

AGRICULTURE IN A DEVELOPING ECONOMY

THE INDIAN EXPERIENCE

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Agriculture in a Developing Economy

— The Indian Experience

A little more than a decade has elapsed since this country launched upon a programme of planned economic development. According to the estimates of the Planning Commission, an investment of 10,110 crore rupees has been made in the economy between 1951 and 1961. The Third Five-Year Plan envisages an investment of another 10,000 crore rupees during 1961-65. It is legitimate to expect that all this investment and the organizational effort that goes with it, would not only accelerate the pace of economic development, but, in the process, also alter the structure of the economy. It would be interesting therefore to examine the nature and extent of change in the structure of the national economy during the last decade, by reference to some of the conventional economic indicators.

For the purpose of this Address, I should like to focus attention on the impact of the process of growth on the agricultural sector. The literature on the economics of growth visualizes a certain role for agriculture in the process of economic development, stage by stage, but a little more precisely in the early stage of development. Not that all writers are unanimous on the subject, but most of them agree on the importance or the crucial role of agriculture.

As a background to our main factual analysis of India's experience, it would be interesting to review briefly, first, some of the theories on the role of agriculture in economic development, and then, the thinking of the Indian planners on the subject, as revealed in the successive Five-Year Plans.

Theoretical view-points :

The primacy of agricultural development is emphasized by some writers, because agriculture is not only the most populous but also the most depressed sector of the economy in most of the developing economies. This view is sometimes carried to the extreme of opposition to industrial development. It is argued that "the policy of industrialization will intensify the tendency for savings to be drained

from the countryside by making investment in urban industries more attractive",¹ and thus widen the range of inequality between the urban and rural standards of living. "Problems of over-population and unemployment, very low incomes, excessive urbanization, food shortage as well as certain social and political considerations would suggest that the policy of industrialization is premature and undesirable at the present stage of Asian development."² The importance of increased supply of food and other wage goods is emphasized by a group of thinkers not merely on welfare grounds, but as a necessary investment in human capital. The 'consumption multiplier', it is argued, is no less crucial than the conventional investment multiplier in the strategy of development.

Priority for agriculture is also favoured on the ground that the creation of investible surplus is technologically easier in agriculture and has a much shorter gestation period. Increase in agricultural production in the initial period of development can be brought about through the application of resources which have a low opportunity cost and make no inroads on the critically scarce resources necessary for industrial development.³

The point of departure comes on the question whether the economic surplus in agriculture should be retained within it for improving the standard of rural living or should be siphoned off for urban, industrial development. Those who advocate the latter are interested in agricultural development not so much as a desirable end in itself but rather as a means to industrial development—as a supplier of food, industrial raw material, labour and capital. It is argued: "The process of capital formation everywhere has meant initial mobilization of investible surpluses by withdrawing a portion of these from agriculturists either forcibly or through lower prices."⁴ The non-violent strategy is expounded thus: "Increase in the output of foodgrains and other agricultural commodities sufficient to lower their price will make the terms of trade unfavourable to agriculture. The fall in agricultural prices will be steep, due to the fact that the demand for food

¹ OSHIMA, HARRY, 'A Strategy of Asian Development', *Economic Development and Cultural Change*, April 1962.

² *Ibid.*

³ JOHNSTON, BRUCE, and JOHN MELLER, 'The Nature of Agriculture's Contribution to Economic Development', *Food Research Institute Studies*, Nov. 1960.

⁴ KEAN, N. A., 'Resource Mobilization from Agriculture and Economic Development in India', *Economic Development and Cultural Change*, October 1963.

s not infinitely elastic. If agricultural prices are depressed relative to non-agricultural prices, agricultural surpluses will go into the hands of non-agriculturists."⁵

As against the agriculture-first school, those who emphasize the role of rapid industrialization in economic development argue that most of the under-developed countries are, in fact, so termed because of the predominance of agriculture in their national economy. The path of progress, therefore, must inevitably lie in the direction of a shift of resources, both capital and labour, from low-productivity enterprises to high-productivity enterprises. Agriculture is admittedly a relatively low-productivity sector even in most of the advanced countries; as such, the strategy of economic development would consist in gradually reducing the preponderance of the agricultural sector in the national economy through a process of industrialization. This, in any case, would be necessary inasmuch as with rising incomes, the community's demand-pattern will undergo a change in favour of industrial products.

