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AN EMPIRICAL ASSESSMENT OF THE IMPACT OF ACCESS TO CREDIT ON FARM OUTPUT: A CASE STUDY OF SEFWI-WIAWSO MUNICIPALITY GHANA

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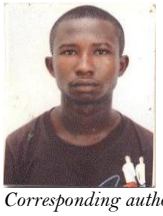

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ABSTRACT

The study examined the socio-demographic features of farmers and credit accessibility in the Sefwi-Wiawso Municipality Ghana. It also identifies the sources and factors influencing access to credit in the Sefwi-Wiawso Municipality. Primary data were obtained from 1,200 households and farmers within the Sefwi-Wiawso Municipal. The empirical analysis employed a logistic regression technique, the Tobit model and Endogenous Switching Regression Model (ESRM) to explore the accessibility of credit on productivity in the agriculture sector. The results revealed that age and gender are statistically significant in determining access to credit from both the logit and the endogenous regression models. The endogenous switching regression model further reveals that educational status, land ownership, access to knowledge on credit significantly influences the amount of credit received by a particular farmer within the Sefwi-Wiawso Municipality. These findings have practical implications for the modernizations of the Agriculture sector in Ghana. It is therefore important for various stakeholders to increase financial literacy among farming communities and the financial institutions to increase the credit accessibility by the Agriculture sector. It is therefore recommended that extension services provision, diversification of agriculture production and easy access to credit from financial institutions in the Municipality be established to ensure increased agriculture production.

Contribution/Originality: This study is one of the very few studies which have investigated the impact of access to credit on agricultural productivity.

1. INTRODUCTION AND CENTRAL ARGUMENT

The contribution of Agriculture to Ghana's economy cannot be overemphasized. Its importance in the areas of foreign exchange earnings, food security, and employment creation cannot be understated. Agriculture plays both backward and forward linkage roles with itself and other sectors of the economy. It provides raw materials to agro-based sectors that create income to those engaged in the sector as well as the central government (Binswanger and Deininger, 1999; Sulemana and Adjei, 2015). According to the Institute of Statistical Social and Economic Research (2014) reports agriculture employs about 43.7% of the Ghanaian labour force and helps reduce rural-urban migration. The impact of agriculture on poverty reduction is profound, and as a result, most policies ear-marked towards poverty alleviation have been modeled around agriculture (Agwu *et al.*, 2008). Accordingly, policy initiatives keep emerging in the agriculture sector to help augment total output.

The production and distribution of agriculture products require huge capital and credit accessibility. However, the agriculture sector is financially constrained leading to the use of old methods and rudimental technology resulting in low production and ineffective distribution (Sulemana and Adjei, 2015). It is estimated that roughly, 80 percent of total agricultural cultivation in Ghana is rain-fed dependent and quite a few (roughly 20 percent) of farming households use fertilizer. Farmers lack access to high yielding seed varieties, fertilizers, insecticides as well as irrigation-based techniques for production. The resultant effect is that most farmers do not enjoy economies of scale due to small scale production reflecting in high cost of production (Sulemana and Adjei, 2015). Credit, which farmers receive, is influenced by several factors which do not give small-scale farmers the opportunity to get the needed amount from the financial institutions.

The Sefwi-Wiawso Municipality in Ghana is no exception to the problem of inadequate agricultural credit to increase crop yield. Access to credit in the municipality is a challenge to small-scale farmers and as a result, farmers find it difficult to purchase the needed inputs to expand their farms. Most farmers often rely on the little income received from their produce and the support of friends to acquire the needed inputs in their farm operations. The primary occupation of the inhabitants is agricultural production and distribution with roughly a little over 70 percent of households engaged in the sector. The farmers in the municipality produce agriculture products such as cocoa, oil palm, pineapple, plantain, yam, rice, tomatoes, garden eggs, citrus, pepper, cassava, cabbage, cocoyam and maize.

Financial institutions that are available in this municipality give loans to farmers based on certain demographic characteristics because most farmers do not have collateral security to secure credit. Farmers in this municipality are not able to save due to the low income they receive from their farm outputs or products. Low amount of savings due to the low disposable income of small-scale farmers is one of the constraints for farmers to access credit from the financial institutions in this municipality. Financial institutions usually use the amount of savings as a yardstick to give credit to farmers. Farmer's socio-demographic features such as age, educational level, gender, marital status, farmer's income, types of crops grown, farm size, extension contact and among others influence their ability to access credit. Socio-demographic characteristics of farmers and access to credit are therefore related. This study, therefore, seeks to evaluate the impact of farmer's credit accessibility on farm productivity within the Sefwi-Wiawso Municipality. More specifically this study seeks to answer the following research questions. How does the socio-demographic feature of respondents affect their capacity to have access to agriculture credit in the Sefwi-Wiawso Municipality? What are the sources of credit and factors influencing access to credit by farmers in the Sefwi-Wiawso Municipality?

