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AGRICULTURAL CREDIT UTILIZATION AMONG FARMERS IN BOLE DISTRICT OF NORTHERN REGION, GHANA

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ABSTRACT

This study examined factors influencing the probability of farmers accessing agricultural credit as well as the amount of received credit allocated to farming operations in the Bole district of Northern region, Ghana. A sample size of 100 respondents were randomly selected and interviewed through a well-structured questionnaire. Paired sample t-test was used to test whether there exist a significant difference between the amount of credit received and the amount allocated to farm sectors. Probit model was employed to identify factors influencing the probability of farmer's access to agricultural credit while Tobit regression model was used to estimate the determinants of credit allocated to farm operations. Evidence from the paired-sample t-test indicated a significance difference between amount of credit received and amount allocated to farm operations. The results from the Probit model indicated that gender, household size, farmers engaging in off-farm income and membership of farmer-based-organization exert significant influence on the probability of farmer's access to agricultural credit. Moreover, estimates from the Tobit regression model revealed that the amount of credit farmers allocate to farm sector is significantly influence by sex of the farmer, farmers level of education, the size of loan received, loan delay (number of days between loan application and receipt) as well as farmers receiving extension services. The study therefore recommends that loan applications should be approved on time to enable farmers used it for the intended purposes, and farmers should be advised through effective extension programs on the need to use loans for the purpose for which it was procured.

KEY WORDS

Agricultural credit, allocation, farmers, Probit regression model, Tobit regression model, Bole district, Ghana.

The Ghanaian agricultural economy has always been dominated by small scale farmers producing a substantial proportion of the national food. However, lack of capital has been identified to be one of the key factors inhibiting the potential of small scale farmers in reaching their production frontiers. Besides lack of agricultural finance, the use of old techniques and weak organizational structures are also some of the reasons that have led to low productivity in the sector.

Access to finance has been identified in many literature as one of the key factors determining the survival and growth of many business, including farming. Credit is considered as more than just another source of factor inputs such as land, labor and other farm equipment because it determines access to most of the farm resources required by farmers. The provision of credit can be regarded as an important instrument for raising the incomes of rural populations mainly by mobilizing resources for more productive uses (Kuwornu et al., 2012). Credit also acts as a catalyst for rural development by motivating latent potential or making under-used capacities functional (Oladeebo and Oladeebo, 2008). Thus, the need to provide agricultural credit is a necessary first step in boosting agricultural development and enhancing efficiency of the production processes.

The main challenges in agricultural credit markets in developing countries like Ghana are source, availability and the use. Inadequate financial projections and planning, high levels of illiteracy among farmers and inadequate access to relevant information inhibit

farmers as to where, how and when to obtain credit facilities. There is also lack of skilled personal to manage the credit very well, and diversion of the credit facilities to non-farm production activities by the farmers (Korwunor et al, 2012). Nonetheless, small-holder farmers in many parts of the country including those in Bole district of Ghana are constrained by inadequate access to credit to carry on with their agricultural activities. Moreover, the importance of credit in improving farm productivity levels does not only depends on availability and accessibility but how the credit is been utilized.

The study therefore seeks to analyze factors that affect credit accessibility of farmers as well as factors that determine the rate of credit allocation to the farm sector. The study will bring to light credit situation of farmers in the study area and help lending institutions to understand credit utilizations by farmers so they can formulate policies accordingly. A better understanding of credit situations of farmers would inform policy implementers to formulate farm level policies to improve capital formation and utilization in the agricultural sector. This study would also contribute to the body of literature on factors influencing credit accessibility and the rate of allocations to farm sector.

The rest of the paper is structured as follows: section two presents the theoretical and empirical literature review. The methodology of the study that includes a brief description of the study area, sampling procedure, data collection techniques, theoretical and empirical models are described in section three. The fourth section presents the empirical results of the study. Finally, section five presents conclusions and recommendations.

