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AGRICULTURAL DEVELOPMENT
AND
THE PRICE MECHANISM

By

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I do not use mere words of convention when I say that I am grateful to the Indian Society of Agricultural Economics for inviting me to guide its deliberations during the present session of its annual conference. The high status which the Society occupies today is no doubt due to the efforts of its dedicated leaders, the most distinguished of whom, Shri Manilal B. Nanavati, is still happily with us. Fortunately, we can still turn to him for guidance and inspiration. More than thirty years ago, efforts were made on the initiative of some officials of the Government of India interested in agricultural economics to found a Society on the occasion of a Conference convened in Delhi at which papers were read on selected problems of India's agricultural economy. I recall having attended this Conference as a participant, but I also recall how my enthusiasm cooled off by reason of the fact that times were out of joint and an objective study of agricultural economics was not possible under the auspices of an official-ridden organisation. It was, therefore, with great expectations that many of us applauded the formation of a non-official body—the Indian Society of Agricultural Economics—under the dynamic leadership of Shri Manilal B. Nanavati. These expectations have been realized and the Society has by now grown in status as well as stature. Simultaneously, agricultural economics has come of age as an academic discipline and has developed its sophisticated methods and techniques. It is with great diffidence that a 'generalist' like me can face 'specialists' gathered here. I am, indeed, grateful to you for your kind thought in electing as your President a generalist—not a specialist—but one who has never wavered in his enthusiasm for understanding the problems of India's agricultural economy. What I have to say has been conceived in somewhat general terms, but I hope that specialists will not mind if I invite them to re-align their sights to explore a general field which I consider important in view of the present 'conjuncture' of developments, both national and international.

The text I have chosen for my address is 'agricultural development and the price mechanism.' To avoid needless controversy, let me assume that, whatever the socio-economic system, the price mechanism plays a functional role in the allocation of resources and the achievement of output targets. This is not an unwarranted assumption at least in respect of the agricultural sector of the economy. The price mechanism cannot be planned away if we have in mind a sensible planned economy. I am assuming that the innumerable participants in a planned economy—State as well as private, collective as well as indivi-

dual—must indicate their needs and the relative urgency of these needs not only through the statistical estimates of the Planning Commission but through the direct pressure of supply and demand. I am assuming that a plan is checked by market indicators and is also realized through the operation of the market mechanism, that the regulation of the market, if necessary, depends upon the tendencies revealed through the market, and that the blue-prints of the Planning Commission must demonstrate their worth in terms of commercial calculation. I hope you will agree that this is at least the current Indian context. I suspect that this is also the current context of agricultural development in many socialist countries, not to speak of free enterprise economies in which the price mechanism reflects as well as generates the basic economic impulses.

Once you grant my assumptions, I can hope to develop the thesis that the perspective of agricultural development over time shows a surprising degree of approximation in spite of the differences in the character of the economic systems. One may indeed build up a general conceptual frame-work as a tool of analysis which may have a much wider application than we usually suspect.

The general perspective of agriculture seems to be its comparatively low man-hour productivity. Technological progress has been greatly reducing the number of persons required to produce a given amount of agricultural output. In the U.S.A. 2 per cent largest farmers obtain no less than 26 per cent of the total farm income. This means that the majority of farms have low productivity per man-hour. The farm hand is the lowest paid wage-earner. The southern share-cropper as well as the tenant-farmer who supplies a share of equipment and livestock and shares the annual farm return, has a comparatively precarious position. The low-productivity marginal farmers are a drag on the economy, and there is a shift of the rural population to the urban areas in which it seeks shorter hours, better wages and better social life. And the dice is heavily loaded against the small or even medium family farmer who decides to stick it out.

In socialist countries economists have recognised that indices of net production per person employed in industry and agriculture show differences in labour productivity. For example, Strumilin has shown that in 1925-26 Soviet productivity in industry was three times higher than in agriculture. In Poland today net production per worker has been estimated to be between 2 and $2\frac{1}{2}$ times higher in industry than in agriculture. One must take into account in this context not man-hour productivity in the technical sense but the net return per person employed in agriculture. In the case of small and even medium-sized farms the 'indivisibility' of labour as a factor of production, deriving from the family character of farms, makes for large fluctuations in the number of the farmer's annual working days, depending upon the size of the holding and the intensity of agriculture.

