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# AGRICULTURAL PRICES IN PUNJAB— A POLICY ANALYSIS

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The transformation of traditional agriculture into a progressive and dynamic business is primarily a techno-organizational process. In the last few years, however, the literature on the subject confirms that the response of the producers to prices is positive both in developed and developing economies. Thus, the techno-organizational effort can be accelerated or retarded by the price incentives or disincentives. The rate of absorption of new knowledge and new inputs also depends critically on the price and risk milieu. It follows, therefore, that while the techno-organizational measures are necessary for a shift to higher production functions, these measures need to be combined with economic policies designed to take advantage of the price responsiveness of supply of agricultural output and demand for farm inputs.

Historically, agricultural price policy has been used negatively to keep the food and raw materials cheap for the growing industrial sector and to provide economic surpluses in the form of savings for investment in the industrial sector. A negative price administration of this type has been an important aspect of policy in the early phases of development in capitalistic as well as socialistic countries. However, it is now generally recognized that there is some critical minimum rate of agricultural growth without which an economy cannot start growing at a desired (planned) rate, either because of the initial dominance of agriculture in income generation, employment and exports or because of the dynamic complementarity of agricultural growth with general economic growth. In many developing countries, this minimum rate of agricultural growth consistent with sustained general growth is quite high. This underlines the need for a positive price policy to achieve this minimum rate of agricultural growth. A system of guaranteed prices for basic foods is, therefore, increasingly being adopted in developing countries. In 1965, according to an FAO survey report, 15 countries had adopted support prices for wheat, 10 for barley, 16 each for maize and rice in Eastern Europe, Asia, Africa and Latin America.[1]

The Government of India has also adopted a positive policy of support prices for a number of agricultural commodities. Although the acceptance of a price support policy for agriculture is a step in the right direction, determination of the levels of support prices remains a baffling problem. The level of support prices[2] for agricultural produce in fact depends on the objectives that are sought to be achieved through the instrument of price policy. The objectives in fixing producer prices differ from country to country and from time to time. In developed countries the major emphasis is mainly on providing a measure of protection

1. F. A. O. Survey, 1965, p. 52.
2. By support prices here we mean the actual prices at which the produce is purchased from the farmer (purchase or procurement price). We are aware of the theoretical distinction, but will not like to distinguish between the two in this article because of its futility in the context of growth oriented support price policy.

and security to the farmers against the hazards of price instability. In developing economies like India, where the overriding consideration is to step up the rate of growth of agricultural production, support price policy for agriculture has to be production oriented.

Further, it is recognized that the break-through in agriculture is possible only through the adoption of improved production technology which entails more expenditure on inputs and involves greater risk. The farmers would, therefore, need to be assured that the additional expenditure involved in adopting new technology will not become a losing proposition because of the slumps in agricultural prices following a good harvest.

*Basis of Price Fixation*

Purely on economic considerations, agricultural prices can be fixed on the basis of (*i*) Cost of production, (*ii*) Ruling price or (*iii*) Parity price. These norms have their respective merits and demerits. In the following sections, an attempt is made to consider these criteria and arrive at levels of support prices for selected farm products in Punjab on the basis of alternative estimates.

*Cost of Production Criterion*

In its primitive form, with the help of accounting methods the average cost or the bulk line cost can be made a basis for determining the level of administered prices. Another variant of cost accounting method is the budgeting technique, whereby the recommended farm practices, their costs, and average yields are taken into account to estimate the per unit cost. However, the problem of valuation, particularly for labour and management inputs, large variations in costs per unit from farm to farm and the inflexibility of the standard, particularly in the face of changing market conditions, highlight the deficiencies of this approach. Further, a production oriented price policy cannot be based on average cost of production, although an understanding of cost of production may be essential for a rational price policy. It is an established fact that much of the increase in agricultural production in recent years has been due to increase in the use of conventional and non-conventional inputs. And, the rate at which cultivators take up such additional inputs is a function of the cost-benefit ratios. In such a situation the cultivator would be indifferent to conventional cost of production figures and be more concerned with marginal costs and returns. He should increase the use of inputs to the point where the value of the marginal yield (discounted for risk) equals the cost. The cost of production in a book-keeping sense is not, thus, relevant to the problem; policy should rather provide for inputs to be increased to the point where cost equals the value of the marginal output. Again the cost of production based as it is on supply criteria, totally ignores the influence of demand in the determination of prices and thus makes it unusable for policy decisions.

