**INVESTMENT PERFORMANCE ANALYSIS FOR PERIOD ENDING JUNE 30, 2019** 

# NEW MEXICO EDUCATIONAL RETIREMENT BOARD

NEW MEXICO EDUCATIONAL RETIREMENT BOARD

August 23, 2019

Allan Martin, Partner Sam Austin, Partner

Michael Miranda, CFA, Senior Analyst



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

# **TABLE OF CONTENTS**

	PAGE
Market Environment Update and Outlook	3
Third Party Placement Agent Disclosure	12
Total Fund Performance	16
Appendix: Market Environment	55



# MARKET ENVIRONMENT UPDATE AND OUTLOOK



# **ECONOMIC ENVIRONMENT**

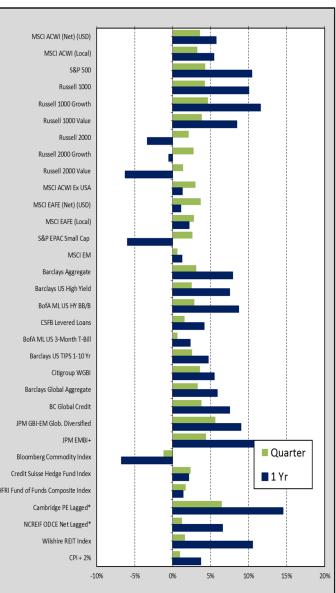
### • Q2 Real GDP (advance estimate) increased at an annual rate of 2.1%.

- 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 unchanged in Q2 at a targeted range of 2.25%-to-2.50%. The 10-year Treasury Yield (constant maturity) finished Q2 down to 2.1% from 2.6%.
  - The Fed lowered the Fed Funds rate by 0.25% to a targeted range of 2.00% -to- 2.25% on July 31, 2019.
- 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.



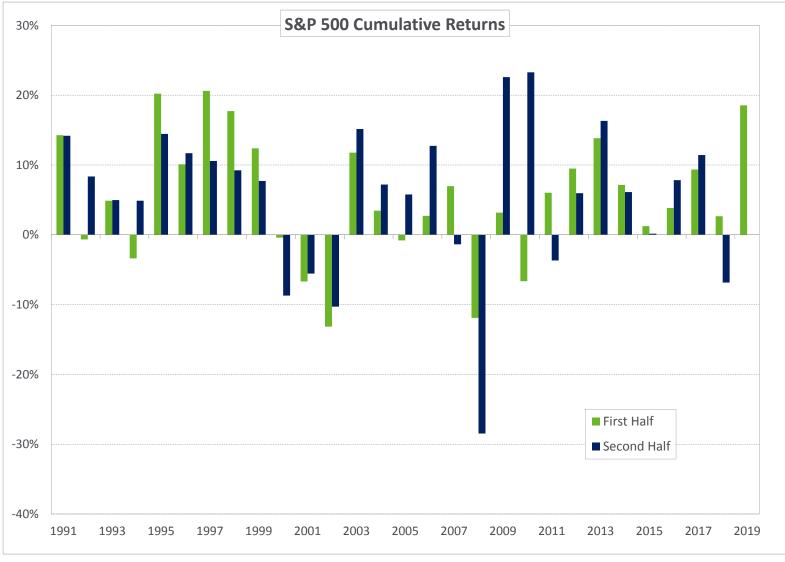
# **MARKET ENVIRONMENT – Q2 2019 OVERVIEW**

		Qtr.	<u>1 Yr.</u>	<u>3 Yr.</u>	<u>5 Yr.</u>	<u>10 Yr.</u>
World Equity Benchmarks						
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%
Domestic Equity Benchmarks						
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%
International Equity Benchmarks						
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%
Domestic Fixed Income Benchmarks						
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%
Global Fixed Income Benchmarks						
Citigroup WGBI	World Gov. Bonds	3.57%	5.48%	1.00%	0.85%	2.21%
Barclays Global Aggregate	Global Core Bonds	3.30%	5.85%	1.62%	1.20%	2.89%
BC Global Credit	Global Bonds	3.79%	7.49%	3.41%	2.12%	4.54%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	5.64%	8.99%	4.24%	-0.45%	3.41%
JPM EMBI+	Em. Mkt. Bonds	4.36%	11.68%	3.50%	4.21%	7.11%
Alternative Benchmarks						
Bloomberg Commodity Index	Commodities	-1.19%	-6.75%	<b>-2.18%</b>	-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

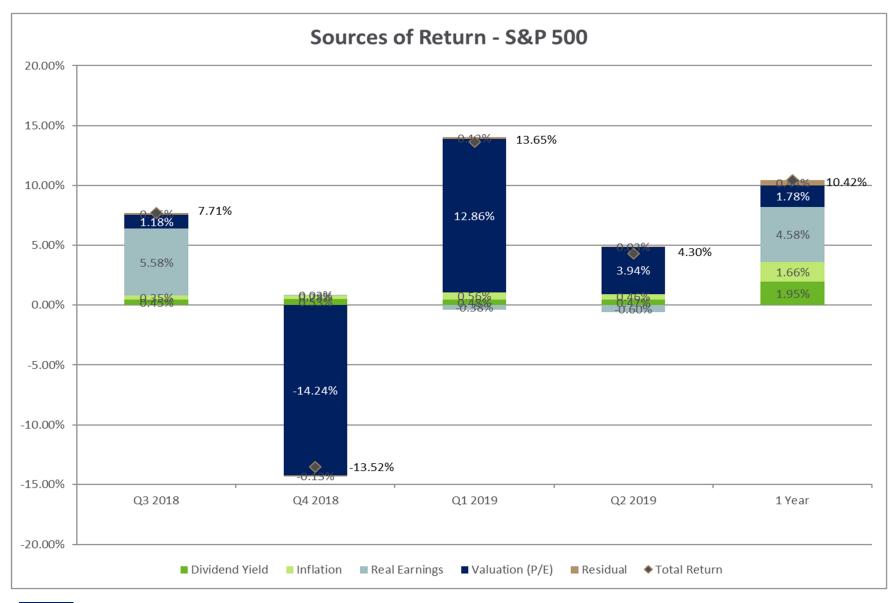
# **BEST FIRST HALF SINCE 1997 FOR US STOCKS**





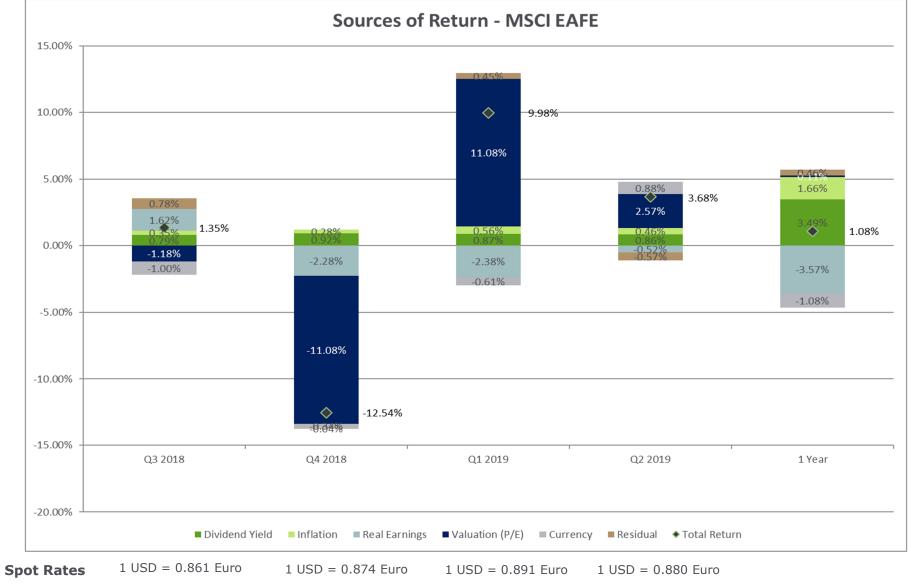


# **1 YEAR ATTRIBUTION OF S&P 500 RETURNS**



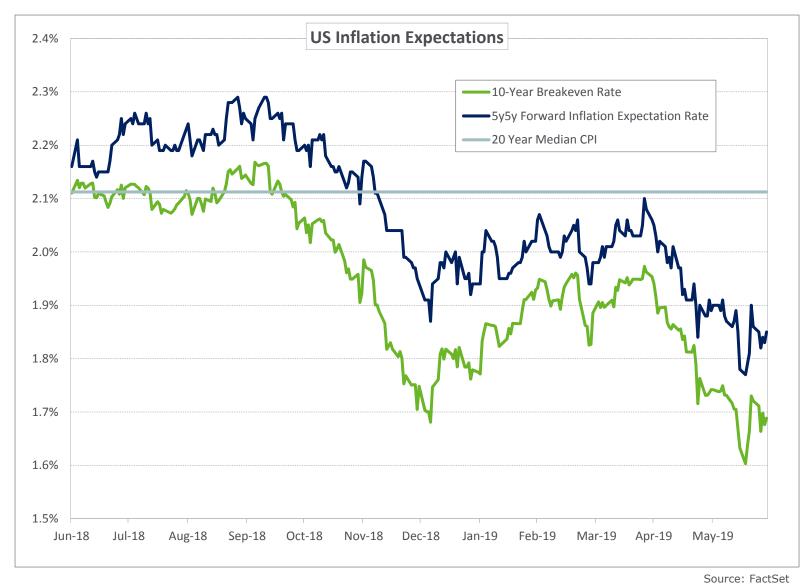


# **1 YEAR ATTRIBUTION OF MSCI EAFE RETURNS**



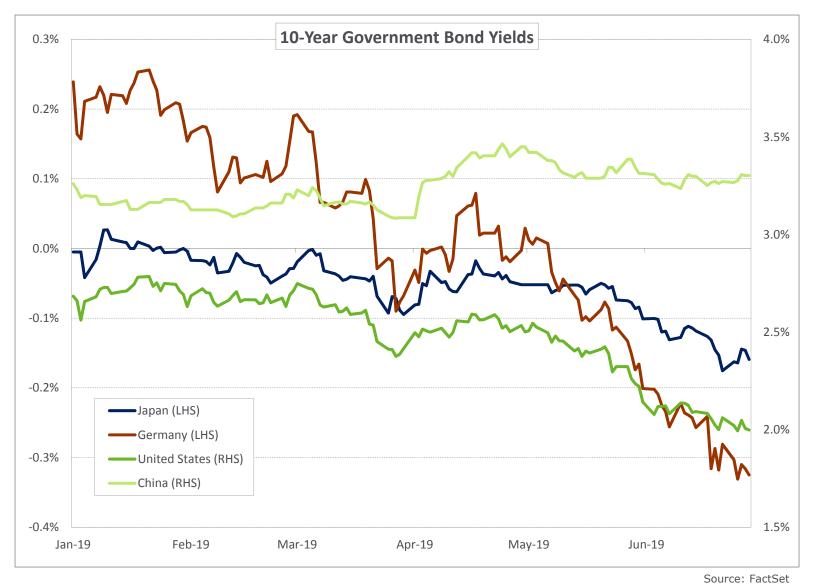


# **INFLATION EXPECTATIONS CONTINUE TO FALL**





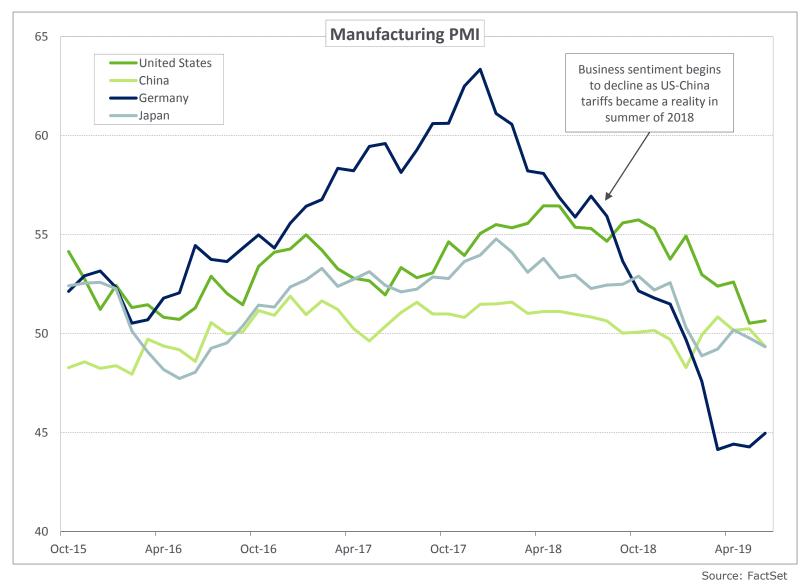
# **GLOBAL BOND YIELDS ARE FALLING**





June 30, 2019

# **TARIFFS WEIGH ON GLOBAL SENTIMENT**





The New Mexico Educational Retirement Board Policy Regarding Placement Agent Disclosures requires that quarterly performance reports to the Board include information regarding any third-party marketers that were used by recipients of investments including any fee, commission or retainer paid by the hired fund to the third-party marketer for services rendered. These fees are not paid by NMERB but are paid by the hired funds for marketing services to the third-party.

The following investments were approved by the NMERB Investment Committee during the quarter, with disclosures made under the policy:

### Andromeda III

The investment was approved for a \$100 million commitment on April 18, 2019 as part of the Fund's allocation to Infrastructure.

Andromeda has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, Andromeda has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

### Lone Star Real Estate VI

The investment was approved for a \$50 million commitment on April 18, 2019 as part of the Fund's allocation to Real Estate.

Lone Star has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, Lone Star has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

#### **Orbimed Royalty III**

The investment was approved for a \$100 million commitment on April 18, 2019 as part of the Fund's allocation to Diversifying Assets.

Orbimed has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, Orbimed has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

### **Raine Partners III**

The investment was approved for a \$40 million commitment on April 18, 2019 as part of the Fund's allocation to Private Equity.

Raine has provided documentation confirming Lazard was paid \$700,000 as a placement agent in connection with NMERB's investment.

Additionally, Raine has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.



The New Mexico Educational Retirement Board Policy Regarding Placement Agent Disclosures requires that quarterly performance reports to the Board include information regarding any third-party marketers that were used by recipients of investments including any fee, commission or retainer paid by the hired fund to the third-party marketer for services rendered. These fees are not paid by NMERB but are paid by the hired funds for marketing services to the third-party.

The following investments were approved by the NMERB Investment Committee during the quarter, with disclosures made under the policy:

### **Ecosystem Investment Partners III**

The investment was approved for a \$50 million commitment on May 23, 2019 as part of the Fund's allocation to Natural Resources.

Ecosystem has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, Ecosystem has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

### <u>RBC</u>

The investment was approved for a \$380 million commitment on May 23, 2019 as part of the Fund's allocation to Emerging Markets Equity.

RBC has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, RBC has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

### UBS

The investment was approved for a \$380 million commitment on May 23, 2019 as part of the Fund's allocation to Emerging Markets Equity.

UBS has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, UBS has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

### SV Impact Medicine

The investment was approved for a \$20 million commitment on May 23, 2019 as part of the Fund's allocation to Private Equity.

SV has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, SV has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.



The New Mexico Educational Retirement Board Policy Regarding Placement Agent Disclosures requires that quarterly performance reports to the Board include information regarding any third-party marketers that were used by recipients of investments including any fee, commission or retainer paid by the hired fund to the third-party marketer for services rendered. These fees are not paid by NMERB but are paid by the hired funds for marketing services to the third-party.

The following investments were approved by the NMERB Investment Committee during the quarter, with disclosures made under the policy:

### SV Growth

The investment was approved for a \$20 million commitment on May 23, 2019 as part of the Fund's allocation to Private Equity.

SV has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, SV has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

### **Realterm Logistics Fund III**

The investment was approved for a \$25 million commitment on June 20, 2019 as part of the Fund's allocation to Real Estate.

Realterm has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, Realterm has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

#### Realterm European Logistics Fund I

The investment was approved for a \$50 million commitment on June 20, 2019 as part of the Fund's allocation to Real Estate.

Realterm has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, Realterm has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

#### Hamilton Lane

The contract extension was approved on June 20, 2019 for continued service as the Fund's Real Estate consultant.

Hamilton Lane has provided documentation confirming no placement agent was used in connection with NMERB's relationship.

Additionally, Hamilton Lane has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.



The New Mexico Educational Retirement Board Policy Regarding Placement Agent Disclosures requires that quarterly performance reports to the Board include information regarding any third-party marketers that were used by recipients of investments including any fee, commission or retainer paid by the hired fund to the third-party marketer for services rendered. These fees are not paid by NMERB but are paid by the hired funds for marketing services to the third-party.

The following investments were approved by the NMERB Investment Committee during the quarter, with disclosures made under the policy:

### **Global Alpha Capital Management**

The investment was approved for a \$125 million commitment on June 20, 2019 as part of the Fund's allocation to Non-U.S. Developed Markets Equity.

Global Alpha has provided documentation confirming Eric Hasenauer, Gary Simonette, Stephen Reynolds, Corporate Affiliates and employees of Connor, Clark, & Lunn are engaged as placement agents in connection with NMERB's investment. Connor, Clark and Lunn pays placement agents and clients are not charged.

Additionally, SV has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.

### **Cross Ocean European Special Situations Fund III**

The investment was approved for a \$100 million commitment on June 20, 2019 as part of the Fund's allocation to Opportunistic Credit.

Cross Ocean has provided documentation confirming no placement agent was used in connection with NMERB's investment.

Additionally, Cross Ocean has completed the ERB Campaign Contribution Disclosure and reports no applicable campaign contributions.



### New Mexico Educational Retirement Board TOTAL FUND PERFORMANCE SUMMARY (NET)

	Market Value	3 Mo F	Rank	YTD F	Rank	1 Yr F	Rank	3 Yrs I	Rank	5 Yrs I	Rank	10 Yrs I	Rank	15 Yrs I	Rank	20 Yrs	Rank	30 Yrs F	Rank	Inception	Inception Date
Total Fund	\$13,329,141,720	3.20%	29	8.48%	95	7.29%	8	9.11%	33	6.73%	10	9.63%	27	7.10%	18	5.73%	44	8.43%	4	9.04%	Jul-83
Policy Index		2.78%	66	8.81%	90	7.36%	7	9.26%	27	6.40%	18	8.82%	62	6.60%	47	5.60%	55	7.62%	58		Jul-83
60% MSCI ACWI (Net) / 40% FTSE WGBI		3.71%	6	11.95%	19	6.02%	31	7.43%	99	4.19%	99	7.13%	98	5.89%	84	4.96%	90				Jul-83
BBgBarc US Aggregate TR		3.08%	39	6.11%	99	7.87%	1	2.31%	99	2.95%	99	3.90%	99	4.27%	99	4.93%	90	5.99%	90	7.05%	Jul-83
S&P 500		4.30%	1	18.54%	1	10.42%	1	14.19%	1	10.71%	1	14.70%	1	8.75%	1	5.90%	37	10.03%	1	10.93%	Jul-83
InvMetrics Public DB > \$1B Net Median		2.93%		10.33%		5.39%		8.72%		5.64%		9.00%		6.51%		5.66%		7.74%		8.53%	Jul-83

Over the past five years, the Fund returned 6.7% per annum,

outperforming the policy index by 33 basis points and ranking in the  $10^{th}$  percentile of the Investment Metrics Public Funds > \$1 Billion universe but underperforming the actuarial assumed rate of 7.25%. The Fund's volatility was 5.0%, which ranks in the 5<sup>th</sup> percentile of its peers over this period. The Fund's risk-adjusted performance, as measured by the Sharpe Ratio, ranks in the 4<sup>th</sup> percentile of its peers.

Over the past three years, the Fund returned 9.1% per annum, underperforming the policy index by 15 basis points and ranking in the 33<sup>rd</sup> percentile of its peer group. Over the same period, the Fund's volatility ranks in the 7<sup>th</sup> percentile of its peers, resulting in a three-year Sharpe Ratio of 1.7, which ranks in the 3<sup>rd</sup> percentile.