It is against the background of such reasoning that an economist in a socialist country very aptly tells us that "migration from agriculture and the more rapid tempo of development of industry are general economic truths. Smaller or greater differences in the rates of development of agriculture and industry may take place within this frame-work. In certain situations the difference is so great that it leads to a disproportionate development of the whole

economy." The law of unequal development of industry and agriculture is thus as valid and significant as the law of unequal development of capitalism. In *An Outline of Political Economy*, written in U.S.S.R. more than 30 years ago, I read: "By industrialisation we must, therefore, understand such economic development as would be accompanied by a more rapid development of industry than of agriculture."¹ In 1925 the Planning authorities in U.S.S.R. had over-estimated the harvest of the year and had framed an over-ambitious industrial plan. The plan had to be cut down. There was then an insufficient supply of manufactured goods. The U.S.S.R. economy was operating on the basis of minimum dependence on foreign trade and loans. The difficulties connected with the 'commodity famine' were supposed to be temporary at that time. But Soviet theoreticians were careful to point out that "parallel with temporary difficulties, the Soviet economic system also experiences difficulties of a more stable character. These difficulties arise from the disproportion in the development of the productive forces in State industry and agriculture."² Economic developments in the subsequent decades have indeed confirmed the basic character of these difficulties in U.S.S.R. as also in other developing socialist countries which have faced, from time to time, the problem of disproportionate development of the entire economy due to lack of balance between agricultural and industrial development.

Here we come across a contradiction in the process of economic development, which transcends the differences in the nature of the economic systems. Lack of balance between industry and agriculture in terms of productivity is the precondition of industrialisation, the pace of which is accelerated by such imbalance threatening to become wider. The economic history of Czechoslovakia, Sweden and U.K. in the 19th century shows that the maximum development of the national income was attained by the maximum gap in the rate of development between industry and agriculture and this was achieved through the favourable terms of trade between industry and agriculture operating in the context of international division of labour. The familiar aspects of the dynamics of such a process of economic development have been migration of agrarian surplus population, industrialisation, capital formation and levelling up of productivity as between agriculture and industry. But inherent in this process is an economic paradox which is like the famous paradox of trade and factor price equalization. There is trade because of inequality of factor prices, but the effect of trade is to bring about factor price equalization. Trade, however, goes on, because factor prices can never be equal for various reasons. Similarly, economic development is conditioned by differential levels of productivity in agriculture and in industry. The effect of economic development is to level up productivity in both sectors, but the levelling up process is never complete. Indeed, it is incomplete levelling up which supplies a momentum to development. In fact an economy can make a virtue of the necessity of an unequal rate of growth of productivity. While the new and dynamic industries are continually lowering prices, the stagnant industries, including agriculture, may be compelled to raise prices in certain conceivable circumstances. The balance of these forces may thus tend to produce a fairly stable general level of prices.

1. Lapidus and Ostrovityanov : *Outline of Political Economy*, Martin Lawrence, 1929, p. 483.

2. *Ibid.*, pp. 521-22.

Countries caught in the paradoxical situation I have just explained, have reacted to it in different ways depending upon circumstances. In free enterprise industrial economies while labour productivity rises as rapidly as money wage rates (W/E remaining constant) or more rapidly (W/E falling) in the industrial sector, labour productivity lags behind money wage rates in agriculture, which means that efficiency wages (W/E) rise resulting in rising farm costs and potentially higher prices of farm products. Since money wage rates are relatively too low in agriculture the State subsidizes agriculture by means of price-support and non-price-support programmes to make it possible for efficiency-wages to rise in agriculture without their being reflected in higher farm prices. But the perspective of agricultural development is different in different countries in this category. In U.S.A. the highly favourable man-land ratio associated with the amazing increase in productivity per acre has created the problem of burdensome agricultural surpluses for which price and income support hardly offers a solution, and all devices designed to bring about a reduction in total output, have not yielded the expected result. In western Europe where the man-land ratio is unfavourable subsidization not only buttresses up agriculture, but for security reasons also aims at both extensive and intensive agricultural development. In both cases, of course, there is the common restrictive attitude to agricultural imports and a tendency to subsidization of exports.

Socialist countries of Europe and also Sweden have recently shown strikingly different trends. Sweden has maintained a constant level of agricultural output for 10 years, and, while encouraging mass migration from agriculture to industry, has chosen to meet the rising demand for agricultural commodities by imports. A similar process is at work in Czechoslovakia. In both countries the marginal physical productivity of labour, expressed in world prices, is higher in industry than the marginal physical productivity in agriculture, expressed in world prices, of labour migrating from the rural areas to the industrial centres. Therefore, it pays to export industrial products in exchange for food imports than to rely on domestic production. In comparatively underdeveloped socialist economies the possibility of converting farmers into industrial workers has been limited by the scarcity of investment goods, while there is great scope for raising the productivity of labour in agriculture. These countries now increasingly rely on a greater degree of approximation between the rate of development of industry and that of agriculture through a proper re-adjustment of their plans of economic development. What has happened in Sweden or Czechoslovakia or Poland cannot be without its relevance for the objective situation in the Soviet Union. From the early days of economic planning, Soviet planners were aware of the problem of disproportionate development of industry and agriculture. The writers of the first official textbook on Political Economy in the Soviet Union, whom I have already quoted, stressed "the necessity of starting a lasting process of re-moulding the peasant on the basis of his own private interests so as gradually to pull him through the medium of the market, through the medium of buying and selling co-operation into collective, social forms of labour."³ "Taxation and price policy," they said, "must be such as to give the peasants a chance to develop and create a market for expanding socialist industry."⁴ There cannot be any clearer enunciation of the necessity of operating the price mechanism as an instrument of agricultural development.

