

PRICE FORECAST OF SELECTED STAPLE FOODSTUFF IN BORNO STATE, NIGERIA

Onyeka U.P., Olayemi J.K and Mafimisebi. T.E

ABSTRACT

The study attempted to forecast the prices of some selected foodstuff in Borno state, Nigeria using a database of the International Institute of Tropical Agriculture Ibadan. These data were on the monthly prices of selected foodstuff in Borno state, which covered a period of nine years (1992-2000). Projection was made by running a regression using exponential functional form; Theil's inequality test was used to test the perfection of the projected prices. Empirical evidence from the analysis shows that 55% of the staple foodstuff prices were rightly predicted while 45% were wrongly predicted in the urban market. Also in the rural market, 73% of the prices were rightly predicted while 27% were wrongly predicted. The knowledge of this projection will help the policy makers in Borno state towards the achievement of efficient marketing strategies.

Key words: Price forecast, Staple Foodstuff, Borno State, Nigeria

INTRODUCTION

The importance of agriculture cannot be overemphasized. Nigeria has substantial economic potential in her agricultural sector. However, despite the importance of agriculture in terms of employment creations, its potential for contributing to economic growth is far from being fully exploited. It has been observed that the sector's importance over the years has moved inversely with the rise in oil revenue. Between the period 1990 to 1999 value added in agriculture to the GDP of Nigeria declined by 2.8% compared to the service sector of the economy which increased by 7.6% (World Bank, 2001). Both theoretical and empirical research has demonstrated the critical importance of a strong agricultural

growth to the general economic sectors of the less developed nations. Agriculture provides food for the teeming population and food in itself is one of the three absolute necessities of life (Seers, 1973). Besides, the agricultural sector is noted for the provision of their agricultural products necessary to support rapid economic growth (Mellor, 1984). Olayide, (1980) states that adequate provision of food and fiber of right quality is a pre-condition for economic development and national stability. This point to the inter-relationship existing between the agricultural sector and the rest of the economy. It must be in view of this inter-relationship that the development of agriculture was seen as sine quanon to economic development. (Adegeye and Dittoh, 1982).

The marketing of agricultural products in many developing economies, with their largely unorganized foodcrops markets, is a major determinant of development generally and agricultural development in particular. In Nigeria, foodcrops marketing has largely been in the hands of small-scale marketers with minimal support from the government agencies. Government emphasis has been on food production. It is agreed that food marketing (and production) should ideally be handled by private individuals and firms, however, the necessary marketing infrastructure has to be in place and a conducive environment created for efficient marketing of produce. As stated by Olayemi (1972), production and marketing constitute a continuum, and lack of development in one retards progress in the other. To increase food production there is a need to develop a more efficient marketing system for the various crops

Over the years, food shortages with high prices has been persistent in Nigeria, an evidence that domestic food output has been inadequate to provide most of Nigerian's food at affordable prices (Idachaba,1990). The logical question that arises from this is that, if food prices have been increasing at both retail and wholesale levels, and if the resource poor farmers positively

respond to prices, why has food production not increased in response to these price increases so as to obviate the food problem? The knowledge of nature i.e. trend in the prices of agricultural products would facilitate projection and thus contribute to the optimal allocation of resources that will maximize profit in accordance with the principle of comparative advantage. Therefore, the main objective of this study was to analyse the trend in prices for the staple foodstuff in Borno state.

METHODOLOGY

The data used were derived from secondary sources. The data obtained from the International Institute of Tropical Agriculture (IITA) database were used. These data were on the average monthly prices of staple foodstuff in urban and rural markets in Borno State. These prices were recorded over a period of nine years. The period covered was from January 1992 –January 2000. Staple foodstuff of interest in this study are maize, cowpea, millet, groundnut, sorghum, fresh and dried tomatoes, pepper, fresh and dried okra and onion.

