

## CHAPTER-I

### INTRODUCTION

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#### 1.1 Background

There is no denying the fact that Indian stock market has changed immensely. Earlier than independence, the Indian stock market was underdeveloped because at that time there were very few companies and the number of securities traded in the stock exchange was smaller. But after Independence, the Indian stock market has broadened drastically and the saving and investing are showing on a slow improvement. In the wake of liberalization and globalization of economic policies, the stock markets in the developing countries are undergoing dramatic changes. Firstly, there has been an exponential development in terms of capital raised, number of listed companies. Secondly, the use of technologies is increasing day by day. These changes also effect the investment decisions. After liberalization, there is more suppleness for firms to make their investment decisions. As per as investment decision is concerned, it depends upon the different things.

Truly speaking, in the era of modernization, multifarious opportunities are available for investors for investing. The craze of investing is mushrooming. Investing is not an easy game. In simply due to uncertainty, investing is a risky concept. To begin with, there is no denying the fact that risk and return plays a prominent role in investment decision making. As far as theoretical concept of risk-return relationship and the diversification effect is concerned, it is a major ambiguous issue. This issue arouses curiosity in the mind of investors, researchers, academicians and practitioners. A curious investor and researcher may find any information about anything that he/she is interested in.

Every investor has keen to know about the security's performance. Investors have some dilemma which security they should select for investment. An investigation of risk and return of different securities is of much of significance and worth investigation. What is the relationship between risk and return? What is the diversification effect? Which macroeconomic variables affect the stock market return? These are some empirical questions. So the present study is concern with the findings and answer to these some questions. Various concepts are often considered when taking investment decisions. Risk and return relationship is of particular interest of investors especially in the context of portfolio diversification. Before selecting any security investors should decided about the proportion of asset. The present study is mainly due to the transition economy. We know that during the last few years, many extraordinary and rapid changes have been seen in the Indian capital market. Therefore, due to the changed environment it becomes important to understand the risk-return relationship and the effect of diversification for Indian equities. The changeable environment offers many opportunities to the investors. Moreover, investment has a vital place in today's changing environment.

Risk and returns are important variables that investors are looking for, at the time of investment decision making. The importance of risk and returns and the relationship between them, encouraged researchers to study different models that measure risk and return with higher accuracy (Sinaee and Moradi 2010).

Practitioners all over the world use a plethora of models in their portfolio selection process and in their attempt to assess the risk exposure to different assets (Michailidis et al. 2006). Thus, it is certainly true that risk and return are essential for investment decision.

The popular developers of portfolio theories were Markowitz and Tobin suggested that the risk of an individual security is the standard deviation of its returns. The Markowitz model generates the efficient frontier of portfolios and the investors are expected to select a portfolio, which is the most appropriate or them, from the efficient set of portfolios available to them. Even since Markowitz introduced the concept of portfolio theory in 1952 one of the questions

predominant in the minds of financial theorists has been the consistency of the investor's optimal portfolio.

Much on the basis of the issue of risk, return and diversification effect on what is often called the Capital Asset Pricing Model (CAPM) which say higher the risk, higher the return. Markowitz developed the modern portfolio theory. According to Markowitz, the stocks are related to each others. The theory explains the reasons of varying expected return over time. The model annotates the relationship between return and risk for an asset. The impact of this model is significant. In fact the evidence for a large number of countries for the Capital Asset Pricing Model (CAPM) is highly appreciable. Given this empirical evidence many authors have tried in recent years to test the relationship between risk and return. The issue of risk, return and diversification effect must be addressed to investors because a person who lacks the awareness, knowledge of equity market, it will be difficult for him to take a proper decision for investment and in India several investors suffering vast losses due to the investment conclusion based on the lack of the awareness about the risk & return relationship and the diversification effect.

During the last few years, Investors are looking for all time new investment opportunities in around the world. Today's the changing environment financial investors used many financial techniques to analyze the risk and return of securities. Capital Asset Pricing Model (CAPM) is one of the most important techniques to assess the risk and return of equities. In order to test the relationship between risk and return, there have been numerous researches in the past.

The most important word that relates to the stock market is 'Investment'. Investment plays a vital role in the development of any country. Everyone invests in order to improve future. Risk and return both are the elements of investment decision making because when a investor wants to invest, the most important question comes to his/her mind is where to invest and this question arises when an investor has more than one alternatives. So, for the purpose of taking a decision for investment, an investor should compare all the alternatives and choose the best one. Now a day, investors have many opportunities for investment. An investor wants maximum returns with minimum level of risk. The

issue concerned with investment from investors is, how securities are priced and this issue is also linked with the two important aspects of investment decision one is risk and other one is return. Thus, risk and return both are the important elements of investment decision making.

### **1.1.1 History of Shares**

The ability of individuals to take stakes in companies has long been known. The Romans used to fund expeditions to India for silks. Indeed, there were contemporary fears that the export of solid silver in exchange for perishable silks would ultimately bankrupt the Empire, a prediction not fulfilled. Many merchants became rich as a result of this trade while the Empire exacted a tax on it. Nevertheless, many of the aristocracy were debarred from taking part in commercial ventures, while the real mark of wealth was to own land. The larger the estate the better and this would provide the primary source of income for the 'old rich'. As a result, the Romans never really sorted out the principles of modern lending (banking), accountancy (they lacked the security of double entry systems) or companies with multiple shareholders who could trade their holdings. After the collapse of the Western Roman Empire in 476 AD, there was a long period of stagnation in Europe. European financiers in medieval times, particularly those of the maritime trading cities such as Venice, invented and developed many of the modern accounting systems that today we take for granted. For example, paper money and transactions between distant banks, and double accounting and the use of black and red inks for positive and negative value entries. However, the Reformation and the spread of British sea power created a new class of entrepreneurs who sought their fortunes in overseas goods. In the sixteenth to eighteenth centuries a typical method of trading was to create a company by borrowing from wealthy (White, 2007).

