

Has the Farmer Benefited from High Prices?

A Comparison of Trends in Harvest and Annual Prices

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The behaviour of agricultural prices during the last decade reveals in retrospect the many imponderables inherent in our economic life and also perhaps the limitations of planning in a mixed economy.

Agricultural prices have shown large fluctuations during many of these years. They moved down during the First Plan, leading to the depression of 1955-56. The Second Plan, which began with agricultural prices still ruling at relatively low levels, saw considerable rise in them towards the end. The price rise has been accelerated during the Third Plan with prices of most agricultural commodities reaching all-time high levels during the third year of the Plan.

It is argued sometimes that rise in agricultural prices measured by annual average prices does not represent the price situation faced by the farmers in the country. Most of the farmers, their ability to hold stocks being poor, dispose of] their produce immediately after the harvest when the rush of supplies to the market results in low prices. And once the produce leaves the farm, whatever rise in price occurs does not benefit the farmer.

The price that really matters to the farmers is thus the harvest price. Therefore, it is pertinent to examine whether the level of harvest prices has risen along with the rising trend of agricultural prices during the last few years,

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A STATISTICAL analysis of the trends in harvest prices and average annual prices is of considerable practical importance. It will enable us to judge whether the inflationary trend prevailing in the economy, as indicated by the rise in the annual average of wholesale prices, has any impact on the level of harvest prices. If the former has not exerted any influence on the latter, it may be said that the rising prices have not favoured the producer. And this may make those small farmers who sell their produce immediately after the harvest (at relatively low prices) and buy later (at high market prices) really worse off. On the other hand, if the level of harvest prices indicates a rising trend along with the annual wholesale prices of agricultural commodities, the farmers' price position would be determined by the relative rates of rise of the two sets of price.

A comparative analysis of the trends in the annual average prices and the harvest prices during the last 13 years 1951-52 to 1963-64 is made here by fitting linear trend equations using the Least Squares Method. Only one commodity — rice is selected for this purpose.

The annual price indices of rice are obtained from the Index Numbers of Wholesale Prices (revised series) compiled by the Office of the Economic Adviser to the Government of India. As for harvest prices, there are two types of price series, both published by the Directorate of Economics and Statistics of the Ministry of Food and Agriculture. Of the two, the farm (harvest) prices broadly represent the prices received by the farmers as they

are defined as "the average wholesale price at which the commodity is disposed off by the producer to the trader at the village site during the specified harvest period"¹ These price data which are available in the form of State averages cover only a short period. And the inadequacy arising out of their non-comparability over time and space lessens their usefulness considerably.

The index numbers of harvest prices are the other set of price data available. They are based on the wholesale price quotations collected by the branches of the State Bank of India from about 104 market centres relating to a few principal crops during the harvesting season. The harvest Period of the agricultural year 1938-39 is the base for this series. In a recent publication,- the Directorate has presented this price data, converting the base into the harvest period of 1952-53, The long-term trends in harvest prices are analysed in this study by fitting linear trend equations to the 3-year moving averages of the harvest price indices for the period 1953-54 to 1961-62. The trend equation obtained by them for the harvest price of rice is : $Y = 864.5 + 4.4x$. The value of the coefficient TV indicates that the harvest prices of rice have been rising at an annual rate of 4.4 per cent during the period studied."

To compare this trend with the trend in the annual average wholesale price of rice, we have fitted a linear trend equation to the 3-year moving averages of the annual price indices of rice for the same period. The regression equation works out to be

$$Y = 85.93 + 3.957x \\ (0.816)$$

A comparison of the two trend lines reveals that during the nine years considered, the harvest prices of rice have been rising at a faster rate (4.4 or 4.95 per cent per annum) than the average annual prices (3.957 per cent per annum). The remarkable inference that may be deduced from this comparison is that the harvest prices of rice have been rising faster than the rate of use in annual average prices! This certainly casts some doubts regarding the efficacy of the statistical measures employed. However, it is not strictly the statistical measures that are a fault, but the non-comparability of the two sets of prices. The differences in the methods of compilation and the number and nature of markets from which price quotations are collected are too important to be ignored. Hence the differential rates of rise recorded by these two sets of prices cannot be accepted, *prima facie*, as an indicator of the relative rise in harvest price of rice.

