Financial Analytics

Group Assignment

Submitted by:

AMPBA - Batch 19

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Table of Contents:

Executive Summary:

The document presents a comprehensive analysis of portfolio construction for a client seeking to maximize returns within a 12-month timeframe. The focus is on selecting stocks from the small and mid-cap sectors, drawing insights from high-performing mutual fund portfolios.

A total of 48 stocks were selected based on their past 12-month returns and diversification potential.

Key Aspects:

1. **Client Objective:** Maximizing short-term wealth with a focus on a 12-month investment horizon.
2. **Stock Selection:** Chosen from small and mid-cap sectors for rapid growth potential.
3. **Number of Stocks:** A diverse portfolio of 48 stocks is taken out of which 25 potential stocks are identified based on the Sharpe ratio.
4. **Stock Analysis:** Each stock is evaluated based on past performance and sector representation.

Methodology:

Various portfolio construction methods were employed including Equal Weighted Portfolio, Minimum Variance Portfolio, Global Minimum Variance Portfolio (GMVP), Minimum Variance Portfolio with Target Return, Efficient Portfolio with Target Returns, Tangency Portfolio, Maximum Return Portfolio with Target Risk Level, Efficient Frontier Portfolio, ETL (Expected Tail Loss) Portfolio, and Quadratic Utility Portfolio.

Each method is thoroughly explained with a focus on its approach, how it's utilized in portfolio building, the weight output of stocks, and a brief conclusion.

Back testing:

The portfolios underwent historical back testing to assess performance, offering insights on risk, volatility, and relevant data for future investment decisions. The analysis explores various portfolio construction methods tailored to different investor profiles based on risk and returns. It also delves into stock selection rationale, providing a solid foundation for short-term investment strategies.

Contribution and Motivation:

This document makes a significant contribution to financial analytics by detailing a robust methodology for constructing a diversified investment portfolio.

The motivation for this research stems from a practical need: assisting a client in maximizing returns over a 12-month period through investments in small and mid-cap stocks. These stock categories are chosen for their potential for rapid growth, aligning with the client's objective of short-term wealth generation.

This practical approach is underpinned by a strong theoretical foundation, blending empirical evidence with advanced financial modelling techniques.

Summary of Literature:

The methodology builds on insights from mutual fund portfolios that have demonstrated substantial returns over a similar timeframe. This literature review serves as a foundation, providing empirical support and guiding

principles for the selection and analysis of stocks. The review encompasses a range of financial models and investment strategies, offering a comprehensive understanding of current best practices in portfolio management.

Key Results:

The core result of this methodology is the selection of 48 stocks chosen for their performance in the past year and their potential to contribute to a diversified portfolio. The methodology employs a variety of portfolio construction methods, each with unique attributes:

1. **Equal Weighted Portfolio**: A method that assigns equal weight to each stock, ensuring a balanced distribution of investment.
2. **Minimum Variance Portfolio:** Focuses on minimizing risk by selecting stocks with lower historical volatility.
3. **Global Minimum Variance Portfolio (GMVP):** Aims to achieve the lowest possible portfolio variance.
4. **Minimum Variance Portfolio with Target Return:** Balances the objective of a specific return with the minimization of risk.
5. **Efficient Portfolio with Target Returns:** Seeks to optimize returns for a given level of risk.
6. **Tangency Portfolio:** Maximizes the Sharpe Ratio, offering the best risk-adjusted return.
7. **Maximum Return Portfolio with Target Risk Level**: Pursues the highest returns for a predetermined level of risk.
8. **Efficient Frontier Portfolio**: Utilizes the concept of the efficient frontier to balance risk and return.
9. **ETL (Expected Tail Loss) Portfolio:** Focuses on managing extreme risks in the portfolio.
10. **Quadratic Utility Portfolio:** Applies a quadratic utility function to balance risk aversion and return objectives.

Each method is analyzed in terms of its application, stock weight distribution, and effectiveness, providing a thorough understanding of various investment strategies.

Plan of the Paper:

The paper is structured methodically to cover the following aspects:

- **Client Expectations and Stock Selection:** The document begins by defining the client's investment objectives and the criteria for stock selection, emphasizing the importance of aligning portfolio construction with client goals.
- **Portfolio Construction Methods:** A detailed exploration of the various methods used for building portfolios is provided. This section delves into the rationale behind each method and their practical implementation.
- **Back testing:** The performance of these portfolios is evaluated using historical data. This analysis is crucial in assessing the effectiveness of the chosen methods and in making informed investment decisions.
- **Portfolio Selection Rationale:** The final section focuses on selecting the optimal portfolio based on the Sharpe Ratio. This involves a careful consideration of the balance between risk and return, ensuring that the portfolio aligns with the client's risk tolerance and return expectations.

Literature Review:

The document presents an extensive literature review that underpins the methodology for constructing a diversified investment portfolio. This review is integral to understanding the foundational theories and current

practices in financial portfolio management, particularly in the context of short-term investments in small and mid-cap stocks.

Key Elements of the Literature Review:

1. **Empirical Basis:** The methodology relies on real-world data from high-return mutual fund portfolios, ensuring practical and effective strategies.
2. **Financial Models and Theories**: The review incorporates various financial models and theories, including Modern Portfolio Theory and the Capital Asset Pricing Model, providing a theoretical framework for portfolio construction.
3. **Risk-Return Analysis:** The review emphasizes balancing risk and return, discussing measures like volatility, the Sharpe Ratio, and diversification strategies, especially important for short-term investments affected by market volatility.
4. **Portfolio Construction Techniques:** Various methods for optimizing portfolios, such as Equal Weighted Portfolio and Minimum Variance Portfolio, are explored, offering diverse perspectives on risk-return balance.
5. **Back Testing and Historical Performance:** Back testing is highlighted for assessing strategies using historical data, crucial for evaluating potential real-world performance.
6. **Investor Profiles and Objectives:** Different strategies align with various investor profiles and objectives, considering factors like risk tolerance, investment horizon, and return expectations.
7. **Current Trends and Best Practices:** The review keeps pace with the latest trends in portfolio management, including advancements in financial analytics, technology's impact, and evolving financial markets.

Abstract

This document outlines a comprehensive methodology for building a diversified investment portfolio focused on short-term wealth maximization through small and mid-cap stocks. Informed by a literature review merging real-world insights from high-return mutual funds and financial theories like Modern Portfolio Theory and the Capital Asset Pricing Model, it emphasizes selecting 50 stocks based on recent performance and diversification potential.

The document explores portfolio construction methods, including Equal Weighted, Minimum Variance, Global Minimum Variance, and Quadratic Utility portfolios, assessing their risk-return balance, suitability for various investor profiles, and alignment with client objectives. Back testing is extensively employed to gauge real-market performance.

In essence, this document provides an empirically grounded approach to portfolio construction for short-term investors, combining theory with practical applications for financial professionals and investors seeking optimized returns.