Investment decision needs to be consistent that cannot be ignored. Just concerning everyone who has written on the subject of investment has on hand one or another definition. For instance

Reilly and Brown (2006) define investment "is the current commitment of dollars for a period of time in order to derive future payments that will

compensate the investors for (1) the time the funds are committed, (2) the expected rate of inflation, and (3) the uncertainty of future payments”.

Amling (1984) define investment “as the purchase by individual or institutional investors of a financial or real asset that produce a return proportional to the risk assumed over some future investment period”.

Fischer and Jordon (1983) define “investment is a commitment of funds made in the expectation of some positive rate or return. If the investment is properly undertaken, the return will be commensurate with the risk the investor assumes”.

To begin our study on ‘Risk-Return Relationship and the Effect of Diversification’, we need to address these issues:

- What risk is?
- What return is?
- What risk-return relationship is?
- What Capital Asset Pricing Model (CAPM) is?
- What diversification effect is?
- What relation exists among macroeconomic variables and stock market returns in India?

These are not the only questions by any means, but they are among the most important questions concerned with investment decision. Broadly speaking, these are the important ways for investors that how they can invest.

The relationship between risk and return in the stock markets has been one of the most investigated topic in financial economics. Although the risk-return relationship is of fundamental importance in economy, the empirical asset pricing literature has not yet reached an agreement on the existence of such a positive risk-return trade off for stock market indices (Balios, 2008).

### **1.1.2 Concept of Risk**

Risk is the possibility of loss. It is the base that actual return may not be same as expected. Risk is measured by standard deviation (the square root of the

variance) because standard deviation measures variations which are associated with risk. It can be calculated as follows:

$$\sigma = \sqrt{\frac{(R_i - \bar{R}_i)^2}{n-1}} \quad \text{Eq. (1.1)}$$

Where

$R_i$  = investment return

$\bar{R}_i$  = average return

N = number of observations

There is no doubt that investor's does not like risk so the acceptance of total risk is not essential for investors. Investors can take the benefits of diversification. With the help of diversification, investors can eliminate the unsystematic risk. Every company faces both types of risk systematic and unsystematic risk. It is important to judge and evaluate the efficiency of companies stock and shares. The majority people are risk averse. It does not mean that investors will not take a risk. Risk adverse people repetitively take risks, but only when they believe there is a superior cause for doing consequently. In other way, we can say people take risk only if they believe they will be rewarded for winning them. The presence of risk means that more than one conclusion is achievable. Risk consists of two components:-

- Systematic, Non-diversifiable or Uncontrollable risk and
- Unsystematic, Diversifiable or Controllable risk.

### **Systematic, Non-diversifiable or Uncontrollable risk**

Risk which effect the entire market. It includes market risk (due to change in market conditions), interest rate risk (due to change in interest rates) and inflation risk, risk due to monsoon, different scams, situation of wars, political risk etc. It is also known as market risk or unavoidable risk. This risk affects a large number of assets and this type of risk is not specific to a particular

company. This type of risk changes due to the economic, social and political factors. This type of risk is uncontrollable.

### **Unsystematic, Diversifiable or Controllable risk**

It means specific risk. This risk effect a small number of assets. The unsystematic risk is different for each investment for a company. It consists of business risk, financial risk, uncertainty risk. Moreover, unsystematic risks are mismanagement, increasing inventory, wrong financial policy, wrong marketing etc. It is also known as unique risk, non-market risk and avoidable risk. This type of risk is specific to a company. Unsystematic risk can't be zero but it can be minimize. Unsystematic risk can be diversifying through creating of portfolios.

Total risk is the combination of systematic and unsystematic risk.

Total Risk = systematic risk (market risk) + unsystematic risk (idiosyncratic risk)

Return and Risk of the equity are linked with the prices of the equity. Therefore, risk and return analysis becomes an important aspect of equity valuation. So, when investors are looking for efficient portfolio, their interest knows the systematic risk.

#### **1.1.3 Concept of Return**

Return is the most important tool for motivating people to invest. Profit on investment is return. Shareholder's return is a most important concept for calculating the performance of companies stock and shares. Returns are based on risk level means higher the risk-higher the return and lower the risk-lower the return. For the purpose of calculating the return this formula is used.

$$R_i = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}} \quad \text{Eq. (1.2)}$$

Where  $R_i$  = actual return

$D_t$  = dividend received.

$P_t$  = security price at the time t

$P_{t-1}$  = security price at the time period t-1

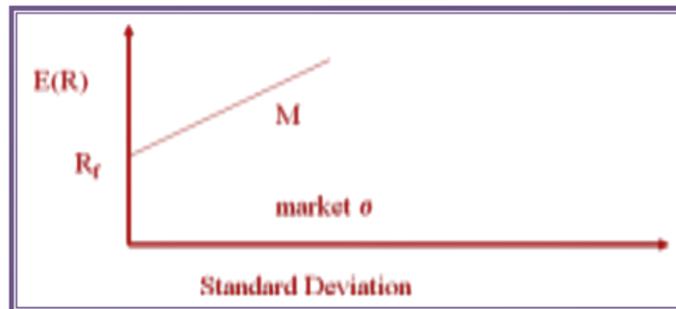
#### 1.1.4 Concept of Risk-Return Relationship

The Capital Asset Pricing Model is the one of the most famous model used in the financial economics. It is the main model about the risk-return relationship in the literature. Capital Asset Pricing Model (CAPM) is a model that use for describing the relationship between risk and expected return. This model is also known as the standard model. This model was developed by Markowitz. It is a model for evaluating the performance of portfolios. Portfolio is the combination of various assets. Markowitz drew attention to the common practice of portfolio diversification and showed exactly how an investor can reduce the standard deviation of portfolio returns by choosing stocks that do not move exactly together. This model was simultaneously and independently developed by Johan Linter, Jan Mossin. Capital Asset Pricing Model includes two market lines: one is Capital Market Line (CML) and the other one is Security Market Line (SML).

