Evaluation of the Operational Performance of the Nigerian Agricultural Credit Cooperative and Rural Development Bank (NACRDB) in South-Western Nigeria

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Abstract: This study examined the performance of small-scale farmers in Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB), in terms of repayment in Oyo and Ondo States. A multistage sampling procedure was used to select 300 respondents using both primary and secondary data to accomplish the objectives. The Tobit regression results on loan repayment of Log-likelihood function (-17.99385) showed that farm experience, farm location, cost of obtaining loan, visitation, borrowing frequency and education with normalized coefficients of –0.0285, -0.0661, -0.1196E^{-04} 0.1048, 0.0518 and 0.0112 respectively were very important factors in determining the repayment performance of the beneficiaries in the institution. The study showed that the institutions considered were characterised by untimely delivery of loan owing to complicated, cumbersome and time-consuming procedures in loan processing/approval decision. The decomposition of repayment elasticities employed in this study indicated that the elasticity of value of loan repaid in good times was more than the elasticity of probability of repayment since the amount of loan size recovered has a long way to go in enhancing the lending capabilities of the institutions. The results of the study therefore provided a baseline data for policy formulation needed to facilitate accessibility of farmers to agricultural loans and enhance loan repayment performance.

Keywords: Tobit, Decomposition, Decision, NACRDB, Credit.

INTRODUCTION

In the less developed countries (LDCs), the role of agricultural credit is closely related to providing needed resources which farmers cannot source from their own available capital. In this regard, the provision of agricultural credit has become one of the most important government activities in the promotion of agricultural development in Nigeria. One of the reasons for the decline in the contributions of agriculture to the economy is lack of a formal national credit policy and paucity of credit institutions, which can assist farmers. Credit (capital) is viewed as more than just another resource such as labour, land, equipment and raw materials (Rahji, 2000). According to Shepherd (1979) credit determines access to all of the resources on which farmers depend. Consequently, provision of appropriate macroeconomic policies and enabling

institutional finance for agricultural development is capable of facilitating agricultural development with a view to enhancing the contribution of the sector in the generation of employment, income and foreign exchange (Olomola, 1997).

In 1999, the Nigerian Agricultural Cooperative Bank was merged with other Agricultural production facilitating banks like the People's Bank of Nigeria (PBN) and the risk assets of the Family Economic Advancement Programme (FEAP) to become an integrated banking system called the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB). It was to grant loans for agricultural production for the purposes of storage, distribution and marketing connected with such production to any state, group of states or any institution for on-lending to farmers, group of farmers or corporate body subject to the states or group of states or state institutions guaranteeing repayment of the loan. The major problems however facing these agricultural credit programmes, irrespective of the institution channel, are low credit recovery rates and patronage.

In the words of Armah and Park (1998) "unless substantial recoveries are made from overdue debts, not only will lending institutions be unable to issue out more loans, there might also be difficulties in meeting legal obligations as they may become crystallized. They also contended that as repayment is the question in lending, the aim of financial assessment is to ensure that the prospects of repayment are high. For any financial organisation like NACRDB, the issue of survival is considered to be very important. For such to avoid liquidation, a component unit at each branch offices must remain afloat to realize some profit and must ensure sustainability, that is, for the institutions to remain in business, it has to cover not only its cost of operations but leave a margin of profit. Thus, in granting loans the financial institutions must ensure repayment; which is implicit in the credit worthiness of the intended beneficiaries.

No matter what the final objectives of credit institutions may be, it is basically the generation of concrete benefits to the borrowers, which make for the success or failure of the credit programmes. It is therefore essential that a full recognition and understanding of the borrower's point of view, interest and problems be considered in relation to the credit recovery of the institutions concerned. Hence, the need to look into the factors guiding the repayment performances of loan beneficiaries in relation to the volume of loan approved, disbursed and recovered by the credit institutions over a period of time.

