

Determinants of Agricultural Credit Market Participation and Loan Repayment Performance in Finoteselam Town, Northwestern Ethiopia

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***Determinants of agricultural credit market participation and
loan repayment performance in Finoteselam town, northwestern
Ethiopia***

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Farming in Bakel Abater Kebele, Finoteselam town

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Declaration

I, the undersigned, declare that this thesis is an outcome of my own work and has not been submitted for the award of any degree in any university in Norway or abroad and all the materials used in the thesis are duly acknowledged.

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Dedication

This thesis is dedicated to my beloved first baby, Naomi Maru Shete, who is expected to come end of May 2007, and to my father, the late Shete Bekele, who passed away without looking at the fruit of his son.

Maru Shete Bekele

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Lists of Acronyms

ACSI	Amhara Credit and Saving Institution
ADU	Adult Equivalent Units
ANRS	Amhara National Regional State
GDP	Gross Domestic Product
Kcal	Killo Calorie
MFIs	Microfinance Institutions
NGOs	Non Governmental Organizations
OLS	Ordinary Least Square
SAP	Structural Adjustment Programs

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Abstract

Ethiopia is one of the world's poorest nations with a per capita income of about US\$157. About 44% of the population live below poverty line. Farmers often lack financial resources to make necessary investments in agriculture. The formal financial services provided by banks are less accessible to poor farmers. Although the informal moneylenders are accessible to the poor farmers, the interest rates charged are very high. As a result, providing rural financial services through microfinance institutions has become part of the poverty reduction strategies of most developing economies.

This research was undertaken at Finoteselam Town, Northwestern Ethiopia. It was done with the objectives of estimating the parameters that determine credit market participation and loan repayment performance. Primary data from 200 households were collected through a questionnaire survey during the summer period in 2006.

The bivariate probit and logit models were estimated using Stata software. Estimation results of the bivariate probit model indicated that variables such as higher family size, large landholding size, household's labour endowment, participation in off farm employment activities and incurring unforeseen expenses increased the probability of households to participate in credit markets. On the other hand, variables such as village dummy and borrowing from other sources decreased the probability of households to participate in the credit scheme. Estimation results of the logit model revealed that variables such as higher family size, incurring unforeseen expenses, and taking loans for the purpose of oxen fattening decreased the probability of repayment performances. On the other hand, variables such as participation in off farm employment activities and an increase in loan term increased the probability of loan repayment performances.

Microfinance institutions like ACSI should target those poor households that participate in off farm employment activities, and those with better labour endowment. They should also focus on supervision of clients so as to avoid diversion of loans to consumption ends due to unforeseen expenses, or higher dependency burden. Family planning, creating enabling conditions for insurance markets, and enhancing labour markets are areas of policy concerns

Key Words: Microfinance, Agricultural credit, Finoteselam town, Credit Market Participation, Loan Repayment

CHAPTER ONE: INTRODUCTION

1.1 Background

Rural financial markets are characterized by asymmetric information. Lenders do not have full information about the characteristics of borrowers. Because of such, and related reasons, financial markets in developing countries face three major problems: adverse selection, moral hazard and weak enforcement of contracts. Thus, formal financial institutions (for example banks) discriminate against the poor and women, who are small borrowers, for reasons of high transaction costs and weak enforcement capacity of contracts. This has led to search for alternative financial service delivery systems for the poor so as to help them get out of poverty.

The concept of providing subsidized credit service to the poor was started since 1950s by governments and donor agencies. However, such efforts were not successful because of low repayment performances, and the inability of the institutions to be financially viable after donors quit. Coupled with this, the concept of providing subsidized credit to the poor was challenged as most developing nations adopted Structural Adjustment Programs (SAP) that emphasise the shift in paradigm from state intervention to market-oriented economy (Johnson and Rogal 1997). Therefore, the popular alternative of launching Microfinance Institutions (MFIs) came into being (Ghatak and Guinnane 1999).

Outreach, financial sustainability, and impacts are taken to be the three important aspects of MFIs, as Zeller and Meyer (2002) called it 'the triangles of microfinance'. Outreach is conceptualised as the extent to which a microfinance institution succeeded in reaching its target clientele (the poor, women, the under-served segment of the

population, etc), and the degree to which it has met the clientele's demand for financial services (Yaron 1994 cited in Wolday 2002). Outreach is measured in terms of scale, depth and breadth. Scale refers to the number of people to whom MFIs provided services. Depth of outreach indicates the extent to which the MFIs target rural, women, and the illiterate segment of the population. Breadth of outreach indicates the type of services rendered to ranges of economic activities, and the geographical area that the MFIs covered. Outreach addresses the supply side of the credit market. The fact that MFIs make substantial efforts to reach the poor does not mean that the poor participate in the credit market. Therefore, households are said to participate in credit market if they borrow from a credit scheme when they want to do so. This makes participation in credit markets more of demand-side issue where borrowers are free to choose between the alternatives.

Financial sustainability, which is the capacity of financial institutions to generate enough profit to be economically viable, is another important aspect of MFIs that enables them satisfy the supply side of the credit market. It is measured in terms of the capacity of the institutions to generate enough revenue to cover overall costs of the institution (Zeller and Meyer 2002; Gulli 1998; and Ledgerwood 1999). Loan repayment is an important criterion in assessing a credit program that is financially sustainable (Schrieder and Manohar 1999). However, in developing countries where there is weak legal machinery to enforce contracts, and where there is little opportunity to take collateral before advancing loans, the probability of default is very high (Ray 1998). Low repayment performances jeopardize the financial sustainability of MFIs.

1.2 Statement of the problem

Ethiopia is administered under nine ethnic-based political regions. The *Amhara* national regional state is one of the regions, which is located in the northwestern part of the country. More than 85% of the population of region live in rural areas (CSA, 1999). About 76% of income of the population of region is generated from agriculture (MoFED 2002b). Nevertheless, agriculture in the region is generally characterized by low level of productivity due to the use of backward technologies. As a result, poverty is widespread in the region. In terms of geographical profile of poverty, the *Amhara* region stood next to the *Tigray* (MoFED 2002a). The study area, *Finoteselam* town, which is found in the *Amhara* regional state, is no different in terms of its low level of agricultural productivity and low level of wellbeing.

Poor farmers in the region in general and in *Finoteselam* town in particular often lack financial resources to make necessary investments in agriculture. The formal financial services provided by banks are less accessible to the poor farmers in rural areas, either because the poor in rural areas lack collateral or their loan size demands are small. It is, therefore, widely believed that improving financial services to the poor facilitates adoption of yield improving agricultural technologies, thereby enhancing agricultural productivity and thereby economic growth (MoFED 2002a).

In Ethiopia, MFIs have been taken as instruments to provide financial services to the poor who have little access to formal banks. The *Amhara* Credit and Saving Institution (ACSI) is a legally registered MFI by the National Bank of Ethiopia under the proclamation no. 40/1996. It caters the credit and saving demand of the

population of the *Amhara* region. ACSI has a prime objective of reaching productive but resource poor members of the society found in the region. Its major credit services are meant for financing agricultural activities so as to enable poor farmers invest in yield improving technologies (ACSI 2004).

However, limited participation of households in the agricultural credit market, low repayment performances of the borrowers and low outreach rates are the challenges that ACSI faces in *Finoteselam* town (BoRD 2002). Therefore, this research was carried out with the following objectives:

1. to identify the level of agricultural credit outreach in terms of scale, depth and breadth in *Finoteselam* town;
2. to analyze the factors that affect participation of households in the agricultural credit market; and
3. to identify the determinants of loan repayment performances of borrowers in the study area.

The study was generally initiated to answer the following research questions:

1. How many households get access to the agricultural credit services offered by ACSI in *Finoteselam* town?
2. For what ranges of agricultural activities does ACSI provide loans to borrowers in *Finoteselam* town?
3. What proportions of female headed households participate in ACSI's credit scheme in *Finoteselam* town?
4. What proportions of illiterate households participate in ACSI's credit scheme in *Finoteselam* town?

5. What are the characteristics of households that describe participation in a credit scheme?
6. What types of households timely repay their loan overdue, and what types of households default in *Finoteselam* town?
7. Which type of loan is more likely to be repaid; agricultural input loan or oxen fattening loan?

1.3 Organization of the thesis

The thesis is organized into six major chapters. The first chapter explains the emergence of MFIs, the problem statement, objectives and research questions of the study, and organization of the paper. The second chapter provides an overview of Ethiopian socioeconomic conditions, level of poverty and sample statistics of the study households. The third chapter dwells on review of theoretical and empirical literature in the field. The fourth chapter highlights models used in the thesis and presents the data and variables. The fifth chapter presents major findings of the study and the last chapter gives concluding remarks and limitations of the study and future research areas.

CHAPTER TWO: BACKGROUND INFORMATION

2.1 Ethiopian socioeconomic indicators

2.1.1 A glimpse at Ethiopian macroeconomic situation

Ethiopia has a total area of 1.1 million square kilometres. Estimate of Gross Domestic Product (GDP) for the fiscal year 2005 indicated a value of \$11.2 billions and a per capita income of \$157. It is the third most populous country in Africa inhabited by more than 70 million people where more than 80% of the population living in rural areas (World Bank 2006). In terms of sectoral contribution to the GDP, agriculture supplies 52.3% of the GDP while service sector and manufacturing sector contribute 36.5% and 11.2% of the GDP respectively (World Bank 2000).

Poverty, especially food poverty, is widespread in the country. An overall estimate of poverty in the country indicates that 44.2% of the population lives below poverty line. Poverty in Ethiopia is deeper in rural areas than urban areas. About 45% of rural population compared to 37% of urban population are estimated to live below the nationally defined poverty line (1075.03Birr¹) in 1999/2000 (Woldehanna 2004).

