CHAPTER -VII
FINDINGS AND SUGGESTIONS

7.1. INTRODUCTION

This chapter deals with the conclusion drawn out of the study on the basis of empirical analysis done in the different chapters. This study has made an attempt to find the overall performance of the futures market in India in the way of the long term relationship between spot and futures market and short run relationship between Indian futures and spot market. In order to understand the arbitrage efficiency of Indian markets, causality of futures and spot market is also needed to be understood. The influence and the ability of different variables in the futures and spot market are determined from the analysis. The causal relationship between different variables, the sign of relationship among variables and the time lag of the response in the market has also been seen. The response and the shock of each variable in the proportion of the shock to the other variables are explained here with the help of results of analysis.

As a part of determining the informational efficiency of futures market, this study has analyzed the hedging efficiency of futures market. The findings and conclusion from the analysis are summarized below under separate headings.

7.2. LONG TERM RELATIONSHIP BETWEEN INDIAN FUTURES AND SPOT MARKET

The whole study period is divided in to four sub periods on the basis of structural break in the data series which is identified by using Bai Perron model and real market trend. It is very clear that the established relationship between both the markets is confirmed through the robustness checking with the result of different study period. Johansen cointegration methodology by using Trace statistics and Eigen value were used as the tool to make the analysis. Existence of long term relationship between Indian spot and futures market is seen during the whole study periods and other sub-period except financial crisis period. During the financial crisis period both
the spot price and futures price series included are in stationary at its level to show the absence of long term relationship between the markets. The VAR, Granger Causality /Bock Exogenity test results showed that there is no causality relationship between Indian spot and futures market during the study sub-periods. The test results indicate that the null hypothesis of spot does not cause futures and futures does not cause spot are accepted during the financial crisis period. All other study sub periods such as introduction and development period, pre- financial crisis period and post financial crisis period showed the similar results of the existence of long term relationship between spot and futures market. The existence of long term relationship between markets reveals the possibility of reducing the disequilibrium among the market during the short term period also.

7.3. SHORT RUN RELATIONSHIP BETWEEN INDIAN FUTURES AND SPOT MARKET.

The long term cointegrated relationship between Indian futures and spot market shows that there is a possibility for disequilibrium among the market during short run period. This disequilibrium among the relationship is corrected by the markets very soon because those markets are integrated for a long period. In this context, the speed of adjustment to correct the disequilibrium of the market is different and the normalized cointegration equation through Vector Error Correction Model tells the efficiency of market to correct the changes and make equilibrium among the relationship. In the whole period of the study, futures market corrects the variation in the Indian spot market. In India the efficiency of futures market to adjust and to respond to the new information is very higher than to the spot market. The robustness of the result is checked in different sub-periods and it shows different result that is in the introduction and development period, the speed of adjustment of futures market is faster than spot market due to the efficiency of responding to the new information with less level of transaction cost and different type of futures contract. During the pre- financial crisis period and the post financial crisis period leading efficiency of futures market has not been seen. From these results, it can be explained that if the market trend is almost predictable, the efficiency of futures market is strong and the other periods which show more volatile trend is not supporting the results. In this study no empirical results show the prominence of spot
market on the futures market. To conclude, the Indian futures market is adjusting the changes in the market and making the equilibrium in the price changes than Indian spot market. But during pre-financial crisis period and post financial crisis period, the speed of adjustment of spot market is higher than futures market but it is not statistically significant. From this point, it is clear that the role of spot market in the process of information transmission is not explained. The actual causal relationship between spot and futures market reveals the possibility of lead-lag relationship between Indian futures and spot market.

7.4. LEAD–LAG RELATIONSHIP BETWEEN FUTURES AND SPOT MARKET IN INDIA

In Indian context, the futures and its underlying markets are integrated for a long period. But in short run period, which market plays the role of leader and gives any idea or information to the investors on the movement of another market is analyzed clearly in the analysis. The causality relationship between futures and spot market reveals the position of lead-lag among futures and spot market. Results of Wald coefficients test indicate that there is bi-directional causality relationship between futures and spot market in India. The robustness checking results also indicate that the null hypothesis of spot market does not cause futures market and futures market does not cause spot market is rejected in all sub-study period and it says that spot market and futures market are transmitting the information to each other. It is clear that, there is no conclusive evidence on which market is leading during which period. There is a tendency to lead and lag with two markets and to transfer the information to another market. To conclude, there is bidirectional relationship between Indian futures and spot market. Both markets are performing like indicator and follower. The investors can observe the movement of both markets and then decide what type of investment should be selected and which market should be considered for the investment process.

7.5. DETERMINANTS OF FUTURES MARKET IN INDIA

Indian futures market movement depends on many factors which are laid down in futures market and its underlying market. To predict the movement of futures market is the inspiration of investors to decide their trading pattern in the spot and futures market. Futures and spot markets are integrated and one market can predict the
movement of another market. This study empirically analysis the role of different factors such as open interest, turn over, number of contract, volatility of futures market and spot market return in the futures market. The properties of data allows to apply Vector Autoregressive Granger Causality/ Block Exogenity test with all variable to other variables and the influence of all factors together to each variable. For the whole study period, all variables together are having influence on futures market but not each variable separately. During the initial period of derivatives, introduction and development period result reveals the role of all variables to determine the futures market movement. During this period spot market and the futures market volatility are playing a vital role to predict the movement of futures market. In the pre-financial crisis period spot return, number of contract and turnover are having influence on futures markets movement.

