

QUARTERLY PERFORMANCE REPORT

City of Fresno Retirement Systems

June 30, 2020

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

SECOND QUARTER 2020 SUMMARY

- **The US economy contracted at an annual rate of -32.9% in the second quarter**
- **The Fed kept rates unchanged, and the target Fed Funds rate remains 0.00% - 0.25%**
- **US stocks outperformed Non-US stocks as the second quarter was one of their best historically, and were positive for the 1-year period**
- **US bonds were positive for both the quarter and one year as yields continued to decline in the second quarter**
- **Net performance over the last 25 years is 7.5%, ahead of the assumed rate of 7.25%**
 - Performance is just above the policy index over the last 25 years but trails since inception
- **Manager selection remains a positive contributor to relative performance long-term**



SECOND QUARTER 2020 SUMMARY

- **In the one-year ended June 30, 2020, the Total Fund returned 1.3%, outperforming the benchmark (net of fees) and ranking at the median of peers**
 - Underweight positioning to Private Equity and overweight positioning to Large Cap Equity contributed to relative performance
 - Developed International Equities manager selection contributed to relative performance
 - Public Equity and Core Fixed Income performance has contributed to overall plan returns over the trailing 1-year period
- **Over the most recent quarter, the Total Fund increased 12.9%, outperforming the policy benchmark (net of fees) and ranking in the first quartile of peers**
 - Overweight positioning to Large Cap Equity and underweight positioning to Private Equity and Private Real Estate contributed to relative performance
 - Private Real Estate and Private Credit manager selection detracted from relative performance
- **Total fund volatility remained elevated relative to peers**



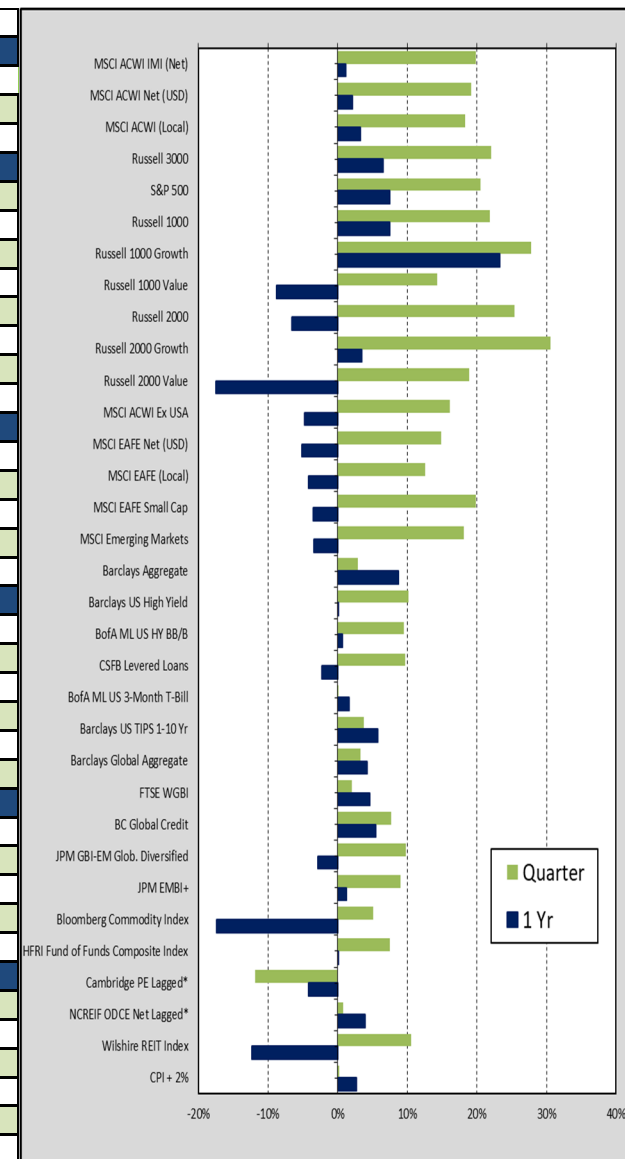
ECONOMIC ENVIRONMENT

- **Q2 Real GDP (advance estimate) plunged at an annual rate of -32.9%.**
 - Retail sales ended May at -1.3% on a YoY basis (April retail sales were down 15.5% YoY). In the same period last year the YoY growth rate was 5.7%.
 - Corporate profits (ended January) as a percent of GDP decreased to 7.6% from 8.7% (in October) and remain elevated relative to historical levels.
 - The inventory-to-sales ratio ended May at 1.5 up from 1.4 in December. Levels have remained relatively constant since early 2010 with a spike to 1.7 in April.
 - The U.S. trade deficit widened (ended May) as the value of exports decreased by 4.4%.
- **The unemployment rate spiked up to 11.1% ended June, up from 4.4% in Q1; U-6, a broader measure of unemployment, increased to 18.0% in Q2 from 8.7% in Q1.**
- **The Case-Shiller Home Price Index (ended May) increased to 218.9 from 215.2 (in March) 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 0.71% in Q2 from 1.52% ended Q1; Capacity Utilization decreased to 68.6 in Q2 from 73.5% in Q1.**
- **Fed Funds rate remains at a targeted range of 0.00%-to-0.25%. The 10-year Treasury Yield (constant maturity) finished Q2 down to 0.7% from 0.9% in Q1.**
- **The Fed remains committed to continuing stimulative action as needed to support the US economy. The Fed's balance sheet continues to grow in wake of the pandemic.**
- **S&P valuations increased in Q2 to 29.96x, and is higher than the 10-year average of 25.9x.**
 - Cyclically adjusted Shiller PE ratio remains above the long-term average of 16.7x



MARKET ENVIRONMENT – Q2 2020 OVERVIEW

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
World Equity Benchmarks						
MSCI ACWI IMI (Net)	World with Small Cap	19.83%	1.17%	5.55%	6.11%	9.10%
MSCI ACWI Net (USD)	World W/O Small Cap	19.22%	2.11%	6.14%	6.46%	9.16%
MSCI ACWI (Local)	World (Local Currency)	18.27%	3.27%	6.45%	6.78%	9.82%
Domestic Equity Benchmarks						
Russell 3000	Domestic All Cap	22.03%	6.53%	10.04%	10.03%	13.72%
S&P 500	Large Core	20.54%	7.50%	10.73%	10.73%	13.99%
Russell 1000	Large Core	21.82%	7.48%	10.64%	10.47%	13.97%
Russell 1000 Growth	Large Growth	27.84%	23.28%	18.99%	15.89%	17.23%
Russell 1000 Value	Large Value	14.29%	-8.84%	1.82%	4.64%	10.41%
Russell 2000	Small Core	25.42%	-6.63%	2.01%	4.29%	10.50%
Russell 2000 Growth	Small Growth	30.58%	3.48%	7.86%	6.86%	12.92%
Russell 2000 Value	Small Value	18.91%	-17.48%	-4.35%	1.26%	7.82%
International Equity Benchmarks						
MSCI ACWI Ex USA	World ex-US	16.12%	-4.80%	1.13%	2.26%	4.97%
MSCI EAFE Net (USD)	Int'l Developed	14.88%	-5.13%	0.81%	2.05%	5.73%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	12.60%	-4.24%	1.26%	2.63%	6.86%
MSCI EAFE Small Cap	Small Cap Int'l	19.88%	-3.52%	0.53%	3.81%	8.02%
MSCI Emerging Markets	Emerging Equity	18.08%	-3.39%	1.90%	2.86%	3.27%
Domestic Fixed Income Benchmarks						
Barclays Aggregate	Core Bonds	2.90%	8.74%	5.32%	4.30%	3.82%
Barclays US High Yield	High Yield	10.18%	0.03%	3.33%	4.79%	6.68%
BofA ML US HY BB/B	High Yield	9.52%	0.69%	3.67%	4.81%	6.57%
CSFB Levered Loans	Bank Loans	9.71%	-2.27%	2.13%	2.94%	4.33%
BofA ML US 3-Month T-Bill	Cash	0.02%	1.63%	1.77%	1.19%	0.64%
Barclays US TIPS 1-10 Yr	Inflation	3.76%	5.75%	3.94%	2.97%	2.66%
Global Fixed Income Benchmarks						
Barclays Global Aggregate	Global Core Bonds	3.32%	4.22%	3.79%	3.55%	2.81%
FTSE WGBI	World Gov. Bonds	2.04%	4.60%	3.98%	3.70%	2.37%
BC Global Credit	Global Bonds	7.68%	5.49%	4.49%	4.23%	4.26%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	9.82%	-2.82%	1.14%	2.34%	1.64%
JPM EMBI+	Em. Mkt. Bonds	9.06%	1.23%	2.66%	4.91%	5.53%
Alternative Benchmarks						
Bloomberg Commodity Index	Commodities	5.08%	-17.38%	-6.14%	-7.69%	-5.82%
HFRI Fund of Funds Composite Index	Fund of Hedge Funds	7.48%	0.09%	2.12%	1.41%	2.75%
Cambridge PE Lagged*	Private Equity	-11.88%	-4.18%	7.89%	8.72%	11.88%
NCREIF ODCE Net Lagged*	Real Estate	0.75%	3.93%	5.85%	7.48%	10.42%
Wilshire REIT Index	REIT	10.56%	-12.31%	0.23%	3.98%	9.22%
CPI + 2%	Inflation/Real Assets	0.21%	2.72%	3.81%	3.63%	3.74%



