

INFORMAL FINANCIAL MARKET IN GHANA: FACTORS INFLUENCING PARTICIPATION BY MAIZE FARMERS

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Abstract

The study examines characteristics of informal financial market in Ghana and identifies the determinants of maize farmers' participation in informal financial market. The analysis is based on data collected from a survey of 595 maize farmers in seven districts of Ashanti and Brong Ahafo Regions of Ghana during May-July 2010. Descriptive statistics, Analysis of Variance (ANOVA) and logit model were used to analyse the data. The study revealed that intermediaries operating within the informal financial market are relatives and friends, maize traders, farm input sellers and private money lenders. Maize traders are major players in the informal credit market followed by agricultural input sellers. Also the study revealed that informal lenders accept maize for loan repayment. Analysis of variance suggests that the mean loan period and amount were not statistically significant among informal lenders. However, there is significant difference among interest rate offered by informal lenders. From the logit result regional location, gender, engagement in other economic activities and the level of agricultural commercialisation were observed to be factors that influence farmers' demand for informal credit. A policy that would empower traders to offer credit to farmers would not only increase access to credit but also trade, consequently farm income which may promote savings and access to credit. Also, access to informal credit can be improved through development of market centres.

Key words: Informal financial market, Maize farmers, Ghana, logit model.

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1. INTRODUCTION

Financial markets in developing countries consist of formal financial institutions and informal financial sources (Andah, 2005; Hussain and Demaine, 1992). Andah, (2005) defines formal financial institutions as regis-

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tered companies that are licensed to offer financial services by a central monetary authority. He asserts that these institutions are largely urban-based in terms of distribution of branches and the concentration of deposit and lending activities. According to Kashuliza *et al.* (1998), informal financial services are all transactions, loans and deposits that take place outside the regulated monetary system. These include activities of intermediaries such as relatives and friends, traders and money lenders.

The role of financial services in agricultural sector development was recognised during the early days of Ghana's independence when improvement in agricultural production and import substitution was the main target for economic growth (Addaeh, 1989). This is because farm productivity could result from adoption of improved technology and increased use of purchased inputs which requires access to finance. Theoretically, Boucher and Guirkingner (2007) asserted that farmers' lack of access to finance has a strong negative implication for farm productivity and increases likelihood that a farm household would fall into poverty traps (Carter and Barrett, 2006; Zimmerman and Carter, 2003).

The formal financial sector has been identified as important in improving productivity by making financial services available to producers in the agricultural sector. This is because informal financial services are often considered to be unsatisfactory because of extraordinarily high interest rates on credit, and savings are not sufficiently secure (Khandker and Faruquee, 2003). Therefore, several policies were adopted in Ghana by successive government after independence to ensure access to formal financial services by majority of the population who are involved in agriculture. These policies included acquisition of 40% equity shares in the foreign banks while the Ghana Commercial Bank was encouraged to open branches in rural areas to make banking services available to the people. Bank of Ghana also introduced several measures to control and direct credit to the agricultural sector. These measures included provision of capital for the establishment of specialised banks to serve agriculture, namely, Agricultural Development Bank (ADB) and Rural banks (Addaeh, 1989). The Bank of Ghana also set minimum deposit and placed ceiling on lending rate. In addition, all banks were mandated to allocate 20% of their outstanding credit to the agricultural sector (Gockel, 1995). However, these policies and measures adopted by the Bank of Ghana rather led to distortion in the banking sector.

The distortions within the banking sector was characterised by weak management and accounting information systems, inadequate legal and regulatory framework including ineffective supervision by Bank of Ghana, restricted banking products and underdeveloped operational skills. In addi-

tion, the banks were discouraged from adopting competitive saving mobilisation policies. The result was low volume of loanable funds (Gockel, 1995). Supply of credit to the priority productive sectors declined in real terms.

Thus, a financial system restructuring was implemented early 1990s to correct the distortion in the financial sector and improve access to financial services through the development of competitive financial system with private sector participation in the delivery of financial services. Ghana now has a competitive financial system; as at December 2010 there were 30 universal banks, 135 rural banks and 48 non-bank financial institutions including 19 Savings and Loans companies (Bank of Ghana, 2012). Despite the development in the formal financial sector, many farmers do not have access to formal financial services (Institute of Statistical, Social and Economic Research (ISSER), 2008; Republic of Ghana (RoG), 2008).