3. Lapidus and Ostrovityanov : *Op cit.*, p. 516.

4. *Ibid.*, p. 515.

Since there was misplaced optimism about the quick response of the peasant who knew his strength and also about the levelling up of labour productivity in agriculture as in industry, and since the Soviet economy was a closed economy, the course of events was, however, different. The Soviet text-book writers had said that "Small agriculture cannot be driven with a stick into the socialist paradise."⁵ But the big stick was used with devastating effect and socialist paradise was not in sight. Indeed, agriculture has proved to be the Achilles Heel of Soviet economic planning even after several decades of remarkable economic progress. If my analysis of the end-results on the assumption of the operation of the price mechanism is correct we should not be surprised if the Soviet Union were to seek a better balanced economy through agricultural imports flowing in the process of Soviet Union's participation in an international division of labour confined not merely to the socialist Bloc of countries but a much wider world which has agricultural surpluses to sell for the products of Soviet industry and mining.

I have presented so far a perspective of agricultural development as a long-range process, which clearly shows certain basically common characteristics in spite of the differences in the economic structure and market forms. In the short run, there is the familiar problem of fluctuations of output and prices over time—the problem of short cycles. The conceptual frame-work within which we usually understand this problem is so familiar that it would be unpardonable to talk about it in a gathering of specialists. I am, however, tempted to place before them a few lines of thought which have considerable theoretical as well as practical importance from the point of view of the perspective I am trying to present.

As regards the utility of the cob-web theorem as a tool of analysis, we must abandon the implicit assumption of discontinuous and alternating reactions on the supply side. In real life there is a more rounded movement rather than sharp fluctuations so elegantly depicted on the curves. One must be sure whether the curves are in fact rectilinear. If they are not, if the supply curve is first comparatively flat and steeper than the demand curve, later on, the final outcome will be a kind of cyclical movement with constant amplitude, preceded successively by decreasing and increasing fluctuations. Are constantly increasing fluctuations possible? If the amplitude of output and price fluctuations goes on increasing, after a point there would be an 'explosion' of the system, but before this point is reached the curves would have changed through a transformation of the structure of the Society and of the market. I draw your attention to these theoretical refinements, because they provide a rational basis for avoiding the extremes of price policy in relation to the operation of the price mechanism. There is no doubt that continually increasing fluctuations of price and quantity in agriculture have to be avoided even before a point is reached where the 'explosion' of the system is prevented by social revolution. At the same time panicky and unwise intervention in the determination of price and quantity would clearly be neither necessary nor desirable. The 'cob-web effect' is most evident in the case of agricultural production with a long gestation period where extremely violent changes in output are inevitable if all producers, when starting new production, expect to realize the prices of the moment. The answer to this may be rationalization

5. *Op. cit.*, p. 516.

of expectations by various means rather than panicky price and output controls long after the event. Nevertheless, it would be clearly necessary to keep constantly in view the amplitude of the cyclical movement in both plantation agriculture and arable farming and to ensure that the agricultural economy in the course of its development is moving steadily towards the narrowing of the range of fluctuations of output and prices and ultimately towards a cyclical movement with constant amplitude. The widening amplitude of the fluctuations of output and prices is, of course, a danger signal which a country can afford to ignore at its peril.

The short-range problem of fluctuations of output and prices presents itself to a particular country according to the clarity of its own perspective of agricultural development. The nature of the measures it adopts is also conditioned by its own long-range problem. An affluent society with a burdensome surplus in agriculture and looking for means of restricting acreage and output thinks of farm prices in the context of national income distribution. Other industrial countries with highly protected agriculture adapted to the requirements of national self-sufficiency take complicated measures to stimulate production on the basis of prices which are high enough above world prices to ensure high farm incomes. Taking wheat as an example, prices have been 25 to 100 per cent above the world price in a number of European countries. On the other hand, in relatively less industrialised countries stabilization measures have resulted in farmers receiving prices that are actually lower than the world price. Policies thus vary according to the levels of national incomes, according as agriculture is regarded as a peripheral or a strategic sector of the economy, and according as the planned target is an increase or decrease or stability of the total output of agriculture.

Let me now try to apply the analysis I have developed so far to the concrete Indian situation and to assess broadly the trend of agricultural development with special reference to the operation of the price mechanism. We can put India in the general perspective if we reason in terms of certain statistical indicators of the dynamics of agricultural development.

Per capita national income reflects the average labour productivity of the economy as a whole compounded of the average labour productivity in 'agriculture' and in 'non-agriculture'. The lower the proportion of persons engaged in agriculture the higher the per capita national income. Taking countries with a sizeable agricultural sector, in 1949, for example, U.S. per capita income of \$ 1,455 was associated with 16 per cent of persons (engaged in agriculture) at one end of the scale and the Indian per capita income of \$ 57 associated with 65 per cent of persons (engaged in agriculture) at the other end of the scale. In between there were highly progressive agricultural countries with not a high degree of industrial development, like New Zealand and Denmark, with dependence on agriculture of 18 and 27 per cent of the population respectively and per capita incomes of \$856 and \$689 respectively.

