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DETERMINANTS OF MICROENTERPRISE LOAN REPAYMENT AND EFFICACY OF SCREENING MECHANISM IN URBAN ETHIOPIA: The Case of Bahir Dar and Awasa Towns

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Mengistu Bediye

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By
Mengistu Bediye Jima
Faculty of Business and Economics

Approval by Board of Examiners:

Dr. Andre Croppenstedt
Advisor

Andre Croppenstedt
Signature

Dr. G. Chipande
External Examiner

Signature

Professor Teshome Mulat
Internal Examiner

Signature

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The Case of Bahir Dar and Awasa Towns

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ABSTRACT

The objective of this study is to investigate the determinants of microenterprise loan repayment and efficacy of screening (lending) techniques in Ethiopia using data collected from two towns, Awasa and Bahir Dar, which are among the many towns in the country hosting borrowers that benefitted from a credit program initiated by the Government of Ethiopia and the International Development Association in early 1989. According to the findings, number of workers employed, age and weekly repayment period are found to be positively related to repaying loan in full in a loan period of one year in Awasa. Loan diversion has a negative relation. The predicted probability of full loan repayment is 53% for the town. Bahir Dar gives evidence that expectation of getting another loan and number of workers employed are positively related to full loan repayment while loan diversion and availability of other sources of credit are negatively related. The predicted probability of full loan repayment is 78 %. As regards efficacy of screening techniques, there is the problem of separating creditworthy borrowers from non-creditworthy borrowers in both towns. There are problems of incorrect rationing of creditworthy borrowers, and incorrect financing of non-creditworthy borrowers. There is no gainsaying that there are some good techniques of correctly identifying creditworthy and non-creditworthy borrowers in both towns. However, the problems seem more serious in the case of Awasa than in the case of Bahir Dar.

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TABLE OF CONTENTS

Page

Page

LIST OF TABLES

EXECUTIVE SUMMARY

MICROENTERPRISE FINANCING

Microenterprise financing was nationally started in Ethiopia following the signing of a credit agreement (known as Market Towns Development Project (MTDP) between the International Development Association and the Government of Ethiopia (and also with the Development Bank of Ethiopia - DBE) in March, 1989 in a bid to improve the condition of the urban poor in the country by providing a group-based credit for the purpose of income generation and employment creation. This credit scheme draws much on the experiences of the Grameen Bank, Bangladesh which is popular for its audacious attempts to institutionalize group-based credit in a bid to throw away the shackles of conventional banking system that usually upholds a collateral-backed credit.

Apart from the Grameen Bank, numerous group-based credit programs have come into existence since a few decades ago following the understanding (by many development policy makers) that excessive allocation of resources to large-scale projects, and dependence on macropolicies as the sole tools of poverty alleviation failed to work out in the expected direction. Though hailed as an important tool of poverty alleviation, the credit programs did not equally turn out successful everywhere they were implemented. Some failed because of excessive dependence on subsidies and donor funds without concern for financial sustainability. This may imply that credit programs involving loan disbursements not accompanied by loan collections are doomed to fail unless their major objective is charity that is supported by donor funds.

In this study focus is directed to a credit program that requires financial sustainability through giving due attention to efficient lending strategy and loan collection. To this effect, microenterprise financing in Ethiopia has been taken up as a theme of the study with specific attention directed to the case of the credit program that became possible through the above mentioned credit agreement.

In studying this case, two towns (namely, Awasa - the capital of Southern Nations Nationalities National Regional State -, and Bahir Dar - the capital of the Amhara National Regional State) that are among the first eight towns selected for the income enhancement and employment generation component of the MTDP are used to provide empirical evidences on determinants of microenterprise loan repayment and efficacy of screening techniques employed by zonal industry and trade offices which, according to the MTDP credit agreement, are responsible for organizing, screening and licensing microenterprises and thereby preparing them for loans from the DBE (which in turn is responsible for effecting loan disbursements and collecting loans). The agreement also states that these project implementing agencies have to see to it that the scheme focuses on households with monthly income of less than Birr 50 and allows borrowers consisting of at least 50 % women and school leavers access to credit.

The selection of the towns is based on the reasons that the towns are among the eight towns first selected for the implementation of income generation and employment creation component of the MTDP, the towns have comparable level of regional significance and development, and the towns can represent two sections of the country with relatively diverging cultural and ethnic backgrounds.

Since project inception up until June 30, 1996, the DBE disbursed a total of Birr 23.97 million to 21,712 microentrepreneurs (68 % of whom were females) organized in 907 cooperatives located in 49 towns spread all over the country. About 65 % of this loan amount was absorbed by only such three activities as food processing, local drinks preparation, and tailoring while the remaining 35 % was accounted for by over thirty other activities.

The overall repayment rate reported for the period for this scheme stood at 85 % which seems to be encouraging for a beginner (-- note that the project was started only without much experience in the field except for a brief practical training given to some staff members of the implementing agencies at the Grameen Bank).

Concerning the achievements in the two study towns, financing under the credit scheme was started in early 1994 in both towns. By June, 1996, Birr 988,760 was disbursed to 735 borrowers (84 % of whom were female borrowers) organized under 19 cooperatives in Awasa while Birr 2.08 million was disbursed to 2,216 borrowers (85 % of whom were females) organized under 533 cooperatives in Bahir Dar. In both towns the three activities mentioned above accounted for most of these disbursed loan amounts. The overall repayment rate is about 91 % for Bahir Dar while it is about 80 % for Awasa.

METHODOLOGY AND ESTIMATION RESULTS

The study utilizes various methodologies. As regards data collection, primary data were collected through a survey conducted in both towns from January to February, 1997 using a structured questionnaire. Besides, relevant documents of zonal trade and industry

offices and the DBE branch offices in both towns were also consulted for further information. During the survey, 350 and 407 valid observations were obtained from Awasa and Bahir Dar, respectively.

Based on the survey data, appropriate econometric methods were used for analysis. The analysis comprises two parts; namely, the part dealing with repayment determinants in relation with probability of full loan repayment, and the part dealing with efficacy of screening techniques.

In the first part, an attempt is made to divide borrowers into two groups based on repayment rates achieved. In line with this, a cut-off rate of 90 % was used to identify borrowers with repayment of at least this point as creditworthy borrowers who settled their loans in full within the one year loan period. The assumption for taking this rate as a cut-off point is based on the finding that most of the borrowers in both towns used the 10 % loan amount they deposited - to serve the purpose of developing a credit guarantee device - for a final settlement of their debts by stopping repayment at 90 % level.

Regarding data estimation in the first part of the analysis, a binomial probit model is used. Accordingly, a heteroscedasticity corrected estimates for Awasa indicate that number of persons employed, weekly instalment repayment period are significantly and positively related with repaying loan in full. On the other hand, loan diversion contributes to a significant negative relation. In terms of predicting the probability of falling in either of the groups, it is found that there is a 53 % probability of repaying loan in full.

In the case of Bahir Dar, four variables are found to have a significant relation with repayment of loan in full. As a result, while expectation for another loan and number of workers employed have a positive relation with full loan repayment, loan diversion and availability of other sources of credit have a negative impact. When looking at the predicted probability of full loan repayment, the findings show that it is 78 % which is better as compared to the case for Awasa.

Passing on to the second part of the analysis, the method employed by Hunte (1996) is used. This method calls for the comparison of significant variables in loan repayment rate and loan rationing ratio equations. While loan repayment rate is measured as a ratio of total loan collected to total loan amount due for collection, loan rationing ratio is calculated as a ratio of loan amount granted to loan amount requested. It is to be noted that loan repayment rate equation is used to indicate the repayment behaviour of a borrower and loan rationing ratio equation is wanted to show the screening (lending) behaviour of a lender.

The method identifies the presence of creditworthy borrowers if a variable is positive in both equations. If a variable is negative in both equations, it affirms correct rationing of a non-creditworthy borrower. On the other hand, if a variable is positive in loan rationing equation and negative in loan repayment equation, it means that there is financing of a non-creditworthy borrower. If the case is otherwise, it indicates an incorrect rationing of a creditworthy borrower.

In line with this method, the two equations are estimated for the two study towns using the tobit model. The estimates for Awasa show that weekly instalment repayment period

1. INTRODUCTION

1.1. BACKGROUND

1.1.1 AN OVERVIEW OF MICROENTERPRISE FINANCING

The traditional development finance model during the first three decades following the Second World War was based on the assumption that transferring capital from industrial countries to developing countries would serve the purpose of effective development policy. The financing of large infrastructure and industrial projects thus got acclamation from every direction.

In an attempt to handle the foreign funds, state owned development banks were established. However, the institutions of the financial system of most developing countries were immature at that time. Unfortunately, the development assistance did not include the task of boosting the financial system either. As a result, "the expectation that large-scale projects would act as a catalyst for general economic development proved to be unrealistic" (Schmidt and Zeitinger, 1996). The cheap credit made available rather resulted in the worsening of the economic condition of the poor countries involved. The poorer competitors of the more wealthy that benefited from the cheap credit and the development banks that could not stand up to the losses the cheap credit caused them had also to face the inevitable collapse.

These coupled with other facts began to fuel movements against financial repression or interest rate ceilings (as propounded by Shaw and McKinnon) in the early 1970s, and they also led to an increased demand for directing development policy measures towards poverty alleviation that involve a direct impact on the target group (Schmidt and Zeitinger, 1996).

Following these new ideas, the financing of small enterprises by state owned development banks (rural credit institutions) in developing countries was pushed forward by multilateral development agencies such as the World Bank, and the United States Agency for International Development (USAID) (Schmidt and Zeitinger, 1996; Khandker et al., 1995). However, since no new financing method accompanied this small scale financing, the consequence was obviously failure. Low income target groups were not reached. The benefit went to the wealthy borrowers. This can also be attributed to the fact that the financing strategies failed to take account of the workings of rural credit markets (Khandker et al., 1995).

Many argue that an inadequate supply of credit can affect production in many developing countries. Alleviation of poverty and promotion of economic development can therefore be facilitated through providing credit to the poor.

The failure to reach the poor through state owned development banks encouraged the provision of credit to the poor target group (left out of the formal credit system that depends on collateral) by non-governmental organizations (NGOs) in the early 1980s (Khandker et al., 1995). Understanding also developed that improving the economic situation of the informal sector businesses would reduce glaring economic and social inequalities since the informal

sector is believed to constitute a vast human resource with enormous productive potential (Schmidt and Zeitinger, 1996). "In fact over the last 20 years small and micro-enterprises from the informal sector have emerged as the 'ideal target group' of development policy makers" (Schmidt and Zeitinger 1996). There is also a wide belief, at present, that microenterprises may help the victims of structural adjustment programs, being carried out in many developing countries, if credit is made available.

As a result of the new approach to credit provision to the poor, credit cooperatives and lending groups began to emerge to fill the gap left out by the formal lending system. In connection with this, the need for a specialized lending institution also grew. By adopting group based credit system it was believed that the problems of screening, incentives and enforcement could be reduced by incorporating joint liability and monitoring (Khandker et al., 1995). Transaction costs and the risk of default were also expected to fall down in this system. Transaction costs can be transferred to borrowers from lenders because "it is generally assumed that groups can perform some screening and enforcement functions and that the community has superior information on its members" (Reinke, 1996).

Experience has, however, shown that group-based credit systems have had different outcomes in different countries. For instance, in countries like Egypt, India, Kenya and Venezuela, credit cooperatives and group-based lending have posed problems of repayment whereas in countries such as Bangladesh, Cameroon, Malaysia, and the Republic of Korea success has been scored because of better incentive, control, and monitoring systems (Khandker et al., 1995).

Despite its failure in some developing countries, group based lending is now-a-days popular in many countries. The World Bank is also interested in sponsoring microcredit programs as can be indicated by the recent formation of "Consultative Group to Assist the Poorest (CGAP) - a Microfinance Program" initiative (Khandker et al., 1995).

The popularity of the group-based lending system has, in particular, been promoted by the success of a bank called Grameen Bank in Bangladesh. This bank was initially started as an action research project in 1976 by its founder professor Muhammad Yunus in defiance to the belief that the poor were unbankable (Shams, 1992). Later in 1979, the research project was promoted to a full blown district wide pilot project which paved the way for the establishment of the Grameen (village) Bank in 1983 as a challenge to collateral-based lending system (Shams, 1992). The bank caters to the needs of the rural landless in Bangladesh, in general, and to those of poor women, in particular.

According to the 1994 data, the bank was able to cover 35000 villages (half of all villages in Bangladesh) with a total membership of over 2 million 94% of which was accounted by women (Khandker et al., 1995). The repayment rate of the bank has also been consistently above 90% which is the highest among rural credit providing development finance institutions (Khandker et al., 1995).

At present, the Grameen Bank replications are found in over 40 countries spanning from such developing countries as Malaysia, Burkina Faso, Sri Lanka, the Philippines, and Honduras to developed countries such as Canada, France (in Paris) and the U.S.A. (in Chicago and Arkansas), to mention but a few (Shams, 1992).

One can observe from the above discussions that microenterprise financing, whether group based or individual-based, is now among the important ways of alleviating poverty in both urban and rural areas and promoting economic development by tapping the human resource potential in the informal sector which has usually been regarded as a sector with minor economic potential.

1.1.2. MICROENTERPRISE FINANCING IN ETHIOPIA

Although providing credit to rural agricultural households for purchase of agricultural inputs and tools has since long been practised by the country's major state owned banks (including the Development Bank of Ethiopia and the Commercial Bank of Ethiopia), credit schemes targeted at the urban or rural poor were nonexistent until recently. Since a few years ago, however, some NGOs have started providing credit to poor households in some parts of the country. Among the few NGOs that conduct credit provision schemes, the Relief Society of Tigray, Ethiopian Relief Organization, Redd Barna (Norwegian NGO), National Women's Association for Development, Action AID - Ethiopia, and Village Academy can be cited as an example. Moreover, many of the aid agencies in the country are now introducing credit provision schemes in their overall programme.

