

“A Study on Importance of Portfolio - Combination of Risky Assets And Risk Free Assets”

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Abstract: This paper titled as ‘A Study on Importance of Portfolio - Combination of Risky Assets and Risk Free Assets’ is a comparative study of various companies from various sectors. Companies from different sectors are taken and the risk and return of the companies are compared to one of their competitors from the same sector. The company which gives better returns for lower risk from the two is selected and it is declared as the company which is most suitable for investments. Investing in equities needs time, knowledge and constant monitoring of the market. For those who need an expert to help to manage their investments, Portfolio Management Services (PMS) comes as an answer. The business of portfolio management has never been an easy one.

I. Introduction

Portfolio is a collection of asset. The asset may be physical or financial like Shares Bonds, Debentures, and Preference Shares etc. The individual investor or a fund manager would not like to put all his money in the shares of one company, for that would amount to great risk. Main objective is to maximize portfolio return and at the same time minimizing the portfolio risk by diversification. Portfolio management is the management of various financial assets, which comprise the portfolio. According to Securities and Exchange Board of India (Portfolio manager) Rules, 1993; —portfolio means the total holding of securities belonging to any person. Designing portfolios to suit investor requirement often involves making several projections regarding the future, based on the current information. When the actual situation is at variance from the projections portfolio composition needs to be changed. One of the key inputs in portfolio building is the risk bearing ability of the investor. Portfolio management can be having institutional, for example, Unit Trust, Mutual Funds, Pension Provident and Insurance Funds,

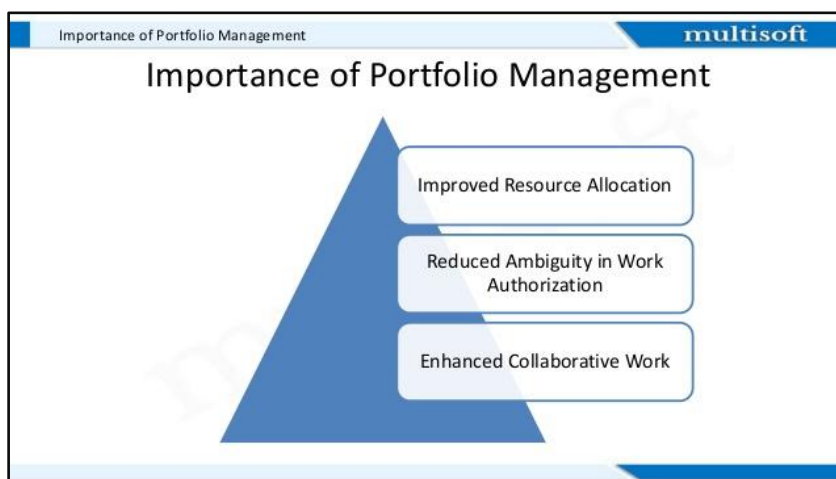
Investment Companies and non-Investment Companies. Portfolio management and investment decision as a concept came to be familiar with the conclusion of second world war when thing can be in the stock market can be liberally ruined the fortune of individual, companies even government’s it was then discovered that the investing in various scripts instead of putting all the money in a single securities yielded weather return with low risk percentage, it goes to the credit of “HARRY MARKOWITZ”, 1991 noble laurelled to have pioneered the concept of combining high yielded securities with these low but steady yielding securities to achieve optimum correlation coefficient of shares.

Portfolio management refers to the management of portfolio’s for other by professional investment managers it refers to the management of an individual investor’s portfolio by professionally qualified person ranging from merchant banker to specified portfolio company.

II. Importance of Portfolio Management

Portfolio management or investment helps investors in effective and efficient management of their investment to achieve this goal. The rapid growth of capital markets in India has opened up new investment avenues for investors. The following are the importance of portfolio management:-

1. In the past one-decade, significant changes have taken place in the investment climate in India.
2. Portfolio management is becoming a rapidly growing area serving a broad array of investors- both individual and institutional-with investment portfolios ranging in asset size from thousands to cores of rupees.
3. It is becoming important because of: Emergence of institutional investing on behalf of individuals. A number of financial institutions, mutual funds, and other agencies are undertaking the task of investing money of small investors, on their behalf



4. Increased market volatility- risk and return parameters of financial assets are continuously changing because of frequent changes in governments industrial and fiscal policies, economic uncertainty and instability.
5. Professionalization of the field and increase use of analytical methods (e.g. quantitative techniques) in the investment decision-making, and
6. Larger direct and indirect costs of errors or shortfalls in meeting portfolio objectives- increased competition and greater scrutiny by investors.