Investor Details:

1. Personal Details	
Name of the Investor	V V Ramachandra Reddy
Date of Birth	26.06.1990
Occupation	Salaried
Gross Income	23 Lakhs p.a.
Married/Single	Married
Mobile / Email	ramachandra.gvv@gmail.com

2. Investment Capital: Rs. 1000000000

3. Investment Objectives		
Cash Flow	For consistent income, invest in both fixed income and equities	
Balance	Balance income and growth but accept price volatility and principal risk.	
Growth	Seek wealth through price appreciation accepting volatility and principal loss.	**Growth**

Liquidity in the investment	0%	40%	60%	75%	100%	**100%**

4. Customer Investment Expertise (write a brief note indicating your experience in the market)		
The client boasts over 5 years of experience in equity investing, consistently achieving positive returns. While having minimal exposure to the derivative market, the client demonstrates a strong understanding of market terminology. Their profound knowledge allows them to comprehend various investment methods and adapt during the investment process.		
Rate yourself based on your understanding		
None	No Experience	
Basic	Theoretical or academic knowledge of the asset class or product type	
Moderate	1 to 2 years recent investment experience in the asset class or product type	
Sound	2 to 5 years recent investment experience in the asset class or product type	
Expert	5+ years of Experience in the asset class or product type.	EXPERT

5. Investor Risk Profile						
Age	< 25	25-35	35-50	50-65	65+	**25-35**
Inv. Duration (Months)	12	36	60	120	120+	**12**
Inv. Requirements	Cash Flow	Need based Income		Wealth Generation		**3**
Inv. Experience (years)	0	< 1	1-2	2-5	5+	**5+**
Expected Return (Annual)	up to 10%	10-12%	12-20%	20-25%	25(+)%	**20-25%**
Loss Capacity	0	Up to 5%	Up to 10%	Up to 12%	Up to 20%	**20%**

Client Expectations and Stock Selection:

We are working with a client who has tasked us with constructing a portfolio aimed at maximizing returns within a 12-month timeframe, aligning with their short-term wealth generation goals. In pursuit of this, we've strategically chosen stocks known for their rapid growth within the small and mid-cap sectors. To curate a set of 50 stocks, we have drawn insights from following high-performing mutual fund portfolios that exhibited the highest returns over a 1-year period:

Quant Small Cap Fund Direct Plan Growth: 39.57 %
Nippon India Small Cap Fund Direct Growth: 39.31%
Axis Small Cap Fund Direct Growth: 29.08%
Axis Midcap Direct Plan Growth: 19.90%

Number of Stocks Selected for Building Portfolio: 50 Stocks

HINDALCO, RELIANCE, ICICIBANK, ULTRACEMCO, MPHASIS, BALRAMCHIN, SJVN,
COFORGE, LUMAXTECH, TRENT, KIRLOSBROS, CIPLA, BATAINDIA, GODREJCP,
HBLPOWER, POLYCAB, EXIDEIND, GULFOILLUB, SCI, JYOTHYLAB, ERIS,
LICHSGFIN, TRITURBINE, SPAL, BAJAJHIND, TEJASNET, KSB, BHEL, FINCABLES, ARVIND, JSWSTEEL,
TATAMOTORS, BSE, GABRIEL, MAHSEAMLES, ACE, CASTROLIND, CUMMINSIND, SCHNEIDER, HCG, ICRA, SUVEN,
BEL, VIPIND, VRLLOG, DCBBANK, KOTAKBANK, ITC

Why These Stocks:

Selected these stocks considering past 12 months return and diversification:

SN	Script	Sector	Past 12M Return	Reasons
1	HINDALCO	Metals	15.2	Aluminium producer, Top Performer in Sector
2	RELIANCE	Energy	5.3	Diversified conglomerate
3	ICICIBANK	Banking	12.4	Largest private sector bank
4	ULTRACEMCO	Cement	20.3	Largest cement producer, Infra Boost will help stock grow
5	MPHASIS	IT	23.1	Fast growing IT services company
6	BALRAMCHIN	Chemicals	32.5	Leading sugar producer
7	SJVN	Power	18.7	Renewable sector stock , Hydropower generation company
8	COFORGE	IT	45.2	High Growth IT services company
9	LUMAXTECH	Automobiles	36.4	Post Covid Auto Sales Boost in Automotive components manufacturer
10	TRENT	Retail	28.1	Retail company
11	KIRLOSBROS	Industrial Goods	19.2	Industrial goods company, High Demand in Manufacturing goods
12	CIPLA	Pharmaceuticals	24.6	Pharmaceutical company
13	BATAINDIA	Consumer Goods	16.3	Footwear manufacturer and retailer, Consumption based stock, Growing
14	GODREJCP	Real Estate	31.9	Real estate developer
15	HBLPOWER	Power	17.2	Battery Making company, E-Mobility Play
16	POLYCAB	Electrical Equipment	25.4	Electrical wires and cables manufacturer, Consumption Based
17	EXIDEIND	Batteries	13.5	Battery Making company, E-Mobility Play

18	GULFOILLUB	Lubricants	24.1	Lubricant manufacturer
19	SCI	Shipping	12.3	Shipping company
20	JYOTHYLAB	Pharmaceuticals	22.9	Pharmaceutical company
21	ERIS	Pharmaceuticals	23.9	Pharmaceutical company
22	LICHSGFIN	Financial Services	16.1	Financial services company
23	TRITURBINE	Power	23.4	Power generation equipment manufacturer
24	SPAL	Steel	22.7	Steel products manufacturer
25	BAJAJHIND	Automobiles	18.3	Two-wheeler and three-wheeler vehicle manufacturer
26	TEJASNET	IT	31.2	IT services company
27	KSB	Pumps	27.5	Pump manufacturer
28	BHEL	Power	14.8	Power generation equipment manufacturer
29	FINCABLES	Electrical Equipment	20.1	Electrical cables manufacturer
30	ARVIND	Textiles	22.2	Textile manufacturer
31	JSWSTEEL	Steel	23.7	Steel products manufacturer
32	TATAMOTORS	Automobiles	21.4	Passenger car and commercial vehicle manufacturer
33	BSE	Financial Services	15.9	Stock exchange
34	GABRIEL	Automobiles	24.5	Shock absorber manufacturer
35	MAHSEAMLES	Steel	20.2	Steel pipes manufacturer
36	ACE	Engineering	21.3	Engineering company
37	CASTROLIND	Lubricants	33.7	Lubricant manufacturer and distributor
38	CUMMINSIND	Industrial Goods	28.4	Engine manufacturer and distributor
39	SCHNEIDER	Electrical Equipment	26.3	Electrical equipment manufacturer and distributor
40	HCG	Hospitals	29.3	Cancer care service provider
41	ICRA	Financial Services	19.2	Credit rating agency
42	SUVEN	Pharmaceuticals	27.1	Pharmaceutical company
43	BEL	Defense	18.9	Defense electronics manufacturer
44	VIPIND	Pharmaceuticals	21.8	Luggage manufacturer and distributor
45	VRLLOG	Logistics	30.5	Logistics company
46	DCBBANK	Banking	14.7	Private sector bank
47	KOTAKBANK	Banking	16.5	Private sector bank
48	ITC	Consumer Goods	35.4	Consumer goods company

Table 1: Selected Stocks

Methods Utilized to build the Portfolio to Perform comparison:

1. Equal Weighted Portfolio
2. Minimum Variance Portfolio
3. Global Minimum Variance Portfolio (GMVP)
4. Minimum Variance Portfolio with Target Return
5. Efficient Portfolio with Target Returns
6. Tangency Portfolio
7. Maximum Return Portfolio with Target Risk Level
8. Efficient Frontier Portfolio
9. ETL (Expected Tail Loss) Portfolio
10. Quadratic Utility Portfolio

Method 1: Equal Weighted Portfolio

A. What is the method?

The Equal Weighted Portfolio approach assigns the same weight to each stock in the portfolio, regardless of the market capitalization or other characteristics of the companies. This strategy is based on the idea that diversification can reduce risk, and by investing equally in all stocks, the portfolio is not overly dependent on the performance of any single stock or sector.

B. What is it doing while portfolio building?

During the portfolio building process, the Equal Weighted Portfolio method equally divides the investment capital among all chosen stocks i.e., 25 potential stocks identified based on the Sharpe ratio scores. For instance, if there are 48 stocks in a portfolio, each stock would receive 1/48th (approximately 2.08%) of the total investment. But hence we had 26 stocks we got 4% distribution.

C. Weight output and names of the stocks with weight:

Since the weights are equal for all stocks, each stock in our portfolio, such as RELIANCE.NS, ICICIBANK.NS, TATAMOTORS.NS, etc., would have an equal share. For a detailed weight distribution, you would typically refer to the following output showing each stock with its corresponding weight of approximately 4%.