Projection was calculated by running regression using exponential trend equation which is of the form

$$L_n Y = b_0 + b_1 X \text{----- equation (1)}$$

where, Y is price of the foodstuffs in the markets, b₀ is the intercept, b₁ is the growth rate and X is the time.

The prices of these foodstuffs were projected in each market and average quarterly prices were calculated for year 2001 –2004. Theil's inequality coefficient was used to test the level of perfection. This coefficient ranges between the values 0 ≤ μ ≤ 1 and is calculated using the formula below

$$\mu = \frac{1/n \sqrt{\sum (P_t - A_t)^2}}{\sqrt{1/n \sum P_t^2 + 1/n \sum A_t^2}}$$

μ = Theil's inequality coefficient

P_t = projected price at time t

A_t = Actual price at time t

n = Number of observations

When the value of μ is zero, it implies perfect prediction but if it equals one, it implies worst prediction.

RESULT AND DISCUSSION

Table 1a: Projected Average Monthly Prices (₹/Kg) Of Staple Foodstuffs in Urban Market (1992-2000).

Year	Sorghum	Millet	Maize	Cowpea	G/Nut
2001	9.70	8.34	16.39	8.00	11.98
	10.44	8.93	18.03	8.36	12.80
	11.23	9.54	19.83	8.74	13.66
2002	12.08	10.20	21.81	9.15	14.59
	13.00	10.91	23.98	9.57	15.59
	13.96	11.67	26.37	10.01	16.65
2003	15.04	12.49	29.01	10.47	17.78
	16.18	13.35	31.90	10.95	18.99
	17.40	14.28	35.08	11.45	20.28
2004	18.72	15.27	38.58	11.99	21.66
	20.14	16.33	42.43	12.52	23.14
	21.66	17.47	46.66	13.10	24.71
μ	0.21	0.22	0.06	0.69	0.63

Table 1b: Projected Average Monthly Prices (₹/Kg) Of Staple Foodstuffs in Urban Market (1992-2000).

	Fresh Tomatoes	Pepper	Dried Okra	Fresh Okra	Onion
2001	14.70	13.36	13.16	27.11	18.89
	16.00	14.37	14.21	30.32	20.83
	17.41	15.45	15.35	33.90	22.99
2002	18.95	16.62	16.56	37.91	25.43
	20.62	17.87	17.88	42.39	27.98
	22.43	19.22	19.31	47.40	30.87
2003	24.41	20.67	20.85	53.01	34.06
	26.56	22.23	22.51	59.27	37.57
	28.90	23.91	24.30	66.28	41.5
2004	31.45	25.72	26.24	74.12	45.73
	34.22	27.65	28.33	82.89	50.46
	37.24	29.74	30.58	92.69	55.67
μ	0.28	0.58	0.48	0.18	0.34

Table 2a: Projected Average Monthly Prices (N/Kg) Of Staple Foodstuffs in Rural Market (1992-2000).

Year	Sorghum	Millet	Maize	Cowpea	G/Nut
2001	5.09	14.24	9.10	12.67	10.35
	5.32	15.54	9.76	13.28	11.01
	5.56	16.96	10.48	14.53	11.71
2002	5.82	18.50	11.24	15.56	12.45
	6.09	20.20	12.06	16.66	13.24
	6.37	22.04	12.93	17.83	14.08
2003	6.66	24.05	13.87	19.10	14.98
	6.96	26.25	14.88	20.45	15.93
	7.28	28.64	15.96	21.89	16.94
2004	7.61	31.26	17.13	23.44	18.01
	7.96	34.11	18.37	25.10	19.16
	8.32	37.23	19.71	26.87	20.38
μ	0.46	0.05	0.18	0.58	0.65

Table 2b: Projected Average Monthly Prices (₹/Kg) Of Staple Foodstuffs in Rural Market (1992-2000).

