CHAPTER-II
REVIEW OF LITERATURE

2.1 Introduction

The Economic liberalization policies have brought a significant change in the development of Indian stock market. The government of India has set up the stock market is one of the most important sources for companies to raise the money. This allows businesses to be publicly traded or raise additional financial capital for expansion by selling shares of ownership of the company in a public market. The present study focused on modeling and forecasting the volatility. A comprehensive literature review has been covered to identify the existing research gap. For the in-depth understanding all the empirical studies related to the stock market volatility, reviewed in this chapter are grouped in to various categories as follows:

1. Studies related to measurement of stock price volatility.
2. Studies related to introduction of Derivatives on spot market volatility.
3. Studies concerning day of the week effect on stock market return and volatility.
4. Studies related to relationship between stock market and Macroeconomic variables.

2.2 Studies Related to Measurement of Stock Price Volatility

Kenneth et al. (1987) examined the relationship between stock returns and stock market volatility. They found evidence that the expected market risk premium is positively related to the predictable volatility of stock returns. They also find the evidence that the unexpected stock market returns are negatively related to the unexpected change in the volatility of stock returns. This negative relation provides indirect evidence of a positive relation between expected risk premiums and volatility. They suggest that these variables have fluctuated widely over the past sixty years.

Yasushi Hamao et al. (1990) observed a short-run interdependence of prices and price volatility across the three major international stock markets. They examined the daily opening and closing prices of major stock indexes for the Tokyo, London and New York stock markets. They analyse that the price volatility spillovers from New York to Tokyo, London to Tokyo and New York to London, but no price volatility spillover effects in other directions are found for the pre October 1987 period. They found that the effect on the
conditional mean is consistent with international financial integration, while the magnitude of volatility spill over is generally much less in this case.

Kenneth Kim and Ghon Rhee (1997) claimed that price limits decrease stock price volatility, counter overreaction and do not interfere with trading activity. Conversely, price limit critics claim that price limits cause higher volatility levels on subsequent days, prevent prices from efficiently reaching their equilibrium level and interfere with trading due to limitations imposed by price limits. Their empirical research does not provide conclusive support for either position. They examine the Tokyo Stock Exchange price limit system to test these hypotheses. Their evidence supports all three hypotheses suggesting that price limits may be ineffective.

Kate Phylaktis et al. (1999) examined the effects of price limits on the stock volatility in the Athens Stock Exchange. They put forward, the information hypothesis, which implies that price limits only slow down the process of adjustment and have no effect on stock volatility; and the over-reaction hypothesis, which assumes that investors tend to overreact to new information, so that price limits give them time to reassess the information and reduce stock volatility. Their results show strong support for the information hypothesis. They obtained the evidence by performing the tests on ten stocks, which include heavily traded stocks as well as less active stocks and covering a variety of industries and on a market wide price index. Their results are also robust to the frequency of the measurement of the returns, and to the tightness of the limits.

Hee-Joon Ahn et al. (2001) investigated the role of limits orders in the liquidity provision in a pure order driven market. They focus on the dynamic relation between transitory volatility and order flow. They examine how transitory volatility affects the mix between limit orders and market orders. Their results show that market depth rises subsequent to an increase in transitory volatility and transitory volatility declines subsequent to an increase in market depth. Their result is consistent with the existence of liquidity providers who enter the market and place limit orders on either the bid or ask side depending on which side will earn profits for the liquidity provision.

Michael Drew et al. (2005) compared the performance of the traditional CAPM with the multifactor model of Fama and French (1996) for equities listed in the Shanghai Stock Exchange. They also investigate the explanatory power of idiosyncratic volatility and respond
to the claim that multifactor model findings can be explained by the turn of the year effect. Their results show that firm size, book to market equity and idiosyncratic volatility are priced risk factors in addition to the theoretically well specified market factor. Their results also reveal that Chinese investors view small and low idiosyncratic volatility firms as more risky than big and high idiosyncratic volatility firms.

