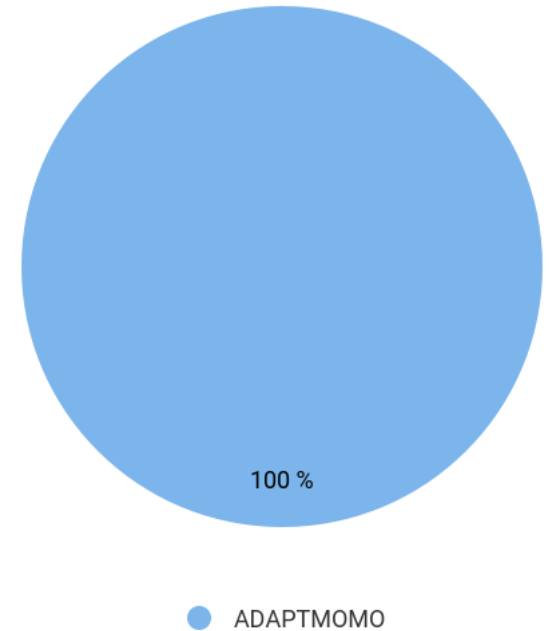


Report Parameters

Start Date	01/01/2005
End Date	05/31/2023
Initial Balance	\$100,000
Rebalancing	Rebalance annually
Reinvest Dividends	Yes
Benchmark	Vanguard 500 Index Investor

Adaptive Momentum

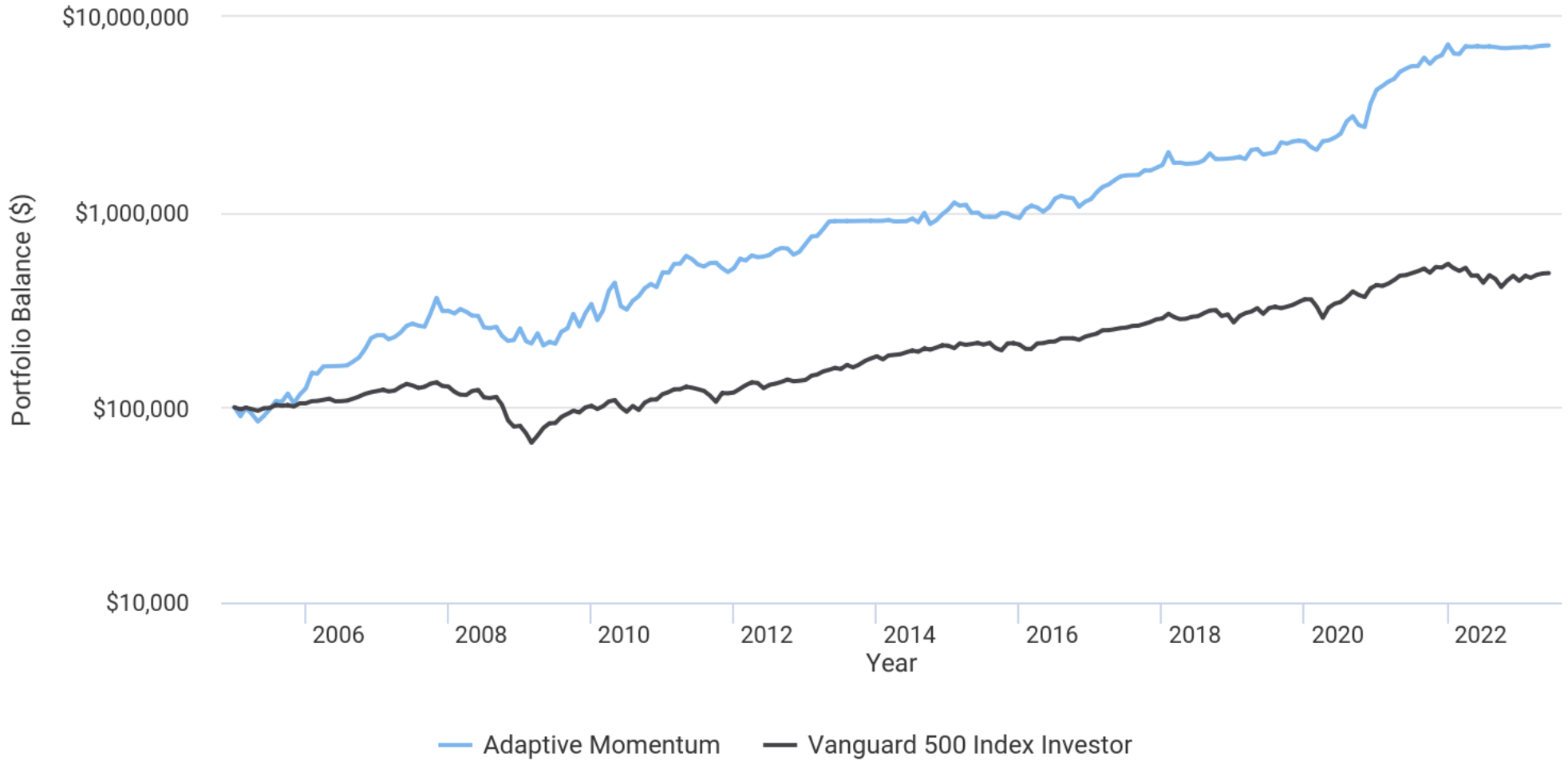
Ticker	Name	Allocation
ADAPTMOMO	Adaptive Momentum	100.00%



