Market Supply Response of Cassava Farmers in Ile-Ife, Osun State

Adesiyan, O. F.[a],*; Adesiyan, A. T.[a]; Oluitan, R. O.[a]

[a] Department of Agricultural Economics, Obafemi Awolowo University, Ile-Ife, Nigeria.
*Corresponding author.

Abstract

This study examined the market supply response of cassava farmers in Ile-Ife, Osun State. Data were collected from 80 cassava farmers from four cassava producing Local Government Areas (LGAs) namely; Ife-East, Ife-Central, Ife-North and Ife-South. These were analysed using descriptive statistics and regression technique. The results of the descriptive analysis showed that method of cassava farming was mainly traditional and cassava was mostlly cultivated with maize. Majority of the cassava farmers were married, literate and of about 35 years meaning that more young people were into cassava cultivation in Ile-Ife. Also, the farmers had an average of 8 members per household. The results of the regression analysis revealed that 97% of the variations in the marketed surplus of cassava were explained by the variables in the model. The result also revealed that the quantity of cassava output in kg and the family size had positive and significant effects on the marketed surplus while losses, quantity of cassava consumed in kg, payments in kind in kg, size of land in hectares had negative effects on the marketed surplus. The elasticity of marketed surplus was 1.6 meaning that the supply response was elastic indicating that the higher the price of cassava output in kg the more the quantity of cassava that will be supplied.

Key words: Cassava farmers; Market supply response; Nigeria; Osun state

INTRODUCTION

Cassava is one of the most important food crops widely cultivated in Nigeria. Being the largest producer in the world with estimated production of about 40million metric tonnes annually, cassava is predominantly grown by smallholder farmers for human and industrial use depending on seasonal rainfall. Evidence has shown that cassava production has been increasing fairly from 1999 to date. However, according to RUSEP (2000) and FMARD (2004), substantial losses from post-harvest systems such as processing, packaging, marketing, storage distribution and transportation have constrained income from cassava production in recent times which complicates food insecurity status in terms of available caloric consumption. Studies have shown that marketing inefficiencies (Adekanye, 1970; Abdullahi, 1983) is another factor affecting cassava production. Hence, this study becomes very crucial in examining the actual market supply response and its determinants. Specifically it examined the socio-economic characteristics of the cassava farmers, quantified the actual marketable and marketed surplus of cassava in Ile-Ife and examined the factors affecting market supply response in Ile-Ife.

1. RESEARCH METHODOLOGY

1.1 Study Area and Sampling Technique

The study was conducted in Ile-Ife, Osun State. The state is endowed with vast natural resources suitable for predominant cassava production. A multi-stage random sampling technique was used in selecting respondents for the study. A list of the villages in Ile-Ife was obtained from the four Local Government Areas (LGAs: Ife-East, Ife-North, Ife-south, and Ife-Central). Out of these, 8 villages were randomly selected for the survey. In each of the villages, 10 respondents were randomly selected to give a total of 80 respondents.

1.2 Data Collection

Primary data was collected with the aid of well structured questionnaire and personal interview. Though the questionnaire was written in English, it was translated to Yoruba language during the interview because it is the native language spoken in the study area. The data collected include information on socio-economic background, cassava output and inputs which include land, labour, seeds, pesticides, herbicides, fertilizer, etc..

1.3 Analytical Techniques

The data was analyzed using means, percentages and multiple regression techniques. The marketable and marketed surplus of cassava have been worked out as follows.

MS = P – R

Where

MS is the marketable surplus;

P represents the total production of the crop;

R is the total requirement or utilization of the produce at home.

The marketed surplus which gives the actual quantity of the produce sold by the farmers according to Krishna Raj (1962) is this

MT = MS + PS – L

Where

MT is the marketed surplus;

MS is the marketable surplus;

PS is the past stock sold out;

L are the losses during storage and transit of the marketable surplus left for sale.

In other to determine the factors affecting the marketed surplus of both crops, multiple linear model was used. The multiple regression model estimated was expressed as:

$Y_i = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + U_1$

Where

Y_i = marketed surplus of the cassava and maize per annum in kg;

b_0 = Constant term;

X_1 = volume of production per annum kg;

X_2 = price received by the farmers in naira per annum;

X_3 = size of family in number of man-days;

X_4 = loses during storage and transit per annum in kg;

X_5 = distance of the farm from the market in kilometres;

X_6 = quantity consumed per annum in kg;

X_7 = payment in kind wages per annum in naira;

X_8 = size of land in hectares;

U = random term.

The elasticity of marketed surplus is presented as follows based on the steps of Krishna Raj (1962):

$E_1 = b_1 \frac{\bar{X}}{\bar{Y}}$

Where

E_1 is the elasticity coefficient;

b_1 is the regression co-efficient of the variable;

$\bar{X}$ is the average total production;

$\bar{Y}$ is the average marketed surplus.

2. RESULTS AND DISCUSSION

The results revealed that cassava producers in the study area were dominated by men that were still very young as presented in Table 1. Majority of them were married, with an average family size of eight. However, very few of the farmers were educated and into full time cassava production. The result also showed that the farmers had cassava production experience.

