

A STUDY ON PORTFOLIO ANALYSIS ON SELECTED STOCKS OF NSE IN INDIA

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OF NSE IN INDIA**

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P.VISWANATHA REDDY

Preface

In the current scenario, investing in stock markets is a major challenge even for seasonal professionals. And it is no disclosure that security Analysis and Portfolio Management is a tough subject for many students. The project offers conceptual clarity, in depth coverage and the Indian context with its emphasis on a student –friendly approach and an effort to demystifying the tough subject. This is project which explains the basic principles of investment in securities, which is a topic of great interest today. The project focuses on the following areas:

- To study the selected securities risks & returns
- To know wisely alternative investments between the securities
- To understand the different securities mix in a portfolio selection
- To study on relationship between risk and return analysis of selected stocks on NSE

Dr. NALLA BALA KALYAN

CONTENTS

S. No.	Description	Page No.
1.	Investment	1
1.1	Characteristics of Investment	1
1.1.1	Investors Preference in Stock Market	3
1.2	Security Analysis	4
1.3	Portfolio Management	7
1.3.1	Traditional Portfolio Analysis	10
1.3.2	Features of Portfolio Management	10
1.3.3	Goals of Portfolio Management	10
1.3.4	Criteria for Portfolio Decisions	11
2.1	Review of Literature	13
2.2	Need for the Study	18
2.3	Scope of the Study	19
2.4	Objectives of the Study	19
2.5	Research Methodology	19
3	Historical Evolution of Indian Stock Market	20
3.1	History of Indian Capital Markets	23
3.1.1	Reforms in Indian Securities Markets	24
3.2	National Stock Exchange	25
3.2.1	Average Daily Turnover (INR Crores)	28
3.2.2	Client Category Participation –Per centage Contribution	30
4	Data Analysis and Interpretation	31
4.1	Calculations of Average Returns of the Companies	31
4.2	Calculation of Risk	38
4.3	Risk and Returns	45
4.4	Calculations of Correlation	46
4.5	Portfolio Weights	48
4.6	Calculation of Portfolio Risk	49
4.7	Calculations of Portfolio Returns	52
4.8	Risk and Return of Portfolios	55
5	Findings & Suggestions	58
5.1	Findings	58
5.2	Suggestions	61
5.3	Conclusion	61
6	References	63

Chapter 1

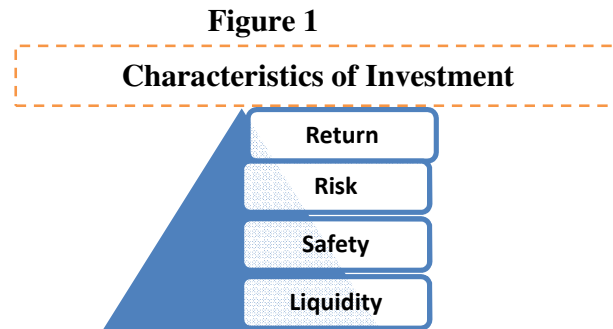
1. Investment

The term ‘investing’ could be associated with the different activities, but the common target in these activities is to “employ” the money (funds) during the time period seeking to enhance the investor’s wealth. Funds to be invested come from assets already owned, borrowed money and savings. By foregoing consumption today and investing their savings, investors expect to enhance their future consumption possibilities by increasing their wealth. But it is useful to make a distinction between real and financial investments. Real investments generally involve some kind of tangible asset, such as land, machinery, factories, etc. Financial investments involve contracts in paper or electronic form such as stocks, bonds, etc.

Investment is parting with one’s fund, to be used by another party, user of fund, for productive activity. It can mean giving an advance or loan or contributing to the equity (ownership capital) or debt capital of a corporate or non-corporate business unit. Generalized, investment means conversion of cash or money into a monetary asset or a claim on future money for a return. This return is for saving, parting with saving or liquidity and lastly for taking a risk involving the uncertainty about the actual return, time of waiting and cost of getting back funds, safety of funds, and risk of the variability of the return. Traditional investment analysis, when applied to securities, emphasizes the projection of prices and dividends. That is, the potential price of a firm’s common stock and the future dividend stream are forecasted, and then discounted back to the present. This intrinsic value is then compared with the securities Current market price. If the current market price is below the intrinsic value, a purchase is recommended, and if vice versa is the case sale is recommended. Although modern security analysis is deeply rooted in the fundamental concepts just outlined, the emphasis has shifted. The more modern approach to common stock analysis emphasizes return and risk estimates rather than mere price and dividend estimates.

1.1 Characteristics of Investment

The characteristics of investment can be understood in terms of as return, risk, safety, liquidity etc.



- i) **Return:** All investments are characterized by the expectation of a return. In fact, investments are made with the primary objective of deriving return. The expectation of a return may be from income (yield) as well as through capital appreciation. Capital appreciation is the difference between the sale price and the purchase price. The expectation of return from an investment depends upon the nature of investment, maturity period, market demand and so on.
- ii) **Risk:** Risk is inherent in any investment. Risk may relate to loss of capital, delay in repayment of capital, nonpayment of return or variability of returns. The risk of an investment is determined by the investments, maturity period, repayment capacity, nature of return commitment and so on. Risk and expected return of an investment are related. Theoretically, the higher the risk, higher is the expected return. The higher return is a compensation expected by investors for their willingness to bear the higher risk.

The essence of risk in an investment is the variation in its returns. This variation in returns is caused by a number of factors. These factors which produce variations in the returns from an investment constitute the elements of risk. Let us consider the risk in holding securities, such as shares debentures, etc. The elements of risk may be broadly classified into two groups. The first group comprises factors that are external to a company and affect a large number of securities simultaneously. These are mostly uncontrollable in nature. The second group includes those factors which are internal to companies and affect only those particular companies. These are controllable to a great extent. The risk produced by the factors is known as systematic risk, and that produced by the second group is known as unsystematic risk. The total variability in returns of a security represents the total risk of that security. Systematic risk and unsystematic risk are the two components of risk. Thus,

$$\text{Total risk} = \text{Systematic risk} + \text{Unsystematic risk}$$

A person making an investment expects to get some return from the investment in future. But, as future is uncertain, so is the future expected return. It is this uncertainty associated with the returns from

an investment that introduces risk into an investment we can distinguish between the expected return and the realized return from an investment. The expected return is the uncertain future return that an investor expects to get from his investment, The realized return, on the contrary, is the certain return that an investor has actually obtained from his investment at the end of the holding period. The investor makes the investment decision based on the expected return from the investment. This possibility of variation of the actual return from the expected return is termed risk. Where realizations correspond to expectations exactly, there would be no risk. Risk arises where there is a possibility of variation between expectations and realizations with regard to an investment. Risk can be defined in terms of variability of returns. "Risk is the potential for variability in returns." An investment whose returns are fairly stable is considered to be a low-risk investment, whereas an investment whose returns fluctuate significantly is considered to be a high-risk investment. Equity shares whose returns are likely to fluctuate widely are considered risky investment. Government securities whose returns are fairly stable are considered to possess low risk.

- iii) **Safety:** The safety of investment is identified with the certainty of return of capital without loss of time or money. Safety is another feature that an investor desires from investments. Every investor expects to get back the initial capital on maturity without loss and without delay.
- iv) **Liquidity:** An investment that is easily saleable without loss of money or time is said to be liquid. A well developed secondary market for security increases the liquidity of the investment. An investor tends to prefer maximization of expected return, minimization of risk, safety of funds and liquidity of investment.

1.1.1 Investors Preference in Stock Market

Though most of the investors want a safe and secure return on their investment, they also look for maximum returns. The pure debt investment brings an average return with lesser liquidity as compared to the equity investments. So in search of higher return (keeping the risk factor in mind) investors are heading towards equity investment. On analysis of recent year investment trends, FII, entrance and operations in Indian stock markets, it has been found that equity is gaining ground in India. The main attraction of equity among investors are-

1. Higher return (especially in case of capitalization and dividend if any)
2. Higher Liquidity
3. Option to start trading with small investments

4. Daily trading (as it increase chances of more “buy or sell” transaction which leads to fast profits/loss generation)

With these benefits, equity has a risk factor of poor dividend payout (as against fixed “interest” income in debt) or the negligible capitalization. Moreover, sometime the investment in equity trading goes to bottom level and nothing is expected in return. Still, the attraction of equity remains high in investors mind become of “return & liquidity factor. And this perception has leaded the investment trends from debt to equity and portfolio investment.

1.2 Security Analysis

The act of investing is commitment of money in expectation of something more in return. Generally, the primary concern of an investor is to minimize the return. An investment is, a monetary asset purchased with the idea that the asset will provide income in the future or appreciate and be sold at a higher price, Investing usually involves the creation of wealth. Each investor should diversify his portfolio in order to minimize the risk. Selection of such an efficient portfolio is usually done with the help of some analysis. Security Analysis is the analysis of tradable financial instruments called Securities. These can be classified into Debt securities, Equities, or some hybrid of the two. Investing involves risk of loss of principal and is more concerned on the return of investment. The Security Analysis relationship is a fundamental concept not only in financial analysis, but also in every aspect of life. If decisions are to lead to benefit maximization, it is necessary that individuals/institutions consider the combined influence on expected (future) return or benefit as well as on risk/cost. The requirement that expected return/benefit be commensurate with risk/cost is known as the "risk/return trade-off" in finance. An investor considering investment in securities is faced with the problem of choosing from among a large number of securities. His choice depends upon the risk-return characteristics of individual securities. He would attempt to choose the most desirable securities and like to allocate his funds over this group of securities. Again he is faced with the problem of deciding which securities to hold and how much to invest in each. The investor faces an infinite number of possible portfolios or groups of securities. The risk and return characteristics of portfolios differ from those of individual securities combining to form a portfolio. The investor tries to choose the optimal portfolio taking into consideration the risk –return characteristics of all possible portfolios. After formulating the investment policy, the securities to be bought have to be scrutinized through the market, industry and company analysis.

- i) **Market Analysis:** The stock market mirrors the general economic scenario. The growth in gross domestic product and inflation are reflected in the stock prices. The recession in the economy results in a bear market. The stock prices may be fluctuating in the short run but in the long run they move in trends i.e. either upwards or downwards. The investor can fix his entry and exit points through technical analysis.
- ii) **Industry Analysis:** The industries that contribute to the output of the major segment of the economy vary in their growth rates and their overall contribution to economic activity. Some industries grow faster than the GDP and are expected to continue in their growth.
- iii) **Company Analysis:** The purpose of company analysis is to help the investors to make better decisions. The company's earnings, Profitability, operating efficiency, capital structure and management have to be screened. These factors have direct bearing on the stock prices and the return of the investors. Appreciation of the stock value is a function of the performance of the company. Company with high product market share is able to create wealth to the investors in the form of capital appreciation.

Investors have different motives for investing. Leaving aside a few who love the power and prestige of holding a major share or a minor share in the company, the majority of the investors have one of the following motives:

- Regular income either in the form of dividend or interest
- Capital gains or capital appreciation
- Hedge against inflation, a positive real rate of return
- Safety of funds and regularity of payment of interest and principal
- Liquidity and marketability in the sense that investor can convert his investments into cash or liquidity and back again into investments when cash is not needed

Security Analysis involves an examination of expected return and accompanying risks. The first three motives of income, capital appreciation and a positive hedge against inflation refers to the expected return. The last two motives of investor lead to the risks involved in the investments. These risks are due to uncertainty of returns, regularity of returns, safety of funds, marketability or lack of it, etc. Investors generally desire to have the maximum return possible, as they like returns, but they dislike risk, and the extent of risk varies from investor to investor. But the return depends on the extent of risk that the investor takes. Investments are made based on security analysis and decisions

involved are what securities to be bought or sold and the extent of proportion of funds to be invested in each.

As the economic and financial environment keeps changing, the risk-return characteristics of individual securities as well as portfolios also change. This calls for periodic review and revision of investment of investors. An investor invests his funds in a portfolio expecting to get a good return consistent with risk that he has to bear. The return realized from the portfolio has to be measured and the performance of the portfolio has to be evaluated. It is evident that rational investment activity involves creation of an investment portfolio. Portfolio management comprises all the processes involved in the creation and maintenance of an investment portfolio. It deals specifically with security analysis, portfolio analysis, portfolio selection, portfolio revision and portfolio evaluation. It also makes use of analytical techniques portfolio analysis and conceptual theories regarding rational allocation of funds. Portfolio management is a complex process which tries to make investment activity more rewarding and less risky.

(i) Systematic Risk

As the society is dynamic, changes occur in the economic, political and social systems constantly. These changes have an influence on the performance of companies and thereby on their stock prices. But these changes affect all companies and all securities in varying degrees. For example, economic and political instability adversely affects all industries and companies. When an economy moves into recession, corporate profits will shift downwards and stock prices of most companies may decline. Thus, the impact of economic, political and social changes is system-wide and that portion of total variability in security returns caused by such system-wide factors is referred to as systematic risk. Systematic risk is further subdivided into interest rate risk, market risk, and purchasing power risk.

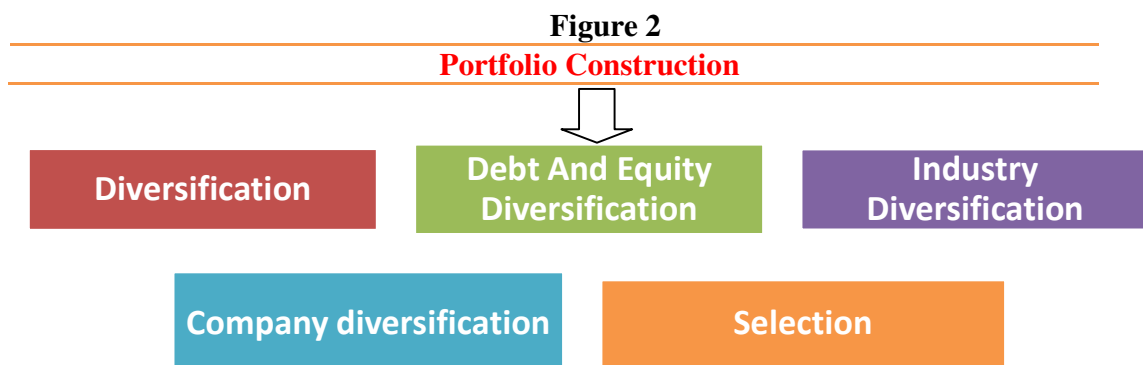
(ii) Unsystematic Risk

The returns from a security may sometimes vary because of certain factors affecting only the company issuing such security. Examples are raw material scarcity, labour strike, and management inefficiency. When variability of returns occurs because of such firm-specific factors and affects it in addition to the systematic risk affecting all securities. The unsystematic or unique risk affecting specific securities arises from two sources: a) the operating environment of the company, and b) the financing pattern adopted by the company. These two types of unsystematic risk are referred to as business risk and financial risk respectively.

1.3 Portfolio Management

Portfolio is a combination of securities such as stocks, bonds and money market instrument. The process of blending together the broad asset classes so as to obtain optimum return with minimum risk is called portfolio construction. Diversification of investment helps to spread risk over many assets. A diversification of securities gives the assurance of obtaining the anticipated return on the portfolio. In a diversified portfolio, some securities may not perform as expected, but others may exceed the expectation and making the actual return of the portfolio reasonably close to the anticipated one. Keeping a portfolio of single security may lead to greater likelihood of the actual return somewhat different from that of the expected return. Hence, it is a common practice to diversify securities in the portfolio. A portfolio is a combination of securities. The portfolio is constructed in such a manner to meet the investor's goals and objectives.

The investor should decide how best to reach the goals with the securities available. The investor tries to attain maximum return with minimum risk. Towards this end he diversifies his portfolio and allocates funds among the securities.



- **Diversification** The main objective of diversification is the reduction of risk in the loss of capital and income. A diversified portfolio is comparatively less risky than holding a single portfolio. There are several ways to diversify the portfolio
- **Debt And Equity Diversification** Debt instruments provide assured return with limited capital appreciation. Common stocks provide income and capital gain but with the flavor of uncertainty. Both debt instruments and equity are combined to complement each other.
- **Industry Diversification** Industries growth and their reaction to government policies differ from each other. Banking industry shares may provide regular returns but with limited capital

appreciation but their growth potential after the year 2002 is not predictable. Thus, industry diversification is need and it reduces risk.

- **Company diversification** Securities from different companies are purchased to reduce risk. Technical analysis suggests the investors to buy securities based on the price movement. Fundamental analysts suggest the selection of financially sound and investor friendly companies.
- **Selection** Based on the diversification level, industry and company analyses the securities have to be selected. Funds are allocated for the selected securities. Selection of securities and the allocation of funds and seals the construction of portfolio.