2. RELEVANT LITERATURE

Aidoo-Acquah (2016) conducted a study on the factors that influence the accessibility of credit facilities among small-scale farmers of the Fiaseman Rural Bank Limited in the Prestea/ Huni-valley District located in the Western part of Ghana. The primary data for the study was collected through questionnaire administration, and the probit regression model used revealed that "marital status, family size, interest rate, the income of household head and the value of collateral were the major factors which influence farmers' access to credit".

Just like Elisha *et al.* (2016) in their study also proved that "factors such as marital status and income of the farmer influence the farmer's access to credit". In relation to this, Benjamin *et al.* (2015) also discovered in their research that "farmers' access to credit is being influenced by gender of the farmer, level of household income, amount of farm capital, technology adoption, contact with an extension officer, farm capital, capital ownership and awareness of lending institution".

Furthermore, Gideon *et al.* (2015) also examined "the factors influencing the probability of accessing agricultural credit and how the amount received is collecting to farming operators". Their study proved that "there exists a significant difference between the amount of credit received and the amount allocated to farm operations".

The probit model of data collection and analysis was used to explore the determinants of agricultural credit and the results is in line with the studies of Benjamin *et al.* (2015); Elisha *et al.* (2016); Aidoo-Acquah (2016) which observed that "gender, household size, farmers engaging in off-farm income and membership farmer-based organization influence the probability of farmers' access to agricultural credit".

In addition, Benjamin *et al.* (2015) also analyzed the factors influencing access to loans. The study was done to basically look at the determinants of loan size. They made use of the probit model to analyze "the factors which influence access to agricultural microcredit in the Northern region of Ghana". It was concluded that gender, farm capital, the size of the household are major determinants of access to credit by farmers.

Elisha *et al.* (2016) also investigated the factors which influence smallholders Rice farmers' access to credit in the Eastern part of Ghana. "A multi-stage technique of sampling was used to undertake the study and the probit model was used to estimate the factors that, influence farmers' access to credit". Their results showed that "age, marital status, membership of the farmer-based organization, extension visit, record keeping and farm income influenced access to credit". The study again proved that most farmers did not use the credit on agricultural activities but rather for other activities.

Moreover, Javed *et al.* (2008) also embarked on a study on the effects credit on rice productivity in Pakistan. "Their study identified that credit offered to farmers had a positive correlation with agricultural productivity". The study employed secondary data in credit given to farmers by the government of Pakistan. The data were analyzed using the linear regression model of the Cobb Douglass hype and the study found out that, credit disbursed for seeds, fertilizers, pesticides, irrigation and tractors had a strong positive correlation on agricultural productivity.

Awotide *et al.* (2015) also examined the influence of the availability of credit on agricultural productivity in Nigeria. The study made use of "Endogenous Switching Regression model (ESRM)". The results revealed clearly that determinant of farmer's access to credit was livestock unit and farm size. Also, their study pointed out that "accessibility to credit has a significant impact on the production of cassava". However, they recommended that credit services to rural farming households should be improved to enable farmers' access credit and increase productivity.

Rahman *et al.* (2014) made use of the logit regression model, "to examine the impact of agricultural credit availability on farm productivity in Pakistan". The results from the study showed "a significant positive association between household size, household income, farmers' education, agricultural credit and agriculture output or yield per acre". The study therefore recommends that "financial assistance should be readily accessible to farmers to help enhance agricultural productivity".

Makina and Chisasa (2013) in a study observed that "the impact of bank credit on agricultural credit in South Africa using the Cobb-Douglas production functions". The data for the study spanned from 1970 to 2009 on agricultural output, bank credit access, capital accumulation, labour and rainfall, they estimated the OLS coefficients of the Cobb-Douglas production function. Results from their study indicate that "bank credit has a significant positive impact on agricultural output in South Africa". Specifically, they observed that, "ceteris paribus, a 1 percent increase in credit results in 0.6 percent increase in agricultural output". Also, "with other variables held constant, a 1 percent increase in capital accumulation results in 0.4 percent increase in agricultural output". The study further showed that "the combined effect of the elasticity's from the Cobb-Douglas estimation showed constant returns to scale which indicates that a proportionate increase in inputs will result in the same proportionate increase in agricultural output".

