GUIDELINES FOR DETERMINING SUPPORT PRICES FOR AGRICULTURAL PRODUCTS

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The purpose of fixing support prices is to assure the farmer that in case market prices tend to go below them, Government will step in and buy all quantities offered to it for sale at the guaranteed prices. It is obvious that the fixation of support prices does not rule out the possibility of market prices being higher than the support prices. In fact, in a situation where demand is increasing at a faster rate than supply, market prices can generally be expected to remain higher than the support prices. If this imbalance is severe, the price policy may also aim at making essential commodities available to the consumer at 'reasonable' prices. In this paper, however, we shall not deal with this aspect of the price policy.

Guidelines for determining support prices of agricultural products would depend on the objectives that are sought to be achieved. Objectives of agricultural price support policies can be and are in fact diverse in different countries. By definition, support price policy assures the farmer against a fall in prices beyond the stipulated level. In some countries (mainly in industrialised countries) such a price-insurance has the primary objective of maintaining (or even raising) the general level of farm incomes. In several other countries (especially in economically less developed countries), the main objective of support price policy is to help augment overall agricultural production or to stimulate production of selected commodities in preference to others. Thus, on the basis of the primary objectives that they seek to achieve, the support price policies can be categorised as either 'income-

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oriented’ or ‘production-oriented’. As the guidelines for determining income oriented support prices will basically differ from those for production-oriented support prices, the question arose as to which of these two types of support price policy is relevant in the present Indian context.

The objective of the income-oriented support price policy is to maintain a desired relationship, often with reference to a selected base period, between prices of agricultural and non-agricultural products as a whole, and thereby to assure a historical parity—not necessarily equality—between farm and non-farm incomes. Price policy, when used as an instrument to achieve desired income objectives, has to be necessarily guided by welfare criteria, and not by the principle of marginal allocation of resources. Parity price approach has been subjected to a good deal of valid criticism. The most important drawback of parity prices is that they are backward-looking and that by seeking to maintain past price relationship they do not allow the price mechanism to perform its essential function of resource allocation within agriculture and also between agricultural and non-agricultural sectors. It needs hardly to be stressed that in a developing economy like ours, which by definition should be forward-looking, any price policy aiming at perpetuating the price structure, resource allocation and production pattern of any past period is absolutely unsuitable. Moreover, income-oriented support policies in developing countries like ours would have another important limitation. In these countries, as income from agricultural sector constitutes a sizeable part of the national income, large transfers of income from other sectors of the economy are not feasible. As a result, the extent to which agricultural income support, as an objective, can be undertaken is very much limited. This, however, does not imply that the level of agricultural incomes or efforts to increase it are not important considerations in policy formulation in developing countries. As a matter of fact, most of these countries strive to increase agricultural

*Any price policy would influence the levels of both agricultural production and farm incomes. But the emphasis laid by different price policies on each of these two aspects can and does, in fact, vary between different countries. It is only with reference to the greater emphasis laid on one objective as compared to the other that the price policies can be categorised as ‘income-oriented’ or production-oriented*. 

incomes by augmenting agricultural production and productivity as a part of overall economic development. What has to be recognised is that in such developing countries support price policy alone is neither an adequate nor a desirable instrument for raising agricultural incomes.

As the over-riding objective in our present context is to step up the rate of growth of agricultural production so as to match the growth to consumer demand, support price policy, which is production-oriented, would seem to have greater relevance. The objective of improving agricultural incomes will be achieved as a sequel to increase production and productivity. The basic hypothesis of the production-oriented support policy is that production responds to price stimulus. A question may be raised as to whether this hypothesis is valid in a developing economy, where a large part of the agricultural activity is subsistence-oriented, rather than market-oriented. Although prices would have a greater influence in respect of cash crops than subsistence crops, yet there is a growing volume of evidence to show that with some degree of monetization and transport facilities, a fairly large proportion of peasants respond, to some extent, to price and other economic incentives. Moreover, the role of support price policy acquires an added significance when increase in agricultural production has to come about mainly through new investments in resources. Augmenting agricultural production is possible in the context of the present agricultural organisation in our country only if the farmers' cooperation in undertaking necessary investment is forthcoming. In as much as the guaranteed support price would reduce the risk arising out of a price fall beyond the stipulated level, support price policy can help in creating a climate conducive to a greater investment effort by the farmer.

