# Optimized Portfolio Analysis

## for
## Domestic Large Cap Portfolio

Code: aRzh3J

## Average Annual Performance Summary

| Timeframe | Compound Annual Growth Rate (Return) | Standard Deviation (Risk) |
|---|---|---|
| Inception | 16.88% | 16.74% |
| 15-Year | 19.31% | 15.95% |
| 10-Year | 19.91% | 18.10% |
| 5-Year | 16.78% | 19.79% |
| 3-Year | 25.91% | 17.63% |
| 1-Year | 22.45% | N/A |

The Optimizer is a tool for use by investment professionals to assist in determining portfolio asset allocations and risk (as measured by standard deviation) based upon inputs by the investment professional.

***Past performance does not guarantee future results and the performance of the portfolio may be lower or higher than the stated hypothetical performance including the probability of loss. Historical hypothetical portfolio returns were higher than the returns of the S&P 500 Index in certain years which were the result of market factors and events which may not be replicated in the future.***

Performance is hypothetical and not representative of prior portfolios since none existed during all of the periods shown. Returns assume dividend reinvestment. Standard Deviation is a measure of price variability (risk).

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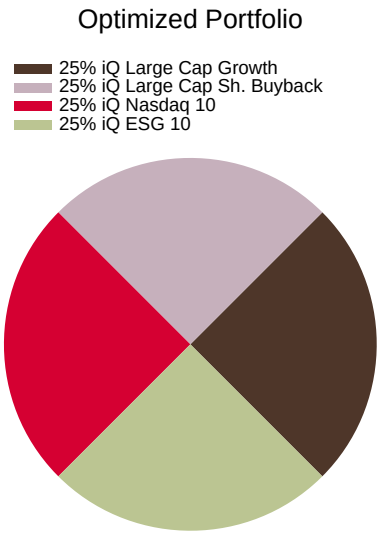
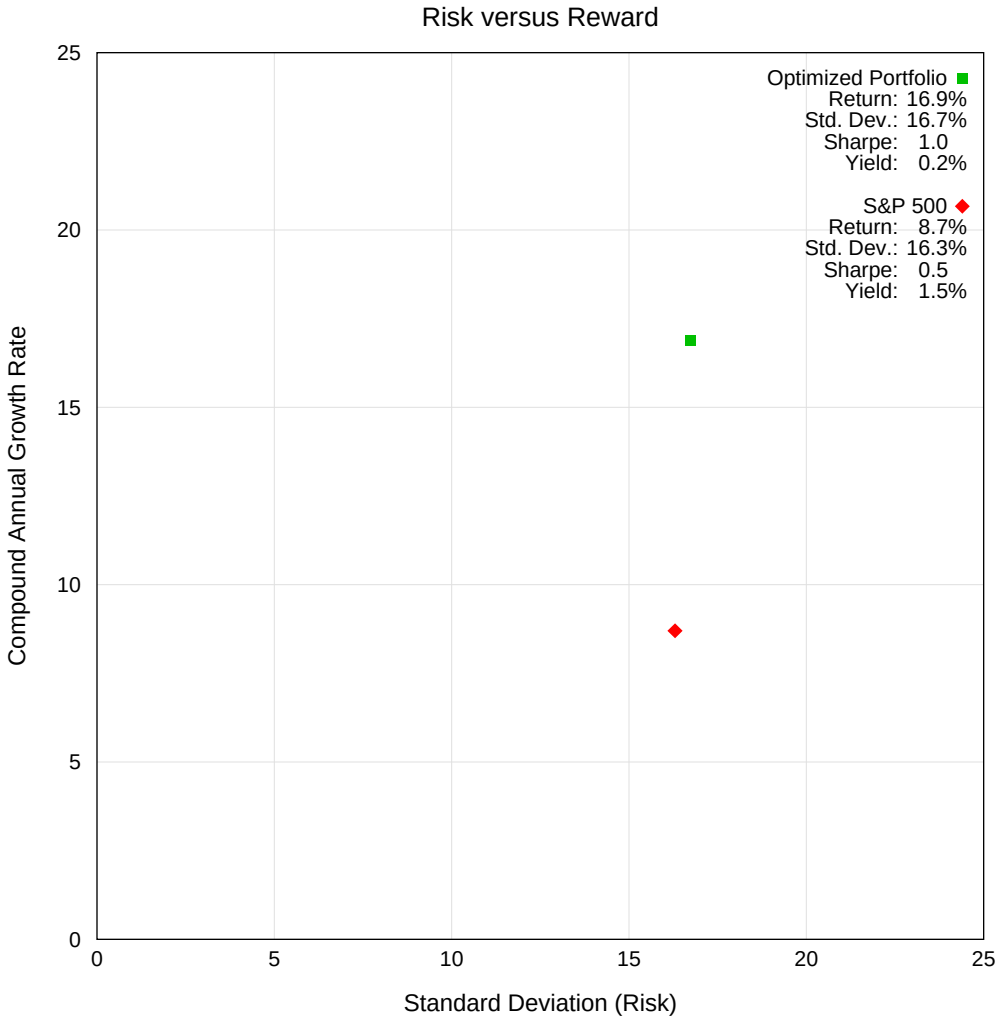
An investment in any investment portfolio should be made with an understanding of the risks involved with owning stocks, such as an economic recession and the possible deterioration of either the financial condition of the issuers of the equity securities or the general condition of the stock market.

