

RESEARCH PAPER

RUBBER FUTURES MARKETS AND THE FARMERS OF KERALA

ABSTRACT

The core functions that commodity futures exchanges intended to perform are price discovery and price risk management. *Futures trading* in agricultural commodities were introduced to provide the farmers, price information, which would help them to make production decisions as well as to lock spot prices for future derivatives and help the farmers access the markets easily. This study is an attempt to find out the utilization of price discovery and price risk management functions of Commodity Exchanges by the rubber farmers in Kerala. The study also attempts to find out the effectiveness of the awareness programs conducted by the Commodity Exchanges among the rubber farmers in Kerala.

Key words: Rubber futures trading, Price discovery, Price risk management, Awareness programs

JEL Classification : G13, G14

Introduction

Rubber has made a great contribution for the economic progress of our country. Rubber has played an imperative role in the economic and industrial growth of India ever since its cultivation during the beginning of this century. The development of NR cultivation in India has boosted up the Indian economy through the setting up of infrastructure facilities and providing employment opportunities to lakhs of people, especially in Kerala. Moreover, the latex from the rubber tree is a major raw material for the manufacture of more than fifty thousand various products which are indispensable to modern life. Thus, Natural Rubber is an industrially and strategically important raw material having a wide variety of usage. The rubber sector was immensely benefited through the Government policies like globalization and liberalization, which helped in market integration.

India is both a rubber producing country as well as a consuming country. The world's total production of natural rubber was 12,070,000 tonnes in 2013 - 14 and India contributed 8,44,000 tonnes. The contribution of Kerala in 2013-`14 was 5,48,225 tonnes. The world's total consumption of natural rubber was 12,159,000 tonnes in 2014 and the consumption in India was 9,81,520 tonnes and the consumption in Kerala was 6,48,220 tonnes.¹ Thus Kerala accounts for 65% of the total Indian produce, 66% of the total rubber consumption in India. Production is dominated by small holdings sector, by accounting for 90.5% of the area and 93.5% of the supply during 2013-14. The concentration of rubber cultivation is so heavy in Kerala that the economic well being of a large section of the population of the State depends on the commodity.² Rubber cultivation in India is focused mainly among small growers and the average size of a small rubber holding is around 0.53 ha. The small holdings account for

¹ Agricultural Statistics, 2013-14, Department of Economics and Statistics, Kerala.

² Mathew (1969), "The Economics of Rubber Plantations in India", pp.3

90 percent of the total area comprising 1.19 million small and marginal farmers and 94 percent of the total production of rubber.³

Futures trading were introduced to give direct benefits to the farmers through its two economic functions of price discovery and price risk management. Commodity exchanges provide a common platform for all the stakeholders, helping in price discovery and hedging. In Kerala, rubber *futures trading*, was introduced in 2003 through the National Commodity Exchange, in Kochi, which is the only commodity exchange in Kerala doing rubber *futures trading*.

Spot markets (cash market), are mostly fragmented over-the-counter markets. Hence price discovery made in these spot markets is inefficient. Price discovery in spot market is affected by geographical dispersion, differential needs of the buyers and sellers in terms of quality, quantity, place of delivery and difficulties associated with handling physical delivery, absence of option to settle the contract by payment of price-difference. But futures trading is a very efficient means of forecasting the price for a commodity as there is convergence of bids and offers originating from a large number of buyers and sellers from different parts of the country – and possibly from abroad. Price Risk Management is very closely related to Hedging, which means transfer of some or all of that risk to those who are willing to accept it, called Speculators. Price risk is managed by taking opposite positions on the spot and futures market. The futures prices are linked to the spot prices through carrying cost, which comprises cost of storage, interest, wastage, shrinkage etc. Therefore, the two prices tend to move in uniformity. Taking opposite positions in the spot and futures market will help to offset the loss in any market due to adverse price fluctuations.

Statement of the problem

³ Annual report (2013-14), "Price Stabilisation Fund Trust, Department of Commerce, Ministry of Commerce and Industry, Government of India, pp.2.