LITERATURE REVIEW

Agricultural credit has been defined by many authors in agricultural literature. Nwaru (2004) defined credit as an instrument whose effectiveness is a function of finance and economics that goes with it. Credit can be in kind or cash. Credit is an important input factor that is demanded by borrowers to help in the production of goods and services. Numerous literature on agricultural credit have focused on farmer's access to credit. Access and efficient utilization of credit is very important in increasing farm productivity level, farm income and reducing poverty levels among rural folks. However, access to credit has been fairly limited in agrarian communities. Meyer et al., (2011) reported that agricultural finance has not been able to meet the needs and expectations of farmers because financial institutions are reluctant to lend to agricultural sector. This may be due the risk associated with agricultural sector particularly smallholder farmers who lack collateral to secure the credit facility. Most studies on agricultural credit have established that, there is a correlation between credit accessibility and household and institutional covariates. Thus, farmer's access to agricultural credit is a function of household characteristics such as age, gender, educational level, farming experience and institutional variables such as membership of farmer-based-organization.

Henri-Ukoha et al., (2011) in their study to analyze the determinants of loan acquisition from financial institutions by small-scale farmers in Ohafia agricultural zone of Abia State of Nigeria, observed that age, level of education, farming experience and farm size have significant influence on credit accessibility. Further, Akudugu (2012) estimated the determinants of credit demand by farmers and supply by rural banks in the Upper East Region of Ghana, using Tobit and Logit models respectively. The findings indicated that age of farmers, gender and political affiliations among others were the main determinants of credit demand by farmers while type of crop grown, farm size and amount of savings had significant influence on the amount of credit supplied by banks. Sebata et al., (2014) studied farmer's access to agricultural finance in Zambia. The study revealed that household size, farmer's level of education, among others were the key constraints inhibiting farmer's access to agricultural finance. Similarly, Akpan et al., (2013) examined determinants of access and demand for credit among poultry farmers in Ikot Ekpene area of Akwa Ibom State, Nigeria. The empirical results revealed that age, gender, farm size, membership of social organization, extension agents visits, and distance to lending source were important determinants influencing access to credit. Similar study was conducted by Oladeebo and

Oladeebo (2008) on the determinants of loan repayment among smallholder farmers in Ogbomoso agricultural Zone of Oyo State, Nigeria. The results of the multiple regression analysis concluded that the amount of loan obtained by farmers; years of farming and farmer's credit history were the major factors that positively and significantly influenced loan repayment. Another study to identify the determinants of agricultural credit among small holder farmers in Nasarawa State, Nigeria was conducted by Etonihu et al., (2013). The stepwise linear regression results revealed that education, distance to source of credit and types of credit were significant factors that affect farmer's accessibility to agricultural credit.

Numerous empirical literature have reported that smallholder farmers divert a proportion of borrowed fund from financial institutions to non-farming activities. Anyiro and Oriaku (2011) in their study indicated that about 83% of smallholder farmers in Abia State, Nigeria divert their borrowed fund to other activities rather than the purpose of which it was obtained. Similarly, Henri-Ukoha et al., (2011) reported only 12.15% diversion of credit into non-farm activities by smallholder farmers in Abia State of Southern Nigeria. On the contrary, Nimoh et al., (2011) investigating the effect of formal credit on the performance of poultry farmers in Ghana observed no diversion of credit to non-farming activities. Notwithstanding, the effects of credit on farm productivity is a function of its utilization. Farmers often misdirect agricultural credit and therefore do not realize its full impact on their productivity and for that matter their livelihood. Waheed (2009) contended that smallholder farmers underutilize agricultural fund for investment purposes by diverting it to personal consumption. The tendency of farmers to divert agricultural credit from its intended purposes could be explained by socio-economics, farm specific and institutional factors.

