

City of Memphis Retirement System OPEB Report

Analysis of Investment Performance

Quarter Ending September 30, 2023

Rosemary E. Guillette

Vice President

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

This performance report ("Report") is based upon information obtained by Segal Marco Advisors, Inc. ("SMA") from third parties over which SMA does not exercise any control. Although the information collected by SMA is believed to be reliable, SMA cannot verify or guarantee the accuracy or validity of such information or the uniformity of the manner in which such information was prepared. The rates of return reflected herein are time weighted and geometrically linked on a monthly basis using a modified Dietz method. Monthly valuations and returns are calculated based on the assumptions that all transactions and prices are accurate from the custodian and/or investment manager. The client to whom Segal Marco Advisors delivers this Report ("Client") agrees and acknowledges that this Report has been prepared solely for the benefit of Client. SMA disclaims any and all liability that may arise in connection with Client's conveyance (whether or not consented to by SMA) of this Report (in whole or in part) to any third party. Client further agrees and acknowledges that SMA shall have no liability, whatsoever, resulting from, or with respect to, errors in, or incompleteness of, the information obtained from third parties. Client understands that the prior performance of an investment and/or investment manager is not indicative of such investment's and/or investment manager's future performance. This Report does not constitute an offer or a solicitation of an offer for the purchase or sale of any security nor is it an endorsement of any custodian, investment and/or investment manager.

Financial Market Conditions

Quarter in Review: Global Equity Overview

Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	-3.27	13.07	21.62	10.15	9.92	11.91
MSCI Europe, Australasia and Far East (EAFE)*	-4.11	7.08	25.65	5.75	3.24	3.82
MSCI Emerging Markets (EM)*	-2.93	1.82	11.70	-1.73	0.55	2.07

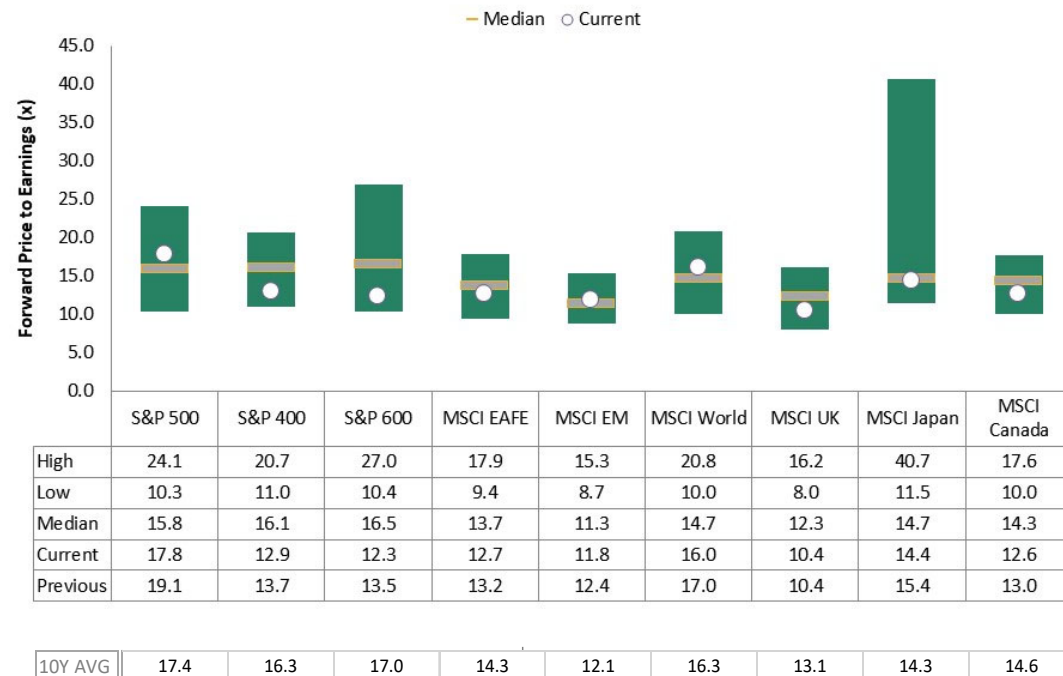
All data in the table are percentages.

* Net dividends reinvested

Global Equity Performance & Valuations

- All global equity markets posted negative returns for the quarter as the forecast of sustained higher interest rates by the U.S. Federal Reserve withered positive momentum to start the quarter.
- The U.K. and Japan both demonstrated resilience during the quarter. However, it was not enough to lift international developed markets beyond the economic worry over higher interest rates in Europe and various China concerns in Asia.
- In emerging markets, China continued to underperform as economic issues persist with property sector issues. India posted another positive quarter in what has been a relatively strong year.
- On a price-to-earnings basis, U.S. mid- and small-cap valuations are at a relative discount to their 10-year averages. International developed equities are also at relative discount to not just U.S. large caps but their own 10-year average as well

Price to Earnings



Data range is from 3/31/00-9/30/23. 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	-3.27	13.07	21.62	10.15	9.92	11.91
Russell 1000	-3.15	13.01	21.19	9.53	9.63	11.63
Russell 1000 Growth	-3.13	24.98	27.72	7.97	12.42	14.48
Russell 1000 Value	-3.16	1.79	14.44	11.05	6.23	8.45
Russell 2000	-5.13	2.54	8.93	7.16	2.40	6.65
Russell 2000 Growth	-7.32	5.24	9.59	1.09	1.55	6.72
Russell 2000 Value	-2.96	-0.53	7.84	13.32	2.59	6.19
Russell Midcap	-4.68	3.91	13.45	8.09	6.38	8.98
Russell 3000	-3.25	12.39	20.46	9.38	9.14	11.28

Performance

All data in the tables are percentages.

- All U.S. equities were negative for the quarter. Investor optimism from the beginning of the quarter dwindled as the realization over sustained higher interest rates to battle inflation settled after the Federal Reserve's September meeting.
- Growth has outperformed value year-to-date. However, large cap growth and value were about level with each other during the quarter. Small cap growth lagged small cap value as growth sectors like technology declined sharply.
- Concentrated performance in the seven largest stocks of the S&P 500 paved the way for large caps to outpace mid and small caps year-to-date. This trend continued as large cap equities outperformed both mid and small caps for the quarter.
- Energy was the best sector this quarter given the recent sharp increase on gas prices. Utilities, Real Estate and Consumer Staples were among the biggest underperformers, but Technology with its concentrated weighting dragged down the broad market.

S&P 500 Sector Returns	QTD	1-Year
Consumer Discretionary	-4.80	13.77
Consumer Staples	-5.97	7.35
Energy	12.22	30.21
Financials	-1.13	11.73
Healthcare	-2.65	8.18
Industrials	-5.16	24.58
IT	-5.64	41.10
Materials	-4.76	18.05
Telecom	3.07	38.48
Real Estate	-8.90	-1.84
Utilities	-9.25	-7.02

Quarter in Review: International Equity

MSCI International Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
World ex. U.S.	-4.10	6.73	24.00	6.07	3.44	3.84
EAFE	-4.11	7.08	25.65	5.75	3.24	3.82
EAFE Local Currency	-1.27	10.67	20.32	10.81	5.65	6.75
Europe	-4.96	7.96	28.85	7.23	3.96	3.83
Europe ex U.K.	-5.94	8.32	30.10	5.81	4.34	4.33
U.K.	-1.54	6.77	24.90	12.08	2.85	2.54
Japan	-1.59	11.21	25.92	2.81	2.06	4.38
Pacific ex Japan	-4.75	-4.44	10.58	4.15	1.78	2.81

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

Performance

- Developed international stocks were negative during the quarter, as high interest rates continued to impact economic growth and overall investor sentiment.
- Europe posted negative returns given concerns of consumer disposable income durability to support various sectors. U.K. equity markets rose over the quarter with positive performance in Energy and Materials, benefiting from sterling weakness against the dollar and recovery in crude oil prices.
- Japanese equities were down, but relative performance was supported by the weakening yen and strong domestic demand.
- Most sectors in the developed international markets were negative in the quarter with Technology, Utilities and Consumer Discretionary generating the most negative returns. Energy was resilient posting the highest positive return given the recent surge in oil prices. Over the last 12 months, all sectors remain positive.

MSCI EAFE Sector Returns	QTD	1-Year
Consumer Discretionary	-8.33	32.76
Consumer Staples	-7.09	9.87
Energy	11.58	34.33
Financials	0.79	33.92
Healthcare	-3.06	18.95
Industrials	-6.00	32.90
IT	-10.69	29.20
Materials	-3.15	23.66
Telecom	-3.43	14.37
Utilities	-8.83	22.54
Real Estate	-1.08	5.41

Quarter in Review: Emerging Market Equity

MSCI EM Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Emerging Markets	-2.93	1.82	11.70	-1.73	0.55	2.07
EM Local Currency	-1.43	4.05	10.89	0.58	2.69	4.95
Asia	-2.90	0.99	11.93	-3.49	0.98	3.82
EMEA	-1.77	-0.16	5.62	-0.58	-2.72	-2.53
Latin America	-4.75	12.89	19.37	15.07	2.81	0.24

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

Performance

- Emerging markets (EM) were negative as investor risk appetite was impacted by continued concern of sustained high interest rates.
- Investor sentiment in Poland was volatile due to political uncertainty with the upcoming parliamentary elections, leading to large declines. Chile was also a large detractor as lithium prices dropped. China continued to underperform with ongoing weakness in the economy, especially its property sector.
- Egypt and Turkey posted the highest returns as support for central bank policy increased. Strong returns could also be found in Colombia, Hungary, Czech Republic, India, and UAE.
- Most sectors were negative for the quarter, but less volatile than counterparts in the developed markets. Energy was resilient posting the highest positive return given the recent surge in oil prices.

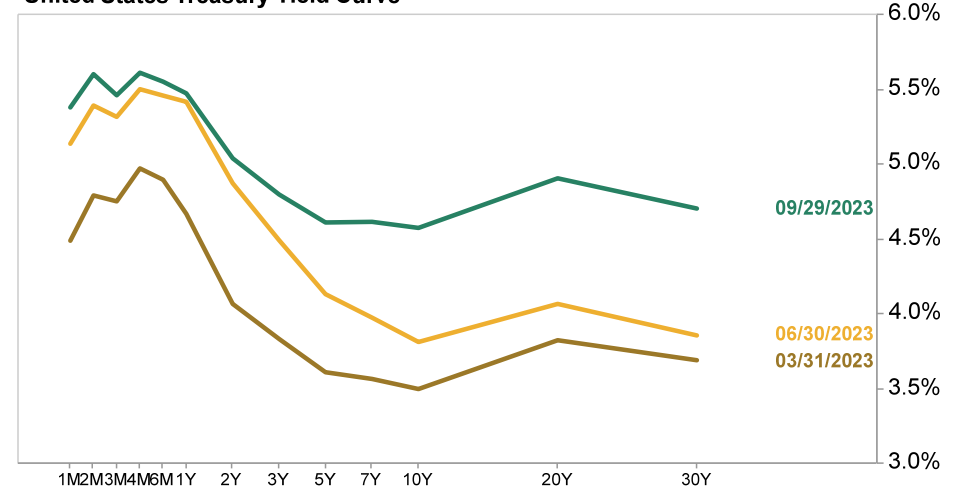
MSCI EM Sector Returns	QTD	1-Year
Consumer Discretionary	0.76	5.06
Consumer Staples	-4.36	4.62
Energy	6.32	23.81
Financials	-1.72	10.19
Healthcare	-0.81	4.09
Industrials	-4.63	11.50
IT	-6.80	25.78
Materials	-3.09	6.54
Telecom	-5.86	12.46
Utilities	-3.03	-5.46
Real Estate	-0.57	1.48

Quarter In Review: Fixed Income Overview

Yield Curve

- The yield curve slightly flattened during the third quarter of 2023, with long-term rates rising faster than short-term rates. The Federal Reserve hiked rates by 25 basis points in July to the highest level in more than 22 years. The Fed also indicated that any future rate decisions will be made on meeting-by-meeting basis based on the economic data.
- Short-term yields rose the least, with the 2-year Treasury Note rising by 18 bps over the prior quarter.
- 10- and 30-year Treasury yields increased the most by 62 basis points and 68 basis points, ending the quarter at 4.57% and 4.70%, respectively.

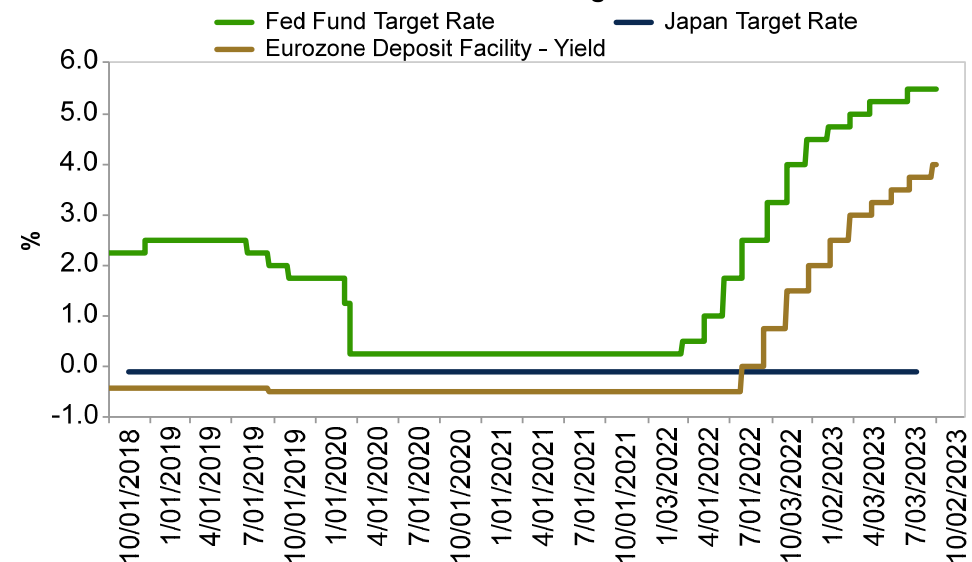
United States Treasury Yield Curve



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	0.90
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	-3.23	-1.21	0.64	-5.21	0.10	1.13
Government/Credit	-3.00	-0.85	0.93	-5.32	0.41	1.31
Government	-2.99	-1.45	-0.74	-5.73	-0.03	0.65
Investment Grade Credit	-3.09	0.02	3.65	-4.93	0.93	2.23
Investment Grade CMBS	-1.00	0.05	1.01	-3.66	0.90	1.65
U.S. Corporate High Yield	0.46	5.86	10.28	1.76	2.96	4.24
FTSE** 3-Month T-Bill	1.38	3.80	4.71	1.78	1.74	1.12
Hueler Stable Value	0.55	1.87	1.87	1.96	2.13	1.97

* Bloomberg Indices, unless otherwise noted.