Please see the last page of this report for a summary of the inherent risks of other asset classes represented in this analysis.

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In certain scenarios, the S&P 500 Index has been included for comparative purposes only. The S&P 500 Index is an unmanaged index of 500 stocks used to measure large-cap U.S. stock market performance. The index cannot be purchased directly by investors.

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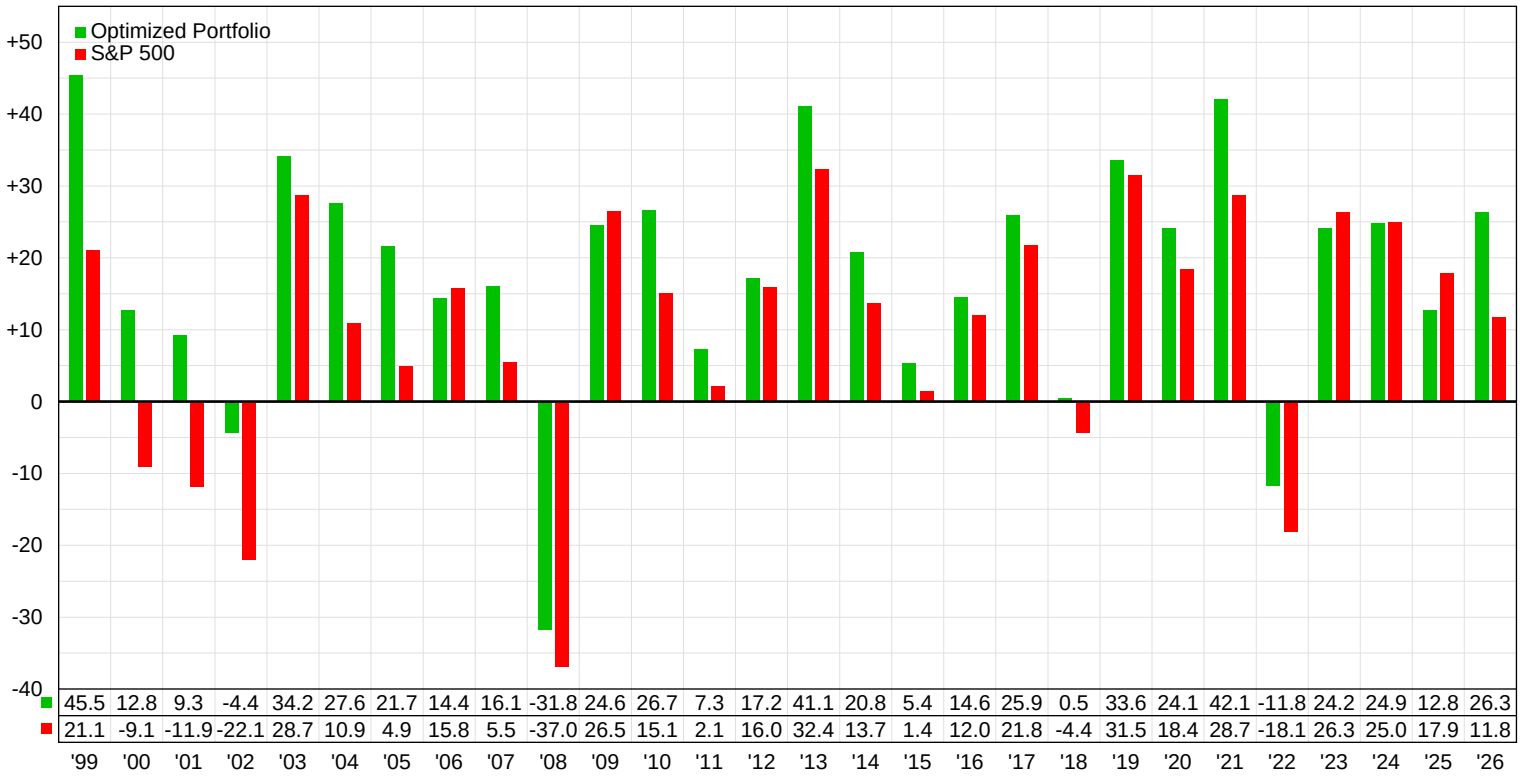
## Hypothetical Annual Returns




