

Analysis of Factors Affecting Smallholder Farmers' Access to Formal Credit in Jibat District, West Shoa Zone, Ethiopia

Assifaw Lemessa¹ Adeba Gemechu²

1.Department of Agricultural Economics, Wollega University, Ethiopia

2.Department of Agricultural Economics, College of Agriculture and Veterinary Medicine, Jimma University, Ethiopia

Abstract

In Ethiopia, among other things, lack of finance is one of the fundamental problems hampering production, productivity and income of rural farm households. Since access to institutional finance is very limited, the majority of the poor are forced to search financial services through informal channels. This study is concerned with analysis of factors affecting smallholder farmers' access to formal credit. As credit is one of the most important factors required for smallholders input utilization, it is important to have sustainable agricultural development. A two stage sampling method was employed. A total of 148 farm households were selected randomly using probability proportional to size. Descriptive statistics and logit model were used for analyzing quantitative data. The output from the study indicates that 51 (34.5 per cent) of the sampled farm households were formal credit users, whereas the remaining 97 (65.5 per cent) were non-users. It was also found out that credit access to female headed households is still limited and the difference between the wealth groups in accessing credit from the formal sources was also statistically significant. Farmers acknowledge group lending that solves the problem of collateral requirement by lending institutions, controls misuse of borrowed funds and minimizes the risk of default and they also recognize the provision of saving services by microfinance institutions. The maximum likelihood estimates of the logistic regression model show that Frequency of contact Development Agents, physical distance of farmers from lending institutions, family size, farm size, experience in credit use from the formal sources, Sex of household head, education level of household head, participation of households in extension package program, attitudes towards Risk, farmers' perception of Loan repayment period, farmers' perception of Lending procedures, lack of opportunity to take a second loan, and membership of farmer's multipurpose cooperatives were important factors influencing formal credit use of smallholder farmers. Therefore, policy aimed to accelerate agricultural development in the area could be successful if these factors and problems are taken into consideration to access credit from the formal financial sources. Based on the findings of the study and personal observation of the situation in which the analysis of factors affecting smallholder farmers' access to formal credit systems are found, some recommendations are forwarded

Keywords: access to formal credit, input utilization, logistic regression model and Ethiopia

1. INTRODUCTION

1.1. Back ground

The accessibility of good financial services is considered as one of the engines of economic development. The establishment and expansion of financial serves is also one of the instruments to break the vicious circle of poverty. Governments of less developed countries have frequently practiced the policies of providing cheap credit to the agricultural sector through financial intermediaries. This cheap credit, it was hoped, would lower the dependence on the rural money lenders (Pinaki, 1998).

The provision of credit has increasingly been regarded as an important tool for raising the incomes of rural populations, mainly by mobilizing recourses for more productive uses. In Ethiopia, the rural financial system is dichotomous in nature. The formal and informal sectors co-exist, which differences in accessibility. The two sources continue to be the major sources of agricultural credit, through their proportion differs. According to Sighn, (1993) the basic distinction b/n the formal and informal sectors is that the latter operates outside the rules and regulations imposed on the farmer by the formal financial institutions. Commercial Banks and other formal institutions fail to cater to the credit need of small holders, however, mainly duet other lending terms and conditions .It is generally the rule and regulations that have created the Myth (ancient story) that the poor are not bankable, and since the cannot afford the required collateral, they are considered un credit worthy (Adera,1995) financing of agricultural input and labor wages requires liquid cash that often is not readily available with the smallholder farmers. Therefore, it is essential to expand the states of rural credit at large to improve agricultural productivity.

It has been a long-held belief among policy makers that poor households in developing countries lack access to adequate financial services for efficient inter temporal transfers of recourses and risk coping and that without well-functioning financial markets, these households do not have much prospect for increasing in any significant and sustainable way their productivity and living standards.

Agricultural finance is regarded as a decisive factor input in farming production, helping poor farmers

to maintain consumption of basic necessities, adopt advanced technology and raise their incomes. Therefore, access to credit is a potent tool to enhance agricultural productivity, to encourage economic development and thereby to alleviate poverty. Accordingly, governments in most developing countries have exerted ambitious efforts aimed at improving credit accessibility by farmers, particularly in the rural areas. Moreover, the growing attention in this regard is derived from the view that the provision of credit to rural population is a very effective strategy for poverty reduction (Zeller and Sharma, 1998; Mohamed, 2003). Nevertheless, the majority of farmers in developing countries have only limited access to commercial banks and other formal financial institutions.

The lending terms and conditions created by the commercial banks like collateral and terms of repayments also deny small farmer from accessing credit. In addition, the farmer characteristic such as level of literacy, income and degree of awareness of credit availability are regarded as main factors determining the farmer's access to formal credit market. Therefore, the smallholder farmers in developing countries have relied almost exclusively on informal credit gathering from friends, relatives, village traders and landlords. This study was analyzed what determines the extent of small holder farmers access to formal credit markets in Jibat district. This study also to analyze household demand for formal credits and will provides empirical evidence on the substitutability between formal and informal credits in Jibat district.

1.2. Statement of the problem

Credit provision is one of the principal components of rural development, which helps to attain rapid and sustainable growth of agriculture. Rural credit is a temporary substitute for personal savings, which catalysis the process of agricultural production and productivity. To boost agricultural production and productivity farmers have to use improved agricultural technologies. However, the adoption of modern technologies is relatively expensive and small farmers cannot afford to self-finance. As a result, the utilization of agricultural technologies is very low. It is argued that enhanced provision of rural credit would accelerate agricultural production and productivity (Briquette, 1999).