The gap in productivity between 'agriculture' and 'non-agriculture' is broadly indicated by the disparity between the percentage of persons engaged in agriculture and the percentage of gross national income shared by agriculture. For U.K. in 1949 the two percentages were equal (6 per cent), indicating a broad equilibrium of productivity and income at the same level in 'agriculture' as well

as 'non-agriculture'. The other striking case was that of New Zealand in which 18 per cent of persons (engaged in agriculture) shared a much higher proportion of the gross national income, viz., 25 per cent. Otherwise, the income share was invariably less than the percentage of population engaged in agriculture : 10 per cent and 16 per cent for U.S.A.; 22 per cent and 27 per cent for Denmark ; 30 per cent and 40 per cent for Italy. In India in 1951 69.74 per cent of persons were engaged in agriculture proper ; whereas the share of agriculture, forestry, fishery and animal husbandry was 48.8 per cent (estimate for agriculture alone is not available). This is a big enough gap which indicates (1) the relatively low technological as well as social productivity of labour engaged in Indian agriculture and (2) the disparity in the inter-sectoral income distribution.

Has agricultural development in India during the last decade or so made an impact in terms of narrowing this gap ? The overall increase in agricultural production during the 11-year period, 1951-52 to 1961-62, has been 43.40 per cent, with an annual rate of increase, at the compound rate, of 3.34 per cent. The annual rate, however, declined from 3.68 per cent during the period of the First Plan to 2.38 per cent during the period of the Second Plan. The annual rate of increase of industrial production (judged by the index of industrial production) at the compound rate has been 6.22 per cent, *i.e.*, almost double, with an overall increase of 106.16 per cent. The sharply differential rate of growth in the two sectors is quite evident. But this has made only a very small dent on the percentage of persons engaged in agriculture. This percentage has declined from 69.74 in 1951 to only 69.53 in 1961. An appreciable proportion of migrants must have been absorbed in 'non-agriculture' other than industry, accounted for by large investments in economic and social overheads during the last decade. Net value added by labour in this sector may well be as high or as low as that of unskilled labour in industry. The real social cost of the shift of people from agriculture to non-agriculture has been high. The increase in income and consumption levels as a result of the shift is greater than the rise in productivity so that capital formation is less than the increase of productivity. We have to add to this the cost of housing and other facilities of even a low level of community life.

In theory, reduction of concealed unemployment in agriculture brings about a rise in the levels of rural investment *and* consumption. We have had, however, evidence to show that the means of consumption released by those who were disguisedly unemployed before are absorbed by those who remain in agriculture and that this tends to reduce the volume of marketed surplus and to necessitate food imports, especially in bad seasons, because the volume of agricultural output has not increased substantially over time. Here we come across the hard core of the problem of agricultural development, viz., how to raise the social productivity of labour engaged in agriculture. If the farmer is not sufficiently interested in investment the kind of situation I have just outlined will persist. Creating means of production in the rural areas by way of social and economic overheads is certainly a desirable policy, but as an offsetting factor the problem of lower social productivity of labour in agriculture is aggravated by unfavourable agrarian relations and wide marketing margins both of which weaken the incentive to save and invest and to produce more.

In macro-economic terms it is not so much the relative social productivity of labour (net national product per worker) in agriculture compared

with industry, which is the problem in India as the absolute rate of increase of productivity over time. Net output per worker in agriculture and allied industries at 1948-49 prices has increased in India by only 8.8 per cent in 1959-60, compared with 1950-51. Taking a somewhat shorter period, 1953 to 1960, Taiwan (China) has shown, on a similar basis of calculation, an increase in agricultural labour productivity of as much as 20.8 per cent.

The process of economic development generally involves a decrease in the relative importance of agriculture. On the basis of the data for 34 countries, Egbert de Vries came to the conclusion that, for every 10 per cent increase in per capita real income, the proportion of national income arising from agriculture decreased by 1.5 per cent. In the case of India the per capita real income (per capita income at 1948-49 prices) has increased in 1961-62, compared with 1951-52, by 17.2 per cent. The share of agriculture, fishery, forestry and animal husbandry in the net national product (national income) has decreased during the same period by 3.8 per cent. This gives a rate of 2 per cent decrease, against every 10 per cent increase in per capita real income, *i.e.*, only 0.5 per cent above the average percentage found by de Vries. We may derive satisfaction from being above the average, but we must not forget that Taiwan (China) has shown a figure of 2.7 per cent above the average during the period 1953-1960.