The Tobit model specification

Tobin (1958) devised what became known as the Tobit (Tobin's probit) or censored normal regression model for situations in which y is observed for values greater than 0 but is not observed (that is censored) for values of zero or less. The standard Tobit model is defined as

$y_i^* = x_i\beta + \varepsilon_i$

$y_i = y_i^* \quad \text{if } y_i > 0$

$y_i = 0 \quad \text{if } y_i \leq 0$ ……. (1)

where y_i^* is the latent dependent variable, y_i is the observed dependent variable, x_i is the vector of the independent variables, β is the vector of

coefficients, and the ε_i 's are assumed to be independently normally distributed: $\varepsilon_i \sim N(0, \sigma^2)$ (and therefore $y_i \sim N(x_i\beta, \sigma^2)$). It should be noted that observed 0's on the dependent variable could mean either a "true" 0 or censored data. At least some of the observations must be censored data, or y_i would always equal y_i* and the true model would be linear regression, not Tobit. Maximum- likelihood estimation of the Tobit model is straightforward. Let *f* (.) and F(.) denote the density function and the cumulative density function for y*. Then the model implies that the probabilities of observing a non- zero y are *f* (y) and p(y* < 0) = F(0), respectively. The log–likelihood function for the model is therefore

$$InL = \left(\prod_{yi>0} f(yi) \prod_{yi=0} F(0)\right) = \sum_{yi>0} Inf(yi) + \sum_{yi=0} InF(0) \quad \text{……..…….. (2)}$$

because y* is normally distributed (as the ε's are normally distributed), *f* (.) and F (.), and therefore the log–likelihood function, can be re expressed in terms of the density function and the cumulative density function of the standard normal distribution, ϕ (.) and Φ (.), and the log-likelihood function can be written in the familiar form:

$$InL = \sum_{yi>0}\left(-In\sigma + In\phi(yi - xi\beta)\right) + \sum_{yi=0} In\left(1 - \Phi\left(\frac{xi\beta}{\sigma}\right)\right) \quad \text{...(3)}$$

Maximum likelihood estimation can then proceed in the usual fashion. To interpret the estimation results, the Marginal Effects (ME) of the independent variables on some conditional mean functions should be examined. In the familiar OLS model y = xβ + ε, there is only one conditional mean function, E (y) = xβ, and M E (y)/ $Mx_k = \beta_k$, where x_k is the k^{th} independent variable. This makes interpretation easy: β_k measures the marginal effect on y of the k^{th} independent variable. In the Tobit model, though, there are three different conditional means: those of the latent variable y*, the observed dependent variable y, and the uncensored observed dependent variable y / y > 0. Accordingly, interpretation depends on whether one is concerned with the marginal effect of x on y*, y, or y / y > 0. Once one determines which marginal effect one is interested in, one simply examines the marginal effects of x on the appropriate conditional expectations. The three marginal effect expressions are derived using standard results on moments of truncated/censored normal distributions (Green, 1997) as follows:

$$\frac{ME(y^*|x) = \beta}{Mx} \quad \text{…….. 4}$$

$$\frac{ME(y|x) = \Phi\beta}{Mx} \quad \text{…….. 5}$$

$$\frac{ME(y|y)\rangle ox}{Mx} \quad \text{…….. 6}$$

where

δ(α) = λ(α)(λ(α) – α), λ(α) = ↓(α)/(1- Φ (α)), and α = -(xβσ).

Equation (5) can be decomposed into two parts for ease of interpretation (McDonald and Moffit 1980). Roncek (1992) provides an example.

Clearly, only for the latent index y* can β be interpreted as the marginal effects of the independent variables. There can be cases in which the mean of the latent y* is of central

interest, but when the data are censored the mean of the observed y is usually of greater interest.

The cumulative normal distribution is viewed as a desirable transformation in this case since it relates a variable (number of standard deviations from the mean) which has a range from minus infinity to plus infinity to another variable (a probability) which has a range from zero to one. In this way, an unconstrained variable can be "transformed" into a new variable, which is bounded. To overcome these problems, studies by Rosett and Nelson (1975), McDonald and Moffit (1980), Norris and Batie (1987), have employed the Tobit model in one form or the other in their various studies. Gustafson, *et.al*. (1991) employed the Tobit analysis to investigate the decision process taken in credit evaluation of agricultural loan officers, while Siles *et.al*. (1994) employed the Tobit model to estimate the effect of socio-economic factors on the probability of loan approval. This model would be most appropriate in that according to Tobin (1958), Amemiya (1978), Akinola and Young (1985), the Tobit model assumes that the dependent variable has a number of its value clustered at a limiting value usually zero and uses all observations between those at the limit and those above the limit, to estimate a regression line. If no observations are available on the individual loan sizes then the sample is said to be truncated. This is to be preferred, in general, over alternative techniques that estimate a line only with the observations above the limit.

The Tobit model is therefore viewed as a hybrid of the discrete and continuous model, which will simultaneously analyse the borrower decision about whether or not to repay loan, and determines the quantity of the repaid loan size. The technique can be used to determine both changes in the probability of being above the limit and changes in the value of the dependent variable if it is already above the limit. This can be quantified for useful and insightful deductions (McDonald and Moffit, 1980).

