2000.

Returns are gross of manager fees.



June 30, 2019

## Oklahoma PERS

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Barrow Hanley	204,804,748	2.1	2.3	47	15.8	43	-8.3	78	11.1	28	6.4	41	16.0	10
Russell 2000 Value			1.4	68	13.5	72	-6.2	60	9.8	51	5.4	63	12.4	85
Over/Under			0.9		2.3		-2.1		1.3		1.0		3.6	
DePrince Race & Zollo	219,027,688	2.2	4.3	18	18.5	19	4.5	6	13.9	10	7.3	24	--	--
Russell 2000 Value			1.4	68	13.5	72	-6.2	60	9.8	51	5.4	63	12.4	85
Over/Under			2.9		5.0		10.7		4.1		1.9			
eV US Small Cap Value Equity Gross Median			2.2		15.1		-4.8		9.8		5.9		13.9	
Westfield	306,819,984	3.1	5.2	51	22.7	40	11.4	58	--	--	--	--	--	--
Russell 1000 Growth			4.6	62	21.5	53	11.6	55	18.1	49	13.4	41	16.3	39
Over/Under			0.6		1.2		-0.2							
eV US Large Cap Growth Equity Gross Median			5.2		21.8		12.1		18.0		12.9		15.9	
<b>Domestic Fixed Income Composite</b>	<b>3,130,645,956</b>	<b>31.5</b>	<b>3.5</b>	<b>18</b>	<b>7.1</b>	<b>32</b>	<b>8.4</b>	<b>25</b>	<b>2.6</b>	<b>58</b>	<b>3.5</b>	<b>44</b>	<b>5.0</b>	<b>44</b>
BBgBarc US Aggregate TR			3.1	33	6.1	49	7.9	37	2.3	69	2.9	61	3.9	63
Over/Under			0.4		1.0		0.5		0.3		0.6		1.1	
eV All US Fixed Inc Gross Median			2.6		5.9		7.0		2.9		3.3		4.6	
Blackrock	1,520,583,437	15.3	3.1	67	6.5	50	8.2	46	2.6	65	3.2	58	4.5	58
BBgBarc US Aggregate TR			3.1	67	6.1	78	7.9	74	2.3	90	2.9	90	3.9	92
Over/Under			0.0		0.4		0.3		0.3		0.3		0.6	
Met West	925,155,994	9.3	3.2	37	6.6	43	8.4	27	3.1	26	3.3	46	5.7	10
BBgBarc US Aggregate TR			3.1	67	6.1	78	7.9	74	2.3	90	2.9	90	3.9	92
Over/Under			0.1		0.5		0.5		0.8		0.4		1.8	
eV US Core Fixed Inc Gross Median			3.2		6.5		8.1		2.8		3.3		4.6	
Hoisington	360,200,006	3.6	6.8	53	12.4	90	12.8	91	1.3	98	6.7	15	7.6	92
BBgBarc US Treasury Long TR			6.0	90	11.0	93	12.3	94	1.3	98	5.7	83	6.5	97
Over/Under			0.8		1.4		0.5		0.0		1.0		1.1	
eV US Long Duration Fixed Inc Gross Median			6.8		14.4		14.4		4.8		6.0		8.7	
Blackrock TIPS	324,706,519	3.3	2.9	6	6.2	6	5.0	99	2.3	53	1.9	99	--	--
BBgBarc US TIPS TR			2.9	6	6.2	7	4.8	99	2.1	80	1.8	99	3.6	50
Over/Under			0.0		0.0		0.2		0.2		0.1			
eV US Interim Duration Fixed Inc Gross Median			2.5		5.1		6.9		2.3		2.6		3.6	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma PERS

# TOTAL FUND PERFORMANCE DETAIL

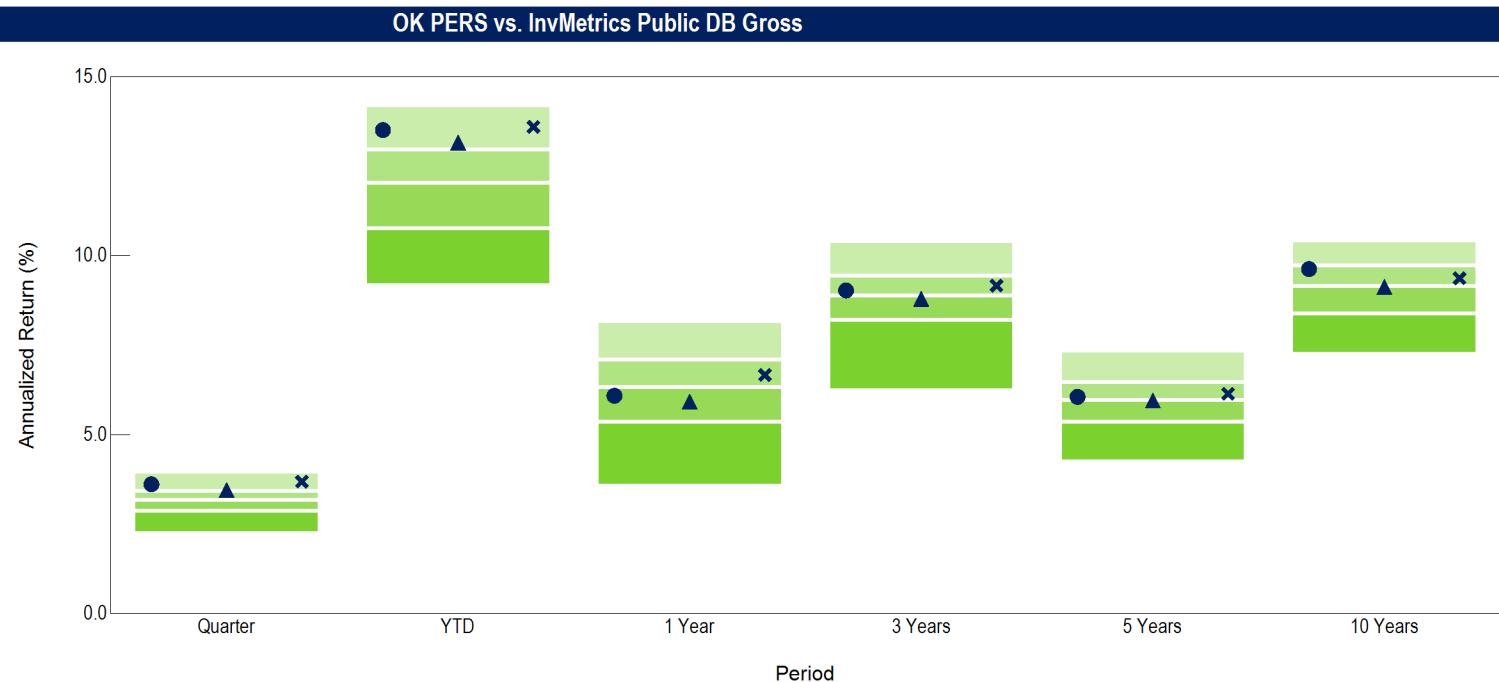
	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>International Equity Composite</b>	<b>2,745,300,450</b>	<b>27.6</b>	<b>3.3</b>	<b>54</b>	<b>14.4</b>	<b>58</b>	<b>2.0</b>	<b>34</b>	<b>9.2</b>	<b>64</b>	<b>2.8</b>	<b>65</b>	<b>7.1</b>	<b>82</b>
MSCI ACWI ex USA			3.0	60	13.6	63	1.3	41	9.4	62	2.2	76	6.5	90
Over/Under			0.3		0.8		0.7		-0.2		0.6		0.6	
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
Baillie Gifford	352,941,237	3.6	6.1	31	20.8	38	0.8	55	10.3	63	5.0	52	--	--
MSCI ACWI ex USA Growth			4.4	70	17.2	72	2.6	30	9.8	80	4.0	94	7.6	98
Over/Under			1.7		3.6		-1.8		0.5		1.0			
eV ACWI ex-US All Cap Growth Eq Gross Median			5.5		20.3		1.0		10.8		5.1		10.1	
Blackrock ACWI Ex US	1,452,019,997	14.6	3.2	57	13.9	62	1.6	37	9.7	54	2.5	72	--	--
MSCI ACWI ex USA			3.0	60	13.6	63	1.3	41	9.4	62	2.2	76	6.5	90
Over/Under			0.2		0.3		0.3		0.3		0.3		0.3	
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
Blackrock ACWI Ex US Growth	330,598,630	3.3	4.5	67	16.8	79	3.6	27	10.0	79	3.9	94	--	--
MSCI ACWI ex USA Growth			4.4	70	17.2	72	2.6	30	9.8	80	4.0	94	7.6	98
Over/Under			0.1		-0.4		1.0		0.2		-0.1			
eV ACWI ex-US All Cap Growth Eq Gross Median			5.5		20.3		1.0		10.8		5.1		10.1	
Mondrian	609,740,586	6.1	1.6	80	10.9	84	2.8	27	7.4	86	1.7	84	6.8	87
MSCI ACWI ex USA Value			1.6	82	10.0	87	-0.1	55	8.9	69	0.3	96	5.4	99
Over/Under			0.0		0.9		2.9		-1.5		1.4		1.4	
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
<b>Real Estate</b>	<b>11,750,000</b>	<b>0.1</b>	<b>-4.5</b>	<b>--</b>	<b>-1.3</b>	<b>--</b>	<b>-2.7</b>	<b>--</b>	<b>-1.4</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			-5.5		-3.7		-9.1		-9.0					
<b>Grand Centre</b>	<b>11,750,000</b>	<b>0.1</b>	<b>-4.5</b>	<b>--</b>	<b>-1.3</b>	<b>--</b>	<b>-2.7</b>	<b>--</b>	<b>-1.4</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			-5.5		-3.7		-9.1		-9.0					

New Policy Index effective as of November 1, 2013 consist of 38% Large Cap Equity, 6% Small Cap Equity, 24% International Equity, and 32% Domestic Fixed Income. Returns are gross of manager fees.



June 30, 2019

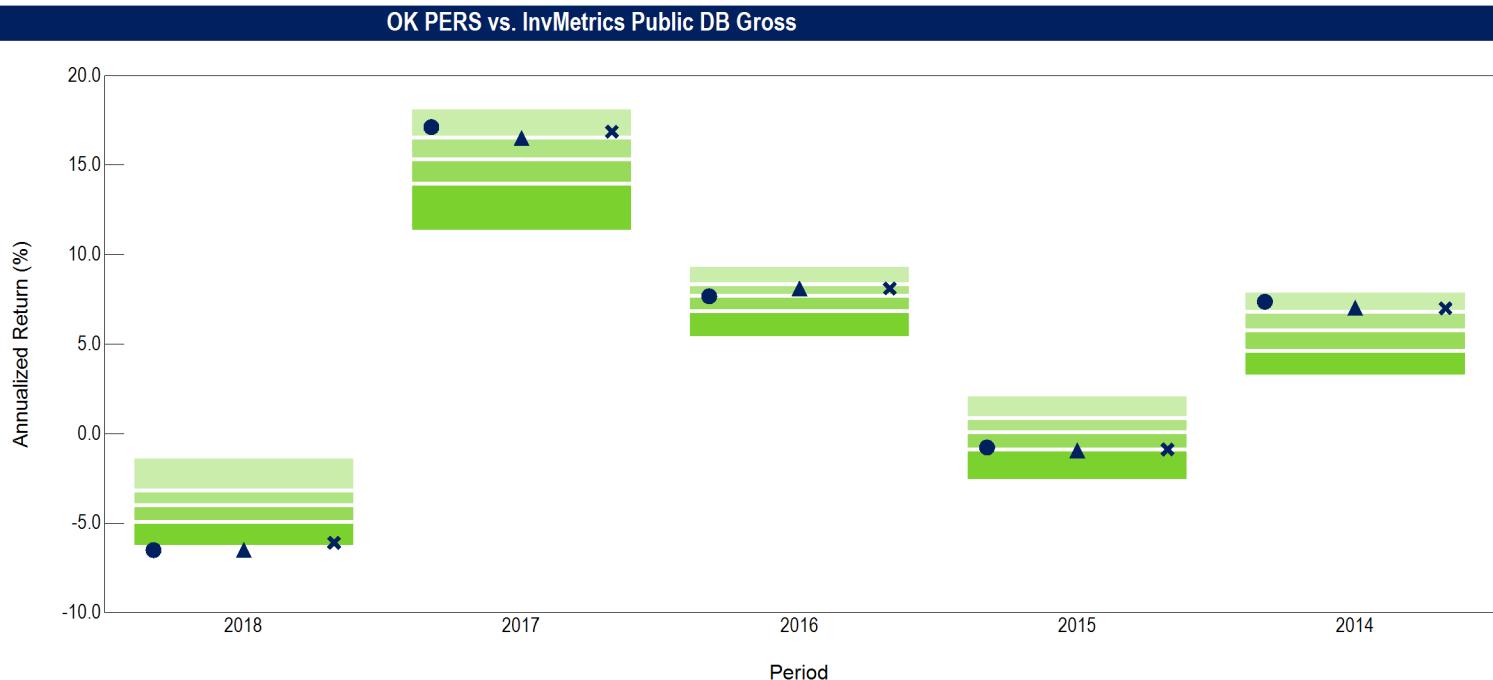
# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE



	Return (Rank)									
5th Percentile	4.0	14.2	8.2	10.4	7.3	10.4				
25th Percentile	3.4	13.0	7.1	9.5	6.5	9.7				
Median	3.2	12.0	6.3	8.9	6.0	9.2				
75th Percentile	2.9	10.8	5.4	8.2	5.4	8.4				
95th Percentile	2.3	9.2	3.6	6.2	4.3	7.3				
# of Portfolios	279	278	273	264	254	217				
● OK PERS	3.6	(18)	13.5	(13)	6.1	(60)	9.0	(43)	6.1	(47)
▲ PERS Allocation Index	3.5	(24)	13.2	(20)	5.9	(64)	8.8	(55)	6.0	(51)
✖ PERS Policy Index	3.7	(14)	13.6	(13)	6.7	(39)	9.2	(37)	6.1	(43)



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE



Return (Rank)										
5th Percentile	-1.3		18.2		9.4		2.2		8.0	
25th Percentile	-3.1		16.5		8.4		0.9		6.8	
Median	-4.0		15.3		7.7		0.1		5.8	
75th Percentile	-4.9		14.0		6.9		-0.9		4.6	
95th Percentile	-6.3		11.3		5.3		-2.6		3.2	
# of Portfolios	319		304		305		316		248	
● OK PERS	-6.5	(97)	17.1	(17)	7.7	(52)	-0.8	(73)	7.4	(15)
▲ PERS Allocation Index	-6.5	(97)	16.5	(26)	8.1	(34)	-0.9	(77)	7.0	(21)
✖ PERS Policy Index	-6.1	(94)	16.9	(21)	8.1	(34)	-0.9	(76)	7.0	(21)



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

OK PERS vs. InvMetrics Public DB Gross

3 Years

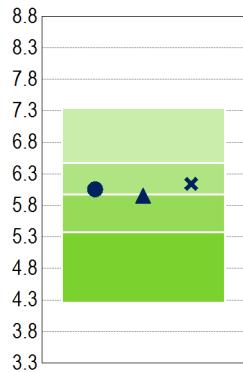


# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

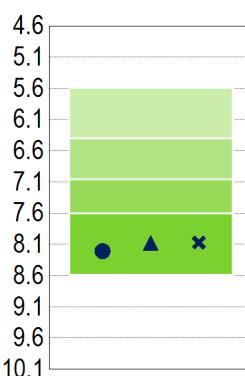
OK PERS vs. InvMetrics Public DB Gross

5 Years

Anlzd Return



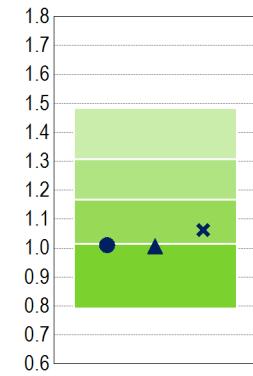
Anlzd Standard Deviation



Sharpe Ratio



Sortino Ratio



● OK PERS

Value	6.06
Rank	47
▲ PERS Allocation Index	
Value	5.96
Rank	51
✖ PERS Policy Index	
Value	6.14
Rank	43

Universe	
5th %tile	7.34
25th %tile	6.48
Median	5.98
75th %tile	5.38
95th %tile	4.27

● OK PERS

Value	8.21
Rank	93
▲ PERS Allocation Index	
Value	8.08
Rank	91
✖ PERS Policy Index	
Value	8.07
Rank	91

Universe

5th %tile	5.59
25th %tile	6.39
Median	7.05
75th %tile	7.59
95th %tile	8.57

● OK PERS

Value	0.63
Rank	77
▲ PERS Allocation Index	
Value	0.63
Rank	78
✖ PERS Policy Index	
Value	0.65
Rank	70

Universe

5th %tile	0.94
25th %tile	0.81
Median	0.73
75th %tile	0.64
95th %tile	0.48

● OK PERS

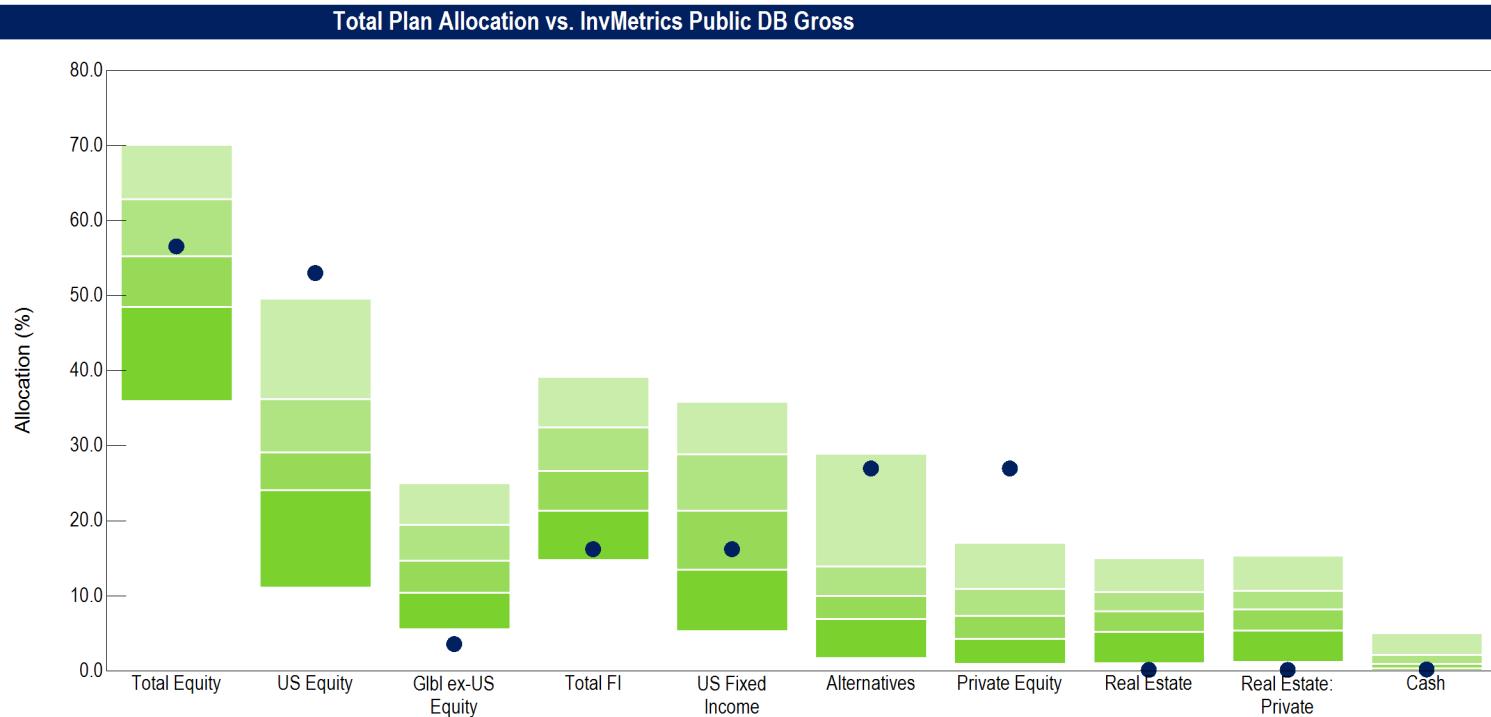
Value	1.01
Rank	79
▲ PERS Allocation Index	
Value	1.01
Rank	80
✖ PERS Policy Index	
Value	1.06
Rank	67

Universe

5th %tile	1.48
25th %tile	1.31
Median	1.17
75th %tile	1.02
95th %tile	0.79



# TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE



	Allocation (Rank)											
5th Percentile	70.1	49.6	25.0	39.1	35.9	29.0	17.0	15.0	15.3	5.0	-	-
25th Percentile	63.0	36.3	19.5	32.5	28.9	14.0	11.0	10.6	10.7	2.2	-	-
Median	55.3	29.2	14.8	26.7	21.4	10.0	7.4	8.0	8.3	1.0	-	-
75th Percentile	48.6	24.2	10.5	21.4	13.6	7.0	4.4	5.3	5.4	0.4	-	-
95th Percentile	36.0	11.2	5.6	14.8	5.3	1.8	1.0	1.1	1.3	0.1	-	-
# of Portfolios	200	132	165	199	117	126	86	134	99	186	-	-
● OK PERS	56.5	(46)	53.0	(3)	3.6	(99)	16.2	(93)	16.2	(69)	27.0	(6)
											27.0	(2)
											0.1	(99)
											0.1	(99)
											0.2	(87)



June 30, 2019

# TOTAL FUND ATTRIBUTION ANALYSIS

Performance Attribution			
	Last 3 Mo.	YTD	1 Yr
Wtd. Actual Return	3.6%	13.5%	6.1%
Wtd. Index Return *	3.7%	13.6%	6.7%
<b>Excess Return</b>	<b>-0.1%</b>	<b>-0.1%</b>	<b>-0.6%</b>
Selection Effect	0.1%	0.2%	-0.1%
Allocation Effect	0.0%	0.0%	0.0%
Interaction Effect	-0.1%	-0.2%	-0.4%
 Asset Class Returns			
OK PERS	3.6%	13.5%	6.1%
Domestic Equity Composite	3.9%	18.3%	7.2%
Domestic Fixed Income Composite	3.5%	7.1%	8.4%
International Equity Composite	3.3%	14.4%	2.0%
Cash Composite	3.3%	3.9%	5.1%
Z TERMINATED - R/E Composite			
Real Estate	-4.5%	-1.3%	-2.7%

\*Calculated from benchmark returns and weightings of each component.

Z TERMINATED represents Composite that fully liquidated.



# OKLAHOMA FIREFIGHTERS

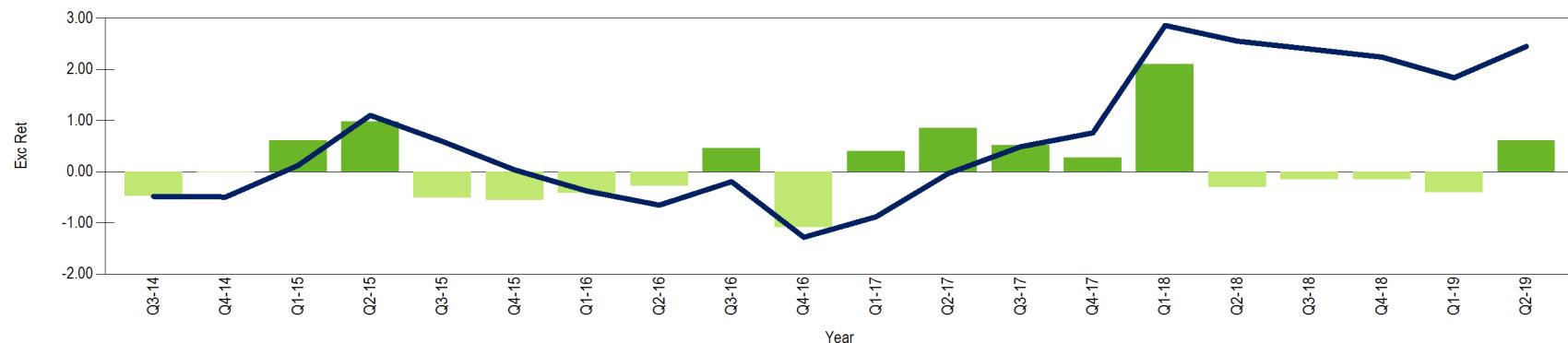


## Oklahoma Firefighters

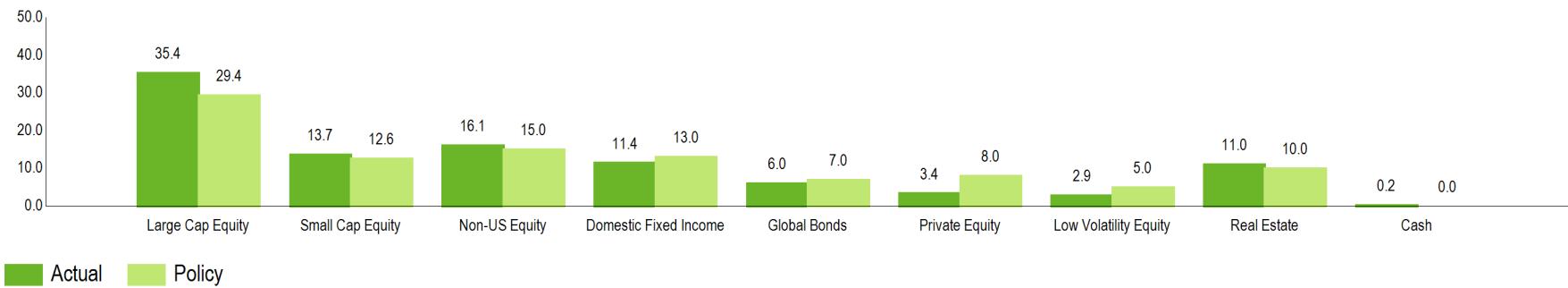
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK FIREFIGHTERS</b>	<b>\$2,850,214,274</b>	<b>4.2%</b>	<b>3</b>	<b>13.8%</b>	<b>10</b>	<b>7.9%</b>	<b>11</b>	<b>11.3%</b>	<b>2</b>	<b>8.1%</b>	<b>1</b>	<b>10.3%</b>	<b>7</b>
<i>FIREFIGHTERS Allocation Index</i>		3.0%	67	12.6%	32	5.7%	69	10.0%	11	6.8%	13	10.1%	13
<i>FIREFIGHTERS Policy Index</i>		3.6%	16	13.5%	13	8.0%	9	10.2%	8	7.6%	3	10.7%	3
<i>InvMetrics Public DB Gross Median</i>		3.2%		12.0%		6.3%		8.9%		6.0%		9.2%	

Quarterly and Cumulative Excess Performance



Actual vs Target Allocation (%)



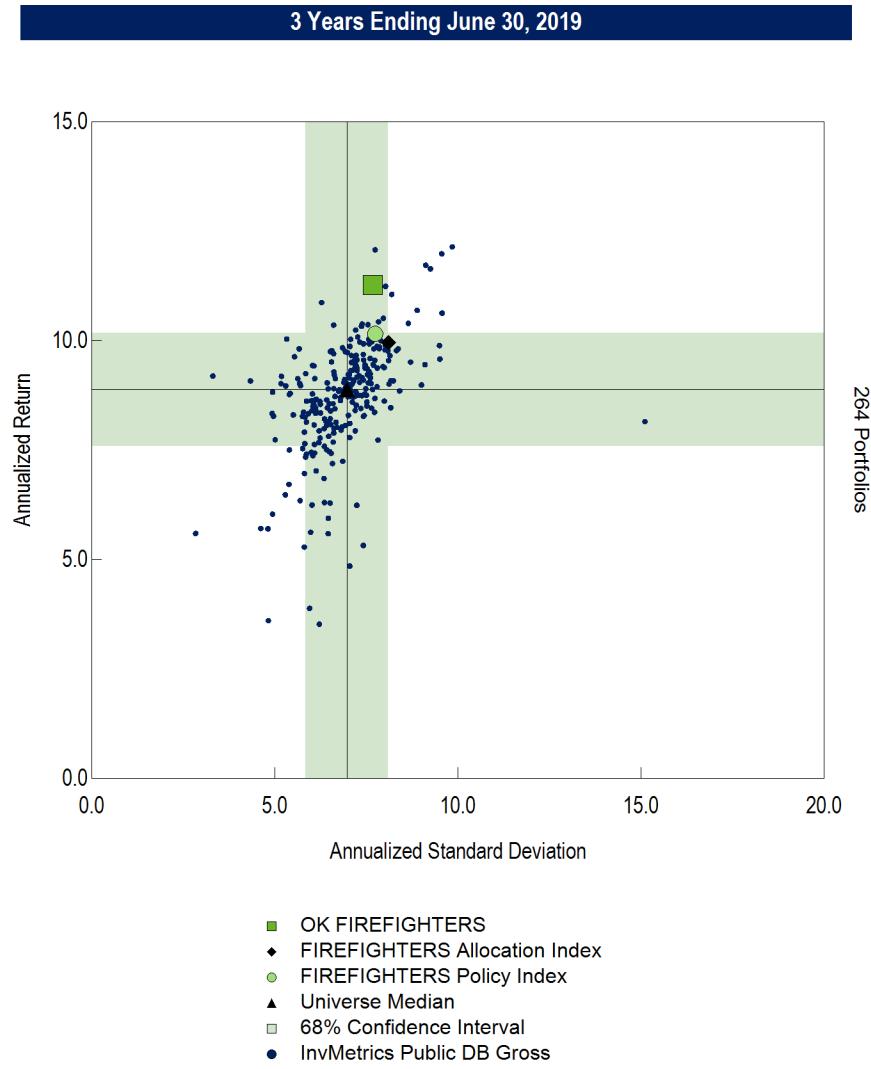
Returns are gross of manager fees.



