

# City of Memphis Retirement System OPEB Report

## Analysis of Investment Performance

*Quarter Ending September 30, 2024*

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## **Financial Market Conditions**



# Quarter in Review: Global Equity Overview

Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	5.89	22.08	36.35	11.91	15.98	13.38
MSCI Europe, Australasia and Far East (EAFE)*	7.26	12.99	24.77	5.48	8.20	5.71
MSCI Emerging Markets (EM)*	8.72	16.86	26.05	0.40	5.75	4.02

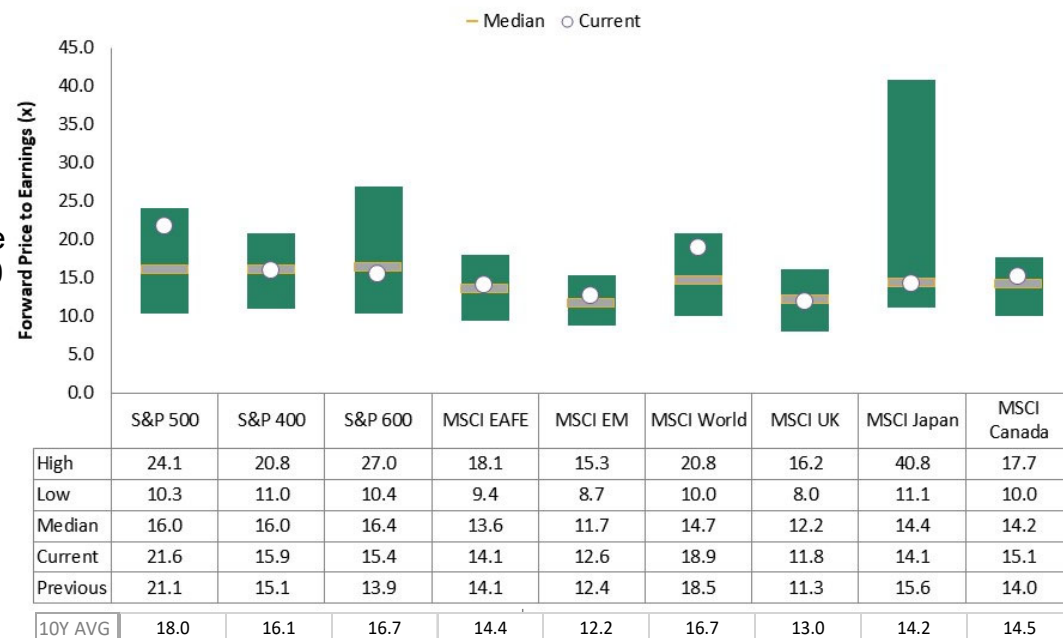
All data in the table are percentages.

\* Net dividends reinvested

## Global Equity Performance and Valuations

- Positive returns were posted for global equities during the third quarter of 2024. Emerging Markets (+8.7%) led the global equities for the second consecutive quarter, followed by International Developed (+7.3%) and U.S. (+5.9%) markets.
- U.S. large cap stocks are trading at slightly higher valuations as the S&P 500's [12 month] forward P/E ratio was 21.6 compared to 21.0 during the first and second quarters of 2024, which was also above the 10-year average of 18.0.
- International Developed large cap stocks, per the MSCI EAFE Index continue to trade a lower valuations than the U.S. The [12 month] forward P/E ratio was up during the third quarter at 14.1, compared to 13.6 at the end of the second quarter, but still below the 10-year average of 14.4.
- Emerging Market stock valuations, per the MSCI EM Index, continue to rise. Current valuations, at 12.6, are 40 basis points above the most recent quarter (12.2) and the 10-year average (12.2).

## Price to Earnings



Data range is from 3/31/00 - 9/30/24. 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	5.89	22.08	36.35	11.91	15.98	13.38
Russell 1000	6.08	21.18	35.68	10.83	15.64	13.10
Russell 1000 Growth	3.19	24.55	42.19	12.02	19.74	16.52
Russell 1000 Value	9.43	16.68	27.76	9.03	10.69	9.23
Russell 2000	9.27	11.17	26.76	1.84	9.39	8.78
Russell 2000 Growth	8.41	13.22	27.66	-0.35	8.82	8.95
Russell 2000 Value	10.15	9.22	25.88	3.77	9.29	8.22
Russell Midcap	9.21	14.63	29.33	5.75	11.30	10.19
Russell 3000	6.23	20.63	35.19	10.29	15.26	12.83

All data in the tables are percentages.

## Performance

- The U.S. market (+5.9%) continues to demonstrate strength through positive returns but trailed the International Developed and Emerging Markets during the quarter.
- Small cap stocks (+9.3%) rallied over the third quarter, bouncing back from negative returns during the second quarter, and led the U.S. market over mid cap (+9.2%) and large cap (+6.1%) stocks. Investor sentiment shifted as expectations for interest rate cuts changed over the quarter and the Fed announced a 50-basis point reduction, creating a strong environment for small cap stocks.
- Value outperformed growth in both large caps and small caps, a reversion from growth's outperformance over recent quarters. The Russell 1000 Value Index was up +9.4% compared to the growth index at +3.2%. Similarly, the Russell 2000 Value Index was up +10.2% versus the growth index at +8.4%.
- All sectors in the S&P 500 Index posted positive returns except for Energy (-2.3%), as oil prices dropped during the quarter. Utilities (+19.4%) led the index, followed by Real Estate (+17.2%) and Industrials (+11.6%).

S&P 500 Sector Returns	QTD	1-Year
Communication Services	1.68	42.91
Consumer Discretionary	7.80	28.06
Consumer Staples	8.96	25.32
Energy	-2.32	0.85
Financials	10.66	39.01
Healthcare	6.07	21.69
Industrials	11.55	35.89
Information Technology	1.61	52.68
Materials	9.70	25.20
Real Estate	17.17	35.83
Utilities	19.37	41.82

# Quarter in Review: International Equity

MSCI International Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
World ex. U.S.	7.76	13.10	24.98	5.65	8.36	5.68
EAFE	7.26	12.99	24.77	5.48	8.20	5.71
EAFE Local Currency	0.82	11.97	17.53	7.92	8.78	7.39
Europe	6.58	12.77	25.23	6.66	8.90	5.59
Europe ex U.K.	6.18	12.01	25.83	5.72	9.24	6.17
U.K.	7.94	15.41	23.32	9.79	7.89	4.10
Japan	5.72	12.35	21.55	2.67	7.15	6.38
Pacific ex Japan	14.29	15.09	28.20	4.80	6.33	5.26

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

## Performance

- International developed markets (+7.3%) were positive for the third quarter, recovering from negative returns during the second quarter, and outperforming the U.S. for the first time since the first quarter of 2023.
- The U.K. (+7.9%) demonstrates continued strength, posting the strongest returns for the third quarter, with the recovery in their domestic economy, the Labour general election win in July and the Bank of England delivering the first interest rate cuts in four years.
- Despite Japan (+5.7%) posting the weakest returns in the quarter, the market showed resilience from the negative returns posted during the second quarter. High volatility continues throughout the Japanese stock market, with significant dislocation in August due to weaker economic data and the Bank of Japan's action in raising interest rates. The yen has strengthened against the US dollar, with impact on sector performance.
- Real Estate (+17.3%), Utilities (+14.9%), and Communication Services (+11.5%) led the international markets during the quarter. Energy (-5.8%) and Information Technology (-2.4%) were the only sectors to post negative returns.

MSCI EAFE Sector Returns	QTD	1-Year
Communication Services	11.50	27.07
Consumer Discretionary	4.84	14.43
Consumer Staples	10.58	10.89
Energy	-5.77	-2.14
Financials	10.38	36.03
Healthcare	4.61	20.35
Industrials	9.38	33.84
Information Technology	-2.43	35.61
Materials	10.69	24.04
Real Estate	17.28	27.57
Utilities	14.93	25.37

# Quarter in Review: Emerging Market Equity

MSCI EM Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Emerging Markets	8.72	16.86	26.05	0.40	5.75	4.02
EM Local Currency	6.62	18.35	24.95	2.85	7.42	6.46
Asia	9.47	21.55	29.71	0.77	7.22	5.64
EMEA	7.14	9.99	19.19	-5.91	0.59	-0.25
Latin America	3.75	-12.52	2.83	7.16	2.05	0.62

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

## Performance

- Emerging Markets (+8.7%) outperformed the U.S. (+5.9%) and International Developed (+7.3%) markets for the second consecutive quarter.
- Asia (+9.5%) posted the strongest returns during the quarter, as Thailand returns were supported by currency strength and delivery of the first phase of a new government stimulus. Given the monetary stimulus measures announced in September and anticipation for further measures, China posted positive returns as well.
- South Korea was the only index with negative returns during the quarter, due to sell-off in technology stocks as investor sentiment questioned revenue growth through artificial intelligence expansion. Brazil also underperformed, negatively affected by the central bank raising rates to contain inflation and the government loosening fiscal spending.
- Consumer Discretionary (+25.0%), Healthcare (+22.9%), and Communication Services (+15.6%) led the market during the quarter. Information Technology (-2.6%) and Energy (-0.4%) were the only sectors to post negative returns.

MSCI EM Sector Returns	QTD	1-Year
Communication Services	15.63	26.17
Consumer Discretionary	24.99	31.85
Consumer Staples	11.12	9.55
Energy	-0.36	17.38
Financials	10.44	26.54
Healthcare	22.89	20.45
Industrials	7.00	19.88
Information Technology	-2.57	40.32
Materials	5.51	5.52
Real Estate	14.83	10.77
Utilities	9.27	35.52

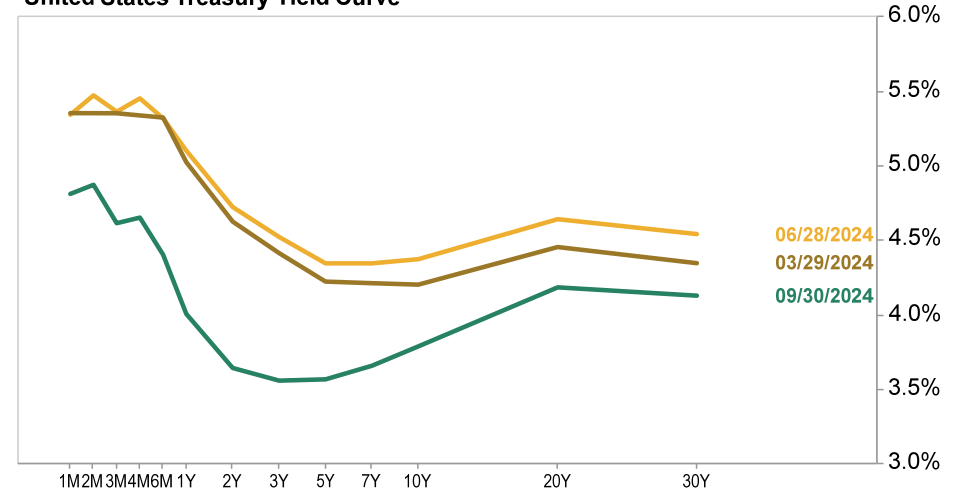


# Quarter In Review: Fixed Income Overview

## Yield Curve

- US Treasury Yield Curve normalized in Q3 2024 as short-term rates fell more than longer-term rates. The Fed lowered interest rates by 50 bps, marking the first cut in four years. Current probabilities are for the Fed to have up to another 200 basis points (bps) in rate cuts by the end of 2026.
- The end to the U.S. yield curve inversion is being driven by a “bull steeping” which means that both 2- and 10-year yields have fallen but the decline was sharper at the short end of the curve.
- 6-month, 2- and 3-year Treasury yields decreased the most by 92 bps, 108 bps and 96 bps respectively, ending the quarter at 4.40%, 3.64% and 3.56%.

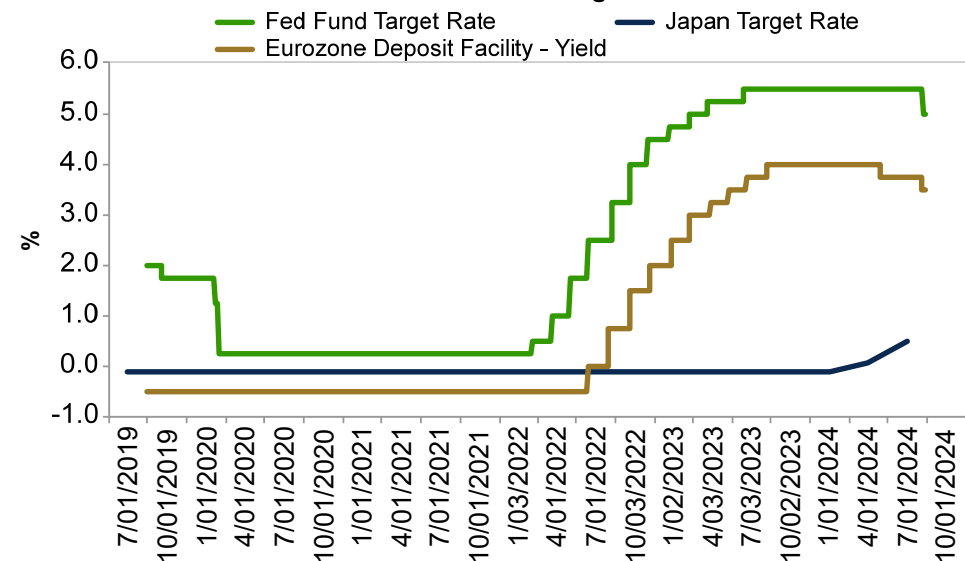
United States Treasury Yield Curve



## Monetary Policies/Global Interest Rates

- The Bank of Japan increased its policy rate in July of 2024 by 15 bps to 0.25%. The European Central Bank (ECB) cut its interest rate by 0.25% both in June and September of 2024, citing a significant improvement in inflation. The ECB interest rate is currently set at 3.65%. The Bank of England decreased its policy rate by 25 bps in August of 2024 to 5.00%.
- The U.S. policy rate is above those of the Eurozone and Japan, but equal to the policy rate in the United Kingdom at 5.00%.

Central Bank Target Rates



Interest Rates	Fed Funds Rate	EZ Deposit Facility Rate
Average	4.96	1.01
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	5.20	4.45	11.57	-1.39	0.33	1.84
Government/Credit	5.10	4.39	11.31	-1.50	0.41	2.00
Government	4.71	3.85	9.68	-1.72	-0.16	1.36
Investment Grade Credit	5.84	5.32	14.28	-1.18	1.16	2.93
Investment Grade CMBS	4.64	6.47	12.05	-0.27	1.20	2.48
U.S. Corporate High Yield	5.28	8.00	15.74	3.10	4.72	5.04
FTSE** 3-Month T-Bill	1.37	4.17	5.63	3.63	2.38	1.67

\* Bloomberg Indices, unless otherwise noted.

