

City of Memphis Retirement System

Analysis of Investment Performance

Quarter Ending June 30, 2023

Rosemary E. Guillette
Vice President

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Financial Market Conditions

Quarter In Review: Global Equity Overview

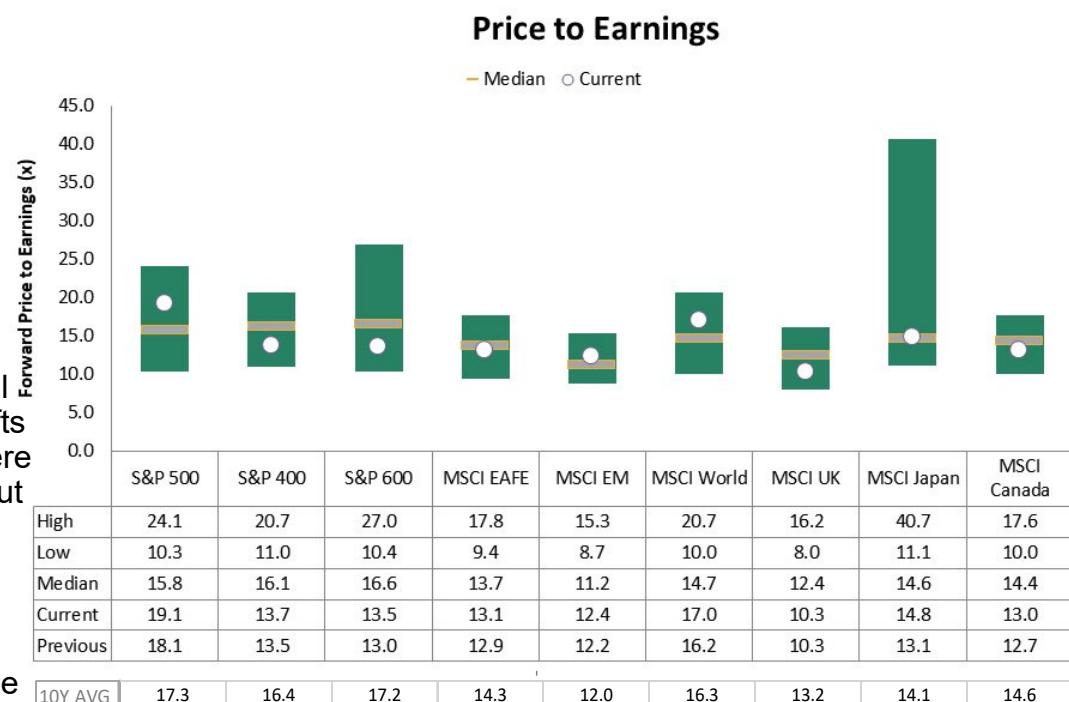
Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	8.74	16.89	19.59	14.60	12.31	12.86
MSCI Europe, Australasia and Far East (EAFE)*	2.95	11.67	18.77	8.93	4.39	5.41
MSCI Emerging Markets (EM)*	0.90	4.89	1.75	2.32	0.93	2.95

All data in the table are percentages.

* Net dividends reinvested

Global Equity Performance and Valuations

- U.S. (+8.7%), developed international (+3.0%), and emerging markets equities (+0.9%) all posted positive returns in the quarter ending June 30, as investor sentiment rose.
- Signs of lower growth in China, as well as continued tensions between the U.S. and China, hindered EM performance, which delivered lower returns than developed markets.
- Japan produced the highest returns for the developed international markets as expectations of governance reforms and structural shifts in the economy boosted investor sentiment. European markets were able to contribute positive returns despite late-quarter worries about the EU economy and the continuing pace of the European Central Bank's rate hikes.
- U.S. large cap and emerging market valuations remain well above their long-term median, while most other markets, including U.S. small cap and developed international, appear cheap relative to the last 20 years.



Data range is from 3/31/00-6/30/23. P/E ratios are forward 12 months.

Quarter In Review: U.S. Equity

U.S. Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	8.74	16.89	19.59	14.60	12.31	12.86
Russell 1000	8.58	16.68	19.36	14.09	11.92	12.64
Russell 1000 Growth	12.81	29.02	27.11	13.73	15.14	15.74
Russell 1000 Value	4.07	5.12	11.54	14.30	8.11	9.22
Russell 2000	5.21	8.09	12.31	10.82	4.21	8.26
Russell 2000 Growth	7.05	13.55	18.53	6.10	4.22	8.83
Russell 2000 Value	3.18	2.50	6.01	15.43	3.54	7.29
Russell Midcap	4.76	9.01	14.92	12.50	8.46	10.32
Russell 3000	8.39	16.17	18.95	13.89	11.39	12.34

All data in the tables are percentages.

Performance

- U.S. equities were up +8.7% for the quarter ending June 30. The Fed raised interest rates by 25 basis points in May but did not further raise rates in June, choosing to pause while they assessed how previous interest rate increases were affecting the broader economy. Initial worries around the U.S. debt ceiling were allayed after Congress approved legislation suspending the debt ceiling in June.
- Growth continued to significantly outperform value, as positive IT gains were driven by continued enthusiasm for artificial intelligence (AI). Value underperformance reflected investor focus on sectors that benefited from stable economic growth.
- Large cap stocks outperformed small caps, as they did in the first quarter. As smaller companies are more dependent on financing, regional banks concerns and higher interest rates continued to hinder their performance.
- Information Technology (+17.2%) continued to lead the market as AI interest drove mega-cap tech stocks higher. Consumer Discretionary (+14.6%) and Telecom (+13.1%) also produced strong returns. Utilities (-2.5%) and Energy (-0.9%) were the only sectors to deliver negative returns for the quarter as oil prices weakened.

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Sources this page: Investment Metrics, FactSet

S&P 500 Sector Returns	QTD	1-Year
Cons. Disc.	14.58	24.73
Cons. Staples	0.45	6.60
Energy	-0.89	18.76
Financials	5.33	9.50
Healthcare	2.95	5.37
Industrials	6.49	25.16
IT	17.20	40.26
Materials	3.31	15.12
Telecom	13.06	17.28
Real Estate	1.81	-4.13
Utilities	-2.53	-3.68

Quarter In Review: International Equity

MSCI International Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
World ex. U.S.	3.03	11.29	17.41	9.30	4.58	5.40
EAFFE	2.95	11.67	18.77	8.93	4.39	5.41
EAFFE Local Currency	4.28	12.10	17.50	11.73	6.42	7.67
Europe	2.74	13.59	21.81	10.68	5.19	5.70
Europe ex U.K.	2.90	15.17	24.57	10.07	6.00	6.40
U.K.	2.19	8.43	13.19	12.57	2.83	3.88
Japan	6.42	13.00	18.14	5.70	3.13	5.23
Pacific ex Japan	-1.80	0.32	5.85	6.54	2.66	4.34

All data in the tables are percentages and net dividends reinvested.

Performance

- Developed international stocks were up +3.0% during the quarter. Inflation pressures, while still high, lessened in most countries, and balance sheets remained relatively strong.
- Europe posted positive returns of +2.7% during the quarter with the European Central Bank raising interest rates twice in the quarter and headline annual inflation declining from 6.1% in May to 5.5% in June. U.K. equity markets struggled following high inflation and low growth expectations.
- Japanese equities were up +6.4%, as foreign investment interest has grown over the quarter. The Nikkei 225 Index exceeded 33,700 yen in June, which was its highest level in 33 years.
- Most sectors in the developed international markets were positive in the quarter, with Industrials (+6.2%), Technology (+5.9%), and Consumer Discretionary (+5.0%) generating the highest returns. Telecommunications (-2.6%), Real Estate (-2.0%), and Materials (-1.7%) lagged. Over the 1-Year period, all sectors remain positive except for Real Estate (-7.4%).

MSCI EAFE Sector Returns	QTD	1-Year
Consumer Disc.	5.02	30.58
Cons. Staples	-0.64	9.87
Energy	0.09	14.34
Financials	4.60	20.16
Healthcare	1.99	9.75
Industrials	6.19	29.63
IT	5.85	32.66
Materials	-1.71	16.35
Telecom	-2.63	2.18
Utilities	4.04	16.49
Real Estate	-1.98	-7.37

Quarter In Review: Emerging Market Equity

MSCI EM Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Emerging Markets	0.90	4.89	1.75	2.32	0.93	2.95
EM Local Currency	1.71	5.55	3.28	3.90	2.97	5.68
Asia	-0.77	4.00	-0.90	1.19	1.20	4.67
EMEA	2.74	1.64	1.79	0.61	-2.69	-1.48
Latin America	14.04	18.52	29.84	16.45	4.79	1.13

All data in the tables are percentages and net dividends reinvested.

Performance

- Emerging markets were up marginally (+0.9%) over the quarter as China's underwhelming economic recovery and tensions with the U.S. contributed to the lag against developed markets.
- China suffered a poorer than expected recovery as the Shanghai Composite Index is marginally positive year-to-date. Korea and Taiwan outperformed overall as technology was strong for the quarter due to the positive sentiment behind AI.
- India rebounded and posted a strong quarter as its economic outlook has improved and is now projected to outpace China's economic growth this year. Brazil also performed well over the quarter following fiscal policy optimism—that country had its best GDP quarter-to-quarter reading (+1.9%) since the last quarter of 2020.
- Emerging market sectors were split for the quarter. Energy (+12.1%), Financials (+5.7%), and Technology (+5.1%) led sector returns. Telecom (-6.8%), Consumer Discretionary (-6.3%), and Real Estate (-4.9), on the other hand, lagged the most.

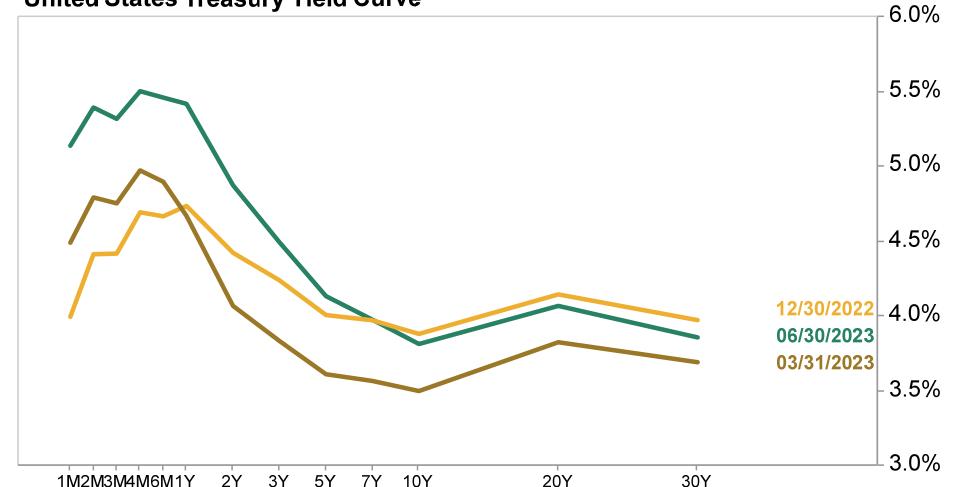
MSCI EM Sector Returns	QTD	1-Year
Cons. Disc.	-6.33	-15.27
Cons. Staples	0.28	4.44
Energy	12.14	13.47
Financials	5.68	6.36
Healthcare	-2.50	-9.55
Industrials	1.81	5.34
IT	5.05	14.10
Materials	-4.17	1.84
Telecom	-6.76	-3.59
Utilities	4.16	-6.70
Real Estate	-4.88	-17.67

Quarter In Review: Fixed Income Overview

Yield Curve

- The yield curve further inverted during the second quarter of 2023, with short-term rates rising faster than long-term rates. The Federal Reserve hiked rates by 25 basis points in May. In June, the Fed announced it would pause interest rate increases after 10 consecutive rate hikes. However, the Fed also indicated that there may be further rate increases later this year.
- Short-term yields increased the most over the quarter, with the 2-year Treasury note rising by 81 bps over the prior quarter.
- 10- and 30-year Treasury yields increased by 32 basis points and 16 basis points, ending the quarter at 3.81% and 3.85%, respectively.

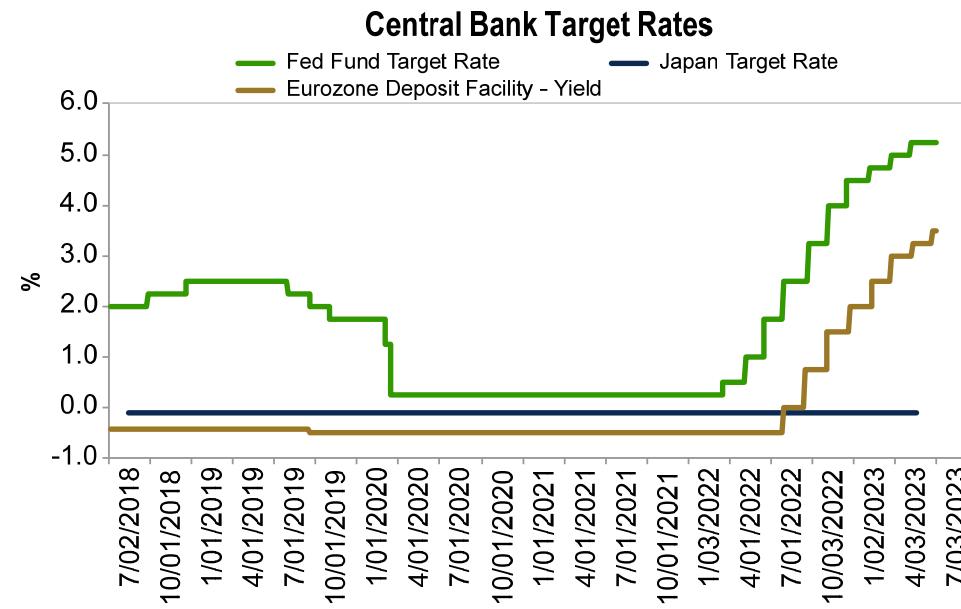
United States Treasury Yield Curve



Monetary Policies/Global Interest Rates

- Central bank deposit rates remained negative in Japan, while rates in Europe ended the quarter at 4.00% and rates in the United Kingdom ended the quarter at 5.00%.
- Reflecting the earlier and faster pace of rate rises, the U.S. policy rate is above those of the Eurozone, the United Kingdom and Japan, at 5.25%.

Interest Rates	Fed Funds Rate	EZ Deposit Facility Rate
Average	4.95	0.87
Max	20.00	3.75
Min	0.25	-0.50



Quarter In Review: U.S. Fixed Income

U.S. Fixed Income Indices*	QTD	YTD	1-Year	3-Year	5-Year	10-Year
U.S. Aggregate	-0.84	2.09	-0.94	-3.96	0.77	1.52
Government/Credit	-0.93	2.21	-0.70	-4.11	1.03	1.66
Government	-1.35	1.59	-2.08	-4.71	0.46	0.97
Investment Grade Credit	-0.29	3.21	1.55	-3.44	1.76	2.63
Investment Grade CMBS	-0.63	1.07	-1.86	-2.73	1.22	1.86
U.S. Corporate High Yield	1.75	5.38	9.06	3.13	3.36	4.43
FTSE** 3-Month T-Bill	1.25	2.39	3.75	1.33	1.57	0.98
Hueler Stable Value	0.55	1.87	1.87	1.96	2.13	1.97

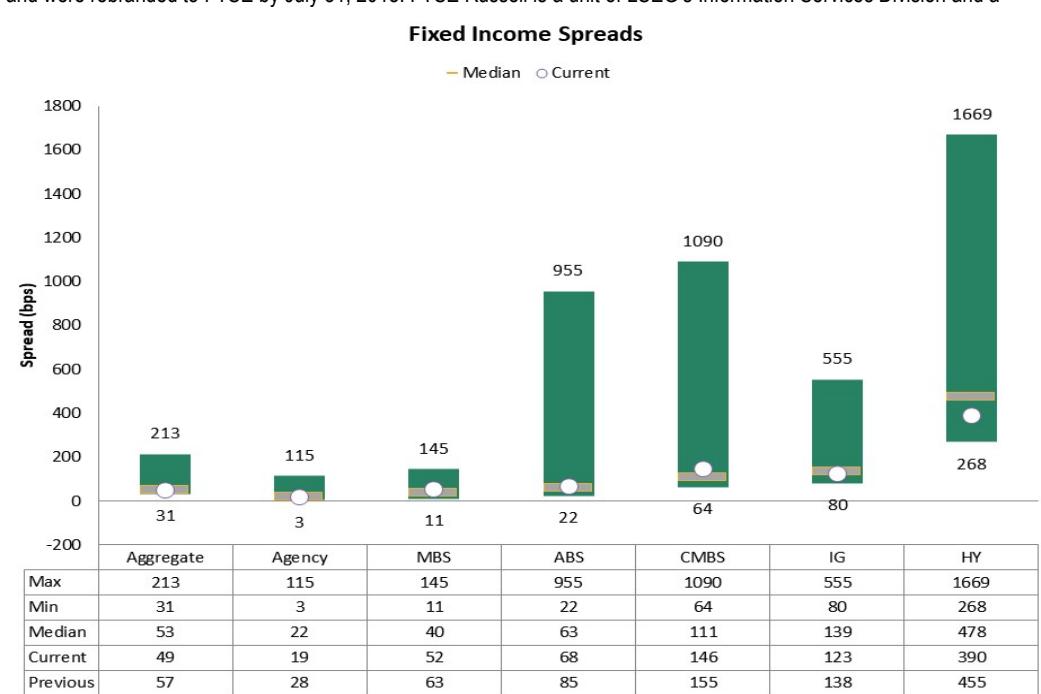
* Bloomberg Indices, unless otherwise noted.

** Formerly Citigroup. Citigroup's fixed income indices were purchased by London Stock Exchange Group (LSEG) and were rebranded to FTSE by July 31, 2018. FTSE Russell is a unit of LSEG's Information Services Division and a wholly owned subsidiary of LSEG.

All data in the table are percentages.

Performance and Spreads

- The U.S. Aggregate Index was negative during the quarter. Sector returns were mostly negative with only the high yield sector and cash delivering positive quarterly returns.
- High Yield had the strongest performance at +1.75% for the quarter. Government bonds experienced the weakest performance in the quarter ended June 30 (-1.35%).
- For the quarter, all domestic fixed income spreads narrowed. The largest decreases were in High Yield and ABS with spreads narrowing by 65 basis points and 17 basis points, respectively.



Quarter In Review: International Fixed Income

Global Fixed Income Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Bloomberg Global Aggregate	-1.53	1.43	-1.32	-4.96	-1.09	0.20
Bloomberg Global Aggregate (Hgd)	0.06	2.96	0.52	-2.88	0.93	2.11
FTSE Non-U.S. WGBI*	-2.12	1.52	-2.63	-7.81	-3.75	-1.40
FTSE Non-U.S. WGBI (Hgd)	0.39	3.83	-0.55	-3.53	0.27	2.26
JPM EMBI Global Diversified**	2.19	4.09	7.39	-3.10	0.55	2.82
JPM GBI-EM Global Diversified***	2.51	7.79	11.38	-1.42	0.29	-0.56

All data in the table are percentages.

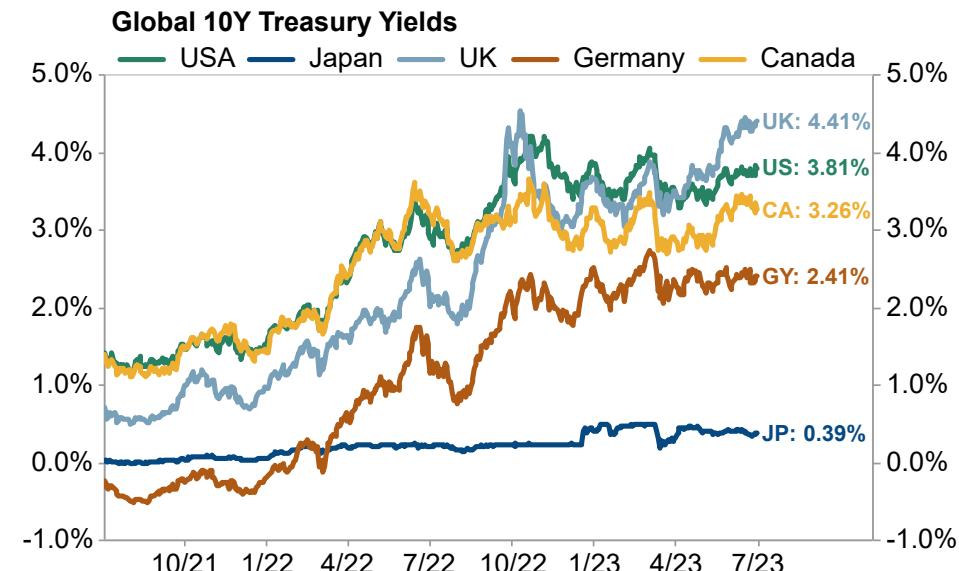
* Formerly Citigroup. The FTSE Non-U.S. World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment grade sovereign bonds excluding the U.S.