Economic development is also normally associated with a shift of acreage from food crops to non-food crops. The cropped area under foodgrains has declined from 77.4 per cent in 1949-50 to 76.1 per cent in 1961-62, by only 1.3 per cent. The annual rate of increase of output of non-food crops since 1949-50 has been 4.19 per cent, while the rate has been 3.60 per cent in the case of food crops. In the category of food crops, the crops the output of which has shown a higher than the average rate of increase are rice (3.75 per cent) and wheat (6.01 per cent). Higher than average percentage increase of output has been recorded for groundnut (4.59 per cent), sugarcane (5.61 per cent) and cotton (6.56 per cent) in the category of non-food crops. A decade is, of course, not a long enough period for trends to be established. There is, moreover, the erratic influence of seasonal fluctuations. Nevertheless it is necessary to examine the economic factors steadily at work many of which are traceable to human arrangements, which I propose to pass rapidly in review.

Before I turn to this let me carry the analysis a little farther. Output is a function of two variables—area and productivity. In the case of foodgrains there has been 1.58 per cent annual increase of area and 1.81 per cent annual increase of productivity during the period 1949-50 to 1961-62. For non-food crops the corresponding figures are 1.84 per cent and 1.68 per cent respectively. The differences are not appreciable, although the increases in both area and productivity are higher in the case of non-food crops. It is, however, significant that the higher than average annual rate of increase of output is explained by the higher than average annual rate of increase of area in the case of wheat, groundnut, sugarcane and cotton. It is only in the case of rice that the annual rate of increase of area (1.05 per cent) is below the average for foodgrains (1.58 per cent), but there has been an impressive annual increase of productivity of 2.50 per cent, as against the average of 1.81 for foodgrains.

The increase in productivity has been below average in the case of wheat amongst food crops, and particularly groundnut and sugarcane amongst the non-food crops. It is only in respect of cotton that we find a high annual rate of increase of area (4.03 per cent) *and* a higher than average increase of productivity (1.71 per cent). It is necessary for specialists to turn their attention to these crops which have shown evidence of dynamism during the last decade. Is the increase in area due to the favourable price factor or the extension of facilities of irrigation? Is it marginal land, as understood by economists, in the context of population pressure? Is the annual increase in productivity in the case of cereals, in general, and rice (2.50 per cent), wheat (1.64 per cent) and jowar (1.47 per cent), in particular, due to larger and better input? If so, what has been the incentive?

In terms of the title of my theme I would, however, like to briefly address myself to one aspect of the problem—the operation of the price mechanism, with particular reference to the agricultural price policy pursued by the State in recent years, which, as I shall try to show, follows a pattern conforming to the general conceptual frame-work I developed earlier. I shall confine my remarks to mainly these five crops which would excellently serve as a peg to hang my analysis on.

The responsiveness of farm output to prices is the very core of the dynamics of agricultural development and has rightly claimed the attention of competent analysts in recent years. Too often the official analysis runs, I am afraid, on unconvincing lines. Over the last decade the coefficients of variation of harvest prices have been as follows:—Sugarcane : 8.1 ; Wheat : 10.9 ; Cotton : 11.6 ; Rice : 12.5 ; Jute : 14.3 ; *Gur* : 17.1 ; Jowar : 17.8 ; Groundnut : 20.3. In the case of sugarcane, wheat, cotton and rice the coefficient of variation has been low. There is minimum price regulation (on the basis of a high minimum price which has become traditional) in the case of sugarcane. The prices of rice and wheat have been kept down by a number of regulatory measures, and maximum and minimum prices are fixed for cotton. In the case of jute, *gur*, jowar and groundnuts prices are more or less unregulated or there is less continuous regulation. Comparative stability of harvest prices of sugarcane, rice and wheat are supposed to be due to regulatory measures. You will agree that there are other complex factors in the situation. One realizes their existence when one goes a little more deeply into the problem. How does one explain the dynamism of supply response in the case of these crops? It is not entirely convincing to say that output has increased because of relative price stability, although prices have been kept down in the case of rice and wheat by regulatory measures, and because the farmer values stability of price even at a comparatively low level of price. Groundnut prices have been more or less uncontrolled, and the coefficient of variation is the highest in the range, *viz.*, 20.3 ; yet the annual rate of increase of output has been 4.59 per cent on the average, as against 4.19 per cent in the case of non-food crops, in general. The annual rate of increase of output of cotton, a controlled commodity, the price of which has been kept down by regulatory measures, is as high as 6.56 per cent. Dr. Raj Krishna of the Institute of Economic Growth has made an excellent econometric study of farm response for pre-partition Punjab, which throws interesting light on these enigmas.⁶ His study is a model of research which, in my opinion, will yield valuable results for other regions of India, by way of

6. Dr. Raj Krishna, "Farm Supply Response in India-Pakistan : A Case Study of the Punjab Region," *The Economic Journal*, September, 1963.

