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AN ANALYSIS OF EXPORT GROWTH AND EXPORT PRICES OF TURMERIC IN INDIA

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India is the largest producer of turmeric, which accounts for more than 50 per cent of the world trade.[1] The area under turmeric has increased from 55,000 hectares in 1950-51 to 82,000 hectares in 1978-79. There was a continuous decrease in area from 1957-58 to 1960-61 and thereafter it started to show an upward trend, increasing to 82,000 hectares in 1978-79. The total production was 1.47 lakh tonnes of cured rhizomes, permitting an export of 10,278 tonnes. The size of export more than doubled in 1979-80 touching a peak level of 21,514 tonnes, fetching foreign exchange worth of Rs. 16.24 crores.

The data on export of turmeric from India and the FOB prices are given in Table I. Though the export has grown over the years, one disquieting feature is the sharp year-to-year fluctuations though it appeared to have stabilised since 1975-76 and touched a peak in 1979-80. The price trend of turmeric in the export market had not been stable. The export prices had exhibited a much larger variation than the quantity exported. The coefficient of variation in the quantity exported was 49.88, while that of export prices was 70.71. Recognizing the importance of turmeric in the economy, an attempt is made in this paper to study the factors influencing the export of turmeric and to analyse the variations in the export prices of turmeric.

TABLE I—TURMERIC EXPORT FROM INDIA

Year	Quantity exported (tonnes)	Price (FOB in Rs./kg.)
1960-61	2,310	1·12
1965-66	10,403	1·32
1970-71	11,109	3·45
1975-76	11,755	3·58
1976-77	11,796	3·76
1977-78	11,253	7·69
1978-79	10,278	10·73
1979-80	21,514	7·55

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1. M. S. Lakshmanachar, "Marketing of Ginger and Turmeric in India," National Seminar on Ginger and Turmeric, 1980, p. 148.

DATA AND METHODOLOGY

The data on export and export prices of turmeric were taken from the News Letters of Spices Export Promotion Council, Cochin. The data on production and domestic prices were collected from *Agricultural Situation in India.*

Turmeric production in India generally exceeds domestic demand and the surplus finds disposal in the foreign markets. Thus the level of production of turmeric in any one year determines the volume of export in the following year. But the flow of turmeric into the export market depends upon the export price or more precisely upon the export price relative (as a ratio) to domestic price. Larger this ratio more will be exported and vice versa. Furthermore, as a source of foreign exchange, several efforts are taken to encourage turmeric export. It is difficult to identify these measures individually to study their impact on export. However, their collective influence can be measured by the trend in export trade. To catch the trend in export trade, time measured in sequential years is a suitable proxy in the time-series data. Scatter diagrams with each of the three specified variables against the quantity exported showed linear relationships. Hence the following linear function was specified and estimated to study the determinants of export of turmeric and their relative importance:

$$\hat{E}_t = B_0 + B_1 Q_{t-1} + B_2 R_t + B_{3t} + u_t$$

where $\hat{E}_t$ = quantity of turmeric exported (tonnes) in year t,

Q_{t-1} = production of turmeric in tonnes in year t—1,

R_t = ratio of export price (P_E) to domestic price (P_d) in year t, *i.e.*, $\left(\frac{P_E}{P_d}\right)_t$,

t = time in years 1, 2 19,

t_1 = 1961-62,

B_0, B_1, B_2, B_3 are regression coefficients to be estimated,

u_t = regression error term.

Ordinary least squares method was used to estimate the function, with *a priori* expectations of non-negative values for all the regression coefficients.

Cyclical variations in export prices of turmeric were studied to analyse the pattern of price movements.

RESULTS

The estimated linear regression equation for turmeric export is presented below:

$$\hat{E}_t = -\underset{(1189.12)}{5162.43} + \overset{NS}{\underset{(0.0361)}{0.0196}}\, Q_{t-1} + \overset{NS}{\underset{(0.8149)}{0.6417}}\, R_t + \underset{(115.9236)}{247.617^{**}_t}$$

R^2 = 0.6327**

n = 19

N. S.=Not significant.

**Significant at one per cent level.

The value of the coefficient of multiple determination is 0.6327 and statistically significant, indicating that nearly 63 per cent of the variation in the export of turmeric can be explained by the explanatory variables specified,

viz., production lagged by one year, export price relative to domestic price of turmeric and time—a proxy for export promotion measures. It is not surprising that 37 per cent of variation still remains unexplained, because inventory operation, variation in domestic demand and special policies and tariff that have a bearing on export trade are some important variables which are not specified for want of reliable data. Their influence is caught in the value of the intercept, which is — 5162.43 and highly significant. Broadly speaking, the omitted variables have a negative effect on (*i.e.*, retard) the growth of turmeric export.

Among the variables specified, it is important to note that the level of production (Q_{t-1}) and export price of turmeric relative to its domestic price (R_t) are not significant. In this context, it is necessary to point out that an excise duty has been imposed on the export of turmeric since January 20,1979. In spite of this, the price variable R_t remains non-significant.

The coefficient of trend variable 't' is highly significant. As already stated, 't' is a catch-all proxy variable for export promotion measures. Its significant value implies that these measures are fairly successful in promoting turmeric export, with an average annual increase of 247.617 tonnes during the two decades covered by the study. This gains added significance in the context of non-responsiveness of turmeric export to price variables. All the coefficients have the expected positive signs. The negative intercept, in the present context, probably implies that turmeric export from India is non-responsive to the influence of specified explanatory variables until it exceeds the value of 5162.43 tonnes per annum. Even beyond this level, only promotional efforts are more effective determinants of export than domestic production or relative price of turmeric. This result suggests that the constitution of an 'Export Promotion Council' for formulating export-oriented strategies would plausibly yield rich dividends.

Export prices of turmeric for the period from 1960-61 to 1979-80 are presented in Table I. The cyclical pattern of variations in prices when plotted in a graph revealed that the length of the export price cycle varied from three to seven years. The export prices are studied for their relation with the domestic prices. The coefficient of correlation is 0.9473 and this close movement of export and domestic prices of turmeric explains the poor variation in the value of the variable R_t and consequently its non-significant influence on export trade.

CONCLUSION

The results conclusively show the significant influence of promotional efforts on the export of turmeric. They show the advantage of setting up an Export Promotion Council for turmeric. The very high correlation of export prices of turmeric with its domestic prices indicates that the latter is exposed to international trade fluctuations and explains high price uncertainty to farmers, further supported by very high coefficient of variation of prices (70.71). Therefore, some policies of price support to farmers with a view to reduce price uncertainty at farm level are necessary.