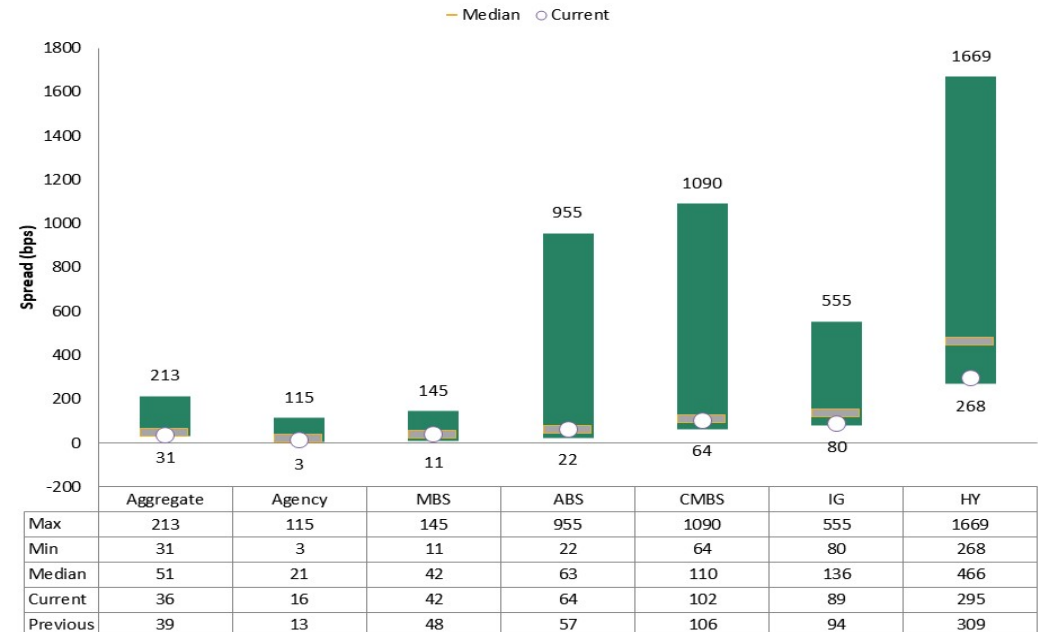
\*\* Formerly Citigroup. Citigroup's fixed income indices were purchased by London Stock Exchange Group (LSEG) and were rebranded to FTSE by July 31, 2018. FTSE Russell is a unit of LSEG's Information Services Division and a wholly owned subsidiary of LSEG.

All data in the table are percentages.

## Performance and Spreads

- The U.S. Aggregate Index was positive during the third quarter. All U.S. Aggregate Index sectors generated positive returns for the quarter.
- The Investment Grade (IG) Credit sector had the strongest performance at +5.84% for the quarter. 3-Month T-Bills experienced the weakest performance (+1.37%) in the quarter ended September 30.
- For the quarter, the US Aggregate Index, MBS, CMBS, IG Credit and High Yield spreads narrowed further while the spreads on Agency and ABS widened. The largest change was in the High Yield sector with spreads narrowing by 14 basis points.

Fixed Income Spreads



Data range is from 9/30/00-9/30/24

# Quarter In Review: International Fixed Income

Global Fixed Income Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Bloomberg Global Aggregate	6.98	3.60	11.99	-3.06	-0.83	0.57
Bloomberg Global Aggregate (Hgd)	4.24	4.38	10.63	-0.22	0.57	2.33
FTSE Non-U.S. WGBI*	8.61	1.92	12.02	-6.25	-3.42	-1.09
FTSE Non-U.S. WGBI (Hgd)	3.65	3.23	9.38	-1.06	-0.56	2.20
JPM EMBI Global Diversified**	6.15	8.64	18.60	-0.40	0.87	3.28
JPM GBI-EM Global Diversified***	8.99	4.95	13.42	0.60	0.59	0.57

All data in the table are percentages.

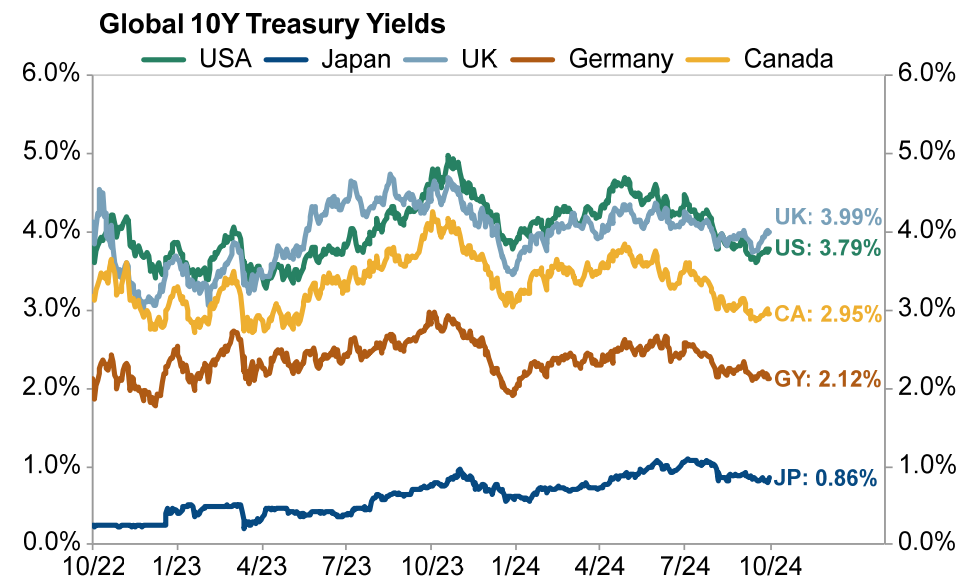
\* Formerly Citigroup. The FTSE Non-U.S. World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment grade sovereign bonds excluding the U.S.

\*\* 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. Except for the Bank of Japan, all other developed country central banks cut interest rates during the third quarter.
- The U.S. dollar depreciated relative to the Yen, Euro, and British Pound.
- Global government bond returns were positive for the quarter ended September 30, with Emerging Markets bonds exhibiting the strongest performance.



# Disclaimer

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

## Total Fund Composite



# City of Memphis OPEB Trust

## Asset Allocation Comparison

Portfolio Value 9/30/24

\$4,999,016

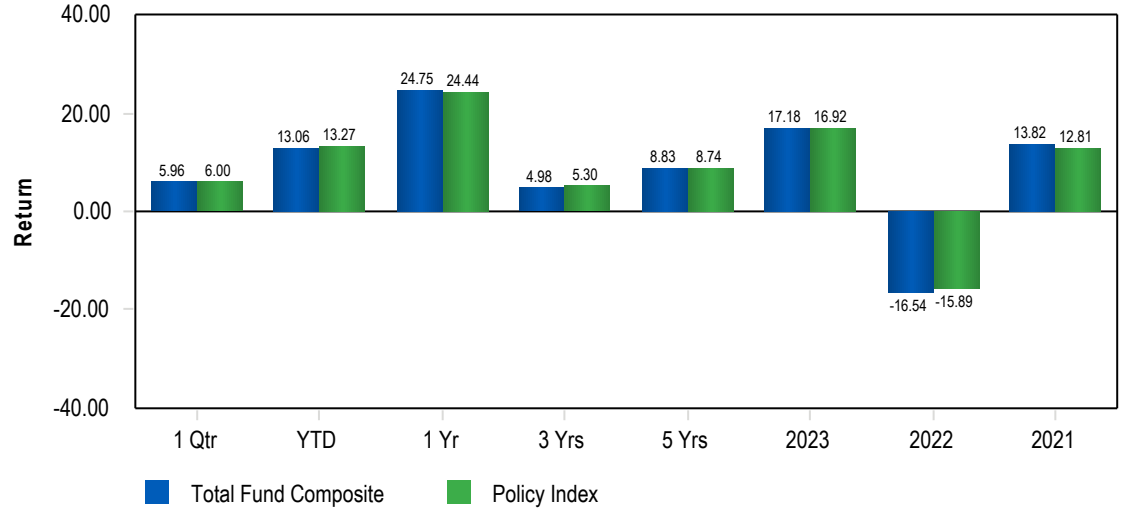
<u>Target Allocations</u>			<u>Current Managers &amp; Allocations</u>			<u>Difference</u>	<u>Range</u>
<b>Equity</b>		(000)			(000)		
Domestic Equity	47.50%	\$2,375	Vanguard Total Stock Market Index	49.66%	\$2,482		40.0%-55.0%
International Equity	15.00%	\$750	Vanguard Developed Market Index	13.23%	\$661		10.0%-20.0%
<b>Equity Total</b>	<b>62.50%</b>	<b>\$3,124</b>	<b>Equity Total</b>	<b>62.89%</b>	<b>\$3,144</b>	<b>0.39%</b>	<b>50.0%-65.0%<sup>1</sup></b>
<b>Fixed Income</b>							
Fixed Income	37.50%	\$1,875	Vanguard Total Bond Market Index	37.11%	\$1,855		
<b>Fixed Income Total</b>	<b>37.50%</b>	<b>\$1,875</b>	<b>Fixed Income Total</b>	<b>37.11%</b>	<b>\$1,855</b>	<b>-0.39%</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>\$4,999</b>	<b>Total</b>	<b>100%</b>	<b>\$4,999</b>		

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

Asset Allocation by Segment

Segments	Market Value (\$)	Allocation (%)
Domestic Equity	2,482,490	49.7
Domestic Fixed Income	1,855,063	37.1
International Equity	661,301	13.2
Cash	162	0.0

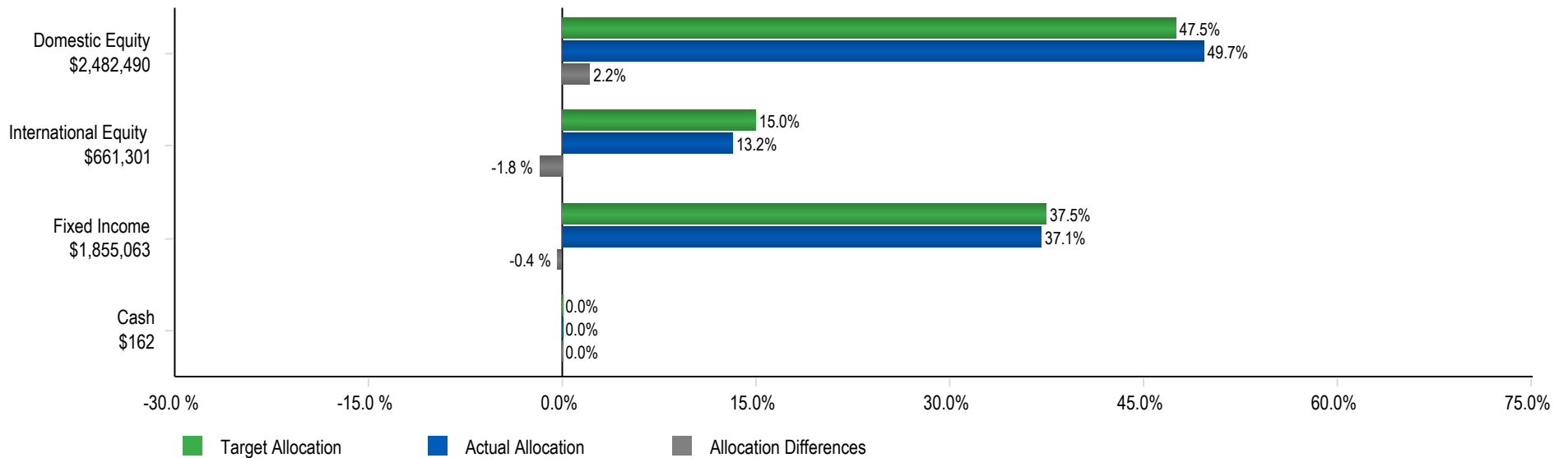
Performance Bar Chart



Gain / Loss

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
Total Fund Composite					
Beginning Market Value	4,718,671	4,422,411	4,008,230	4,321,681	3,271,890
Net Cash Flows					
Income	-4,838	-4,518	-4,133	133,310	336,249
Gain/Loss	285,183	581,124	994,919	544,025	1,390,877
Ending Market Value	4,999,016	4,999,016	4,999,016	4,999,016	4,999,016





	Asset Allocation (\$)	Asset Allocation (%)	Target Allocation (%)	Differences (%)	Minimum Allocation (%)	Maximum Allocation (%)
Domestic Equity	2,482,490	49.7	47.5	2.2	40.0	55.0
International Equity	661,301	13.2	15.0	-1.8	10.0	20.0
Fixed Income	1,855,063	37.1	37.5	-0.4	30.0	45.0
Cash	162	0.0	0.0	0.0	0.0	2.0
<b>Total Fund</b>	<b>4,999,016</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>		

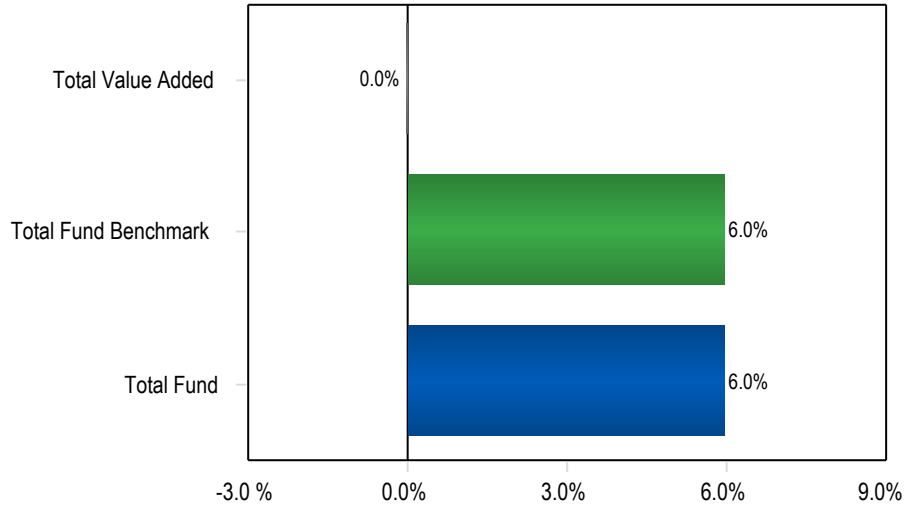
	(\$)	Total Fund	%
Total Fund Composite	4,999,016		100.0
Vanguard Total Stock Market	2,482,490		49.7
Vanguard Developed Markets Index	661,301		13.2
Vanguard Total Bond Market	1,855,063		37.1
Fidelity Money Market Fund	162		0.0

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Total Fund Composite	6.0	13.1	24.7	5.0	8.8	8.1	7.8	8.0	07/01/2008
<i>Policy Index</i>	6.0	13.3	24.4	5.3	8.7	8.2	7.8	7.8	
All Public Plans-Total Fund Median	5.4	11.5	20.4	4.8	8.4	7.7	7.5	7.2	
Total Fund Composite Rank	30	22	8	44	38	35	38	12	
Vanguard Total Stock Market	6.4	20.0	35.2	10.1	15.2	13.7	12.7	11.6	07/01/2008
<i>Russell 3000 Index</i>	6.2	20.6	35.2	10.3	15.3	13.7	12.8	11.6	
IM U.S. Multi-Cap Equity (MF) Median	6.2	17.3	30.4	8.6	12.5	11.2	10.3	9.7	
Vanguard Total Stock Market Rank	46	30	29	29	23	20	18	17	
Vanguard Developed Markets Index	7.4	12.2	24.6	4.8	8.3	5.9	5.9	7.5	01/01/2012
<i>Developed Market Policy Index</i>	7.6	12.5	24.7	5.0	8.6	6.3	6.2	7.9	
IM International Equity (MF) Median	7.1	13.0	23.8	2.5	7.3	5.0	5.1	6.7	
Vanguard Developed Markets Index Rank	46	61	41	28	31	26	28	29	
Vanguard Total Bond Market	4.7	3.7	11.0	-1.6	0.2	1.4	1.8	2.9	07/01/2008
<i>Blmbg. U.S. Aggregate</i>	5.2	4.4	11.6	-1.4	0.3	1.5	1.8	3.0	
IM U.S. Broad Market Core Fixed Income (MF) Median	5.2	4.8	12.0	-1.5	0.5	1.5	1.8	3.2	
Vanguard Total Bond Market Rank	92	100	88	60	74	60	57	64	
Fidelity Money Market Fund	1.3	3.8	5.2	3.3	2.1	2.0	1.4	1.4	10/01/2014
<i>90 Day U.S. Treasury Bill</i>	1.4	4.0	5.5	3.5	2.3	2.2	1.6	1.6	
IM U.S. Taxable Money Market (MF) Median	1.3	3.8	5.2	3.3	2.1	2.0	1.4	1.4	
Fidelity Money Market Fund Rank	49	49	49	49	50	46	44	44	