Price discovery is the information about future spot price through futures market and it refers to the use of futures price for pricing cash market transactions (Working, 1948). Price discovery in today's commodity market is very efficient as all the stake holders are able to participate in the commodity exchanges. There has been a revival of commodity futures market since 2003, but the commodity markets in India are inefficient in terms of price discovery due to various factors. Futures markets are said to emit price signals for the future periods in theory. In practice, such signals seldom influence cropping decisions especially in rubber. Majority of rubber cultivators are small and marginal farmers who own less than two acres of land and the ability to respond to price signals is rather limited.

The Forward Markets Commission and National Multi Commodity In Kerala, the NMCE is conducting number of programs in the different districts among the various stakeholders, including farmers. In spite of the developments made in the commodity futures market, there is lack of awareness about the benefits of price discovery and price risk management among the farmers.

Hence this study is an attempt to find out the utilization of price discovery and price risk management functions of Commodity Exchanges by the rubber farmers in Kerala and also to find out the effectiveness of the awareness programs conducted by the Commodity Exchanges among the rubber farmers in Kerala.

Review of Literature

Efforts have been made to review available studies pertaining to the characteristic aspects of commodity exchanges globally as well as pertaining to India.

Commodity Exchange characteristic specific:

This section is organized into two parts based on the relevant characteristics of the commodity exchanges. These are Price Discovery and Hedging on commodity exchanges.

Price Discovery

Fu and Qing (2006) studied the price discovery process and volatility spillovers in Chinese spot-futures markets and found that there was a long-term equilibrium relationship and significant bidirectional information flows between spot and futures markets in China, with a dominant role played by futures market.

Kabra (2007), in his study on futures market in India, found that price discovery function has little relevance for farmers in their present conditions because the infrastructure for involving farmers located in rural areas in the futures trade does not exist. Also, a warehouse receipt for enabling one to hedge in a distant metropolitan futures exchange is difficult in the Indian farm sector. Because, if a contract has to be concluded by physical delivery, there are a lot of transaction costs to be incurred as well as difficulty in fulfilling the technical conditions necessary for the effective use of futures market.

UNCTAD(2007) conducted a study on emerging commodity exchanges and found that Exchanges have developed in countries where production is predominantly done by small holders. The study found that particularly in China and India, where smallholder production is the predominant pattern, exchanges must broaden access to markets; empowering farmers to make better cropping and selling decisions; reducing information asymmetries that have been previously taken advantage by the more powerful market actors; upgrading storage, grading and technology infrastructure and expanding access to cheaper sources of finance.

Yaganti (2009),in his study on spices and base metals regarding price discovery and hedging effectiveness, found that utilisation of futures price information is not efficient in spices, but in case of metals most of information in futures prices is efficiently used.

Vasisht, (2010) found that the commodity futures market in India is not efficient in predicting the future ready prices and thus is not able to discover future prices efficiently in commodities like pepper, groundnut oil and guar gum. According to him, one of the main

reasons for the poor performance of the Indian futures market is inadequate participation of hedgers and to attract hedgers, there is a need for commodity exchanges and the Forward Markets Commission to explore new initiatives.

Hedging on commodity exchanges:

Hedging is an integral activity of any commodity exchange. This section pertains to studies based on hedging.

Working (1953), conducted a study on futures trading and hedging and concluded that between different exchanges dealing in the same commodity, there is a strong tendency for hedgers to prefer to use the exchange which has the largest volume of speculative trading.

Turvey and Baker (1990) investigated the relationships of farm programs and farm finance on farmers' decisions to hedge with futures or options and found that farmers' use of futures and options decreased due to loan rates and target prices. Also farms with high debt were found to hedge more than farms with low debt.

Balachandran (2007) conducted a study on trading on commodity futures to analyse the expectations of the clients and concluded that the client cannot take the benefits of hedge positions in the present online trading system. He also found that not many Indian people are aware of futures trading and using online trading system and the farmers also don't know much about using futures market to hedge their products.

Breger and Sasha (2009) in their study on hedging, examined whether derivative instruments are able to provide income support to farmers who are facing commodity risk. They found that futures hedging give only a vague income security service in some cases.