The introduction of an urban microenterprise financing (which is the subject of this study) scheme on a national scale came about in early 1989. Moreover, as part of its effort to improve infrastructure in towns considered market and service centres for the agricultural hinterland and to alleviate problems of urban poverty in the country (World Bank, 1989), the Government of Ethiopia signed a credit agreement with the International Development

Association (IDA) in March, 1989 which made available funds for financing a project named Market Towns Development Project (MTDP). The project had different components that were planned to be implemented in sixteen towns divided into Phase One and Phase Two* . One of the components was designed for the purpose of employment generation and income enhancement through financing microenterprises and small-scale enterprises in Phase Two towns. At present, the number of towns covered under this employment and income generation project component is forty nine (DBE, 1997).

According to the Staff Appraisal Report of the World Bank (1989), small enterprise is defined as an enterprise that employs fewer than ten employees and that has approximately Birr 7000 or less of fixed capital per employee. On the other hand, micro enterprises are " defined as extremely small, and in most cases, household income producing activities, often employing just one or two persons, poorly organized, and almost always unlicensed. Such enterprises, commonly referred to as informal sector enterprises, often fall outside of HASIDA's** terms of reference, but are nevertheless potentially important as a medium of entry into the enterprise sector. They typically create employment at extremely low investment costs and generate significant portions of household income, especially among the very poor " (World Bank, 1989).

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*Phase One consisted of Assela, Wolliso, Shashamane, Mizan Teferi, Goba-Robe, Arsi Negele, Ambo and Ziway towns while Phase Two included Bahir Dar, Awasa, Debre Birhan, Bedele, Woldia, Asebe Teferi, Debre Tabor and Arba Minch. While Phase One towns were designed for infrastructural improvement, in Phase Two towns income enhancement and employment generation programs were planned to be undertaken.

**HASIDA stands for Handicrafts and Small-Scale Industries Development Agency which is now non-existent. It was responsible for promoting and licensing handicrafts and small-scale industries in Ethiopia. But now most of its jobs are done by regional industry bureaux.

The employment generation and income enhancement component of the MTDP was entrusted to the Development Bank of Ethiopia (DBE)* and HASIDA (whose job was later taken up by regional industry bureaux) for implementation. According to the credit agreement entered into between the IDA and the Government of Ethiopia and also the DBE, the DBE is responsible for extending credit facilities to microenterprises, while the concerned regional industry bureaux undertake the job of promoting, organizing and screening microenterprises.

The actual financing of microenterprises got underway in 1994 after some delay as this activity was the first of its kind both for the country and the DBE. Some time had to elapse while training the staff of the implementing agencies and learning the experience of other countries such as Bangladesh, Israel and Egypt. In addition, security problems that prevailed in some areas of the country during the early 1990s contributed to a certain extent towards the delay.

THE CREDIT DELIVERY MODEL

The credit delivery system employed in the credit scheme draws much on Grameen Bank experiences. A brief description of the system is given as follows.

a) According to the World Bank Staff Appraisal Report (1989), an urban household with a monthly income not exceeding Birr 50 had been regarded as poor that would

*DBE is a state owned development bank engaged in extending short, medium, and long term loans to agricultural, industrial, mining and energy, construction, and hotels and tourism sectors. Microfinancing is an additional task to the bank.

be eligible for loans under the scheme. However, the targeting was later broadened to include households with monthly income not exceeding Birr 100 by some microenterprise organizing zonal industry and trade offices. The scheme has also been designed to focus mainly on (at least 50 %) women-owned enterprises and school leavers.

b) Concerned zonal industry and trade offices promote the formation of microenterprise cooperatives in the selected project towns. Accordingly, groups are formed in such a manner that a group consists of five like minded members who know one another, are either neighbours or live in the same Kebele. Nonetheless, relatives are not allowed to join the same group. Usually four to six groups form a cooperative whose maximum membership cannot exceed 30. While every group has a chairperson and a secretary, a cooperative has a chairperson, a vice chairperson and a secretary. Cooperative members meet every week to effect loan repayment and discuss relevant issues.

c) Zonal industry and trade offices in the selected towns are responsible for screening, organizing and licensing microenterprise cooperatives. They are also supposed to give training to the cooperative members on credit utilization and related matters before loan disbursement is made.

d) The organizing offices prepare business plans for each borrower in a cooperative they organize so that the size of the financial requirement of a borrower is determined properly. Following this, loan request is lodged with the DBE by cooperatives

submitting all relevant documents that signify the proper assessment has been made and the remaining job is only effecting loan disbursement.

e) Making sure documents are in order, the DBE disburses loans to the cooperative members through the executive members of the cooperatives

f) Every borrower is supposed to deposit 10 % of loan granted in savings account as a guarantee against default.

g) Group members assume joint liability for loans they receive.

Based on the above model, as of June 30, 1996, the DBE through its 17 branches/sub-branches disbursed a total of Birr 23.97 million to 21712 microentrepreneurs, 68% of whom were women, organized in 907 microenterprise cooperatives located in 49 towns spread all over the country (DBE, 1997). Of a total of thirty six types of activities in which all the borrowers were engaged, three activities; viz, local drinks preparation, food processing and tailoring absorbed about 65% of the total loan amount disbursed (DBE, 1997).

Although a few branches of the bank had a recovery rate as low as 33%, the overall recovery rate the bank reported by June 1996 was 85% for this credit scheme. This recovery rate is good for a beginner like the DBE with limited micro-financing skills. It must also be noted here that the bank is dominantly assisted by the zonal industry bureaux in loan collection. What is more interesting about this microenterprise credit scheme is that the borrowers are charged the official interest rate (which is considered to be positive in real

terms) faced by the borrowers in the conventional lending system. That is, there has been no room for cheap credit that would undermine the financial position of the lender. Besides, "positive interest rates give borrowers an incentive to be efficient (Von Pischke, 1991). This seems to be in line with the position of Dale W. Adams who also refutes the argument for low interest rates (applied to rural finance) under the ground that cheap credit will result, for instance, in losses and channelling of more resources to the more affluent (Von Pischke, 1991).

The ideals of microfinancing seem to be taking root in the country. To this effect, in 1996, the government issued a proclamation providing for the licensing and supervision of microfinancing institutions.

Though the moves that are being made to enjoy the benefits of microfinancing in the country is laudable, it is worth noting that credit schemes may not be sustainable if not based on the workings of credit markets. Subsidies and donor funds may not warrant the financial sustainability of microfinancing institutions. It is thus advisable that credit scheme initiatives be based on appropriate studies.

1.2. STATEMENT OF THE RESEARCH PROBLEM

An overwhelming majority of world's poor live in Third World Countries where "participation in economic activity becomes more and more prohibitive the lower one goes down the income scale" (Yunus, 1993). Of the various approaches employed in alleviating poverty in these countries, "credit is one action which is directly addressed to the individual"

(Gibbons, 1992). That is why, many are now of the opinion that allowing the poor to have command over resources through credit can contribute towards poverty alleviation. "The best way to do something about poverty is to let the people do their own thing. Nobody will have more motivation to change his situation than the sufferer himself" (Gibbons, 1992).

It is generally accepted that credit which is put to productive use results in good returns. But credit provision is such a risky business that, in addition to other reasons of varied nature, it may involve fraudulent and opportunistic behaviour. The lender in the formal financial system is at a disadvantage in terms of information on the borrower's behaviour. Fortunately, group based microfinancing system that involves peer pressure and joint liability has evolved to counter the problems of a conventional bank that provides a collateral backed credit alienating the poor.

The success of microenterprise financing institutions in this group based lending system hinges on their financial sustainability. "For agencies that are involved in the development or assisting in the development of a micro-credit institution, it is recommended that profitability and sustainability should be the final goals, and therefore the only indicators of success" (Rudkins, 1994, 34). Furthermore,

> "loan default is a tragedy because failing to implement appropriate lending strategies and credible credit policies often result in the demise of credit institutions. Default problems destroy lending capacity as the flow of repayment declines; transforming lenders into welfare agencies, instead of viable financial institutions. It incorrectly penalizes creditworthy borrowers whenever the financial technology is not sophisticated enough to separate high-risk applicants from low-risk borrowers. Loan default may also deny new applicants access to credit as the bank's cash-flow management problems augment in direct proportion to the increasing default problem" (Hunte, 1996).

Above all, sustainable credit operations should involve efficient lending systems and disbursements that are followed by loan repayment. Striving to meet credit needs without concern for lending strategies and loan collection is thus a futile exercise.

Meanwhile, experience has shown that many rural financial institutions sustained heavy losses because of poor loan collection in a stable economy such as India and because of inadequate indexation in high inflation economies like Brazil and Mexico (Yaron, 1994). Many became a burden on government budgets (Yaron, 1994). Subsidies could not make these institutions financially sustainable as they are not forever. "Subsidization per se is clearly not a problem, and it is also probably unavoidable. But subsidization which does not aim over the medium term to help institutions grow, enhance their productivity and lower their costs is not an appropriate tool of development policy" (Schmidt and Zeitinger, 1996). Hence, loan recovery has to be dependable for a microenterprise financing institution to have a sustainable financial position the absence of which will easily defeat the objective of alleviating poverty through credit provision.

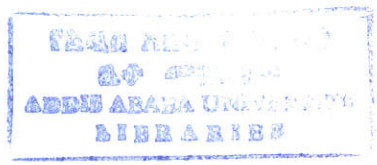
Although group credit schemes are hailed as a major solution to problems of credit rationing in the context of poor entrepreneurs in developing countries, the distinctive factors that affect microenterprise loan repayment are not the same in different socio-economic and socio-political settings. A case in point, Reinke (1996) has come up with a finding that group based lending would not be successful in the context of South Africa. Reinke states that the presence of high geographical mobility, low attachment to specific neighbourhoods, and peer groups consisting of competitors can frustrate solidarity groups in South Africa. That is why

he recommends an individualist credit system for a better loan recovery performance in South Africa.

"Whether default is random and influenced by erratic behaviour or whether it is influenced by" certain factors in a specific situation, therefore, needs an empirical investigation so that the findings can be used by microfinancing institutions to manipulate their credit programmes for the better (Khandker et al.,1995).

Although the overall repayment performance of microenterprises financed by the DBE seems satisfactory, the need for investigation into the factors affecting the repayment behaviour of borrowers and the efficacy of screening mechanisms employed by zonal industry and trade offices deserves attention. Knowledge about the repayment-behaviour-affecting factors and efficient lending (screening) strategies may, therefore, save the DBE and the microenterprise organizing zonal industry offices the chance of indulging in wasteful ways of recovering loans.

This study which makes use of the case of two towns (Awasa and Bahir Dar) under the MTDP is believed to throw light on the factors affecting microenterprise loan repayment behaviour in the country.



1.3. OBJECTIVES AND SIGNIFICANCE OF THE STUDY

The major objective of the study is to investigate the determinants of microenterprise loan repayment performance in urban Ethiopia by taking the case of microenterprises financed by the DBE under a credit line from the IDA in Awasa and Bahir Dar towns. A comparison of the cases of the two towns will also be made.

Side by side with this, an attempt is to be made to relate the screening criteria (representing microenterprise organising bodies' behaviour) employed in separating creditworthy borrowers (those having no repayment problems) from non-creditworthy borrowers (those having repayment problems) with the borrower repayment behaviour in order to identify which screening criteria are faulty. In this regard, an attempt is also to be made to identify in which town we have a better screening system since the screening jobs in each of the two towns are done by independent zonal industry and trade offices.

In this study, loan rationing (measured as a ratio of loan granted to requested) is considered to represent the screening behaviour of the zonal industry and trade offices. Loan rationing is assumed to work as a screening devise in that lenders usually give relatively smaller loan amounts to borrowers whom they think (suspect) are involved in risky businesses (or are default prone in one way or another).

Based on the findings of the study, policy implications are also to be put forward. Since institutional microfinancing in urban Ethiopia is a recent experience, a study of this kind is of great importance in further understanding factors affecting loan repayment and

efficacy of a lending strategy which are the major factors that contribute to the sustainability of a credit program. Moreover, it is believed that both researchers and microenterprise financiers alike can learn through this study whether a repayment behaviour is randomly influenced or systematically influenced by specific factors. The study is also to contribute to the thin literature of the country on the subject.

1.4. SCOPE AND LIMITATIONS OF THE STUDY

The study focuses only on the discussion of factors affecting microenterprise loan repayment behaviour and screening behaviour based on a primary data drawn from the two towns where the DBE financed microenterprises out of a fund made available by the IDA. Microenterprises financed by NGOs and other schemes have not been considered under the study.

Although it would have been better to consider microenterprises financed under different schemes (in addition to that of the DBE) to have a better representative sample, time and financial constraints had not allowed such kind of move, thus making the study a reflection of a specific credit scheme. There is, nonetheless, no reason to rule out the possibility that the findings of the study might not work out for other related credit schemes sponsored by NGOs. What still consolidates the importance of the study's findings, however, is the fact that the credit scheme run by the DBE(which is the basis of this study) is a scheme, unlike other schemes, that has got a much wider coverage that involves about forty nine towns that are spread all over the country.

Before concluding the introductory section, a brief look at the contents of the other sections. Section 2 deals with the literature review under which both international and Ethiopian literature on the determinants of microenterprise loan repayment are reviewed. Under section 3 hypothesis and theoretical discussions about loan repayment determinants and efficacy of screening mechanisms will be presented. Variables selected as affecting loan repayment behaviour will be discussed. Section 4 is a section where the methodology employed during the study is discussed. Data type, data sources, data collection technique and data analysis method employed are to be presented. Section 5 presents the empirical findings of the study. Section 6 gives the conclusions and policy implications drawn from the findings.