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## Oklahoma Firefighters

# TOTAL FUND RISK/RETURN - 3 YEARS



3 Years Ending June 30, 2019				
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK FIREFIGHTERS	11.28%	2	7.68%	83
FIREFIGHTERS Allocation Index	9.96%	11	8.10%	92
FIREFIGHTERS Policy Index	10.16%	8	7.74%	85

3 Years Ending June 30, 2019				
	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK FIREFIGHTERS	1.29	10	1.59	28
FIREFIGHTERS Allocation Index	1.06	55	1.46	44
FIREFIGHTERS Policy Index	1.13	31	1.75	12

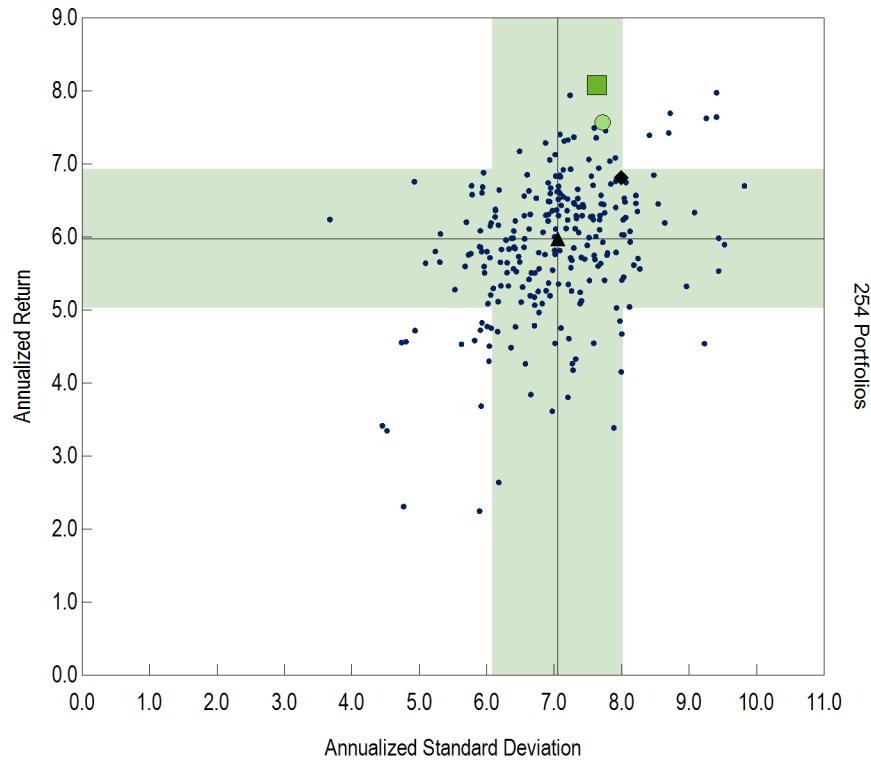


June 30, 2019

## Oklahoma Firefighters

# TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending June 30, 2019



5 Years Ending June 30, 2019

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK FIREFIGHTERS	8.08%	1	7.63%	77
FIREFIGHTERS Allocation Index	6.81%	13	7.99%	87
FIREFIGHTERS Policy Index	7.57%	3	7.72%	80

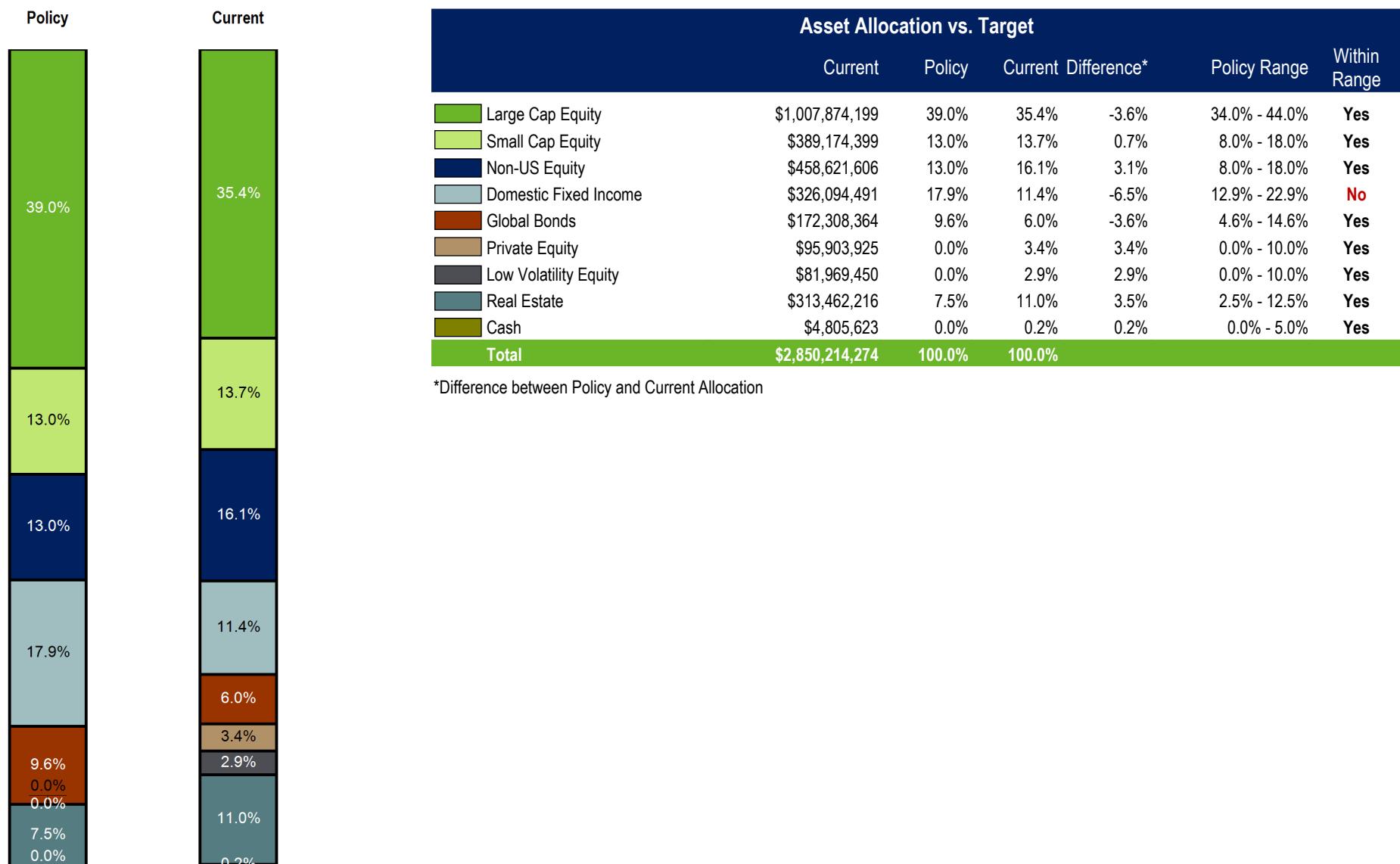
5 Years Ending June 30, 2019

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK FIREFIGHTERS	0.94	5	1.41	11
FIREFIGHTERS Allocation Index	0.74	46	1.09	64
FIREFIGHTERS Policy Index	0.87	13	1.35	20

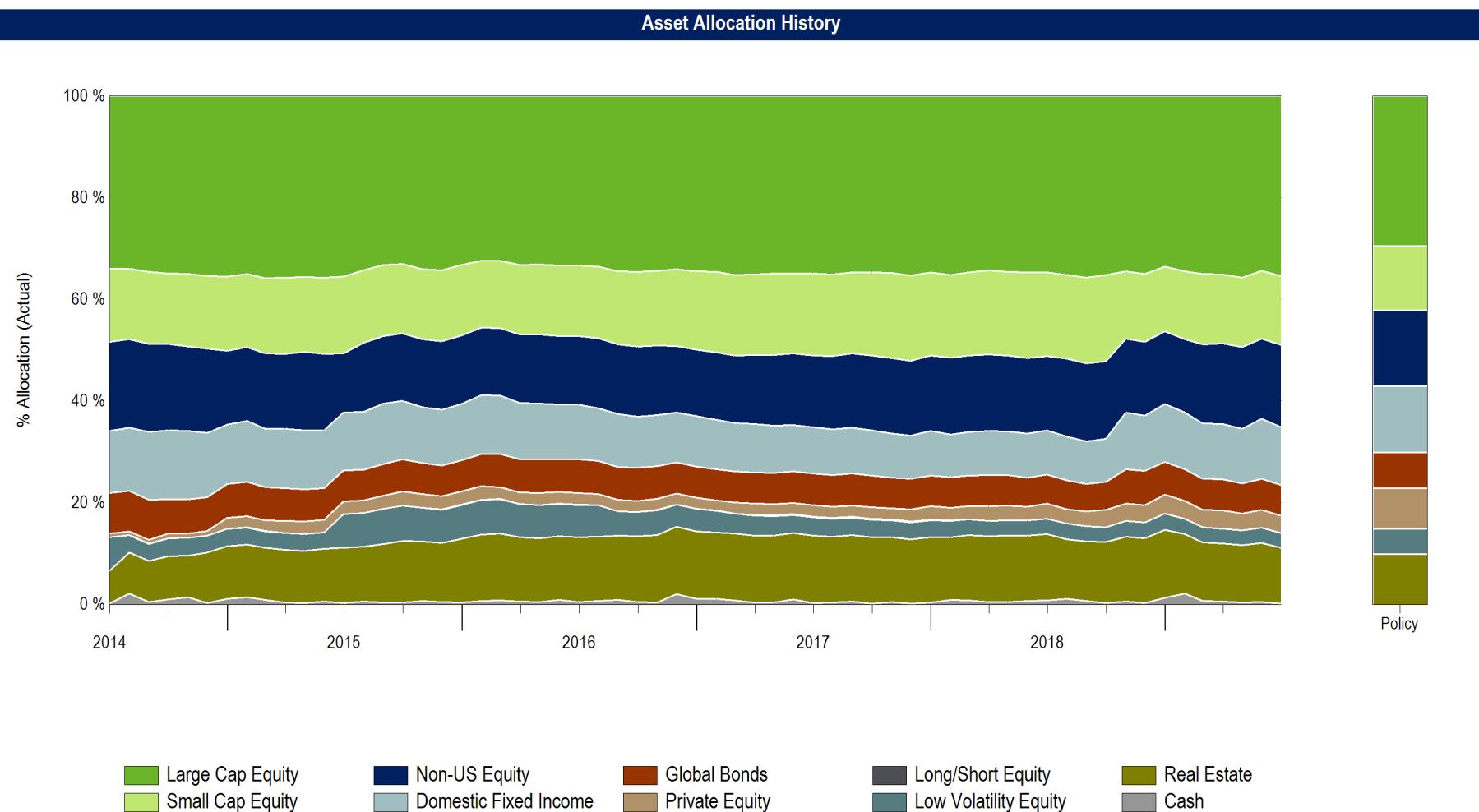


June 30, 2019

# TOTAL PLAN ASSET ALLOCATION VS. POLICY



# TOTAL PLAN ASSET ALLOCATION HISTORY



## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>OK FIREFIGHTERS</b>	<b>2,850,214,274</b>	<b>100.0</b>	<b>4.2</b>	<b>3</b>	<b>13.8</b>	<b>10</b>	<b>7.9</b>	<b>11</b>	<b>11.3</b>	<b>2</b>	<b>8.1</b>	<b>1</b>	<b>10.3</b>	<b>7</b>
<i>FIREFIGHTERS Allocation Index</i>			<u>3.0</u>	67	<u>12.6</u>	32	<u>5.7</u>	69	<u>10.0</u>	11	<u>6.8</u>	13	<u>10.1</u>	13
Over/Under			1.2		1.2		2.2		1.3		1.3		0.2	
<i>FIREFIGHTERS Policy Index</i>			3.6	16	13.5	13	8.0	9	10.2	8	7.6	3	10.7	3
<i>InvMetrics Public DB Gross Median</i>			3.2		12.0		6.3		8.9		6.0		9.2	
<b>Domestic Equity Composite</b>	<b>1,397,048,598</b>	<b>49.0</b>	<b>5.1</b>	<b>27</b>	<b>20.9</b>	<b>28</b>	<b>10.5</b>	<b>29</b>	<b>15.4</b>	<b>29</b>	<b>10.6</b>	<b>31</b>	<b>14.1</b>	<b>64</b>
<i>Russell 3000</i>			<u>4.1</u>	46	<u>18.7</u>	45	<u>9.0</u>	38	<u>14.0</u>	41	<u>10.2</u>	37	<u>14.7</u>	51
Over/Under			1.0		2.2		1.5		1.4		0.4		<u>-0.6</u>	
<i>eV All US Equity Gross Median</i>			3.9		18.3		6.7		13.0		9.2		14.7	
<b>Large Cap Equity Composite</b>	<b>1,007,874,199</b>	<b>35.4</b>	<b>4.7</b>	<b>33</b>	<b>19.3</b>	<b>39</b>	<b>9.5</b>	<b>35</b>	<b>14.2</b>	<b>37</b>	<b>10.2</b>	<b>37</b>	<b>14.5</b>	<b>56</b>
<i>Russell 1000</i>			<u>4.2</u>	43	<u>18.8</u>	44	<u>10.0</u>	32	<u>14.1</u>	39	<u>10.5</u>	33	<u>14.8</u>	47
Over/Under			0.5		0.5		<u>-0.5</u>		0.1		<u>-0.3</u>		<u>-0.3</u>	
<i>eV All US Equity Gross Median</i>			3.9		18.3		6.7		13.0		9.2		14.7	
Aronson	93,256,418	3.3	3.6	54	14.8	65	2.6	81	10.8	62	6.3	80	12.8	71
<i>Russell 1000 Value</i>			<u>3.8</u>	49	<u>16.2</u>	40	<u>8.5</u>	33	<u>10.2</u>	71	<u>7.5</u>	60	<u>13.2</u>	58
Over/Under			<u>-0.2</u>		<u>-1.4</u>		<u>-5.9</u>		0.6		<u>-1.2</u>		<u>-0.4</u>	
<b>SSgA Equity Index</b>	<b>209,556,218</b>	<b>7.4</b>	<b>4.3</b>	<b>47</b>	<b>18.5</b>	<b>42</b>	<b>10.5</b>	<b>39</b>	<b>14.2</b>	<b>38</b>	<b>10.8</b>	<b>34</b>	<b>14.8</b>	<b>39</b>
<i>S&amp;P 500</i>			<u>4.3</u>	47	<u>18.5</u>	42	<u>10.4</u>	40	<u>14.2</u>	39	<u>10.7</u>	35	<u>14.7</u>	41
Over/Under			0.0		0.0		0.1		0.0		0.1		0.1	
<b>SSgA EQ Wtd S&amp;P</b>	<b>205,153,275</b>	<b>7.2</b>	<b>3.9</b>	<b>57</b>	<b>19.5</b>	<b>28</b>	<b>8.2</b>	<b>58</b>	<b>12.4</b>	<b>74</b>	<b>9.2</b>	<b>76</b>	<b>15.6</b>	<b>13</b>
<i>S&amp;P 500</i>			<u>4.3</u>	47	<u>18.5</u>	42	<u>10.4</u>	40	<u>14.2</u>	39	<u>10.7</u>	35	<u>14.7</u>	41
Over/Under			<u>-0.4</u>		1.0		<u>-2.2</u>		<u>-1.8</u>		<u>-1.5</u>		0.9	
<b>Intech</b>	<b>202,396,528</b>	<b>7.1</b>	<b>5.2</b>	<b>23</b>	<b>20.5</b>	<b>16</b>	<b>9.0</b>	<b>51</b>	<b>13.1</b>	<b>62</b>	<b>10.6</b>	<b>36</b>	<b>14.9</b>	<b>34</b>
<i>S&amp;P 500</i>			<u>4.3</u>	47	<u>18.5</u>	42	<u>10.4</u>	40	<u>14.2</u>	39	<u>10.7</u>	35	<u>14.7</u>	41
Over/Under			0.9		2.0		<u>-1.4</u>		<u>-1.1</u>		<u>-0.1</u>		0.2	
<i>eV US Large Cap Core Equity Gross Median</i>			4.1		17.7		9.2		13.8		10.2		14.5	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Fred Alger Management	195,633,345	6.9	6.1	25	22.6	42	11.9	52	19.4	31	13.8	35	--	--
Russell 1000 Growth			4.6	62	21.5	53	11.6	55	18.1	49	13.4	41	16.3	39
Over/Under			1.5		1.1		0.3		1.3		0.4			
eV US Large Cap Growth Equity Gross Median			5.2		21.8		12.1		18.0		12.9		15.9	
Beutel Goodman Company	101,878,414	3.6	4.7	--	16.4	--	13.2	--	13.1	--	--	--	--	--
Russell 1000 Value			3.8	--	16.2	--	8.5	--	10.2	--	7.5	--	13.2	--
Over/Under			0.9		0.2		4.7		2.9					
<b>Small Cap Equity Composite</b>	<b>364,833,719</b>	<b>12.8</b>	<b>5.8</b>	<b>16</b>	<b>28.2</b>	<b>9</b>	<b>14.5</b>	<b>5</b>	<b>19.5</b>	<b>13</b>	<b>12.1</b>	<b>12</b>	<b>15.7</b>	<b>33</b>
Russell 2000			2.1	63	17.0	51	-3.3	57	12.3	48	7.1	57	13.4	78
Over/Under			3.7		11.2		17.8		7.2		5.0		2.3	
eV US Small Cap Equity Gross Median			2.9		17.1		-2.2		12.1		7.6		14.7	
Earnest Partner	88,500,900	3.1	5.0	12	23.1	4	6.8	5	14.3	8	9.2	7	15.2	18
Russell 2000 Value			1.4	68	13.5	72	-6.2	60	9.8	51	5.4	63	12.4	85
Over/Under			3.6		9.6		13.0		4.5		3.8		2.8	
River Road	86,298,076	3.0	6.3	3	22.5	5	10.6	2	15.4	7	10.7	3	13.2	67
Russell 2000 Value			1.4	68	13.5	72	-6.2	60	9.8	51	5.4	63	12.4	85
Over/Under			4.9		9.0		16.8		5.6		5.3		0.8	
eV US Small Cap Value Equity Gross Median			2.2		15.1		-4.8		9.8		5.9		13.9	
Lord Abbet	95,517,745	3.4	9.3	8	39.2	2	19.3	7	27.5	6	12.4	30	--	--
Russell 2000 Growth			2.7	79	20.4	65	-0.5	80	14.7	77	8.6	81	14.4	86
Over/Under			6.6		18.8		19.8		12.8		3.8			
Delaware Small Growth	94,516,997	3.3	2.8	79	28.0	30	14.2	16	20.5	36	15.8	8	--	--
Russell 2500 Growth			4.1	55	23.9	48	6.1	48	16.1	68	10.0	65	15.7	66
Over/Under			-1.3		4.1		8.1		4.4		5.8			
eV US Small Cap Growth Equity Gross Median			4.4		22.9		5.5		18.3		10.8		16.5	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Tortoise Direct Opportunities	24,340,681	0.9	11.5	--	-1.3	--	0.4	--	--	--	--	--	--	--
Alerian MLP Index			0.1	--	17.0	--	3.1	--	-0.4	--	-7.2	--	8.2	--
Over/Under			11.4		-18.3		-2.7							
<b>International Equity Composite</b>	<b>408,695,510</b>	<b>14.3</b>	<b>6.7</b>	<b>7</b>	<b>19.6</b>	<b>22</b>	<b>3.8</b>	<b>18</b>	<b>11.9</b>	<b>23</b>	<b>6.1</b>	<b>21</b>	<b>7.5</b>	<b>79</b>
MSCI ACWI ex USA			3.0	60	13.6	63	1.3	41	9.4	62	2.2	76	6.5	90
Over/Under			3.7		6.0		2.5		2.5		3.9		1.0	
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
Chautauqua	137,977,755	4.8	5.8	14	20.4	15	-1.0	64	11.0	34	5.4	26	--	--
MSCI EAFE			3.7	47	14.0	60	1.1	42	9.1	67	2.2	76	6.9	84
Over/Under			2.1		6.4		-2.1		1.9		3.2			
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
WCM	165,896,388	5.8	10.4	1	25.2	2	13.3	1	15.3	5	10.3	3	--	--
MSCI EAFE			3.7	47	14.0	60	1.1	42	9.1	67	2.2	76	6.9	84
Over/Under			6.7		11.2		12.2		6.2		8.1			
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
<b>Emerging Markets Equity Composite</b>	<b>104,792,665</b>	<b>3.7</b>	<b>2.4</b>	<b>28</b>	<b>10.9</b>	<b>62</b>	<b>-2.2</b>	<b>84</b>	<b>8.2</b>	<b>83</b>	<b>1.6</b>	<b>89</b>	<b>--</b>	<b>--</b>
MSCI Emerging Markets			0.6	76	10.6	66	1.2	59	10.7	52	2.5	74	5.8	95
Over/Under			1.8		0.3		-3.4		-2.5		-0.9			
eV Emg Mkts Equity Gross Median			1.4		12.0		1.8		10.7		3.4		7.5	
Wasatch - Liquidating	2	0.0	0.4	82	4.6	98	-9.1	99	3.5	99	0.4	97	--	--
MSCI Emerging Markets			0.6	76	10.6	66	1.2	59	10.7	52	2.5	74	5.8	95
Over/Under			-0.2		-6.0		-10.3		-7.2		-2.1			
eV Emg Mkts Equity Gross Median			1.4		12.0		1.8		10.7		3.4		7.5	
ClariVest Emerging Market Equity	60,066	0.0	0.1	86	7.0	93	-5.1	94	8.2	83	0.9	94	--	--
MSCI Emerging Markets			0.6	76	10.6	66	1.2	59	10.7	52	2.5	74	5.8	95
Over/Under			-0.5		-3.6		-6.3		-2.5		-1.6			
eV Emg Mkts Equity Gross Median			1.4		12.0		1.8		10.7		3.4		7.5	
RBC GAM EMERGING MARKETS	52,370,517	1.8	3.3	15	--	--	--	--	--	--	--	--	--	--
MSCI Emerging Markets			0.6	76	10.6	66	1.2	59	10.7	52	2.5	74	5.8	95
Over/Under			2.7											
eV Emg Mkts Equity Gross Median			1.4		12.0		1.8		10.7		3.4		7.5	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Wellington Emerging Markets	52,362,080	1.8	1.5	49	--	--	--	--	--	--	--	--	--	--
<i>MSCI Emerging Markets</i>			<u>0.6</u>	76	<u>10.6</u>	66	<u>1.2</u>	59	<u>10.7</u>	52	<u>2.5</u>	74	<u>5.8</u>	95
Over/Under			0.9											
eV Emg Mkts Equity Gross Median			1.4		12.0		1.8		10.7		3.4		7.5	
<b>Fixed Income Composite</b>	<b>498,402,855</b>	<b>17.5</b>	<b>2.5</b>	<b>52</b>	<b>4.8</b>	<b>67</b>	<b>5.0</b>	<b>75</b>	<b>2.5</b>	<b>61</b>	<b>2.7</b>	<b>69</b>	<b>4.5</b>	<b>53</b>
<i>BBgBarc US Aggregate TR</i>			<u>3.1</u>	33	<u>6.1</u>	49	<u>7.9</u>	37	<u>2.3</u>	69	<u>2.9</u>	61	<u>3.9</u>	63
Over/Under			<u>-0.6</u>		<u>-1.3</u>		<u>-2.9</u>		0.2		<u>-0.2</u>		0.6	
eV All US Fixed Inc Gross Median			2.6		5.9		7.0		2.9		3.3		4.6	
<b>Core Bonds Composite</b>	<b>222,892,476</b>	<b>7.8</b>	<b>2.5</b>	<b>96</b>	<b>5.4</b>	<b>93</b>	<b>6.7</b>	<b>96</b>	<b>2.3</b>	<b>89</b>	<b>3.1</b>	<b>78</b>	<b>--</b>	<b>--</b>
<i>BBgBarc US Aggregate TR</i>			<u>3.1</u>	67	<u>6.1</u>	78	<u>7.9</u>	74	<u>2.3</u>	90	<u>2.9</u>	90	<u>3.9</u>	92
Over/Under			<u>-0.6</u>		<u>-0.7</u>		<u>-1.2</u>		0.0		0.2			
eV US Core Fixed Inc Gross Median			3.2		6.5		8.1		2.8		3.3		4.6	
Orleans Capital Management	71,284,846	2.5	3.0	75	6.9	20	8.4	28	2.8	45	--	--	--	--
<i>BBgBarc US Aggregate TR</i>			<u>3.1</u>	67	<u>6.1</u>	78	<u>7.9</u>	74	<u>2.3</u>	90	<u>2.9</u>	90	<u>3.9</u>	92
Over/Under			<u>-0.1</u>		0.8		0.5		0.5					
eV US Core Fixed Inc Gross Median			3.2		6.5		8.1		2.8		3.3		4.6	
Garcia Hamilton Associates	151,607,630	5.3	2.2	99	4.7	99	5.9	99	2.5	76	--	--	--	--
<i>BBgBarc US Aggregate TR</i>			<u>3.1</u>	67	<u>6.1</u>	78	<u>7.9</u>	74	<u>2.3</u>	90	<u>2.9</u>	90	<u>3.9</u>	92
Over/Under			<u>-0.9</u>		<u>-1.4</u>		<u>-2.0</u>		0.2					
eV US Core Fixed Inc Gross Median			3.2		6.5		8.1		2.8		3.3		4.6	
<b>Intermediate Bonds Composite</b>	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>BBgBarc US Govt/Credit Int TR</i>			<u>2.6</u>	33	<u>5.0</u>	59	<u>6.9</u>	46	<u>2.0</u>	89	<u>2.4</u>	85	<u>3.2</u>	88
Over/Under														
eV US Interim Duration Fixed Inc Gross Median			2.5		5.1		6.9		2.3		2.6		3.6	
Garrison Middle Market Funding	7,363,516	0.3	-0.5	99	-0.4	99	0.6	99	2.1	99	2.9	97	--	--
<i>Credit Suisse Leveraged Loans</i>			<u>1.6</u>	99	<u>5.4</u>	96	<u>4.1</u>	99	<u>5.4</u>	2	<u>3.9</u>	27	<u>6.3</u>	21
Over/Under			<u>-2.1</u>		<u>-5.8</u>		<u>-3.5</u>		<u>-3.3</u>		<u>-1.0</u>			
eV US Core Plus Fixed Inc Gross Median			3.2		7.1		8.3		3.6		3.6		5.6	
Medley Opportunity Fund II	17,838,547	0.6	-3.8	99	-3.8	99	-11.7	99	-3.5	99	-0.1	99	--	--
<i>Credit Suisse Leveraged Loans</i>			<u>1.6</u>	61	<u>5.4</u>	68	<u>4.1</u>	50	<u>5.4</u>	36	<u>3.9</u>	72	<u>6.3</u>	47
Over/Under			<u>-5.4</u>		<u>-9.2</u>		<u>-15.8</u>		<u>-8.9</u>		<u>-4.0</u>			
eV US Float-Rate Bank Loan Fixed Inc Gross Median			1.7		5.7		4.1		5.2		4.0		6.3	

Returns are gross of manager fees.



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## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
PIMCO Corporate Opp Fund II	26,818,285	0.9	5.1	3	0.2	99	8.4	91	--	--	--	--	--	--
BBgBarc US High Yield TR			2.5	97	9.9	57	7.5	97	7.5	1	4.7	21	9.2	1
Over/Under			2.6		-9.7		0.9							
eV US Corporate Fixed Inc Gross Median			4.5		10.1		10.8		4.3		4.4		6.7	
PIMCO Bravo III	33,961,667	1.2	2.3	97	1.8	99	9.8	72	--	--	--	--	--	--
Cambridge Associates US All PE			0.0	99	6.5	92	8.7	77	14.5	1	11.0	1	14.3	1
Over/Under			2.3		-4.7		1.1							
eV US Corporate Fixed Inc Net Median			4.4		10.0		10.5		4.1		4.1		6.4	
PIMCO Private Income Fund	17,220,000	0.6	--	--	--	--	--	--	--	--	--	--	--	--
BBgBarc US High Yield TR			2.5	97	9.9	57	7.5	97	7.5	1	4.7	21	9.2	1
Over/Under														
eV US Corporate Fixed Inc Gross Median			4.5		10.1		10.8		4.3		4.4		6.7	
<b>Global Fixed Composite</b>	<b>172,308,364</b>	<b>6.0</b>	<b>3.3</b>	<b>43</b>	<b>6.7</b>	<b>52</b>	<b>5.0</b>	<b>68</b>	<b>2.8</b>	<b>69</b>	<b>1.8</b>	<b>64</b>	<b>--</b>	<b>--</b>
FTSE WGBI TR			3.6	31	5.4	75	5.5	62	1.0	95	0.8	84	2.2	93
Over/Under			-0.3		1.3		-0.5		1.8		1.0			
eV All Global Fixed Inc Gross Median			3.1		6.7		6.4		4.0		2.9		4.7	
Brandywine	172,308,364	6.0	3.3	43	6.7	52	5.0	68	2.8	69	1.8	64	--	--
FTSE WGBI TR			3.6	31	5.4	75	5.5	62	1.0	95	0.8	84	2.2	93
Over/Under			-0.3		1.3		-0.5		1.8		1.0			
eV All Global Fixed Inc Gross Median			3.1		6.7		6.4		4.0		2.9		4.7	
<b>Real Estate Composite</b>	<b>313,462,216</b>	<b>11.0</b>	<b>1.8</b>	<b>--</b>	<b>2.9</b>	<b>--</b>	<b>7.4</b>	<b>--</b>	<b>8.3</b>	<b>--</b>	<b>10.3</b>	<b>--</b>	<b>--</b>	<b>--</b>
NCREIF Property Index			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			0.3		-0.4		0.9		1.4		1.5			
JP Morgan RE	108,547,676	3.8	1.1	--	1.6	--	5.3	--	7.1	--	9.1	--	9.7	--
NCREIF Property Index			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			-0.4		-1.7		-1.2		0.2		0.3		0.5	
Portfolio Advisors RE III	3,566,521	0.1	-0.1	--	0.2	--	-1.2	--	4.0	--	9.3	--	4.2	--
NCREIF Property Index			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			-1.6		-3.1		-7.7		-2.9		0.5		-5.0	
Portfolio Advisors RE IV	3,566,521	0.1	27.6	--	28.5	--	44.5	--	21.9	--	18.9	--	--	--
NCREIF Property Index			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under					26.1		25.2		38.0		15.0		10.1	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Angelo Gordon Net Lease Realty III LP	24,533,814	0.9	1.4	--	4.1	--	7.8	--	8.7	--	6.4	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			-0.1		0.8		1.3		1.8		-2.4			
Mesirow	27,571,821	1.0	8.7	--	8.7	--	10.7	--	10.3	--	7.9	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			7.2		5.4		4.2		3.4		-0.9			
Dune Real Estate Fund III	26,861,069	0.9	2.0	--	4.7	--	14.6	--	14.0	--	12.8	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			0.5		1.4		8.1		7.1		4.0			
OK FF Portfolio Advisors	8,618,127	0.3	-0.4	--	-0.3	--	4.4	--	4.1	--	8.9	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			-1.9		-3.6		-2.1		-2.8		0.1			
Landmark RE VII	12,792,644	0.4	-1.4	--	-0.8	--	1.1	--	5.1	--	--	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			-2.9		-4.1		-5.4		-1.8					
JP Morgan Special Situation Property	69,202,096	2.4	0.4	--	2.4	--	7.6	--	9.1	--	--	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			-1.1		-0.9		1.1		2.2					
Hall Capital III	10,869,099	0.4	5.4	--	5.4	--	7.7	--	9.3	--	--	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			3.9		2.1		1.2		2.4					
Portfolio Advisors RE VI	14,406,213	0.5	-0.4	--	0.3	--	9.7	--	--	--	--	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			-1.9		-3.0		3.2							
Hall Capital Real Estate Fund	2,926,615	0.1	0.9	--	0.4	--	--	--	--	--	--	--	--	--
<i>NCREIF Property Index</i>			1.5	--	3.3	--	6.5	--	6.9	--	8.8	--	9.2	--
Over/Under			-0.6		-2.9									