In a related study, Sial *et al.* (2011) examined "the role of institutional credit on agricultural production in Pakistan using time series analysis". Using a time series data spanning from 1972 to 2008, a Cobb-Douglas production function using OLS was examined. A result of their study indicates that "agricultural production credit, availability of irrigation water, the intensity of cropping, and labour force in the Agriculture sector are positively significantly related to agricultural production output".

Waheed (2009) investigated the "effects of micro credits on the farm production and well-being of rural farmers in Pakistan. Microfinance is recognized to be an essential ingredient for investment in rural agricultural production activities and a catalyst well-being improvement of the rural poor". The study pointed out that "credit accessibility to non-poor was better and more productive than credit to the poor farmer". It can be concluded that, non-poor are more easily able to have access to credit compared to the poor.

A study explored "the effect of agricultural credit scheme under supervision (SACS) on farm output". In a comparative analysis of "two group of farmers who have access to credit from formal sources and those from informal sources, and it was observed that farmers who had access to SACS utilized more inputs, had greater yields and profits than their informal counterparts". It was therefore recommended that extension services and access to credit should be intensified to realize higher productivity within the sector.

3. METHODOLOGY

The method of analysis of the study is a quantitative approach of estimation. The dependent variable Y, is the credit constraint condition of the farmer (i.e., a credit constraint farmer is the farmer who has not received all the loans applied for (received only a part of the loan applied for), from the financial institution, and this condition is dummied 1, otherwise 0 when the farmer received all the loan amount applied for, from the financial institution). Let assume that Y* can be specified as follows:

$$Y^* = \beta + \sum_{j}^{7} \beta j + \varepsilon \quad (1)$$

Where in Equation 1 Y^* represents the credit constraint farmer, J represents the factors of credit demand and € represents the error term.

$$Y_i^* = 1 \; if \; Y^* > 0 \quad (2)$$

Where in Equation 2 Y^* represents a credit constraint farmer categorized as 1.

$$Y_i > 0 \; otherwise \quad (3)$$

Where in Equation 3 Y^*_i represents an unconstrained farmer due to available credit.

Following Nagler (2002) where he used " X_1, X_2, X_3... X_n represent vector of random variables, *I represent* a vector of unknown parameters and *I represent* a random disturbance term". The empirical logit model specified to analyze the credit constraint condition of the farmers can be expressed as follows:

$Y_i = \beta_0 + \beta_1 farmers\ Age + \beta_2 Sex\ of\ the\ farmers + \beta_3 Household\ size + \beta_4 Educational\ status\ of\ the\ farmers + \beta_5 Income\ level + \beta_6 Farming\ experience + \beta_7 Farm\ size + \varepsilon_i$ (4)

Where $\boldsymbol{\beta_0}$ *is a constant,* $\boldsymbol{\beta_1 \ldots \beta_7}$ *are coefficients and* ε_i *is the stochastic disturbance or the error term.*

Where in Equation 4 Y_i represents the determinants of access to credit or denial to credit.

3.1. Data Sampling

This section discusses theoretical framework and statistical techniques employed in determining credit constraint in agricultural productivity in the Sefwi Wiawso Municipality using data from a well-structured questionnaire. It examines the types and sources of data, model specification variables employed under the study, prior expectations on the signs of the coefficients to be estimated as well as the model estimation technique.

In Probit estimation, the variable of interest is always an unobserved variable of interest (y*). Under the probit model, there exist dummy variables for the unobserved regression analysis which are categorized as one (1) and

zero (0). Contrarily, Ellinger *et al.* (1992) " Tobit (Tobin's probit) also known as the censored normal regression model is used 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".

It can be modeled as:

$$Y_i^* = X\beta + e \quad (5)$$

Where Y* in Equation 5 is a latent dependable variable and Yi, is observed variable, X is a vector of independent variables. β is the vector of co-efficient for the study.

$$Y_i^* = 1 \; if \; Y^* > 0 \quad (6)$$

Where in Equation 6 Y_i^* represents a credit constraint farmer categorized as 1.

$$Y_i \leq 0 \; otherwise \quad (7)$$

Where in Equation 7 Y_i^* represents a credit unconstraint farmer categorized as 0

. The Maximum Likelihood Estimation (MLE) of the Tobit model is a straight forward one and it interpreted in the same way as the linear regression model just that under Tobit model, there are observed latent variable and censored variables.

3.2. Endogenous Switching Regression Model

Hausman (1983) observed that, "one of the best ways to deal with endogeneity is the use of simultaneous models in estimating their outcomes". The use of the Endogenous Switching Regression Model (ERM) is used to correct any biases in the study during the selection of farmers and their respective variables for study especially when providing services to farmers in addition to credit.