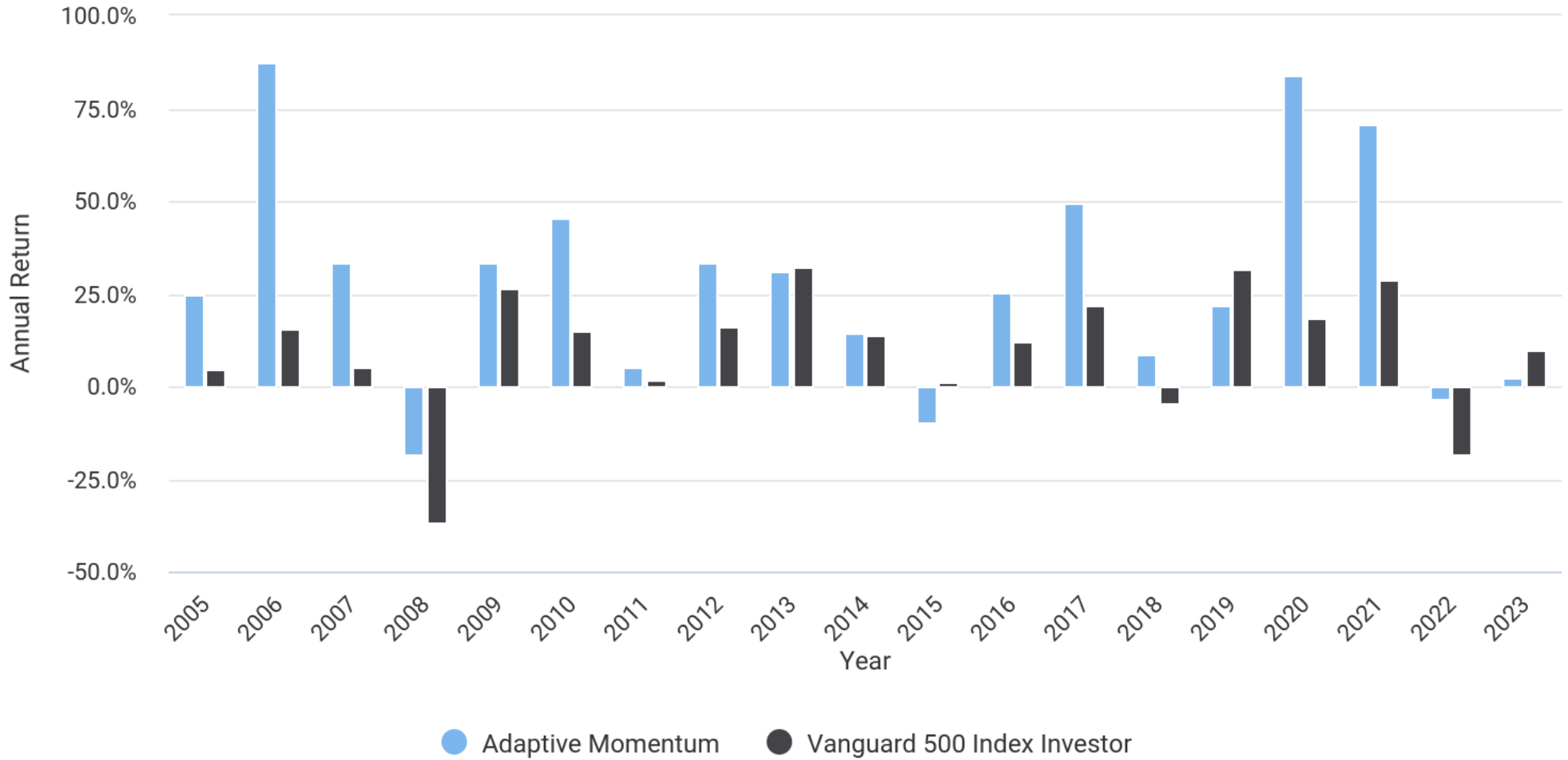
Portfolio Performance (Jan 2005 - May 2023)

Metric	Adaptive Momentum	Vanguard 500 Index Investor
Start Balance	\$100,000	\$100,000
End Balance	\$7,157,685	\$487,152
End Balance (inflation adjusted)	\$4,478,746	\$304,824
Annualized Return (CAGR)	26.10%	8.98%
Annualized Return (CAGR, inflation adjusted)	22.93%	6.24%
Standard Deviation	26.12%	15.13%
Best Year	87.41%	32.18%
Worst Year	-18.66%	-37.02%
Maximum Drawdown	-42.98%	-50.97%
Sharpe Ratio	0.97	0.56
Sortino Ratio	1.81	0.82
Stock Market Correlation	0.45	1.00

Portfolio Growth



Annual Returns



Trailing Returns

Name	Total Return			Annualized Return				Annualized Standard Deviation	
	3 Month	Year To Date	1 year	3 year	5 year	10 year	Full	3 year	5 year
	Adaptive Momentum	2.73%	2.50%	0.96%	43.73%	32.15%	23.04%	26.10%	26.84%
Vanguard 500 Index Investor	5.71%	9.58%	2.77%	12.77%	10.86%	11.84%	8.98%	17.91%	18.63%

Trailing return and volatility are as of last full calendar month ending May 2023

Risk and Return Metrics (Jan 2005 - May 2023)

