COMMODITY FUTURES TRADING IN INDIA: A ROLE OF NATIONAL COMMODITY EXCHANGES

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I. INTRODUCTION

Globally, commodity markets have occupied a very important place in the economic growth and progress of countries. The concept of organized trading in commodities evolved in the middle of the 19th century. Chicago had emerged as a major commercial hub with rail roads and telegraph lines connecting it with the rest of the world, there by attracting wheat producers from mid-west to sell their produce to the dealers and distributors. However, lack of organized storage facilities and the absence of a uniform weighing and grading mechanism often confined the producers to the dealer's discretion. There was an inherent need to establish a common meeting place for both farmers and dealers to deal in "*spot*" grain to deliver wheat immediately and receive cash in return, which happened in the year 1848.

Gradually, the farmers (sellers) and dealers (buyers) started committing to exchange the produce for *cash in future.* This is how the contract for "futures" trading evolved where by the producer would agree to sell his produce (wheat) to the buyer at a future date at an agreed upon price. In this way, the farmer knew in advance about what payment he would receive, and the dealer knew about his costs involved. This arrangement was perceived beneficial to both sellers and buyers. These contracts became popular very quickly and started changing hands even before the delivery date. If a particular dealer felt uninterested in having wheat, he would sell his contract to some one else, who needed it. Similarly, the producer who didn't intend to deliver his wheat would pass on the responsibility to another by buying new contract. The price of the contract would depend on the price movement in the wheat market depending upon demand and supply.

Commodity markets had a dominant presence in global markets ever since the first commodity exchange "Chicago Board of Trade (CBOT)" was established in Chicago in the year 1848, which is one of the largest commodity exchanges in the world. In the second half of the 1980s several developing countries established their own commodity future exchanges. Some of the world's largest exchanges were established in Brazil and China. Some newly liberalized economies, such as Russia and Hungary, have also setup commodity future exchanges. Commodity exchanges occupy an important place in the world, and it has been estimated that the volume traded on these exchanges are a multiple times those on stock exchanges.

Evolution of Commodity Futures Trading In India

Commodity futures trading in India is almost as old as that in the United States. India's first organized futures market was the Bombay Cotton Trade Association Ltd., which was set up in 1875. Futures trading in oil seeds started with the setting up of Gujarati Vyapari Mandali in 1900. Gold futures trading began in Mumbai in 1920. During the first half of the 20th century, there were several commodity exchanges trading in jute, pepper, turmeric, potatoes, sugar, etc.

However, during 1940s, trading in forwards and futures became difficult as a result of price controls. Major policy decisions taken after independence, mainly because of the scarcity situation then prevailing adversely affected the development of futures and forwards markets in the country. In 1952, the forward contract regulation act was passed which controls all transferable forward and futures contracts. This again put restriction on futures trading. During the 1960s and 70s, the Government of India suspended trading in several commodities like cotton, jute, edible oilseeds, etc. As the government felt that these markets were increasing the prices of commodities.

The twin policies of government offering to buy agricultural produce at a "Minimum Support Price" (MSP) and gaining a monopoly in storage, transportation and distribution of agricultural produce along with a ban on futures and options trading were the major factors that weakened the agricultural commodity markets in the country. The ban on futures trading in agricultural commodities were removed in the seventies, but the futures markets never regained the levels of liquidity that they had enjoyed earlier.

The government appointed two committees to study the commodity futures sector, that is, *the Dantwala Committee in 1966, and the Khusro committee in 1980*, which recommended the re-introduction of futures trading in major commodities. The government finally brought back forward trading in agricultural commodities in the early 1980's. But, it was done for commodities that did not have a very significant role in the economy, that is, castor seed, castor oil, jaggary, jute, pepper, potato and turmeric. Several localized exchanges started trading in the same commodity, each of them with a local broker and wholesale-merchandiser constituency. However, even after a decade, none of the markets achieved the levels of liquidity that existed prior to the ban on commodity futures trading.

Once futures trading became operational, in spite of liberalization, it has been difficult for trade to be transferred from illegal black markets, which have zero tax liability and no reporting requirements to the legal authorities as compared to the regulated markets, where taxes and reporting are part of the legal producers. Further, responding to the need for commodity futures in India, in 1994, a committee was set-up for assessing the scope for forwards and futures trading in commodities and for recommending steps to be taken for development of futures trading in India. The committee so instituted was known as the Kabra Committee and much of its recommendations have been implemented.

Currently, there are three major National Level Commodity Exchanges and 21 regional exchanges operating in India. The national exchanges include National Multi-Commodity Exchange of India Limited (NMCE), Multi Commodity Exchange of India limited (MCX) and National Commodity and Derivatives Exchange Limited (NCDEX), which have been working since 26th November 2002, 10th November 2003 and 15th December 2003 respectively.

Need for National Level Commodity Futures Exchange in India

To develop active trading interest across commodities, it is necessary to have a common platform of commodity futures exchange where demand and supply forces can act together in bringing out the best price for any commodity. The main economic purpose of futures commodity exchanges as a market place is to enable commodity Producers and processors to sell their produce in advance to protect them against possible price fall for their commodities and allow consumers, traders, processors to buy in advance to protect against possible price increase. In this way they are able to 'hedge' their price risk, by locking the price, which they will receive, and which they will pay respectively. Commodities futures trading is a global phenomenon and offers tremendous potential to market participants for both profit making on small price correction as well as to hedgers looking at managing price risk on account of price fluctuations. In developed markets, futures trading is conservatively 10 times the size of cash market in commodities. If we consider the fact that in the US, futures trading is almost 20 times that of the cash market production, it would only be fair to suggest that the futures market in our country has potential to grow very large.

In India, futures trading is now allowed in more than 100 commodities. Most of these allowable commodities are traded through various exchanges in India. Indian economy is directly and indirectly dependent on agricultural produce. The agricultural commodity market already has measure share and with the availability of futures trading on national commodity futures exchanges will provide more liquidity, price discovery and better risk management opportunities Currently, national Commodity Exchanges are also inviting new streams of investors for new trading and business opportunities for diversification. It necessitates national commodity futures exchanges to provide price discovery, better investment opportunities and prudent risk management practices. Future prospect of commodity futures trading in India is upbeat. During the year 2005-06, the total value of commodity futures trade was Rs. 21.34 lakh crore as compared to Rs. 5.71 lakh crore during 2004-05. The volume of trade has also gone up to 6685 lakh tonnes during 2005-06 as compared to 1942 lakh tonnes during 2004-05.

In the present era, which is witnessing increased dealings in knowledge of the agricultural produce on commodity exchanges, the role of national commodity exchanges

assumes importance. Further, a study of relative importance of a range of agricultural commodities in futures trading and the volume of their trade will light on the likely pattern of futures trading in the country in the days to come. In addition, it would also be informative to investigate the type of relationship between spot and futures trading in facing competitive. This study also helps the policy makers to ascertain the future requirements. In this context, the present study was taken up with the following specific objectives.

1. To study the organizational set up and the mode of working of the National Level Commodity Exchanges in India
2. To analyze the share of agricultural commodities traded across National Level Commodity Exchanges in India
3. To study the relationship between spot and futures price of the selected agricultural commodities traded in the National Level commodity Exchanges
4. To study the handicaps in futures trading in the country perceived by the members/brokerage houses (hereafter referred to as only “members”) and their clients

Limitation of the Study

The present study did not considered regional commodity exchanges due to difficulties in obtaining required data.

Presentation of the study

The entire study has been presented in seven chapters. In the first chapter given more importance and the current status of the present study was highlighted. The specific objectives of the study as well as limitations of the study have been indicated.

Chapter II, deals with the reviews of the relevant research studies connected with the objectives.

Chapter III provides the main features of the study area and study out lines. The nature and sources from which relevant data have been collected and the various statistical tools and techniques employed in the study for evaluating the objectives were included.

Chapter IV, is devoted to the analysis of the data through a variety of tables into which relevant details have been compressed and summarized under appropriate heads and presented in the tables.

Chapter V, provides the casual relationship between certain variables and the outcome which they produced.

Chapter VI, briefs the summary of the main findings along with the policy implications that emerged from the findings of the study.

Chapter VII, the final chapter list the reference cited while undertaking the research.

II. REVIEW OF LITERATURE

Not much work has been existing in literature pertaining to commodity exchanges, particularly with respect to the objectives that the present study seeks to accomplish. As such, effort has been made in this chapter to review available studies pertaining to any aspect of commodity exchanges, and the studies related to the organizational structures of institutions.

The reviews of previous literature has been presented under the following heads:

2.1 Organizational structures of institutions
2.2 Market share analysis
2.3 Market integration

2.1 Organizational structures of institutions

Alibekov (1994) found that Commodity exchanges are envisaged as a key element. There is a need for widespread education of agricultural producers in fundamentals of business and marketing, and also essential for organization of futures trading in grain, sugar, and vegetable oils, creation of proper futures market infrastructure, introduction of clearing accounts for participants, and provision of adequate information services.

Srinivasan (1997) studied the organization and management effectiveness of regulated market committee; he observed more or less uniform organizational structure of regulated markets in Tamil Nadu. In Thirukoilur regulated market alone the post of junior superintendent existed. However, the number of posts in each cadre and the number of posts filled up varied directly with the quantum of arrivals.

Ramandev (1998) observed the management appraisal of Cashew processing industry in Uttara Kannada district of Karnataka. He found line organizational structure in cashew processing industry, which is simple and clear cut responsibility and authority with fast and easy feed back from the employees. The discipline among employees maintained easily and effectively. Similarly, increase in size of the unit their salary expenditure also increased.

Efremenko (2000) presented an overview of the main aspects of organizational structure that currently exists in the Belarussian agricultural sector. Prospects for the development of new organizational and legal forms of commercial enterprises in the agricultural sector were considered, taking into account the impact of the new Civil Code of the Republic of Belarus. It was suggested that a new structure for "agribusiness" could gradually be established, and this would embrace a whole range of ownership and management types, including corporations (open and closed joint stock companies, and limited liability companies), partnerships, cooperatives (production and consumer) and individual ownership (unitary enterprises, and daughter or subordinate companies).

Izvekov (2000) observed the switch from a centralized to a market economy in Russia has led to a change in the structure of the food distribution network and the rise of the wholesaler as the link between producer and retailer. An analysis was made of the wholesale sector, with particular reference to its role in shaping the operating system employed. With regard to Russian conditions, the organizational structure and management system of the MERKA fruit and vegetable company, set up in Moscow in 1992, was described. A private company, it had a 2-tier structure: one embraces the commercial director, the chief engineer and accounts department, while the other operates the commercial trading operations. Its modus operandi was said to permit it to undercut its rivals' prices by 10-15per cent, not least by operating through regular foreign importers, an important factor in view of the current import levels of 80per cent of all fruits and vegetables.

Kozachuk (2001) reported that any management practices existing in Russian enterprises were inappropriate for operating in market conditions. There was a clear need for

management functions to be extended, and for new methods and approaches to management that are suitable for different ownership types to be developed. The process of managing a trading enterprise should be based on market principles and modern management methodologies. Key ideas in western management theory were considered, and used as the basis for different models of organizational structure in trading enterprises. These models include: the functional structure, where positions are grouped according to their main functional area; the divisional structure, where positions are grouped by similarity of products or services; and hybrid structures, which incorporate elements of both functional and divisional structures. Different management styles were also considered, specifically the directive and democratic styles. It was stressed that the choice of management style influenced by the economic situation and functional characteristics of any given trading enterprise.

2.2 Market share analysis

Briem (1993) analysed the market for American style super-premium' ice cream in France. It was found that the market leader. American manufacturer Haggen-Dasz had a market share of 84 per cent, easily out-performing Gervais (10.5 per cent) and motta (5.5 per cent).

Zimmermann and Borgstein (1993) analysed the growth in sales of organic products via the natural food stores in the Netherland. They expected that the total market share of organic foods will either stagnate or decline in the medium term if no further efforts are made to stop the declining trends in sales of organic products.

Kaku (2001) studied the broiler futures in Kanmon Commodity Exchange and he found that in 1973, in the Japanese Chicken meat market, the share of whole birds, cut-ups, parts and deboned meat and imported chicken meat was 59.3, 37.3 and 3.4per cent, respectively. However, in 1994 the share shifted to 8.9, 59.7 and 31.4per cent, respectively. The specification for commodity futures market should be the boneless leg meat of domestic broilers.

Jairatt and Kamboj (2005) reported that the total commodities traded in the agricultural commodities accounted for nearly 95 per cent during 2002-03, which hovered around 92 per cent in 2004-05. He mentioned that the removal of ban, share of national commodity exchanges increased from nearly 6 per cent and that of regional exchanges declined from 94 to 27 per cent during the period.

Labys and Cohen (2006) studied the global wine market has witnessed major changes in recent years. Some of these changes are structural in nature or trend-following, whereas others are cyclical. Recently, new market entrants have increased their exports not only to traditional European markets but to other importing regions as well, whereas Old World producers have experienced declining market shares. However, the evidence examined here suggests that market share data also contain strong cyclical components. Mixed results also occur when the wine export data are disaggregated into products.

Madlapure *et al*. (2002) analysed the business turnover, and operational efficiency of dairy cooperative societies in Konkan Region, Maharashtra, India. Results reveal that: the sample cooperative societies have more share capital and borrowings compared to the progressive societies, but the latter have more accumulated funds; the cooperative societies do their business with very small working capital but with great efficiency; and the progressive societies have lower turnover compared to the other societies.

Kunnal and Shankarmurthy (1996) studied that the critically analyses the performance of the Karnataka State Seed Corporation (KSSC) with respect to its seed marketing activity. KSSC has adopted a mixed distribution network to sell seeds in the state. The quantity of seeds of different crops marketed by the KSSC increased during the study period. Though sales of seeds showed fluctuating trends, sales turnover showed an increasing trend. The share of cooperatives in the distribution of seeds of KSSC was not appreciable.

2.3 Market integration

Blyn (1973) estimated the degree of market integration by computing correlation coefficients for detrended and deseasonalized prices for eight wheat markets of Punjab and Delhi. Thus, totally nine detrended price series of twelve monthly prices were arranged and correlated. The results showed that the overall average correlation coefficient (r) for twelve months was 0.68. He reported that the average 'r' was equal to the 'r' between Delhi and other markets, indicating the dependence of Delhi market prices on the prices of all other collecting markets.