Portfolio is a combination of securities such as stocks, bonds and money market instrument. The process of blending together the broad asset classes so as to obtain optimum return with minimum risk is called portfolio construction. Diversification of investment helps to spread risk over many assets. A diversification of securities gives the assurance of obtaining the anticipated return on the portfolio. In a diversified portfolio, some securities may not perform as expected, but others may exceed the expectation and making the actual return of the portfolio reasonably close to the anticipated one.

Keeping a portfolio of single security may lead to greater likelihood of the actual return somewhat different from that of the expected return. Hence, it is a common practice to diversify securities in the portfolio. "Portfolio analysis considers the determination of future risk and return in holding various blends of individual securities". The simple fact that securities carry different degrees of expected risk leads most investors to the notion of holding more than one security at a time, in an attempt to spread risks by not putting all their eggs into one basket. Diversification of one's holdings is intended to reduce risk in an economy in which every asset's returns are subject to some degree of uncertainty. Even the value of cash suffers from the inroads of inflation. Most investors hope that if they hold several assets, even if one goes bad, the others will provide some protection from an extreme loss. Portfolios are combinations of assets. In this text, portfolios consist of collections of securities. Traditional portfolio planning emphasizes on the character and the risk bearing capacity of the investor. For example, a young, aggressive, single adult would be advised to buy stocks in newer, dynamic, rapidly growing firms. A retired widow would be advised to purchase stocks and bonds in old-line, established, stable firms, such as utilities. Modern portfolio theory suggests that the traditional approach to portfolio analysis, selection, and management may yield less than optimum

results. Hence a more scientific approach is needed, based on estimates of risk and return of the portfolio and the attitudes of the investor toward a risk-return trade-off stemming from the analysis of the individual securities.

The combination of investments into securities by an individual to reduce the risk is called **portfolio**. The investor who wishes to make investment can make use of the financial institution which provides the services of portfolio management. This financial institution s conducts its analysis on investment. The risk in investing in portfolio can be limited through an approach called diversification in portfolio. By involving different types of securities like bonds, shares, futures contracts, options etc. Certain types of risks will be reduced. Portfolio manager considers the factors like types of assets to include, aims of the investors and also the changes in the environment while deciding the securities to be included in portfolio. The selection in portfolio means deciding what, how many, when to purchase the securities. These decisions include the risk on securities and their expected returns (by using standard deviation). These expected returns are then compared with each type of asset. While deciding the portfolio the aims and goals of the investors must be considered and their behavior on risk like risk seekers, risk adverse etc.

The mutual funds firms are following this method for optimizing their portfolios of investment. Hence, portfolio management is the concept of deciding what assets to include in portfolio by doing SWOT analysis and care is taken to give maximum return at a given level of risk.

- Specification and qualification of investor objectives, constraints, and preferences in the form of an investment policy statement.
- Determination and qualification of capital market expectations for the economy, market sectors, industries and individual securities.
- Allocation of assets and determination of appropriate portfolio strategies for each asset class and selection of individual securities.
- Performance measurement and evaluation to ensure attainment of investor objectives.
- Monitoring portfolio factors and responding to changes in investor objectives, constrains and / or capital market expectations.

- Rebalancing the portfolio when necessary by repeating the asset allocation, portfolio strategy and security selection.

1.3.1 Traditional Portfolio Analysis

Traditional security analysis recognizes the key importance of risk and return to the investor. Most traditional methods recognize return as some dividend receipt and price appreciation over a forward period. But the return for individual securities is not always over the same common holding period, nor are the rates of return necessarily time-adjusted. An analyst may well estimate future earnings and a P/E to derive future prices. He will surely estimate the dividend. But he may not discount the values to determine the acceptability of the return in relation to the investor's requirements. In any case, given an estimate of return, the analyst is likely to think of and express risk as the probable downside price expectation (either by itself or relative to upside appreciation possibilities). Each security ends up with some rough measure of likely return and potential downside risk of the future. Portfolios, or combinations of securities, are thought of as helping to spread risk over many securities. However, the interrelationship between securities may be specified only broadly or nebulously. This is not to say that traditional portfolio analysis is unsuccessful. It is to say that much of it might be more objectively specified in explicit terms.

1.3.2 Features of Portfolio Management

Basically the portfolio management involves:

- Deciding where to invest and divest (buying & selling of assets).
- Managing money in order to meet the asset requirements of the investors.
- Increasing the returns while reducing the risk.

1.3.3 Goals of Portfolio Management

Portfolio management mainly concentrates on reducing the risk and increasing the returns. The other objectives which support the desires of investors are:

- Continuous return
- Rise in their investment
- Marketability and liquidity

- Investment safety
- Reducing the taxes.

1.3.4 Criteria for Portfolio Decisions

- In portfolio management emphasis is put on identifying the collective importance of all investor's holdings. The emphasis shifts from individual assets selection to a more balanced emphasis on diversification and risk-return interrelationships of individual assets within the portfolio. Individual securities are important only to the extent they affect the aggregate portfolio. In short, all decisions should focus on the impact which the decision will have on the aggregate portfolio of all the assets held.
- Portfolio strategy should be molded to the unique needs and characteristics of the portfolio's owner.
- Diversification across securities will reduce a portfolio's risk. If the risk and return are lower than the desired level, leverages (borrowing) can be used to achieve the desired level.
- Larger portfolio returns come only with larger portfolio risk. The most important decision to make is the amount of risk which is acceptable.
- The risk associated with a security type depends on when the investment will be liquidated. Risk is reduced by selecting securities with a payoff close to when the portfolio is to be liquidated.
- Competition for abnormal returns is extensive, so one has to be careful in evaluating the risk and return from securities. Imbalances do not last long and one has to act fast to profit from exceptional opportunities.
- Provides user interfaces that allow for the extraction of data based on user defined parameters.
- Provides a comprehensive set of tools to perform portfolio and risk evaluation against parameters set within the risk framework.
- Provides a set of tools to optimize portfolio value and risk position by:
- Considering various legs of different contracts to create an optimal trading strategy.
- The calculation of residual purchase requirements.
- Performs analysis that provides the relevant information to create hedge and trade plans.
- Evaluates the best mix of contracts on offer from counterparties to minimize the overall purchase cost and maximize profits.

- Creates and maintains trading and hedge strategies by:
- Allocating trades to contracts and books.
- Maintaining trades against contracts and books.
- Reviewing trades against existing trading strategy.
- Maintains an audit trail of decisions taken and query resolution.
- Produces accurate and timely reports

Chapter 2

Review of Literature

2.1 Review of Literature

A complete review of literature has become a significant ingredient in any investigation as it not only gives a design about the work done in the past and also assists in interpretation of the data. A brief review of literature pertaining to the objectives of the present study has been done to plan it on a systematic line.

Jawahar Lal (1992) presents a profile of Indian investors and evaluates their investment decisions. He made an effort to study their familiarity with, and comprehension of financial information, and the extent to which this is put to use. The information that the companies provide generally fails to meet the needs of a variety of individual investors and there is a general impression that the company's Annual Report and other statements are not well received by them.

L.C.Gupta (1992) revealed the findings of his study that there is existence of wild speculation in the Indian stock market. The over speculative character of the Indian stock market is reflected in extremely high concentration of the market activity in a handful of shares to the neglect of the remaining shares and absolutely high trading velocities of the speculative counters. He opined that, short- term speculation, if excessive, could lead to "artificial price". An artificial price is one which is not justified by prospective earnings, dividends, financial strength and assets or which is brought about by speculators through rumors, manipulations, etc. He concluded that such artificial prices are bound to crash sometime or other as history has repeated and proved.

Amanulla & Kamaiah (1995) conducted a study to examine the Indian stock market efficiency by using Ravallion co integration and error correction market integration approaches. The data used are the RBI monthly aggregate share indices relating five regional stock exchanges in India, viz Bombay, Calcutta, Madras, Delhi, Ahmedabad during 1980-1983. According to the authors, the co integration results exhibited a long-run equilibrium relation between the price indices of five stock exchanges and error correction models indicated short run deviation between the five regional stock exchanges. The study found that there is no evidence in favour of market

efficiency of Bombay, Madras, and Calcutta stock exchanges while contrary evidence is found in case of Delhi and Ahmedabad.

“Redel” (1997) concentrated on the capital market integration in developing Asia during the period 1970 to 1994 taking into variables such as net capital flows, FDI, portfolio equity flows and bond flows. He observed that capital market integration in Asian developing countries in the 1990s was a consequence of broad-based economic reforms, especially in the trade and financial sectors, which are the critical reason for economic crises which followed the increased capital market integration in the 1970s in many countries, will not be repeated in the 1990s. He concluded that deepening and strengthening the process of economic liberalization in the Asian developing countries is essential for minimizing the risks and maximizing the benefits from increased international capital market integration.

Debjit Chakraborty (1997) in his study attempts to establish a relationship between major economic indicators and stock market behaviour. It also analyses the stock market reactions to changes in the economic climate. The factors considered are inflation, money supply, and growth in GDP, fiscal deficit and credit deposit ratio. To find the trend in the stock markets, the BSE National Index of Equity Prices (Natex) which comprises 100 companies was taken as the index. The study shows that stock market movements are largely influenced by, broad money supply, inflation, C/D ratio and fiscal deficit apart from political stability.

Arun Jethmalani (1999) reviewed the existence and measurement of risk involved in investing in corporate securities of shares and debentures. He commended that risk is usually determined, based on the likely variance of returns. It is more difficult to compare 80 risks within the same class of investments. He is of the opinion that the investors accept the risk measurement made by the credit rating agencies, but it was questioned after the Asian crisis. Historically, stocks have been considered the most risky of financial instruments. He revealed that the stocks have always outperformed bonds over the long term. He also commented on the 'diversification theory' concluding that holding a small number of non-correlated stocks can provide adequate risk reduction. A debt-oriented portfolio may reduce short term uncertainty, but will definitely reduce long-term returns. He argued that the 'safe debt related investments' would never make an

investor rich. He also revealed that too many diversifications tend to reduce the chances of big gains, while doing little to reduce risk. Equity investing is risky, if the money will be needed a few months down the line. He concluded his article by commenting that risk is not measurable or quantifiable. But risk is calculated on the basis of historic volatility. Returns are proportional to the risks, and investments should be based on the investors' ability to bear the risks, he advised.

Rodriguez, Michael Hardleand Wolfgang (2000) they analyze new approach for building record following portfolios with a confined number of stocks. They developed a two stages calculation that first gauges the connections between stocks and file in a versatile way and also figures the ideal weights that minimize the following slip. At long last the technique is connected to the DAX-Index and an examination with a gullible model that considers the genuine weights of every stock in the list is given. It gives the idea that the system succeeds in lessening the following lapse. Presentation of versatile relationship estimators doesn't enhance fundamentally the following blunder; by and by it acquires another dissemination of weights that is exploitable on the choice business so as to develop unpredictability arbitrages.

“Bhanu Pant and Dr. T.R.Bishnoy” (2001) analyzed the behaviour of the daily and weekly returns of five Indian stock market indices for random walk during April 1996 to June 2001. They found that Indian Stock Market Indices did not follow random walk.

Nath and Verma (2003) examine the interdependence of the three major stock markets in south Asia stock market indices namely India (NSE-Nifty) Taiwan (Taiex) and Singapore (STI) by employing bivariate and multivariate co integration analysis to model the linkages among the stock markets, No co -integration was found for the entire period (daily data from January 1994 to November 2002). They concluded that there is no long run equilibrium.

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Sharma et.al, (2012) scrutinizes the risk return trade off of the stocks listed in the stock exchanges of South Asia. This study aimed to find out, the expected return and risk connected over time by using the descriptive statistics. The study found that high returns and rational risk complicated in those South Asian countries. Shanmugasundram, G. and Benedict, D. John (2013) deliberate risk influenced in the Indian Sectoral indices and Nifty. They found risk association in varied with time period. They had designated five Sectoral indices from NSE and Nifty Index for 8 years from 2004 to 2012. For the study t-Test and ANOVA carried out to find out the risk alteration between the sectors and Nifty.

Debasish & Khan, 2012, the study undertook analyses and selection of an optimal portfolio of selected Stocks in manufacturing sectors of India. The daily data of fourteen Stock of NSE Nifty Index have been considered from January 2003 to November 2012. The weight age of investment under each security is determined based on respective beta values, Stock movement variance, unsystematic risk, return on Stock and risk free return. The results exhibit that out of 14 manufacturing sector Stocks only three Stocks namely Hero Motors Corp., Tata Motors and Asian paints constitute an optimal portfolio with Hero Motors Corp. showing a highest proportion of investment of around 58.22%.

Dr. Sathya Swaroop Debasish and Jakki Samir Khan (2012) did the examination on Optimal Portfolio Construction in Stock Market an Empirical Study on Selected Stocks in Manufacturing Sectors of India. Their examination target is to develop an ideal portfolio in Indian securities exchange with the assistance of the Sharpe single list model. In their study they chose 14 stocks from the different assembling areas like Automobiles, Cements, Paints, Textiles and Oil & Refineries. They found that just three organizations stocks constitute the ideal portfolio and these were Asian Paints, Tata engines and Hero Motor Corp. with perfect extent of venture of 1.9 %, 38.88 and 58.22% individually. On the same line Mokta Rani Sarker (2013) did her study in Bangladesh and found that the ideal portfolio comprises of thirty three stocks chose out of 164 stocks which framed the DSE, giving the arrival of 6.17%.

“**Juhi Ahuja**” (2012) presents a review of Indian Capital Market & its structure. In last decade or so, it has been observed that there has been a paradigm shift in Indian capital market. The application of many reforms & developments in Indian capital market has made the Indian capital market comparable with the international capital markets. Now, the market features a developed regulatory mechanism and a modern market infrastructure with growing market capitalization, market liquidity, and mobilization of resources. The emergence of Private Corporate Debt market is also a good innovation replacing the banking mode of corporate finance. However, the market has witnessed its worst time with the recent global financial crisis that originated from the US sub-prime mortgage market and spread over to the entire world as a contagion. The capital market of India delivered a sluggish performance.

Niranjan Mandal(2013) in the examination of Sharpe’s single list model and its application to build ideal portfolio: an experimental study found that there was a noteworthy contrast between the aggregate danger of the ideal portfolio figured under two distinct instruments viz., Sharpe Index Model and Markowitz's model. The aggregate danger of the ideal portfolio was 2.87% (as far as SD) under Sharpe Index Model and the aggregate danger of the portfolio was observed to be 1.79% (as far as SD) in Markowitz's model.

P. Swarna Lakshmi, (2013) analysed the volatility pattern in different Sectoral Indices in Indian stock market utilizing Autoregressive Conditional Heteroskedasticity, an econometric model. This study was conducted for the period starting 2008 till 2012 of eleven Sectoral Indices from NSE. Researcher determined the reality sector has uppermost volatility than other sector; however the banking sector has bottommost volatility for the period. The risk and return connection in Latin American, Brazilian, and Columbian equity markets for which quarterly data were measured over the period (Tsuji, 2014).

Nalini, 2014, this study presented an approach to portfolio selection using Single index model. The scope of the study was to create investors awareness about the applicability and benefits of SIM approach. The yearly data of fifteen companies from S & P BSE Sensex index was utilized. From the results it was revealed that four securities comprise an optimum portfolio. During the

year 2013-2014, similar micro level studies were conducted like “The single index model & the construction of Optimal portfolio: a case of banks listed on NSE India” by (Singh & Jayant, 2014), “Construction of optimal equity portfolio using the Sharpe index model with reference to Banking and Information Technology sectors in India from 2009-2013” by (Ramanathan & Jahnavi, 2014), “Optimal Portfolio Construction in Stock market – an empirical study on selected Stocks (BSE) of automobile Companies” (R & S, 2014), “ A Study on Usage of Sharpe’s Single Index Model in Portfolio Construction with reference to CNX Nifty” by (Chauhan, 2014). Although these studies vary with respect to sample taken but the methodology, computations, results and utility value obtained is similar.

Dr. S Krishnaprabha Mr. M Vijayakumar (2015) had conducted ‘a study on risk return analysis of selected stocks in India’. The study conducted to analyze the risk and return of investing in various companies like banking, IT, FMCG, Automobiles, pharmaceuticals etc. The results of the study states that there is less fluctuations in the shares when compared to the market as well as prices. The long term investors are able to predict the about the variations in the share prices. Majority of IT, FMCG, pharmaceutical sectors gives more return compared to banking and automobiles.

Bedanta Bora, Anindita Adhikary (2015) has conducted a study on ‘Risk and Return Relationship – an Empirical Study of BSE Sensex Companies in India’. The basic framework of the study was analysis of relationship between risk and returns on the basis of beta of 30 companies listed at BSE Sensex. It concluded that 99% of variation in the Sensex is explained by variation in scripts.

2.2 Need for the Study

The portfolio management is required for selection of securities from the vast number of opportunities available which gives maximum return and reduces the risk and also gives the investor a maximum return at a given level of risk. The analysis mainly studies the risk and return relationship of selected stocks from different sectors on NSE. Investors will find beneficial based on the risk and return analysis.