Metric	Adaptive Momentum	Vanguard 500 Index Investor
Arithmetic Mean (monthly)	2.23%	0.82%
Arithmetic Mean (annualized)	30.26%	10.23%
Geometric Mean (monthly)	1.95%	0.72%
Geometric Mean (annualized)	26.10%	8.98%
Standard Deviation (monthly)	7.54%	4.37%
Standard Deviation (annualized)	26.12%	15.13%
Downside Deviation (monthly)	4.01%	2.95%
Maximum Drawdown	-42.98%	-50.97%
Stock Market Correlation	0.45	1.00
Beta (*)	0.76	1.00
Alpha (annualized)	19.26%	0.00%
R Squared	19.58%	100.00%
Sharpe Ratio	0.97	0.56
Sortino Ratio	1.81	0.82
Treynor Ratio (%)	33.30	8.49
Calmar Ratio	3.66	0.53
Active Return	17.12%	N/A
Tracking Error	23.70%	N/A
Information Ratio	0.72	N/A
Skewness	0.27	-0.61
Excess Kurtosis	1.62	1.32
Historical Value-at-Risk (5%)	10.28%	8.01%
Analytical Value-at-Risk (5%)	10.18%	6.37%
Conditional Value-at-Risk (5%)	14.08%	9.92%
Upside Capture Ratio (%)	151.47	100.00
Downside Capture Ratio (%)	76.39	100.00
Positive Periods	145 out of 221 (65.61%)	148 out of 221 (66.97%)
Gain/Loss Ratio	1.23	0.79

(*) Vanguard 500 Index Investor is used as the benchmark for calculations. Value-at-risk metrics are monthly values.

Adaptive Momentum Returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Balance
2005	-10.00%	10.36%	-7.17%	-8.26%	6.85%	8.16%	10.23%	-0.95%	10.12%	-10.84%	10.85%	7.51%	24.88%	3.42%	\$124,885
2006	20.24%	-0.89%	8.88%	0.22%	0.17%	0.24%	0.66%	4.66%	4.94%	10.55%	13.48%	3.50%	87.41%	2.54%	\$234,047
2007	0.16%	-4.79%	2.72%	5.42%	8.27%	2.50%	-2.26%	-1.23%	16.66%	20.42%	-14.33%	0.11%	33.30%	4.08%	\$311,978
2008	-3.05%	5.38%	-3.04%	-4.52%	-0.38%	-12.61%	-1.02%	1.77%	-10.28%	-5.76%	1.10%	14.72%	-18.66%	0.09%	\$253,773
2009	-13.97%	-2.71%	12.68%	-13.35%	4.43%	-2.24%	15.40%	3.75%	18.72%	-13.69%	16.53%	11.80%	33.36%	2.72%	\$338,428
2010	-17.33%	11.70%	26.82%	9.90%	-24.26%	-3.97%	10.95%	5.62%	9.77%	5.04%	-3.46%	18.92%	45.19%	1.50%	\$491,368
2011	-0.33%	10.99%	0.22%	9.59%	-3.82%	-6.14%	-2.30%	4.29%	0.37%	-6.29%	-4.41%	4.49%	4.99%	2.96%	\$515,886
2012	11.92%	-2.10%	6.19%	-2.08%	0.82%	1.84%	5.78%	2.68%	-0.57%	-7.01%	3.45%	9.61%	33.19%	1.74%	\$687,127
2013	9.38%	0.43%	8.34%	9.41%	0.59%	-0.10%	0.16%	-0.10%	0.22%	0.07%	0.09%	-0.18%	31.22%	1.50%	\$901,671
2014	0.20%	0.97%	-1.76%	0.11%	0.18%	3.23%	-4.25%	11.71%	-12.28%	4.32%	7.37%	5.72%	14.33%	0.76%	\$1,030,908
2015	8.70%	-3.59%	1.03%	-9.08%	0.34%	-4.95%	0.04%	-0.18%	4.88%	-0.50%	-3.59%	-1.89%	-9.49%	0.73%	\$933,028
2016	11.14%	4.11%	-2.07%	-4.87%	5.44%	10.76%	3.26%	-1.87%	-0.86%	-9.67%	6.06%	3.31%	25.15%	2.07%	\$1,167,684
2017	8.88%	5.95%	2.93%	5.11%	4.76%	1.18%	0.19%	0.20%	5.49%	-0.09%	3.30%	3.19%	49.21%	2.11%	\$1,742,293
2018	16.54%	-11.93%	0.25%	-1.26%	0.35%	0.61%	3.24%	8.42%	-6.50%	0.15%	0.38%	0.76%	8.74%	1.91%	\$1,894,602
2019	1.33%	-2.50%	11.18%	1.30%	-6.43%	1.42%	1.51%	12.32%	-1.56%	2.76%	0.73%	-0.76%	21.74%	2.29%	\$2,306,525
2020	-6.56%	-3.14%	10.81%	0.89%	3.29%	4.62%	15.79%	6.25%	-9.75%	-2.44%	31.53%	17.95%	83.76%	1.36%	\$4,238,368
2021	4.84%	4.90%	3.41%	8.79%	3.86%	3.07%	0.00%	10.34%	-7.00%	7.52%	2.90%	13.65%	70.92%	7.04%	\$7,244,314
2022	-10.32%	-0.43%	9.50%	-0.50%	0.60%	-0.59%	0.41%	-0.81%	-1.19%	-0.13%	0.69%	0.12%	-3.61%	6.45%	\$6,983,017
2023	0.78%	-0.99%	1.65%	0.74%	0.32%								2.50%	2.47%	\$7,157,685