Schmidt and kropp (1987), stated that access to financial services by smallholders is normally seen as one of the constraints limiting their benefits from credit facilities. However, in most cases the access problem, especially among formal financial institutions, is one created by the institutions mainly through their lending policies. This is manifested in the form of prescribed minimum loan amounts, complicated application procedures and restrictions on credit for specific purposes. They further argue that the type of financial institution and its policy would determine the access. Where credit duration, terms of payment, required security and the provision of supplementary services do not fit the needs of the target grow, potential borrowers would not apply for credit even where it exists and when they do, they would be denied access. Farm Households in rural areas do not usually have adequate access to formal sources credit, which provide funds through formal financial institutions such as Commercial Banks. This situation contributes to a virtual exclusion of the small holder farmers from formal credit markets. The high cost of obtaining loans from informal sources are also not placed them as better alternatives; however, several classes of institutional arrangements offer to these borrowers' valid substitutes for individual collateral, & to the lenders low cost alternatives to imperfect credit worthiness information (Stiglitz & Weiss, 1981).

In Ethiopia there is a wide gap between owned and required capital to finance the agricultural activities of smallholder farmers since the income from subsistence they tend to be biased towards men. It is the men headed household which is usually approached and registered agriculture does not yield much surplus beyond family consumption and other social obligations. The lack of access to capital in rural areas is one of the major factors which hinder the development of agriculture (Tefera, 2004).

In the western Shoa zone, including Jibat district until a few years ago land was not a problem. But labor is in short supply and is expensive especially during peak weeding and harvesting periods. Farmers mostly use hired labor. This indicates that there is a high demand for cash during the peak periods for labor. Due to the fact that the formal sector is not in a position to satisfy the credit requirements of the farmers during the periods, they depend on the informal sector for their credit needs. Most informal lenders provide cash advance before the crop is harvested, farmers are then obliged to repay the loan in cash or in kind based on previous commitment made with the lender. Theoretical evidence in the district show that in the past years formal credit institutions failed to reach the poor, particularly women and the very poor households. On account of this background this study was undertaken, to fill the information gap on the factors affecting smallholder farmers' access to formal credit in Jibat.

Research objectives

Major objective:

The general objective of this study is to investigate the determinants of farming house- holds' access to formal credit for agricultural production in Jibat district.

Specific objectives:

To identifies and measure factors that affect smallholder farmers' access to formal credit

To identify the status of women and different wealth groups access to formal and informal credit sources.
To assess smallholder farmers' perception of the strengths and weaknesses of formal financial institutions in the study area.

2. RESEARCH METHODOLOGY

Description of the study area

The proposed study will be carried out in Jibat District. Jibat District is located 184 km to the west of Addis Ababa in western Shoa administration zone and a 58 km gravel road is connected the district with town of Guder by crossing through Tikur Inchini District. It is divided into 24 kebeles including 1 urban kebele for seeking of administration. (I.e. 23 rural and 1 urban kebele (Shenen 01). Shenen is the capital town of the district which is 70 km away from Ambo and 184 km from Finfinne. The district is bounded by district Nono in the south, Danno in the west, Cheliya in the North West, Tikur Inchini in the east, Toke kutaye in the north-east and Ameya in south-east. Astronomically, it is located between grids of 8° 18' 0.5" N and 8° 54' 00" N latitude and 37° 17' 00" E and 37° 38' 00" E longitude and its total area is 504.30 km².

The altitudinal range of the district above sea level is 1600-3200 meters, annual average rain fall is 850-1450mm and the annual average temperature is 10°C -25°C. Naturally, the district characterized by three agro-climatic zones (Traditional thermal zones) namely cool Temperate (Baddaa) (47.83%), Temperate (Badda-Daree) (45.65%) and Hot zone (Kolla) (Gammoojjii) (6.52%).

The Commercial Bank of Ethiopia, Oromia credit and saving institution (OCSI), Eshet microfinance institution and Wisdom microfinance institution (WMFI) are the only institutional finance suppliers in the woreda.

Sample and Sampling Method

A two stage sampling method was employed. Three out of Twenty three rural peasant associations in the Woreda were selected purposively based on the assumption to represent enough number of female headed HHs, different wealth groups and FMSC that gives credit service to their members in the PAs. In the second stage, the population in each PA (from the selected 3 PAs) were stratified into different wealth groups and each group also stratified into male and female headed farm households and a total of 148 (51 credit users and 97 non-credit users) farm households were selected randomly using probability proportional to size in the respective wealth groups and sex.

The sampling frames were identified using wealth ranking criteria set by the community. Possession of livestock, cultivated land size, number of farming oxen and type of house owned is the most important criteria used for wealth ranking in the study area. These were done, by providing a recent list of farm households of the sampled PAs to a farmer group and the group categorized each farm household to various wealth categories. Then sample farm households were taken from each category.

