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EFFICIENCY IN MILLET MARKETING (A CASE STUDY OF RAJASTHAN)

Improvements in marketing encourage production largely through direct or indirect effect of higher prices to producers. It may be direct by reducing marketing costs and margins and passing these reductions to the farmers in the form of higher prices or indirect through lower prices to the consumers, resulting in expansion of the market. The extent to which changes in marketing costs and margins are transferred to farmers depends on the perfection or otherwise of the market mechanism. The issue of competitiveness or perfection of Indian markets for foodgrains has been a subject of considerable interest, both in terms of conclusions reached and methodology.

In this paper we present evidence on market performance for millets from Rajasthan State which is characterized by high production fluctuations of millets. All the three millets studied, *viz.*, bajra (pearl millet), maize (zea mays) and jowar (sorghum) are grown in *kharif* season and are largely dependent on rainfall.

METHODOLOGY AND DATA

Methods of price correlations and correspondence between price differences and costs were used by Lele (1967, 1973), Raju and von Oppen (1982), Thakur (1974), Agarwal, and Singh and Kahlon (1977) to show that the market structure for millets is fairly competitive. Recently Rudra (1980) and Harriss (1979, 1982) have shown that a conclusion of competitiveness does not necessarily flow from correlations close to unity or from a correspondence between costs and prices on the average. We have, therefore, confined ourselves to static and dynamic analysis of marketing margins and have avoided price series correlation as a method of assessing market performance.

The selected districts are Alwar, Bharatpur, Ganganagar, Jaipur, Kota, Sawai Madhopur and Udaipur which together account for 44.3 per cent of bajra production, 35.6 per cent of maize production and 46.6 per cent of jowar production in the State.

Static analysis of marketing margins was carried out by computing the share of consumer's (retail) price obtained by the producer, and the relative magnitude of marketing costs and retained margins of traders. Gross price spread was computed as concurrent margin, *i.e.*, the difference in the retail price at the urban centre and farm harvest price of the concerned district. Net margins were estimated by deducting the costs of marketing from the gross price spread. Marketing costs included labour for loading, unloading, weighing, stitching and sieving of bags, depreciation on gunny bags, transportation and storage costs, octroi, commission, brokerage, market fee sales tax, etc. The analysis could be done only for bajra for two years (1977-78 and 1978-79) in Jaipur district due to lack of retail price data for other crops, centres and years. The analysis of margins was made dynamic in time and space by working out (i) off-season price increases and comparing these with

storage costs; and (ii) inter-market price differences and comparing these with transportation costs. Correspondence between inter-seasonal price changes and storage costs was studied for ten years (1970-71 to 1979-80). Four seasons of three months each were considered. First season was taken as November to January. Storage cost included godown rent, value of physical losses during storage and interest on tied up capital. Correspondence between month to month price changes (beginning November) and storage costs was also examined. Based on ten years' analysis, probabilities of positive returns to storage were computed.

Correspondence between inter-market price differences and transportation costs for each month of six years' period (1975-1980) was examined. This could be done between six market pairs for bajra, five market pairs for maize and three market pairs for jowar. Frequency distribution of months according to direction and magnitude of inter-market price differences was worked out. Due to data gaps, actual number of paired observations that could be used for analysis was less than anticipated. Transportation costs included loading charges, truck haulage, depreciation on bags, octroi in the receiving market and unloading.

Farm harvest and monthly wholesale and retail prices were obtained from the publications and records of the Directorate of Economics and Statistics, Rajasthan, Jaipur. Costs of storage, transportation and marketing were obtained from representative traders, warehouse officials, transport agencies and other market functionaries.

RESULTS

Price Spread

The results in Table I show that the difference between retail and farm harvest price of bajra was Rs. 31.29 per quintal. This is the gross marketing margin which is 30.98 per cent of the farm harvest price and 23.65 per cent of the retail price. Out of this, the actual cost of marketing is only Rs. 10.05 per quintal and the remaining is the net margin retained by various

TABLE I—PRICE SPREAD FOR BAJRA GRAIN IN RAJASTHAN (1977-79)

Particulars	Rs. per quintal	Percentage of retail price	Percentage of farm harvest price
Farmers' share (farm harvest price)	101.00	76.35	100.00
Marketing costs	10.05	7.60	9.95
Net marketing margins	21.24	16.05	21.03
Gross price spread (gross margin)	31.29	23.65	30.98
Retail price	132.29	100.00	130.98

TABLE II—DIFFERENCE BETWEEN SEASONAL PRICE RISE AND STORAGE COST FOR MILLETS IN RAJASTHAN (1970-71 TO 1979-80)

(Rs. per quintal)

Marketing year/Season	Bajra				Jowar				Maize					
	I-II		I-III		I-IV		I-III		I-IV		I-III		I-IV	
	I-II	I-III	I-IV	I-III	I-II	I-III	I-IV	I-II	I-III	I-IV	I-II	I-III	I-IV	
1970-71	-10.22	-16.59	-17.47	-0.92	-0.14	0.24	-2.21	-3.89	-7.08	
1971-72	5.02	11.29	23.10	2.51	12.97	22.83	2.96	5.78	10.61	
1972-73	11.48	17.88	-1.45	-0.17	-3.08	-1.60	17.01	28.67	34.04	
1973-74	9.06	6.24	50.62	15.07	28.30	36.53	7.23	16.46	15.99	
1974-75	-3.97	-14.84	-80.41	-0.73	-17.16	-50.38	53.42	45.17	-10.84	
1975-76	-18.92	-8.78	-18.22	-8.14	19.27	-3.51	-11.02	-7.24	-7.08	
1976-77	3.85	8.59	3.02	-1.14	-13.36	-19.78	2.46	6.76	-44.83	
1977-78	-16.01	-24.10	-31.66	-4.45	-8.98	-9.32	-5.71	-8.20	-25.75	
1978-79	-15.88	-19.37	5.88	-6.39	-4.28	-1.40	-10.19	-4.18	-0.40	
1979-80	0.73	-2.25	-25.73	12.65	5.51	-18.69	-3.00	11.92	-12.89	
Average	-3.51	-4.19	-9.23	0.83	1.91	-4.51	5.10	9.13	-4.82	

