

City of Memphis Retirement System OPEB Report

Analysis of Investment Performance

Quarter Ending December 31, 2023

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Financial Market Conditions



IN REVIEW: QUARTER ENDING DECEMBER 31, 2023

A Synopsis of the Financial Market Environment

Quarter In Review: Global Equity Overview

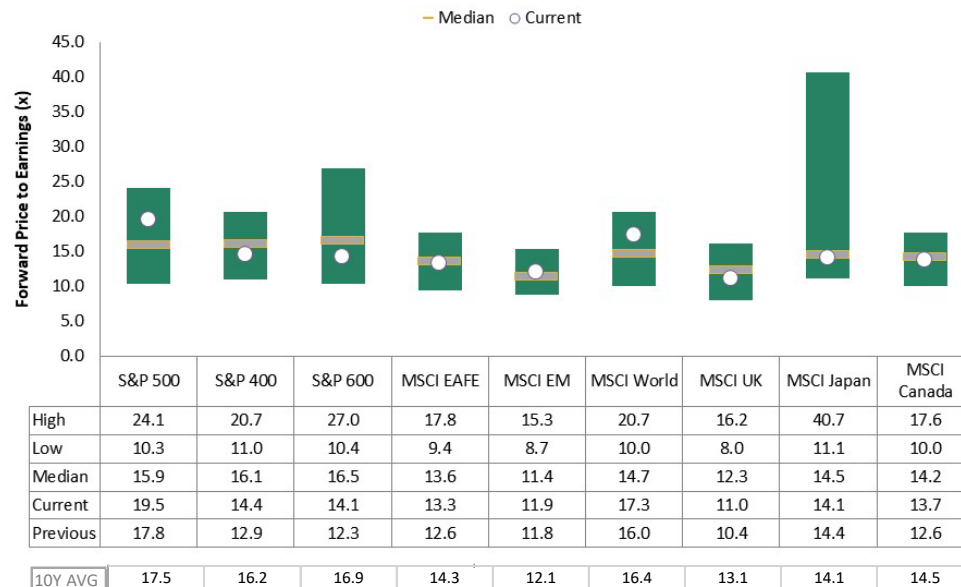
Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	11.69	26.29	26.29	10.00	15.69	12.03
MSCI Europe, Australasia and Far East (EAFE)*	10.42	18.24	18.24	4.02	8.16	4.28
MSCI Emerging Markets (EM)*	7.86	9.83	9.83	-5.08	3.68	2.66

All data in the table are percentages.
* Net dividends reinvested

Global Equity Performance and Valuations

- U.S. (+11.7%), Developed International (+10.4%), and Emerging Markets (+7.9%) all posted positive returns through the quarter ending December 31. Potential interest rate cuts for 2024 signaled by the U.S. Federal Reserve improved investor sentiment globally.
- For emerging markets, despite Latin America's (+17.6%) strong returns, lack of economic stimulus and the ongoing real estate crisis in China continued to hinder performance across the asset class, delivering lower returns than developed markets.
- Europe (+11.1%) and Japan (+8.2%) produced the highest returns for developed international markets, driven by increasing market expectations.
- On a price-to-earnings basis, U.S. mid (14.4x) and small cap (14.1x) valuations are up from the third quarter but remain at a relative discount to their 10-year averages (16.2x and 16.9x, respectively). International developed equities (13.3x) and emerging markets (11.9x) remain cheap to their 10-year average as well (14.3x and 12.1x, respectively). U.S. large cap valuations (19.5x) remain well above their long-term average (17.5x).

Price to Earnings



Data range is from 3/31/00-12/31/23. 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	11.69	26.29	26.29	10.00	15.69	12.03
Russell 1000	11.96	26.53	26.53	8.97	15.52	11.80
Russell 1000 Growth	14.16	42.68	42.68	8.86	19.50	14.86
Russell 1000 Value	9.50	11.46	11.46	8.86	10.91	8.40
Russell 2000	14.03	16.93	16.93	2.22	9.97	7.16
Russell 2000 Growth	12.75	18.66	18.66	-3.50	9.22	7.16
Russell 2000 Value	15.26	14.65	14.65	7.94	10.00	6.76
Russell Midcap	12.82	17.23	17.23	5.92	12.68	9.42
Russell 3000	12.07	25.96	25.96	8.54	15.16	11.48

All data in the tables are percentages.

Performance

- U.S. equities, represented by the S&P 500, were up +11.7% for the quarter ending December 31. Investor optimism bounced back from the third quarter with expectations for imminent rate cuts by the Federal Reserve.
- Year-to-date, growth has outperformed value. During the quarter, large cap growth (+14.2%) outperformed large cap value (+9.5%). Continuing from last quarter small cap growth (+12.8%) lagged small cap value (+15.3%).
- Large cap stocks led the market for most of the year with the highly concentrated seven stocks of the S&P 500 driving outperformance, but mid (+12.8%) and small cap stocks (+14.0%) bounced back during the fourth quarter.
- Interest rate sensitive sectors including Real Estate (+18.8%), IT (+17.2%), and Financials (+14.0%) led the markets during the quarter. Energy (-6.9%) lagged the market as the only negative sector as crude oil prices weakened. For the year, IT (+57.8%), Communication Services (+55.8%), and Consumer Discretionary (+42.4%) were the highest performing sectors while Utilities (-7.1%) and Energy (-1.3%) were the only negative sectors.

S&P 500 Sector Returns	QTD	1-Year
Communication Services	10.95	55.80
Consumer Discretionary	12.42	42.41
Consumer Staples	5.54	0.52
Energy	-6.94	-1.33
Financials	14.03	12.15
Healthcare	6.41	2.06
Industrials	13.05	18.13
Information Technology	17.17	57.84
Materials	9.69	12.55
Real Estate	18.83	12.36
Utilities	8.56	-7.08

Quarter In Review: International Equity

MSCI International Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
World ex. U.S.	10.51	17.94	17.94	4.42	8.45	4.32
EAFE	10.42	18.24	18.24	4.02	8.16	4.28
EAFE Local Currency	4.96	16.16	16.16	8.64	9.49	6.61
Europe	11.05	19.89	19.89	5.80	9.09	4.13
Europe ex U.K.	12.34	21.69	21.69	4.91	9.83	4.74
U.K.	6.86	14.09	14.09	8.76	6.87	2.49
Japan	8.19	20.32	20.32	0.66	6.91	4.97
Pacific ex Japan	11.39	6.44	6.44	1.57	5.74	3.90

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

Performance

- International developed markets slightly trailed the U.S. (+11.7%) during the fourth quarter in 2023, but still finished strong posting a 10.4% return over the quarter.
- Europe was uplifted by softer inflation numbers and increasing market expectations of a cease in future interest rate hikes, ending 2023 with a robust quarter (+11.1%). Similarly, U.K. equities were also up for the quarter ending December 31 (+6.9%) as small and mid cap domestic stocks outperformed.
- Japanese equities had one of its strongest years in recent memory, with an +8.2% gain during the last quarter. Investors continue to be bullish on the more favorable market and regulatory conditions in the country's capital markets. Pacific ex Japan equities ended the quarter +11.4% as technology stocks led the growth in Asian markets.
- It was a positive quarter for all sectors in International Developed equities with IT (+21.3%) and Materials (+17.1%) the strongest performers.

MSCI EAFE Sector Returns	QTD	1-Year
Communication Services	8.94	13.14
Consumer Discretionary	8.00	21.69
Consumer Staples	5.19	4.47
Energy	0.35	12.54
Financials	9.95	18.83
Healthcare	4.90	9.27
Industrials	14.31	27.62
Information Technology	21.31	36.41
Materials	17.07	19.91
Real Estate	14.89	9.07
Utilities	14.00	16.97

Quarter In Review: Emerging Market Equity

MSCI EM Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Emerging Markets	7.86	9.83	9.83	-5.08	3.68	2.66
EM Local Currency	5.58	9.85	9.85	-2.53	5.42	5.21
Asia	6.71	7.76	7.76	-6.90	4.32	4.13
EMEA	8.37	8.19	8.19	-2.90	-0.32	-1.76
Latin America	17.55	32.71	32.71	9.93	6.11	2.11

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

Performance

- Emerging Market equities (+7.9%) lagged U.S. (+11.7%) and International Developed equities (+10.4%) during the quarter ending December 31 as China continued to detract from the index.
- China continues to struggle as an ongoing real estate crisis, sentiment on weaker economic growth, and uncertainty in stimulus measures led to an underperforming quarter.
- Taiwan and Korea outperformed on technology related returns. India was also strong, backed by economic growth of 7%. Turkey was the worst performing index as inflation persists at over 60%. Latin America was the strongest region (+17.6%) as Brazil outperformed with an improving economy, including interest rate cuts in the end of the quarter.
- Technology (+17.8%) and Utilities (+12.8%) were the strongest sectors in Emerging Markets, with Real Estate being the only negative sector (-0.2%) during the quarter.

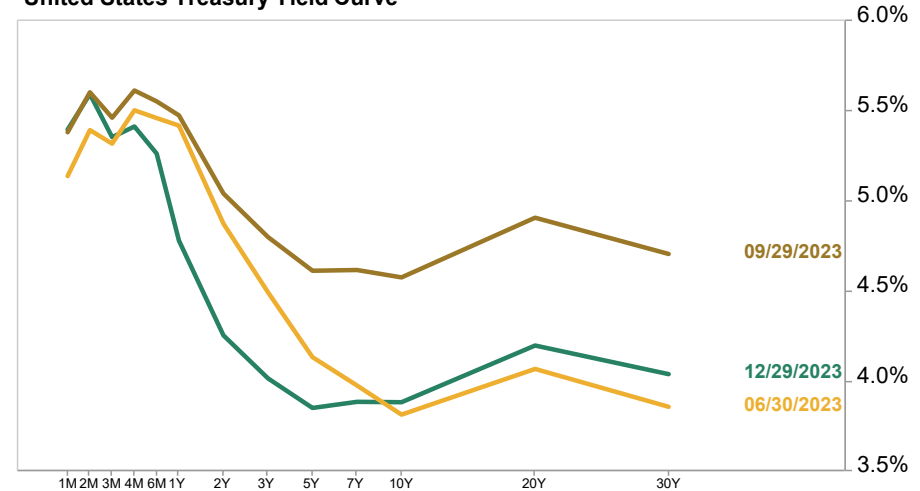
MSCI EM Sector Returns	QTD	1-Year
Communication Services	0.05	-1.10
Consumer Discretionary	0.83	-3.40
Consumer Staples	6.12	4.24
Energy	6.69	26.82
Financials	8.26	11.50
Healthcare	7.31	-1.29
Industrials	6.25	5.43
Information Technology	17.83	32.32
Materials	6.79	1.51
Real Estate	-0.21	-7.09
Utilities	12.77	1.95

Quarter In Review: Fixed Income Overview

Yield Curve

- Yields declined in intermediate to long-term maturities while the 1-Month T-Bill yield remained mostly unchanged. The interest rate curve further inverted compared to third quarter. The shift in the yield curve indicates that the market is pricing several rate cuts during 2024. The Federal Reserve continues its rate decision pause citing the need to hold rates higher for longer until inflation is conclusively moving towards the Fed's long-term target of 2%.
- Short-term yields declined the least, with the 3-Month T-Bill decreasing by 11 bps over the prior quarter.
- 2- and 3-year Treasury yields declined the most by 79 bps each, ending the quarter at 4.25% and 4.01%, respectively.

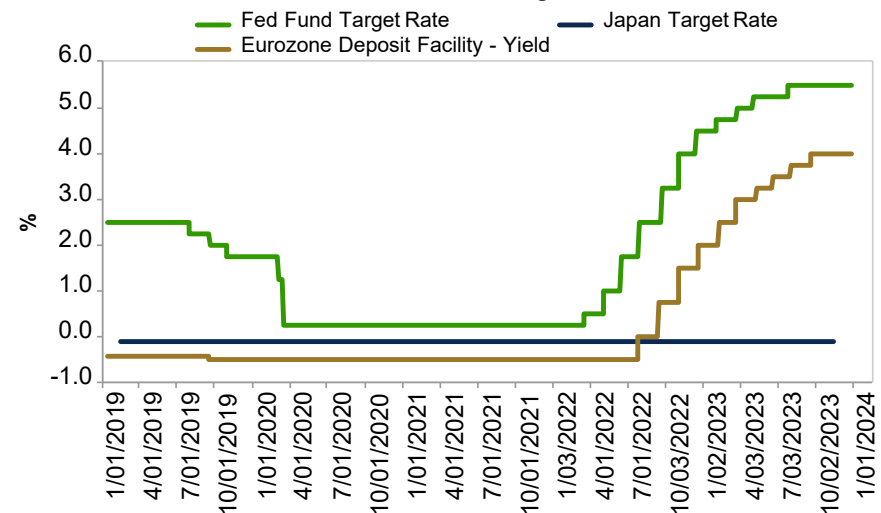
United States Treasury Yield Curve



Monetary Policies/Global Interest Rates

- Central bank deposit rates remained negative in Japan, while rates in Europe ended the quarter at 4.50% and rates in the United Kingdom ended the quarter at 5.25%.
- The U.S. policy rate is above those of the Eurozone, the United Kingdom and Japan, at 5.50%.