For the year ending June 30, 2019, the Fund experienced a net investment gain of \$922.9 million, which includes a net investment gain of \$413.6 million during the quarter. Assets increased from \$12.9 billion twelve months ago, to \$13.3 billion on June 30, 2019, with \$480 million in net distributions during the year. The Fund returned 7.3% exceeding the assumed rate, although underperforming the policy index by 7 basis points. The fund ranked in the 8<sup>th</sup> percentile of its peers.

The InvMetrics Public Funds >\$1 Billion Net Universe contains 78 observations for the period ending June 30, 2018, with total assets of \$667 billion.

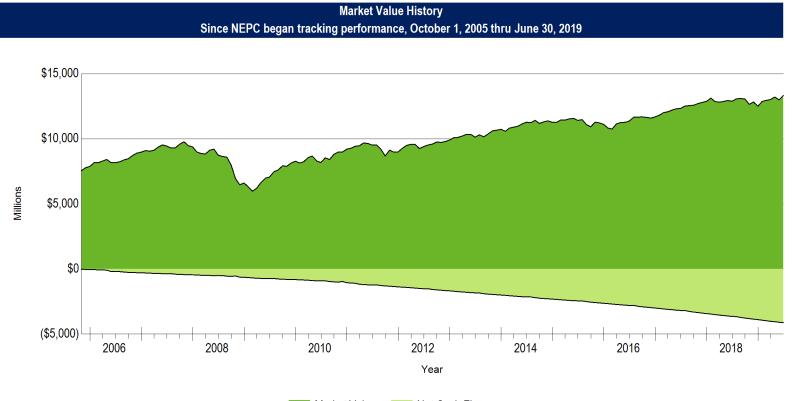




	5 Years Ending June 30, 2019												
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank					
Total Fund	6.7%	10	5.0%	5	1.2	4	2.1	5					
Policy Index	6.4%	18	5.3%	9	1.0	6	1.9	5					
InvMetrics Public DB > \$1B Net Median	5.6%		6.6%		0.7		1.2						

3 Years Ending June 30, 2019												
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank				
Total Fund	9.1%	33	4.4%	7	1.7	3	2.5	7				
Policy Index	9.3%	27	4.7%	8	1.7	4	3.5	2				
InvMetrics Public DB > \$1B Net Median	8.7%		6.0%		1.2		1.6					

# New Mexico Educational Retirement Board TOTAL FUND ASSET GROWTH SUMMARY



Market Value Net Cash Flow

	Last Three Months	Year-To-Date	One Year	Three Years	Five Years	Since 10/1/05
Beginning Market Value	\$13,020,197,300	\$12,504,945,863	\$12,886,225,133	\$11,366,601,630	\$11,274,476,583	\$7,694,652,364
Net Cash Flow	-\$104,614,119	-\$230,041,225	-\$479,998,999	-\$1,324,186,722	-\$1,978,009,792	-\$4,111,411,295
Net Investment Change	\$413,558,539	\$1,054,237,082	\$922,915,585	\$3,286,726,811	\$4,032,674,929	\$9,745,900,650
Ending Market Value	\$13,329,141,720	\$13,329,141,720	\$13,329,141,720	\$13,329,141,720	\$13,329,141,720	\$13,329,141,720



# **TOTAL FUND ASSET ALLOCATION VS. POLICY**

<u>Current</u> <u>Allocation</u>	Policy Target		Current Mkt Value	Current Allocation	Policy Target <sup>1</sup>	<u>Difference</u>	Policy Range	Within Range
		Equity	\$4,174,759,392	31.3%	33.0%	-1.7%	15% - 55%	Yes
		U.S. Equity	\$2,311,011,537	17.3%	19.0%	-1.7%	10% - 30%	Yes
15.1%	16.0%	U.S. Large Cap Equity	\$2,013,239,194	15.1%	16.0%	-0.9%	10% - 25%	Yes
		U.S. Small/Mid Cap Equity	\$297,772,343	2.2%	3.0%	-0.8%	0% - 5%	Yes
		Non-U.S. Equity	\$1,863,747,854	14.0%	14.0%	0.0%	5% - 25%	Yes
2.2%		Non-U.S. Developed Mkts	\$635,874,036	4.8%	5.0%	-0.2%	0% - 10%	Yes
4.8%	3.0%	Non-U.S. Emerging Mkts	\$1,227,873,818	9.2%	9.0%	0.2%	2% - 15%	Yes
	5.0%	Fixed Income	\$3,454,768,436	25.9%	26.0%	-0.1%	10% - 58%	Yes
9.2%		Core Fixed Income	\$844,836,681	6.3%	6.0%	0.3%	0% - 20%	Yes
	9.0%	Opportunistic Credit	\$2, 378, 355, 653	17.8%	18.0%	-0.2%	0% - 30%	Yes
		Emerging Mkts Debt	\$231, 576, 102	1.7%	2.0%	-0.3%	0% - 8%	Yes
6.3%	6.0%	Alternatives	\$5,571,567,211	41.8%	40.0%	1.8%	10% - 60%	Yes
		Absolute Return	\$385,545	0.0%	0.0%	0.0%	0% - 10%	Yes
		Diversifying Assets	\$1,606,120,295	12.0%	12.0%	0.0%		
17.8%	18.0%	Global Asset Allocation	\$544,162,192	4.1%	4.0%	0.1%	0% - 8%	Yes
		Risk Parity	\$724,969,058	5.4%	3.0%	2.4%	0% - 8%	Yes
		Other Diversifying Assets	\$336,989,046	2.5%	5.0%	-2.5%	0% - 10%	Yes
<u></u>	2.9%	Real Estate	\$910,276,832	6.8%	7.0%	-0.2%	0% - 14%	Yes
	0.076	REITs	\$289,945,711	2.2%	3.0%	-0.8%		
12.0%	12.0%	Private Real Estate	\$620,331,121	4.7%	4.0%	0.7%		
		Private Equity	\$2,009,777,274	15.1%	13.0%	2.1%	0% - 22%	Yes
6.8%	7.0%	Inflation-Linked Assets	\$1,045,007,264	7.8%	8.0%	-0.2%	0% - 15%	Yes
		Cash	\$127,982,536	1.0%	1.0%	0.0%	0% - 15%	Yes
15.1%	13.0%	Total	\$13,329,141,720	100.0%	100.0%	0.0%		

<sup>1</sup>Long-Term Policy Target approved by the Board in June 2016.

Note: Allocations shown here include cash held in separately managed portfolios.

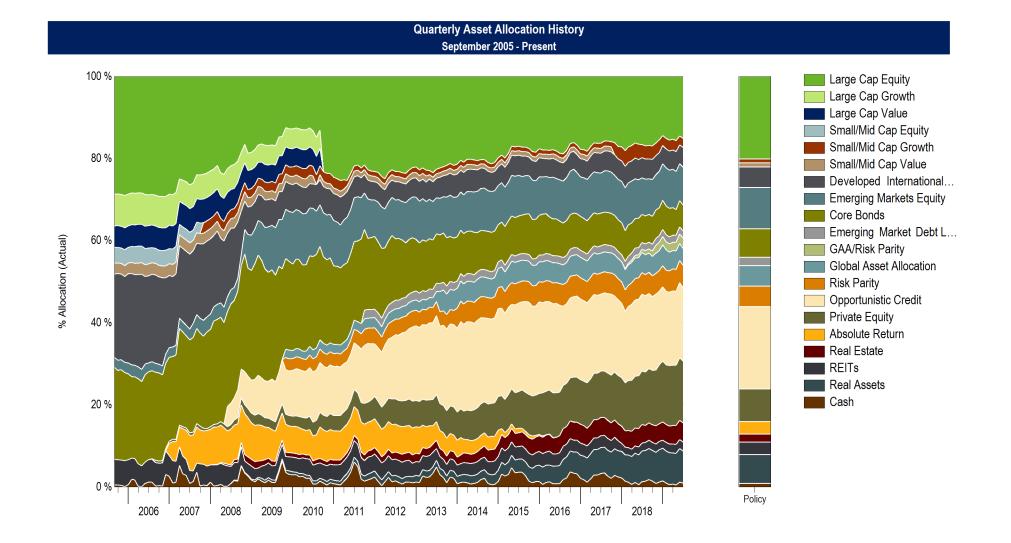
Totals may not add to 100% due to rounding. Total Plan includes Legacy Assets portfolio totaling \$64,144.



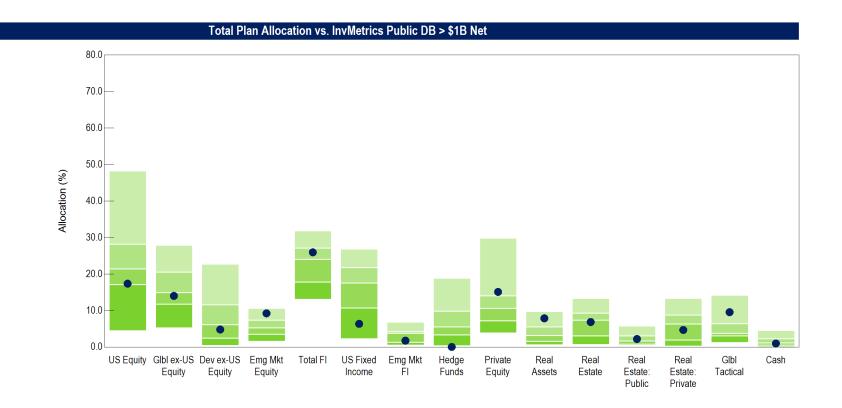
7.8%

8.0%

# New Mexico Educational Retirement Board TOTAL FUND ASSET ALLOCATION HISTORY



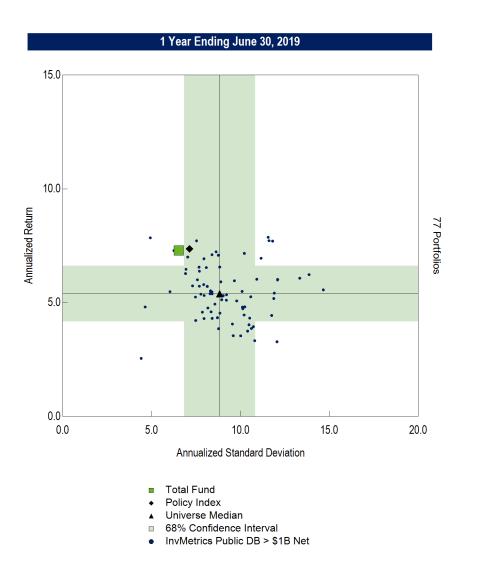
# New Mexico Educational Retirement Board TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE



	Allocatio	n (Rank)														
5th Percentile	48.2	27.9	22.7	10.6	31.8	26.8	6.8	18.8	29.8	9.7	13.3	5.8	13.3	14.2	4.6	
25th Percentile	28.2	20.6	11.7	7.4	27.2	21.8	4.3	9.8	14.1	5.6	9.3	3.1	8.8	6.5	2.3	
Median	21.5	15.0	6.2	5.3	24.1	17.6	3.8	5.6	10.7	3.2	7.4	1.7	6.3	3.8	1.2	
75th Percentile	17.2	11.8	2.5	3.6	17.9	10.8	1.3	3.4	7.3	1.6	3.1	0.9	2.0	3.1	0.6	
95th Percentile	4.5	5.4	0.5	1.6	13.1	2.3	0.5	0.4	3.9	0.7	0.7	0.5	0.3	1.3	0.1	
# of Portfolios	52	57	33	47	60	51	27	39	52	31	53	17	51	13	60	
<ul> <li>Total Fund</li> </ul>	17.3 (7	5) 14.0 (65)	4.8 (64)	9.2	(10) 25.9 (36)	6.3 (91)	1.7 (68)	0.0 (99)	15.1 (20)	7.8 (9	) 6.8 (52)	2.2 (44)	4.7 (62)	9.5 (18)	1.0 (60)	

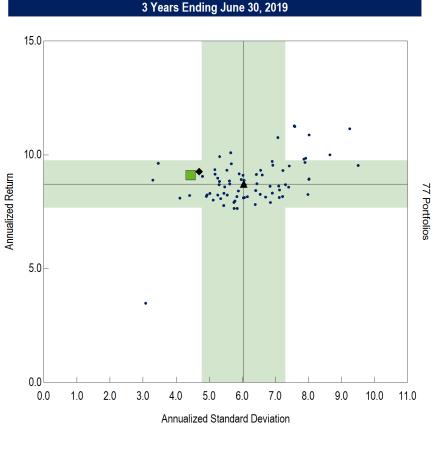


# New Mexico Educational Retirement Board TOTAL FUND RISK/RETURN



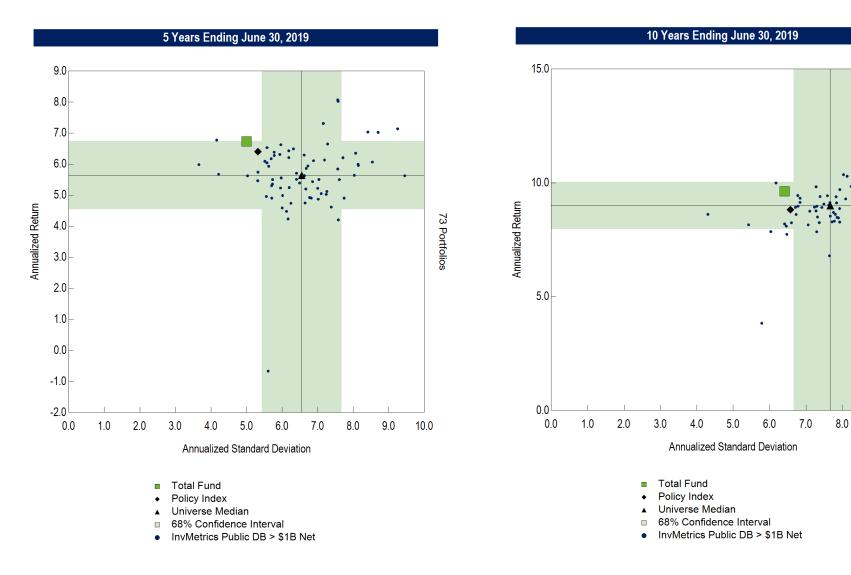
Note: Ranks are based on net returns.





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

# New Mexico Educational Retirement Board TOTAL FUND RISK/RETURN



Note: Ranks are based on net returns.

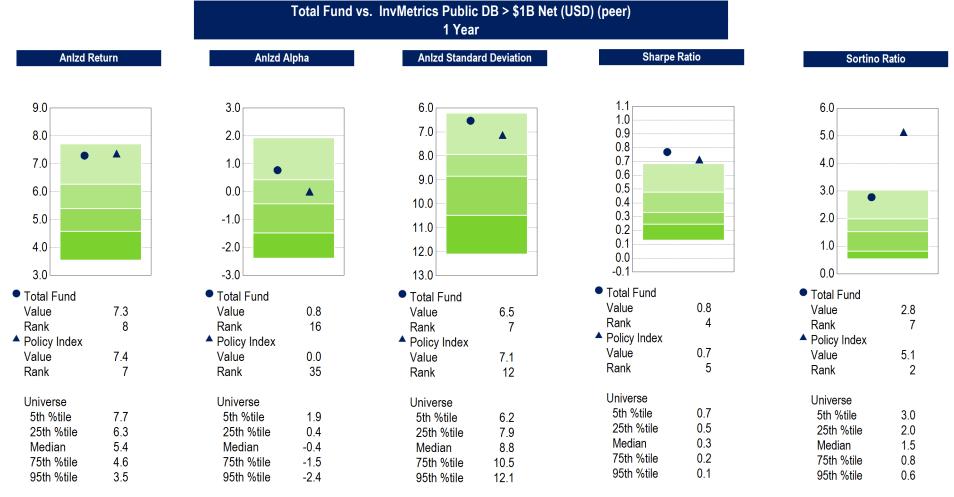


9.0

10.0

65 Portfolios

# **TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE**



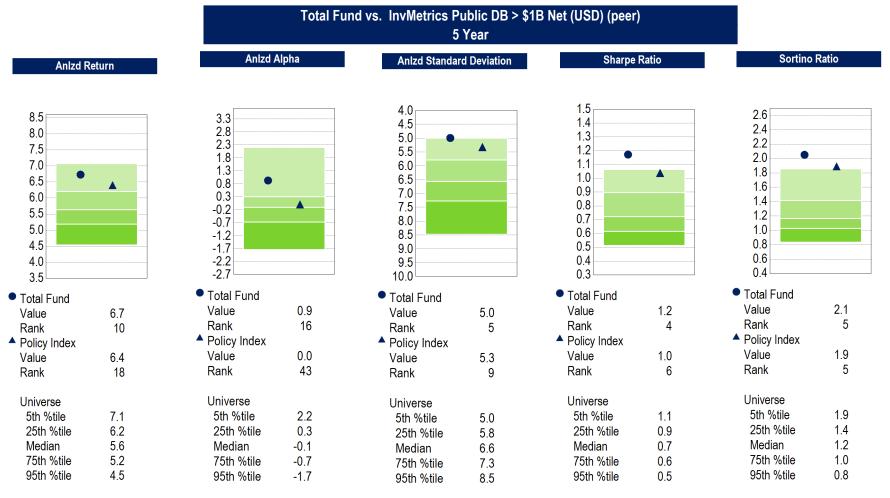


# **TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE**





# **TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE**



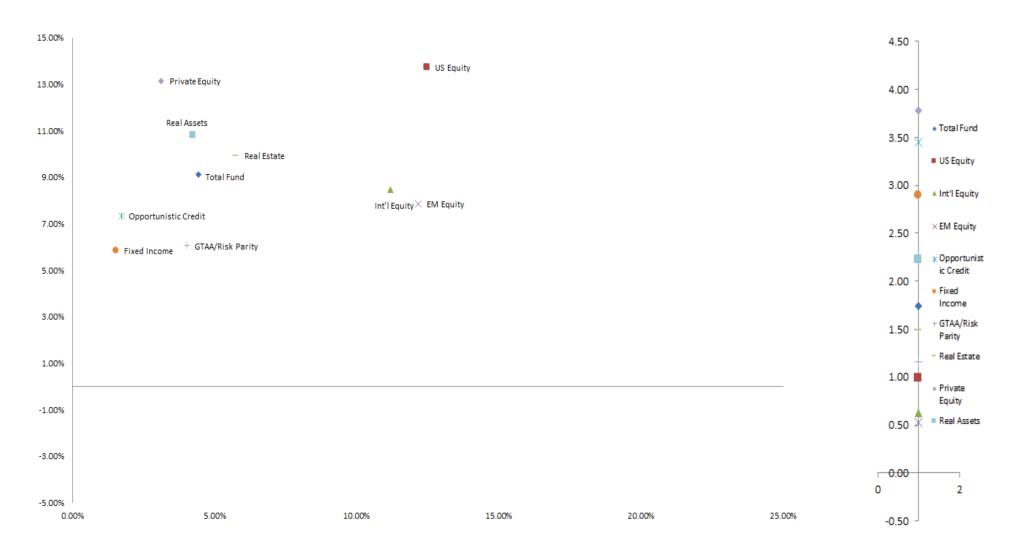


# **TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE**





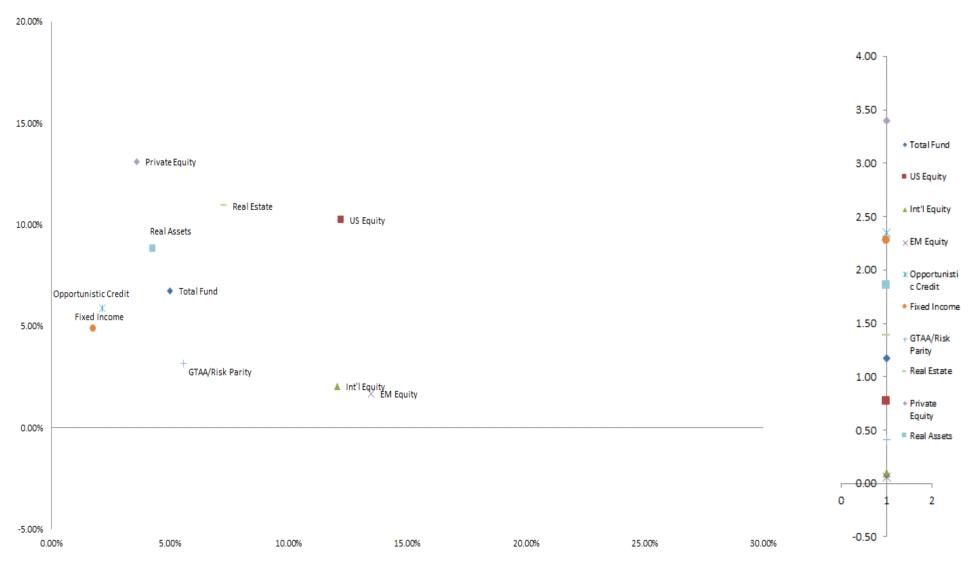
# **3 YEAR RISK/RETURN PROFILE**



Note: Returns are net of fees. The graph on the right side shows composite level sharpe ratios.



