Determinants of Small Farmer's Access to the Formal Credit Institutions in Kassala State, East Sudan

Eltayeb Mohamedain Abdalla
Assistant professor, Department of Economics
Faculty of Economic and Administrative Science
University of Kassala, Sudan.

Ebaidalla Mahjoub Ebaidalla
Lecturer, Department of Economics, Faculty
of Economic and Administrative Science,
University of Kassala, Sudan.

Abstract

This paper aims at identifying the factors that affect the peasants' transactions with formal credit institutions, using survey data. Descriptive statistics and binary logistic model were used for analyzing data. The study reveals that around (47%) ,of the sample farm households were credit users, dealing with banks and organizations , whereas the remaining (53%) were non-users. It was also found that the access of farmer to the formal credit institution is positively affected by family size; experience of the household head in credit use; ownership of adequate collateral; and participation of the household head in training/extension activities. On the other hand, age of household head; distance travelled by farmer to the lending institution; farm size; number

of the household males who are less than 17 years old-all these negatively affect the access to formal credit institutions. Moreover, the results showed that social collateral recently adopted by formal lenders, like group borrowing and guarantor were inconvenient to many farmers' perspective. The paper concludes with some recommendations regarding the key factors that inhibit access to formal credit by the small farmers.

محددات مشاركة صغار المزارعين

مع مؤسســـات التمويل النظاميـــة

خلاصة البحث:

هدفت هذه الورقة إلى تحديد العوامل المؤثرة على تعامل صغار المزارعين مع مؤسسات التمويل النظامية من خلال بيانات مسحية تم تحليلها باستخدام منهج التحليل الوصفي والنموذج القياسي اللوجستي.

توصلت الدراسة إلى أن حوالي 47٪ من حجم عينة العائلات التي تعمل في مجال الزراعة تحصلوا على تمويل من المؤسسات النظامية كالبنوك والمنظمات، وما تبقى حوالي 53٪ من العينة لم يتمكنوا من الحصول على تمويل نظامي.كما توصلت الدراسة إلى أن وصول المزارعين إلى مؤسسات التمويل النظامية يتأثر إيجابا بحجم الأسرة، الخبرة في استخدام الائتمان، امتلاك الضمانات الكافية، والمشاركة في نشاطات التدريب والإرشاد الزراعي. ومن ناحية أخرى، فان مستوى العمر وعدد أفراد الأسرة الذين تقل أعمارهم عن 17 سنة تمثل أهم العوامل المؤثرة سلباً في حصول المزارع على التمويل من المؤسسات النظامية. كذلك أوضحت النتائج أن الضمانات الاجتماعية التي تطبقها المؤسسات النظامية مثل الاقتراض الجماعي، غير ملائمة حسب وجهة نظر عدد من المزارعين.

اختتمت الورقة ببعض التوصيات كإطار لحل المشكلات التي تعيق وصول صغار المزارعين للتمويل النظامي، بالإضافة إلى تقديم بعض المقترحات لتوسيع دائرة الاستفادة من التمويل النظامي.

1. Introduction

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 formal financial intermediaries fail to cater for the credit needs of the small farmer, because they view the rural farming as the riskiest investment area and providing a loan to cut down their profits (Mohamed, 2003). The small farmers are regarded risky for reasons related to the difficulty in obtaining accurate information about them. Banks associate farmers to high transaction costs, because they are widely dispersed geographically and are inaccessible. The lending terms and conditions created by the commercial banks like collateral and terms of payments also deny small farmer from accessing credit. In addition, the farmer characteristics 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 small farmers in developing countries have relied almost exclusively on informal credit gathering from friends, relatives, village traders and landlords.

The agrarian credit market in Sudan has a dual character in the sense that formal and informal lending and borrowing are carried out simultaneously where the formal sector exists. As early as 1959 banks started lending to agriculture, but the volume of these loans as a proportion of total bank credit to the private sector was negligible. Hence for many farmers the informal loan market has been the main, if not the only, source of credit (Elhiraika, 1999).

Like other marginal states in Sudan, the agricultural sector in Kassala state plays a key role in the local economy and contributes about 90% of its GDP. The potential resources in terms of arable land, water and livestock, suggest that agriculture provides the best opportunities to future economic growth and development of the state. Therefore, enhancing the accessibility of credit services to the small farmers is one of the most important factors that have been proposed for stimulating production and realization of their potential contribution to the state's economy, as well as alleviating poverty. Therefore, agricultural credit market in Kassala State has received considerable attention from the state and central governments. The State has many branches of commercial banks as well as some nongovernmental organizations (NGOs) involved in financing services. In this regard also, many financial schemes were launched in the last years, such as the microfinance scheme founded by the Central Bank of Sudan in 2008, which

aims to avail credit to the small enterprises, especially small farmers.

Despite the availability of formal credit institutions in Kassala, farm households lack access to formal credit; hence, they rely almost exclusively on informal credit. Further, the state comprises diversified ethnic groups with some customs and traditions challenging the development process and credit access, such as gender discrimination and tendency against education. Thus, many questions could be raised in accordance with this study which includes the following: what are the factors that determine the farmer's access to the formal credit market in Kassala state? Have formal financial institutions played an effective role in financing small farmers and thus stimulated the economic development in the state?

Motivated by a dearth in the studies on the factors influencing small farmer's access to the formal credit market in Sudan in general and in Kassala State, in particular, this study will fill a gap in the literature by identifying the most significant determinants of formal credit accessibility by small farmers. The study also aims to provide recommendations to the decision makers in taking appropriate actions towards facilitating the establishment of comprehensive and sustainable financial institutions for the development of agriculture and rural sectors.

The rest of this paper is organized as follows: section (2), discusses some stylized facts about the financial markets in Kassala State. Section (3), briefly presents the literature review on the credit markets and the determinants of small farmer's access to formal credit services. While section (4) describes the data and methodology, section (5) presents the results and discussions. Section (6) ends with conclusion and policy implications.

2. Agriculture and the Financial Market in Kassala State: An Overview

The potential agricultural endowments in Kassala, such as abundant water resources, arable land and livestock, render it a suitable place for agrarian activities. Specifically, the state possesses about 2.8 million feddans of arable land beside the climate zone (Abu Sin and Abbakar, 2007)[1]. The state also has a considerable area of pasture land, about 7 millions feddans, feeding a huge number of livestock which is estimated at 4 million heads, leading kassala to be as one of the animal-rich states in Sudan. Moreover, the state possesses a huge water endowment compared to its neighbor, Gedarif and Red Sea states. As such, the state has abundant rain and ground water as well as two rivers that run through its land - El Gash and Atbara.