** The JP Morgan Emerging Market Bond Index (EMBI) Global Diversified index measures government bonds in hard currencies.

*** The JP Morgan Government Bond Index – Emerging Markets (GBI-EM) Global Diversified index measures government bonds in local currencies.

Global Performance and Yields

- Yields rose in most developed markets during the quarter. Both the UK and Europe were more aggressive with interest rates increases compared to the U.S. The Bank of England increased rates twice by 25 and 50 basis points, respectively. The ECB also increased rates twice during the quarter by 25 basis points each time as inflation remains a major concern in both Europe and the United Kingdom.
- Inflation was the main driving force behind the speed of rate increases by the global central banks.
- The U.S. dollar depreciated relative to the yen, British pound and euro.
- Global returns were negative for the quarter ended June 30 while emerging markets debt returns were positive and delivered the strongest performance.



Disclaimer

The information and opinions herein provided by third parties have been obtained from sources believed to be reliable, but accuracy and completeness cannot be guaranteed. This article and the data and analysis herein is intended for general education only and not as investment advice. It is not intended for use as a basis for investment decisions, nor should it be construed as advice designed to meet the needs of any particular investor. Please contact Segal Marco Advisors or another qualified investment professional for advice regarding the evaluation of any specific information, opinion, advice, or other content. On all matters involving legal interpretations and regulatory issues, investors should consult legal counsel.

Total Fund Composite

City of Memphis

Asset Allocation Comparison as of June 30, 2023

\$2,468,266							
Target Allocations		Current Managers & Allocations			Difference		Range
Equity							
Large Cap Equity	20.00%	\$493,653 (000)	Barrow, Hanley (large cap value) Rhumbline Russell 1000 Growth (large cap growth) Winslow (large cap growth) Rhumbline S&P 500 (large cap core)	5.93% 3.73% 3.54% 8.38%	\$146,256 \$92,028 \$87,414 \$206,832 (000)	1.58%	15%-25%
Mid/SMID Cap Equity	4.00%	\$98,731	Northern Trust (mid cap core) Capital Prospects SMID Cap*	2.23% 2.33%	\$54,919 \$57,590	0.56%	0%-7%
Small Cap Equity	4.00%	\$98,731	Capital Prospects Small Cap Value* Conestoga (small cap growth) Nicholas (small cap growth)	2.51% 1.25% 1.01%	\$61,912 \$30,764 \$24,872	0.76%	0%-7%
Domestic Equity	28.00%	\$691,114	Domestic Equity	30.90%	\$762,588	2.90%	18%-38%
Developed International	15.00%	\$370,240	1607 Capital Partners Principal Global Investors Marathon Asset Mgmt Strategic Global Advisors	4.39% 4.28% 4.44% 2.56%	\$108,275 \$105,578 \$109,560 \$63,128	0.66%	10%-20%
Emerging Markets	7.00%	\$172,779	Acadian JPMorgan	3.58% 3.32%	\$88,456 \$81,835	-0.10%	5%-12%
International	22.00%	\$543,018	International	22.56%	\$556,832	0.56%	15%-30%
Equity Total	50.00%	\$1,234,133	Equity Total	53.46%	\$1,319,420	3.46%	
Fixed Income							
Core Fixed Income	13.00%	\$320,875	PIMCO Prudential Core Conserv Bond Barrow Hanley High Quality Core Garcia Hamilton Aggregate	3.82% 3.66% 1.28% 3.00%	\$94,208 \$90,308 \$31,615 \$74,139	-1.24%	8%-18%
Global Fixed Income	8.00%	\$197,461	Brandywine	7.97%	\$196,826	-0.03%	3%-13%
Global High Yield	5.00%	\$123,413	Mackay Shields	4.94%	\$121,996	-0.06%	2%-10%
Fixed Income Total	26.00%	\$641,749	Fixed Income Total	24.68%	\$609,092	-1.32%	18%-34%

* Emerging Managers

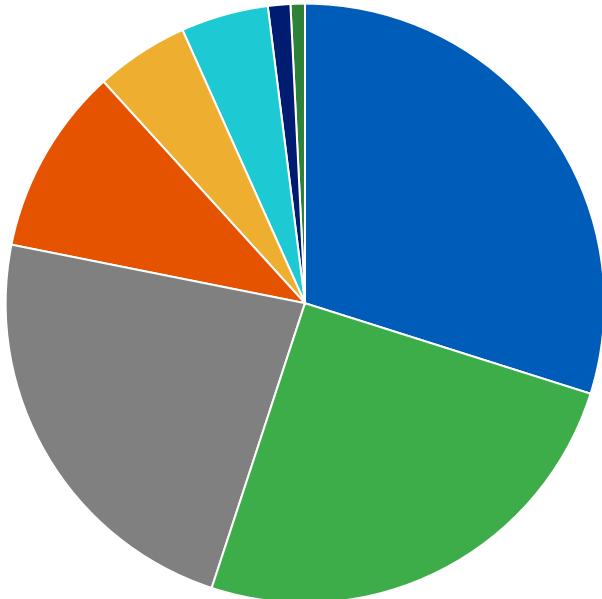
<u>Target Allocations</u>	<u>Current Managers & Allocations</u>				<u>Difference</u>	<u>Range</u>
Real Estate						
Core/Value Add/REITs	10.00%	\$246,827	BlackRock US Core Property Fund RREEF REIT II Vanguard REIT Index TA Realty Core Property Fund	2.88% 0.76% 0.13% 1.26%	\$70,977 \$18,755 \$3,323 \$31,100	
			Cornerstone (Barings) Real Estate Fund X ¹ Dune Real Estate Partners Fund IV Green Cities III Green Cities IV Green Cities V Long Wharf Real Estate Partners IV Long Wharf Real Estate Partners Fund V Long Wharf Real Estate Partners Fund VI Long Wharf Real Estate Partners Fund VII Mesirow Financial Real Estate Value Fund III TA Realty Fund XI	0.00% 0.96% 0.53% 0.73% 0.00% 0.03% 0.48% 0.56% 0.07% 1.09% 0.38%	\$50 (Total Commitment \$10M, Total Drawn \$11.8M, Total Distributed \$15.6M) \$23,756 (Total Commitment \$30M, Total Drawn \$22.6M, Total Distributed \$1.5M) \$13,097 (Total Commitment \$20M, Total Drawn \$24.0M, Total Distributed \$10.7M) \$17,977 (Total Commitment \$20M, Total Drawn \$19.2, Total Distributed \$1.1M) \$21 (Total Commitment \$20M, Total Drawn \$0.1, Total Distributed \$0.0M) \$697 (Total Commitment \$20M, Total Drawn \$21.5M, Total Distributed \$29.6M) \$11,835 (Total Commitment \$20M, Total Drawn \$20.0M, Total Distributed \$14.9M) \$13,810 (Total Commitment \$20M, Total Drawn \$20.7M, Total Distributed \$11.3M) \$1,623 (Total Commitment \$20M, Total Drawn \$1.9M, Total Distributed \$0.0M) \$26,995 (Total Commitment \$20M, Total Drawn \$22.3M, Total Distributed \$7.3M) \$9,349 (Total Commitment \$20M, Total Drawn \$20.0M, Total Distributed \$23.2M)	
			<i>TA Realty Fund XIII (\$30M Commitment)</i>			
Real Estate Total	10.00%	\$246,827	Real Estate Total	9.86%	\$243,366	-0.14%
Private Equity						
Private Equity	5.00%	\$123,413	Neuberger Berman Crossroads XXI Neuberger Berman Crossroads XXIV Pantheon Global Secondary Fund V Siguler Guff Small Buyout Opportunities Fund V SSM Growth Equity Fund II* SSM Growth Equity Fund III*	2.26% 0.07% 1.31% 0.21% 0.31% 0.73%	\$55,786 (Total Commitment \$50M, Total Drawn \$36.5M, Total Distributed \$27.9M) \$1,821 (Total Commitment \$40M, Total Drawn \$2.0M, Total Distributed \$0.0M) \$32,260 (Total Commitment \$50M, Total Drawn \$39.7M, Total Distributed \$32.0M) \$5,193 (Total Commitment \$20M, Total Drawn \$4.9M, Total Distributed \$0.0M) \$7,734 (Total Commitment \$10M, Total Drawn \$9.5, Total Distributed \$5.3M) \$17,909 (Total Commitment \$10M, Total Drawn \$14.7, Total Distributed \$0.9M)	
Private Equity Total	5.00%	\$123,413		4.89%	\$120,704	-0.11%
Private Credit						
	5.00%		Brightwood Capital Fund V Churchill Middle Market Senior Loan Fund III Neuberger Berman Private Debt Fund IV	0.18% 0.27% 0.73%	\$4,537 (Total Commitment \$10M, Total Drawn \$4.0, Total Distributed \$0.0M) \$6,627 (Total Commitment \$10M, Total Drawn \$11.9, Total Distributed \$5.9M) \$18,125 (Total Commitment \$30M, Total Drawn \$18.2, Total Distributed \$2.4M)	
Private Credit Total	5.00%	\$123,413		1.19%	\$29,290	-3.81%
Hedge Fund of Funds						
	4.00%		Aetos Grosvenor Preserver, LP*	1.90% 1.96% 0.33%	\$46,776 \$48,270 \$8,025	
Hedge Fund of Funds Total	4.00%	\$98,731		4.18%	\$103,071	0.18%
Internal Account	0.00%	\$0	Internal Account	1.76%	\$43,323	
Cash	0.00%	\$0	Cash	1.76%	\$43,323	1.76%
Total	100%	\$2,468,266	Total	100%	\$2,468,266	

¹ Cornerstone Real Estate Advisers now operates under the investment adviser name "Barings Real Estate Advisers," however, all predecessor funds retain the name Cornerstone. All new products open to new investors will operate under the name "Barings Real Estate Adviser."

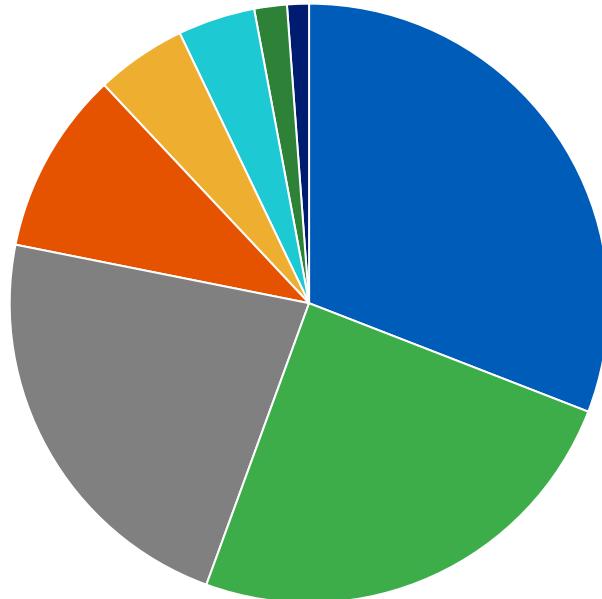
**City of Memphis Retirement System
Asset Allocation Chart**

As of June 30, 2023

March 31, 2023 : \$2,438,212,252



June 30, 2023 : \$2,468,265,792



	Market Value (\$)	Allocation (%)
Domestic Equity Composite	728,541,723	29.9
Fixed Income Composite	613,714,571	25.2
International Equity Composite	562,721,645	23.1
Total Real Estate Composite	246,792,305	10.1
Private Equity Composite	122,846,485	5.0
Hedge Fund Composite	115,036,203	4.7
Private Debt Composite	29,588,616	1.2
In House Cash	18,970,704	0.8

	Market Value (\$)	Allocation (%)
Domestic Equity Composite	762,588,475	30.9
Fixed Income Composite	609,091,735	24.7
International Equity Composite	556,831,834	22.6
Total Real Estate Composite	243,366,179	9.9
Private Equity Composite	120,704,447	4.9
Hedge Fund Composite	103,070,941	4.2
In House Cash	43,322,653	1.8
Private Debt Composite	29,289,528	1.2

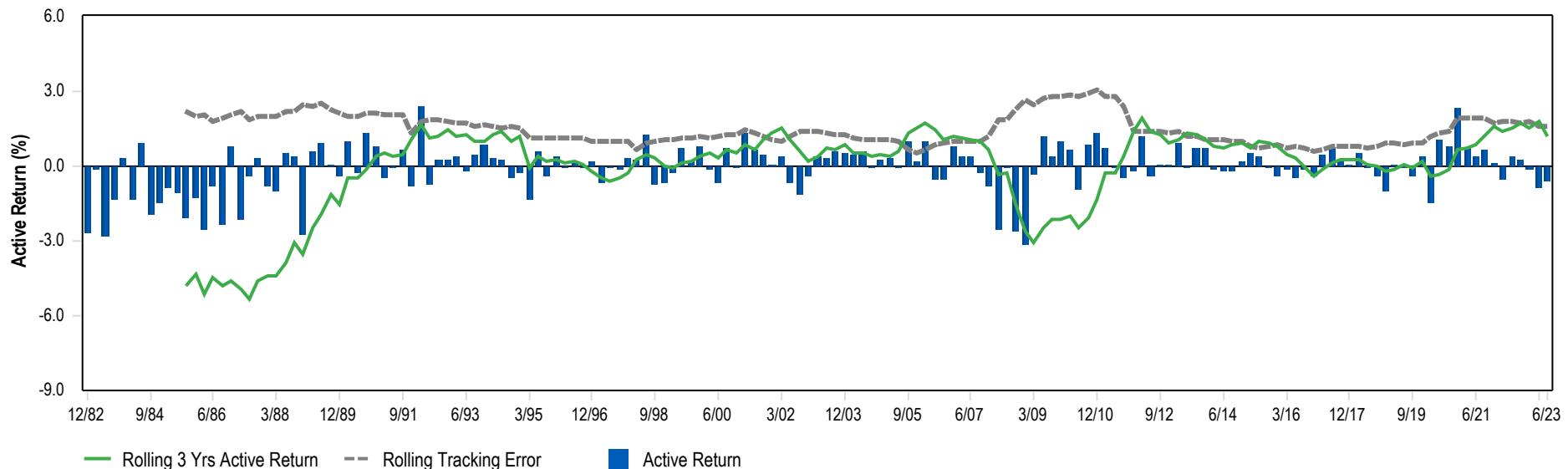
City of Memphis

Total Fund Composite

As of June 30, 2023

	Gain / Loss							
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	
Total Fund Composite								
Beginning Market Value	2,438,212,252	2,373,704,216	2,403,940,343	2,265,687,672	2,346,220,884	2,094,532,166	2,040,033,774	
Net Cash Flows	-37,129,080	-69,992,160	-155,789,129	-386,819,324	-640,946,786	-867,862,822	-1,235,218,628	
Income	9,430,632	18,180,283	33,091,863	94,022,576	166,148,861	231,995,409	349,249,642	
Gain/Loss	57,751,987	146,373,453	187,022,715	495,374,867	596,842,832	1,009,601,040	1,314,201,004	
Ending Market Value	2,468,265,792	2,468,265,792	2,468,265,792	2,468,265,792	2,468,265,792	2,468,265,792	2,468,265,792	

Rolling Return and Tracking Error

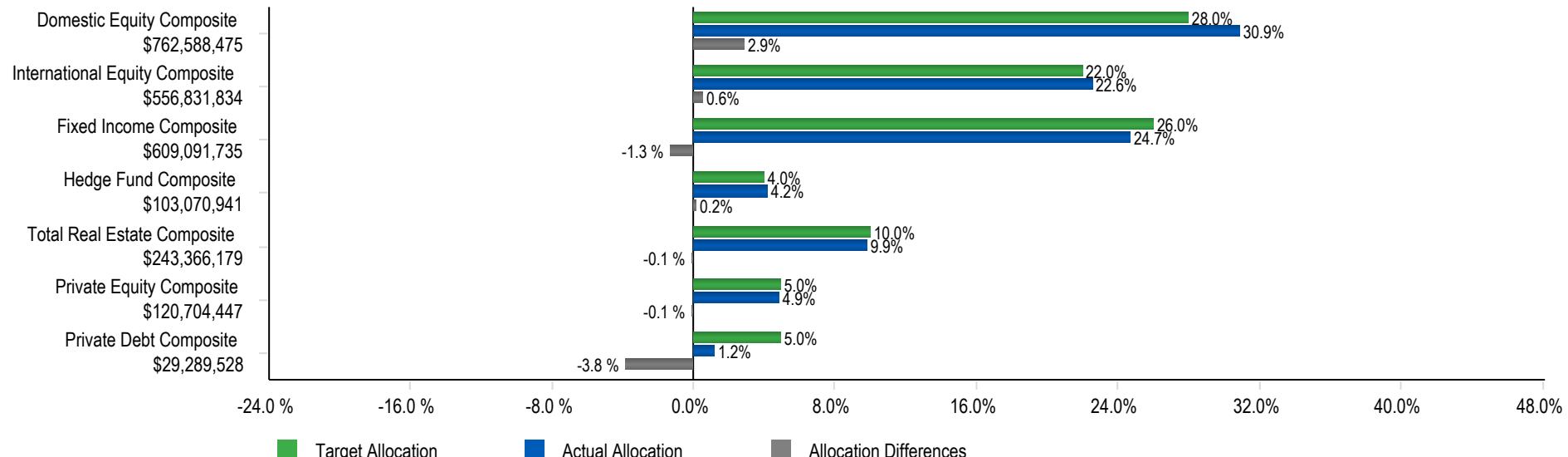


	Performance							
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs	
Total Fund Composite	2.8	7.0	8.7	8.1	6.3	7.7	7.4	
Policy Index	3.4	8.6	10.2	6.9	6.1	7.3	7.0	
Difference	-0.6	-1.6	-1.5	1.2	0.2	0.4	0.4	

City of Memphis

Total Fund Composite

As of June 30, 2023



	Asset Allocation (\$)	Asset Allocation (%)	Target Allocation (%)	Differences (%)	Minimum Allocation (%)	Maximum Allocation (%)
Total Fund Composite	2,468,265,792	100.00	100.00	0.00	-	-
Domestic Equity Composite	762,588,475	30.90	28.00	2.90	18.00	38.00
International Equity Composite	556,831,834	22.56	22.00	0.56	15.00	30.00
Fixed Income Composite	609,091,735	24.68	26.00	-1.32	18.00	34.00
Hedge Fund Composite	103,070,941	4.18	4.00	0.18	2.00	6.00
Total Real Estate Composite	243,366,179	9.86	10.00	-0.14	5.00	15.00
Private Equity Composite	120,704,447	4.89	5.00	-0.11	3.00	7.00
Private Debt Composite	29,289,528	1.19	5.00	-3.81	3.00	7.00

**City of Memphis
Asset Allocation**

As of June 30, 2023

	Total Fund	%
	(\$)	
Total Fund Composite	2,468,265,792	100.0
In House Cash	43,322,653	1.8
Domestic Equity Composite	762,588,475	30.9
Barrow, Hanley	146,256,286	5.9
Rhumbline S&P 500	206,832,135	8.4
Rhumbline Russell 1000 Growth	92,028,341	3.7
NTGI S&P 400	54,919,464	2.2
Winslow Capital Management	87,414,433	3.5
Nicholas Investment Partners	24,871,967	1.0
Conestoga Capital Advisors	30,763,956	1.2
Capital Prospects SMID	57,589,632	2.3
Capital Prospects Small Cap Value	61,912,261	2.5
Fixed Income Composite	609,091,735	24.7
Mackay Shields	121,996,050	4.9
PIMCO	94,208,335	3.8
Barrow Hanley High Quality Core	31,615,057	1.3
Garcia Hamilton Aggregate	74,138,613	3.0
Prudential Core Conserv Bond	90,307,631	3.7
Brandywine	196,826,049	8.0
International Equity Composite	556,831,834	22.6
1607 Capital Partners	108,274,582	4.4
Marathon Asset Mgmt	109,559,559	4.4
Principal Global Investors	105,578,499	4.3
Acadian EM Equity II	88,456,319	3.6
Strategic Global Advisors	63,127,964	2.6
J.P. Morgan Global Emerging Markets Discovery Fund	81,834,912	3.3
Hedge Fund Composite	103,070,941	4.2
Grosvenor Institutional Partners, L.P.	48,269,640	2.0
Aetos	46,775,925	1.9
Preserver, L.P.	8,025,376	0.3
Total Real Estate Composite	243,366,179	9.9

