



## THE COMPARATIVE STUDY ON THE PERFORMANCE OF NCDEX AND NMCE (WITH SPECIAL REFERENCE TO AGRICULTURAL PRODUCTS)

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### Introduction

**“Howe'er they roam, the world must follow still the plougher's team,  
though toilsome, culture of the ground as noblest toil esteem.”**

This kural speaks of how agriculture is at the helm of all occupations as that sustains 'life'. Human kind cannot survive without farming. Agriculture is the predominant sector when compare to other sectors such as industrial sector, trading, transportation etc., Agricultural products play a vital role in the growth of GDP of Indian economy. Adequate availability of agricultural products leads to reduce the poverty of the nation. In Simple, Agriculture is the backbone of the nation.

Now days, Majority of agricultural Products are traded through Registered Commodity Exchanges which are set up and regulate by FMC. There are 21 Commodity Exchanges in India, 5 are National Exchanges and 16 are Regional Exchanges. 5 national commodity exchanges dominate the commodity futures market i.e. Multi Commodity Exchange Limited (MCX), National Multi Commodity Exchange (NMCE), National Commodity and Derivative Exchange (NCDEX), Indian Commodity Exchange Limited (ICEX) and Commodity and Derivative Exchanges (ACE). It also encourages the farmers to involve the agricultural production with optimum potential interest.

MCX deals in the trading of 40 commodities which include bullions, precious metals, plantations and more, and NCDEX offers 34 commodities of which 23 are Agri-based and the rest include precious metals, energy, polymer, etc. NMCE offers Agri –based products such as castor seed, copra, soybean oil, Mustard Seed, Guar Seed, Chana, pepper, Cardamom, Rubber, Sacking, Raw jute, Coffey Rep Bulk etc., Whereas MCX specializes in bullions and precious metals like gold and silver, NCDEX, NMCE are highly trusted for the trading of Agri-based products like oil and oil seeds, cereals, etc. Even though, NCDEX, NMCE is having a lesser market share than MCX, these commodity exchanges deal with agricultural products predominantly. This reason stimulates the researcher to compare the performance towards agricultural products between NCDX and NMCE. It leads to find which major contribution for Agri-based products between NCDX and NMCE.

### **National Commodity and Derivatives Exchange Limited - NCDEX**

Essentially, NCDEX, located in Mumbai, is a public limited company, which was incorporated on 23rd April 2003. This was done under the Companies Act, 1956. On 9th May 2003, it was given its Certificate for Commencement of Business, and it started its business operations on 15th December 2003.

This exchange is regulated by the Forward Market Commission with regards to the futures trading in commodities. NCDEX is also subjected to certain laws of the country that include:

- Companies Act
- Stamp Act
- Contracts Act
- Forward Commission (Regulation) Act

This is an online multi-commodity exchange that is promoted and professionally managed by the following:

1. ICICI Bank Limited - ICICI Bank
2. Life Insurance Corporation of India – LIC
3. National Bank for Agriculture and Rural Development - NABARD
4. National Stock Exchange of India Limited – NSE
5. Punjab National Bank – PNB
6. CRISIL Limited
7. Indian Farmers Fertilizer Cooperative Limited – IFFCO
8. Canara Bank



### National Multi Commodity Exchange of India Ltd - NMCE

The National Multi-Commodity Exchange of India Limited is regarded as the first de - mutualized online multi-commodity exchange that has been established in the country. It was incorporated on 20th December 2001, but began business operations on 26th November 2002. It is promoting and managing institutions include:

- Central Warehousing Corporation – CWC
- National Agricultural Cooperative Marketing Federation of India Limited – NAFED
- Gujarat Agro Industries Corporation Limited – GAIC
- National Institute of Agricultural Marketing – NIAM
- Gujarat State Agricultural Marketing Board – GSAMB
- Neptune Overseas Limited

- A. Baskara M “commodity futures trading in India: a role of national commodity exchanges” Aug-2007.  
B. Dr.Dharambeer & Mr.Barinder Singh "Indian Commodity Market Growth and Prospects" July-2011.  
C. Takeshi "Market Efficiency of Commodity Futures in India" Oct-2012.

