

Diversification: A Strategic Approach Towards Risk Mitigation of Select Stocks

Dr. T. Vara Lakshmi¹, Maddi Keerthi Reddy²

^{1,2}Institute of Aeronautical Engineering, Dundigal, Hyderabad, Telangana, India.

Emails: mvaralu2011@gmail.com¹, keerthireddy2218@gmail.com²

Abstract

Diversification is a key concept that provides a calculated method for reducing risk and maximizing profits. Investing across a range of assets in various sectors is the fundamental component of diversification, which lowers the risk exposure to an asset. This paper look into the strategic importance of diversification in select stocks for achieving risk-adjusted returns in investment portfolios. It explores the diversification as a risk management tool and analyzes its impact on the performance of portfolios which comprised of carefully chosen stocks from different sectors. The study utilizes empirical data and quantitative methods such as Capital Asset Pricing Model to evaluate the risk-return factors of diversified portfolios. The findings will provide the benefits of diversification in mitigating risk and suggests the investors in the investment decisions.

Keywords: Diversification, Investment, Maximizing Returns, Portfolio, Stocks.

1. Introduction

Spreading investments throughout a variety of assets can help to mitigate the impact of volatility in any one asset on the portfolio as a whole, which is known as diversification. This paper explores the strategic analysis for diversification process [1]. Diversification is justified by the idea of not placing all of your eggs in one basket. Investors aim to build a well-diversified portfolio that can withstand market swings and unanticipated occurrences by spreading their money over a range of stocks from various industries or asset. Choosing the appropriate stock combination is just as important as diversification strategy [2]. To do this, it is necessary to analyze a number of variables, including beta value, expected return, risk of select stock and to build a portfolio that maximizes the returns and minimizes the risk. The procedure necessitates giving individual stock fundamentals, sectoral performance, and market trends considerable thought [3]. This study aims to know the advantages of diversification and offer insights into creating well-diversified portfolios that are in line with investor goals and risk preferences through empirical analysis and quantitative tools like the Capital Asset Pricing Model [4].

1.1. Purpose

The efficient risk management in investment decision-making and offers insightful advice to investors looking to maximize their portfolios. Investors are constantly seeking for ways to reduce risk and increase returns. While diversification is a well-known strategy for achieving this balance, its efficacy has to be empirically proven, particularly with regard to particular equities. Developments in the financial industry, shifts in the geopolitical landscape, and overall economic circumstances all add to the intrinsic volatility of the financial markets. Long-term financial success requires an awareness of how diversification can reduce this volatility. Investing in individual stocks has certain inherent risks, such as company-specific variables including financial performance, industry disruptions, and management changes. Making wise financial decisions requires understanding how diversification might reduce these risks. Carefully weighing asset allocation and risk management strategies is necessary to build a well-diversified portfolio [5].

1.2. Objectives

- To understand the role of diversification strategy in a volatile market.
- To assess risk and return of select stocks.
- To evaluate portfolio performance of select stocks.
- To suggest investors to make wise investment decisions on the basis of select stock performance.

2. Method

This study is based on empirical evidences, purely based on secondary data sources such as BOMBAY STOCK EXCHANGE website. To analyze the data, quantitative research approaches like Capital asset pricing model is used and also risk and return calculated for individual stock performance of different companies from different sectors is evaluated in Table 1.

Table 1 Risk and Return Analysis for Selected Companies of Portfolio “A”

Particulars	TC S	SUN PHARMA	BANK OF BARODA	TATAMOTORS	ADANI POWER
Exp. Return	0.0081	0.028	0.0404	0.0404	0.0796
Weight	0.2	0.2	0.2	0.2	0.2
Standard deviation	0.0579	0.0618	0.1114	0.1139	0.1944
BETA	0.0323	0.2929	0.0241	0.0145	0.0550

PORTFOLIO RETURN = $\sum (\text{EXPECTED RETURN} * \text{WEIGHT})$

Portfolio return = $(0.0081 * 0.2) + (0.028 * 0.2) + (0.0404 * 0.2) + (0.0404 * 0.2) + (0.0796 * 0.2)$.
Portfolio return = $(0.0016) + (0.0055) + (0.0081) + (0.0081) + (0.0159)$

Portfolio return = 0.0392

PORTFOLIO RISK = $\sqrt{\sum (\text{WEIGHT} * \text{STANDARD DEVIATION})^2}$

Portfolio risk = $\sqrt{(0.2 * 0.0579)^2 + (0.2 * 0.0618)^2 + (0.2 * 0.1114)^2 + (0.2 * 0.1139)^2 + (0.2 * 0.1944)^2}$.