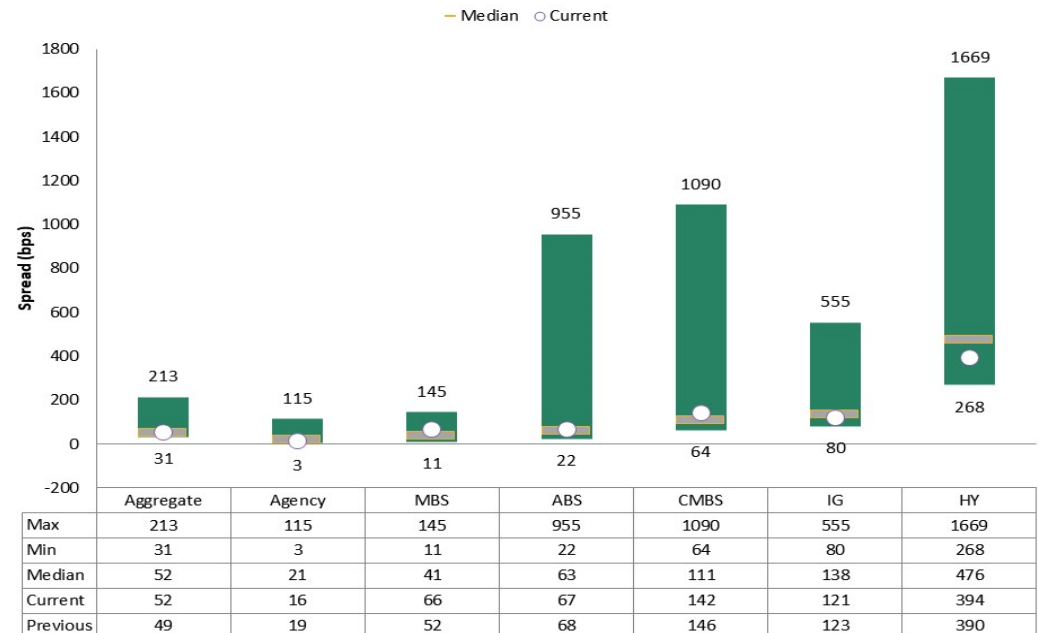
** Formerly Citigroup. Citigroup's fixed income indices were purchased by London Stock Exchange Group (LSEG) and were rebranded to FTSE by July 31, 2018. FTSE Russell is a unit of LSEG's Information Services Division and a wholly owned subsidiary of LSEG.

All data in the table are percentages.

Performance & Spreads

- The U.S. Aggregate Index was negative this quarter. Sector returns were mostly negative with only the high yield sector and cash delivering positive quarterly returns.
- The 3-Month T-Bill had the strongest performance for the quarter. The U.S. Aggregate Index experienced the weakest performance in the quarter.
- For the quarter, U.S. Aggregate, MBS, and High Yield spreads widened while the spreads on Agency, ABS, CMBS, and IG Credit narrowed. The largest change was in MBS with a spread increasing by 14 basis points.

Fixed Income Spreads



Data range is from 9/29/00-9/30/23

Quarter In Review: International Fixed Income

Global Fixed Income Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Bloomberg Global Aggregate	-3.59	-2.21	2.24	-6.93	-1.62	-0.44
Bloomberg Global Aggregate (Hgd)	-1.82	1.09	2.10	-3.71	0.57	1.84
FTSE Non-U.S. WGBI*	-5.16	-3.71	2.55	-10.77	-4.34	-2.31
FTSE Non-U.S. WGBI (Hgd)	-1.81	1.95	0.98	-4.43	0.01	1.98
JPM EMBI Global Diversified**	-2.23	1.76	10.01	-4.56	-0.35	2.47
JPM GBI-EM Global Diversified***	-3.26	4.28	13.10	-2.70	-0.00	-0.84

All data in the table are percentages.

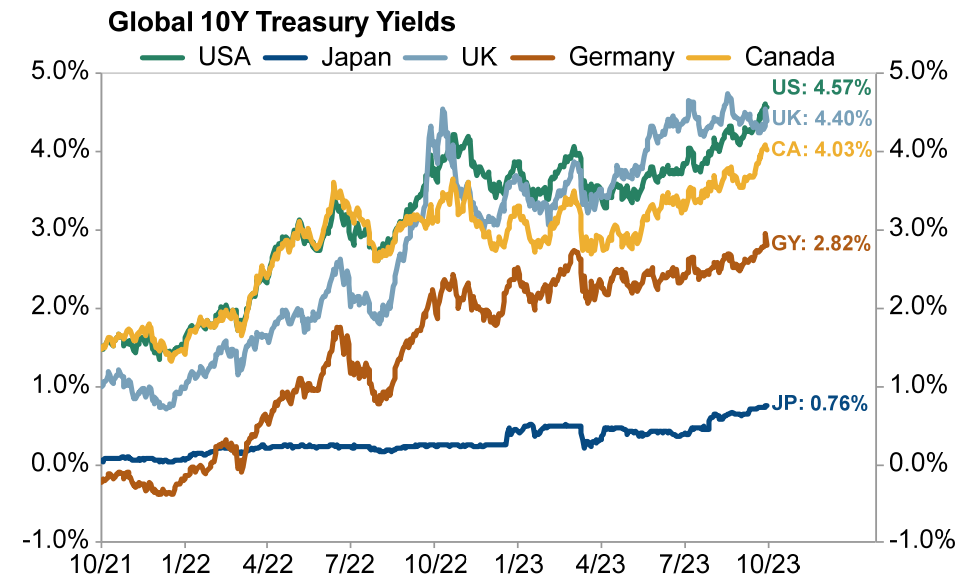
* Formerly Citigroup. The FTSE Non-U.S. World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment grade sovereign bonds excluding the U.S.

** 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 & Yields

- Yields rose in most developed markets during the quarter. The ECB was more aggressive with interest rate hikes compared to both the U.S. and UK. The Bank of England increased rates in August by 25 basis points. The ECB increased rates twice during the quarter by 25 basis points each time as inflation remains the main concern in Europe.
- Above target inflation continues to be the main driving force behind rate increases by the global central banks.
- The U.S. dollar appreciated relative to the yen, British pound and Euro.
- Global returns and emerging markets debt returns were negative for the quarter.



Total Fund Composite

City of Memphis OPEB Trust

Asset Allocation Comparison

Portfolio Value 9/30/23

\$4,008,230

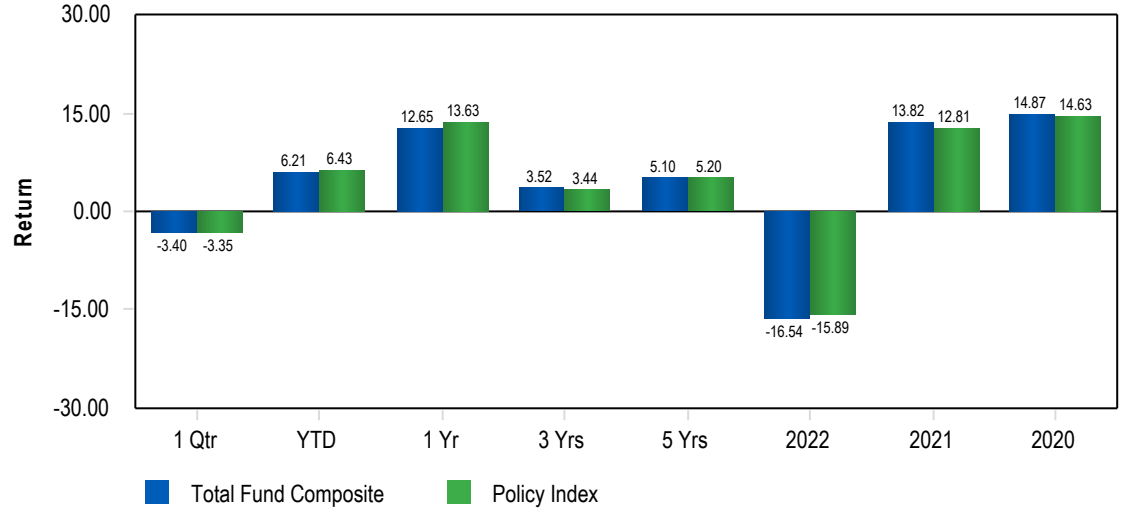
<u>Target Allocations</u>			<u>Current Managers & Allocations</u>			<u>Difference</u>	<u>Range</u>
Equity		(000)			(000)		
Domestic Equity	47.50%	\$1,904	Vanguard Total Stock Market Index	49.61%	\$1,989		40.0%-55.0%
International Equity	15.00%	\$601	Vanguard Developed Market Index	13.24%	\$531		10.0%-20.0%
Equity Total	62.50%	\$2,505	Equity Total	62.85%	\$2,519	0.35%	50.0%-65.0%¹
Fixed Income							
Fixed Income	37.50%	\$1,503	Vanguard Total Bond Market Index	37.15%	\$1,489		
Fixed Income Total	37.50%	\$1,503	Fixed Income Total	37.15%	\$1,489	-0.35%	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%	\$4,008	Total	100%	\$4,008		

¹ Total Equity may not exceed 65%.

Asset Allocation by Segment

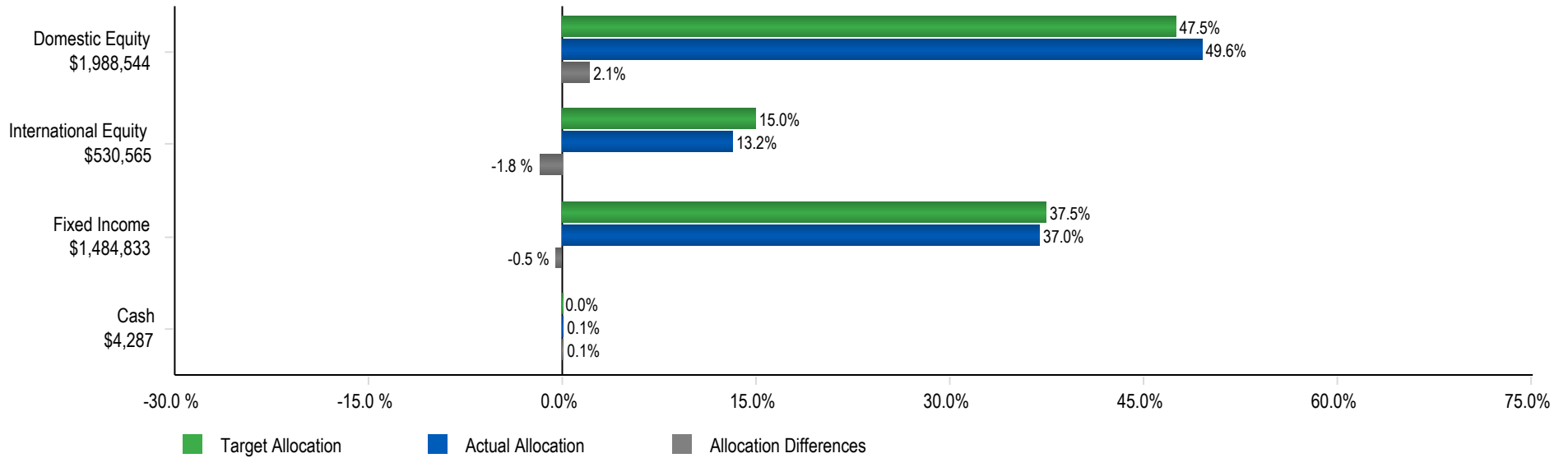
Segments	Market Value (\$)	Allocation (%)
Domestic Equity	1,988,544	49.6
Domestic Fixed Income	1,484,833	37.0
International Equity	530,565	13.2
Cash	4,287	0.1

Performance Bar Chart



Gain / Loss

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Total Fund Composite					
Beginning Market Value	4,149,423	3,774,005	3,558,191	3,609,746	3,122,611
Net Cash Flows					
Income	12,368	46,708	57,117	207,047	414,985
Gain/Loss	-153,561	187,517	392,922	191,437	470,634
Ending Market Value	4,008,230	4,008,230	4,008,230	4,008,230	4,008,230



	Asset Allocation (\$)	Asset Allocation (%)	Target Allocation (%)	Differences (%)	Minimum Allocation (%)	Maximum Allocation (%)
Domestic Equity	1,988,544	49.6	47.5	2.1	40.0	55.0
International Equity	530,565	13.2	15.0	-1.8	10.0	20.0
Fixed Income	1,484,833	37.0	37.5	-0.5	30.0	45.0
Cash	4,287	0.1	0.0	0.1	0.0	2.0
Total Fund	4,008,230	100.0	100.0	0.0		

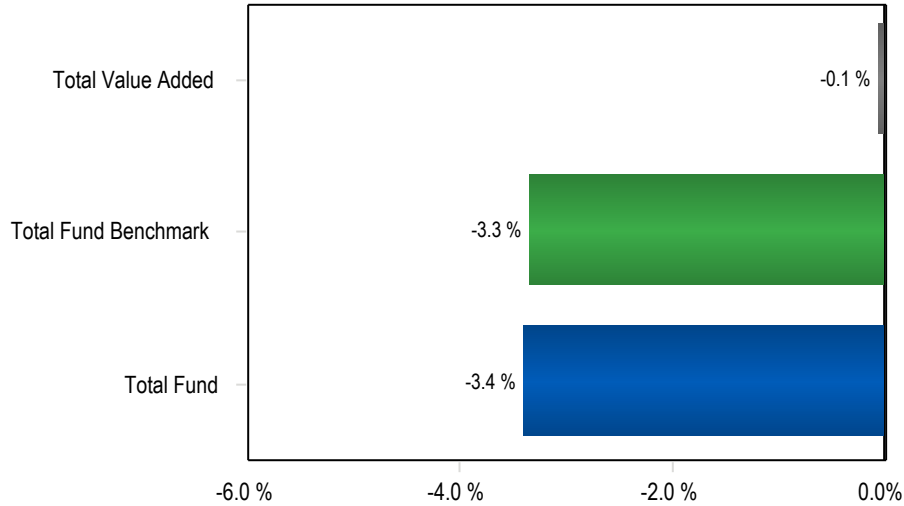
	(\$)	Total Fund	%
Total Fund Composite	4,008,230		100.0
Vanguard Total Stock Market	1,988,544		49.6
Vanguard Developed Markets Index	530,565		13.2
Vanguard Total Bond Market	1,488,966		37.1
Fidelity Money Market Fund	155		0.0