Central Bank Target Rates



Interest Rates	Fed Funds Rate	EZ Deposit Facility Rate
Average	4.95	0.93
Max	20.00	4.00
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	6.82	5.53	5.53	-3.31	1.10	1.81
Government/Credit	6.63	5.72	5.72	-3.53	1.41	1.97
Government	5.62	4.09	4.09	-3.74	0.56	1.27
Investment Grade Credit	8.50	8.52	8.52	-3.29	2.63	2.95
Investment Grade CMBS	5.24	5.29	5.29	-2.41	1.60	2.11
U.S. Corporate High Yield	7.16	13.44	13.44	1.98	5.37	4.60
FTSE** 3-Month T-Bill	1.41	5.26	5.26	2.25	1.91	1.26
Hueler Stable Value	0.55	1.87	1.87	1.96	2.13	1.97

* Bloomberg Indices, unless otherwise noted.

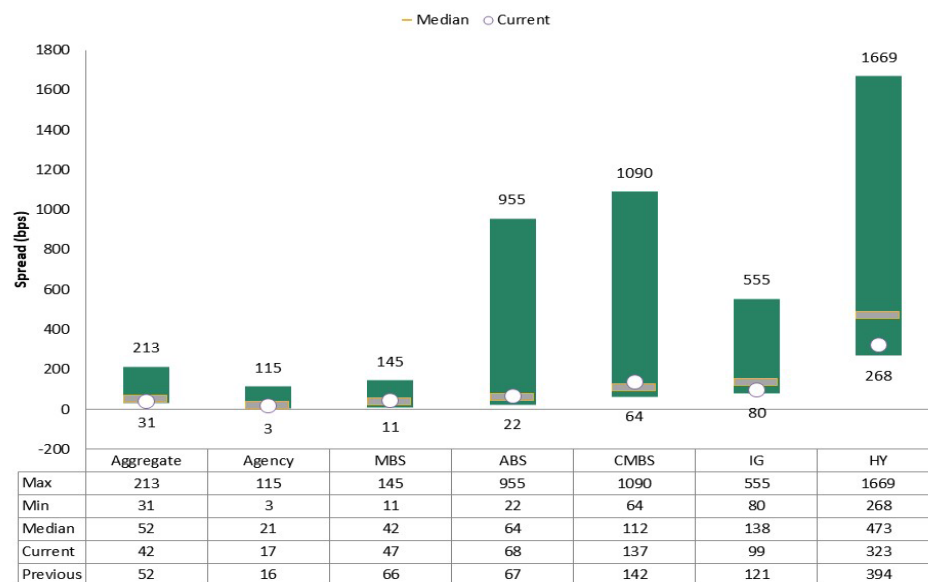
** Formerly Citigroup. Citigroup's fixed income indices were purchased by London Stock Exchange Group (LSEG) and were rebranded to FTSE by July 31, 2018. FTSE Russell is a unit of LSEG's Information Services Division and a wholly owned subsidiary of LSEG.

All data in the table are percentages.

Performance and Spreads

- The U.S. Aggregate Index was positive during the fourth quarter. All sectors delivered positive quarterly returns.
- Investment Grade Credit had the strongest performance at +8.50% for the quarter. Cash experienced the weakest performance in the quarter ended December 31 (1.41%).
- For the quarter, Agency and ABS spreads slightly widened while the spreads on the US Aggregate Index, MBS, CMBS, IG Credit and High Yield narrowed. The largest change was in the High Yield sector with spreads narrowing by 71 basis points.

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	8.10	5.72	5.72	-5.51	-0.32	0.38
Bloomberg Global Aggregate (Hgd)	5.99	7.15	7.15	-2.11	1.40	2.41
FTSE Non-U.S. WGBI*	9.91	5.83	5.83	-9.35	-2.77	-1.26
FTSE Non-U.S. WGBI (Hgd)	5.95	8.02	8.02	-2.86	0.72	2.52
JPM EMBI Global Diversified**	9.16	11.09	11.09	-3.56	1.67	3.22
JPM GBI-EM Global Diversified***	8.07	12.70	12.70	-3.16	1.14	0.09

All data in the table are percentages.

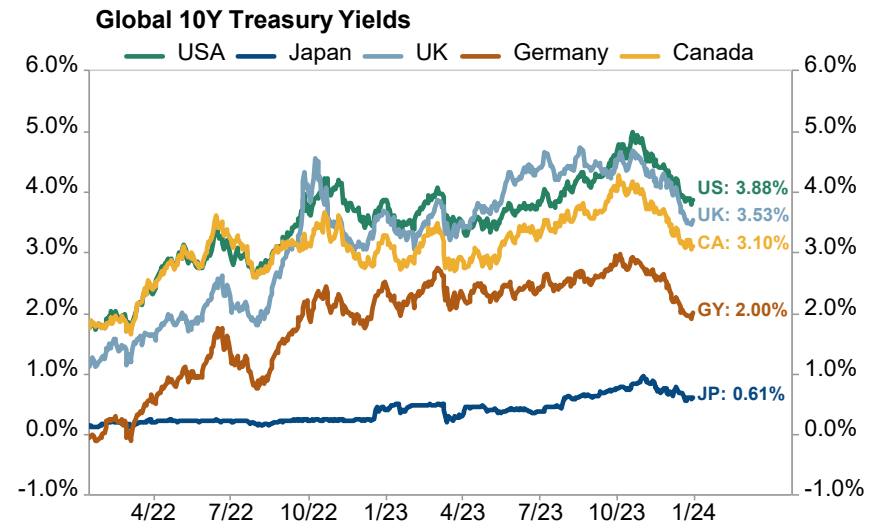
* Formerly Citigroup. The FTSE Non-U.S. World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment grade sovereign bonds excluding the U.S.

** 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 declined in most developed markets during the quarter. Both the ECB and the Bank of England kept policy rates unchanged during the fourth quarter as inflation remains the main concern in Europe and UK.
- Global central banks kept interest rates at record highs in anticipation of inflation resurgence.
- The U.S. dollar depreciated relative to the yen, British pound and Euro.
- Global returns were positive for the quarter ended December 31, with Non-U.S. sovereign bonds exhibiting the strongest performance.



Total Fund Composite

City of Memphis OPEB Trust

Asset Allocation Comparison

Portfolio Value 12/31/23

\$4,408,624

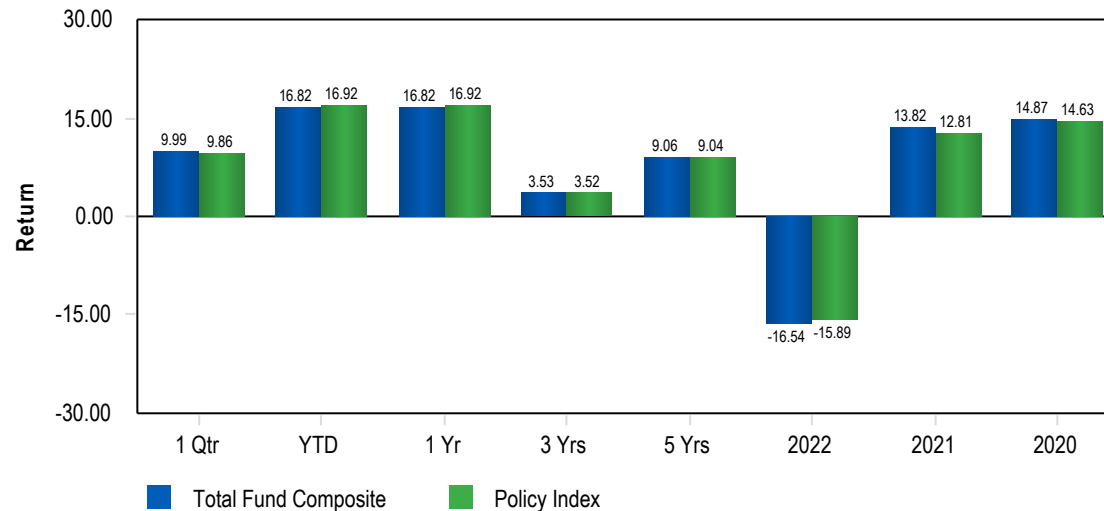
<u>Target Allocations</u>			<u>Current Managers & Allocations</u>			<u>Difference</u>	<u>Range</u>
Equity		(000)			(000)		
Domestic Equity	47.50%	\$2,094	Vanguard Total Stock Market Index	50.59%	\$2,230		40.0%-55.0%
International Equity	15.00%	\$661	Vanguard Developed Market Index	13.37%	\$590		10.0%-20.0%
Equity Total	62.50%	\$2,755	Equity Total	63.96%	\$2,820	1.46%	50.0%-65.0%¹
Fixed Income							
Fixed Income	37.50%	\$1,653	Vanguard Total Bond Market Index	36.03%	\$1,589		
Fixed Income Total	37.50%	\$1,653	Fixed Income Total	36.03%	\$1,589	-1.47%	30.0%-45.0%
Internal Account	0.00%	\$0	Fidelity Money Market Fund	0.00%	\$0		
Cash	0.00%	\$0	Cash	0.00%	\$0		0%-2%
Total	100%	\$4,409	Total	100%	\$4,409		

¹ Total Equity may not exceed 65%.

Asset Allocation by Segment

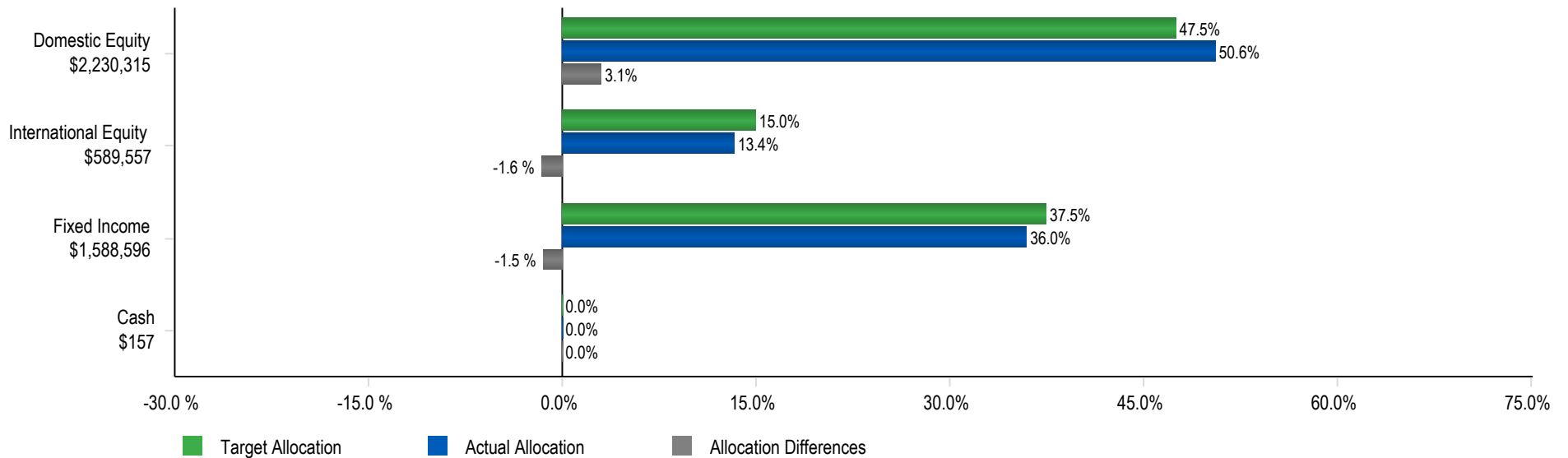
Segments	Market Value (\$)	Allocation (%)
Domestic Equity	2,230,315	50.6
Domestic Fixed Income	1,588,596	36.0
International Equity	589,557	13.4
Cash	157	0.0

Performance Bar Chart



Gain / Loss

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Total Fund Composite					
Beginning Market Value	4,008,230	3,774,005	3,774,005	3,969,622	2,855,563
Net Cash Flows					
Income	-4,133	42,575	42,575	183,326	391,458
Gain/Loss	404,527	592,044	592,044	255,676	1,161,603
Ending Market Value	4,408,624	4,408,624	4,408,624	4,408,624	4,408,624



	Asset Allocation (\$)	Asset Allocation (%)	Target Allocation (%)	Differences (%)	Minimum Allocation (%)	Maximum Allocation (%)
Domestic Equity	2,230,315	50.6	47.5	3.1	40.0	55.0
International Equity	589,557	13.4	15.0	-1.6	10.0	20.0
Fixed Income	1,588,596	36.0	37.5	-1.5	30.0	45.0
Cash	157	0.0	0.0	0.0	0.0	2.0
Total Fund	4,408,624	100.0	100.0	0.0		

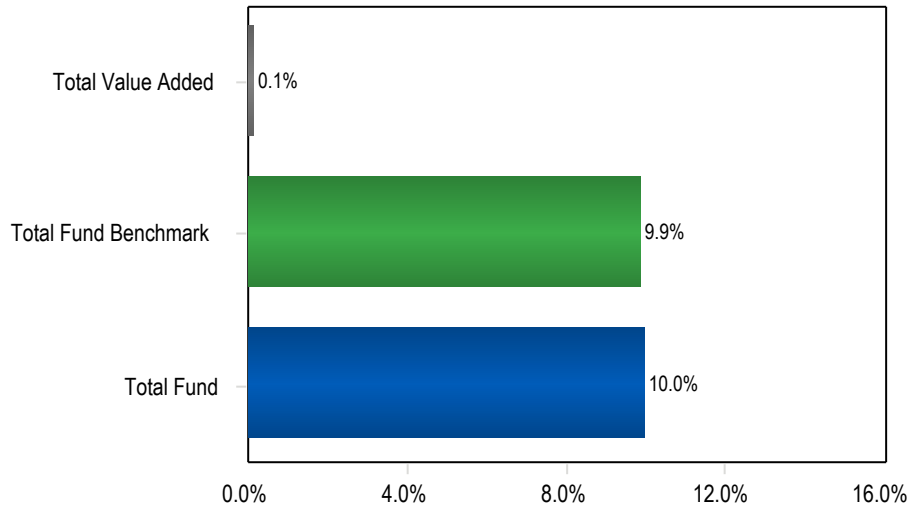
	(\$)	Total Fund	%
Total Fund Composite	4,408,624		100.0
Vanguard Total Stock Market	2,230,315		50.6
Vanguard Developed Markets Index	589,557		13.4
Vanguard Total Bond Market	1,588,596		36.0
Fidelity Money Market Fund	157		0.0

