# INVESTMENT PERFORMANCE ANALYSIS FOR PERIOD ENDING MARCH 31, 2020



# NEW MEXICO EDUCATIONAL RETIREMENT BOARD

May 21, 2020
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# MARKET ENVIRONMENT UPDATE & OUTLOOK

### **ECONOMIC ENVIRONMENT**

- Q1 Real GDP (advance estimate) decreased at an annual rate of 4.8%.
  - Retail sales ended January at +4.5% on a YoY basis. In the same period last year the YoY growth rate was 1.9%.
  - Corporate profits (ended September) as a percent of GDP increased to 8.8% from 8.5% (in June) and remain elevated relative to historical levels.
  - The inventory-to-sales ratio ended January flat at 1.4 from December levels and has remained relatively constant since early 2010.
  - The U.S. trade deficit fell ended January (-6.7%) as imports fell and exports fell due to the coronavirus.
- The unemployment rate ticked up to 4.4% ended March, up from 3.6% in Q4; U-6, a broader measure of unemployment, increased to 8.7% in Q1 from 6.7% in Q4.
- The Case-Shiller Home Price Index (ended February) increased to 213.2 from 212.4 (in December) 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 1.52% in Q1 from 2.29% ended Q4; Capacity Utilization decreased to 72.7% from 77.1% in Q1.
- Fed Funds rate was cut 1.50% to a targeted range of 0.00%-to-0.25%. The 10-year Treasury Yield (constant maturity) finished Q1 down to 0.9% from 1.9%.
- The Fed announced an unlimited expansion of the balance sheet to support the US economy. This move expanded on previous announcements for smaller QE denominations
- S&P valuations decreased in Q1 to 24.9x, and is lower than the 10-year average of 25.8x.
  - Cyclically adjusted Shiller PE ratio remains above the long-term average of 16.7x



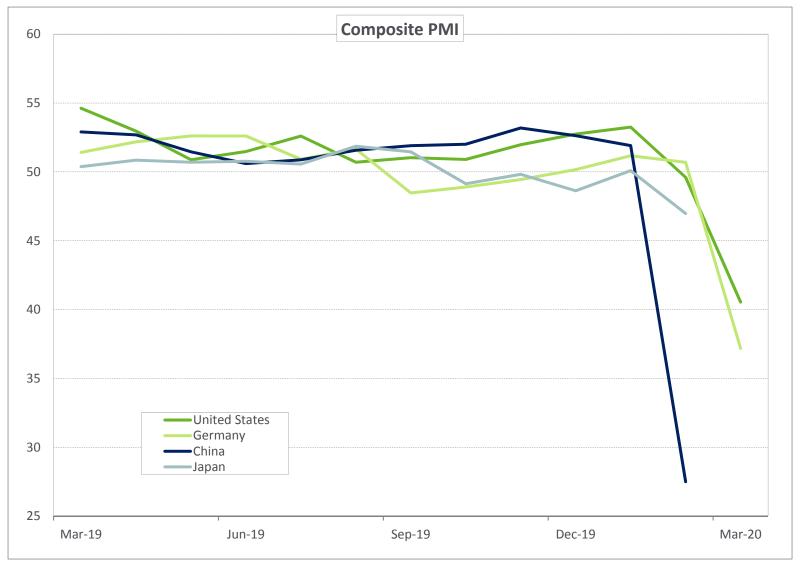
# **MARKET ENVIRONMENT - Q1 2020 OVERVIEW**

		Qtr.	<u>1 Yr.</u>	<u>3 Yr.</u>	<u>5 Yr.</u>	<u> 10 Yr.</u>						
World Equity Benchmarks							MSCI ACWI IMI (Net)	-				-
MSCI ACWI IMI (Net)	World with Small Cap	-22.44%	-12.73%	0.76%	2.45%	5.80%	` '					
MSCI ACWI Net (USD)	World W/O Small Cap	-21.37%	-11.26%	1.50%	2.85%	5.88%	MSCI ACWI Net (USD)			_		
MSCI ACWI (Local)	World (Local Currency)	-19.97%	-9.87%	1.69%	3.14%	6.80%	MSCI ACWI (Local)					
Domestic Equity Benchmarks							Russell 3000					
Russell 3000	Domestic All Cap	-20.90%	-9.13%	4.00%	5.77%	10.15%	S&P 500					
S&P 500	Large Core	-19.60%	-6.98%	5.10%	6.73%	10.53%	Russell 1000					
Russell 1000	Large Core	-20.22%	-8.03%	4.64%	6.22%	10.39%	Russell 1000 Growth				<b>—</b>	
Russell 1000 Growth	Large Growth	-14.10%	0.91%	11.32%	10.36%	12.97%	Russell 1000 Value					
Russell 1000 Value	Large Value	-26.73%	-17.17%	-2.18%	1.90%	7.67%	Russell 2000	į.				
Russell 2000	Small Core	-30.61%	-23.99%	-4.64%	-0.25%	6.90%	Russell 2000 Growth			_		
Russell 2000 Growth	Small Growth	-25.77%	-18.58%	0.10%	1.70%	8.89%	Russell 2000 Value					
Russell 2000 Value	Small Value	-35.66%	-29.64%	-9.51%	-2.42%	4.79%						
International Equity Benchmarks							MSCI ACWI Ex USA					
MSCI ACWI Ex USA	World ex-US	-23.36%	-15.57%	-1.96%	-0.64%	2.05%	MSCI EAFE Net (USD)					
MSCI EAFE Net (USD)	Int'l Developed	-22.83%	-14.38%	-1.82%	-0.62%	2.72%	MSCI EAFE (Local)					
MSCI EAFE (Local)	Int'l Developed (Local Currency)	-20.55%	-12.58%	-1.80%	-0.15%	4.36%	MSCI EAFE Small Cap		: -			
MSCI EAFE Small Cap	Small Cap Int'l	-27.52%	-18.15%	-2.88%	0.97%	4.81%	MSCI Emerging Markets					
MSCI Emerging Markets	Emerging Equity	-23.60%	-17.69%	-1.62%	-0.37%	0.68%	Barclays Aggregate					
Domestic Fixed Income Benchmarks							Barclays US High Yield					
Barclays Aggregate	Core Bonds	3.15%	8.93%	4.82%	3.36%	3.88%	BofA ML US HY BB/B			<u> </u>		
Barclays US High Yield	High Yield	-12.69%	-6.94%	0.76%	2.78%	5.64%	CSFB Levered Loans					
BofAML US HY BB/B	High Yield	-11.88%	-5.46%	1.31%	2.92%	5.63%	BofA ML US 3-Month T-Bill					
CSFB Levered Loans	Bank Loans	-13.19%	-9.51%	-0.73%	1.21%	3.26%	Barclays US TIPS 1-10 Yr					
BofAML US 3-Month T-Bill	Cash	0.57%	2.26%	1.83%	1.19%	0.64%	·					
Barclays US TIPS 1-10 Yr	Inflation	0.31%	4.50%	2.54%	2.18%	2.52%	Barclays Global Aggregate					
Global Fixed Income Benchmarks							FTSE WGBI			_	_	
Barclays Global Aggregate	Global Core Bonds	-0.33%	4.20%	3.55%	2.64%	2.47%	BC Global Credit					
FTSE WGBI	World Gov. Bonds	2.00%	6.17%	4.27%	2.96%	2.19%	JPM GBI-EM Glob. Diversified					■ Quart
BC Global Credit	Global Bonds	-4.68%	1.67%	3.09%	2.42%	3.39%	JPM EMBI+					Quart
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	-15.21%	-6.52%	-0.80%	0.25%	0.49%	Bloomberg Commodity Index					1 Yr
JPM EMBI+	Em. Mkt. Bonds	-8.67%	-3.13%	0.53%	2.93%	4.77%	HFRI Fund of Funds Composite Index					
Alternative Benchmarks		_					Cambridge PE Lagged*			•		
Bloomberg Commodity Index	Commodities	-23.29%	-22.31%	-8.61%	-7.76%	-6.74%	NCREIF ODCE Net Lagged*	-				
HFRI Fund of Funds Composite Index	Fund of Hedge Funds	-7.30%	-3.94%	0.50%	0.33%	1.91%	Wilshire REIT Index					
Cambridge PE Lagged*	Private Equity	4.03%	14.33%	14.07%	12.14%	13.81%						
NCREIF ODCE Net Lagged*	Real Estate	1.27%	4.39%	6.13%	7.99%	10.39%	CPI+ 2%					
Wilshire REIT Index	REIT	-25.63%	-19.39%	-2.50%	-0.19%	7.66%	-40	% -30%	-20%	-10%	0%	10%
CPI + 2%	Inflation/Real Assets	0.31%	3.55%	3.96%	3.84%	3.76%						



\* As of 12/31/2019

# **GLOBAL ECONOMY EXPECTED TO CONTRACT**







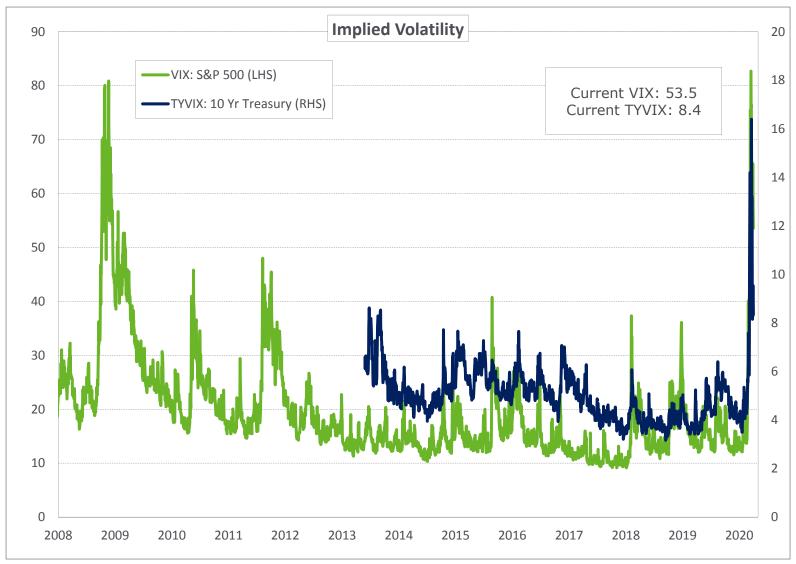
# **MONETARY AND FISCAL RESPONSES**

Fed Action	Description
Fed Rate Cuts	The Fed cut rates in two emergency sessions by a total of 1.50% to a range of 0.00% - 0.25%.
Balance Sheet Expansion	The Fed announced an unlimited expansion of the balance sheet to support the US economy. This move expanded on previous announcements for smaller QE denominations
Liquidity Support Facilities	The Fed announced additional measures to ensure market liquidity, including facilities to support money market funds, commercial paper, and broad credit support systems
Credit Support Facilities	The Fed established programs aimed at supporting consumers and businesses, such as the Term Asset-Backed Securities Loan Facility (TALF) and a Main Street Business Lending Program. These programs provide preferential borrower agreements, such as deferred interest and principal payments, for consumers and small businesses.

US Government Action	Description
Families First Coronavirus Response Act	The bill was passed to provide sick leave, expand food assistance and unemployment benefits, and provide additional protection for health care employees
Fiscal Stimulus Package	Congress is finalizing a \$2 trillion economic stimulus package aimed at providing direct financial assistance, expanded benefits programs, and loans to individuals, small businesses, and industries impacted by COVID-19



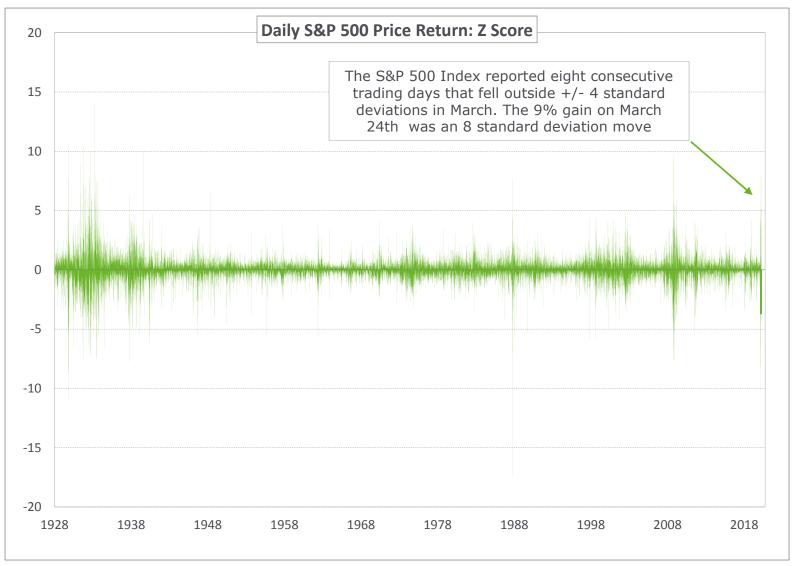
# **CORRELATIONS AND VOLATILITY ARE ELEVATED**





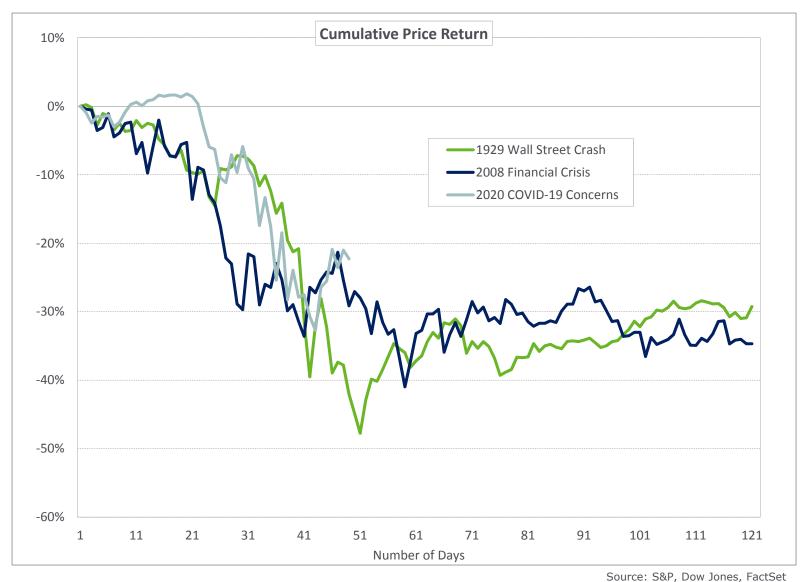


### **ABNORMALLY LARGE PRICE MOVEMENTS**





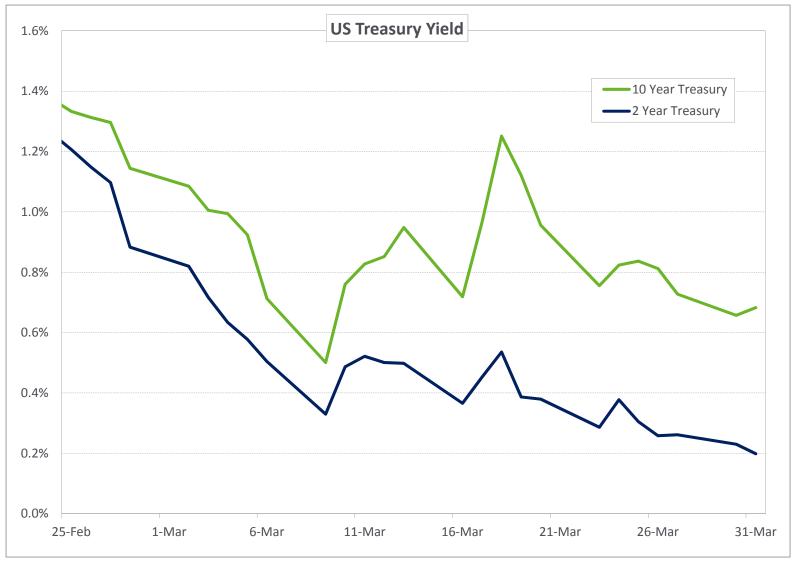
# **US EQUITY DURING MARKET DELEVERAGING**

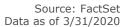




Financial Crisis represents S&P returns from 9/1/2008 – 3/9/2009; Wall Street Crash represents Dow Jones returns from 8/30/1929 – 2/26/1930; COVID-19 represents S&P returns from 1/23/2020 (representing the start of the Wuhan, China lockdown) – 3/31/2020

## **U.S. TREASURY YIELDS ARE STRESSED**







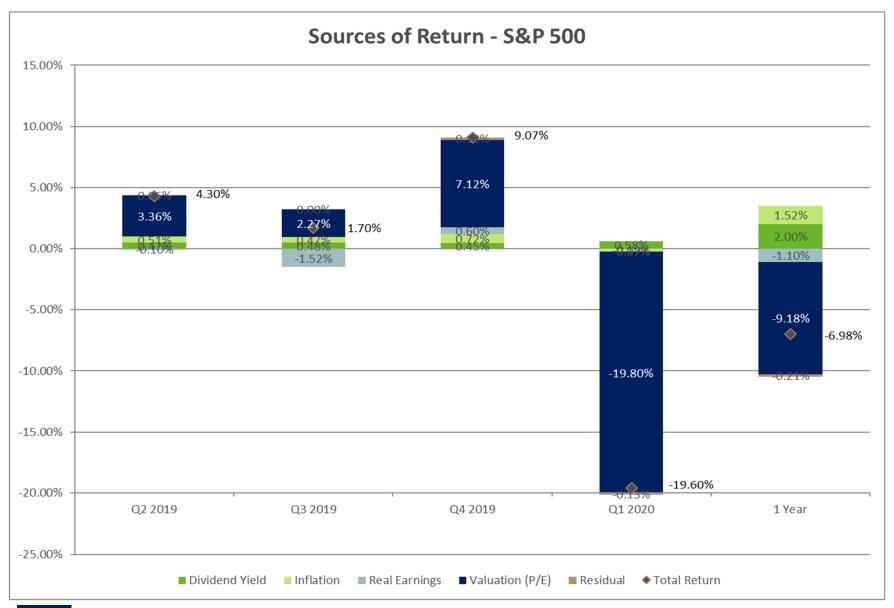
## **CREDIT SPREADS HAVE WIDENED**





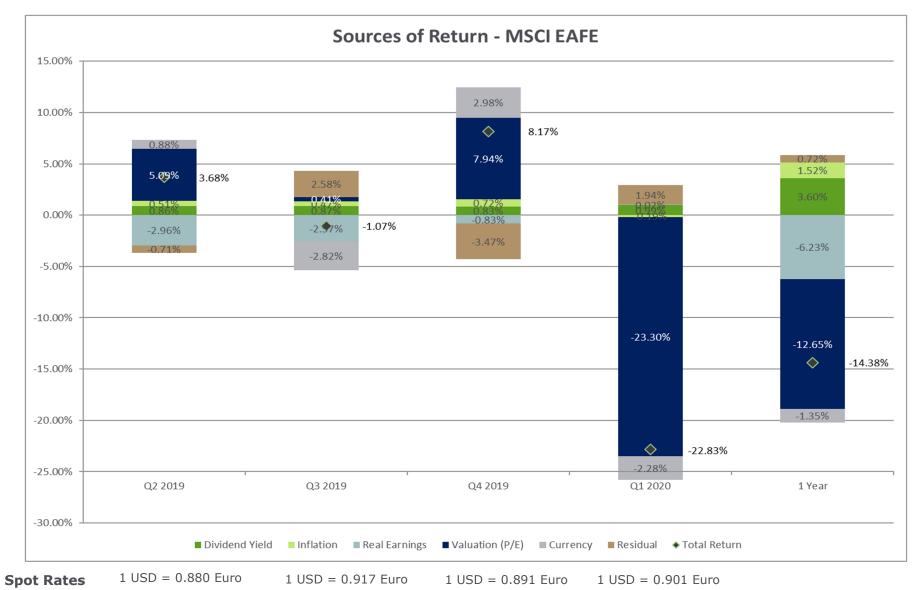
Source: Bloomberg, FactSet Data as of 3/31/2020

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





### 1 YEAR ATTRIBUTION OF MSCI EAFE RETURNS





### THIRD PARTY PLACEMENT AGENT DISCLOSURE

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:

#### **BlackRock CO-Invest Fund III**

The investment was approved for a \$100 million commitment on January 16, 2020 as part of the Fund's allocation to Private Equity.