A study by Chengappa and Muralidharan (1980) on pricing efficiency of Indian coffee, interpreted the pricing efficiency of Indian coffee markets in terms of spatial integration. The bivariate correlations of monthly prices among geographical markets at pool sale, wholesale and at retail levels used as indices of market integration showed a maximum at pool level because of better control by the Coffee Board. The efficiency was in the declining order from the wholesalers to retailers for want of adequate control by the Board. The location of distribution points and institutional constraints of differential sales tax were found to influence the movement of prices in vision.

An analysis of pricing efficiency in spatial markets a study by Gupta and Mueller (1982) suggested a technique for estimating the price relationship between regional markets, which avoids the ambiguity of the correlation coefficient. The method was based on Fama's concept of pricing efficiency and consists of tests based on Granger's causality. The method was applied to price series from three regional markets of slaughter hogs in West Germany.

Lundahl and Peterson (1982) studied the market integration for major food grains for the period 1969-74. The number of markets for each product considered was 19 for rice, eight for grain millet, 20 for grain corn, 11 for ground corn and 15 for seed beans. Monthly price series were detrended and the residuals were correlated. The results showed that there was not high correlation between the residuals. For all the food grains, there was a tendency for the correlation to be full towards the end of each year.

Raveendran and Aiyasamy (1982) while analyzing export growth and export prices of turmeric from India observed cyclical pattern of variations in prices. The length of the export price cycle varied from three to seven years. The export prices were studied for their relation with the domestic prices. The coefficient of correlation between the two was 0.9473. The high correlation in export and domestic prices of turmeric explained little variation in value of the variable R_t (ratio between price P_e to domestic price P_d in the year t, i.e., $(P_e / P_{d)\ t)}$ and consequently its non significant influence on export trade. The very high correlation of export price of turmeric with its domestic prices obviously confirmed the vulnerability of the latter to international price fluctuations.

Brorsen *et al*. (1984) reported that the use of univariate and multivariate time series analysis in the investigation of dynamic relationships among selected weekly import prices of rice in the European Economic Community (EEC). EEC imported rice from US, Thailand and Argentina. The results showed that Argentinean and US prices moved together. These two prices were influenced by the European market and react quickly to changes in Thailand prices. Thailand prices responded slowly to US and Argentinean prices.

The Ravallion's regression model was used to study the integration of palm oil market in Peninsular Malaysia (Arshad and Gaffar,1990). The crude palm oil market was observed to be spatially price efficient. The high integration of the crude palm oil markets was not surprising in view of the efficient and adequate infrastructure facilities available. The standardization of crude palm oil futures contract made the product homogenous leading to efficient price discovery thereby enhancing pricing efficiency.

Using the correlation coefficient, Gemtessa (1991) analyzed the integration of Ethiopian coffee prices with the world prices. The correlation coefficient for the monthly average prices secured at domestic and world markets for 12 months lag was calculated. The bivariate correlation coefficient of the two market prices revealed that they move together in

the same direction. The lagged cross correlations of domestic prices and world prices also revealed that they move together in the same direction. The lagged cross-correlations of domestic prices and world prices of coffee for the period 1979-80 to 1987-88 indicated that the world prices of coffee had a stronger influence on the domestic prices than the domestic prices had on the world prices of coffee.

Baharumshah and Habibullah (1994) employed the co-integration technique to analyze the long run relationship among pepper prices in six different markets of Malaysia. The co-integration technique was applied to weekly pepper prices for the period 1986-91.The empirical findings of the study indicated that regional pepper markets in Malaysia were highlyco-integrated and prices of pepper tended to move uniformly across spatial markets indicating competitive pricing behavior.

The co-integration approach was used (Sinharoy and Nair, 1994) to analyze the pepper price variations in the world market. It was observed that due to open trade status of pepper, its prices had moved synchronously, indicating integration of the world-pepper market. It was pointed out that due to the oligopolistic nature of the world market for pepper; its prices did not deviate much. The domestic supply variables were found to be responsive to the international market conditions.

Behura and Pradhan (1998) used bivariate price series correlation and Engle-Granger test to analyze the market integration for Orissa marine fish markets. The bivariate correlation coefficients for six selected market pairs ranged between 0.60 and 0.85. The test statistic obtained for all the pair wise markets were found to be less than the asymptotic critical value even at 10 per cent level excepting that of Cuttack-Paradip pair. Thus the marine fish markets in the state were assumed to be not integrated and hence quite uncompetitive. This was mainly attributed to poor infrastructure facilities at landing centers as well as the terminal secondary markets.

Bhatta and Bhat (1998) studied the extent of price relationship for arecanut between selected markets of Mangalore and Sirsi using the correlation coefficient method. The results revealed that the Mangalore market was more efficient than Sirsi market. The commercial nature of the crop and its diversified market conduct was clear from the fact that there was a direct relationship between the supply and price.

The intra-state spatial integration of rice markets in India was investigated by Ghosh and Madhusudan (2000) who used ML method of co-integration. Intra-state regional integration of rice markets was evaluated by testing the long run linear relationship between the prices of the state-specific variety of rice quoted in spatially separated locations in four selected states. The cointegration results for Uttar Pradesh indicated that the regional markets are integrated to such an extent that the Law of one price (LOP) holds for III and IV ARWA variety of rice. However, no evidence was found in favour of the LOP for the coarse or common variety of rice marketed in Bihar, Orissa and West Bengal, even though, the regional rice markets were found to be integrated. The results pertaining to inter-state regional integration of rice markets represented by four market centers chosen from the four selected states, revealed that even though the markets are integrated, the LOP does not hold.

Kumar Ranjit (2000) analyzed the relationship between prices of rice in domestic market (New Delhi) with major rice markets of the world viz., Bangalore and Houston (USA) by using the co integration approach. The results clearly revealed that all the price series were not stationary and were not integrated in the long run.

Naik and Jain (2001) studied that on assessing the efficiency of major commodity futures markets in India using the cointegration theory and they concluded that a major reason for the poor performance of Indian futures market could be the lack of adequate participation of hedgers in these markets. The management of the exchanges and the forward markets commission has to find ways to attract hedgers in order to improve the performance of these markets.

Basab Dasguptha (2004) in his study on the role of commodity future market in spot price stabilization, production and inventory decisions with reference to India shows the future price elasticity of production has always been greater or equal to one and increasing profit by increasing price is not possible. It also shows that the future price elasticity of inventory was inversely related with the carrying cost. Therefore, on unnecessary hoarding will increase the carrying cost leading to a lower responsiveness of inventory to future prices.

Aviral Chopra and Blesser (2005) studied the Price Discovery in the Black Pepper Market in Kerala, India. They explored empirically the incidence of price discovery for black pepper in spot market, the nearby and the first distant future market by using daily data employing the method of cointegration and directed a cyclic graphs. The study reveals that price information is discovered in the future market and the results in these three markets are tied together in one cointegration relationship, spot and first distant future contract do not respond to perturbations in the co integrating on by the near future contract adjust to shock in the long run relationships hoarding these three market together.

Zapata *et al.* (2005) examined the relationship between 11 sugar futures prices traded in New York and the world cash prices for exported sugar. It was found that the futures market for sugar led the cash market in price discovery. However, find evidence that changes in the cash price causes changes in futures price, that is, causality is unidirectional from futures to cash. The finding of cointegration between futures and cash prices suggests that the sugar futures contract is a useful vehicle for reducing overall market price risk faced by cash market participants selling at the world price (i.e., not enjoying favorable trade incentives). Further reliability on the usefulness of the WSF as a price discovery market is found through the impulse response functions; a shock in the futures price innovation generates a quick (one month) and positive response in futures and cash prices.

Babula *et al* (2006) applied Johansen and Juselius' methods of the co-integrated vector auto regression (VAR) model to a monthly US system of markets for soyabeans, soya meal, and soya oil. Analysis of the error correction or cointegration space illuminates the empirical nature of policy-relevant market elasticities, and of the effects of important policy, market, and institutional events on US soya-related markets. A statistically strong US demand for soyabeans emerged as the primary co integrating relation in the error-correction space.

Ghoshray (2007) in his study revealed that Durum wheat is one of the commodities for which there is intense trade competition between the United States and Canada. He examined the relationship between Canadian and U.S. durum wheat prices using cointegration and an asymmetric error correction approach. The overall results suggest that a long run relation holds between the U.S. and Canadian durum wheat prices. The U.S. price responds to restore the equilibrium relationship with the corresponding Canadian price, while the Canadian price evolves independently. Using tests for structural change, it is revealed that changes in Canadian domestic policy (the repeal of the WGTA) had an effect on this long run relation. Since the withdrawal of the WGTA, quality differences in durum wheat for both countries seem to matter in the dynamics and integration of U.S. and Canadian durum wheat prices.

III. METHODOLOGY

This chapter deals with the description of the study area, sampling procedure adopted, method of survey, nature and sources of data and various tools and techniques employed for analyzing the data.

3.1 Description of the study area
3.2 Sampling design
3.3 Nature and sources of data
3.4 Analytical tools and techniques employed
3.5 Definition of terms and concepts used in the study

3.1 DESCRIPTION OF THE STUDY AREA

3.1.1 Selection of the Commodity Exchanges

The present study pertains to all the three National Level Commodity Exchanges in India namely, National Multi-Commodity Exchange of India Limited (NMCE), Multi Commodity Exchange of India limited (MCX) and National Commodity & Derivatives Exchange Limited (NCDEX). As such these national commodity exchanges have been purposively selected for the present study.

3.1.2 Location and General Description of the Study Area

The present study was conducted with respect to all three National Level Commodity Exchanges in India, namely National Multi-Commodity Exchange of India, (NMCE) Ahmedabad, which started trading in November 2002, and the other two national Exchanges viz. Multi Commodity Exchange of India Ltd (MCX) Mumbai and National Commodity and Derivatives Exchange Ltd (NCDEX) Mumbai which started trading in November 2003. These exchanges are playing very important role in the trading activities in India.

1) National Multi Commodity Exchange of India Ltd. (NMCE) was promoted by commodity relevant public institutions, viz., Central Warehousing Corporation (CWC), National Agricultural Cooperative Marketing Federation of India (NAFED), Gujarat Agro-Industries Corporation Limited (GAICL), Gujarat State Agricultural Marketing Board (GSAMB), National Institute of Agricultural Marketing (NIAM), and Neptune Overseas Limited (NOL). While various integral aspects of commodity economy, viz., warehousing, cooperatives, private and public sector marketing of agricultural commodities, research and training were adequately addressed in structuring of the Exchange, finance was a vital missing link. Punjab National Bank (PNB) took equity of the Exchange to establish that linkage.

2) National Commodity & Derivatives Exchange Limited (NCDEX) is a professionally managed on-line multi commodity exchange promoted by ICICI Bank Limited, Life Insurance Corporation of India (LIC), National Bank for Agriculture and Rural Development (NABARD) and National Stock Exchange of India Limited (NSE). Canara Bank, Credit Rating Information Services of India Limited (CRISIL), Goldman Sachs, Indian Farmers Fertilizer Cooperative Limited (IFFCO) and Punjab National Bank (PNB) by subscribing to the equity shares have joined the initial promoters as shareholders of the Exchange. NCDEX is the only commodity exchange in the country promoted by national level institutions.

3) MCX is an independent and de-mutulised multi commodity exchange, promoted by major financial institutions like Financial Technologies Ltd., State Bank of India and its associates, National Bank for Agriculture and Rural Development (NABARD), National Stock Exchange of India Ltd. (NSE), Fid Fund (Mauritius) Ltd, Corporation Bank, Union Bank of India, Canara Bank, Bank of India, Bank of Baroda, HDFC Bank and SBI Life Insurance Co. Ltd.

3.2 SAMPLING DESIGN

3.2.1 Selection of the Commodity Exchanges.

The major three National Level Exchanges in India namely, NMCE, NCDEX and MCX were selected for the study. Due to a large number of commodities traded in these exchanges and the importance they are gaining lately, selecting these three exchanges for the study was necessary.

3.2.2 Selection of members of the National Level Commodity Exchanges

A total of 15 members having membership of all three National Level Exchanges were selected for the study. Further, two clients of each of the 15 members were also selected to study the handicaps in futures trading in agricultural commodities both at members and clients' levels.

3.2.3 Selection of Agricultural Commodities traded on exchanges

For the present study, fifteen major agricultural commodities currently traded in the commodity exchanges were selected. Three commodities were selected from among cereals, pulses, oilseeds, spices and plantation crops. They were wheat, maize and rice among cereals; urad, channa and tur among pulses; RBD palm oil, soya oil and ground nut oil among oils; pepper, chilli and jeera among spices, and rubber, cashew and coffee among plantation crops. The above crops were selected based on their volume of trade in respective groups.

3.3 Nature and Sources of Data

The detailed information required for the study was collected from both primary and secondary sources in order to accomplish the various objectives of the study as shown here under:

3.3.1 Primary Data

Primary data were collected from the selected members of the National commodity exchanges and their clients. The Information gathered from them by personal interview with well-structured comprehensive questionnaire related to the handicaps they faced in participating in futures trading. The respondents were fully apprised of the purpose of information collection and the practical utility of the findings. They were interviewed informally and leisurely.

3.3.2 Secondary Data

Secondary data on daily futures price, spot prices, and volume of trade on exchanges were collected from the official web site of Forward Market Commission (FMC), Mumbai and respective web sites of the National Level Commodity Exchanges in India for the period 2004-05 to 2006-07.

3.4 Analytical tools and techniques employed in the study

For the purpose of accomplishing the objectives of the study, data were analysed using the following techniques.

3.3.1 Tabular analysis

3.3.2 Cointegration technique

3.4.1 Tabular analysis

Tabular analysis was followed to analyse the share of different national exchanges in the total quantity of selected commodities traded in futures market. Also, the constraints experienced by the members of the exchanges and their clients, were analysed by tabular approach calculating averages and percentages.

3.4.2 Cointegration technique

For examining integration between spot and futures market, the present study adopted cointegration technique. The cointegration approach to market integration is intuitively appealing and straight forward in application. Integrated markets are those where prices are determined interdependently. This has generally been assumed to mean that the price changes in one market will be fully transmitted to the other markets. Markets that are not integrated may convey inaccurate price information that might distort marketing decisions and contribute to inefficient product movements.