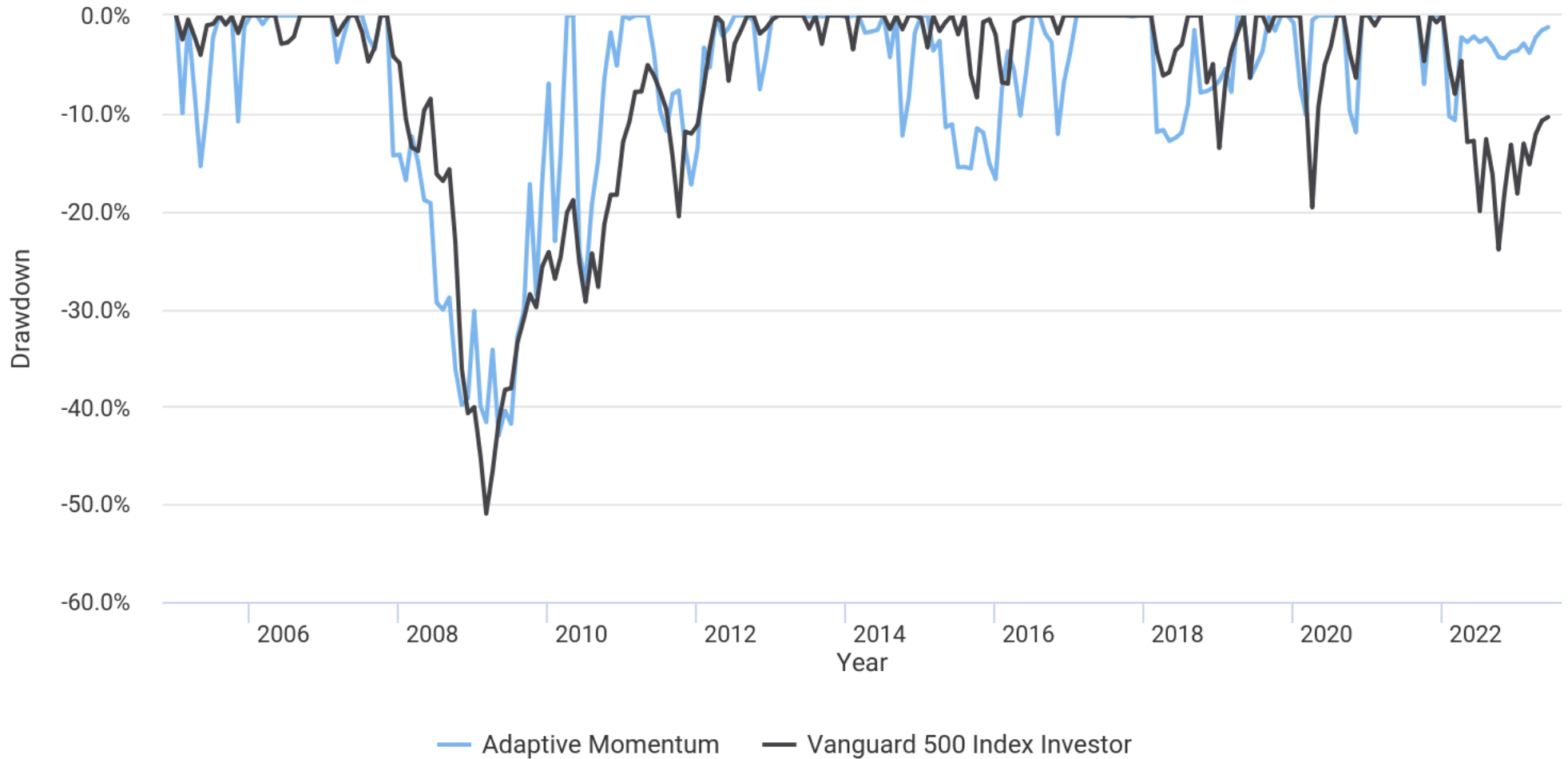
Annual return for 2023 is from 01/01/2023 to 05/31/2023

