Loan Accessibility and Repayment Performance of Livestock Farmers under the Agricultural Credit Guarantee Scheme Fund in Southeast, Nigeria

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Abstract

The study analysed livestock farmers' accessibility and repayment performance to lending institutions under the Agricultural Credit Guarantee Scheme Fund in Southeast, Nigeria. Two states (Ebonyi and Imo states) were purposively chosen as   representative of the five Southeast states. Primary data were collected using a structured questionnaire administered on 195 loan beneficiaries that were selected through simple random sampling technique. Descriptive statistics, logit and multiple regression analysis techniques were used in data analysis. The result showed that the lending institutions were able to meet 53.7% of the credit demand of the farmers, while their repayment performance was 90.1%. The logit analysis showed a "Percentage Correct" of 71.8% with age, marital status, educational level, farming experience, collateral value and total income as significant factors influencing accessibility to credit demand. The multiple regression analysis on factors influencing the farmers' loan repayment showed that amount borrowed, age, educational level, household size, livestock value and total income as significant variables at 5% level of probability influencing their loan repayment. The Federal Government of Nigeria is advised to fashion and enforce a programme for livestock development under the Agricultural Credit Guarantee Scheme Fund that will guarantee credit to livestock farmers. This will assist in enhancing the farmers' accessibility to the much needed credit thereby making animal protein available at reasonable prices to people.

Keywords: Livestock, Loan Accessibility, Repayment Performance, Credit Guarantee, Southeast.

INTRODUCTION

Agricultural loan can be obtained from two sources viz formal and informal. Formal loan refers to money obtained through a credit facility from a registered financial institution. According to Central Bank of Nigeria (2004), the Agricultural system in Nigeria operates through four (4) broad categories of credit institutions acting as financial intermediaries. First is the Central Bank of Nigeria that is the ultimate coordinator of formal credit. The second is the banking sector comprising of all the commercial and merchant banks, and the specialised banks like the Bank of Agriculture (formerly Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB).   The third set of credit institutions include the world bank assisted Agricultural Development Projects (ADP), River Basin Development Authority, State ministries, Cooperative organisations and non-governmental organisations (NGOs). Lastly, are the specialised credit/ credit enhancing institutions like the Nigerian Agricultural Insurance Corporation (NAIC) and microfinance banks. It is believed that the formal sources of credit are rarely, easily available to majority of the farmers because of their inability to meet the financial institutions' conditionalities. It is also believed that for the farmers that are fortunate to have access to formal credit, a wide gap exists between the amount requested and the amount obtained from the lending institutions. This is borne out of the conviction by formal institutions that lending to agriculture is a risky business because its repayment can hardly be fully obtained (Kohansal and Mansori,2009). It was in recognition of all these problems that the Federal Government of Nigeria in 1977 established the Agricultural Credit Guarantee Scheme Fund (ACGSF) to encourage commercial and other deposit banks to participate in increasing the productive capacity of farmers through a credit lending programme that will meet the farmers' needs. However, there is a growing concern that credit flow from the financial institutions under the scheme to farmers especially the livestock farmers in Southeast of Nigeria is poor leading to low output and consequently high prices of meat in their markets. Records show that the average price of meat in the states hovers around ₦1000 ($6.3). This is high in view of the fact that average daily wage in the area is about ₦800 ($5) and the importance of meat in the daily meal of the people. It is also common knowledge that most of the meat consumed in the area are either imported or brought in from other states. This raises the question of the farmers' accessibility to formal loan which is accepted as the cheapest source of credit and their repayment performance of loans obtained from formal institutions in the area.