METHODOLOGY

The study was conducted in Oyo and Ondo states in southwestern Nigeria. Southwestern Nigeria comprises of six states viz: Lagos, Ogun, Oyo, Osun, Ondo and Ekiti states. The study was conducted on the Nigerian Agricultural Cooperative and Rural Development Bank limited (NARCDB) being the national/apex agricultural credit institution in Nigeria. A multi- stage sampling technique was used to select the respondents. Firstly, Oyo and Ondo States were purposively selected because they had higher number of the banks' branches with high number of agricultural loan applicants. The lists of the applicants were collected from each of the state offices of Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB), six branches were purposively chosen based on the concentration of the applicants. Finally, in the last stage, having found that the average number of applicants for each branch was 250 during the preliminary survey period, 10 percent of the number, that is, 25 applicants were randomly selected from each branch of the bank in the state. Since there are 6 bank branches in each state so there are 12 (twelve) branches in all. Twelve agricultural officers were interviewed for the purpose of the

study. Therefore 25 multiplied by 12 = 300 made up the sampling size for the beneficiaries.

The study made use of both primary and secondary data to accomplish the objectives. The data for this study contained the 2003/2004 production year. Two different sets of structured questionnaires were used in the collection of primary data. The first sets were directed at the Agricultural Officers of the banks in connection with the banks and beneficiaries. The second sets, were directed at the agricultural loan beneficiaries of the institutions. Secondary data were sourced from the bank's draft operating manual, official publications of CBN, such as statistical bulletin, published reports on Agricultural Credit and Banking and notes on Nigeria Agricultural Bank, Federal Office of Statistics Publications and International Financial Statistics published by the World Bank.

The conceptual model

To determine the effect of various explanatory factors on loan repayment as well as the extent of determining the loan size repaid, this study follows from Gustafson *et al* (1991), LaDue *et al* (1992) and Siles *et al* (1994). Loan repayment decisions are assumed to be based upon the strength of feeling of the i^{th} borrower to repay the loan. According to Gustafson *et al* (1991), agricultural officers are assumed to make loan repayment decision based upon an objective of utility maximization. If j represents various sizes of loan where j = 1 for the large amount of loan and j = 2 for the small amount of loan, then the non – observable and unavailable underlying utility function, which ranks the preference of the i^{th} borrower, is given by $\mu (M_{ji}, A_{ji})$. Thus the utility, derivable from the various sizes of loans repaid depends on M, which is a vector of farm and farmer– specific attributes of the loan beneficiary and A, which is a vector of attributes associated with the sizes of loan repaid. Although the utility function is unobserved, a linear relationship is postulated between the utility derivable from a j^{th} loan size and the vector of observed farm, farmer specific characteristics, X_i (e.g. farm size, age, gender, project type, experience of farmer), and the loan specific characteristic (e.g. small or medium, long term), project type specific characteristics (e.g. food crops, cash crops), institutional characteristics (e.g. extension contact), location specific characteristics (e.g. agro ecological zones) and a disturbance term having a zero mean, e_j: $\mu_{ji} = \beta_i X_i + e_{ji}$ $j = 1,2: i=1, \ldots,n$ ….(7)

and $X_i = F_i(M_i, A_i)$ ……(8)

Beneficiaries are assumed to repay a loan size that gives them the largest utility. Thus, equation (8) does not restrict the function F to linear, such that as the utilities μ_{ji} are random, the ith borrower will select the alternative

$j = 1$ if $\mu_{1i} > \mu_{2i}$ or if the unobservable (latent) random variable

$Y^* = \mu_{1i} - \mu_{2i} > 0$ ……..……..…(9)

Since the primary aim is to interpret the dependent variable in the model as the probability of making a choice, given information about X_i there is need to use some notion of probability as the basis of the transformation. This involves translating values of X_i, which may range over the entire real line, into a probability that ranges in value from 0 to

1. A monotonic transformation is also required since it is desirable that the transformation should maintain the property that increases in X_i are associated with increases (or decreases) in the dependent variable for all values of X_i. According to Pindyck and Rubinfeld (1997), the cumulative probability function provides a suitable transformation. This is defined as one having as its value the probability that an observed value of a variable X_i (for every X_i) will be less than or greater than the threshold value. Since all probabilities lie between 0 and 1, the range of the cumulative probability function is the (0, 1) interval.

