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RESEARCH NOTES

ECONOMIC PERFORMANCE OF GROUNDNUT MARKETING CHANNELS: A CASE STUDY OF RAYALASEEMA REGION OF ANDHRA PRADESH

THE PROBLEM

In a comparative study of different spatial markets, from the point of efficiency, different indicators such as (a) percentage share of the producer in the final product, (b) costs of marketing, (c) price equalisation/differentiation and (d) spatial and temporal price movements are being adopted. In case a market is efficient or perfectly competitive in nature, adoption of any of the above criteria will yield the same results. In other words, the ranking of the markets will remain the same. However, when different sub-systems of a market characterize different types of markets such as monopoly, oligopoly, oligopolistic competition, etc., and with multiple classes of participants having different class interests, a single measure seems to be inadequate to assess the overall performance. In the context of groundnut marketing system, when participants have some choice to operate in different channels, where the structure of the channels vary, the problem becomes more complex.

Nevertheless, the variable, 'low or high' producers' share¹ in the value of final product gives an idea to some extent whether there are any collusions or agreements or not. But this does not throw light on the other criteria. Secondly, the variable does not take into account the operational efficiency of the participants individually in the game of trade. The minimization of costs of marketing of margins to middlemen² is used as a proxy to the criterion for free mobility of large number of buyers and sellers and no collusion among them. This variable is also limited to the criterion of perfect knowledge and whether prices received/paid by any participant are the same, *i.e.*, homogeneity and to some extent, perfect knowledge of market

1. The important studies on the concept of producers' share and its measurement are M.C. Munshi: *From the Farmers to the Consumer—A Survey of Price Spreads*, Research Department, Federation of Indian Chambers of Commerce and Industry, New Delhi, 1957; C.G. Ranade, R.B. Singh and K. Hanumantha Rao: *Marketing Channels and Price Spread in Cotton*, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1979; A.S. Kahlon and B. Singh: *Marketing of Groundnut in Punjab*, Department of Economics and Sociology, Punjab Agricultural University, Ludhiana, 1968; Laxman Singh, "Marketing Costs and Producers' Share in Consumers' Rupee—Two Case Studies of Rice in Madhya Pradesh", *Agricultural Situation in India*, Vol. XVI, No. 10, January 1962, pp. 1020-1024; A.P. Kulkarni, "Price Spread for Groundnut in Two Regulated Markets", Seminar on Marketing of Agricultural Commodities, Seminar Series—V Indian Society of Agricultural Economics, Bombay, 1965.

2. The important studies on the concept of costs and its measurement are C.G. Ranade, K.H. Rao and D.C. Sah: *Co-operative and Private Trade Channels in Groundnut*, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1979; M.G. Pavaskar and V. Radhakrishnan, "Marketing Margins in Cotton", *Economic and Political Weekly*, Vol. V, No. 13, March 28, 1970, pp. A-41-A-47; R.V. Singh, R.C. Varma and N.L. Agarwal, "Marketing Costs and Margins of Co-operative Marketing Society and a Private Wholesale Trader," *Agricultural Marketing*, Vol. XVII, No. 1, April 1974, pp. 14-18; S.C. Merh, "Costs of Marketing Cotton in the Bombay Karnatak," *Indian Journal of Agricultural Economics*, Vol. IV, No. 1, March 1949, pp. 215-222.

conditions.³ This variable also does not represent whether the price is reasonable or not, if not what are the alternative choices, including mobility available to the producer-seller. Synchronised and divergent movement of prices or market integration⁴—spatial and temporal—implies efficient relaying of price signals from the consumer level to that of the producers. Price differences, if any, between two geographical centres and/or between two time points are ascribed to transport costs and/or storage costs. Nevertheless, two prices can indeed differ by a large margin and yet they move together in the same direction and yield a correlation coefficient of one.⁵ This variable is also deficient in indicating the competitiveness due to non-accountability of actual transport and storage costs. Hence, the specific objectives of the study are (i) to identify some indicators of (economic) performance of marketing channels, and (ii) to compute a measure of overall economic performance of groundnut marketing channels.

APPROACH OF THE STUDY

The four criteria, methodologically, can be stated as follows for measuring the efficiency of channels of marketing: (i) higher producers' share in the value of final product, (ii) lower the costs of marketing, (iii) price equalisation and (iv) seasonal price movements.