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Firefighters

# TOTAL PLAN PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Hedge Fund Composite</b>	<b>131,895,546</b>	<b>4.6</b>	<b>2.0</b>	--	<b>5.3</b>	--	<b>1.1</b>	--	<b>5.1</b>	--	<b>2.3</b>	--	<b>4.3</b>	--
HFRI FOF: Conservative Index			1.7	--	5.0	--	2.4	--	3.9	--	2.2	--	3.1	--
Over/Under			0.3		0.3		-1.3		1.2		0.1		1.2	
<b>Permal</b>	<b>81,969,450</b>	<b>2.9</b>	<b>1.2</b>	--	<b>1.8</b>	--	<b>0.2</b>	--	<b>5.0</b>	--	--	--	--	--
HFRI Fund of Funds Composite Index			1.7	--	6.4	--	1.4	--	4.3	--	2.2	--	3.2	--
Over/Under			-0.5		-4.6		-1.2		0.7					
Allianz Global Investors DMAP	49,926,096	1.8	3.3	--	11.5	--	3.1	--	6.6	--	--	--	--	--
Russell 2500 Growth			4.1	--	23.9	--	6.1	--	16.1	--	10.0	--	15.7	--
Over/Under			-0.8		-12.4		-3.0		-9.5					
<b>Private Equity Composite</b>	<b>95,903,925</b>	<b>3.4</b>	<b>2.6</b>	--	<b>1.0</b>	--	<b>9.4</b>	--	<b>14.1</b>	--	<b>13.5</b>	--	--	--
Cambridge Associates US All PE			0.0	--	6.5	--	8.7	--	14.5	--	11.0	--	14.3	--
Over/Under			2.6		-5.5		0.7		-0.4		2.5			
Pomona Capital Fund VIII	4,145,651	0.1	-2.3	--	-2.3	--	15.2	--	16.3	--	13.9	--	--	--
Cambridge Associates US All PE			0.0	--	6.5	--	8.7	--	14.5	--	11.0	--	14.3	--
Over/Under			-2.3		-8.8		6.5		1.8		2.9			
Ardian	24,843,475	0.9	4.4	--	0.4	--	10.3	--	12.2	--	13.7	--	--	--
Cambridge Associates US All PE			0.0	--	6.5	--	8.7	--	14.5	--	11.0	--	14.3	--
Over/Under			4.4		-6.1		1.6		-2.3		2.7			
Dynamics Global Secondaries IV	31,256,090	1.1	0.2	--	-0.4	--	10.1	--	14.5	--	--	--	--	--
Cambridge Associates US All PE			0.0	--	6.5	--	8.7	--	14.5	--	11.0	--	14.3	--
Over/Under			0.2		-6.9		1.4		0.0					
AESF VI	21,674,460	0.8	2.7	--	0.8	--	1.7	--	--	--	--	--	--	--
Cambridge Associates US All PE			0.0	--	6.5	--	8.7	--	14.5	--	11.0	--	14.3	--
Over/Under			2.7		-5.7		-7.0							
Pomona Capital Fund IX	8,919,873	0.3	11.6	--	11.6	--	12.7	--	--	--	--	--	--	--
Cambridge Associates US All PE			0.0	--	6.5	--	8.7	--	14.5	--	11.0	--	14.3	--
Over/Under			11.6		5.1		4.0							
Argonaut Private Equity Fund IV	5,064,377	0.2	-1.1	--	-1.0	--	--	--	--	--	--	--	--	--
Cambridge Associates US All PE			0.0	--	6.5	--	8.7	--	14.5	--	11.0	--	14.3	--
Over/Under			-1.1		-7.5									

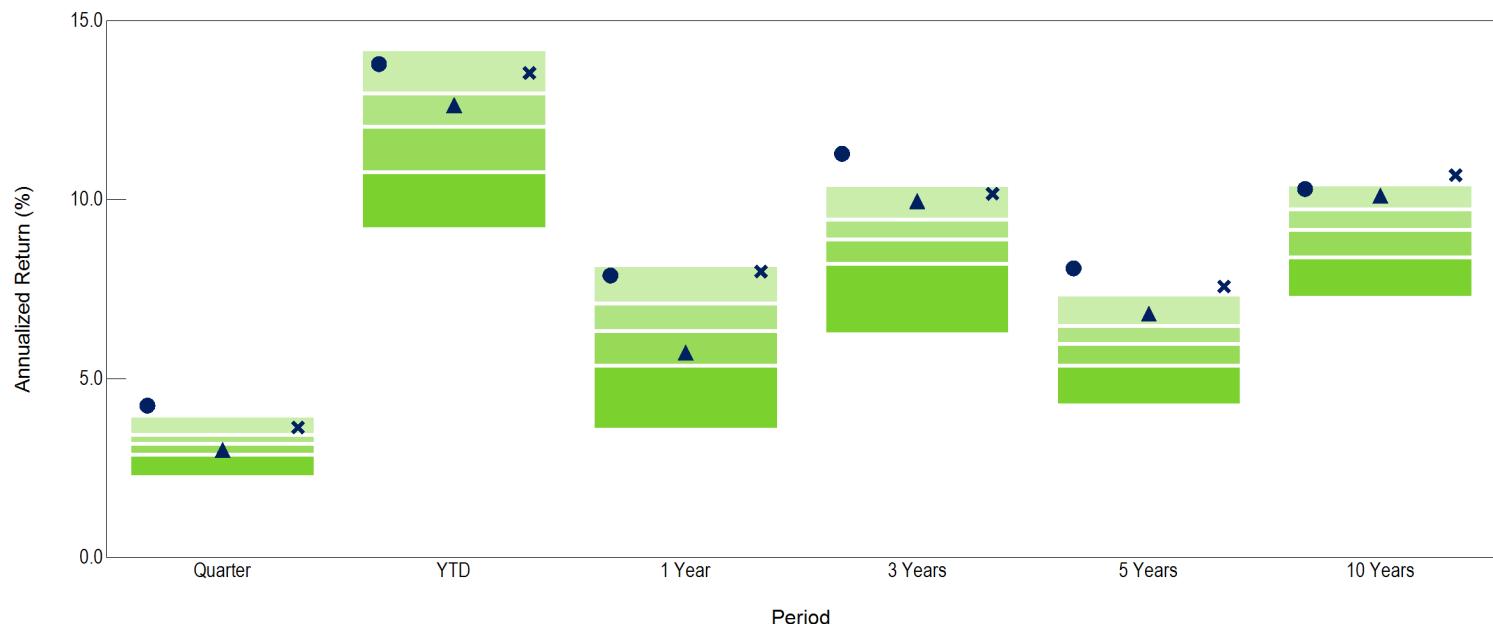
Returns are gross of manager fees.



June 30, 2019

# TOTAL PLAN RETURN SUMMARY VS. PEER UNIVERSE

OK FIREFIGHTERS vs. InvMetrics Public DB Gross



	Return (Rank)									
5th Percentile	4.0	14.2	8.2	10.4	7.3	10.4				
25th Percentile	3.4	13.0	7.1	9.5	6.5	9.7				
Median	3.2	12.0	6.3	8.9	6.0	9.2				
75th Percentile	2.9	10.8	5.4	8.2	5.4	8.4				
95th Percentile	2.3	9.2	3.6	6.2	4.3	7.3				
# of Portfolios	279	278	273	264	254	217				
● OK FIREFIGHTERS	4.2	(3)	13.8	(10)	7.9	(11)	11.3	(2)	8.1	(1)
▲ FIREFIGHTERS Allocation Index	3.0	(67)	12.6	(32)	5.7	(69)	10.0	(11)	6.8	(13)
✖ FIREFIGHTERS Policy Index	3.6	(16)	13.5	(13)	8.0	(9)	10.2	(8)	7.6	(3)



June 30, 2019

# TOTAL PLAN RETURN SUMMARY VS. PEER UNIVERSE

OK FIREFIGHTERS vs. InvMetrics Public DB Gross



	Return (Rank)								
5th Percentile	-1.3		18.2		9.4		2.2		8.0
25th Percentile	-3.1		16.5		8.4		0.9		6.8
Median	-4.0		15.3		7.7		0.1		5.8
75th Percentile	-4.9		14.0		6.9		-0.9		4.6
95th Percentile	-6.3		11.3		5.3		-2.6		3.2
# of Portfolios	319		304		305		316		248
● OK FIREFIGHTERS	-2.4	(13)	18.7	(4)	7.3	(61)	2.1	(6)	6.9
▲ FIREFIGHTERS Allocation Index	-3.9	(49)	15.6	(44)	9.4	(5)	0.5	(35)	6.1
✖ FIREFIGHTERS Policy Index	-3.8	(45)	16.4	(28)	8.7	(15)	1.6	(10)	8.7



## Oklahoma Firefighters

# TOTAL PLAN RISK STATISTICS VS. PEER UNIVERSE

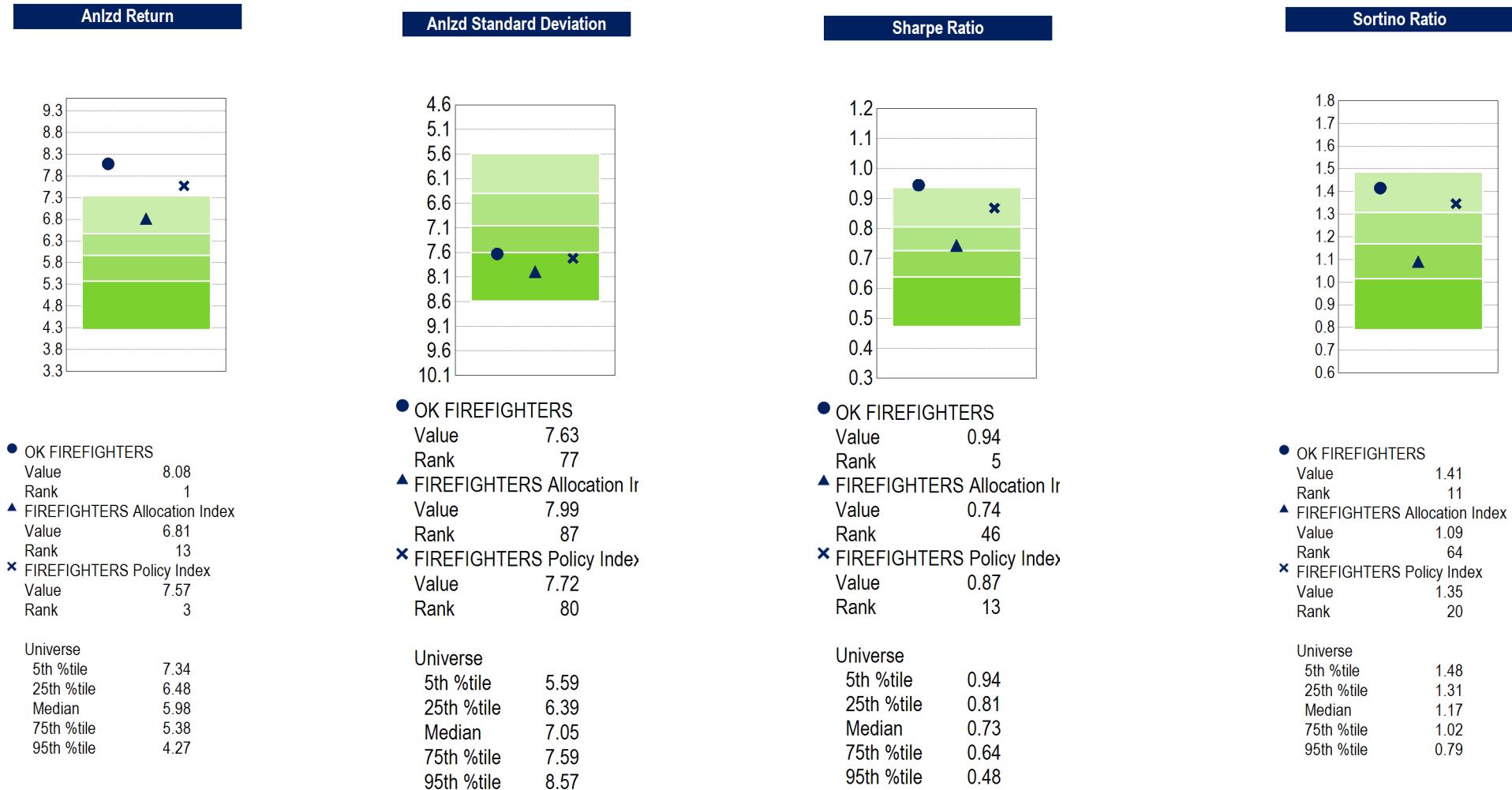
OK FIREFIGHTERS vs. InvMetrics Public DB Gross  
3 Years



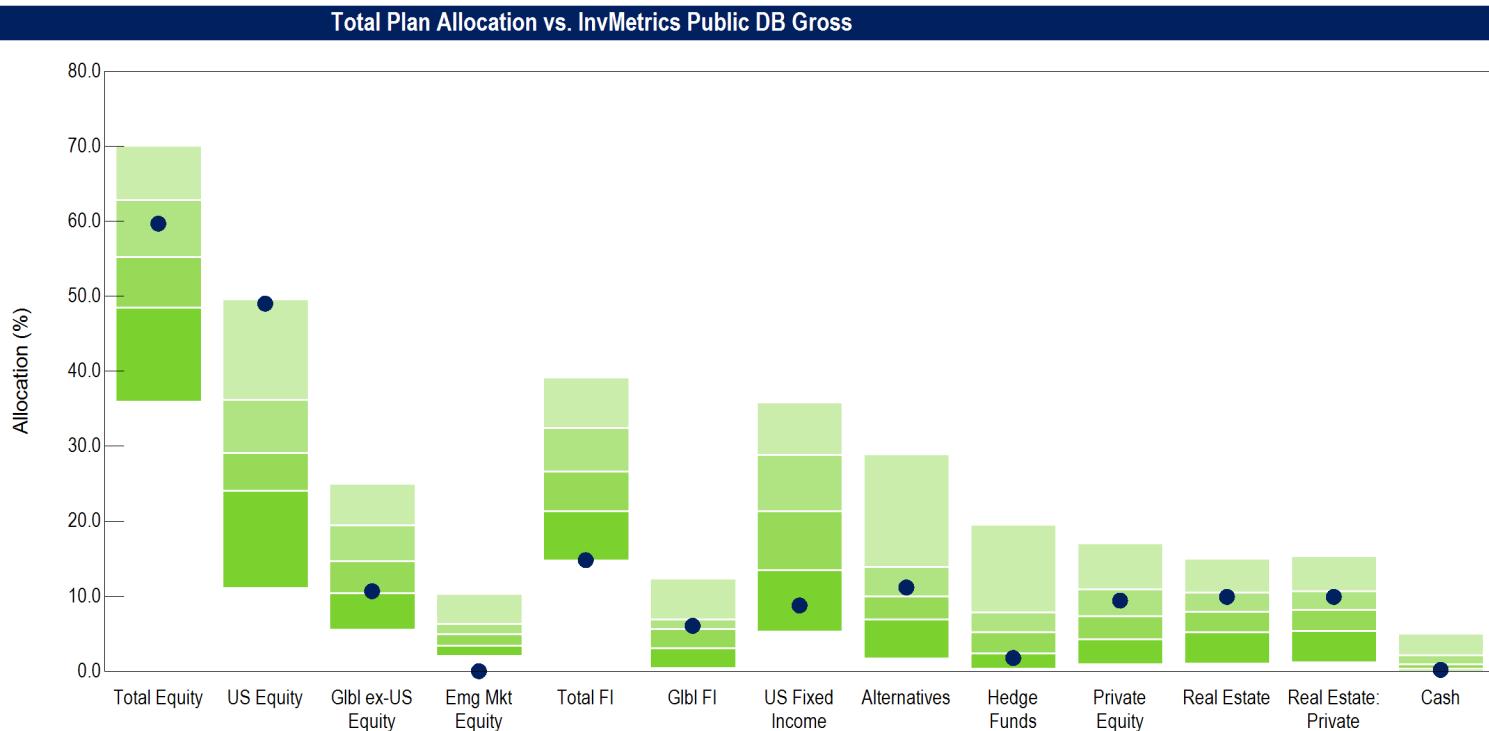
## Oklahoma Firefighters

# TOTAL PLAN RISK STATISTICS VS. PEER UNIVERSE

OK FIREFIGHTERS vs. InvMetrics Public DB Gross  
5 Years



# TOTAL PLAN ALLOCATIONS VS. PEER UNIVERSE



	Allocation (Rank)													
5th Percentile	70.1	49.6	25.0	10.4	39.1	12.4	35.9	29.0	19.6	17.0	15.0	15.3	5.0	--
25th Percentile	63.0	36.3	19.5	6.4	32.5	7.0	28.9	14.0	7.9	11.0	10.6	10.7	2.2	--
Median	55.3	29.2	14.8	5.0	26.7	5.7	21.4	10.0	5.3	7.4	8.0	8.3	1.0	--
75th Percentile	48.6	24.2	10.5	3.5	21.4	3.1	13.6	7.0	2.4	4.4	5.3	5.4	0.4	--
95th Percentile	36.0	11.2	5.6	2.1	14.8	0.4	5.3	1.8	0.4	1.0	1.1	1.3	0.1	--
# of Portfolios	200	132	165	88	199	28	117	126	56	86	134	99	186	--
● OK FIREFIGHTERS	59.7 (39)	49.0 (7)	10.7 (74)	0.0 (99)	14.8 (96)	6.0 (38)	8.8 (89)	11.2 (37)	1.8 (82)	9.4 (37)	9.9 (31)	9.9 (34)	0.2 (87)	--



June 30, 2019

# TOTAL PLAN ATTRIBUTION ANALYSIS

Performance Attribution		
	Last 3 Mo.	1 Yr
Wtd. Actual Return	4.3%	7.9%
Wtd. Index Return *	3.6%	8.0%
<b>Excess Return</b>	<b>0.6%</b>	<b>-0.1%</b>
Selection Effect	0.6%	-0.1%
Allocation Effect	0.0%	0.0%
Interaction Effect	0.0%	0.0%
Asset Class Returns		
OK FIREFIGHTERS	4.2%	7.9%
Domestic Equity Composite	5.1%	10.5%
Large Cap Equity Composite	4.7%	9.5%
Small Cap Equity Composite	5.8%	14.5%
Z TERMINATED - Long/Short Equity Composite		
International Equity Composite	6.7%	3.8%
Emerging Markets Equity Composite	2.4%	-2.2%
Fixed Income Composite	2.5%	5.0%
Domestic Fixed Income	2.1%	5.2%
Core Bonds Composite	2.5%	6.7%
Intermediate Bonds Composite		
Global Fixed Composite	3.3%	5.0%
Real Estate Composite	1.8%	7.4%
Hedge Fund Composite	2.0%	1.1%
Private Equity Composite	2.6%	9.4%

\*Calculated from benchmark returns and weightings of each component.

Z TERMINATED represents Composite that fully liquidated.



# OKLAHOMA POLICE

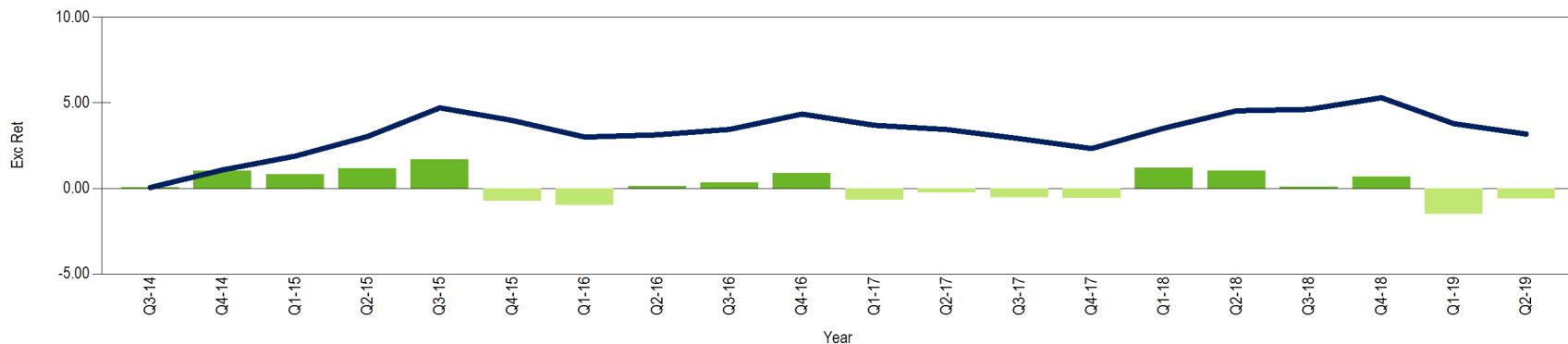


## Oklahoma Police

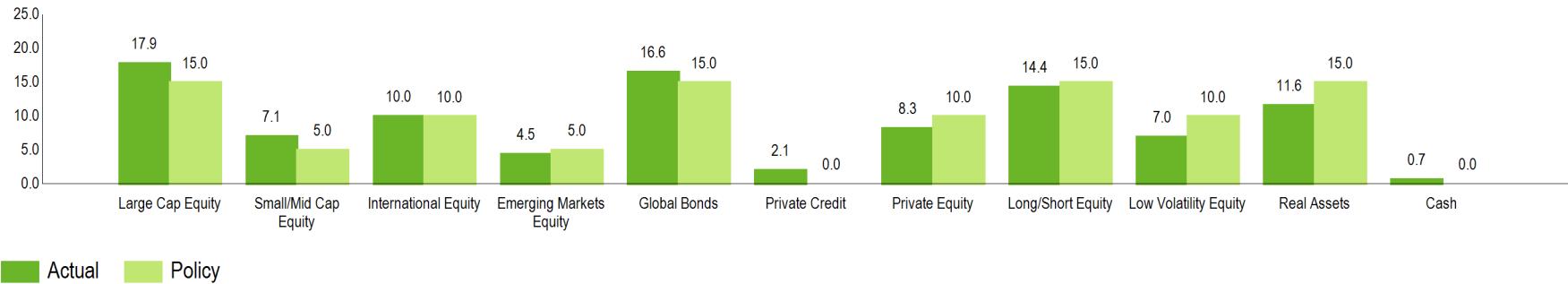
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK POLICE</b>	<b>\$2,604,662,334</b>	<b>2.5%</b>	<b>91</b>	<b>9.6%</b>	<b>92</b>	<b>4.7%</b>	<b>84</b>	<b>8.3%</b>	<b>75</b>	<b>5.6%</b>	<b>69</b>	<b>8.5%</b>	<b>72</b>
POLICE Allocation Index		2.1%	97	9.4%	94	4.0%	93	7.7%	86	4.9%	86	8.9%	59
POLICE Policy Index		3.1%	60	11.8%	55	5.9%	64	8.2%	76	4.9%	86	9.0%	56
InvMetrics Public DB Gross Median		3.2%		12.0%		6.3%		8.9%		6.0%		9.2%	

Quarterly and Cumulative Excess Performance



Actual vs Target Allocation (%)



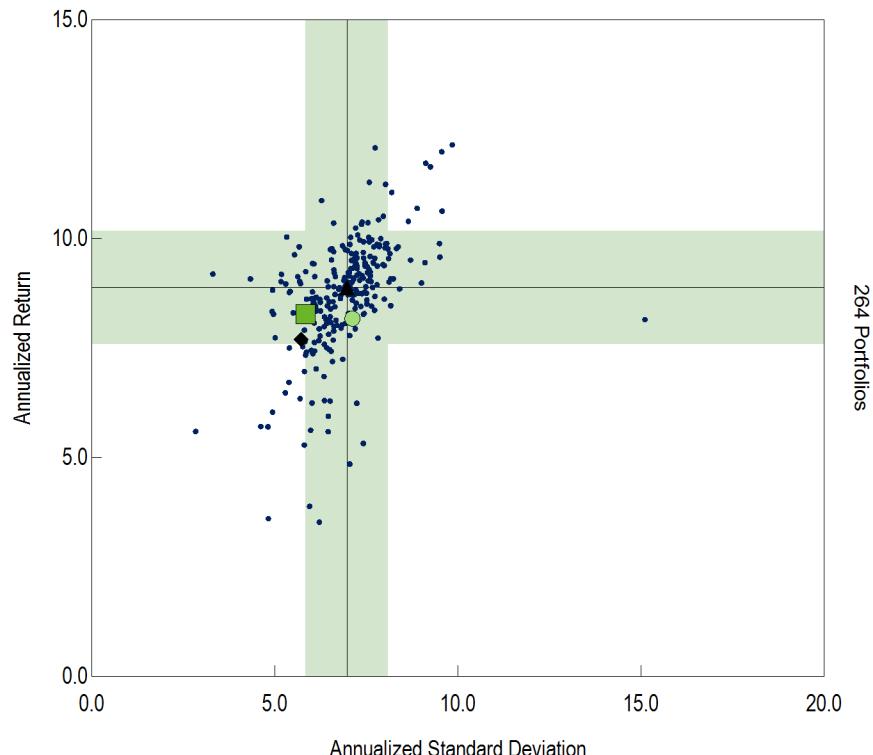
Returns are gross of manager fees.



June 30, 2019

# TOTAL FUND RISK/RETURN - 3 YEARS

3 Years Ending June 30, 2019



3 Years Ending June 30, 2019

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK POLICE	8.27%	75	5.83%	14
POLICE Allocation Index	7.70%	86	5.71%	10
POLICE Policy Index	8.18%	76	7.11%	59

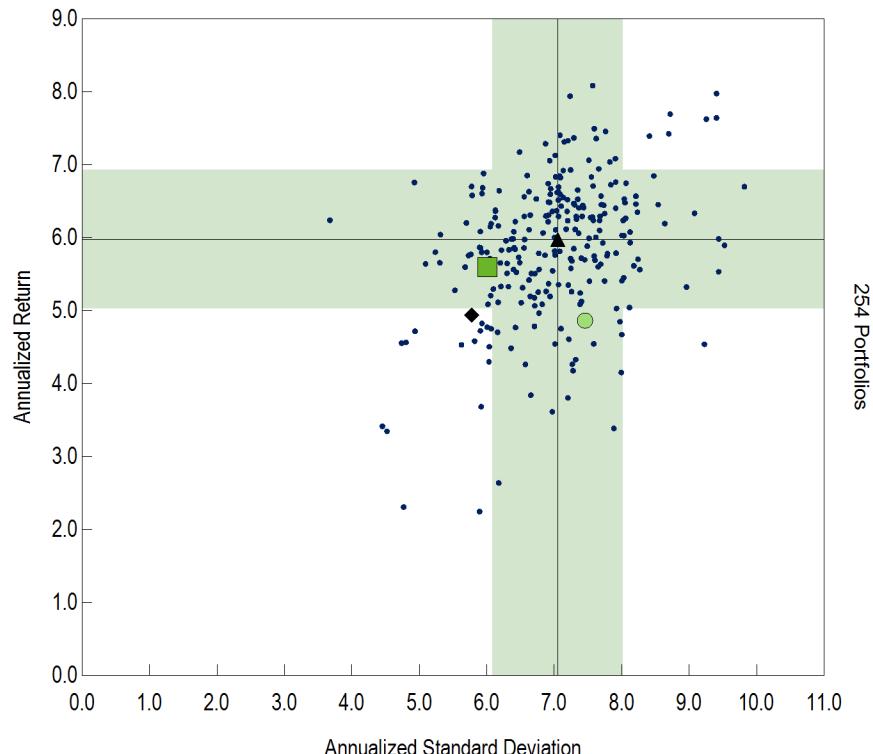
3 Years Ending June 30, 2019

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK POLICE	1.18	21	1.49	39
POLICE Allocation Index	1.10	40	1.50	37
POLICE Policy Index	0.95	83	1.30	74



# TOTAL FUND RISK/RETURN - 5 YEARS

5 Years Ending June 30, 2019



5 Years Ending June 30, 2019

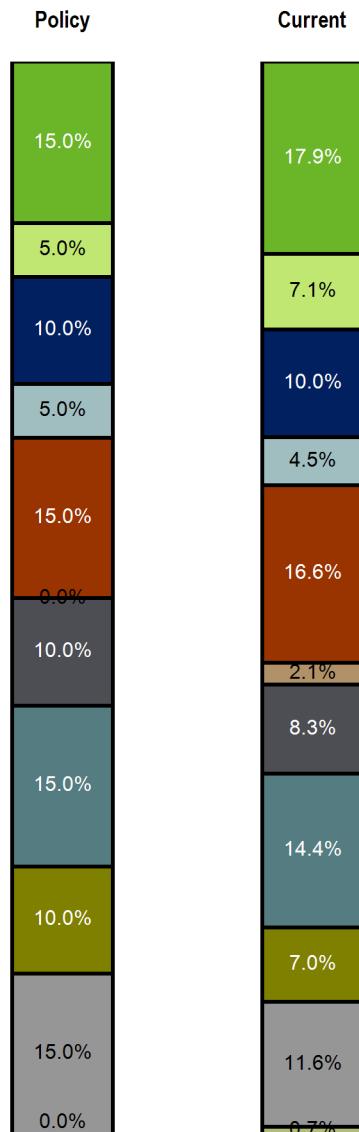
	Anlzd Ret	Rank	Anlzd Std Dev	Rank
OK POLICE	5.60%	69	6.01%	15
POLICE Allocation Index	4.94%	86	5.77%	8
POLICE Policy Index	4.87%	86	7.46%	71

5 Years Ending June 30, 2019

	Sharpe Ratio	Rank	Sortino Ratio	Rank
OK POLICE	0.79	32	1.29	29
POLICE Allocation Index	0.70	58	1.08	65
POLICE Policy Index	0.54	91	0.97	83



