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IV

CONCLUDING OBSERVATION

The disparities in the regional income have two elements: production denoting the technology and prices. The latter has been primarily responsible for accentuating the income disparities. Therefore, for reducing the inequalities in the regional income, apart from concentrating on removing the structural rigidities of low resource base areas by evolving the 'new technology' for the crops suited to their requirement, more attention has to be paid for removing the distortion in the relative price structure. This is evident from the fact that about three-fourths of the disparity in the regional income are accounted for by the price effect. In the long run, of course, the solution for removing the regional disparities lies in the development of low income regions at par with high income regions.

The results of our study reveal that the conflict between the expansion of output and equitable distribution of farm income, both inter-crop and inter-regional, however, became more acute after the introduction of new agricultural technology. This implies that the existing framework for the determination of price policy could not take care of the long run effects of agricultural development on the disparities of regional income. To achieve the planning objective of growth with equity, it is, therefore, imperative to take corrective policy measures at this stage of economic development, otherwise delayed action might cost the nation heavily. One such short run solution in the determination of the price policy for a commodity could be through allowing due weightage to the inter-crop and 'interregional' income disparities for which the terms of reference of the Agricultural Prices Commission may have to be expanded.

STRATEGY FOR STABILISING THE PARITY BETWEEN PRICES OF GROUNDNUT AND FINISHED MANUFACTURED GOODS FROM GROUNDNUT

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I

Minimum support price of farm produce is to ensure that in the years of fluctuating output the cultivators are assured of at least a minimum price which not only covers all the input costs of production but generates a fair margin of profit to the cultivators. The concept of minimum support prices for agricultural commodities which become input to agro-processing industries, such as groundnut, may fail to ensure remunerative prices to farming community because of following reasons. First, for these commodities there do not exist an institution which ensures an assured market and hence a fair price in the case of fluctuations in crop output. Second, the growers may not be sharing the benefit of the seasonal rise in the price of processed output such as groundnut oil, oilcake and deoiled cake. And third, even an increased

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price to the grower in a particular year may be less than the price of the processed output of which he eventually becomes a consumer. The increase in input prices or increase in the unit cost of production further results in a decline in his overall benefits.

The groundnut system encompasses three major sub-systems, namely, groundnut production at farm level, marketing of groundnut and extraction of oil and oilcake, and solvent extraction of oilcake. Out of the total production of groundnut, about 17.4 per cent is used for seed, home consumption and feed,[1] and a small quantity of groundnut is exported. The remaining proportion of groundnut is used for crushing either through village *ghanis* or in power operated expeller units. It is reported that out of the total quantity of groundnut crushed, the expeller units' share is about 90 per cent.[2] The oil and oilcake output of the expeller sub-system in the total groundnut crushed is 30 per cent and 45 per cent respectively, the residual are shells and waste.[3] A part of the oilcake is used as cattle feed and manure and the remaining portion is further chemically processed in the solvent extraction sub-system. After the extraction, the oil and deoiled cake output is about 6 per cent and 92 per cent of the oilcake input.[4] Nearly 90 per cent of the deoiled cake was exported upto 1970-71. The proportion of home consumed deoiled cake is expected to increase gradually to about 15 per cent by late 1970s.[5]

The finding of our earlier research[6] revealed that in most of the years when groundnut production declined not only the 'farmers' share' (ratio between farm price of groundnut and prices of all finished manufactured goods from equivalent groundnut) declined but even the ratio of farm harvest price to oil price had declined. That is, not only the prices of all the manufactured goods from groundnut increased faster than the groundnut price but even the oil price in these years increased faster than the increase in the farm harvest prices. It should be noted that oil price is considered as the base for paying price of groundnut to the growers.[7]

1. This proportion varies over years and is about 17·4 per cent of production between 1963-64 and 1977-78. See Bulletin on Commercial Crop Statistics, Issues 1 to 3, Ministry of Agriculture and Irrigation, Government of India, New Delhi.

2. University of Bombay and Operations Research Group: Export Potential of Oilcake, Vol. I, p. 38.

3. The proportion of oilcake and oil in the groundnut crushed varies for different varieties and processing units. We have taken the above ratio because it not only coincides with our micro level finding in Andhra Pradesh but is supported by other research also. See D. K. Desai and A. G. K. Murthy: A Study on Solvent Extraction and Expeller Oil Industry, Indian Institute of Management, Ahmedabad, 1968, pp. 28-29.