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

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

#### **PIMCO Corporate Opportunities Fund III**

The investment was approved for a \$125 million commitment on January 16, 2020 as part of the Fund's allocation to Opportunistic Credit.

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

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

#### **Tenex Capital Partners Fund III**

The investment was approved for a \$50 million commitment on March 19, 2020 as part of the Fund's allocation to Private Equity.

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

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

#### **Prostar Energy Fund III**

The investment was approved for a \$50 million commitment on March 19, 2020 as part of the Fund's allocation to Real Assets.

Prostar has provided documentation confirming Eaton Partners was engaged as a placement agent in connection with NMERB's investment.

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



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

#### **Crow Holdings Realty Partners IX**

The investment was approved for a \$50 million commitment on March 19, 2020 as part of the Fund's allocation to Real Estate.

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

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



# **TOTAL FUND PERFORMANCE SUMMARY (NET)**

	Market Value	3 Mo F	Rank	Fiscal YTD F	Rank	1 Yr F	Rank	3 Yrs F	Rank	5 Yrs	Rank	10 Yrs F	Rank	15 Yrs I	Rank	20 Yrs	Rank	30 Yrs	Rank	Inception	Inception Date
Total Fund	\$12,397,673,687	-9.21%	7	-4.49%	12	-1.44%	14	4.43%	15	5.02%	9	6.91%	26	6.28%	17	4.75%	54	8.27%	10	8.71%	Jul-83
Policy Index		-9.74%	15	-5.01%	18	-2.36%	18	4.35%	17	4.76%	12	6.49%	40	5.73%	41	4.90%	48	7.30%	56		Jul-83
60% MSCI ACWI (Net) / 40% FTSE WGBI		-12.44%	43	-7.57%	44	-4.14%	40	2.90%	48	3.16%	64	4.63%	97	4.66%	89	3.98%	93	6.51%	88		Jul-83
S&P 500		-19.60%	99	-10.82%	88	-6.98%	76	5.10%	5	6.73%	1	10.53%	1	7.58%	1	4.79%	52	9.28%	1	10.36%	Jul-83
BBgBarc US Aggregate TR		3.15%	1	5.68%	1	8.93%	1	4.82%	7	3.36%	61	3.88%	99	4.40%	93	5.08%	36	6.05%	90	7.06%	Jul-83
InvMetrics Public DB > \$1B Net Median		-12.63%		-7.95%		-4.97%		2.79%		3.69%		6.40%		5.42%		4.82%		7.43%		8.07%	Jul-83

Over the past five years, the Fund returned 5.0% per annum, outperforming the policy index by 26 basis points and ranking in the  $9^{th}$  percentile of the Investment Metrics Public Funds > \$1 Billion universe and underperforming the actuarial assumed rate of 7.00%. The Fund's volatility was 5.9%, which ranks in the  $9^{th}$  percentile of its peers over this period. The Fund's risk-adjusted performance, as measured by the Sharpe Ratio, ranks in the  $6^{th}$  percentile of its peers.

Over the past three years, the Fund returned 5.4% per annum, outperforming the policy index by 8 basis points and ranking in the 15<sup>th</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 0.4, which ranks in the 11<sup>th</sup> percentile.

For the year ending March 31, 2020, the Fund experienced a net investment loss of \$147.8 million, which includes a net investment loss of \$1.25 billion during the quarter. Assets decreased from \$13.0 billion twelve months ago, to \$12.40 billion on March 31, 2020, with \$475 million in net distributions during the year. The Fund returned -1.44%, outperforming the policy index by 92 basis points and ranking in the  $14^{\rm th}$  percentile of its peers.

The InvMetrics Public Funds >\$1 Billion Net Universe contains 62 observations for the period ending March 31, 2020, with total assets of \$437 billion.

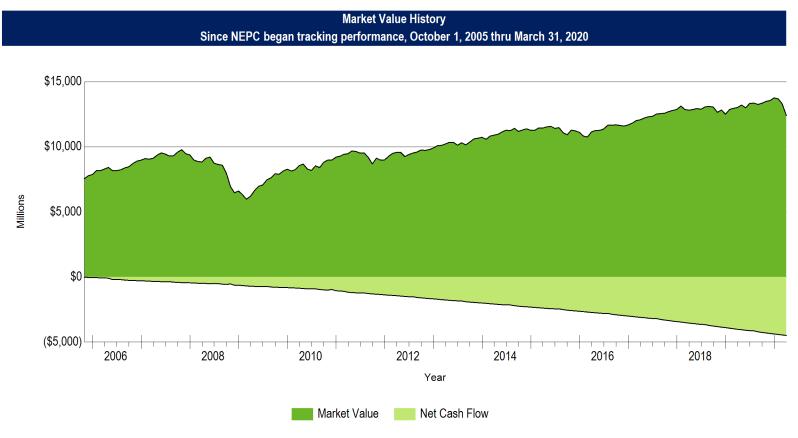


	5 Years Ending March 31, 2020												
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank					
Total Fund	5.0%	9	5.9%	9	0.7	6	0.9	6					
Policy Index	4.8%	12	6.3%	12	0.6	9	0.8	7					
InvMetrics Public DB > \$1B Net Median	3.7%		7.8%		0.3		0.5						

	3 Years Ending March 31, 2020													
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank						
Total Fund	4.4%	15	6.2%	7	0.4	11	0.7	9						
Policy Index	4.4%	17	6.6%	12	0.4	12	0.6	10						
InvMetrics Public DB > \$1B Net Median	2.8%		8.5%		0.1		0.3							



## **TOTAL FUND ASSET GROWTH SUMMARY**



	Last Three Months	Fiscal Year-To-Date	One Year	Three Years	Five Years	Since 10/1/05
Beginning Market Value	\$13,763,653,160	\$13,329,141,720	\$13,020,197,300	\$12,076,800,316	\$11,437,383,160	\$7,694,652,364
Net Cash Flow	-\$113,160,786	-\$370,099,974	-\$474,714,094	-\$1,389,680,925	-\$2,104,953,271	-\$4,481,475,538
Net Investment Change	-\$1,252,818,687	-\$561,368,058	-\$147,809,520	\$1,710,554,296	\$3,065,243,797	\$9,184,496,862
Ending Market Value	\$12,397,673,687	\$12,397,673,687	\$12,397,673,687	\$12,397,673,687	\$12,397,673,687	\$12,397,673,687

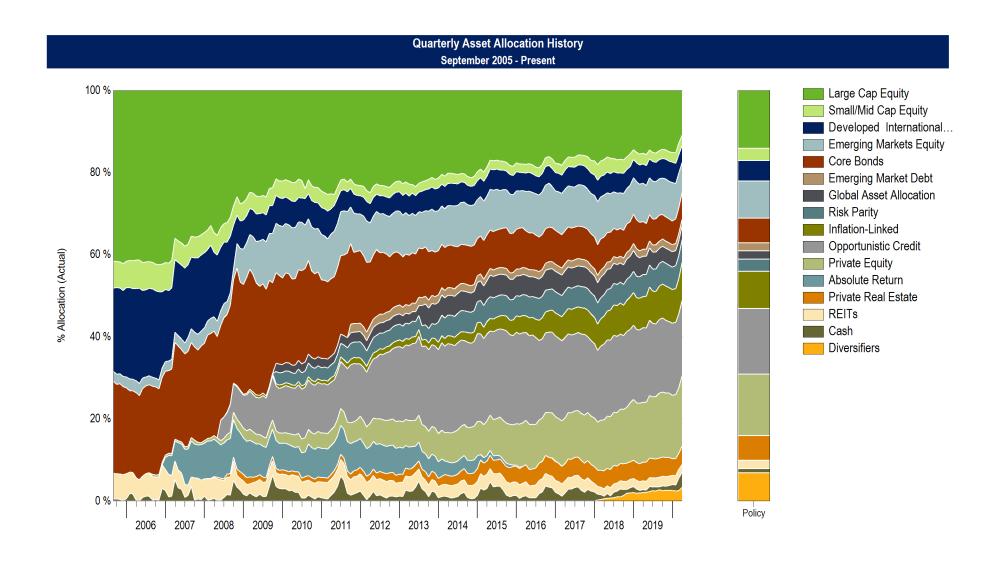


# TOTAL FUND ASSET ALLOCATION VS. POLICY

<u>Current</u> <u>Allocation</u>	<u>Policy</u> Target		Current Mkt Value	Current Allocation	Policy Target <sup>1</sup>	Difference	Policy Range	Within Range
		Equity	\$3,081,253,527	24.9%	31.0%	-6.1%	15% - 55%	Yes
		U.S. Equity	\$1,656,829,961	13.4%	17.0%	-3.6%	8% - 30%	Yes
		U.S. Large Cap Equity		10.9%	14.0%	-3.1%	7% - 25%	Yes
10.9%		U.S. Small/Mid Cap Equity	\$306,086,889	2.5%	3.0%	-0.5%	0% - 5%	Yes
	14.0%	Non-U.S. Equity	\$1,424,423,566	11.5%	14.0%	-2.5%	5% - 25%	Yes
		Non-U.S. Developed Mkts		4.2%	5.0%	-0.8%	0% - 10%	Yes
2.5%		Non-U.S. Emerging Mkts	\$904,054,424	7.3%	9.0%	-1.7%	2% - 15%	Yes
4.2%	3.0%							
		Fixed Income	\$3,276,114,453	26.4%	24.0%	2.4%	10% - 58%	Yes
7.3%	5.0%	Core Fixed Income	\$799,442,822	6.4%	6.0%	0.4%	0% - 20%	Yes
7.376		Opportunistic Credit	\$2,272,547,583	18.3%	16.0%	2.3%	0% - 30%	Yes
		Emerging Mkts Debt	\$204, 124, 049	1.6%	2.0%	-0.4%	0% - 8%	Yes
6.4%	9.0%							
		Alternatives	\$5,572,926,414	45.0%	44.0%	1.0%	10% - 65%	Yes
		Absolute Return	\$353,847	0.0%	0.0%	0.0%	0% - 10%	Yes
	6.0%	<u> </u>						
		Diversifying Assets	\$1,513,169,614	12.2%	12.0%	0.2%		
40.2%		Global Asset Allocation	\$421,603,051	3.4%	2.0%	1.4%	0% - 6%	Yes
18.3%		Risk Parity	\$680,858,624	5.5%	3.0%	2.5%	0% - 6%	Yes
	16.0%	Other Diversifying Assets	\$410,707,939	3.3%	7.0%	-3.7%	0% - 12%	Yes
	16.0%							
		Real Estate	\$775,013,914	6.3%	8.0%	-1.7%	0% - 15%	Yes
<del>3:</del> 6%		REITs	\$224,361,250	1.8%	2.0%	-0.2%		
	2.0%	Private Real Estate	\$550, 652, 664	4.4%	6.0%	-1.6%		
	0.0%							
12.2%		Private Equity	\$2,130,414,933	17.2%	15.0%	2.2%	0% - 24%	Yes
	12.0%							
		Inflation-Linked Assets	\$1,153,974,106	9.3%	9.0%	0.3%	0% - 16%	Yes
6.3%		O t	* 407 000 750	0.00/	4.00/	0.00/	200/ 450/	V
		Cash	\$467,322,750	3.8%	1.0%	2.8%	-20% - 15%	Yes
	8.0%	Total	\$12,397,673,687	100.0%	100.0%	0.0%		
			, , ,,					
17.2%								
	15.0%							
		<sup>1</sup> Long-Term Policy Target approved by	the Board in Au	gust 2019.				
		Note: Allocations shown here include of	ash held in sena	rately man	aged portfolio	s		
9.3%			•	,	- ,			
9.3%		Totals may not add to 100% due to ro	unding. Total Pla	an includes	Legacy Assets	portfolio to	taling \$56,542.	
	9.0%							
3.8%								
3.070	1.0%							

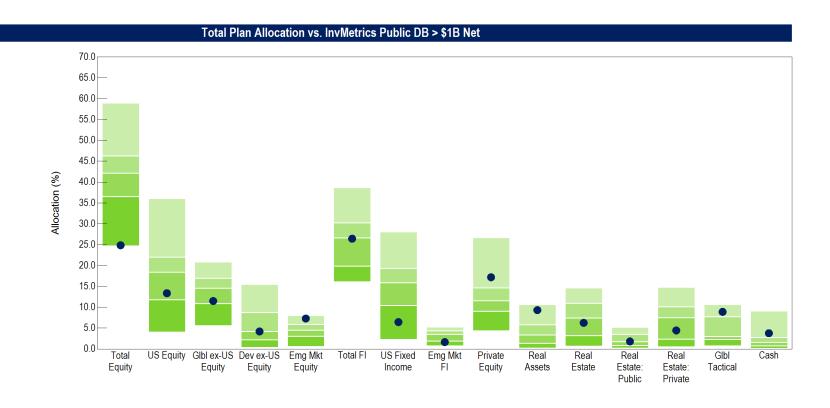


# **TOTAL FUND ASSET ALLOCATION HISTORY**





### TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE



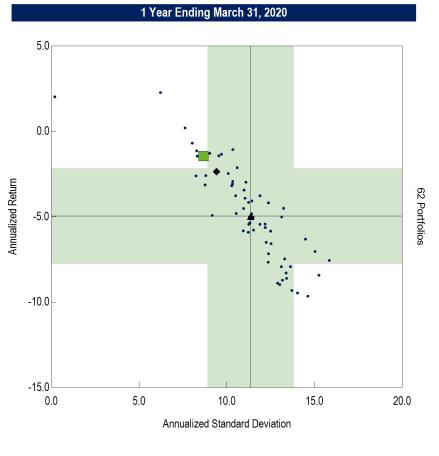
5th Percentile 25th Percentile Median 75th Percentile 95th Percentile # of Portfolios

Total Fund

Allocation	on (Rank)															
58.9	36.1	20.9	15.5	8.1	38.6	28.1	5.3	26.7	10.6	14.	3	5.2	14.8	10.7	9.1	
46.3	22.1	17.0	8.8	5.9	30.3	19.4	4.5	14.7	5.9	11.	)	3.6	10.2	7.8	2.8	
42.2	18.5	14.7	4.2	4.6	26.7	16.0	3.6	11.6	3.4	7.	5	1.8	7.6	3.1	1.7	
36.6	11.8	10.9	2.2	3.1	19.9	10.5	2.0	9.1	1.4	3.	2	0.9	2.4	2.3	8.0	
24.8	4.1	5.6	0.4	0.7	16.2	2.3	8.0	4.4	0.3	0.	7	0.3	0.6	8.0	0.2	
50	39	50	28	41	50	41	24	48	23	4	7	17	43	10	50	
24.9 (9	94) 13.4 (7	73) 11.5 (72)	4.2 (51)	7.3 (	10) 26.4 (52)	6.4 (87)	1.6 (81)	17.2 (15)	9.3	(9) 6.	3 (59)	1.8 (51)	4.4 (70)	8.9 (23)	3.8 (19)	

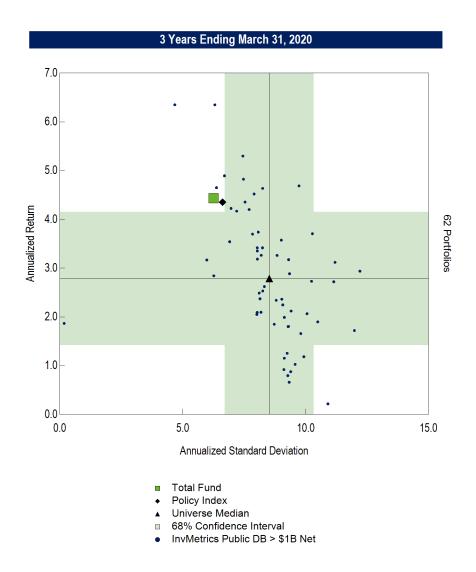


# TOTAL FUND RISK/RETURN





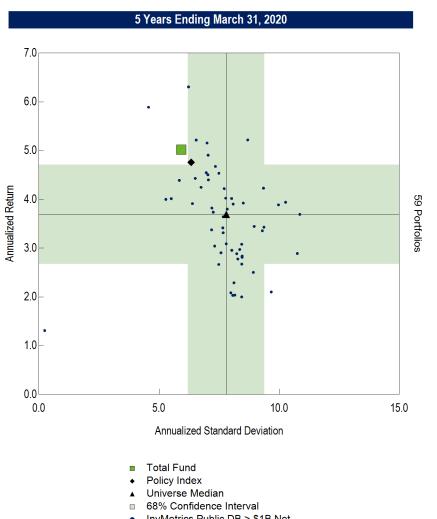
- Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB > \$1B Net



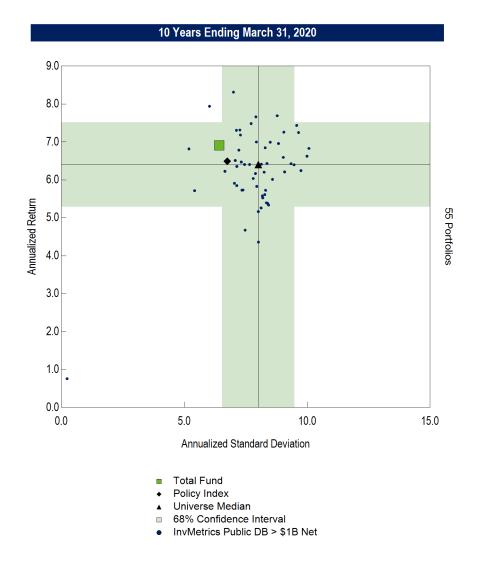
Note: Ranks are based on net returns.



