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PRESIDENTIAL ADDRESS

SUMMARIES OF GROUP DISCUSSION

PRICES, COSTS OF PRODUCTION AND TERMS OF TRADE OF INDIAN AGRICULTURE*

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I am very thankful to the members of the Indian Society of Agricultural Economics for doing me the honour of electing me to preside over this Annual Conference of the Society. I am fully conscious of the generosity and appreciation shown by fellow members to a loyal old member of the Society, which is the premier representative body of scholars of agricultural economics in India. I shall try to justify your affection and trust to the best of my ability.

This meeting of the Society happily coincides with the Twenty-fifth anniversary of the Agro-Economic Research Centre of the Sardar Patel University, our hosts. This Agro-Economic Research Centre is one of a chain of such Centres, established with the full financial assistance of the Ministry of Agriculture of the Government of India, in different Universities and research institutions in the country. These Centres are standing testimony to the excellent co-operation between the Government and the Universities in promoting research into the problems of India's agricultural economy. The Agro-Economic Research Centres, in addition to the Agricultural Universities, have made a significant contribution to our understanding of the forces shaping the rural economy and the impact of various policy measures in the field. The Centre at Vallabh Vidyanagar, under able leadership, both past and present to has contributed very effectively to research as well as training of researchers in agricultural economics. I take this opportunity to join you all in wishing the Centre even more active and fruitful contributions to the study of the Indian rural economy in the years to come.

In recent years considerable body of public opinion, including political, academic, as well as farmers', has expressed distress at what is characterized as unfair treatment to the agricultural sector in the economy over the years. This is other than the concern with poverty in rural India. It is concerned with the total farm sector. The leaders of farmers' organizations have tried to highlight this by drawing a distinction between 'India' and 'Bharat', the former referring to the urban sector and the latter to the rural.

At a sectoral aggregate level there appears justification in this distinction between 'India' and 'Bharat'. The total real Net National Product (NNP) of India (*i.e.*, approximately the National Income) increased at an average compound rate of about 3.5 per cent during the last 30 years. During the same period, the total population grew at the rate of about 2.2 per cent, giving a growth rate of about 1.3 per cent in the real per capita income. In contrast to this picture for the total economy,

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I wish to record my thanks to the Economic and Statistical Adviser to the Ministry of Agriculture, Government of India, for making available to me the unpublished data on Farm Harvest Prices and the Costs of Production of Crops, obtained through the annual surveys. I also wish to thank Ms. Nishita Pradhan for great help with all the calculations. This essay is based on a part of the research work being funded by the University Grants Commission.

the picture for the agricultural sector is characterized by stagnancy of income at the per capita level. While the total NNP in the agricultural sector increased at about 2.2 per cent a year during the last three decades, the proportion of the total population dependent on agriculture for its living remained unchanged at 70 per cent, and therefore recorded the same rate of growth as the total population, leaving the average real per capita income of the people in agriculture unchanged over the years. It is obvious that the real increase was in the non-agricultural sector, essentially urban.

Of course, every one realises that these are sectoral averages, and in each sector there were households which had done better than the average and others who had fared worse. In regard to the agricultural sector, two rather sharply opposite views have been presented.[1] One view is that during the last two decades in particular, the cultivator sub-sector of the agricultural sector, consisting of cultivators who have surplus produce to sell, has been able to improve its income position through favourable terms of trade. These benefits, however, have not reached the other sub-sector consisting of marginal farmers and landless labourers. The representatives of farmers' organizations as well as some others, have, on the other hand, maintained that the farm sector has been receiving a raw deal, the terms of trade have moved against the cultivators and therefore their real income situation has, by and large, deteriorated or at best stood unchanged, and the non-agricultural sector has been having it good at the cost of the agricultural sector. If the cultivators are badly off, they say, their labourers cannot be better off. Their approach to the improvement in the farmers' income position is mainly through improvement in their terms of trade. This, they consider, can be achieved by the State fixing prices of different farm products on the basis of their costs of production every year, which would also provide incentive to greater farm production. They contend that the Agricultural Prices Commission (APC) does not determine the support prices of farm products strictly on the basis of cost of production. What is more, the way the cost of production is computed has flaws that adversely affect the interest of the farmers.

Sometimes the advocacy has indeed gone further.[2] It is contended that it is not enough to fix prices on the basis of the cost of production. The prices should be fixed as high as possible (depending on the price elasticity of demand), so that the total sales revenue should be the maximum. The possibility of excess production and accumulation of stocks in such circumstance can be avoided by fixing output quota for individual producers. In effect, it is suggested that the state should operate a cartel for every type of farm produce. This would ensure the highest possible income to the farmers, *i.e.*, 'Bharat', and thereby improve parity with 'India'.

1. See, for example, Ashok Mitra: Terms of Trade and Class Relations, Frank Cass and Co., Ltd., London, 1977. R. Thamarajakshi, "Intersectoral Terms of Trade and Marketed Surplus of Agricultural Produce, 1951-52—1965-66", *Economic and Political Weekly*, Vol. IV, No. 26, June 28, 1969, and "Role of Price Incentives in Stimulating Agricultural Production in a Developing Economy", in D. Ensminger (Ed.): Food Enough or Starvation for Millions, Tata McGraw-Hill, New Delhi, 1977. A. S. Kahlon and D. S. Tyagi, "Inter-Sectoral Terms of Trade", *Economic and Political Weekly*, Vol. XV, No. 52, December 27, 1980.

2. Sharad Joshi: *Bharatiya Shetichi Paradhinata* (in Marathi), recorded by Suresh Ghate, Shetkari Prakashan, Alibag (Maharashtra), 1982, p. 26.

It would be useful to examine the question of fixation of price on the basis of cost of production, and then turn attention to the trend in terms of trade of agriculture during the last two decades.

In India one finds a strong appeal among not only farmers' representatives but many others for the feeling that the price of farm product must cover its cost of production and that the state should ensure a fair price to the farmer by fixing the price of the produce to cover the cost of production. The student of economics can react to this by simply saying that price of a commodity is determined by forces of supply and demand, and to fix the price on the basis of cost of production, which underlies supply, without reference to demand, is sure to give rise to the chronic problem of surplus. It is, however, not very helpful to dispose of the matter in such summary fashion. During the last two decades students have tried to point out the pitfalls and defects in this rather simplistic approach to price determination.[3] I shall try to summarise these here.

Since most agricultural farms are multi-product enterprises, calculation of the cost of production of a particular product on the farm involves not only the ascertaining of actual purchase or paid-out costs of specific current inputs, but also apportionment of any common cost incurred at the farm level for different products. This requires collection of data of particular sort that is not always readily available. More importantly, if the input is in the nature of a capital equipment, calculation of its depreciation involves all the problems raised by economists about the use of historical values of assets for the purpose. While the economic logic is clear, there are no foolproof empirical methods of applying these. A serious matter in this context is the valuation of the services of land. The farmers' spokesmen have often contended that the cost of land services in the cost of production of crops has been under-valued, and that the going price of the particular type of land should be taken as a basis for valuing the service of land in calculating the cost of production of the crop. Apart from the difficulty of estimating the possible market price of any piece of farm land where very little actual sale purchase transaction takes place in the locality in a year, it is pointed out that land value in India is high partly because of the sense of security and prestige associated with the possession of land. Therefore, it would be improper to attribute this unascertained value of the service of land to the cost of production of a crop grown on that land. Nor is the basis of the total allocation of the annual cost of land among the different crops grown on it during a year, very clear. But most important of all is the old economic knowledge that the return to the services of a fixed factor (or factor in short supply), like land, depends on the price of the produce it helps to produce, and not vice versa. Raising the price of a farm produce by attributing a higher value to land may only result in a further rise in land value next year, leading to further rise in price, and so on. The price rise will be reflected essentially in rising rental. The allocation of costs also becomes problematic when the same land grows mixed crops in the same season, or where a crop has important marketable by-products. Empirically there are no satisfactory ways of dealing with these problems.

