

JOURNAL OF  
RURAL  
ECONOMICS  
AND  
DEVELOPMENT

Vol. 20	2011	No. 1
Author	Content	Page
Pippy Fawole and K.A Thomas	<i>Effects of Contract Farming Scheme on Cassava Production Enterprise in Oyo State, Nigeria</i>	1-7
Odu O.O., V.O. Okoruwa, K.O. Adenegan, A.O. Olajide	<i>Determinants of Rice Farmer's Access to Credit in Niger State, Nigeria</i>	8-20
Suleiman, A. and Tosan Fregene	<i>Analysis of Costs and Returns of Artisanal Fish Marketing in Kebbi State, Nigeria</i>	21-29
Olatomide Waheed Olowa and Timothy T. Awoyemi	<i>Remittances and Household Expenditure in Rural Nigeria</i>	30-43
Adepoju A. O. and F.Y. Okunmadewa	<i>Households' Vulnerability to Poverty in Ibadan Metropolis, Oyo State, Nigeria</i>	44-57



**JOURNAL OF RURAL ECONOMICS  
AND DEVELOPMENT**

Vol. 20	2011	No. 1
Author	Content	Page
Pippy Fawole and K.A Thomas	<i>Effects of Contract Farming Scheme on Cassava Production Enterprise in Oyo State, Nigeria</i>	1-7
Odu O.O., V.O. Okoruwa, K.O. Adenegan, A.O. Olajide	<i>Determinants of Rice Farmer's Access to Credit in Niger State, Nigeria</i>	8-20
Suleiman, A. and Tosan Fregene	<i>Analysis of Costs and Returns of Artisanal Fish Marketing in Kebbi State, Nigeria</i>	21-29
Olatomide Waheed Olowa and Timothy T. Awoyemi	<i>Remittances and Household Expenditure in Rural Nigeria</i>	30-43
Adepoju A. O. and F.Y. Okunmadewa	<i>Households' Vulnerability to Poverty in Ibadan Metropolis, Oyo State, Nigeria</i>	44-57

## **Determinants of Rice Farmer's Access to Credit in Niger State, Nigeria**

**Odu O.O<sup>1\*</sup>, V.O. Okoruwa<sup>1</sup>, K.O. Adenegan<sup>1</sup>, A.O. Olajide<sup>1</sup>**

*<sup>1</sup>Department of Agricultural Economics University of Ibadan, Ibadan*

### **Abstract**

The performance of the agricultural sector has been relatively poor considering the attitude of existing financial institutions to the support of the sector. Informal credit supply is limited while formal credit supply is often inaccessible to smallholder farmers. Therefore, borrower's characteristics that determine access to formal and informal sources of credit were examined. Data collected by the Africa Rice Centre from Niger State in 2009 were used. Multi-stage sampling technique was used to obtain a sample of 373 out of 470 rice farmers from whom information was collected. Descriptive statistics and multinomial logit model were then used to analyse the data. Results revealed that agricultural credit programmes and village residents in the formal and informal credit sectors respectively were the accessible sources of credit. The results also revealed that access to formal credit was significantly increased by experience in rice farming, expenses on fertilizer input and rice income while access to informal credit was significantly increased by gender, duration of village residency, experience in rice farming and expenses on fertilizer input. It is recommended that a suitable credit support programme for access to formal credit should be introduced.

JEL Classification Code: Q12, Q14

**Keywords:** *Access to credit, Determinants, Rice farmer, Niger State*

*\*Correspondence E-mail: olusolaodu@gmail.com; Telephone number: +2348033119504*

---

### **Introduction**

Credit has a significant role to play in increasing farm productivity because the cultivation of most agricultural products for example paddy involves a high cash outlay for

meeting operating costs during the cultivation season (Iqbalet *al.*, 2003). The lack of access to creditor a given source of credit can be defined as when the maximum credit limit for that source of credit is zero and access to



