

Full Length Research Paper

Comparative analysis of rural and urban market prices for garri in Edo State, Nigeria: Implications for food security

S. I. Orewa^{1*} and R. A. Egware²

¹Department of Agriculture, Benson Idahosa University, Benin City, Nigeria.

²Department of Agricultural Economics and Extension Services, University of Benin, Benin City, Nigeria.

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This study compared the prices of garri in both rural and urban markets of Edo State, Nigeria covering the period 1990 to 2005. Specifically, the study examined the nature and trend of price movement of garri in both markets (rural and urban), determined the annual rate of increase in the price of garri in the markets and tested if the differences in the price of garri in the rural and urban markets were significant. The prices used for the study were derived from the daily prices of garri collected by staff of the Edo State Agricultural Development Programme (EADP, 1990) from the various markets in Edo State, Nigeria. The data were analyzed using simple descriptive statistics (such as means, standard deviations, tables, graphs, etc) and the Student t-test. The study revealed that the price of garri for both markets were cheapest in the third quarter (months of July to September) and most expensive from the 4th to the 1st quarters (from December to around April). Generally, urban market prices for garri were higher than that of the rural markets for the period considered. The observed mean annual price increases (that is, growth rate) was 20.50 and 43.02% for rural and urban markets, respectively. When the differences in price of garri for both markets were tested on a four yearly basis, they were significantly different from each other implying a wide gap between the rural and urban markets occasioned by rising fuel prices over the years. The significant t-values obtained for the period on a four-yearly basis at the 5% level of significance were 1.342, 1.382, 2.250, and 2.321, respectively. Due to the disparity in prices between the rural and urban markets, it is recommended that government should direct her efforts towards stabilizing the price of fuel and create motorable roads in the rural areas where garri is produced in order to close up the wide price margin between the rural and urban markets.

Key words: Garri, market prices, comparative analysis, food security.

INTRODUCTION

Nigeria grows more cassava than any other country in the world. The country's production is currently put at about 46 million tons a year from a total cropped land area of 3.85, thus, giving an average yield of about 12 tons/ha (FAO, 2009). The production of cassava is concentrated in the hands of numerous small-holder

farmers located primarily in the South and Central regions of Nigeria (Ezedinma et al., 2007). Traditionally, the farmers, processors and traders seem to have responded to the demand for convenient foods from cassava especially garri, fufu and cassava chips in urban centres and across Nigerian borders (Ezedinma et al., 2007).

Cassava is mainly produced for domestic markets, but presently, some of the dry processed food products from cassava (such as garri and fufu flour) are known to be

*Corresponding author. E-mail: bigpapisly@yahoo.com.

finding their way to emigrant Nigerian communities in the United States of America and Europe (Dipeolu et al., 2002). According to Lemchi (1999), cassava is usually traded in some processed form, generally garri. It is estimated that 70% of the cassava produced in Nigeria is processed into garri. As a result, garri has become the most commonly traded cassava product. Garri prices, therefore, are a reliable indication of the demand and supply of cassava. Other relevant processed cassava foods in the traditional food market include fufu, lafun and abacha (Onabolu, 2001).

Garri is a fermented and roasted or fried granular product from cassava. It was considered a poor man's food until recently. It is now elevated to an urban convenience food. It is a cheap and ready source of vital energy. Garri production involves peeling, grating, de-watering, fermenting, sieving, frying and finally bagging. This process gives white or creamy-white garri while the addition of palm oil prior to de-watering adds a yellow colour to garri. Yellow garri is preferred and can cost twice as much, making it less available to poorer households. Garri is commonly consumed either as a paste soaked in cold water with sugar, coconut, roasted peanut, fish or boiled cowpea as complements (Ezedinma et al., 2007).

Price is an important determinant in acreage decisions of farmers, particularly for produce intended for sale in the market (Nmadu, 1992). The existence of markets to cater for the farmer's surplus production is therefore an essential prerequisite for agricultural development. Produce must be sold at the prices that would cover the cost of production and leave a surplus to reward the farmer's efforts (Damisa, 1998). The existence of markets is however, not enough on its own, to efficiently stabilize prices, and the performance of the market is equally very important (Egware, 2009).