4. Desai and Murthy: *ibid*, p. 45.

5. University of Bombay and Operations Research Group: *op. cit.*, Vol. III, p. 250.

6. C. G. Ranade, K. H. Rao and D. C. Sah, "Groundnut System: Behaviour of Farmer's Share", *The Economic Times*, Bombay, February 16, 1981.

7. Analysing the groundnut oil prices and farm harvest prices of groundnut following revealing conclusions were arrived by a research done at the National Dairy Development Board. "As this dominant group (the trade and industry) controls the market, it is able to ensure that prices fall sharply during the harvest period. Any stocks remaining from the previous year's harvest are crushed at the time, to ensure a drop in the prices of oil which is such as to convince the ordinary small producer he must accept a low price for this year's crop. Having purchased the bulk of the crop, the dominant group forces up the oil prices in order to recoup its investment. Hence, the extreme instability of prices and supplies in the vegetable oil markets." National Dairy Development Board: Restructuring Edible Oil and Oilseed Production and Marketing: A Project by NDDB, Anand, October 1977, pp. 1-3.

The implications of the above findings are as follows.   Whenever ground-nut production goes down the trade gives less share of oil, oilcake, and deoiled cake prices to the growers and increases its profit per unit of groundnut crushed. In contrast, in the years of increase in production, the trade gives higher share of oil, oilcake and deoiled cake prices to the growers.   Although their net revenue per unit of groundnut crushed declines, the trade maintains its overall profit by increasing its turnover.

To sum up, by simply assuming higher price for groundnut, the growers will not benefit since their share in the total value generated in the groundnut system could still remain stagnant.

In this paper we have argued that the growers' net income can be increa-sed if they own the resources involved in the groundnut system.[8]   The paper aims at estimating and examining the increase in net income due to vertically integrated co-operatives of growers in the groundnut system.

II

The purpose of vertical integration through co-operatives of growers in a commodity system is to increase the growers' income by bringing all types of marketing and processing activities for that commodity under the activities of co-operatives in such a way that the benefits of integration are distributed among grower members.   In the groundnut system, vertical integration would imply that a group of groundnut growers would share among themselves the profit generated in the extraction of oil and deoiled cake in the expeller and solvent extraction plants owned by them and selling oil, oilcake and deoiled cake to the consumers.[9]   In this section we, however, focus upon such inte-gration only upto the sale of oil, oilcake and deoiled cake at the wholesale level.

In what follows we shall estimate the net benefits from vertical integra-tion to the groundnut growers first at the micro level for a sample of growers in Andhra Pradesh and then at the macro level for the country as a whole. We have examined in this section the groundnut system with specific reference to marketing upto the wholesale trade of groundnut oil, oilcake and deoiled cake in Andhra Pradesh in four groundnut marketing channels.   From these channels in all 43 cultivators in two districts of Andhra Pradesh, namely, Kurnool and Anantapur, were selected and the movement of groundnut from

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8.   The idea of increasing the farmers' income substantially through the integrated co-operative system has been outlined by Gupta and Gaikwad in their pioneering work. See V. K. Gupta and V. R. Gaikwad: A Guide to Management of Small Farmers' Co-operatives, Centre for Manage-ment in Agriculture, Indian Institute of Management, Ahmedabad, 1977.   The present paper is an outcome of a recent research project undertaken by us. See C. G. Ranade, K. H. Rao and D. C. Sah: A Study of Co-operative and Private Trade Channels in Groundnut Marketing, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1981.

9.   We are assuming that vertically integrated groundnut system will be organized on the basis of the pooling system followed in cotton co-operatives in Gujarat.   The pooling system is lucidly explained by the National Co-operative Development Corporation as follows: "Pooling has been defined as a process by which the produce is physically assembled and that assembled goods are sold as a single unit rather than separate lots, owned by separate persons.   It also includes pooling expen-diture and equation of price payable to farmers."   Cotton Marketing by Co-operatives in Gujarat State, National Co-operative Development Corporation, New Delhi, 1977 (unpublished), p. 8.

the farm to processors was traced (Table I). The data generated for different participants in the groundnut system pertain to the year 1978-79.