credit exists when the maximum credit limit for that credit source is positive (Diagne, 1999). Access to credit could increase the willingness of farming households to adopt more farming technologies resulting in increased production as well as increased income (Li and Zhu, 2007). The two most critical periods when credit is needed during the season are at pre-planting and harvesting (Akpokodjeet *al.*, 2001), hence, the acuteness of credit needs at different times during the cultivation season. Furthermore, credit is not only needed for farming purposes, but also for household consumption expenditure, especially during the off-season period. Under the Structural Adjustment Programme (SAP), the Nigerian Agricultural and Cooperative Bank (NACB) set up in 1988 special credit schemes to boost rice production (CBN, 2006). Under the scheme, the number of loans granted for rice production increased from three to five thousand seven hundred and eighty approved loans in 1989 (Akpokodjeet *al.*, 2001). Later on in 1989, the government launched an agricultural policy for self-sufficiency in rice production for a ten years period. In 2004, funding for implementing the Presidential Initiative on Rice project was augmented from the additional ten percent tariff on imported rice, apart from normal budgetary provisions for the project (Progress Report on Presidential Rice Initiative, 2004). The introduction of these policies by successive governments underscores the fact that sustainable economic growth cannot be achieved without putting in place well-focused programmes to increase the access of farmers to factors of production, especially credit.

In Nigeria, the performance of the agricultural sector has been relatively poor considering the attitude of the existing financial systems to the support of the agricultural sector. Formal credit institutions

are usually not located within the reach of rural farmers and there is insufficient information on the formal agricultural credit sector among the rural farming population. This situation discourages most rural farmers from patronising the formal credit sector which has resulted in an over-dependence on the informal credit sector (Adebayo and Adeola, 2008). In addition, formal credit institutions impose credit limits for different operations without detailed knowledge of the operations. These ceilings lead to imbalances in credit supply during the farming season which results into farmers being prone to credit constraint conditions. Smallholder rice farmers usually have a large household size to complement their farm labour needs which increases their household dependency ratio as they have to spend more on family consumption. This increased family consumption has adverse effect on their access to formal credit facilities because of the high risk of default. Coupled with this is the relatively small size of many rice farms in Nigeria, a factor that is also related to the limited access of farmers to the credit market. Short-term seasonal loans from informal suppliers of credit which are more readily available to farmers however create unique limitations for the level of projects that can be undertaken such that most rice farmers experience credit constraint early in the planting season (Adebayo and Adeola, 2008). The willingness of the borrower to pay interest rate and/or collateral still does not place the right to fix the maximum credit limit in his or her hand. Lenders often fix the maximum credit limit based on their willingness to lend and not their ability as they put into consideration various criteria such as the risk of default and characteristics of borrowers (Diagne, 1999). Therefore, access to credit is affected by certain variables such as availability and eligibility criteria of



credit programs. In other words, access is more of a supply-side issue related to the potential lender's choice of the maximum credit limit (Diagne, 1999).

Furthermore, taking a look at available credit sources in both the formal and informal credit sector, it has been discovered that though credit is important for sustainable agricultural development, there still exists a gap between its demand and supply as induced by certain factors. It is therefore the contention of this study that there is insufficient information as to these factors that determine the access of farmers to formal and informal credit. The contribution of this study is therefore to profile the credit sources accessible to and used by rice farmers in the state and to determine the factors that would influence access to formal and informal credit sources. Again, Niger state has been discovered to account for the largest share of credit recipients from informal credit sources in a survey conducted by Erenstein *et al.*, (2003). This study is based on the research need for information on financial markets that meet the peculiar demands of the rural farming household and to provide empirical evidence on the determinants of access to credit by smallholder farming populations. The rest of the paper has been organized into four sections. Next, it addresses the logic behind the concept of credit access while the following section would then specify the empirical model and description of data. A discussion of the results would then follow with a conclusion.

## 2. Theoretical framework

Rational choice theory is an approach used by social scientists to understand human behavior and it has been the dominant paradigm in economics. However, in recent decades it has become widely used in other disciplines in the social sciences (Green,