2.3 Scope of the Study

- This study covers the calculation of correlation between different securities
- 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.

2.4 Objectives of the Study

The main objectives of this research can be summarized as follows.

- To study the selected securities risks & returns
- To know wisely alternative investments between the securities
- To understand the different securities mix in a portfolio selection
- To study on relationship between risk and return analysis of selected stocks on NSE

2.5 Research Methodology

The methodology used in the study for the completion of the project and the fulfillment of the project objectives, is as follows; Market prices of 12 companies have been taken for 12 months of different dates, there by dividing the companies into 4 sectors. A final portfolio is made at the end of the year to know the changes (increase/decrease) in the portfolio at the end of the year.

Sources of Data

Primary Data: Primary data are generated through personal investigation on the companies.

Secondary Data: The secondary information was collected from the records and published annual reports of the company, web sites, Magazines, Books, news papers and Journals etc.

Chapter 3 Historical Evolution of Indian Stock Market

3. Historical Evolution of Indian Stock Market

The first stock exchange in London was officially formed in 1773, a scant 19 years before the New York Stock Exchange. Whereas the London Stock Exchange (LSE) was handcuffed by the law restricting shares, the New York Stock Exchange has dealt in the trading of stocks, for better or worse, since its inception. The NYSE wasn't the first stock exchange in the U.S., however, that honor goes to the Philadelphia Stock Exchange, but it quickly became the most powerful. Formed by brokers under the spreading boughs of a buttonwood tree, the New York Stock Exchange made its home on Wall Street. The exchange's location, more than anything else, led to the dominance that the NYSE quickly attained. It was in the heart of all the business and trade coming to and going from the United States, as well as the domestic base for most banks and large corporations. By setting listing requirements and demanding fees, the New York Stock Exchange became a very wealthy institution.

The NYSE faced very little serious domestic competition for the next two centuries. Its international prestige rose in tandem with the burgeoning American economy and it was soon the most important stock exchange in the world. The NYSE had its share of ups and downs during the same period, too. Everything from the Great Depression to the Wall Street bombing of 1929 left scars on the exchange the 1929 bombing left 38 dead and also left literal scars on many of Wall Street's prominent buildings. The less literal scars on the exchange came in the form of stricter listing and reporting requirements. On the international scene, London emerged as the major exchange for Europe, but many companies that were able to list internationally still listed in New York. Many other countries including Germany, France, the Netherlands, Switzerland, South Africa, Hong Kong, Japan, Australia and Canada developed their own stock exchanges, but these were largely seen as proving grounds for domestic companies to inhabit until they were ready to make the leap to the LSE and from there to the big leagues of the NYSE. Some of these international exchanges are still seen as dangerous territory because of weak listing rules and less rigid government regulation.

Like several other goods which require a market place for buyer and sellers to come together; shares too need a bazaar where they can be sold and bought. The bazaars where shares are sold are either primary market or secondary market. Primary market refers to the business done through Initial Public offers (IPOs), during which shares are offered for the first time to the public or to existing

shareholders through rights. The latter is the existing shareholder either on priority or through a private placement when shares are selectively sold to limited number of investors.

New equity shares are initially issued and offered through the primary market and subsequently they are traded through the secondary market. The latter consists of network of stock exchanges. A Stock Exchange is the actual bazaar that conducts securities trading. Companies that wish their stock to be bought or sold list their shares in the stock exchange and members registered at the stock exchange either buy or sell these stocks on behalf of their investor clientele the prices of the listed securities keep changing depending on the demand and supply for that security, almost akin to what happens to the other commodity products (in their respective markets). It registers members who have the necessary qualification, skills and financial resources to undertake the trading in securities. Shares of those companies who have not listed with any stock exchanges can't be sold through stock exchanges. If an investor wants to sell shares of such companies then has to find the buyer through his own means. This is where a stock exchange helps investors. It provides a large market place consisting of hundreds of members representing thousands of buyers and sellers to give a fair valuation of shares and to improve liquidity of the investment.

Presently there are 25 Government recognized stock exchanges in various states of India. Of these, National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) operate all over India and handle the bulk of business volumes. There is also Interconnected Stock Exchange (ISE) and over – the – Counter Exchange (OTC), which operates at more than one location but their business volumes are not very significant at present. The stock market is mainly present to create money. Through the market, investors - both companies and individuals - can buy stocks, which effectively make them own a small part of a company. If the company prospers, investors are rewarded with dividends and profits. Companies, by becoming public and offering stocks to the public, can raise money and improve their profile through business expansions which can help them make great profit.

Stock Market is one of the most vibrant sectors in the financial system, marking an important contribution to economic development further; it performs an important role of enabling corporate, entrepreneurs to raise resources for their companies and business ventures through public issues. Today long term investors are interested to invest in the Stock market rather than invest anywhere. The Bombay Stock Exchange (BSE), the National Stock Exchange (NSE) and the Calcutta Stock Exchange (CSE) are the three large stock exchanges of Indian Stock Market. Stock Market is a place where shares of public listed companies are traded. The primary market is where companies float shares to the general

public in an initial public offering (IPO) to raise capital. Once new securities have been sold in the primary market, they are traded in the secondary market where one investor buys shares from another investor at the prevailing market price or at whatever prices both the buyer and seller agree upon.

The secondary market or the stock exchanges are regulated by the regulatory authority. In India, the secondary and primary markets are governed by the Security and Exchange Board of India (SEBI). A stock exchange facilitates stock brokers to trade company stocks and other securities. India's premier stock exchanges are the Bombay Stock Exchange and the National Stock Exchange. The Indian securities market has become one of the most dynamic and efficient securities markets in Asia today. The Indian market now conforms to international standards in terms of operating efficiency. In this context, it would be informative to understand the origin and growth of the Indian stock market.

The number of stock exchanges virtually remained unchanged for nearly three decades from 1947 to 1977, except for the establishment of the Bangalore Stock Exchange in 1957. During the 1980s, however, many stock exchanges were established. Some of them were:

1. Cochin Stock Exchange (1978)
2. Uttar Pradesh Stock Exchange (at Kanpur,1982)
3. Pune Stock Exchange(1982)
4. Ludhiana Stock Exchange (1983)
5. Jaipur Stock Exchange (1989)
6. Bhubaneswar Stock Exchange(1989)
7. Vadodara Stock Exchange (at Baroda,1990)

Besides enabling mobilizing resources for investment, directly from the investors, providing liquidity for the investors and monitoring and disciplining company managements are the principal functions of the stock markets. The main attraction of the stock markets is that they provide for entrepreneurs and governments a means of mobilizing resources directly from the investors, and to the investors they offer liquidity. It has also been suggested that liquid markets improve the allocation of resources and enhance prospects of long term economic growth.

The Financial markets across the globe have become volatile. They are mainly driven by news and events in the world markets. This volatility has a direct impact on Indian economy, which is increasingly getting exposed to the global markets in the post liberalization era. The liberalized policy being followed by the Government of India and the gradual withdrawal of the procurement and distribution channel necessitated for introduction of a market mechanism to perform the economic

functions of price discovery and risk management in order to improve market-efficiency and for the free movement of financial assets, the importance of hedging and risk management through derivative products has grown substantially. A package of reforms consisting of measures to liberalize, regulate and develop the securities market is being implemented since early 1990s.

Innovative initiatives like establishment of SEBI, screen- based trading and establishment of I.T .backed NSE, depository services, rolling settlements, internet trading and derivatives trading are some which placed the stock market at the forefront of modern capital markets of the world.

3.1 History of Indian Capital Markets

In 1992, the SEBI Act was enacted giving SEBI statutory of stock trading, integration of national market markets, and efficiency of market operations. India has seen a tremendous change in the secondary market for equity. The capital market is divided into two segments viz:

a) Primary Market

b) Secondary Market

a) Primary Market: The primary market is the place where the new offerings by companies are made either as Initial Public Offer (IPO) or Rights Issue. IPOs are offerings made by the companies for the first time while rights are offerings made to the existing shareholders. Investors who prefer to invest in the primary issues are called Stags.

b) Secondary Market: The secondary market provides liquidity to the investors in the primary market. The secondary markets provide an efficient platform for trading of those securities initially offered in the primary market. Also those investors who have applied for shares in an IPO may or may not get allotment. If they don't then they can always buy the shares in the secondary market. Secondary market consists of stock exchanges where the buy orders and sell orders are matched in the organized manner/ there are at present 25 recognized stock exchanges in India and are governed by the Securities Contracts Regulation Act (SCRA).

The stock exchange performs the following functions:

- Provide trading platform to investors and provide liquidity
- Facilitate Listing of securities
- Registers members - Stock Brokers, sub brokers
- Make and enforce by-laws
- Manage risk in securities transactions
- Provides Indices

There are two leading stock exchanges in India which help us trade are:

1. **National Stock Exchange:** National Stock Exchange incorporated in the year 1992 provides trading in the equity as well as debt market. Maximum volumes take place on NSE and hence enjoy leadership position in the country today
2. **Bombay Stock Exchange:** BSE on the other hand was set up in the year 1875 and is the oldest stock exchange in Asia. It has evolved in to its present status as the premier stock exchange.

Role of Capital Market

1. It is the indicator of the inherent health of the economy.
2. It is the largest source of funds with long or indefinite maturity for companies and thereby enhances capital formation in the economy.
3. It offers a number of investment avenues to the investors.
4. It helps in channelizing the savings pool in the economy towards investments, which are more efficient and give a better rate of return thereby helping in optimum allocation of capital in the country.

3.1.1 Reforms in Indian Securities Markets

Over a period, the Indian securities market has undergone remarkable changes and grown exponentially, particularly in terms of resource mobilisation, intermediaries, the number of listed stocks, market capitalization, turnover and investor population. The following paragraphs list the principal reform measures undertaken since 1992.

Creation of Market Regulator: Securities and Exchange Board of India (SEBI), the securities market regulator in India, was established under SEBI Act 1992, with the main objective and responsibility for (i) protecting the interests of investors in securities, (ii) promoting the development of the securities market, and (iii) regulating the securities market.

Screen Based Trading: Prior to setting up of NSE, the trading on stock exchanges in India was based on an open outcry system. The system was inefficient and time consuming because of its inability to provide immediate matching or recording of trades. In order to provide efficiency, liquidity and transparency, NSE introduced a nation-wide on-line fully automated screen based trading system (SBTS) on the CM segment on November 3, 1994.

Reduction of Trading Cycle: Earlier, the trading cycle for stocks, based on type of securities, used to vary between 14 days to 30 days and the settlement involved another fortnight. The Exchanges,

however, continued to have different weekly trading cycles, which enabled shifting of positions from one Exchange to another. It was made mandatory for all Exchanges to follow a uniform weekly trading cycle in respect of scrips not under rolling settlement. In December 2001, all scrips were moved to rolling settlement and the settlement period was reduced progressively from T+5 to T+3 days. From April 2003 onwards, T+2 days settlement cycle is being followed.

Equity Derivatives Trading: In order to assist market participants in managing risks better through hedging, speculation and arbitrage, SC(R) A was amended in 1995 to lift the ban on options in securities. Trading in derivatives, however, took off in 2000 with index futures after suitable legal and regulatory framework was put in place. The market presently offers index futures, index options, single stock futures and single stock options.

Demutualisation: Historically, stock exchanges were owned, controlled and managed by the brokers. In case of disputes, integrity of the stock exchange suffered. NSE, however, was set up with a pure demutualised governance structure, having ownership, management and trading with three different sets of people. Currently, all the stock exchanges in India have a demutualised set up.

Dematerialisation: As discussed before, the old settlement system was inefficient due to (i) the time lag for settlement and (ii) the physical movement of paper-based securities. To obviate these problems, the Depositories Act, 1996 was passed to provide for the establishment of depositories in securities with the objective of ensuring free transferability of securities with speed and accuracy. There are two depositories in India, viz. NSDL and CDSL. They have been set up to provide instantaneous electronic transfer of securities. *Demat* (Dematerialised) settlement has eliminated the bad deliveries and associated problems. To prevent physical certificates from sneaking into circulation, it has been made mandatory for all newly issued securities to be compulsorily traded in dematerialised form. Now, the public listed companies making IPO of any security for Rs.10 crore or more have to make the IPO only in dematerialised form.

Issue of Capital and Disclosure Requirements (ICDR) Regulations 2009: In August 2009, the SEBI issued Issue of Capital and Disclosure Requirements (ICDR) Regulations 2009, replacing the Disclosure and Investor Protection (DIP) Guidelines 2000. ICDR Regulations 2009 would govern all disclosure norms regarding issue of securities.

3.2. National Stock Exchange

The National Stock Exchange is located in Mumbai. It was incorporated in 1992 and became a stock exchange in 1993. The basic purpose of this exchange was to bring the transparency in the

stock markets. It started its operations in the wholesale debt market in June 1994. The equity market segment of the National Stock Exchange commenced its operations in November, 1994 whereas in the derivatives segment, it started its operations in June, 2000. It has completely modern and fully automated screen based trading system having more than two lakh trading terminals, which provides the facility to the investors to trade from anywhere in India. It is playing an important role to reform the Indian equity market to bring more transparent, integrated and efficient stock market.

As on July 2013, it has a market capitalization above than \$989 billion. The total 1635 companies are listed in National Stock Exchange. The popular index of NSE, The CNX NIFTY is extremely used by the investor throughout India as well as internationally. NSE was firstly introduced by leading Indian financial institutions. It offers trading, settlement and clearing services in equity and debt market and also in derivatives. It is one of India's largest exchanges internationally in cash, currency and index options trading. There are number of domestic and global companies that hold stake in the exchange. Some domestic companies include GIC, LIC, SBI and IDFC Ltd. Among foreign investors, few are City Group Strategic Holdings, Mauritius limited, Norwest Venture Partners FII (Mauritius), MS Strategic (Mauritius) limited, Tiger Global five holdings, have stake in NSE. The National Stock Exchange replaced open outcry system, i.e. floor trading with the screen based automated system. Earlier, the price information can be accessed only by few people but now information can be seen by the people even in a remote location. The National Stock Exchange (NSE) is India's leading stock exchange covering 364 cities and towns across the country. NSE was set up by leading institutions to provide a modern, fully automated screen-based trading system with national reach. The Exchange has brought about unparalleled transparency, speed & efficiency, safety and market integrity. It has set up facilities that serve as a model for the securities industry in terms of systems, practices and procedures. NSE has played a catalytic role in reforming the Indian securities market in terms of microstructure, market practices and trading volumes. The National Stock Exchange of India Limited has genesis in the report of the High Powered Study Group on Establishment of New Stock Exchanges, which recommended promotion of a National Stock Exchange by financial institutions (FIs) to provide access to investors from all across the country on an equal footing. Based on the recommendations, NSE was promoted by leading Financial Institutions at the behest of the Government of India and was incorporated in November 1992 as a tax-paying company unlike other stock exchanges in the country. On its recognition as a stock exchange under the Securities Contracts (Regulation) Act, 1956 in April 1993, NSE commenced

operations in the Wholesale Debt Market (WDM) segment in June 1994. The Capital Market (Equities) segment commenced operations in November 1994 and operations in Derivatives segment commenced in June 2000.

NSE's mission is setting the agenda for change in the securities markets in India. The NSE was set-up with the following objectives:

- establishing a nation-wide trading facility for equities, debt instruments and hybrids,
- ensuring equal access to investors all over the country through an appropriate communication network,
- providing a fair, efficient and transparent securities market to investors using electronic trading systems,
- enabling shorter settlement cycles and book entry settlements systems, and
- meeting the current international standards of securities markets.

The standards set by NSE in terms of market practices and technologies have become industry benchmarks and are being emulated by other market participants. NSE is more than a mere market facilitator. It's that force which is guiding the industry towards new horizons and greater opportunities. Till the advent of NSE, an investor wanting to transact in a security not traded on the nearest exchange had to route orders through a series of correspondent brokers to the appropriate exchange. This resulted in a great deal of uncertainty and high transaction costs. One of the objectives of NSE was to provide a nationwide trading facility and to enable investors spread all over the country to have an equal access to NSE. NSE has made it possible for an investor to access the same market and order book, irrespective of location, at the same price and at the same cost. NSE uses sophisticated telecommunication technology through which members can trade remotely from their offices located in any part of the country. NSE trading terminals are present in 363 cities and towns all over India. NSE has been promoted by leading financial institutions, banks, insurance companies and other financial intermediaries. NSE is one of the first demutualised stock exchanges in the country, where the ownership and management of the Exchange is completely divorced from the right to trade on it. Though the impetus for its establishment came from policy makers in the country, it has been set up as a public limited company, owned by the leading institutional investors in the country.

