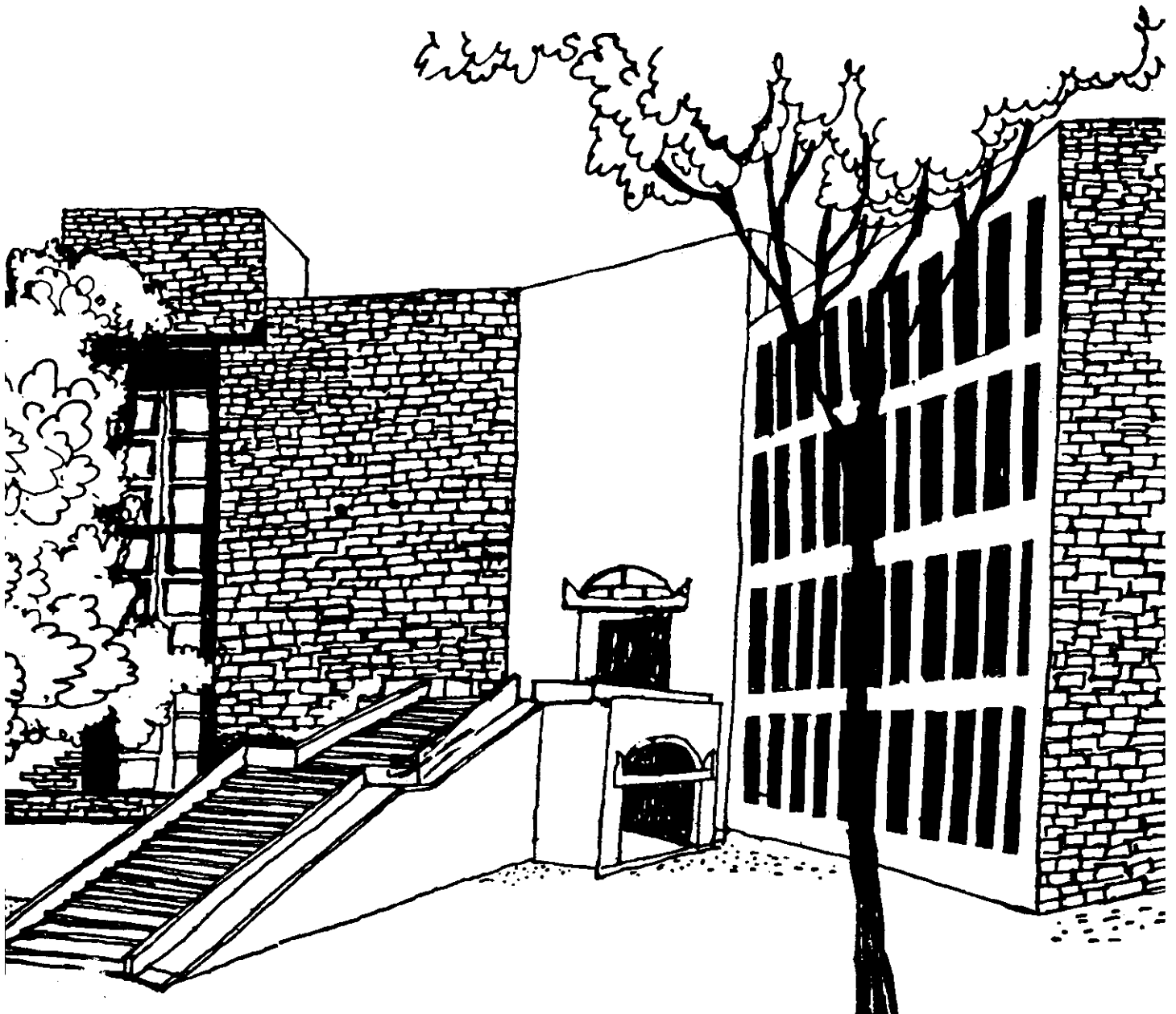




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# Working Paper



**ROLE OF FUTURES TRADING IN FACILITATING  
COMMODITY EXPORTS**

By

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## **Role of Futures Trading in Facilitating Commodity Exports**