2002). The theory of rational choice considers the choice behavior of one or more decision making units which could be consumers or firms (farms). Rational choice theories represent preferences with a utility function. In this case utility is the ability of a good or service to satisfy a particular human want. The basic assumption of utility theory is that the decision making unit in this case a farmer always chooses the alternative for which the expected value of the utility is maximum. For example a crop farmer is faced with the decision of which crop to produce or of how much of his farm resources such as land and labour should be used in cultivating rice as opposed to some other crop like maize. The rational choice approach to this problem is based on the fundamental premise that the farmer's choice would be based on those choices that would help him or her achieve his or her objective of maximizing profit and minimizing cost given all other factors that are beyond control. Therefore the rational choice theory is based on the following axioms regarding consumer preferences. These are that the consumer faces a known set of alternatives, secondly for any pair of alternatives (A and B), the consumer either prefers A to B, prefers B to A, or is indifferent between A and B. Thirdly, if a consumer prefers A to B and B to C, then he or she necessarily prefers A to C but if he or she is indifferent between A and B and indifferent between B and C, then he or she is necessarily indifferent between A and C. In addition, if the consumer is indifferent between two or more alternatives that are preferred to all others, he or she will choose one of those alternatives, with the specific choice from them remaining indeterminate. The utility function has certain properties. The first is that the change in utility associated with a small increase in the quantity of a good consumed i.e. marginal utility is positive. The



second is that of diminishing marginal utility which states that the positive marginal utility of each good gets smaller and smaller as more of the good is being consumed. A simple example of a utility function is given a consumer who purchases two goods. Let  $x$  denote the number of units of good A consumed and  $y$  denote the number of units of good B consumed. The utility function of the consumer is given by the following equation:

$$U = (x, y) \dots\dots\dots (1)$$

where the function  $U$  assigns a number to any given set of values for  $x$  and  $y$ .

The basic rational choice model assumes all outcomes are known with certainty. However, this basic model has been extended to account for uncertainty. For instance, in the decision to give a loan to a smallholder farmer, the lender is assumed to consider the likelihood of the borrower not being able to repay the loan ( $\rho A$ ) or being able to repay based ( $\rho B$ ) on certain factors. These are two possible outcomes. There is a 100% chance that either A or B would occur. The lender would maximize expected utility which is the sum of utility in each outcome weighted by the probability that the outcome would occur.

$$\rho A + \rho B = 1 \dots\dots\dots (2)$$

Response models have been used in rational decision making for which the set of alternatives must be mutually exclusive and finite. In these models, decision making units are assumed to make decisions based on the objective of utility maximization (Hausman and McFadden, 1984). The analytical models commonly used include the binary logit and probit models, nested logit model,

multinomial logit model and multinomial probit model.

### 3. Methodology

#### 3.1 Study area

The study area, Niger State lies between the latitude of 3.20' east and longitude 8 and 11.3' north. It is bordered to the north by Sokoto State, west by Kebbi State, south by Kogi and south-west by Kwara State. Kaduna and Federal Capital Territory border the State to both north-east and south-east respectively. The State has a common boundary with the Republic of Benin along New Bussa, Agwara and Wushishi Local Government Areas. The state capital is Minna and there are twenty five local government areas. 91 per cent of village households in Niger State are engaged in rice production (Erenstein et al., 2003).

Niger State also happens to be in the North Central zone which is the largest producer of rice in Nigeria accounting for 47 per cent of the total rice output in 2000 (Akpokodje et al., 2001). The state experiences distinct dry and wet seasons with annual rainfall varying from 1,100mm in the northern part of the State to 1,600 mm in the southern parts. The maximum temperature is recorded between March and June, while the minimum is usually between December and January. The rainy season lasts for about 150 days in the Northern parts of the state and about 120 days in the Southern parts of the State. Generally, the climate, soil and hydrology of the State permit the cultivation of most of Nigeria's staple crops and still allows sufficient opportunities for grazing, fresh water fishing and forestry development. With respect to production levels, the highest hectareage of rice under cultivation is that of rain-fed lowland while the lowest is that of mangrove swamp (Akpokodje et al., 2001). Rice

production is predominant in Shiroro, Lavun, Paikoro, Katcha and Gbako local government areas of the state.

### 3.2 Data collection

Data collected by Africa Rice Centre in a survey conducted in 2009 was used for empirical analysis. The data provided detailed and representative information on small-scale rice-based farmers. Information on the socioeconomic characteristics of rice farmers in Niger State, experience in cultivation of lowland rice as well as expenditure on inputs used for rice production such as land area, labour, seeds, fertilizers and pesticides were extracted from the survey for this study. Others were on income generated from rice and other crops, quantity of rice and other crops, access to credit, sources of credit and amount of credit obtained by the rice farming households. A total of three hundred and seventy three out of four hundred and seventy rice-producing households in Niger State which covered five local government areas and seventeen villages were used for data analysis after post-entry cleaning.

