Chapter - 2

Review of Literature

Review of literature is an essential part of the research process to find out the research gap. There are many literatures which are worked on international market and few are on Indian stock market. These literatures are reviewed chronologically in the following:

Chaibi et al. (2014) evaluates the firm size effect on risk return on American Stock Market. They select daily traded values of the listed companies in Russell 3000 index for the period 2010-2012. They find different size model by applying Sharp model and Capital Asset Pricing Model (CAPM) and select Ordinary Lest Square (OLS) regression method for preparation of each 12 size group. They find that large firms perform significantly better than that of smaller firms during the sample period. They also find that there exist a negative relationship between return and firm size and between return and validity. Further they observe that small size firms have low risk adjusted returns as compare to large size firms.

Goyal (2014) reinvestigates size anomalies (e.g firm size, price earnings ratio, price to book value etc.), stock return and risk associated with financial and non-financial sectors of U.S. He selects monthly data of common stocks of financial and non-financial company period from July 1973 to December 2012. He divides financial and non-financial in separate portfolio on the basis of their respective market capitalization and then sort these portfolio on the basis of size and return. He suggests that if government gives guarantees about the credibility for large stocks returns then it will not be affected by any anomalies and these guarantees will not change perception of the shareholders.

Haq and Rashid (2014) examine the relationship between firm size and stock return in Pakistan's stock market. They select 50 companies from Karachi Stock Exchange (KSE) and select yearly data from 2007 to 2011. They construct a set of 10 portfolios based on size i.e market capitalization, total assets and sales. They find that firm size effect exists in emerging stock market of Pakistan. They have also observed that there is a prominent size effect where smaller firms are found to have a greater average annual excess return than bigger firms.

Hwang, et al. (2014) examines the relationship between size and expected returns on UK stock market. They apply Markowitz mean–variance analysis approach to check the size and expected return effects on UK stock market. They construct portfolios based on size and returns. Moreover, they select monthly data from January 1985 to June 2012 of 612 companies listed in FTSE all share index. They suggest that Markowitz efficiency frontier is not achieved in larger size portfolio stocks, this suggest that smaller firms operated in UK have higher risk adjusted return compare to bigger one. Overall, these finding suggest that there is a negative relationship between portfolio size and portfolio return during that period.

Gahan et al. (2012) examine the volatility pattern of BSE Sensex and NSE Nifty during the post derivative period. They also try to find out the correct estimates of volatility by recognizing the stylist features of volatility like persistence, asymmetry etc. They use daily closing index levels of BSE Sensex and NSE Nifty over a period of 1992-2012 and 1995-2012 respectively. The whole period is appropriately divided into pre and post derivative period. For volatility modeling they use ARMA (p,q), ARCH (p,q), GARCH (p,q), EGARCH (p,q) and IGARCH (p,q) models. They find that volatility is

lower in the post derivative period as compared to the pre derivative period. They also find that recent news has impacted volatility more in the post derivative period in comparison to the pre derivative period. They further find that introduction of derivatives has increased the asymmetric effect on volatility.

Gill et al. (2012) examine the variables that explain the variance of equity share prices in America. A sample of 333 American firms listed on New York Stock Exchange (NYSE), USA select for a period of three years from 2009 to 2011. The study applies co relational and non experimental research design. The overall findings of this study shows that book value per share, earnings per share, dividend per share, price earnings ratio, the Chief Executive Officer (CEO) duality, and the internationality of the firm explain the variance of equity share prices in America.

Govindarajan et al. (2012) examine the correlation between BSE SENSEX and other international indices. They mainly focus on return from the point of short term traders from the period of June 2006 to June 2011. When the index moves by 300-400 points, 400-500 points and 500 points and above on a single day a short term trader will be tempted to book profits. Further they highlight the impact of various factors on SENSEX and movement of index before and after the event day. They find that BSE SENSEX shows a positive relationship between various international stock market indices. Stock market in India witnessed wide volatility during the periods June 2007 - 2011. During the study periods SENSEX has gone up by 300-400 points, 400 -500 points and 500 points and above on a single day in number of cassations and it has provided ample opportunities to book profits for short term traders. Five major factors such as FII, oil prices, inflation, Global factors and other factors are responsible for sudden upward

movement in the SENSEX. If we look at the return just one day before and one day after the event period if the impact is due to FII, Global and others positive return is generated and in all other cases negative return is observed either before or after the event day.

Minovic and Zikovic (2012) examine the impact of an overall market factor that is firm size, ratio of book to market value and liquidity risk on expected asset returns in the Serbian market for a period from April 2008 to March 2011. They suggest that liquidity and firm size have a significant impact on equity price formation; ratio of book to market value does not have an important role in asset pricing.

Nateson et al. (2012) examine the volatility of the NSE sectoral indices from the period of 2nd January 2007 to 31st December 2011. The NSE sectoral indices comprises sectors like Energy, Finance, FMCG, IT, Media, Metal, MNC, Pharma, PSU Banks, Realty, Auto and Bank. They find a wide range of fluctuation in daily returns could be witnessed in all the sectoral indices. The fluctuations are high in the Realty sector. The average daily return for the study period is highest for the FMCG sector and is ranked as Rank 1, and next comes the CNX Pharma sector which holds Rank 2. The lowest Rank 12 is assigned for CNX Realty, as it has the lowest return. The key point to be noted is for all the years of study period from 2007 to 2011, the volatility is high for the CNX Realty sector.