III. Literature Review

The process of choosing a portfolio may be divided into two stages. The first stage starts with observation and experience and ends with beliefs about the future performances of available securities. The second stage starts with the relevant beliefs about future performances and ends with the choice of portfolio. This paper is concerned with the second stage. There is a rule which suggests both that the investor should diversify and that he should maximize expected return. The rule states that the investor does (or should) diversify his funds among all those securities which give maximum expected return. The law of large numbers will insure that the actual yield of the portfolio will be almost the same as the expected yield. This rule is a special case of the expected returns- variance of returns rule. It accepts that there is a portfolio which gives both maximum expected return and minimum variance and it acclaims this portfolio to the investor (Markowitz, 1952). An important topic in international economics worries the size of benefits from diversifying over securities in foreign countries, especially securities in emerging markets. In theory, if foreign securities do not perfectly correlate with U.S. securities, domestic investors gain from international diversification. However, the scale of the diversification benefits in general depends on various portfolio constraints, such as investors' ability to take short positions. The existence of substantial diversification benefits of investing in emerging markets subject to short-sale constraints will highlight the importance of international diversification. Ignoring short-sale constraints, many studies have recognized low correlation across international markets and extensive diversification benefits (Li, K., Sarkar, A., & Wang, Z., 2003).

The authors in this paper examined whether the application of mean-variance framework on portfolio manager allocation offers any out-of-sample benefits compared to a inexperienced strategy of equal weighting. Based on the high net worth of investors we apply the wide variety of methodologies to evaluate the input parameters of widely moving average. While it is important for a high-net-worth (HNW) investor (the principal) to figure out how to construct a contract with the portfolio manager (the agent) in a way that commits the portfolio manager to act in the best interests of the investor, it is of equal importance that the investor knows how to achieve an optimal allocation of portfolio managers. In this study, we report this gap in the academic literature, and by using actual data on HNW investor mandates, estimate whether the HNW investor is better off by using the mean-variance framework compared to a naïve strategy of equal weighting in the allocation of portfolio managers (Christensen, Vangsgaard and Gamskjaer, 2015).

IV. Need Of The Study

1. The main aim of this study is to understand the portfolio management and its importance and about risk free asset and risky asset. Also to understand the effect while investing in single security and investing in more than one security i.e. diversification.
2. To identify how the investment made in different securities minimizes the risk and maximize the returns.

3. To identify how the investment made in different securities help in minimizing the risk and maximize the returns and also to test output of combination of risky asset and risk free asset.
4. To get the overall knowledge of securities and investments.

V. Objectives

1. To calculate the return of various companies.
2. To calculate the risk of various companies.
3. To calculate the portfolio return & risk of different portfolios of various companies.
4. To calculate minimum variance portfolio.
5. To calculate the risk and return on combination of risky asset.
6. To evaluate the performance of various portfolios.
7. To understand, analyze and select the best portfolio.

VI. Scope Of The Study

The study covers the calculation of correlations between the different securities in order to find out at what percentage funds should be invested among the companies in the portfolio. Also the study includes the calculation of individual Standard Deviation of securities and ends at the calculation of weights of individual securities involved in the portfolio. These percentages help in allocating the funds available for investment based on risky portfolios.

VII. Research Methodology

Research design or research methodology is the procedure of collecting analyzing and interpreting the data to diagnosis the problem and react to the opportunity in such a way where the costs can be minimized and the desired level of accuracy can be achieved to arrive at a particular conclusion.

The methodology used in the study for the completion of the project and the fulfillment of the project objectives, is as follows:

- Research type: - Empirical (based on experimentation or observation, i.e. Evidence)
- Sample size: - 4 companies under large caps from different sectors is selected which are listed on BSE
- Data type: - Secondary data
- Research tools used
 1. Arithmetic average or mean
 2. $\text{Return} = (\text{Current price} - \text{Previous price}) / \text{Previous price} * 100$
 3. Standard deviation
 4. Covariance and Variance
 5. Correlation
 6. Minimum Variance Portfolio.

VIII. Data Collection Method

The entire data were collected from the secondary source i.e. from BSE website under Historical Data. Internet is main source of secondary sources of date collection used. The following three companies’ data was collected:

- 1) Ambuja Cements Limited
- 2) Bharti Airtel Limited
- 3) Infosys Limited
- 4) Tata Motors

IX. Data Analysis And Interpretation

Table #1: Showing assumed weights, portfolio mean, variance and standard deviation of Ambuja Cements and Bharti Airtel:

Ambuja Cements(W1)	Bharti Airtel(W2)	Portfolio Mean / Returns	Portfolio Variance	Standard Deviation/Risk
0%	100%	0.000321	0.000296299	0.017213
10%	90%	0.000305	0.000252286	0.015884
20%	80%	0.000289	0.000216835	0.014725
30%	70%	0.000273	0.000189947	0.013782
40%	60%	0.000257	0.00017162	0.013100
50%	50%	0.000241	0.000161854	0.012722
60%	40%	0.000231	0.000160651	0.012675
70%	30%	0.000209	0.000168009	0.012962