*Ruling Price Criterion*

This requires that the price be linked to a moving average of market prices in the recent past period. The advantage of this criterion is that it builds the effect of demand trends into price fixation while the cost criterion ignores this

aspect altogether. The importance of this criterion, therefore, lies in co-ordinating the demand growth with supply growth over the relevant time periods. In the event of an excess supply outlook, demand effect should influence the price fixation via the moving average of market prices. However, in an economy where prices are regulated by deliberate policy, the moving average may not truly reflect the market trends. The criterion cannot, therefore, be used for prediction purposes.

*Parity Approach*

Parity price is the price that purchases for the seller of a unit of an article as much of other things and services as he could purchase with the same unit in a given base period. The parity prices seek to stabilize inter-relationships between different agricultural products as well as between agricultural and non-agricultural products. The principal parity is thus to maintain given relationships and not reduction of price fluctuations. Parity may be conceived of in a number of ways:

(*a*) Parity between prices of all agricultural commodities and all non-agricultural commodities.
(*b*) Parity between prices of individual agricultural commodities and general agricultural prices.
(*c*) Parity between prices received of the farm products and prices paid for farm inputs.
(*d*) Parity between prices received of the farm products and prices paid for farm and family expenditure taken together.

(*a*) *Parity Prices between Agricultural and Non-Agricultural Commodities*

In any discussion of price policy, the terms of trade between agricultural and non-agricultural sector assume great significance, because the sectoral relationships of prices have a bearing on production. In the Punjab State, for which this analysis has been made, the index of non-agricultural prices separately is not available. Agricultural prices are, therefore, compared with the all-commodities (general) wholesale prices (of agricultural and non-agricultural commodities). Further the individual commodity prices are compared with the general wholesale price level in respect of six products, *i.e.*, wheat, gram, barley, maize, bajra and rice in order to estimate the parity prices for each of them. Table I gives the parity ratios for all the agricultural commodities as well as for individual crops with the general wholesale price index.

It shows that during seven years out of ten (1959-60 to 1968-69) the terms of trade were unfavourable to agriculture as a group. For individual commodities it varied from time to time but was unfavourable for all the commodities studied except bajra during the year 1968-69.

(*b*) *Parity between Individual Agricultural Commodities and General Agricultural Prices*

Table II shows the parity ratios of individual agricultural commodities with indices of general agricultural prices for the ten-year period from 1959-60 to 1968-69.

TABLE I—PARITY RATIOS OF AGRICULTURAL PRICES WITH NON-AGRICULTURAL PRICES : 1958-59 THROUGH 1968-69 (BASE 1952)

| Year | Whole-sale index | Parity ratio of | | | | | | All agri-cultural prices |
|---|---|---|---|---|---|---|---|---|
| | | Wheat | Gram | Maize | Bajra | Barley | Rice | |
| 1959-60 | 114.67 | 87.78 | 75.53 | 83.57 | 105.71 | 97.52 | 93.75 | 106.39 |
| 1960-61 | 117.64 | 84.98 | 72.26 | 89.40 | 125.81 | 88.26 | 90.04 | 95.20 |
| 1961-62 | 119.18 | 86.12 | 78.42 | 85.15 | 99.57 | 90.43 | 88.25 | 93.14 |
| 1962-63 | 125.74 | 80.83 | 72.74 | 74.10 | 100.79 | 75.14 | 83.56 | 91.45 |
| 1963-64 | 130.05 | 87.87 | 103.28 | 83.73 | 111.86 | 117.22 | 88.31 | 93.81 |
| 1964-65 | 154.26 | 90.90 | 79.30 | 113.01 | 134.97 | 107.83 | 77.71 | 107.61 |
| 1965-66 | 161.23 | 102.60 | 107.06 | 74.33 | 110.41 | 125.70 | 79.40 | 102.33 |
| 1966-67 | 202.36 | 102.48 | 117.92 | 113.22 | 114.20 | 131.26 | 69.29 | 85.98 |
| 1967-68 | 221.74 | 91.97 | 77.53 | 78.93 | 87.42 | 86.57 | 77.37 | 80.44 |
| 1968-69 | 214.36 | 97.96 | 80.74 | 81.74 | 119.32 | 80.39 | 88.41 | 85.37 |