3. Nilakantha Rath, "On Fixation of Price in Agriculture on the Basis of Cost of Production", *Artha Vijnana*, Vol. 7, No. 4, December 1965, and *Artha Vikas*, Vol. 2, No. 1, January 1966. M. L. Dantwala, "Agricultural Price Policy", *The Economic Times*, February 7, 1981. M. K. Bennett: Farm Cost Studies in the United States, Food Research Institute, Stanford, 1928.

Besides allocation of costs, difficulties arise in the valuation of inputs not purchased in the market but supplied by the farm households. Valuation of the farm household labour is the most important of these in the Indian context. While current method of valuation of such labour involves an attempt at estimating its opportunity cost, one may suspect that even this in many situations might be an overestimate. Most of farm management studies in India during the last three decades the have shown that a significant proportion of farmers, particularly the small and even medium farmers, were incurring loss, often repeatedly in three consecutive years, when all costs, including land and family labour costs (the so-called Cost C), are deducted from the gross value of output. Since land and family labour are the two major items for which the value is imputed, and since many feel that the land cost is under-valued, one comes to the conclusion that family labour in this situation does not really earn what is attributed to it as its opportunity cost. The costs that are presently being attributed as opportunity cost, therefore, are more in the nature of normative wage rates. Moreover, it is conceivable that the opportunity cost of family labour may not be the same at all times of the year. All these go to indicate the many empirical difficulties and shortcomings in estimating the cost of production of any crop grown by a farmer in any year.

The matter of using cost data for price fixation becomes even more problematic when we notice that different farmers have different costs (however estimated) per unit of output, and that there is no single 'the' cost of production. Indeed, the farm cost data reveal a wide range of costs per unit of output over which farmers, even in a limited group of villages, are distributed. Which cost of production should then provide the basis for price fixation? The average cost has no particular merit; it does not cover the cost of the same proportion of farmers, or of land under the crop, or of the total produce in any year; and it leaves more or less half of these uncovered. Recognition of this led some in the U. S. A. in the twenties and in India during the last two decades to advocate what is called the 'bulk-line cost' approach to price determination. It simply means that the price should be fixed at such a level as would cover the unit cost of production of the bulk of the output, that bulk being put at 85 per cent of the total produce. There is no justification for this particular percentage, except that it excludes some who presumably are 'inefficient' producers or had accidentally high cost. The arbitrariness of such a cut-off point apart, the real trouble with fixation of price with either an average or a bulk-line cost is that it completely neglects the unavoidably important considerations of inter-crop and inter-regional relative prices. Even a cursory look at cost data, crop and regionwise, will show what unintended havoc this approach can play with relative prices and their consequences. Fixation of prices on the basis of cost of production (however defined) might lead to wide differences in regional prices of a crop, completely unrelated to costs of transport from one region to the other. The differences in prices of competing crops even in the same region may lead to great shortages and surpluses of different crops.

Besides the conceptual, empirical and policy implications of the suggestion for fixation of farm product price on the basis of its cost of production, there are operational difficulties as well. The price fixed by the Government, in order to be effective, must be announced before the crop arrives in the market, *i.e.*, some time early

in the harvesting season. Now, it is inconceivable that the cost of production data for the current season, collected from the farmers, along with yield estimates, can be processed and made available to the price fixing authority in time for fixation of price on its basis before marketing starts. It is common knowledge that the cost data based on cost of production surveys during the last ten years become available to the price fixing agency with almost a two year lag, despite the use of computers. But what is more, it has been rightly argued that if the price fixed by the state is to affect the decision of the farmer, it must be announced before the sowing of the crop, and not before its marketing. That, however, rules out the possibility of fixing the price on the basis of the actual cost of production. Any other method of estimating possible cost will be conjectural and hence subject to varying degrees of error.

In view of all this, it is no wonder that neither the APC in India during the last two decades of its existence, nor any other country I am aware of, has been able to fix the price of any farm product on the basis of its actual cost of production. The APC merely states that it takes, among other things, costs of production into account in fixing price, presumably because it thinks it can do no better.

An alternative approach that has been widely used in the western world for fixing support price by the state for farm products is the fixation of price of produce at such level as would maintain a certain parity between prices received and prices paid by the farmers. While this approach is followed in order to protect the farmer's real income position, it can also be useful as a price support measure for purposes of production and supply. Scholars in India have tried to compute inter-sectoral commodity terms of trade for agriculture in order to ascertain if the prices received by the farmers were relatively higher or lower than the prices paid by them to the non-farm sector on farm and household account. These exercises,[4] with their limitations of method and data, have been at the all-India level for the entire agricultural sector, sometimes consisting also of plantations like tea, etc., and the forest sector which is mainly in the public sector. While they are of use in understanding the country-wide changes in the terms of trade of the agricultural sector, they naturally smother the differences among regions and major crops in this regard. In the context of differential rates of agricultural development not only in different regions but also of different crops, it would be useful to know how terms of trade have changed for different crops in different regions, if one is to have a clearer understanding of the forces operating on production and income distribution in the farm sector. I, therefore, propose to make a modest attempt in this direction within the limitations of the information available to me.

I propose to examine the changing terms of trade of the major crops in the different States for which the relevant data are available for the last two and half decades. For prices received the data used are the farm harvest prices of individual crops in the State concerned. It may be argued that the farm harvest price may not be the best indicator of the price received by the farmer, since most large farmers sell the bulk of the produce not soon after harvest but much later, in the lean season preceding the next harvest. This point was checked by comparing the index of

4. Thamarajakshi, *op. cit.* A. S. Kahlon and D. S. Tyagi: Agricultural Price Policy in India, Allied Publishers Pvt. Ltd., Bombay, 1983. A. S. Kahlon and M. V. George: Agricultural Marketing and Price Policies, Allied Publishers Pvt. Ltd., Bombay, 1985. K. Subbarao, "Farm Prices: A Survey of the Debate", Institute of Economic Growth, Delhi, 1984 (mimeo.).

the farm harvest price of a particular crop with the wholesale price index of that crop in the last four months before the next harvest, during the period 1961-80. (These data and graphs are not presented here to save space.) It was found that there was no evidence to believe that the index of the wholesale price of a crop in the lean season had increased faster than the index of its farm harvest price during the period; in some years there was a slightly higher increase in the case of some crops, in other years the rise was lower. Therefore, there is no harm in using the index of farm harvest prices as the measure of prices received by farmers.

Prices paid by the farmers are of two types — the prices of the farm inputs purchased from the non-farm sector, and prices of household consumption items purchased from the non-farm sector. (Normally, inter-sectoral terms of trade are calculated for the farm sector as a whole. I have chosen to compute such terms of trade for individual crops, with all its limitations, because the problems of different regions, even for the same crop, as well as of the different crops, are not the same.) The farm inputs purchased from the non-farm sector consist of five items listed in the farm cost surveys conducted under the aegis of the Ministry of Agriculture: fertilizers; insecticides; electricity, diesel and flow irrigation water; farm machinery and equipment and their repair as well as farm building. We have used the all-India wholesale price of fertilizer, insecticide, diesel oil, electricity and non-electrical machinery, prepared by the office of the Economic Adviser, as indicative of the prices of the farm inputs purchased from the non-farm sector. In order to arrive at a weighted average price index of all these inputs, we used the percentages of the expenditure on these inputs to their total expenditure for a particular crop in a particular State, as weights. These expenditure data are obtained from the cost of production surveys conducted by the Ministry of Agriculture in various States during the years 1972-83. Where such cost data for a crop were available for a number of years, it was noticed that in most cases the year to year variation in their percentage distribution was rather small. Therefore, we have taken the average percentages for the different years as weights. Naturally, this composite price paid index for farm inputs could be computed only for such crops and States for which the cost of production data were available.