Different researchers estimated the level of rural poverty in Ethiopia from data generated through various household surveys. The studies estimated poverty lines by valuing a pre-defined basket of food items that represent the consumption behavior of the poor and that provide 2200Kcal, and adding to it the non-food share of the total consumption expenditure. Then, those who are below the poverty

¹ 1US\$=8.6Birr

line are considered as poor. A summary of results of their findings is presented in Table 2.1.

Table 2.1 Profile of poverty in Ethiopia

Sources	Year				
	1989	1994	1995/96	1997	1999/2000
Dercon and Krishnan (1998)	61%	50%	45%		
Dercon (2000)		39%		29%	
Bigsten <i>et al</i> (2003)		42%	38%	36%	
MEDaC (1999)			48%		
MoFED (2002a)			47%		45%
Turufat Bekele (1996)			49%		
Mekonnen <i>et al</i> (1998)			48%		
Woldehanna (2004)					44.2%

Source: Maru (2004)

The mean per capita consumption expenditure of Ethiopia for the year 1999/00 is estimated at 1056.71Birr with constant prices of 1995/96 (MoFED 2002a). Households' food expenditure share is higher for the study area (81%) and for the *Amhara* region (72%) compared to the statistics for Ethiopia (65%). This indicates the magnitude of food poverty in the area (Table 2.2). Accounts of wellbeing indicators are presented in Table 2.2. For ease of understanding, comparison is made for Ethiopia, for the *Amhara* region where the study area is geographically located in, and for *Finoteselam* town (sample statistics).

Table 2.2 Wellbeing indicators for Ethiopia, Amhara Region and Finoteselam town

Indicators	Ethiopia	Amhara Region	Sample Statistics
Average Total Consumption Expenditure (Birr)	1056.71	1087.74	986.26
Average Income per Adult Equivalent (Birr)	784.99	798.16	814.14
Calorie Intake per Adult Equivalent per day	2550.11	NA*	NA
Household Food Expenditure Share of Total Budget (%)	65	72	81
Source	MoFED (2002b)	MoFED (2002b)	Own Calculation

*NA means Data Not Available

2.1.2 Social and demographic characteristics in Ethiopia

Fertility rates are very high in Ethiopia in which a woman gives 7.7 births during her reproductive years (MEDaC 1999 as cited in Enquobahrie 2004). The average family size in Ethiopia is 4.9 persons. Poorer households have relatively larger family size averaged at 5.8 (MoFED 2002a). Average family size for the study area is 5.84, which is well above the national average. It is not uncommon for some households to have 12 household members. This makes the dependency burden of the study area to be 1.57, which is relatively higher than the regional average (0.89) and the national average (1.15). Dependency burden is the ratio of total number of household members in the working age group (15-64years) to the total number of household members in the dependent age group (less than 15 years and greater than 65 years old). Age is a factor frequently associated with demand for credit services. Mean age of heads of the household in the study area is about 53 years compared to 44 years for Ethiopia. Households headed by older individuals tend to be poorer than those headed by younger ones (MoFED 2002a).

Gender is another important factor influencing participation in microfinance programs. Female headedness is, however, not a dominant situation neither nationally nor in the study area. Female headed households account about 26% of the entire population, 29% of the *Amhara* region and 24% of the study area (Table 2.3).

As presented in Table 2.3, the literacy rate is generally low in Ethiopia. Out of the total household heads, only 29% are literate. Gender wise, females are less literate compared to their male counterparts. Only about 20% of women are literate to 40% men. Likewise, illiteracy is dominant in the study area. The literacy rate for the study area (22.5%) is marginally lower than the national average (29%) and the regional averages (23.3%).

Nevertheless, spending in education increased from 2.6% of GDP in 1992/93 to 3.5% in 1998/99 and increased to 5.5% of GDP in 2001/02 (MoFED 2002a). Such increased in spending is reflected in the increase in literacy rate from 27% in 1995 to 29 % in 2000. Gross Primary Enrolment Rate for the country, for instance, has increased from 35.5 % in 1995 to 58.9 % in 2000 (MoFED 2002b).

Table 2.3 Social and Demographic Indicators for Ethiopia, *Amhara* Region and *Finoteselam* Town

Indictors	Ethiopia	<i>Amhara</i> Region	Sample statistics
Average Household Size	4.9	4.5	5.84
Average Adult Equivalent Household Size	3.9	3.6	5.04
Dependency ratio	1.15	0.89	1.57
Mean Age of Household Head	44	46	53
Female Headed Households (%)	26	29	24
Literate Household Heads (%)	29	23.3	22.5
Source	MoFED (2002b)	MoFED (2002b)	Own Calculation

Agriculture is the dominant source of income for the country in general and for the study area in particular. As presented in Table 2.4, about 72.5% of income for the Ethiopian population is generated from agricultural activities. The proportion of income generated from agricultural activities increases to 88.45% in *Finote Selam* town, and to 75.8% in *Amhara* region where the study area is geographically located. The average income of households in *Finoteselam* town is about 1236.26 Birr per year.

Owing to the place of agriculture in household's livelihood, land and cattle ownership is a major indicator of wellbeing in the society. About 64% of the rural households own land less than one hectare. The average landholding size for Ethiopia is 1.026 hectare (FDRE 2002) and average land ownership for the study area is estimated at 0.8 hectare. On average, rural households in the country own 4.1 cattle compared to 3.6 cattle in *Amhara* region (MoFED (2002a), and 3.0 in *Finoteselam*. It is required to own a value of one ox or equivalent to get access for the micro-credit service provided by ACSI. This implies that, at least in principle,

those households that are relatively better off are excluded from the service. In addition to the credit worthiness of a borrower, households in the area also consider the wealth status of the borrower before they join a certain borrowers group. These couple of evidences justifies the importance of wealth indicators for agricultural credit market participation in *Finoteselam* town.

As presented in Table 2.4, off-farm employment is more important source of income next to agriculture for *Finoteselam* town (6.37%) compared to the country (2.86%) and that of the *Amhara* region (2.15%). But, generally speaking the contribution of the non-agricultural sector to households' livelihood is insignificant.

Due to the significance of agricultural activities for household livelihood in the study area, microfinance services provided by ACSI are geared towards financing such activities like oxen fattening and lending for input loans.

Table 2.4 Mean proportion of income for households in Ethiopia, *Amhara* Region and *Finoteselam* town by sources

Sources of income	Ethiopia	<i>Amhara</i> Region	Sample statistics
Agricultural Activities	72.53	75.8	88.45
Wage from off farm employment	2.86	2.15	6.37
Household enterprise other than Agriculture	5.36	3.8	1.02
Remittance	3.88	4.46	2.81
Saving Account Source	0.22	0.08	0.0
Housing Rent	3.53	3.16	0.0
Profit Share Source (Dividends)	0.014	0.021	0.0
Other Recipient Sources	11.6	10.5	1.35
Total	100.00	100.00	100.00
Source	MoFED (2002b)	MoFED (2002b)	Own Calculation

2.2 The microfinance industry in Ethiopia

Providing micro-credit services to the rural poor was initially started by Non-Governmental Organizations (NGOs) operating in Ethiopia, which have had a prime objective of poverty reduction. But, later on, the government of Ethiopia endorsed the need for establishing the microfinance industry in the country with clear objective of extending credit and saving services to the poor who have little access to formal financial services. Accordingly, it promulgated Proclamation No. 40/1996 that states the licensing and supervision of microfinance institutions as share companies in accordance with the Commercial Code of Ethiopia. Most of the MFIs in Ethiopia are owned by regional governments, local NGOs, associations and individuals of Ethiopian origin (Abinet 2006).

2.2.1 Regulatory Framework for the Microfinance Industry in Ethiopia

The Ethiopian government regulates the financial system of the country by developing laws and policies. The National Bank of Ethiopia (NBE) is given the power to license, supervise and regulate financial institutions such as banks, insurance companies, MFIs, and savings and credit cooperatives under Proclamation No. 83/1994. In addition, Proclamation No. 84/1994 broke the state monopoly on financial services, and allowed the establishment of private financial institutions.

Following these proclamations, different NGOs, government departments, cooperatives and others started mobilising savings, and providing micro credit services to the poor. However, their operations were more fragmented and often inconsistent (Wolday 2002). In 1996, the government of Ethiopia enacted Proclamation No. 40/1996 to

facilitate sound development of the microfinance industry in a more consistent way. According to this proclamation, any institution qualifies to provide financial services if the institution obtains license from the National Bank of Ethiopia, formed as a share company fully owned by Ethiopian nationals and possesses a minimum capital deposit of 200 000 Birr (\$22573.36) in a bank.

As a follow up of Proclamation No. 40/1996, the National Bank of Ethiopia issued directives that set a loan ceiling of 5 000 Birr (\$534.33), required loan duration of one year, and gave rights to MFIs to set their own lending interest rate ceilings. The regulatory framework also prohibited NGOs in Ethiopia from providing free or subsidised micro credit services at a very low interest rate to the poorest of the poor based on humanitarian criteria.

Towards the end of 2003, there were 22 MFIs that started providing financial services to the poor. However, the industry is generally constrained by lack of skilled human resources, lack adequate infrastructure to reach the rural poor, and lack of adequate finance. On the other hand, since provision of credit service was started by NGOs, borrowers have had the tendency to look at loans taken as charity money, which did not have to be paid back (Abinet 2006).

2.2.2 The *Amhara* credit and saving institution (ACSI)

The *Amhara* Credit and Saving Institution, which is one of the MFIs in Ethiopia, is registered by the National Bank of Ethiopia in April 1997. It was established with the aspiration 'to see a society in which people are free from the grips of abject poverty' through giving financial services to the productive but poor people. ACSI's

operational area is limited to the *Amhara* Region, which is the northwest and northeast part of the country (ACSI 2004). It is the only MFI that operates in the study area of this research paper.