The producers' share is derived by the ratio of net average price received by the producers to the weighted average price of oil and oilcake. The producers' net average price received is arrived at as an average of offered price after adjusting it to the deductions made for each lot. Weighted average price of oil and oilcake, as it is the value of final product, is arrived at by using the following simple formula:

$$P_{wi} = \frac{W_o \bar{P}_{oi} + W_c \bar{P}_{ci}}{W_o + W_c}$$

where \bar{P}_{oi} = average price of oil sold out by oil mills in each channel,

\bar{P}_{ci} = average price of cake sold out by oil mills in each channel,

W_o = weight for oil,

W_c = weight for oilcake,

i = channel number ranges from 1 to 5.

3. Ranade, Rao and Sah, *op.cit.*

4. On market integration and its measurement, refer G. Parthasarathy, "Prices of Rice during Second Five Year Plan Period at Selected Market Centres in Southern Zone," *Artha Vijnana*, Vol. XXIII, No. 2, June 1961; R.W. Cummings Jr: Pricing Efficiency in the Indian Wheat Market, Impex India, New Delhi, 1967; Uma J. Lele: Foodgrains Marketing in India—Private Performance and Public Policy, Cornell University Press, Ithaca, New York, 1971; Ranade, Rao and Sah, *op.cit.*

5. Ashok Rudra: Indian Agricultural Economics: Myths and Realities, Allied Publishers Pvt. Ltd., New Delhi, 1982.

Weights are derived on the basis of average input and output ratios of oil mills in each channel. Costs of marketing are estimated per rupee and the channel which has the lowest marketing cost is ranked as 1 and that which has the highest as 5. Similar ranking has been done after estimating the margin to the middlemen in each channel.

Price equalisation, denoting that the prices received by all categories of farmers are equal, has been studied by taking the mean of the differences (\bar{d}) between the highest and lowest prices of each week under each channel. If $\bar{d} = 0$, it implies price equalisation among all categories of farmers. If \bar{d} is low, it implies less deviation among categories of farmers and if \bar{d} is high, deviation is supposed to be high. This paper has not dealt with the further classification of farmers on the basis of land holding.

The seasonal movement of prices has been studied by adopting a simpler standard deviation formula, rather than estimating correlation coefficients for time-series data.

$$\sigma = (1/T) \sum W_t (P_t - \bar{P})^2$$

where σ = seasonal price variability index/factor,

\bar{P} = average farm price of the season under each channel,

P_t = average farm price of the week,

T = total weeks in the season,

$$W_t = \frac{S_t}{\sum_i \sum_t S_{it}}$$

S_t = sales during the week,

$\sum_i \sum_t S_{it}$ = summation of sales during the week under all channels.

The total season has been divided into two periods, *viz.*, peak and lean periods. Peak period represents the immediate post-harvest period of three months. The later period of three months is the lean season. The ' σ ' is estimated separately for each period. A lower value of ' σ ' implies that the farmers' prices are not affected by seasonality and vice versa.

For grouping of all these factors to estimate the efficiency performance of marketing channels, ranking approach is adopted. The relative ranking is made for each channel as per each indicator factor and as a composite indicator, the mean of the ranks for each channel is obtained. The lowest mean represents relatively the most efficient channel and vice versa. Efficiency performance as such cannot be determined absolutely, the results give the relative performance of the existing channels.

SAMPLING DESIGN

The paper is confined to the groundnut marketing system upto the whole-sale trade of oil and oilcake in Rayalaseema region which contributes around

67 per cent of the total groundnut production in Andhra Pradesh. Four markets*—Vayalpad, Madanapalle, Anantapur and Adoni—are chosen purposively for the present study, based on the criteria of (i) highest agricultural population and (ii) highest area under groundnut; three villages are selected from the jurisdiction of each market. Thirty farmers were selected by using random sampling method from each village (Table I). But due to non-availability of sufficient data from 13 farmers, they were excluded from the analysis.

TABLE I.—NUMBER OF FARMERS SELECTED IN EACH CHANNEL

Market	Village	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Total
Vayalpad	1	10	10	10	—	—	30
	2	5	14	7	4	—	30
	3	6	11	9	—	—	26
Madanapalle	4	13	14	3	—	—	30
	5	7	15	6	—	—	28
	6	12	3	13	—	—	28
Anantapur	7	10	8	10	1	—	29
	8	12	10	6	2	—	30
	9	22	6	—	3	—	31
Adoni	10	—	—	—	—	27	27
	11	—	—	—	—	28	28
	12	—	—	—	—	30	30
Total		97	91	64	10	85	347

From the information provided by the farmers, it is identified that the surplus of groundnut available to oil industry in the region has been moving through the following five major channels in the region.