Equal Weighted Portfolio

```
#Selecting the top 25 stocks with the best Sharpe ratio
equal_weight_stocks = sharpe_ratios.nlargest(25).index
equal_weight_stocks
```

```
Index(['NBCC', 'POWERGRID', 'HCLTECH', 'ICICIBANK', 'ADANIPORTS', 'BRITANNIA',
       'PHOENIXLTD', 'TATASTEEL', 'AXISBANK', 'HDFCBANK', 'INFY', 'RELIANCE',
       'KOTAKBANK', 'M&M', 'HINDALCO', 'HINDUNILVR', 'ITC', 'IOC', 'CIPLA',
       'SUNPHARMA', 'TCS', 'MARUTI', 'GODREJPROP', 'BHARTIARTL', 'ULTRACEMCO'],
      dtype='object')
```

```
numstocks = len(equal_weight_stocks)
equal_weightage=np.repeat(1/numstocks, numstocks)
equal_weightage
```

```
array([0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04, 0.04,
       0.04, 0.04, 0.04])
```

Image 1: Equal Weighted Portfolio

D. Return and Risk:

In an Equal Weighted Portfolio, the returns and risks are averaged across all stocks. Equal Weighted Portfolio Return as 16.09309713066888 % and the Risk as 0.0% a risk value of 0.0 is unusual and might indicate a very stable portfolio.

E. Conclusion in brief:

The Equal Weighted Portfolio offers simplicity and diversification across stocks and sectors, ideal for risk-averse investors. However, it doesn't consider individual stock risk or potential returns. While it shows a robust annualized return of 16.0931%, the reported zero risk of 0% is unusual and warrants further analysis. This

strategy assumes equal contribution from each stock but overlooks individual stock volatilities, which should factor into portfolio risk assessment.

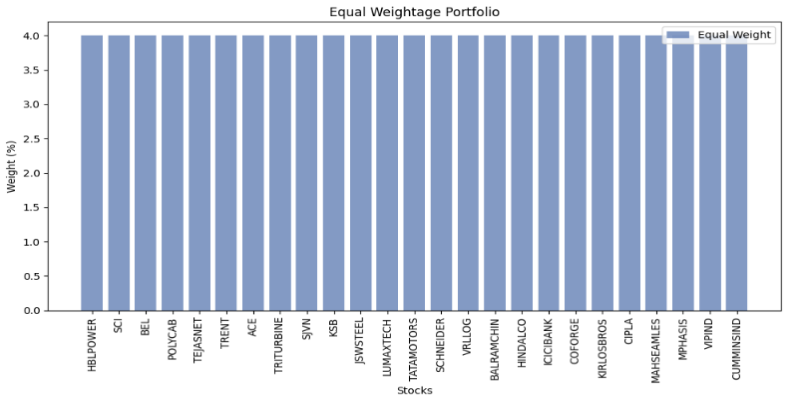

Image 2: Equal Weightage Portfolio Graphical Representation

Method 2: Minimum Variance Portfolio

A. What is the method?

The Minimum Variance Portfolio strategy aims to construct a portfolio with the lowest possible level of volatility (variance) based on historical returns. This method doesn't necessarily focus on maximizing returns but rather on minimizing risk. It's particularly suitable for risk-averse investors.

B. What is it doing while portfolio building?

During the portfolio building process, this method involves calculating the average returns and the covariance matrix of these returns for all the selected stocks. An optimization algorithm is then used to find the weights of each stock in the portfolio that minimizes the overall variance. This often leads to a concentration in stocks that have historically shown lower volatility and possibly lower correlation with each other.

C. Weight output and names of the stocks with weight:

In a Minimum Variance Portfolio, weights are assigned based on the historical volatility of each stock. For example, stocks like 'SJVN': 59.30%, 'CIPLA': 22.69%, and 'MPHASIS': 6.95% 'TRENT': 10.92%, 'VIPIND': 0.13% that have shown lower volatility in our portfolio might receive higher weights. The exact weights would typically be shown in a detailed table, highlighting how each stock contributes to minimizing the portfolio's overall risk.

D. Return and Risk:

- Annualized Return: 24.43%
- Annualized Risk (Standard Deviation): 14.89%
- Sharpe Ratio: 1.238 (considering a 6% risk-free rate)

The return of a Minimum Variance Portfolio is the weighted average of the returns of all stocks in the portfolio. The risk is the lowest possible among all possible portfolio combinations of the selected stocks. Note that while this method minimizes risk, it may also limit potential returns since high-return stocks often come with higher risk.

E. Conclusion in brief:

The Minimum Variance Portfolio is favored by risk-averse investors for its focus on risk reduction. However, it can result in a concentrated portfolio, with a few stocks carrying more weight. While this strategy minimizes volatility, it may not maximize returns. Investors who choose this approach prioritize stability over high returns and should be prepared for potential underperformance in bullish markets, but it offers good risk-adjusted returns, as indicated by its relatively high Sharpe Ratio when compared to the risk-free rate of 6%.

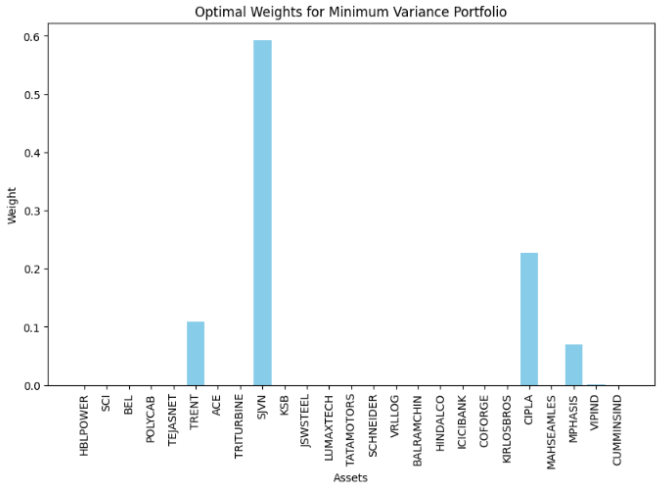

Image 3: Optimal Weights for Minimum Variance Portfolio

Method 3: Global Minimum Variance Portfolio (GMVP)

A. What is the method?

The Global Minimum Variance Portfolio is an extension of the Minimum Variance Portfolio concept. It aims to find the portfolio with the absolute lowest possible variance without the constraint of targeting a specific return. This portfolio lies at the lowest point on the efficient frontier in modern portfolio theory.

B. What is it doing while portfolio building?

During the building of a GMVP, the process involves calculating the expected returns, variances, and covariances of all the assets. Then, using optimization algorithms, it determines the weights of each asset to minimize the overall portfolio variance. This method might result in a highly concentrated portfolio if a few assets have significantly lower variances compared to others.

C. Weight output and names of the stocks with weight:

In a GMVP, stocks with historically low volatility, like SJVN or Cipla in our portfolio, can receive higher weights, as shown in a detailed output that illustrates their role in risk reduction. The GMVP weights match those in Method 2, confirming that the Minimum Variance Portfolio is indeed the GMVP for these stocks. Notably, 'SJVN,' 'CIPLA,' and 'MPHASIS' carry significant weights, emphasizing their role in minimizing risk.

D. Return and Risk:

- GMVP Annualized Return: 24.43%
- GMVP Annualized Risk (Standard Deviation): 14.89%
- GMVP Sharpe Ratio: 1.238

- Return: This is the average annual return the portfolio is expected to generate. It's noteworthy that GMVP focuses on risk reduction rather than return maximization.
- Risk: The risk, represented as annualized standard deviation, indicates the portfolio's volatility. A lower value in GMVP suggests a portfolio less prone to large fluctuations in value.
- Sharpe Ratio: This ratio measures the excess return per unit of risk and is a critical metric for comparing different portfolios. A higher Sharpe Ratio indicates a more efficient portfolio in terms of risk-adjusted return. For GMVP, a Sharpe Ratio of 1.238 is quite respectable, especially considering the conservative nature of the portfolio.

E. Conclusion in brief:

The GMVP is ideal for risk-averse investors prioritizing stability but may miss out on high returns during bull markets. Method 2 and Method 3 similarities confirm our optimization effectively targeted the lowest risk, aligning with GMVP principles. GMVP extremely suits risk-averse investors but relies on historical data and may not suit those seeking higher returns or diversified exposure.