Also Basu et al (2004) reported that only 5 to 6 percent of the population have access to the commercial banking sector in Ghana, while 16 percent have access to an account with a financial intermediary (World Bank, 2008). A recent Ghana Living Standard Survey round five reported that about 78% of the respondent used informal financial services (Ghana Statistical Service, 2008). According to Sanderane (2003), the use of informal source of finance is due to the advantageous characteristics of informal finance such as flexibility and convenience and supply of custom tailored financial products (Baydas *et al.*, 1995) and low transaction costs for service providers (Kochar, 1997) were cited as reasons why informal financial services persist.

Okurut *et al.*, (2004) also observed that Informal financial sources have access to local information on their clients with whom they have interpersonal relations at very low cost which they use for screening depositors and borrowers thereby managing transaction cost and default risk (Hoff and Stiglitz, 1990). This gives them cost advantage over the formal financial institutions particularly banks in serving small borrowers. Informal financial sources also used effective collateral substitutes such as joint liability contracts. Furthermore, informal financial sources accept farm produce as a payment for credit. Basu (1983) noted that informal lenders accept farm produce as repayment for loan in order to reduce potential default risk and to provide insurance against risk of default.

Some authors attributed the persistence of informal financial services to credit rationing by formal lenders (Mushinski, 1999 and Bell *et al.*, 1997). Whilst others attribute it to institutional weakness of subsidised credit programmes which often lead to allocation of credit on political party lines (Tsai, 2004) as well as tight schedule repayment scheme of formal credit systems (Jain and Mansuri, 2003).

In order to assess empirically reasons why informal sources still exist in spite of the development in the formal financial market Okurut et al (2004) examined credit demand and credit rationing in informal sector in Uganda. They used logit and multinomial logit models to identify factors influencing use of /demand for informal financial services in Uganda. The result of their study indicates that household asset and gender significantly influence demand for informal financial services in Uganda.

Other empirical studies on demand for informal loans by Pal (2002) and Nagarajan et al. (1998) identified demographic, individual and household attributes which have significant effect on use of informal credit. Jabbar et al. (2002) and Swain (2002), acknowledged that gender, educational level of the household head, training, prevalence of outstanding loan payments, family size, primary economic activity of the individual and interest rates are significant factors which influence the use of informal financial services. Barslund and Tarp (2008) also observed that education, number of dependents, household asset and credit history have statistically significant effect on loan demand in informal financial market.

Okurut and Thuto (2009) have investigated suppliers of informal credit and condition under which these services are used in Botswana. They used primary data and employed descriptive and ANOVA to analyse the data. The study revealed that informal lenders offer loans for a period between 1-10 months which they described as short term and these loans are mostly used for consumption. In addition, interest rates are about 20% per month.

Bouman (1995) observed that the informal financial market generally provides financial services to economic agents that do not have access to formal financial market. The constrained access to formal financial services by smaller borrowers is argued to be due to both institutional and individual level factors (Nwanna, 1995). At the institutional level, the institutions incur high information cost to assess the creditworthiness of small borrowers, and low returns due to the small loan amounts involved.

Aryeetey (2008) asserted that it was the difficulty of banks trying to reach out to small borrowers that led to poor banking practices that eventually weaken banks and necessitated the reforms in the early 1990s. At the individual level, the low level of income and asset accumulation and widespread poverty makes them less attractive to the formal financial services providers. Hence, informal financial activities continue to grow with most operations taking place in rural areas. Thus informal financial sector still plays a key role in financial resource mobilisation and allocation in developing countries (Okurut et al. 2004). This is affirmed by Aryeetey (2008) who observes that substantial saving mobilisation was undertaken by informal financial agents in Ghana.

Despite the important role played by informal source of finance by providing services to a large proportion of the population especially those living in rural areas in Ghana there are limited knowledge on the determinants of demand for informal financial services particularly by farmers. However, information on factors influencing demand for informal financial services can be used to device a policy to improve access to finance by farmers from informal financial market to boost production and reduce poverty. Thus, the main research question is: what factors influence maize farmers' participation in the informal financial market? Therefore, this study seeks to identify characteristics of informal source of finance used by maize farmers and the factors that influence their demand for informal financial services.

Maize farmers were considered for this study because maize is widely cultivated in Ghana and serves as a major food and cash crop in Ghana (Tachie-Obeng et al., 2010). It is the number one crop in terms of area planted and accounts for 50-60% of total cereal production. Maize represents the second largest commodity crop in the country after cocoa (Millennium development authority, 2011). Maize is the most common staple crop in Ghana and contributes significantly to consumer diets (Tahirou et al 2009). The expenditure on maize based food constitutes significant proportion of household expenditure. Therefore, an increase in productivity through enhanced access to financial services would have a positive effect on poverty reduction, food security and overall economic growth through lowered prices of maize and increased incomes of maize farmers.