### **Abstract**

In India, since its beginning in 1921 futures trading has been subjected to frequent intervention by the government in terms of allowing, banning and restricting its operation. As the debate on their utility for the economy as a whole, especially in terms of price stabilization, continues, the government is hesitant to encourage futures trading. The usefulness of futures markets are being reexamined in the light of its positive effects on international trade. Futures market seems to help exporters by way of reducing the risk of dishonor of contracts in the domestic market, reducing transaction cost due to liquidity and standardization, better market information and so on. However, unless the exporters are assured that in the long run they do not incur losses by participating in the futures market, they will not participate in the futures market. Moreover, for the economy as a whole the influence of futures trading on price stabilization should not be negative. This study examined the issues of exporters' profitability from trading in castor seed futures and price stabilization effect to assess whether futures trading should be encouraged for enhancing exports. The results indicate that the castor oil exporters would not have incurred losses if they had consistently participated in the futures market. In fact they would have benefitted by following certain trading strategies. The price stabilization test results also indicated that price stabilization effect is stronger than the destabilization effect. This is more so during high price years. These results indicate that futures trading can be beneficially used for export promotion.

## **Role of Futures Trading in Facilitating Commodity Exports**

### **Introduction**

Varying perception of policy makers regarding the utility of commodity futures market have led to frequent government intervention in these markets throughout the world. In India, since its beginning in 1921 futures trading has been subjected to frequent intervention by the government in terms of allowing, banning and restricting its operation. As the debate on their utility for the economy as a whole continues, the government is hesitant in encouraging futures trading.

The roles of futures market as a facilitator of hedging and speculation by providing liquidity (economy of transactions), efficient intertemporal allocator of commodities and providing market information are well recognized. However, its role in stabilizing spot prices is still unresolved (Kawai, 1983; Turnovsky and Campbell, 1985; Newbery, 1984, 1987). In the recent years, it is recognized that futures market have a positive role to play in international trade of commodities.

The recent technological advances in communications and computing have led to a rapid growth of futures trading in the west. However, futures markets have been untouched by these advances in India. Soon after Independence, the Government of India enacted the Forward Contract (Regulation) Act, 1952, under which a number of futures market were set up all over the country for trading in such commodities as cotton, oilseeds, spices, raw jute, jute products, etc. In the sixties, futures trading in cotton, groundnut, mustard seed and raw jute were banned as doubts were expressed on their economic utility. At present, futures trading is permitted for only five commodities - castor seed, pepper, turmeric, gur and potatoes. In the recent years its role as an instrument in export promotion is being examined. As long as futures trading is helpful in improving exports and if it does not have any adverse impact on price stabilization it would be wise to permit and encourage futures trading at least for the commodities for which export market is large. In this paper we examine the utility of castor seed futures trading in terms of improving exports of castor seed products and its role in price stabilization. Castor seed is selected in this study as India is a major supplier of castor oil in

the world market and futures trading in castor seed is intense.

### **Futures Trading and Exports**

Since the process of commodity exports generally involve 2 to 3 months of lag between agreement and delivery, exporters need to go for a forward contract to acquire required amount of commodity, especially when the exporters are not the inventory holders themselves. If such contracts are not futures contracts there is a high risk of dishonor of the contract in the event of an unfavorable movement of prices for sellers. Therefore, exporters face additional risk of dishonor if they go for such contracts. Since futures market completely eliminate this risk, exporters' competitiveness in the market increases in the presence of futures market. Also, non-inventory holder will have the same advantage as the inventory holders in doing export business. Moreover, the standardization of commodities that is required in the case of futures trading facilitates spot trading, reduces transaction cost and costs related to other risks. The existence of futures market also provides easy access to information to the importers and hence reduces their risk of entering Indian market.

However, unless these advantages are accompanied by an assurance that there will not be significant losses by trading in futures, exporters may not participate in futures market. Also, unless there is a positive or at least neutral price stabilization effect, futures trading will be difficult to justify. In this paper we examine these two aspects, i.e., profitability of trading in futures and price stabilization effect for castor seed market.

### **Castor Seed Futures Trading**

Castor seed futures trading is organized by Bombay Oilseeds and Oils Exchange Ltd and Ahmedabad Seed Merchants Association for 'Bombay Small Castor seed' variety. Madras Small, Gujarat Small, Kutch and Saurashtra Small and castor seed bold are other tenderable varieties. The contract months are March, June, September and December and delivery period is 1st to the last date of the month. The contract is for 5 metric tons and unit of quotation is for 100 kgs. Trading commences in the month of July/August for December delivery,

October/November for March Delivery, January for June delivery and March for September delivery.

### **Methodology**

As mentioned earlier, in this paper we examine two issues: first, whether exporters incur loss by trading in the futures market and second, whether futures market destabilize spot prices.

