Full Length Research Paper

Determinants of formal agricultural credit allocation to the farm sector by arable crop farmers in Benue State, Nigeria

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The aim of this study was to determine the effects of socio-economic and demographic factors on the rate of credit allocation to the farm sector by arable crop farmers in Benue State, Nigeria. Cross-sectional data were obtained from 300 randomly selected loan beneficiaries. Obtained data were analyzed using frequency counts, percentages, t -test and multiple regressions. Results showed a statistically significant gap (p 0.001) between the amount of loan applied for and the amount received by farmers. The study also found that only about 56% of the loans were invested directly in farm activities implying that the balance of 43% of the loan was diverted and spent on non-farm activities. Factors that significantly (p 0.005) affected the rate of credit allocation to the farm include age, education, farm size, household size, length of loan delay and visitation by bank officials. Based on these results, the paper recommends increased flow of capital to the bank for on-lending to farmers. In addition, loans should be disbursed on time and banks officials should be encouraged to pay regular supervisory visits to farmers. Finally, benefiting farmers should be given basic training on efficient management of loans in order to curtail the high rate of loan diversion.

Key words: Credit allocation, farm sector, arable crop farmers, Nigerian agricultural and rural development bank, Nigeria.

INTRODUCTION

Agriculture has always played a pivotal role in the history of Nigerian economic development by providing food security, employment, foreign exchange earnings and poverty reduction. Despite the enormous contributions of agriculture to the Nigerian economy over the years, the sector has slipped into a systemic decline, particularly in the past three decades since the petroleum industry replaced the sector as the main earner of government revenue and foreign exchange earnings (FGN, 2004). In Nigeria, agricultural credit has for long been identified as a major input in the development of the agricultural sector. In fact, the lack of adequate, accessible, and affordable credit is among major factors responsible for the systemic decline in the contribution of agriculture to

Nigerian economy (Rhaji, 2000).

Every segment of agricultural production requires the availability of adequate capital since capital determines access to all other resources on which farmers depend (Ayoola and Oboh, 2000). It has been shown that farm level credit if well applied, encourages capital formation and diversified agriculture, increases resource producti-vity, size of farm operations, innovations in farming, marketing efficiency, value added and net farm incomes (Nwagbo et al., 1989). The usefulness of any agricultural credit program does not only depend on its availability, accessibility and affordability, but also on its proper and efficient allocation and utilization for intended uses by beneficiaries (Oboh, 2008). In spite of the importance of credit in agricultural production, its acquisition, management and repayment are replete with a number of problems. Awoke (2004) reported that high rate of default arising from poor management procedures, loan diversion and unwillingness to repay loans has been threatening the

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sustainability of most public agricultural credit schemes in Nigeria.

The Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB) is one of the government publicly sponsored credit institution established since 1973 (formerly called the Nigerian Agricultural and Cooperative Bank) to cater for the credit needs of the agricultural sector. Unfortunately, the performance of NACRDB has been rated low, mainly due to high default rate by beneficiaries.

There is the need to critically assess factors affecting the rate of credit allocation by beneficiaries of NACRDB. A detailed understanding of these factors may provide necessary information towards designing a more effective and sustainable credit system that can serve resource poor farmers better. The aim of this study therefore was to examine the socio-economic and demographic determinants of credit allocation to the farm sector by arable crop farmers in Benue State, Nigeria.

MATERIALS AND METHODS

The study was conducted in Benue State, Nigeria. The State was purposely selected because most of the inhabitants are arable crop farmers and Benue State is acclaimed the nation's food basket.

A total of 300 arable crop farmers were randomly selected through a two - stage stratified sampling technique. The respondents were credit beneficiaries of the Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB) from the three agricultural and geopolitical zones of the State. First, the six branches of NACRDB (with two branches located in each of the three zones) formed the primary sampling strata. Then, a simple random sampling technique was used to select 300 loan beneficiaries. Structured interview schedule was used to collect cross sectional data from respondents during the 2006 cropping season.

The available data were analyzed with the use of frequency distribution, percentages, t-test and multiple regression analysis. To test for significant differences between credit demand by farmers and credit supply by NACRDB, the paired – sample t-test was employed.

In order to determine factors affecting the rate of credit allocation to the farm sector, the multiple regression model was used and specified as follows:

$$Y = + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + e_i$$

Where
Y = Percentage of credit allocated to the farm sector (%)
X_1 = Age (years);
X_2 = Gender (male = 1, female = 0);
X_3 = Education (years);
X_4 = Annual income (Naira);
X_5 = Farming experience (years);
X_6 = Farm size (hectare);
X_7 = Household size;
X_8 = Extension visits (visited = 1, not visited = 0);
X_9 = Loan delay (number of days between loan application and receipt);
X_{10} = Bank visits (visited = 1, not visited = 0);
X_{11} = Adoption of Innovation (adopted = 1, not adopted = 0);
= Constant;

β_s = Regression coefficients;
e_i = Error term.

