PART III

RESPONSE OF AGRICULTURE TO PRICES
CHAPTER VII

PRICES RECEIVED BY FARMERS

In Section I we argued that an imbalance in the food sector unleashes an unstable inflationary process. But the question was discussed without reference to how agriculture itself responds to increasing prices. A positive response would bring about an element of stability into an otherwise unstable process. Section III is devoted to examine the nature and extent of such response and factors governing it. Our main reference, as before, shall be to India.

The question of price responsiveness of the farmers is very important to the policy-maker. If the response is positive, he faces the serious problem of reconciling the interest of the producers and consumers. The price level would have to be such that on the one hand it induces producers to produce more and enables them to increase capital formation at the farm, and on the other it achieves the required level of savings in the rest of the economy and safeguards the consumer's standard of living. It is, therefore, imperative to know the factors governing farmers' response.

The very first question that arises here is how far the rising prices reach the farmers. The present chapter
is devoted to this question. The next question, farmers' response as such, has several facets - his response in terms of aggregate production, his response in terms of crop-patterns and his response in terms of marketable surplus. Chapter VIII is devoted to the first and second of these facets and Chapter IX to the last.

It is only to the prices that farmers actually get that they will respond to, if at all. This issue has been approached in two ways. First, we may inquire into producers' share in the wholesale price at any given time or given the prices. Secondly, we may ask whether any given rate of increase in wholesale price or retail price in the competitive market is associated with a greater than, equal, or less than proportionate increase in the farmers' price. If there is a more than proportionate increase in farmers' price, his share in the wholesale price should increase. The second question is of great consequence to inflationary process. However, before we go into it, we may as well know the extent of producers' share, without reference to the impact on it of a price rise in the retail or wholesale market.

A. Producers' Share in Consumer's Price

The factors reducing producers' share in the price - such as, bulk of sales at the village level, multiplicity of
marketing functionaries, and malpractices at the assembling markets - are too well known to be detailed here. We are mainly interested in the estimates of producer's share.

Studies of price-spread, it must be noted, are riddled with many difficulties like varieties of market charges, modes of sale, market facilities and nature of markets, and absence of proper facilities for grading leading to difficulties in comparison of quality.

In spite of these difficulties, several attempts have been made in this respect. We may note here the attempt made by the Economic and Statistical Adviser, Ministry of Food and Agriculture, in respect of major foodgrains - rice, wheat and jowar. This study determines the producers' share by deducting the charges borne by producers from the primary wholesale price. Gross margins of intermediaries are determined by comparing prices of the same variety of the commodity at different levels of marketing at a particular point of time. Marketing costs like weighment charges, market fees and commission for brokers are deducted from gross margins to arrive at traders' net margin of profits.

There is also another method, which involves following a

1. See 'Agricultural Policy in India', (memographed brochure), Economic and Statistical Adviser, Ministry of Food and Agriculture, Government of India, New Delhi 1963, Chapter VI, 'Price Spread'.

---
particular consignment of commodity through different stages, right from the producer to the primary wholesale market. However, this method is more difficult in practice, though it may appear more satisfactory. The different consignments may get mixed up, combined and sorted out in the intermediate stages.

According to this study, which is confined to selected market channels, producer's percentage share in the price of rice (in December, 1962) was found to be: Bihar 90.7, Madras 84.5, West Bengal 80.0, Madhya Pradesh 77.2, Uttar Pradesh 76.3, Andhra Pradesh 75.4, Maharashtra 74.8 and Mysore 72.3. In the case of wheat, it was (in April, 1962) 84.1 in Rajasthan, 82.8 in Punjab - Delhi, and 81.3 in U.P. In the case of jowar, it was (in September, 1962) 84.9 in M.P., 84.8 in Andhra Pradesh, and 81.2 in Maharashtra. Thus producer's share is in all cases above 70 per cent, and above 75 percent in all cases except one. In 9 cases out of 14, the share is 80 per cent and above. This is not a disappointing picture, especially in view of the fact that producer's share accounted for only about 60 to 70 per cent of consumer's price in the pre-war period. The improvement

---

2. Ibid. p.112.
in the position has been mainly due to regulation of marketing practices, grading and standardisation of produce, introduction of standard weights and measures and increased transport facilities.