First, the study specifies binary choice model associated with the econometric model stated above. The model is based on Alene and Manyong (2007) study which assessed "farmers access to credit conditioned on observed co-variates using Probit Modeled as;

$$P_i^* = \beta Z + e \quad (8)$$

Where P_i^* in Equation 8 is a dependent endogenous variable, X is a vector of independent variables. β is the vector of co-efficient for the study.

$$P_i^* = 1 \; if \; P^* > 0 \quad (9)$$

Where in Equation 9 P_i^* represents a credit constraint farmer categorized as 1.

$$P = O, \quad if \; P_i \leq 0 \; otherwise$$

Due to the selection bias, farmers are said to experience two regimes described as follow;

$$\text{(Regime 1= Access to credit)} \; G_{1i} = \lambda_i H_i + \phi_1 C_{1i} + V_{1i} \quad (10)$$

Where in Equation 10 is the productivities of the farmers under the various regimes of either access to credit or no access to credit". H_i are a vector of exogenous variables which are assumed to determine the productivity of farmers in the Municipality, Φ_1 is the parameter to be estimated and the V_I is the error term.

$$\text{(Regime 2=No access to credit)}\quad G_{2i} = \lambda_2 H_i + \Phi_2 C_{1i} + V_{2i} \qquad (11)$$

Where in Equation 11 G_{2i} is the productivities of the farmers under the various regimes of either access to credit or no access to credit". H_i are a vector of exogenous variables which are assumed to determine the productivity of farmers, Φ_2 is the parameter to be estimated and V_2 is the error term.

Following Alene and Manyong (2007) "where G_{1i} and G_{2i} are the productivities of the farmers under the various regimes of either access to credit or no access to credit". H_i are a vector of exogenous variables which are assumed to determine the productivity of farmers in the Municipality, Φ_1 and Φ_2 are the parameters to be estimated and the V_I and V_2 are the error terms.

Following Lokshin and Sajaia (2004) "the Full Information Maximum Likelihood method is the perfect way to conduct analysis of the endogenous switching regression model". Empirically, the equation of the ESRM to be estimated; is credit demand function, in a probit regression and an Agricultural production function. The access to credit decision equation, which is equivalent to Equation 8, is specified as follows:

CREDITACCESS= f(AGE, EDUC, INCOME LEVEL, SEX,LAND OWNERSHIP, ACRES,KNOW.OF CREDIT, ACCESS TO EXT. BANK ACC.). *(12)*

Where in Equation 12 defines the determinants of access to credit based on all factors of credit demand by a particular farmer.

The binary dependent outcome of the study is categorized into 1 if the farmer has access to credit and (0) if the farmer does not have access to credit. The level of productivity after the access or no access to credit by a particular farmer is then written as;

PRODUCTIVITY = f (AGE, EDUC, INCOME LEVEL, SEX, LAND OWNERSHIP, ACRES, KNOW.OF CREDIT, ACCESS TO EXT. BANK ACC.) *(13)*

Where in Equation 13 is defined as the determinants of productivity by a farmer due to access to credit in the Sefwi-Municipal.

4. EMPIRICAL RESULTS

The survey covered farmers of the Sefwi-Wiawso Municipality with a representative sample of 1,210 households in ten (10) enumeration areas. Exactly, One thousand, two hundred (1,200) respondents were successfully interviewed translating into a response rate of 99.17 percent. Detailed information was collected on the demographic characteristics of households, education, employment, credit accessibility conditions, household agriculture, income and their components.

The summary statistics of credit accessibility and agricultural productivity in the Sefwi- Wiawso Municipality of the Western region is presented in Table 4.1 above shows that, 62.5 percent of the households interviewed were males' while 37.5 percent of them were females. Table 4.1 shows that most of the farmers interviewed were within the age group of 38-47 years which shows an active age group of the population within the Sefwi-Municipal. About 43.85 percent of the individuals fall within this age category. The proportion of farmers who have had some form of education was skewed towards educated with 65 percent. More than half of the households interviewed were located in the urban areas of the Municipal (54.17%) whiles the rural households were 45.83 percent. Out of the total number of people interviewed, the number of farmers who were married was 71.61 percent compared to 28.33

percent of them who were not married. This means that, since farming is an economic activity that requires more helping hands most farmers get married early in other to have more helping hands on the farm work compared to the unmarried people.

Table-4.1. Summary statistics of variables.