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Total Fund Composite	10.0	16.8	16.8	3.5	9.1	7.8	6.9	7.6	07/01/2008
<i>Policy Index</i>	9.9	16.9	16.9	3.5	9.0	7.8	7.0	7.4	
All Public Plans-Total Fund Median	7.9	12.7	12.7	4.0	8.7	7.6	6.7	6.8	
Total Fund Composite Rank	6	7	7	59	38	45	41	14	
Vanguard Total Stock Market	12.2	26.0	26.0	8.4	15.1	12.8	11.4	10.9	07/01/2008
<i>Russell 3000 Index</i>	12.1	26.0	26.0	8.5	15.2	12.8	11.5	10.8	
IM U.S. Multi-Cap Equity (MF) Median	11.6	20.6	20.6	7.9	12.7	10.6	9.2	9.0	
Vanguard Total Stock Market Rank	38	29	29	44	25	25	17	17	
Vanguard Developed Markets Index	11.1	17.7	17.7	3.6	8.3	7.1	4.5	7.0	01/01/2012
<i>Developed Market Policy Index</i>	10.9	18.3	18.3	3.9	8.7	7.3	4.9	7.3	
IM International Equity (MF) Median	9.4	15.2	15.2	0.6	7.1	6.1	3.7	6.1	
Vanguard Developed Markets Index Rank	25	30	30	27	29	30	28	26	
Vanguard Total Bond Market	6.7	5.7	5.7	-3.4	1.1	1.3	1.8	2.8	07/01/2008
<i>Blmbg. U.S. Aggregate</i>	6.8	5.5	5.5	-3.3	1.1	1.3	1.8	2.9	
IM U.S. Broad Market Core Fixed Income (MF) Median	6.8	5.8	5.8	-3.4	1.2	1.3	1.8	3.0	
Vanguard Total Bond Market Rank	60	54	54	41	57	49	48	60	
Fidelity Money Market Fund	1.3	4.9	4.9	2.1	1.7	1.5	1.1	1.2	10/01/2014
<i>90 Day U.S. Treasury Bill</i>	1.4	5.0	5.0	2.2	1.9	1.7	1.2	1.3	
IM U.S. Taxable Money Market (MF) Median	1.3	4.9	4.9	2.1	1.7	1.5	1.1	1.1	
Fidelity Money Market Fund Rank	56	52	52	51	52	50	48	48	

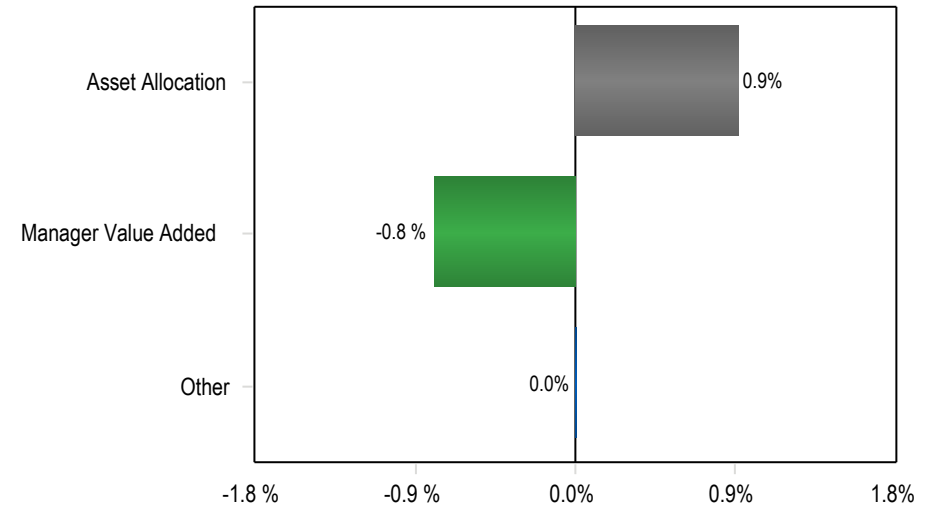
	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Fund Composite	-16.5	13.8	14.9	21.0	-4.7	15.0	7.4	0.3	7.1	17.8
<i>Policy Index</i>	-15.9	12.8	14.6	21.2	-4.4	14.8	7.3	0.6	7.4	17.6
Vanguard Total Stock Market	-19.5	25.7	21.0	30.8	-5.2	21.2	12.7	0.4	12.5	33.5
<i>Russell 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	

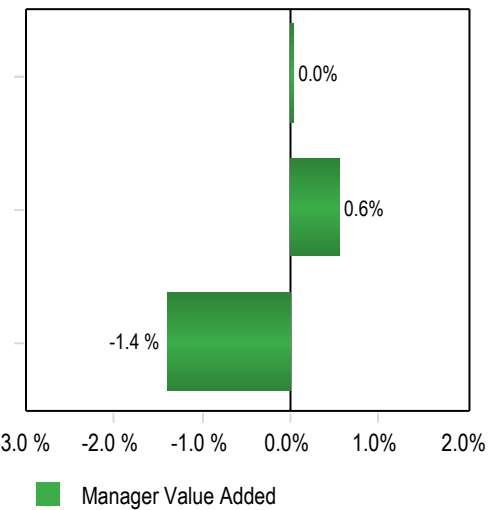
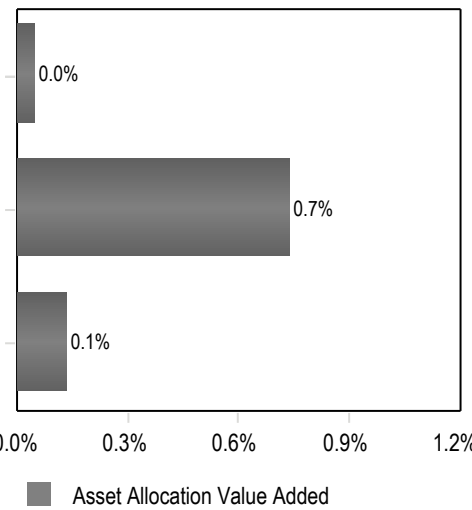
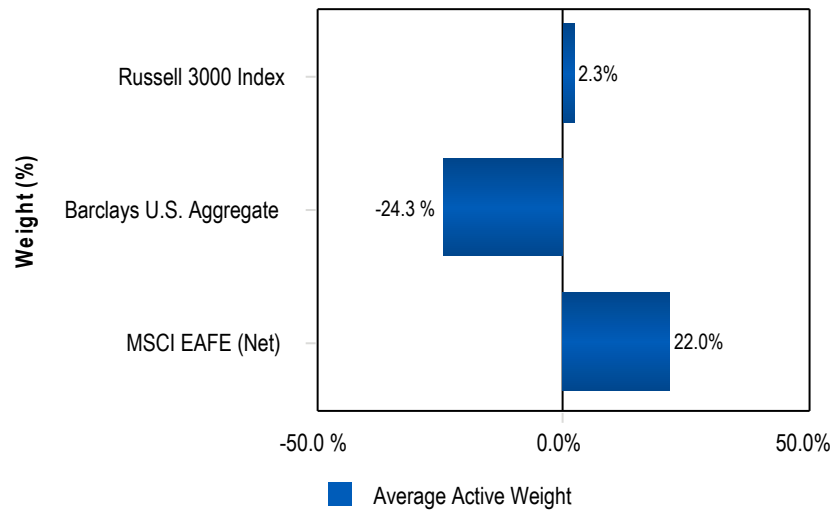
Total Fund Performance