TABLE I—SELECTED MARKETING CHANNELS IN KURNOOL AND ANANTAPUR

Channel No.	District	Type of marketing channel	No. of sample farmers
I	Kurnool	Private commission agent in regulated market*a*	12
II	Kurnool	Co-operative society as commission agent in regulated market*b*	8
III	Anantapur	Co-operative oil mill where traders and farmers directly come*c*	13
IV*d*	Anantapur	Village trader	11
V	Anantapur	Private oil mill where farmers directly selling to the mill	10
Total			54*d*

a. Kurnool regulated market.
b. Yemmiganur regulated market.
c. Strictly speaking, the marketing channels II and V are not co-operative because in the case of the former the co-operative institution is only a middleman in the system, the rest of the operations is with private individuals, and in the case of the latter though the oil mill is co-operative it is not operating on the basis of co-operative principles.
d. Due to non-availability of data for the processing unit in channel IV, for further analysis this channel has not been considered. In the present analysis, only 43 cultivators and the movement of their groundnut from their farms to the wholesale oil and oilcake market is traced.

In order to estimate the net benefits of vertical integration, first the price spread in different marketing channels is worked out with respect to one quintal of groundnut as follows. The terminal market price considered in the study is equal to the value of groundnut oil, oilcake and husk sold by oil mills out of the purchase of one quintal of groundnut. The price spread is worked out for the following items: (a) grower's net share, (b) marketing cost incurred by growers, (c) marketing cost and margins of commission agents or village trader, (d) procurement and processing cost incurred by oil mills and (e) margins to oil mills.

The grower's net share is defined as the average price minus the marketing cost per quintal of groundnut incurred by the growers. The average price of groundnut is estimated as a weighted average of prices received by all the sample groundnut growers within the channel. The percentage of marketed surplus of groundnut in the total groundnut production is considered as weights for each grower. For estimating the margins to the commission agent, first his revenue per quintal of groundnut was worked out on the basis of average price of groundnut and the commission rate he charged. From his gross revenue per quintal of groundnut, the marketing cost incurred by him was deducted to obtain his margins. The margin to oil mill is equal to the terminal market price minus the sum of procurement, processing and marketing cost per quintal of groundnut.

After estimating the price spread, the net benefits of vertical integration to groundnut growers are estimated as follows. First, we compute the net income from groundnut cultivation for the sample growers in Andhra Pradesh. The net income is defined as the value of grower's net share in the price spread in groundnut marketing minus the cost of cultivation per quintal of groundnut. The cost of cultivation includes all out of pocket expenses plus the imputed value of family labour and animal labour together with interest on working capital at the rate of 10 per cent per annum. The average net income is computed for the sample growers in all the four channels. This is the net benefit to the growers before integration. The net benefit after integration is then equal to the value generated in the system, that is the current margins of traders and processors plus any other cost which can be saved because of co-operative intervention.

It can be noticed that the integrated system will not have to pay purchase tax on groundnut. This is because the integrated system will simply be pooling the growers' produce and will not be purchasing it from them. Therefore, while estimating the net benefits we have excluded purchase tax. This tax is otherwise paid by oil mills in all the four channels. There could be further saving in the cost because of the economics of scale. We have, however, not assumed any economics of scale in our estimation.

In order to estimate the net benefits at the macro level we have used the estimates of total cost of cultivation, marketing and processing for the sample farmers in channel I in Andhra Pradesh. This channel is considered because the oil mill belonging to it is having higher capacity utilization and high trade margins.

Table II presents the estimates of net benefits of integration in the four channels studied in Andhra Pradesh. The net benefits of integration range from Rs. 35.82 to Rs. 50.98 per quintal of groundnut crushed in different channels. This means that the growers' income will increase by about 34 to 114 per cent depending upon the channel and the net income before integration. The net benefits are higher for those marketing channels which are longer. Thus, for instance, for farmers selling directly to oil mills (channels III and V) the net benefit will be about Rs. 35 while for those selling through the commission agents (channels I and II) it will be as high as Rs. 50.

Note that channel III, where the farmers sell to the co-operative oil mill in Anantapur also requires vertical integration. This is because the co-operative oil mill simply purchases groundnut from the growers as well as traders, and does not pass on its profits to the groundnut growers.

