CHAPTER -II

REVIEW OF THE LITERATURE

Review of related literature is the main part of any research work because it explores the research work already carried out in the related field of the study. The present chapter deals with the review of literature on Risk-Return Relationship and the effect of diversification. Risk and Return relationship and the effect of diversification are important empirical questions. Numerous studies have been conducted on risk and return relationship in India and foreign countries. Many of the researchers had investigated CAPM in its various developed capital market. Some of them have proved positive relationship between risk and return and on the other hand some of them proved negative relationship. So, there is a controversy about the issue and the controversy requires exploring the subject in present.

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. There are few studies in India related to Capital asset pricing model. A lot of published articles showed positive risk-return relationship. The scope of literature for reference has been divided into three subheads namely:

2.1   Studies related to Risk-Return Relationship

2.2   Studies related to diversification effect

2.3   Studies related to the effect of macroeconomic variables

2.1   Studies Related to Risk-Return Relationship

The economists Harry Markowitz and William Sharpe studied the relationship between risk and return. There have been a lot of studies on

risk-return relationship in India and other countries. This subhead provides a comprehensive view in the context of risk-return relationship. Some of the studies supportive the Capital Asset Pricing Model (CAPM) and some of the studies also argued about the Capital Asset Pricing Model (CAPM). A review of some of the studies is as follows:

Black et al. (1972) in their study found linear relationship between the average excess portfolio return and beta over the period of 1931-1965.

Fama and Macbeth (1973) found a linear and positive relationship between expected return and beta. For the purpose of showing relationship, expected return and beta based on all stocks listed in NYSE.

Lakonishok and Shapiro (1986) examined the relationship between stock market return and beta, standard deviation and size for the period from 1962-1981 and concluded that neither beta nor variance or residual standard deviation can explained cross-sectional returns.

Ruefli (1990) by applying the mean-variance approach reported that the relationship was inherently unverifiable. **Bark (1991)** used the Fama-Macbeth methodology to test the CAPM in the Korean market. His study was based on monthly stock returns for the period of January 1980 to December 1987. This study investigated the positive risk and return trade off. The results of the study indicated that during the study period CAPM was not a predictive model in the Korean market.

Jegers (1991) showed for the explanation of risk-return relations at firm prospect theory is useful. **Fama & French (1992)** by using Sharpe-Lintner Black Model, the study found that no cross-sectional relationship between return and beta. **Sauer & Murphy (1992)** found CAPM is the better indicator of capital asset pricing in Germany than the CCAPM.

On the other hand **Weinraub and Kuhlman (1994)** examined the effect of the variability of individual common stock betas on the variability of the portfolio beta. The study covered a period from January 1975, to December 1990. A sample of 600 common stocks daily returns has been used in the study. The

study found that low beta stock have greater relative beta variability. The study also found that a strong positive relationship between the level of beta and its variability. **Eakins et al. (1996)** concluded for institutional investment allocation process that market returns is an important factor.

Elton and Gruber (1997) in their study updated the modern portfolio theory. The study reviewed the articles of modern portfolio analysis and also outlined the some important topics for future researches. The study explained that a great deal of attention is estimation of the inputs to the portfolio selection problem and concentrate on the literature that is unique to the portfolio selection area, namely the estimation of the covariance or correlation structure. On the other hand, the study explained that if subjective estimates are used or if subjective modification of historical data is used, the reduced data requirements of the single-index model should lead to improved forecasting. **Fletcher (1997)** found no significant relationship between size and returns.

It also believed that one of the important future directions for portfolio theory involves the explicit inclusion of liabilities into the asset allocation decision. While conceptually easy to solve, the implementation of a system to include both liabilities and assets in a manner that produces real insight is much more difficult.

For the India stock market, **Madhusoodanan (1997)** examined the relationship between risk-return and to test whether it was really positive or not. The study used portfolio approach for analyzing the relationship between risk and return. The study used weekly data of 120 scrips traded on Bombay Stock Exchange (BSE) for the period from January 1987 to March 1995. The results of the study not supported the risk-return relationship and study found that the different investment horizons have got different type of relationships.

An important study undertaken by **Sehgal (1997)** tested the Three-Parameter Capital Asset Pricing Model in India. The model has been tested in the Indian context using Bombay Stock Exchange data from April, 1984 to May, 1993. The empirical findings of the study indicated that CAPM was not a suitable descriptor of the asset pricing on the Indian capital market.

Harrison and Zhang (1999) found positive risk and return relation at longer holding period. **Isakov (1999)** showed no arbitrage opportunities in Swiss stock market during the study period of 1983-1991. **Hodoshima et al. (2000)** reported that positive and negative excess returns produce the significant sconditional relationship between beta and return.

Chawla (2001) has examined the stability of beta in the Indian stock market. The study used monthly data of 36 stocks over the period of 4 years i.e., from March 1996 to March 2000. The study tested the stability of beta in the Indian stock market by using incorporating time variable in the regression and by using dummy variables for the slope coefficient. The study concluded instability of beta over the time period.

