Factors Affecting Access to Agricultural Loans in Anambra State: An Econometric Analysis

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

This study was designed to examine the extent to which farmers have benefited from loans/credit activities of commercial banks, as well as the factors affecting accessibility of credit/loans by banks to them. Multistage and simple random sampling techniques were adopted in selection process of sample farmers and bank officials. Two sets of questionnaires were designed and administered to 75 small-scale farmers and six officials of the two banks in the Onitsha Agricultural Zone of the state, to gather information and relevant data for study. Eighty-six percent of the questionnaire forms were returned and used in the analysis. Descriptive tools and econometrics method were used to analyse the data collected and to examine the effect of certain socio-economic and other variables on loan/credit approval. Findings show that farmers in the area have not benefited substantially from the agricultural loan facilities of commercial banks. Access to bank loans in the area was found to depend largely on ability of the applicant to provide collateral security. Age, crop type, and income were found to be important and significant determinants of access to agricultural loan in the Zone. The study therefore recommended among others, that the government should, through Central Bank of Nigeria, direct banks to increase the small-holder loan limit to farmers, as well as de-emphasizing their insistence on collateral security.

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1. INTRODUCTION

Adequate and timely credit provision significantly increases agricultural output which leads to an increase in the economic development of the cultivators and people attached to cultivation [1], [2], [3]. Inadequate agricultural funding has been identified as one of the major factors militating against food production in Nigeria. This has resulted in the recycling of poverty as farmers who are mostly rural-based lack the necessary collateral to access credit (from financial institutions) needed for increased production. This vicious cycle of poverty can only be broken if and only if a policy that can ensure higher level of credit investment into the agricultural sector is instituted.

Farmers cannot purchase the needed inputs such as pesticides, improved planting materials and agro chemicals such as herbicides, insecticides and fungicides. Most of the implements used by small-scale farmers are worn out and needs replacements. These farmers need improved farm machinery and also require hired labour to supplement their family labour. All these require funds, and thus necessitating increased funding by banks. This has become increasingly necessary for increased food and raw material production and a boost in the confidence of the farmers to increase the size of cultivated under cultivation [4].

The government, realising the difficulty of financing agricultural projects, have over the years, embarked on series of programmes to make funds available to farmers to enhance increase in food production. These include the various loan schemes, agricultural credit banks and a host of others. Commercial banks in Nigeria, as major players in the country's credit intermediation sector are expected to be very visible in the provision of agricultural loans, hence the decision of the government to channel their agricultural schemes through them. But the expected change for increased food production did not occur [5]. There are contentions that small holder farmers still do not have access to adequate finance. Enhancing Financial Innovations and Access, EFInA [6] reports that only 23 percent of the adult population in Nigeria has access to formal financial institutions. Furthermore, Ojo [7] observes that only 15 percent of the trading bank credit to agriculture

has been met. Ijaiya and Abdulraheem [8], on the other hand, note that in spite of the empirical evidence that availability of credit facility would enhance development, formal and informal sources of credits to agriculture in Nigeria remains poor, epileptic and scanty.

The reasons for the unsatisfactory access to agricultural loans by farmers are often linked to the high cost of administering such loans and the perceived high default rates among farmers [5]. Lack of bank accounts, collateral, and information regarding the procedure for accessing credits from banks equally limit rural women's access to credit from formal institutions [9]. Agnet [10] opines that rural farmers are often constrained in agricultural credit applications because the complex mechanism of commercial banking is least understood by them.

But the socio-demographic characteristics of the farmer such as age, gender, farm size, household size, among others, may also constitute a set of determinant variables of credit access [11-14]. Unfortunately few detailed studies have focused on the examination of the impact of these variables on credit access. This study is an attempt at contributing to current discussions on credit access and the role of socio-economic profiles of the farmers in credit access in Anambra State, Nigeria.

2. OBJECTIVES

The objectives of the study are to determine the extent small-scale farmers have benefited from agricultural loan facilities of commercial banks; and the influence of their socio-economic characteristics on such loans in Anambra State, Nigeria.

3. METHODOLOGY

3.1 Data Collection Procedures

The study was carried out in Anambra State, and Onitsha Agricultural Zone, because it is home to most agrarian communities in the state, was purposively selected. The zone is made up of five local government Areas: Idemili North, Idemili South, Ogbaru, Onitsha North and Onitsha South. It is densely populated and the people were predominantly farmers, and fishermen, while some are also engaged in animal husbandry. In the urban centre of Onitsha

metropolis people engaged in different economic activities like manufacturing, trading, crafts, and carpentry.