Two series are said to be co-integrated when there exists a long run equilibrium relationship between them. In other words, two series cannot drift from one another in the long run. That is, there exists an equilibrium mechanism to bring the two series together. Applying this concept to any two given markets, cointegration between their price series implies long run dependence between them. Since the very essence of market integration is the price dependence across markets, it follows that cointegration between prices in two given markets implies integration of the markets.

To examine the price relation between two markets, the following basic relationship commonly used to test for the existence of market integration may be considered.

$$P_{it} = \alpha_0 + \alpha_1 P_{jt} + \varepsilon_t \quad \text{..... (1)}$$

Where P_i and P_j are price series of a specific commodity in two markets i and j. ε is the residual term assumed to be distributed identically and independently. The test of market integration is straight forward if pi and pj are stationary variables. Often, however, economic variables are non -stationary in which case the conventional tests are biased towards rejecting the null hypothesis. Thus, before proceeding to further analysis, it is important to check for the stationarity of the variables (Granger and Newbold, 1974).

Stationary series is defined as one whose parameters that describe the series (namely the mean, variance and autocorrelation) are independent of time, or rather exhibit constant mean and variance and have autocorrelation that are invariant through time. Once the non- stationarity status of the variables is determined, the next step is to test for the presence of co-integrating (long run equilibrium) relationship between the variables.

The augmented Dickey Fuller test (ADF test)) is used to determine the stationarity of a variable. The test is based on the Dickey Fuller value statistic of B_1 given by the following equation.

$$\Delta P_t = \beta_0 + \beta_1 P_{t-1} + \sum_{k=1}^{N} \delta_k \Delta P_{t-k} + \eta_t \quad \text{..... (2)}$$

Where

$$\Delta P_t = \mathrm{P}_t - \mathrm{P}_{t-1}$$

The test statistic is simply the t statistic. However, under the null hypothesis, it is not distributed as student- t, but this ratio can be compared with critical values given in Dickey Fuller Table. In estimating Equation (2), the null hypothesis is Ho: P_t is I (1), which is rejected [in favour of I (0)] if β_1 is found to be negative and statistically significant. The above test can also be carried out for the first difference of the variables. That is, we estimate the following regression equation:

$$\Delta^2 P_t = \theta_0 + \theta_1 \Delta P_{t-1} + \sum_{k=1}^{N} \Phi_k \Delta^2 P_{t-k} + \mu_t \quad \text{..... (3)}$$

Where the null hypothesis is Ho: P_t is I (2), which is rejected [in favour of I (1)] if θ_1 is found to be negative and statistically significant. In general, a series P_t is said to be integrated of order 'd', if the series achieves stationary after differencing d times, denoted P_t ~

I (d). Consequently, if P_t is stationary after differencing once, this we may denote as $P_t \sim I(1)$.

Having established that the variables are non-stationary in level, we may then test for cointegration. Only variables that are of the same order of integration may constitute a potential co-integrating relationship.

Alternative and quicker way of finding out whether the two price series are co-integrated is the Co-integrating Regression Durbin Watson (CRDW) test. In CRDW we use the Durbin Watson'd' obtained from the co-integrating regression. Here null hypothesis is d=0.

In the present study, integration between spot and futures market was studied by using cointegration technique for maize among cereals, channa among pulses and refined soya oil among oils with respect to each national commodity exchange. The above commodities were selected based on the quantity of their trade in commodity exchanges except for wheat whose traded quantity was highest among cereals but which was still not considered due to the recent ban on its futures trade. Spices and plantation crops were not considered in cointegration analysis due to time constraints without diluting the over all objective of the study of integration between spot and futures market. For this analysis, average daily futures prices of each contract were worked out for each of the three years (i.e; 2004-05 to 2006-07) were used along with the corresponding spot prices.

Definition of the terms related to the commodity exchanges used in the study

Arbitrage

The simultaneous purchase and sale of similar Commodities in different markets to take advantage of a price discrepancy.

Backwardation

A futures market in which the relationship between two delivery months of the same commodity is abnormal. The opposite of Contango.

Basis

The difference between the current cash price of a commodity and the futures price of the same commodity.

Bear Market

A market in which prices are declining. A market participant who believes prices will move lower is called a "bear." A news item is considered bearish if it is expected to result in lower prices.

Bid

An expression of willingness to buy a commodity at a given price; the opposite of Offer.

Broker

A company or individual that executes futures and options orders on behalf of financial and commercial institutions or the general public.

Bull Market

A market in which prices are rising. A market participant who believes prices will move higher is called a "bull." A news item is considered bullish if it is expected to result in higher prices.

Clear

The process by which a clearing house maintains records of all trades and settles margin flow on a daily mark-to-market basis for its clearing members.

Clearinghouse

An agency or separate corporation of a futures exchange that is responsible for settling trading accounts, collecting and maintaining margin monies, regulating delivery and reporting trade data. The clearinghouse becomes the buyer to each seller (and the seller to each buyer) and assumes responsibility for protecting buyers and sellers from financial loss by assuring performance on each contract.

Clearing Member

A member of an exchange clearinghouse responsible for the financial commitments of its customers. All trades of a non-clearing member must be registered and eventually settled through a clearing member.

Closing Price

At the end of each day's trading, the system calculates the weighted average price of all trades of that contract done during the last 30 minutes of a trading session.

Commission

A fee charged by a broker to a customer for executing a transaction.

Contango

A futures market in which prices in succeeding delivery months are progressively higher. The opposite of Backwardation.

Delivery

The transfer of the cash commodity from the seller of a futures contract to the buyer of a futures contract. Each futures exchange has specific procedures for delivery of a cash commodity. Some futures contracts, such as stock index contracts, are cash settled.

Expiration Date

Generally the last date on which an option may be exercised. It is not uncommon for an option to expire on a specified date during the month prior to the delivery month for the underlying futures contracts.

FMC

Forward market commission.

Futures Contract

It is an agreement between two parties to buy or sell a specified quantity and quality of an asset at a certain time in the future at a price agreed upon at the time of entering into the contract on the futures exchange.

Forward contract

It is an agreement between two parties to buy or sell an asset at a future date for price agreed upon while signing the agreement. Forward contract is not traded in the exchange.

Long

One who has bought futures contracts.

Margin

An amount of money deposited by both buyers and sellers of futures contracts and by sellers of options contracts to ensure performance of the terms of the contract (the making or taking delivery of the commodity or the cancellation of the position by a subsequent offsetting trade). Margin in commodities is not a down payment, as in securities.

Maintenance Margin

A set minimum margin (per outstanding futures contract) that a customer must maintain in his margin account to retain the futures position.

Mark-to-Market

To debit or credit a margin account on a daily basis based on the close of that day's trading session. In this way, buyers and sellers are protected against the possibility of contract default.

Market Order

An order to buy or sell a futures or options contract at whatever price is obtainable when the order reaches the trading floor.

MCX

Multi commodity exchange

NBOT

National Board of Trade

NCDEX

National Commodity Derivative Exchange

NMCE

National Multi Commodity Exchange.

Open Interest

The total number of futures contracts of a given commodity that have not yet been offset by an opposite futures transaction nor fulfilled by delivery of the commodity. Each open transaction has a buyer and a seller, but for calculation of open interest, only one side of the contract is counted.

Overbought

A technical opinion that the market price has risen too steeply and too fast in relation to underlying fundamental factors.

Oversold

A technical opinion that the market price has declined too steeply and too fast in relation to underlying fundamental factors.

Price Discovery

The process of determining the price of a commodity by trading conducted in open outcry at an exchange.

Settlement Price

The last price paid for a futures contract on any trading day. Settlement prices are

used to determine open trade equity, margin calls and invoice prices for deliveries.

Short

One who has sold futures contracts

Speculator

A market participant who tries to profit from buying and selling by anticipating future price movements.

Spot

Usually refers to a cash market price for a physical commodity that is available for immediate delivery.

Volume

The number of purchases and sales of futures contracts made during a specified period of time, often the total transactions for one trading day.

Warehouse Receipt

A document guaranteeing the existence and availability of a given quantity and quality of a commodity in storage; commonly used as the instrument of transfer of ownership in both cash and futures transactions.

IV. RESULTS

The results of the study are presented under the following heads.

4.1 Organizational Structure of Commodity Exchanges in India
4.2 Share of National Commodity Exchanges in the Agricultural Produce Traded in Futures Market
4.3 Integration of Spot and Futures Market for Agricultural Commodities
4.4 Problems Faced by the Members of the Exchanges and their Clients

4.1 Organizational Structure of Commodity Exchanges in India

The organization structure of Indian commodity market is illustrated in figure1. In the hierarchy of Indian commodity exchanges market, the Forward Markets Commission is a statutory body set up under the Forward Contracts (Regulation) Act, 1952. The Commission functions under the administrative control of the Ministry of Consumer Affairs, Food & Public Distributions, Dept. of Consumer Affairs, Government of India.

Under the Act, the Commission has following functions

To advise the Central Government in respect of recognition or withdrawal of recognition of any association and other matters arising out of the administration of the Act.

(i) To keep forward markets under observation and to take appropriate action in relation to them.
(iii) To collect and publish information regarding trading conditions in respect of goods to which any of the provisions of the Act is made applicable including information regarding supply, demand and prices and to submit to Central Government periodical reports on the operation of this Act and on the working of the forward markets relating to such goods.
(iv) To make recommendations to improve the organization and working of forward markets.
(v) To undertake inspection of the accounts of recognized associations and/any members thereof.
(vi) To perform other duties prescribed by the Central Government.

2 The Commission, thus, is a statutory authority entrusted with regulatory functions under the Act. The Commission, at present comprises 4 Members, one of whom is its Chairman. It has its headquarters at Mumbai and a Regional Office at Calcutta. The sanctioned strength of the office comprises of 42 officers and 94 staff members, one post of Director (Enforcement) has been revived and 3 posts (2 of Computer and 1 of Hamal) has been surrendered. The Commission has 3 functional wings under the set-up to carry out various tasks as detailed below:

(i) The Commodity Division: This Division deals with all the matters relating to the regulation of the forward and futures markets in the country. Besides, this Division keeps a close watch on the emerging developments in different commodity markets in India. This Division also prepares a number of analytical reports and notes of varying periodicity regarding the trading condition in respect of goods to which the provisions of the Act are applicable including the supply, demand and prices. These reports are submitted to the Department of Consumer Affairs.
(ii) The Enforcement Division: Assists the police authorities in the States and Union Territories in enforcing the provisions of the Act, conducts training courses, scrutinizes documents seized by the police during the course of raids and renders help to the prosecution with its officers appearing as expert witnesses in the different Courts of Law in the country. The Commission keeps close surveillance on the activities in illegal forward markets and communicates the intelligence thereon, to the concerned police authorities for their verifications, surveillance and appropriate enforcement action. The Commission or its officers

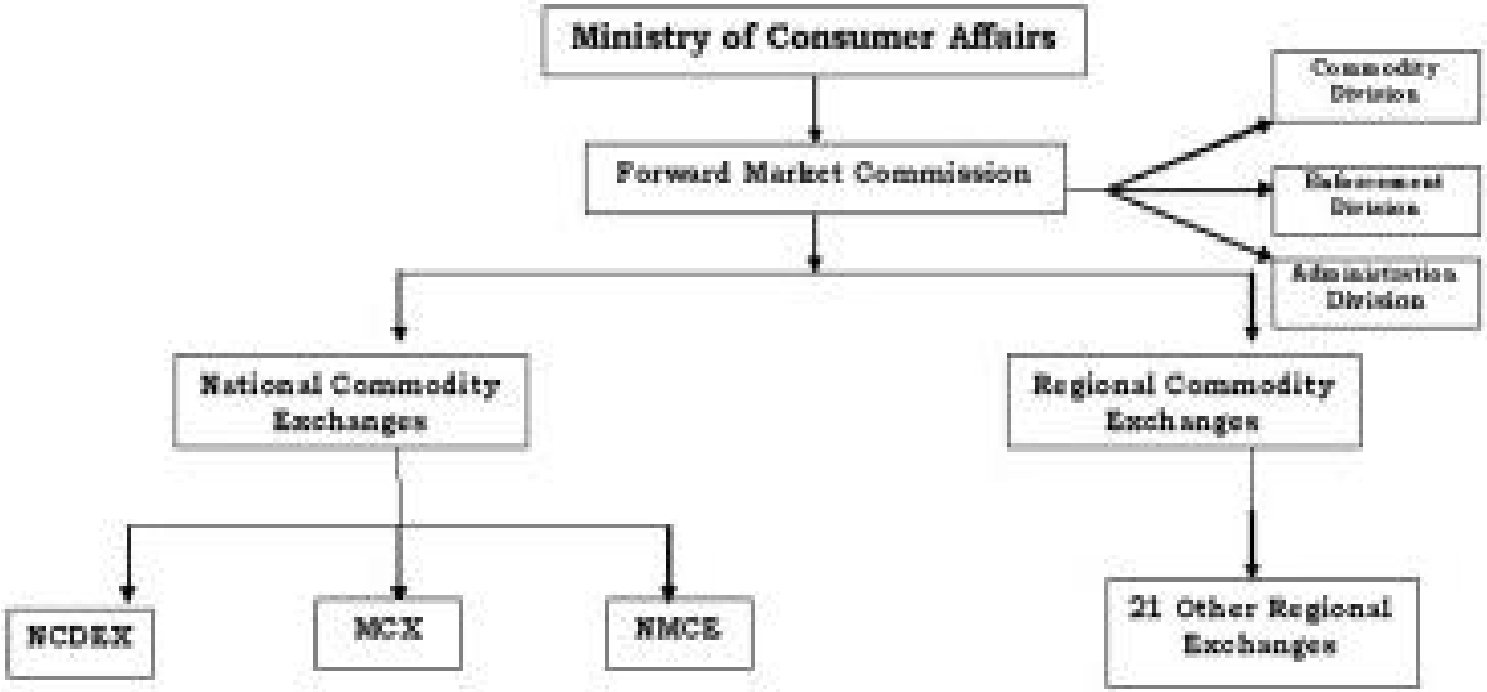


Fig. 1: Organizational Structure of Indian Commodity Exchanges

Fig. 1: Organizational Structure of Indian Commodity Exchange

do not possess the powers of search, seizure and prosecution in respect of the various offences committed under the Act. These powers are vested with the police authorities in the State and Union Territories. The officers of this division assist the police authorities, wherever possible in organising and conducting the raids. Further more, this division also assists the police authorities in scrutinizing the documents seized by them in the course of their raids against the operators in the illegal forward markets. Comprehensive scrutiny reports are prepared in this division on the basis of the evidence contained in the documents seized and are then sent to the police authorities for further necessary action. Apart from carrying out these tasks the officers of this division also tender evidence in the different courts of law as 'Expert Witness'. The Enforcement Division also conducts surprise checks of the recognized Commodity Exchanges whenever necessary. This division has been organising a number of training Programmes for police officers and public prosecutors and seminar for Judicial Magistrates with a view to acquaint police officers with the intricacies of forward trading and the Act.