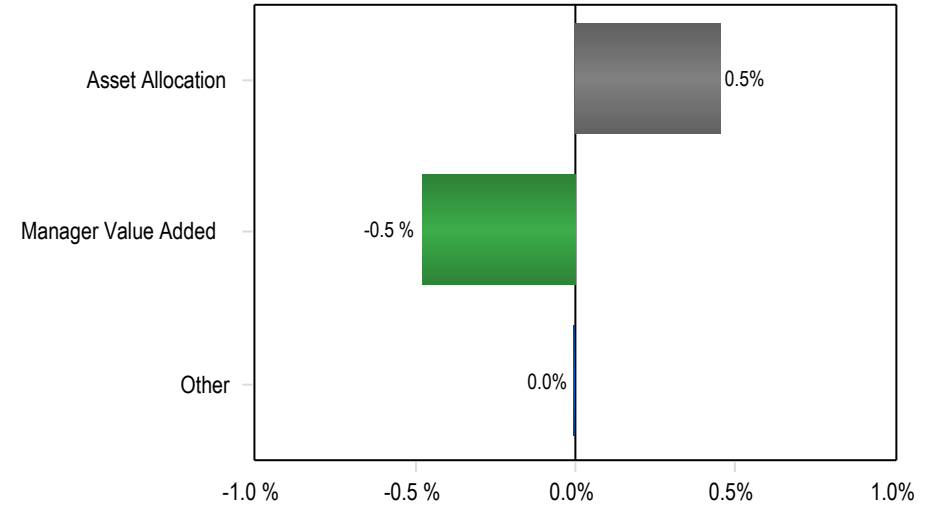
	Performance (%)									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total Fund Composite	17.2	-16.5	13.8	14.9	21.0	-4.7	15.0	7.4	0.3	7.1
<i>Policy Index</i>	16.9	-15.9	12.8	14.6	21.2	-4.4	14.8	7.3	0.6	7.4
Vanguard Total Stock Market	26.5	-19.5	25.7	21.0	30.8	-5.2	21.2	12.7	0.4	12.5
<i>Russell 3000 Index</i>	26.0	-19.2	25.7	20.9	31.0	-5.2	21.1	12.7	0.5	12.6
Vanguard Developed Markets Index	17.7	-15.3	11.4	10.3	21.9	-14.6	26.3	2.4	-0.3	-5.7
<i>Developed Market Policy Index</i>	18.3	-15.3	11.9	10.3	22.7	-14.5	26.7	2.7	0.0	-4.6
Vanguard Total Bond Market	6.0	-13.2	-1.7	7.7	8.7	0.0	3.6	2.6	0.4	6.0
<i>Blmbg. U.S. Aggregate</i>	5.5	-13.0	-1.5	7.5	8.7	0.0	3.5	2.6	0.5	6.0
Fidelity Money Market Fund	4.9	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>	5.0	1.5	0.0	0.7	2.3	1.9	0.9	0.3	0.0	0.0

	Performance (%)									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Vanguard Total Stock Market	26.5	-19.5	25.7	21.0	30.8	-5.2	21.2	12.7	0.4	12.5
<i>Russell 3000 Index</i>	26.0	-19.2	25.7	20.9	31.0	-5.2	21.1	12.7	0.5	12.6
IM U.S. Multi-Cap Equity (MF) Median	20.5	-17.4	24.7	14.7	28.2	-7.1	20.5	10.0	-1.4	10.5
Vanguard Total Stock Market Rank	26	60	41	34	30	33	44	33	37	25
Vanguard Developed Markets Index	17.7	-15.3	11.4	10.3	21.9	-14.6	26.3	2.4	-0.3	-5.7
<i>Developed Market Policy Index</i>	18.3	-15.3	11.9	10.3	22.7	-14.5	26.7	2.7	0.0	-4.6
IM International Equity (MF) Median	15.2	-19.0	8.5	13.7	22.1	-16.0	28.6	1.8	-2.3	-4.5
Vanguard Developed Markets Index Rank	30	31	32	60	51	36	64	47	36	64
Vanguard Total Bond Market	6.0	-13.2	-1.7	7.7	8.7	0.0	3.6	2.6	0.4	6.0
<i>Blmbg. U.S. Aggregate</i>	5.5	-13.0	-1.5	7.5	8.7	0.0	3.5	2.6	0.5	6.0
IM U.S. Broad Market Core Fixed Income (MF) Median	5.8	-13.7	-1.3	8.2	8.8	-0.6	3.6	2.9	0.0	5.5
Vanguard Total Bond Market Rank	38	27	65	65	53	20	52	64	32	28
Fidelity Money Market Fund	4.9	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>	5.0	1.5	0.0	0.7	2.3	1.9	0.9	0.3	0.0	0.0
IM U.S. Taxable Money Market (MF) Median	4.9	1.4	0.0	0.3	1.9	1.5	0.5	0.1	0.0	0.0
Fidelity Money Market Fund Rank	52	57	57	56	46	47	45	43	54	48

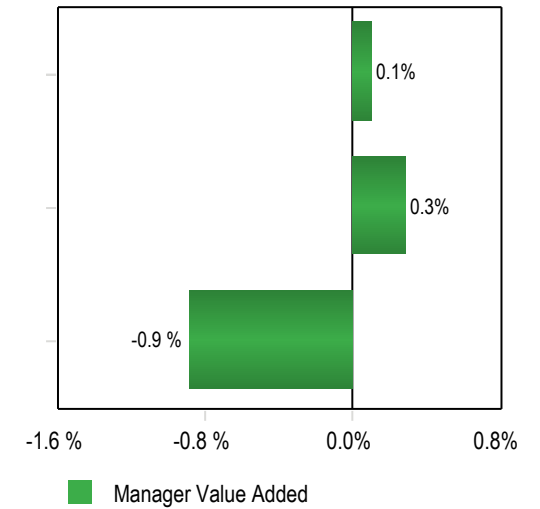
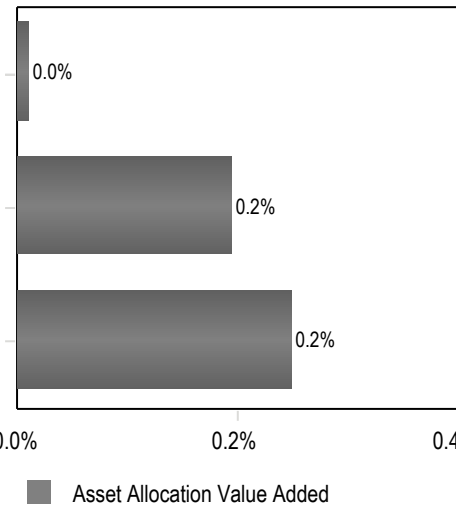
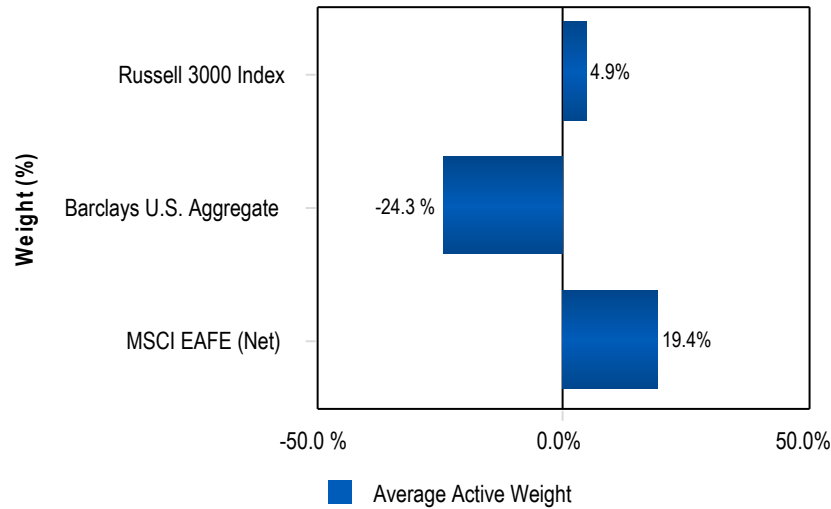
**Total Fund Performance**

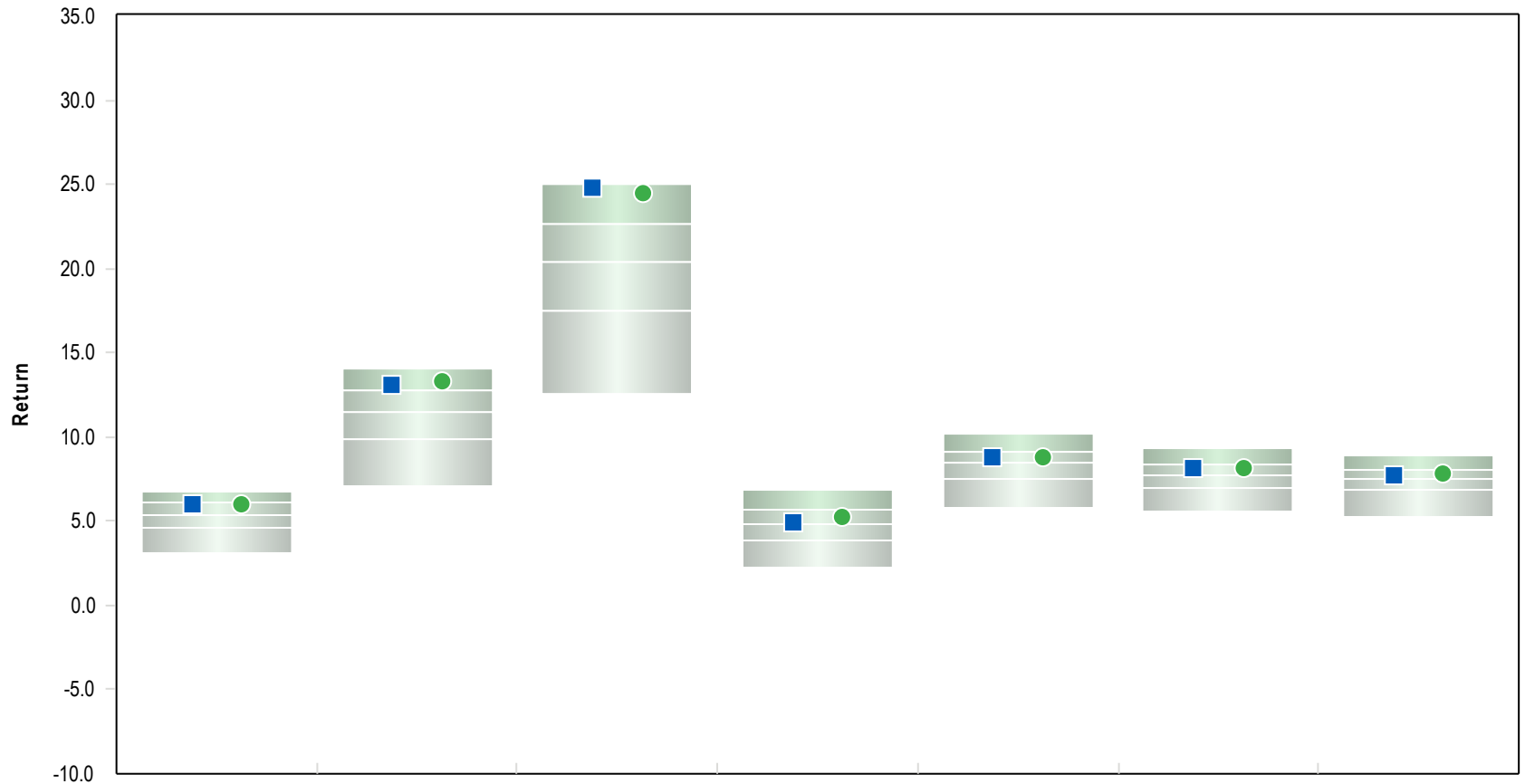


**Total Value Added:0.0%**



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

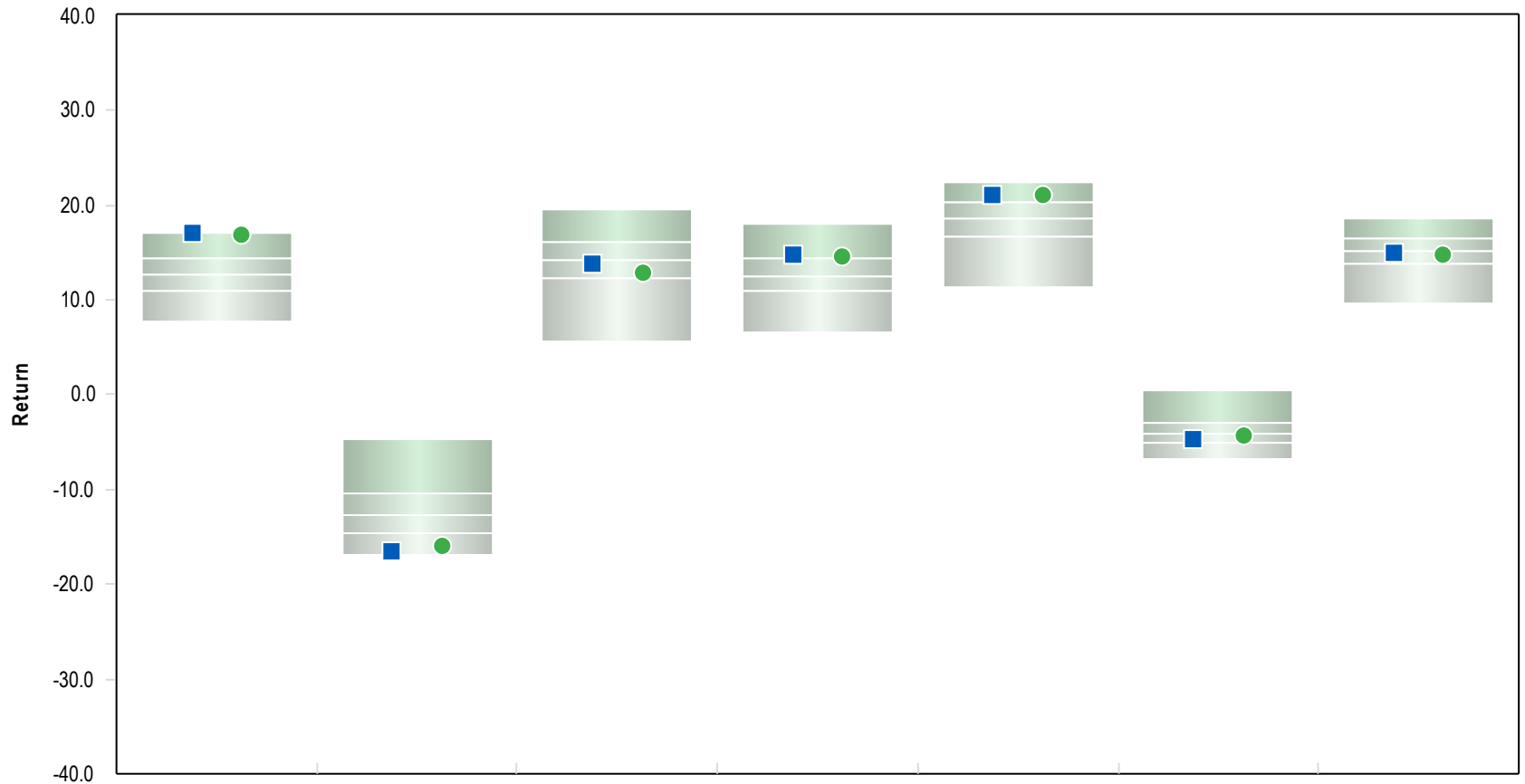




	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Total Fund Composite	6.0 (30)	13.1 (22)	24.7 (8)	5.0 (44)	8.8 (38)	8.1 (35)	7.8 (38)
● Policy Index	6.0 (28)	13.3 (17)	24.4 (11)	5.3 (36)	8.7 (40)	8.2 (35)	7.8 (36)