ACSI provides four types of financial services: credit, saving, money transfer and pension fund management. To deal with the problem of information asymmetry, it adopted the 'Grameen Bank model' of group lending scheme where five to ten individual borrowers join together, and take loans through a joint liability arrangement. In addition, it has a Credit and Saving Committee in each operational area so as to screen those who are credit worthy from those who are not. Because of its limited capacity to cater all the credit demands of the region, ACSI has been providing credit only for income generation and related purposes like agricultural loans for its clients. With its saving product, it provides two types of services: voluntary saving and compulsory saving-exclusively for loan clients. To target its credit services to the poor, ACSI follows possession of 'one ox' as a local poverty line (ACSI 2004).

CHAPTER THREE: LITERATURE REVIEW

3.1 Theoretical literature

3.1.1 Theoretical models explaining household's consumption behaviour

Maintaining consumption at an acceptable level is the key challenge of households in developing countries. With the change in family size and composition, a households' inter-temporal consumption pattern varies over time. Morduch (1995) argued that households cope with the risk of a falling consumption level through consumption and/or income smoothing mechanisms, which is done through saving and credit (borrowing) strategies, if at all markets for it exists.

Sadoulet and de Janvry (1995) discussed inter-temporal household models ("Life Cycle Model" and Permanent Income Model") that explain households' consumption behaviour over time. The models assume that households have the opportunity to borrow money if they would like to do so.

In the "Life Cycle Model" households are described to have flow of income over their life span, and faced with the objective function of maximizing their utility level through choosing optimal consumption and saving levels. In the model, current consumption does not depend on current income, but rather on the households' life span characteristics (Sadoulet and de Janvry 1995).

On the other hand, the "Permanent Income Model" assumes that current consumption depends on expected consumption in the following period, while the later depends on households' life-cycle characteristics. The model also assumes

that households' are uncertain about future income levels, and thus try to maximize their utility from consumption over their life span. In any of these models, as argued by Zeller and Manohar (2002a), loans taken for consumption smoothing can also be considered as working capital loans because better consumption enhances the productivity of labour, which is the main source of income for households in developing countries.

3.1.2 The neoclassical farm household model

The neoclassical farm household model explains that there is a perfectly competitive market for all commodities that efficiently allocate resources among economic agents using the price mechanism. The model assumes that there is a complete set of markets for all commodities; there are no transaction costs; all economic agents have equal information (perfect information); economic agents are rational and hence choose course of action that gives maximum benefit or satisfaction; there is private property rights, etc (Tviland 1996). In conclusion, the model asserts that since price distortions lead to loss of efficiency and welfare, removing all market distortions brings efficient resource allocation by producers and consumers. However, the model fails to explain full picture of markets in developing countries where there are imperfections in the product, service and input markets. Imperfection in the credit market is one among many in developing countries.

3.1.3 Credit markets in developing countries

In the world of perfect information and zero transaction costs, resource allocation is efficiently achieved through market prices. Likewise, if credit markets are

competitive, interest rate reflects the best uses of the financial resource among alternative uses. Nevertheless, such a market situation is far from reality since many of the economies of developing countries are characterized by imperfect information, poor infrastructure development, high transaction costs, etc. According to Holden and Binswanger (1998), “market imperfections are deviations from a perfectly competitive market”. This includes a situation of missing markets, markets with price bands, markets that exist for certain seasons only following the seasonal nature of farming, interlinked markets, markets with imperfect competition, rationing of commodities, etc. However, such market imperfections become a market failure only when it results in losses of efficiency, and when it is possible to improve the inefficiency through policy interventions. In credit markets, most poor households in developing countries are rationed out of market, and hence the credit market is missing for them.

According to Stiglitz and Weiss (1981), when markets fail, credit rationing, market segmentations, interlinkages of markets and interest rate variations are the features that prevail in the markets. With market failures, high interest rates attract risky projects and low interest rates attract many borrowers compared to available financial resources. Credit rationing is the mechanism for clearing available resources leading to limit the access of some households in the credit market, or otherwise limit the amount of loan they should take compared to their actual demand for loans.

Participation of the poor in credit market in developing countries, a concept different from access to credit market, is affected by both demand- and supply-side

factors. These factors are not under the full control of both the lender and the borrower. Households are said to participate in the credit market if they borrow from a credit scheme. On the contrary, non-participants of credit market include those who have applied and not selected for various reasons, and those who do not apply at all. Thus, participation in credit market is more of demand side issue where borrowers are free to choose between the alternatives. However, access to credit market is more of a supply-side issue that is linked to the availability of the micro-credit program to the poor, and about the eligibility criteria of the borrowers.

3.1.4. Group lending and role of MFIs in reaching the poor

3.1.4.1 Role of group lending

MFIs have clear advantage of reaching the poor compared to formal financial institutions as they use the mechanism of group lending. They deal with the problem of adverse selection and moral hazard that came out of information asymmetry through group-lending schemes, though getting perfect information about borrowers is also a challenge among borrowers in the same group. In this case, group lending serves as social collateral where the risk of default is shared among borrowers. Peer monitoring in a group of borrowers transfers the risk of default from MFIs to members of the group. According to Stiglitz (1993), with small group size, the incentive for peer monitoring increases and the default rates decreases. On the contrary, with large group size, free-rider problems are quite common and default rates increases.

Economists and development practitioners argued that group lending scheme contributes to high repayment performances of MFIs through mitigating the problems of adverse selection, moral hazard, and enforcement of contracts (Stiglitz 1990; Ghatak and Guinnance 1999; Besley and Coate 1995). Therefore, group lending is argued to reduce screening costs of MFIs, and at the same time believed to increase access of the poor to financial services who have little physical resources to pledge for the purpose of collateral (El-noush 1999).

But, as argued by Wright (2000), because of the free-rider problem in a group lending scheme with joint liability, some borrowers may not be accepted as group members, which makes them involuntary non-participants.

In the study area, credit groups use the social system to enforce a member of a group who is capable, but would like to default. Mostly, members with strategic default will be threatened exclusion from social networks.

3.1.4.2 Role of MFIs in reaching the poor

In achieving the objective of poverty reduction, MFIs basically give three types of loans. These are consumption loans used for financing shortfalls in consumption, working capital loans, and fixed capital loans to help the poor start a new enterprise (Ray 1998).

In the literature of microfinance, two different perspectives have been advocated on the role of credit in poverty reduction. The first group who supports “the income generation approach” argue that credit should be provided mainly to the

'productive poor' to enable them to finance income-generating activities. They see credit as a means to escape from poverty and not as a consumption end by itself. A second group, who favours the "new minimalist approach", argues that it is possible to fight against poverty by giving credit services to any poor individual, including lending services for consumption needs as long as the borrower is able to repay the loan (Garson 1999 and Zeller and Manohar 1998). Coming to the situation in the study area, ACSI considers micro-credit as a means to poverty reduction. Hence, it provides credit services for poor farmers of the study area for agricultural activities, and do not provide at all loans for consumption smoothing purposes.

However, the poor face many constraints in getting access to services provided by MFIs as the poor are required to fulfil eligibility requirements (Zeller and Manohar 2002b).

The authors discussed the maximum amount of money that borrowers are allowed to take from MFIs, which is termed as a 'credit limit', so as to measure extent of access to credit services by households. A 'credit limit' is the maximum amount of money that a borrower is allowed to take from the MFIs. Supply-side constraints and certain regulatory frameworks designed at national levels force MFIs to set a 'credit limit'.

Although the regulatory framework for the operation of MFIs in Ethiopia allows to disburse a 'credit limit' of 5000Birr to borrowers, ACSI follows a policy of disbursing only 750 Birr to a poor client for the first time. Then, 100%, 75%, 50%

and 25% increase to the amount of the first loan for borrowers who move successfully to the second, third, fourth and fifth cycle respectively (ACSI 2004).

3. 1.5 Theoretical explanations of loan default

As discussed in the introductory part, loan repayment is an important variable that affects the financial sustainability of MFIs. Loan default is operationally defined in this paper as a situation in which borrowers fail to repay their loan outstanding when the loan matures. The Principal-Agent model can best describe the interaction between the lender (the Principal) and the borrower (the Agent) where they operate under incentive problem. Each of the actors would like to maximize their individual objective functions subject to the constraints imposed by each other. The Principal (lender) lacks information about the characteristics of the borrowers and faces a problem of enforcement, but is able to observe outcomes (repayment or default) in the end.

The problem of the Principal is as to what kind of incentive structure to put in place so as to get the agent to repay the loans taken. Therefore, if the agent accepts the credit contract offered by the principal and puts in a maximum effort, the outcome would be high repayment performance, unless the agent would like to adopt a course of strategic default. On the contrary, if the agent puts in a low effort after accepting the credit contract of the principal, there will be a likely outcome of loan default but the agent would still claim that the outcome is due to factors beyond his/her control. In the literature, this is what is called ex-post moral hazard (Rodriguez-Meza 2000).

In connection to this, the lender's risk hypothesis presents two broad categories of factors that determine loan repayment performances of borrowers. These are the willingness and ability of borrowers to pay back loans. Information asymmetries about borrowers' characteristics and activities, and inability to accept labour and outputs as collateral put formal financial institutions at a disadvantage relative to informal moneylenders. For instance, if the use of loans by clients is not monitored, loans taken for starting up new venture may be invested on risky project or loan taken for productive purposes (as working capital and fixed capital) may be used for consumption purposes, leading to inability of clients to repay (Ray 1998). This happens because loans are fungible.

In the case of project failure because of diverting loans to other risky projects, the relatively well off borrowers repay their loans. This is particularly true because formal moneylenders usually cater to the financial needs of the poor for productive purposes, and they give little focus to their consumption needs. On the other hand, the absence of legal systems makes difficult to enforce borrowers to repay loans leading to strategic default (Ray 1998).

The loan term is another important factor that affects a borrowers' ability to repay their loan. The closer the institutions' loan repayment period is to the client's needs, the higher the repayment rate. In other words, if the loan term is shorter than the business cycle, the default rate would be higher. In addition, diversification of the loan portfolio reduces risk and increases repayment rates (Ledgerwood 1999). Loan size is also another important variable that determines repayment performances of borrowers. The 'larger' the loan size, the higher the

expected default rates if the loan size is large enough so that the borrower does not need future credit from similar lending institutions, and if the legal machinery is weak to enforce such strategic defaults (Ray 1998).

