Analyzing Portfolio Risk and Return

This analysis evaluates four new investment options for inclusion in the client portfolios. The analysis determines the fund with the most investment potential based on key risk-management metrics: daily returns, standard deviations, correlations, Sharpe ratios, betas, and Treynor ratios.

Stages:

I. Data load

1. Import the required libraries and dependencies.

2. Read the `whale_navs.csv` file into a Pandas DataFrame, and creation of a datetime index.

3. Calculate returns. DataFrame based on the NAV prices of the four funds and the closing price of the S&P 500 Index.

II. Quantitative Analysis

Profitability Analysis

Use daily, cumulative, and holding period returns, together with visulaizations to assess performance.

Volatility Analysis

Use box plots to analyze and compare the dispersion of daily returns among funds and stock market index.

Risk Analysis

Evaluate the risk profile of each fund by using standard deviation and beta. Analysis includes:

1. Annualization

2. Risk evolution using 21-day rolling standard deviations of returns

3. Determination of the more and less risky fund

Risk-Return Profile Analysis

1. Calculation of Sharpe and Treynor ratios for the funds and the S&P 500.

2. Visualization of Sharpe ratios in a bar chart.

3. Determination of the portfolio with the best and worst risk-return profile.

Diversification Analysis

Evaluation the funds' sensitivity relative to the broader market using rolling beta.

III. Conclusions

* Recommendation of the selected fund for inclusion for the firm’s suite of fund offerings