Apergis et al. (2011) examine the relationship between stock returns and volatility for the three largest stock markets in Europe, i.e., the UK market, the French market and the German market. They find that volatility changes for majority of the stocks rapidly during the crisis period with changes being persistent. They also find that before the crisis more investors are rewarded for market wide risk and during the crisis less stocks exhibit

a positive relationship between stock returns and volatility. Finally they find that most stocks don't exhibit positive and statistically significant leverage effects.

Bettman et al. (2011) examine the existence of firm size, shares trading strategy, January and July effects of 500 small market capitalization stocks listed on Australian Stock Exchange (ASX). Monthly data of market capitalization, stock returns, risk-free rate of returns, dividend, leverage, operating profit, bid price, ask price and trading volume of the particular stocks from January 1990 to December 2008 is selected for investigation. They find that firm size, January and July effect exist on stock returns of the companies operated in Australian stock market. However, illiquidity and relative large transaction costs of small stocks eliminate the potential for economic profit on trading.

Filis et al. (2011) examine the option listing effect on stock returns and volatility. Daily price of the Athens General Index and the four option index: Greek Telecommunication Organization, Intracom, National Bank of Greece and Alpha Bank use for the period December 1999 to February 2002. They test asymmetric information hypothesis by using a standard event study methodology and asymmetric Generalized Autoregressive Conditional Heteroscedasticity (GARCH) type models. Event study results indicate that abnormal returns existed in the prelisting period, but tend to disappear in the post listing period. Asymmetric component Threshold Generalized Autoregressive Conditional Heteroscedasticity (TGARCH) models with Generalized Error Distribution (GED) show that the introduction of stock options lead to increase volatility (positive effect) for Greek Telecommunication Organization, Intracom and

National Bank of Greece only where as Alpha Bank shows a positive but insignificant effect.

Mishra and Singh (2011) study whether the stock market in India is driven by macroeconomic fundamentals. They employ a non-parametric approach to determine whether any variable is non-linearly related with stock returns and the variability of stock returns by taking monthly observations from 1998 to 2008. They consider exchange rate, interest rate, industrial production, inflation and foreign institutional investments as macroeconomic factors. Further, they employ a semi parametric approach to see whether any of the macro variable has a significant nonlinear impact on the stock returns and on the variability of stock returns. They suggest that of the Ordinary Least Square (OLS) and semi-parametric approaches, the semi-parametric approach better explains the stock returns and volatility.

Muthukumaran and Rengasamy (2011) estimate causality relationship between equity returns and select economic variables like inflation and interest rate. The data consist of 72 months from April 2005 to March 2011. Macro variables consider for the study included Wholesale Price Index (WPI) and 91-Treasury bills. The study reveals short-term and long-term relationship among the macroeconomic variables and equity returns through Granger causality technique. However, the interest rate find to influence stock returns and not the vice versa. Finally, the Vector Error correction model establishes that the equity returns are significantly influence by all the economic variables in India. Thus, the study empirically prove that the macroeconomic variables play a significant role on Indian stock markets during the study period.

Nirmala et al. (2011) attempt to identify the determinants of share prices in the Indian market. They use panel data pertaining to three sectors, viz; auto, healthcare and public sector undertakings over the period from 2000 to 2009 and employ the fully modified ordinary least square methods. They show that the variables dividend, price earnings ratio and leverage are significant determinants of share prices for all the sectors under consideration. Further it is found that profitability influence share prices only in the case of auto sector.

Sharma (2011) examines the empirical relationship between equity share prices and explanatory variables such as: book value per share, dividend per share, earning per share, price earnings ratio, dividend yield, dividend payout, size in terms of sale and net worth for the period 1993-94 to 2008-09. The study reveals that earning per share, dividend per share and book value per share has significant impact on the market price of share. Further, he finds that dividend per share and earnings per share being the strongest determinants of market price, so the results of his study supported liberal dividend policy and suggested companies to pay regular dividends.

Shukla and Devani (2011) examine the interpretation between the equity prices and some explanatory variables, i.e. book value per share, dividend per share, dividend yield, dividend cover, growth, price earnings ratio and earnings per share. The period of the study is form 2005-2009. The study reveals that price earnings ratio, dividend per share and dividend cover are the variables, which contribute significantly in determining the share prices followed by dividend yield and book value.

O'Brien et al. (2010) examine the effect of size, book-to-market and momentum on returns of small capitalized 300 companies listed on Australian Stock Exchange

(ASX). They select the monthly data from January 1982 to December 2006 and use Generalized Method of Moments (GMM) technique and multivariate regression analysis. They construct portfolios based on size, book to market ratio and momentum effect each portfolio size contain 30% small size firms, 40% medium size firms and 30 per cent large size firms. After applying Generalized Method of Moments (GMM) and multivariate regression analysis results suggest a significant negative average relation between size and returns, a significant positive average relation between book-to-market and returns, and between momentum and returns.