According to the wealth ranking criteria, farmers who have greater than thirteen cows, five horses or mules, eight sheep, greater than twelve ha of cultivated land size, more than three pairs of oxen and house with corrugated iron or grass house with partition and good management were considered as rich farmers. Farmers who have three to thirteen cows, two to five horses or mules, three to eight sheep or goats, four to twelve ha of cultivated land, two to three pairs of farming oxen and house with corrugated iron or grass house with partition and medium management were considered as medium rich farmers. Farmers who have two to three cows, two sheep, One horses or mules, One ha of cultivated land, one pair of farming oxen and house with grass house with relatively medium management were considered as poor farmers. Lastly, farmers who have less than or equal to one cow and One sheep, less than or one ha of cultivated land, with no farm oxen, no horse and lived with grass house without partition or poor management unable to feed the household throughout the year were considered as very poor farmers.

Data types, data sources and method of data collection

Sources of data include both primary and secondary data sources. Qualitative data that helped to access smallholder farmer's perception of the strengths and weaknesses of formal financial institutions in the study area were collected through personal observation, focus group discussion; semi structured and open ended questionnaires.

Structured questionnaire was prepared to collect quantitative data for the study. Primary data sources were the sample farm households both male and female headed from different wealth groups. Secondary sources were from Jibat district office of agriculture, Oromia credit and saving share Cooperation (OCSSCO) Shenen branch and Wisdom micro financing institution (WMFI) Shenen branch.

Data Analysis method

Both qualitative and quantitative techniques were used to analyze the data. Qualitative data that were obtained by observation, focus group interview were organized in the field. Quantitative data were analyzed using descriptive statistics such as mean percentage, standard deviation, tabulation, ratio and frequency distribution. In addition, the t-test and chi-square statistics were employed to measure the mean and percentage differences between credit

users and non-users. A binary logit, model which fits the analysis for factors that affects smallholder farmer's access to formal credit was employed.

The questionnaire was designed to capture information on socio-economic and demographic data like age, gender, household size, size of landholding, years of formal schooling, household income, types of agricultural enterprises, household composition, occupational statistics, average monthly income of each member of the households; and level of household access to formal credit The questionnaire was pre-tested to remove the possibility of any ambiguity in its interpretation and validate its effectiveness and relevance to the study objectives. Household data was collected from the cross-sectional survey of households in Jibat district.

Econometric Analysis

This study was intended to analyze which and how much the hypothesized regressors were related to the smallholder farmer's access to formal credit. Dummy variable takes a value of zero or one depending on whether or not smallholder farmers use formal credit. However, the independent variables were both continuous and discrete.

There are several methods to analyze the data involving binary out comes. However, for this particular study, logit model were selected over discriminant and linear probability models. If the independent variables are normally distributed the discriminant-analysis estimator which follows ordinary least square procedures (OLS) is the true maximum likelihood estimator (MLE) and therefore, asymptotically more efficient than the logit model which requires maximum likelihood method. However, if the independent variables are not normal the discriminant-analysis estimator is not consistent, whereas the logit MLE is consistent and therefore, more robust (Maddala, 1983; Amemiya, 1981), the linear probability model (LPM) which is expressed as a linear function of the explanatory variable is computationally simple. However, despite its computational simplicity as indorsed by Pindyck and Rubinfeld(1981), Amemiya(1981), and Gujarati (1988), it has a serious defect in that the estimated probability values can lie outside the normal zero and one range.

Hence logit model is advantageous over LPM in that the probabilities are bound between 0 and 1. Moreover, logistic model best fits the nonlinear relationship between the probabilities and the explanatory variables. In the analysis of studies involving qualitative choices, usually a choice has to be made between logit and probit models. According to Amemiya (1981), the statistical similarities between logit and probit models make a choice between them difficult. The justification for using logit is its simplicity of and that its probability lies between 0 and 1.

Moreover, its probability approaches zero at a slower rate as the value of explanatory variable gets smaller and smaller, and the probability approaches 1 at a slower and slower rate as the value of the explanatory variable gets larger and larger(Gujarati,1995).

In the analysis of studies involving qualitative choices, usually a choice has to be made between logit and probit models. According to Amemiya (1981), the statistical similarities between logit and probit models make the choice between them difficult. However, Maddala (1983) and Kmenta (1986) reported that many authors tend to agree in that the logistic and cumulative normal functions are very close in the mid-range, but the logistic function has slightly heavier tails than the cumulative normal functions. Pindyck and Rubinfeld (1981) and Gujarati (1988) illustrated that the logistic and probit formulations are quite comparable, the main difference being that the former has slightly fatter tails; that is, the normal curve approaches the axes more quickly than the logistic curve.

Hosmer and Lemeshew (1989) pointed out that a logistic distribution (logit) has got advantage over the others in the analysis of dichotomous outcome variable in that it is extremely flexible and easily used model from mathematical point of view and results in a meaningful interpretation. Hence, the logistic model is selected for this study. Therefore, the cumulative logistic probability model is econometrically specified as follows:

$$P_i = F(Z_i) = F(\alpha + \sum \beta_i X_i) = \frac{1}{1 + e^{-Z_i}} \dots \dots \dots (1)$$

Where, P_i is the probability that an individual or household is credit user or non-credit user given X_i ;

e denotes the base of natural logarithms, which is approximately equal to 2.718;

X_i represents the i^{th} explanatory variables; and

α and β_i are parameters to be estimated

Hosmer and Lemeshew (1989) pointed out that the logistic model could be written in terms of the odds and log of odds, which enables one to understand the interpretation of the coefficients. The odds ratio implies the ratio of the probability (P_i) that an individual would choose an alternative to the probability ($1-P_i$) that he/she would not choose it.

