

# City of Memphis Retirement System OPEB Report

## Analysis of Investment Performance

*Quarter Ending June 30, 2023*

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## TABLE OF CONTENTS

	SECTION
FINANCIAL MARKET CONDITIONS .....	1
TOTAL FUND .....	2
VANGUARD TOTAL STOCK MARKET INDEX FUND .....	3
VANGUARD DEVELOPED MARKETS INDEX FUND .....	4
VANGUARD TOTAL BOND MARKET INDEX FUND .....	5
APPENDIX .....	6

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## **Financial Market Conditions**





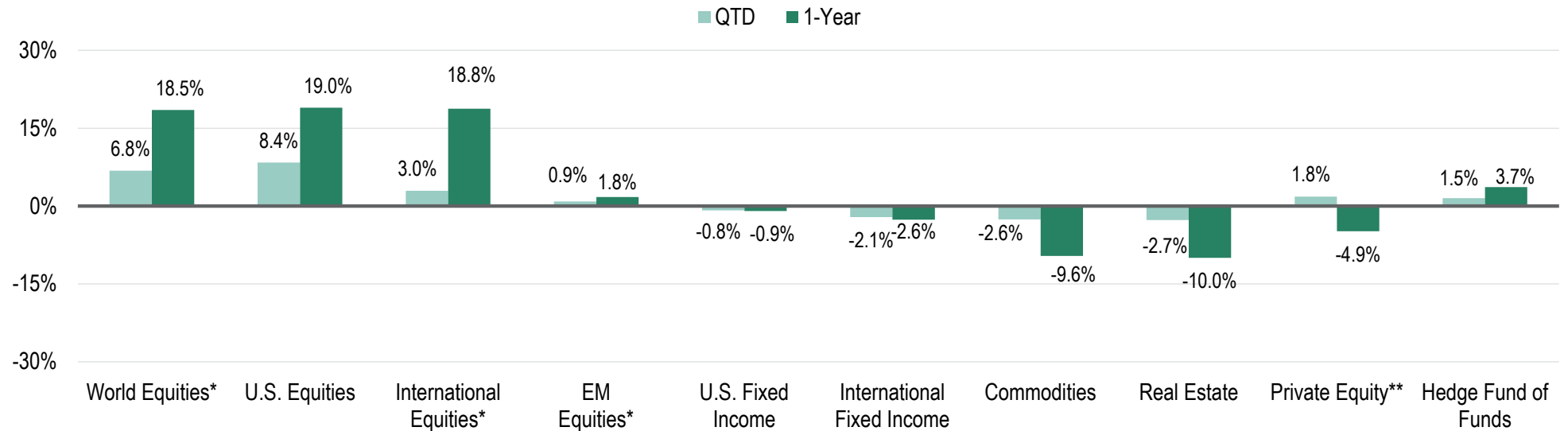
# IN REVIEW: QUARTER ENDING JUNE 30

**A Synopsis of the Financial Market Environment**

August 2023

# Quarter In Review

## Summary of Investment Returns



## Quarterly Synopsis

- World equity markets were solidly positive. Moderating inflation and hopes that global rate hikes would slow fueled stocks' gains.
- U.S. equities rose. Investors were cheered by the fact that inflation was cooling, and thus that interest rate hikes may slow.
- International equities surged, as energy supply concerns faded and hopes grew that inflation had peaked.
- Emerging market equity also rose, with a weaker US dollar and investor optimism about slower rate increases.
- U.S. fixed income was positive. Treasuries were slightly higher even as the Federal Reserve hiked rates twice in the quarter.
- Non-U.S. fixed income also was higher. With signs that inflation may have peaked in the eurozone, investors were hopeful that rate hikes would slow.
- Hedge funds posted a gain. Emerging markets performed best in the quarter.
- Commodities declined, with industrial metals posting the biggest quarterly losses.

\* Net Dividends Reinvested

\*\* Performance as of Q1 2023 because more recent performance data is not yet available.

Sources: Investment Metrics, Cambridge Associates, FactSet

# Index Returns

Asset Class	Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
World Equity	MSCI World <sup>1</sup>	6.83	15.09	18.51	12.18	9.07	9.50
U.S. Equity	Russell 3000	8.39	16.17	18.95	13.89	11.39	12.34
Non-U. S. Equity	MSCI EAFE <sup>1</sup>	2.95	11.67	18.77	8.93	4.39	5.41
Emerging Market Equity	MSCI EM <sup>1</sup>	0.90	4.89	1.75	2.32	0.93	2.95
U.S. Fixed Income	Bloomberg U.S. Aggregate	-0.84	2.09	-0.94	-3.96	0.77	1.52
Non-U.S. Fixed Income	FTSE <sup>2</sup> Non-U.S. WGBI (Unhedged)	-2.12	1.52	-2.63	-7.81	-3.75	-1.40
Commodities	Bloomberg Commodity Index	-2.56	-7.79	-9.61	17.82	4.73	-0.99
Real Estate	NFI-ODCE <sup>3</sup>	-2.68	-5.77	-9.98	7.99	6.50	8.75
Private Equity	Cambridge Associates US Private Equity <sup>4</sup>	1.83	1.83	-4.86	25.25	18.30	16.46
Hedge Funds	HFRI Fund of Funds Composite	1.52	2.27	3.67	5.04	3.32	3.39

<sup>1</sup> Net Dividends Reinvested

<sup>2</sup> Formerly Citigroup Non-U.S. WGBI. Citigroup's fixed income indices were purchased by London Stock Exchange Group (LSEG) and were all 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.

<sup>3</sup> NCREIF Fund Index (NFI) – Open End Diversified Core Equity (ODCE)

<sup>4</sup> Performance as of Q1 2023 because more recent performance data is not yet available.

Sources: Investment Metrics, Cambridge Associates, FactSet

# Index Returns

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 3000	8.39	16.17	18.95	13.89	11.39	12.34
MSCI EAFE*	2.95	11.67	18.77	8.93	4.39	5.41
MSCI World*	6.83	15.09	18.51	12.18	9.07	9.50
MSCI EM*	0.90	4.89	1.75	2.32	0.93	2.95

Fixed-Income Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Blbg U.S. Aggregate	-0.84	2.09	-0.94	-3.96	0.77	1.52
Blbg U.S. Govt/Credit	-0.93	2.21	-0.70	-4.11	1.03	1.66
Blbg U.S. Intermediate Govt/Credit	-0.81	1.50	-0.10	-2.46	1.23	1.41
Blbg U.S. L/T Govt/Credit	-1.29	4.39	-2.56	-8.60	0.66	2.86
Blbg U.S. Government	-1.35	1.59	-2.08	-4.71	0.46	0.97
Blbg U.S. Credit	-0.31	3.13	1.39	-3.38	1.65	2.51
Blbg U.S. Mortgage-Backed Securities	-0.64	1.87	-1.52	-3.73	0.03	1.14
Blbg U.S. Corporate High Yield	1.75	5.38	9.06	3.13	3.36	4.43
FTSE Non-U.S. WGBI (Unhedged)***	-2.12	1.52	-2.63	-7.81	-3.75	-1.40
FTSE 3-Month T-Bill***	1.25	2.39	3.75	1.33	1.57	0.98

Other Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Hueler Stable Value	0.70	1.35	2.40	2.02	2.19	2.01
Bloomberg Commodity	-2.56	-7.79	-9.61	17.82	4.73	-0.99
HFRI Fund of Funds Composite	1.52	2.27	3.67	5.04	3.32	3.39
NCREIF NFI-ODCE	-2.68	-5.77	-9.98	7.99	6.50	8.75
Cambridge Associates Private Equity**	1.83	1.83	-4.86	25.25	18.30	16.46

\* Net Dividends Reinvested

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Sources: eVestment Alliance, Hueler Analytics, Investment Metrics, Cambridge Assoc, FactSet

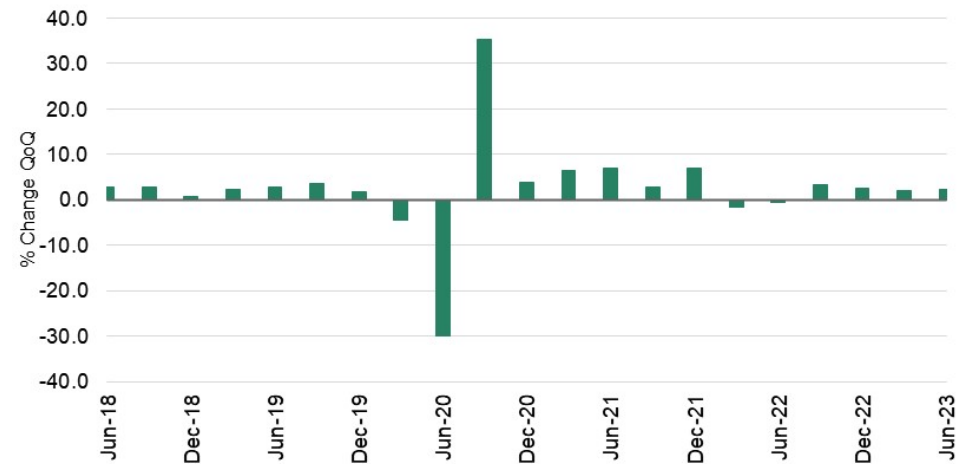


# Quarter In Review: U.S. Economy

## GDP Growth

- U.S. GDP growth rose 2.4% in the quarter ended June 30.
- Quarterly growth was solidly positive as recession fears have abated somewhat. The Federal Reserve took a pause from hiking in June as inflation showed signs of slowing.
- Consumer spending has pulled back from its high but is still relatively robust.
- Gross private domestic investment increased 5.7% while government spending rose 2.6% in the quarter.

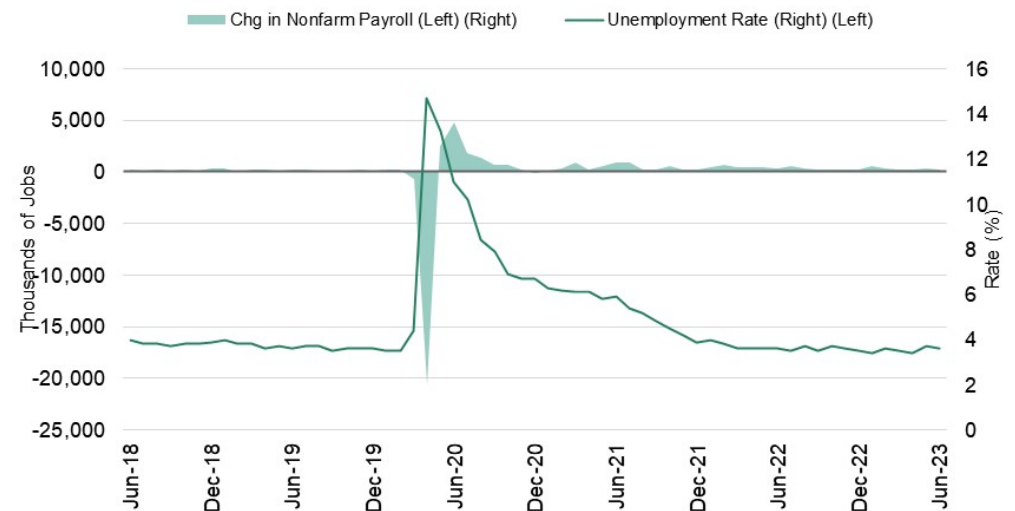
### U.S. Real GDP Growth



## Employment Picture

- The unemployment rate was 3.6% in June. The rate has fluctuated between 3.4% and 3.7% since March 2022.
- Nonfarm payrolls rose by 209,000 in June, showing that the labor market remains strong in spite of several Federal Reserve rate hikes aimed at slowing the economy in order to reduce inflation.
- Jobs in government, health care, social assistance and construction continued to trend higher.

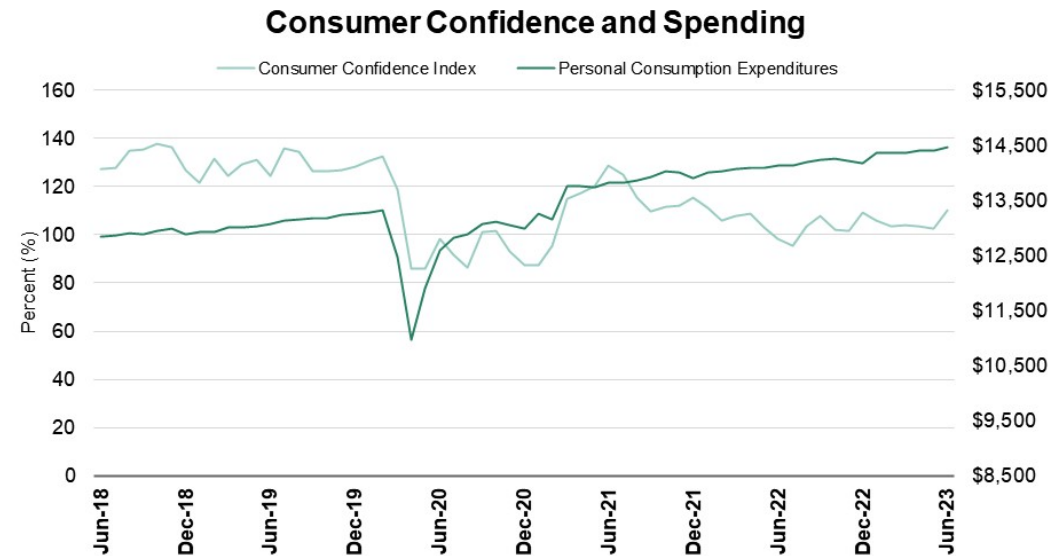
### U.S. Nonfarm Payrolls and Unemployment Rate



# Quarter In Review: U.S. Economy

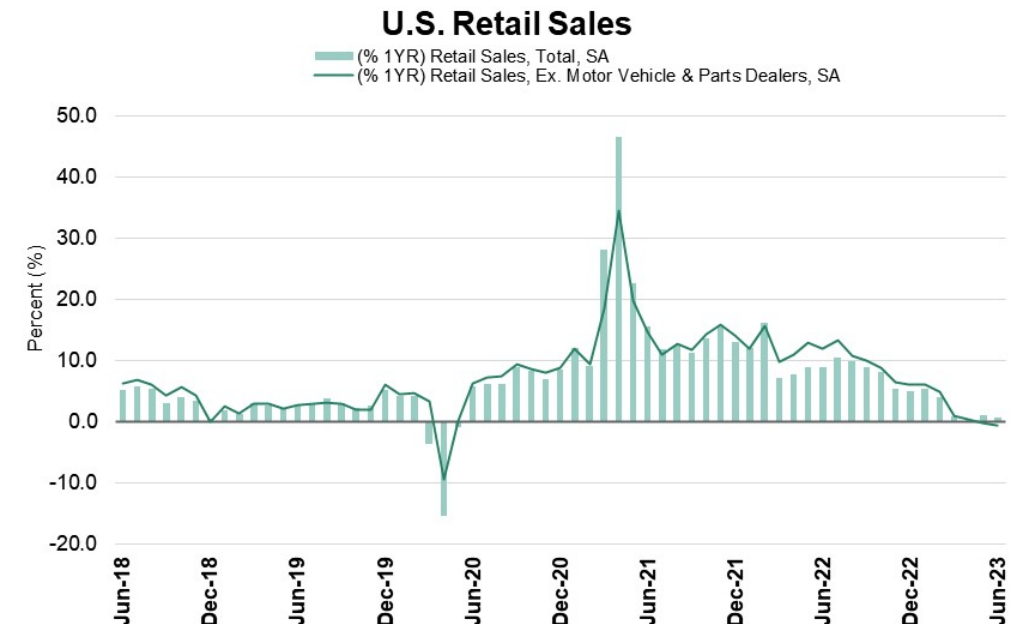
## Consumer Confidence and Spending

- The consumer confidence index rose slightly in the quarter ended June 30. Consumers had a more favorable outlook as inflation moderated and interest rate hikes paused in June.
- Consumer sentiment rose with a stronger economy, cooling inflation and a robust labor market.
- Personal consumption expenditures rose in June.



## Retail Sales

- Retail sales rose in June 2023.
- Increases in sales were seen at miscellaneous store retailers (+2%), nonstore retailers (+1.9%), furniture (+1.4%), and electronic and appliance stores (+1.1%).
- Sales declines were seen at gas stations (-1.4%), building materials and garden equipment (-1.2%) and sporting goods (-1%).

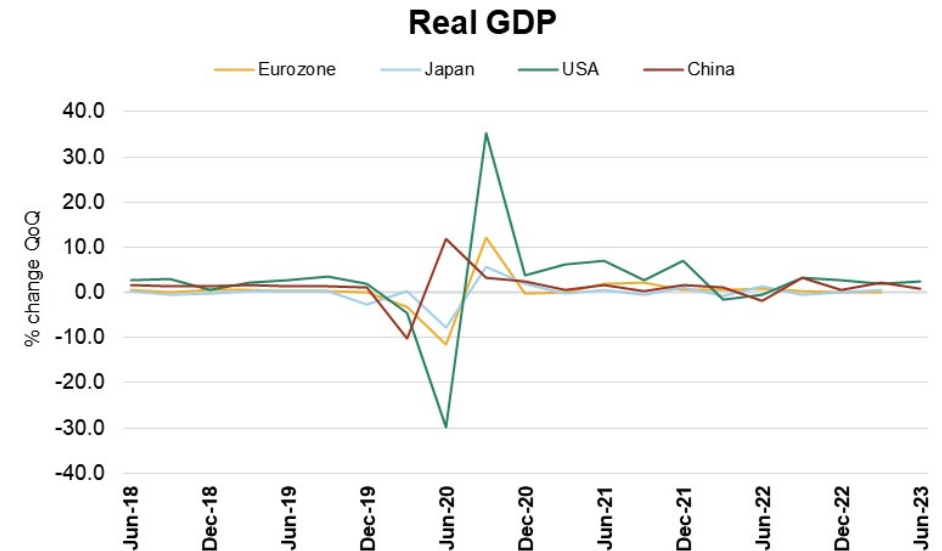


\*The most recent data available.  
Source this page: FactSet

# Quarter In Review: Global Economy

## World GDP Growth

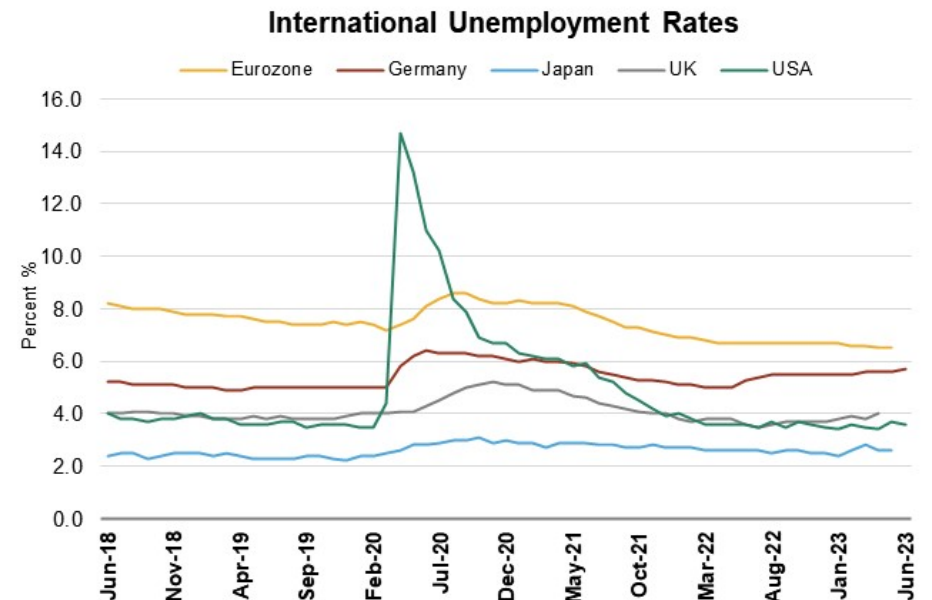
- Eurozone GDP inched up +0.1% quarter over quarter (QoQ) in the quarter ended June 30. It was the weakest GDP expansion rate since the first three months of 2021. High inflation and increasing rates hit economic performance in the quarter.
- China's GDP grew 6.3% in the quarter ended June 30, below the consensus forecast of 7.3%. China's recovery has been more lackluster than expected.
- Japan's GDP rose 0.7% in the quarter ended March 31\*\*. This was the second straight quarter of economic growth, as private consumption rose after strict border controls were lifted.
- U.S. GDP grew +2.4% in the quarter ending June 30.



