

DETERMINANTS OF FOOD SECURITY AMONG COCOA PRODUCING HOUSEHOLDS IN ABIA STATE, NIGERIA

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ABSTRACT

The study was set out to analyse the determinants of food security among the cocoa producing households in Abia state, Nigeria. The specific objectives are to: determine the food security status of the households and estimate the determinants of food security among the cocoa producing households in the study area. Purposive sampling technique was adopted in the selection of 90 households from Cocoa producing Local Government Areas in the State. The objectives were analyzed with food security index formula and logistic regression model. The results revealed that majority of the respondents are food insecure. This was exemplified by the fact that 61.11 percent of the households are food insecure while food secure households constituted about 38.89 percent. From the logit regression results, age of the farmer, educational attainment of the household head, household size, income level, dependency ratio and farmers' membership of a social group were all significant at varying probability levels. On the basis of the findings, the study recommended promulgation of income support policies for cash crop producing households to encourage and sustain production among others.

Key words: Cocoa, food security, households, index, logit.

INTRODUCTION

Cocoa belongs to the family *steruliaceae* and genus *theobroma*. It is a perennial tree crop grown in tropical climates, with over 66 per cent produced by smallholder farmers in West Africa. Since the introduction of the crop into Nigeria in about 1874 (Oyedele, 2007), it has grown to be a major export crop. Nigeria is the third largest producer of cocoa in Africa, producing about 12 percent of the total world production behind Ivory Coast which produces 35 percent and Ghana's 13 percent (Wilcox and Abbot, 2004).

Currently, the production capacity of cocoa in Nigeria has reached about 385, 000 metric tonnes per annum, an increase of 215, 000 metric tonnes from year 2000 production level. This disposition places Nigeria as the fourth highest cocoa producing nation in the world after Ivory Coast, Indonesia and Ghana (Erelu, 2008). At state by state level, 14 states are the major producers of cocoa, Ondo state, ranking first while, Abia state is seventh. However, in Nigeria, Cocoa is largely produced on a small scale and the average delivery per farmer is less than 5 bags (roughly 300kg per hectare of cocoa) per season (Oluyole, 2005). Prior to the oil boom era in Nigeria, cocoa, cotton, groundnut, oil palm products and rubber were the principal export crops. Nigeria has suffered a reduction in recent years owing to a number of factors (Oluyole and Sanusi, 2009). Villalobos (1989) identified some of these factors as low yield, inconsistent production pattern, disease incidence, pest attack and use of simple farm tools. In addition,

Oduwole (2004) in his study identified aging cocoa farms as one of the factors responsible for the decline in cocoa production in south western Nigeria. Many farms were over 40 years old and such farms constitute as much as 60 percent of the cocoa farms in Nigeria (Oluyole and Sanusi, 2009). Food security has interrelated components; availability of food through production, storage and imports, and ability of all people in a nation to acquire the adequate food. The ability of all people depends on the situation of their income; urban food security is to a greater deal correlated with the individual earnings of cash income.

According to (AU/NEPAD, 2002), food security is defined as when all people at all time have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and for food preference for an active and healthy life. Food as a basic necessity of life is seen in the fact that it is a means of sustenance and an adequate food intake in terms of quantity and quality, is a key for a healthy and productive life (Omonona *etal*, 2007). The importance of food is also shown in the fact that it accounts for a substantial part of a typical household budget. The concern for food security and nutritional well-being in an economy is predicted by role of human element in economic development (Okunmadewa; 2001). The economic development of a nation in turn is dependent on its factor endowment. This includes the non-human and human resources. The productive capacity of the human resources is however, a function of how well fed they are. Available data from the National Bureau of statistics (2003) and the National Demographic Health Survey the Nigerian population especially women and children lived in severe social desperation, with many households being food insecure, with poor access to resources to meet basic needs, resulting in nutritional deficiencies.

Despite all these attempts, Nigeria has had a varied history of both good and bad of the food production, sustainability and food security (Omotor, 2009). Government at various times through various programmes has intervened, but the food deficit argument by food imports have remained and seem to be on the trajectory that is up and down of increase. The consequence is that more Nigerians live below poverty line and are food insecure. Over 70 percent of the population lives in the rural areas and as noted by Oduro and Aeyea, (2003), much of the poverty is concentrated in the rural areas mostly among the farmers.