$$(1-P_i) = \frac{1}{1 + e^{Z_i}} \dots \dots \dots (2)$$

Therefore, the odds ratio becomes,

$$\left(\frac{P_i}{1-P_i}\right) = \left(\frac{1+e^{Z_i}}{1+e^{-Z_i}}\right) = e^{Z_i} \dots\dots\dots(3)$$

or

Therefore, to get linearity, we take the natural logarithms of odds ratio equation (4), which results in the logit

$$\left(\frac{P_i}{1-P_i}\right) = \left(\frac{1+e^{Z_i}}{1+e^{-Z_i}}\right) = e^{(\alpha + \sum \beta_i X_i)} \dots\dots\dots(4)$$

$$Z_i = \ln\left(\frac{P_i}{1-P_i}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_m X_m \dots\dots\dots(5)$$

model as indicated below:

As P goes from 0 to 1, the logit goes from $-\infty$ to ∞ . That is, although the probabilities lie between 0 and 1, the logits are not so bounded (Gujarati, 1995).

If the disturbance term U_i is taken into account, the logit model becomes,

$$Z_i = \alpha + \sum_{i=1}^m \beta_i X_i + u_i \dots\dots\dots(6)$$

RESULTS AND DISCUSSION

Determinants of Households Access to Formal Sources of Credit

Descriptive statistics of selected variables

In order to have a pure image of the quantitative demographic, socio-economic, and institutional and communication variables which differentiate between formal credits users from the non-users t-test was applied. Six continuous and five discrete variables were found significant with 1%, and 5% and probability level. Only these significant variables are described in table 34.

Table 1 Mean differences continuous variables for formal credit users and non-users

Variables	Non-users Mean	Credit users Mean	t-value	Significance Level
AGE	42.97(16.01)	51.90(17.55)	-3.02**	0.9989
FREQDA	2.44(0.84)	3.05(1.19)	3.65**	0.0002
DIST	2.90(0.83)	2.17(0.97)	4.79*	0.0000
FAMILYSZ	6.23(2.56)	7.17(3.29)	-1.91**	0.9712
FARMSZ				
EXCRIFS	2.17(0.73)	4.07(1.84)	8.92*	0.0000

*, ** represent level of significant at 1% and 5% level respectively

Numbers in the brackets indicate standard deviations

The outcome of the survey exposed that credit users and non-user farmers have an average age of 51.90 and 42.97 years respectively. The difference in terms of age between the groups was significant at 5% probability level. This indicates that farmers with higher age have better connotation with credit sources that could deliver better information about the institutions that can enable access to formal credit sources (Table 34).

Frequency of contact DA (FREQDA) is also associated to access formal credit for smallholder farmers. It was imagined that farmers who have frequent contact with extension agents were predictable to have more information that will influence farm household's demand to use credit from the formal sources. An average number of extension contact days for credit non-user and credit user sample households were 2.44 and 3.05 days per three months, the difference between the non- users and credit-users group was significant at 5% probability level.

Physical distance of farmers from lending institutions (DIST) is a significant variable that touches access to formal credit. Non-users from the formal sources have an average distance of 2.90 hours whereas the users have an average distance of 2.17 hours. The mean difference between the non-users and credit users group was significant at 1% level of significance. That means, farmers travel a short distance to access credit from the formal financial institutions have better opportunity to access credit from these institutions.

Family size (FAMILYSZ) is another variable that affects access to formal credit. Non-users from the formal sources have an average family size of 6.23 whereas the credit users have an average family size of 7.17.

The mean difference between the non- user and credit user groups was significant at 5% level of significance Table 34).

The mean value of number of household members who used formal credit was 4.33 ha for users and 1.46 ha for non-users. The mean difference between credit users and non-users was significant at 1% level. The result of the survey was as expected because, farmers who cultivate larger size of land can utilize more capital and also, larger land size reflects ownership of an important asset, which is expected to affect access to agricultural credit.

Experience in credit use from the formal sources (EXCRIFS) is a significant variable that affects access to formal credit. Non-users from the formal sources have an average experience of 2.17 years whereas the credit users have an average year experience of 4.07 year. The mean difference between the non-users and credit user groups was significant at 1% level of significance. That means, farmers experience in credit use from the formal financial institutions plays an important role in accessing credit from these institutions Table 34).

Table 1 Significant level of discrete variables for formal credit users and non-users

Variables	Values	Formal credit		X ² -Value	P-Value
		Non-user	Credit use		
GENDER	0	26(26.8)	17(33.3)	34.09	0.0000*
	1	71(73.2)	34(66.7)		
EDUC	0	62(63.9)	15(29.4)	14.31	0.0008**
	1	35(36.1)	36(70.6)		
PARTIEXT	0	61(62.9)	31(60.8)	14.31	0.0008**
	1	36(37.1)	20(39.2)		
RITAKE	0	24(24.7)	43(84.3)	18.66	0.0001**
	1	73(75.3)	8(15.7)		
MEMCOOP	0	53(54.6)	12(23.5)	22.37	0.0000*
	1	44(45.4)	39(76.5)		

*, ** represent level of significant at 1% and 5% level respectively

From the total sample farm households, 33.3 percent of the users and 26.8 percent of the non-users were female headed households. The number of credit user female headed households is lower than the credit users of male household heads. Therefore, farmers sex (GENDER) is one of the discrete variables that significantly affect formal credit users. The difference between the user and non-user groups was significant at 5% probability level.

