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ORIGINAL ARTICLE

Trend Analysis Of Arrivals And Prices Of Major Agricultural - Commodities In Apmc Pune.

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Abstract:

It is believed that, with the increase in arrivals of agricultural commodity in the market, their prices come down and vice versa . In order to test this hypothesis, an analysis of time series of data of few selected commodities was undertaken . For this study ,the data on arrivals and annual average prices of six important commodities was under taken up. For the study, the data available in annual reports of Agricultural Produce Committee Pune , for the period of 10 years was used. First the data was subjected to Correlation analysis. It showed that there was no negative co relation between annual arrivals and annual current year's average prices of the six agricultural commodities viz Rice, Jawar, Wheat, Jaggery, Potato and Onion. As well, the correlation between annual arrivals and previous year's prices of these six commodities also showed no correlation excepting that in Potato commodity. The positive and significant correlation in respect of Potato might be due to its high demand over the years.

An attempt has also been made to examine the trend in arrival and the average prices of six commodities. For this purpose, Compound Growth Rate (CGR) percentages were calculated. These were as follows

KEYWORDS:

APMC, Arrivals, Annual Average Prices, Compound Growth Rate

INTRODUCTION

The establishment of Agricultural Produce Market Acts in almost all the states of India has helped the producers / sellers of agricultural commodities by way of removing previous weaknesses of agricultural marketing. However, it is well known fact that the price – fluctuations of agricultural commodities are still a common phenomenon due to its seasonal nature of production and the seasonal demand of the commodity. The market information relating to arrivals of produce and its price over a period of time help the farmers to decide on future production plan on their farmers and its marketing schedule. Keeping this in view, a study on marketing trend of both the arrivals and its average prices was undertaken. The following were the objectives of the present study.

Table: Compound Growth Ret of arrivals and prices of selected commoditie in APMC, Pune (200-01 to 2009-10)

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Commodity	Compound Growth Rates (%)	
	For Arrivals	For Average Prices
Rice	13.76	2.28
Jawar	-4.50	27.02
Wheat	0.04	18.50
Jaggery	9.65	16.14
Potato	8.14	14.02
Onion	-2.27	16.95

The table shows that the growth rate in respect of prices are higher than those of arrivals, in respect of Jawar, Wheat, Jaggery, Potato and Onion. The high growth rate in the process of these commodities might be due to their high inflation over the period. Such trend, however was not observed in respect to commodity Rice.

2] OBJECTIVES :

The present study was undertaken to examine the following issues.

I) To know whether there exists correlation between arrivals and prices of the agricultural commodities in the Agricultural Produce Market.
II) To study the trend in respect of arrivals and average prices of the selected important agricultural commodities, over a period of 10 years.

3] METHODOLOGY :

For the study, one APM viz. Pune was selected purposively. This market is situated at the central place of Pune district and fairly represent the district. The data available in Annual Reports of APMC, Pune was used. The data on yearly arrivals of important agricultural commodities and their annual average prices available in the annual report were used. The study is confined to six major commodities of the district . The agricultural commodities selected were Jawar, Rice, Wheat, Jaggery, Potato and Onion. The data used for analysis, pertain to 10 years time – period viz 2000-01 to 2009-10. The statistical techniques used for estimating few selected majors were the following.

I] Correlation Co-efficient

$$\sum xiyi :- (((\sum x)(\sum y)) / n) / \sqrt{\{\sum xi^2 - (\sum x)^2/n\}\ \{\sum yi^2 - (\sum y)^2/n\}}$$

Where ,

r = Correlation co-efficient.
x = Arrivals.
y = Price per qt.

II]Exponential form of equation = y=ab.
Where y=Arrivals / prices
a = constant.
b = trend co-efficient.
t = Time period.

Annual Compound Growth Rate =
C.G.R.(%) = (Antilog of b - 1)*100.

4] ANALYSIS :

At first, the data on arrivals and annual average prices were subjected to elementary statistical analysis. In this, the values of mean, standard deviation (σ) and that of co-efficient of variation (C.V.) were worked out and those are given below in Table 1:

Table 1: Values of Mean, σ and C.V in respect of arrivals and annual average prices of selected Agricultural commodities at Pune APM.

Sr.No.	Commodity		No. of Years	Mean Arrivals in '000'qtls. Prices in qtls	Standard deviation A : qtls in '000' P : qtls	Co-efficient of variation (C.V %)
1.	Rice	A	10	1360	321	23.62
		P	10	1525	262	17.21
2.	Jawar	A	10	295	53	17.95
		P	10	1063	358	33.69
3.	Wheat	A	10	910	150	16.50
		P	10	1353	348	25.71
4.	Jaggery	A	10	398	77	19.48
		P	10	1491	589	39.50
5.	Potato	A	10	965	194	20.12
		P	10	698	240	34.40
6.	Onion	A	10	3204	648	20.24
		P	10	530	198	37.43

A : indicates annual arrivals of the commodity.
P : indicates annual average price of the commodity.
Arrivals are in '000' quintals.
Prices are in Rs /qt.

The results presented in Table : 1 showed that the values of C.Vs. in respect of annual average prices of all commodities excepting that of rice, are much more than the C.Vs. of arrivals of the commodities in the markets. This led to conclude that barring the Rice commodity, the prices of remaining commodities either increased over the years or vary much from year to year. This would be clear, when the estimates of growth rates would be another point that should be noticed that, among the six commodities, C.V.of the Annual average prices of Rice was lowest (17.21 %). This indicates that the Annual average prices of Rice did not vary much as was varied in case of other five commodities.