Financial crisis period is a critical period to the stock market and futures market in India. No relationship can be found out during this period. The role of speculators, decides the movement of the market and no established relationship is there in the futures market during the crisis period. All other variables and futures market return are moving independently, then there is no chance for predicting the futures market on the basis of the movement of any other variable of the futures market. Futures market is influenced by all variables together and number of contract and volatility individually. This result confirms that the Indian futures market can be predicted by the movement of spot market movement, volatility of futures market, number of contract and turnover independently and all these variables together also influences the futures market. On the basis of the results from the empirical analysis, it is clear that spot market index return, futures market volatility, number of contract and turnover of the futures market are the determinants of the futures market in India.

7.6. POSITIVE RELATIONSHIP BETWEEN FUTURES MARKET AND ITS DETERMINANTS

The causal relationship between futures market and its determinants helps the traders and investors to predict the market. The negative or positive sign of effect in the futures market from the determinants provide more clarity on the movement and help the traders to make decision on buying or selling option clearly. The response of futures return to the change of determinants is revealed by the impulse response
function results. During the whole study period, result shows that the futures market is positively responding to the shocks of spot market. The similar type of response can be seen from introduction and development period. Sudden positive response is seen in the futures market due to the change in spot market return. In the crisis period, only very short moment positive shock in futures market due to the change in spot market. Post financial crisis study period results indicate that futures market responses positively in the same level. It is shorted that the results of impulse response function of Indian futures market and spot market are positive.

7.7. NEGATIVE RELATIONSHIP BETWEEN FUTURES MARKET AND ITS DETERMINANTS

The direction of relationship between variables is very important to understand the role of each aspect in the prediction of other variable. Traders are looking keenly on the positive or negative relationship among the determinants of futures market. In the pre-financial crisis period, change in open interest, number of contract and turnover on the first day may make very minimal level of negative response from futures market. Post financial crisis period study results indicate that futures market responses positively in the same level. So we can conclude the results of impulse response function such a manner that the changes and responses of Indian futures market and spot market are positive and responses of futures market to the variation in other variables cannot be decided as negative or positive.

7.8. THE EXISTENCE OF SHOCK AND RESPONSES OF INDIAN FUTURES AND SPOT MARKET

If the variables are related every shock and changes in one variable makes responses and variation in another variable. Variance decomposition results for various sub-period shows the effect of shock in one variable and the response of the shock in that variable itself and the proportion of shock transmitted to another variable. In the case of shocks in futures market, every day it around 90% of the effects of shocks transmitted to spot market and within 10 days maximum 8% shocks is reflected by futures market. What ever happened in the futures market is suddenly converted to spot market but more proportion of shocks in spot market is reflected by spot market itself. The similar type of relationship is seen from turnover and number of contract. Other variables like volatility and open interest are reflecting more
portions of their shocks by themselves and very less proportion is transmitted to other variables. While time is passing the level of proportion of shocks transmitted to another variable is increasing. It is concluded that more portion of shocks in Indian spot market is reflected by spot market itself and very minimal level is transmitted to another market that is futures market. But any fluctuation in the futures market suddenly affects the spot market with full sound. The shocks in other variables also is transmitted to the other related variables and the level of proportion is reducing from the source variable and it is increasing in the other variables.

7.9. PROPORTION AND TRANSMISSION OF SHOCKS AND RESPONSES OF FUTURES AND SPOT MARKET

The shock of futures market transmits suddenly to spot market and the spot market bears the shock in itself. The same relation is seen in the case of number of contract and turnover. Around 90% of the reflection of the shock in the turnover comes to the number of contract immediately and the shock of number of contracts is stayed in the same variable itself. All related variables are transmitting their shocks to each other and they are able to predict the movement of other variables up to an extent.

7.10. RISK REDUCTION EFFICIENCY OF FUTURES MARKET IN INDIA

Risk reduction efficiency of Indian futures market is analyzed through the hedging process. S&PCNX Nifty and its underlying index, 19 individual stocks futures and spot return series are taken into consideration for the estimation of hedge ratio. Optimal hedge ratio estimated through the DVEC-GARCH shows that all most all sample companies and index futures market are reducing the risk of the assets in the spot market. According to the sub-period analysis of hedging performance of index futures and individual stock futures not that much variation in the risk protection is seen from the results. On the basis of the empirical result it is confirmed that Indian futures market is able to protect the risk of investors who are having asset in spot market. The null hypothesis of the study futures do not provide risk protection to the spot market asset is not accepted and prove the efficiency of futures market in risk reduction.
7.11. SUMMARY

This study made an attempt to analyze the informational efficiency of Indian futures market by three ways such as the dynamic linkage with Indian spot market, the ability of spot and futures market factors to predict the movement of futures market, that is the short run causal relationship between various determinants of the futures market and the hedging process of futures market. In all these area, it is seen that there is very smooth way of passing information from futures market to spot market and both are linked. On the basis of empirical analysis and the theoretical support from the literature, it is confirmed that the informational efficiency of futures market in India. The market is so volatile in India due to the high level presence of speculators and in this context decision on long term investment may not be crucial and apt decision at the correct time helps the traders to make profit from the trading process in Indian futures market.