From the total sample respondents differences were observed between formal credit users and non-users in literacy level (EDUC) of the total sample households 63.9 per cent of credit non-users and 29.4 per cent of users were illiterate respectively. The difference in literacy level between credit users and non-users from the formal financial sources was statistically significant at 5% level of probability. This may probably mean that literate farmers have more exposure to the external environment and information which helps them easily associate to credit sources..

The amount of farm households who participated in agricultural extension package (PARTIEX) was better for formal credit users than non-users. Out of the total respondents, 39.2 per cent from the credit users and 37.1 per cent from the non-users have participated in agricultural extension package program. The difference in participating in agricultural extension package between the credit user and non-user respondent farmers was significant at 5% probability level. This implies that farmers who are willing to participate in agricultural technologies will be facilitated with agricultural credit.

Respondent's attitude towards risk (RITAKE) was significantly different between credit users and non-users. Among the groups 15.7 per cent of the users and 75.3 per cent of the non-users thought that formal credit is risky to repay in case of crop failure. The difference between the two groups was significant at 5% probability level. This perception difference might be one of the problems for lower status of smallholder farmers' access to formal credit.

Membership of farmers multipurpose cooperatives (MEMCOOP) is also the other variable that significantly affects access to formal credit. From the total respondents 76.5 per cent were credit users while only 45.4 per cent were not credit users from the formal sources. This has significance percentage difference at 1% probability level between the user and non-user groups. This implies membership of farmer's multipurpose cooperative plays a determining role in providing access to formal credit especially in farmer's multipurpose cooperatives' source.

4.6.2.1. Analysis of Factors Affecting smallholder farmer's access to formal credit

The logit econometric model was selected for analyzing the factors affecting smallholder farmer's access to formal credit. Prior to running the logistic regression analysis both the continuous and discrete explanatory variables were checked for the existence of multicollinearity and high degree of association using variance inflation factor (VIF) and contingency coefficients, respectively. The VIF values for continuous variables were found to be very small (much less than 10) indicating that absence of multicollinearity between them (Table 36).

Likewise, the results of the computation of contingency coefficients reveal that there was no serious problem of association among discrete variables. For this reason, all of the explanatory variables were included in the final analysis. More specifically, five continuous and five discrete explanatory variables were used to estimate the logit model.

In the logit model analysis, we emphasize on considering the combined effect of variables between formal credit user and non-user farm households in the study area. By considering the variables simultaneously, we are able to incorporate important information about their relationship.

Twenty variables were hypothesized to explain factors affecting smallholder farmer's access to formal credit. Out of these thirteen of the variables were found to be significant, while the remaining two were less significant in explaining the variations in the dependent variable and five variables did not show variation among sample farm households.

The maximum likelihood estimates of the logistic regression model show that age of smallholder farmers (AGE) and membership of farmer's multipurpose cooperatives (MEMCOOP) were less powerful in explaining smallholder farmers' access to formal credit. Frequency of contact DA (FREQDA), physical distance of farmers from lending institutions (DINST), family size (FAMILYSZ), farm size (FARMSZ), experience in credit use from the formal sources (EXCRIFS), Sex of household head (GENDER), education level of household head (EDUC), participation of households in extension package program (PARTIEXT), attitudes towards Risk (RITAKE), farmers' perception of Loan repayment period (SHOREPIN), farmers' perception of Lending procedures (LEPROC), farmers' perception of group lending (COLLATGF) and lack of opportunity to take a second loan (LAOPLOAN) were important factors influencing smallholder farmers access to formal credit in the study area.

The variables such as family labor (FAMILABR), fertility status of the soil (FERTST), number of Oxen (OXNO), total livestock ownership (LIVSTKNO) and resettled farm households (RESFHH) did not show any variation among sample farm households. For this reason it was not retained in the model.

Table 2 Maximum likelihood estimates of logit model and the effects of explanatory variables on the probability of access to formal credit

Explanatory variables	Estimated coefficient	Odds ratio	Wald statistics	Significance level
Constant	1.223	1.887	1.028	0.165
AGEHH	1.755	1.030	0.661	0.316
FREQDA	2.597	0.797	15.11	0.004***
DIST	0.861	1.225	4.79	0.097**
FAMILYSZ	1.607	1.914	10.51	0.067***
FARMSZ	1.068	2.910	10.829	0.051***
EXCRIFS	1.618	5.043	3.406	0.165*
GENDER	0.731	0.642	16.19	0.023***
EDUC	0.360	0.458	7.36	0.093**
PARTIEXT	0.371	0.273	7.35	0.089**
RITAKE	0.247	0.556	5.62	0.160**
SHOREPIN	0.194	0.443	3.227	0.241*
LEPROC	0.107	2.477	6.942	0.073**
COLLATGF	1.242	1.220	0.659	0.503
LAOPLOAN	2.381	0.491	2.261	0.172*
MEMCOOP	0.453	0.511	1.435	0.719*

***, ** and * represent level of significant at 1%, 5% and 10% respectively.

The maximum likelihood estimates of the logistic regression model show that Frequency of contact DA (FREQDA), physical distance of farmers from lending institutions (DINST), family size (FAMILYSZ), farm size (FARMSZ), experience in credit use from the formal sources (EXCRIFS), Sex of household head (GENDER), education level of household head (EDUC), participation of households in extension package program (PARTIEXT), attitudes towards Risk (RITAKE), farmers' perception of Loan repayment period (SHOREPIN), farmers' perception of Lending procedures (LEPROC), lack of opportunity to take a second loan (LAOPLOAN), and membership of farmer's multipurpose cooperatives (MEMCOOP) were important factors influencing formal credit use of smallholder farmers.