| | '99 | '00 | '01 | '02 | '03 | '04 | '05 | '06 | '07 | '08 | '09 | '10 | '11 | '12 | '13 | '14 | '15 | '16 | '17 | '18 | '19 | '20 | '21 | '22 | '23 | '24 | '25 | '26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Optimized Portfolio | 45.5 | 12.8 | 9.3 | -4.4 | 34.2 | 27.6 | 21.7 | 14.4 | 16.1 | -31.8 | 24.6 | 26.7 | 7.3 | 17.2 | 41.1 | 20.8 | 5.4 | 14.6 | 25.9 | 0.5 | 33.6 | 24.1 | 42.1 | -11.8 | 24.2 | 24.9 | 12.8 | 26.3 |
| S&P 500 | 21.1 | -9.1 | -11.9 | -22.1 | 28.7 | 10.9 | 4.9 | 15.8 | 5.5 | -37.0 | 26.5 | 15.1 | 2.1 | 16.0 | 32.4 | 13.7 | 1.4 | 12.0 | 21.8 | -4.4 | 31.5 | 18.4 | 28.7 | -18.1 | 26.3 | 25.0 | 17.9 | 11.8 |

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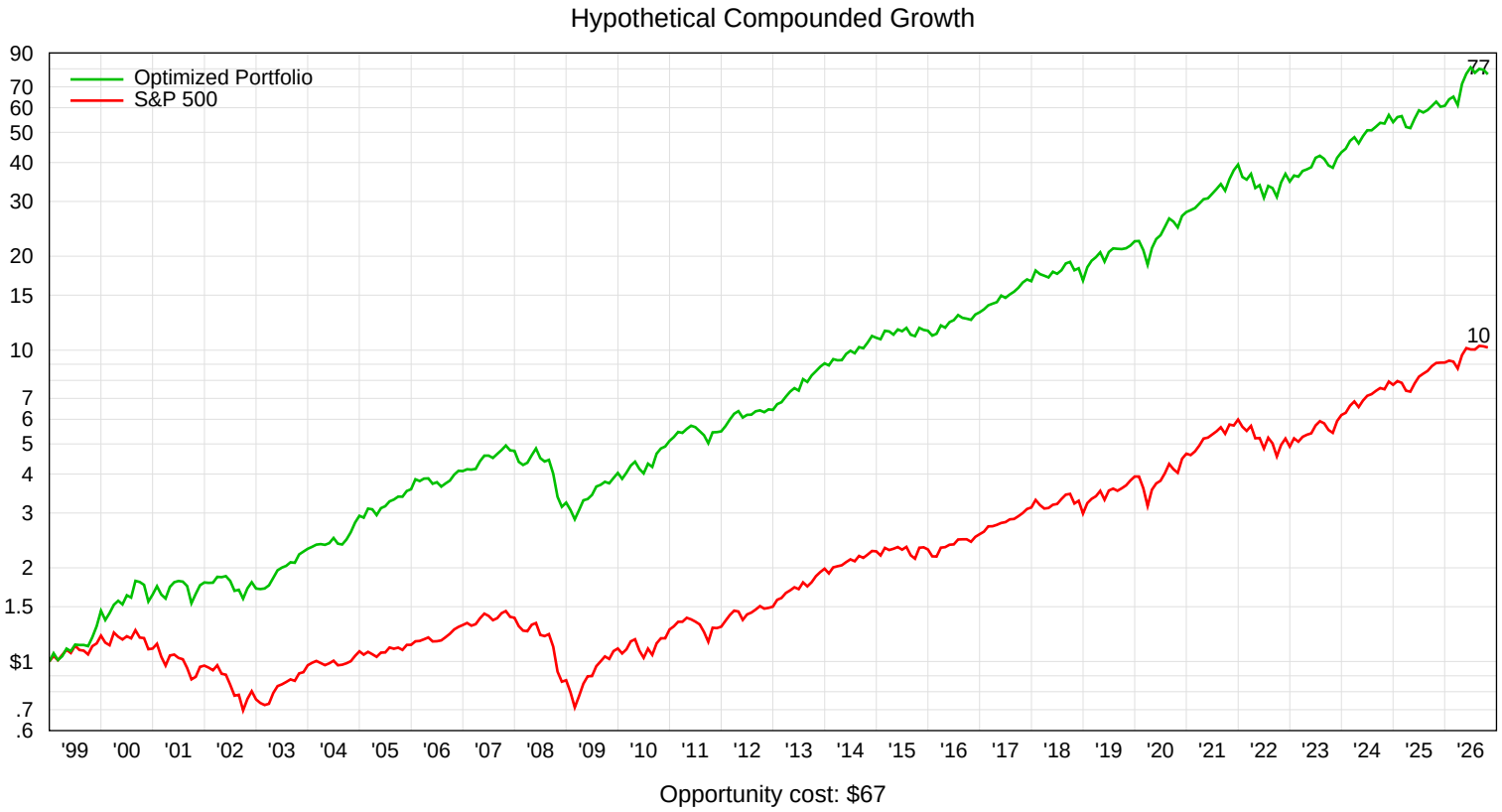