2. LITERATURE REVIEW

Various studies have been conducted in different developing countries regarding microenterprise and rural credit performance in terms of loan repayment. Accordingly, a number of factors have been raised as systematically influencing loan repayment. In conjunction with this, a look at the major ones can serve the purpose of grasping what the literature offers on empirical works done so far.

Loan amount (size) is one of the factors that can affect loan repayment performance. Adeyemo (1984) in his study about loan delinquency in multipurpose cooperative unions in Nigeria indicates that large loan amount is negatively related with loan repayment. Likewise, Njoku and Odii (1991) and Njoku and Obasi (1991) studied determinants of loan repayment under two different agricultural credit schemes (in Nigeria) and found out that loan amount was negatively related with loan repayment. On the other hand, Vigano (1993), in a study about the case of Burkina Faso, states that large loan amount receivers are better payers if they are established bank customers.

Household income is another factor that is believed to influence microenterprise loan repayment positively. In relation to this, the works of Jama and Kulundu (1992) on Kenya, and that of Kashuliza (1993) on Tanzanian case that indicate positive relation between farm income and loan repayment can be cited as an example. Adeyemo (1984), on the other hand, has a somewhat different position about impact of farm income on loan repayment. According to his study on a Nigerian case, income at a higher level has a negative relation with loan repayment.

Education also is considered by some authors as a factor that can affect loan repayment positively. For instance, Adeyemo (1984) reported results supporting this idea. There are, however, other findings that contradict this argument. Njoku and Odii (1991) in their Nigerian case study and Yaqub (1995) in his Bangladeshi case study indicated that education was negatively related with loan repayment. On the other hand, authors like Jama and Kulundu (1992), Kashuliza (1993),and Njoku and Obasi (1991) reported findings that showed the insignificance of education to affect loan repayment.

Supervision is the other factor that we have among the major factors that affect loan repayment positively. Regarding this, the findings of Okorie (1986) based on a Nigerian smallholder agricultural credit and that of Jama and Kulundu (1992) can be cited as empirical examples.

Passing on to another factor that may affect microenterprise loan repayment, we have "borrower's attitude to loan repayment" as an important one. This also has been tested empirically. Accordingly, Jama and Kulundu (1992) and Kashuliza (1993) came up with similar results that indicated the existence of a negative relation with loan repayment if borrower's attitude to loan repayment was negative.

Number of sources of income also has been tested empirically to know whether it affects loan repayment or not. One finding in this respect is that obtained by Jama and Kulundu (1993). According to this finding, number of sources of income was found to positively affect loan repayment.

Loan diversion to other purposes is another factor that is considered to have a significant impact on microenterprise loan repayment. A study made to confirm this position is that of Jama and Kulundu (1992). The study was made for a Kenyan smallholder farmers credit repayment performance and it was found out that loan diversion had a negative impact on loan repayment. In this study, loan diversion was also taken as an endogenous variable whose predicted value was used in the determination of loan repayment performance. Accordingly, it was found that late loan issue and inadequate supervision contributed a lot towards loan diversion. On the other hand, farmer's education was not statistically significant to explain loan diversion. Likewise, in a related study by Vigano (1993), it was found out that loan smaller than required would lead to loan diversion.

Looking at the impact of use of hired labour and machinery (in farming), Kashuliza's (1986) study for a Tanzanian case indicates that this variable has a positive relation with loan repayment.

Household size is another factor that can have a significant impact on microenterprise loan repayment. According to a study conducted by Njoku and Odii (1991) in Nigeria, household size is negatively related with loan repayment. Kashuliza (1993) also in his Tanzanian case study obtained a negative relation but the relation was not statistically significant. On the other hand, Njoku and Obasi (1991), in Nigeria, got a positive relation between household size and loan repayment contrary to their expectations.

Age is another factor that might attract attention in studying the determinants of smallholder farmer or microenterprise loan repayment performance. Vigano (1993) believes

that age is a symptom of stability and reduces credit risk. However, a study by Kashuliza (1993) tested the impact of this variable and came out with a result that indicated weak relationship between loan repayment and age of borrower. The variable was not statistically significant.

Interest paid on loan can influence loan repayment since it is a cost of borrowing. In connection with this, there are some empirical studies that have come up with similar findings. For instance, Njoku and Odii (1991) and Njoku and Obasi (1991) studied the determinants of loan repayment in Nigerian smallholder agricultural credit and arrived at a conclusion that interest paid on loan and loan repayment were negatively related.

Business experience also is another important point that should be considered in studying factors affecting loan repayment. It is usually considered to be positively related with loan repayment. For example, according to empirical study by Njoku and Odii (1991), farming experience was found to be positively related with loan repayment. Vigano (1993) also supports this idea by stressing that younger firms are more subject to default risk. On the other hand, in other studies by Njoku and Obasi (1991), in Nigeria, and Yaqub (1995), in Bangladesh, borrower's skill or farming experience had no relevance to loan repayment.

Value of assets of borrower is seen as another loan repayment influencing factor. It is considered to show wealth of a borrower. To have a look at the empirical findings regarding this variable, Njoku and Odii (1991) obtained a positive sign for the variable. Likewise, Vigano (1993) got a positive relationship between loan repayment and value of

borrower's asset in a study about Burkina Faso. On the contrary, Yaqub (1995) and Hunte (1996), with a Guyanese case study, came up with a negative sign.

Repeated borrowing or credit experience has been considered by Yaqub (1995) and Hunte (1996) in their study about loan repayment performance. While Hunte's study came forward with a positive sign for the variable, the work of Yaqub indicated that repayment fell with repeated borrowing because of empowerment that came from repeated borrowing. Vigano (1993) is also of the opinion that established customers are better payers.

We can still mention some more loan repayment influencing factors that have been empirically tested. For instance, sex, grace period, and delayed loan issuing have been found to have some relation with loan repayment. Considering the variable sex, we have two contradicting findings at hand. While Yaqub's (1995) finding showed that women were better than their male counterparts in Bangladesh in repaying loan, Hunte (1996) got a result that indicated diminished repayment with female borrowers. In the case of grace period and delayed loan issuing, Hunte got also a negative result. Accordingly, extended grace period and delayed loan issuing resulted in diminished loan repayment. Hunte also identified such activities as rice and sugar production and fishing as having a positive relation with loan repayment. In relation to this, Vigano (1993) points out that in agriculture where revenue is highly variable, repayment may not be dependable. On the other hand, she suggests that livestock breeding and trade are less risky and hence good for repayment. At this juncture, it is also worthwhile to make note of the finding of Njoku and Obasi (1991) that stresses the importance of profitability of an enterprise in loan repayment. Contrary to this, Vigano (1993) states that profitability and regular repayment have no relation, confirming " the

widespread opinion that the fungibility of money and unity of the enterprise make it misleading and dangerous to put too much attention on the specific project to be financed instead of evaluating the firm's global performance."

In addition to the earlier variables, loan issue timing, loan maturity (instalment period), and ratio of total debt to total assets were also found to have relation with repayment. Accordingly, Vigano (1993) says that while the latter two have a negative relation with repayment, timely issued loan is supportive of good repayment. Regarding loan maturity, small periodical repayments are good, according to Vigano (1993).

When we come to the efficacy of screening mechanisms employed by lenders, we have one study at hand. This study, which is on a Guyanese case, is that by Hunte (1996). In his study, Hunte compares significant variables in a loan repayment equation and loan rationing equation considering this procedure to serve as a tool showing efficacy of a screening mechanism employed by a lender.

According to his findings, based on the above method of analysis, borrowers engaged in sugar cane production were incorrectly rationed implying that they were rationed while being excellent payers. The findings further indicate that loan contracts with extended grace periods resulted in poor repayment performance by those borrowers who got loans without rationing. Briefly, such variables as those standing for fishing, males in food crops and livestock, credit experience and sugar cane were found to enhance creditworthiness while grace period, delays and joint borrowers contributed significantly to loan default problem and a flawed screening mechanism (Hunte, 1996). A note is to be made here that the method of

comparison employed by Hunte will be discussed in another section to come since this method is also among the tools of analysis in this study.

Looking briefly at the methodologies employed, most of the works discussed above made use of Ordinary Least Squares (OLS) method with single equation in their data analysis. Besides, a linear functional form was considered as the best fit (based on value of R^2) in the studies. Jama and Kulundu (1992), however, took up a different approach. They used two stages least squares method to deal with endogeneity problem of the loan diversion variable included in the loan repayment equation as an independent variable. Hunte (1996) also employed a different method. The model he employed was the tobit model to take care of a continuous dependent variable that may involve variable censoring of some sort (e.g., involving zero values).

Our earlier discussions are totally empirical evidences from other developing countries. When we look at the Ethiopian situation, the literature is thin since microfinancing is a recent experience for the country. For instance, Shimelis (1995), Solomon (1995), DBE (1996), DBE (1997) and Mengistu (1996) try to show the performance of microenterprises in various towns covered under the MTDP using a descriptive analysis. In the studies, the good repayment performance scored by many microenterprise cooperatives financed under the MTDP, screening problems and the better performance of women borrowers in loan repayment are shown. However, the discussion about factors that affect loan repayment and screening mechanism is thin. As a result, we do not have much to say in this regard at this point.

Having looked at what the literature says, this study is, therefore, believed to narrow the gap in the Ethiopian literature on microenterprise loan repayment and loan rationing performance influencing factors.

3. HYPOTHESIS/THEORETICAL FRAMEWORK

The study of determinants of loan repayment performance has mainly been an empirical work. Theoretical work regarding microenterprise loan repayment performance is not at an advanced stage. According to Yunus (1989), for instance, " economic literature does not pay much attention" to credit "on the ground that it only plays a lubricating role for trade, commerce and industry. Literature fulfils its responsibility by erecting a theory of interest and walks out of the subject." Besides, "efforts to examine loan default have not been rigorously pursued in many rural credit programs" (Hunte, 1996).

The relationship between loan repayment and loan rationing and factors affecting them is thus hypothesized based on practical experiences and on other related studies. But note that signs of variables in such empirical work without a priory requirement may depend much on the empirical outcomes.

Loan Repayment Rate (LRR) and Loan Rationing Ratio (LORR)

Loans granted to microenterprises under the MTDP had been of one year maturity at the start of the project. It is only very recently (less than one year ago), that granting loans with more than one year maturity was started. The loans considered under this study are therefore of one year maturity. Based on this, the loan repayment for each sampled microenterprise has been computed as a ratio of total loan collected in a year (the loan period) to total loan due (supposed to be collected) in the same year.

For the purpose of the study, it is hypothesized that microenterprise loan repayment rate and loan rationing ratio either positively or negatively depend on the factors discussed below. LORR which is measured as a ratio of loan granted to loan requested is used with LRR to investigate whether or not the mechanism employed to screen out non-creditworthy borrowers is efficient.

1. Loan Size : This variable may have a mixed impact on loan repayment. If a loan amount is enough for the intended purpose, it will have a positive impact on productive capacity of the borrowing enterprise." Efficient loan sizes fit borrower's repayment capacity and stimulate enterprise " (Von Pischke, 1991). However, if it is beyond what is required and what the borrower can handle, it will be more of a burden than help. As a result, loan repayment may be undermined. If a borrower is an established customer of a bank, however, it may be possible that large loan amount may not be a burden for repayment since the borrower might have an improved entrepreneurial skills and better knowledge about the rules and regulations of the bank (Vigano, 1993). On the other hand, if loan is too small, any thing can happen - either it may be easy to repay or it may be difficult if in expectation of obtaining loan ambitious commitments have been made. In general, loans that are " too small may not produce commitment to their productive use or repayment (Von Pischke, 1991).

Taking up LORR, loan size is positively related with this variable. In other words, a borrower is allowed access to relatively larger loan amount means he has faced less rationing.

2. Supervision and Advisory Visits : This variable is supposed to be positively related with loan repayment. Tight supervision and advisory visits can improve the proper utilization of the loan. With tight supervision, borrowers can be made to observe their credit obligations.

With regard to loan rationing, borrowers that can use supervision and advisory visits for the better are likely to be less rationed. This variable is thus supposed to have a positive sign in the LORR equation.

3. Loan Diversion : If loan is diverted to non-intended and non-income generating purposes (such as consumption), it is likely that the sign of this variable will be negative. In other words, diverted funds not used productively reduce repayment capacity (Von Pischke, 1991). If, however, the loan is diverted to non-intended but income generating purposes, the sign will be positive.

Likewise, loan diverters are likely to face loan rationing if information on this characteristic of a borrower is dependable and thus making the expected sign of loan diversion in LORR negative.

4. Household Income : This is supposed to have a positive sign since increased household income means more capacity to repay loan.

But in the case of loan rationing, it is stipulated in the credit agreement between the IDA and the DBE that households with relatively smaller monthly income (specifically, less

than Birr 50) are supposed to have more access to loan. Therefore, it is expected that this variable is negatively signed in LORR equation.

5. Number of Activities that Provide Sources of Income for the Household (including other than those for which loan has been taken) : With increased number of sources of income, it is likely that loan repayment can be made without difficulty. This variable is thus supposed to be positively signed.

As regards LORR, borrowers with more number of activities may or may not face rationing depending on the income group under which they are categorised. With more number of activities , it is more likely that more income may be expected and hence barring access to loan. On the other hand, if the number of activities are large only in size not in capacity to generate income that can make a borrower fall under non-eligible group, it is possible that rationing may not take place. It is therefore better to leave the sign of this variable for the empirical outcome.

6. Age of Borrower : This variable may assume a positive sign. It is usually believed that with age a borrower may acquire stability (Vigano, 1993). However, nothing can be said about its sign with definiteness. It is therefore left for empirical investigation.

In the case of loan rationing, it is also expected that with age, borrowers gain more experience and stability and thus can be good clients. It is therefore more sound to expect a lender to ration a younger borrower than an older one.

7. Educational Level of Borrower : This variable may have a mixed impact. Normally an educated borrower could be expected to make use of the loan proceeds in a better way than the uneducated one and hence can become an active payer. In general, the variable is expected to have a positive sign. But there is nothing that would stop the opposite from happening.