	Total Fund (\$)	%
Core Private Real Estate Composite	124,155,791	5.0
BlackRock US Core Property Fund	70,977,248	2.9
TA Realty Core Property Fund	31,099,922	1.3
RREEF REIT II	18,755,315	0.8
Vanguard REIT Index Inv	3,323,306	0.1
Private Real Estate Composite	119,210,389	4.8
Cornerstone (Barings) Real Estate Advisers Fund X	50,432	0.0
Dune Real Estate Fund IV	23,756,328	1.0
Green Cities III, L.P.	13,096,564	0.5
Green Cities IV, L.P.	17,977,414	0.7
Green Cities V, L.P.	20,746	0.0
Long Wharf Real Estate Partners IV, L.P.	697,352	0.0
Long Wharf RE Partners V, L.P.	11,834,668	0.5
Long Wharf RE Partners VI, L.P.	13,810,106	0.6
Long Wharf RE Partners VII, L.P.	1,622,629	0.1
Mesirow Real Estate Value Fund III, L.P.	26,995,079	1.1
TA Realty Fund XI	9,349,070	0.4
Private Equity Composite	120,704,447	4.9
Neuberger Berman Crossroads Fund XXI	55,786,221	2.3
Neuberger Berman Crossroads Fund XXIV	1,821,464	0.1
Pantheon Global Secondary Fund V	32,259,832	1.3
Siguler Guff Small Buyout Opportunities Fund V	5,193,095	0.2
SSM Partners Growth Equity II L.P.	7,734,369	0.3
SSM Partners Growth Equity III, LP	17,909,466	0.7
Private Debt Composite	29,289,528	1.2
Brightwood Capital Fund V	4,537,434	0.2
Churchill Middle Market Senior Loan Fund III	6,626,758	0.3
Neuberger Berman Private Debt Fund IV	18,125,336	0.7

City of Memphis

Comparative Performance

As of June 30, 2023

	<u>Performance (%)</u>								
	<u>1 Quarter</u>	<u>Year To Date</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>7 Years</u>	<u>10 Years</u>	<u>Since Inception</u>	<u>Inception Date</u>
Total Fund Composite	2.78	7.02	8.74	8.08	6.34	7.69	7.40	9.20	10/01/1982
Policy Index	3.39	8.56	10.15	6.87	6.09	7.29	7.03	9.52	
In House Cash	1.23	2.37	3.74	1.29	1.49	1.29	0.96	3.86	10/01/1982
90 Day U.S. Treasury Bill	1.17	2.25	3.59	1.27	1.55	1.36	0.97	3.63	
Domestic Equity Composite	8.34	14.18	18.92	14.77	11.01	13.06	11.79	11.90	10/01/1982
Russell 3000 Index	8.39	16.17	18.95	13.89	11.39	12.86	12.34	11.71	
Domestic Equity Index	7.61	14.56	18.31	13.51	10.04	12.00	11.63	N/A	
Fixed Income Composite	-0.75	2.69	1.72	-0.96	1.65	1.86	2.57	6.79	10/01/1982
Fixed Income Index	-0.53	2.64	1.04	-2.74	0.65	0.86	1.81	6.58	
International Equity Composite	2.59	10.74	14.04	7.58	4.39	7.62	6.55	5.26	01/01/1990
International Equity Index	2.32	9.51	13.27	6.95	3.40	6.33	4.83	4.97	
Hedge Fund Composite	2.22	3.97	7.55	6.81	4.54	5.17	N/A	5.29	04/01/2016
90-Day T-Bill+ 5%	2.41	4.78	8.77	6.34	6.63	6.43	6.02	6.39	
HFRI FOF: Conservative Index	0.85	1.78	3.47	6.01	3.89	4.11	3.45	4.04	
Core Private Real Estate Composite	-3.04	-6.70	-9.49	8.19	7.03	6.86	8.76	8.14	09/01/1999
NCREIF Property Index	-1.98	-3.75	-6.59	6.79	5.90	6.24	7.82	8.41	

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	<u>Performance (%)</u>									
	<u>2022</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>
Total Fund Composite	-12.92	13.57	15.06	18.86	-5.39	18.36	6.76	0.24	5.49	17.71
Policy Index	-12.94	11.35	12.73	18.81	-4.51	16.68	8.04	-0.19	5.86	15.19
In House Cash	1.50	0.04	0.26	2.12	1.93	0.67	0.35	0.18	0.11	0.11
90 Day U.S. Treasury Bill	1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04	0.05
Domestic Equity Composite	-17.48	25.47	22.41	30.07	-5.88	22.62	10.04	-1.26	8.80	35.55
Russell 3000 Index	-19.21	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.56	33.55
Domestic Equity Index	-18.82	23.52	20.08	29.94	-6.47	20.20	13.76	0.19	11.60	34.04
Fixed Income Composite	-11.71	-0.36	9.51	9.88	-0.98	6.94	5.14	-0.23	4.70	0.13
Fixed Income Index	-13.63	-1.25	7.78	9.24	-0.91	5.50	4.83	-0.86	4.89	0.39
International Equity Composite	-20.51	9.15	17.83	24.67	-15.52	33.29	3.30	-0.50	-1.08	20.79
International Equity Index	-16.14	6.88	11.18	20.94	-13.98	28.77	3.16	-4.06	-4.13	16.58
Hedge Fund Composite	-3.41	7.59	11.20	7.95	-1.55	6.72	N/A	N/A	N/A	N/A
90-Day T-Bill+ 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
Core Private Real Estate Composite	5.06	25.04	2.55	10.16	4.91	7.75	8.50	11.92	20.06	7.12
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Total Fund Composite	2.78	7.02	8.74	8.08	6.34	7.69	7.40	9.20	10/01/1982
Policy Index	3.39	8.56	10.15	6.87	6.09	7.29	7.03	9.52	
In House Cash	1.23	2.37	3.74	1.29	1.49	1.29	0.96	3.86	10/01/1982
90 Day U.S. Treasury Bill	1.17	2.25	3.59	1.27	1.55	1.36	0.97	3.63	
Domestic Equity Composite	8.34	14.18	18.92	14.77	11.01	13.06	11.79	11.90	10/01/1982
Russell 3000 Index	8.39	16.17	18.95	13.89	11.39	12.86	12.34	11.71	
Domestic Equity Index	7.61	14.56	18.31	13.51	10.04	12.00	11.63	N/A	
IM U.S. Equity (SA+CF) Median	5.76	10.71	16.59	14.23	9.43	11.74	11.09	12.70	
Domestic Equity Composite Rank	28	36	37	43	34	35	41	77	
Barrow, Hanley	6.13	3.49	12.34	17.21	9.46	10.98	10.49	12.60	10/01/1982
Russell 1000 Value Index	4.07	5.12	11.54	14.30	8.11	8.94	9.22	11.46	
IM U.S. Large Cap Value Equity (SA+CF) Median	4.27	5.57	12.62	15.64	9.43	10.74	10.26	12.55	
Barrow, Hanley Rank	23	73	54	31	49	45	41	46	
Winslow Capital Management	13.28	26.15	28.18	10.48	13.16	16.50	15.18	14.96	11/01/2011
Russell 1000 Growth Index	12.81	29.02	27.11	13.73	15.14	16.91	15.74	15.81	
IM U.S. Large Cap Growth Equity (SA+CF) Median	11.75	26.26	25.20	11.64	13.20	15.35	14.67	14.84	
Winslow Capital Management Rank	29	51	27	62	52	27	32	45	
Rhumbline Russell 1000 Growth	12.80	28.96	27.06	13.73	15.13	N/A	N/A	15.93	10/01/2017
Russell 1000 Growth Index	12.81	29.02	27.11	13.73	15.14	16.91	15.74	15.94	
IM U.S. Large Cap Growth Equity (SA+CF) Median	11.75	26.26	25.20	11.64	13.20	15.35	14.67	14.22	
Rhumbline Russell 1000 Growth Rank	36	32	34	21	17	N/A	N/A	17	
Rhumbline S&P 500	8.74	16.89	19.58	14.60	12.30	13.37	12.83	9.55	01/01/2004
S&P 500	8.74	16.89	19.59	14.60	12.31	13.38	12.86	9.52	
IM U.S. Large Cap Core Equity (SA+CF) Median	7.74	14.33	17.98	13.94	11.39	12.88	12.56	9.82	
Rhumbline S&P 500 Rank	28	26	31	35	29	38	39	74	

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

					Performance (%)				
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
NTGI S&P 400	4.85	8.85	17.63	15.46	7.80	10.08	10.21	9.99	04/01/2011
S&P MidCap 400	4.85	8.84	17.61	15.44	7.79	10.07	10.21	9.98	
IM U.S. Mid Cap Core Equity (SA+CF) Median	4.84	8.90	17.59	14.66	8.17	10.36	10.29	10.22	
NTGI S&P 400 Rank	47	66	45	29	66	72	65	76	
Capital Prospects SMID	5.59	10.67	13.23	13.53	8.00	12.28	N/A	12.89	02/01/2016
Russell 2500 Index	5.22	8.79	13.58	12.29	6.55	9.71	9.38	10.95	
IM U.S. SMID Cap Equity (SA+CF) Median	4.99	9.54	15.24	14.61	8.51	10.96	10.43	12.04	
Capital Prospects SMID Rank	39	43	69	57	55	31	N/A	38	
Capital Prospects Small Cap Value	5.81	8.37	16.80	21.19	N/A	N/A	N/A	11.00	04/01/2019
Russell 2000 Value Index	3.18	2.50	6.01	15.43	3.54	7.70	7.29	6.11	
IM U.S. Small Cap Value Equity (SA+CF) Median	4.11	6.71	13.68	18.18	6.63	9.75	9.35	9.40	
Capital Prospects Small Cap Value Rank	26	35	34	30	N/A	N/A	N/A	27	
Nicholas Investment Partners	10.89	15.04	17.05	9.87	9.73	14.12	11.18	13.07	07/01/2012
Russell 2000 Growth Index	7.05	13.55	18.53	6.10	4.22	9.31	8.83	10.11	
IM U.S. Small Cap Growth Equity (SA+CF) Median	5.96	13.46	17.36	8.93	8.77	13.23	11.51	12.73	
Nicholas Investment Partners Rank	7	29	53	44	33	38	60	43	
Conestoga Capital Advisors	5.25	18.41	20.48	9.40	N/A	N/A	N/A	8.24	08/01/2018
Russell 2000 Growth Index	7.05	13.55	18.53	6.10	4.22	9.31	8.83	3.94	
IM U.S. Small Cap Growth Equity (SA+CF) Median	5.96	13.46	17.36	8.93	8.77	13.23	11.51	8.69	
Conestoga Capital Advisors Rank	65	15	29	47	N/A	N/A	N/A	57	

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
International Equity Composite	2.59	10.74	14.04	7.58	4.39	7.62	6.55	5.26	01/01/1990
<i>International Equity Index</i>	2.32	9.51	13.27	6.95	3.40	6.33	4.83	4.97	
IM International Equity (SA+CF) Median	2.88	11.20	16.55	8.66	4.59	7.40	6.35	7.19	
International Equity Composite Rank	57	56	64	63	55	45	46	89	
1607 Capital Partners	3.04	9.30	13.83	8.83	4.76	8.23	7.17	5.10	06/01/2008
<i>MSCI EAFE (Net)</i>	2.95	11.67	18.77	8.93	4.39	6.88	5.41	2.75	
IM International Large Cap Core Equity (SA+CF) Median	3.30	11.82	17.84	8.98	4.77	7.39	6.34	3.87	
1607 Capital Partners Rank	62	85	77	52	51	31	22	14	
Marathon Asset Mgmt	2.97	10.69	18.79	10.32	4.66	7.21	6.46	7.80	04/01/2004
<i>MSCI AC World ex USA (Net)</i>	2.44	9.47	12.72	7.22	3.52	6.32	4.75	5.35	
IM International Large Cap Core Equity (SA+CF) Median	3.30	11.82	17.84	8.98	4.77	7.39	6.34	6.51	
Marathon Asset Mgmt Rank	64	72	38	24	54	58	46	13	
Principal Global Investors	3.32	15.31	21.95	7.29	5.33	7.20	7.09	3.39	07/01/2007
<i>MSCI World ex U.S. Growth (Net)</i>	2.96	13.75	19.40	6.24	5.46	7.30	6.28	3.41	
IM International Large Cap Core Equity (SA+CF) Median	3.30	11.82	17.84	8.98	4.77	7.39	6.34	3.63	
Principal Global Investors Rank	50	9	12	85	37	58	23	61	
Strategic Global Advisors	2.10	10.47	15.73	9.54	4.44	7.49	7.12	8.24	07/01/2012
<i>MSCI World ex-U.S. (Net)</i>	3.03	11.29	17.41	9.30	4.58	6.94	5.40	6.41	
IM International Core Equity (SA+CF) Median	2.91	10.94	16.22	8.69	4.49	7.38	6.48	7.64	
Strategic Global Advisors Rank	69	57	52	36	51	46	29	30	
Acadian EM Equity II	3.88	12.06	8.89	7.44	3.02	6.59	4.02	2.42	05/01/2011
<i>MSCI EM (net)</i>	0.90	4.89	1.75	2.32	0.93	4.95	2.95	0.85	
IM Emerging Markets Equity (SA+CF) Median	2.46	7.41	6.97	4.37	2.93	6.17	4.41	2.53	
Acadian EM Equity II Rank	34	18	42	38	48	44	64	53	

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

					Performance (%)				
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
J.P. Morgan Global Emerging Markets Discovery Fund	-0.56	5.19	3.86	0.68	2.96	N/A	N/A	7.38	12/01/2016
MSCI EM (net)	0.90	4.89	1.75	2.32	0.93	4.95	2.95	4.61	
IM Emerging Markets Equity (SA+CF) Median	2.46	7.41	6.97	4.37	2.93	6.17	4.41	6.16	
J.P. Morgan Global Emerging Markets Discovery Fund Rank	85	74	67	80	49	N/A	N/A	27	
Fixed Income Composite	-0.75	2.69	1.72	-0.96	1.65	1.86	2.57	6.79	10/01/1982
Fixed Income Index	-0.53	2.64	1.04	-2.74	0.65	0.86	1.81	6.58	
Mackay Shields	1.45	5.45	9.42	4.78	4.58	5.55	5.52	7.62	01/01/1999
Credit Suisse High Yield Index	1.87	5.84	9.35	3.61	3.19	4.48	4.29	6.21	
IM U.S. High Yield Bonds (SA+CF) Median	1.58	5.00	8.70	3.50	3.66	4.54	4.52	6.39	
Mackay Shields Rank	62	31	30	19	8	11	5	5	
PIMCO	-0.32	2.87	0.10	-2.62	1.61	1.57	2.14	3.25	04/01/2009
Blmbg. U.S. Aggregate	-0.84	2.09	-0.94	-3.97	0.77	0.44	1.52	2.58	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-0.72	2.42	-0.41	-3.43	1.20	0.94	1.96	3.39	
PIMCO Rank	9	14	19	16	20	10	31	57	
Prudential Core Conserv Bond	-0.75	2.28	-0.52	-3.83	0.85	0.52	1.65	2.47	09/01/2009
Blmbg. U.S. Aggregate	-0.84	2.09	-0.94	-3.97	0.77	0.44	1.52	2.33	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-0.72	2.42	-0.41	-3.43	1.20	0.94	1.96	2.91	
Prudential Core Conserv Bond Rank	55	69	53	75	87	82	79	82	
Barrow Hanley High Quality Core	-0.44	2.83	N/A	N/A	N/A	N/A	N/A	6.12	11/01/2022
Blmbg. U.S. Aggregate	-0.84	2.09	-0.94	-3.97	0.77	0.44	1.52	5.37	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-0.77	2.28	-0.70	-3.71	0.93	0.66	1.68	5.60	
Barrow Hanley High Quality Core Rank	9	8	N/A	N/A	N/A	N/A	N/A	15	
Garcia Hamilton Aggregate	-1.17	2.89	N/A	N/A	N/A	N/A	N/A	6.73	11/01/2022
Blmbg. U.S. Aggregate	-0.84	2.09	-0.94	-3.97	0.77	0.44	1.52	5.37	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-0.77	2.28	-0.70	-3.71	0.93	0.66	1.68	5.60	
Garcia Hamilton Aggregate Rank	93	8	N/A	N/A	N/A	N/A	N/A	6	

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Brandywine	-2.16	1.28	-0.36	-1.68	0.10	0.66	N/A	1.01	08/01/2015
<i>Blmbg. Global Aggregate</i>	-1.53	1.43	-1.32	-4.96	-1.09	-0.90	0.20	0.25	
<i>FTSE World Government Bond Index</i>	-1.79	1.66	-2.49	-6.49	-2.04	-1.79	-0.48	-0.31	
IM Global Fixed Income (SA+CF) Median	0.38	3.17	3.58	-0.28	2.11	2.38	2.57	2.62	
Brandywine Rank	89	82	79	61	74	74	N/A	78	
Hedge Fund Composite	2.22	3.97	7.55	6.81	4.54	5.17	N/A	5.29	04/01/2016
90-Day T-Bill+ 5%	2.41	4.78	8.77	6.34	6.63	6.43	6.02	6.39	
<i>HFRI FOF: Conservative Index</i>	0.85	1.78	3.47	6.01	3.89	4.11	3.45	4.04	
Grosvenor Institutional Partners, L.P.	2.22	3.83	7.47	6.79	4.57	5.35	N/A	5.37	04/01/2016
90-Day T-Bill+ 5%	2.41	4.78	8.77	6.34	6.63	6.43	6.02	6.39	
<i>HFRI FOF: Conservative Index</i>	0.85	1.78	3.47	6.01	3.89	4.11	3.45	4.04	
Aetos	2.41	4.39	8.32	6.72	4.62	5.06	N/A	5.07	05/01/2016
90-Day T-Bill + 5%	2.41	4.78	8.77	6.34	6.63	6.43	6.02	6.41	
<i>HFRI FOF: Conservative Index</i>	0.85	1.78	3.47	6.01	3.89	4.11	3.45	4.03	
Preserver, L.P.	1.03	2.23	4.03	7.08	N/A	N/A	N/A	4.73	02/01/2019
90-Day T-Bill + 5%	2.41	4.78	8.77	6.34	6.63	6.43	6.02	6.54	
<i>HFRI Fund of Funds Composite Index</i>	1.43	2.18	3.58	5.01	3.30	4.02	3.38	4.29	
<i>HFRI RV: Multi-Strategy Index</i>	0.49	2.19	2.51	5.29	3.73	4.09	3.79	4.19	
Total Real Estate Composite	-1.71	-4.69	-8.83	8.33	7.36	7.37	9.72	9.73	07/01/1996
<i>NCREIF Property Index</i>	-1.98	-3.75	-6.59	6.79	5.90	6.24	7.82	8.93	
Core Private Real Estate Composite	-3.04	-6.70	-9.49	8.19	7.03	6.86	8.76	8.14	09/01/1999
<i>NCREIF Property Index</i>	-1.98	-3.75	-6.59	6.79	5.90	6.24	7.82	8.41	
BlackRock US Core Property Fund	-4.35	-8.98	-11.19	6.72	6.16	7.10	8.66	4.49	10/01/2006
<i>NCREIF Property Index</i>	-1.98	-3.75	-6.59	6.79	5.90	6.24	7.82	6.81	

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

					Performance (%)				
	<u>1 Quarter</u>	<u>Year To Date</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>7 Years</u>	<u>10 Years</u>	<u>Since Inception</u>	<u>Inception Date</u>
RREEF REIT II	-1.82	-7.07	-10.80	8.47	6.97	7.41	9.32	8.08	07/01/1999
<i>NCREIF Property Index</i>	-1.98	-3.75	-6.59	6.79	5.90	6.24	7.82	8.35	
Vanguard REIT Index Inv	1.63	3.45	-3.92	5.90	4.40	N/A	N/A	4.13	01/01/2017
<i>Vanguard REIT Spliced Index</i>	1.68	3.54	-3.82	6.00	4.48	3.27	6.24	4.24	
IM Real Estate Sector (MF) Median	1.67	4.31	-2.96	6.84	4.41	3.32	6.04	4.31	
Vanguard REIT Index Inv Rank	54	72	65	70	52	N/A	N/A	55	
TA Realty Core Property Fund	-1.19	-1.86	-5.73	13.68	N/A	N/A	N/A	11.57	04/01/2019
<i>NCREIF ODCE Equal Weighted</i>	-2.68	-5.76	-9.96	8.17	6.78	7.23	8.94	6.67	

Gross of Fees.