Portfolio risk = $\sqrt{(0.0116)^2 + (0.0124)^2 + (0.0223)^2 + (0.0228)^2 + (0.0389)^2}$.

Portfolio risk = $\sqrt{(0.0001) + (0.0002) + (0.0005) + (0.0006) + (0.0015)}$.

Portfolio risk = $\sqrt{0.0028}$

Portfolio risk = 0.0530

Computing the beta of each portfolio by taking a weighted average of the betas of the individual companies in the portfolio.

THE FORMULA FOR PORTFOLIO BETA: $\sum (W_i * \beta_i)$

Where, W_i is the weight of the stock i .

And β_i is the beta value of stock i .

Portfolio beta = $(0.2 * 0.0323) + (0.2 * 0.2929) + (0.2 * 0.0241) + (0.2 * 0.0145) + (0.2 * 0.0550)$

Portfolio beta = $0.00646 + 0.05858 + 0.00482 + 0.0029 + 0.011$

Portfolio beta = 0.08376

Therefore, the portfolio “A” beta value is 0.08376.

Hence it indicates that the portfolio has less risk.

Calculating Expected Portfolio Returns of the portfolio “A”:

By using the CAPM (CAPITAL ASSET PRICING MODEL) formula to calculate the expected return of each portfolio:

$E(R_i) = R_f + (\beta * (R_m - R_f))$

Where, $E(R_i)$ is the expected return of the asset or stock.

R_f is the Risk free rate on returns.

R_m is market return.

β is the beta coefficient of the asset, which measures its volatility relative to the market.

Therefore, $R_f = 7.089$ (which is constant)

$$\text{Portfolio } \beta = 0.08376$$

$$R_m = 0.0122$$

$$E(R_i) = 7.089 + (0.08376 * (0.0122 - 7.089))$$

$$E(R_i) = 7.089 + (0.08376 * (-7.0768))$$

$$E(R_i) = 7.089 + (-0.5937)$$

$$E(R_i) = 6.4953$$

Therefore, the expected return ($E(R_i)$) using the CAPM formula is approximately 6.4953%

Table 2 Risk and Return Analysis for Selected Companies of Portfolio "B"

Particulars	INFOSYS	CIP LA	SBI	MARUTI SUZUKI	GAIL
Exp. Return	0.0082	0.0164	0.0292	0.0141	0.0137
Weight	1/5 = 0.2	1/5 = 0.2	1/5 = 0.2	1/5 = 0.2	1/5 = 0.2
Standard deviation	0.0664	0.0609	0.0972	0.0566	0.0992

$$\text{PORTFOLIO RETURN} = (0.0082 * 0.2) + (0.0164 * 0.2) + (0.0292 * 0.2) + (0.0141 * 0.2) + (0.0137 * 0.2).$$

$$\text{Portfolio return} = (0.0017) + (0.0032) + (0.0058) + (0.0028) + (0.0027).$$

$$\text{Portfolio return} = 0.0163$$

$$\text{PORTFOLIO RISK} = \sqrt{(0.2 * 0.0664) + (0.2 * 0.0609) + (0.2 * 0.0972) + (0.2 * 0.0566) + (0.2 * 0.0992)}.$$

$$\text{Portfolio risk} = \sqrt{(0.0132) + (0.0121) + (0.0194) + (0.0113) + (0.0198)}.$$

$$\text{Portfolio risk} = \sqrt{0.0761}$$

$$\text{Portfolio risk} = 0.2759$$

Computing the beta of each portfolio by taking a weighted average of the betas of the individual companies in the portfolio in Table 2.