# TOTAL FUND ASSET ALLOCATION VS. POLICY

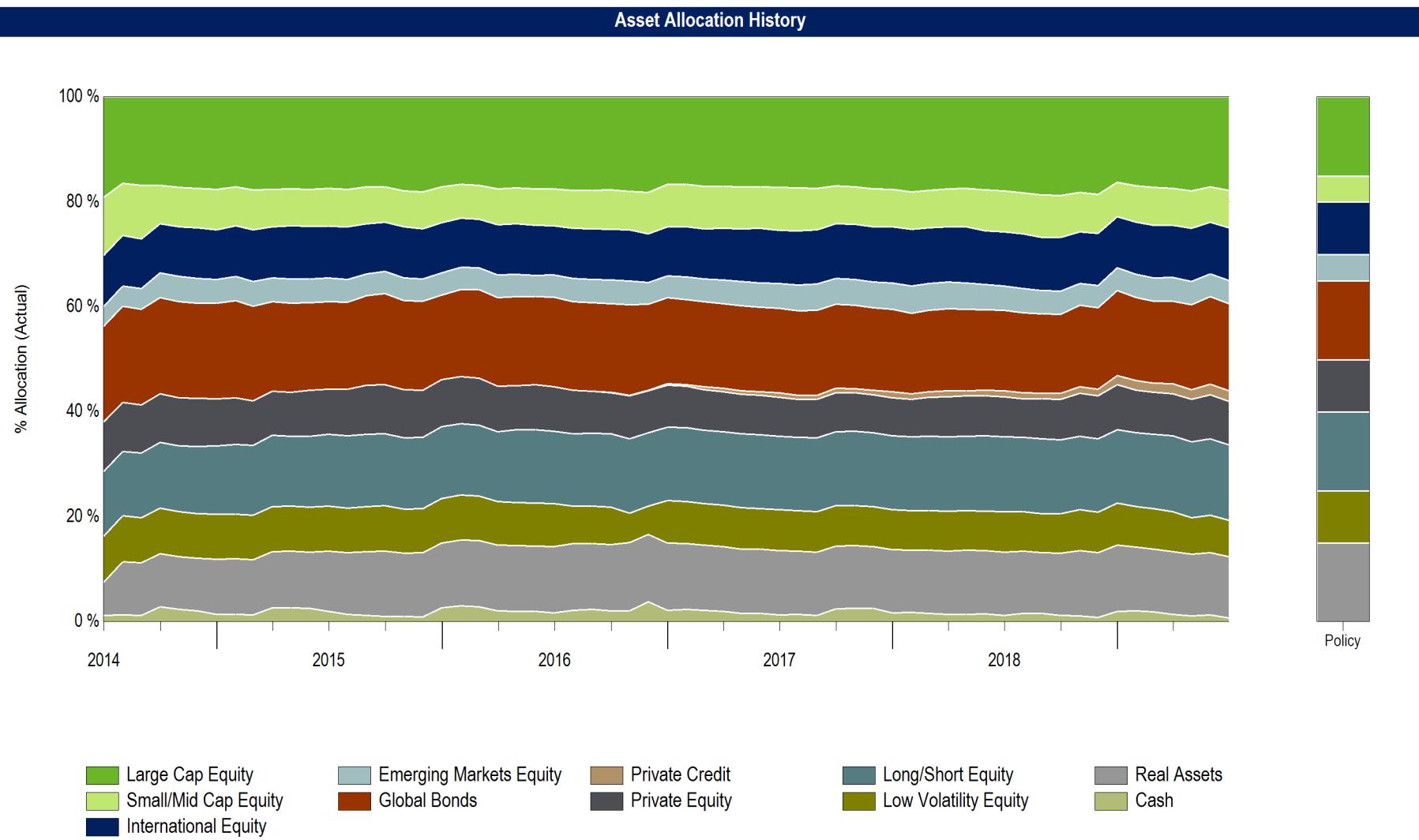


	Asset Allocation vs. Target					
	Current	Policy	Current	Difference*	Policy Range	Within Range
Large Cap Equity	\$465,476,108	15.0%	17.9%	2.9%	10.0% - 20.0%	Yes
Small/Mid Cap Equity	\$183,775,621	5.0%	7.1%	2.1%	0.0% - 15.0%	Yes
International Equity	\$261,644,901	10.0%	10.0%	0.0%	5.0% - 15.0%	Yes
Emerging Markets Equity	\$116,436,485	5.0%	4.5%	-0.5%	0.0% - 10.0%	Yes
Global Bonds	\$431,161,689	15.0%	16.6%	1.6%	10.0% - 20.0%	Yes
Private Credit	\$53,482,315	0.0%	2.1%	2.1%	0.0% - 5.0%	Yes
Private Equity	\$215,912,163	10.0%	8.3%	-1.7%	5.0% - 15.0%	Yes
Long/Short Equity	\$374,278,411	15.0%	14.4%	-0.6%	10.0% - 20.0%	Yes
Low Volatility Equity	\$181,141,326	10.0%	7.0%	-3.0%	5.0% - 15.0%	Yes
Real Assets	\$303,194,292	15.0%	11.6%	-3.4%	0.0% - 30.0%	Yes
Cash	\$18,159,025	0.0%	0.7%	0.7%	0.0% - 5.0%	Yes
<b>Total</b>	<b>\$2,604,662,334</b>	<b>100.0%</b>	<b>100.0%</b>			

\*Difference between Policy and Current Allocation



# TOTAL FUND ASSET ALLOCATION HISTORY



## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>OK POLICE</b>	<b>2,604,662,334</b>	<b>100.0</b>	<b>2.5</b>	<b>91</b>	<b>9.6</b>	<b>92</b>	<b>4.7</b>	<b>84</b>	<b>8.3</b>	<b>75</b>	<b>5.6</b>	<b>69</b>	<b>8.5</b>	<b>72</b>
POLICE Allocation Index			2.1	97	9.4	94	4.0	93	7.7	86	4.9	86	8.9	59
Over/Under			0.4		0.2		0.7		0.6		0.7		-0.4	
POLICE Policy Index			3.1	60	11.8	55	5.9	64	8.2	76	4.9	86	9.0	56
InvMetrics Public DB Gross Median			3.2		12.0		6.3		8.9		6.0		9.2	
<b>Equity Composite</b>	<b>1,027,333,114</b>	<b>39.4</b>	<b>3.4</b>	<b>54</b>	<b>16.1</b>	<b>53</b>	<b>4.2</b>	<b>63</b>	<b>12.1</b>	<b>41</b>	<b>7.2</b>	<b>41</b>	<b>10.9</b>	<b>63</b>
Russell 3000			4.1	40	18.7	31	9.0	30	14.0	21	10.2	14	14.7	9
Over/Under			-0.7		-2.6		-4.8		-1.9		-3.0		-3.8	
eV All Global Equity Gross Median			3.6		16.3		5.8		11.3		6.8		11.5	
<b>Domestic Equity Composite</b>	<b>649,251,728</b>	<b>24.9</b>	<b>3.9</b>	<b>51</b>	<b>18.5</b>	<b>47</b>	<b>6.5</b>	<b>51</b>	<b>14.2</b>	<b>39</b>	<b>9.6</b>	<b>44</b>	<b>14.6</b>	<b>52</b>
S&P 500			4.3	41	18.5	47	10.4	29	14.2	38	10.7	30	14.7	50
Over/Under			-0.4		0.0		-3.9		0.0		-1.1		-0.1	
eV All US Equity Gross Median			3.9		18.3		6.7		13.0		9.2		14.7	
Northern Trust Russell 1000 Index Fund	465,476,108	17.9	4.2	47	18.8	37	10.1	42	14.1	40	10.5	41	14.8	38
Russell 1000			4.2	47	18.8	37	10.0	42	14.1	40	10.5	42	14.8	38
Over/Under			0.0		0.0		0.1		0.0		0.0		0.0	
eV US Large Cap Core Equity Gross Median			4.1		17.7		9.2		13.8		10.2		14.5	
Boston Partners	88,740,962	3.4	5.0	20	19.4	25	-3.2	65	9.6	59	5.6	60	13.4	63
Russell 2500 Value			1.9	69	15.3	76	-1.9	52	9.0	61	5.5	61	13.3	65
Over/Under			3.1		4.1		-1.3		0.6		0.1		0.1	
eV US Small-Mid Cap Value Equity Gross Median			2.8		17.4		-1.4		10.1		6.0		13.9	
Cortina Small Cap Growth	95,034,658	3.6	1.1	90	16.2	87	-0.2	77	19.2	43	9.8	67	--	--
Russell 2000 Growth			2.7	79	20.4	65	-0.5	80	14.7	77	8.6	81	14.4	86
Over/Under			-1.6		-4.2		0.3		4.5		1.2			
eV US Small Cap Growth Equity Gross Median			4.4		22.9		5.5		18.3		10.8		16.5	

Northern Trust Russell 1000 Index fund was Mellon Capital Passive Index fund before 10/30/2014.

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>International Equity Composite</b>	<b>378,081,386</b>	<b>14.5</b>	<b>2.5</b>	<b>67</b>	<b>12.1</b>	<b>76</b>	<b>0.4</b>	<b>48</b>	<b>8.5</b>	<b>74</b>	<b>3.1</b>	<b>64</b>	<b>6.1</b>	<b>95</b>
<b>MSCI ACWI ex USA</b>			<u>3.0</u>	60	<u>13.6</u>	63	<u>1.3</u>	41	<u>9.4</u>	62	<u>2.2</u>	76	<u>6.5</u>	90
Over/Under			<u>-0.5</u>		<u>-1.5</u>		<u>-0.9</u>		<u>-0.9</u>		0.9		<u>-0.4</u>	
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
<b>Mondrian Int'l Value</b>	<b>140,800,835</b>	<b>5.4</b>	<b>1.3</b>	<b>62</b>	<b>10.5</b>	<b>51</b>	<b>1.8</b>	<b>24</b>	<b>7.6</b>	<b>55</b>	<b>1.8</b>	<b>46</b>	<b>7.0</b>	<b>48</b>
<b>MSCI ACWI ex USA</b>			<u>3.0</u>	24	<u>13.6</u>	21	<u>1.3</u>	27	<u>9.4</u>	37	<u>2.2</u>	30	<u>6.5</u>	61
Over/Under			<u>-1.7</u>		<u>-3.1</u>		0.5		<u>-1.8</u>		<u>-0.4</u>		0.5	
eV ACWI ex-US Value Equity Gross Median			1.6		10.5		-2.0		7.9		1.6		6.8	
<b>Baring Focused Intl Equity</b>	<b>120,844,066</b>	<b>4.6</b>	<b>4.0</b>	<b>40</b>	<b>14.8</b>	<b>53</b>	<b>-0.1</b>	<b>55</b>	<b>10.1</b>	<b>47</b>	<b>5.2</b>	<b>28</b>	<b>--</b>	<b>--</b>
<b>MSCI ACWI ex USA</b>			<u>3.0</u>	60	<u>13.6</u>	63	<u>1.3</u>	41	<u>9.4</u>	62	<u>2.2</u>	76	<u>6.5</u>	90
Over/Under			1.0		1.2		<u>-1.4</u>		0.7		3.0			
eV All ACWI ex-US Equity Gross Median			3.5		15.2		0.2		9.9		3.8		8.9	
<b>Wasatch EM Small Cap</b>	<b>36,169,492</b>	<b>1.4</b>	<b>3.8</b>	<b>6</b>	<b>14.7</b>	<b>12</b>	<b>0.4</b>	<b>28</b>	<b>7.8</b>	<b>62</b>	<b>3.2</b>	<b>58</b>	<b>--</b>	<b>--</b>
<b>MSCI Emerging Markets Small Cap</b>			<u>-1.0</u>	82	<u>6.7</u>	85	<u>-5.1</u>	73	<u>5.5</u>	83	<u>0.5</u>	87	<u>5.9</u>	99
Over/Under			4.8		8.0		5.5		2.3		2.7			
eV Emg Mkts Small Cap Equity Gross Median			0.9		10.6		-2.2		8.4		3.4		9.7	
<b>AB EM Strategic Core Equity</b>	<b>80,266,993</b>	<b>3.1</b>	<b>1.9</b>	<b>--</b>	<b>10.1</b>	<b>--</b>	<b>-1.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>MSCI Emerging Markets</b>			<u>0.6</u>	--	<u>10.6</u>	--	<u>1.2</u>	--	<u>10.7</u>	--	<u>2.5</u>	--	<u>5.8</u>	--
Over/Under			1.3		<u>-0.5</u>		<u>-2.2</u>							
<b>Fixed Income Composite</b>	<b>431,161,689</b>	<b>16.6</b>	<b>3.1</b>	<b>53</b>	<b>6.9</b>	<b>47</b>	<b>6.8</b>	<b>45</b>	<b>3.9</b>	<b>52</b>	<b>3.1</b>	<b>48</b>	<b>5.7</b>	<b>36</b>
<b>BBgBarc US Aggregate TR</b>			<u>3.1</u>	53	<u>6.1</u>	63	<u>7.9</u>	31	<u>2.3</u>	76	<u>2.9</u>	49	<u>3.9</u>	64
Over/Under			0.0		0.8		<u>-1.1</u>		1.6		0.2		1.8	
eV All Global Fixed Inc Gross Median			3.1		6.7		6.4		4.0		2.9		4.7	
<b>Oaktree</b>	<b>129,150,796</b>	<b>5.0</b>	<b>2.5</b>	<b>55</b>	<b>7.2</b>	<b>31</b>	<b>4.7</b>	<b>79</b>	<b>6.4</b>	<b>13</b>	<b>4.0</b>	<b>32</b>	<b>8.1</b>	<b>18</b>
<b>BBgBarc US Aggregate TR</b>			<u>3.1</u>	33	<u>6.1</u>	49	<u>7.9</u>	37	<u>2.3</u>	69	<u>2.9</u>	61	<u>3.9</u>	63
Over/Under			<u>-0.6</u>		1.1		<u>-3.2</u>		4.1		1.1		4.2	

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Agincourt	220,458,516	8.5	3.2	27	6.7	37	8.6	22	2.9	50	3.4	47	4.8	46
BBgBarc US Aggregate TR			3.1	33	6.1	49	7.9	37	2.3	69	2.9	61	3.9	63
Over/Under			0.1		0.6		0.7		0.6		0.5		0.9	
eV All US Fixed Inc Gross Median			2.6		5.9		7.0		2.9		3.3		4.6	
Loomis Sayles	81,552,376	3.1	3.7	24	6.6	53	6.3	51	2.6	72	1.6	67	4.1	61
FTSE WGBI TR			3.6	31	5.4	75	5.5	62	1.0	95	0.8	84	2.2	93
Over/Under			0.1		1.2		0.8		1.6		0.8		1.9	
eV All Global Fixed Inc Gross Median			3.1		6.7		6.4		4.0		2.9		4.7	
<b>Total Long/Short</b>	<b>374,278,411</b>	<b>14.4</b>	<b>1.6</b>	<b>53</b>	<b>10.8</b>	<b>42</b>	<b>2.7</b>	<b>40</b>	<b>7.6</b>	<b>51</b>	<b>5.0</b>	<b>49</b>	<b>--</b>	<b>--</b>
HFRI FOF: Strategic Index			1.4	54	7.7	58	0.1	52	5.0	70	2.3	75	3.5	91
Over/Under			0.2		3.1		2.6		2.6		2.7			
eV Alt Fundamental - Long/Short Equity Median			1.8		9.3		0.3		7.7		4.8		8.2	
Grosvenor	374,278,411	14.4	1.6	53	10.8	42	2.7	40	7.6	51	5.0	49	6.3	72
HFRI FOF: Strategic Index			1.4	54	7.7	58	0.1	52	5.0	70	2.3	75	3.5	91
Over/Under			0.2		3.1		2.6		2.6		2.7		2.8	
eV Alt Fundamental - Long/Short Equity Median			1.8		9.3		0.3		7.7		4.8		8.2	
<b>Total Real Assets</b>	<b>303,194,292</b>	<b>11.6</b>	<b>0.1</b>	<b>--</b>	<b>2.1</b>	<b>--</b>	<b>2.2</b>	<b>--</b>	<b>5.4</b>	<b>--</b>	<b>5.0</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>Total Core Real Estate</b>	<b>177,574,671</b>	<b>6.8</b>	<b>1.4</b>	<b>--</b>	<b>2.1</b>	<b>--</b>	<b>6.4</b>	<b>--</b>	<b>7.9</b>	<b>--</b>	<b>9.8</b>	<b>--</b>	<b>--</b>	<b>--</b>
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			0.4		-0.3		0.0		0.3		0.0			
Columbus Square	4,774,830	0.2	1.2	--	2.9	--	8.3	--	7.2	--	12.8	--	14.9	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			0.2		0.5		1.9		-0.4		3.0		5.0	
JP Morgan	129,424,092	5.0	1.1	--	1.6	--	5.3	--	7.1	--	9.1	--	9.7	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			0.1		-0.8		-1.1		-0.5		-0.7		-0.2	
Blackstone Property Partners	43,375,749	1.7	2.0	--	3.7	--	9.5	--	10.5	--	--	--	--	--
NCREIF ODCE			1.0	--	2.4	--	6.4	--	7.6	--	9.8	--	9.9	--
Over/Under			1.0		1.3		3.1		2.9					
<b>Private Real Estate</b>	<b>50,228,531</b>	<b>1.9</b>	<b>1.4</b>	<b>--</b>	<b>3.8</b>	<b>--</b>	<b>10.2</b>	<b>--</b>	<b>8.4</b>	<b>--</b>	<b>11.0</b>	<b>--</b>	<b>--</b>	<b>--</b>
Siguler Guff Distressed RE	4,387,502	0.2	-0.6	--	3.7	--	5.9	--	13.2	--	15.4	--	--	--

\*The Private Real Estate returns are time weighted.

Returns are gross of manager fees.



June 30, 2019

## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
TA Associates Realty X	9,353,290	0.4	5.9	--	8.9	--	16.1	--	10.2	--	12.0	--	--	--
Cerberus Real Estate Fund III	9,862,249	0.4	1.0	--	5.4	--	10.5	--	6.4	--	10.8	--	--	--
<i>NCREIF ODCE</i>			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			0.0		3.0		4.1		-1.2		1.0			
Hall Capital Fund III	5,391,733	0.2	5.1	--	5.1	--	7.4	--	10.2	--	--	--	--	--
<i>NCREIF ODCE</i>			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			4.1		2.7		1.0		2.6					
Siguler Guff Distressed RE II	6,694,249	0.3	-1.8	--	0.2	--	7.3	--	13.1	--	--	--	--	--
<i>NCREIF ODCE</i>			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			<u>-2.8</u>		<u>-2.2</u>		0.9		5.5					
Cerberus Real Estate Partners IV	10,094,174	0.4	3.6	--	7.7	--	14.3	--	-26.1	--	--	--	--	--
<i>NCREIF ODCE</i>			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			2.6		5.3		7.9		-33.7					
Siguler Guff Dist. Real Estate Opp. II B	4,445,334	0.2	-7.3	--	-9.9	--	12.5	--	--	--	--	--	--	--
<i>NCREIF ODCE</i>			<u>1.0</u>	--	<u>2.4</u>	--	<u>6.4</u>	--	<u>7.6</u>	--	<u>9.8</u>	--	<u>9.9</u>	--
Over/Under			<u>-8.3</u>		<u>-12.3</u>		6.1							
Mt Lucas Peak	26,764,495	1.0	-5.8	--	-5.9	--	-14.7	--	-2.3	--	2.6	--	0.2	--
Gresham Tap Fund	48,626,595	1.9	-2.1	--	5.1	--	-8.5	--	-0.9	--	--	--	--	--
<b>Total Low Volatility Strategies</b>	<b>181,141,326</b>	<b>7.0</b>	<b>0.6</b>	--	<b>3.3</b>	--	<b>2.2</b>	--	<b>4.0</b>	--	<b>1.2</b>	--	--	--
HFRI FOF: Conservative Index			<u>1.7</u>	--	<u>5.0</u>	--	<u>2.4</u>	--	<u>3.9</u>	--	<u>2.2</u>	--	<u>3.1</u>	--
Over/Under			<u>-1.1</u>		<u>-1.7</u>		<u>-0.2</u>		0.1		<u>-1.0</u>			

\*Returns are gross of manager fees.



June 30, 2019

## Oklahoma Police

# TOTAL FUND PERFORMANCE DETAIL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
PAAMCO	114,730,643	4.4	-0.1	85	3.6	82	0.4	53	3.5	74	0.9	82	4.3	70
HFRI FOF: Conservative Index			<u>1.7</u>	50	<u>5.0</u>	67	<u>2.4</u>	24	<u>3.9</u>	66	<u>2.2</u>	58	<u>3.1</u>	80
Over/Under			<u>-1.8</u>		<u>-1.4</u>		<u>-2.0</u>		<u>-0.4</u>		<u>-1.3</u>			1.2
eV Alt Fund of Funds - All Single Strategy Median			1.7		7.9		0.6		5.0		2.5		5.1	
Wellington Global Total Return	66,410,683	2.5	1.7	49	2.5	86	5.9	3	--	--	--	--	--	--
HFRI FOF Conservative (1 Mo Lag)			<u>1.3</u>	63	<u>3.1</u>	83	<u>1.4</u>	34	<u>3.4</u>	76	<u>2.1</u>	59	<u>3.1</u>	80
Over/Under			0.4		<u>-0.6</u>		4.5							
eV Alt Fund of Funds - All Single Strategy Median			1.7		7.9		0.6		5.0		2.5		5.1	
<b>Private Credit</b>	<b>53,482,315</b>	<b>2.1</b>	<b>2.4</b>	--	<b>3.7</b>	--	<b>8.4</b>	--	--	--	--	--	--	--
Cambridge Associates US All PE			<u>0.0</u>	--	<u>6.5</u>	--	<u>8.7</u>	--	<u>14.5</u>	--	<u>11.0</u>	--	<u>14.3</u>	--
Over/Under			2.4		<u>-2.8</u>		<u>-0.3</u>							
<b>Private Equity</b>	<b>215,912,163</b>	<b>8.3</b>	<b>4.1</b>	--	<b>5.0</b>	--	<b>15.1</b>	--	<b>10.6</b>	--	<b>10.3</b>	--	<b>12.0</b>	--
Cambridge Associates US All PE			<u>0.0</u>	--	<u>6.5</u>	--	<u>8.7</u>	--	<u>14.5</u>	--	<u>11.0</u>	--	<u>14.3</u>	--
Over/Under			4.1		<u>-1.5</u>		6.4		<u>-3.9</u>		<u>-0.7</u>		<u>-2.3</u>	

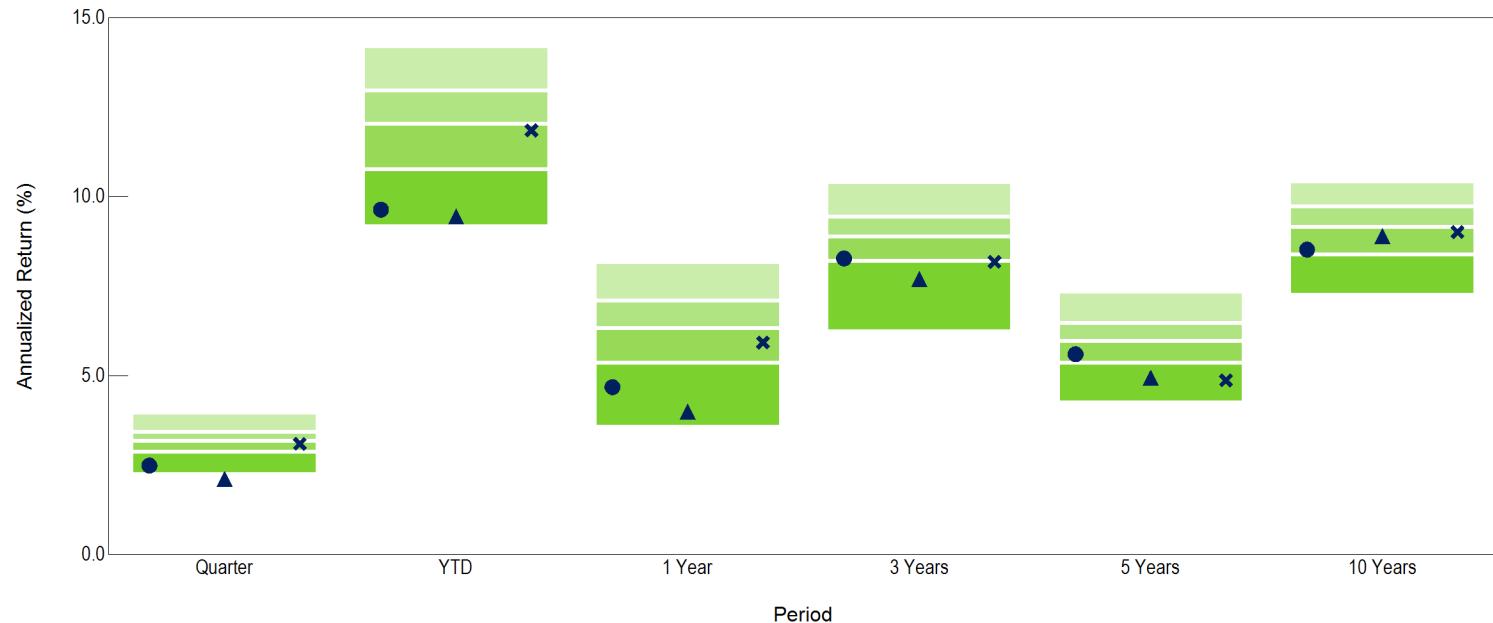
\*Returns are gross of manager fees.



June 30, 2019

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK POLICE vs. InvMetrics Public DB Gross

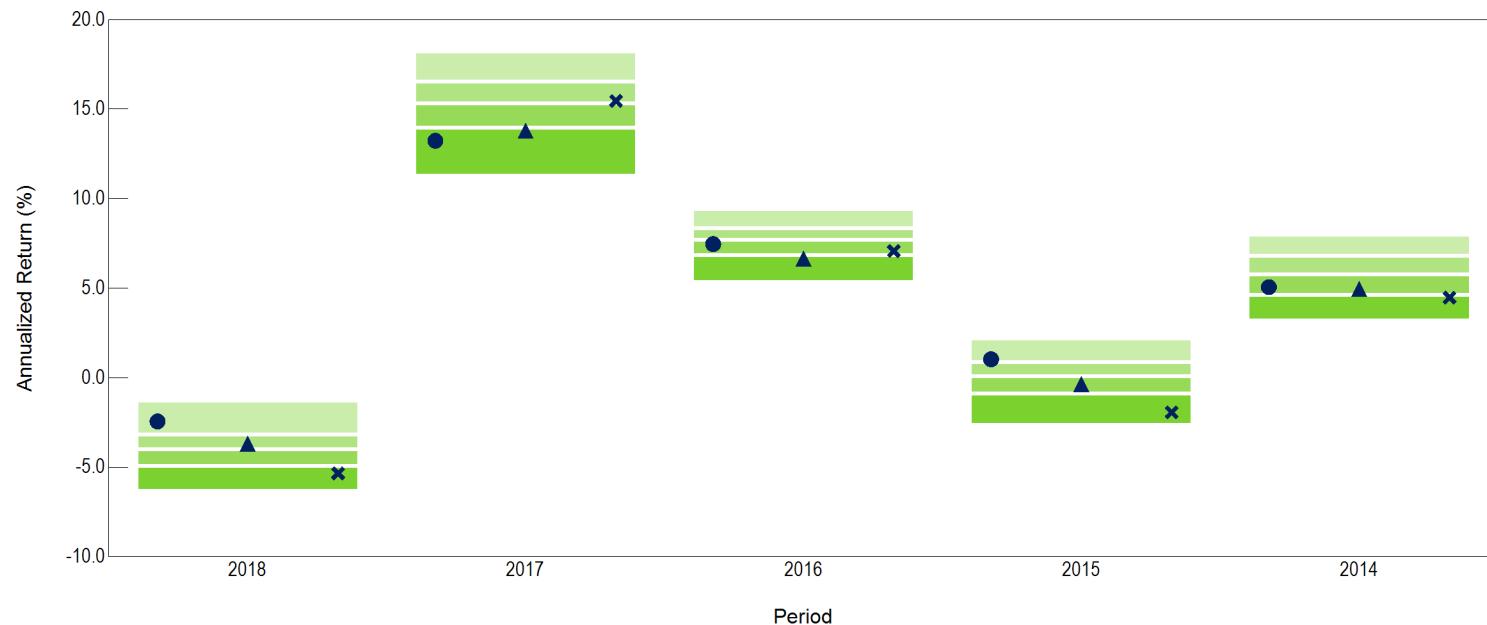


	Return (Rank)								
5th Percentile	4.0	14.2	8.2	10.4	7.3	10.4			
25th Percentile	3.4	13.0	7.1	9.5	6.5	9.7			
Median	3.2	12.0	6.3	8.9	6.0	9.2			
75th Percentile	2.9	10.8	5.4	8.2	5.4	8.4			
95th Percentile	2.3	9.2	3.6	6.2	4.3	7.3			
# of Portfolios	279	278	273	264	254	217			
● OK POLICE	2.5	(91)	9.6	(92)	4.7	(84)	8.3	(75)	5.6
▲ POLICE Allocation Index	2.1	(97)	9.4	(94)	4.0	(93)	7.7	(86)	4.9
✖ POLICE Policy Index	3.1	(60)	11.8	(55)	5.9	(64)	8.2	(76)	4.9



# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

OK POLICE vs. InvMetrics Public DB Gross



	Return (Rank)							
5th Percentile	-1.3	18.2	9.4	2.2	8.0			
25th Percentile	-3.1	16.5	8.4	0.9	6.8			
Median	-4.0	15.3	7.7	0.1	5.8			
75th Percentile	-4.9	14.0	6.9	-0.9	4.6			
95th Percentile	-6.3	11.3	5.3	-2.6	3.2			
# of Portfolios	319	304	305	316	248			
● OK POLICE	-2.4	(14)	13.2	(86)	7.5	(57)	1.0	(21)
▲ POLICE Allocation Index	-3.7	(42)	13.8	(77)	6.7	(80)	-0.4	(63)
✖ POLICE Policy Index	-5.3	(83)	15.5	(48)	7.1	(70)	-1.9	(89)



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

OK POLICE vs. InvMetrics Public DB Gross

3 Years



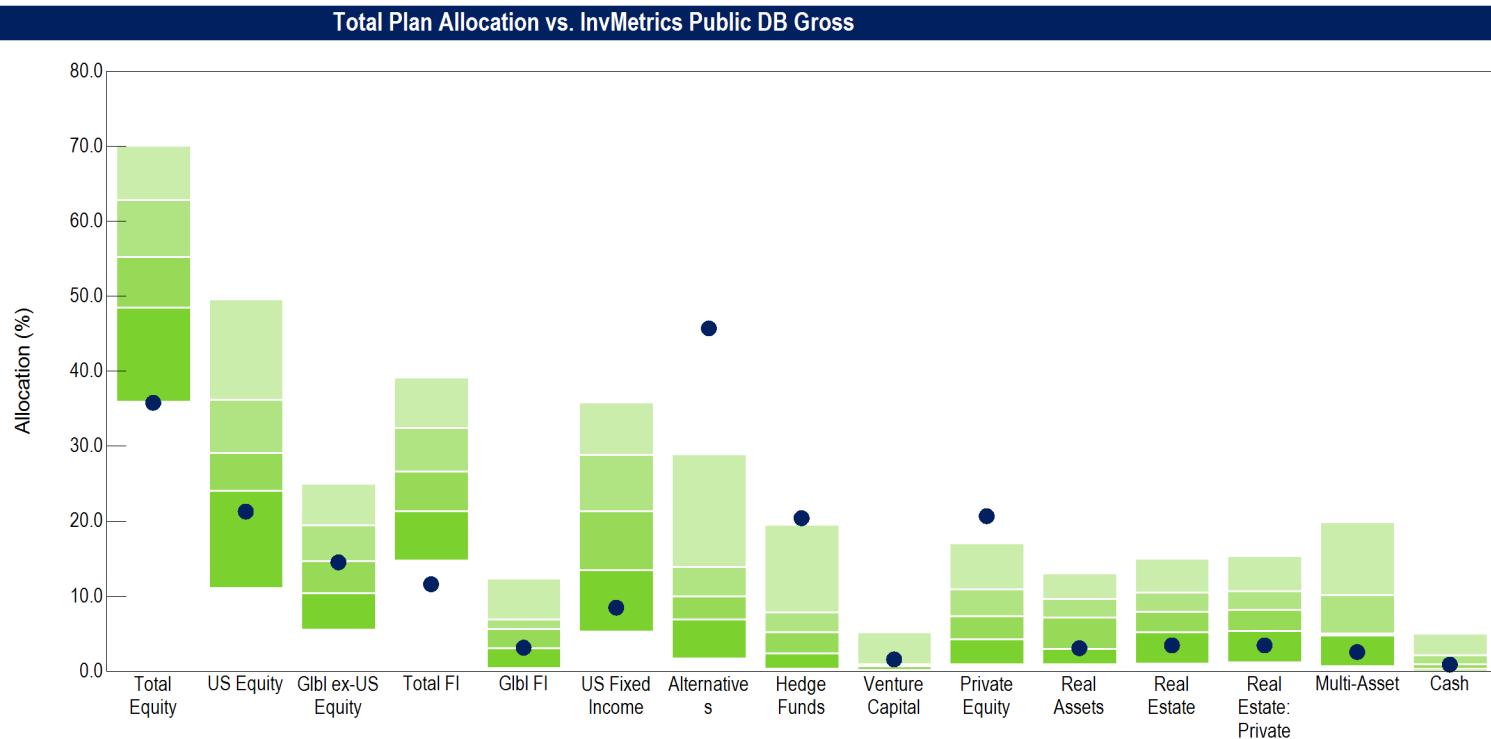
## Oklahoma Police

# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE

OK POLICE vs. InvMetrics Public DB Gross  
5 Years



# TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE



	Allocation (Rank)																
5th Percentile	70.1	49.6	25.0	39.1	12.4	35.9	29.0	19.6	5.2	17.0	13.0	15.0	15.3	19.9	5.0	--	
25th Percentile	63.0	36.3	19.5	32.5	7.0	28.9	14.0	7.9	1.0	11.0	9.8	10.6	10.7	10.2	2.2	--	
Median	55.3	29.2	14.8	26.7	5.7	21.4	10.0	5.3	0.7	7.4	7.2	8.0	8.3	5.1	1.0	--	
75th Percentile	48.6	24.2	10.5	21.4	3.1	13.6	7.0	2.4	0.2	4.4	3.1	5.3	5.4	4.8	0.4	--	
95th Percentile	36.0	11.2	5.6	14.8	0.4	5.3	1.8	0.4	0.1	1.0	1.1	1.3	0.8	0.1	--	--	
# of Portfolios	200	132	165	199	28	117	126	56	16	86	53	134	99	65	186	--	
● OK POLICE	35.8	(96)	21.3	(84)	14.5	(53)	11.6	(98)	3.1	(75)	8.5	(92)	45.7	(2)	20.4	(4)	--



June 30, 2019

# TOTAL FUND ATTRIBUTION ANALYSIS

Performance Attribution			
	Last 3 Mo.	YTD	1 Yr
Wtd. Actual Return	2.5%	9.8%	4.6%
Wtd. Index Return *	3.1%	11.8%	5.9%
<b>Excess Return</b>	<b>-0.6%</b>	<b>-2.1%</b>	<b>-1.3%</b>
Selection Effect	-0.7%	-2.9%	-0.9%
Allocation Effect	0.0%	0.0%	0.0%
Interaction Effect	0.1%	0.8%	-0.4%
 Asset Class Returns			
OK POLICE	2.5%	9.6%	4.7%
Equity Composite	3.4%	16.1%	4.2%
Domestic Equity Composite	3.9%	18.5%	6.5%
International Equity Composite	2.5%	12.1%	0.4%
Fixed Income Composite	3.1%	6.9%	6.8%
Total Long/Short	1.6%	10.8%	2.7%
Total Real Assets	0.1%	2.1%	2.2%
Total Core Real Estate	1.4%	2.1%	6.4%
Private Real Estate	1.4%	3.8%	10.2%
Total Low Volatility Strategies	0.6%	3.3%	2.2%
Private Credit	2.4%	3.7%	8.4%
Private Equity	4.1%	5.0%	15.1%
Cash	0.7%	1.3%	2.5%

\*Calculated from benchmark returns and weightings of each component.