* As of 3/31/2020

City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE SUMMARY - NET OF FEES

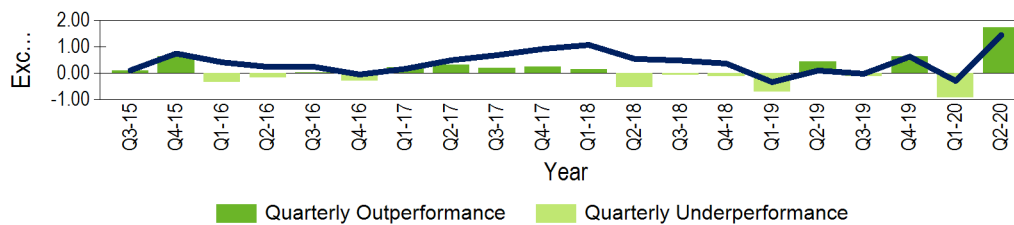
	Market Value	3 Mo Rank	YTD Rank	1 Yr Rank	3 Yrs Rank	5 Yrs Rank	7 Yrs Rank	10 Yrs Rank	15 Yrs Rank	20 Yrs Rank	25 Yrs Rank	Inception	Inception Date										
Total Fund	\$2,978,080,751	12.9%	12	-4.5%	59	1.3%	50	5.0%	48	5.9%	31	7.0%	30	8.4%	29	6.2%	33	5.6%	32	7.5%	19	8.6%	Oct-85
<i>Policy Index</i>		11.1%	29	-5.0%	71	0.3%	68	4.8%	58	5.6%	39	6.7%	38	8.2%	32	6.4%	28	5.7%	27	7.5%	26	9.1%	Oct-85
<i>60% MSCI ACWI (Gross)/40% FTSE WGBI</i>		12.3%	15	-1.6%	8	4.0%	9	6.0%	21	6.0%	25	6.1%	70	7.0%	91	5.8%	56	5.0%	78	6.3%	87	--	Oct-85
<i>InvMetrics Public DB > \$1B Net Median</i>		10.1%		-4.3%		1.3%		5.0%		5.4%		6.4%		7.8%		5.9%		5.4%		7.0%		8.3%	Oct-85

Over the past five years, the Fund returned 5.86% per annum, ranking in the 3rd percentile of the Investment Metrics Public Funds > \$1 Billion net of fee universe. The Fund's return outperformed the actuarial rate of 7.25%, but outperformed the policy index by 3 basis points. The Fund's volatility was 94%, which ranks in the 1st percentile of its peers over this period. The Fund's risk-adjusted performance, as measured by the Sharpe Ratio, ranks in the 61st percentile of its peers.

Over the past three years, the Fund returned 4.97% per annum, outperforming the policy index by 21 basis points and ranking in the 48th percentile of its peer group. Over the past three years, the Fund's Sharpe Ratio of 0.30 ranks in the 68th percentile.

For the year ending June 30, 2020, the Fund returned -1.26%, outperforming the policy index by 98 basis points and ranking in the 50th percentile of its peers.

Quarterly and Cumulative Excess Performance



5 Years Ending June 30, 2020

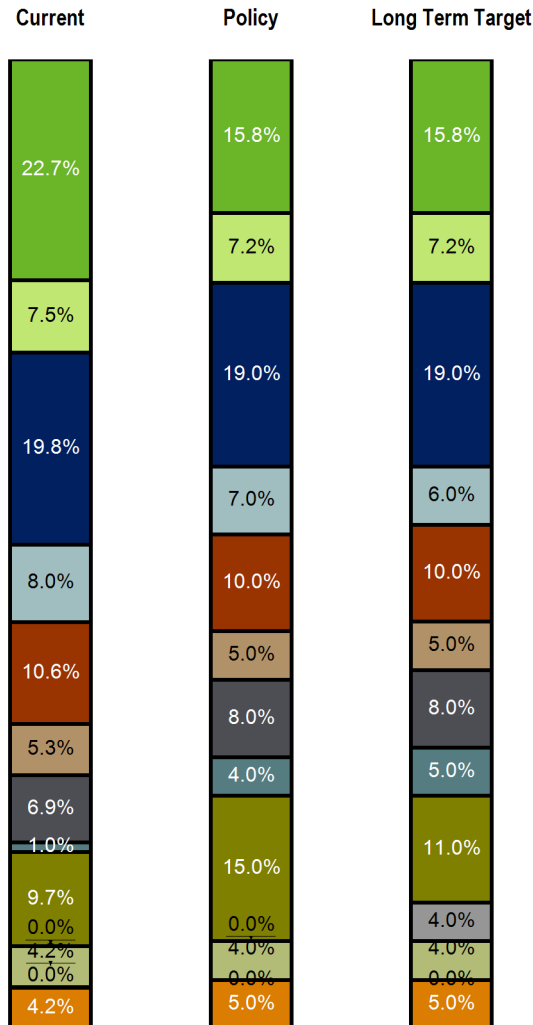
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank
Total Fund	5.9%	31	9.9%	91	0.5	61	0.6	67
Policy Index	5.6%	39	9.8%	89	0.5	68	0.6	57

7 Years Ending June 30, 2020

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank
Total Fund	7.0%	30	9.1%	91	0.7	68	0.9	69
Policy Index	6.7%	38	8.9%	89	0.7	71	0.9	64



TOTAL FUND ASSET ALLOCATION VS. POLICY TARGETS



Asset Allocation vs. Target						
	Current	Current	Policy	Difference*	Policy Range	Within Range
Large Cap Equity	\$676,609,523	22.7%	15.8%	6.9%	10.0% - 26.0%	Yes
Small Cap Equity	\$222,531,724	7.5%	7.2%	0.3%	2.0% - 12.0%	Yes
Developed International Equity	\$590,650,796	19.8%	19.0%	0.8%	14.0% - 24.0%	Yes
Emerging Markets Equity	\$238,481,133	8.0%	7.0%	1.0%	3.0% - 9.0%	Yes
Core Fixed Income	\$314,112,174	10.5%	10.0%	0.5%	6.0% - 15.0%	Yes
High Yield	\$157,924,049	5.3%	5.0%	0.3%	2.0% - 8.0%	Yes
Private Credit	\$205,433,073	6.9%	8.0%	-1.1%	4.0% - 12.0%	Yes
Private Equity	\$29,911,843	1.0%	4.0%	-3.0%	0.0% - 10.0%	Yes
Real Estate - Private	\$289,746,708	9.7%	15.0%	-5.3%	9.0% - 24.0%	Yes
Real Estate - Public	\$12,508	0.0%	0.0%	0.0%	0.0% - 5.0%	Yes
Infrastructure	\$126,032,973	4.2%	4.0%	0.2%	2.0% - 6.0%	Yes
Cash	\$1,154,602	0.0%	0.0%	0.0%	0.0% - 2.0%	Yes
Energy Infrastructure	\$125,480,539	4.2%	5.0%	-0.8%	2.0% - 8.0%	Yes
Total	\$2,978,080,751	100.0%	100.0%			