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Total Fund Composite	-3.4	6.2	12.6	3.5	5.1	6.4	6.4	7.0	07/01/2008
<i>Policy Index</i>	-3.3	6.4	13.6	3.4	5.2	6.5	6.5	6.8	
All Public Plans-Total Fund Median	-2.6	4.7	10.7	4.9	5.4	6.7	6.5	6.5	
Total Fund Composite Rank	85	11	19	78	60	59	54	18	
Vanguard Total Stock Market	-3.3	12.3	20.4	9.2	9.0	11.6	11.2	10.2	07/01/2008
<i>Russell 3000 Index</i>	-3.3	12.4	20.5	9.4	9.1	11.6	11.3	10.2	
IM U.S. Multi-Cap Equity (MF) Median	-3.3	8.0	17.4	8.6	6.9	9.6	9.0	8.4	
Vanguard Total Stock Market Rank	49	29	30	45	19	21	16	16	
Vanguard Developed Markets Index	-4.7	5.9	24.0	5.3	3.2	5.2	4.0	6.2	01/01/2012
<i>Developed Market Policy Index</i>	-3.9	6.7	24.2	5.8	3.5	5.6	4.4	6.5	
IM International Equity (MF) Median	-4.5	4.6	19.1	2.1	2.3	4.2	3.3	5.3	
Vanguard Developed Markets Index Rank	53	38	28	29	31	28	31	28	
Vanguard Total Bond Market	-3.1	-0.9	0.7	-5.2	0.1	-0.1	1.1	2.4	07/01/2008
<i>Blmbg. U.S. Aggregate</i>	-3.2	-1.2	0.6	-5.2	0.1	-0.1	1.1	2.5	
IM U.S. Broad Market Core Fixed Income (MF) Median	-3.1	-0.9	0.8	-5.1	0.1	0.0	1.1	2.6	
Vanguard Total Bond Market Rank	51	52	53	57	44	57	51	61	
Fidelity Money Market Fund	1.3	3.5	4.4	1.6	1.5	1.3		1.0	10/01/2014
<i>90 Day U.S. Treasury Bill</i>	1.3	3.6	4.5	1.7	1.7	1.5	1.1	1.2	
IM U.S. Taxable Money Market (MF) Median	1.3	3.5	4.4	1.6	1.5	1.3	0.9	1.0	
Fidelity Money Market Fund Rank	52	50	52	51	51	49		47	

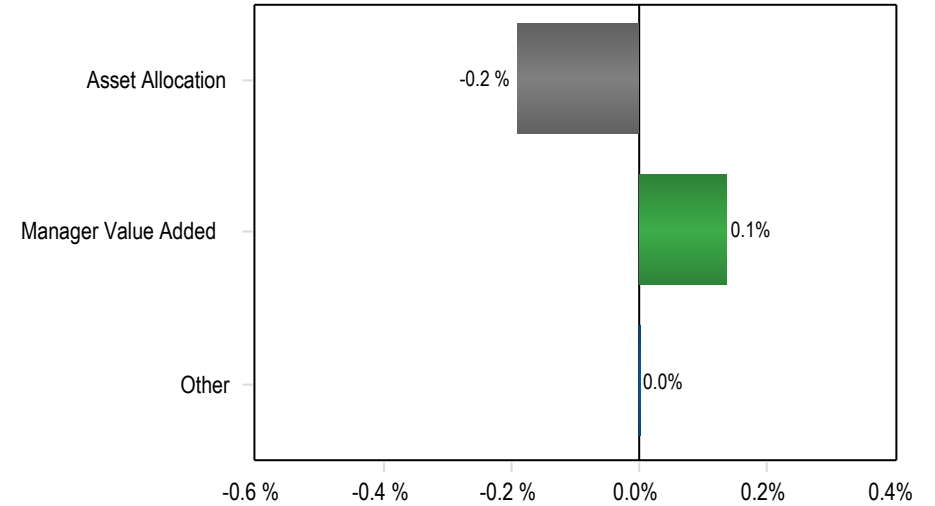
	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Total Fund Composite	-16.5	13.8	14.9	21.0	-4.7	15.0	7.4	0.3	7.1	17.8
<i>Policy Index</i>	-15.9	12.8	14.6	21.2	-4.4	14.8	7.3	0.6	7.4	17.6
Vanguard Total Stock Market	-19.5	25.7	21.0	30.8	-5.2	21.2	12.7	0.4	12.5	33.5
<i>Russell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

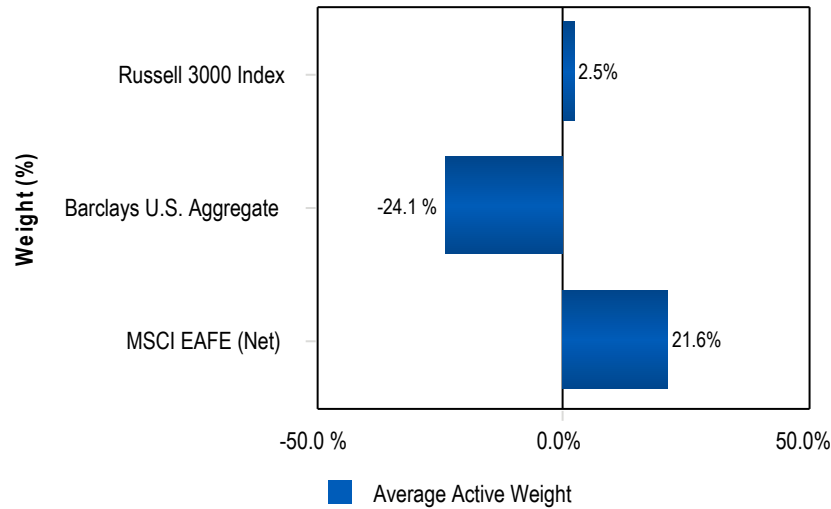
Total Fund Performance



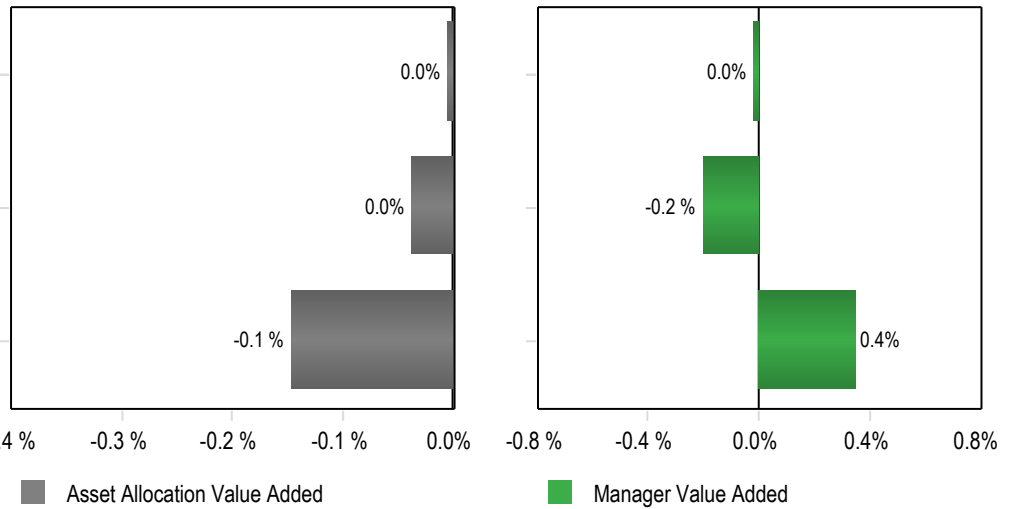
Total Value Added:-0.1 %

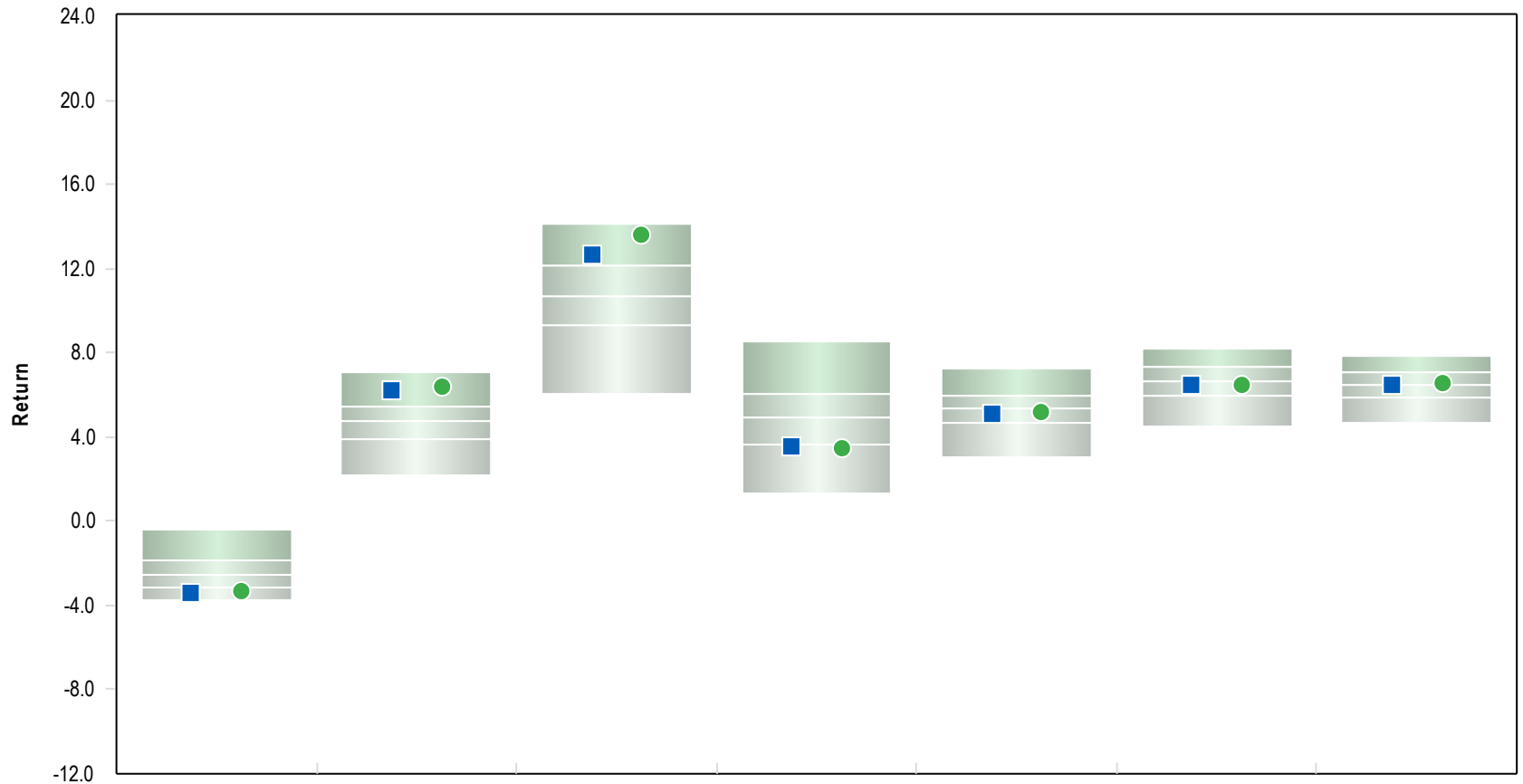


Total Asset Allocation:-0.2 %



Total Manager Value Added:0.1%

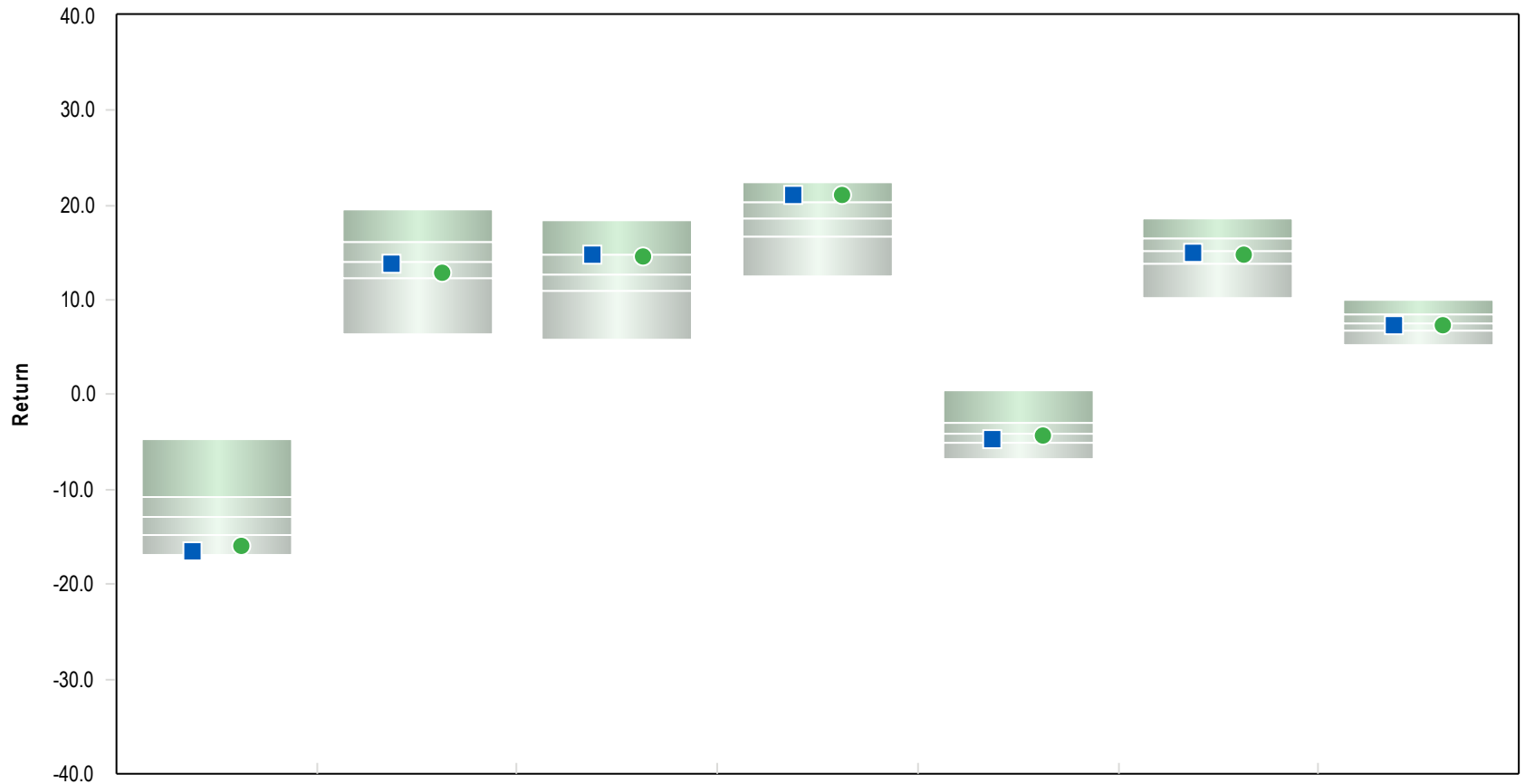




	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Total Fund Composite	-3.4 (85)	6.2 (11)	12.6 (19)	3.5 (78)	5.1 (60)	6.4 (59)	6.4 (54)
● Policy Index	-3.3 (82)	6.4 (9)	13.6 (11)	3.4 (79)	5.2 (56)	6.5 (56)	6.5 (48)