Frequency of contact DA (FREQDA) was found to be important in reducing formal credit use. The Wald statistics corresponding to the variable FREQDA show that it is significant at 1% probability level. The odds favoring access to formal credit use decreases by a factor of 0.797 for farmers.

Physical distance of farmers from lending institutions (DINST) is another factor, which is significantly related to the dependent variable and that it is significant at 5% probability level.

The odds favoring access to formal credit use increases by a factor of 1.225 for farmers.

Family size (FAMLYSZ) would increase access to formal credit use. The odds in favor of access to formal credit use increases by a factor of 1.914 for households, which had small family size than those who had large family size. The positive relationship between family size and access to credit is that farmer who had small family size can utilize more capital for labor and other farm inputs and therefore, this will increase the demand for credit and therefore, as demand increase there will be a chance of access to credit.

Farm size (FARMSZ) would increase access to formal credit use. The odds in favor of access to formal credit use increases by a factor of 2.910 for households, which had larger cultivated farm size than those who had lesser farm size. The positive relationship between cultivated land size and access to credit is that farmer who cultivated larger size of land can utilize more capital for labor and other farm inputs and therefore, this will increase the demand for credit and therefore, as demand increase there will be a chance of access to credit. Mohiuddin (1993), stated that both supply and demand factors explain women's limited access to institutional credit, although supply factors are more important.

On the other hand this result contradicts with studies by Anbes (2005), which revealed that "the level of farm credit for fertilizer and high yielding varieties (HYV) varied inversely with farm size". This may be true for fertilizer credit use, but in the case of farm labor it is different. Since farming in rural Ethiopia especially in the study area is extensive, and in extensive farming when the size of the land increases the need for labor proportionally increases. This again increases operational expenses, which leads to the need for additional capital, and additional capital requirement leads to the demand for credit. However, this result is in line with the study of Miller and Ladman (1983) who applied discriminant analysis to identify a set of socio-economic, physical and psychological factors that influence credit use among small farmers with a view to differentiate between borrowers, potential borrowers, and non-borrowers. The results of the study indicated that borrowers were characterized by large farm size.

Experience in credit use from the formal sources (EXCRIFS) is another factor, which is significantly related to the dependent variable and that it is significant at 10% probability level. The odds in favor of accessing to formal credit use increases by a factor of 5.043 for an increase in a year of experience of formal credit use. The reason behind this is that a farmer having more experience in formal credit use will have more tendencies towards using that source

Sex of household head (GENDER) is another factor, which is significantly related to the dependent variable and that it is significant at 1% probability level. The odds in favor of accessing to formal credit use increases by a factor of 0.642. The result of the logit model also revealed that the variable has a negative relationship that female headed household uses formal credit less than male headed households or the female headed households would be less likely to go for formal credit.

Education level of household head (EDUC) is affects access to formal credit negatively. The difference in literacy level between credit users and non-users from the formal financial sources was statistically significant at 5% level of probability. The odds in favor of accessing to formal credit use increases by a factor of 0.458 for a literate farm households increase experience of formal credit use. This may probably mean that literate farmers have more exposure to the external environment and information which helps them easily associate to credit sources.

Participation of households in extension package program (PARTIEXT) is another factor, which is significantly related to the dependent variable and that it is significant at 5% probability level. The odds in favor of accessing to formal credit use increases by a factor of 0.273 for farmers. This implies that farmers who are willing to participate in agricultural technologies will be facilitated with formal credit.

Attitudes towards Risk (RITAKE) are another factor, which is significantly related to the dependent variable and that it is significant at 5% probability level. The odds favoring access to formal credit use increases by a factor of 0.556 for farmers.

The result of the logit model also revealed that the variable has a negative relationship that farmer with risk-taker uses formal credit than non-risk-taker. The odds in favor of access to formal credit use decreases by a factor of 0.556 for households who fear risk.

Farmers' perception of Loan repayment period (SHOREPIN) is another factor, which is significantly related to the dependent variable and that it is significant at 10% probability level. The odds in favor of accessing to formal credit use decreases by a factor of 0.443 for farmers. This implies that the repayment period is good for farmers if it is on harvesting time or when the farmers get income to repay their loan.

Farmers' perception of lending procedures (LEPROC) was found to be important in reducing formal credit use. This variable is significant at 5% level of significant. The odds favoring access to formal credit use decreases by a factor of 2.477 for farmers. This is implies that as lending procedure improved and being appropriate for farmers, the farmers were initiated, so that they go for credit.

Lack of opportunity to take a second loan (LAOPLOAN) is another factor, which is significantly related to the dependent variable and that it is significant at 10% probability level. The odds in favor of accessing to formal credit use decreases by a factor of 0.491 for farmers. This implies that farmers who are willing to repay

their loan on time will be facilitated with the second formal credit.