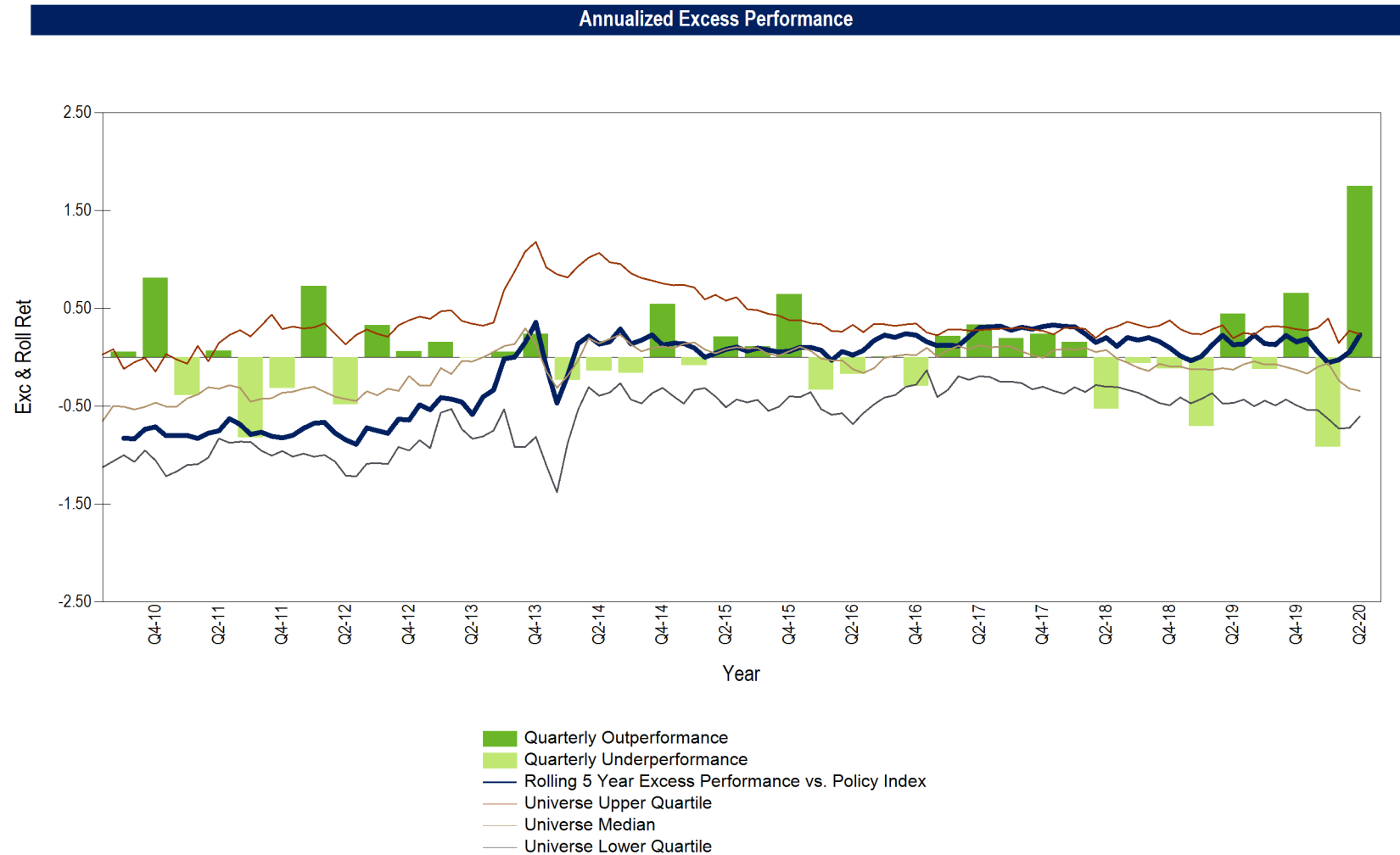
*Difference between Current and Current Allocation

*Policy column reflects targets in the Policy Index.

**Does not include HY Bonds in Core Fixed income mandates.

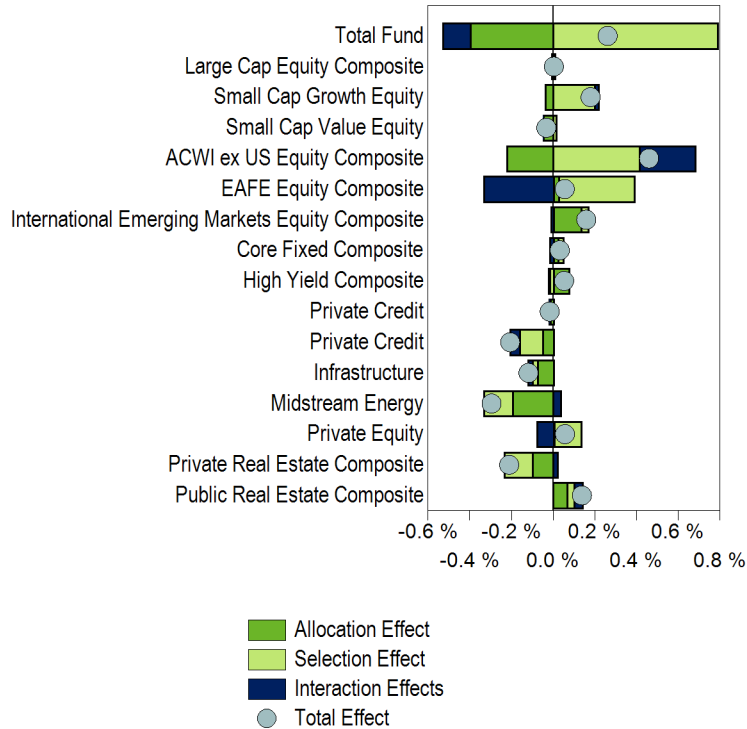


ROLLING 5 YEAR EXCESS RETURNS- NET OF FEES



TOTAL FUND ATTRIBUTION ANALYSIS

Attribution Effects
3 Years Ending June 30, 2020



Attribution Summary
3 Years Ending June 30, 2020

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Large Cap Equity Composite	10.7%	10.6%	0.1%	0.0%	0.0%	0.0%	0.0%
Small Cap Growth Equity	13.4%	7.9%	5.6%	0.2%	0.0%	0.0%	0.2%
Small Cap Value Equity	-4.0%	-4.3%	0.3%	0.0%	0.0%	0.0%	0.0%
ACWI ex US Equity Composite	4.7%	1.6%	3.1%	0.4%	-0.3%	0.3%	0.4%
EAFE Equity Composite	--	-1.3%	--	0.4%	0.0%	-0.3%	0.1%
International Emerging Markets Equity Composite	2.9%	2.3%	0.7%	0.0%	0.1%	0.0%	0.2%
Core Fixed Composite	5.3%	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%
High Yield Composite	3.0%	3.3%	-0.4%	0.0%	0.1%	0.0%	0.1%
Private Credit	--	--	--	0.0%	0.0%	0.0%	0.0%
Private Credit	5.7%	7.2%	-1.5%	-0.1%	-0.1%	0.0%	-0.2%
Infrastructure	--	--	--	0.0%	0.0%	0.0%	-0.1%
Midstream Energy	--	--	--	-0.1%	-0.2%	0.0%	-0.3%
Private Equity	--	--	--	0.1%	0.0%	-0.1%	0.1%
Private Real Estate Composite	4.2%	5.1%	-0.9%	-0.1%	-0.1%	0.0%	-0.2%
Public Real Estate Composite	2.5%	0.2%	2.3%	0.0%	0.1%	0.0%	0.1%
Total	5.0%	4.8%	0.2%	0.8%	-0.4%	-0.1%	0.2%

