Comprehensive Portfolio Analysis Report

Portfolio Composition

Reliance Industries: 25%

Infosys: 25%

HDFC Bank: 25%

Tata Consultancy Services: 25%

QuantStats Metrics

PORTFOLIO ANALYSIS REPORT

==========

Total Return: 928.87%

Annual Return: 12.54%

Annual Volatility: 18.28%

Sharpe Ratio: 1.0483

Sortino Ratio: 1.5306

Maximum Drawdown: -34.88%

Calmar Ratio: 0.3596

Value at Risk (95%): -1.82%

Expected Shortfall (95%): -2.80%

Win Rate: 0.5304

Best Day: 9.62%

Worst Day: -10.73%

Average Win: 0.85%

Average Loss: -0.80%

Profit Factor: 1.2027

Common Sense Ratio: 1.3731

Tail Ratio: 1.1416

Skewness: -0.2734

Kurtosis: 7.5467

Note: Could not calculate monthly/yearly breakdowns: module 'quantstats.stats' has no attribute 'yearly_returns'

Comprehensive Portfolio Analysis Report

AI Analysis

I. OVERALL PERFORMANCE SUMMARY

The overall performance of this portfolio is quite strong, with a total return of 928.87% over the analysis period. This indicates that the investments have performed well and generated significant returns for the investor. The annual return of 12.54% and the annual volatility of 18.28% provide context to this performance, showing a balance between return generation and risk management.

II. RETURN ANALYSIS

Annual Return: This metric represents the average annualized return on investment over the analysis period. A value of 12.54% indicates that the portfolio has generated a healthy return compared to many other investment options.

Best Day: This measures the highest single-day return in the portfolio, at 9.62%. This shows that the investments had some days with substantial gains.

Worst Day: The worst day in this portfolio was -10.73%, indicating a significant loss on that particular day. It is essential to understand the factors contributing to this decline and take steps to mitigate similar future occurrences.

Average Win: With an average win of 0.85%, it suggests that most winning trades or investments generated modest gains.

Average Loss: The average loss of -0.80% indicates that losing trades or investments typically resulted in small losses, which is a good sign for risk management.

Profit Factor: This metric compares the average win to the average loss, and a value of 1.2027 indicates that the portfolio has more winning trades than losing ones, which is desirable.

III. RISK ANALYSIS

Annual Volatility: At 18.28%, this measures the variability or uncertainty in the portfolio's returns over a year. A higher value indicates greater risk. This level of volatility suggests that the portfolio has some exposure to risk, which is expected for most investments.

Comprehensive Portfolio Analysis Report

Maximum Drawdown: The maximum drawdown of -34.88% represents the largest decline in the portfolio's value from its peak to its trough. This indicates that the portfolio experienced a significant setback at some point during the analysis period.

Calmar Ratio: This ratio compares the annual return to the maximum drawdown, with a value of 0.3596. A higher value indicates better risk-adjusted performance. The current Calmar Ratio suggests that the portfolio's risk-adjusted performance could be improved.

Value at Risk (95%): This measures potential loss in the portfolio over a specified time frame (e.g., one day) with a 95% confidence level. A value of -1.82% indicates that there is a 5% chance of losing more than this amount in a single day.

Expected Shortfall (95%): This metric estimates the average loss when the actual return is worse than the Value at Risk. The current value of -2.80% suggests that there may be room for improvement in risk management.

IV. RISK-ADJUSTED PERFORMANCE

Sharpe Ratio: At 1.0483, this ratio measures the risk-adjusted return by dividing the excess return over the risk-free rate by the annual volatility. A higher value indicates better performance. The current Sharpe Ratio suggests that the portfolio has performed reasonably well compared to its risks.

Sortino Ratio: This metric is similar to the Sharpe Ratio but only considers downside risk. With a value of 1.5306, it shows that the portfolio has performed well in terms of risk-adjusted performance with a focus on negative returns.

Tail Ratio: The Tail Ratio compares the actual number of observations below a certain threshold to the expected number of tail losses. A value above 1 indicates that the portfolio has experienced fewer tail losses than expected. With a tail ratio of 1.1416, this suggests that the portfolio has performed well in terms of extreme negative events.

V. DRAWDOWN AND RECOVERY ANALYSIS

Maximum Drawdown: As previously mentioned, this measures the largest decline in the portfolio's value from its peak to its trough. The current maximum drawdown of -34.88% is a critical metric to consider when evaluating the portfolio's resilience during market downturns.

