

**ADDIS ABABA UNIVERSITY**

**SCHOOL OF GRADUATE STUDIES**

**MICROFINANCE AND LOAN REPAYMENT PERFORMANCE:**

**A Case Study of the Oromia Credit and Savings Share  
Company (OCSSCO) in Kuyu**

**By**

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**June 2003**

**Addis Ababa**

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**School of Graduate Studies**

***Microfinance and Loan Repayment Performance: A Case Study of the  
Oromia Credit and Savings Share Company (OCSSCO) in Kuyu***

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*A Thesis Submitted to The School of Graduate Studies, Addis Ababa*

*University, Faculty of Business and Economics in Partial Fulfillment*

*of the Requirements for the Degree of Master of Science in*

*Economics (Economic Policy Analysis)*

**June 2003**

**Addis Ababa**

## **DECLARATION**

I, the undersigned, declare that this thesis is my own work and has never been presented in any other university. All sources of materials used for this thesis have been duly acknowledged.

Declared by:

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Date: \_\_\_\_\_

## **ACKNOWLEDGEMENTS**

I'm very much indebted to my thesis supervisor, Dr. Dejene Aredo, for his invaluable comments, suggestions and advice at each stage of the study. My sincere thanks also go to the Supreme Court of Oromia and the African Economic Research Consortium for giving me the financial support I needed to undertake this study.

I'm also grateful to members of OCSSCO staff particularly Obbo Simegn for their cooperation during the data collection. My special thanks also go to Obbo Demozie Mamie and Obbo Teshale Abera, the former and current presidents of the Supreme court of Oromia respectively, for allowing me join the M.Sc. program. Furthermore I'd like to thank Obbo Tamirat Bizuneh, head of planning and research department of the institution I work in and my officemate Obbo Reggasa Shega for their encouragement throughout the writing of the thesis.

My heart felt gratitude also goes to my parents, who were always with me in all aspects in general. I'd also like to extend my gratitude to my beloved Derartu Raya, who was helping and encouraging me morally and also for typing the material. Birkinesh Kebebew and Arare Tsegaye also deserve my gratitude for the help they have been providing in the course of writing the thesis.

Last but no least my special gratitude goes to my friends Tesfaye Arega (classmate) and Nigusie for their kind cooperation and moral encouragement throughout the study period.

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## ABBREVIATIONS

AEMFI	Association of Ethiopian Micro Finance Institutions
CBE	Commercial Bank of Ethiopia
CSA	Central Statistical Authority
DECSI	Dedebit Credit and Savings Institution
GDP	Gross Domestic Production
IDA	International Development Association
KDARDO	Kuyu District Agricultural and Rural Development Office
MEDaC	Ministry of Economic Development and Cooperation
MFDR	Micro Finance Development Report
MFI	Micro Financing Institutions
MTDP	Market Towns Development Project
NBE	National Bank of Ethiopia
NGO	Non-Governmental Organization
NSADD	North Shoa Agricultural Development Department
OCSSCO	Oromia Credit and Saving Share Company
PA	Peasant Association
POCSSBO	Project Office for the Creation of Small Scale Business Opportunities
WFC	Woman Fuel-wood Carrier

## ***Abstract***

*This study was conducted with the aim of analysing the factors that influence microfinance loan repayment, evaluating the loan rationing mechanism and also assessing the impact of the program on the livelihood of borrowers, using primary data collected through structured questionnaire.*

*The estimation results of the descriptive statistics and the probit model show that education, income, loan supervision, suitability of repayment period, availability of other credit sources and livestock are important and significant factors that enhance the loan repayment performance, while loan diversion and loan size are found to significantly increase loan default. In addition female borrowers were found better in terms of loan repayment. According to these findings the institution is recommended to see into these factors with care and design a better lending strategy focusing on effective supervision, training and approval of appropriate loan size so as to minimize the loan default problem observed. Moreover, it should pay attention to expanding of its services so that more poor women join the program and benefit from it there by contributing to the improvement of the repayment performance.*

Regarding the loan rationing, borrowers who are literate, loan diverters, support more dependents and earn more income, were disfavored; while those who are older, male, apply for larger loan amounts, own livestock of higher value, perceive supervision as adequate and the repayment period as suitable were favored. There were some serious problems observed in the rationing mechanism the institution employed, i.e., borrowers who are good payers (like those who are literate) were rationed more while those who contribute to the default problem (like those who are male and who apply for larger loan amounts) were rationed less. The institution is particularly recommended to improve these problems observed in its rationing mechanism.

*The credit scheme was also found to have positive impact in improving the income, education, health and nutritional status of the borrowers as evidenced by the Wilcoxon test that compares the situations before and after participation in the credit scheme.*

Key Words: *microfinance, loan repayment performance, loan diversion, loan rationing, impact, creditworthy*

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

#### 1.1.1 General

Ethiopia is one of the lowest income countries in the world. Its economy, which is mainly dependent on agriculture, has been hit by several internal and external shocks. Devastating wars, frequent draughts, high population growth, distorted investment environment, volatile primary product prices, etc have been some of the shocks the economy has been experiencing. These and a lot other factors resulted in the decline of the economy as a whole, while the living conditions of the population have been continuously deteriorating. Specifically during the Derge period (1974 -1991) the Ethiopian economy was performing very poorly under a socialist oriented command economy.

