

## MEASURING EFFICIENCY OF INDIAN GUAR SEED FUTURE MARKET

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### ABSTRACT

*Guar is a leguminous crop, botanical named as *Cyamopsistetragonoloba* which normally suited for sandy soils and required moderate rainfall to grow. Rajasthan is the main state for producing up to 70% of guar seed in India. Other major states for production of guar are Haryana, Punjab and Gujarat in India. Guar seed future trading was suspended in the year 2012 at NCDEX- India. The paper studies the gaps in the functioning of agricultural commodity market with the help of model such as Johansen's Co integration and Granger causality. We have found bi directional causality between future and spot prices of guar seed.*

**KEYWORDS:** *Guar Seed, Lead Lag Relationship, Co-Integration, Granger Causality.*

### Introduction

India grows around 80% of the world's annual guar production. Countries like Thailand and Australia are putting efforts for the promotion of the cultivation of guar seed. India is the largest country for the production of guar seed followed by Pakistan. Around 70% of the guar production is mainly done in Rajasthan. Other states are Gujarat, Haryana, Punjab, U.P and M.P. Guar botanical name is *Cyamopsis Tetragonaloba* is an annual, legume plant suited for sandy soil and at the same time it requires proper sunlight and moderate rainfall. Guar seed is having spherical shape endosperm which contains galactomannan gum basically used in industries. The extraordinary price rise during six months period between October 2011 and March 2012. The current guar seed production in India is 12.61 lakh tones. It was found that there was high fluctuation in the price of guar seed in the year 2012. As compared to previous year the price of guar seed was increased by Rs.32000. The main reason for the high fluctuation in the guar seed prices were the extravagant speculation disproportionate to hedging of guar gum and guar seed.

### Review of Literature

Many researchers have analyzed efficiency markets of commodity for their study. It has been found that there is few research on the efficiency of the commodity futures market in the Indian context. Naik and Jain(2001) used the co-integration theory for studying the efficiency of major commodity futures market. He concluded that main reason for the poor performance of Indian futures market is due to lack of adequate participation of hedgers in futures markets. Gopal and Sudhir (2002) concluded that agricultural commodity futures market has not fully developed as competent mechanism of price discovery and risk management. He blames deficient market for the poor management and infrastructure. Nirmal Kumar (2004) emphasized on the investors perception in the Indian commodity future trading market. Narendra (2006) concluded by saying that Commodity market has progressed with number of commodity exchanges, transparency and trading activity after 2003. Himdari (2007) mentioned the points that significant returns features and diversification potential has made commodities popular as an asset class. Sharma Tanushree (2016) examined speculative effect in trading in pepper. She found that surge in spot prices is not because of speculation. It obsoletes speculative effect in pepper trading. Kamal (2007) concluded that in short time, the commodity futures market has achieved sudden growth in turnover. He found the reasons to be consider for making commodity market as an efficient instrument for risk management. Jabir Ali and Kriti

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Bardhan Gupta(2011) suggests that there is a long term relationship between futures and spot prices for agricultural commodities like maize ,chickpea ,black lentil ,pepper ,castor seed ,soybean and sugar. The analysis of short term relationship by causality test indicates that futures market have stronger ability to predict subsequent spot prices for chickpea ,castor seed ,soybean and sugar as compared to maize ,black lentil and pepper .This study empirically examines the efficiency of futures markets for 12 agricultural commodities traded in the commodity exchanges using Johansen's co-integration approach. Thiagu Ranganathan and Usha Anantha kumar (2014)gave a conclusion that the Indian soybean futures markets are efficient and unbiased in the long run but there seems to be inefficiencies present in the short run .The cointegration test is used to test the long run unbiasedness and market efficiency of the contract, while the QARCH –M-ECM model is used to test the short run market efficiency. Kumar Mahalik Mantu Acharya Debashis Suresh Babu M (2014) studied vector error correction model and bivariate exponential garch model to analyze the price discovery and volatility spillovers in Indian spot futures commodity market. The VECM shows that agriculture future price index, energy future price index and aggregate commodity index effectively serve the price discovery function in the spot market implying that there is a flow of information from future to spot commodity markets but the reverse causality does not exist. There is no cointegrating relationship between metal future price index and metal spot price index. Jain Mamta and Arora Rakhi (2014) emphasizes on finding out the relationship between futures and spot prices of selected agricultural commodity Pepper by applying co-integration test using secondary data for the period of five years .This paper has made an effort to investigate the volatility in commodity prices .The study found that there is co-integration between future and spot prices for the selected time period. Dinesh Kumar Sharma and Meenakshi Malhotra (2015) concluded by studying the impact of future trading activity on the volatility of guar seed spot market prices .He examined the volatility of spot prices before and after the introduction of futures trading and relationship between futures trading activity and spot price volatility .The data taken on NCDEX from 2004 to 2011.Analysis of data is done using two different models named GARCH model and granger causality test .It was found that there is positive and significant relationship between futures trading volume and spot returns volatility and causality is also observed from UTV to spot volatility.