Frimpong et al. (2006) modeled and forecasted volatility (conditional variance) on the Ghana Stock Exchange using a Random Walk, GARCH (1, 1), EGARCH (1, 1) and TGARCH (1, 1) models. They used unique three days a week Databank Stock Index (DSI) to study the dynamics of the Ghana stock market volatility over 10-years. They estimated the competing volatility models and their specification and forecast performance. They found that the volatility clustering, leptokurtosis and asymmetry effects associated with stock market returns on more advanced stock markets. They estimate that GARCH models suggest a high degree persistent in the conditional volatility of stock returns on the Ghana Stock Exchange.

Vivien Tai et al. (2006) investigated whether trade size or number of transaction provides more information on explaining price volatility and market liquidity in this market. They also investigate how market condition can affect the relationship between information type and trading activities. They use data from the Taiwan OTC market to run the empirical tests. It divides firms into five size groups based on their market capitalization. Their findings show that the larger the number of transactions the higher the price volatility. Smaller firms on the Taiwan OTC market are traded based on firm-specific information. This relation is further affected by market trends. They fill a gap in the literature to show that market condition has an impact on the relation between information type and trader’s behaviour.

Epaminontas Katsikas (2007) analysed the relationship between volatility and autocorrelation in major European stock index futures markets. His evidence points show the negative relationship between volatility and autocorrelation. Specifically, autocorrelation is low during volatile periods and high during calm periods. He analysed that volatility itself is an asymmetric function of past errors in the sense that negative errors exert considerably higher impact on volatility than positive ones. He found that a negative relationship between volatility and autocorrelation in major European futures markets. He suggests that futures prices are non-linearly predictable so that short-term trading could produce abnormal returns.
Jaemin Kim (2007) examined changes in daily return volatility associated with open market share repurchases. He employed Univariate analyses; control the analyses and multiple regression analyses to explore relations between daily return volatility and a number of variables. He finds evidence that an open market share repurchase firm, by actively buying back its shares when the share price falls, reduces daily return volatility. His results suggest that it is the subsequent actual buyback trading activity, not the announcement that is significantly negatively associated with changes in daily return volatility.

Ananth Rao (2008) analysed the co-integration and volatility persistence of six Middle East emerging Arabian Gulf Cooperation Council (AGCC) equity markets with developed markets. He uses the MGARCH and VAR methodology to analyze the co-integration and volatility spillover across emerging AGCC markets and developed markets. His Study shows that AGCC markets exhibit significant own and cross spillover of innovations and volatility spillover and persistence in these markets. His results imply that, emerging AGCC markets are susceptible to conditions within the AGCC region. This increases potential benefits of international diversification for international investors.

Phillip O'Shea et al. (2008) denoted that there is conjecture that small and mid-cap companies in highly speculative industries use frequent and repetitive disclosure to promote price volatility and heighten market interest. Excessive disclosure could indicate instances of self-promotion or poor disclosure practices and these habits could mislead investors. Their purpose is to quantitatively investigate the impact of firm disclosure on price volatility in the Australian stock market. They consider the effect of information disclosure on the daily stock price volatility of 340 Metals & Mining industry entities listed on the Australian Securities Exchange. Their results indicate the number of disclosures, the number of price and non-price sensitive disclosures and the number of disclosures by category has a significant influence on daily price volatility.

Sabur Mollah and Asma Mobarek (2009) investigated the time-varying risk return relationship and the persistence of shocks to volatility. They found that there is a long-term persistence shock in emerging markets compared to developed markets. They used the data set for the developed and emerging markets is not consistent in terms of the period. However, they explore the venues for further research on the global diversification. They implied the volatility measurement is vital in determining the cost of capital for investment and portfolio management, option pricing and for market regulations. They found unique features include
large the size with updated data set that reveals the nature of world economy and empirical evidence on volatility testing that reports the risk return characteristics of both developed and emerging markets.