METHODOLOGY

This study was conducted in Southeast, Nigeria. The Southeast comprises of five states viz Abia, Anambra and

Imo states in the South; and Ebonyi and Enugu states in the North. Ebonyi and Imo states were purposively chosen as representative of the states because of the presence of a high number of livestock farmers who took loan from formal institutions. Also, records of the Central Bank of Nigeria indicate that loan beneficiaries for livestock production in the two states account for 55.5% of the total population of livestock loan beneficiaries in Southeast, Nigeria. The list of the loan beneficiaries was sourced from banks under the ACGSF in the states. A total of one hundred and fifty (150) livestock farmers were obtained from the list of Imo state while a total of one hundred and twenty eight (128) livestock were obtained from the lists in Ebonyi state. These gave a sample frame of two hundred and seventy-eight (278) livestock loan beneficiaries for the study. Simple random sampling technique was used to select one hundred and five (105) beneficiaries from Imo state and ninety (90) farmers from Ebonyi state, thus giving a sample size of one hundred and ninety five (195) representing 70% of the sample frame. Primary data were collected using a structured questionnaire administered on the one hundred and ninety five (195) selected loan beneficiaries. Also, secondary information were obtained from journals, textbooks and bank bulletins.

Analytical Technique

Both descriptive and quantitative techniques were used in analysing the data obtained in this study. The ability of the financial institutions to meet the loan beneficiaries' credit demand and repayment performance of the farmers were achieved using percentages. The logit model was used to determine factors influencing accessibility to amount of credit demanded by the loan beneficiaries. This is patterned after the works of Akram et al (2008) and Rahji and Adeoti (2010). The model postulates that the probability (P_1) that an loan applicant has full access to credit demanded is a function of of an index Z . This index is also the inverse of the standard logistic cumulative function (P_1). The dependent variable is Y

Where

Y = 1 if the beneficiary had full access and 0 for otherwise

Hence:

$P_1 (Y =1) = f (Z_1)$ ……………………… equation 1

and

$Z_1 = f^{-1}(P_1)$ ……………………………… equation 2

The index (Z_1) summaries a set of the applicant's characteristics termed the explanatory variables (X^s).

Hence:

$Z_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_9 X_9$ ………… Equation 3

where

β_0= constant

X_1=Age (in years)

X_2= sex (1 = Male, 0 = Female)

X_3 = Marital status (1= Married, 0=Single)

X_4 = Household size (number of persons)

X_5 =Educational level (years)

X_6 =Farming Experience (years)

X_7 =Collateral value (Naira)

X_8= Livestock value (Naira)

X_9 = Total Income (Naira)

e = error term

The probability that an applicant has full credit access is

$P_1 (Y = 1)= \dfrac{1}{1 + e^{-z1}}$ …………………… Equation 4

The probability that the applicant does not have full credit access is

$P_1 (Y = 0) = 1 – P_1 (Y = 1)$ …………………………….. Equation 5

But

$1- P_1 (Y=1) = \dfrac{e^{-z1}}{1 + e^{-z1}}$ …………………………………Equation 6

and the ratio of equation (4) to equation (6)

$P_1 (Y =1) / [1-P_1 (Y=1)] = e^{-z1}$ ……………………Equation 7

Therefore, the probability that an applicant has full credit access to the probability that he does not have full access is represented as

$Log_e [P_1 (Y=1)] / [1-P_1 (Y = 1)] = Z_1$ ………………… Equation 8

The left hand side of equation (8) is the probability that the applicant has full credit access to the probability that he is credit constrained. An applicant is credit constrained if he does not have full access to his credit demand. A

negative sign on any variable means that higher values of that variable increase the probability that the farmer will be constrained while a positive sign indicates that higher values of the variable will increase the likelihood of the applicant to have full access to the amount of loan demanded.

The beneficiaries' repayment performance was realised using the repayment rate formula while the factors influencing their repayment was determined using multiple regression analysis. The repayment performance was obtained using the formula

$$RR = \sum_{i=1}^{n} \frac{A_i}{Tr}$$

where,

RR = repayment rate (%)

N = number of beneficiaries

A_i = amount repaid (₦)

Tr = total amount due for repayment

The multiple regression analysis used to determine factors influencing the amount of loan repaid by a farmer was patterned after the works of Onyenucheya and Ukoha (2007) and is implicitly represented as