**City of Memphis Retirement System
Comparative Performance - IRR**

As of June 30, 2023

	Market Value (\$)	%	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	Since Inception	Inception Date
Real Estate										
Private Real Estate Composite	119,210,389	4.8	-0.4	-2.6	-8.3	8.5	7.4	7.5	11.9	09/30/2009
Cornerstone (Barings) Real Estate Advisers Fund X	50,432	0.0	0.0	-19.1	-57.7	6.4	6.9	7.0	8.0	12/21/2015
Dune Real Estate Fund IV	23,756,328	1.0	0.0	1.7	12.3	12.2			6.0	08/22/2019
Green Cities III, L.P.	13,096,564	0.5	0.0	-2.3	-26.2	-9.1	-3.1	-0.3	-0.2	11/13/2015
Green Cities IV, L.P.	17,977,414	0.7	0.0	-2.0	-7.4	0.2			-0.4	06/27/2019
Green Cities V, L.P.	20,746	0.0	-99.0						-99.2	03/27/2023
Long Wharf Real Estate Partners IV, L.P.	697,352	0.0	-22.2	-30.8	-33.1	-16.9	3.0	9.1	11.9	07/03/2013
Long Wharf RE Partners V, L.P.	11,834,668	0.5	-0.9	-4.0	-4.0	6.9	7.7	8.2	7.7	11/20/2015
Long Wharf RE Partners VI, L.P.	13,810,106	0.6	0.2	0.4	5.4	26.4			19.2	06/27/2019
Long Wharf RE Partners VII, L.P.	1,622,629	0.1	-2.4						-18.5	03/30/2023
Mesirow Real Estate Value Fund III, L.P.	26,995,079	1.1	-0.2	0.6	2.5	17.5	14.5		13.6	05/07/2018
TA Realty Fund XI	9,349,070	0.4	0.0	-14.1	-31.1	17.5	12.7	11.5	11.2	05/25/2016
Private Equity										
Private Equity Composite	120,704,447	4.9	0.0	0.9	3.2	19.2	13.5	14.5	14.7	12/15/2015
Neuberger Berman Crossroads Fund XXI	55,786,221	2.3	0.0	2.3	3.1	23.7	18.8	17.6	17.2	04/27/2016
Neuberger Berman Crossroads Fund XXIV	1,821,464	0.1	0.0	12.3	-15.8				-15.8	07/11/2022
Pantheon Global Secondary Fund V	32,259,832	1.3	0.0	-2.4	-1.0	15.0	7.7	11.8	12.9	12/22/2015
Siguler Guff Small Buyout Opportunities Fund V	5,193,095	0.2	0.5	-1.4					18.6	08/05/2022
SSM Partners Growth Equity II L.P.	7,734,369	0.3	0.0	1.4	6.1	8.9	7.5	8.0	7.9	12/15/2015
SSM Partners Growth Equity III, LP	17,909,466	0.7	0.0	2.2	11.5	17.6			16.2	12/02/2019
Private Debt										
Private Debt Composite	29,289,528	1.2	-0.6	2.6	7.6				9.3	07/30/2021
Churchill Middle Market Senior Loan Fund III	6,626,758	0.3	0.0	2.2	6.8				6.1	10/07/2021
Brightwood Capital Fund V	4,537,434	0.2	0.0	3.6	9.6				9.5	07/30/2021
Neuberger Berman Private Debt Fund IV	18,125,336	0.7	-1.0	2.5	7.5				10.8	10/21/2021

City of Memphis

Comparative Performance

As of June 30, 2023

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	Performance (%)
In House Cash	1.50	0.04	0.26	2.12	1.93	0.67	0.35	0.18	0.11	0.11	
90 Day U.S. Treasury Bill	1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04	0.05	
Domestic Equity Composite	-17.48	25.47	22.41	30.07	-5.88	22.62	10.04	-1.26	8.80	35.55	
Russell 3000 Index	-19.21	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.56	33.55	
Domestic Equity Index	-18.82	23.52	20.08	29.94	-6.47	20.20	13.76	0.19	11.60	34.04	
IM U.S. Equity (SA+CF) Median	-16.45	26.02	16.48	28.58	-7.08	19.38	13.20	-0.50	9.96	35.79	
Domestic Equity Composite Rank	55	54	35	41	43	32	68	56	58	52	
Barrow, Hanley	-2.54	26.34	4.53	26.10	-5.94	16.37	14.95	-1.57	13.68	33.49	
Russell 1000 Value Index	-7.54	25.16	2.80	26.54	-8.27	13.66	17.34	-3.83	13.45	32.53	
IM U.S. Large Cap Value Equity (SA+CF) Median	-5.42	27.87	4.49	27.55	-8.36	17.13	14.78	-2.30	12.07	33.63	
Barrow, Hanley Rank	28	66	50	63	29	63	48	44	28	52	
Winslow Capital Management	-30.74	24.86	38.77	34.63	4.19	33.24	-1.53	7.17	11.14	38.29	
Russell 1000 Growth Index	-29.14	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48	
IM U.S. Large Cap Growth Equity (SA+CF) Median	-29.13	24.98	35.35	34.01	-0.53	28.48	4.63	5.43	11.87	34.72	
Winslow Capital Management Rank	61	52	35	45	11	20	93	35	60	20	
Rhumbline Russell 1000 Growth	-29.11	27.58	38.51	36.35	-1.51	N/A	N/A	N/A	N/A	N/A	
Russell 1000 Growth Index	-29.14	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48	
IM U.S. Large Cap Growth Equity (SA+CF) Median	-29.13	24.98	35.35	34.01	-0.53	28.48	4.63	5.43	11.87	34.72	
Rhumbline Russell 1000 Growth Rank	50	31	35	28	58	N/A	N/A	N/A	N/A	N/A	
Rhumbline S&P 500	-18.09	28.72	18.40	31.39	-4.41	21.78	11.94	1.38	13.58	32.30	
S&P 500	-18.11	28.71	18.40	31.49	-4.38	21.83	11.96	1.38	13.69	32.39	
IM U.S. Large Cap Core Equity (SA+CF) Median	-16.49	27.77	17.53	30.03	-5.07	22.10	10.47	1.51	13.42	33.21	
Rhumbline S&P 500 Rank	64	38	45	35	42	56	32	55	48	63	
NTGI S&P 400	-13.06	24.84	13.64	26.22	-11.10	16.22	20.74	-2.17	9.75	33.51	
S&P MidCap 400	-13.06	24.76	13.66	26.20	-11.08	16.24	20.74	-2.18	9.77	33.50	
IM U.S. Mid Cap Core Equity (SA+CF) Median	-13.08	24.80	13.78	26.90	-11.03	17.28	16.61	-1.33	10.09	36.00	
NTGI S&P 400 Rank	41	48	63	71	60	76	22	69	63	77	

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Capital Prospects SMID	-20.88	23.82	21.47	27.70	-4.36	23.75	N/A	N/A	N/A	N/A
Russell 2500 Index	-18.37	18.18	19.99	27.77	-10.00	16.81	17.59	-2.90	7.07	36.80
IM U.S. SMID Cap Equity (SA+CF) Median	-16.72	23.41	17.27	28.90	-9.85	17.96	16.37	-1.42	6.67	38.13
Capital Prospects SMID Rank	67	47	42	60	22	24	N/A	N/A	N/A	N/A
Capital Prospects Small Cap Value	-8.69	38.00	3.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Russell 2000 Value Index	-14.48	28.27	4.63	22.39	-12.86	7.84	31.74	-7.47	4.22	34.52
IM U.S. Small Cap Value Equity (SA+CF) Median	-10.72	29.80	5.13	24.99	-14.08	11.59	27.32	-4.31	5.71	37.96
Capital Prospects Small Cap Value Rank	34	16	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nicholas Investment Partners	-31.08	9.62	69.08	36.26	-10.37	27.38	3.01	-1.36	-0.13	59.00
Russell 2000 Growth Index	-26.36	2.83	34.63	28.48	-9.31	22.17	11.32	-1.38	5.60	43.30
IM U.S. Small Cap Growth Equity (SA+CF) Median	-27.36	11.81	42.86	28.99	-3.83	24.33	10.61	-0.71	3.91	46.26
Nicholas Investment Partners Rank	74	60	14	27	87	36	90	56	76	5
Conestoga Capital Advisors	-27.05	17.47	32.97	26.95	N/A	N/A	N/A	N/A	N/A	N/A
Russell 2000 Growth Index	-26.36	2.83	34.63	28.48	-9.31	22.17	11.32	-1.38	5.60	43.30
IM U.S. Small Cap Growth Equity (SA+CF) Median	-27.36	11.81	42.86	28.99	-3.83	24.33	10.61	-0.71	3.91	46.26
Conestoga Capital Advisors Rank	47	32	71	63	N/A	N/A	N/A	N/A	N/A	N/A
International Equity Composite	-20.51	9.15	17.83	24.67	-15.52	33.29	3.30	-0.50	-1.08	20.79
International Equity Index	-16.14	6.88	11.18	20.94	-13.98	28.77	3.16	-4.06	-4.13	16.58
IM International Equity (SA+CF) Median	-16.36	11.64	11.61	23.40	-14.57	28.69	2.41	1.15	-3.33	23.40
International Equity Composite Rank	71	66	31	43	60	27	44	61	30	62
1607 Capital Partners	-19.27	12.25	16.08	25.34	-14.21	32.93	2.69	-0.08	-1.55	26.32
MSCI EAFE (Net)	-14.45	11.26	7.82	22.01	-13.79	25.03	1.00	-0.81	-4.90	22.78
IM International Large Cap Core Equity (SA+CF) Median	-15.89	12.14	11.77	23.58	-14.27	27.84	1.56	0.58	-3.65	22.92
1607 Capital Partners Rank	77	48	30	38	50	11	38	57	22	26

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Marathon Asset Mgmt	-13.54	10.00	9.94	23.94	-13.22	24.34	-1.17	7.15	-3.95	29.45
MSCI AC World ex USA (Net)	-16.00	7.82	10.65	21.51	-14.20	27.19	4.50	-5.66	-3.87	15.29
IM International Large Cap Core Equity (SA+CF) Median	-15.89	12.14	11.77	23.58	-14.27	27.84	1.56	0.58	-3.65	22.92
Marathon Asset Mgmt Rank	26	69	58	48	35	81	82	6	55	9
Principal Global Investors	-24.40	12.61	22.60	26.96	-17.31	26.47	-0.37	4.95	-1.10	26.38
MSCI World ex U.S. Growth (Net)	-22.68	11.57	18.41	27.92	-13.14	27.61	-1.87	1.65	-3.26	20.53
IM International Large Cap Core Equity (SA+CF) Median	-15.89	12.14	11.77	23.58	-14.27	27.84	1.56	0.58	-3.65	22.92
Principal Global Investors Rank	96	43	11	29	87	58	75	12	18	25
Strategic Global Advisors	-16.24	17.09	8.22	22.95	-16.55	30.04	0.01	3.84	1.30	26.59
MSCI World ex-U.S. (Net)	-14.29	12.62	7.59	22.49	-14.09	24.21	2.75	-3.04	-4.32	21.02
IM International Core Equity (SA+CF) Median	-16.86	12.47	12.18	23.97	-15.01	29.44	1.71	1.60	-3.41	24.22
Strategic Global Advisors Rank	43	15	72	59	66	45	71	31	9	35
Acadian EM Equity II	-19.83	8.59	12.47	17.83	-18.46	38.83	13.85	-17.49	2.28	-1.63
MSCI EM (net)	-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60
IM Emerging Markets Equity (SA+CF) Median	-19.46	0.91	18.39	20.17	-15.23	36.89	9.87	-12.11	0.12	1.16
Acadian EM Equity II Rank	53	26	75	66	80	38	22	90	34	70
J.P. Morgan Global Emerging Markets Discovery Fund	-28.06	-3.29	34.80	30.36	-15.05	46.95	N/A	N/A	N/A	N/A
MSCI EM (net)	-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60
IM Emerging Markets Equity (SA+CF) Median	-19.46	0.91	18.39	20.17	-15.23	36.89	9.87	-12.11	0.12	1.16
J.P. Morgan Global Emerging Markets Discovery Fund Rank	91	69	14	11	48	12	N/A	N/A	N/A	N/A
Fixed Income Composite	-11.71	-0.36	9.51	9.88	-0.98	6.94	5.14	-0.23	4.70	0.13
Fixed Income Index	-13.63	-1.25	7.78	9.24	-0.91	5.50	4.83	-0.86	4.89	0.39
Mackay Shields	-6.92	6.26	6.25	14.24	-0.61	7.77	17.63	-0.68	2.55	7.28
Credit Suisse High Yield Index	-10.55	5.50	5.48	14.00	-2.37	7.02	18.26	-4.93	1.86	7.53
IM U.S. High Yield Bonds (SA+CF) Median	-9.46	5.31	6.57	14.32	-1.64	7.48	14.07	-2.08	2.50	7.58
Mackay Shields Rank	23	27	58	51	31	38	13	27	50	57

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
PIMCO	-12.46	-0.41	8.78	9.11	0.82	5.49	3.58	0.17	4.46	-2.69
Blmbg. U.S. Aggregate	-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97	-2.02
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-12.95	-1.24	8.49	9.17	0.06	3.99	3.04	0.81	6.14	-1.60
PIMCO Rank	26	20	39	54	9	5	34	89	96	96
Prudential Core Conserv Bond	-13.02	-1.54	7.75	8.82	-0.09	3.69	2.86	0.83	6.19	-2.08
Blmbg. U.S. Aggregate	-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97	-2.02
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-12.95	-1.24	8.49	9.17	0.06	3.99	3.04	0.81	6.14	-1.60
Prudential Core Conserv Bond Rank	55	66	71	67	73	69	60	48	46	78
Brandywine	-13.45	-3.50	11.98	8.14	-2.74	11.09	1.05	N/A	N/A	N/A
Blmbg. Global Aggregate	-16.25	-4.71	9.20	6.84	-1.19	7.39	2.09	-3.15	0.59	-2.60
FTSE World Government Bond Index	-18.26	-6.97	10.11	5.90	-0.84	7.49	1.60	-3.57	-0.48	-4.00
IM Global Fixed Income (SA+CF) Median	-12.38	0.49	8.69	9.72	-1.81	7.81	6.15	-2.41	2.47	0.01
Brandywine Rank	57	74	19	75	66	14	92	N/A	N/A	N/A
Hedge Fund Composite	-3.41	7.59	11.20	7.95	-1.55	6.72	N/A	N/A	N/A	N/A
90-Day T-Bill+ 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
Grosvenor Institutional Partners, L.P.	-5.86	7.78	17.17	6.06	-1.49	6.14	N/A	N/A	N/A	N/A
90-Day T-Bill+ 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
Aetos	-0.68	6.46	6.99	9.26	-1.61	7.30	N/A	N/A	N/A	N/A
90-Day T-Bill + 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
Preserver, L.P.	-3.69	11.83	3.70	N/A	N/A	N/A	N/A	N/A	N/A	N/A
90-Day T-Bill + 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI Fund of Funds Composite Index	-5.31	6.17	10.88	8.39	-4.02	7.77	0.51	-0.27	3.37	8.96
HFRI RV: Multi-Strategy Index	-0.73	7.03	6.69	5.29	-0.23	4.09	6.36	0.65	3.40	7.90

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	2022	2021	2020	2019	Performance (%)					
					2018	2017	2016	2015	2014	2013
Total Real Estate Composite	2.66	24.73	2.36	9.80	8.23	6.97	9.06	15.74	20.84	10.85
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
Core Private Real Estate Composite	5.06	25.04	2.55	10.16	4.91	7.75	8.50	11.92	20.06	7.12
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
BlackRock US Core Property Fund	9.61	19.62	2.86	6.39	7.76	8.87	10.95	15.25	11.63	10.85
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
RREEF REIT II	8.60	24.92	1.32	6.28	7.99	7.44	9.14	16.70	13.00	15.01
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
Vanguard REIT Index Inv	-26.19	40.47	-4.67	28.95	-5.93	4.86	N/A	N/A	N/A	N/A
Vanguard REIT Spliced Index	-26.12	40.56	-4.55	29.03	-5.86	5.07	8.60	2.52	30.38	2.47
IM Real Estate Sector (MF) Median	-26.17	41.32	-4.31	27.32	-5.71	5.32	6.34	2.91	29.47	1.64
Vanguard REIT Index Inv Rank	51	61	54	34	54	59	N/A	N/A	N/A	N/A
TA Realty Core Property Fund	9.59	30.41	6.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NCREIF ODCE Equal Weighted	7.46	22.62	1.57	6.08	8.25	7.80	9.27	15.17	12.38	13.36

Gross of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	<u>Performance (%)</u>								
	<u>1 Quarter</u>	<u>Year To Date</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>7 Years</u>	<u>10 Years</u>	<u>Since Inception</u>	<u>Inception Date</u>
Total Fund Composite	2.68	6.82	8.35	7.67	5.92	7.26	6.97	7.11	07/01/1996
Policy Index	3.39	8.56	10.15	6.87	6.09	7.29	7.03	7.08	
In House Cash	1.23	2.37	3.74	1.29	1.49	1.29	0.96	3.86	10/01/1982
90 Day U.S. Treasury Bill	1.17	2.25	3.59	1.27	1.55	1.36	0.97	3.63	
Domestic Equity Composite	8.26	14.02	18.59	14.44	10.68	12.71	11.43	12.33	10/01/2009
Russell 3000 Index	8.39	16.17	18.95	13.89	11.39	12.86	12.34	12.92	
Domestic Equity Index	7.61	14.56	18.31	13.51	10.04	12.00	11.63	12.42	
Fixed Income Composite	-0.82	2.55	1.44	-1.27	1.34	1.54	2.26	3.28	10/01/2009
Fixed Income Index	-0.53	2.64	1.04	-2.74	0.65	0.86	1.81	2.64	
International Equity Composite	2.42	10.37	13.27	6.89	3.70	6.90	5.85	5.90	10/01/2009
International Equity Index	2.32	9.51	13.27	6.95	3.40	6.33	4.83	4.83	
Hedge Fund Composite	2.22	3.97	7.55	6.81	4.54	5.17	N/A	5.29	04/01/2016
90-Day T-Bill+ 5%	2.41	4.78	8.77	6.34	6.63	6.43	6.02	6.39	
HFRI FOF: Conservative Index	0.85	1.78	3.47	6.01	3.89	4.11	3.45	4.04	
Core Private Real Estate Composite	-3.04	-6.70	-9.49	8.19	7.03	6.86	8.76	8.14	09/01/1999
NCREIF Property Index	-1.98	-3.75	-6.59	6.79	5.90	6.24	7.82	8.41	

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
In House Cash	1.23	2.37	3.74	1.29	1.49	1.29	0.96	3.86	10/01/1982
90 Day U.S. Treasury Bill	1.17	2.25	3.59	1.27	1.55	1.36	0.97	3.63	
Domestic Equity Composite	8.26	14.02	18.59	14.44	10.68	12.71	11.43	12.33	10/01/2009
Russell 3000 Index	8.39	16.17	18.95	13.89	11.39	12.86	12.34	12.92	
Domestic Equity Index	7.61	14.56	18.31	13.51	10.04	12.00	11.63	12.42	
IM U.S. Equity (SA+CF) Median	5.76	10.71	16.59	14.23	9.43	11.74	11.09	12.58	
Domestic Equity Composite Rank	29	37	39	47	37	39	46	54	
Barrow, Hanley	6.05	3.34	12.00	16.86	9.11	10.60	10.11	12.37	10/01/1982
Russell 1000 Value Index	4.07	5.12	11.54	14.30	8.11	8.94	9.22	11.46	
IM U.S. Large Cap Value Equity (SA+CF) Median	4.27	5.57	12.62	15.64	9.43	10.74	10.26	12.55	
Barrow, Hanley Rank	23	74	58	34	57	53	56	71	
Winslow Capital Management	13.12	25.79	27.43	9.84	12.50	15.82	14.52	14.31	11/01/2011
Russell 1000 Growth Index	12.81	29.02	27.11	13.73	15.14	16.91	15.74	15.81	
IM U.S. Large Cap Growth Equity (SA+CF) Median	11.75	26.26	25.20	11.64	13.20	15.35	14.67	14.84	
Winslow Capital Management Rank	32	52	32	69	65	42	53	66	
Rhumbline Russell 1000 Growth	12.80	28.95	27.03	13.70	15.10	N/A	N/A	15.85	09/01/2017
Russell 1000 Growth Index	12.81	29.02	27.11	13.73	15.14	16.91	15.74	15.95	
IM U.S. Large Cap Growth Equity (SA+CF) Median	11.75	26.26	25.20	11.64	13.20	15.35	14.67	14.25	
Rhumbline Russell 1000 Growth Rank	36	32	34	21	17	N/A	N/A	19	
Rhumbline S&P 500	8.73	16.87	19.55	14.58	12.27	13.34	12.80	9.52	01/01/2004
S&P 500	8.74	16.89	19.59	14.60	12.31	13.38	12.86	9.52	
IM U.S. Large Cap Core Equity (SA+CF) Median	7.74	14.33	17.98	13.94	11.39	12.88	12.56	9.82	
Rhumbline S&P 500 Rank	30	26	33	37	31	38	40	77	
NTGI S&P 400	4.84	8.82	17.57	15.41	7.75	10.03	10.16	9.94	04/01/2011
S&P MidCap 400	4.85	8.84	17.61	15.44	7.79	10.07	10.21	9.98	
IM U.S. Mid Cap Core Equity (SA+CF) Median	4.84	8.90	17.59	14.66	8.17	10.36	10.29	10.22	
NTGI S&P 400 Rank	52	75	54	44	74	82	74	84	