Hence, the standard cumulative normal distribution of $X_i\beta$ is expressed as:

$$F(X_i\beta) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{Y_1} e^{\frac{-s^2}{2}} ds \quad \text{……..(10)}$$

Where, s = a random variable which is normally distributed with mean zero and unit variance. Thus, the probability that $Y_i = 1$ (i.e. that the lender approves a loan) is a function of the independent variables:

$P_i = P_r(Y_i = 1) = P_r(\mu_{1i} > \mu_{2i})$

$= P_r(\beta_1 X_i + e_{1i} > \beta_2 X_i + e_{2i})$

$= P_r[e_{1i} - e_{2i} > X_i(\beta_2 - \beta_1)]$

$= P_r(\mu_i > X_i\beta)$

Therefore, $P_i = P_r(Y_i = 1) = F_i(X_i\beta)$..... (11)

Where: P_r = a probability function, μ_i = a random disturbance term $(e_{1i} - e_{2i})$; $\mu i \sim N(0, \sigma^2 1)$. X = the n × k matrix of the explanatory variables, β = k × 1 vector of parameters to be estimated. $F(X_i\beta)$ = cumulative distribution function for μ_i evaluated at $X_i\beta$. Thus, the probability that a borrower will repay a certain loan size is a function of the vector of explanatory variables, the unknown parameters and the error term. However, equation (11) cannot be estimated directly without knowing the form of F. following Rahm and Huffman (1984), it is the distribution of μ_i that determines the distribution of F. therefore, if μ_i is normal, F will have a cumulative normal distribution.

The functional form of F (which is the decision component of the model) can be specified as a linear combination of observable explanatory variables as:

$$Y^*_i = \beta X_i + \mu_i \quad \text{……..…...…(12)}$$

This can be represented algebraically for the i^{th} borrower as:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \beta_N X_N \ldots\ldots; \quad i = 1, 2, \ldots N$$

such that

$$Y_i = \begin{cases} 0 & if \ Y_i^* \le T \\ Y_i^* & if \ 0 < Y_i^* < 1; \\ 1 & if \ Y_i^* > T \end{cases} \qquad (i = 1, 2, ..., n)$$

……...(13)

where, Y_i = observed dependent variable e.g. the size of the loan repaid by the i^{th} borrower. Y^*_i = non- observable latent variable representing the continuous dependent variable when decision is made on the loan size. (e.g. loan repaid). T = non- observable threshold (cut- off) point, N = number of observations.

Since the disturbance term, μ_i, is a function of the independent variables, an attempt to estimate equation (13) using Ordinary Least Square (OLS) will result in biased and inconsistent estimates (Maddala, 1983). If Y^*_i is assumed to be normally distributed, then consistent estimates can be obtained by performing a Tobit estimation using an iterative Maximum Likelihood Algorithm (White, 1978).

The use of maximum likelihood estimation guarantees that the parameter estimates will be asymptotically efficient and the appropriate statistical tests can be performed. This means that all the parameter estimators are asymptotically normal, such that test of significance analogous to the regression t- test can be performed (Pindyck and Rubinfeld, 1997). The likelihood function is of the form:

$$L = \sum_{t=1}^{s} \log\left[1 - F(\sigma\ Y_t - I_t)\right] + \sum_{t=S+1}^{N} \log\ f(\sigma\ Y_t - I_t) \quad \ldots\ldots\ldots\ldots (14)$$

Where F_i and f are the cumulative normal distribution function of μ_i, and T is the critical (cut-off) value which translates $Y^*_{i>}$ T, as borrower repaid, and $Y^*_i \leq T$, as borrower refuse to pay. The Tobit model (Tobin, 1958) therefore measures not only the probability that a borrower will repay the loan but also the influence of the loan size if repaid. Thus, equation 13 is a simultaneous and stochastic decision model. If the non-observed latent variable Y^*_i is greater than T, the observed qualitative variable Y_i that indexes repayment becomes a continuous function of the explanatory variables and 0 otherwise (no repayment).

RESULTS AND DISCUSSION

Loan Disbursement, Repayment and Default

Some definite pattern on the proportion of loan repayment to loan disbursed is revealed from Table 1. Over the years, the amount repaid had been lower than the amount due for repayment with the rate ranging from 28.19 percent in 1999 to 78.02 percent in 2001. The decreasing rate of repayments by the beneficiaries over the years had made it impossible for the institution to meet the cash requirement for its borrowers, especially in some projects.

The study further revealed that out of the overall volume approved, about 2,216 were not disbursed. A number of varying reasons were adduced for this and these ranged from improper completion of application forms, unsatisfactory visitation/ inspection reports on proposed projects, inability to produce guarantors and relevant records as well as the failure of the applicant to return the appropriate satisfactory document as expected. In essence, the number of "non disbursement" accounted for 17.4 percent out of the overall approval made for the period under consideration.

