

## **Chapter - 7**

### **Summary, Conclusion and Suggestions**

The present study a firm level study is on the stock market volatility and return in selected Indian Industries. The study is crucial because volatility represents risk and is a matter of concern for anyone who is dealing with money or investing in the stock market or any other financial instruments. Hence, the issue of volatility has become increasingly significant in recent times for the financial practitioners, market participants, retail investors, regulators and researchers. Volatility is a matter of great concern for market participants for the simple reason that as an investor one would like to know how much volatility or risk, he or she is exposed to, as more volatile a stock is, the more risky it is. Knowing the volatility of a stock provides some idea about what possible range of values it will take on some future date and can make informed decisions on his investments. Nonetheless, it is hard to predict with any certainty the price of a volatile stock. In general, people dislike risk and would like to have less risk or no risk while investing. Based on the findings of the study mentioned in earlier chapters the conclusion and policy suggestions are framed in this chapter. This chapter is divided into four sections viz; summary of the entire study in section 7.1, conclusion of the study in section 7.2, policy suggestions in section 7.3 and finally limitation of the study and scope for further research in section 7.4.

#### **7.1 Summary of the Study:**

The study focuses mainly on four themes viz; nature of stock market volatility and the relationship between volatility and expected returns, impact of stock market volatility and firm size on return and finally to identify the determinants of volatility and the

relationship between volatility and industrial profitability. The study reveals that there is volatility clustering and the volatility clustering is also persistent. Existence of leverage effect is also shown in the study. The study further reveals that there is positive relationship between expected returns and volatility for certain companies. Size effect on return is also shown in the study. The relation between volatility and industrial profitability is also found in the study.

To fulfill the above-mentioned objectives the study comprises with seven chapters which are briefly mentioned in the following:

Chapter 1 gives introduction of the study. In this chapter necessity of the study, objectives, hypotheses, data description and plan of chapters has been discussed.

Chapter 2 deals with review of literature which is combined by both theoretical and empirical literature. This literature mainly focuses on the various aspects of stock market volatility and return, determination of volatility, volatility and firm size.

Chapter 3 shows the theoretical and conceptual frameworks and methodology of the study. The present study is based on secondary data. The present study is a sectoral and firm level study. There are eleven sectoral indices in National Stock Exchange in India. These are CNX AUTO, CNX BANK, CNX ENERGY, CNX FINANCE, CNX FMCG, CNX IT, CNX MEDIA, CNX PHARMA, CNX PSU BANKS, CNX REALTY, CNX METAL. From these 11 sectoral indices, six sectoral indices are selected based on the composite index of percentage of traded value, percentage of market capitalization and percentage of market representation. These are CNX AUTO, CNX BANK, CNX ENERGY, CNX FINANCE, CNX FMCG and CNX IT. From each sectoral index top 15 stocks (companies or firms) are selected based on market capitalization. The study is

based on daily closing index value and daily closing prices of selected sectoral indices and firms. The period of the study is from April 1, 2005 to April 1, 2014. These sectoral indices and firm level data are collected from NSE website [www.nseindia.com](http://www.nseindia.com). The study here also considers several macroeconomic and firm specific variables. These are Wholesale Price Index (WPI), Exchange Rate (ER), Index of Industrial Production (IIP), Net Foreign Institutional Investment (Net FII), Trade Balance (TB) and Call Money Rate (CMR). The monthly data of these macroeconomic variable's are collected from Handbook of Indian Statistics, website [www.rbi.org.in](http://www.rbi.org.in). The firm specific factors such as Price Earnings Ratio (P/E), Price to Book Value (P/B) and Dividend Yields (DY) data are collected from NSE website [www.nseindia.com](http://www.nseindia.com). The quarterly data of profit, net sales and market capitalisation are collected from the website [www.equimaster.com](http://www.equimaster.com). The data of all the concerned variables are collected for a period of April 1, 2005 to April 1, 2014.