Comprehensive Portfolio Analysis Report

VI. STATISTICAL MEASURES

Skewness: This metric measures the asymmetry in the distribution of returns, with positive values indicating a higher probability of large gains and negative values indicating a higher probability of large losses. A value of -0.2734 suggests that the portfolio has a slight propensity for larger losses compared to gains.

Kurtosis: This measures the "tails" of the return distribution, with higher values indicating more extreme events (either gains or losses). A kurtosis of 7.5467 indicates that the portfolio experiences more extreme returns than a normal distribution, which could be a sign of higher risk.

VII. KEY INSIGHTS AND RECOMMENDATIONS

1. The overall performance is strong, with a total return of 928.87%. This is an excellent achievement, and the investor should be satisfied with this result.
2. Risk management could be improved, as evidenced by the Calmar Ratio and other risk metrics. The investor may want to consider adjusting the portfolio's allocation or implementing better risk management strategies.
3. While the Sharpe and Sortino Ratios indicate reasonable risk-adjusted performance, there is still room for improvement. The investor should work with their financial advisor to identify areas of potential enhancement.
4. The drawdown analysis reveals that the portfolio has experienced significant setbacks in the past. It would be prudent for the investor to review the factors contributing to these declines and consider implementing strategies to mitigate similar future occurrences.
5. The skewness and kurtosis metrics suggest that the portfolio experiences more extreme events than a normal distribution, indicating higher risk. The investor should work with their financial advisor to determine if this level of risk aligns with their long-term investment goals and tolerance for volatility.

Monthly Performance Analysis

1. Best/worst performing months:

Looking at the data provided, the best performing month was August 2022, with a return of 7.32%. The worst-performing month was June 2010, with a return of -0.000000%. These results may be attributed to various factors such as market conditions, company performance, and global events that affected the Indian stock market during those periods.

1. Seasonal patterns:

There doesn't seem to be a clear seasonal pattern in the data provided. However, it's worth noting that some months

have consistently high or low returns, such as June 2010 and August 2022. This inconsistency could be due to the specific events and market conditions during those periods rather than a true seasonal pattern.

2. Consistency of performance:

The consistency of performance varies across different months. Some months consistently performed well, such as August 2022, while others had mixed results like March 2013 and June 2014. It's important to note that the stock market is inherently volatile, and it's difficult to achieve consistent returns over short periods.

3. Months to watch out for:

Based on the data provided, you may want to be cautious about investing during certain months, such as June 2010, which had a negative return. Additionally, there were some volatile months like August 2022 and June 2014, where the returns fluctuated significantly. These months may require closer monitoring of your portfolio.

4. Potential improvements to monthly performance:

To potentially improve monthly performance, consider the following strategies:

* Diversify your investments across different sectors and geographies.
* Rebalance your portfolio periodically to maintain an optimal risk-reward ratio.
* Monitor market trends and news that could impact your investments.
* Consider using dollar-cost averaging or other investment strategies to minimize the impact of short-term volatility.

1. As this is an Indian stock portfolio, some factors to consider for improvement may include:

* Keeping track of company-specific news and financials for Reliance, Infosys, HDFC Bank, and TCS to understand their performance relative to the market.
* Evaluating macroeconomic indicators such as GDP growth, inflation rates, and interest rates in India, which may impact the stock market.
* Staying informed about global events that could affect the Indian stock market, such as political stability, trade relations, and changes in commodity prices.

Portfolio vs Best Stock Comparison

1. PERFORMANCE COMPARISON:

- The Diversified Portfolio has a total return of 928.87% and an annual return of 12.54%. In contrast, the TCS Stock Portfolio has a total return of 1244.32% and an annual return of 14.08%. The TCS Stock Portfolio outperforms the Diversified Portfolio in terms of both total and annual returns.
- The Diversified Portfolio has a lower volatility (18.28%) compared to the TCS Stock Portfolio (25.01%). This indicates that the Diversified Portfolio is less risky than the TCS Stock Portfolio.

Comprehensive Portfolio Analysis Report

- The Diversified Portfolio has a higher Sharpe Ratio (1.0483) and Sortino Ratio (1.5306), while the TCS Stock Portfolio has a lower Sharpe Ratio (0.9044) and Sortino Ratio (1.3506). These ratios show that the Diversified Portfolio generates higher risk-adjusted returns than the TCS Stock Portfolio.