# **5 YEAR RISK/RETURN PROFILE**



Note: Returns are net of fees. The graph on the right side shows composite level sharpe ratios.



# **TOTAL FUND ATTRIBUTION ANALYSIS**

### Attribution Effects 1 Year Ending June 30, 2019

Total Fund

U.S. Large Cap Equity Composite

Core Fixed Income Composite

Opportunistic Credit Composite

Absolute Return Composite

Other Diversifying Assets

Private Equity Composite Real Assets Composite

Cash

-0.6 %

Allocation Effect

Selection Effect Total Effect

-0.4 %

-0.2 %

0.0 %

0.2 %

0.4 %

0.6 %

0.8 %

Public Real Estate Composite

Private Real Estate Composite

U.S. Small/Mid Cap Equity Composite Non-U.S. Developed Mkts Equity Composite

Non-U.S. Emerging Mkts Equity Composite

Non-U.S. Emerging Market Debt Composite

Global Asset Allocation/Risk Parity Composite



- Allocation Effect: -0.45%
  - Other Diversifying Assets underweight (+0.08%)
  - Public Real Estate underweight (-0.05%)
  - Global Asset Allocation/Risk Parity overweight (-0.09%)
  - U.S. Small/Mid Cap Equity overweight (-0.11%)
  - U.S. Large Cap Equity underweight (-0.12%)
  - Manager Selection Effect: +0.34%
    - Real Assets outperformed (+0.60%)
    - Private Real Estate outperformed (+0.28%)
    - Other Diversifying Assets outperformed (+0.10%)
    - Global Asset Allocation/Risk Parity outperformed (+0.08%)
    - Emerging Mkts Debt underperformed (-0.05%)
    - Emerging Mkts Equity underperformed (-0.06%)
    - Private Equity underperformed (-0.22%)
    - Opportunistic Credit underperformed (-0.40%)
  - Residual: 0.00%

### The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

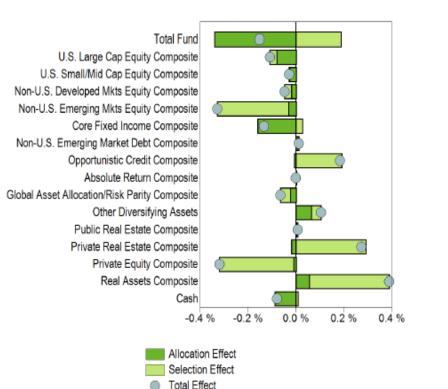
**Allocation Effect:** Measures the impact of the decision to over/under weight asset classes relative to Interim SAAP benchmark weights. (Return Asset Class Index – Total Interim Policy Index Return) × (Weight Asset Class Portfolio – Weight Asset Class Interim Policy Index).

**Manager Selection Effect:** Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. [Weight Asset Class Benchmark × (Return Portfolio Asset Class – Return Asset Class in Interim Policy Index)] + **Interaction Effect:** Measures the impact of over/under weighting decisions and over/under performance. (Return Asset Class Portfolio (Weight Asset Class Portfolio – Weight Asset Class Policy Index))–(Return Asset Class Index (Weight Asset Class Portfolio – Weight Asset Class Index)).

**Residual:** Contribution to excess return not captured in Allocation Effect and Manager Selection Effect.

# **TOTAL FUND ATTRIBUTION ANALYSIS**

### Attribution Effects 3 Years Ending June 30, 2019



### 3 Year Excess Return: -0.15%

- Allocation Effect: -0.34%
  - Other Diversifying Assets underweight (+0.07%)
  - Real Assets underweight (+0.06%)
  - U.S. Large Cap Equity underweight (-0.08%)
  - Cash overweight (-0.09%)
  - Core Fixed Income overweight (-0.16%)
- Manager Selection Effect: +0.19%
  - Real Assets outperformed (+0.33%)
  - Private Real Estate outperformed (+0.29%)
  - Opportunistic Credit outperformed (+0.19%)
  - Non U.S. Emerging Mkts Equity underperformed (-0.30%)
  - Private Equity underperformed (-0.31%)
- Residual: 0.00%

### The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

**Allocation Effect:** Measures the impact of the decision to over/under weight asset classes relative to Interim SAAP benchmark weights. (Return Asset Class Index – Total Interim Policy Index Return) × (Weight Asset Class Portfolio – Weight Asset Class Interim Policy Index).

**Manager Selection Effect:** Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. [Weight Asset Class Benchmark × (Return Portfolio Asset Class – Return Asset Class in Interim Policy Index)] + **Interaction Effect:** Measures the impact of over/under weighting decisions and over/under performance. (Return Asset Class Portfolio (Weight Asset Class Portfolio – Weight Asset Class Policy Index))–(Return Asset Class Index (Weight Asset Class Portfolio – Weight Asset Class Index)).

**Residual:** Contribution to excess return not captured in Allocation Effect and Manager Selection Effect.

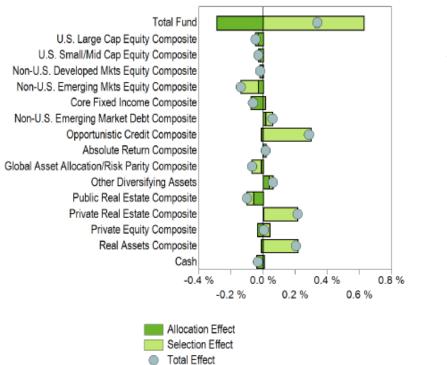


# **TOTAL FUND ATTRIBUTION ANALYSIS**

### Attribution Effects 5 Years Ending June 30, 2019

### 5 Year Excess Return: +0.34%

- Allocation Effect: -0.29%
  - Public Real Estate underweight (-0.06%)
  - Core Fixed Income overweight (-0.08%)
  - Manager Selection Effect: +0.63%
    - Opportunistic Credit outperformed (+0.30%)
    - Real Assets outperformed (+0.22%)
    - Private Real Estate outperformed (+0.21%)
    - Global Asset Allocation/Risk Parity underperformed (-0.05%)
    - Emerging Mkts Equity underperformed (-0.11%)
- Residual: 0.00%



### The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

**Allocation Effect:** Measures the impact of the decision to over/under weight asset classes relative to Interim SAAP benchmark weights. (Return Asset Class Index – Total Interim Policy Index Return) × (Weight Asset Class Portfolio – Weight Asset Class Interim Policy Index).

**Manager Selection Effect:** Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. [Weight Asset Class Benchmark × (Return Portfolio Asset Class – Return Asset Class in Interim Policy Index)] + **Interaction Effect:** Measures the impact of over/under weighting decisions and over/under performance. (Return Asset Class Portfolio (Weight Asset Class Portfolio – Weight Asset Class Policy Index))–(Return Asset Class Index (Weight Asset Class Portfolio – Weight Asset Class Index)).

**Residual:** Contribution to excess return not captured in Allocation Effect and Manager Selection Effect.



# **TOTAL FUND RISK STATISTICS**

3 Years Ending June 30, 2019												
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Tracking Error	Rank	Info Ratio	Rank	Beta
U.S. Large Cap Equity Composite	15.1%	14.0%	34	12.2%	6	-0.2%	23	0.1%	1	-1.5		1.0
S&P 500	-	14.2%	31	12.2%	6	0.0%	20	0.0%	1			1.0
U.S. Small/Mid Cap Equity Composite	2.2%	12.6%	84	15.1%	99	0.7%	12	3.0%	83	0.1	30	1.0
NMERB Small/Mid Cap Equity Blended Index		12.3%	88	15.5%	99	0.0%	20	0.0%	1			1.0
Non-U.S. Developed Mkts Equity Composite	4.8%	8.5%	54	11.2%	28	-0.7%	51	0.7%	1	-0.9		1.0
MSCI EAFE		9.1%	44	11.1%	23	0.0%	37	0.0%	1			1.0
Non-U.S. Emerging Mkts Equity Composite	9.2%	7.9%	65	12.2%	21	-1.5%	55	2.9%	35	-1.0		0.9
MSCI Emerging Markets	-	10.7%	10	13.9%	79	0.0%	26	0.0%	1			1.0
Core Fixed Income Composite	6.3%	2.6%	75	3.1%	85	0.3%	84	0.6%	26	0.5	75	1.0
BBgBarc US Aggregate TR	-	2.3%	92	3.0%	80	0.0%	99	0.0%	1			1.0
Non-U.S. Emerging Market Debt Composite	1.7%	5.1%	43	6.2%	39	0.8%	24	2.3%	59	0.1	36	0.8
Non-U.S. EMD Custom Benchmark	-	4.9%	54	7.3%	59	0.0%	54	0.0%	1			1.0
Opportunistic Credit Composite	17.8%	7.3%		1.7%		3.9%		2.2%		0.5		0.4
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index		6.3%		3.2%		0.0%		0.0%				1.0
Global Asset Allocation/Risk Parity Composite	9.5%	6.1%		4.0%		1.8%		4.1%		-0.4	-	0.5
GAA/Risk Parity Custom Index		7.7%		3.2%		0.0%		0.0%				1.0

3 Years Ending June 30, 2019											
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank				
Real Estate Composite	6.8%	9.9%	4	5.7%	97	9.5%	5				
NCREIF Property Index	-	6.9%	51	2.8%	44	0.0%	89				
Private Equity Composite	15.1%	13.2%	46	3.1%	1	13.7%	21				
Cambridge Associates US All PE (1 Qtr Lag)		15.4%	27	7.0%	81	0.0%	83				
Real Assets Composite	7.8%	10.8%	19	4.2%	24	14.7%	1				
CPI + 4% (Seasonally Adjusted)	-	6.1%	35	0.6%	1	0.0%	72				

1 - Performance for Equity, Fixed Income, and Emerging Mkt Debt, Opportunistic Credit and GAA/Risk Parity composites are net of fees. Note: Percent of Total equals 96.3% because Absolute Return Composite and Cash Composite are not included.



# **TOTAL FUND RISK STATISTICS**

5 Years Ending June 30, 2019												
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Tracking Error	Rank	Info Ratio	Rank	Beta
U.S. Large Cap Equity Composite	15.1%	10.6%	8	12.0%	6	0.0%	17	0.2%	1	-0.4		1.0
S&P 500	-	10.7%	7	12.0%	9	0.0%	16	0.0%	1			1.0
U.S. Small/Mid Cap Equity Composite	2.2%	7.4%	94	14.5%	99	0.1%	15	3.2%	91	-0.1		0.9
NMERB Small/Mid Cap Equity Blended Index		7.7%	92	15.0%	99	0.0%	16	0.0%	1			1.0
Non-U.S. Developed Mkts Equity Composite	4.8%	2.0%	55	12.0%	58	-0.2%	55	1.1%	1	-0.2		1.0
MSCI EAFE	-	2.2%	50	12.3%	74	0.0%	50	0.0%	1			1.0
Non-U.S. Emerging Mkts Equity Composite	9.2%	1.7%	48	13.5%	26	-0.6%	53	3.4%	48	-0.2		0.8
MSCI Emerging Markets		2.5%	24	15.8%	84	0.0%	28	0.0%	1			1.0
Core Fixed Income Composite	6.3%	3.1%	55	3.0%	69	0.1%	81	0.5%	20	0.3	44	1.0
BBgBarc US Aggregate TR	-	2.9%	65	2.9%	62	0.0%	89	0.0%	1			1.0
Non-U.S. Emerging Market Debt Composite	1.7%	2.2%	32	6.6%	22	2.2%	7	3.6%	75	0.7	7	0.7
Non-U.S. EMD Custom Benchmark	-	-0.3%	56	9.1%	59	0.0%	37	0.0%	1			1.0
Opportunistic Credit Composite	17.8%	5.9%		2.1%		3.6%		2.8%		0.6		0.4
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index		4.3%		3.8%		0.0%		0.0%				1.0
Global Asset Allocation/Risk Parity Composite	9.5%	3.2%		5.6%		-0.1%		4.6%		-0.3		0.7
GAA/Risk Parity Custom Index	-	4.6%		5.5%		0.0%		0.0%				1.0

5 Years Ending June 30, 2019											
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank				
Real Estate Composite	6.8%	10.9%	1	7.3%	96	11.5%	1				
NCREIF Property Index		8.8%	68	3.8%	46	0.0%	94				
Private Equity Composite	15.1%	13.1%	34	3.6%	1	13.4%	16				
Cambridge Associates US All PE (1 Qtr Lag)		11.9%	43	6.3%	81	0.0%	89				
Real Assets Composite	7.8%	8.8%	5	4.3%	15	6.9%	17				
CPI + 4% (Seasonally Adjusted)	-	5.5%	32	0.7%	1	0.0%	81				

1 - Performance for Equity, Fixed Income, and Emerging Mkt Debt, Opportunistic Credit and GAA/Risk Parity composites are net of fees. Note: Percent of Total equals 96.3% because Absolute Return Composite and Cash Composite are not included.



# **PERFORMANCE DETAIL - TOTAL FUND & U.S. EQUITY**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Total Fund	13,329,141,720	100.0	3.2	29	8.5	95	7.3	8	9.1	33	6.7	10	9.6	27	9.0	Jul-83
Policy Index			<u>2.8</u>	66	<u>8.8</u>	90	<u>7.4</u>	7	<u>9.3</u>	27	<u>6.4</u>	18	<u>8.8</u>	62		Jul-83
Over/Under			0.4		-0.3		-0.1		-0.2		0.3		0.8			
60% MSCI ACWI (Net) / 40% FTSE WGBI			3.7	6	12.0	19	6.0	31	7.4	99	4.2	99	7.1	98		Jul-83
InvMetrics Public DB > \$1B Net Median			2.9		10.3		5.4		8.7		5.6		9.0		8.5	Jul-83
U.S. Equity Composite	2,311,011,537	17.3	4.1	41	18.4	56	9.0	16	13.7	53	10.2	21	14.4	35	11.3	Jan-85
Russell 3000			<u>4.1</u>	47	<u>18.7</u>	49	<u>9.0</u>	16	<u>14.0</u>	34	<u>10.2</u>	23	<u>14.7</u>	23	<u>11.1</u>	Jan-85
Over/Under			0.0		-0.3		0.0		-0.3		0.0		-0.3		0.2	
InvMetrics Public DB > \$1 Billion US Equity Net Median			4.0		18.6		7.3		13.8		9.5		14.2			Jan-85
U.S. Large Cap Equity Composite	2,013,239,194	15.1	4.3	26	18.6	51	10.4	7	14.0	34	10.6	8	14.6	26	6.6	Aug-99
S&P 500			<u>4.3</u>	28	<u>18.5</u>	52	<u>10.4</u>	7	<u>14.2</u>	31	<u>10.7</u>	7	<u>14.7</u>	22	<u>6.1</u>	Aug-99
Over/Under			0.0		0.1		0.0		-0.2		-0.1		-0.1		0.5	
InvMetrics Public DB > \$1 Billion US Equity Net Median			4.0		18.6		7.3		13.8		9.5		14.2		6.6	Aug-99
S&P 500 Index Fund	2,013,239,194	15.1	4.3	44	18.6	36	10.4	38	14.0	28	10.6	20	14.7	15	5.6	Jan-00
S&P 500			<u>4.3</u>	44	<u>18.5</u>	36	<u>10.4</u>	38	<u>14.2</u>	25	<u>10.7</u>	19	<u>14.7</u>	15	<u>5.7</u>	Jan-00
Over/Under			0.0		0.1		0.0		-0.2		-0.1		0.0		-0.1	
eV US Large Cap Core Equity Net Median			4.1		17.3		8.3		12.9		9.3		13.9		6.7	Jan-00
U.S. Small/Mid Cap Equity Composite	297,772,343	2.2	3.1	99	17.9	77	1.6	99	12.6	84	7.4	94	12.9	96	7.4	Aug-99
NMERB Small/Mid Cap Equity Blended Index			<u>3.0</u>	99	<u>19.2</u>	29	<u>1.8</u>	99	<u>12.3</u>	88	<u>7.7</u>	92	<u>14.0</u>	68	<u>8.2</u>	Aug-99
Over/Under			0.1		-1.3		-0.2		0.3		-0.3		-1.1		-0.8	
InvMetrics Public DB > \$1 Billion US Equity Net Median			4.0		18.6		7.3		13.8		9.5		14.2		6.6	Aug-99
S&P 400 Mid-Cap	297,772,124	2.2	3.1	72	17.9	66	1.6	70							5.6	Nov-17
Russell 2500			<u>3.0</u>	75	<u>19.2</u>	57	<u>1.8</u>	70	<u>12.3</u>	48	<u>7.7</u>	57	<u>14.4</u>	50	<u>6.6</u>	Nov-17
Over/Under			0.1		-1.3		-0.2								-1.0	
eV US Mid Cap Equity Net Median			4.3		20.1		6.8		12.0		8.1		14.4		8.0	Nov-17

1 - U.S. Small/Mid Cap Equity Composite includes the performance history of the U.S. Small Cap Equity Composite through November 2011.

2 - NMERB Small/Mid Cap Equity Blended Benchmark is the Russell 2000 Index through November 2011 and the Russell 2500 Index from December 2011 - forward.

3 - Total Fund market value includes \$64,144 from Legacy Assets.

4 - U.S. Small/Mid Cap Equity Composite includes \$219 from Lord Abbett.

Note: Performance shown is net of fees. Fiscal year ends June 30.



### **PERFORMANCE DETAIL - NON-U.S. EQUITY**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Non-U.S. Equity Composite	1,863,747,854	14.0	1.8	93	11.8	85	1.0	53	8.1	85	1.8	90	5.2	99	6.2	Jul-95
MSCI ACWI ex USA			<u>3.0</u>	54	<u>13.6</u>	54	<u>1.3</u>	50	<u>9.4</u>	40	<u>2.2</u>	86	<u>6.5</u>	79		Jul-95
Over/Under			-1.2		-1.8		-0.3		-1.3		-0.4		-1.3			
InvMetrics Public DB > \$1 Billion Global ex-US Equity Net Median			3.0		13.8		1.3		9.1		2.8		7.2		5.6	Jul-95
Non-U.S. Developed Mkts Equity Composite	635,874,036	4.8	3.8	27	14.5	46	1.2	40	8.5	54	2.0	55	6.4	82	6.0	Sep-95
MSCI EAFE			<u>3.7</u>	31	<u>14.0</u>	50	<u>1.1</u>	42	<u>9.1</u>	44	<u>2.2</u>	50	<u>6.9</u>	39	<u>4.9</u>	Sep-95
Over/Under			0.1		0.5		0.1		-0.6		-0.2		-0.5		1.1	
InvMetrics Public DB Dev Mkt ex-US Eq Net Median			3.1		14.0		0.0		8.6		2.1		6.7		6.1	Sep-95
Pyramis	304,875,485	2.3	3.6	38	14.6	34	1.0	31	7.4	72	1.4	84	6.7	82	7.0	Jun-03
MSCI EAFE			<u>3.7</u>	37	<u>14.0</u>	42	<u>1.1</u>	31	<u>9.1</u>	40	<u>2.2</u>	65	<u>6.9</u>	80	<u>7.0</u>	Jun-03
Over/Under			-0.1		0.6		-0.1		-1.7		-0.8		-0.2		0.0	
eV All EAFE Equity Net Median			2.8		13.1		-1.8		8.7		3.1		8.1		7.8	Jun-03
BlackRock MSCI EAFE	330,998,551	2.5	3.9	30	14.4	36	1.4	29	9.5	32	2.6	60			5.0	Aug-13
MSCI EAFE			<u>3.7</u>	37	<u>14.0</u>	42	<u>1.1</u>	31	<u>9.1</u>	40	<u>2.2</u>	65	<u>6.9</u>	80	<u>4.7</u>	Aug-13
Over/Under			0.2		0.4		0.3		0.4		0.4				0.3	
eV All EAFE Equity Net Median			2.8		13.1		-1.8		8.7		3.1		8.1		5.3	Aug-13

1 - InvMetrics Public DB > B > Dev Mkt ex-US Eq Net is unavailable, universe includes all public funds. Note: Performance shown is net of fees. Fiscal year ends June 30.