- Channel 1: Farmers selling through village merchants in unregulated market.
- Channel 2: Farmers selling through brokers or agents of processing units and/or traders in unregulated market.
- Channel 3: Farmers directly selling to private processing units in unregulated market.
- Channel 4: Farmers directly selling to co-operative processing units in unregulated market.
- Channel 5: Farmers selling through commission agents in regulated market.

In addition, data regarding marketing costs, purchase and sale prices, turnover and qualitative information from 18 village merchants and 13 brokers, 11 owners of decorticating units and 12 oil mills were collected

* Vayalpad and Madanapalle markets are unregulated, Anantapur is unregulated with co-operative processing unit and Adoni is a regulated market.

through designed schedules and personal interviews. The data related to the *kharif* season, 1981-82.

RESULTS OF THE STUDY

The producers' share is the highest in channel 4, followed by channel 5 and the lowest in channel 1 (Table II). In other words, this indicator shows that the farmers will be benefited if they sell either directly to the co-operative processing units or through commission agents in the markets where total market regulation is under operation. The second and third indicators, *viz.*, marketing costs and margins to middlemen also substantiate the earlier argument, even though the marketing costs are the lowest in channel 3. It may be noted that the marketing costs are lower as the length

TABLE II—PRODUCERS' SHARE IN THE FINAL PRODUCT PRICE IN DIFFERENT MARKETING CHANNELS

Item	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
1. Producers' price (Rs./quintal)	318.12	329.85	335.75	353.63	367.45
2. Oil price (Rs./quintal)	1,240.00	1,260.00	1,250.00	1,187.00	1,242.00
3. Oilcake price (Rs./quintal)	184.00	180.00	178.00	188.00	203.00
4. Weighted average price of oil and oilcake (Rs./quintal)	589.33	594.55	589.48	571.46	601.81
5. Producers' share ($1 \div 4 \times 100$) (per cent)	53.98	55.48	56.96	61.88	61.06

Source: Primary data for the *kharif* season, 1981-82.

(Note:— The producers' prices are adjusted to quantity and price deductions made at disposal.)

Weights: Input-output ratios: 100 kg. pods = 72 kg. of kernels + 26 kg. of husk.
100 kg. kernels = 38 kg. oil + 61 kg. of oilcake.

100 kg. = 72 kg. = 27.36 oil— W_o
pods kernel 43.92 kg. oilcake— W_c

The balances at each identity are wastages.

of the channel is smaller. The cost data (Table III) show that the overall cost of marketing in channel 3 is lower when compared to channel 4 and channel 5, because the taxes paid are relatively less in channel 3. The

TABLE III—MARKETING COSTS PER RUPEE AND MARGIN TO THE MIDDLEMEN IN DIFFERENT CHANNEL

Cost	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
I. Procurement costs					
1. Cartage	0.024	0.030	0.002	—	—
2. Labour	0.030	0.030	0.003	—	0.080
3. Weighment	0.007	0.003	0.008	0.003	0.001
4. Market cess	0.010	0.010	0.010	0.010	0.010
II. Decortication					
1. Labour	0.072	0.060	0.060	0.030	0.054
2. Electricity	0.014	—	—	—	—
3. Depreciation	0.010	—	—	—	—
III. Brokerage					
1. Pods	0.011	0.008	—	—	—
2. Seed	0.009	0.009	—	—	—
IV. Crushing charges					
1. Disposal costs	0.087	0.070	0.065	0.085	0.060
V. Taxes					
1. Disposal costs	0.006	0.007	0.007	0.008	0.006
VI. Taxes					
1. Total costs per rupee	0.013	0.021	0.023	0.063	0.036
2. Raw material procurement cost	0.269	0.248	0.178	0.199	0.247
3. Margin to the middlemen	0.540	0.555	0.570	0.619	0.611
	0.191	0.202	0.252	0.182	0.142
	1.000	1.000	1.000	1.000	1.000

Source: Primary data for the *kharif* season, 1981-82.

difference among prices received by the farmers (Table IV) is also the lowest in channel 4, but the highest in channel 5. The plausibility of such result in the case of channel 5 may be due to quality differentiation in regulated markets where perfect grading is done by the marketing officials.