There is considerable variation in the share of intermediaries - millers/wholesalers and retailers, as well as in the share of marketing costs. The combined margin of wholesalers and retailers is even negative in one case (-2.7 per cent) and the highest percentage share is seen in respect of rice in Maharashtra (22.0 per cent). The cost of marketing has varied from 3.2 per cent for rice in Maharashtra to 14.7 per cent in Madras, also for rice. These variations obviously depend on the nature and location of markets.

Economic and Statistical Adviser's Study also touched upon seasonal variations in producers' share. The study pertains to rice in Andhra Pradesh and Madras, and to the year 1962. The study showed that producers' prices touched the lowest level in December in Andhra Pradesh and in November in Madras, which happen to be the months of peak marketing for rice. Producers' prices were at the peak in July-August in Andhra Pradesh, and in June-August in Madras. June-August is the lean season for the crop, when farmers do not have significant disposable stocks. It is not only the absolute prices, but even the percentage share of producers
in consumer's price was highest in the lean months and lowest in the peak season, in both the states.

There are now several indications to show that marketing structure has improved in favour of the agriculturist. Marketing legislation has improved market efficiency, introducing correct weighments, rationalizing the systems of sale and reducing market charges. We have already referred to the improvement that has taken place in the producers' share of the market. Direct evidence of reduction in market charges is available, indicating that marketing is less costly now than before. The Directorate of Marketing and Inspection studied data collected from 496 market committees during 1961-62, to assess the extent of reduction in market charges. Taking all charges together (commission, weighment, Hamali, Brokerage, charity and unauthorized deductions), they amounted to Rs. 3.99 per Rs. 100 worth of produce during the pre-regulation period; this figure was brought down to 2.05 during the post regulation period. This means a saving of 1.94 per Rs. 100 worth of produce, and the percentage of saving to pre-regulation charges amounts to 48.8.

One of the important effects of regulation of markets has been an increase in the proportion of market arrivals brought in Regulated Markets by growers themselves. A study of 167 regulated markets in 1959-60, by the Directorate of Marketing and Inspection, revealed this share to be 65 per cent. The adhoc sub-committee appointed by the then Government of Hyderabad in 1954 also reported that whereas this share was about 20 per cent in the pre-regulation period, it varied between 50 and 95 per cent in different markets in the post-regulation period.

In majority of the markets, open auction system has been introduced and in some markets prices are settled by open agreement. This means that farmers are assured of market prices and cheating is eliminated, atleast as far as regulated markets are concerned.

B. Change in Farm Prices

How we may come to the question of how far farm prices respond to rising wholesale prices. It is easy to see that, theoretically, a given proportionate change in wholesale or retail price will mean a greater proportionate change in farm prices.
prices, given the cost of marketing and the percentage mark-up. This should mean that in an inflationary process the highest price rise (proportionately) will be at the farm level, followed by wholesale price and the retail price. To make it more clear, we may express the relationship in algebraic form:

\[ P_w = (P_f + C) (1 + m_w) \]  .. (1)

or

\[ P_f = \frac{P_w}{1 + m_w} - C \]  .. (1a)

where \( P_w \) is price at the wholesale level, \( P_f \) is price at the farm level and \( C \) is market costs fixed in absolute terms per unit of produce (such as storage, transport, and processing), and \( m_w \) is wholesalers' percentage mark-up.