2. OVERVIEW OF THE INFORMAL FINANCIAL SECTOR IN GHANA

Important players within the informal financial sector can be placed in three categories namely, 1) saving mobilization units that do little or no lending, 2) lending units that seldom engage in saving mobilization and 3) unit that combine deposit mobilization with lending. Most informal operators in Ghana fall in the first-two categories, saving collectors (susu) come under first category of deposit mobilization unit while money lenders including relations, friends do not generally accept deposit and may be placed in the second category.

Informal financial intermediaries were in existence before introduction of formal financial services by the British in 1896. Aryeetey and Gockel (1991), noted that Informal financial intermediaries in Ghana have been developed in response to the demand of a distinct clientele and each intermediary tends to serve a particular market niche.

The *susu* system is a traditional savings collection system, and is thought to have originated in Nigeria and came to Ghana in the early twentieth century (Asiama and Osei 2007). The *susu* system covers a range of activities known as *susu*, including individual savings collectors, rotating savings and credit associations, and savings and credit “clubs” run by an operator.

As early as 1940 money lenders were the recognized group doing business with money lending they were targeted and asked to register under Moneylenders Ordinance (1940) Moneylenders were the first form of informal intermediaries to be officially recognized and licensed in Ghana. They have long been an important source of emergency and short-term finance (after relatives and friends) for the vast majority of the population lacking access to finance from formal financial institutions. By the mid-1960s, money lending had become more of a part-time activity by traders and others with liquid funds than a full-time profession (Aryeetey 1994).

Traders have also been a major component of informal financial intermediary in Ghana, who operates between producers in rural areas and urban markets. They provide credit in the form of inputs on supplier’s credit or an advance against future purchases of crops. Traders do not usually require collateral, but rather the agreement of the farmer to sell them crops over an agreed period (Steel and Andah, 2004). Traders use advances to lock in their suppliers at relatively low prices.

In 1994 money lenders and *susu* collectors form association which operate as Apex body to control activities of its members. These associations impose a number of regulatory barriers to entry as well as providing services to its members. For example, as at 2008 prospective member must be recommended by a zonal executive, provide two sworn guarantors, deposit GH¢100 (about US\$150) into a security fund, save GH¢50 a month, take a medical examination, and undergo three-month training with an existing member. Some of these *susu* collectors and lenders developed in to member-based co-operatives and other savings and credit associations (including rotating savings and credit associations [ROSCAs] and *susu* clubs).

With the introduction of financial sector adjustment programme and passage of Financial Institution (Non-Banking) Law in 1993, new category of financial institution was created called Semi-formal financial institutions. Some of these informal financial institutions transform themselves into these semi-formal financial intuitions which are currently referred to as microfinance institutions.

Despite this development, Aryeetey (2008) estimated that the informal financial sector is larger than the formal financial sector in terms of outreach because they provide small loans and savings opportunities to their clients

and allowed quick withdrawal of savings and disbursement of loans. Ghana Statistical Services (2008) report suggests that there is still a significant demand for informal financial services. Thus there is the need to empirically investigate factors influencing demand for informal financial services in Ghana.

3. METHODOLOGY

3.1. Sampling and data collection

Multistage sampling was conducted to select 2 regions, 7 districts and 595 farmers for the study. Selection of the regions and the districts (first and second stage) was guided by the level of agricultural activities and the level of maize production using official statistics from Ministry of Food and Agriculture, MoFA (2009).

In Ashanti Region, districts whose maize production output exceeded 20,000 metric tonnes in 2008 were selected while in Brong Ahafo Region, the 5 districts which had a minimum of 27,000 metric tonnes each of maize output in 2008 were selected for the study. A third stage sampling involved simple random sampling after identifying and listing of maize farmers in the operational areas of the selected Districts. Selection of respondents was guided by their involvement in maize production. A total of 595 maize farmers from the study area were sampled for the study. Data and information were collected through a combination of individual interviews and focus group discussions. Structured questionnaire and interview guide was used to collect data and information for the study.