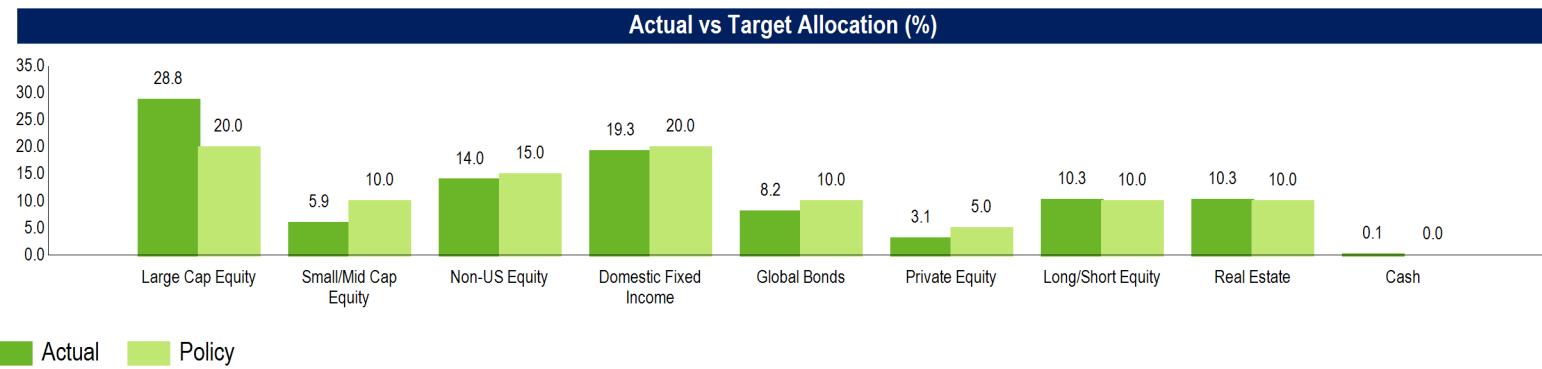
# OKLAHOMA LAW



## Oklahoma Law

# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK LAW</b>	<b>\$1,010,316,854</b>	<b>2.8%</b>	<b>79</b>	<b>11.4%</b>	<b>66</b>	<b>4.5%</b>	<b>87</b>	<b>8.8%</b>	<b>55</b>	<b>5.7%</b>	<b>66</b>	<b>9.2%</b>	<b>46</b>
LAW Allocation Index		3.0%	67	10.5%	80	5.6%	72	8.6%	64	6.2%	42	9.2%	46
LAW Policy Index		3.3%	45	11.8%	56	5.9%	64	8.8%	53	6.4%	29	9.4%	40
InvMetrics Public DB Gross Median		3.2%		12.0%		6.3%		8.9%		6.0%		9.2%	



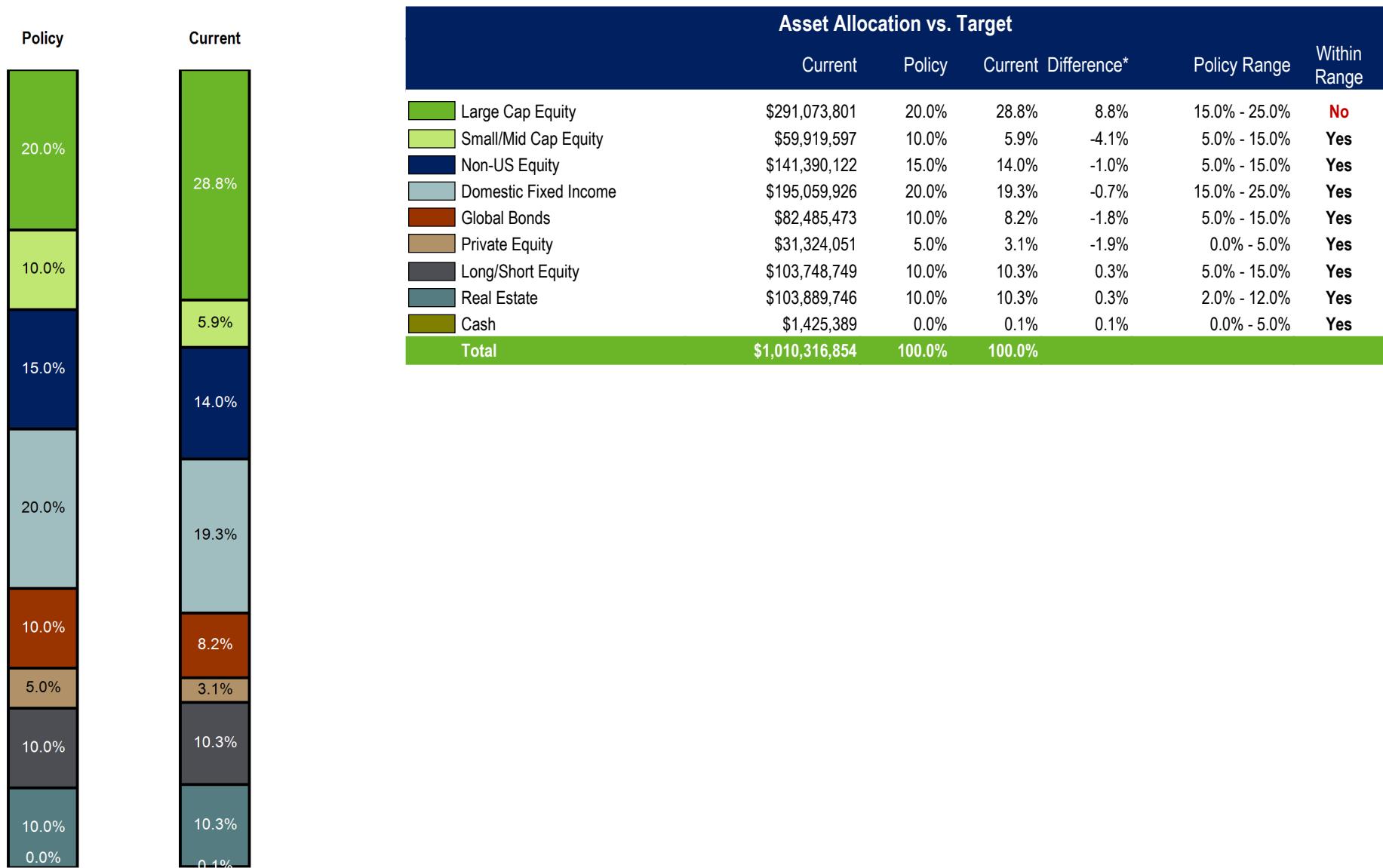
Actual      Policy

Returns are gross of manager fees.



June 30, 2019

# TOTAL FUND ASSET ALLOCATION VS. POLICY



# OKLAHOMA JUDGES

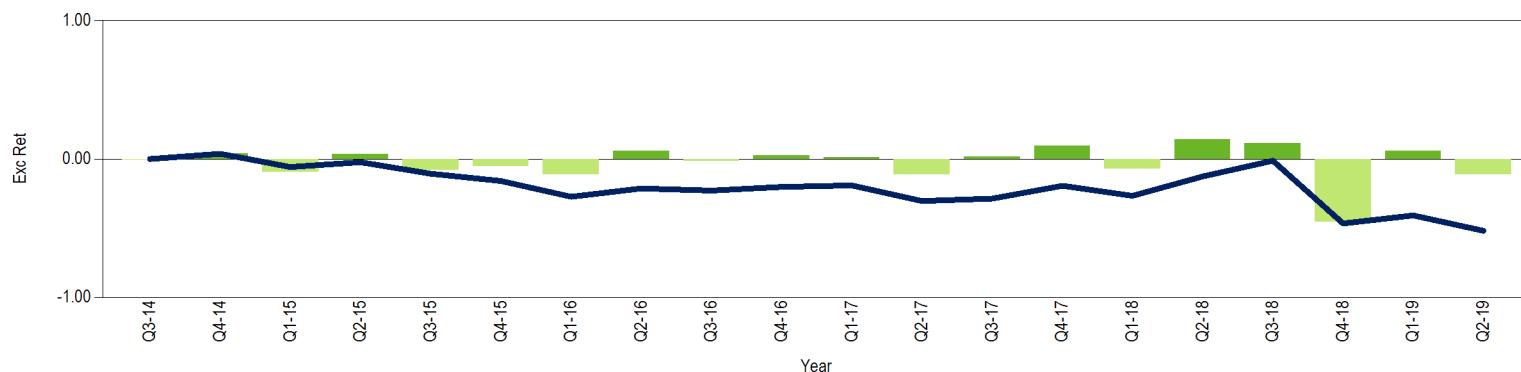


## Oklahoma Judges

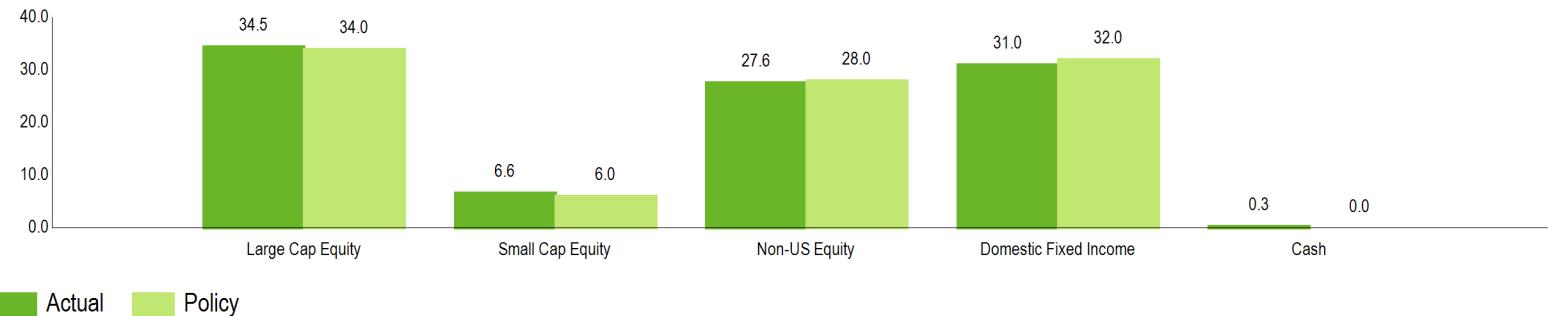
# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK JUDGES</b>	<b>\$347,518,042</b>	<b>3.6%</b>	<b>19</b>	<b>13.5%</b>	<b>13</b>	<b>6.2%</b>	<b>57</b>	<b>9.0%</b>	<b>43</b>	<b>6.0%</b>	<b>48</b>	<b>9.5%</b>	<b>34</b>
JUDGES Allocation Index		3.5%	23	13.3%	17	6.0%	63	8.8%	54	5.8%	56	9.0%	56
JUDGES Policy Index		3.7%	14	13.6%	13	6.7%	39	9.2%	37	6.1%	43	9.4%	42
InvMetrics Public DB Gross Median		3.2%		12.0%		6.3%		8.9%		6.0%		9.2%	

Quarterly and Cumulative Excess Performance



Actual vs Target Allocation (%)

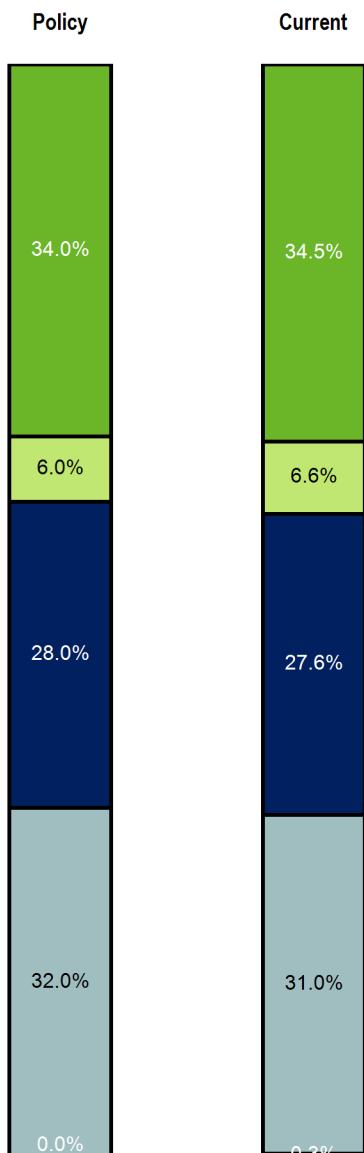


Returns are gross of manager fees.



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# TOTAL FUND ASSET ALLOCATION VS. POLICY



	Asset Allocation vs. Target					Within Range
	Current	Policy	Current Difference*	Policy Range		
Large Cap Equity	\$119,753,900	34.0%	34.5%	0.5%	31.2% - 36.8%	Yes
Small Cap Equity	\$23,077,331	6.0%	6.6%	0.6%	3.2% - 8.8%	Yes
Non-US Equity	\$95,903,214	28.0%	27.6%	-0.4%	25.0% - 31.0%	Yes
Domestic Fixed Income	\$107,721,984	32.0%	31.0%	-1.0%	27.5% - 36.5%	Yes
Cash	\$1,061,613	0.0%	0.3%	0.3%	0.0% - 5.0%	Yes
<b>Total</b>	<b>\$347,518,042</b>	<b>100.0%</b>	<b>100.0%</b>			

\*Difference between Policy and Current Allocation



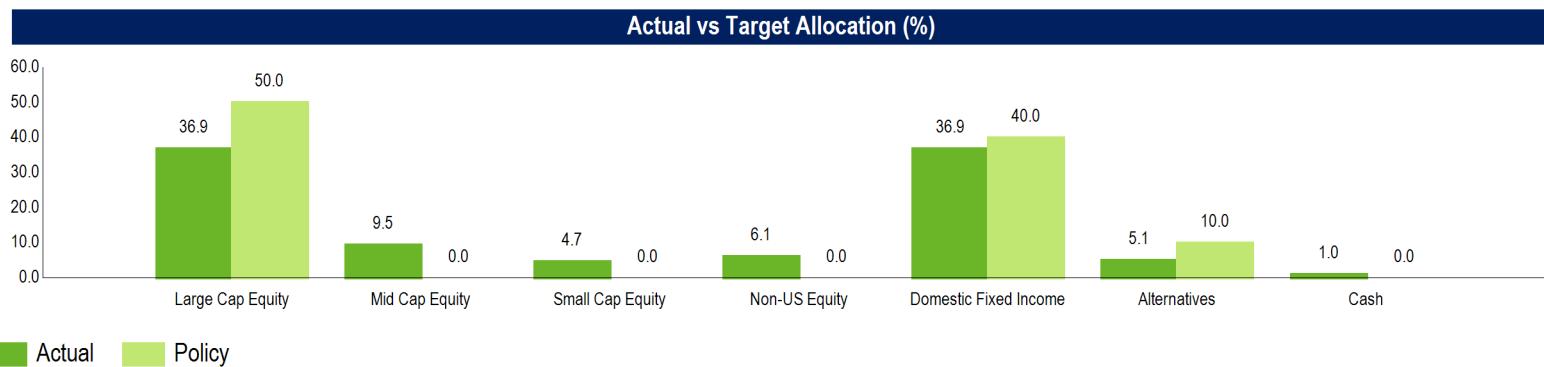
# OKLAHOMA WILDLIFE



## OKLAHOMA WILDLIFE

# TOTAL FUND PERFORMANCE SUMMARY

	Market Value	3 Mo	Rank	YTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank	10 Yrs	Rank
<b>OK WILDLIFE</b>	<b>\$117,690,741</b>	<b>3.3%</b>	<b>41</b>	<b>12.8%</b>	<b>29</b>	<b>7.2%</b>	<b>23</b>	<b>8.9%</b>	<b>51</b>	<b>6.4%</b>	<b>31</b>	<b>8.7%</b>	<b>67</b>
WILDLIFE Allocation Index		3.5%	22	13.0%	26	8.0%	9	9.0%	47	6.5%	23	8.8%	64
WILDLIFE Policy Index		3.7%	14	12.5%	38	6.3%	51	7.7%	86	6.3%	33	9.2%	51
InvMetrics Public DB Gross Median		3.2%		12.0%		6.3%		8.9%		6.0%		9.2%	

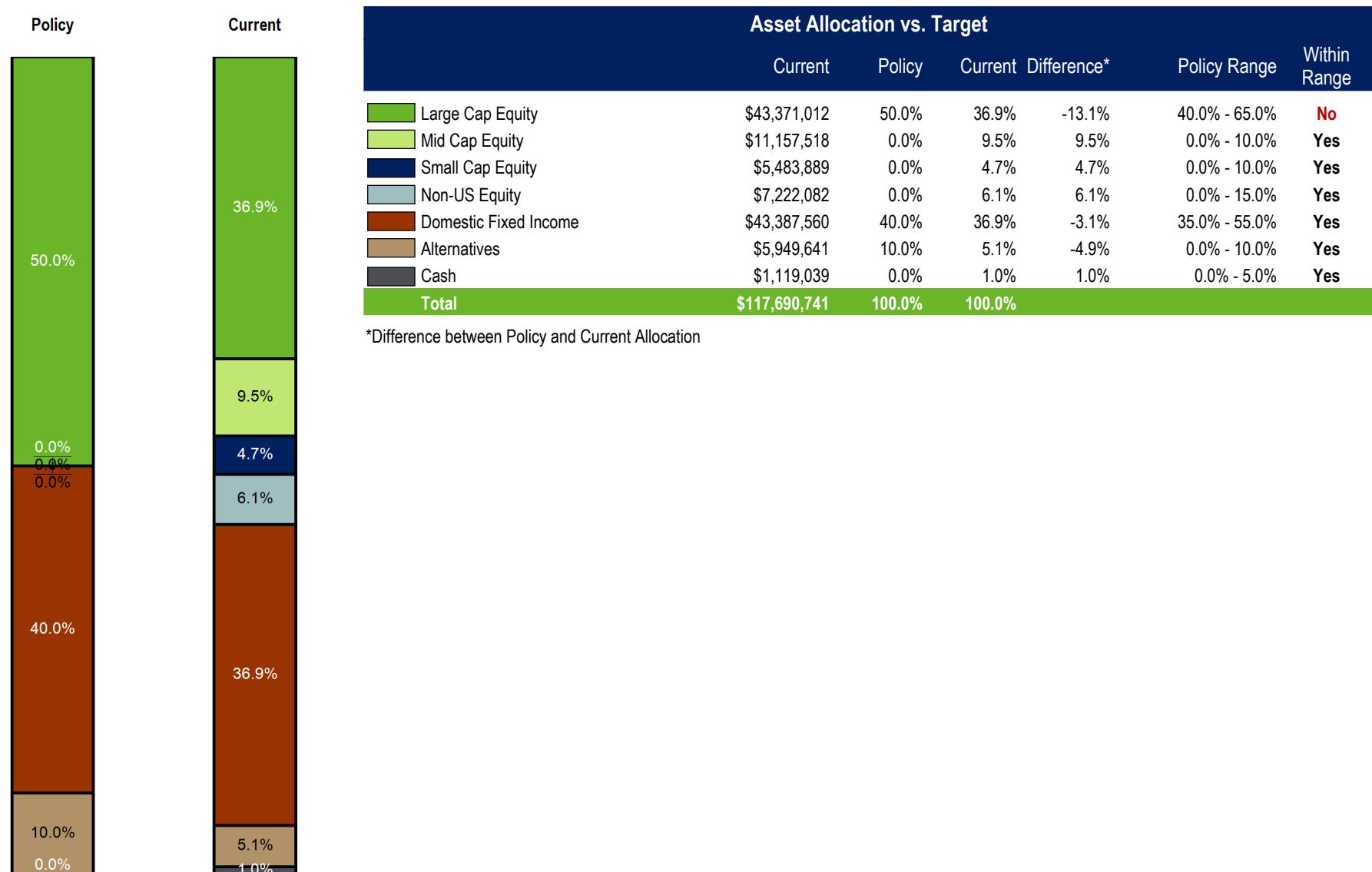


Returns are gross of manager fees.



June 30, 2019

# TOTAL FUND ASSET ALLOCATION VS. POLICY



# **Appendix**

NEPC, LLC —

# 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%

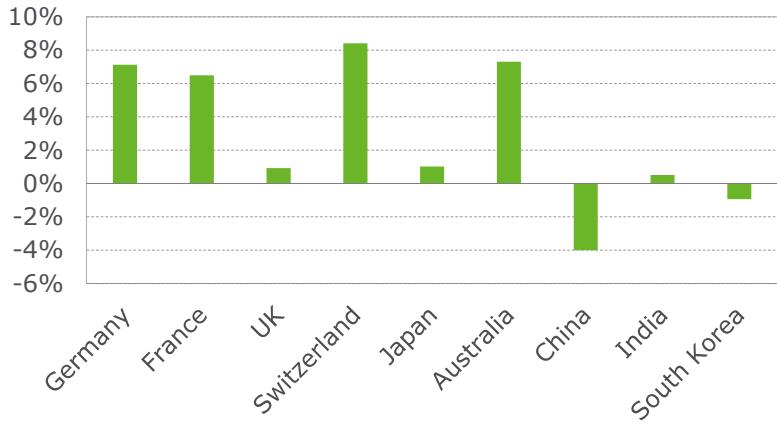
Source: FactSet

### QTD Equity Index Returns



Source: FactSet

### MSCI QTD Country-Specific Returns



Source: FactSet



# CREDIT PERFORMANCE OVERVIEW

## Q2 Credit Market Summary

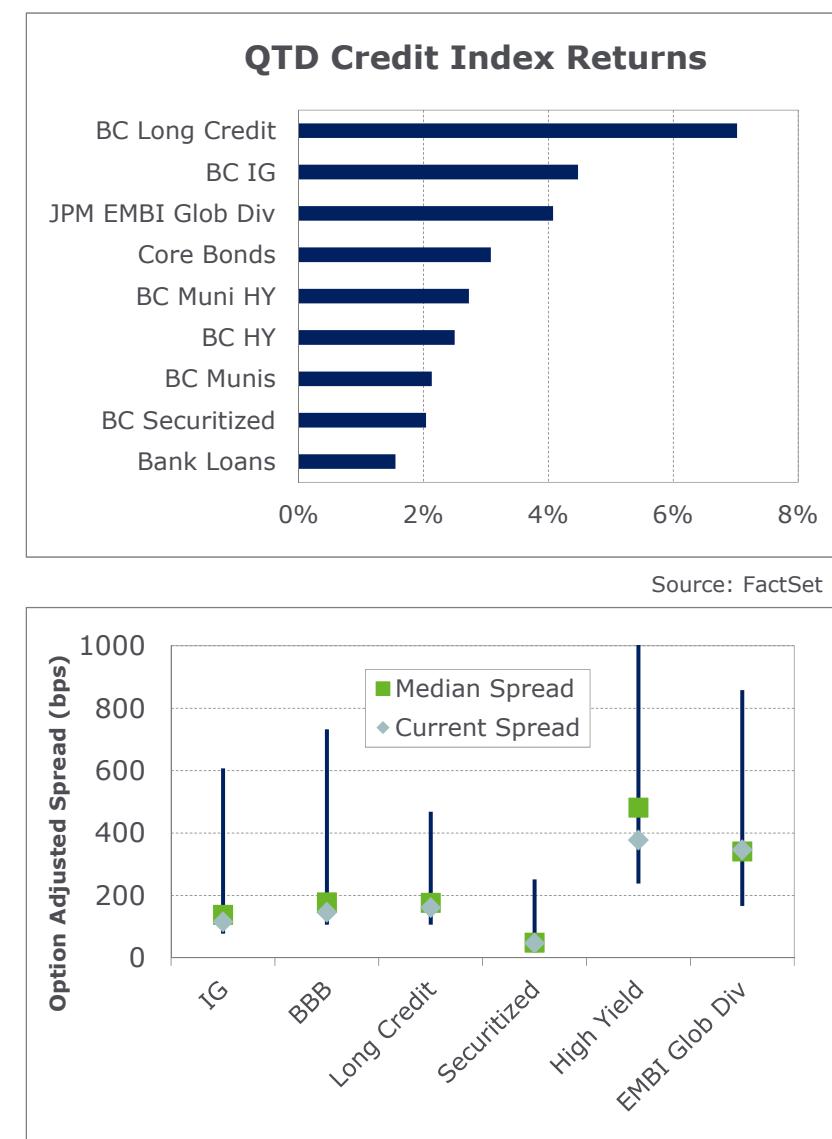
**Global yields continued to decline - reflecting concerns over the global growth outlook**

**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



# 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**

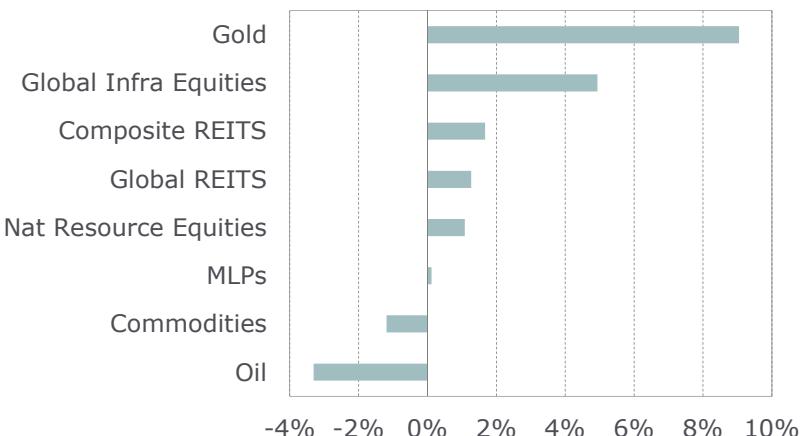
**The US inflation outlook weakened to its lowest level since Q3 2016**