### Need for the Study

All previous reviews and researchers were focused on multi commodity exchanges and its performance because 87% of the market share holding by the MCX hence we need to make and find difference in agricultural commodity comparison between National Commodity and Derivative Exchange (NCDEX) and National Multi Commodity Exchange (NMCE), both products were traded in the agricultural products were lower values when compared to MCX so it will help the formers, investors, shareholders and commodity broking agent to know exact differentiation on agricultural performances.

### Literature Review

In this portion, tried to investigate of the existing literature reveals that no specific work has been carried out to examine the energy commodities traded on a multi commodity exchange in India for the period of 2004 to 2013. There are various studies that have been discovered in the similar associated topics, but for expressive the accurate presentation of multi commodity exchange in energy products we involve early reviews and those literatures keep up with this project. This helps demonstrate the performance growth of energy products for past 10 years in MCX in India.

**Abhijit Sen (2008)<sup>1</sup>** Gave a brief report on “The Impact of Future Trading on Agricultural Commodities”, in which some studies attribute the impacts of future trading of agricultural commodities during 2008. The expert committee headed by Prof has been set up by the government of India to (i) study the extent of impact, if any, of futures trading on wholesale and retail prices of agricultural commodities and to suggest ways to minimize such an impact; (ii) make such other recommendations as the Committee may consider appropriate regarding increased association of farmers in the futures market/trading so that farmers are able to get the benefit of price discovery through Commodity Exchanges.

**Alibekov M M and Lukinov M P (1994)<sup>2</sup>** Found that Commodity exchanges are envisaged as a key element. There is a need for widespread education of agricultural producers in the 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.

**Bhaskara M (2007)<sup>3</sup>** Studied on “Commodity Future Trading in India: A Role of National Commodity Exchange”, with the objectives to study the organizational set up and the mode of working on national level commodity exchange, to analyze the share of agriculture commodities traded across the national level commodity exchange, A large proportion of clients had difficulty in predicting the trend in commodity future market. Integration of spot and future market for certain commodities was observed only with respect to some exchanges and not in all.

**Garbade K D and Silber W L (1983)<sup>4</sup>** analyzed about that the use simultaneous price dynamics to model spot and future prices, in which changes in spot and futures prices on t are a function of the basis of t-1, this model has been extended on four storable agricultural commodities to examine the characteristics of spot and future characteristics. It is also discovered in the results that there is a fairly elastic supply of arbitrage system and that Garbade and Silber model is more suitable for the intraday behavior of spot and future prices.

**Isha Chhajed and Sameer Mehta (2013)<sup>5</sup>** In his research paper Market Behavior and Price Discovery in Indian Agriculture Commodity Market examined the price discovery mechanism is quite effective for most commodities, but may not be very



effective for some commodities. They found several natural processes such as seasonal cycles based on harvests, monsoons, depressions, and other weather events would also be expected to have an impact on price discovery in commodity markets; this is another area that needs to be studied.

**Jabir A and K B Gupta (2011)<sup>6</sup>** analyzed the efficiency of 12 agricultural commodity markets by examining the relationship between the future and spot prices from 2004 to 2007. As the result of their co integration and causality test, they indicate that co integration exists in these indices for all commodities except wheat and rice and that the direction of causality is mixed, depending on the commodities.

**Jairatt M S and Prashanth Kamboj (2005)<sup>7</sup>** Reported that the total commodities traded on 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 the ban, the 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.

**Kumar S and Sunil B (2004)<sup>8</sup>** Examined the price discovery for five commodities in six Indian commodity exchanges. Daily futures and comparable ready prices have been used in the study and the ratio of standard deviations of spot and future rates have been taken for empirical testing of ability of futures markets to incorporate information well. They find the inability of future market to fully incorporate information and confirmed inefficiency of future market. However, the authors conclude that the Indian agricultural commodities futures markets are not yet mature and efficient.

**Sanjay Sehgal, Dr.Namita Rajput and Rajeev Kumar Dua (2012)<sup>9</sup>** In his study titled “Price Discovery in Indian Agricultural Commodity Markets conclude that Indian commodities market” is still not perfectly competitive for some commodities. Find that spot and futures prices of all sample commodities and indices are non stationary, and in fact integrated to order one except one commodity Turmeric in which null hypothesis is accepted and there is no co integration revealed in this market.