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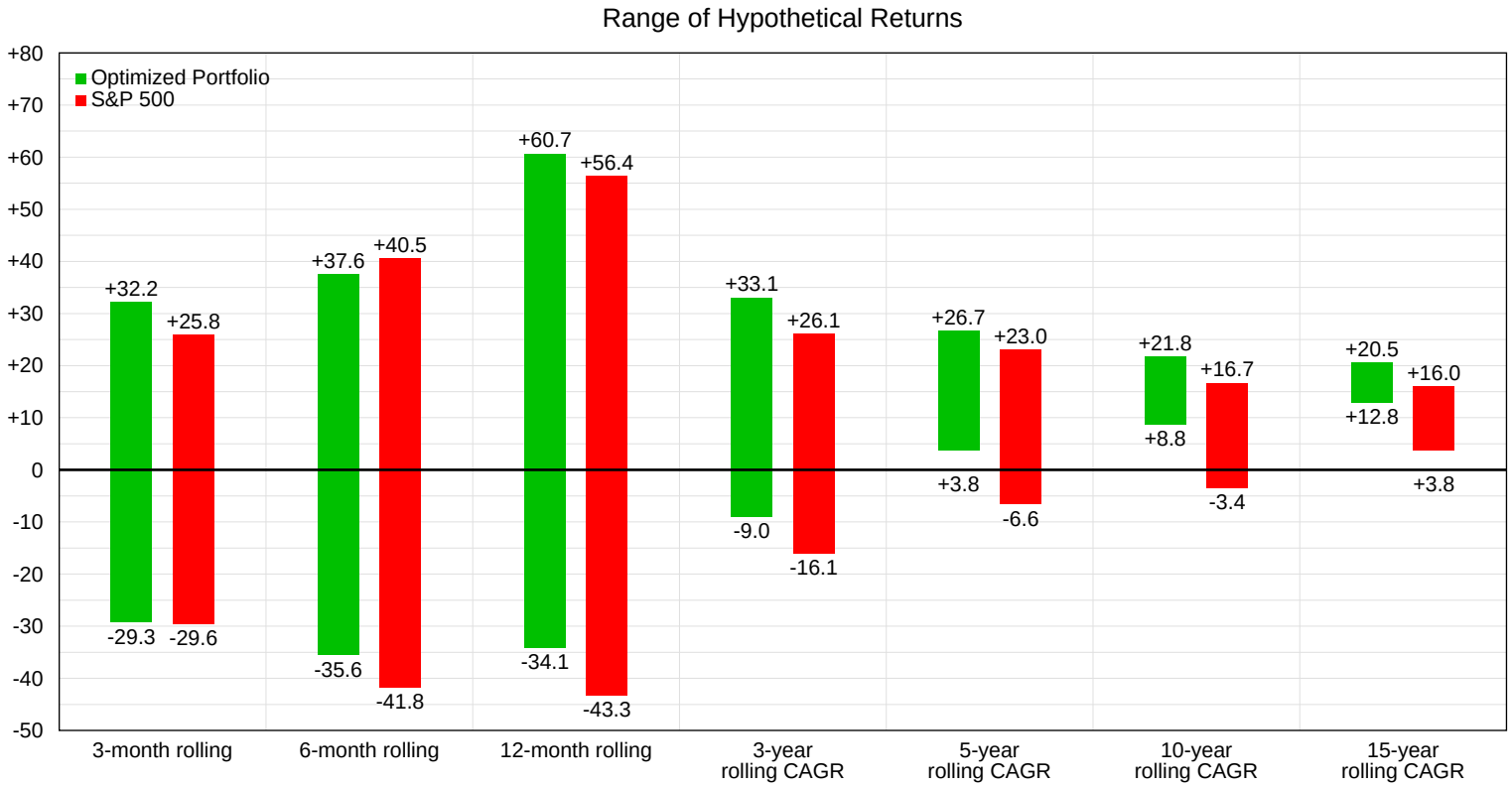


***Disclaimer: Best and worst return periods for this model may not align with those of the mega cap-weighted S&P 500 Index.***