**Capital Market Line (CML):** The Capital Market Line provides a framework for determining the relationship between expected return and risk for portfolios of securities. The Capital Market Line provides a framework for determining the relationship between expected return and risk for portfolios of securities. The capital market line uses the standard deviation as a measure of risk. Capital Asset Pricing Model deals with the concept of how assets are priced. The model is an extension of Markowitz's (1952) portfolio theory. Sharp (1965), Linter (1965) and Black (1972) are the researchers who developed the CAPM based on the assumptions and notions of portfolio theory. They suggest that high expected returns are linked with high levels of risk. In other words, the model demonstrates that expected return on a stock above the risk free rate has linear relation with non-diversifiable risk as measured by stocks' beta (Khan 2012).

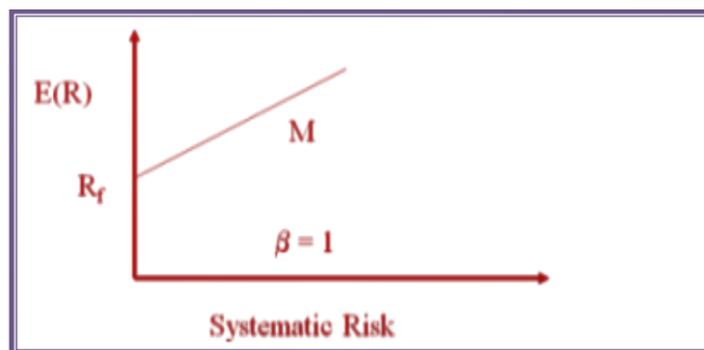
The phenomenon of Capital Market Line (CML) is presented in Figure 1.1

**FIGURE 1.1**  
**CAPITAL MARKET LINE (CML)**



**Security Market Line (SML):** Security market line provides a framework for determining the relationship between expected return and risk for individual securities. The security market line uses beta ( $\beta$ ) as a measure of risk. The phenomenon of Security Market Line (SML) is presented in Figure 1.2

**FIGURE 1.2**  
**SECURITY MARKET LINE (SML)**



Expected return is calculated by using this equation:

$$E(R_i) = R_f + \beta_i [E(R_m) - R_f] \quad \text{Eq. (1.3)}$$

Where

$E[R_i]$  = expected return

$R_f$  = Risk free rate

$$\beta_i = \text{beta of the security } i \text{ as } \frac{\text{Cov}(R_i, R_m)}{\text{VAR}(R_m)}$$

$$E(R_m) = \text{expected return on the market}$$

$$[E(R_m) - R_f] = \text{Market Premium}$$

### 1.1.5 Concept of Capital Asset Pricing Model: A Brief History

Markowitz developed the modern portfolio theory. According to Markowitz, the stocks are related to each others. The theory explains the reasons of changing expected return over time. The Capital Asset Pricing Model was developed for this framework. The model annotates the relationship between return and risk for an asset. The Capital Asset Pricing Model was developed by Markowitz in 1952. The Capital Asset Pricing Model was independently developed by William Sharpe (1964), John Lintner (1965) and Jan Mossin (1966). Many researchers have shown positive relationship between risk and return and some found negative relationship between risk and return. Capital Asset Pricing Model provides the conceptual framework and analytical model for determining the risk and return relationship. Many studies supported the CAPM model and showed significant relationship between return and systematic risk (Black, Jensen and Scholes 1972). The Capital Asset Pricing Model is based on the following assumptions (Elton, Edwin J., Gruber, Martin J., Brown, Stephen J. and Goetzmann, William N. (2009), p. 283).

- There are no transaction costs.
- The second assumption behind the CAPM is that assets are infinitely divisible.
- The third assumption is the absence of personal income tax.
- The fourth assumption is that an individual can't affect the prices of stock by his buying and selling action.
- The fifth assumption is that investors are expected to make decisions solely in terms of expected values and standard deviations of the returns on their portfolios.

- The sixth assumption is that unlimited short sales are allowed.
- The seventh assumption is that unlimited lending and borrowing at the riskless rate.
- The eighth and ninth assumption is deal with the homogeneity of expectations.
- The tenth assumption is that all assets are marketable.

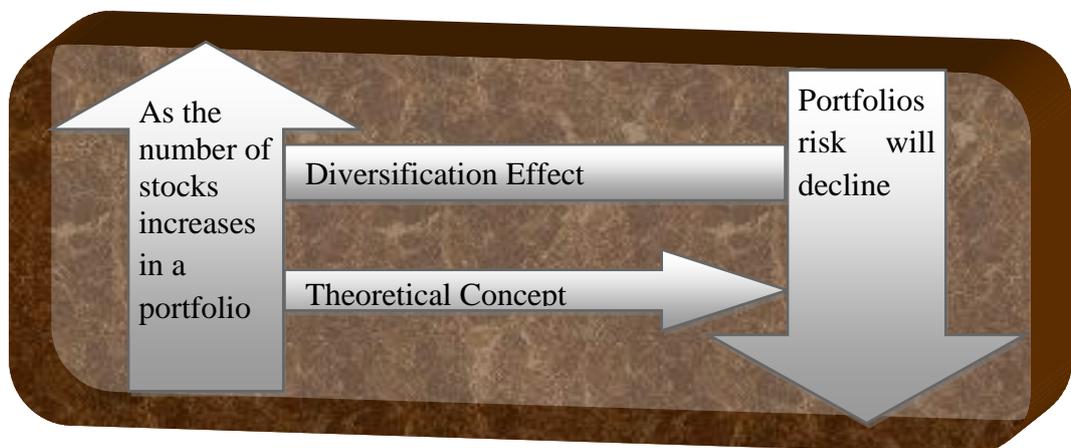
### 1.16 Concept of Diversification Effect

Diversification is one of the important concepts of finance. Simply it says, Diversification is the technique of reducing risk. Diversification simply it means reducing risk by investing a variety of assets. In other way, we can also say that it is a way of managing risk. Investors should buy stocks of different companies.