The highest number of repaid loans (78 percent) was recorded in the year 2001 while the least repayment was recorded in 1999 with 28 percent (Table 3). This could be attributed to merger effects of the Nigerian Agricultural Cooperative Bank limited with other agricultural production facilitating banks like peoples' bank of Nigeria (PBN), integrated banking system of Nigerian Agricultural Credit and Rural Development Bank (NACRDB). The repayment performance index within the period 1996 – 2000 was low when compared with that of the period 2001-2006 (Table 2). This could be attributed to the fact that there was a lack of consistency in the growth performance of the agricultural sector in the period 1981-2000 with some evidence of unstable or fluctuating trends, probably due to policy instability and inconsistencies in policies and policy

implication. This probably reflects the declining trend in the Federal Government's investment priority in the agricultural sector.

Table 1. Volume of loan disbursement and repayment

Year	Amount repaid (N)	Amount due (N)	Repayment rate (%)
1996	3,020,218.00	5,893,496.00	51.25
1997	6,421, 033.00	10,540,958.28	60.92
1998	3,662,101.00	9,049,879.20	40.47
1999	680,314.00	2,413,281.40	28.19
2000	2,682,428.00	4,636,436.48	57.86
2001	9,998,279.00	12,815,756.00	78.02
2002	11,831, 468.00	15,312,133.40	77.27
2003	17,893,926.00	23,329,596.36	76.70
2004	21,812,603.00	29,246,390.96	74.58
2005	9,988,279.00	13,815,756.00	76.02
2006	8,998,279.00	11,815,756.00	75.02

Source: NACRDB'S Record, OYO & ONDO States.

LPI= Loan Repayment Index

The repayment performance index within the period 1996 – 2000 was low when compared with that of the period 2001-2006 (Table 2). This could be attributed to the fact that there was a lack of consistency in the growth performance of the agricultural sector in the period 1981-2000 with some evidence of unstable or fluctuating trends, probably due to policy instability and inconsistencies in policies and policy implication. This probably reflects the declining trend in the Federal Government's investment priority in the agricultural sector. The pattern of low repayment index (LRI) movement in the latter period was a reflection of government priority for agriculture and recent increase in public sector salaries thereby improving people's purchasing power. Following from this is the high demand for products and more importantly the degree of compliance of the banking system with the agricultural credit guidelines. The level of disbursement each year is regarded as a function of the preceding year's repayment performance of the beneficiaries as implicit in the recovery of loans by the bank (Table 2). The high default rate could also be attributed to the poor monitoring and supervision in the management structure. On the average, the agricultural credit assistants do visit the applicant's farms only once before the loan is given to them. The supervision and monitoring activities are either carried out randomly or never at all during the period of farming. It was discovered that there is little or no extension role being carried out. This could therefore result to diversion of loan into other things apart from agricultural activities for which it was meant.

TABLE 2. Summary of the NARCDB loans repayment performance (1996-2007)

Year	Loan Vol. Approved	Loan Vol. Disbursed	Amount Repaid	Amount Due	Outstanding Balance	BBR (1)	LRI (2)	BDR (3)	LDI (4)
1996	6,415,200	5,080,600	3,020,218	5,893,496	2,873,278	46.5	48.2	53.5	51.8
1997	10,804,690	9,087,033	6,421,033	10,540,958	4,119,252	48.8	53.1	61.2	56.9
1998	8,405,150	7,801,620	3,622,101	9,049,879	5,427,778	40.3	41.4	59.7	58.6
1999	4,608,600	2,080,415	680,314	2,413,281	1,732,967	42.2	43.8	57.8	56.2
2000	5,817,315	3,996,928	2,682,428	4,636,436	1,954,008	40.7	41.5	59.3	58.5
2001	12,733,640	1,048,066	9,998,279	12,815,756	2,817,477	53.9	54.8	46.1	45.2
2002	15,483,414	13,200,115	11,831,468	15,312,133	3,480,665	57.9	56.7	42.1	43.3
2003	22,941,731	20,111,721	17,893,926	29,329,596	5,435,670	63.6	64.8	36.4	35.2
2004	27,816,372	25,212,406	21,812,603	29,246,390	7,433,787	65.3	69.2	34.7	30.8
2005	23,941,731	20,111,721	17,893,926	29,329,596	5,435,670	65.6	68.8	35.4	34.2
2006	28,816,372	25,212,406	21,812,603	29,246,390	7,433,787	67.3	79.2	34.7	32.8