Alternative Analysis

An alternative method has been adopted, therefore, to make a comparative analysis of the trends in harvest and annual wholesale prices of rice. Instead of the harvest price indices, we may use the averages of the monthly wholesale price indices pertaining to the harvest period. Rice in India is grown under different soil-climate complexes and thus has different harvesting periods in different parts of the country. And again as it

is grown more than once in a year in many of the rice growing regions, there is more than one harvesting period in a year. But of the three crops grown, only the autumn and winter crops are important and broadly their harvest periods fall within the five months from September to January.⁴ This has been substantiated by a study of the seasonality of rice prices.⁵ However, a period of five months is a long period compared with the harvest period considered in the compilation of the harvest price indices, which is only six to eight weeks. In between these two extremes, we have selected, somewhat arbitrarily, the three months December, January and February, to represent the harvest period for rice. By a close observation of the monthly indices of wholesale prices of rice during the last 14 years (see table 1), it was found that generally prices remain low during these three months compared to the other months in the year. Therefore, a simple arithmetic average of the three monthly price indices is calculated to represent the "harvest period price" of rice in each year. These prices are obviously lower than the annual average prices during all the years.

The differences between these "harvest period price" indices and the harvest prices of the Directorate may be noted. Apart from the differences

in the base period and the length of the harvest period, there is one major difference. The harvest price index is calculated as a weighted geometric average of the price relatives of rice from different States, the weights being the current year's production in different States. Our "harvest period price" index is a simple arithmetic mean of 43 price quotations drawn from 43 markets in all of the rice growing States.

Comparison of the Two Indices

The similarities between the "harvest period price" indices and the annual price indices may also be noted before we proceed with the comparative analysis. Both have the same base, same price quotations from the same markets and the same method of compilation. The comparability of these two price indices may enable us to obtain better results than that, obtained by the earlier comparison.

Table 2 provides the annual price indices and the "harvest period price" indices of rice from 1951-52 to 1963-64. Linear trend lines are fitted to the 3-year moving averages of the annual and "harvest periods prices" to estimate the rates of increase of the respective price series. The trend equations obtained are :

$$\begin{aligned} \text{Annual Average Prices} & Y = 100.09 \\ & + 2.11 X (0.67) \end{aligned}$$

$$\begin{aligned} \text{"Harvest Period Prices"} & \dots Y = 95.18 \\ & + 2.22 X (0.54) \end{aligned}$$

It is interesting to note that the "harvest period prices" have been rising at a rate equal to that of the annual average prices of rice during 1951-52 to 1963-64. The earlier comparison had given the impression of harvest prices outstripping the rise in annual prices. This would lead one to the erroneous conclusion that during the last 13 years the margin between harvest prices and annual average prices has tended to be narrowed down considerably. The present comparison, on the other hand, yields a result which is more moderate in its implications and perhaps nearer to reality than the former. It indicates that the rise in the "harvest period, prices" of rice has kept pace with the rising trend in its annual average prices. A simpler inference readily acceptable would be that the price situation of the producer has not deteriorated during the last decade when almost all agricultural prices were moving in the upward direction. We may hasten to add that this is only an inference, deduced from the observation of only one agricultural commodity and is too far from a generalization.

It is not difficult to show that the relationship between the "harvest period price" and the annual average price has not deteriorated during the period studied. This can be examined

Table J : Monthly Index Numbers of Wholesale Prices of Rice

(Base: 1952-53 - 100)

Year	April	May	June	July	August	September	October	November	December	January	February	March
1951-52	105	107	110	111	111	109	105	100	99	99	99	97
1952-53	97	101	103	105	104	102	98	98	95	99	99	99
1953-54	99	103	107	112	110	107	103	97	93	90	87	87
1954-55	90	89	88	86	89	90	83	81	74	73	72	72
1955-56	72	74	76	79	81	81	79	78	76	77	79	86
1956-57	92	93	85	97	100	101	100	99	94	93	98	97
1957-58	101	106	107	108	111	108	107	107	102	101	99	100
1958-59	103	106	111	115	118	118	115	108	98	92	92	92
1959-60	95	98	102	109	113	111	112	108	101	102	105	106
1960-61	108	113	114	115	115	114	111	106	102	99	100	101
1961-62	101	103	106	108	110	110	108	106	102	101	102	103
1962-63	106	109	110	112	114	115	115	116	110	108	109	100
1963-64	117	121	124	127	128	131	132	130	122	120	121	122

Source : Office of The Economic Adviser, Government of India,

by expressing the "harvest period price" as a percentage of the annual average price for each year. If the two prices are equal then the ratio between them will be 100. Any figure lower than this indicates the differences between the two prices. This difference, or the differential margin in prices, if we may call it so, has not risen during the last 13 years as can be seen in Table 3.