### 3.3 Method of analysis

Descriptive statistics such as the mode and cumulative frequencies were used for categorical data while the mean, was used for continuous variables to describe the data set. These measures were used because they best describe some attributes of the population of rice farmers in the study area. For the analysis of factors that influence farmers' access to a particular credit source, the choice of credit is modeled as a discrete choice model in which the farmer chooses between alternative sources of credit and selects the alternative that will give the highest utility (Ben-Akiva and Lerman, 1985). Multinomial logistic regression model was chosen for analyzing the data set because

it provides a reliable and effective way to determine the factors that influence access to a particular credit source which is the response variable and the estimate of odds ratio of certain factors on the choice of a particular credit source. The odds ratio is the primary measure of effect size in logistic regression and it is defined as the odds of being a case for one group divided by the odds of being a case for another group. In order to estimate the factors that influence access to formal or informal sources of credit, this study model the options simultaneously using the multinomial logit model.

For each choice of credit formal ( $y_i=1$ ), informal ( $y_i=2$ ), one regression would be run to predict the probability of  $y_i$  ( the dependent variable for any observation  $i$ ) being in that category as opposed to being in the reference or baseline category of  $y_i=0$ . as follows:

$$y_i = X_i \beta_n + e_n \dots\dots\dots (3)$$

The model stated more explicitly is as follows:

$$V_{ci} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots e_i \quad (4)$$

Where  $V_{ci}$  denotes the measurable utility derived from any of the two alternatives formal or informal credit,  $X_i$  denotes the attributes that predispose a farmer to having access to either credit source,  $\beta_n$  are the parameters to be estimated and  $e_i$  are the error terms. The probability of a farmer having access to a formal or informal credit source i.e.  $Pr(y_i)$  is given below:

$$Pr(y_i) = \frac{\exp(\beta_0 + \beta_{1i} x_{1i} + \beta_{2i} x_{2i} + \dots + \beta_{ki} x_{ki})}{\sum \exp(\beta_{0n} + \beta_{1n} x_{1i} + \beta_{2n} x_{2i} + \dots + \beta_{kn} x_{ki})} \quad (5)$$



With  $y_i = 0$  as the reference category,  $Pr(y_i = 0) = \frac{1}{1 + \sum_{j=1}^J \exp(\beta_j X_i)}$   
 ..... (6)

A positive sign of a coefficient in the results would imply that the independent variable increases the probability of the farmer having access to that source of credit while a negative sign of a coefficient would imply a decreasing effect. The log likelihood function for the multinomial logit, which gives the relative probability of having access to either formal or informal credit to the probability of the reference group can be written as:

$$\ln \frac{P_{y_i}}{P_{y_0}} = \beta_i X_i \dots\dots\dots (7)$$

where  $P_{y_i}$  = probability of access to formal credit or informal credit;  $P_{y_0}$  = probability of being in the reference group.  
 Other statistical tools to be used include the relative risk ratio. The relative risk ratio (RR) is a ratio of the probability of a farmer having access to a particular credit source. It represents the impact of each explanatory variable or particular attribute keeping all other variables constant on that credit source. When the relative risk ratio equals 1 this implies that the explanatory variable leaves the credit source unchanged and when it is greater (lesser) than 1, it implies that the effect of the explanatory variable is to increase (reduce) the credit source. The relative risk ratio is calculated as follows:

$$RR = \frac{P(y_i)}{P(y_0)} \dots\dots\dots (8)$$

In addition to the relative risk ratios, the marginal effects of changes in the farmer's attributes on the probability of a rice farmer having access to either formal or informal sources as well as respective elasticities are also presented. Marginal effects are calculated after estimating the probabilistic regression as follows:

$$\text{Marginal effect of } x \text{ (Mfx)} = \frac{df}{dx} \dots\dots\dots (9)$$

Where Mfx is the partial derivative, with respect to x, of the prediction function f.