Daniel et al. (2001) found premium in average stock returns was stronger in Japan than the United States. The study rejected the Fama and French (1993) three factor model. **Cannon and Sehgal (2003)** in their findings of the study supportive the Fama-French Model applied to Indian equities. **Elsas et al. (2003)** reported that conditional test reliably identified the relationship between beta and return.

Ismail and Shakarni (2003) investigated the relationship between return and beta for Islamic unit trust by applying cross-sectional regression analysis and examined whether beta has played a role to explaining cross sectional differences in Islamic unit trusts returns and also made a comparison between unconditional and conditional relationship. The study used weekly price data for 12 Islamic unit trusts for the period of 1 May 1999 to 31 July 2001. The results of the study supported the hypothesis of positive significant relationship in up-markets and negative significant relationship in down-markets. The study found that beta could be used as a tool for explaining the cross sectional differences in Islamic unit trusts returns and also found that the investors of Islamic unit trust are the risk averse.

Tang and Shum (2003) in their study concluded that during the study period risk-return relationship between up and down market was weak.

Chou et al. (2004) in their study found insignificant size effect during the post-1981 and insignificant BM effect during the post-1990.

Manickaraj and Loganathan (2004) measured the stationary of beta in the Indian context. The study used the weekly closing equity prices of 38 randomly selected companies listed in the stock exchange, Mumbai. In the study, beta coefficient for individual securities was measured by using Sharpe model. The study covered a period from 11 May, 1990 to 6 February, 1996. The study found that the betas for individual securities and smaller portfolios was not stable over time and could not be used as a measure of risk.

Mohamed and Devi (2004) in their study concluded that the return is equal to T-Bill rate and also proved that an investor return in Indian stock market is less than the rate of interest provided by the fixed deposits by the nationalized banks. **Perold (2004)** in their study discussed the application and importance of CAPM in finance.

Srinivas and Sivakumar (2004) discussed the importance of CAPM model. This study tested the validity of CAPM model during down trends in Indian Stock Market. For the purpose of testing the validity of CAPM model, in this study a period of 10 years (1984-1993) have been used. It showed that CAPM was not reliable model during that period (1984-1993).

Tang and Shum (2004) showed that other stock characteristics in addition to beta are also important in pricing risky assets. **Bartholdy and Peare (2005)** reported that Fama and French model does not perform much better than CAPM under this paper by applying simple estimation technique.

Dhankar and Kumar (2006) measured the relationship between risk and return and the effect of diversification on non-market risk in Indian stock market. For the purpose of measuring relationship and the effect of diversification Market Index Model has been used in this study. The study found higher positive correlation between portfolio return and risk. It also found that portfolio non-market risk declines with diversification.

Manjunatha et al. (2006) found that intercept is significantly differing from risk-free rate of return and slope is not equal to the difference between the market return and risk-free rates of return. This study was based on intercept and slope test and on the basis of this found that CAPM did not hold in Indian context. This study also showed an inverse relationship between the portfolio returns and their betas.

Michailidis et al. (2006) in their study examined the validity of the Capital Asset Pricing Model (CAPM) for the Greek Stock Market. The study used weekly stock returns for 100 companies listed on the Athens stock exchange from January 1998 to December 2002. The stock returns of the study were adjusted for dividends as required by the CAPM. The findings of the study not supported the theory basic hypothesis that higher risk (beta) is associated with a higher level of return. The study also investigated that whether the CAPM adequately capture all-important determinants of returns including the residual variance of stocks. The results pointed out that residual risk has no effect on the expected returns of portfolios.

Mittal and Mittal (2006) analyzed the risk-return relationship with the help of Capital Asset Pricing Model (CAPM) in the Indian Stock Market. For the purpose of examining the relationship between risk and return, the study used seven years monthly and weekly returns for selected 135 equity shares quoted on Bombay Stock Exchange (BSE) during the study period of January 1996 to December 2002. The study selected those securities which were the major part of market capitalization and daily trading value and BSE Sensitive Index was taken a market proxy that represented the market portfolio. The study used the interest rate on treasury bills as riskless rate of return. The study testing the Capital Asset Pricing Model (CAPM) with the help of first pass and the second pass regression equations. With the help of first pass regression (individual securities), the study found that 93 coefficients were positive and significant at 1 percent level and another 19 were positive and significant at 5 percent level of significance in case of weekly data and in case of monthly data, the study revealed that out of 135 coefficients, 125 betas are positively significant at 1 percent level and 6 betas are significant at 5 percent level of significance. The results of the study supported

that stock market index was capable of explaining stock returns during the study period. Moreover, Cross-Sectional Regression (individual securities) results showed positive relationship between the expected return and beta coefficients of all the selected securities. The study also tested the relationship between risk and return with the help of portfolios. It observed that positive risk-return relationship on monthly data was stronger as compared to the monthly data during the study period.