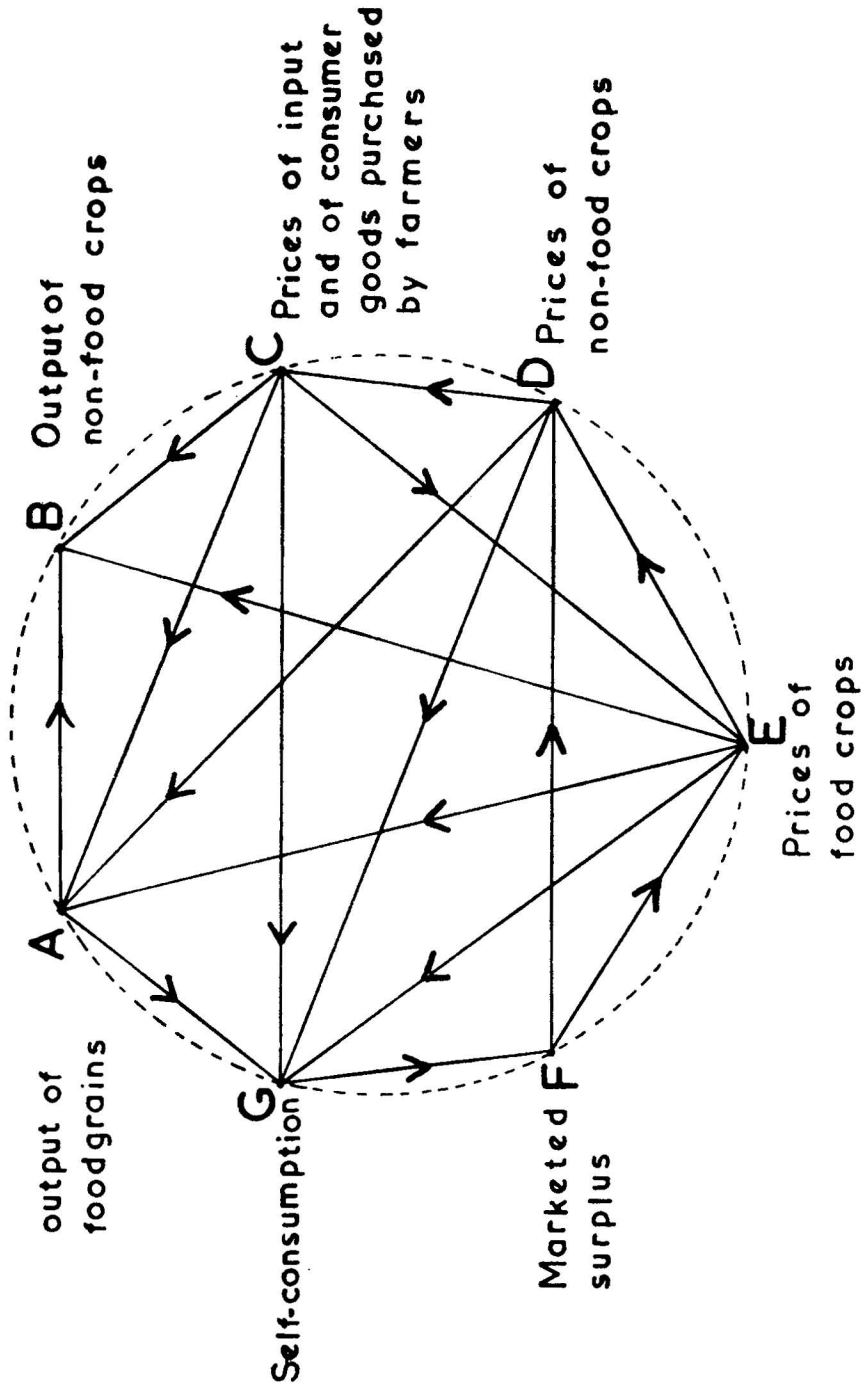
inter-regional comparisons of responsiveness of supply. He finds that price alone was the important factor in the determination of the acreage of maize and sugarcane. In the case of cotton price was more important than yield. Irrigation capacity was more important than price for cotton, bajra and irrigated wheat. Yield was more important than price in the case of rice. For jowar Dr. Raj Krishna found a possible negative response to price movements. I wonder whether irrigation capacity rather than the price factor explains the recent increases in both the area and yield of cotton and wheat in India as a whole. Similarly, his finding that yield was more important than price in the case of rice is very significant in the light of the fact that in the case of rice during the last decade we notice the highest annual increase of productivity, viz., 2.50 per cent. The importance of the price factor in the determination of the sugarcane acreage has been too familiar a phenomenon to leave any scope for speculation.

Farm response would seem to depend on the constellation of price and non-price factors which act and re-act on one another through an intricate chain of relations. The diagram given in the next page is designed to present a synoptic view of the operation of these factors.

Beginning with the point A on the circle, output of foodgrains is linked in a chain of mutual causation with the output of non-food crops, prices of input and consumer goods purchased by farmers, prices of non-food crops and food crops and the level of self-consumption. Output of non-food crops (B) is linked with the other factors mentioned except that self-consumption is either non-existent or is insignificant in the case of commercial crops.