Potential determinants or attributes of a farmer's access to a particular credit system (X) can be characterized into individual or household characteristics and production activity characteristics. The individual or household characteristics include gender (GEND), duration of residency in the village (NOYRRESID), household size (SIZHOUS), duration of educational training (NOYREDU), duration of experience in lowland rice farming (NYLOWF), land ownership (OWNLAND). The production activity characteristics include expenditure on fertilizers (FETEXPD), farm size (FAMSIZ), income from rice production (RICINC), which was used as a proxy for income or wealth due to the tendency of households to under-report their assets, and secondary occupation of farmers (SECACT). The symbol  $e$  represents error terms. The variables considered for analysis were selected based on review of previous literature on related studies (Mpuga 2004; Linh 2004; Udoh 2005; Tang *et al.*, 2010).

4. Results and discussion  
 4.1 Characteristics of rice farming



### **households**

Table 1 describes the rice farmers that had access to the two sources of credit. The table shows that 21.8% and 7.0% of male farmers had access to informal and formal sources of credit respectively.

Female farmers that had credit access used 18.0% and 1.1% of informal and formal credit respectively which is in agreement with findings by Udoh (2005). Only 9.5% and 15.3% of those that had access to formal and with the results of Mpuga (2004). Rice farmers in the area seemed to be experienced in the different systems of cultivation with those that had access to credit having the highest average of 23 years in lowland rice cultivation of which there was a significant difference in the mean values of experience in lowland rice cultivation. Access to formal credit facilities, which were of a higher volume than informal credit facilities, might have contributed to increasing the purchasing power of rice farmers such that they were able to purchase more of inputs such as fertilizer (₦23583.87).

#### **4.2 Credit sources and use by rice farmers**

The results presented in this analysis include data on the sources of formal and informal credit used by rice-based farmers, which is highlighted in Table 2. Results from the shows only 99 farmers (26.5%) of the sample of 373 farmers had access to credit and of this figure, 21.2% used formal credit sources while 78.8% used informal credit sources. This result is consistent with findings by Adebayo and Adeola (2008) and Tang *et al.* (2010). The remaining 73.5% of the sample of 373 farmers were discovered not to have had access to any source of credit. The fact that the larger proportion of these farmers did not use credit does not mean that they had no need for it, rather it is possible that the official bottlenecks that formal credit

informal credit respectively were educated up to the secondary school level. The survey showed that 80.9% of rice farmers that had access to formal credit and 64.1% that had access to informal credit however had Islamic education. This finding revealed that education predisposes farmers to better access to production credit and high enrolment for Islamic education was probably based on the need to reduce risk of default as consistent

facilities entailed and the lower volume of informal credit facilities must have prevented these farmers from accessing these credit facilities. On the supply side of credit services, farmers lacking sufficient quantity and quality of assets are usually excluded from formal credit facilities. Agricultural credit programs happened to have been the most preferred source of credit in the formal sector as about 66.7% of farmers using formal credit subscribe to it. This was followed by other sources such as credit programme (19.0%) and banks(14.3%) in that order of descending preference. This is in agreement with findings from Iqbal *et al.*, (2003) who observed that activities often financed and supported by banks were agricultural marketing rather than production activities. In the informal sector, rice farmers preferred residents from neighbouring villages (26.9%), village residents (25.6%), traders (20.5%), farmers' groups (19.2%) and spouses (7.7%) respectively in descending order of importance. This evidence supports the important role that communal relationships have played in credit support to these small-scale farmers.

#### **4.3 Determinants of farmer's access to credit**

The influence of various variables on the desired choice of credit compared to those who did not obtain credit was determined with