Membership of farmer's multipurpose cooperatives (MEMCOOP) is another factor, which is significantly related to the dependent variable and that it is significant at 10% probability level. The odds favoring access to formal credit use increases by a factor of 0.511 for farmers who are membership of farmer's multipurpose cooperatives.

In addition, the probability of accessing formal credit was also positively and significantly influenced by being a member of farmers' multipurpose cooperatives (MEMCOOP). This is due to the fact that cooperatives provide agricultural credit from their own source for members only. While for non-members except input credit no other type of credit was provided. Therefore, this was one of the constraints that restrict farmers' credit access from service cooperative which is one of the MFI in the study area.

CONCLUSION AND RECOMMENDATION

CONCLUSION

The Ethiopian smallholder farmers' access to formal credit systems is characterized by a number of distinctive features of which the most important include the following

RECOMMENDATIONS

Based on the findings of the study and personal observation of the situation in which the analysis of factors affecting smallholder farmers' access to formal credit systems are found, the following recommendations are forwarded.

1. Development agents are a strong bridge between smallholder farmers and microfinance institutions (MFIs) and other development oriented organizations. Integrated and participatory rural development strategies can achieve their target if these development agents create strong social and cultural links with the people that they are expected to assist. Therefore, organizing regular in-service and on-job training, providing adequate incentives and remuneration as well as employing adequate number of development agents will be necessary conditions to change the farmers' attitude toward using formal credit.
2. The policy that the country follows currently promotes market oriented economic system. This may dissuade banks to serve geographically dispersed and large number of rural farmers in fear of loan administration costs and risk of default since they may have alternative clientele in and around towns who can Pledge collateral to the banks. Therefore, alternative solutions should be sought to solve the current problem of formal credit accessibility procedure. In addition, the physical distance of lending institutions, bureaucratic procedures of the institutions, lack of well-organized farmers' associations or groups, etc., may worsen the smallholder farmers' access to formal credit. Therefore, it is necessary to seek other alternative strategies (such as rural credit and saving schemes, door-to-door services, ensure accountability, transparency and efficiency of the institution workers or employees) to mitigate the current formal credit scarcity problem.
3. Formal credit services were provided by the farmers' multipurpose cooperatives which are currently disintegrated or very weak to give required services to their members. These organizations were established more for political than economic reasons as farmers' perception. To have an efficient formal credit delivery system, farmers should form their own groups on voluntary basis with group based liabilities to secure access of formal credit.
4. The majority of the rural smallholder farmer households' especially female headed households and the very poor farmers did not use formal credit from formal financial sources. Therefore, high emphasis should be given in screening potential borrowers and to address the very poor and female headed households in the formal credit market.
5. The repayment period for formal credit especially which is for agricultural activity in the study area is almost uniform and regular. These inflexible repayment schedules sometimes do not correspond to period of cash availability for the poor households. Therefore, participatory development of activity and income calendars could be used to synchronize repayment schedule with credit need and income flow of different households.
6. Nowadays group lending becomes the most important method of providing rural credit to the poor who could not bring material collateral. However, poor farmers especially the very poor farmers find group lending inconvenient to access credit from MFI since they are rejected from the group by others. Therefore, there should be a policy environment whereby individuals may have access to MFI credit, without forming groups, by means of using land use right certificates and also guarantor as a collateral.
7. Agricultural activities in general are seasonal; hence credit providers have to be conscious with regard to the timely provision of credit.

ACKNOWLEDGEMENT

The authors would like to acknowledge Wollega University for supporting the research activity.