The state encompasses the three agricultural sub-sectors that dominate in Sudan, namely, irrigated sector, traditional rain-fed and mechanized rain-fed. Regarding irrigated agriculture, the state contains four schemes: New Halfa Agricultural Corporation, Halfa Sugar Company, El Gash and Kalahot schemes. The main crops cultivated in irrigated schemes are cotton, groundnuts, wheat and sorghum. With respect to the rain-fed agricultural subsector, the state contains both the traditional and mechanized rain-fed sectors which are widespread on a considerable area, reaching 60% of the total cultivable area in the state. The main crops cultivated in this sector are sorghum, sesame and millet. The sector supplies most of population with food, particularly in the rural areas. Moreover, the state embodies a sizeable area of horticultural gardens, covering an area of 30,000 feddans alongside

1 - 1 Feddan = 0.41 hectares.

the Elgash river banks. Furthermore, the state is considered as one of the most important horticultural states in Sudan, suppling the rest of the country with fruits and vegetables. In addition, in the recent years these crops represent major exports to neighboring countries such as Eritrea and Ethiopia, as well as Gulf countries.

Despite these agricultural endowments and human resources, the area under cultivation is about 1.2 million feddans, equivalent to 42.8% out of the total cultivable area. The cultivated area suffers from low productivity. With no doubt, there are many factors that resulted in such situation, the most important among them are, unskilled farmers, lack of advanced technology and accessibility to the agricultural credit.

As regard to the credit market, Kassala state has both formal and informal systems. The formal financial market involves some commercial banks branches , nongovernmental organizations (NGOs) and financial schemes. Specifically, there are more than ten branches of commercial banks in Kassala; one of them is a specialized bank, the Agricultural Sudanese Bank (ASB) which is owned by the government. Most of the bank's branches are found in the state's centre (Kassala), which is remote from the rural areas, contributing to the factors that deny farmers access to credit. The commercial banks also, concentrate mainly on trade and services finance, and few of them involve in agricultural credit. While the ASB is specialized in the agricultural finance, most of the loans provided by the bank are in kind and devoted to the large scale projects. The state also, contains many organizations engage in providing finance services, like Agency for Cooperation, Research and Development (ACORD) and GOAL. These organizations are targeting the poor and low income groups,

but most of their credit beneficiaries are non-farmers. It is worth mentioning that the International Fund for Agricultural Development (IFAD) established in 2005 a credit unit aiming at availing finance to the small farmers in Elgash scheme. Since then, IFAD systematically provides credit to a large number of small farmers, extended some credit facilities, such as training and extension, group collateral and monitoring. Further, considerable efforts are exerted by the central government to avail financial services to farming activities. For example, in 2005 the government started to finance many small enterprise owned by the university graduates, under the so called Graduate Employment Scheme sponsored by the central government. Notably, most of credit provided to graduates is directed to the grazing and animal production projects. Moreover, in 2008 the microfinance scheme was innovated and launched by the Central Bank of Sudan (CBOS) aiming at providing financial services to small scale enterprises through the commercial banks portfolios. Although many small farmers benefited from the microfinance scheme, the outcome has not been assessed.

On the other hand, the informal credit market represents the backbone of the credit services in the rural areas, in Kassala state. In fact, most of the farmers finance their agricultural operations through the informal finance, from grains trader, relatives, friends, and money lenders. Not surprisingly, almost all farmers prefer the informal credit than the formal one, since the latter put difficult conditions that constrain the small farmer such as, adequate collateral and complicated application procedures (Mohammed Elkhair and Eltayeb, 2010).

3. Literature Review

3.1. The Role of Credit in Agricultural Development

There is a consensus among development economists on the significant impact of credit on agricultural development and poverty reduction, particularly in low income countries. Owing to the time lag between plantation and harvest and lower saving rates, agricultural credit smooth farmer's expenditure, particularly after bad harvests. In addition, credit services help the smallholder to tap financial resources beside their savings, as well as helping enabling farmers in general to not only take advantage of potential profitable investment opportunities, but also to fulfill the social function of enhancing their life and welfare (Manganhele, 2010).

Access to credit would also increase rural poor households' willingness to adopt new agricultural technologies such as high-yielding seeds, chemical inputs that raise production and income. Most empirical studies in developing countries found that credit availability has a positive impact on agricultural productivity, (Feder et al. 1990, Saeed et al. 1996 and Croppenstedt et al 2003 among others). For example, Croppenstedt and others studied the technology adoption in Ethiopia and found that large-scale supply of credit is one of the most significant factors positively affecting farmer productivity.

Given the widespread of poverty among the rural population in developing countries, access to financial services plays an important role in poverty alleviation, since credit expands the poor's production capacity and improves rural income distribution. Mohamed (2003) stated that low productivity in agriculture and increase in the numbers of poor among

farmers are generally attributed to the use of poor technology resulting from limited access to credit. Roughly speaking, the accessibility of a suitable financial service in a suitable time is considered as one of the engines of economic development. Therefore, the establishment and expansion of financial service is also one of the instruments to break the vicious circle of poverty (Yehuala, 2008).

3.2. Financial Markets: A conceptual Framework

Financial markets in developing countries are characterized by segmentation and imperfect market conditions (Mohamed, 2003). Usually credit market in these countries, particularly in the rural areas is classified into two forms: the formal and informal financial markets. The first is referred to place in which credit transactions are regulated by the government, while the informal credit involves all financial operations such as loans and deposits operating outside the regulation of monetary authority (Ateino, 2001). The formal credit market includes financial institutions like banks and some NGOs specializing in the credit provision to the poor. In contrast, the informal financial sector includes informal financial entities, such as rotating savings and credit associations (ROSCAs), money lenders, traders, grain millers, smallholder farmers and employers, as well as relatives and friends (Chipeta and Mkandawire, 1991).