Yakob and Delpachitra (2006) employed the GARCH-M model in examining the relationship between risk and return of selected Asia Pacific Countries. The Asia Pacific Countries included Australia, China, Hong Kong, India, Indonesia, Japan, Malaysia, Singapore, South Korea, and Taiwan. The study used daily closing values for stock indices of ten exchanges in Asia Pacific countries. The study covered a period from January 2000 to February 2005. The study used the GARCH (p, q) − M model as proposed by Engle, Lilien and Robins (1981). The study didn't support the positive relationship in the Asia Pacific stock markets as postulated by the CAPM. In the study only China and Malaysia were coherented with the model. The study revealed that the conditional CAPM model may be useful for market practitioners in determining the expected rate of return as well as the cost of capital in the China and Malaysia country.

Ang and Chen (2007) estimated a conditional CAPM with latent time-varying conditional betas, market risk premia and stochastic systematic volatility. The study found that only an investor with a strong, dogmatic belief in the book-to-market effect would conclude that conditional alpha of the book-to-market strategy is positive over the long run from 1996 to 2001. The study also showed that under a conditional CAPM with time-varying betas, predict table market risk premia and stochastic systematic volatility, there is little evidence that conditional alpha for a book-to-market trading strategy is different from zero. **Galagedera (2007)** study showed that the association between CAPM beta and downside beta depends on the standard deviation, skewness and kurtosis of the market portfolio returns.

Iqbal and Brooks (2007) also tested the Capital Asset Pricing Model (CAPM) by using the period of September 1992 to April 2006. It tested the Capital Asset Pricing Model in Karachi Stock Exchange. The study used the methodology of Fama-Macbeth. The study found that overall beta appears to explained the cross sectional variation in expected returns, especially with individual stocks, size and beta portfolios. These results were more prominent in that sample period. However, in these cases the risk return relationship was also non-linear in beta. It found that the sign of the coefficients for the beta risk and the skewness are according to their expectation as predicted by theory. The study concluded that aspect contrasts with the earlier studies on emerging markets which usually reported incorrect signs for the risk premiums. It revealed that the essential results was not change greatly, even after adjustment for infrequent trading and employing three different data frequencies.

Leon et al. (2007) studied the risk-expected return trade-off in several European stock indices and reported significant positive relationship between risk and return in most of the indices.

Michailidis et al. (2007) in their study produced no relation between beta and average returns. The study of **Misra and Misra (2007)** reported that FMCG, health care and oil & gas sectors were the most defensive sectors whereas metals and IT sectors were the most aggressive sectors in the Indian economy.

Wongkamolsesh (2007) examined and compared the empirical evidence between two asset pricing models i.e., Capital Asset Pricing Model and the Single-Index Model. The study used monthly closing prices for the period from 1998-2002. The results of the study showed that there is a difference in accuracy level between the CAPM and the Single-Index Model for the Thai Stock Market. The study found that the Single-Index Model had slightly better accuracy than the CAPM because of the higher value of the adjusted R-square of the Single Index.

Balios (2008) analyzed the risk and return relationship for the trading session of Athens Stock Exchange (ASE). It has found the negative intraday relationship between return and risk. This study concluded that microstructure changes should take place in order to make information incorporated into easier

and faster. This study showed positive returns from the first and last quarter of the session.

Dhankar and Kumar (2007-2008) provided a picture of risk and return scenario in the Indian stock market. **Kapusuzoglu (2008)** in their study calculated alpha, beta and correlation coefficients and also explained their effects and the study also explained stock-index relationship on the basis of single factor.

Celik et al. (2009) investigated the risk-return trade off by using S-L CAPM for the individual stocks and portfolios consisting of manufacturing firms listed in the ISE (Istanbul Stock Exchange). The study used monthly returns for manufacturing industry for the period from January 2002 to June 2008 (78 monthly observations). The study found the linear relationship between risk and return whereas parameter tests are not satisfactory to conclude that the model parameters are robust.

Homsud et al. (2009) found that three factor model can explained risk in stock return better than CAPM in these groups (SH, BH, BM, SL) during the period of July 2002 to May 2007 in Thailand Stock Exchange.

A research was conducted by **Javid and Ahmad (2009)** tested the multifactor capital asset pricing model in case of Pakistani stock market during the period 1993-2004 and found that three moment CAPM performed relatively well in explaining risk-return relationship. On the other hand **Manjunatha and Mallikarjunappa (2009)** results of the study proved that beta alone is not the determinant of security/portfolio returns in the Indian capital market.

Trifan (2009) tested the capital asset pricing model for the Romanian capital market by using a daily data for a sample of 24 companies during the period of 06.01.2003-31.07.2009. The results of the study don't provide evidence against CAPM.

Choudhary (2010) examined the Capital Asset Pricing Model (CAPM) for Indian Stock Market. The study used monthly stock returns from 278 companies of BSE 500 index listed on Bombay Stock Exchange for the period of January 1996 to December 2009. The result of the study not supported the theory basic

hypothesis that higher risk (beta) is associated with a higher level of return. The study also investigated whether the CAPM adequately captures all important aspects of reality by including the residual variance of stock. The results showed that residual risk has effect on the expected return of portfolios.

