

Agricultural Commodity Derivatives

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INTRODUCTION

India being predominantly an agricultural economy, commodities play a significant role. In the wake of Government's liberalization of the futures trading in commodities in the mid 1990s, commodities trading initially witnessed an increasing momentum in activities. In fact, Indian commodity exchanges have the largest number of futures contracts in agricultural commodities compared to any other exchange in the world. However, the introduction of future trading in the selected agricultural commodities had apparently led to an increase in price of the commodity and its volatility. Therefore, the Government of India was forced to ban trading in futures on selected agricultural commodities and gradually, the spot prices and volatility of these commodities declined after the ban on futures trading was introduced (Golaka Nath & Lingareddy, 2008). *"Although food inflation has eased from the high 20.9% in 2010, underlying inflation pressures remain intense. India's economic outlook is likely to remain somewhat clouded by persistent inflationary pressures, as headline inflation has remained high since the early 2010."*

The London-based Fitch said in its Global Economic Outlook Report. Literally, now the emplacement of acute inflation is in other sectors other than food grains; but food grains have seen incisive inflation until recently, and the prices in the open market have not come down much from woozy altitudes to which they had climbed. The agricultural farmers say, *"The common man is gasping for breath as the prices of essential commodities are spiraling out of control. Farmers are eking out a living on loans taken at high interest rates. The failure to control prices has jacked up input costs of agriculture."* (Ramakrishnan, 2011). Economists are of the view that the agrarian crisis, increasing corporate control over farm production and trade, and speculative trading lead to a tempestuous inflation that is eroding the real incomes of people (Chandrasekhar, 2011). The rapid growth of these new types of speculators has led many to argue that today's speculative trade in agricultural futures markets is the proverbial tail wagging the dog. Economists also claim that these new speculators create *"price distortions"* and potentially disrupt traditional spot-futures convergence patterns (Morrison, 2006; Henriques, 2008). The Reserve Bank of India (RBI) recently said that food inflation seems to be pointing towards changing consumption patterns as India gets more affluent and people move towards more high value commodities. This has consequently led to the demand for modern corporate retail chains to enter the food distribution. Henceforth, the Darwinian process favours the rational behaviour of market participants resulting in *"price gouging"* i.e. the commodity prices are *"unconscionably"* high or *"take unfair advantage of unusual market conditions"*. Agricultural peasants in the neoliberal regime; the forward trading which promoted the interests of trader-speculators contributed to the inflationary processes in essential commodities. On the other hand, the corporate houses and the commodity brokers blame that the commodity derivatives markets face slow regulation on futures trading despite any reliable statistical evidence. This necessitated a serious discussion among economists and academicians to look into the effects of futures prices on spot prices of the agricultural commodities.

REVIEW OF LITERATURE

In an agrarian economy like India, agricultural commodities have been banned several times from futures trading for their impingement on spot market prices and volatility. Therefore, attention is required on happenings in commodity

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futures markets and their effects on spot markets. The following studies have critically examined the impact of futures trading on the underlying spot markets in various dimensions.

To study the impact of futures trading, if any, on agricultural commodity prices, the GOI appointed a committee under the chairmanship of Prof. Abhijit Sen, Member, Planning Commission March 2, 2007 and submitted its report on April 29, 2008. The main findings and recommendations of the committee are as follows:

- ❖ Negative sentiments have been created by the decision to delist futures trades in some important agricultural commodities.

- ❖ The period during which futures trading has been in operation is too short to discriminate adequately between the effect of opening of futures markets, if any, and what might simply be the normal cyclical adjustments in prices; Indian data analyzed does not show any clear evidence of either reduced or increased volatility.

- ❖ The vibrant agriculture markets including derivatives markets are the frontline institutions to provide early signs of future prospects of the sector. The committee recommended for upgradation of regulation by passing of the proposed amendment to FC(R) Act, 1952 and removal of infirmities in the spot market (Economic Survey, 2009-10).

Sophisticated speculators exacerbate price change by selling to less well informed agents at a price above what a competitive equilibrium would dictate (Kaldor, 1939). Speculators amplify a price trend by buying or selling only after price has changed, thus increasing volatility (Baumol, 1957). Fraudulent activity in the futures market results in price distortion in the spot market if it is used to corner or squeeze the spot market (Simpson and Ireland, 1985). Speculation artificially distorts price movement so as to exaggerate the normal response to fundamentals (Chassard and Haliwell, 1986). Futures trading activity destabilizes the spot volatility of agricultural commodities (Pashigian, 1986 and Weaver and Banerjee, 1990). Investors searching for bandwagon profits are another reason for increased volatility (Edwards, 1988). An increase in uninformed speculative trade increases price volatility by interjecting noise into a market with limited liquidity. The inflow and existence of speculators in futures market produces destabilizing forces which create undesirable bubbles (Edwards, 1988 and Harris, 1989). The lead-lag relationship between futures trading activity (volume and open interest) and cash price volatility for major agricultural commodities were examined and the results show that an unexpected increase in futures trading volume unidirectionally causes an increase in spot price volatility for most agricultural commodities. Likewise, there is a weak causal feedback between open interest and cash price volatility. These findings exhibit the destabilizing effect of futures trading on agricultural commodity markets (Yang et al., 2005). The studies in Indian commodities markets reveal the impact of commodity futures on welfare and inflation in the economy. The study estimated the efficiency of futures using the Johansen's Cointegration for different forecasting frequencies and the results suggested that the wheat futures were not efficient even in the short term. Further, they concluded that the price discovery was poor and the higher volumes in futures markets had a significant causal impact on inflation (Sahi and Raizad, 2006). The results of granger causality tests indicated that unexpected increase in futures activity in terms of rise in volumes and open interest has caused an increase in cash price volatilities in all the commodities listed. The study has confirmed the notion of destabilizing effect of futures trading on spot prices of commodities (Sahi, 2006). The introduction of future trading in the selected agricultural commodities had apparently led to an increase in price of commodities. The spot prices and volatility of all the commodities under study have increased in the post futures period and declined after the ban on futures trading (Nath, G. C. and Lingareddy T., 2008). In agricultural commodities, the unexpected futures trading volume causes spot price volatility (Kumar, B., 2011).