Assuming exporters buy the commodity in the spot market when needed (no inventory holding by the exporter), profitability of trading in futures would depend on the price changes at the time of selling the contract compared to the price at the time of purchase and differences in spot and futures prices at maturity. Exporters would benefit if the prices of futures contract has increased over the price at which contract is bought and if futures prices are higher than the spot prices at maturity. We have examined these two components of profitability separately.

For the first component we have computed the price spread between maturity months and month in which contract is bought. Specifically we have examined for situations where contract is bought in the first week of first, second, third and fourth month after the commencement of the contract and sold in first and second week of the maturity month (maturity month price - price when contract was bought). For the second component, we have computed the weekly average price difference between futures price and spot price (futures price - spot price = maturity basis) during the maturity months. The data used is for the period from March 1985 to June 1990.

Futures markets through their open competitive bidding and efficiency in disseminating market information facilitate a closer inter-temporal price equilibrium and reduces the frequency as well as the magnitude of price fluctuation in the spot markets. These reduction in price fluctuations are not the long period secular price movements in commodities caused by such influences as growth of population and incomes, changes in consumer habits or customs, technological developments etc. Nor its stabilizing influence of

futures market operate on small day to day and hour to hour oscillations which are caused by the efforts of speculators to earn quickly through rapid "turns" in prices. The major price fluctuations that futures market could readily reduce are the short run, intraseasonal price changes (particularly from month to month) which affects largely the fortunes of the trade and industry.

To analyze the price stabilizing efficiency of the castor seed futures market Kaldor's concept of "Elasticity of Expectations" has been used. This concept is based on the assumption that the elasticity of expectations and the elasticity of speculative stocks together determine the extent to which price variations due to outside causes are eliminated by speculation. If we denote the degree of price stabilizing influence by S, the elasticity of speculative stocks by e, and the elasticity of expectations by n, their relations can be expressed as follows:

$$S = -e(n-1).$$

Since e cannot be negative, the sign of S is dependent on whether n is greater or less than 1. Therefore, the nature of price stabilization is determined by n, which measures the change in current price due to changes in expected price. Speculation will destabilize the price of the commodity when  $n > 1$  and will stabilize the price when  $n < 1$ . The effect will be neutral when  $n = 1$ . In this study we have used futures price as expected price, though futures price is different from expected price to the extent of risk premium. We have assumed that the risk premium does not vary significantly in the short run. The expression for n is

$$n = \frac{(F_t - F_0)/F_0}{(R_t - R_0 - c)/(R_0 + c)}$$

where n denotes the elasticity of expectation, R is the spot price, F is the futures price, c is the cost of carrying stock, and t refers to time period. The "elasticities of expectations" were worked out for one month periods from May 1985 to June 1990. The average weekly spot and futures prices of castor seed at Bombay were used for this purpose. The carrying costs were assumed to



be Rs. 11.50 for four weeks period for all the years. The frequencies of elasticities of expectations (n) indicates whether futures trading had stabilizing or destabilizing influence on spot prices.

### **Results**

Futures price spread between maturity and different trading months are presented in table 1. The table indicates that the price spread were generally negative for June and September contract for 1988, and March and June contract of 1989. This may be due to good castor crop obtained during 1988-89 after three successive drought years. Table also indicates that as the maturity approached there is a tendency of futures price to rise. As a result during the third and fourth month the prices are generally higher than the maturity months, as can be observed from the negative spreads. Assuming the maturity cash and futures prices are equal, on an average, buying contracts in the first month and second has been beneficial for exporters for all contracts (except for March when it is sold during first week of maturity). Buying during the third month of commencement of trading has also been beneficial except for March contract, irrespective of whether contract is sold during first or second week of the maturity month. However, buying contract during fourth month has been beneficial for the September contract and for December contract when sold during second week of the maturity month. Therefore, exporters can use certain strategies while using futures trading. They are: avoid trading in the fourth month after commencement of the contract unless it is for the September contract; avoid March contract unless exporter can buy during first and second month after commencement of futures trading.