Kaushik, Taneja and Kaur (2010) checked whether higher/lower risk will yield higher/lower expected rate of return and whether the expected rate of return is linearly related with the stock beta i.e., its systematic risk. The weekly share prices for 123 companies for the period from 2004-2009 have been used in the study. The study found that systematic risk is not directly correlated with average return generation assumed by CAPM. The study also found that the returns have decreasing trend during the study period. **Krishna (2010)** studied the impact of return interval on beta estimation by using daily, weekly and monthly return from April 1, 2009 to March 31, 2010 and found significant changes in beta.

Popa et al. (2010) showed in terms of efficiency and risk-return linear models, the Romanian stock market showed the same properties as the emerging markets. **Ray (2010)** examined the beta stability in Indian stock market. The study considered monthly return data of 30 stocks for the period of 1999 to 2009 and the result revealed that the overall phase all the stocks are statistically significant.

Sinaee and Moradi (2010) in their study examined the risk return relations in Tehran Stock Market during 2003-2005. The study conducted a sample of 74 companies were collected from all Iraninan companies listed in Tehran Stock Exchange. In addition, the study also tested the effects of other stock return's characteristics such as skewness, kurtosis and unsystematic risk. The results of the study indicated that the relationship between return and beta is non-linear. The study also found that skewness had an, important effect on returns but kurtosis didn't have significant relation with returns during the study period.

Vij and Tamimi (2010) in their study examined the application of CAPM in estimation of the systematic risk and expected return of a sample of Bombay

Stock Exchange listed sixty stocks. All the stocks used in the study were Drug industry of India and study covered a sample of 2001 to 2007. In the study for the purpose of checking the statistical reliability of stocks and portfolios parameters the study used z and t test at the five percent level of significance. The study found that statistical reliability of individual stocks and portfolio beta validates the CAPM in Indian Stock Market.

Abdullah et al. (2011) examined the relationship between beta and return of the Industrial portfolio by using monthly data from 2001 to 2009 in Kuwait stock exchange. The study used M-GARCH (1, 1) to estimate the time-varying beta. The results of the study showed CAPM was not worked in this market.

On the other hand **Bello and Adedokun (2011)** examined the risk-return characteristics of Nigerian quoted firms for the period of 2000-2004 by using monthly data and the study revealed that little scope for diversification in this market.

Hasan et al. (2011) investigated the risk-return relationship by using the supporting structure of CAPM in Dhaka stock exchange by using monthly stock returns of 80 non financial companies and the result of study did not support the theory's basic hypothesis.

Manjunatha (2011) showed CAPM does not hold for the Indian Market during the study period from January 1, 1990 to June 30, 2010. **Talebnia et al. (2011)** showed that small companies have greater beta and average return as compared to large companies and found to selecting an optimal portfolio the Fama & French model has sound and VaR model is not sound for selecting the optimal portfolio.

Abdullahi et al. (2012) found that the average return in the Nigerian stock market was very low as compared to other markets such as New York, Tokyo, London and German stock exchange. **Khan (2012)** in their study by employing a sample of 20 companies of different sectors concluded that the mean return of cement and chemical companies was linearly related to beta and risk during the study period 2007 to 2008.

2.2   Studies Related to the Diversification Effect

A well-designed portfolio will combine investment assets that have different attributes. The core idea here is expressed in the classic advice "Don't put all your eggs in one basket." If you drop the basket, you're toast. (Technically you would be egged, but you get the point). By diversifying across various unrelated investment assets, your portfolio should be less susceptible to large losses. And if we can avoid or minimize large losses, our overall investment experience should be better (Israelsen 2010, p. 63). 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). It is certainly true that diversification is one of the important concepts of finance. Simply it says, Diversification is the technique of reducing risk. Moreover, to determine the exact size of a well diversified portfolio is the core of the field of finance.

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. Much of the early literature on diversification effect in the capital market showed that there is a significant effect of diversification. The study given by Statman (1987) concluded that a well diversified portfolio must include 30 securities. Surprisingly, the study of Gupta and Khoon (2001) concluded that a well diversified portfolio must include up to 27 securities and Evan and Archer (1968) concluded that a well diversified portfolio must include 10 stocks. However, a well diversified portfolio concept is found controversial issue in different markets.

The two articles which were authored by Markowitz and Roy published in 1952 about the behavioural basis. There is no depth of literature on the issue of diversification effect. The review of literature shows that there are some studies on diversification effect. But most of the studies showed different results. In the Indian context, very few studies have explained the concept of a well diversified portfolio. Therefore, this present research work has attempted to study a well

diversified portfolio concept in India. A brief review in the context of diversification effect is presented as follows:

Evans and Archer (1968) estimated the relationship between diversification and the level of variations of portfolio returns. The study used 470 of the securities listed on Standard and Poor's Index. The results of the study suggested that a somewhat stable and predictable relationship does indeed exist between the number of securities included in a portfolio and portfolio dispersion. The study also explained that for the purpose of concluding portfolio according to their methodology, there is a need to perform on marginal analysis.

Wagner and Lau (1971) conducted a study on the effect of diversification on risk and in their study showed that the rate of return on well diversified low risk portfolios indeeded significantly lower than the return on well diversified higher risk portfolios. The study suggested that the investment performance can often be improved by expanding the list of qualified securities to include higher return, higher risk stocks, while offsetting the increase in market risk through more effective diversification.