From day one, NSE has adopted the form of a demutualised exchange - the ownership, management and trading is in the hands of three different sets of people. NSE is owned by a set of

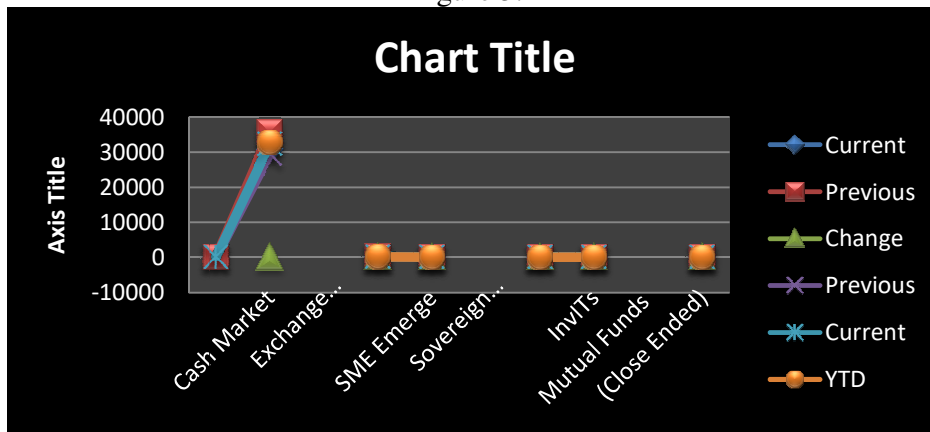
leading financial institutions, banks, insurance companies and other financial intermediaries and is managed by professionals, who do not directly or indirectly trade on the Exchange. This has completely eliminated any conflict of interest and helped NSE in aggressively pursuing policies and practices within a public interest framework.

3.2.1 Average Daily Turnover (INR Crores)

1. Equity Market

Product	Current Month	Previous Month	Change	Previous FY	Current FY	YTD	% Change
Cash Market	30548.72	35510.33	-13.97%	29416.08	32214.04	32731.18	1.09
Exchange Traded Funds	130.45	134.62	-3.10%	126.42	145.26	150.27	1.15
SME Emerge	8.07	13.61	-40.73%	22.49	20.21	23.51	-0.9
Sovereign Gold Bonds	0.54	0.80	-32.62%	0.35	0.47	0.47	1.34
InvITs	3.66	4.51	-18.86%	16.57	4.87	5.88	-0.29
Mutual Funds (Close Ended)	0.88	0.10	739.39%	0.30	0.85	0.79	2.83

Figure 3.1



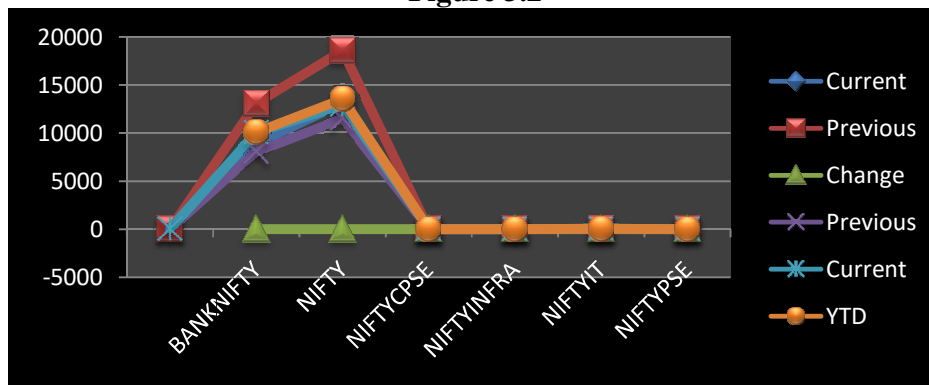
From the above chart of NSE equity market moments, it is inferred that the cash market is fallen sharply at 13.97% for the month of November 2018, whereas the same is observed that the cash market increased to 1.09 % on yearly basis. Secondly, it is inferred that the exchange traded funds are fallen at 3.10% for the month of November 2018, whereas the same is observed that the exchange traded funds increased to 1.15 % on yearly basis. Thirdly, it is inferred that the SME Emerge are fallen sharply at 40.73% for the month of November 2018, and also SME Emerge fallen to 0.9 % on yearly basis. Fourthly, it is inferred that the Sovereign Gold Bonds are fallen at 32.62% for the month of November 2018, whereas the same is observed that the Sovereign Gold Bonds increased to 1.34 % on yearly basis. And also it is inferred that the investment in IT sectors are fallen at -18.86% for the month of November 2018, and also the investment in IT sectors fallen to 0.29 % on yearly basis. Finally, it is understood that mutual fund investments plays a safe game at NSE by applying proper mix of portfolio it is observed the 739.39 % sharp rise at close ended mutual funds, and a yearly increase of 2.83%. From the above observation and inference it has been proved that the equity market is performing

positively at long run than the short periods. And also it is proved that a proper combination of portfolio fetch us maximum return at equity markets over long run.

ii) Equity Derivatives - Index Futures

Product	Current Month	Previous Month	Change	Previous FY	Current FY	YTD	% Change
BANKNIFTY	8889.23	13114.39	-32.22%	8031.17	10054.11	10091.08	1.25
NIFTY	13134.74	18590.79	-29.35%	11477.95	12904.75	13567.31	1.12
NIFTYCPSE	0.00	0.00	0.00	0.01	0.00	0.00	0
NIFTYINFRA	0.00	0.00	0.00	0.01	0.00	0.00	0
NIFTYIT	29.25	33.58	-12.90%	18.27	32.22	31.31	1.76
NIFTYPSE	0.00	0.00	0.00	0.01	0.00	0.00	0

Figure 3.2

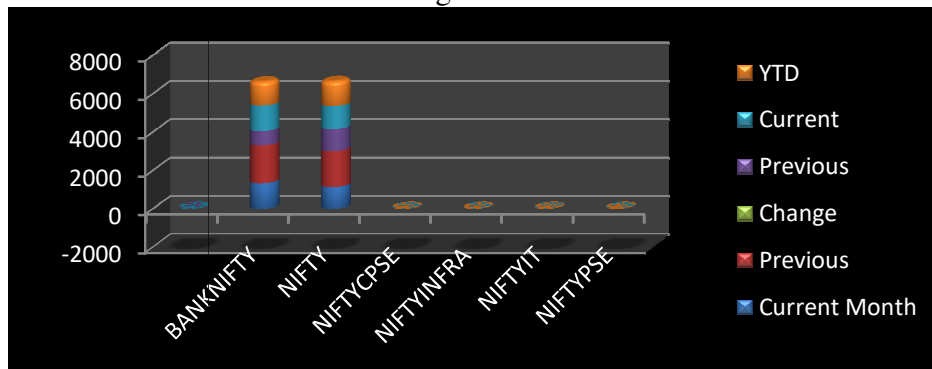


From the above chart of NSE Equity Derivatives - Index Futures, it is inferred that Bank NIFTY is fallen sharply at 32.22% for the month of November 2018, whereas the same is observed that the Bank NIFTY increased to 1.25 % on yearly basis. Secondly, it is inferred that NIFTY are fallen at 29.35% for the month of November 2018, whereas the same is observed that the NIFTY increased to 1.12 % on yearly basis. NIFTYCPSE, NIFTYINFRA, and NIFTYPSE not started their share movement wing. Finally, it is inferred that the NIFTYIT are fallen at 12.90% for the month of November 2018, and , whereas the same is observed that the NIFTYIT increased to 1.76 % on yearly basis. From the above analysis it is observed that an index futures contract of NIFTYIT giving investors the ability to buy or sell an underlying listed financial instrument at a fixed price on a future date with of maximum profits when compared with other index futures

iii) Equity Derivatives - Index Options

Product	Current Month	Previous Month	Change	Previous FY	Current FY	YTD	% Change
BANKNIFTY	1332.51	1969.95	-32.36%	741.07	1330.43	1258.57	1.71
NIFTY	1134.16	1876.67	-39.57%	1131.48	1205.59	1301.80	1.06
NIFTYCPSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NIFTYINFRA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NIFTYIT	0.00	0.00	-6.23%	0.00	0.00	0.00	0.00
NIFTYPSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Figure 3.3

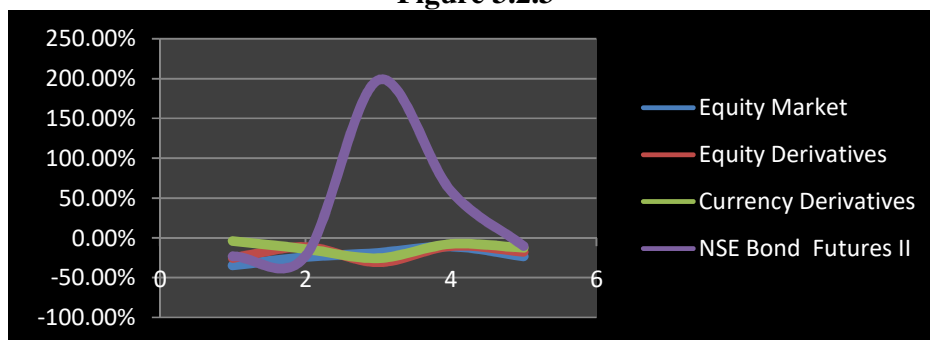


From the above chart of NSE **Equity Derivatives - Index options**, it is inferred that Bank NIFTY is fallen at 32.36% for the month of November 2018, whereas the same is observed that the Bank NIFTY increased to 1.79% on yearly basis. Secondly, it is inferred that NIFTY are fallen at 39.57% for the month of November 2018, whereas the same is observed that the NIFTY increased to 1.06 % on yearly basis. NIFTYCPSE, NIFTYINFRA, NIFTYIT, and NIFTYPSE not started their share movement wing. From the above analysis and observation establish that Bank NIFTY is experiencing a boom in long run when compared with other equity derivatives index options at NSE.

3.2.2 Client Category Participation –Per centage Contribution

Product	Equity Market	Equity Derivatives	Currency Derivatives	NSE Bond Futures II
Corporates	-34.78%	-25.29%	-3.75%	-23.19%
DII	-24.06%	-11.41%	-13.88%	-23.09%
FII	-18.73%	-30.56%	-25.48%	197.89%
Others	-10.80%	-10.23%	-7.61%	58.80%
PRO	-23.30%	-17.39%	-12.54%	-10.38%

Figure 3.2.3



Client Category Participation- Percentage Contribution

From the above chart of NSE client participation at equity market, it is inferred that Foreign Institutional Investors(FII's) stood first in their participation and performance and at equity derivatives level it is observed that Domestic Institutional Investors(DII's) stood first in their participation and contribution, and at currency derivatives level it is experienced that Corporate clients are best performers as well as contributors. Lastly at NSE Bond Futures II level PRO's contribution stood first. From the above it is drawn to conclusions that each every client is contributing to the NSE trough different instruments.

Chapter- 4
Data Analysis & Interpretation

4. Data Analysis and Interpretation**4.1 Calculations of Average Returns of the Companies**

$$\text{Average Return (R)} = \frac{\text{R}}{N}$$

(P0) = Opening price of the share
(P1) = Closing price of the share

4.1.1. Infosys**Table 4.1.1**

Average Return on Infosys Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return((P1-P0)/P0*100)
July-2016	2469	2969.25	20.26
Aug-2016	2988	3105	3.91
Sep-2016	3077.1	3013	-2.08
Oct-2016	3030	3309.9	9.23
Nov-2016	3300	3354.55	1.65
Dec-2016	3352	3485.65	3.98
Jan-2017	3492	3701.1	5.98
Feb-2017	3685	3824.85	3.79
Mar-2017	3825	3282.8	-14.17
Apr-2017	3283.05	3180.8	-3.11
May-2017	3185	2939.4	-7.71
June-2017	2960.5	3255.55	9.96
Total Returns			31.69

$$\text{Average Return} = 31.69/12 = 2.64$$

4.1.2 Mphasis**Table 4.1.2**

Average Return on Mphasis Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1-P0)/P0*100
July-2016	371.95	400.85	7.76
Aug-2016	397	420.8	5.99
Sep-2016	423	438.75	3.72
Oct-2016	439.95	423.4	-3.76
Nov-2016	427.5	397.4	-7.04
Dec-2016	396	440	11.11
Jan-2017	442	370.45	-16.18
Feb-2017	370.45	387.85	4.69
Mar-2017	385.1	404	4.90
Apr-2017	400.5	412.7	3.04
May-2017	408.35	440.9	7.97
June-2017	443.95	425.65	-4.12
Total Returns			18.08

$$\text{Average Return} = 18.08/12 = 1.50$$

4.1.3 HCL Info Systems

Table 4.1.3

Average Return on HCL Info systems Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1- P0)/P0*100
July-2016	34.45	29.8	-13.49
Aug-2016	29.8	21.7	-27.18
Sep-2016	21.7	26.1	20.27
Oct-2016	26	23.55	-9.42
Nov-2016	23.5	21.2	-9.78
Dec-2016	21.4	21	-1.86
Jan-2017	21.2	23.85	12.5
Feb-2017	23.35	27.8	19.05
Mar-2017	27.8	37.8	35.97
Apr-2017	38	44.9	18.15
May-2017	45.35	68.1	50.16
June-2017	68.6	75.2	9.62
Total Returns			103.99

Average Return = $103.99/12=8.66$

4.1.4 Atul Auto Motors

Table 4.1.4

Average Return on Atul Auto motors Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1- P0)/P0*100
July-2016	309	309.15	0.04
Aug-2016	314	295	-6.05
Sep-2016	291	325.9	11.99
Oct-2016	326.5	376.95	15.45
Nov-2016	377	412.15	9.32
Dec-2016	416.5	451.35	8.34
Jan-2017	455	411.15	-9.63
Feb-2017	415	420.6	1.34
Mar-2017	416.35	433.75	4.17
Apr-2017	439.9	541.55	23.10
May-2017	545	815.4	49.61
June-2017	838.9	890.55	6.15
Total Returns			113.83

Average Return = $113.83/12=9.48$

4.1.5 Maruti Motors

Table 4.1.5

Average Return on Maruti Motors Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1-P0)/P0*100
July-2016	1540	1326.3	-13.87
Aug-2016	1326	1243.55	-6.21
Sep-2016	1240.25	1358.55	9.53
Oct-2016	1364.05	1636.2	19.95
Nov-2016	1642	1676.15	2.07
Dec-2016	1670	1763.9	5.62
Jan-2017	1770	1636.25	-7.55
Feb-2017	1620	1589	-1.91
Mar-2017	1582	1971.75	24.63
Apr-2017	1976	1923	-2.68
May-2017	1895	2271.8	19.88
June-2017	2270	2439.35	7.46
Total Returns			56.92

Average Return = $56.92/12=4.74$

4.1.6 Hindustan Motors

Table 4.1.6

Average Return on Hindustan Motors Security from July 2016 to June 2017			
Month & year	Opening Price P0	Closing Price P1	Return(P1-P0)/P0*100
July-2016	9.05	6.55	-27.62
Aug-2016	6.4	6.35	-0.78
Sep-2016	6.4	7.4	15.62
Oct-2016	7.35	7.9	7.48
Nov-2016	8.05	7.6	-5.59
Dec-2016	7.1	8.55	20.42
Jan-2017	8.6	7.2	-16.27
Feb-2017	7.35	7.3	-0.68
Mar-2017	7.3	7.2	-1.36
Apr-2017	7.4	7.55	2.02
May-2017	7.55	9.55	26.49
June-2017	9.45	9.65	2.11
Total Returns			21.84

Average Return = $21.84/12=1.82$

4.1.7 ACC Cements

Table 4.1.7

Average return on ACC cements Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1- P0)/P0*100
July-2016	1225	1173.55	-4.2
Aug-2016	1185	964.1	-18.64
Sep-2016	970	1111.95	14.63
Oct-2016	1119.25	1134.85	1.39
Nov-2016	1138	1096.6	-3.63
Dec-2016	1098	1108.75	10.97
Jan-2017	1110	1010.85	-8.93
Feb-2017	1004.05	1104.9	10.04
Mar-2017	1103.1	1399.55	26.87
Apr-2017	1400	1293	-7.64
May-2017	1296.15	1337	3.15
June-2017	1347.7	1469.25	9.01
Total Returns			33.02

Average Return = $33.02/12=2.75$

4.1.8 Penna Cements

Table 4.1.8

Average return on Penna cements Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1- P0)/P0*100
July-2016	25.15	23.7	-5.76
Aug-2016	23	22.2	-3.47
Sep-2016	22	20.95	-4.77
Oct-2016	21	21.15	0.71
Nov-2016	22.4	20.8	-7.14
Dec-2016	21.2	23.7	11.79
Jan-2017	23.5	20.85	-11.27
Feb-2017	20.7	20.2	-2.41
Mar-2017	20.45	24.3	18.82
Apr-2017	23.4	27.65	18.16
May-2017	28	37.05	32.32
June-2017	38	41	7.89
Total Returns			54.87