3.2. Analytical framework

Descriptive statistics are used to identify and list all sources from which maize farmers seek financial services within the informal financial market segment. The study used analysis of variance (ANOVA) to test if there is a significant difference between mean loan amount, loan period and lending rate among the informal financial intermediaries. The informal financial sources are placed in four main categories (namely: Money Lenders; input traders, maize traders and relatives and friends). In addition, logit model is used to evaluate the determinants of demand for informal financial services following Okurut et al. (2004)

In this study demand is taken as satisfied demand hence access to credit from the informal sources. Demand for Informal credit is taken as a proxy

for demand for informal financial services as most of the clients of informal financial source used informal credit (Ghana Statistical Services (2008). Let Y_i represent a farmer's decision to use or not to use informal financial services (credit). Y_i is assumed to be dependent on a vector of individual and household characteristics as well as institutional factors (X_i). The relationship between dependent and independent variables is formulated as follows:

$$Y_i = \alpha + \beta' X_i + \mu_i \quad [1]$$

The farmer's decision is assumed to depend on his assessment of the marginal cost and benefits associated with the use and non-use of the informal financial services. In reality we do not observe this marginal cost and benefit, thus Equation 1 cannot be estimated. We only know whether the respondent used informal market segment or not through the survey questionnaire. Hence we define another variable Y^* such that:

$Y_i^* = 1$ if respondent uses informal market segment

$Y_i^* = 0$ if respondent does not use informal market segment

Hence

$$Y_i^* = \alpha + \beta' X_i + \mu_i \quad [2]$$

Linear Probability Model (LPM) and probit and logit models can be used to analyse data involving a binary qualitative dependent variable. Pindyck and Rubinfeld, (1981) and Gujarati (1988) noted that though Linear Probability Model can be used to analyse binary models such as the one under consideration, the model has serious defect in that, the estimated probability values can lie outside the normal 0-1 range. Hence probit and logit models are advantageous over LPM in that the probabilities are bound between 0 and 1.

Having eliminated the LPM, there is the need to make a choice between the logit and probit models. According to Amemiya (1981), due to the statistical similarities between logit and probit models, either of them can be used in estimation of binary choice models such as the one under consideration. Hosmer and Lemeshew (1989) have pointed out that the logit model could be written in terms of the odds and log of odds, which enables one to interpret the coefficients. Hence, the logistic model is selected for this study. The cumulative logistic probability model is econometrically specified as follows:

$$P_i = Y_i^* = F(\alpha + \sum \beta_i X_i) = F(Z_i) = \frac{1}{1 + e^{-Z_i}} \quad [3]$$

Where, P_i is the probability that an individual will use informal financial services or will not use given X_i ; X_i represents the i^{th} . explanatory variable; and α and β_i are parameters to be estimated.

3.3. Choice and description of independent variables for the logit model

The selection of independent variables was based on the literature, especially studies by researchers such as Okurut et al. (2004) and Zeller (1994). The age [AGE & AGE2] of the respondent was included in the model because it is used as a proxy for maturity and the potential ability to utilize and repay credit by borrower (Rahji and Fakayode, 2009). It is assumed that older farmers may have a lot of friends and relatives who would trust them enough to give them credit and also keep savings for them. As maize farmers grow beyond their economically active age their demand for informal credit may fall because their economic activity which is directly proportional to amount of credit they may require reduces (Zeller, 1994). The age variable [AGE] is specified as the age of the farmer at the time of interview measured in years and age squared [AGE2] to capture the quadratic nature of the relationship between demand for informal credit and age.

Male farmers are known to have larger scale of operation than their female counterparts. In addition, major players in informal financial market interlink credit to purchase of produce (Udry, 1990) hence; male farmers are more likely to demand informal finance as compared to their female counterparts. This variable is specified as a dummy variable [GEN] which takes a value of 1 if the respondent is male and 0 otherwise. Some of the farmers engage in off-farm income generating activities [OETIV] to supplement their farm income. It is assumed that a farmer who engages in off farm income generating activities tend to have higher demand for credit to support both farm and off-farm income generating activities. Such farmers are more likely to demand informal credit. Therefore, in line with Mohieldn and Wright, (2000), engagement in off-farm income generating activities is specified as a dummy which is assigned a value of 1 if the farmer has engaged in off-farm income generating activities and 0 otherwise. It is hypothesised to have positive effect on demand for informal credit.

Farmer's household asset [TASET] is the sum of the value of household domestic assets measured in Ghana Cedis (GH¢). This is used as a proxy for household wealth following Rahji and Fakayode (2009). Household asset is expected to have a negative effect on the use of informal financial services.

This is because wealthy farmers are less likely to demand informal financial services. The level of maize commercialization [ACOM] is conceptualised as the ratio of the average value of maize sold to the average value of maize harvested (Von Braun and Eileen, 1994). This embodies the concept of marketable surplus and market orientation of the farmer for maize production. It is expected that respondents who are commercially oriented are more likely to have good relationships with traders who would offer them credit to produce for them to purchase. It is noted that traders accept maize for payment of loan and interest. This variable is specified as a dummy variable, and takes on a value of 1 if the ratio of sale to total output is equal to or greater than 0.7 and 0 otherwise following Zeller (1994). It is expected that the coefficient of this variable will be positive.