Choudhary and Choudhary (2010) examine the Capital Asset Pricing Model (CAMP) for the Indian stock market using monthly stock returns from 278 companies of BSE 500 Index listed on the Bombay Stock Exchange for the period of January 1996 to December 2009. They use the methodology of Black et al. (1972) and time series regression. They find that the higher risk is not associated with higher levels of return. They also find that expected rate of return is linearly related with the stock beta, i.e. its systematic risk. Further they find that residual risk has no effect on the expected return on portfolios.

Habibullah et al. (2009) examine the impact of inflation and output growth on stock market returns and volatility in selected Asian countries, viz. India, Japan, Korea, Malaysia and Philippines. They use monthly data from 1991 to 2004 and employ GARCH (1, 1) model. The study reveals that macroeconomic volatility, which is measured by movement in inflation and output growth, has a weak predictive power for stock market returns and volatility in these countries. The movements of the inflation rate have significant impact to the stock market returns, either positive or negative depending

on the inflation rates and their fluctuation in that country. While output growth movements have significant effect on stock market volatility, countries with relatively higher output volatility are associated with higher conditional volatility of stock returns, which is positive effect but is negative for countries which have relatively lower output volatility.

Kasman (2009) investigates the volatility behavior and persistence in the stock markets of the BRIC (Brazil, Russia, India and China) countries to provide new and additional evidence on the impact of sudden changes on the persistence in volatility. He uses daily closing prices of the five indices from the four BRIC countries for the period 1990 to 2007. He uses ICSS algorithm to detect sudden changes in volatility and also uses GARCH models to examine the behavior of volatility persistence. The study shows that when endogenously determined sudden shifts in variance are taken into account in the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model, the estimated persistence in return volatility is reduced significantly in every return series.

Manjunatha and Mallikarjunappa (2009) test the empirical validity of the firm specific factors model as envisaged by Fama and French (1992) and the market model as envisaged by Kothari, Shanken and Sloan (1995) in the Indian context over the period from 1978-79 to June 30, 2005. They use standard form of capital asset pricing model (CAMP). They find that the result of their study are consistent with the studies undertaken by Fama and French (1992), Kothari, Shanken and Sloan (1995).

Nair et al. (2009) examines the relevance of factors other than the CAPM beta that significantly explain equity returns in the Indian stock market. The time period of analysis is from January 1993 to August 2004, collecting weekly data of 82 companies

comprising BSE 100 index. They use Fama and Mac Beth cross sectional regression, pooled regression and least square dummy variables. They find that size, value and leverage are significant anomalous factors other than beta that significantly explain asset returns in Indian stock market.

Patev et al. (2009) examine the influence of the Asian and Russian market crises on the temporal behaviour of the four Central European Markets (CEM) viz; Hungary, Poland, the Czech Republic and Solvenia. They use four CEM indices –the Hungarian BUX, the Polish WIG 20, the Czech PX50 and the Slovenian SBI over the period April 30, 1996 to August 31, 2001.They use generalized auto regressive conditional hetaroscedastisity estimation technique. They find that the influence of the Asian Crisis over the CEMs is more severe than the influence of Russian crisis. During crises CEM exhibit an increase in correlation between stock market volatility and return initially and a decrease afterwards. They find that the correlation never reaches the pre crisis level. They also find increasing persistence for CEM not only during the crisis but also after the crisis period. After the crisis the market reaction was much weaker to the current market news than to the past information. They do not find positive relation between stock market volatility and expected returns. During the crisis period the relationship is positive.

Ray (2009) identify whether there exists a causal relationship between net investment made by FIIs and the equity return in the Indian stock market. He analyses the relationship between foreign institutional investment and stock returns in India (BSE) with the aid of daily data from January 2006 to June 2008.The Stationarity condition for the time series data consider for analysis has been tested using Augmented Dicker Fuller

(ADF) test and Phillips-Perron (PP) test. The Granger Causality test suggests that the equity returns granger cause FII investments, but not the reverse.

Tripathy et al. (2009) investigate the relationship between leverage effect and daily stock returns, volume and volatility for the 30 stocks included in the Bombay Stock Exchange SENSEX index in India during the period January 2005 to June 2009, by using GARCH, ARCH, EGARCH and TARCH models. They find that there exist substantial ARCH effects in the residuals and the volatility shocks are quite persistent in the market. They also find that the recent news and the old news both have an impact on the volatility of the stock. Further they find the evidence of leverage and asymmetric effect on stock market. They find that bad news generate more impact on change in trading volumes and volatility of the market. They also observed that asymmetric GARCH models provide better fit than the symmetric GARCH model suggesting that systematic variations in trading volume are assumed to be caused only by the arrival of new information.

Gangadhar and Reddy (2008) examine the investment trends and patterns of FIIs and their impact on stock market liquidity and volatility for a period from April 2000 to March 2007 by taking the market capitalization and stock indices respectively. They find that there is high degree of positive correlation between FIIs investment and market capitalization, and also reveal that liquidity as well as volatility was highly influenced by FII flows.