Note that the figures in the graph above represent the percent change in real GDP from the previous quarter, not the annual growth rate of these economies.

## Global Employment Picture

- Eurozone unemployment was +6.5% in May 2023, unchanged from the previous month.
- The Netherlands (+3.5%) had the lowest unemployment rate in the Eurozone, while Spain (+11.6%) had one of the highest.
- Japan's unemployment rate stayed steady +2.6% in May, same as April's level.



\*\*Most recent data available.

Source this page: FactSet

# 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

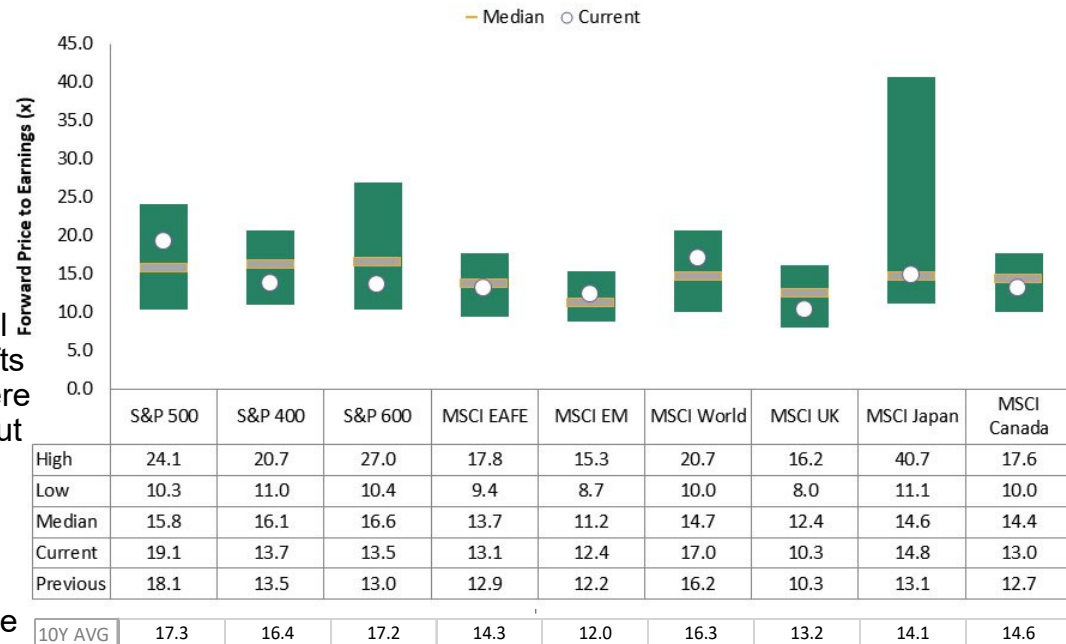
All data in the table are percentages.

\* 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.

## Price to Earnings



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
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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.

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
Comm. Services	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
EAFE	2.95	11.67	18.77	8.93	4.39	5.41
EAFE 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
Comm. Services	-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.

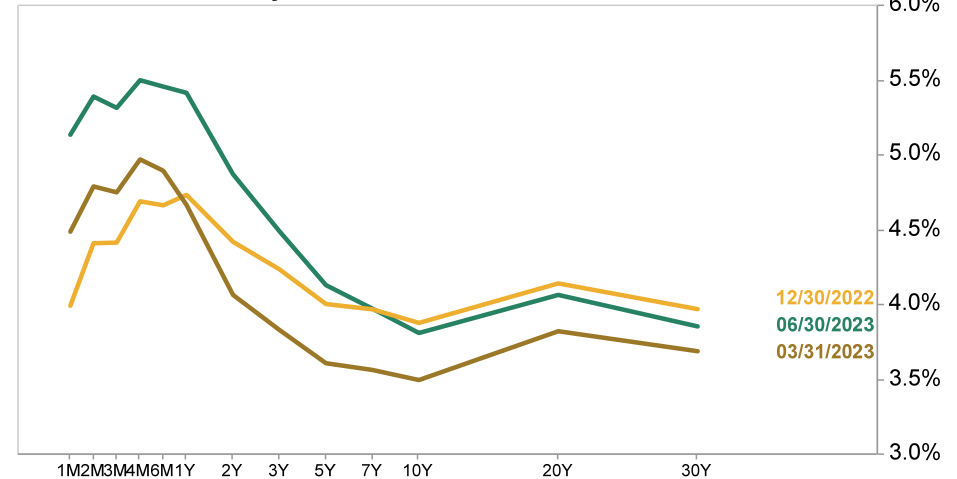
MSCI EM Sector Returns	QTD	1-Year
Cons. Disc.	-6.33	-15.27
Cons. Staples	0.28	4.44
Energy	12.14	13.47
Financials	5.68	6.36
Healthcare	-2.50	-9.55
Industrials	1.81	5.34
IT	5.05	14.10
Materials	-4.17	1.84
Comm. Services	-6.76	-3.59
Utilities	4.16	-6.70
Real Estate	-4.88	-17.67

# 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.

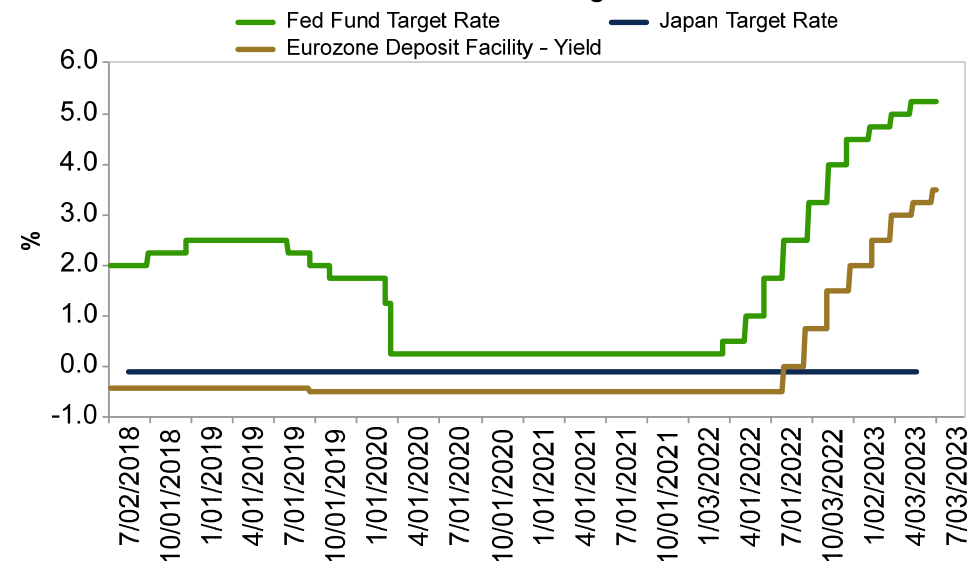
United States Treasury Yield Curve



## 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%.

Central Bank Target Rates



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.

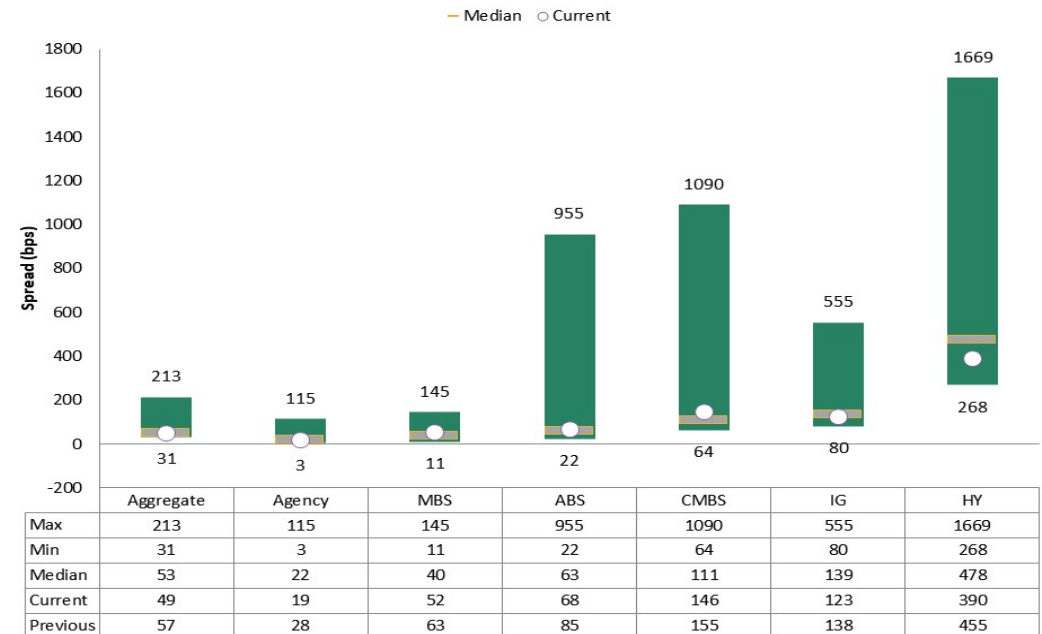
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All data in the table are percentages.

## 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.

Fixed Income Spreads



# 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.

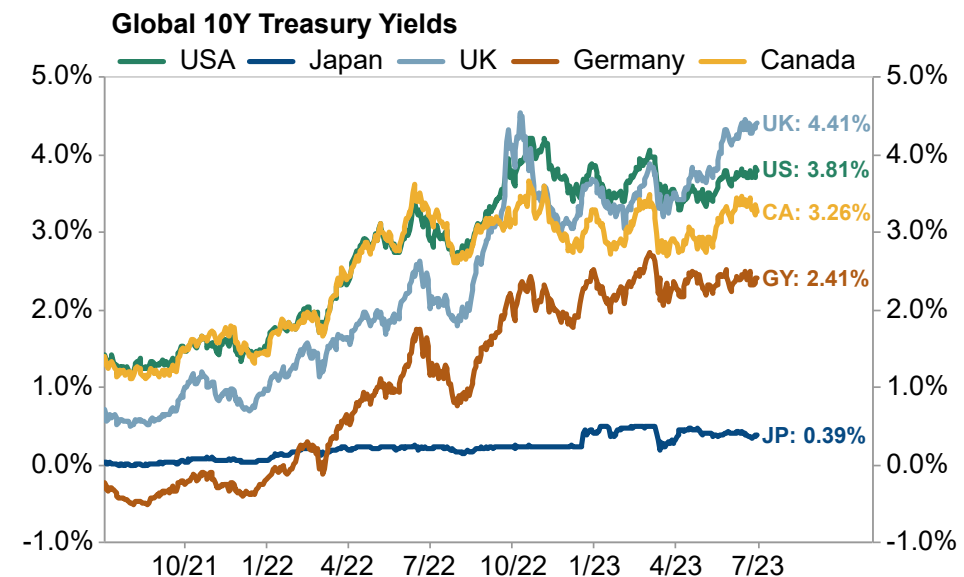
\* Formerly Citigroup. The FTSE Non-U.S. World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment grade sovereign bonds excluding the U.S.

\*\* 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.



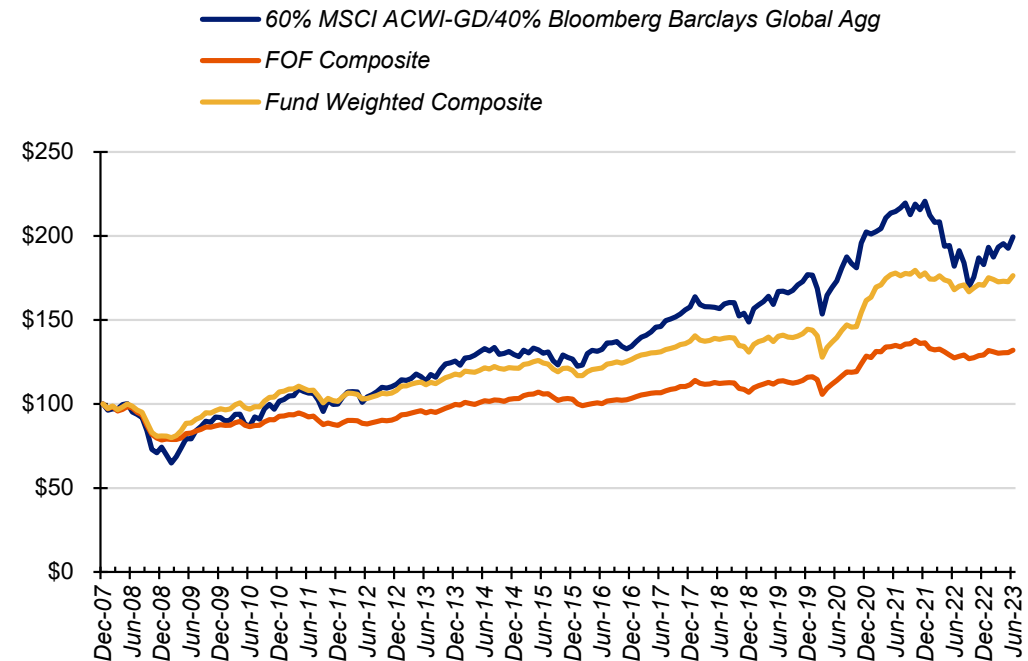
# Quarter In Review: Absolute Return Strategies

HFRI Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Fund of Funds Composite	1.43%	2.18%	3.58%	5.01%	3.30%	3.38%
Fund Weighted Composite	2.15	3.36	4.99	8.12	4.96	4.70
Event Driven	1.28	2.68	5.49	8.56	4.36	4.55
Equity Hedge	2.87	5.45	7.39	8.87	5.42	5.63
Macro	1.90	-0.59	-0.17	7.38	5.04	3.12
Emerging Markets	2.97	4.93	3.78	4.77	2.61	3.44
Relative Value	1.21	2.57	4.08	5.90	3.58	3.99

## Hedge Fund Performance

- The HFRI Fund Weighted Composite Index returned 2.15% during the second quarter. Emerging Markets (2.97%) and Equity Hedge (2.87%) funds experienced the best results, while Event Driven (1.28%) and Relative Value (1.21%) were weaker.
- In Emerging Markets, funds targeting investment in India (15.77%) and Latin America (13.06%) led gains, as funds focused on China (-3.50%) experienced a reversal of experiences in the prior quarter. Within Equity Hedge, Quantitative Directional (3.60%) and Fundamental Growth (3.24%) managers outperformed peers.
- Within Relative Value, funds focused on Sovereign (2.14%) and Asset-Backed (1.86%) investments led peers, while Volatility (0.84%) and Multi-Strategy (0.49%) approaches were muted.
- The Fund of Funds Composite rose 1.43% during the quarter, underperforming the 60% MSCI ACWI-GD / 40% Bloomberg Global Aggregate blended index, which returned 3.17%.

## Growth of \$100 | January 2008 – June 2023



# Quarter In Review: Private Equity

## Performance

- The total return for private equity funds, comprising performance across all strategies, was -4.8% over the 1-year period and 1.8% for the quarter ending March 31.
- The 3-, 5-, 10-, and 20-year returns for US private equity funds were 25.3%, 18.3%, 16.5% and 14.3%, respectively, as of 3/31/2023.
- Public market equity equivalents and fixed income rose across the board despite two Fed rate hikes. Both private equity (3.1%) and venture capital managers had positive performance (-0.8%) in the quarter ending March 31.

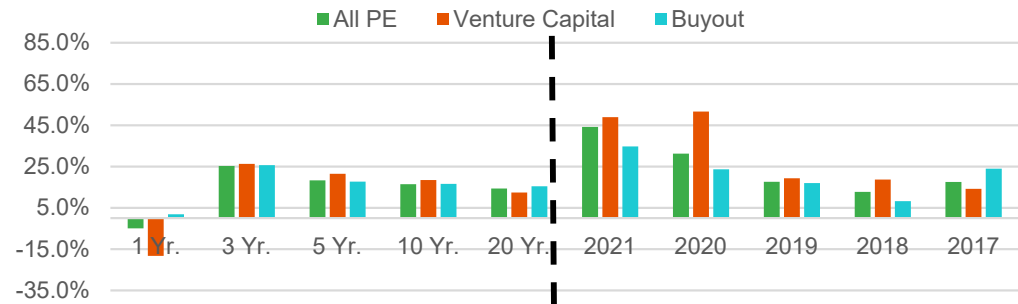
## Fundraising

- Globally, private equity funds raised approximately \$106.7 billion across 166 funds in the quarter ending March 31. It is below the average of \$165.0 billion raised over the past 20 quarters.
- As of June 2023, there are 3,997 private equity funds raising capital targeting an aggregate \$1,319 billion.

## Exit Activity

- Buyout and venture exits continue to recover in the quarter ended March 31, although exits are still lower compared to the same period last year. Uncertainty around interest rates continue to weigh on deal financing and activity, which is expected to normalize as we approach the top of the cycle of rate hikes in the coming months.

## Private Equity Performance by Investment Horizon and Vintage Year

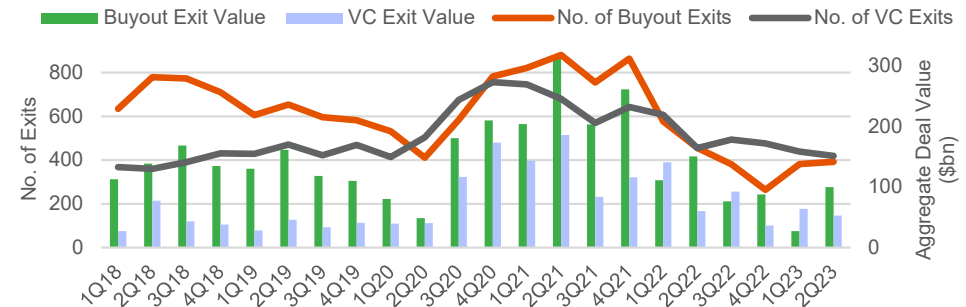


Performance is pooled IRR of the peer group as reported by ThomsonOne/Cambridge Associates. All PE includes VC, Growth Equity, Buyout, Subordinated Capital, Credit opportunities, and Control-Oriented Distressed funds. Source: Thomson Reuters

## Global Quarterly Private Equity Fundraising, Q1 2016 – Q1 2023



## Global Private Equity Exits



Sources: Thomson Reuters and Preqin. All data is as of the latest available. Performance data was final as of 3/31/23 and buyout and venture fundraising and exit data as of Q2 2023.