Before 1973 the economy was fairly stable. But after 1974, the economy began to face major political, social and economic instabilities, which reduced the relative performance of the various sectors. Private investment was severely undermined due to policies followed by the Derge.

After the fall of the Derge, however, the government of Ethiopia has taken several measures to reverse the economic decline and worsening poverty situation in the country. According to the report by MEDaC(1999) the Ethiopian economy has registered a recovery in economic performance since the introduction of economic reform program after a period of stagnation and decline for nearly two decades.

Although the reform programs and policy changes resulted in economic recovery and growth in GDP, the achievement towards eradication of poverty was not satisfactory. This is because of the fact that without ensuring adequate private sector activities, thereby creating higher employment opportunities, it is difficult to reduce the existing unemployment problem in the country (Berhanu, 1999)

The unemployment problem in the country has forced a lot of people to join the informal sector of the economy. This sector of an economy is said to have a significant role in the creation of jobs and income generation for quite a large proportion of the population in a developing country like Ethiopia. According to a paper compiled by the Ministry of Trade and Industry (cited in Berhanu, 1999) the number of people earning their livelihood from the informal sector activities and small scale manufacturing industries is eight times larger than those engaged in the medium and large scale industrial establishments.

### **1.1.2 Credit policy in Ethiopia**

The formal and informal financial sectors are the principal sources of finance for any investment or business that can be undertaken at micro, small-scale and large-scale levels in an economy. The major financial institutions in the formal financial sector in Ethiopia are the Commercial Bank of Ethiopia (CBE) and the Development Bank of Ethiopia (DBE). As Dejene (1993) noted, because of the elaborate paper work, bureaucratic lending procedures and stringent collateral requirements, the institutions do not deliver credit as and when needed. Moreover they operate at high transaction costs.

During the imperial regime, the banking sector was partly owned by foreigners and the lending policy was mainly oriented to financing foreign enterprises and wealthy clients while domestic small borrowers were rationed out and forced to seek credit from informal finance (Mauri, 1997).

Moreover branch concentration was in few urban centres, with Addis Ababa alone, for instance, accounting for 64 percent of branches in the country. Collateral requirements were up to 200%. The agricultural sector was almost neglected because financial institutions considered agricultural activity as risky investment (Itana, 1994).

During the Derg regime (1974-1991) all financial institutions were nationalized and credit was mainly channelled to public enterprises, state farms and cooperatives. The provision of credit was not based on economic rationality but entirely on government preference. The private sector was marginalized. The discrimination against the private sector was not only in credit access but also in interest rate, which was for instance 9% for private sectors as opposed to 6% for public industrial enterprises since July 1986 (Itana, 1994).

Abreham (2002) noted that with the downfall of the Derge, the private sector got equal access to credit with other sectors, banks were also given autonomy to decide by themselves based on purely commercial criteria and establishment of private banks and insurance companies was permitted. As a result loan disbursed to the private sector, which was 49% in 1992/93 rose considerably and reached 87.7% in 2000/01. In fact there is still unsatisfied demand for credit from this sector of the economy due to inability to meet banks' lending requirements.

As Solomon (1996) noted the banks serve big businessmen and disregard poor households as bankable. Many small, creditworthy businessmen, with their viable investment ventures, are denied access to institutional credit because they couldn't afford the required collateral. He also indicated that, "Overall; the prevailing operation of the formal financial institution in many low-income countries such as Ethiopia is inefficient in providing sustainable credit facilities to the poor."

Regarding delivery of financial services access to institutional credit was very limited in Ethiopia. Because of this limited access, the majority of the poor get financial services through informal sources like moneylenders, Iqub, Iddr, merchants, friends and relatives, etc. The formal financial sources have not been interested in delivering credit to the poor. Even if the banks in the country, which are part of the formal financial sources decide to give credit to the poor (as in the case some banks have been forced to do so during the Derge regime) their outreach was also very limited for long. Thus, delivering financial services to the poor requires an innovative targeting design and a mechanism of credit delivery that helps identify and target only the poor who can take the initiative and sustain productive use of loans.

In recent years the informal and semi-formal lending institutions (such as Iqub, Iddir, money lenders etc.) are becoming the dominant and important sources of finance for poor households in Ethiopia. According to Dejene (1993) these two institutions account for 81% of the agricultural credit.

Currently, the establishments of sustainable and profitable micro finance institutions that serve large number of poor households have been a prime component of the new development strategy

of Ethiopia (Wolday, 2000). NGOs have also been directly funding micro credit activities as part and parcel of poverty alleviation program since the 1970s (MFDR, 2001).

### **1.1.3 Micro Financing in Ethiopia**

Poverty is the main challenge and a fundamental issue of economic development in Ethiopia. The solutions to poverty are multifaceted as are its causes. Many argue that an inadequate supply of credit can affect production negatively. Alleviation of poverty and promotion of economic development can therefore be facilitated through providing credit to the poor.

As tried to point out earlier the formal financial sector has failed to reach the majority of the rural as well as urban poor. This has forced the poor to turn to the informal and semi-formal financial sources. However, credit from such sources is not only inadequate, but also exploitative and costly.

Although provision of credit to rural agricultural household for purchase of agricultural inputs and tools has since long been practiced in Ethiopia, credit schemes targeted at the urban or rural poor were non-existent until recently. Since the 1970s however some NGOs have been providing credit to poor households in some parts of the country, side by side with activities like delivering relief and development services (MFDR, 2001; Mengistu, 1997).