TABLE II—PARITY RATIOS OF INDIVIDUAL COMMODITY WITH ALL AGRICULTURAL PRICES : 1958-59—1968-69

| Year | Agricultural prices | Wheat | Gram | Maize | Bajra | Barley | Rice |
|---|---|---|---|---|---|---|---|
| 1959-60 | 122 | 82.51 | 70.99 | 78.55 | 99.36 | 91.66 | 88.11 |
| 1960-61 | 112 | 89.26 | 75.90 | 93.90 | 132.15 | 92.70 | 94.58 |
| 1961-62 | 111 | 92.47 | 84.20 | 91.43 | 106.91 | 97.09 | 94.76 |
| 1962-63 | 115 | 88.37 | 79.53 | 81.02 | 110.20 | 82.16 | 91.36 |
| 1963-64 | 122 | 93.66 | 110.09 | 89.25 | 119.24 | 124.95 | 99.87 |
| 1964-65 | 166 | 84.47 | 73.69 | 105.02 | 125.42 | 100.20 | 72.22 |
| 1965-66 | 165 | 100.26 | 104.61 | 72.63 | 107.88 | 122.83 | 77.59 |
| 1966-67 | 174 | 119.18 | 137.14 | 131.68 | 132.81 | 152.65 | 80.59 |
| 1967-68 | 178 | 114.57 | 96.58 | 98.32 | 108.90 | 107.85 | 96.39 |
| 1968-69 | 183 | 114.75 | 94.57 | 95.75 | 139.76 | 94.17 | 103.56 |

In the case of rice, parity remained unfavourable during all the years except 1968-69. Whereas for other foodgrains, it fluctuated from year to year. In 1968-69, parity was favourable to wheat, bajra and rice, but unfavourable to gram, maize and barley. Such inter-crop price ratios have an important influence on the production programmes of the farmers, and therefore need to be kept in mind while fixing the prices of various commodities under managed price system, so that relative price levels do not get distorted involuntarily.

*Parity Approach to Price Determination*

For determining a reasonable price for agricultural commodities, parity with wholesale prices seems more relevant for two reasons; firstly, because it reflects in some sense, the expenses incurred by the farmer on purchasing farm inputs as well as on the family consumption goods. Secondly, it reflects in some degree the general demand conditions in the economy. In the following sections, therefore, parity prices have been estimated using three formulae; *viz.*, (1) fixed base method, (2) average parity method and (3) adjusted base method.

*Fixed Base Method*

The estimated parity prices for the selected agricultural commodities at 1952 fixed base are given in Table III. The advantage in this method is that once the wholesale price index is obtained it is easy to calculate the parity price for any year. This approach, however, suffers from the inherent weakness of freezing the price relationships to the base period and does not take account of the technological changes which alter the inter-crop relationships and affect efficiency in agriculture.

TABLE III—ESTIMATED PARITY PRICES, WITH 1952 BASE-FIXED

| Year | Wheat | Gram | Maize | Bajra | Barley | Rice |
|---|---|---|---|---|---|---|
| 1959-60 | 43.39 | 48.22 | 36.11 | 32.85 | 31.69 | 30.73 |
| 1960-61 | 44.52 | 49.47 | 37.04 | 31.43 | 32.51 | 31.53 |
| 1961-62 | 43.93 | 50.11 | 37.53 | 34.15 | 33.74 | 31.94 |
| 1962-63 | 47.58 | 53.38 | 39.59 | 36.02 | 34.74 | 33.70 |
| 1963-64 | 49.21 | 54.70 | 40.95 | 37.26 | 35.93 | 34.85 |
| 1964-65 | 58.37 | 64.87 | 48.58 | 44.19 | 42.62 | 41.35 |
| 1965-66 | 61.01 | 67.80 | 50.77 | 46.19 | 44.55 | 43.21 |
| 1966-67 | 76.57 | 85.09 | 63.73 | 57.98 | 55.91 | 54.23 |
| 1967-68 | 83.91 | 93.24 | 69.82 | 63.53 | 61.27 | 59.43 |
| 1968-69 | 81.11 | 90.13 | 67.49 | 61.41 | 59.22 | 57.45 |
| 1969-70* | 82.93 | 92.15 | 69.01 | 62.79 | 60.55 | 58.73 |

*Projected values.