On the other hand, unforeseen expenditure of borrowers on a wedding or medical treatment for prolonged illnesses or death of a family member, for example, could harm the repayment ability of borrowers, and increase rate of default (Devereux and Pares 1990; Ray 1998).

Among the theoretical explanations for loans default, diversion of loans meant for productive purposes to consumption end due to misfortune, and shorter loan term compared to the business cycle of the borrower's projects are anticipated to be important variables in the study area that harms the ability of borrowers to repay their loans overdue. On the other hand, larger group size in a borrowing group and larger loan size, which increases strategic default of borrowers, are anticipated to be important variables in *Finoteselam* town.

3.2 Empirical literature

3.2.1 Determinants of credit market participation

Chowdhury (2005) studied the factors that determine access of the poor in credit market in Bangladesh employing probit with sample selection model. His findings revealed that amount of land owned, household income status, eligibility of the household and female headedness of the household affected positively the access of the household in the credit market. Before running independent probit models, the researcher confirmed that participation in credit markets is decided independent

of the access to the credit scheme by applying the bivariate probit model. The result of his bivariate analysis indicated that ρ is not significantly different from zero. Therefore, Chowdhury's study has enormous contribution in terms of methodological significance to the present study in *Finoteselam* town. The variables he found significant are also anticipated to be important determinants of credit market participation in *Finoteselam* town.

Milanzi (2003) studied the determinants of households' credit market participation in Nigeria using the probit model. He found out that variables like age of household head squared, and distance to market significantly decreased the probability of the household to participate in a credit scheme. On the other hand, variables like business orientation of the household, age of the head and liquidity constraint of the household significantly increased the probability of the household to participate in a credit market. Milanzi (2003) assumed that access to and participation in credit markets is synonymous concepts implying that the parameters can be estimated through independent probit models. In terms of methodological contribution, Milanzi's study is considered to be less important to study of agricultural credit market participation in *Finoteselam* town since, in the later case, it is assumed that the two concepts are not synonymous, and hence interdependent.

The variable that captures business orientation of the household, which was found important determinant of credit market participation in Milanzi's study in Nigeria, is anticipated to be less important to the study in *Finoteselam* town since the lending service in the later case is purely for agricultural activities that has nothing

to do with starting up a new business, and for poor farmers who are subsistent in nature. Nevertheless, the variable that captures distance to market, which was included in Milanzi's study might have been important for the current study in credit market participation if it were included. The variables such as household's age and liquidity constraints of the household that were included in Milanzi's study are also anticipated to be important determinants of credit market participation in *Finoteselam* town.

Ene (2006) studied the factors that determine access to and participation in a credit market in *Tigray* region, northern Ethiopia using panel data collected from 650 households from 1998 to 2001. He estimated the variables through probit model, and found out that oxen ownership significantly increased the probability of households to participate in the credit market. However, variables such as female headedness and ownership of higher tropical livestock units significantly decreased the probability of households to participate in the credit market. Ene considered different variables for the access to credit market equation and for the participation in credit markets equation, and estimated them through independent probit models. But, did not actually look at whether participation in credit market is dependent on having access to the credit scheme. Therefore, it has less significance in terms of its methodological contribution, though it has contextual significance since it was done in Ethiopia. The variables such as oxen ownership (which is an eligibility criterion to get access to agricultural credit services in *Finoteselam* town), and sex of household head are anticipated to be important variables in the current study. Ownership of tropical livestock unit was used as a

wealth indicator in Ene's study (a variable which is captured by amount landholding in the present study) is also anticipated to be important variable.

Abebe (2002) carried out a probit estimate to identify the determinants of access to formal credit services in the Ethiopian highlands using household level data from 117 households. His findings suggested that age of household head, number of adults in the household and if the household (borrower) default for the past five years decreased the probability to participate in a credit scheme. On the other hand, however, variables such as amount of cultivated land and amount of owned land increased the probability of households to participate in the credit scheme. Since, the researcher considered access to and participation in credit schemes as similar concepts, he employed an independent probit model to estimate the parameters. Therefore, it has little methodological significance to the present study though it has significant contextual contribution. The variables he found important determinants of access to formal credit market are anticipated to be important for the current study. He also included a variable that captures repayment history of borrowers for the past five years, which is important in credit market participation study, but unfortunately not considered in the present study.

3.2.2 Determinants of loan repayment performance

Osuntogun and Oludimu (1982) also investigated the relationship between magnitudes of loan repayment with socioeconomic variables of borrowers in Nigeria through employing Pearson correlation analysis technique. Loan repayment was positively correlated to large landholding size, better education

level of borrowers, higher number of supervisions, higher amount of borrowed money, higher amount of savings, and non-farm income.

Okorie (1986) carried out Spearsman's product moment correlation analysis between loan repayment rate and a set of variables like nature of loan disbursement (whether the loan is provided in cash, in kind or both), time of loan delivery, number of supervisions, and profitability of the venture in Nigeria. The results indicated that those clients who received a loan in kind fully repaid their loans compared to those who received in cash. This could be due to the fact that loans are fungible when provided in cash. On the other hand, there were significant relationships between higher repayment rates and timely provisions of loans, higher frequency of supervision and profitability of the venture in which the client is engaged. Another study in Nigeria by Olomola (2001) who estimated the multinomial logit model showed that those borrowers that divert loans for other purposes are less likely to repay their overdue loans.

All of the above studies that were carried out in Nigeria by different researchers at different times employed different analytical methodologies to identify the factors that determine loan repayment performances. Though none of them have little methodological significance to the present study, its contribution in terms of pinpointing the important determinants of loan repayment variables can not be ignored. The variables such as landholding size, education level of borrowers, credit supervision, amount of borrowed money (captured by loan size in the present study), profitability of the venture (captured by type of enterprise), loan diversion (captured by unforeseen expenditure) and non-farm income (captured

by off-farm employment) are anticipated to be important variables in the loan repayment study at *Finoteselam* town. However, nature of loan disbursement is not considered in the present study since all the agricultural loans in *Finoteselam* town are given in cash. The studies by Osuntogun and Oludimu (1982) and Okorie (1986) included variables such as amount of savings and timely provisions of loans respectively as important determinants of loan repayment performances in Nigeria. These variables are missed in the present study though they might have been important.

Owusu-Boakye (2005) studied factors that determine loan repayment performances of 78 credit groups in 13 communities of Ghana. He estimated the logit model and found out that larger group size significantly increased the odds ratio for loan repayment. Likewise, weekly income of group members significantly increased the probability of loan repayment. However, age of members of the group decreased the probability of loan repayment at a 5% significance level. Owusu-Boakye's study has a methodological significance to the loan repayment study in *Finoteselam* town. The variables considered in his study such as group size and age of the borrowers are among the anticipated important variables in the present study. However, weekly income of households is not considered important as the clients in *Finoteselam* town derive their major livelihood from agriculture in which income is generated on a yearly basis. Instead, wealth indicator variable (farm size) is considered important in the context of the study area.

Godquin (2002) collected data from 1629 observations in Bangladesh to estimate the probability for a borrower to repay her/his loan at the due date. The researcher

estimated the parameters using the probit model. The size of the loan portfolio, education level and age of borrowers had a significant negative influence on repayment performance, whereas household size was found to have no effect on repayment performance. In another study, Martin (1997) collected data from 246 borrowers from Grameen Bank in Bangladesh. The author estimated the parameters using the logit model, and found out that group members with better schooling, and larger landholding size showed little delinquency problems. However, group members that have other source of credit and those who have been members in a group for longer periods showed delinquency problems.

Both of the studies carried out in Bangladesh have methodological contribution to the loan repayment study in *Finotselam* town. Except for the variable that captures the length of period (loan cycle) in which the client has been member in the credit scheme, all the variables included in the studies are also included in the present study and hence, anticipated to be important determinant of loan repayment performance in *Finoteselam* town. The loan cycle variable which is not included might have been also important if it were not missed.

Paxton and Thraen (2003) studied factors that determined loan repayment in group lending schemes in Burkina Faso employing mean-covariance structural model. Their findings suggested that 'matching problem' (deterioration of loan repayment performances as the loan cycle continues) as important destabilising effect on overall repayment performance. In addition, the 'domino effect' (a situation in which all members of the group default when one of the group member default), was found as important determinant of loan repayment in joint liability of

group credit. Although the presence of other debt was considered in their study, it was not found important in determining loan repayment unlike the result of Martin (1997) in Bangladesh. Though the study by Paxton and Thraen (2003) has little methodological significance, the variable that captures the presence of other debt, which is included in their study, is anticipated to be important determinant of loan repayment performances in *Finoteselam* town. The variables that capture the 'domino effect' and the loan cycle might have been important though not included in the present study.

Mehrteab (2005) studied determinants of loan repayment performances of 351 borrowers from two credit programs in Eritrea. He estimated the parameters using the logit model. His findings revealed that better knowledge about the behaviour of individual borrowers that form groups prior to group formation and the value that members of the group attach for future credit services positively predicted loan repayment of the borrowers. The study conducted by Mehrteab (2005) has methodological contributions to the loan repayment study in *Finoteselam* town.

Bhatt and Tang (2002) employed the logit model to identify the determinants of loan repayment in microfinance programs in US. The findings revealed that education level of borrowers increased the probability of loan repayment rates, whereas variables like income of borrowers and sex of borrowers are found to be insignificant. Although the context of the US is very much different from the situation of developing countries, in terms of methodological contribution the study could have importance.

In a nutshell, from previous studies done on credit market participation, variables like income, age, amount of landholding, sex of household head, eligibility criteria, head's age and its square are hypothesized to be important determinants of credit market participation in my study. Likewise, from the loan repayment studies previously done, variables like group size, income of borrowers, age of household head, credit supervision, enterprise type, landholding size, education level of household head, loan size, borrowing from other sources and sex of household heads are hypothesized to be important determinants of loan repayment performances in *Finotselem* town. However, this study also included variables which are not included in previous works reviewed above, but theoretically argued to be important. These variables are participation in off farm employment, household's labour endowment and group size.