# **PERFORMANCE DETAIL - EMERGING MARKET EQUITY**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Non-U.S. Emerging Mkts Equity Composite	1,227,873,818	9.2	0.8	53	10.5	34	0.8	43	7.9	65	1.7	48	4.5	86	6.4	Sep-00
MSCI Emerging Markets Over/Under			<u>0.6</u> 0.2	66	<u>10.6</u> -0.1	29	<u>1.2</u> -0.4	36	<u>10.7</u> -2.8	10	<u>2.5</u> -0.8	24	<u>5.8</u> -1.3	34	<u>7.5</u> -1.1	Sep-00
InvMetrics Public DB > \$1 Billion Emg Mkt Eq Net Median			0.8		10.2		0.2		8.1		1.6		5.0		6.5	Sep-00
Robeco	131,968,294	1.0	0.9	62	13.6	34	4.9	14	12.6	13	3.7	24	6.2	63	8.5	Nov-08
MSCI Emerging Markets			<u>0.6</u>	72	10.6	62	<u>1.2</u>	47	<u>10.7</u>	38	<u>2.5</u>	52	<u>5.8</u>	74	<u>8.5</u>	Nov-08
Over/Under			0.3		3.0		3.7		1.9		1.2		0.4		0.0	
eV Emg Mkts Equity Net Median			1.4		12.0		0.9		9.9		2.5		6.7		9.0	Nov-08
Neuberger Berman Emerging Markets	358,175,399	2.7	0.9	61	11.6	54	-0.6	64	10.1	46	3.1	37			4.8	Aug-13
MSCI Emerging Markets			<u>0.6</u>	72	<u>10.6</u>	62	<u>1.2</u>	47	<u>10.7</u>	38	<u>2.5</u>	52	<u>5.8</u>	74	<u>4.2</u>	Aug-13
Over/Under			0.3		1.0		-1.8		-0.6		0.6				0.6	
eV Emg Mkts Equity Net Median			1.4		12.0		0.9		9.9		2.5		6.7		4.3	Aug-13
Mondrian Emerging Markets Small Cap	117,807,373	0.9	-4.4	99	2.3	99	-7.7	85	0.3	98	-2.7	98			0.2	Aug-13
MSCI Emerging Markets Small Cap			<u>-1.0</u>	82	<u>6.7</u>	87	<u>-5.1</u>	67	<u>5.5</u>	70	<u>0.5</u>	76	<u>5.9</u>	99	<u>2.6</u>	Aug-13
Over/Under			-3.4		-4.4		-2.6		-5.2		-3.2				-2.4	
eV Emg Mkts Small Cap Equity Net Median			0.5		9.9		-3.1		7.0		2.5		9.2		3.8	Aug-13
IShares MSCI Emerging Markets	676,991,070	5.1														
State Street Bank + Trust Co	1,556,773	0.0														

I - IShares MSCI Emerging Markets was funded with \$666M in June 2019.
 State Street Bank + Trust Co was funded with \$1.5M in June 2019.
 Note: Performance shown is net of fees. Fiscal year ends June 30.



# **PERFORMANCE DETAIL - TOTAL FI AND CORE FI**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Fixed Income Composite	3,454,768,436	25.9	2.3	85	5.1	82	5.4	91	5.8	7	4.9	7	7.5	8	3.1	Jan-85
BBgBarc US Aggregate TR Over/Under			<u>3.1</u> -0.8	36	<u>6.1</u> -1.0	65	<u>7.9</u> -2.5	12	<u>2.3</u> 3.5	94	<u>2.9</u> 2.0	63	<u>3.9</u> 3.6	97	<u>6.8</u> -3.7	Jan-85
InvMetrics Public DB > \$1 Billion Fixed Income Net Median			2.9		6.5		7.1		4.1		3.0		5.4		5.2	Jan-85
Core Fixed Income Composite	844,836,681	6.3	3.2	24	6.4	34	7.9	22	2.6	75	3.1	55	5.1	55	5.3	Dec-99
BBgBarc US Aggregate TR Over/Under InvMetrics Public DB > \$1 Billion US Fixed Income Net			<u>3.1</u> 0.1	29	<u>6.1</u> 0.3	55	<u>7.9</u> 0.0	24	<u>2.3</u> 0.3	92	<u>2.9</u> 0.2	65	<u>3.9</u> 1.2	93	<u>5.0</u> 0.3	Dec-99
Median			2.9		6.1		7.0		3.1		3.2		5.1		5.1	Dec-99
Core Fixed Income	844,836,681	6.3	3.2	43	6.4	51	7.9	49	2.6	41					2.8	Apr-15
BBgBarc US Aggregate TR Over/Under			<u>3.1</u> 0.1	56	<u>6.1</u> 0.3	69	<u>7.9</u> 0.0	49	<u>2.3</u> 0.3	64	<u>2.9</u>	57	<u>3.9</u>	73	<u>2.6</u> 0.2	Apr-15
eV US Core Fixed Inc Net Median			3.1		6.4		7.9		2.5		3.0		4.3		2.7	Apr-15



# **PERFORMANCE DETAIL - EMERGING MARKET DEBT**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Non-U.S. Emerging Market Debt Composite	231,576,102	1.7	4.2	59	8.8	70	7.9	53	5.1	43	2.2	32			2.1	Sep-11
Non-U.S. EMD Custom Benchmark			<u>4.9</u>	43	<u>10.0</u>	37	<u>10.8</u>	15	<u>4.9</u>	54	<u>-0.3</u>	56			<u>0.0</u>	Sep-11
Over/Under			-0.7		-1.2		-2.9		0.2		2.5				2.1	
InvMetrics All DB Emg Mkt Fix Inc Net Median			4.4		9.1		8.1		5.0		0.4				2.0	Sep-11
EMSO	104,791,972	0.8	2.3	99	5.1	97	3.0	99	4.0	80	4.0	39			4.4	Sep-11
JP Morgan GBI - EM Global Diversified Index			<u>5.6</u>	16	<u>8.7</u>	80	<u>9.0</u>	69	<u>4.2</u>	78	<u>-0.5</u>	85	<u>3.4</u>	78	<u>0.0</u>	Sep-11
Over/Under			-3.3		-3.6		-6.0		-0.2		4.5				4.4	
eV All Emg Mkts Fixed Inc Net Median			4.2		10.0		10.1		5.2		3.1		6.8		4.2	Sep-11
Prudential	126,765,717	1.0	5.9	11	12.1	8	12.4	6	6.0	24					9.2	Feb-16
50% JPM EMBI Global Diversified/ 50% JPM GBI-EM Global Diversified			<u>4.9</u>	31	<u>10.0</u>	49	<u>10.8</u>	36	<u>4.9</u>	65	<u>2.5</u>	59	<u>5.6</u>	65	<u>7.9</u>	Feb-16
Over/Under			1.0		2.1		1.6		1.1						1.3	
eV All Emg Mkts Fixed Inc Net Median			4.2		10.0		10.1		5.2		3.1		6.8		7.9	Feb-16

1 - Non-U.S. Emerging Market Debt Composite market value includes \$18,413 in terminated manager account.

2 - InvMetrics Public DB > \$1B Emerging Mkt Fixed Income unavailable, universe includes all DB plans.

3 - Non-U.S. EMD Custom Benchmark Composition from 9/1/2011-1/31/2016: JP Morgan GBI-EM Diversified. 2/1/2016 - Current: 50% JPM EMBI Global Diversified / 50% JPM GBI-EM Global Diversified. Note: Performance shown is net of fees. Fiscal year ends June 30.



# **PERFORMANCE DETAIL - OPPORTUNISTIC FI**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Opportunistic Credit Composite	2,378,355,653	17.8	1.9		4.4		4.3		7.3		5.9		9.5		8.3	May-08
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>6.1</u>	May-08
Over/Under			-0.3		-3.5		-2.1		1.0		1.6		2.0		2.2	
ICE BofAML BB-B US High Yield Constrained TR			2.8		10.4		8.7		7.2		4.8		8.6		7.2	May-08
Beachpoint Combined	521,458,011	3.9	2.6		6.6		4.9		7.2		4.8		8.6		6.8	Mar-04
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>5.8</u>	Mar-04
Over/Under			0.4		-1.3		-1.5		0.9		0.5		1.1		1.0	
Beachpoint Total Return	521,458,011	3.9	2.6		6.6		4.9		7.2		4.8		8.6		7.1	Jun-08
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>6.1</u>	Jun-08
Over/Under			0.4		-1.3		-1.5		0.9		0.5		1.1		1.0	
Pimco Disco Combined	116,910,847	0.9	1.6		4.2		5.9		10.7		8.1		12.2		11.6	Jul-08
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>6.2</u>	Jul-08
Over/Under			-0.6		-3.7		-0.5		4.4		3.8		4.7		5.4	
Pimco Disco II	116,910,847	0.9	1.6		4.2		5.9		10.7		8.1				12.9	Oct-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>6.2</u>	Oct-11
Over/Under			-0.6		-3.7		-0.5		4.4		3.8				6.7	
GoldenTree Combined	198,111,598	1.5	1.8		4.7		5.8		7.5		5.7				8.8	Oct-09
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>6.5</u>	Oct-09
Over/Under			-0.4		-3.2		-0.6		1.2		1.4				2.3	
Goldentree II	198,111,598	1.5	1.8		4.7		5.8		7.5		5.7				8.4	Sep-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>6.0</u>	Sep-11
Over/Under			-0.4		-3.2		-0.6		1.2		1.4				2.4	
Medley Capital	67,169,163	0.5	-3.9		-3.9		-11.9		-3.6		0.0				3.0	Aug-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>5.4</u>	Aug-11
Over/Under			-6.1		-11.8		-18.3		-9.9		-4.3				-2.4	



# **PERFORMANCE DETAIL - OPPORTUNISTIC FI**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%) F	Rank	1 Yr (%) I	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Waterfall - Eden	306,102,690	2.3	2.6		3.1		5.3		9.4		6.7				9.4	Aug-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index Over/Under			<u>2.2</u> 0.4		<u>7.9</u> -4.8		<u>6.4</u> -1.1		<u>6.3</u> 3.1		<u>4.3</u> 2.4		<u>7.5</u>		<u>5.4</u> 4.0	Aug-11
Waterfall - Victoria	89,652,387	0.7	1.9		2.7		7.0		11.5		10.1				10.3	Aug-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index	00,002,001	0.7	<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>5.4</u>	Aug-11
Over/Under			-0.3		-5.2		0.6		5.2		5.8				4.9	
Gramercy Distressed Opp II	101,188,592	0.8	0.2		2.4		-4.7		-1.4		-2.1				2.0	Jul-12
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>5.5</u>	Jul-12
Over/Under			-2.0		-5.5		-11.1		-7.7		-6.4				-3.5	
ICE Canyon	46,848,041	0.4	1.2		4.7		2.3		9.0		1.5				2.7	Jun-12
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>5.6</u>	Jun-12
Over/Under			-1.0		-3.2		-4.1		2.7		-2.8				-2.9	
Lone Star VIII	22,453,388	0.2	-3.0		-3.9		-1.4		-3.2		7.0				7.8	Oct-13
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>5.0</u>	Oct-13
Over/Under			-5.2		-11.8		-7.8		-9.5		2.7				2.8	
Marathon European Credit Opportunity I	14,867,311	0.1	-0.4		6.3		26.8		15.6		11.5				10.8	Oct-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>6.2</u>	Oct-11
Over/Under			-2.6		-1.6		20.4		9.3		7.2				4.6	
Marathon European Credit Opportunity II	81,782,476	0.6	0.0		9.5		8.9		11.4		9.0				8.7	Mar-14
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.5</u>	Mar-14
Over/Under			-2.2		1.6		2.5		5.1		4.7				4.2	
Lone Star IX	47,709,879	0.4	-1.6		-4.5		-3.5		9.2						-14.7	Apr-15
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.9</u>	Apr-15
Over/Under			-3.8		-12.4		-9.9		2.9						-19.6	



# **PERFORMANCE DETAIL - OPPORTUNISTIC FI**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Kildare European Partners I LP	17,376,970	0.1	0.1		7.0		21.0		18.7		14.6				13.5	May-14
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index Over/Under			<u>2.2</u> -2.1		<u>7.9</u> -0.9		<u>6.4</u> 14.6		<u>6.3</u> 12.4		<u>4.3</u> 10.3		<u>7.5</u>		<u>4.5</u> 9.0	May-14
Black Forest	48,451,366	0.4	2.2		5.5		7.7		7.8						7.7	Aug-14
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.6</u>	Aug-14
Over/Under			0.0		-2.4		1.3		1.5						3.1	
Gramercy Distressed Opp III	96,299,600	0.7	1.3		2.6		-2.0		1.4						-1.4	Jan-16
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>7.2</u>	Jan-16
Over/Under			-0.9		-5.3		-8.4		-4.9						-8.6	
GSO Capital Opp III	65,848,117	0.5	3.8		4.7		10.3								8.7	Oct-16
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>5.4</u>	Oct-16
Over/Under			1.6		-3.2		3.9								3.3	
Cross Ocean ESS II	67,197,424	0.5	3.5		1.5		3.2								11.3	May-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.7</u>	May-17
Over/Under			1.3		-6.4		-3.2								6.6	
OWS CREDIT OPPORTUNITY FD	119,011,400	0.9	2.4		3.4		6.8								9.1	Jul-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.8</u>	Jul-17
Over/Under			0.2		-4.5		0.4								4.3	
TAIGA SPECIAL OPP DAC LP	86,105,178	0.6	2.7		4.4		6.7								11.5	Aug-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.5</u>	Aug-17
Over/Under			0.5		-3.5		0.3								7.0	



# **PERFORMANCE DETAIL - OPPORTUNISTIC FI**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Sutherland Asset Management	63,818,044	0.5	4.2		13.2		1.6								2.0	Jul-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index Over/Under			<u>2.2</u> 2.0		<u>7.9</u> 5.3		<u>6.4</u> -4.8		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.8</u> -2.8	Jul-17
OHA Strategic Credit II	17,439,555	0.1	3.9		7.6		21.6								27.5	Dec-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.8</u>	Dec-17
Over/Under			1.7		-0.3		15.2								22.7	
Lone Star X	68,027,867	0.5	0.2		1.5		6.0								-29.9	Jan-18
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.9</u>	Jan-18
Over/Under			-2.0		-6.4		-0.4								-34.8	
Kildare European Partners II LP	36,246,156	0.3	-0.2		2.6										0.4	Nov-18
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>4.9</u>	Nov-18
Over/Under			-2.4		-5.3										-4.5	
Riverstone Credit Partners II	44,841,738	0.3	3.9		11.7										-3.8	Dec-18
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>5.6</u>	Dec-18
Over/Under			1.7		3.8										-9.4	
RCP II N Strategic Credit	6,768,469	0.1	6.8		5.5										5.5	Jan-19
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>7.9</u>	Jan-19
Over/Under			4.6		-2.4										-2.4	
OLEA SPECIAL OPPS OFFSHORE I	26,513,350	0.2													6.3	Jun-19
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>2.2</u>		<u>7.9</u>		<u>6.4</u>		<u>6.3</u>		<u>4.3</u>		<u>7.5</u>		<u>1.4</u>	Jun-19
Over/Under															4.9	



# **PERFORMANCE DETAIL - GAA/RISK PARITY**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Absolute Return Composite	385,545	0.0														
GAA, Risk Parity, and Other Diversifying Assets	1,606,120,295	12.0	3.2		7.4		5.9		6.3		3.3					
3-Month LIBOR + 2%			<u>1.1</u>		<u>2.3</u>		<u>4.7</u>		<u>3.8</u>		<u>3.3</u>		<u>2.8</u>			
Over/Under			2.1		5.1		1.2		2.5		0.0					
Global Asset Allocation/Risk Parity Composite	1,269,131,250	9.5	3.0		7.8		5.4		6.1		3.2				7.1	Oct-09
GAA/Risk Parity Custom Index			<u>1.1</u>		<u>2.3</u>		<u>4.7</u>		<u>7.7</u>		<u>4.6</u>		<u>7.5</u>		<u>6.5</u>	Oct-09
Over/Under			1.9		5.5		0.7		-1.6		-1.4				0.6	
Global Asset Allocation Composite	544,162,192	4.1	1.4		1.5		2.5		5.6		1.5				2.3	Nov-12
Credit Suisse Hedge Global Macro			<u>4.5</u>		<u>11.4</u>		<u>7.0</u>		<u>5.3</u>		<u>2.8</u>		<u>5.1</u>		<u>3.2</u>	Nov-12
Over/Under			-3.1		-9.9		-4.5		0.3		-1.3				-0.9	
Bridgewater Pure Alpha	306,518,935	2.3	1.0	90	-2.6	99	2.8	59	6.7	41	2.5	65			6.3	Oct-09
Credit Suisse Hedge Global Macro			<u>4.5</u>	13	<u>11.4</u>	35	<u>7.0</u>	14	<u>5.3</u>	61	<u>2.8</u>	56	<u>5.1</u>	78	<u>4.7</u>	Oct-09
Over/Under			-3.5		-14.0		-4.2		1.4		-0.3				1.6	
eV Global TAA Net Median			2.4		9.8		3.3		5.8		3.3		6.7		5.8	Oct-09
PIMCO All Asset All Authority	237,643,257	1.8	1.9	66	5.7	84	2.3	64	4.6	64	0.5	90			1.5	Jul-13
Credit Suisse Hedge Global Macro			<u>4.5</u>	13	<u>11.4</u>	35	<u>7.0</u>	14	<u>5.3</u>	61	<u>2.8</u>	56	<u>5.1</u>	78	<u>3.0</u>	Jul-13
Over/Under			-2.6		-5.7		-4.7		-0.7		-2.3				-1.5	
eV Global TAA Net Median			2.4		9.8		3.3		5.8		3.3		6.7		4.7	Jul-13
Risk Parity	724,969,058	5.4	4.3		13.8		7.8		6.4		4.6				4.7	Nov-12
GAA/Risk Parity Custom Index			<u>1.1</u>		<u>2.3</u>		<u>4.7</u>		<u>7.7</u>		<u>4.6</u>		<u>7.5</u>		<u>6.8</u>	Nov-12
Over/Under			3.2		11.5		3.1		-1.3		0.0				-2.1	
Bridgewater All Weather	482,782,292	3.6	3.7	18	12.0	33	6.6	18	6.5	42	3.7	41			7.8	Oct-09
60% MSCI World (Gross) / 40% FTSE WGBI			<u>4.1</u>	15	<u>12.6</u>	26	<u>6.7</u>	17	<u>7.9</u>	26	<u>4.8</u>	20	<u>7.8</u>	35	<u>6.7</u>	Oct-09
Over/Under			-0.4		-0.6		-0.1		-1.4		-1.1				1.1	
eV Global TAA Net Median			2.4		9.8		3.3		5.8		3.3		6.7		5.8	Oct-09
PanAgora	242,186,766	1.8	5.4	5	17.5	6	10.3	5	6.2	44	6.6	4			8.4	Dec-13
GAA/Risk Parity Custom Index			<u>1.1</u>	90	<u>2.3</u>	98	<u>4.7</u>	36	<u>7.7</u>	29	<u>4.6</u>	26	<u>7.5</u>	36	<u>5.2</u>	Dec-13
Over/Under			4.3		15.2		5.6		-1.5		2.0				3.2	
eV Global TAA Net Median			2.4		9.8		3.3		5.8		3.3		6.7		3.8	Dec-13

1 - Absolute Return Composite includes \$385,545 in liquidating assets.