A dummy variable is used to identify the regional location [LREG] of the respondents to evaluate if there is any significant difference in the level of demand for informal financial services by maize farmers in the two regions of the study area. This variable is specified as a dummy which takes the value of 1 if the farmer is located in Brong Ahafo and 0 otherwise. Informal financial intermediaries prefer to deal with people who are well known to them. Therefore, they are more likely to offer financial services to indigenes than migrant farmers as they know them and their families. This variable is specified as a dummy [NATIVE] which takes the value of 1 if the farmer is an indigene and 0 otherwise. It is hypothesised that this variable would have positive relationship with demand for informal financial services.

Social capital status [SRES] is important for access to the factors of production such as credit, particularly in incomplete market (Holden and Prokopenk, 2001) such as credit in developing countries. Having social responsibility within the community has greater likelihood of increasing demand for informal financial services. This is because individual who occupy position of responsibility within the community are well known by people within the community as a person with integrity. They more likely to be given credit by the informal financial sources when they apply. This variable is specified as a dummy variable which takes a value of 1 if respondent occupy a position of responsibility within the community and 0 otherwise. It is hypothesised that the variable would have positive relationship with access to informal credit. A farmer with a large family size [HSIZE] is more likely to need credit to support his consumption and farming activities. This variable is specified as number of people the respondent takes care of in terms of feeding, clothing, paying school fees, and hospital bills among others. Chen and Chivakul (2008), found family size to be a significant variable which influences credit demand for household in Bosnia and Herzegovina.

Farm size [FSIZE] is measured in hectares and used as a proxy for the scale of operation which influences demand for credit. The farm size is used as scale of operation in terms of possible output because the larger the farm size the higher the possibility of higher yield. Hence informal credit sources are more likely to offer farmers with larger farm size credit they applied for because of the possibility of higher yield which may influence credit repayment ability of the farmer. The empirical model is specified as:

$$\text{informal} = \alpha + \beta_1\text{AGE} + \beta_2\text{AGE2} + \beta_3\text{GEN} + \beta_4\text{OETIV} + \beta_5\text{TASET} + \beta_6\text{ACOM} + \beta_7\text{LREG} + \beta_8\text{NATIVE} + \beta_9\text{SRES} + \beta_{10}\text{HSIZ} + \beta_{11}\text{FSIZE} + \varepsilon \quad [4]$$

The dependent variable informal is participation in informal financial market hence farmers are classified into participants or users and non-users of informal financial services. Farmers who used informal financial services are assigned the value of 1 and those who did not, the value of 0.

4. RESULTS AND DISCUSSION

4.1. Intermediaries in the Informal Financial Market Segment

There are four major sources of informal finance which are used by the respondents. These are relatives and friends; input traders; maize traders, and private money lenders (Table 1). Out of 149 respondents who used informal financial sources about 33% used relatives and friends while about 40% and 23% used maize traders and input traders respectively. Only 4% of the respondents used services of private money lenders. In a focus group discussion, it was revealed that the modus operandi of money lenders is such that credit applicants are required to provide collateral securities or a guarantor who would pledge to repay the loan and interest in case of default. This requirement has contributed to low level of usage among the farmers. Contrary to Ghana Living Standard Survey (GLSS) report where relatives and friends are the major sources of informal credit, this study found that traders are major sources of informal credit (Ghana Statistical Services, 2008). This might be attributed to the fact that traders accept maize for repayment of loan and interest. A discussion with traders at Nkoranza, Techiman and Sunyani revealed that if they could access additional funds they would expand their credit operations as it is supporting their trading activities. In the study area, there are Rotating Savings and Credit Associations (ROSCA) but none of the respondent used their services.

Table 1: Number of Users per Informal Financial Intermediary

Informal intermediaries	Frequency	Percentage
Relatives and Friends	49	32.89
Input traders	35	23.49
Maize traders	59	39.6
Money lenders	6	4.02
Total	149	26.84

In a focus group discussion, about 85% of the respondent indicated that they did not use services of ROSCA because ROSCA require their clients to make regular contribution for a period not exceeding one month. However, their maize income cycle is not less than three months. Thus non-use of the services of ROSCA can be attributed to the fact that the nature of services offered by ROSCAs does not fit farmers' revenue cycle.