Hiriyappa (2008) in his book ‘investment management’ explained the diversification concept as “A portfolio that is invested in multiple statements whose returns are uncorrelated will have an expected simple return which is weighted average of the individual instruments returns. Its volatility will be less than the weighted average of the individual instruments volatilities. This is diversification”. A theoretical representation of the concept of diversification is presented in Figure 1.3.

**FIGURE 1.3**

#### **THEORETICAL CONCEPT OF DIVERSIFICATION**

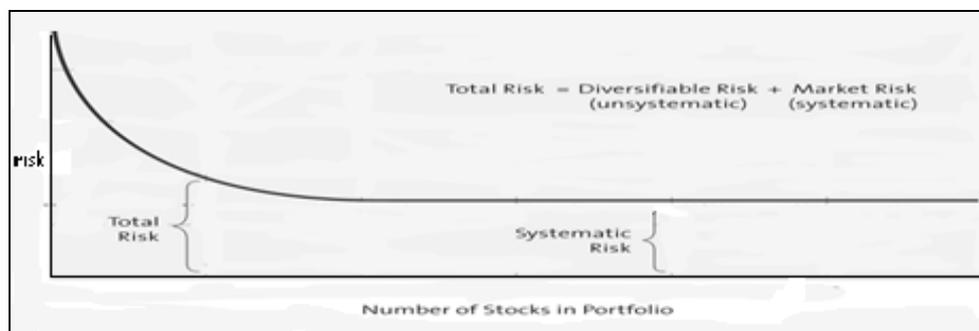


Theoretical concept of diversification says that as the number of securities increases in portfolio, the portfolio risk will decline. A most important principle

concerned with diversification effect is: “**Don’t put all your eggs in one basket**”. **That is related to form a portfolio**. According to this principle the investors shouldn’t invest in only one company. Investors should invest in different companies. That means if some of the companies fails then loss of the investment can be manageable. Therefore, Diversification is a way of managing risk.

As portfolio size increase, so the risk of the portfolio falls. Of importance to investors is the number of assets in portfolio beyond which addition of further assets will not result in further reduction in risk. Modern portfolio theory (MPT) proposes how rational investors will use diversification to optimize their portfolios, and how risky asset should be priced. Markowitz (1952) showed that the variance of the return in a portfolio of financial securities depends not only on the riskiness of individual securities in the portfolio, but also on the relationship of risk among these securities. This suggests that as more assets classes added to the portfolio, the more portfolio risk reduced (Al Suqaier & Al Ziyud 2011). The advantages of diversification are risk management and portfolio optimization. The main disadvantage of diversification is that it can be difficult for small investors. A graphical representation of the diversification situation is presented is Figure 1.4.

**FIGURE 1.4**  
**DIVERSIFICATION SITUATION**



The horizontal axis denotes the number of securities in the portfolio while the vertical axis denotes the risk. The total risk is the combination of unsystematic and systematic risk and unsystematic risk can be removed by diversification.

The traditional theory laid down diversification as a technique of selection of securities in a portfolio. This is called “Random diversification” or Simple diversification, on the basis of straight rule of “two is better than one”. Simple Diversification or random diversification was found to be more remunerative by researchers and these number of scrips in a portfolio of individuals is to be around 10-15 securities (Avadhani 2003, p. 547).

### **1.17 Concept of Markowitz Model**

Markowitz pioneered in developing a well defined theoretical structure for portfolio analysis that can be summarized as follows. First, the two relevant characteristics of a portfolio are its expected return and some measure of the dispersion of possible returns around the expected return, the variance being analytically the most tractable. Second, rational investors will choose to hold efficient portfolios, which are those that maximize expected returns for a given degree of risk or, alternatively and equivalently, minimize risk for a given expected return. Third, it is theoretically possible to identify efficient portfolios by the proper analysis of information for each security on expected return, the variance in that return, and the co-variance of return for each security and that for every other security. Finally, a specified, manageable computer program can utilize inputs from security analysts in the form of the three kinds of necessary information about each security in order to specify a set of efficient portfolios. The program indicates the proportion of an investor's fund that should be allocated to each security in order to achieve efficiency i.e., the maximization of return for a given degree of risk or the minimization of risk for a given expected return (Farrell, 1976). Moreover, the Markowitz model deals only with the concept of total risk. There is no doubt that it is very sound model but this model has one limitation that there is a huge quantity of data is essential to find out the efficient set of portfolio.

### **1.1.8 Important Key Terms**

There are so many important key terms which are concerned with risk and return analysis. Some of them and their description are as follows:

**Beta ( $\beta$ ):** Beta explains a relationship between the price movements of a share with the price movements of an index. Beta measures security's volatility, fluctuations in price and the market portfolio of all stocks. Following method has been used for beta calculation:

$$\beta = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} \quad \text{Eq. (1.4)}$$

If beta is zero then the asset is risk-free. If the stocks beta value is greater than one that stock is riskier than market index means more volatile and also known as aggressive stock and if the stocks beta value is less than one that stock is less risky than market index means less volatile and also known as defensive stock, If stocks beta is equal to one it means that stocks return is equal to market return.

**Alpha ( $\alpha$ ):** Alpha is an intercept, can be calculated by the following formula:

$$\alpha_i = \bar{R} - \beta_i \bar{X} \quad \text{Eq. (1.5)}$$

Where  $\alpha_i$  is an intercept of security i,  $\bar{R}$  is the mean return of security i,  $\bar{X}$  is the mean return of index.

**Portfolio Return:** Portfolio return can be calculated as:

$$R_p = \sum_{i=1}^N w_i (\alpha_i + \beta_i R_m) \quad \text{Eq. (1.6)}$$

Where  $R_p$  is the portfolio return,  $w_i$  is the weight give to security i.

**Portfolio Variance:** Portfolio variance can be obtained as:

$$\sigma_p^2 = \left[ \sum_{i=1}^N (w_i \beta_i)^2 \sigma_m^2 \right] + \left[ \sum_{i=1}^N w_i^2 e_i^2 \right] \quad \text{Eq. (1.7)}$$

Where  $\sigma_p^2$  is variance of the portfolio,  $\sigma_m^2$  is the expected variance of the index,  $w_i^2 e_i^2$  is the weighted average of error term of each security in the portfolio.