Vanguard 500 Index Investor Returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Balance
2005	-2.45%	2.09%	-1.76%	-1.91%	3.17%	0.13%	3.71%	-0.91%	0.79%	-1.68%	3.76%	0.02%	4.77%	3.42%	\$104,774
2006	2.65%	0.26%	1.23%	1.33%	-2.90%	0.13%	0.61%	2.36%	2.56%	3.25%	1.89%	1.39%	15.64%	2.54%	\$121,163
2007	1.49%	-1.97%	1.11%	4.42%	3.48%	-1.68%	-3.08%	1.50%	3.72%	1.58%	-4.19%	-0.70%	5.39%	4.08%	\$127,690
2008	-6.02%	-3.25%	-0.44%	4.85%	1.29%	-8.44%	-0.83%	1.45%	-8.91%	-16.79%	-7.17%	1.07%	-37.02%	0.09%	\$80,418
2009	-8.41%	-10.66%	8.76%	9.56%	5.62%	0.22%	7.58%	3.60%	3.72%	-1.87%	5.98%	1.95%	26.49%	2.72%	\$101,717
2010	-3.60%	3.09%	6.01%	1.58%	-8.01%	-5.24%	7.00%	-4.53%	8.92%	3.79%	0.00%	6.67%	14.91%	1.50%	\$116,887
2011	2.36%	3.42%	0.03%	2.95%	-1.15%	-1.67%	-2.05%	-5.45%	-7.04%	10.91%	-0.23%	1.02%	1.97%	2.96%	\$119,185
2012	4.46%	4.31%	3.28%	-0.64%	-6.02%	4.11%	1.37%	2.24%	2.58%	-1.86%	0.56%	0.90%	15.82%	1.74%	\$138,046
2013	5.18%	1.34%	3.74%	1.91%	2.33%	-1.35%	5.07%	-2.91%	3.12%	4.59%	3.03%	2.51%	32.18%	1.50%	\$182,463
2014	-3.47%	4.56%	0.82%	0.72%	2.33%	2.05%	-1.39%	3.98%	-1.41%	2.42%	2.68%	-0.26%	13.51%	0.76%	\$207,111
2015	-3.02%	5.74%	-1.59%	0.95%	1.27%	-1.93%	2.08%	-6.05%	-2.48%	8.42%	0.29%	-1.59%	1.25%	0.73%	\$209,696
2016	-4.98%	-0.15%	6.78%	0.37%	1.78%	0.25%	3.68%	0.13%	0.01%	-1.83%	3.70%	1.96%	11.82%	2.07%	\$234,476
2017	1.88%	3.96%	0.10%	1.02%	1.39%	0.61%	2.04%	0.29%	2.06%	2.32%	3.06%	1.10%	21.67%	2.11%	\$285,281
2018	5.71%	-3.69%	-2.56%	0.37%	2.39%	0.61%	3.71%	3.25%	0.55%	-6.85%	2.03%	-9.04%	-4.52%	1.91%	\$272,375
2019	8.00%	3.20%	1.94%	4.04%	-6.36%	7.03%	1.43%	-1.59%	1.86%	2.15%	3.62%	3.01%	31.33%	2.29%	\$357,702
2020	-0.05%	-8.24%	-12.37%	12.81%	4.76%	1.98%	5.63%	7.18%	-3.81%	-2.67%	10.94%	3.84%	18.25%	1.36%	\$422,974
2021	-1.02%	2.76%	4.37%	5.32%	0.69%	2.31%	2.38%	3.03%	-4.66%	6.99%	-0.71%	4.47%	28.53%	7.04%	\$543,660
2022	-5.19%	-3.00%	3.69%	-8.73%	0.17%	-8.27%	9.21%	-4.09%	-9.22%	8.08%	5.58%	-5.77%	-18.23%	6.45%	\$444,555
2023	6.27%	-2.45%	3.66%	1.55%	0.42%								9.58%	2.47%	\$487,152

Annual return for 2023 is from 01/01/2023 to 05/31/2023

Drawdowns



Drawdowns for Historical Market Stress Periods

Stress Period	Start	End	Adaptive Momentum	Vanguard 500 Index Investor
Subprime Crisis	Nov 2007	Mar 2009	-41.61%	-50.97%
COVID-19 Start	Jan 2020	Mar 2020	-9.49%	-19.63%

Drawdowns for Adaptive Momentum (worst 10)

Rank	Start	End	Length	Recovery By	Recovery Time	Underwater Period	Drawdown
1	Nov 2007	Apr 2009	1 year 6 months	Mar 2010	11 months	2 years 5 months	-42.98%
2	May 2010	Jun 2010	2 months	Dec 2010	6 months	8 months	-27.27%
3	May 2011	Nov 2011	7 months	Mar 2012	4 months	11 months	-17.30%
4	Feb 2015	Dec 2015	11 months	Jun 2016	6 months	1 year 5 months	-16.74%
5	Jan 2005	Apr 2005	4 months	Jul 2005	3 months	7 months	-15.42%
6	Feb 2018	Apr 2018	3 months	Mar 2019	11 months	1 year 2 months	-12.83%
7	Sep 2014	Sep 2014	1 month	Dec 2014	3 months	4 months	-12.28%
8	Aug 2016	Oct 2016	3 months	Jan 2017	3 months	6 months	-12.12%
9	Sep 2020	Oct 2020	2 months	Nov 2020	1 month	3 months	-11.95%
10	Oct 2005	Oct 2005	1 month	Dec 2005	2 months	3 months	-10.84%