It may be emphasised that support price policy is a necessary but not a sufficient condition to bring about increase in agricultural production. In order to be effective, the incentive of the support price policy should not be blunted by disincentives arising out of regressive tenurial arrangements, or credit restrictions or structural imperfections in the marketing of agricultural products. Further, support price policy can at best provide an inducement to the farmer to increase production; whether in fact production will increase or not will depend,
inter alia, on the availability of physical inputs as well as their supply elasticity. If input supplies are relatively price inelastic, increase in support prices may tend to result only in cost inflation. These factors are, no doubt, important determinants of the efficacy of the support price policy. But for our present purpose, we shall assume that steps are simultaneously being taken to remove the deficiencies, if any, in the overall framework in which the support prices are to operate.

A question may arise whether there is any need for a support price policy when prices are generally high and continue, on the whole, to rise. It seems that the need for support price policy even in a situation of high and generally rising prices can arise on account of two considerations. Firstly, even though prices are generally rising, possibility of prices declining, sometimes even steeply, cannot altogether be ruled out, especially during the immediate post-harvest period and/or in heavily surplus pockets, where potentiality of increasing production is often high. Moreover, the biological character of agricultural production also results in year to year fluctuations in production. As a result, in years of sizable increase in production, prices decline quite steeply, to even what may be described as 'unremunerative' levels. The experience regarding jute prices during 1959 and paddy prices in Thanjavur district of Madras during 1963 can be cited as recent illustrations of this type. Secondly, an environment of high but uncertain prices cannot be considered ideal for inducing farmers to undertake new investments for increasing agricultural production. The hypothesis that stable, even though somewhat low, prices are more likely to induce farmers to increase production than high but fluctuating prices, seems to be convincing.

It may also be asked whether support price would have any influence on the production decisions of the farmer when market prices, and consequently the prices realised by the farmer, are higher than the support prices. No doubt, prices actually realised by the farmer can be expected to provide an important basis on which the farmer may form his price expectations. Even then, it would not be valid to assume that support prices would not at all influence the farmer's price expectations, especially if the support prices are not
fixed at unrealistically low levels. In the first instance, a realistic support price can raise the average realised price by not permitting even the post-harvest prices to be lower than the support prices. Secondly, fixation of the support price provides a floor to the price probability calculations of the farmer, and thereby induces him to work nearer the optimum point on his production possibility curve. High realised prices cannot divest the future of its inherent uncertainty; support prices can reduce this uncertainty by indicating the floor below which market prices will not be permitted to fall and thereby promote a rational use of farm resources. However, the effectiveness of the support prices in achieving this objective would depend to a large extent on their level. If they are fixed at very low levels they would hardly enter into the farmer's decision-making process.

If it is agreed that in our present context, the main role of the support prices is to help create a climate in which farmers would be induced to take decisions favourable to the augmenting of agricultural production, the question that arises is which decisions of the farmer should the support price policy strive to influence and how best it can be done in actual practice in our conditions. Among the many decisions a farmer has to take in the management of his farm, the important ones relate to (a) combination of resources (including the choice of production technique) and (b) choice of products. Although we know only a little about the decision-making process, let alone the precise models, employed by the farmer, it is realistic to assume that he does base his decisions about how to produce and what to produce on some economic calculus in which expected prices of products and of inputs occupy an important position. Decisions relating to the combination of resources and the choice of production technique may be influenced by the expected relationship between costs (as determined by input prices) and returns (as determined by output prices). Similarly, it is the expected inter-relationship between the prices of competing crops that may influence the choice relating to the product-mix. It is from this angle, therefore, that the claims of costs of production as well as the inter-crop price parities as guidelines for determining support prices have to be considered. In the following paragraphs we shall examine various questions that arise in this context.
First, let us consider the observed past cost of production of a product as a basis on which its support price may be fixed. The main argument in favour of this suggestion is rooted in the basic relation between price and cost; the price should cover the cost of production, otherwise the producer will sooner or later give up producing. Looked at in this general manner, cost of production approach appears to be disarmingly simple and fair; but on economic grounds, it can be justified only under conditions of full employment and that too in the long run. The problems associated with the cost of production approach to support price determination are also varied and complex, and they deserve careful consideration. The main questions that need to be answered are: (a) what costs to consider and (b) whose costs to consider.