Elton and Gruber (1977) presented the formula for determining the effect of diversification on risk and showed that estimating expected variance and total risk seems to be very good but much cruder in estimating variance in variance.

Statman (1987) conducted a study on how many stocks make a diversified portfolio. The study showed that for borrowing investors, a well diversified portfolio must include 30 stocks and for lending investors there must be at least 40 stocks. The conclusion of this study was that the extensively accepted idea that the benefits of diversification are practically exhausted when the number of stocks reaches 10 to 15.

Another study conducted by **Woerheide and Persson (1993)** on an index of portfolio diversification and also explained that a recurring question in the literature concerning diversification is what is the minimum number of securities required to achieve adequate diversification. The problem is that studies on this topic assume equally distributed holdings. The study examined the relationship

between the standard deviation of returns of randomly selected portfolios and the respective indices of diversification. It measured the quality of each index by the closeness of the fit (in regression terms) between portfolio risk (i.e., the standard deviation of returns) and the index number. It recommended that the complement of the Herfindahl index as the measure of diversification for unevenly distributed portfolios based on its simplicity and wide-spread usage. The study concluded that the index values of less than 0.85 implied that a portfolio was probably not adequately diversified. Portfolios with index values greater than 0.91 were probably adequately diversified. It also indicated that the index could be used to define an evenly distributed portfolio equivalency.

Neu-Ner and Firer (1997) studied that how many randomly selected JSE shares are required to achieve a well diversified portfolio. The population studied included all securities listed on the main board of the Johannesburg Stock Exchange during the period June 1993 to June 1996. The study concurred with the study of Statman (1987)'s findings that a well-diversified portfolio of randomly chosen shares on the JSE must include at least 30 shares. It also concluded that significant benefits of diversification could be achieved by holding smaller portfolio. The study overall concluded that benefits of diversification in reducing the unique risk of portfolio of randomly selected JSE.

Sanyal and Sen (1998) studied the portfolio diversification and risk reduction in India. The study examined that how risk is diversified in India in the context or risky assets. The study examined the nature of diversification of risk in India with the full Variance-Covariance Model and the Market Model. The study used a sample of 100 companies and the time period for the study was from 15.04.88 to 30.04.95 i.e., for seven years. It used weekly data for different calculations. The study constructed portfolio with the help of random number generator. The study revealed that a very high degree of diversification in India. The study indicated that a high degree of diversification was achieved in India by taking a higher number of stocks (35-40) to achieve full diversification during the study period. The study showed that this is due to the fact that the risk profile of Indian stocks varies amongst themselves. It also revealed that investigation under

Market Model showed that residual risk falls off rather drastically compared to the Variance-Covariance Model.

Another study conducted by **Gupta and Khoon (2001)** examined the relationship between the portfolio risk and the number of stocks in a portfolio in the period of September 1988 to June 1997 to determine the optimum size of portfolio of stocks. In the study a sample of 213 stocks traded on Kuala Lumpur Stock Exchange (KLSE) were used. The results of the study revealed that the diversification benefits are available upto the 27 securities.

The important study conducted by **Statman (2004)** expressed that the benefits and costs of diversification under the rules of mean–variance portfolio theory are different from those under the rules of behavioral portfolio theory. The study also concluded that the reduction of risk is not always a benefit in behavioral portfolio theory. The study explained that the optimal number of individual stocks under the rules of behavioral portfolio theory is the number that balances the chance for uplift into riches against the chance of a descent into poverty. The rules of optimal diversification in behavioral portfolio theory were similar to the rules of suitability that govern brokers and financial advisors. Suitability regulations require brokers to make sure that an investor's desire for upside potential does not breach the investor's need for downside protection. It also suggested that the rules of diversification in behavioral portfolio theory are not as precise as the rules in mean–variance portfolio theory, they are clear enough.

Irala and Patil (2007) also studied the concept of portfolio size and diversification by using a monthly data during the study period of January 1999 to January 2005. The study suggested that a very high degree of diversification was possible in India and also concluded that a portfolio size of 10-15 stocks was found to be appropriate as the reduction in risk was only marginal thereafter.

Goetzmann and Kumar (2008) examined the diversification choices of individual investors during a six-year period in the U.S. capital market history. The present study used a data from U.S. discount brokerage house and found that the sample was under-diversified.

Al Suqaier and Al Ziyud (2011) examined the effect of diversification as Amman Stock Exchange during the study period of 2/12/2005 to 13/3/2010. In the study, for the purpose of testing the hypothesis, a sample of 100 companies was used. The results of the study revealed that diversification increase with a decrease rate.

On the other hand **Alekneviciene et al. (2012)** in their study measured the effect of diversification on differently-weighted stocks during the study period of 2009 to 2010 on the basis of daily stock prices in the Lithuanian Stock Exchange. The research results showed that forming naive portfolios, the diversification effect is a little larger than forming differently-weighted portfolios by capitalization. The study showed that forming differently-weighted portfolios by capitalization from 22 stocks, 97 % of diversifiable risk can be eliminated. The study showed that the main reason of both differences is due to the consistence of smaller number of stocks.