RESULTS AND DISCUSSION Socio-demographic profiles of respondents

The socio-economic and demographic profiles of respondents are presented in Table 1. Results indicated that majority (77.7%) of the farmers were males with an average age of 45.1 years. Farmers spent an average of 8.3 years in formal school, while they had a mean household size of 8.0 persons. In general, their farm sizes averaged 2.8 ha with a mean annual income of N24,380. Farmers also had an average farming experience of 22.2 years. The three major arable crops grown include cassava, yam and rice.

However, given the farmers' low level of education, small farm size, low annual income and large household size, availability of credit may help to improve their farm output and productivity.

Size of loan applied for and received by respondents

Table 2 presents the result of a t-test analysis used to determine whether significant differences exist between amount applied and amount received by farmers. The result indicated that the mean value of loan supply was significantly (P 0.01) lower than the mean value of loan demand. This may be attributed to shortage of loanable funds at NACRDB. Inadequate loan facilities are common problems among publicly owned agricultural credit institutions in Nigeria (Oboh, 2008). The inadequate amount of loan granted to applicants might limit their capacity to finance their farm investment plans thereby affecting farm output and productivity negatively.

Allocation of loan by respondents between the farm and the non-farm sectors of the household economy

The average loan size allocated to the farm was 56.1% leaving the balance of 43.9% to the non-farm sector. This is called the average budget share (ABS) and it measures the percentage of total credit spent on each sector. Even though, the ABS value of 56.1% for the farm sector is relatively higher, the value of 43.9% for the non-farm sector suggests a reasonable level of loan diversion.

Table 3 presents the percentage of loan allocated to the farm and the non-farm sectors across the various categories of loan size. On a comparative basis, beneficiaries belonging to low loan size category (N20,000 to 40,000) allocated less of their loans to the farm sector and by implication, more to the non- farm sector. On the other hand, beneficiaries in the high loan size category (>N40,000) allocated more of their loans to

Table 1. Selected socio-demographic profiles of respondents.

Variable	Frequency	Percentage	Minimum	Maximum	Mean
Age (years)	-	-	29	62	45.1
Education (years)	-	-	0	19	8.3
Farming experience (years)	-	-	2	52	22.2
Household size	-	-	2	24	8.0
Farm size (ha)	-	-	0.7	8.0	2.8
Annual income (N)	-	-	15300	84000	24380
Gender					
Male	233	77.7	-	-	-
Female	67	22.3	-	-	-
Major arable crops grown					
Cassava	292	97.3*	-	-	-
Yam	231	77.0	-	-	-
Rice	187	62.3	-	-	-
Potatoes	101	33.7	-	-	-
Maize	97	32.3	-	-	-
Groundnut	68	22.7	-	-	-

* Total percentage >100 due to multiple responses. Source: Survey data, 2006.

Table 2. Summary of mean scores and paired sample t- values for differences between size of loan applied and received by respondents.

Variables	Mean (₦)	t- values	df
Size of loan applied for	211,666.7		
		39.34**	299
Size of loan received	50,536.7		

**Significant at 1% level of probability; ₦ represents the local currency, the Naira. Source: Survey data, 2006.

Table 3. Loan allocation (%) to the farm and the non-farm sectors based on size of loan received by respondents.

Size of loan (₦)	Allocations (%)		
	Farm sector	**Non-farm sector**	**Total**
≤ 20, 000	31.2	68.8	100.0
21,000 – 40,000	34.7	65.3	100.0
41,000 – 60,000	51.3	48.7	100.0
61,000 – 80,000	50.8	49.2	100.0
81,000 – 100,000	52.7	47.3	100.0
>100,000	69.5	30.5	100.0

Source: Survey data, 2006.

the farm. This result suggests that there is high propensity for low loan size (which seems inadequate for meaningful farm work) to be easily diverted for non-farm activities.

This result is similar to the findings of Rabo et al. (2001) in which about 36.7% of small scale farmers' institutional credit meant for farm activities in Bauchi State in Northern Nigeria was diverted.

Factors affecting the rate of credit allocation to the farm sector

The estimated determinants of credit allocation to the farm sector were summarized and presented in Table 4.

Table 4. Summary of regression analysis on determinants of credit allocation to the farm sector.