The analysis at the macro level will help us in examining the variations in net benefits over the years. The estimates for 1974-75 to 1977-78 are presented in Table III. The increase in the growers' net income after integration would have been 21 per cent in 1977-78 to 81 per cent in 1975-76. This variation over the years is mainly because of variations in groundnut oil prices (see section I). The trade and oil industry generated significantly high margin in the years when the groundnut production had declined. Note that in 1974-75 and 1976-77 only 4.1 million tonnes of groundnut were crushed and

TABLE II—ADDITIONAL BENEFITS PASSED TO GROUNDNUT GROWERS AFTER VERTICAL INTEGRATION

(Rs. per quintal)

Item	Private[a]		Co-operative	
	Channel I	Channel V	Channel III	Channel II
Farm level				
(i) Growers' net income[b] ..	72·78	106·17	87·00	42·37
Trade and industry				
(ii) Margin to commission agent	8·03			1·00
(iii) Margin to expeller unit ..	23·37	15·19	15·50[c]	27·87
(iv) Margin to solvent extraction unit	8·34	8·71	9·09	8·34
(v) Terminal market price ..	289·99	296·47	303·73	289·99
(vi) Net margin to trade and industry (ii)+(iii)+(iv) ..	39·74	23·90	24·59	37·21
(vii) Net benefits to growers [(vi) + purchase tax saved] ..	50·98	35·82	36·06	48·24
(viii) Percentage increase in growers' net income [(vii)/(i) × 100]	70	34	41	114

a. For classification of channels, see Table I.

b. Gross revenue minus cost of cultivation minus marketing cost incurred by the growers. Cost of cultivation is defined as all paid expenses in production plus imputed value of family labour and own bullock labour plus interest on working capital. It excludes interest on own capital and rental value of own land.

c. The farm harvest price received for channel III is for 1978 *kharif* (farmers do not grow *rabi* groundnut), whereas the margin to oil mill is arrived at by taking the annual average price paid by the co-operative oil mill during 1978-79.

TABLE III—ADDITIONAL BENEFIT TO GROWERS BY INTEGRATING GROUNDNUT SYSTEM* AT MACRO LEVEL

(million rupees)

Item	1974-75	1975-76	1976-77	1977-78
Farm level				
(1) Gross revenue	10,299	9,975	9,242	12,527
(2) Production and marketing cost	5,990	8,095	5,967	7,308
(3) Growers' net income (1)—(2)	4,309	1,880	3,275	5,219
Trade				
(4) Margin to commission agent	372	344	330	452
Oil industry				
(5) Purchase tax and market cess	515	499	462	626
(6) Cost incurred by mill in transportation, processing groundnut and oilcake and marketing oil, oilcake and deoiled cake	743	880	866	854
(7) Terminal market price† ..	12,010	12,027	11,858	14,019
(8) Margin to trade and industry (7) — (1) — (5) — (6) + (4)	825	1,017	1,618	464
(9) Additional benefit to growers after purchase tax exemption (8) + (5)	1,340 (32·4)‡	1,516 (26·6)	2,080 (50·1)	1,090 (21·6)
(10) Percentage increase in growers' net income [(9)/(3) × 100]	31	81	64	21

* The cost of groundnut production and marketing, and the cost of different functionaries in trade and oil industry are respectively for growers, private commission agent and private oil mill in channel I. The cost incurred at solvent extraction sub-system is developed from data supplied by Shree Rajkot Lodika Sahakari Kharid Vechan Sangh Ltd., Rajkot.

† The terminal market price is the sum of the value of oil, oilcake, deoiled cake and husk at wholesale level.

‡ Figures in brackets are net margins to trade and industry per quintal of groundnut crushed.

trade margins were Rs. 32 and Rs. 50 per quintal, while in 1975-76 and 1977-78 groundnut crushed was 5.7 and 5.1 million tonnes and trade margins were only Rs. 27 and Rs. 22 per quintal respectively. In absolute terms, however, the total net margins fetched by the trade and industry were highest in 1976-77 when the production was the lowest (Rs. 2,080 million).

Thus we notice that the trade and oil industry did not incur losses over the years. The trade operates throughout the agricultural year while the farmers sell only during a few months after harvesting. The trade can cover the risk of output and price fluctuations by operating in the system for a much longer time than the period for which the farmers market their produce. It is the farmer who suffers from the risk of price fluctuations and if there is vertical integration his risks can be absorbed by the system itself.