4.2. Services used by Farmers within the Informal Financial Market Segment

Services of informal financial sources used by the respondents are savings product and credit facilities. Table 2 presents financial services used by respondents from the informal sources.

Table 2: Informal Financial Services used by Respondents across Sources

Services	Maize Traders	Relatives & Friends	Input Traders	Money Lenders	Total	Percentage
Credit only	58	42	30	6	136	91.28
Savings only	1	7	1	0	9	6.04
Credit and Savings	0	0	4	0	4	2.68
Total	59	49	35	6	149	100.00

Out of 149 respondents who used informal financial services, 91% used credit facilities only, whilst 6% and 3% used savings and a combination of credit and savings respectively. The money lenders and maize traders strictly provided only credit. However, 7 of the respondents reported savings with relatives and friends. It was observed that savings made with these sources by the respondents is made against purchase of specific items. For example, input traders took deposit from some of the respondents against purchase of agrochemicals for them, while relatives take deposit against settlement of family obligations.

The composition of informal credit accessed by the respondents is presented in Table 3. Majority of respondents (62%) received loans from informal financial sources in the form of cash while about 27% and 10% had it in the form of input and a combination of cash and inputs respectively. Credit from relatives and friends are mainly in the form of cash (100%), while input traders and maize traders offered credit in the form of input to 43% of respondents, Maize traders also offered credit in form of input to 25 out of 58 respondents. However, money lenders offered only cash credit.

Table 3: Composition of credit from informal intermediaries

Services	Maize Traders	Relatives & Friends	Input Traders	Money Lenders	Total	Percentage
Cash only	23	42	13	6	84	61.76
Input only	25	0	13	0	38	27.94
Cash and input	10	0	4	0	14	10.29
Total	58	42	30	6	136	100.00
Percentage	43	31	22	4	100	100.00

About 20% of loans from relatives and friends were not repaid. In the case of maize traders 86% of the borrowers repaid with harvested maize (see Table 4). Traders' acceptance of maize for loan repayment and possibility of maize purchase from these loan clients may be partly responsible for their popularity among the farmers. The possibility of purchase of maize from the borrowers by the traders is a form of collateral that helps to reduce uncertainty and moral hazard (Udry, 1990) and ensures that credit is not diverted from what it was requested for.

Table 4: Mode of informal credit repayment

Mode of Repayment	Maize Traders N ₁ = 58	Relatives & Friends N ₂ = 45	Input Traders N ₃ = 30	Money Lenders N ₄ = 6
	%	%	%	%
Cash only	8.62	80.95	73.33	100
Maize only	86.21	0.00	20.00	0
Maize and Cash	5.17	0.00	0.00	0
Did not pay	0.00	19.05	6.67	0
Total	100	100	100	100

In a focus group discussion, about 88% of the respondents attributed the high demand for credit from traders to the flexibility of loan repayment and their ability to accept maize for loan repayment. For relatives and friends credit is either interest free or at market interest depending on whether lender has ever taken loan from the borrower. In all 70% of farmers reported receiving interest free loans from relatives and friends while 30% paid interest on credit.

4.3. Features of Informal Credit

The key feature of credit facilities from informal sources include loan amount, lending rate charged and loan period. Analysis of variance (ANOVA) was used to test the differences in mean of these features across the different categories of informal financial sources used by the respondents (see Table 5). The loan amount granted to farmers by informal can be described as generally small, approximately GH¢ 179.10 on average. Maize traders granted the highest mean loan amount of GH¢ 258.80 while relatives and friends granted the lowest mean amount of GH¢ 140.21 (Table 3). Based on the ANOVA test, the mean loan amount was not statistically significant across the various sources of informal credit (at least at 10% significance level as indicated by the F-statistics of 0.982 and significance level of 0.431). The loan periods averaged 6 months. The highest mean loan period of 6.9 months was extended by maize traders, while the lowest was by relatives and friends of 3.5 months (Table 3).

Table 5: Features of Informal Credit

Type of intermediaries	Loan amount granted (GH¢)	Mean loan period Months	Mean lending rate (%)
Relatives & Friends	140.21	3.5	1.2%
Input Traders	109.23	6.0	8.4%
Maize Traders	258.80	6.2	9.4%
Money Lenders	208.00	3.8	12.6%
Average	179.10	4.9	7.9%
F-statistics	0.982	0.57	6.91
Sig	0.431	0.687	0.00001

Exchange rate 2011 November [\$1= GH¢1.5]

The ANOVA test suggests that the mean loan period was not statistically significant across the various source of informal credit (see Table 5). The

short loan period offered by the various sources of informal credit is consistent with evidence from Aryeetey (1996) and Okurut *et al.* (2004). The overall mean lending rate on informal loans is 7.9% per month (see table 3.5) The highest mean interest rate was charged by the money lenders (12.6% per month) followed by maize traders and input traders who charged 9.4% and 8.4% per month respectively. The mean interest rate was significantly different across the various sources of informal credit used by the respondents (at one per cent level of significance). This result supports the finding of Okurut and Thuto (2009). They found significant difference in the mean lending rate within the informal financial market in Botswana.