The average price ratio for the whole period works out to be 93.2 and during 9 out of 13 years, the ratio has remained above this level. Only during three years has it declined below 90.0. And these three years represent the years of low annual average prices. It may be noted from this observation that during the years of low annual prices the harvest prices remain still lower, resulting in a differential price margin of over 10 per cent. Logically the causal relationship may run the other way—annual prices may tend to be low due to the low harvest prices. This may be explained as follows: During a year of bumper crop, the traders who feel the pulse of the market more intelligently than the farmers, and who expect a fall in the annual prices, offer lower prices to the farmers to safeguard their margin¹.

During the years of price rise (due to poor crops), the differential margin is roughly maintained at 5 per cent or so. The harvest prices also rise with the annual prices. A plausible explanation would be that: in view of the shortage of crops the traders tend to offer a little higher price inducing the farmer to part with more of his produce during (the harvest period. This course of action is likely to be taken by them in order to procure large amount of supplies, which they are certain to sell at higher prices during the rest of the year. As a result harvest prices roughly keep pace with the rise in the annual average prices.

However, the simple inference deduced from our analysis is subject to modification due to the limitations of the price data used. The price quotations used for compilation of the price indices are drawn from primary, secondary and terminal markets.⁸ Though the "harvest period price" index is based on price quotations prevailing during the three months considered to be the harvest period, the price quotations may not necessary pertain to rice coming to the market after the current year's harvest. The price quotations in the secondary and

terminal markets are more likely to be the prices relating to the previous year's crop. And usually the prices in the secondary and terminal markets are higher than those in the primary markets. A simple average of these prices thus does not realistically represent the "harvest period price" which is what really matters to the producer.

The "harvest period price" index merely represents the average price of rice prevailing in the country during a particular harvest period. Therefore, the rise in the levels of this price over a period does not mean that, the level of prices received by the producer has risen with the rise in the commodity price level. At the same time it would not be unrealistic to conclude that the level of the "harvest period price" or better the level of the lowest price in each year has risen along with the rise in the annual average price of rice.

Notes:

¹ "Economic Survey of Indian Agriculture, 1959-60", Appendix VI, p 139, Ministry of Food and Agriculture, 1961.

² "Agricultural Price Policy" (mimeograph), February 1963, p 1, Ministry of Food and Agriculture.

³ It is regrettable that the trend equation given by the Directorate is found to be *wrong* and also that the standard error of the regression coefficient is not provided. Using the same data and applying the Least Squares Method, we obtained the trend line as follows:

$$Y = 88.18 + 4.950x \\ (0.197)$$

⁴ "Report on the Marketing of Rice in India". 1955, p 22, Ministry of Food and Agriculture. K Krishnamurthy: "Seasonality in Wholesale Price of Rice" Artha Vijnana, June 1960.

⁶ See, B D Giles: "Agriculture and the Price Mechanism", in "Oxford Studies in Price Mechanism" edited by T Wilson and Andrews, PWS The Clarendon Press, Oxford, 1951.

⁸ For an account of some technical problems connected with price reporting, see Chapter II in "Collection of Agricultural Prices in India—Report of the Enquiry Committee" Chairman, P. N. Thapar, Ministry of Food and Agriculture, 1955

Table 2: Annual and "Harvest Period Price" Indices of Rice

Base 1952-53=100

Year	Annual Prices	3-Year Moving Averages	"Harvest Period Prices"	3-Year Moving Averages
1	2	3	4	5
1951-52	104	-	99	-
1952-53	100	101	98	96
1953-54	100	94	90	87
1954-55	82	86	73	89
1955-56	78	86	77	82
1956-57	97	93	95	91
1957-58	105	102	101	97
1958-59	105	105	94	99
1959-60	105	106	103	99
1960-61	108	106	100	103
1961-62	105	108	102	103
1962-63	111	114	109	110
1963-64	125	-	121	-

Table 3: The Ratio of "Harvest Period Prices" to the Annual Average Prices of Rice

1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58
95.2	98.0	90.0	89.0	98.7	97.9	96.2
1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	
89.5	98.1	92.6	97.1	98.2	95.8	

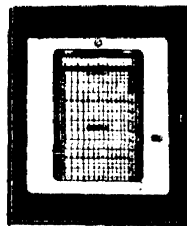
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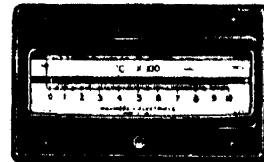
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