Chapter - 7
CONCLUSION

7.1 Introduction

India has a very long history in the field of commodity derivatives. The last two centuries have witnessed many-fold increase in the commodity derivatives market. There were different arguments in favour of and against the operation of derivative markets. Many times the derivative trading was banned, the major one was in 1965. The Government of India appointed various committees to study about the influence and operation of commodity derivatives and they recommended the reintroduction of futures trade. The financial sector reforms in 1990s and India’s entry towards the GATT and WTO have paved the way for the reintroduction of commodity futures in agricultural and other commodities. Since the reintroduction of futures in 2003, the commodity derivatives market has exhibited exponential growth both in terms of volume and number of traded contracts.

Price discovery and hedging are the two objectives of commodity derivatives markets. The price discovery is the revealing of information about future spot market prices through the futures market and refers to the use of futures price for predicting spot market transactions. Hedging is the process of making an offset position either in the spot or futures market against the purchase and sale in the other market.

The present work is an attempt to study the growth and structure of commodity derivatives market in India, working of derivatives exchanges and identify their problems and to evaluate the price discovery and hedging performance of commodity futures namely cardamom, pepper and rubber.

7.2 Findings of the Study

The commodity derivatives market has attained a substantial growth after the reintroduction of commodity futures in 2003. The volume and value of trade have increased more than 40 times and 150 times respectively and it is found that the
growth in the commodity derivatives is much higher than the growth rate in the GDP of India.

The derivative exchanges have also improved the growth of the derivatives market. In India there are six national level multi commodity exchanges and 22 regional exchanges and they trade in 113 commodities in the derivatives market. The Multi Commodity Exchange of India is the market leader at the national level. At present the bullion market attracts a high level of investments with a share of 43percentage, followed by base metal of 24percentage, energy products by 17percentage and agricultural products by 16percentage. The problems of derivatives exchanges are low awareness among participants, high transaction costs, low participation of hedgers, few and widely dispersed delivery centres, policy restrictions, unreliability of warehouse receipts etc.

The price discovery process is the process of determining the price of an asset in the marketplace through the interactions of buyers and sellers. It is also a method of determining the price for a specific commodity through supply and demand factors related to the market. If the spot and futures prices are showing a high degree of interrelation, the price discovery is possible in the market. The analysis is done in two steps.

Firstly, the Johansen’s cointegration test is applied to analyse the integration of spot and near futures prices of commodities. The results indicate that the spot and futures prices of cardamom, pepper and rubber have long run equilibrium relationship. There are two cointegrating equations for cardamom and one cointegrating equation for pepper and rubber. Thus it is found that the price discovery process is possible in the case of all the three commodities.

Secondly, the pair wise Granger Causality test is applied to find out whether the spot prices causes futures prices or futures prices causes spot prices. This test is applied as the data are cointegrated. The Granger Causality test has shown that there is bidirectional causality between the spot and futures prices of three commodities. It is found that in the case of cardamom and pepper, the futures market leads the spot market and in the case of rubber the spot market leads the futures market. This is consistent with the studies of Kumar and Arora (2011),
Karande (2006), Gupta and Singh (2005), and Shankar and Jaiswal (2011) and samna (2014).

The hedging performance of the products namely cardamom, pepper and rubber is tested by using the statistical techniques such as OLS, VAR, VECM, and VAR MGARCH.

The OLS Regression explains that the hedge ratio is 8.35, 22.8 and 3.88 percentages in case of cardamom, pepper and rubber respectively.

The VAR model measures the relationship between two series, namely, the returns of spot prices and futures prices. Here the return of daily closing spot prices are taken as the endogenous variable and return of daily closing futures prices are taken as the exogenous variable. The hedge ratio obtained from VAR model is 15.75 percentage, 28.62 percentage and 9.44 percentage in cardamom, pepper and rubber respectively.