2.3 Studies Related to the Effect of Macroeconomic Variables

There have been so many studies on the issue of the effect of macroeconomic variables and stock prices in India and foreign countries and most of the studies revealed the controversy of the issue of the effect of macroeconomic variables and stock prices. The controversy points of the different studies require exploring the subject. Moreover, the clear understanding of economic variables and their effect is vital for investors, policy makers and academic researchers. Thus the present study also discusses the relationship between macroeconomic variables and stock market return in India. A brief review in the context of macroeconomic variables and stock prices is presented as follows:

Rao (1997) examined the response of stock prices to Macroeconomic events e.g., changes in direct or indirect tax rates or decontrol of lending rates, changes in individual policy, changes in trade policies, changes in exchange rate policies etc. The study covered a period from January 1, 1991 to December 31, 1994 and daily stock prices of selected firm and daily BSE Sensex have been used. Events were selected on the basis of their expected impact on the industry

or a group of firms. The study found that the changes in administered prices had the maximum impact on the market. The study also found that the larger firms in an industry didn't have a decisive influence on the response of the market.

Seshaiah and Tomer (1997) studied the relationship between industry stock return and inflation rate and also studied the effect of exchange rates on stock returns. The study used linear regression technique to find out the various relationships. The study covered a period from 1980-81 to 1993-94. The study found that inflation rate and exchange rate were negatively related to the stock return.

Nath and Samanta (2003) examined the relationship between Exchange rate and stock prices in India by using daily data from March 1993 to December 2002 and found that the return in these two markets were not interrelated and revealed that return in stock market had causal influence on return in exchange rate with the possibility of mild influence in reverse direction.

Maysami et al. (2004) investigates the long- run equilibrium relationship between macroeconomic variables and Singapore stock market index (STI) as well as various Singapore exchange sector indices-the finance index, the property index and the hotel index. The study revealed that for interest rate, industrial production price levels, exchange rate and money supply are of cointegrating relationship with the change in short and long.

Acikalin, Aktas and Unal (2008) investigated the relationship between returns in Istanbul Stock Exchange (ISE) and macroeconomic variables of Turkish economy. The following macroeconomic variables have been taken in the study–GDP, exchange rates, interest rates and CAB (current account balance). The study based on quarterly data and covered the period from the ist quarter of 1991 to last quarter of 2006. Cointegration and Vector Error Correction Model (VECM) has been used in the study. The results of the study found that unidirectional relationship between macroeconomic variables and ISE index. The results of the study also imply that investors may improve their portfolio performance.

Ahmed (2008) investigated the nature of casual relationship between stock prices and the macro economic variables of Indian economy for the period March 1995 to March, 2007 by using quarterly data. Macroeconomic variable were included index of industrial production, exports, foreign direct investment, money supply, exchange rate, interest rate etc. Yamamoto Granger causality test have been applied to explore the long run relationship and BVAR modeling for variance decomposition and impulse response function have been explaining the short run relationship between stock prices and the macro economic variables in this study. This study found that differential casual links between macroeconomic variable and stock indices in the long run. It indicated that the Indian stock market seems to be driven not only by the actual performance but also by expected potential performance.

Gay and Nova (2008) examined the time-series relationship between stock market index prices and the macroeconomic variables of exchange rate and oil price of four emerging economies of Brazil, Russia, India and China. The study used monthly data from 1999:03 to 2006:06. It applied the Box-Jenkins ARIMA were used to examine the relationship with the help of moving averages at one-month MA (1), three-month MA(3), six-month MA(6) and twelve-month MA(12) for the lagged dependent of stock market price and the two intervening variables of exchange rate and oil price. The study revealed that the relationship between exchange rates and stock prices was to be positively related that showed that an appreciation (depreciation) of the domestic currency in terms of USD would have an unfavorable (favorable) impact on the domestic stock market. The analysis of the effect of international macroeconomic factors of exchange rate and oil price on the stock market exchange price of Brazil, Russia, India and China did not revealed a significant relationship.

Kandir (2008) used factor model to test the effect of macroeconomic factors on stock returns. The variables which used in the study were growth rate of industrial production index, change in consumer price index, growth rate of narrowly defined money supply, change in exchange rate, interest rate, growth rate of international crude oil price and return on the MSCI world equity index. The study used oil data for all non-financial firms listed on the ISE for the period

from July 1997 to June 2005. The study used four criteria's for portfolio construction those were market equity, the book-to-market equity and the earning-to-price equity and leverage ratio. The study used multiple regression models to test the relationship between stock portfolio returns and seven macroeconomic factors. In the study, stock portfolio returns were used as dependent variables and the macroeconomic variables used as independent variables. The results of the study found that exchange rate, interest rate and world market return seemed to affect all of the portfolio returns while inflation rate was significant for only three of the twelve portfolios. The study found that industrial production, money supply and oil prices did not appeared to have any significant affect on stock returns.

