



QUARTERLY PERFORMANCE REPORT

CITY OF FRESNO RETIREMENT
SYSTEMS

JUNE 30, 2023

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SECOND QUARTER 2023 SUMMARY

- **The US economy expanded (in real terms) at an annual rate of 2.4% in the second quarter.**
- **The Fed increased rates in Q2 by 0.25% to a targeted range of 5.00%- to-5.25% up from a targeted range of 4.75%-to-5.00% ended Q1.**
- **On July 27, the Fed increased rates by 0.25% once more, moving the target Fed Funds rate to 5.25%-to-5.50%.**
- **U.S. equities outperformed developed market equities (Japan, Europe, etc.).**
- **Fixed income gained during the quarter, and spreads in investment-grade and high-yield credit remained steady.**
- **Total fund performance net of fees over the past 25 years was 6.6% per year, outperforming the Policy Index but underperforming the current 6.75% assumed rate.**
- **Manager selection remains a positive contributor to relative performance long-term.**

SECOND QUARTER 2023 SUMMARY

- **In the one-year ended June 30, 2023, the Total Fund returned 9.6%, outperforming the benchmark (net of fees) and ranking in the first quartile of peers.**
 - Manager selection in Equities detracted from relative performance but drove outperformance for Real Assets.
 - Private Real Estate performance contributed to overall plan returns over the trailing 1-year period.
- **Over the most recent quarter, the Total Fund returned 2.9%, underperforming relative to the policy benchmark (net of fees) and ranking in the second quartile of peers.**
 - Manager selection benefited Fixed Income, Private Credit, and Private Real Estate which contributed to relative performance.
 - Equities detracted from relative performance.
- **Total Fund volatility remained elevated relative to peers.**

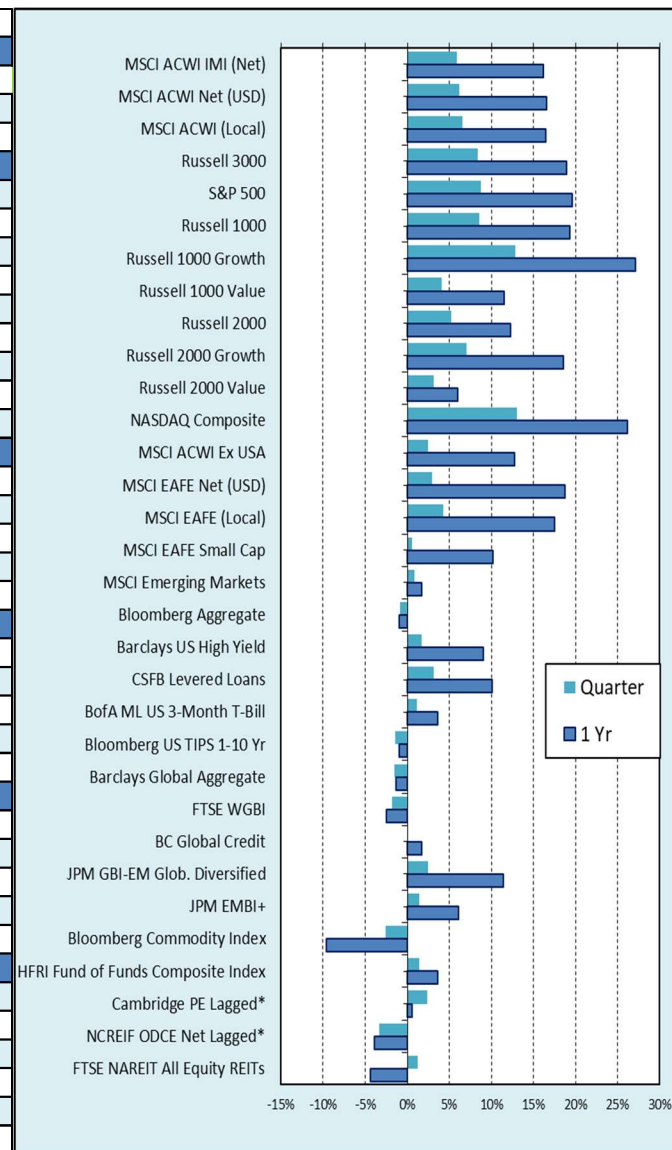
ECONOMIC ENVIRONMENT

- **Q2 Real GDP (first estimate) increased at an annual rate of 2.4%.**
 - Retail sales ended May at +0.9% on a YoY basis. In the same period last year the YoY growth rate was +8.9%.
 - Corporate profits as a percent of GDP ended January 2022 at 10.1%, down from 11.5% in the same period last year and remain elevated relative to historical levels.
 - The inventory-to-sales ratio ended May at 1.4 up from 1.3 one year ago. Levels have remained relatively constant since early 2010 with a spike to 1.7 in April 2020.
 - The U.S. trade deficit narrowed in May as imports decreased to their lowest level since late 2021.
- **The unemployment rate was 3.6% ended Q2, up from 3.5% in Q1; U-6, a broader measure of unemployment, increased to 6.9% in Q2 from 6.7% in Q1.**
 - The labor force participation rate ended Q2 flat at 62.6% versus Q1. Labor force participation declined to 60.2% in April 2020 and is at levels below the 10 year pre-pandemic average of 63.0%.
- **The Case-Shiller Home Price Index (ended May) increased to 305.2 from 297.1 in Q1 and remains at levels higher than that of pre-financial crisis levels of 150.9.**
- **Rolling 12-month seasonally-adjusted CPI ended Q2 at 3.09% down from 4.98% in Q1. In the same period last year, it was 8.93%; Capacity Utilization decreased to 78.90 in Q2 from 79.51 Q1.**
- **Fed Funds rate increased in Q2 by 0.25% to a targeted range of 5.00%-to-5.25% up from a targeted range of 4.75%-to-5.00% ended Q1. The 10-year Treasury Yield (constant maturity) finished Q2 at 3.75% up from 3.66% in Q1.**
- **The Fed continues scaling back asset purchases. The Fed continues to reduce the size of its balance sheet after a period of rapid growth post-pandemic.**
- **S&P valuations (using Shiller CAPE ratio) increased in Q2 to 31.04x, up from 28.94x in Q1 and are lower than the 10-year average of 29.3x.**
 - Cyclically adjusted Shiller PE ratio remains above the long-term average of 17.04x.