There are, however, two possibilities going against a proportionately greater rise in farm prices than in wholesale prices. One is that \( C \) or service charges may not be

fixed, but may increase with rising labour or material costs. If they increase proportionately with wholesale prices, farm prices will increase equally proportionately, provided the mark-up is fixed. The second possibility is that wholesalers or village traders would like to increase their mark-ups with rising prices. Whether they can do this or how far they can do this depends on the degree of dependence of farmers on traders, or on the monopolistic conditions facing the farmer. In case the mark-up also increases, assuming $C$ is increasing in the same proportion as wholesale prices, farm prices will increase nevertheless, though less than proportionately with the wholesale prices. The mark-up would have to increase by much greater proportion than the rise in wholesale prices to keep farm prices constant; the needed increase in mark-up will be greater, greater the rise in wholesale prices. If we rule out great increases in mark-ups as improbable, it

7. Cohen has indicated that some of the increase in demand as incomes rise will be absorbed by higher marketing costs. Food may have to be produced on more distant lands leading to higher transport costs; or, cost of distribution itself may rise. Cf. E.L. Cohen, op.cit., p.130.

8. To illustrate: Assume that to start with $P_w = 100$, $C = 20$ and $m_w = 1/4$, so that $P_f = 60$. Suppose both $I_w$ and $C$ rise by 20 per cent, so that they are now equal to 120 and 24 respectively. For $P_f$ to remain constant at 60, $m_w$ will have to be 3/7, that is, it will have to increase by 71 per cent. If $P_w$ and $C$ rise by 25 per cent, $m_w$ will have to be 8/17, that is, increase by 88.2 per cent, to keep $P_f = 60$. 
would mean what even if the two possibilities are allowed for, farm prices would increase, though less than proportionately with the rise in wholesale prices.

We may examine the Indian evidence to see how far farm prices are responding to annual average of wholesale prices. Table 15 presents Index Numbers of Harvest Prices published by the Directorate of Economics and Statistics and also the Index Numbers of Wholesale Prices compiled by the Office of Economic Adviser to Government of India. The former are not exactly the prices received by farmers as such, but are compiled on the basis of wholesale prices of principal crops as reported by branches of the State Bank of India from selected assembling centres during the prescribed harvest period of 6 to 8 weeks. The two sets of series are not strictly comparable, since they are compiled by different agencies and there is difference in the methods of compilation, and also in the number of markets covered. However, we can use these series for a broad comparison of trends, though we cannot correlate the two sets of indexes for every year. We have selected here the prices of foodgrains (cereals and pulses), raw cotton and groundnut. Linear trend equations are fitted to 3-year moving averages of each series separately and the results are given in the last column in Table 16 itself. All the trend co-efficients
Table 13: Harvest and Wholesale Prices (1952-53 = 100)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Foodgrains</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harvest</td>
<td>90.8</td>
<td>70.4</td>
<td>61.8</td>
<td>102.3</td>
<td>103.8</td>
<td>105.6</td>
<td>105.2</td>
<td>103.6</td>
<td>110.2</td>
<td></td>
<td>( Y = 84.5 + 3.2 X )</td>
</tr>
<tr>
<td>Wholesales</td>
<td>96.9</td>
<td>76.2</td>
<td>73.4</td>
<td>93.3</td>
<td>97.6</td>
<td>106.4</td>
<td>102.2</td>
<td>102.0</td>
<td>100.2</td>
<td>105.8</td>
<td>( Y = 75.2 + 2.5 X )</td>
</tr>
<tr>
<td>B: Cotton-Raw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harvest</td>
<td>110.4</td>
<td>94.5</td>
<td>102.9</td>
<td>119.6</td>
<td>114.4</td>
<td>110.1</td>
<td>130.3</td>
<td>131.3</td>
<td>130.3</td>
<td>138.5</td>
<td>( Y = 99.2 + 4.1 X )</td>
</tr>
<tr>
<td>Wholesales</td>
<td>104.0</td>
<td>102.0</td>
<td>97.0</td>
<td>111.0</td>
<td>106.0</td>
<td>99.0</td>
<td>106.0</td>
<td>112.0</td>
<td>109.0</td>
<td>113.0</td>
<td>( Y = 100.7 + 1.1 X )</td>
</tr>
<tr>
<td>C: Groundnut</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harvest</td>
<td>103.0</td>
<td>63.4</td>
<td>76.0</td>
<td>100.2</td>
<td>95.2</td>
<td>102.6</td>
<td>109.4</td>
<td>123.3</td>
<td>134.6</td>
<td>133.6</td>
<td>( Y = 76.2 + 6.1 X )</td>
</tr>
<tr>
<td>Wholesales</td>
<td>127.0</td>
<td>82.0</td>
<td>73.0</td>
<td>111.0</td>
<td>106.0</td>
<td>117.0</td>
<td>131.0</td>
<td>146.0</td>
<td>155.0</td>
<td>140.0</td>
<td>( Y = 95.0 + 5.5 X )</td>
</tr>
</tbody>
</table>