As regards the cost items that are relevant and also their appropriate evaluation, the main problem relates to the family labour. The argument against including family labour as a cost item and evaluating it at the market wage rate, either for permanent or casual labour, rests on the consideration that the opportunity cost of the farm family labour in India is almost nil. If by this it is meant that there are no alternative avenues of employment for the farm family labour, and that it will continue to be engaged in farming, whatever the price of the product, it is no more than a truism. However, this line of reasoning is at best applicable to a largely subsistence-oriented cultivation, and is not quite appropriate when the objective is of transforming peasant farming into a market-oriented business proposition. Moreover, though as a general hypothesis the nil opportunity cost proposition may not be incorrect, yet it is also important to reckon that the opportunity cost of labour during certain peak periods in agriculture is very high. If, therefore, the principle of opportunity cost has to be followed, it is more appropriate to determine the opportunity cost of labour at different periods during the season and evaluate it accordingly rather than take it as of nil value throughout. However, the complexities of evaluating the opportunity cost of farm family labour in this way are so many, that this basis does not seem to be more than an intellectually attractive possibility.

Another argument against the inclusion of farm family labour as a cost item and of evaluating it at the going wage rate is that it
unduly inflates the cost figure, especially because the small farmers push the use of labour input to the point of zero marginal return. This, however, does not imply that the small farms are run inefficiently. In fact, on most small family-farms, labour is labour is largely used as a substitute for other inputs and especially for capital, and, therefore, it has as much claim to be regarded as a cost item as any other input. But still the question remains whether the labour use on small farms would be pushed as far as the point of zero marginal return if it were to be hired labour. If the answer is in the negative, economic logic would question the evaluation of the farm family labor at the going wage rate.

Another question that arises in whose cost of production should be taken into account for determining the support prices. Cost of production of a commodity is dependent on a number of factors which vary from farm to farm, e.g., size of the farm, soil type, cropping pattern, farm investment as well as technique of production employed. (The role of the managerial ability of the farmer is implicit in the technique of production). Since structure of farm business and/or the technique of production would differ, often widely, as between different farms, cost of production of a commodity would also vary between different farms and regions. Hence, the problem of aggregation has to be resolved if the cost of production is used as a basis for determining support prices. In this connection, three aggregate cost estimates can be considered:

(a) Average cost of all farmers;
(b) Bulk-line cost; and
(c) Average cost of efficient farmers.

Average cost, though useful in providing valuable background information, can hardly provide a satisfactory basis for determining farm prices. If support prices are related to the average cost of production, it is clear that a majority of farmers would still have costs higher than the average cost. The question also arises whether average costs of production are at all relevant when the objective is to augment production. It is the marginal cost of production which may need to be covered rather than the average cost of production. The alternative of bulk-line cost is often suggested with a view to relating
the support price to the marginal cost of production. Bulk-line cost has been defined as the cost which would cover the cost of producing 85 per cent of the total output. In a sense, therefore, the bulk-line cost is the marginal cost of producing the 85th unit of output, assuming that a total of 10^1 units of the commodity is being produced. Thought the limit of 85 per cent of production is only arbitrarily fixed and can hardly have any defence in economic logic, yet the bulk-line cost is the nearest real work approximation to the economist’s concept of marginal cost. However, bulk line cost approach, based on past cost structure, has a basic limitation that it assumes that the technique of production would remain static. If the objective is to increase agricultural production by shifting the production function, the bulk-line cost approach, based on past cost structure, would lose much of its appeal. It may also be questioned whether support prices based on past bulk-line cost would necessarily provide the inducement to the farmer to undertake new investments for increasing production.