Wide scale micro financing begun in 1990, following the credit agreement signed between the Ethiopian government and the IDA. The credit program was an urban micro financing scheme

that aimed at financing the Market Towns Development Project (MTDP), whose actual operation begun in 1994 (Mengistu, 1997).

Since micro-credit delivery and saving mobilization in Ethiopia are being carried out by NGOs, government departments, co-operatives and others in a fragmented and inconsistent way, the government took the initiative to establish a regulatory framework in order to facilitate sound development of the micro finance industry. Accordingly proclamation No. 40/1996 was enacted to provide for the licensing and supervision of the business of micro financing by empowering the NBE to license and supervise them (MFDR, 2000).

Sixteen MFIs have been licensed by the NBE and started delivering micro finance services since the issuance of this proclamation. These MFIs aim at poverty alleviation through targeting specific groups (reaching the poor) and group based lending. In a short period of time the MFIs have managed to reach a sizable portion of the rural and urban poor, and in so doing have gained significant experience (MFDR, 2000). One of the MFI so established is Oromia Credit and Saving Share Co. (OCSSCO for short) which is operating in the Oromia Regional State of Ethiopia. It was originally established as Oromo Self Help Organization (OSHO) in 1996 to deliver credit and mobilize savings in rural Oromia. Soon it was transformed into OCSSCO and got registered in 1997 as per proclamation No 40/1996.

The general objective of OCSSCO is to alleviate poverty and promote economic development through provision of credit and saving services. The specific objectives of OCSSCO include: - achieving household level food security in Oromia, increasing household income, and improving the overall economic and social conditions of rural households.

Regarding the program norms, OCSSCO's average loan size for the first loan is Birr 1000. A client obtains the next higher loan after the successful repayment of the first loan. Loan terms of OCSSCO are established at different levels for different activities with a maximum loan period of one year. To ensure the viability and sustainability of its operations OCSSCO charges 12.5% per annum on its loan amount and interest will be paid on declining balance. On the other hand OCSSCO pays 8% interest on the amount saved by its clients.

OCSSCO is currently operational only in 29 districts of Oromia. Yet, the entire region has, 180 districts. This indicates OCSSCO is at its infant stage, requiring tremendous expansion of its activities to reach the rural poor (MFDR, 2000).

OCSSCO is confined in areas where the majority of small-scale poor farmers live. According to a report in MFDR (2000), the organization has disbursed a loan amount of Birr 25,315,078 to about 30,000 clients as of June 2000. The amount of savings mobilized has reached Birr 3.1 million during the same period, while the repayment rate has shown a decline (has fallen to 97% in the year 2000).

## **1.2. Statement of the Problem**

An overwhelming majority of the world's poor live in the Third World countries. Various approaches have been employed in alleviating poverty, of which provision of credit that targets the poor is one. Many are now of the opinion that allowing the poor to have command over resources through credit can contribute towards poverty alleviation. Gibbons, (1992) argues that

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.

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 behavior. The lender in the formal financial system is at a disadvantage of information on the borrower's behavior. Fortunately, group based micro financing 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 (Mengistu, 1997).

For such MFIs to be successful, they should be sustainable both financially as well as institutionally. On top of sustainability one has to include developmental effects like income on the target group as core measure of success. For agencies that are involved in the development or in assisting 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).

Although the performance of the MFIs in Ethiopia has been impressive since their establishment, they are experiencing default problems as can be observed in their declining repayment rates, as indicated in the previous section.

Hunte (1996) argues that default problems destroy lending capacity as the flow of repayment declines, transforming lenders into welfare agencies, instead of a viable financial institution. It incorrectly penalizes creditworthy borrowers whenever the screening mechanism is not efficient. 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.

It is obvious that many rural credit schemes have sustained heavy losses because of poor loan collection. And yet a lot more have been dependent on government subsidy to financially cover the losses they faced through loan default. But such dependence will not prove helpful for sustainability. MFIs should rather depend on loan recovery to have a sustainable financial position in this regard, so that they can meet their objective of alleviating poverty.

*"Whether default is random and influenced by erratic behavior 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 micro financing institutions to manipulate their credit programs for the better" (Khandker et al. 1995).*

In view of the above-mentioned problems, the following questions deserve attention. Are there some factors that enhance the loan default problem in such micro financing schemes? What characteristic of borrowers should be taken into consideration by such institutions in the process of screening their clients in a way that will not jeopardize their financial position due to the default problem? What are the benefits from such lending schemes for poor beneficiaries? In an attempt to answer these questions this study will try to analyze the factors behind loan repayment problem, and the impact of the micro financing scheme on the poor beneficiaries by taking the case of OCSSCO's operation in Kuyu district of Oromia.

### **1.3 Purpose and Objectives**

The aim of this study is to investigate determinants of loan repayment performance, evaluate the major determinants used as a means of credit rationing and assess the impact of micro finance credit scheme of OCSSCO on the beneficiaries with particular reference to borrowers in Kuyu district of Oromia.