Totals may be off slightly due to rounding



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Total Fund	2,978,080,751	100.0	12.9	12	-4.5	59	1.3	50	5.0	48	5.9	31	8.4	29	8.6	Oct-85
<i>Policy Index</i>			<u>11.1</u>	29	<u>-5.0</u>	71	<u>0.3</u>	68	<u>4.8</u>	58	<u>5.6</u>	39	<u>8.2</u>	32	<u>9.1</u>	Oct-85
Over/Under			1.8		0.5		1.0		0.2		0.3		0.2		-0.5	
<i>60% MSCI ACWI (Gross)/40% FTSE WGBI</i>			12.3	15	-1.6	8	4.0	9	6.0	21	6.0	25	7.0	91	--	Oct-85
<i>InvMetrics Public DB > \$1B Net Median</i>			10.1		-4.3		1.3		5.0		5.4		7.8		8.3	Oct-85
Total Equity Composite	1,728,273,088	58.0	21.9	3	-4.8	7	3.2	5	6.2	7	6.9	3	10.0	1	7.8	Oct-95
<i>MSCI ACWI</i>			<u>19.2</u>	32	<u>-6.3</u>	36	<u>2.1</u>	38	<u>6.1</u>	8	<u>6.5</u>	18	<u>9.2</u>	33	<u>6.6</u>	Oct-95
Over/Under			2.7		1.5		1.1		0.1		0.4		0.8		1.2	
<i>InvMetrics Public DB Gbl Eq Net Median</i>			18.8		-7.5		0.8		5.8		6.2		6.4		5.6	Oct-95
Domestic Equity Composite	899,141,273	30.2	23.7	8	-3.9	16	4.6	26	8.6	43	9.1	40	13.2	35	--	Nov-95
<i>Domestic Equity Index</i>			<u>22.7</u>	22	<u>-6.3</u>	58	<u>2.7</u>	50	<u>7.8</u>	63	<u>8.7</u>	57	<u>12.9</u>	45	<u>8.9</u>	Nov-95
Over/Under			1.0		2.4		1.9		0.8		0.4		0.3			
<i>InvMetrics Public DB US Eq Net Median</i>			21.2		-5.9		2.7		8.3		8.8		12.7		8.6	Nov-95
Large Cap Equity Composite	676,609,518	22.7	21.8	37	-2.8	39	7.5	37	10.7	36	10.4	34	14.2	29	8.8	Oct-95
<i>Large Cap Equity Index</i>			<u>21.8</u>	37	<u>-2.8</u>	39	<u>7.5</u>	37	<u>10.6</u>	36	<u>10.7</u>	31	<u>14.0</u>	31	<u>9.1</u>	Oct-95
Over/Under			0.0		0.0		0.0		0.1		-0.3		0.2		-0.3	
<i>eV US Large Cap Equity Net Median</i>			19.8		-5.7		3.5		8.1		8.4		12.5		9.2	Oct-95
<i>NTAM Russell 1000 Index Fund</i>	676,609,518	22.7	21.8	24	-2.8	31	7.5	24	10.7	21	--	--	--	--	12.2	Oct-16
<i>Russell 1000</i>			<u>21.8</u>	24	<u>-2.8</u>	31	<u>7.5</u>	24	<u>10.6</u>	22	<u>10.5</u>	18	<u>14.0</u>	12	<u>12.1</u>	Oct-16
Over/Under			0.0		0.0		0.0		0.1						0.1	
<i>eV US Large Cap Core Equity Net Median</i>			19.6		-5.1		3.9		8.7		8.8		12.8		10.2	Oct-16

Fiscal year end: June 30



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Small Cap Equity Composite	222,531,755	7.5	29.2	32	-6.6	29	-1.3	32	4.8	34	6.5	31	11.1	40	8.0	Oct-95
<i>Russell 2000</i>			<u>25.4</u>	48	<u>-13.0</u>	46	<u>-6.6</u>	44	<u>2.0</u>	44	<u>4.3</u>	46	<u>10.5</u>	46	<u>8.1</u>	<i>Oct-95</i>
Over/Under			3.8		6.4		5.3		2.8		2.2		0.6		-0.1	
<i>eV US Small Cap Equity Net Median</i>			25.0		-14.9		-9.8		0.9		3.7		10.1		10.1	<i>Oct-95</i>
Eagle Asset Management	119,628,507	4.0	34.3	48	8.1	33	12.7	35	13.4	47	11.0	38	--	--	13.3	Nov-10
<i>Russell 2000 Growth</i>			<u>30.6</u>	68	<u>-3.1</u>	71	<u>3.5</u>	59	<u>7.9</u>	72	<u>6.9</u>	79	<u>12.9</u>	72	<u>11.5</u>	<i>Nov-10</i>
Over/Under			3.7		11.2		9.2		5.5		4.1				1.8	
<i>eV US Small Cap Growth Equity Net Median</i>			33.7		2.8		8.3		12.5		9.9		14.2		12.9	<i>Nov-10</i>
Kennedy Capital Mgmt	102,903,247	3.5	23.3	32	-21.2	46	-15.2	44	-4.0	49	1.7	34	8.7	37	9.5	May-03
<i>Russell 2000 Value</i>			<u>18.9</u>	70	<u>-23.5</u>	65	<u>-17.5</u>	60	<u>-4.3</u>	55	<u>1.3</u>	40	<u>7.8</u>	64	<u>7.7</u>	<i>May-03</i>
Over/Under			4.4		2.3		2.3		0.3		0.4		0.9		1.8	
<i>eV US Small Cap Value Equity Net Median</i>			20.6		-21.8		-16.2		-4.2		0.9		8.3		8.7	<i>May-03</i>



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
International Equity Composite	829,131,815	27.8	20.0	29	-6.0	12	1.8	10	4.1	10	4.7	9	7.0	9	--	Apr-94
International Equity Index			16.8	76	-10.3	44	-3.8	53	1.4	40	2.7	49	5.6	59	5.1	Apr-94
Over/Under			3.2		4.3		5.6		2.7		2.0		1.4			
InvMetrics Public DB ex-US Eq Net Median			18.6		-10.5		-3.7		1.1		2.6		5.7		5.1	Apr-94
ACWI ex US Equity Composite	722,479,281	24.3	20.1	38	-5.8	47	2.5	44	4.7	43	5.3	34	7.2	51	6.1	Sep-08
MSCI ACWI ex USA Gross			16.3	70	-10.8	71	-4.4	71	1.6	67	2.7	66	5.5	76	4.5	Sep-08
Over/Under			3.8		5.0		6.9		3.1		2.6		1.7		1.6	
eV ACWI ex-US All Cap Equity Net Median			18.6		-7.7		0.0		3.8		3.9		7.3		6.0	Sep-08
Baillie Gifford	308,986,150	10.4	24.9	20	0.2	15	10.5	13	8.1	14	8.1	12	9.4	10	8.0	Oct-08
MSCI ACWI ex USA Gross			16.3	71	-10.8	61	-4.4	62	1.6	57	2.7	58	5.5	72	4.5	Oct-08
Over/Under			8.6		11.0		14.9		6.5		5.4		3.9		3.5	
MSCI ACWI ex USA			16.1	74	-11.0	62	-4.8	65	1.1	60	2.3	64	5.0	80	4.0	Oct-08
eV All ACWI ex-US Equity Net Median			18.5		-8.5		-0.9		2.8		3.7		6.8		5.9	Oct-08
BlackRock ACWI ex US	201,733,768	6.8	16.2	72	-10.9	62	-4.6	63	1.4	58	2.5	62	--	--	2.7	Mar-11
MSCI ACWI ex USA Gross			16.3	71	-10.8	61	-4.4	62	1.6	57	2.7	58	5.5	72	2.9	Mar-11
Over/Under			-0.1		-0.1		-0.2		-0.2		-0.2				-0.2	
MSCI ACWI ex USA			16.1	74	-11.0	62	-4.8	65	1.1	60	2.3	64	5.0	80	2.5	Mar-11
eV All ACWI ex-US Equity Net Median			18.5		-8.5		-0.9		2.8		3.7		6.8		4.3	Mar-11
Principal Global	211,759,363	7.1	17.0	65	-9.0	52	-3.1	59	1.8	57	2.6	60	7.3	42	4.8	Sep-08
MSCI ACWI ex USA Gross			16.3	71	-10.8	61	-4.4	62	1.6	57	2.7	58	5.5	72	3.0	Sep-08
Over/Under			0.7		1.8		1.3		0.2		-0.1		1.8		1.8	
MSCI EAFE			14.9	83	-11.3	63	-5.1	66	0.8	63	2.1	66	5.7	66	2.7	Sep-08
eV All ACWI ex-US Equity Net Median			18.5		-8.5		-0.9		2.8		3.7		6.8		4.4	Sep-08