DEMOGRAPHIC VARIABLE	No. of household	Percent of total
GENDER		
Male	750	62.5%
Female	450	37.5%
AGE GROUP		
18-27 years	230	19.17%
28-37 years	670	55.83%
38-47 years	300	25.00%
48-57 years >58 years		
EDUCATION		
Educated	780	65%
Non-educated	420	35%
RESIDENCE		
Urban	650	54.17%
Rural	550	45.83%
MARITAL STATUS		
Married	860	71.67%
Single	340	28.33%
ACRES OF LAND OWNED		
1-5 acres	850	70.83%
>10 acres	350	29.16%
ENGAGED IN ECONOMIC ACTIVITY		
Yes	934	77.833%
No	266	22.17%
FARM OWNERSHIP		
Farm	980	81.17%
No-farm	240	18.83%

Source: Authors computation with data from Field Survey, 2018.

The number of people engaged in economic activity for income, cash or in kind within the Municipality was represented by 77.83 percent. This means that most of individuals are engaged in one form or work or the other. The major occupation within the Municipality is farming which is represented by 81.1 percent compared to other economic activities such as the manufacturing and service sector which together constitute 18.83 percent. The Sefwi-Wiawso Municipality is an area with large tracts of land for agriculture purposes and mining as well. The members within the communities of the Municipality are predominantly farmers. This is the main occupation of the residents of the Municipality.

Table-4.2. Access to credit and land size.

Credit Accessibility among farmers			
Acres of land	**Yes**	**No**	**Total**
1-5 acres	560 (46.66%)	200 (16.67%)	760 (63.33%)
>10 acres	200 (16.67%)	240 (20%)	440 (36.67%)
Total			1,200(100%)

Source: Authors computation with data from survey interview.

The acreage of land influences the ability of a farmer to have access to credit. Farmers with a land area of (1-5 acres) have 46.66 percent access to credit in the Sefwi-Wiawso Municipality compared to individuals who have acreage of land above 10. The farmers with above 10 acres of land have 16.67 percent to have access to credit. This means that, most of the financial institutions within the Municipality have the high tendency to give credit to

farmers who engages in small scale farming compared to those who engage in large scale farming. The reason could be that, the farmers who cultivate the land on small scale are able to sell their farm produce quickly since they are normally engage in food crops that yield within the short term.

The farmers who engage in large scale farming (above 10 acres) usually cultivates crops that requires high level of capital and also have long period before cultivation. This is a major reason for their denial of access to credit by the financial institutions that exists in the Municipality. The large agricultural activities in the Municipality also usually require the cultivation over long periods of time and therefore limit the financial institutions ability to give out more financial resources to the farmers. From Table 4.2 about 20 percent of the farmers who falls under the category of large-scale farming that requires ten (10) acres and above areas of land were denied financial access from the financial institutions when they applied for loans. This is usually the case of most banks prefer investment in short term interesting activities compared to long term activities which usually take about three (3) years and above.

4.1. Logistic Regression Results

The estimation of results of access to credit and farm productivity in the Sefwi-Wiawso Municipality is done in the table below. The first part entails the demographic variables and then followed by the economic variables. The characteristics of the households such as age, gender, employment status, and educational status significantly affect the household decision to partake in Agriculture activities as well as put in a loan application.

Similar to the findings of Jangwe (2014) the educational attainment or level of education has a negative effect on the farmers' participation decision in Agriculture in the Sefwi-Wiawso Municipality. In comparison with farmers with no formal education, farmers with basic and secondary educational attainment are less likely to participate in Agricultural activities. This finding also confirms the findings of Dosal *et al.* (2011) for the sample households in Bobo Dioulasso, Burkina Faso. The marginal effects results indicate that compared to farmers with no formal education, the probability that a farmer participate in agriculture activities are reduced by about 8.1 and 18.4 percentage points respectively. This negative relationship between educational attainment and participation in farming activities may be taken as an indication that farmers with formal education stands a better chance of securing good jobs in the Municipality and thus, would be paid better at their workplaces, hence, may not engage in subsistence farming as income generating source to augment his or her income.

The age of the farmer is positively related to access to financial resources for Agriculture participation. This means that farmers with are older enough are more likely to own their lands and therefore use it for Agriculture activities. From the analysis, a one year increase in the age of the farmer raises the farmer likelihood of participating in the phenomenon by about 1.2 percentage points. This result consistent with that of Dosal *et al.* (2011) who finds that farmers engaging in Agricultural activities in Sikasso, Mali are older compared to those non- participating farmers.

A farmer's access to land significantly influences his decision to engage in the agricultural activities. The results indicate a positive association between land ownership or land access and the decision to participate in Agriculture activities Table 4.3. This finding is consistent with that of Adebisi and Monisola (2012). Land constitutes one of the significant inputs or factors of farming. Thus, farmers that have easy access to agricultural land are more likely to participate in it compared to farmers with limited or no access. Furthermore, it can be observed that, compared to the Sewfi-Wiawso Municipality, farmers in the other towns in the Municipality are more probable to engage in Agriculture activities. This may be due to the availability of land and /or the ease of acquiring land in these towns.