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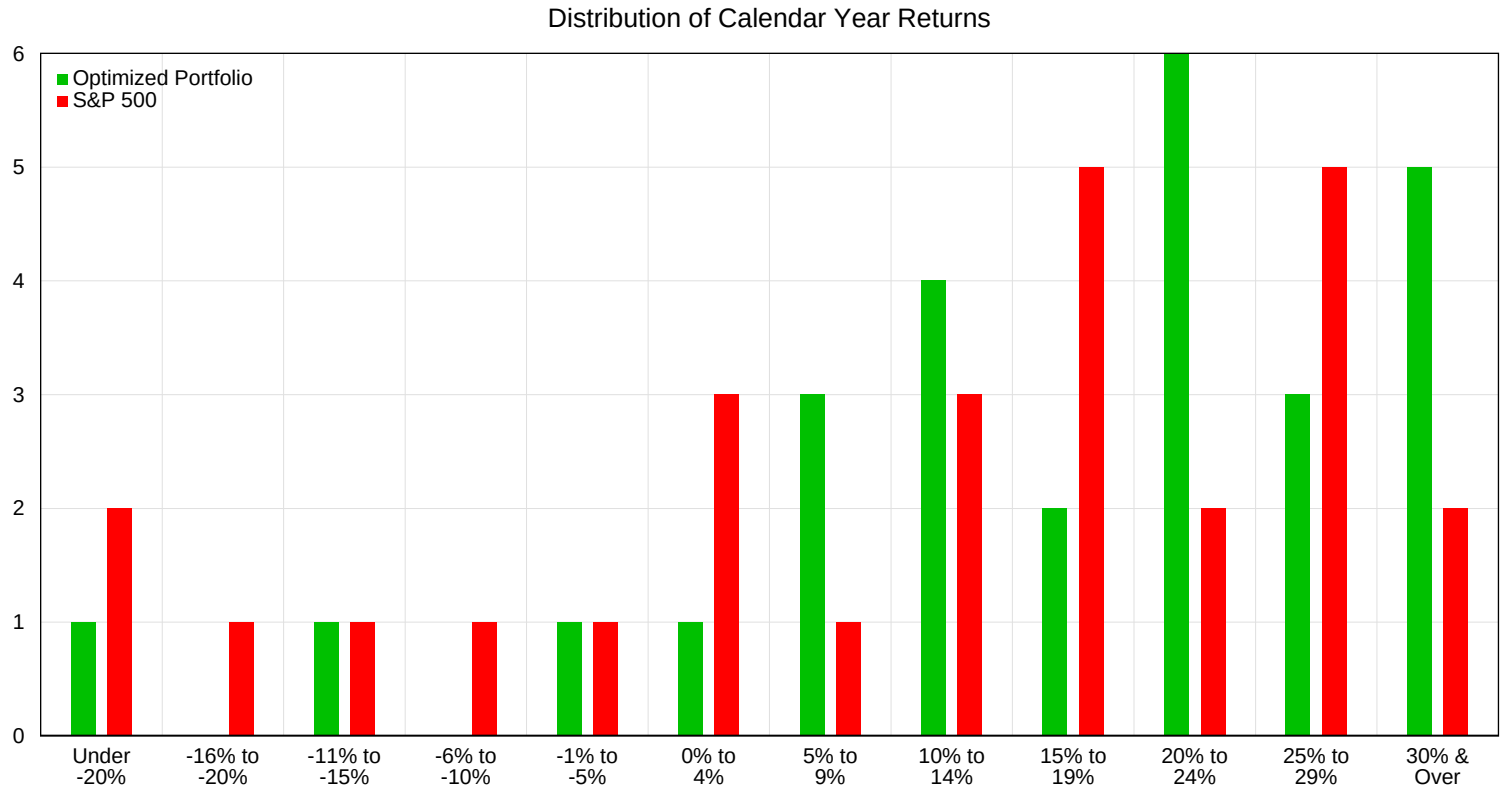