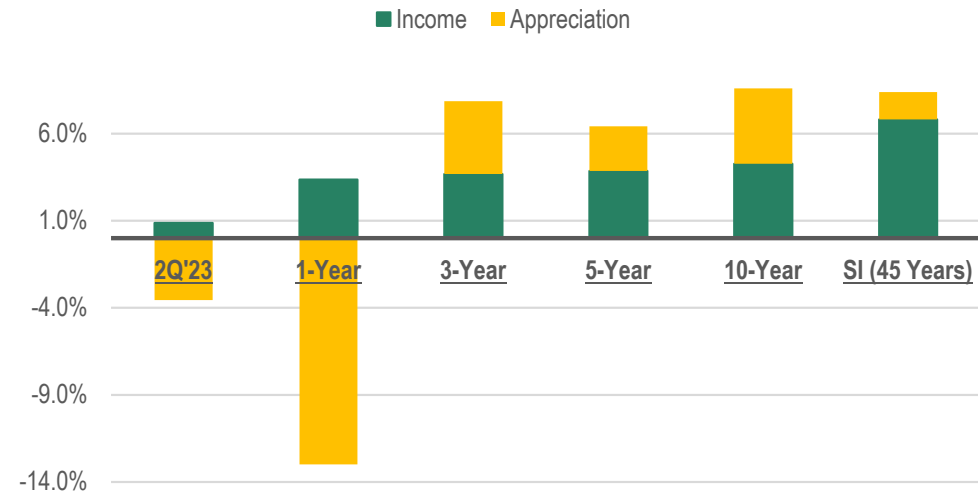
Source: Pitchbook

# Quarter In Review: Real Estate

## Real Estate Performance\*

- NFI-ODCE returned -2.68% (gross) for the quarter ended June 30, while the NCREIF-NPI returned -1.98% and the NAREIT Equity REIT Index returned +1.20%.
- Income return for the NFI-ODCE was +0.87% for the quarter. Appreciation of assets generated a -3.55% return for the quarter<sup>1</sup>.
- In the U.S., for the quarter retail sector appreciation was -1.44%, apartment sector appreciation was -2.02%, office sector appreciation was -7.00% and industrial sector appreciation was -1.60%. For the same time period, retail sector income was +1.27%, apartment sector income was +0.98%, office sector income was +1.21% and industrial sector income was +0.85%.
- In the U.S., the return for the second quarter of 2023 by region was: East (-2.70%), Midwest (-1.29%), South (-0.80%) and West (-2.23%).

NCREIF Fund Index (NFI) Open-End Diversified Core (ODCE) Real Estate Performance<sup>1</sup>

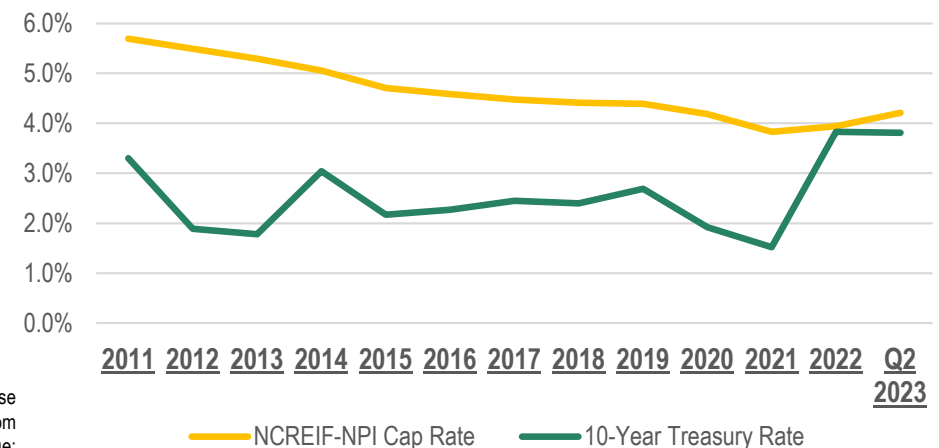


The NFI-ODCE (Open-end Diversified Core Equity) is defined by NCREIF as a fund-level cap-weighted, gross of fee, time-weighted return index with an inception date of December 31, 1977. 1. The sum of income and appreciation returns may not equal total return due to rounding and/or the compounding of individual component returns to each other.

## Real Estate Capitalization Rates\* vs. Treasuries

- Nationally, cap rates expanded 13 basis points in the quarter to 4.21%.
- The 10-year Treasury averaged 3.60% in the quarter and ended the quarter at 3.81%. As a result, the spread between the 10-year Treasury rate and national cap-rates at the end of the quarter was 40 bps. This was a decrease over the previous quarter where the NPI cap rate (4.08%) exceeded the 0-year treasury rate (3.65%).

Capitalization Rates & 10-Year U.S. Treasury Rates



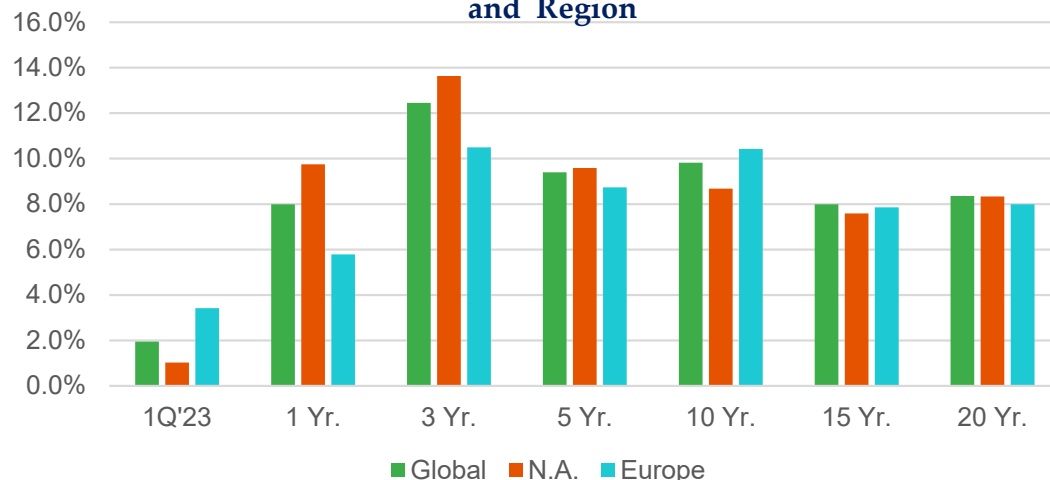
\*A cap rate is the potential rate of return on a real estate investment. Assuming no change in net operating income, real estate valuations rise when cap rates fall. Comparing cap rates to the 10-year U.S. Treasury provides investors with an estimated spread for expected returns from real estate (higher risk) vs. fixed rate bond (lower risk) investments. NFI-ODCE returns are preliminary performance. Sources this page: NCREIF, NPI, FRED Economic Data (Federal Reserve Bank of St Louis) 1. The sum of income and appreciation returns may not equal total return due to rounding and/or the compounding of individual component returns to each other.

# Quarter In Review: Infrastructure

## Performance\*

- The total return for North American private infrastructure funds was 1.03% in the quarter and 9.75% over the 1-year period ending March 2023.
- On a relative basis, Europe infrastructure led in performance throughout the quarter ending March 31, 2023, at 3.42% whereas Global and North American funds posted 1.95% and 1.03%, respectively.
- The 3-, 5-, 10-, 15-, and 20-year return for North American private infrastructure funds was 13.63%, 9.59%, 8.68%, 7.59%, 8.34%, respectively, as of March 31, 2023.
- Public infrastructure registered a 0.55% return in the quarter ending March 31 as per the FTSE Global Core Infrastructure 50/50 Index (Net). Trailing 1-, 3-, 5-year returns are -7.77%, 10.27% and 5.81%.

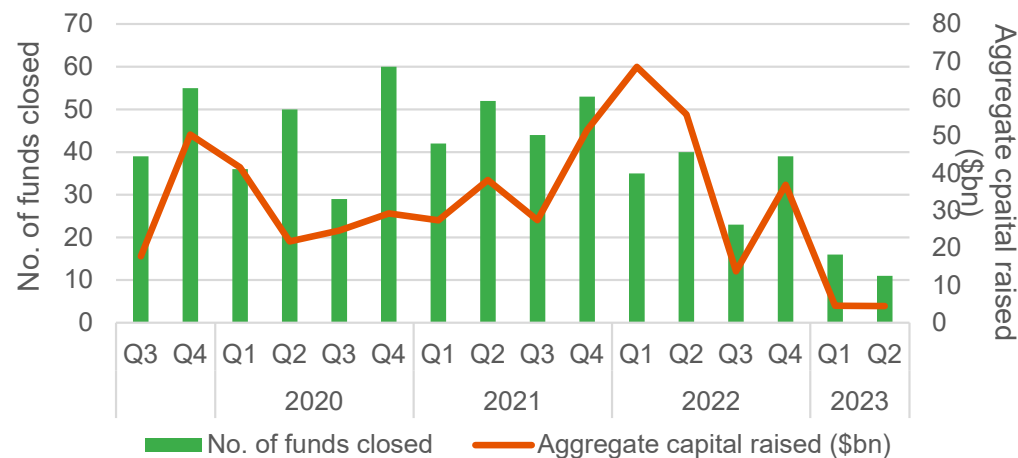
Burgiss Infrastructure Performance by Investment Horizon and Region



## Fundraising

- Aggregate capital commitments for infrastructure funds increased in the quarter ended June 30 versus the previous quarter, raising \$32.3 billion in capital commitment across 11 funds in line with the \$33.7 billion average since 2016.
- The fundraising pace moderated from peak of \$61.3 billion in the quarter ending December 31, 2022, which was the busiest on record, as investors exhausted their allocation budgets.
- Core and core plus strategies represent most of the infrastructure funds in markets making up 260 of the 524 total fund in market (50%) or \$324 billion of the \$509 billion of capital targeted from funds in markets (64%).

Historical Infrastructure Fundraising



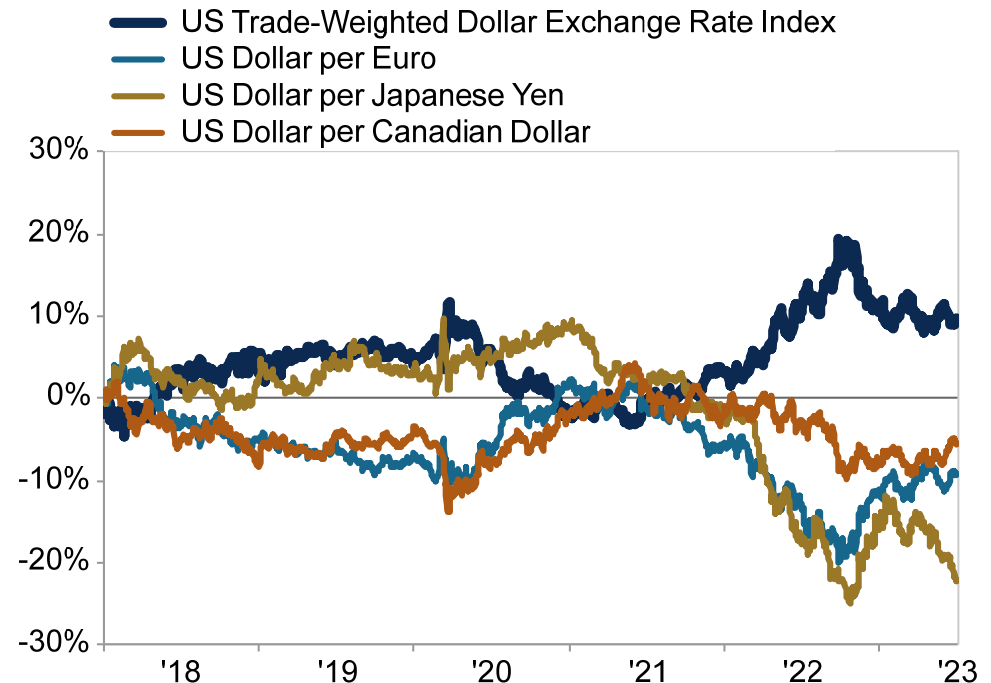
\*Most recent data available from Burgiss Privatel. Subject to one quarter lag.  
Fundraising Information Source: Preqin

# Quarter In Review: Commodities and Currencies

BCOM Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Bloomberg Commodity Index (BCOM)	-2.56	-7.79	-9.61	17.82	4.73	-0.99
Energy	-1.56	-19.95	-31.12	20.94	-3.83	-8.52
Agriculture	-1.01	-0.99	1.20	25.32	10.21	-0.13
Industrial Metals	-10.49	-12.37	-5.37	12.29	3.36	2.13
Precious Metals	-3.12	2.97	7.83	2.24	7.39	2.96
Livestock	9.68	4.98	16.77	12.63	-1.79	-2.27

## Commodity and Currency Highlights

- The Bloomberg Commodity Index fell in the quarter ended June 30. Industrial metals (-10.5%) slid with nickel and zinc posting significant decreases.
- Energy declined in the quarter. Crude oil, Brent crude, gas oil and heating oil were all lower. However, natural gas made a small gain.
- The only subsector making a gain was livestock, which was up nearly +10% as the return for live cattle surged +12.2% in the quarter.
- The U.S. dollar depreciated relative to the yen, British pound and euro.



# Disclaimer

*The information and some of the opinions herein provided by third parties have been obtained from sources believed to be reliable, but accuracy and completeness cannot be guaranteed. These insights and the data and analysis herein are intended for general education only and not as investment advice. They are not intended for use as a basis for investment decisions, nor should they 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. Of course, on all matters involving legal interpretations and regulatory issues, investors should consult legal counsel.*



## Total Fund Composite



# City of Memphis OPEB Trust

## Asset Allocation Comparison

Portfolio Value 6/30/23

\$4,149,423

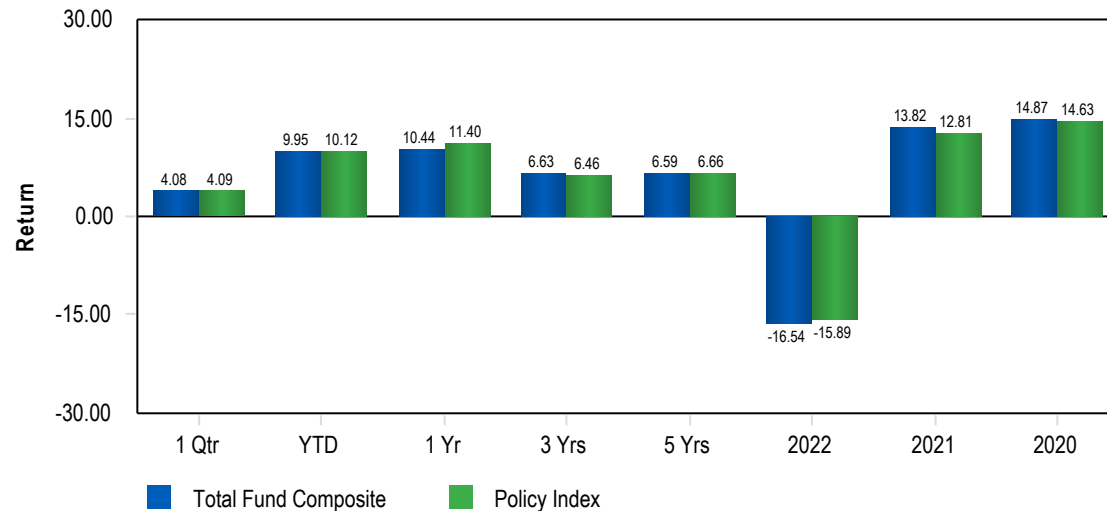
<u>Target Allocations</u>			<u>Current Managers &amp; Allocations</u>			<u>Difference</u>	<u>Range</u>
<b>Equity</b>		(000)			(000)		
Domestic Equity	47.50%	\$1,971	Vanguard Total Stock Market Index	49.55%	\$2,056		40.0%-55.0%
International Equity	15.00%	\$622	Vanguard Developed Market Index	13.42%	\$557		10.0%-20.0%
<b>Equity Total</b>	<b>62.50%</b>	<b>\$2,593</b>	<b>Equity Total</b>	<b>62.97%</b>	<b>\$2,613</b>	<b>0.47%</b>	<b>50.0%-65.0%<sup>1</sup></b>
<b>Fixed Income</b>							
Fixed Income	37.50%	\$1,556	Vanguard Total Bond Market Index	37.03%	\$1,536		
<b>Fixed Income Total</b>	<b>37.50%</b>	<b>\$1,556</b>	<b>Fixed Income Total</b>	<b>37.03%</b>	<b>\$1,536</b>	<b>-0.47%</b>	<b>30.0%-45.0%</b>
Internal Account	0.00%	\$0	Fidelity Money Market Fund	0.00%	\$0		
<b>Cash</b>	<b>0.00%</b>	<b>\$0</b>	<b>Cash</b>	<b>0.00%</b>	<b>\$0</b>		<b>0%-2%</b>
<b>Total</b>	<b>100%</b>	<b>\$4,149</b>	<b>Total</b>	<b>100%</b>	<b>\$4,149</b>		

<sup>1</sup> Total Equity may not exceed 65%.