LR = f (X$_1$, X$_2$, X$_3$, X$_4$, X$_5$, X$_6$, X$_7$, X$_8$, X$_9$, X$_{10}$, X$_{11}$)e

where,

LR = amount of loan Repaid (N)

X_1 = amount of loan borrowed (N)

X_2 = age of farmers (years

X_3 = sex of the Respondent (1 = Male, 0 = Female)

X_4 = marital status (1=Married, 0=Single)

X_5 = number of Years spent in school (years)

X_6 = livestock Farming experience (years)

X_7 = household size (Number of Persons)

X_8 = interest charge on loan (%)

X_9 = livestock value (₦)

X_{10} = total income (₦)

X_{11} = collateral Value (₦)

E = error term

In estimating the regression model, the data collected were fitted into four functional forms viz linear, semi log, exponential and hyperbolic forms. The form that gave the best fit based on value of coefficient of multiple determination (R^2), number of variables with significant t- coefficients and conformity of the signs of the variables to *a priori* expectations was chosen as the lead model (Olayemi, 1998; Odii, 2001). The overall significance of the independent variables was tested using the F-test statistic. The model is stated thus

$$F^* = \frac{R^2/(k-1)}{(1-R^2)/(N-K)}$$

where

F*= computed F value

R^2 = coefficient of multiple determination

N =number of observations

K = number of independent variables

RESULTS AND DISCUSSIONS

Out of the one hundred and ninety five (195) questionnaires administered on the selected respondents, only one hundred and eighty-eight (188) questionnaires were validly completed, returned and used in the analysis. The analysis showed that the banks were able to meet 53.7% of the credit demand of the loan beneficiaries. This is low considering the role of credit in raising the output of farmers. This could be attributed to majority of the farmers' inability to meet the institution's conditions.

The result of the logit regression analysis on factors influencing accessibility to the amount of loan applied from lending institutions under the Agricultural Credit Guarantee Scheme in the study area is presented in Table 1. In the result, the "Predicted Percentage Correct" is 71.8% which indicates that the model displays a good fit. Also, the computed chi-square was 87.23 which is greater than the tabulated value at 1% (21.7) and 5% (16.92) thereby making the independent variables statistically significant in identifying factors influencing accessibility to amount demanded from the lending institutions. The Wald statistics coefficient for age (X$_1$) was positive and statistically significant at both 1% and 5% levels of significance. The implication of this result is that older people within the context of this study have better access to the loans than the younger ones. A further

explanation of this is that older people are likely to be more realistic in the amount of loan demanded and also more likely to meet the collateral requirements that are attached to the amount of loan that they demand. The coefficient for marital status (X_3) was also significant at both 5% and 1% probability levels. A probable explanation of this result is that married people are considered to be very stable, responsible and most likely to meet contractual agreement than single persons. The Wald statistics coefficient for educational level (X_5) was also positive and significant at both 1% and 5% level of significance. Educational level is expected to play a leading role in credit access as it takes a good educational background to understand one's credit capability. The coefficient for farming experience (X_6) was only significant at 5% probability level. This fits into *a priori* expectations as it takes experience for one to understand the adequate amount that he requires in business at any given time. The coefficient for collateral (X_7) was significant at both 1% and 5% level of significance. This is acceptable as highly valued collateral attracts the attention of all creditors. Farmers with high valued collateral expected to have access to loans demanded that those with low valued collateral. The Wald statistics value for total income (X_9) is also significant and positive as a factor that enhances accessibility to credit demanded. A probable explanation of this result is that higher monthly income implies a higher capacity to meet repayment schedule. The analysis of the loan repayment performance of the respondent livestock farmers in the south east states showed a repayment rate of 90.1%. This is high and in tandem with the findings of Oke, Adeyemo and Agbonlahor (2007) who reported a repayment rate of 90% in their study on microcredit repayment in Southwestern Nigeria. It is however contrary to the findings of Acqnah and Addo (2011) who reported a low repayment rate of 29.1% in their study on fishermen in Ghana and the findings of Onyenucheya and Ukoha (2007) who reported a low repayment rate of 45% in their study on farmers under the Nigerian Agricultural, Cooperative and Rural Development Bank (now Bank of Agriculture) in Abia State. The result of the multiple regression analysis on the factors influencing the loan repayment is presented in Table 2.