Gupta (2011), in his study on the Indian commodity derivatives market, found that derivatives provide hedging opportunities and also help in price discovery. He also concluded

that the ill effect of the market, if any, arises from improper regulation and so the regulator should be efficient for the prospect of the market.

Scope of the study

Futures trading were introduced to give direct benefits to the farmers through its two economic functions of price discovery and price risk management through hedging. Although Commodity exchanges provide a common platform for all the stakeholders, helping in price discovery and hedging, the 'Small holder' perspective needs to be emphasized. Technologies suitable for 'barely literate' farmers are not developed, so that the actual benefits of trading through commodity exchanges are not enjoyed by the primary producers. The study focuses on the effectiveness of futures trading among the rubber farmers in Kerala.

Objective of the study

To study whether *futures trading* is beneficial for the rubber farmers of Kerala.

Hypotheses of the Study

H₁: The rubber farmers in Kerala are not the beneficiaries of futures trading.

Methodology

Sources of Data

The study is based on both primary as well as secondary data. In Kerala, there is a regional concentration of production of NR in Kottayam District by producing 21.27% of the total production of the State, followed by Ernakulam producing 11.08% and Pathanamthitta producing 9.44%. Hence the primary data have been collected from the farmers in Kottayam, Pathanamthitta and Ernakulam districts of South Kerala with the help of structured questionnaire. The questionnaires were tested by conducting a pilot survey of a few respondents selected on random basis. Utilising the information from the pilot study, questionnaire was modified for the final study. The questionnaire was administered personally using face to face method in order to improve the response rate. Nominal and

ordinal scales were used to take the responses of respondents regarding demographic variables, while Likert's (1970) three point scale was used to take the responses regarding the level of awareness about rubber futures trading and role of commodity exchanges in the development of rubber markets in Kerala, on awareness scale ranging from little to not at all and role scale ranging from highly significant to not at all significant respectively. Cross tabulation has been utilized to represent the responses of the respondents.

The secondary data have been collected from reports and official websites of the Rubber Board and different Commodity Exchanges like MCX and NMCE and different journals like *Rubber Mithram*.

Sample Design

The researcher has adopted Multistage Random Sampling technique. The researcher has selected farmers in the study area and much care has been taken to ensure that the sample group represents the whole area of the study. In the first stage, the three districts, Kottayam, Ernakulam and Pathanamthitta which are having the highest Natural Rubber production in Kerala were selected. In the second stage, addresses of farmers were collected from 10 Regional offices of the Rubber Board in each District - 5 Regional Offices in Kottayam district, 3 Regional offices in Ernakulam district and 2 Regional Offices in Pathanamthitta district were selected. In the third stage, from each regional office, 3 Rubber Producers' Societies were selected and from each RPS, 10 farmers, who are engaged in rubber cultivation, were selected. Thus, 300 farmers were selected at random from the three districts.

Results and Discussion

1.1. Awareness about futures trading among farmers

Kerala represents 88 percent of small holding rubber cultivation area in the country. Rubber cultivation and production needs a large and professional labour force during its whole lifetime existence. Tapping of rubber trees is not only a skilled job but also highly

labour intensive. As skill is more important than educational qualifications, majority of the rubber farmers are not highly educated.

Futures trading will enable farmers to get a better price realisation and they would be free to choose between spot and futures trading depending on market conditions prevailing from time to time.

In order to find out whether awareness about *futures* trading is related to the educational level of the farmers, the following analysis was done.

Table 1.
Educational Level and Level of awareness about futures trading

Educational level	Level of awareness of futures trading			Total
	Little	Much	Not at all	
Up to matriculation	33 21.0%	11 7.0%	113 72.0%	157 100%
Graduation	50 43.1%	13 11.2%	53 45.7%	116 100%
PG/ Professional & above	8 29.6%	8 29.6%	11 40.7%	27 100%
Total	91 30.3%	32 10.7%	177 59.0%	300 100%

Pearson Chi-square: 31.325, do=4, p=.000

Source: Survey data

Majority of the farmers are not at all aware about futures trading and few are having little awareness about futures trading. Also, among the farmers whose educational level is up to matriculation, majority are not at all aware about futures trading in rubber. Among the farmers who are graduates, a few are much aware about futures trading. But among the farmers who are post graduates or professionals, majority are aware about futures trading respectively.