CHAPTER FOUR: MODEL AND DATA

4.1 Description of the study area

Ethiopia is administratively classified into nine ethnic based regions. The *Amhara* National Regional State (ANRS) is one of the regions of the country with its regional town (Bahir Dar) located 565 Km northwest of the capital city of Ethiopia (Addis Ababa). It has an estimated area of 0.17 million square kilometres inhabited by a total population of 19.1 millions. About 88.5% of the population of the region live in rural areas. ANRS is further classified into 105 districts. The study area, *Finoteselam* town, is administered under *Jabi Tehnan* district, which is one of the districts of the region (Amhara 2007b). *Finoteselam* town is further administratively classified into five *kebeles*², namely *kebele 01*, *kebele 02*, *kebele 03*, *Bakel-Abater* and *Shembekuma-Yedefas*. It hosts a total of 7239 household population. The first three *kebeles* in *Finoteselam* town host households that drive their livelihood from sources other than agriculture. They have a total of 4666 household population. The remaining two *kebeles*, *Bakel-Abater* and *Shembekuma-Yedefas*, have their major livelihood source from agricultural activities, and host a total of 2573 household population (Annex 1).

4.2 Sampling techniques and data collection method

The two *kebeles*, *Bakel-Abater* and *Shembekuma-Yedefas*, that drive their major livelihood source from agricultural activities are purposefully selected for this study. This was done for the reason of getting adequate number of samples for the loan repayment study as most of the credit services given by ACSI are geared for

agricultural activities. The tax payers' list, further updated by key informants in each *kebeles*, was obtained for the purpose of using it as sampling frame. A total of 200 households were randomly selected from the two *kebeles*. A proportional sampling technique was employed to decide on the number of households to be surveyed from each *kebele*. Then, with the help of a structured questionnaire, pre-tested in the field, primary data were collected. Data on variables such as household characteristics, participation of households in a credit scheme, loan repayment performance of the borrower, participation in off farm employment activities, income, oxen ownership, amount of landholding size, type of enterprise, amount of loan taken, borrowing from other sources, loan term, etc were collected. In addition, secondary data such as average loan size disbursed to individual borrowers in a group, client eligibility criteria, interest rate, repayment performance of ACSI, and background information about the study area were also collected to augment the household survey.

4.3 Data analysis techniques

Both descriptive statistics and econometric models are used in the analysis of the data collected for the study. Descriptive statistics are used to identify the level of outreach in terms of scale, depth and breadth. The maximum likelihood estimation technique, as opposed to the Ordinary Least Square (OLS) technique, is widely used in estimating parameters that have discrete dependent variables. The maximum likelihood estimation technique estimates the probability of an event occurring. For such reasons, previous credit market participation and loan repayment performance studies adopt the use of the logit and probit models. In this study,

² *The lowest administrative unit in Ethiopia*

from the class of econometric models that use the maximum likelihood estimation technique, the bivariate probit model is used to estimate the parameters of credit market participation. In addition, the logit model is used to estimate the parameters of loan repayment performance. Stata version 9 is used to estimate the parameters.

4.3.1 Specification of econometric models

4.3.1.1 Credit market participation: The bivariate probit model

In developing countries, services offered by MFIs are targeted. They do follow some eligibility criteria to select those productive but resource poor borrowers that have the potential to engage in income generating activities, and have the potential to repay debts on due dates. It means that all poor people who have demand for credit service might not have the access to the service though the programme is physically available to them. For instance, ACSI follows the ownership of value of one ox or less as a local poverty line to select borrowers implying that those households that have a value of greater than one ox will not have the access to the service. On the other hand, participation in a credit market is affected by a host of factors given that households have access to the programme, which makes participation as a two-stage process.

Estimating the parameters of credit market participation assuming that access and participation are independent could give biased estimates. As argued by Heckman (1979 as cited in Chowdhury 2005), there is selection bias when self-selection by individuals is the situation. For this reason, the bivariate probit model, instead of

the probit model, is adopted for this study to estimate the parameters that affect participation in credit market.

The bivariate probit model as specified by Green (2003) is used to specify participation in the credit program:

$$Y_i = \beta_i X_i + \varepsilon_{1i} \quad (1),$$

where, Y_i is a binary variable for the probability of households participating in credit market with 1 if the household participates, and 0 if otherwise; X_i 's are a vector of exogenous variables affecting participation; β_i is a vector of parameters to be estimated; ε_{1i} is the error term; and $i = 1,2,3\dots n$, where n is the number of observations.

The access to a credit program can be modelled as:

$$y_i = x_i \alpha_i + \varepsilon_{2i} \quad (2),$$

where, y_i is binary variable representing the probability of households having access to credit services; x_i is vector of exogenous variables affecting access; α_i is vector of parameter to be estimated; ε_{2i} is the error term; and $i = 1, 2, 3\dots n$, where n is the number of observations.

In both equations (1) and (2), the error terms are normally distributed with mean zero and variance one, and the correlation between them is unity, i.e, $\text{Cov}(\varepsilon_{1i}, \varepsilon_{2i}) = \rho$ where $\rho \neq 0$ implies that the two equations are dependent, and the observations on the participation equation (Y_i) are observed only if $y_i = x_i \alpha_i + \varepsilon_{2i} > 0$. But, if $\rho = 0$, the equations are independent and the parameters

for credit market participation can be estimated through an independent probit model.

Equation (1) can be adapted to this study as:

$$\text{Part} = f \{ \text{VD, FS, AH, AH2, LE, SH, EH, OF, HS, UE, OB} \}$$

where the left-hand side of the above function represents participation of households (Part) in the agricultural credit market, VD represents location dummy, SH represents sex of households, AH represents age of household head, AH2 stands for age of household head squared, HS represents household size, LE represents household labour endowment, EH is education level of household head, FS is landholding size, OB is borrowing from other sources, OF is participation in off-farm employment, UE is unexpected expenditure.

Likewise, equation (2) can be adapted to this study as:

$$\text{Acces} = f \{ \text{VD, FS, AH, AH2, LE, SH, EH, OF, HS, UE, OB, EL} \}$$

where the left-hand side of equation represents access of households to the agricultural credit market (Acces), and EL is eligibility of the household. The other variables are similar to equation (1).

4.3.1.2 Loan repayment performances: The logit model

In this study, the logit model is used to estimate the determinants of loan repayment performances of borrowers. According to Gujerati (1995), the logit model follows the maximum likelihood estimation technique, and assumes that the

random variable follows the normal cumulative density function. It means that the likelihood of an event to occur happens when the utility exceeds a certain critical threshold level.

One major weakness of the logit model is that it could produce a wald statistic that is too small leading to accept the null hypothesis that the coefficients are equal to zero. This happens in cases when the absolute regression coefficient becomes large enough yielding a standard error which is too large. Whenever one has large value for the coefficients, it is not good to rely on the wald statistic for hypothesis testing; instead it would be better to build a model with and without that variable and base the hypothesis testing on the change in the log likelihood (Norusis 1994).

According to Norusis (1994), the logit model can be specified as:

$$\text{Log} \left\{ \text{Pr ob} \left(\frac{P_1}{P_0} \right) \right\} = \beta_0 + \beta_1 \chi_1 + \dots + \beta_n \chi_n \quad (3),$$

where $\text{Pr ob} \left(\frac{P_1}{P_0} \right)$ represents the probability of an event occurring. Further,

$$\text{Pr ob} \left(\frac{P_1}{P_0} \right) = e^{\beta_0 + \beta_1 \chi_1 + \dots + \beta_n \chi_n} \quad (4),$$

Equation (6) can be adapted to this study as a ratio of repayment to default and can be re-written as:

$$\text{Pr ob} \left(\frac{\text{Re pay}}{\text{Default}} \right) = e^{\beta_0 + \beta_1 (SH) + \beta_2 (AH) + \beta_3 (AH2) + \beta_4 (HS) + \beta_5 (EH) + \beta_6 (FS) + \beta_7 (OF) + \beta_8 (EN) + \beta_9 (LS) + \beta_{10} (LT) + \beta_{11} (UE) + \beta_{12} (GS) + \beta_{13} (SP) + \epsilon} \quad (5),$$

where, e is the natural logarithm, β_0 the coefficient for the constant, β_1 is the coefficient for sex of household head (SH), β_2 is the coefficient for age of household head (AH), β_3 is the coefficient for household age squared (AH²), β_4 is the coefficient for household size (HS), β_5 is the coefficient for education level of household head (EH), β_6 is the coefficient for landholding size (FS), β_7 is the coefficient for participation in off-farm employment (OF), β_8 is the coefficient for choice of enterprise (EN), β_9 is the coefficient for loan size (LS), β_{10} is the coefficient for loan term (LT), β_{11} is the coefficient for incurring unexpected expenditure (UE), β_{12} is the coefficient for borrowing group size (GS), β_{13} is the coefficient for credit supervision (SUP) and is the error term. The left-hand side of equation (5) represents the probability that a borrower repays her/his loan overdue.

4.4 Definition of variables

4.4.1 Variables for credit market participation and expected signs

In the Ethiopian context, the household decision to participate in credit market does not only depend on profitability as in the case for a 'pure' producer. It rather depends on household characteristics and production characteristics. Based on economic theory and previous empirical studies, the following variables are hypothesized to affect credit market participation.

Credit market participation (Part): a variable that represents participation of borrowers in credit market, which is the left-hand side of the participation equation. It is a dummy variable with a value of 1 if the household participates in the credit market, and 0, if otherwise.

Access (Acces): a variable that represents access of households to microfinance services, which is the left-hand side of the access equation. It takes on a value of 1 if the household has access to the services and 0, if otherwise.