As for the prices paid index for farm household consumption items purchased from the non-farm sector, the basic items for the rural population for each State and their weights were taken from the 17th Round of the National Sample Survey (NSS), 1961-62. (It would have been preferable to use such data relating to a later period, say the seventies, if they were available to us.) The items included are: Vanaspati, all edible oils, sugar and gur, tea and coffee, tobacco products, intoxicants, kerosene, cotton, woollen and silk cloth and readymade wear, bedding, medicine, soap and utensils. Items like shoes, transport, consumer durables could not be considered since their price indices were not available for the whole or part of the period. However, these exclusions may not make a significant difference to the prices paid index in view of their weight in the overall per capita expenditure in most States. The price indices used for these commodities are the all-India wholesale prices. (Regional rural retail price indices would have been better, if available.)

It is, however, not practicable to combine these two composite indices of prices paid, one for purchased inputs and the other for purchased items of household con-

sumption, when the terms of trade index is for an individual crop. We shall, therefore, perforce use these two indices separately to deflate the index of farm harvest price of a particular crop and try to read them together, a rather clumsy job indeed.

The terms of trade index (or the parity index) requires that one refers to a year (or period) during which the relative price position was considered satisfactory from the farmers' and others' point of view. The effort is then to maintain this parity or terms of trade, in order to protect the farmer's real income position, as also incentive for production. It may be difficult to find a single year or even a 2-3 year period during the last 20-25 years which might satisfy this requirement for all crops in all States. We have chosen 1961-62 as the base year for our purpose, since the beginning of the sixties was a generally satisfactory period for agriculture. However, choice of a different year or period during the years 1961-83, can be made and the indices appropriately recalculated (of course, with the same weights) from our tables, if preferred. For computing the terms of trade with respect to the input prices, the prices index of the output of a year, say 1962-63, is divided by the composite input price index for the financial year 1962-63. For the terms of trade index with reference to household consumption goods purchased from the non-farm sector, the price received index of, say 1962-63, is divided by the composite price paid index of 1963, and so on, and the 1961-62 terms of trade index equated to 100. The data are presented in Tables I and II.

Examination of the terms of trade index with respect to input prices, for as many crops and States for which the relevant data were available (Table I), shows the following trends:

(*i*) The index for all crops (except jute) in all States showed a high level, till 1974-75. The indices reached peak high levels around 1967-69, declined somewhat around 1970-72, and then increased till 1974-75. But never did the indices come down to the level of the early sixties during these 15 years.

(*ii*) From 1975-76 till 1982-83 (the latest year for which farm harvest price data are available to us) there was a visible decline in the terms of trade index. However, all crops do not show the same trend. The index for cereals, *i.e.*, rice, wheat, jowar, bajra, ragi and barley showed a downward trend. The millets and *ragi* in most States in most years, and particularly in the years of the eighties showed an index lower than 100, meaning thereby that the commodity terms of trade index had become distinctly unfavourable to these crops compared to the early sixties. The index for rice became distinctly unfavourable in the eighties (1980-83) in all States, while in some States like Punjab, Bihar and Assam it was so since 1976-77. Similarly, the index for wheat showed that the terms of trade for farmers since 1975-76 had fluctuated around 100, but became distinctly unfavourable in the eighties.

(*iii*) As against the cereals, the pulses, and cash crops like oilseeds, sugarcane and cotton did not exhibit unfavourable terms of trade. Indeed the index, though fluctuating over the years, remained considerably above 100 for gram and groundnut, indicative of the position in regard to pulses and oilseeds in general. So was the position with regard to sugarcane. In regard to cotton, the index came almost to the level of the sixties in a few States like Karnataka and Haryana in the late seventies and early eighties, but never showed a distinctly persistent unfavourable terms of trade.

(*iv*) The one crop showing very distinctly unfavourable terms of trade is jute. Its harvest price has highly fluctuated from year to year. But for most of the years since 1961-62, the terms of trade index has been below that of the base year. The situation was persistently unfavourable in the seventies and declined further during the early eighties.

Before drawing conclusions about the changing pattern of terms of trade, it is necessary to turn our attention to the other part of the terms of trade, where the farm harvest price index is compared with the composite price index of items of household expenditure purchased from the non-farm sector (Table II). The picture that emerges on this account may be summarised as follows:

(*a*) The terms of trade of all crops, with reference to household purchases, moved up significantly for most crops till about 1968-69. But thereafter the index for most cereal crops declined in the beginning of the seventies (1970-72), almost to the level of the base period in the beginning of the sixties. Subsequently, till 1974-75 there was a fresh upward spurt. But after that for many cereals, and after 1977-78 for all cereals in all States, the index declined sharply to the level of the beginning of the sixties, or even lower than that.

(*b*) In regard to pulses and most of the traditional cash crops like oilseeds and sugarcane, the terms of trade have remained consistently higher than in the beginning of the sixties, despite considerable fluctuations from year to year.

(*c*) The index for cotton shows sharp fluctuations over the two decades, and cannot be said to have remained consistently higher than in 1961-62, though it does not show any persistent unfavourable trend either. Jute, on the other hand, not only showed great fluctuations, but also unfavourable trend in more recent years.

We may now make an attempt to read the two indices together, in order to judge what might have happened to the farmers growing different crops in the different States during the last two and half decades.

Compared to the beginning of the sixties, the commodity or barter terms of trade of farmers increased very significantly upto 1968-69. After that there was a decline. This decline was more in relation to the index involving household expenses than that involving farm inputs, and more for cereals than for other crops. Therefore, one may infer that farmers growing cereals using little inputs purchased from the non-farm sector saw their terms of trade decline to near the position of the early sixties. Farmers growing other cereals with significant purchased inputs, as well as those growing pulses and cash crops had still favourable terms of trade.

Both the terms of trade of all farmers again improved upto 1974-75. But after that, and particularly after 1978-79, the terms of trade of all cereals declined to the level of the early sixties or even lower. The favourable terms of trade of pulses and most cash crops like oilseeds, sugarcane, however, continued with fluctuations and at a somewhat lower level than in the later parts of the sixties.

This overall picture shows that during the period 1961-62 to 1982-83, the barter terms of trade of farmers did not show either a continuous rise or a continuous decline. There was a steady all-round rise till about 1968-69, then a decline, in case of certain crops almost to the 1961-62 level in 1970-72, then again a sharp rise till 1974-75, and after that a general decline, often to the 1961-62 level, or even lower, particularly in the case of cereals.

It is well understood that the barter terms of trade are not a safe guide to the changing real income position of the farmers, because it does not encompass the technological changes in agriculture affecting per acre yields, the changing crop mix in farms and the changing size of holdings. The income terms of trade can be expected to catch the first two of these three factors. Absence of relevant data prevents us from trying to build up such a time-series for various crops or regions. However, it is possible to make a few qualitative statements on the matter.

The high barter terms of trade during the middle of the sixties for all crops coincided with the steep fall in farm production and widespread famine conditions during 1965-67. Therefore, one can say that the high barter terms of trade during this period cannot be interpreted to mean improved real income position of the farmers in most regions. The high terms of trade during the subsequent two or three years, however, indicated distinctly improved income position. This was much more so for those farmers who switched over to the new high-yielding variety (HYV) of wheat and rice.

The decline in the index in 1970-72 was more noticed in the case of cereals, but this was more on account of the greater rise in the price of non-farm consumables purchased by the rural households. Therefore, farmers who produced cereals with very little non-farm inputs (like fertilizer, water, etc.) may be said to have suffered a decline in their real income position, back to the level of the early sixties. The producers of millets, *ragi* as well as rice in major rice growing regions, like eastern India, as well as wheat producers outside the northern belt, may be said to fall in this category.

The subsequent all-round rise in the farmers' terms of trade till 1974-75 was more due to the inflationary conditions prevailing in the country, than the drought conditions in some parts. This upsurge also saw both a spurt and consolidation of the new HYV technique in regard to cereals. Surely, farmers of most crops in most parts of the country, except those subjected to drought, may be presumed to have benefited in their real income position.