Kuwornu et al., (2012) in assessing agricultural credit allocation and constraint condition of maize farmers in Ghana employed Tobit model to identify the key determinants of credit allocation to farm business of selected maize farmers in Ghana. The results of the Tobit model indicated that, while age of farmer has significant negative influence on credit allocation to farm sector, bank visit to farmers and the amount of credit received have positive significant effect on the percentage of credit allocated to farm operations. Oboh and Ekpebu (2011) in their study on determinants of formal agricultural credit allocation to farm sector by arable crop farmers in Benue State, Nigeria employed multiple regression model in determining factors affecting the rate of credit allocation to the farm sector. The study revealed that age, education, farm size, loan delay, bank visit and household size were significant variables that affect the rate of credit allocation to the farm sector. A similar study was conducted on Nigerian farmers in Benue State by Oboh and Kushwaha (2009) to determine the socio-economic factors affecting allocation of credit to farm sector. The empirical results of their study showed that age, education, farm size, household size and visitation by banks significantly influenced the proportion of credit allocated to farm operations.

METHODOLOGY OF RESEARCH

Study Area. The Bole District is located at the extreme western part of the Northern Region of Ghana. The District is bordered to the North by Sawla / Tuna Kalba District, to the West by the Republic of Ivory Coast, to the East by West Gonja District and to the South by Wenchi and Kintampo Districts of Brong-Ahafo Region. The District stretches from Bodi in the North to Bamboi in the South. The Bole District covers an area of about 4800 km² which is 6.8% of the total landmark of the northern region. It has a population of about 87,656 (Projection based on 2000 population census) and a growth rate of about 3.1% per annum. The population is sparse with a density of about 14 per km². The District capital is the only urban center in the district. Other semi – urban centers include Bamboi, Maluwe, Tinga, and Banda-Nkwanta. There are 148 communities, one town council and five area councils. The households are predominantly headed by male.

Sampling Procedure and Data Collection Techniques. The study employed cross-sectional data randomly selected from farm households in ten communities in the Bole district. To aid the process of sampling in the selected communities, a list of farm households

who have benefited from credit facilities were obtained from lending institutions. A total of 49 credit beneficiaries and 51 non-credit beneficiaries were randomly selected from ten communities.

Analytical Framework. The study employed both descriptive and quantitative methods to analyze the dataset. Descriptive statistics was used to describe the demographics characteristics of farm households as well as proportion of credit allocated to the farm sector. The paired-sample t-test was used to test for significant difference between amount of credit received and the amount allocated to farm operations. The study also employed Probit and Tobit regression models to analyze differences in probability of farmer access to credit and the differences in the amount allocated to farm sector respectively.

Probit Model. Qualitative dependence response model such as Probit or Logit have been used in many studies in the field of credit access involving a limited dependent variable, (see Danso-Abbeam et al., 2014, Ghimire et al., 2013, Dainella et al., 2013). According to Gujarati (2004), binary choice models are analyzed in the general framework of probability models. The choice of the Probit model is based on the assumption of its realistic standard normal distribution. The dependent variable is coded “0” or “1” corresponding to the response given by a farmer on whether or not he/she access credit. Nagler (2002) have shown that Probit model constraint the estimated probabilities of the dependent variable to lie between 0 and 1 and relaxes the independent variables as a constant across probability values of the dependent variable. Moreover, Probit model has the advantage of plausible error distribution as well as reasonable probabilities. The Probit model assumes that apart from the observed values of 0 and 1 for the dependent variable Y , there is a latent unobserved continues variable Y^* that determines the value of the dependent variable Y . The dependent variable Y^* is a dichotomous which represent the credit access condition of the farmers and take the values “1” for those who are able to access credit and “0” if otherwise. We assume that Y^* can be specified as follows:

$$Y_i^* = \beta_0 + \sum_{j=1}^8 \beta_j x_j + \varepsilon_i$$

$$Y_i = 1 \text{ if } Y^* > 0 \quad (1),$$

$$Y_i > 0, \text{ otherwise}$$

where $X_1, X_2, \dots, X_j$ represent vector of random variables, β_j represent vector of unknown parameters and ε_i represent a random disturbance term (Nagler 2002).