A considerable body of literature has concentrated on the failure of financial markets in providing credit services to small household farmers in developing countries. Most of these studies eg.((Stiglitz (1990); and Besley (1994)) are based on the seminal work of Stiglitz and Weiss, (1981) which attributed the failure of credit markets to the incomplete markets and

imperfect information. Stiglitz and Weiss (1981) argued that interest rate does not equilibrate the financial market, and in turns, results in credit rationing. They argued that interest rates charged by a credit institution are seen as having a dual role of sorting potential borrowers (leading to adverse selection), and affecting the actions of borrowers (leading to the incentive effect). Thus, interest rates influence the nature of the transaction and do not necessarily clear the market. Stiglitz and Weiss attributed both effects to the imperfect information inherent in credit markets. The Adverse selection aspect of interest rate arises because lenders would like to identify the borrowers most likely to repay their loans since the banks' expected returns depend on the probability of repayment. In order to identify borrowers with high probability of repayment, banks are likely to use the interest rates that an individual is willing to pay as a screening device. However, borrowers willing to pay high interest rates may on average be at worse risks; thus as the interest rate increases, the riskiness of those who borrow also increases, reducing the bank's profitability. On the other hand, incentive effect occurs when a change in the interest rate and other terms of the contract change the behavior of borrowers since it affects the returns on their projects. Stiglitz and Weiss (1981) further showed that higher interest rates induce firms to undertake projects with lower probability of success (leading to the problem of moral hazard).

However, most theoretical models on the credit market supported the view that incomplete information, imperfect contracts, lack of collateral as well as cost of screening and monitoring among lenders lead to the problem of adverse selection and moral hazard, which undermine the operation of

financial markets and hence, results in credit rationing (Hoff and Stiglitz,1990 and Bell, 1990). As a consequence of credit constraints, borrowers resort to the informal credit markets which are widespread in most developing countries. Even though, the environment of informal credit is not better than formal market, since informal agencies are monopolistic and charge a higher interest rate (Hoff and Stiglitz, 1990 and Aleem, 1990). Thus, the interesting questions here are: why small borrowers prefer informal finance of higher rates than formal credit with low charge and subsidized interest rate? And what factors that lead to the existence of formal market alongside the informal?

In literature, there is a growing body of thinking concentrating on the factors that render rural household prefers informal credit instead of formal financial market. Generally speaking, the previous reasons of the failure of the financial markets are the main causes for the existence and success of the informal financial sector. Moreover, the most important factor behind this success is that informal credit market maintains very low transaction cost, because of their comparative advantage in information acquisition and lower administrative costs (Mohieldin and Wright, 1994). Chung (1995) and Mushinski (1999) point out that high transaction costs related to the loan application in the formal sector may discourage households from taking formal loans[2]. Many authors view that the informal sector is preferred by the

2 - This is called households *transaction cost rationed* in the formal sector (Barham et al., 1996). Because informal lenders have greater information about loan applicants, application procedures are easier in the informal sector and transaction costs are lower. As a result, the differences in transaction costs may drive the effective cost of informal credit below the effective cost of formal credit, and households that are transaction cost rationed in the formal sector may take an informal loan despite its higher interest rate.

borrowers because sometimes it charges a low or zero interest rate. Based on evidence from rural India, Kochar (1992) argued that informal credit is preferred by borrowers because loans from informal sources, in particular, from friends or relatives, may be cheaper than formal loans. Furthermore, as long as the formal lenders have limited information and rely on collateral to overcome moral hazards and adverse selection, hence those who have insufficient collateral prefer an informal loan since informal lenders, due to their informational advantages, can substitute information-intensive screening and monitoring for collateral (Boucher and Guirkinger, 2007). Therefore, the low cost of borrowing, screening and information and absence of collateral are the main factors justifying the success of informal credit market and its existence alongside the formal market.

3.3. Access to Credit Services

In spite of the importance of credit in agricultural development and poverty reduction, the lack of access to the formal financial services became a puzzle problem facing almost all small farmers in the developing countries. As explained above, due to the problem of credit rationing in the credit market, the access to formal financial market is constrained, thus most borrowers resort to informal credit market.

Regarding the determinants of access to formal credit there is a growing body of literature identifying the factors constraining farmers from obtaining the credit. The literature clarify that the factors affecting access to formal and semi-formal credit market are mainly related to the socio-economic characteristics of borrowers and institutional factors such as lending terms and conditions imposed by the lenders. Socio-economic

factors pertaining to borrower such as age, gender, income, past credit experience and degree of awareness of available credit services are found to be the most important factors determining the small farmer access to formal credit market (Hossain, 1988 and Zeller 1994). For example, Atieno (2001) studied the access of small-scale enterprises in Kenya to formal financial market, showed that income level, distance to credit sources, past credit participation and assets owned were important variables that explain the participation in formal credit markets. A study in Egypt by Mohieldin and Wright (1994), employing a probit model analysis of the factors determining the farmer's access to the formal credit sector, argued that educational level, ownership of land, total assets, and size of the household were significant factors affecting credit access. In the case of Sudan, Elhiraika (1999) investigated the farmers' participation in the rural credit market in Sudan, using a survey data of three agricultural sub-sectors namely, irrigated, mechanized and traditional sectors. He found that the demand for formal credit is positively and significantly influenced by household's farm size, non-farm income and the availability of banks. More recently, Yehuala (2008) studied the factors that affect smallholder farmer's access to formal credit and also the status of women access to formal and informal credit sources in Ethiopia, using Logit model. He found that the participation in extension package programs, experience in credit use from the formal sources, total cultivated land size, number of livestock and collateral are the most important factor influencing access to formal credit. He also found that credit access to female headed households is limited, and justified that by the claim that women have lower status in their level of education, land

holding size, livestock holding, experience in credit use and extension contact.

Apart from demand side factors, the institutional constraints imposed by financial institutions through their credit rationing policies and conditions are also found to be limiting the access of the smallholder farmers to the formal credit market. This is displayed in the form of terms of payments; credit duration prescribed; minimum loan amounts; complicated application procedures; and restrictions on credit for specific purposes (Schmidt and Kropp, 1987; Zeller, 1994 and Manganhele, 2010).

4. Methodology

To determine the factors that influence the rural farmer's access to the formal credit sector, the study uses both qualitative and quantitative methods. In this section first we describe the sources of data and sampling, and then we discuss the econometric methodology.

4.1. Sample and Data

The empirical analysis of this study is based on primary sources of data collected through a household survey from rural areas of five localities in Kassala state, namely, North Delta, Rural Aroma, New Halfa, Atbara River and Wad Heleiw[3]. The survey is based on simple random sampling and stratified random sampling techniques. The household survey questionnaire has covered 416 households and was conducted in the months of September and October, 2010.