Pooling of time-series cross-sectional data provides more observations, more variability, less collinearity among variables, more degree of freedom and more efficiency (Baltagi, 1995). More importantly, pooled data are more proficient to identify and measure effects that are undetectable in pure cross-sections or pure time-series data, and the measurement and omitted-variables biases are reduced (Pindyck and Rubinfeld, 1998). There were several other studies on panel data analysis which were carried out by Matyas and Sevestre (1996), Baltagi (2001), Nerlove (2002), Arellano (2003) and Hsiao (2003) etc. Since in the Indian commodity markets, very few studies have addressed this issue, the present paper inquires the effect of futures prices on spot prices in an emerging commodity derivative market context, and panel data analysis was attempted to test the effect.

METHODOLOGY

In this paper, the effect of Future price on Sport price of Agricultural commodity price was seen (Sahi, 2006; Nath, G.

C. and Lingareddy T. , 2008; Kumar, B., 2011). The data for the study were weekly commodity prices for a period of five years from 2006 to 2011 on 6 commodities. It was only in 2006 that commodity trading was introduced in Agricultural products. The commodities covered in the study were Cardamom, Chana, Maize, Potato, Sugar and Mentha oil, these were the frequently traded commodities in the MCX index during the study period. Panel data regression model was fitted to analyze the effect of future price on the spot price, both fixed and random effect were seen and on the basis of the Hausman test, the right model was decided.

Table 1 : Random - Effects				
Mean dependent var		280.3007	S.D. dependent var	380.2101
	Coefficient	Std. Error	t-ratio	p-value
Const	0.985615	11.8373	0.0833	0.93370
FP	0.997634	0.0103274	96.6003	<0.00001

✿ **Hausman Test** : Asymptotic test statistic: Chi-square (1) = 0.0410038 with p-value = 0.839531.

Table 2 : Fixed-effects				
Mean dependent var		280.3007	S.D. dependent var	380.2101
R-squared		0.992050	P-value (F)	0.000000
	Coefficient	Std. Error	t-ratio	p-value
Const	0.918645	3.60015	0.2552	0.79877
FP	0.998263	0.0108041	92.3967	<0.00001

FINDINGS AND DISCUSSIONS

The Tables 1 and 2 are the results of random and fixed effect of Panel Data Regression model. The first thing that is to be decided from the above results is the appropriate model for the data. The Table 1 shows the results of random effect from which it can be seen that the future price has an effect on the spot price with the t stat significant at less than 1%. Now, one should decide on the right model. Hausman (1978) test results show that there is no fixed effect in the data as the chi square value is insignificant even at 10 %. Therefore, the right model for the data is the *Random Effect Model*, which is given in the Table 1. From the Random Effect Model, it can be seen that the regression equation is significant at <1 %, rejecting the null hypothesis that the beta is equal to zero. The explained variance of 99 % shows the amount of variation the independent variable is able to explain on the dependent variable, even though it is multiple effect. Future prices seem to have a significant effect on the spot price, as the t stat is significant at less than <1 % and the coefficient is close to 1. Therefore, the change is almost equal if the future price goes up by 1 unit. The spot price is also expected to go up by the same margin. As the Random effect model is the right model for the data, so it can be concluded that the effect is same for all the commodities. Random effects estimators are always consistent and efficient (Hausman and Taylor, 1981).

Generally, the price of a futures contract on a commodity moves correspondingly with the price of the underlying commodity. If the commodity prices rise, so will the futures prices. If the commodity prices fall, so will the futures prices. In the agricultural commodity market, the Futures trading increases spot price volatility if traders in futures market do not have as good information as participants have in the spot market. Even if the futures prices accurately reflect information available to traders in that market, their collective action pushes spot market prices away from its most appropriate value. Stein (1987) argued that futures trading introduces new speculators to the spot market. He demonstrates that if information is asymmetrically distributed, the information content of spot price is altered, and spot price variability increases and welfare is reduced.

CONCLUSION

The origin of derivatives can be traced back to the need of farmers to protect themselves against fluctuations in the

price of their crop. But after the introduction of commodity derivatives trading, the fluctuation in prices of agricultural commodities adversely impacts the incomes and livelihoods of farmers. The food inflation remained in double digits for most of 2010, before showing signs of moderation from March, 2011. The spot market may experience an increase in price volatility as futures trading enhances the price discovery mechanism and so, information concerning fundamentals is more rapidly assimilated into price. A major economic function of futures market is its price discovery role. Since a futures market faces less friction than the spot market, particularly with respect to lower transaction cost, futures price responds more quickly to new information or because of trading activity of uninformed speculation in the futures market. Such trading moves futures price first and then pulls spot prices by means of arbitrage, creating a lead lag relation. Thereby, futures price gouging on the spot market price may lead to take advantage of unusual market conditions, leading to food inflation in the economy. Thus, it is necessary to re-visit whether agricultural futures markets are still hedging markets.

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