**Eric Girard and Mohammed Omran (2009)** explored the change in speed of dissemination of order flow information on stock volatility of return in 79 traded companies at the Cairo and Alexandria Stock Exchange (CASE). They examine the interaction of volatility and volume in 79 traded companies in CASE. They found that information size and direction have a negligible effect on conditional volatility and, as a result, the presence of noise trading and speculative bubbles is suspected. They also found that the persistence in volatility is not eliminated when lagged or contemporaneous trading volume is incorporated into a GARCH model. They have shown that, when volume is further broken down into its expected and unexpected components, volatility persistence decreases.

**Kumar (2010)** examined the statistical properties of the volatility index of India, its relationship with the Indian stock market and its predictive power for forecasting future variance. He examined the volatility transmission between India and developed markets. He employs quantile regression methodology to examine the empirical relationships of a volatility index. Volatility spillovers between emerging and developed markets are studied using volatility indices that are ex ante. During the study period they observed that the average Ivix level is 35.89 per cent and the higher movements. Volatility forecasts obtained from Ivix contain important information about realized market volatility and the results indicate that Ivix is an unbiased estimator of future realized volatility.

**Hung-Chun Liu and Jui-Cheng Hung (2010)** applied alternative GARCH-type models to daily volatility forecasting and apply Value-at-Risk to the Taiwanese stock index futures markets that suffered most from the global financial tsunami that occurred during 2008. They conducted a forecast evaluation using various proxy measures based on both symmetric and asymmetric loss functions, while back-testing and two utility based loss functions are employed for further assessment with respect to risk management practice. They demonstrate that the EGARCH model provides the most accurate daily volatility forecasts, while the performances of the standard GARCH model and the GARCH models with highly persistent and long-memory characteristics are relatively poor.
Athanasios Koulakiotis et al. (2010) valued the volatility transmissions between portfolios of cross-listed equities and exchange rate differences and also the volatility persistence for home, foreign equities and exchange rate differences in the UK and German markets. They focused on the volatility persistence for foreign equities that are listed in the UK and German markets, second on the respective home portfolios of cross-listed equities and third on the exchange rate differences. They found that the volatility persistence is more prominent than error persistence from cross-listed equities, foreign or home and the exchange rate differences.

Ahmed Shamiri and Zaidi Isa (2010) investigated the international information transmission of return and volatility spillovers from US and Japan markets to Asia-Pacific markets using daily stock market return data covering the period. They investigated whether the efforts for more economic, monetary and financial integration have fundamentally altered the sources and intensity of volatility spillovers to the individual stock market. Their results suggested that, for international investors to get profits from the returns of Asia-Pacific securities, it is necessary to pay attention to the US market directly. However, implementing global hedging strategies on Asia-Pacific markets requires the information concerning the Japanese volatility behaviour.

Suk Joon Byun et al. (2011) investigated whether the superiority of the implied volatility from a stochastic volatility model over the implied volatility on the forecasting performance. They made a grander causality tests between an implied volatility and a realized volatility is carried out for checking the forecasting performance. They implied a trading strategy for forecasting power of an implied volatility earns positively, in particular, more positively under high volatile market or low return market. They identified that as a volatile market grows, it becomes more and more important to evaluate the forecasting performance of intraday future volatility, not only from an academic prospective, but also in practical terms. They suggested that implied volatilities are more meaningful for the future realized volatility.

Khaled Hussainey et al. (2011) explored the relation between dividend policy and share price changes in the UK stock market. Multiple regression analyses are used to explore the association between share price changes and both dividend yield and dividend payout ratio. They found a positive relation between dividend yield and stock price changes, and a negative relation between dividend payout ratio and stock price changes. They showed the
fact that dividend policy is relevant in determining share price changes for firms listed in the London Stock Exchange.