Data were obtained through collected from small-scale crop farmers in Anambra State, Nigeria State and the two commercial banks in the zone. Multi-stage sampling technique was used in the selection of the study location and farmer-respondents. Three local government areas were randomly selected. From each of the selected three local government areas, five communities were also randomly selected, giving a total of 15 communities. Thereafter, a random selection of 5 farmers from each of the 15 communities was made, giving a total of 75. Three officials, each from the two banks in the area who were responsible for agricultural loans, were also randomly selected and included in the sample to make it 81. Two sets of structured questionnaires were thereafter prepared, and administered to them, one set for the farmers and the other for the bank officials. The small-scale farmers and bank officials were also interviewed to drive home claims and counter-claims on both sides.

3.2 Method of Analysis

A total of 70 copies of the questionnaires (64 from the farmers and six from the bank officials; a return rate of 86.42%) were properly completed and returned, and were therefore used in the analysis. All the returned copies of the questionnaires were coded manually. Descriptive statistics were extensively used in analysing the data.

In order to understand the effect of the individual factors of age, sex, marital status, family size, level of education, type of crop grown, farm size, loan security provided, farmers' income, on the agricultural loan access to small-scale farmers, an econometrics model (multiple regression using the least square estimation techniques) was adopted using these factors as independent variables and the amount of loan approved and granted the farmer applicant by the banks as the dependent variable.

The functional relationship of these variables is expressed thus:

$$y = f(x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9) \tag{1}$$

where

Y = access to agricultural credit (amount of loan received)
x_1 = age of the farmer (years)

x_2 = sex (1 for male, 0 for female)
x_3 = marital status (1 married, 0 for single)
x_4 = family size (Number per household)
x_5 = level of education (Number of years in school)
x_6 = type of crop grown (1 for annual, 0 for perennial)
x_7 = farm size (Hectares)
x_8 = loan security (1 for yes, 0 for no)
X_9 = income (Naira)

It is assumed that there is an approximately linear relationship between the dependent variable Y and the independent variables: x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9. Therefore, equation 1 is specified as:

$$Y = b_o + b_1x_1, b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_{7+} b_8x_{8+} b_9x_9 \tag{2}$$

where

b_o = intercept term showing value of y when x_1, x_2, x_3, x_4, x_5 etc are zero. That is, the value y is predicted to have when all the independent variables are equal to zero.

b_1 to b_9 = the coefficients or multipliers that describe the size of the effect the independent variables (x_1 to x_9) are having on the dependent variable y.

To make the model more realistic, the disturbance term u is introduced to get equation 3 from equation 2, thus:

$$Y = bo + b_1x_1, b_2x_2 + b_3x_3 + b_4x_4 + \dots + x_n + u \tag{3}$$

4. RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of Respondents

Agriculture in the region is dominated by male farmers. Almost 80% of the farmer-respondents are males. There is a moderate distribution in the age range of the farmers. Nevertheless, most of the farmers (83%) are in the very active age brackets of 21-30 and 31-40. Almost all the farmers are married, 94% which indicates that farmers marry early to raise families that will provide labour and assist them in their farm work. The farmers have fairly large families. Over 80% has family sizes of over 10 persons. Indeed, over one-third has family sizes of over 11 persons. The farm size of most of the farmers ranged from

one to three hectares (62%), while the rest have farm size of 4 hectare and above. Thus, it is evident that they were purely small-scale farmers. Although 53% of the farmers had formal education, their educational levels were generally low, while about half of them (47%), had no formal education. Almost all the responding farmers ware engaged in the cultivation of annual crops (95%). The most common crops cultivated in the area are yam, rice, cassava, maize etc. The option of the farmers to engage in annual crop cultivation could be due to the need to harvest the crops as soon as possible in order to pay back loans obtained from banks. Loans granted them by the banks are usually for one cropping season. The rest of the responding farmers (5%) are engaged in perennial crops cultivation. To obtain loans from banks most of the farmers (95%) were made to provide one of security or the other. The most preferred forms of securities were guarantors and collateral securities in the form of landed property or farm land. Only very few farmers reported that they did not provide any form of security before they were granted loans. Annual income level of the small-scale farmers in the area range from ₦10,000 (62.52 USD) to over ₦90,000 (562.68 USD) Those within the income range of ₦71,000 (443.89 USD) -N90,000 (562.68) had the highest percentage of 28%, while those of between ₦10,000 (62.52 USD) and ₦30,000 (187.56 USD) had the lowest percentage of 12%, showing that the standard of living of an average farmer in the area is moderate. Majority of the farmers (66%) obtained their loan individually while others, 34% obtained theirs through membership of cooperative/farmers' association.