**Table 1: Distribution of rice farmers by socioeconomic and farm characteristics**

Socioeconomic characteristics N=373	Source of Credit			F-test for equal means
	Formal	Informal	No credit	
Proportion of male farmers (%) n <sub>1</sub> = 284	7.0	21.8	71.1	-
Proportion of female farmers (%) n <sub>2</sub> = 89	1.1	18.0	80.9	-
Mean Age	46 (4.34)	48 (6.44)	46 (7.40)	1.55
Mean household size	5 (2.02)	8 (4.35)	9 (4.75)	10.01***
Mean number of years of residence in the village	45 (4.55)	48 (6.32)	44 (10.54)	3.72*
Mean Area of land cultivated to Rice (ha)	4.28 (1.41)	2.94 (4.10)	2.98 (4.52)	8.67***
<i>Education levels</i>				
None (%)	9.5	20.5	48.5	
Primary (%)	-	8.9	10.2	
Secondary (%)	9.5	6.4	10.6	
Post-secondary (%)	-	-	0.7	
Islamic (%)	80.9	64.1	29.9	
Mean Years of experience in rice farming	23 (7.51)	23 (6.03)	21 (7.69)	4.35**
<i>Rice production</i>				
Mean expenses on fertilizer (₦)	23583.87 (8662.18)	16675.00 (9627.48)	11949.78 (8488.26)	29.38***
Mean expenses on herbicide (₦)	11806.45 (6927.71)	7591.18 (7503.02)	5550.00 (5145.61)	17.85***
Mean expenses on seeds (₦)	7277.42 (6274.05)	4301.47 (3744.86)	4664.90 (4926.99)	4.48**
Mean expenses on labour (₦)	10206.67 (5228.30)	7136.77 (4996.39)	3671.06 (4795.62)	2.03**
Mean output of rice (kg/ha)	4815.07 (1589.58)	3692.36 (1126.42)	3213.27 (2833.24)	2.11*
Mean income from rice (₦)	306956.50 (50612.28)	224605.90 (101985.6)	188915.90 (94479.78)	24.16***

Note: Figures in parentheses are standard deviations; \*\*\* 1% ; \*\*5% ; \*10% Significant levels



**Table 2: Distribution of rice farmers by credit sources used in Niger State**

Source of Credit	Formal	Informal	No credit
N=99			
Credit programme	4 (1.1)	-	-
Bank	3 (0.8)	-	-
Agricultural credit programme	14 (3.8)	-	-
Traders	-	16 (4.3)	-
Village residents	-	20 (5.4)	-
Other village residents	-	21 (5.6)	-
Spouse	-	6 (1.6)	-
Farmers' groups	-	15 (4.0)	-
<b>Total</b>	<b>21 (5.6)</b>	<b>78 (20.9)</b>	<b>274 (73.5)</b>

Note: Figures in parenthesis are percentages

the aid of multinomial logit analysis. Table 3 presents the results of multinomial logit estimations and odd ratios with no credit obtained as the base outcome. A positive sign of a coefficient in the results would imply that the independent variable increases the probability of the farmer selecting that source of credit while a negative sign of a coefficient would imply a decreasing effect on the probability of using that credit source. Ten (10) explanatory variables were used while there were three (3) response variables, which were the sources of credit-formal, informal and none. Results from the table revealed that for the probability of access to formal credit source, three of the variables - experience of the farmers in lowland rice cultivation, rice income and expenses on fertilisers determined access of rice farmers to formal credit in the study area as their coefficients were positively significant. A report by USAID (2006) revealed that more rice farmers in Benue State joined the credit programme being supported by the agency and a private partner, Olam Nigeria Limited as a result of testimonies of increased income from farmers that had benefitted from the programme which confirms this finding. This was also confirmed by Mpuga, (2004) and Udoh, (2005). The implications with respect to the

marginal effect is that a percentage increase in experience of rice farmers, rice income and expenses on fertiliser is likely to increase the probability of access to formal credit only marginally. However the response of rice farmers to this increase was less than proportionate for the three variables. The size of the rice farming household was found to have prevented access of rice farmers to formal credit sources since the coefficient was negatively significant. This is probably because a large family is more likely to default in repayment and is therefore less likely to qualify for a loan from formal sources. This is consistent with findings by Omonona et al. (2010). In agreement with Tang *et al.*, (2010) gender, duration of education and secondary occupation were not significant. For probability of access to informal credit sources, four variables were positively significant as shown in Table 3. Male gender, which confirmed the effect of culture in the rural setting and preference for the male gender (Udoh, 2005), duration of residency in the village, experience in lowland rice cultivation and expenses on fertiliser were the main variables that determined access to informal credit by rice farmers. This study confirms that as the farmer stayed longer in the village he or she was more likely