In the same manner, a positive sign can be expected for this variable in the LORR equation since it may usually be expected that an educated borrower can handle loan proceeds more properly and thus reducing the need for rationing.

8. Sex of Borrower : There is usually a belief among many microenterprise financiers that women are better loan payers thinking that they are more entrepreneurial as a result of assuming more responsibilities in the domestic affairs of a household (Vigano, 1993). Since some studies indicate that the opposite can happen, it is better not to speculate before hand.

On the other hand, as it is the objective of the credit scheme to give priority to women borrowers, it is expected that these borrowers are less rationed than their male counterparts.

9. Availability of Other Sources of Credit (other than Iqub-traditional rotating savings association) : If there are other sources of credit that the borrower can resort to in case of emergency (e.g. failure of business), the borrower can use these sources to fulfil his/her microenterprise loan obligations to keep his/her name unblemished. Therefore, the variable is likely to have a positive sign. However, if the borrower is no more interested in the microenterprise loan, the interest in repaying the loan may fall.

Because of the nature of the credit scheme (favouring poor borrowers without access to dependable credit sources), borrowers with access to various sources of credit are expected to be rationed in this scheme. Hence, the variable is supposed to be negatively signed in the LORR equation.

10. Number of Workers Employed Including Borrower & Family Member(s) : With increased number of workers, it is more likely that production will increase. Loan repayment can therefore be effected without much difficulty. Productivity of labour also matters in this regard. Under normal circumstances, it is expected that this variable has a positive impact on repayment.

In the same manner, expecting this sort of borrowers to have relatively better capacity to repay, a lender may not use strict rationing in this case. The variable can thus be expected to have a positive sign in LORR equation.

11. Expectation for Another Loan : There are cases where borrowers effect repayments on time in expectation of obtaining additional loan. This situation can make the variable to assume a positive sign.

As regards LORR, a borrower that observes his/her credit obligations expecting to get more loans may influence the lender to have an opinion that the borrower is going to be an established client. This, in other words, may mean that the borrower is intent on benefiting from more credit experience. Hence, it is expected that this variable is positively signed in LORR equation.

12. Suitability of Weekly Instalment Repayment Period : Since instalment repayment should be effected weekly in this credit program, it is expected that borrowers who find this repayment period suitable may perform better. The sign is thus expected to be positive.

In the case of loan rationing, borrowers that are identified as having no problem with repayment period are likely to face less rationing. This can make the expected sign positive.

It is further hypothesized that loan diversion rate that has been specified as influencing loan repayment and loan rationing earlier is also dependent on some other factors. This situation necessitates the use of a recursive model (two stage regression) to address the issue of interdependence between this independent variable and the error term (which is an endogeneity problem). The following are the variables that are considered to affect loan diversion rate (LDR) which is, under this study, defined as a ratio of loan amount spent on non-intended activities to total loan proceeds.

1. Household size : If the number of dependents of the borrower increases, the borrower will be under pressure to get more money. As a result, the loan proceeds may be diverted to the purpose of meeting the needs of the dependent family members. This variable is thus expected to have a positive impact on LDR.

2. Time loan issued : If loan is issued late from the point of view of the borrower, it is likely that the loan proceeds will be diverted to other purposes. The commitment of loan proceeds to productive use may not be realized if price of inputs vary seasonally.

3. Household Income : With increased household income, the borrower may not divert the loan proceeds to other purposes as the income may be enough to take care of these other purposes.

4: Use of Bookkeeping Methods : If bookkeeping methods are made use of, it will be easy for the borrower to follow his/her loan utilization status. But if the case is otherwise, the borrower may confuse the loan proceeds with incomes/funds from other sources, thus getting into a situation of diverting loan proceeds to other purposes unknowingly.

5. Number of Persons Supported Outside the Household : As the number of non-household members dependent on the income of the borrower increases, loan diversion is more likely to occur.

In concluding this section, it is important to note that interest rate, which is believed to be one of the factors that can affect loan repayment, has been dropped out because of the reason that all borrowers are charged the same interest rate thus rendering it a constant rather than a variable. Perhaps one may use rate of return of the investment minus the interest rate in place of interest rate. However, information on the rate of return of microenterprise investment is difficult to get.

Repayment instalment period has also been found to be uniform (which is one week) for all borrowers in both of the study areas. Consequently, this has also been dropped.

The models used to study the above discussed relationships will be discussed in the following section that deals with methodology of the study.

4. METHODOLOGY

4.1. DATA TYPE AND SOURCES

The data used in the study are primary and cross-sectional in type and cover a one year period (1995). Since the commencement (1994) of the financing program considered for the study, three rounds of loans have been conducted. Of these rounds of loans, those eligible for the purpose of the study are those which include loans the maturity of which had already passed at the start of data collection process. Accordingly, while loans granted in the first two rounds until the end of 1995 are considered, those loans granted after the end of 1995 failed to qualify for consideration because of the reason that the maturity dates (considering one year as loan maturity period) of loans granted after 1995 (i.e. in 1996) fell either in late 1996 or early 1997, thus overlapping with or falling after the period of data collection. As noted in an earlier section, all loans granted in the first two rounds had a one year maturity period. Hence, based on this maturity period information, the category of borrowers considered involves first-time and repeat borrowers.

The data sources are : (1) the Urban Microenterprise Loan Repayment Survey conducted for this purpose; (2) relevant documents of the Awasa and Bahir Dar branches of the DBE; and 3) documents supplied by Sidama Zone Trade, Industry and Tourism office (responsible for organizing microenterprises in Awasa town), and West Gojam Zone Trade and Industry Office (responsible for organizing microenterprises in Bahir Dar town).

The selection of the two towns for this study is based on a number of reasons the more important of which includes the following:

1. The towns are among the eight Phase Two towns that were originally selected for income enhancement and employment generation component of the MTDP. Owing to this, it is possible to have borrowers with all sorts of borrowing experience for the study.

2. The towns are believed to have a comparable level in terms of development and regional significance. While Awasa is the capital town of the Southern Peoples National Regional State, Bahir Dar is the capital town of the Amhara National Regional State.

3. The towns may be taken as representing the microenterprise loan repayment performance (under the MTDP) in the two ends (North western and Southern regions) of the country with different cultural backgrounds.

4.2. DATA COLLECTION

The Urban Microenterprise Loan Repayment Survey (which is the major source of data for this study) was undertaken in Awasa and Bahir Dar towns for two months (January and February, 1997) employing a structured questionnaire administered through trained enumerators. Individual microenterprise borrowers selected for the study were taken based on a simple random sampling. As a result, the following has been obtained.

Awasa

In Awasa, thirteen microenterprise cooperatives with a total membership of 352 were considered passing the eligibility criterion stated earlier (that requires the consideration of borrowers served since project commencement in 1994 up till end of 1995 at the latest). For the purpose of obtaining an acceptable result, it is obvious that the number of observations has to be reasonably large. Taking this into consideration, all of the 352 borrowers were considered. That means, the sample and the population size would have been equal had it not been for two faulty questionnaire that were dropped out. The total number of valid observations for the case of Awasa is therefore 350.

Bahir Dar

Thirty two microenterprise cooperatives with a total membership of nine hundred were considered based on the same eligibility criterion mentioned earlier. Every cooperative consisted a number of groups each of which has exactly five members, thus making the total number of groups 180. For the purpose of the study, at least two members were considered from each group. Consequently, a total of 409 observations were randomly drawn. However, after discarding two faulty questionnaire, the valid number of observations stands at 407, which is 45% of the population size.

Some Notes on the Towns (the study areas)

Awasa

Awasa is the capital of the Southern Peoples National Regional State located in the Southern part of the country. According to the 1994 census report (CSA, 1996), the total population of the region stands at 10,377,028, and the population of Awasa which is divided into fourteen Kebeles (local administrative bodies) is 69,169 of which 34,140 are females and 35,029 are males. The average household size of the town is reported to be 4.6. The unemployment rate reported by the Central Statistical Authority (1996) for the town is 19.34%. The unemployment rate is higher for females in the town (which is 27.10%) than that for males (which is 15.50%).

Financing the town's microenterprises out of the fund made available under the MTDP was started in March, 1994. By 1996, 19 microenterprise cooperatives with a total membership of 735 were served. Of the total microenterprise cooperative members, 635 (86%) were females while 100 (14 %) were males. The total loan amount disbursed to the cooperative members stood at Birr 988,760 of which Birr 833,460 (84 %) was absorbed by female members. Three economic activities; viz, local drinks preparation, food processing and tailoring accounted for the major portion of loans extended. The overall repayment rate was about 80 %.

Bahir Dar

Bahir Dar (with a total of 17 kebeles) is the capital of the Amhara National Regional State. It is located in the North Western part of the country. The total population of the region stands at 13,834,297, according to the 1994 census. The town's population is 96,140 which consists of 45,436 males and 50,704 females. The average household size is 4.4.

According to the 1994 census report (CSA, 1996), the unemployment rate is reported to be 16.22 % for the town. As is the case for Awasa, the unemployment rate for females of the town (18.36%), although not as high as that in Awasa, is higher than that for males (14.22 %)

The microenterprise financing by DBE was started in July, 1994 in the town. As of June 30, 1996, a total of Birr 2,075,810 was disbursed to 2216 borrowers (organized under 53 cooperatives) of whom 1879 (85 %) were females while 337 (15 %) were male borrowers. As is the case with Awasa, local drinks preparation, food processing, and tailoring activities absorbed most of the loans extended. The overall repayment rate for the whole period stood at about 91 %.

A note is wanted to be made that in both towns there is double counting regarding number of borrowers because borrowers are counted every time they receive loan regardless of whether they are repeat borrowers or not. For instance, about 55 % of the 735 borrowers in Awasa are repeat borrowers while in case of Bahir Dar they constitute about 66 % of the 2,216 sampled borrowers.

4.3. DATA ANALYSIS

In analyzing the data, a number of econometric methods have been made use of. Proceeding with the discussion of methodologies employed to analyze loan repayment affecting factors and the efficacy of screening mechanisms employed, we start with the methodology used to look at loan repayment behaviour determining factors by focusing on the question of whether or not a borrower settled loan in full.

4.3.1. LOAN REPAYMENT PERFORMANCE

The probit model is produced in this study based on the following assumption. The assumption is that the decision of the *ith* borrower whether to repay loan in full or not depends on an unobservable utility index I_i explained by a set of certain independent variables. This utility index, which indicates that the probability of repaying loan in full will be greater if its value is larger, can be modeled as :

$$I_i = \beta' X_i$$

where I_i = utility index

β = a $1 \times k$ vector of parameters, and

X_i = a $k \times 1$ vector of explanatory variables.

More precisely, the index measures utility derived from repayment. If negative, the perceived costs outweigh the benefits thus resulting in failure to repay loan in full. The index I_i will be negative whenever the probability of repaying loan in full is less than 0.5.

In order to relate this unobservable utility index to the decision of repaying loan in full we assume that

$LR_i = 1$ if $I_i > 0$ (borrower repaid loan in full or attained repayment rate ≥ 0.90);

or

$LR_i = 0$ if $I_i \leq 0$ (borrower did not repay loan in full or attained repayment rate < 0.90), where LR_i is loan repayment for *ith* borrower.

Assuming that the unobserved I_i are normally distributed with zero mean and variance, the probability that $I_i > 0$ can be computed as

$P_i = \text{Prob}(I_i > 0) = F(I_i) = F(\beta' x_i)$, where F is the CDF.

It is to be noted that the observed LR_i are just realizations of a binomial process in which probabilities are given by $F(I_i)$. Hence, the likelihood function (the joint probability) is given by

$$L = \Pi_{LRi=1} P_i \, \Pi_{LRi=0} (1-P_i)$$

where the first product is over observations for which $LR_i=1$, and the second product is over observations for which $LR_i=0$.

There is a logic behind basing our repayment analysis on utility index. Under normal circumstances, a borrower settles his/her debt if benefits are derived from this activity. For instance, if a borrower expects to get another loan, it is more likely that he/she repays loan as more benefits are expected from this expected loan. More is said under the section dealing with the hypothesis/theoretical framework in relation with variables affecting repayment (utility derived there of).

To address the issue of total loan repayment determinants, borrowers have been grouped into two categories based on the rate of repayments they achieved. Accordingly, we have a category of borrowers with repayment rates of 90 % and above, and a category consisting of borrowers with repayment rates of 89 % and below. This grouping is meant to show borrowers with and without repayment problems. Likewise, the group consisting of borrowers with 90 % and above repayment rates is considered to represent borrowers with no repayment problem while the other group is a group of borrowers who failed to observe the conditions of the loan contracts they entered into.

The grouping is not arbitrary. A question may be raised as to the criteria on which this grouping is based. It is, therefore, imperative to explain the criteria employed.

As noted earlier, a borrower is supposed to deposit 10 % of the loan amount received in a savings account with the DBE or the Commercial Bank of Ethiopia. This procedure is

meant to develop a credit guarantee mechanism and also to pave the way for the integration of the small borrower into the formal financial system.

During the survey, it was noted, in both towns, that most (perhaps all) borrowers with 90 % and above repayment rates had opted to use the 10 % loan amount deposited for covering their unsettled debts. In other words, instead of fully repaying the loan and thus feeling free to withdraw the 10 % deposited amount to use for other purposes, they were observed to be content with using this deposit for debt settlement. According to the concerned cooperative organizing officers, this behaviour may be attributed to the low level of financial awareness of the borrowers about the benefits of savings held with banks. Further, some borrowers even had a misconception that they might not get the deposited amounts back even after full settlement of their debts. Hence, the easier way they thought was good for circumventing this was to stop repayment at the 90 % level so that the DBE would use the deposits as their final debt settlement. This situation seem to underestimate the individual or overall repayment rates reported by the concerned body since the reported figures do not include deposits in their calculation.