There was no beneficiary through community loan schemes.

4.2 Farmers' Access to Loans

The banks' response to loan requests by farmers in the zone has not been encouraging. Between 2009 and 2013 not more than 35% of the loan requests was granted by the banks in any of the four years. In fact, only 15% of the loan requests was granted in 2009 (Table 1). The banks refusal to increase their loan volume is unfortunate since repayment records (at the offices of the banks) by the farmers have been impressive.

4.3 Test of Hypothesis One

H_0: There is no significant difference between loan applications and disbursements to farmers within the period, 2009 to 2013.

H_1: There is significant difference between loan applications and disbursements to farmers within the period, 2009 to 2013.

Decision: The paired samples t-test result in Table 2 shows that the t-test estimate of 4.766 is significant at 0.05 levels. Thus, the null hypothesis is rejected and the alternative is accepted, hence the conclusion that there is indeed difference between the amount of loan applications and disbursements to farmers within the period, 2009 to 2013. This then appears to agree with our earlier observation in table 1, that the farmers have not benefitted substantially from agricultural loan facilities of commercial banks in the area.

Table 1. 2009-2013 agricultural loan demand, disbursement, repayment and balance outstanding

Year	Amount applied for (₦) (A)	Amount disbursed (₦) (B)	Amount repaid (₦) (C)	Balance outstanding (₦) (D)	Percentage repayment (₦) (E)	% of (B) to (A)
2009	3,800,000	571,350	408,540	162,810	72%	15%
2010	9,500,000	3,158,050	2,581,032	577,018	82%	33%
2011	13,000,000	3,192,800	2,538,974	653,826	80%	25%
2012	5,000,000	1,596,320	1,190,092	406,228	75%	32%
2013	7,170,000	2,541,400	2,288,840	252,560	90%	35%

1 Nigerian Naira (₦) = 0.0063 USD as at (31/12/2013)
Source: Field Survey, 2014

Table 2. Paired sample for test of hypothesis one

	Mean	Std. deviation	Std. error mean	T	df	Sig
Amount Applied - Amount Obtained	5584816.00	2620451.17	1171901.39	4.766	4	0.009

4.4 Determinants of Access to Agricultural Loans

The major reason advanced by banks for refusing loan requests by farmers was largely due to lack of collateral security, compounded by their low literacy level. Banks also were known to prefer short-term loans to businesses with minimal risk and comparable collateral security as against agricultural loans with long maturity period full of uncertainties. Other reasons for agricultural loan refusal include long repayment period, and low interest rate. That provision of collateral security was indeed a major factor in the consideration of loan applications is evident from Table 4 (Appendix). Here, security provided by farmers is shown against approval and disbursement of loans. The farmers who provided landed property and farm lands as securities had better shares of the approvals/applications ratio (70% and 60%) Those who produced guarantors weren't given much attention as only 33% of the applications were approved and disbursed. Of the 698 applications without security for the loans, only 9 percent of them had the applications approved. The applications that were backed up with landed property and farm land as collateral security were favoured more in terms of average amounts received. An average amount of ₦11,532.00 (72.08 USD) and ₦ 11,796.00 (73.73 USD) respectively went to each of the applications as against an average of ₦ 9,500.00 (59.38USD) and ₦ 6,397.00 (39.98 USD) disbursed to loan applications with guarantors and those without any security respectively.

The banks were also more inclined to granting loans to literate farmers (Table 5, appendix). Of the 173 loan applicants that have secondary education, 69% had their applications approved and disbursed. Also, of the 565 applications from farmers with primary education, 62% of them were approved. Those not approved could be as a result of other requirements not met. There were only 10 applicants with tertiary education and 7 of them benefited, which was about 70%. But for the illiterate farmers, out of a total of 2,216 loan applications made only 573 (or 26%) were approved.

The implications of the above is that the banks were more at home with educated farmers, hence, not only that majority of literate applicants were considered, but also average individual disbursement was higher for applicants with secondary and tertiary education qualifications:

₦12,532.00 (78.33 USD) and ₦12,000.00 (75 USD) respectively as compared to average amount that was granted to illiterate farmers which is just ₦9,819.00 (61.37 USD). Thus, poor educational background could be a militating factor in loan application consideration.

4.5 Regression Analysis of Socioeconomic Determinants of Access to Agricultural Loan

The computed t-ratios for x_1-age, x_6-crop type, x_7-farm size, x_8-security and x_9-income, were found to be significant at the conventional 5% significant level. Therefore, changes in age, crop type, security, farm size, and income will significantly influence the amount of loan given, while changes in other variables will not.