# TOTAL FUND RISK/RETURN



InvMetrics Public DB > \$1B Net



Note: Ranks are based on net returns.

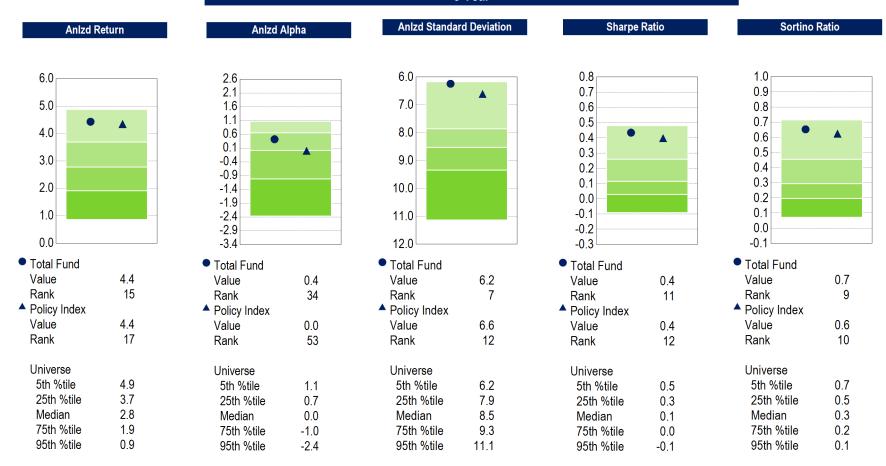


Total Fund vs. InvMetrics Public DB > \$1B Net (USD) (peer)
1 Year





Total Fund vs. InvMetrics Public DB > \$1B Net (USD) (peer) 3 Year











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





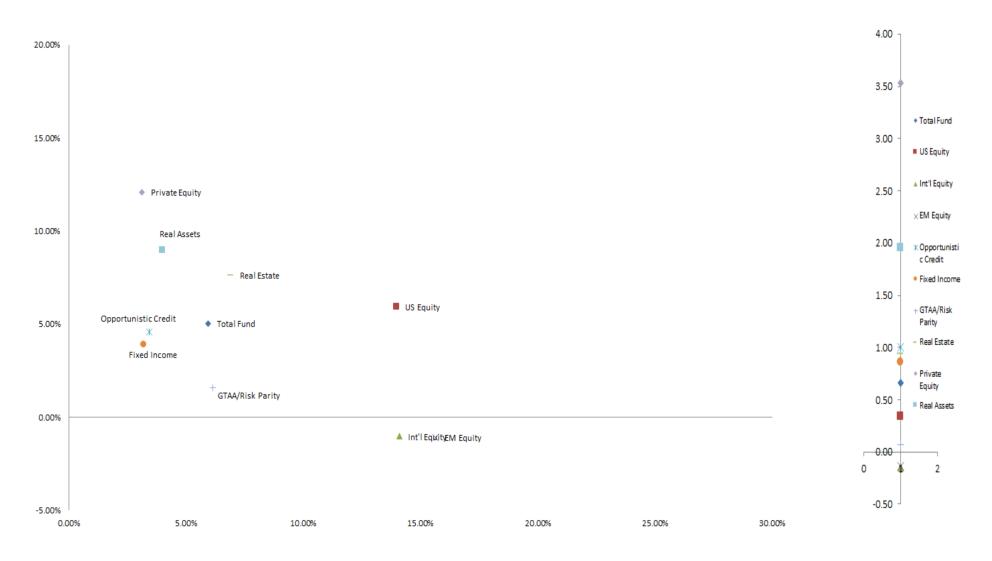
# 3 YEAR RISK/RETURN PROFILE



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



# **5 YEAR RISK/RETURN PROFILE**

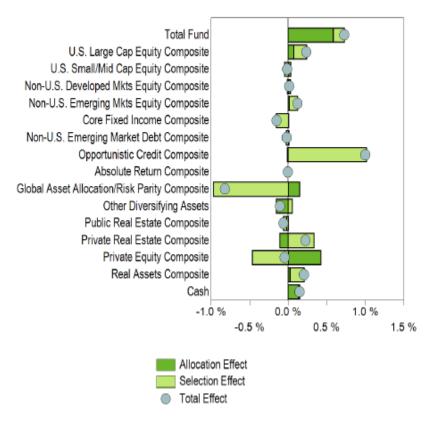


Note: Returns are net of fees. The graph on the right side shows composite level sharpe ratios.



### **TOTAL FUND ATTRIBUTION ANALYSIS**

Attribution Effects
1 Year Ending March 31, 2020



#### 1 Year Excess Return: +0.92%

- Allocation Effect: +0.77%
  - Private Equity overweight (+0.41%)
  - Cash overweight (+0.18%)
  - U.S. Large Cap Equity underweight (+0.16%)
  - Global Asset Allocation/Risk Parity overweight (+0.15%)
  - Private Real Estate underweight (-0.11%)
  - Other Diversifying Assets underweight (-0.14%)
- Manager Selection Effect: +0.15%
  - Opportunistic Credit outperformed (+1.02%)
  - Private Real Estate outperformed (+0.33%)
  - Real Assets outperformed (+0.18%)
  - U.S. Large Cap Equity outperformed (+0.16%)
  - Non-U.S. Emerging Markets Equity outperformed (+0.11%)
  - Core Fixed Income underperformed (-0.15%)
  - Private Equity underperformed (-0.46%)
  - Global Asset Allocation/Risk Parity underperformed (-0.97%)
- 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).

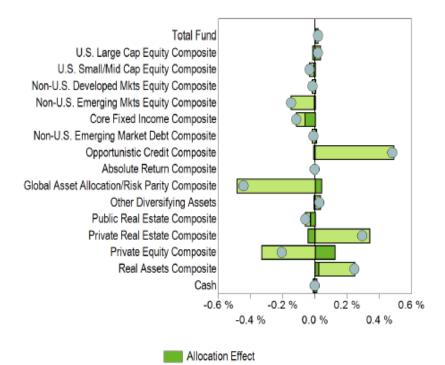
**Manager Selection Effect:** Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. [Weight Asset Class Benchmark × (Return Portfolio Asset Class – Return Asset Class in Interim Policy Index)] + **Interaction 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 Portfolio – 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 March 31, 2020



Selection Effect Total Effect

#### 3 Year Excess Return: +0.08%

- Allocation Effect: +0.06%
  - Private Equity overweight (+0.12%)
  - Core Fixed Income underweight (-0.06%)
- Manager Selection Effect: +0.02%
  - Opportunistic Credit outperformed (+0.49%)
  - Private Real Estate outperformed (+0.33%)
  - Real Assets outperformed (+0.22%)
  - Core Fixed Income underperformed (-0.06%)
  - Non U.S. Emerging Mkts Equity underperformed (-0.14%)
  - Private Equity underperformed (-0.33%)
  - Global Asset Allocation/Risk Parity underperformed (-0.49%)
- 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).

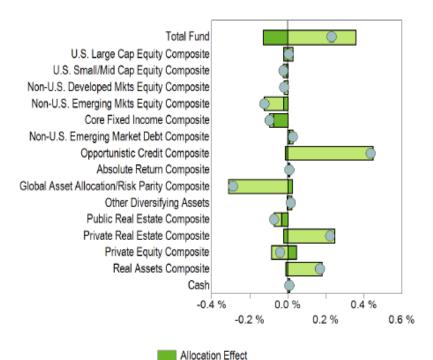
**Manager Selection Effect:** Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. [Weight Asset Class Benchmark × (Return Portfolio Asset Class – Return Asset Class in Interim Policy Index)] + **Interaction 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 March 31, 2020



Selection Effect Total Effect 5 Year Excess Return: +0.26%

- Allocation Effect: -0.11%
  - Core Fixed Income overweight (-0.08%)
- Manager Selection Effect: +0.37%
  - Opportunistic Credit outperformed (+0.45%)
  - Private Real Estate outperformed (+0.24%)
  - Real Assets outperformed (+0.18%)
  - Private Equity underperformed (-0.08%)
  - Emerging Mkts Equity underperformed (-0.10%)
  - Global Asset Allocation/Risk Parity 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 Portfolio – 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 March 31, 2020												
	% 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	10.9%	5.4%	3	14.9%	5	0.4%	11	0.6%	5	0.5	9	1.0
S&P 500	-	5.1%	5	15.2%	7	0.0%	17	0.0%	1	-		1.0
U.S. Small/Mid Cap Equity Composite	2.5%	-3.8%	99	20.2%	99	-0.8%	38	3.4%	85	-0.2		1.0
NMERB Small/Mid Cap Equity Blended Index		-3.1%	99	20.3%	99	0.0%	17	0.0%	1			1.0
Non-U.S. Developed Mkts Equity Composite	4.2%	-2.2%	67	15.0%	43	-0.3%	73	0.9%	12	-0.5		1.0
MSCI EAFE	-	-1.8%	54	14.6%	17	0.0%	55	0.0%	1		-	1.0
Non-U.S. Emerging Mkts Equity Composite	7.3%	-2.8%	32	15.8%	14	-1.5%	43	3.1%	43	-0.4	-	0.9
MSCI Emerging Markets	-	-1.6%	22	17.4%	56	0.0%	22	0.0%	1			1.0
Core Fixed Income Composite	6.4%	3.9%	38	3.8%	62	-1.1%	74	1.6%	44	-0.5		1.1
BBgBarc US Aggregate TR	-	4.8%	8	3.2%	20	0.0%	23	0.0%	1		-	1.0
Non-U.S. Emerging Market Debt Composite	1.6%	-1.2%	50	10.1%	52	-1.1%	27	2.5%	43	-0.4	-	1.0
Non-U.S. EMD Custom Benchmark	-	-0.1%	22	10.0%	50	0.0%	5	0.0%	1	-		1.0
Opportunistic Credit Composite	18.3%	3.1%		3.8%		2.1%		4.1%		0.7		0.5
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index		0.3%		7.6%		0.0%		0.0%			-	1.0
Global Asset Allocation/Risk Parity Composite	8.9%	0.4%		7.5%		-5.3%		7.4%		-0.9		0.8
GAA/Risk Parity Custom Index		7.0%		1.7%		0.0%	-	0.0%			-	1.0

3 Years Ending March 31, 2020													
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank						
Real Estate Composite	6.3%	8.0%	15	6.6%	96	7.3%	6						
NCREIF Property Index	-	6.4%	51	2.7%	36	0.0%	78						
Private Equity Composite	17.2%	11.7%	65	2.8%	1	10.8%	20						
Cambridge Associates US All PE (1 Qtr Lag)		14.1%	40	6.7%	78	0.0%	89						
Real Assets Composite	9.3%	9.1%	6	4.4%	16	4.2%	26						
CPI + 4% (Seasonally Adjusted)	-	6.0%	29	0.6%	1	0.0%	66						

<sup>1 -</sup> 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 92.9% because Absolute Return Composite, Diversifying Assets Composite, and Cash Composite are not included.



## **TOTAL FUND RISK STATISTICS**

	5 Years Ending March 31, 2020														
	% 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	10.9%	7.0%	2	13.4%	3	0.3%	5	0.5%	1	0.5	4	1.0			
S&P 500	-	6.7%	2	13.7%	5	0.0%	16	0.0%	1	-		1.0			
U.S. Small/Mid Cap Equity Composite	2.5%	0.0%	99	17.9%	99	-0.5%	23	3.3%	84	-0.1		1.0			
NMERB Small/Mid Cap Equity Blended Index		0.5%	99	18.0%	99	0.0%	16	0.0%	1			1.0			
Non-U.S. Developed Mkts Equity Composite	4.2%	-1.0%	84	14.1%	28	-0.4%	78	1.1%	6	-0.4		1.0			
MSCI EAFE	-	-0.6%	74	14.1%	28	0.0%	74	0.0%	1			1.0			
Non-U.S. Emerging Mkts Equity Composite	7.3%	-1.1%	45	15.6%	18	-0.9%	56	3.4%	45	-0.2		0.9			
MSCI Emerging Markets	-	-0.4%	29	17.6%	77	0.0%	31	0.0%	1			1.0			
Core Fixed Income Composite	6.4%	3.0%	51	3.5%	59	-0.5%	87	1.3%	31	-0.3		1.1			
BBgBarc US Aggregate TR	-	3.4%	22	3.1%	35	0.0%	57	0.0%	1			1.0			
Non-U.S. Emerging Market Debt Composite	1.6%	1.6%	30	9.0%	43	1.0%	6	3.5%	39	0.3	1	0.8			
Non-U.S. EMD Custom Benchmark	-	0.5%	51	10.1%	49	0.0%	16	0.0%	1			1.0			
Opportunistic Credit Composite	18.3%	4.6%		3.4%		3.0%		3.7%		0.7		0.5			
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index		2.1%		6.5%		0.0%		0.0%			-	1.0			
Global Asset Allocation/Risk Parity Composite	8.9%	0.8%		7.1%		-3.5%		6.4%		-0.8		0.7			
GAA/Risk Parity Custom Index	-	5.7%	-	4.9%		0.0%	-	0.0%			-	1.0			

5 Years Ending March 31, 2020														
	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank							
Real Estate Composite	6.3%	7.6%	67	6.9%	99	6.2%	11							
NCREIF Property Index	-	7.6%	67	3.3%	33	0.0%	82							
Private Equity Composite	17.2%	12.1%	42	3.1%	4	12.0%	16							
Cambridge Associates US All PE (1 Qtr Lag)	-	12.1%	42	6.3%	72	0.0%	87							
Real Assets Composite	9.3%	8.9%	6	4.0%	12	4.3%	27							
CPI + 4% (Seasonally Adjusted)	-	5.9%	38	0.6%	1	0.0%	82							

<sup>1 -</sup> 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 92.9% because Absolute Return Composite, Diversifying Assets Composite, and Cash Composite are not included.



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

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Total Fund	12,397,673,687	100.0	-9.2	7	-4.5	12	-1.4	14	4.4	15	5.0	9	6.9	26	8.7	Jul-83
Policy Index			<u>-9.7</u>	15	<u>-5.0</u>	18	<u>-2.4</u>	18	<u>4.4</u>	17	<u>4.8</u>	12	<u>6.5</u>	40		Jul-83
Over/Under			0.5		0.5		1.0		0.0		0.2		0.4			
60% MSCI ACWI (Net) / 40% FTSE WGBI			-12.4	43	-7.6	44	-4.1	40	2.9	48	3.2	64	4.6	97		Jul-83
InvMetrics Public DB > \$1B Net Median			-12.6		-8.0		-5.0		2.8		3.7		6.4		8.1	Jul-83
U.S. Equity Composite	1,656,829,961	13.4	-20.6	10	-12.4	10	-8.8	12	3.9	14	5.9	7	10.1	17	10.6	Jan-85
Russell 3000			<u>-20.9</u>	15	<u>-12.7</u>	15	<u>-9.1</u>	17	<u>4.0</u>	14	<u>5.8</u>	11	<u>10.1</u>	14	<u>10.5</u>	Jan-85
Over/Under			0.3		0.3		0.3		-0.1		0.1		0.0		0.1	
InvMetrics Public DB > \$1 Billion US Equity Net Median			-22.4		-15.1		-11.8		2.6		4.6		9.4			Jan-85
U.S. Large Cap Equity Composite	1,350,743,072	10.9	-18.3	3	-9.6	2	-5.7	2	5.4	3	7.0	2	10.6	5	5.9	Aug-99
S&P 500			<u>-19.6</u>	4	<u>-10.8</u>	3	<u>-7.0</u>	3	<u>5.1</u>	5	<u>6.7</u>	2	<u>10.5</u>	6	<u>5.3</u>	Aug-99
Over/Under			1.3		1.2		1.3		0.3		0.3		0.1		0.6	
InvMetrics Public DB > \$1 Billion US Equity Net Median			-22.4		-15.1		-11.8		2.6		4.6		9.4		5.4	Aug-99
S&P 500 Index Fund	1,350,743,072	10.9	-18.3	27	-9.6	20	-5.7	22	5.4	22	7.0	10	10.6	9	4.8	Jan-00
S&P 500			<u>-19.6</u>	40	<u>-10.8</u>	31	<u>-7.0</u>	33	<u>5.1</u>	24	<u>6.7</u>	13	<u>10.5</u>	11	<u>4.8</u>	Jan-00
Over/Under			1.3		1.2		1.3		0.3		0.3		0.1		0.0	
eV US Large Cap Core Equity Net Median			-20.1		-12.7		-8.7		3.4		5.0		9.6		5.9	Jan-00
U.S. Small/Mid Cap Equity Composite	306,086,889	2.5	-31.8	99	-26.1	99	-23.9	99	-3.8	99	0.0	99	6.9	98	5.6	Aug-99
NMERB Small/Mid Cap Equity Blended Index			<u>-29.7</u>	98	<u>-24.7</u>	99	<u>-22.5</u>	99	<u>-3.1</u>	99	<u>0.5</u>	99	<u>7.5</u>	96	<u>6.4</u>	Aug-99
Over/Under			-2.1		-1.4		-1.4		-0.7		-0.5		-0.6		-0.8	
InvMetrics Public DB > \$1 Billion US Equity Net Median			-22.4		-15.1		-11.8		2.6		4.6		9.4		5.4	Aug-99
S&P 400 Mid-Cap	306,086,889	2.5	-31.8	76	-26.1	77	-23.9	77							-8.3	Nov-17
Russell 2500			<u>-29.7</u>	67	<u>-24.7</u>	71	<u>-22.5</u>	72	<u>-3.1</u>	60	<u>0.5</u>	61	<u>7.7</u>	63	<u>-7.1</u>	Nov-17
Over/Under			-2.1		-1.4		-1.4								-1.2	
eV US Mid Cap Equity Net Median			-25.9		-20.2		-17.4		0.1		2.0		8.2		-4.4	Nov-17

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



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

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

<sup>3 -</sup> Total Fund market value includes \$56,542.90 from Legacy Assets.