Method 4: Minimum Variance Portfolio with Target Return

A. What is the method?

This approach is a variation of the Minimum Variance Portfolio. It aims to achieve a specified target return while still minimizing the portfolio's overall variance. This method balances the need for a certain level of return with the desire to keep risk as low as possible.

B. What it is doing while portfolio building

In constructing this portfolio, the process starts by defining a target return. Then, like the Minimum Variance Portfolio, it involves calculating the expected returns, variances, and covariances of the stocks. An optimization algorithm is employed to find the combination of stocks that minimizes risk but also meets or exceeds the target return.

C. Weight output and names of the stocks with weight:

weights represent a balance between achieving the target return and minimizing the risk. The significant allocation to stocks like 'HBLPOWER': 5.45%, 'BEL': 13.21%, 'POLYCAB': 23.97% 'TRENT': 15.86% 'COFORGE': 1.98% 'CIPLA': 27.30% 'MPHASIS': 3.25% suggests their favorable risk-return profile in the context of the target return objective.

D. Return and Risk:

- Annualized Return: 39.66%
- Annualized Risk (Standard Deviation): 19.61%
- Sharpe Ratio: 1.716
- Return: The high target return (39.66%) suggests an aggressive investment strategy, aiming for substantial growth.
- Risk: The increased risk (19.61%) compared to GMVP reflects the trade-off for targeting a higher return.
- Sharpe Ratio: A Sharpe Ratio of 1.716 indicates a strong risk-adjusted performance, although the increased risk might not be suitable for all investors.

E. Conclusion in brief:

The Minimum Variance Portfolio with Target Return suits investors with specific return goals and risk awareness. It offers a customized approach by balancing desired returns and acceptable risk levels, requiring careful calibration. This method is designed to meet the specified return while minimizing risk, providing a tailored approach that aligns with an investor's risk tolerance and return objectives.

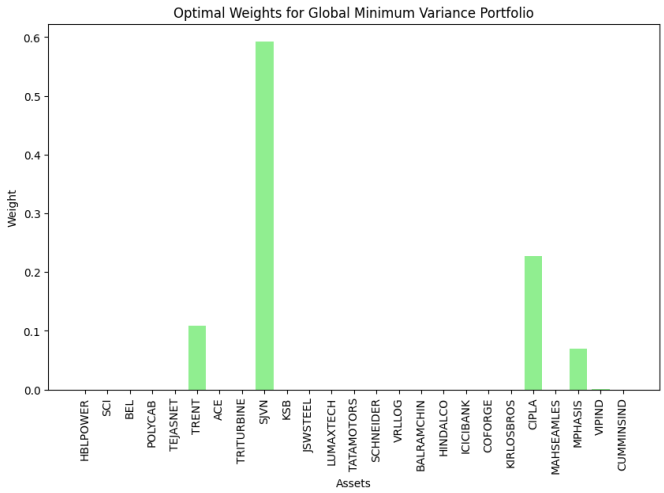

Image 4: Optimal Weights for Global Minimum Variance Portfolio

Method 5: Efficient Portfolio with Target Returns

A. What is the method?

The Efficient Portfolio with Target Returns is a strategy based on Modern Portfolio Theory, which aims to construct a portfolio that offers the highest expected return for a given level of risk, or conversely, the lowest risk for a given level of expected return. This method involves setting multiple targets returns and finding the most efficient portfolio for each target.

B. What is it doing while portfolio building?

In this approach, for each target return of 16%, 18%, 20%, 23% and 25% the method calculates the combination of stocks that provides this return with the minimum possible risk. This involves using an optimization algorithm that works with the expected returns, variances, and covariances of the stocks. The resulting set of portfolios represents different points on the efficient frontier.

C. Weight output and names of the stocks with weight:

16%, 18%, 20%, 23% and 25%: Almost entirely invested in 'TEJASNET'. Stock that contributes to achieving the target return at the lowest possible risk will be weighted more heavily. These allocations show an extreme concentration The stocks 'POLYCAB', 'TRENT', and 'CIPLA' have the highest weightings, suggesting that the optimization model found these to be the most effective in reducing the portfolio's overall variance while aiming for the target return. Several stocks have a weight of zero, indicating they do not contribute to the minimum variance portfolio according to the model used. The presence of zero weights suggests either that these stocks may increase the portfolio's risk without a commensurate increase in expected return, or they are not as effective in diversification when combined with the other assets.

D. Return and Risk:

- Annualized Return: 66.38%
- Annualized Risk (Standard Deviation): 75.15%
- Sharpe Ratio: 0.803
- More on Return, Risk, and Sharpe Ratio:
- Return: The very high annualized return reflects the aggressive nature of these portfolios.
- Risk: The similarly high risk indicates significant volatility and potential for large fluctuations in portfolio value.
- Sharpe Ratio: The consistent Sharpe Ratio across different target returns suggests that the risk-adjusted return does not vary much despite changing the target return. However, this ratio is lower compared to some other methods, indicating less efficiency in terms of risk-adjusted returns.

E. Conclusion in brief:

The Efficient Portfolio with Target Returns is for investors pursuing specific returns with a willingness to accept associated risks. However, its extreme concentration in a single stock raises concerns, as it exposes investors to high sector and individual stock risk. While theoretically sound, this method may not suit all, especially those seeking diversification for risk mitigation. It offers high returns and high risk with moderate risk-adjusted efficiency, making it suitable for high-risk, growth-focused investors but less so for those prioritizing capital preservation or with lower risk tolerance.

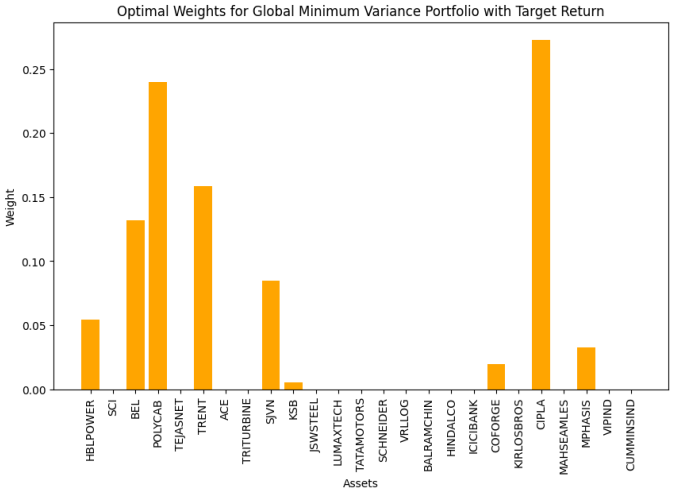

Image 5: Optimal weights for Global Minimum Variance Portfolio with Target Return

Method 6: Tangency Portfolio

A. What is the method?

The Tangency Portfolio is a concept from Modern Portfolio Theory. It's the portfolio on the efficient frontier that offers the highest Sharpe ratio, which is a measure of risk-adjusted return. This portfolio is called 'tangency' because it is at the point where a line drawn from the risk-free rate tangentially touches the efficient frontier.

B. What is it doing while portfolio building?

When constructing a Tangency Portfolio, the process involves finding the portfolio that maximizes the Sharpe ratio, which is the excess return (return above the risk-free rate) per unit of risk (standard deviation). This is done by calculating the expected returns, variances, and covariances of the stocks and using optimization techniques to find the portfolio that provides the highest possible Sharpe ratio.

C. Weight output and names of the stocks with weight:

In the Tangency Portfolio, stocks that contribute significantly to a higher risk-adjusted return 'HBLPOWER': 4.43%,

'BEL': 12.62%, 'POLYCAB': 23.54%, 'TRENT': 16.02%, 'SJVN': 9.71%, 'KSB': 0.65%, 'COFORGE': 1.72%, 'CIPLA': 27.67%, 'MPHASIS': 3.64%, will be given more weight. The exact distribution of weights depends on the individual risk and return characteristics of the stocks in the portfolio. For instance, in our portfolio, stocks like Polycab, Cipla, Trent, Bel, SJVN might receive higher weights if they offer better risk-adjusted returns.