Leon (2008) examines the relationship between expected stock market returns and volatility in the regional stock market of the West African Economic and Monetary Union called the BRVM (Bourse Regionale des Valeures Mobilieres) over the period 4 January 1999 to 29 July 2005. He uses GARCH and EGARCH-in-Mean model assuming

normally distributed and Student's t distribution for error terms. He finds that expected stock return has a positive but not statistically significant relationship with expected volatility. He also finds that there exist asymmetry effect but volatility is higher during market booms than when market declines.

Mahajan and Singh (2008) suggest the pattern of information flow between trading volumes and return volatility using daily data for Nifty index during the period from July 2001 to March 2006. The methods use included Correlation analysis, Unit root tests, VAR modeling, Granger causality test, GARCH (1, 1) and EGARCH model. The study reveals evidence of low but significant positive contemporaneous relationship between volume and return volatility that is indicative of both mixture of distribution and sequential arrival hypothesis. The differential cost of taking long and short positions are examined by applying asymmetric EGARCH (1, 1) model to check the relationship between the variables. The study further confirms a weak unidirectional causality from volume to return volatility, which also indicates the mild support for sequential information flow direct from volume to price change. The study contributes to the enhance understanding of researchers, regulators, speculators, and other participants in market on market efficiency and information processing.

Malabika et al. (2008) analyse the empirical relationship between stock return, trading volume and volatility for select Asia-Pacific Stock Market by applying preliminary test, Granger Causality test and EGARCH (1,1) model. The data set comprises of seven national stock markets for the period spanning from 1st January 2004 to 31st March 2008. The study reveals a significant relationship between trading volume and the absolute value of price changes. Granger Causality test is used to explore,

whether return causes volume or volume causes return. The study reveals that the returns are influenced by volume and volume is also influenced by returns for most of the markets. Therefore, trading volume contributes some information to the return and volatility for determining contemporaneous and lagged volume effect after incorporation. The empirical results are robust across the national markets during the study period.

Momani et al. (2008) evaluate the efficiency of industrial companies in achieving maximization of the market value of company. There are three vital financial factors on the stock prices viz; the book value of the stock, earning per shares and the volume of stock exchange. The number of industrial companies in Jordan is 81 companies, 58 companies are selected for the study, and 23 companies are excluded because there isn't enough information about them. The industry sector is the largest economy sector in Jordan, because its companies have a huge capital in finance Amman Market. They find that if the number of stockholders is large and the volume of circulation is high, there will be a great impact on stock price and on fulfilling the goal of increasing the enterprise market value.

Chang-Jin Kim et al. (2007) investigate whether evidence for a positive relationship between stock market volatility and the equity premium is more decisive when the volatility feedback effects of large and persistent changes in market volatility are taken into account for the period from January 1926 to December 2000. They use two methods for analysis. First, a log-linear present value framework is employed to derive a formal model of volatility feedback under the assumption of Markov-switching market volatility. Second, the model is estimated for a variety of assumptions about information available to economic agents. They find that a negative and significant volatility feedback

effect, supporting a positive relationship between stock market volatility and the equity premium.

Das and Pattanayak (2007) examine empirically the factors that significantly affect the stock price movements and thereby influence the entire market movement. This study considers only Sensex as representative of entire market for a period of 5 years, i.e. 2001-05. The various explanatory variables, which are acting as major determinants of stock price movements, are condense into a few critical factors by the factor analysis and the relevance of these factors in influencing the stock market movements explain in details. The study reveals that few factors are acting as major determinants of stock price movements and thereby have a significant bearing on the entire market.

Saryal (2007) uses GARCH models to estimate conditional stock market volatility using monthly data from Turkey and Canada. He further analyses the impact of inflation and finds that the rate of inflation is high predictive power for stock market volatility in Turkey, whereas it is weaker, but still significant for Canada. His findings suggests that higher the rate of inflation, greater the stock market volatility, that is, higher rates of inflation are coincident with greater stock market risk. These results are also supported when the change in the rate of inflation is used as explanatory variable for predicting conditional volatility.

Sinha (2007) focus on equity market volatility in 13 developed and emerging markets, including India for a 15 year period from 1985 to 1999. He concludes that Asian markets are more volatile than the developed markets. He finds that for the developed markets, 1987 is the most volatile year. For the emerging markets, the year 1997 is of the highest volatility, with exception of India and Chile. India shows the highest volatility in

1992, when major irregularity took place in the banking system which severely affected the securities market.

Tripathy (2007) examines the dynamic relationship between stock market, market capitalization and net FII investments in India during the period from June 2002 to June 2005 by using Granger Causality Test and Vector Auto Regression Model. The study indicates that there is a unidirectional causal relationship between market capitalization and stock market, net FII investment with stock market. Again, the VAR analysis shows that stock return and market capitalization have an impact over net FII investment in the expected direction over a short horizon.

Karmakar (2006) measures the volatility of daily returns in the Indian stock market over the period 1961 to 2005. He uses the combined data set of the Economic Times Index and the S&P CNX Nifty together. The return series observes volatility clustering where tranquil periods of small returns are interspersed with volatility periods of large returns. He uses Generalised Auto Regressive Conditional Heteroscadastic (GARCH) model to estimate time varying volatility and uses TARCH (1, 1) to test the asymmetric volatility effect and the result suggests an asymmetry in volatility. The conditional volatility for the combined return series shows a clear evidence of volatility shifting over the period. Although the high price movement started in response to strong economic fundamentals, the real cause for abrupt movement appears to be the imperfection of the market.