Table 2 shows the bases (futures price - spot price) during different weeks of the maturity months. The table indicates that for March and June contracts the bases were generally in favour of exporters. The bases were adverse for June contract during 1987 and 1988 and for March contract during 1988. However, for the duration of analysis as a whole the exporter benefitted from futures trading. In the case of September contract large negative bases were observed during 1987. Bases were negative during first three weeks in 1985 and last three weeks in 1988. The year to year variations in bases were also

Table 1. Futures Price Spread Between Maturity and Different Trading Months (Rs/Qt1)

Contract	Year	Price Spread Between First Week of Maturity Month and Different Months After Commencement of Trading				Price Spread Between Second Week of Maturity Month and Different Months After Commencement of Trading			
		First	Second	Third	Fourth	First	Second	Third	Fourth
March	1986	40.25	8.00	-23.75	-3.25	45.42	13.17	-18.58	1.92
	1987	12.90	8.00	-34.13	-24.08	17.40	12.50	-29.63	-19.58
	1988	36.17	44.92	22.33	8.58	34.30	43.05	20.46	6.71
	1989	-8.50	-31.09	-19.17	-21.50	-21.33	-43.92	-32.00	-43.33
	1990	-30.80	-30.80	-14.50	24.08	-20.30	-4.00	34.58	13.42
	Average		10.00	-0.19	-13.84	-3.23	11.10	4.16	-5.03
June	1986	27.53	35.60	40.70	17.10	46.13	54.20	59.30	35.70
	1987	33.84	41.42	31.92	-20.53	41.67	49.25	39.75	-12.70
	1988	-8.30	-13.10	-20.02	-32.85	-16.70	-21.50	-28.42	-41.25
	1989	-35.10	-15.00	-9.90	5.10	-28.50	-8.40	-3.30	11.70
	1990	14.00	6.75	-0.75	-10.13	27.00	19.75	12.25	2.87
	Average		6.39	11.13	8.39	-8.26	13.92	18.66	15.92
September	1985	-56.25	-27.50	-35.50	-18.83	-33.75	-5.00	-13.00	3.67
	1986	51.70	32.70	11.72	19.05	66.03	47.03	26.03	33.38
	1987	84.45	55.70	70.70	69.10	79.45	50.70	65.70	64.10
	1988	-30.80	-35.92	13.25	-10.58	-19.47	-24.59	24.58	0.75
	1989	87.75	97.45	105.25	69.85	79.33	67.03	96.83	61.43
	Average		27.37	24.49	33.08	25.72	34.32	31.43	40.03
December	1985	-20.83	1.50	9.50	-12.50	5.17	27.50	35.50	13.50
	1986	30.00	5.60	6.67	-0.60	39.02	14.02	15.09	1.82
	1987	32.47	37.90	24.85	13.60	35.12	40.55	27.50	16.25
	1988	N.T.	N.T.	N.T.	N.T.	N.T.	N.T.	N.T.	N.T.
	1989	25.83	23.58	7.53	-14.27	20.42	18.17	2.12	-19.68
	Average		13.61	13.72	9.71	-2.75	19.95	20.05	16.04

N.T. refers to no trading.

Table 2. Difference Between Futures and Spot Prices During  
Different Weeks of Maturity Month (Rs/Qtl)

Contract	Year	I Week	II Week	III Week	IV Week
March	1986	7.00	7.50	12.50	12.50
March	1987	7.75	13.50	8.50	-0.50
March	1988	-12.00	-4.50	1.00	1.00
March	1989	20.00	16.00	18.00	13.00
March	1990	4.50	4.50	4.50	11.00
	Average	5.45	7.40	8.90	7.40
June	1986	14.00	18.75	13.50	12.50
June	1987	-0.25	-0.50	0.00	-4.00
June	1988	-5.50	-17.00	-19.00	4.00
June	1989	17.00	16.00	35.00	7.00
	Average	6.31	4.31	7.38	4.88
September	1985	-6.00	-9.50	-11.00	2.00
September	1986	21.25	15.00	15.25	7.00
September	1987	-102.25	-64.50	-47.00	-38.00
September	1988	7.25	-1.50	-4.00	-1.00
September	1989	22.00	22.00	22.00	3.00
	Average	-11.55	-7.70	-4.95	-5.40
December	1985	4.00	9.50	7.50	-2.50
December	1986	17.00	19.50	12.50	7.50
December	1987	-26.00	-62.50	-97.50	-58.50
December	1988	N.T.	N.T.	N.T.	N.T.
December	1989	20.00	27.00	16.00	1.50
	Average	3.00	-1.30	-12.30	-10.40

N.T. refers to no trading.