**Portfolio Beta:** Beta of a portfolio is the weighted average of the individual assets betas. It can be calculated as:

$$\beta_P = \sum_{i=1}^N w_i \beta_i \quad \text{Eq. (1.8)}$$

Where  $w_i$  is the portfolio share for asset i and  $\beta_i$  is the beta of the asset i.

**Total Risk:** Total risk of a security is the sum of systematic or unsystematic risk. It can be written as:

$$\text{TotalRisk} = \beta_i^2 \sigma_m^2 + e_i^2 \quad \text{Eq. (1.9)}$$

**Correlation Coefficient:** Correlation coefficient explains that how the return of two securities varies together. If the correlation coefficient is +1 that indicates positive correlation, if the correlation coefficient is -1 that indicates negative correlation, if the correlation coefficient is zero that indicates no correlation.

**Covariance:** Covariance explains that how one variable changes in relation to changes in another variable. It's a statistical measure of examining the relationship between two variables.

**Risk Reduction:** Markowitz in their study explained that that the variance of a portfolio of  $N$  assets is given by:

$$\sigma_p^2 = \sum_{i=1}^N w_i^2 \sigma_i^2 + \sum_{i=1}^N \sum_{j=1}^N w_i w_j \sigma_i \sigma_j \rho_{ij} \quad \text{Eq. (1.10)}$$

Where,  $\sigma_p^2 =$  portfolio variance

$\rho_{ij}$  = correlation between asset i and j

$\sigma_i^2$  = variance of the asset i

$N$  = number of assets

### 1.1.9 Concept of Macroeconomic Variables

Before investing investors should look at the macroeconomic factors such as interest rate, GDP growth rate, inflation etc. because macroeconomic variables also effects the equity market and if these variables effects the equity market, they also effect the investment decision. So the present study also discussed the concept of the relationship between macroeconomic variables and stock market returns in India to know about their influence.

Macroeconomic and Industry circumstance might have a greater influence on profits than the firm's relative performance within its industry. In other words, investors need to keep the big picture in mind (Bodie, 2006. p. 581).

An efficient capital market is the one in which security prices adjust rapidly to the arrival of new information. Therefore, the current prices reflect all information about the security. Moreover, economic theory suggests that should prices reflect expectations about future corporate performance, and corporate profits generally reflect the level of economic activities. If stock prices accurately reflect the underlying fundamentals, then the stock prices should be employed as leading indicators of future economic activities, and not the other way round. Therefore, the causal relation among macroeconomic variables and stock prices are important in the formulation of the nation's economy explained by Singh (2010).

As Kutty (2010) stated that economic theory postulates that interest rate, inflation, price level and money supply and the other factors are important variables in understanding the behavior of stock prices and predicting the trends and movements in exchange rates. Understanding the relationship between macroeconomic variables and stock prices are important from the point of view

of policy makers, and the investment community in this changing global environment. Currency is quite often included as an asset in the portfolio held by mutual funds, hedge funds and other professionally managed portfolios, and knowledge of the relationship between exchange rates and stock prices may enable the manager to manage risk efficiently.

The relationship between macroeconomic variables and stock market return has remained a doubtful issue. Various studies have been examined the relationship between macroeconomic variables and stock market returns. Some of the studies found no relationship exists between macroeconomic variables and stock market returns and some of the studies found long-run relationship exists between macroeconomic variables and stock market returns. However, there are no proper results on the subject of the relationship between macroeconomic variables and stock market returns in India.

The macro variables that have been tested in the study are:

- Industrial Production (IP)
- Consumer Price Index (CPI)
- Exchange Rates
- Money Supply
- Call Money Rates

The description of all these variables is as follows:

### **Industrial Production (IP)**

Index of industrial production is a single representative figure to measure the general level of industrial activity in economy (Misra and Puri 2008, p. 355). It is released by the Federal Reserve Board. In simply, it is the economic indicator which measures the amount of output of different industries such as manufacturing, mining etc. Different investors can use the index of industrial production of various industries to examine the growth of that industry.

## **Consumer Price Index (CPI)**

Inflation is a process in which the general price index records a sustained and appreciable increase over a period of time. Rate of Inflation is simply the rate of increase in the general level of prices (Bedi, 2004). What people have to understand about inflation is that it causes, and is not caused by, rising prices. The word Inflate means to expand, not to go up or down, and inflation results whenever the money supply and credit are expanded. Prices rise when that expansion occurs without a commensurate expansion of goods and services (Schiff 2008, p. 26). The consumer price index is one of the most important indicator of purchasing power of money. The CPI measures the cost of a representative container of goods and services virtual to the same container of goods and services in a fixed year base year.

## **Exchange Rates**

In modern economy the role of stock exchange is very important. It can be very helpful to diversify the domestic funds and channels into productive investment, however to perform this important task it is very necessary that stock market have significant relationship with the macroeconomic variables explicated by Mohammad et al. (2009). In the literature, a lot of the previous studies like Kutty (2010), Zhao (2010) have pointed out that no long run relationship between exchange rate and stock prices. Besides that, Katechos (2011) suggested that exchange rates & global stock market returns are strongly linked. Sundharam (2005) in his book 'Economic Analysis' defined "as the rate at which one currency buy or exchanges for another currency is known as the rate of exchange.

## **Money Supply**

Money Supply is another important indicator of macroeconomic environment. Money supply in an economy determines liquidity conditions in the market, interest rate structure and hence the cost of capital to the firms, and the rate of inflation. Money supply is basically determined by the central bank of a country (e.g. Reserve Bank of India) and the commercial banking network.