5th Percentile	6.8	14.1	25.0	6.9	10.2	9.3	8.9
1st Quartile	6.1	12.8	22.7	5.7	9.2	8.4	8.0
Median	5.4	11.5	20.4	4.8	8.4	7.7	7.5
3rd Quartile	4.7	9.9	17.5	3.8	7.5	7.0	6.8
95th Percentile	3.2	7.1	12.6	2.2	5.8	5.5	5.2

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



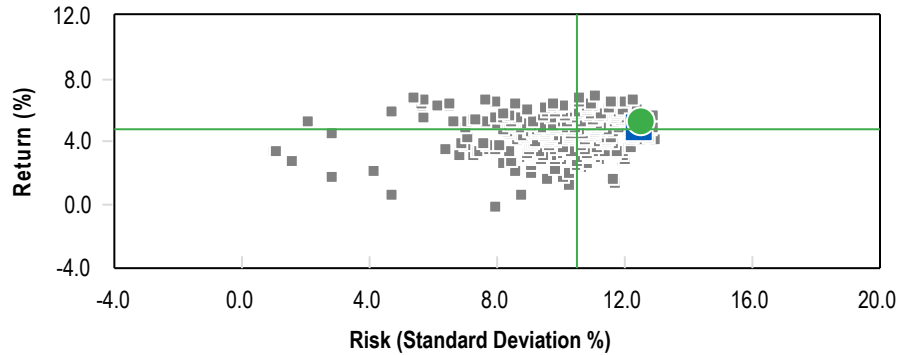
	2023	2022	2021	2020	2019	2018	2017
■ Total Fund Composite	17.2 (5)	-16.5 (93)	13.8 (56)	14.9 (22)	21.0 (17)	-4.7 (65)	15.0 (53)
● Policy Index	16.9 (6)	-15.9 (89)	12.8 (70)	14.6 (24)	21.2 (15)	-4.4 (57)	14.8 (58)

5th Percentile	17.0	-4.6	19.5	18.0	22.5	0.4	18.6
1st Quartile	14.3	-10.5	16.1	14.5	20.3	-2.9	16.4
Median	12.7	-12.7	14.2	12.5	18.6	-4.0	15.1
3rd Quartile	10.9	-14.5	12.3	10.9	16.7	-5.1	13.8
95th Percentile	7.8	-16.9	5.6	6.7	11.3	-6.9	9.7

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

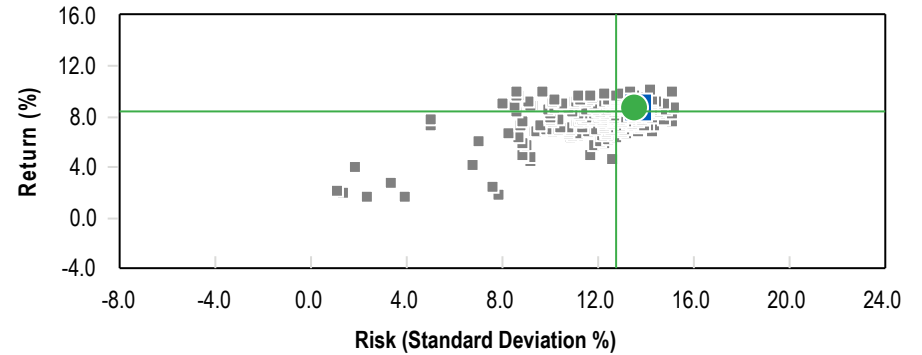


Risk & Return Plan Sponsor — 3 Years



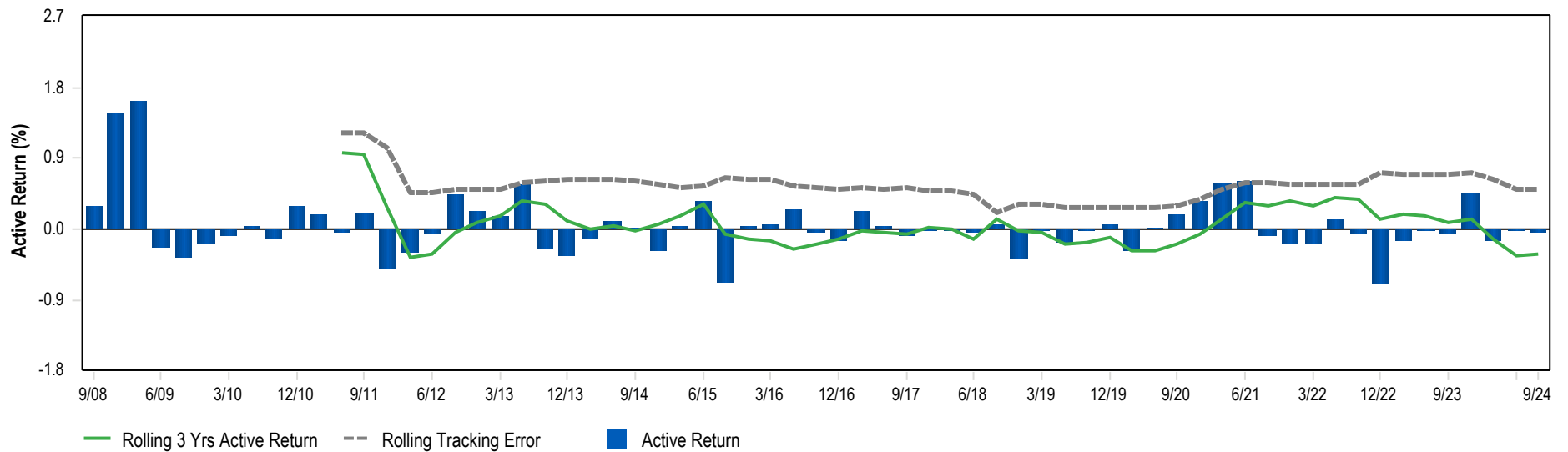
	Return	Standard Deviation
Total Fund Composite	5.0	12.5
Policy Index	5.3	12.5
Median	4.8	10.5

Risk & Return Plan Sponsor — 5 Years



	Return	Standard Deviation
Total Fund Composite	8.8	13.7
Policy Index	8.7	13.5
Median	8.4	12.7

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		648,406	4,422,411	17.2
To 09/2024	4,422,411		576,605	4,999,016	13.1

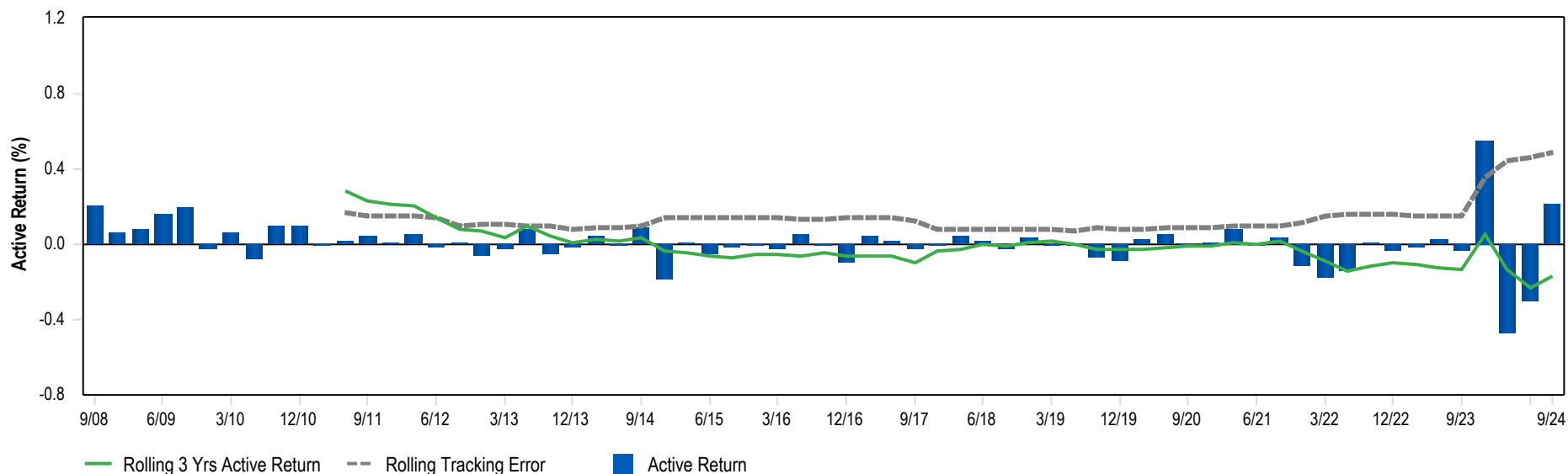
Gain/Loss includes income received and change in accrued income for the period.

## Vanguard Total Stock Market Index Fund



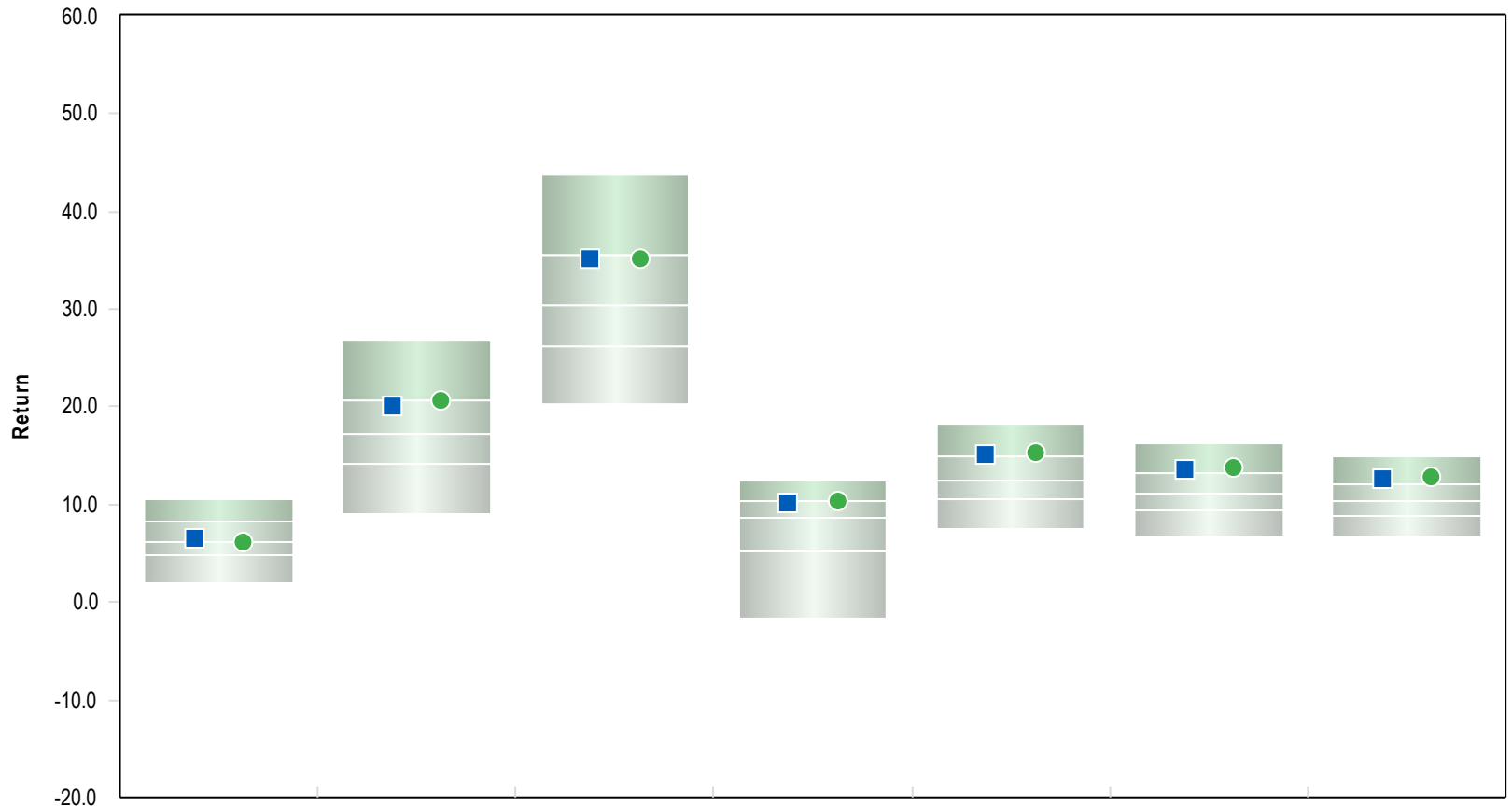
	Gain / Loss				
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
<b>Vanguard Total Stock Market</b>					
Beginning Market Value	2,474,360	2,239,585	1,988,544	2,014,887	1,624,623
Net Cash Flows	-150,000	-200,000	-200,000	-200,000	-658,894
Income				28,186	112,224
Gain/Loss	158,130	442,905	693,946	639,417	1,404,538
Ending Market Value	2,482,490	2,482,490	2,482,490	2,482,490	2,482,490

Rolling Return and Tracking Error



Performance

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Total Stock Market	6.4	20.0	35.2	10.1	15.2	13.7	12.7
Russell 3000 Index	6.2	20.6	35.2	10.3	15.3	13.7	12.8
Difference	0.2	-0.6	0.0	-0.2	-0.1	0.0	-0.1

