Portfolio Optimization | IIT Roorkee

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Introduction

A minimum variance portfolio is one that maximizes performance while minimizing risk. It can hold investment types that are volatile on their own but when combined create a diversified portfolio with lower volatility than any of the parts.

Portfolio Optimization Strategy

- Initial Screening - Utilized financial metrics to select the top 20 performing stocks listed on the NSE.
- Optimization Approach: Recognizing that volatility alone is not an ideal basis for optimization, we incorporated financial factors into our strategy. Implemented a portfolio optimization algorithm focused on minimizing variance among these 20 stocks.
- This approach aims to balance risk management with financial performance to enhance portfolio outcomes.

Query used

Search Query You can customize the query below:

Query

Net profit $>$ 2000 AND Sales growth 3Years $>$ 10 AND

Profit growth 3Years $>$ 10 AND

Price to Earning $<$ Historical PE 3Years AND

Return on equity $>$ 10

LSTM Model

We have also applied LSTM Model in order to predict future pricing of a stock.

Portfolio optimization

$$\mathbf{w} = \frac{\mathbf{u}\mathbf{C}^{-1}}{\mathbf{u}\mathbf{C}^{-1}\mathbf{u}^{T}}$$

Conclusion

In conclusion, portfolio optimization using the minimum variance approach offers a powerful strategy to construct portfolios that aim to minimize risk while maximizing returns. By diversifying investments across assets with low correlations, this method seeks to achieve a balance between risk and return. However, it's essential to recognize that historical data and assumptions play a crucial role in this process, and actual market conditions may vary. Therefore, continual monitoring and adjustments are necessary to adapt to changing market dynamics and maintain an optimal portfolio allocation over time.