The Chi-square test proves that there is a close association between educational Level and level of awareness about futures trading.

Farmers with higher educational level are more aware about futures trading although their number is comparatively less when compared to the number of farmers who are having educational level only up to matriculation and who form the majority, who are unaware about *futures trading*.

1.2. Awareness about the benefits of futures trading

The two economic benefits of *futures trading* are price discovery and hedging. The future prices are discovered in a transparent manner on the online platforms of the national commodity derivatives exchanges. With the help of information on future price trends, and probable supply and demand of various commodities, the farmers can plan their cultivation as well as storage and sale of their produce in advance. Even when rubber market remains subdued due to global uncertainties, *futures trading* will provide an effective hedging mechanism for farmers. They will not be forced to exclusively depend on spot markets alone or hold the commodity expecting a price rise in future.

To find out whether the farmers are aware about these benefits, the following analysis was done.

Table 2. Awareness about the benefits of *futures trading*.

Level of awareness of futures trading	Awareness about benefits of future trading			Total
	Price Discovery	Hedging	Not aware	
Little	31 34.1%	2 2.2%	58 63.7%	91 100%
Much	18 56.2%	0 0.0%	14 43.8%	32 100%
Not at all	0 0.0%	0 0.0%	177 100%	177 100%
Total	49 16.3%	2 0.7%	249 83.0%	300 100%

square: 98.410, df = 4, p=.000

Source : Survey data

Pearson Chi-

Majority 83% (249) of the farmers are not aware about the benefits of *futures* trading. Only 16.3% (49) are aware about price discovery. Also, among the farmers who are aware about the benefits of *futures* trading, 56.2% (18) are only much aware about price discovery benefit and 34.1% (31) are only little aware about price discovery.

The Chi-square test proves that there is close association between level of awareness about *futures* trading and awareness about the benefits of *futures* trading viz. price discovery and hedging.

So it can be inferred that among the farmers, majority are not aware about the benefits of rubber *futures* trading and among those who are aware about the benefits, they are aware only about price discovery. The benefit of hedging is known only to a minority.

1.3. Reason for not trading in rubber *futures*

Futures trading in natural rubber began on 15 March 2003 for the first time in India, with the hope that the rubber farmers, a large percentage of whom are having small holdings, will benefit immensely through the *futures* trading. But there are only few farmers who are trading in rubber futures. In order to understand whether lack of awareness about the benefits of futures trading is the reason for not trading in rubber futures, the following analysis was done.

Table 3. Reason for not trading in rubber futures

Awareness about benefits of future trading	Trading in Futures		Total
	Yes	No	
Price Discovery	21 43.8%	27 56.2%	48 100%
Hedging	0 0.0%	2 100%	2 100%
Not aware	13 5.6%	219 94.4%	232 100%
Total	34 12.1%	248 87.9%	282 100%

Pearson Chi-square: 54.858, df = 2, p=.000

Source : Survey data

Among the farmers who are aware about the benefits of *futures* trading, 12.1% (34) are trading in rubber futures and majority 87.9% (248) are not trading in rubber *futures*.

The Chi square test proves that there is close association between level of awareness about the benefits of futures trading and trading in rubber *futures*.

Thus it can be inferred that, lack of awareness about the benefits of rubber *futures* trading is the major reason for not trading in rubber *futures* trading.

1.4. Source of Awareness about *Futures* Trading

There are different sources through which awareness about *futures* trading is created among the farmers. The Commodity Exchanges are creating awareness through awareness programs conducted at different places for the various stake holders. The Rubber Board is also conducting classes for the benefit of the rubber farmers and in those classes, *futures* trading is also introduced for their awareness. There are cooperative societies in Kerala which are successfully carrying out *futures* trading in rubber and through them the farmers have been able to become aware about *futures* trading in rubber. The following analysis was done to find out about the source of awareness about *futures* trading.