5th Percentile	-0.4	7.0	14.1	8.6	7.2	8.2	7.8
1st Quartile	-1.9	5.5	12.2	6.1	6.0	7.3	7.1
Median	-2.6	4.7	10.7	4.9	5.4	6.7	6.5
3rd Quartile	-3.2	3.9	9.3	3.7	4.7	6.0	5.9
95th Percentile	-3.8	2.2	6.0	1.3	3.1	4.5	4.6

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

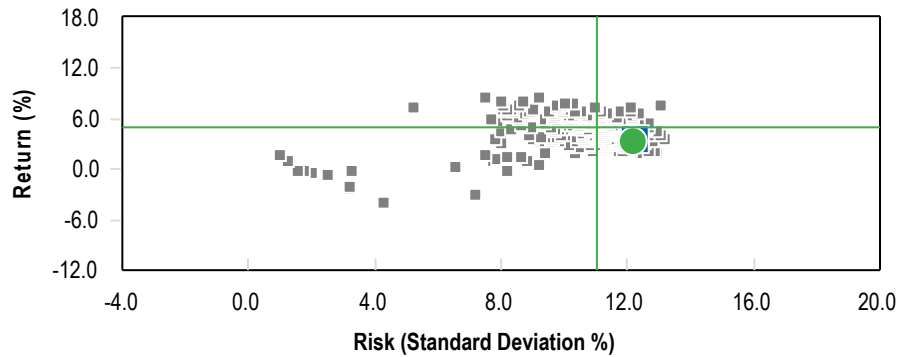


	2022	2021	2020	2019	2018	2017	2016
■ Total Fund Composite	-16.5 (93)	13.8 (54)	14.9 (24)	21.0 (18)	-4.7 (64)	15.0 (52)	7.4 (58)
● Policy Index	-15.9 (89)	12.8 (68)	14.6 (26)	21.2 (15)	-4.4 (55)	14.8 (56)	7.3 (62)

5th Percentile	-4.7	19.6	18.4	22.5	0.4	18.6	10.0
1st Quartile	-10.8	16.1	14.7	20.4	-2.9	16.4	8.5
Median	-12.8	14.0	12.6	18.6	-4.1	15.1	7.6
3rd Quartile	-14.8	12.3	11.0	16.7	-5.1	13.8	6.8
95th Percentile	-16.9	6.5	5.9	12.5	-6.8	10.1	5.2

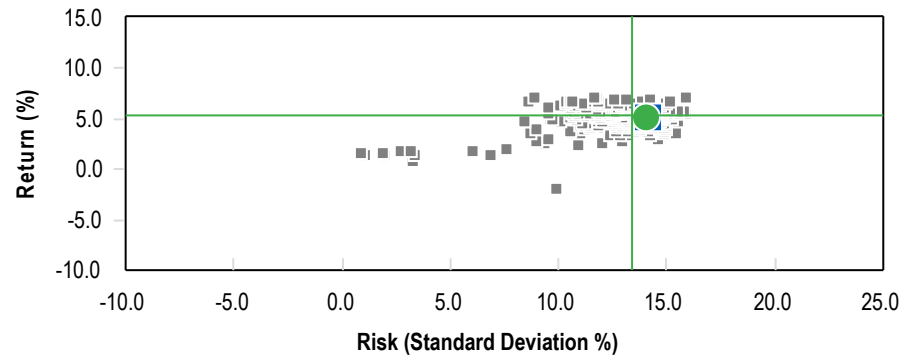
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Risk & Return Plan Sponsor — 3 Years



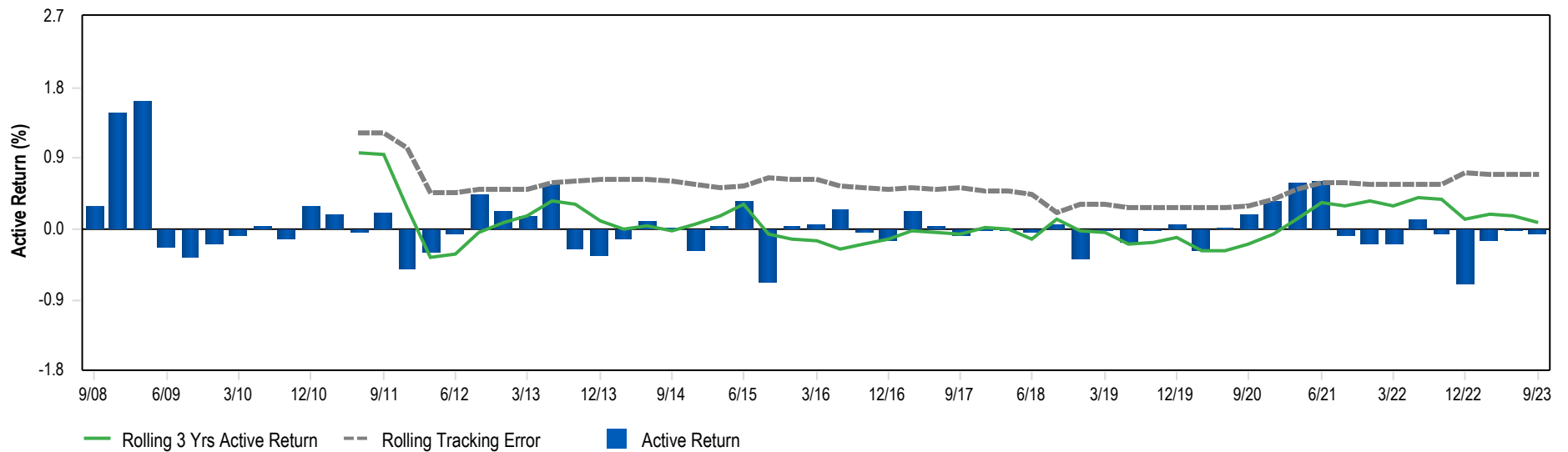
	Return	Standard Deviation
Total Fund Composite	3.5	12.2
Policy Index	3.4	12.2
Median	4.9	11.1

Risk & Return Plan Sponsor — 5 Years



	Return	Standard Deviation
Total Fund Composite	5.1	14.2
Policy Index	5.2	14.0
Median	5.4	13.4

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

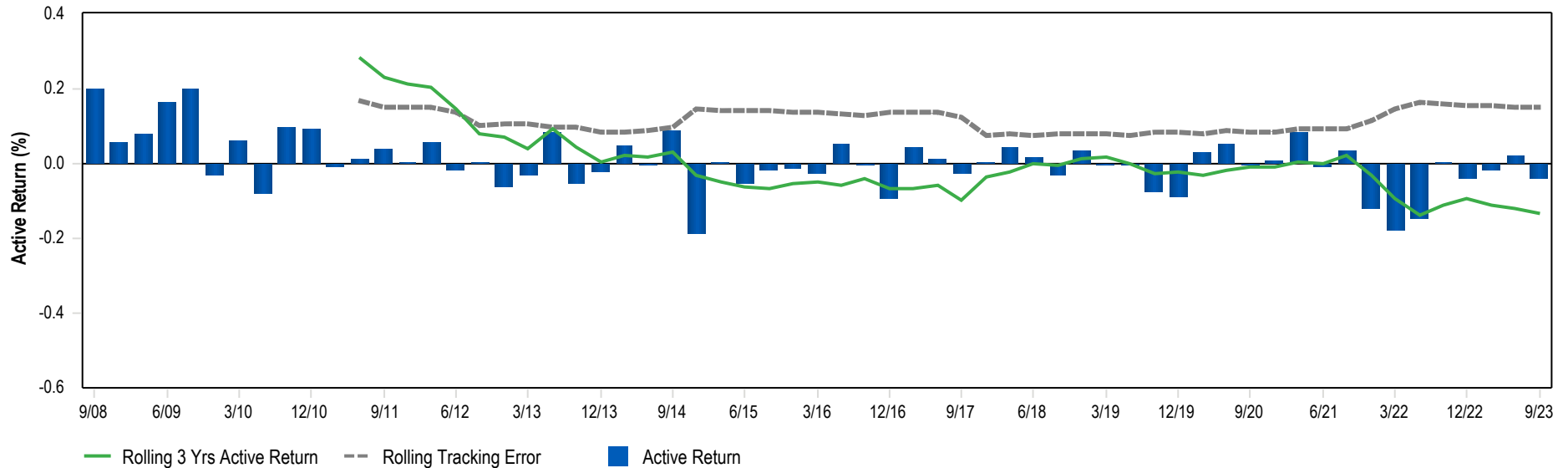
Periods Ending	Beginning Market Value (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending Market Value (\$)	%Return
From 06/2008	2,910,974		-474,478	2,436,496	-16.3
2009	2,436,496	6,000,000	1,023,156	9,459,652	21.3
2010	9,459,652	1,000,000	1,445,483	11,905,135	13.6
2011	11,905,135		455,833	12,360,968	3.8
2012	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 09/2023	3,774,005		234,225	4,008,230	6.2

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

Vanguard Total Stock Market Index Fund

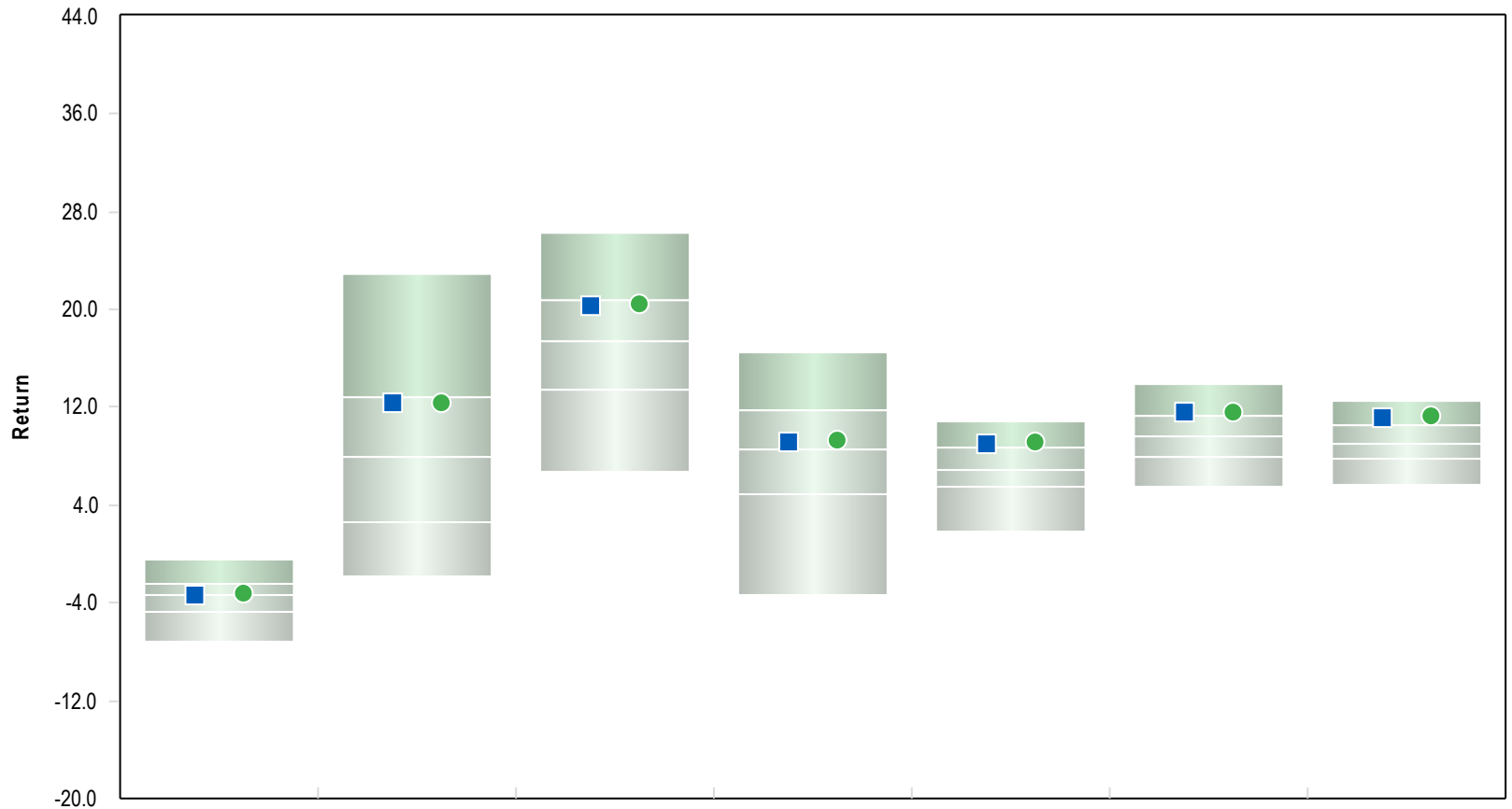
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Vanguard Total Stock Market					
Beginning Market Value	2,056,243	1,769,976	1,651,979	1,868,219	1,579,140
Net Cash Flows				-458,894	-458,894
Income				57,749	141,136
Gain/Loss	-67,698	218,568	336,566	521,471	727,163
Ending Market Value	1,988,544	1,988,544	1,988,544	1,988,544	1,988,544