**Table 3: Determinants of farmer's choice of credit source**

Explanatory Variables	Formal Credit Source				Informal Credit Source			
	Coefficient Est. (s.e.)	RRR	Slope	Elasticity	Coefficient Est. (s.e.)	RRR	Slope	Elasticity
GEND	0.87 (1.26)	2.41	0.015	0.03	1.09 (0.58)*	2.97	0.123	0.13
NOYRRESID	0.02 (0.03)	1.02	1.22e-04	-3.84e-04	0.06 (0.02)**	1.06	0.008	0.01
SIZHOUS	-0.26 (0.09)***	0.77	-0.006	-0.01	-0.11 (0.04)***	0.90	-0.014	-0.01
NYLOWF	0.08 (0.03)**	1.08	0.002	0.003	0.06 (0.03)**	1.07	0.008	0.01
OWNLAND	0.43 (0.67)	1.54	0.01	0.03	0.03 (0.37)	1.03	0.003	-0.01
RICINC	7.95e-06 (4.20e-06)*	1.00	1.85e-07	4.14e-07	3.36e-06 (2.46e-06)	1.00	5.80e-07	4.39e-07
FAMSIZ	3.28e-05 (0.18)	1.00	0.001	0.006	-0.25 0.12**	0.78	-0.040	-0.04
NOYREDU	-0.07 (0.10)	0.93	-0.002	-0.004	-0.003 (0.04)	1.00	-0.60e-03	0.001
SECACT	0.22 (0.19)	1.25	0.006	0.02	-0.11 (0.13)	0.90	-0.016	0.02
FETEXPD	9.10e-05 (2.95e-05)***	1.00	2.10e-06	4.62e-06	4.39e-05 (1.93e-05)**	1.00	5.71e-06	4.03e-06
Number of observations	373							
Log likelihood								
LR chi 2(20)	-206.160							
Pseudo R2	113.83***							
	0.216							

\*\*\* Significant at 1% level    \*\*Significant at 5% level    \*Significant at 10% level

Note: The omitted category, (base outcome) in the dependent variables are the farmers who did not have access to credit



to access informal credit which is factual because it was observed that farmers that borrowed from informal sources had the highest duration of residence in the villages of 48 years. This proved that their familiarity with the village communities was probably a condition for their using this source of credit as confirmed by Diagne (1999) and Udoh (2005). The marginal effects implied that a 1% increase in gender, duration of residency, experience and expenses on fertiliser would increase the likelihood of access to informal credit by 0.12%, 0.01%, and 0.01% respectively. In terms of response, the indications are that the increases lead to less than proportionate increase in the probability of access to informal credit. Two other variables however, had a significant but negative effect on access to informal credit. These include size of rice farming household and farm size which were found to have prevented access of rice farmers to informal credit sources since their coefficients were negatively significant. These findings infer that a large farming household would be more likely to default in loan repayment if care is not taken due to additional family expenses (Tang *et al.*, 2010) and that the larger the farm size the more the farmer's likelihood of having access to formal credit sources which provide larger loans (USAID, 2006). Results from this study revealed that access of rice farmers to formal credit sources was enhanced by higher income from rice farming which was considered as assurance that the farmer would be able to repay the loan on time. Experience in cultivation of lowland rice was also shown as being advantageous to securing formal credit facilities as a guarantee that the agricultural project would most likely succeed. However, accessing informal credit sources was clearly shown to be influenced by gender, with a preference for men and duration of residency in the village. Also, the level of familiarity that exists within existing

social groups, family or community settings farmers aided access to informal credit sources. This emphasizes the importance of reliability and openness in all financial transactions. Expense on fertilizer was discovered to be a key determinant of access to either of both sources of credit facilities as a major input in rice production. Empirical findings revealed that rice farmers in the study preferred informal sources of credit confirming the view that banking institutions have contributed insignificantly to the supply of credit. Gender considerations in credit use were found to be biased towards male rice farmers in the informal sector even though all male and female farmers were still in their productive years.

## 5. Conclusion

An understanding of the sources of credit that are accessible to rice farmers and the factors influencing their access to formal and informal credit, would help in the packaging of credit programs targeted at these farmers. This paper recognizes the global importance of rice and the significant potential rice market in Nigeria (Progress Report on Presidential Rice Initiative, 2004). It has therefore provided relevant empirical evidence in formulating agricultural policies concerning agricultural credit access for rice production in Nigeria as well as to stimulate support for a more conducive business enabling environment marked by supportive policies, and regulations. Information about the factors that influence rice farmer's access to formal and informal credit would assist government in the formulation of policies targeted at these farmers. Considering the dynamic nature of the financial services sector, such policies could offer services that expand and complement predominant informal credit programmes for smallholder farmers.