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

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Non-U.S. Equity Composite	1,424,423,566	11.5	-23.4	40	-17.5	37	-16.0	55	-2.6	62	-1.0	78	0.3	99	5.2	Jul-95
MSCI ACWI ex USA			<u>-23.4</u>	38	<u>-18.0</u>	52	<u>-15.6</u>	54	<u>-2.0</u>	46	<u>-0.6</u>	69	<u>2.1</u>	87	<u>4.3</u>	Jul-95
Over/Under			0.0		0.5		-0.4		-0.6		-0.4		-1.8		0.9	
InvMetrics Public DB > \$1 Billion Global ex-US Equity Net Median			-24.1		-17.9		-15.0		-2.1		-0.2		2.7		4.6	Jul-95
Non-U.S. Developed Mkts Equity Composite	520,369,142	4.2	-23.9	58	-17.9	58	-14.8	48	-2.2	67	-1.0	84	2.3	99	4.9	Sep-95
MSCI EAFE			<u>-22.8</u>	21	<u>-17.4</u>	46	<u>-14.4</u>	46	<u>-1.8</u>	54	<u>-0.6</u>	74	<u>2.7</u>	79	<u>3.9</u>	Sep-95
Over/Under			-1.1		-0.5		-0.4		-0.4		-0.4		-0.4		1.0	
InvMetrics Public DB > \$1 Billion Dev Mkt ex-US Eq Net Median			-23.8		-17.7		-14.8		-1.5		-0.2		3.3		5.0	Sep-95
BlackRock MSCI EAFE	425,281,766	3.4	-22.8	37	-17.5	39	-14.3	35	-1.6	39	-0.3	44			1.5	Aug-13
MSCI EAFE			<u>-22.8</u>	38	<u>-17.4</u>	38	<u>-14.4</u>	35	<u>-1.8</u>	43	<u>-0.6</u>	52	<u>2.7</u>	71	<u>1.2</u>	Aug-13
Over/Under			0.0		-0.1		0.1		0.2		0.3				0.3	
eV All EAFE Equity Net Median			-24.3		-18.4		-16.1		-2.4		-0.6		3.7		1.4	Aug-13
Global Alpha International Small Cap	95,087,376	0.8	-28.5	80							-				-25.3	Dec-19
MSCI EAFE			<u>-22.8</u>	38	<u>-17.4</u>	38	<u>-14.4</u>	35	<u>-1.8</u>	43	<u>-0.6</u>	52	<u>2.7</u>	71	<u>-20.3</u>	Dec-19
Over/Under			-5.7												-5.0	
MSCI EAFE Small Cap			-27.5	75	-19.5	60	-18.1	69	-2.9	54	1.0	30	4.8	25	-24.4	Dec-19
eV All EAFE Equity Net Median			-24.3		-18.4		-16.1		-2.4		-0.6		3.7		-21.4	Dec-19

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



# PERFORMANCE DETAIL - EMERGING MARKET EQUITY

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Non-U.S. Emerging Mkts Equity Composite	904,054,424	7.3	-23.2	20	-17.2	20	-16.6	21	-2.8	32	-1.1	45	-0.7	73	5.1	Sep-00
MSCI Emerging Markets			<u>-23.6</u>	25	<u>-18.2</u>	25	<u>-17.7</u>	25	<u>-1.6</u>	22	<u>-0.4</u>	29	<u>0.7</u>	33	<u>6.1</u>	Sep-00
Over/Under			0.4		1.0		1.1		-1.2		-0.7		-1.4		-1.0	
InvMetrics Public DB > \$1 Billion Emg Mkt Eq Net Median			-24.8		-20.1		-19.1		-3.8		-1.2		-0.1		5.2	Sep-00
Neuberger Berman Emerging Markets	316,610,804	2.6	-23.4	32	-18.0	34	-17.3	38	-1.8	36	0.6	27			1.2	Aug-13
MSCI Emerging Markets			<u>-23.6</u>	35	<u>-18.2</u>	37	<u>-17.7</u>	40	<u>-1.6</u>	32	<u>-0.4</u>	41	<u>0.7</u>	64	<u>0.7</u>	Aug-13
Over/Under			0.2		0.2		0.4		-0.2		1.0				0.5	
eV Emg Mkts Equity Net Median			-25.1		-20.1		-19.1		-2.7		-0.9		1.3		0.4	Aug-13
State Street Bank + Trust Co	1,962	0.0	6.0		7.1			-	-		-				7.2	Jun-19
MSCI Emerging Markets			<u>-23.6</u>		<u>-18.2</u>		<u>-17.7</u>		<u>-1.6</u>		<u>-0.4</u>		<u>0.7</u>		<u>-13.1</u>	Jun-19
Over/Under			29.6		25.3										20.3	
RBC GAM EME Fund	279,381,447	2.3	-22.9	25											-18.7	Aug-19
MSCI Emerging Markets			<u>-23.6</u>	35	<u>-18.2</u>	37	<u>-17.7</u>	40	<u>-1.6</u>	32	<u>-0.4</u>	41	<u>0.7</u>	64	<u>-17.2</u>	Aug-19
Over/Under			0.7												-1.5	
eV Emg Mkts Equity Net Median			-25.1		-20.1		-19.1		-2.7		-0.9		1.3		-19.2	Aug-19
UBS Emerging Markets EQ OPP	308,055,949	2.5	-23.4	32							-				-10.8	Aug-19
MSCI Emerging Markets			<u>-23.6</u>	35	<u>-18.2</u>	37	<u>-17.7</u>	40	<u>-1.6</u>	32	<u>-0.4</u>	41	<u>0.7</u>	64	<u>-17.2</u>	Aug-19
Over/Under			0.2												6.4	
eV Emg Mkts Equity Net Median			-25.1		-20.1		-19.1		-2.7		-0.9		1.3		-19.2	Aug-19



<sup>1 -</sup> State Street Bank + Trust Co was funded with \$1.5M in June 2019.

<sup>2 -</sup> RBC GAM EME fund was funded with \$285M in July 2019.

<sup>3 -</sup> UBS Emerging Markets EQ OPP funded with \$95M in July 2019.

### PERFORMANCE DETAIL - TOTAL FI AND CORE FI

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Fixed Income Composite	3,276,114,453	26.4	-4.6	77	-2.4	81	-0.2	84	3.0	60	3.9	14	5.6	9	3.0	Jan-85
BBgBarc US Aggregate TR			<u>3.1</u>	1	<u>5.7</u>	2	<u>8.9</u>	1	<u>4.8</u>	9	<u>3.4</u>	24	<u>3.9</u>	60	<u>6.8</u>	Jan-85
Over/Under			-7.7		-8.1		-9.1		-1.8		0.5		1.7		-3.8	
InvMetrics Public DB > \$1 Billion Fixed Income Net Median			-2.7		-0.1		2.8		3.1		3.0		4.1		5.1	Jan-85
Core Fixed Income Composite	799,442,822	6.4	0.1	39	3.0	39	6.2	35	3.9	38	3.0	51	4.2	55	5.2	Dec-99
BBgBarc US Aggregate TR			<u>3.1</u>	15	<u>5.7</u>	14	<u>8.9</u>	12	<u>4.8</u>	8	<u>3.4</u>	22	<u>3.9</u>	68	<u>5.1</u>	Dec-99
Over/Under			-3.0		-2.7		-2.7		-0.9		-0.4		0.3		0.1	
InvMetrics Public DB > \$1 Billion US Fixed Income Net Median			-0.4		1.4		4.3		3.4		3.0		4.3		5.2	Dec-99
Core Fixed Income	799,442,822	6.4	0.1	81	3.0	79	6.2	77	3.9	77	3.0	68			3.0	Apr-15
BBgBarc US Aggregate TR			<u>3.1</u>	15	<u>5.7</u>	12	<u>8.9</u>	13	<u>4.8</u>	15	<u>3.4</u>	30	<u>3.9</u>	56	<u>3.4</u>	Apr-15
Over/Under			-3.0		-2.7		-2.7		-0.9		-0.4				-0.4	
eV US Core Fixed Inc Net Median			1.7		4.1		7.3		4.4		3.2		3.9		3.2	Apr-15



### PERFORMANCE DETAIL - EMERGING MARKET DEBT

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Non-U.S. Emerging Market Debt Composite	204,124,049	1.6	-14.5	34	-11.9	49	-8.1	44	-1.2	50	1.6	30			0.4	Sep-11
Non-U.S. EMD Custom Benchmark			<u>-14.3</u>	33	<u>-10.9</u>	33	<u>-6.6</u>	31	<u>-0.1</u>	22	<u>0.5</u>	51			<u>-1.3</u>	Sep-11
Over/Under			-0.2		-1.0		-1.5		-1.1		1.1				1.7	
InvMetrics All DB Emg Mkt Fix Inc Net Median			-16.1		-12.2		-8.6		-1.2		0.5				1.1	Sep-11
EMSO	97,795,665	0.8	-8.8	6	-6.7	9	-4.6	13	-0.7	38	3.3	7			3.1	Sep-11
JP Morgan GBI - EM Global Diversified Index			<u>-15.2</u>	43	<u>-11.5</u>	36	<u>-6.5</u>	26	<u>-0.8</u>	41	<u>0.3</u>	70	<u>0.5</u>	76	<u>-1.4</u>	Sep-11
Over/Under			6.4		4.8		1.9		0.1		3.0				4.5	
eV All Emg Mkts Fixed Inc Net Median			-15.7		-12.6		-8.6		-1.2		1.6		3.6		2.5	Sep-11
Prudential	106,312,105	0.9	-19.2	92	-16.1	89	-11.2	86	-1.7	65					3.0	Feb-16
50% JPM EMBI Global Diversified/ 50% JPM GBI-EM Global Diversified			<u>-14.3</u>	34	<u>-10.9</u>	30	<u>-6.6</u>	27	<u>-0.1</u>	32	<u>1.6</u>	51	<u>2.7</u>	65	<u>3.5</u>	Feb-16
Over/Under			-4.9		-5.2		-4.6		-1.6						-0.5	
eV All Emg Mkts Fixed Inc Net Median			-15.7		-12.6		-8.6		-1.2		1.6		3.6		3.1	Feb-16

<sup>3 -</sup> 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.



<sup>1 -</sup> Non-U.S. Emerging Market Debt Composite market value includes \$16,278 in terminated manager account.

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

### PERFORMANCE DETAIL - OPPORTUNISTIC FI

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Opportunistic Credit Composite	2,272,547,583	18.3	-5.1		-3.3	-	-1.5	-	3.1		4.6		6.7		7.5	May-08
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>4.8</u>	May-08
Over/Under			7.5		6.2		6.0		2.8		2.5		2.3		2.7	
ICE BofAML BB-B US High Yield Constrained TR			-11.9		-8.1		-5.5		1.3		2.9		5.6		5.9	May-08
Beachpoint Combined	410,930,895	3.3	-16.7	-	-13.0		-10.7	-	-0.5		1.9		4.9		5.6	Mar-04
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>4.9</u>	Mar-04
Over/Under			-4.1		-3.5		-3.2		-0.8		-0.2		0.5		0.7	
Beachpoint Total Return	410,930,895	3.3	-16.7		-13.0		-10.7	-	-0.5		1.9		4.9		5.4	Jun-08
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>4.8</u>	Jun-08
Over/Under			-4.1		-3.5		-3.2		-0.8		-0.2		0.5		0.6	
Pimco Disco Combined	113,170,721	0.9	-6.4		-3.2		-1.6		5.6		6.9		9.2		10.5	Jul-08
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>4.9</u>	Jul-08
Over/Under			6.2		6.3		5.9		5.3		4.8		4.8		5.6	
Pimco Disco II	113,170,721	0.9	-6.4		-3.2		-1.6		5.6		6.9				11.2	Oct-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>	-	<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>4.4</u>	Oct-11
Over/Under			6.2		6.3		5.9		5.3		4.8				6.8	
GoldenTree Combined	200,843,591	1.6	2.3		1.4		3.2		5.5		5.1		7.8		8.3	Oct-09
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>5.1</u>	Oct-09
Over/Under			14.9		10.9		10.7		5.2		3.0		3.4		3.2	
Goldentree II	200,843,591	1.6	2.3		1.4		3.2		5.5		5.1				7.8	Sep-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>	-	<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>4.2</u>	Sep-11
Over/Under			14.9		10.9		10.7		5.2		3.0				3.6	
Medley Capital	50,384,186	0.4	-3.1		-13.8		-17.2		-10.4		-4.1				1.0	Aug-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>3.7</u>	Aug-11
Over/Under			9.5		-4.3		-9.7		-10.7		-6.2				-2.7	



### PERFORMANCE DETAIL - OPPORTUNISTIC FI

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Waterfall - Eden	320,091,369	2.6	1.4		4.6		7.2		7.2		6.3				9.1	Aug-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>3.7</u>	Aug-11
Over/Under			14.0		14.1		14.7		6.9		4.2				5.4	
Waterfall - Victoria	96,838,623	0.8	1.4		8.0		10.1		12.1		10.6				10.3	Aug-11
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>3.7</u>	Aug-11
Over/Under			14.0		17.5		17.6		11.8		8.5				6.6	
Gramercy Distressed Opp II	73,148,438	0.6	-3.0		-17.6		-17.5		-10.4		-4.9				-0.7	Jul-12
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>3.6</u>	Jul-12
Over/Under			9.6		-8.1		-10.0		-10.7		-7.0				-4.3	
ICE Canyon	1,318,556	0.0	10.7		9.3		10.6		5.6		6.2				3.6	Jun-12
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>3.7</u>	Jun-12
Over/Under			23.3		18.8		18.1		5.3		4.1				-0.1	
Lone Star VIII	21,417,889	0.2	-1.1		-2.7		-5.7	-	-1.0		-0.8				6.4	Oct-13
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>2.8</u>	Oct-13
Over/Under			11.5		6.8		1.8		-1.3		-2.9				3.6	
Marathon European Credit Opportunity II	34,286,089	0.3	2.0		4.4		4.4		10.9		9.1				8.3	Mar-14
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>2.2</u>	Mar-14
Over/Under			14.6		13.9		11.9		10.6		7.0				6.1	
Lone Star IX	44,859,946	0.4	4.5		6.6		4.8		4.3		-11.5				-11.5	Apr-15
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>2.1</u>	Apr-15
Over/Under			17.1		16.1		12.3		4.0		-13.6				-13.6	



### PERFORMANCE DETAIL - OPPORTUNISTIC FI

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Kildare European Partners I LP	13,308,868	0.1	3.3		6.2		6.3		17.2		14.7				12.8	May-14
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>2.2</u>	May-14
Over/Under			15.9		15.7		13.8		16.9		12.6				10.6	
Black Forest	47,253,976	0.4	-3.1		1.3		3.5		6.3		8.1				6.9	Aug-14
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>2.1</u>	Aug-14
Over/Under			9.5		10.8		11.0		6.0		6.0				4.8	
Gramercy Distressed Opp III	83,215,200	0.7	-3.1		-13.6		-12.4		-6.0						-4.5	Jan-16
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>3.4</u>	Jan-16
Over/Under			9.5		-4.1		-4.9		-6.3						-7.9	
GSO Capital Opp III	68,637,534	0.6	3.3		8.4		12.6		11.1						9.3	Oct-16
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>1.2</u>	Oct-16
Over/Under			15.9		17.9		20.1		10.8						8.1	
Cross Ocean ESS II	56,447,634	0.5	1.7		6.1		9.8								10.5	May-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>0.0</u>	May-17
Over/Under			14.3		15.6		17.3								10.5	
OWS CREDIT OPPORTUNITY FD	123,449,100	1.0	1.6		3.7		6.3								8.0	Jul-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-0.2</u>	Jul-17
Over/Under			14.2		13.2		13.8								8.2	
TAIGA SPECIAL OPP DAC LP	152,696,313	1.2	-8.1		-4.8		-2.3								6.2	Aug-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-0.6</u>	Aug-17
Over/Under			4.5		4.7		5.2								6.8	
Sutherland Asset Management	31,783,889	0.3	-50.7		-46.3		-44.1				_				-19.1	Jul-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-0.2</u>	Jul-17
Over/Under			-38.1		-36.8		-36.6								-18.9	



### PERFORMANCE DETAIL - OPPORTUNISTIC FI

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
OHA Strategic Credit II	42,495,080	0.3	1.0		0.8		4.7								18.3	Dec-17
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-1.1</u>	Dec-17
Over/Under			13.6		10.3		12.2								19.4	
Lone Star X	81,565,855	0.7	1.9		9.2		9.4								-18.0	Jan-18
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-1.3</u>	Jan-18
Over/Under			14.5		18.7		16.9								-16.7	
Kildare European Partners II LP	30,706,499	0.2	4.0		8.8		8.6								6.4	Nov-18
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-3.6</u>	Nov-18
Over/Under			16.6		18.3		16.1								10.0	
Riverstone Credit Partners II	48,503,771	0.4	0.9		5.7		9.8								1.3	Dec-18
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-3.3</u>	Dec-18
Over/Under			13.5		15.2		17.3								4.6	
RCP II N Strategic Credit	11,431,823	0.1	5.3		11.8		19.4								14.2	Jan-19
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-1.9</u>	Jan-19
Over/Under			17.9		21.3		26.9								16.1	
OLEA SPECIAL OPPS OFFSHORE I	52,570,750	0.4	-3.6		5.4										12.1	Jun-19
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-8.3</u>	Jun-19
Over/Under			9.0		14.9										20.4	
Cross Ocean USD ESS III	34,968,452	0.3	2.8												1.7	Nov-19
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-10.6</u>	Nov-19
Over/Under			15.4												12.3	
The Varde Fund XIII, L.P.	25,448,250	0.2	3.0												3.0	Jan-20
50% CS Leveraged Loan / 50% ICE BofA ML US HY BB-B Rated Constrained Index			<u>-12.6</u>		<u>-9.5</u>		<u>-7.5</u>		<u>0.3</u>		<u>2.1</u>		<u>4.4</u>		<u>-12.6</u>	Jan-20
Over/Under			15.6												15.6	
General Ledger	774,234	0.0														

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

Cross Ocean US ESS III funded 10/17/2019. The Varde Fund XIII, L.P. funded 12/31/2019.