3 - We concentrated only on these localities, because they represent all three modes of agriculture in the state which are irrigated, mechanized rain-fed and traditional rain-fed.

4.2. Econometric methodology

In order to identify the determinants of farmer's access, the logistic model (Logit) was used, which allows for estimating the probability that farmer accessed the credit or not. That is, the data used in the study were classified into two categories: formal credit obtainer and other do not access any formal credit, so that the dependent variable was designed as a dummy variable takes one if the farmer accessed the credit and zero otherwise. The Logit linear probability model was estimated employing maximum likelihood method.

In the empirical literature, there are many other linear probability models (LPM) commonly used to analyze the binary dependent variable, such as, Probit and Tobit models. However, we followed Amemiya (1981) in using Logit model. The reason for using Logit is that in other LPM the probability values of dependent variable can lie outside the normal 0-1 range, so that the advantage of Logit is that the probabilities are bound between zero and one (Gujarati, 2003). The Logit model, also is computationally simple and best fits the non-linear relationship between the probabilities and the explanatory variables.

In this subsection, it is important to provide a brief description of the binary Logit estimation. Since our interest is to model the decision of farmer households regarding access to credit, the dependent variable is discrete, accessing a loan or not in relation to other regressors, therefore, the linear probability model could be written as:

$$P_i = E(Y = 1|X_i) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_k X_k \qquad (1)$$

Where: P_i is the probability of individual that access formal credit or does not

X_i is the set of regresors and Y=1means that the farmer has credit access

The cumulative logistic distribution function could be specified as follows:

$$P_i = f(Z_i) = \frac{1}{1 + e^{-(\alpha + \sum \beta_i X_i)}} = \frac{1}{1 + e^{-z_i}} \qquad (2)$$

Where: e denote the base of natural logarithms, which is approximately equal to 2.718.

α and β are coefficients to be estimated[4], and $Z_i = \alpha + \sum \beta_i X_i$

Here Z_i range between $-\infty$ and $+\infty$

Let us write the log model in terms of odds which allows us to understand the interpretation of the coefficients. The odds ratio means the ratio of the probability of individual accessing (P_i) to the probability of having no access ($1 - P_i$). i.e. $(1 - P_i) = \frac{1}{1+e^{z_i}}$. therefore

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

Taking the natural logarithm of equation (3) we obtain

$$z_i = Ln\left(\frac{P_i}{1 - P_i}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots \beta_k X_k \qquad (4)$$

To get the Logit model in econometric form we add error term to equation (4)

4 - The probability term (P_i) ranges between 0 and 1 and in turn, it is not linear either in X_i nor β's. Due to the non linearity problem one cannot use Ordinary Least Square method (OLS) to estimate the parameters. Therefore, the logit model is usually estimated using maximum likelihood estimation method (MLE).

$$z_i = \alpha + \sum_{i=1}^{k} \beta_i X_i + \mu_i \qquad (5)$$

As stated above the dependent variable is a dichotomy representing small farmer's access to formal credit service, that is, it takes the value of "1" and "0" for users and non users of credit, respectively. On the other hand, the independent variables are the set of factors that are hypothesized to affect the accessibility of farmers to formal credit institutions. Thus, an explicit estimable econometric model is formulated as follows:

$$Y_i = \beta_0 + \beta_1 Age_i + \beta_2 Sex + \beta_3 Edu_i + \beta_4 Area_i + \beta_5 Dist_i + \beta_6 Mart_i + \\ + \beta_7 Dep_i + \beta_8 Orgn_i + \beta_9 Expr_i + \beta_{10} Wage_i + \beta_{11} Remt_i + \beta_{12} Shop_i + \\ \beta_{13} Trans_i + \beta_{14} Tech_i + \beta_{15} Tract_i + \beta_{16} Extn_i + \beta_{17} Gbrr_i + \beta_{18} Fncost_i + \\ \beta_{19} Repay_i + \beta_{20} Proc_i + \beta_{21} Lvst_i + \beta_{22} Fsize_i + \varepsilon_i$$

Where: Y is dependent variable (binary)

Age: age of the household head

Sex: sex of household head, is a dummy variable takes "1" if farmer is male and "0" otherwise.

Edu: education level of household head, measured by the years of schooling

Area: Farm size measured by the number of feddans

Dist: distance of the village from major marketing centres.

Mart: Marital status, take value of "1" if household farmer is married and zero otherwise.

Shop: ownership of shop which is a proxy for off-farm income.

Remt: Remittances transferred by relatives working abroad, is a dummy variable.

Wage: paid wage received by one or more of household members, a proxy for off-farm income.

Dep: number of household males under 17 years.

Orgn: participation of respondent in farmers' organization is a dummy variable takes a value of "1" for member and "0" otherwise.

Expr: experience of farmer in credit use from the formal source, is a dummy variable.

Trans: mean of transport (car or lorry), is a dummy variable taking "1" if farmer possess mean of transport and zero otherwise.

Tech: adopting of technology, is a dummy variable taking value of "1" is farmer adopt technology and zero otherwise.

Extn: participation in training and extension activities

Tract: possessing of tractor, take "1" if farmer possess tractor and zero otherwise.

Gbrr: household perception towards group borrowing.

Fncost: perception of financing cost

Repay: perception of repayment

Proc: perception of procedure

Lvst: possessing of livestock

Fsize: family size.

5. Results and Discussions

On the basis of the methodology outlined above, this section presents and discusses the empirical results of the analysis. The section, however, is divided into four sub-sections; the first sub-section highlights the characteristics of the sample households. Credit activities in the study area are presented in the second sub-section. The third subsection discusses the views of small farmers regarding the strengths and weaknesses of the formal financial institutions. Finally, the fourth subsection presents the econometric analysis that identifies the most important factors which affect small farmer access to formal credit.