More specifically, the research will have the following objectives: -

- i. To investigate the factors that influence the loan repayment performance of borrowers financed by OCSSCO.
- ii. To identify the major factors used as a means of separating credit worthy borrowers from those who are not, i.e., to evaluate the efficiency of OCSSCO's screening mechanism.
- iii. To assess the effect of the credit scheme on the beneficiaries in terms of reducing poverty.
- iv. To derive policy implications that will help the organization<sup>1</sup> understand some of the factors behind the loan repayment performance and efficiency of rationing mechanism, in designing efficient lending strategies to ensure program sustainability.

#### **1.4 Research Hypotheses**

The relationship between loan repayment and loan rationing and the factors affecting them are hypothesized based on practical experiences. Accordingly borrowers' socio-economic characteristics, the attitude of the lending agency in properly screening borrowers and other economic conditions are hypothesized to explain loan repayment performance of borrowers.

Specifically the ability of borrowers to effectively use the loan proceeds on income generating activities and also devotion on the part of the lending institution in following up the loan utilization of its borrowers in this regard are hypothesized to be the most important determinants that can improve loan repayment performance.

Further, it is hypothesized that the same variables that are thought to explain loan repayment performance explain the loan rationing mechanism to be employed by the lending institution.

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<sup>1</sup> OCSSCO

Finally beneficiary's livelihood is expected to improve because of participation in the credit scheme provided that the loan is utilized effectively on activities that are income generating.

The list of variables that are hypothesized to influence loan repayment performance and hence the loan rationing mechanism; together with their expected signs is given in chapter three.

### **1.5 Significance of the Study**

As explained earlier, targeting credit to the poor is one of the several instruments of alleviating poverty. MFIs are engaged in providing credit to the poor so that they can generate income and employment for themselves. For these institutions to be able to render such a service on a permanent basis, they should be viable and sustainable. They should not depend on donations or subsidies in the long run.

This requires an efficient loan repayment performance as well as an impact to be observed on the target beneficiaries.

Although some studies have been conducted on the credit schemes that targeted the poor in Ethiopia, no empirical study has been done on micro financing operation of OCSSCO so far. So this study tries to provide a detailed empirical analysis on the loan repayment performance of OCSSCO. It also tries to investigate the screening mechanisms used by the institution and assess the impact of the program on its borrowers.

## **1.6 Scope and Limitations of the Study**

Although sustainability of MFIs includes financial, economic, institutional and borrower viability, this study focuses on only one aspect of it, i.e., borrower viability. Accordingly, the study focuses on loan repayment performance, screening mechanism and impact (which are all part of the borrower viability aspect of sustainability) based on data obtained from only one district. More over other schemes are not considered in this study. Nonetheless, there is no reason to rule out the possibility that the findings of the study might workout for other related schemes. The study will also shade light on situations of the sustainability of OCSSCO's credit scheme.

## **CHAPTER TWO**

### **REVIEW OF LITERATURE**

#### **2.1 Theoretical literature**

##### **2.1.1 The Need for MFI**

The formal financial institutions played little role in financing development efforts in the rural areas. This is because they are clustered in urban areas, concentrate on funding large enterprises and are inaccessible to the rural poor especially in terms of distance.

In addition the rural poor can't fulfill banking requirement to get loans. The requirements for collateral and intrinsic banking procedures are in most cases very difficult for the poor to deal with. The volume of loan demanded by small farmers is not appealing to banks. Such loans are difficult to manage and their processing not financially feasible.

Dejene (2003) argues in his study on the economic importance of the informal institutions in Ethiopia that the poor are often marginalized in the formal credit markets. This can be explained partly in terms of: 1) a lack of collateral, which makes lending to the poor a risky venture; 2) transaction cost of lending to and borrowing by the poor is often high; and 3) utility loss from repayment is higher for the poor as compared to the rich.

So the poor don't have access to the formal financial sources. Lack of access to institutional credit is one of the crucial factors impeding peasant agricultural production in particular and rural development in general.

On the other hand credit from informal sources is inadequate and moreover the interest rate charged is exorbitantly exploitative. Fidler and Webster (1996) note that although informal credit markets operate widely in rural areas, moneylenders typically charge very high interest rates, inhibiting the rural poor from investing in productive income generating activities.

Thus, failure of the formal financial institutions to fulfill the financial needs of the rural poor, on the one hand, and inadequacy and exploitative or costly nature of informal credit sources on the other, led to the establishment of specialized financial institutions known as MFIs with the purpose of extending micro-credit to the rural and urban poor.

Johnson and Rogaley (1997) defined micro finance as the provision of financial services to the poor involving small deposits and loans. MFIs use peer monitoring and joint liability structure to overcome the screening, monitoring and enforcement problems commonly encountered by formal lending institutions (Sinha, 1998).

### **2.1.2 Repayment Performance in Group Lending**

Since the 1970s, group-lending programs have been promoted in many developing countries. A common characteristic of group lending is that the group obtains the loan under joint liability, so each member is made responsible for repayment of loans of his or her peers. Joint liability, but possibly more so, the threat of losing access to future credit, incites members to perform various functions, including screening of loan applicants, monitoring the individual borrower's efforts, fortunes and shocks, and enforcing repayment of their peers' loan. (Zeller, 1996).