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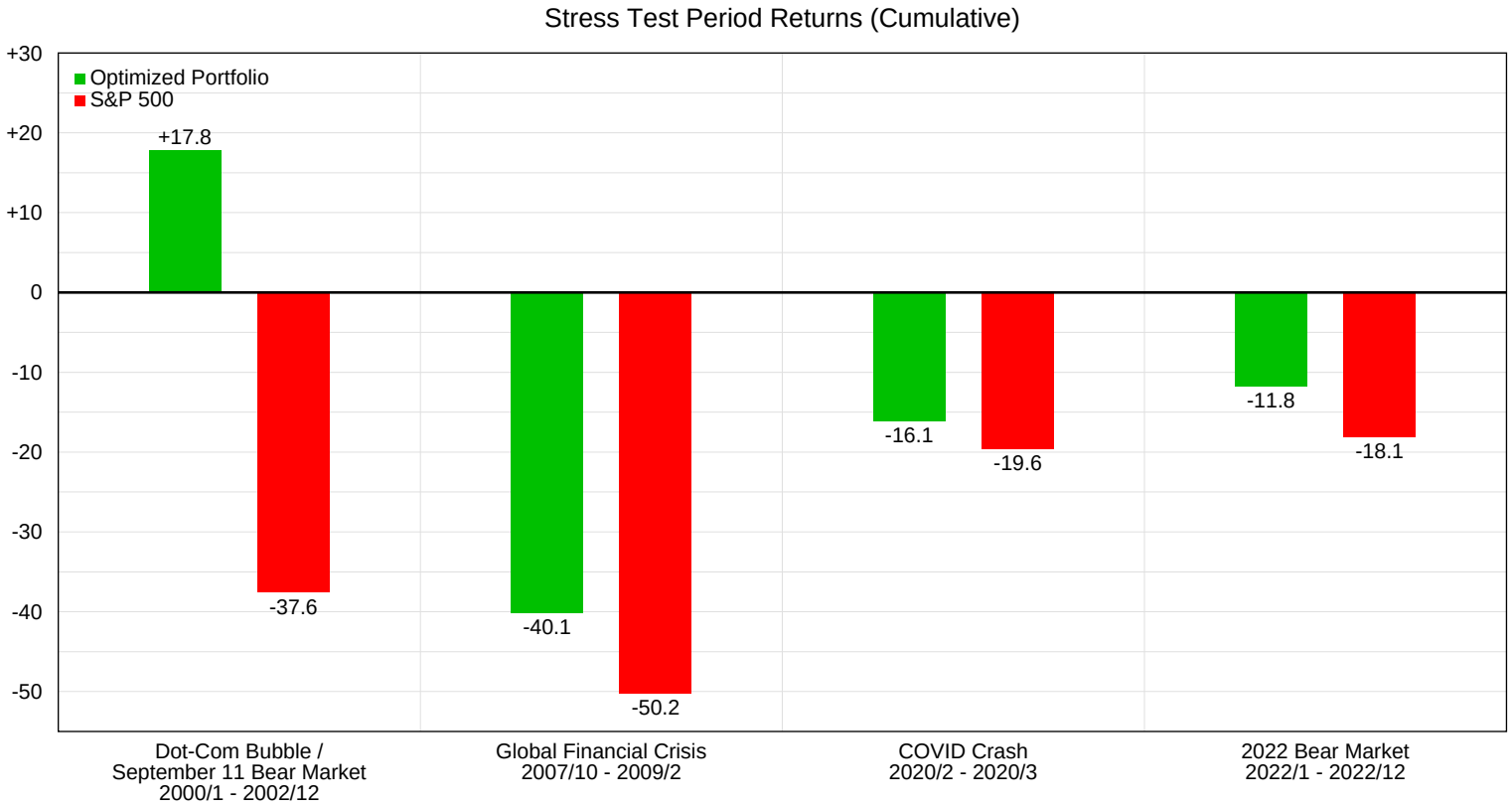


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## Salient Statistics

| | Optimized Portfolio | S&P 500 Index |
|---|---|---|
| Up Years | 24 | 21 |
| Down Years | 3 | 6 |
| Up Year % | 89% | 78% |
| Best Year | +45.54% | +32.39% |
| Worst Year | -31.81% | -37.00% |
| Maximum Drawdown | -42.06% | -50.95% |
| Ulcer Index | 8.49 | 15.26 |
| **Risk Measurements** | | |
| Alpha | 8.22% | - |
| Beta | 0.92 | - |
| Up-Market Capture | 1.12 | - |
| Down-Market Capture | 0.74 | - |
| Correlation | 0.90 | - |
| R-Squared | 0.81 | - |
| Sharpe Ratio | 1.01 | 0.53 |
| Skew | -0.53 | -0.65 |
| Kurtosis | 1.11 | 1.15 |

## What is Asset Allocation?

Numerous independent studies have determined that more than 90% of a portfolio's relative performance can be attributed to Asset Allocation.