Table 4. Source of Awareness about Futures Trading

Level of awareness of futures trading	Source of awareness					Total
	MCE	Rubber Board	Media	RPS	Co-op Society	
Little	7 7.7%	21 23.1%	4 4.4%	18 19.8%	41 45.1%	91 100%
Much	8 25.0%	7 21.9%	4 12.5%	1 3.1%	12 37.5%	32 100%
Total	15 12.2%	28 22.8%	8 6.5%	19 15.4%	53 43.1%	123 100%

Pearson Chi-square:12.786, df = 4, p=.012

Source : Survey data

Among the 123 farmers who are aware about the futures trading in rubber, majority 43.1% (53) farmers became aware about it through the cooperative societies. 22.8% (28) were created awareness through the Rubber Board, 15.4% (19) through the Rubber

Producers' Societies (RPS), 12.2% (15) through National Multi Commodity Exchange (NMCE) and 6.5% (8) through media.

The Chi square test proves that there is close association between level of awareness about futures trading and source of awareness about the *futures* trading.

Thus, it can be inferred that the role of commodity exchanges in creating awareness about *futures* trading among farmers is very negligible. Cooperative Societies and Rubber Board have been able to create more awareness than the Exchange.

1.5. Level of awareness of futures trading and Participation in awareness programs

Commodity Exchanges have been undertaking various types of activities for the farmers for increasing awareness and improving participation in the Commodities market.

To find out whether participation in awareness programs depended on the level of awareness about *futures* trading, the following analysis was done.

Table 5

Level of awareness of futures trading and Participation in awareness programs

Level of awareness of futures trading	Participation in awareness program		Total
	Yes	No	
Little	32 35.17%	59 64.83%	91 100%
Much	25 78.13%	7 21.87%	32 100%
Not at all	4 2.26%	173 97.74%	177 100%
Total	61 20.33%	239 79.67%	300 100%

Pearson Chi square = 114.027, df= 2, p= .000

Source: Survey data

**Table 6. Binomial Test
Participation in awareness programs**

Participation in awareness program	Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Group 1	No	239	.80	.50	.000
Group 2	Yes	61	.20		
Total		300	1.00		

Source: Computed

Among the 123 farmers who are aware about rubber *futures* trading, only 57 farmers (46.34%) have participated in awareness programs.

The Chi-square test proves that there is close association between level of awareness about futures trading and participation in awareness program. This proportion is statistically significant @ 5% level of significance in the binomial tests.

Thus, it can be seen that majority, 80%, of the farmers have not participated in awareness program as they were not aware about rubber *futures* trading and although 41% of the farmers were aware about rubber *futures* trading, among them only 19% had attended awareness program

1.6. Creation of interest in trading in rubber *futures* after participating in awareness program

Awareness program are conducted by the Commodity Exchanges to make the farmers understand about the benefits of *futures* trading. If the farmers have benefitted through the awareness program, they would be interested in trading in *futures*.

Table 7.
Creation of interest in trading in rubber *futures* after participating in

awareness program

Participation in awareness program	Interest in futures trading after awareness program		Total
	Yes	No	
Yes	31 54.4%	26 45.6%	57 100.0%
No	4 100.0%	0 0.0%	4 100.0%
Total	35 57.4%	26 42.6%	61 100.0%

Source: Survey data

Among the 61 farmers who attended the awareness program, majority 57.4% (35) became interested in trading in rubber *futures*, where as 42.6% (26) were not interested in trading even after participating in awareness programs.

So it can be inferred that farmers will get interested in trading in rubber *futures* if they participate in awareness programs.

1.7. Trading behavior of farmers after participating in awareness program

In order to analyse whether the farmers started trading in rubber *futures* after participating the awareness programme, the following analysis was done.

Table 8. Trading in rubber *futures* after participating in awareness programme

Participation in awareness program	Trading in Futures		Total
	Yes	No	
Yes	26 42.6%	35 57.4%	61 100.0%
No	6 2.5%	233 97.5%	239 100.0%
Total	32 12.1%	268 87.9%	300 100.0%

Pearson Chi square = 88.184, df= 1, p= .000

Source: Survey data

Among the farmers who participated in the awareness programs, majority 87.9% (268) did not start trading in rubber *futures* whereas, 12.1% (32) started trading in rubber futures.