Asset Allocation by Segment

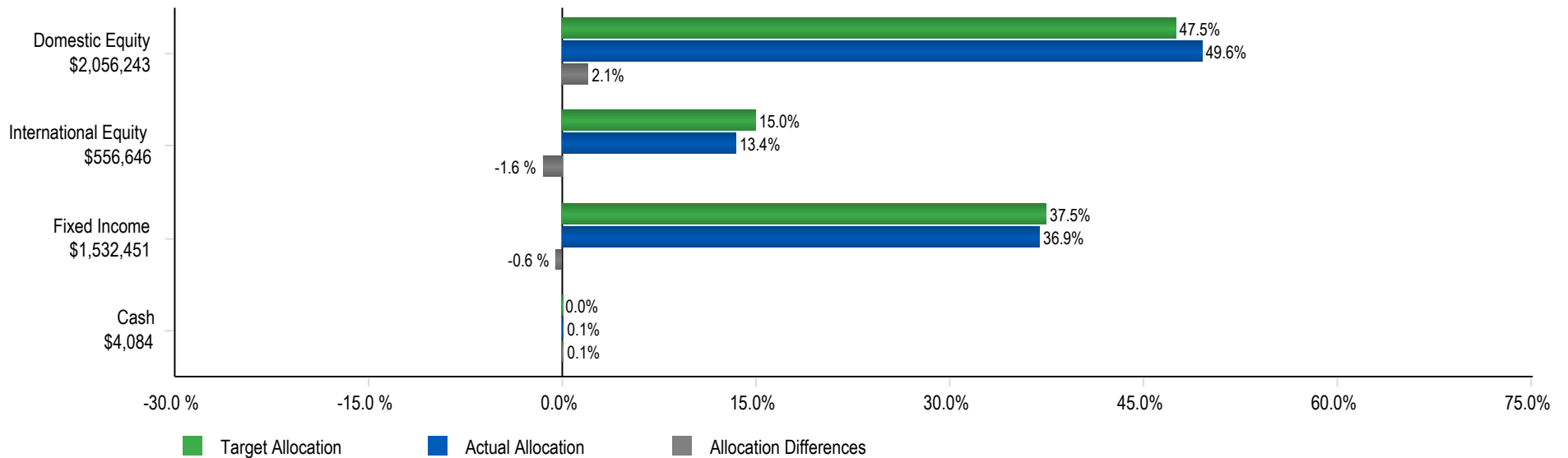
Segments	Market Value (\$)	Allocation (%)
Domestic Equity	2,056,243	49.6
Domestic Fixed Income	1,532,451	36.9
International Equity	556,646	13.4
Cash	4,084	0.1

Performance Bar Chart



Gain / Loss

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Total Fund Composite					
Beginning Market Value	3,986,927	3,774,005	3,757,252	3,420,076	3,012,771
Net Cash Flows					
Income	21,432	34,340	62,994	211,198	419,345
Gain/Loss	141,064	341,078	329,178	518,149	717,308
Ending Market Value	4,149,423	4,149,423	4,149,423	4,149,423	4,149,423



	Asset Allocation (\$)	Asset Allocation (%)	Target Allocation (%)	Differences (%)	Minimum Allocation (%)	Maximum Allocation (%)
Domestic Equity	2,056,243	49.6	47.5	2.1	40.0	55.0
International Equity	556,646	13.4	15.0	-1.6	10.0	20.0
Fixed Income	1,532,451	36.9	37.5	-0.6	30.0	45.0
Cash	4,084	0.1	0.0	0.1	0.0	2.0
<b>Total Fund</b>	<b>4,149,423</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>		

	(\$)	Total Fund	%
Total Fund Composite	4,149,423		100.0
Vanguard Total Stock Market	2,056,243		49.6
Vanguard Developed Markets Index	556,646		13.4
Vanguard Total Bond Market	1,536,383		37.0
Fidelity Money Market Fund	152		0.0

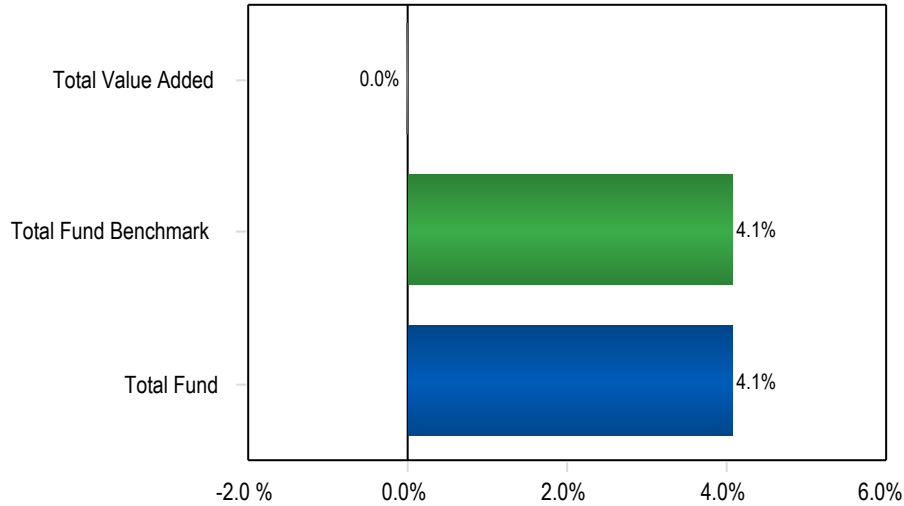
	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Total Fund Composite	4.1	9.9	10.4	6.6	6.6	7.4	7.3	7.4	07/01/2008
<i>Policy Index</i>	4.1	10.1	11.4	6.5	6.7	7.5	7.4	7.2	
All Public Plans-Total Fund Median	3.1	7.5	8.8	7.7	6.6	7.6	7.3	6.7	
Total Fund Composite Rank	13	7	18	73	50	57	50	15	
Vanguard Total Stock Market	8.4	16.2	18.9	13.7	11.3	12.8	12.3	10.6	07/01/2008
<i>Russell 3000 Index</i>	8.4	16.2	19.0	13.9	11.4	12.9	12.3	10.6	
IM U.S. Multi-Cap Equity (MF) Median	6.1	12.2	16.1	12.9	9.0	10.8	10.2	8.9	
Vanguard Total Stock Market Rank	27	30	35	41	19	23	18	17	
Vanguard Developed Markets Index	3.1	11.1	16.5	9.0	4.4	6.9	5.6	6.8	01/01/2012
<i>Developed Market Policy Index</i>	3.1	11.1	16.9	9.3	4.6	7.2	5.9	7.1	
IM International Equity (MF) Median	2.4	9.7	13.3	6.3	3.1	5.9	4.8	5.9	
Vanguard Developed Markets Index Rank	32	38	32	26	28	28	26	28	
Vanguard Total Bond Market	-0.9	2.2	-0.9	-4.0	0.8	0.4	1.5	2.7	07/01/2008
<i>Blmbg. U.S. Aggregate</i>	-0.8	2.1	-0.9	-4.0	0.8	0.4	1.5	2.7	
IM U.S. Broad Market Core Fixed Income (MF) Median	-0.8	2.3	-0.9	-3.7	0.7	0.5	1.5	2.8	
Vanguard Total Bond Market Rank	63	56	52	70	46	60	52	60	
Fidelity Money Market Fund	1.2	2.2	3.5	1.2	1.3	1.1		0.9	10/01/2014
<i>90 Day U.S. Treasury Bill</i>	1.2	2.3	3.6	1.3	1.6	1.4	1.0	1.1	
IM U.S. Taxable Money Market (MF) Median	1.2	2.2	3.5	1.2	1.3	1.1	0.8	0.9	
Fidelity Money Market Fund Rank	44	48	51	52	51	47		48	

	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Fund Composite	-16.5	13.8	14.9	21.0	-4.7	15.0	7.4	0.3	7.1	17.8
<i>Policy Index</i>	-15.9	12.8	14.6	21.2	-4.4	14.8	7.3	0.6	7.4	17.6
Vanguard Total Stock Market	-19.5	25.7	21.0	30.8	-5.2	21.2	12.7	0.4	12.5	33.5
<i>Russell 3000 Index</i>	-19.2	25.7	20.9	31.0	-5.2	21.1	12.7	0.5	12.6	33.6
Vanguard Developed Markets Index	-15.3	11.4	10.3	21.9	-14.6	26.3	2.4	-0.3	-5.7	21.8
<i>Developed Market Policy Index</i>	-15.3	11.9	10.3	22.7	-14.5	26.7	2.7	0.0	-4.6	23.0
Vanguard Total Bond Market	-13.2	-1.7	7.7	8.7	0.0	3.6	2.6	0.4	6.0	-2.1
<i>Blmbg. U.S. Aggregate</i>	-13.0	-1.5	7.5	8.7	0.0	3.5	2.6	0.5	6.0	-2.0
Fidelity Money Market Fund	1.4	0.0	0.3	1.9	1.6	0.6	0.1	0.0	0.0	
<i>90 Day U.S. Treasury Bill</i>	1.5	0.0	0.7	2.3	1.9	0.9	0.3	0.0	0.0	0.0

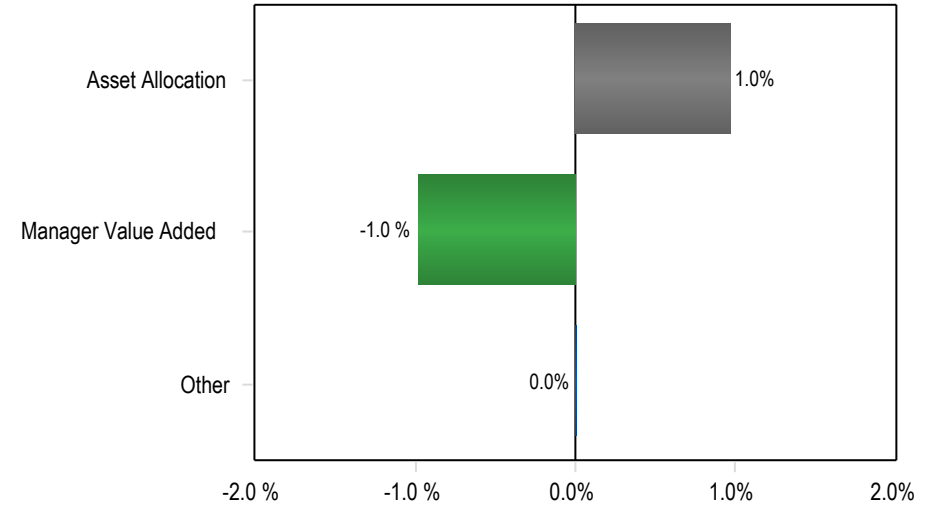


	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Vanguard Total Stock Market	-19.5	25.7	21.0	30.8	-5.2	21.2	12.7	0.4	12.5	33.5
<i>Russell 3000 Index</i>	-19.2	25.7	20.9	31.0	-5.2	21.1	12.7	0.5	12.6	33.6
IM U.S. Multi-Cap Equity (MF) Median	-17.4	24.7	14.7	28.2	-7.1	20.5	10.0	-1.4	10.5	33.8
Vanguard Total Stock Market Rank	60	41	34	30	33	44	33	37	25	53
Vanguard Developed Markets Index	-15.3	11.4	10.3	21.9	-14.6	26.3	2.4	-0.3	-5.7	21.8
<i>Developed Market Policy Index</i>	-15.3	11.9	10.3	22.7	-14.5	26.7	2.7	0.0	-4.6	23.0
IM International Equity (MF) Median	-19.0	8.5	13.7	22.1	-16.0	28.6	1.8	-2.3	-4.5	17.7
Vanguard Developed Markets Index Rank	31	32	60	51	36	64	47	36	64	31
Vanguard Total Bond Market	-13.2	-1.7	7.7	8.7	0.0	3.6	2.6	0.4	6.0	-2.1
<i>Blmbg. U.S. Aggregate</i>	-13.0	-1.5	7.5	8.7	0.0	3.5	2.6	0.5	6.0	-2.0
IM U.S. Broad Market Core Fixed Income (MF) Median	-13.7	-1.3	8.2	8.8	-0.6	3.6	2.9	0.0	5.5	-2.0
Vanguard Total Bond Market Rank	28	65	65	53	20	52	64	32	28	60
Fidelity Money Market Fund	1.4	0.0	0.3	1.9	1.6	0.6	0.1	0.0	0.0	
<i>90 Day U.S. Treasury Bill</i>	1.5	0.0	0.7	2.3	1.9	0.9	0.3	0.0	0.0	0.0
IM U.S. Taxable Money Market (MF) Median	1.4	0.0	0.3	1.9	1.5	0.5	0.1	0.0	0.0	0.0
Fidelity Money Market Fund Rank	57	57	56	46	47	45	43	54	48	

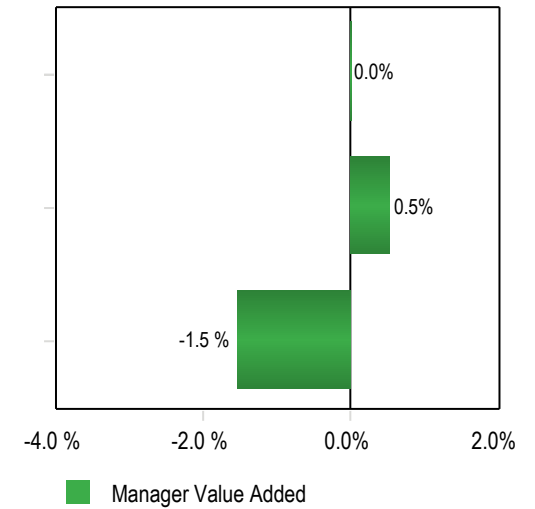
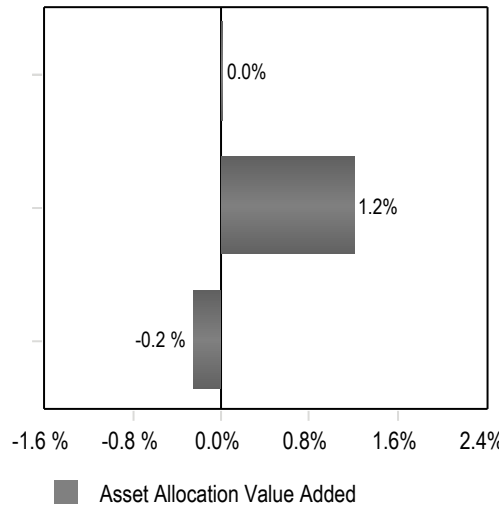
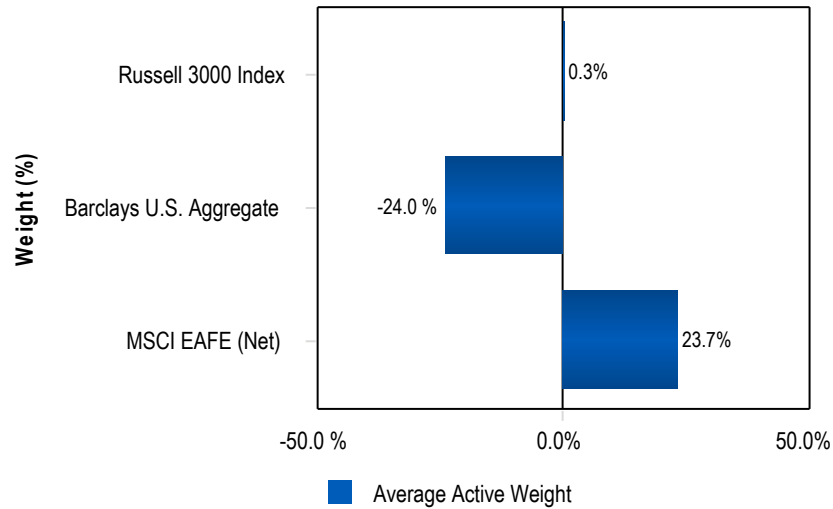
**Total Fund Performance**

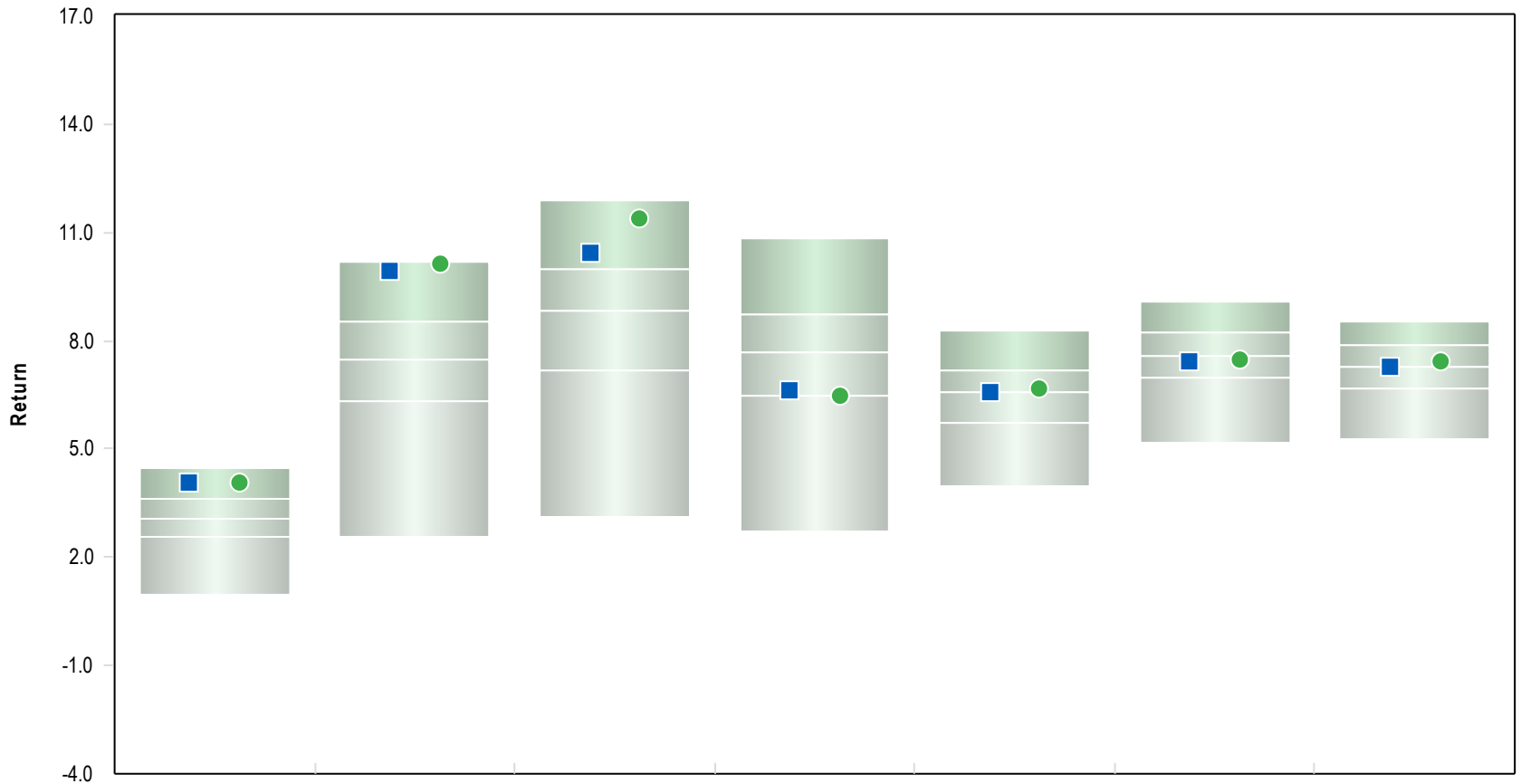


**Total Value Added:0.0%**



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

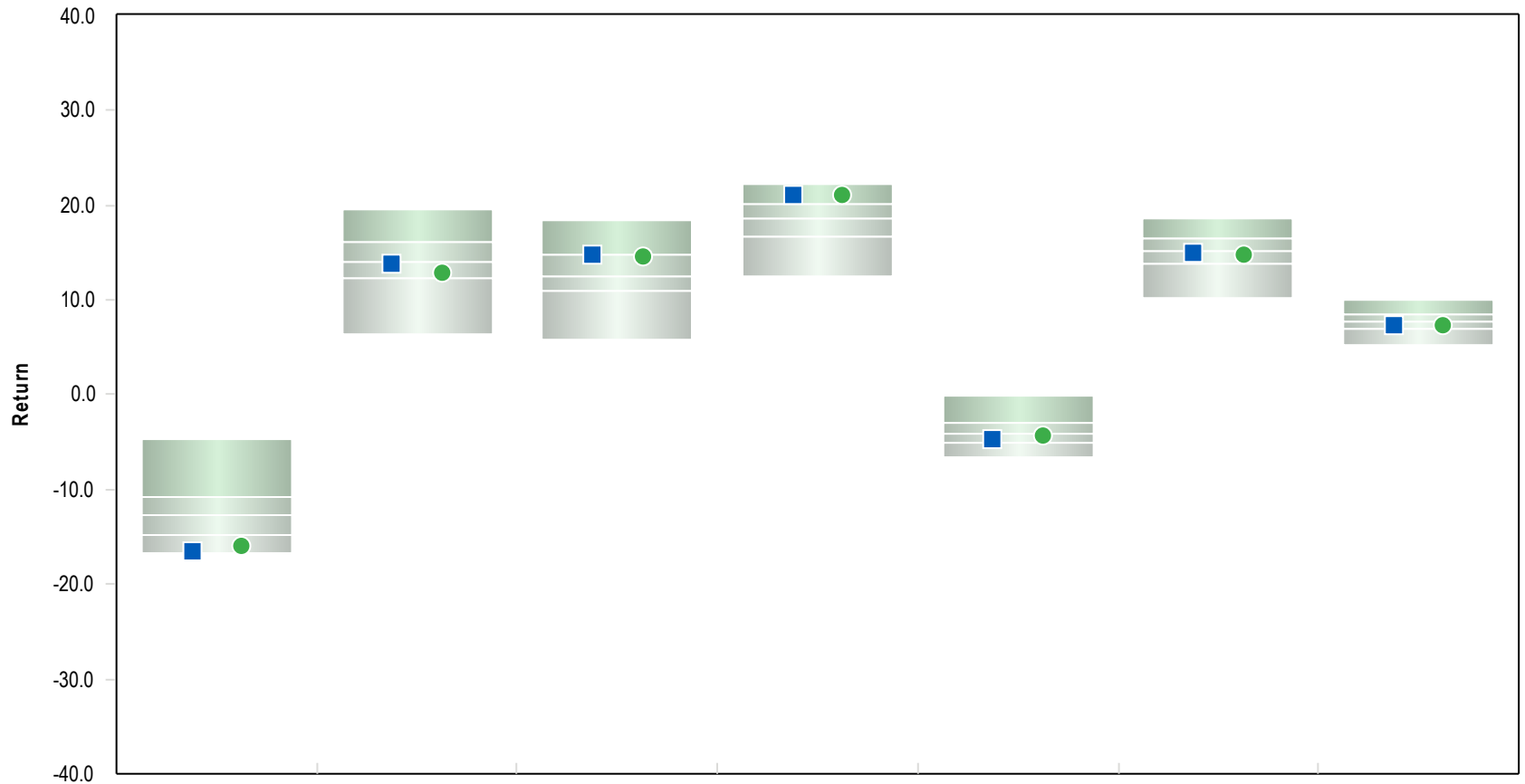




	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Total Fund Composite	4.1 (13)	9.9 (7)	10.4 (18)	6.6 (73)	6.6 (50)	7.4 (57)	7.3 (50)
● Policy Index	4.1 (12)	10.1 (6)	11.4 (9)	6.5 (76)	6.7 (47)	7.5 (54)	7.4 (44)