Determinant functional forms	Linear	Exponential	Semi-Log	Double Log
Constant	5.251 (9.806)	1.320 (0.099)	-80.186 (45.480)	0.379 (0.462)
Age (x_1)	0.634** (0.269)	6.735×10^{-3}** (0.003)	82.188* (23.708)	0.835* (0.241)
Sex (x_2)	4.313 (2.906)	5.780×10^{-2} (0.029)	3.863 (2.881)	5.525×10^{-2} (0.029)
Education (x_3)	1.162* (0.281)	8.814×10^{-3} (0.003)	32.743* (10.275)	0.240** (0.104)
Income (x_4)	-3.8×10^{-6} (0.000)	5.485×10^{-8} (0.000)	-5.588 (6.448)	-1.0×10^{-2} (0.065)
Farming experience (x_5)	6.372×10^{-2} (0.205)	2.803×10^{-5} (0.002)	0.699 (6.580)	(-2.6×10^{-2}) (0.067)
Farm size (x_6)	0.400 (1.256)	-8.6×10^{-4} (0.013)	3.142* (7.659)	7.148×10^{-3} (0.078)
Household size (x_7)	-1.570* (0.426)	-1.5×10^{-2} (0.004)	-42.777* (7.988)	-0.398* (0.081)
Extension visit (x_8)	-0.173 (5.646)	-4.2×10^{-2} (0.057)	1.284×10^{-2} (5.519)	-4.5×10^{-2} (0.056)
Loan delay (x_9)	1.746×10^{-3} (0.006)	-3.5×10^{-6} (0.000)	-0.670* (4.774)	-1.7×10^{-2} (0.048)
Bank visit (x_{10})	7.6×10^{-2} (3.505)	-3.0×10^{-2} (0.036)	0.894** (3.469)	-2.4×10^{-2} (0.035)
Innovation adoption (x_{11})	-2.766 (5.433)	6.369×10^{-3} (0.055)	2.473 (5.307)	1.120×10^{-2} (0.054)
R^2	0.212	0.186	0.564	0.211
R^{-2}	0.181	0.155	0.538	0.181
F–statistic	7.024*	5.980*	22.421*	6.989*

**Significant at 1% level; * Significant at 5% level. Figures in parentheses are standard errors. Source: Survey data, 2006.

Based on statistical and econometric considerations, the semi-log functional form was chosen as the lead function. The coefficient of determination (R^2) is 0.564, implying that the explanatory variables accounted for about 56.4% of the change in the rate of credit allocation to the farm sector. Six variables were statistically significant (P 0.005), and these include age, education, farm size, loan delay, bank visit and household size. Age of beneficiaries maintained the right *a priori* positive sign, suggesting that credit allocation to the farm increases with increasing age of farmers. Education also maintained a positive relationship with loan allocation to the farm sector. This is consistent with the observations of Nwaru (2005), that an educated farmer, other things being equal, allocates farm resources more efficiently.

The positive effect of farm size implies that farmers' loan allocation to the farm increases with increasing farm size. This confirmed the findings of Emerole (2004) that increase in farm size necessarily requires the employment of more farm inputs which in turn require additional capital for their purchase. Bank visits specified as a dummy variable also had a positive sign implying that beneficiaries visited by bank officials tend to allocate more funds to the farm sector. The coefficient for length of loan delay showed inverse relationship with rate of credit allocation to the farm implying that less of delayed loan is used for farm work. This result was in line with earlier findings by Nweze (1991) that untimely release of loan tends to tempt farmers to divert the loan for unintended uses.

Finally, household size with a negative coefficient conforms to *a priori* expectation, implying that credit allocation to the farm sector decreases with increasing household size. This result was in agreement with the findings of Mejeha (2005) in which farmers with high household sizes tended to divert their loans for the sustenance and upkeep of family members.

Conclusion

This study showed that the size of loan granted to farmers was significantly lower than what was applied for. A reasonable proportion of the loan was also diverted to non-farm activities. The pattern of loan allocation showed that beneficiaries with high loan size tended to allocate more of their loans to the farm than beneficiaries with low loan size.

In addition, it was found that factors that significantly affected the rate of credit allocation to

the farm were farmers' age, educational level, farm and household size. Other factors are length of loan delay and visit to farmers by bank officials. Based on these findings, it is suggested that government should increase the volume of loan facilities to NACRDB for onward disbursement to intending beneficiaries. This may lead to reasonable increase in farmers' individual loan sizes. In order to reduce the rate of loan diversion, loans should be disbursed on time, and bank supervisors should visit beneficiaries regularly. In addition, pre-disbursement training is recommended for all successful loan applicants for efficient loan allocation and management.

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