International comparisons of shares of major sectors in national product "reveal a negative correlation between the level of income and agriculture's share in it, and a positive correlation between the level of income and the share of non-agricultural commodity production. As the level of *per capita* income increases, the share of agriculture in national product drops and that of industry rises."⁶ Analysis of long-term trends also confirms the results obtained by cross-country analysis. Thus, Prof. Kuznets found that with the secular rise of product *per capita* and per worker, the share of the agricultural sector in total product declines and the share of the manufacturing sector rises. The analysis in terms of distribution of labour force in the different sectors of the national economy suggests a significant positive association between the rate of growth in *per capita* and a shift away from agriculture in the structure of the labour force. One is therefore led to argue that "if real income *per capita* is to grow rapidly, the accompanying changes in the occupational structure of the labour force should be equally large. In the sample of eighteen countries, the total shift in the percentage distribution of

⁵ *Ibid.*

⁶ KUZNETS, SIMON, 'Quantitative Aspects of Economic Growth of Nations', *Economic Development and Cultural Change*, July 1957. The subsequent observations are also based on this article.

labour force (including unpaid family labour) among the three major sectors (agriculture, manufacture, services) tends to be large in countries with high rates of growth of *per capita* income and *vice versa*.⁷

These conclusions, however, should not be interpreted to imply that a mere re-deployment of labour force would automatically, so to say, lead to higher *per capita* income. Kuznets' analysis has also revealed that a mere shift of the industrial structure of under-developed countries towards the pattern of developed countries—retaining the contrast between the high, relative, per-worker product in the manufacturing and service sectors and the low one in the agricultural sector—will not reduce the international differences in per-worker product. "To put in simply," he says, "the major source of international differences in countrywide output per worker (and *per capita*) between developed and under-developed countries is not that the full-time labour force of the former and of the latter are distributed differently among the several industrial sectors. . . . It is rather in the fact that within each sector proper—within agriculture, within mining, within manufacturing, within transportation and trade etc.—the product per worker in the under-developed countries is so much lower than in the developed." As a matter of fact, Kuznets himself has elsewhere argued : "Agricultural Revolution—a marked rise in productivity per worker in agriculture—is a pre-condition of the industrial revolution in any part of the world."⁸ Whatever be the motive or objective of economic development, welfare of the rural community or its surplus-generating-potential for overall economic development, there appears to be a fair degree of consensus regarding the crucial importance of agriculture in the initial period of economic growth.

II

PLACE OF AGRICULTURE IN INDIA'S FIVE-YEAR PLANS

In the light of the foregoing discussion on the role of agriculture in economic development, it would be useful to review briefly the views of the Planning Commission on this question as stated in the successive Five-Year Plans. Writing about the pattern of priority in the

⁷ *Ibid.*

⁸ KUZNETS, SIMON, *Six Lectures in Economic Growth*.

First Five-Year Plan, the Planning Commission states: "The conception of priorities over a period has to be a dynamic one, the emphasis as between different sectors shifting as development in those taken up initially prepares the ground for development in others." Having laid down this broad principle, the Planning Commission proceeds to state: "For the next five-year period, agriculture including irrigation and power must, in our view, have the top-most priority. For one thing, this emphasis is indicated by the need to complete the projects in hand, and further we are convinced that without a substantial increase in the production of food and of raw materials needed for industry, it would be impossible to sustain a high tempo of industrial development. In an under-developed economy, with low yield in agriculture, there is of course no real conflict between agricultural and industrial development. One cannot go far without the other; the two are complementary. It is necessary, however, on economic as well as on other grounds, first of all to strengthen the economy at the base and to create conditions of sufficiency and even plenitude in respect of food and raw materials." Consistent with this approach, in the total Plan outlay of 2,356 crore rupees, as much as 15.1 per cent was allocated to agriculture and community development and 28.1 per cent to irrigation and power (16.3 per cent to irrigation, 11.1 per cent to power and 0.7 per cent to flood control, etc.) as against 7.6 per cent to industry and mining (6.3 per cent for large and medium industries and 1.3 per cent for small industries).⁹ It should, however, be mentioned that the Planning Commission, at that stage, held the following view: "The progress in industries, especially large-scale industries, would have to depend, to a great extent, on effort in the private sector, while the State would concentrate on the provision of basic services like power and transportation." Though it was stated, that the State had also "special responsibility for developing key industries and heavy industries like iron and steel, heavy chemicals and manufacture of electrical equipments without which development in the modern world is impossible," no significant allocation was made for the development of these key industries in the public sector.

Agricultural production during the First Five-Year Plan increased substantially, though in retrospect it appears that the bulk of it was due to an increase in the acreage and to good weather conditions. At

⁹ For the statement of outlay in the public sector under the three Five-Year Plans, see Table 1.