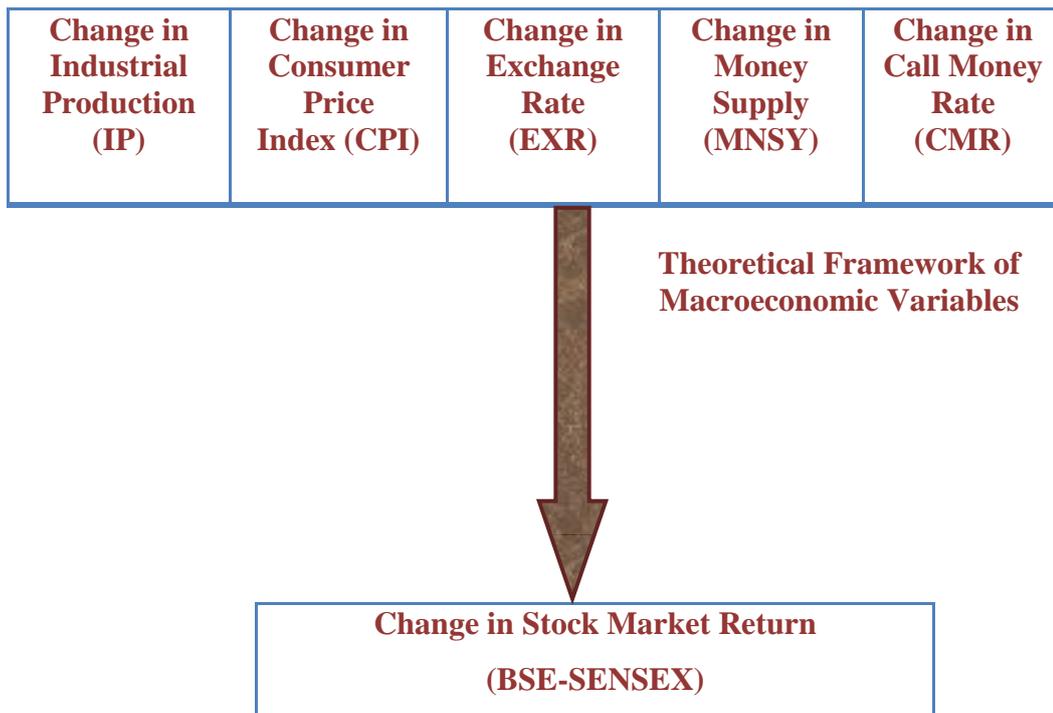
## Call Money Rate

The interest paid on call loans is known as the 'call rate'. It is a highly volatile rate. It varies from day-to-day, hour-to-hour, and sometimes even minute-to-minute. It is very sensitive to changes in the demand for and supply of call loans (Pathak 2003, p. 66). Call money rate is an interest rate at which bank made to brokers. Also know as broker's loan rate.

### Theoretical Framework:

The theoretical framework was adapted from the model on the understanding of the relationship between macroeconomic variables and stock market return. Based upon the literature the following framework has been derived. The theoretical framework is depicted in Figure 1.5

**FIGURE 1.5**  
**THEORETICAL FRAMEWORK OF MACROECONOMIC VARIABLES**



## 1.10 History of Portfolio Theory (Markowitz, 2008)

The history of portfolio theory can be described as:

<b>HISTORY OF PORTFOLIO THEORY</b>
<b>Williams (1938)</b>
<b>Markowitz (1952)</b>
<b>The "General" Portfolio Selection Problem</b>
<b>Tobin (1958)</b>
<b>William Sharpe (1964)</b>
<b>John Lintner (1965)</b>
<b>Jan Mossin (1966)</b>

### **Williams (1938)**

Williams observed that the future dividends of a stock or the interest and principal of a bond may be uncertain. He said that, in this case, probabilities should be assigned to various possible values of the security and the mean of these values used as the value of the security. Finally, he assured readers that by investing in sufficiently many securities, risk can be virtually eliminated (Markowitz, 2008).

### **Markowitz (1952)**

Markowitz, (2008) in their book explained that on the basis of Markowitz (1952), called the father of modern portfolio theory (MPf), but Roy (1952) can claim an equal share of this honor. That summarizes the contributions of both My 1952 article on portfolio selection proposed expected (mean) return,  $E$ , and variance of return,  $V$ , of the portfolio as a whole as criteria for portfolio selection, both as a possible hypothesis about actual behavior and as a maxim for how investors ought to act. The article assumed that "beliefs" or projections about securities follow the same probability rules that random variables obey. From this assumption, it follows that (1) the expected return on the is a weighted average of the expected returns on individual securities and (2) the variance of return on the

portfolio is a particular function of the variances of, and the covariance's between, securities and their weights in the portfolio.

### **The "General" Portfolio Selection Problem**

For the case in which one and only one feasible portfolio minimizes variance among portfolios with any given feasible expected return, Markowitz (1952) illustrated that the set of efficient portfolios is piecewise linear. It may be traced out by starting with the unique point (portfolio) with minimum feasible variance, moving in a straight line from this point, and then perhaps, after some distance, moving along a different straight line, and so on, until the efficient portfolio with maximum expected return is reached. He explained that Markowitz (1952) did not present the formulas for the straight lines that make up the set of efficient portfolios. These formulas were supplied in Markowitz (1956), but Markowitz (1956) solved a much more general problem than discussed in Markowitz (1952).

### **Tobin (1958)**

Tobin was concerned with the demand for money as distinguished from other "monetary assets." Monetary assets, including cash, were defined by Tobin as "marketable, fixed in money value, free of default risk." money when" consols"s are the only other monetary asset. The next-to-last section of the article was on "multiple alternatives to cash."

### **William Sharpe (1964)**

A theory of market equilibrium of asset price under the risk conditions given by William Sharpe (1964). In his study, the capital market equilibrium based on two important assumptions:

- All investors able to borrow or lend funds on equal terms with a common pure rate of interest.
- Homogeneity of investor expectation. Sharpe's two major contributions, the single factor model and the CAPM. He also pointed that the first one deals with supply side model of how returns are generated; the later one is a demand side model. The

models can hold independently, or separately, and both are used in practice.

### **John Lintner (1965)**

He discussed the problem of selecting optimal portfolio by risk adverse investors who have the alternative of investing risk-free securities with a positive return and who can sell short if they wish. He developed different important equilibrium properties within the risky asset portfolio. He examined the complications introduced by institutional units on amounts that either individuals or corporations may borrow at given rates by rising costs of borrowed funds and certain other real world complications.