It is for this reason that a borrower with at least 90 % repayment rate is regarded as having settled his/her debt. Those borrowers below this rate of repayment can, therefore, be taken to have a repayment problem since they failed, one way or the other, to fully repay within the specified loan period. Therefore, based on the above grouping, a binomial probit model is used to deal with the analysis of the determinants and probability of falling in either of the groups.

Moreover, the major reason for using this model for our dichotomous dependent variable is because of the inefficiency of the OLS method. Usually, if we apply the OLS method, which in this dichotomous variable case is called the linear probability model (LPM), we have the following major problems : 1) non-normality of the error terms; 2) heteroscedasticity of the error terms; and 3) possibility of estimated probabilities lying outside the 0-1 range.

In general, the estimates of β in LPM are not efficient and LPM is also logically weak in that it assumes that $P_i = E(LR_i = 1 \mid x)$ increase linearly with x, implying that the marginal effect of x remains constant throughout (Gujarati, 1988). For these reasons, hence, there is a need for a probability model such as probit model showing that as the explanatory variable increases the probability that the dependent variable will occur ($LR_i = 1$) remains within 0-1 interval. The list and definitions of the explanatory variables are given in Table 1 below.

In the LR_i equation, the loan diversion rate (LDR) variable has been identified to be endogenous because of its dependence on variables both from the LR_i equation and outside. To avoid interdependence between this variable and the error term, the fitted value of LDR has been considered. Since the relation between LR_i and LDR is one way, there is no need for discussion of simultaneity problem.

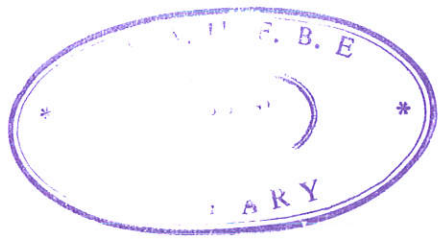
Table 1

List and Definitions of Variables

Variable	Description
Sex	Female=1; Male=0
AGB	Age of borrower in years
LS	Loan size in Birr
WEMP	Number of workers employed including borrower
SAV	Number of supervision visits made to a borrower
NACT	Number of activities in which borrower is engaged to get income
EALO	Repayment in expectation for another loan? Yes=1, No=0
ELB	Educational level 0= if illiterate 1= if grade 1-8 2= if grade 9-12 3= if above grade 12
SRP	Weekly instalment repayment suitable? Yes=1, No=0
LDR	Loan diversion rate
HI	Household monthly income : 1= if below Birr 100 2= if between Birr 101-200 3= if between Birr 201-300 4= if between Birr 301-500 5= if above Birr 500
AOSC	Other sources of credit available? Yes=1, No=0

The values of the LDR are limited between 0 and 1. That is, we have total loan diversion, partial loan diversion and no diversion. Hence, the appropriate model to compute the fitted value of LDR in this censored sample (which calls for maximum likelihood estimation) is the tobit model (Maddala, 1983) which is specified as follows (see Appendix 1 for detail) :

$$LDR_i^* = B'X_i + U_i$$



where, LDR_i^* is a latent variable, and X_i and U_i, respectively, are set of explanatory variables and the error terms. If LDR_i is the observed variable, the two limit tobit model will have :

$$LDR_i = 0 \quad \text{if } LDR_i \leq 0$$
$$= LDR^* \quad \text{if } 0 < LDR^* < 1$$
$$= 1 \quad \text{if } LDR^* \leq 1$$

where 0 and 1, respectively, are the lower and upper limits. Table 2 gives list of variables identified as affecting LDR.

Table 2

The List and Definitions of Variables in LDR Equation

Variable	Description
URK	Borrower uses record keeping? Yes=1, No=0
NDO	Number of dependents outside borrower's household
HOS	Household size in number
LWD	Loan issued received on time? Yes=1, No=0
HI	Household Income 1 if below Birr 100 2 if Birr 101-200 3 if Birr 201-300 4 if Birr 301-500 5 if above Birr 500

Having finished the discussion of methodologies used in estimating factors affecting probabilities of having and not having a repayment problem, we shall now proceed to the next issue at hand.

4.3.2. EVALUATION OF SCREENING (LOAN RATIONING) MECHANISM

For this section of the study, the method of analysis employed by Hunte (1996) has been made use of. Like the case in Hunte's model, the LRR and LORR of this study, while being continuous, are limited between 0 and 1. In other words, we have defaulters and non-defaulters (with varying degrees), and loan-rationed and non-loan rationed borrowers. The appropriate model for this type of problem (censored samples) is the tobit model (Maddala, 1983) since we cannot have a normal distribution for a variable constrained between 0 and 1 that renders OLS estimates biased as compared to maximum likelihood estimation. The two limit tobit model specification for loan repayment rate and loan rationing equations is given below (see Appendix 1 for detail) :

$$LRR_i^* = \alpha' X_i + e_{1i}$$

$$LORR_i^* = \beta' X_i + e_{2i}$$

where,

LRR_i^* = Loan repayment rate

$LORR_i^*$ = Loan rationing ratio is measured as a ratio of loan granted to loan requested

X_i = Set of borrower characteristics

α, β = Set of parameters

e_i = The error terms

Note that both LRR_i^* and $LORR_i^*$ are latent variables. If we, respectively, denote the observed variables by LRR and LORR, the specification for a lower and upper limits of 0 and 1, respectively will appear as shown below. For brevity, we see the case for LRR.

$$LRR_i = 0 \quad \text{if } LRR_i \leq 0$$
$$= LRR^* \quad \text{if } 0 < LRR^* < 1$$
$$= 1 \quad \text{if } LRR^* \leq 1$$

"In order to evaluate the efficacy of the financial technology, the level of parameter significance and the sign in the estimation of the loan rationing ratio equation should be compared with the level of significance and sign in the estimation of the repayment equation. Significant parameters in the rationing and repayment equations will reveal the correct identification of loan rationing criteria" (Hunte, 1996). According to Hunte (1996), significant parameters in the loan rationing equation, but no parameter significance in the equation of loan repayment will reflect a useless rationing device, since no information on default probabilities will be observed. He further states that significant parameters in the equation of loan repayment, compared with no parameter significance in the equation of loan rationing will reveal that the lender is ignoring useful information that clearly identifies applicants with low credit risks. Moreover, he goes on, for a screening mechanism to identify creditworthy borrowers accurately, a significant positive sign in the equation of loan rationing has to be matched with a significant positive sign in the repayment equation for the same variables. Alternatively, a significant positive sign in the equation of loan rationing matched with a significant negative sign for the same variable in the equation of loan repayment will accurately indicate the presence of a flawed screening mechanism that can attract default-

prone borrowers. A significant negative sign, Hunte further elaborates, in the equation of loan rationing and a significant positive sign in the equation of loan repayment will indicate the existence of a situation where the screening mechanism is incorrectly rationing credit too strictly to creditworthy borrowers. On the other hand, Hunte stresses, significant negative signs in both equations will show that there is an accurate identification of default-prone borrowers that deserve more strict rationing.

Table 3 shows a four-way classification scheme developed by Hunte (1996). This classification matches creditworthy and non-creditworthy borrowers. By creditworthy borrowers in this study we mean those borrowers who properly observe all the conditions of the loan contracts and fully repay their loan while non-creditworthy borrowers are those borrowers who fail to satisfy the loan contract conditions and have repayment problems.

Table 3

Diagnostic Matrix for Evaluating the Screening and Rationing Mechanism

Hypotheses (States)	LENDER'S CREDIT ACTION : accept H_0		LENDER'S CREDIT ACTION : reject H_0	
	ex ante no rationing	ex post repayment	ex ante rationing	ex post repayment
H_0: Creditworthy	$+\beta_s$ Sector I No Error	$+\alpha^{rp}$	$-\beta_s$ Sector III Type I Error	$+\alpha^{rp}$
H_1: Non-creditworthy	$+\beta_s$ Sector II Type II Error	$-\alpha^{rp}$	$-\beta_s$ Sector IV No Error	$-\alpha^{rp}$

Note: β_s = screening mechanism (LORR): if negative, more rationing; if positive, less rationing.

α^{rp} = repayment rate (LRR): if negative, less repayment expected; if positive, more repayment expected

Source: Hunte (1996).

In line with the above discussion, in Table 3, Sector I shows the category of creditworthy borrowers while Sector III indicates the misclassification of creditworthy borrowers as high credit risk borrowers. In other words, Sector III shows that creditworthy borrowers who have the capacity to repay larger loans are rationed. This indicates a defective screening mechanism. Sector IV and Sector II reveal the situation in which loan is made

available to default-prone borrowers. Borrowers that fall in Sector II are those who face no rationing but have poor repayment performance. These borrowers who, according to Hunte (1996), fail to satisfy the contracted repayment terms after receiving disbursements create a moral hazard problem which is defined as the tendency of one party to a contract to alter his or her behaviours in ways which are costly to the other party. Borrowers in Sector IV are those which are accurately rationed. Loan to such kind of borrowers should not be granted in principle.

Based on the above system of classification, "the proportion of significant parameters falling in each of these four sectors will indicate whether or not the technology is flawed and will have important implications for the financial viability of credit institutions" (Hunte, 1996).

In connection with the methodologies employed in analyzing the data, it is to be noted that LIMDEP Version 7.0 software has been used in the estimation process. The other point that is to be noted is that the variables considered in both the LRR and LORR equations are the same as those stated under section 4.3.1. It must also be born in mind that the use of fitted values of the variable LDR still applies in these equations. Hence, for the sake of brevity, repetitions are avoided.

In conjunction with model estimation, it is to be borne in mind that in an attempt to maintain normality in some variables log-transformation has been utilized. Further, some variables which had been thought to be useful for the analysis were dropped out due to the

fact that they resulted in severe multicollinearity problems that would jeopardise the soundness of the models in the study.

5. EMPIRICAL RESULTS

5.1. DETERMINANTS (PROBABILITIES) OF FULL LOAN REPAYMENT

Before getting in to the discussion of the econometric results, it is good to briefly review the nature of our variables in the following manner. When grouping the sampled borrowers in terms of full repayment and below full repayment rates, in the Bahir Dar sample, we have 305 borrowers (75%) who settled their loan in full and 102 (25%) borrowers who failed to pay in full. In the case of Awasa, the figure for borrowers with full repayment stands at 185 (53%) while that for below full repayment borrowers is 165 (47%). In conjunction with this, it is important to note that the mean repayment rate is 91% for Bahir Dar while it is 80 % for Awasa. The above figures can surely indicate the better performance of borrowers in Bahir Dar when compared to those in Awasa.

In Awasa town, female borrowers represent 85% of the sample while in Bahir Dar they represent 80%. This is due to the fact that female borrowers are given more access to credit provided under the scheme, according to the Staff Appraisal Report of the World Bank (1989).

Table 4

Summary Statistics of the Variables

Variable	Awasa			Bahir Dar		
	Mean	Range	Standard Deviation	Mean	Range	Standard Deviation
SEX	0.8543	0-1	0.3533	0.8084	0-1	0.3941
AGB	25.56	20-50	4.2911	38.7887	19-87	11.0382
LS	1469	500-2000	541.0975	1069.19	200-2000	494.7638
WEMP	1.8057	1-9	1.1565	2.1032	1-8	1.1741
SAV	1.0829	0-7	1.2876	1.9410	0-8	1.3378
HI	2.8514	1-5	1.2044	2.5725	1-5	1.0166
NACT	2.231	1-5	0.7499	-		-
ELB	0.9086	0-3	0.7163	-		-
SRP	0.4029	0-1	0.4912	-		-
AOSC	-	0-1	-	0.1794	0-1	0.3841
EALO	-	0-1	-	0.3145	0-1	0.4649
LDR1	0.2769	0-1	0.3644	0.1891	0-1	0.3082
URK	0.3914	0-1	0.4888	0.1548	0-1	0.3622
HOS	5.911	1-12	2.3469	5.7543	1-15	2.2446
LWD	0.4657	0-1	0.4995	0.6364	0-1	0.4816
NDO	0.4429	0-5	0.8436	0.2973	0-7	0.7412

Note: The mean for a dummy variable indicates percentage of 1's.

The mean loan amount is Birr 1469 for Awasa which is greater than that for Bahir Dar (Which is Birr 1069). While the loan amount for the Bahir Dar sample varies between Birr 200-2000, the range for Awasa is between Birr 500-2000.

Looking at another important variable, we see that about 54 % of the sampled borrowers in Awasa have their own houses while about 41 % of the sampled borrowers in Bahir-Dar have houses of their own. In other words, in terms of wealth, these figures may indicate that wealthy borrowers have more access to credit in Awasa as compared to those in Bahir Dar despite the precondition that an applicant with low level of wealth (specifically, a monthly household income of less than Birr 50) should be allowed access to credit in the scheme.

The mean number of supervision (follow-up) visits made to a borrower is approximately 1.1 for Awasa and 2 for Bahir Dar. Meanwhile, the mean loan diversion rate for Awasa is about 28 % while it is 19 % for Bahir Dar, thus indicating execution of more non-intended activities by borrowers in Awasa than in Bahir Dar.

The weekly repayment period was reported to be suitable by 81 % and 40 %, respectively, of the respondents in Bahir Dar and in Awasa. The smallness of the figure for Awasa may give a reason for the smaller mean repayment rate as compared to the Bahir Dar case. Borrower's age is another variable we have in our discussion of loan repayment. The mean age is about 26 years for Awasa and 39 years for Bahir Dar, showing borrowers in Awasa are younger than their counterparts in Bahir Dar.

The average household size for both towns is about 6 persons. Meanwhile, the mean range of household monthly income is approximately Birr 201-300 for both towns,indicating a bit of divergence from the original requirement to qualify for a loan. Concerning expectation for another loan, there is more tendency to repay in expectation of getting another loan in Awasa than there is in Bahir Dar. Accordingly, 66 % the of respondents in Awasa effected repayment because of expectation for another loan while the figure for Bahir Dar stood at 31%.