In the study GARCH-M model is used to examine the nature of volatility and the relationship between return and volatility. To examine the leverage effect E-GARCH model is used. To examine the relationship between firm size volatility and returns panel regression is used. To analyze the long run relationship and short term dynamic interaction among the variables of interest, the OLS based auto regressive distributer lag co-integration technique (ARDL) is used. To investigate the relationship between volatility and industrial profitability panel regression is used.

Chapter 4 deals with the measurement of stock market volatility and its pattern. The relationship between stock market volatility and return is also examined in this chapter. A comparative analysis among six different sectoral indices viz; Automobile, Banking, Energy, Financial, FMCG, IT sector in the Indian stock market is done.

Chapter 5 investigates the relationship between expected return and firm size. Firm size is classified into three categories, viz; small size firm, medium size firm and large size firm based on a composite index constructed by using market capitalization, net sales and profit after tax. The chapter shows the relationship between firm size and expected return. The chapter also explains the effect of change in volatility on expected return for each category of firm size. This chapter further makes a comparative analysis among different sectors.

Chapter 6 shows the relationship between stock market volatility and profitability of the selected sectors. This chapter also makes a comparative analysis among different sectors. The study attempts to examine whether change in profitability has any impact on stock market volatility. This chapter also deals with identification of the determinants of stock market volatility.

## **7.2 Conclusion:**

The study is focused on mainly six industries or sectors viz; automobile, banking, energy, financial, FMCG and IT industry of Indian industries. Already there are five objectives in this study which is mentioned in the Chapter 1. The conclusion can be analyzed according to the formation of hypotheses taken for the study which is mentioned in Chapter 1.

The first hypothesis of the study is that there is a high volatility in the share prices and the volatility clustering in Indian stock market is not persistent. From the findings it is observed that for all the return series of the selected sectors viz; automobile, banking, energy, financial, FMCG and IT the ARCH and GARCH coefficients are statistically significant, which indicates that previous period shocks as well as previous period

volatility influences the current period volatility. It also represents the existence of volatility in all the return series of selected sectors. From this it can be concluded that the null hypothesis that there is high volatility in share prices is accepted. A significant GARCH coefficient indicates the presence of volatility clustering, i.e. a positive value of the coefficient implies that a positive stock price changes are associated with further positive changes and vice versa. A relatively large value of GARCH coefficients indicates that shocks to the conditional variance take a long time to die out. From the above analysis it is seen that the GARCH coefficient is relatively large in almost all the return series of the selected sectors indicating that the volatility clustering is persistent. From this it can be said that the null hypothesis that the volatility clustering is not persistent is rejected.

Once it is conformed that there exist high volatility and the volatility clustering is persistent then it is important to know the relationship between expected returns and stock market volatility. From the findings it is observed that expected return depends on stock market volatility for the return series of Escorts Limited (EL), Hindustan Machine Tools (HMT), Hindustan Motors Limited (HNM), Mahindra & Mahindra Limited (MM), Maharashtra Scooters Limited (MS), SML Isuzu Limited (SI), and Tata Motors Limited (TM) of automobile sector, the return series of Canara Bank Limited (CBL), Industrial Credit and Investment Corporation Of India Limited (ICICI), Ing Vysya Bank Limited (INGV), Jammu & Kashmir Bank Limited (J&K) and Kotak Mahindra Bank Limited (KMB) of banking sector, the return series of Calcutta Electric Supply Corporation (CESC), National Hydroelectric Power Corporation (NHPC), National Thermal Power Corporation Limited (NTPC), Reliance Infrastructure Limited (RIL) and Torrent Power

Limited (TPL) of energy sector, the return series of Bajaj Finanserv Limited (BFSL), Industrial Financial Corporation of India (IFCI) and Reliance Capital Limited (RCL) of financial sector, the return series of Britannia Inds. Limited (BIL), Marico Limited (ML), Nestle India Limited (NIL) and Zydus Wellness Limited (ZWL) of (FMCG) sector and the return series of Hindustan Computers Limited (HCL), Hexaware Technologies Limited (HTL), KPIT Technologies Limited (KTL), Oracle Financial Service Limited (OFSC), Persistent System Limited (PSL), TCL and CNX IT of IT sector. From this it can be concluded that for the above mentioned companies the null hypothesis that the expected return depends on volatility is accepted.

