
**Agricultural credit repayment in Finoteselam town,
northwestern Ethiopia**

Maru Shete¹ and Roberto J. Garcia²

Abstract

This research was undertaken at Finoteselam town with the objective of estimating the parameters that determine agricultural credit repayment. Primary data from 200 households were collected through a questionnaire survey in 2006. 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 individual loan repayment within a group. On the other hand, variables such as participation in off farm employment activities and an increase in loan term increased the probability of individual loan repayment within a group lending scheme. It is therefore important that microfinance institutions *focus on supervision of clients so as to avoid diversion of loans to consumption ends. Family planning, creating enabling conditions for insurance markets, and enhancing labour markets are areas of policy concerns that could further improve loan repayment performances.*

Key words: Agricultural credit, determinants, microfinance, ACSI, northwestern Ethiopia, Finoteselam

¹ Address correspondence to: Maru Shete, P.O.Box 50321, Addis Ababa, Ethiopia. Email: marushet@yahoo.com

² Department of Economics and Resource Management, Norwegian University of Life Sciences, P.O.Box 5003, N-1432 Ås, Norway.

Introduction

Rural financial markets are characterized by asymmetric information. Lenders do not have full information about the characteristics of borrowers. As a result, financial markets in developing countries face three major problems: adverse selection, moral hazard and weak enforcement of contracts. Thus, formal financial institutions (banks) discriminate against the poor and women (Ray 1998), exhibit delayed disbursement (Sarap, 1990) and are often inadequate in supply (Chaudhuri and Gupta, 1996). This has led to the 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 emphasize a paradigm shift 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).

The performance of MFIs is evaluated based on their level of outreach, sustainability and impact. Outreach is conceptualized 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 (Conning, 1999). Hence, outreach addresses the supply side of the credit market. Financial sustainability, on the other hand, is the capacity of financial institutions to generate enough profit to be economically viable.

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; Ledgerwood, 1999; Gulli, 1998). Loan repayment is an important criterion in assessing if a credit program is financially sustainable (Schrieder and Manohar, 1999). In developing countries, however, the probability of default is very high due to weak legal machinery to enforce contracts, and due to little opportunity to take collateral before advancing loans (Ray, 1998).

Low repayment performances jeopardize the financial sustainability of MFIs. In Ethiopia, MFIs have been taken as instruments to facilitate adoption of yield improving agricultural technologies through providing financial services to the poor who have little access to formal banks. Empirical literature on loan repayment studies in the country is very thin. The findings of this article are significant in terms of adding knowledge and information about the determinants of loan repayment of individual borrowers within a group lending scheme. The piece of work was carried out with the objective of identifying the factors that affect agricultural loan repayment performances of individual clients in a group lending scheme of the *Amhara* Credit and Saving Institution (ACSI) in Finoteselam town.

The forthcoming parts of the article are structured into literature, methodology, result and discussion and conclusion. The literature part discusses models of household consumption behaviour, group lending schemes, roles of microfinance institutions and theories of loan default. The third section of the article gives description of the study area, the sampling procedures, data collection and analysis techniques followed in the study. The fourth section elaborates the major findings of the study, and finally concluding remarks are given in the last section.

Literature on credit markets and microfinance Household's consumption behavior

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

Group lending in MFIs

MFIs have clear advantage of reaching the poor compared to formal banks 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. The role of group lending in peer selection effect is recorded in the literature (Ghatak, 2000; Armendariz de Aghion and Gollier, 2000). However, getting perfect information about borrowers is a challenge among individual borrowers in the same group (Laffont and N'Guessan, 2000). Group lending generally 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. With small group size, the incentive for peer monitoring increases and the default rate decreases. On the contrary, with large group size, free-rider problems are quite common and default rates increase (Stiglitz, 1993; Armenda de Aghion, 1999).

Economists and development practitioners argued that a 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). Empirical findings in Bangladesh (Morduch, 1999; Matin, 1997), in Eritria (Hermes *et al.*, 2006) and in Madagascar (Zeller, 1998) also revealed that group lending improved repayment performance.