Year	Fresh Tomato es	Dried Tomato es	Pepper	Fresh Okra	Onion
2001	23.88	23.89	28.87	15.86	22.21
	26.57	26.45	32.21	18.32	24.67
	29.57	29.27	35.93	21.60	27.41
2002	32.90	32.39	40.09	25.40	30.44
	36.61	35.85	44.73	29.26	33.80
	40.74	39.67	49.90	33.37	37.54
2003	45.33	43.90	55.67	38.05	41.70
	50.44	48.59	62.11	43.33	46.31
	56.13	53.77	69.29	47.10	51.68
2004	62.46	59.51	77.30	52.16	57.12
	69.50	65.87	86.24	57.68	63.43
	77.33	72.89	96.16	62.27	70.46
μ	0.05	0.15	0.30	0.13	0.22

μ = Theil's inequality coefficient. Its value ranges from $0 \leq \mu \leq 1$

$\mu = 0$ means perfect prediction

$\mu = 1$ means worst prediction

Tables 1 and 2, show the projected quarterly monthly prices of the staple foodstuffs in urban and rural markets respectively. The prices of the foodstuffs were first projected for the year 1999 and 2000. The result obtained was used with the actual prices in the same year to calculate the Thiel's inequality test. The projection was then made for the staple foodstuffs for the year 2001 to 2004 after which the quarterly average prices were calculated. The last row in both tables shows μ (Theil's inequality text): this test indicates how good the projection is.

It was observed from table 1 that the projected prices of maize, fresh okra, sorghum, millet, onion and fresh tomatoes in the urban

markets have μ values of 0.06, 0.18, 0.21, 0.22, 0.34 and 0.28 respectively thus showing an almost perfect prediction. The best of all is maize with a μ value of 0.06. In same market, the prices of cowpea, groundnut, dried tomatoes, peppers and dried okra have μ values of 0.69, 0.63, 0.45, 0.58 and 0.48 respectively. This implies a bad prediction. The prediction above shows that 55 percent of these foodstuffs were rightly predicted while 45% were wrongly predicted in the urban market.

Conversely in table 2, the foodstuffs prices that show good prediction are millet, maize, fresh tomatoes, dried tomatoes, onions, fresh okra, pepper and dry okra with μ values of 0.05, 0.18, 0.05, 0.15, 0.22, 0.13, 0.30 and 0.30 respectively while those that were wrongly predicted are sorghum, cowpea and groundnut with μ values of 0.46, 0.58 and 0.65 respectively. 73% of the prices of these foodstuffs were rightly predicted while 27% were wrongly predicted in the rural market.

Table 3: Percentage rate of growth per quarter for the staple foodstuffs in urban and rural markets (1992-2002)

Crops	Rural markets	Urban market
Maize	1.77	2.41
Sorghum	1.13	1.84
Millet	2.21	1.69
Cowpea	1.72	1.13
G/nut	1.55	1.66
Fresh Tomatoes	2.71	2.13
Dried Tomatoes	2.57	1.84
Pepper	2.77	1.84
Fresh Okra	2.73	2.83
Dried Okra	2.38	1.93
Onion	2.66	2.49

Table 3 shows the percentage rates of growth in the prices of the staple foodstuffs in urban and rural markets. The result shows that in the

rural market, pepper has the highest rate of growth with the value of 2.77%. This implies that the price of pepper in the rural market rises at an average rate of 2.77% every quarter of the year. Sorghum has the least percentage rate of growth with a value 1.13%. Conversely, in the urban market, fresh okra has the highest rate of growth with a value of 2.83% while cowpea has the least value of 1.13%.

CONCLUSION

The central focus of this study was to project future prices of the selected staple foodstuffs in Borno State of Nigeria. From the Theil's inequality test, empirical result shows that 55% of the prices were rightly predicted while 45% were wrongly predicted in the urban market. Also in the rural market 73% were rightly predicted while 27% were wrongly predicted. The percentage rate of growth depicts an average rate at which each foodstuff rises every quarter. This forecast results are of very great importance to policy makers towards the achievement of economic growth through efficient marketing strategies.

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