MARKET ENVIRONMENT

Q2 2023 OVERVIEW

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
World Equity Benchmarks						
MSCI ACWI IMI (Net)	World with Small Cap	5.89%	16.14%	10.97%	7.65%	8.62%
MSCI ACWI Net (USD)	World W/O Small Cap	6.18%	16.53%	10.99%	8.10%	8.75%
MSCI ACWI (Local)	World (Local Currency)	6.55%	16.47%	11.80%	8.87%	9.83%
Domestic Equity Benchmarks						
Russell 3000	Domestic All Cap	8.39%	18.95%	13.89%	11.39%	12.34%
S&P 500	Large Core	8.74%	19.59%	14.60%	12.31%	12.86%
Russell 1000	Large Core	8.58%	19.36%	14.09%	11.92%	12.64%
Russell 1000 Growth	Large Growth	12.81%	27.11%	13.73%	15.14%	15.74%
Russell 1000 Value	Large Value	4.07%	11.54%	14.30%	8.11%	9.22%
Russell 2000	Small Core	5.21%	12.31%	10.82%	4.21%	8.26%
Russell 2000 Growth	Small Growth	7.05%	18.53%	6.10%	4.22%	8.83%
Russell 2000 Value	Small Value	3.18%	6.01%	15.43%	3.54%	7.29%
NASDAQ Composite	Large Growth	13.05%	26.14%	11.94%	13.93%	16.21%
International Equity Benchmarks						
MSCI ACWI Ex USA	World ex-US	2.44%	12.71%	7.22%	3.52%	4.75%
MSCI EAFE Net (USD)	Int'l Developed	2.95%	18.77%	8.93%	4.39%	5.41%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	4.28%	17.50%	11.73%	6.42%	7.67%
MSCI EAFE Small Cap	Small Cap Int'l	0.58%	10.18%	5.70%	1.30%	6.19%
MSCI Emerging Markets	Emerging Equity	0.90%	1.75%	2.32%	0.93%	2.95%
Domestic Fixed Income Benchmarks						
Bloomberg Aggregate	Core Bonds	-0.84%	-0.94%	-3.97%	0.77%	1.52%
Barclays US High Yield	High Yield	1.75%	9.06%	3.13%	3.36%	4.43%
CSFB Levered Loans	Bank Loans	3.12%	10.10%	6.16%	4.02%	4.13%
BofA ML US 3-Month T-Bill	Cash	1.17%	3.59%	1.27%	1.55%	0.98%
Bloomberg US TIPS 1-10 Yr	Inflation	-1.42%	-0.92%	1.15%	2.75%	1.98%
Global Fixed Income Benchmarks						
Barclays Global Aggregate	Global Core Bonds	-1.53%	-1.32%	-4.96%	-1.09%	0.20%
FTSE WGBI	World Gov. Bonds	-1.79%	-2.49%	-6.49%	-2.04%	-0.48%
BC Global Credit	Global Bonds	0.08%	1.71%	-3.77%	0.21%	1.34%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	2.51%	11.38%	-1.42%	0.29%	-0.56%
JPM EMBI+	Em. Mkt. Bonds	1.43%	6.11%	-7.21%	-2.02%	0.96%
Alternative Benchmarks						
Bloomberg Commodity Index	Commodities	-2.56%	-9.61%	17.82%	4.73%	-0.99%
HFRI Fund of Funds Composite Index	Fund of Hedge Funds	1.43%	3.58%	5.01%	3.30%	3.38%
Cambridge PE Lagged*	Private Equity	2.41%	0.56%	23.85%	15.93%	14.55%
NCREIF ODCE Net Lagged*	Real Estate	-3.38%	-3.91%	7.46%	6.56%	8.47%
FTSE NAREIT All Equity REITs	REIT	1.20%	-4.39%	6.12%	4.78%	6.81%
CPI + 2%	Inflation/Real Assets	1.17%	5.15%	7.86%	5.97%	4.77%



* As of 3/31/2023

EXECUTIVE SUMMARY

	Market Value (\$)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	15 Yrs (%)	25 Yr (%)	Inception (%)	Inception Date
Total Fund	3,687,053,172	2.9 (28)	7.6 (18)	9.6 (13)	9.8 (16)	7.2 (23)	8.3 (17)	7.8 (19)	6.8 (25)	6.6 (24)	8.7	Oct-85
<i>Policy Index</i>		3.1 (22)	7.3 (28)	8.4 (35)	9.0 (28)	6.5 (46)	7.8 (45)	7.3 (40)	6.8 (26)	6.5 (30)	9.1	
<i>60 MSCI World (Gross)/40 CITI WGBI</i>		3.1 (24)	9.1 (1)	9.1 (21)	4.2 (99)	4.6 (97)	5.7 (99)	5.5 (100)	4.8 (99)	5.3 (93)		
<i>InvMetrics Public DB > \$1 Billion Median</i>		2.6	6.5	7.8	8.3	6.3	7.4	7.0	6.5	6.1		
Population		69	68	67	64	63	63	59	55	39		

5 Years Ending June 30, 2023

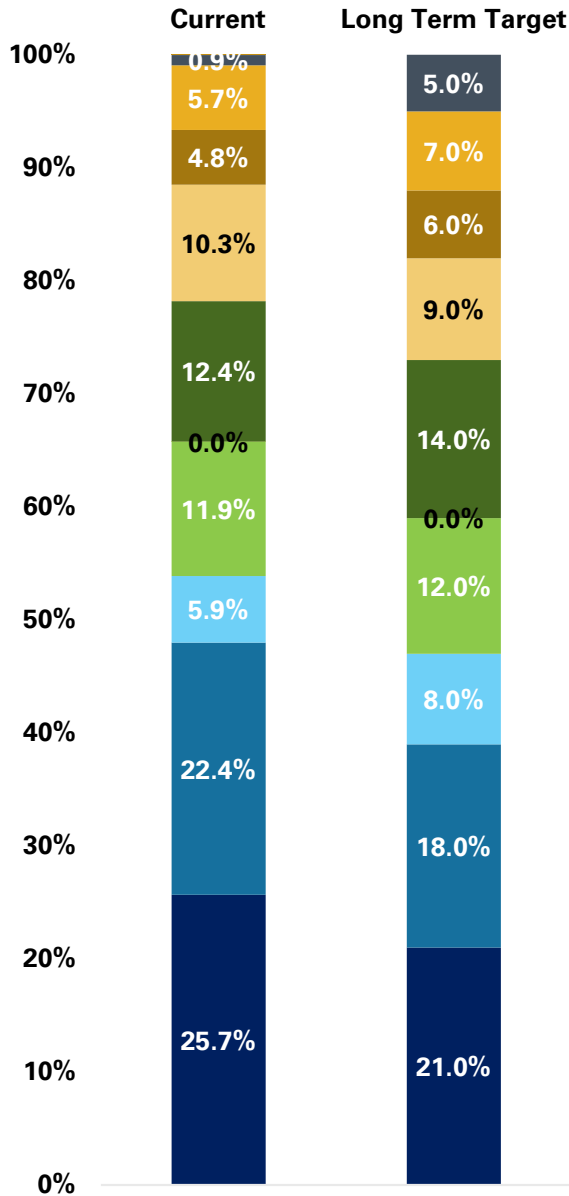
	Return	Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	7.2 (23)	11.5 (64)	0.5 (31)	0.8 (33)
<i>Policy Index</i>	6.5 (46)	11.4 (63)	0.5 (49)	0.7 (49)
<i>60 MSCI World (Gross)/40 CITI WGBI</i>	4.6 (97)	12.3 (87)	0.3 (98)	0.4 (98)

7 Years Ending June 30, 2023

	Return	Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	8.3 (17)	10.0 (67)	0.7 (31)	1.1 (33)
<i>Policy Index</i>	7.8 (45)	9.9 (64)	0.7 (47)	1.0 (46)
<i>60 MSCI World (Gross)/40 CITI WGBI</i>	5.7 (99)	10.8 (86)	0.4 (99)	0.6 (98)

- Over the past five years, the Fund returned 7.2% per annum, ranking in the 23rd percentile of the Investment Metrics Public Funds > \$1 Billion net of fee universe. The Fund's return outperformed the actuarial rate of return and also outperformed the Policy Index by 0.7%.
- The Fund's volatility was 11.5% which ranks in the 64th percentile of its peers. The Fund's risk-adjusted performance, as measured by the Sharpe ratio, ranks in the 31st percentile of its peers.
- Over the past three years, the Fund returned 9.8% per annum, outperforming the Policy Index by 0.8% and ranking in the 16th percentile of its peer group. Over the past three years, the Fund's Sharpe Ratio of 0.8 ranks in the 23rd percentile.
- For the year ending June 30, 2023, the Fund returned 9.6%, outperforming the Policy Index by 1.2% and ranking in the 13th percentile among its peers.