Table 1 : OUTLAY* IN THE PUBLIC SECTOR IN THE FIRST, THE SECOND AND THE THIRD PLAN

<i>Head</i>	<i>First Plan</i>		<i>Second Plan</i>		<i>Third Plan</i>	
	<i>(1951-56)</i>		<i>(1956-61)</i>		<i>(1961-66)</i>	
	<i>Outlay</i>	<i>Percentage</i>	<i>Outlay</i>	<i>Percentage</i>	<i>Outlay</i>	<i>Percentage</i>
Agriculture & Community Development	357	15.1	568	11.8	1,068	14
Major & medium irrigation	401	17.0	486	10.1	650	9
Power	260	11.1	427	8.9	1,012	13
Village & small industries	30	1.3	200	4.1	264	4
Industries & minerals	149	6.3	690	14.4	1,520	20
Transport & communications	557	23.6	1,385	28.9	1,486	20
Social services & miscellaneous	533	22.6	945	19.7	1,300	17
Inventories/Miscellaneous	69	3.0	99	2.1	200	3
Total	2,356	100	4,800	100	7,500	100

* Planned, not actual. Source : Five-Year Plans.

the end of the First Five-Year Plan, food-grain production had increased from 55 million tons to 65 million tons, exceeding the target of 61.6 million tons laid down for the last year of the Plan. Prices of agricultural commodities also declined sharply. The comfortable situation on the agricultural front induced the Planning Commission to shift the emphasis towards industrialization, while formulating the Second Five-Year Plan. One of the major objectives of the Second Five-Year Plan was stated to be "rapid industrialization with particular emphasis on the development of basic and heavy industries". The other objectives mentioned in this context were a sizeable increase in national income, a large expansion of employment opportunities and reduction of inequalities in incomes and wealth, but there was no specific mention of the development in agriculture. Arguing the case for rapid industrialization, the Commission stated: "Low or static standards of living, under-employment and unemployment and, to a certain extent, a gap between the average and the highest incomes are all manifestations of basic under-development which characterizes an economy dependent mainly on agriculture. The core of development is thus rapid industrialization and diversification of the economy.

But, for industrialization to be rapid enough, basic industries like iron and steel, non-ferrous metals, coal, cement and heavy chemicals as well as industries which make machines for making machines have to be developed rapidly." The approach of the balanced growth was not given up. It was stated that balanced pattern of industrialization requires well-recognized effort to utilize labour for increasing the supplies of much-needed consumer goods in a manner which economizes the use of capital.

Consistent with this view, the percentage of the developmental outlay (Rs. 4,800 crores) allocated to industry and mining was increased to 18.5 per cent (from 7.6 per cent in the First Five-Year Plan) and that for agriculture and community development was reduced to 11.8 per cent (from 15.1 in the First Plan). There was a similar reduction to 19 per cent from 28.1 per cent in outlay allocated for irrigation and power. The targets of agricultural production for the Second Five-Year Plan were also relatively modest. For example, the production of food-grains was to be increased from 65 million tons in 1955-56 to 75 million tons in 1960-61, an increase of 10 million tons in the five years of the Second Plan as against an increase of 14 million tons achieved during the First Five-Year Plan. Soon after, however, it was realized that the target for food-grain production in the Second Five-Year Plan was rather low and was raised to 80 million tons, without, however, making any addition to the financial allocation for agricultural development.

Though in the last year of the Second Plan, food-grain production nearly reached the revised target, in the preceding years, shortages were experienced resulting in a substantial increase in food-grain prices. The Third Plan, therefore, restored the primacy of agriculture in its development programme. Unlike in the Second Plan, the achievement of self-sufficiency in food-grains and increased agricultural production to meet the requirements of industry and export, found place in the principal objectives of the Third Plan. It was stated that in the scheme of development in the Third Plan, the first priority necessarily belonged to agriculture. The experience during the period of the first two Plans, especially the Second, had shown that the rate of growth in agricultural production was one of the main limiting factor in the progress of the Indian economy. This, however, did not imply relaxation of emphasis on the development of basic and heavy in

tries. As a matter of fact, there appears to be a certain degree of ambivalence regarding the relative importance of agriculture and industry. On the one hand, it was stated: "The development of agriculture based on utilization of man-power resources of the countryside and the maximum use of local resources holds the key to the rapid development of the country". On the other, it was also stated: "There is no doubt that industry has a leading role in securing rapid economic advance." This was sought to be reconciled by the following statement: "The growth of agriculture and the development of human resources alike hinge upon the advance made by industry. Not only does industry provide the new tools, but it begins to change the mental outlook of the peasant."

Allocation of financial outlay to the different sectors in the Third Plan does indicate a slight shift in favour of agriculture. The share of agriculture and community development in the total financial outlay was increased from 11.8 per cent in the Second Plan to 14 per cent in the Third, while the percentage allocated to major and medium irrigation was slightly reduced. The percentage share of organized industry and minerals was stepped up from 14.4 to 20 per cent. It was, however, stated: "In formulating agricultural production programmes for the Third Plan, the guiding consideration has been that the agricultural efforts should not be impeded in any manner for want of financial or other resources. Accordingly, finance is being provided on a scale which is considered adequate and further assurance is given that if for achieving the targets of production, additional resources are found necessary, this will be provided as the Plan proceeds." During the first two years of the Third Plan, progress of agricultural production was very unsatisfactory and when national emergency was declared, after the invasion of the northern frontier, the National Development Council sanctioned supplementary allocation for minor irrigation and soil conservation.