Asset Allocation is based on "Modern Portfolio Theory." In 1952, Nobel Laureate Harry Markowitz, regarded as the "father of modern portfolio theory," developed the first mathematical model that illustrated how risk can be reduced through diversification of investments that have different patterns of return (correlations).

Asset Allocation is analogous to baking a cake. The individual ingredients are not something you would consider sitting down and having as a meal: flour, raw eggs, baking soda, etc. But, when combined, the results can be incredible.

We caution against evaluating performance results on an individual basis rather than the portfolio as a whole. Like the cake analogy, if you leave those raw eggs out, your cake will be spoiled. You can't eliminate one investment because it hasn't performed or is out of favor. If you do, you have become a **Market Timer** – which can diminish long-term performance.

**PORTFOLIO OPTIMIZATION**

Portfolio Optimization is a sophisticated approach to Asset Allocation that is designed to balance the risks, returns and correlations of an investment portfolio over long holding periods. To continue our analogy, Portfolio Optimization tells us (based on history) how much of each ingredient makes the best tasting cake for the allowable cost.

Portfolio Optimization seeks to identify the historically optimum blend of investments that, based on their historical performance, would have produced a desired result in terms of performance, risk, and/or yield.

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**Beta** is a measure of the volatility (all markets, up markets, down markets) of a portfolio in comparison to the market (S&P 500 Index) as a whole. **Alpha** is a measure of performance on a risk-adjusted basis. Alpha takes the volatility (price risk) of a portfolio and compares its risk-adjusted performance to a benchmark index. The excess return of the portfolio relative to the return of the benchmark index is the alpha. The S&P 500 Index is the assumed benchmark. **Correlation** is a measure that determines the degree to which two variable's movements are associated. **R-squared** values range from 0 to 100. An R-squared of 100 means that all movements of a security are completely explained by movements in the index. A high R-squared (between 85 and 100) indicates the portfolio's performance patterns have been in line with the index. A portfolio with a low R-squared (70 or less) doesn't act much like the index. For this illustration, R-squared is calculated against the S&P 500 Index. **Sharpe Ratio** is a ratio developed by Nobel laureate William F. Sharpe to measure risk-adjusted performance. The Sharpe ratio is calculated by subtracting the risk-free rate - such as that of the 10-year U.S. Treasury bond - from the rate of return for a portfolio and dividing the result by the standard deviation of the portfolio returns. **Maximum Drawdown** measures the largest single drop from peak to bottom in the value of a portfolio before a new peak is achieved.

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## IMPORTANT DISCLOSURES

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Some results presented in this report may be based on hypothetical or backtested performance. Such results do not represent actual trading and do not reflect all transaction costs, taxes, or market impact that would be incurred in a live portfolio. Backtested results were generated using historical data with the benefit of hindsight and may not reflect how the models would have performed under actual market conditions. Hypothetical performance has inherent limitations and may not be representative of results achievable in real-world investing. Past performance is not indicative of future results.

Model performance shown in this report assumes an annual expense of **0.50%** to account for estimated trading costs and other implementation expenses. Actual costs incurred by investors may be higher or lower depending on the advisor, custodian, investment vehicles used, and account structure.

**Risk Disclosure**
All investing involves risk, including the potential loss of principal. Quantitative and model-based strategies may experience periods of significant underperformance, drawdowns, or losses. Market conditions, correlations, liquidity, and volatility may change in ways that cause models to perform materially differently than in the past. No investment strategy or risk management technique can eliminate market risk or guarantee positive returns.

**Data & Accuracy**
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