There are indications of the existence of gap in price relationship among markets in Nigeria. Some markets have been found to affect appreciably the price of commodities in another market (Damisa, 1998). The existence of this gap among markets greatly distorts the pricing efficiency of the marketing system, especially in the marketing of agricultural produce including garri (Damisa, 1998). This paper compares the price of garri in both rural and urban markets of Edo State, Nigeria with a view to relay price information to market participants in order to make more rational decisions that will in the long-run ensure a better market performance. Specifically, this study has the following objectives:

- 1) To examine the nature of garri price movement and the quarterly price in both rural and urban markets of Edo State, Nigeria;
- 2) To determine the annual rates of increases in garri price in both the rural and urban markets of Edo State, Nigeria; and
- 3) To test if the differences in garri prices between the

rural and urban markets were significant.

METHODOLOGY

The study covered Edo State, Nigeria. It is bound by Ondo State (to the North-West), Delta State (to the East), and Kogi State (to the North). The total land area for arable crop production in the state is about 19,035 km² and is spread over the eighteen Local Government Areas of the state (Edo Agricultural Development Programme (EADP), Annual Reports).

There are many markets scattered within the state varying in size, number and distribution of participants and range of products sold. According to EADP officials, markets in the state are divided into three zones: Edo South zone comprising Ehor, Iguobazuwa, New Benin, Okha and Ugo markets; Edo Central zone comprising Ekpoma, Ewu and Uromi markets and Edo North zone comprising Auchi, Igarra and Agbede markets. Edo South markets were classified as urban because of the proximity to the EADP office in Benin City, the capital of Edo State, Nigeria; while markets in Edo Central and Edo South were classified as rural.

Weekly prices of garri and other food staples like rice, yam, etc., displayed for sale in these markets are recorded for the period of 1990 to 2005 by the EADP officials were used for this study. The markets attract participants not only from within the state but also from outside the state. The data were analysed using both descriptive statistics (such as, means, graphs, tables, etc) and inferential statistics. The differences between rural and urban market prices of garri were tested using the Student t-test to determine if they were significantly different. The formula used is stated as:

$$t = \frac{\bar{X}_R - \bar{X}_U}{\frac{S_R}{\sqrt{n}} + \frac{S_U}{\sqrt{n}}} = \frac{\bar{X}_R - \bar{X}_U}{\frac{S_R + S_U}{\sqrt{n}}}$$

where \bar{X}_R is the mean quarterly price of garri for the rural markets; \bar{X}_U is the mean quarterly price of garri for the urban markets; S_R is the estimated standard error of the mean quarterly price of garri for the rural market; S_U is the estimated standard error of the mean quarterly price of garri for the urban market; and n is the number of years considered.

RESULTS AND DISCUSSION

The quarterly price movement for garri for the period of 1990 to 2005 is presented in Figures 1 to 16. The bulk of garri sold in Edo State is moved from the rural assembly markets to the urban markets. The price of garri varies throughout the year.

However, it is cheapest in the third quarter (months of July to September) and most expensive from the fourth to first quarters (from December to around April) (Figures 1 to 16). This is because the prices of cassava tubers are also expensive at those times. As the dry season advances from November to March, the soil cakes and it becomes more difficult and arduous to harvest cassava roots. This cost is transferred all the way down to the consumer. Garri prices were also found to vary from year

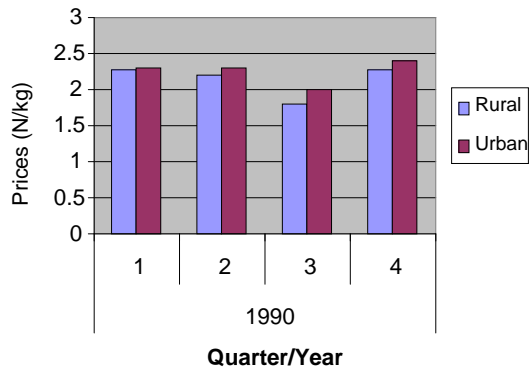


Figure 1. Quarterly prices for garri in Edo State, Nigeria for the year 1990.

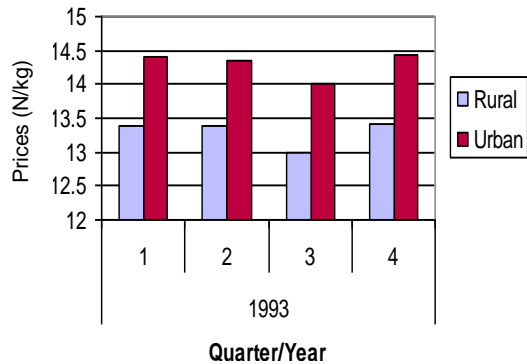


Figure 4. Quarterly prices for garri in Edo State, Nigeria for the year 1993.