Viewing the three Five-Year Plans together, one can state that the only period during which the importance of agricultural development was not sufficiently appreciated was at the time of the formulation of the Second Plan. It may be perhaps more appropriate to say that during that period, the importance of the basic and heavy industries in national development came to be emphasized for the first time. It was interpreted as 'neglect' of agriculture. In this connection, it is

important to mention that the allocation of only 6.3 per cent of the total financial outlay in the First Plan to the development of large and medium industries in the public sector was altogether too meagre and its step-up to 14.4 per cent in the Second Plan was, in a way, a correction of the 'neglect' of industrial development in the First Plan. It is interesting to note that, in retrospect, even the critics of the heavy-industry bias of the Second Plan agree that it would have been worthwhile to have endeavoured to establish a steel mill during the period of the First Plan.

In this connection, it is necessary to emphasize that it is inappropriate to judge the priorities accorded to different sectors, only by reference to the composition of planned public outlay or investment. Apart from the considerable non-monetized investment, particularly in the agricultural sector, so characteristic of under-developed economies, the quantum of private investment in different sectors constitutes an important component of the total investment on which the ultimate output would depend. According to the estimates given in the Third Five-Year Plan, during the period of the First Five-Year Plan (1951-56), the private-sector investment came to 1800 crore rupees as against 1560 crore rupees of public-sector investment. The corresponding figures for the second-plan period (1956-61) are 3100 crore rupees and 3650 crore rupees. It may also be noted that during the period of the Second Plan, private investment in agriculture and community development came to 625 crore rupees as against public investment of 210 crore rupees. In the case of major and medium irrigation, however, as expected, there was no private investment against an investment of 420 crore rupees by the public sector.¹⁰ Further, as Reddaway has rightly pointed out, "the only way of judging whether a development plan is well-balanced is by considering the flow of output of the various goods and services. Investment is simply one means of securing this balance and the character of the development cannot be judged by the way in which this one means is allocated between various industries."¹¹ "The capital expenditures", he says, "are a very important means of helping to attain this output, but they are not objectives in themselves; if some other method of raising output could be discovered during the Plan period (e.g. by the use of better

¹⁰ See Table 2.

¹¹ REDDAWAY, W. B., *The Development of the Indian Economy*, p. 161.

Table 2 : INVESTMENT (PRIVATE AND PUBLIC) IN THE FIRST, THE SECOND AND THE THIRD PLAN

(Rs. Crores)

Head	First Plan Investment				Second Plan Investment				Third Plan Investment			
	Public (a)	Private (a)	Total	Percentage	Public	Private	Total	Percentage	Public	Private	Total	Percentage
1	2	3	4	5	6	7	8	9	10	11	12	13
Agriculture & Community Development	234	363	597	18.0	210	625	835	12	660	800	1,460	13
Major & medium irrigation	250	(b)	250	7.2	420	(b)	420	6	650	(b)	650	6
Power	203	23	226	6.7	445	40	485	7	1,012	50	1,062	10
Village & small industries	31	101	132	4.0	90	175	265	4	150	275	425	4
Organized industries & Minerals	62	392	454	13.5	870	675	1,545	23	1,520	1,050	2,570	25
Transport & Communications	421	78	499	15.0	1,275	135	1,410	21	1,486	250	1,736	17
Social services & miscellaneous	359	553	912	27.0	340	950	1,290	19	622	1,075	1,697	16
Inventories	—	290	290	8.6	—	500	500	8	200	600	800	8
Total	1,560	1,800	3,360	100	3,650	3,100	6,750	100	6,300	4,100	10,400	100

Note : Investment should be distinguished from outlay. The former represents expenditure on the creation of physical assets, the latter corresponds to revenue expenditure on Plan schemes.

(a) The break-up of investment in the private and the public sector for the period of the First Plan is not available. The break-up given in column 2 corresponds to the break-up of public outlay. The break-up in column 3 is worked out under the assumption that its pattern was the same as in the Second Plan (column 7).

(b) Included under agriculture and community development.

Source : Third Five-Year Plan, Tables on pp. 32, 33 and 59.

II

seeds instead of costly irrigation schemes); then, the essence of the Plan can be fulfilled even if the capital expenditure were far below the original figures."¹²

Professor Reddaway has elaborated this point thus: "A five-year plan normally shows two main sets of figures: targets for the outputs of various commodities which should be attained in the last year of the plan, and plans for capital expenditure to be done in the whole period of the plan. Of these two, the capital expenditure is the thing which calls for direct and immediate action, and it tends, therefore, to be regarded as the essence of 'the Plan'. This is, however, to mistake the means for the objective: the fundamental *objective* of the Plan is to attain the higher levels of output, and it is these levels of future output which have to be kept in balance as between one product and another, if the Plan is to be a coherent one."