5.1. Characteristics of Sample Households

As stated earlier, demographic, institutional and socio-economic characteristics are the major factors influencing household access to formal credit services. Firstly, we used the descriptive statistics' analysis which allows providing some insights to the importance of various factors that are related to the use of credit, and in turn will be useful for developing an estimation of econometric modeling discussed in the final subsection. The farmer's access to the formal credit in the context of this research is measured in terms of credit users and non-users. Table1 shows the demographic features of the respondents. The results indicate that about 31.4 percent of formal credit users and 53.1 percent of non users had the family size that ranges from 1 to 5 (1-5) persons. Moreover, the credit users increased with increased family size, while the behavior of non users showed the inverse pattern. Regarding to the household sex, the results reveals that the male headed households accounted for 82.2 percent,

compared to 17.8 percent of female headed households. Moreover, twenty percent of formal credit users and 15.8 Percent of nonusers were female headed households. That is, the number of women using formal credit in the sample was less than the number of men. The implication of this result is that male headed household has more access to formal financial services. As for the education level among the farmers, Table (1) shows that about 36.3 percent of the sample households were illiterate, while more than 60 percent were literate (primary and more). The table also indicates that about 30.3 percent of non users and 43.6 percent of credit users were illiterate. Moreover, about 41.1% of female headed households are illiterate while the percentage of illiterate male that headed household is 35.1%. This indicates that there is a difference between male and female headed households in terms of literacy level, but it may not have a discriminating effect in credit access, because it seems there is no positive effect of education level on access for the sample households. Regarding the marital status, the results indicate that about 75.7 percent of sample households heads are married and 12.5 percent were separated /divorced/ widowed while only 11.8 are single. Moreover, the average age of the household's head was 43.5 years with minimum and maximum ages of 16 and 84 years, respectively. As such, formal credit users and non users had similar average ages. The average ages of male and female headed households were 44.05 and 41.14 years, respectively.

Table1: The Demographic Characteristics of Respondents

Characteristics	Users%	Non users%	Female headed Households%	Maleheaded Households%	Total%
Family size :					
1-5	31.4	53.1	-	-	43.3
6-8	34.0	29.4	-	-	31.5
>8	34.6	17.5	-	-	25.2
Sex:					
Male	79.8	84.2	-	-	82.3
Female	20.2	15.8	-	-	17.7
Literacy level:					
Illiterate	43.6	30.3	41.5	35.1	36.3
Read and write	22.9	36.0	13.5	33.6	30.0
Primary	18.1	13.2	24.3	13.5	15.4
Secondary	12.8	14.5	18.9	12.6	13.7
Over secondary	2.7	6.1	1.4	5.3	4.6
Marital Status:					
Married	74.5	76.8	40.5	83.3	75.2
Widows	14.4	11.0	54.1	3.5	12.5
Single	11.1	12.2	5.4	13.2	11.8
Age:					
Mean	43.92	43.17	41.14	44.02	43.5
St dev	14.86	12.85	10.93	14.29	13.79

Source: computed from the field survey data, 2010.

*Note: min age of male = 16, max of male= 84, min of female = 18, max of female = 65

In accordance with the institutional characteristics, Table2 shows that about 14.9 % out of total respondents were members of farmer organizations. Among them 16 percent were credit users while 14 percent were non users. This relative low level of representation for female headed households may probably limit their access to formal credit compared to equivalent households. Regarding the distance that the potential borrowers travelled for accessing credit from formal institutions, Table (2) indicates that the distance travelled by the sample farmer households to the nearest credit institution was about 31.6 kilometers on average. Precisely, nonusers travelled on average about 34.27 KM while users travelled on average about 27.39km, implying that distance might be a limiting factor to access credit from formal institutions.

Table2: Institutional Characteristics of the Respondents

Characteristics	users	nonusers	Total
Membership of Farmer' Organization:			
Yes(%)	16	14	14.9
No(%)	84	86	85.1
Distance Traveled by Framer:			
Mean	34.27	27.39	31.16
St dev	14.95	9.78	13.31

Source: computed from the field survey data, 2010

As regard to the socioeconomic characteristics of farmer household, Table3 and Table 4, present the main features. Table3 reports that about

71.4 percent of the households children participated in farm cultivation. The participation of children in farming was higher for both users and non user households, this indicate that, the study area is characterized by the child labor and credit user and non user households were similar in using children for farming. The adult participation in cultivation activities was accounted for 61.5 percent of the total sample households.

Table3: Households Members Participation in Land Cultivation

characteristics	Users %	Non users %	Total %
Children Participation in land cultivation :			
Yes	73.4	69.7	71.4
No	26.6	30.3	28.6
Adults Participation in land cultivation :			
Yes	71.3	53.5	61.5
No	28.7	46.5	38.5

Source: computed from field survey data, 2010.

Regarding the participation of small farmers in training and extension activities, Table4 brings out that the number of respondents participated in training/ extension activities were only 24.8%. As the figures indicated, out of the total respondents, 30.9 percent from the credit users and 19.7 percent from the nonusers have participated in training / extension activities. This

difference may mean that low level of participation in training and extension probably limit non user households as compared to credit users who have relatively better participation in these activities.

Table4: Participation in Training / Extension Activities

Characteristics	Users %	Non users %	Female headed households %	Male headed households %	Total %
Yes	30.9	19.7	28.4	24	24.8
No	69.1	80.3	71.6	76	75.2

Source: Computed from the Field Survey Data, 2010

Table5 shows the number of farmers that holding land and livestock, which are considered as collaterals facilitates the access of farmers to formal credit. The result indicates about 38.9 percent of total sample households were landless while 28.1 percent owned more than 10 feddans. On the other hand, 51 percent of formal credit users were landless compared to 28.9 percent of non-users. Furthermore, Table5 reveals that, formal credit users who owned more than 10 feddans accounted for 23 percent while their equivalent nonusers were 32.5 percent. That means, the land distribution in study area is in favor of non credit users. This result may indicate to relative success of antipoverty activities targeting particularly very poor households in the last decades. The study, also found that farmers in the study area undertake both crop and livestock production activities. As indicate by Table5 about 85.6 percent of the total respondents owned livestock. The livestock population number was converted into the tropical livestock unit (TLU) to facilitate comparisons between respondent groups. (Yehuala, 2008). Furthermore, it was found that about 14.3 percent of formal credit

users owned more than 15 TLU in comparison with 5.7 of nonusers. Therefore, credit users possessed relatively more live- stock units than nonuser households.

Table5: Land and livestock Holding by Credit Access

	Users %	Nonusers %	total %
Holding Land (in feddan):			
Landless	51	28.9	38.9
1-5	12	23.7	18.3
6-10	14	14.9	14.4
> 10	23	32.5	28.1
Holding Livestock in TLU:			
Zero	12.2	16.2	14.4
0> &≤5	42.1	50.0	46.4
5> & ≤15	31.4	28.1	29.6
15> & ≤30	11.7	4.8	7.9
≥ 30	2.6	0.9	1.7

Source: computed from field survey data, 2010.