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
International Emerging Markets Equity Composite	106,652,532	3.6	19.8	56	-7.3	6	0.9	6	2.9	7	4.4	4	3.2	32	7.8	Apr-99
<i>MSCI Emerging Markets Gross</i>			<u>18.2</u>	73	<u>-9.7</u>	20	<u>-3.0</u>	16	<u>2.3</u>	13	<u>3.2</u>	24	<u>3.6</u>	23	<u>8.1</u>	<i>Apr-99</i>
Over/Under			1.6		2.4		3.9		0.6		1.2		-0.4		-0.3	
<i>InvMetrics Public DB Emg Mkt Eq Net Median</i>			20.4		-11.4		-5.5		-0.7		1.1		2.4		--	<i>Apr-99</i>
Acadian Emerging Market	50,765,456	1.7	17.9	71	-10.2	52	-3.3	48	0.6	57	3.8	35	--	--	2.1	Aug-14
<i>MSCI Emerging Markets Gross</i>			<u>18.2</u>	68	<u>-9.7</u>	46	<u>-3.0</u>	45	<u>2.3</u>	37	<u>3.2</u>	44	<u>3.6</u>	54	<u>1.5</u>	<i>Aug-14</i>
Over/Under			-0.3		-0.5		-0.3		-1.7		0.6				0.6	
<i>MSCI Emerging Markets</i>			18.1	68	-9.8	48	-3.4	48	1.9	41	2.9	49	3.3	61	1.2	<i>Aug-14</i>
<i>eV Emg Mkts Equity Net Median</i>			20.3		-10.1		-3.7		1.2		2.7		3.7		1.3	<i>Aug-14</i>
Axiom Intl Investors	55,887,076	1.9	21.5	43	-4.5	18	5.0	16	5.3	16	5.0	24	--	--	3.8	Aug-14
<i>MSCI Emerging Markets Gross</i>			<u>18.2</u>	68	<u>-9.7</u>	46	<u>-3.0</u>	45	<u>2.3</u>	37	<u>3.2</u>	44	<u>3.6</u>	54	<u>1.5</u>	<i>Aug-14</i>
Over/Under			3.3		5.2		8.0		3.0		1.8				2.3	
<i>MSCI Emerging Markets</i>			18.1	68	-9.8	48	-3.4	48	1.9	41	2.9	49	3.3	61	1.2	<i>Aug-14</i>
<i>eV Emg Mkts Equity Net Median</i>			20.3		-10.1		-3.7		1.2		2.7		3.7		1.3	<i>Aug-14</i>



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Total Fixed Income Composite	472,036,019	15.9	7.5	11	2.6	68	5.4	64	4.9	31	4.7	12	4.9	24	--	Nov-95
Fixed Income Index			<u>5.4</u>	40	<u>2.7</u>	67	<u>5.8</u>	60	<u>4.9</u>	32	<u>4.7</u>	12	<u>4.7</u>	32	<u>5.5</u>	Nov-95
Over/Under			2.1		-0.1		-0.4		0.0		0.0		0.2			
BBgBarc US Aggregate TR			2.9	87	6.1	14	8.7	13	5.3	10	4.3	28	3.8	65	5.3	Nov-95
InvMetrics Public DB Total Fix Inc Net Median			4.8		4.4		6.7		4.3		3.8		4.1		5.4	Nov-95
Core Fixed Composite	314,112,093	10.5	5.9	20	4.9	57	7.6	34	5.3	20	4.7	12	4.3	28	--	Apr-94
BBgBarc US Aggregate TR			<u>2.9</u>	92	<u>6.1</u>	20	<u>8.7</u>	19	<u>5.3</u>	21	<u>4.3</u>	25	<u>3.8</u>	45	<u>5.5</u>	Apr-94
Over/Under			3.0		-1.2		-1.1		0.0		0.4		0.5			
InvMetrics Public DB US Fix Inc Net Median			4.0		5.1		7.0		4.4		3.8		3.6		5.5	Apr-94
Dodge & Cox	159,398,214	5.4	6.5	4	5.6	65	8.7	45	5.8	19	5.1	8	4.8	10	5.1	Jan-03
BBgBarc US Aggregate TR			<u>2.9</u>	93	<u>6.1</u>	47	<u>8.7</u>	45	<u>5.3</u>	50	<u>4.3</u>	60	<u>3.8</u>	72	<u>4.4</u>	Jan-03
Over/Under			3.6		-0.5		0.0		0.5		0.8		1.0		0.7	
eV US Core Fixed Inc Net Median			4.4		6.1		8.6		5.3		4.4		4.1		4.5	Jan-03
PGIM	154,543,512	5.2	4.9	33	5.4	73	8.1	68	5.1	67	4.2	67	3.9	67	4.5	Apr-03
BBgBarc US Aggregate TR			<u>2.9</u>	93	<u>6.1</u>	47	<u>8.7</u>	45	<u>5.3</u>	50	<u>4.3</u>	60	<u>3.8</u>	72	<u>4.4</u>	Apr-03
Over/Under			2.0		-0.7		-0.6		-0.2		-0.1		0.1		0.1	
eV US Core Fixed Inc Net Median			4.4		6.1		8.6		5.3		4.4		4.1		4.5	Apr-03
High Yield Composite	157,923,926	5.3	10.9	1	-2.4	98	0.1	97	3.0	97	4.4	21	6.5	1	7.0	Aug-04
BBgBarc US High Yield TR			<u>10.2</u>	1	<u>-3.8</u>	98	<u>0.0</u>	97	<u>3.3</u>	96	<u>4.8</u>	10	<u>6.7</u>	1	<u>6.9</u>	Aug-04
Over/Under			0.7		1.4		0.1		-0.3		-0.4		-0.2		0.1	
InvMetrics Public DB US Fix Inc Net Median			4.0		5.1		7.0		4.4		3.8		3.6		4.2	Aug-04
Loomis Sayles	157,923,926	5.3	10.9	17	-2.4	20	0.1	36	3.0	39	4.1	48	6.8	10	7.2	Aug-04
BBgBarc US High Yield TR			<u>10.2</u>	28	<u>-3.8</u>	45	<u>0.0</u>	37	<u>3.3</u>	25	<u>4.8</u>	14	<u>6.7</u>	13	<u>6.9</u>	Aug-04
Over/Under			0.7		1.4		0.1		-0.3		-0.7		0.1		0.3	
eV US High Yield Fixed Inc Net Median			9.2		-4.0		-0.6		2.8		4.0		6.2		6.3	Aug-04