The seasonal price variability indicators (Tables V and VI) for peak and lean seasons suggest that the farmers are able to take advantage of the price movements in channel 1, *i.e.*, if they sell the produce through village merchants. On the other hand, farmers selling directly to co-operative units could not take advantage of price movements. The indicators seem to be doubtful and questionable, because the question arises after glancing through the data on weekly prices and quantities disposed (see Appendix 1 and 2), whether the farmers are equally exploited or deceived rather than benefited. Though there is less seasonal variation in channel 1, the prices received by the farmers are also low. The result, thus, should be substantiated with the other factors relating to prices.

TABLE IV—DEVIATIONS(d) BETWEEN MAXIMUM AND MINIMUM PRICES IN DIFFERENT CHANNELS

Month—Week	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
0 3	—	—	—	—	22 (8.39)
0 4	—	—	—	—	70(19.22)
1 1	—	—	—	—	—
1 2	—	—	—	—	—
1 3	49(15.63)	0	—	—	55(14.97)
1 4	16 (5.54)	47(15.64)	0	—	91(25.33)
2 1	34(11.45)	0	—	—	188(49.86)
2 2	50(16.07)	40(12.52)	0	—	75(20.27)
2 3	56(18.68)	30 (9.28)	34 (9.97)	—	92(23.68)
2 4	90(28.54)	40(12.37)	75(22.91)	—	74(19.50)
3 1	90(27.28)	80(24.11)	17 (5.34)	8 (1.95)	0
3 2	82(24.90)	108(31.67)	24 (7.16)	0	0
3 3	68(19.67)	29 (8.50)	39(11.55)	0	—
3 4	28 (8.73)	61(18.68)	44(12.96)	27 (8.33)	—
4 1	14 (4.56)	115(33.76)	58(17.55)	0	—
4 2	0	0	94(26.86)	—	—
4 3	—	4 (1.27)	7 (2.08)	—	—
4 4	0	34(10.48)	1 (0.21)	—	—
5 1	0	—	0	—	—
5 2	—	—	17 (4.99)	—	—
5 3	—	—	35(10.02)	—	—
5 4	0	0	18 (4.97)	—	—
6 1	—	0	—	—	—
6 2	—	—	—	—	—
6 3	—	—	—	—	—
6 4	0	—	0	—	—
Σ d	577	588	463	35	667
N	16	17	17	6	10
\bar{d}	36.06	34.59	27.24	5.83	66.70

Source: Primary data for the *kharif* season, 1981-82.

(—) Indicates no transactions during the week.

Figures in parentheses represent percentages to weekly average prices.

TABLE V—SEASONAL PRICE VARIABILITY FACTORS FOR PEAK PERIOD: CHANNELWISE

Month—Week	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
1 1	—	0.1331	—	—	—
1 2	—	—	—	—	—
1 3	0.0019	1.6243	—	—	0.6256
1 4	2.4599	10.0446	0.0106	—	7.2820
2 1	0.9544	0.0158	—	—	0.0356
2 2	0.1723	0.0952	1.9040	—	1.8388
2 3	4.7249	0.0003	0.3655	—	9.6465
2 4	0.0011	0.0002	1.7347	—	0.4193
3 1	6.6485	2.1125	15.7241	12.3367	0.2667
3 2	5.5631	33.1249	0.0010	4.1011	3.7148
3 3	1.5392	5.4690	0.2718	4.2711	—
3 4	0.2701	0.5237	0.4944	17.8706	—
$\Sigma W_t (P_t - \bar{P})^2 =$	22.3354	53.1434	20.5061	38.5795	23.8293
T	10	11	8	4	8
1/T	2.2335	4.8312	2.5633	9.6449	2.9787
σ	1.4945	2.1980	1.6010	3.1056	1.7259

Source: Primary data for *kharif* season, 1981-82.

TABLE VI—SEASONAL PRICE VARIABILITY FACTORS FOR LEAN PERIOD: CHANNELWISE

Month—Week		Channel 1	Channel 2	Channel 3	Channel 4
4	1	0.2865	0.0742	10.0706	1.8280
4	2	0.6221	12.7547	2.9988	4.7600
4	3	—	5.4431	1.0812	—
4	4	3.4355	17.9226	7.9866	—
5	1	0.2396	—	6.1339	—
5	2	—	—	0.0908	—
5	3	—	—	9.6981	—
5	4	1.0097	3.2600	29.1428	—
6	1	—	30.0854	—	—
6	2	—	—	—	—
6	3	—	—	—	—
6	4	4.0573	—	18.2080	—
$\Sigma W_t (P_t - \bar{P})^2$		9.6507	69.5400	85.4108	6.5880
T	.. .. .	6	6	9	2
1/T	.. .. .	1.6085	11.5900	9.4901	3.294
		1.2682	3.4044	3.0806	1.8149