The empirical Probit model specified to analyze the probability of credit access is specified as follows:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \varepsilon_i \quad (2),$$

where $X_1, X_2, X_3, X_4, X_5, X_6, X_7$, and X_8 denotes the age of the farmer, the squared of the age of the farmer, gender, household size, educational level, income from off-farm activities, farming experience and membership of farmer-based-organization respectively. The measurements and the *a priori* expectations of the variables used in the empirical Probit model are presented in table 1.

The Tobit Model. In order to investigate different proportion of credit allocated to farm operations, we assume that there is no conditional dependency between amount of credit received and the proportion of credit allocated to farm operations. We therefore use Tobit regression model to analyze the factors that influence proportion of credit allocated to farm sector. It is expressed as a percentage of maximum amount of credit allocated to farming business. The Tobit model is appropriate for analyzing the amount of credit allocated to farm operations since it is able to capture zero values because not all farmers allocated some or all the credit to farming business which the OLS is suitable. According to Greene (2008), the

general formulation of the Tobit model is usually given in terms of an index function. With the Tobit model, we observe Y if amount allocated to the farm business is above or below the censored. The method of estimation for the Tobit model is the maximum likelihood estimation. The Tobit model can be defined as:

$$Y_i^* = \beta_0 + \sum_{j=1}^{11} \beta_j X_j + \varepsilon_i$$

$$Y_i = Y_i^* \text{ if } Y_i^* > 0$$

$$Y_i = 0 \text{ if } Y_i^* \leq 0 \quad (3),$$

where Y_i denotes the observed dependent variable; Y_i^* latent which is not observable, X_j denotes the vector of factors influencing the proportion of credit allocated to farm operations, β_j denotes vector of unknown parameters, ε_i is a residual that are independently and normally distributed with zero mean and common variance σ^2 .

Table 1 - Description of Variables used in the Probit Model

Variables	Description	Unit of Measurement	Apriori Expectation
x_1	Age of farmer	Years	+
x_2	Age squared	Years	+
x_3	Gender of farmer	Dummied: 1 if male, 0 if female	+/-
x_4	Household size	Number of people	-
x_5	Formal education of farmer	Years	+
x_6	Income from off-farm activities	Ghana cedi	+
x_7	Number of years in Farming	Years	+
x_8	Farmer Based Organization	Dummied: 1 if member, 0 if otherwise	+/-

Table 2 - Description of Variables used in the Tobit Regression Model

Variables	Description	Unit of Measurement	Apriori Expectation
x_1	Age of farmer	years	+
x_2	Age squared	years	+
x_3	Gender of farmer	Dummied: 1 if male, 0 if female	+/-
x_4	Household size	Number of people	-
x_5	Formal education of farmer	years	+
x_6	Income from off-farm activities	Ghana cedi	+
x_7	Number of years in Farming	years	+
x_8	Amount of credit received	Ghana cedi	+
x_9	Farmer Based Organization	Dummied: 1 if member, 0 if otherwise	+/-
x_{10}	Loan duration	Weeks	-
x_{11}	Extension visit	Dummied: 1 if visited, 0 if otherwise	+/-

The empirical model for the Tobit model used to estimate the amount of credit disbursed is given by:

$$Y_M = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \dots + \beta_{11} X_{11} \quad (4),$$

where X_1 , X_2 , X_3 , X_4 , X_5 , and X_{11} denotes age of farmer, age squared of farmer, household size, farming experience, educational level, off-farm income, amount received, loan delay, extension visit and membership of farmer-based-organization respectively. The variable description, measurement and a priori expectations of factors influencing the amount of credit disbursed are presented in table 2 below.

RESULTS AND DISCUSSIONS

Socio-Economic Characteristics of Respondents. From the summary statistics, most of the farmers fall within a productive age bracket (18-50) with a mean age of thirty six (36) years. The mean age in the society is the economically active population who has the ability to engage in farming businesses. Majority of the farmers have had at least five (5) years in farming indicating farmers in the Bole District are experienced in the farming business. However, majority (65%) of the farmers have no formal education. This clearly indicates that the level of formal education among farmers in the Bole District is low. The effect of the low educational level of the respondents are inability to keep proper farm records, difficulty in determining when, where and how to apply for credit. Seventy four percent (74%) of farmers including those who accessed credit and those who did not access credit were females and the remaining 26% were males. This clearly shows that women in the Bole District engage in farming businesses more than men.