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Alternatives	486,858,165	16.3	1.9	--	-10.4	--	-8.6	--	--	--	--	--	--	--	0.0	Apr-18
<i>Alternatives Index</i>			<u>5.9</u>	--	<u>-6.8</u>	--	<u>-4.2</u>	--	--	--	--	--	--	--	<u>3.5</u>	<i>Apr-18</i>
Over/Under			-4.0		-3.6		-4.4								-3.5	
Private Credit	205,432,991	6.9	-4.8	--	-2.8	--	0.6	--	5.7	--	--	--	--	--	6.0	Aug-15
<i>Private Credit Index</i>			<u>6.8</u>	--	<u>1.8</u>	--	<u>5.6</u>	--	<u>7.2</u>	--	--	--	--	--	<u>7.4</u>	<i>Aug-15</i>
Over/Under			-11.6		-4.6		-5.0		-1.5						-1.4	
Crescent Capital	77,188,103	2.6	-1.3	--	-1.3	--	2.7	--	6.2	--	--	--	--	--	6.1	Sep-15
<i>Private Credit Index</i>			<u>6.8</u>	--	<u>1.8</u>	--	<u>5.6</u>	--	<u>7.2</u>	--	--	--	--	--	<u>7.4</u>	<i>Sep-15</i>
Over/Under			-8.1		-3.1		-2.9		-1.0						-1.3	
Monroe Capital	79,967,516	2.7	-3.2	--	-1.0	--	2.3	--	6.5	--	--	--	--	--	8.2	Apr-16
<i>Private Credit Index</i>			<u>6.8</u>	--	<u>1.8</u>	--	<u>5.6</u>	--	<u>7.2</u>	--	--	--	--	--	<u>7.4</u>	<i>Apr-16</i>
Over/Under			-10.0		-2.8		-3.3		-0.7						0.8	
PIMCO COF II	48,277,373	1.6	-11.9	--	-7.7	--	-4.7	--	4.5	--	--	--	--	--	6.5	Aug-16
<i>Private Credit Index</i>			<u>6.8</u>	--	<u>1.8</u>	--	<u>5.6</u>	--	<u>7.2</u>	--	--	--	--	--	<u>7.4</u>	<i>Aug-16</i>
Over/Under			-18.7		-9.5		-10.3		-2.7						-0.9	



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Infrastructure	126,032,832	4.2	-2.8	--	0.3	--	4.1	--	--	--	--	--	--	--	3.4	Oct-18
CPI + 4% (Unadjusted)			<u>0.9</u>	--	<u>2.3</u>	--	<u>4.7</u>	--	<u>5.8</u>	--	<u>5.6</u>	--	<u>5.8</u>	--	<u>5.3</u>	Oct-18
Over/Under			-3.7		-2.0		-0.6								-1.9	
JP Morgan IIF	63,314,776	2.1	-3.6	--	0.7	--	3.2	--	--	--	--	--	--	--	3.1	Oct-18
CPI + 4% (Unadjusted)			<u>0.9</u>	--	<u>2.3</u>	--	<u>4.7</u>	--	<u>5.8</u>	--	<u>5.6</u>	--	<u>5.8</u>	--	<u>5.3</u>	Oct-18
Over/Under			-4.5		-1.6		-1.5								-2.2	
Ullico UIF	62,718,056	2.1	-2.1	--	-0.2	--	5.1	--	--	--	--	--	--	--	4.0	Dec-18
CPI + 4% (Unadjusted)			<u>0.9</u>	--	<u>2.3</u>	--	<u>4.7</u>	--	<u>5.8</u>	--	<u>5.6</u>	--	<u>5.8</u>	--	<u>5.5</u>	Dec-18
Over/Under			-3.0		-2.5		0.4								-1.5	
Midstream Energy	125,480,584	4.2	28.6	--	-31.2	--	-34.3	--	--	--	--	--	--	--	-34.3	Jul-19
Alerian Midstream Energy Index			<u>32.6</u>	--	<u>-29.6</u>	--	<u>-29.4</u>	--	<u>-8.9</u>	--	<u>-6.5</u>	--	--	--	<u>-29.4</u>	Jul-19
Over/Under			-4.0		-1.6		-4.9								-4.9	
Harvest	76,217,584	2.6	33.4	--	-32.0	--	-35.2	--	--	--	--	--	--	--	-35.2	Jul-19
Alerian Midstream Energy Index			<u>32.6</u>	--	<u>-29.6</u>	--	<u>-29.4</u>	--	<u>-8.9</u>	--	<u>-6.5</u>	--	--	--	<u>-29.4</u>	Jul-19
Over/Under			0.8		-2.4		-5.8								-5.8	
Tortoise	49,263,001	1.7	22.1	--	-30.2	--	--	--	--	--	--	--	--	--	-32.2	Aug-19
Alerian Midstream Energy Index			<u>32.6</u>	--	<u>-29.6</u>	--	<u>-29.4</u>	--	<u>-8.9</u>	--	<u>-6.5</u>	--	--	--	<u>-28.3</u>	Aug-19
Over/Under			-10.5		-0.6										-3.9	
Private Equity	29,911,758	1.0														
Pantheon PE Fund of 1	29,911,758	1.0	-3.6	--	-0.8	--	4.4	--	--	--	--	--	--	--	3.8	Apr-19
Private Equity Index			<u>-21.0</u>	--	<u>-13.7</u>	--	<u>-9.9</u>	--	--	--	--	--	--	--	<u>-8.3</u>	Apr-19
Over/Under			17.4		12.9		14.3								12.1	



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Real Estate Composite	289,759,007	9.7	-3.5	91	-5.4	88	-1.3	88	4.4	76	6.5	63	10.2	66	8.8	Jan-96
Real Estate Index			<u>-1.7</u>	73	<u>-0.9</u>	34	<u>1.6</u>	44	<u>4.5</u>	75	<u>6.7</u>	60	<u>10.7</u>	35	<u>9.3</u>	Jan-96
Over/Under			-1.8		-4.5		-2.9		-0.1		-0.2		-0.5		-0.5	
InvMetrics Public DB Real Estate Pub+Priv Net Median			<u>-1.0</u>		<u>-1.1</u>		<u>1.0</u>		<u>5.2</u>		<u>7.1</u>		<u>10.5</u>		<u>8.7</u>	Jan-96
Private Real Estate Composite	289,746,563	9.7	-4.5	--	-3.0	--	-0.5	--	4.2	--	6.0	--	9.6	--	8.6	Jan-96
NCREIF ODCE			<u>-1.6</u>	--	<u>-0.6</u>	--	<u>2.2</u>	--	<u>5.7</u>	--	<u>7.3</u>	--	<u>10.8</u>	--	<u>8.9</u>	Jan-96
Over/Under			-2.9		-2.4		-2.7		-1.5		-1.3		-1.2		-0.3	
JP Morgan RE	179,349,828	6.0	-2.2	--	-0.9	--	1.4	--	4.2	--	5.9	--	9.6	--	8.6	Jan-96
NCREIF ODCE Net			<u>-1.8</u>	--	<u>-1.0</u>	--	<u>1.3</u>	--	<u>4.7</u>	--	<u>6.3</u>	--	<u>9.8</u>	--	<u>7.9</u>	Jan-96
Over/Under			-0.4		0.1		0.1		-0.5		-0.4		-0.2		0.7	
CFRSR-Carlyle CPI Fund	2,709,725	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	Jul-20
NCREIF ODCE Net			<u>-1.8</u>	--	<u>-1.0</u>	--	<u>1.3</u>	--	<u>4.7</u>	--	<u>6.3</u>	--	<u>9.8</u>	--	--	Jul-20
Over/Under																
Oaktree Value Add	11,717,063	0.4	0.8	--	5.7	--	9.2	--	21.6	--	--	--	--	--	19.5	Dec-16
NCREIF ODCE + 1%			<u>-1.5</u>	--	<u>-0.5</u>	--	<u>2.3</u>	--	<u>5.8</u>	--	<u>7.4</u>	--	<u>10.9</u>	--	<u>6.4</u>	Dec-16
Over/Under			2.3		6.2		6.9		15.8						13.1	
PCCP Value Add	18,009,880	0.6	-8.9	--	-5.9	--	-4.5	--	8.6	--	--	--	--	--	13.0	Oct-16
NCREIF ODCE + 1%			<u>-1.5</u>	--	<u>-0.5</u>	--	<u>2.3</u>	--	<u>5.8</u>	--	<u>7.4</u>	--	<u>10.9</u>	--	<u>6.2</u>	Oct-16
Over/Under			-7.4		-5.4		-6.8		2.8						6.8	
PIMCO Bravo III	47,399,344	1.6	-11.7	--	-10.6	--	-5.6	--	6.1	--	--	--	--	--	5.3	Nov-16
NCREIF ODCE + 1%			<u>-1.5</u>	--	<u>-0.5</u>	--	<u>2.3</u>	--	<u>5.8</u>	--	<u>7.4</u>	--	<u>10.9</u>	--	<u>6.3</u>	Nov-16
Over/Under			-10.2		-10.1		-7.9		0.3						-1.0	
Artemis AREPF III	4,206,161	0.1	-2.7	--	3.8	--	3.9	--	--	--	--	--	--	--	-12.9	Jan-19
NCREIF ODCE + 1%			<u>-1.5</u>	--	<u>-0.5</u>	--	<u>2.3</u>	--	<u>5.8</u>	--	<u>7.4</u>	--	<u>10.9</u>	--	<u>3.2</u>	Jan-19
Over/Under			-1.2		4.3		1.6								-16.1	
Brookfield SREP III	19,586,783	0.7	-4.4	--	-5.8	--	-7.8	--	--	--	--	--	--	--	-6.7	Apr-19
NCREIF ODCE + 1%			<u>-1.5</u>	--	<u>-0.5</u>	--	<u>2.3</u>	--	<u>5.8</u>	--	<u>7.4</u>	--	<u>10.9</u>	--	<u>2.8</u>	Apr-19
Over/Under			-2.9		-5.3		-10.1								-9.5	
Blue Vista BVREP V	6,767,779	0.2	-21.6	--	--	--	--	--	--	--	--	--	--	--	-21.6	Mar-20
NCREIF ODCE + 1%			<u>-1.5</u>	--	<u>-0.5</u>	--	<u>2.3</u>	--	<u>5.8</u>	--	<u>7.4</u>	--	<u>10.9</u>	--	<u>-0.7</u>	Mar-20
Over/Under			-20.1												-20.9	