Rolling Return and Tracking Error



Performance

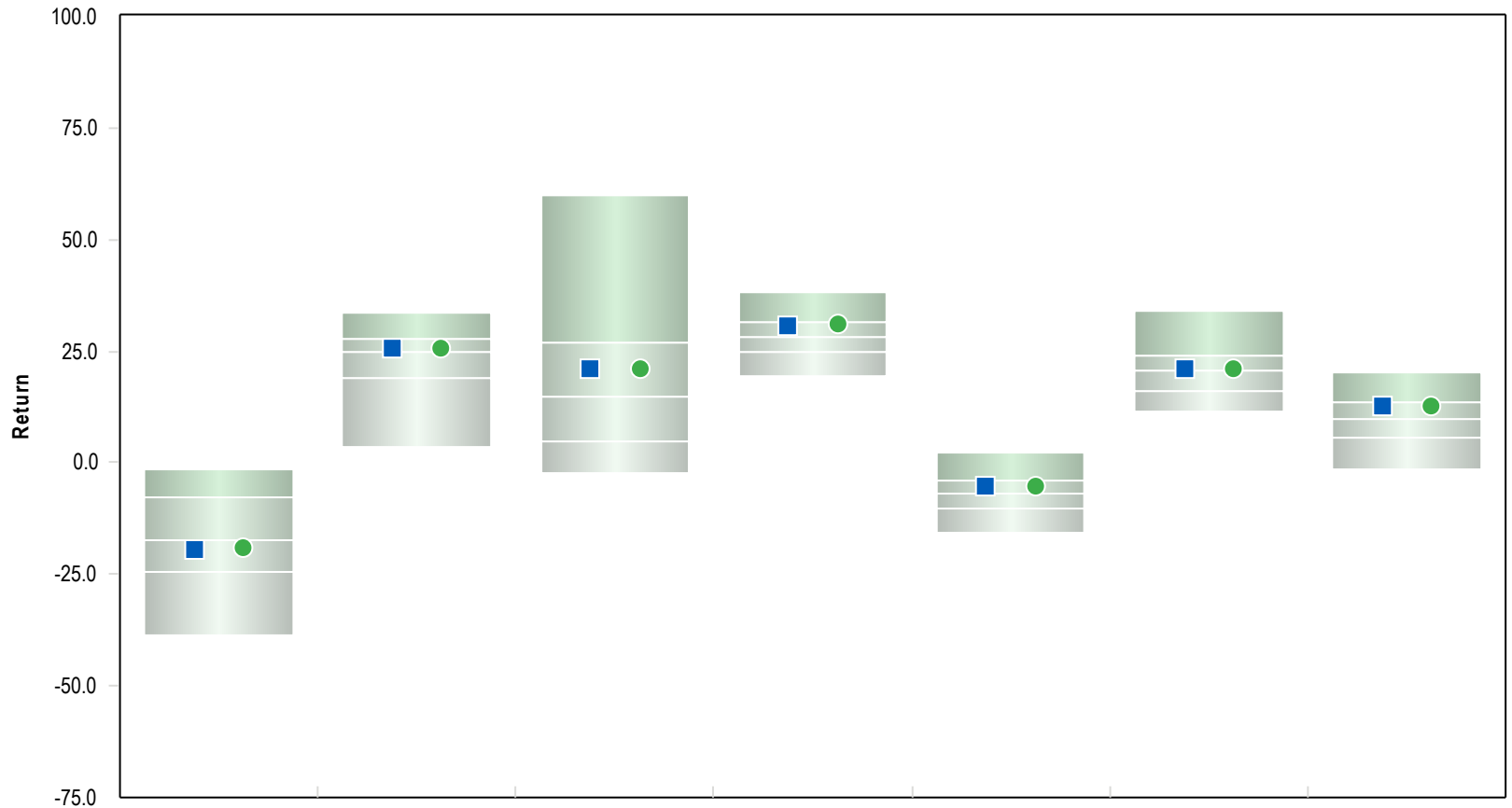
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Total Stock Market	-3.3	12.3	20.4	9.2	9.0	11.6	11.2
Russell 3000 Index	-3.3	12.4	20.5	9.4	9.1	11.6	11.3
Difference	0.0	-0.1	-0.1	-0.2	-0.1	0.0	-0.1



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Total Stock Market	-3.3 (49)	12.3 (29)	20.4 (30)	9.2 (45)	9.0 (19)	11.6 (21)	11.2 (16)
● Russell 3000 Index	-3.3 (47)	12.4 (28)	20.5 (29)	9.4 (43)	9.1 (18)	11.6 (19)	11.3 (14)

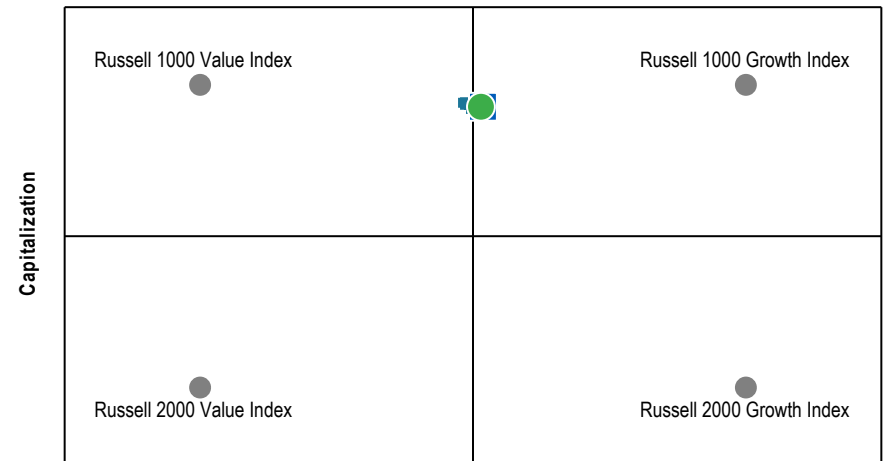
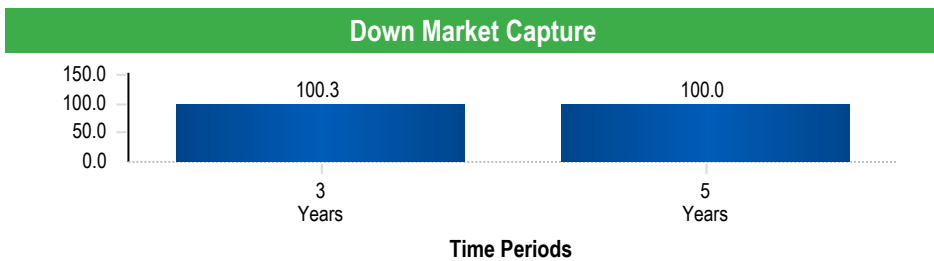
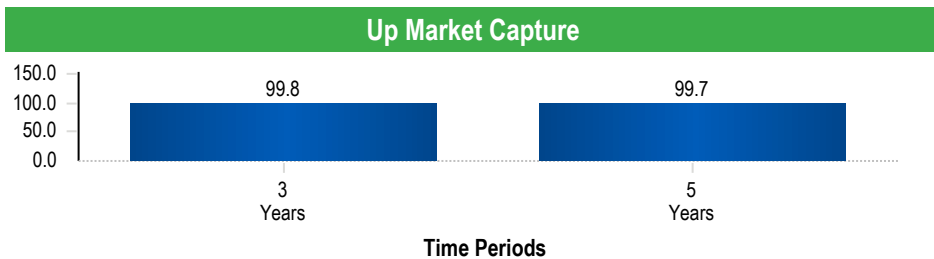
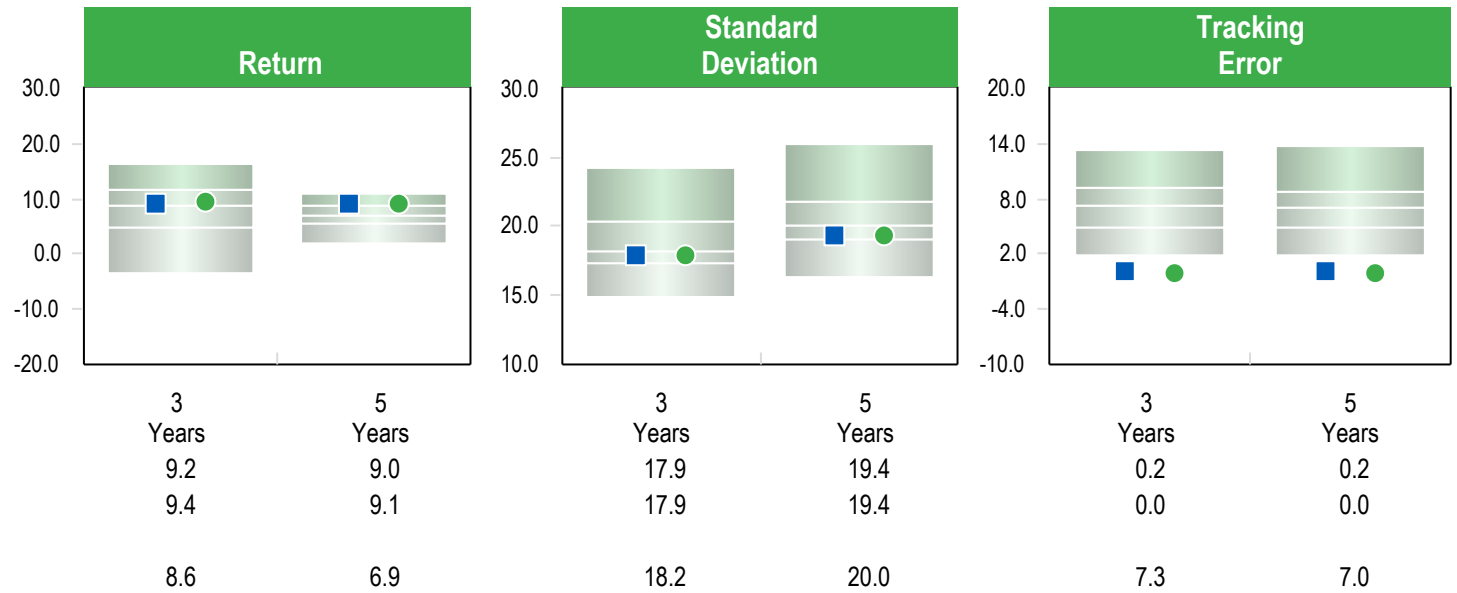
5th Percentile	-0.4	23.0	26.3	16.5	10.9	14.0	12.6
1st Quartile	-2.4	12.9	20.9	11.8	8.7	11.3	10.5
Median	-3.3	8.0	17.4	8.6	6.9	9.6	9.0
3rd Quartile	-4.7	2.6	13.4	4.9	5.4	7.9	7.7
95th Percentile	-7.2	-1.8	6.8	-3.3	1.9	5.5	5.7

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 (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	-17.4	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 ■ Sep-2023 ● Average Style Exposure

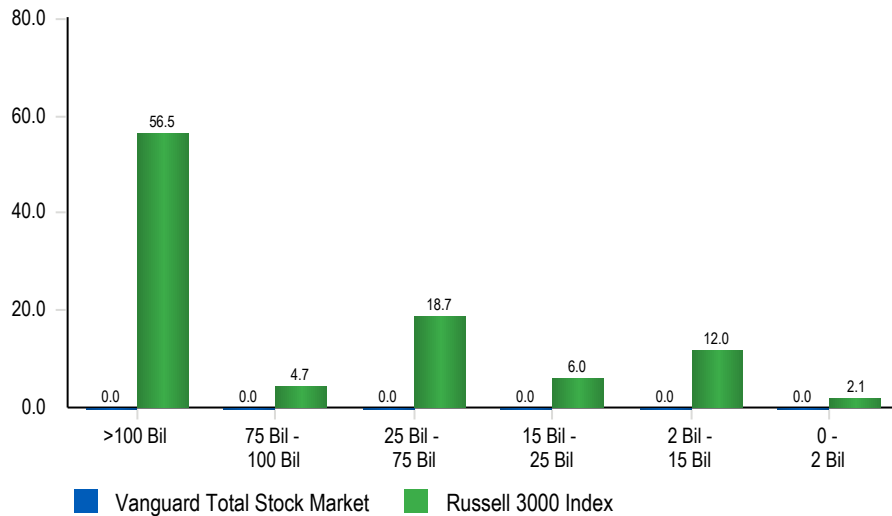
Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	0.0	6.1	0.0	
Microsoft Corp	0.0	5.6	0.0	
Amazon.com Inc	0.0	2.7	0.0	
NVIDIA Corporation	0.0	2.5	0.0	
Google Inc [A]	0.0	1.9	0.0	
Tesla Inc	0.0	1.7	0.0	
Alphabet Inc	0.0	1.6	0.0	
Meta Platforms Inc	0.0	1.6	0.0	
Berkshire Hathaway Inc	0.0	1.5	0.0	
Exxon Mobil Corp	0.0	1.1	0.0	
% of Portfolio	0.0	26.3	-26.3	