Isao Ishida et al. (2011) proposed a new method for estimating continuous-time stochastic volatility models for the S&P 500 stock index process using intraday high-frequency observations of both the S&P 500 index and the Chicago Board Options Exchange implied volatility index. They provided a framework for using intraday high-frequency data of both the indices’ estimates, in particular, for improving the estimation accuracy of the leverage parameter driving the diffusive components of the price process and its spot variance process, respectively. They experimented the importance of making proper adjustments to the moment conditions when realized measures are computed using data from non-contiguous non-full-day trading sessions.

Maria Assunta Baldini et al. (2011) investigated the potential relationship between the stock market announcement of a brand’s buy and sell agreement and the stock price trend. Their statistical relevance of the analysis is limited by the observational data that it was possible to analyse. They investigated investors’ behaviour with regard to the accomplishment of a purchase/sale operation for an asset that is traditionally regarded as a major value driver. They examined the market’s reaction to a well-defined corporate event, declared separately and not along with other occurrences.

Chih-Hsiang Chang et al. (2011) examined the lead-lag relationship, the volatility asymmetry and the overreaction phenomenon between the financial markets of the USA and Taiwan. They focused on three differentiating features. Their study investigated, the price transmission between the most updated information of the US stock index and the TAIEX, the volatility asymmetry applying a trivariate GJR-GARCH model, and the overreaction phenomenon of emerging market investors. Their empirical results of the whole research period revealed that although there is a lead-lag relationship between the financial markets in the USA and Taiwan, there is only weak evidence indicating that the TAIEX led the spot and futures prices in the USA. Moreover, they showed that there is a significant price transmission effect and volatility asymmetry among the TAIEX, the US spot index and the US index futures.

David McMillan and Pako Thupayagale (2011) investigated volatility in African Stock Markets (ASMs), taking account of periodic level shifts in the mean level of volatility, where
the regime shifts are determined endogenously. Their Volatility estimates are incorporated into standard volatility models to assess the impact of structural breaks on volatility persistence, long memory and forecasting performance for ASMs. They suggest that persistence and long memory in volatility are overestimated when regime shifts are not accounted. They describe one of the first studies to incorporate endogenously determined regime shifts into volatility estimates and assess the impact of structural breaks on volatility persistence, long memory and forecasting performance for ASMs.

**Ingyu Chiou (2011)** investigated the lead-lag relationships between three major stock markets (Tokyo, London and New York) over the period 1997-2007, using the return-volatility variable. His aim is to use new data to test how one national stock market affects another national stock market, which is one focus of the market integration literature. He employs the traditional regression model because three stock markets are in different time zones and trading takes place sequentially. Specifically, the intraday return is calculated from the daily open and close prices. He finds strong evidence that three stock markets are significantly interdependent. His new evidence confirms that there are high degrees of linkages between Tokyo, London and New York.

**Tian Yong Fu et al. (2011)** analyzed the volatility transmission between the Japanese stock and foreign exchange markets. They used the daily data over the study period 1994-2007, they found that news shocks in the Japanese currency market account for volatility transmission in eight of the ten industrial sectors considered. They also found that significant asymmetric effects in five of these industries. While the BEKK-GARCH model enables analysis of volatility transmission between the stock and foreign markets against a background of conditional correlation and asymmetries, the model requires the estimation of a large number of parameters, which can be problematic for a limited dataset. Their findings have important implications for understanding international volatility transmission involving the stock and foreign exchange markets. This in turn can provide insight into investor behaviour.

**Anson Wong and Kui Yin Cheung (2011)** used the family of GARCH models to study the evolution of stock price volatility in the Hong Kong stock market from 1984 to 2009. They examined a number of variables that may lead to the volatility of the Hong Kong stock market. These variables include the fluctuation of the Shanghai A-Share Price Index, the change of crude oil price and the interest rate movement. Their Empirical results show that
both the EGARCH and AGARCH models can detect the asymmetric effect well in response to both good news and bad news. By comparing different GARCH models, they find that it is the EGARCH model that best fits the Hong Kong case.