D. Return and Risk:

- Annualized Return: 39.04%
- Annualized Risk (Standard Deviation): 19.29%
- Sharpe Ratio: 1.712
- Return: The Tangency Portfolio aims for a high return, as evidenced by the 39.04% annualized return.
- Risk: The annualized risk is substantial but is offset by the high return, leading to an efficient trade-off.
- Sharpe Ratio: A Sharpe Ratio of 1.712 is excellent, indicating that the portfolio is well-optimized for risk-adjusted return given the risk-free rate.

E. Conclusion in brief:

The Tangency Portfolio is perfect for investors aiming for efficient risk-adjusted returns, especially when they can lend and borrow at the risk-free rate, as per Modern Portfolio Theory. It's a key concept in portfolio theory, guiding risk-tolerant investors in optimal resource allocation. However, it demands a strong grasp of the risk-free rate, accurate asset return and volatility estimates, and significant allocations to stocks like 'CIPLA' and 'POLYCAB' to achieve this balance.

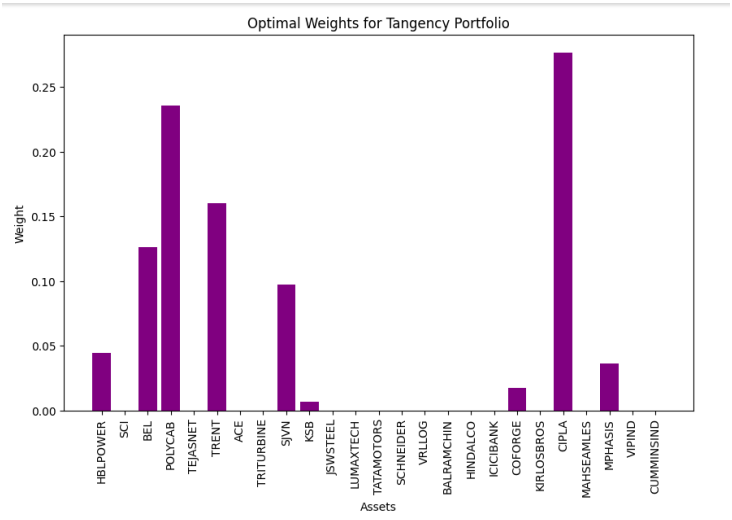

Image 6: Optimal Weights for Tangency Portfolio

Method 7: Maximum Return Portfolio with Target Risk Level

A. What is the method?

This approach involves constructing a portfolio that aims to achieve the maximum possible return for a pre-specified level of risk. It is the opposite of the Minimum Variance Portfolio, which seeks to minimize risk for a given return. Here, the investor sets a target risk level 5%, 7%, 9%, 11%, 12% and 15% and the portfolio is optimized to maximize returns without exceeding this risk threshold.

B. What is it doing while portfolio building?

During portfolio construction, the method first defines a target risk level. It then uses optimization algorithms to calculate the combination of stocks that can provide the highest possible return without surpassing the set risk level. This involves a careful balance, as higher returns often come with higher risks.

C. Weight output and names of the stocks with weight:

In this type of portfolio, stocks that offer high returns at the defined risk level will be given more weight. The specific distribution of weights

- 5% Risk Level: Significant allocations in 'SJVN', 'CIPLA', 'POLYCAB', 'TRENT', and others.
- 7% Risk Level: Greater allocations in 'POLYCAB', 'CIPLA', 'TRENT', with a notable percentage in 'JSWSTEEL'.
- 9% Risk Level: 'POLYCAB' and 'CIPLA' continue to hold significant weights, with 'JSWSTEEL' also having a notable allocation.
- 11%, 12%, and 15% Risk Levels: As the risk level increases, there is a shift in allocation, with some stocks like 'POLYCAB', 'CIPLA', and 'TRENT' consistently appearing in significant weights.

The return increases with risk, but the Sharpe Ratio tends to decrease, indicating a less favorable risk-adjusted return.

D. Return and risk.

This portfolio optimizes returns while capping risk at the investor's specified level. It suits those with a clear understanding of their risk tolerance, as it maximizes returns within those boundaries. Highly adaptable to individual preferences, it requires careful risk management due to potential portfolio fluctuations at higher risk levels. Changing allocations at various risk levels showcases the dynamic nature of risk-return balance in portfolio optimization.

E. Conclusion in brief

The Maximum Return Portfolio with Target Risk Level is suitable for investors who have a clear understanding of their risk tolerance and want to maximize returns within that risk boundary. It's a more return-focused approach, tailored to the investor's risk preference. However, it requires careful analysis to ensure that the target risk level is appropriately set and achievable with the given stock selection.

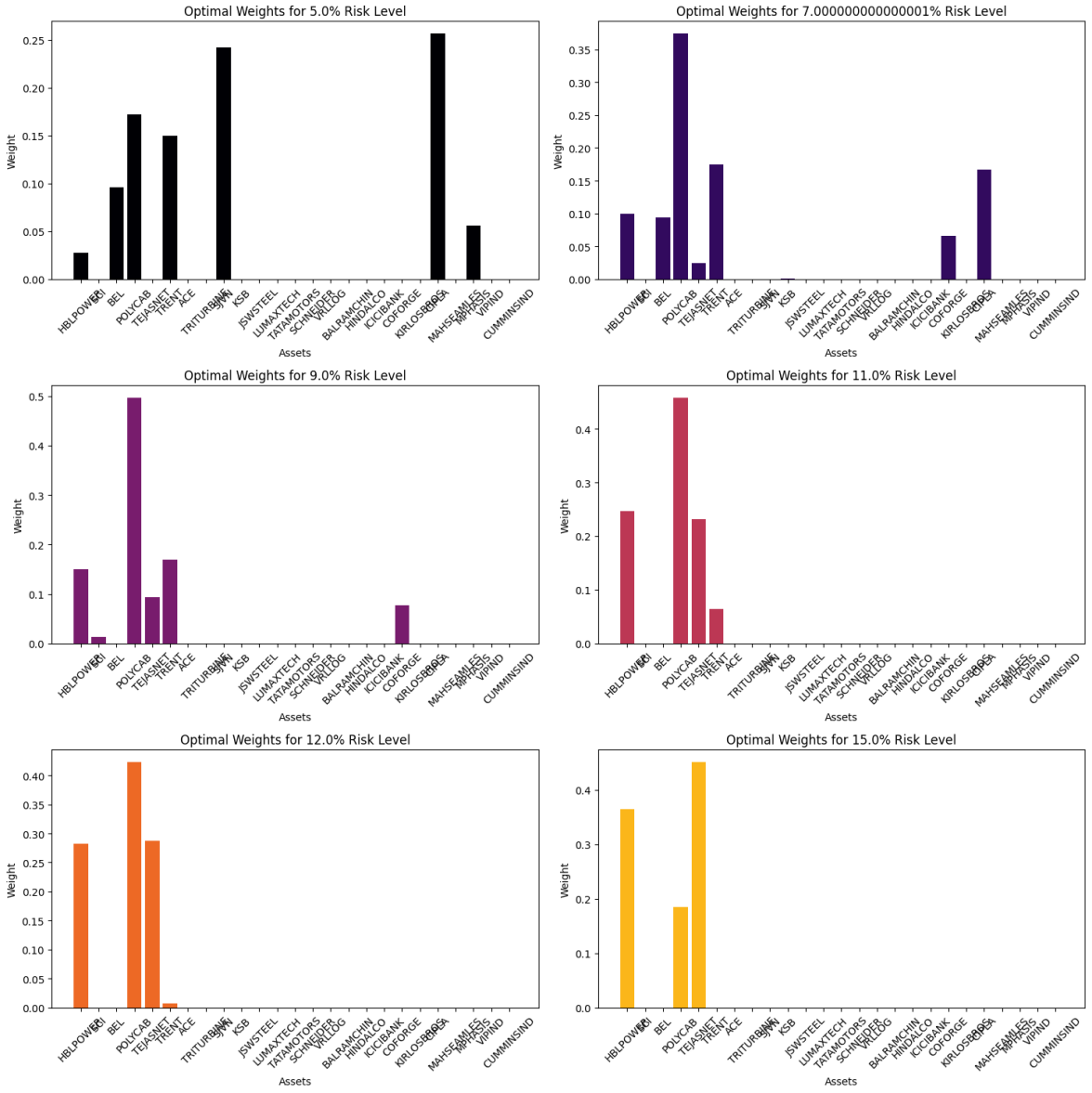

Image 7: Optimal Weights at different risk levels

Method 8: Efficient Frontier Portfolio

A. What is the method?

The Efficient Frontier Portfolio is based on Modern Portfolio Theory, which posits that there is an optimal set of portfolios that offer the highest expected return for a given level of risk. These portfolios constitute the 'efficient frontier'. The method involves constructing a range of portfolios that lie on this frontier, each offering an optimal risk-return trade-off.