### **Jan Mossin (1966)**

Jan Mossin (1966) planned a theory of market risk premiums and also discussed the risk price concept and showed that general equilibrium implies the existence of so called market line relating per dollar expected yield and standard deviation of yield. He further discussed the concept of price of risk in terms of the slope of this line.

## **1.2 Statement of the Problem**

Significance of the present investigation lies in studying the relationship between risk and return and also studying the diversification effect. The issues of risk, return, diversification are also controversial. It is one that received considerable attention in finance literature. Many researchers have shown positive relationship between risk and return and some have found negative relationship between risk and return. Many studies supported the CAPM model and showed significant relationship between return and systematic risk (Black, Jensen and Scholes 1972). However Manjunatha et al. (2006) in their study showed that CAPM doesn't hold in the Indian context by using a short period and small sample of companies data and it was based on the intercept and slope test. The study of Mahaeshwari and Vanjara (1989) showed that the relationship between systematic risk and actual return were negatively related in a bearish

market. There are few studies in India related to risk and return relationship. This study also relates to the risk and return relationship.

The relationship among risk and return in the stock markets has been one of the most investigated topic in financial economics. Although the risk-return relationship is of fundamental importance in economy, the empirical asset pricing literature has not yet reached an agreement on the existence of such a positive risk-return trade off for stock market indices (Balios, 2008)

Moreover, every investor wants maximum return and minimum risk. But the main problem is that how investor can make a well diversified portfolio and which type of stocks to be select for constructing a well diversified portfolio.

It is not surprising that this problem has received a great deal of attention. It has major implications for the structure and very existence of financial intermediaries, as well as for the behavior of all investors (Elton and Gruber, 1977). There have been so many securities available for investors for investing and due to the uncertainty most of the securities are risky. Moreover, a portfolio selection is a big problem and diversified portfolio how it makes also a debatable issue. Therefore, the present study also checked the effect of diversification in India.

In addition, Bodie (2006) also explains that investor should also keep in mind the macroeconomic variables. As stock market return also effects from large number of factors. It is implant for a researcher to study these factors and examining them the relationship among these factors and stock market returns in depth view. Therefore the present study also examined the relationship among macroeconomic variables and stock market returns in India.

Moreover, during the last few years, there has been a lot of theoretical and empirical research work on risk-return relationship and on issues related to risk-return analysis in the stock market. Risk-Return relationship in the stock market has been of great significance. The concepts of risk, return, diversification and macroeconomic variables are very important and relevant. Risk and return in the stock market depends upon different factors. This study relates to the 'Risk and Return Analysis of Indian Equities'. A study of risk & return analysis would

be helpful for the investing people to choose the right company for investing their money and also helpful for knowing about the diversification effect. In Indian context, the study on Risk and Return analysis of Indian equities will be beneficial for investors for taking rational decisions because investors want to maximize return for the risk and they intend their investment money to attain their future goals. This study will differ from other studies because this study has used a large sample of data for showing risk-return relationship and for the purpose of checking that CAPM holds or doesn't hold in the Indian market. The study also examines the effect of diversification on risk. Process of combining securities in a portfolio is known as diversification. The study also investigates the relationship between macroeconomic variables and stock returns in India. Macro economic variables include Industrial Production, Consumer Price Index, Exchange Rate, Money Supply, Call Money Rates etc.

### **1.3 Research Questions**

Research questions are therefore, important. No research questions or poorly formulated research questions will lead to poor research. If you do not specify clear research questions, there is a great risk that your research will be unconfused and that you will be unsure about what your research is about and what you are collecting data for (Bryman, 2008). The questions which are usually raised in relation to the risk-return analysis include:

- Is there any relationship between systematic risk and return of individual securities/portfolios?
- Is there a relationship between portfolio size and portfolio risk?
- Is there any effect of diversification on non-market risk?
- How many securities make a well diversified portfolio?
- Is there any significant relationship between macroeconomic variables (Industrial Production, Consumer Price Index, Exchange Rate, Money Supply and Call Money Rates) on stock market returns in India?

## 1.4 Objectives of the Study

The present study relates to the risk and return analysis of some selected securities of BSE-500. It is an attempt to answer the following questions relating to risk and return analysis:

1. To study the relationship between systematic risk (beta) and return of individual securities/portfolios.
  - i. To examine the risk and return of individual selected securities.
  - ii. To examine the risk and return of portfolios.
  - iii. To examine the industry-wise risk and return.
2. To examine the relationship between portfolio size and portfolio risk.
3. To examine the effect of diversification on non-market risk.
4. To study that how many securities make a well diversified portfolio.
5. To examine whether macroeconomic variables (Industrial Production, Consumer Price Index, Exchange Rate, Money Supply and Call Money Rates) have any significant relationship with stock market returns in India.

Explanation of fifth objective is described as below:

Macroeconomic and Industry circumstance might have a greater influence on profits than the firm's relative performance within its industry. In other words, investors need to keep the big picture in mind (Bodie, 2006. p. 581). Inflation affects decisions concerning new investments, investors, working capital, product prices, wages and salaries and even dividend policy (Bedi, 2004. p. 162). On the other hand, (Payne, 2007. p. 297) in their book explained that you have to consider the big picture, or macro conditions. Where is the economy going to be in the next six months to six years? This is important, as you must balance your portfolio. Timing is important, as are anticipation of economic conditions and the direction of interest rates. The stock market return is based on various factors. The defined number of these factors is not well-known so far. There is a lengthy past about the determinants of stock market returns in the empirical capital market literature. The literature suggests that different variables are playing vital

role in the variations in stock market returns. Therefore, the present study also checks the effect of macroeconomic variable on stock market returns in India.

### **1.5 Hypotheses of the Study**

On the basis of the above mentioned objectives, the following hypotheses have been framed:

- 1) In order to examine the relationship between risk and return, the following hypothesis has been tested against the alternative hypothesis:

H<sub>10</sub> : There is no significant relationship between beta and return (individual securities/portfolios).