RELATIONSHIP BETWEEN ARRIVALS AND PRICES

An attempt has been made to see as to whether there exists any relationships between the annual arrivals and the annual average prices. Besides the relationship between the previous years prices and the current years annual arrivals have also been examined. For the purpose, the correlation analysis of the data was carried out and the values of correlation co-efficient thus obtained are presented below in Table : 2.

Table : 2 :- Values of correlation co-efficient.

Sr.No.	Name of the Commodity	Values of Correlation Co-efficient (r)	
		Correlation between	
		Arrivals and Prices of same Year	Arrivals of current year while the Prices of previous Year
1.	Rice	0.4364	0.2692
2.	Jawar	0.3834	0.3416
3.	Wheat	0.5665	0.1890
4.	Jaggery	0.3287	0.0945
5.	Potato	0.2112	0.7734*
6.	Onion	0.2361	0.3772

* indicates that the value is statistically significant at 5%.

The values of correlation co-efficient show that there is no significant relationship between the arrivals and the average prices. It means that the producers seems to have sold their produce in the market what so ever the prices may be the values of ' r ' in respect of crops viz. Rice and Wheat fairly indicative and showed that there is trend in the minds of the farmers to bring the rice and wheat produce as and when the prices were high. As regards, commercial crops viz. Jaggery, Potato and onion, the values of ' r ' were non-significant indicating that the these commodities are being brought in the market. This might also be due to either poor hoarding capacity or absence of storage facilities.

RELATIONSHIPS BETWEEN ARRIVALS AND PREVIOUS YEARS PRICES :

It is always contended that the cultivators always go for growing those crops for which the demand was very high, or the prices were high during the previous year. This situation is observed only in case of potato crop only, as the value of ' r ' in case of this was significant (r=0.7734). In case of rest of the commodities the values of "r" were non significant This clearly showed that the farmers do not take into account the previous years prices of these commodities while planning for growing of crops like Jawar, Rice, Wheat. The value of ' r ' in respect of cash crops like onion was non-significant. However, this ' r ' values being moderately better than those of rice, Jawar, wheat, jiggery. It could therefore be concluded that there is tendency amongst the farmers to take up onion crop only when the prices are better. The low value of ' r ' in respect of Jaggery. (r=0.0945) indicated that the production of this commodity do not depend fully on previous years prices of it.

Table 3 : Linear Growth Rates of Arrivals and Prices of selected commodities in Pune APM (2000 – 2001 to 2009 – 2010)

Agricultural Commodity	Linear Growth Rates of	
	Arrivals %	Prices %
Rice	5.42	-1.73
Jawar	-2.11	10.85
Wheat	1.69	7.85
Jaggery	-4.21	8.30
Potato	3.84	6.88
Onion	-1.24	6.34

The data presented in Table : 3 showed that the growth rates of arrivals Rice is the highest (5.42%) while it is the lowest in case of Jaggery (-4.21%). Further, it was observed that the growth rates of arrivals of Potato and Wheat are positive while those of Jawar, Jaggery and Onion, the growth rates are negative. It could therefore concluded that the commodities like Rice, Wheat and Potato showed increasing arrivals over the 10 years period. While the remaining three commodities Viz. Jawar, Jaggery and Onion did not show such trend as regards the growth rates of Average Price, it was observed that the price-trend in respect of all commodities, excepts the rice, was positive. This suggest that the farmers can bring their produce more and more quantity so as to get the advantage of getting more price for their produce.

Compound Growth Rates (C.G.R.)

In trend analysis of data the estimation of compound growth rates is also done with a view to get more clearer idea of trend of arrivals and prices. This will facilitate the growers of the commodity to plan the production plan for their farms. The compound growth rates (C.G.R) calculated for the commodities under study have been shown in the following Table

Table 4 : Compound Growth Rates of Arrivals and Prices of selected commodities in APMC Pune (2001 – 02 to 2009 – 10)

Commodity	Arrivals		Prices	
	Compound Growth Rate		Compound Growth Rate	
	% C.G.R	R^2	% C.G.R	R^2
Rice	13.76	0.399	2.28	0.064
Jawar	-4.50	0.108	27.05	0.922
Wheat	0.038	3.038	18.50	0.801
Jaggery	9.65	0.393	16.14	0.293
Potato	8.14	0.254	14.02	0.333
Onion	-2.27	0.032	16.95	0.938

The conclusion that can be drown from the data given in Table : 4 are more or less in the same line as is observed from the data on linear growth rates given in Table : 3. However, it may be pointed out again that the C.G.R of arrivals of two commodities Viz. Jawar and onion were negative. This might be because of the low production or tendency of producers to divert the output markets according to their changing decisions on the basis of output or prices.

CONCLUDING REMARKS :

In the APM Pune, out of six agricultural commodities, three agricultural commodities Viz. Wheat, Rice and onion proved positive performance during the study period while remaining 3 commodities Jawar, Jaggery and onion, the arrivals of which showed no positive trend. As against this the price trends were positive and satisfactory for all the six commodities excepting for rice commodity. And thus it can be suggested the producers can think of bringing their produce to avail the benefits of increasing trend of prices.