*Average Parity Method*

In view of the weakness of the fixed base method, the parity may be worked out on the basis of the average relationships of individual commodity prices to wholesale prices during the ten preceding years. This can be obtained by taking the average index of prices for the specified commodity for the past ten years and deflating it by the average wholesale price index of the corresponding years. The average parity index so obtained will be multiplied by the actual price in the base period and wholesale price index for the year for which projection is made. The formula is

$$\text{Projected price} = \frac{\overline{C}_p}{\overline{W}_p} \cdot C_{p_{to}} \cdot W_{t+1}$$

Where $\overline{C}$ is ten-year average price of the commodity,

$\overline{W}_p$ is ten-year average of wholesale price index,

$C_{p_{to}}$ is actual price of commodity in the base year, and

$W_{t+1}$ is wholesale price index for the year for which projection is made.

The results based on this analysis are summarized in Table IV. This approach, however, suffers from the limitation that it loses sight of the old base altogether.

TABLE IV—ESTIMATED PARITY PRICES BASED ON TEN-YEAR AVERAGE PRICE

| Year | Wholesale price indices | Wheat | Gram | Maize | Bajra | Barley | Rice |
|---|---|---|---|---|---|---|---|
| 1959-60 | 114.67 | 100.66 | 86.61 | 95.83 | 121.22 | 111.83 | 107.50 |
| 1960-61 | 117.64 | 99.97 | 85.01 | 105.17 | 148.01 | 103.83 | 105.93 |
| 1961-62 | 119.18 | 102.64 | 93.46 | 101.49 | 118.67 | 107.78 | 105.11 |
| 1962-63 | 125.74 | 101.63 | 91.46 | 93.17 | 126.73 | 94.49 | 105.07 |
| 1963-64 | 130.05 | 114.27 | 134.31 | 108.89 | 145.47 | 152.44 | 114.85 |
| 1964-65 | 154.26 | 140.22 | 122.33 | 174.34 | 208.20 | 166.34 | 119.88 |
| 1965-66 | 161.23 | 165.43 | 172.62 | 119.84 | 178.01 | 202.67 | 128.02 |
| 1966-67 | 202.36 | 207.37 | 238.62 | 229.12 | 231.09 | 265.61 | 140.22 |
| 1967-68 | 221.74 | 203.94 | 171.91 | 175.01 | 193.85 | 191.97 | 171.57 |
| 1968-69 | 214.36 | 210.00 | 173.07 | 175.23 | 255.77 | 172.33 | 189.51 |
| Average | 156.12 | 144.61 | 136.94 | 137.80 | 172.70 | 156.93 | 128.77 |
| 1952-53 prices Rs./quintal | — | 37.84 | 42.05 | 31.49 | 28.65 | 27.63 | 26.80 |
| Parity price for 1969-70 | — | 76.82 | 80.83 | 60.91 | 69.46 | 60.87 | 48.37 |

If the relationship between agricultural commodity prices and wholesale prices has been adverse to agriculture during the last ten years for whatever reasons, it will remain adverse even in future. Hence a better approach appears to be the adjusted base method.

*Adjusted Base Method*

The adjusted base method represents a compromise between the two approaches described above, as it not only retains the old base as the standard of equality between prices received for farm products on the one hand and prices paid by the farmers for goods and services on the other, it also establishes relationships among parity prices of farm products that reflect average price relationships during the immediately preceding ten years. Thus it takes into account the changes taking place in input-output relationships resulting from technological progress without losing sight of the base year relationship.