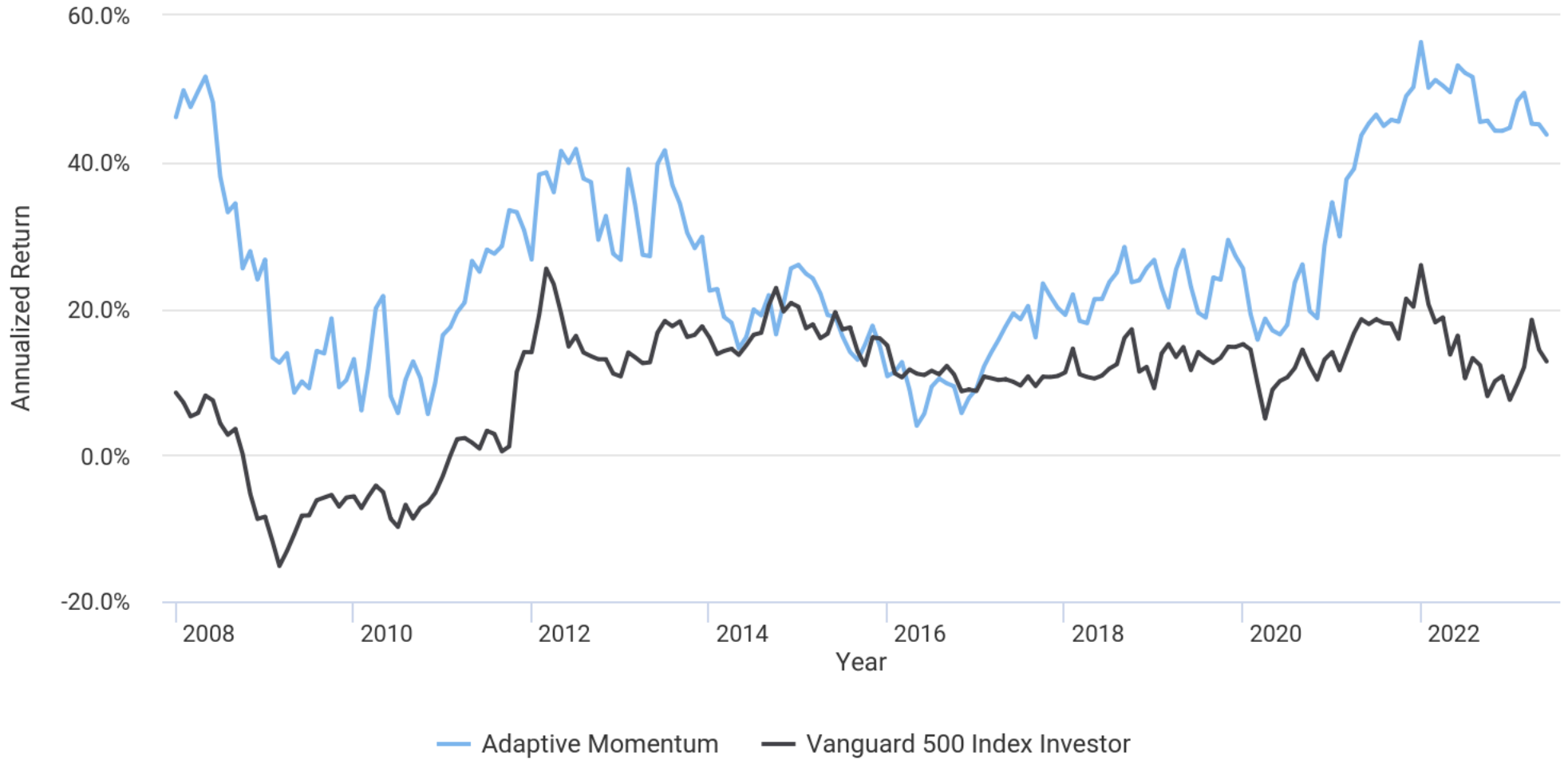
Drawdowns for Vanguard 500 Index Investor (worst 10)

Rank	Start	End	Length	Recovery By	Recovery Time	Underwater Period	Drawdown
1	Nov 2007	Feb 2009	1 year 4 months	Aug 2012	3 years 6 months	4 years 10 months	-50.97%
2	Jan 2022	Sep 2022	9 months				-23.95%
3	Jan 2020	Mar 2020	3 months	Jul 2020	4 months	7 months	-19.63%
4	Oct 2018	Dec 2018	3 months	Apr 2019	4 months	7 months	-13.55%