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Public Real Estate Composite	12,444	0.0	14.2	17	-15.6	69	-9.8	72	2.5	42	5.8	42	10.4	36	6.9	Jul-05
<i>Wilshire RESI</i>			<u>10.6</u>	71	<u>-17.9</u>	81	<u>-12.4</u>	79	<u>0.2</u>	80	<u>4.2</u>	73	<u>9.3</u>	60	<u>6.0</u>	<i>Jul-05</i>
Over/Under			3.6		2.3		2.6		2.3		1.6		1.1		0.9	
<i>eV US REIT Net Median</i>			12.0		-13.9		-7.1		2.1		5.2		9.8		6.9	<i>Jul-05</i>
Principal REIT	12,444	0.0	14.2	17	-15.6	69	-9.4	66	3.0	39	5.9	41	10.5	36	8.2	Feb-05
<i>Wilshire RESI</i>			<u>10.6</u>	71	<u>-17.9</u>	81	<u>-12.4</u>	79	<u>0.2</u>	80	<u>4.2</u>	73	<u>9.3</u>	60	<u>6.8</u>	<i>Feb-05</i>
Over/Under			3.6		2.3		3.0		2.8		1.7		1.2		1.4	
<i>eV US REIT Net Median</i>			12.0		-13.9		-7.1		2.1		5.2		9.8		7.7	<i>Feb-05</i>
Cash & Equivalents Composite	1,154,472	0.0	0.1	--	0.4	--	1.4	--	1.7	--	1.2	--	0.7	--	1.6	Sep-03
<i>91 Day T-Bills</i>			<u>0.0</u>	--	<u>0.4</u>	--	<u>1.3</u>	--	<u>1.7</u>	--	<u>1.1</u>	--	<u>0.6</u>	--	<u>1.3</u>	<i>Sep-03</i>
Over/Under			0.1		0.0		0.1		0.0		0.1		0.1		0.3	
Payroll Account	738,440	0.0	0.1	--	0.4	--	1.4	--	1.7	--	1.2	--	0.7	--	2.0	Apr-99
<i>91 Day T-Bills</i>			<u>0.0</u>	--	<u>0.4</u>	--	<u>1.3</u>	--	<u>1.7</u>	--	<u>1.1</u>	--	<u>0.6</u>	--	<u>1.7</u>	<i>Apr-99</i>
Over/Under			0.1		0.0		0.1		0.0		0.1		0.1		0.3	
Operating Funds	416,031	0.0	0.1	--	0.4	--	1.4	--	1.7	--	1.2	--	0.7	--	1.5	Oct-03
<i>91 Day T-Bills</i>			<u>0.0</u>	--	<u>0.4</u>	--	<u>1.3</u>	--	<u>1.7</u>	--	<u>1.1</u>	--	<u>0.6</u>	--	<u>1.3</u>	<i>Oct-03</i>
Over/Under			0.1		0.0		0.1		0.0		0.1		0.1		0.2	

Fiscal year end: June 30

Composite rankings are used for Total Equity Composite (InvMetrics Public DB US Eq), Domestic Equity Composite (InvMetrics Public DB Total Eq), International Equity Composite (InvMetrics Public DB ex- US Eq), International Developed Equity Composite (InvMetrics Public DB Dev Mkt ex-US), International Emerging Markets Equity (InvMetrics Public DB Emg Mkt Eq), Total Fixed Income (InvMetrics Public DB Total Fix Inc), Core Fixed Composite (InvMetrics Public DB US Fix Inc), High Yield Composite (InvMetrics Public DB US Fix Inc) and Total Real Estate (InvMetrics Public DB Real Estate Pub+Priv).

Manager rankings are used for Large Cap Equity Composite (eA US Large Cap Equity), Small Cap Equity Composite (eA US Small Cap Equity), ACWi ex US Equity Composite (eA ACWI ex-US Equity), EAFE Equity Composite (eA All EAFE Equity) and Public Real Estate Composite (eA US REIT).