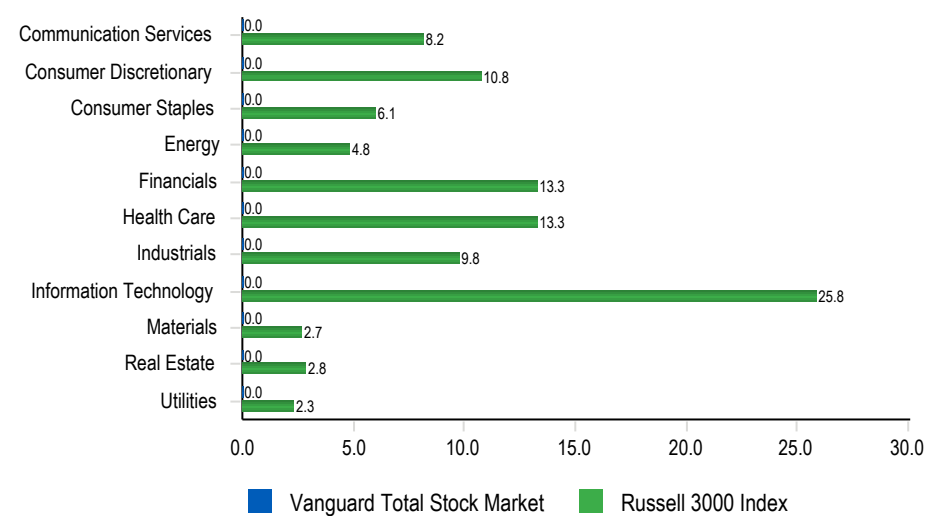
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$)		538,565,139,478
Median Mkt. Cap (\$)		1,845,806,370
Price/Earnings ratio		20.6
Price/Book ratio		4.0
5 Yr. EPS Growth Rate (%)		18.1
Current Yield (%)		1.6
Beta (5 Years, Monthly)	1.0	1.0
Number of Stocks	0	2,994

Distribution of Market Capitalization (%)



Sector Weights (%)



Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	0.0	6.1	0.0	
Microsoft Corp	0.0	5.6	0.0	
Amazon.com Inc	0.0	2.7	0.0	
NVIDIA Corporation	0.0	2.5	0.0	
Google Inc [A]	0.0	1.9	0.0	
Tesla Inc	0.0	1.7	0.0	
Alphabet Inc	0.0	1.6	0.0	
Meta Platforms Inc	0.0	1.6	0.0	
Berkshire Hathaway Inc	0.0	1.5	0.0	
Exxon Mobil Corp	0.0	1.1	0.0	
% of Portfolio	0.0	26.3	-26.3	

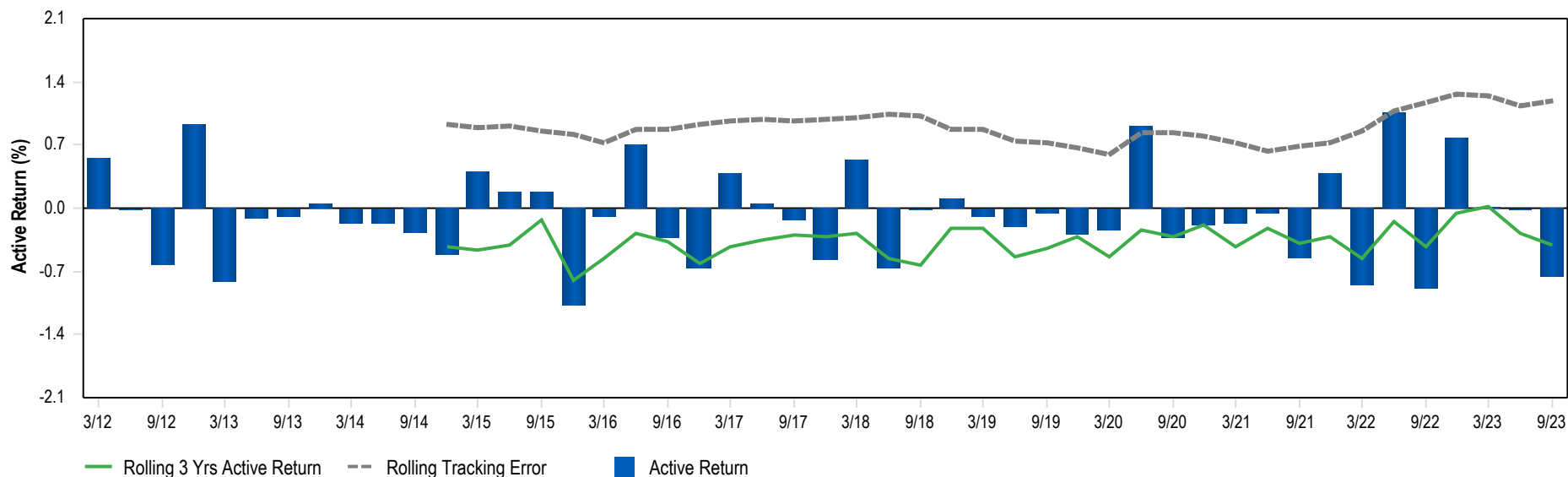
Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	0.0	6.1	0.0	
Microsoft Corp	0.0	5.6	0.0	
Amazon.com Inc	0.0	2.7	0.0	
NVIDIA Corporation	0.0	2.5	0.0	
Google Inc [A]	0.0	1.9	0.0	
Tesla Inc	0.0	1.7	0.0	
Alphabet Inc	0.0	1.6	0.0	
Meta Platforms Inc	0.0	1.6	0.0	
Berkshire Hathaway Inc	0.0	1.5	0.0	
Exxon Mobil Corp	0.0	1.1	0.0	
% of Portfolio	0.0	26.3	-26.3	

Vanguard Total Developed Markets Index Fund

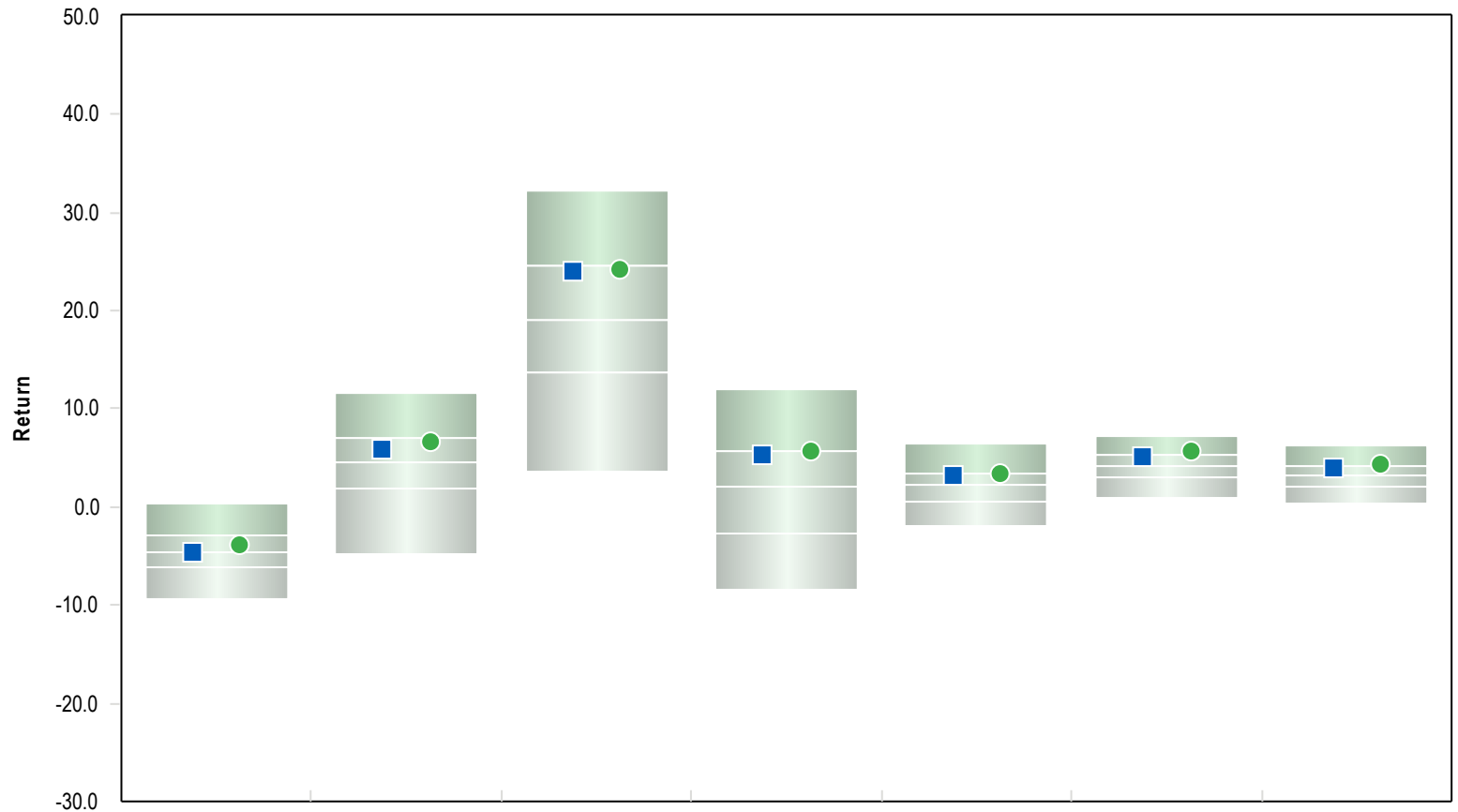
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Vanguard Developed Markets Index					
Beginning Market Value	556,646	501,004	427,825	454,102	454,212
Net Cash Flows					
Income		12,542	12,542	43,710	76,807
Gain/Loss	-26,080	17,020	90,199	32,754	-453
Ending Market Value	530,565	530,565	530,565	530,565	530,565

Rolling Return and Tracking Error



Performance

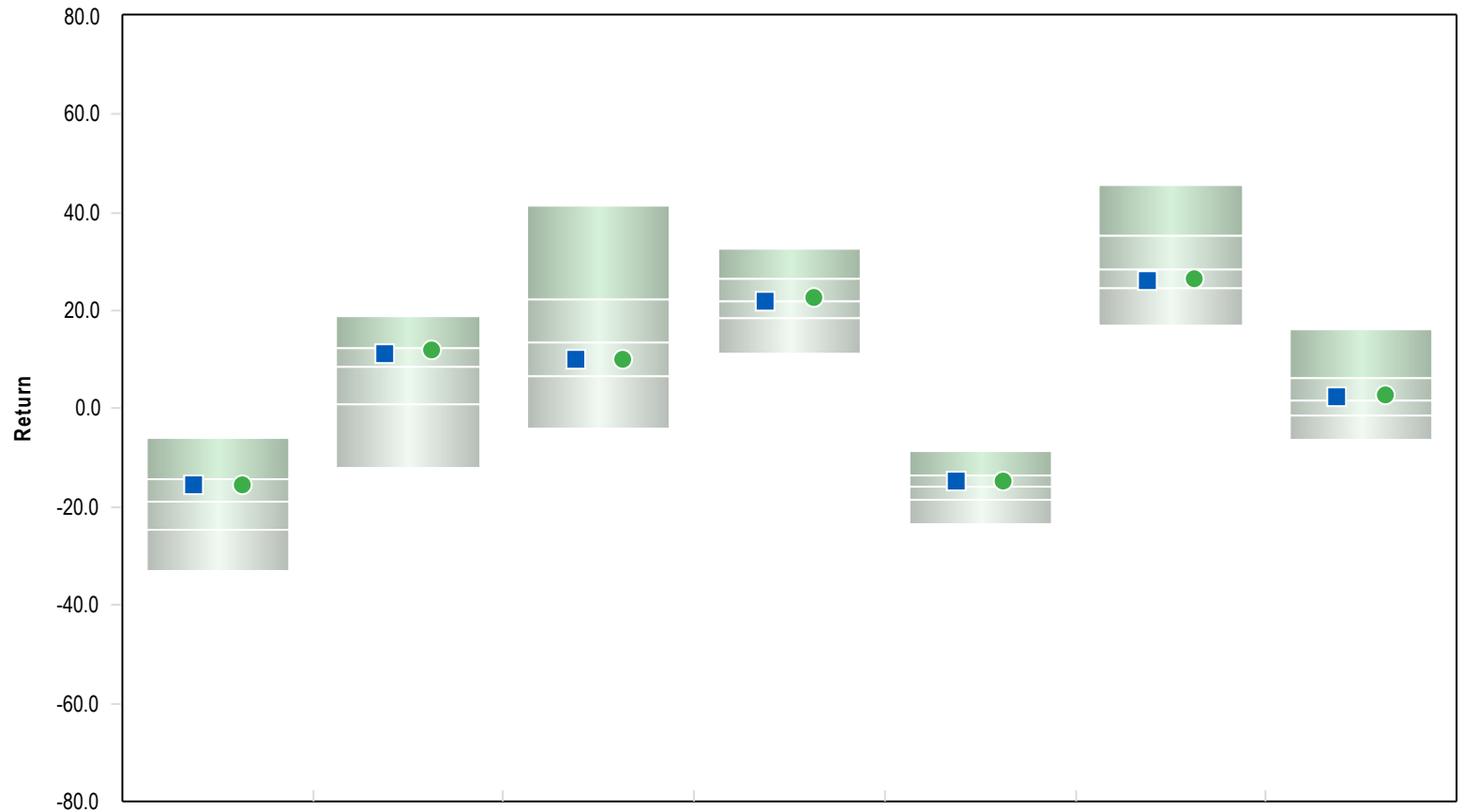
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Developed Markets Index	-4.7	5.9	24.0	5.3	3.2	5.2	4.0
Developed Market Policy Index	-3.9	6.7	24.2	5.8	3.5	5.6	4.4
Difference	-0.8	-0.8	-0.2	-0.5	-0.3	-0.4	-0.4



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Developed Markets Index	-4.7 (53)	5.9 (38)	24.0 (28)	5.3 (29)	3.2 (31)	5.2 (28)	4.0 (31)
● Developed Market Policy Index	-3.9 (39)	6.7 (29)	24.2 (28)	5.8 (25)	3.5 (25)	5.6 (19)	4.4 (21)