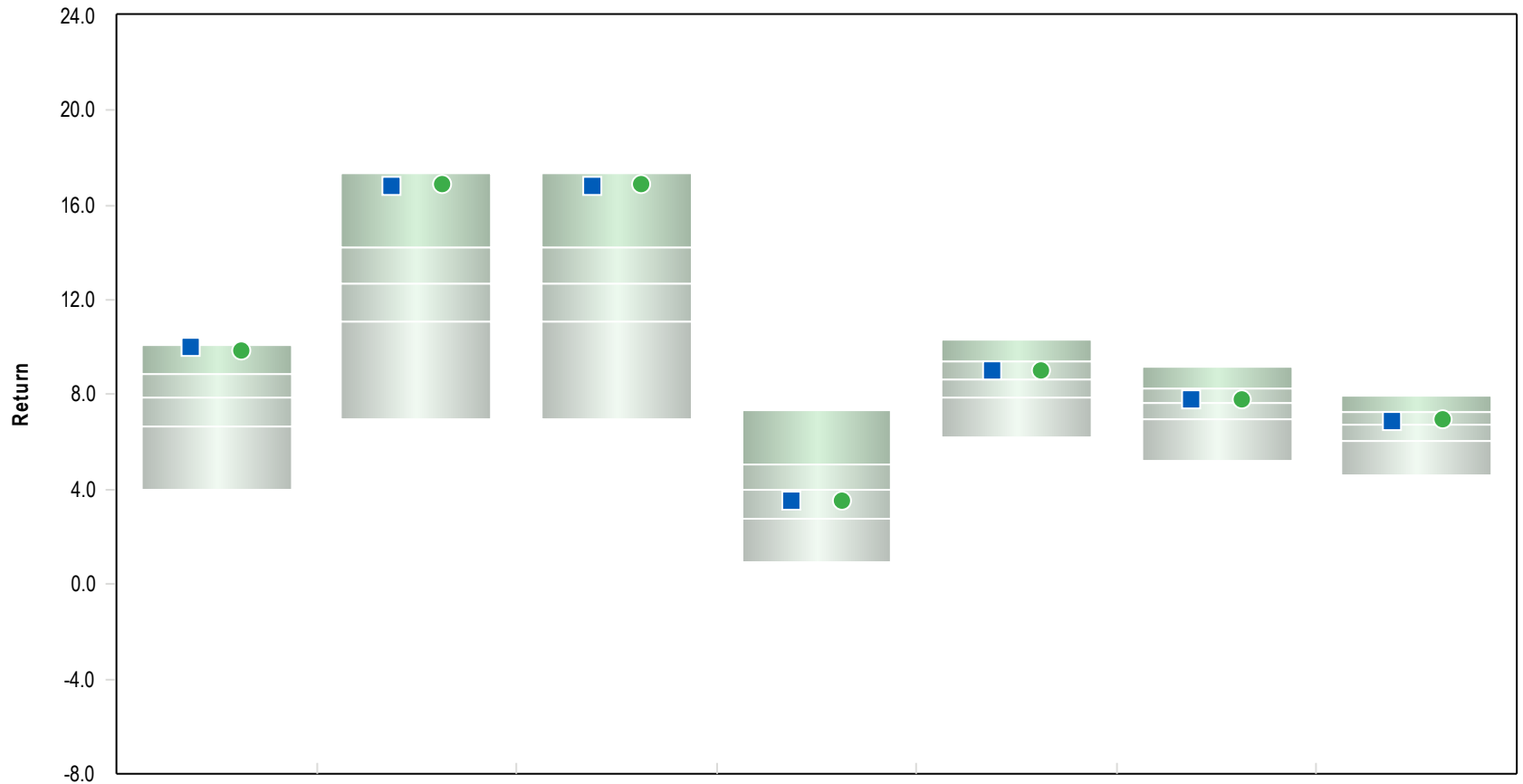


Total Value Added:0.1%



Total Asset Allocation:0.9% **Total Manager Value Added:-0.8%**

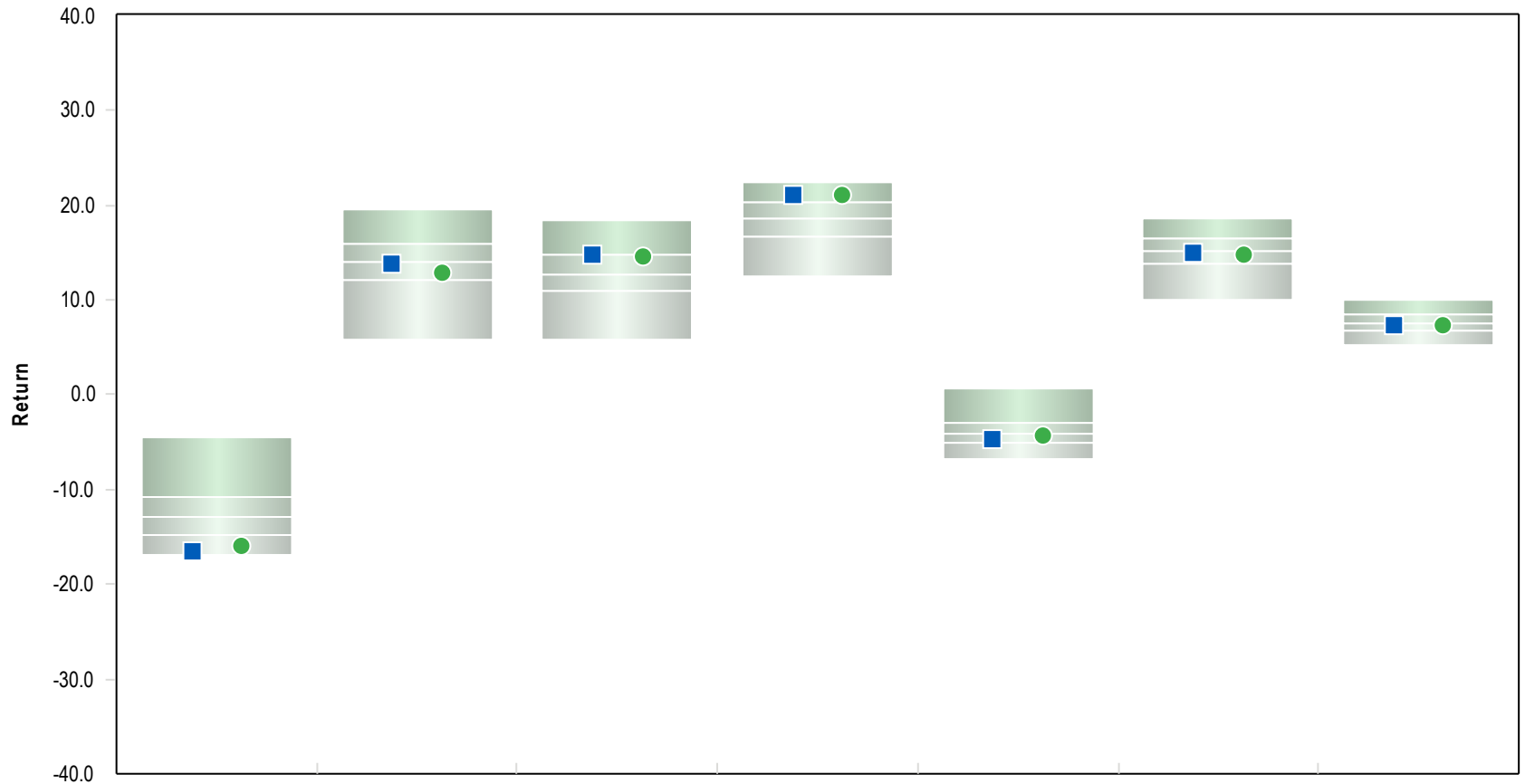




	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Total Fund Composite	10.0 (6)	16.8 (7)	16.8 (7)	3.5 (59)	9.1 (38)	7.8 (45)	6.9 (41)
● Policy Index	9.9 (8)	16.9 (7)	16.9 (7)	3.5 (60)	9.0 (39)	7.8 (44)	7.0 (38)

5th Percentile	10.1	17.3	17.3	7.4	10.3	9.2	8.0
1st Quartile	8.9	14.2	14.2	5.1	9.4	8.3	7.3
Median	7.9	12.7	12.7	4.0	8.7	7.6	6.7
3rd Quartile	6.6	11.1	11.1	2.7	7.9	7.0	6.1
95th Percentile	4.0	7.0	7.0	1.0	6.2	5.2	4.6

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

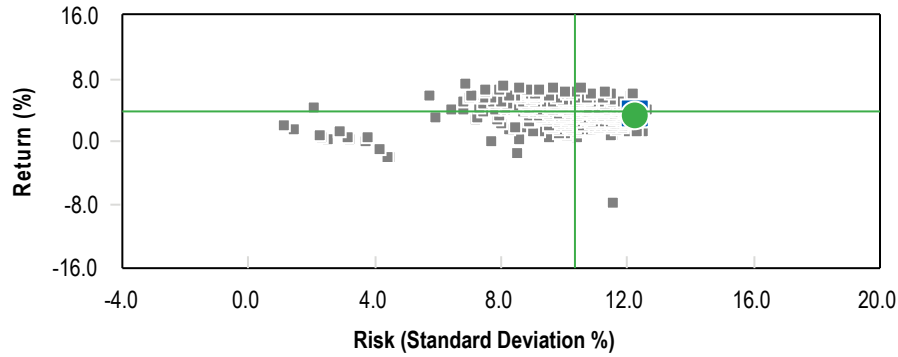


	2022	2021	2020	2019	2018	2017	2016
■ Total Fund Composite	-16.5 (93)	13.8 (53)	14.9 (24)	21.0 (18)	-4.7 (64)	15.0 (53)	7.4 (57)
● Policy Index	-15.9 (89)	12.8 (68)	14.6 (27)	21.2 (15)	-4.4 (55)	14.8 (57)	7.3 (62)

5th Percentile	-4.5	19.5	18.4	22.5	0.6	18.6	9.9
1st Quartile	-10.8	16.0	14.8	20.4	-2.9	16.5	8.4
Median	-12.9	14.0	12.6	18.7	-4.1	15.2	7.6
3rd Quartile	-14.8	12.2	11.0	16.7	-5.2	13.8	6.8
95th Percentile	-16.9	5.9	5.9	12.4	-6.9	10.1	5.2

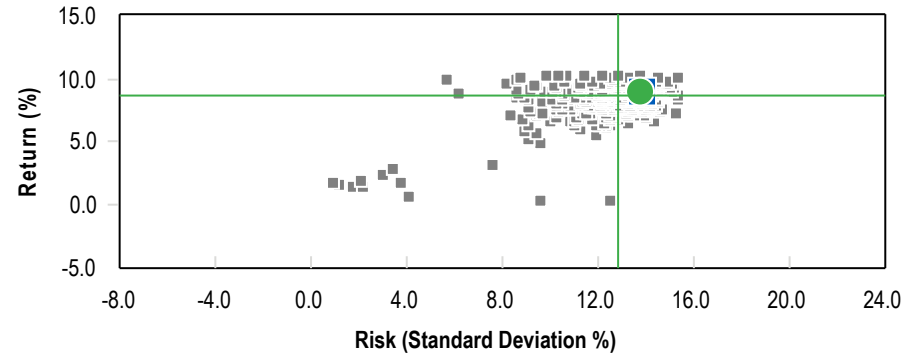
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Risk & Return Plan Sponsor — 3 Years



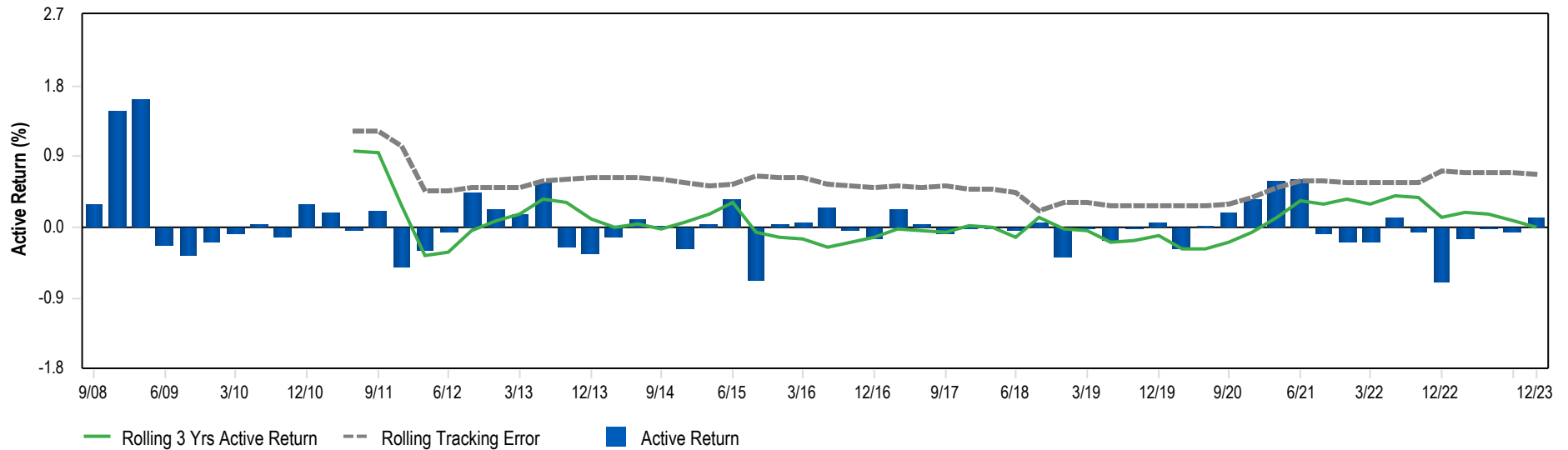
	Return	Standard Deviation
Total Fund Composite	3.5	12.2
Policy Index	3.5	12.2
Median	4.0	10.4

Risk & Return Plan Sponsor — 5 Years



	Return	Standard Deviation
Total Fund Composite	9.1	13.8
Policy Index	9.0	13.7
Median	8.7	12.9

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

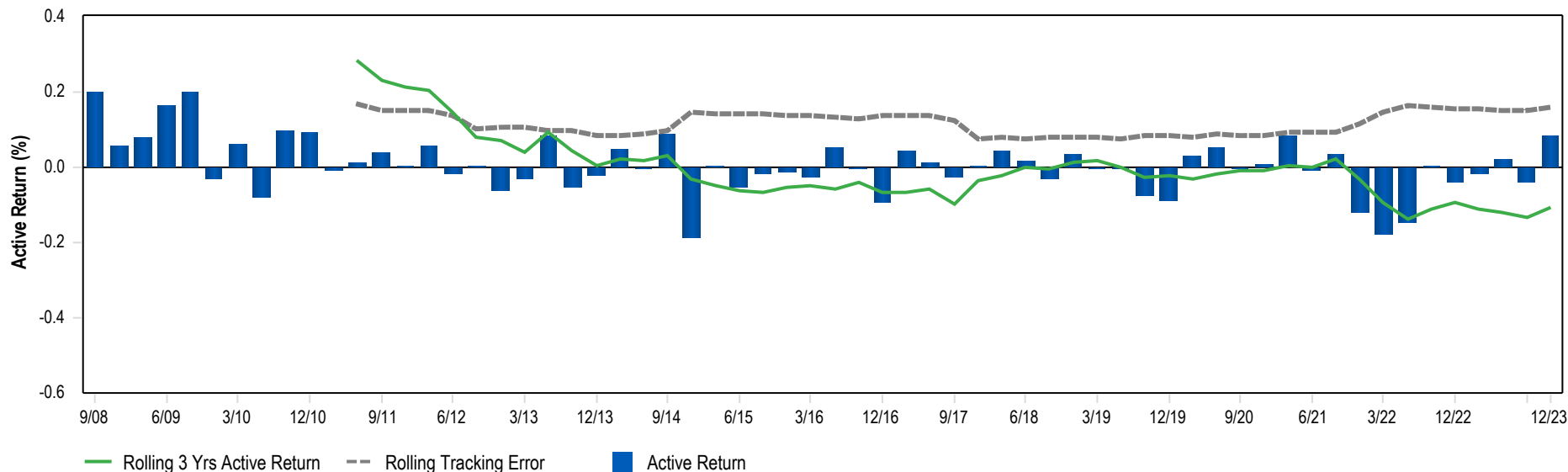
Periods Ending	Beginning Market Value (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending Market Value (\$)	%Return
From 06/2008	2,910,974		-474,478	2,436,496	-16.3
2009	2,436,496	6,000,000	1,023,156	9,459,652	21.3
2010	9,459,652	1,000,000	1,445,483	11,905,135	13.6
2011	11,905,135		455,833	12,360,968	3.8
2012	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
2023	3,774,005		634,619	4,408,624	16.8