REFERENCES

- Adams, D.W. 1984. Are the arguments for cheap credit sound? In undermining rural development with cheap credit.
- Adera, A.1995. Instituting effective linkages between formal and informal financial sector in Africa:
- Amare Birhanu, 2005. Determinants of formal source of credit loan repayment performance of smallholder farmers: the case of north western Ethiopia, north Gondar. Unpublished M.Sc. Thesis submitted to Alemaya University, Ethiopia.
- Amemiya, T.1981.Qualitative response model: A survey. Journal of Economics literature. Beckman, T.N. and Fosl, R.S., 1969.credit and collection.
- Anbes Tenaye, 2003. Pattern of credit use and its impact on small farmer's income: A study in Dire Dawa area, Eastern Ethiopia. Unpublished M.Sc. Thesis submitted to Alemaya University, Ethiopia.
- Aryeetey et al.,. 1997. Financial market integration and reforms in Ghana, Malawi, Nigeria and Tanzania. World Bank Economic Review.
- Assefa Admassie, 2004. A Review of the Performance of Agricultural Finance in Ethiopia. Pre-and Post Reform Periods.
- Atieno, R. 2001. Formal and informal institutions' lending policies and access to credit by small-scale enterprises in Kenya: An empirical assessment. African Economic Research Consortium, Nairobi.
- Beckman, T.N.and Foster, R.S. 1969. Credits and Collections: Management and Theory. Eighth Edition. McGraw-Hill Book Company. New York, U.S.A.
- Belay Abebe, 2002. Factors influencing loan repayment of rural women in eastern Ethiopia: The case of Dire Dawa area. Unpublished M.Sc. Thesis submitted to Alemaya University, Ethiopia.
- Belay Kassa, 1998. Structural problem of peasant agriculture in Ethiopia. Research
- Belay Kebede and Belay Kassa, 1998, "Factors Affecting Loan Repayment Performance of Small-holders in the Central Highlands of Ethiopia; The Case of Alemgena District." Ethiopia Journal of Agricultural Economics 2(21) pp. 61-89.
- Berhanu Taye, 1993. An Analysis of Factors Influencing Fertilizer Consumption and Access to Fertilizer Credit in Ethiopia. M.Sc. Thesis, Alemaya University of Agriculture, Ethiopia.
- Dejene Aredo, 2003. Informal financial institutions: the economic importance of Iddir, Iqqub, and loans, technological progress in Ethiopian agriculture, proceedings of the national workshop on technological progress in Ethiopian Agriculture; November 29-30, 2001. Economic department, faculty of business and economics, AAU; Addis Ababa, Ethiopia.
- Diagne, A. Zeller, M. and Sharma, M. 2000. Empirical Measurements of Households' Access To Credit And Credit Constraints In Developing Countries: Methodological Issues And Evidence: International Food Policy Research Institute. Washington, D.C. U.S.A.
- Ellis, F. 1992. Agricultural policies in developing countries. School of development studies, university of East Anglia, Cambridge university press.
- Fafchamps 1992; Coate and Ravallion 1993, Udry 1994, Lund and Fafchamps 1997; Kochar 1997).Kebede (1995),(in Sisay Yehuala Msc. Theses)
- Getaneh Gobeze, 2005a. Livelihoods through Micro-enterprise Services; Assessing Supply and Demand Constraints for Microfinance in Ethiopia (With Particular Reference to the Amhara Region); Paper Presented at the 3rd International Conference on the Ethiopian Economy, Organized by the Ethiopian Economic Association June 2-4, 2005. Addis Ababa, Ethiopia.
- Greenwal, D. and Associates, 1983. The Concise McGraw-Hill Dictionary of Modern Economics. New York, USA.
- Gujarati, Damodar N. 1988. Basic Econometrics. Second Edition. McGraw-Hill Book Company, New York. U.S.A.
- Hosmer, D.W. and Lemeshew, S. 1989. Applied Logistic Regression. A Wiley-Inter-science Publication, New York.
- Hossain, M. 1988. Credit for the alleviation of rural poverty: The Grameen Bank in Bangladesh. IFPRI Research Report.
- Hussien Hamda, 2007. Farm Household Economic Behaviour in Imperfect Financial Markets, Doctorial Thesis, Swedish University of Agricultural Sciences, Uppsala.
- Kashuliza A. 1993. Loan Repayment and its Determinants in Small holder Agriculture: A case study in the southern highlands of Tanzania, *Eastern African Economic Review*.
- Kebede Koomsa, 1995. Agricultural Credit Analysis. National Agricultural Policy Workshop.
- Kmenta, J. 1986. Elements of Econometrics. Second Edition. Macmillan Pub. Co. New York. U.S.A.

- Maddala, G. S. 1983, Limited Department and qualitative Variables in Econometrics.
- Miller, L.F. 1977. Agricultural Credit and Finance in Africa. The Rockefeller Foundation. U.S.A.
- Mohiuddin, Y. 1993. Credit worthiness of poor women: A comparison of some minimalist credit programs in Asia: A preliminary analysis, the Pakistan development review, 32(4): 1199-1209
- NORAD report 2003. Building demand-led and pro-poor financial systems. NORAD microfinance position paper. (on line available on the world wide web: <http://www.cgap.org/direct/docs/other/NORADmicrofinancepositionpaper.pdf>.)
- Padmanabhan K.H. 1996. Rural credit, lessons for rural bankers and policy makers, London, UK.
- Pindyck, Robert S. and Rubinfeld, Daniel L. 1981, "Econometric Models and Economic Forecasts," 2nd Edition, McGraw- Hill Book Co. New York.
- Pinaki, B. 1998. Formal and Informal sector interaction in rural credit markets. Journal of development economics
- Penchansky, R. and Thomas, W. J., 1981. The Concept of Access: Definition and Relationship to Consumer Satisfaction.
- Sisay Yehuala, 2008. Determinants of smallholder farmers access to formal credit: The case of Metema Woreda, North Gondar. Unpublished M.Sc. Thesis submitted to Alemaya University, Ethiopia.
- Tefera Derbew, 2004. Determinants of smallholder farmers demand for non-formal credit: The case of Farta Woreda. Un published M.Sc thesis, Alemaya University, Ethiopia.
- OZOWA, V.N.(2007). Information needs of small-scale farmers in Africa: The Nigerian Example.
- Wolday Amha, 1989, "Factors Affecting Farm Income and Adoption of Fertilizer in Ethiopia: A case study of Shebedino Woreda, "A Paper Presented to the Department of Agricultural Economics, Technische Universtat Berline.
- Wolday Amha, 1999. Networking Micro-finance Activities in Ethiopia: Challenges and Prospects, A paper presented at the International Conference on Micro Finance Development in Ethiopia, Bahir Dar.
- Zeller, Manfred, 1998. Determinants of Repayment Performance in Credit Groups: The Role of Programme Design, Intragroup Risk Polling, and Social Cohesion. International Food Policy Research Institute. Reprint No. 384.
- Zeller, M and M. Sharma, 1996. Repayment Performance in Group-Based Credit Programs in Bangladesh: An Empirical Analysis. Food Consumption and Nutrition Division, International Food Policy Research Institute, Washington D. C., USA.