The segment of the diagram including the chain C-D-E-F is of considerable importance in the Indian agricultural economy. The factors involved here are: (1) the parity in the sense of the ratio between the prices received and the prices paid, and (2) the inter-crop price-parity. It is quite evident that any disequilibrium in these parities has adverse reactions on agricultural development, at any rate in the long run. Since this question is linked with agricultural price policy and non-price regulatory measures it will be discussed a little later. It is clear from the diagram that prices of input and of consumer goods purchased by farmers (*gur*, for example) also depend on food prices and prices of non-food crops. This segment of the chain of relations becomes significant in an inflationary situation.

Self-consumption, marketed surplus, and de-stocking and re-stocking operations of the primary producers have assumed quite some importance in recent years. How they influence prices is easy to understand, but the reaction of prices and particularly any disturbance in inter-crop price-parity, on farm consumption, stocks and marketed surplus is an interesting phenomenon revealed by current research. The marketed surplus is 31 per cent and 37 per cent of production in the case of superior foodgrains, like rice and wheat respectively, for which demand has been increasing steadily, and varies between 19 and 26 per cent in the case of inferior grains. For non-food crops self-consumption is naturally an insignificant factor. A dynamic element in the situation is that even small holdings below 10 acres contribute appreciably to the marketed surplus not only in the case of a heavy-yielding crop like rice but even in the case of wheat. There is clear evidence to show that the price factor does influence the size of the surplus. Small cultivators have a deficit of foodgrains.



Their distress sales result in their contribution to the marketed surplus, but that is more than offset by their purchases of foodgrains later in the season provided the prices of commercial crops they sell are high enough. But to the extent that small farmers produce more food, although their self-consumption increases, since their demand on supplies flowing into the market perhaps later in the year will be less, there would be a net increase in marketed surplus. Of course, in the case of medium and large farmers the marginal rate of marketable surplus would be high as well as their capacity to hoard and dishoard according to the market situation. In this case the higher prices of non-food crops which they may get will increase not their self-consumption but their capacity to hoard supplies for a rising market. These trends should be studied, if I may suggest, in the context of seasonal price fluctuations which are such a great headache for harassed food ministers. The increase in the area under more paying non-food crops is not an unmixed blessing from the point of the flow of the marketed surplus of foodgrains. The planners here are really on the horns of a dilemma.

This brings me to the problem of inter-crop price-parity in respect of which there is a good deal of ambivalent thinking and policy-making in the name of planning. For the five crops which, as I have said, have shown some evidence of the farmer's dynamism and enterprise the inter-crop price-parity is apt to be disturbed, because while, on the one hand, the prices of wheat and rice are kept down, the price of cotton is subject to maximum and minimum limits and the price of sugarcane is kept comparatively high; on the other hand, the prices of substitutes like jute, *gur*, jowar and groundnuts are more or less unregulated. This creates a distortion in the price-mechanism. *Ad hoc* price-fixing by government is a de-stabilising factor. In 1958-59 relative cheapness of rice in the open market and the high black-market prices resulted in withholding of supplies. Similarly, relative cheapness of wheat in comparison with gram, peas, oilseeds and other pulses in U.P., Madhya Pradesh and Punjab induced farmers to sell more of these crops and to hoard wheat. Similarly the disparities between the price of jute and the price of rice in West Bengal, between the price of sugarcane and the price of wheat or rice in U.P. and elsewhere, between the price of cotton and those of its substitutes have created imbalances for which government's unwise interference with the price mechanism is mainly responsible. The assumption underlying the "cob-web" theorem that farmers are influenced by their immediate experience rather than knowledge of the basic trend does hold good when one studies the de-stocking and re-stocking movements in the countryside. Their bad experience with government's regulative measures has been an important disincentive.

Another disincentive, particularly from a long-range perspective, is the unfavourable level of parity prices or the terms of trade of agriculture as a whole. I shall content myself with offering only two comments on this problem. As my earlier analysis has shown, this is a kind of evil paradox inherent in the process of economic development. The answer to it is to subsidize agriculture through transfer payments of various kinds. It is, at bottom, a problem of better distribution of national income not only through direct subsidies, but also through increasing investment in economic and social overheads in the agricultural sector. Maintaining parity prices by government

price-fixing in order to obtain a better distribution of national income between the agricultural and the non-agricultural sectors, has serious limitations because of the contradiction between the objective of influencing national income formation and that of the optimum use of production factors in agriculture. In practice, agricultural price policy has different aims which show contradictions. To resolve these contradictions the State has recourse to other methods of influencing agricultural development — adjusting the taxation system, providing cheap credit and other kinds of aids to production as well as developing the 'infra-structure'. What I have said is generally true of States with different social systems.