Table 1
Socio-Economic Characteristics

Characteristics	Percentage
Age	32.5 % had average age of 26years
Sex	65% male
Marital Status	87.5% married
Household size	56.2% had average household size of 8
Educational level	42.5% had secondary education
Farming Experience	42% had the minimum of 20years
Nature of farming	71% were full time farmers

Data analysis, 2010

2.1 Marketed and Marketable Surplus Results

MS = P – R

Where

MS is the marketable surplus;

P is annual total production;

R is total requirement or utilization of the produce at home.

MS (cassava) = 3096000 – 1178380 = 1917620 kg or 1918 tons;

MT = MS + PS – L.

Where

MS is the marketed surplus;

PS is the past stock sold out if any;

L are the losses.

MT (Cassava) = 1917620 – 32984 = 1884636 kg or 1885 tons.

Table 2
Marketable and Marketed Surplus of Cassava Farmers in Ile-Ife

	Variables	Amount (₦)
i	Total Production	3096000
ii	Utilization	
	Home Consumption	*199300*
	Quantity gives as gift	*694620*
	Sub total	*1178380*
iii	Marketable Surplus (i-ii)	1917620
iv	Losses	32984
v	Marketed surplus	1884634

Source: Data analysis, 2010

Table 2 shows that cassava is grown both for consumption and sale. However, with increase in production, more quantity would be sold by the farmers in order to increasing their annual income and on the other hand, a decrease in cassava production would lead to a decrease in the sale of the crop and an increase in the quantity that is utilised at home. This means that an increase in production would lead to an increase in the marketable surplus which is equal to the marketed surplus if the farmer does not experience any loss.

2.2 Regression Result

In order to determine the factors affecting the marketed surplus of the different crops and the extent of actual impact of each factor, multiple linear regression models was estimated. The Cob Douglas function gave the best fit.

Table 3
Estimates of Regression Equation Model of Marketed Surplus of Cassava with Respect to Factors Affecting Marketed Suplus of the Farmers

Particulars		Cassava	t
Quantity of production (X_1)		1.278*	(20.926)
Price received	(X_2)	0.022	(0.863)
Size of family	(X_3)	0.018	(0.772)
Losses	(X_4)	-0.051**	(-2.110)
Distance of farm	(X_5)	-0.012	(-0.530)
Quantity consumed	(X_6)	-0.303*	(-11.1150)
Payment in kind	(X_7)	-0.056	(-1.586)
Size of land	(X_8)	-0.144**	(-2.173)
R^2		0.967	

Source: Data analysis, 2010

$$Y = b_0 + 1.278X_1 + 0.022X_2 + 0.018X_3 - 0.051X_4 - 0.012X_5 - 0.303X_6 - 0.056X_7 - 0.144X_8$$

This means that X_1, X_2, and X_3 had positive impact on the marketed surplus while the other variables had negative impact. Table 3 also shows that all the explanatory variables were statistically significant. The R^2 value was 97% indicating that about 97% of the factors causing variations in the marketed surplus of cassava were explained. The most important factor which increased marketed surplus significantly was the increased output followed by the quantity consumed at home and quantity given as gifts. The land size, losses and market distance similarly had negative and significant effects on marketed surplus.

2.3 Elasticity of Marketed Surplus with Respect to Output

$$E_1 = b_1 \frac{\bar{X}}{\bar{Y}}$$

Where
E_1 is the elasticity co-efficient;
b_1 is the regression co-efficient of the variable;
$\bar{X}$ is the average value of the i-th independent variable;
$\bar{Y}$ is the average value of the dependent variable, namely the marketed surplus.
Elasticity coefficient
$b_1 = 0.967$
$\bar{X} = 38,700$
$\bar{Y} = 23,557.925$
E = 1.588 = 1.6

Table 4
Elasticity of Marketed Surplus with Respect to Output

Output	Elasticity Coefficient
Cassava	1.6

The market supply response of farmers in term of the elasticity of the marketed surplus with respect to output is presented in Table 4. The elasticity turns out to positive and greater than unity. This shows that an increase in the price of cassava will lead to a corresponding increase in the marketed surplus and a reduction in the quantity consumed at home.

CONCLUSION

In conclusion, the marketed surplus of cassava would increase if the quantity of cassava output and family size increase. However, increase in the losses incurred, quantity of cassava consumed or given out and size of land cultivated would reduce cassava marketed surplus. In addition, the higher the price of cassava, the more the quantities of cassava that would be supplied for sale. Therefore, farmers would be encouraged to practice intensification practices to increase cassava output. Also, policies that would stabilize market price of cassava should be advocated.

REFERENCES

Abdullahi, Y. A. (1983). *The Role of Agriculture in Reversing the Present Economic Crisis in Nigeria*. A public lecture organized by Nigerian Institute of Social and Economic Research (NISER) at University of Calabar, Cross River.

Adekanye, T. O. (1970). The Markets for Food Stuffs in Western Nigeria. *Journal of African Studies, 3*(1), 71-76.

Federal Ministry of Agriculture and Rural Development (2004). Annual Report.

Krishna, Raj (1965). Some Production Function for the Punjab. *Indian Journal of Agricultural Economics, 17*(3).

RUSEP (2002). *A Synthetic Report of the International Workshop on Cassava Competitiveness in Nigeria*. Monograph, IITA, Nigeria.