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Capital Prospects SMID	5.46	10.40	12.68	12.99	7.49	11.74	N/A	12.35	02/01/2016
Russell 2500 Index	5.22	8.79	13.58	12.29	6.55	9.71	9.38	10.95	
IM U.S. SMID Cap Equity (SA+CF) Median	4.99	9.54	15.24	14.61	8.51	10.96	10.43	12.04	
Capital Prospects SMID Rank	40	44	72	59	66	41	N/A	48	
Capital Prospects Small Cap Value	5.70	8.13	16.30	20.64	N/A	N/A	N/A	10.52	04/01/2019
Russell 2000 Value Index	3.18	2.50	6.01	15.43	3.54	7.70	7.29	6.11	
IM U.S. Small Cap Value Equity (SA+CF) Median	4.11	6.71	13.68	18.18	6.63	9.75	9.35	9.40	
Capital Prospects Small Cap Value Rank	28	38	37	32	N/A	N/A	N/A	31	
Nicholas Investment Partners	10.61	14.47	15.88	8.87	8.69	13.03	10.10	12.39	06/01/2012
Russell 2000 Growth Index	7.05	13.55	18.53	6.10	4.22	9.31	8.83	10.53	
IM U.S. Small Cap Growth Equity (SA+CF) Median	5.96	13.46	17.36	8.93	8.77	13.23	11.51	13.04	
Nicholas Investment Partners Rank	8	36	62	51	54	53	89	74	
Conestoga Capital Advisors	5.03	17.93	19.49	8.51	N/A	N/A	N/A	7.38	08/01/2018
Russell 2000 Growth Index	7.05	13.55	18.53	6.10	4.22	9.31	8.83	3.94	
IM U.S. Small Cap Growth Equity (SA+CF) Median	5.96	13.46	17.36	8.93	8.77	13.23	11.51	8.69	
Conestoga Capital Advisors Rank	68	17	36	53	N/A	N/A	N/A	69	
International Equity Composite	2.42	10.37	13.27	6.89	3.70	6.90	5.85	5.90	10/01/2009
International Equity Index	2.32	9.51	13.27	6.95	3.40	6.33	4.83	4.83	
IM International Equity (SA+CF) Median	2.88	11.20	16.55	8.66	4.59	7.40	6.35	6.83	
International Equity Composite Rank	62	59	68	70	68	62	67	74	
1607 Capital Partners	2.87	8.93	13.06	7.94	3.95	7.43	6.38	4.36	06/01/2008
MSCI EAFE (Net)	2.95	11.67	18.77	8.93	4.39	6.88	5.41	2.75	
IM International Large Cap Core Equity (SA+CF) Median	3.30	11.82	17.84	8.98	4.77	7.39	6.34	3.87	
1607 Capital Partners Rank	66	87	84	69	75	49	49	26	

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Marathon Asset Mgmt	2.81	10.34	18.04	9.62	4.00	6.53	5.77	7.08	04/01/2004
MSCI AC World ex USA (Net)	2.44	9.47	12.72	7.22	3.52	6.32	4.75	5.35	
IM International Large Cap Core Equity (SA+CF) Median	3.30	11.82	17.84	8.98	4.77	7.39	6.34	6.51	
Marathon Asset Mgmt Rank	66	75	48	36	75	75	71	25	
Principal Global Investors	3.19	15.02	21.30	6.84	4.82	6.65	6.52	2.83	07/01/2007
MSCI World ex U.S. Growth (Net)	2.96	13.75	19.40	6.24	5.46	7.30	6.28	3.41	
IM International Large Cap Core Equity (SA+CF) Median	3.30	11.82	17.84	8.98	4.77	7.39	6.34	3.63	
Principal Global Investors Rank	53	11	16	89	47	73	42	82	
Strategic Global Advisors	1.91	10.07	14.88	8.71	3.67	6.70	6.33	7.57	06/01/2012
MSCI World ex-U.S. (Net)	3.03	11.29	17.41	9.30	4.58	6.94	5.40	6.97	
IM International Core Equity (SA+CF) Median	2.91	10.94	16.22	8.69	4.49	7.38	6.48	8.16	
Strategic Global Advisors Rank	72	61	57	50	68	69	56	73	
Acadian EM Equity II	3.70	11.67	8.12	6.69	2.30	5.84	3.32	1.82	05/01/2011
MSCI EM (net)	0.90	4.89	1.75	2.32	0.93	4.95	2.95	0.85	
IM Emerging Markets Equity (SA+CF) Median	2.46	7.41	6.97	4.37	2.93	6.17	4.41	2.53	
Acadian EM Equity II Rank	37	19	45	40	58	63	81	77	
J.P. Morgan Global Emerging Markets Discovery Fund	-0.76	4.75	2.98	-0.08	2.16	N/A	N/A	6.55	12/01/2016
MSCI EM (net)	0.90	4.89	1.75	2.32	0.93	4.95	2.95	4.61	
IM Emerging Markets Equity (SA+CF) Median	2.46	7.41	6.97	4.37	2.93	6.17	4.41	6.16	
J.P. Morgan Global Emerging Markets Discovery Fund Rank	86	81	72	84	61	N/A	N/A	39	
Fixed Income Composite	-0.82	2.55	1.44	-1.27	1.34	1.54	2.26	3.28	10/01/2009
Fixed Income Index	-0.53	2.64	1.04	-2.74	0.65	0.86	1.81	2.64	
IM U.S. Fixed Income (SA+CF) Median	-0.28	2.55	1.29	-1.00	1.80	1.55	2.23	3.04	
Fixed Income Composite Rank	84	50	49	53	75	51	50	45	

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Mackay Shields	1.33	5.19	8.89	4.29	4.14	5.10	5.07	7.16	01/01/1999
Credit Suisse High Yield Index	1.87	5.84	9.35	3.61	3.19	4.48	4.29	6.21	
IM U.S. High Yield Bonds (SA+CF) Median	1.58	5.00	8.70	3.50	3.66	4.54	4.52	6.39	
Mackay Shields Rank	73	43	42	26	24	23	15	9	
PIMCO	-0.41	2.69	-0.24	-2.97	1.25	1.21	1.80	2.91	04/01/2009
Blmbg. U.S. Aggregate	-0.84	2.09	-0.94	-3.97	0.77	0.44	1.52	2.58	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-0.72	2.42	-0.41	-3.43	1.20	0.94	1.96	3.39	
PIMCO Rank	14	27	36	24	47	21	71	76	
Prudential Core Conserv Bond	-0.75	2.28	-0.52	-3.91	0.74	0.41	1.54	2.36	09/01/2009
Blmbg. U.S. Aggregate	-0.84	2.09	-0.94	-3.97	0.77	0.44	1.52	2.33	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-0.72	2.42	-0.41	-3.43	1.20	0.94	1.96	2.91	
Prudential Core Conserv Bond Rank	55	69	53	81	97	98	88	86	
Barrow Hanley High Quality Core	-0.44	2.83	N/A	N/A	N/A	N/A	N/A	6.12	11/01/2022
Blmbg. U.S. Aggregate	-0.84	2.09	-0.94	-3.97	0.77	0.44	1.52	5.37	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-0.77	2.28	-0.70	-3.71	0.93	0.66	1.68	5.60	
Barrow Hanley High Quality Core Rank	9	8	N/A	N/A	N/A	N/A	N/A	15	
Garcia Hamilton Aggregate	-1.17	2.89	N/A	N/A	N/A	N/A	N/A	6.73	11/01/2022
Blmbg. U.S. Aggregate	-0.84	2.09	-0.94	-3.97	0.77	0.44	1.52	5.37	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-0.77	2.28	-0.70	-3.71	0.93	0.66	1.68	5.60	
Garcia Hamilton Aggregate Rank	93	8	N/A	N/A	N/A	N/A	N/A	6	
Brandywine	-2.25	1.09	-0.73	-2.04	-0.26	0.29	N/A	0.64	08/01/2015
Blmbg. Global Aggregate	-1.53	1.43	-1.32	-4.96	-1.09	-0.90	0.20	0.25	
FTSE World Government Bond Index	-1.79	1.66	-2.49	-6.49	-2.04	-1.79	-0.48	-0.31	
IM Global Fixed Income (SA+CF) Median	0.38	3.17	3.58	-0.28	2.11	2.38	2.57	2.62	
Brandywine Rank	89	84	81	63	79	79	N/A	85	

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

					Performance (%)								
					1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Hedge Fund Composite		2.22	3.97	7.55	6.81	4.54	5.17		N/A		5.29		04/01/2016
90-Day T-Bill+ 5%		2.41	4.78	8.77	6.34	6.63	6.43		6.02		6.39		
HFRI FOF: Conservative Index		0.85	1.78	3.47	6.01	3.89	4.11		3.45		4.04		
Grosvenor Institutional Partners, L.P.		2.22	3.83	7.47	6.79	4.57	5.35		N/A		5.37		04/01/2016
90-Day T-Bill+ 5%		2.41	4.78	8.77	6.34	6.63	6.43		6.02		6.39		
HFRI FOF: Conservative Index		0.85	1.78	3.47	6.01	3.89	4.11		3.45		4.04		
Aetos		2.41	4.39	8.32	6.72	4.62	5.06		N/A		5.07		05/01/2016
90-Day T-Bill + 5%		2.41	4.78	8.77	6.34	6.63	6.43		6.02		6.41		
HFRI FOF: Conservative Index		0.85	1.78	3.47	6.01	3.89	4.11		3.45		4.03		
Preserver, L.P.		1.03	2.23	4.03	7.08		N/A		N/A		N/A		4.73
90-Day T-Bill + 5%		2.41	4.78	8.77	6.34	6.63	6.43		6.02		6.54		
HFRI Fund of Funds Composite Index		1.43	2.18	3.58	5.01	3.30	4.02		3.38		4.29		
HFRI RV: Multi-Strategy Index		0.49	2.19	2.51	5.29	3.73	4.09		3.79		4.19		
Total Real Estate Composite		-1.83	-4.93	-9.31	7.76	6.76	6.70		9.01		10.50		10/01/2009
NCREIF Property Index		-1.98	-3.75	-6.59	6.79	5.90	6.24		7.82		8.66		
BlackRock US Core Property Fund		-4.54	-9.34	-11.90	5.87	5.35	6.33		7.86		3.70		10/01/2006
NCREIF Property Index		-1.98	-3.75	-6.59	6.79	5.90	6.24		7.82		6.81		
RREEF REIT II		-2.06	-7.51	-11.65	7.47	5.98	6.41		8.32		7.21		07/01/1999
NCREIF Property Index		-1.98	-3.75	-6.59	6.79	5.90	6.24		7.82		8.35		
Vanguard REIT Index Inv		1.63	3.45	-3.92	5.90	4.40		N/A		N/A		4.13	01/01/2017
Vanguard REIT Spliced Index		1.68	3.54	-3.82	6.00	4.48	3.27		6.24		4.24		
IM Real Estate Sector (MF) Median		1.67	4.31	-2.96	6.84	4.41	3.32		6.04		4.31		
Vanguard REIT Index Inv Rank		54	72	65	70	52		N/A		N/A		55	
TA Realty Core Property Fund		-1.19	-1.86	-5.73	13.68		N/A		N/A		N/A		11.57
NCREIF ODCE Equal Weighted		-2.68	-5.76	-9.96	8.17	6.78	7.23		8.94		6.67		

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	<u>Performance (%)</u>									
	<u>2022</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>
Total Fund Composite	-13.24	13.13	14.58	18.36	-5.79	17.86	6.33	-0.17	5.09	17.24
Policy Index	-12.94	11.35	12.73	18.81	-4.51	16.68	8.04	-0.19	5.86	15.19
In House Cash	1.50	0.04	0.26	2.12	1.93	0.67	0.35	0.18	0.11	0.11
90 Day U.S. Treasury Bill	1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04	0.05
Domestic Equity Composite	-17.70	25.11	22.02	29.67	-6.17	22.22	9.62	-1.61	8.44	35.07
Russell 3000 Index	-19.21	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.56	33.55
Domestic Equity Index	-18.82	23.52	20.08	29.94	-6.47	20.20	13.76	0.19	11.60	34.04
Fixed Income Composite	-11.98	-0.70	9.17	9.51	-1.28	6.58	4.83	-0.53	4.42	-0.14
Fixed Income Index	-13.63	-1.25	7.78	9.24	-0.91	5.50	4.83	-0.86	4.89	0.39
International Equity Composite	-21.01	8.44	17.01	23.83	-16.10	32.40	2.64	-1.18	-1.73	20.03
International Equity Index	-16.14	6.88	11.18	20.94	-13.98	28.77	3.16	-4.06	-4.13	16.58
Hedge Fund Composite	-3.41	7.59	11.20	7.95	-1.55	6.72	N/A	N/A	N/A	N/A
90-Day T-Bill+ 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
Total Real Estate Composite	2.12	24.06	1.81	9.01	7.46	6.29	8.20	14.65	20.16	10.27
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
In House Cash	43,323	1.50	0.04	0.26	2.12	1.93	0.67	0.35	0.18	0.11	0.11
90 Day U.S. Treasury Bill		1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04	0.05
Domestic Equity Composite	762,588	-17.70	25.11	22.02	29.67	-6.17	22.22	9.62	-1.61	8.44	35.07
Russell 3000 Index		-19.21	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.56	33.55
Domestic Equity Index		-18.82	23.52	20.08	29.94	-6.47	20.20	13.76	0.19	11.60	34.04
IM U.S. Equity (SA+CF) Median		-16.45	26.02	16.48	28.58	-7.08	19.38	13.20	-0.50	9.96	35.79
Domestic Equity Composite Rank		55	56	35	43	45	34	70	59	60	55
Barrow, Hanley	146,256	-2.83	25.97	4.19	25.67	-6.30	15.92	14.50	-1.92	13.29	33.03
Russell 1000 Value Index		-7.54	25.16	2.80	26.54	-8.27	13.66	17.34	-3.83	13.45	32.53
IM U.S. Large Cap Value Equity (SA+CF) Median		-5.42	27.87	4.49	27.55	-8.36	17.13	14.78	-2.30	12.07	33.63
Barrow, Hanley Rank		31	68	53	67	31	69	54	46	34	56
Winslow Capital Management	87,414	-31.14	24.15	37.97	33.81	3.57	32.46	-2.13	6.55	10.67	37.50
Russell 1000 Growth Index		-29.14	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48
IM U.S. Large Cap Growth Equity (SA+CF) Median		-29.13	24.98	35.35	34.01	-0.53	28.48	4.63	5.43	11.87	34.72
Winslow Capital Management Rank		65	58	38	53	13	26	95	41	63	26
Rhumbline Russell 1000 Growth	92,028	-29.11	27.58	38.51	36.35	-1.51	N/A	N/A	N/A	N/A	N/A
Russell 1000 Growth Index		-29.14	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48
IM U.S. Large Cap Growth Equity (SA+CF) Median		-29.13	24.98	35.35	34.01	-0.53	28.48	4.63	5.43	11.87	34.72
Rhumbline Russell 1000 Growth Rank		50	31	35	28	58	N/A	N/A	N/A	N/A	N/A
Rhumbline S&P 500	206,832	-18.11	28.69	18.37	31.36	-4.43	21.75	11.89	1.35	13.55	32.26
S&P 500		-18.11	28.71	18.40	31.49	-4.38	21.83	11.96	1.38	13.69	32.39
IM U.S. Large Cap Core Equity (SA+CF) Median		-16.49	27.77	17.53	30.03	-5.07	22.10	10.47	1.51	13.42	33.21
Rhumbline S&P 500 Rank		66	38	46	35	42	56	33	55	48	63
NTGI S&P 400	54,919	-13.10	24.79	13.59	26.16	-11.14	16.17	20.68	-2.22	9.70	33.45
S&P MidCap 400		-13.06	24.76	13.66	26.20	-11.08	16.24	20.74	-2.18	9.77	33.50
IM U.S. Mid Cap Core Equity (SA+CF) Median		-13.08	24.80	13.78	26.90	-11.03	17.28	16.61	-1.33	10.09	36.00
NTGI S&P 400 Rank		53	55	67	73	62	79	26	74	66	80

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Capital Prospects SMID	57,590	-21.26	23.27	20.87	27.08	-4.83	23.15	N/A	N/A	N/A	N/A
Russell 2500 Index		-18.37	18.18	19.99	27.77	-10.00	16.81	17.59	-2.90	7.07	36.80
IM U.S. SMID Cap Equity (SA+CF) Median		-16.72	23.41	17.27	28.90	-9.85	17.96	16.37	-1.42	6.67	38.13
Capital Prospects SMID Rank		68	51	42	65	24	25	N/A	N/A	N/A	N/A
Capital Prospects Small Cap Value	61,912	-9.09	37.37	2.98	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Russell 2000 Value Index		-14.48	28.27	4.63	22.39	-12.86	7.84	31.74	-7.47	4.22	34.52
IM U.S. Small Cap Value Equity (SA+CF) Median		-10.72	29.80	5.13	24.99	-14.08	11.59	27.32	-4.31	5.71	37.96
Capital Prospects Small Cap Value Rank		38	19	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nicholas Investment Partners	24,872	-31.60	8.52	67.40	34.93	-11.26	26.11	1.98	-2.34	-1.12	57.42
Russell 2000 Growth Index		-26.36	2.83	34.63	28.48	-9.31	22.17	11.32	-1.38	5.60	43.30
IM U.S. Small Cap Growth Equity (SA+CF) Median		-27.36	11.81	42.86	28.99	-3.83	24.33	10.61	-0.71	3.91	46.26
Nicholas Investment Partners Rank		76	64	16	30	89	42	92	65	82	9
Conestoga Capital Advisors	30,764	-27.66	16.41	32.04	26.02	N/A	N/A	N/A	N/A	N/A	N/A
Russell 2000 Growth Index		-26.36	2.83	34.63	28.48	-9.31	22.17	11.32	-1.38	5.60	43.30
IM U.S. Small Cap Growth Equity (SA+CF) Median		-27.36	11.81	42.86	28.99	-3.83	24.33	10.61	-0.71	3.91	46.26
Conestoga Capital Advisors Rank		53	38	73	68	N/A	N/A	N/A	N/A	N/A	N/A
International Equity Composite	556,832	-21.01	8.44	17.01	23.83	-16.10	32.40	2.64	-1.18	-1.73	20.03
International Equity Index		-16.14	6.88	11.18	20.94	-13.98	28.77	3.16	-4.06	-4.13	16.58
IM International Equity (SA+CF) Median		-16.36	11.64	11.61	23.40	-14.57	28.69	2.41	1.15	-3.33	23.40
International Equity Composite Rank		73	71	33	48	65	31	49	66	35	66
1607 Capital Partners	108,275	-20.18	11.46	15.28	24.50	-14.82	32.05	1.97	-0.82	-2.22	25.44
MSCI EAFE (Net)		-14.45	11.26	7.82	22.01	-13.79	25.03	1.00	-0.81	-4.90	22.78
IM International Large Cap Core Equity (SA+CF) Median		-15.89	12.14	11.77	23.58	-14.27	27.84	1.56	0.58	-3.65	22.92
1607 Capital Partners Rank		84	56	32	43	60	16	45	63	31	29

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Marathon Asset Mgmt	109,560	-14.09	9.29	9.30	23.13	-13.78	23.53	-1.82	6.45	-4.59	28.60
MSCI AC World ex USA (Net)		-16.00	7.82	10.65	21.51	-14.20	27.19	4.50	-5.66	-3.87	15.29
IM International Large Cap Core Equity (SA+CF) Median		-15.89	12.14	11.77	23.58	-14.27	27.84	1.56	0.58	-3.65	22.92
Marathon Asset Mgmt Rank		34	72	64	54	43	89	85	10	62	14
Principal Global Investors	105,578	-24.52	11.97	21.89	26.23	-17.79	25.75	-0.95	4.34	-1.67	25.65
MSCI World ex U.S. Growth (Net)		-22.68	11.57	18.41	27.92	-13.14	27.61	-1.87	1.65	-3.26	20.53
IM International Large Cap Core Equity (SA+CF) Median		-15.89	12.14	11.77	23.58	-14.27	27.84	1.56	0.58	-3.65	22.92
Principal Global Investors Rank		96	52	12	33	90	67	78	14	23	28
Strategic Global Advisors	63,128	-16.85	16.18	7.36	22.09	-17.09	29.13	-0.74	3.08	0.54	25.64
MSCI World ex-U.S. (Net)		-14.29	12.62	7.59	22.49	-14.09	24.21	2.75	-3.04	-4.32	21.02
IM International Core Equity (SA+CF) Median		-16.86	12.47	12.18	23.97	-15.01	29.44	1.71	1.60	-3.41	24.22
Strategic Global Advisors Rank		50	21	75	66	72	52	76	38	13	40
Acadian EM Equity II	88,456	-20.42	7.84	11.67	17.03	-19.04	37.87	13.08	-18.07	1.60	-2.15
MSCI EM (net)		-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60
IM Emerging Markets Equity (SA+CF) Median		-19.46	0.91	18.39	20.17	-15.23	36.89	9.87	-12.11	0.12	1.16
Acadian EM Equity II Rank		57	27	77	70	83	42	29	92	38	74
J.P. Morgan Global Emerging Markets Discovery Fund	81,835	-28.67	-3.87	33.64	29.38	-15.74	45.78	N/A	N/A	N/A	N/A
MSCI EM (net)		-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60
IM Emerging Markets Equity (SA+CF) Median		-19.46	0.91	18.39	20.17	-15.23	36.89	9.87	-12.11	0.12	1.16
J.P. Morgan Global Emerging Markets Discovery Fund Rank		92	71	16	14	56	14	N/A	N/A	N/A	N/A
Fixed Income Composite	609,092	-11.98	-0.70	9.17	9.51	-1.28	6.58	4.83	-0.53	4.42	-0.14
Fixed Income Index		-13.63	-1.25	7.78	9.24	-0.91	5.50	4.83	-0.86	4.89	0.39
IM U.S. Fixed Income (SA+CF) Median		-9.20	0.00	7.01	8.74	0.42	4.18	3.66	0.75	4.45	-0.18
Fixed Income Composite Rank		65	68	27	40	77	27	40	73	51	50

Net of Fees.