The situation changed after 1974-75, essentially because of the sharp rise in the prices of farm inputs, and the anti-inflationary measures adopted soon after this year. There was a general decline in the index of terms of trade for all crops; but it was most noticeable for all cereals including wheat and rice. The situation persisted till 1983, the last year for which data are available to us. This decline, however, does not represent a worsening of the real income position of all cereal farmers in all States. Thanks to the new seed technology, the farmers producing these crops found that compared to the pre-HYV period they needed a smaller portion of their output to buy the new inputs than before, thus indicating a growingly favourable real income situation. This was the position till 1974.[5] After 1974, available cost and return data for crops like wheat and rice suggest that in the HYV regions, despite increased proportions of the produce being used to buy the inputs, the farmers, thanks to higher per acre yields, were left with either the same output, as in the case of wheat, or with larger output, as in the case of rice, than before 1974. This suggests that despite unfavourable barter terms of trade during the last some years, the wheat

5. A. Mukhopadhyaya: Inter-Regional Variation in Cost and Production and Relative Profitability of Some Major Crops in India, Ph. D. Thesis, University of Poona, Pune, 1980-81.

and rice farmers in these HYV regions were not only in a better income position compared to the early sixties, but were certainly not in an inferior position compared to the pre-1974 position. This is broadly the situation in regard to the Punjab, Haryana, Uttar Pradesh, and rice areas of Andhra Pradesh and Tamil Nadu.

The same, however, cannot be said about the rice growing eastern India (*i.e.*, Bihar, Assam, West Bengal, and presumably Orissa, as well as the rice region of Madhya Pradesh) which has recorded a declining barter terms of trade for rice, its most important crop (except West Bengal), but no significant upward trend in per hectare yield of rice. It is well-known that the new variety of paddy seeds has still to make any impact on the main winter paddy in these States; the real change is noticed only in summer paddy in these regions, which, unfortunately, is very limited in area due to limited irrigation facility. It means, therefore, that the declining barter terms of trade for rice farmers in this region in the late seventies and early eighties also indicate a declining real income position or at best a stagnant one compared to the early sixties.

The same appears to be the situation with regard to the jowar, bajra and *ragi* farmers who account for the bulk of the unirrigated farms in the dry agricultural region of peninsular India. Their barter terms of trade have deteriorated in the late seventies and early eighties, and their per hectare yields have not registered any significant increase during the period, suggesting thereby an adverse income terms of trade compared to the early sixties. This is more likely to be the case with regard to *rabi* jowar than *kharif* jowar and bajra which have recorded some increase in yield rates due to adoption of hybrid seeds.

The producers of pulses and oilseeds have obviously not suffered any loss in real income position but rather gain in it, though fluctuating, almost entirely due to favourable barter terms of trade, since these crops have not registered any noticeable rise in yield rates. The position of sugarcane growers is similar in that while the barter terms of trade have remained favourable, the yield rates have either increased or remained unchanged, implying an improvement in their real income position.

It is difficult to say anything even in such general terms about cotton, since the trend in prices as well as yield rates of distinctly different varieties have surely not been the same, but time-series data for these are not readily available.

Jute is a particularly unfortunate crop since its barter and income terms of trade appear to have declined during the last decade or so. If the farmers have continued to produce this, it is apparently because there is no alternative to the use of most of this land, on which transplanted paddy follows jute most of the time.

This rather long review of the changing terms of trade in relation to different crops in various States and their impact on the farmers' real income situation appears to us instructive. The two opposing perceptions of a steadily favourable terms of trade for farmers on the one side, and of worsening terms of trade all-round, on the other, appear untenable. The picture is a mixed one, type-of-farmingwise and regionwise. The northern irrigated regions as well as the coastal deltas have seen distinct improvement in the farmers' real income position not only compared to the early sixties but also compared to the early seventies, though in the later period it has seen a smaller improvement compared to the earlier period. As against this, the unirrigated agricultural regions of peninsular India and the entire eastern Indian

region have seen stagnation and some marginal deterioration in the late seventies and early eighties, preceded by some favourable trends till the early seventies.

The reasons for this may not be far to seek. Regions which have seen rapid growth of perennial irrigation facilities and successful adoption of new high-yielding seeds have been able to improve their position even in the face of declining terms of trade in recent years. The other regions have stagnated or suffered due to the absence of these basic conditions.

Can price policy change this situation? The evidence suggests that price policy can play only a very limited role in this context. That merely favourable or rising barter terms of trade cannot deliver the goods is indicated by the fact that while the barter terms of trade of pulses and oilseeds have been continuously favourable over the last two decades, often rising quite high, it has resulted in no significant increase in production of these crops. If anything, wherever it was possible to switch over such lands to the new HYV crops, it has been done. The major source of change has to be in the provision of irrigation and bio-technological improvement.

The dry agricultural farmers of peninsular India, growing unirrigated jowar, bajra, *ragi*, groundnut and cotton, have yet to be favoured with irrigation water which can change their income and lives. These potentially water-short regions are today characterized by uneconomic use of water which at the same time limits the area of land and the number of farmers benefited. A change in the use of such water can not only help produce more per unit of water than at present, but also enable the use of more productive seeds and crops than at present. Irrigation can greatly increase productivity of millets as well as pulses, oilseeds and cotton. Indeed, extension of irrigation may lead, usefully, to a decline in the area under millets, since with increased production of rice and wheat the relative price of millets will continue to be under pressure. Today these farmers have no choice; if denied irrigation for long their real income position will deteriorate simply because of the better performance of wheat and rice in the green revolution belt.

The eastern Indian rice regions hold great potentialities provided perennial irrigation facility and suitable high-yielding paddy varieties and other crops can be developed for the winter paddy lands. The matter is complex, and mere favourable terms of trade cannot do the trick.

But this does not mean that the terms of trade have no relevance in this context. While very favourable terms of trade by themselves cannot provide great incentives to greater production,[6] unfavourable or declining terms of trade cannot create the necessary conditions for adoption of better techniques and higher production. One may recollect that, thanks to the liberal supply of wheat under P. L. 480 and its distribution at fixed unchanging price all over the country, the price of wheat relative to the general price level was declining during the early sixties. This situation, however, sharply changed in 1965-66 due to the severe shortfall in agricultural production and the simultaneous closure of the P. L. 480 tap. Relative price of wheat improved, and this coincided with the introduction of the HYV wheat seed. It is a matter for speculation if the new seed technology would have been adopted as

6. Raj Krishna: Agricultural Growth, Price Policy and Equity, The World Bank, Washington, D. C., January, 1982, quoted in Kahlon and George, *op. cit.*, p. 199. Raj Krishna reports a positive but small response of aggregate farm output to terms of trade of farmers, and concludes that "a favourable price environment is essential for agricultural growth."

fast and as widely if the price had not improved and been supported by the Agricultural Prices Commission that came into existence at the time. It is not proper to believe that eastern India will adopt any new techniques rapidly in the face of deteriorating terms of trade of most crops grown there. Policy, therefore, should ensure that the terms of trade are not allowed to deteriorate when one is planning and executing new techniques and crops for the region.