**Data and Methodology**

The data set in the study is consists of agricultural commodity named guar seed which is most actively traded on NCDEX. The selection of this commodity have been done because of the fact that there was a high fluctuation in the price of guar seed in the year 2012.This leads to the suspension of the future trading of guar seed on NCDEX. The data in the study consists of daily closing price of guar seed spot and futures prices. The period of study is from 2004 to 2011. Given the nature of the problem of the data, firstly study the data properties from an econometric perspective. For this study firstly, futures, spot, trading volume and open interest series are examined with Augmented Dickey Fuller (ADF) test. This test is to analyze the stationarity of spot and future prices of guar seed. The results are listed in the Table 1.

**Table 1: Unit Root Test Results**

S.No.	Market	Tests		p-value	
		ADF	2 <sup>nd</sup> Difference	level	2 <sup>nd</sup> difference
1.	spot	2.51	-9.6	0.99	0.0000
2.	future	2.93	-10.5	0.99	0.0000

Note: Null hypothesis of ADF is that spot/futures return series has unit root.

\* denotes significance at 5% level.

As it can be seen that initially spot and future series were non stationary and after second difference data was stationary.

**Table 2: Results of Johansen’s Test for Cointegration**

Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.395664	1831.659	15.49471	1.0000
At most 1 *	0.350073	844.5535	3.841466	0.0000*

Trace test indicates 2 cointegratingeqn(s) at the 0.05 level.

\*denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

As it can be seen from above table The result of trace test proves the null hypothesis of no co-integration is proved true. This has an important implication that the Guar Seed spot and future prices does not have a stable long-run relationship.

**Table 3: Granger Causality Test**

Null Hypothesis:	Obs	F-Statistic
LSP does not Granger Cause LFP	1963	12.3266*
LFP does not Granger Cause LSP		33.5604*

Note: \* indicates rejection of null hypothesis of no causality at 5% significance level.

The F-statistic (Table 3) reject the null hypothesis of no Granger causality from futures to spot market and spot market to future market..We found bi directional causality flowing from spot to future and future to spot.

### Conclusion

Guar Seed futures contract was introduced on NCDEX in April 2004 to fulfill the hedging needs of the farmers, traders, exporters, etc., and also to assist the spot market participants in making informed pricing decisions. oil exploration and food processing industry has made Export demand of Guar to the extent of giving it the status of new gold, but this commodity has also become controversial and its futures trading is facing allegations of disturbing the fundamentals. This study is an attempt to study the price discovery and efficiency of the future market of guar seed. The data set in the study is consists of agricultural commodity named guar seed which is most actively traded on NCDEX. The selection of this commodity have been done because of the fact that there was a high fluctuation in the price of guar seed in the year 2012.This leads to the suspension of the future trading of guar seed on NCDEX.

The data in the study consists of daily closing price of guar seed spot and futures prices. The period of study is from 2004 to 2011.Data of spot prices at level and first difference level does not have unit root meaning that it is not stationary. The series are stationary after second difference. We could not found any cointegration between spot and future prices. This has an important implication that the Guar Seed spot and future prices does not have a stable long-run relationship. We found bi directional causality flowing from spot to future prices and future to spot prices.

### References

- Ahuja, Narender L. (2006), "Commodity Derivatives market in India: Development, Regulation and Future Prospective", International Research Journal of Finance and Economics, 1, 153-162
- Bhattacharya, Himdari (2007), "Commodity Derivatives Market in India", Economic and Political weekly, Money Banking and Finance Vol. 42 No. 13, pp. 1151-1162.
- Jabir Ali Kriti Bardhan Gupta, (2011),"Efficiency in agricultural commodity futures markets in India", Agricultural Finance Review, Vol. 71 Iss 2 pp. 162 – 178.
- Mantu Kumar Mahalik, Debashis Acharya and M. Suresh Babu, Price Discovery and Volatility
- Naik, Gopal and Jain Sudhir Kumar (2002), "Indian Agricultural Commodity Futures Market: A Performance Survey", Economic and Political weekly, Vol. 37, No. 30, pp 3167-3173.
- Naik, G. and Jain,S.K.2001,Efficiency and unbiasedness of Indian commodity futures market. Indian Journal of Agricultural Economics,656(2),pp 185-197.
- Quantitative Approaches to Public Policy –Conference in Honor of Professor T. Krishna Kumar.
- Sharma Dinesh Kumar and Malhotra Meenakshi , (2015),"Impact of futures trading on volatility of spotmarket-a case of guar seed", Agricultural Finance Review, Vol. 75 Iss 3 pp. 416 – 431.
- Sharma, Tanushree (2016). The Impact of Future Trading on Volatility in Agriculture Commodity: A Case of Pepper. IUP Journal of Financial Risk Management, 13(4), 47.
- Spillovers in Futures and Spot Commodity Markets: Some Empirical Evidence from India.
- Thiagu Ranganathan Usha Ananthakumar, (2014),"Market efficiency in Indian soybean futures markets", International Journal of Emerging Markets, Vol. 9 Iss 4 pp. 520 – 534.