The estimates of net benefits presented in Table III are worked out for the actual amount of oilcake extracted during 1974-75 to 1977-78. If, however, we assume that all oilcake is solvent extracted, the net benefit of integration to the growers would be enhanced further by about 2.7 per cent of the terminal market price.

In order to understand whether integrated groundnut co-operatives will be stable, we have compared the net benefits from groundnut co-operatives with those from cotton co-operatives in Gujarat. For comparability, we have compared the percentage increase in the price receivable through groundnut co-operatives with that in the cotton co-operatives.[10] This percentage increase is equal to the share of farm harvest price in the margins of traders and processors.

The results are presented in Table IV. In cotton co-operatives the growers receive about 10 to 15 per cent higher prices. In the vertically integrated groundnut co-operatives, however, such increase is much higher, ranging from 10 to 23 per cent. On the basis of the above findings, we think that groundnut co-operatives will have less risk of decrease in their market share and consequent instability as compared with such risks in cotton co-operatives operating upto the lint market.[11]

III

The major hypotheses tested in this paper is that vertically integrated groundnut system is more beneficial to the groundnut growers than the non-integrated system. We have come to the conclusion that by simply giving higher farm prices of groundnut the growers will not |necessarily benefit since their share in the total value generated in the trade system could still remain stagnant. The net benefits of vertically integrated co-operatives to the growers are however significantly high. Our case study in Andhra Pradesh estimates

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10. See C. G. Ranade, R. B. Singh and K. H. Rao: Marketing Channels and Price Spread in Cotton, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1979.

11. In Gujarat, cotton co-operatives function simultaneously with the private trade. Although the co-operatives are successful in Gujarat the proportion of total output sold by them has been fluctuating widely from 29 per cent in 1972 to only 11 per cent in 1977-78. See Ranade, Singh and Rao: *ibid,* Table 4·1·5.

TABLE IV—PERCENTAGE INCREASE IN PRICE RECEIVED BY FARMERS IN COTTON AND GROUND-
NUT CO-OPERATIVES

(*Rs.*)

Item	Cotton (per candy)*		Groundnut (per quintal)†		
	1976-77	1977-78	1975-76	1976-77	1977-78
1. Producer's net share ..	5,501·87 (80·48)	5,052·52 (83·42)	163·56 (76·01)	209·55 (73·81)	234·03 (82·53)
2. Marketing cost incurred by producer‡	38·50 (0·56)	41·25 (0·68)	4·35 (2·02)	4·35 (1·53)	4·35 (1·53)
3. Cost incurred by interme- diaries	470·25 (6·88)	464·75 (7·67)	20·27 (9·65)	22·80 (8·03)	22·70 (8·01)
4. Margin to intermediaries	825·88 (12·08)	498·08 (8·23)	26·49 (12·32)	47·22 (16·63)	22·49 (7·93)
5. Terminal market price ..	6,836·50 (100)	6,056·60 (100)	215·17 (100)	283·92 (100)	283·57 (100)
6. Percentage increase in price received by farmers [(4)/ (1) × 100]	15·01	9·86	16·20	22·53	9·61

* Derived from Ranade, Singh and Rao: *op. cit.*, p. 94.
† Based upon the micro level estimation with the assumption that all the oilcake is solvent extracted.
‡ Excludes commission paid by the farmer to the commission agent in the groundnut system.

that the incremental income from such co-operatives varies from 35 to 115 per cent depending upon the marketing channel where integration takes place.

Even if such integration covers only 20 per cent of groundnut marketed, it will have a stabilising effect on fluctuating parity within the groundnut system due to competition between integrated and non-integrated system.

We would, however, like to recommend vertically integrated groundnut system with a word of caution. The integrated co-operatives may face stiff competition posed by private trade, government restrictions on the export of deoiled cake, and organizational rigidities one usually notices in the co-operative sector. These problems might reduce the effectiveness of co-operatives in influencing the selling behaviour of their grower members. In order to avoid this, suitable management practices will have to be designed by them.

Furthermore, such interventions in the groundnut system need encouragement first by giving them RBI refinance facility for marketing advances to the growers, at concessional rates. The repayment period for such refinance should be long enough so that the co-operatives can compete with the private trade in the oil market. And, at processing and marketing level the Government of India should encourage these interventions by giving the co-operatives priority in export quota for deoiled cake.