As the data of two series are cointegrated in the long run the Vector Error Correction Model (VECM) is applied. The results show that the hedge ratio is 18.89 percentage in cardamom, 30.82 percentage in pepper and 11.54 percentage in rubber.

VAR MGARCH model analysed the hedging performance of cardamom, pepper and rubber and the relationship between their spot and futures price. The R squared of the regression equation is 8.3, 22.80, and 3.88 percentages respectively.

The effect of GARCH term is significant in determining the volatility of the residual. As the variation of residual exhibit conditional heteroscedasticity (because small variations generate small variations and large variations generate large variations) GARCH (1 1) Model was applied in order to find out the reason for the volatility.

The coefficient of futures prices in the regression model means that one unit increase in the return of futures prices of cardamom, pepper and rubber increases only 15.86, 29.08 and 4.96 percentages in its return of spot prices respectively. Thus it can be concluded that the hedging performance of commodity derivatives market is very low.
All these results show that hedging performance is the highest in the case of pepper followed by cardamom and rubber. However, by comparing with the financial, bullion, and agricultural commodities the results are substantially lower. Thus it indicates that the hedging performances of the selected three commodities are rather low. This is consistent with the study of Aggarwal, Jain and Thomas (2014), Singh (2007), and Kumar (2008) whereas it is inconsistent with the finding of Pandey, Kumar and Singh (2008).

7.3 Suggestions

The derivatives are originated to protect the farmers from adverse price fluctuations. But they are not actively engaged in the trading of commodity derivatives. So in order to attract them into the derivatives market, the exchanges must give awareness to people through various programmes such as seminars and workshops etc., and induce farmers to make use of the facilities of the commodity derivative markets to hedge the risk

The derivatives exchanges contribute substantially in the field of commodity derivatives. Out of the six national level exchanges the Multi Commodity Exchange of India plays an active role and the market leader in the commodity derivatives sector by holding a share of 85 percentage. There is only a nominal share for other five national and regional exchanges. In a country like India with diversified markets it requires more than six national exchanges. So measures may be taken to attract more number of national level exchanges. Similarly, the exchanges face many problems. Measures may be taken to solve these problems also such as improving the warehousing facilities, eliminating grade mismatch etc.

The price discovery is possible only if there is a close relation between the spot and futures market. There are various reasons of the price rise in spot market, namely, black marketing, hoarding, speculation, restrictive trade practices, inflation etc. In these circumstances the demand for the product is higher and the supply is very low then there may be chance of price rise. The Government should take adequate measures to control the unfair trade practices and thereby stabilise the market.
In order to improve the hedging performance of commodities market there should be a transparent derivatives market. A stable *futures* market will increase the information transmission to the spot market. Thus hedging performance can be improved by the active participation of the members such as dealers, hedgers, investors, exporters and importers. So necessary steps may be taken to popularise the *futures* trade in commodity derivatives.

### 7.4 Conclusion

The introduction of commodity derivatives is a milestone in the economic history of India. The price discovery and hedging are the important objectives of commodity derivatives. Indian plantation commodity derivatives market seems to perform the price discovery function but it is less efficient in hedging.

The Indian commodity derivatives market and national level exchanges are facing many operational problems such as the financial illiteracy, geographical limitations, timely technological upgradation, low income and less saving habits, high transaction cost etc.

Derivatives will be very successful with the active involvement from the part of all stakeholders. The depth and width of the market can be increased by adequate quality and financial literacy of the people. Thus a stable and vibrant commodity derivatives market will be able to contribute a remarkable growth towards Indian economy.

### 7.5 Scope for further research

- This study includes the plantation sector products only. It is advisable to make a comparative study of the agricultural and plantation sector products.
- It becomes necessary to study the price discovery and hedging effectiveness of the products included in the Minimum Support Price.
- To make a study about the price discovery of tea, coffee, cocoa etc.
- To analyse the price discovery and hedging aspects from Indian commodity derivatives market and from any of the international market.