This implies that one can think in terms of a somewhat differential price policy for certain crops, like rice in eastern zone, millets in peninsular India, than in more developed region. The present price situation in the developed agricultural regions does not appear to have led to deteriorating income terms of trade of farmers not only with reference to the pre-HYV period of the early sixties, but also compared to the much better income position of the early seventies. The only caution one may advocate here is to ensure that the emerging price situation there does not lead to deterioration in the income terms of trade. In the other regions, however, where declining barter terms of trade indicate also declining income terms of trade, in the prevailing price situation, it appears necessary and advisable to prevent this from happening in the interest of greater acceptance of newer techniques. If this implies marginally higher procurement/support price (and now the two are the same) of paddy or rice or millets in the more agriculturally undeveloped regions, this may be considered both necessary and desirable.[7]

The fixation of support price appears to have neglected these considerations. In the first place, the effort is to fix a single price for a crop for the whole country. Our examination of the data would suggest that this is not equally fair for every region. A regionally differential support price, so fixed that the price difference between any two regions does not exceed the transport costs, would be useful. Secondly, examination of the procurement prices over the years show that the increase in procurement prices kept pace with the rise in price of farm inputs, but not necessarily with the rise in the price index of household commodities purchased by the farm sector. Since many of the commodities in the relatively under-developed regions involved little inputs from the non-farm sector, the relevant prices to compare with, in their case, would be the prices of consumables purchased by the farm households. It would be necessary to keep this in view in fixing support prices for such crops. Today the object of agricultural price policy is to provide a support price to farm products against sharp fluctuations in the market, and not compulsorily buy a part of the produce for sale at subsidised prices. Support in this context must take changing prospects of both demand and supply into account. While doing so, it has to take the changing income terms of trade into consideration so that farmers do not suffer a loss in real income.

It may not be out of place to mention here that in these under-developed agricultural regions one sometimes finds farmers selling their produce at prices lower than the announced support price, simply because there is no official agency to buy

7. The problem of jute requires special attention. Till 1977-78 the farm harvest price of raw jute appears to have generally kept pace with the wholesale price of jute manufactures. Therefore, the rather depressed terms of trade may be a reflection of the conditions of demand affecting jute manufactures. However, after 1977-78 the farm harvest price of jute appears to be steadily lagging behind the wholesale price of jute manufactures. Whatever the reason, it raises a question about the appropriate support price for jute.

at the stated price. If failure to take such elementary precaution persists, all other advocacy on price policy shall be no better than paper exercises.

In the absence of technological improvement, mere favourable barter terms of trade will amount to only increasing the rental component in farm income. This surely cannot be the solution to the problem of stagnant income of the agricultural sector in India, though the advocacy of state-run agricultural cartels will amount to that. A fair deal to the farm sector will have to start with a fair deal to the farm labourers, and small and marginal farmers who are also mainly wage workers. This can be done not only by ensuring at least a subsistence minimum wage in agricultural operation, but also by providing such workers with wage work at this wage rate for the remaining days of the year. This can be effectively achieved, like in the case of enforcement of support price for farm products, by the state guaranteeing employment at the minimum wage rate to whosoever wants it in the countryside. An effective minimum wage rate, enforced in this manner, should be able to ensure a better income for farm labourers. It will influence farm product prices in two ways: In the first place, higher wage rates for wage labour, and consequently, a higher opportunity cost for family labour, would get reflected in the cost of production of farm products, and therefore in their support as well as market prices. Secondly, higher income of agricultural labourers will create greater demand for farm products, particularly cereals, thereby helping to keep up prices. Today one sees the extraordinary spectacle of the state carrying a buffer stock of 29 million tonnes of foodgrains while half the rural households is found to be too poor to afford even enough food every day of the year. Improved real income for such people therefore shall be twice blessed.

Of course, a somewhat higher farm product price can be offset by a corresponding rise in non-farm prices, through not only a rise in the cost of inputs from the farm sector but also a rise in the non-farm salaries and wages. Persistent price adjustments in this manner can only set inflationary spiral in motion, and prove self-defeating. Therefore, it is necessary to acknowledge that the question involved is one of fair distribution of income in the society between the farm and non-farm sector. A proper wages and incomes policy for our society, so often advocated, must have this as one of its important goals. In our anxiety to please everyone, we must not forget that, in the context of a dynamic economy, giving a somewhat higher portion of the incremental income to the under-privileged must mean a much smaller share of the incremental to the others. It is useful to remind ourselves that the country has adopted a policy, however unevenly and haltingly implemented, of putting a ceiling on land holdings. Given the present available technology, a dry farmer in Maharashtra, for example, with a ceiling on land holding of 54 acres for his family, cannot get more than Rs. 20,000 a year as net income from his farm (net of out of pocket expenses), in a normal year. And that is the exemption limit for non-farm income for income-tax purposes. Irrigation surely opens up greater opportunities. But the fact of the matter is, there is a policy for the farm sector. This needs to be strengthened with a policy relating to the wage labourers in that sector. But there is no policy today relating to the non-farm sector vis-a-vis the farm sector. Surely, one cannot pretend that this is not relevant.

The debate on farm price policy in India has suffered from rather extreme and

therefore rather simplistic stands. The problems are more complex, both in the regional and temporal sense. The major thrust has to be in the direction of creation of new resources and techniques and appropriate policy frame for their economic utilization. Price policy can play a positive but limited role in this context. A regional and cropwise differential support price policy would appear to be necessary and useful, if judiciously formulated. The wider question of a fairer distribution of income requires a more comprehensive incomes policy than mere higher prices for farm products. A careful understanding of these problems and implications should be a first necessary step in the formulation of appropriate policies.

TABLE I. INDEX OF THE RATIO OF THE INDEX OF FARM HARVEST PRICES OF INDIVIDUAL CROPS TO THE COMPOSITE INDEX OF THE PRICES OF INPUTS PURCHASED BY THE FARMERS FROM THE NON-FARM SECTOR FOR EACH CROP IN DIFFERENT STATES

(*1961-62=100*)

Year	(*a*) Bihar						(*b*) Uttar Pradesh		
	Autumn paddy	Winter paddy	Wheat	Maize	Jute	Sugarcane	Barley	Wheat	Paddy
1961-62 ...	100	100	100	100	100	100	100	100	100
1962-63 ...	103	108	82	93	65	112	91	99	103
1963-64 ...	105	113	107	95	72	158	132	129	97
1964-65 ...	138	125	154	165	104	160	158	167	140
1965-66 ...	208	175	166	191	116	140	172	164	182
1966-67 ...	145	254	211	214	122	185	252	253	224
1967-68 ...	254	222	134	238	84	319	159	157	208
1968-69 ...	150	147	133	148	144	197	143	155	150
1969-70 ...	140	151	136	148	95	142	154	168	147
1970-71 ...	143	147	117	133	120	134	123	137	138
1971-72 ...	132	135	112	163	88	204	137	134	134
1972-73 ...	144	153	138	161	96	234	175	135	154
1973-74 ...	182	224	186	205	72	229	212	195	162
1974-75 ...	183	148	111	189	78	158	164	146	152
1975-76 ...	106	97	78	115	51	132	77	92	95
1976-77 ...	116	119	91	110	64	140	103	108	97
1977-78 ...	135	116	89	140	74	138	115	113	118
1978-79 ...	115	168	89	126	81	129	102	106	116
1979-80 ...	111	140	96	137	73	238	118	107	141
1980-81 ...	96	102	86	112	50	148	103	92	107
1981-82 ...	84	110	85	111	42	149	88	92	100
1982-83 ...	120	131	103	125	62	125	103	99	110

(*Contd.*)

TABLE I (*Contd.*)

Year	(*c*) West Bengal			(*d*) Andhra Pradesh					
	Autumn paddy	Winter paddy	Wheat	Paddy	Jowar	Ground-nut	Cotton	Sugar-cane	Tobacco
1962-63 ...	104	124	107	95	92	94	125	132	101
1963-64 ...	114	132	125	100	101	98	116	180	100
1964-65 ...	120	138	132	115	136	138	119	202	120
1965-66 ...	143	164	167	119	136	192	141	200	113
1966-67 ...	170	199	175	118	135	206	149	295	114
1967-68 ...	193	216	192	127	130	134	141	529	131
1968-69 ...	165	184	143	147	131	150	132	262	167
1969-70 ...	159	173	139	121	151	169	162	174	159
1970-71 ...	164	176	160	117	151	163	192	244	154
1971-72 ...	163	189	235	135	136	146	173	267	143
1972-73 ...	164	182	246	156	146	207	175	325	136
1973-74 ...	233	217	219	146	136	222	275	261	136
1974-75 ...	168	141	140	120	160	181	130	299	101
1975-76 ...	127	184	126	89	99	93	106	192	97
1976-77 ...	129	140	153	103	110	157	181	206	164
1977-78 ...	124	123	140	102	102	142	145	145	98
1978-79 ...	124	136	132	95	85	132	162	154	149
1979-80 ...	132	156	115	103	82	154	153	302	153
1980-81 ...	110	110	98	92	88	164	146	287	139
1981-82 ...	104	121	109	91	91	149	130	183	135
1982-83 ...	—	141	120	95	82	154	114	158	123