**Stavros Degiannakis, et al. (2012)** focused on the performance of three alternative value-at-risk (VaR) models to provide suitable estimates for measuring and forecasting market risk. Data consists of five international developed and emerging stock market indices over the time period. It is provide the evidence that the tools of quantitative finance may achieve their objective. Their results indicate that the widely accepted and simplified ARCH framework seems to provide satisfactory forecasts of VaR, not only for the pre-2008 period of the financial crisis but also for the period of high volatility of stock market returns.

**Faten Ben Slimane (2012)** assessed the volatility of the underlying markets and use break methodology to highlight the merger effects. It also adds control samples to account for any change in volatility that could be caused by factors other than the merger event. The results suggest that the Euro next merger did not affect the market risk. It is finding no evidence that the integration onto the same platforms for trading and clearing had a significant effect on the volatility of the emerging markets. This study contributes to clarify business issues and to guide policy makers on exchange industrial organization. He further contributes to the ongoing discussion about the drawbacks and merits of horizontal exchange integration of the Euronext.

### 2.3 Studies Related to Introduction of Derivatives on Spot Market Volatility

**Frederick Song et al. (2005)** examined the roles of the number of trades, size of trades and share volume in explaining the volatility-volume relation in the Shanghai Stock Exchange with high frequency trade data used. Their results confirm that the volatility-volume relation is driven mainly by the number of trades on the Chinese stock market. The number of trades explains the volatility-volume relation better than the size of trades. Their results also show that the second largest sized trades affect the volatility more than other trades on the Chinese market.

**Evangelos Drimbetas et al. (2006)** analysed the effects of the introduction of the futures and options into the FTSE/ASE 20 index on the volatility of the underlying index. They analysed the data (August 1997–April 2005) with the help of an EGARCH model. It is shown that the introduction of derivatives has induced a reduction of the conditional volatility of the
FTSE/ASE 20 index and consequently it has increased its efficiency. They found that these contradictory results have an impact in various markets.

**Floros Christos and Vougas Dimitrios (2006)** explored the effect of futures trading on the volatility of the underlying spot market. They focus on various techniques to investigate the relationship between information and the volatility of the indices in Greece. Their results for the FTSE/ASE 20 index suggested that futures trading has led to decreased stock market volatility (negative effect), but the results for the FTSE/ASE Mid 40 index indicate that the introduction of stock index futures has led to increased volatility (positive effect). Their estimations of the unconditional variances indicated lower market volatility after the introduction of stock index futures. Their findings are helpful to financial managers dealing with Greek stock index.

**Adnan Kasman and Saadet Kasman (2008)** examined the impact of the introduction of stock index futures on the volatility of the Istanbul Stock Exchange (ISE), using asymmetric GARCH model, for the period July 2002–October 2007. Their results from EGARCH model indicated that the introduction of futures trading reduced the conditional volatility of ISE-30 index. Their results further indicated that there is a long-run relationship between spot and future prices. They also suggested that the direction of both long- and short-run causality is from spot prices to future prices. It is found from the study that consistent with those theories stating that futures markets enhance the efficiency of the corresponding spot markets.

**Timotheos Angelidis and Stavros Degiannakis (2008)** evaluated the performance of symmetric and asymmetric ARCH models in forecasting both the one-day-ahead Value-at-Risk and the realized intra-day volatility of two equity indices in the Athens Stock Exchange. Two volatility specifications are estimated, the symmetric generalized autoregressive conditional heteroscedasticity (GARCH) and the asymmetric PARCH processes. They found the VaR framework as the most appropriate method for the Bank index is the symmetric model with normally distributed innovations, while the asymmetric model with asymmetric conditional distribution applies for the General index. They examined the performance of various volatility models in forecasting the realized volatility and calculating the 95 and 99 per cent VaR.