Amount of Credit Applied and Amount Received by Farmers. The paired t-test results used to determine whether there is a significant difference between the mean amount of credit applied and the mean amount of credit received is presented in table 3 below. The P-value of 0.3213 suggests that the null hypothesis cannot be rejected. This implies that the mean amount of credit received (GH¢3,005.6) is not significantly different from the mean amount of credit applied (GH¢3,010.8). The result contradicts a study conducted by Oboh and Ekpebu (2011) who revealed that the mean value of loan supplied was significantly lower than the mean value of loan demanded.

Table 3 - Result of the Paired Sample t-test showing Significant Difference between the Mean Amount of Credit Applied and the Mean Amount Received by Farmers

Variable	Mean	T-value	Degree of freedom	P-value
Credit Applied	3,010.6129	1.0000	61	0.3213
Credit Received	3,005.7742		61	

Source: Field Survey (2014). ** = 5% Significance level.

Amount of Credit Received and Amount of Credit Allocated to the Farm Sector. Table 4 below presents the paired t-test results used to determine whether there is a significant difference between the mean amount of credit received and the mean amount of credit allocated to the farm sector. The P-value of 0.000 indicates significance at 1%, hence the null hypothesis is rejected implying that the mean amount of credit received (GH¢ 3,005.80) is significantly higher than the mean amount of credit allocated to the farm business (GH¢ 2,009.80).

Table 4: Paired Sample t-test showing Significant Difference between the Mean Amount of Credit Received by Farmers and the Mean Amount of Credit Allocated to the Farm Sector

Variable	Mean	T-value	Degree of freedom	P-value
Credit Received	3,005.8	4.5312	62	0.0000***
Amount to Farm Business	2,009.8		62	

Source: Field Survey (2014). *** = 1% Significance level.

Analysis of the Factors that Influence Credit Accessibility. Socio-economic factors influencing agricultural credit accessibility was analyzed using the Probit model. This is presented in table 5 below. The socio-economic variables included in the Probit model were age, age squared, gender, household size, educational level, years in farming, off-farm income and FBO membership. Four (4) out of the eight (8) explanatory variables estimated showed significant influence on farmer's probability to access credit. These variables include gender, household size, off-farm income and FBO membership.

The measure of goodness of fit, Pseudo R-squared of the estimated Probit model was 0.3046 implying that about 30.46 percent of the probability of accessing credit is explained by all the explanatory variables. The joint hypothesis was statistically significant at 1% (Prob>chi2 = 0.0000) implying that at least one of the explanatory variables is statistically significant to the probability of accessing credit. The interpretation of the marginal effects is based on *ceteris paribus*.

Gender specified as dummy was found to be significant and has a positive marginal effect. The positive marginal effect and significance of gender means that credit accessibility is high for male farmers. The result of the positive marginal effect of gender is in line with a study conducted by Akpan et al., (2013) who revealed that males have higher probability of accessing credit than females. The marginal effects value of 0.16 by approximation implies that a unit increase in the number of male farmers would lead 0.16 percentage points increase in the probability of accessing credit. This may be attributed to the fact that, in Northern Ghana, males generally have access to information and control of resources than females.

Household size was found to be significant and has a negative marginal effect. The implication is that, farm households with fewer members per house have higher probability of accessing credit. The result conforms to a study conducted by Danso-Abbeam et al., (2014). In their study, they found out that, increasing household size lowers the probability of accessing credit. However, it contradicts the findings of Webber and Mushof (2012) who found household size to be an increasing function of the probability of accessing credit. The marginal effect of household size is 0.53 approximately which means that the probability of accessing credit would decrease by 0.53 percentage points for every one person added to the farmer's household.