Nair (2008) examined the macroeconomic determinants of stock market development in India during the period of 1993-94 to 2006-07. For the purpose of analysis, the study used cointegration and error correction model. The study revealed that long run relationship exists between macroeconomic variables and stock market development. It found that real income and its growth rate, interest rate and financial intermediary development have significant affect on the stock market development in short run. It also revealed that exchange rate, inflation and Foreign Institutional Investment (FII) have no significant effect on stock market development in India.

Tursoy, Gunsel and Rjoub (2008) have tested the Arbitrage Pricing Theory (APT) in Istanbul Stock Exchange. The study examined the effect of macroeconomic variables on stock returns and tested 13 macroeconomic variables namely; money supply (M2), industrial production, crude oil price, consumer price index (CPI), import, export, gold price, exchange rate, interest rate, gross domestic product (GDP), foreign reserve, unemployment rate and market pressure index (MPI) in the period of February 2001 to September 2005. The study tested 13 macroeconomic variables against eleven portfolios of Istanbul Stock Exchange (ISE). The results of the study found no significant relationship exists between the stock return and tested macroeconomic variables.

Aydemir and Demirhan (2009) examined the effect of macroeconomic variables in Turkey Stock Prices. The study conducted a daily data for the period

from 23 February, 2001 to 11 January, 2008. In the study, National 100, services, financials, industrials and technology indices are taken as stock price indices. The results of the study indicated that there is bidirectional causal relationship between exchange rate and all stock market indices.

On the other hand **Dumitrescu and Horobet (2009)** investigated the dynamic link between stock prices, exchange rates and other macroeconomic variables in Romania using the monthly data for the period from January 1998 to September 2007 by applying multivariate cointegration technique and the results of the study found positive relationship between money supply and stock prices and nominal effective exchange rate and stock prices and also found negative relationship between reserves and stock prices and real effective exchange rate and stock prices.

Mohammad et al. (2009) explored the correlation between the macro economic variables and share prices of KSE (Karachi Stock Exchange). The study used quarterly data for different macroeconomic variables (Foreign Exchange Reserves, Foreign Exchange Rate, Industrial Production Index (IPI), Whole Sale Price Index (WPI), Gross Fixed Capital Formation (GFCF) and broad money M2 form the period of 1986-2008. The study found that the influence of foreign exchange rate and foreign exchange reserve significantly affect the stock prices, while other variable like IPI and GFCF were insignificantly affect stock prices. The study also found that the increase in production and capital formation insignificantly effect on stock prices while external factor like M2 and foreign exchange positively.

Rahman et al. (2009) explored the interaction between selected macroeconomic variables and stock prices for the case of Malaysia. The macroeconomic variables used KLCI, Industrial Production Index (IP), M2 (money supply), RER (Real Exchange Rate), RES (End-reserve) and Treasury bills. The study used monthly data for January 1986 to March 2008 for Malaysian Stock Market. The study used conventional econometric techniques along with a battery of complementary tests to trace out both short run and long run dynamics. The study showed that changes in Malaysian Stock Market Index do perform a cointegrating relationship with changes in money supply, interest rate, exchange

rate, reserves and industrial production index. The study highlighted that Malaysian Stock Market has stronger dynamic interaction with reserves and industrial production index as compared to money supply, interest rate and exchange rate.

Roselees and fung (2009) examined the impact of the movement on macroeconomic conditions in the context of stock returns of various firms and also investigated the relationship between stock returns of different size of firms with Consumer Price Index, Industrial Production Index, Money Supply (m3), Interbank Money Market, three months Treasury Bills Discount Rate, six months Treasury Bills Discount Rate and Crude Oil Price. The study used data for different size of firms listed in Bursa Malaysia for the period of 12 years starting from January 1996 to July 2007. The study referred the methodology developed by Chen, Roll and Ross (1986). In the study factor analysis was employed to determine the important significant factors effect the firm's expected return. The OLS were used to regress these macroeconomic variables with the firm's stock returns and macroeconomic variables. The findings of the study were that stock returns are significantly influenced by a number of systematic forces and their behaviour can be explained only through the combined explanatory power of macroeconomic factors and firm size.

On the other hand **Sohail and Hussain (2009)** in their study examined the long run and short run relationship between Lahore Stock Exchange and macroeconomic variables in Pakistan. The study used a period from December 2002 to June 2008. The study found that inflation had a negative impact on stock prices while the other variables like industrial production, money supply and real effective exchange rate effects the stock returns positively during the study period. The study recommended that competition commission should keep a close watch on the stock market functioning.

Ahamed et al. (2010) have examined the dynamic linkage between exchange rate and stock prices. The study used daily data for the period from January 2005 to December 2009. The study used Granger causality test to find the linkage between two variables and the results of the study found that overall study period as well as individual year results reported unidirectional relationship

between two variables and the year 2009 existed the bidirectional relationship between two variables.

Kutty (2010) in their study examined the relationship between stock prices and exchange rates in Maxico. The study used weekly closing prices for Ist week of January 1989 to the last week of December 2006. The study revealed that the stock prices lead exchange rates in short run and no long-run relationship exists between both of the variables. The study supported the finding of the Abdalla and Murinde (1997), who conducted that stock prices Granger influences exchange rates.