## PERFORMANCE DETAIL - GAA/RISK PARITY

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Absolute Return Composite	353,847	0.0														
GAA, Risk Parity, and Other Diversifying Assets	1,513,169,614	12.2	-9.7		-6.8		-3.8		1.7		1.6		5.7		6.0	Oct-09
3-Month LIBOR + 2%			<u>0.9</u>		<u>3.0</u>		<u>4.1</u>		<u>4.1</u>		<u>3.5</u>		<u>2.9</u>		<u>2.9</u>	Oct-09
Over/Under	4 400 404 675	0.0	-10.6		-9.8		-7.9		-2.4		-1.9		2.8		3.1	0-4.00
Global Asset Allocation/Risk Parity Composite	1,102,461,675	8.9	-12.6		-9.6	-	-6.8	-	0.4	-	0.8		5.3		5.6	Oct-09
GAA/Risk Parity Custom Index Over/Under			<u>0.9</u> -13.5		<u>3.0</u> -12.6		<u>4.1</u> -10.9		<u>7.0</u> -6.6		<u>5.7</u> -4.9		<u>6.2</u> -0.9		<u>6.4</u> -0.8	Oct-09
Global Asset Allocation Composite	421.603.051	3.4	-16.9		-14.4	_	-13.2		-3.0		-1.4		-0.9		0.0	Nov-12
Credit Suisse Hedge Global Macro	42 1,000,00 i	V.T	<u>-8.1</u>		<u>-5.4</u>		<u>-1.1</u>		<u>1.1</u>		0.6		<u>3.6</u>		2.2	Nov-12
Over/Under			<u>-8.8</u>		<u>-9.0</u>		-12.1		-4.1		-2.0		0.0		-2.2	1407 12
Bridgewater Pure Alpha	269,042,765	2.2	-15.4	67	-12.2	74	-11.3	80	-1.9	83	-1.4	89	4.3	32	4.5	Oct-09
Credit Suisse Hedge Global Macro	, ,		<u>-8.1</u>	20	<u>-5.4</u>	18	<u>-1.1</u>	12	<u>1.1</u>	37	<u>0.6</u>	51	<u>3.6</u>	54	<u>3.9</u>	Oct-09
Over/Under			-7.3		-6.8		-10.2		-3.0		-2.0		0.7		0.6	
eV Global TAA Net Median			-12.8		-9.4		-6.6		0.2		0.6		3.7		4.1	Oct-09
PIMCO All Asset All Authority	152,560,286	1.2	-19.4	86	-17.9	95	-16.3	96	-4.4	99	-1.7	94			-1.6	Jul-13
Credit Suisse Hedge Global Macro			<u>-8.1</u>	20	<u>-5.4</u>	18	<u>-1.1</u>	12	<u>1.1</u>	37	<u>0.6</u>	51	<u>3.6</u>	54	<u>2.0</u>	Jul-13
Over/Under			-11.3		-12.5		-15.2		-5.5		-2.3				-3.6	
eV Global TAA Net Median			-12.8		-9.4		-6.6		0.2		0.6		3.7		2.3	Jul-13
Risk Parity	680,858,624	5.5	-9.8		-6.1	-	-2.1		3.0		2.5				3.4	Nov-12
GAA/Risk Parity Custom Index			<u>0.9</u>		<u>3.0</u>		<u>4.1</u>		<u>7.0</u>		<u>5.7</u>		<u>6.2</u>		<u>6.5</u>	Nov-12
Over/Under			-10.7		-9.1		-6.2		-4.0		-3.2				-3.1	
Bridgewater All Weather	453,467,184	3.7	-9.9	27	-6.1	22	-2.6	19	2.7	14	2.0	21	6.3	11	6.6	Oct-09
60% MSCI World (Gross) / 40% FTSE WGBI			<u>-12.2</u>	39	<u>-7.0</u>	26	<u>-3.3</u>	24	<u>3.5</u>	13	<u>3.7</u>	5	<u>5.4</u>	17	<u>5.5</u>	Oct-09
Over/Under			2.3		0.9		0.7		-0.8		-1.7		0.9		1.1	
eV Global TAA Net Median			-12.8		-9.4		-6.6		0.2		0.6		3.7		4.1	Oct-09
PanAgora	227,391,441	1.8	-9.7	26	-6.1	22	-1.0	11	3.6	11	3.5	6			6.3	Dec-13
GAA/Risk Parity Custom Index			<u>0.9</u>	1	<u>3.0</u>	1	<u>4.1</u>	1	<u>7.0</u>	1	<u>5.7</u>	1	<u>6.2</u>	11	<u>5.1</u>	Dec-13
Over/Under			-10.6		-9.1		-5.1		-3.4		-2.2		0.7		1.2	D 40
eV Global TAA Net Median			-12.8		-9.4		-6.6		0.2		0.6		3.7		1.5	Dec-13



<sup>1 -</sup> Absolute Return Composite includes \$353,847 in liquidating assets.

<sup>2 -</sup> 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.

<sup>3 -</sup> 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

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
39 3.3	-0.1		2.5		6.6	-			-	-			8.6	Feb-18
	<u>0.9</u>		<u>3.0</u>		<u>4.1</u>		<u>4.1</u>		<u>3.5</u>		<u>2.9</u>		<u>4.3</u>	Feb-18
	-1.0		-0.5		2.5								4.3	
63 0.4	0.7		12.5		15.1								9.7	Apr-18
	<u>0.9</u>		<u>3.0</u>		<u>4.1</u>		<u>4.1</u>		<u>3.5</u>		<u>2.9</u>		<u>4.4</u>	Apr-18
	-0.2		9.5		11.0								5.3	
37 1.0	-0.3		-6.3		-5.9								2.2	Feb-18
	<u>0.9</u>		<u>3.0</u>		<u>4.1</u>		<u>4.1</u>		<u>3.5</u>		<u>2.9</u>		<u>4.3</u>	Feb-18
	-1.2		-9.3		-10.0								-2.1	
69 1.2	-3.6		5.5		15.1								15.1	Oct-18
	<u>0.9</u>		<u>3.0</u>		<u>4.1</u>		<u>4.1</u>		<u>3.5</u>		<u>2.9</u>		<u>4.3</u>	Oct-18
	-4.5		2.5		11.0								10.8	
30 0.4	10.6		11.9		16.4								12.4	Oct-18
	<u>0.9</u>		<u>3.0</u>		<u>4.1</u>		<u>4.1</u>		<u>3.5</u>		<u>2.9</u>		<u>4.3</u>	Oct-18
	9.7		8.9		12.3								8.1	
91 0.2	-5.7												7.9	Oct-19
	<u>0.9</u>		<u>3.0</u>		<u>4.1</u>		<u>4.1</u>		<u>3.5</u>		<u>2.9</u>		<u>1.9</u>	Oct-19
	-6.6												6.0	
0.2														
	\$) Portfolio  39 3.3  63 0.4  37 1.0  69 1.2  30 0.4  91 0.2	\$) Portfolio (%)  39 3.3 -0.1	\$) Portfolio (%) Rank  39 3.3 -0.1	\$\text{3MO} \text{Rank} \text{YTD} \\ \( \( \) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	3	3	30	\$\begin{array}{c ccccccccccccccccccccccccccccccccccc	3	10	3	10   10   10   10   10   10   10   10	Note   Note	No   Sign   No   Sign   No   Portfolio   Portfo



#### 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	40,499,406	47,430,863	9.7	Apr-18
2017	1609 Fund	125,000,000	125,000,000	127,103,837	2.2	Feb-18
2018	Olea Special Opportunities Offshore Fund	135,000,000	135,000,000	149,420,969	15.1	Oct-18
2018	Orchard Liquid Credit Fund	40,000,000	40,000,000	47,660,880	12.4	Nov-18
2019	OrbiMed Royalty & Credit Opps. III	100,000,000	20,000,000	19,091,391	7.9	Oct-19
2019	AE Industrial AA	150,000,000	20,000,000	20,000,000		
2019	Cloverlay	150,000,000				
Total	Other Diversifying Assets	800,000,000	360,499,406	410,707,940	8.6	Feb-18

<sup>\*</sup>Market Values and Performance data are through 3/31/2020

#### 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	0.02	0.03	0.08	-0.04	-0.18	-0.04	0.11	-0.11	0.08	-0.03	1.00				
EIG Energy Fund	-0.29	-0.33	-0.30	-0.22	-0.12	-0.12	-0.17	-0.49	0.21	-0.07	0.21	1.00			
1609 Fund	-0.14	-0.12	-0.11	-0.25	-0.15	-0.11	0.02	0.01	0.15	0.06	0.41	-0.05	1.00		
OLEA	0.36	0.38	0.41	0.29	0.02	0.21	0.40	0.24	-0.23	0.00	0.77	-0.20	-0.23	1.00	
Orchard	-0.75	-0.60	-0.67	-0.72	-0.67	-0.83	-0.87	-0.61	0.17	-0.32	0.12	-0.08	0.33	-0.20	1.00



### **PERFORMANCE DETAIL - REAL ESTATE**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Real Estate Composite	775,013,914	6.3	-7.3	96	-2.0	91	0.7	77	8.0	15	7.6	67	11.7	6	9.7	Dec-03
NCREIF Property Index Over/Under			<u>0.7</u> -8.0	68	<u>3.7</u> -5.7	50	<u>5.3</u> -4.6	40	<u>6.4</u> 1.6	51	<u>7.6</u> 0.0	67	<u>10.2</u> 1.5	62	<u>8.8</u> 0.9	Dec-03
Wilshire REIT			-25.6	99	-20.7	99	-19.4	99	-2.5	99	-0.2	99	7.7	88	7.3	Dec-03
InvMetrics Public DB > \$1 Billion Real Estate Net Median			1.0		3.6		4.2		6.4		8.0		10.7		7.4	Dec-03
Public Real Estate Composite	224,361,250	1.8	-27.6	99	-22.7	99	-21.1	99	-3.9	99	-1.7	99	7.0	89	6.9	Dec-03
Wilshire REIT Over/Under			<u>-25.6</u> -2.0	99	<u>-20.7</u> -2.0	99	<u>-19.4</u> -1.7	99	<u>-2.5</u> -1.4	99	<u>-0.2</u> -1.5	99	<u>7.7</u> -0.7	88	<u>7.3</u> -0.4	Dec-03
InvMetrics Public DB > \$1 Billion Real Estate Net Median			1.0		3.6		4.2		6.4		8.0		10.7		7.4	Dec-03
Brookfield	224,361,250	1.8	-27.6	88	-22.7	86	-21.1	85	-3.9	90	-2.2	95			5.3	Jul-11
MSCI US REIT Over/Under			<u>-27.2</u> -0.4	85	<u>-22.7</u> 0.0	86	<u>-22.0</u> 0.9	86	<u>-4.2</u> 0.3	91	<u>-1.7</u> -0.5	90	<u>6.1</u>	95	<u>4.1</u> 1.2	Jul-11
eV US REIT Net Median			-23.4		-17.4		-16.0		-1.1		0.9		8.3		6.3	Jul-11
Private Real Estate Composite	550,652,664	4.4	4.7	1	10.2	1	13.6	1	14.5	1	13.7	1	14.2	1	9.1	Jan-08
NCREIF Property Index			<u>0.7</u>	48	<u>3.7</u>	34	<u>5.3</u>	28	<u>6.4</u>	58	<u>7.6</u>	57	<u>10.2</u>	38	<u>6.1</u>	Jan-08
Over/Under			4.0		6.5		8.3		8.1		6.1		4.0		3.0	
InvMetrics Public DB Real Estate Priv Net Median			0.6		3.3		4.5		6.5		7.8		9.8		4.4	Jan-08
U.S. Private Real Estate	550,652,664	4.4	4.7		10.2		13.6		14.5		13.7		14.5		9.7	Jan-08
NCREIF Property Index Over/Under			<u>0.7</u> 4.0		<u>3.7</u> 6.5		<u>5.3</u> 8.3		<u>6.4</u> 8.1		<u>7.6</u> 6.1		<u>10.2</u> 4.3		<u>6.1</u> 3.6	Jan-08

<sup>1</sup> - 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	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Private Equity Composite	2,130,414,933	17.2	2.0	63	7.3	50	11.1	54	11.7	65	12.1	42	13.5	24	7.4	Jun-06
Cambridge Associates US All PE (1 Qtr Lag) Over/Under			<u>4.0</u> -2.0	23	<u>9.0</u> -1.7	41	<u>14.3</u> -3.2	37	<u>14.1</u> -2.4	40	<u>12.1</u> 0.0	42	<u>13.8</u> -0.3	17	<u>12.3</u> -4.9	Jun-06
InvMetrics Public DB > \$1 Billion Private Equity Net Median			2.6		7.3		12.9		13.2		11.6		12.0		10.0	Jun-06
Real Assets Composite	1,153,974,106	9.3	-1.1	28	1.3	28	8.2	5	9.1	6	8.9	6	5.8	63	3.3	Jul-08
CPI + 4% (Seasonally Adjusted)			<u>0.8</u>	7	<u>4.0</u>	8	<u>5.6</u>	22	<u>6.0</u>	29	<u>5.9</u>	38	<u>5.8</u>	63	<u>5.5</u>	Jul-08
Over/Under			-1.9		-2.7		2.6		3.1		3.0		0.0		-2.2	
InvMetrics Public DB > \$1 Billion Real Assets/Commodities Net Median			-2.9		-1.7		1.0		2.6		3.2		6.9		2.7	Jul-08
Infrastructure Composite	456,605,062	3.7	-0.4		4.7		11.0		8.0		8.8		5.7		3.7	Jul-08
Infrastructure	446,386,077	3.6	-0.4		4.5		10.7		7.9		7.3		5.3		3.4	Jul-08
CPI + 4% (Seasonally Adjusted)			<u>0.8</u>		<u>4.0</u>		<u>5.6</u>		<u>6.0</u>		<u>5.9</u>		<u>5.8</u>		<u>5.5</u>	Jul-08
Over/Under			-1.2		0.5		5.1		1.9		1.4		-0.5		-2.1	
International Infrastructure	10,218,985	0.1	0.5		7.3		14.9		10.4		30.7				-0.2	Jan-13
CPI + 4% (Seasonally Adjusted)			<u>0.8</u>		<u>4.0</u>		<u>5.6</u>		<u>6.0</u>		<u>5.9</u>		<u>5.8</u>		<u>5.6</u>	Jan-13
Over/Under			-0.3		3.3		9.3		4.4		24.8				-5.8	
Natural Resources	697,369,045	5.6	-1.5		-0.8	-	6.5	-	9.9		9.0		6.3		4.7	Mar-09
Harvest Fund	25,042,837	0.2	-48.9		-52.0		-52.1		-23.2						-17.4	Aug-16
Alerian MLP Index			<u>-57.2</u>		<u>-61.0</u>		<u>-60.9</u>		<u>-28.9</u>		<u>-20.7</u>		<u>-5.0</u>		<u>-23.0</u>	Aug-16
Over/Under			8.3		9.0		8.8		5.7						5.6	
Energy	280,828,711	2.3	-3.1		-2.4		10.7		23.8		17.3				5.1	Jan-14
CPI + 4% (Seasonally Adjusted)			<u>0.8</u>		<u>4.0</u>		<u>5.6</u>		<u>6.0</u>		<u>5.9</u>		<u>5.8</u>		<u>5.6</u>	Jan-14
Over/Under			-3.9		-6.4		5.1		17.8		11.4				-0.5	
Agriculture Composite	143,996,779	1.2	1.4		4.5		7.8		4.7		4.4				4.4	Aug-12
NCREIF Farmland			<u>-0.1</u>		<u>3.2</u>		<u>4.0</u>		<u>5.7</u>		<u>6.6</u>		<u>10.9</u>		<u>10.4</u>	Aug-12
Over/Under			1.5		1.3		3.8		-1.0		-2.2				-6.0	
Timber Composite	120,720,248	1.0	0.2		1.9		3.9	-	5.0		5.5		5.5		4.0	Mar-09
NCREIF Timberland Index			<u>0.1</u>		<u>0.3</u>		<u>1.3</u>		<u>2.5</u>		<u>2.8</u>		<u>4.5</u>		<u>3.6</u>	Mar-09
Over/Under			0.1		1.6		2.6		2.5		2.7		1.0		0.4	

<sup>3 -</sup> Timber Composite contains Brookfield Brazil Timber, Conservation Forestry II, Conservation Forestry IV, and ETO II Operating Partnership. Note: Performance shown is net of fees. Fiscal year ends June 30.



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.