In terms of education, borrowers in Awasa are more educated than those in Bahir Dar. This can be seen from the mean figures for the dummy education variable -- 0.9086 for Awasa and 0.7174 for Bahir Dar. Although the figures may approximate educational level of grade 1-8, we can see that the figures are not equal thus indicating the existence of more educated borrowers in the Awasa sample than in that of Bahir Dar. There is also a related report in terms of whether or not record keeping is employed by borrower. We have 39 % of the respondents in Awasa who used record keeping whereas 16 % of respondents in Bahir Dar reported to have used record keeping.

The number of activities, serving as a source of income, in which a borrower is engaged is also another variable of concern in this study. The mean number of activities for Awasa is 2.23 (ranging between 1-5 activities) and 1.25 (ranging between 1-4 activities) for Bahir Dar.

The variable representing availability of other sources of credit than 'iqub' and the DBE loan also has got an information to give. Consequently, we have 58 % of the

respondents in Awasa with other sources of credit while only 18 % of the respondents in Bahir Dar have other sources of credit.

Equally important like the other variables stated earlier is whether or not loans were issued on time. According to the outcome of the study, 62 % of the respondents in Awasa received loan on time while 76 % of the respondents in Bahir Dar reported to have received loan on time. It is also worthwhile to note that the micro-enterprises which benefited from the credit scheme managed to create job opportunities for 2 persons (mostly family members) on average (approximately) in both towns. We can thus feel that the scheme is also contributing towards unemployment reduction in addition to income generation as planned. The summary statistics are given in Table 4 for more information.

Going into the discussion of our econometric estimates, the results are given in Table 6. Before attempting the estimation of the major equation, however, a tobit regression had been done to obtain the fitted value of loan diversion rate. As a result, as shown in Table 5, loan diversion rate is negatively related with use of record keeping, timely loan granting, and monthly household income for both towns. Household size and number of dependents outside the household have been found to have positive relation with loan diversion for Awasa. But the relation is not statistically significant. For Bahir Dar, number of dependents outside household has a statistically significant positive relation with loan diversion. On the other hand, household size (which is included only in the LDR equation assuming that the direct impact of this variable is mainly on loan diversion) has an unexpected sign (negative) but it is insignificant.

Coming back to our discussion of estimates of the probit model estimating full loan repayment probabilities, it has been detected that the model for Awasa has a problem of heteroscedasticity, which is usually said to be highly associated with cross sectional data, results when the disturbance term is not constant across observations. On the other hand, no heteroscedasticity problem has been detected in the case of Bahir Dar.

Heteroscedasticity in a univariate probit model is modeled as:

$$\text{Var}[\ \epsilon\ ] = [\ \exp(\alpha' z)\ ]^2$$

where z stands for vector of weighting variables.

The Lagrange Multiplier test is used in testing the null hypothesis of homoscedasticity. Using matrix algebra, the Lagrange Multiplier statistic for this test of hypothesis, H_0 is given by :

$$LM = g'_0\ [\ H_0\ ]^{-1}\ g_0$$

where **g** is the gradient of the log-likelihood function and **H** is **N** times a consistent estimator of the expected value of the Hessian of the log-likelihood. The subscript **'0'** indicates that these matrices are to be computed at the parameter estimates obtained under the restrictions of $\mathbf{H_0}$ (Greene, 1993). See Appendix 1 for more modelling information.

The LM statistic is asymptotically distributed as chi-squared (χ^2) with degrees of freedom equal to the number of variables in z. Consequently, we have to compare the value of the LM statistic with the critical value of χ^2. For the study's purpose, one variable, NACT, is used as a weight (i.e., the variance is modeled as depending on NACT).

The LM statistic calculated is 65.8132 whereas the critical value of χ^2 at 95 % level with one degree of freedom is 3.84, clearly indicating that the null hypothesis of homoscedasticity should be rejected. Based on this result, the probit model with heteroscedasticity is estimated, using variable NACT as a weight, for Awasa side by side with the model for Bahir Dar. Estimates are shown in Table 6.

According to the estimates, the number of workers employed has positive relation with full loan repayment for both towns. Supervision visit has an unexpected negative sign, albeit statistically insignificant, for Awasa. This must be due to the fact that more supervision visits have been paid to borrowers who were lagging behind in their repayment despite their reluctance to react positively to the visits. Age, and weekly repayment period have positive relation (significant) with full loan repayment in the case of Awasa.

Loan size and loan diversion are negatively related to full repayment for both cases. However, it is only loan diversion which has a significant relation with full repayment. Furthermore, expectation for another loan and availability of other sources of credit which are considered to work in the case of Bahir Dar only have statistically significant relation with full loan repayment. While expectation for another loan has positive relation, availability of other credit sources has negative relation with full loan repayment, showing that borrowers

with access to other credit sources do not care about repaying the loan made available through the scheme.

Having said so much in relation to statistical significance of variables in our binomial probit model, we now pass on to having a look at the probabilities of full loan repayment at specific values of different variables in the model. Probability is given by :

$$E[\ LRR_i \mid X_i\ ] = \Phi(\beta' X_i)$$

where Φ is cumulative distribution function (cdf). Table 7 gives the summary for selected variables.

Table 7 shows that the probability of full repayment by a borrower with all the variables (borrower characteristics) at their mean values is 0.783 (78 %) for Bahir Dar while it is disappointingly low at 0.534 (53 %) for Awasa. The probability for a female borrower to repay loan in full (with the other variables at their mean values) is 0.54 for Awasa and 0.78 for Bahir Dar. The probability for the male borrower is 0.48 and 0.81, respectively, for Awasa and Bahir Dar. The variation in the probabilities for the sexes is seen to be a little bit magnified in the case of Awasa as compared to that of Bahir Dar where the probabilities for both sexes are very close to each other. In the case of Awasa, it seems that female borrowers have a relatively larger probability of repaying loan in full as compared to male borrowers. The probability of recovering (in full) a loan granted to a borrower expecting to obtain another loan (following full settlement of previous loan) is 86 % for Bahir Dar. The probability for

Table 5

Maximum Likelihood Estimates of the Tobit Model for Loan Diversion Equations

Variable	Awasa		Bahir Dar	
	Coefficient	t-ratio	Coefficient	t-ratio
HOS	0.01919	1.175	-0.00225	-0.125
URK	-0.57595*	-6.323	-0.25535*	-2.176
LWD	-0.17132*	-2.138	-0.35336*	-4.483
LOG(NDO)	0.0174	0.188	0.37216*	3.919
HI	-0.10022*	-2.874	-0.09043*	-2.176
CONSTANT	0.43148*	3.384	0.06606	0.477
σ	0.61171	15.513	0.60466	14.017
log-likelihood	-259.0256		-249.9366	
No. of observations	350		407	

* Significant at 5% or better level

those with no expectation, on the other hand, is 74 % for this town. Looking at another variable available in the model for Bahir Dar, we have a significant variation in the probability of repayment with availability of other credit sources. Accordingly, while the probability for those having other credit sources is 58 %, the one for those without other credit sources is 82 %. The other variable in which we observe a significant variation in terms of probability of full repayment is that which stands for whether or not the weekly loan instalment repayment period is suitable (the variable is available only in the model for Awasa). The probability for borrowers who regard the weekly instalment repayment period

Table 6

Maximum Likelihood Estimates of the Binomial Probit Model for Determinants of total Loan Repayment

Variable	Awasa			Bahir Dar		
	Coefficient	Slope	t-ratio	Coefficient	Slope	t-ratio
SEX	-0.03995	-0.0213	-0.063	-0.10278	-0.0805	-0.482
LS	-0.00058	-0.00003	-1.024	-0.00012	-0.00001	-0.713
LOG(WEMP)	1.8573**	0.99198	1.655	0.27325**	0.21401	1.675
LOG(SAV)	-0.41893	-0n2238	-0.895	0.19866	0.15559	1.354
AGB	0.15101**	0.08065	1.734	0.01113	0.00087	1.477
NACT	0.13334	0.07122	0.318	-	-	-
EALO	-	-	-	0.43549*	0.34108	2.457
ELB	0.52558	0.28071	1.480	-	-	-
SRP	2.2412*	1.19702	1.881	-	-	-
LDR2***	-7.7545*	-4.1417	-1.872	-2.1787*	-1.70636	-2.335
HI	-	-	-	0.08537	0.06686	0.955
AOSC	-	-	-	-0.71777*	-0.56216	-2.205
Constant	-3.2312	-1.72578	-1.424	0.43430	0.34014	0.863
log likelihood	-196.1046			-182.1273		
Restricted log likelihood	-242.0298			-229.1446		
Pseudo R^2 (McFadden's)	0.19			0.205		
Count R^2	0.70			0.81		
No. of observations	350			407		

Note: McFadden's R^2 is calculated as 1 - Ln (L)/Ln (L_o), where Ln (L) is the log likelihood, and Ln (l_o) is the restricted log likelihood. Count R^2 = (number of correct predictions) / (number of total observations).

* significant at 5% or better level
** significant at 10% level
*** fitted value of LDR1

is suitable is 72% and it is 40% for whom the period is not suitable. The other variable for which probability has been calculated for Awasa is education. In this case, borrowers with educational level of grade 1-8 have a higher probability (54 %) than illiterate borrowers (which is 45%). In brief, probabilities greater than 50 % imply the presence of possibility of repaying loan in full.

Table 7
Probabilities of Loan Repayment in Full for selected Variables at Specific Values

Variable		Awasa	Bahir Dar
Overall		0.5341	0.7832
Sex:	1 = Female	0.5433	0.7773
	0 = Male	0.4799	0.8067
LS:	Birr 200 (minimum for Bahir Dar)	-	0.8132
	Birr 500 (minimum for Bahir Dar)	0.5797	-
	Birr 2000 (maximum for both)	0.5088	0.7481
EALO:	1	-	0.8602
	0	-	0.7408
AOSC:	1	-	0.5769
	0	-	0.8190
ELB:	1	0.5423	-
	0	0.4518	-
SRP:	1	0.7208	-
	0	0.4007	-

Note: When calculating probabilities of occurrence for a variable at a specific value, the rest of the variables are considered at their mean values

Table 6 also gives us predicted effects of changes in the explanatory variables on the probabilities. They are usually called marginal effects or slopes and are given by :

$\partial P_i/\partial X_i = \beta\phi(\beta' X_i)$, where $\phi(\cdot)$ = is the density function of the standard normal.

5.2. THE EFFICACY OF RATIONING AND SCREENING MECHANISMS

In studying the efficacy of the screening mechanisms employed by the microenterprise organizing bodies in the two study areas, the variables used are the same as those used in our earlier binomial probit model estimation. As a result, there is no need to discuss the nature of the variables again here.

Unlike the case in the probit model estimation where borrowers are grouped into two categories, we are now here to use the observed repayment rates of all observations in estimating the loan repayment rate and the loan rationing rate equations based on tobit model

(as noted in the methodology section). Prior to moving into the comparison of estimates of the two equations, a brief look at the observed values of loan repayment rate and loan rationing rate is worthy of note. Table 8 gives us the frequency distributions of the two dependent variables. According to these results, about 53 % (185 borrowers) of the sampled borrowers in Awasa fall within the range of 90-100% repayment rate. In the case of Bahir Dar, the number of sampled borrowers who fall in this range stands at 305 (75 %). The other major range of repayment rate next to the above range in terms accounting for larger number of borrowers is range 80-90 %. We have 57 (16.3%) borrowers within this range for the Awasa sample and 48 (11.8 %) borrowers for the Bahir Dar sample.

Table 8

Frequency Distributions of Loan Repayment Rate and Loan Rationing Rate

Range	Awasa		Bahir Dar	
	LRR	LORR	LRR	LORR
0 - 0.19	1(0.3)	12(3.4)	1(0.2)	0
0.2 - 0.29	3(0.9)	41(11.7)	2(0.5)	0
0.3 - 0.39	19(5.4)	19(5.4)	4(1)	1(0.2)
0.4 - 0.49	23(6.6)	43(12.3)	4(1)	12(2.9)
0.5 - 0.59	19(5.4)	28(8)	10(2.5)	18(4.4)
0.6 - 0.69	21(6.0)	10(2.9)	15(3.7)	26(6.4)
0.7 - 0.79	22(6.3)	4(1.1)	18(4.4)	22(5.4)
0.8 - 0.89	57(16.3)	8(2.3)	48(11.8)	13(3.2)
0.9 - 1	185(52.9)	185(52.9)	305(74.9)	315(77.4)

Note: Figures in parentheses are percentages

Regarding loan rationing, 185 (53%) borrowers in the Awasa sample received loan with less rationing (falling within the range 90-100%). To look at the seriousness of loan rationing in the case of Awasa, Table 8 tells us that 115 (32.8%) borrowers received only 50 % and less of what they had requested in loan. It is to be remembered, as noted earlier, that the sample for Awasa represents 100% of the population eligible for the study. This case of rationing is much more severe than that for Bahir Dar. According to Table 8, about 315 (77.4 %) of the sampled borrowers received 90-100 % of the loans they requested for. It is only 13 (3.1%) borrowers who received below 50 % of their loan requests.

Passing on to the econometric estimation aspect of our analysis, the variance of the two tobit equations for Awasa were found to be heteroscedastic using likelihood ratio (LR) test while the models for Bahir Dar do not have this problem.

Heteroscedasticity is modeled in tobit model as (see Appendix 1 for more) :

$$\sigma_i^2 = \exp(\gamma' z_i) \text{ where, } z_i = [1, x_i] \text{ and } \gamma = [\ln\sigma^2, \alpha]$$

LR test which is asymptotically distributed as chi-squared with degrees of freedom equal to the number of variables in the weights for heteroscedasticity is given by :

$$LR = \chi^2 = 2(\ln L - \ln L_0)$$

where lnL is the log likelihood for the model with heteroscedasticity and $\ln L_0$ is the log likelihood for the model with homoscedasticity.