80%	20%	0.000193	0.000183929	0.013562
90%	10%	0.000177	0.000208411	0.014436
100%	0%	0.000161	0.000241455	0.015539

In the above table no.1 we can observe that when risk is increasing from the 0.012722 till 0.017213 simultaneously returns are also increasing from 0.000241 to 0.000321 which shows efficient portfolio from 0.012675 however risk is in increasing trend it is observed that returns are not observed to be increasing, hence from that point we call it as inefficient portfolio. It is also observed that at risk is minimum of 0.012675 at an optimal combination of 60%, 40% combination. Same efficient and inefficient frontier is presented in graphical by taking portfolio returns on y – axis and risk on x axis. Therefore, when the weights are (60%-40%) it is the best point to invest. This point represents the lowest possible risk.

Table # 2: Showing assumed weights, portfolio mean, variance and standard deviation of Infosys and Tata Motors:

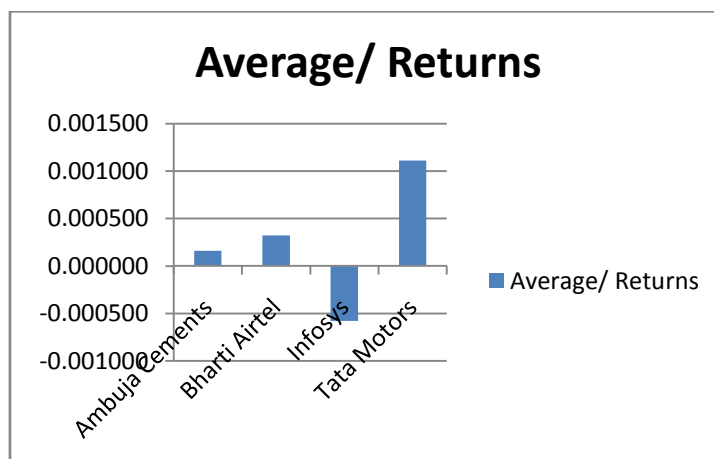
Infosys(W1)	Tata Motors (W2)	Portfolio mean/Return	Portfolio Variance	Standard Deviation/ Risk
10%	90%	0.000941	0.000417	0.020419
20%	80%	0.000772	0.000334	0.018283
30%	70%	0.000603	0.000266	0.016308
40%	60%	0.000434	0.000212	0.014559
50%	50%	0.000266	0.000172	0.013129
60%	40%	0.000097	0.000147	0.012129
70%	30%	-0.000072	0.000136	0.011671
80%	20%	-0.000241	0.000140	0.011818
90%	10%	-0.000410	0.000157	0.012550
100%	0%	-0.000579	0.000190	0.013772

In the above table no.2 we can observe that when risk is increasing from the 0.012129 till 0.020419 simultaneously return is also increasing from 0.000097 till 0.000941 which shows efficient portfolio from 0.011671 though risk is in increasing trend it is observed that returns are not observed to be increasing, hence from that point we call it as inefficient portfolio. It is also observed that at risk is minimum of 0.011671 at an optimal combination of 70%, 30% combination. Same efficient and inefficient frontier is presented in graphical by taking portfolio returns on y – axis and risk on x axis. Therefore, when the weights are (70%-30%) it is the best point to invest. This point represents the lowest possible risk.

Table #3: Showing average returns of various individual stocks or companies of different sector.

Average Sheet	Average/ Returns
Companies	
Ambuja Cements	0.000161
Bharti Airtel	0.000321
Infosys	-0.000579
Tata Motors	0.001110