Source: Adapted From NACRDB Data, 2007
BRR= Borrower's Repayment Rate
BDR=Borrower's Default Rate
LDI= Loan Default Index

Nature of Repayment Problems

The delinquency and default problems observed among the beneficiaries can be evaluated in four categories. They are (i) borrower related causes; (ii) causes related to loan utilization; (iii) lender- related sources; and (iv) extraneous causes. The borrower- related causes include sickness such as infections; burden of other debts and family problems. The causes which are related to loan utilization are low sales; fall in product prices; low or poor yield; low product prices; low demand for product; perishable nature of product; pest attack and weather condition (especially inadequate or too much rainfall).

The lender- related causes are high interest rate and late disbursement of loans. Other critical but extraneous factors are fuel scarcity, poor transportation and communication system and high cost of transportation. One category of causes appears to be particularly troublesome judging by the high proportion of borrowers who attributed their inability to repay to it. This cause is associated with loan utilization. Table 3 showed that the poor transportation system in the rural areas which is a major impediment to produce marketing was regarded by 92 percent of the respondents as the cause of their inability to repay on schedule. The production related problems are poor yield, high incidence of pests and diseases and inclement weather. The unsatisfactory weather condition (especially inadequate or too much rainfall) is the most crucial production- related problems as indicated by 62 percent of the respondents. These factors need to be taken into consideration in fully understanding the effects of loan use on repayment performance in the rural financial system.

Table 3. Causes of Loan Repayment Problems among the Beneficiaries

Causes	% of Respondent*
Borrower-related	
Ill- health	32
Burden of some other debt	6
Family Problems	8
Lender- Related	
High interest rate	12
Late disbursement Lag	15
Loan use related	
Low sales	92
Fall in product prices	88
Poor yield	12
Low product prices	68
Perishable nature of products	3
High incidence of pest and diseases	4
Inclement of weather condition	62
Low demand for product	68
Extraneous factors	
Fuel Scarcity	56
Poor transportation system	92
High transportation cost	22

Source: Field Survey, 2005
*Multiple responses

Tobit Regression Results on Loan Repayment for NACRDB

Tobit regression estimates for NACRDB showed that the coefficient of the variables FRMZE, HHZE, DSBMT, FRMLOC, VISIT, and BRWFQCY were significant at 0.01, 0.05 and 0.10 levels while the coefficients the variables LOANVOL, EDUC, SEX, NFI and COBT were not significant (Table 4). All the coefficients of the significant variables have

positive signs except for the variables HHZE, and FRMLOC that exhibited negative signs. All the coefficients of the non-significant variables exhibited positive signs except FRMZE and COBT. The positive relationship of the coefficient of variable FRMEXP with loan repayment is in line with the *a priori* expectation. The primary determinants of a potential borrower's capabilities are experience in business and the quality of the financial information provided as far as the banks are concerned. Based on their exposure, it could be adjudged that they possess greater ability to predict possible problems and likely solutions that result in higher income.

The coefficient of the variable HHZE conformed to the *a priori* expectation that the burden imposed by a large family was likely to squeeze agricultural resources from which loan could be repaid. The implication of this is that borrowers with lower number of household members would meet their repayment obligation better than those with high number of household members. The *a priori* expectation in terms of disbursement lag was based on the essence of timeliness in agricultural production. Most agricultural activities are time bound and if production credit is delayed beyond the critical period of production, such a credit would no longer be relevant or at best sub - optimally utilized. This would invariably create condition precedent to default particularly when viewed from the perspective that even in the most extreme case of non - utilization of the loan; certain costs related to approval transaction would still have to be borne by the borrowers. The implication of this result is that loans that are timely disbursed are fully repaid as at when due.

The coefficient of the variable BRWFQCY conformed adequately to the *a priori* expectation. This variable was used as a proxy to measure whether a borrower was a regular or an irregular customer. The banks maintain a policy under other credit schemes wherein it is expected that a customer must have operated his account consistently for twelve months before eligible for a credit facility. The whole essence is to familiarize with the customer, under-study his character, consider his business acumen and managerial competence as well as acquaint with his various sources of income. The result from this study therefore indicates that a regular customer is more likely to meet his credit obligation than his irregular counterpart. The positive (non significant) sign exhibited by the coefficient of variable EDUC was as expected, that is, borrowers with higher level of education would have a better repayment performance on the basis of the fact that such farmers would readily respond to improved technologies and innovations that could enhance a better returns from farm investment. The non-significance of the variable's coefficient contradicts the assertion. A possible reason is that the institutions were not directly linked to any extension services agency such that the degree of exposure to improved techniques by borrowers were uniform and such, adoption decision by farmers were directly attributable to willingness. In essence, the result showed that the adoption of better farm management practices by the farmers was more of a chance phenomenon based on the best practices in the

farming locality with scant regard to the level of education of the borrowers.