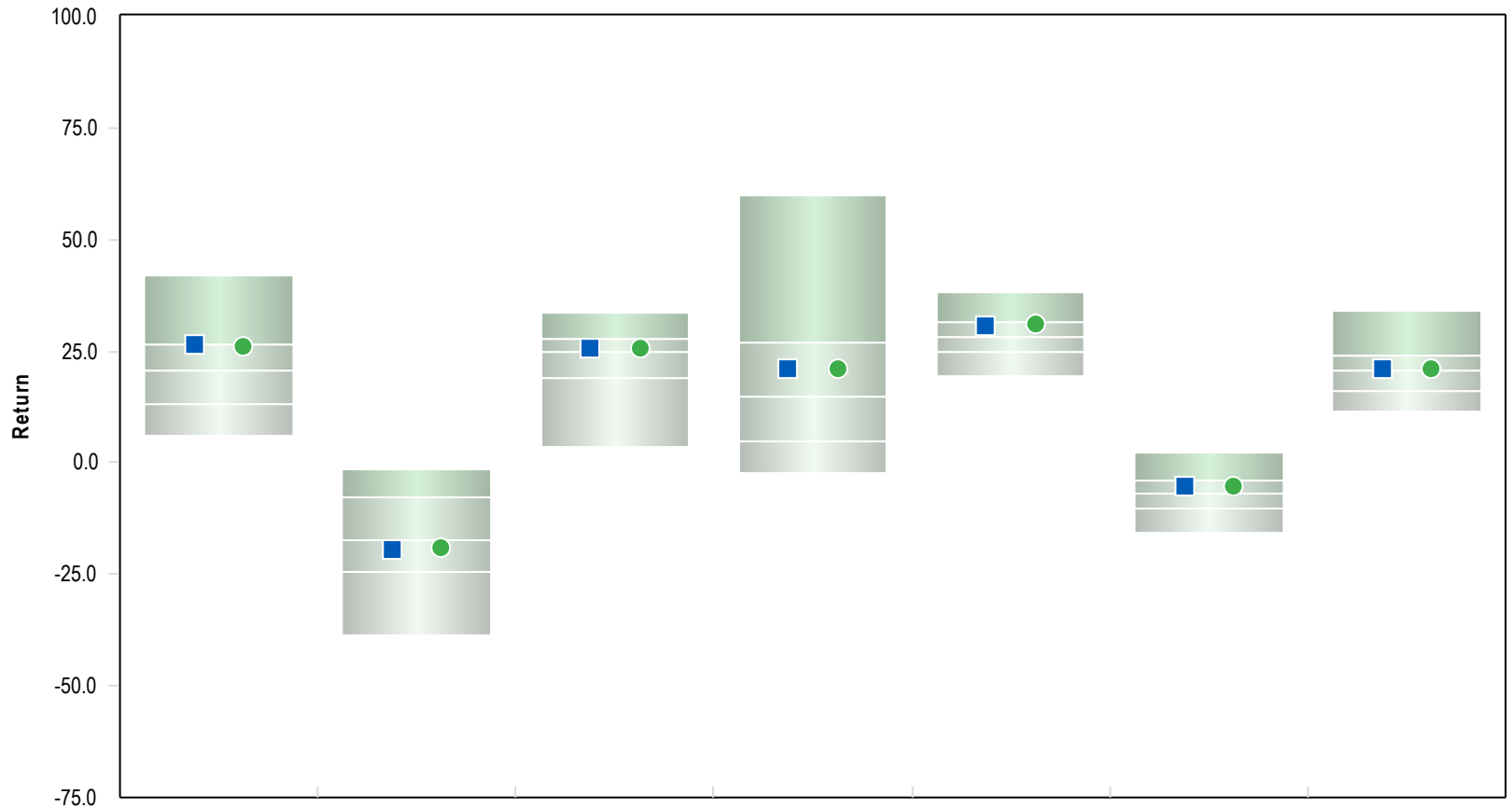


	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Total Stock Market	6.4 (46)	20.0 (30)	35.2 (29)	10.1 (29)	15.2 (23)	13.7 (20)	12.7 (18)
● Russell 3000 Index	6.2 (51)	20.6 (25)	35.2 (29)	10.3 (26)	15.3 (21)	13.7 (19)	12.8 (16)

5th Percentile	10.6	26.8	43.8	12.5	18.2	16.3	14.9
1st Quartile	8.2	20.6	35.6	10.3	15.0	13.2	12.1
Median	6.2	17.3	30.4	8.6	12.5	11.2	10.3
3rd Quartile	4.8	14.2	26.1	5.3	10.5	9.3	8.9
95th Percentile	2.0	8.9	20.3	-1.6	7.6	6.8	6.7

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

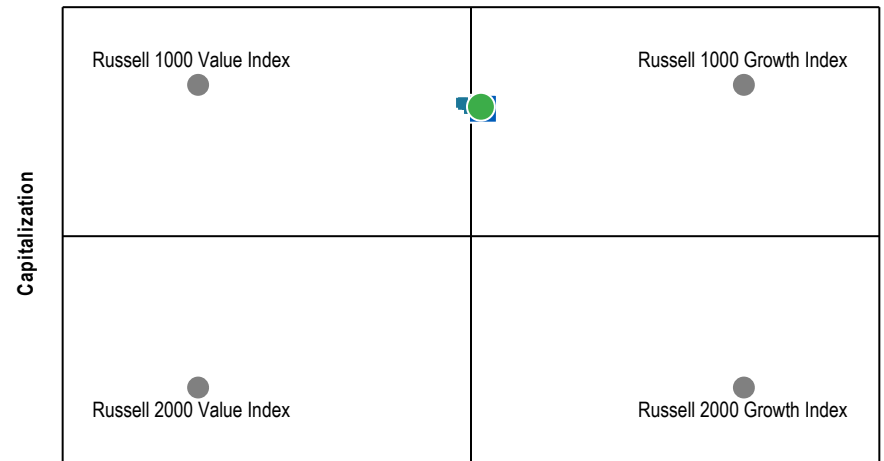
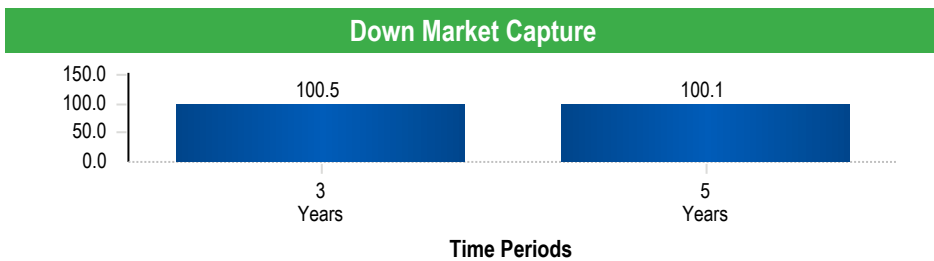
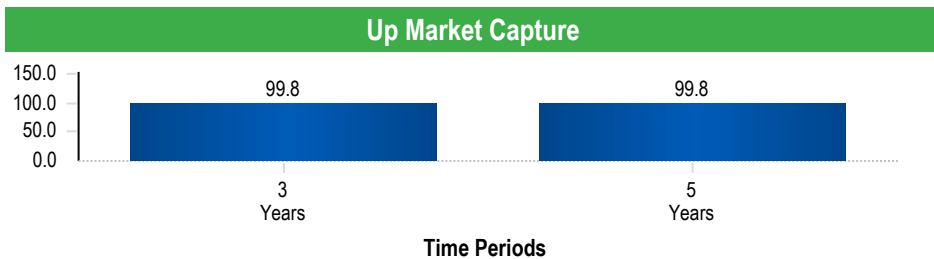
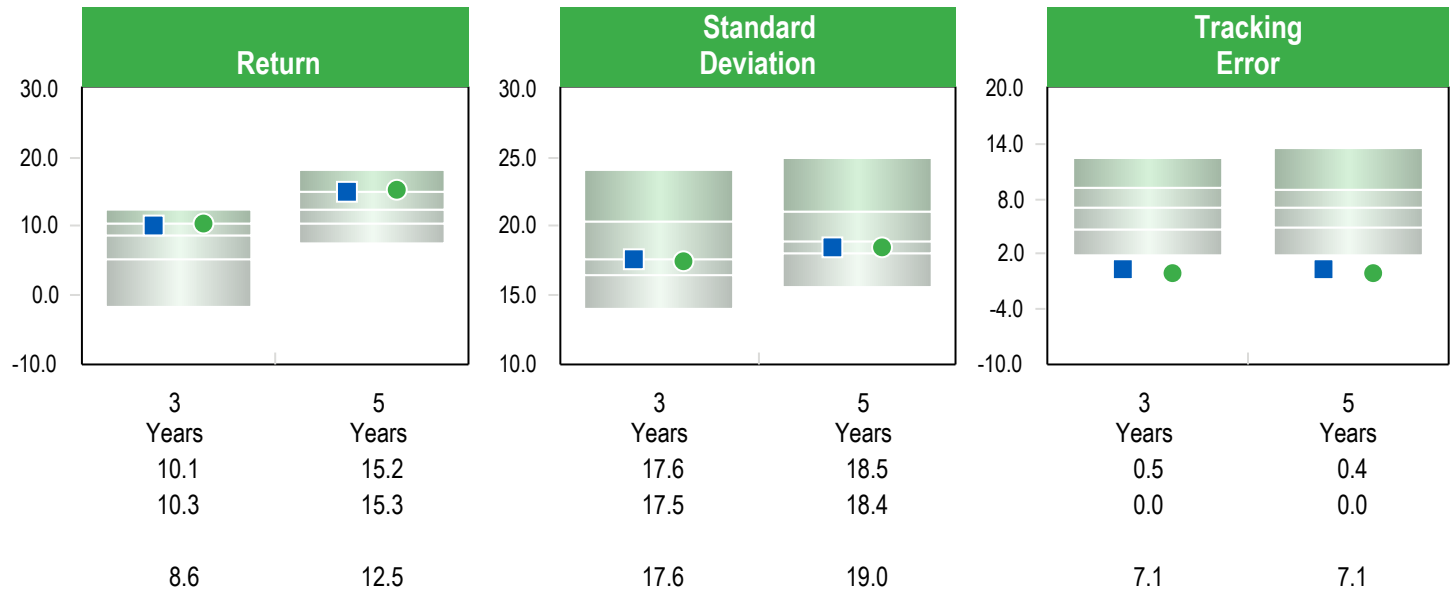




	2023	2022	2021	2020	2019	2018	2017
■ Vanguard Total Stock Market	26.5 (26)	-19.5 (60)	25.7 (41)	21.0 (34)	30.8 (30)	-5.2 (33)	21.2 (44)
● Russell 3000 Index	26.0 (29)	-19.2 (58)	25.7 (41)	20.9 (34)	31.0 (29)	-5.2 (34)	21.1 (45)

5th Percentile	42.0	-1.3	33.5	60.1	38.2	2.3	34.0
1st Quartile	26.7	-7.9	27.8	26.8	31.6	-4.0	24.2
Median	20.5	-17.4	24.7	14.7	28.2	-7.1	20.5
3rd Quartile	13.1	-24.6	18.9	4.9	24.7	-10.1	16.1
95th Percentile	6.0	-38.7	3.3	-2.5	19.3	-15.9	11.5

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



■ Style History    
 ■ Sep-2024    
 ● Average Style Exposure

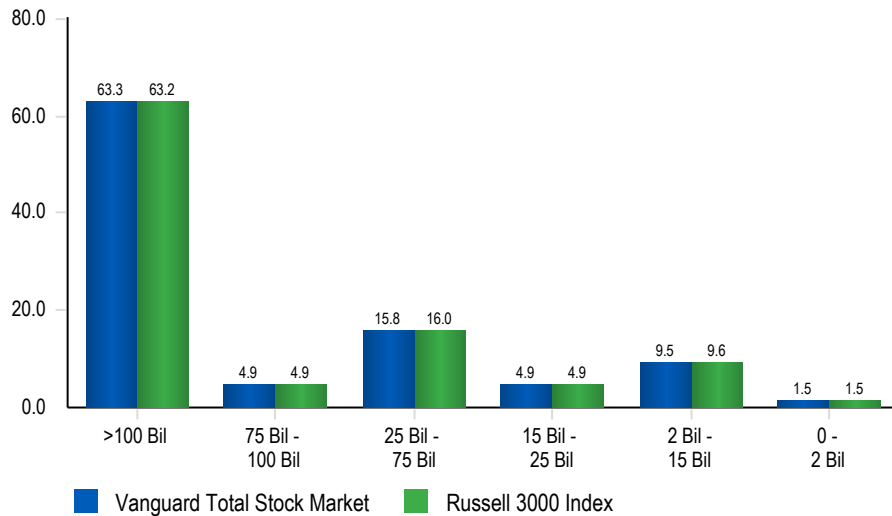
Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Apple Inc	6.1	6.1	0.0	10.8
Microsoft Corp	5.8	5.8	0.0	-3.6
NVIDIA Corporation	5.2	5.1	0.1	-1.7
Amazon.com Inc	3.2	3.1	0.1	-3.6
Meta Platforms Inc	2.3	2.3	0.0	13.6
Google Inc [A]	1.8	1.8	0.0	-8.8
Berkshire Hathaway Inc	1.5	1.5	0.0	13.1
Broadcom Inc	1.5	1.4	0.1	7.8
Alphabet Inc	1.4	1.5	-0.1	-8.7
Eli Lilly and Co	1.4	1.3	0.1	-2.0
% of Portfolio	30.2	29.9	0.3	

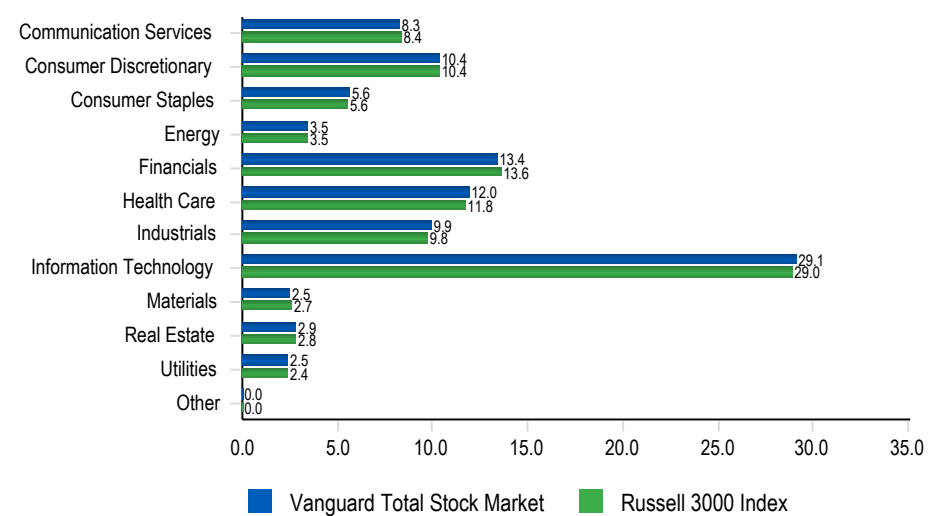
Portfolio Characteristics

	Portfolio	Benchmark
Wtd. Avg. Mkt. Cap (\$)	858,610,419,897	851,764,612,125
Median Mkt. Cap (\$)	1,272,205,300	2,253,136,695
Price/Earnings ratio	27.0	26.9
Price/Book ratio	4.7	4.7
5 Yr. EPS Growth Rate (%)	18.4	18.4
Current Yield (%)	1.3	1.3
Beta (5 Years, Monthly)	1.0	1.0
Number of Stocks	3,589	2,987

Distribution of Market Capitalization (%)



Sector Weights (%)