The existing theoretical models of peer monitoring deduce that repayment performance in group lending programs is positively related to the homogeneity of members with respect to the riskiness of their projects (Stiglitz, 1993; Besley and Coate, 1995). In group-lending programs, the functions of screening, monitoring and the enforcement of repayment are to a large extent, transferred from bank to group members. The financial intermediary reduces recurrent lending transaction costs by replacing a multiple of small loans to individuals with a larger group loan (Adams, 1988 as cited in Zellar, 1996). This reduction in transaction costs enables financial intermediaries to bank with poor, who demand small loans and who would not receive any credit under an individual loan contract because of excessive unit transaction costs of tiny loans.

Zeller (1996) argues that probably the most important rationale for group lending is the information and monitoring advantages that group-based financial institutions at the community level have, compared to individual contracts between a bank and borrower. Group members get important information like reputation, indebtedness and asset ownership of the loan applicants at a lower cost. They can also easily monitor individual efforts made towards ensuring repayment.

In addition, groups may also have a comparative advantage in enforcement of loan repayment. Group members can potentially employ social sanctions or even seize physical collateral from the defaulter (Besley and Coate, 1995). Moreover, group members appear to be in a better position to assess the reason for default and to offer insurance services to members who are experiencing shock that are beyond their control. (Zellar, 1996)

Despite all the above-mentioned benefits, group lending is not without its problems. There are several factors that may undermine the repayment performance in group lending. Zeller (1996) discusses that since the risk of loan default by an individual is shared by his or her peers, a

member may choose a riskier project compared to that in the case of individual contract, and may count on other members to repay his or her loan (i.e. adverse selection of risky projects). He further notes that repayment incentives for a good borrower will vanish under joint liability, when he or she expects that significant number of peers will default.

Individuals select those whom they thrust to form a group with, that is they want those who can make regular repayments, have a good concern about the possible loss they face in case of non-repayment, ultimately leading to the exclusion of the poorest of the poor.

Reikne (1996) assessed the factors that lead to the failure of group based lending system in urban areas and went on to the extent that he recommended an individual credit system for a better loan repayment. According to him presence of high geographical mobility, low attachment to specific neighborhoods and peer groups consisting of competitors are the factors that frustrate the solidarity of groups in urban areas, and hence group lending is more applicable to the rural environment than to urban society.

### **2.1.3 Credit Markets and Rationing**

The market for credit differs from standard markets for goods and services in two important ways. As we know from the classical competitive theory, the first difference lies in the fact that in standard markets a number of agents take part in buying and selling a homogenous commodity. The second difference lies in the fact that the handover of the good or service and the payment for it occur simultaneously in such markets.

In contrast, credit received today by an individual is exchanged for a promise of repayment in the future. Since promises differ from person to person, and are frequently broken, there may be no objective way of determining that a promise will be kept. That is, moral hazard and adverse selection may affect the likelihood of the promise being kept and hence of that of loan repayment (Jaffe and Stiglitz, 1990)

Considering such basic differences between standard and credit markets, trying to apply the standard supply-demand model is not totally appropriate for analysing the market for promises. If credit markets were like standard markets, then interest rates would be the prices that equate the demand and supply for credit. However an excess demand for credit is common applications for credit are frequently not satisfied, resulting in an excess demand for credit over its supply at the market interest rate (Ibid). This situation is usually termed as credit rationing in the literature. The question to be raised here will be why is credit rationed? The whole story seems to hinge on the fact that prices don't clear the market for credit. In fact credit rationing exists, and this seems to imply an excess demand for loanable funds.

As Stiglitz and Weiss (1981) noted, one way of explaining this condition associates it with short or long term disequilibria. In the short term it is viewed as temporary disequilibrium phenomenon; i.e., the economy has incurred an exogenous shock, and for reasons not fully explained, there is some stickiness in the prices of capital (interest rates) so that there is a transitional period during which rationing of credit occurs. On the other hand long term credit rationing is explained by governmental constraints such as usury laws or minimum wage legislation.

Jaffe and Stiglitz (1990) discuss certain features of loan contracts and loan markets that make standard demand and supply model inapplicable, giving rise to credit rationing. These features include uncertainly the nature of loan contracts, and borrowers risk behaviour. For instance, uncertainty concerning the borrower's ability, or willingness of repaying loans when they are due, results in divergences between promised and actual repayments, creating risk of default. Since the response of lenders to uncertainty is determined in part by the extent of their risk aversion, they may use credit rationing to reduce default risk.

Loan contracts specify the amount borrowed, the interest and non-price terms like collaterals, which constrain the borrower in order to reduce default. As the terms of contract change the behaviour of the borrower is likely to change. For instance, raising the interest rate decreases the return on projects that succeed. This could be due to the fact that higher interest rates induce borrowers to undertake projects with lower probability of success but higher returns when successful.

Stiglitz and Weiss (1981) argue that the interest rate banks charge may affect the riskiness of the pool of loans by either sorting potential borrowers (the adverse selection effect); or affecting the actions of borrowers (the moral hazard or incentive effect); both deriving directly from the residual imperfect information that is present in loan markets after evaluating loan applications.

Since lenders are not able to control all the actions of their borrowers directly, they formulate the terms of loan contract in such a way that induces the borrower to act in the interest of the lender. For this reason the expected return by the lender may rise less rapidly than the interest rate; and, beyond a point may actually decline. Clearly at such an interest rate beyond which the expected

return to the lender starts to decrease, the demand for credit exceeds the supply of loans. The lender wouldn't give a loan to an individual who offers higher interest rate since its expected return is lower. Hence there are no competitive forces resulting supply to equal demand and credit is rationed. The same is true with increasing the collateral requirements beyond some point. (Ibid)

Consequently, it may not be profitable to raise the interest rate or collateral requirements when a lender has excess demand for credit; instead lenders deny loans to borrowers. Hodgman (1960) considered risk of default as a reason for banks not to raise loan rates even though they face an excess demand.