Table 4. Tobit parameter estimates of loan repayment for NACRDB

Variable	Normalized Coefficients	Standard Error	Asymptotic t – ratio
Constant	0.7473	0.3521	2.1222
LOANVOL	$0.9127E^{-06}$	$0.1459E^{-0}$	0.625
EDUC	0.0112	0.0077	1.458
FRMZE	-0.0285	0.0244	-1.168*
FRMEXP	0.0091	0.0048	1.900*
HHZE	-0.0421	0.0213	-1.977**
SEX	0.0705	0.0761	0.926
NFI	$0.305E^{-05}$	$0.306E^{-05}$	0.996
DSBMT	0.1122	0.0671	1.673*
FRMLOC	-0.0661	-0.0173	-3.820***
COBT	$-0.1196E^{-04}$	$0.5114E^{-0}$	-0.234
VISIT	0.1048	0.0282	3.718***
BRWFQCY	0.0518	0.0234	2.214**

Source: Field Survey, 2007
*** Significant at 0.01 levels
** Significant at 0.05 levels
* Significant at 0.1 levels
Log - likelihood Function = -17.99385

The predicted probability of Y > Limit given average var. (i) = 0.483333
The observed frequency of Y > Limit = 0.2253
Mean square error = 0.719667
Standard error of estimate = 7.365

Decomposition of total elasticity change of the dependent variable

The decomposition of elasticity of the expected value of loan repayment for NACRDB in the study area is shown in Table 5. The computed elasticities from the model showed that marginal changes in various characteristics increase the expected value of repaid loan than it increases the probability for loan repayment. The volume of loan disbursed to borrowers LOANVOL is expected to increase the total elasticity by 53 percent decomposed into 24 percent increment for probability of loan repaid and 28 percent increment in the value of loan repaid. This implies that additional increase in the volume of loan given the beneficiary will increase the probability of repaying the loan by 24 percent while it will influence the value of the loan repaid by 28 percent. EDUC, FRMZE, and HHZE were estimated to have similar effects on the total repayment elasticities and its components. In each case, the total elasticities of -0.67, -1.29 and -0.16 respectively consist of –0.37, -0.82, -0.08 due to intensity of loan size repaid and -0.31, 0.15 and -0.71 attributable to elasticity of probability of loan repayment. This means that increase in the number of years spent in the school, hectares of land used, and the household will reduce the probability of repayment by 31 percent, 15 percent, and 71 percent respectively. The negative impact of education on repayment performance tends to confirm the viewpoint of Olomola, (1999) regarding the behaviour of educated individuals in terms of repayment of informal loans. According to him, educated individuals have better chances of securing white – collar jobs. The tendency to move from place to place in search of better job opportunities imply that they can be considered as bad credit risks by informal lenders. Moreover, their frequency of relocation also implies that they are unlikely to have reputation within the community that can make them attractive to lenders and even socio groups that are coming together for savings and credit purposes.

The total elasticity value of disbursement lag DSBMT is -3.37 decomposed into -1.84 and -1.53 for value of loan repaid and probability of loan repayment respectively. This result implied that a one percent increase in the disbursement lag would reduce the value of the

loan repaid by 1.8 percent and the probability of loan repayment by 1.5 percent. This is a reflection on the pattern of loan processing not in terms of procedures but the time it takes an applicant to collect the loan after submitting an application. Loan processing involves a number of stages over which the zonal officers have no control and which may involve procedures that can affect the DSBMT.

The decomposition of elasticity of the expected value of loan repayment for NACRDB in the study area is shown in Table 36. The computed elasticities from the model showed that marginal changes in various characteristics increase the expected value of loan repaid than it increases the probability for loan repayment. The volume of loan disbursed to borrowers FRMEXP is expected to increase the total elasticity by 30 percent decomposed into 9.6 percent increment for probability of loan repaid and 21 percent increment in the value of loan repaid. It is important to stress here that some dynamic incentives are associated with the banks' lending programme, which may affect the behaviour of individuals with experience of borrowing from the banks. For instance, the loan size of first-time borrowers is lower than that of borrowers who have been granted loans more than once. Theoretically, the repeated nature of the loan transactions and the threat to cut off any future lending when loans are not repaid may enhance efficiency.