### **PERFORMANCE DETAIL - CASH**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Mitigation Banking	60,943,798	0.5	0.0		1.2		13.3		8.1		11.7				2.5	Mar-11
CPI + 4% (Seasonally Adjusted) Over/Under			<u>0.8</u> -0.8		<u>4.0</u> -2.8		<u>5.6</u> 7.7		<u>6.0</u> 2.1		<u>5.9</u> 5.8		<u>5.8</u>		<u>5.7</u> -3.2	Mar-11
Water Property Investor, L.P.	65,836,672	0.5	44.1		42.2		40.9		12.1		6.5				9.4	Jan-15
CPI + 4% (Seasonally Adjusted) Over/Under			<u>0.8</u> 43.3		<u>4.0</u> 38.2	-	<u>5.6</u> 35.3		<u>6.0</u> 6.1		<u>5.9</u> 0.6		<u>5.8</u>	-	<u>5.8</u> 3.6	Jan-15
Cash	467,322,750	3.8														
Cash	464,768,514	3.7	0.4		2.3		2.9		2.4		1.7		1.2		1.2	Dec-99
91 Day T-Bills			<u>0.4</u>		<u>1.3</u>		<u>1.9</u>		<u>1.7</u>		<u>1.1</u>		<u>0.6</u>		<u>1.7</u>	Dec-99
Over/Under			0.0		1.0		1.0		0.7		0.6		0.6		-0.5	
NM ERB Cash	2,448,241	0.0	-0.1		2.2		2.2		8.0		0.5		0.7		1.0	Jun-00
91 Day T-Bills			<u>0.4</u>		<u>1.3</u>		<u>1.9</u>		<u>1.7</u>		<u>1.1</u>		<u>0.6</u>		<u>1.6</u>	Jun-00
Over/Under			-0.5		0.9		0.3		-0.9		-0.6		0.1		-0.6	
Local Government Investment Pool (LGIP) at STO	105,995	0.0	0.4		1.5		2.1		1.6						1.1	Jul-15
91 Day T-Bills			<u>0.4</u>		<u>1.3</u>		<u>1.9</u>		<u>1.7</u>		<u>1.1</u>		<u>0.6</u>		<u>1.2</u>	Jul-15
Over/Under			0.0		0.2		0.2		-0.1						-0.1	



### PRIVATE MARKETS PERFORMANCE SUMMARY

	Private Equity Dollar Weighted vs. Time Weighted Performance										
	3 Mo (%)	1 Yr (%)	3 Yr (%)	5 Yr (%)	10 Yr (%)	Inception (%)	Inception Date				
Dollar Weighted											
Total Net IRR	-0.6	10.9	13.1	13.5	14.6	12.8	Jun-06				
Time Weighted											
Net Time Weighted Return	3.5	11.5	13.2	13.1	14.7	7.2	Jun-06				

	Real Estate Dollar Weighted vs. Time Weighted Performance										
	3 Mo (%)	1 Yr (%)	3 Yr (%)	5 Yr (%)	10 Yr (%)	Inception (%)	Inception Date				
Dollar Weighted											
Total Net IRR						11.2	Jan-08				
Time Weighted											
Net Time Weighted Return	3.4	11.1	13.3	13.6	13.6	8.9	Jan-08				

	Infrastructure Dollar Weighted vs. Time Weighted Performance										
	3 Mo (%)	1 Yr (%)	3 Yr (%)	5 Yr (%)	10 Yr (%)	Inception (%)	Inception Date				
Dollar Weighted											
Total Net IRR						7.0	Jul-08				
Time Weighted											
Net Time Weighted Return	2.3	11.6	8.8	9.0	6.3	3.5	Jul-08				

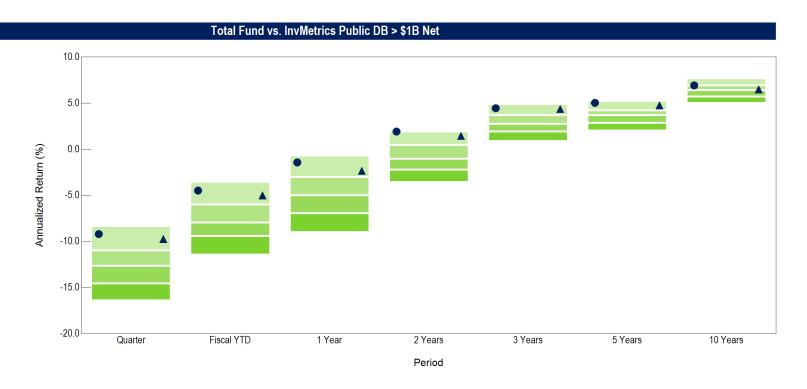
	Natural Resources Dollar Weighted vs. Time Weighted Performance										
	3 Mo (%)	1 Yr (%)	3 Yr (%)	5 Yr (%)	10 Yr (%)	Inception (%)	Inception Date				
Dollar Weighted											
Total Net IRR						9.4	Mar-09				
Time Weighted											
Net Time Weighted Return	-0.3	6.9	11.1	9.2	6.0	4.9	Mar-09				



<sup>\*</sup>Time weighted performance as of 12/31/2019 except for Private Equity which is reported as of 9/30/2019

<sup>\*</sup>Dollar weighted performance is as of 9/30/2019 except for Private Equity which is reported as of 6/30/2019

### TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

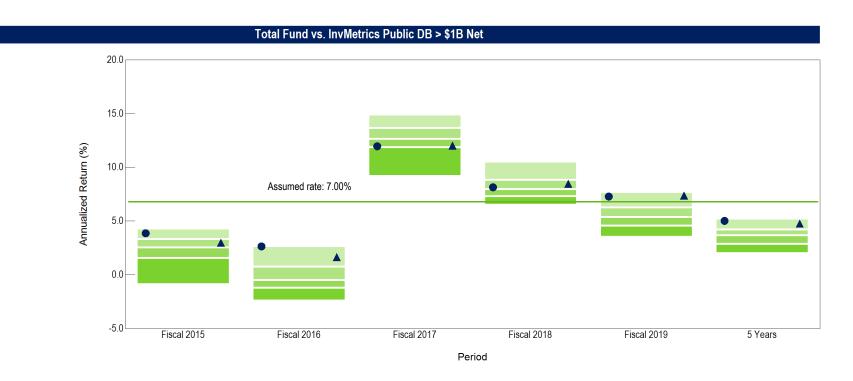


		Return (Rank)													
5t	h Percentile	-8.3		-3.6		-0.7		1.9		4.9		5.2		7.7	
2	5th Percentile	-10.9		-6.0		-3.0		0.5		3.7		4.2		6.9	
M	edian	-12.6		-8.0		-5.0		-1.0		2.8		3.7		6.4	
7	5th Percentile	-14.5		-9.4		-6.9		-2.2		1.9		2.9		5.7	
95	ith Percentile	-16.4		-11.4		-9.0		-3.6		0.9		2.0		5.0	
#	of Portfolios	62		62		62		62		62		59		55	
•	Total Fund	-9.2	(7)	-4.5	(12)	-1.4	(14)	1.9	(5)	4.4	(15)	5.0	(9)	6.9	(26)
<b>A</b>	Policy Index	-9.7	(15)	-5.0	(18)	-2.4	(18)	1.4	(19)	4.4	(17)	4.8	(12)	6.5	(40)

Note: Ranks are based on net returns.



### TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE



	Return (Rank)										
5th Percentile	4.3		2.7		14.9		10.5	7.7		5.2	
25th Percentile	3.3		8.0		13.7		8.8	6.3		4.2	
Median	2.6		-0.5		12.7		8.0	5.4		3.7	
75th Percentile	1.6		-1.2		11.9		7.3	4.6		2.9	
95th Percentile	-0.9		-2.4		9.2		6.5	3.5		2.0	
# of Portfolios	53		55		65		51	77		59	
Total Fund	3.9	(16)	2.6	(6)	12.0	(71)	8.1 (46	3) 7.3	(9)	5.0	(9)
Policy Index	3.0	(42)	1.7	(9)	12.0	(68)	8.5 (33	7.4	(7)	4.8	(12)

Note: Ranks are based on net returns.



### **TOTAL FUND ATTRIBUTION ANALYSIS**

Attribution Summary 3 Months Ending March 31, 2020									
	Wtd. Actual Return	_	Excess Return	Selection Effect	Allocation Effect	Total Effects			
U.S. Large Cap Equity Composite	-18.3%	-19.6%	1.3%	0.2%	0.2%	0.4%			
U.S. Small/Mid Cap Equity Composite	-31.8%	-29.7%	-2.1%	-0.1%	0.1%	0.0%			
Non-U.S. Developed Mkts Equity Composite	-23.9%	-22.8%	-1.1%	-0.1%	0.0%	0.0%			
Non-U.S. Emerging Mkts Equity Composite	-23.2%	-23.6%	0.4%	0.0%	0.0%	0.1%			
Core Fixed Income Composite	0.1%	3.1%	-3.0%	-0.2%	0.0%	-0.2%			
Non-U.S. Emerging Market Debt Composite	-14.5%	-14.3%	-0.2%	0.0%	0.0%	0.0%			
Opportunistic Credit Composite	-5.1%	-12.6%	7.4%	1.3%	0.0%	1.3%			
Absolute Return Composite	-0.5%	0.9%	-1.4%	0.0%	0.0%	0.0%			
Global Asset Allocation/Risk Parity Composite	-12.6%	0.9%	-13.5%	-1.2%	0.2%	-1.0%			
Other Diversifying Assets	-0.1%	0.9%	-1.0%	0.0%	-0.3%	-0.3%			
Public Real Estate Composite	-27.6%	-25.6%	-2.0%	0.0%	0.0%	-0.1%			
Private Real Estate Composite	4.7%	0.7%	4.0%	0.1%	-0.1%	0.0%			
Private Equity Composite	2.0%	4.0%	-2.1%	-0.3%	0.4%	0.1%			
Real Assets Composite	-1.1%	0.8%	-1.9%	-0.1%	0.0%	-0.1%			
Cash Total	0.3% -9.3%	0.4% -9.7%	0.0%	0.0% -0.4%	0.1%	0.1% 0.4%			

	EV	Attribution TD Ending N		20		
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Total Effects
U.S. Large Cap Equity Composite	-9.6%	-10.8%	1.2%	0.2%	0.1%	0.3%
U.S. Small/Mid Cap Equity Composite	-26.1%	-24.7%	-1.4%	0.0%	0.1%	0.0%
Non-U.S. Developed Mkts Equity Composite	-17.9%	-17.4%	-0.4%	0.0%	0.0%	0.0%
Non-U.S. Emerging Mkts Equity Composite	-17.2%	-18.2%	1.0%	0.1%	0.0%	0.1%
Core Fixed Income Composite	3.0%	5.7%	-2.7%	-0.2%	0.0%	-0.1%
Non-U.S. Emerging Market Debt Composite	-11.9%	-10.9%	-0.9%	0.0%	0.0%	0.0%
Opportunistic Credit Composite	-3.3%	-9.5%	6.2%	1.1%	0.0%	1.0%
Absolute Return Composite	-0.5%	2.8%	-3.4%	0.0%	0.0%	0.0%
Global Asset Allocation/Risk Parity Composite	-9.6%	3.0%	-12.5%	-1.1%	0.2%	-0.9%
Other Diversifying Assets	2.5%	3.0%	-0.5%	0.0%	-0.2%	-0.2%
Public Real Estate Composite	-22.7%	-20.7%	-2.0%	0.0%	0.0%	-0.1%
Private Real Estate Composite	10.2%	3.7%	6.5%	0.3%	-0.1%	0.2%
Private Equity Composite	7.3%	9.0%	-1.7%	-0.3%	0.4%	0.1%
Real Assets Composite	1.3%	4.0%	-2.7%	-0.2%	0.0%	-0.2%
Cash	2.3%	1.3%	1.1%	0.0%	0.1%	0.2%
Total	-4.6%	-5.0%	0.4%	-0.3%	0.7%	0.4%



### **TOTAL FUND ATTRIBUTION ANALYSIS**

Attribution Summary 1 Year Ending March 31, 2020									
	Wtd. Actual Return		Excess Return	Selection Effect	Allocation Effect	Total Effects			
U.S. Large Cap Equity Composite	-5.7%	-7.0%	1.3%	0.2%	0.1%	0.2%			
U.S. Small/Mid Cap Equity Composite	-23.9%	-22.5%	-1.5%	0.0%	0.0%	0.0%			
Non-U.S. Developed Mkts Equity Composite	-14.8%	-14.4%	-0.4%	0.0%	0.0%	0.0%			
Non-U.S. Emerging Mkts Equity Composite	-16.6%	-17.7%	1.1%	0.1%	0.0%	0.1%			
Core Fixed Income Composite	6.2%	8.9%	-2.7%	-0.2%	0.0%	-0.2%			
Non-U.S. Emerging Market Debt Composite	-8.1%	-6.6%	-1.5%	0.0%	0.0%	0.0%			
Opportunistic Credit Composite	-1.5%	-7.5%	6.0%	1.0%	0.0%	1.0%			
Absolute Return Composite	-3.5%	4.0%	-7.5%	0.0%	0.0%	0.0%			
Global Asset Allocation/Risk Parity Composite	-6.8%	4.1%	-10.9%	-1.0%	0.1%	-0.8%			
Other Diversifying Assets	6.6%	4.1%	2.5%	0.0%	-0.2%	-0.1%			
Public Real Estate Composite	-21.1%	-19.4%	-1.7%	0.0%	0.0%	-0.1%			
Private Real Estate Composite	13.6%	5.3%	8.3%	0.3%	-0.1%	0.2%			
Private Equity Composite	11.1%	14.3%	-3.2%	-0.5%	0.4%	0.0%			
Real Assets Composite	8.2%	5.6%	2.6%	0.2%	0.0%	0.2%			
Cash Total	2.9%	1.9%	1.0% 0.7%	0.0%	0.1%	0.1% 0.7%			
Total	-1.0%	-2.4%	0.7%	0.1%	0.0%	0.7%			

	Attribution Summary									
	3 Ye		March 31, 20	20						
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Total Effects				
U.S. Large Cap Equity Composite	5.4%	5.1%	0.3%	0.0%	0.0%	0.0%				
U.S. Small/Mid Cap Equity Composite	-3.8%	-3.1%	-0.7%	0.0%	0.0%	0.0%				
Non-U.S. Developed Mkts Equity Composite	-2.2%	-1.8%	-0.4%	0.0%	0.0%	0.0%				
Non-U.S. Emerging Mkts Equity Composite	-2.8%	-1.6%	-1.1%	-0.1%	0.0%	-0.1%				
Core Fixed Income Composite	3.9%	4.8%	-0.9%	-0.1%	-0.1%	-0.1%				
Non-U.S. Emerging Market Debt Composite	-1.2%	-0.1%	-1.1%	0.0%	0.0%	0.0%				
Opportunistic Credit Composite	3.1%	0.3%	2.8%	0.5%	0.0%	0.5%				
Absolute Return Composite	-2.2%	3.7%	-5.9%	0.0%	0.0%	0.0%				
Global Asset Allocation/Risk Parity Composite	0.4%	5.7%	-5.3%	-0.5%	0.0%	-0.4%				
Other Diversifying Assets				0.0%	0.0%	0.0%				
Public Real Estate Composite	-3.9%	-2.5%	-1.4%	0.0%	0.0%	-0.1%				
Private Real Estate Composite	14.5%	6.4%	8.1%	0.3%	0.0%	0.3%				
Private Equity Composite	11.7%	14.1%	-2.4%	-0.3%	0.1%	-0.2%				
Real Assets Composite	9.1%	6.0%	3.1%	0.2%	0.0%	0.2%				
Cash	2.2%	1.7%	0.5%	0.0%	0.0%	0.0%				
Total	4.4%	4.4%	0.0%	0.0%	0.0%	0.0%				



### **TOTAL FUND ATTRIBUTION ANALYSIS**

Attribution Summary 5 Years Ending March 31, 2020						
	Wtd. Actual Return		Excess Return	Selection Effect	Allocation Effect	Total Effects
U.S. Large Cap Equity Composite	7.0%	6.7%	0.2%	0.0%	0.0%	0.0%
U.S. Small/Mid Cap Equity Composite	0.0%	0.5%	-0.5%	0.0%	0.0%	0.0%
Non-U.S. Developed Mkts Equity Composite	-1.0%	-0.6%	-0.4%	0.0%	0.0%	0.0%
Non-U.S. Emerging Mkts Equity Composite	-1.1%	-0.4%	-0.7%	-0.1%	0.0%	-0.1%
Core Fixed Income Composite	3.0%	3.4%	-0.4%	0.0%	-0.1%	-0.1%
Non-U.S. Emerging Market Debt Composite	1.6%	0.5%	1.1%	0.0%	0.0%	0.0%
Opportunistic Credit Composite	4.6%	2.1%	2.5%	0.4%	0.0%	0.4%
Absolute Return Composite	-0.2%	3.1%	-3.4%	0.0%	0.0%	0.0%
Global Asset Allocation/Risk Parity Composite	0.8%	4.1%	-3.4%	-0.3%	0.0%	-0.3%
Other Diversifying Assets				0.0%	0.0%	0.0%
Public Real Estate Composite	-1.7%	-0.2%	-1.5%	0.0%	0.0%	-0.1%
Private Real Estate Composite	13.7%	7.6%	6.0%	0.2%	0.0%	0.2%
Private Equity Composite	12.1%	12.1%	0.0%	-0.1%	0.0%	0.0%
Real Assets Composite	8.9%	5.9%	3.1%	0.2%	0.0%	0.2%
Cash Total	1.5% 5.0%	1.1% 4.8%	0.4%	0.0%	0.0% -0.1%	0.0% 0.2%