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

Vanguard Total Stock Market Index Fund

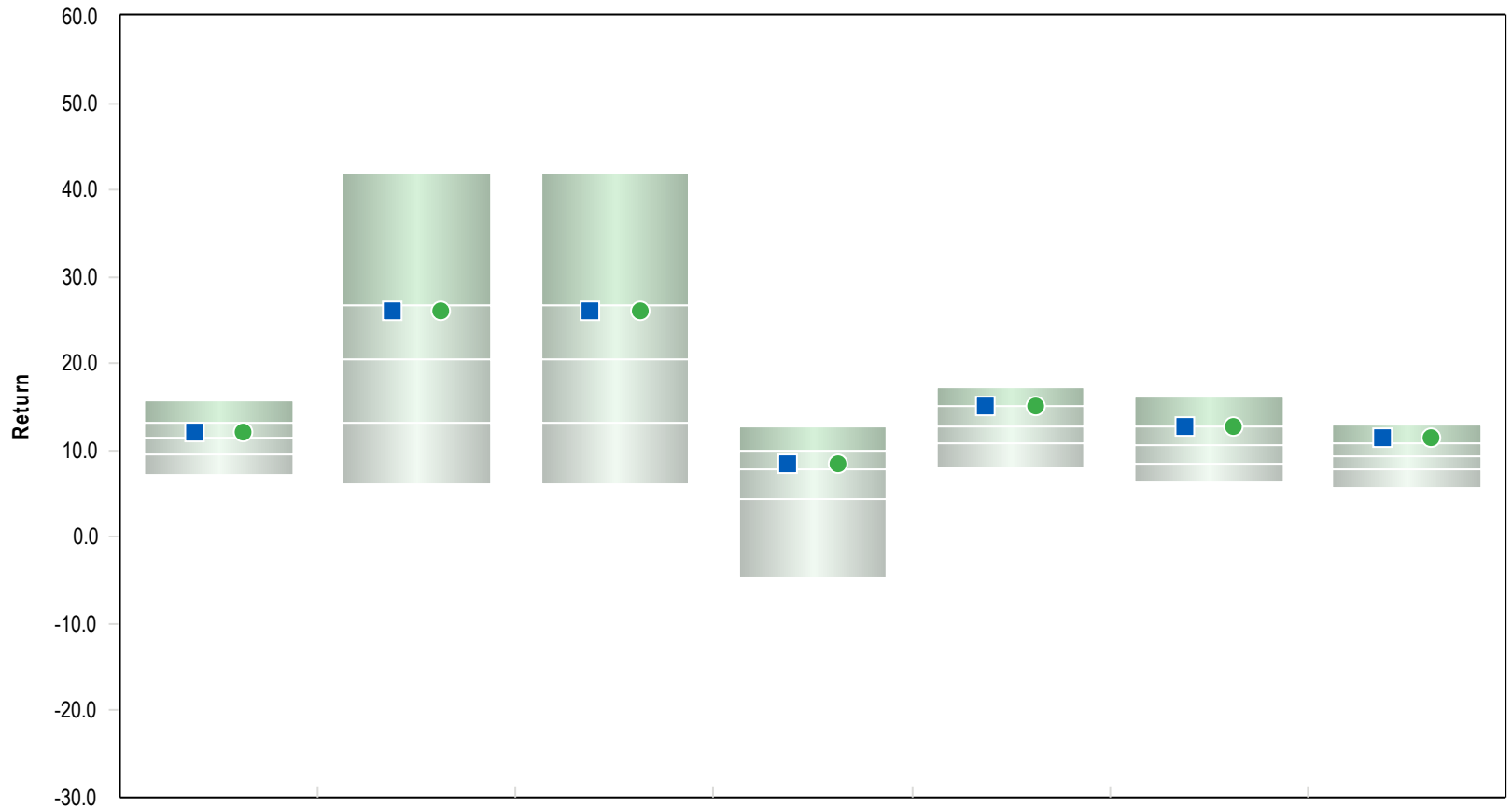
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Vanguard Total Stock Market					
Beginning Market Value	1,988,544	1,769,976	1,769,976	2,142,628	1,353,881
Net Cash Flows				-458,894	-458,894
Income				49,232	133,630
Gain/Loss	241,770	460,338	460,338	497,349	1,201,697
Ending Market Value	2,230,315	2,230,315	2,230,315	2,230,315	2,230,315

Rolling Return and Tracking Error



Performance

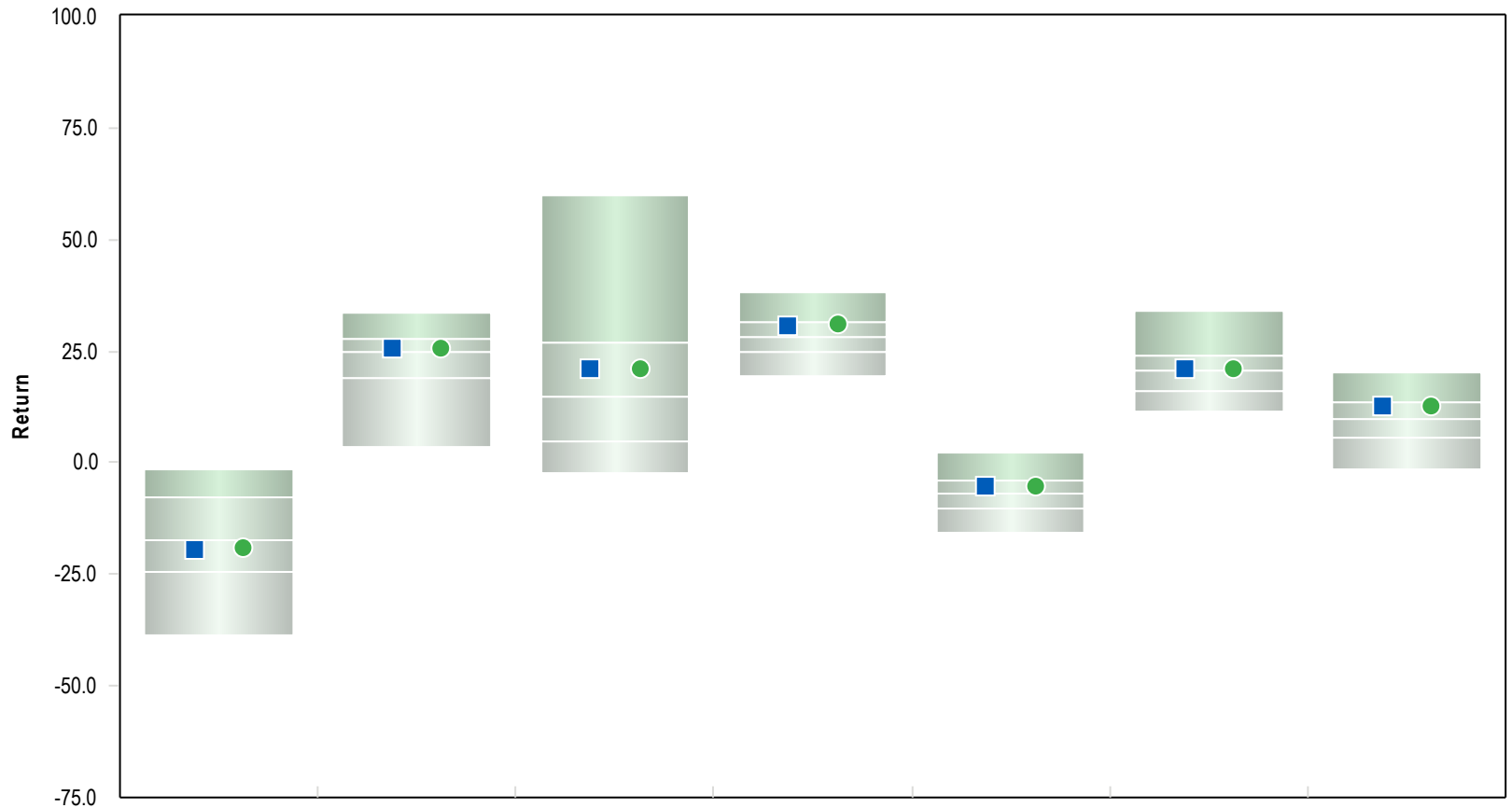
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Total Stock Market	12.2	26.0	26.0	8.4	15.1	12.8	11.4
Russell 3000 Index	12.1	26.0	26.0	8.5	15.2	12.8	11.5
Difference	0.1	0.0	0.0	-0.1	-0.1	0.0	-0.1



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Total Stock Market	12.2 (38)	26.0 (29)	26.0 (29)	8.4 (44)	15.1 (25)	12.8 (25)	11.4 (17)
● Russell 3000 Index	12.1 (40)	26.0 (29)	26.0 (29)	8.5 (42)	15.2 (23)	12.8 (24)	11.5 (16)

5th Percentile	15.8	42.0	42.0	12.8	17.3	16.1	13.0
1st Quartile	13.1	26.7	26.7	9.9	15.0	12.7	10.8
Median	11.6	20.5	20.5	7.9	12.7	10.6	9.2
3rd Quartile	9.6	13.1	13.1	4.4	10.7	8.5	7.9
95th Percentile	7.2	6.0	6.0	-4.7	7.9	6.2	5.8

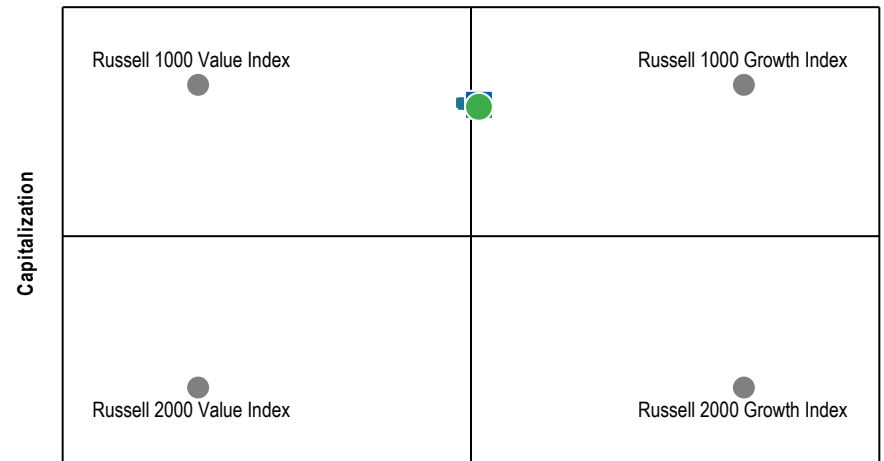
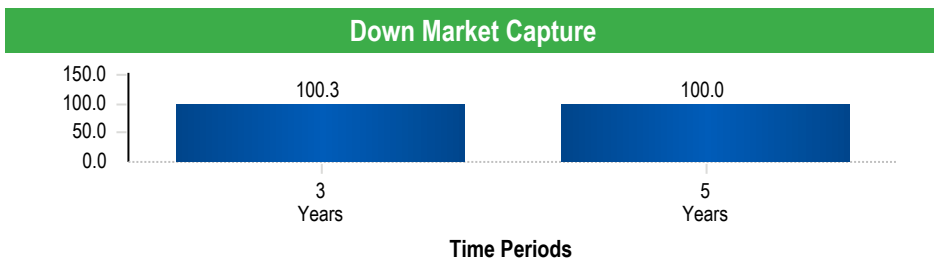
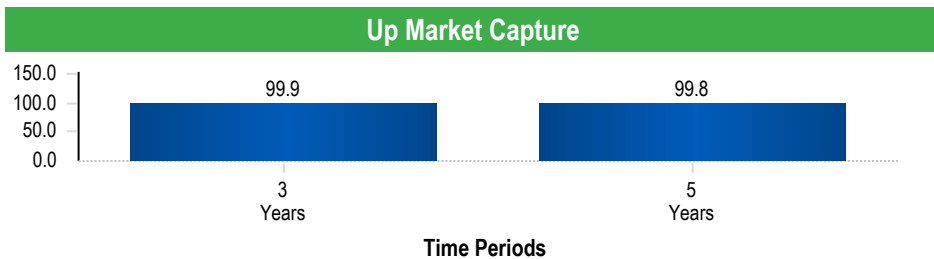
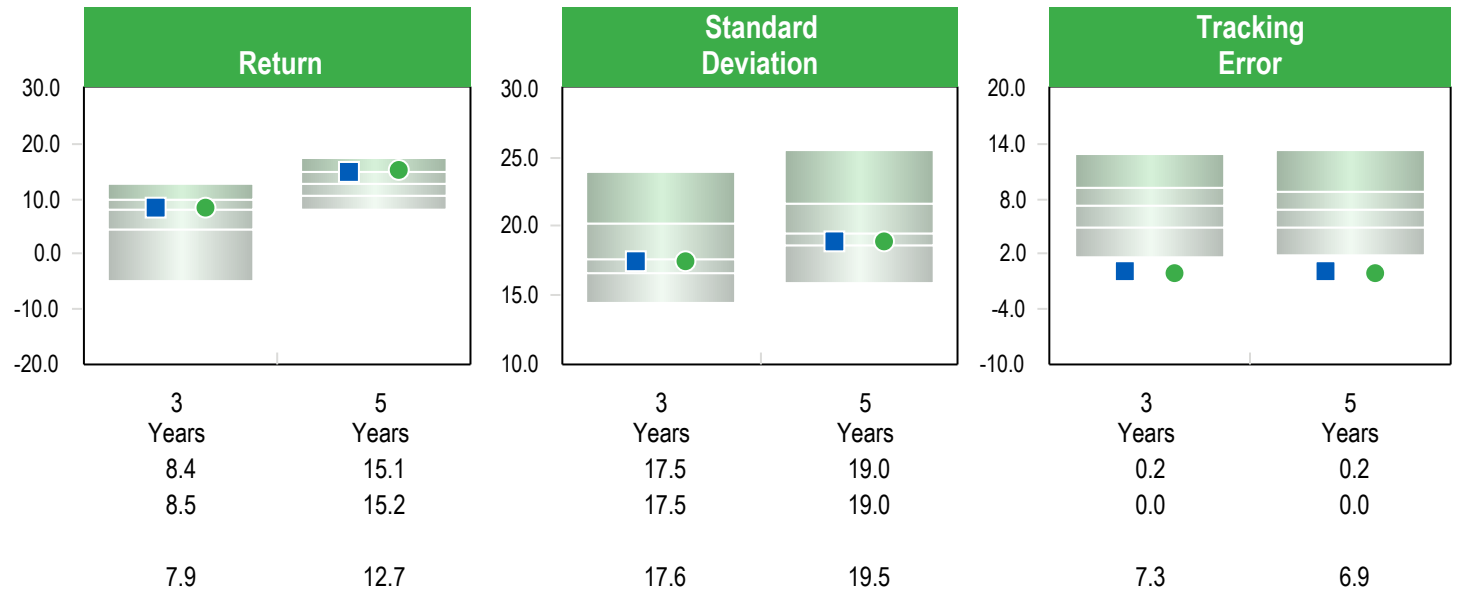
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



	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 (29)	-5.2 (34)	21.1 (45)	12.7 (32)

5th Percentile	-1.3	33.5	60.1	38.2	2.3	34.0	20.2
1st Quartile	-7.9	27.8	26.8	31.6	-4.0	24.2	13.7
Median	-17.5	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	-38.7	3.3	-2.5	19.3	-15.9	11.5	-1.3