III

After this rather prolix introductory background, we may concentrate on our main theme: the impact of the growth-process on Indian agriculture. Let us begin with the examination of the relative growth-rates in the agricultural and non-agricultural sectors of the economy. To keep quantitative analysis within a modest limit, ours will be only a two-sector analysis: agriculture—including animal husbandry, forest and fisheries—and the rest of the economy which, for the sake of convenience, has been termed non-agricultural sector, unless otherwise stated.

Several factors influence the relative position of the two sectors in the process of development. Firstly, the growth-rates in the two sectors may vary. The impact of the differential growth-rates on *per capita* (or per worker) income will be modified by the sectoral transfer of labour-force. The change in the terms of trade will further alter the income-parity ratio of the two sectors. We shall first briefly review the experience in regard to these three dominant factors during the last decade.

Growth-rates

A variety of statistical data, not always easily comparable, is available on growth-rates in agricultural production and productivity.

¹² *Ibid.*, p. 189.

We have the unadjusted and the adjusted figures of annual production in absolute terms. We have also the Index Numbers of Production, Area and Productivity which claim that they remove the non-comparability due to changes in statistical coverage and methods of estimation. As the measurement based on two specific points (years) would be influenced by seasonal conditions which are important in agriculture, linear growth-rates and compound rates have been calculated. One series is based on the three-year moving-averages of the index numbers for the period 1949-50 to 1961-62 and the other for the period 1952-53 to 1961-62.¹³

Table 3 : ALL-INDIA COMPOUND GROWTH-RATES IN PERCENTAGES

	1949-50 to 1961-62 (Average 1949-50 to 1951-52 = 100)	1952-53 to 1961-62 (Average 1952-53 to 1954-55 = 100)
Food-grains	3.45	2.46
Non-food-grains	3.57	3.88
All crops	3.49	2.94

The table reveals that agricultural production increased at the compound rate of about 3.5 per cent during 1951-1961. If, however, a three-year average centered on 1953-54 is taken, the increase amounts to only three per cent per year.

The better results in the 1949-50 series are believed to be primarily due to the larger contribution of the increase in area. As there are grave doubts about the Index Number Series of Area (which incidentally is used as a deflator for calculating the Index of Productivity) it would be advisable to avoid going into the question of the relative contribution of Area and Productivity to the growth in production.

For industrial growth, we have the Revised Series of Index of Industrial Production with the Base : 1956 = 100. After shifting the base to 1951, we get a linear rate of growth of 9.7 per cent per year.¹⁴ That the growth-rate in the industrial sector should be higher than that in the agricultural sector, is to be expected in a developing economy. What is somewhat unexpected is the wide divergence between the two.

¹³ *Growth Rates in Agriculture (Mimeo.)*, Economic and Statistical Adviser, Ministry of Food & Agri., Govt. of India.

¹⁴ Moving average is not taken. The Index covers only the organized industry.

The national income data provide another source from which the sectoral growth-rates may be derived. The net national output in 1948-49 prices originating from the agricultural sector increased from 43.8 *abja** rupees (annual average of 1949-52) to 57.6 *abja* rupees (average of 1959-62) resulting in an increase of 31.5 per cent during these years (Table 4). For the corresponding period, the increase in the net national output in the rest of the economy (termed the non-agricultural sector) was from 45.6 *abja* to 68.3 *abja*, resulting in an increase of 49.8 per cent. If these figures are viewed from

Table 4 : GROWTH IN NATIONAL OUTPUT

	<i>Rs. abja (100 crores)</i>				
	1949-52*	1959-62**	Increase	Increase percentage	Share in total increase
	<i>Constant prices (1948-49)</i>				
Agriculture†	43.8	57.6	13.8	31.5	37.8
Non-agriculture‡	45.6	68.3	22.7	49.8	62.2
Total	89.4	125.9	36.5	40.8	100.0
	<i>In current prices</i>				
Agriculture	48.0	66.7	18.7	39.0	42.1
Non-agriculture	47.2	72.9	25.7	54.4	57.9
Total	95.2	139.6	44.4	46.6	100.0

* Three-year average centered round 1950-51.

** Three-year average centered round 1960-61.

† Includes animal husbandry, forest and fisheries.