Table 5 - Probit Model Results of the Factors that Influence Farmer' Access to Credit

Variable	Marginal Effects	Coefficients	Standard Error	P-Value
Age	0.0967	0.4587	0.2975	0.134
Age Squared	-0.0039	-0.0181	0.0564	0.749
Gender	0.1589**	0.9938	1.0961	0.049
Household Size	-0.0528***	0.2435	0.0715	0.003
Years In Farming	-0.0361	0.1663	0.3051	0.586
Educational Level	0.3475	0.0649	0.1867	0.676
Off-Farm Income	0.0324***	0.0034	0.0010	0.001
FBO Member	0.0141***	1.2140	0.4133	0.001
Constant		0.4459	0.5057	0.728
Number of Observations	100			
Prob chi ²	0.000			
Wald chi ²	43.52			
Pseudo R ²	0.4303			

Source: Field Survey, 2014

*** = 1% Significance level. ** = 5% Significance level. * = 10% Significance level.

Off-farm income was also found to be significant and influences credit accessibility positively. Farmers who derive income from off-farm activities have higher probability of accessing credit than their counterparts who do not. The marginal effect of off-farm income is 0.32 which means that for a unit increase in income from off-farm business, the likelihood of accessing credit would increase by 0.32 percentage points. This is attributed to the fact that income from off-farm activities can serve as collateral that lenders can lean on in times of production losses that may happen as a result of natural calamities. Isitor et al., (2014) also

found off-farm income to have a positive relationship with agricultural credit accessibility. However, the effect was not found to be significant.

Farmer's membership of FBO has a positive marginal effect and found to have a significant influence on the probability of accessing credit. This indicates that farmers who join Farmer-based organizations have higher probability of accessing credit. The marginal effect of FBO membership is 0.45 implying that for a unit increase in FBO membership, the probability of accessing credit would increase by 0.45 percentage points. From the findings, one major reason why farmers join FBO is for financial services. This is consistent with the findings of Akudugu (2012) and Isitor et al., (2014).

Analysis of the Factors that Affect Allocation of Credit to the Farm Sector. The Tobit model was used to analyze factors influencing the proportion of credit allocated to farm operations. Variables included in the Tobit model are; age of farmer, age squared, gender, and household size, number of years in farming, educational level, and amount of credit received, off-farm income, credit duration, extension visit and FBO membership.

The Pseudo R-squared of the estimated Tobit regression model was 0.3559 implying that about 35.6 percent of credit allocated to the farm sector is explained by the explanatory variables. The probability value of the joint hypothesis was found to be statistically significant at 1% indicating that at least one of the explanatory variables significantly explains the differences in the proportion of credit allocated to farm operations. The results of the estimated Tobit model also revealed that gender, educational level, amount of credit received, credit duration and extension visit significantly explained the proportion of credit allocated to farming operations.

Gender specified as dummy was found to have significant influence on the amount of credit allocated to farm productions. The direction of gender was negative implying that females tend to allocate greater proportion of credit received to their farm business than their male counterparts. The marginal effect of gender is 0.85 implying that as the number of female farmers increase by one unit, the amount of credit allocated to farm sector increases by 0.85 percentage points.

Table 6 - Tobit Regression Results of the Factors that Affect Allocation of Credit to the Farm Business

Variable	Marginal Effect	Coefficient	Robust Std. Error	P-Value
Age	-0.4169	0.9908	0.1590	0.102
Age Squared	0.2679	0.2679	0.0585	0.211
Gender	-0.8495**	-0.8495	0.5937	0.033
House Hold Size	0.3640	0.3640	0.8117	0.958
Years In Farming	0.8992	0.8992	0.1902	0.159
Educational Level	-0.9953*	-0.9953	0.1905	0.092
Off-farm Income	-0.1688	-0.1688	0.1390	0.230
Amount received	0.3463***	0.3463	0.1630	0.000
Loan delay	-0.1296**	0.1296	0.4828	0.042
Extension Visit	-0.0031***	-0.0031	0.0940	0.007
FBO Member	0.9908	0.9908	0.1737	0.126
Constant		0.6683	0.3944	0.220
Number of Observations	100			
Pseudo R ²	0.3559			
Prob>F	0.0000			

Source: Field Survey, 2014.