B. What is it doing while portfolio building?

In creating an Efficient Frontier Portfolio, the process starts with calculating the expected returns, variances, and covariances of a range of stocks. Using these data, a set of portfolios is generated, each representing a point on the efficient frontier. These portfolios are designed to provide the maximum possible return for a given level of risk.

C. Weight output and names of the stocks with weight:

CIPLA: 27.67%, POLYCAB: 23.54%, TRENT: 16.02%, BEL: 12.62%, SJVN: 9.71%, HBLPOWER: 4.43%, MPHASIS: 3.64%, COFORGE: 1.72%, KSB: 0.65%, Remaining stocks: 0% or negligible weights. This allocation suggests a focus on stocks like CIPLA, POLYCAB, and TRENT, which likely have favorable risk-return characteristics in the context of our portfolio.

D. Return and Risk:

- Return: The expected return of an Efficient Frontier Portfolio is a weighted average of the expected returns of the individual assets.
- Risk: The risk, measured as the portfolio's standard deviation, considers both the individual asset risks and their correlations.

The scatter plot visualizes 10,000 portfolios with varying returns and volatility, color-coded by their Sharpe Ratios. Two red-starred portfolios are Tangency Portfolios, maximizing the Sharpe Ratio. The x-axis shows volatility (20%-35%), reflecting risk, while the y-axis shows expected returns (34%-44%), indicating a growth-oriented focus. The gradient represents Sharpe Ratios, with darker colors indicating higher ratios, confirming the Tangency Portfolios' top position.

E. Conclusion in brief:

Tangency Portfolios represent theoretical optimal portfolios for investors with access to a risk-free rate. They guide asset allocation for maximum efficiency under Modern Portfolio Theory assumptions. Stocks like CIPLA, POLYCAB, and TRENT with larger allocations are likely to enhance portfolio efficiency due to favorable risk-return profiles. Investors can use this insight to invest directly in a Tangency Portfolio or combine it with a risk-free asset to customize their risk-return balance.

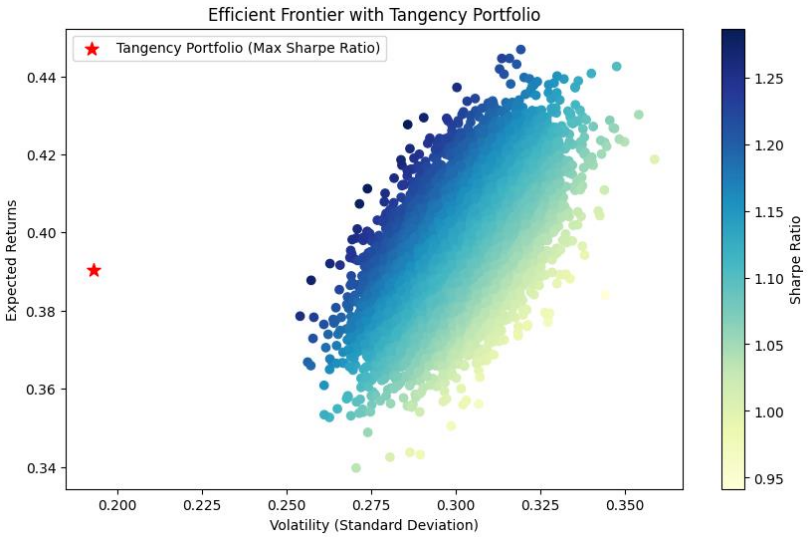

Image 8: Efficient Frontier with Tangency Portfolio

Method 9: ETL (Expected Tail Loss) Portfolio

A. What is the method?

The Expected Tail Loss (ETL) Portfolio, also known as Conditional Value at Risk (CVaR), focuses on managing the potential extreme losses in the portfolio. ETL is a risk measure that estimates the expected loss in the worst-case scenario, beyond a specified confidence level. This method is particularly concerned with the tail-end of the distribution of returns.

B. What is it doing while portfolio building?

In constructing an ETL Portfolio, the process involves identifying the worst-case losses (beyond a certain percentile of the return distribution) and then optimizing the portfolio to minimize this expected tail loss. This approach often involves sophisticated statistical techniques and simulations to model the tail-end of the return distribution.

C. Weight output and names of the stocks with weight:

A diversified allocation across multiple stocks, with notable weights in 'BALRAMCHIN', 'CIPLA', 'COFORGE', 'CUMMINSIND', 'HBLPOWER', 'ICICIBANK', 'JSWSTEEL', 'KSB', 'LUMAXTECH', 'MAHSEAMLES', 'MPHASIS', 'POLYCAB', 'SJVN', 'TATAMOTORS', 'TEJASNET', 'TRENT', 'VIPIND', and a few others.

This broad distribution indicates a strategy to mitigate risk by not over-concentrating on any single stock.

D. Return and risk.

- Annualized Return: 40.38%
- Annualized Risk (Standard Deviation): 35.19%
- Sharpe Ratio: 0.977
- Return: The portfolio's return is comparatively high, which suggests a balance between risk management and return potential.
- Risk: The risk level indicates a moderate to high volatility, which is balanced against the objective of minimizing extreme downside risk.
- Sharpe Ratio: A Sharpe Ratio below 1 indicates a less favorable risk-adjusted return compared to some other portfolio construction methods.

E. Conclusion in brief:

The ETL Portfolio is suited for investors who are particularly risk-averse and concerned with potential significant losses in their portfolio. It provides a way to manage and minimize these risks, but it may also limit the portfolio's upside potential. This approach requires a deep understanding of risk management and the ability to model and interpret complex risk scenarios. The ETL Portfolio is particularly suited for investors who are concerned about significant market downturns and wish to minimize their exposure to extreme losses. This approach is more conservative than those focusing solely on return maximization, as it prioritizes protection against the worst-case scenarios.

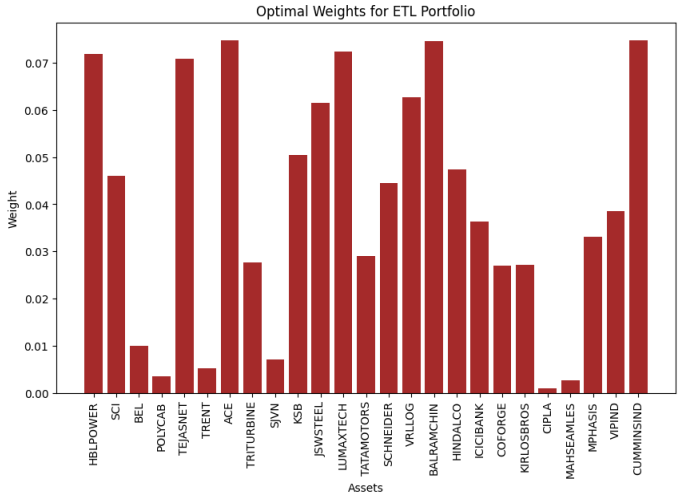

Image 9: Optimal Weights for ETL portfolio

Method 10: Quadratic Utility Portfolio

A. What is the method?

The Quadratic Utility Portfolio method is based on utility theory, where the investor's preferences are quantified using a utility function. This function typically incorporates both the expected return and the risk (variance) of the portfolio. The quadratic utility function is one where the investor's satisfaction (utility) decreases at an increasing rate with increasing risk.