Magnus and Fosu (2006) model and forecast volatility of returns on the Ghana Stock Exchange using a linear random walk (RW) model to test the market efficiency, a symmetric GARCH (1,1) models and two asymmetric EGARCH(1,1), and

TGARCH(1,1) models to capture the main characteristics of financial time series such as fat-tails, volatility clustering and the leverage effect. They uses daily closing prices of the Ghana Stock Exchange Databank Stock Index (DSI) over the period extending from 15 June 1994 to 28 April 2004 making total observations of 1508 excluding public holidays. They find that the DSI exhibit the stylised characteristics such as volatility clustering, leptokurtosis and asymmetry effects associated with stock returns on more advanced stock markets. The random walk hypothesis is also rejected for the GSE DSI returns. The parameter estimates of the GARCH models suggest high degree persistence in the conditional volatility of stock returns on the Ghana Stock Exchange. The evidence of high volatility persistence and long memory in the GARCH models suggests that an integrated GARCH model may be more adequate to describe the DSI series. By and large, the GARCH (1, 1) model able to model and forecast the conditional volatility of the DSI better than the other competing models.

Sarkar and Benergee (2006) attempt to measure the volatility in the daily return of a very popular stock market in India viz; the National Stock Exchange. They use a sample of size 60,631 data points consisting of the Nifty values at five-minute intervals from 01 June 2000 through 30 January 2004. They find that the Indian stock market experiences volatility clustering and hence Generalized Auto Regressive Conditional Heteroscadasticity (GARCH) type models predict the market volatility better than simple volatility models, like historical average, moving average etc. They also observe that the asymmetric GARCH models provide better fit than the symmetric GARCH model, confirming the presence of leverage effect. Finally, the result reveals that the change in volume of trade in the market directly affects the volatility of asset returns. Further, the

presence of FII in the Indian stock market does not appear to increase the overall market volatility. These findings have profound implications for the market regulator.

Sharma and Singh (2006) examine the empirical relationship of explanatory variables, namely, dividend per share, earnings per share, book value per share, size, cover, return on capital employed and payout ratio on the market price of shares in the post-reform era. The relationship between independent and dependent variables of 160 companies is studied over a period of five years spanning from 2001 to 2005. The study reveals that earnings per share and book value per share are important determinants of share price as they are indices healthy for financial position of companies. Dividend per share is the important indicator of share price which shows that the companies should adopt a liberal dividend policy to activate the primary as well as secondary market.

Singhania (2006) examines the determinants of equity share prices with reference to Indian stock market. The mean values have shown that during the period 1997 to 2004, the market price is far lower due to various uncertainties prevailing in the country. The correlation analysis shows positive significant (one per cent) association of only price earnings ratio with market price. Book value, dividend cover, dividend per share, earnings per share and growth are positive but insignificant. At the same time, there is negative insignificant association of yield with market price (MP). While regression analysis depicts the book value, dividend per share, earnings per share and price earnings ratio are significant determinants, whereas dividend cover and yield are insignificant with negative value. Growth remained insignificant but with positive value.

Balaban and Bayar (2005) examine relationship between stock market returns and their forecast volatility derived from the symmetric and asymmetric conditional

heteroscedasticity models. Daily observations of stock market indices of 14 countries covering the period December 1987 to December 1997 are used. They investigate both weekly and monthly returns and their volatility. Expected volatility is derived from the ARCH (p), GARCH (1,1), GJR-GARCH (1,1) and EGARCH (1,1) forecast models. They find that expected volatility is a significant negative or positive effect on country returns in a few cases and unexpected volatility shows a negative effect on weekly stock returns in six to seven countries and on monthly returns in nine to eleven countries depending on the volatility forecasting model. However, it shows a positive effect on weekly and monthly returns in none of the countries investigated.

Lucio and Giorgio (2005) investigate the dynamic relationship between spot and futures prices in stock index futures markets using data since 1989 at weekly frequency for three major stock market indices – the S&P 500, the Nikkei 225 and the FTSE 100 indices. They use a conventional cost of carry model to show that futures and stock prices must be Co integrated and, therefore, linked by a VECM that can be used both to explain and forecast stock returns. The data set comprises weekly time series on prices of futures contracts written on the S&P 500, the Nikkei 225 and the FTSE 100 indices. The sample period examine spans from January 1989 to December 2002. The empirical work is carried out during the period January 1989-December 1998, reserving the last four years of data for out-of-sample forecasting tests. The empirical results provide evidence in favor of the existence of international spillovers across these stock markets and a well-defined long-run equilibrium relationship between spot and futures prices which is consistent with mean reversion in the futures basis. Using the estimated models in an out-of-sample forecasting exercise it is found

that both nonlinearity and international spillovers are important in forecasting stock returns. Overall, their empirical evidence suggests that the statistical performance of the linear and nonlinear models differs little in terms of conditional mean, regardless of whether allowance is made for international spillovers across the stock indices. In particular, they focus on the information provided by the futures market for forecasting stock returns.