The double log function performed best of all the functional forms as it produced the highest value of coefficient of multiple determination (R^2), the highest number of variables with significant t- values and conformity of the signs to *a priori* expectations. It also displayed the least value of standard error (S.E). The F value of 26.04 is greater than the tabulated value at both 5% (1.83) and 1%(2.47) levels of significance. This implies that there is a significant relationship between the dependent variable and independent variables. The coefficient of multiple determination was 0.65 implying that 65% of the variation in the farmers' loan repayment performance was explained by the independent variables included in the model. This is high compared to 46.7% obtained by Ojiako and Ogbukwa(2012) in their study on loan repayment capacity of small holder cooperative farmers in Yewa North local Government area of Ogun state. Also, Onyenucheya and Ukoha (2007) obtained an R^2 of 30.0% in their study on loan repayment and credit worthiness of farmers under the Nigerian Agricultural Cooperative and Rural Development Bank (now Bank of Agriculture) in Abia state.

Thus, the lead equation on factors influencing repayment performance of livestock farmers in Southeast, Nigeria is mathematically represented as

Log Q =2.964 + 0.644logX$_1$ + 0.280logX$_2$ + 0.265logX$_3$ − 0.200logX$_4$ + 0.956logX$_5$
         (1.380)   (5.625)**   (0.234)   (0.927)   (-1.331)   (2.897)**
+ 0.870logX$_6$ − 0.182logX$_7$ + 0.351logX$_8$ + 0.019logX$_9$ + 0.190logX$_{10}$+ 0.021logX$_{11}$
    (0.697)   (-1.999)**   (0.613)   (1.751)*   (1.851)*   (0.675)

The multiple Regression coefficients for amount borrowed (X_1), age (X_2), educational level (X_5), household size (X_7), livestock value (X_9) and total income (X_{10}) were significant at 5% and 1% level of probability implying that these variables are very important factors influencing the amount of loan repaid by the respondent livestock farmers. The coefficient for amount borrowed (X_1) was significant at both 5% and 1% level of significance. This result is contrary to the findings of Eze and Ibekwe (2007) but in agreement with Afolabi (2008) and Iqal, Ahmad and Abbas (2003). An explanation of this result is that the more volume of loan given to a farmer, the more likely that he will make adequate amount available for the farm business which will lead to higher income and consequently result in higher repayment capacity. This is possible due to the advantages associated with the economies of scale which come through the expansion of purchases and production (Okorji and Mejeha, 1993). The coefficient for age (X_2) was negatively significant at 5% probability level. This result is in tandem with the findings of Balogun and Alimi (1988) that age is one of the major causes of loan default. This can be attributable to the fact that the older the farmer, the less aggressive and innovative he becomes in farm business and hence the less ability to manage facilities effectively. The coefficient for educational attainment (X_5) was also significant at 5% level of significance. This is in agreement with *a priori* expectation that a good educational standing is required to understand the importance of loan repayment. It is also in consonance with the study of Oladeebo and Oladeeto (2008). The coefficient for household size (X_7) was negatively significant at both 5% and 1% levels of significance large household sizes could exert pressure on a loan beneficiary thereby leading to poor loan repayment as fund to be used to repay loan could be diverted to meet a large household needs. This is contrary to the findings of Afolabi (2008) who reported a positive relationship between household size and loan repayment. However in another study on small scale farmers of Oyo State, Nigeria, Afolabi (2010)

reported that household size had negative influence on loan repayment performance which is in agreement with this finding. The coefficient for livestock value (X_9) was positive and significant at 5% probability level. This is acceptable as it is expected that higher livestock value implies higher income to the farmer which keeps him in a better position for loan repayment. The coefficient for total income (X_{10}) was positive and significant at 5% level of significance . This is in agreement with Onyenucheya and Ukoha(2007). A high total income implies enough money to meet family needs and also meet loan repayment agreement.