(*Contd.*)

TABLE I (*Contd.*)

Year	(*e*) Assam		(*f*) Kerala	(*g*) Tamil Nadu				
	Paddy	Rape-seed and mustard	Paddy	Rice	Jowar	Ground-nut	Cotton	Sugar-cane
1962-63	104	99	93	90	92	92	114	187
1963-64	105	90	101	108	100	98	114	175
1964-65	113	97	151	112	120	123	120	161
1965-66	128	102	191	120	114	164	120	156
1966-67	158	114	210	108	110	160	144	220
1967-68	169	141	246	104	107	143	124	179
1968-69	181	135	194	102	148	140	139	176
1969-70	148	130	189	127	143	184	142	149
1970-71	118	145	148	120	129	160	165	199
1971-72	135	117	160	122	129	153	149	219
1972-73	109	128	181	116	128	158	142	237
1973-74	168	152	258	141	155	216	147	201
1974-75	156	110	213	--	191	247	87	130
1975-76	95	77	147	--	102	171	97	139
1976-77	99	125	125	--	114	204	142	164
1977-78	107	132	118	99	103	207	145	121
1978-79	101	137	112	104	80	86	138	132
1979-80	107	124	115	117	78	158	105	—
1980-81	103	138	99	100	78	136	96	212
1981-82	93	111	104	101	85	139	100	100
1982-83	101	105	118	99	74	158	89	97

(*Contd.*)

TABLE I (*Contd.*)

Year	(*h*) Karnataka				(*i*) Maharashtra			
	Jowar	*Ragi*	Ground-nut	Cotton	Jowar	Bajra	Cotton	Sugar-cane
1962-63	92	82	92	102	104	99	121	141
1963-64	101	92	106	109	115	103	132	204
1964-65	142	173	136	117	121	154	142	200
1965-66	167	235	181	108	143	205	118	163
1966-67	136	181	208	164	136	155	139	298
1967-68	139	173	140	120	126	161	69	417
1968-69	—	154	142	130	130	143	110	259
1969-70	109	133	160	144	126	138	108	158
1970-71	—	120	157	169	144	120	128	189
1971-72	117	117	128	132	150	128	127	258
1972-73	159	150	189	144	177	189	138	331
1973-74	143	179	227	193	229	133	226	253
1974-75	137	154	124	94	182	134	114	201
1975-76	93	75	82	88	136	105	89	164
1976-77	105	123	143	139	120	97	86	172
1977-78	85	95	145	116	110	104	174	148
1978-79	77	81	122	107	108	90	144	129
1979-80	77	83	152	106	104	85	142	—
1980-81	85	102	147	104	110	87	146	256
1981-82	78	93	142	88	96	76	132	138
1982-83	67	90	144	88	96	76	126	132

(*Contd.*)

TABLE I (*Contd.*)

Year	(*j*) Gujarat				(*k*) Madhya Pradesh				
	Bajra	Jowar		Ground-nut	Rice	Jowar	Wheat	Gram	Cotton
		Kharif	*Rabi*						
1962-63 ...	99	93	—	91	78	97	89	87	101
1963-64 ...	116	102	—	100	91	119	110	127	105
1964-65 ...	150	131	—	111	110	131	129	117	117
1965-66 ...	164	146	—	152	117	126	123	124	115
1966-67 ...	171	148	—	174	131	128	141	123	130
1967-68 ...	147	148	132	119	152	138	160	153	117
1968-69 ...	149	149	144	132	149	138	151	153	113
1969-70 ...	141	152	163	163	138	170	159	176	135
1970 71 ...	97	132	116	158	125	150	131	130	191
1971-72 ...	108	119	140	144	125	154	132	143	137
1972-73 ...	160	172	185	170	140	148	139	199	135
1973-74 ...	148	195	190	211	160	228	196	265	163
1974-75 ...	168	188	—	146	154	186	146	184	115
1975-76 ...	96	97	—	93	118	107	91	110	93
1976-77 ...	99	102	—	109	118	115	116	122	169
1977-78 ...	109	107	—	135	124	122	122	175	144
1978-79 ...	107	100	—	145	114	111	110	163	124
1979-80 ...	97	99	—	158	150	111	125	169	116
1980-81 ...	99	100	—	158	108	111	114	222	127
1981-82 ...	88	86	—	121	104	100	99	146	126
1982-83 ...	89	96	—	162	122	102	115	132	97

(*Contd.*)

TABLE I (*Contd.*)

Year	(*l*) Punjab					(*m*) Haryana				
	Paddy	Wheat	Maize	Cotton (American)	Sugarcane	Paddy	Wheat	Gram	Bajra	Cotton (American)
1962-63 ...	88	101	91	81	116	—	—	—	—	—
1963-64 ...	76	115	104	86	197	—	—	—	—	—
1964-65 ...	133	131	141	106	178	—	—	—	—	—
1965-66 ...	106	150	151	120	112	—	—	—	—	—
1966-67 ...	116	170	199	155	195	124	205	203	166	125
1967-68 ...	106	150	150	133	400	127	139	173	155	117
1968-69 ...	109	129	133	112	223	119	157	193	147	132
1969-70 ...	109	138	121	123	151	112	158	182	137	143
1970-71 ...	105	131	117	196	143	112	138	151	89	172
1971-72 ...	103	126	118	184	205	112	141	166	108	183
1972-73 ...	95	120	114	183	247	153	135	236	187	188
1973-74 ...	104	154	117	177	192	116	155	275	156	183
1974-75 ...	130	104	156	135	143	85	112	225	131	134
1975-76 ...	73	91	83	87	126	81	96	103	81	90
1976-77 ...	96	104	101	147	143	81	103	130	82	147
1977-78 ...	99	106	128	164	134	87	106	154	91	156
1978-79 ...	86	106	120	96	73	86	107	171	81	137
1979-80 ...	86	102	116	111	174	82	102	212	102	122
1980-81 ...	75	90	106	112	180	79	91	237	94	113
1981-82 ...	64	85	99	126	141	68	92	181	83	110
1982-83 ...	74	87	113	108	140	76	92	163	81	108

(*Contd.*)

TABLE I (*Concld.*)

Year	(*n*) Rajasthan					
	Jowar	Bajra	Wheat	Maize	Gram	Rapeseed and mustard
1962-63	88	93	95	97	118	101
1963-64	106	113	114	112	154	118
1964-65	126	128	128	140	179	148
1965-66	130	146	159	168	174	166
1966-67	158	154	207	196	216	179
1967-68	129	135	151	145	184	139
1968-69	139	144	162	174	207	133
1969-70	148	144	163	155	210	147
1970-71	118	95	129	126	167	145
1971-72	132	95	137	129	185	146
1972-73	144	136	156	159	217	165
1973-74	183	139	181	234	330	166
1974-75	195	197	151	226	247	129
1975-76	117	99	91	102	129	80
1976-77	110	92	106	105	163	151
1977-78	119	118	109	138	200	141
1978-79	112	104	107	125	197	140
1979-80	106	100	105	127	219	122
1980-81	94	91	94	118	266	130
1981-82	88	98	97	119	209	115
1982-83	90	89	90	108	185	90