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; Karlan 2004; Hermes *et al.*, 2006).

But, because of the free-rider problem in a group lending scheme some borrowers may not be accepted as group members, which makes them involuntary non-participants (Wright, 2000). Lending groups use the social ties to enforce a member of a group who is capable, but interested in strategic default. Mostly, members with strategic default will be threatened with exclusion from future loans and imposed with social sanctions (see Hermes *et al.*, 2006; Armendariz de Aghion, 1999; Conning, 1999; Zeller, 1998).

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” argues that credit should be provided mainly to the ‘productive poor’ to enable them finance income-generating activities. They see credit as a means to escape from poverty and not as a consumption end by itself. The 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; Zeller and Manohar, 1998).

Coming to the situation in the study area, the Amhara Credit and saving Institution(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 5000Birr³ to borrowers, ACSI follows a policy of disbursing a maximum amount of 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).

Theories of loan default

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 an incentive problem. Each of the actors would like to maximize their individual objective functions subject to the constraints imposed by each other. The principal lacks information about the characteristics of the agent 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 repay the loans taken (see McIntosh and Wydick, 2005 about dynamic incentive structure).

³ One US dollar was equivalent to 8.62 Birr during the survey period.

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. In connection with 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 (Ray, 1998).

Information asymmetries about borrowers' characteristics, activities and inability to accept labour and outputs as collateral put formal financial institutions at a disadvantageous position relative to informal moneylenders. For instance, if the use of loans by clients is not monitored, loans taken for starting up new ventures may be invested on risky projects 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 it difficult to enforce borrowers to repay loans leading to strategic default (Bolton and Sharfstein, 1990; Ray, 1998).

The loan term is another important factor that affects borrowers' ability to repay their loan. The closer the institution's loan repayment period 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 of loan default, diversion of loans meant for productive purposes to consumption end due to misfortune, and shorter loan terms 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, group size in a borrowing group and loan size, which increases strategic default of borrowers, are also expected to be important variables in Finoteselam town.

Methodology

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). The region 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 *woredas*. The study area, Finoteselam town, is administered under Jabi Tehnan district, which is one of the *woredas* of the region (Amhara 2007).

Finoteselam town is further administratively classified into five *kebeles*⁴, namely *kebele 01*, *kebele 02*, *kebele 03*, Bakel-Abater

⁴ The lowest administrative unit in Ethiopia

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 4665 households 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 (see Table 1).

Table 1 Household Population in Finoteselam town, 2006

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

Source: FTA (2006)

Sampling and Data

The study followed a multi-stage sampling technique. In the first stage, non-probabilistic sampling technique was employed to select out of the five *kebeles*. Bakel-Abater and Shembekuma-Yedefas *kebeles* that derive their major livelihood 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 towards agricultural activities.

In the second stage, probabilistic sampling technique was employed to select sample households from the two target *kebeles*. The tax payer's list, further updated by key informants

in each *kebele*, was obtained for the purpose of using it as sampling frame.

A total of 200 households were randomly selected from the two *kebeles*. Proportional sampling technique (a sample size proportional to the size each *kebele*) was employed to decide the number of households to be surveyed from each *kebele*. A structured questionnaire, pre-tested in the field, was conducted to collect primary data. Data on variables such as household characteristics, participation of households in a credit scheme, loan repayment performance of individual borrower in a group, participation in off-farm employment activities, 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 collected to augment the household survey.

Data analysis techniques

Both descriptive statistics and econometric model are used in this study. 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 loan repayment performance studies adopted the use of the logit or probit model. In this study, from the class of econometric models that use the maximum likelihood estimation technique, the logit model is used to estimate the parameters of loan repayment performance. Stata is used to estimate the parameters.