2. RISK COMPARISON:

- The Diversified Portfolio has a lower Maximum Drawdown (-34.88%) compared to the TCS Stock Portfolio (-27.25%). This means that the Diversified Portfolio experiences smaller losses during adverse market conditions than the TCS Stock Portfolio.
- Both portfolios have similar Calmar Ratios (0.3596 for Diversified Portfolio and 0.5168 for TCS Stock Portfolio). The Calmar Ratio measures the relationship between the annual return and the maximum drawdown, indicating that both portfolios have a lower risk-adjusted performance.
- The Value at Risk (95%) and Expected Shortfall (95%) for both portfolios are quite similar, suggesting that both portfolios have comparable downside risks.

3. RISK-ADJUSTED RETURNS COMPARISON:

- The Diversified Portfolio has higher Sharpe and Sortino Ratios compared to the TCS Stock Portfolio. This indicates that the Diversified Portfolio generates better risk-adjusted returns than the TCS Stock Portfolio.

4. STRENGTHS AND WEAKNESSES OF EACH:

- Diversified Portfolio Strengths: Lower volatility, higher Sharpe and Sortino Ratios, lower Maximum Drawdown.
- Diversified Portfolio Weaknesses: Lower total and annual returns compared to the TCS Stock Portfolio.
- TCS Stock Portfolio Strengths: Higher total and annual returns, similar Value at Risk (95%) and Expected Shortfall (95%) to the Diversified Portfolio.
- TCS Stock Portfolio Weaknesses: Higher volatility, lower Sharpe and Sortino Ratios, higher Maximum Drawdown, and slightly lower Calmar Ratio compared to the Diversified Portfolio.

5. RECOMMENDATION:

Based on the analysis above, the Diversified Portfolio is a better choice for an investor seeking a more stable and risk-adjusted performance. Although it has lower total and annual returns than the TCS Stock Portfolio, its lower volatility, higher Sharpe and Sortino Ratios, and lower Maximum Drawdown provide a more balanced and less risky investment option. The TCS Stock Portfolio may generate higher returns, but it comes with higher risk and volatility.

Comprehensive Portfolio Analysis Report

Specific Metric (Sharpe Ratio)

The Sharpe Ratio is a popular metric used to evaluate the performance of an investment portfolio. It measures the average return of a portfolio over and above the risk-free rate per unit of volatility (standard deviation) or total risk. In other words, it tells you how much extra return you're getting for taking on additional risk.

1. What this metric measures: The Sharpe Ratio measures the risk-adjusted return of a portfolio by comparing the excess return (return minus the risk-free rate) to the standard deviation of the portfolio returns. It is used to assess the performance of an investment relative to its riskiness, giving a sense of how much reward an investor receives for taking on additional risk.

2. How it's calculated: The formula for calculating the Sharpe Ratio is as follows:

Sharpe Ratio = (Average Asset Return - Risk-Free Rate) / Standard Deviation of Asset Returns

Where:

- Average Asset Return is the average return of the portfolio over a specific period
- Risk-Free Rate is the interest rate on an investment with no risk, typically considered as government bonds or treasury bills.
- Standard Deviation of Asset Returns measures the volatility or dispersion of the returns from the mean return.

3. What the specific value means: A Sharpe Ratio of 1.0483255490226953 suggests that your portfolio is earning 1.048 times as much return for every unit of risk taken. This is considered a good but not outstanding result, especially if the risk-free rate is low or zero. However, whether this is good or bad depends on the context and what you're comparing it to. A higher Sharpe Ratio indicates better performance relative to risk, while a lower ratio means that the returns are not commensurate with the level of risk taken.

4. Factors that could improve or worsen this metric: There are several factors that can influence the Sharpe Ratio of your portfolio:

- Increasing return: If you can increase the average return of the portfolio without increasing risk, the Sharpe Ratio will increase.
- Decreasing risk: If you can reduce the risk (standard deviation) of the portfolio without reducing the return, the

Sharpe Ratio will also increase.

- Lowering the risk-free rate: The Sharpe Ratio can increase if the risk-free rate decreases, assuming that your portfolio's return remains constant or increases.

5. How investors should interpret this in their decision making: When comparing different investment options or assessing your own portfolio, a higher Sharpe Ratio is generally better than a lower one. It indicates that you are getting more return for each unit of risk taken. However, it's important to keep in mind that the Sharpe Ratio has its limitations. For example, it doesn't consider the frequency or magnitude of large positive or negative returns. Also, it treats all types of risk equally, which may not always be the case. Investors should also consider other metrics and factors when making investment decisions, such as the information ratio, downside deviation, or their personal risk tolerance.