Proceeding with the test, variables log(WEMP), AGB, and LS are used as weights for the LRR equation and AGB and LS are used for the LORR equation. The calculation gives the following result for the LRR equation.

$$\chi^2 = 2(36.76 - 22.23) = 29.06$$

Comparing this with the critical value of chi-squared at three degrees of freedom which is 7.82 at 95% level, we see that the null hypothesis of homoscedasticity can be rejected.

In relation to the case of LORR equation, the results for LR test are given below.

$$\chi^2 = 2(-218.51 - (-223.09) = 9.16$$

This figure is, like the case for LRR, also greater than the chi-squared critical value at two degrees of freedom which is 5.99 at 95 % level, thus leading to the rejection of the null hypothesis of homoscedasticity. Following these results, the models with heteroscedasticity are estimated using the above mentioned weighting variables. Table 9 gives the estimates.

Before going into the findings, it is worthwhile to refresh our memories about the comparative analysis mentioned earlier in Table 3. In a bid to evaluate the efficacy of loan rationing (screening technique), we compare the sign of a variable that is significant in both LRR and LORR equations. In brief, a positive sign in LRR equation indicates good

repayment while a negative sign shows the reverse. In the case of LORR equation, a positive sign for a variable implies that loan is granted to borrowers with such characteristic without rationing and a negative sign implies the presence of rationing.

Based on the above, the comparison process is done in the following manner. If a statistically significant variable is positively signed in both of the equations, it implies that the screening technique correctly identifies a borrower with this characteristic as creditworthy; that is, such a borrower that receives loan without rationing also performs very well in repaying loan. If the variable is negatively signed in both of the equations, it means that a borrower with this characteristic is correctly identified as non-creditworthy showing that rationing loan to such a borrower is correct in that he/she is not a good payer. If a variable is negatively signed in LRR equation but positively in LORR equation, it implies that the screening technique is not capable of identifying a creditworthy borrower since non-rationing of loan to a borrower with this characteristic results in poor loan recovery. Further, if a variable is positively signed in LRR equation and negatively signed in LORR equation, the implication is that the screening technique incorrectly rations a good payer.

As per the estimates for Awasa, seven out of nine variables are statistically significant in the LRR equation. Sex, age, number of workers employed, education and weekly repayment period are positively related with loan repayment while loan size and loan diversion are negatively related with repayment in the case of Awasa. As regards LORR for the town, again we have seven (out of nine) variables that are statistically significant. Accordingly, loan size, supervision visits, weekly repayment period and loan diversion are positively related with loan rationing ratio. In other words, borrowers with these

characteristics have been less rationed. On the contrary, age, number of income generating activities, and education have negative relation with loan rationing ratio implying the rationing of loan to borrowers with these characteristics.

Regarding the case of Bahir Dar, we have seven out of nine variables that are significant in the loan repayment rate equation. Expectation for another loan, supervision (follow-up) visit, monthly household income and number of workers employed have significant positive impact on loan repayment rate. In other words, loans to borrowers with such kind of characteristics may result in their enhanced recovery. On the other hand, loan diversion and loan size (like the case of Awasa), and availability of other sources of credit are negatively related to loan repayment. The other variables are statistically insignificant indicating that they have no worth mentioning relation with loan repayment in this case of Bahir Dar. For instance, such variables as age and sex are insignificant in affecting repayment behaviour of borrowers.

In relation to loan rationing equation of Bahir Dar, six out of nine variables are significant. Accordingly, loan size, expectation for another loan and availability of other credit sources are positively related with loan granting without rationing. On the other hand, number of workers employed, supervision visits and loan diversion have negative impact. The remaining variables have no statistically significant relation with screening behaviour of the microenterprise organizing bodies.

Following the above discussions, we are now to proceed to our next job of comparing the significant variables in loan repayment rate equation with those in the loan rationing equation. We are to use the criteria in Table 3 in our comparative analysis.

Table 9
Maximum Likelihood Estimates of the Tobit Equations for Determination of Efficacy of Screening Mechanism

Variable	Awasa		Bahir Dar	
	LRR	LORR	LRR	LORR
SEX	0.07532* (2.828)	0.00572 (0.070)	-0.01355 (-0.601)	0.01819 (0.205)
LS	-0.00007* (-3.000)	0.00042* (5.680)	-0.00004* (-2.185)	0.00019* (2.414)
LOG(WEMP)	0.0758* (3.310)	-0.08616 (-1.316)	0.0287** (1.640)	-0.14913* (-2.137)
LOG(SAV)	-0.01963 (-0.905)	0.11639* (2.178)	0.0315* (2.031)	-0.11378* (-1.953)
AGB	0.00837* (2.960)	-0.0192* (-2.783)	0.0005 (0.652)	0.00418 (1.357)
NACT	0.01553 (0.936)	-0.07782* (-1.831)	-	-
EALO	-	-	0.04225* (2.309)	0.19777* (2.660)
ELB	0.03649* (2.279)	-0.08707* (-1.830)	-	-
SRP	0.0796* (2.909)	0.35223* (4.238)	-	-
LDR2***	-0.70397* (-7.202)	0.87991* (3.244)	-0.36451* (-3.622)	-1.6607* (-4.115)
HI	-	-	0.0223* (2.227)	-0.03695 (-0.0914)
AOSC	-	-	-0.14408* (-3.871)	0.65719* (4.077)
Constant	0.69849* (7.404)	0.68611* (3.020)	0.97329* (18.191)	1.3003* (6.088)
σ	0.11359 (3.311)	0.56353 (2.140)	0.14950 (20.478)	0.47689 (11.595)
log- likelihood	36.76	-218.51	-0.2598	-187.1865
No of observations	350	350	407	407

Note: Figures in parenthesis are t-statistics

* significant at 5% or better level
** significant at 10% level
*** fitted value of LDR1

Looking at the case of Awasa in Table 9, we can observe that five variables are significant in both equations, thus allowing us to make the comparison. The variables include loan size, age, education, weekly repayment period and loan diversion. Going into the details of the results, borrowers that accepted weekly repayment period as suitable were correctly identified as creditworthy borrowers since we have positive sign in both equations for this variable. Despite this correct screening technique that categorizes the above borrowers in Sector I of Table 3, there are some other anomalies. For example, borrowers were incorrectly rationed while they were actually good payers. Such borrowers fall in Sector III of Table 3. To this effect, literate borrowers and borrowers with relatively higher level of age were incorrectly rationed despite being good payers. Furthermore, loan diverters and borrowers that applied for relatively larger loan amounts were not rationed while they were actually non-creditworthy borrowers that should fall in Sector II of Table 3. This inability to separate creditworthy from non-creditworthy borrowers must have contributed to the relatively lower average repayment rate as compared to the case of Bahir Dar.

As regards to Bahir Dar, we also have some screening problems although relatively less serious as compared with the case of Awasa. According to Table 9, there are six significant variables in both equations. Here we have borrowers that fall in all sectors of Table 3. Borrowers with expectation for another loan and loan diverters, respectively, were correctly identified as creditworthy and non-creditworthy borrowers. While the former group of borrowers falls in Sector I of Table 3, the latter group falls in Sector IV of Table 3. Identifying loan diverters as non-creditworthy borrowers is the salient feature of the Bahir Dar screening technique. Though this group of borrowers should have been denied access to

credit, because of lack of full information on the behaviour of a borrower the group may keep on having an access (to a limited extent) to credit.

Apart from the above, Table 9 also tells us that the screening technique in Bahir Dar is not without its weaknesses. Consequently, it is shown that microenterprises which created more employment and those which required more supervision visits were incorrectly rationed despite the fact that they were good payers. In other words, making more loan to this group of borrowers (that fall in Sector III, Table 3) available would have contributed positively to the profitability of the lender. Meanwhile, borrowers that applied for relatively larger loan amounts and those that had other sources of credit (falling in sector II, Table 3) were not rationed properly while they accounted for more repayment problems. Presumably, the borrowers with other sources of credit are not worried about not getting another loan from DBE. This is also a serious problem of screening (like the case in Awasa) which lets non-creditworthy borrowers have access to credit.

In concluding this section, it has been tried to portray that there were screening problems in both towns. According to Table 9, however, the degree of seriousness of the problems is not the same for both towns. It seems that, based on the study's findings shown in Table 9, the problem is slightly more serious in the case of Awasa. Nonetheless, these faulty screening techniques observed in the towns need not be exaggerated when considering the fact that those involved in screening borrowers for loan are not much experienced in the field and were not informed of relevant empirical research findings either. Most of their activities are based on haphazard techniques. Besides, as stated in the literature review, empirical studies on the Ethiopian case are also thin thus compounding the problem further.

It is, therefore, advisable to look for ways of refining lending strategies in such a credit scheme before contemplating to widen the scope of the scheme.

6. CONCLUSION AND POLICY IMPLICATIONS

6.1. CONCLUSION

This study tries to portray the repayment performance of microenterprise borrowers and the credit rationing behaviour of loan administrators in a credit program managed by government agencies. Accordingly, the evidences provided by the study show that the overall performance in Bahir Dar, in terms of loan repayment and borrower screening, is relatively better than that in Awasa. For instance, the probability of repaying loan in full and the mean rate of repayment for Bahir Dar are better than those for Awasa, thus indicating the greater chance of incidence of loan default in Awasa.

More specifically, number of workers (including borrower, family member and hired labour) employed, age and weekly repayment period are likely to contribute to greater probability of recovering total loan disbursed in the case of Awasa. Loan diversion, on the contrary, is found to reduce the probability. In the case of Bahir Dar, the major factors found to increase probability of recovering total loan disbursed include number of workers employed and expectation of getting further credit. Loan diversion and availability of other sources of credit, on the other hand, contribute to the reduction of the probability of total loan recovery. In general, while number of workers employed contribute towards increased probability of total loan recovery loan diversion is more likely to reduce the probability. Therefore, loan administrators need to base their choice of beneficiaries upon repayment enhancing factors.

In terms of lending strategies, the empirical evidences exhibit the presence of screening techniques incapable of efficiently separating creditworthy borrowers from non-creditworthy borrowers, albeit the problems in Bahir Dar seem relatively milder. The criteria identified to contribute towards weak lending strategies include incorrect loan size, access to other sources of credit and loan diversion. Weekly repayment period and expectation of getting further loan, however, are factors that generate creditworthiness.

Despite the general good achievements scored during the credit scheme implementation, the evidences from the two study areas indicate that the sustainability of such a credit scheme may fall in jeopardy unless due attention is given to lending strategies (techniques) and borrower repayment behaviour. Thus, more has to be done not to lose the grip on benefits of group-based credit.

6.2. POLICY IMPLICATIONS

This study has attempted to come up with evidences which may serve as a springboard in identifying efficient lending strategies in an environment where microfinancing is carried out based on haphazard lending techniques due to lack of prior relevant experience. On the basis of the evidences, therefore, some policy implications need to be brought to the attention of loan administrators and interested bodies.

According to the major findings discussed earlier, we have two factors; viz, loan size and loan diversion, that happen to apply in both of the study areas. Fortunately, they are among the major factors of interest in loan repayment analysis. These factors are found to

work towards increased default risk (loan repayment) which is a symptom of slack lending strategy.

To begin with loan size, the evidences imply that there is a need for a correct size of loan. This in turn implies that loan application evaluation techniques need to be periodically improved in an attempt to keep pace with changing nature of credit demands. In this regard, a relevant training program need to be adopted.

Loan diversion is the other factor identified as contributing towards generating default risk because of incorrect lending strategy. Problems associated with loan diversion may be partly removed by paying attention to such factors as monthly household income, record keeping and timely loan issuing that, as disclosed earlier, are considered to reduce loan diversion. Here again, improving loan application evaluation techniques seems to be imperative.

On top of the above, some notes are also required to be made on the general importance of peer monitoring where by group members monitor the actions of their peers in a group-based credit program. As observed during the survey period, microenterprise groups in the study areas exhibited lack of incentive for peer monitoring. Contrary to the procedures of group-based credit which requires joint liability of group members, cooperative executives and cooperative organizing agents usually take the prime responsibility of dealing with a defaulter. Because of this and loose group formation involving free rider problems, many of the salient features of peer monitoring seem to have been lost. Therefore, designing a successful peer monitoring system in addition to allowing the emergence of truly self-

formed groups may help in dealing with loan diversion and other problems of screening. To this effect, peer groups should actually constitute self-selected members. Peer groups thus formed need to form a cooperative with a lesser size of membership as compared to the present practice of allowing cooperatives to have a maximum of thirty members (six groups) in order to reduce the coordination burden. Following this and a borrower training program developed accordingly, the job of screening and supervision of loan utilization should be based on peer monitoring so that loan administrators can focus mainly on loan evaluation and coordination of peer groups and loan collection. Peer monitoring should, therefore, be institutionalized by changing the existing dependence on zonal cooperative promoting agents for screening and supervision so that moral hazard and free rider problems are reduced.

APPENDIX 1 : NOTES ON SOME ECONOMETRIC TOOLS

1.1. The Probit Model and Utility Index

Utility index is given by

$$I_i = \beta' X_i$$

I_i are not observed. Instead we observe :

$y_i = 1$ if $I_i > 0$

$y_i = 0$ if $I_i \leq 0$

That is, the larger the value of the utility index, the greater the probability of y_i to occur.