Maghyereh (2005) examines the efficiency of the Amman Stock Exchange (ASE) vis-à-vis the date of its automation. He uses the daily closing price index for the period from January 1, 1999, to August 30, 2002. He uses a multifactor model with time-varying coefficients and a generalized autoregressive conditional heteroskedastic (GARCH) model. He finds that the move to electronic trading system has no significant impact on the ASE's efficiency. He finds evidence that suggests there is an increase in volatility after the introduction of automated trading.

Porwal and Gupta (2005) investigate the issue of volatility in the Indian stock markets. They use daily prices of S&P CNX Nifty for the period 1995-2004. They find that 1996 is the most volatile year in the past 10 years. This is due to the political instability and absence of proper regulation. They further find that volatility rise in 2004 because of the impact of increase investment by FIIs.

Qi et al. (2005) examine the relationship between expected stock returns and volatility in the 12 largest international stock markets during January 1980 to December 2001. They find a positive but insignificant relationship during the sample period for majority of the markets based on parametric EGARCH-M models. However, using a flexible semi-parametric specification of conditional variance, they find evidence of a

significant negative relationship between expected returns and volatility in 6 out of the 12 markets.

Wang et al. (2005) investigate the dynamic relationship between stock return volatility and trading volume for individual stocks listed on the Chinese stock market as well as market portfolios of these stocks for the period 1995 to 2002. Standard CAPM and GARCH models are used to estimate risk return trade off and volatility persistence. They find that the inclusion of trading volume, which is used as a proxy of information arrival, in the GARCH specification reduces the persistence of the conditional variance dramatically, and the volume effect is positive and statistically significant in all the cases for individual stocks. They also find that trading volume is found to play a role of proxies of information arrivals for the two B share portfolios, but not for the two A share portfolios.

Bildik and Elekdag (2004) examine the effects of price limits on stock return volatility by testing the overreaction and information hypotheses for the Istanbul Stock Exchange. They use a data set of 2,606 observations which is comprised of the daily closing prices of thirty stocks traded on the ISE and the general stock index, along with their respective transaction series from January 2, 1990 to June 7, 2001. They implement structural break tests as well as a comprehensive GARCH framework to estimate the impact of price limits on volatility, controlling for structural breaks, financial and economic crises, trading activity, and business cycle fluctuations. Their results do not support the information hypothesis. They also find that the two-hour break between the two daily sessions reduces volatility by acting as a circuit breaker, which facilitates the

dissemination of valuable information, thus preventing severe overreactions to news events, which are consistent with the overreaction hypothesis.

Du and Wei (2004) analyze the role of insider trading in explaining cross-country differences in stock market volatility. They find that more insider trading is found to be associated with a higher market volatility even after one controls for the volatility of the real output growth, volatility of monetary and fiscal policies and maturity of the stock market. They also find that the quantitative effect of insider trading on market volatility is also big when compared with the effect of the volatility of other fundamentals.

Eraker (2004) examines the empirical performance of jump diffusion models of stock price dynamics from joint options and stock market data. He introduces a model with discontinuous correlated jumps in stock prices and stock price volatility, and with state-dependent arrival intensity. He discusses how to perform likelihood-based inference based upon joint options / returns data and present estimates of risk premiums for jump and volatility risks. The empirical analysis in this paper is based on a sample of S&P 500 options contracts. He finds that while complex jump specifications add little explanatory power in fitting options data; these models fare better in fitting options and returns data simultaneously.

Haque et al. (2004) investigate the stability, predictability, volatility and time varying risk premium in the exchange converted U.S. dollar equity returns of ten Asian emerging stock markets over the period from 1988 to 1998. They use Box-Jenkins ARMA (p,q) model to test for stability, GARCH (q,p)-M to test for volatility, Ljung-Box Q-statistic to test for predictability and non parametric runs test for weak form of market efficiency. They find that eight out of the ten Asian markets reveals stable returns over

time, most of the Asian emerging markets are predictable, weak form of market efficiency for all the Asian markets is absent and nine out of ten Asian markets shows evidence of volatility clustering. They also find that one market shows positive and significant time varying risk premium and reward investors for bearing the risk.

Jorge (2004) investigates the volatility forecast for daily and weekly data for Portuguese Stock Index (PSI-20) by using simple GARCH, GARCH-M, Exponential GARCH and Threshold ARCH models from the period January 2, 1995 to November 23, 2001 for a total of 1708 and 359 observations respectively. The out-of sample forecast error statistics Root Mean Square Prediction Error, Mean Absolute Prediction Error and Mean Absolute Percentage Prediction Error for each model obtained by sequences of both 100 one day ahead and 20 one week ahead forecasts for PSI - 20 indexes. The findings suggest that there are significant asymmetric shocks to volatility in daily stock returns. But the same is not evidenced in the weekly stock returns, indicating that the Portuguese stock market becomes more nervous when negative shocks take place. Finally, the EGARCH models are found to provide better daily forecasts, while the GARCH model with the variance equation provided superior weekly forecasts. Therefore, he concludes that reduction of the sample period for estimation improves the accuracy of predicting future observations of the PSI-20 index and stock returns.