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. According to Bierens (2008), the logit model can be specified as:

Let $(Y_1, X_1), \dots, (Y_n, X_n)$ be a random sample from the logit distribution:

$$\Pr[Y_j = 1|X_j] = \frac{1}{1 + \exp(-\alpha_0 - \beta_0 X_j)} \quad (1)$$

$$\begin{aligned} \Pr[Y_j = 0|X_j] &= 1 - \Pr[Y_j = 1|X_j] \\ &= \frac{\exp(-\alpha_0 - \beta_0 X_j)}{1 + \exp(-\alpha_0 - \beta_0 X_j)} \end{aligned} \quad (2)$$

Where the X_j 's are explanatory variables and α_0 and β_0 are unknown parameters to be estimated from the model.

The model is called logit because:

$$\Pr[Y_j = 1|X_j] = F(\alpha_0 + \beta_0 X_j) \quad (3)$$

Where $F(x) = \frac{1}{1 + \exp(-x)}$ is the distribution function for the logit model (4)

The conditional probability function involved in the logit model is thus,

$$\begin{aligned} f(y|X_j, \alpha_0, \beta_0) &= \Pr[Y_j = y|X_j] \\ &= F(\alpha_0 + \beta_0 X_j)^y (1 - F(\alpha_0 + \beta_0 X_j))^{1-y} \end{aligned}$$

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$$= \begin{cases} F(\alpha_0 + \beta_0 X_j) & \text{if } y = 1 \\ 1 - F(\alpha_0 + \beta_0 X_j) & \text{if } y = 0 \end{cases}$$

(5)

$$= \begin{cases} 1 - F(\alpha_0 + \beta_0 X_j) & \text{if } y = 0 \\ F(\alpha_0 + \beta_0 X_j) & \text{if } y = 1 \end{cases}$$

(6)

Equation (5) happens when individual borrowers repay their loan overdue, otherwise equation (6) will be observed (default).

The log-likelihood function for the logit model is presented as:

$$\begin{aligned} \ln(Ln(\alpha, \beta)) &= \sum_{j=1}^n \ln(f(Y_j | X_j, \alpha, \beta)) \\ &= \sum_{j=1}^n Y_j \ln(F(\alpha + \beta X_j)) + \sum_{j=1}^n (1 - Y_j) \ln(1 - F(\alpha + \beta X_j)) \\ &= \sum_{j=1}^n (1 - Y_j) (\alpha + \beta X_j) - \sum_{j=1}^n \ln(1 + \exp(-\alpha - \beta X_j)) \end{aligned}$$

(7)

This motivates to estimate α_0 and β_0 by maximizing $\ln(Ln(\alpha, \beta))$ to α and β as:

$$\ln\left(Ln\left(\hat{\alpha}, \hat{\beta}\right)\right) = \max_{\alpha, \beta} \ln(Ln(\alpha, \beta)).$$

(8)

Equation (8) will be estimated through Stata econometric software to predict values for $\hat{\alpha}$ and $\hat{\beta}$.

In this study the explanatory variables (X_j) are sex of household head (SH), age of household head (AH), age squared for household head (AH2), household size (HS), education level of household head (EH), landholding size (FS), participation in off-

farm employment (OF), choice of enterprise (EN), loan size (LS), loan term (LT), incurring unexpected expenditure (UE),

borrowing group size (GS), and credit supervision (SUP). The left-hand side of logit model represents the probability that a borrower repays her/his loan overdue. The variables entered into the logit model along with their expected sign of influence on the dependent variable are presented on Table 2.

Result and discussion

Descriptive statistics

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 has resulted in having a very large dependency burden (157%), implying that one active member of a household supports about two persons. In the study area, a single person who is in the active age group could support a maximum of 6 persons. The mean year of schooling for the household head in Finoteselam town is about three years. 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 while 49% of them borrowed for oxen fattening. The amount of money borrowed by clients ranges from 400 to 1500 Birr. The mean loan size value is 801.42 Birr.

ACSI follows a group-lending approach. Results of the descriptive statistics in Table 3 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 installment. 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. According to the respondents, they are expected to pay 18% interest rate for the loans they borrowed.

Again as indicated in Table 3, 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 expenses 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.