*Fitted to 3-year moving averages. Year \( X = 0 \) is the average of 1953-54 and 1954-55. Trend co-efficients in all the equations are statistically significant.

Sources:
are statistically highly significant. Comparing the trend co-efficients of harvests prices and wholesale prices for each of the three commodities, we find that in all the three cases, the trend co-efficient of harvest prices is higher than that of wholesale prices. This means that harvest prices have been rising faster than the wholesale prices. However, too great a significance cannot be attached to this result, considering the limited comparability of the two sets of data.

An alternative analysis is provided by Thingalaya where he takes averages of monthly wholesale price indices during the harvest period and the annual wholesale price indices. By fitting linear trend equations to their 3-year moving averages, he finds that the two were rising at an equal rate. This study pertains to only one commodity, viz., rice, and the period selected is 1961-62 to 1963-64.

We have also tried the same method below in respect of another important commodity, viz., wheat, but in a different way. Instead of fitting trend equations separately to the two series, we have regressed the average of wholesale

---

price of wheat during the April-June quarter (when substantial part of market arrivals from villages take place) on the average wholesale price during the preceding year. The data are presented below in Table 16.

The following equation was obtained from the data:

\[
\log Y = -0.134812 + 1.062010 \log X
\]

Equation (2)

where \( Y \) is the April-June average of wholesale price of wheat and \( X \) is the average wholesale price of wheat during the preceding year. The equation shows that the wholesale prices during peak marketing season increase (or decrease) by 1.062 per cent following a one per cent increase (or decrease) in the wholesale prices during the preceding year. The change in the former is only a little more than proportionate. Though the farmer does not gain by the rise in prices during the same year, he gains by it after the next harvest, that is, he benefits with a lag of one year.

On the whole, therefore, one may say that increasing prices reach the farmers, though there may be a lag, and the benefit is broadly proportionate, as seen from Thingalaya's study and also from Equation (2). It should
Table 16: Wholesale Prices of Wheat (Index Numbers)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of April-June</td>
<td>96</td>
<td>92</td>
<td>78</td>
<td>61</td>
<td>80</td>
</tr>
<tr>
<td>Average of Preceding Year</td>
<td>94</td>
<td>100</td>
<td>93</td>
<td>75</td>
<td>72</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of April-June</td>
<td>91</td>
<td>88</td>
<td>93</td>
<td>88</td>
<td>87</td>
</tr>
<tr>
<td>Average of Preceding Year</td>
<td>88</td>
<td>88</td>
<td>105</td>
<td>96</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of April-June</td>
<td>89</td>
<td>88</td>
<td>112</td>
<td>134</td>
<td>138</td>
</tr>
<tr>
<td>Average of Preceding Year</td>
<td>91</td>
<td>90</td>
<td>99</td>
<td>130</td>
<td>138</td>
</tr>
</tbody>
</table>

be noted, however, that evidence presented here is indirect, as trends in prices actually received by farmers are not compared with trends in wholesale prices. In the absence of adequate data in respect of the former, the evidence presented here can be hoped to be only a fair approximation to reality concerning farmers' gain. But it is also strengthened further by the fact that since the war, there is reason to believe that farmers' share in consumers' price must have increased.