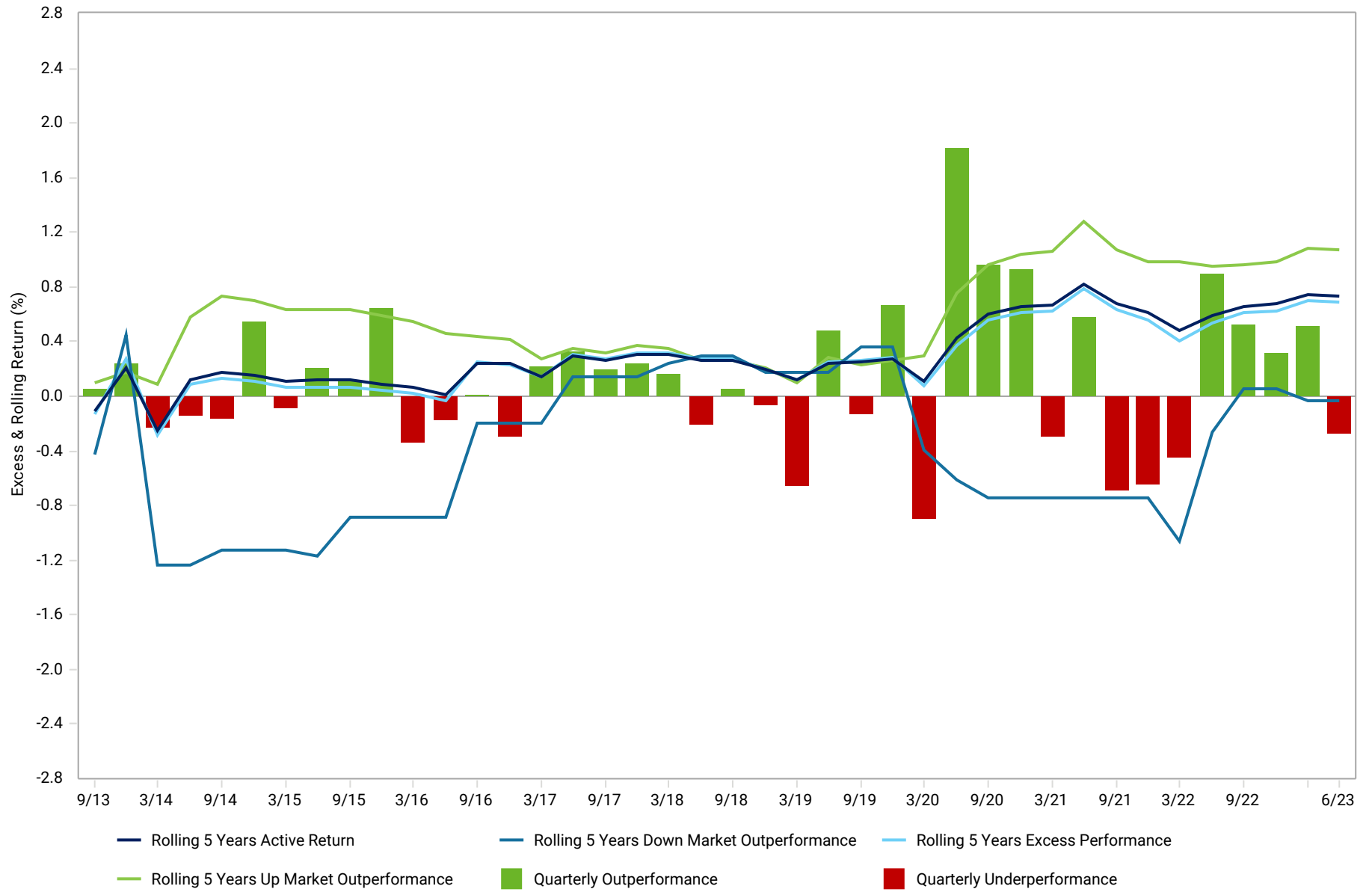
ASSET ALLOCATION VS. POLICY



	Current (\$)	Current (%)	Long Term Target (%)	Difference (%)	Policy Range (%)	Within Range
Domestic Equity	945,758,900	25.7	21.0	4.7	13.0 - 30.0	Yes
International Equity	824,211,758	22.4	18.0	4.4	10.0 - 20.0	No*
Private Equity	216,488,298	5.9	8.0	-2.1	0.0 - 10.0	Yes
Core Fixed Income	438,371,426	11.9	12.0	-0.1	5.0 - 20.0	Yes
High Yield	1,875	0.0	0.0	0.0	0.0 - 5.0	Yes
Private Debt	458,394,912	12.4	14.0	-1.6	5.0 - 20.0	Yes
Core Real Estate	380,442,894	10.3	9.0	1.3	5.0 - 15.0	Yes
Value Add/Oppportunistic Real Estate	178,598,121	4.8	6.0	-1.2	2.0 - 8.0	Yes
Infrastructure	210,023,893	5.7	7.0	-1.3	2.0 - 10.0	Yes
Diversifying/Thematic	33,352,061	0.9	5.0	-4.1	0.0 - 7.0	Yes
Cash	1,409,033	0.0	0.0	0.0	0.0 - 2.0	Yes
Total	3,687,053,172	100.0	100.0	0.0		