Table-4.3. Marginal Effects of the Logistic Regression Estimating the Probability that a farmer have access to credit for Agriculture in the Sefwi Wiawso Municipality.

Variable	Coef.	Std.Err	P>Z	Marginal effects	Std.Err
X'tics of farmers					
Age	0.067***	0.014	0.000	0.012	0.002
Gender					
Male (Dummy)	0.615***	0.089	0.000	0.104	0.014
Educ. Attainment					
No Educ. (Ref. Cat.)					
Basic	-0.458***	0.076	0.000	-0.081	0.013
Secondary	-1.336***	0.113	0.000	-0.184	0.012
Tertiary	0.48	1.252	0.701	0.096	0.276
Employment Status					
Employed (Ref. Cat.)					
Retired	-1.269***	0.27	0.000	-0.156	0.021
Unemployed	-1.526***	0.136	0.000	-0.190	0.012
Marital Status					
Married (Ref. Cat.)					
Never married	-0.077	0.105	0.461	-0.014	0.018
Divorced	-0.093	0.102	0.365	-0.061	0.018
Household X'tics					
Sector of employment					
Service (Ref. Cat.)					
Agriculture	0.15***	0.015	0.000	0.719	0.023
Manufacturing	0.166	0.112	0.000	-0.099	0.013
Ownership of Agric. Land					
Land owned (Dummy)	0.813***	0.295	0.000	0.719	0.023
Agriculture outputs					
Food crops (Ref. Cat.)					
cash crops	-0.552***	0.07	0.000	0.099	0.013
Tree crops	0.050**	0.024	0.041	0.009	0.004
Towns					
Sefwi-Wiawso (Ref. Cat.)					
Boako	2.090***	0.157	0.000	0.468	0.033
Datano	2.145***	0.156	0.000	0.48	0.032
Wiaso-Kwasipatabo	3.022***	0.161	0.000	0.637	0.023
Sefwi- Waise	2.975***	0.15	0.000	0.637	0.023
Wiawso-Somaakrom	1.550***	0.15	0.000	0.336	0.034
Akalomonbo	3.072***	0.166	0.000	0.629	0.022
Susumete3	2.964***	0.164	0.000	0.627	0.024
New town	3.378***	0.185	0.000	0.679	0.021
Asaman	2.949***	0.202	0.000	0.62	0.028
Constant	6.087***	0.407	0.000		
Log Likelihood	-3588.9917				
Pseudo R2	0.2152				
P>chi2	0.000				
*** Significance at 1% ** Significance at 5% *Significance at 10%					

Source: Authors estimation based on Data from field survey, 2017.

Table-4.4. Tobit Estimation for Parameters on Access to credit by farmers.

Variables	Coefficients	Standard Error	Asymptotic t-ratio
Constant	-0.8597	0.3129	-2.747
AMT.EXP	0.0032	0.0064	-0.500
EDUC	0.0061	0.0085	0.0071**
ACRES	-0.1623	0.0191	-0.084*
SEX	0.1325	0.1181	1.122
COLLATERAL	0.8704	0.1212	0.0182***
REASON FOR LOAN	0.6726	0.0897	0.749
LOAN REPAYMENT	0.6615	0.9684	0.0068***
INCOME LEVEL	0.5211	0.4822	1.081
CREDIT ACCESS	0.0075	0.0314	0.239***
*** Significance at 1%			
** Significance at 5%			
*Significance at 10%			
Log-Likelihood Function	= -91. 44385		
Number	= 761		
LR Chi2 (11)	= 15.754		
Prob > Chi2	= 0.000		
Pseudo R^2	= 0.0083		

Source: Authors computation with data from Field Survey, 2018.

The results indicate a significant association between the employment status of the farmer and his or her decision to participate in Agriculture activities. Compared to individuals who are employed in other sectors of the economy, people who are retired and unemployed are less likely to participate in agricultural activities. This is because agricultural activities require ample time and enough strength. Retired individuals may not have enough financial support for the Agricultural activities as well as may be even denied loans to participate in Agricultural activities.

The results show a significant relationship between the type of crops cultivated and the farmer's access to credit in the Sefwi-Wiawso Municipality. A farmer who engages in cash crops cultivation are less likely to have access to financial support compared to those to who engage in food crops. This is because food crops yield their harvest within the shortest possible time compared to cash crops which may need longer periods before harvesting. Moreover, farmers who engage in food crops have a better chance of been given a loan compared to those who engage in cash crops. Lastly, the results reveal no significant association between the marital status of the farmer and the decision to engage in farming activities. Thus, the decision to participate in farming in the Sefwi-Wiawso Municipality is not influenced by the whether the individual is married, divorced or widowed.