5th Percentile	4.5	10.2	11.9	10.9	8.3	9.1	8.5
1st Quartile	3.6	8.5	10.0	8.7	7.2	8.2	7.9
Median	3.1	7.5	8.8	7.7	6.6	7.6	7.3
3rd Quartile	2.6	6.3	7.2	6.5	5.7	7.0	6.7
95th Percentile	1.0	2.6	3.1	2.7	4.0	5.2	5.3

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

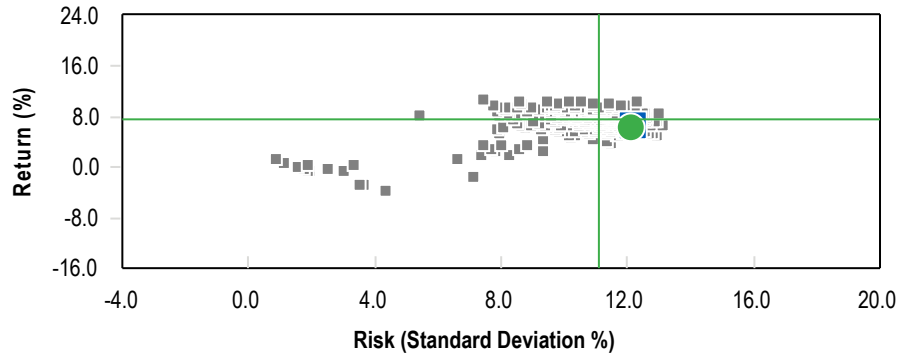


	2022	2021	2020	2019	2018	2017	2016
■ Total Fund Composite	-16.5 (94)	13.8 (54)	14.9 (24)	21.0 (16)	-4.7 (65)	15.0 (53)	7.4 (60)
● Policy Index	-15.9 (90)	12.8 (68)	14.6 (26)	21.2 (14)	-4.4 (57)	14.8 (57)	7.3 (65)

5th Percentile	-4.6	19.6	18.4	22.2	-0.1	18.6	10.0
1st Quartile	-10.7	16.1	14.7	20.2	-2.9	16.5	8.5
Median	-12.8	14.0	12.5	18.6	-4.0	15.2	7.7
3rd Quartile	-14.7	12.3	10.9	16.7	-5.1	13.9	6.9
95th Percentile	-16.8	6.5	5.8	12.5	-6.7	10.1	5.3

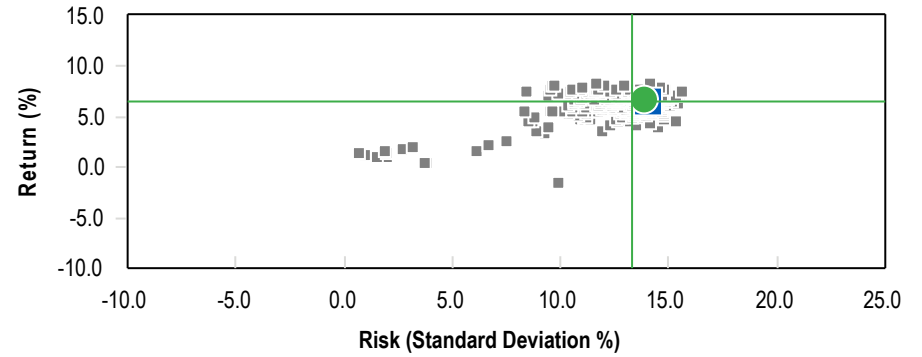
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

Risk & Return Plan Sponsor — 3 Years



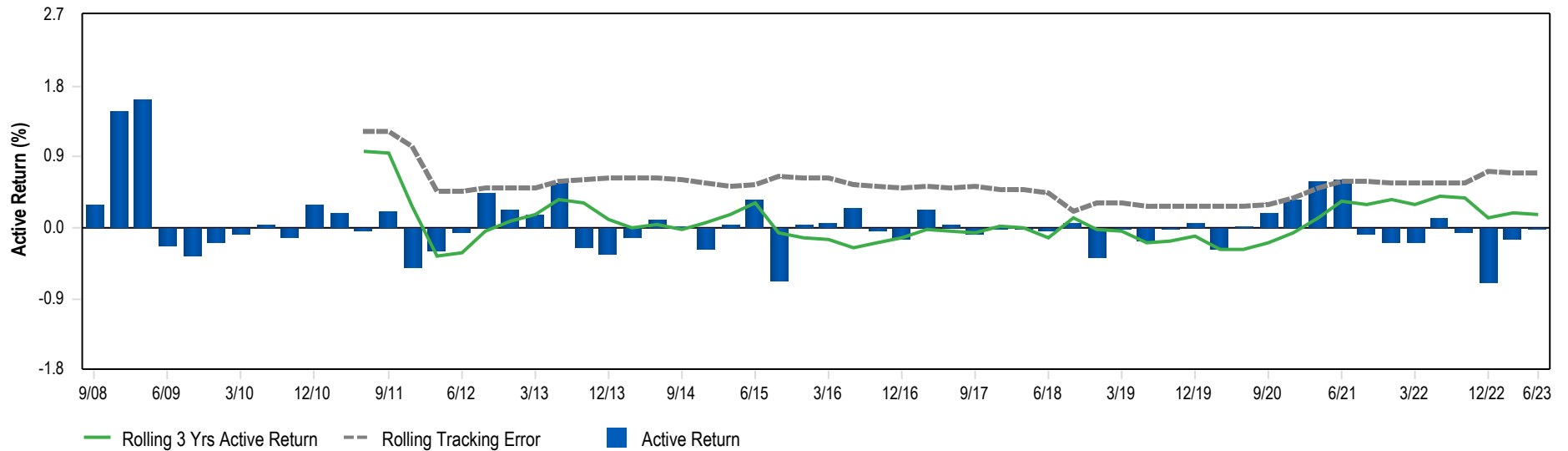
	Return	Standard Deviation
Total Fund Composite	6.6	12.1
Policy Index	6.5	12.1
Median	7.7	11.1

Risk & Return Plan Sponsor — 5 Years



	Return	Standard Deviation
Total Fund Composite	6.6	14.0
Policy Index	6.7	13.9
Median	6.6	13.3

Rolling Return and Tracking Error



Policy Index	Weight (%)
Jun-2003	
Russell 3000 Index	62.5
Blmbg. U.S. Aggregate	37.5
Jan-2012	
Russell 3000 Index	47.5
Blmbg. U.S. Aggregate	37.5
MSCI EAFE (Net)	15.0

Policy Index	Weight (%)
Jan-2012 MSCI EAFE Index	100.0
Jun-2013 FTSE Developed x North America Index	100.0
Jan-2016 FTSE Developed All-Cap ex US Transition Index	100.0
Jun-2016 FTSE Developed All Cap ex-U.S. Index	100.0

Periods Ending	Beginning Market Value (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending Market Value (\$)	%Return
From 06/2008	2,910,974		-474,478	2,436,496	-16.3
2009	2,436,496	6,000,000	1,023,156	9,459,652	21.3
2010	9,459,652	1,000,000	1,445,483	11,905,135	13.6
2011	11,905,135		455,833	12,360,968	3.8
2012	12,360,968	-929,020	2,479,823	13,911,771	12.4
2013	13,911,771	1,188,894	1,634,497	16,735,162	17.8
2014	16,735,162	-9,032,562	1,030,125	8,732,726	7.1
2015	8,732,726	-6,540,086	233,076	2,425,715	0.3
2016	2,425,715		179,552	2,605,267	7.4
2017	2,605,267	1	391,729	2,996,996	15.0
2018	2,996,996		-141,433	2,855,563	-4.7
2019	2,855,563		600,131	3,455,694	21.0
2020	3,455,694		513,928	3,969,622	14.9
2021	3,969,622		552,241	4,521,862	13.8
2022	4,521,862		-747,857	3,774,005	-16.5
To 06/2023	3,774,005		375,418	4,149,423	9.9

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

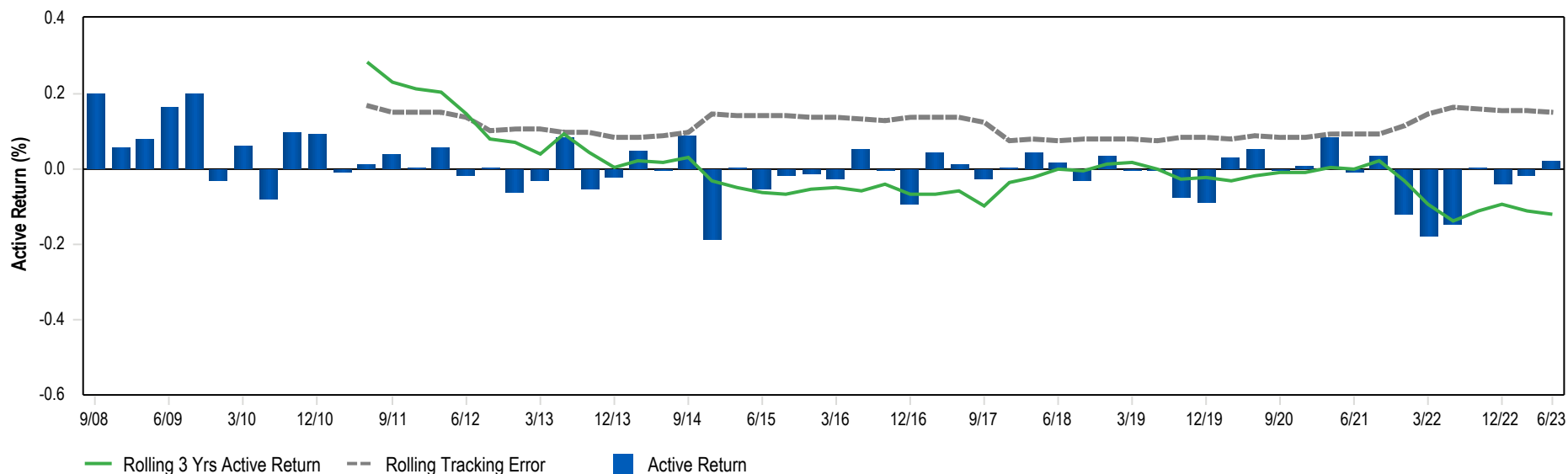


# Vanguard Total Stock Market Index Fund



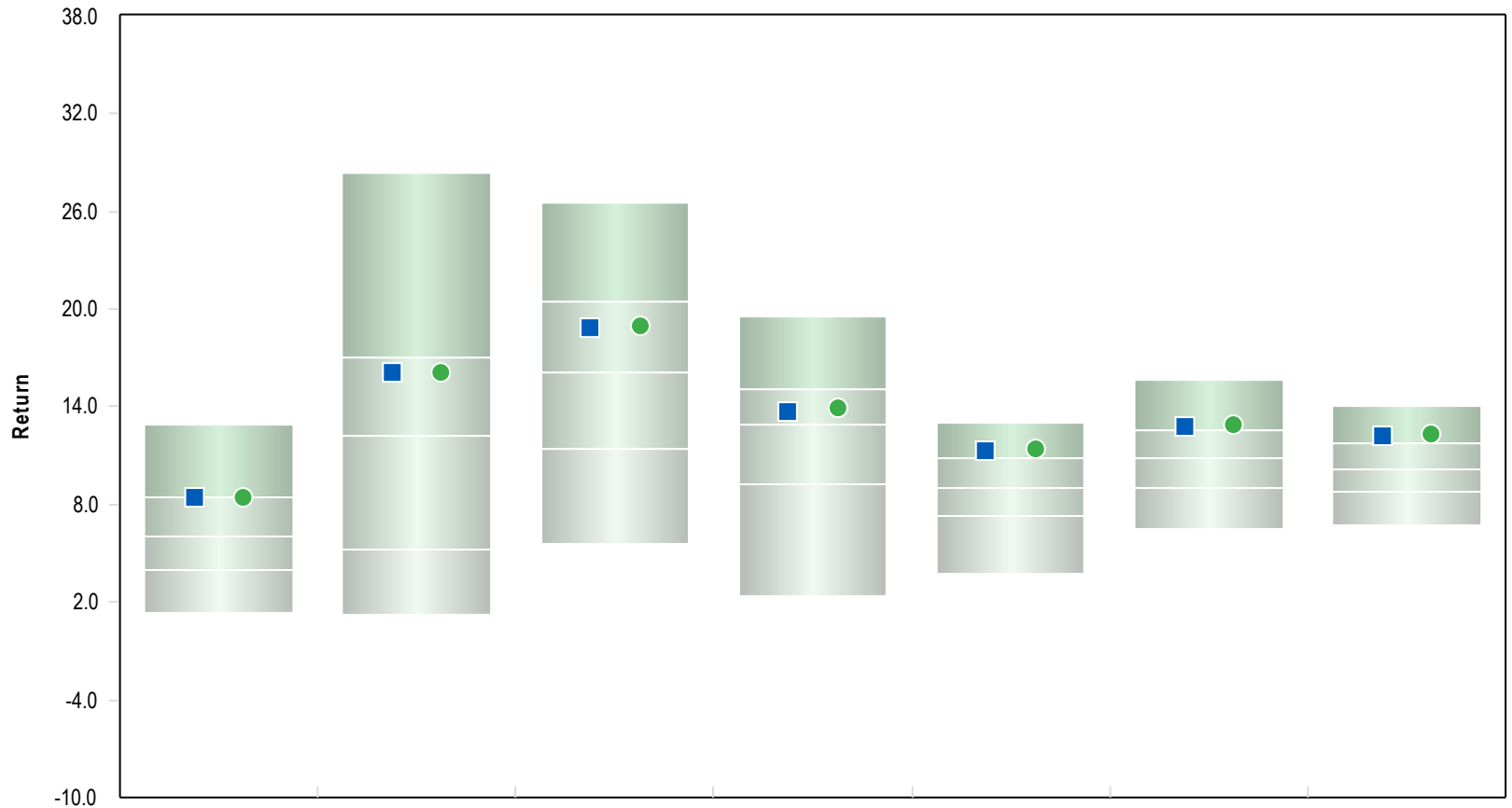
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
<b>Vanguard Total Stock Market</b>					
Beginning Market Value	1,896,733	1,769,976	1,729,079	1,710,779	1,474,542
Net Cash Flows				-458,894	-458,894
Income			7,248	65,060	148,636
Gain/Loss	159,509	286,266	319,915	739,297	891,959
Ending Market Value	2,056,243	2,056,243	2,056,243	2,056,243	2,056,243

Rolling Return and Tracking Error



Performance

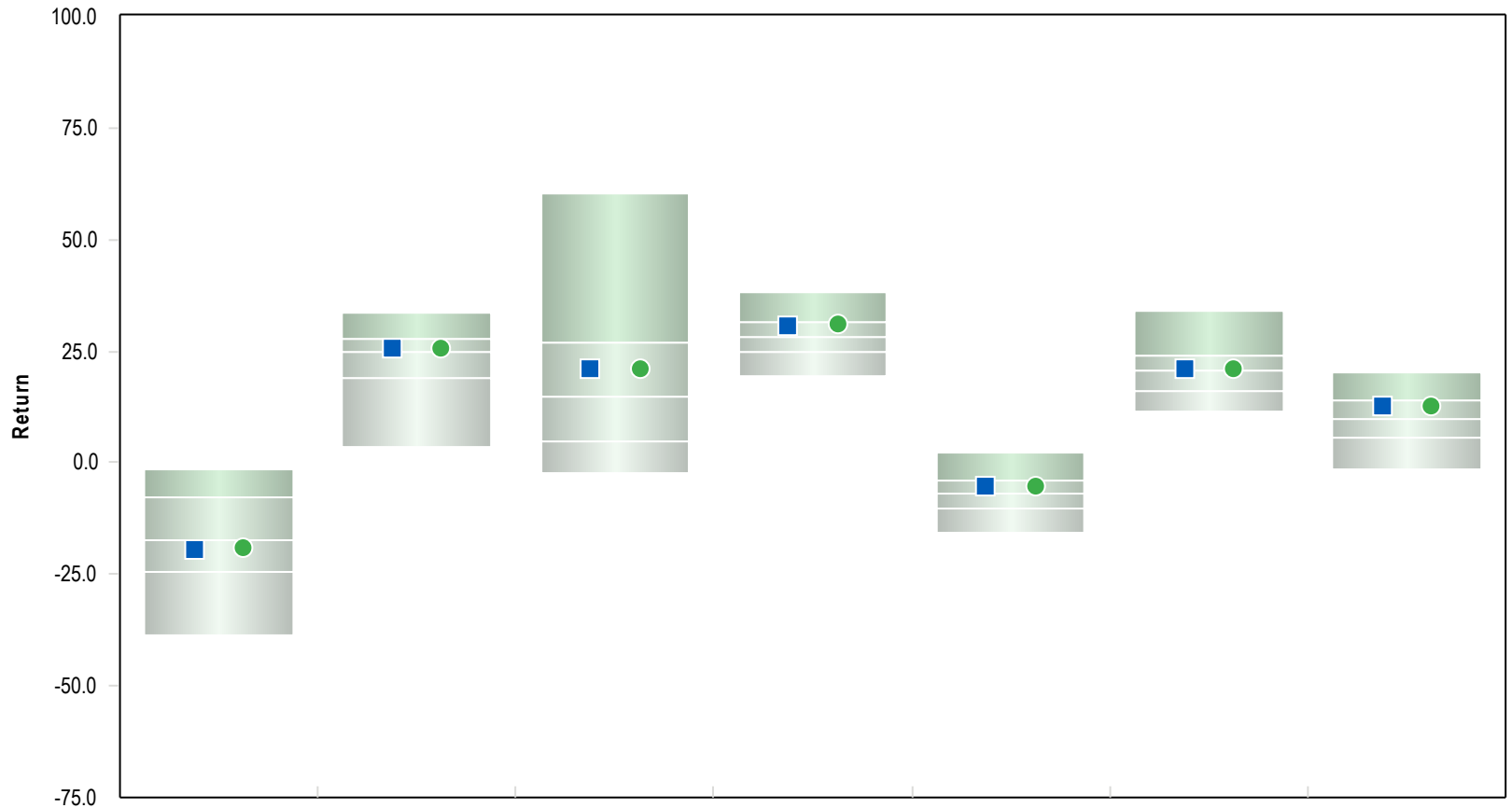
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Total Stock Market	8.4	16.2	18.9	13.7	11.3	12.8	12.3
Russell 3000 Index	8.4	16.2	19.0	13.9	11.4	12.9	12.3
Difference	0.0	0.0	-0.1	-0.2	-0.1	-0.1	0.0