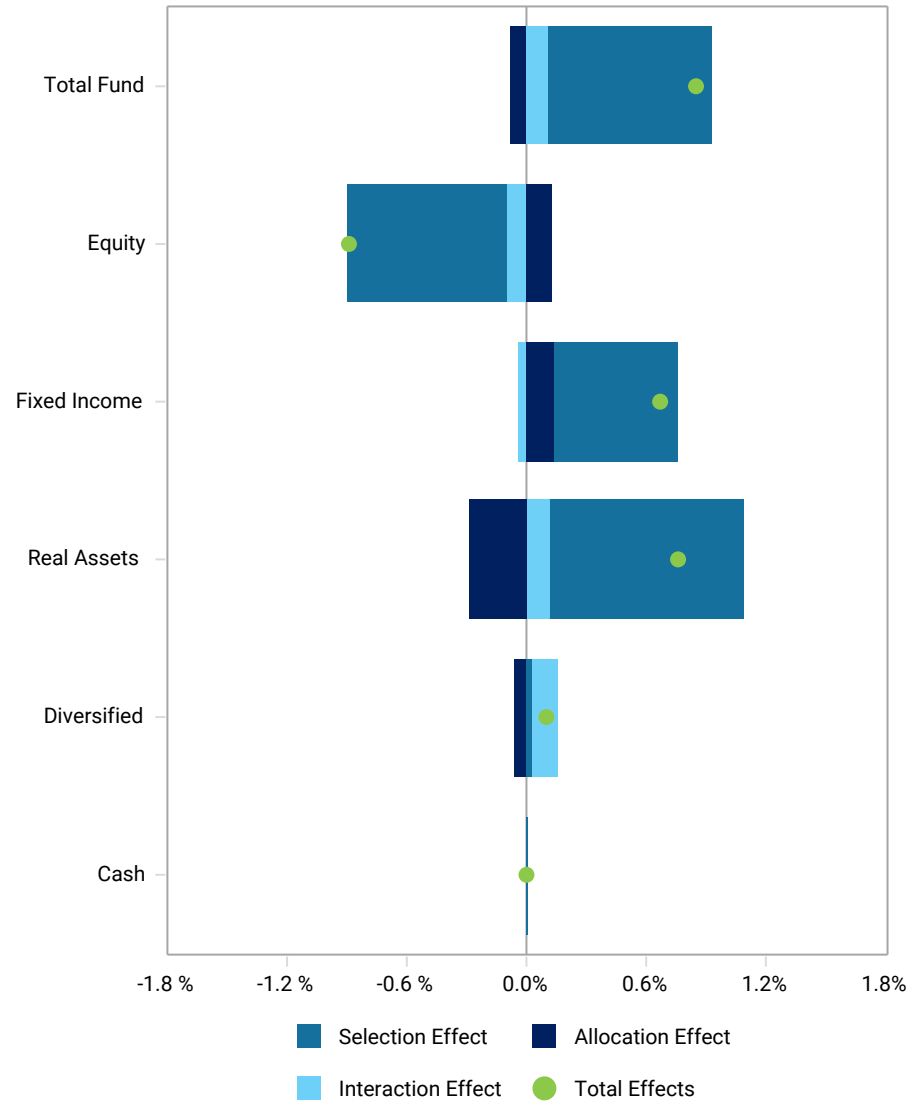
* The current International Equity exposure is closer to the Pension's interim target of 20%.

TOTAL FUND VS. POLICY INDEX



ATTRIBUTION ANALYSIS

Attribution Effects
3 Years Ending June 30, 2023



Attribution Summary
3 Years Ending June 30, 2023

	Wtd. Actual Return (%)	Wtd. Index Return (%)	Excess Return (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Total Effects (%)
Equity	10.3	12.1	-1.8	-0.8	0.1	-0.1	-0.9
Fixed Income	3.5	1.2	2.2	0.6	0.1	0.0	0.7
Real Assets	13.1	7.6	5.5	1.0	-0.3	0.1	0.8
Diversified	5.9	9.4	-3.5	0.0	-0.1	0.1	0.1
Cash	2.3	1.3	1.0	0.0	0.0	0.0	0.0
Total Fund	9.8	9.0	0.8	0.8	-0.1	0.1	0.8

TOTAL FUND PERFORMANCE DETAIL - SHORT - TERM - NET OF FEES

	Allocation		Performance (%)								
	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Fund	3,687,053,172	100.0	2.9 (28)	7.6 (18)	9.6 (13)	9.8 (16)	7.2 (23)	8.3 (17)	7.8 (19)	8.7	Oct-85
<i>Policy Index</i>			<u>3.1 (22)</u>	<u>7.3 (28)</u>	<u>8.4 (35)</u>	<u>9.0 (28)</u>	<u>6.5 (46)</u>	<u>7.8 (45)</u>	<u>7.3 (40)</u>	<u>9.1</u>	
Over/Under			-0.2	0.3	1.2	0.8	0.7	0.5	0.5	-0.4	
<i>60 MSCI World (Gross)/40 CITI WGBI</i>			<u>3.1 (24)</u>	<u>9.1 (1)</u>	<u>9.1 (21)</u>	<u>4.2 (99)</u>	<u>4.6 (97)</u>	<u>5.7 (99)</u>	<u>5.5 (100)</u>		
Over/Under			-0.2	-1.5	0.5	5.6	2.6	2.6	2.3		
<i>InvMetrics Public DB > \$1 Billion Median</i>			2.6	6.5	7.8	8.3	6.3	7.4	7.0		
Total Equity Composite	1,986,458,956	53.9	5.2	12.9	15.6	10.3	7.7	10.2	9.1	8.3	Nov-95
<i>MSCI AC World All Cap Index (Net)</i>			<u>5.8</u>	<u>13.1</u>	<u>16.0</u>	<u>10.9</u>	<u>7.6</u>	<u>9.7</u>	<u>8.6</u>		
Over/Under			-0.6	-0.2	-0.4	-0.6	0.1	0.5	0.5		
Domestic Equity Composite	945,758,900	25.7	8.4	16.2	19.0	13.7	10.3	12.3	11.7	10.5	Apr-03
<i>Domestic Equity Index</i>			<u>8.4</u>	<u>16.2</u>	<u>19.0</u>	<u>15.2</u>	<u>10.6</u>	<u>12.6</u>	<u>12.0</u>	<u>10.6</u>	
Over/Under			0.0	0.0	0.0	-1.5	-0.3	-0.3	-0.3	-0.1	
NTAM Russell 3000	945,758,900	25.7	8.4 (30)	16.2 (24)	19.0 (31)	13.6 (44)	11.7 (35)			12.8 (27)	Oct-16
<i>Russell 3000 Index</i>			<u>8.4 (29)</u>	<u>16.2 (24)</u>	<u>19.0 (31)</u>	<u>13.9 (42)</u>	<u>11.4 (39)</u>			<u>12.6 (32)</u>	
Over/Under			0.0	0.0	0.0	-0.3	0.3			0.2	
<i>eV US Large Cap Core Equity Median</i>			7.3	13.0	16.7	13.4	10.9			11.9	