B. What is it doing while portfolio building?

In building a Quadratic Utility Portfolio, the process involves maximizing the utility function, which is a balance between seeking higher returns and minimizing risk. The utility function usually includes a parameter, often denoted as 'Lambda' (λ), which represents the investor's risk aversion – higher values of λ indicate greater risk aversion. The optimization process finds the portfolio composition that maximizes this utility function for the given λ.

C. Weight output and names of the stocks with weight

Diverse allocations with notable weights in 'HBLPOWER', 'BEL', 'POLYCAB', 'TEJASNET', 'TRENT', 'SJVN', 'KSB', 'JSWSTEEL', 'LUMAXTECH', 'TATAMOTORS', 'SCHNEIDER', 'VRLLOG', 'BALRAMCHIN', 'HINDALCO', 'ICICIBANK', 'COFORGE', 'KIRLOSBROS', 'CIPLA', 'MAHSEAMLES', 'MPHASIS', 'VIPIND', 'CUMMINSIND', and others.

This distribution reflects a balance between maximizing returns and minimizing risk as per the investor's utility function.

D. Return and risk.

- Annualized Return: 53.17%
- Annualized Risk (Standard Deviation): 30.53%
- Sharpe Ratio: 1.545 (considering a 6% risk-free rate)
- More on Return, Risk, and Sharpe Ratio:

- Return: The portfolio's return is high, indicating a focus on return maximization within the confines of the utility function.
- Risk: The risk level is significant, which is a consequence of the pursuit of higher returns.
- Sharpe Ratio: A Sharpe Ratio of 1.545 shows a good risk-adjusted performance, suggesting that the portfolio effectively balances risk and return in line with the investor's utility preference.

E. Conclusion in brief

The Quadratic Utility Portfolio is suitable for investors who have specific risk-return preferences and seek a portfolio that aligns with their utility function. It is a more personalized approach, tailoring the portfolio to the individual's risk tolerance and return expectations. The Quadratic Utility Portfolio is suitable for investors who have specific preferences regarding risk and return, as encoded in their utility function. This method is highly customizable, as it can be adjusted to reflect varying degrees of risk tolerance and return objectives. It offers a more sophisticated approach to portfolio construction by considering the investor's subjective preferences, but it also requires a clear understanding of one's risk-return profile and the ability to accurately model it.

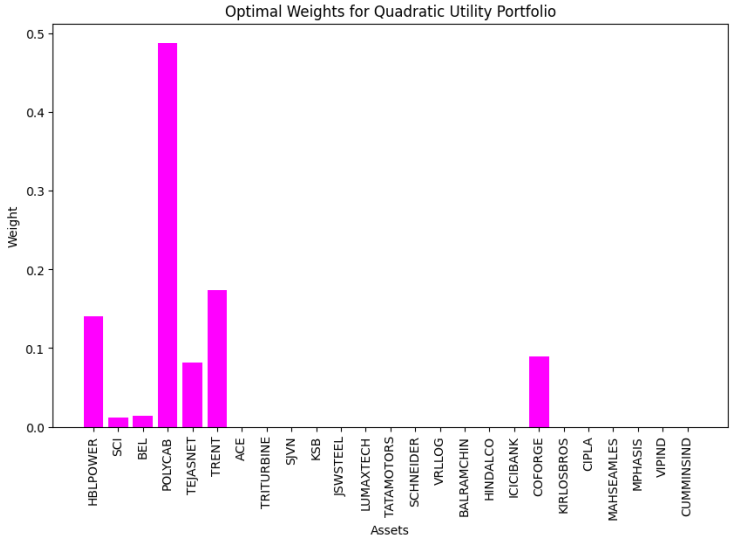

Image 10: Optimal Weights for Quadratic Utility Portfolio

Back testing

A. What is the method?

Back testing is a method used to evaluate the performance of a trading strategy or an investment portfolio by testing it against historical data. It involves simulating how a portfolio would have performed in the past, based on actual historical returns. This method helps in assessing the effectiveness of a strategy or a portfolio's design before applying it in real market conditions.

B. What it is doing while portfolio building

In the back testing process, the portfolio or strategy is applied retrospectively to historical market data to see how it would have performed. This involves using the historical prices of the stocks in the portfolio and applying the

portfolio weights and investment strategy as if they had been in place during the historical period. The performance of the portfolio is then analyzed over this historical period.

C. Back testing Results for the Portfolio Methods:

Method	Annualized Return	Annualized Risk	Sharpe Ratio
Minimum Variance Portfolio	30.41	15.05	1.622
Global Minimum Variance	30.41	15.05	1.622
Tangency Portfolio:	109.57	72.45	1.43
Global Minimum Variance with Target Return	48.1	19.23	2.19
ETL (Expected Tail Loss) Portfolio	50.77	35.39	1.265
Quadratic Utility Portfolio:	63.26	30.32	1.88

Table 2: Comparison of back-tested results

	Portfolio	Annualized Return	Annualized Risk	Sharpe Ratio
3	Global Minimum Variance with Target Return	0.481050	0.192303	2.189513
5	Quadratic Utility Portfolio	0.632623	0.303244	1.888322
0	Minimum Variance	0.304061	0.150513	1.621519
1	Global Minimum Variance	0.304061	0.150513	1.621519
2	Tangency	1.095725	0.724509	1.429556
4	ETL (Expected Tail Loss) Portfolio	0.497038	0.342652	1.275458

Image 11: Output of comparison

D. Analysis of Back testing Results:

- Minimum Variance Portfolios (Standard and Global) showed good risk-adjusted returns with relatively low risk. They are particularly suited for conservative investors.
- Tangency Portfolio exhibited the highest return but also the highest risk, making it suitable for investors with a high-risk tolerance.
- Global Minimum Variance with Target Return achieved an impressive balance, offering high returns with moderate risk, reflected in the highest Sharpe Ratio among all methods.
- ETL Portfolio provided a good balance between return and risk, but with a lower Sharpe Ratio, suggesting it may not be as efficient in risk-adjusted terms compared to others.
- Quadratic Utility Portfolio also performed well in terms of return, but with a comparatively higher risk level.

E. Conclusion in brief

Back testing these portfolios gives valuable insights into their historical performance, which can be a guide for future investment decisions. It's important to note that past performance is not always indicative of future results. Each method has its own set of advantages and is suitable for different types of investors based on their risk tolerance, return expectations, and investment horizon.

F. Portfolio Selection Rationale Based on Sharpe Ratio: We have selected this portfolio based on the highest Sharpe ratio which has given us a balanced profile with wealth generation in mind.

G. Our selected portfolio:

Based on our analysis, the Global Minimum Variance Portfolio with a targeted return of 48% and a risk of 19.23% has the highest Sharpe ratio of 2.1895. This is followed by the Quadratic Utility Portfolio with a return of 63.26% and a risk of 30%, yielding a Sharpe ratio of 1.888. Our decision to focus on these portfolios is based on achieving the best risk-adjusted returns.

H. Weight distribution and portfolio stocks:

CIPLA: 27.2998%
POLYCAB: 23.969%
BEL: 13.205%
TRENT: 15.87%
SJVN: 8.49%
KSB: 0.51%
COFORGE: 1.97%
HBLPOWER: 5.45%
MPHASIS: 3.5%

By focusing on the Sharpe ratio, WE are prioritizing portfolios that provide the best return per unit of risk. The selected portfolios are expected to yield high returns while keeping the volatility (risk) within a reasonable range.

Generative AI Stocks:

Number of Stocks Selected for Building Portfolio:
TCS, INFY, HCLTECH, WIPRO, SUNPHARMA, CIPLA, DRREDDY, HDFCBANK, ICICIBANK, AXISBANK, KOTAKBANK, HINDUNILVR, ITC, ESTLEIND, BRITANNIA, RELIANCE, ONGC, IOC, NTPC, TATASTEEL. HINDALCO, ULTRACEMCO, MARUTI, TATAMOTORS, M&M, HEROMOTOCO, BHARTIARTL, IDEA, DLF, GODREJPROP, PHOENIXLTD, SOBHA, NBCC, GMRINFRA, ADANIPORTS, POWERGRID, NTPC

Performed similar methods for portfolio building and optimization.