Credit rationing is broadly defined as a situation where the demand for loans exceed the supply of loans at the going interest rate. Different types of credit rationing have been examined in the literature. Pehlivan (1996) as cited in Abreham (2002) saw it from the angle of loan size where borrowers receive a lesser amount of loan than they requested at a given loan rate.

Stiglitz and Weiss (1981) defined loan rationing as a situation where among loan applicants who appear to be identical some receive loans and others don't, even if these rejected ones offered to pay a higher interest rate or equivalently, some identifiable groups of individuals who, with a given supply of credit, are unable to obtain loans at any interest rate, even though with a larger supply of credit, they would.

Jaffe and Stiglitz (1990) further broadened the classification and identified four types credit rationing. These are: - 1) A situation where a borrower may receive a loan of smaller amount than desired; 2) A situation where some individuals cannot borrow at the interest rate they consider appropriate based on what they perceive to be their probability of default; 3) A situation where a

borrower may be denied credit, when a lender thinks of not being able to obtain its required return at any interest rate. The concept that will be addressed in this study is, the first type of rationing.

#### **2.1.4 Impact Assessment and Sustainability**

Microfinance institutions have become an increasingly important component of strategies to alleviate poverty. Hence, knowledge about the achievements of such programs is important. Impact assessment studies are essential to evaluate the success of the program or to see whether the program brings the desired benefits to the target groups. Hulme (2000) noted that impact assessment studies have become increasingly popular with donor agencies, and in consequence, have become an increasingly significant activity for recipient agencies.

There are two major schools of thought that are popular in micro finance impact assessment. Hulme (2000) terms them as ‘intermediary’ and ‘intended beneficiary’ schools, based on their focus of impact. The intermediary school focuses purely on changes in the MFI and its operations. Two key variables are focused on in this approach: institutional outreach and institutional sustainability (Yaron, et al, 1997). If both outreach and sustainability have been enhanced then the intervention is judged to have a beneficial impact as it has widened the financial market in a sustainable fashion.

This is based on the assumption that such institutional impacts extend the choices of people looking for credit and savings services, and that this extension of choice ultimately leads to improved micro enterprise performance and household economic security. Though this holds in

theory, it has failed to be valid in a number of experiences (Hulme, 2000). The intended beneficiary approach focuses on the intended target group or clients rather than the institution delivering the financial services. The units of assessment in this case are the ones developed by USAID's AIMS project that seeks to assess impact at household, enterprise, individual and community levels. This approach is believed to produce a fuller picture of overall impacts (Chen and Dunn, 1996 as cited in Hulme, 2000).

Conventionally, economic indicators have been widely utilized in assessing the impact of micro finance where assessors are particularly interested in measuring changes in income, expenditure, consumption and assets. Sebstad et al. (1995) distinguish between 'domain of change' (e.g. household income) and 'markers of change' (e.g. amount of income, number of income sources and seasonality of income) within each domain.

Fidler and Webster (1996) discussed that although it is often difficult to control for other variables, comparing the income of participants to that of non-participants is possible in measuring impact. This is usually called 'the control group approach' in the literature. Concerning about the control group approach, Hulme (2000) explains that it requires a before and after comparison of a population that are in a micro finance program and an identical population that didn't participate in the program. He argues that despite being elegant, this approach has such problems as sample selection bias, miss- specification of underlying causal relationships and respondent motivation.

In practice it is not only difficult but also extremely costly to find and establish control groups exactly similar to that of the group of program participants. Some assessors use a cross-sectional impact methodology that uses new borrowers as a control group to solve such difficulties. This

approach compares repeat borrowers to new ones and then calls any difference between these two groups the 'impact' of the program. Karlan (2001) discusses the perils of using new clients as control group and suggests solutions to some of the notable problems with such a methodology.

Other researchers have tried to use the production function approach, which considers credit as one input. But as is criticized by Adams (1988) credit is a means of acquisition of inputs and not an end in itself.

Another approach put forward by researchers as a solution is comparing the borrowers livelihood before and after taking loan. Such an approach has been suggested by Fidler and Webster (1996). Again as with the above methodologies this approach has its limitations like respondents not giving accurate information of loan use if they actually diverted their loan, difficulty in knowing whether an increase in income is due to the credit or not, etc.

Coming to issues of sustainability Yeron (1994) discussed that the two most important objectives for a rural financial institutions to be successful are financial self-sustainability and more outreach to the target rural population. Financial self-sustainability is said to be achieved when the return on equity, net of any subsidy received, equals or exceeds the opportunity cost of funds.

On the other hand, outreach is assessed on the basis of the type of clientele served and the variety of financial services offered; including the value and number of loans extended, the value and number of saving accounts, the number of branches and sub-branches, percentage of total rural population served, the real annual growth of the rural financial institutions' assets over recent years and the participation of women clients (ibid).