Graph # 1: Showing the returns of various individual stocks or companies

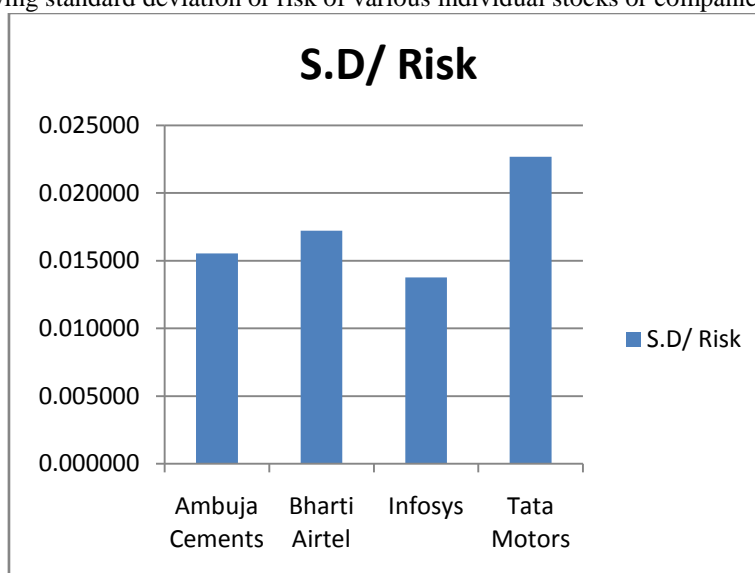


The above graph no.1 and table no. 3 show the average/returns of various individual stocks or companies. Out of four companies Tata Motors is having highest returns of 0.001100 and Infosys is having the lowest returns of minus (-0.000579) which is a negative return.

Table #4: Showing standard deviation or risk of various companies of different sectors.

Standard Deviation Sheet	
Companies/Stocks	S.D/ Risk
Ambuja Cements	0.015539
Bharti Airtel	0.017213
Infosys	0.013772
Tata Motors	0.022671

Graph No. 2: Showing standard deviation or risk of various individual stocks or companies



The above graph no. 2 and a table no. 4 show the standard deviation/risk of various individual stocks or companies. Out of four companies Tata Motors is having the highest risk/S.D. of 0.022671 and Infosys is having the lowest risk of 0.013772

X. Findings

As the study on importance of portfolio and risk free asset and risky asset makes me to understand and learn many things. The findings of the study are:

1. Among the individual stock calculation, Tata Motors is better stock with return of 0.001100 which is 0.11% and risk of 0.022671 which is 2.27%.
2. Bharti Airtel is also good in terms of returns, which is 0.032% with risk of 1.721%.
3. Ambuja Cements is also good enough in risk adjusted return with a return of 0.016% and risk of 1.554%.
4. A combination of Infosys and Tata Motors is the highest return combination with a return of 0.0266% but risk is 1.313%. The correlation and covariance of Infosys and Tata Motors are -0.02286 and -0.00000711 respectively.
5. The combination of Ambuja cements and Bharti Airtel is having a better correlation and covariance of 0.20583 and 0.0000548 which is positive.
6. The minimum variance portfolio of Ambuja Cements and Bharti Airtel is 56%, which means the investor need to invest 56% of his investment in Ambuja Cements and 44% in Bharti Airtel with a risk of 0.012667 and a return of 0.000231 which are in positive.

7. The minimum variance portfolio of Infosys and Tata Motors is 73%, which means the investor need to invest 73% of his investment in Infosys and 27% in Tata Motors with a risk of 0.011650 and a return of -0.000116 which are in negative.
8. The risky asset in Ambuja Cements and Airtel is having a return of 0.000231 and a risk of 0.012667 with a combined correlation of 0.20583 and it also has a risk free point where risk is 0.00 and return of 0.000100 and risky asset at a point where risk is 0.012700 and return of 0.000231.
9. The risky asset in Infosys and Tata Motors is having a return of -0.000116 with a risk of 0.011650 where the combined correlation is -0.0228648 and it also has a risk free point where risk is 0.00 and return is -0.000500 and a risky asset point where risk is 0.011650 a with a return of -0.000166.

XI. Recommendations

1. Investors should plan for investment on advice of experts market being volatile.
2. Before investment investor should know importance of portfolio for this market awareness about performance of stock is required.
3. Investor should have knowledge about performance of stock like daily returns, risk they should be ready to face, what should be the optimal combination which gives maximum returns with minimum risk.
4. He should also have knowledge about benefits of combination of risk free and risky assets.

XII. Conclusion

On behave of the portfolio importance study we can conclude that:

The aim and objective of the study has achieved. Investors with low risk averse can go for investing in Infosys Company as the risk is very low. Investors with moderate risk can go for investing in a combination of Ambuja Cements and Bharti Airtel. Investors who are aggressive can go for investing in the combination of Infosys and Tata Motors and also in Ambuja and Bharti Airtel and finally investors can get benefit by investing in selected scripts of industries.

While looking on to the Minimum Variance Portfolio we can conclude that most of the Investors will prefer to invest in Ambuja Cements and Bharti Airtel because the percentage of investment is less and the risk and return is also more and positive when compare to the Infosys and Tata Motors where the percentage of investment is high and the risk and return is less and negative. So, mostly investors want to invest less and get a higher return which is possible in Ambuja and Bharti Airtel.

XIII. Limitations

The sample size is limited by only four stocks from different sectors. While constructing portfolios the stocks are given equal weightage, return & risk will change if weightage is different. The data was collected from the time horizon of one financial year starting from April 2016 to March 2017. The data has been collected from secondary sources only; relevance of information may not fully trustworthy.

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