‡ The rest of the economy.

another angle, 37.8 per cent of the total increase in national output during the period was contributed by the agricultural sector and the remaining 62.2 per cent by the non-agricultural sector. It is apparent that the rate of growth was relatively small for the agricultural sector as compared with that for the non-agricultural sector. This would make the income-parity ratio between the two sectors less favourable to the agricultural sector over the decade; other factors such as labour-force movement and terms of trade remaining the same. This picture is slightly altered when the national output is measured in current prices. Under this method of calculation, the output in the agricultural sector shows an increase of 39 per cent as against an

* *Abja* = 100 crores or 1000 millions.

increase of 54.4 per cent in the non-agricultural sector. In other words, 42.1 per cent of the increase in the national output during this period was contributed by agriculture as against 57.9 per cent by the non-agricultural sector. The contribution of the agricultural sector to the total increase in national output was relatively larger (42.1 per cent) when measured in terms of current prices instead of constant prices (37.8 per cent). This difference can be attributed to the change in the terms of trade in favour of agriculture (Price-parity ratio 102.7).†

Labour-force : The changes in the composition of labour-force between 1951 and 1961 as revealed by the population census, are presented in Table 5. There were, however, some drastic changes in the concepts and definition used in the two census, and extreme caution is needed in drawing conclusions based on these figures. Particular mention may be made of the marked increase in the labour-participation rates from 39 per cent in 1951 to 42.98 per cent in 1961. On the

Table 5 : POPULATION AND LABOUR-FORCE BY SECTORS

(Figures in million)

Year	Population	Working force	Agricultural workers*	Non-agricultural workers	% of agricultural workers to total workers
1951	356.88	139.52	100.63	38.89	72.13
1961	438.31	188.42	135.26	53.16	71.79
Change 1961-51	81.43	48.90	34.63	14.27	(-) 00.34

* (1) The term "agricultural workers" includes : (a) 'cultivators', or the industrial category I of the 1961 census; (b) 'agricultural labourers', or the industrial category II of the 1961 census; and (c) workers engaged in 'livestock, forestry, hunting and plantations, orchards and allied activities' but not those engaged in mining and quarrying, or, in other words, only a part of the industrial category III of the 1961 census.

(2) The 1961 data are taken from : Census of India, Paper No. 1 of 1962, 1961 Census : Final Population Totals.

	Price Indexes.			
	1949-52	1959-62		
Agricultural	100	107.45	$\frac{107.45}{104.60}$	= 102.72
Non-agricultural	100	104.60	$\frac{107.45}{105.84}$	= 101.52
Total	100	105.84	$\frac{104.60}{105.84}$	= 98.82

whole, it can be said that the increase in the labour-force between 1951 and 1961 revealed by the table exaggerates the situation due to an underestimation by the 1951 census and overestimation by the 1961 census. Anyway, the most significant factor which emerges from the table is that the proportion of the labour-force employed in agriculture remains almost the same (72.13 in 1951 and 71.79 in 1961) over the decade. This would imply that the change in the relative position of the two sectors due to differential growth-rates would not be affected by this factor inasmuch as there was no change in the disposition of the labour-force.

Terms of trade : The third factor which would affect the relative position of the two sectors would be the change in their terms of trade. Various methods have been used to determine the terms of trade : (a) of the agricultural sector vis-a-vis non-agricultural sector ; and (b) of the farmers in terms of the ratio of prices received to prices paid. The usual method used for the former is to study the relative movements in the prices of agricultural and non-agricultural commodities and the ratio between the two. This should not be strictly termed as terms of trade inasmuch as the weights used in the construction of the wholesale prices would be very different from the weights of the commodities entering into the trade between the two sectors. In any case, information regarding the movement in the prices of these two groups of commodities would be of some interest and is given in Table 6.

By and large, the movements in the prices of the two groups of commodities have been on parallel lines. In the year 1955, however, the index for the agricultural commodities declined by as many as 12 points from the base year but that for the non-agricultural commodities fell by only one point. From this year onwards, the rise in the price index of the agricultural commodities has been somewhat steeper than that of the non-agricultural commodity price-index. In the year 1961, the two indexes stood almost at the same level.

Information regarding the ratio of prices received to prices paid by the farmers is available only for a few regions. (see Table 7). The Punjab Board of Economic Enquiry has been compiling this information for the last 25 years. Similar information is available for the last decade in some other states like Assam, Kerala, Orissa and West Bengal. Extreme caution should be exercised in making use of

Table 6 : INDEX NUMBERS OF WHOLESALE PRICES OF AGRICULTURAL TO
NON-AGRICULTURAL COMMODITIES

(Base : 1952-53 = 100)

Weights	<i>Agricultural commodities</i> (680)	<i>Non-agricultural commodities</i> (320)	<i>All commodities</i> (1000)
1950	113	99	109
1951	122	117	120
1952	102	104	102
1953	107	99	104
1954	99	100	100
1955	88	99	92
1956	102	105	103
1957	109	108	109
1958	112	109	111
1959	118	111	116
1960	124	121	123
1961	126	127	126

Source : *Economic Survey*, 1960-61, Directorate of Economics and Statistics,
Ministry of Food and Agriculture, p. 56.

this information without a detailed scrutiny of the methods and techniques used in the construction of the index. The differences in the crop patterns of these regions are significant. Orissa, Assam and West Bengal are predominantly rice-growing areas, while the major crops in the Punjab are wheat and gram. Kerala's 'agriculture' is dominated by coconut, tapioca and pepper. Weights given to different commodities in the construction of the indexes of prices received naturally vary, as they should. But the marked variations in the weights given to commodities entering into the indexes of prices paid, particularly in regard to family consumption—e.g., 48 per cent for clothing in the Punjab and eight per cent in Bengal—are difficult to explain. Similarly, the basis for weights given to commodities purchased for farm production is quite arbitrary in some cases. Apart from the technicalities of the construction of the index numbers, the method of collection of the data and their dependability leave much to be desired. However, for the sake of completing the record of available information, the parity indexes for these states are given in Table 7.