**Seeger C (2004)<sup>10</sup>** Reported concludes that “the GOI must remain resolute on its adoption of a market-based, internationally competitive agricultural sector. This will mean that, unlike in the past, when a calamity befalls the agricultural sector, policymakers must remember that price volatility is usually reality based, caused by supply and demand conditions. The historic urge to ban commodity futures as the putative solution must be resisted”.

### Gaps in the Literature

Most of the studies have been made focusing on growing trends, performance, Future trading of wholesale and retail products, widespread education of agriculture, organizational set up and the mode of working on commodity exchanges, price dynamics, spot and future prices & price discovery. In previous researchers haven't taken any literatures or agricultural performances related to other commodity exchanges like National Commodity and Derivative Exchange (NCDEX) and National Multi Commodity Exchange (NMCE) even if they are competing with Multi Commodity Exchange in India. The study related to National Commodity and Derivative Exchange (NCDEX) and National Multi Commodity Exchange to make a comparative study for finding performance. Hence, the study is taken up.

### Objectives of the Study

The objectives of the study are as follows:

- To comparative study between NCDEX and NMCE with the accordance of performance in agricultural products from 2004 to 2014.
- To percentage analysis of performance of major agricultural commodities among past a decade in NCDEX
- To percentage analysis of performance of major agricultural commodities among past a decade in NMCE

### Research Methodology

The present study is conducted to provide information to the participants, investor, trade brokers and stakeholder perception towards Energy product performance in multi commodity exchange market. The main objective of the study is to understand the Energy products' performance in the Indian commodity market. The data for this paper is secondary in nature, which is collected from forward market commission (FMC), Multi commodity exchange (MCX), National commodity derivative exchange (NCDEX) and National multi commodity exchange (NMCE) sites. The data collected is analyzed by percentage analysis to finding out of the yearly performance of Energy products in multi commodity exchange (MCX). For this purpose first the day wise data are converted into month wise data, then again converted into year wise data for easy findings of yearly traded values and its performance. The data was not available for the certain period as for that period the commodity



was taken out from the trading by the government. The percentage analysis is carried out using normal calculation without using any software related package.

**Sources of Data:** The required and relevant data are collected from secondary sources like, books, journals and website like FMC, FIA and MCX.

**Primary Data:** This study purely related to secondary data's and for the reason primary data's were not collected in a systematic manner by meeting the existing investors, participants, formers in commodity market & other individuals. Secondary data were utilized for the purpose of the study by the researcher. The research is aimed to obtain the data mainly through secondary sources. Collected additional data's from the previous research books, journals and articles and the same has been used to obtain information.

**Secondary Data:** This study entirely depends on secondary source data and the data's were collected from multi commodity exchange, forward market commission and other commodities related to official websites, [www.fmc.gov.in](http://www.fmc.gov.in), [www.fia.org](http://www.fia.org) and [www.mcxindia.com](http://www.mcxindia.com).

**Period of the Study:** The daily historical closing data's were downloaded of trade quantity, trade values and no of trade contract on day wise collected from the MCX official website. The data collected is for a period of TEN years from 2004 to 2013.

### Analysis and Discussion

The percentage analysis is used as the techniques of data analysis in this paper. In order to compute the performance of National Commodity and Derivative Exchange (NCDEX) and National Multi Commodity Exchange (NMCE) in agricultural products and its traded values have been used in this paper in the following equations. Annual data on energy product values of individual commodities were obtained from the Commodities Research Bureau (CRB) for commodities traded on the both Commodity Exchanges. Percentage analysis is performed to study and investigate the year wise growth trend from the year 2004 to 2013.

**Table 1.1: Traded Value of Commodity Exchanges (Rs. In Lakhs)**

| Year  | 2004     | 2005     | 2006     | 2007     | 2008     | 2009     | 2010      | 2011      | 2012      | 2013      |
|-------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|
| NCDEX | 12036935 | 65274926 | 86087809 | 65736926 | 56205316 | 77660831 | 100161310 | 150481516 | 177283394 | 113593915 |
| NMCE  | 57705    | 10918    | 211758   | 40027    | 68414    | 297196   | 257236    | 221509    | 312872    | 235405    |

Source: Data From NCDEX Website: <http://www.ncdex.com> - Note: Valuation as of 05/06/2016.