7.12. SUGGESTIONS

From the research done and presented in previous pages, the researcher brings forth the following suggestions to investors, regulators and policy makers.

7.12.1. INVESTORS

1. **Go long** – Investors are advised or suggested to make investment for a long period in spot and futures market as it will help to stabilize the high return.

2. **Rely on one market**- Investors and traders need not struggle to observe the movement of both markets for information, instead they can take the investment decision based on the movement of one market as both are cointegrated. Whichever is convenient for him can be considered.

3. **Effectively utilize the arbitrage opportunities**- The bidirectional relationship between spot and futures market provides the perfect arbitrage opportunities between them. The market players should utilize this opportunity effectively to make profit.

4. **Future market is an indicator** – Information from the futures market can be taken as an indicator to take decision for investment in the spot market.

5. **Consider trade volume and spot market movement**- Market players should consider trade volume like number of contract, turnover and the movement of spot
market to make investment in futures market as they have high degree of dependencies.

6. **Not fundas please** – The movement of spot market cannot be predicted on the basis of fundamentals of the companies alone. It depends on many aspects from futures market. While considering spot market as the investment avenue the movement of futures markets and its other aspects should also be considered, no fundas alone.

7. **Indicators of futures market** - Trade volume, volatility of futures market and spot market are taken as the indicators of futures market return. The market players should keenly observe the movement of trade volume of the futures market and its fluctuations to predict the movement of futures market in addition to movement in spot market.

8. **Utilize the shock of futures market as an opportunity** - The shock of futures market will suddenly transmit to the spot market. It makes an opportunity to the traders to make trading strategies to earn profit from the spot market due to the shock of futures market. Something happens in future perspective may give trading opportunity in spot market. Trader should utilize it for a short period.

9. **Bearish market is not a tragedy** – Speculators are playing more in bearish market and making so negative trend to the investors. Actually nothing happens in the fundamentals of the individual stock in the spot market and when the external environment changes the real values of stocks may come out. Thus the investors can use this time for long term investment by buying and through short term rational trading strategies traders can make benefit from the bearish market.

10. **Hedge it** – Both spot and futures market are integrated and there is opportunities for hedging. Investors can rely upon movement of one market and can take the opposite position in the integrated market, thus the total risk of investment can be reduced.

11. **Investment in** – Individual stock like HDFC, HINDUNILVR, INFOSYSTCH, M&M and TATA MOTORS are the stocks which can provide nearly 100% risk reduction in the investment through hedging process irrespective of market movement.
7.11.2. GOVERNMENT & REGULATORS

1. *Enrich investors* – In the research it is found that there are many ways for reducing risk but investors are not aware or rather they are not published and therefore, Govt. or regulators like SEBI should introduce the scheme to equip more youth or potential investors about the technicalities of futures market and its special benefits.

2. *Fix Guide post* – Agencies should introduce some effective indicators to warn the traders and investors from the dangerous zone of the investment and to help the traders and investors to diversify their avenues from one to another investment channels.

3. *Bring regulations* – Regulation is a must to monitor the performance of speculators during the bearish market condition so that traders can also make benefits.

SCOPE FOR FURTHER RESEARCH

This study has made effort to analyze the informational efficiency of futures market in three ways such as the dynamic linkage between Indian futures and spot market, the determinants of futures market through the informational relationship between futures market and other variables, the risk reduction efficiency through the hedging process between Indian futures and spot market. During the thorough analysis it is found that there are some aspects which are to be analyzed thoroughly to get more idea on the futures market movement and its investment possibilities in the futures market. They are,

- The long run relationship between futures market and one of its determinants, turnover, can be analyzed.
- The mispricing and its relationship between futures market is another area for the future research.
- The cointegration among futures price series and open interest may provide some basic idea on the hedging efficiency of futures market.
- Considering more number of individual stocks from the futures market and to estimate hedge ratio provide investors deep idea on the optimal hedge ratio of futures
market and the efficiency of individual company to protect the interest of the investors.

- To find the basis of market by deducting the spot price from futures market and making the analysis on the futures market offers basic knowledge on arbitrage efficiency of futures and spot market.

- There is another research gap in which new series of daily price can be estimated by taking the average of daily low price and high price. It gives more idea on the day trading movement of market and the analysis will be more fruitful for small traders and day traders.

- The volatility of spot market is to be taken as the variable to predict the movement of futures market may provides more clarity on the relationship between the spot and futures market.

- These are the future research opportunities which are identified by this empirical study but could not have touched in the present analysis. Young researchers can make lot of study on this area and provide fruitful contribution to the literature.