Fiscal year end: June 30



TOTAL FUND PERFORMANCE DETAIL - SHORT - TERM - NET OF FEES

	Allocation		Performance (%)								Inception Date
	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	
International Equity Composite	824,211,758	22.4	2.6	12.0	15.9	5.2	3.8	7.0	5.6		Apr-94
<i>International Equity Index</i>			<u>2.7</u>	<u>9.9</u>	<u>13.3</u>	<u>8.1</u>	<u>4.3</u>	<u>7.0</u>	<u>5.4</u>	<u>5.6</u>	
Over/Under			-0.1	2.1	2.6	-2.9	-0.5	0.0	0.2		
Baillie Gifford	240,205,140	6.5	1.6 (77)	14.6 (14)	18.4 (20)	1.7 (89)	3.9 (54)	7.7 (32)	6.5 (28)	6.7 (34)	Oct-08
<i>MSCI AC World ex USA index</i>			<u>2.7</u> (51)	<u>9.9</u> (62)	<u>13.3</u> (63)	<u>7.7</u> (46)	<u>4.0</u> (51)	<u>6.8</u> (54)	<u>5.2</u> (66)	<u>5.1</u> (72)	
Over/Under			-1.1	4.7	5.1	-6.0	-0.1	0.9	1.3	1.6	
<i>eV All ACWI ex-US Equity Median</i>			2.7	10.8	14.8	7.4	4.0	6.9	5.7	6.0	
Baillie Gifford Smaller Cos.	58,832,335	1.6	2.6 (35)	15.0 (7)	19.4 (13)					-14.7 (85)	Jul-21
<i>MSCI EAFE + Canada Small Cap Index</i>			<u>0.7</u> (78)	<u>5.9</u> (81)	<u>10.6</u> (70)					<u>-7.5</u> (42)	
Over/Under			1.9	9.1	8.8					-7.2	
<i>eV ACWI ex-US Small Cap Equity Median</i>			1.6	8.5	12.3					-9.1	
BlackRock ACWI ex US	284,029,017	7.7	2.5 (54)	9.3 (70)	12.8 (69)	7.2 (54)	3.6 (60)	6.5 (64)	4.9 (75)	3.8 (81)	Mar-11
<i>MSCI AC World ex USA index</i>			<u>2.7</u> (51)	<u>9.9</u> (62)	<u>13.3</u> (63)	<u>7.7</u> (46)	<u>4.0</u> (51)	<u>6.8</u> (54)	<u>5.2</u> (66)	<u>4.1</u> (72)	
Over/Under			-0.2	-0.6	-0.5	-0.5	-0.4	-0.3	-0.3	-0.3	
<i>eV All ACWI ex-US Equity Median</i>			2.7	10.8	14.8	7.4	4.0	6.9	5.7	4.9	
Principal Global	240,847,934	6.5	3.8 (22)	12.0 (37)	16.4 (36)	7.8 (45)	4.1 (47)	6.7 (59)	5.7 (55)	5.4 (36)	Sep-08
<i>MSCI AC World ex USA index</i>			<u>2.7</u> (51)	<u>9.9</u> (62)	<u>13.3</u> (63)	<u>7.7</u> (46)	<u>4.0</u> (51)	<u>6.8</u> (54)	<u>5.2</u> (66)	<u>4.0</u> (71)	
Over/Under			1.1	2.1	3.1	0.1	0.1	-0.1	0.5	1.4	
<i>eV All ACWI ex-US Equity Median</i>			2.7	10.8	14.8	7.4	4.0	6.9	5.7	4.8	
Sanctioned Assets	293,060	0.0	5.4	51.1	27.8					27.8	Jul-22
<i>MSCI EAFE (Net)</i>			<u>3.0</u>	<u>11.7</u>	<u>18.8</u>					<u>18.8</u>	
Over/Under			2.4	39.4	9.0					9.0	
Global Transition	4,272	0.0	8.6	4.1	123.8	5.6	-5.8			-7.4	Jul-17
<i>90 Day U.S. Treasury Bill</i>			<u>1.2</u>	<u>2.3</u>	<u>3.6</u>	<u>1.3</u>	<u>1.6</u>			<u>1.5</u>	
Over/Under			7.4	1.8	120.2	4.3	-7.4			-8.9	

TOTAL FUND PERFORMANCE DETAIL - SHORT - TERM - NET OF FEES

	Allocation		Performance (%)									
	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
Private Equity	216,488,298	5.9	1.6	1.7	-0.4	20.1					15.0	Apr-19
Ocean Avenue Fund V, L.P.	1,870,891	0.1	-6.5								-6.5	Apr-23
Russell 2000 + 3%			<u>6.0</u>								<u>6.0</u>	
Over/Under			-12.5								-12.5	
Pantheon PE Fund of 1	178,017,998	4.8	2.8	2.9	0.1	20.4					15.5	May-19
Private Equity Index			<u>7.3</u>	<u>18.4</u>	<u>-6.3</u>	<u>17.4</u>					<u>10.5</u>	
Over/Under			-4.5	-15.5	6.4	3.0					5.0	
Pantheon Co-Investment V	19,478,268	0.5									-17.7	May-23
Private Equity Index											<u>-0.1</u>	
Over/Under											-17.6	
Pantheon Co 2022	6,583,737	0.2	2.1	3.4	19.1						19.1	Jul-22
Private Equity Index			<u>7.3</u>	<u>18.4</u>	<u>-6.3</u>						<u>-6.3</u>	
Over/Under			-5.2	-15.0	25.4						25.4	
Pantheon Secondary 2023	10,537,404	0.3									-2.5	May-23
Private Equity Index											<u>-0.1</u>	
Over/Under											-2.4	
Total Fixed Income Composite	896,768,213	24.3	1.6	4.4	4.7	3.5	4.4	4.2	4.3	5.5	Nov-95	
Fixed Income Index			<u>1.1</u>	<u>4.3</u>	<u>4.8</u>	<u>0.9</u>	<u>3.2</u>	<u>3.1</u>	<u>3.4</u>	<u>5.0</u>		
Over/Under			0.5	0.1	-0.1	2.6	1.2	1.1	0.9	0.5		
Core Fixed Composite	438,371,426	11.9	-0.2	2.7	0.9	-2.6	1.4	1.5	2.2	3.5	Apr-03	
Blmbg. U.S. Aggregate Index			<u>-0.8</u>	<u>2.1</u>	<u>-0.9</u>	<u>-4.0</u>	<u>0.8</u>	<u>0.4</u>	<u>1.5</u>	<u>3.1</u>		
Over/Under			0.6	0.6	1.8	1.4	0.6	1.1	0.7	0.4		
Dodge & Cox	221,417,231	6.0	0.1 (1)	3.1 (4)	2.1 (1)	-1.5 (2)	2.3 (1)	2.1 (1)	2.9 (2)	4.1 (4)	Jan-03	
Blmbg. U.S. Aggregate Index			<u>-0.8 (72)</u>	<u>2.1 (74)</u>	<u>-0.9 (75)</u>	<u>-4.0 (85)</u>	<u>0.8 (78)</u>	<u>0.4 (81)</u>	<u>1.5 (78)</u>	<u>3.1 (78)</u>		
Over/Under			0.9	1.0	3.0	2.5	1.5	1.7	1.4	1.0		
eV US Core Fixed Inc Median			-0.7	2.3	-0.5	-3.6	1.0	0.7	1.7	3.4		
PGIM	216,954,195	5.9	-0.6 (29)	2.3 (46)	-0.3 (34)	-3.7 (66)	0.8 (76)	0.5 (79)	1.6 (70)	3.3 (55)	Apr-03	
Blmbg. U.S. Aggregate Index			<u>-0.8 (72)</u>	<u>2.1 (74)</u>	<u>-0.9 (75)</u>	<u>-4.0 (85)</u>	<u>0.8 (78)</u>	<u>0.4 (81)</u>	<u>1.5 (78)</u>	<u>3.1 (78)</u>		
Over/Under			0.2	0.2	0.6	0.3	0.0	0.1	0.1	0.2		
eV US Core Fixed Inc Median			-0.7	2.3	-0.5	-3.6	1.0	0.7	1.7	3.3		
High Yield Composite	1,875	0.0	2.4	4.6	8.0	2.1	2.6	3.8	4.0	6.2	Sep-04	
Blmbg. U.S. Corp: High Yield Index			<u>1.7</u>	<u>5.4</u>	<u>9.1</u>	<u>3.1</u>	<u>3.4</u>	<u>4.5</u>	<u>4.4</u>	<u>6.3</u>		
Over/Under			0.7	-0.8	-1.1	-1.0	-0.8	-0.7	-0.4	-0.1		
Loomis Sayles	1,875	0.0	2.4 (11)	4.6 (58)	8.0 (59)	2.1 (88)	2.6 (81)	3.8 (71)	4.0 (55)	6.3 (16)	Sep-04	
Blmbg. U.S. Corp: High Yield Index			<u>1.7 (29)</u>	<u>5.4 (24)</u>	<u>9.1 (31)</u>	<u>3.1 (51)</u>	<u>3.4 (42)</u>	<u>4.5 (29)</u>	<u>4.4 (26)</u>	<u>6.3 (16)</u>		
Over/Under			0.7	-0.8	-1.1	-1.0	-0.8	-0.7	-0.4	0.0		
eV US High Yield Fixed Inc Median			1.5	4.8	8.3	3.1	3.2	4.2	4.1	5.8		