Assuming that the unobserved I_i are normally distributed with zero mean and variance, the probability that $I_i > 0$ can be computed from the standardized normal CDF (Cumulative Distribution Function) as

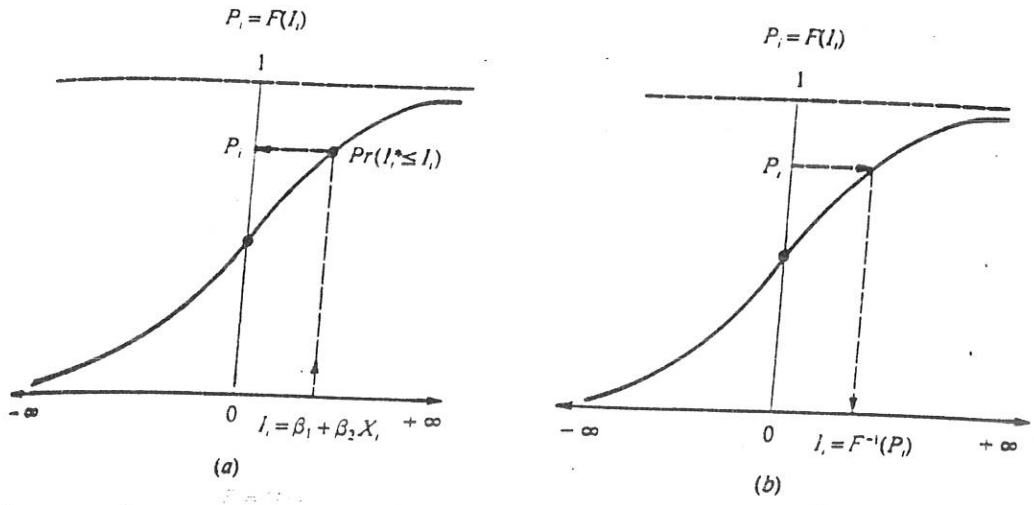
$$P_i = Pr(LR_i = 1) = Pr(I_i > 0) = F(I_i) = \frac{1}{(2\pi)^{1/2}} \int_{-\infty}^{I_i} \exp(-\frac{t^2}{2}) dt$$

$$= \frac{1}{(2\pi)^{1/2}} \int_{-\infty}^{\beta' x_i} \exp(-\frac{t^2}{2}) dt$$

where F is the CDF and t is a standardized normal variable, i.e, $t \sim N(0,1)$. This probability is measured from $-\infty$ to $B'X_i$.

Figure

The Probit Model



Probit model: (a) Given I_i, read P_i from the ordinate; (b) Given P_i, read I_i from the abscissa.

Source : Gujarati (1988)

Any one interested in calculating the utility index can do so by taking the inverse of the above equation for P_i. The above figure illustrates the probit model under which P_i will remain within the 0-1 interval, the non-linear relationship between P_i and X_i (i.e., P_i taper off at slower rates at zero and one as X_i get smaller and very large, respectively), and the derivation of the utility index. In the figure I_i^* is zero or the threshold above which $y_i=1$ (i.e., loan repayment in full in this case) will occur.

1.2. The Two Limit Tobit Model

The model is specified as

$$y_i^* = \beta' X_i + \epsilon$$

$$\epsilon \sim N(0,\sigma^2)$$

y^* is not directly observed; i.e., it is censored. The observed counterpart for a tobit model with lower and upper limits is given as

$$\begin{aligned} y_i &= L_{1i} \quad \text{if } y_i \leq L_{1i} \\ &= y_i^* \quad \text{if } L_{1i} < y_i^* < L_{2i} \\ &= L_{2i} \quad \text{if } y_i^* \leq L_{2i} \end{aligned}$$

where L_{1i} and L_{2i} are, respectively, the lower and upper limits. The likelihood function or the joint probability for this model is given by

$$L(\beta, \sigma \mid y_i, x_i, L_{1i}, L_{2i})$$

$$= \prod_{y_i=L_{1i}} \Phi\left(\frac{L_{1i}-\beta' X_i}{\sigma}\right) \prod_{y_i=y_i^*} \frac{1}{\sigma}\phi\left(\frac{y_i-\beta' x_i}{\sigma}\right) \prod_{y_i=L_{2i}} \left[1-\Phi\left(\frac{L_{2i}-\beta' x_i}{\sigma}\right)\right]$$

Denoting $\Phi[(L_{1i}-\beta' x_i)/\sigma]$ and $\Phi[(L_{2i}-\beta' x_i)/\sigma]$ by Φ_{1i} and Φ_{2i}, respectively, with corresponding definitions for ϕ_{1i} and ϕ_{2i}, we have expressions for $E(y_i)$ as

$$E(y_i | L_{1i} < y^*_i < L_{2i}) = \beta' x_i + E(u_i | L_{1i} - \beta' x_i < u_i < L_{2i} - \beta' x_i)$$

$$= \beta' x_i + \sigma(\phi_{1i} - \phi_{2i})/(\Phi_{1i} - \Phi_{2i})$$

1.3. The LM Statistics for Testing Heteroscedasticity

Using matrix algebra, LM statistics is given by

$$LM = g'_0 [H_0]^{-1}$$

where g is the gradient of the log likelihood function and H is N times a consistent estimator of the expected value of the Hessian of the log likelihood. The subscript '0' indicates that these matrices are to be compacted at the parameter estimates obtained under the restrictions of H_0.

The log likelihood function for a probit model with multiplicative heteroscedasticity is given by

$$\ln L = \Sigma_i \ln \Phi[q_i \beta' x_i \times \exp(-\gamma' z_i)$$

where $q_i = 2y_i - 1 = \text{sgn}(y_i)$

The gradient is $\partial \ln L / \partial \beta = \Sigma_i v_i x_i$

$$\partial \ln L / \partial \gamma = \Sigma_i v_i z_i (-\beta' x_i)$$

where $v_i = q_i(\phi/\Phi) \times \exp(-\gamma' z_i)$, and ϕ_i, Φ_i = the standard normal pdf and cdf at $q_i \beta' x_i \times \exp(-\gamma' z_i)$. The two parts of the gradient are combined into g_i for convenience. Hence,

$$H = \Sigma_i g_i g_i'$$

APPENDIX 2: SURVEY QUESTIONNAIRE

DETERMINANTS OF URBAN MICROENTERPRISE LOAN REPAYMENT SURVEY IN AWASA AND BAHIR DAR TOWNS

TO THE RESPONDENT :-

The outcome of this questionnaire is meant to support a research report to be presented for a university degree. The answers given by a respondent are confidential and will not be disclosed to any party for purposes other than strictly research. The research outcome that may be possible through this questionnaire is believed to contribute to the objective of helping the urban poor in Ethiopia through providing credit more effectively.

QUESTIONNAIRE FOR STUDYING THE DETERMINANTS OF MICROENTERPRISE LOAN REPAYMENT RATE IN URBAN ETHIOPIA WITH SPECIAL REFERENCE TO THE CASE OF AWASA AND BAHIR DAR TOWNS

Town:---------- Date:----------

Enumerator:---------- Questionnaire No.:----

PLEASE ANSWER THE FOLLOWING QUESTIONS CAREFULLY
YOUR COOPERATION IS HIGHLY NEEDED IN ANSWERING THE QUESTIONS

SECTION 1: BORROWER IDENTIFICATION

1.1. Name of borrower:_____

1.2. Address: Kefitegna (Woreda/Higher):---------- Kebele:-------

1.3. Age:--------

1.4. Sex:--------

Answer 1 if female

0 if male

1.5. Marital status:------

Answer 1 if single

2 if married

3 if divorced

4 if widowed

1.6. Educational level of borrower:---------

Answer 0 if illiterate (cannot read and write)

1 if grade 1-8

2 if grade 9-12

3 if above grade 12

1.7. Household size (number of dependents in the household of the borrower):-------

List household members by age and sex :

Name (optional - number may be used in place)	Age	Sex
----------	----	----
----------	----	----

1.8. How many persons do you support outside your household ?----

SECTION 2 : COOPERATIVE (GROUP) FORMATION INFORMATION

2.1. Name of the microenterprise cooperative to which the borrower belonged last time:-------

2.2. How many members did the cooperative have ?----------

2.3. Did you know all of (most of) the members of your group in the cooperative before joining it ?--------

Answer 1 if Yes

0 if No

2.4. Did you feel obligation to other members of your group?----

Answer 1 if Yes

0 if No

2.5. Did you have a feeling that you might be sued in case of failure to repay the loan ?----

Answer 1 if Yes

0 if No

SECTION 3 : LOAN AND LOAN REPAYMENT

3.1. How much did you receive from the Development Bank of Ethiopia in loan ? Birr-

3.2. In how many weeks were you supposed to repay each repayment instalment (or what was the repayment period/time) ?------

3.3. What was the amount of each loan repayment instalment ? Birr------

3.4. In how many months was the total loan wanted to be fully repaid ?-------

3.5. How much interest did you pay on the loan in the year ? Birr------

3.6. Did you have a belief that the loan was something that had to be repaid to the Bank ?------

Answer 1 if Yes

0 if No

3.7. How many times did you take loan from the DBE by becoming a member of a microenterprise cooperative ?-------

3.8. Was the loan you received enough for your planned purpose ?------

Answer 1 if Yes

0 if No

3.9. What was the amount you had requested ? Birr------

3.10. Was it in expectation of getting another loan that you were repaying the loan ?--

Answer 1 if Yes

0 if No

3.11. How many weeks were you given to adjust yourself to using the loan before starting the loan repayment ?--------

3.12. Was the weekly repayment period suitable ?------

Answer 1 if Yes

0 if No

3.13. If your answer to question 3.12. is No, a repayment period of how many weeks did you think was suitable ?-------

SECTION 4 : PRICE AND CREDIT BENEFIT INFORMATION

4.1. Did you get any benefit because of using the DBE loan during'the period you last took loan ?--------

Answer 1 if Yes

0 if No

4.2. Was the price for your product stable ?-------

Answer 1 if Yes

0 if No

4.3. What was the trend in the price for your product ?-----

Answer 0 if constant

1 if decreasing

2 if increasing

4.4. Did the loan help you in overcoming your problems ?-----

Answer 1 if Yes

0 if No

4.5. Did you use record keeping methods and/or bank accounts ?--------

Answer 1 if Yes

0 if No

SECTION 5 : SUPERVISION AND ADVISORY VISITS

5.1. How many times did people from the industry bureau that organized your cooperative or from the Bank come to visit (advise) or supervise your loan utilization ?------

5.2. Did you go to the industry bureau or the Bank to discuss about any of your problems ?---

Answer 1 if Yes

0 if No

5.3. If your answer to question 5.2. is Yes, how many times did you go ?------

5.4. If you went to the Bank or the industry bureau, were you helped ?------

Answer 1 if Yes

0 if No

5.5. If your answer to question 5.4. is No, and if you had a problem you could not solve with the Bank and the industry bureau, whom else did you approach?

Person's affiliation----------

No comment----------

5.6. Did you get training on the group credit before receiving the loan ?------

Answer 1 if Yes

0 if No

SECTION 6 : LOAN DIVERSION

6.1. Did you use the loan (or part of the loan) for other purposes, than you had first planned? ------

Answer 1 if Yes

0 if No

(skip question 6.2 if your answer to question 6.1 is No)

6.2. If you used the loan partially or fully for other purposes, how much did you spend on these other purposes ? Birr------

6.3. Did you receive the loan on time (or at the time you wanted it) ?-------

Answer 1 if Yes

0 if No

SECTION 7 : INCOME AND WEALTH INFORMATION

7.1. What is the monthly income of your household ?------

Answer 1 if income is below Birr 100

2 if income is between Birr 101-200

3 if income is between Birr 201-300

4 if income is between Birr 301-500

5 if income is above Birr 500

7.2. How many rooms does the house you live in have ?-----

7.3. What is the house you live in made of ?-------

Answer 1 if stone/hollow block/brick

0 if mud

7.4. Do you have a toilet ?-----

Answer 1 if Yes

0 if No

7.5. Do you have your own tap water facility ?------

Answer 1 if Yes

0 if No

7.6. What is the value of your assets (including assets for purposes other than your business) ?--------

Answer 1 if below Birr 500

2 if between Birr 501-1000

3 if between Birr 1001-2000

4 if between Birr 2001-3000

5 if between Birr 3001-4000

6 if above Birr 4000.

7.7. How many times do you go or take your children to a doctor or a clinic per year ?-----

7.8. How much do you think are your medical expenses per year ? Birr-------

SECTION 8 : EMPLOYMENT AND PRODUCTION INFORMATION

8.1. In how many activities were you engaged while using the loan ?------

8.2. What was the major type of activity you were engaged in ?------

Answer 1 if local drinks preparation

2 if food processing

3 if woodwork / metalwork

4 if textiles /garment making/ tailoring/tannery

5 if shoe repair

6 if agricultural activity

7 if others

8.3. How many years of experience do you have in the major activity(ies)/business for which you took the loan ?----

8.4. What type of labour did you employ ?----------

Answer 1 if yourself only

2 if yourself and member(s) of your family

3 if yourself and hired labour

4 if yourself, family member and hired labour

8.5. How many workers did you employ including yourself, family member and hired labour ?-------

8.6. What did you mostly use in your production ?---------

Answer 1 if machines mostly

0 if hand tools mostly

8.7. What was the ownership of the tools or machines you were using ?------

Answer 1 if your property

2 if hired

3 if both hired and your property

8.8. What was the ownership of your workshed ?-------

Answer 1 if your property

0 if rented

8.9. If your workshed was rented, who was the owner ?------

Answer 1 if Kebele

0 if private individual

8.10. How much was the monthly rent ? Birr-------

SECTION 9 : OTHER SOURCES OF CREDIT

9.1. Did you have sources of credit other than the DBE and/or IQUB (it could be for loan repayment during emergency or for your business or for any other purpose)?---

Answer 1 if Yes

0 if No

9.2. If your answer to question 9.1. is yes, please specify your other sources of credit ?----

9.3. Were you a member of an IQUB during the loan period ?-----

Answer 1 if Yes

0 if No

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DECLARATION

I, the undersigned, declare that this thesis is my own original work and has not been presented for a degree in any other University. All sources of materials used for the thesis have been duly acknowledged.

Name : Mengistu Bediye Jima

Signature : 

Date : June, 1997

Place : Addis Ababa.