5	Aug 2015	Sep 2015	2 months	May 2016	8 months	10 months	-8.38%
6	Sep 2020	Oct 2020	2 months	Nov 2020	1 month	3 months	-6.38%
7	May 2019	May 2019	1 month	Jun 2019	1 month	2 months	-6.36%
8	Feb 2018	Mar 2018	2 months	Jul 2018	4 months	6 months	-6.16%
9	Jun 2007	Jul 2007	2 months	Sep 2007	2 months	4 months	-4.71%
10	Sep 2021	Sep 2021	1 month	Oct 2021	1 month	2 months	-4.66%

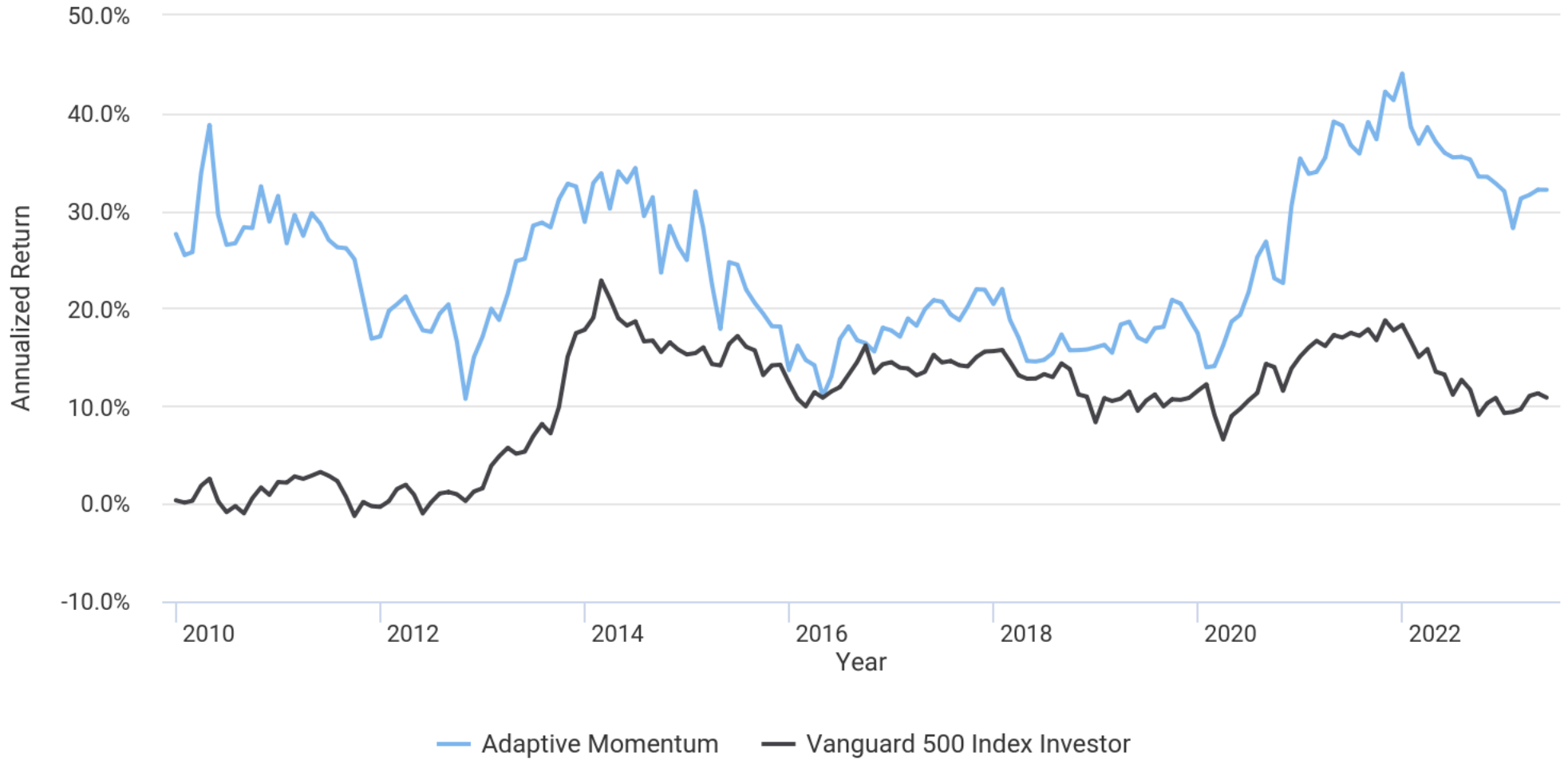
Rolling Returns (Jan 2005 - May 2023)