**Mallikarjunappa and Afsal (2008)** examined the volatility implications of the introduction of derivatives on stock market volatility in India using the S&P CNX Nifty Index as a
benchmark. They accounted for non-constant error variance in the return series, a GARCH model is fitted by incorporating futures and options dummy variables in the conditional variance equation. They fund clustering and persistence of volatility before and after derivatives, while listing seems to have no stabilisation or destabilisation effects on market volatility. They observed the persistence of shocks and long-term memory processes in the post-derivatives period as well, and therefore, they concluded that the introduction of derivatives has not brought the desired outcome of decline in volatility.

Sathya Swaroop Debasish (2009) proposed the impact of the introduction of Nifty index futures on the volatility of the Indian spot markets by use of econometric models. They considered six measures of volatility, the dynamic linear regression model and GARCH model investigate the volatility in National Stock Exchange (NSE), Nifty prices both before and after the onset of futures trading. Analysis confirmed that no structural change after the introduction of futures trading on Nifty, and found that whilst the pre-futures select was integrated, the post-futures select was stationary. They implied that futures markets serve their prescribed role of improving pricing efficiency and improved the quality of information flowing to spot markets.

Pratap Chandra Pati and Prabina Rajib (2010) estimated the time-varying conditional volatility, and examined the extent to which trading volume, as a proxy for information arrival; explained the persistence of futures market volatility using National Stock Exchange S&P CRISIL NSE Index Nifty index futures. They found evidence of leverage effect, which indicated that negative shocks increase the futures market volatility more than positive shocks of the same magnitude. In addition, their results indicated that inclusions of both contemporaneous and lagged trading volume in the GARCH model reduce the persistence in volatility, but contemporaneous volume provides a greater reduction than lagged volume.

2.4 Studies concerning Day of the Week effect on Stock Market Return and Volatility

Lawrence Glosten et al. (1993) explored a support for a negative relation between conditional expected monthly return and conditional variance of monthly return using a GARCH model modified by allowing seasonal pattern in volatility and positive and negative innovations to returns having different impacts on conditional volatility. They also showed that monthly conditional volatility may not be as persistence as was thought. Positive
unanticipated returns appeared to result in a downward revision of the conditional volatility whereas negative anticipated returns result in an upward revision of conditional volatility. They found that the time series properties of monthly excess returns are substantially different from the reported properties of daily excess returns.

**Michael Drew et al. (2006)** stated that idiosyncratic volatility is highly correlated with size and that it plays a powerful role in explaining expected returns. They identified idiosyncratic volatility is useful in explaining the variation in expected returns and the findings can be explained by the turn of the year effect. Monthly stock returns and market values of all listed firms in Germany and UK are used as the basis of the evaluation. They found that firm size and idiosyncratic volatility are related to security returns. In addition, they noted that the findings are robust throughout the period. They suggested that idiosyncratic volatility is highly correlated with firm size and that it is useful in explaining expected stock returns and generate higher returns to small firms.

**Haitham Al-Zoubi and Bashir Kh.Al-Zu'bi (2007)** valued the market efficiency, asymmetric effect and time varying risk–return relationship for daily stock return of Amman Stock Exchange (ASE). They used the exponential generalized autoregressive conditional heteroscedasticity (EGARCH) and threshold autoregressive conditional heteroscedasticity in mean are utilized to measure the persistent of volatility, risk-return relationship and volatility magnitude to bad and good news. Their results showed significant positive relationship between equity return and risk in the ASE, which is consistent with the portfolio theory and they suggest the existence of the asymmetric effect. They examined the persistence of the stock volatility and the leverage effect for the holding period 1990-2000. The ASE volatility tends to change over-time and is serially correlated.