Sustainability relates to the ability of a program to continuously maintain its activities and services in order to meet its objectives. For micro financing operation to be effective and successful there should be sustainability. Snodgrass (1997) argues that a successful micro enterprise support program is defined in terms of outreach, financial sustainability or socio-economic impact.

According to Khandker et al. (1995) the concept of sustainability of micro finance can be divided into four interrelated ideas; namely, financial viability, economic viability, institutional viability and borrower viability. Financial viability relates to the fact that a lending institution should at least equate the cost per each unit of currency lent to the price it charges its borrowers (i.e. the interest rate). Economic viability relates to meeting the economic cost of funds (opportunity cost) used for credit and other operations with the income it generates from its lending activities. Institutional viability is related more to efficient management and decision-making process. Borrower viability however, refers to whether the borrowers of the institution have achieved higher flows of income over time and are able to repay back their loans. It is this concept of sustainability (in addition to financial sustainability) that is given more emphasis in this study.

## **2.2 Empirical Literature**

Quite several studies have been conducted in different developing countries regarding micro credit performance in terms of loan repayment and impact .We begin by those that focus on loan repayments.

Ajayi (1992) employed correlation and multiple regression analysis in his study about factors affecting default in residential mortgages of the Federal Mortgage bank of Nigeria. His results revealed that cost of construction, monthly repayment, loan to value ratio, market value of property, age of borrower and annual income of borrower enhance loan defaults, while expected rental income from property reduces loan default.

Vigano (1993) in his study about the case of development bank of Burkina Faso employed a credit-scoring model. He found out that being women, married, aged, more business experience, value of assets, timeliness of loan release, small periodical repayments, project diversification and being a pre-existing depositor are positively related to loan repayment performance. On the other hand, loan in kind, smaller loan than required, long waiting period from application to loan release and availability of other source of credit were found to have negative relation with loan repayment performance.

Zellar (1996) analyzed the determinants of loan repayment of credit groups in Madagascar with the purpose of quantifying the effect of intra-group pooling of risky assets or projects by controlling for community level and program design factors that influence the repayment rate of groups loan. He employed a tobit model using a data set on groups from six different lending programs. The results showed that socially cohesive groups pool risks by diversifying the members' asset portfolio so that their repayment performance is improved even in communities with high risk exposure. Groups with higher level of social cohesion as measured by the number of common bonds, have a better repayment rate. Moreover the results also indicated that it is not the level of physical and human assets of group members but the degree of variance of such assets among members, that leads to better repayment, by pooling risks among group members.

Kashuliza(1993) used a linear regression model to analyze determinants of loan repayment in smallholder agriculture in the southern highlands of Tanzania. His study showed that level of education, attitude towards repayment, farm income and off-farm income positively affect loan repayment with farm income being significant, while age, household expenditure and household size have negative influence on loan repayment performance with household expenditure being significant.

Njoku and Odii (1991) studied determinants of loan repayment under the Social Emergency Loan Scheme in Nigeria. Their study showed that late release of loans, complicated loan processing procedures, loan diversion to non- agricultural enterprise low enterprise returns resulting from low adoption rate of improved agricultural technologies and emphasis on political considerations in loan approvals contributed to poor loan repayment performance of small holders. Loan volume, years of formal education, household size and interest paid on loan were found to positively and significantly affect loan repayment; while years of farming experience, loan period, farm size, farming as major occupation, farm output and value of assets were found to negatively and significantly affect loan repayment.

Chirwa (1997) used a probit model to estimate the probability of agricultural credit repayment in Malawi. The result indicted that crop sales, income transfers, degree of diversification and quality of information are positively related while size of club is negatively related to the probability of repayment. Other factors like amount of loan, sex, household size and club experience were found to be insignificant.

The other important study is that by Arene (1992). He evaluated the credit delivery system of Supervised Agricultural Credit Schemes among smallholder maize farmers in Nigeria employing multiple regression analysis. The analysis indicated that loan size, farm size, income, age, number of years of farming experience, level of formal education and adoption of innovation are significantly and positively related to repayment rate. Distance between home and source of loan, household size and credit needs were found to be negatively related to repayment rate.

Adeyemo (1984) used descriptive analysis on loan delinquency in multi purpose cooperative union in Kwara state, Nigeria. The result showed that natural calamities, crop failure due to pest, poor storage facilities, lack of adequate transport facilities, sales income, farm size, education, tenure status of borrowers are factors associated with loan delinquency.

The Study by Hunte (1996) examined repayment behavior of borrowers and the credit rationing technology of lenders in a rural financial institution, Hunte estimated loan rationing and loan repayment equations using tobit model and found out that only 33% of the criteria utilized identified credit worthy borrowers implying that the screening system was not efficient.

Impact analysis for any credit program is essential to evaluate the success of the program or to see whether the program brings the desired benefits to the target groups. In recent years impact assessment has become an increasingly important aspect of development activity as agencies, and particularly aid donors, have sought to ensure that funds are well spent (Hulme, 2000).

Conventionally, economic indicators have been widely utilized in assessing the impact of micro finance where analyzers are particularly interested in measuring changes in income, expenditure,

consumption and assets. Recently, social indicators such as educational status, access to health services, nutritional levels, contraceptive uses, etc., together with the above economic indicators have been used to assess impact of micro finance on the beneficiaries (Ibid)

According to Hossain (1988) Grameen Bank has made a positive contribution to the alleviation of poverty in the areas of its operation. It has successfully reached its target group with credit, and has ensured both productive utilization of loans and their recovery in due time, thus helping to improve the living standard of more than 90% of the participants.