	Portfolio	Annualized Return	Annualized Risk	Sharpe Ratio
0	Minimum Variance	0.207811	0.148920	0.992550
1	Global Minimum Variance	0.207811	0.148920	0.992550
3	Global Minimum Variance with Target Return	0.198304	0.157460	0.878345
4	ETL (Expected Tail Loss) Portfolio	0.242531	0.275083	0.663548
5	Quadratic Utility Portfolio	0.167544	0.220654	0.487388
2	Tangency	-0.037206	0.542645	-0.179134

Image 12: Back testing Result for GenAI Stocks:

Based on the Sharpe Ratio we have deployed Minimum Variance portfolio for GenAI stocks.

```
Total Number of Stocks in the Portfolio: 13

POWERGRID: 21.103762%
HCLTECH: 1.207093%
BRITANNIA: 4.891565%
PHOENIXLTD: 0.886211%
INFY: 12.248408%
KOTAKBANK: 1.837862%
HINDUNILVR: 20.986118%
ITC: 7.473454%
IOC: 6.922848%
CIPLA: 4.401484%
SUNPHARMA: 6.125718%
TCS: 9.122720%
BHARTIARTL: 2.792757%
```

Image 13: Selected portfolio for Gen-AI stocks

Performance Analysis and Justification:

We employed two distinct methods for constructing portfolios. Initially, I curated a selection of 48 stocks tailored to the client's preferences and risk profile, performed optimization and back testing resulting in the creation of a portfolio comprised of 9 stocks.

Following a comparable methodology for comparison, we furnished the same client profile to GenAI, requesting stock recommendations. GenAI provided us with a list of 40 stocks, and, akin to the previous process, we conducted optimization and back testing, ultimately resulting in a refined portfolio consisting of 13 stocks.

My Portfolio								
Capital in Rs.	**1000000000**							
			Entry (at Open)				**Exit (at Open)**	
SCRIPT	**Weights**	**Value Based on Weight**	**Stock Price on 14.10.2022**	**QTY Purchased**	**Abs. Price Adjusted Qty**	**Actual Invested Value**	**Stock Price on 01.11.2023**	**Booked Value**
HBLPOWER	5.45	54500000	102.00	534313.725	534314	54500000	294.00	157088235.3
BEL	13.2	132000000	103.00	1281553.4	1281553	132000000	133.75	171407767
POLYCAB	23.97	239700000	2600.00	92192.3077	92192	239700000	4922.10	453779757.7
TRENT	15.86	158600000	1432.00	110754.19	110754	158600000	2163.70	239638840.8
SJVN	8.49	84900000	32.80	2588414.63	2588415	84900000	71.35	184683384.1
KSB	0.51	5100000	2074.65	2458.24597	2458	5100000	3045.00	7485358.976
COFORGE	1.97	19700000	3680.00	5353.26087	5353	19700000	4998.00	26755597.83
CIPLA	27.3	273000000	1115.10	244821.092	244821	273000000	1200.00	293785310.7
MPHASIS	3.25	32500000	2138.00	15201.1225	15201	32500000	2134.60	32448316.18
	100	1000000000				1000000000		1567072569
							Profit/Loss	567072568.6
							Return (%)	56.71

Table 3: Manually curated stock portfolio

Performance Analysis:

1. POLYCAB and CIPLA constitute most of the portfolio with weights of 23.97% and 27.3%, respectively.
2. POLYCAB displayed significant growth, with its stock price rising from ₹2600 to ₹4922.10, resulting in a substantial increase in portfolio value.
3. CIPLA also demonstrated strong performance, advancing from ₹1115.10 to ₹1200, contributing significantly to the overall portfolio growth.
4. POLYCAB's robust performance led to a substantial booked value, contributing significantly to the overall profit.
5. The portfolio's diverse holdings across power (SJVN), technology (COFORGE, MPHASIS), and manufacturing (BEL, KSB) sectors effectively mitigate risk, contributing to a positive overall portfolio return.

Portfolio Return and Profit/Loss Analysis:

The portfolio exhibits a commendable return of 56.71%. The calculated profit/loss amounts to ₹567,072,568.6, indicating a strong positive performance and successful investment decisions within the evaluation period.

GenAI (BARD) Portfolio								
Capital in Rs.	**1000000000**							
			Entry (at Open)				**Exit (at Open)**	
SCRIPT	**Weights**	**Value Based on Weight**	**Stock Price on 14.10.22**	**QTY Purchased**	**Abs. Price Adj. Qty**	**Actual Invested Value**	**Stock Price on 01.11.23**	**Booked Value**
POWERGRID	21.17	211694626.9	163.50	1294768.36	1294768	211694626.9	202.35	261996377.7
HCLTECH	1.26	12565626.92	1005.00	12503.1114	12503	12565626.92	1280.00	16003982.55
BRITTANIA	4.90	48994626.92	3800.10	12892.9836	12893	48994626.92	4442.60	57278368.88
PHOENIXLTD	0.93	9294626.923	1408.75	6597.78309	6598	9294626.923	1820.20	12009284.77
INFY	12.30	122978636.9	1485.00	82813.8969	82814	122978636.9	1373.05	113707621.2
KOTAKBANK	1.89	18894626.92	1828.00	10336.2292	10336	18894626.92	1731.00	17892012.69
HINDUNILVR	21.03	210294626.9	2590.00	81194.8366	81195	210294626.9	2485.00	201769169.1
ITC	7.52	75194626.92	332.30	226285.365	226285	75194626.92	430.00	97302707.12
IOC	6.97	69694626.92	68.00	1024920.98	1024921	69694626.92	92.00	94292730.54
CIPLA	4.45	44509466.92	1115.10	39915.2246	39915	44509466.92	1200.00	47898269.49
SUNPHARMA	6.17	61694626.92	976.00	63211.7079	63212	61694626.92	1092.00	69027185.04
TCS	9.17	91694626.92	3145.00	29155.6842	29156	91694626.92	3355.00	97817320.61
BHARTIARTL	2.25	22494626.92	779.95	28841.1141	28841	22494626.92	903.00	26043526.01
	100	1000000000				1000000000		1113038556
							Profit/Loss	113038555.7
							Return (%)	11.30

Table 4: GenAI Selected Portfolio Stocks

Performance Analysis:

1. The portfolio strategically diversifies across power (POWERGRID), technology (HCLTECH, TCS), FMCG (BRITTANIA, HINDUNILVR), pharmaceuticals (CIPLA, SUNPHARMA), and finance (KOTAKBANK, ITC), effectively mitigating risk.
2. Significant growth is observed in stocks like POWERGRID, HINDUNILVR, and TCS, each making substantial contributions to the portfolio's overall value.
3. Notable stock movements include HCLTECH, BRITTANIA, and INFY, which showcase positive returns during the evaluation period.
4. Stocks such as POWERGRID, HINDUNILVR, and TCS exhibit significant price increases, resulting in substantial booked values and contributing to profit.
5. The diverse set of stocks in the portfolio reflects a mix of growth-oriented and stable performers.

Portfolio Return and Profit/Loss Analysis:

The GenAI-selected portfolio achieves a commendable return of 11.30%. The calculated profit/loss amounts to ₹113,038,555.7, indicating positive performance and successful investment decisions within the evaluation period.

Return Comparison and comments:

The manually curated portfolio achieved a robust return of 56.71%, driven by high-performing stocks like POLYCAB and CIPLA. In contrast, the GenAI-selected portfolio delivered a 11.30% return, showcasing a balanced mix of sectors. Both approaches demonstrate successful investment strategies.

While the manual portfolio emphasized specific high-performing stocks, the GenAI-selected portfolio showcased a balanced sectoral mix, resulting in commendable returns. Both methods exhibit successful strategies, emphasizing the importance of tailored stock selection and diversified sectoral allocation in achieving positive investment outcomes.

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