City of Memphis

Comparative Performance

As of June 30, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Mackay Shields	121,996	-7.36	5.77	5.87	13.72	-0.96	7.27	17.20	-1.13	2.09	6.80
Credit Suisse High Yield Index		-10.55	5.50	5.48	14.00	-2.37	7.02	18.26	-4.93	1.86	7.53
IM U.S. High Yield Bonds (SA+CF) Median		-9.46	5.31	6.57	14.32	-1.64	7.48	14.07	-2.08	2.50	7.58
Mackay Shields Rank		24	38	65	56	35	55	17	34	61	66
PIMCO	94,208	-12.74	-0.80	8.36	8.73	0.49	5.14	3.24	-0.15	4.15	-2.98
Blmbg. U.S. Aggregate		-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97	-2.02
IM U.S. Broad Market Core Fixed Income (SA+CF) Median		-12.95	-1.24	8.49	9.17	0.06	3.99	3.04	0.81	6.14	-1.60
PIMCO Rank		37	32	52	76	18	7	44	97	97	99
Prudential Core Conserv Bond	90,308	-13.06	-1.65	7.59	8.66	-0.21	3.56	2.75	0.73	6.09	-2.18
Blmbg. U.S. Aggregate		-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97	-2.02
IM U.S. Broad Market Core Fixed Income (SA+CF) Median		-12.95	-1.24	8.49	9.17	0.06	3.99	3.04	0.81	6.14	-1.60
Prudential Core Conserv Bond Rank		61	83	81	81	82	80	66	59	56	86
Brandywine	196,826	-13.77	-3.86	11.57	7.74	-3.10	10.67	0.67	N/A	N/A	N/A
Blmbg. Global Aggregate		-16.25	-4.71	9.20	6.84	-1.19	7.39	2.09	-3.15	0.59	-2.60
FTSE World Government Bond Index		-18.26	-6.97	10.11	5.90	-0.84	7.49	1.60	-3.57	-0.48	-4.00
IM Global Fixed Income (SA+CF) Median		-12.38	0.49	8.69	9.72	-1.81	7.81	6.15	-2.41	2.47	0.01
Brandywine Rank		59	76	23	80	70	16	93	N/A	N/A	N/A
Hedge Fund Composite	103,071	-3.41	7.59	11.20	7.95	-1.55	6.72	N/A	N/A	N/A	N/A
90-Day T-Bill+ 5%		6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index		0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
Grosvenor Institutional Partners, L.P.	48,270	-5.86	7.78	17.17	6.06	-1.49	6.14	N/A	N/A	N/A	N/A
90-Day T-Bill+ 5%		6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index		0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
Aetos	46,776	-0.68	6.46	6.99	9.26	-1.61	7.30	N/A	N/A	N/A	N/A
90-Day T-Bill + 5%		6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index		0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70

Net of Fees.

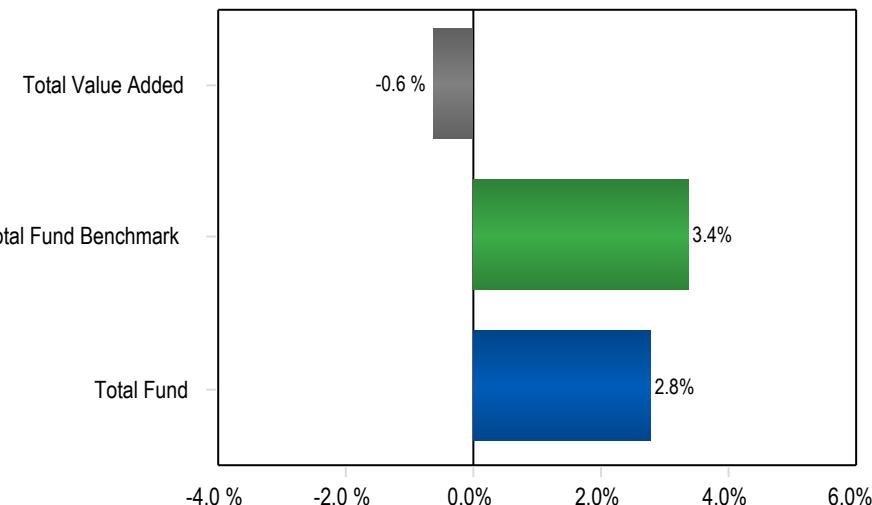
City of Memphis

Comparative Performance

As of June 30, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Preserver, L.P.	8,025	-3.69	11.83	3.70	N/A	N/A	N/A	N/A	N/A	N/A	N/A
90-Day T-Bill + 5%		6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
<i>HFRI Fund of Funds Composite Index</i>		-5.31	6.17	10.88	8.39	-4.02	7.77	0.51	-0.27	3.37	8.96
<i>HFRI RV: Multi-Strategy Index</i>		-0.73	7.03	6.69	5.29	-0.23	4.09	6.36	0.65	3.40	7.90
Total Real Estate Composite	243,366	2.12	24.06	1.81	9.01	7.46	6.29	8.20	14.65	20.16	10.27
<i>NCREIF Property Index</i>		5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
BlackRock US Core Property Fund	70,977	8.74	18.65	2.08	5.58	7.20	8.29	10.10	14.38	10.71	9.90
<i>NCREIF Property Index</i>		5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
RREEF REIT II	18,755	7.59	23.79	0.37	5.29	6.98	6.43	8.12	15.63	11.95	14.38
<i>NCREIF Property Index</i>		5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
Vanguard REIT Index Inv	3,323	-26.19	40.47	-4.67	28.95	-5.93	4.86	N/A	N/A	N/A	N/A
<i>Vanguard REIT Spliced Index</i>		-26.12	40.56	-4.55	29.03	-5.86	5.07	8.60	2.52	30.38	2.47
<i>IM Real Estate Sector (MF) Median</i>		-26.17	41.32	-4.31	27.32	-5.71	5.32	6.34	2.91	29.47	1.64
<i>Vanguard REIT Index Inv Rank</i>		51	61	54	34	54	59	N/A	N/A	N/A	N/A
TA Realty Core Property Fund	31,100	8.84	29.56	5.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>NCREIF ODCE Equal Weighted</i>		7.46	22.62	1.57	6.08	8.25	7.80	9.27	15.17	12.38	13.36

Net of Fees.

Total Fund Performance**Total Value Added:-0.6 %**

Asset Allocation

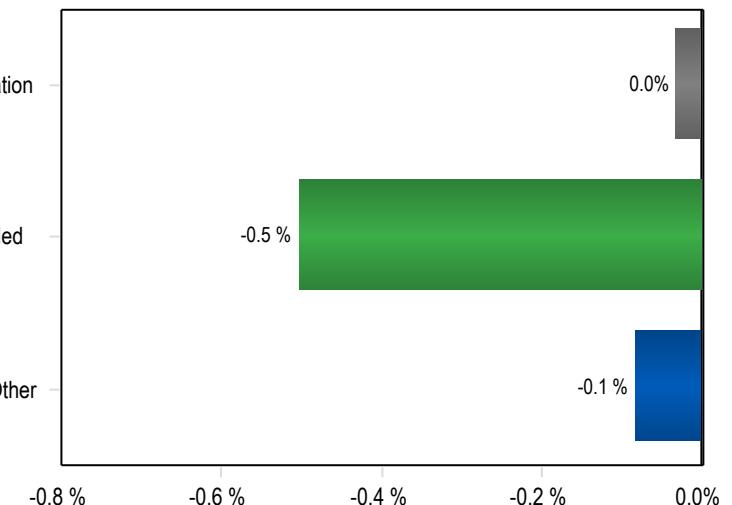
Manager Value Added

Other

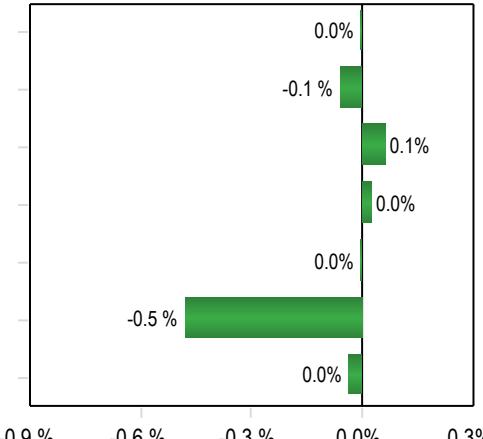
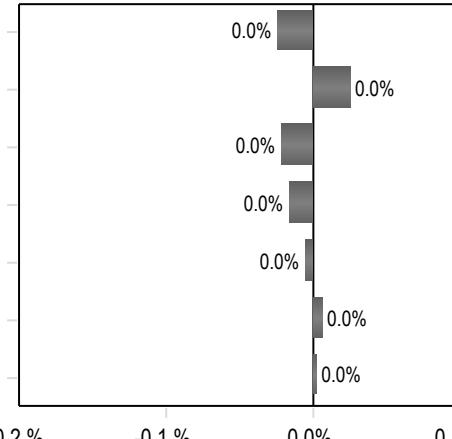
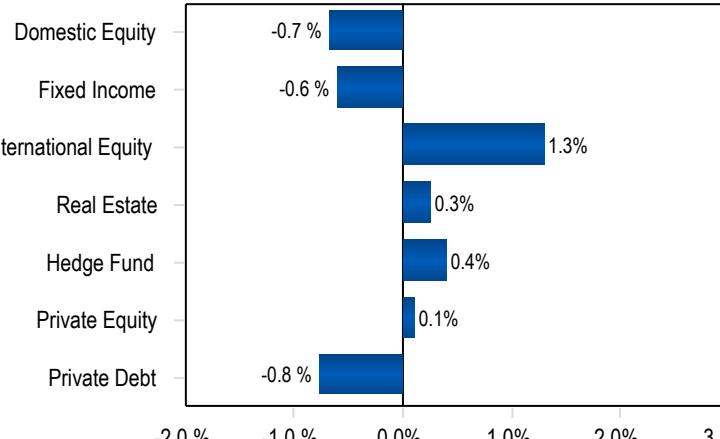
0.0%

-0.5 %

-0.1 %

**Total Asset Allocation:0.0%****Total Manager Value Added:-0.5 %**

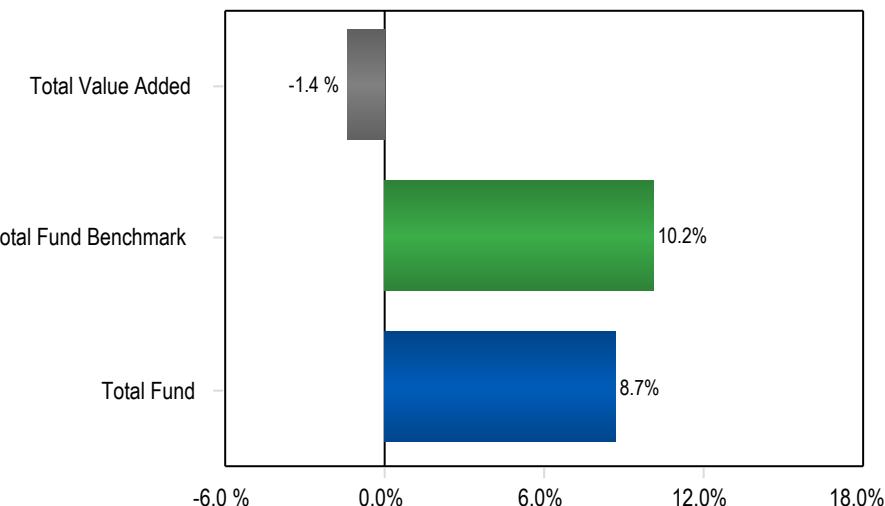
Weight (%)



■ Average Active Weight

■ Asset Allocation Value Added

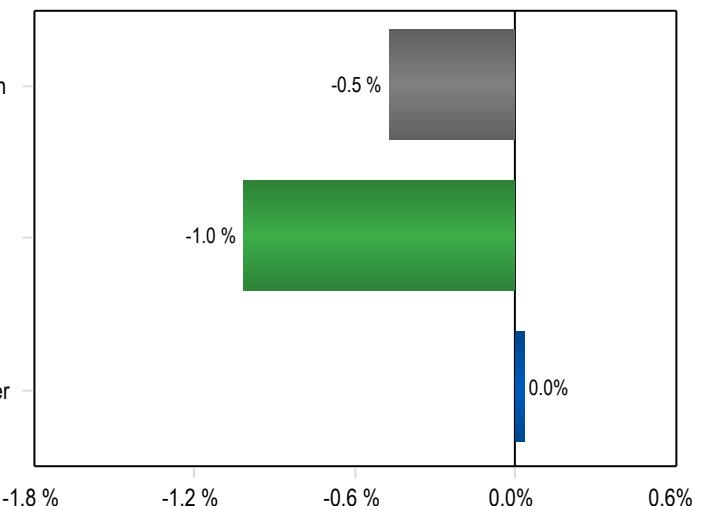
■ Manager Value Added

Total Fund Performance**Total Value Added:-1.4 %**

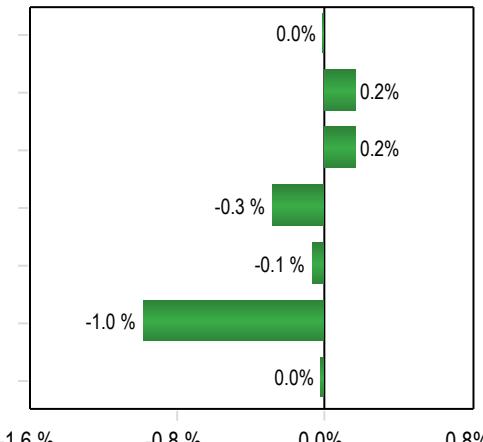
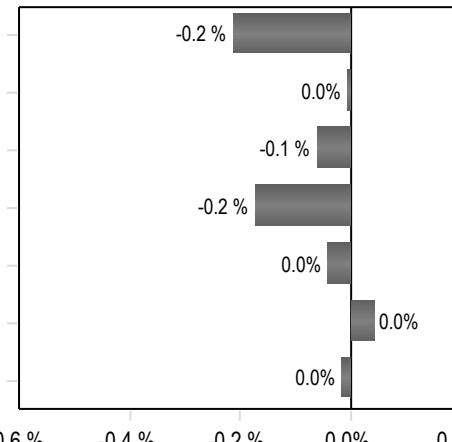
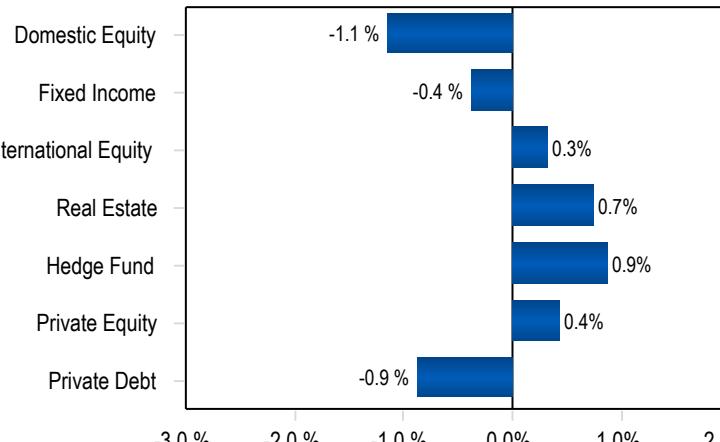
Asset Allocation

Manager Value Added

Other

**Total Asset Allocation:-0.5 %****Total Manager Value Added:-1.0 %**

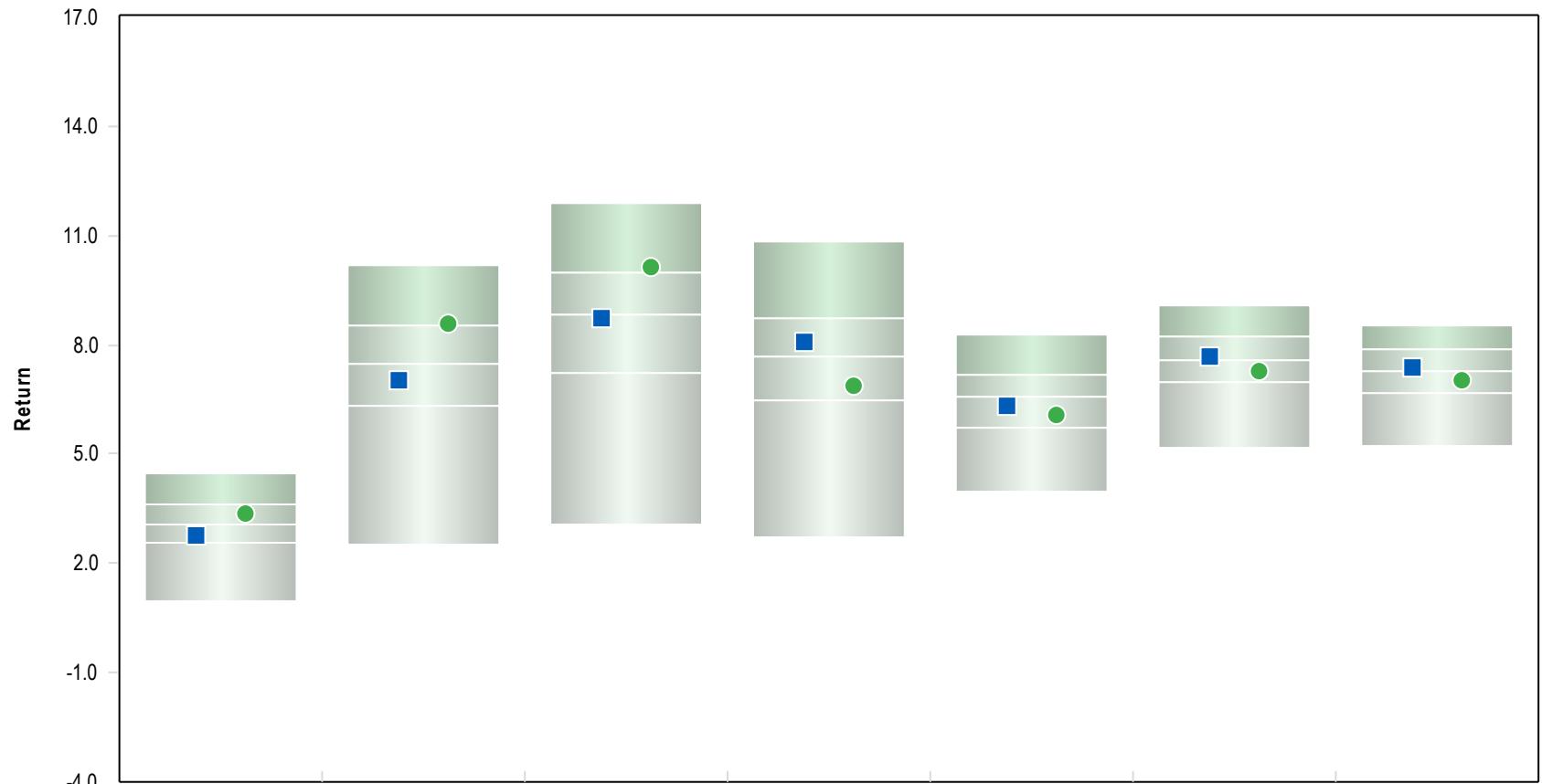
Weight (%)