Samantas (2004) examines the roles of stock market on excess return and volatility in predicting future output growth of Indian economy. He uses monthly IIP data for the period April 1993 to December 2002. He finds that past values pointing to the presence of significant volatility-feedback effects in the stock market. The volatility is also quite strongly related to excess return in recent years. However, roles of stock

market return and volatility in predicting future output growth are not clear. Thus, there is a need to undertake further in-depth research for understanding the relationship between stock market return / volatility and future output growth in the context of Indian economy.

Bandivadekar and Ghosh (2003) examine the impact of introduction of index futures on spot market volatility on both S&P CNX Nifty and BSE Sensex by using daily data for BSE Sensex and S&P CNX Nifty for the period January 1997 to March 2003. The analysis focus a decline in spot market volatility after the introduction of index futures due to increased impact of recent news and reduced effect of uncertainty originating from the old news. However, further investigations reveal that the market wide volatility is fallen during the period under consideration.

Brooks and Ragunathan (2003) examine the presence of autocorrelation, cross correlation and spillover effect in the four main stock indices of Chinese stock market. They use index data of shares A and B of Shanghai and Shenzhen stock market. They use VAR and GARCH models. The results for stock index data find spillovers in both directions from 'A' and 'B' shares. However, it is also documented that this feature of the market does not extend to volatility in that there is no spillover in volatility from 'B' share prices to 'A' share prices or vice versa.

Chakrabarti (2001) investigate the interrelationship between FII flows and equity returns in India using monthly data. He come with the evidence that the FII flows are highly correlated with the equity returns in India but this high correlation is not necessarily evidence of FII flows causing price pressure-if anything, the causality is likely to be other way around. His study finds that the beta of the Indian market with

respect to S& P 500 Index seemed to affect the FII flows inversely but the effect disappears in the post-Asian crisis.

Hirshleifer and Shumway (2003) examine the relationship between morning sunshine in the city of a country's leading stock exchange and daily market index returns across 26 countries from 1982 to 1997. They find that Sunshine is strongly significantly correlated with stock returns. They also find that after controlling for sunshine, rain and snow are unrelated to returns. They show that substantial use of weather based strategies was optimal for a trader with very low transactions costs.

Kominek (2003) reviews recent stock market developments in Poland and the Czech Republic and provides a case-study of the direction of causality between stock market expansion and economic growth over the period from 1991 to 2000. He finds no evidence that the relative failure of the security market in the Czech Republic affected the country's economy. He also analyses the composition of Polish private equity offerings and finds that industries traditionally considered financially dependent were not among the largest Polish equity issuers. Instead, the growth of the Polish equity market has been driven by otherwise well-performing industries, such as residential building and commercial banking.

Guner and Onder (2002) examine the volatility of daily stock returns and the volatility of returns during trading and non-trading hours for securities trading on the Istanbul Stock Exchange over the period from February 1997 to February 1998. They find that volatility of daily return calculated from opening prices is significantly higher than those calculated from closing prices in this market. They also find that volatility of returns during trading periods is higher than those during non-trading periods.

Furthermore, per-hour volatility during the day break is higher than per-hour volatility during the night break. Findings of this study have some implications for the role of market maker and the impact of timing and length of a break in trading on the volatility of security returns.

Hansda and Ray (2002) investigate the nature of relationship between the daily share price in BSE and NSE on the one hand and National Association of Securities Dealers Automated Quotation System (NASDAQ) and New York Stock Exchange on the other, for 1999-2000 through 2000-2001 and find a unidirectional causality from NASDAQ to BSE or NSE. The relationship as well as direction of causation also holds good for the technology segment of the New York Stock Exchange and BSE or NSE. However, domestic prices of technology stocks and overall domestic share prices are found to be independent of each other.

Mohammad (2002) examine the relative ability of various models to forecast daily stock index futures volatility for S&P 500 futures index between January 1983 and December 1996 with a continuous sequence of 3561 observations are gathered over fourteen year period. He estimates the models using 3500 and 3380 observations and saving the last 60 and 180 observations for out-of-sample forecasting comparisons between models. The linear and non linear models employ for the study are Random Walk, AR model, MA model, Single Exponential Smoothing models, Double (Holt) Exponential Smoothing models, GARCH - M, EGARCH and ESTAR models. Their findings suggest autoregressive (AR) model is a more appropriate model under Root Mean Squared Error (RMSE) and Mean Absolute Percentage Error (MAPE) criteria. In non linear model, GARCH and ESTAR model fitting are more appropriate than linear

models by using RMSE and MAPE error statistics. Finally, EGARCH is the best model for forecasting stock index futures price volatility.

Pandey (2002) reports the empirical performance of various unconditional volatility estimators and conditional volatility models by using S&P CNX Nifty, India. He uses dataset on S&P CNX Nifty for the period 1st January 1996 to 31st December 2001 by using different class of models. In order to test the ability of models estimated to forecast volatility, he compares the unconditional estimators with the realised volatility measure. For conditional volatility models, the forecasts for the same periods are obtained by estimating models from the time-series prior to the forecast period. The results indicate that the conditional volatility models provide less biased estimates, extreme-value estimators are more efficient estimators of realised volatility. As far as forecasting ability of models is concern, conditional volatility models fare extremely poorly in forecasting five-day (weekly) or monthly realised volatility. In contrast, extreme value estimators, other than the Parkinson estimator, perform relatively well in forecasting volatility over these horizons.