Location dummy (VD): geographical differences are expected to affect households' participation in the credit market. The geographical differences factor is represented by village dummy. It takes on a value of 1 if households are located in *Shembekuma-Yedefas kebele* and 0 if they are located in *Bakel-Abater kebele*.

Wealth (FS): From the lender's point of view, due to market imperfection, richer households are safer clients. We would therefore expect that those households which have the capacity to repay under all circumstances would have unimpeded access to credit. An alternative hypothesis, however, could be that richer households can solve liquidity problems by selling part of their assets thereby having lower probability to participate in a credit market. Therefore, based on these theoretical arguments, indicators of wealth could affect credit market participation either positively or negatively. Farm size is used as indicator of wealth in this study.

Age of household head (AH): Age is directly related to household experience. As the age of the household increases, the household becomes more experienced about the merits and demerits of participation in the credit market. Therefore, age is expected to affect the probability to participate in the credit market positively.

Age of household head square (AH2): the effect of age on credit market participation is assumed to be non-linear. Hence, the square of age is included in the model to capture its effect at older ages of the household head. At older age of household heads, participation is expected to decrease as they are assumed to be more sceptical.

Labour endowment (LE): in a situation where there is asymmetry of information, lenders prefer to give loan for those households that fulfil collateral demands. Labour endowment of the household could serve as collateral, and therefore expected to increase the probability of households to participate in the credit market. To generate the variable, family members of households are adjusted for Adult Equivalent Units (AEU).

Sex of household head (SH): male headed households are expected to have better access to information and agricultural inputs than female headed households. Therefore, male headed households are expected to have higher probability to participate in the credit market than female headed ones.

Education of household head (EH): better educated household heads make better decision regarding input and technology use. Therefore, the household head's education is expected to increase the probability to participate in the credit market.

Eligibility (EL): represents eligibility of households. It takes on a value of 1 if a borrower is eligible to get the agricultural credit services offered by ACSI, and 0

if otherwise. The variable is expected to increase access of households to agricultural credit schemes.

4.4.2 Variables for loan repayment performances and expected signs

Based on economic theories, and previous research findings, the following variables are identified to influence loan repayment performances of borrowers in *Finoteselam* town.

Repayment performance (Repay): a variable that represents repayment performances of borrowers, which is the left-hand side of the econometric model. It is a dummy variable with a value of 1 if the borrower repays its loan at due date, and 0, if otherwise.

Loan term (LT): represents the time period (in months) during which the entire loan must be paid. The shorter the loan term, the higher the expected default rate.

Loan size (LS): represents amount of money borrowed by the client measured in domestic currency (Birr). The expectation is as the size of the loan increases, the default rate increases.

Supervision (SUP): represents whether the borrower received supervision by credit administrators. It takes on a value of 1 if the borrower received supervision, and 0 otherwise. Credit supervision is expected to decrease the default rate.

Landholding size (FS): represents amount of land owned measured in hectare. The expectation is as landholding size increase default rate decrease.

Education level of household head (EH): represents household head's level of education measured in years of schooling. The expectation is that household heads with higher years of schooling will have better repayment capacity.

Off farm employment (OF): dummy for participation in off-farm employment activities; 1 if the household participates in off farm employment activities, and 0 if otherwise. Households that participate in off-farm employment activities are expected to have better loan repayment capacity.

Household size (HS): represents dependency burden of households. Larger households would have higher dependency burden that decreases the capacity to save. Households with larger family size are expected to have lower loan repayment capacity.

Group size (GS): represents the number of borrowers in the group lending scheme. As the size of the group increases heterogeneity increases, and therefore default rate.

Type of enterprise (EN): dummy for the type of activity that the borrower takes loan taking a value of 1 if borrowers take agricultural inputs loan, and 0 if borrowers take oxen fattening loan.

Unforeseen expenditure (UE): dummy for any unforeseen expenditure such as illness, accident, funeral, etc incurred by the household after borrowing the loan. A value of 1 is ascribed if the household faced any unforeseen expenses, and 0 if otherwise. The expectation is as unforeseen expenses increase, the default rate also increase.

4.5 Descriptive statistics

As presented in Table 4.1, the location dummy variable that captures geographical variation in *Finoteselam* town is done based on proportional sampling technique. Accordingly, 49% and 51% of the households interviewed in the survey are from *Bakel-Abater* and *Shembekuma-Yedefas kebeles* respectively.

Table 4.1 Descriptive statistics of variables considered in the analysis

Variables	N	Mean	Std. Dev.	Min	Max
Repay	89	0.60	0.49	0	1
Part	200	0.44	0.50	0	1
VD	200	0.49	0.50	0	1
SH	200	0.76	0.43	0	1
AH	200	52.75	14.29	26	90
HS	200	5.84	2.20	1	12
LE	200	5.05	1.96	0.82	10.7
EH	200	2.19	3.34	0	12
FS	200	0.82	0.36	0.25	2.5
OB	200	0.645	0.48	0	1
OF	200	0.35	0.48	0	1
EN	89	0.51	0.50	0	1
LS	89	801.42	306.12	400	1500
LT	89	7.73	3.40	4	12
SUP	89	0.65	0.48	0	1
UE	200	0.35	0.48	0	1
GS	89	6.40	1.52	5	10
EL	200	0.71	0.45	0	1

Source: Own calculation

As presented in Table 4.1 above, household size in the area ranges from 1 to 12, making the average family size at 5.84 persons. Given the limited availability of farm land (mean landholding size is 0.8 hectares) that the entire family members depend on, it can be argued that household size is very high in the area. This resulted in having a very large dependency burden (157%), implying that one

active member of a household supports about 1.6 persons. In the study area, a single person who is in the active age group could support a maximum of 6 persons.

To have many children in developing countries is often associated with both cultural and economic reasons. Culturally, to have many children is considered as a prestige. On the other hand, taking contraceptives is often considered as a taboo. From an economic perspective, it can also be argued that such situations happen because of imperfect labour and insurance markets in developing countries. Hence, households try to have as many children as possible for the purposes of getting adequate labour for farming, and for social security reasons at old age. To have more kids could also reflect child mortality rate so as to increase the likelihood that one or more of the kids make it the adulthood. Coupled with this, lenders also usually prefer to extend loans for those households that have better labour supply. In the study area, the mean labour endowment per household is about 5 persons.

Again as presented in Table 4.1, the average level of education for household heads in *Finoteselam* town is found to be about three years of schooling. It is interesting to note that there are household heads that joined farming after they graduated from their high school program contrary to those heads that are illiterate.

Borrowers take loans for financing two types of enterprises. Out of those households that participated in the credit scheme, 51% of them borrowed for the purpose of buying agricultural inputs with the remaining one for oxen fattening. The amount of money borrowed by clients ranges from 400Birr to 1500Birr, with a

mean loan size value of 801.42 Birr. Reports from ACSI indicated that the average loan size that the MFI extended to borrowers is about 1,000Birr (ACSI 2004).

As discussed in chapter two, ACSI follows a group-lending approach. Results of the descriptive statistics in Table 4.1 revealed that the number of members in a borrowing group ranges from five to ten with a mean group size of about six. ACSI uses an end term repayment approach, as opposed to payment through instalment, to get back the loans advanced. The loan term for borrowers ranges from four months for shorter projects as in oxen fattening to one year for longer projects as in crop production. Therefore, borrowers are expected to repay the loans taken along with interest rate payments either at the end of four months or after twelve months depending on the types of agreements they signed in. According to the respondents, they are expected to pay 18% interest rate for the loans they borrowed. However, reports of ACSI indicated that interest rate charged for loans advanced to borrowers is 12% (ACSI 2004) revealing some inconsistencies in the official report.

Again as indicated in Table 4.1, out of those clients who borrowed from ACSI, 60% of them paid back the loans on the due dates while 40% of them defaulted. About 35% of the clients reported that they faced unforeseen expense either due to prolonged illness or death of a family member. The literature states that those borrowers who faced unforeseen expenses are likely to default. Reports of ACSI indicated that loan repayment performance of the institution is about 98% (ACSI 2004). ACSI adopted the group lending scheme with joint liability where the group members are responsible for repayment of the loans taken by a member who defaults. The situation in *Finoteselam* town confirms the power of group lending

though at the expense of other group members. This implies that ACSI got back its loan repaid from other group members although 40% of individual borrowers defaulted.

High drop out rate is a serious problem when many group members default in any credit scheme with joint liability arrangement. In this study, out of those who participated in the credit scheme (n=89), 30% of them expressed their disinterest to continue in the second cycle for reason of default within a group. Generally speaking, there is weak legal machinery to enforce repayment of those who defaulted. The informal enforcement mechanism through social pressure lacks power when borrowers failed to repay due to their inability to do it.

In addition to the use of joint liability mechanism for enforcing repayment by ACSI, credit administrators supervise clients to ensure that the loans taken are not diverted and used for purposes other than it was meant for. About 65% of the borrowers revealed that they get supervision from ACSI.

4.6 Extent of outreach in *Finoteselam* town

It is to be recalled that one of the aim of this study was to identify the level of agricultural credit outreach in terms of scale, depth and breadth. As presented in Table 4.1 above, 71% of households in the study area fulfils the eligibility criteria of ACSI (owning less than or equal to a value of an ox), and hence have access to the microfinance services offered by the MFI. However, only 44% of the surveyed households actually participated in the credit scheme indicating that to participate in a credit market is beyond to have access to the services. Out of those households

who are eligible to get the MFI services, 62% of them participated in the credit market.

The depth of outreach is disproportionately in favour of male headed households. Out of the total male-headed households, 47% of them participated in the credit market. Comparatively, out of the total female-headed households, 35% of them participate in the credit market. If we further consider credit market participation out of those household populations which have the access to the service, 65% and 51% of male and female headed households, respectively, participated in the credit market. Again depth of outreach is disproportionately in favour of those members of the society that are literate. Only 11.5% of the illiterate are covered in the outreach program of ACSI in *Finoteselam* town.