Table 7 : INDEX NUMBERS OF PARITY BETWEEN PRICES RECEIVED AND PRICES PAID

<i>Year</i>	<i>Assam</i> (1944=100)	<i>Kerala</i> (1952-53 =100)	<i>Punjab</i> (1938-39 =100)	<i>Orissa</i> (1939=100)	<i>West Bengal</i> (<i>Previous</i> <i>year</i> =100)
1951-52	131.6*	—	91.7	—	—
1952-53	103.9	—	98.5	110.02*	—
1953-54	102.1	95.2	101.2	103.02	—
1954-55	99.6	85.2	89.9	113.81	101.1*
1955-56	96.4	82.4	99.1	126.24	98.9
1956-57	106.7	83.4	103.7	135.54	—
1957-58	118.6	81.9	96.9	123.92	—
1958-59	109.3	83.0	103.2	121.84	107.3
1959-60	99.1	92.8	94.8	—	98.2
1960-61	107.3	92.1	95.3	—	102.6
1961-62	115.5	88.8	87.8	—	98.7
1962-63	105.6	84.1	84.9	—	97.9

* Calendar years, e.g., 1951 is identified as 1951-52 and so on, in column one.

Source: Directorate of Economics & Statistics, Ministry of Food & Agriculture, Government of India.

The statistical evidence regarding the terms of trade, apart from its inadequacy and qualitative deficiencies, does not lead to any firm conclusions. The sectoral national-income estimates in constant and current prices, indicate a positive shift of the terms of trade in favour of agriculture. Perhaps there is something in the national-income-estimation procedures, which has such a built-in bias. The question needs a more careful and critical examination. Conclusions based on the wholesale-price index, would depend upon the year from which the trend is measured. Of the 12 years for which the data are given in Table 6, in 7 years, the price index was favourable for agriculture, and the positive difference in its favour was, on the whole, larger than the negative difference against it. The data on the parity of the prices received to prices paid for Kerala and the Punjab definitely indicate that the terms of trade have gone against the former; Orissa shows exactly the opposite trend, and West Bengal a mixed trend.

The experience of the progress in the agricultural and non-agricultural sectors during the period 1951-61 may be summed up as follows :

(1) The gross product derived from the agricultural sector increased at the compound rate of 2.7 per cent; the growth-rate in the non-agricultural sector was 3.76 (1948-49 to 1960-61 National Income Statistics).

(2) The proportion of workers engaged in the agricultural sector* declined fractionally from 72.13 in 1951 to 71.82 in 1961. Consequently, there was an insignificant increase in the proportion of the work-force engaged in the non-agricultural sector, from 27.87 in 1951 to 28.18 in 1961.

(3) The incomes per worker in the two sectors in 1951 were 431 rupees and 1,165 rupees respectively.† In 1961, they had crept up to 437 rupees and 1,297 rupees respectively. As a result, the income parity of the workers in the two sectors declined from 0.37:1 to 0.34:1. It should be mentioned that the paltry rise of only six rupees in the per-agricultural-worker income is, in some measure, due to the sharp increase in the agricultural work-force, a part of which may be purely definitional. If the 1961 participation-rate is applied to the 1951 population-data, the work-force in 1951 would be larger and the per-worker income would be smaller (approximately Rs. 392). In that case the increase in the per-worker income in agriculture, during the decade, would amount to 45 rupees.

IV

We may now examine some facets of the situation as it will emerge after a ten-year period ending 1971 and a 15-year period ending 1976, under certain specific assumptions. The projection examines the impact on the per-worker-income ratio of the two sectors under following assumptions :

- (1) Population will grow at the compound rate of 2.35 per cent during this period;
- (2) the growth-rates in the two sectors will be the same as observed during the decade 1951-61; and
- (3) the proportion of workers engaged in the two sectors will remain the same as in 1961.

The result of the projection shows that after a ten-year period, i.e.

* Including livestock, forestry, fishing, plantations, orchards and allied activities but not mining and quarrying.

† See Table 8.

in 1971, the per-worker-income ratio in the agricultural and the non-agricultural sector will decline from 0.33:1 in 1961 to 0.30:1 in 1971, and to 0.29:1 in 1975 (see Table 8).