Roll Period	Adaptive Momentum			Vanguard 500 Index Investor		
	Average	High	Low	Average	High	Low
1 year	31.19%	126.75%	-39.85%	10.46%	56.19%	-43.32%
3 years	26.14%	56.37%	3.97%	9.84%	25.91%	-15.18%
5 years	24.65%	44.06%	10.75%	10.45%	22.85%	-1.26%
7 years	23.84%	33.31%	13.96%	10.89%	17.12%	2.54%
10 years	23.32%	30.24%	16.21%	11.09%	16.52%	6.32%
15 years	24.64%	27.00%	21.71%	9.41%	10.77%	7.45%

Annualized Rolling Return (36 months)



Annualized Rolling Return (60 months)



Notes:

- **IMPORTANT:** The projections or other information generated by Portfolio Visualizer regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results and are not guarantees of future results. Results may vary with each use and over time.
- The results do not constitute investment advice or recommendation, are provided solely for informational purposes, and are not an offer to buy or sell any securities. All use is subject to terms of service.
- Investing involves risk, including possible loss of principal. Past performance is not a guarantee of future results.
- Asset allocation and diversification strategies do not guarantee a profit or protect against a loss.
- Hypothetical returns do not reflect trading costs, transaction fees, commissions, or actual taxes due on investment returns.
- The results are based on information from a variety of sources we consider reliable, but we do not represent that the information is accurate or complete.
- Refer to the related documentation sections for more details on terms and definitions, methodology, and data sources.
- Portfolio model information represents a blended portfolio consisting of the model's underlying positions and assigned weights provided by the user and rebalanced at the specified schedule. The results were constructed using net of fee mutual fund performance. Portfolio Visualizer does not provide preferential treatment to any specific security or investment.
- The results are based on the total return of assets and assume that all received dividends and distributions are reinvested.
- Market capitalization refers to the total value of all a company's shares of stock. It is calculated by multiplying the price of a stock by its total number of outstanding shares. Large cap refers to a company with a market capitalization value of more than \$10 billion, mid cap refers to a company with a market capitalization value between \$2 and \$10 billion, and small cap refers to a company with a market capitalization value below \$2 billion. For funds and portfolios the equity market capitalization is calculated based on the long position of the equity holdings.
- Credit quality measures the ability of a bond issuer to repay a bond's interest and principal in a timely manner. Ratings agencies research the financial health of each bond issuer and assign ratings to the bonds being offered. Lower-rated bonds generally offer higher yields to compensate investors for the additional risk. AAA is the highest possible rating that may be assigned to an issuer's bonds by any of the major credit rating agencies. Bonds rated AAA to AA are known as high-grade bonds, bonds rated A to BBB are known as medium-grade bonds, and bonds rated BB to C are known as non-investment grade bonds. An issuer will receive a rating of D if it is already in default on some of its debt. For funds and portfolios the fixed income credit quality break-down is calculated based on the long position of the fixed income holdings.
- A fixed income maturity date refers to the specific date on which the investor's principal will be repaid. Duration measures a bond's or fixed income portfolio's price sensitivity to interest rate changes. If a bond has a duration of 5 years, and interest rates increase by 1%, the bond's price will decline by approximately 5%. Conversely, if a bond has a duration of 5 years and interest rates fall by 1%, the bond's price will increase by approximately 5%. A fixed income portfolio's duration is computed as the weighted average of individual bond durations held in the portfolio.
- Compound annualized growth rate (CAGR) is the annualized geometric mean return of the portfolio. It is calculated from the portfolio start and end balance and is thus impacted by any cashflows.
- The time-weighted rate of return (TWRR) is a measure of the compound rate of growth in a portfolio. This is calculated from the holding period returns (e.g. monthly returns), and TWRR will thus not be impacted by cashflows. If there are no external cashflows, TWRR will equal CAGR.
- The money-weighted rate of return (MWRR) is the internal rate of return (IRR) taking into account cashflows. This is the discount rate at which the present value of cash inflows equals the present value of cash outflows.
- Total return is the combined return in income and capital appreciation from investment in an asset. Yield measures the current cash income received from investment in an asset. Bonds provide yield in the form of interest payments and stocks through dividends.
- Standard deviation (Stdev) is used to measure the dispersion of returns around the mean and is often used as a measure of risk. A higher standard deviation implies greater the dispersion of data points around the mean.
- Sharpe Ratio is a measure of risk-adjusted performance of the portfolio, and it is calculated by dividing the mean monthly excess return of the portfolio over the risk-free rate by the standard deviation of excess return, and the displayed value is annualized.
- Sortino Ratio is a measure of risk-adjusted return which is a modification of the Sharpe Ratio. While the latter is the ratio of average returns in excess of a risk-free rate divided by the standard deviation of those excess returns, the Sortino Ratio has the same denominator divided by the standard deviation of returns below the risk-free rate.
- Treynor Ratio is a measure of risk-adjusted performance of the portfolio. It is similar to the Sharpe Ratio, but it uses portfolio beta (systematic risk) as the risk metric in the denominator.
- Calmar Ratio is a measure of risk-adjusted performance of the portfolio. It is calculated as the annualized return over the past 36 months divided by the maximum drawdown over the past 36 months based on monthly returns.
- Risk-free returns are calculated based on the Federal Reserve 3-Month Treasury Bill (secondary market) rates.
- Downside deviation measures the downside volatility of the portfolio returns unlike standard deviation, which includes both upside and downside deviations. Downside deviation is calculated based on negative returns that hurt the portfolio performance.
- Correlation measures to what degree the returns of the two assets move in relation to each other. Correlation coefficient is a numerical value between -1 and +1. If one variable goes up by a certain amount, the correlation coefficient indicates which way the other variable moves and by how much. Asset correlations are calculated based on monthly returns.
- Skewness is a measure of the asymmetry of the probability distribution or returns from a normal Gaussian distribution shape about its mean. Negative skewness is associated with the left (typically negative returns) tail of the distribution extending further than the right tail; and positive skewness is associated with the right (typically positive returns) tail of the distribution extending further than the left tail.
- Excess kurtosis is a measure of whether a data distribution is peaked or flat relative to a normal distribution. Distributions with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy or fat tails.
- A drawdown refers to the decline in value of a single investment or an investment portfolio from a relative peak value to a relative trough. A maximum drawdown (Max Drawdown) is the maximum observed loss from a peak to a trough of a portfolio before a new peak is attained. Drawdown values are calculated based on monthly returns.
- Value at Risk (VaR) measures the scale of loss at a given confidence level. For example, if the 95% confidence one-month VaR is 3%, there is 95% confidence that over the next month the portfolio will not lose more than 3%. Value at Risk can be calculated directly based on historical returns based on a given percentile or analytically based on the mean and standard deviation of the returns.
- Conditional Value at Risk (CVaR) measures the scale of the expected loss once the specific Value at Risk (VaR) breakpoint has been breached, i.e., it calculates the average tail loss by taking a weighted average between the value at risk and losses exceeding the value at risk.
- Beta is a measure of systematic risk and measures the volatility of a particular investment relative to the market or its benchmark. Alpha measures the active return of the investment compared to the market benchmark return. R-squared is the percentage of a portfolio's movements that can be explained by movements in the selected benchmark index.
- Active return is the investment return minus the return of its benchmark. For periods longer than 12 months this is displayed as annualized value, i.e., annualized investment return minus annualized benchmark

return.

- Tracking error, also known as active risk, is the standard deviation of active return. This is displayed as annualized value based on the standard deviation of monthly active returns.
- Information ratio is the active return divided by the tracking error. It measures whether the investment outperformed its benchmark consistently.
- Gain/Loss ratio is a measure of downside risk, and it is calculated as the average positive return in up periods divided by the average negative return in down periods.
- Upside Capture Ratio measures how well the fund performed relative to the benchmark when the market was up, and Downside Capture Ratio measures how well the fund performed relative to the benchmark when the market was down. An upside capture ratio greater than 100 would indicate that the fund outperformed its benchmark when the market was up, and a downside capture ratio below 100 would indicate that the fund lost less than its benchmark when the market was down. To calculate upside capture ratio a new series from the portfolio returns is constructed by dropping all time periods where the benchmark return is less than equal to zero. The up capture is then the quotient of the annualized return of the resulting manager series, divided by the annualized return of the resulting benchmark series. The downside capture ratio is calculated analogously.
- All risk measures for the portfolio and portfolio assets are calculated based on monthly returns.
- Gross expense ratio reflects the total annual operating expenses paid by each fund. Net expense ratio reflects what investors were charged after waivers, reductions, and reimbursements.
- Price to earnings (P/E) ratio of a stock is calculated by dividing the current price of the stock by its trailing 12 months' earnings per share. For funds the price to earnings ratio is computed as the weighted average of fund holdings.
- The annual results for 2023 are based on monthly returns from January to May.
- The results assume annual rebalancing of portfolio assets to match the specified allocation.