**Robert Faff and Michael McKenzie (2007)** assessed the determinants of conditional stock index autocorrelation with particular emphasis on the impact of return volatility that is theoretically linked through the behaviour of feedback traders. They considered the S&P 100, 500 and the NASDAQ 100 index and volatility in each series is captured using option-implied estimates taken from the Chicago Board Options Exchange. They suggested that low or even negative return autocorrelations are more likely in situations where, return volatility is high, price falls by a large amount, traded stock volumes are high and the economy is in a recessionary phase. Their results confirmed that previous related work showing a link between autocorrelation and volatility is not induced by a mechanical relation.
Johan Knif and Seppo Pynnönen (2007) explored the relationship between stock return correlation and volatility. They analyzed the incremental effect of volatility on the level of correlation. Their focus is set on the impact of the volatilities involved in the definition and calculation of the correlation as well as on the effects of external volatilities from other markets. They have constructed an explicit model to investigate the contribution of the level of volatility on mutual correlations of the markets. Their results strongly supported the findings that high volatility tends to increase correlations between the markets. Their results can be directly utilized by portfolio managers in planning portfolio diversification strategies in accordance with the expected future volatility.

Mahmod Qadan and Joseph Yagil (2012) investigated whether the tracking ability of Exchange Traded Funds (ETFs) is lower in highly volatile periods and to shed more light on the factors behind the tracking error. They applied the Error Correction Model that incorporates a short-run adjustment mechanism on domestic US ETFs that follow industrial indices. They found that tracking errors attained pronounced levels during 2008 compared to 2006 and 2007, mainly in ETFs from the real estate and banking and finance sectors. In addition, they found tracking error is positively correlated with the daily volatility of the ETF, while trading volume has a limited effect on reducing tracking errors. They shed more light on the relationship between securities and their fundamentals and contribute to the literature on the information transmission mechanism for dually-listed securities.

Jullavut Kittiakaraskun et al. (2012) explored the impact of trades by informed traders and uninformed traders on the asymmetric volatility relation, a stylized fact that has long been puzzling financial economists. They aimed to test the hypothesis using a direct measure for informed trades and uninformed trades. They employed the Computer Trade Reconstruction (CTR) data of Nasdaq-100 index futures for the period of 2002 through 2004. They analyzed that these results are only significant during the first half of the period, which is more volatile than the second half. They suggested that selling activity of uninformed traders can significantly influence asset return and volatility and, hence, deserves more attention from the researchers.

Suliman Zakaria and Suliman Abdalla (2012) examined the model stock return volatility in the Saudi stock market by using daily closing prices on the general market index. They employed different univariate specifications of the generalized autoregressive conditional heteroscedastic (GARCH) model, including both symmetric and asymmetric models. An
application of the GARCH (1,1) model provides strong evidence of the persistence of time varying volatility. By allowing the mean equation of the returns series to depend on a function of the conditional variance, his results provide evidence of the existence of a positive risk premium, which supports the positive correlation hypothesis between volatility and the expected stock returns.

2.5 Studies related to Relationship between Stock Market and Macroeconomic Variables

Mervyn King and Sushil Wadhwani (1990) investigated that, in October 1987, almost all stock markets fell together despite widely different economic circumstances. They constructed a model in which contagion between markets occurs as a result of attempts by rational agents to infer information from price changes in other markets. Their empirical evidence suggested that an increase in volatility leads in turn to an increase in the size of the contagion effects the raise in the correlation between markets just after the crash is the evidence. Their results proved robust; it would have the important implication that volatility can, in part, be self-sustaining.

Hui Boon Tan and Chee Wooi Hooy (2004) investigated the collapse of the Malaysian exchange rate and the stock market during the Asian financial crisis had elevated uncertainties in the financial market and increased the instability of the bank stock returns. They have briefly outlined the main aspects of the Malaysian bank merger program, and tracked as well as evaluated the effects of the program on the volatility of the Malaysian bank stock returns. They indicated that the banking consolidation program had exerted some degrees of stability for the anchor banks’ stock excess returns. Their Analysis on the conditional volatilities appeared to support a persistency positive risk returns tradeoff in the trading of the Malaysia banking stocks.