The idea of linking support price to the cost of production of efficient farmers merits serious attention in so far as it is primarily production-oriented. The logic of this approach is that while efficiency must be rewarded, inefficiency must not be encouraged. In order to translate this approach into practice, the question of defining the efficient farmer has to be satisfactorily resolved. It is obvious that efficient farmers are not necessarily big farmers. Farm Management Studies have shown beyond doubt that efficient farmers as well as inefficient farmers are found in all size groups. Various criteria can be thought of for distinguishing efficient farmers from the inefficient ones, e.g., cost per unit of output, yields per acre, gross value of production per acre, returns per unit of capital invested, use of improved technology etc. Each of these criteria deserves careful consideration. It may, however, be mentioned that efficiency has relevance only with respect to a given framework of farm structure. The structural imbalance inherent in our agriculture may make some farms look inefficient though in actual practice they may not be so. The technological efficiency has also to be distinguished from economic efficiency. All these considerations underline the fact that there is no simple formula distinguishing the efficient farms in the existing structure and organisation of Indian agriculture.
Cost of production approach, though useful for some purposes, is essentially a backward-looking approach. Given a certain level of technology, the linking of support prices with past costs of production, however defined and measured, can at best succeed in guaranteeing certain income levels to the farmers. It cannot ensure that support prices so determined would in fact provide the necessary stimulus for increasing production. For this purpose, support prices should ideally be related to the supply responses to price stimuli. Various economic models for estimating supply responses can be thought of. These models fall into two broad categories: (a) those based on aggregative time series; and (b) those based on micro-sources of data. Most of the supply response studies based on time series data have been in the form of regression analysis. Though these studies have, by and large, provided useful insights into the historical relationship between prices and production, yet their value as tool for predicting log-run supply responses has been found to be very limited, since they do not adequately deal with the institutional, structural and technological changes. The problems of aggregation and estimation further restrict the utility of these studies. The supply response models based on micro-sources of data can be cost-function models or production-function models or linear programming models. Although it is theoretically possible to derive both short-run and long-run supply responses through these economic models, the response coefficients so obtained are generally not very stable and therefore cannot be used with confidence. The biggest single limitation of these models lies in the assumption of a static framework. Moreover, the type of data needed for building up these models are not available in most of the developing countries. As a result, the utility of the supply response functions is extremely limited in developing a rational structure of support prices.

While thus the sophisticated economic models have limited value in our present context as a basis for determining support prices, it is necessary to relate support prices to costs of and returns from improved technology, so as to provide an adequate inducement to the farmer for augmenting agricultural production through the adoption of improved technology. It may, however, be argued that improved technology, by definition, is cost reducing and therefore there may not be any need for providing any incentive to the farmer for adopting it. But there exist important psychological handicaps in the way
of rapid adoption of improved technology. The apparent advantages accruing from the adoption of the improved farm technology are subjected to a two-way cut by the farmer: (a) by way of heavily discounted expected output estimates; and (b) by way of inflated expected cost estimates. The logic underlying the farmer’s behaviour as hypothesised above is understandable if we consider the nature of innovation in agriculture. The improved agricultural technology is highly capital intensive and calls for a substantial rise in investment. Given the asset structure of most of the Indian farmers and the generally unpredictable flow of vitally needed farm inputs like irrigation and fertilisers, heavy output discounting and cost inflating can be adequately defended even on a purely theoretical plane. Hence, in order to induce the farmer to adopt improved technology the support prices should be fixed at such levels as would give the farmer an income which will be sufficiently higher than the income that he would have obtained had he not adopted the improved techniques of production, so as to adequately cover the element of risk.* Let us assume two levels of farm technology, viz., the existing or traditional level and the improved level. Let us denote the optimum net income per acre under existing level of technology as \( Y \). The average farmer will be willing to adopt the the improved technology only if he is sure of realising a net income equivalent to \( Y \) plus an adequate margin for risk and uncertainty arising out of the adoption of improved technology. If the risk and uncertainty margin is denoted by \( Z \) then the adjusted net income per acre may be denoted \( Y' \) so that,

\[
Y + Z = Y'
\]