5th Percentile	0.3	11.7	32.3	12.0	6.5	7.3	6.3
1st Quartile	-2.9	7.0	24.6	5.8	3.5	5.3	4.1
Median	-4.5	4.6	19.1	2.1	2.3	4.2	3.3
3rd Quartile	-6.2	1.9	13.6	-2.7	0.6	3.0	2.2
95th Percentile	-9.4	-4.7	3.6	-8.5	-2.0	0.9	0.3

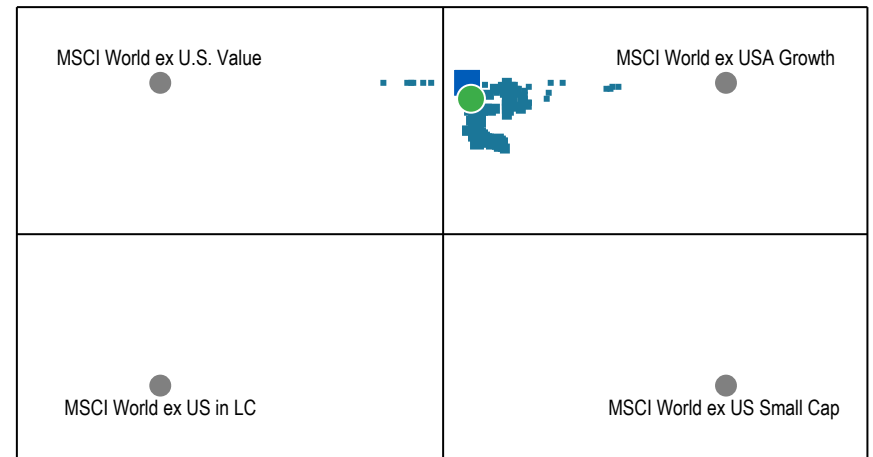
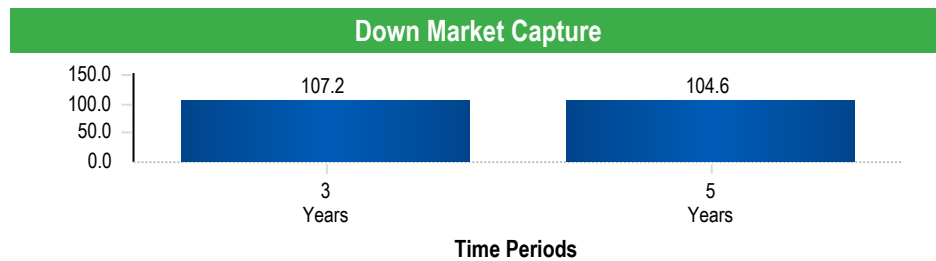
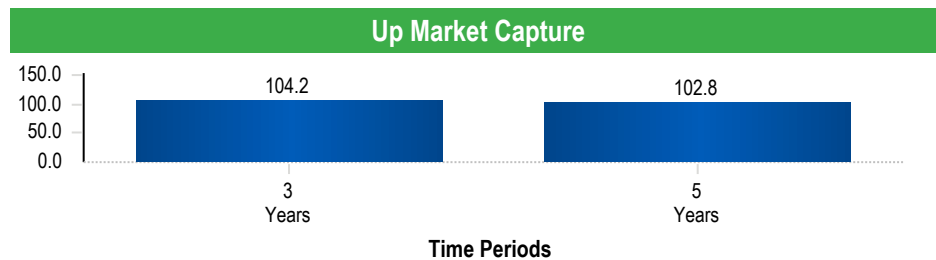
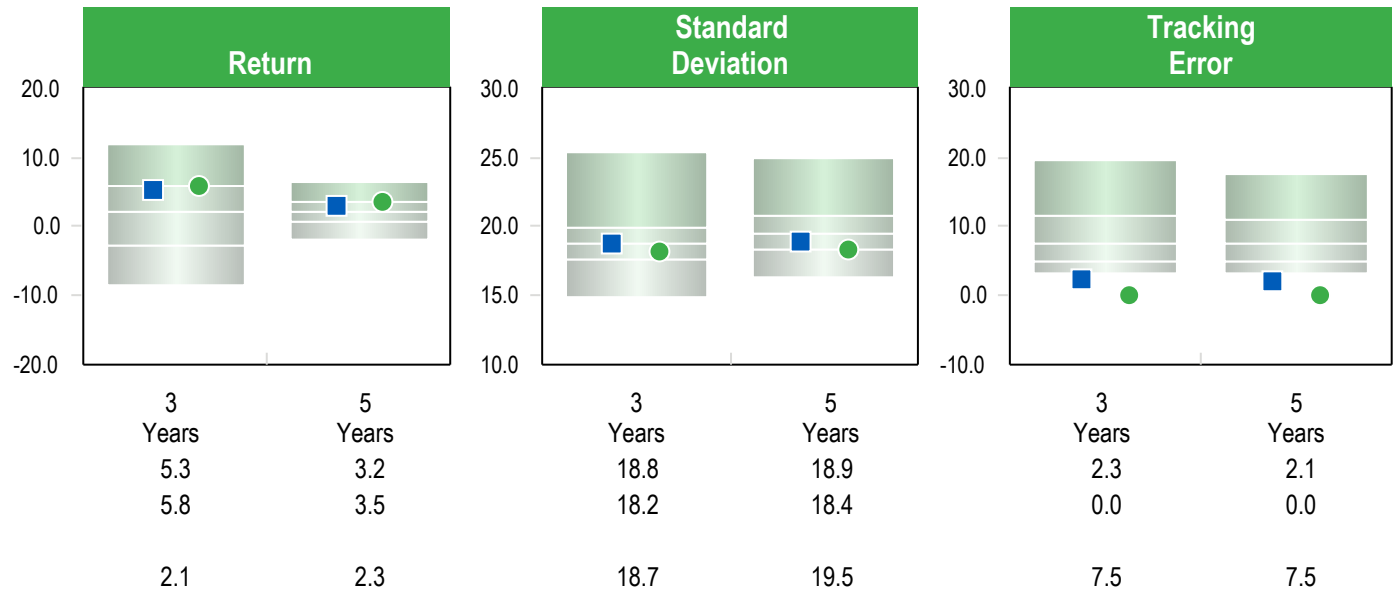
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



	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

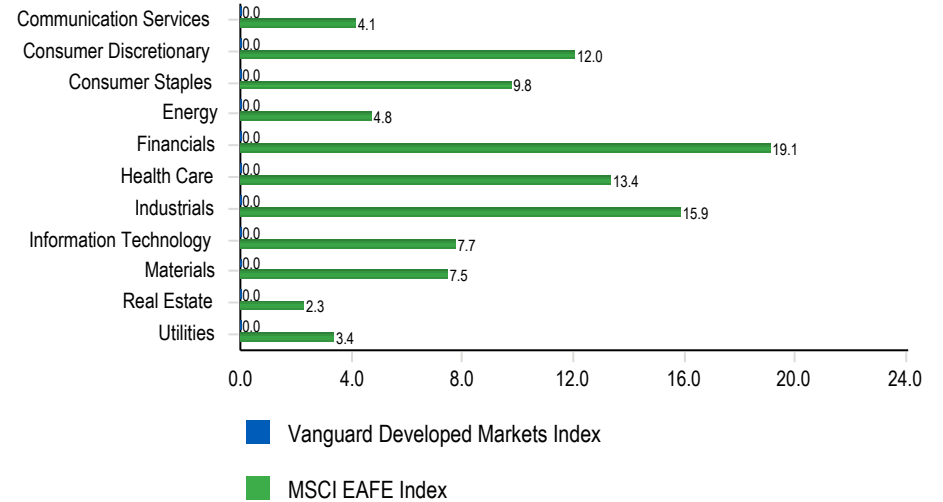
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



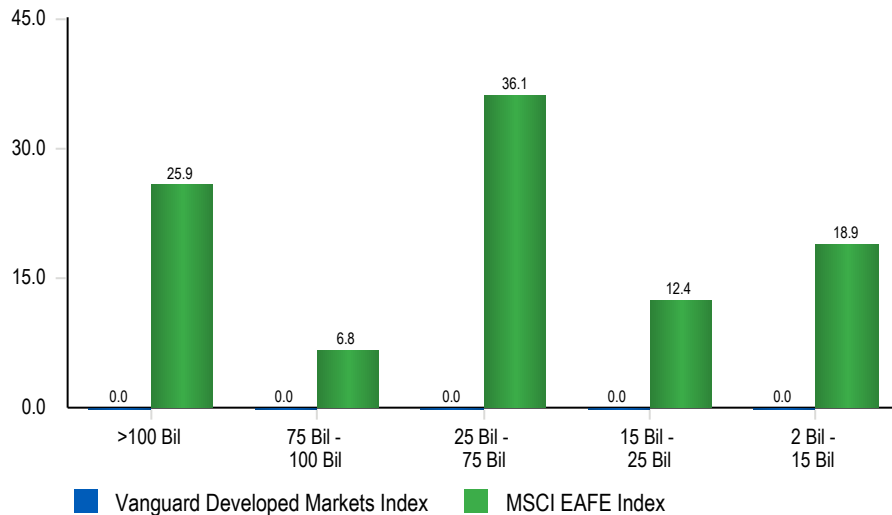
Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Nestle SA, Cham Und Vevey	0.0	2.1	0.0	
Novo Nordisk A/S	0.0	2.0	0.0	
ASML Holding NV	0.0	1.6	0.0	
Shell Plc	0.0	1.4	0.0	
Novartis AG	0.0	1.4	0.0	
Astrazeneca PLC	0.0	1.4	0.0	
LVMH Moet Hennessy Louis Vuitton SE	0.0	1.4	0.0	
Roche Holding AG	0.0	1.3	0.0	
Toyota Motor Corp	0.0	1.3	0.0	
HSBC Holdings PLC	0.0	1.1	0.0	
% of Portfolio	0.0	15.0	-15.0	

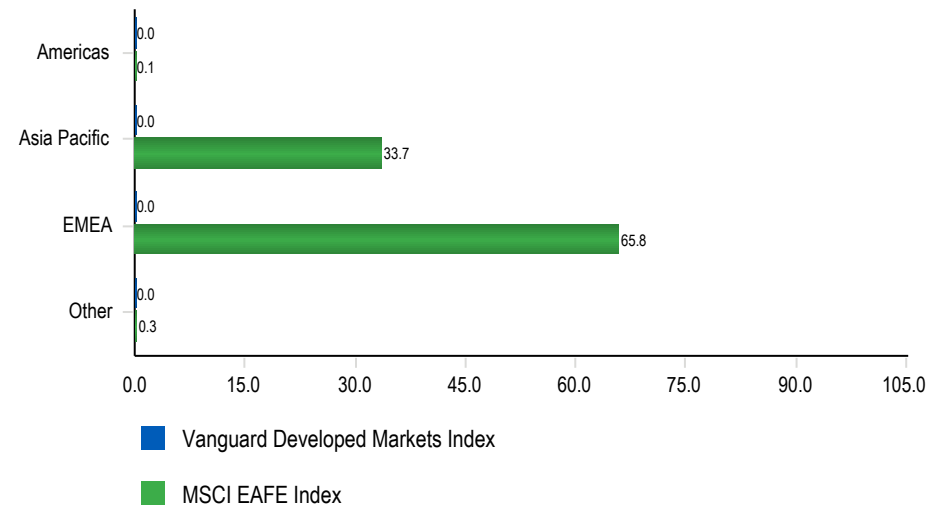
Sector Weights (%)



Distribution of Market Capitalization (%)