intermediaries. Net margin is 21.03 per cent of the farm harvest price and 16.05 per cent of the retail price. Out of the price paid by the consumer, 76.35 per cent goes to the farmer, 7.60 per cent is the cost of marketing and 16.05 per cent is the net margin of intermediaries. In view of the very simple nature of marketing functions required to be performed for bajra, the margin of intermediaries appears to be high.

Intra-Year Price Rise and Storage Cost

Differences between the price rise from the first (post-harvest season, average of November to January) to the subsequent seasons and storage costs for ten years' period are shown in Table II. In most of the years, it was not profitable to carry the inventories even upto the second season. Thus buying on a random date during the first season and selling on a random date during the subsequent seasons were not always profitable. But substantial price fluctuations during the year provide an opportunity for the astute trader to profit. But this is a return for astute trading and not of the usual phenomenon of seasonality in prices. Based on the difference between inter-month price rise and storage cost (beginning November during each year), we estimated for each month, the number of years when the difference was positive. Dividing this number by 10, the probability of obtaining positive difference was obtained. The probabilities are given in Table III. The probabilities range from 0.4 to 0.7 in bajra, from 0.3 to 0.6 in maize and from 0.2 to 0.5 in jowar. The probability of earning a profit by buying on a random date in November (post-harvest season) and selling on a random date during subse-

TABLE III—PROBABILITY MATRIX OF INTER-MONTH PRICE RISE (BEGINNING NOVEMBER) EXCEEDING STORAGE COST FOR KHARIF MILLETS IN RAJASTHAN BASED ON TEN YEARS' DATA (1970-71 TO 1979-80)

Month	Bajra	Maize	Jowar
December	0.7	0.4	0.2
January	0.6	0.6	0.5
February	0.6	0.6	0.3
March	0.6	0.6	0.4
April	0.6	0.5	0.2
May	0.5	0.6	0.3
June	0.6	0.6	0.5
July	0.4	0.5	0.4
August	0.4	0.5	0.5
September	0.4	0.4	0.3
October	0.5	0.3	0.2

quent months is not very high. They were, in general, more in bajra and maize than in jowar. Such a situation is observed because buying/selling and stocking decisions of traders are timed in a way that is considered most advantageous by them.

Inter-Market Price Differences and Transportation Costs

The results in Table IV show that during 71 per cent of the months prices in the secondary markets were higher than in the primary markets and the reverse was true in 29 per cent of the months. But the difference did not exceed transportation costs in all months. For example, the price in the secondary markets exceeded the price in the primary markets and transportation costs in 46 per cent of the months. Similarly in 8 per cent of the months, the price in the primary markets was more than the price

TABLE IV—FREQUENCY DISTRIBUTION OF MONTHS ACCORDING TO DIRECTION AND MAGNITUDE OF INTER-MARKET PRICE DIFFERENCES BETWEEN PRIMARY, SECONDARY AND TERMINAL MILLET MARKETS OF RAJASTHAN (1975-1980)

Particulars	Bajra	Maize	Jowar	Total
Between primary and secondary markets				
Ps > Pp	72 (58)	85 (82)	37 (79)	194 (71)
Pp > Ps	52 (42)	19 (18)	10 (21)	81 (29)
Total	124 (100)	104 (100)	47 (100)	275 (100)
Ps > (Pp+TC)	41 (33)	54 (52)	31 (66)	126 (46)
Pp > (Ps+TC)	16 (13)	5 (5)	1 (2)	22 (8)
Between secondary and terminal markets				
Pr > Ps	93 (82)	37 (38)	61 (73)	191 (65)
Ps > Pr	21 (18)	60 (62)	23 (27)	104 (35)
Total	114 (100)	97 (100)	84 (100)	295 (100)
Pr > (Ps+TC)	50 (44)	5 (5)	51 (61)	106 (36)
Ps > (Pr+TC)	5 (4)	19 (20)	8 (10)	32 (11)

Pp = Wholesale price in primary wholesale market.
 Ps = Wholesale price in secondary wholesale market.
 Pr = Wholesale price in terminal wholesale market.
 TC = Transportation cost.

Figures in parentheses are percentages of total months.

in the secondary markets and transportation cost. The inter-market price differences (primary and secondary markets) exceeded transportation costs in 46 per cent of the months in bajra, in 57 per cent of the months in maize and in 68 per cent of the months in jowar. The comparison of inter-market price differences between secondary and terminal markets shows that they exceeded transportation costs in 29 per cent to 71 per cent of the months. Thus correspondence between price differences and transportation cost appears to be low. This is because, even during a month, traders undertake inter-market sale and purchase on such days where the price difference over the cost is most advantageous to them.

CONCLUSIONS

In view of the simple nature of marketing functions involved in bajra, the margins of intermediaries are rather high. Correspondence between inter-seasonal or inter-month price rise and storage cost does not reveal very high chances of earning a profit from storage. Profits can only be earned by astute trading. Correspondence between inter-market price differences and transport costs was not of a high degree. It appears that efficiency in millet marketing, though not very high, is also not exploitative as it used to be in the historical past. Various measures to regulate and improve the performances have affected the market mechanism but a lot remains to be done by improving the market information system, farmers' education in marketing and effective implementation of measures in force.

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