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**Table 3. Yearwise Stability Test Results**

Year	n>1	n<1	Ratio
1985	21	33	1.57
1986	28	58	2.07
1987	23	63	2.74
1988	19	52	2.74
1989	27	54	2.00
1990 (till June)	8	30	3.75
<b>Total</b>	<b>126</b>	<b>290</b>	<b>2.30</b>

**Table 4. Monthwise Stability Test Results**

Month	n>1	n<1	Ratio
January	2	27	13.5
February	1	37	37.0
March	7	34	4.86
April	16	23	1.44
May	23	24	1.04
June	9	17	1.88
July	8	17	2.13
August	10	31	3.1
September	13	21	1.62
October	2	24	12
November	20	19 *	0.95
December	15	16	1.07
<b>Total</b>	<b>126</b>	<b>290</b>	<b>2.30</b>

Here again the number of times elasticities of expectation were less than unity were higher than number of times it was greater than unity for all the months except for November. A probable reason for this greater instability in November is that stray arrivals start coming by the end of November, and December being the first contract of the new crop year prices tend to be unstable and hence futures market is unable to stabilize spot prices. December contract generally contains more of speculative trading as it is the beginning of the harvest season. As harvest season advances the production estimates tend to become more accurate and hence stabilizing effects are greater. By May harvest season closes and prices start rising. This trend in price increase continues up to August by end of which first information about the new crop starts coming in.

Finally, it was examined whether such stabilizing influence was unbiased between rising and falling price movements in the ready market. An unbiased futures market would help in stabilizing the rise in ready prices as often as it would help in preventing fall in such prices.

While counting the stabilizing and destabilizing effect when the ready prices rose or declined the case of 'no change' in ready prices were excluded, as these would not reveal any bias. Table 5 summarizes the results. It is clear from the table that castor seed futures market tended to support the fall in ready prices as well as arrest rise in price equally. Moreover, it is clearly evident from the ratios that in 1987 when prices were ruling high due to drought conditions it tended to arrest rise in ready prices and during 1989,90 when production was high it tended to reduce fall in ready prices.

Thus we can conclude that futures market in castor seed has helped in stabilizing spot prices in normal years as well as in drought years and thus have played an important role in castor seed trading in India. Its usefulness is also evident from the volume of trading in the futures market (table 6).

Table 5. Influence of Futures Market on Rise and Fall in Spot Prices

Year	when ready price rose			when ready price declined		
	Stabilizing	Destabilizing	Ratio	Stabilizing	Destabilizing	Ratio
	n < 1	n > 1		n < 1	n > 1	
1985	16	11	1.45	17	10	1.7
1986	35	25	1.40	23	3	7.66
1987	37	13	2.84	26	10	2.6
1988	21	8	2.62	31	11	2.81
1989	21	15	1.40	33	12	2.75
1990	14	8	1.75	16	0	
TOTAL	144	80	1.8	146	46	3.17

Table 6. Castor Seed Production and Volume of Trading in Futures Market (000 tons)

Year	Production (trade estimate)	Traded at			Per cent of Production Traded
		BOE	ASMA	TOTAL	
1985-86	400	710.88	1434.74	2145.62	436.41
1986-87	360	NA	1292.245	1292.245	269.21
1987-88	275	736.66	1616.515	2353.175	755.70
1988-89	350	814.395	2014.678	2829.073	703.31
1989-90	500	351.378	1264.54	1615.918	223.18

NA = Not available; BOE = Bombay Oilseeds Exchange;  
ASMA = Ahmedabad Seed Merchants Association.

The table indicates that the volume of trading in castor seed has been at least 4-5 times of the estimated production of castor seed reflecting the

usefulness of futures trading in castor seed. It can also be observed that during drought years the volumes of trading has been higher compared to other years.

### **Conclusions**

The usefulness of futures markets are being reexamined in the light of its positive effect on international trade. The policy makers are exploring the possibility of using futures markets as an instrument in export promotion. Futures market seem to help exporters by way of reducing risk of dishonor of contracts in the domestic market, reducing transaction cost due to liquidity and standardization, better market information and so on. However, unless the exporters are assured that in the long run they do not incur losses by participating in the futures market, they will not participate in the futures market. Moreover, for the economy as a whole the influence of futures trading on price stabilization should not be negative. This study examined the issues of exporters' profitability from trading in castor seed futures and price stabilization effect to assess whether futures trading should be encouraged for enhancing exports. The results indicate that the castor oil exporters would not have incurred losses if they had consistently participated in the futures market. In fact they would have benefitted by following certain strategies. The price stabilization test results also indicated that price stabilization effect is stronger than the destabilization effect. This is more so during high price years. Positive price stabilization effect was observed for both rising and declining price periods. These results indicate that futures trading can be beneficially used for export promotion. Therefore, for those commodities which (or its products) are exported it would be helpful to introduce futures trading.

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