**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%

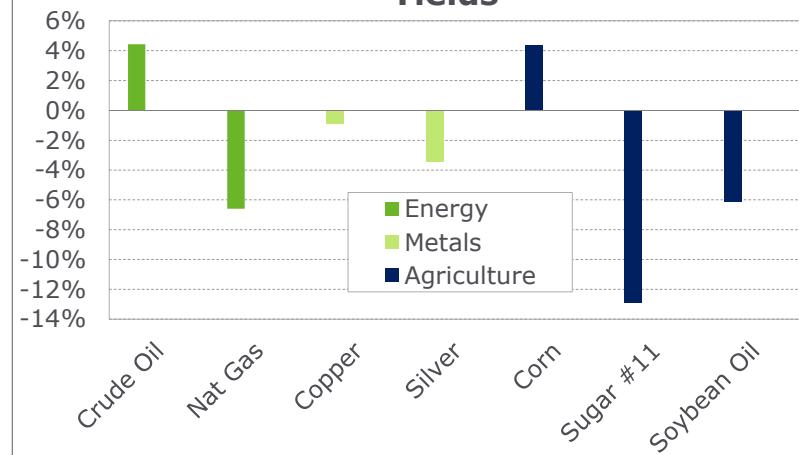
Source: FactSet

## QTD Real Asset Index Returns



Source: FactSet

## 12-Month Commodity Future Roll Yields



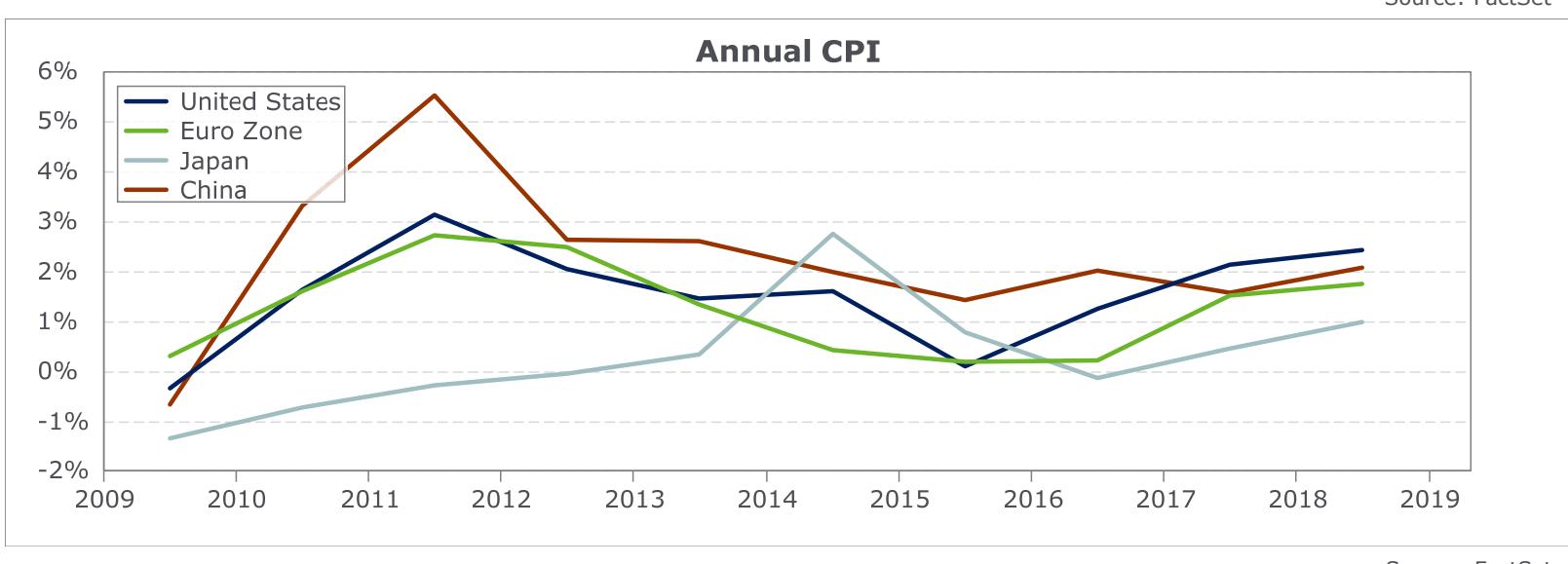
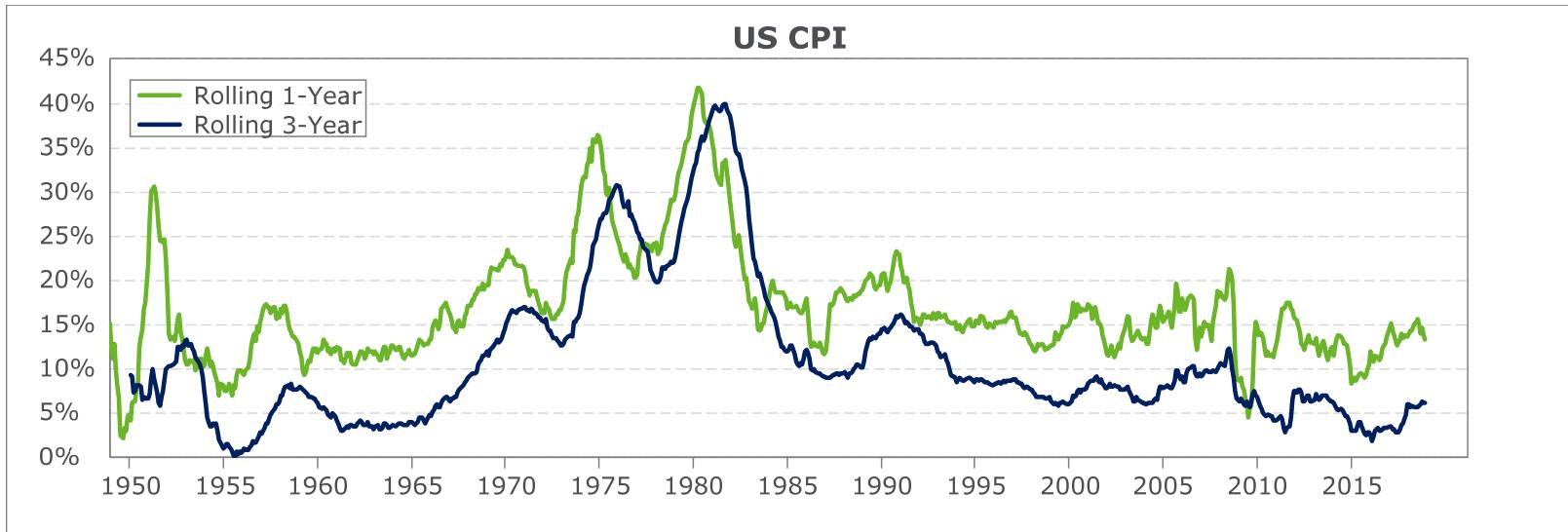
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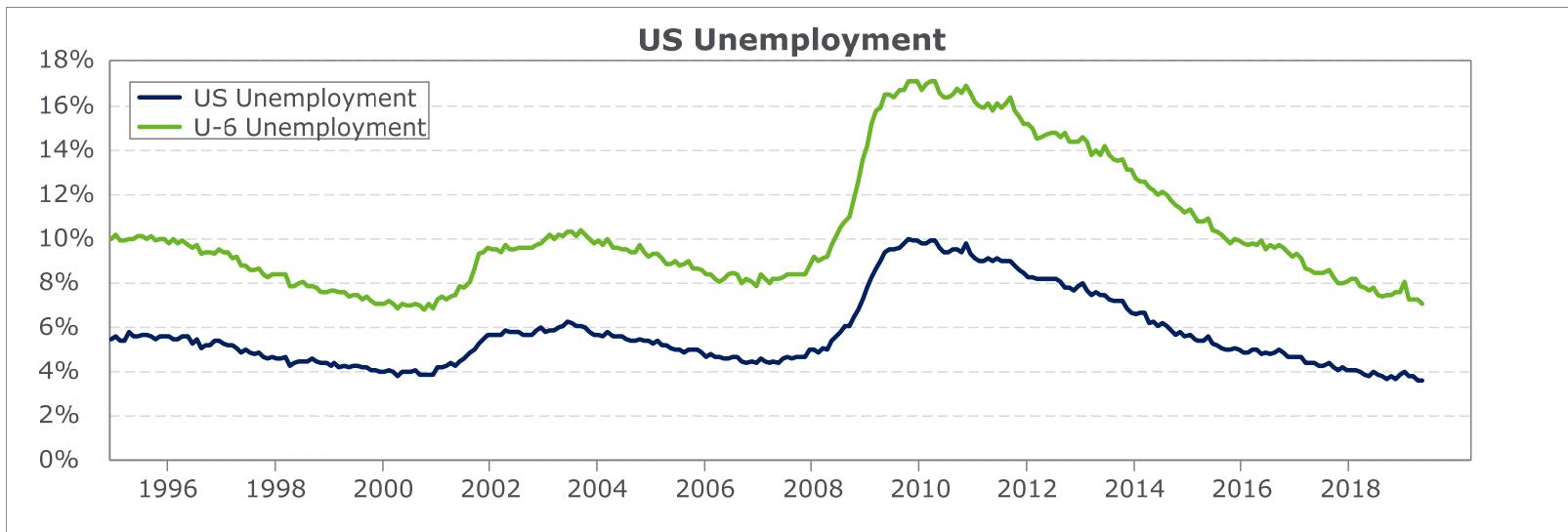
# MACRO

NEPC, LLC

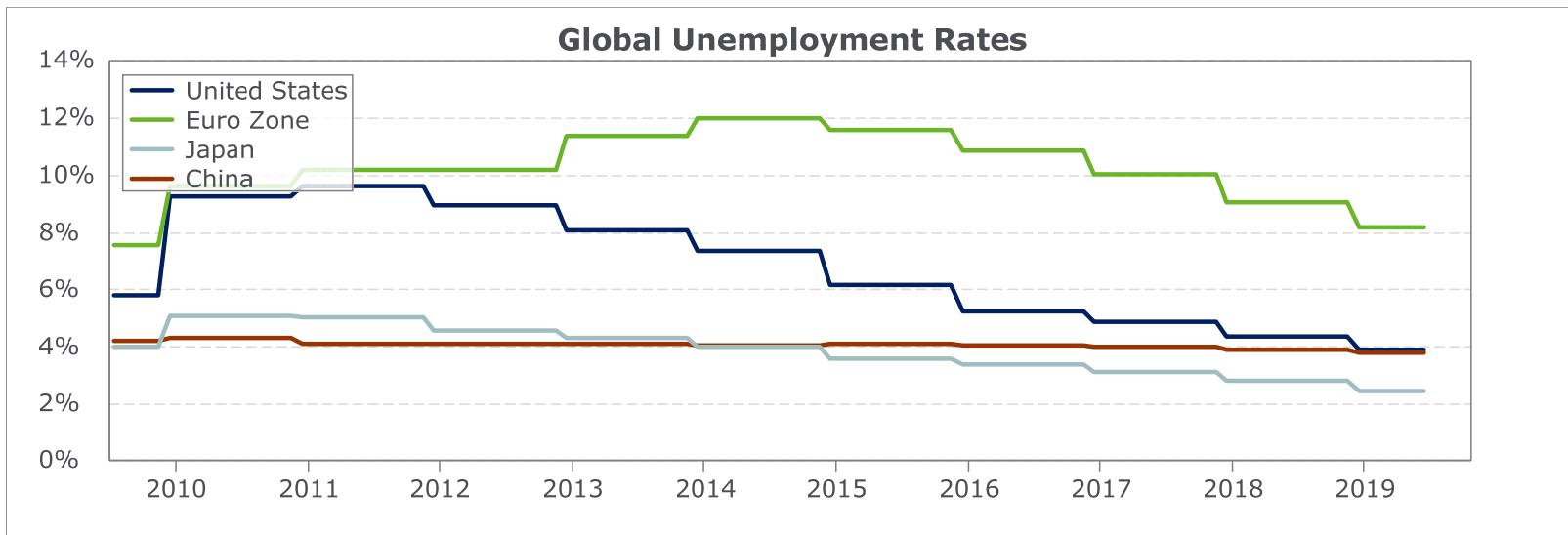
# INFLATION



# UNEMPLOYMENT



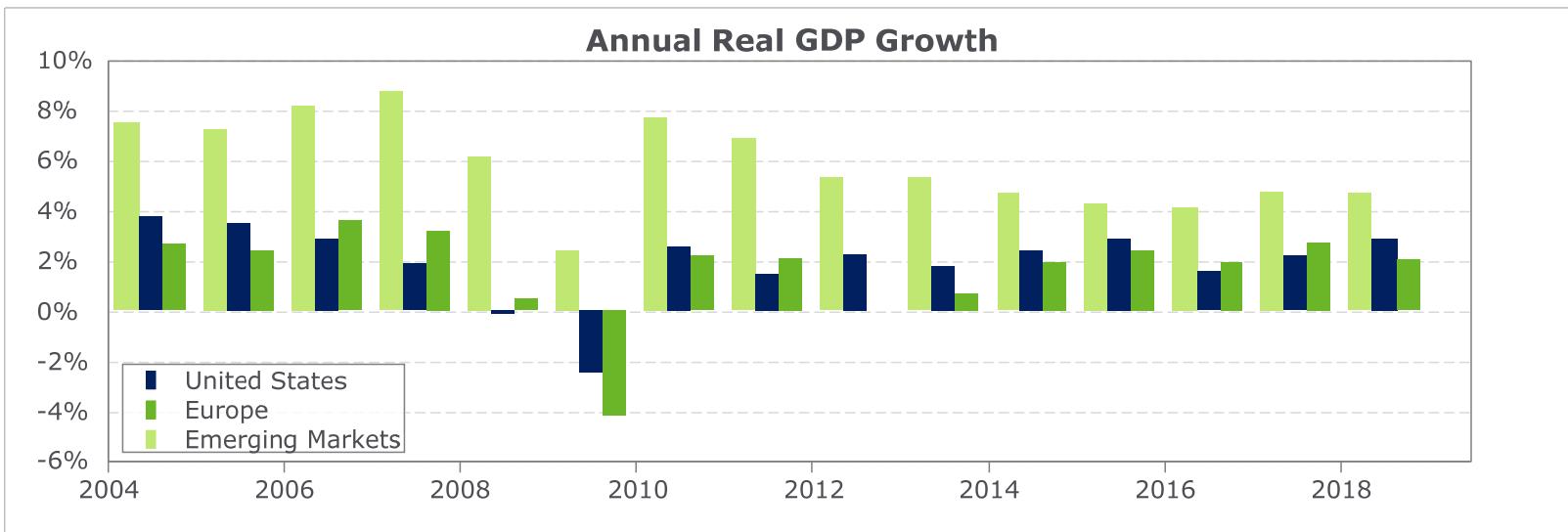
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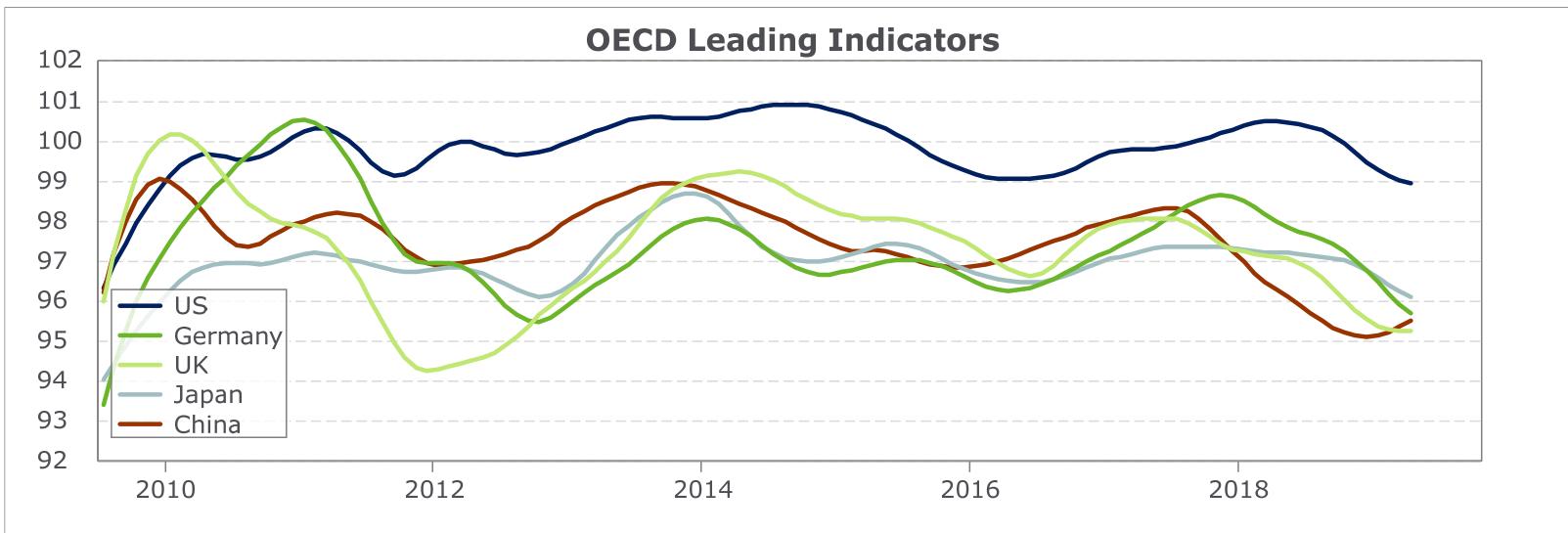
Source: FactSet



# ECONOMIC INDICATORS



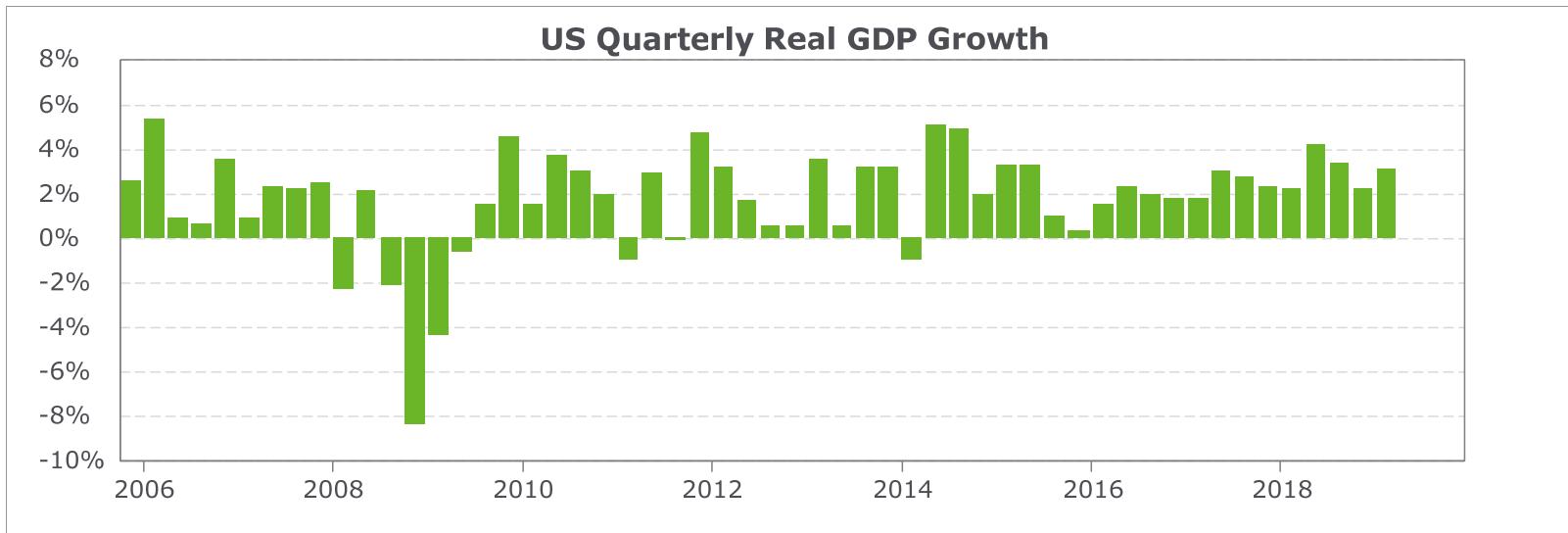
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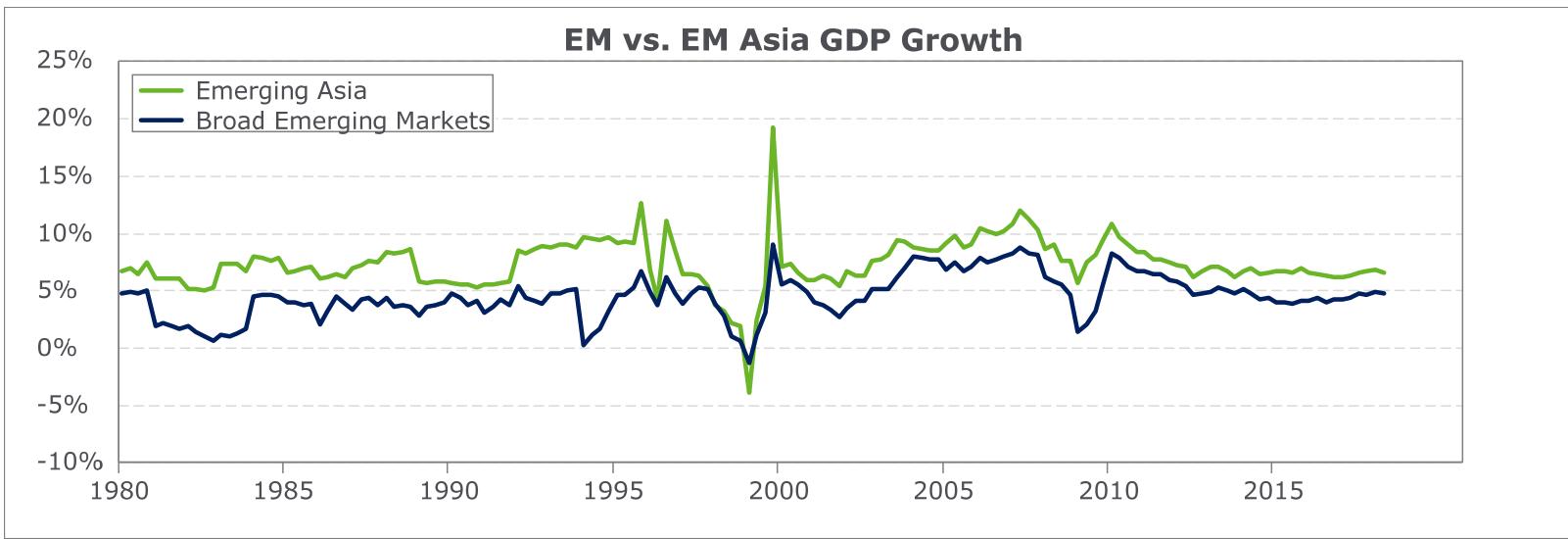
Source: FactSet



# GROSS DOMESTIC PRODUCT



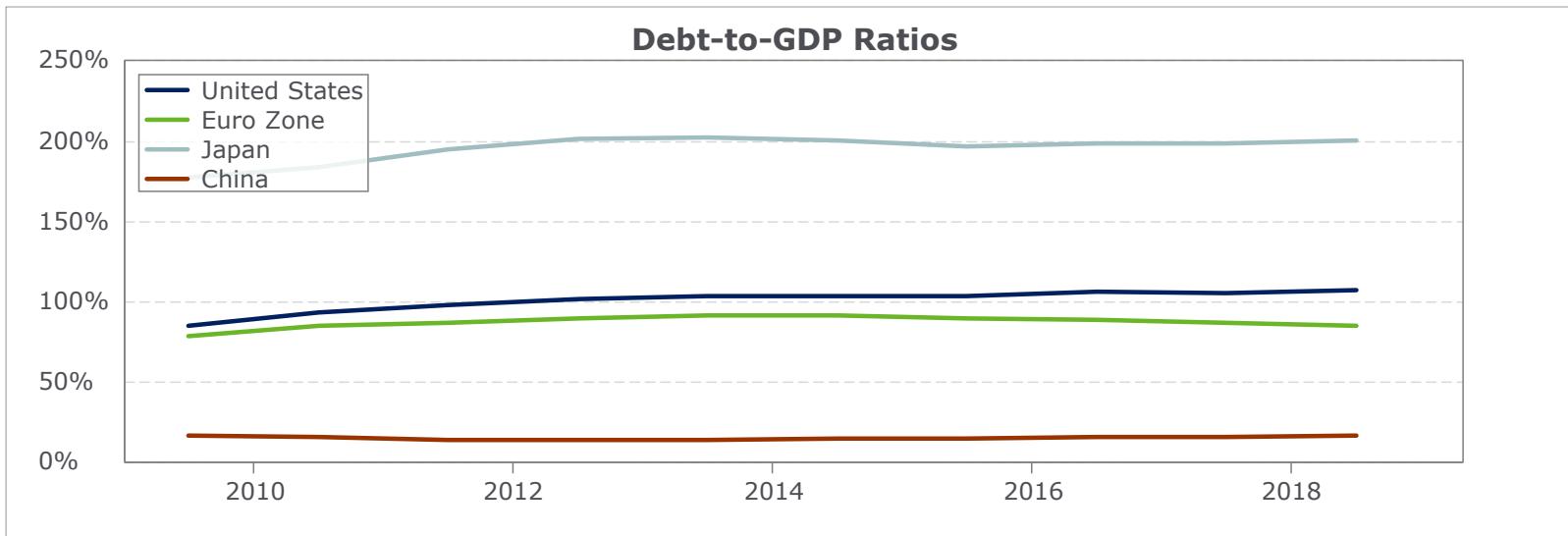
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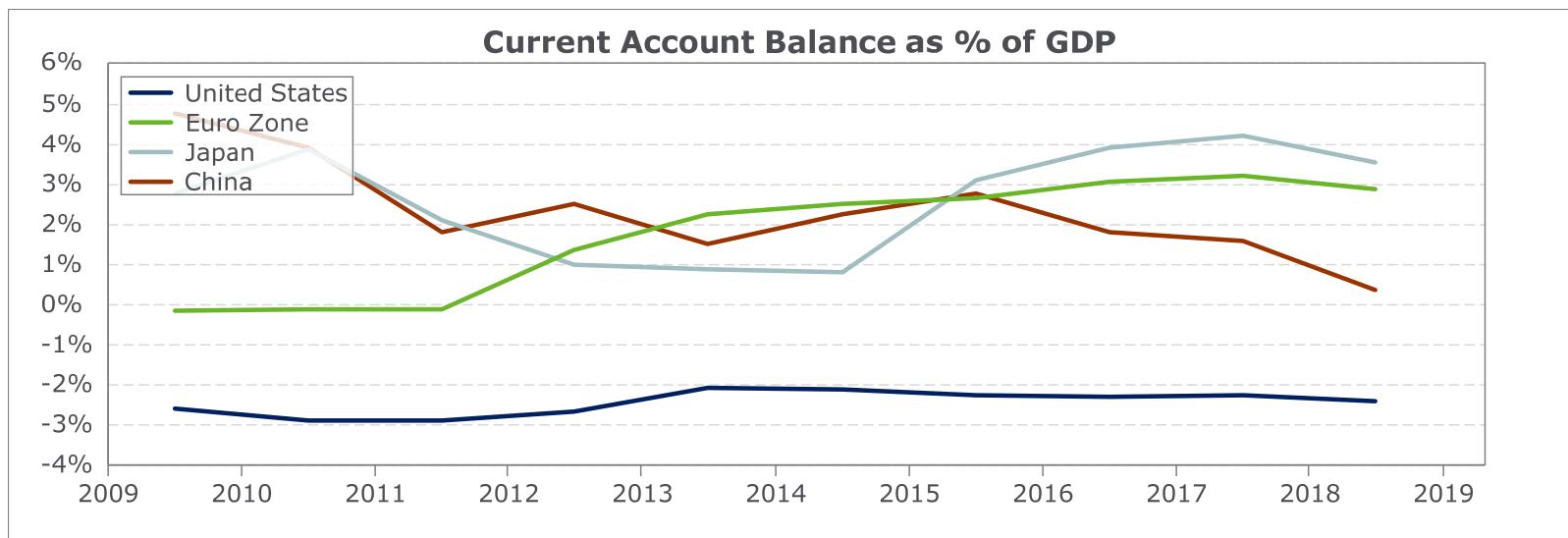
Source: FactSet



# GROSS DOMESTIC PRODUCT METRICS



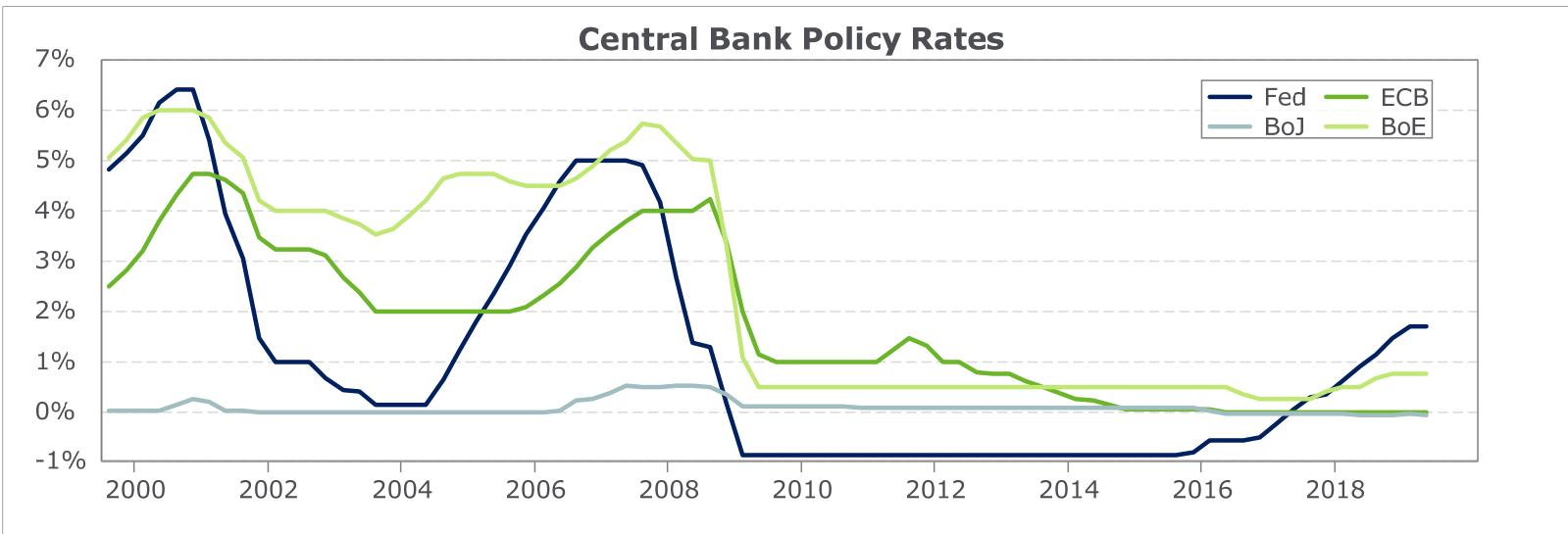
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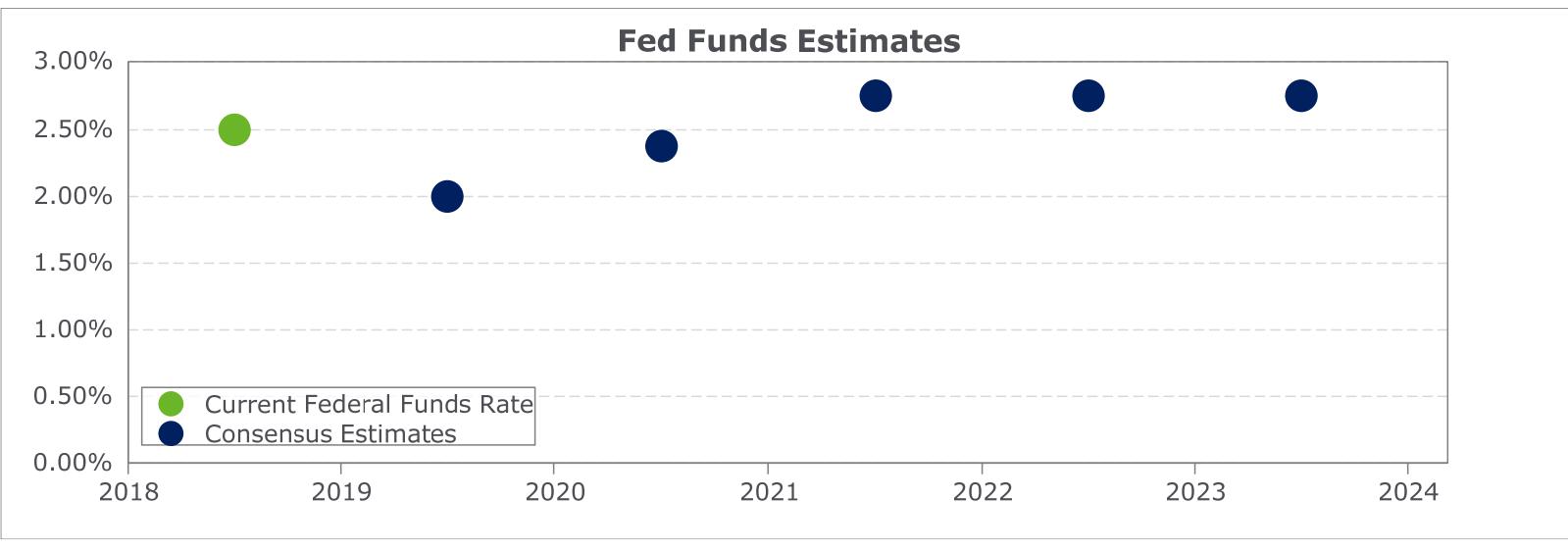
Source: FactSet