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Total Stock Market	8.4 (27)	16.2 (30)	18.9 (35)	13.7 (41)	11.3 (19)	12.8 (23)	12.3 (18)
● Russell 3000 Index	8.4 (28)	16.2 (30)	19.0 (35)	13.9 (38)	11.4 (17)	12.9 (21)	12.3 (17)

5th Percentile	12.9	28.4	26.5	19.5	13.1	15.6	14.1
1st Quartile	8.5	17.0	20.4	15.1	10.8	12.6	11.8
Median	6.0	12.2	16.1	12.9	9.0	10.8	10.2
3rd Quartile	4.0	5.3	11.4	9.2	7.3	9.0	8.7
95th Percentile	1.3	1.2	5.6	2.4	3.8	6.5	6.7

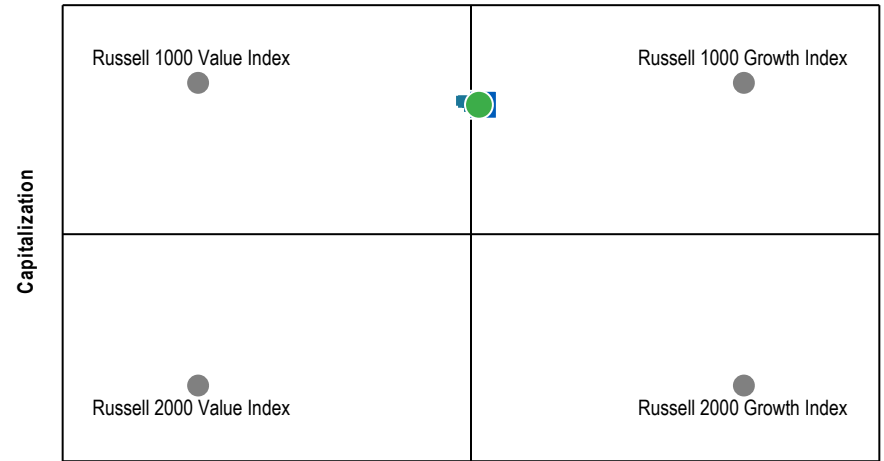
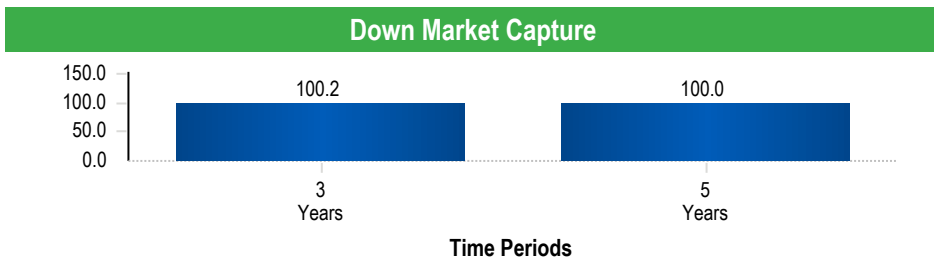
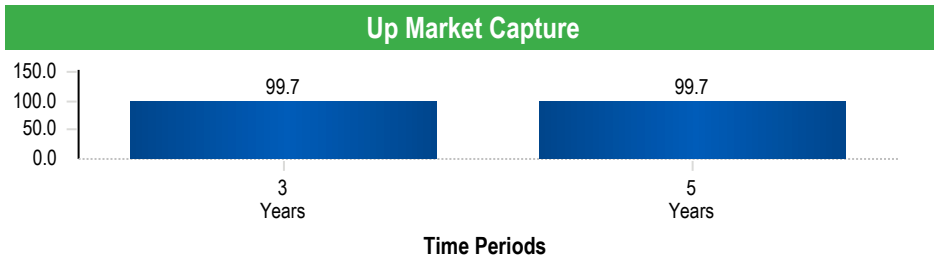
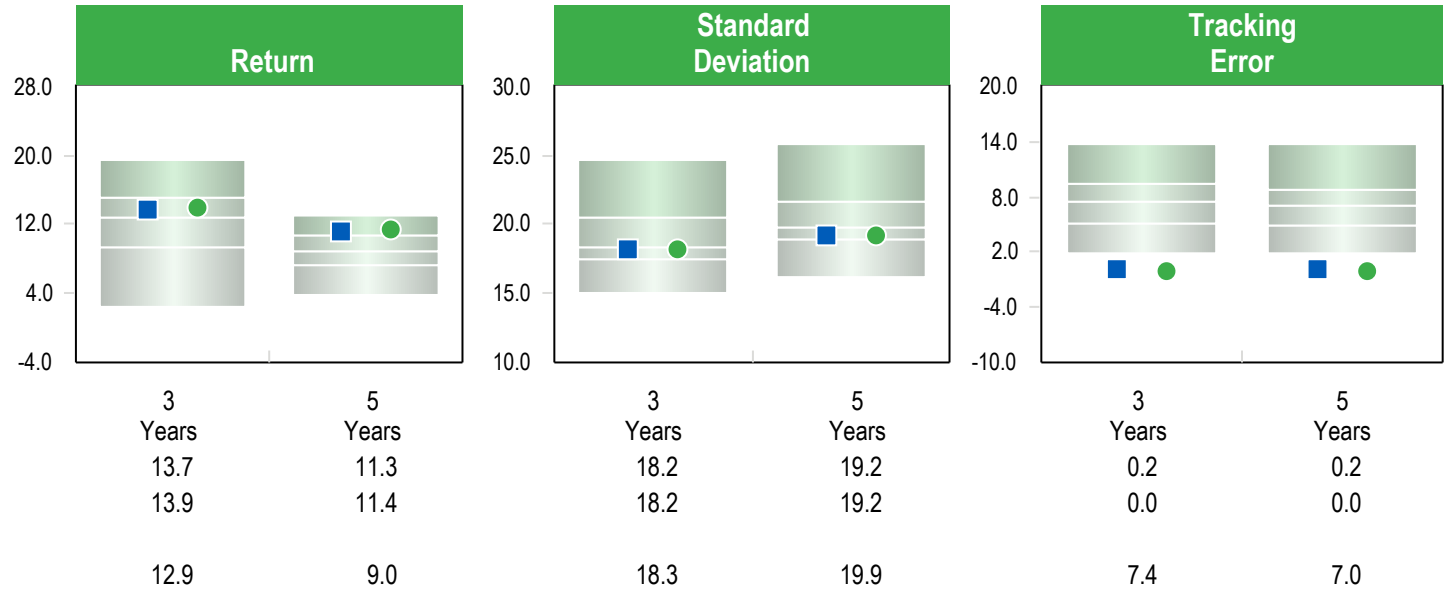
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



	2022	2021	2020	2019	2018	2017	2016
■ Vanguard Total Stock Market	-19.5 (60)	25.7 (41)	21.0 (34)	30.8 (30)	-5.2 (33)	21.2 (44)	12.7 (33)
● Russell 3000 Index	-19.2 (58)	25.7 (41)	20.9 (34)	31.0 (28)	-5.2 (34)	21.1 (45)	12.7 (32)

5th Percentile	-1.3	33.5	60.2	38.2	2.3	34.0	20.2
1st Quartile	-7.9	27.8	26.8	31.6	-4.0	24.2	13.8
Median	-17.4	24.7	14.7	28.2	-7.1	20.5	10.0
3rd Quartile	-24.6	18.9	4.9	24.7	-10.1	16.1	5.5
95th Percentile	-38.6	3.3	-2.5	19.3	-15.9	11.5	-1.3

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



■ Style History    
 ■ Jun-2023    
 ● Average Style Exposure

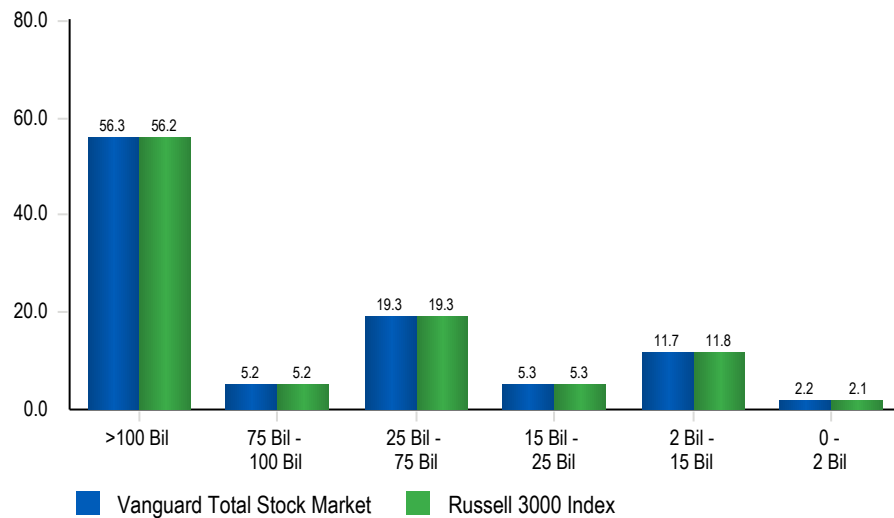
Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	6.7	6.7	0.0	17.8
Microsoft Corp	5.9	5.8	0.1	18.4
Amazon.com Inc	2.6	2.7	-0.1	26.2
NVIDIA Corporation	2.3	2.3	0.0	52.3
Google Inc [A]	1.6	1.6	0.0	15.4
Tesla Inc	1.6	1.7	-0.1	26.2
Meta Platforms Inc	1.5	1.5	0.0	35.4
Berkshire Hathaway Inc	1.4	1.4	0.0	10.4
Alphabet Inc	1.4	1.4	0.0	16.3
Unitedhealth Group Inc	1.0	1.0	0.0	1.7
% of Portfolio	26.0	26.1	-0.1	

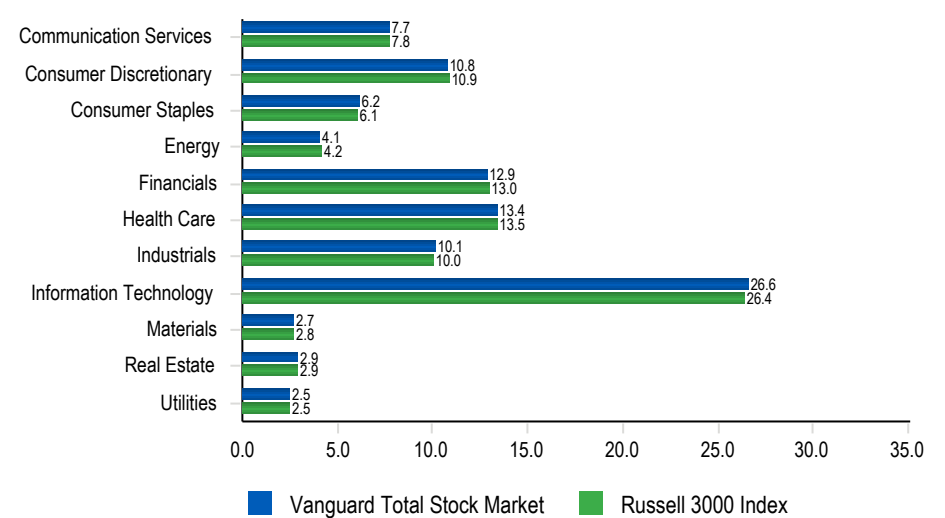
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$)	581,320,223,609	580,224,812,228
Median Mkt. Cap (\$)	1,023,685,480	1,972,713,400
Price/Earnings ratio	22.0	22.0
Price/Book ratio	4.3	4.2
5 Yr. EPS Growth Rate (%)	16.6	16.6
Current Yield (%)	1.5	1.5
Beta (5 Years, Monthly)	1.0	1.0
Number of Stocks	3,801	3,010

Distribution of Market Capitalization (%)



Sector Weights (%)



## Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
CXApp Inc	0.0	0.0	0.0	503.3
Minerva Neurosciences Inc	0.0	0.0	0.0	471.2
ImmunoGen Inc	0.0	0.0	0.0	391.4
Marker Therapeutics Inc	0.0	0.0	0.0	336.6
Applied Digital Corp	0.0	0.0	0.0	317.4
Presto Automation Inc	0.0	0.0	0.0	230.4
GSI Technology Inc	0.0	0.0	0.0	221.5
Aemetis Inc	0.0	0.0	0.0	216.0
Rockwell Medical Inc	0.0	0.0	0.0	201.7
EyePoint Pharmaceuticals Inc	0.0	0.0	0.0	195.9
% of Portfolio	0.0	0.0	0.0	

## Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Tuesday Morning Corp.	0.0	0.0	0.0	-99.7
Mullen Automotive Inc	0.0	0.0	0.0	-96.7
ViewRay Inc	0.0	0.0	0.0	-89.8
Rain Oncology Inc	0.0	0.0	0.0	-86.3
FibroGen Inc	0.0	0.0	0.0	-85.5
TRACON Pharmaceuticals Inc	0.0	0.0	0.0	-84.6
Mallinckrodt plc	0.0	0.0	0.0	-83.8
Wheels Up Experience Inc	0.0	0.0	0.0	-81.5
Vinco Venture Inc	0.0	0.0	0.0	-81.0
Cue Health Inc	0.0	0.0	0.0	-79.7
% of Portfolio	0.0	0.0	0.0	



Buy and Hold Portfolio	8.4
Portfolio Trading	0.0
Actual Return	8.4
Benchmark Return	8.4
Actual Active Return	0.0
Stock Selection	0.0
Sector Selection	0.0
Interaction	0.0
Total Selection	0.0
Portfolio Trading	0.0
Benchmark Trading	0.0
Active Trading Impact	0.0
Buy and Hold Active Return	0.0

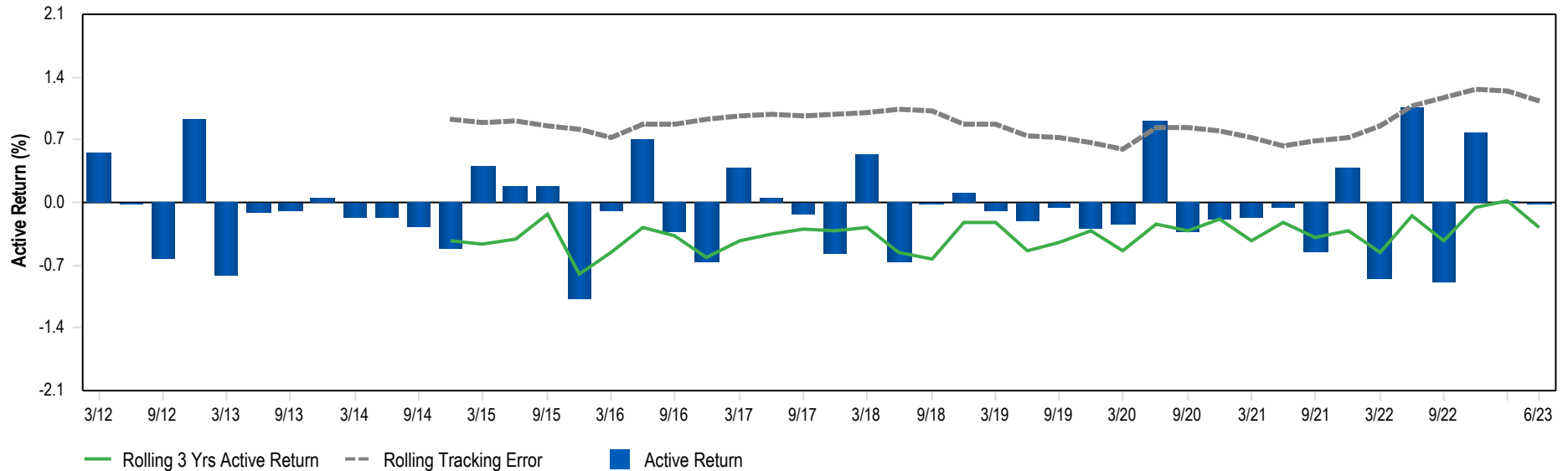
	Allocation-04/01/2023		Performance-1 Quarter Ending June 30, 2023			Attribution		
	Portfolio	Benchmark	Portfolio	Benchmark	Stock	Sector	Interaction	Total
Communication Services	7.5	7.6	12.3	12.2	0.0	0.0	0.0	0.0
Consumer Discretionary	10.4	10.3	12.7	12.8	0.0	0.0	0.0	0.0
Consumer Staples	6.6	6.6	0.5	0.5	0.0	0.0	0.0	0.0
Energy	4.5	4.7	-0.3	-0.5	0.0	0.0	0.0	0.0
Financials	10.9	10.9	4.9	4.9	0.0	0.0	0.0	0.0
Health Care	14.1	14.1	3.3	3.3	0.0	0.0	0.0	0.0
Industrials	10.0	9.8	8.1	8.1	0.0	0.0	0.0	0.0
Information Technology	27.3	27.2	15.6	15.6	0.0	0.0	0.0	0.0
Materials	2.9	3.0	3.1	2.7	0.0	0.0	0.0	0.0
Real Estate	3.1	3.1	1.5	1.5	0.0	0.0	0.0	0.0
Utilities	2.8	2.8	-2.7	-2.8	0.0	0.0	0.0	0.0
Total	100.0	100.0	8.4	8.3	0.0	0.0	0.0	0.0