If the total cost corresponding to the levels of improved inputs that are recommended to the farmer for adoption is denoted by \( C \), the gross expected income of the farmer, under improved technology, should be equal to the sum of adjusted net income (net income under existing technology + a margin for risk and uncertainty) and \( C \). Let this gross income be denoted \( X \) so that we have:

\[
Y' + C = X
\]

*"It is, no doubt, true that some improved techniques of production e.g., irrigation, reduces the element of risk. But some other improved techniques of production, e.g., new varieties of seed, fertilizers etc., tend to increase the element of risk on account of either the unfamiliarity or higher capital investment."
If we divide $X$ by the output level 0 corresponding to the given levels of improved inputs, we get the estimate of the support price, $P$:

$$\frac{X \pm P}{0}$$

The above 'modified production function' approach has no doubt several limitations. In the first place it has been assumed that farmers are optimally combining their resources under existing levels of technology. This assumption can to some extent be justified on the basis of empirical findings of some of the recent studies which show that farmers, by and large, use their resources in an optimum manner given the shape of the production surface under their traditional techniques of cultivation. Another important assumption in this approach is that a given combination of inputs as represented by the recommended package, has been taken as the basis for estimating output and cost under improved technology. It may also be noted that this approach gives only a point estimate and it does not tell us about the shape of the supply response curve. However, it is possible to derive a supply curve by adopting different input combinations, i.e. different variations of the package. Since the formulation is essentially based on the production function model, the shortcomings of the latter are valid in this case also. It may, however, be mentioned that the model has given very interesting results in some preliminary testing based on the composite demonstration data from the Intensive Agricultural District Programme Areas.

Before we conclude the discussion regarding relationship between costs of production and support prices, it may be mentioned that the level at which support prices may be fixed would also depend on the input prices. Output and input price ratio is an important factor influencing the growth of the overall agricultural output. Favourable price ratios can be brought about both by raising output prices and by lowering input prices. A choice between these two alternatives has to be exercised with great care because both the alternatives have advantages and disadvantages. The main advantage of subsidising input prices is that the cost of subsidy programme is directly related to the propagation of practices that increase productivity. The cost of subsidies can be borne through the tax system so that the unfavourable
impact of higher agricultural prices on the non-agricultural sector can be avoided. Further, subsidy will benefit only those who are innovators, while raising product prices will increase incomes of both innovaters and non-innovaters. If marginal preference for leisure relative to labour is high, higher incomes through higher product prices can to some extent blunt the incentive to increased production.

In favour of higher product prices, it can be argued that input subsidies are of not much help in situations in which increase in agricultural productivity comes from a more intensive use of non-purchaseable inputs that are not complementary with purchaseable inputs. Secondly, if the use of purchaseable inputs is already widespread, the costs of input subsidies mount. On the other hand, if the use of such inputs is not wide-spread, it is doubtful whether the mere lowering of the price of inputs will induce more farmers to begin to use them.

Thus, it is not possible to say a priori whether preference should be given to higher product prices or to input subsidies. Whether in a particular situation the necessary inducement should be provided by raising support price or by reducing input cost will have to be determined in the light of several considerations, e. g., existing level of input use, possibility of raising output price, relative importance of low cost and provision to the farmer of a cushion for risk taking, ease or difficulty of administration of input subsidy as well as value judgement regarding income distribution between agricultural and non-agricultural sectors. It may, however, be emphasised that in order that the desired objective of wider adoption of new and improved technique is achieved, inter-relationship between product prices and input costs is of fundamental importance and the desired relationship will have to be attained in practice by a judicious combination of variations in both prices and costs.