In this method the average price of the commodity during the past ten years deflated by the average change in the indices of agricultural prices for the same period is used to obtain the adjusted base price. This is then multiplied by the wholesale price index of the year for which estimates are made. The estimated parity prices for agricultural commodities in the Punjab based on adjusted base are given in Table V.

TABLE V—ACTUAL AND ESTIMATED PARITY PRICES BASED ON ADJUSTED BASE

| Year | Wheat | Gram | Maize | Bajra | Barley | Rice (paddy) |
|---|---|---|---|---|---|---|
| 1959-60 | 39.09 | 36.42 | 30.18 | 34.73 | 30.90 | 28.81 |
| 1960-61 | 37.83 | 35.75 | 33.12 | 39.54 | 28.69 | 28.39 |
| 1961-62 | 38.84 | 39.30 | 31.96 | 34.00 | 29.78 | 28.19 |
| 1962-63 | 38.46 | 38.83 | 29.34 | 36.31 | 26.11 | 28.16 |
| 1963-64 | 43.24 | 56.48 | 34.29 | 41.68 | 42.12 | 30.78 |
| 1964-65 | 53.06 | 51.44 | 54.90 | 59.65 | 45.96 | 32.13 |
| 1965-66 | 62.60 | 72.59 | 37.74 | 51.00 | 56.00 | 34.31 |
| 1966-67 | 78.47 | 100.34 | 72.15 | 66.21 | 73.39 | 37.58 |
| 1967-68 | 77.17 | 72.29 | 55.11 | 55.54 | 53.04 | 45.98 |
| 1968-69 | 79.50 | 72.78 | 55.18 | 73.28 | 47.65 | 50.79 |
| Average | 54.73 | 57.61 | 43.40 | 49.19 | 43.36 | 34.51 |
| Adjusted base | 37.80 | 39.79 | 29.97 | 33.97 | 29.94 | 23.83 |
| Estimated for 1969-70 | 82.84 | 87.20 | 65.68 | 74.44 | 65.62 | 52.22 |

### (c) *Parity between Prices Received of the Farm Products and Prices Paid for Farm Inputs*

Another important parity relationship is that between the product prices received by the farmers and prices paid by them for farm inputs. For computing the prices paid index, prices of major farm inputs were considered for the base period as well as for the current year. And, a composite index was constructed with appropriate weights for different input items. Data regarding agricultural wages, bullock prices and seed prices were taken from the statistical abstracts of the Punjab. Index of price of steel manufactures was obtained from the *Reserve Bank of India Bulletin*. Cost of irrigation equipments was obtained from a few cultivators and verified with the local private Engineering Workshop in Ludhiana City. Data on fertilizer prices were supplied by the Punjab State Co-operative Supply and Marketing Federation. Rates of rent and land revenues were taken from the Farm Accounts of the Punjab. Weights were assigned to each of these items on the basis of the parity index survey of 1962-63, by the Advisory Board of Economic Enquiry, Punjab. Table VI presents a comparison of price indices of farm inputs used during 1952-53 and 1968-69. The table indicates that the farm

TABLE VI—COMPARISON OF PRICES OF INPUTS USED FOR WHEAT PRODUCTION IN 1952-53 WITH THAT OF 1968-69

| | Weights* 1962-63 | Farm inputs 1952-53 | | 1968-69 | |
|---|---|---|---|---|---|
| | | Cost Rs. | Index | Cost Rs. | Index |
| Agricultural wages (worker) | 11.6 | 2.07 | 100 | 5.72 | 276.33 |
| Bullock prices (animal) | 28.9 | 477.94 | 100 | 1,108 | 231.82 |
| Seed prices (quintal) | 15.8 | 37.84 | 100 | 79.50 | 210.10 |
| Steel manufactures (index) | 14.5 | — | 100 | — | 211.80 |
| Irrigation equipment (set) | 14.0 | 1,100 | 100 | 3,150 | 286.36 |
| Fertilizers (index) | 3.7 | — | 100 | — | 170.33 |
| Rent (acre) | 6.7 | 105.02 | 100 | 277.96** | 264.67 |
| Land revenue (acre) | 4.8 | 3.07 | 100 | 3.75** | 122.15 |
| | 100 | — | — | — | 232.84 |