# Vanguard Total Developed Markets Index Fund



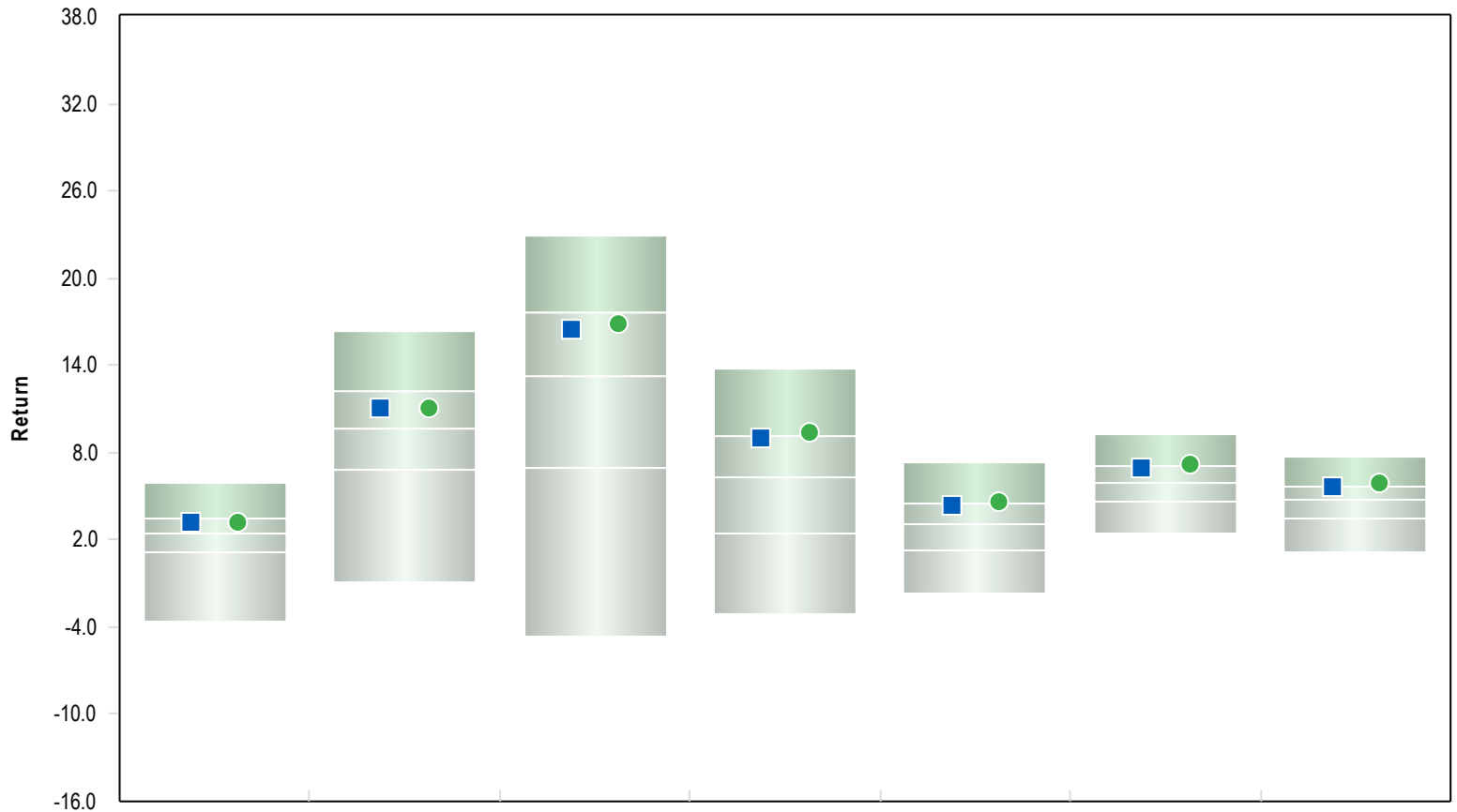
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
<b>Vanguard Developed Markets Index</b>					
Beginning Market Value	539,676	501,004	477,681	429,731	449,321
Net Cash Flows					
Income	10,667	12,542	13,922	46,127	78,346
Gain/Loss	6,303	43,100	65,043	80,788	28,979
Ending Market Value	556,646	556,646	556,646	556,646	556,646

Rolling Return and Tracking Error



Performance

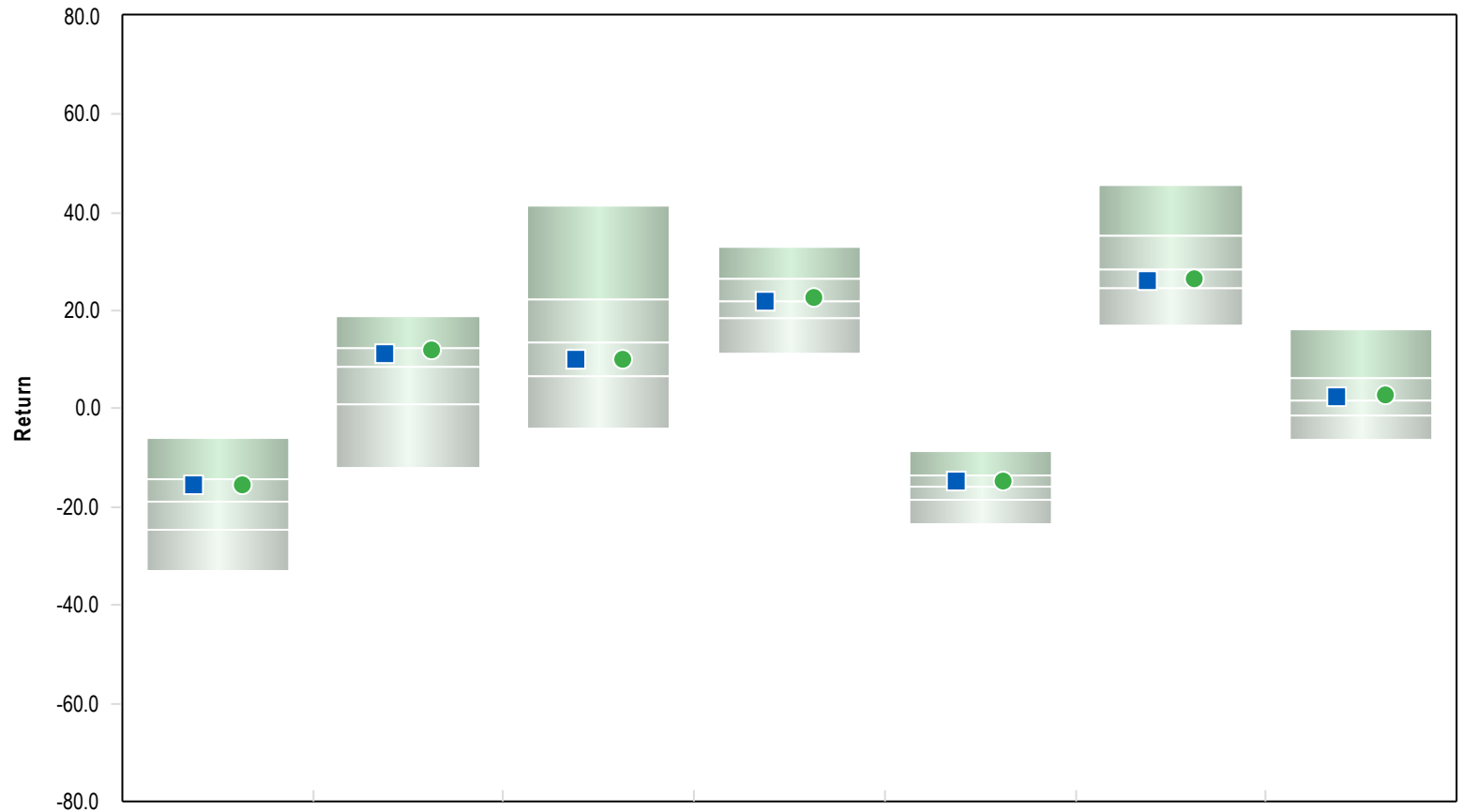
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Developed Markets Index	3.1	11.1	16.5	9.0	4.4	6.9	5.6
Developed Market Policy Index	3.1	11.1	16.9	9.3	4.6	7.2	5.9
Difference	0.0	0.0	-0.4	-0.3	-0.2	-0.3	-0.3



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Developed Markets Index	3.1 (32)	11.1 (38)	16.5 (32)	9.0 (26)	4.4 (28)	6.9 (28)	5.6 (26)
● Developed Market Policy Index	3.1 (32)	11.1 (38)	16.9 (30)	9.3 (23)	4.6 (25)	7.2 (22)	5.9 (20)

5th Percentile	5.9	16.4	23.0	13.7	7.4	9.2	7.8
1st Quartile	3.4	12.2	17.6	9.1	4.5	7.0	5.6
Median	2.4	9.7	13.3	6.3	3.1	5.9	4.8
3rd Quartile	1.1	6.8	6.9	2.4	1.3	4.6	3.4
95th Percentile	-3.7	-1.0	-4.6	-3.1	-1.7	2.4	1.1

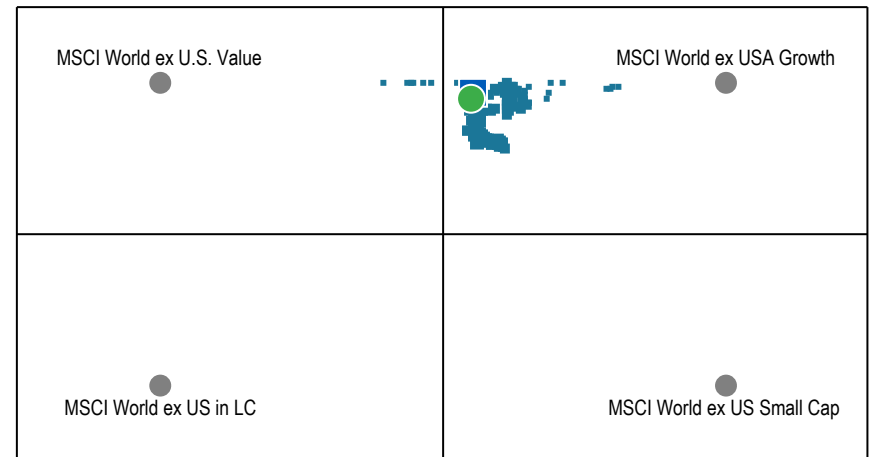
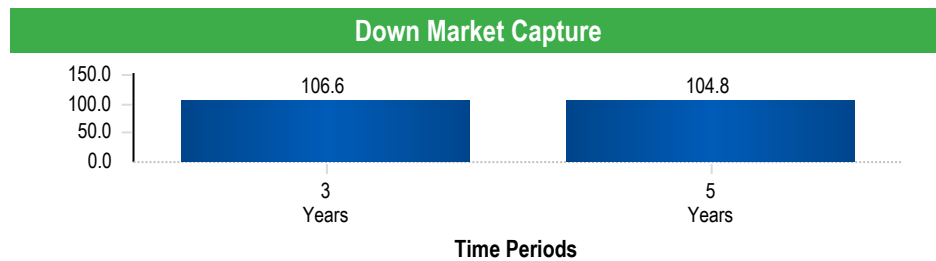
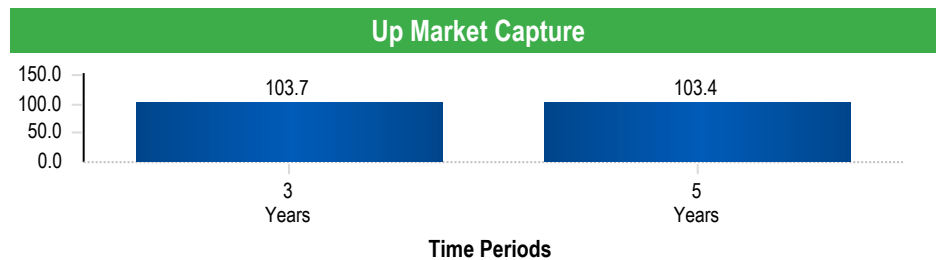
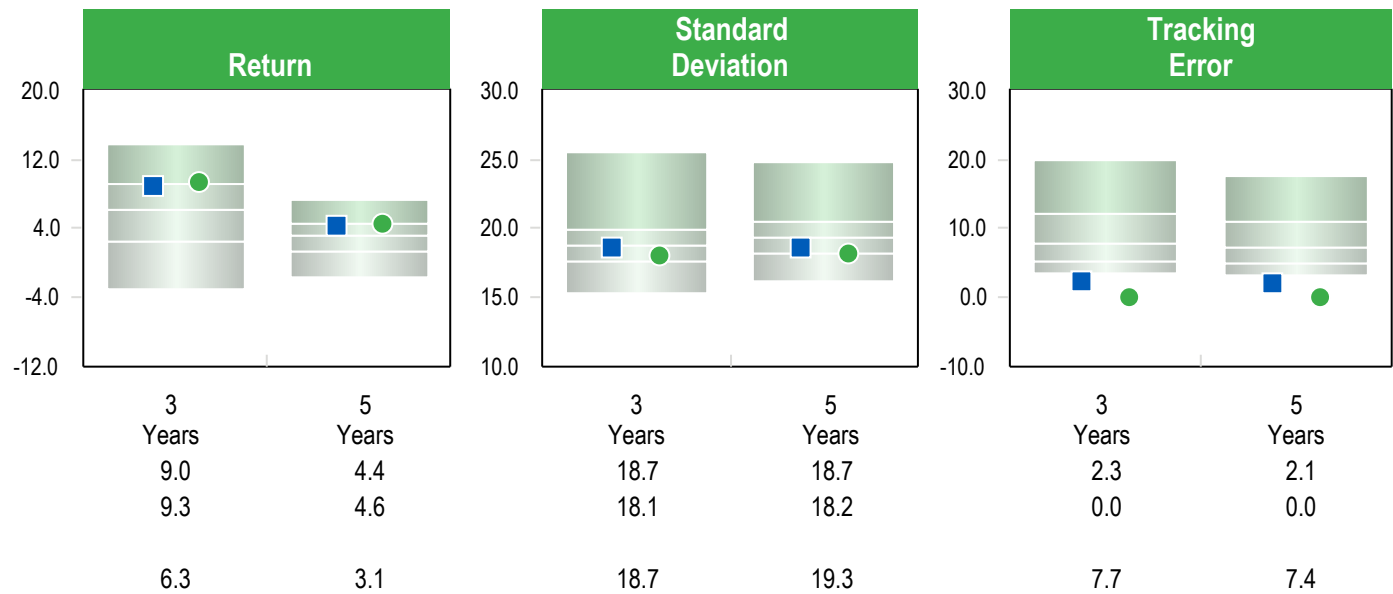
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



	2022	2021	2020	2019	2018	2017	2016
■ Vanguard Developed Markets Index	-15.3 (31)	11.4 (32)	10.3 (60)	21.9 (51)	-14.6 (36)	26.3 (64)	2.4 (47)
● Developed Market Policy Index	-15.3 (31)	11.9 (29)	10.3 (60)	22.7 (46)	-14.5 (35)	26.7 (63)	2.7 (44)

5th Percentile	-6.1	18.7	41.6	32.8	-8.8	45.6	16.4
1st Quartile	-14.3	12.4	22.3	26.5	-13.4	35.3	6.4
Median	-19.0	8.5	13.7	22.1	-16.0	28.6	1.8
3rd Quartile	-24.7	0.8	6.6	18.4	-18.6	24.7	-1.3
95th Percentile	-33.0	-11.9	-3.9	11.2	-23.3	16.9	-6.4

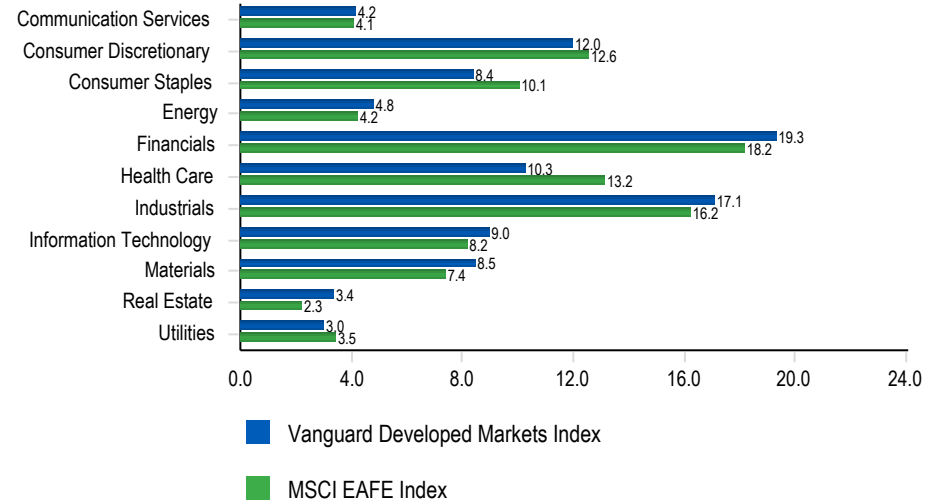
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



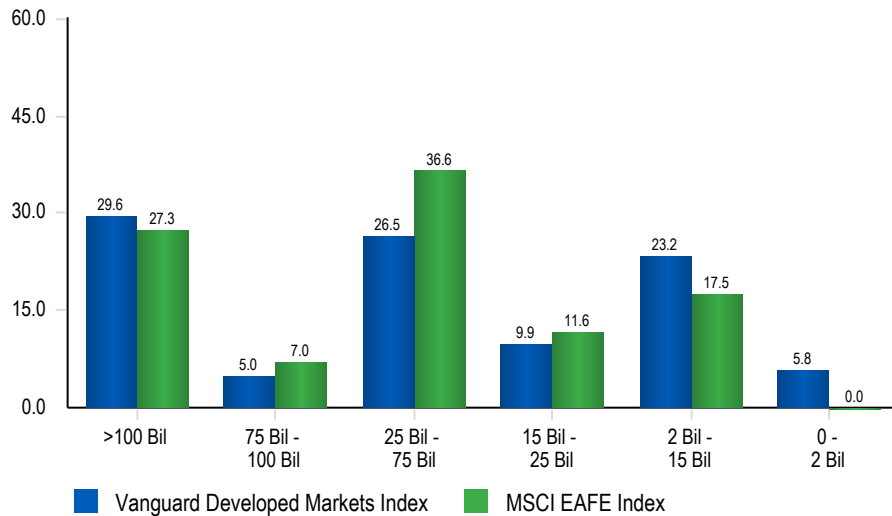
Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Nestle SA, Cham Und Vevey	1.6	2.1	-0.5	-0.6
ASML Holding NV	1.4	1.9	-0.5	7.3
Novo Nordisk A/S	1.2	1.7	-0.5	
LVMH Moet Hennessy Louis Vuitton SE	1.2	1.7	-0.5	2.9
Astrazeneca PLC	1.0	1.4	-0.4	2.7
Roche Holding AG	1.0	1.4	-0.4	7.0
Shell Plc	1.0	1.3	-0.3	8.0
Novartis AG	0.9	1.3	-0.4	4.7
Toyota Motor Corp	0.9	1.1	-0.2	13.7
BHP Group Ltd	0.8	1.0	-0.2	-5.4
% of Portfolio	11.0	14.9	-3.9	