H<sub>11</sub> : There is a significant relationship between beta and return (individual securities/portfolios).

- 2) To examine the relationship between portfolio size and portfolio risk, the following hypothesis has been tested against the alternative hypothesis:

H<sub>20</sub>: Portfolio size is positively related to portfolio risk.

H<sub>21</sub>: Portfolio size is negatively related to portfolio risk.

- 3) To examine the effect of diversification on non-market risk, the following hypothesis has been tested against the alternative hypothesis:

H<sub>30</sub>: Diversification has no effect on non-market risk.

H<sub>31</sub>: Diversification has effect on non-market risk.

- 4) In order to examine the relationship between macro economic variables (industrial production, consumer price index, exchange rate, money supply and call money rates) and stock market return, the following hypotheses has been tested against the alternative hypotheses:

H<sub>401</sub>: There is no significant relationship between industrial production and stock market returns in India.

H<sub>411</sub>: There is a significant relationship between industrial production and stock market returns in India.

H<sub>402</sub>: There is no significant relationship between consumer price index and stock market returns in India.

H<sub>412</sub>: There is a significant relationship between consumer price index and stock market returns in India.

H<sub>403</sub>: There is no significant relationship between exchange rate and stock market returns in India.

H<sub>413</sub>: There is a significant relationship between exchange rate and stock market returns in India.

H<sub>404</sub>: There is no significant relationship between money supply and stock market returns in India.

H<sub>414</sub>: There is a significant relationship between money supply and stock market returns in India.

H<sub>405</sub>: There is no significant relationship between call money rate and stock market returns in India.

H<sub>415</sub>: There is a significant relationship between call money rate and stock market returns in India.

All the above mentioned hypotheses, either directly or indirectly, attempts to establish that variation of stock return is only due to variation in stock market index. But in reality, stock return variation may be influenced by many other factors. To test the above hypotheses, we need to estimate different regression models that were based on theoretical models.

## **1.6 Scope/Usefulness of the Study**

- The present research work aims to study the Risk and Return analysis of some selected securities of BSE-500. This study would be useful for investors to take rational decisions and for showing that

applicability of CAPM helps an investor to take better quality decision.

- The study is immensely valuable to investors in this sense it provides the details of the relationship between risk and return and also provides the details of the effect of macroeconomic variables on stock market return. The use of different tools to examine the relationship between variables provides econometric holds.
- This study would be also useful for portfolio managers, financial analysts and policy makers because financial analysts provide guidance to business and individuals making investment decisions.
- The effect of macroeconomic variables (industrial production, consumer price index, exchange rate, money supply, call money rates) on stock market return provides implications for monetary policy and portfolio management practices.
- The study covers a longer period and large number of securities than the existing studies. Its findings may be more useful as compared to earlier studies.

## **1.6 Delimitations of the Study**

The present study based on the secondary data as mentioned above. As every study have some limitations. The following important limitations have been noted while conducting the present study:

- The present study is restricted only to eleven years that is from 1 January 2001 to 31 December 2011. What happened thereafter is outside the scope of the study.
- The study is based on the secondary data which has been taken from different websites in India under study, therefore its findings depends entirely on the accuracy of such data.
- The study has used only daily data and monthly data. It ignored weekly data.
- It is limited to the BSE-500 selected stocks. It could have been better if we had used BSE-100, BSE-200 and NIFTY etc.

- The study has used macroeconomic variables namely, industrial production, consumer price index, exchange rate, money supply, call money rates. It ignored other different financial and macroeconomic variables.
- The present study is largely based on different statistical and econometric techniques and they have their own limitations which also apply to the study.

## **1.8 Chapter Design of the Study**

This thesis is organized into six chapters:

### **Chapter I**

Chapter I present an overview of risk-return relationship. Why the concepts of risk, return, diversification is important and how these concepts can be beneficial and what measures are useful for explaining these concepts. The chapter also covers the different aspects which were included the statement of the problem, need of the study, research questions, hypotheses of the study, scope/usefulness of the study, delimitations of the study etc.

### **Chapter II**

Chapter II reviews the existing literature on the existing topic. It is divided into three sections: first section reviews the risk-return relationship concept, second section relates to the diversification concept and third section reviews the macroeconomic variables concept. This chapter also reviews the tools put to employ by previous investigators on the topic.

### **Chapter III**

Chapter III presents the research methodology in the study. The different aspects which included in this chapter were research design, period of the study, sample of the study, data collections sources and the explanation of different tools and techniques applied for analysis of data in the study.

## **Chapter IV**

Chapter IV presents the results relating to the study that is based on the Indian Stock Market. The study is conducted with the help of the applications of Capital Asset Pricing Model (CAPM), Markowitz applications of diversification effect. This chapter explains the analysis and interpretation of the results in the study related to risk and return relationship and the diversification effect.

## **Chapter V**

Chapter V presents the results relating to the relationship between macroeconomic variables and stock market returns. The relationship is checked with the help and the econometric techniques (Unit Root Test, Cointegration Test and Vector Error Correction Model (VECM)).

## **Chapter VI**

Conclusion is the sixth chapter of the study. The chapter presents a summary of the thesis with findings and conclusion of the analysis of the study. Thoughts for further research with other techniques are mentioned.

## **Conclusion**

Before going on in our investigation, it is valuable to briefly review some of the past studies which have examined the relationship between risk and return with the applications of Capital Asset Pricing Model (CAPM). Therefore, the literature review presents in second chapter. The present study will differ in literature from a lot of ways. Firstly in the study the relationship between risk and return has been checked by using a large sample of data by using first pass and cross sectional regression. The present study also checks the diversification effect on portfolio risk and non-market risk to the confirmation of the theoretical concept. One of the most important things is that macroeconomic variables also effect the equity market and if this variable effects the equity market, they also effect the investment decision. So in the study also examined the relationship between macroeconomic variables and stock market returns in India to know about their influence.

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