The challenge of such large proportion of individual default rates within a group lending scheme is that members will not continue to second and third cycles and dropout rates will be higher. This hampers MFIs from achieving the objective of reducing poverty levels of those active but resource poor individuals who discontinue from the scheme due to joint liability problem. High dropout 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 sanction lacks power when borrowers failed to repay due to their inability to do it.

In addition to the use of joint liability mechanisms 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.

Econometric model estimation

The overall performance of the logit model can be observed on the Pseudo R^2 . The result indicated that the model predicted 85% of the variation in the dependent variable (repay or default) with the value of Pseudo $R^2 = 0.8542$. In addition, a value for the log likelihood ratio (-8.6227564), which is close to zero indicates good model fit. Most of the variables took the expected signs indicating appropriate model specification. 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 individual borrowers within a group, 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 $p < 0.1$. In terms of its magnitude, 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 the chance of diverting loans taken for productive purposes to consumption ends will increase, leading the borrowers to lack the capacity to repay loans on due dates. The study conducted by Osuntogun and Oludimu (1982) in Nigeria employing Pearson correlation analysis technique confirmed the negative impact of loan diversion on the repayment performance of borrowers. The result of Godquin (2002) in Bangladesh using the probit model 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 $p < 0.1$. As the value for the variable shifts from zero to one, the repayment probability of borrowers increases by 27%. Participation in off farm employment activities 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) who estimated the logit model in Ghana, and with that of Osuntogun and Oludimu (1982) in Nigeria. But, Bhatt and Tang (2002) who estimated the logit model in the United States found insignificant result for the variable.

Again as indicated in the result table, choice of enterprise is another important variable that affected loan repayment performances of individual borrowers. The variable has a negative sign and it is statistically significant at $p < 0.1$. As the value for the variable shifts from zero (agricultural input loan) to one (oxen fattening), the repayment probability of borrowers 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. The loan term for oxen-fattening is shorter and borrowers are unable to repay their debts. 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 $p < 0.05$. 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 is mentioned 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 $p < 0.05$. As the value for the variable shifts from zero to one, the repayment probability of borrowers 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, landholding size, age of household head, age squared, and group size turned out insignificant. An increase in the size of group might not necessarily lead to higher default rate as long as the groups are homogenous enough to put social sanctions and to ease peer monitoring. 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.

Conclusion

The study 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, took the expected negative signs, and their coefficients are significantly different from zero at $p < 0.1$, $p < 0.1$ and $p < 0,05$ 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 larger family size and incurring unexpected expenses increased the demand for credit. 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 larger family size. 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 Finoteselam. Had it been with the presence of such insurance markets, diversion of loans taken for productive purposes to unforeseen expenses wouldn't happen. This suggests the need for creating enabling conditions for insurance markets to start functioning. It goes without saying that participation in off-farm activities increased repayment performances of individual borrowers further suggesting to create a level playing field for the labour market in the study area. Lastly, the authors suggest that the impact of group homogeneity and dynamics in a group lending scheme is an important area that needs to be studied in future loan repayment studies.

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Appendixes

Table 2: Variables and their expected signs

Variables	Description	Measurement	Expected sign
SH	Sex of household head	1 if male and 0 if female	Positive
AH	Age of household head	Years	Positive
AH2	Age of head squared	Years	Negative
HS	Household size	Adult equivalent	Negative
EH	Education of household head	Years of schooling	Positive
FS	Farm size	Hectare	Positive
OF	Off farm employment	1 if the household engaged in off farm employment activities and 0, if otherwise	Positive
EN	Choice of enterprise	1 if loan is taken for oxen fattening, and 0 if loan is taken for crop production	Noprior expectation
LS	Loan size	Ethiopian Birr (ETB)	Negative
LT	Loan term	Months	Positive
UE	Unforeseen expenses	1 if the borrower faced with unforeseen expenses, and 0 if otherwise	Negative
GS	Group size	Numbers	Negative
SUP	Supervision of borrowers	1 if the borrower is supervised, and 0 if otherwise	Positive

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Table 3 Descriptive Statistics of Variables Considered in the Analysis

Variables	N	Mean	Std. Dev.	Min	Max
Repay	89	0.60	0.49	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
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