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



Style History Dec-2023 Average Style Exposure

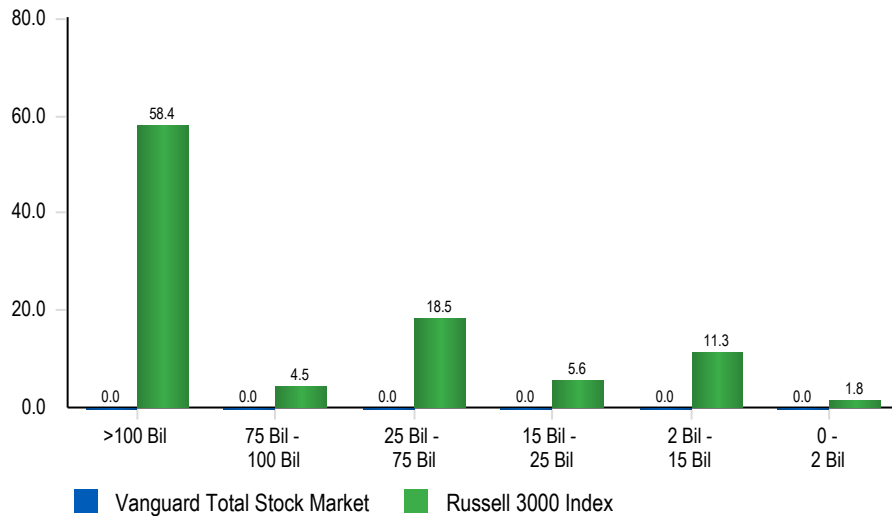
Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	0.0	6.1	0.0	
Microsoft Corp	0.0	6.0	0.0	
Amazon.com Inc	0.0	2.9	0.0	
NVIDIA Corporation	0.0	2.5	0.0	
Google Inc [A]	0.0	1.8	0.0	
Meta Platforms Inc	0.0	1.7	0.0	
Alphabet Inc	0.0	1.5	0.0	
Tesla Inc	0.0	1.5	0.0	
Berkshire Hathaway Inc	0.0	1.4	0.0	
Eli Lilly and Co	0.0	1.1	0.0	
% of Portfolio	0.0	26.5	-26.5	

Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$)		618,100,953,824
Median Mkt. Cap (\$)		2,174,667,120
Price/Earnings ratio		22.8
Price/Book ratio		4.1
5 Yr. EPS Growth Rate (%)		16.6
Current Yield (%)		1.5
Beta (5 Years, Monthly)	1.0	1.0
Number of Stocks	0	2,976

Distribution of Market Capitalization (%)



Sector Weights (%)

No data found.

Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	0.0	6.1	0.0	
Microsoft Corp	0.0	6.0	0.0	
Amazon.com Inc	0.0	2.9	0.0	
NVIDIA Corporation	0.0	2.5	0.0	
Google Inc [A]	0.0	1.8	0.0	
Meta Platforms Inc	0.0	1.7	0.0	
Alphabet Inc	0.0	1.5	0.0	
Tesla Inc	0.0	1.5	0.0	
Berkshire Hathaway Inc	0.0	1.4	0.0	
Eli Lilly and Co	0.0	1.1	0.0	
% of Portfolio	0.0	26.5	-26.5	

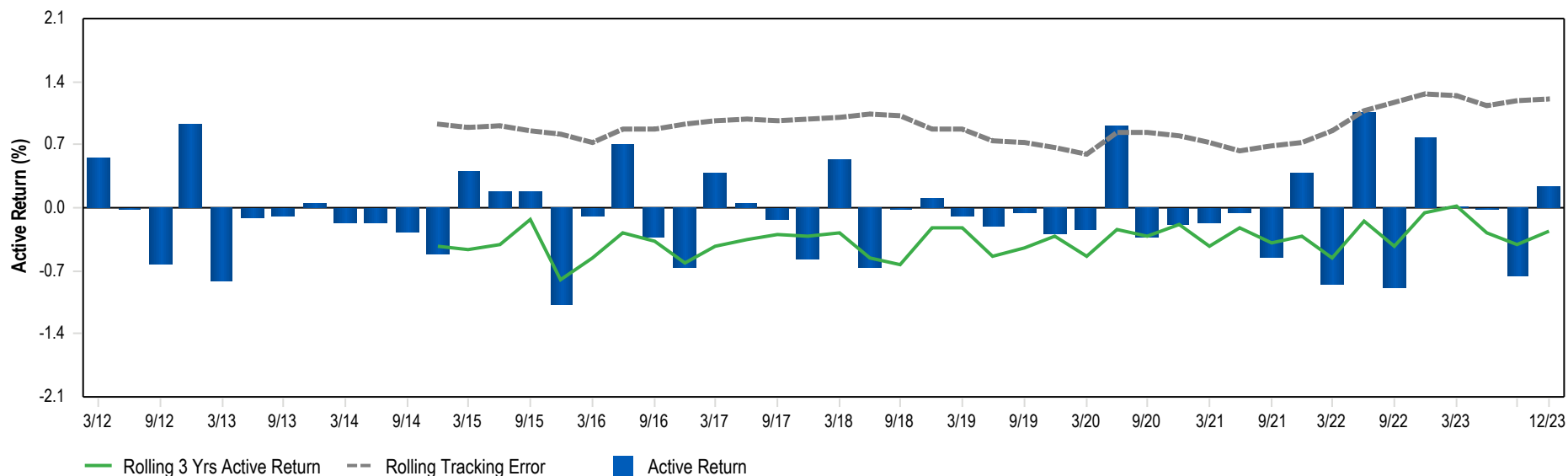
Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	0.0	6.1	0.0	
Microsoft Corp	0.0	6.0	0.0	
Amazon.com Inc	0.0	2.9	0.0	
NVIDIA Corporation	0.0	2.5	0.0	
Google Inc [A]	0.0	1.8	0.0	
Meta Platforms Inc	0.0	1.7	0.0	
Alphabet Inc	0.0	1.5	0.0	
Tesla Inc	0.0	1.5	0.0	
Berkshire Hathaway Inc	0.0	1.4	0.0	
Eli Lilly and Co	0.0	1.1	0.0	
% of Portfolio	0.0	26.5	-26.5	

Vanguard Total Developed Markets Index Fund

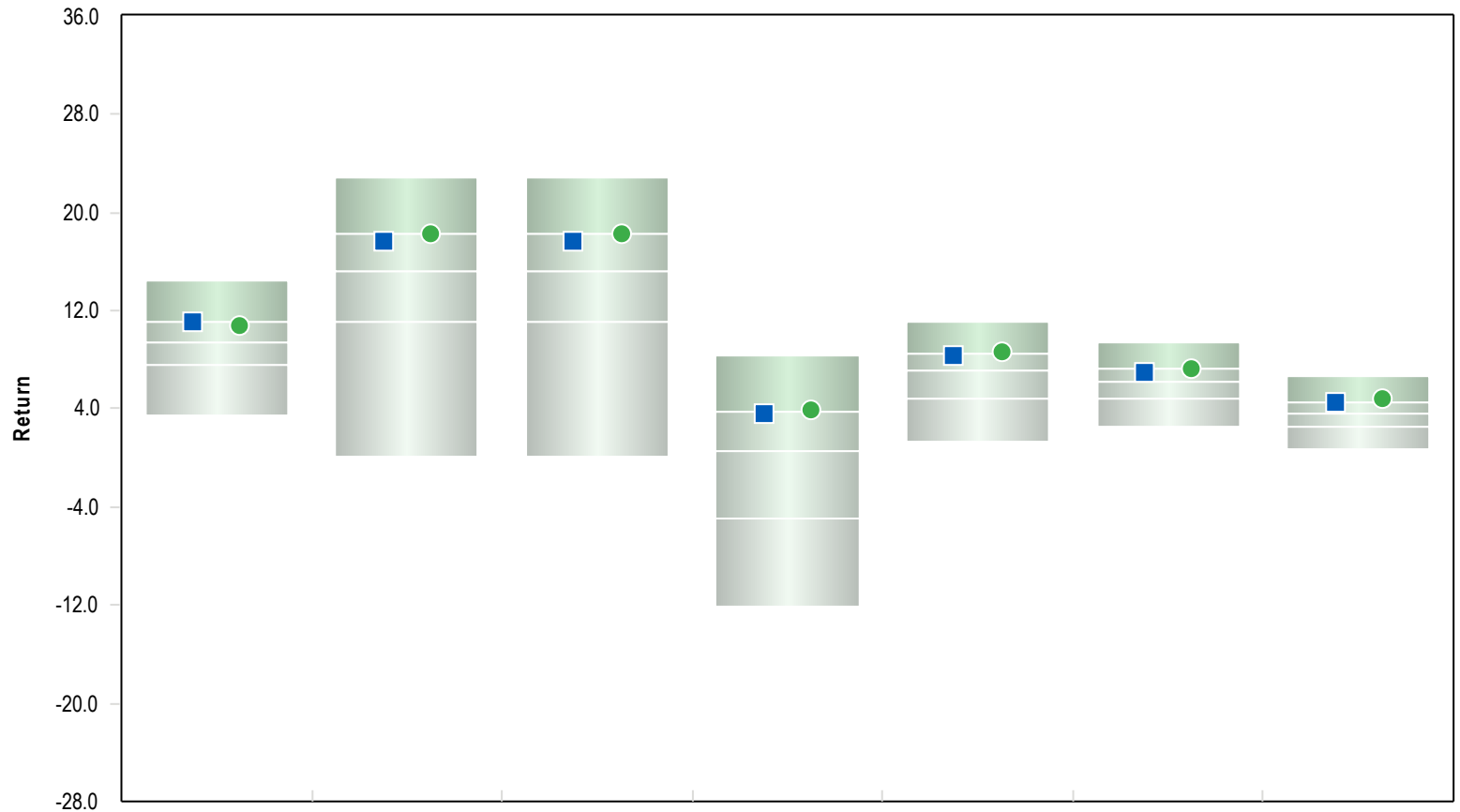
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Vanguard Developed Markets Index					
Beginning Market Value	530,565	501,004	501,004	530,964	394,888
Net Cash Flows					
Income		12,542	12,542	39,128	72,906
Gain/Loss	58,991	76,011	76,011	19,466	121,763
Ending Market Value	589,557	589,557	589,557	589,557	589,557

Rolling Return and Tracking Error



Performance

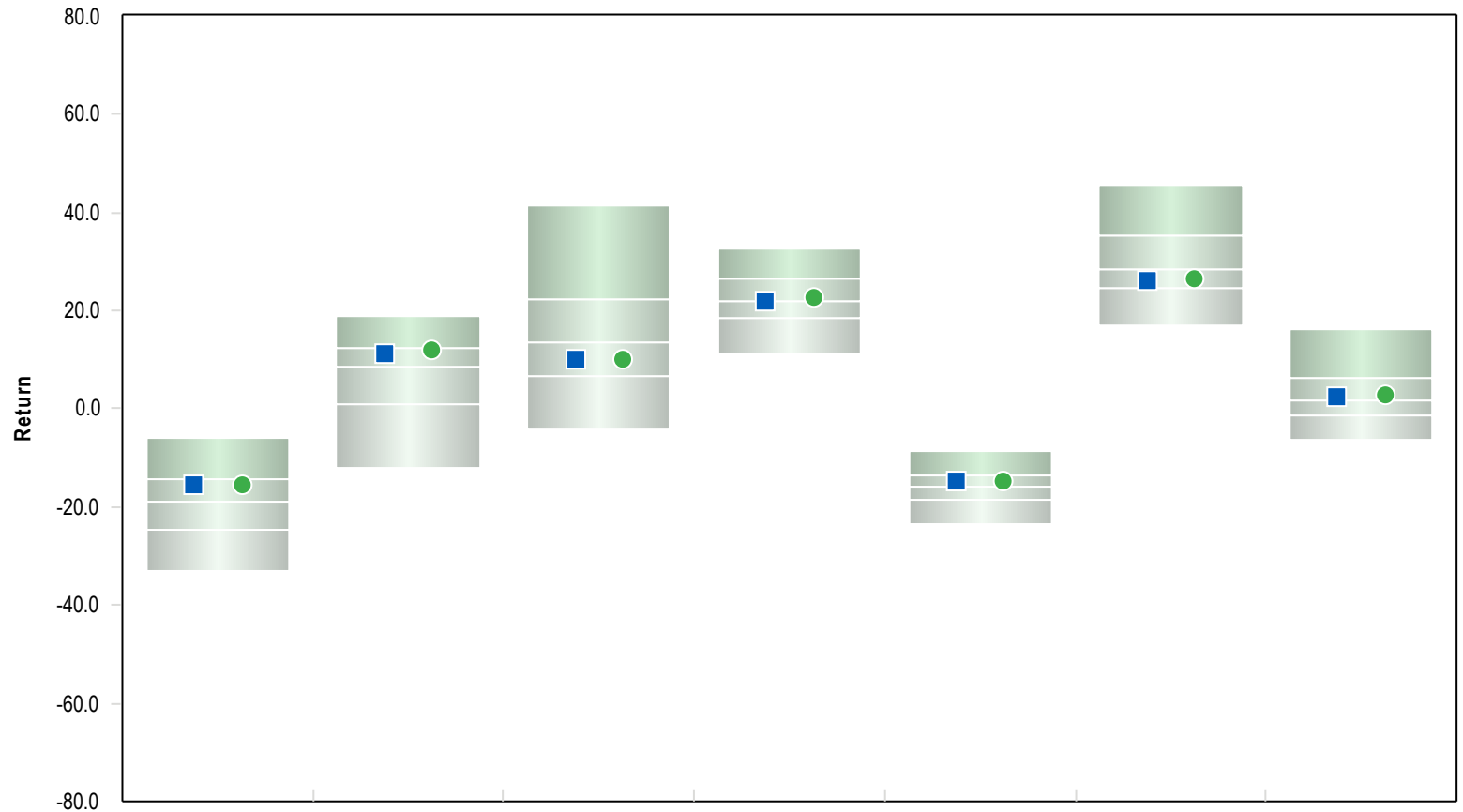
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Developed Markets Index	11.1	17.7	17.7	3.6	8.3	7.1	4.5
Developed Market Policy Index	10.9	18.3	18.3	3.9	8.7	7.3	4.9
Difference	0.2	-0.6	-0.6	-0.3	-0.4	-0.2	-0.4



