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DISPARITIES IN REGIONAL INCOME: ROLE OF PRICES

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I

PROBLEM AND PRESENT STUDY

The problem of disparities in incomes both between farms and between regions in the country has attracted the attention of planners from the very beginning.¹ Various measures were also taken to reduce such inequalities, yet the problem of inequalities remains as serious as in the early fifties.² In the farm sector the growth in income decisively depends on growth in production and changes in prices.³ As regards the pattern of growth in the agricultural output it is well-known that the rates of growth⁴ have varied from crop to crop and from region to region.

With technological break-through in the case of wheat, paddy and to some extent in cotton, not only the disparity among the crops widened but the location-specific character of new technology widened the gap⁵ in the regions also. As regards the price factor which could have helped in reducing the inequalities, by moving the direction opposite to that observed in the case of output, it had to a large extent got determined on the criterion other than that of reducing regional income disparities. It may, however, be mentioned here that the terms of reference of the Agricultural Prices Commis-

* Department of Economic Affairs, Ministry of Finance, Government of India, New Delhi. The views expressed in this paper are those of the author and not of his employer. Thanks are due to Dr. V. N. Misra for his valuable comments and suggestions on an earlier draft of this paper. The responsibility for the shortcomings, however, rests with the author.

1. The Third Five-Year Plan states that "economic activity must be so organised that the tests of production and growth and those of equitable distribution are equally met." Government of India: Third Five-Year Plan, Planning Commission, New Delhi, 1961, p. 9. The other Plans have also reiterated similar sentiments.

2. Francine R. Frankel: *India's Green Revolution: Economic Gains and Political Costs*, Princeton University Press, Princeton, New Jersey, U.S.A., 1971, pp. 3-11.

3. C. H. Hanumantha Rao: *Technological Change and Distribution of Gains in Indian Agriculture*, The Macmillan Company of India Ltd., Delhi, 1975, p. 82.

4. The all-India compound growth rates for foodgrains during the period 1952-53 to 1964-65 was 2.50 per cent per annum as against 3.99 per cent for non-foodgrains. Among the States, the growth rates for foodgrains varied from 3.66 per cent in Punjab to 0.76 per cent in Assam; for non-foodgrains from 7.04 per cent in Punjab to 1.49 per cent in Assam. In the case of rice, it was 3.18 per cent for all-India and varied from 8.68 per cent in Punjab to 0.74 per cent in Assam; for wheat it was 5.38 per cent in Punjab, 3.12 per cent in Gujarat and 3.30 per cent for all-India. The production of groundnut varied from 9.01 per cent in Gujarat to (—) 2.13 per cent in Andhra Pradesh; cotton from 7.06 per cent in Punjab to 0.72 per cent in Andhra Pradesh and jute from 5.81 per cent in West Bengal to 0.04 per cent in Assam. Government of India: *Growth Rates in Agriculture, 1949-50 to 1964-65*, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi, 1968.

5. The all-India compound growth rates of foodgrains during the period 1967-68 to 1978-79 was 2.77 per cent as against 2.88 per cent for non-foodgrains. The rates of growth for rice was 2.64 per cent and 6.02 per cent for wheat. During the period 1969-70 to 1978-79 the rates of growth for foodgrains among the States varied from 9.15 per cent in Maharashtra to (—) 0.14 per cent in Kerala; in the case of major oilseeds from 7.15 per cent in West Bengal to (—) 2.35 per cent in Andhra Pradesh; for cotton from 14.28 per cent in Andhra Pradesh to (—) 0.55 per cent in Madhya Pradesh; and for jute and mesta it varied from 16.28 per cent in Andhra Pradesh to (—) 4.77 per cent in Madhya Pradesh. The Statewise growth rates are as estimated by Y. K. Alagh and P. S. Sharma, "Growth of Crop production: 1960-61 to 1978-79—Is it Decelerating?", *Indian Journal of Agricultural Economics*, Vol. XXXV, No. 2, April-June 1980, pp. 104-118.

sion *inter alia* require it to take into account (i) the need to provide incentive to the producer for adopting improved technology and for developing a production pattern broadly in the light of national requirements; (ii) the need to ensure rational utilization of land, water and other production resources; and (iii) the likely effect of the price policy on the rest of the economy, particularly on the cost of living, level of wages, industrial cost structure, etc. Thus, the Commission is not explicitly required to take into account the need of reducing regional income disparities.