The Tobit regression estimates above shows a pulled sampled data for the various categories of farmers with access to credit and those without access to credit. The Table 4.4 above shows the Tobit regression estimates of the data.

4.2. Socio Demographic Features

From Table 4.4 above, socio-demographic characteristics such as the level of education and the gender dimension of the respondent are very important in determining access to credit by a farmer within a household. The educational status of the farmer influences his or her ability to have access to credit. This is significant at 5 percent level. This means that, as individual gains more education, he or she is more likely to have access to credit compared to uneducated one. Loan application or credit accessibility involves a lot of procedures that hinders or improves the individual's ability to have access to the credit.

The sex of the farmer from Table 4.4 above has no influence on credit accessibility. There exists a positive relationship between credit accessibility and the sex of the farmer. This means that, irrespective of the gender of the farmer, he or she has a high chance of having access to credit. It is however insignificant.

4.3. Institutional Factors

The amount of expenditure incurred by a farmer on the farm is also not significant to credit accessibility. This may be because, a farmer may acquire a loan but will not use it for the purpose of farming. This may reduce the ability of the farmer to expand the acres to land cultivated in a particular year. The amount of expenditure incurred by a farmer is positively related to the amount of credit acquired even though it is highly insignificant. An increase in the amount of expenditure by one unit will increase the credit acquired by a farmer by 3.2 percent.

From Table 4.4, the acre of land cultivated has a significant impact on the amount of credit acquired. This is significant at 10 percent. An increase in the acres of the land cultivated significantly reduces the individual farmer's access to credit. This means that, as an individual have more access to land, the rate at which financial institutions will be willing to give out credit to such individuals' falls. Most financial institutions prefer to give out loans to farmers who cultivate on a small scale than large scale cultivation.

The availability of collateral security by a farmer significantly influences the amount of credit accessibility by a particular farmer in the Sefwi-Municipality. Because of the farming nature of the Municipality, the amount of the amount of credit is highly influenced by the availability of credit. Individual farmers who have collateral security are more likely to have access to credit compared to people who do not have access to credit. From Table 4.4, the availability of collateral security and access to credit by a farmer is significant at 1 percent and also positively related.

From Table 4.4 loan repayment ability of the farmer based on previous records significantly influences an individual farmer's ability to have access to credit. This is significant at 1 percent and also positively related to access to credit. A 1 percent increase in loan repayment or credit worthiness will increase the amount of credit accessibility by 66 percent. This is very significant since many credit institutions look at the credit worthiness of an individual before they give any loans applied for. This case is not different under the accessibility of credit by farmers in the Sefwi-Municipality.

The amount of income level of the farmers does not significantly influence their credit accessibility. The ability of farmer to have access to credit is not dependent on their income. This is true for the study above because, farmers in the Sefwi-Municipality usually receive low levels of income from the farming activities. Most of these farmers also go for loans during the times where the farming seasons are off. This reduces their ability to haves access to credit. This is insignificant from Table 4.4 above.

Table-4.5. Maximum Likelihood Estimation of Endogenous Switching Regression Model.

Variable	Access to credit (0/1)	Access to credit=1	Access to credit =0
AGE	-0.0455***(0.0144)	0.1721**(0.0828)	0.1793***(0.0686)
EDUC	0.0754**(0.0349)	0.1772**(0.0864)	0.4322(0.2793)
INCOME LEVEL	-0.0011**(0.005)	0.0053(0.0114)	0.0527(0.0384)
SEX	0.898***(0.3625)	0.0485*(0.1515)	0.7079(0.2912)
LAND OWNERSHIP	0.3754 (0.2705)	-0.1136**(0.0548)	0.1881(0.1087)
ACRES	-0.02719 (0.2878)	0.7428***(0.141)	-1.0577(0.3088)
KNOW. OF CREDIT	0.2589 (0.2924)	5.5927***(0.590)	2.2784(1.4926)
ACCESS TO EXT.	0.0223 (0.0287)	-1.7506***(0.082)	-0.5529***(0.0781)
BANK.ACC.	0.0607** (0.0354)	0.50398*(0.3004)	0.1562(0.4140)
CONSTANT	-1.465** (0.524)	5.927**(0.204)	4.875**(0.354)
*** Significance at 1%, ** Significance at 5% and * significance at 1%.			
/Ins1	-1.7506*** (0.08278)		
/Ins2	-0.5529*** (0.0781)		
/r1	0.50398* (0.3004)		
/r2	0.1562 (0.4140) LR test for Joint		

Independence of eqn: $Chi^2(1) = 765$ Prob> $Chi^2 = 0.000$.