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Developed Markets Index	11.1 (25)	17.7 (30)	17.7 (30)	3.6 (27)	8.3 (29)	7.1 (30)	4.5 (28)
● Developed Market Policy Index	10.9 (28)	18.3 (25)	18.3 (25)	3.9 (25)	8.7 (23)	7.3 (24)	4.9 (20)

5th Percentile	14.4	22.8	22.8	8.3	11.1	9.5	6.7
1st Quartile	11.1	18.2	18.2	3.8	8.5	7.3	4.6
Median	9.4	15.2	15.2	0.6	7.1	6.1	3.7
3rd Quartile	7.6	11.2	11.2	-5.0	4.8	4.9	2.6
95th Percentile	3.4	0.1	0.1	-12.2	1.3	2.6	0.7

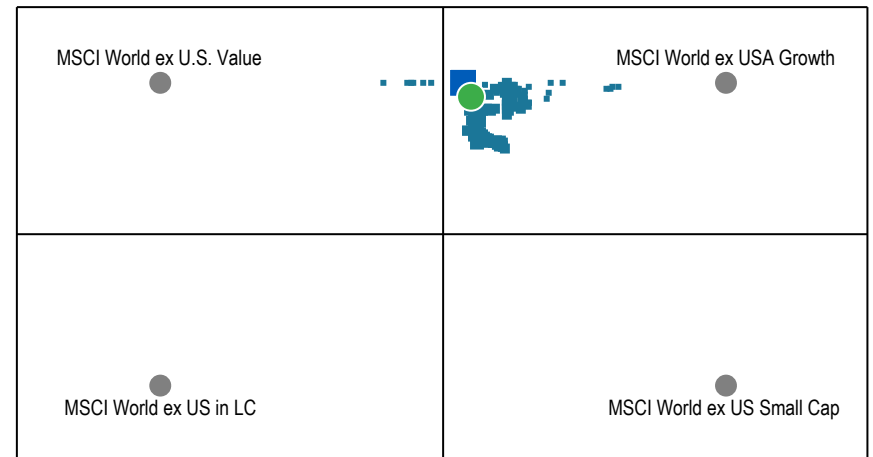
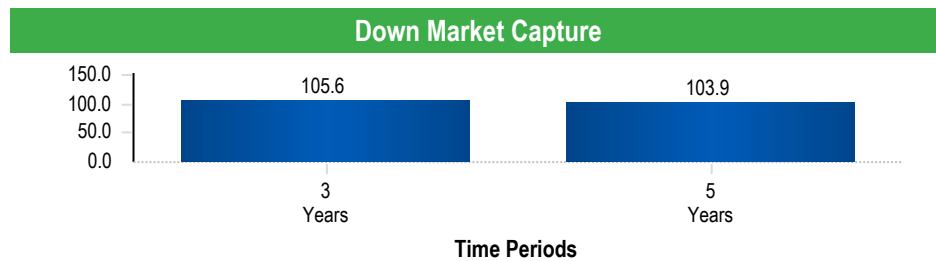
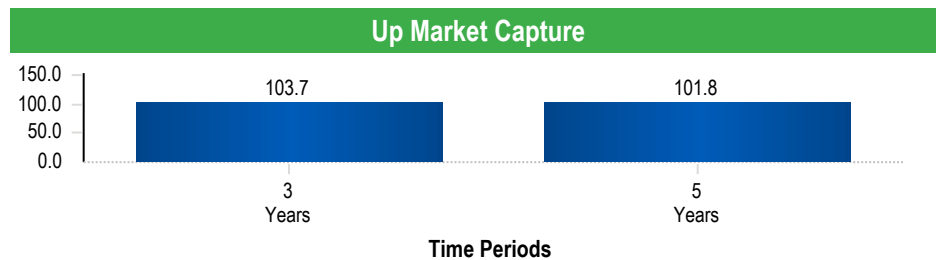
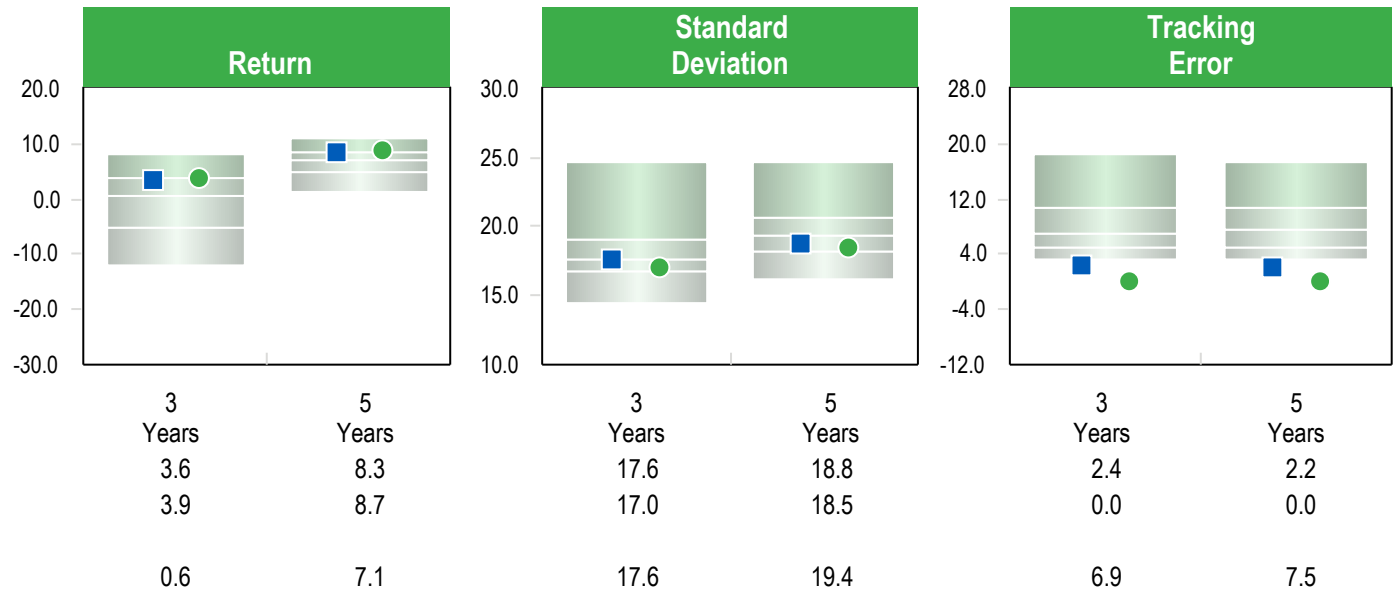
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



	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	41.5	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	-3.8	11.2	-23.3	17.0	-6.4

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



■ Style History
 ■ Dec-2023
 ● Average Style Exposure

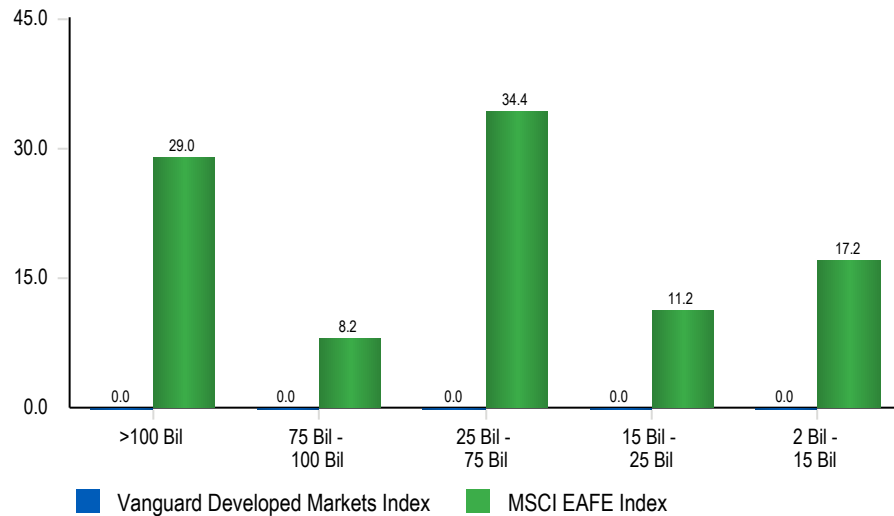
Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Novo Nordisk A/S	0.0	2.1	0.0	
Nestle SA, Cham Und Vevey	0.0	1.9	0.0	
ASML Holding NV	0.0	1.9	0.0	
LVMH Moet Hennessy Louis Vuitton SE	0.0	1.4	0.0	
Shell Plc	0.0	1.3	0.0	
Astrazeneca PLC	0.0	1.3	0.0	
Novartis AG	0.0	1.3	0.0	
Roche Holding AG	0.0	1.3	0.0	
Toyota Motor Corp	0.0	1.2	0.0	
BHP Group Ltd	0.0	1.1	0.0	
% of Portfolio	0.0	14.8	-14.8	

Sector Weights (%)

No data found.

Distribution of Market Capitalization (%)



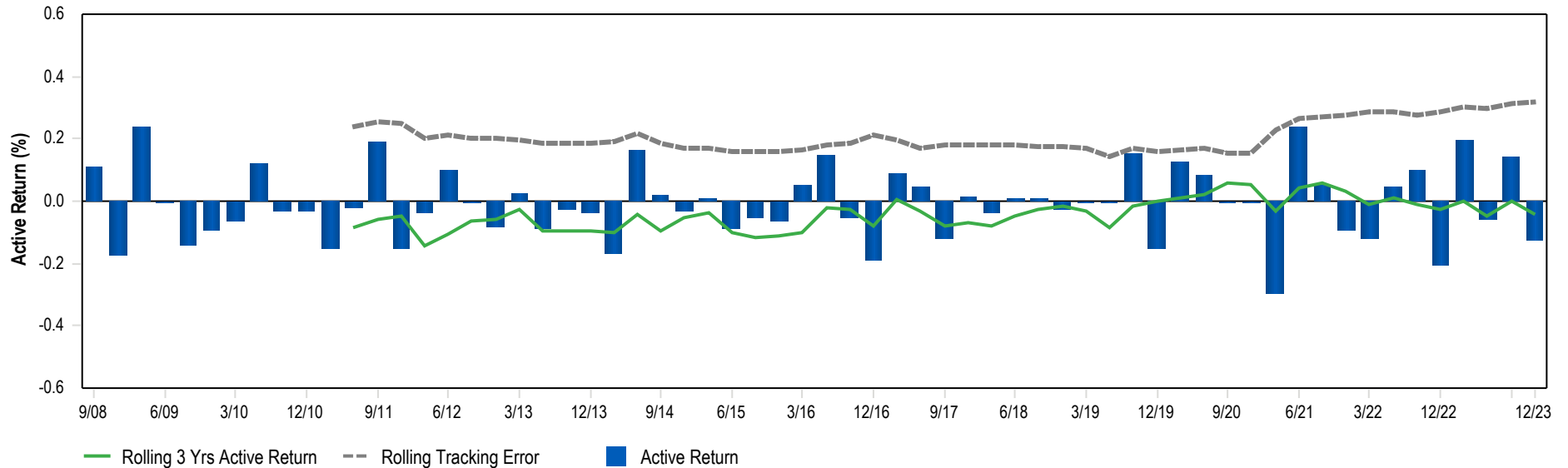
Region

No data found.