In view of the very limited work on the role of agricultural prices in the distribution of regional income, an attempt has been made in this paper first to decompose the changes in regional income⁶ into production effect and price effect. Having known the broad magnitude of both the components in the regional income, the study then concentrates on estimating (i) the contribution of production and prices in the incremental income; (ii) the respective contribution of major two cereals, rice and wheat and cash crops like sugarcane, groundnut, cotton and jute in the incremental income; (iii) the effect of procurement policies of foodgrains on income; (iv) the effect of differential rates of growth allowed in the fixation of support price of cotton and jute; and (v) the effect of issues of foodgrains on income of deficit States.

The study is based on the data for four States, *viz.*, Andhra Pradesh, Punjab, Gujarat and West Bengal. These States belonging to different directions of the country, east, west, north and south, have diverse agro-climatic conditions and their economy depended on different crop mix. The weight of paddy is maximum in the agricultural economy of Andhra Pradesh, followed by cash crops like mesta, groundnut, cotton and sugarcane. In Punjab, wheat and paddy have a lion's share followed by cotton and sugarcane. The State of Gujarat derives the maximum share of farm income from cash crops like cotton and groundnut, followed by the two main cereals. In West Bengal, paddy continues to play a dominant role followed by jute and mesta in influencing the level of farm income. The period 1969-70 to 1979-80 has been chosen for the decomposition of incremental farm income.

II

ANALYTICAL FRAMEWORK

The values of crop output were worked out for two points of time: the base period at constant prices and the terminal period both at constant and current prices. The difference in the gross value of crop output computed at constant prices for the two periods is expected to provide the magnitude of increases in the farm income due to improvement in production, whereas

6. In view of the non-availability of reliable cost of production data for various crops for different States over the periods, the gross value of crop output, computed with the help of farm harvest prices, has been adopted as a proxy for farm income.

the difference in the values of output worked out for the terminal period both at constant and current prices would give the effect of price rise on incremental income. The incremental income accruing due to the improvement in production was estimated by working out its share in the total incremental income arrived at for the terminal year at current prices.

Since we are interested in knowing the broad magnitude of the components of the regional income rather than their trends of the whole period, the two points of time chosen have been trienniums ending 1969-70 and 1979-80. The three-year weighted average for both the points of time was worked out so as to eliminate the effects of weather-induced fluctuations in production and prices.⁷

The principal crops selected for estimating the farm income accounted for about 85 per cent of the total area under forecast crops in all the four States during the triennium ending 1969-70, and 88 per cent in Andhra Pradesh, 98 per cent in Punjab, 92 per cent in Gujarat and 93 per cent in West Bengal during the triennium ending 1979-80. The gross value of farm output is based on the farm harvest prices, which were taken from the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India. The harvest prices for small millets and mesta are not available, therefore, their prices were estimated by working out the relationship between the prices of small millets and other coarse grains and the relationship between jute and mesta in the wholesale market. In case of non-availability of prices for certain commodities in a State, their prices as prevailing in the adjacent State were adopted. The harvest prices for 1979-80 were arrived at by inflating the price level of 1978-79 by the respective increases in the weighted wholesale price. The product of output and prices was divided by the cropped area to arrive at the per hectare gross value of crop output as a proxy for farm income.

III

RESULTS

The comparative estimates of income accruing due to the changing structure of agricultural technology and prices, the relative contribution of production and prices and the share of major commodities in the farm income as worked out are presented in Table I.

It may be seen from the table that the additional per hectare gross value of output due to improvement in production increased by Rs. 388 in Punjab, followed by Rs. 358 in Andhra Pradesh, by Rs. 263 in West Bengal and by Rs. 221 in Gujarat. The analysis further shows that at constant prices, the improvement in production tended to reduce the variability in the farm income over the period among the States. The index of farm income of Punjab declined from 192 to 168, *i.e.*, by 12.5 per cent, of Gujarat from 126 to 107,

7. N. Krishnaji, "Inter-Regional Disparities in Per Capita Production and Productivity of Foodgrains: A Preliminary Note on Trends", *Economic and Political Weekly*, Vol. X, Nos. 33, 34 and 35, Special Number, August 1975.

TABLE I—PER HECTARE GROSS VALUE OF PRINCIPAL CROPS

(Rs.)