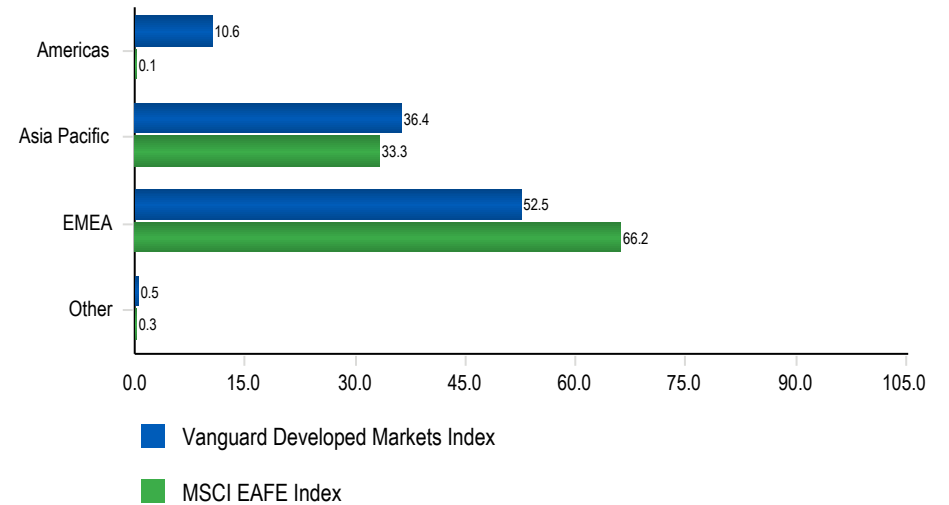
Sector Weights (%)



Distribution of Market Capitalization (%)



Region



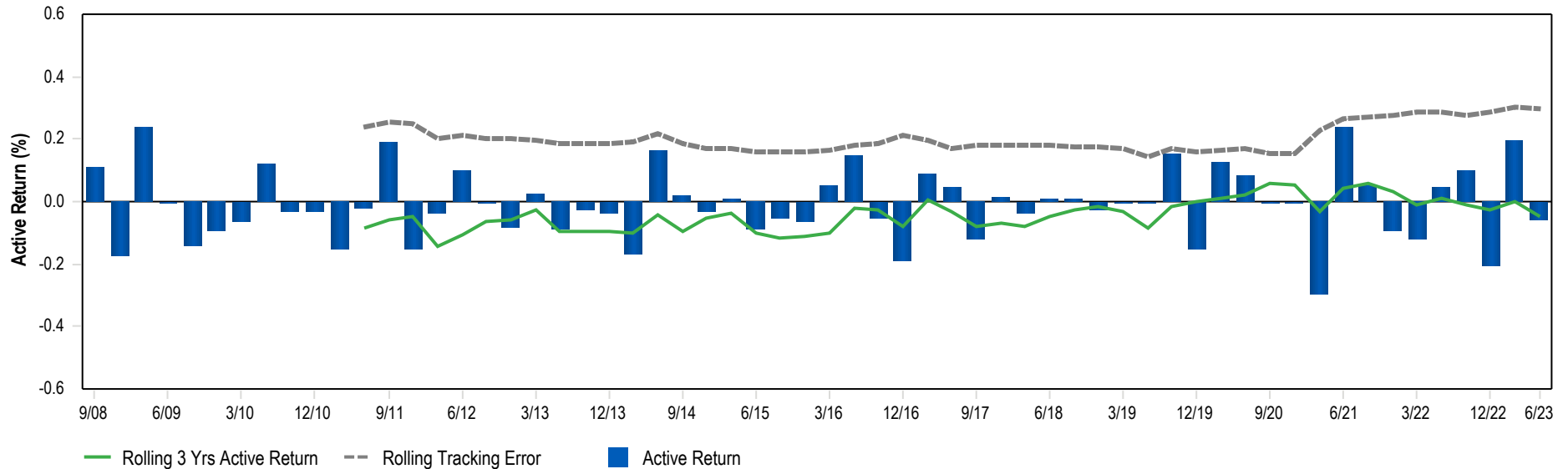


# Vanguard Total Bond Market Index Fund



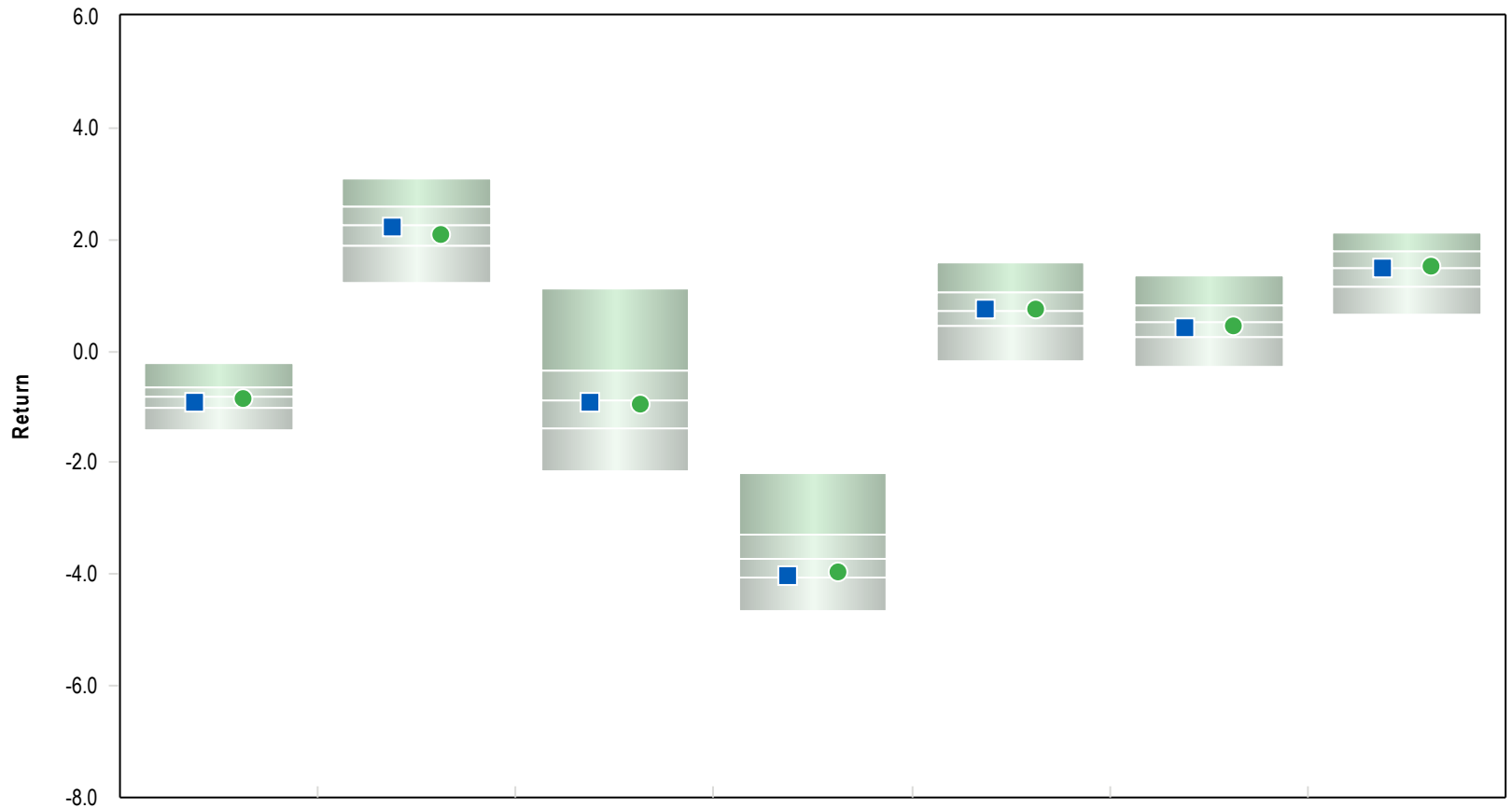
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
<b>Vanguard Total Bond Market</b>					
Beginning Market Value	1,550,367	1,502,876	1,550,344	1,278,953	1,088,315
Net Cash Flows				459,360	459,360
Income	10,759	21,791	41,814	100,001	192,323
Gain/Loss	-24,743	11,717	-55,775	-301,930	-203,616
Ending Market Value	1,536,383	1,536,383	1,536,383	1,536,383	1,536,383

Rolling Return and Tracking Error



Performance

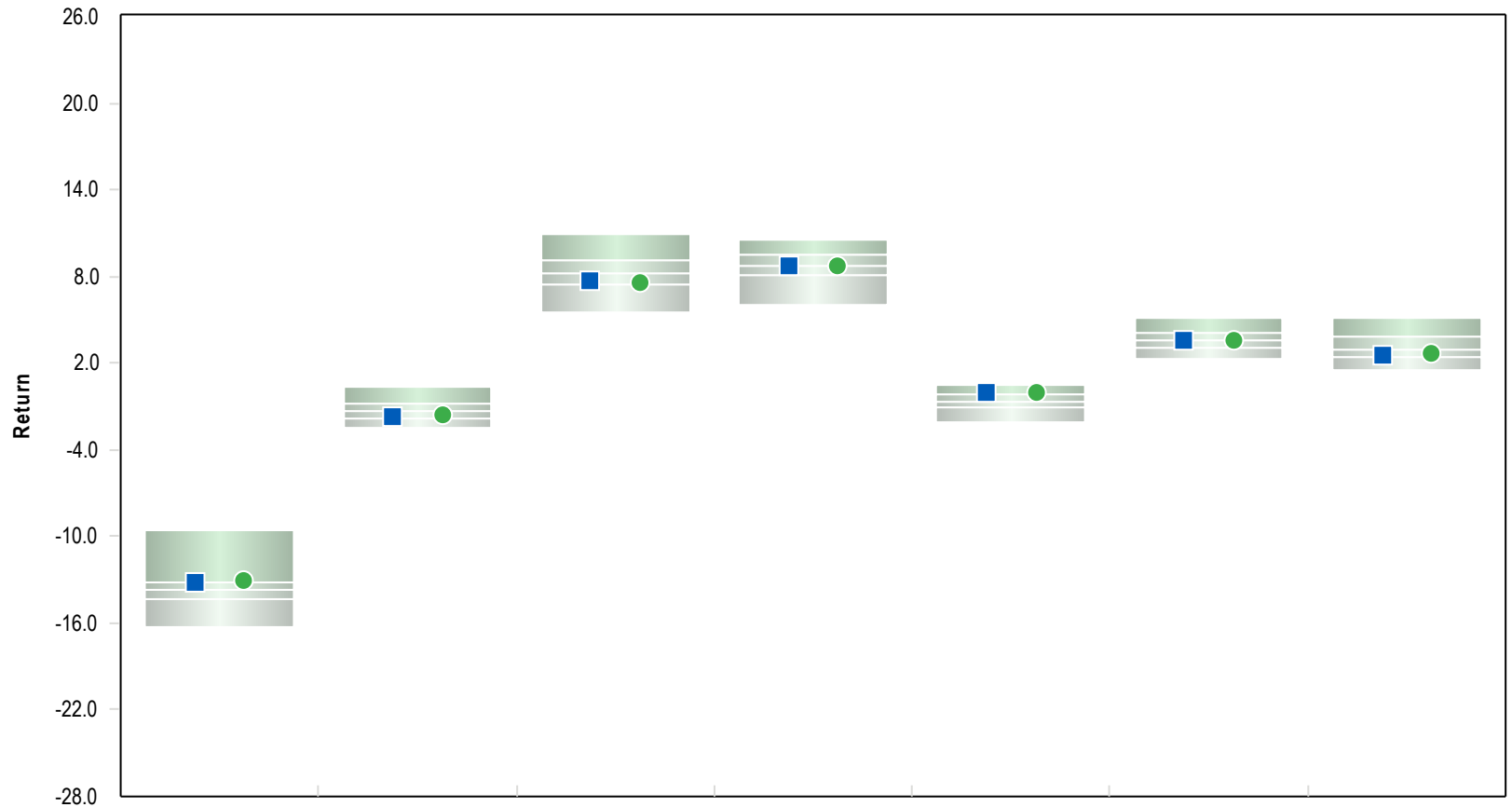
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Total Bond Market	-0.9	2.2	-0.9	-4.0	0.8	0.4	1.5
Blmbg. U.S. Aggregate	-0.8	2.1	-0.9	-4.0	0.8	0.4	1.5
Difference	-0.1	0.1	0.0	0.0	0.0	0.0	0.0



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Total Bond Market	-0.9 (62)	2.2 (56)	-0.9 (52)	-4.0 (70)	0.8 (46)	0.4 (60)	1.5 (52)
● Blmbg. U.S. Aggregate	-0.8 (54)	2.1 (67)	-0.9 (54)	-4.0 (64)	0.8 (46)	0.4 (57)	1.5 (48)

5th Percentile	-0.2	3.1	1.1	-2.2	1.6	1.3	2.1
1st Quartile	-0.7	2.6	-0.3	-3.3	1.0	0.8	1.8
Median	-0.8	2.3	-0.9	-3.7	0.7	0.5	1.5
3rd Quartile	-1.0	1.9	-1.4	-4.1	0.4	0.2	1.2
95th Percentile	-1.4	1.2	-2.1	-4.7	-0.2	-0.3	0.7

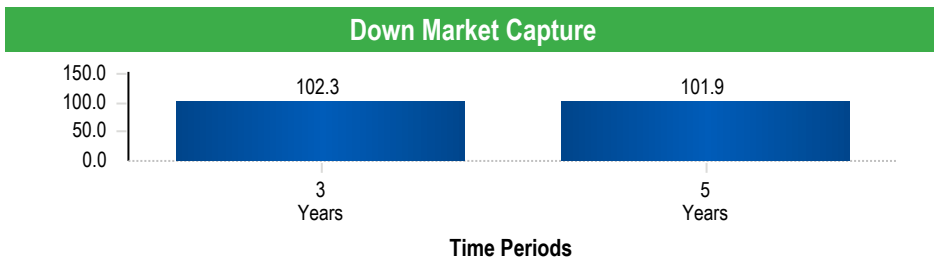
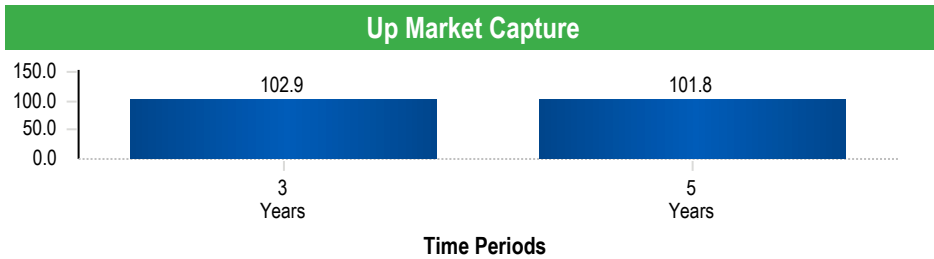
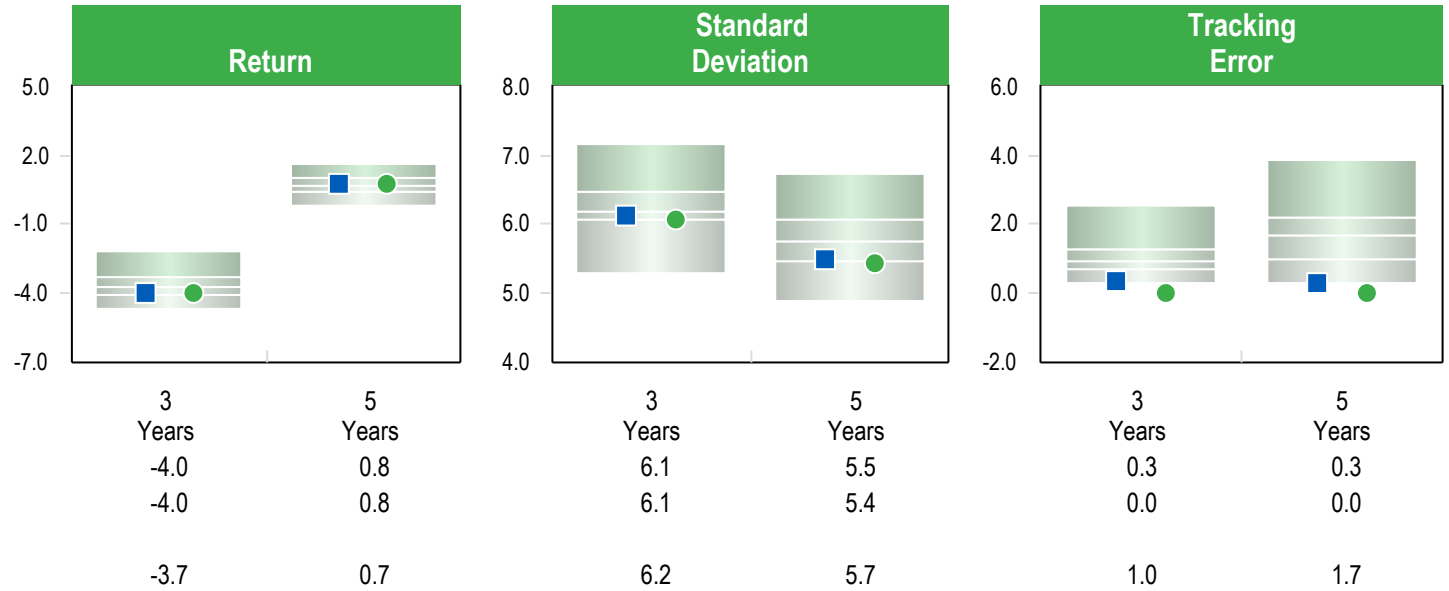
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



	2022	2021	2020	2019	2018	2017	2016
■ Vanguard Total Bond Market	-13.2 (27)	-1.7 (66)	7.7 (66)	8.7 (53)	0.0 (20)	3.6 (52)	2.6 (64)
● Blmbg. U.S. Aggregate	-13.0 (22)	-1.5 (60)	7.5 (73)	8.7 (53)	0.0 (18)	3.5 (54)	2.6 (62)

5th Percentile	-9.6	0.3	11.0	10.6	0.5	5.1	5.1
1st Quartile	-13.1	-0.8	9.1	9.5	-0.1	4.2	3.8
Median	-13.7	-1.3	8.2	8.8	-0.6	3.6	2.9
3rd Quartile	-14.3	-1.8	7.5	8.1	-1.1	3.1	2.4
95th Percentile	-16.3	-2.5	5.5	6.0	-2.1	2.2	1.5

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



■ Style History    
 ■ Jun-2023    
 ● Average Style Exposure

# Appendix





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

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Annual Dollar Fee	Average Fee
Vanguard Total Stock Market Index	6/30/2023	\$2,056,243	Equity Only	Russell 3000 Index	All Cap Equity	4 bps on all assets	\$822	0.04%
Vanguard Developed Market Index	6/30/2023	\$556,646	Equity Only	FTSE Developed x North America	International Equity	16 bps on all assets	\$891	0.16%
Vanguard Total Bond Market Index	6/30/2023	\$1,536,383	Fixed Income	Barclays U.S. Aggregate	Core Fixed Income	3.5 bps on all assets	\$538	0.035%
Fidelity Money Market	6/30/2023	\$152	Cash	90 Day U.S. Treasury Bill	Cash	33 bps on all assets	\$1	0.33%
<b>OPEB Total</b>		<b>\$4,149,424</b>					<b>\$2,251</b>	<b>0.05%</b>