$$\text{THE FORMULA FOR PORTFOLIO BETA} = (0.2 * 0.0544) + (0.2 * 0.0454) + (0.2 * 0.0065) + (0.2 * 0.0390) + (0.2 * 0.0588)$$

$$\text{Portfolio beta} = 0.01088 + 0.00908 + 0.0013 + 0.0078 + 0.01176$$

$$\text{Portfolio beta} = 0.04082$$

Therefore, the portfolio "B" beta value is 0.04082. Hence it indicates that the portfolio has less risk.

Calculating Expected Portfolio Returns of the portfolio "B":

$$\text{Therefore, } R_f = 7.089 \text{ (which is constant)}$$

$$\text{Portfolio } \beta = 0.04082$$

$$R_m = 0.0122$$

$$E(R_i) = 7.089 + (0.04082 * (0.0122 - 7.089))$$

$$E(R_i) = 7.089 + (0.04082 * (-7.0768))$$

$$E(R_i) = 7.089 + (-0.2865)$$

$$E(R_i) = 6.8025$$

Therefore, the expected return ($E(R_i)$) using the CAPM formula is approximately 6.8025%.

3. Results and Discussion

3.1. Results

3.1.1. Analysis of Portfolio "A"

The companies in Portfolio "A" are from a variety of industries, including IT (Tata Consultancy Services), bank (Bank of Baroda), pharmaceuticals (Sun Pharmaceutical Industries Ltd.), automobile (Tata Motors), and energy (Adani Power Ltd). The 3.92% predicted return for the portfolio points to a modest degree of possible benefit. The standard deviation of the portfolio's risk, however, is comparatively low at 5.31%, suggesting a steady and less erratic mix of investments. And the beta value of portfolio "A" is 6.4953, which indicates that the risk level of the portfolio is high.

3.1.2. Analysis of Portfolio "B"

Stocks from the IT (Infosys Ltd.), pharmaceuticals (Cipla Ltd.), banking (SBI), automotive (Maruti Suzuki India Ltd.), and energy (GAIL Ltd.) sectors make up Portfolio "B". Compared to Portfolio "A," the portfolio's predicted return is lower at 1.64%, suggesting possible smaller gains. But with a standard deviation of 27.60%, Portfolio "B" has a substantially higher risk, indicating more volatility

and unpredictability in returns. And the beta value of portfolio “B” is 6.8025, which indicates that the risk level of the portfolio is high.

3.2. Discussion

- Both portfolios are diversified but portfolio “A” performed better than the portfolio “B”.
- (Portfolio “A” diversified among TCS, SUN PHARMA, BANK OF BARODA, TATA MOTORS, and ADANI POWER.)
- (Portfolio “B” diversified among INFOSYS, CIPLA, SBI, MARUTI SUZUKI, and GAIL.)
- There is a significant impact of macroeconomic factors on stock returns.
- Higher the risk indicates the higher returns.
- It is found that there is a significant difference among the select stocks risk and return factors.
- By using Capital Asset Pricing Model, the expected return of portfolio “B” is higher than the portfolio “A” and also the risk of portfolio “B” is higher than the portfolio “A”.

Conclusion

The results showed that Portfolio "A" and Portfolio "B" had different risk-return profiles. With a comparatively low standard deviation of 5.31% and a higher projected return of 3.92%, Portfolio "A" showed a well-balanced mix of assets across industries, including IT, pharmaceuticals, banking, automotive, and energy. Given that Portfolio "B" built by equities from the IT, pharmaceutical, banking, automotive, and energy sectors, it has a lower expected return of 1.64% but a greater standard deviation of 27.60%, indicating increased volatility and risk exposure. When comparing the two portfolios, Portfolio "A" showed itself to be the more reliable and steady choice, making it more enticing to investors looking for a risk-return balance. Conversely, Portfolio "B" can draw in investors who are willing to take on more risk in exchange for possibly larger profits in spite of the heightened volatility.

Reference

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