The breadth of outreach in terms of types of enterprises covered in credit program in the study area is limited to a few agricultural activities (oxen fattening and agricultural input loan). In reality, however, borrowers would like to get credit services for a variety of activities including starting up small petty trading activities. Even so, breadth of outreach in terms of geographical coverage invariably reached all the villages of the study area.

CHAPTER FIVE: ESTIMATION RESULTS AND DISCUSSIONS

It is to be recalled that the study was initiated to address the objectives of identifying the factors that determine participation of households in an agricultural credit market, and the factors that determine loan repayment performances of those borrowers who participated in the credit scheme.

5.1 Determinants of credit market participation in *Finoteselam* town

As presented in the previous chapter, the bivariate probit model was specified for estimating the parameters of credit market participation. Estimation results of are presented in Table 5.1 below. However, the parameters that determine access to agricultural credit scheme are beyond the theme of this study, and hence the coefficients will not be discussed here.

As presented in Table 5.1, the over performance of the model can be looked at the chi-square significance level. The result indicated that the overall model fit is significant at 1% level. In addition, most of the variables included in the model maintained the expected sign further justifying appropriate model specification.

Access to and participation in credit markets are terms that have been used interchangeably in credit studies. However, as discussed earlier, there is conceptual difference between the two terms. Most of the time, especially in developing countries, participation in credit markets is dependent on whether households have access to microfinance services provided by MFIs. This entails that estimation of the parameters that determine credit market participation can not simply done

through independent probit or logit models unless it is statistically confirmed that the covariance between the two dependent variables (access and participation) is zero.

As presented in Table 5.1, the bivariate probit model estimated indicated that the null hypothesis that rho is equal to zero ($H_0 : \rho = 0$) is rejected at 1% level of significance. This justifies the use of the bivariate probit model. In other words, participation of households in credit market in *Finoteselam* town is dependent on whether households have access to the microfinance services provided by ACSI.

Table 5.1: Estimation result of the bivariate probit model

	Coef.	Robust Std. Err	Z	P> Z	T-Ratio	Marginal Effect
Acces						
VD	-0.10	0.21	-0.47	0.63	-0.47	
SH	0.12	0.26	0.45	0.65	0.45	
AH	0.08	0.06	1.30	0.18	1.29	
AH2	-0.001	0.0006	-1.39	0.15	-1.38	
HS	-0.14	0.27	-0.50	0.62	-0.49	
LE	0.05	0.31	0.16	0.87	0.16	
EH	0.02	0.04	0.52	0.60	0.52	
FS	0.56	0.31	1.81	0.05**	1.81	
OB	-0.46	0.22	-2.05	0.03**	-2.05	
OF	1.21	0.28	4.37	0.00*	4.37	
UE	0.12	0.22	0.52	0.62	0.52	
EL	0.53	0.41	1.81	0.00*	1.29	
Const	-1.53	1.66	-0.92	0.35	-0.92	
Part						
VD	-0.41	0.21	-2.02	0.044**	-1.93	-0.16
SH	0.37	0.26	1.41	0.16	1.36	0.14
AH	0.06	0.06	0.89	0.37	0.85	0.022
AH2	-0.0005	0.001	-0.89	0.37	-0.83	-0.0002
HS	0.49	0.25	1.97	0.049**	1.77	0.20
LE	0.77	0.29	-2.63	0.009*	2.37	0.30
EH	-0.024	0.04	-0.61	0.54	-0.63	-0.009
FS	1.16	0.29	3.96	0.000*	3.43	0.46
OB	-0.48	0.22	-2.18	0.029**	-2.11	-0.19
OF	1.28	0.24	5.27	0.000*	5.45	0.48
Const	-2.10	1.68	-1.225	0.21	-1.24	
/athrho	14.45	917.92	0.02	0.98		
Rho	1	1.03e-09	-1	1		
Likelihood-ratio test of rho=0			Number of obs = 200			
Chi2(1) = 60.093			Log likelihood = -164.45814			
Prob > chi2 = 0.0000*			Wald chi2(22) = 104.58			
Significant at 1%			Prob > chi2 = 0.0000			
Significant at 5%			*Significant at 10%			

Source: Own calculation

The results presented in Table 5.1 indicated that variables such as village dummies, family size, labour endowment of households, landholding size, borrowing from other sources, participation of households in off farm activities, and incurring unexpected expenditure significantly determine whether the household decides to participate in credit market, given that the household has access to the microfinance service (i.e, if the household is eligible).

Geographical difference was expected to have impact on credit market participation. Its sign is found to be negative and statistically significant at 5% level. As the value for village dummy runs from zero (being located in *Bakel-Abater kebel*) to one (*Shembekuma-Yedefas kebel*), the elasticity of participation decreases by about 16%. This indicates that households who are located in *Bakel-Abater kebel* are more likely to participate in the credit market. *Bakel-Abater kebel* is relatively better suited for agricultural activities owing to the availability of small scale irrigation scheme compared to *Shembekuma-Yedefas kebel*. The fact that the credit service offered by ACSI is more of for agricultural activities justifies the difference in credit market participation between the two villages.

The variable used to capture the effect of dependency burden (i.e, household size) on credit market participation is found to be positive and statistically significant at 5% level. As household size increases, the probability to participate in a credit market also increases with a marginal effect of about 20%. The likely explanation is with higher dependency burden liquidity constraint increases that motivate the demand to participate in a credit scheme.

The variable that captures labour endowment of households is positive and significant at 1% level of significance. From the lender's point of view, those households endowed with better labour availability are less risky clients, which increase their probability of being selected by creditors. As labour endowment of households increases by one unit, the probability to participate in credit market increases by 30%. The result of labour endowment in is consistent with the findings of Abebe (2002) in Ethiopia.

The wealth variable (farm size) is also found to be positive and statistically significant at 1% level. As landholding size increases by one hectare, the probability to participate in the agricultural credit market increases by 46%. Relatively wealthy households are less risky and preferred by lenders, hence increases their chance to be selected in the credit scheme. The result for the landholding variable is consistent with the findings of Chowdhury (2005) in Bangladesh and Milanzi (2003) in Nigeria.

As presented in Table 5.1 above, the sign for the variable that captures borrowing from other sources (OB) is negative, and it is statistically significant at 5% level. As the value for the variable changes from zero to one, the probability to participate in the agricultural credit market decreases by 19%. The likely explanation could be those households that borrowed from other sources might have little liquidity constraint, which decreases their demand for additional credit from ACSI. The variable that indicates whether households face incidental liquidity constraint (unforeseen expenditure) was also found to be positive and statistically significant at 1%. As the dummy value for unforeseen expenses shifts from zero to one, the

probability that households participate in the agricultural credit market increases with a marginal value of 33%. Milanzi (2003) also conducted similar study in Nigeria employing the probit model, and found that the signs for liquidity constraint to be positive and significantly different from zero.

Again from Table 5.1, the sign for participation in off farm employment activities was also found to be positive and statistically different from zero at 1% level of significance. As the value of the variable shifts from zero to one, the probability to participate in the agricultural credit market increases by a value of 48%. Participation in off farm employment activities increases disposable income of households. Households with better disposable income are less risky clients from the lenders' point of view. Hence, increases the chance of being served in the credit market. Chowdhury (2005) also found similar result in Bangladesh in that as income status of borrowers increased the probability to participate in credit markets also increased.

Again from Table 5.1, the variables such as sex of household head, age of household head, and age of household squared are found to be insignificant, and maintained the expected sign. However, the variable for education level of household head is insignificant but with unexpected sign. Relatively educated household heads might have little liquidity constraint since they can engage in off-farm employment activities, and hence might have less demand for credit services.

5.2 Determinants of loan repayment performance in *Finoteselam* town

The other objective of the study was to identify the factors that affect loan repayment performances of borrower. Equation (5) was estimated to identify

important determinants of loan repayment performances. Estimation result of the logit model is presented on Table 5.2.

As presented in Table 5.2, the overall performance of the logit model can be observed on the Pseudo R². The result indicated that the model predicted 85% of the variation in the dependent variable (repay or default) with the value of Pseudo R²= 0.8542. In addition, a value for the log likelihood ratio (-8.6227564), which is close to zero indicates good model fit. As in the result of the bivariate probit model, most of the variables took the expected signs indicating appropriate model specification.

Table 5.2 Estimation result of the logit model

Repay	Coef.	Std. Err.	Z	P> Z 	T Ratio	Marginal Effect
SH	-1.46	3.51	-0.42	0.68	-0.42	-0.07
AH	-0.47	1.08	-0.44	0.66	-0.44	-1.59
AH2	0.005	0.01	0.47	0.639	0.46	0.99
HS	-1.56	0.95	-1.65	0.099***	-1.65	-0.52
EH	0.51	0.63	0.80	0.42	0.80	0.08
FS	3.29	4.96	0.66	0.51	0.66	0.18
OF	6.00	4.24	1.65	0.099***	1.65	0.27
EN	-9.80	5.87	-1.67	0.095***	-1.67	-0.31
LS	-.0003	0.01	-0.03	0.973	-0.33	-0.02
LT	1.76	0.86	2.05	0.040**	2.05	0.85
UE	-8.65	4.16	-2.08	0.038**	-2.08	-0.26
GS	0.10	0.59	0.15	0.881	0.15	0.04
SUP	0.085	0.92	0.09	0.92	0.09	0.65
Const	8.46	27.63	0.31	0.759	0.31	
Number of obs = 89			LR chi2(12) = 101.04			
Prob > chi2 = 0.0000*			Log likelihood = -8.6227564			
Pseudo R2 = 0.8542			*Significant at 1%			
***Significant at 10%			**Significant at 5%			

Source: Own calculation

Estimation results presented in Table 5.2 above revealed that the variables such as household size, participation of households in off-farm employment activities, household's choice of enterprise, loan term, and incurring unexpected expenses significantly determined repayment performances of borrowers, and all took the expected signs.