## Ten Best Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Instil Bio Inc	0.0	0.0	0.0	554.2
Lumen Technologies Inc	0.0	0.0	0.0	545.5
CommScope Holding Co Inc	0.0	0.0	0.0	396.7
Personalis Inc	0.0	0.0	0.0	359.8
Serve Robotics Inc	0.0	0.0	0.0	307.7
Nutex Health Inc	0.0	0.0	0.0	264.8
Alpha Teknova Inc	0.0	0.0	0.0	253.3
Capricor Therapeutics Inc	0.0	0.0	0.0	218.9
FreightCar America Inc	0.0	0.0	0.0	209.2
Gevo Inc	0.0	0.0	0.0	192.5
% of Portfolio	0.0	0.0	0.0	

## Ten Worst Performers

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Mullen Automotive Inc	0.0	0.0	0.0	-98.7
HilleVax Inc	0.0	0.0	0.0	-87.8
Vertex Energy Inc	0.0	0.0	0.0	-87.8
Hyzon Motors Inc	0.0	0.0	0.0	-84.9
Athira Pharma Inc	0.0	0.0	0.0	-83.2
Odyssey Marine Exploration Inc.	0.0	0.0	0.0	-83.0
Oncernal Therapeutics Inc	0.0	0.0	0.0	-82.6
Outset Medical Inc	0.0	0.0	0.0	-82.4
Creative Media & Community Trust Corporation	0.0	0.0	0.0	-80.8
Verrica Pharmaceuticals Inc	0.0	0.0	0.0	-80.1
% of Portfolio	0.0	0.0	0.0	

Buy and Hold Portfolio	6.2
Portfolio Trading	0.3
Actual Return	6.4
Benchmark Return	6.2
Actual Active Return	0.2
Stock Selection	0.0
Sector Selection	0.0
Interaction	0.0
Total Selection	0.0
Portfolio Trading	0.3
Benchmark Trading	0.0
Active Trading Impact	0.2
Buy and Hold Active Return	0.2

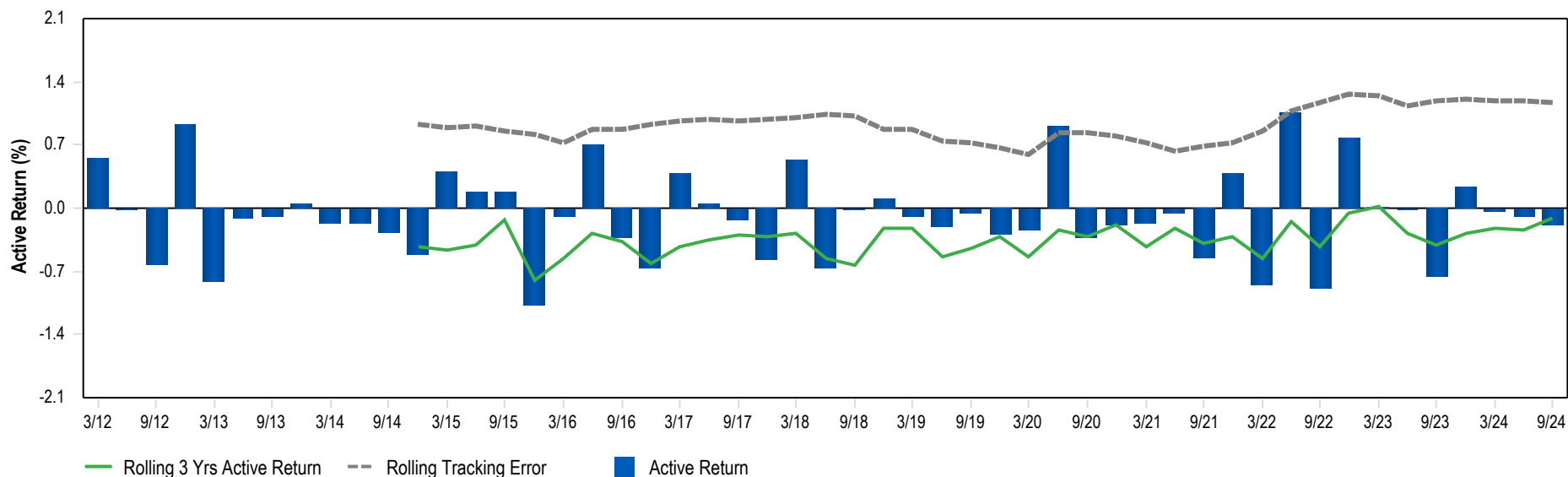
	Allocation-07/01/2024		Performance-1 Quarter Ending September 30, 2024			Attribution		
	Portfolio	Benchmark	Portfolio	Benchmark	Stock	Sector	Interaction	Total
Communication Services	8.7	8.8	2.0	2.2	0.0	0.0	0.0	0.0
Consumer Discretionary	10.2	10.1	7.9	8.2	0.0	0.0	0.0	0.0
Consumer Staples	5.5	5.5	8.6	8.5	0.0	0.0	0.0	0.0
Energy	3.8	3.9	-2.9	-3.0	0.0	0.0	0.0	0.0
Financials	13.0	13.2	10.9	10.7	0.0	0.0	0.0	0.0
Health Care	11.9	11.9	6.4	6.4	0.0	0.0	0.0	0.0
Industrials	9.5	9.4	10.8	11.0	0.0	0.0	0.0	0.0
Information Technology	30.4	30.1	1.9	1.8	0.0	0.0	0.0	0.0
Materials	2.4	2.5	9.4	9.5	0.0	0.0	0.0	0.0
Real Estate	2.6	2.6	17.3	17.2	0.0	0.0	0.0	0.0
Utilities	2.2	2.2	18.6	18.7	0.0	0.0	0.0	0.0
Total	100.0	100.0	6.2	6.2	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	615,585	589,555	530,565	574,482	444,407
Net Cash Flows					
Income				29,697	63,558
Gain/Loss	45,716	71,745	130,735	57,122	153,336
Ending Market Value	661,301	661,301	661,301	661,301	661,301

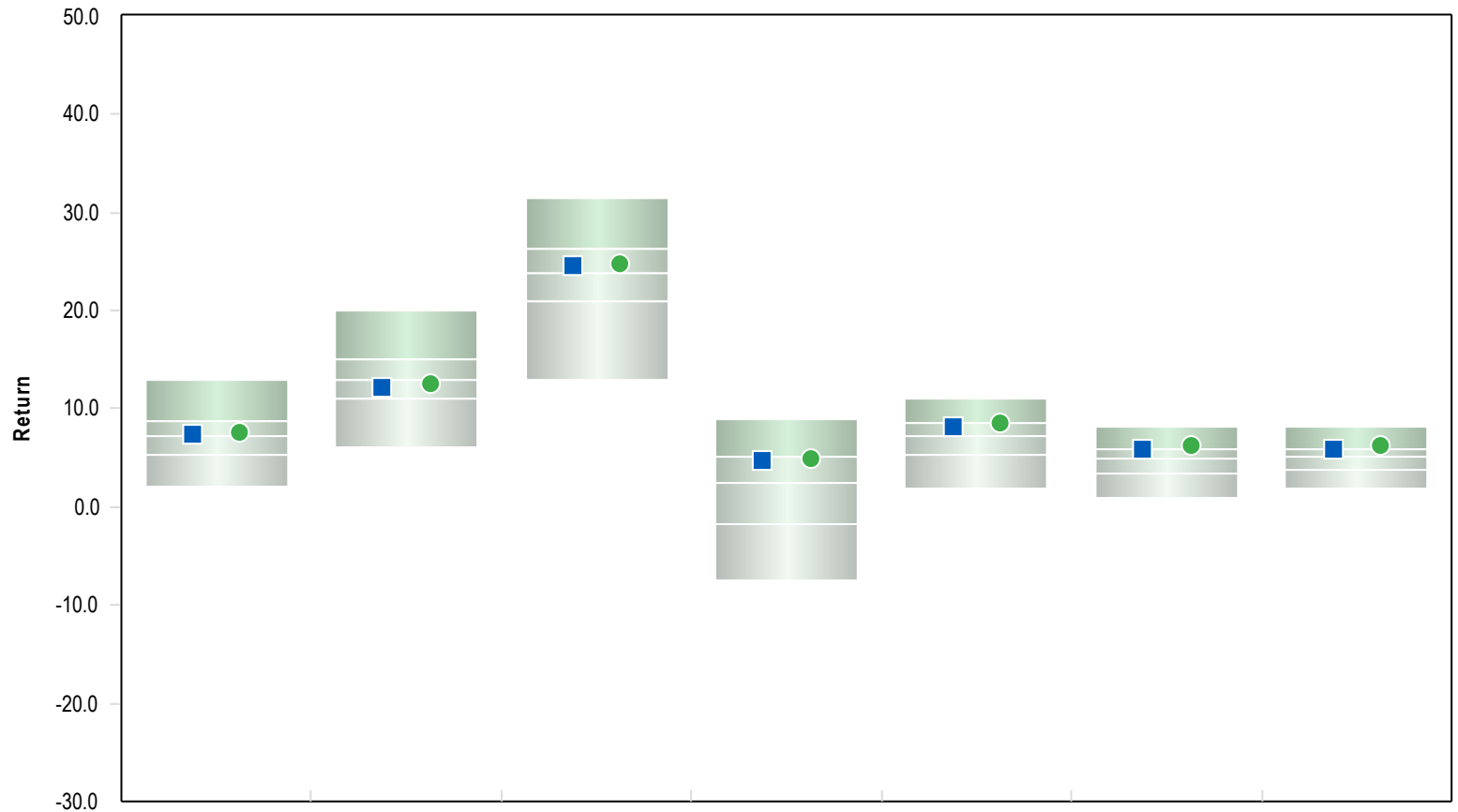
Rolling Return and Tracking Error



Performance

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Developed Markets Index	7.4	12.2	24.6	4.8	8.3	5.9	5.9
Developed Market Policy Index	7.6	12.5	24.7	5.0	8.6	6.3	6.2
Difference	-0.2	-0.3	-0.1	-0.2	-0.3	-0.4	-0.3

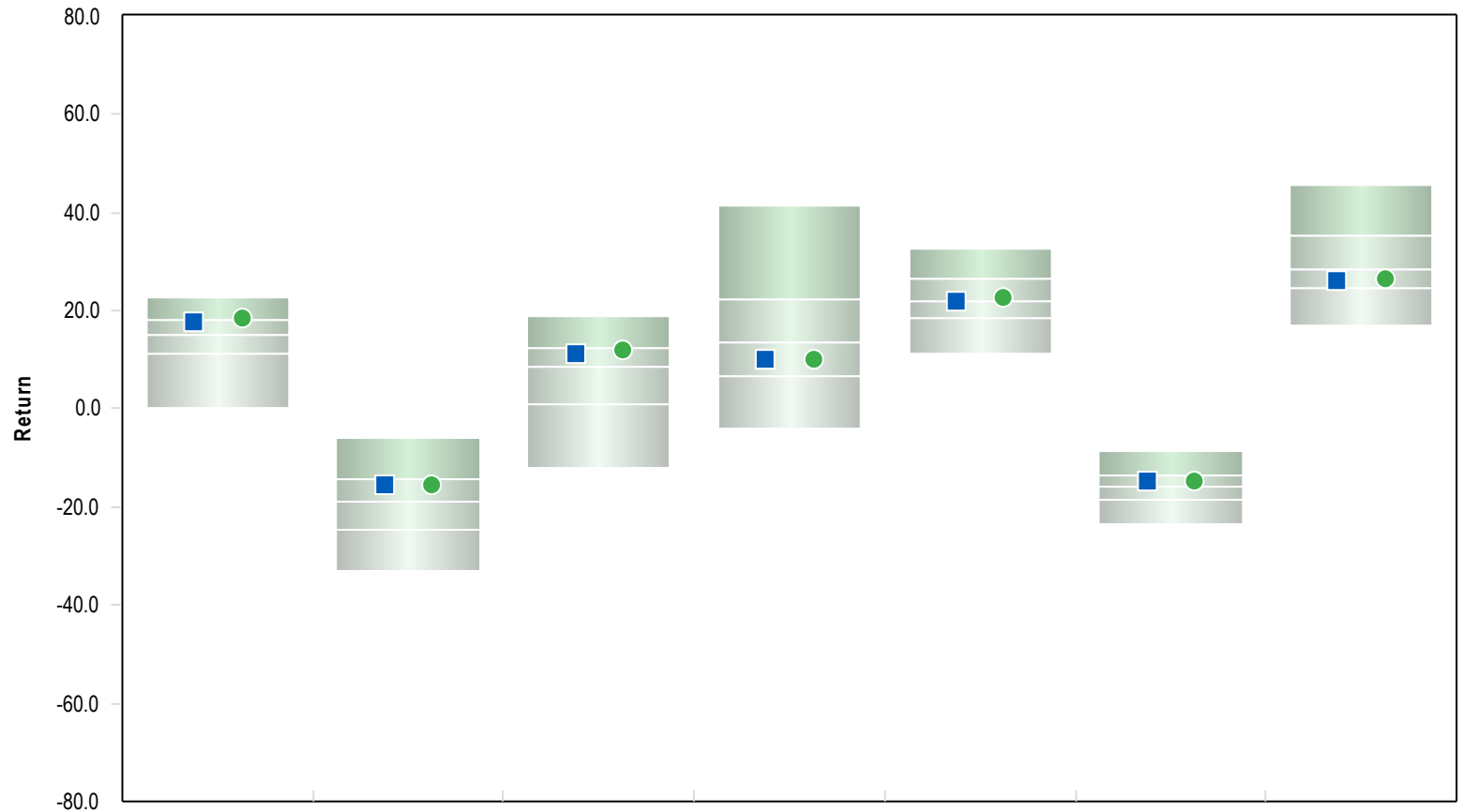




	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Developed Markets Index	7.4 (46)	12.2 (61)	24.6 (41)	4.8 (28)	8.3 (31)	5.9 (26)	5.9 (28)
● Developed Market Policy Index	7.6 (43)	12.5 (57)	24.7 (40)	5.0 (27)	8.6 (25)	6.3 (20)	6.2 (21)

5th Percentile	12.9	20.1	31.5	8.9	11.0	8.2	8.2
1st Quartile	8.7	15.1	26.2	5.2	8.6	5.9	6.0
Median	7.1	13.0	23.8	2.5	7.3	5.0	5.1
3rd Quartile	5.4	11.0	21.0	-1.7	5.4	3.3	3.8
95th Percentile	2.1	6.1	13.0	-7.5	1.8	0.9	1.9

