An economic analysis of turmeric arrivals and price behaviour in Sangli district of Maharashtra

U.S. MANE, R.B. CHANGULE, P.L. KOLEKAR AND S.H. GHARGE

ABSTRACT
Investigation was carried out during the year 2009-2010. Data were collected for the year 2000-2001 to 2010-2011 from Sangli APMC. Growth rate and trend equation were used for analysis of data. The result revealed that maximum arrival index was 261.22 per cent in the month of March and minimum arrival index 24.78 per cent in the month of October. Price index was maximum 125.45 per cent in the month of September while it was minimum 88.06 per cent in the month of December. It was observed that there was inverse relationship between arrivals and prices of turmeric in Sangli market.

Key words: Turmeric, Prices, Arrivals, Price index, Arrival index

Agriculture is characterized by the wide variation in output. Turmeric subsequently leads to larger variation in market arrivals, fluctuations in market arrivals lead to the price instability of turmeric crop. The wild fluctuations affect the farmer’s capacity of making sustained efforts for increasing production. This fluctuation in prices of agricultural commodity is greatest obstacle in the way of agricultural development. Agricultural arrivals and prices. therefore exercise a dominant influence on agricultural economy of our country.

The price of turmeric assumes great significance for producers as well as consumers point of view. It is said that prices are mirror of economy of the country. The purpose of the present study was to examine the behaviour and pattern of fluctuations in prices and arrivals of turmeric for the study in agriculture produce market committee’s in Sangli district.

METHODOLOGY
The present study has taken into consideration the arrivals and prices of turmeric from APMC of Sangli district for the period of 2000-2001 to 2010-2011. Data were analyzed to achieve the objectives of the study. After compilation of data, functional analysis such as seasonal indices, S.D., C.V. (%), correlation and regression were computed for precision in conclusion. The computation procedure, of these analytical tools is given in the following section.

Growth rate:
The annual trend in the arrivals and prices were worked out by measuring the growth in arrivals and prices of commodities.

The trend equation tried was

\[ Y = a + bt + U_i \]

where,

\[ Y = \text{Yearly arrivals / price} \]
\[ t = \text{Time period} \]
\[ U_i = \text{Random errors} \]

LGR will be worked out using the equation,

\[ \text{Linear growth rate (LGR)} = \frac{b}{y} \times 100 \]

where,

\[ b = \text{Regression coefficient} \]
\[ y = \text{Arithmetic mean} \]

Compound growth rate (CGR):
Compound growth rate will be calculated by using both using exponential curve fit
Exponential curve fit:
\[ Y = a b^t \]
\[ \log (y) = \log (a) + t \log (b) + \log (e^i) \]
\[ Y = A + Bt + U \]

\( b = \text{antilog} B \)

and compound growth rate (CGR) will be calculated as,
\[ \text{CGR} = \text{Antilog} (b-1) \times 100 \]

where,
\[ Y = \text{dependent variable for which growth rate were estimated.} \]
\[ a = \text{Intercept} \]
\[ b = \text{Regression coefficient} \]
\[ t = \text{Time period} \]

Seasonal indices:
To examine the peak slack period, monthly seasonal indices were worked out by simply average method.
\[ \text{Seasonal index} = \frac{\sum X_i}{x} \times 100 \]

where,
\[ X_i = \text{Average of n}^{th} \text{years for the i}^{th} \text{months} \]
\[ \bar{x} = \text{The mean of i}^{th} \text{months for n}^{th} \text{years} \]
\[ \bar{x} = \frac{12}{n-1} \sum X_i \]

The irregular fluctuations were estimated by averaging the figures of data.

Coefficient of variation:
Coefficient of variation is “percentage variation in the mean as the standard deviation being stated as the total variation in the mean.” The coefficient of variations of each market arrivals and prices were worked out for comparing the variability present in market arrivals and prices.
\[ \text{C.V.} = \frac{\text{SD}}{\text{Mean}} \times 100 \]

where,
\[ \text{CV} = \text{Coefficient of variation} \]
\[ \text{SD} = \text{Standard deviation} \]
\[ \text{S.D. is Standard deviation which is the measure of dispersion.} \]

This measure of dispersion was calculated by securing the deviation of each observation from the mean, adding the square dividing by number of (n-1) observations less one and extracting the square root.
\[ \text{S.D.} = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \]

where,
\[ X_i = \text{Arrivals / prices} \]
\[ \bar{x} = \text{Mean of arrivals / prices} \]
\[ n = \text{Number of years / months} \]