TABLE 11. INDEX OF THE RATIO OF THE INDEX OF FARM HARVEST PRICE OF PRODUCE RECEIVED BY FARMERS TO THE INDEX OF PRICES PAID BY RURAL HOUSEHOLDS FOR GOODS OF HOUSEHOLD CONSUMPTION PURCHASED FROM THE NON-FARM SECTOR IN DIFFERENT STATES

(1961-62=100)

Year	(a) Andhra Pradesh						
	Paddy	Jowar	*Ragi*	Tobacco	Ground-nut	Cotton	Sugar-cane
1961-62	100	100	100	100	100	100	100
1962-63	89	90	100	95	92	117	131
1963-64	91	95	86	108	92	102	176
1964-65	99	123	122	100	126	99	187
1965-66	94	115	127	120	158	109	164
1966-67	90	110	128	113	167	112	238
1967-68	102	107	126	145	116	113	469
1968-69	119	109	111	136	126	101	223
1969-70	96	93	97	130	138	119	144
1970-71	91	95	92	117	133	142	195
1971-72	102	116	105	113	177	122	207
1972-73	104	112	107	108	154	116	232
1973-74	96	98	108	101	156	177	182
1974-75	115	149	140	81	172	123	198
1975-76	93	103	91	150	99	110	206
1976-77	89	99	95	143	142	168	184
1977-78	90	92	88	86	129	136	131
1978-79	76	73	72	120	112	150	127
1979-80	78	71	73	117	129	130	227
1980-81	84	85	83	126	153	146	264
1981-82	92	95	90	144	155	141	188
1982-83	91	82	85	117	153	122	155

(Contd.)

TABLE II (*Contd.*)

Year	(*b*) Bihar								
	Rice	Maize	*Ragi*	Wheat	Gram	Sugar-cane	Tobacco	Rape-seed and mustard	Jute
1961-62 ...	... 100	100	100	100	100	100	100	100	100
1962-63 ...	... 98	87	89	78	97	73	103	103	69
1963-64 ...	... 93	84	86	96	122	141	75	106	64
1964-65 ...	... 117	140	143	132	167	138	122	142	89
1965-66 ...	... 167	153	136	136	156	112	116	154	95
1966-67 ...	... 173	160	146	159	201	138	89	131	93
1967-68 ...	... 215	200	194	113	177	267	98	118	71
1968-69 ...	... 133	126	117	114	146	168	83	124	122
1969-70 ...	... 117	122	112	113	161	117	119	135	78
1970-71 ...	... 115	105	107	93	125	105	59	137	97
1971-72 ...	... 105	124	115	85	129	154	112	139	69
1972-73 ...	... 107	118	106	101	157	168	85	124	73
1973-74 ...	... 119	134	106	123	205	149	92	217	48
1974-75 ...	... 192	196	178	114	184	162	104	145	78
1975-76 ...	... 117	124	132	84	140	142	126	104	55
1976-77 ...	... 99	93	93	77	127	117	103	154	55
1977-78 ...	... 115	118	103	75	174	116	94	161	63
1978-79 ...	... 93	100	86	72	177	102	101	148	67
1979-80 ...	... 82	101	83	73	169	176	98	158	58
1980-81 ...	... 86	102	87	79	215	136	93	166	46
1981-82 ...	... 86	114	125	88	209	155	94	167	43
1982-83 ...	... 117	123	114	102	181	123	85	154	62

(*Contd.*)

TABLE II (*Contd.*)

Year	(c) Gujarat							
	Paddy	Jowar	Bajra	Wheat	Gram	Tobacco	Ground-nut	Cotton
1961-62 ...	100	100	100	100	100	100	100	100
1962-63 ...	80	91	90	89	83	83	86	92
1963-64 ...	—	97	105	104	92	93	92	93
1964-65 ...	—	126	134	122	164	109	100	83
1965-66 ...	—	129	130	105	276	113	126	101
1966-67 ...	—	116	122	120	193	111	126	81
1967-68 ...	140	116	108	102	123	111	93	81
1968-69 ...	157	128	121	114	127	94	113	108
1969-70 ...	140	129	114	99	147	134	139	113
1970-71 ...	102	114	75	86	117	171	130	142
1971-72 ...	99	92	77	86	101	129	110	103
1972-73 ...	128	134	106	101	119	99	121	110
1973-74 ...	151	139	99	110	163	99	144	118
1974-75 ...	183	161	144	113	155	134	139	100
1975-76 ...	97	97	81	98	107	132	96	97
1976-77 ...	82	92	82	77	97	64	97	125
1977-78 ...	90	105	98	92	147	70	129	111
1978-79 ...	90	93	86	82	149	75	125	96
1979-80 ...	86	87	75	73	131	57	117	83
1980-81 ...	96	91	88	77	188	76	136	—
1981-82 ...	100	91	90	85	160	104	121	—
1982-83 ...	109	97	86	88	132	91	152	—

(*Contd.*)

TABLE II (*Contd.*)

Year	(*d*) Karnataka						
	Jowar	*Ragi*	Wheat	Gram	Tobacco	Ground-nut	Cotton
1961-62	100	100	100	100	100	100	100
1962-63	84	81	89	—	99	91	100
1963-64	94	83	84	115	64	95	96
1964-65	127	150	84	187	66	118	98
1965-66	140	192	157	189	42	147	86
1966-67	105	136	141	136	42	156	118
1967-68	115	141	130	—	55	115	98
1968-69	111	131	125	135	36	122	171
1969-70	92	111	97	150	77	134	116
1970-71	99	99	96	116	82	130	132
1971-72	95	93	87	119	77	102	98
1972-73	114	112	104	176	71	142	101
1973-74	108	123	135	204	34	155	127
1974-75	131	151	108	165	58	122	94
1975-76	97	79	77	115	74	87	94
1976-77	95	111	94	104	82	128	130
1977-78	78	87	91	165	43	130	110
1978-79	66	70	82	141	45	102	94
1979-80	62	67	77	145	57	119	87
1980-81	80	97	106	207	35	135	102
1981-82	83	100	93	166	68	150	97
1982-83	69	92	97	139	56	143	94

(*Contd.*)

TABLE II (*Contd.*)

Year	(*e*) Madhya Pradesh							
	Rice	Jowar	Bajra	Wheat	Gram	Tobacco	Ground-nut	Cotton
1961-62	100	100	100	100	100	100	100	100
1962-63	75	94	84	84	83	117	98	91
1963-64	81	101	85	100	120	142	89	91
1964-65	96	119	109	115	108	162	122	98
1965-66	94	107	110	101	106	166	157	90
1966-67	98	101	121	106	98	157	171	94
1967-68	125	113	124	130	125	140	129	90
1968-69	128	118	114	129	131	118	134	91
1969-70	119	114	118	134	149	121	151	107
1970-71	103	126	95	108	110	132	160	148
1971-72	97	127	92	104	118	115	130	102
1972-73	102	117	110	103	156	116	156	95
1973-74	107	167	114	136	196	100	167	108
1974-75	158	174	172	142	171	108	174	105
1975-76	129	110	90	96	94	125	114	93
1976-77	105	105	85	103	110	111	139	145
1977-78	112	116	114	111	166	111	161	127
1978-79	95	100	78	94	147	84	141	103
1979-80	107	94	94	96	144	70	146	86
1980-81	98	106	92	106	215	—	167	120
1981-82	108	108	107	103	159	—	186	134
1982-83	121	109	104	118	141	—	178	101

(*Contd.*)

TABLE II (*Contd.*)