After knowing that for some companies of selected sectors expected return depends on stock market volatility. It is essential to know the relationship between expected return and firm size. Firm size is classified into three categories, viz; small size firm, medium size firm and large size firm based on a composite index constructed by using market capitalization, net sales and profit after tax (details given in appendix). The effect of small size firms on expected returns is negative for all the sectors but statistically significant for FMCG, energy and automobile sectors. The effect of medium size firms on expected returns is also negative but statistically significant for FMCG sector. However, the effect of large size firms on expected returns is positive for all sectors and it is also statistically significant for all sectors except energy sector. By considering different firm size it is concluded that there is an association between expected return and firm size. That means the null hypothesis of no association between expected return and firm size is rejected. The study further examines the relationship between expected return and volatility according to firm size. It is observed that the

relationship between expected return and volatility of small size firm is positive and statistically significant for banking, energy and FMCG sector but it is negative and statistically significant for the financial sector.

The study further identifies the factors which are responsible for stock market volatility and to empirically analyze the long run relationship and short run dynamic interaction among the variables of interest. From the study it is observed that wholesale price index, call money rate, trading volume and trade balance have significant impact on stock market volatility in the long run. However, in the short run all the selected variables have affected stock market volatility.

As the study is on selected Indian industries therefore it is essential to know whether there is any relationship between industrial profitability and volatility. From the findings of the study it is observed that the relationship between profitability and volatility is negative and statistically significant for automobile, financial and IT sectors. However, the coefficient of profitability is statistically insignificant for banking, energy and FMCG sectors. The impact of profitability on volatility is relatively higher in the automobile sector as compared to other sectors. The impact of profitability on volatility is almost same for automobile and IT sector. Therefore, the null hypothesis that there is significant relationship between volatility and profitability is accepted except Banking, Energy and FMCG sector.

### **7.3 Suggestive Policy Measures:**

Some policy suggestions can be framed in the following on the basis of findings and conclusions of this study.

- The present study would be useful for investor because it provides the empirical evidence on volatility of different sectors and firms. Before taking investment decision it is essential to analyze volatility of the different sectors as well as firms. Investor should have systematic investment plan as systematic investment plan is one of the most efficient ways to benefit from the volatility. The markets move up and down over a period of time. By investing through systematic investment plan, one has the opportunity to enter at every stage of the market and can earn good return. There should be diversification in the investment such as rather than investing the whole money in single sector or firm investor should invest in two or more than two sectors or firms as this study found each sector and firm is having different risk-return level and different pattern of volatility.
- It is suggested that before investment the investor should consider the size of the firm. Because return is significantly depends on size of firms. Return may vary with size of firm.
- A more liberalized regime in the emerging market economies should be accompanied by the further improvements in the regulatory system of the financial sector. Because a little increases in the volatility in the equity market may result in sudden massive withdrawals of FII, which may result in quite disturbing consequence on the country's economy.
- The government of the emerging countries should have a stable economic policy because frequent changes in the economic policy may cause excessive volatility in the market which loses the investor confidence in the equity market.



#### **7.4 Limitations of the Study and Scope for further Research:**

There are some limitations of the study which will help the further researcher to work in this area. These limitations are due to time constraint and non-availability of data. These limitations are discussed in the following:

- In the present study, only symmetric and asymmetric GARCH model is used to measure conditional volatility. Though stochastic volatility model could be used to measure volatility. But due to time constraint this is not done.
- The present study is restricted to six sectoral indices and ninety companies of National Stock Exchange in India. More sectors and companies would be considered for further research in future.
- This study is based on daily closing price; however the work could be done by using different buying and selling price and with high frequency data.
- The present study shows the relationship between return and volatility or risk. The relationship between returns and volume change by considering the seasonality effect.