TOTAL FUND PERFORMANCE DETAIL - SHORT - TERM - NET OF FEES

	Allocation		Performance (%)								Inception Date
	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	
Private Credit	458,394,912	12.4	3.5	6.1	7.7	12.6	9.0	9.2	8.5	Sep-15	
<i>Private Credit Index</i>			<u>2.4</u>	<u>5.9</u>	<u>9.9</u>	<u>3.1</u>	<u>4.7</u>	<u>5.5</u>	<u>5.7</u>		
Over/Under			1.1	0.2	-2.2	9.5	4.3	3.7	2.8		
Crescent Capital	28,141,050	0.8	5.2	5.3	6.0	9.7	7.6	8.1	7.4	Sep-15	
<i>Private Credit Index</i>			<u>2.4</u>	<u>5.9</u>	<u>9.9</u>	<u>3.1</u>	<u>4.7</u>	<u>5.5</u>	<u>5.7</u>		
Over/Under			2.8	-0.6	-3.9	6.6	2.9	2.6	1.7		
Arcmont Euro Private Debt	103,998,742	2.8	5.4	10.4	17.2				12.7	Apr-21	
<i>Private Credit Index</i>			<u>2.4</u>	<u>5.9</u>	<u>9.9</u>				<u>1.7</u>		
Over/Under			3.0	4.5	7.3				11.0		
Arcmont Co-Investments	9,000,000	0.2								Jul-23	
<i>Private Credit Index</i>											
Over/Under											
Monroe Capital	217,128,972	5.9	3.1	5.6	8.7	11.9	9.2	9.4	9.7	Apr-16	
<i>Private Credit Index</i>			<u>2.4</u>	<u>5.9</u>	<u>9.9</u>	<u>3.1</u>	<u>4.7</u>	<u>5.5</u>	<u>5.6</u>		
Over/Under			0.7	-0.3	-1.2	8.8	4.5	3.9	4.1		
PIMCO COF II	19,848,511	0.5	-1.0	16.2	11.2	20.0	11.6		11.7	Aug-16	
<i>Private Credit Index</i>			<u>2.4</u>	<u>5.9</u>	<u>9.9</u>	<u>3.1</u>	<u>4.7</u>		<u>5.5</u>		
Over/Under			-3.4	10.3	1.3	16.9	6.9		6.2		
PIMCO COF III	80,277,638	2.2	2.6	0.3	-4.0	26.7			31.0	May-20	
<i>Private Credit Index</i>			<u>2.4</u>	<u>5.9</u>	<u>9.9</u>	<u>3.1</u>			<u>4.1</u>		
Over/Under			0.2	-5.6	-13.9	23.6			26.9		

TOTAL FUND PERFORMANCE DETAIL - SHORT - TERM - NET OF FEES

	Allocation		Performance (%)								
	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Real Assets	769,064,908	20.9	-1.3	-0.8	-1.3	13.1	7.6	7.2	9.2	9.6	Jan-96
Private Real Estate Composite	178,598,121	4.8	-1.5	-1.4	-1.0	14.2	10.1	12.1	12.0	10.0	Jan-96
NCREIF ODCE			<u>-2.7</u>	<u>-5.8</u>	<u>-10.0</u>	<u>8.0</u>	<u>6.5</u>	<u>7.0</u>	<u>8.7</u>	<u>8.8</u>	
Over/Under			1.2	4.4	9.0	6.2	3.6	5.1	3.3	1.2	
Oaktree Value Add	10,385,776	0.3	-4.8	-8.6	-9.8	3.7	7.6			12.0	Dec-16
NCREIF ODCE + 1%			<u>-2.6</u>	<u>-5.7</u>	<u>-9.8</u>	<u>8.1</u>	<u>6.6</u>			<u>7.2</u>	
Over/Under			-2.2	-2.9	0.0	-4.4	1.0			4.8	
PCCP Value Add	23,269,213	0.6	-5.2	-6.3	-4.9	19.5	13.8			15.9	Oct-16
NCREIF ODCE + 1%			<u>-2.6</u>	<u>-5.7</u>	<u>-9.8</u>	<u>8.1</u>	<u>6.6</u>			<u>7.0</u>	
Over/Under			-2.6	-0.6	4.9	11.4	7.2			8.9	
PIMCO Bravo III	42,141,673	1.1	-1.8	-2.4	-3.2	12.0	7.7			8.3	Nov-16
NCREIF ODCE + 1%			<u>-2.6</u>	<u>-5.7</u>	<u>-9.8</u>	<u>8.1</u>	<u>6.6</u>			<u>7.1</u>	
Over/Under			0.8	3.3	6.6	3.9	1.1			1.2	
Alidade Capital V	3,874,566	0.1	-27.0	-28.7	-41.9					-31.1	Dec-21
NCREIF ODCE + 1%			<u>-2.6</u>	<u>-5.7</u>	<u>-9.8</u>					<u>5.8</u>	
Over/Under			-24.4	-23.0	-32.1					-36.9	
Artemis AREPF III	13,511,026	0.4	0.7	-1.7	6.0	28.2				12.7	Jan-19
NCREIF ODCE + 1%			<u>-2.6</u>	<u>-5.7</u>	<u>-9.8</u>	<u>8.1</u>				<u>6.5</u>	
Over/Under			3.3	4.0	15.8	20.1				6.2	
Brookfield SREP III	50,979,438	1.4	2.5	4.6	7.4	13.9				7.7	May-19
NCREIF ODCE + 1%			<u>-2.6</u>	<u>-5.7</u>	<u>-9.8</u>	<u>8.1</u>				<u>6.6</u>	
Over/Under			5.1	10.3	17.2	5.8				1.1	
Blue Vista BVREP V	16,299,200	0.4	0.3	0.3	-2.8	25.1				13.7	Mar-20
NCREIF ODCE + 1%			<u>-2.6</u>	<u>-5.7</u>	<u>-9.8</u>	<u>8.1</u>				<u>7.1</u>	
Over/Under			2.9	6.0	7.0	17.0				6.6	
Kayne Anderson VI	18,137,229	0.5	-0.3	5.1	13.6					2.7	Nov-21
NCREIF ODCE + 1%			<u>-2.6</u>	<u>-5.7</u>	<u>-9.8</u>					<u>5.6</u>	
Over/Under			2.3	10.8	23.4					-2.9	
Core Real Estate	380,442,894	10.3	-3.0	-4.4	-4.7	9.7	6.9	6.9	8.4		Jan-96
JP Morgan RE	151,733,339	4.1	-3.1	-4.9	-11.1	6.2	4.9	5.5	7.3	8.3	Jan-96
NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net)			<u>-2.9</u>	<u>-6.2</u>	<u>-10.7</u>	<u>7.0</u>	<u>5.6</u>	<u>6.0</u>	<u>7.8</u>	<u>7.8</u>	
Over/Under			-0.2	1.3	-0.4	-0.8	-0.7	-0.5	-0.5	0.5	
CFRSR-Carlyle CPI Fund	228,709,555	6.2	-2.9	-4.0	1.6	12.6				12.6	Jul-20
NCREIF Fund Index-Open End Diversified Core Equity (VW) (Net)			<u>-2.9</u>	<u>-6.2</u>	<u>-10.7</u>	<u>7.0</u>				<u>7.0</u>	
Over/Under			0.0	2.2	12.3	5.6				5.6	

