

A Project Report on Risk Return Portfolio Analysis with Reference to Securities Market

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Abstract-Successful investment requires a careful assessment of the investment's potential returns and its risk of loss. A firm's risk and expected returns directly affect its share price. In real-world situations, the risk of any single investment would not be viewed independently of other assets. New investment must be considered in light of their impact on the risk and return of the portfolio of assets. In traditional financial analysis, investment management tools allow investors to evaluate the return and risk of individual investments and portfolios. Usually, higher the risk, higher the returns and lower the risk, lower the returns. However, a general understanding of this phenomenon is not sufficient to make appropriate decisions relating to investments. A more quantifiable analysis is required to understand the investment. Thus the following study discusses the analysis of portfolio risk and returns.

Keywords-risk, return, investments, portfolio, profits

I.INTRODUCTION

Portfolio Analysis is the process of reviewing or assessing the elements of the entire portfolio of securities or products in a business. The review is done for careful analysis of risk and return. Portfolio Analysis conducted at regular intervals helps the investor to make changes in the portfolio allocation and change them according to the changing market and different circumstances. The analysis also helps in proper resource/asset allocation to different elements in the portfolio.

Portfolio construction refers to a process of selecting the optimum mix of securities for the purpose of achieving maximum returns by taking minimum risk.

A portfolio is a combination of various securities such as stocks, bonds and money market instruments. Diversification of investments helps in spreading risk over many assets; hence one must diversify securities in the portfolio to create an optimum portfolio and ensure good returns on portfolio.

There are two approaches to portfolio construction:

- Traditional Approach of Portfolio Construction
- Modern Approach of Portfolio Construction

1. Need of the study:

All types of investors need an investment portfolio to optimally invest. It can be constructed using both short-term and long-term investment choices. Like mentioned earlier, many people do not have expertise and knowledge to invest. Building an optimal investment portfolio helps investors to minimise risk and maximise returns. Asset management companies (AMCs) enable investors to invest

in the best investment opportunities. They customise an investment plan on the basis of specific requirements, risk appetite and return expectations of customers. The customisation and continuous updates of portfolios assist investors to have a complete understanding of how and where their money is invested.

2. Scope of the study:

The study contains the calculation of risk return along with the expected risk and returns by obtaining the covariance between different companies in order to find out at what percentages, the funds can be invested using portfolio to maximize the returns.

3. Objectives:

- To understand the portfolio construction and Markowitz efficient portfolio.
- To evaluate the risk and return of the securities along with the expected risk and return.
- To understand the process of analysis to get maximum returns.

4. Research Methodology:

Research methodology the process of collecting the data from the secondary source and analysing it through interpreting the data using excel and concluding the findings from the analysis. The methodology used in the study for the completion of the project and the fulfillment of the project market prices of the companies have been taken for 3 months.

5. Sources of the data:

The data was collected from the secondary sources like stock market and financial data websites.

6. Limitations of the study:

- The study explains how to construct the portfolio and analyse expected risk and returns.
- Construction of Portfolio is restricted to two companies based on Markowitz model.
- Detailed study of the topic was not possible due to limited size of the project.

II. INTERPRETATION

1. The time allocated to the project was only 45 days.

Table 1. Showing the calculated risk and return of all the 3 different industries.

Industry	Company	Mean	Standard Deviation
Automotive	Telsa Inc.	0.82%	12.04%
	Toyota	-0.49%	3.76%
Tele Communication	Msi	-2.28%	6.04%
	Tata	4.88%	10.23%
Banking	Hdfc	-1.85%	4.89%
	Sbi	0.53%	9.42%

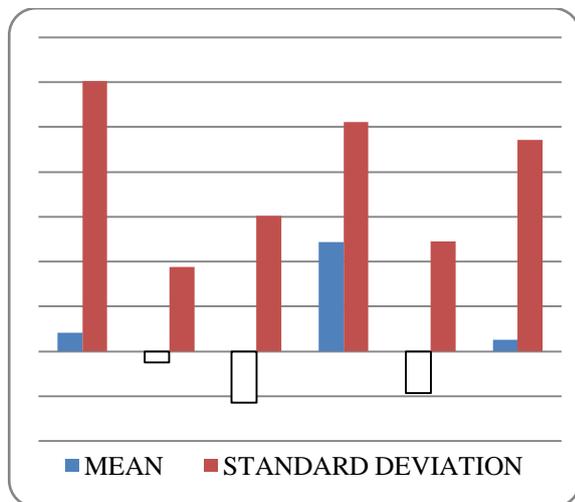


Fig 1. Graph showing the calculated risk and return of all the 3 different industries.

1.1 Interpretation:

According to the average returns and standard deviation of all the 6 different companies telsa inc., tata, and sbi has the positive returns which indicates that the investment would be made on these companies. It also indicates the higher risk and higher returns.

2. Calculation of Portfolio Risk and Returns:

Based on the efficient portfolio frontier the weights of investment is allocated to obtain maximum returns and minimize the risk.

Table 2. Showing the calculated minimum risk portfolio.

Companies	Security 1	Security 2
Telsa & Toyota	90%	10%
Msi & Tata	10%	90%
HDFC & SBI	10%	90%

3. Calculation of Covariance and Correlation:

Covariance=

$$\frac{(Return_{ABC} - Average_{ABC}) * (Return_{XYZ} - Average_{XYZ})}{n-1}$$

$$Correlation(\square) = \frac{cov(Security\ 1, security\ 2)}{sd\ of\ security\ 1 * sd\ of\ security\ 2}$$

Table 3. Showing the calculated covariance and correlation.