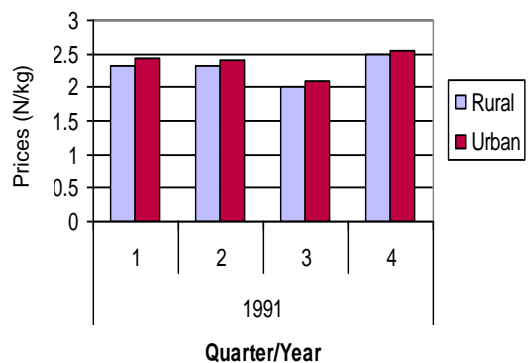


Figure 2. Quarterly prices for garri in Edo State, Nigeria for the year 1991.

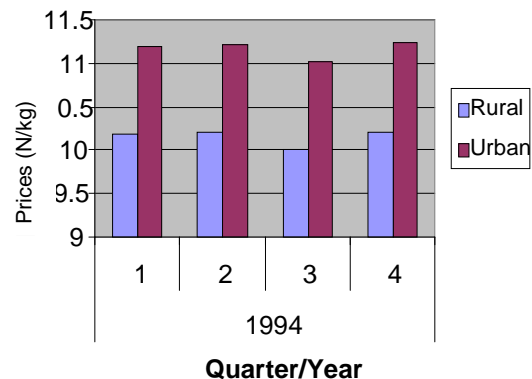


Figure 5. Quarterly prices for garri in Edo State, Nigeria for the year 1994.

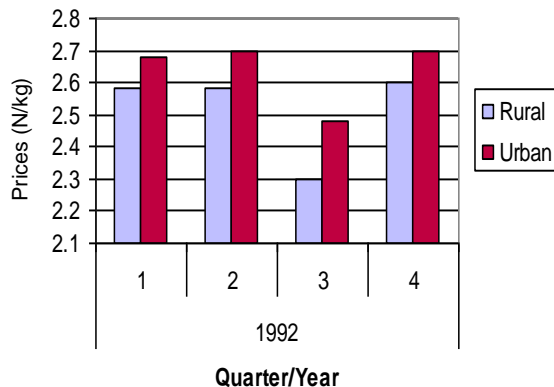


Figure 3. Quarterly prices for garri in Edo State, Nigeria for the year 1992.

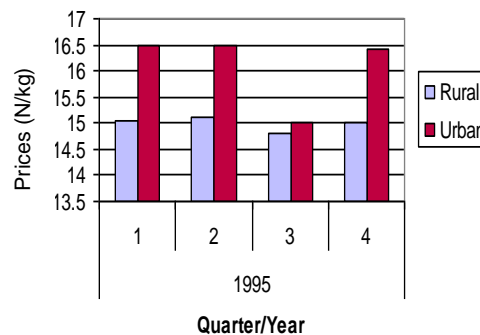


Figure 6. Quarterly prices for garri in Edo State, Nigeria for the year 1995.

to year.

In Edo State, garri prices exhibit cyclical peaks and troughs mainly due to the inability of the markets to absorb the supplies. This fact agrees with the findings of Ezedinma et al. (2007). As a result, in the years when

cassava is scarce the price goes up and farmers are encouraged to plant more and in subsequent years production goes up accompanied by downward price movement, thus, prompting farmers to plant less until the price goes up again in a cycle of approximately two to three years. Such cyclical changes cause price instability and significantly increase the income risk to producers.

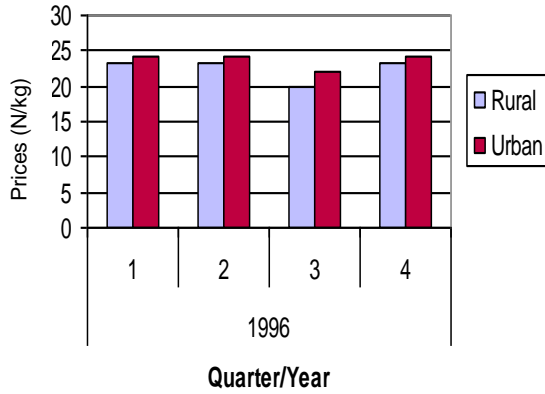


Figure 7. Quarterly prices for garri in Edo State, Nigeria for the year 1996.