# CENTRAL BANK RATES



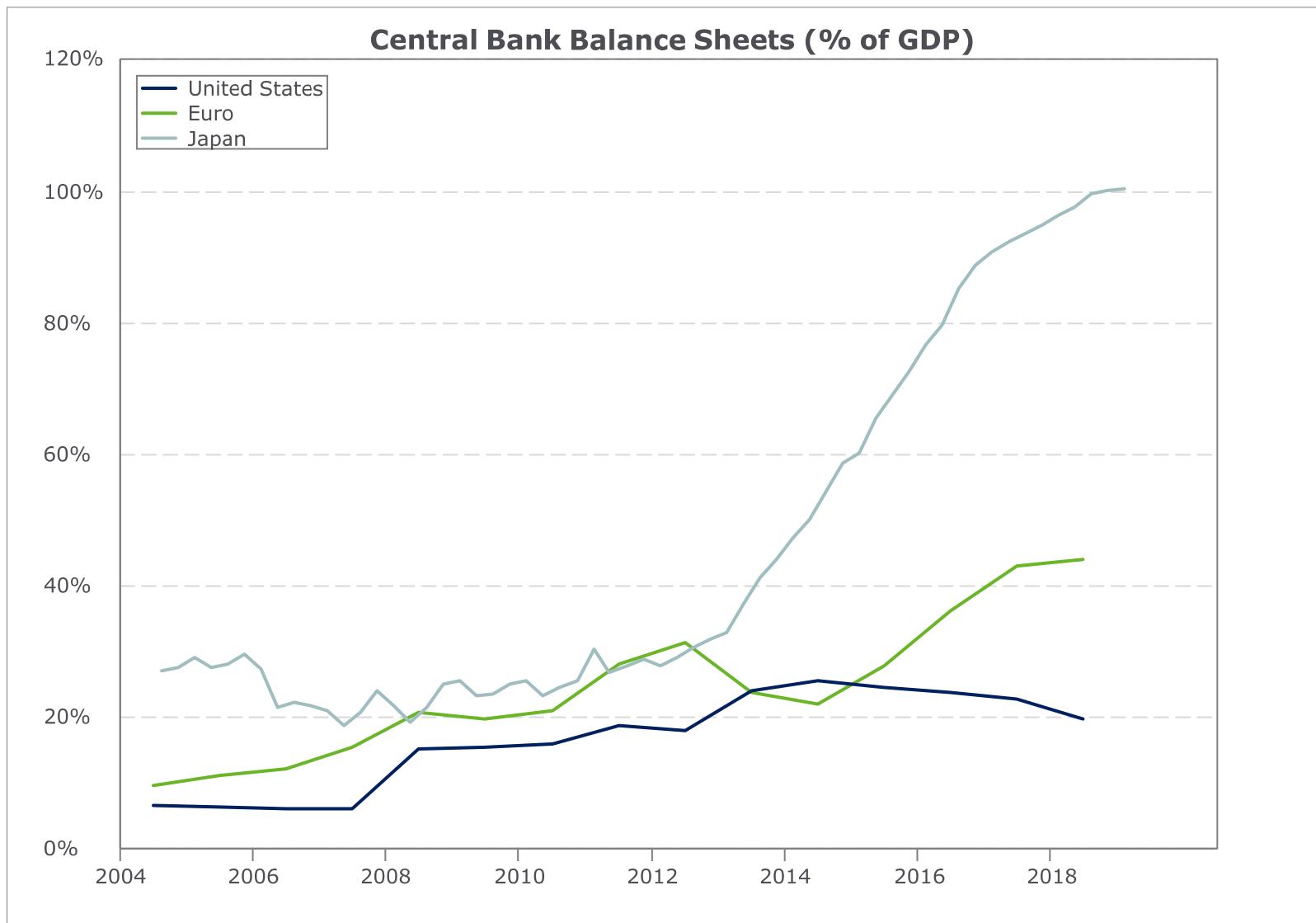
Source: FactSet



Source: FactSet



# CENTRAL BANK BALANCE SHEETS



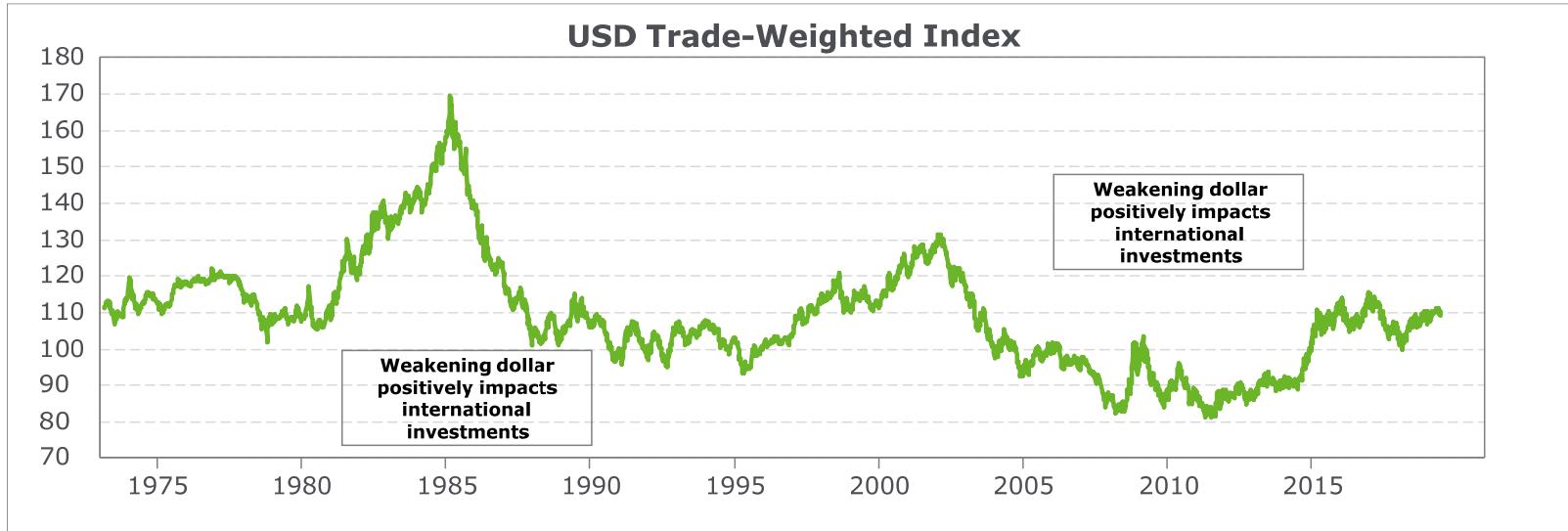
Source: FactSet



# CURRENCIES

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

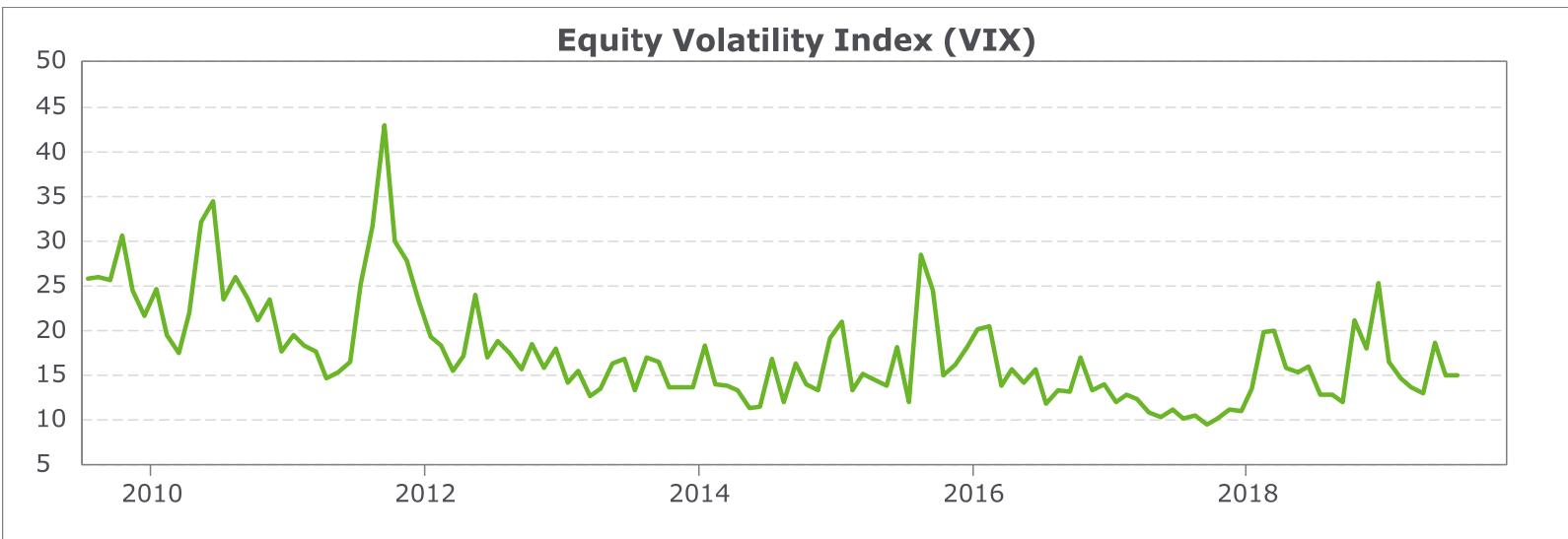
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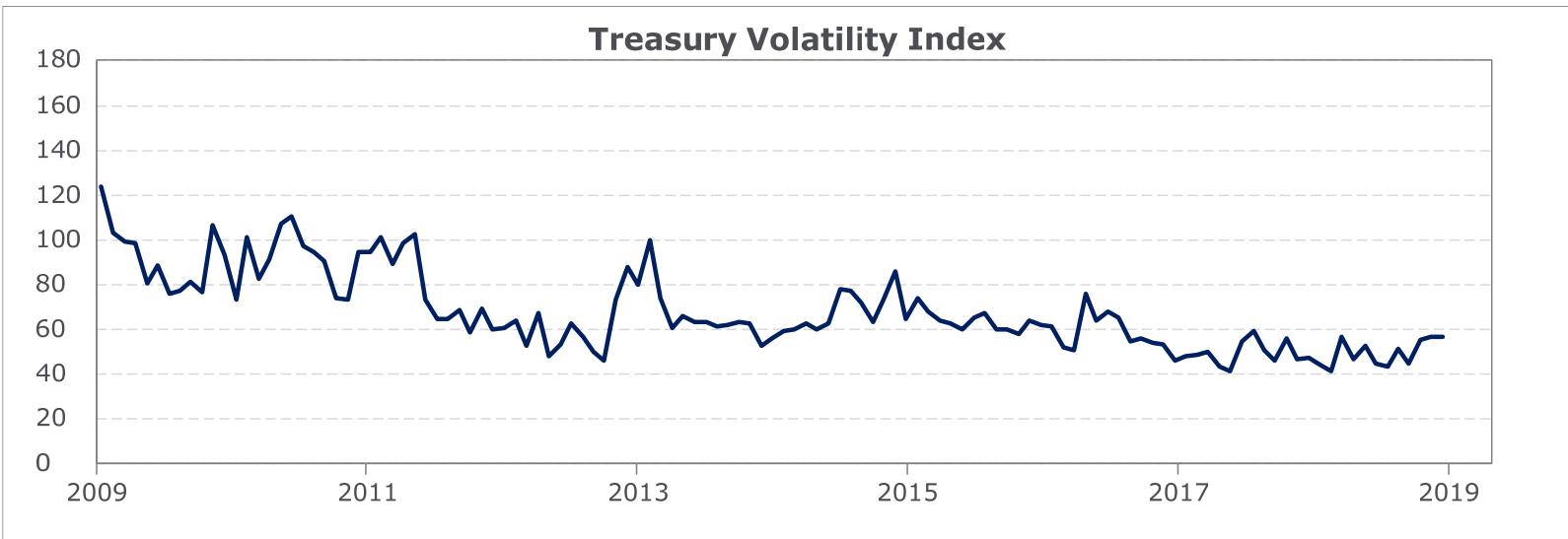
Source: FactSet



# VOLATILITY



Source: FactSet



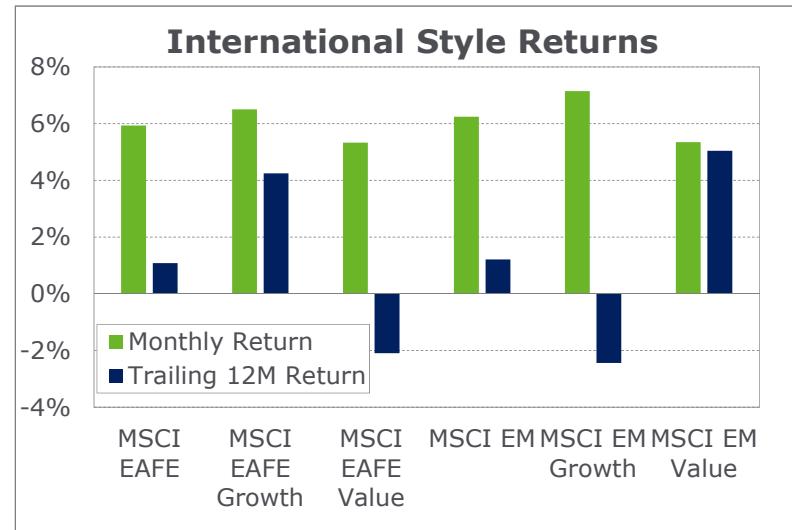
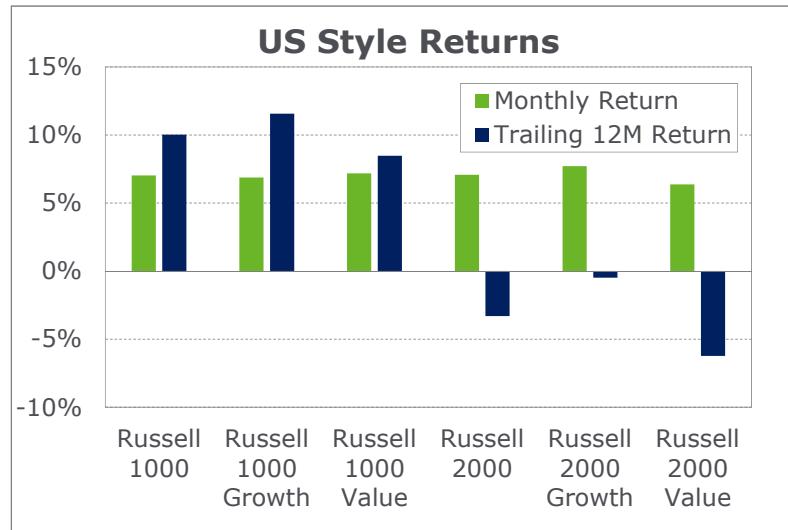
Source: FactSet



# EQUITY

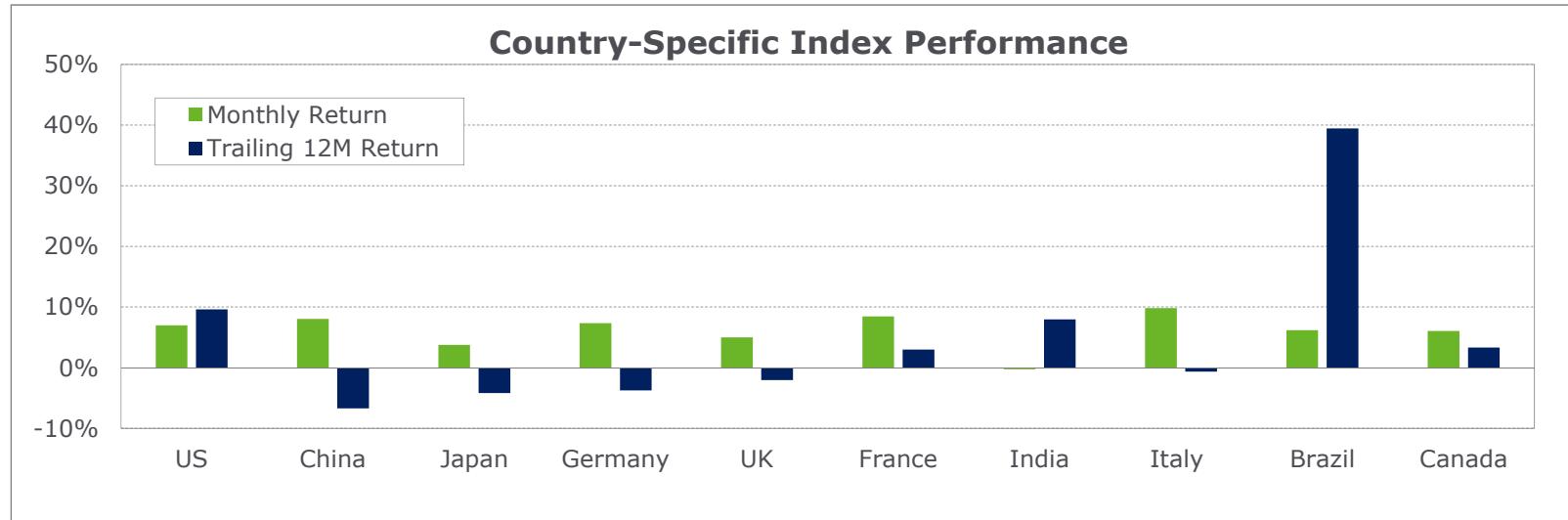
NEPC, LLC

# EQUITY INDEX PERFORMANCE



Source: FactSet

Source: FactSet



Source: FactSet



# INDEX COMPOSITION

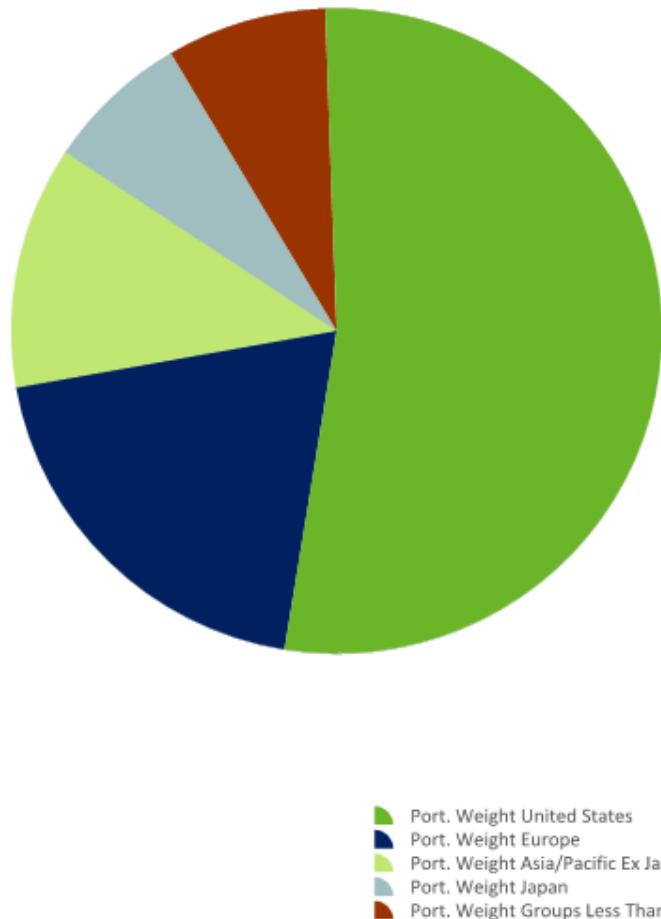
Return Contribution	MTD	QTD	YTD	Index Weight
<b>S&amp;P 500</b>	<b>7.0%</b>	<b>4.3%</b>	<b>18.5%</b>	<b>100.0%</b>
Communication Services	0.4%	0.4%	1.9%	10.2%
Consumer Discretionary	0.8%	0.5%	2.2%	10.2%
Consumer Staples	0.4%	0.3%	1.2%	7.3%
Energy	0.5%	-0.2%	0.8%	5.0%
Financials	0.9%	1.0%	2.3%	13.1%
Health 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%

Source: FactSet

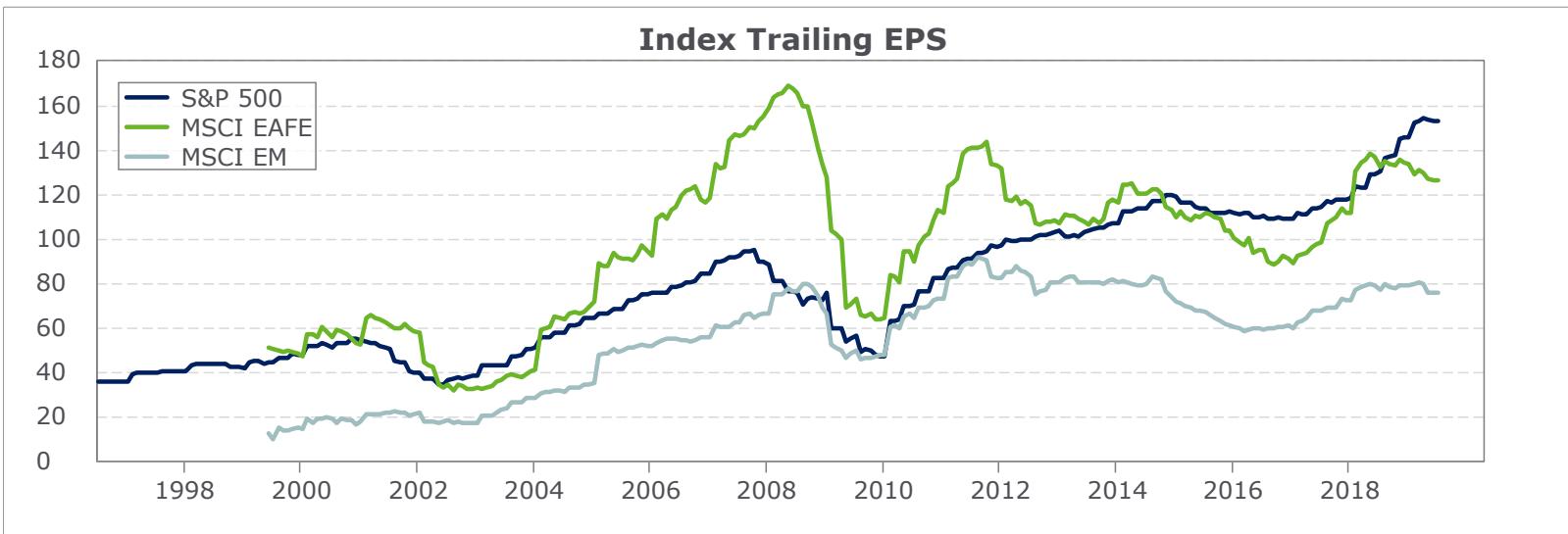
**MSCI ACWI Weights**



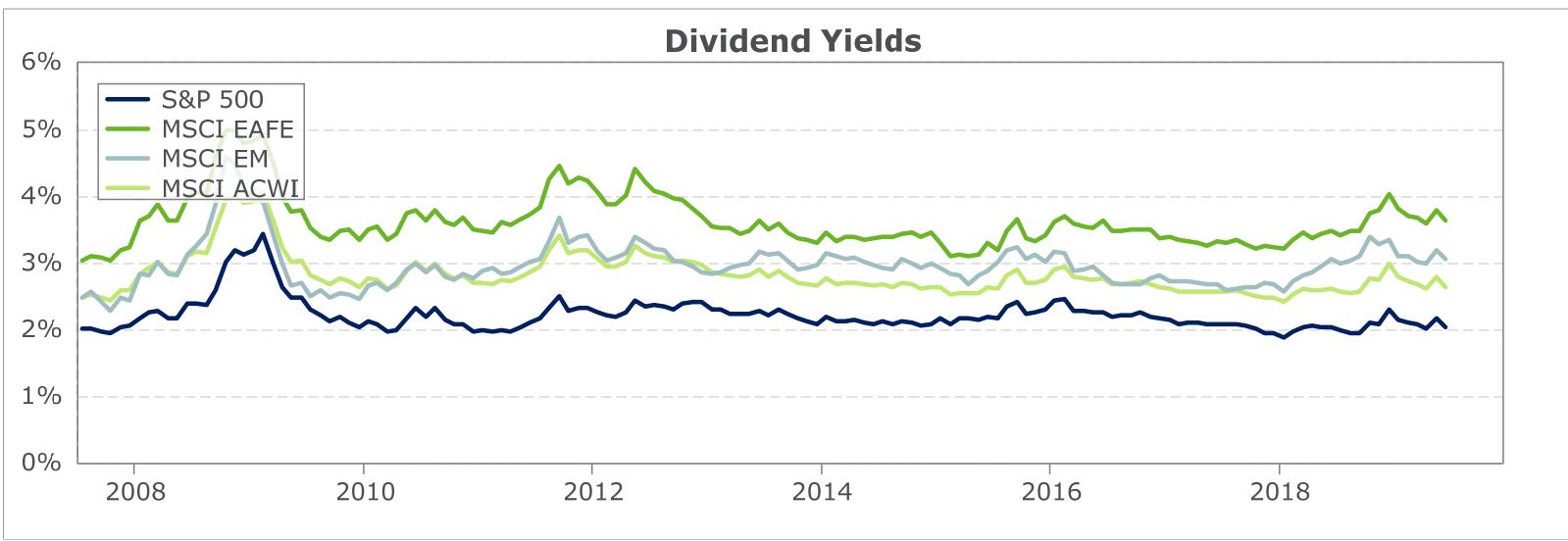
Source: FactSet



# EARNINGS & YIELDS



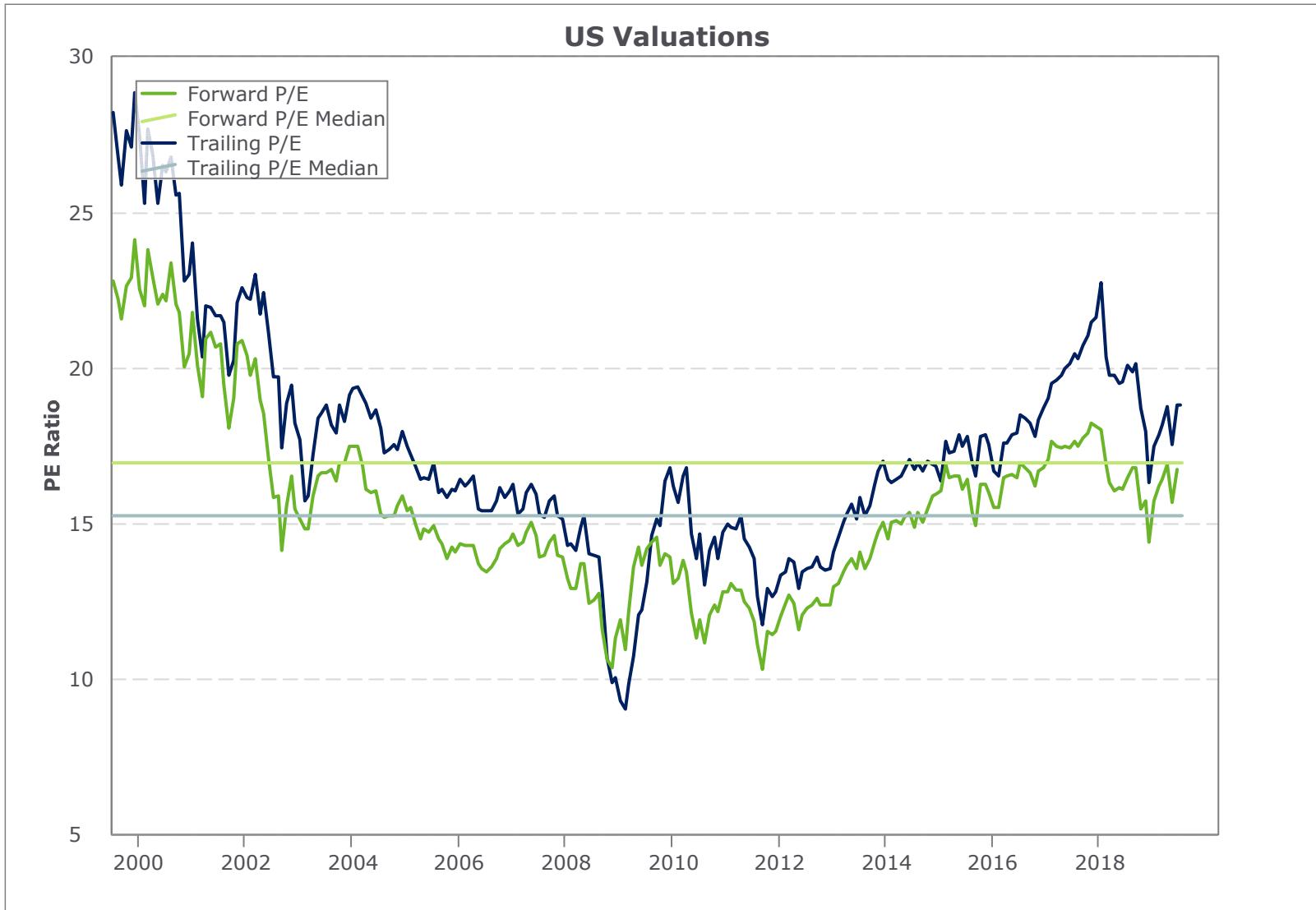
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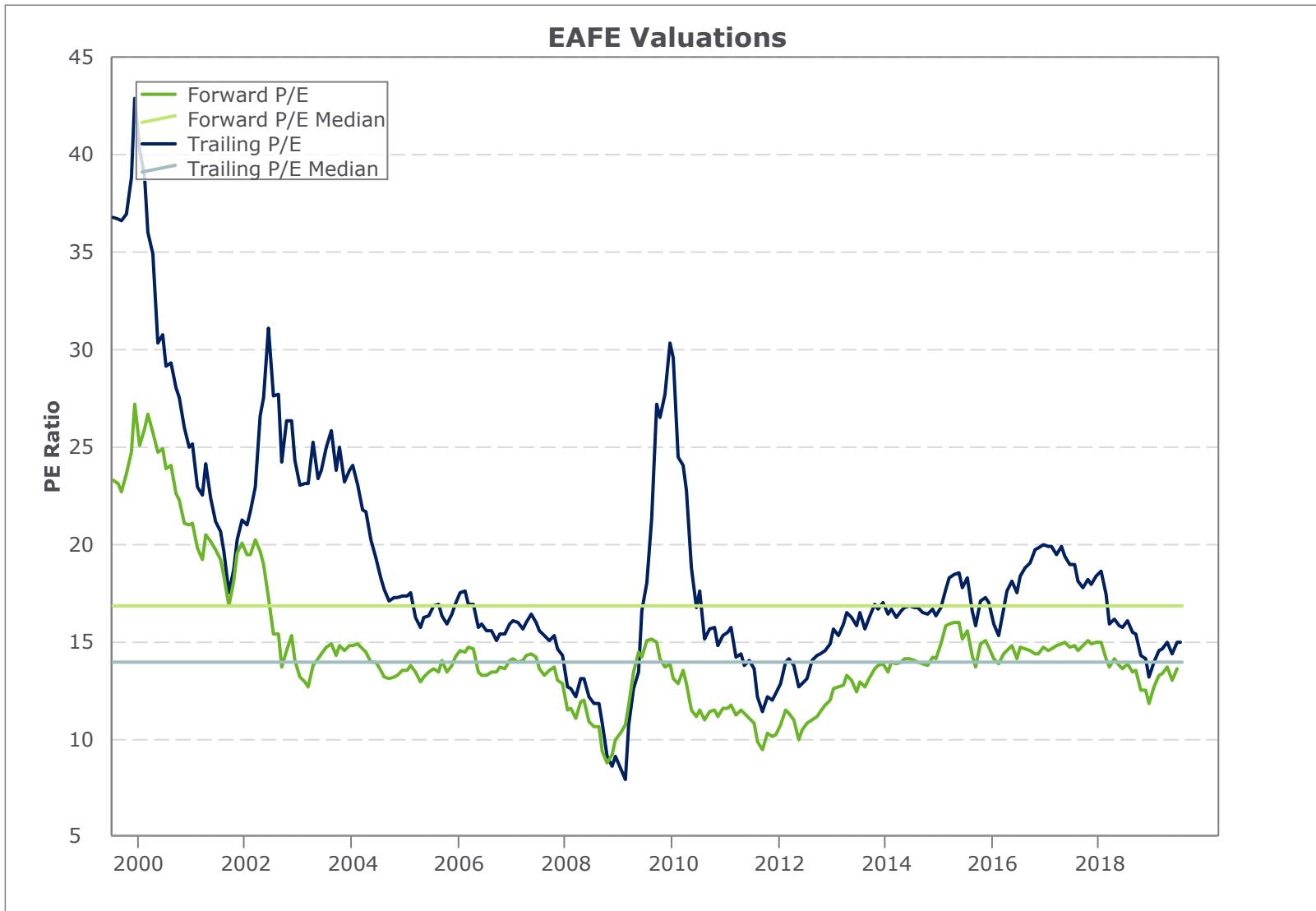
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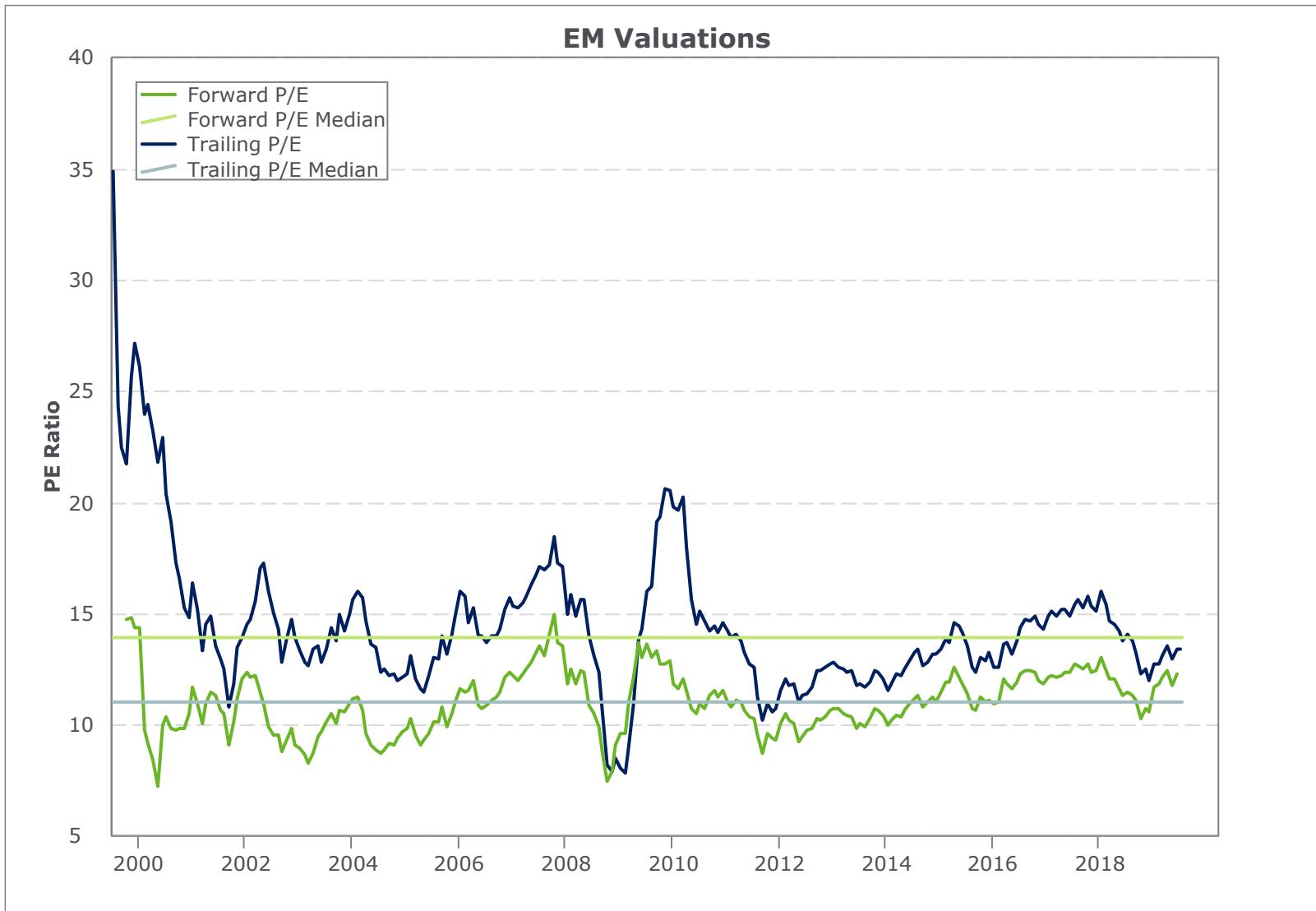
# US EQUITY VALUATIONS