Average Return = $54.87/12=4.57$

4.1.9 Shree Cements

Table 4.1.9

Average return on Shree cements Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1- P0)/P0*100
July-2016	4735	4354.75	-8.03
Aug-2016	4301	3595.8	-16.39
Sep-2016	3595	4123.65	14.70
Oct-2016	4175	4435.35	6.23
Nov-2016	4429.95	4371	-1.33
Dec-2016	4370.05	4342.2	-0.63
Jan-2017	4340	4436.7	2.22
Feb-2017	4380	4688.5	7.04
Mar-2017	4688.55	5670.95	20.95
Apr-2017	5670	5701.45	0.55
May-2017	5715	6851.05	19.87
June-2017	6851	7204.05	5.15
Total Returns			50.33

Average Return = $50.33/12=4.19$

4.1.10 DR Reddy Laboratories

Table 4.1.10

Average return on Dr Reddy`s lab Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1- P0)/P0*100
July-2016	2217.9	2281.2	2.85
Aug-2016	2300	2292.9	-0.30
Sep-2016	2271.6	2381.15	4.82
Oct-2016	2372.95	2456.4	3.51
Nov-2016	2456	2484.8	1.17
Dec-2016	2499	2534.6	1.42
Jan-2017	2545	2609.55	2.53
Feb-2017	2605	2895.5	11.15
Mar-2017	2878	2563.9	-10.91
Apr-2017	2581	2706.15	4.84
May-2017	2692.1	2460.65	-8.59
June-2017	2465	2624.05	6.45
Total Returns			18.94

Average Return = $18.94/12=1.57$

4.1.11 Glenmark

Table 4.1.11

Average return on Glenmark Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1-P0)/P0*100
July-2016	549	576.6	5.02
Aug-2016	580	514.95	-11.21
Sep-2016	514	530.5	3.21
Oct-2016	533.9	563.6	5.56
Nov-2016	554.95	515.85	-7.04
Dec-2016	517.2	533.85	3.21
Jan-2017	534	559.25	4.72
Feb-2017	560	569.65	1.72
Mar-2017	571.95	565.2	-1.18
Apr-2017	569.45	604.55	6.16
May-2017	614.15	552.5	10.03
June-2017	555	570.1	2.72
Total Returns			22.92

Average Return = $22.92/12=1.91$

4.1.12 Indoco Remedies

Table 4.1.12

Average return on Indoco remedies Security from July 2016 to June 2017			
Month & Year	Opening Price P0	Closing Price P1	Return(P1-P0)/P0*100
July-2016	63.05	60.8	-4.71
Aug-2016	61	62.45	2.37
Sep-2016	63.95	65.25	2.03
Oct-2016	66	81.15	22.95
Nov-2016	81.15	110.15	35.73
Dec-2016	111.7	136.6	22.29
Jan-2017	136	121.1	-10.95
Feb-2017	120.5	147.35	22.28
Mar-2017	148	140.6	-5
Apr-2017	140	132.5	-5.35
MAY-2017	131.85	162.85	23.51
June-2017	163.9	164.65	0.45
Total Returns			105.6

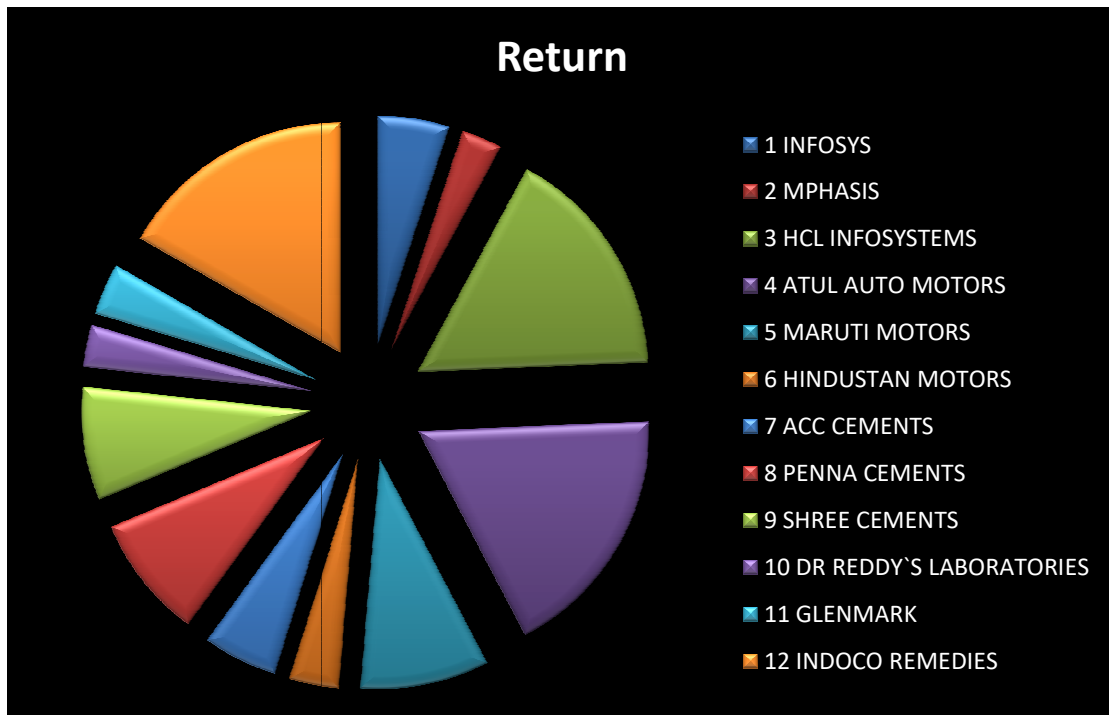
Average Return = $105.6/12=8.8$

4.1.13 Diagrammatic Presentation

Table 4.1.13

Sr. No	Company	Return
1	Infosys	2.64
2	Mphasis	1.50
3	HCL Infosystems	8.66
4	ATUL Auto Motors	9.48
5	Maruti Motors	4.74
6	Hindustan Motors	1.82
7	ACC Cements	2.75
8	Penna Cements	4.57
9	Shree Cements	4.19
10	Dr Reddy`S Laboratories	1.57
11	Glenmark	1.91
12	Indoco Remedies	8.8

Figure 4.1



Interpretation: Here we have taken 12 companies from 4 different sectors like IT, Automobiles, Cement and Pharma to calculate the average returns for the period of July 2016 to June 2017. The table 4.1.13 clearly indicates that Atul Auto Motors, Hcl InfoSystems and Indoco Remedies were top performers by generating significant returns of 9.48%, 8.66% and 8.80%

respectively. At the same time Maruti Motors, Penna Cements and Shree Cement were generating moderate returns of 4.74%, 4.57% and 4.19% respectively. The remaining stocks like Infosys, Mphasis, Hindustan Motors, Dr Reddy’s Laboratories and Glenmark Pharma were generating very low returns of 2.64%, 1.50%, 1.82%, 1.57% and 1.91% respectively. The analysis clearly indicates that the performance of all the stocks in sector wise was not similar. For example, In IT sector Hcl Infosystem was outperformed by generating 8.66% but INFOSYS and Mphasis were performed poorly by generating 2.64% and 1.50%. Like that stocks in specific sector were not generating similar returns. Thus, returns of the stocks were depending on the individual performance of the company, not sector wise performance.

4.2 Calculation of Risk

Calculation of Standard Deviation

$$\begin{aligned} \text{Standard Deviation} &= \sqrt{\text{Variance}} \\ \text{Variance} &= \frac{1}{n} (R-AR)^2 \end{aligned}$$

4.2.1 Infosys

Table 4.2.1

Risk of Infosys Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR)²
July-2016	20.26	2.64	17.62	310.4644
Aug-2016	3.91	2.64	1.27	1.6129
Sep-2016	-2.08	2.64	-4.72	22.2784
Oct-2016	9.23	2.64	6.59	43.4281
Nov-2016	1.65	2.64	-0.99	0.9801
Dec-2016	3.98	2.64	1.34	1.7956
Jan-2017	5.98	2.64	3.34	11.1556
Feb-2017	3.79	2.64	1.15	1.3225
Mar-2017	-14.17	2.64	-16.81	282.5761
Apr-2017	-3.11	2.64	-5.75	33.0625
May-2017	-7.71	2.64	-10.35	107.1225
June-2017	9.96	2.64	7.32	53.5824
Total				869.3811

$$\text{Variance} = \frac{1}{n} (R-AR)^2 = \frac{1}{12} (869.38) = 72.4$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{72.44} = 8.511$$

4.2.2 Mphasis

Table 4.2.2

Risk of Mphasis Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	7.76	1.50	6.26	39.18
Aug-2016	5.99	1.50	4.49	20.16
Sep-2016	3.72	1.50	2.22	4.92
Oct-2016	-3.76	1.50	-5.26	27.66
Nov-2016	-7.04	1.50	-8.54	72.93
Dec-2016	11.11	1.50	9.61	92.35
Jan-2017	-16.18	1.50	-17.68	312.58
Feb-2017	4.69	1.50	3.19	10.17
Mar-2017	4.90	1.50	3.4	11.56
Apr-2017	3.04	1.50	1.54	2.37
May-2017	7.97	1.50	6.47	41.86
June-2017	-4.12	1.50	-5.62	31.58
TOTAL				667.32

$$\text{Variance} = 1/n (R-AR)^2 = 1/12 (667.32) = 55.61$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{55.61} = 7.45$$

4.2.3 HCL Info Systems

Table 4.2.3

Risk of HCL Info Systems Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	-13.49	8.66	-22.15	490.62
Aug-2016	-27.18	8.66	-35.84	1284.50
Sep-2016	20.27	8.66	11.61	134.79
Oct-2016	-9.42	8.66	-18.08	326.88
Nov-2016	-9.78	8.66	-18.44	340.03
Dec-2016	-1.86	8.66	-10.52	110.67
Jan-2017	12.5	8.66	3.84	14.74
Feb-2017	19.05	8.66	10.39	107.95
Mar-2017	35.97	8.66	27.31	745.83
Apr-2017	18.15	8.66	9.49	90.06
May-2017	50.16	8.66	41.5	1722.25
June-2017	9.62	8.66	0.96	0.92
Total				5369.24

$$\text{Variance} = 1/n (R-AR)^2 = 1/12 (5369.24) = 447.43$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{447.43} = 21.15$$

4.2.4 ATUL Auto Motors

Table 4.2.4

Risk of Atul automotors Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	0.04	9.48	-9.44	89.11
Aug-2016	-6.05	9.48	-15.53	241.18
Sep-2016	11.99	9.48	2.51	6.30
Oct-2016	15.45	9.48	5.97	35.64
Nov-2016	9.32	9.48	-0.16	0.02
Dec-2016	8.34	9.48	-1.14	1.29
Jan-2017	-9.63	9.48	-19.11	365.19
Feb-2017	1.34	9.48	-8.14	66.25
Mar-2017	4.17	9.48	-5.31	28.19
Apr-2017	23.10	9.48	13.62	185.50
May-2017	49.61	9.48	40.13	1610.42
June-2017	6.15	9.48	-3.33	11.08
TOTAL				2640.17

$$\text{Variance} = 1/n (R-AR)^2 = 1/12 (2640.17) = 220.01$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{220.01} = 14.83$$

4.2.5 Maruti Motors

Table 4.2.5

Risk of Maruti Motors Security from July 2016 to June 2017				
Month	Return(R)	AVG Return(AR)	(R-AR)	(R-AR) ²
July-2016	-13.87	4.74	-18.61	346.33
Aug-2016	-6.21	4.74	-10.95	119.90
Sep-2016	9.53	4.74	4.79	22.94
Oct-2016	19.95	4.74	15.21	231.34
Nov-2016	2.07	4.74	-2.67	7.12
Dec-2016	5.62	4.74	0.88	0.77
Jan-2017	-7.55	4.74	-12.29	151.04
Feb-2017	-1.91	4.74	-6.65	44.22
Mar-2017	24.63	4.74	19.89	395.61
Apr-2017	-2.68	4.74	-7.42	55.05
May-2017	19.88	4.74	15.14	229.21
June-2017	7.46	4.74	2.72	7.39
Total				1610.92

$$\text{Variance} = 1/n (R-AR)^2 = 1/12 (1610.92) = 134.24$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{134.24} = 11.58$$

4.2.6 Hindusthan Motors

Table 4.2.6

Risk of Hindusthan Motors Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	-27.62	1.82	-29.44	866.71
Aug-2016	-0.78	1.82	-2.6	6.76
Sep-2016	15.62	1.82	13.8	190.44
Oct-2016	7.48	1.82	5.66	32.03
Nov-2016	-5.59	1.82	-7.41	54.90
Dec-2016	20.42	1.82	18.6	345.96
Jan-2017	-16.27	1.82	-18.09	327.24
Feb-2017	-0.68	1.82	-2.5	6.25
Mar-2017	-1.36	1.82	-3.18	10.11
Apr-2017	2.02	1.82	0.2	0.04
May-2017	26.49	1.82	24.67	608.60
June-2017	2.11	1.82	0.29	0.08
Total				2449.12

$$\text{Variance} = 1/n (R-AR)^2 = 1/12 (2449.12) = 204.09$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{204.09} = 14.28$$

4.2.7 Acc Cements

Table 4.2.7

Risk of ACC Cements Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	-4.2	2.75	-6.95	48.30
Aug-2016	-18.64	2.75	-21.39	457.53
Sep-2016	14.63	2.75	11.88	141.13
Oct-2016	1.39	2.75	-1.36	1.84
Nov-2016	-3.63	2.75	-6.38	40.70
Dec-2016	10.97	2.75	8.22	67.56
Jan-2017	-8.93	2.75	-11.68	136.42
Feb-2017	10.04	2.75	7.29	53.14
Mar-2017	26.87	2.75	24.12	581.77
Apr-2017	-7.64	2.75	-10.39	107.95
May-2017	3.15	2.75	0.4	0.16
June-2017	9.01	2.75	6.26	39.18
Total				1675.68

$$\text{Variance} = 1/n (R-AR)^2 = 1/12 (1675.68) = 139.64$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{139.64} = 11.81$$

4.2.8 Penna Cements

Table 4.2.8

Risk of Penna Cements Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	-5.76	4.57	-10.33	106.70
Aug-2016	-3.47	4.57	-8.04	64.64
Sep-2016	-4.77	4.57	-9.34	87.23
Oct-2016	0.71	4.57	-3.86	14.89
Nov-2016	-7.14	4.57	-11.71	137.12
Dec-2016	11.79	4.57	7.22	52.12
Jan-2017	-11.27	4.57	-15.84	250.90
Feb-2017	-2.41	4.57	-6.98	48.72
Mar-2017	18.82	4.57	14.25	203.06
Apr-2017	18.16	4.57	13.59	184.68
May-2017	32.32	4.57	27.75	770.06
June-2017	7.89	4.57	3.32	11.02
Total				1931.14

Variance = $1/n (R-AR)^2 = 1/12 (1931.14) = 160.92$

Standard Deviation = $\sqrt{\text{Variance}} = \sqrt{160.92} = 12.68$

4.2.9 Shree Cements

Table 4.2.9

Risk of Shree Cements Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	-8.03	4.19	-12.22	149.32
Aug-2016	-16.39	4.19	-20.58	423.53
Sep-2016	14.70	4.19	10.51	110.46
Oct-2016	6.23	4.19	2.04	4.16
Nov-2016	-1.33	4.19	-5.52	30.47
Dec-2016	-0.63	4.19	-4.82	23.23
Jan-2017	2.22	4.19	-1.97	3.88
Feb-2017	7.04	4.19	2.85	8.12
Mar-2017	20.95	4.19	16.76	280.89
Apr-2017	0.55	4.19	-3.64	13.24
May-2017	19.87	4.19	15.68	245.86
June-2017	5.15	4.19	0.96	0.92
Total				1294.08

Variance = $1/n (R-AR)^2 = 1/12 (1294.8) = 107.84$

Standard Deviation = $\sqrt{\text{Variance}} = \sqrt{107.84} = 10.38$

4.2.10 Dr Reddy`S Laboratories

Table 4.2.10

Risk of Reddy`s lab Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	2.85	1.57	1.28	1.63
Aug-2016	-0.30	1.57	-1.87	3.49
Sep-2016	4.82	1.57	3.25	10.56
Oct-2016	3.51	1.57	1.94	3.76
Nov-2016	1.17	1.57	-0.4	0.16
Dec-2016	1.42	1.57	-0.15	0.02
Jan-2017	2.53	1.57	0.96	0.92
Feb-2017	11.15	1.57	9.58	91.77
Mar-2017	-10.91	1.57	-12.48	155.75
Apr-2017	4.84	1.57	3.27	10.69
May-2017	-8.59	1.57	-10.16	103.22
June-2017	6.45	1.57	4.88	23.81
TOTAL				405.79

$$\text{Variance} = 1/n (R-AR)^2 = 1/12 (405.9) = 33.81$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{33.81} = 5.81$$