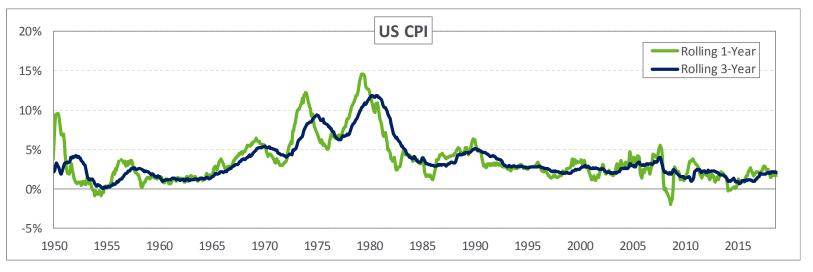


# **APPENDIX**

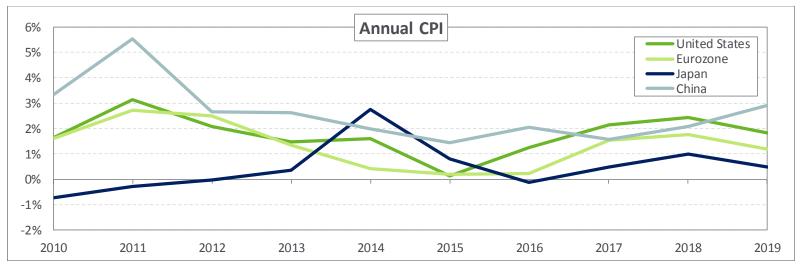
NEPC, LLC —

# **MACRO**

### **INFLATION**



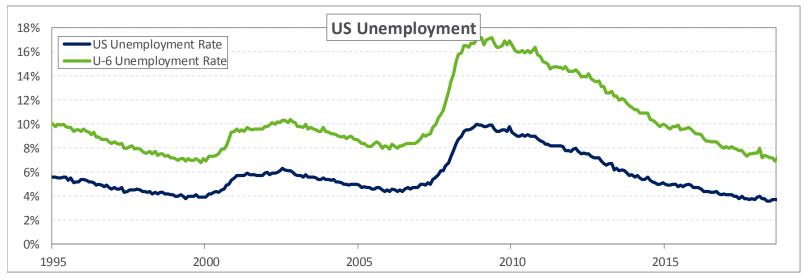
Source: Bureau of Labor Statistics, FactSet



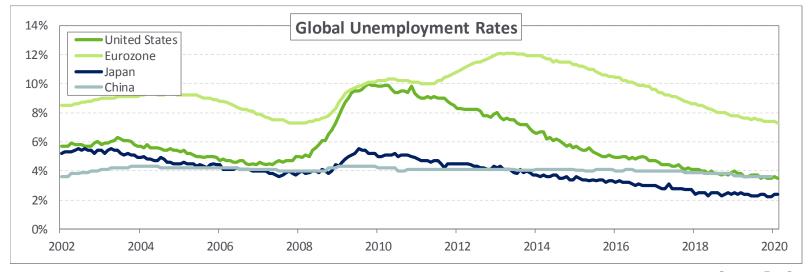
Source: FactSet



### **UNEMPLOYMENT**



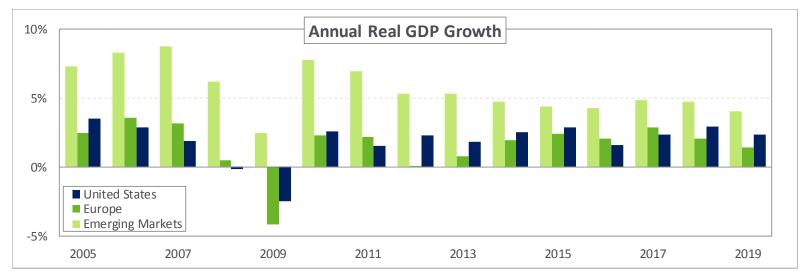
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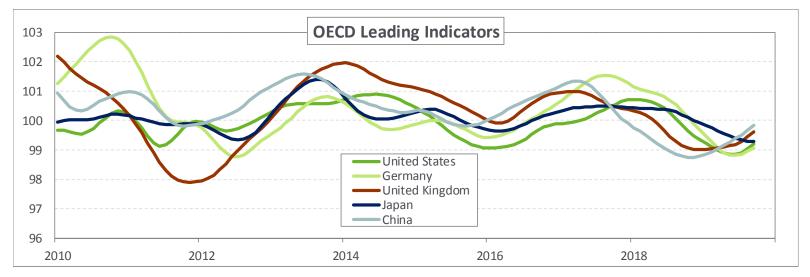
Source: FactSet



#### **ECONOMIC INDICATORS**



Source: Bureau of Economic Analysis, Oxford Economics, FactSet



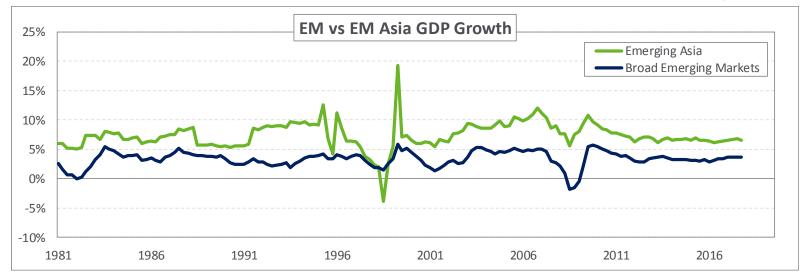
Source: OECD, FactSet



### **GROSS DOMESTIC PRODUCT**



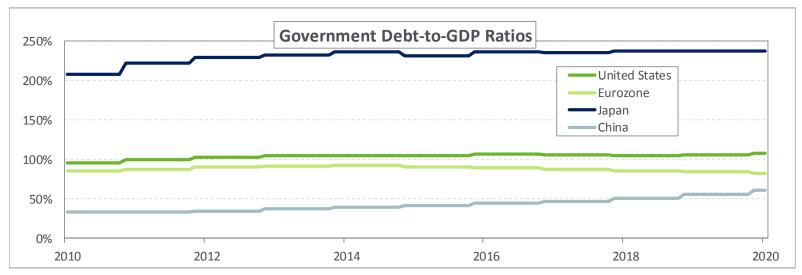
Source: Bureau of Economic Analysis, FactSet



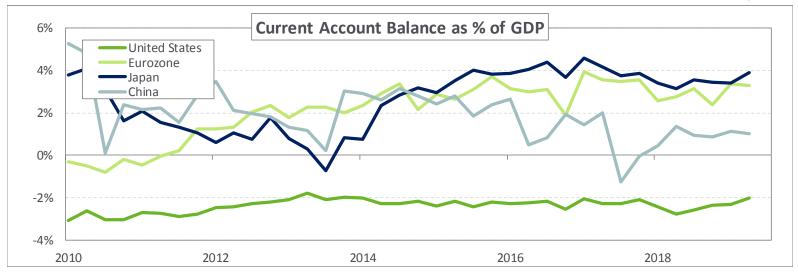
Source: IMF, FactSet



### **GROSS DOMESTIC PRODUCT METRICS**



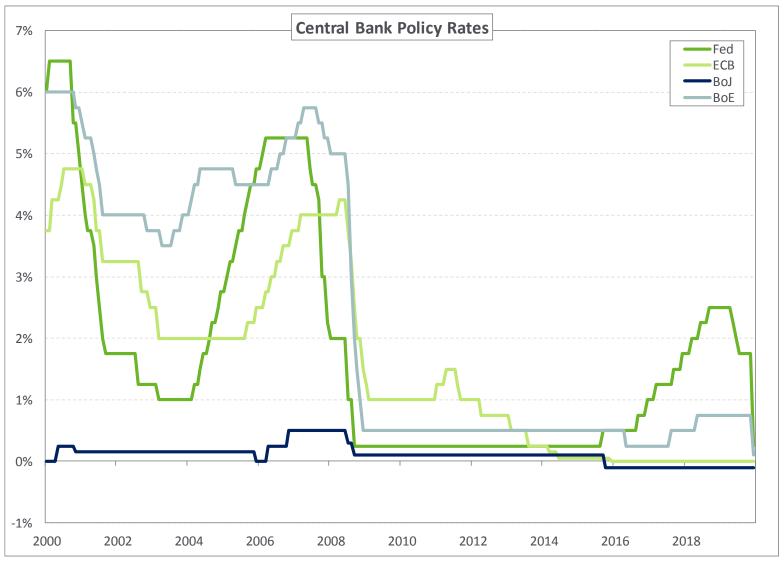
Source: IMF, FactSet



Source: FactSet



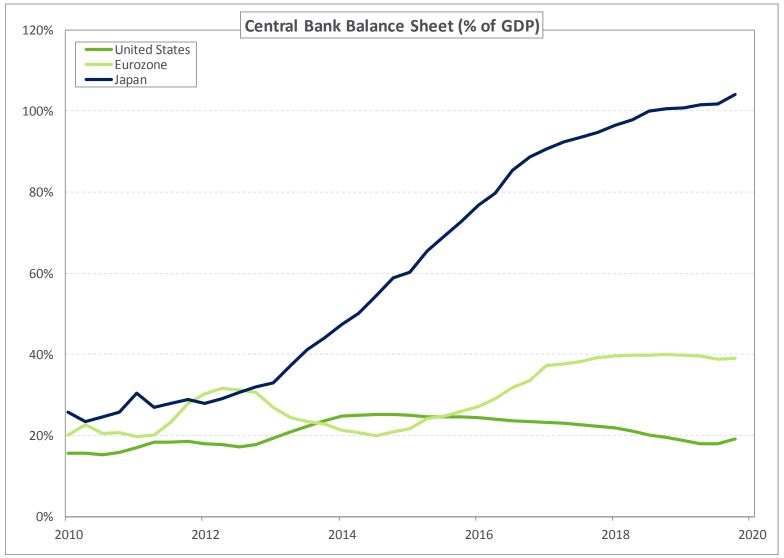
### **CENTRAL BANK RATES**







### **CENTRAL BANK BALANCE SHEETS**



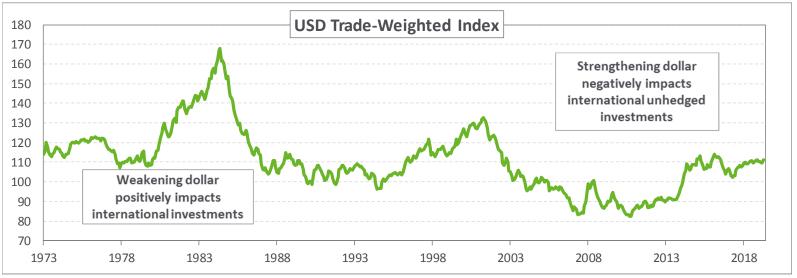




### **CURRENCIES**

		% Change Relative to USD			
Currencies	Spot	1 Month	YTD	1 Year	
Euro	1.10	-0.11%	-2.25%	-2.28%	
British Pound	1.24	-2.92%	-6.40%	-4.84%	
Japanese Yen	107.96	0.08%	-0.66%	-2.47%	
Swiss Franc	0.97	-0.04%	-0.08%	-2.85%	
Australian Dollar	0.61	-5.07%	-12.93%	-13.84%	
Chinese Yuan	7.09	1.47%	1.83%	5.55%	
Brazilian Real	5.19	14.96%	28.93%	33.27%	
Russian Ruble	78.13	16.27%	25.80%	18.93%	
Indian Rupee	75.65	4.83%	5.99%	9.20%	
Mexican Peso	23.46	18.50%	24.23%	20.94%	
South African Rand	17.86	13.53%	27.72%	23.85%	

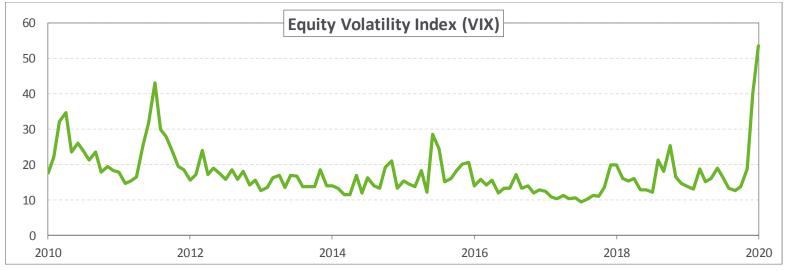
Source: FactSet



Source: FactSet



### **VOLATILITY**



Source: CBOE, FactSet



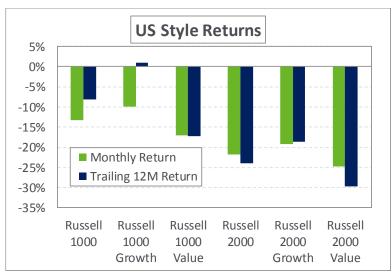
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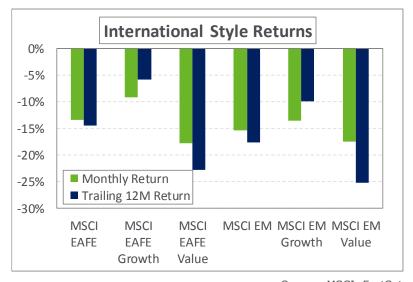


# **EQUITY**

NEPC, LLC —

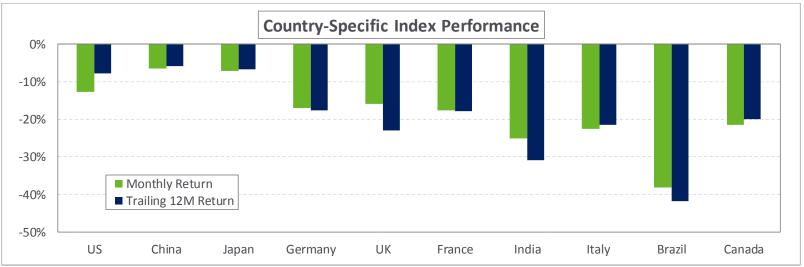
## **EQUITY INDEX PERFORMANCE**





Source: Russell, FactSet





Source: MSCI, FactSet Represents returns in USD



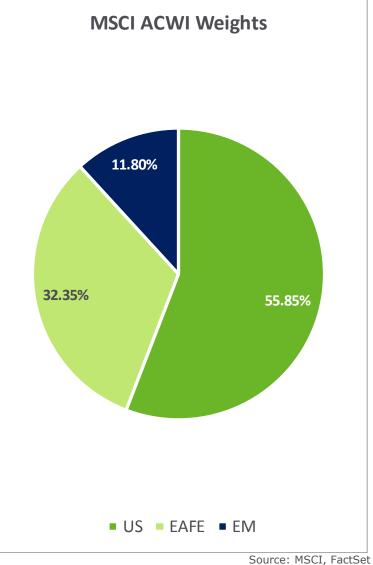
### **INDEX COMPOSITION**

	MTD	ОТО	YTD	Index Weight
S&P 500	-12.4%	-19.6%	-19.6%	100.0%
Communication Services	-1.3%	-1.8%	-1.8%	10.7%
Consumer Discretionary	-1.2%	-1.8%	-1.8%	9.8%
Consumer Staples	-0.6%	-1.1%	-1.1%	7.8%
Energy	-1.2%	-2.0%	-2.0%	2.6%
Financials	-2.5%	-4.0%	-4.0%	10.9%
Health Care	-0.8%	-1.9%	-1.9%	15.4%
Industrials	-1.7%	-2.4%	-2.4%	8.2%
Information Technology	-1.9%	-2.7%	-2.7%	25.5%
Materials	-0.3%	-0.7%	-0.7%	2.4%
Real Estate	-0.6%	-0.7%	-0.7%	3.0%
Utilities	-0.4%	-0.6%	-0.6%	3.6%

Source: S&P, FactSet

	MTD	QTD	YTD	Index Weight
MSCI ACWI	-13.5%	-21.4%	-21.4%	100.0%
Communication Services	-1.0%	-1.4%	-1.4%	9.3%
Consumer Discretionary	-1.4%	-2.2%	-2.2%	10.8%
Consumer Staples	-0.6%	-1.2%	-1.2%	8.8%
Energy	-1.2%	-2.1%	-2.1%	3.7%
Financials	-3.6%	-5.3%	-5.3%	14.4%
Health Care	-0.5%	-1.4%	-1.4%	13.3%
Industrials	-1.8%	-2.7%	-2.7%	9.6%
Information Technology	-1.6%	-2.3%	-2.3%	18.8%
Materials	-0.6%	-1.2%	-1.2%	4.4%
Real Estate	-0.7%	-0.9%	-0.9%	3.1%
Utilities	-0.5%	-0.6%	-0.6%	3.6%