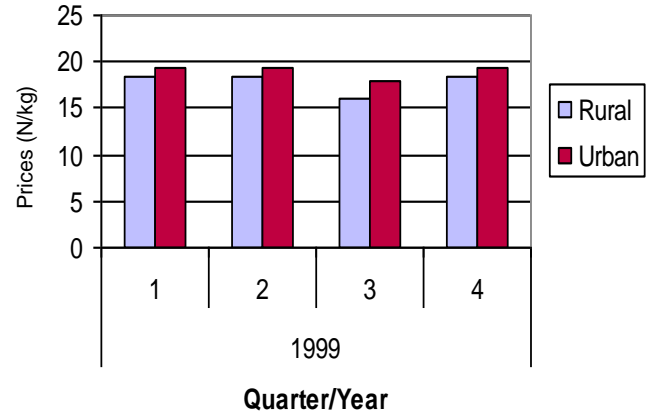


Figure 10. Quarterly prices for garri in Edo State, Nigeria for the year 1999.

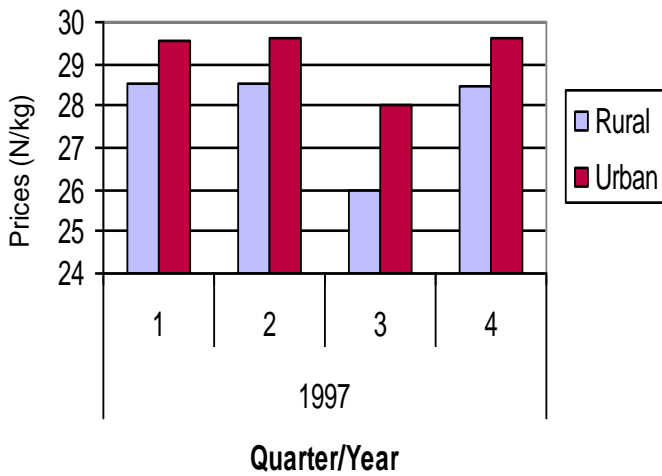


Figure 8. Quarterly prices for garri in Edo State, Nigeria for the year 1997.

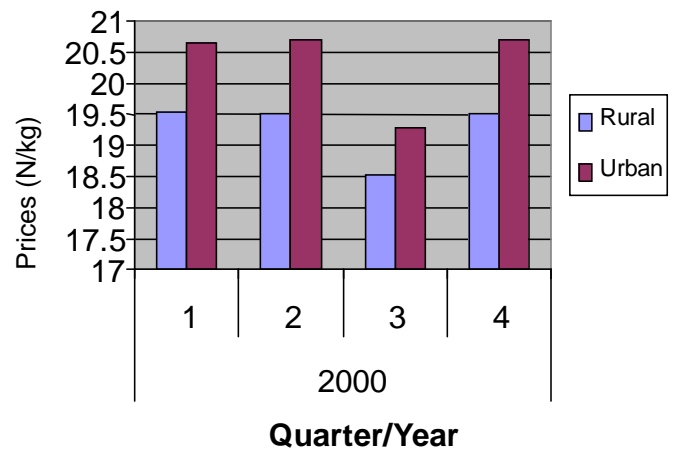


Figure 11. Quarterly prices for garri in Edo State, Nigeria for the year 2000.

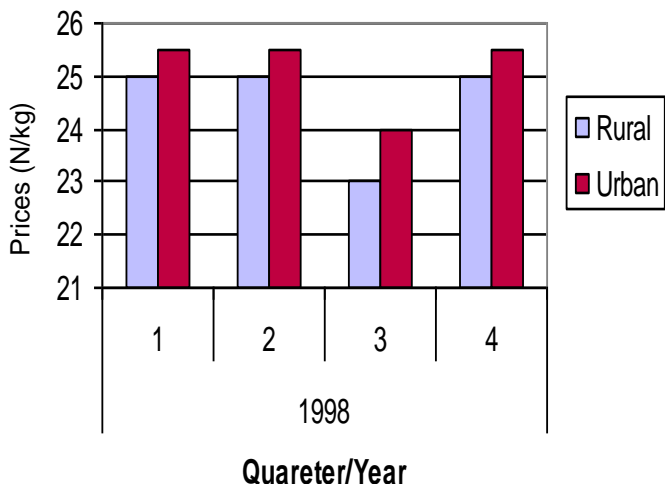


Figure 9. Quarterly prices for garri in Edo State, Nigeria for the year 1998.