Year	(*f*) Maharashtra						
	Paddy	Jowar	Bajra	Wheat	Sugarcane	Ground-nut	Cotton
1961-62 ...	100	100	100	100	100	100	100
1962-63 ...	94	98	94	89	131	92	110
1963-64 ...	124	105	95	116	196	94	113
1964-65 ...	153	110	141	157	187	121	119
1965-66 ...	169	120	173	112	135	151	93
1966-67 ...	135	105	122	84	231	141	100
1967-68 ...	140	102	131	94	338	124	55
1968-69 ...	138	111	124	87	225	141	92
1969-70 ...	127	107	119	80	148	162	91
1970-71 ...	123	121	101	110	151	149	103
1971-72 ...	119	122	103	103	193	126	95
1972-73 ...	—	135	144	123	233	168	97
1973-74 ...	—	165	121	154	220	176	147
1974-75 ...	—	164	123	142	185	154	111
1975-76 ...	—	141	109	112	168	123	81
1976-77 ...	109	107	101	94	149	147	76
1977-78 ...	108	103	99	100	135	147	159
1978-79 ...	90	94	78	87	106	125	119
1979-80 ...	85	85	68	81	—	133	107
1980-81 ...	94	105	84	99	247	163	134
1981-82 ...	103	104	82	102	149	166	136
1982-83 ...	107	100	79	105	138	164	125

(*Contd.*)

TABLE II (*Contd.*)

Year	(*g*) Punjab								
	Rice	Bajra	Maize	Wheat	Barley	Gram	Sugar-cane	Ground-nut	Cotton
1961-62 ...	100	100	100	100	100	100	100	100	100
1962-63 ...	82	86	85	95	90	94	109	106	77
1963-64 ...	72	93	96	106	111	117	187	103	80
1964-65 ...	126	126	129	119	145	127	168	132	99
1965-66 ...	91	112	129	128	160	149	97	190	104
1966-67 ...	86	126	149	128	188	170	149	183	118
1967-68 ...	83	109	117	117	116	140	312	114	103
1968-69 ...	98	112	119	116	138	181	200	139	99
1969-70 ...	99	119	110	124	128	169	136	154	122
1970-71 ...	88	88	100	112	109	130	119	165	166
1971-72 ...	80	83	94	99	99	153	157	127	145
1972-73 ...	73	185	88	94	167	182	186	144	143
1973-74 ...	79	119	86	114	157	230	145	168	134
1974-75 ...	129	174	159	105	133	214	143	179	134
1975-76 ...	78	91	91	99	77	112	131	122	94
1976-77 ...	91	79	96	98	99	129	135	148	143
1977-78 ...	99	91	126	103	79	162	133	199	167
1978-79 ...	77	80	106	95	93	157	64	138	88
1979-80 ...	70	72	91	80	95	182	140	136	94
1980-81 ...	72	87	100	85	86	260	176	102	111
1981-82 ...	72	104	110	94	93	226	159	228	144
1982-83 ...	83	113	121	93	100	226	155	198	121

(*Contd.*)

TABLE II (Contd.)

Year		(h) Rajasthan				
		Rice	Bajra	Wheat	Gram	Sugarcane	Rapeseed and mustard
1961-62	...	100	100	100	100	100	100
1962-63	...	105	90	91	115	145	97
1963-64	...	95	108	111	145	190	117
1964-65	...	122	122	123	169	149	146
1965-66	...	222	130	137	153	116	148
1966-67	...	218	125	166	175	208	147
1967-68	...	165	110	124	151	293	114
1968-69	...	156	125	141	181	191	116
1969-70	...	139	124	140	179	114	125
1970-71	...	130	81	104	142	106	119
1971-72	...	108	79	105	153	157	116
1972-73	...	116	108	114	172	151	125
1973-74	...	101	106	133	249	128	128
1974-75	...	185	181	142	229	133	118
1975-76	...	134	101	93	133	132	80
1976-77	...	117	85	97	153	129	140
1977-78	...	116	114	102	192	94	135
1978-79	...	110	96	92	182	84	126
1979-80	...	114	91	91	202	153	115
1980-81	...	121	91	94	266	166	134
1981-82	...	120	108	109	237	193	133
1982-83	...	119	106	108	223	203	112

(Contd.)

TABLE II (*Contd.*)

Year	(*i*) Tamil Nadu								
	Rice	Jowar	*Ragi*	Bajra	Sugar-cane	Ground-nut	Sesa-mum	Cotton	Toba-cco
1961-62 ...	100	100	100	100	100	100	100	100	100
1962-63 ...	86	91	89	91	179	90	88	109	96
1963-64 ...	100	102	87	95	166	98	96	110	145
1964-65 ...	96	116	112	111	145	117	99	105	112
1965-66 ...	91	113	120	107	121	136	120	94	117
1966-67 ...	82	92	95	95	171	132	133	111	108
1967-68 ...	89	93	96	96	238	123	118	102	88
1966-69 ...	83	124	120	121	145	117	115	110	104
1969-70 ...	101	113	105	109	117	259	126	108	90
1970-71 ...	95	103	97	98	155	128	121	126	128
1971-72 ...	93	103	98	92	165	121	120	110	145
1972-73 ...	79	93	88	88	161	115	131	95	131
1973-74 ...	95	119	116	106	141	163	140	101	116
1974-75 ...	—	171	168	160	127	228	143	85	113
1975-76 ...	—	97	82	99	140	166	111	98	171
1976-77 ...	—	99	90	89	141	176	115	128	114
1977-78 ...	87	93	84	93	106	186	116	134	93
1978-79 ...	85	68	71	65	106	72	97	117	63
1979-80 ...	88	68	74	64	—	141	109	87	74
1980-81 ...	91	78	90	78	200	134	127	95	71
1981-82 ...	102	94	96	88	104	151	143	108	64
1982-83 ...	95	80	91	78	97	166	133	94	56

(*Contd.*)

TABLE II (*Contd.*)

Year	(*j*) Uttar Pradesh							
	Paddy	Wheat	Barley	Gram	Sugar-cane	Ground-nut	Rapeseed and mustard	Cotton
1961-62	100	100	100	100	100	100	100	100
1962-63	99	95	80	99	96	83	96	102
1963-64	91	122	117	131	118	100	110	89
1964-65	129	155	139	146	—	123	119	111
1965-66	156	141	137	147	—	138	131	115
1966-67	174	198	185	218	—	169	154	111
1967-68	170	129	119	150	—	130	111	110
1968-69	127	131	111	143	—	119	121	106
1969-70	129	147	122	167	117	145	132	109
1970-71	118	113	93	119	107	155	130	116
1971-72	105	105	98	136	119	110	127	118
1972-73	117	104	123	171	153	141	127	104
1973-74	117	148	152	238	133	181	182	119
1974-75	154	144	144	201	134	162	127	138
1975-76	104	100	82	—	—	—	—	—
1976-77	91	96	89	130	110	135	169	137
1977-78	112	106	113	186	104	145	165	160
1978-79	102	92	90	169	—	110	130	135
1979-80	113	87	101	173	—	143	148	96
1980-81	103	88	102	227	—	165	149	114
1981-82	112	103	101	198	—	140	131	150
1982-83	119	107	115	168	—	164	143	148

(*Contd.*)

TABLE II (*Concld.*)

Year	(*k*) Assam	(*l*) Kerala	(*m*) West Bengal			
	Rice	Rice	Autumn rice	Winter rice	Wheat	Jute
1961-62	100	100	100	100	100	100
1962-63	101	87	98	115	100	76
1963-64	94	93	99	114	109	93
1964-65	102	128	101	112	109	94
1965-66	111	157	114	126	130	97
1966-67	122	163	123	140	126	90
1967-68	134	204	157	173	157	79
1968-69	152	168	138	153	121	103
1969-70	121	158	129	140	114	99
1970-71	98	122	129	136	117	98
1971-72	111	128	122	137	105	91
1972-73	95	138	119	127	105	88
1973-74	107	178	112	133	153	70
1974-75	140	224	169	145	131	66
1975-76	95	159	135	113	94	55
1976-77	84	116	106	115	87	71
1977-78	95	105	102	101	88	71
1978-79	89	95	98	106	85	67
1979-80	90	89	92	102	77	58
1980-81	93	115	103	101	91	53
1981-82	91	113	113	129	116	58
1982-83	99	116	—	141	117	59