# EAFE EQUITY VALUATIONS



# EM EQUITY VALUATIONS



# CREDIT

NEPC, LLC

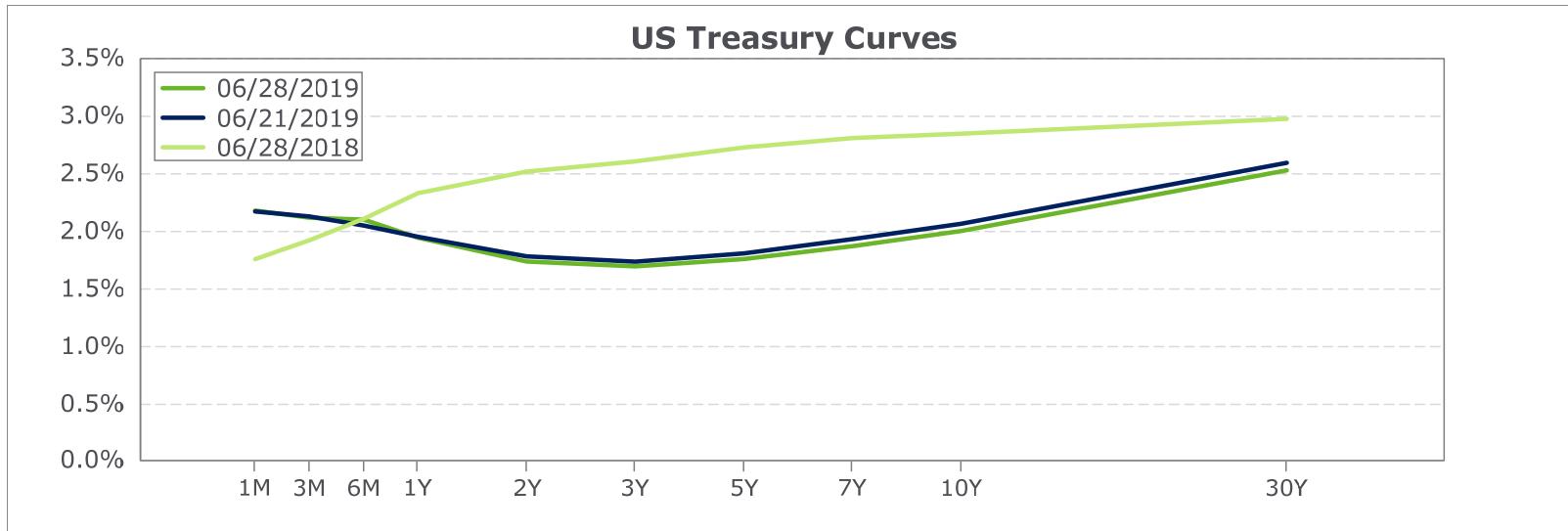
# FIXED INCOME CHARACTERISTICS

	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



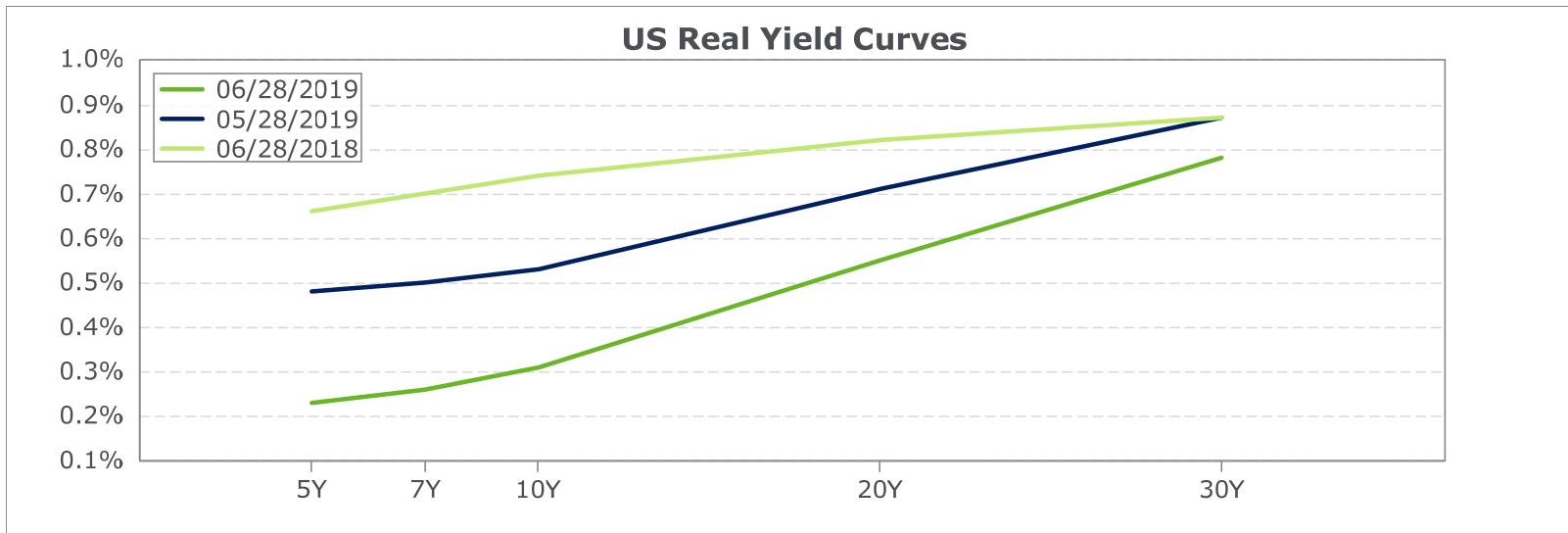
Source: FactSet

	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



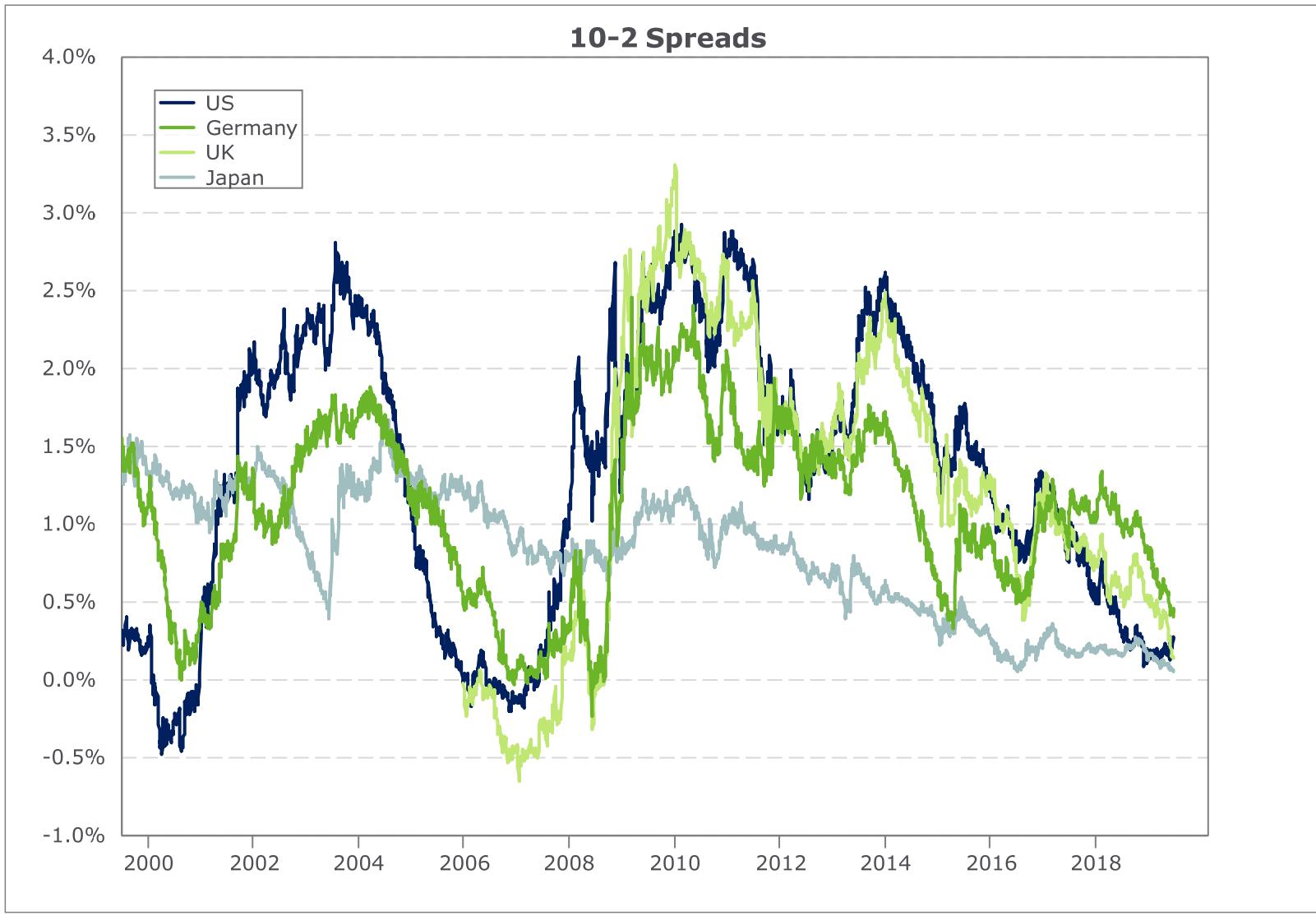
Source: FactSet

	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



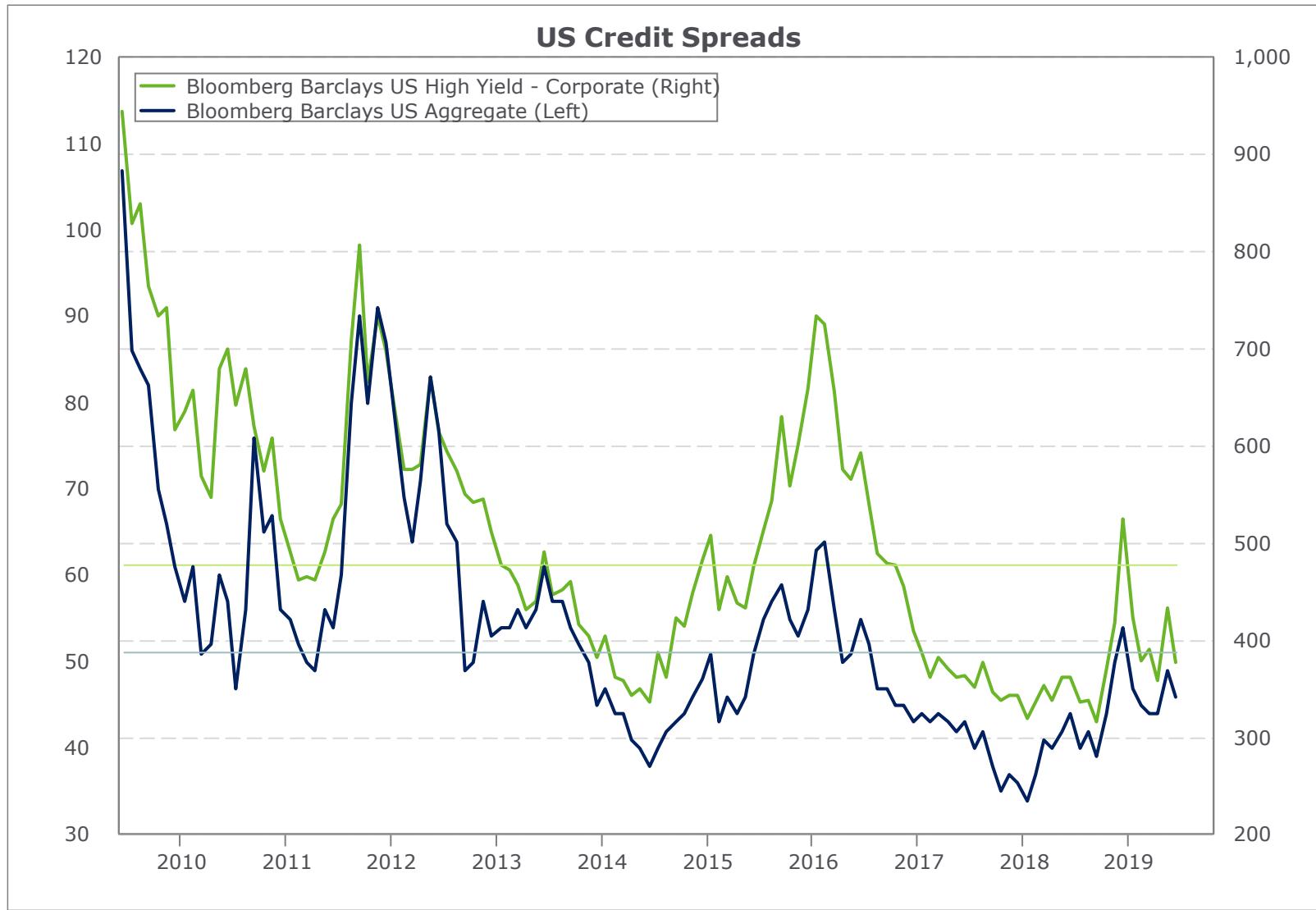
# NOMINAL YIELDS



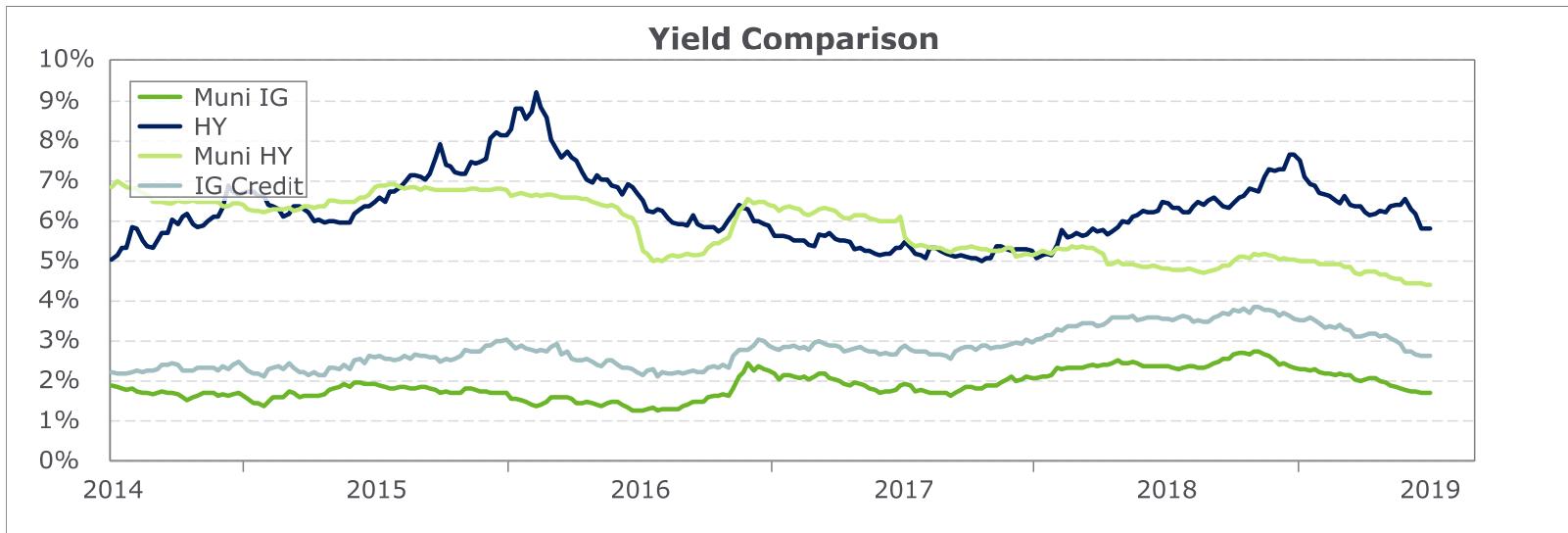
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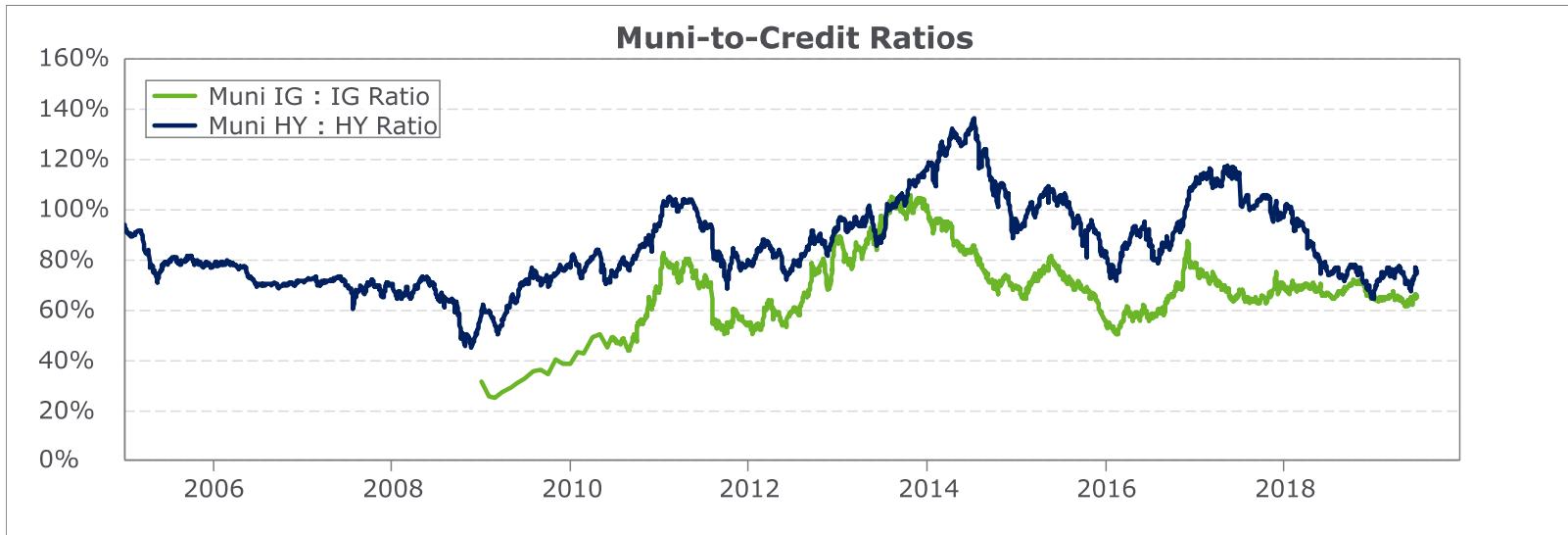
# CREDIT SPREADS



# MUNICIPAL BOND RATIOS



Source: FactSet



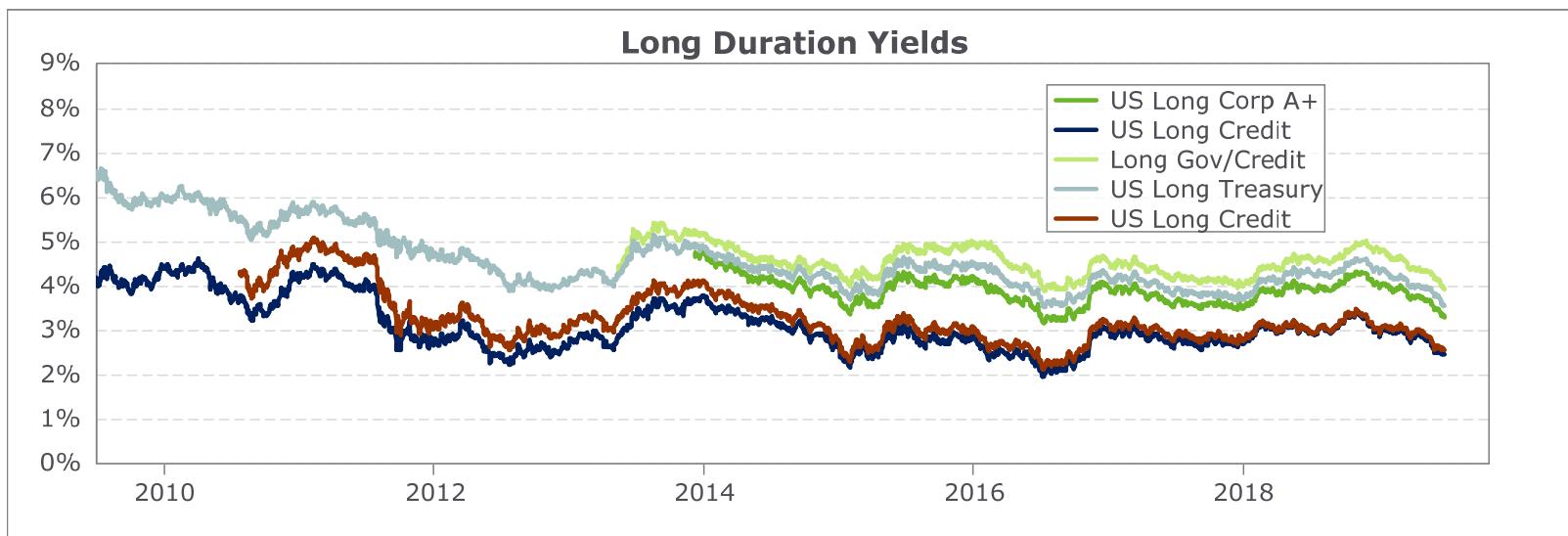
Source: FactSet



# LONG DURATION

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

Source: FactSet



Source: FactSet



# REAL ASSETS

NEPC, LLC

# REAL ASSETS INDEX PERFORMANCE

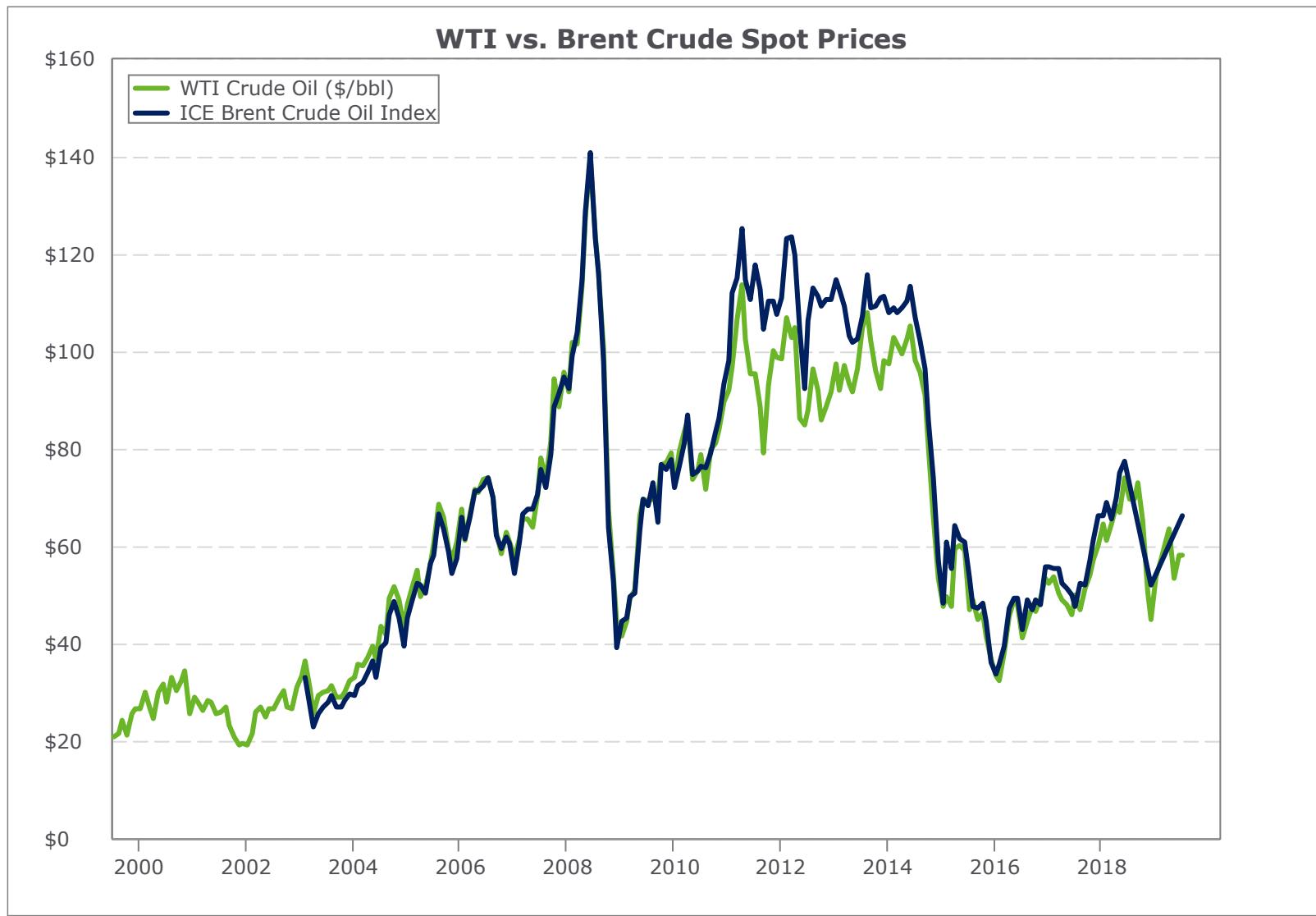
Index	1 Month	3 Month	YTD	1 Year	3 Year	5 Year
<b>Bloomberg Commodity Index</b>	<b>2.7%</b>	<b>-1.2%</b>	<b>5.1%</b>	<b>-6.8%</b>	<b>-2.2%</b>	<b>-9.1%</b>
<b>Bloomberg Agriculture Index</b>	<b>0.5%</b>	<b>4.5%</b>	<b>1.2%</b>	<b>-4.2%</b>	<b>-10.3%</b>	<b>-9.7%</b>
Coffee	2.2%	10.6%	0.2%	-15.6%	-17.8%	-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



## **Information Disclaimer**

- Past performance is no guarantee of future results.
- All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.
- NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the plan's custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.
- Some index returns displayed in this report or used in calculation of a policy, allocation or custom benchmark may be preliminary and subject to change.
- This report is provided as a management aid for the client's internal use only. Information contained in this report does not constitute a recommendation by NEPC.
- This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

## **Reporting Methodology**

- The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC generally reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.
- Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of return are annualized when the time period is longer than a year. Performance is presented gross and/or net of manager fees as indicated on each page.
- For managers funded in the middle of a month, the "since inception" return will start with the first full month, although actual inception dates and cash flows are taken into account in all Composite calculations.
- This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.