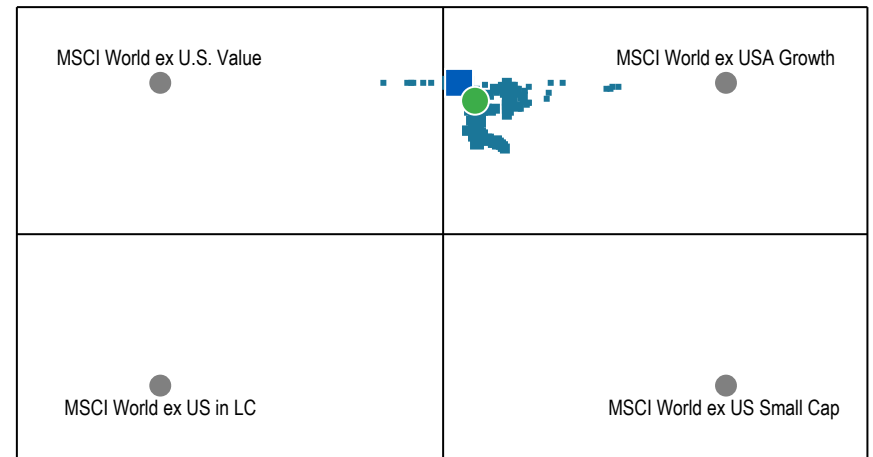
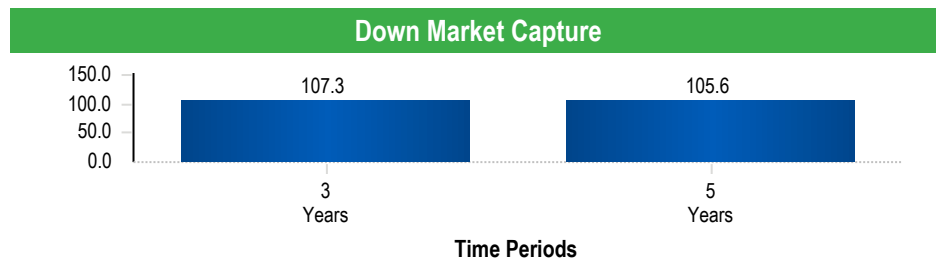
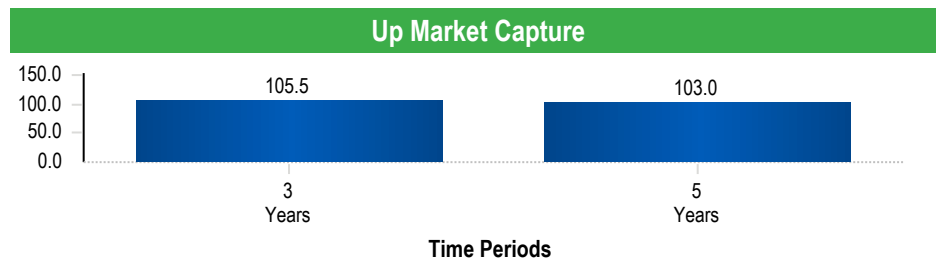
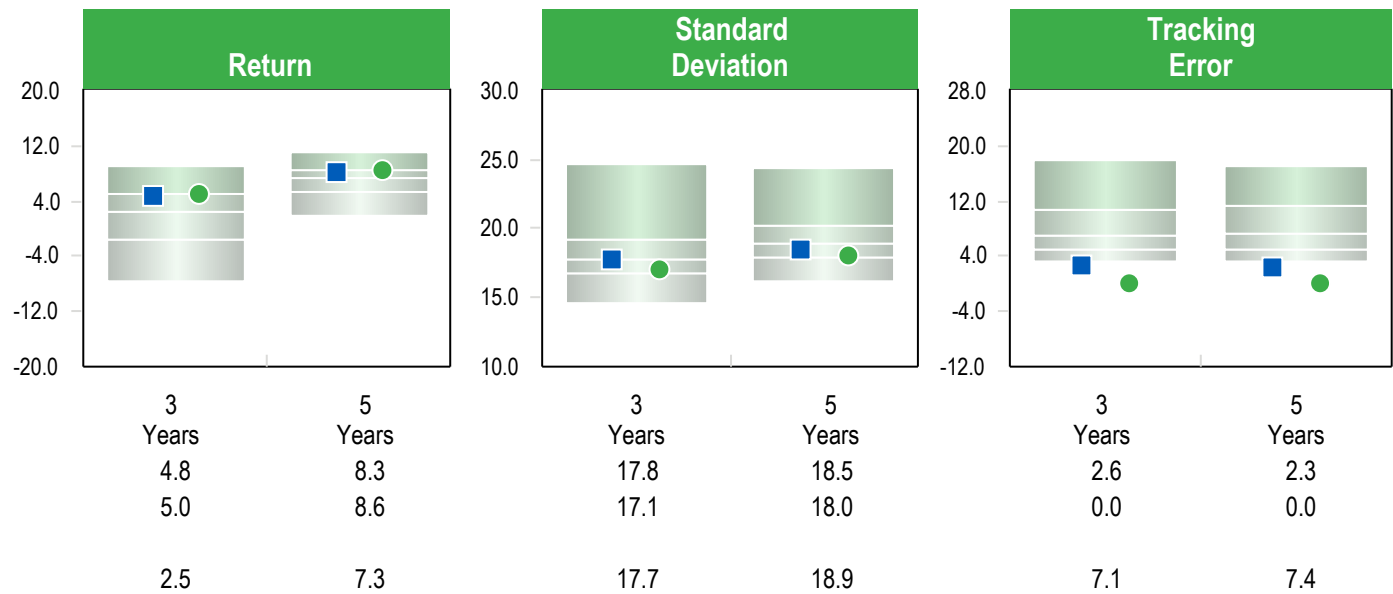
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



	2023	2022	2021	2020	2019	2018	2017
■ Vanguard Developed Markets Index	17.7 (30)	-15.3 (31)	11.4 (32)	10.3 (60)	21.9 (51)	-14.6 (36)	26.3 (64)
● Developed Market Policy Index	18.3 (25)	-15.3 (31)	11.9 (29)	10.3 (60)	22.7 (46)	-14.5 (35)	26.7 (63)

5th Percentile	22.8	-6.1	18.7	41.5	32.8	-8.8	45.6
1st Quartile	18.2	-14.3	12.4	22.3	26.5	-13.4	35.3
Median	15.2	-19.0	8.5	13.7	22.1	-16.0	28.6
3rd Quartile	11.2	-24.7	0.8	6.6	18.4	-18.6	24.7
95th Percentile	0.1	-33.0	-11.9	-3.8	11.2	-23.3	17.0

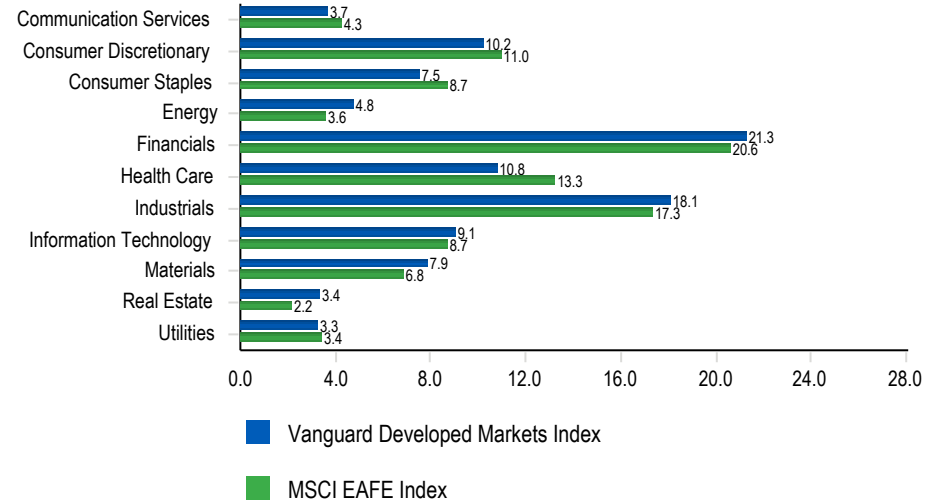
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



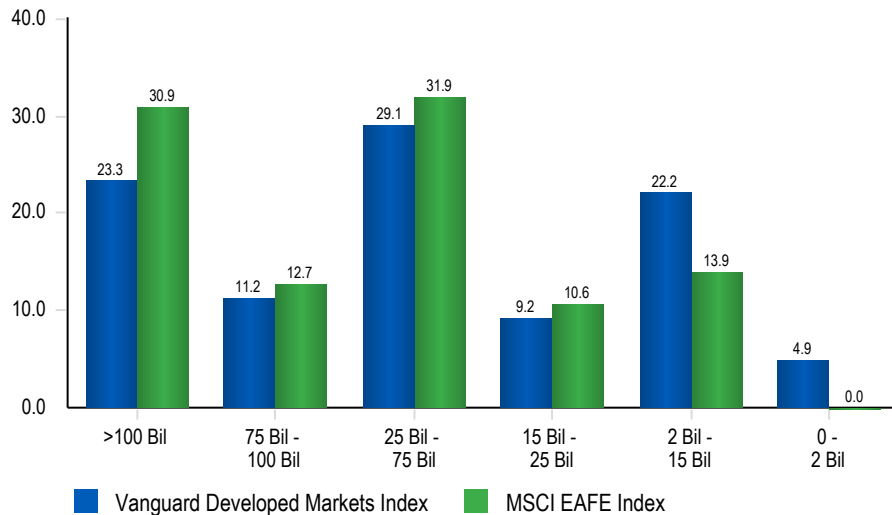
Top Ten Equity Holdings

	Portfolio Weight (%)	Benchmark Weight (%)	Active Weight (%)	Quarterly Return (%)
Novo Nordisk A/S	1.5	2.2	-0.7	-19.8
ASML Holding NV	1.4	1.9	-0.5	-18.9
Nestle SA, Cham Und Vevey	1.1	1.5	-0.4	-2.0
SAP SE	1.1	1.4	-0.3	12.8
Astrazeneca PLC	1.0	1.4	-0.4	-1.2
Novartis AG	1.0	1.3	-0.3	6.1
Roche Holding AG	1.0	0.1	0.9	14.8
Shell Plc	0.9	1.2	-0.3	-4.8
Toyota Motor Corp	0.9	1.0	-0.1	-14.2
LVMH Moet Hennessy Louis Vuitton SE	0.8	1.2	-0.4	0.5
% of Portfolio	10.7	13.2	-2.5	

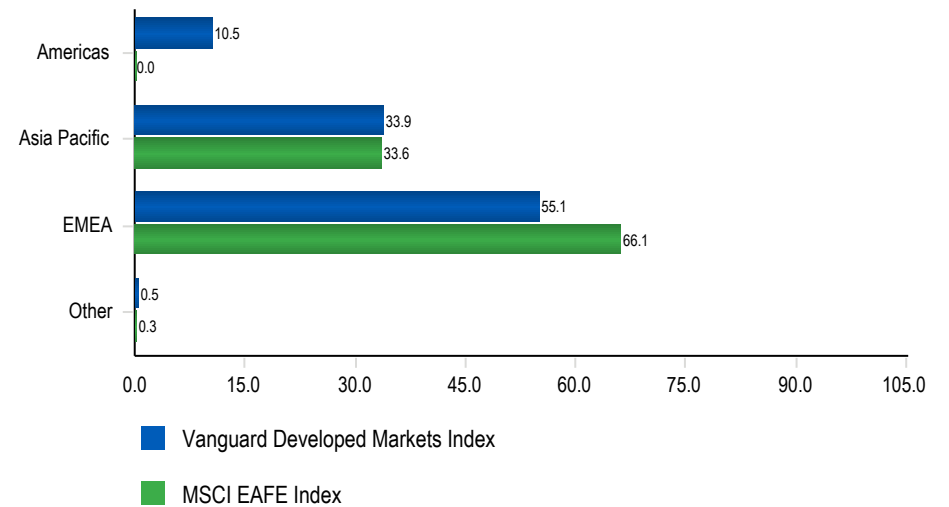
Sector Weights (%)



Distribution of Market Capitalization (%)



Region



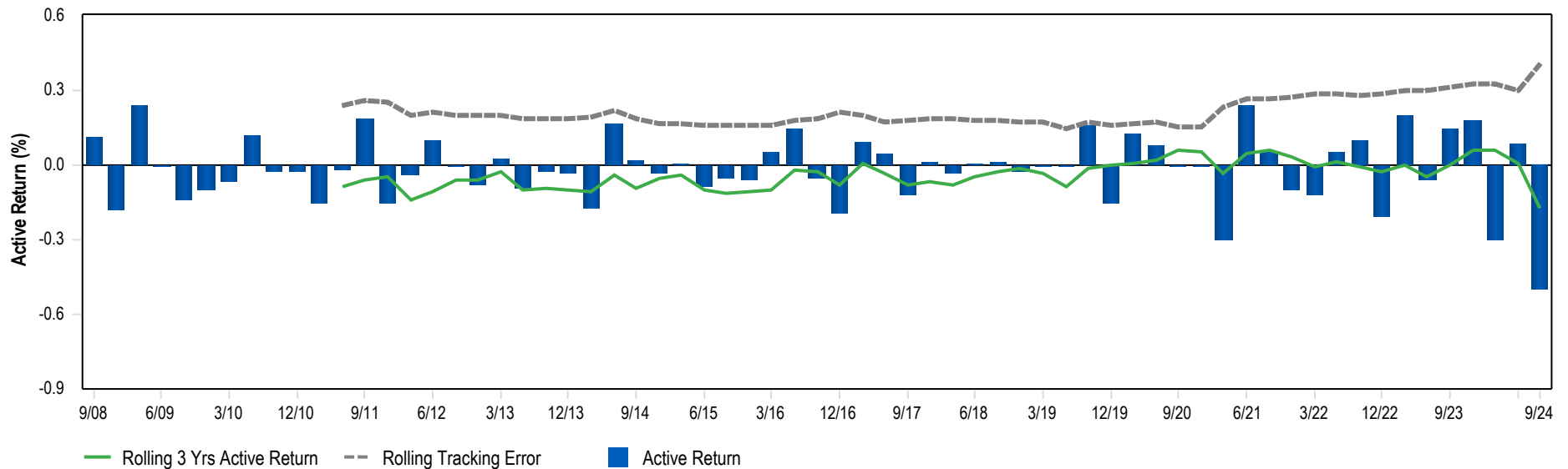
## Vanguard Total Bond Market Index Fund