Relationship between arrivals and prices:
In order to know the relationship between arrivals (x) and prices (y), the simple linear correlation was estimated by using Karl pearson’s method:
\[ r = \frac{\text{Co - variance (X, Y)}}{\sqrt{\text{Variance (X)}} \times \sqrt{\text{Variance (Y)}}} = \frac{\text{SD. (X) SD. (Y)}}{\text{SD. (X) SD. (Y)}} \]
\[ r = \frac{1}{n-1} \left( \sum (x - \bar{x})(y - \bar{y}) \right) \]
\[ \sqrt{\frac{1}{n-1} \sum (x - \bar{x})^2 \times \frac{1}{n-1} \sum (y - \bar{y})^2} \]

ANALYSIS AND INTERPRETATION
The findings of the present study as well as relevant discussion have been summarized under the following heads:

Trend in arrivals and prices:
Trend in arrivals and prices of turmeric in Sangli market were computed and are presented in Table 1. There was significant and positive growth of arrivals of turmeric in the month of March by 18.81 per cent per annum. It was also observed that there was decline in arrivals in remaining months. As regards the prices, there

<p>| Table 1 : Growth rate of turmeric in Sangli market (2000-2001 to 2010-2011) |
|------------------------|------------------------|------------------------|</p>
<table>
<thead>
<tr>
<th>Months</th>
<th>CGR of arrivals</th>
<th>CGR of prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>12.93*</td>
<td>9.15**</td>
</tr>
<tr>
<td>November</td>
<td>17.76*</td>
<td>10.38**</td>
</tr>
<tr>
<td>December</td>
<td>18.19*</td>
<td>12.69**</td>
</tr>
<tr>
<td>January</td>
<td>2.01</td>
<td>8.84*</td>
</tr>
<tr>
<td>February</td>
<td>13.61**</td>
<td>12.42**</td>
</tr>
<tr>
<td>March</td>
<td>18.81**</td>
<td>12.88*</td>
</tr>
<tr>
<td>April</td>
<td>18.18**</td>
<td>13.43**</td>
</tr>
<tr>
<td>May</td>
<td>12.19**</td>
<td>13.13**</td>
</tr>
<tr>
<td>June</td>
<td>1.91</td>
<td>13.25**</td>
</tr>
<tr>
<td>July</td>
<td>9.28*</td>
<td>13.40**</td>
</tr>
<tr>
<td>August</td>
<td>11.53</td>
<td>14.58**</td>
</tr>
<tr>
<td>September</td>
<td>14.62*</td>
<td>14.92**</td>
</tr>
</tbody>
</table>

* and ** indicate significance of values at P=0.05 and 0.01, respectively.
was substantial significant and positive growth in prices of turmeric in month of September by 14.92 per cent per annum. Similar results were observed by Mane (1979), Inamdar and Diskalkar (1987) and Pothula (1987) with respect to trend of arrivals and prices.

**Peak arrivals and prices and seasonal fluctuations:**

The result of the seasonal indices for arrivals and prices of turmeric in Sangli market are presented in Table 2. The maximum arrival index was in the month of March 261.22 per cent followed by April and May and it was 231.49 and 176.03 per cent and arrival index was minimum in the month October (24.78%). The price index was maximum in the month of September (125.45%). The price index was minimum in the month of December (88.06%). The instability in arrivals ranged from 43.03 to 173.41 per cent in all months, while the instability in prices ranged from 42.69 to 92.89 per cent in all months. Similar results observed by Prasad et al. (1989) and Lohar (1991) with respect to arrival index and price index.

**Relationship between arrivals and prices of turmeric:**

Relationship between arrivals and prices of turmeric are presented in Table 3. It indicates the significant increase in arrival during month of January, February, March and April under study period. Correlation coefficient between arrivals and prices of turmeric was negative and non-significant in Sangli market. The negative sign indicates inverse relationship between arrivals and prices in Sangli market. Similar results were observed by Waiwal (1991) with respect to relationship between arrivals and prices.

**Conclusion:**

The following general conclusion emerged from the present study.

The monthly seasonal indices for turmeric arrivals were higher immediately after harvest in Sangli market. The price indices of turmeric were lower during peak arrival months and vice versa.

**REFERENCES**