On pooling all the indicators (Table VII), it is shown that the co-operative marketing channel is the most efficient, followed by selling directly

TABLE VII—PERFORMANCE OF MARKETING CHANNELS

Channels	Indicators						Composite index I_i/N_i	Final ranking
	I_1	I_2	I_3	I_4	I_5	I_6		
1	5	5	3	4	1	1	3.17	4
2	4	4	4	3	4	4	3.87	5
3	3	1	5	2	2	3	2.67	2
4	1	2	2	1	5	2	2.17	1
5	2	3	1	5	3	—	2.80	3

I_1 = Producers' share indicator.

I_2 = Marketing costs indicator.

I_3 = Middlemen margins indicator.

I_4 = Price deviation indicator.

I_5 = Peak period — seasonal price variability indicator.

I_6 = Lean period — seasonal price variability indicator.

I_i = Channels 1, 2,, 6.

N_i = Total number of channels.

to processing units in the unregulated market and through commission agents in regulated markets. The elimination of middlemen in channel 3 makes it superior to or its performance is more efficient than channel 5, inspite of regulation of the market.

From the results, it is observed that the elimination of middlemen and regulation of the market will definitely improve the returns to the producers. Co-operative marketing under such system helps to promote perfect market conditions in favour of agricultural producers.

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APPENDIX 1

AVERAGE PRICES—WEEK AND CHANNELWISE DISTRIBUTION

(Rs./quintal).

Month—Week		Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
0	3	..	..	—	—	262·33
0	4	..	..	—	—	364·25
1	1	..	..	—	333·00	—
1	2	..	..	—	—	—
1	3	..	..	313·50	290·00	—
1	4	..	..	289·00	300·43	334·00
2	1	..	..	297·00	326·00	—
2	2	..	..	311·20	319·50	351·00
2	3	..	..	299·83	323·43	341·00
2	4	..	..	315·33	323·25	327·40
3	1	..	..	329·88	331·77	318·25
3	2	..	..	329·35	341·05	335·38
3	3	..	..	345·65	341·25	337·63
3	4	..	..	320·67	326·62	339·57
4	1	..	..	307·00	340·60	330·50
4	2	..	..	329·00	364·00	350·00
4	3	..	..	—	316·00	336·50
4	4	..	..	284·00	324·50	321·50
5	1	..	..	320·00	—	314·00
5	2	..	..	—	—	340·50
5	3	..	..	—	—	349·25
5	4	..	..	323·00	325·00	362·00
6	1	..	..	—	380·00	—
6	2	..	..	—	—	—
6	3	..	..	—	—	—
6	4	..	..	329·00	—	371·00

Source: Primary data for the *kharif* season, 1981-82.

APPENDIX 2

QUANTITY DISPOSED—WEEK AND CHANNELWISE DISTRIBUTION

(quantals)

Month—Week		Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
0	3	—	—	—	—	50.00
0	4	—	—	—	—	117.00
1	1	—	12.60	—	—	—
1	2	—	—	—	—	—
1	3	6.60	13.05	—	—	71.00
1	4	31.91	171.09	40.38	—	222.64
2	1	25.84	19.35	—	—	660.97
2	2	98.56	58.76	70.88	—	416.73
2	3	179.58	114.93	108.83	—	586.98
2	4	246.75	71.65	233.80	—	378.89
3	1	272.48	262.34	469.11	64.78	43.87
3	2	245.46	936.67	392.14	35.26	59.22
3	3	117.10	151.22	549.03	49.20	—
3	4	78.68	423.38	269.91	76.70	—
4	1	11.98	184.11	233.36	17.32	—
4	2	9.66	74.29	126.00	45.10	—
4	3	—	23.95	116.45	—	—
4	4	10.13	176.20	56.85	—	—
5	1	31.68	—	23.10	—	—
5	2	—	—	185.65	—	—
5	3	—	—	492.40	—	—
5	4	49.80	34.00	205.00	—	—
6	1	—	59.45	—	—	—
6	2	—	—	—	—	—
6	3	—	—	—	—	—
6	4	63.00	—	61.50	—	—

Source: Primary data for the *kharif* season, 1981-82.