Gain / Loss

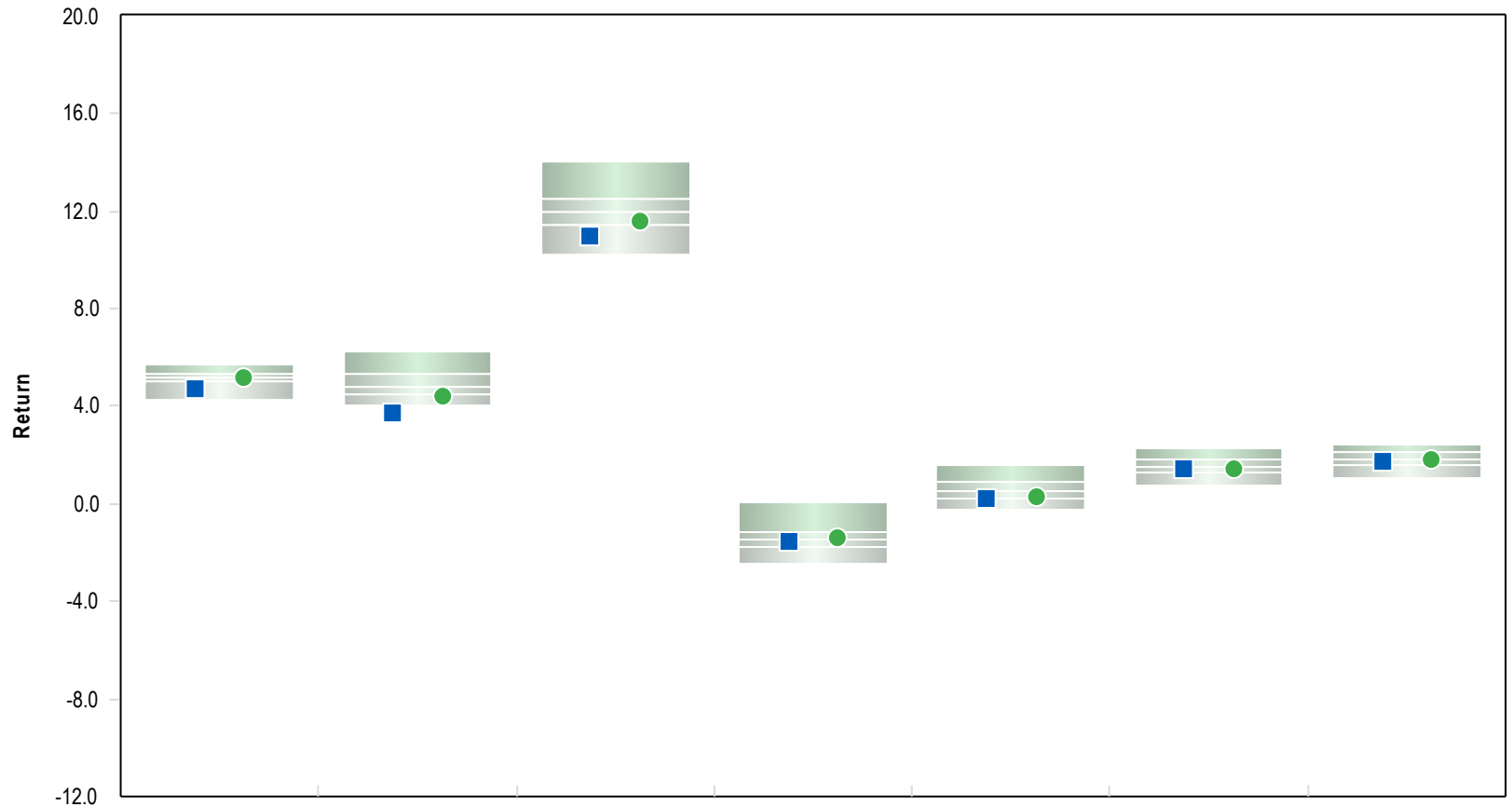
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs
<b>Vanguard Total Bond Market</b>					
Beginning Market Value	1,628,565	1,593,113	1,488,966	1,732,165	1,202,253
Net Cash Flows	150,000	200,000	200,000	200,000	659,360
Income	-4,838	-4,518	-4,132	75,418	160,444
Gain/Loss	81,335	66,467	170,229	-152,519	-166,994
Ending Market Value	1,855,063	1,855,063	1,855,063	1,855,063	1,855,063

Rolling Return and Tracking Error



Performance

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Vanguard Total Bond Market	4.7	3.7	11.0	-1.6	0.2	1.4	1.8
Blmbg. U.S. Aggregate	5.2	4.4	11.6	-1.4	0.3	1.5	1.8
Difference	-0.5	-0.7	-0.6	-0.2	-0.1	-0.1	0.0

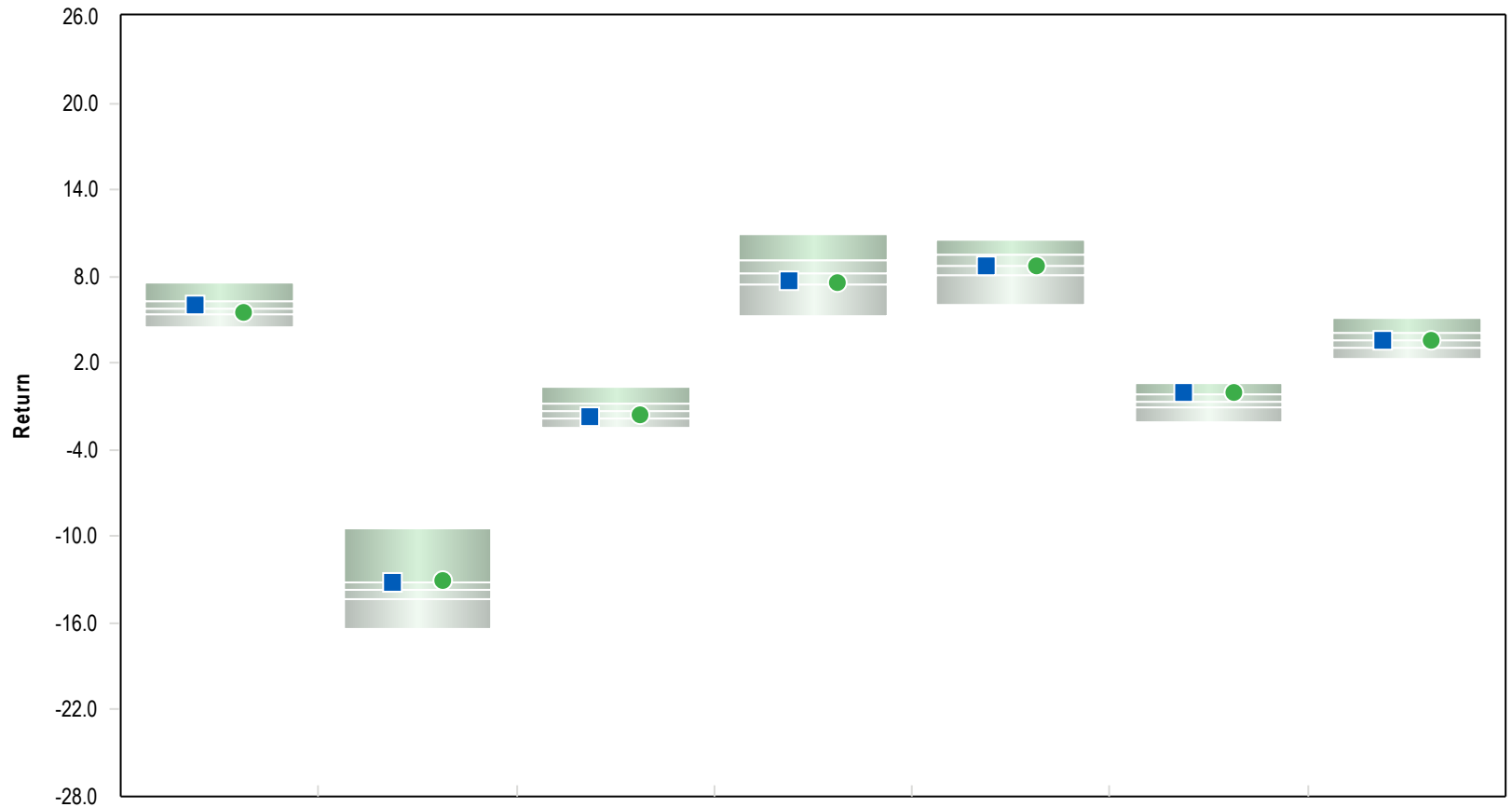


	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Vanguard Total Bond Market	4.7 (92)	3.7 (100)	11.0 (88)	-1.6 (60)	0.2 (74)	1.4 (60)	1.8 (57)
● Blmbg. U.S. Aggregate	5.2 (45)	4.4 (78)	11.6 (69)	-1.4 (42)	0.3 (64)	1.5 (54)	1.8 (50)

5th Percentile	5.7	6.3	14.1	0.0	1.6	2.3	2.5
1st Quartile	5.3	5.3	12.5	-1.2	0.9	1.8	2.1
Median	5.2	4.8	12.0	-1.5	0.5	1.5	1.8
3rd Quartile	5.0	4.5	11.5	-1.8	0.2	1.3	1.6
95th Percentile	4.3	4.0	10.2	-2.5	-0.3	0.7	1.0

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

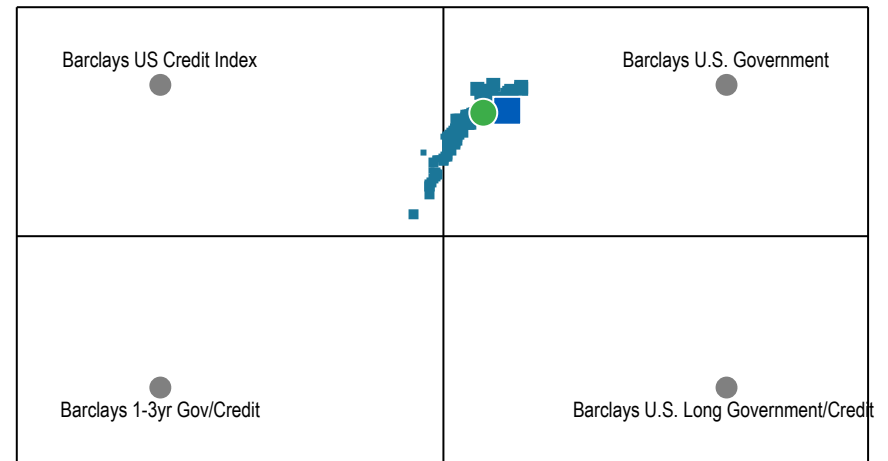
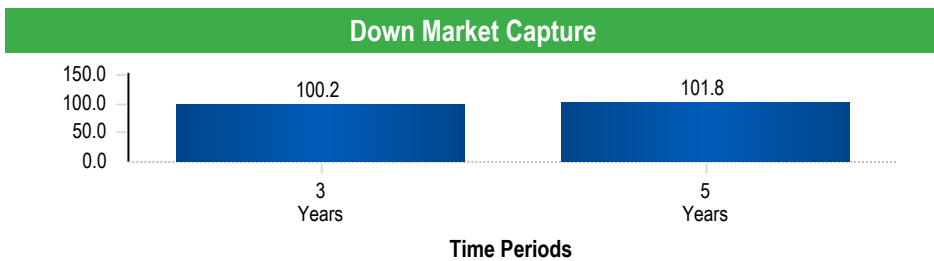
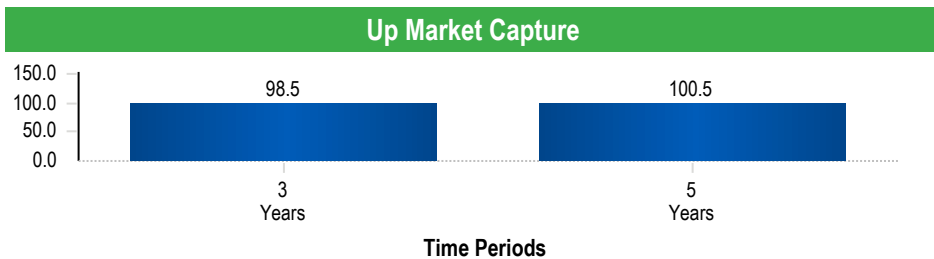
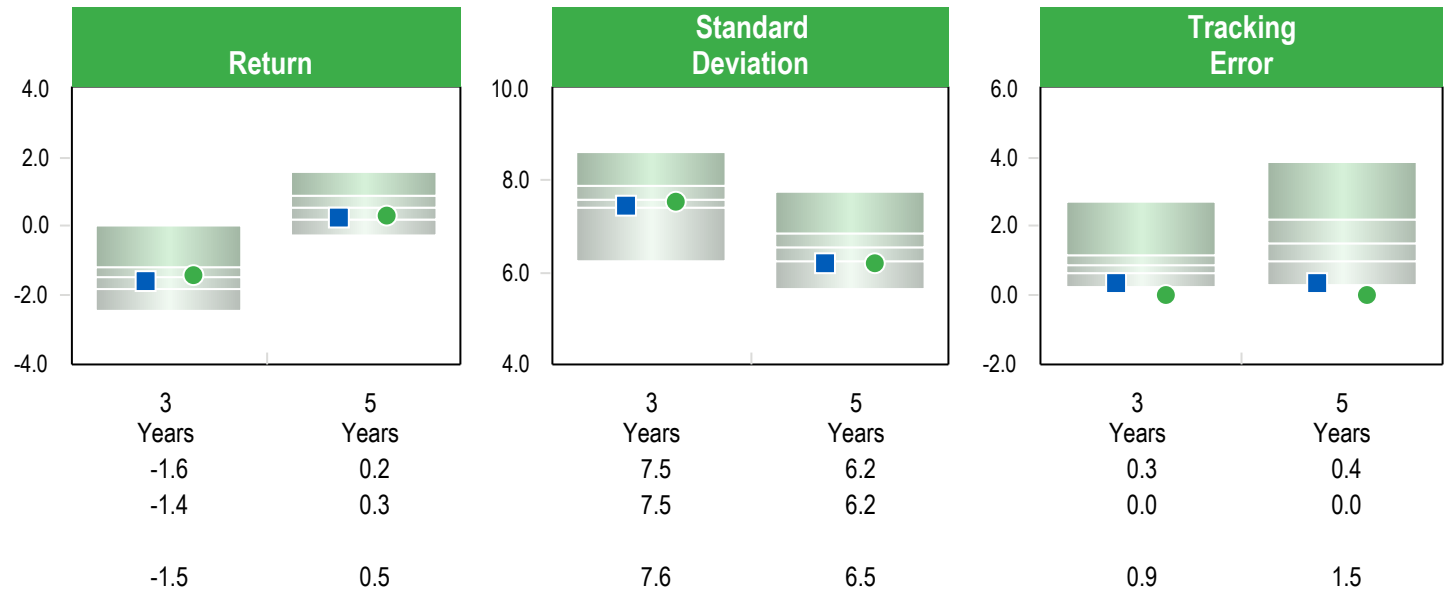




	2023	2022	2021	2020	2019	2018	2017
■ Vanguard Total Bond Market	6.0 (38)	-13.2 (27)	-1.7 (65)	7.7 (65)	8.7 (53)	0.0 (20)	3.6 (52)
● Blmbg. U.S. Aggregate	5.5 (65)	-13.0 (22)	-1.5 (60)	7.5 (73)	8.7 (53)	0.0 (18)	3.5 (54)

5th Percentile	7.5	-9.5	0.3	11.0	10.6	0.6	5.1
1st Quartile	6.3	-13.1	-0.8	9.1	9.5	-0.1	4.2
Median	5.8	-13.7	-1.3	8.2	8.8	-0.6	3.6
3rd Quartile	5.3	-14.3	-1.8	7.5	8.1	-1.1	3.1
95th Percentile	4.4	-16.4	-2.5	5.2	6.0	-2.1	2.2

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



■ Style History     
 ■ Sep-2024     
 ● Average Style Exposure

# Appendix



**City of Memphis OPEB  
Manager Roster  
September 30, 2024**

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Annual Dollar Fee	Average Fee
Vanguard Total Stock Market Index	9/30/2024	\$2,482,490	Equity Only	Russell 3000 Index	All Cap Equity	4 bps on all assets	\$993	0.04%
Vanguard Developed Market Index	9/30/2024	\$661,301	Equity Only	FTSE Developed x North America	International Equity	16 bps on all assets	\$1,058	0.16%
Vanguard Total Bond Market Index	9/30/2024	\$1,855,537	Fixed Income	Barclays U.S. Aggregate	Core Fixed Income	3.5 bps on all assets	\$649	0.035%
Fidelity Money Market	9/30/2024	\$162	Cash	90 Day U.S. Treasury Bill	Cash	33 bps on all assets	\$1	0.33%
<b>OPEB Total</b>		<b>\$4,999,491</b>					<b>\$2,701</b>	<b>0.05%</b>