The World Bank (2001) has identified three pillars under-pinning food security to include food availability, food accessibility, and food utilization. Food availability means ensuring that sufficient food is available through own production. Food accessibility means poverty reduction: simply making food available is not enough because low income households must also be able to purchase it. Food utilization means ensuring a good nutritional outcome, which can be termed nutrition security.

Although, food insecurity is usually associated with rural households and the metropolitan poor who are more vulnerable to high food price and limited access to food as a result of low income, there are differences between household food security within the metropolitan and rural setting. While real wage and employment are the main determinants of food security in the metropolis, the level of domestic food production dictated by the extent and ease of access to production inputs and services is a primary determinant of food security in the rural setting. To the ever growing metropolis more food has to be imported or produced in areas presently under cultivation (Arene and Mbata, 2008).

Given the increasing trend of cash crops production, where most of the farmers increase their cash crops cultivated areas, this may lead to declining food production, which leads to shortages in food and increased food insecurity. It therefore, becomes pertinent to know the determinants of food security among cocoa producing households in south east, Nigeria using Abia state as a case. The general objective of the study is to determine the food security status among cocoa producing households in Abia state, Nigeria. The specific objectives are to determine the food security status of the households and estimate the determinants of food security among the cocoa producing households in the study area.

METHODOLOGY

The study area is Abia state, south east, Nigeria. Abia state is one of the 36 states in Nigeria. The state lies between longitude 04⁰ 45' and 06⁰ 07' north and latitude 07⁰ 00' and 08⁰ 10' east. The state has a population density of 580 persons per square kilometer and a population of 2,833,999 persons (NPC, 2007). Purposive and random sampling technique was adopted in the study which involved three local government areas where cocoa production is predominant were chosen for the study namely Bende, Ikwuano and Umuahia North local government areas. Thirty producing households were then randomly selected from each of these local government areas. This brings a total number of the respondents to ninety. Data and information were elicited from the respondents using structured and pretested questionnaire, administered by trained enumerators. Data were analyzed using food security index formula and logistic regression model specified as:

Model Specification

The food index formula is given as

$$F_i = \frac{\text{per capital food expenditure for the } i\text{th households}}{\frac{2}{3} \text{ means per capital food expenditure of all household}} \dots\dots\dots(1)$$

Where F_i = Food security index
 When $F_i \geq 1$ = Food secure i th household
 $F_i \leq 1$ = Food insecure i th household

This model has been used in the past by Omonona *etal* (2007) and Odoemelam (2010).

Logit model is a model used in estimating the probability of events based on dependent dichotomous variables (Gujarati, 1995). This model has found several applications in the literature (Adesina *et al*, 2000; Oluwatayo, 2010). Adichotomous dependent variable assumes only two values (either zero or one).

Suppose that food security is represented by 'fs' where, fs is 1 if a household is food secure and 0 otherwise. The logit model to be estimated is given as:

$$P_{fs} (Y_{it}= 1) = \frac{\exp (\beta_{fs} Z_{it})}{1+ \exp (\beta_{fs} Z_{it})} \quad P_{fs} (Y=0) = 1 - P_{fs} (Y=1) = \frac{1}{1+ \exp (\beta_{fs} Z_{it})}$$

Where, Y_{it} is the dependent variable, which takes on the value of '1' if the i th household is food secure and '0' otherwise, b is a vector of unknown coefficients and Z_{it} is a vector of explanatory variables related to i th household.

RESULTS AND DISCUSSION

Food Security Status of Cocoa Producing Households in Abia State, Nigeria

Table 1 shows the food security status of the respondents in the study area. The results revealed that majority of the respondents are food insecure. The households who are food insecure were 61.11 percent while food secure households constituted about 38.89 percent. Odoemelam (2010) had noted that majority of the households in Ikwuano local government area of Abia state, were food insecure. This study confirms the result.