TOTAL FUND PERFORMANCE DETAIL - SHORT - TERM - NET OF FEES

	Allocation		Performance (%)								
	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Infrastructure	210,023,893	5.7	2.1	6.8	4.9	6.4				5.3	Oct-18
<i>CPI + 4% (Unadjusted)</i>			<u>2.1</u>	<u>4.8</u>	<u>7.1</u>	<u>10.0</u>				<u>8.2</u>	
Over/Under			0.0	2.0	-2.2	-3.6				-2.9	
JP Morgan IIF	111,619,368	3.0	2.7	11.0	6.7	7.7				6.0	Oct-18
<i>CPI + 4% (Unadjusted)</i>			<u>2.1</u>	<u>4.8</u>	<u>7.1</u>	<u>10.0</u>				<u>8.2</u>	
Over/Under			0.6	6.2	-0.4	-2.3				-2.2	
Ullico UIF	98,404,525	2.7	1.4	2.4	3.4	5.5				5.0	Dec-18
<i>CPI + 4% (Unadjusted)</i>			<u>2.1</u>	<u>4.8</u>	<u>7.1</u>	<u>10.0</u>				<u>8.4</u>	
Over/Under			-0.7	-2.4	-3.7	-4.5				-3.4	
Multi Asset	33,352,061	0.9	0.9	4.3	18.9					21.4	Dec-21
Midstream Energy	13,636	0.0	1.0	4.9	19.9	27.5				8.0	Jul-19
Harvest	13,636	0.0	1.0	4.9	19.8	29.0				8.6	Jul-19
<i>Alerian Midstream Energy Index</i>			3.7	4.5	12.2	24.2	7.6	6.4			Jan-00
Alternative Credit	33,338,425	0.9	2.1	2.2	-1.4					-1.4	Jul-22
Cloverlay	5,528,151	0.1									Jul-23
Sixth Street TAO	27,810,274	0.8	2.1	2.2						-1.4	Jul-22

TOTAL FUND PERFORMANCE DETAIL - SHORT - TERM - NET OF FEES

	Allocation		Performance (%)								
	Market Value (\$)	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Cash & Equivalents Composite	1,409,033	0.0	1.2	2.4	-2.7	2.3	2.1	1.8	1.3	1.7	Oct-03
<i>90 Day U.S. Treasury Bill</i>			<u>1.2</u>	<u>2.3</u>	<u>3.6</u>	<u>1.3</u>	<u>1.6</u>	<u>1.4</u>	<u>1.0</u>	<u>1.3</u>	
Over/Under			0.0	0.1	-6.3	1.0	0.5	0.4	0.3	0.4	
Payroll Account	773,726	0.0	1.2	2.4	-2.7	1.0	1.3	1.2	0.9	1.9	Apr-99
<i>90 Day U.S. Treasury Bill</i>			<u>1.2</u>	<u>2.3</u>	<u>3.6</u>	<u>1.3</u>	<u>1.6</u>	<u>1.4</u>	<u>1.0</u>	<u>1.8</u>	
Over/Under			0.0	0.1	-6.3	-0.3	-0.3	-0.2	-0.1	0.1	
Operating Funds	635,307	0.0	1.2	2.4	-2.7	0.8	1.2	1.2	0.9	1.4	Oct-03
<i>90 Day U.S. Treasury Bill</i>			<u>1.2</u>	<u>2.3</u>	<u>3.6</u>	<u>1.3</u>	<u>1.6</u>	<u>1.4</u>	<u>1.0</u>	<u>1.3</u>	
Over/Under			0.0	0.1	-6.3	-0.5	-0.4	-0.2	-0.1	0.1	