4.2.11 Glenmark

Table 4.2.11

Risk of Glenmark Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	5.02	1.91	3.11	9.67
Aug-2016	-11.21	1.91	-13.11	171.87
Sep-2016	3.21	1.91	1.3	1.69
Oct-2016	5.56	1.91	3.65	13.32
Nov-2016	-7.04	1.91	-8.95	80.10
Dec-2016	3.21	1.91	1.3	1.69
Jan-2017	4.72	1.91	2.81	7.89
Feb-2017	1.72	1.91	-0.19	0.03
Mar-2017	-1.18	1.91	-3.09	9.54
Apr-2017	6.16	1.91	4.25	18.06
May-2017	10.03	1.91	8.12	65.93
June-2017	2.72	1.91	0.81	0.65
Total				380.44

$$\text{Variance} = 1/n (R-AR)^2 = 1/12 (380.44) = 31.70$$

$$\text{Standard Deviation} = \sqrt{\text{Variance}} = \sqrt{31.70} = 5.63$$

4.2.12 Indoco Remedies

Table 4.2.12

Risk of Indoco Remedies Security from July 2016 to June 2017				
Month	Return(R)	Avg Return(AR)	(R-AR)	(R-AR) ²
July-2016	-4.71	8.8	-13.51	182.52
Aug-2016	2.37	8.8	-6.43	41.34
Sep-2016	2.03	8.8	-6.77	45.83
Oct-2016	22.95	8.8	14.15	200.22
Nov-2016	35.73	8.8	26.93	725.22
Dec-2016	22.29	8.8	13.49	181.98
Jan-2017	-10.95	8.8	-19.75	390.06
Feb-2017	22.28	8.8	13.48	181.71
Mar-2017	-5	8.8	-13.8	190.44
Apr-2017	-5.35	8.8	-14.15	200.22
May-2017	23.51	8.8	14.71	216.38
June-2017	0.45	8.8	-8.35	69.72
Total				2625.64

Variance = $1/n (R-AR)^2 = 1/12 (2625.64) = 218.80$

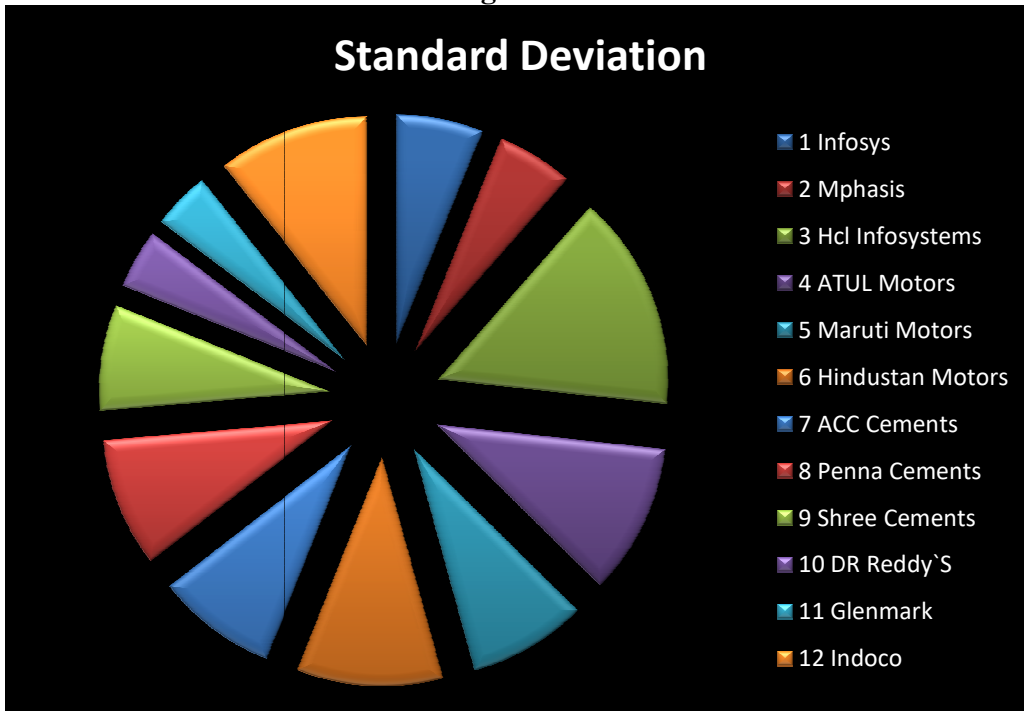
Standard Deviation = $\sqrt{\text{Variance}} = \sqrt{218.80} = 14.79$

4.2.13 Diagrammatic Presentation

Table 4.2.13

Sr. No	Company	Standard Deviation
1	Infosys	8.511
2	Mphasis	7.45
3	Hcl Infosystems	21.15
4	ATUL Motors	14.83
5	Maruti Motors	11.58
6	Hindustan Motors	14.28
7	ACC Cements	11.81
8	Penna Cements	12.68
9	Shree Cements	10.38
10	DR Reddy`S	5.81
11	Glenmark	5.63
12	Indoco	14.79

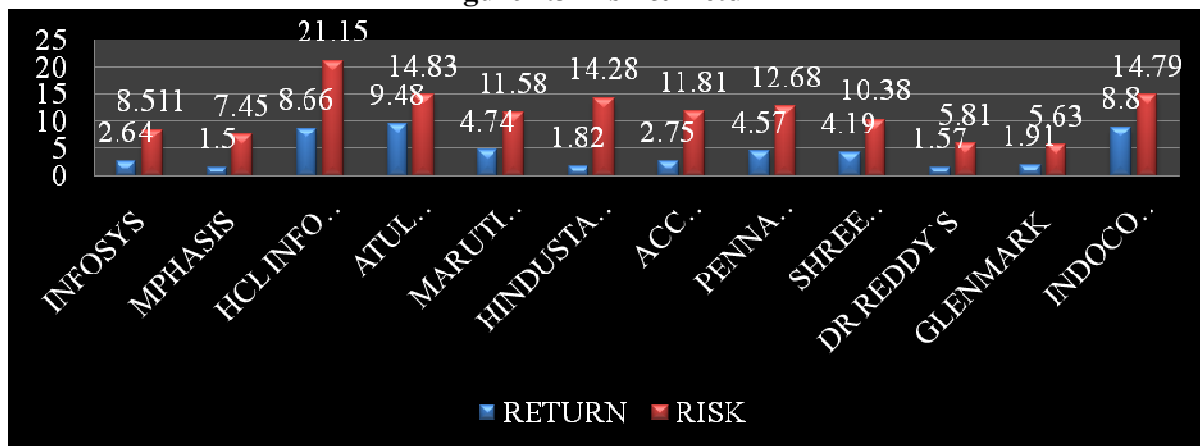
Figure 4.2



Interpretation: As per requirement for analysis, here we have calculated the standard deviation for identifying the risk levels of the stocks. The table 4.2 clearly shows that the Hcl Infosystems, Atul Motors, Hindustan Motors and Indoco Remedies had high standard deviation values which indicated high risk of the securities. The Maruti Motors, Acc, Penna Cements and Shree Cements had moderate standard deviation values which indicated the moderate risk of the securities. The remaining stocks like Infosys, Mphasis, Dr Reddy’s Laboratories and Glenmark had lower standard deviation value which means low risk of the securities. Like stock returns, Risk of the stocks will be no way relevant to sector wise performance. Thus, risk level of the stocks depends on the individual performance of the company, not sector wise performance.

4.3 Risk and Returns

Figure 4.3 Risk & Return



The Risk and Returns associated with the above 12 companies can be shown in graph as follows.

Interpretations: The above chart shows the risk and returns of the all companies grouped together. From the above graph, we can interpret that the above all securities have more risk than their individual returns. The more return yielding securities are Indoco Remedies and Shree Cements. The Companies which have more risk with low returns are Hindustan Motors, ACC Cements and HCL Info Systems.

4.4 Calculations of Correlation

Table 4.4

CALCULATIONS OF CORRELATION												
	INFO SYS	EMP HASI S	HCL INF OSY MS	ATUL AUTO MOTO RS	MAR UTI MOT ORS	HIND USTA N MOT ORS	ACC CEM ENT	PENN A CEME NT	SHRE E CEM ENTS	DR REDD Y'S LABO RATO RIES	GLE NM ARK	IND OCO REM EDIE S
RETURNS												
	20.26	7.76	-13.5	0.04	-13.87	-27.6	-4.2	-5.76	-8.03	2.85	5.02	-4.71
	3.91	5.99	-27.2	-6.05	-6.21	-0.78	-18.6	-3.47	-16.39	-0.3	-11.2	2.37
	-2.08	3.72	20.27	11.99	9.53	15.62	14.6	-4.77	14.7	4.82	3.21	2.03
	9.23	-3.76	-9.42	15.45	19.95	7.48	1.39	0.71	6.23	3.51	5.56	22.95
	1.65	-7.04	-9.78	9.32	2.07	-5.59	-3.63	-7.14	-1.33	1.17	-7.04	35.73
	3.98	11.11	-1.86	8.34	5.62	20.42	11	11.79	-0.63	1.42	3.21	22.29
	5.98	-16.2	12.5	-9.63	-7.55	-16.3	-8.93	-11.27	2.22	2.53	4.72	-11
	3.79	4.69	19.05	1.34	-1.91	-0.68	10	-2.41	7.04	11.15	1.72	22.28
	-14.17	4.9	35.97	4.17	24.63	-1.36	26.9	18.82	20.95	-10.91	-1.18	-5
	-3.11	3.04	18.15	23.1	-2.68	2.02	-7.64	18.16	0.55	4.84	6.16	-5.35
	-7.71	7.97	50.16	49.61	19.88	26.49	3.15	32.32	19.87	-8.59	10	23.51
	9.96	-4.12	9.62	6.15	7.46	2.11	9.01	7.89	5.15	6.45	2.72	0.45
calculation of correlation												
INFOSYS	1	-0.18	-0.70	-0.44	-0.62	-0.54	-0.44	-0.61	-0.66	0.61	0.04	-0.05
EMPHASIS		1.00	0.11	0.32	0.13	0.40	0.27	0.49	0.04	-0.23	0.05	0.12
HCL INFOSYSTEMS			1.00	0.58	0.55	0.44	0.58	0.67	0.89	-0.39	0.56	-0.08
ATUL AUTO MOTORS				1.00	0.55	0.68	0.14	0.77	0.53	-0.36	0.54	0.40
MARUTI MOTORS					1.00	0.66	0.67	0.61	0.80	-0.55	0.22	0.31
HINDUSTAN MOTORS						1.00	0.37	0.62	0.50	-0.23	0.24	0.46
ACC CEMENTS							1.00	0.36	0.77	-0.22	0.24	0.08
PENNA CEMENTS								1.00	0.54	-0.58	0.42	0.09
SHREE CEMENTS									1.00	-0.40	0.50	0.09
DR REDDY'S LABORATORIES										1.00	0.05	0.03
GLENMARK											1.00	-0.10
INDOCO REMEDIES												1

Interpretation: As part of identifying the portfolio risk, first we need to identify the relationship among the securities. So, here we used the statistical tool called correlation to measure the relationship among the securities. The possible outcome of correlation among the stocks might be positive correlation, negative correlation and no correlation. The table 4.4, In IT sector shows that Infosys had negative correlation with Mphasis and Hcl infosystems but Mphasis with Hcl infosystem had no correlation. In auto sector, Atul Auto Motors, Hindustan motors and Maruti motors had positive correlations among them. In cement sector, Acc cements, Penna cements and Shree cement had positive correlation among them. In pharma sector, Dr Reddy's laboratories, Glenmark and Indoco Remedies had no correlation among them. Generally stocks

with similar sector might get positive correlation but results show that some sectors like IT had negative correlations and as well as no correlation. In Pharma sectors stocks indicate that there are No correlations exist among them but Automobiles and Cement sectors indicate the positive correlations exist among them.

4.4.1 Infosys with Others

When constructing a portfolio with Infosys as constant and changing other security in the portfolio, the combination of Infosys and other Securities have different relation in their Portfolio Such has, HCL -0.7, Emphasis 0.0 info systems has resulted in most negative correlation (-0.7). The combination of Infosys and Dr Reddy`s has resulted in most positive correlation (0.613). So portfolio of Infosys and Hcl Info systems has less risk than other portfolios.

4.4.2 Emphasis with others

When grouped in a portfolio with Emphasis as constant and changing other security in the portfolio, the combination of Emphasis and Dr Reddy`S Lab has resulted in most negative correlation (-0.227). The combination of Emphasis and Penna Cements has resulted in most positive correlation (0.49). So portfolio of emphasis and Dr Reddy`S Lab systems have less risk than other portfolios.

4.4.3 HCL Info systems with others

When grouped in a portfolio with HCL Info systems as constant and changing other security in the portfolio, the combination of HCL Infosystems and Dr Reddy`S Lab has resulted in most negative correlation (-0.388). The combination of HCL Infosystems and Shree Cements has resulted in most positive correlation (0.889). So portfolio of Hcl Infosystems and Dr Reddy`S Lab systems have less risk than other portfolios.

4.4.4 Atul Automotors with Others

When grouped in a portfolio with Atul Automotors as constant and changing other security in the portfolio, the combination of Atul Automotors and Dr Reddy`S Lab has resulted in most negative correlation (-0.36). The combination of Atul Automotors and Penna Cements has resulted in most positive correlation (0.771). So portfolio of Atul Automotors and Dr Reddy`S Lab systems have less risk than other portfolios.

4.4.5 Maruti Motors with Others

When grouped in a portfolio with Maruti Motors as constant and changing other security in the portfolio, the combination of Maruti Motors and Dr Reddy`S Lab has resulted in most negative correlation (-0.551). The combination of Atul Automotors and Penna Cements has resulted in most positive correlation (0.797). So portfolio of Maruti Motors and Dr Reddy`S Lab systems have less risk than other portfolios.

4.4.6 Hindustan Motors with Others

When grouped in a portfolio with Maruti Motors as constant and changing other security in the portfolio, the combination of Maruti Motors and Dr Reddy`S Lab has resulted in most negative correlation (-0.551). The combination of Atul Automotors and Penna Cements has resulted in most positive correlation (0.797). So portfolio of Maruti Motors and Dr Reddy`S Lab systems have less risk than other portfolios.

4.5 Portfolio Weights

Portfolio weights are taken from the opinions of different investors who want to invest in these securities. They have given their opinions on portfolio weights based on the risk of individual securities. Their opinions on weights for different securities in portfolio are recorded as follows.

4.5.1 Weights for High Risk Securities

Table 4.5.1

Respondents	w1 (Hcl info)	w2 (Atul)	w3 (Indoco)	w4 (Hindustan)
1	0.1	0.29	0.29	0.32
2	0.4	0.2	0.2	0.2
3	0.25	0.2	0.25	0.3
4	0.2	0.25	0.3	0.3
5	0.3025	0.3575	0.1275	0.1125
6	0.3	0.2	0.25	0.25
7	0.2	0.25	0.25	0.3
8	0.2	0.25	0.3	0.25
9	0.25	0.25	0.2	0.3
10	0.23	0.32	0.23	0.22

4.5.2 Weights for Moderate Risk Securities

Table 4.5.2

Respondents	w1(Penna)	w2(ACC)	w3(Maruti)	w4(Shree)
1	0.08	0.3	0.3	0.32
2	0.3	0.25	0.3	0.15
3	0.3	0.35	0.15	0.2
4	0.25	0.15	0.3	0.25
5	0.1025	0.3075	0.3525	0.2475
6	0.25	0.2	0.15	0.4
7	0.2	0.2	0.3	0.3
8	0.25	0.3	0.2	0.25
9	0.25	0.25	0.25	0.25
10	0.28	0.32	0.2	0.2

4.5.3 Weights for Low Risk Securities

Table 4.5.3

Respondents	w1 (Infosys)	w2 (Emphasis)	w3 (Dr Reddy`s)	w4 (Glenmark)
1	0.05	0.25	0.25	0.45
2	0.25	0.25	0.25	0.25
3	0.25	0.2	0.25	0.3
4	0.3	0.25	0.3	0.15

5	0.2525	0.2575	0.3	0.19
6	0.15	0.15	0.2	0.5
7	0.15	0.25	0.3	0.3
8	0.15	0.3	0.2	0.35
9	0.3	0.2	0.3	0.2
10	0.34	0.15	0.3	0.21

Based on the above correlation and weights of securities in portfolios, the portfolio risk and portfolio return for each portfolio have been calculated below.