State	Gross value of output during triennium ending			Increase in income due to production (col. 3—2)	Increase in income due to production and price (col. 4—3)	Increase in income due to price effect (col. 6—5)	Share of price effect in total income (col. 7 as percentage of col. 6)
	1969-70 (at constant prices)	1979-80 (at current prices)	1979-80 (at current prices)				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Andhra Pradesh	867 (100)	1,225 (100)	1,935 (100)	358 (100)	1,068 (100)	710 (100)	66.5 (100)
Punjab ..	1,664 (192)	2,052 (168)	3,465 (179)	388 (108)	1,801 (169)	1,413 (199)	78.5 (118)
Gujarat ..	1,093 (126)	1,314 (107)	2,580 (133)	221 (62)	1,487 (139)	1,266 (178)	85.1 (128)
West Bengal ..	1,612 (186)	1,875 (154)	2,660 (137)	263 (73)	1,048 (98)	785 (111)	74.9 (113)

Note:—Figures in brackets are respective index numbers with Andhra Pradesh as 100.

i.e., by 15.1 per cent and that of West Bengal from 186 to 154, *i.e.*, by 17.2 per cent in comparison to the price index of Andhra Pradesh between the two points of time, *i.e.*, trienniums ending 1969-70 and 1979-80. This evidence demonstrates that with the given technology and prices held constant, the existing rate of increase in incomes could be minimized among the States.

It may, however, be mentioned that the agricultural price policy as pursued by the Government over time has also been exercising its influence on the disparities in the distribution of income. The per hectare value of crop output varied largely between the States because of production and prices, as mentioned earlier. In Punjab, it worked out to Rs. 3,465, being the highest, followed by Rs. 2,660 in West Bengal, Rs. 2,580 in Gujarat and Rs. 1,935 in Andhra Pradesh during the triennium ending 1979-80. The difference in the values, both at current and constant prices, shows that the gross income in the terminal period increased by 96 per cent in Gujarat, by 69 per cent in Punjab, by 58 per cent in Andhra Pradesh and by 42 per cent in West Bengal; and in these States, the gross income of Punjab, at current prices, was 79 per cent higher than Andhra Pradesh. This analysis shows the existing magnitude of the income inequalities among the States. It is thus evident that higher production coupled with rising prices of agricultural commodities has accentuated the income inequalities. It seems that the maximum gain went to those areas which were endowed with assured supply of water and obviously for those farmers who could adopt the capital intensive technology.

The component analysis of the total income accruing during the triennium ending 1979-80 at current prices reveals that the share of price effect in the total income worked out to 85.1 per cent in Gujarat, 78.5 per cent in Punjab, 74.9 per cent in West Bengal and 66.5 per cent in Andhra Pradesh, the average for the four States being 76.3 per cent, whereas the remaining

gain in income came from the improvement in production over the period. It is thus evident that about one-fourth increase in income accrued owing to increase in production and the remaining three-fourth improvement in income was due to increase in prices.

The price effect on gross income further shows that the per hectare incremental income during the period varied from Rs. 1,413 in Punjab to Rs. 710 in Andhra Pradesh. In comparison to Andhra Pradesh, the gain in farm income due to the price effect was 99 per cent higher in Punjab, 78 per cent higher in Gujarat and only 11 per cent higher in West Bengal. It is further clear that the effect of price rise has been maximum in favour of the already highest income State—Punjab—, thus accentuating the income disparities between the States.

Having seen the components of the regional income, it would be interesting to know the relative share of principal crops in the gross value of output, as given in Table II.

TABLE II.—PERCENTAGE CONTRIBUTION OF PRINCIPAL CROPS IN THE GROSS VALUE OF OUTPUT

Crop	<i>(at prices of respective years)</i>									
	Andhra Pradesh during the triennium ending		Punjab during the triennium ending		Gujarat during the triennium ending		West Bengal during the triennium ending			
	1969-70	1979-80	1969-70	1979-80	1969-70	1979-80	1969-70	1979-80	1969-70	1979-80
Paddy	40.6	42.2	5.2	18.5	6.3	4.7	79.8	70.1		
Wheat	0.1	0.1	42.0	40.2	6.2	8.1	2.1	6.2		
Sugarcane (<i>gur</i>)	14.3	6.2	9.5	3.9	2.2	3.7	1.6	1.7		
Groundnut	11.8	11.8	3.0	1.2	13.6	23.1	—	—		
Cotton	3.5	7.1	25.3	24.7	52.1	37.3	—	—		
Jute and mesta	6.5	12.2	—	—	—	—	12.1	10.9		

The inter-State analysis as given in Table II shows that the bulk of the farm income came from the two principal crops, wheat and rice as a function of improvement both in production and prices. However, in Punjab, the combined weight of both the cereals increased from 47.2 to 58.7, showing an improvement of 11.5 percentage points in comparison to only 1.6 percentage points in Andhra Pradesh and 0.3 percentage points in Gujarat during the period. In West Bengal, on the contrary, the weight of rice and jute, the major food and cash crop of the State recorded a decline of 9.7 and 1.2 percentage points respectively. In Gujarat, while cotton being the most important cash crop, lost its share by 15 percentage points, groundnut, however, gained by 10 percentage points in the total income.