CONCLUSION AND RECOMMENDATIONS

Inadequate access to credit limits agricultural output and by extension the farmers' income. This study, therefore, investigated livestock farmers' accessibility and repayment performance of credit loans obtained from financial institutions under guarantee by the Agricultural Credit Guarantee Scheme Fund (ACGSF). Financial institutions under the scheme in the study were able to meet 53.7% of the farmers demand. The study also, showed that there is high repayment rate by the farmers. This is contrary to studies that reported low repayment in agricultural lending. It is therefore recommended that Federal Government should fashion and enforce a programme for livestock development strategy under the Agricultural Credit Guarantee Scheme Fund that will guarantee adequate credit to educated livestock farmers.

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Table 1: Logit Regression Result on Factors influencing Credit Accessibility by Livestock farmers in Southeast, Nigeria

Variable	Coefficient B	S.E	Wald Statistics	odd Ratio
Constant	0.042	1.897	0.000	1.043
Age (X_1)	0.187	0.034	30.852**	1.256
Gender (X_2)	0.193	0.548	0.123	1.212
Mar. status (X_3)	-2.687	0.830	10.475**	0.068
Household size (X_4)	0.014	0.092	0.023	1.000
Educ. level (X_5)	-0.312	0.120	6.714**	1.732
Farm. Exp. (X_6)	-0101	0.074	1.862*	0.904
Col. Value (X_7)	0.000	0.000	12.869**	1.500
L/ value(X_8)	0.000	0.000	1.485	1.000
Total Inc. (X_9)	0.180	0.110	2.449**	1.920
Chi squared$_{comp.}$	87.23			

Source: Field Survey Data 2012

** =Significant at 1%;   * = 5% level

Table 2: Multiple Regression Analysis Results on Factors Influencing Loan Repayment by the livestock Farmers in Southeast, Nigeria

Variable	Linear	Semi log	Doublelog	Exponential
Constant	97487.95	9.533	2.964	9.501
	(0.372)	(1.391)	(1.380)	(16.092)
Amt. Bor Borrowed(X_1)	0.449	0.698	0.644	0.006
	(2.687)**	(1.908)*	(5.625)**	(1.548)
Age (X_2)	1117.724	0.417	0.280	0.023
	(0.273)	(0.457)	(0.234)	(2.608)**
Gender (X_3)	55895.27	0.359	0.265	0.639
	(0.846)	(0.897)	(0.927)	(1.449)
Mar.Stat(X_4)	19084.49	-0.501	-0.200	0.342
	(0.152)	(-1.044)	(-1.331)	(1.482)
Edu Lev (X_5)	44380.04	1.085	0.956	0.079
	(2.086)*	(1.029)	(2.897)**	(2.467)**
Farm Exp(X_6)	1515.74	0.120	0.87	0.042
	(0.169)	(0.301)	(0.697)	(2.243)*
HH size(X_7)	-40771.27	0.428	-0.182	-0.005
	(-2.132)*	(1.253)	(-1.999)**	(-0.172)
Interest(X_8)	8163.41	-0.420	0.351	-0.019
	(1.670)*	(-0.230)	(0.613)	(-1.855)*
L/stock Value(X_9)	0.034	0.009	0.019	0.012
	(0.618)	(0.034)	(1.710)*	(0.240)
Total Income (X_{10})	0.390	0.619	0.19	5. 34
	(0.211)	(2.207)*	(1.851)*	(1.176)
Coll.value(X_{11})	0.170	0.898	0.021	0.01
	(0.120)	(2.147)*	(0.675)	(2.377)**
η	188			
R^2	0. 375	0.111	0.65	0.270
F-Cal	9.62	1.754	26.04	5.926
S.E	3.746	1.906	0.597	0.82

Source Field Survey data 2012.
( ) t- coefficient
**Significant at 5% level of significance
* Significant at 1% level of significance