Regarding the off farm income sources, Table6 shows that more than 80 percent of the total respondents had no off farm income sources. No differences between formal credit users and non users in possessing off-farm income sources, with minor exception that credit user households owned transport assets more than non users. The importance of off-farm income source is due to its ability to provide alternatives for financing farming operations and could be used by farmers as a collateral requirement in borrowing from formal institutions.

Table6: Off- Farm Income Sources

Sources	Users %	Nonusers %	Total %
Shops in near market:			
Yes	16	15.8	15.9
No	84	84.5	84.1
Remittances :			
Yes	9	11.4	10.3
No	91	88.6	89.7
Paid wages :			
Yes	16	21.9	19.2
No	84	78.1	80.8
Transport assets :			
Yes	16.5	6.6	11.1
No	83.5	93.4	88.9

Source: Computed from field surrey data, 2010.

5.2. Credit Activities in the Study Area

In the study area, there are governmental and private banks, NGOs, and social credit institution providing credit sources. There are also a number of financial institutions outside these formal credit institutions like relatives, friends and private money lenders. The result on the credit sources is presented in Table7 which reveals that about 400 households out of 416 (total respondents) accessed credit from both formal and informal sources, with percentage of 96%. This implies that there was a higher demand for credit in the study area. Moreover, most of the respondents (53%) obtained

loans from informal credit sources, which may be an indicator of the inability of formal financial institutions. Regarding the contribution of NGOs in providing formal loans was very low, but their percentage share in financing female headed households was relatively higher. Among the informal credit institutions, the share of private money lenders was significantly large (60.8%). Interestingly, 62.3 percent of female headed households accessed formal credit institutions compared to 44.2 percent of male headed households, which may be due to relative success of antipoverty programs addressing gender issues.

Table7: Sources of Credit

Sources of credit	Female headed households %	Male headed households %	total %
Formal sources			
NGOs	6.7	39.5	13.3
Banks	93.3	60.5	86.7
Subtotal	44.2	62.3	47
Informal Sources			
Relatives & friends	41.8	17.4	39.2
Private moneylender	58.2	82.6	60.8
Sub total	55.8	37.7	53
Total	100	100	100

Source: Computed from Field surrey data, 2010.

Table8 shows the types of loans provided by formal financial institutions and the loan repayment. As shown from the table, about 61 percent of loans provided by formal institutions were in cash while 39 percent were in kind. The cash loan allow recipient the most flexibility to

define his own needs, but it does not guarantee achievement of policy objectives related to encouragement of agricultural production. In accordance with the repayment period, the results brought out that, most of the respondents (93.6%) received short run loans i.e. one year duration. Moreover, the repayment time for agricultural loans was immediately after crops are harvested. Borrowers in the group are expected to repay their loans at the same time. The repayment period may have negative impacts on the farmer willingness for formal credit.

Table8: Types of Formal Loans and Repayment Period

	%
Loan Type:	
Cash loan	61
Loans in kind	39
total	100
Loan Repayment Period:	
one year	93.6
2 years	3.7
More than 2 years	2.7
Total	100

Source: Computed from field survey data, 2010.

5.3. The Strengths and Weaknesses of Formal Financial Institutions According to Respondents Views.

This subsection describes the respondent's views and opinions, towards lending procedures of formal financial institutions. Generally, as presented in Table9, most difficulties that facing the smallholder farmer's access to the formal credit, according to the respondent views could be

divided into five categories. Almost 58% of the difficulties were related to guarantees, 14.2% due to financing cost, 9.9% related to procedures, 8.4% arise from both procedures and financing cost combined, while only 5.5% and 4.1% related to the repayment period and the distance respectively. With reference to the recent scheme of financing that adopted by the banking system in Sudan (Micro finance) no property collateral or group formation is asked, only guarantor is required to provide small loans. Although guarantor is convenient to small holders, the repeated failing of borrowers to repay loans may threaten the success of the program. With regard to other difficulties that may limit small farmers' access to formal credit, cost of financing and procedures followed guarantee respectively.

Table9: Respondents' View towards Difficulties Facing Access to Formal Credit.

The difficulty	%
Guarantee	58.0
Cost of financing	14.2
Repayment period	5.5
Procedures	9.9
The distance	4.1
Procedures and financing cost	8.4
Total	100

Source: Computed from Field survey data, 2010

With respect to the respondents' opinions on actions proposed to facilitate their access to formal credit, the followings, are apparent from Table10. The result shows that about 25.2percent of respondents thought that medium and long term credit should be promoted. As well, the

repayment period has to be extended when the borrower default, mainly during seasons characterized by disasters and drought. While 19% of the respondents suggested simplifying the procedures in order to enable rural small holders to access formal credit, 7.9% of the respondents called for bankers training to know how to deal with rural small holders. Roughly, 6.5% of the responding households consider awareness of potential borrowers as the first step to enable them access formal credit, whereas 11.6 Percent requested provision of loans on time and in a reasonable size. Nearly,6.7 Percent asked for providing financial services close to the places of working and residence. Only 2.4% and 4.1 % suggested reducing the financing cost and considering producers needs and capabilities respectively. Lastly, almost, 16.6% thought that all mentioned suggestions are important.

Table10: Respondents View on the Ways to Facilitate Rural Small Holder Household's Access to Formal Credit.

Suggestions	%
promoting medium & long term credit and extending repayment period where borrower default	25.2
Simplifying procedures	19.0
Provision of loans on time and in reasonable sizes	11.6
Awareness of target groups	6.5
Training of bankers	7.9
Considering producers needs and capabilities	4.1
Providing financial service close to places of working and residence	6.7
- Reducing financing cost	2.4
- All above	16.6
Total	100

Source: Computed from field survey data, 2010.

5.4. The Results of Logistic Model

In addition to the qualitative analysis, the study used econometric methods to quantify the factors that affect small holder farmer's access to formal credit. As outlined in the section of methodology, the study used logistic regression analysis, in which the dependent variable is discrete take the value of one if the farmer access formal credit and zero if not. The data description was presented in the previous methodology section. Accordingly, the results of estimation of econometric model using maximum likelihood technique are presented in Table11 below.

The results show that the model has good explanatory power with F test ratio 7.49. The value of LR is higher and significant at 1%, implying that there is no serious econometric problem in the model. In general, most of the estimated coefficients carry their expected signs except of (education, age and farm size).