It could be concluded from the above observations that the new agricultural technology, confined mostly to rice, wheat and to some extent cotton, coupled with reliance on higher prices influenced the relative contribution of

individual crops in the total farm income considerably. This apart, big farmers always exert pressure on Government for upward revision of procurement/support prices. In this process the surplus States like Punjab have gained most in respect of both wheat and rice, thereby further accentuating income disparities among the States. The improvement in income that might have accrued due to the rise in the prices of sugarcane, groundnut, cotton and jute and mesta has, however, not resulted in any significant increase in production in favour of these commodities. On the other hand, despite the present low price in relation to other crops, wheat production is expanding. Therefore, it may be inferred that the increases in profitability without technological improvement in cultivation, *i.e.*, through reduction in unit cost, could neither encourage any major shift in acreage under desired crops nor to any substantial increases in production. The improvement in the growth rate of productivity and agricultural income through technological means has been more acceptable than reliance on only higher prices. However, in traditional technology, the bulk of productivity growth came from the different kinds of relative shifts in area but when new technology started shifting the production function upwards, pure increase in yield became the major factor of productivity growth.⁸ The inter-crop and inter-State variations in the productivity as also reliance on higher prices as a means to expand production have thus fostered inter-crop and inter-State economic disparities.

After studying the role of different crops in the regional income, it would be further interesting to know the role of procurement of rice and wheat in the total production in each State for drawing an inference about its influence on regional income. The results are given in Table III.

TABLE III—PERCENTAGE PROCUREMENT OF RICE AND WHEAT TO PRODUCTION

State	Rice		Wheat		Rice and wheat	
	During triennium ending		During triennium ending		During triennium ending	
	1969-70	1979-80	1969-70	1979-80	1969-70	1979-80
Andhra Pradesh	9 (12·8)	11 (13·7)	— (—)	— (—)	8·9 (8·1)	10·6 (6·1)
Gujarat ..	6 (0·7)	— (—)	31 (0·2)	— (—)	21·2 (4·1)	— (—)
Punjab ..	61 (9·2)	83 (48·0)	37 (68·2)	52 (57·0)	39·7 (30·8)	61·6 (53·1)
West Bengal	6 (11·6)	2 (3·1)	— (—)	1 (0·1)	6·1 (7·3)	2·1 (1·4)
All-India	8(100·0)	10(100·0)	12(100·0)	19(100·0)	26·0(100·0)	—13·7(100·0)

N.B.: Figures in brackets are the States' contribution to the total procurement.

8. Dharm Narain, "Growth of Productivity in Indian Agriculture", *Indian Journal of Agricultural Economics*, Vol. XXXII, No. 1, January-March 1977, pp. 1-44.

The combined share of Punjab in the total procurement of wheat and rice increased from 30.8 per cent in the triennium ending 1969-70 to 53.1 per cent in the triennium ending 1979-80, while among the remaining States, it registered declines, as may be seen in Table III. It seems that the Government's intervention provided an assured market to the advantage of high income groups of States like Punjab, thereby offering enough inducement to the farmers of these States to adopt modern technology on a wider scale and maximize production and income, accentuating the disparities in the regional income.

The agricultural economy of Gujarat is highly dependent on cash crops like groundnut and cotton and that of West Bengal on paddy and jute. The differential rates⁹ of growth allowed in the fixation of support prices of agricultural commodities as also the new technology over the period also had its effect in influencing the regional income.

Another factor which is indirectly increasing the inter-State disparity in income has been the releases of foodgrains for meeting the requirement of public distribution system. This aspect has been analysed in Table IV.

TABLE IV—PERCENTAGE SHARE TO TOTAL ISSUES OF FOODGRAINS

Year	State			
	Andhra Pradesh	Gujarat	Punjab	West Bengal
1971	3.2	1.8	1.9	27.5
1972	3.9	2.9	2.9	21.5
1973	3.3	6.8	2.5	17.4
1974	3.2	7.2	1.7	16.1
1975	3.5	6.3	0.8	15.2
1976	2.6	1.9	1.8	17.3
1977	2.7	3.3	2.0	16.9
1978	2.5	1.9	2.5	16.3
1979	1.9	1.7	3.6	17.9
1980	3.5	2.4	2.4	15.5

During the decade ending 1980, of the total foodgrains issued, West Bengal on an average received 18.2 per cent, being the maximum, as against 3.6 per cent by Gujarat, 3 per cent by Andhra Pradesh and 2.3 per cent by Punjab (Table IV). The transfer of resources has thus obviously gone in favour of surplus States.

9. For instance, the support price of cotton between 1969-70 and 1979-80 was stepped up to as high as 122 per cent in contrast to only 45 per cent for jute.

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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