The Chi square test proves that there is close association between trading in rubber *futures* and participation in awareness program.

So it can be inferred that although farmers attended the awareness programs, they did not start trading in rubber futures.

1.8. Reason for not trading in rubber *futures*

There are only very few farmers who are trading in rubber *futures*. In order to understand whether lack of awareness about the benefits of *futures* trading is the reason for non trading in rubber *futures*, the following analysis was done.

Table 9. Reason for not Trading in rubber *futures*

Awareness about benefits of future trading	Trading in Futures		Total
	Yes	No	
Price Discovery	21 42.8%	28 57.2%	49 100.0%
Hedging	0 0.0%	2 100.0%	2 100.0%
Not aware	13 5.6%	236 94.4%	249 100.0%
Total	34 12.1%	266 87.9%	300 100.0%

Pearson Chi square = 54.858, df= 1, p= .000

Source: Survey data

Among the farmers who are aware about the benefits of *futures* trading, 12.1% (34) are trading in rubber futures and majority 87.9% (248) are not trading in rubber *futures*. Also, among the farmers who are trading in rubber *futures*, none of them are aware about the benefit of hedging. They are trading because of the benefit of price discovery.

Chi square test proves that there is close association between level of awareness about the benefits of *futures* trading and trading in rubber *futures*.

So it can be inferred that majority of the farmers are not trading in rubber *futures* due to lack of awareness about the benefits of *futures* trading, especially that of hedging.

Findings

The study has found that the educational level of the farmers has a significant role in generating awareness about rubber *futures* trading among the farmers. Majority of the farmers are having educational level only up to matriculation and they are not aware about rubber *futures* trading. Farmers with higher educational level are more aware about *futures* trading but their number is comparatively less when compared to the number of farmers who are having educational level up to matriculation.

The study has also found that among the farmers, majority are not aware about the benefits of rubber *futures* trading and among those who are aware about the benefits, they are aware only about price discovery. The benefit of hedging is known only to a minority. It is also seen that majority of the farmers have not participated in awareness programmes, although a few are aware about *futures* trading.

It is observed that the role of commodity exchanges in creating awareness about *futures* trading among farmers is very negligible. Cooperative Societies and Rubber Board have been able to create more awareness than the Exchange.

Suggestions

A series of Awareness Programs for the farmers should be organised by the Commodity Exchange, involving the Rubber Board, Rubber Producers' Societies and Cooperative Societies at Panchayat Level. Intense publicity should be given through print and visual media. If the process is simplified and information made available in vernacular languages, many growers will appreciate the market fundamentals and may eventually participate in it. As majority of the farmers are having education only up to Matriculation, use

of local language in trading will help them to understand the concepts of *futures* trading well and boost their confidence that they would be benefitted. As a part of the training, it would be highly effective if arrangements could be made for some kind of “mock trading” in *future* market through demo software, preferably in local language.

As Farmers’ Groups like Rubber Producers’ Societies, Co-operative Institutions, Regional Rural Banks, NGOs etc. that work in rural areas have close association with and the trust of farmers, they should be allowed and encouraged to act as aggregators. The aggregators will be able to hedge on behalf of the farmers in the *futures* market, as they have the requisite knowledge and operational skills needed to participate in these markets.

These measures will help the farmers and local traders to understand the mechanism well and encourage them to participate in *futures* market.

Conclusion

The small and marginal rubber farmers in Kerala, whose educational level is only up to matriculation, are not aware about the concepts or the benefits of rubber *futures* trading. Hence they are not utilising the economic benefits of price discovery function and price risk management function of rubber *futures* trading.

The National Multi Commodity Exchange in Kerala has not been able to reach the rubber farmers of rural areas through their awareness programs. It should have close association with the Rubber Board, Rubber Producers’ Societies and Co-operative Institutions, who are in close contact with the rubber farmers and conduct more awareness programs for the rubber farmers.

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