It is instructive to note that in spite of the information from the banks to the contrary, level of education is not a significant variable. Undeniably, negative sign associated with the estimate suggests that those with higher education are not favoured in loan approvals. The only possible explanation could be that the farmers lied about their educational status (to enhance their chances of approval) when they applied for loans. Again, the banks did not indicate that age, marital status, and income plays any role in loan approval decisions, but the results of the estimates has shown that they are very important variables.

Another interesting observation in the result is that farm size appears not to be an important factor in loan application consideration. Though not significant, it does suggest that those with large farms are disadvantaged.

The results of the multiple regression analysis are further presented as follows:

R^2 = 0.848
Adj. R^2 = 0.819
F* = 28.511*
DW = 2.259
* Significant at 1% level

The multiple correlation coefficient R^2 = 0.85 shows a relatively high degree of relationship between the dependent variable and the independent variables $X_1 - X_9$. In other words, there is high degree of association between the dependent and independent variables taken together. The adjusted R^2 (denoted by Adj.R^2) was found to be 0.82. This implies that 82% of

Table 3. Model results of the regression analysis

Variables	Unstandardized coefficients		t	Sig.
	B	Std. error		
(Constant)	-39823.860	13118.559	-3.036	.004
(x_1) Age	6699.236	588.565	11.382	.000
(x_2) Gender	-449.810	3283.283	-.137	.892
(x_3) Marital Status	-14877.323	8016.838	-1.856	.069
(x_4) Household size	131.243	95.875	1.369	.177
(x_5) Education	-32.852	313.689	-.105	.917
(x_6) Crop type	12632.855	4588.531	2.753	.008
(x_7) Farm size	2873.674	1192.154	2.410	.020
(x_8) Loan security	8114.135	4059.541	1.999	.051
(x_9) Income	12749.045	3203.021	3.980	.000

the variation in loan amount Y is accounted for by changes in variables X_1-X_9. The remaining 18% can be attributed to omitted explanatory and unquantifiable variables.

The result of the F-test (29.51) is significant showing that the joint effect of age, sex, marital status, family size, level of education, crop type, farm size, security and income $(X_1 – X_9)$ on loan amount (Y) is significant. The calculated DW value 1.60 lies between the theoretical value, du = 1.54 and 4-du = 3.46. This indicates that the model is free of auto correlation and multicollinearity.

4.6 Test of Hypothesis Two

H_0: Access to agricultural loan is not significantly influenced by socioeconomic profiles of the farmer.

H_1: Access to agricultural loan is significantly influenced by socioeconomic profiles of the farmer.

Regression results in Table 3 are were to test hypothesis two.

Decision: The regression analysis shows that the F ratio which measures the strength of the independent variables in explaining variations in the dependent variable was 29.511, which was significant at 0.01 levels. Certainly, the regression result shows that there is a positive and significant relationship between loan amount obtained by the farmers and age, crop type, security, farm size and income. This goes to show that these variables have a positive effect on the current amount of loan given by the banks to the farmers. We therefore reject the null hypothesis and accept the alternative hypothesis, thereby concluding that access to agricultural loan is significantly influenced by socioeconomic profiles of the farmer.

5. POLICY IMPLICATIONS AND CONCLUSION

As the regression results show, there is a positive and significant relationship between loan amount and age, crop type, security, farm size and income. This shows that these variables have a positive effect on the amount of loan given by the banks to the farmers in the agricultural zone under study. Loan security, in particular, determines to a large extent the amount of loan a farmer can secure from banks. Many small-scale farmers cannot provide the much-preferred collateral security. The implication is that they will continue to benefit marginally only from the small holder loan scheme, which even that can only be given to them on the provision of guarantors as security. To improve agricultural production, government should, through the Central Bank regulation on banks, increase the small-holder loan limit to farmers. It is worth mentioning that a way out could be to encourage farmers to form groups such as cooperatives in order to improve their chances of access to credits.

Majority of the farmers were youths and this implies that a very active lending policy in favour of the youths by the government will redirect the orientation of the youths towards agricultural production. Also, the rural areas should be provided with adequate amenities to make it more attractive to youths.