*Based on the Board of Economic Enquiry, Punjab, Parity Index Survey, 1962-63.
**Farm Accounts, Punjab.

cost index rose to 232.84 in 1968-69 over the 1952-53 base. The wheat prices index increased to 210 in the same period with a parity ratio 90.19. On this basis, the parity price for wheat in the year 1968-69 works out to be Rs. 88.14. The projected parity price for 1969-70 crop, estimated on the assumption that cost of cultivation would increase at the average of the last 13 years, works out to be Rs. 91.27 per quintal. Similarly, for other crops parity prices have been estimated at Rs. 101.52 for gram, Rs. 76.02 for maize, Rs. 69.38 for bajra, Rs. 66.75 for barley and Rs. 64.70 for rice (paddy).

However, these prices establish parity with farm inputs alone and do not take into account changes in prices paid for items of farm family consumption. Hence a composite weighted index of prices paid was constructed for farm inputs as well as for family expenditure.

*(d) Parity of Farm Prices with Prices Paid*

Table VII gives the composite index of prices paid for 1968-69 for Punjab.

TABLE VII—COMPOSITE INDEX OF FARM INPUTS AND FAMILY EXPENDITURE, PUNJAB

| Items | Weights* used | Index of prices paid | |
|---|---|---|---|
| | | 1952-53 | 1968-69 |
| Farm inputs | 41.2 | 100 | 232.84 |
| Family expenditure | 58.8 | 100 | 191.54 |
| Composite index | 100 | 100 | 208.56 |

*Weights are based on the Board of Economic Enquiry, Punjab, Parity Index Survey, 1962-63.

The composite index of prices paid for 1968-69 worked out to be 208.56. Using this index, parity ratios of prices received and prices paid for major agricultural commodities, were obtained as under :

| Commodity | 1969-70 parity prices (Rs./Qtl.) |
|---|---|
| Wheat | 81.51 |
| Gram | 90.56 |
| Maize | 67.80 |
| Bajra | 61.69 |
| Barley | 59.54 |
| Rice | 57.70 |

These estimates of parity prices are slightly lower than those in Table VI. This was because of the fact that the composite index of prices paid was lower than the single index of farm input prices, as the family expenditure index rose comparatively less rapidly during this period.

Besides being a simpler tool, this approach has the advantage that the price ratio becomes almost a cost of production standard because the price received for individual commodities is compared with prices paid for all items including

family consumption and weighted according to quantities used. Further it has the appeal of fairness and the merit of reflecting in some degree the alternatives and substitutes that might enter the consumption and input patterns over time. Although it is often difficult and may not even be appreciated some time to use parity ratios literally as programme guides for price policy, yet the parity yardstick is capable of indicating needed adjustment in keeping with the drive for increasing production

*Average of Different Approaches*

Table VIII presents a summary of parity prices based on different approaches. The figures show that no single approach provides a consistently high or low parity price for all commodities. Whereas average parity gives highest price for bajra, parity with adjusted base provides highest price for barley. The parity with cost of cultivation puts wheat, gram, maize and rice in advantageous position. This goes to prove that no single approach can be taken as an adequate criterion for fixing of agricultural commodity prices. However, this provides a range within which prices might be located in order to satisfy the norms of equity as well as the forces of supply and demand.

TABLE VIII—DIFFERENT ESTIMATES OF PARITY PRICES FOR SELECTED AGRICULTURAL COMMODITIES : 1969-70

| | Parity with 1952 base fixed | Parity with ten-year average as base | Parity with adjusted base | Parity with price of inputs (base 1952-53) | Parity with prices paid inputs plus consumption (base 1952-53) | Average of parities |
|---|---|---|---|---|---|---|
| Wheat | 82.93 | 76.82 | 82.84 | 91.27 | 81.51 | 83.07 |
| Gram | 92.15 | 80.83 | 87.20 | 101.52 | 90.56 | 90.45 |
| Maize | 69.01 | 60.91 | 65.68 | 76.02 | 67.80 | 67.88 |
| Bajra | 62.79 | 69.46 | 74.44 | 69.38 | 61.69 | 67.55 |
| Rice (paddy) | 58.73 | 48.37 | 52.22 | 64.70 | 57.70 | 56.34 |
| Barley | 60.55 | 60.87 | 65.62 | 66.75 | 59.54 | 62.67 |