**Chart 1.1: Traded Value of Commodity Exchanges (Rs. In Lakhs)**



Source: Data From NCDEX Website: <http://www.ncdex.com> - Note: Valuation as of 05/06/2016.

### Inference

The table 1.1 represents the traded value of total agricultural products of NCDEX and NMCE for 10 years. Based on the data table, the bar chart has drawn for the purpose of demonstrating the comparative analysis between the performance of



NCDEX and NMCE towards the agricultural products for 10 years. The bar chart has clearly figured that the trading activities of NCDEX predominantly surpass the NMCE's performance for every year. The maximum traded value, i.e. 177283394 (in Lakhs) of NCDEX in overall agricultural products had reached in the year 2012. Even though there were some floating in the trading activities of NCDEX, the growing trends have found from the bar chart. Thus, it is resulted that the remarkable performances in agricultural trading activities have been contributed only by NCDEX for a decade.

**Table 1.2: Performance of NCDEX in Major Agricultural Products**

| Year       |       | 2004    | 2005     | 2006     | 2007     | 2008     | 2009    | 2010     | 2011     | 2012     | 2013     | 2014    | Total     |
|------------|-------|---------|----------|----------|----------|----------|---------|----------|----------|----------|----------|---------|-----------|
| Chana      | NCDEX | 1029930 | 16793658 | 29599847 | 9455880  | 3909227  | 8780556 | 10446446 | 23578542 | 21626626 | 12304172 | 362765  | 137887649 |
|            | IN %  | 1%      | 12%      | 21%      | 7%       | 3%       | 6%      | 8%       | 17%      | 16%      | 9%       | 0%      | 100%      |
| Groundnuts | NCDEX | 0       | 0        | 27529    | 25       | 0        | 198     | 0        | 0        | 0        | 0        | 0       | 27752     |
|            | IN %  | 0%      | 0%       | 99%      | 0%       | 0%       | 1%      | 0%       | 0%       | 0%       | 0%       | 0%      | 100%      |
| Mustard    | NCDEX | 180015  | 1171470  | 5767056  | 15246277 | 11187636 | 7627000 | 8618587  | 10449547 | 24729336 | 8482273  | 2692951 | 96152148  |
|            | IN %  | 0%      | 1%       | 6%       | 16%      | 12%      | 8%      | 9%       | 11%      | 26%      | 9%       | 3%      | 100%      |
| Sugar      | NCDEX | 159738  | 2056957  | 2002766  | 1833374  | 2426180  | 1738119 | 37759    | 1644789  | 2136174  | 1266883  | 848748  | 16151487  |
|            | IN %  | 1%      | 13%      | 12%      | 11%      | 15%      | 11%     | 0%       | 10%      | 13%      | 8%       | 5%      | 100%      |
| Wheat      | NCDEX | 165421  | 907016   | 2801156  | 142012   | 0        | 191591  | 365649   | 292138   | 516972   | 195029   | 56114   | 5633098   |
|            | IN %  | 3%      | 16%      | 50%      | 3%       | 0%       | 3%      | 6%       | 5%       | 9%       | 3%       | 1%      | 100%      |

Source: Data From NCDEX Website: <http://www.ncdex.com> - Note: Valuation as of 05/06/2016.

#### Inference

In the Table 1.2, percentage analysis has done for the purpose of knowing the actual performance of NCDEX in the trading activities of major agricultural products. Even though there were the fluctuation, Chana, Mustard, sugar and wheat were traded in every year through NCDEX among studied period.



The following are maximum turnover which was yield by NCDEX from the major agricultural products among 10 years such as 21% Chana traded value in the year 2006, 26% Mustard traded value in the year 2012, 15 % Sugar traded value in the year 2008 and 50% Wheat traded value in the year 2006.

However in the case of Groundnut, trade had been brought out in the years of 2006, 2007 and 2009 and its maximum traded value of 99% was reached only in the year 2006 among 10 years. Then, it shows that there were no trading activities of sugar through NCDEX in the remaining years.

Hence, the result is to be the evidence that there was no failure of the trading activities of Chana, Mustard, Sugar and Wheat in any of the past ten years, which ensure that participants exhibit their fair involvement in such products trading activities. So, there is also a better scope for major agricultural products trading activities in future periods.