The study showed that 94% of the respondents were married. This goes to show that farmers engage in early marriage. This will, as a matter of fact, affect the youth farmers psychologically in their attempt to actualise effective and efficient family and farm management. This is the more reason why the government should as much as possible assist the farmers achieve a moderate

living standard. This could be achieved by way of loan liberalisation in order for them to increase their production and attract increased income. The banks seem to be more disposed to annual crop farmers who incidentally are on the majority. The implication is that perennial/tree crops production will be seriously jeopardised. There is need to fashion out a credit scheme that will also encourage perennial crop production. In fact, effort should be directed towards increased production of perennial crops.

Farming as a business is capital intensive. For a farmer to break-even in his farming activity, he needs enough capital to integrate the modern improved agricultural technology without which he will continuously remain at a peasant production level. In the light of the above, it becomes rational that loans/credit availability to small-scale farmers should be a priority to the government more so, when over 90% of the nation's total food production comes from them. Indeed a way of breaking out of the vicious circle of poverty will to make it easier for rural farmers to have easier access to loan/credit.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Atieno, Rosemary. Formal and informal institutions' lending policies and access to credit by small-scale enterprises in Kenya: An empirical assessment AERC Research Paper 111 African Economic Research Consortium, Nairobi November; 2001.
2. Udry C. Credit markets in Northern Nigeria: Credit as an insurance in a rural economy. In K. Hoff, A. Braverman and J. Stiglitz, eds., The Economics of Rural Organisations: Theory and Policy. London: Oxford University Press; 1994.
3. Adegeye AJ, Dittoh JS. Essentials of agricultural economics. Centre for Agricultural and Rural Development, University of Ibadan. 1982;152.
4. Aryeetey E. Rural finance in Africa: Institutional developments and access for the poor. The World Bank Annual Conference on Development Economics, 25–26 April, Washington, D.C.; 1996.
5. Idris B. Review of small farmer access to agricultural credit in Nigeria. Policy Note No. 25. International Food Policy Institute (IFPRI); 2010.
6. Enhancing Financial Innovations and Access, EFInA. Access to financial services in Nigeria: Key findings; 2008. Available:http://www.efina.org.ng/Key_Find ings.pdf
(Accessed on 4th July, 2012)
7. Ojo JAT. Central banking and financial sector management in Nigeria; An Outsider view. In: Fakiyesi, O. O. and S. O. Akano (Eds), Issues in Money, Finance and Economic Management in Nigeria (Essays in Honour of Professor Obasanmi Olakankpo). 2005;35–98.
8. Ijaiya GT, Abdulraheem A. Commercial banks credits to the agricultural sector and poverty reduction in Nigeria: A calibration analysis. Nig. J. Agric. Bus. Rural Develop. 2000;1(1):43- 57.
9. Okojie C, Monye-Emina A, Eghafona K, Osaghae G, Ehiakhamen JO. Institutional environment and access to microfinance by self-employed women in the rural areas of Edo State. NSSP Brief No. 14. Washington. D.C.: International Food Policy Research Institute; 2010.
10. Agnet. Making farm credit work for the small-scale farmers; 2004.
(Accessed on July 20, 20109)
11. Oboh VU, Kushwaha S. Socio-economic determinants of farmers' loan size in Benue State, Nigeria. Journal of Applied Sciences Research. 2009;5(4):354-358.
12. Okeke Daniel C. The role of banks in small-scale agricultural financing in Anambra Agricultural Zone of Anambra State. Unpublished M. Agric. thesis, Dept. of Agricultural Economics, Federal University of Technology, Owerri; 2001.
13. Ikashuliza AK, Kydd JG. Determinants of bank credit access for small holder farmers in Tanzania: A discriminant analysis application. Savings and Development. 1996;3:285–97.
14. Zeller M. Determinants of credit rationing: A study of informal lenders and formal credit groups in Madagascar. World Development. 1994;22(12):1895–1907.

APPENDIX

Table 4. Security requirement and loan disbursement

Security	No. of applications received	No. of approvals made	Amount disbursed (A)	% of approvals to applications received
Landed Property	502	352	4,056,000	70%
Farm Land	270	163	1,911,000	60%
Guarantor	1494	493	4,683,500	33%
No Security	698	64	409,420	9%
Total	2,964	1,051,	11,059,920	

Source: Field Survey, 2014

Table 5. Effect of education on agricultural loan disbursement

Level of education	No. of applications received (₦)	No. of approvals made (₦)	Amount disbursed (₦)	% of approvals to applications received
Primary	565	352	3,837,400	62%
Secondary	173	119	1,491,520	69%
Tertiary	10	7	105,000	70%
Illiterates	2,216	573	3,626,200	26%
Total	2,964	1,051	11,059,920	35%

1 Nigerian Naira (₦) = 0.0063 USD as at (31/12/2013)
Source: Field Survey, 2014