2 - GAA/Risk Parity Custom Index: 60% MSCI World Half Hedged/ 40% CITI WGBI Half Hedged Inception - 6/30/2014; 60% MSCI World/ 40% CITI WGBI from 7/1/2014 - present.

3 - InvMetrics Public DB > \$1 Billion Global Tactical Net universe does not have enough observations to rank the GAA and Risk Parity Composites.



# **PERFORMANCE DETAIL - GAA/RISK PARITY**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Other Diversifying Assets	336,989,046	2.5	4.0		5.7		12.1								11.5	Feb-18
3-Month LIBOR + 2%			<u>1.1</u>		<u>2.3</u>		<u>4.7</u>		<u>3.8</u>		<u>3.3</u>		<u>2.8</u>		<u>4.5</u>	Feb-18
Over/Under			2.9		3.4		7.4								7.0	
EIG Energy Fund XVII	35,735,424	0.3	2.3		-5.7		7.9								5.5	Apr-18
3-Month LIBOR + 2%			<u>1.1</u>		<u>2.3</u>		<u>4.7</u>		<u>3.8</u>		<u>3.3</u>		<u>2.8</u>		<u>4.6</u>	Apr-18
Over/Under			1.2		-8.0		3.2								0.9	
The 1609 Fund LTD.	135,652,802	1.0	0.5		0.5		6.3								8.3	Feb-18
3-Month LIBOR + 2%			<u>1.1</u>		<u>2.3</u>		<u>4.7</u>		<u>3.8</u>		<u>3.3</u>		<u>2.8</u>		<u>4.5</u>	Feb-18
Over/Under			-0.6		-1.8		1.6								3.8	
OLEA SPECIAL OPPS OFFSHORE I	123,021,580	0.9	9.1		20.5										17.0	Oct-18
3-Month LIBOR + 2%			<u>1.1</u>		<u>2.3</u>		<u>4.7</u>		<u>3.8</u>		<u>3.3</u>		<u>2.8</u>		<u>3.5</u>	Oct-18
Over/Under			8.0		18.2										13.5	
Orchard Liquid Credit Fund	42,579,240	0.3	4.0		5.7										6.4	Oct-18
3-Month LIBOR + 2%			<u>1.1</u>		<u>2.3</u>		<u>4.7</u>		<u>3.8</u>		<u>3.3</u>		<u>2.8</u>		<u>3.5</u>	Oct-18
Over/Under			2.9		3.4										2.9	



# **OTHER DIVERSIFYING ASSETS PERFORMANCE**

Vintage Year	Investment	Commitment	Paid In Capital	Current MV	Time Weighted Returns Since Inception	Inception Date
2017	EIG Energy Fund XVII	100,000,000	35,548,376	35,735,424	5.5	Apr-18
2017	1609 Fund	125,000,000	125,000,000	135,652,802	8.3	Feb-18
2018	Olea Special Opportunities Offshore Fund	135,000,000	110,000,000	123,021,580	17.0	Oct-18
2018	Orchard Liquid Credit Fund	40,000,000	40,000,000	42,579,240	6.4	Nov-18
2019	OrbiMed Royalty & Credit Opps. III	100,000,000	-	-	-	-
Total	Other Diversifying Assets	500,000,000	310,548,376	336,989,046	11.5	Feb-18

\*Market Values and Performance data are through 6/30/2019

#### Correlation of Monthly Returns Since Inception

	Total Fund	U.S. Equity	Non U.S. Developed Markets	Non U.S. Emerging Markets	Core Fixed Income	Non U.S. Emerging Markets Debt	Opportunistic Credit	Real Estate	Private Equity	Real Assets	Other Diversifying Assets	EIG Energy Fund	1609 Fund	OLEA	Orchard
Other Diversifying Assets	-0.14	-0.03	-0.03	-0.35	-0.17	-0.21	0.26	-0.37	-0.06	-0.23	1.00				
EIG Energy Fund	-0.53	-0.52	-0.50	-0.43	-0.18	-0.35	-0.54	-0.73	0.36	-0.05	0.47	1.00			
1609 Fund	-0.12	-0.01	0.00	-0.30	-0.33	-0.11	0.21	-0.13	-0.05	-0.25	0.44	0.07	1.00		
OLEA	0.16	0.28	0.23	-0.10	-0.15	-0.24	0.60	0.02	-0.37	-0.16	0.75	-0.12	-0.17	1.00	
Orchard	-0.10	-0.10	-0.01	-0.26	0.28	0.45	0.24	-0.04	-0.16	-0.12	0.24	-0.24	0.54	0.08	1.00



## **PERFORMANCE DETAIL - REAL ESTATE**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Real Estate Composite	910,276,832	6.8	2.8	4	9.7	1	12.1	1	9.9	4	10.9	1	16.1	1	10.3	Dec-03
NCREIF Property Index			<u>1.5</u>	39	<u>3.3</u>	36	<u>6.5</u>	53	<u>6.9</u>	51	<u>8.8</u>	68	<u>9.2</u>	49	<u>8.9</u>	Dec-03
Over/Under			1.3		6.4		5.6		3.0		2.1		6.9		1.4	
Wilshire REIT			1.6	34	17.9	1	10.5	3	4.1	97	7.8	84	15.7	2	9.2	Dec-03
InvMetrics Public DB > \$1 Billion Real Estate Net Median			1.2		2.8		6.6		6.9		9.1		9.2		7.5	Dec-03
Public Real Estate Composite	289,945,711	2.2	2.0	16	19.2	1	10.8	3	4.0	97	6.4	89	15.3	2	9.0	Dec-03
Wilshire REIT			<u>1.6</u>	34	<u>17.9</u>	1	<u>10.5</u>	3	<u>4.1</u>	97	<u>7.8</u>	84	<u>15.7</u>	2	<u>9.2</u>	Dec-03
Over/Under			0.4		1.3		0.3		-0.1		-1.4		-0.4		-0.2	
InvMetrics Public DB > \$1 Billion Real Estate Net Median			1.2		2.8		6.6		6.9		9.1		9.2		7.5	Dec-03
Brookfield	289,945,711	2.2	2.0	51	19.2	41	10.8	62	4.2	64	5.7	94			9.2	Jul-11
MSCI US REIT			<u>1.0</u>	87	<u>17.1</u>	76	<u>9.7</u>	80	<u>2.8</u>	88	<u>6.4</u>	87	<u>14.1</u>	87	<u>8.0</u>	Jul-11
Over/Under			1.0		2.1		1.1		1.4		-0.7				1.2	
eV US REIT Net Median			2.1		18.6		11.4		4.5		7.9		15.7		9.5	Jul-11
Private Real Estate Composite	620,331,121	4.7	3.1	1	5.6	2	12.7	1	13.6	1	14.3	1	12.9	6	8.8	Jan-08
NCREIF Property Index			<u>1.5</u>	25	<u>3.3</u>	16	<u>6.5</u>	54	<u>6.9</u>	60	<u>8.8</u>	69	<u>9.2</u>	39	<u>6.2</u>	Jan-08
Over/Under			1.6		2.3		6.2		6.7		5.5		3.7		2.6	
InvMetrics Public DB Real Estate Priv Net Median			1.3		2.9		6.6		7.7		9.6		8.7		4.6	Jan-08
U.S. Private Real Estate	620,331,121	4.7	3.1		5.6		12.7		13.6		14.4		13.4		9.4	Jan-08
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>		<u>6.2</u>	Jan-08
Over/Under			1.6		2.3		6.2		6.7		5.6		4.2		3.2	

1 - InvMetrics Public DB > \$1B Real Estate Private is unavailable, universe includes all public funds. Note: Performance is shown net of fees. Fiscal year ends June 30.



# **PERFORMANCE DETAIL - PE & RA**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Private Equity Composite	2,009,777,274	15.1	3.5	39	2.6	65	11.5	48	13.2	46	13.1	34	14.7	14	7.2	Jun-06
Cambridge Associates US All PE (1 Qtr Lag) Over/Under			<u>4.8</u> -1.3	20	<u>3.0</u> -0.4	60	<u>12.7</u> -1.2	44	<u>15.4</u> -2.2	27	<u>11.9</u> 1.2	43	<u>14.7</u> 0.0	18	<u>12.3</u> -5.1	Jun-06
InvMetrics Public DB > \$1 Billion Private Equity Net Median			3.1		3.7		10.9		12.5		10.7		11.2		9.5	Jun-06
Real Assets Composite	1,045,007,264	7.8	6.8	1	6.2	34	13.6	5	10.8	19	8.8	5	6.4	58	3.4	Jul-08
CPI + 4% (Seasonally Adjusted)			<u>1.4</u>	55	<u>3.0</u>	72	<u>5.7</u>	29	<u>6.1</u>	35	<u>5.5</u>	32	<u>5.8</u>	61	<u>5.5</u>	Jul-08
Over/Under			5.4		3.2		7.9		4.7		3.3		0.6		-2.1	
InvMetrics Public DB > \$1 Billion Real Assets/Commodities Net Median			1.7		4.4		4.4		4.8		2.0		6.4		2.6	Jul-08
Infrastructure Composite	406,645,789	3.1	6.0		6.2		9.7		8.0		8.5		6.1		3.5	Jul-08
Infrastructure	383,463,243	2.9	5.9		7.2		10.5		8.2		7.5		5.7		3.2	Jul-08
CPI + 4% (Seasonally Adjusted)			<u>1.4</u>		<u>3.0</u>		<u>5.7</u>		<u>6.1</u>		<u>5.5</u>		<u>5.8</u>		<u>5.5</u>	Jul-08
Over/Under			4.5		4.2		4.8		2.1		2.0		-0.1		-2.3	
International Infrastructure	23,182,545	0.2	7.1		-4.8		2.4		5.1		22.0				-1.3	Jan-13
CPI + 4% (Seasonally Adjusted)			<u>1.4</u>		<u>3.0</u>		<u>5.7</u>		<u>6.1</u>		<u>5.5</u>		<u>5.8</u>		<u>5.6</u>	Jan-13
Over/Under			5.7		-7.8		-3.3		-1.0		16.5				-6.9	
Natural Resources	638,361,476	4.8	7.3		6.2		16.1		12.8		8.4		5.6		5.1	Mar-09
Harvest Fund	52,088,703	0.4	-0.3		20.6		1.2								1.1	Aug-16
Alerian MLP Index			<u>0.1</u>		<u>17.0</u>		<u>3.1</u>		<u>-0.4</u>		<u>-7.2</u>		<u>8.2</u>		<u>-0.6</u>	Aug-16
Over/Under			-0.4		3.6		-1.9								1.7	
Energy	263,977,653	2.0	13.5		6.5		35.0		32.2		8.6				6.3	Jan-14
CPI + 4% (Seasonally Adjusted)			<u>1.4</u>		<u>3.0</u>		<u>5.7</u>		<u>6.1</u>		<u>5.5</u>		<u>5.8</u>		<u>5.6</u>	Jan-14
Over/Under			12.1		3.5		29.3		26.1		3.1				0.7	
Agriculture Composite	121,769,213	0.9	3.2		3.0		5.4		2.7		3.8				4.2	Aug-12
NCREIF Farmland Over/Under			<u>0.7</u> 2.5		<u>1.4</u> 1.6		<u>5.7</u> -0.3		<u>6.3</u> -3.6		<u>8.0</u> -4.2		<u>11.1</u>		<u>11.1</u> -6.9	Aug-12
Timber Composite	97,079,736	0.7	2.0		3.2		5.6		5.1		5.7		4.6		4.1	Mar-09
NCREIF Timberland Index			<u>1.0</u>		<u>1.2</u>		<u>2.9</u>		<u>3.3</u>		<u>4.6</u>		<u>4.0</u>		<u>3.8</u>	Mar-09
Over/Under			1.0		2.0		2.7		1.8		1.1		0.6		0.3	

Energy composite includes Five Point Cap, Lime Rock, Enervest, BP Natural Gas, and Bluescape Energy.
 Agriculture Composite contains Halderman Farm Mgmt Services, Hancock Agriculture, and Blue Road Capital L.P.

3 - Timber Composite contains Brookfield Brazil Timber, Conservation Forestry II, Conservation Forestry IV, and ETO II Operating Partnership.



# **PERFORMANCE DETAIL - CASH**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Mitigation Banking	56,452,616	0.4	11.9		11.1		14.9		11.1		10.8				2.5	Mar-11
CPI + 4% (Seasonally Adjusted)			<u>1.4</u>		<u>3.0</u>		<u>5.7</u>		6.1		<u>5.5</u>		<u>5.8</u>		<u>5.8</u>	Mar-11
Over/Under			10.5		8.1		9.2		5.0		5.3				-3.3	
Water Property Investor, L.P.	46,993,554	0.4	-0.9		-0.8		-1.0		0.3						2.7	Jan-15
CPI + 4% (Seasonally Adjusted)			<u>1.4</u>		<u>3.0</u>		<u>5.7</u>		<u>6.1</u>		<u>5.5</u>		<u>5.8</u>		<u>5.8</u>	Jan-15
Over/Under			-2.3		-3.8		-6.7		-5.8						-3.1	
Cash	127,982,536	1.0														
Cash	125,120,590	0.9	0.7		1.3		2.4		1.9		1.3		1.0		1.2	Dec-99
91 Day T-Bills			<u>0.6</u>		<u>1.2</u>		<u>2.3</u>		<u>1.4</u>		<u>0.9</u>		<u>0.5</u>		<u>1.6</u>	Dec-99
Over/Under			0.1		0.1		0.1		0.5		0.4		0.5		-0.4	
NM ERB Cash	2,757,478	0.0	0.0		-0.1		0.3		0.1		0.1		0.5		0.9	Jun-00
91 Day T-Bills			<u>0.6</u>		<u>1.2</u>		<u>2.3</u>		<u>1.4</u>		<u>0.9</u>		<u>0.5</u>		<u>1.5</u>	Jun-00
Over/Under			-0.6		-1.3		-2.0		-1.3		-0.8		0.0		-0.6	
Local Government Investment Pool (LGIP) at STO	104,469	0.0	0.6		1.2		2.2		1.2						0.9	Jul-15
91 Day T-Bills			<u>0.6</u>		<u>1.2</u>		<u>2.3</u>		<u>1.4</u>		<u>0.9</u>		<u>0.5</u>		<u>1.1</u>	Jul-15
Over/Under			0.0		0.0		-0.1		-0.2						-0.2	



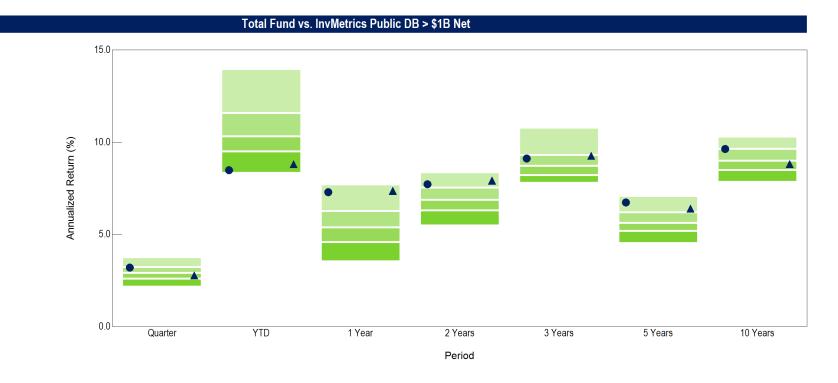
# **PRIVATE MARKETS PERFORMANCE SUMMARY**

		Private Equ	ity Dollar-We	ighted vs. Ti	me-Weighted	Performance	
	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Time-Weighted							
Total Net Return	-0.9	11.9	12.6	13.3	13.9	7.3	Jun-06
Dollar-Weighted							
Total Net IRR	-0.6	10.9	13.1	13.5	14.6	12.8	
		Real Estat	e Dollar-Weig	ghted vs. Tin	ne-Weighted F	Performance	
	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Time-Weighted							
Total Net Return	2.4	15.6	13.6	13.7	12.7	8.7	Jan-08
Dollar-Weighted							
Total Net IRR						11.3	
		Infrastructu	ure Dollar-We	ighted vs. Ti	me-Weighted	Performance	
	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Time-Weighted							
Total Net Return	0.2	5.0	8.8	8.0	5.4	2.9	Jul-08
Dollar-Weighted							
Total Net IRR						7.0	
	N	atural Reso	urces Dollar-	Weighted vs.	Time-Weight	ed Performance	
	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Time-Weighted							
Total Net Return	-1.0	17.4	10.7	7.0	4.6	4.5	Mar-09
Dollar-Weighted							
Total Net IRR						9.6	



\*Time weighted performance as of 3/31/2019; dollar weighted performance is as of 12/31/2018 except for Infrastructure which is reported as of 3/31/2019

## New Mexico Educational Retirement Board TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

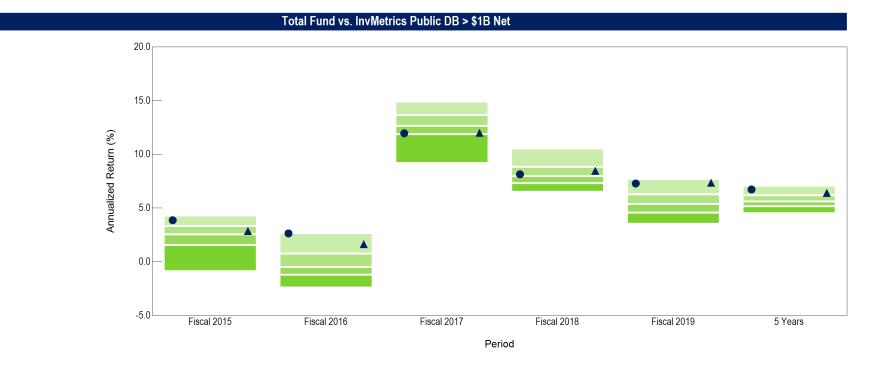


		Return (Rank)													
5th	Percentile	3.8		14.0		7.7		8.4		10.8		7.1		10.3	
25t	h Percentile	3.2		11.6		6.3		7.5		9.3		6.2		9.6	
Me	dian	2.9		10.3		5.4		6.9		8.7		5.6		9.0	
75t	h Percentile	2.6		9.5		4.6		6.3		8.2		5.2		8.5	
95t	h Percentile	2.2		8.3		3.5		5.5		7.8		4.5		7.9	
# o	f Portfolios	78		78		77		77		77		73		65	
• 1	otal Fund	3.2	(29)	8.5	(95)	7.3	(8)	7.7	(19)	9.1	(33)	6.7	(10)	9.6	(27)
≜ F	Policy Index	2.8	(66)	8.8	(90)	7.4	(7)	7.9	(16)	9.3	(27)	6.4	(18)	8.8	(62)

Note: Ranks are based on net returns.



## New Mexico Educational Retirement Board TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE



	Return (Rank)								
5th Percentile	4.3	2.	7	14.9		10.5	7.7	7.1	
25th Percentile	3.3	0.	3	13.7		8.8	6.3	6.2	
Median	2.6	-0.	5	12.7		8.0	5.4	5.6	
75th Percentile	1.6	-1.	2	11.9		7.3	4.6	5.2	
95th Percentile	-0.9	-2.	1	9.2		6.5	3.5	4.5	
# of Portfolios	53	5	ō	65		51	77	73	
Total Fund	3.9	(16) 2.	6 (6)	12.0	(71)	8.1 (46)	7.3 (8)	6.7 (10)	
Policy Index	2.9	(47) 1.	7 (9)	12.0	(68)	8.5 (33)	7.4 (7)	6.4 (18)	

Note: Ranks are based on net returns.