The sign for the variables that captures the effect of household size (HS) is found to be negative and the coefficient is statistically different from zero at 10% level of significance. In terms of its magnitude of influence on loan repayment performance of borrowers, as the size of the family increases by one person, the probability of default increases by 52%. With higher family size, dependency burden increases and there will be high chance of diverting loans taken for productive purposes to consumption ends, leading the borrowers to lack the capacity to repay loans on due dates. The study conducted by Osuntogun and Oludimu (1982) in Nigeria confirmed the negative impact of loan diversion on the repayment performance of borrowers. The result of Godquin (2002) in Bangladesh showed that family size has no effect on the loan repayment performance of borrower.

The sign for participation in off-farm employment activities is positive and the coefficients are significantly different from zero at 10% level. As the value for the variable shifts from zero to one, the probability that borrowers repay their overdue loans increases by 27%. Participation in off farm employment increases disposable income of borrowers, which gives a good opportunity to settle their debts. The positive impact of increased income on loan repayment performance of borrowers is consistent with the findings of Owusu-Boakye (2005) in Ghana, and Osuntogun

and Oludimu (1982) in Nigeria But the findings of Bhatt and Tang (2002) in the United States for the variable was insignificant.

Again as indicated in Table 5.2, choice of enterprise is another important variable found to affect loan repayment performances of borrowers. The variable has a negative sign and it statistically significant at 10% level. As the value for the variable shifts from zero (oxen fattening) to one (agricultural input loan), the probability that the borrowers repay their loan overdue decreases by 31%. In the study area, the loan term given for oxen fattening projects ranges from three to six months compared to a one year loan term for agricultural input loans. As presented in the theoretical part, loan term shorter than the business cycle of the enterprise compels borrowers to default.

Loan term is another variable found to determine loan repayment performances of borrowers. Its sign is positive and the coefficient is statistically different from zero at 5% level of significance. As the value for the variable increases by one month, the probability of repayment increases by 85%. Loan term that matches the business cycle of the projects was discussed in the literature to increase repayment performances of borrowers. Loan term is fixed in the study area to a maximum of one year for agricultural activities, but relatively lower period for oxen fattening projects. Since crop production activities require longer time from production to harvesting and then to marketing, the longer the loan term, the better opportunity that borrowers will get to settle their loan overdue.

Last but not least is the variable that captures whether households face unforeseen expenses due to prolonged illness or death of a family member. The sign for the variable is found to be negative and its coefficient is statistically different from zero at 5% level of significance. As the value for the variable shifts from zero to one, the probability to repay the loan overdue decreases by about 26%. Such unexpected expenses lead to diversion of loans against the purposes it was meant for, which forces the borrower to involuntary default.

The variables such as sex of household head, education level of household head, loan size, supervision, and landholding size took the expected signs though all are insignificant. However, the variables such as age of household head, age squared, and group size turned out to be insignificant with unexpected signs. An increase in size of group might not necessarily lead to higher default rate as long as the groups are homogenous enough implying that homogeneity of the group increases loan repayment performance. However, this study was done based on the data collected from individual borrowers within a group. Hence it would be erroneous to fully explain it that way unless it is supported with data.

CHAPTER SIX: CONCLUSIONS

6.1 Summary

The study was initiated to identify the level of outreach of ACSI in *Finoteselam* town, and to estimate the parameters that determine agricultural credit market participation and loan repayment performance in the area.

It was found out from the total household population in the study area, 71% of them fulfils the eligibility criterion of ACSI, and hence have access to the agricultural credit services. However, for various reasons the scale of outreach, i.e the extent of participation in the study area is 44%. In terms of depth of outreach, it seems that the credit services offered by ACSI are disproportionately in favour of male headed households and illiterate members of the society. Out of the male headed households, 47% of them have participated in the agricultural credit market compared to 35% of female headed household participants. This suggests the need for proportionately addressing female headed households, and the illiterate. Breadth of outreach of ACSI in terms of geographical coverage was encouraging in that the services are available in all of the villages of *Finoteselam* town.

Breadth of outreach in terms of activities is, however, limited to only for agricultural activities (for oxen fattening and agricultural input). Widening the breadth of outreach of ACSI's services to a range of activities other than agriculture would have significant contribution, as in for example, to start up new business in petty trading. ACSI is the only MFIs that provide credit and saving services to the population of the *Amhara* region in general and to the study area in particular.

There seems to be a kind of monopoly in which only one institution controls the agricultural credit market. As a result, there is little opportunity for the clients to choose among alternative sources of credit. Therefore, it would have a paramount importance for the poverty reduction endeavour of the country if government bodies put concerted efforts for other microfinance institutions to emerge and serve households of the area.

The study also answered the research question of what factors affect households' decision to participate in a credit scheme. The bivariate probit model confirmed that participation of households in the agricultural credit market is dependent on whether households are eligible for the credit schemes offered by the ACSI. This necessitates improving the conditions that increase access of households to the agricultural credit schemes, given that supply-side constraints are not stringent.

The signs for the variables included in the model such as higher family size, larger landholding size, higher household's labour endowment, and participation in off farm employment activities found to be positive and their respective coefficients are significantly different from zero either at 1%, 5%, or 10% level of significance. The variables increased participation in the agricultural credit market with a magnitude of 20%, 46%, 30% and 49% respectively. The sign for incurring unexpected expenses was negative, and its coefficient is significantly different from zero at 5% level. It decreases the magnitude of participation in the agricultural credit market by 33%.

As discussed in the background and problem statement of the study, the whole concept of providing micro-credit services is to address the financial need of the poor that have little or no resources to pledge as collateral. However, in reality as confirmed in this study, those households with larger landholding size, those with higher labour endowment and those that are participating in the off-farm employment market are participating in the agricultural credit market. This raises a policy concern to devise a mechanism to address the credit need of those poor households who are still rationed out from the market. At the same time, development agencies like ACSI that have the prime goal of addressing the demand of the poor need to revise their selection criteria.

The study also came up that 40% of the borrowers defaulted for various reasons. The results indicated that factors such as higher family size, incurring unexpected expenses, and borrowing for oxen fattening significantly took the expected negative signs, and their coefficients are significantly different from zero at 10%, 10% and 5% level of significance respectively. In terms of magnitude of influence, it decreased the probability of loan repayment performances of borrowers by about 52%, 31% and 26% respectively. On the other hand, the loan term and participation in off-farm employment activities took positive signs, and hence significantly increased loan repayment performances of borrowers by about 85% and 27% respectively.

It is interesting to note that higher family size and incurring unexpected expenses increased the demand for credit, and hence increased participation in the credit scheme. Concomitantly, these variables increased the probability that households

tend to be delinquent. Therefore, it would be logical for microfinance institutions like ACSI to look seriously at the project plans of those clients with the attribute of higher family size, and at the same time frequently supervise them to avoid the risk of loan diversion for other purposes. It also raises a policy concern that the average family size in the area is larger than the national average, which needs to be managed in the long run. Insurance markets in Ethiopia are almost non-existent, let alone in rural towns like *Finote Selam*. Had it been with the presence of such insurance markets, diversion of loans taken for productive purposes for unforeseen expenses wouldn't happen. This suggests the need for creating enabling conditions for insurance markets to start functioning.

Participation in off-farm employment activities increased both participation in credit markets and loan repayment performances in *Finoteselam* town. Targeting of those poor households that participate in off-farm employment activities would help microfinance institutions (like ACSI) to be financially sustainable. On the other hand, policymakers need to further improve the labour market in the area so that other non participant households would also join the off-farm employment scheme, if at all there is inefficiency in the market.

Last but not least, development agencies like ACSI should increase the loan term for the lending for oxen fattening projects in a way it matches the business cycle of the project.

6.2 Limitations

The results of this study should be accepted taking into consideration the limitations it passes through. Given the time and logistical constraints, the study considered only individual borrowers within a group. It does not consider group level data like the degree of homogeneity of the borrowing groups in terms of gender, experience, enterprise, social ties, etc. It considered only group size among the group level data.

The variation captured by the error terms in both the bivariate probit and in the logit models partly indicate that there were other variables not included in the models, but important to explain the variations in the dependent variables. There are variables that were included in previous research works and found to be important determinants of credit market participation and loan repayment performances, but not included in this study due to time and budget constraints. To mention, variables such as distance of the borrower to the nearest market place and repayment history of the borrower for the past periods might explain the remaining variation in the agricultural credit market participation. Likewise, amount of savings, timely provisions of loans, loan cycle, a variable that captures the 'domino effect', knowledge about the borrowers before group formation, and the value that members of the group attach for future credit services might explain the remaining variation in the loan repayment performance study.

On the other hand, loan repayment study is a matter of critical concern for those who default. Therefore, getting reliable data is a challenge. In such cases it would have been better if it were possible to do triangulation techniques so as to cross

check the validity of the data. For example, to use focus group discussion and key informants interview in addition to the household survey.

6.3 Areas of Future Research

The limitations and the findings of this study suggests to do future research by including variables that capture group level attributes like sex of borrowers, purpose of borrowing, experience of the individual borrower, social ties of borrowers, etc with in a group so as to come up with a workable recommendation for group lending scheme. In addition, the magnitude that is captured by the error terms in both of the models suggests including some more variables that are mentioned above, which are found to be important in previous research works but not included in this study.

From the study it was observed that those households that borrowed from other sources did not want to participate in the credit scheme offered by ACSI. It would be important to study these sources of credit and compare with the working of that of the MFI (ACSI).

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Annex 1: Summary of household population in Finoteselam town, 2006

<i>S.N</i>	<i>Name of Kebele</i>	<i>Estimated total population</i>	<i>Estimated household population</i>
1	<i>Kebele 01</i>	9522	1587
2	<i>Kebele 02</i>	12057	2009
3	<i>Kebele 03</i>	6396	1070
4	<i>Bakel-Abater</i>	8759	1250
5	<i>Shembekuma-Yedefas</i>	9263	1323
6	<i>Total</i>	45997	7239

Source: *Finoteselam* town administration, 2006