Determinants of Food Security among Cocoa Producing Households in Abia State, Nigeria

In explaining the determinants of food security status among cocoa producing households in Abia State, Nigeria, the regressand (i.e. the food security index 1 for food secure and 0 otherwise) was regressed against a number of socioeconomic variables – age, gender, household size, educational status of household head, income, membership of social group(s), dependency ratio using the logistic model. From the results, age of the farmer, educational attainment of the household head, household size, income level, dependency ratio and farmers' membership of a social group were all significant. They however possessed different signs at either 1 or 5 percent probability level.

Age of the farmer was significant at 1 percent probability level with a positive sign. This means that as the age of the farmer's increases, the probability of them been food secure increases. This could probably be that with increasing age, the farmers may have finished training some of their children if not all and had reduced their household responsibilities, thus having more money to buy food. Similarly, these children may be making remittances back home which will also be an additional income for the purchase of food. This result is similar to that of Oluwatayo, (2010).

The coefficient of educational attainment of the household head was also statistically significant at 1 percent level with a positive sign. The implication is that the higher the educational attainment of the household head, the higher the probability of the household's food security status. Education as it were has the tendency of exposing people and placing them in vantage positions over others who are not so much educated. This includes the knowledge of food combination among other things. This result disagrees with Omonona and Agoi (2007) but agrees with Odoemelam (2010).

Household size was statistically significant at 5 percent level with a negative sign. This meant that as the household size increases, the probability of the cocoa producing household in the study area been food secure reduces. Omonona and Agoi (2007) had opined that food insecurity incidence increases with increase in household size. This could be as a result of increase in the dependency ratio in the households. This finding corroborates with this previous assertion.

Income had a positive sign and statistically significant at 99 percent confidence level. This result shows that increase in the income of the farmers could lead to a corresponding increase in the food security of the cocoa producing households in the study area. Increasing income means that

households should be able to have access to food through affordability. This finding is consistent with Omonona *et al*, (2007) and Wiggins and Keats (2009).

Dependency ratio which took into account the number of persons the farmers take care of in terms of their welfare but do not stay in the same household was significant at 1 percent probability level but with a negative sign. This result implied that with increasing number of dependents, the probability of food insecurity in the household increases. In the study area, people are oftentimes faced with the challenges of taking care of their extended family members, relations and friends even outside their household. This might be a possible explanation for this and corroborates with that of Odoemelam (2010).

The coefficient of membership of social group(s) possessed a positive sign and significant at 1 percent probability level. This meant that membership of groups had a positive relationship with food security status among the households. Belonging to societies could be a forum to exchange ideas, render assistance, etc to each other. This could probably play a role in assisting members know how to ensure food security. This study agrees with Oluwatayo, (2010). The log likelihood of the equation in the model is - 77.675. This means that 77.675 percent of the variability has been explained in the model. Since, this value is quite high, it could be regarded as a good fit for the model.

CONCLUSION

The study has shown that majority of the households are food insecure in the study area. It has also revealed that age of the farmer, educational attainment of the household head, household size, income level, dependency ratio and farmers' membership of a social group were all statistically significant, thus were the determinants of food security status among the cocoa producing households. The study recommends that policies such as income support, credit and market access should be promulgated to encourage and sustain production.

Table 1: Distribution of food security status of the respondents

Food security index	Frequency	Percentage
< 1.00	55	61.11
> 1.00	35	38.89
Total	90	100

Source: Computations from Field Survey Data, 2013.

Table 2: Maximum Likelihood Estimates of Determinants of Food Security among Cocoa Producing Households in the study Area

Variable	Parameter	Coefficient	T-ratio
Constant	b ₀	0.2407	28.106***
Age of the farmer	X ₁	0.8953	11.392***
Gender	X ₂	0.3442	1.1956
Educational Level	X ₄	0.4017	3.4553***
Household size	X ₅	-0.6180	-2.3172**
Monthly Income	X ₅	0.3872	3.0558***
Dependency ratio	X ₆	-0.2412	-2.844***
Family Size	X ₇	0.2455	4.3772***

Log likelihood = - 77.675
 Prob. Chi² = 0.000128

Note: ***, ** - denote 1 and 5percent significant level
 Source: computations from Field Survey Data, 2013.

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