# New Mexico Educational Retirement Board TOTAL FUND ATTRIBUTION ANALYSIS

	3 Mc	Attribution sonths Ending		)19		
	Wtd. Actual Return		Excess Return	Selection Effect	Allocation Effect	Total Effects
U.S. Large Cap Equity Composite	4.3%	4.3%	0.0%	0.0%	-0.1%	-0.1%
U.S. Small/Mid Cap Equity Composite	3.1%	3.0%	0.1%	0.0%	0.0%	0.0%
Non-U.S. Developed Mkts Equity Composite	3.8%	3.7%	0.1%	0.0%	0.0%	0.0%
Non-U.S. Emerging Mkts Equity Composite	0.8%	0.6%	0.2%	0.0%	0.0%	0.0%
Core Fixed Income Composite	3.2%	3.1%	0.1%	0.0%	0.0%	0.0%
Non-U.S. Emerging Market Debt Composite	4.2%	4.9%	-0.6%	0.0%	0.0%	0.0%
Opportunistic Credit Composite	1.9%	2.2%	-0.4%	-0.1%	0.0%	-0.1%
Absolute Return Composite	-3.0%	1.1%	-4.1%	0.0%	0.0%	0.0%
Global Asset Allocation/Risk Parity Composite	3.0%	1.1%	1.9%	0.2%	0.0%	0.1%
Other Diversifying Assets	4.0%	1.1%	2.9%	0.1%	0.0%	0.1%
Public Real Estate Composite	2.0%	1.6%	0.4%	0.0%	0.0%	0.0%
Private Real Estate Composite	3.1%	1.5%	1.6%	0.1%	0.0%	0.1%
Private Equity Composite	3.5%	4.8%	-1.3%	-0.2%	0.0%	-0.2%
Real Assets Composite Cash	6.8% 0.5%	1.4% 0.6%	5.3% -0.1%	0.4% 0.0%	0.0% 0.0%	0.4% 0.0%
Total	3.2%	2.8%	0.4%	0.5%	-0.1%	0.4%

		Attribution	_			
	Y Wtd. Actual Return	TD Ending Ju Wtd. Index Return	ne 30, 2019 Excess Return	Selection Effect	Allocation Effect	Total Effects
U.S. Large Cap Equity Composite	18.6%	18.5%	0.0%	0.0%	-0.2%	-0.2%
U.S. Small/Mid Cap Equity Composite	17.9%	19.2%	-1.3%	0.0%	-0.1%	-0.1%
Non-U.S. Developed Mkts Equity Composite	14.5%	14.0%	0.5%	0.0%	0.0%	0.0%
Non-U.S. Emerging Mkts Equity Composite	10.5%	10.6%	-0.1%	0.0%	0.0%	0.0%
Core Fixed Income Composite	6.4%	6.1%	0.3%	0.0%	0.0%	0.0%
Non-U.S. Emerging Market Debt Composite	8.8%	10.0%	-1.2%	0.0%	0.0%	0.0%
Opportunistic Credit Composite	4.4%	7.9%	-3.5%	-0.6%	0.0%	-0.6%
Absolute Return Composite	-3.4%	2.2%	-5.6%	0.0%	0.0%	0.0%
Global Asset Allocation/Risk Parity Composite	7.8%	2.3%	5.5%	0.5%	-0.2%	0.4%
Other Diversifying Assets	5.7%	2.3%	3.4%	0.1%	0.2%	0.3%
Public Real Estate Composite	19.2%	17.9%	1.3%	0.0%	-0.1%	-0.1%
Private Real Estate Composite	5.6%	3.3%	2.2%	0.1%	0.0%	0.1%
Private Equity Composite	2.6%	3.0%	-0.4%	-0.1%	-0.1%	-0.2%
Real Assets Composite	6.2%	3.0%	3.2%	0.3%	0.0%	0.3%
Cash	1.0%	1.2%	-0.2%	0.0%	0.0%	0.0%
Total	8.5%	8.8%	-0.3%	0.3%	-0.6%	-0.3%



# New Mexico Educational Retirement Board TOTAL FUND ATTRIBUTION ANALYSIS

	1 Y	Attribution ear Ending		9		
	Wtd. Actual Return		Excess Return	Selection Effect	Allocation Effect	Total Effects
U.S. Large Cap Equity Composite	10.4%	10.4%	0.0%	0.0%	-0.1%	-0.1%
U.S. Small/Mid Cap Equity Composite	1.6%	1.8%	-0.1%	0.0%	-0.1%	-0.1%
Non-U.S. Developed Mkts Equity Composite	1.2%	1.1%	0.2%	0.0%	0.0%	0.0%
Non-U.S. Emerging Mkts Equity Composite	0.8%	1.2%	-0.5%	-0.1%	0.0%	-0.1%
Core Fixed Income Composite	7.9%	7.9%	0.0%	0.0%	0.0%	0.0%
Non-U.S. Emerging Market Debt Composite	7.9%	10.8%	-2.9%	0.0%	0.0%	-0.1%
Opportunistic Credit Composite	4.3%	6.4%	-2.1%	-0.4%	0.0%	-0.4%
Absolute Return Composite	-3.7%	4.3%	-8.0%	0.0%	0.0%	0.0%
Global Asset Allocation/Risk Parity Composite	5.4%	4.7%	0.8%	0.1%	-0.1%	0.0%
Other Diversifying Assets	12.1%	4.7%	7.5%	0.1%	0.1%	0.2%
Public Real Estate Composite	10.8%	10.5%	0.2%	0.0%	-0.1%	0.0%
Private Real Estate Composite	12.7%	6.5%	6.2%	0.3%	0.0%	0.3%
Private Equity Composite	11.5%	12.7%	-1.2%	-0.2%	0.0%	-0.2%
Real Assets Composite	13.6%	5.7%	7.8%	0.6%	0.0%	0.6%
Cash	2.1%	2.3%	-0.2%	0.0%	0.0%	0.0%
Total	7.3%	7.4%	-0.1%	0.3%	-0.4%	-0.1%

		Attribution				
		ears Ending Wtd. Index Return	June 30, 201 Excess Return	Selection Effect	Allocation Effect	Total Effects
U.S. Large Cap Equity Composite	14.0%	14.2%	-0.2%	0.0%	-0.1%	-0.1%
U.S. Small/Mid Cap Equity Composite	12.6%	12.3%	0.2%	0.0%	0.0%	0.0%
Non-U.S. Developed Mkts Equity Composite	8.5%	9.1%	-0.6%	0.0%	0.0%	0.0%
Non-U.S. Emerging Mkts Equity Composite	7.9%	10.7%	-2.8%	-0.3%	0.0%	-0.3%
Core Fixed Income Composite	2.6%	2.3%	0.3%	0.0%	-0.2%	-0.1%
Non-U.S. Emerging Market Debt Composite	5.1%	4.9%	0.2%	0.0%	0.0%	0.0%
Opportunistic Credit Composite	7.3%	6.3%	1.0%	0.2%	0.0%	0.2%
Absolute Return Composite	0.3%	3.4%	-3.1%	0.0%	0.0%	0.0%
Global Asset Allocation/Risk Parity Composite	6.1%	6.5%	-0.4%	0.0%	0.0%	-0.1%
Other Diversifying Assets				0.0%	0.1%	0.1%
Public Real Estate Composite	4.0%	4.1%	-0.1%	0.0%	0.0%	0.0%
Private Real Estate Composite	13.6%	6.9%	6.7%	0.3%	0.0%	0.3%
Private Equity Composite	13.2%	15.4%	-2.2%	-0.3%	0.0%	-0.3%
Real Assets Composite	10.8%	6.1%	4.6%	0.3%	0.1%	0.4%
Cash	1.6%	1.4%	0.2%	0.0%	-0.1%	-0.1%
Total	9.1%	9.3%	-0.2%	0.2%	-0.3%	-0.2%



# **TOTAL FUND ATTRIBUTION ANALYSIS**

	5 V	Attribution ears Ending		10		
	Wtd. Actual Return		Excess Return	Selection Effect	Allocation Effect	Total Effects
U.S. Large Cap Equity Composite	10.6%	10.7%	-0.1%	0.0%	0.0%	0.0%
U.S. Small/Mid Cap Equity Composite	7.4%	7.7%	-0.2%	0.0%	0.0%	0.0%
Non-U.S. Developed Mkts Equity Composite	2.0%	2.2%	-0.2%	0.0%	0.0%	0.0%
Non-U.S. Emerging Mkts Equity Composite	1.7%	2.5%	-0.8%	-0.1%	0.0%	-0.1%
Core Fixed Income Composite	3.1%	2.9%	0.1%	0.0%	-0.1%	-0.1%
Non-U.S. Emerging Market Debt Composite	2.2%	-0.3%	2.5%	0.0%	0.0%	0.1%
Opportunistic Credit Composite	5.9%	4.3%	1.5%	0.3%	0.0%	0.3%
Absolute Return Composite	0.7%	2.9%	-2.1%	0.0%	0.0%	0.0%
Global Asset Allocation/Risk Parity Composite	3.2%	3.7%	-0.5%	-0.1%	0.0%	-0.1%
Other Diversifying Assets	-			0.0%	0.0%	0.1%
Public Real Estate Composite	6.4%	7.8%	-1.4%	0.0%	-0.1%	-0.1%
Private Real Estate Composite	14.3%	8.8%	5.5%	0.2%	0.0%	0.2%
Private Equity Composite	13.1%	11.9%	1.2%	0.0%	0.0%	0.0%
Real Assets Composite Cash	8.8% 1.1%	5.5% 0.9%	3.2% 0.2%	0.2% 0.0%	0.0% 0.0%	0.2% 0.0%
Total	6.7%	6.4%	0.3%	0.6%	-0.3%	0.3%



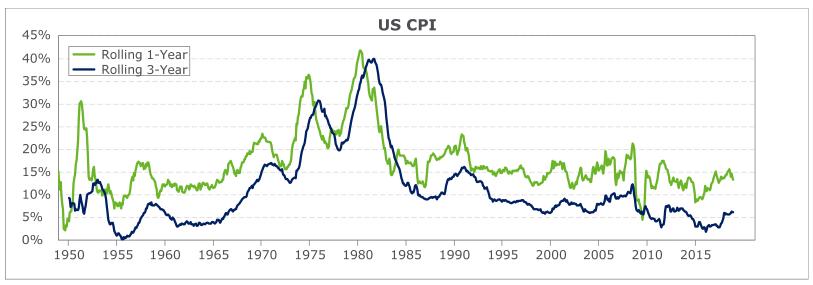




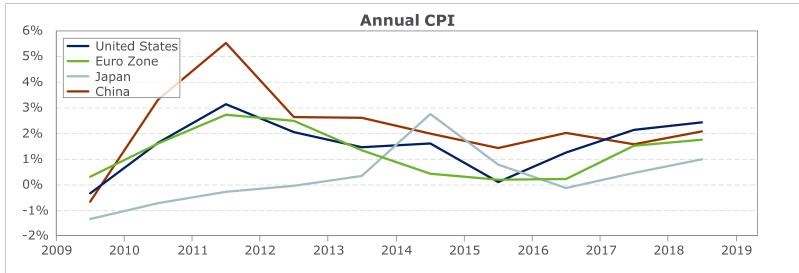




# INFLATION

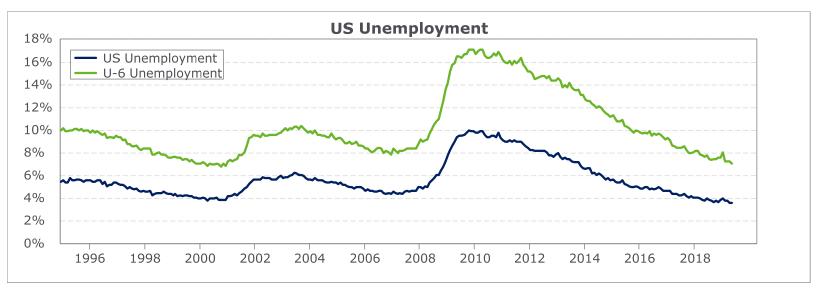


Source: FactSet

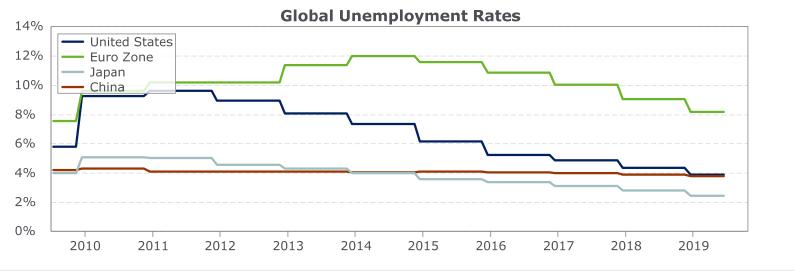




# UNEMPLOYMENT



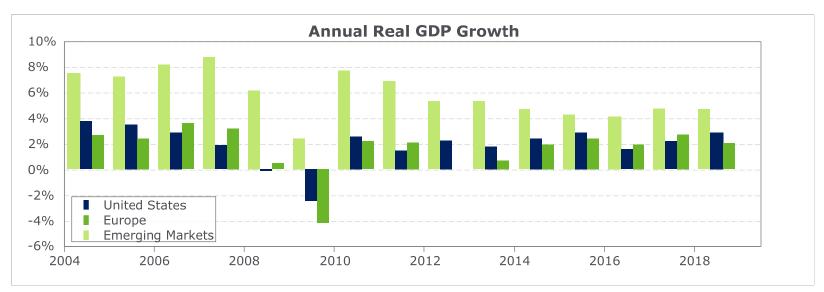
Source: FactSet



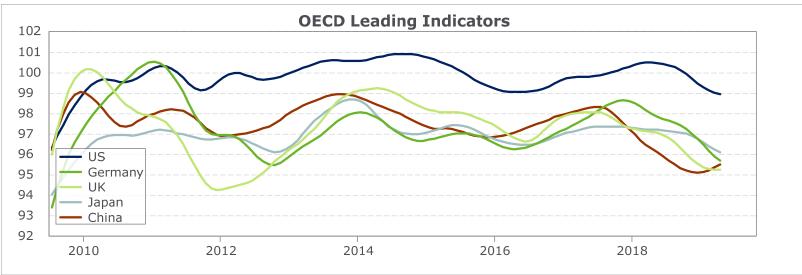




# **ECONOMIC INDICATORS**



Source: FactSet





# **GROSS DOMESTIC PRODUCT**

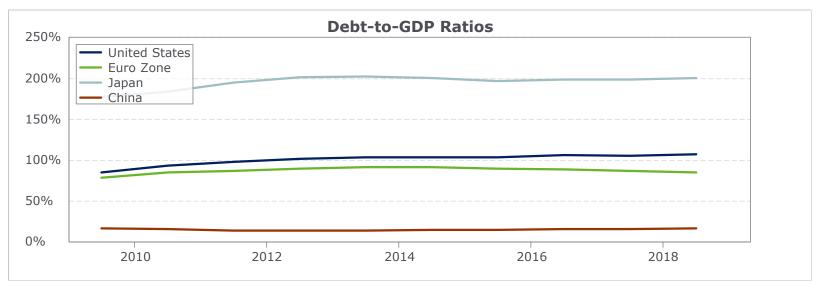


Source: FactSet

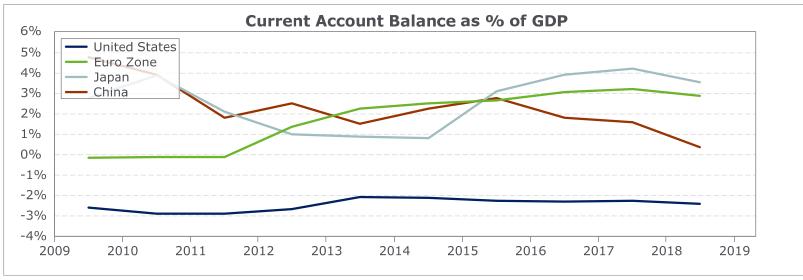


NE

# **GROSS DOMESTIC PRODUCT METRICS**

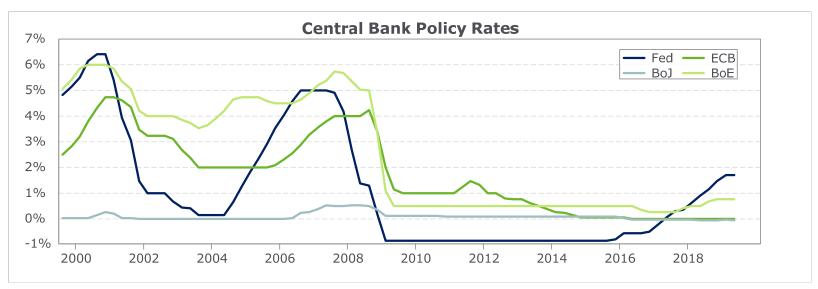


Source: FactSet

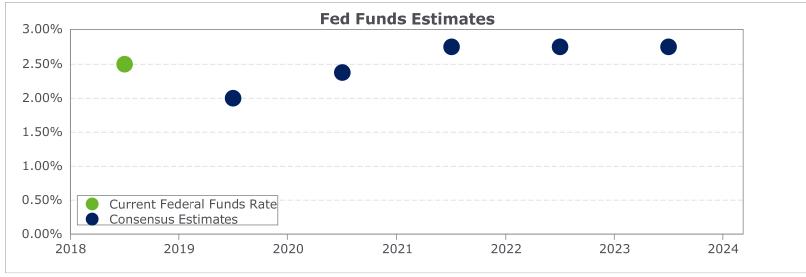




# **CENTRAL BANK RATES**

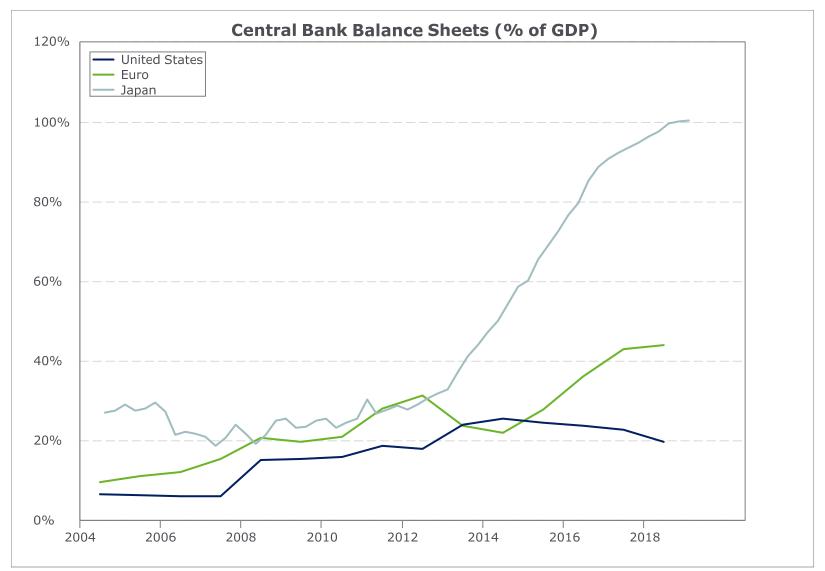


Source: FactSet





# **CENTRAL BANK BALANCE SHEETS**





# **CURRENCIES**

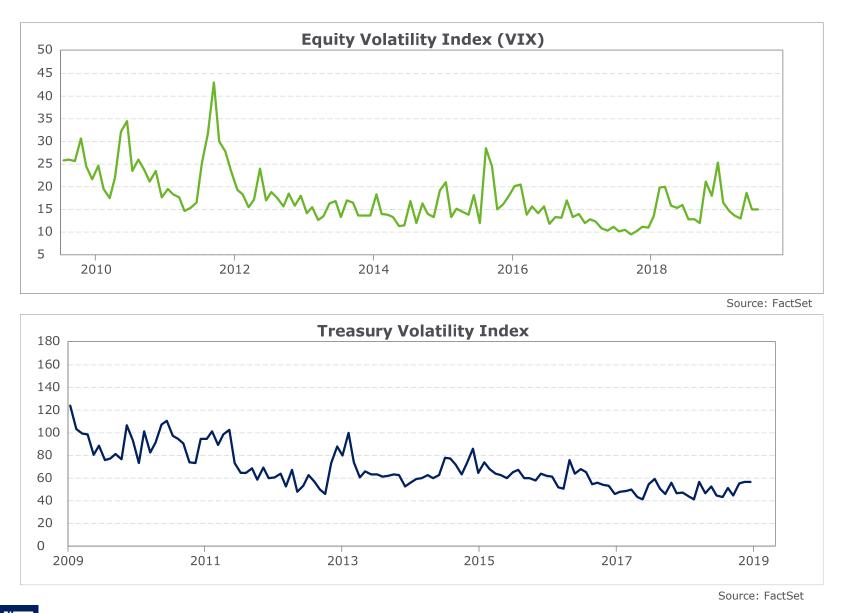
		%	Change Relative to US	SD
Currencies	Spot	1 Month	YTD	1 Year
Euro	1.14	1.92%	-0.38%	-1.64%
British Pound	1.27	0.41%	-0.07%	-2.80%
Japanese Yen	107.74	-1.63%	-1.80%	-2.39%
Swiss Franc	0.98	-3.35%	-1.10%	-2.30%
Australian Dollar	1.43	-1.25%	0.32%	4.69%
Chinese Yuan	6.87	-0.65%	0.04%	3.65%
Brazilian Real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