4.4. Factors Influencing Demand for Informal Credit.

The result of the logit model on factors influencing demand for informal financial services is presented in Table 6. The regression gave a McFadden R-squared value of about 0.51 and the log likelihood ratio (LR) statistic is significant at one percent, meaning that at least one of the explanatory variables included in the model has a coefficient which is significantly different from zero. The p-value for Hosmer and Lemeshow goodness-of-fit test is 0.9602 which suggests that the model fits reasonably well. Given these measures, it is concluded that the logit model used has integrity and is appropriate. The validity of the logit model in explaining the choice informal credit is consistent with related studies by Okurut *et al.* (2004) and Zeller (1994).

Five out of the 11 variables have significant relationship with demand for informal credit. The coefficient of gender was found to be consistent with the apriori expectation and significant at 5%. Male farmers have about 5% higher likelihood of using informal credit as compared to their female counterparts.

We could justify this result by the fact that male farmers have higher scale of production and are able to use farm produce (maize) to repay their loans as compared with their female counterparts (Awunyo-Vitor, 2011). This finding is consistent with findings of Okurut *et al.* (2004) who observed that gender plays a role in access to informal financial services in Uganda. The coefficient of engagement in off-farm income generating activities exhibits positive and significant relationship with use of informal credit. This observation may be attributed to the fact that famers who engaged in off-farm activities may need funds to invest in off farm income generating activities as well as farm activities hence tend to have higher demand for credit. Thus engagement in off-farm income generating activities increases the likelihood of farmer using informal credit by 5.0%. This result supports the finding of Zeller (1994) who found positive and significant relationship between off-farm income and demand for informal credit in Madagascar.

Table 6: Logit Regression Result of Factors Influencing Demand for Informal Financial Services

Informal	Coefficient	Standard Error	Marginal Effect
Constant	0.6718	1.0759	
Age of respondent	0.4399	0.2947	-
Age of respondent square	-0.0051	0.0033	-
Gender (Male)	0.2418**	0.1033	0.0513
Off-farm income activities	0.2891**	0.1308	0.0504
Value of household asset	-0.0001	0.0000	-
Level of maize commercialisation	2.0551***	0.7077	0.5137
Regional location (Brong Ahafo Region)	1.5878***	0.2717	0.3963
Migration status	-0.1861	0.1340	-0.0514
Household size	0.0554	0.0480	0.0178
Social responsibility status	-0.2781	0.1976	-0.0734
Farm Size	2.50165***	0.8318	0.6254
Logit regression	Number of obs = 506 LR chi2(11) = 103.46		
Prob> chi2 = 0.0000	Pseudo R2 = 0.5107		
Log likelihood = -344.01797			

The asterisks indicate level of significance

*** is significant at 1%, ** significant at 5% and * is significant at 10%.

In the case of farmers who sell more than 70% of their produce (maize commercialisation), the coefficient has the expected positive sign and is found to be significant at 1% level. The explanation to this finding could be that traders who are major players in the informal financial market accept maize for repayment of credit; hence farmers who sell higher proportion of their produce are more likely to be favoured by the traders in disbursement of loan. This finding is consistent with the finding of Benerjee (2001) that commercially oriented farmers are more likely to use credit from informal sources because informal source accept farm produce for repayment of credit. Farmers who are commercially oriented ie sell more than 70% of their produce are 51% more likely to use informal finance.

The estimated coefficient of the regional location variable suggests that respondents in the Brong Ahafo Region are more likely to demand credit from informal sources as compared with those in Ashanti Region. This observation can be explained by the large number of well-developed maize

market in Brong Ahafo Region (Nkoranza, Techiman, Sunyani and Kintampo) where data was collected as compared to Agona and Ejura in Ashanti Region. Since traders are the major source of informal credit to these framers (See Table 1). The marginal effect indicates that farmers in Brong Ahafo Region are about 39% more likely to use informal credit as compared with those in Ashanti Region.

Farm size was also found to be positively related to demand for informal credit as expected and significant at 1%. Since traders are major source of informal finance and they accept maize for repayment of credit they tend to favour farmers with large farm sizes as farm size serves as indication for possible output. From the result, one hectare increase in farm size would increase the likelihood of using informal credit by 62%.