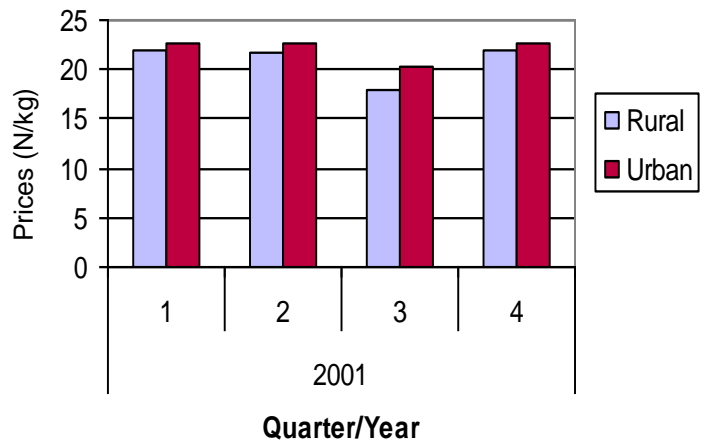


Figure 12. Quarterly prices for garri in Edo State, Nigeria for the year 2001.

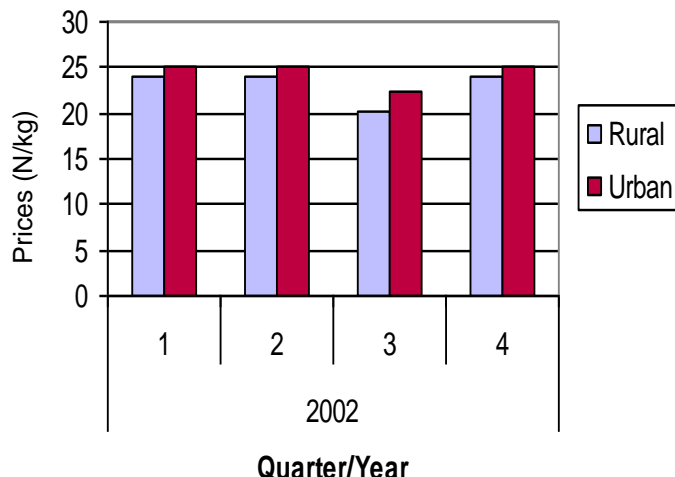


Figure 13. Quarterly prices for garri in Edo State, Nigeria for the year 2002.

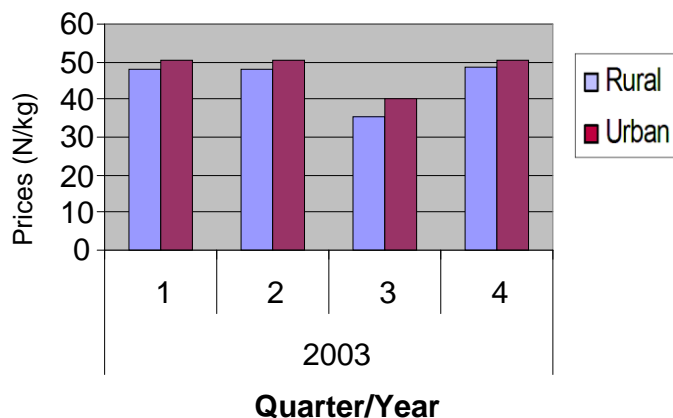


Figure 14. Quarterly prices for garri in Edo State, Nigeria for the year 2003.

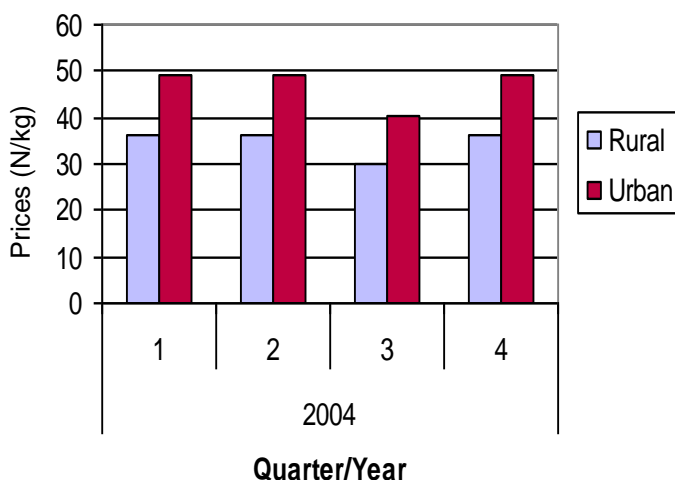


Figure 15. Quarterly prices for garri in Edo State, Nigeria for the year 2004.