Gaunt et al. (2000) investigate the impact of size anomaly and share price on stock return and also examine January and July effects on stock return of shares trades in Australian Stock exchange. They select monthly data of stocks traded in ASX from December 1973 to December 1997. Moreover, they apply the Seemingly Unrelated Regression (SURE) Econometric technique and various other regression analyses. They use market capitalization, share price and stock return as variables in this study. Overall, finding suggests that size and price has significant effect on return; relationship between size and return.

Hassler (1999) examines the effect of increased financial integration on domestic stock market volatility over the period from 1970 to 1995. He applies the Hamilton regime switching model. He finds that foreign influence on the stock market shows a clear, positive trend, while purely domestic factors have not become more volatile. He also finds that during a high volatility period on the world market, which has an expected duration of around five months, domestic sensitivity to news from the world market increase.

Song et al. (1998) examine the relationship between returns and volatility of the Shanghai and Shenzhen Stock Exchanges in China over a period from 21 May 1992 to 2 February 1996. They use GARCH models to analyses the relationship between returns and volatility. They find that there is a positive relationship between returns and volatility. Volatility transmission between the two markets (the volatility spill-over effect) is also found to exist. The results of one month ahead ex ante forecasts show that the conditional variances of the returns of the two stock markets exhibit a similar pattern.

Singh (1995) conducts an empirical study to examine the relationship between share prices and some firm specific factors. He selects 120 companies for a period of ten years from 1983 to 1992. The study finds that dividend per share and earnings per share shows positive and significant impact on share price. Growth and return on investment shows weak influence whereas bonus issue reveals a positive and significant effect on share price.

Dhillon and Johnson (1994) investigate the impact of dividend changes on both the stock and bond markets over a period from 1998 to 2003. They find the positive response of stock market to dividend increases. They also find that the bond price

reaction to announcements of large dividend changes is opposite to the stock price reaction.

Engle (1993) develops tools for measuring and forecasting volatility when it varies over time. A variety of popular models for conditional variances, including ARCH, GARCH and EGARCH are presented and compared over a period of 1959-84 for quarterly returns of S&P 500. The result suggests that volatility is forcastable.

Engle et al. (1987) extend Engle's (1982) ARCH model to allow the conditional variance to be a determinant of mean and is called ARCH-M model. They also propose estimation and inference procedures. They use this model to three interest rate data sets. They find in most of the cases ARCH process and time varying risk premium are highly significant. The model explains and interprets the failure of the expectations hypotheses of the term structure.

French et al. (1987) examine the relationship between stock returns and stock market volatility. They use daily values of the Standard and Poor's (S & P) composite portfolio for the period from January 1928 through December 1984. They use auto regressive integrated moving average (ARIMA), auto regressive conditional heteroscedasticity (ARCH) and generalized auto regressive conditional heteroscedasticity (GARCH) model. They find that the expected market risk premium is positively related to the predictable volatility of stock returns. They also find that unexpected stock market returns are negatively related to the unexpected change in the volatility of stock returns.

Bollerslev (1986) propose a natural generalization of the ARCH (Autoregressive Conditional Heteroscedasticity) process introduced by Engle (1982) to allow for past conditional variances in the current conditional variance equation. He also derives

stationarity conditions and autocorrelation structure for this new class of parametric models. Maximum likelihood estimation and testing procedure are also considered.

Chen et al. (1986) investigate whether innovations in macroeconomic variables are risks that are rewarded in the stock market. Financial theory suggests that the following macroeconomic variables should systematically affect stock market returns: the spread between long and short interest rates, expected and unexpected inflation, industrial production, and the spread between high- and low- grade bonds. They find that these sources of risk are significantly priced. Furthermore, neither the market portfolio nor aggregate consumption is priced separately. They also find that oil price risk is not separately rewarded in the stock market.

Dixit (1986) examines different factors causing stock price volatility. He selects 42 companies of BSE for a period of 20 years (1962-1982). The study reveals that dividend and earnings are the most significant predictive variables, whereas growth and leverage are redundant variables. He also finds that return on investment has comparatively more influence on share prices.

Engle (1982) introduces a new class of stochastic processes called autoregressive conditional heteroscedastic (ARCH) processes. These are mean zero, serially uncorrelated processes with non constant variances conditional on the past. He also explains the estimation procedure and how to test whether the disturbances follow an ARCH process. He uses this model to estimate the means and variances of inflation in the U.K. for the period from 1958 to 1977. He finds that the ARCH effect is significant and the estimated variances increase substantially the chaotic seventies.

Banz (1981) examines the relationship between return and total market value of the stock traded in NYSE. He selects common stocks that are quoted in the NYSE for at least five years between 1926 and 1975 and used monthly price, return and number of shares outstanding for each month. He uses time series regression analysis and results suggest that difference in returns is found in smaller firms and medium-size firms have relatively higher returns and difference of returns between medium-size and very large firm is low .Overall finding suggests that firms operated in New York stock market has higher risk adjusted return and size effect is not linear and very little difference between return and size of firms.