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



CALENDAR YEAR INDEX PERFORMANCE

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Jun	QTD	YTD
S&P 500	32.4%	13.7%	1.4%	12.0%	21.8%	-4.4%	31.5%	18.4%	28.7%	-18.1%	6.6%	8.7%	16.9%
Russell 1000	33.1%	13.2%	0.9%	12.1%	21.7%	-4.8%	31.4%	21.0%	26.5%	-19.1%	6.8%	8.6%	16.7%
Russell 2000	38.8%	4.9%	-4.4%	21.3%	14.6%	-11.0%	25.5%	20.0%	14.8%	-20.4%	8.1%	5.2%	8.1%
Russell 2500	36.8%	7.1%	-2.9%	17.6%	16.8%	-10.0%	27.8%	20.0%	18.2%	-18.4%	8.5%	5.2%	8.8%
MSCI EAFE	22.8%	-4.9%	-0.8%	1.0%	25.0%	-13.8%	22.0%	7.8%	11.3%	-14.5%	4.6%	3.0%	11.7%
MSCI EM	-2.6%	-2.2%	-14.9%	11.2%	37.3%	-14.6%	18.4%	18.3%	-2.5%	-20.1%	3.8%	0.9%	4.9%
MSCI ACWI	22.8%	4.2%	-2.4%	7.9%	24.0%	-9.4%	26.6%	16.3%	18.5%	-18.4%	5.8%	6.2%	13.9%
Private Equity	12.6%	22.3%	14.6%	10.4%	10.3%	21.0%	13.1%	17.2%	45.0%	-9.3%	-	2.0%	2.0%
BBG TIPS	-8.6%	3.6%	-1.4%	4.7%	3.0%	-1.3%	8.4%	11.0%	6.0%	-11.8%	-0.3%	-1.4%	1.9%
BBG Municipal	-2.6%	9.1%	3.3%	0.2%	5.4%	1.3%	7.5%	5.2%	1.5%	-8.5%	1.0%	-0.1%	2.7%
BBG Muni High Yield	-5.5%	13.8%	1.8%	3.0%	9.7%	4.8%	10.7%	4.9%	7.8%	-13.1%	1.8%	1.7%	4.4%
BBG US Corporate HY	7.4%	2.5%	-4.5%	17.1%	7.5%	-2.1%	14.3%	7.1%	5.3%	-11.2%	1.7%	1.7%	5.4%
BBG US Agg Bond	-2.0%	6.0%	0.5%	2.6%	3.5%	0.0%	8.7%	7.5%	-1.5%	-13.0%	-0.4%	-0.8%	2.1%
BBG Global Agg	-2.6%	0.6%	-3.2%	2.1%	7.4%	-1.2%	6.8%	9.2%	-4.7%	-16.2%	0.0%	-1.5%	1.4%
BBG Long Treasuries	-12.7%	25.1%	-1.2%	1.3%	8.5%	-1.8%	14.8%	17.7%	-4.6%	-29.3%	0.0%	-2.3%	3.7%
BBG US Long Credit	-6.6%	16.4%	-4.6%	10.2%	12.2%	-6.8%	23.4%	13.3%	-1.2%	-25.3%	1.4%	-0.4%	5.0%
BBG US STRIPS 20+ Yr	-21.0%	46.4%	-3.7%	1.4%	13.7%	-4.1%	20.9%	24.0%	-5.2%	-39.6%	1.0%	-2.9%	5.1%
JPM GBI-EM Global Div	-9.0%	-5.7%	-14.9%	9.9%	15.2%	-6.2%	13.5%	2.7%	-8.7%	-11.7%	3.3%	2.5%	7.8%
JPM EMBI Glob Div	-5.3%	7.4%	1.2%	10.2%	10.3%	-4.3%	15.0%	5.3%	-1.8%	-17.8%	2.2%	2.2%	4.1%
CS Hedge Fund	9.7%	4.1%	-0.7%	1.2%	7.1%	-3.2%	9.3%	6.4%	8.2%	1.1%	-	0.1%	0.3%
BBG Commodity	-9.5%	-17.0%	-24.7%	11.8%	1.7%	-11.2%	7.7%	-3.1%	27.1%	16.1%	4.0%	-2.6%	-7.8%
Alerian Midstream	-	16.4%	-37.3%	33.8%	-2.4%	-13.3%	24.0%	-23.4%	38.4%	21.5%	7.0%	3.7%	4.5%
FTSE NAREIT Equity REITs	2.5%	30.1%	3.2%	8.5%	5.2%	-4.6%	26.0%	-8.0%	43.2%	-24.4%	5.2%	2.6%	5.4%

*Private Equity return represents calendar year pooled IRR and is subject to a one quarter lag
Source: FactSet, Barclays, Thomson One



TRAILING ANNUAL INDEX PERFORMANCE

Equity							
	Jun-23	QTD	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI	5.8%	6.2%	13.9%	16.5%	11.0%	8.1%	8.8%
S&P 500	6.6%	8.7%	16.9%	19.6%	14.6%	12.3%	12.9%
Russell 1000	6.8%	8.6%	16.7%	19.4%	14.1%	11.9%	12.6%
Russell 2000	8.1%	5.2%	8.1%	12.3%	10.8%	4.2%	8.3%
Russell 2500	8.5%	5.2%	8.8%	13.6%	12.3%	6.5%	9.4%
MSCI EAFE	4.6%	3.0%	11.7%	18.8%	8.9%	4.4%	5.4%
MSCI EM	3.8%	0.9%	4.9%	1.7%	2.3%	0.9%	3.0%

Credit							
	Jun-23	QTD	YTD	1 YR	3 YR	5 YR	10 YR
BBG Global Agg	0.0%	-1.5%	1.4%	-1.3%	-5.0%	-1.1%	0.2%
BBG US Agg	-0.4%	-0.8%	2.1%	-0.9%	-4.0%	0.8%	1.5%
BBG Credit	0.3%	-0.3%	3.1%	1.4%	-3.4%	1.7%	2.5%
BBG US HY	1.7%	1.7%	5.4%	9.1%	3.1%	3.4%	4.4%
BBG Muni	1.0%	-0.1%	2.7%	3.2%	-0.6%	1.8%	2.7%
BBG Muni HY	1.8%	1.7%	4.4%	2.9%	1.8%	2.8%	4.2%
BBG TIPS	-0.3%	-1.4%	1.9%	-1.4%	-0.1%	2.5%	2.1%
BBG 20+ STRIPS	1.0%	-2.9%	5.1%	-10.8%	-16.6%	-2.1%	2.4%
BBG Long Treasuries	0.0%	-2.3%	3.7%	-6.8%	-12.1%	-0.9%	1.8%
BBG Long Credit	1.4%	-0.4%	5.0%	1.1%	-6.1%	1.5%	3.5%
BBG Govt/Credit 1-3 Yr	-0.4%	-0.4%	1.1%	0.5%	-0.9%	1.1%	1.0%
JPM EMBI Glob Div	2.2%	2.2%	4.1%	7.4%	-3.1%	0.6%	2.8%
JPM GBI-EM Glob Div	3.3%	2.5%	7.8%	11.4%	-1.4%	0.3%	-0.6%

Real Assets							
	Jun-23	QTD	YTD	1 YR	3 YR	5 YR	10 YR
BBG Commodity	4.0%	-2.6%	-7.8%	-9.6%	17.8%	4.7%	-1.0%
Alerian Midstream Index	7.0%	3.7%	4.5%	12.2%	24.2%	7.6%	-
NAREIT Composite Index	5.7%	1.6%	3.2%	-4.3%	6.2%	4.4%	6.6%



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

GLOSSARY OF INVESTMENT TERMINOLOGY— RISK STATISTICS

- **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.
Formula:
(Annualized Return of Portfolio - Annualized Return of Risk Free) / Annualized Standard Deviation (Portfolio Returns)
- **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 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:
(Annualized Return of Portfolio - Annualized Arithmetic Average of the Portfolio Returns) Squared / The number of periods - 1

GLOSSARY OF INVESTMENT TERMINOLOGY— RISK STATISTICS

▪ 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) * $\sqrt{\text{# of periods per year}}$*
Where X = periods portfolio return and Y = the period's BM return
For monthly returns, the periods per year = 12
For quarterly returns, the periods per year = 4

▪ Treynor Ratio

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

Formula:

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

▪ Up/Down Capture Ratio

- A measure of what percentage of a market's 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.

Upside Capture:

Total Return (Fund Returns) / Total Returns (BM Return) when Period Benchmark Return is ≥ 0

Downside Capture:

Total Return (Fund Returns) / Total Returns (BM Return) when Benchmark Return < 0

Source: InvestorForce



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