Average of all these parity price calculations can form a base to consider the level of support prices and any price within this range, which might suit some social and/or political objectives can be considered a rational price. The averages in the case of these six commodities in Punjab work out to be as follows :

| | 1968-69 | 1969-70 |
|---|---|---|
| Wheat | 78.81 | 83.07 |
| Gram | 86.04 | 90.45 |
| Barley | 65.29 | 62.67 |
| Maize | 65.30 | 67.88 |
| Bajra | 60.27 | 67.55 |
| Rice | 53.69 | 56.34 |

These estimates of parity prices, however, include an element of bias due to difference in absolute bases for costs and returns. A given index increase or decrease on a smaller base does not equate with the same on a larger base. It is, therefore, essential to adjust these parities (increase/decrease in parity prices) with variable costs-gross returns ratio.[3] An example will illustrate in respect of maize crop.

| | Base period 1968-69 | Current period 1969-70 (Average of parities) |
|---|---|---|
| Price | Rs. 61.60 | Rs. 67·88 |
| Per cent increase (index) | 109.7 | |
| Variable costs | Rs. 632 | |
| Gross returns | Rs. 1,079 | |
| Cost-returns ratio | 2:3 | |
| Deflated index | (100 + 9.7 2/3) =106.5 | |
| Adjusted parity price | 61.60 × 106.5=66.03 | |

On this basis, the adjusted parity prices for support purchases may be:

| | 1968-69 | 1969-70 |
|---|---|---|
| Wheat | Rs. 77.50 | Rs. 78.97 |
| Gram .. .. .. .. | Rs. 76.00 | Rs. 83.60 |
| Maize .. .. .. .. | Rs. 61.60 | Rs. 66.03 |
| Bajra .. .. .. .. | Rs. 59.40 | Rs. 63.44 |
| Paddy .. .. .. .. | Rs. 49.90 | Rs. 53.00 |
| Barley .. .. .. .. | Rs. 54.94 | Rs. 57.20 |

3. These ratios were taken from the Package of Practices Recommended for *Rabi* and *Kharif* Crops by the Punjab Agricultural University, Ludhiana which are reproduced in Table IX.

TABLE IX—VARIABLE CASH EXPENSES—GROSS RETURNS RATIOS FOR SELECTED COMMODITIES

| | Variable costs per acre (Rs.) | Gross returns per acre (Rs.) | Variable costs-returns ratio |
|---|---|---|---|
| Wheat | 418.07 | 1,520.60 | 1: 3.6 |
| Gram | 150.00 | 524.00 | 1: 3.4 |
| Maize | 580.09 | 1,031.50 | 2: 3 |
| Barley | 203.54 | 727.00 | 1: 3.6 |
| Paddy | 593.53 | 1,072.50 | 1: 2 |
| Bajra | 364.52 | 833.75 | 1: 2 |

*Source:* Package of Practices Recommended for *Kharif* and *Rabi* Crops, 1968-69, Punjab Agricultural University, Ludhiana.

The variable costs and gross returns have been taken for high-yielding varieties at improved level of production technology because the whole purpose and emphasis of support prices is to introduce and accelerate the pace of adoption of improved technology. Variable costs have been considered because the major fluctuations in input prices take place in this group and these costs affect the farm decisions a great deal. Gross returns have been taken because the prices immediately and directly affect these returns and they are very obvious to the farmer. If at all production decisions respond to changes in prices, they do so via impact on gross returns. It may, however, be added that the parity price approach should not be used to inflate the prices of farm products. These provide the ceiling and the objective of price policy should be to stabilize farm prices and to keep them within reasonable limits to provide an element of stability to the general price level in the economy. Also we wish to state that we are aware of the limitation of the data used in this analysis in respect of its reliability and adequacy, yet we hope this analysis can be helpful in price policy decisions till more precise analyses become available to the policy makers.