Companies	Covariance	correlation
Telsa & Toyota	0.0042	0.097
Msi & Tata	0.0012	0.020
HDFC & SBI	0.0023	0.4998

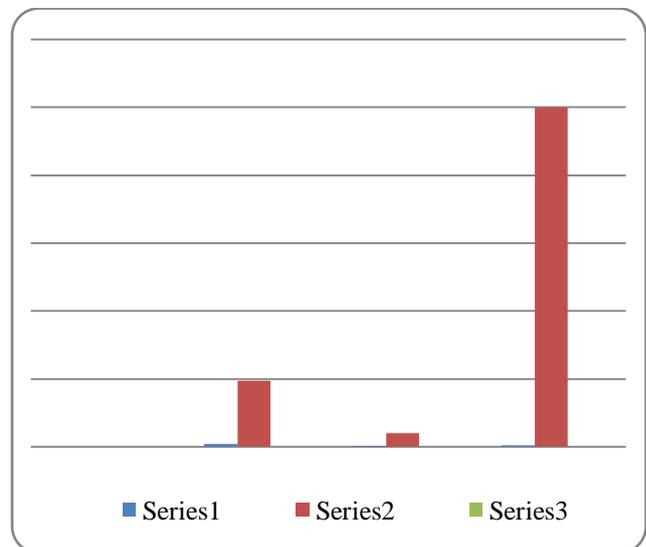


Fig 2. Graph showing the calculated covariance and correlation.

3.1 Interpretation:

According to the above graph all the companies have positive correlation which indicates that these companies are facing no risk.

4. Calculation of Portfolio Risk and Portfolio Returns:

$$4.1\ Portfolio\ risk = r_1 + r_2$$

4.2 Portfolio return =

$$\sqrt{\sigma_1^2 * x_1^2 + \sigma_2^2 * x_2^2 + 2r_{12}\sigma_1\sigma_2 x_1 x_2}$$

Where,

σ_1 = sd of security 1

σ_2 = sd of security 2

r_{12} = correlation coefficient between security 1 and 2

x_1 = proportion of investment in security 1

x_2 = proportion of investment in security 2

Table 4. Showing the calculated Portfolio risk and return.

Companies	Expected Return	Expected Risk
Automotive Telsa & Toyota	0.69%	10.9%
Tele-Communication Msi & Tata	4.16%	9.24%
Banking Hdfc & Sbi	0.30%	8.73%

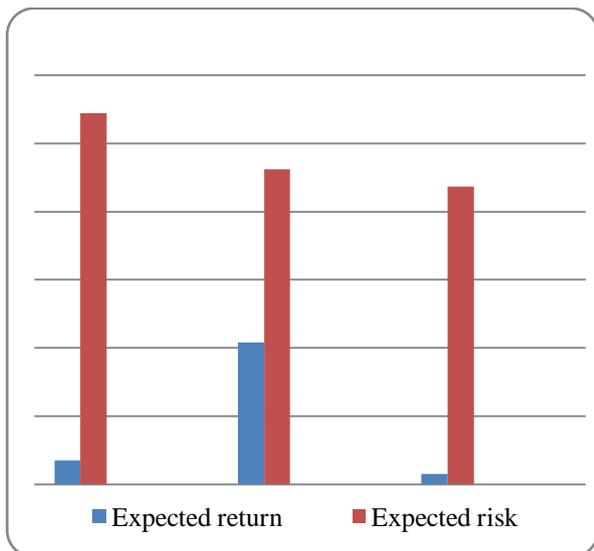


Fig 3. Graph showing the calculated Portfolio risk and return.

Interpretation:

From the above data the best portfolio is of telecommunication industry as the risk return are moderate comparing to the other industries with respect of risk and returns expected return is high with the portfolio combination of Msi & Tata.

III. FINDINGS OF THE STUDY

The main objective of the study is to understand how the portfolio is processed and obtain the maximum returns. The analytical part of the study reveals the following interpretations:

- According to the average returns and standard deviation of all the 6 different companies telsa inc., tata, and sbi has the positive returns which indicates that the investment would be made on these companies. It also indicates the higher risk gives the higher returns.
- According to the analytics of correlation factor all the 6 companies have positive correlation which indicates that these companies are facing no risk.

From the analytics done, best portfolio is of tele communication industry. The risk is high at automotive industry but there are no high returns as the variance between the two companies is large. The risk at tele communication is moderate compared to other industries but the return are maximum and profitable.

IV. SUGGESTIONS OF THE STUDY

- Select your investments on economic grounds. Public knowledge is no advantage.
- Buy stocks in companies with potential for surprises.
- Don't put your trust in only one investment.
- Listen to rumors and tips, check for yourself.
- The investor must select the right advisory body which has sound knowledge about the product which lessen the risk in the long term.
- Professionalized advisory is the most important feature to the investors. Professionalized research analysis which will be helpful for reducing any kind of risk to overcome.

V. CONCLUSION OF THE STUDY

From the overall study the portfolio performance is good at telecommunication industry with the highest portfolio return of 4.16% and 9.24% of portfolio return which concludes that this the best portfolio combination among others to invest and obtain the maximum returns.

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