**Table 1.3: Major Agricultural Products Performance in NMCE.**

| Year       |      | 2004 | 2005 | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  | 2014  | Total     |
|------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|
| Chana      | NMCE | 0    | 849  | 74099 | 10914 | 0     | 45576 | 37228 | 44034 | 58623 | 42779 | 34416 | 348518.89 |
|            | IN % | 0%   | 0%   | 21%   | 3%    | 0%    | 13%   | 11%   | 13%   | 17%   | 12%   | 10%   | 100%      |
| Groundnuts | NMCE | 3281 | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 3281      |
|            | IN % | 100% | 0%   | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 100%      |
| Mustard    | NMCE | 248  | 6    | 371   | 0     | 16387 | 83166 | 67394 | 59321 | 64574 | 53550 | 20219 | 365236    |
|            | IN % | 0%   | 0%   | 0%    | 0%    | 4%    | 23%   | 18%   | 16%   | 18%   | 15%   | 6%    | 100%      |
| Sugar      | NMCE | 0    | 0    | 97    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 97        |
|            | IN % | 0%   | 0%   | 100%  | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 100%      |
| Wheat      | NMCE | 90   | 2    | 128   | 40    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 259       |
|            | IN % | 35%  | 1%   | 49%   | 15%   | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    | 100%      |

Source: Data From NMCE Website: <http://www.nmce.com> - Note: Valuation as of 05/06/2016.

#### Inference

Table 1.3 represents a percentage analysis of the performance of NMCE in Major Agricultural products among past 10 years. From the analysis, it has found that in the initial years of 2004, 2005 and there were 0% of trade values of Chana among 10 years. Later, it had reached 21% of trade value in the year of 2006, which was greater value among past decade. Again the



traded values of Chana were reduced to 3% and 0% in the following years 2007, 2008 respectively. However, the traded value of Chana had been slowly increasing with some fluctuation in the following years from 2009 to 2014. Thus, it reveals that Participants of NMCE fairly concentrated on the trade of Chana from 2004 to 2014.

It has observed that 100% of ground nuts traded value was shown in the year of 2004 only when compare to past decade. Hence, it has understood, that the participants of NMCE had not been shown interest to trade Ground nuts from 2005 to 2014.

It has been inferred that there were only 0% of trade values of Mustar from the beginning of 2004 to 2007 and it was reached a maximum traded value of 23% in the year 2009. Then, the percentage of mustar traded value sustained in the upward direction with some floats upto 2013 and it was rapidly reduced to 6% in the year of 2014.

It has found that 100% of trade value was shown in the year of 2004 only among 10 years. And also, there were 0% traded values of sugar in the rest of the years. The table 1.2 represents that wheat had been traded in NMCE only in the period from 2004 to 2007. In such period, there were only notable traded values of 35%, 49% in 2004, 2005 respectively. Later, NMCE had stopped trading of wheat up to 2014. Hence, it has shown that there may be the lesser possibility of sugar and wheat trade done through NMCE in future circumstances.

### Findings

1. From the comparative study, it has found that the trading activities of NCDEX in agricultural products exceeded the NMCE's performance for every year in the studied periods. Thus, the trading mechanism in NCDEX may be most comfortable and reliable to the participants which supposed to overcome NMCE performance.
2. In the Table 1.1, the traded value of overall agricultural products reached its maximum of 177283394 (in Lakhs) in NCDEX in the year 2012. The result indicates that there must be possible to maximize the profit through agricultural products trading in forthcoming periods.
3. Acquired as a whole performance of NCDEX and NMCE in agricultural products for a decade, it has proved the traded value of chana is greater than the other agricultural products such as groundnut, Mustar, Sugar and wheat. Hence, it is concluded that the chana trade fighter a leader position in the performance of NCDEX and NMCE.
4. It has found that highest traded value percentage in NCDEX of chana is 21% in the year 2006, Mustar is 26% in the year 2012, Sugar is 15% in 2008 and Wheat is 50% in the year 2006. It is concluded that the profit might be maximized in the year of 2006, 2008 and 2012 in NCDEX when compared to past one decade.
5. It has found that highest traded value percentage in NMCE of chana is 21% in the year 2006, Mustar is 23% in the year 2009, Sugar is 100% in 2006 and Wheat is 49% in the year 2006. It is concluded that the profit might be maximized in the year of 2006 and 2009 in NMCE when compared to past one decade.