4.6 Calculation of Portfolio Risk

The portfolio risk of the above securities in portfolios is calculated by using the following measures, they are:

- Weights of securities
- Correlation between securities
- Individual risk of securities

By using the above measures, the portfolio risk is calculated from the following formula

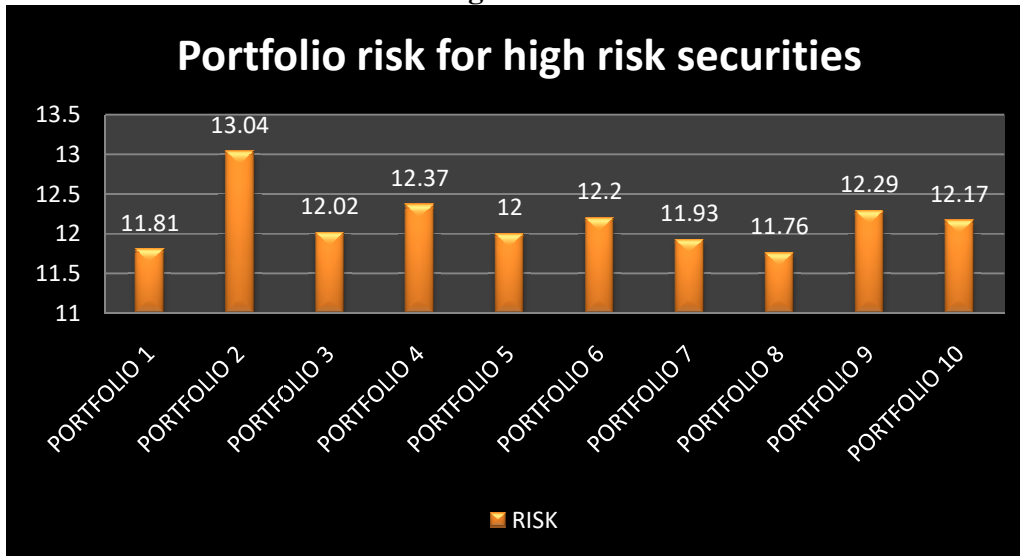
$$\sigma_p = (\sigma_a * W_a)^2 + (\sigma_b * W_b)^2 + (\sigma_c * W_c)^2 + (\sigma_d * W_d)^2 + 2 * \sigma_a * \sigma_b * W_a * W_b * r_{ab} + 2 * \sigma_a * \sigma_c * W_a * W_c * r_{ac} + 2 * \sigma_b * \sigma_c * W_b * W_c * r_{bc} + 2 * \sigma_a * \sigma_d * W_a * W_d * r_{ad} + 2 * \sigma_b * \sigma_d * W_b * W_d * r_{bd} + 2 * \sigma_c * \sigma_d * W_c * W_d * r_{cd}$$

4.6.1 Portfolios Consisting of High Risk Securities

Table 4.6.1

Calculation of Portfolio Risk for High risk securities				
w1 (Hcl info)	w2 (Atul)	w3 (Indoco)	w4 (Hindustan)	Portfolio Risk
0.1	0.29	0.29	0.32	11.81
0.4	0.2	0.2	0.2	13.04
0.25	0.2	0.25	0.3	12.02
0.2	0.25	0.3	0.3	12.37
0.3025	0.3575	0.1275	0.1125	12.00
0.3	0.2	0.25	0.25	12.20
0.2	0.25	0.25	0.3	11.93
0.2	0.25	0.3	0.25	11.76
0.25	0.25	0.2	0.3	12.29
0.23	0.32	0.23	0.22	12.17

Figure 4.6.1



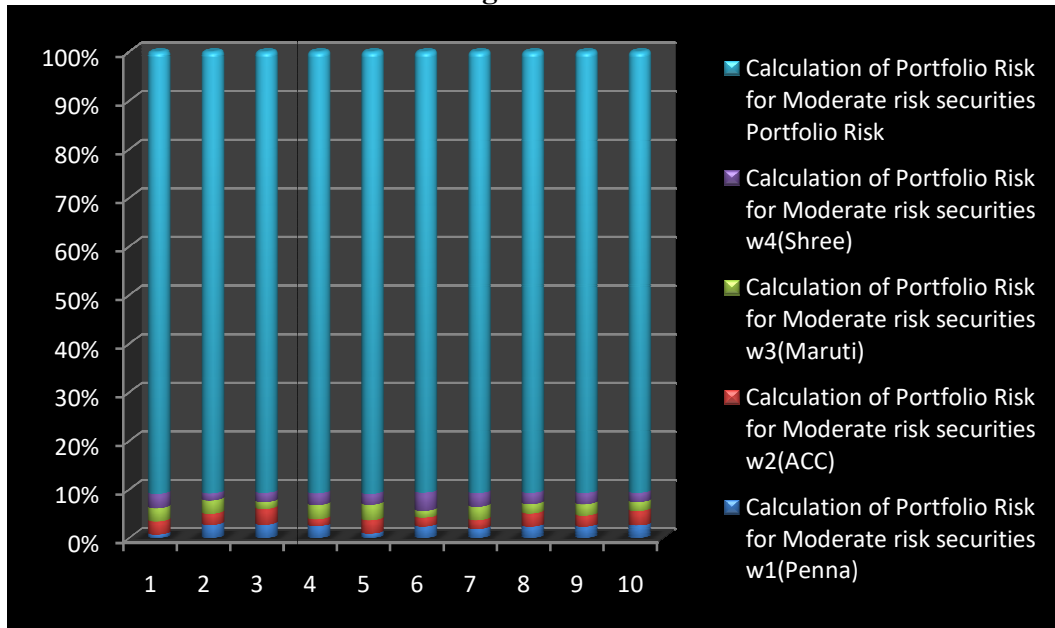
Interpretation: Here we were segregating the stocks into high, moderate and low risk securities. Under high risk, we identified Hcl infosystem, Atul motors, Indoco Remedies and Hindustan stocks with 10 different portfolios. After examining the stocks in high risk portfolios, we found that portfolio no.2 shows higher portfolio risk value of 13.04 and other remaining stocks showing similar portfolio risk value.

4.6.2 Portfolios Consisting of Moderate Risk securities

Table 4.6.2

Calculation of Portfolio Risk for Moderate risk securities				
w1(Penna)	w2(ACC)	w3(Maruti)	w4(Shree)	Portfolio Risk
0.08	0.3	0.3	0.32	10.01
0.3	0.25	0.3	0.15	9.89
0.3	0.35	0.15	0.2	9.77
0.25	0.15	0.3	0.25	9.39
0.1025	0.3075	0.3525	0.2475	10.13
0.25	0.2	0.15	0.4	9.71
0.2	0.2	0.3	0.3	9.85
0.25	0.3	0.2	0.25	9.77
0.25	0.25	0.25	0.25	9.80
0.28	0.32	0.2	0.2	9.78

Figure 4.6.2



Interpretation: Under moderate risk, we identified Penna Cements, ACC Cements, Shree Cements and Maruti Motors stocks with 10 different portfolios. After examining of the stocks in moderate risk portfolios, we found that portfolio No.1 and portfolio No. 5 have higher portfolio risk values of 10.01 and 10.13 respectively and other remaining stocks have slightly lower portfolio risk values.

4.6.3 Portfolios consisting of low risk securities

Table 4.6.3

Calculation of Portfolio Risk for Low risk securities				
w1(Infosys)	w2(Emphasis)	w3(Drreddy`s)	w4(Glenmark)	Portfolio Risk
0.05	0.25	0.25	0.45	3.51
0.25	0.25	0.25	0.25	3.73
0.25	0.2	0.25	0.3	3.76
0.3	0.25	0.3	0.15	4.05
0.2525	0.2575	0.3	0.19	3.82
0.15	0.15	0.2	0.5	3.71
0.15	0.25	0.3	0.3	3.48
0.15	0.3	0.2	0.35	3.51
0.3	0.2	0.3	0.2	4.06
0.34	0.15	0.3	0.21	4.33

Figure 4.6.3



Interpretation: Under low risk, we identified that Infosys, Mphasis, Dr Reddy’s and Glenmark stocks with 10 different portfolios, we found that portfolio No.4, portfolio No.9 and portfolio No.10 have portfolio risk values of 4.05, 4.06 and 4.33 respectively and other remaining stocks have slightly lower portfolio risk values.

4.7 Calculations of Portfolio Returns

The portfolio return of the above securities in portfolios is calculated by using the following measures, they are:

- Weights of securities
- Returns of the securities

By using the above measures, the portfolio risk is calculated from the following formula

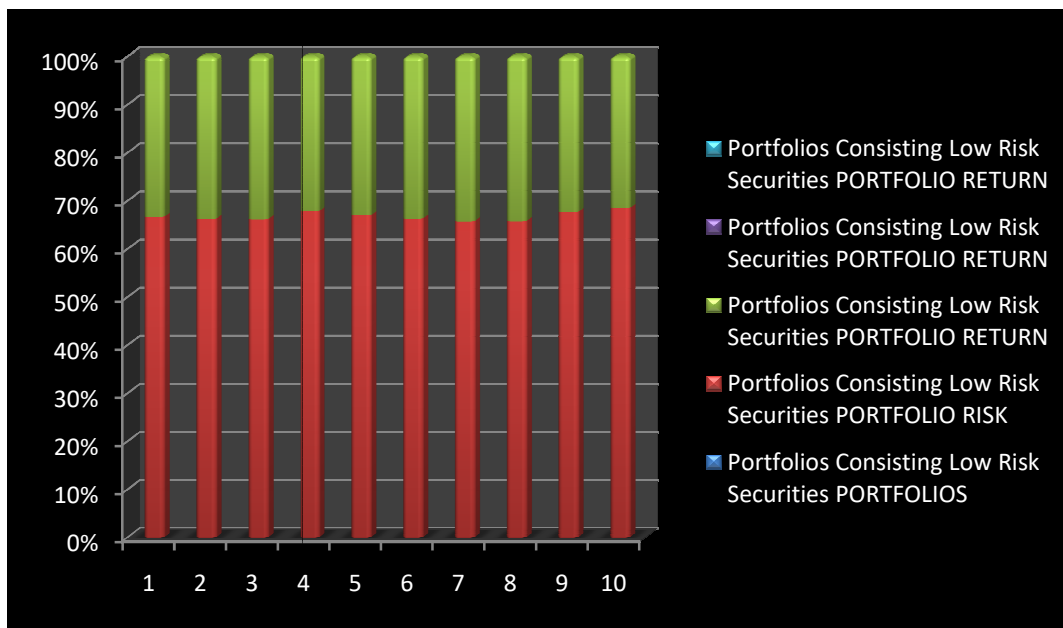
$$E(R_p) = \sum W_i * R_i$$

4.7.1 Portfolios Consisting of High Risk Securities

Table 4.7.1

Calculation of Portfolio Return for High risk securities				
w1(Hcl info)	w2(Atul)	w3(Indoco)	w4(Hindustan)	Portfolio Return
0.1	0.29	0.29	0.32	6.7496
0.4	0.2	0.2	0.2	7.484
0.25	0.2	0.25	0.3	6.807
0.2	0.25	0.3	0.3	7.288
0.3025	0.3575	0.1275	0.1125	7.3355
0.3	0.2	0.25	0.25	7.149
0.2	0.25	0.25	0.3	6.848
0.2	0.25	0.3	0.25	7.197
0.25	0.25	0.2	0.3	6.841
0.23	0.32	0.23	0.22	7.4498

Figure 4.7.1



Interpretation: Here we were segregating the stocks into high, moderate and low risk securities. Under high risk, we identified Hcl infosystem, Atul motors, Indoco Remedies and Hindustan stocks with 10 different portfolios. The returns of the portfolios consisting of high risk securities were calculated based on individual returns and their weights in portfolio. After examining the stocks in high risk portfolios, we found that portfolio no.2, 4, 5, 7, and 10 were generated higher portfolio returns of 7.484, 7.288, 7.33, 7.149, 7.197 and 7.449 respectively and other remaining portfolios were generating slightly lower returns.

4.7.2 Portfolios Consisting of Moderate Risk Securities

Table 4.7.2

Calculation of Portfolio Return for Moderate risk securities				
w1(Penna)	w2(ACC)	w3(Maruti)	w4(Shree)	Portfolio Return
0.08	0.3	0.3	0.32	3.9534
0.3	0.25	0.3	0.15	4.109
0.3	0.35	0.15	0.2	3.8825
0.25	0.15	0.3	0.25	4.0245
0.1025	0.3075	0.3525	0.2475	4.021925
0.25	0.2	0.15	0.4	4.0795
0.2	0.2	0.3	0.3	4.143
0.25	0.3	0.2	0.25	3.963
0.25	0.25	0.25	0.25	4.0625
0.28	0.32	0.2	0.2	3.9456

Interpretation: Under moderate risk, we identified Penna Cements, ACC Cements, Shree Cements and Maruti Motors stocks with 10 different portfolios. The returns of the portfolios

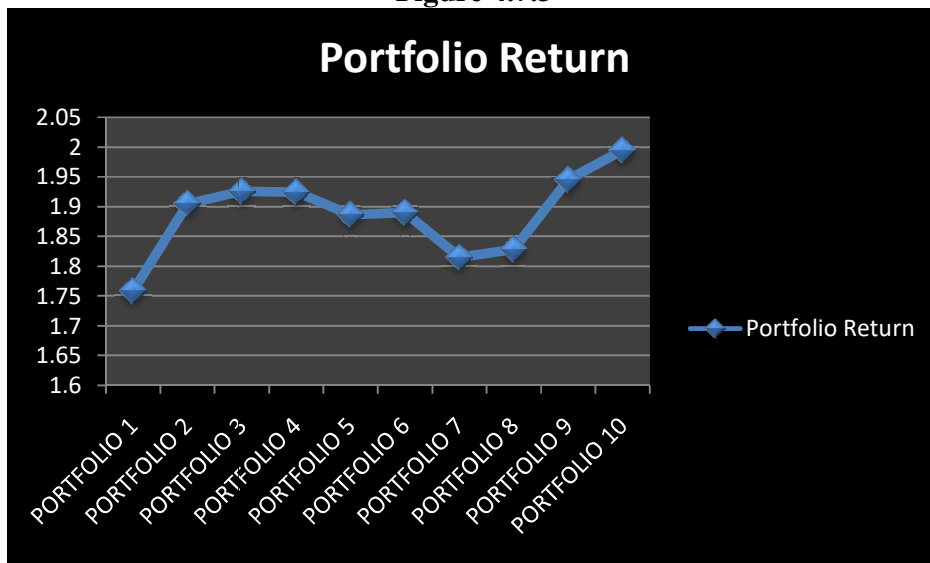
consisting of moderate risk securities were calculated based on individual returns and their weights in portfolio. After examining of the stock in moderate risk portfolios, we found that portfolio No.2, 4, 5, 6, 7 and 9 were generated higher portfolios returns of 4.10, 4.024,4.021, 4.079, 4.143 and 4.062 respectively and other remaining generated the slightly lower returns.

4.7.3 Portfolios consisting of low risk securities

Table 4.7.3

Calculation of Portfolio Return for Low risk securities				
w1(Infosys)	w2(Mphasis)	w3(Dr Reddy)	w4(Glenmark)	Portfolio Return
0.05	0.25	0.25	0.45	1.759
0.25	0.25	0.25	0.25	1.905
0.25	0.2	0.25	0.3	1.9255
0.3	0.25	0.3	0.15	1.9245
0.2525	0.2575	0.3	0.19	1.88675
0.15	0.15	0.2	0.5	1.89
0.15	0.25	0.3	0.3	1.815
0.15	0.3	0.2	0.35	1.8285
0.3	0.2	0.3	0.2	1.945
0.34	0.15	0.3	0.21	1.9947

Figure 4.7.3



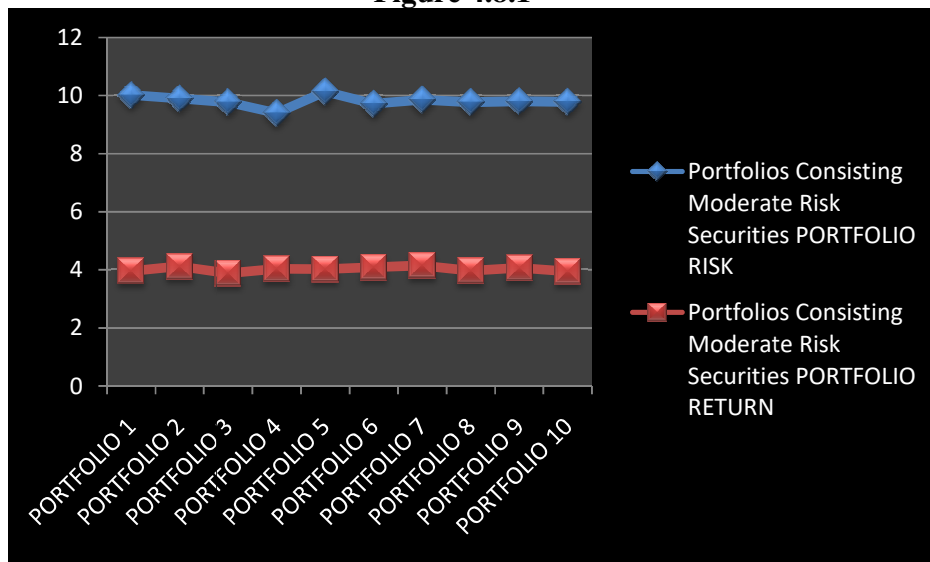
Interpretation: Under low risk, we identified that Infosys, Mphasis, Dr Reddy’s and Glenmark stocks with 10 different portfolios, The returns of the portfolios consisting of low risk securities were calculated based on individual returns and their weights in portfolio. We found that portfolio No.2, 3, 4, 9 and 10 generated slightly higher returns of 1.905, 1.925, 1.924, 1.945 and 1.994 respectively and other portfolios generated relatively lower returns.