APPENDIX

NEPC, LLC

CALENDAR YEAR INDEX PERFORMANCE

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Jun	YTD
S&P 500	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	-4.4%	31.5%	2.0%	-3.1%
Russell 1000	16.1%	1.5%	16.4%	33.1%	13.2%	0.9%	12.1%	21.7%	-4.8%	31.4%	2.2%	-2.8%
Russell 2000	26.9%	-4.2%	16.3%	38.8%	4.9%	-4.4%	21.3%	14.6%	-11.0%	25.5%	3.5%	-13.0%
Russell 2500	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	16.8%	-10.0%	27.8%	2.9%	-11.1%
MSCI EAFE	7.8%	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	25.0%	-13.8%	22.0%	3.4%	-11.3%
MSCI EM	18.9%	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	37.3%	-14.6%	18.4%	7.4%	-9.8%
MSCI ACWI	12.7%	-7.3%	16.1%	22.8%	4.2%	-2.4%	7.9%	24.0%	-9.4%	26.6%	3.2%	-6.3%
Private Equity	19.8%	9.5%	12.6%	22.3%	14.6%	10.4%	10.3%	21.0%	13.1%	17.2%	-	-
BC TIPS	6.3%	13.6%	7.0%	-8.6%	3.6%	-1.4%	4.7%	3.0%	-1.3%	8.4%	1.1%	6.0%
BC Municipal	2.4%	10.7%	6.8%	-2.6%	9.1%	3.3%	0.2%	5.4%	1.3%	7.5%	0.8%	2.1%
BC Muni High Yield	7.8%	9.2%	18.1%	-5.5%	13.8%	1.8%	3.0%	9.7%	4.8%	10.7%	4.0%	-2.6%
BC US Corporate HY	15.1%	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	7.5%	-2.1%	14.3%	1.0%	-3.8%
BC US Agg Bond	6.5%	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	3.5%	0.0%	8.7%	0.6%	6.1%
BC Global Agg	5.5%	5.6%	4.3%	-2.6%	0.6%	-3.2%	2.1%	7.4%	-1.2%	6.8%	0.9%	3.0%
BC Long Treasuries	9.4%	29.9%	3.6%	-12.7%	25.1%	-1.2%	1.3%	8.5%	-1.8%	14.8%	0.1%	21.2%
BC US Long Credit	10.7%	17.1%	12.7%	-6.6%	16.4%	-4.6%	10.2%	12.2%	-6.8%	23.4%	2.5%	5.9%
BC US STRIPS 20+ Yr	10.9%	58.5%	3.0%	-21.0%	46.4%	-3.7%	1.4%	13.7%	-4.1%	20.9%	0.2%	28.7%
JPM GBI-EM Global Div	15.7%	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	15.2%	-6.2%	13.5%	0.5%	-6.9%
JPM EMBI Glob Div	12.2%	7.3%	17.4%	-5.3%	7.4%	1.2%	10.2%	10.3%	-4.3%	15.0%	3.5%	-2.8%
CS Hedge Fund	10.9%	-2.5%	7.7%	9.7%	4.1%	-0.7%	1.2%	7.1%	-3.2%	9.3%	-	-4.5%
BBG Commodity	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	1.7%	-11.2%	7.7%	2.3%	-19.4%
Alerian MLP	35.9%	13.9%	4.8%	27.6%	4.8%	-32.6%	18.3%	-6.5%	-12.4%	6.6%	-7.9%	-35.7%
FTSE NAREIT Equity REITs	28.0%	8.3%	18.1%	2.5%	30.1%	3.2%	8.5%	5.2%	-4.6%	26.0%	3.1%	-18.7%

Source: FactSet, Barclays, Thomson One

*Private Equity return represents calendar year pooled IRR and is subject to a one quarter lag



TRAILING ANNUAL INDEX PERFORMANCE

Equity						
	Jun-20	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI	3.2%	-6.3%	2.1%	6.1%	6.5%	9.2%
S&P 500	2.0%	-3.1%	7.5%	10.7%	10.7%	14.0%
Russell 1000	2.2%	-2.8%	7.5%	10.6%	10.5%	14.0%
Russell 2000	3.5%	-13.0%	-6.6%	2.0%	4.3%	10.5%
Russell 2500	2.9%	-11.1%	-4.7%	4.1%	5.4%	11.5%
MSCI EAFE	3.4%	-11.3%	-5.1%	0.8%	2.1%	5.7%
MSCI EM	7.4%	-9.8%	-3.4%	1.9%	2.9%	3.3%
Credit						
	Jun-20	YTD	1 YR	3 YR	5 YR	10 YR
BC Global Agg	0.9%	3.0%	4.2%	3.8%	3.6%	2.8%
BC US Agg	0.6%	6.1%	8.7%	5.3%	4.3%	3.8%
BC Credit	1.8%	4.8%	9.1%	6.1%	5.5%	5.2%
BC US HY	1.0%	-3.8%	0.0%	3.3%	4.8%	6.7%
BC Muni	0.8%	2.1%	4.4%	4.2%	3.9%	4.2%
BC Muni HY	4.0%	-2.6%	1.0%	5.3%	5.8%	6.1%
BC TIPS	1.1%	6.0%	8.3%	5.0%	3.7%	3.5%
BC 20+ STRIPS	0.2%	28.7%	35.6%	16.2%	12.9%	10.9%
BC Long Treasuries	0.1%	21.2%	25.4%	12.0%	9.3%	7.7%
BC Long Credit	2.5%	5.9%	13.2%	8.7%	8.5%	7.8%
BC Govt/Credit 1-3 Yr	0.2%	2.9%	4.2%	2.9%	2.1%	1.6%
JPM EMBI Glob Div	3.5%	-2.8%	0.5%	3.6%	5.3%	6.0%
JPM GBI-EM Glob Div	0.5%	-6.9%	-2.8%	1.1%	2.3%	1.6%
Real Assets						
	Jun-20	YTD	1 YR	3 YR	5 YR	10 YR
BBG Commodity	2.3%	-19.4%	-17.4%	-6.1%	-7.7%	-5.8%
Alerian Midstream Index	-4.5%	-32.5%	-34.5%	-18.5%	-13.6%	-
FTSE NAREIT Equity REITS	3.1%	-18.7%	-13.0%	0.0%	4.1%	9.1%

Source: S&P, MSCI, Russell, Barclays, JPM, Alerian, FTSE, FactSet



GLOSSARY OF INVESTMENT TERMINOLOGY

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:
 $(\text{Annualized Return of Portfolio} - \text{Annualized Return of Benchmark}) / \text{Annualized Standard Deviation}(\text{Period Portfolio Return} - \text{Period Benchmark Return})$. 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:
 $\text{Calculation Average } (X-Y) / \text{Downside Deviation } (X-Y) * 2$
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 describes 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:
 $(\text{Annualized Return of Portfolio} - \text{Annualized Return of Risk Free}) / \text{Annualized Standard Deviation (Portfolio Returns)}$

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:
 $\text{Tracking Error} = \text{Standard Deviation } (X-Y) * \sqrt{\text{\# of periods per year}}$
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:
 $(\text{Portfolio Average Return} - \text{Average Return of Risk-Free Rate}) / \text{Portfolio Beta}$

Up/Down Capture Ratio - A measure of what percentage of a market's returns 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.

$\text{Upside Capture} = \text{Total Return}(\text{Fund Returns}) / \text{Total Returns}(\text{BM Return})$ when Period Benchmark Return is $> = 0$

$\text{Downside Capture} = \text{Total Return}(\text{Fund Returns}) / \text{Total Returns}(\text{BM Return})$ when Benchmark < 0

Data Source: InvestorForce



GLOSSARY OF INVESTMENT TERMINOLOGY

Of Portfolios/Observations¹ – The total number of data points that make up a specified universe

Allocation Index³ - 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 Effect² - 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)³ - 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)³ - 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.

Attribution³ - 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 Maturity⁴ - 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 Average¹ - 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) Attribution¹ - 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) Attribution¹ - 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)⁴ - 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: ¹InvestorForce, ²Interaction Effect Performance Attribution, ³NEPC, LLC, ⁴Investopedia, ⁵Hedgeco.net



GLOSSARY OF INVESTMENT TERMINOLOGY

Coupon⁴ – 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 Effect¹ - Is the effect that changes in currency exchange rates over time affect excess performance.

Derivative Instrument³ - 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 Deviation¹ - 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.

Duration³ - 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 Ratio¹ – 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 Bond³ - 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 Hurdle⁵ – 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 Mark⁴ - 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 Rate⁴ - 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 Effects² - 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.

Median³ - The value (rate of return, market sensitivity, etc.) that exceeds one-half 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 Duration³ - The percentage change in the price of a fixed income security that results from a change in yield.

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

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

Net Investment Change¹ – Is the change in an investment after accounting for all Net Cash Flows.

Performance Fee⁴ - 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



GLOSSARY OF INVESTMENT TERMINOLOGY

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



GLOSSARY OF INVESTMENT TERMINOLOGY

Policy Index³ - 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)⁴ - 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)³ - The weighted equity P/E is based on current price and trailing 12 months earnings per share (EPS).

Price to Sales (P/S)⁴ - 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)⁴ - 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) Effect² - 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 rate⁵ - is a hurdle rate that once beaten allows a fund manager to charge a performance fee based on the entire annualized return.

Tiered Fee¹ - 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 Return¹ - 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 Deviation¹ - Standard Deviation of Positive Returns

Weighted Avg. Market Cap.⁴ - 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 (%)³ - The current yield of a security is the current indicated annual dividend rate divided by current price.

Yield to Maturity³ - 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



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