### Conclusions

The root cause of poverty of a nation is the scarce availability of things such as food, cloth and shelter. The flawless availability and accessibility of necessity things should be possible only when the nation encourages the agricultural development. In such way, the commodity exchanges show their efficient performance in agri-based products trading activities. The study clearly viewed that the performance of NCDEX is remarkable when compare to NMCE. It has found that NCDEX had fairly traded chana, mustard, and sugar among ten years with a maximum traded value which means production; demand for such products may be greater than other major products. Whereas, the NMCE had been traded chana and mustard regularly among five major agricultural products for a decade. Those are also lesser traded value than NCDEX. It also indicates NCDEX compete the trading performance of other commodity exchanges. It is suggested that NMCE has to improve its infrastructure facilities, trading methodology, simply the policies and procedures, extend the branches, avoidance of unnecessary complication in entry of participants and increase the investment volume. It leads to improve the performance of NMCE.

### References

#### Books

1. Avadhani S (2000): "Investment Management and Mutual Funds".
2. Hull J (1995): "Introduction to Futures and Options Market".
3. Marlowe J (2000): "Hedging Currency Risk and Options and Futures".
4. Murti AND Murti (2000): "Derivative Trading in India".
5. Sahoo (1997): "Financial Derivatives and its products".
6. Sirisha E (2001): "Stock Market Derivatives: Role of Indices".



#### Journals

1. Abhijit Sen: *The Impact of Future Trading on Agricultural Commodities, Report of the Expert Committee of Ministry of Consumer Affairs, Food & Public Distribution Government of India.* 2008.
2. Alibekov M M and Lukinov M P: *Problems of development of the agricultural markets. Ekonomika Sel skokhozyaistvennykh I Pererabatyvayushchikh Predpriyatii (2): 1994 4-8.*
3. Bhaskara M: *Commodity Future Trading in India: A Role of National Commodity Exchange, Edited Book: Indian Commodity Market (Derivative & Risk Management), Pondicherry University.* 2007.
4. Garbade K D and Silber W L: *“Dominant satellite relationship between live cattle cash and futures markets”, The Journal of Futures Markets, vol. 10 (2), 1983, pp. 123-136.*
5. Isha Chhajed and Sameer Mehta: *Market Behavior and Price Discovery in Indian Agriculture Commodity Market, International Journal of Scientific and Research Publications, ISSN: 2250-3153, Volume 3, Issue 3, March 2013, PP. 1-4.*
6. Jabir A and K B Gupta: *‘Efficiency in Agricultural Commodity Future Market in India: Evidence from Co integration and causality Tests’, Agricultural Finance Review, 2011, 71 (2), pp. 162-178.*
7. Jairatt M S and Prashanth Kamboj: *Some constraints to Indian agriculture commodity futures, Indian journal of agricultural marketing, (conference special), 19 (2), 2005.*
8. Kumar S and Sunil B: *“Price discovery and market efficiency: evidence from agricultural future commodities”, South Asian Journal of Management, April 1-2004.*
9. Sanjay Sehgal, Dr.Namita Rajput and Rajeev Kumar Dua: *Price Discovery in Indian Agricultural Commodity Markets, International Journal of Accounting and Financial Reporting, ISSN: 2162-3082 2012, Vol. 2, No. 2, PP. 34-54. 2012.*
10. Seeger C: *“Roadmap: Commodity Futures Markets Development in India 2005 and Forward”, USAID, December 2004.*

#### Websites

1. Indian Commodity - [www.indiancommodity.com](http://www.indiancommodity.com).
2. Multi Commodity Exchange - [www.mcxindia.com](http://www.mcxindia.com).
3. National Commodity and Derivate Exchange - [www.ncdex.com](http://www.ncdex.com).
4. National Multi Commodity Exchange - [www.nmce.com](http://www.nmce.com).
5. Security Exchange Board of India - [www.sebi.gov.in](http://www.sebi.gov.in).
6. Securities Exchange Commission - [www.sec.gov](http://www.sec.gov).