(iii) The Administration Division: Deals with the personnel and staff matters of the Commission.

The commodity exchanges under the Forward market Commission, are divided into national commodity exchanges and regional commodity exchanges.

Under the national commodity exchanges, there are three major exchanges namely MCX, NCDEX and NMCE. The Regional Commodity Exchange consists of 21 Regional Exchanges their responsibilities and operations as same as National Commodity Exchanges but commodities are more or less regional specific for their trading activities. The organization flow chart is shown in fig.1.

4.2 Share of National Commodity Exchanges in the Agricultural Produce Traded in Futures Market

Table 4.1 shows the total quantity of related cereals crops viz., wheat, maize and rice traded in futures market along with the share of each national commodity exchanges in the traded quantity. As the table reveals, a total of 37.65 lakh tonnes of wheat was traded in national commodity exchanges in the country in 2004-05. In this, NCDEX accounted for nearly 97 per cent (36.49 lakh tonnes) followed by NMCE which accounted for 1.64 per cent (0.62 lakh tonne) and MCX which accounted for 1.45 per cent (0.54 lakh tonne) during 2004-05. During the next year (2005-06) also, NCDEX retained top position and accounting for 97.23 per cent (196.05 lakh tonnes) of total trade in national exchanges followed by MCX which accounted for 5.46 per cent (2.71 tonnes) and NMCE accounting for 0.06 per cent (0.12 lakh tonne) in the total volume of trade of 201.63 lakh tonnes. In the year 2006-07 the total trade of wheat in national commodity exchanges was 236.85 lakh tonnes. Whereas, NCDEX, MCX and NMCE accounted for 97.7 per cent, 2.25 per cent and 0.05 per cent respectively.

Maize was not listed for commodity trading in NMCE in the year 2004-05 to 2006-07 of the remaining two exchanges, NCDEX had a larger share of 91.83 per cent in the total quantity of maize traded in two national exchanges. MCX accounted for just 8.17 per cent share with a trading of 0.16 lakh tonne of maize in the total quantity of 1.99 lakh tonne traded in national exchanges, this crop continued not to be listed in NMCE in the remaining two years of the study period also namely 2005-06 and 2006-07. However, NCDEX continued to have a larger share than MCX in the total quantity of maize traded in the national exchanges in both the years. Specifically, the share of NCDEX and MCX was around 97 per cent and 3 per cent respectively. In 2005-06, with 16.31 lakh tonnes of maize traded in NCDEX and 0.49 lakh tonne traded in MCX. In the year 2006-07, the total quantity of maize traded in the national exchanges was 71 lakh tonnes. In this, NCDEX accounted for 69.4 lakh tonnes (around 98 percent) and MCX accounted for 1.61 lakh tonne (around 2 per cent).

With regards to rice it was not listed in NCDEX during any of the above three periods under consideration. Further, it was not listed in the NMCE 2006-07. For the year 2004-05,

Table 4.1 Volume of cereals traded in national level commodity exchanges

(Lakh Tonnes)

Commodities	Volume of Quantity traded in the year											
	2004-05				2005-06				2006-07			
	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL
Wheat	0.54 (1.45)*	36.49 (96.91)	0.62 (1.64)	37.65 (100)	5.46 (2.71)	196.05 (97.23)	0.12 (0.06)	201.63 (100)	5.31 (2.25)	230.85 (97.70)	0.13 (0.05)	236.28 (100)
Maize	0.16 (8.17)	1.82 (91.83)	NL (0.00)	1.99 (100)	0.49 (2.92)	16.31 (97.08)	NL (0.00)	16.80 (100)	1.61 (2.26)	69.40 (97.74)	NL	71.01 (100)
Rice	0.32 (8.08)	NL	3.60 (91.92)	3.91 (100)	2.08 (100)	NL	NT	2.08 (100)	2.49 (100)	NL	NL	2.49 (100)

NL: Not Listed; NT: Not Traded

* Figures in parenthesis show percentage of the total quantity traded

the total quantity traded of rice in the national exchanges was 3.91 lakh tonnes with NMCE accounting for 3.6 lakh tonnes (around 92 per cent share) and MCX accounting for 0.32 lakh tonnes (around 8 per cent share). For the year 2005-06, this cereal was traded only in MCX since there was no trading of rice in NMCE though it was listed. As such MCX accounted for 100 per cent share in the total quantity of 2.08 lakh tonnes traded in the year. Similarly, this national exchange had again a 100 per cent share in the total quantity of 2.49 lakh tonnes traded in 2006-07.

Table 4.2 depicts the total quantity of selected pulses traded in the national commodity exchanges along with their shares for the period 2004-05 to 2006-07. Urad was traded only in MCX and NCDEX in 2004-05 and in all the three exchanges during the remaining two years. In the year 2004-05, the total quantity traded of urad was 65.15 lakh tonnes. In this, NCDEX accounted for a share of around 97 per cent with a total trading of 63.39 lakh tonnes and MCX for a share of accounted for around 3 per cent the total quantity traded of urad in 2005-06 was of the order of around 796 lakh tonnes. The major share in this was of NCDEX which accounted for 95 per cent share with a trade volume of 756 lakh tonnes. MCX had a share of 4.89 per cent with 38.92 lakh tonnes of traded quantity, NMCE accounted for just around 1 lakh tonne of traded produce with an insignificant share of 0.13 per cent in the total quantity. For the year 2006-07, NCDEX again had a maximum share of 51.74 per cent in the total quantity of around 122 lakh tonnes traded in the national exchanges. The next highest share was that of MCX (30.3 per cent) were the traded quantity amounted to around 37 lakh tonnes, around 22 lakh tonnes of urad was traded in NMCE giving it a share of around 18 per cent. Channa like urad, was also not traded in NMCE during 2004-05. During this year the total quantity traded of channa in the other two national exchanges was 107.11 lakh tonnes which consisted of 105.88 lakh tonnes (around 99 per cent) traded in NCDEX and 1.23 lakh tonne (around 1 per cent) traded in MCX. During the year 2005-06, the total quantity traded of channa in three national exchanges was around 1270 lakh tonnes. This composed of 48.4 lakh tonnes (around 4 percent) traded in MCX, around 1208 lakh tonnes (around 95 percent) traded in NCDEX and 13.3 lakh tonnes(around 1 percent) traded in NMCE. For the year 2006-07 also the share of NCDEX continued to be the largest with the total quantity traded of 1049 lakh tonnes, which accounted for around 78 percent of the total of the three exchanges. The other two exchanges, namely, NMCE and MCX had a share of around 19 percent and three percent respectively with corresponding quantities of 252.35 lakh tonnes and 38.37 lakh tonnes.

Tur, another pulse considered in the study, was traded only in MCX in 2004-05 and 2005-06. The quantity traded was meager at 0.32 lakh tonnes in 2004-05 and 13.75 lakh tonnes in 2005-06. This produce was however traded both in MCX and NCDEX in the year 2006-07. In the total quantity traded in the two exchanges (38.4 lakh tonnes), the share of NCDEX was around 55 per cent with a traded quantity of around 21 lakh tonnes and that of MCX was around 45 per cent with a traded quantity of 17.33 lakh tonnes.

Table 4.3 presents quantity traded of oils in the selected national commodity exchanges and their respective shares. RBD palm oil was traded in MCX and NCDEX and not in NMCE during 2004-05 and 2005-06. However, it was traded only in MCX during 2006-07. The total quantity traded on the two exchanges was 0.87 lakh tonne, With MCX accounting for around 73 per cent share and NCDEX accounting for around 27 per cent for the year 2004-05. For the year 2005-06,the quantity traded of this oils on the national commodity exchanges was 0.55 lakh tonne, which composed of 0.36 lakh tonne traded on MCX (around 66 percent) and 0.1 lakh tonne traded on NCDEX (around 34 per cent). For the year 2006-07 the quantity traded on MCX was 0.36 lakh tonne.

Unlike RBD palm oil, refined soy oil was traded on all the three exchanges during each year. Its total quantity traded on the three exchanges during 2004-05 was 286.5 lakh tonnes. The share of MCX, NCDEX and NMCE in this total quantity was around 10.4 per cent, 21.4 per cent and 68.2 per cent respectively. The total soya oil transaction on the three exchanges during 2005-06 was around 189 lakh tonnes. The quantity traded on MCX, NCDEX and NMCE was 81.71 lakh tonnes (43.18 percent), 99.17 lakh tonnes (52.41 percent), and 8.33 lakh tonnes (4.40 per cent) respectively. During 2006-07 the total quantity traded on the national exchanges was much larger at 645 lakh tonnes. In this, the maximum

Table 4.2 Volume of pulses traded in national level commodity exchanges

(Lakh Tonnes)

Commodities	Volume of Quantity traded in the year											
	2004-05				2005-06				2006-07			
	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL
Urad	1.76 (2.70)*	63.39 (97.30)	NT	65.15 (100)	38.92 (4.89)	755.68 (94.97)	1.06 (0.13)	795.66 (100)	37.06 (30.30)	63.28 (51.74)	21.98 (17.97)	122.32 (100)
Channa	1.23 (1.15)	105.88 (98.85)	NT	107.11 (100)	48.40 (3.81)	1207.95 (95.14)	13.30 (1.05)	1269.65 (100)	38.37 (2.86)	1048.90 (78.30)	252.35 (18.84)	1339.63 (100)
Tur	0.32 (100)	NL	NT	0.32 (100)	13.75 (100)	NL	NT	13.75 (100)	17.33 (45.13)	21.07 (54.87)	NT	38.40 (100)

NL: Not Listed; NT: Not Traded

* Figures in parenthesis show percentage of the total quantity traded

Table 4.3 Volumes of oils traded in national level commodity exchanges

(Lakh Tonnes)

Commodities	Volume of Quantity traded in the year											
	2004-05				2005-06				2006-07			
	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL
RBD Palmoil	0.64 (73.26)*	0.23 (26.74)	NT	0.87 (100)	0.36 (65.86)	0.19 (34.14)	NT	0.55 (100)	0.36 (100)	NT	NT	0.36 (100)
Refined soya oil	29.69 (10.36)	61.32 (21.40)	195.48 (68.23)	286.49 (100)	81.71 (43.18)	99.17 (52.41)	8.33 (4.40)	189.21 (100)	92.86 (14.33)	111.78 (17.25)	443.30 (68.42)	647.94 (100)
Ground nut oil	0.08 (6.60)	NT	1.18 (93.40)	1.26 (100)	NT	0.43 (100)	NT	0.43 (100)	0.35 (81.01)	0.08 (18.99)	NT	0.43 (100)

NL: Not Listed; NT: Not Traded

* Figures in parenthesis show percentage of the total quantity traded

share was that of NMCE (around 68.4 per cent) and the minimum share was that of MCX (around 14.3 per cent).

Ground nut oil was not traded in NCDEX during 2004-05. The quantity traded of this oil in MCX and NMCE was 0.08 lakh tonne and 1.18 lakh tonne respectively. For the year 2005-06, there was no ground nut oil transaction on MCX and NMCE. NCDEX was the only exchange where this oil was traded in a meager quantity of 0.43 lakh tonnes. In the year 2006-07, both MCX and NCDEX had future trading in this oil. The total quantity traded in the national exchanges was 0.43 lakh tonne, which was shared by MCX with 0.35 lakh tonne (81 per cent) and NCDEX with 0.08 lakh tonne (19 per cent).

Table 4.4 presents results on quantity of spices traded on national exchanges. Pepper, the only spice among the three selected once which was traded on all the three exchanges during all the three years, had a total trading of 16.2 lakh tonnes in the national exchanges. The share of NMCE in this was the largest at around 76 per cent followed by NCDEX (around 22 per cent) and MCX (1 per cent). The total volume of traded in pepper in the national commodity exchanges for the year 2005-06 was 18.38 lakh tonnes. This total consisted of 0.88 lakh tonne traded on MCX (around 5 percent), 7.71 lakh tonnes in NCDEX (around 42 percent) and 9.79 lakh tonnes traded on NMCE (around 53 per cent). The volume of future trade in pepper during 2006-07 was much larger at around 84 lakh tonnes compare to the earlier two years, the share of MCX, NCDEX and NMCE in this total were around 1 per cent, 75 per cent and 24 per cent respectively.

Chilli, while it was not listed in the NMCE during 2004-05 and 2005-06, was not traded in that exchange in 2006-07 despite being listed. For the year 2004-05, the volume of its total futures trade was just 0.2 lakh tonne. While 0.17 lakh tonne was traded on NCDEX a negligible amount of 0.04 lakh tonne was traded in MCX. During 2005-06 the quantity traded of this spice on national exchanges was much larger (24.85 lakh tonnes) compare to the previous year. While NCDEX accounted for around 99 per cent of the trade in national exchanges, MCX accounted for around just 1 per cent. During the year 2006-07, the total trade of chilli on national commodity exchanges further improved, which stood at 78.55 lakh tonnes, while NCDEX had a share of around 98 per cent. In this, MCX had a share of around 2 per cent.