TABLE 5. Decomposition of the elasticity of loan repayment for NACRDB

Variable	Elasticity of Probability of Loan Repayment	Value of Loan Repaid	Total Elasticity
LOANVOL	1.7373	3.7269	5.4643
EDUC	0.1189	0.2551	0.3739
FRMZE	-0.2078	-0.4457	-0.6534
FRMEXP	0.0969	0.2080**	0.3051
HHZE	-0.7400	-1.5900**	-2.3300
SEX	0.1324	0.2840	0.4164
NFI	0.1718	0.3683	0.5400
DSBMT	0.6900	1.4800*	2.1780
FRMLOC	-1.5900	-3.4300***	-5.0200
COBT	-0.1099	-0.2359*	-0.7597
VISIT	0.5199	1.1223***	1.6422
BRWFQCY	0.3196	0.7017**	1.0213

Source: Field Survey, 2005
****Significant at 0.01 level
**Significant at 0.05 level
* Significant at 0.1 level

SUMMARY AND CONCLUSION

Contrary to the widely held belief, the results showed that loan volume, farm size and net farm income did not have significant influence on loan repayment though, delay in disbursement, distance of farm location to the bank, cost of obtaining the loan, non-frequent visit made by the bank officials and low borrowing frequency from the institution tend to reduce repayment ability.

It was found that loan characteristics like disbursement lag and cost of obtaining loan have to be taken as control variables for an effective analysis of determinants of the repayment performance. Traditional variables like educational level, sex or size of the family were not significant in loan repayment hence should not be used to determine the loan size. The present study, using suitable model

specification and assuming that all parameter estimates would remain stable over time, shows that the models of the type estimated will greatly inform the evaluation of prospective farmers for loan benefit.

Decomposition of repayment elasticities indicated that the elasticity of value of loan repaid in good times was more than the elasticity of probability of repayment, since the amount of loan size recovered has a long way to go in imploring the lending capabilities of the institutions. The volume of loan disbursed from the institution was not enough to meet adequately the financial needs of the respondents. In addition, the distances of the credit offices to the locations of most beneficiaries were too long which invariably increased the cost of obtaining loan and reduced the repayment ability.

It can also be concluded that the repayment rate of NACRDB was improving and this implied a remarkable- progress of this Scheme so the continuation of the agricultural loan scheme is desirable. The study elicited facts on the challenges of extending loan facilities to farmers in Southwestern Nigeria. The results of the study therefore provided a baseline data for policy formulation needed to facilitate accessibility of farmers to agricultural loans and enhance loan repayment performance. The study was able to establish the improvement and remarkable progress recorded by the beneficiaries of NACRDB and thus the continuation of the agricultural loan scheme is desirable. The decomposition of repayment elasticities employed in this study indicated that the elasticity of value of loan repaid in good times was more than the elasticity of probability of repayment since the amount of loan size recovered has a long way to go in enhancing the lending capabilities of the institutions.

RECOMMENDATIONS

The following recommendations are made on the basis of the findings of this study.

1. The significance of visitation on probability of repayment indicates that regular visit by the bank officials and probably processing of loan application for the applicant (farmer) right on the field would significantly improve the credit repayment rate. In this wise, the farmers would not only save the transportation cost component of obtaining the loan but the opportunity cost of time would also reduce significantly.
2. The fact that the study confirmed the significance of loan disbursement lag in reducing repayment ability points to the crucial importance of timeliness in loan negotiation and delivery. When loan delivery misses the critical period of use, there is the tendency that such a loan would be diverted to relatively less productive or utterly unproductive activities. Thus, the problems of inadequate skill personnel, bureaucratic procedures, and stringent conditions for fulfilment prior to disbursement and instalmental disbursement, which are always sources of delay, must be eliminated to allow the credit market to function effectively. Hence there should be timely release of capital allocations, bearing in mind that agricultural activities are exceedingly time specific.

3. In other to reduce the time lag between loan application and the release of funds, it is recommended that power be delegated to Zonal Officers to grant credit to small farmers directly and huge amount (>N 250,000) need be referred to the headquarters. In addition, there is need for the modification of the credit delivery system to include the cooperative and community based organizations as delivery channels to reduce transaction.
4. An enabling environment should be created for improved loan recovery like a legal unit in NACRDB (under an autonomous setting) to prosecute loan defaulters.

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