4.8 Risk and Return of Portfolios

Table 4.8.1

Portfolios Consisting High Risk Securities		
PORTFOLIOS	PORTFOLIO RISK	PORTFOLIO RETURN
PORTFOLIO 1	11.81	6.7496
PORTFOLIO 2	13.04	7.484
PORTFOLIO 3	12.02	6.807
PORTFOLIO 4	12.37	7.288
PORTFOLIO 5	12.00	7.3355
PORTFOLIO 6	12.20	7.149
PORTFOLIO 7	11.93	6.848
PORTFOLIO 8	11.76	7.197
PORTFOLIO 9	12.29	6.841
PORTFOLIO 10	12.17	7.4498

Figure 4.8.1



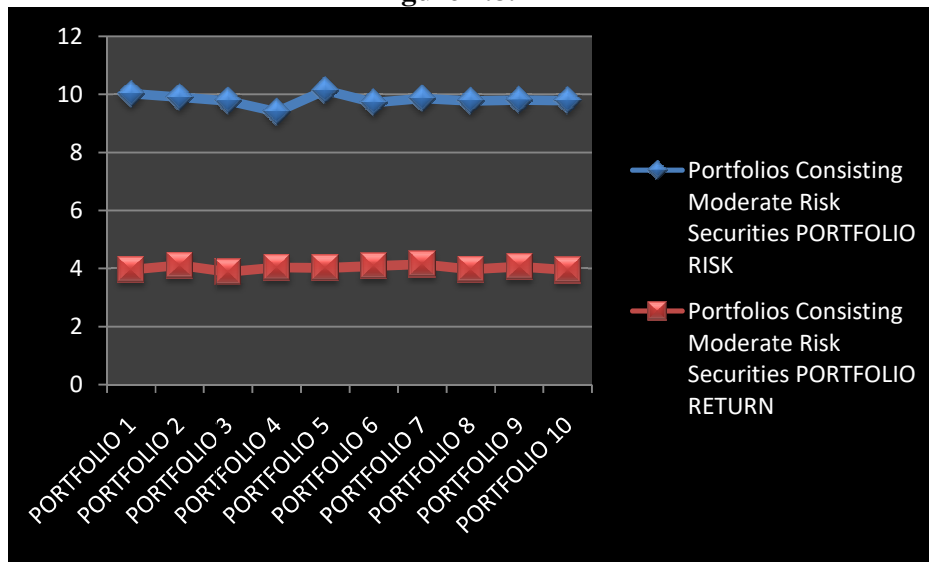
Interpretation: Generally the potential return of an investment depends on the high risk of securities. There is no guarantee to get higher returns of accepting high risk securities. If investor wants to reduce the risk, there is only one way to minimize i.e., diversification. Diversification enables investor to reduce the risk of investor portfolio without sacrificing potential returns. Once portfolio is fully diversified, investor has to take additional risk to earn higher potential returns on portfolio. The numerical values of risk and return of high risk securities table 4.8.1 indicates that the portfolio which generates higher returns had higher portfolio risk and vice versa. For example portfolio no. 2 which generates higher return of 7.484 with higher portfolio risk of 13.04 and vice versa portfolio no.1 generates lower return of 6.749 with lower portfolio risk of 11.81 but it always couldn't happen because some portfolios generate high returns with moderate portfolio risk if we diversify the portfolio properly.

4.8.2 Portfolios Consisting Moderate Risk Securities

Table 4.8.2

Portfolios Consisting Moderate Risk Securities		
PORTFOLIOS	PORTFOLIO RISK	PORTFOLIO RETURN
PORTFOLIO 1	10.01	3.9534
PORTFOLIO 2	9.89	4.109
PORTFOLIO 3	9.77	3.8825
PORTFOLIO 4	9.39	4.0245
PORTFOLIO 5	10.13	4.021925
PORTFOLIO 6	9.71	4.0795
PORTFOLIO 7	9.85	4.143
PORTFOLIO 8	9.77	3.963
PORTFOLIO 9	9.80	4.0625
PORTFOLIO 10	9.78	3.9456

Figure 4.8.2



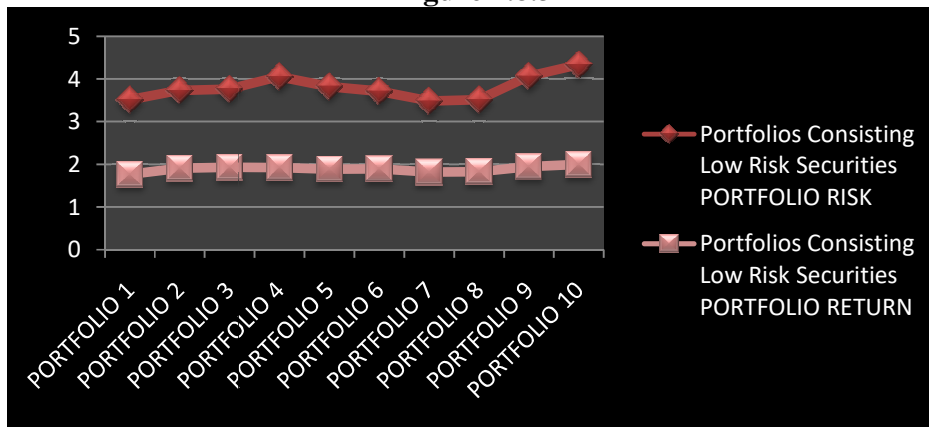
Interpretation: The numerical values of risk and return of moderate risk securities table 4.8.2 indicates that the higher risk securities will not always generate the higher returns and vice versa. For example portfolio no.7 which generates higher return of 4.143 with moderate portfolio risk of 9.85. The well diversified portfolios will generate the higher returns with even moderate or lower securities.

4.8.3 Portfolios Consisting Low Risk Securities

Table 4.8.3

Portfolios Consisting Low Risk Securities		
PORTFOLIOS	PORTFOLIO RISK	PORTFOLIO RETURN
PORTFOLIO 1	3.51	1.759
PORTFOLIO 2	3.73	1.905
PORTFOLIO 3	3.76	1.9255
PORTFOLIO 4	4.05	1.9245
PORTFOLIO 5	3.82	1.88675
PORTFOLIO 6	3.71	1.89
PORTFOLIO 7	3.48	1.815
PORTFOLIO 8	3.51	1.8285
PORTFOLIO 9	4.06	1.945
PORTFOLIO 10	4.33	1.9947

Figure 4.8.3



Interpretation: The numerical values of risk and return of low risk securities table 4.8.3 indicates that the higher risk securities generated the higher returns and some portfolio generated higher returns with lower portfolio risk. For example portfolio no.4 generates higher return of 1.924 with higher portfolio risk of 4.05 and portfolio no.3 generates higher portfolio returns of 1.925 with lower portfolio risk of 3.76 that means higher risk portfolio will generate higher returns but sometimes if portfolio is well diversified with appropriate weights of the portfolio, it leads to higher portfolio returns with low risk securities.

Chapter 5 Findings & Suggestions

5.1 Findings

- Here we have taken 12 companies from 4 different sectors like IT, Automobiles, Cement and Pharma to calculate the average returns for the period of July 2016 to June 2017. The table clearly indicates that Atul Auto Motors, Hcl InfoSystems and Indoco Remedies were top performers by generating significant returns of 9.48%, 8.66% and 8.80% respectively. At the same time Maruti Motors, Penna Cements and Shree Cement were generating moderate returns of 4.74%, 4.57% and 4.19% respectively. The remaining stocks like Infosys, Mphasis, Hindustan Motors, Dr Reddy's Laboratories and Glenmark Pharma were generating very low returns of 2.64%, 1.50%, 1.82%, 1.57% and 1.91% respectively. The analysis clearly indicates that the performance of all the stocks in sector wise was not similar. For example, In IT sector Hcl Infosystem was outperformed by generating 8.66% but INFOSYS and Mphasis were performed poorly by generating 2.64% and 1.50%. Like that stocks in specific sector were not generating similar returns. Thus, the returns of the stocks were depending on the individual performance of the company, not sector wise performance.
- As per requirement for analysis, here we calculated the standard deviation for identifying the risk levels of the stocks. The table clearly shows the Hcl Infosystems, Atul Motors, Hindustan Motors and Indoco Remedies had high standard deviation values which indicated high risk of the securities. The Maruti Motors, Acc, Penna Cements and Shree Cements had moderate standard deviation values which indicated the moderate risk of the securities. The remaining stocks like Infosys, Mphasis, Dr Reddy's Laboratories and Glenmark had lower standard deviation value which means low risk of the securities. Like stock returns, Risk of the stocks will be no way relevant to sector wise performance. Thus , risk level of the stocks depends on the individual performance of the company, not sector wise performance.
- As part of identifying the portfolio risk, first we need to identify the relationship among the securities. So, here we used the statistical tool called correlation to measure the relationship among the securities. The possible outcome of correlation among the stocks might be positive correlation, negative correlation and no correlation. The table 4.4, In IT sector shows that Infosys had negative correlation with Mphasis and Hcl infosystems but

Mphasis with Hcl infosystem had no correlation. In auto sector, Atul Auto Motors, Hindustan motors and Maruti motors had positive correlations among them. In cement sector, Acc cements, Penna cements and Shree cement had positive correlation among them. In pharma sector, Dr Reddy's laboratories, Glenmark and Indoco Remedies had no correlation among them. Generally stocks with similar sector might get positive correlation but results show that some sectors like IT had negative correlations and as well as no correlation. In Pharma sectors stocks indicate that there are No correlations exist among them but Automobiles and Cement sectors indicate that the positive correlations exist among them.

- Here we were segregating the stocks in to high, moderate and low risk securities. Under high risk, we identified Hcl infosystem, Atul motors, Indoco Remedies and Hindustan stocks with 10 different portfolios. After examining the stocks in high risk portfolios, we found that portfolio no.2 shows higher portfolio risk of 13.04 and other remaining stocks showing similar portfolio risk.
- Under moderate risk, we identified Penna Cements, ACC Cements, Shree Cements and Maruti Motors stocks with 10 different portfolios. After examining the stock in moderate risk portfolios, we found that portfolio No.1 and portfolio No. 5 had higher portfolio risk of 10.01 and 10.13 respectively and other remaining stocks had slightly lower portfolio risk values.
- Under low risk, we identified Infosys, Mphasis, Dr Reddy's and Glenmark stocks with 10 different portfolios, we found that portfolio No.4, portfolio No.9 and portfolio No.10 have portfolio risk values of 4.05, 4.06 and 4.33 respectively and other remaining stocks have slightly lower portfolio risk values.
- Here we were segregating the stocks in to high, moderate and low risk securities. Under high risk, we identified Hcl infosystem, Atul motors, Indoco Remedies and Hindustan stocks with 10 different portfolios. The returns of the portfolios consisting of high risk securities were calculated based on individual returns and their weights in portfolio. After examining the stocks in high risk portfolios, we found that portfolio no.2, 4, 5, 7, and 10 were generated higher portfolio returns of 7.484, 7.288, 7.33, 7.149, 7.197 and 7.449 respectively and other remaining portfolios generated slightly lower returns.

- Under moderate risk, we identified Penna Cements, ACC Cements, Shree Cements and Maruti Motors stocks with 10 different portfolios. The returns of the portfolios consisting of moderate risk securities were calculated based on individual returns and their weights in portfolio. After examining the stock in moderate risk portfolios, we found that portfolio No.2, 4, 5, 6, 7 and 9 were generated higher portfolio returns of 4.10, 4.024, 4.021, 4.079, 4.143 and 4.062 respectively and other remaining generated the slightly lower returns.
- Under low risk, we identified that Infosys, Mphasis, Dr Reddy's and Glenmark stocks with 10 different portfolios, The returns of the portfolios consisting of low risk securities were calculated based on individual returns and their weights in portfolio. We found that portfolio No.2, 3, 4, 9 and 10 generated slightly higher returns of 1.905, 1.925, 1.924, 1.945 and 1.994 respectively and other portfolios generated relatively lower returns.
- Generally, the potential return of an investment depends on the high risk of securities. There is no guarantee to get higher returns of accepting high risk securities. If investor wants to reduce the risk, there is only one way to minimize i.e., diversification. Diversification enables investor to reduce the risk of investor portfolio without sacrificing potential returns. Once portfolio is fully diversified, investor has to take additional risk to earn higher potential returns on portfolio.
- The numerical values of risk and return of high risk securities table 4.8.1 indicates that the portfolio which generates higher returns had higher portfolio risk and vice versa. For example, portfolio no. 2 generates higher return of 7.484 with higher portfolio risk of 13.04 and vice versa portfolio no.1 generates lower return of 6.749 with lower portfolio risk of 11.81 but it always couldn't happen because some portfolios generate high returns with moderate portfolio risk if we diversify the portfolio properly.
- The numerical values of risk and return of moderate risk securities table 4.8.2 indicates that the higher risk securities will not always generate the higher returns and vice versa. For example, portfolio no.7 generates higher return of 4.143 with moderate portfolio risk of 9.85. The well diversified portfolios will generate the higher returns with even moderate or lower securities.
- The numerical values of risk and return of low risk securities table 4.8.3 indicates that higher risk securities generated the higher returns and some portfolio generated higher returns with lower portfolio risk. For example, portfolio no.4 generates higher return of

1.924 with higher portfolio risk of 4.05 and portfolio no.3 generates higher portfolio return of 1.925 with lower portfolio risk of 3.76 that means higher risk portfolio will generate higher returns but sometimes if portfolio is well diversified with appropriate weights of the portfolio, it leads to higher portfolio returns with low risk securities.

5.2 Suggestions

- As the average return of securities, HCL Infosystems, ATUL Motors, Indoco remedies, Hindustan Motors were high, the investors who are willing to earn more returns, can invest in HCL Infosystems, ATUL Motors, Indoco remedies, Hindustan Motors.
- As the securities of HCL Infosystems, ATUL Motors, Indoco remedies, Hindustan Motors are risky securities because of high volatility, it is suggested that the investors should be careful while investing in these securities.
- The investors who are not willing to take high risk with high return will invest in portfolio consisting of Infosys, Emphasis, Dr Reddy`S Lab, Glenmark
- Don't put your entire investment in one security. It is like "putting all the eggs in one basket ". This will make high risk in the long term.
- Investors are always diversifying their investments in different sectors stocks to overcome the risk of drastic fall of stocks due to fundamental weakness of company.
- The investor must select the right advisory body which has sound knowledge about the product which they are offering.
- Good advisory body always gives proper suggestions to investors which will help to get higher returns with lower risk.

5.3 Conclusion

Stock Market is a market where the trading of company stock, both listed securities and unlisted takes place. It is different from stock exchange because it includes all the national stock exchanges of the country. For example, we use the term, "the stock market was up today" or "the stock market bubble." Every investment is characterized by return and risk. The concept of risk is intuitively understood by investors. In general, it refers to the possibility of incurring a loss in a financial transaction. But risk involves much than that. The word risk has a definite financial meaning. The investors who are risk averse can invest their funds in the portfolio combination of Infosys, Emphasis, Dr Reddy`S Lab, and Glenmark proportion. The investors who are slightly

risk averse are suggested to invest in Penna Cements, ACC Cements, Maruti Motors, and Shree cements as the combination is slightly low risk when compared with other companies. This study aims at analyzing the opportunity that are available for investors as per returns are concerned and the investment of risk thereof while investing in equity of firms listed in the national stock exchange. As part of the process of economic liberalization, the stock market has been assigned an important place in financing the Indian corporate sector. Besides enabling mobilizing resources for investment directly from the investors, providing liquidity for the investors and monitoring and disciplining company managements are the principal functions of the stock markets. The main attraction of the stock markets is that they provide for entrepreneurs and governments a means of mobilizing resources directly from the investors, and to the investors they offer liquidity. It has also been suggested that liquid markets improve the allocation of resources and enhance prospects of long term economic growth.

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