Jeera, another spice crop considered in this study was like chilli, unlisted in NMCE during 2004-05 and 2005-06. Further, it was not traded in NMCE during 2006-07, though it was listed. The total quantity traded of this spice in national exchanges was 3.5 lakh tonnes during 2004-05, with MCX having a share of around 7 per cent and NCDEX having a share of around 93 per cent. For the year 2005-06, the quantity traded of jeera was 18.61 lakh tonnes. This included 2.58 lakh tonnes traded in MCX (around 14 per cent) and 16 lakh tonnes traded in NCDEX (around 86 per cent). During 2006-07 , there was considerably increase in the volume of future trade in jeera on the national commodity exchanges of the total quantity 69.49 lakh tonnes, 3.39 lakh tonnes was traded on MCX and 66.1 lakh tonne was traded on NCDEX.

Table 4.5 displays quantity traded of plantation crop on the three national exchanges. Rubber was traded on each national commodity exchanges during 2004-05 and 2005-06. Its total trade was 9.49 lakh tonnes during 2004-05. While, MCX and NCDEX evidenced similar quantities of trade (0.27 lakh tonne and 0.24 lakh tonne respectively), NMCE had distinctly larger quantity of trade, which stood at 8.99 lakh tonnes, the total quantity traded during this year in national commodity exchanges was the order of 9.49 lakh tonnes. For the year 2005-06, the total volume of futures trade in rubber was 11.46 lakh tonnes, while NMCE had the larger share of around 84 per cent in this, NCDEX had the smallest share of mere 1 per cent. MCX with total trade of 1.67 lakh tonnes accounted for around 15 per cent of the total trade in the national commodity exchanges. Rubber was not traded on NCDEX during 2006-07. Its total trade on MCX and NMCE amounted to 14.61 lakh tonnes during 2006-07. While the trade on NMCE was of the order of 13.84 lakh tonnes (around 95 per cent of the total trade), the trade on MCX was meager at 0.78 lakh tonne (around 5 per cent).

Table 4.4 Volumes of spices traded in national level commodity exchanges

(Lakh Tonnes)

Commodities	Volume of Quantity traded in the year											
	2004-05				2005-06				2006-07			
	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL
Pepper	0.22 (1.35)	3.55 (21.91)	12.43 (76.75)	16.20 (100)	0.88 (4.78)	7.71 (41.96)	9.79 (53.26)	18.38 (100)	0.54 (0.64)	63.41 (75.45)	20.09 (23.91)	84.04 (100)
Chilli	0.04 (17.90)	0.17 (82.10)	NL	0.20 (100)	0.33 (1.31)	24.52 (98.69)	NL	24.85 (100)	1.33 (1.69)	77.22 (98.31)	NT	78.55 (100)
Jeera	0.24 (6.72)	3.26 (93.28)	NL	3.50 (100)	2.58 (13.85)	16.03 (86.15)	NL	18.61 (100)	3.39 (4.87)	66.10 (95.13)	NT	69.49 (100)

NL: Not Listed; NT: Not Traded

* Figures in parenthesis show percentage of the total quantity traded

Table 4.5 Volumes of plantation crops traded in national level commodity exchanges

(Lakh Tonnes)

Commodities	Volume of Quantity traded in the year											
	2004-05				2005-06				2006-07			
	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL	MCX	NCDEX	NMCE	TOTAL
Rubber	0.27 (2.83)	0.24 (2.52)	8.99 (94.64)	9.49 (100)	1.67 (14.53)	0.12 (1.06)	9.67 (84.40)	11.46 (100)	0.78 (5.32)	NT	13.84 (94.68)	14.61 (100)
Coffee	NL	NT	NT	NT	NL	0.01 (0.43)	2.57 (99.57)	2.58 (100)	0.53 (97.80)	NT	0.01 (2.20)	0.54 (100)
Cashew	0.01 (100)	NT	NL	0.01 (100)	0.05 (65.96)	0.03 (34.04)	NL	0.08 (100)	0.08 (99.66)	NT	NL	0.08 (100)

NL: Not Listed; NT: Not Traded

* Figures in parenthesis show percentage of the total quantity traded

Coffee, another plantation crop considered in this study was not listed on MCX during 2004-05 and hence not traded. It was however, listed on NCDEX and NMCE during the year, but not traded. During the year 2005-06 also this plantation crop was not listed in MCX. As such coffee was traded only on NCDEX and NMCE. The volume of trade in there two exchanges was just 0.01 lakh tonne in NCDEX and 2.57 lakh tonnes in NMCE. For the year 2006-07 the total volume of trade on MCX and NMCE was 0.54 lakh tonne. The share of MCX and NMCE in the total was around 98 per cent and 2 per cent respectively.

In the year 2004-05, the future trade in cashew occurred only in MCX and the quantity traded was just 0.01 lakh tonne. For the year 2005-06, cashew was traded both in MCX and NCDEX, which accounted for around 66 per cent and 34per cent respectively of the total quantity of 0.08 lakh tonne traded in national commodity exchanges. During the year 2006-07, cashew was traded only on MCX and volume of trade was very insignificant, that is just 0.08 lakh tonne.

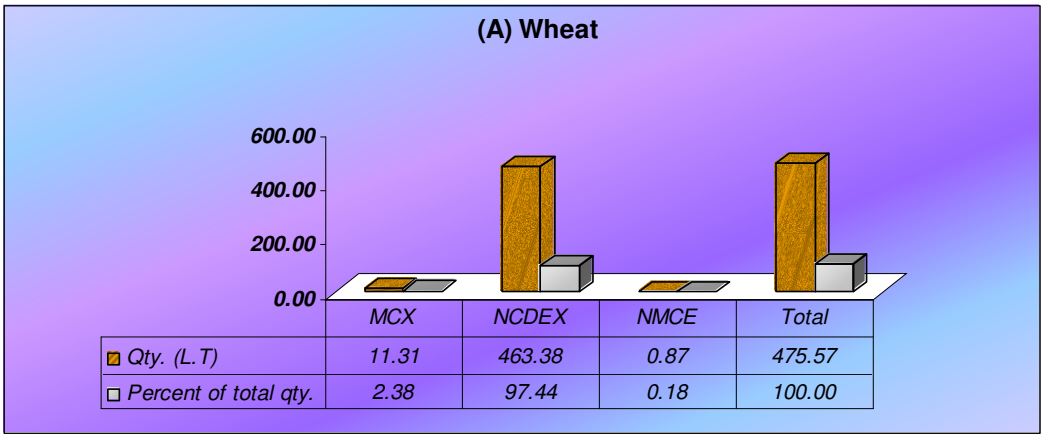
Fig. 2 to 6 show diagrammatically 3-year overall shares of MCX, NCDEX and NMCE in the 3-year total quantities of cereals, pulses, oils, spices and plantation crops traded on the national commodity exchanges during the period 2004-05 to 2006-07. Specifically fig.2 displays share of national commodity exchanges in the total volume of futures trade in cereals over the above the period of three years. As the fig shows the total quantity of wheat traded in the national commodity exchanges during 2004-05 to 2006-07 was around 476 lakh tonnes. In this, overall share of MCX, NCDEX and NMCE were around 2.4 per cent, 97.4 per cent and 2 per cent respectively. Similarly, in the three year total trade of maize NCDEX had a share of around 97.5 per cent while MCX accounted for around 2.5 per cent. With respect to rice, it was MCX which had a maximum share of around 57.6 per cent in the total quantity traded during the three years.

It is clear from fig.3 that the overall major share in the total urad trade and channa trade in the national commodity exchanges during 2004-05 to 2006-07 was that of NCDEX around 89.8 per cent and 87 per cent respectively. With regards to channa it was MCX which occupied first place in terms of the share in the total quantity traded during three years around 60 per cent.

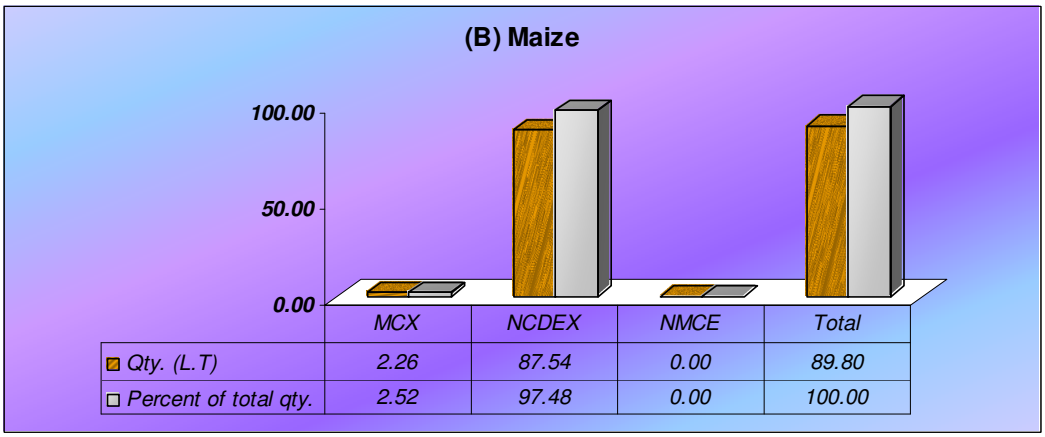
Fig.4 portrays the share of national commodity exchanges in total futures trade in oils conducted during three years. While MCX had maximum share (around 76 per cent) in respect of palm oil, NMCE had maximum share both with respect to refined soya oil (around 58 per cent) and ground nut oil (around 55 percent).

Fig.5 relates to the share of national commodity exchanges in the total futures trade of spices at national commodity exchanges during the three-year under consideration. Specifically, with respect to pepper, NCDEX had the largest share of around 63 per cent and MCX had the least share of around 1.4 per cent in the total trade conducted in three years. Regarding futures trade in chilli, the maximum share of around 98.4 per cent was accounted for by NCDEX while the minimum share of around 1.6 per cent was accounted for by MCX. There was no trading of chilli in NMCE. With regards to jeera, NCDEX had again the maximum share (around 93 per cent) in total futures trade of three years.

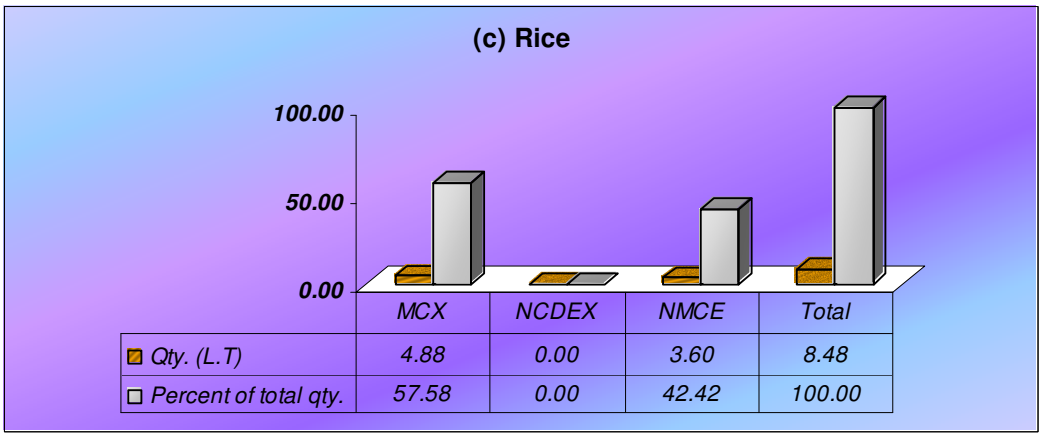
Fig.6 presents the respective shares of MCX, NCDEX and NMCE in the total futures trade of plantation crops. In respect of total futures trade in rubber during the period 2004-05 to 2006-07, the share of NMCE was maximum (around 91 per cent), while the share of NCDEX was minimum (around one per cent). Regarding coffee it was NMCE again accounted for a share of around 82.6 per cent in the total trade of three years. The share of MCX and NCDEX were around 17 per cent and 0.4 per cent respectively. Regarding the total futures trade in cashew, MCX had a huge share of around 84 per cent while the remaining share was that of NCDEX entirely.



	MCX	NCDEX	NMCE	Total
Qty. (L.T)	11.31	463.38	0.87	475.57
Percent of total qty.	2.38	97.44	0.18	100.00



	MCX	NCDEX	NMCE	Total
Qty. (L.T)	2.26	87.54	0.00	89.80
Percent of total qty.	2.52	97.48	0.00	100.00



	MCX	NCDEX	NMCE	Total
Qty. (L.T)	4.88	0.00	3.60	8.48
Percent of total qty.	57.58	0.00	42.42	100.00

Fig.2: Share of National Commodity Exchanges in Futures Trade of Cereals at National Level (2004-05 to 2006-07)