*** = 1% Significance level. ** = 5% Significance level. * = 10% Significance level.

Educational level was also found to have a negative significant influence on the allocation of credit to farm sector. Thus, farmers who have spent more years in formal education tend to allocate smaller proportion of credit received to their farm business. This could be attributed to the fact educated farmers may have other non-farm businesses which they could divert a larger proportion of the credit into. The result contradicts a study conducted by Nwaru (2005) as well as Oboh and Ekpebu (2010) who revealed that farmers with higher levels of education allocate farm resources more efficiently. The marginal effect of educational level is 0.99 which means that for a unit increase in the level of formal

education, the proportion of credit allocation to farming business would decrease by 0.99 percentage points.

Amount of credit received conformed to the *a priori* expectation (positive) and was found to be significant. The positive relationship and the significance of amount of credit received to the proportion of credit allocation to farming operations implied that farmers who receive a larger amount of credit allocate greater proportion of the credit to their farming businesses. This result is consistent with the findings of Nosiru et al., (2010) who revealed that as amount of credit increases, the percentage of credit allocated to farm sector also increases. The marginal effect of amount of credit received is 0.35 implying that a unit increase in the amount of credit received will lead to 0.35 percentage points increase in the proportion of credit allocated to the farm business.

Credit delay (number of days between application and receipt) was also found to be significant and negatively influences the proportion of credit allocated to farming operations. This implies that the proportion of credit allocated to farm businesses decreases as loan delay increases. In other words, farmers who receive credit shortly after submission of loan application form tend to allocate greater percentage of the credit to their farm businesses. This result is in line with earlier findings by Amonoo et al., (2003) that there is a high tendency of farmers to misuse credit when loans are received late. The marginal effect of credit duration is 0.13 implying that one unit increase in credit duration (as defined in number of weeks) would lead to 0.13 percentage point decrease in the proportion of credit allocated to the farm business.

Extension visit was also found to have a negative significant influence on the proportion of credit allocated to farming businesses. The implication is that farmers who do not receive extension services allocate greater proportion of credit to their farming businesses. This is contrary to our *a priori* expectation. The marginal effect of extension is 0.003 which means that proportion of credit allocation to farming activities would decrease by 0.003 percentage points for one unit increase in extension visit.

CONCLUSIONS AND RECOMMENDATIONS

The study sought to examine factors influencing farmer's accessibility to agricultural credit as well as the differences in the amount of credit allocated to farm sector. Descriptive statistics and the paired-sample t-test were used to analyze the amount of credit applied and the amount received as well as the difference between mean amount received and mean amount allocated to farm operations. Probit regression model was used to identify factors influencing the probability of farmers accessing credit from lending institutions whilst Tobit regression model was used to estimate the determinants of amount of credit allocated to farming operations. The results of the paired sample t-test indicated that while there is no significant difference between amount of credit applied and the amount received, there exist a significant difference between the amount of credit received and the proportion allocated to farm sector. Probit regression model revealed that gender, household size, off-farm income and membership of farmer-based-organization have significant influence on the differences in the probability of accessing credit. Further, estimated results from the Tobit model indicated that while gender, educational level, loan delay and extension visits exert negative significant effects on the proportion of credit allocated to farm sector, amount of credit received have positive significant influence on amount allocated to farm sector. The study therefore recommends that financial institutions should be conscious of the timely approval of loans since late approval tends to tempt farmers to divert the loans to unintended purposes. Farmers should also be granted the required amount of loans to enable them utilized it for intended purposes to improve productivity and enhance their livelihood as a whole. Moreover, the study was conducted in the agricultural sector of the economy by concentrating on crop farmers in the Bole district of the Northern region. This may not be a representative of the whole Ghanaian agricultural sector. We therefore recommend that future research may extend it to other sub-sectors of agriculture as well as the other parts of the country.

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