■ Average Active Weight

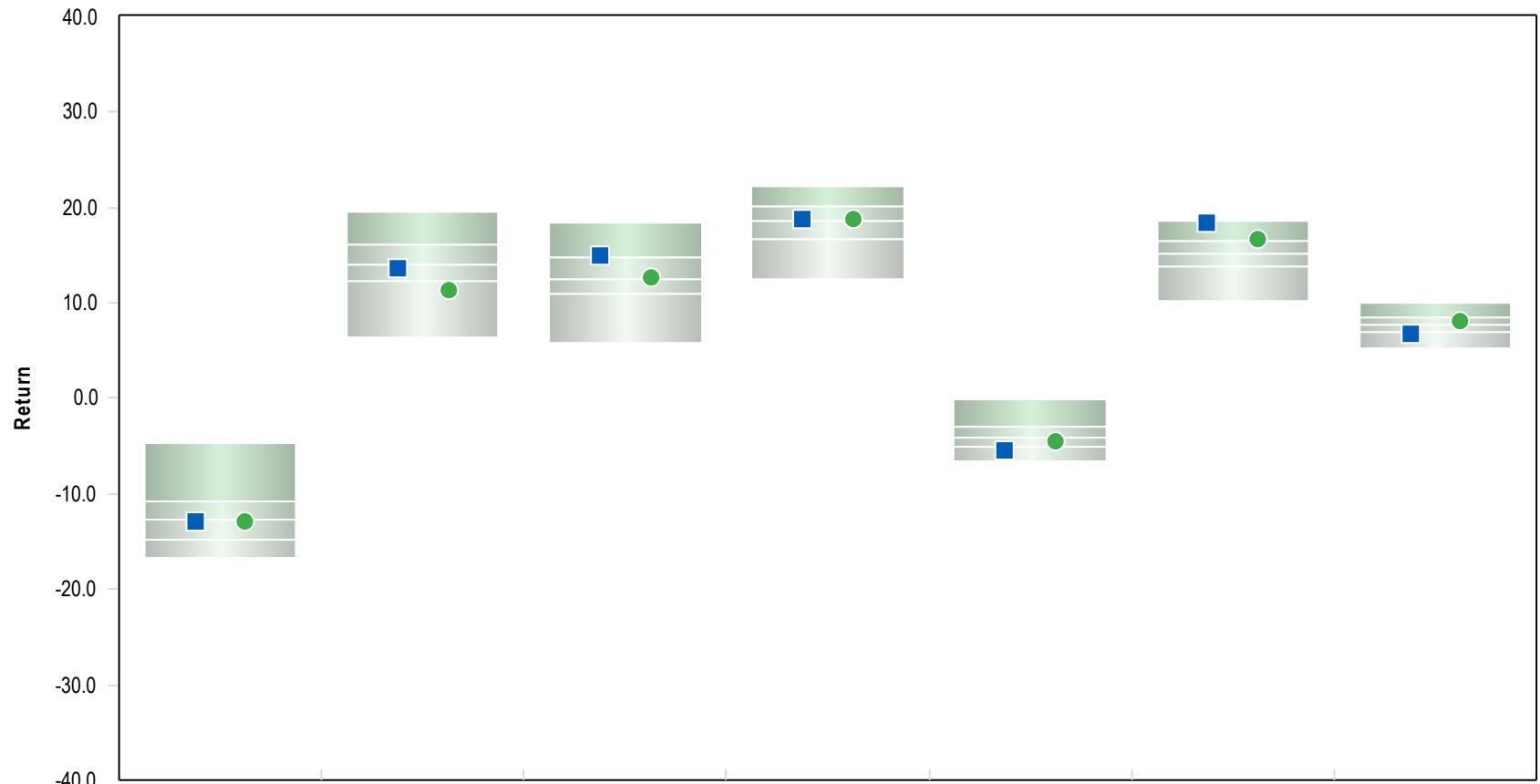
■ Asset Allocation Value Added

■ Manager Value Added



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Total Fund Composite	2.78 (65)	7.02 (61)	8.74 (52)	8.08 (42)	6.34 (59)	7.69 (46)	7.40 (44)
Policy Index	3.39 (36)	8.56 (25)	10.15 (21)	6.87 (69)	6.09 (67)	7.29 (61)	7.03 (62)
5th Percentile	4.49	10.18	11.91	10.85	8.30	9.10	8.55
1st Quartile	3.60	8.53	9.97	8.72	7.16	8.25	7.88
Median	3.05	7.46	8.83	7.70	6.58	7.58	7.29
3rd Quartile	2.54	6.33	7.24	6.46	5.71	6.96	6.68
95th Percentile	0.97	2.52	3.08	2.70	3.95	5.16	5.23

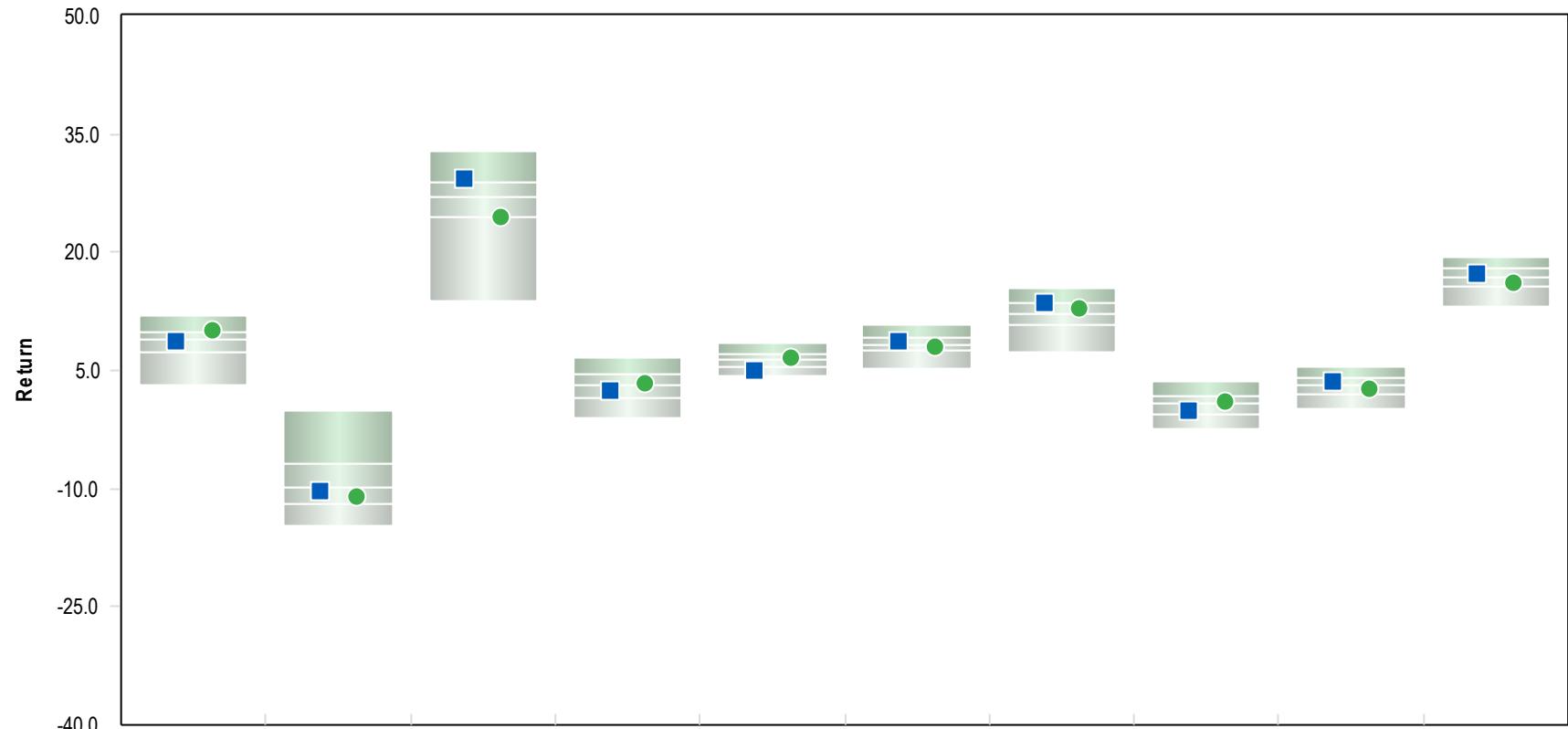
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



	2022	2021	2020	2019	2018	2017	2016
Total Fund Composite	-12.92 (52)	13.57 (57)	15.06 (22)	18.86 (45)	-5.39 (82)	18.36 (7)	6.76 (80)
Policy Index	-12.94 (53)	11.35 (84)	12.73 (48)	18.81 (46)	-4.51 (60)	16.68 (21)	8.04 (41)

5th Percentile	-4.64	19.58	18.42	22.22	-0.07	18.60	9.97
1st Quartile	-10.72	16.11	14.72	20.21	-2.90	16.48	8.51
Median	-12.79	14.03	12.55	18.58	-4.03	15.17	7.69
3rd Quartile	-14.70	12.28	10.94	16.67	-5.11	13.88	6.92
95th Percentile	-16.75	6.48	5.82	12.49	-6.65	10.14	5.34

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

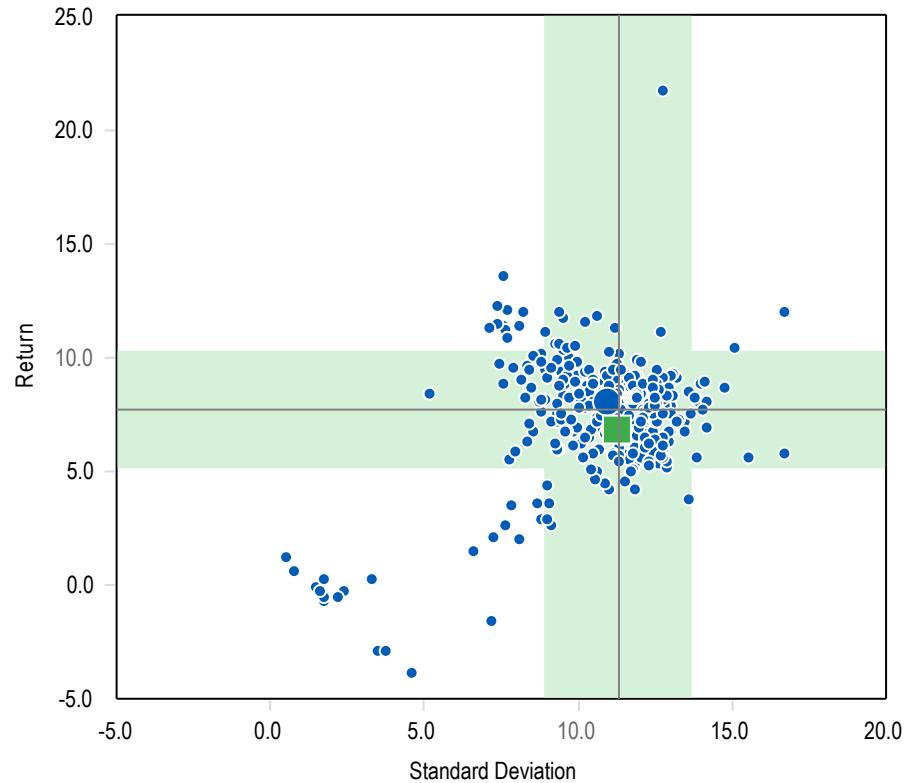


	Jul-2021 To FYTD	Jul-2021 To Jun-2022	Jul-2020 To Jun-2021	Jul-2019 To Jun-2020	Jul-2018 To Jun-2019	Jul-2017 To Jun-2018	Jul-2016 To Jun-2017	Jul-2015 To Jun-2016	Jul-2014 To Jun-2015	Jul-2013 To Jun-2014
■ Total Fund Composite	8.74 (52)	-10.31 (55)	29.46 (21)	2.48 (59)	5.10 (83)	8.78 (37)	13.55 (25)	-0.10 (69)	3.72 (33)	17.31 (40)
● Policy Index	10.15 (21)	-10.93 (62)	24.40 (76)	3.33 (46)	6.55 (44)	7.91 (61)	12.89 (35)	1.02 (42)	2.78 (61)	16.08 (67)
5th Percentile	11.91	0.00	32.82	6.67	8.53	10.91	15.51	3.59	5.40	19.45
1st Quartile	9.97	-6.91	28.95	4.50	7.19	9.27	13.53	1.72	3.98	17.91
Median	8.83	-9.80	27.01	3.04	6.36	8.31	12.19	0.72	3.14	16.88
3rd Quartile	7.24	-11.97	24.45	1.61	5.54	7.45	10.84	-0.49	2.09	15.61
95th Percentile	3.08	-14.81	13.80	-0.96	4.24	5.13	7.43	-2.53	0.13	13.19

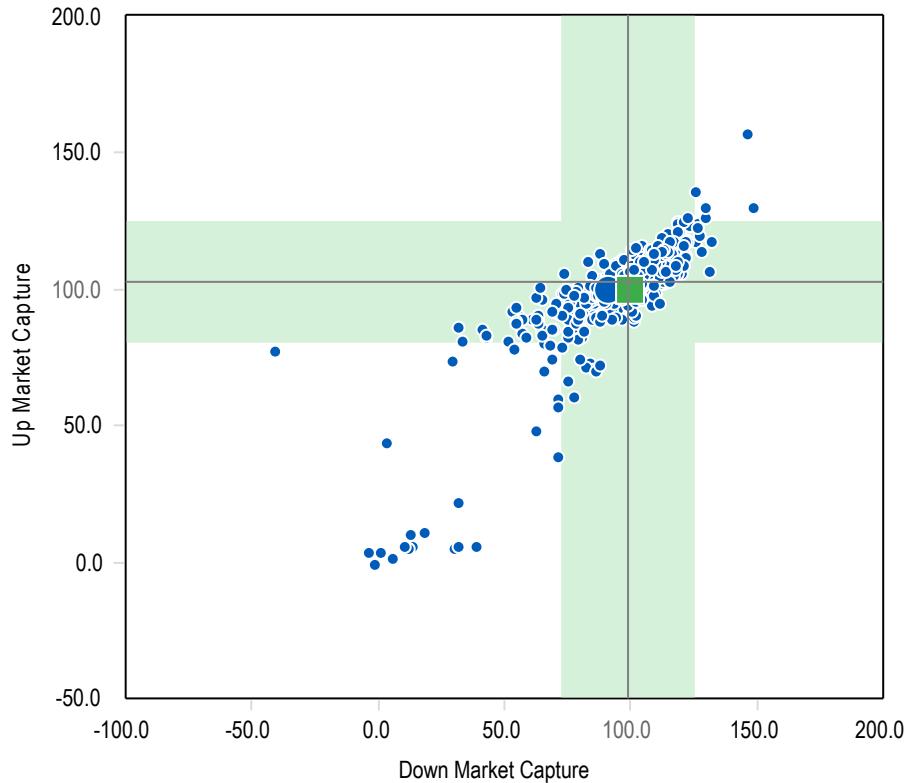
Parentheses contain percentile rankings.

Calculation based on monthly periodicity.

3 Years Annualized Return vs. Annualized Standard Deviation



3 Years Upside Capture Ratio vs. Downside Capture Ratio

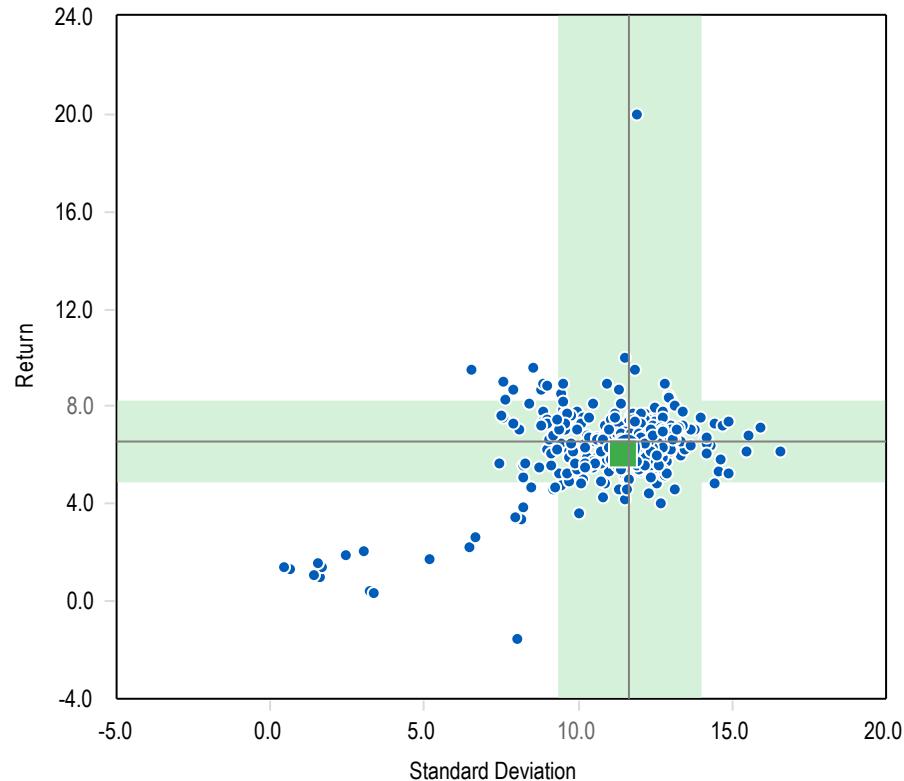


	Return	Standard Deviation
Total Fund Composite	8.1	11.0
Policy Index	6.9	11.3
Median	7.7	11.3
Population	365	365

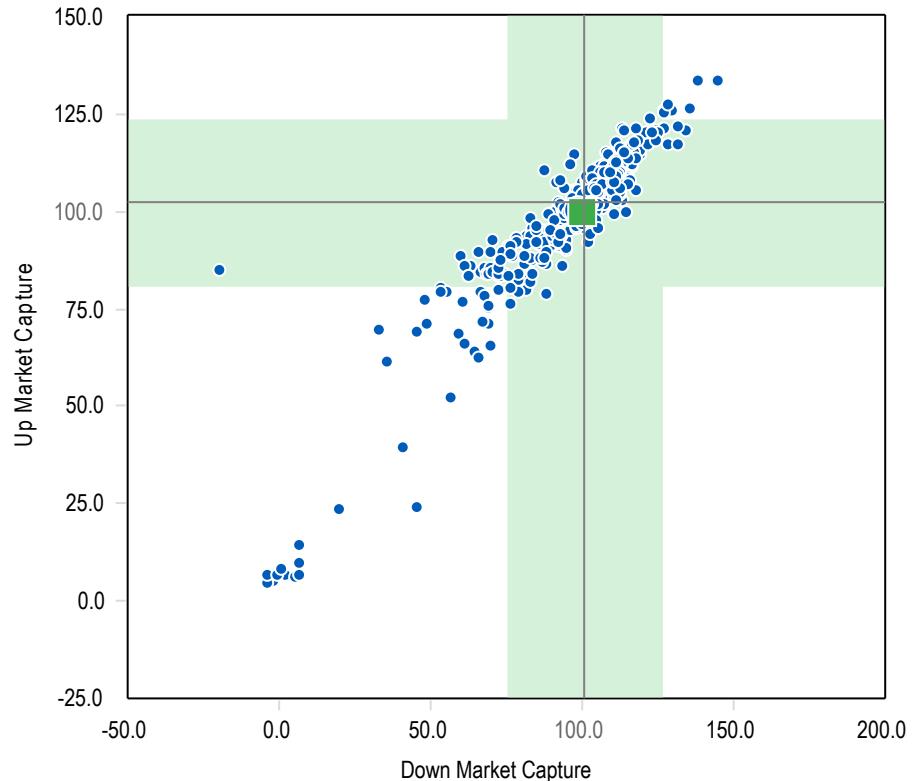
	Up Market Capture	Down Market Capture
Total Fund Composite	100.1	91.4
Policy Index	100.0	100.0
Median	102.8	99.3
Population	365	365

The shaded area is one sigma range from the median.

5 Years Annualized Return vs. Annualized Standard Deviation



5 Years Upside Capture Ratio vs. Downside Capture Ratio



	Return	Standard Deviation
Total Fund Composite	6.3	11.6
Policy Index	6.1	11.4
Median	6.6	11.7
Population	351	351

	Up Market Capture	Down Market Capture
Total Fund Composite	100.4	98.6
Policy Index	100.0	100.0
Median	102.2	101.0
Population	351	351

The shaded area is one sigma range from the median.