The result also shows that the small farmer access to the formal credit institution is positively affected by the family size; experience of the household head in credit use; ownership of the physical assets such as, transport assets (cars, lories), tractor and participation of the household head in training / extension activities. On the other hand, the access to formal credit institutions is negatively influenced by the age of household; distance travelled by farmer toward the lending institution; farm size and number of household males less than seventeen years.

The results show that the age of household head is negatively and significantly affecting access to the formal credit institution. This result contradicts the prior expectations of the study which assumed that older household heads are characterized by experience and possessing of assets to fulfill a collateral requirement. However, this result is consistent with some research findings which justified this fact by stating that younger household head adopts new technology and therefore, having high production

capacities making him favored by formal lenders (Shah et al., 2008). Mohamed (2003) also reported similar evidence in the case of Tanzania

Table11: The Results of Logistic Regression Model (Access is dependent)

Explanatory variables	Coefficients	z-statistic	Prob
C	1.604**	2.204	0.027
Age	-0.02**	-1.998	0.045
Sex	-0.153	0.466	0.640
Edu	-0.102	-0.348	0.727
Mart	0.23	0.513	0.607
Orgn	0.08	0.190	0.848
Dep	-0.285**	-2.158	0.030
Expr	1.53***	5.249	0.000
Dist	-0.76***	-4.712	0.000
Remt	0.181	0.393	0.693
Wage	-0.237	0.682	0.494
Shop	-0.014	0.040	0.968
Trans	0.928**	1.969	0.048
Area	-0.027**	-2.673	-0.007
Tech	-0.277	-1.188	-0.234
Tract	1.37	2.236	0.025
Extn	1.06***	3.063	0.002
Gbrr	0.337	1.117	0.263
Fncost	0.16	O.395	0.692
Repay	-0.37	0.70	0.48
Proc	-0.50	1.08	0.279
Lvst	0.026	1.416	0.156
Fsize	0.176***	3.220	0.001
F	7.49	F. Prob	(0.0000)
LR	142.77	LR. Prob	(0.0000)

*Note: ***, ** and *, indicate significant at the 1, 5 and 10 percent level respectively*

The qualitative analysis concluded that male headed households have more access to formal credit services, whereas the Logit result shows that the variable of sex is insignificant. Accordingly, the low participation of female headed households in formal credit was attributed to difference in socio -economic characteristics and not to gender discrimination.

Surprisingly, the level of education was found insignificant and negatively affecting the access to formal credit. However, the negative coefficient was not expected for this variable, as it was believed that chances to access credit from formal institutions improve with increase in levels of education. Nevertheless, this result in our case study could be interpreted by two explanations. First, most of the farmers that accessed formal credit were illiterate reflecting their poverty, since education is positively correlated with income. Secondly, many formal credit institutions usually targeting poor and vulnerable small household farmers in rural areas with low education level.

On the other hand, the insignificance of education variable seems to be resulted from similarity of education wise distribution of formal credit users and non users, as shown in descriptive analysis.

The result reveals that the access of farmer to the formal credit is positively affected by his experience in formal credit use, implies that farmer aware with procedures and conditions of formal institution has more chance to access them. This evidence is in line with Hossain (1988), Zeller (1994) and Atieno (2001).

Furthermore, Table11 depicts that there was a negative relationship between the distance from lending institution and probability of accessing

formal credit. This implies that as the lending institution is very close to the place of residence and working, the higher would be the probability of accessing credit. This result is in line with finding of Ehiraika and Ahmed (1998) who found that the distance is one of the major constraints affecting access of farmer to the formal credit in Sudan.

Similar to the descriptive analysis, the empirical results indicates that the number of household males under 17 years had a negative relationship with the access to credit. This means, children widely participated in land cultivation; therefore as family had more male children, family labor source was enough to perform farming operations. Such result indicated to the existence of child labor phenomena in the study area.

Unexpectedly, the farm size (cultivated land size) was negatively related to participation in formal credit. Although this result contradicts the prior expectations, it is consistent with descriptive analysis results which showed that most of the formal credit users were landless or holding small size of land. As stated previously, very poor households have been targeted by antipoverty activities over the last three decades. Thus, landless and other very poor groups were aware on opportunities to alleviate poverty, particularly through formal credit.

As for the participation in training/extension activities, it was found to be an important variable positively influenced the access to formal credit. This may be partly due to policies adopted by some NGOs and government institutions that combine training/extension with a provision of the fund. Moreover, the participation in training/ extension activities increases awareness among beneficiaries, which enable them to improve their socio

economic status through available alternatives specifically credit services.

Finally, the study reveals that the farmer who possessing credit guaranties such as, car; lorry; tractor; had a high probability to access the formal financial institutions. This result confirms the most previous empirical studies such as, Mohieldin and Wright (1994) and Atieno (2001).

6. Concluding Remarks

6.1 Conclusion

This research is an attempt to analyze the factors that affecting small farmer's access to formal credit institutions. The study used a cross-sectional data gathered from five localities in Kassala state, and employed both qualitative and quantitative methods.

Interestingly, the study found that most of small farmers (96%) have attained credit either from formal or informal market. Not surprisingly, the percentages of farmers used formal and informal credit are 47% and 53% respectively. Therefore, the result confirms the main hypothesis of the study which is stated that the contribution of formal credit institutions to providing credit to the small farmers is less than those of informal credit. Moreover, this result supports most previous empirical studies of Mohieldin and Wright (1994), Elhiraika (1999) and Mohamed (2003).

Regarding the factor that affecting small farmer access to formal credit institutions, the results of both descriptive analysis and binary logistic regression model indicated that, those households whose head had experience in using formal credit; participated in training / extension activities; resident and worked at a place close to the formal credit

institution and subjected to antipoverty program even he was landless, had a high probability to access formal credit. In other words, those respondents with a better knowledge score actually use more formal credit. Moreover, the analysis shows that the possibility of access to formal credit was positively affected by ownership of physical assets, i.e. transport assets and tractor. In addition, households of large size had better chances to access formal credit, because it is expected that it has more earning members fulfilling a collateral requirements. In contrast, social collateral adopted by formal lenders recently, like group borrowing and guarantors were inconvenient from some farmers perceptive.

Furthermore, the study shows that the area of the study is characterized by an existence of child labor phenomenon and short loans duration and the repayment schedules don't correspond to the period of cash availability for the poor households.