Based on the findings of this study, it is recommended that credit policies should be targeted at improving access of these farmers to formal credit programmes, which are of a larger volume. Government's efforts should be directed at helping rice farmers increase their level of income from rice farming by value addition through processing. This would increase the market value of rice resulting in increased returns from rice production and better position these farmers for formal credit facilities. In addition, necessary intervention

in form of improved access to production inputs should be implemented as this would increase rice production for better access to formal credit facilities. Formal credit institutions need to be readily accessible in order to contribute more to the development of rural farmers. To this end their focus should be on registering their presence in the rural areas with credit programmes that are suited to the seasonal credit requirements of these farmers as a complement to the services being rendered by the informal sector.

## References

- Adebayo O.O. and Adeola R.G. (2008). Sources and Uses of Agricultural Credit by Small Farmers in Surulere LGA of Oyo State *Anthropologist* 10.4: 313-314
- Akpokodje G., Lancon F. and Oreinstein Olaf (2001). The Nigerian Rice Economy in a Competitive World: Constraints, Opportunities and Strategic Choices, Nigeria's Rice Economy: State of the Art. WARDA Publication
- Ben-Akiva M. and Lerman S.R. (1985) Discrete Choice Analysis. The M.I.T. Press
- Central Bank of Nigeria. (2006) Microfinance Policy, Regulatory and Supervisory Framework for Nigeria : 1-5.
- Diagne A. 1999. Determinants of Household Access to and Participation in Formal and Informal Credit Markets in Malawi. Food Consumption and Nutrition Division. IFPRI.
- Erenstein O.F., Lancon O., Osiname and Kebbeh M. (2003). Operationalising the Strategic Framework: The Nigerian Rice Economy in a Competitive World-Constraints, Opportunities and Strategic Choices. WARDA-Africa Rice Centre, Abidjan,
- Green S. (2002), Rational Choice Theory: An Overview: A Presentation at the Baylor University Faculty Development Seminar on Rational Choice Theory, May 2002
- Hausman J. and McFadden D. (1984), Specification Test for the Multinomial Logit Model. *Econometrica* 52:5 pp 1219-40
- Iqbal M., Ahmad M. and Abbas K. (2003). The Impact of Institutional Credit on Agricultural Production in Pakistan. *The Pakistan Development Review* 42.4 Part I:469-485
- Li, R. and Zhu X. (2007). Econometric Analysis of Credit Constraints of Rural Households and Welfare Loss. *Economic Research*.2:146-155
- Linh, H. (2004). Effect of Rice Farming Households in Vietnam: A DEA with Bootstrap and Stochastic Frontier Application. Preliminary Draft, Department of Applied Economics, University of Minnesota
- Mpuga P. (2004). Demand for Credit in Rural Uganda: Who Cares for the Peasants? Paper presentation at the Conference on Growth, Poverty Reduction and Human



Development in Africa Centre for the Study of African Economies

Ogundari K. (2006). Determinants of Profit Efficiency Among Small Scale Rice Farmers in Nigeria: A Profit Function Approach. Poster Paper Presentation at International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-19, 2006

Omonona B.T., Egbetokun O.A., and Akanbi A.T. (2010) Resource Use and Technical Efficiency in Cowpea Production in Nigeria. *Economic Analysis and Policy*. 40:1

Progress Report on Presidential Rice Initiative. (2004).

Tang S., Guan Z., Jin S. (2010). Formal and Informal Credit Markets and Rural

Credit Demand in China. Paper presentation at the Agricultural & Applied Economics Association 2010 AAEA, CAES, & WAEA Joint Annual Meeting, Denver, Colorado.

Tiamiyu S.A., Akintola J.O., Rahji M.A.Y. (2010). Production Efficiency Among Growers Of New Rice For Africa In The Savanna Zone Of Nigeria. *Agricultura Tropica et Subtropica*. 43 (2)

Udoh E.J. (2005). Demand and Control of Credit from Informal Sources by Rice Producing Women of Akwa Ibom State, Nigeria. *Journal of Agriculture and Social Sciences* 1:2 152-155.

US Agency for International Development. 2008. Country Report. (2006).

UNIVERSITY OF IBADAN LIBRARY