From Table 4.5 above, the maximum likelihood Estimation of the Endogenous Switching Regression Model is provided.

The regression above shows farmers with access to credit and farmers without access to credit. Those with credit are coded as (1) and those without credit are coded as (0).

Age significantly influences the level of credit accessibility. Credit institutions are always willing to provide credit farmers who are old enough to handle such amounts. This is significant at 1 percent significance level. As an individual gains additional years, there is high probability of having access to credit in Sefwi-Municipality. Age significantly influences the impact on productivity by a farmer within the Sefwi Municipality. Older farmers who have access to credit are more productive since they have access to credit.

The educational level of the farmer also influences the ability of such individual to have access to credit. This has a positive impact on the level of productivity of the farmers within the household. From Table 4.5, there exist a positive relationship between the educational status of the farmer and the level of productivity. More educated people are more likely to have access to credit and therefore produce more output on a large scale compared to unproductive farmers.

Landownership also significantly impact on the level of productivity of the farmer. The farmer's ability to have access to credit is significantly dependent on land ownership. This makes a farmer more productive when he or she owns the land compared to when the land is sharecropped. From Table 4.5, there is a positive relationship between farmers who owns the land and the level of their productivity through access to credit. This is significant at 1 percent significance level. This result is consistent with Obasi *et al.* (2013) who found a positive relationship between access to credit and the farm ownership.

The knowledge of credit by a farmer also significantly influences the level of credit availability and impact on productivity. Farmers who have fore knowledge of their credit and it usage are more likely to have access to credit. This is significant at 1 percent significance level and also shows a positive relationship between the level of knowledge on credit and access to it by a particular farmer in the Municipality. This has a positive impact on the level of output or productivity of the farmers within the Municipality as shown in Table 4.5 compared to the farmers who have do not have access to credit.

The availability of bank accounts for the farmer also has a positive impact on the level of productivity by that farmer. This is shown in Table 4.5 at 1 percent significance level. This means that, farmers who have bank account are more likely to have access to credit and therefore become more productive compared to farmers who do not have access to credit.

5. CONCLUSION AND POLICY RECOMMENDATION

The logit regression technique was employed in examining the access to credit by an individual and the willingness to participate in Agricultural activities in the Municipality. The analysis of the farmer's decision to engage in agriculture reveals that, the socio-demographic variables of the farmer as well as some economic characteristics are significant predictors of the farmer's ability to have access to financial support to participate in the phenomenon.

Farmer's socio-demographic characteristics or features such as age, gender, educational attainment and employment status influence their access to credit to participate in the Agriculture sector of the economy. The age of farmer raises the likelihood of the farmer to participate in agriculture. This is because older people are more likely to have access to financial support as well as land to participate in Agriculture activities. Household heads who are males are more likely to participate in agricultural activities in the Sefwi wiawso Municipality compared to female-headed households. Also, the educational attainment of farmer had negative influence on the individual's participation decision.

The major conclusions drawn from this study have a number of significant suggestions for policy implementation in this Municipality. The results presented in this study suggest that agriculture has the potential reducing the poverty level of people in the Sefwi – Wiawso Municipality. To ensure the full potential of the

agricultural sector in the improving the livelihoods of the farmers, the following policy recommendations are worth considering:

First, policy interventions that address the problems of credit unavailability, lack of inputs should be set up in the Municipality. There should be measures to ensure that farmers have access to credit and the necessary inputs especially land and hygienic water for irrigation in the Municipality. This will enable those involved to produce on large scale and also attract new people to engage in the agricultural activity. Also, there is the need for the existence of efficient market for agricultural produce and the government and local activities should support and promote the marketing of these agricultural products in the Municipality.

Secondly, there is the need to encourage agricultural diversification which promotes the production of high-valued foods (e.g. mushrooms) that require little cultivation space but offer good monetary returns. Thus, access to land must not be a big problem in the cultivation of such agricultural products. The farmers in the Municipality should be supported to produce foods that improve the family's food security and income as well. Moreover, there is the need for education and environmental health awareness. This can be done through the education of farmers on good farming practices in the Sefwi-Wiawso Municipality. From the interview conducted on farmers perception of extension officers' agency establishment, there was a 100 percent support for the establishment of such unit. The provision of adequate extension officers will facilitate the dissemination of information and the teaching of good farming practices that will promote the production of food in a healthy way.

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