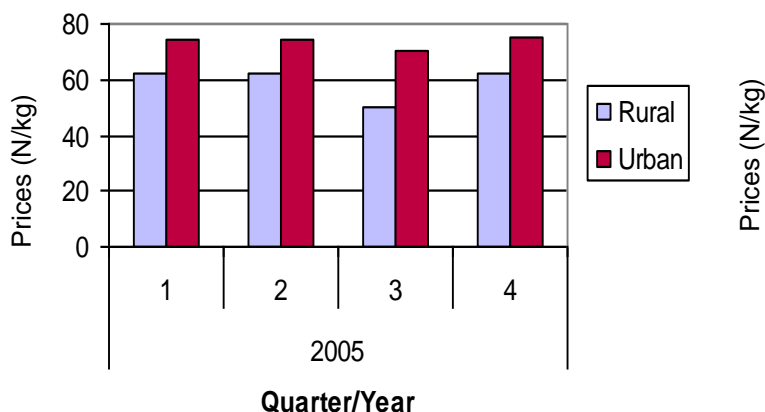


Figure 16. Quarterly prices for garri in Edo State, Nigeria for the year 2005.

Looking at the annual trend, there has been on the average 20.50 and 43.02% mean annual price rise in both the rural and urban markets, respectively between the period of 1990 to 2005 (Table 1).

The rural and urban prices of garri were tested to see if the differences between them were significant. The Student t-test showed that the prices were significantly different from each other at 5% level of significance for the period of 1990 to 2005. The differences in prices were compared for every four years (Table 2).

The increasing t-value over time suggests that as the years progressed, the gap between the rural and urban markets prices became widened; a factor that may be attributed to the rise in fuel prices over the years, thus, making transportation cost to be higher. The added cost is therefore reflected in the higher produce prices for agricultural produce (for example, garri) sold in the urban centres. Urban prices of garri being generally higher than rural prices can also be explained by the fact that farming mainly takes place in the rural areas; therefore, transportation is needed to get the produce to the urban centres where the population is denser.

Conclusion

This study, noted that there is a wide gap between rural and urban market prices for garri mainly attributable to rising fuel prices over the years as well as poor market information. Public policy markers should therefore be concerned with the operational aspects of the food distribution system. The gap can be appreciably and reasonably closed up if the distribution system is improved on and adequate market information is available to the stakeholders. It is being recommended therefore that government should direct her efforts towards stabilizing the price of fuel and create motorable roads in the rural areas where the bulk of garri is produced. This would help to close up the wide price margin between the rural and urban markets.

Table 1. Mean annual price of garri in Edo State, Nigeria for the period of 1990 to 2005.

| Market | Year | | | | | | | | | | | | | | | | Mean annual price increase (%) |
|--------|-------------|----------------|-----------------|-------------------|-------------------|------------------|------------------|------------------|-------------------|-------------------|-----------------|-----------------|------------------|------------------|------------------|------------------|--------------------------------|
| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | |
| Rural | 2.14 (0) | 2.29 (7.01) | 2.52 (10.04) | 13.30 (81.05) | 10.15 (-23.68) | 14.99 (47.68) | 22.55 (50.43) | 27.89 (23.68) | 24.50 (-12.15) | 17.72 (-27.67) | 19.27 (8.75) | 20.88 (8.35) | 23.06 (10.44) | 45.06 (95.40) | 34.60 (23.21) | 59.45 (71.82) | 20.50 |
| Urban | 2.25 (0) | 2.40 (6.25) | 2.64 (10.00) | 14.30 (441.67) | 11.17 (-21.89) | 16.10 (44.14) | 23.56 (46.34) | 29.18 (23.85) | 25.13 (-13.88) | 18.96 (-24.55) | 20.34 (7.28) | 22.03 (8.31) | 24.48 (11.12) | 47.73 (94.98) | 47.00 (-1.53) | 73.40 (56.17) | 43.02 |

Source: Computed from EADP Annual Reports (Various Issues). Values in parentheses represent the percentage annual price increases (or growth rate).

Table 2. Test of difference between the rural and urban market prices of garri in Edo State, Nigeria.

| Student t-value | Period |
|-----------------|-------------|
| 1.342* | 1990 – 1993 |
| 1.382* | 1994 – 1997 |
| 2.250* | 1998 – 2001 |
| 2.321* | 2002 – 2005 |

Source: Computed from the EADP Annual Reports (Various issues). *Significant at the 5% level of significance.

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