Sharma and Mahendru (2010) in their study examined the long run relationship between BSE and macroeconomic variables for the period from January 2008 to January 2009. The macro economic variables which used in the study were exchange rate, foreign exchange reserves, inflation rate and gold prices. The study used a multiple regression model to examine the relationship between macroeconomic variables and stock prices. The study revealed that exchange rate and gold prices highly affect the stock price and inflation rate is significant only for three of the twelve portfolios. The study found that inflation rate and foreign exchange reserves didn't have influence on stock prices.

Singh (2010) has examined the causal relationship between stock market index i.e., BSE Sensex and three economic variables in Indian economy by applying Unit root test and Granger Causality test. The variables used in the study were Wholesale Price Index (WPI), Index of Industrial Production (IIP) and exchange rate (Rs/$). The study used monthly data for the period from April 1995 to March 2009. The results of the study indicated that IIP is the only variable having bilateral causal relationship with BSE Sensex. The study also found that WPI is having strong correlation with Sensex but it was having unilateral causality with BSE Sensex.

The study conducted by **Asaolu and Ogunmuyiwa (2011)** investigated the impact of macroeconomic variables and stock market returns in Nigeria. The study investigated the impact with the help of econometric techniques such as Augmented Dickey Fuller (ADF) test, Granger Causality test, Cointegration and

Error Correction Model (ECM). It used the time series data from 1986-2007, that considered a boom period. The variables used in the study were External Debt (ED), Inflation rate (IR), Fiscal Deficit (FD), Exchange Rate (EX), Foreign Capital Inflow (FCI), Investment (INV), Industrial output (INDO) etc. The study on the basis of Johansen's cointegration test concluded that there was a long run relationship between average share price and the macroeconomic variables. Surprisingly, the study found that except exchange rate all other macro economic variables failed to confirm any relationship between average share prices and macroeconomic variables with the help of Granger Causality test. Moreover, the Error Correction Model (ECM) showed weak relationship between average share prices and macroeconomic variables.

On the other hand **Hosseini et al. (2011)** investigated the relationship stock market indices and macroeconomic variables in India and China. It covered the period from January 1999 to January 2009 and used the economic variables namely: Crude Oil Price (COP), Money Supply (M2), Industrial Production (IP) and Inflation Rate (IR). The study showed long run and short run linkage between macro economic variables and stock prices in India and China. The study revealed that the effect of increase in inflation on stock indices was positive in both of the countries and found the contemporaneous effect of crude oil price was positive in India. This effect was negative and insignificant in China.

More recently, **Katechos (2011)** employed new approach in order to investigate the underlying relationship between stock markets and exchange rates. Current approaches suggest that the relative equity market performance of two countries is linked to their exchange rate. In contrast, this study proposes an alternative approach where one global variable–global equity market returns-is believed to have an effect on exchange rates, with the relative interest rate level of a currency determining the sign of the relationship. The empirical findings suggested that exchange rates and global stock market returns were strongly linked. The value of currencies with higher interest rates was positively related with global equity returns, whereas the value of currencies with lower interest rates was negatively related with global equity returns.

Muhopadhyay and Sarkar (2011) presented the long-run predictability in the Indian stock market based on cointegration analysis and Vector Error Correction Model (VECM) analysis. The study used three indices such as BSE Sensex, BSE 100 and NIFTY. The study examined the long run relationship among macroeconomic variables, financial variables and stock market prices during the study period of April 1996 to December 2002. It revealed that there were two cointegrating relations for all the three system method for the three indices. The results of the study were based on trace and maximum eigen value tests indicated there existed cointegrating relation involving a stock market index and the macroeconomic variables viz., domestic industrial production, consumer price index, nominal exchange rate, foreign direct investment and long-term interest rate etc.

Conclusion

The present work is based on the review of Indian and foreign studies and the review were presented in this chapter. The aforementioned studies indicate that the relationship between risk and return and the effect of diversification has been a subject of concern in India for the researchers, academicians, investors and financial analysts. 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.

The review of literature observed that as compared to other countries there has been a very little research work regarding risk-return relationship and the relevant issue on risk-return analysis in India. The present study found that maximum studies used a smaller sample and time period for investigating the relationship between risk and return and many of the studies showed some mixed results. The literature review observed that both risk and return are the important variables for investors when they want to take a decision for investment. 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 for Indian equities. There are, however, a number of studies that did not detect any sign of positive risk and return relationship. In a nutshell, on the basis of above mentioned studies, the

present study concluded that there is a continuous need of the undertaking the study on risk-return relationship and the diversification effect. Based on these studies, the present study also made an attempt to investigate that how many securities makes a well diversified portfolio.

The understanding of macroeconomic variables and their effect on stock market returns is vital for investors, policy makers and academic researchers. Quite a few researches address the issue of the relationship between macroeconomic variables and stock market returns in India with evidence of mixed results, depending on the methodology, data, time-period and framework used. Thus, the present study also discusses the relationship between macroeconomic variables and stock market return in India. The study tested the relationship between macroeconomic variables and stock market returns in India with the help of econometric techniques.

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