Source: FactSet





# VOLATILITY

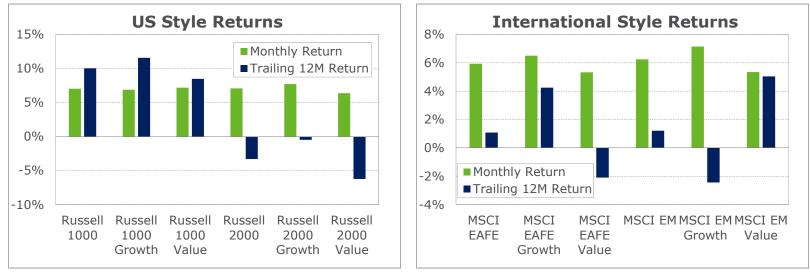






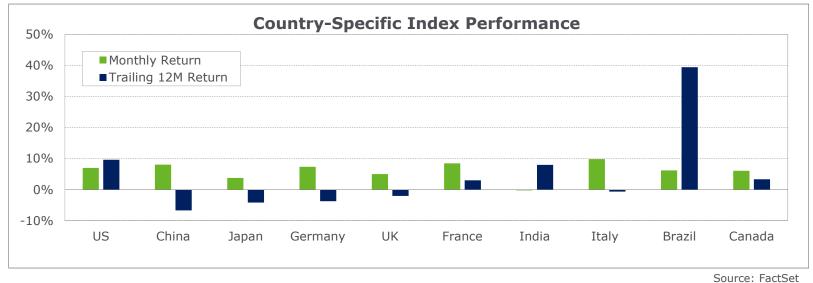


# **EQUITY INDEX PERFORMANCE**



Source: FactSet







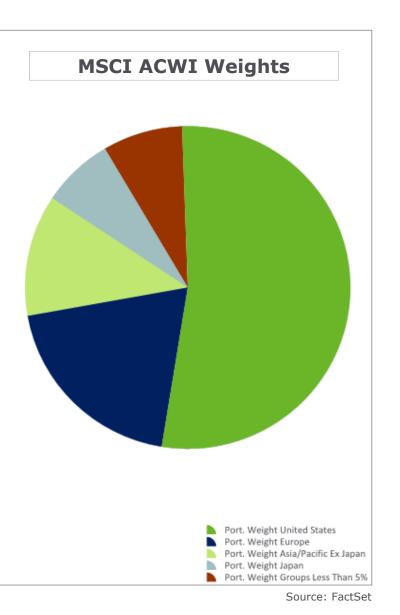
June 30, 2019

# **INDEX COMPOSITION**

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

Source: FactSet

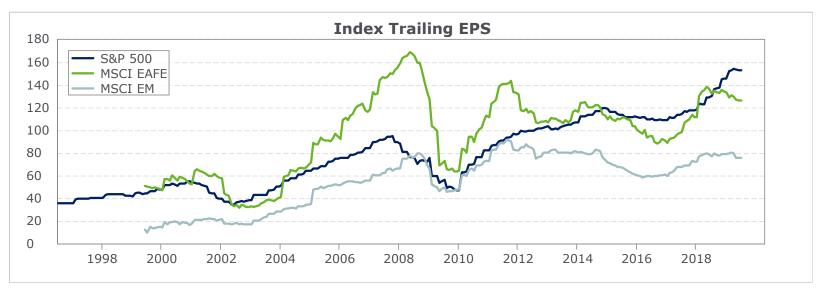
Return Contribution	MTD	QTD	YTD	Index Weight
MSCI ACWI	6.5%	3.6%	16.2%	100.0%
Communication Services	0.4%	0.3%	1.3%	8.7%
Consumer Discretionary	0.9%	0.5%	1.9%	10.8%
Consumer Staples	0.4%	0.2%	1.2%	8.3%
Energy	0.4%	-0.1%	0.9%	5.9%
Financials	1.0%	1.0%	2.5%	16.9%
Health Care	0.8%	0.2%	1.2%	11.4%
Industrials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