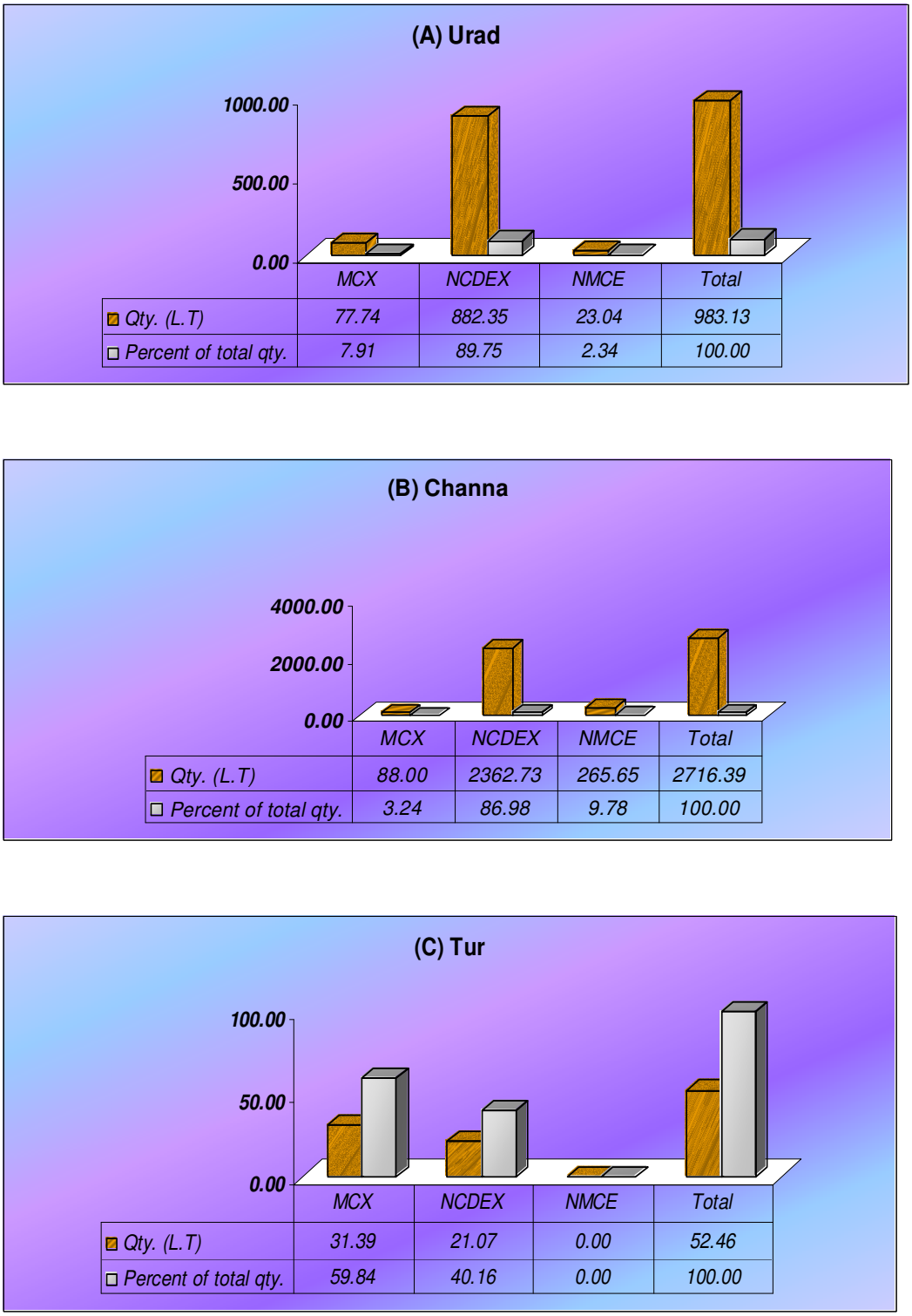
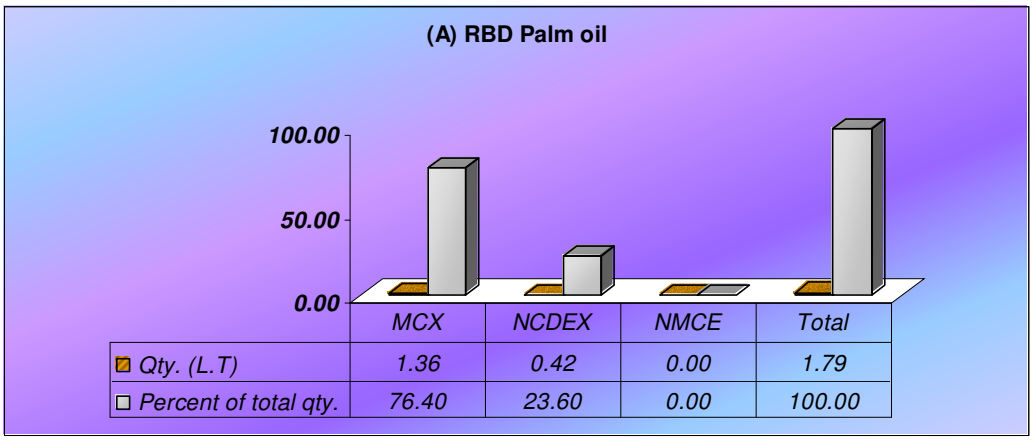
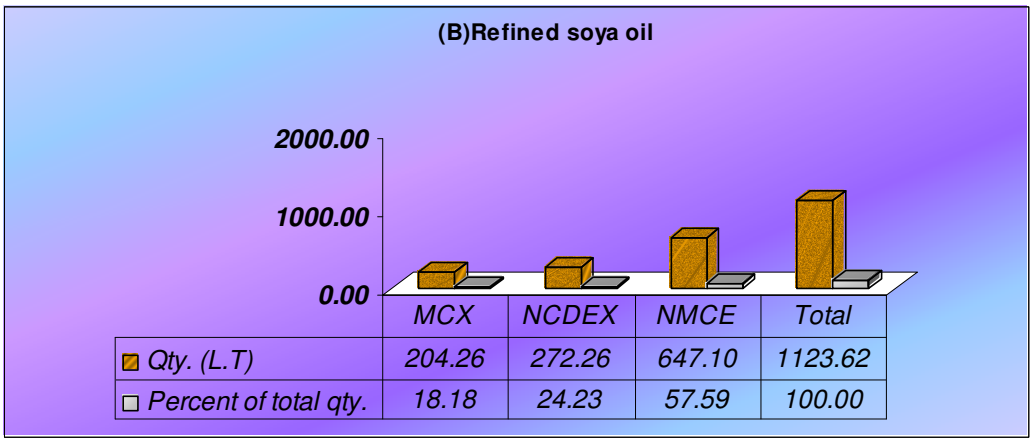


Fig.3: Share of National Commodity Exchanges in Futures Trade of Pulses at National level (2004-05 to 2006-07)





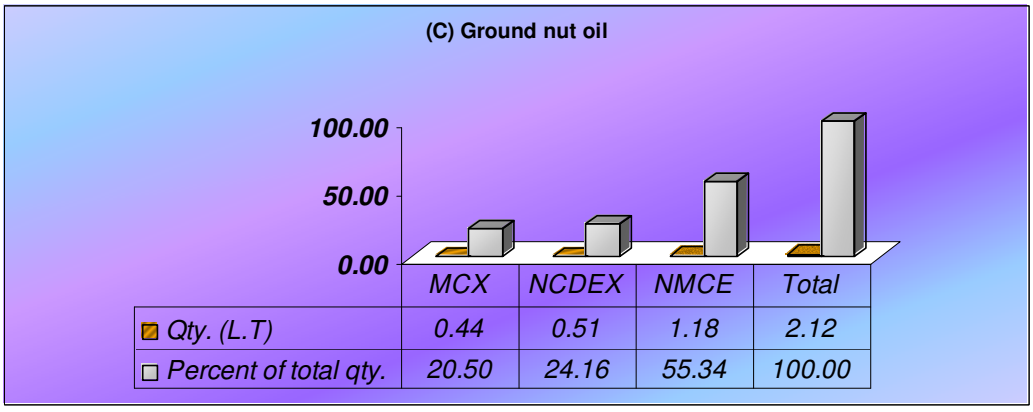
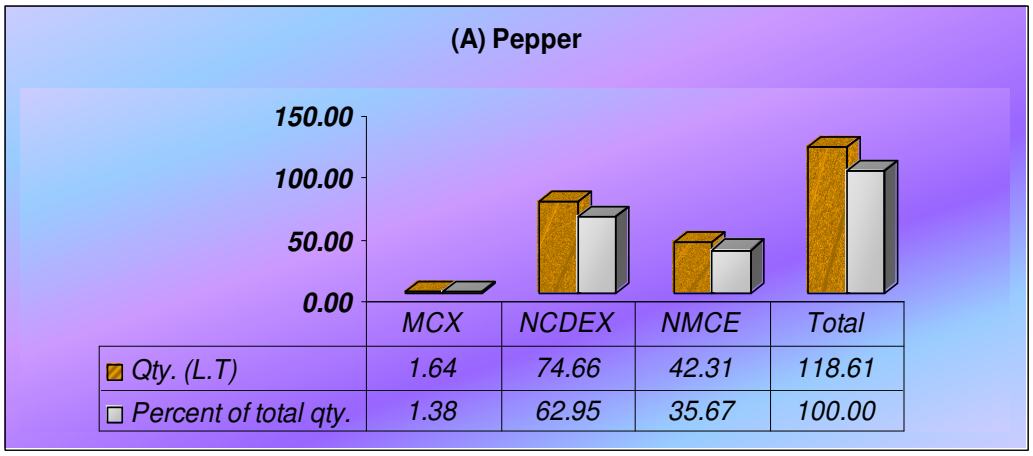
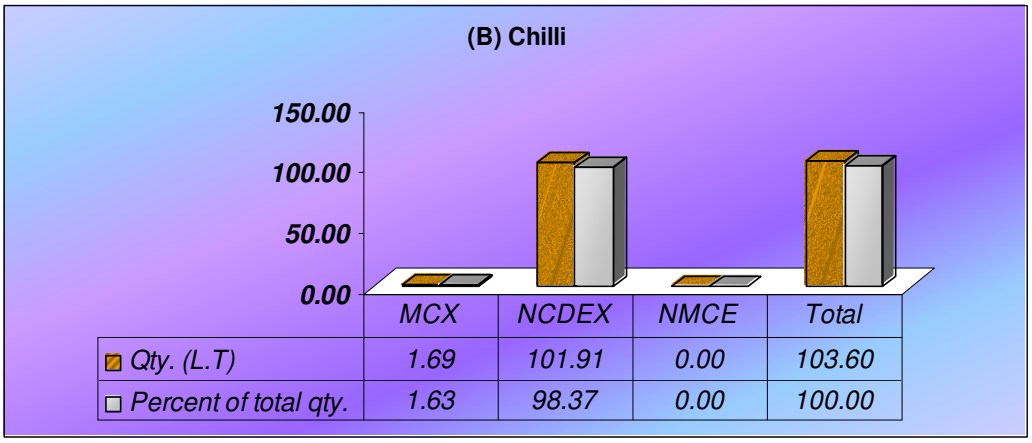


Fig.4: Share of National Commodity Exchanges in Futures Trade of Oils at National Level(2004-05 to 2006-07)





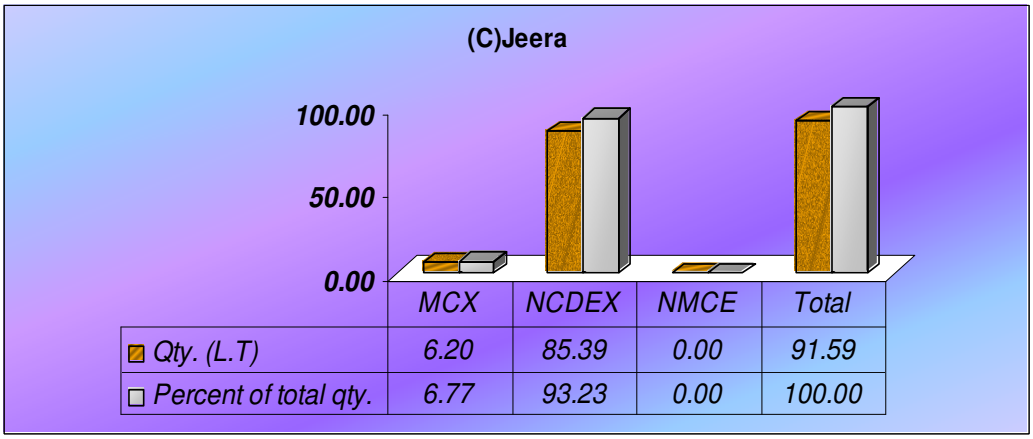
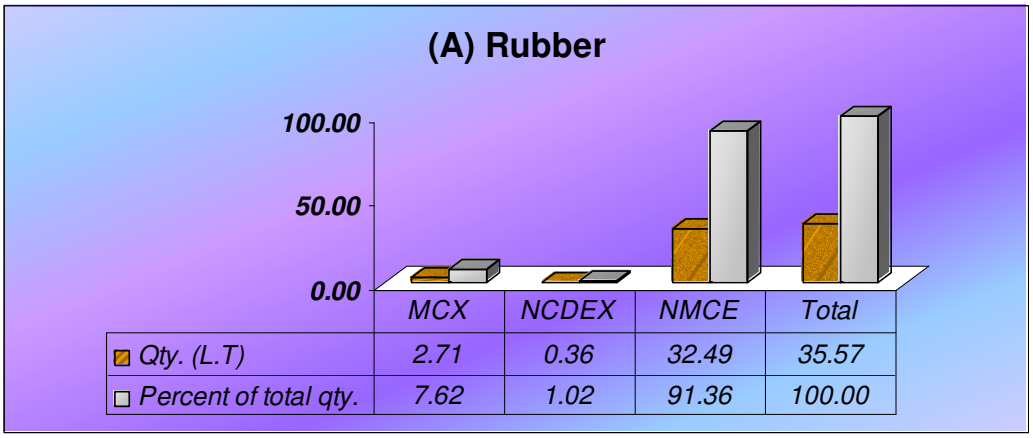
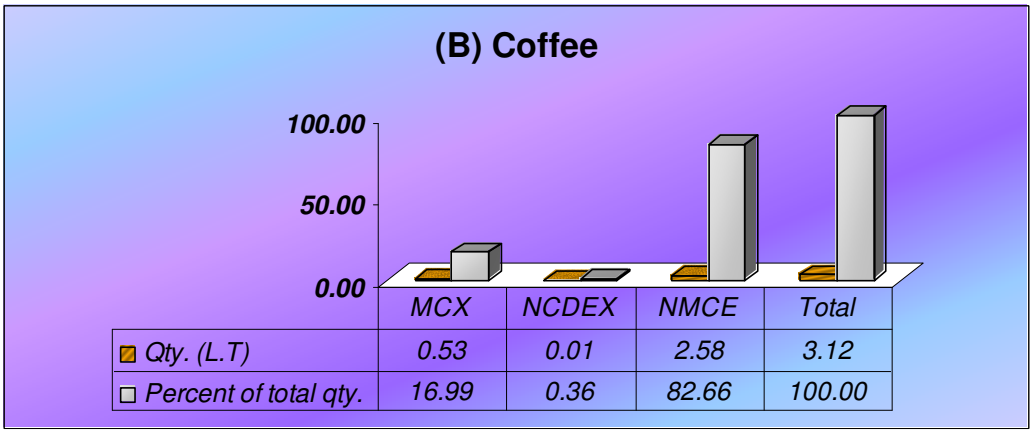


Fig.5: Share of National Commodity Exchanges in Futures Trade of Species at National Level (2004-05 to 2006-07)





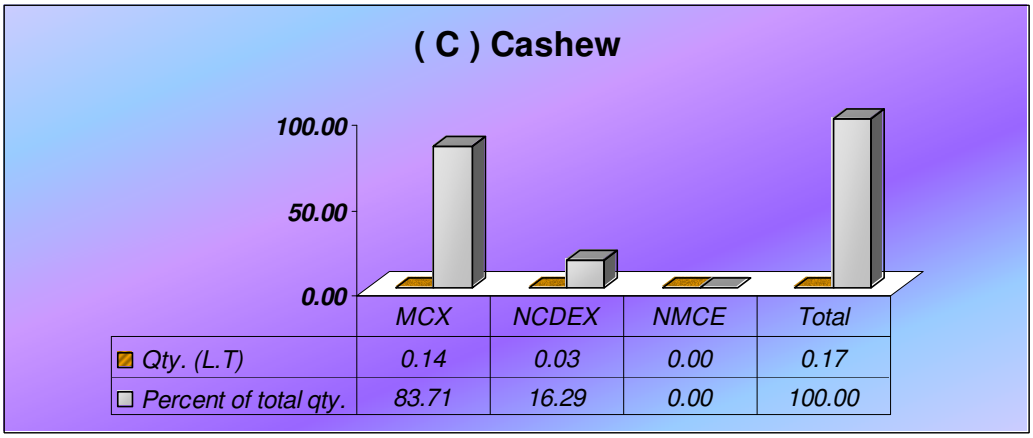


Fig.6: Share of National Commodity Exchanges in Futures Trade of Plantation crops at National level (2004-05 to 2006-07)

4.3 Integration of Spot and Futures Market for Agricultural Commodities

Spatial market integration refers to a situation in which prices of a commodity in separated markets move together and price signals and information are transmitted smoothly across the market. Hence, spatial market information may be evaluated in terms of the relationship between the prices of spatially separated markets and spatial price behavior in the markets may be used as a measure of overall market performance.