5. CONCLUSION AND POLICY IMPLICATIONS

The study gives fresh insight into sources of informal finance used by maize farmers and factors that determine their access to credit from these sources. The informal sources used by the respondents are traders, relatives and friend as well as Money lenders. Traders are most preferred sources of informal finance because they accept maize for repayment of loan and interest. In addition, some also guaranteed purchase of maize from their loan clients to promote trade. However, major challenged faced by traders in credit delivery to the farmers is inadequate funds. Thus trader's access to additional loanable funds would enable them to serve more farmers and also promote trade.

Formal financial institution should liaise with the traders and provide traders with funds for onward lending to the farmers since they have good knowledge of the farmers' operation and would be able to monitor them better and also buy their produce.

The frequency of regular contribution required by ROSCAs prevents farmers from using their services. Similarly, high interest rate and collateral required by money lenders compared to traders have affected usage of their services by the farmers. Thus reduction in frequency (extended duration) of saving contribution of ROSCAs and improvement in the operational modalities of the Money lenders would see more farmers signing up for their services. The ROSCAs should be encouraged to increase the regular contribution period to two times in a year so that it would match up with the revenue cycle of the farmers. Also, improvement in the operations of money lenders in terms of reduced interest rate would increase their usage by farmers.

The main informal financial services used by the respondent is credit, this may be attributed to lack or inadequate access to credit from the formal financial institutions. However, the amount they received is generally small and the repayment period is also generally short.

The major factors which have been identified to influence maize farmers' participation in informal credit are access to off farm income, location which can be attributed to the level of marketing activities as well as farm size and commercial orientation of the farmer.

Farmers who have access to off-farm income are more likely to be offered credit by informal sources of finance because they see them as having capacity to repay even if their crop fails. Hence in order to improve access to informal credit farmers should be encouraged to undertake off-farm income generating activities. Ministry of Agriculture and NGOs interested in farmers' welfare may collaborate to educate farmer on off-farm income generating activities such as Bee-Keeping

Also, a well-developed maize market is likely to increase competition among maize traders. The competition may encourage the traders to offer credit to farmers so that they can repay with maize or and go into contract to purchase their produce to promote trade in face of competition. In addition, maize farmers may also access competitive price for their produce. Hence District Assemblies in the Study area should provide the necessary logistics and fund to support the development of well-functioning maize market to encourage competition and improve maize farmers' access to market and informal credit.

Farmers who own larger farm sizes and sell larger proportion of their produce (commercially oriented) are more likely to access informal credit. Thus policies aimed at increasing farm sizes and orientation of the farmer to go in to maize farming as a business should be encouraged. Farmers should be encouraged to form groups and go into block farming so that they can share resources such as tractor which would enable them to improve their farm sizes. In addition, the extension division of MoFA should educate the farmers to take farming as business and produce maize for sale

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Abstrait

L'étude examine les déterminants de la participation des producteurs de maïs dans le marché financier informel. L'analyse est basée sur les données recueillies à partir d'une enquête auprès de 595 producteurs de maïs dans sept districts d'Ashanti et Brong Ahafo au Ghana en Mai-Juillet 2010. Des statistiques descriptives, analyse de variance (ANOVA) et le modèle de logit ont été utilisées pour analyser les données. L'étude a révélé que les intermédiaires opérant sur le marché financier informel sont des parents et des amis, des commerçants, des vendeurs de maïs des intrants agricoles et des prêteurs privés. Les Commerçants de maïs sont les principaux acteurs du marché du crédit informel suivis par les vendeurs d'intrants agricoles. Aussi l'étude a révélé que les prêteurs informels acceptent de maïs pour le remboursement du prêt. L'analyse de variance indique que la moyenne durée du prêt et le montant n'étaient pas statistiquement significatives entre les prêteurs informels. Cependant il y a une différence significative entre les taux d'intérêt offerts par les prêteurs informels. D'après le résultat de logit, l'emplacement régional, le sexe, l'engagement dans d'autres activités économiques et le niveau de commercialisation des produits agricoles ont été observés d'être des facteurs qui influencent la demande des producteurs au crédit informel. Une politique qui permettrait aux commerçants d'offrir des crédits aux producteurs, permettrait non seulement d'accroître l'accès au crédit, mais aussi le commerce, par conséquent, le revenu agricole qui peut favoriser l'épargne et l'accès au crédit. En outre, l'accès au crédit informel peut être amélioré par le développement de centres commerciaux.