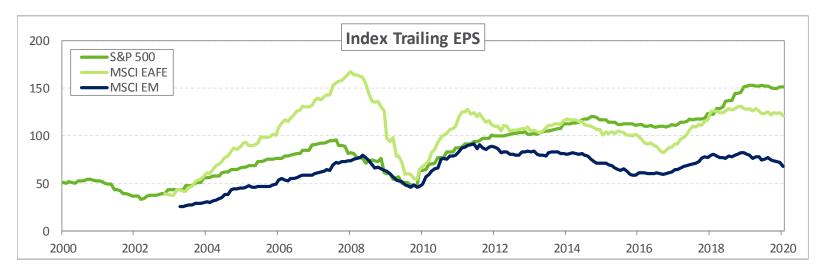
Source: MSCI, FactSet



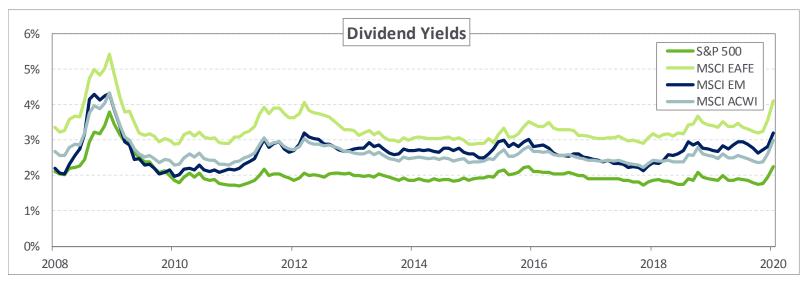




### **EARNINGS & YIELDS**



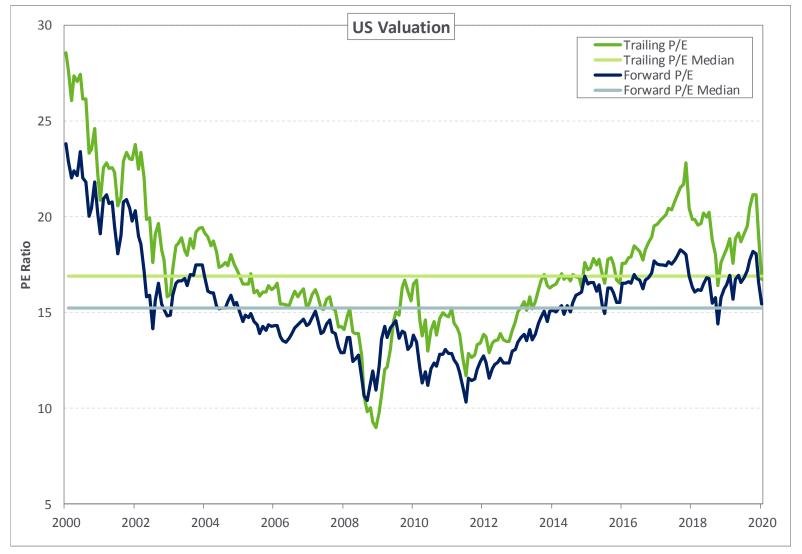
Source: FactSet



Source: FactSet



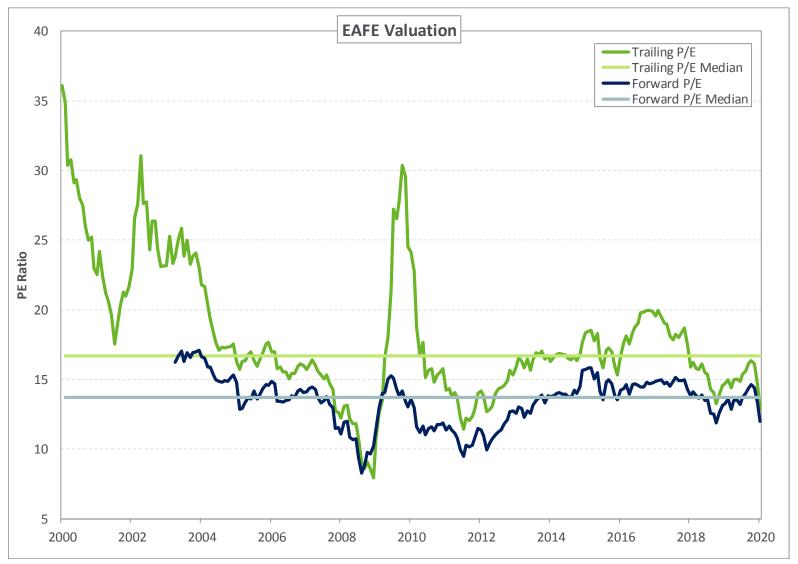
# **US EQUITY VALUATIONS**



Source: S&P, FactSet



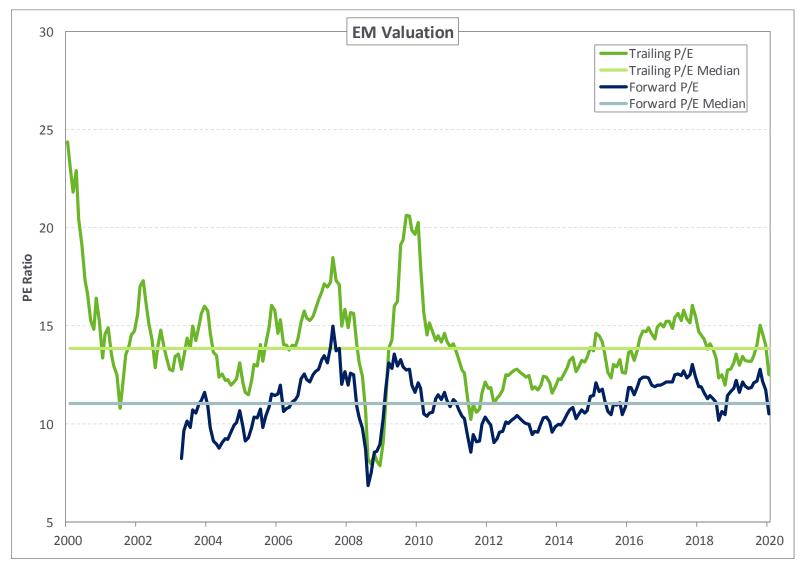
# **EAFE EQUITY VALUATIONS**

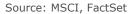






# **EM EQUITY VALUATIONS**







# **CREDIT**

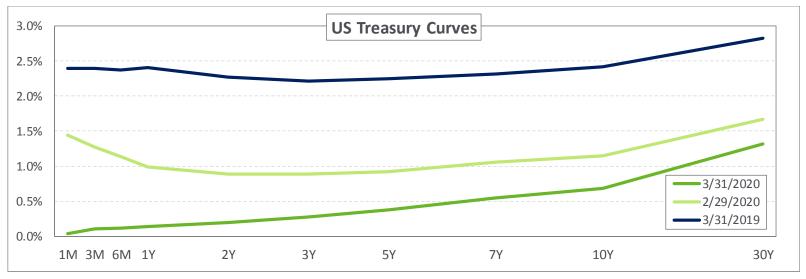
# FIXED INCOME CHARACTERISTICS

	Averages			To	tal Returns (º	<b>%</b> )
	Yield to Worst	Spread (bps)	Duration (Years)	1-Month	YTD	1-Year
Barclays Aggregate	1.59%	95	5.7	-0.6%	3.1%	8.9%
Barclays Treasury	0.58%	-	7.0	2.9%	8.2%	13.1%
Barclays Agency	0.94%	49	3.9	1.0%	4.1%	8.2%
Barclays MBS	1.34%	60	1.7	1.1%	2.8%	7.0%
Barclays ABS	2.40%	213	2.1	-2.1%	-0.2%	2.8%
Barclays CMBS	1.80%	130	5.6	-1.3%	3.6%	8.2%
Barclays Corp IG	3.43%	272	8.0	-7.1%	-3.6%	4.9%
Barclays Muni	2.01%	-	5.4	-3.6%	-0.6%	3.8%
Barclays HY Muni	5.24%	-	10.0	-11.0%	-6.9%	-0.7%
Barclays TIPS	0.93%	-	6.7	-1.8%	1.7%	6.8%
Barclays HY	9.44%	880	4.1	-11.5%	-12.7%	-6.9%
Barclays Global Agg	1.22%	82	7.0	-2.2%	-0.3%	4.2%
JPM EMBI Glob Div	-	627	7.1	-13.8%	-13.4%	-6.8%
JPM GBI - EM	4.61%	-	5.3	-11.1%	-15.2%	-6.5%

Source: Barclays, JP Morgan, FactSet



# **TREASURIES**



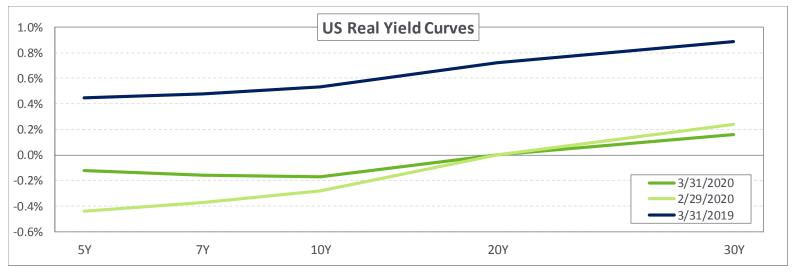
Source: FactSet

		Yield (%)	Total Return (%)		
	Current	1 Month Ago	12 Months Ago	1 Month	12 Months
3M Treasury	0.10%	1.27%	2.39%	0.29%	2.25%
6M Treasury	0.11%	1.14%	2.37%	0.52%	2.85%
2Y Treasury	0.20%	0.88%	2.27%	1.32%	5.38%
5Y Treasury	0.37%	0.92%	2.24%	2.62%	10.88%
10Y Treasury	0.68%	1.14%	2.42%	4.16%	18.25%
30Y Treasury	1.32%	1.67%	2.82%	7.57%	39.50%

Source: FactSet



# **REAL YIELDS**



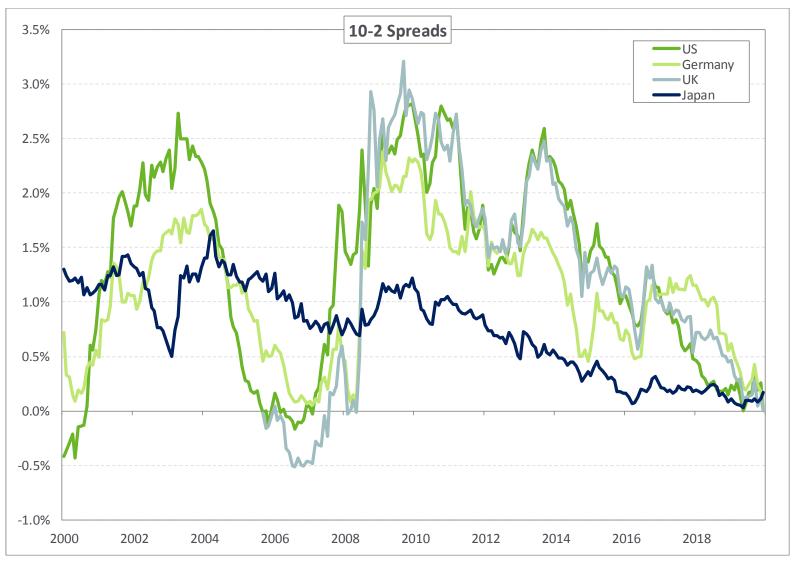
Source: FactSet

	Real Rates			Breakeven Rates		
	Current	1 Month Ago	12 Months Ago	Current	12 Months	
5-Year	-0.12%	-0.44%	0.45%	0.49%	1.79%	
7-Year	-0.16%	-0.37%	0.48%	0.71%	1.84%	
10-Year	-0.17%	-0.28%	0.53%	0.85%	1.89%	
30-Year	0.16%	0.24%	0.89%	1.16%	1.93%	

Source: FactSet



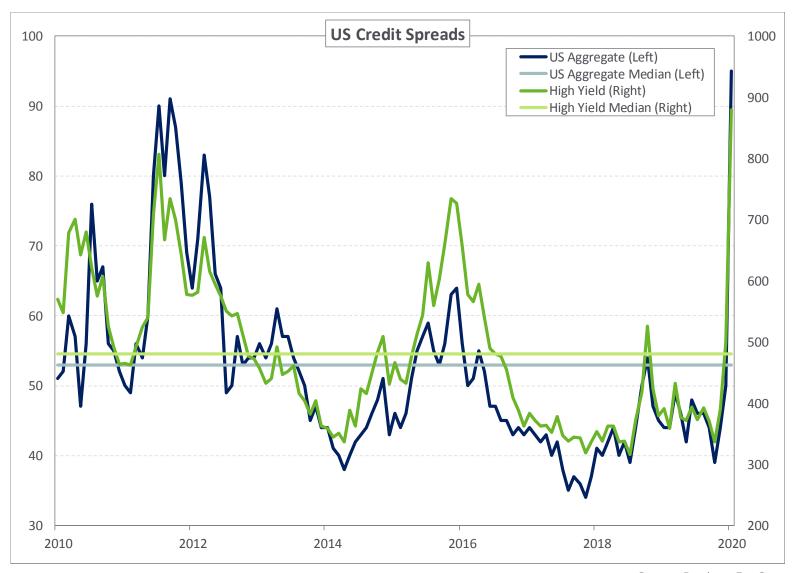
# **NOMINAL YIELDS**







# **CREDIT SPREADS**



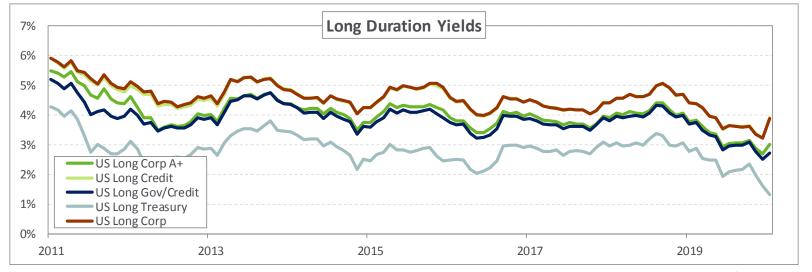




# **LONG DURATION**

Index	ndex Current		12 Months Ago	Duration
Barclays Long Treasury	Barclays Long Treasury 1.3%		2.8%	19.0
Barclays 20+ STRIPS 1.4%		1.7%	2.8%	26.8
Barclays Long Credit 3.9%		3.2%	4.4%	14.1
Barclays Long Gov/Credit 2.7%		2.5%	3.7%	16.4
Barclays Long Corp A+ 3.3%		2.8%	4.0%	15.2

Source: Barclays, FactSet



Source: Barclays, FactSet



# **REAL ASSETS**

NEPC, LLC —

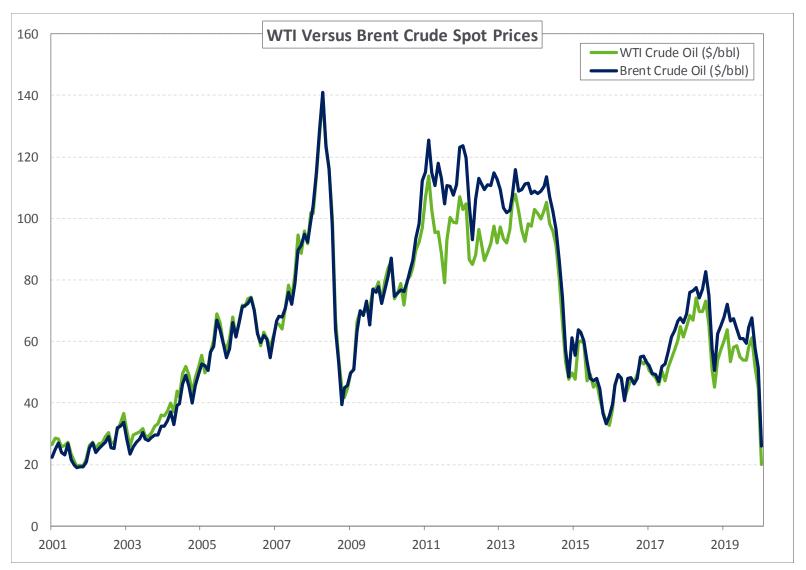
# **REAL ASSETS INDEX PERFORMANCE**

Index	1 Month	3 Month	YTD	1 Year	3 Year	5 Year
Bloomberg Commodity Index	-12.8%	-23.3%	-23.3%	-22.2%	-8.6%	-7.7%
Bloomberg Sub Agriculture Index	-3.3%	-9.9%	-9.9%	-5.3%	-9.1%	-7.2%
Coffee	7.4%	-9.4%	-9.4%	12.1%	-14.4%	-11.5%
Corn	-7.4%	-12.9%	-12.9%	-11.8%	-12.0%	-11.4%
Cotton	-16.8%	-26.4%	-26.4%	-35.0%	-12.6%	-4.7%
Soybean	-0.7%	-8.2%	-8.2%	-6.7%	-7.4%	-5.2%
Soybean Oil	-5.8%	-23.0%	-23.0%	-8.8%	-8.7%	-6.0%
Sugar	-26.3%	-20.0%	-20.0%	-22.8%	-19.4%	-8.5%
Wheat	8.4%	2.1%	2.1%	22.4%	-0.2%	-7.2%
Bloomberg Sub Energy	-35.1%	-51.1%	-51.1%	-52.6%	-19.8%	-18.7%
Brent Crude	-43.2%	-56.3%	-56.3%	-52.4%	-14.5%	-15.3%
Heating Oil	-32.0%	-50.0%	-50.0%	-47.6%	-12.4%	-13.6%
Natural Gas	-5.3%	-27.5%	-27.5%	-50.3%	-29.6%	-26.4%
Unleaded Gas	-59.9%	-68.1%	-68.1%	-63.3%	-27.1%	-20.7%
WTI Crude Oil	-54.4%	-66.5%	-66.5%	-65.1%	-25.5%	-23.3%
Bloomberg Sub Industrial Metals	-9.7%	-18.5%	-18.5%	-22.5%	-5.5%	-3.4%
Aluminum	-10.6%	-16.8%	-16.8%	-22.3%	-8.9%	-5.1%
Copper	-12.2%	-20.3%	-20.3%	-23.5%	-6.2%	-4.9%
Nickel	-6.4%	-18.4%	-18.4%	-10.8%	4.5%	-2.2%
Zinc	-5.9%	-16.2%	-16.2%	-31.2%	-7.7%	0.1%
Bloomberg Sub Precious Metals	-1.4%	-1.1%	-1.1%	15.6%	3.7%	3.2%
Gold	1.8%	4.5%	4.5%	22.1%	7.7%	5.4%
Silver	-13.9%	-21.1%	-21.1%	-7.6%	-9.2%	-4.4%
Bloomberg Sub Livestock	-13.5%	-28.1%	-28.1%	-35.3%	-11.0%	-9.7%
Lean Hogs	-19.9%	-36.8%	-36.8%	-51.9%	-20.4%	-15.1%
Live Cattle	-9.1%	-22.6%	-22.6%	-23.3%	-5.9%	-6.8%

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



# **OIL MARKETS**







#### **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 6/30/2019: 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.
- 7/1/2019 Present: 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%, 2% Wilshire REIT Index, 5% 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)

**Standard Deviation** - The standard deviation is a statistical term that de-scribes the distribution of results. It is a commonly used measure of volatility of returns of a portfolio, asset class, or security. The higher the standard deviation the more volatile the returns are.

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 Reta

**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 mortgage-backed 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** - 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.

**Correlation¹** - 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: 'InvestorForce, 'Interaction Effect Performance Attribution, 'NEPC, LLC, 'Investopedia, '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: 1InvestorForce, 2Interaction Effect Performance Attribution, 3NEPC, LLC, 4Investopedia, 5Hedgeco.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 Effects²** - 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.

Universe3 - The list of all assets eligible for inclusion in a portfolio.

Upside Deviation - 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: ¹InvestorForce, ²Interaction Effect Performance Attribution, ³NEPC, LLC, ⁴Investopedia, ⁵Hedgeco.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.
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#### **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.
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