Let me carry my analysis a little farther to deal briefly, in conclusion, with the vexed question of agricultural price policy. Many of us may be inclined to question whether in India the State has an agricultural price policy and to think that whatever has happened by way of agricultural development has happened not because of any price policy but in spite of it. As I have tried to show, there are a number of non-price factors in the situation, which have influenced the direction of our agricultural development. In terms of the simple diagram I have used, it is possible to imagine that the State may exercise controls at *all* points—C to G—and even A and B directly. This would be an instance of an "overdetermined" system. The very nature of Indian planning rules out an "overdetermined" system of this kind. What has been attempted in India is fixation of maximum prices of certain commodities, combined with regulation of the movement of supplies. This does not make for an "overdetermined" system. Instead of two variables (*a*) actual price and (*b*) actual quantity, there are in our system two additional variables that are determined, (1) the excess quantity sellers have to supply and (2) the deficit in the quantity buyers want to buy, at the price and quantity fixed. These hypothetical quantities represent "tensions" which also become variables in the system. These tensions are periodically released through rules being set aside or altered or reduced in number, *e.g.*, by political compromise between groups and sectional interests. This also happens even in a totalitarian, "overdetermined" system.

Indeed, in India as well as in some of the socialist countries which still maintain family farms price regulation in the agricultural sector shows a high degree of ambivalence and flexibility. This is explained not necessarily by slipshod thinking, but by the peculiar complexity of price formation in agriculture. Prices may be fixed before farmers take their production decisions. They are supposed to be guaranteed, but there may be no guarantee as regards the amount to be bought by the State. Purchase prices later in the season may, in fact, be elastic. This kind of wariness is due to a number of reasons. Depending on the operation of imponderable psychological factors, price-fixing may operate to stabilise the market as well as to intensify speculation. As our own experience has shown, fixing a high price may restrict the flow of supplies. If the objects are intensification of agriculture and a high rate of capital formation, particularly high prices may stimulate self-consumption and frittering away of resources or otherwise dispersion of purchasing power, which, even if it leads to investment, will not materialise in large investments needed for agricultural development. High prices may only benefit speculators and not the primary producers, specially the small farmers.

Fixing *all* prices faces almost insurmountable difficulties. Supply elasticities for individual crops are not known. Planning authorities, in fact, cannot weigh properly the factors bearing on the direction of agricultural production, such as changes in crop rotation and in the intensity of agriculture and the farmer's estimation of the long-run price advantage in respect of particular crops. The problem of agricultural price policy, as it poses itself to planning authorities, is not that prices fixed by the State should deviate from equilibrium prices, but to create conditions for market equilibrium in the case of selected crops. Buffer stocks are supposed to be a very handy instrument for this purpose. But buffer stock operations have been bedevilled in India by the influence of demand variations getting dovetailed into the effect of harvest variations which buffer stocks are designed to counteract. The problem becomes serious enough when buffer stocks are largely dependent on costly imports of supplies of 'strategic' agricultural commodities like wheat and rice.

If there is an agricultural price policy in India, it follows not an unfamiliar pattern. Highly industrialised countries subsidize farm incomes by means of "deficiency payment" made to the farmers, which raises the price received (including the subsidy) to a higher level than the domestic price moving in parity with the world price. The object is to achieve a reduction of farm costs. The 'deficiency payment' offers a weaker incentive to increase sales than if the subsidy were paid on the price of the product sold. Subsidies have also taken the form of remission of Central and State taxes, or subsidization of the prices of fertilizers and better varieties of seeds, or provision of credit at special concessional rates, etc. The object is two-fold: to lower cost and to encourage better agricultural practices.

Poor countries cannot afford deficiency payments, and have to rely on public investment in the overheads of agricultural development as well as on subsidization of better farming practices, as India has done. A Polish economist believes that a proper agricultural policy should be to rely less on price-fixing and more on a combination of State investment and farm investment, reduction of costs of production and various kinds of aids to production through subsidization of the prices of means of production.

The striking fact to which I wish to draw your attention is that India, like a number of less industrialised countries, has been, to a certain degree, following the policy of agricultural protection in the reverse. In Australia agricultural marketing arrangements have been such as to hold down the price of wheat to the domestic consumer below the world price of wheat and to pay the Australian wheat producer a price which is an average of the world price and the domestic price, or which is less than the world price. In Argentina the incidence of taxes on exports of wheat and meat, the proceeds of which financed industrialisation, was thrown back on the domestic farmer and the consumer. In West Africa the marketing arrangements have resulted in the domestic producer of cocoa getting less than the world market price. In Burma the difference between the price of rice paid by the State to the primary producer and the high export price has been the main source of State finance. In the case of India, to quote the Haberler Report on *Trends in International Trade*, "the price of wheat and so the reward offered to domestic wheat producers has been controlled at so low a price that even the imports

of U. S. wheat provided under special surplus-disposal arrangements have had to be subsidized in the Indian market to bring the price down to the low level earned by the domestic producers.”⁷ Thus while industrial countries have been pursuing generally protectionist policies to stimulate agricultural development, “agricultural anti-protection devices,” as the Haberler Report puts it, “are to be found mainly in some of the less industrialised countries where they tend to discourage agricultural production.”⁸ Is this not a paradoxical policy for a country which aims at agricultural development and self-sufficiency in foodgrains? So I conclude, as I began, with a paradox.

7. Trends in International Trade, GATT, Geneva, October, 1958.

8. *Ibid.*