

Trends in Arrivals and Prices of Groundnut and Cotton in Dharwad Market

S.B.Hosmani*, K.C.Gummagolmath* and P.M.Savadatti**

INTRODUCTION

The marketing of agricultural produce has not received much attention inspite of expansion in output to a large extent. The gradual transformation of subsistence farming into a dynamic agri-business is primarily a techno-economic process. The necessary conditions to speed up such a transformation are improved technology, ready availability of inputs and above all remunerative prices for their produce. Stability in prices plays an important role in the development of agriculture based economy. Unless agricultural marketing is given due importance, no technology would attract the farm producer. The nature of farm products, their yield variations and demand conditions have led to instability in prices of agricultural commodities. The reasonability of farm production has caused seasonal variation in the market prices.

The variations in arrivals and prices of commodities are of two kinds. First related to the fluctuations over time, generally known as temporal variations and the second related to fluctuations over space and is termed as spatial variations.

The study of seasonal variations is considered to be important as it would guide the producer-seller in marketing of his produce. It would also serve as a guide

* Department of Agricultural Economics, UAS, Dharwad

**Reader in Economics, Karnataka University, Dharwad, India

to policy makers to take up policy : since hence present study is an attempt to study the variations in arrivals and prices of groundnut and cotton crop in Dharwad market.

METHODOLOGY

The study was conducted in Dharwad district of Karnataka State. Dharwad market was selected for the study where cotton and groundnut are two important cash crops grown in the area of operation of this market. To evaluate the objectives of the study, the data relating to monthly market arrivals and prices of groundnut and cotton over a period of 12 years (1987-88 to 1998-99) were collected from APMC Dharwad. The data so collected was subjected to the analysis to workout indices, trend and correlation of arrivals and prices.

Analytical Frame Work

The technique employed for analysis of time series data were

- i. Analysis of seasonal factor by 12 (twelve) months centered moving average.
- ii. Analysis of trend factor by regression analysis.
- iii. Analysis of cyclical fluctuations.

Twelve Monthly Centred Moving Average

This is one of the widely accepted methods of analysis of time series data for seasonal variations in prices and arrivals. The twelve month centered moving average comprises of the trend and cyclical components. The seasonal index is then computed by dividing the original series by twelve month centered moving average. For this purpose the following multiplicative model was used.

$$O = T.C.S.I \quad \dots (1)$$

Where,

O	=	Original time series data
T	=	Trend factor
C	=	Cyclical factor
S	=	Seasonal factor
I	=	Irregular factor

The seasonal factor is isolated as

$$S = \frac{O}{M} \quad \dots (2)$$

Where,

M	=	Twelve month centered moving average
---	---	--------------------------------------

Using equations (1) and (2), the seasonal index may be defined as

$$S^* = \frac{O}{M} \times 100$$

Where,

S*	=	Seasonal index
----	---	----------------

Analysis of trend factor by regression analysis

The growth rates of arrivals and prices over the years were estimated by fitting a linear regression equation to the de-randomised yearly data on groundnut and cotton arrivals as well as prices. The econometric model used for the purpose was as given below.

$$Y_t = a + b_t + E_t$$

Where,

Y_t	=	Time series annual data of arrivals and prices
a	=	Intercept
b_t	=	Regression coefficient
t	=	Time period in years (1,2,.....12)
E_t	=	random error

Analysis of Cyclical Fluctuations

The cyclical movements of arrivals and prices were analysed by tabulation as well as graphical technique using the derandomised data of arrivals of prices, as follows.

Since the model considered was multiplicative model, by dividing the original data by the seasonal factor and trend factor, the cyclical factor was determined as:

$$\text{Cyclical factor} = \frac{O}{T \times S}$$

The irregular factor was ignored

RESULTS AND DISCUSSION

Temporal Movement of Arrivals and Prices

Seasonal Movement of arrivals of Cotton and Groundnut

In order to ascertain the long run seasonal variations in arrivals, monthly seasonal Indices were calculated. The results presented in the Table 1 revealed that the peak market arrivals were observed in the month of September, October and November. The highest index was observed for the month of October (597.35) followed by September (350.74) and November (114.80). As the groundnut harvesting starts in the month of September and continues upto November and hence it can be inferred that, farmers have sold their

Table 1: Seasonal Indices in the Prices and Arrivals of Groundnut and Cotton in Dharwad Market

Period of month	Groundnut		Cotton	
	Arrivals	Price	Arrivals	Price
April	3.47	87.30	41.98	78.86
May	5.46	83.69	19.78	75.88
June	11.06	75.23	10.05	75.58
July	2.44	72.53	1.15	77.27
August	0.92	63.50	0.12	87.61
September	350.74	98.18	0.00	0.00
October	597.35	99.58	2.29	104.55
November	114.80	101.54	113.15	116.40
December	13.60	93.36	451.07	117.44
January	1.82	84.94	241.51	117.25
February	0.40	85.83	159.75	102.56
March	1.40	85.46	101.12	92.90

produce immediately after harvest. This seasonal pattern of market arrivals is the result of inadequacy of storage facility and weak financial position of the farmers. Where as in the case of cotton the arrivals were fairly distributed from November to March and for these months the indices were more than 100. The arrivals in the case of cotton were found in all the month except September, but the indices were less than 100 and again indicating the seasonal pattern of arrivals. This is very much true for the cash crop like cotton, wherein the farmers try to convert their output into cash as soon as possible to meet their obligations like repayment of loan and personal consumption expenditure.