6.2. Recommendations

Based on the above results, the study suggests some recommendations for the policy maker aiming at improving the access of small farmers to formal credit in Kassala state, the most important among which are follows:

1. Rural Formal credit services should be provided close to the potential borrowers, taking into account reducing the current cost.

2. Specialized institutions taking care of awareness, capacity building and development of rural household participation in the formal credit program, should be established.

3. The small loans Insurance institutions should be established, which

aim at protecting the microfinance schemes from default risk that associated with the agricultural loans.

4. The government should adopt policies that promoting medium and long run loans.

5. Participatory development of activity and income calendars has to be used to synchronize repayment schedule with credit need and income flow of different households.

6. Policies related to credit guaranteeing should be revised continuously to enable poor households to access formal credit, for example, by using land use right certificates.

7. Rural formal credit schemes have to make efforts to increase people awareness on their activities, and they should emphasize the complement of capacity building component and credit access.

8. Antipoverty framework adopted in rural areas should be widened to include recent developments in this field i.e. sustainable livelihood and pro-poor growth approaches.

References

1- Abu Sin and Abbakar (2007) " Kassala: the Bridging State in Eastern Sudan", in Ahmed and Manger (eds): Peace in Eastern Sudan: some Important Aspect for Consideration. University of Bergen, Norway.

2- Amemiya, T. (1981) "Qualitative Response Model: A Survey". Journal of Economic literature 19: 1483-1536.

3- Atieno, R. (2001) "Formal and Informal Institutions' Lending Policies and Access to Credit Small-scale Enterprises in Keya: An empirical Assessment". AERC Research Paper, NO (111), African Economic Research Consortium. Nairobi, Kenya.

4- Barham, B.L; Boucher, S and Carter M.R. (1996) "Credit Constraints, Credit Unions and Small-scale Producers in Guatemala" World Development, 24(5): 793-806

5- Bell, C. (1990) "Interactions Between Institutional and Informal Credit Agencies in Rural India" World Bank Economic Review, vol. 4, no. 3: 297–327.

6- Besley, T. (1994) "How Do Market Failures Justify Intervention in Rural Credit Markets?" The World Bank Research Observer, vol. 9, no. 1: 27–47.

7- Boucher, S. and Guirkinger (2008) "Understanding the Coexistence of Formal and Informal Credit Markets in Piura, Peru". World Development, 36 (8): 1436-1452.

8- Chung, I. (1995) "Market Choice and Effective Demand for Credit: The Roles of Borrower Transaction Costs and Rationing Constraints.

Journal of Economic Development, 20(2):23– 44.

9- Croppenstedt, A; Demeke, M and Meschi, M (2003) "Technology Adoption in the Presence of Constraints: The case of Fertilizer Demand in Ethiopia. Review of Development Economics, 7(1): 58-70

10- Elhiraika, A.B (1999) "An Econometric Analysis of Farm Household Participation in the Rural Credit Market in Sudan", Savings and Development Journal, No. (2): 193-213

11- Elhiraika, A.B. and Ahmed, S.A. (1998) "Agricultural Credit under Economic Liberalization and Islamization in Sudan", AERC Research Paper NO (79), African Economic Research Consortium. Nairobi, Kenya

12- Feder, G.Lau, L.J; Lin, J.Y and Luo, X (1990) "The Relationship Between Credit and Productivity in Chinese Agriculture: A Micro-economic Model of Disequilibria" American Journal of Agricultural Economics, Vol. 72 (5): 1151-1157.

13- Ghate, P. B. (1988). "Informal Credit Markets in Asian Developing Countries", Asian Development Review.

14- Ghate, P. B. (1992). "Interaction Between the Formal and Informal Financial Sectors: The Asian Experience", World Development, No. 1., XIV.

15- Gujarati, D, N. (2003) "Basic Econometrics". 4th edition. McGraw-Hill Book Company. New York.

16- Hoff, K. and Stiglitz, J. (1990) "Imperfect information and rural credit markets: Puzzles and Policy Perspectives". World Bank

Economic Review, 5:235–250.

17- Hossain, M. (1988). "Credit for the Alleviation of Rural Poverty: The Grameen Bank in Bangladesh". IFPRI Research Report No. 65.

18- Jappelli, T. (1990). Who is credit constrained in the U.S. economy? Quarterly Journal of Economics, 105(1):219–234.

19- Kevane, M. (1993). "Is the Sheil a shill? Informal Credit in Rural Sudan", The Journal of Developing Areas, vol 27: 515 and 534.

20- Kochar, A. (1992). "An Empirical Investigation of Rationing Constraints in Rural Credit Markets in India", Mimeo, Stanford University.

21- Manganhele, A. T (2010) "Improving Access to smallholder Farmers in Mozambique: Lessons from Government Efforts in Developing Countries of Africa and Asia", M.Sc. Thesis, University of Pretoria, South Africa.

22- Mohammed Elkhair.A and Eltayeb. M (2010) "The Survey of Training Needs Assessment and Examination of Research and Extension Outputs in Elgash Agricultural Scheme". Unpublished Report.

23- Mohieldin, S. and Wright, W. (2000) "Formal and Informal Credit Markets in Egypt" Economic Research Forum, Working Paper No, 9415.

24- Mushinski, D. (1999). "An Analysis of Loan Offer Functions of Banks and Credit Unions in Guatemala. Journal of Development Studies, 36(2):88–112.

25- Saeed, Q. Nabi,I. and Faruqee, R. (1996). "Rural Finance for Growth

and Poverty Alleviation". The World Bank, Policy Research Working Paper No. 1593. Washington DC, USA

26- Shah, Sayeda Rizwana and others (2008) "Determination of Credit Programme Participation and Socio-Economic Characteristics of Beneficiaries: Evidence from Sargodha" The Pakistan Development Review, 47(4), pp.947-959.

27- Stiglitz, J.E. and A. Weiss (1981) "Credit Rationing in Markets with Imperfect Information". American Economic Review, 71(3): 393 - 410.

28- UNDP, (2005) "Access not Availability: an analysis of food security and potentials in Red Sea and Kassala State, Eastern Sudan"

29- Yehuala, S. (2008) "Determinants of Smallholder Farmers Access to Formal Credit: The Case of Metema Woreda, North Gonder, Ethiopia". M.Sc. Thesis, Haramaya University, Ethiopia.

30- Zeller, M. (1994). "Determinants of Credit Rationing: A Study of Informal Lenders and Formal Credit Groups in Madagascar", World Development, Vol. 22 No. 12: 1895 – 1907.