Vanguard Total Bond Market Index Fund

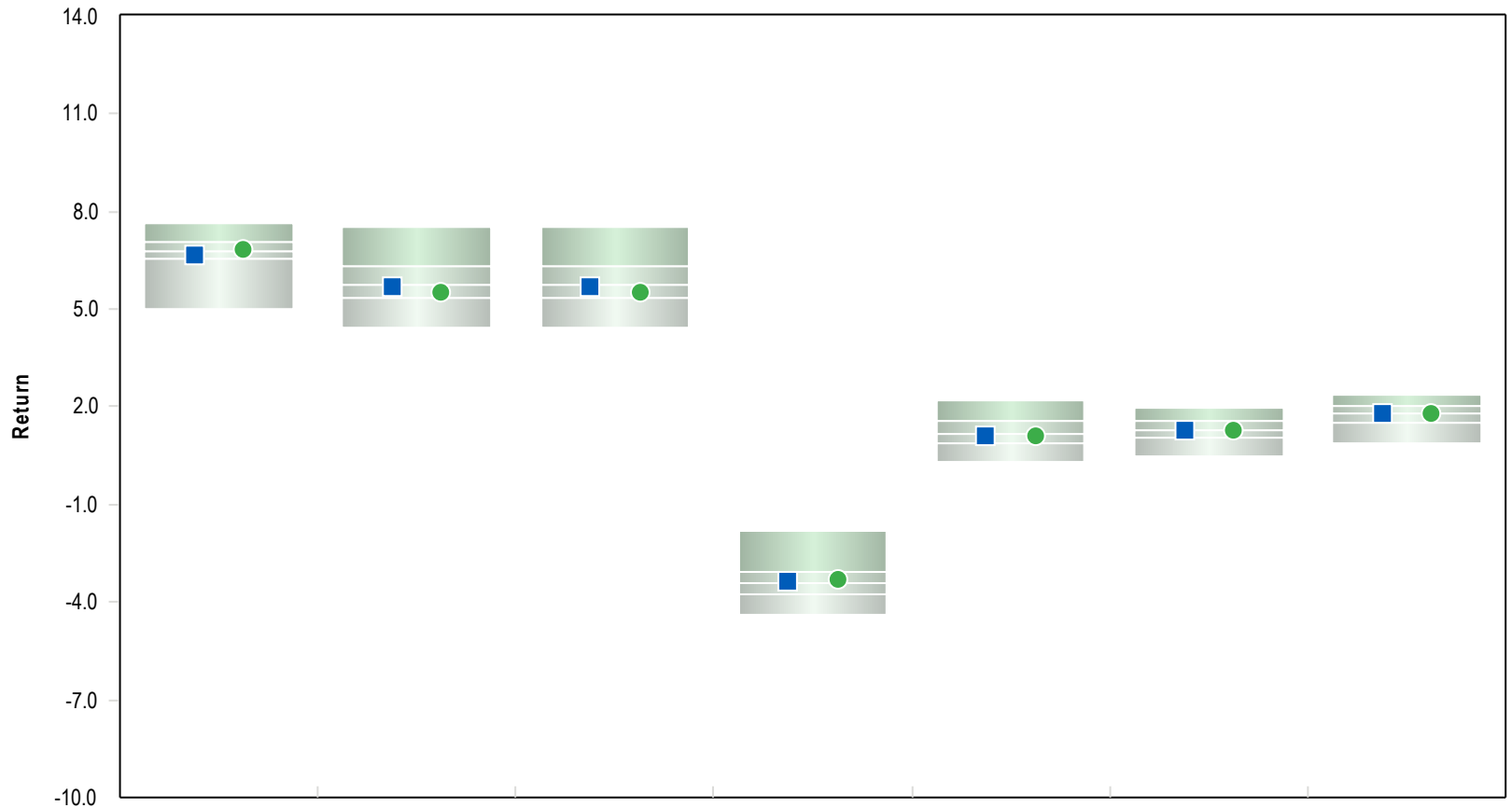
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Vanguard Total Bond Market					
Beginning Market Value	1,488,966	1,502,876	1,502,876	1,295,417	1,106,196
Net Cash Flows				459,360	459,360
Income	-4,132	30,026	30,026	94,957	184,889
Gain/Loss	103,763	55,694	55,694	-261,138	-161,849
Ending Market Value	1,588,596	1,588,596	1,588,596	1,588,596	1,588,596

Rolling Return and Tracking Error



Performance

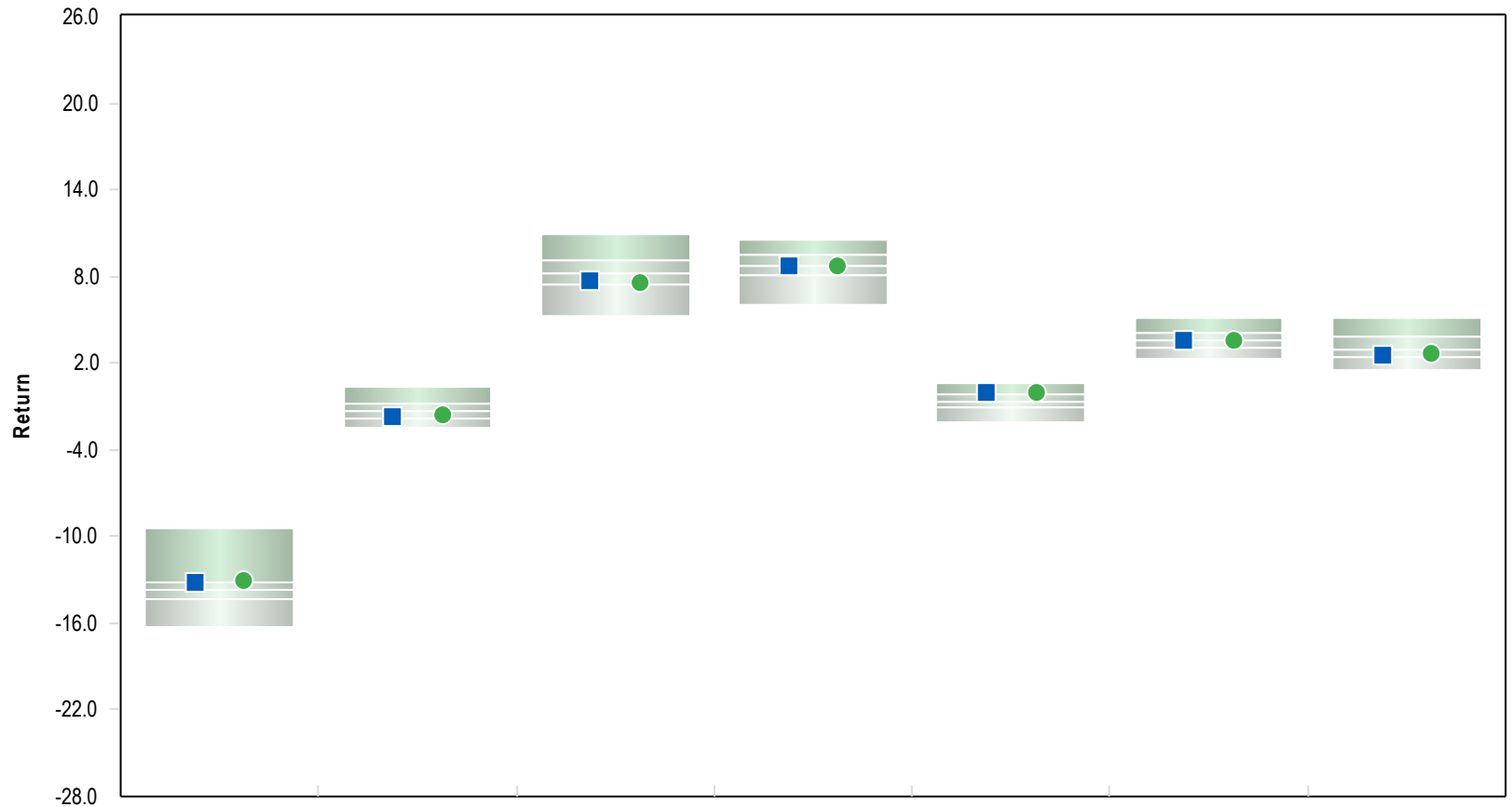
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Total Bond Market	6.7	5.7	5.7	-3.4	1.1	1.3	1.8
Blmbg. U.S. Aggregate	6.8	5.5	5.5	-3.3	1.1	1.3	1.8
Difference	-0.1	0.2	0.2	-0.1	0.0	0.0	0.0



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Total Bond Market	6.7 (60)	5.7 (54)	5.7 (54)	-3.4 (41)	1.1 (57)	1.3 (49)	1.8 (48)
● Blmbg. U.S. Aggregate	6.8 (46)	5.5 (65)	5.5 (65)	-3.3 (38)	1.1 (58)	1.3 (50)	1.8 (46)

5th Percentile	7.6	7.5	7.5	-1.8	2.2	2.0	2.4
1st Quartile	7.1	6.3	6.3	-3.1	1.6	1.6	2.0
Median	6.8	5.8	5.8	-3.4	1.2	1.3	1.8
3rd Quartile	6.6	5.3	5.3	-3.7	0.9	1.0	1.5
95th Percentile	5.0	4.4	4.4	-4.4	0.3	0.5	0.9

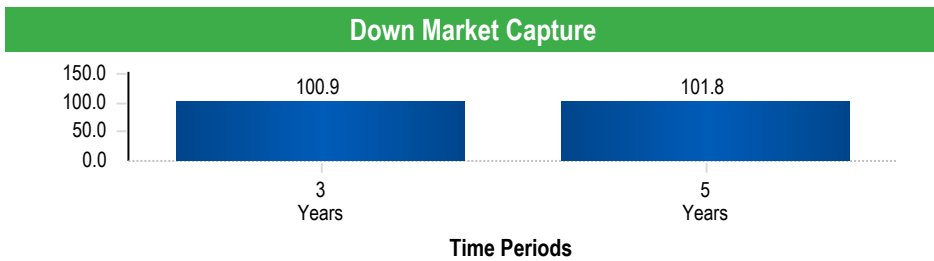
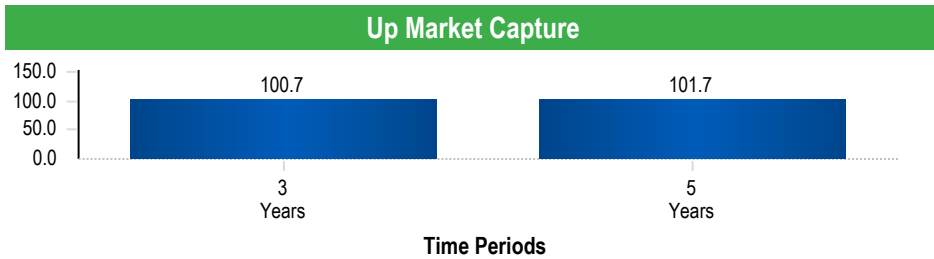
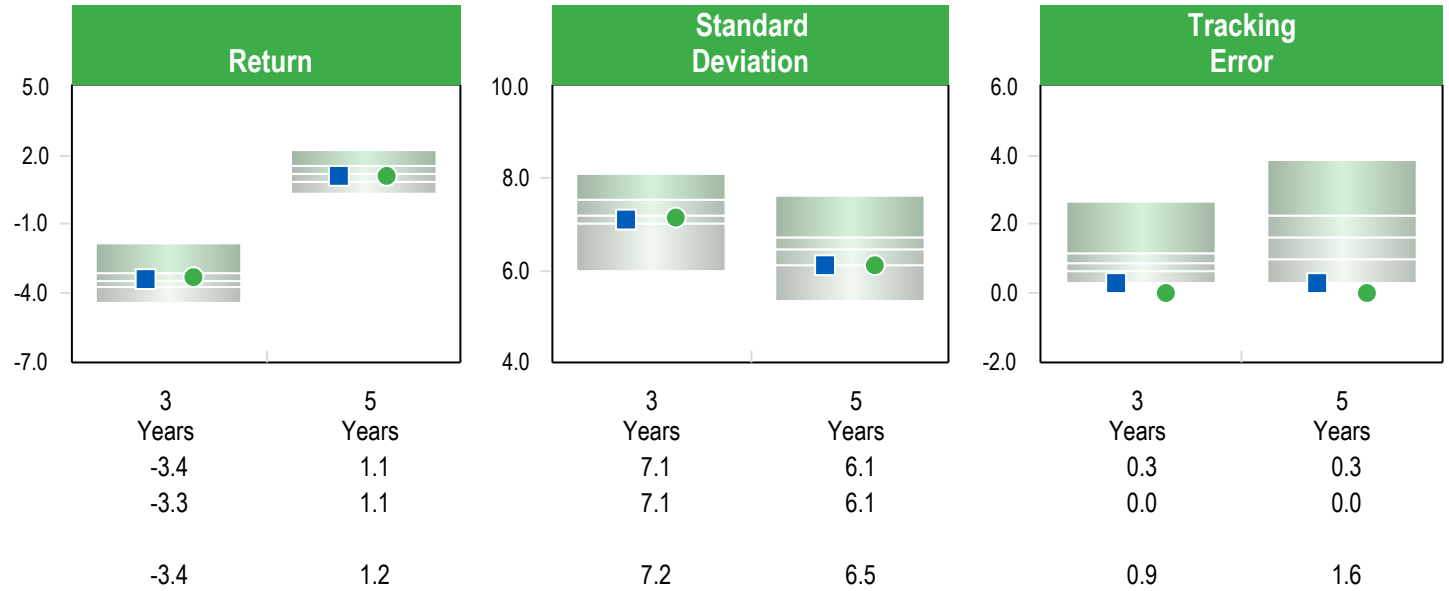
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



	2022	2021	2020	2019	2018	2017	2016
■ Vanguard Total Bond Market	-13.2 (28)	-1.7 (65)	7.7 (65)	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	-9.5	0.3	11.0	10.6	0.6	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	5.2	6.0	-2.1	2.2	1.5

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



■ Style History ■ Dec-2023 ● Average Style Exposure

Appendix

**City of Memphis OPEB
Manager Roster
December 31, 2023**

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Annual Dollar Fee	Average Fee
Vanguard Total Stock Market Index	12/31/2023	\$2,230,315	Equity Only	Russell 3000 Index	All Cap Equity	4 bps on all assets	\$892	0.04%
Vanguard Developed Market Index	12/31/2023	\$589,557	Equity Only	FTSE Developed x North America	International Equity	16 bps on all assets	\$943	0.16%
Vanguard Total Bond Market Index	12/31/2023	\$1,588,596	Fixed Income	Barclays U.S. Aggregate	Core Fixed Income	3.5 bps on all assets	\$556	0.035%
Fidelity Money Market	12/31/2023	\$157	Cash	90 Day U.S. Treasury Bill	Cash	33 bps on all assets	\$1	0.33%
OPEB Total		\$4,408,624					\$2,392	0.05%