Seasonal Movement of Price:

The seasonal behaviour of prices as revealed by seasonal indices of groundnut and cotton are presented in the Table 1. The higher price index of groundnut was observed in the month of November (101.54) and indices for rest of the month were less than 100. It is interesting to note that with increase in the arrivals, price index was also increased. This is also true with the prices of cotton, where in the indices for the month of October to February were more than 100 and during the same period, the seasonal indices of arrivals were also high. This can be attributed to the fact that during peak months of harvest and consequently the high arrivals, more number of traders were gathered and hence the prices started rising. However, the pace of seasonal index of arrivals were higher than that of seasonal index of prices. In spite of it the distressed sales were found in both the commodities and hence the rate of increase in prices was not proportionate with the rate of increase in arrivals.

Trend in arrivals and prices of groundnut and cotton in Dharwad market

The results of the regression analysis presented in the Table 2 revealed that, there was a positive movement in the arrivals of groundnut with an annual increase of 1635.40

Table 2: Trend Values of Market Arrivals and Prices of Groundnut and Cotton

Sl. No.	Crop	Trend equation	R ²	T Value
1	Groundnut			
	Arrivals	$Y=31332.22-1635.39x$	0.13 NS	1.2247
	Prices	$Y=476.43+47.91x$	0.80**	6.2901
2	Cotton			
	Arrivals	$Y=21070.44-13660.16x$	0.26	-1.89
	Prices	$Y=543.18+158.74x$	0.85	7.5237

quintals. However, in the case of cotton, a negative movement was found with an annual decline of 13660 quintals. The positive annual movement in the arrivals of groundnut was due to the fact that, the farmers in the study area had given lion share for this crop over the years. Groundnut being a cash crop and also relatively less susceptible for pests and variation in agro-climatic factors was that farmers preferred to grow this crop. However, in the case of cotton, the decline in the movement of arrivals was found. Major proportion of cotton produced was hybrid (DCH-32), which is susceptible for pests and diseases and hence, the variations in the yield of cotton caused the negative movement in the arrivals.

Trend in Price

The market prices of groundnut was subjected to trend analysis to ascertain the annual increase in the market prices of groundnut. The highly significant trend values revealed that there is significant annual increase in the level of prices. Groundnut crop is one of the major commercial as well as oilseed crop in Dharwad and hence this may be ascertained for higher increase in prices annually.

The annual increase in the price of cotton in Dharwad market was revealed by the significant values of coefficient of determination. This may be attributed to the peculiar feature of cotton, where in arrivals depends on the prices

of cotton rather than prices on arrivals. The farmers tend to hold back their produce, since it is a durable commodity and every thing is marketable surplus. In expectations of higher prices in the future farmers were released the cotton for sale in bits. Hence, increasing trend in market prices of cotton was quite obvious. The dealing trend in cotton arrivals has further boosted the increasing trend on market prices.

Pace and Pattern of Arrivals of Groundnut and Cotton in Dharwad Market

From the Table 3 it was clear that the peak arrivals of groundnut were in the month of December (39.50%). Most of the groundnut arrivals were during September to December as it coincide with the harvesting season. The cotton arrivals spread over the period of six months from November to April. As its harvesting was not done once at a time, which spreads over the months with 7-15 days

Table 3: Pace and Pattern of Arrivals of Groundnut and Cotton (from 1987-88 to 1998-99)

Months	Groundnut (Quintals)	% to total	Cotton (bales)	Total
April	138.50	0.61	4841.92	3.68
May	218.50	0.97	2281.18	1.73
June	441.50	1.95	1159.25	0.80
July	97.75	0.43	132.60	0.10
August	36.75	0.16	14.00	0.01
September	14008.00	61.98	0.00	0.00
October	2387.50	10.56	263.83	0.20
November	4584.66	20.28	13050.92	9.91
December	543.33	2.40	52022.75	39.50
January	72.71	0.32	27854.00	21.15
February	16.28	0.07	18424.00	13.99
March	56.00	0.25	11660.73	8.85
Total	22601.48	100.00		

interval. On the other hand farmers release the cotton for sale bit by bit when ever the prices are remunerative.

Cyclical variations in Arrivals of Groundnut and Cotton

Table 4 depict the cyclical variations in groundnut and cotton. The table revealed the presence of uneven cycle for both groundnut and cotton in Dharwad market. Every cycles in arrivals of these crops may be attributed to non-prefactors.

Table 4: Cyclical variations In Arrivals and Prices of Groundnut and Cotton in Dharwad Market

Year	Groundnut		Cotton	
	Arrivals	Price	Arrivals	Price
1987-88	0.69	0.27	0.70	0.10
1988-89	1.06	0.13	0.69	0.06
1989-90	0.60	0.11	2.45	0.03
1990-91	1.13	0.11	0.75	0.03
1991-92	0.86	0.10	0.71	0.04
1992-93	1.81	0.06	0.81	0.03
1993-94	1.51	0.06	0.75	0.03
1994-95	0.73	0.07	0.82	0.04
1995-96	0.75	0.05	0.70	0.03
1996-97	1.13	0.05	1.29	0.02
1997-98	0.65	0.05	0.85	0.03
1998-99	1.04	0.06	1.73	0.025

Cyclical variations in prices of Groundnut and Cotton

The results on cyclical variations in groundnut and cotton prices were analysed both by tabular as well as graphical analysis techniques. The presence of 4-5 years cycle was found with respect to groundnut prices whereas for cotton the 2-3 years cycle was found. The presence of such short duration cycles may be attributed to the demand and price