The present study empirically evaluated integration of futures and spot market. The present study employed cointegration technique to examine whether the futures market is integrated with the spot market. This is studied by testing whether the law of one price (LOP) holds in these markets.

For cointegration analysis, at first, the order of integration of the price series is to be determined. The number of times a series has to be differenced before it becomes stationary is itself the order of integration. A series, which has to be differenced once to become stationary, has an order of integration one, denoted as I (1).

The results of Dicky- fuller test for stationarity of price series in spot and futures markets are presented in table 4.6 with respect to Channa, stationarity of spot and futures price series was attained at the same order of differencing for NCDEX (order of differencing = 2). The spot and futures price series of channa attained Stationarity at different orders of differencing with respect to NMCE and MCX. With regards to maize, the Stationarity of spot and futures price series was attained at the same order of differencing for MCX (order of differencing = 1). For NCDEX, the spot price series of maize was integrated of order (I) and futures price series was integrated of order I (2).Regarding refined soya oil, the order of differencing required for the Stationarity of both spot and futures price series in NMCE was 1 alike. In other words, spot price series were integrated of the order I (1). Similarly, for NCDEX also, spot and future price series had to be differenced twice before attaining stationarity. In other words, refined soya oil prices were integrated of order I (2). For MCX, However, the two price series of soya oil had to be differenced different number of times for attaining stationarity. In other words, spot and futures prices were integrated at different orders.

From the above results, the cointegration of spot and futures markets could be established only for four cases, which showed same order of integration for both spot and futures prices. These included and NCDEX futures markets for channa; spot and MCX futures markets for maize; spot and NMCE futures market for soya oil and spot and NCDEX futures markets for soya oil.

The cointegration between spot and futures markets for the remaining four cases in table 4.6 could not be established based on Dicky-fuller test for stationarity for these cases, Dicky fuller test was conducted to test for the stationarity of the residuals to examine the existence of cointegration .The results of this test are presented in table 4.7 As the table reveals, for none of the cases ADF value was greater than the critical value this implied that there was no cointegration spot and NMCE futures market and spot and MCX futures market for channa; spot and MCX futures market for refined soya oil, and spot and NCDEX futures market for maize.

4.4 Problems Faced by the Members of the Exchanges and their Clients

4.4.1 Problems faced by the Member of the National Level Commodity Exchanges

The present study analysed the problem faced by the registered members of national commodity exchanges as well as clients currently are presented in Table 4.8, a total of fifteen members of commodity exchanges were randomly selected to ascertain the problems they faced.

Table 4.6 Dickey-Fuller test for stationarity of the price series of Futures and Spot market

Commodity	Markets	Order of integration	ADF value
Channa	NMCE Futures market	I(1)	-3.00
	Spot market	I(3)	-3.6
Refined soya oil	NMCE Futures market	I(1)	-2.89
	Spot market	I(1)	-3.33
Channa	MCX Futures market	I(2)	-3.45
	Spot market	I(3)	-3.31
Maize	MCX Futures market	I(1)	-5.08
	Spot market	I(1)	-3.23
Refined soya oil	MCX Futures market	I(1)	-2.67
	Spot market	I(2)	-3.35
Channa	NCDEX Futures market	I(2)	-4.2
	Spot market	I(2)	-2.85
Maize	NCDEX Futures market	I(2)	-2.68
	Spot market	I(1)	-3.03
Refined soya oil	NCDEX Futures market	I(2)	-3.80
	Spot market	I(2)	-3.02

Note: 1. Maize was not listed on NMCE
Note: 2. Assy critical value @ 10% for the above cases was -2.57

Table 4.7 Dickey-fuller test for Cointegration of the price series of Futures and Spot market

Commodity	Markets	ADF value
Channa	NMCE Futures and spot markets	-1.62
Channa	MCX Futures and spot markets	-2.38
Refined soya oil	MCX Futures and spot markets	-2.63
Maize	NCDEX Futures and spot markets	-2.2

Table 4.8 Problems faced by the Member of the National Level Commodity Exchanges

(n=15)

Sl No	Problems	Percentage
1	Lack of technical staff in back office	66.67
2	Lack of technical staff in front office	60.00
3	Price volatility	53.33
4	Severe competition	46.67
5	Ignorance and attitudes of clients	40.00
6	Surveillances Problems	33.33
7	Inadequate infrastructure facility	26.67
8	Hurdles in clearing, settlement and delivery	22.22
9	Investment requirements	13.33
10	Account registration procedure	8.89

As many as 68 per cent of the members expressed that the major problem they were facing was that of lack of technical staff in back office, lack of technical staff in front office was a problem faced by around 60 per cent of the members. The next most severe problem experienced by the members (by around 53 per cent) was that of difficulties in predicting future market trends. While severe competition from fellow members constituted a problem for around 47 per cent of the members, clients' ignorance and attitudes posed problem for around 40 per cent respondents. One third of the total respondents felt that they were facing a problem of surveillance. The other problem faced included inadequate infrastructure facility, hurdles in clearing, settlement and delivery. Margin money requirements and registration procedure, which were experienced by around 27 per cent, 22 per cent, 13per cent and 9 per cent respondents respectively.

4.4.2 Problems faced by the clients while commodity futures trading

For the Present study a random sample of 30 clients of the national commodity exchanges were interviewed to study the problems they experienced in their futures trading operation. Results are in table 4.9. According to a large number of clients (around 77 per cent), difficulties in predicting future market trends was the major problem, followed by problems relating to taxation accounted to around 56 per cent. Around 44 per cent of the clients expressed that they faced problems in futures trading due to the lack of knowledge about this marketing concept. Lack of infrastructure facility at brokerage house and problems with back office were the constraints faced by the 40 per cent of the clients each.

Table 4.9 Problems faced by the clients while commodity futures trading

(n=30)

Sl no	Problems	Percentage
1	Difficulties in predicting future market trends	76.67
2	Taxation	55.56
3	lack of knowledge about commodity future trading	43.81
4	Lack of Infrastructure facility at brokerage houses	40.00
5	Problems with Back office	40.00
6	Margin money requirements	36.67
7	Problems with dealers	36.67
8	Problems with front office	35.83
9	Clearing, Delivery and Settlement	13.33
10	Account registration procedure	12.22

Approximately 37 per cent of the clients each reported that they had problems in meeting margin money requirements and while dealing with dealers. The other problem faced by the clients included difficulties at front office around 36 per cent, clearing, delivery and settlement problems around 13 per cent and account registration procedure around 12 per cent.

V. DISCUSSION

The results of the following investigation in the previous chapter are discussed in this chapter under the following headings.

5.1 Organizational Structure of Commodity Exchanges in India
5.2 Share of National Commodity Exchanges in the Agricultural Produce Traded in Futures Market.
5.3 Integration of Spot and Futures Market for Agricultural Commodities
5.4 Problems Faced by the Members of the Exchanges and their Clients

5.1 Organizational Structure of Commodity Exchanges in India

Organizational structure involves arrangement of activities and assignments of personnel to these activities in order to achieve the organizational goals. From a managerial point of view the main concerns are ensuring effective communication and coordination. It is a way by which various parts of an organization are tied together in a coordinated manner, and it illustrates the various relationships among various levels of the hierarchy within the organization as well as horizontal relationships among various aspects of the organizational operations. A well planned organization structure results in better use of resources.

The entire futures market in the country come under the purview of ministry of consumer affaires, Government of India. The Forward Market Commission is a statutory nodal authority which is in charge of overall administration of futures market in the country. With headquarters in Mumbai. The commission comprises four members of whom one acts as the chairman. The commission also has a regional office at Calcutta.

The Forward Market Commission has three important division they include commodity division, enforcement division and administration division. The commodity division interested with the regulation of forward and futures market in the country. This division also prepares several analytical reports pertaining to demand, supply and price condition of the commodity covered under the futures market in the country. The enforcement division helps the law enforcement authority in the state and union territories in enforcing the presence of the act. Further, this division keeps close surveillance on the illegal activities in the futures market. This division also conducts training courses for police officers, public prosecutors and conduct seminars for judicial magistrates. The third wing of Forward Market Commission, namely, the administration division deals with the staffing matters of the commission.

The futures market in the country operating under the administrative control of Forward Market Commission are broadly categorized into national commodity exchanges and regional commodity exchanges .National commodity exchanges include national commodity derivative exchange (NCDEX), Multi commodity exchange (MCX) and National multi commodity exchange (NMCE). In these national exchanges the agricultural commodities are traded not only in large numbers but also in large volume. The other group of exchanges namely, regional commodity exchanges include 21 regional exchanges.

The 21 regional exchanges are

1 Rajdhani Oils and Oilseeds Exchange Ltd. , Delhi
2 Ahmedabad Commodity Exchange Ltd
3 Bhatinda Om & Oil Exchange Ltd., Batinda.
4 Bikaner Commodity Exchange Ltd.,Bikaner
5 e-Commodities Ltd,New Delhi
6 Esugarindia Limited, Mumbai
7 First Commodity Exchange of India Ltd, Kochin
8 Haryana Commodities Ltd., Hissar
9 India Pepper & Spice Trade Association.Kochi
10 National Board of Trade. Indore
11 Surendranagar Cotton oil & Oilseeds Association Ltd

12 The Bombay Commodity Exchange Ltd.Mumbai
13 The Bullion Association Limited,Jaipur
14 The Central India Commercial Exchange Ltd, Gwaliar
15 The Chamber Of Commerce.,Hapur
16 The East India Cotton Association Mumbai
17 The East India Jute & Hessian Exchange Ltd,Culcutta
18 The Meerut Agro Commodities Exchange Co. Ltd., Meerut
19 The Rajkot Seeds oil & Bullion Merchants` Association Ltd
20 The Spices and Oilseeds Exchange Ltd,Sangli
21 Vijay Beopar Chamber Ltd.,Muzaffarnagar

The regional commodity exchanges are distinct from national commodity exchange in that the former handle only those agricultural commodities which are important at the regional level. Further, the volume of transaction also is small in the regional commodity exchanges.

5.2 Share of National Commodity Exchanges in the Agricultural Produce Traded in Futures Market

With regard to the share of cereals namely, wheat and maize the share of NCDEX far exceeded the shares of other two exchanges in the total quantity traded of these two commodities in the national exchanges during all the three-year considered in this study.

While the share of NCDEX in respect of wheat was around 97 per cent during each year, its share in respect of maize was around 92 per cent in 2004-05 and more than 97 per cent in each of the remaining two years (see table 4.1). In respect of the another cereal considered in this study namely, rice, NCDEX did not have any trading in any year. While NMCE had a share of around 92 per cent in 2004-05, MCX accounted for the entire trade in rice in the remaining two years.

With respect to three-year total trade of these cereals in the national exchanges (see fig.2), it could be seen that the over all share of NCDEX was as high as 97 per cent for wheat as well as maize. However, in the three-year total trade of rice the share of MCX was maximum around (56 per cent) followed by NMCE (around 42 per cent).

With regard to pulses also the NCDEX had a major share in the total quantity traded on the three national exchanges. For instance, in respect of urad the share of NCDEX was more than 94 per cent for the year 2004-05 to 2005-06 (see table4.2). Its share in the year 2006-07 also was only around 52 per cent though it was still highest among the three exchanges. Regarding channa also, NCDEX had a major share of more than 95 per cent for 2004-05 and 2005-06. For the year 2006-07, though the share of NCDEX continued to be the highest, it was only around 78 per cent. As for tur, MCX accounted for the entire period on National Commodity Exchange in 2004-05 and 2005-06. However, during 2006-07 NCDEX also witnessed trade with a share of around 55 per cent leaving the remaining share of 45 per cent to MCX.

In the three-year period total volume of trade of pulses in the national commodity exchange, the share of NCDEX was around 90 per cent for urad and 87 per cent for channa (see fig.3). However, in respect of tur the maximum over all share in the three year total was that of MCX (60 per cent) followed by NCDEX 40 per cent.

With regard to the futures trade in oils in the National commodity exchange, MCX topped among the three exchanges in terms of its share in turn over of RBD palm oil during each of the three years. Its share were around 73 per cent in 2004-05, around 66 per cent in 2005-06 and 100 per cent in 2006-07. Regarding refined soya oil, while NMCE had a major share of around 68 per cent during 2004-05 and 2006-07, NCDEX topped among the three national exchanges with a share of around 52 per cent. With respect to ground nut oil trade different national exchanges topped in the different year, in their shares in the total trade on national exchanges. Specifically, NMCE topped in the year 2004-05 with a share of 93 per

cent NCDEX topped in the year 2005-06 with a share of 100 per cent and finally MCX topped with a share of around 81 per cent in 2006-07.

In the three-year total futures transaction, the share of MCX was maximum (around 76 per cent) in respect of RBD palm oil; the share of NMCE was maximum (more than 55 per cent) in respect of refined soya oil and ground nut oil.