Apart from the deterioration in the relative position of the worker in the agricultural sector, as revealed by the above projection, the implications of our assumptions, that the ratio of the work-force in the two sectors will remain constant, need to be examined. On this assumption, the work-force in agriculture would expand from 135.3 millions in 1961 to 170.7 millions in 1971—resulting in an increase of 35.4 millions; in 1975 it will reach 191.7 millions—resulting in an increase of 56.4 millions in 15 years. The current pressure of population on land is already excessive, and one of the objectives of planned economic development is to reduce it. As we saw in Section III, we have not succeeded in doing so during the last decade. The above-mentioned calculations indicate the magnitude of the task the agricultural sector will have to face in the next decade in regard to the employment situation.

Faced with this situation, it will be convenient to argue that the transfer of workers from agriculture to industry should be accelerated. But the industrial sector faces an equally difficult task. Under the assumption of no change (from 1961) in the proportion of workers in the two sectors, by 1971, the non-agricultural sector will have to find employment for 13.8 million people. If the income-parity ratio is not to deteriorate for the agricultural sector, it will have to take in additional five million persons. If the workers' proportion in agriculture is to come down to 65 (instead of 71.8 in 1961), the total absorption by the non-agricultural sector will have to be of the magnitude of 28 million workers in 1971. We have not worked out the capital requirements of employing such a large number in industries. It will depend on the pattern of industrialization, a discussion on which will lead us into the controversy of employment-oriented *v.* surplus-generating industrialization.

The situation as is developing presents an awkward dilemma for the planner. If industrialization is not speeded up, the employment and the income situation in the agricultural sector will become explosive. With the acceleration in the rate of population-growth in the current decade, if the growth-rate and the rate of labour-transfer remain the same as in 1951-61, there will be an increase in the per-

Table 8 : EMPLOYMENT, OUTPUT, INCOME PER WORKER, AND INCOME RATIO IN AGRICULTURE AND THE REST OF THE ECONOMY, 1951, 1961, 1971, 1975

<i>Year</i>	<i>Total work force</i>	<i>Workers in agriculture</i>	<i>Workers in non-agriculture</i>	<i>Output in agriculture</i>	<i>Output in non-agriculture</i>	<i>Agri. output per worker</i>	<i>Non-agri. output per worker</i>	<i>Income ratio Agri. 1 Non-agri.</i>
1	2	3	4	5	6	7	8	9
 In millions			In Rs. <i>abja</i> , 1948-49 prices		Rupees		
1951	139.52	100.63	38.89	43.4	45.3	431	1165	0.37 : 1
1960-61	188.4	135.3	53.1	59.1	68.9	437	1297	0.34 : 1
1970-71	237.7	170.7	67.0	77.14	99.70	452	1488	0.30 : 1
1970-71*	237.7	165.6	72.1	77.14	99.70	466	1333	0.34 : 1
1975-76	266.9	191.7	75.2	88.13	119.93	460	1595	0.29 : 1

Assumptions : (i) Population increases at the compound rate of 2.35 per cent per year; (ii) Work-force increases in both sectors at the same rate as that of population; (iii) Proportion of workers in the agricultural and the non-agricultural sector remains the same as in 1961 (71.8 and 28.2); (iv) Output in the two sectors increases at the same rate as experienced during 1948-49 to 1960-61 (agri. 2.7 per cent per year compound, non-agri. 3.76 per cent, National Income Data); *(v) In row IV in the Table, figures are worked out on the assumption that the ratio of the agricultural and the non-agricultural income in 1971 remains the same as in 1961.

worker income in the agricultural sector of only six rupees in 10 years (1971). The situation will improve only if the growth-rate is significantly stepped up or there is a massive transfer of workers from the agricultural to the non-agricultural sector or both. The experience of the first three years of this decade has demonstrated how difficult it is to step up the growth-rate in agriculture. I am not suggesting that this experience of the first three years would be typical for the entire 1961-71 decade. Far from it; but neither would any facile optimism be in order. It is also necessary to point out that there are limits to the expansion of agricultural commodities from the demand side as well. Though in the context of the present shortage this aspect of the problem may not be immediately relevant, its relevance for long-term planning should not escape attention. Agricultural surpluses can be quite embarrassing, not only in the developed countries, but also in the developing ones. Not only are the export prospects of primary commodities somewhat dim, but the income-elasticity of domestic demand also will, sooner or later, begin to exercise a curb on expansion. As and when this happens, the gains of improved production may be lost through adverse terms of trade. Transfer of workers from agriculture to other sectors of the economy—which themselves are not free from the gnawing problem of unemployment and under-employment—is also not easy. Apart from the social and the psychological problems involved in it, the magnitude of capital requirements for employment in large industries, and organizational effort that would be needed if employment is to be found in decentralized and small-scale enterprises, would be stupendous. The situation demands a highly competent and wise economic statesmanship.

R. B. R. R. KALE MEMORIAL LECTURES

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* Not published.

† Out of print.

(1) No lecture was delivered in 1947.

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