Let us now consider the place of inter-crop price relationship in determining support prices. As mentioned earlier, the need for the inter-crop price relationship (parity) approach is based on the hypothesis that prices of competing crops would influence the farmer's decision relating to the choice of products. The theoretical basis of this hypothesis is that a change in the price of a product would
disturb the equilibrium of the farm and start a process of re-adjustment of resource-use and consequently of output levels of different products. There is considerable empirical evidence to show that farmers respond, in varying degrees, to change in prices by re-allocating acreages under different crops. Thus, both theory and available empirical evidence indicate that the inter-crop price relationship is an important factor influencing farmer’s production decisions.

Most of the acreage response studies attempt to co-relate shifts in acreage under a crop with variations in the price of that crop or in the price ratios of competing crops after allowing for a suitable time-lag. Usually, this relationship is studied with reference to time-series data based on actual observations of acreages and prices. A question may be raised whether empirical evidence indicating a relationship between realised prices and acreages would be relevant for the purpose of support price determination. As pointed out earlier, support prices if not fixed at an unduly low level, can raise the average realised price by not permitting the prices to fall below the stipulated level even during the immediate post-harvest period. But the more important role of support prices is to minimise the price uncertainty, so that the more fixation of the support price of a crop or a change in its level in relation to that of a competing crop would influence the resource allocation and cropping pattern.

It seems that if adequate and reliable data on production (acreage) responses to price variations were available, the ideal solution would be to make a detailed study at the beginning of each crop year of the supply and demand conditions of each crop and then make marginal adjustments in the support price of each crop in the light of the supply (acreage) response coefficients. While as a general proposition it seems reasonable to conclude that the relative prices of competing crops should be fixed in such a manner as would bring about the desired production pattern, the question arises whether and to what extent response coefficients obtained with reference to past relationship between price and acreage (production) would hold good for future projections. Price is only one of the variables influencing farmer’s decisions regarding choice of crops. There are many other important factors like technological innovations, structural changes etc.,
which also vary over time. There is also the problem of aggregation at the all India level of results obtained from regional studies with varying crop complexes. Moreover, it can be argued that it is the profitability of producing a crop that would influence the farmer's decision more than its price. Evidently, the profitability is determined not only by price but also the yield per acre and costs. If the profitability of a particular crop is very high as compared to that of the competing crop, a slight shift in price may not affect the acreage.

In conclusion, it may be observed that our present knowledge does not enable us to evolve a cut and dried formula for determining support prices. Much more empirical evidence will have to be collected and analysed for a number of years to come before any attempt at evolving a scientific basis for fixing support prices can begin to yield results. Even then it is very doubtful whether it would be either feasible or desirable to reduce the support price determination process to any rigid mathematical formula approach. There is no substitute for judgement in this field. Price mechanism is a highly sensitive and delicate instrument and the repercussions of a change in price in one area would be so wide-spread that it seems almost an impossible task to take into account all of them and to arrive at an integrated price structure that may be truly described as in equilibrium, both over space and time. Nevertheless, attempts to collect and analyse as much empirical evidence as possible will have to continue and to be intensified so as to derive supply response co-efficients, which can serve as guidelines for determining support prices. The empirical evidence that is available in this respect at present is so limited that at best it can serve only as a qualitative pointer rather than a quantitative determinant. Efforts at systematic collection of data on costs of production, especially of the efficient farmers, will have not only to continue but also to be intensified, so as to provide valuable background information. Moreover, data on costs of and returns from improved practices, especially in the Intensive Agricultural Development Areas, will have to be analysed on the lines suggested under the modified production function approach in this paper. Also, the relationship between product prices and input costs will need to be reviewed from time to time. However, we can be more certain about one thing, viz.,
the primary objective of the support price policy in our country has to be that of augmenting agricultural production and not of achieving income redistribution between agricultural and non-agricultural sectors. The guidelines for determining support prices will have to be evolved keeping this objective firmly in view.