With regard to the futures trade in spices on the national exchanges, the share of NCDEX far exceeded the share of other two national exchanges in respect of chilli and jeera, the trend being some what different in respect of pepper. Specifically, with regard to pepper, NMCE had a major share of around 77 per cent for the year 2004-05 and around 53 per cent for the year 2005-06 in total quantity traded on the three national exchanges. However, for the year 2006-07, it was NCDEX, which had a major share of around 75 per cent followed by NMCE with a share of around 24 per cent. For chilli and jeera, NCDEX had outstanding shares. In the case of chilli, for example, NCDEX accounted for more than 98 per cent share in 2005-06 and 2006-07 and more than 82 per cent share in the year 2004-05. With regards to jeera, the share of NCDEX was again high in the vicinity of around 95 per cent for 2004-05 and 2006-07. Its share for the year 2005-06 was around 86 per cent.

From the view point of the share in the three -year total trade in spices, it was singularly NCDEX, which had maximum share. While its share was around 63 per cent for pepper, it was as high as around 98 per cent for chilli and 93 per cent for jeera.

With regard to the futures trade of plantation crops it was NMCE which had a maximum share in the total quantity traded of rubber on national exchanges in the year 2004-05 to 2006-07. The share of NMCE in respect of this crop was more than 94 per cent in 2004-05 and 2006-07, while it was around 84 per cent in the year 2005-06. In each of the three years, MCX ranked next to NMCE in respect of rubber. Regarding coffee there was no trade in any of the three exchanges, while coffee was not listed on MCX during this year, it was not active on the other two exchanges. For the year 2005-06 coffee trade was almost entirely accounted for NMCE (more than 99 per cent). With regards to 2006-07, while MCX accounted for around 98 per cent trade, NMCE accounted fort the best. In case of cashew, MCX accounted for full trade on national exchanges in 2004-05 and over all full trade in the year 2006-07, in the year 2005-06 also MCX had a maximum share of around 66 per cent the rest being contributed by NCDEX.

From the view point of three year total trade on the national exchanges, the share of NMCE was maximum both in respect of rubber and coffee (around 91 per cent and 83 per cent share respectively). As for cashew, it was MCX that accounted for maximum transaction (around 84 per cent).

5.3 Integration of Spot and Futures Market for Agricultural Commodities

In the present study co integration technique was employed to determine the integration of spot and futures market with respect to three commodities namely, maize among cereals, channa among pulses, and refined soya oil among oils. The results of cointegration analysis varied across commodities and commodity exchanges. In the case of channa the order if integration of futures and spot price series were different to with respect to NMCE and MCX. However, with respect to NCDEX the order of integration of futures price series was the same as the order of integration of spot market price series [I(2)]. The ADF values were greater than the critical values for there price series. Thus, the results indicated that the spot market and NCDEX futures market for channa were integrated. In other words there was a co-movement of channa prices in spot and futures market. Similarly, in the case of maize, the results revealed integration of spot market and MCX futures market for maize. In this case both the price series were integrated of order I(1). Further, ADF values were larger than critical values. The other two national exchanges were not integrated with spot market as for as maize was concerned. With regards to refined soya oil, it was clear from the results that soya oil spot market was integrated with both NMCE and NCDEX futures market. The MCX

futures market was not integrated with spot market for refined soya oil. In all, integration between spot and futures market was evidenced in a total of four cases out of the nine cases examined [Table 4.6 (a)]. Thus, the results implied that in the four cases of spot and future market transaction, there existed long run equilibrium between spot and future price series. As such, one could predict the movement in one series based on the movement in the other. Lack of co-movement between spot and futures market could be caused by violent fluctuations in the prices. These fluctuation could be the result of changing supply and demand condition of both domestic and international varying production condition, margin money requirements on future market and unexplained market sentiments. Thus, exploring the causes for non-existence of integration between spot and futures markets. In five cases could have been identified in the in the present study itself.

5.4 Problems Faced by the Members of the Exchanges and their Clients

5.4.1 Problems faced by the Member of the National Level Commodity Exchanges

As table 4.8 reveled, around 67 per cent of members expressed that they has problem of deficient technical staff in back office. Back office concerned with the issues like receiving the orders, executing the orders, issuing contract confirmation list etc, which are very important part of the working of brokerage house. As indicated by a majority of the members, non-availability of well trained staff has been a major obstacle in the smooth working of this office. Front office of the brokerage house is involved in the extension activities to reach the ultimate clients convenience them about the importance of participation in commodity exchanges and finally linking them to futures market. As around 60 per cent of the members indicated, this office also suffered from lack of technical staff. Another problem which was experienced by more than 50 per cent of the members related to difficulties in predicting future market trends in futures markets. In other words these members were of the opinion that unexpected volatility in price movements prevented them from guiding the clients with accurate information, particularly price information with respect to futures market. Almost 50 per cent of the members (47 per cent) were concerned about severe competition from other brokerage houses involved in futures market business. For around 40 per cent of the respondent's clients' ignorance and their attitudes were a matter of concern. In particular, as these respondents pointed out, there were clients who took the brokers into task if the guidance provided by the latter related to the trends in futures market went wrong. So this kind of attitude in the clients could demoralize the brokers as expressed by the above 40 per cent respondents. Around one third of the respondents indicated that they faced the problem with respect to surveillance. Brokers need to maintain certain amount of margin money collected from the clients. Price movements in the futures market may require the broker to collect additional amount of margin money from the clients in order to keep the amount of margin money intact. However, as the above per cent of respondents indicated, they had tough time in collecting such additional amounts from the clients whenever clients, suffered loss on their future transaction due to market movements. The problem of inadequate infrastructure facility was a concern for around 27 per cent member. The problems which were pointed out by less than 25 per cent members included hurdles in clear settlement and delivery, investment requirements and intricacies in account registration.

5.4.2 Problems Faced by the clients while Commodity Futures Trading

Among the problems faced by the clients price volatility was the most significant one. As many as 77 per cent of the clients, expressed that they faced this problem (see table 4.9). According to this, violent price fluctuation came in their way of making sound decision and realizing profit from the operation in the futures market. Around 56 per cent of the respondents had difficulties with respect to government taxation; taxes like income tax, service tax and sales tax imposed on them by the government were too heavy to bear. Around 44 per cent of the respondents, opined that they missed the basic knowledge about the operation of futures market. Insufficient infrastructure at brokerage however was a

problem for around 40 per cent clients. As many as 40 per cent of the respondents experienced problems in the working of back office in the brokerage house. However, around 36 per cent respondents experienced problem with front office. As many as 37 per cent of the respondents stated that they had problem in meeting the margin money requirements. An equal proportion of the respondent (around 37 per cent), mentioned that they had problems with dealers. The problems with clear delivery and settlements and the problems with account registration procedure were experienced by less than 15per cent respondents.

VI. SUMMARY AND POLICY IMPLICATIONS

India is traditionally an agrarian economy, therefore, instability of commodity prices has always been a major concern of the producers as well as the consumers. The concept of organized trading in commodities evolved in the middle of the 19th century.How ever, commodity futures trading in India is almost as old as that in the United States. During 1940s, trading in forwards and futures became difficult as a result of price controls. Major policy decisions taken after independence, mainly because of the scarcity situation then prevailing adversely affected the development of futures and forwards markets in the country. In 1952, the forward contract regulation act was passed which controls all transferable forward and futures contracts. This again put restriction on futures trading. During the 1960s and 70s, the Government of India suspended trading in several commodities like cotton, jute, edible oilseeds, etc. As the government felt that these markets were increasing the prices of commodities. After the ban on futures trading in agricultural commodities were removed in the seventies, the government appointed two committees to study the commodity futures sector, that is, *the Dantwala Committee in 1966, and the Khusro committee in 1980*, which recommended the re-introduction of futures trading in major commodities. Finally, the government brought back forward trading in agricultural commodities in the early 1980's. However, even after a decade, none of the markets achieved the levels of liquidity that existed prior to the ban on commodity futures trading.

Currently, there are three major National Level Commodity Exchanges and 21 regional exchanges operating in India. Future prospect of commodity futures trading in India is upbeat. During the year 2005-06, the total value of commodity futures trade was Rs. 21.34 lakh crore as compared to Rs. 5.71 lakh crore during 2004-05. The volume of trade has also gone up to 6685 lakh tonnes during 2005-06 as compared to 1942 lakh tonnes during 2004-05. In the present era, which is witnessing increased dealings in knowledge of the agricultural produce on commodity exchanges, the role of national commodity exchanges assumes importance. Further, a study of relative importance of a range of agricultural commodities in futures trading and the volume of their trade will throw light on the likely pattern of futures trading in the country in the days to come. In addition, it would also be informative to investigate the type of relationship between spot and futures trading in facing competition.

The broad objectives of the present study are:

1. To study the organizational set up and the mode of working of the National Level Commodity Exchanges in India
2. To analyze the share of agricultural commodities traded across National Level Commodity Exchanges in India.
3. To study the relationship between spot and futures price of the selected agricultural commodities traded in the National Level commodity Exchanges.
4. To study the handicaps in futures trading in the country perceived by the members/brokerage houses (hereafter referred to as only "members") and their clients.

The present study was carried out with respect of to all three National Level Commodity Exchanges in India, namely National Multi-Commodity Exchange of India, (NMCE) Ahmedabad, and the other two national Exchanges viz. Multi Commodity Exchange of India Ltd (MCX) Mumbai and National Commodity and Derivatives Exchange Ltd (NCDEX) Mumbai. These exchanges are playing very important role in the trading activities in India.

For the present study, fifteen major agricultural commodities currently traded in the commodity exchanges were selected. Three commodities were randomly selected from among cereals, pulses, oilseeds, spices and plantation crops. They were wheat, maize and rice among cereals; urad, channa and tur among pulses; RBD palm oil, soya oil and ground nut oil among oils; pepper, chilli and jeera among spices, and rubber, cashew and coffee among plantation crops. The above crops were selected based on their volume of trade in respective groups. To analyse the Problems faced by the Members of the Exchanges and their Clients, a total of 15 members having membership of all three National Level Exchanges were selected for the study. Further, two clients of each of the 15 members were also

selected to study the handicaps in futures trading in agricultural commodities both at members and clients' levels.

The tools and techniques employed in the study area were tabular presentation and cointegration technique.

FINDINGS OF THE STUDY

The important findings of the study and the conclusions drawn there form are presented below.

1. The share of NCDEX in respect of wheat was around 97 per cent during each year, its share in respect of maize was around 92 per cent in 2004-05 and more than 97 per cent in each of the remaining two years.
2. In the three-year total trade of rice the share of MCX was maximum (56 per cent) followed by NMCE (around 42 per cent).
3. For urad, the share of NCDEX was more than 94 per cent for the year 2004-05 to 2005-06. Its share in the year 2006-07 was only around 52 per cent though it was still highest among the three exchanges.
4. For channa, NCDEX had a major share of more than 95 per cent for 2004-05 and 2005-06. For the year 2006-07, though the share of NCDEX continued to be the highest, it was only around 78 per cent.
5. With regard to the futures trade in oils in the National commodity exchange, MCX topped among the three exchanges in terms of its share in turn over of RBD palm oil during each of the three year. Its share were around 73 per cent in 2004-05, around 66 per cent in 2005-06 and 100 per cent in 2006-07.
6. From the view point of the share in the three -year total trade in spices, it was singularly NCDEX, which had maximum share. While it share was around 63 per cent for pepper, it was as high as around 98 per cent for chilli and 93 per cent for jeera.
7. From the view point of three-year total trade on the national exchanges, the share of NMCE was maximum both in respect of rubber and coffee (around 91 per cent and 83 per cent share respectively). As for cashew, it was MCX that accounted for maximum transaction (around 84 per cent).
8. The results indicated that the spot market and NCDEX futures market for channa were integrated.
9. In the case of maize, the results revealed integration of spot market and MCX futures market.
10. With regards to refined soya oil, it was clear from the results that soya oil spot market was integrated with both NMCE and NCDEX futures market.
11. Around 67 per cent of members expressed that they had problem of deficient technical staff in back office.
12. The problems faced by the client's difficulties in predicting future market trends was the most significant one. As many as 77 per cent of the clients, expressed that they faced this problem.

POLICY IMPLICATIONS

1. A majority of the members faced the problem of lack of trained staff in commodity futures trading as it is of recent origin. Thus, employing agricultural graduates and having them trained by the forward market commission could solve this problem to some extent especially with respect to agricultural commodities.

2. A large proportion of the clients had difficulty in predicting the trends in commodity futures market. This problem can be tackled through the consultancy services offered by the professional agencies.

3. Integration of spot and futures market for certain commodities was observed only with respect to some exchange/s and not all. With spot market price series being the same across the exchanges, this kind of observation implies violent fluctuations in future prices on the exchanges not integrated with spot Markets. As a means to check such wide price fluctuations, measures like collection of special margin money from the clients may be taken up.

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COMMODITY FUTURES TRADING IN INDIA : A ROLE OF NATIONAL COMMODITY EXCHANGES

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ABSTRACT

Commodity futures trading in India is almost as old as that in the United States with India's first organized futures market, Bombay cotton trade association Ltd., being set up 1875.

The objectives of the present study were to examine the organizational set up and the mode of working of the National Exchanges, assess the share of national exchanges in commodities traded on futures market and analyze the relationship between spot and futures price of the selected agricultural commodities. Secondary data were collected from the official web sites of Forward Market Commission (FMC) and National Level Commodity Exchanges in India for the period 2004-05 to 2006-07, while the primary data regarding the handicaps in futures trading were collected through personal interview of members and clients.

The result showed that the share of NCDEX in respect of selected crops among cereals, pulses and spices were around 63 percent to 99 percent during each year in the total quantity handled in national level exchanges. However, in the case of plantations and oil crops NMCE was witnessed major market share except cashew and RBD palmoil respectively. The Augmented Dicky Fuller (ADF) test has been used to check the time series data. Most of the series have been observed to follow the stationary pattern at the first and second difference. Around 67 per cent of members expressed that they has problem of deficient technical stall in back office. The problem faced by the client's difficulties in predicting future market trends was the most significant one. As many as 77 per cent of the clients, expressed that they faced this problem.