**City of Memphis
Policy Index**

As of June 30, 2023

Policy Index	Weight (%)	Policy Index	Weight (%)
Jan-1979		Apr-2011	
Russell 3000 Index	45.0	S&P 500	26.0
Bloomberg U.S. Aggregate	40.0	Russell Midcap Index	4.0
MSCI EAFE (Net)	10.0	Russell 2000 Index	4.0
Wilshire REOC	5.0	MSCI EAFE (Net)	17.0
Apr-1997		MSCI Emerging Markets Index	5.0
Russell 3000 Index	40.0	Bloomberg U.S. Aggregate	29.0
Bloomberg U.S. Aggregate	40.0	Credit Suisse High Yield	10.0
MSCI EAFE (Net)	15.0	NCREIF ODCE Equal Weighted	5.0
Wilshire REOC	5.0	Sep-2016	
Oct-1999		Russell 3000 Index	27.0
Russell 3000 Index	40.0	MSCI EAFE (Net)	18.5
Bloomberg U.S. Aggregate	40.0	MSCI EM (net)	8.5
MSCI AC World ex USA	15.0	Bloomberg U.S. Aggregate	12.0
Wilshire REOC	5.0	NCREIF Property Index	10.0
Jul-2001		Bloomberg Global Aggregate	10.0
Russell 3000 Index	40.0	S&P 500 + 3%	4.0
Bloomberg U.S. Aggregate	40.0	T Bills + 5%	4.0
MSCI AC World ex USA	15.0	Credit Suisse High Yield Index	6.0
NCREIF Property Index	5.0	Dec-2021	
Apr-2007		Russell 3000 Index	32.0
Russell 3000 Index	35.0	MSCI EAFE (Net)	15.0
Bloomberg U.S. Aggregate	40.0	MSCI EM (net)	7.0
MSCI AC World ex USA	20.0	Bloomberg U.S. Aggregate	13.0
NCREIF Property Index	5.0	NCREIF Property Index	10.0
		Bloomberg Global Aggregate	8.0
		S&P 500 + 3%	4.0
		T Bills + 5%	4.0
		Credit Suisse High Yield Index	5.0
		Morningstar LSTA US Leveraged Loan	2.0

**City of Memphis
Policy Index**

As of June 30, 2023

Policy Index	Weight (%)
Jan-2023	
Russell 3000 Index	31.0
MSCI EAFE (Net)	15.0
MSCI EM (net)	7.0
Bloomberg U.S. Aggregate	13.0
NCREIF Property Index	10.0
Bloomberg Global Aggregate	8.0
S&P 500 + 3%	5.0
T Bills + 5%	4.0
Credit Suisse High Yield Index	5.0
Morningstar LSTA US Leveraged Loan	2.0

City of Memphis

International Equity Index

As of June 30, 2023

Policy Index	Weight (%)
Jan-1970	
MSCI AC World ex USA	100.0
Apr-2011	
MSCI EAFE (Net)	77.0
MSCI Emerging Markets Index	23.0
Sep-2016	
MSCI EAFE (Net)	69.0
MSCI EM (net)	31.0
Dec-2021	
MSCI EAFE (Net)	68.0
MSCI EM (net)	32.0

City of Memphis

Fixed Income Index

As of June 30, 2023

Policy Index	Weight (%)	Policy Index	Weight (%)
Jan-1976		Jan-2021	
Blmbg. U.S. Aggregate	100.0	Blmbg. U.S. Aggregate	43.0
Apr-2011		Credit Suisse High Yield Index	21.0
Blmbg. U.S. Aggregate	74.0	Blmbg. Global Aggregate	36.0
Credit Suisse High Yield	26.0		
Sep-2016			
Blmbg. U.S. Aggregate	43.0		
Credit Suisse High Yield	21.0		
Blmbg. Global Aggregate	36.0		
Jan-2017			
Blmbg. U.S. Aggregate	47.0		
Credit Suisse High Yield	22.0		
Blmbg. Global Aggregate	31.0		
Jan-2018			
Blmbg. U.S. Aggregate	43.0		
Credit Suisse High Yield	22.5		
Blmbg. Global Aggregate	34.5		
Jan-2019			
Blmbg. U.S. Aggregate	43.5		
Credit Suisse High Yield	22.0		
Blmbg. Global Aggregate	34.5		
Jan-2020			
Blmbg. U.S. Aggregate	44.0		
Credit Suisse High Yield Index	23.0		
Blmbg. Global Aggregate	33.0		

City of Memphis

Schedule of Investable Assets

Since Inception Ending June 30, 2023

Periods Ending	Beginning Market Value (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending Market Value (\$)	%Return
From 06/1996	1,291,734,891	-14,742,714	101,140,788	1,378,132,965	7.9
1997	1,378,132,965	-34,096,344	234,250,900	1,578,287,521	17.2
1998	1,578,287,521	-42,268,539	240,063,429	1,776,082,411	15.4
1999	1,776,082,411	-47,808,437	240,291,082	1,968,565,056	13.2
2000	1,968,565,056	-64,387,008	7,639,956	1,911,818,004	0.4
2001	1,911,818,004	-77,481,199	-14,124,868	1,820,211,937	-0.7
2002	1,820,211,937	-81,528,582	-150,191,752	1,588,491,603	-8.4
2003	1,588,491,603	-75,424,638	350,796,286	1,863,863,251	22.6
2004	1,863,863,251	-79,808,593	216,220,232	2,000,274,890	11.9
2005	2,000,274,890	-90,832,853	173,260,464	2,082,702,500	8.5
2006	2,082,702,500	-86,039,647	266,362,298	2,263,025,152	13.6
2007	2,263,025,152	-96,032,638	180,996,824	2,347,989,338	8.3
2008	2,347,989,338	-105,220,477	-662,432,769	1,580,336,092	-28.9
2009	1,580,336,092	-102,169,783	337,471,803	1,815,638,112	22.2
2010	1,815,638,112	-107,265,723	244,019,890	1,952,392,279	14.0
2011	1,952,392,279	-113,653,688	14,703,206	1,853,441,798	0.7
2012	1,853,441,798	-64,856,098	206,277,288	1,994,862,988	13.7
2013	1,994,862,988	-135,949,680	344,705,536	2,203,618,845	17.7
2014	2,203,618,845	-133,361,482	120,224,286	2,190,481,650	5.5
2015	2,190,481,650	-122,787,070	9,420,065	2,077,114,644	0.2
2016	2,077,114,644	-90,342,269	135,585,599	2,122,357,975	6.8
2017	2,122,357,975	-117,949,337	385,214,135	2,389,622,772	18.4
2018	2,389,622,772	-134,023,080	-122,005,142	2,133,594,551	-5.4
2019	2,133,594,551	-109,150,662	398,812,740	2,423,256,628	18.9
2020	2,423,256,628	-136,045,892	343,923,054	2,631,133,790	15.1
2021	2,631,133,790	-96,972,374	343,958,578	2,878,119,994	13.6
2022	2,878,119,994	-155,042,272	-349,373,506	2,373,704,216	-12.9
To 06/2023	2,373,704,216	-69,992,160	164,553,736	2,468,265,792	7.0

Gain/Loss includes income received and change in accrued income for the period.

Appendix

City of Memphis Retirement System

Comparative Performance

As of June 30, 2023

	1 Quarter	Year To Date	1 Year	3 Years	5 Years	Since Inception	Inception Date
Barrow, Hanley	6.1	3.5	12.3	17.2	9.5	12.6	10/01/1982
Russell 1000 Value + 75 bps	4.3	5.5	12.4	15.2	8.9	12.3	10/01/1982
1607 Capital Partners	3.0	9.3	13.8	8.8	4.8	5.7	07/01/2008
MSCI EAFE Net + 400 bps	4.0	13.9	23.5	13.3	8.6	7.5	07/01/2008
Marathon Asset Mgmt	3.0	10.7	18.8	10.3	4.7	7.8	04/01/2004
MSCI ACWI ex. US + 200 bps	3.2	11.0	15.6	9.9	6.1	8.0	04/01/2004
Principal Global Investors	3.3	15.3	21.9	7.3	5.3	3.4	07/01/2007
MSCI EAFE Net + 240 bps	3.6	13.0	21.6	11.5	6.9	4.9	07/01/2007
PIMCO	-0.3	2.9	0.1	-2.6	1.6	3.2	04/01/2009
BC Aggregate + 75 bps	-0.7	2.5	-0.2	-3.2	1.5	3.3	04/01/2009

>Returns for periods greater than one year are annualized.

>Returns are expressed as percentages.

**City of Memphis
Manager Roster
As of June 30, 2023**

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Estimated Annual Fee (\$)	Estimated Annual Fee (bps)	Universe Median Fee (bps)
Barrow Hanley	6/30/2023	\$146,256,286	Equity Only	Russell 1000 Value	Large Cap Value	75 bps on first \$10.0M, 50 bps on next \$15.0M, 25 bps on next \$175M, 20 bps on next \$600M, 15 bps over \$800M	\$453,141	0.31%	0.54%
Rhumbline Russell 1000 Growth Index	6/30/2023	\$92,028,341	Equity Only	Russell 1000 Growth	Large Cap Growth	3 bps on first \$100.0M, 2 bps on next \$200.0M (Assets of Rhumbline S&P 500 combined with Rhumbline Russell 1000 Growth Index for pricing)	\$21,484	0.02%	0.55%
Winslow Capital	6/30/2023	\$87,414,433	Equity Only	Russell 1000 Growth	Large Cap Growth	60 bps for the first \$50M, 55 bps next \$50M, and 50 bps next \$150M	\$505,779	0.58%	0.55%
Rhumbline S&P 500 Index	6/30/2023	\$206,832,135	Equity Only	S&P 500	Large Cap Core	3 bps on first \$100.0M, 2 bps on next \$200.0M (Assets of Rhumbline S&P 500 combined with Rhumbline Russell 1000 Growth Index for pricing)	\$48,288	0.02%	N/A
Northern Trust	6/30/2023	\$54,919,464	Equity Only	S&P 400	Mid Cap Core	5 bps on first \$50.0M, 4 bps thereafter	\$26,968	0.05%	N/A
Capital Prospects SMID	6/30/2023	\$57,589,632	Equity Only	Russell 2500 Index	SMID Cap	75 bps on all assets	\$431,922	0.75%	0.85%
Capital Prospects SCV	6/30/2023	\$61,912,261	Equity Only	Russell 2000 Value	Small Cap Value	100 bps on first \$5.0M, 85 bps on next \$5.0M, 60 bps on the balance	\$464,342	0.75%	0.90%
Nicholas Investment Partners	6/30/2023	\$24,871,967	Equity Only	Russell 2000 Growth	Small Cap Growth	100 bps on all assets	\$248,720	1.00%	0.91%
Conestoga Small Cap Growth	6/30/2023	\$30,763,956	Equity Only	Russell 2000 Growth	Small Cap Growth	90 bps on first \$10.0M, 80 bps on next \$15.0M, 65 bps thereafter	\$247,466	0.80%	0.91%
1607 Capital Partners	6/30/2023	\$108,274,582	Int'l Equity	MSCI EAFE	Int'l Equity	70 bps on all assets	\$757,922	0.70%	0.60%
Principal Global Investors	6/30/2023	\$105,578,499	Int'l Equity	MSCI World ex US Growth	Int'l Equity	60 bps on first \$50.0M, 55 bps on next \$50.0M, \$50 bps over \$100.0M	\$605,682	0.57%	0.66%
Marathon Asset Management	6/30/2023	\$109,559,559	Int'l Equity	MSCI ACWI ex US	Int'l Equity	95 bps on the first \$25.0M, 75 bps on next \$25.0M, and 52.5 bps thereafter	\$737,688	0.67%	0.60%
Strategic Global Advisors	6/30/2023	\$63,127,964	Int'l Equity	MSCI ACWI ex US	Int'l All Cap	100 bps on first \$5.0M, 70 bps on next \$50.0M, 65 bps on the next \$50.0M, and 50 bps on the remaining balance	\$456,896	0.72%	0.66%
Acadian	6/30/2023	\$88,456,319	Emerging Markets	MSCI EM	Emerging Markets	75 basis points on the first \$50 million and 65 basis points thereafter	\$624,966	0.71%	0.85%
JPMorgan	6/30/2023	\$81,834,912	Emerging Markets	MSCI EM	Emerging Markets	80 bps on first \$100.0M, 75 bps on balance	\$654,679	0.80%	0.85%

**City of Memphis
Manager Roster
As of June 30, 2023**

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Estimated Annual Fee (\$)	Estimated Annual Fee (bps)	Universe Median Fee (bps)
PIMCO	6/30/2023	\$94,208,335	Fixed Income	Barclays US Aggregate	Fixed Income	50 bps on first \$25.0M, 37.5 bps on next \$25.0M, 25 bps over \$50.0M: Separate Account min \$75M	\$329,271	0.35%	0.25%
Garcia Hamilton	6/30/2023	\$74,138,613	Fixed Income	Barclays US Aggregate	Fixed Income	20 bps on first \$50.0M, 16 bps on next \$50.0M, 14 bps thereafter	\$138,622	0.19%	0.25%
Barrow Hanley	6/30/2023	\$31,615,057	Fixed Income	Barclays US Aggregate	Fixed Income	30 bps on first \$50M	\$94,845	0.30%	0.25%
Prudential	6/30/2023	\$90,307,631	Fixed Income	Barclays US Aggregate	Fixed Income	12 bps on first \$100.0M, 7 bps on next \$100.0M, 5 bps thereafter	\$113,215	0.13%	0.25%
Brandywine	6/30/2023	\$196,826,049	Global FI	Barclays Global Aggregate	Global Fixed Income	37 bps on the first \$220.0M; 35 bps thereafter	\$732,891	0.37%	0.35%
Mackay Shields	6/30/2023	\$121,996,050	High Yield FI	Credit Suisse HY	High Yield Fixed Income	50 bps on first \$100.0M, 40 bps over \$100.0M	\$587,984	0.48%	0.48%
BlackRock US Core Property	6/30/2023	\$70,977,248	Real Estate	NCREIF Property Index	Real Estate	66 bps on net capital contributions, 14 bps on reinvested amounts	\$566,053	0.80%	0.75% - 1.50%
RREEF II	6/30/2023	\$18,755,315	Real Estate	NCREIF Property Index	Real Estate	50-55 bps on net asset value + performance fee	\$179,463	0.96%	0.75% - 1.50%
Vanguard REIT Index	6/30/2023	\$3,323,306	Real Estate	Wilshire US REIT	Real Estate	10 bps on all assets	\$3,323	0.10%	N/A
TA Realty Core Property Fund	6/30/2023	\$31,099,922	Real Estate	NCREIF Property Index	Real Estate	70 bps on all assets	\$217,699	0.70%	0.75% - 1.50%
Cornerstone (Barings) Real Estate Fund X	3/31/2023	\$50,432	Real Estate	NCREIF Property Index	Real Estate	1.5% of equity investment	\$86,149	0.97%	1.00% - 1.50%
Dune Real Estate Fund IV	3/31/2023	\$23,756,328	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% on called capital thereafter	\$450,000	1.50%	1.00 - 1.50%

**City of Memphis
Manager Roster
As of June 30, 2023**

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Estimated Annual Fee (\$)	Estimated Annual Fee (bps)	Universe Median Fee (bps)
Green Cities III	3/31/2023	\$13,096,564	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% of unreturned capital contributions	\$127,684	0.64%	1.00% - 1.50%
Green Cities IV	3/31/2023	\$17,977,414	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% of unreturned capital contributions	\$300,000	1.50%	1.00% - 1.50%
Green Cities V	3/31/2023	\$20,746	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% of unreturned capital contributions	\$300,000	1.50%	1.00% - 1.50%
Long Wharf RE Partners IV	3/31/2023	\$697,352	Real Estate	NCREIF Property Index	Real Estate	1.0% of unfunded capital commitments and 1.5% of funded capital commitments during investment period; thereafter 1.5% of contributed capital less capital attributed to investments that have been sold	\$24,460	0.12%	1.00% - 1.50%
Long Wharf RE Partners V	6/30/2023	\$11,834,668	Real Estate	NCREIF Property Index	Real Estate	1.5% of committed capital during investment period; 1.5% of invested capital after investment period	\$159,640	0.80%	1.00% - 1.50%
Long Wharf RE Partners VI	6/30/2023	\$13,810,106	Real Estate	NCREIF Property Index	Real Estate	1.5% of committed capital during investment period; 1.5% of invested capital after investment period	\$300,000	1.50%	1.00% - 1.50%
Long Wharf RE Partners VII	6/30/2023	\$1,622,629	Real Estate	NCREIF Property Index	Real Estate	1.5% of committed capital during investment period; 1.5% of invested capital after investment period	\$300,000	1.50%	1.00% - 1.50%
Mesirow Real Estate Value Fund III	3/31/2023	\$26,995,079	Real Estate	NCREIF Property Index	Real Estate	Commitments < \$25M: 1.5% on invested capital subject to a minimum of 1.1% on committed capital during investment period	\$220,000	1.10%	1.00% - 1.50%
TA Realty Associates Fund XI	3/31/2023	\$9,349,070	Real Estate	NCREIF Property Index	Real Estate	Years 1-3 on committed capital. Year 1: 0.50%, Year 2: 0.85%, Year 3: 1.15%. Thereafter, based on invested equity: Year 4: 1.20%, Year 5: 1.25%, Year 6: 1.20%, Year 7: 1.00%, and 0.60% thereafter.	\$112,189	1.20%	1.00% - 1.50%
Pantheon Global Secondary Fund V	3/31/2023	\$32,259,832	Private Equity	S&P + 3%	Secondaries	1% on committed capital during investment period; 90 % annual reduction of prior year	\$314,680	0.63%	1.00% - 2.00%
SSM Growth Equity Fund II	3/31/2023	\$7,734,369	Private Equity	S&P + 3%	Growth Equity	2.0% on committed capital during investment period	\$200,000	2.00%	1.00% - 2.00%
SSM Growth Equity Fund III	3/31/2023	\$17,909,466	Private Equity	S&P + 3%	Growth Equity	2.0% on committed capital during investment period	\$200,000	2.00%	1.00% - 2.00%
NB Crossroads Fund XXI	3/31/2023	\$55,786,221	Private Equity	S&P + 3%	Fund of Funds	Based on committed capital: Year 1: 20bps, Years 2-4: 40bps, Years 5-8: 40 bps, Years 9-10: 5 bps, Years 11-12: 0 bps	\$200,000	0.40%	1.00% - 2.00%
NB Crossroads Fund XXIV	3/31/2023	\$1,821,464	Private Equity	S&P + 3%	Fund of Funds	Based on committed capital: Average Fee Schedule on Commitments \$50M - \$100M	\$200,000	0.40%	1.00% - 2.00%
Siguler Guff Small Buyout Opportunities V	3/31/2023	\$5,193,095	Private Equity	S&P + 3%	Fund of Funds	Reduced Fee Schedule: 82 bps on first \$10M of commitment; 69.7 bps on remaining \$10M of commitment.	\$151,700	0.76%	1.00% - 2.00%
Brightwood Capital Fund V	3/31/2023	\$4,537,434	Private Debt	Barclays US Aggregate	Direct Lending	1.5% on equity capital	\$68,062	1.50%	1.00% - 2.00%
Churchill Middle Market Senior Loan Fund III	3/31/2023	\$6,626,758	Private Debt	Barclays US Aggregate	Direct Lending	0.50% on invested capital	\$33,134	0.50%	1.00% - 2.00%
Neuberger Berman Private Debt Fund IV	3/31/2023	\$18,125,336	Private Debt	Barclays US Aggregate	Direct Lending	0.50% on invested capital through June 2022	\$90,627	0.50%	1.00% - 2.00%
Aetos	6/30/2023	\$46,775,925	Hedge Fund	90 Day T Bills + 5%	Hedge Fund of Funds	75 bps plus a 5% performance fee	\$437,277	0.70%	1.00% - 2.00%
Grosvenor	6/30/2023	\$48,269,640	Hedge Fund	90 Day T Bills + 5%	Hedge Fund of Funds	115 bps on the first \$25M, 100 bps on next \$25M, 80 bps on next \$50M, 60 bps thereafter	\$520,196	1.08%	1.00% - 2.00%
Preserver	6/30/2023	\$8,025,376	Hedge Fund	90 Day T Bills + 5%	Hedge Fund of Funds	1.00% on all assets	\$80,254	1.00%	1.00% - 2.00%
TOTAL		\$2,424,943,139					\$14,125,360	0.58%	

* Estimated Fee reflects actual Q4 2022 fees multiplied by 4 to estimate annual fee. Figure includes base management fee plus/minus performance fee if achieved.
Total Market Value does not include Cash account.