Christos Floros (2007) investigated the effects of adopting International Accounting standards on Greek stock market volatility. He considered daily data (covering the period 2003-2005) from four major indices of the Athens Stock Exchange. He found that the introduction of International accounting standards has a negative but not significant effect on Greek stock market volatility. He confirmed by estimation of three different types of GARCH specifications. In addition, the unconditional variance indicates lower market volatility in Greece for all indices. His findings are helpful to financial managers dealing with Greek stock indices.
Anthony Kyerboah Coleman and Kwame Agyire-Tettey (2008) aimed at using a broader data set and longer time frame coupled with a relatively rigorous and robust methodology to examine the effect of real exchange rate volatility on Foreign Direct Investment in a small and developing country such as Ghana. They showed that the volatility of the real exchange rate has a negative influence on FDI inflow and that the liberalization process has not led to a greater inflow of FDI in Ghana. Their objective was to examine empirically the impact of real exchange rate volatility or risk on FDI flow into a developing country like Ghana. They recommended the adoption of a flexible exchange regime and to minimise the level of real exchange rate volatility.

Duc Khuong Nguyen and Mondher Bellalah (2008) reexamined the dynamic changes in emerging market volatility around stock market liberalization. They counted for partial market integration is developed for modeling stock market volatility in emerging market countries. Second, they analysed the Bai and Perron stability test in a linear framework and a pooled time-series cross-section model were employed to examine the empirical relationship between stock market liberalization and volatility. They assumed a static degree of market integration. From the structural break analysis, they reinforced the empirical findings through proving that none of the estimated break dates in the conditional volatility indices are directly linked to the official liberalization dates.

Charles Adjasi (2009) analysed the impact of macroeconomic uncertainty on stock-price volatility in Ghana. Their method of analysis is in two stages. The first stage estimates univariate volatility models for each macroeconomic variable using the EGARCH model. In the second stage volatility effect of macroeconomic variables on stock prices is estimated mean-conditional variance. Their results showed that higher volatility in prices and interest rates increases volatility of the stock prices. Their tests were based on EGARCH model. This implies that increased uncertainty in cocoa prices and interest rates amplify volatility on the GSE. They found that the volatility response of the stock market to uncertainty in both external and internal macroeconomic factors, with the magnitude of external effects being greater than that of the internal effects.

Gregory Koutmos (2012) proposed a general, yet simple model to estimate interest rate volatility. He used a methodology which is based on an extended Exponential Generalized ARCH (EGARCH) model that incorporates both interest rate levels as well as past information shocks in the volatility function. He suggested that the elasticity of volatility to
the level of interest rates, although statistically significant, is not as high numerically as previously thought. Extending the model to accommodate possible shifts would probably improve the performance as well the forecasting accuracy. He implied the accurate pricing of fixed income derivative securities as well as the efficient risk management of fixed income portfolios. He provided a convenient and unifying methodological framework for assessing the importance and forecasting ability of the various volatility components.

Samer Al-Rjoub and Hussam Azzam (2012) examined stock returns behaviour during financial crises for an emerging market from 1992 to 2009. They identified episodes of significant price declines crashes and watch the stock price behaviour during these episodes. They estimated the behaviour of stock returns and volatility in ASE during global, regional and local events. Their results showed that crises in general have negative impact on stock returns for all sectors, with the banking sector being the most affected. They provided an evidence of high persistence in volatility and strong reverse relationship between stock return and its volatility before and after the crisis.

2.6 Conclusion

The review of literature witnessed that the research in the area of stock market volatility has been done by various researchers in different point of time. Although the researcher was came to know few shortcomings on them. Many studies are based on the Indian stock market as well. But there is no consensus opinion about the forecasting volatility of the underlying stock market as reported by different studies related to India & other countries. The samples taken for the studies were limited and the multiple regression models was applied without verifying the properties of the time series data such as stationary. This research is focused on CNX NIFTY 50 companies which have been further divided into five segments with 37 sample companies for unique focus of the research. This study an attempt has been made to overcome the limitations of the previous studies by considering longer time frame of data and considering a larger group of individual stock. Hence, the current study attempts to throw light on the volatility forecasting of selected NIFTY 50 companies in India, to fill the gap in the existing literature.