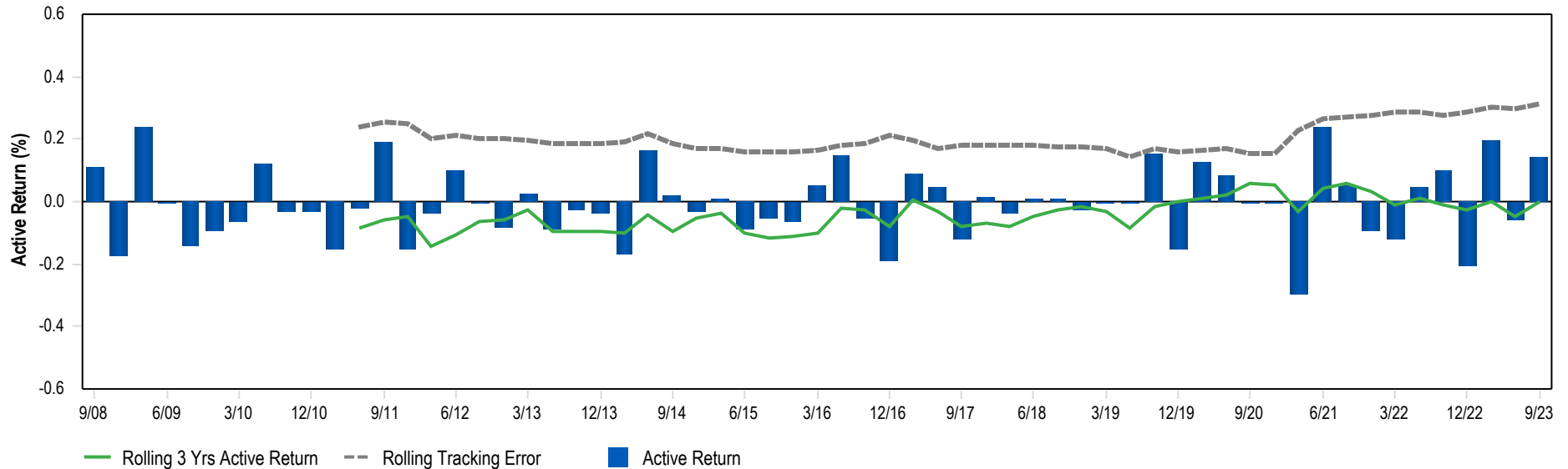
Region



Vanguard Total Bond Market Index Fund

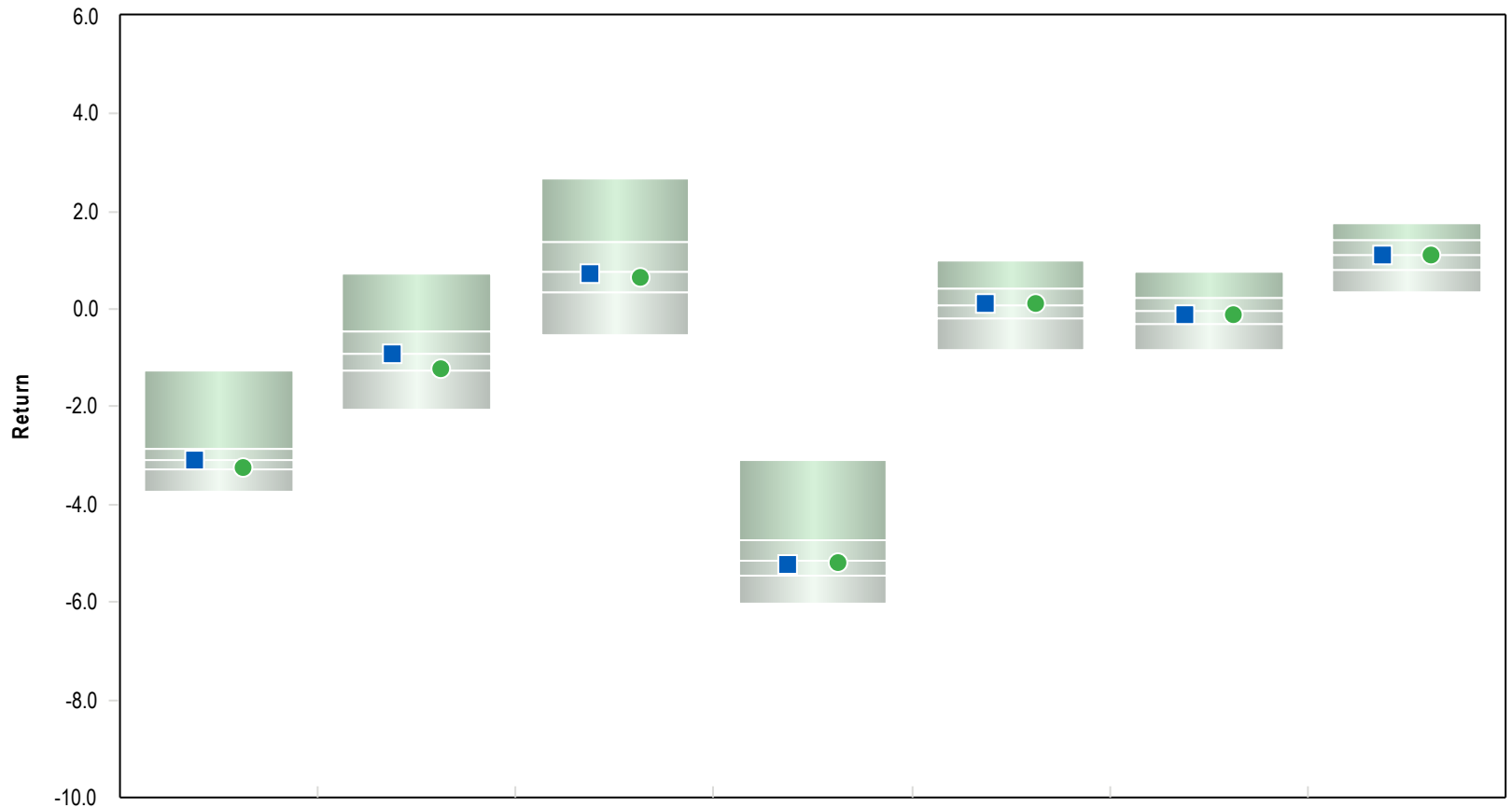
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Vanguard Total Bond Market					
Beginning Market Value	1,536,383	1,502,876	1,478,240	1,286,813	1,088,664
Net Cash Flows				459,360	459,360
Income	12,367	34,158	44,567	105,578	197,006
Gain/Loss	-59,785	-48,068	-33,841	-362,785	-256,064
Ending Market Value	1,488,966	1,488,966	1,488,966	1,488,966	1,488,966

Rolling Return and Tracking Error



Performance

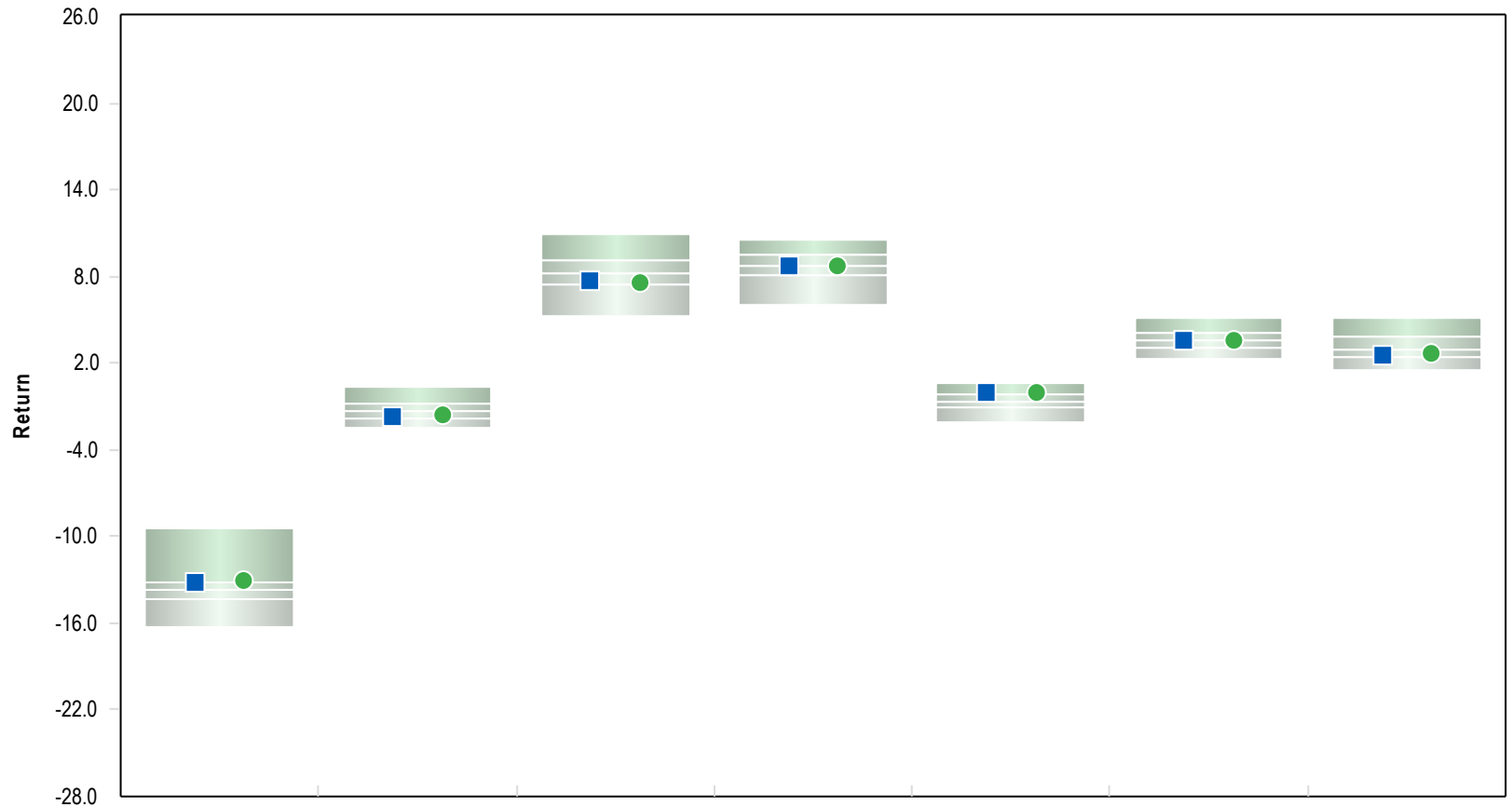
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Total Bond Market	-3.1	-0.9	0.7	-5.2	0.1	-0.1	1.1
Blmbg. U.S. Aggregate	-3.2	-1.2	0.6	-5.2	0.1	-0.1	1.1
Difference	0.1	0.3	0.1	0.0	0.0	0.0	0.0



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Total Bond Market	-3.1 (51)	-0.9 (52)	0.7 (53)	-5.2 (57)	0.1 (44)	-0.1 (57)	1.1 (51)
● Blmbg. U.S. Aggregate	-3.2 (70)	-1.2 (71)	0.6 (57)	-5.2 (56)	0.1 (47)	-0.1 (56)	1.1 (50)

5th Percentile	-1.3	0.7	2.7	-3.1	1.0	0.8	1.8
1st Quartile	-2.9	-0.4	1.4	-4.7	0.4	0.2	1.4
Median	-3.1	-0.9	0.8	-5.1	0.1	0.0	1.1
3rd Quartile	-3.3	-1.3	0.3	-5.4	-0.2	-0.3	0.8
95th Percentile	-3.7	-2.1	-0.5	-6.0	-0.8	-0.8	0.3

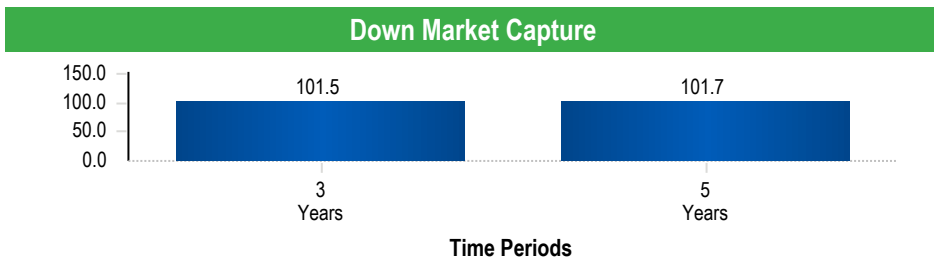
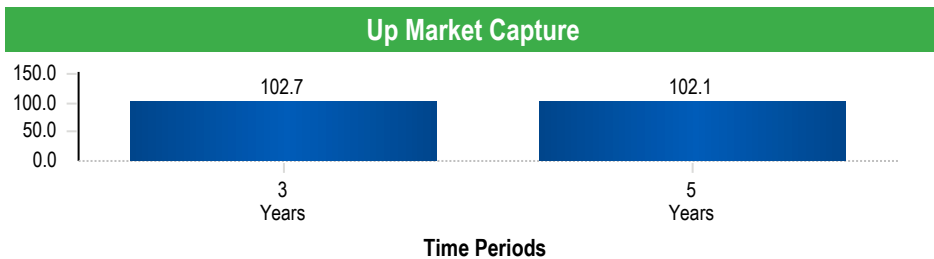
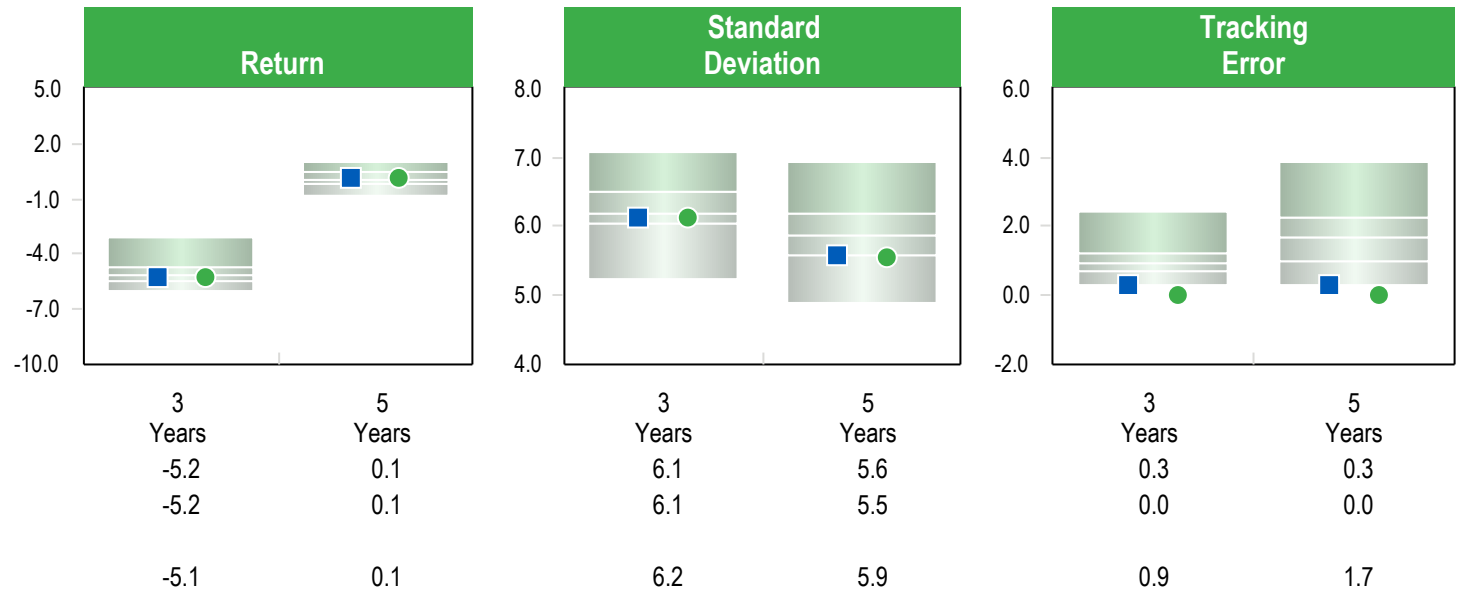
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.



	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 ■ Sep-2023 ● Average Style Exposure

Appendix

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

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Annual Dollar Fee	Average Fee
Vanguard Total Stock Market Index	9/30/2023	\$1,988,544	Equity Only	Russell 3000 Index	All Cap Equity	4 bps on all assets	\$795	0.04%
Vanguard Developed Market Index	9/30/2023	\$530,565	Equity Only	FTSE Developed x North America	International Equity	16 bps on all assets	\$849	0.16%
Vanguard Total Bond Market Index	9/30/2023	\$1,488,966	Fixed Income	Barclays U.S. Aggregate	Core Fixed Income	3.5 bps on all assets	\$521	0.035%
Fidelity Money Market	9/30/2023	\$155	Cash	90 Day U.S. Treasury Bill	Cash	33 bps on all assets	\$1	0.33%
OPEB Total		\$4,008,230					\$2,166	0.05%