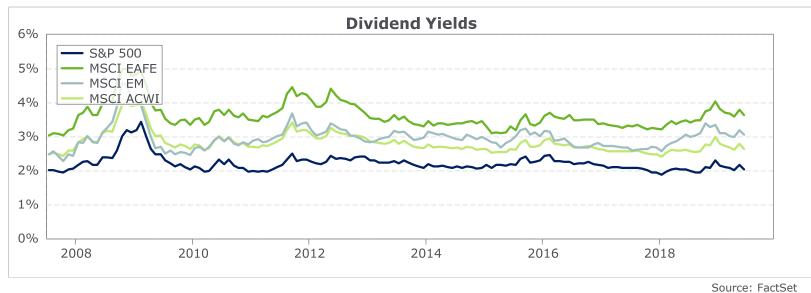


June 30, 2019

**EARNINGS & YIELDS** 

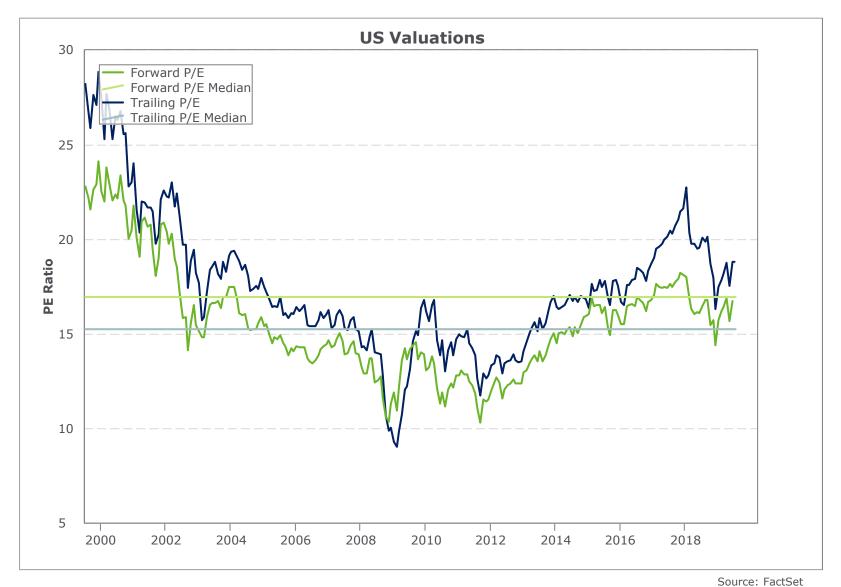


Source: FactSet



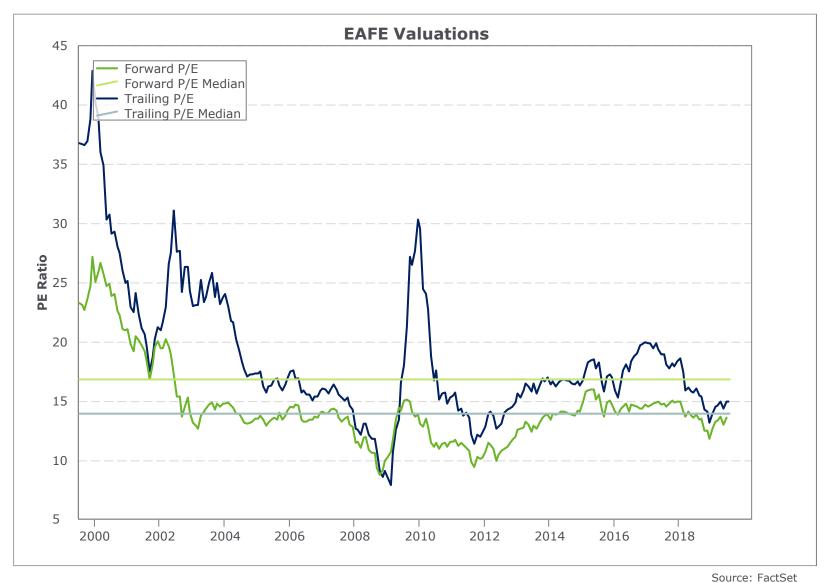


# **US EQUITY VALUATIONS**



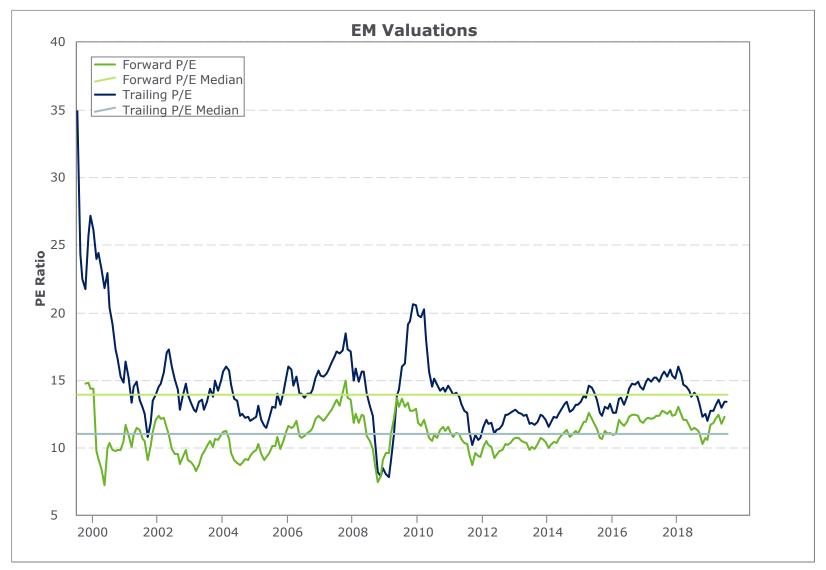


# EAFE EQUITY VALUATIONS





# **EM EQUITY VALUATIONS**







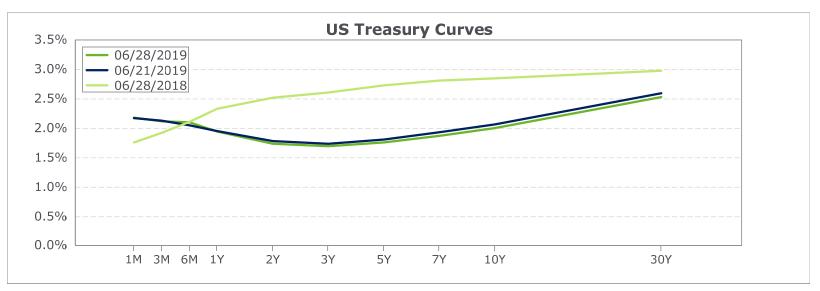


# FIXED INCOME CHARACTERISTICS

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



#### TREASURIES

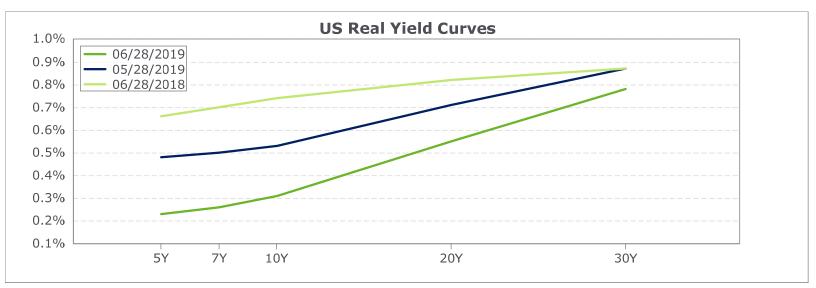


Source: FactSet

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



### **REAL YIELDS**

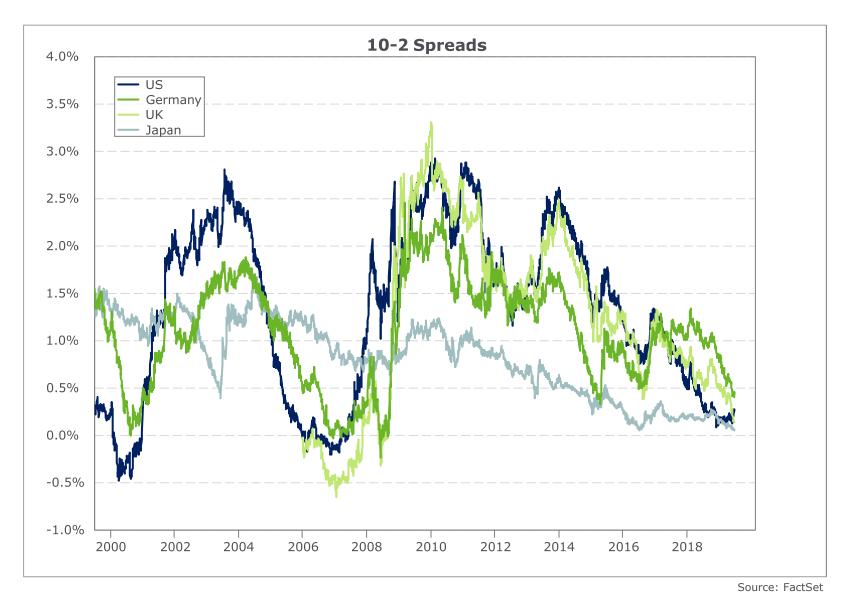


Source: FactSet

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

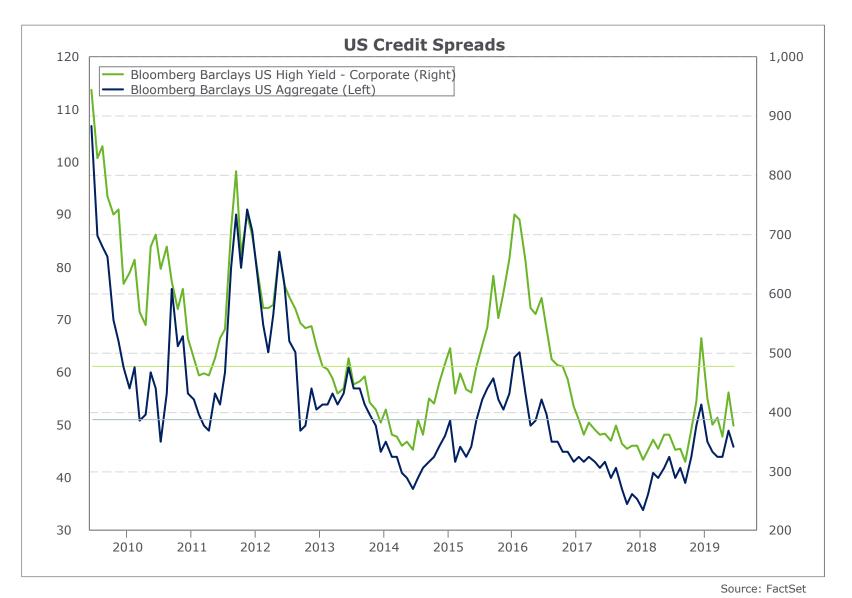


### **NOMINAL YIELDS**



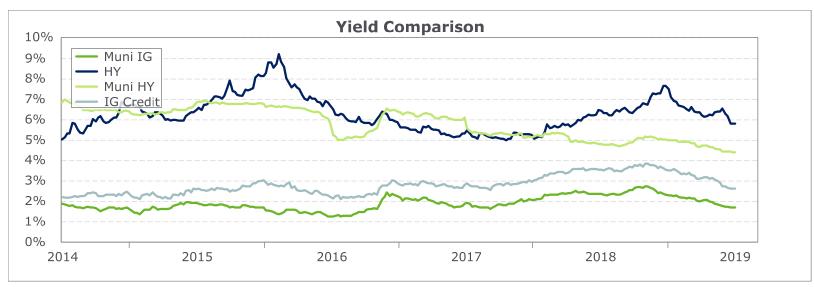


# **CREDIT SPREADS**

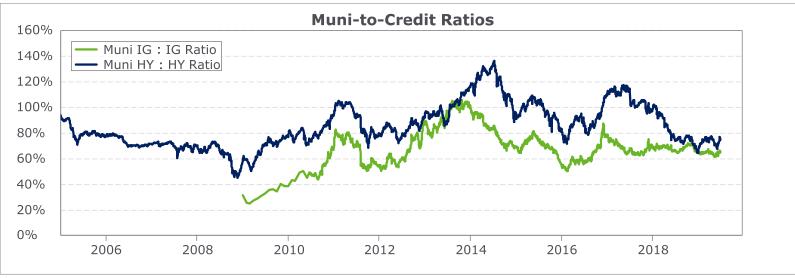




#### **MUNICIPAL BOND RATIOS**



Source: FactSet



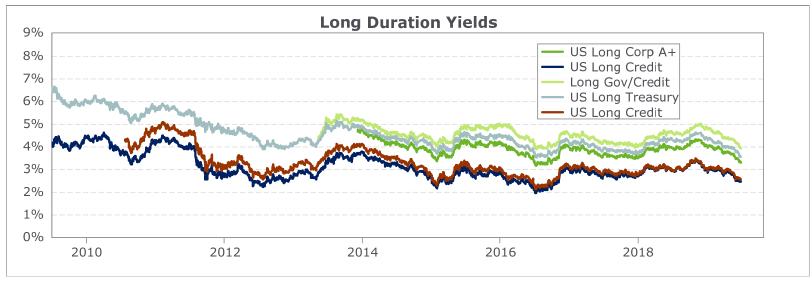




# LONG DURATION

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

Source: FactSet





# **REAL ASSETS**



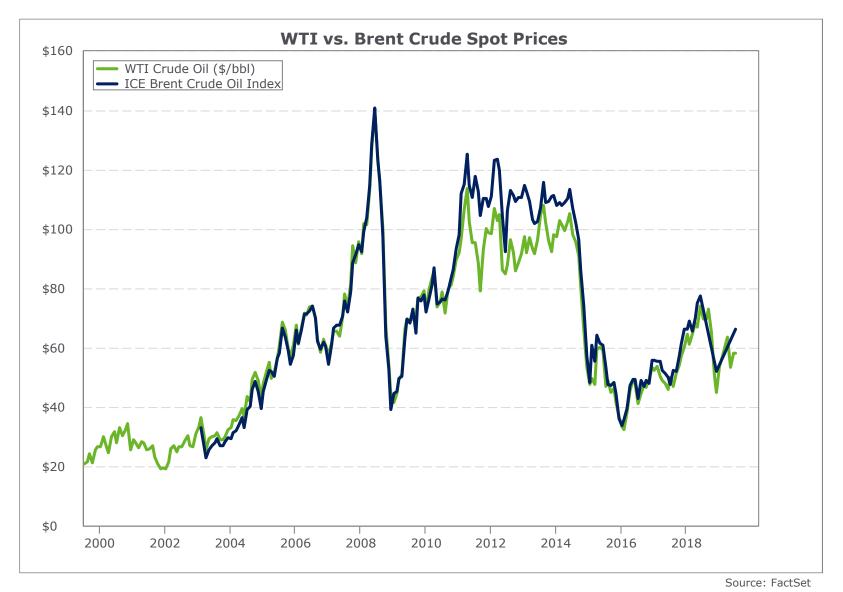
## **REAL ASSETS INDEX PERFORMANCE**

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

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



# **OIL MARKETS**





June 30, 2019

## **POLICY INDEX HISTORY**

- 4/1/2012 6/30/2012: 23% S&P 500 Index, 2% Russell 2500 Index, 5% MSCI EAFE Index, 10% MSCI Emerging Markets Index, 18% Barclays Aggregate, 15% Bank of America Merrill Lynch US High BB-B Constrained Index, 2% JP Morgan GBI - EM Global Diversified Index, 5% (60% MSCI World HH / 40% CITI WGBI HH), 8% (90 Day T-Bill + 2%), 3% Wilshire REIT, 2% NCREIF Property Index, 5% Cambridge Associates US All PE 1 Quarter Lag, 1% (CPI + 4% Seasonally Adjusted), 1% 90 Day T-Bill.
- 7/1/2012 6/30/2013: 23% S&P 500 Index, 2% Russell 2500 Index, 5% MSCI EAFE Index, 10% MSCI Emerging Markets Index, 18% Barclays Aggregate Index, 15% (50% Credit Suisse Leveraged Loan Index / 50% Bank of America Merrill Lynch US HY BB-B Rated Constrained Index), 2% JP Morgan GBI - EM Global Diversified Index, 5% (60% MSCI World HH / 40% CITI WGBI HH), 3% Wilshire REIT, 2% NCREIF Property Index, 8% (91 Day T-Bill + 2% 1 month lag), 5% Cambridge Associates All US PE 1 Quarter Lag, 1% (CPI + 4% Seasonally Adjusted), 1% 91 Day T-Bill.
- 7/1/2013 6/30/2014: 20% S&P 500 Index, 2% Russell 2500 Index, 5% MSCI EAFE Index, 10% MSCI Emerging Markets Index, 7% Barclays Aggregate Index, 20% (50% Credit Suisse Leveraged Loan Index / 50% Bank of America Merrill Lynch US HY BB-B Rated Constrained Index), 2% JP Morgan GBI – EM Global Diversified Index, 5% (60% MSCI World HH / 40% CITI WGBI HH), 5% Credit Suisse Hedge Global Macro Index, 3% Wilshire REIT Index, 2% NCREIF Property Index, 3% (91 Day T-Bill + 2% 1 Month Lag), 8% Cambridge Associates US All PE 1 Quarter Lag, 7% (CPI + 4% Seasonally Adjusted), 1% 91 Day T-Bill.
- 7/1/2014 9/30/2014: 20% S&P 500 Index, 2% Russell 2500 Index, 5% MSCI EAFE Index, 10% MSCI Emerging Markets Index, 7% Barclays Aggregate Index, 20% (50% Credit Suisse Leveraged Loan Index / 50% Bank of America Merrill Lynch US HY BB-B Rated Constrained Index), 2% JP Morgan GBI – EM Global Diversified Index, 5% (60% MSCI World / 40% CITI WGBI), 5% Credit Suisse Hedge Global Macro Index, 3% Wilshire REIT Index, 2% NCREIF Property Index, 3% (91 Day T-Bill + 2% 1 Month Lag), 8% Cambridge Associates US All PE 1 Quarter Lag, 7% (CPI + 4% Seasonally Adjusted), 1% 91 Day T-Bill.



## **POLICY INDEX HISTORY**

- 10/1/2014 1/31/2016: 18% S&P 500 Index, 2% Russell 2500 Index, 5% MSCI EAFE Index, 10% MSCI Emerging Markets Index, 6% Barclays Aggregate Index, 20% (50% Credit Suisse Leveraged Loan Index / 50% Bank of America Merrill Lynch US HY BB-B Rated Constrained Index), 2% JP Morgan GBI – EM Global Diversified Index, 5% (60% MSCI World / 40% CITI WGBI), 5% Credit Suisse Hedge Global Macro Index, 4% Wilshire REIT Index, 3% NCREIF Property Index, 11% Cambridge Associates US All PE 1 Quarter Lag, 8% (CPI + 4% Seasonally Adjusted), 1% 91 Day T-Bill.
- 2/1/2016 12/31/2016: 18% S&P 500 Index, 2% Russell 2500 Index, 5% MSCI EAFE Index, 10% MSCI Emerging Markets Index, 6% Barclays Aggregate Index, 20% (50% Credit Suisse Leveraged Loan Index / 50% Bank of America Merrill Lynch US HY BB-B Rated Constrained Index), 2% (50% JP Morgan EMBI Global Diversified Index / 50% JP Morgan GBI – EM Global Diversified Index), 5% (60% MSCI World / 40% CITI WGBI), 5% Credit Suisse Hedge Global Macro Index, 4% Wilshire REIT Index, 3% NCREIF Property Index, 11% Cambridge Associates US All PE 1 Quarter Lag, 8% (CPI + 4% Seasonally Adjusted), 1% 91 Day T-Bill.
- 1/1/2017 9/30/2017: 18% S&P 500 Index, 2% Russell 2500 Index, 5% MSCI EAFE Index, 10% MSCI Emerging Markets Index, 6% Barclays Aggregate Index, 20% (50% Credit Suisse Leveraged Loan Index / 50% Bank of America Merrill Lynch US HY BB-B Rated Constrained Index), 2% (50% JP Morgan EMBI Global Diversified Index / 50% JP Morgan GBI - EM Global Diversified Index), 5% (60% MSCI World / 40% CITI WGBI), 5% Credit Suisse Hedge Global Macro Index, 3% Wilshire REIT Index, 4% NCREIF Property Index, 11% Cambridge Associates US All PE 1 Quarter Lag, 8% (CPI + 4% Seasonally Adjusted), 1% 91 Day T-Bill.
- 10/1/2017 12/31/2017: 16% S&P 500 Index, 3% Russell 2500 Index, 5% MSCI EAFE Index, 9% MSCI Emerging Markets Index, 6% Barclays Aggregate Index, 18% (50% Credit Suisse Leveraged Loan Index / 50% Bank of America Merrill Lynch US HY BB-B Rated Constrained Index), 2% JP Morgan GBI – EM Global Diversified Index, 7% (60% MSCI World / 40% CITI WGBI), 5% Libor + 2%, 3% Wilshire REIT Index, 4% NCREIF Property Index, 13% Cambridge Associates US All PE 1 Quarter Lag, 8% (CPI + 4% Seasonally Adjusted), 1% 91 Day T-Bill.
- 1/1/2018 Current: 16% S&P 500 Index, 3% Russell 2500 Index, 5% MSCI EAFE Index, 9% MSCI Emerging Markets Index, 6% Barclays Aggregate Index, 18% (50% Credit Suisse Leveraged Loan Index / 50% Bank of America Merrill Lynch US HY BB-B Rated Constrained Index), 2% JP Morgan GBI – EM Global Diversified Index, 12% Libor + 2%, 3% Wilshire REIT Index, 4% NCREIF Property Index, 13% Cambridge Associates US All PE 1 Quarter Lag, 8% (CPI + 4% Seasonally Adjusted), 1% 91 Day T-Bill.



**Alpha** - Measures the relationship between the fund performance and the performance of another fund or benchmark index and equals the excess return while the other fund or benchmark index is zero.

**Alpha Jensen -** The average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio's beta and the average market return. Also known as the abnormal return or the risk adjusted excess return.

**Annualized Excess Return over Benchmark** - Annualized fund return minus the annualized benchmark return for the calculated return.

**Annualized Return** - A statistical technique whereby returns covering periods greater than one year are converted to cover a 12 month time span.

**Beta** - Measures the volatility or systematic risk and is equal to the change in the fund's performance in relation to the change in the assigned index's performance.

**Information Ratio** - A measure of the risk adjusted return of a financial security, asset, or portfolio.

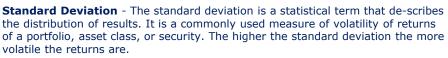
Formula: (Annualized Return of Portfolio - Annualized Return of Benchmark)/Annualized Standard Deviation(Period Portfolio Return – Period Benchmark Return). To annualize standard deviation, multiply the deviation by the square root of the number of periods per year where monthly returns per year equals 12 and quarterly returns is four periods per year.

**R-Squared** – Represents the percentage of a fund's movements that can be explained by movements in an index. R-Squared values range from 0 to 100. An R-Squared of 100 denotes that all movements of a fund are completely explained by movements in the index.

**Sharpe Ratio** - A measure of the excess return or risk premium per unit of risk in an investment asset or trading strategy.

**Sortino Ratio** - A method to differentiate between good and bad volatility in the Sharpe Ratio. The differentiation of up and down volatility allows the calculation to provide a risk adjusted measure of a security or fund's performance without upward price change penalties.

Formula: Calculation Average (X-Y)/Downside Deviation (X-Y) \* 2 Where X=Return Series X Y = Return Series Y which is the risk free return (91 day T-bills)



Formula: (Annualized Return of Portfolio – Annualized Return of Risk Free) / Annualized Standard Deviation (Portfolio Returns)

**Tracking Error** - Tracking error, also known as residual risk, is a measure of the degree to which a portfolio tracks its benchmark. It is also a measure of consistency of excess returns. Tracking error is computed as the annualized standard deviation of the difference between a portfolio's return and that of its benchmark.

Formula: Tracking Error = Standard Deviation  $(X-Y) * \sqrt{\#}$  of periods per year) Where X = periods portfolio return and Y = the period's benchmark return For monthly returns, the periods per year = 12 For quarterly returns, the periods per year = 4

**Treynor Ratio** - A risk-adjusted measure of return based on systematic risk. Similar to the Sharpe ratio with the difference being the Treynor ratio uses beta as the measurement of volatility.

Formula: (Portfolio Average Return - Average Return of Risk-Free Rate)/Portfolio Beta

**Up/Down Capture Ratio** - A measure of what percentage of a market's re-turns is "captured" by a portfolio. For example, if the market declines 10% over some period, and the manager declines only 9%, then his or her capture ratio is 90%. In down markets, it is advantageous for a manager to have as low a capture ratio as possible. For up markets, the higher the capture ratio the better. Looking at capture ratios can provide insight into how a manager achieves excess returns. A value manager might typically have a lower capture ratio in both up and down markets, achieving excess returns by protecting on the downside, whereas a growth manager might fall more than the overall market in down markets, but achieve above-market returns in a rising market.

 $\label{eq:upsideCapture} UpsideCapture = TotalReturn(FundReturns)/TotalReturns(BMReturn) \ when \ Period Benchmark \ Return \ is \ > \ = \ 0$ 

 $\label{eq:upsideCapture} UpsideCapture = TotalReturn(FundReturns)/TotalReturns(BMReturn) \ when \ Period Benchmark \ Return \ is \ > = \ 0$ 



# Of Portfolios/Observations<sup>1</sup> - The total number of data points that make up a specified universe

Allocation Index<sup>3</sup> - The allocation index measures the value added (or subtracted) to each portfolio by active management. It is calculated monthly: The portfolio asset allocation to each category from the prior month-end is multiplied by a specified market index.

Asset Allocation Effect<sup>2</sup> - Measures an investment manager's ability to effectively allocate their portfolio's assets to various sectors. The allocation effect determines whether the overweighting or underweighting of sectors relative to a benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is over weighted in a sector that outperforms the benchmark and underweighted in a sector that underperforms the benchmark. Negative allocation occurs when the portfolio is over weighted in a sector that underperforms the benchmark and under weighted in a sector that outperforms the benchmark.

**Agency Bonds (Agencies)**<sup>3</sup> - The full faith and credit of the United States government is normally not pledged to payment of principal and interest on the majority of government agencies issuing these bonds, with maturities of up to ten years. Their yields, therefore, are normally higher than government and their marketability is good, thereby qualifying them as a low risk-high liquidity type of investment. They are eligible as security for advances to the member banks by the Federal Reserve, which attests to their standing.

Asset Backed Securities (ABS)<sup>3</sup> - Bonds which are similar to mortgagebacked securities but are collateralized by assets other than mortgages; commonly backed by credit card receivables, auto loans, or other types of consumer financing.

Attribution<sup>3</sup> - Attribution is an analytical technique that allows us to evaluate the performance of the portfolio relative to the benchmark. A proper attribution tells us where value was added or subtracted as a result of the manager's decisions. Average Effective Maturity<sup>4</sup> - For a single bond, it is a measure of maturity that takes into account the possibility that a bond might be called back to the issuer.

For a portfolio of bonds, average effective maturity is the weighted average of the maturities of the underlying bonds. The measure is computed by weighing each bond's maturity by its market value with respect to the portfolio and the likelihood of any of the bonds being called. In a pool of mortgages, this would also account for the likelihood of prepayments on the mortgages.

**Batting Average**<sup>1</sup> - A measurement representing an investment manager's ability to meet or beat an index.

Formula: Divide the number of days (or months, quarters, etc.) in which the manager beats or matches the index by the total number of days (or months, quarters, etc.) in the period of question and multiply that factor by 100.

**Brinson Fachler (BF) Attribution**<sup>1</sup> - The BF methodology is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance. The main advantage of the BF methodology is that rather than using the overall return of the benchmark, it goes a level deeper than BHB and measures whether the benchmark sector, country, etc. outperformed/or underperformed the overall benchmark.

**Brinson Hood Beebower (BHB) Attribution<sup>1</sup>** - The BHB methodology shows that excess return must be equal to the sum of all other factors (i.e., allocation effect, selection effect, interaction effect, etc.). The advantage to using the BHB methodology is that it is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio's underlying performance.

**Corporate Bond (Corp)**<sup>4</sup> - A debt security issued by a corporation and sold to investors. The backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations. In some cases, the company's physical assets may be used as collateral for bonds.

**Correlation**<sup>1</sup> - A range of statistical relationships between two or more random variables or observed data values. A correlation is a single number that describes the degree of relationship between variables.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net



**Coupon<sup>4</sup>** – The interest rate stated on a bond when it is issued. The coupon is typically paid semiannually. This is also referred to as the "coupon rate" or "coupon percent rate."

Currency Effect<sup>1</sup> - Is the effect that changes in currency exchange rates over time affect excess performance.

**Derivative Instrument**<sup>3</sup> - A financial obligation that derives its precise value from the value of one or more other instruments (or assets) at the same point of time. For example, the relationship between the value of an S&P 500 futures contract (the derivative instrument in this case) is determined by the value of the S&P 500 Index and the value of a U.S. Treasury bill that matures at the expiration of the futures contract.

**Downside Deviation**<sup>1</sup> - Equals the standard deviation of negative return or the measure of downside risk focusing on the standard deviation of negative returns.

#### Formula:

Annualized Standard Deviation (Fund Return - Average Fund Return) where average fund return is greater than individual fund returns, monthly or quarterly.

**Duration**<sup>3</sup> - Duration is a measure of interest rate risk. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates. A bond's duration is inversely related to interest rates and directly related to time to maturity.

Equity/Debt/Cash Ratio<sup>1</sup> – The percentage of an investment or portfolio that is in Equity, Debt, and/or Cash (i.e. A 7/89/4 ratio represents an investment that is made up of 7% Equity, 89% Debt, and 4% Cash).

**Foreign Bond<sup>3</sup>** - A bond that is issued in a domestic market by a foreign entity, in the domestic market's currency. A foreign bond is most often issued by a foreign firm to raise capital in a domestic market that would be most interested in purchasing the firm's debt. For foreign firms doing a large amount of business in the domestic market, issuing foreign bonds is a common practice.

Hard Hurdle<sup>5</sup> – is a hurdle rate that once beaten allows a fund manager to charge a performance fee on only the funds above the specified hurdle rate.

**High-Water Mark**<sup>4</sup> - The highest peak in value that an investment fund/ account has reached. This term is often used in the context of fund manager compensation, which is performance based. Some performance-based fees only get paid when fund performance exceeds the high-water mark. The high-water mark ensures that the manager does not get paid large sums for poor performance.

Hurdle Rate<sup>4</sup> - The minimum rate of return on an investment required, in order for a manager to collect incentive fees from the investor, which is usually tied to a benchmark.

Interaction Effects<sup>2</sup> - The interaction effect measures the combined impact of an investment manager's selection and allocation decisions within a sector. For example, if an investment manager had superior selection and over weighted that particular sector, the interaction effect is positive. If an investment manager had superior selection, but underweighted that sector, the interaction effect is negative. In this case, the investment manager did not take advantage of the superior selection by allocating more assets to that sector. Since many investment managers consider the interaction effect to be part of the selection or the allocation, it is often combined with the either effect.

Median<sup>3</sup> - The value (rate of return, market sensitivity, etc.) that exceeds onehalf of the values in the population and that is exceeded by one-half of the values. The median has a percentile rank of 50.

Modified Duration<sup>3</sup> - The percentage change in the price of a fixed income security that results from a change in yield.

**Mortgage Backed Securities (MBS)**<sup>3</sup> - Bonds which are a general obligation of the issuing institution but are also collateralized by a pool of mortgages.

Municipal Bond (Muni) <sup>4</sup> - A debt security issued by a state, municipality or county to finance its capital expenditures.

**Net Investment Change**<sup>1</sup> – Is the change in an investment after accounting for all Net Cash Flows.

**Performance Fee**<sup>4</sup> - A payment made to a fund manager for generating positive returns. The performance fee is generally calculated as a percentage of investment profits, often both realized and unrealized.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net



**Policy Index<sup>3</sup>** - A custom benchmark designed to indicate the returns that a passive investor would earn by consistently following the asset allocation targets set forth in this investment policy statement.

Price to Book (P/B)<sup>4</sup> - A ratio used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share, also known as the "price-equity ratio".

Price to Earnings (P/E)<sup>3</sup> - The weighted equity P/E is based on current price and trailing 12 months earnings per share (EPS).

**Price to Sales (P/S)**<sup>4</sup> - A ratio for valuing a stock relative to its own past performance, other companies, or the market itself. Price to sales is calculated by dividing a stock's current price by its revenue per share for the trailing 12 months.

**Return on Equity (ROE)**<sup>4</sup> - The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

Selection (or Manager) Effect<sup>2</sup> - Measures the investment manager's ability to select securities within a given sector relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by the manager's allocation to the sector. The weight of the sector in the portfolio determines the size of the effect—the larger the sector, the larger the effect is, positive or negative.

Soft Hurdle rate<sup>5</sup> – is a hurdle rate that once beaten allows a fund manager to charge a performance fee based on the entire annualized return.

**Tiered Fee<sup>1</sup>** – A fee structure that is paid to fund managers based on the size of the investment (i.e. 1.00% fee on the first \$10M invested, 0.90% on the next \$10M, and 0.80% on the remaining balance).

**Total Effects<sup>2</sup>** - The active management (total) effect is the sum of the selection, allocation, and interaction effects. It is also the difference between the total portfolio return and the total benchmark return. You can use the active management effect to determine the amount the investment manager has added to a portfolio's return.

**Total Return<sup>1</sup>** - The actual rate of return of an investment over a specified time period. Total return includes interest, capital gains, dividends, and distributions realized over a defined time period.

Universe<sup>3</sup> - The list of all assets eligible for inclusion in a portfolio.

Upside Deviation<sup>1</sup> - Standard Deviation of Positive Returns

Weighted Avg. Market Cap.<sup>4</sup> - A stock market index weighted by the market capitalization of each stock in the index. In such a weighting scheme, larger companies account for a greater portion of the index. Most indexes are constructed in this manner, with the best example being the S&P 500.

Yield (%)<sup>3</sup> - The current yield of a security is the current indicated annual dividend rate divided by current price.

Yield to Maturity<sup>3</sup> -The discount rate that equates the present value of cash flows, both principal and interest, to market price.

Data Source: <sup>1</sup>InvestorForce, <sup>2</sup>Interaction Effect Performance Attribution, <sup>3</sup>NEPC, LLC, <sup>4</sup>Investopedia, <sup>5</sup>Hedgeco.net



#### **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.



## **INFORMATION DISCLAIMER**

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