An increase in net enterprise income of 93% was observed for borrowers of Indonesia's Bank of Rakyat in a similar studies conducted to see the impact of the banks micro financing scheme (Fildler and Webster, 1996). In general, most impact assessment studies show improvements in quality of life and the positive impact of micro finances in poverty alleviation. However, even the famous Bank (the Grameen Bank) is currently facing an increase in the number of dropouts that affect its contribution to poverty reduction and the viability of the program and its borrowers in the future (Karim and Osada, 1998).

### **2.3 Studies on Micro Finance and Related Credit Schemes in Ethiopia.**

Looking at the situation of Ethiopia empirical studies on the analysis of determinants of loan repayment and impact analysis are very few. Regarding loan repayment an econometric estimation was conducted by Mengistu (1997) taking the case of micro enterprises in Awasa and Bahir Dar towns. The analysis consisted of estimating two equations, one for loan repayment and

the other for loan rationing. According to the estimation results (employing binomial probit model for loans repayment) he reported that the number of workers employed has positive relation with full loan repayment for both towns, while loan size and loan diversion were negatively related. Age and weekly repayment period had positive relation with repaying loan in full for Awasa. In the case of Bahir Dar, loan expectation and number of workers employed have a positive relation with full repayment, while loan diversion and availability of other sources of credit have a negative impact. The predicted probabilities of full loan repayment were 53% and 78% for Awasa and Bahir Dar respectively.

In relation to loan rationing for the case 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. For the case of Awasa, five variables are significant; namely, loan size, age, education, weekly repayment period and loan diversion. Literate borrowers and borrowers with relatively higher level of age were incorrectly rationed despite being good payers.

In his study on the Project Office for the Creation of Small-Scale Business Opportunities (POCSSBO) in Addis Ababa, Berhanu (1999) using probit model found that education, timely loan granting and the use of accounting system are negatively related to the proportion of loan funds diverted. However loan size, numbers of dependents with in the household and consumption expenditure is positively related to loan diversion. He reported that loan diversion and loan size are negatively related to full loan repayment while age is positively related.

Retta (2000) also employed probit models for loan repayment performance of Women Fuel Wood Carriers (WFCs) in Addis Ababa. He reported that educational level is negatively related to loan repayment while frequency of loan (repeat borrowers), supervision, suitability of repayment installment period and other income sources are found to encourage repayments and hence reduce the probability of loan default.

In another relevant study by Abreham (2002) an investigation of determinants of repayment status of borrowers and criteria of credit rationing were conducted with reference to private borrowers around Zeway area who are financed by the DBE. The estimation result employing tobit model revealed that having other source of income education, work experience in related economic activity before the loan and engaging on economic activities other than agriculture are enhancing while loan diversion, being male borrower and giving extended loan repayment period are undermining factors of loan recovery performance.

With regards to loan rationing mechanism, it was found that borrowers who secured high value of collateral and those with relatively longer period were favored while those with higher equity share and extensive experience in related activity were disfavored. This leads to the conclusion that the bank's rationing mechanism didn't much with the repayment behavior of the borrowers.

Coming to studies on impact analysis, Kassa (1998) in his study of the impact of micro financing under the micro enterprise project scheme in southern Ethiopia, has reported growth in income, employment, consumption and medical expenditure of the beneficiaries after the loan. Using Wilcoxon Matched Pairs Non-Parametric test, he also indicated that the average income after the loan is greater than that before the loan, in all the three loan cycles.

Berhanu (1999) also used Wilcoxon test and found that health, education and consumption expenditures have increased after loan compared to that before loan. Employment and household income have also increased after the loan. But he found unsatisfactory results for saving mobilization, as POCSSBO did not attach the saving facility with its credit program or facility.

Retta (2000) also reported a positive impact of micro finance on the living conditions of fuel wood carriers (WFCs), there by enhancing their economic empowerment. This was reflected in the rise of their income, expenditure and in their shift to other alternative income generating activities after the loan rather than engaging in fuel wood collecting, carrying and selling activity.

Teferi (2002) in his study on Dedebit Credit and Saving Institution (DECSI) found out that credit scheme has made its own positive contribution to the beneficiaries in relation to income, access to educational facilities, medical facilities, household diet and savings.

Bekele et.al. (2003) employed a logistic regression model to analyze the factors influencing loan repayment performance of smallholders in Ethiopia. The authors used data on 309 borrowers of input loans in the Oromia and Amhara National Regional states and found out that individuals who took larger loans had better repayment performances than those who took smaller loans. Further the results of the study revealed that late disbursement of inputs purchased by the loan funds was an important bottleneck in loan repayment while livestock were found to be important in improving the farmers' repayment performance.

In general, all the above studies (except two, namely: Mengistu, 1997 and Abreham, 2002) focus on assessing impact of the credit schemes on borrowers and loan repayment performance of the borrowers. The two studies pointed out above (Mengistu, 1997 and Abreham, 2002) focused on

investigating the determinants of loan repayment performance and loan rationing mechanisms of micro enterprises and small-scale businesses, respectively. Hence analyzing determinants of loan repayment, loan rationing and impact all in one may give a wider perspective of the sustainability of MFIs, which none of the above studies did.

So in this study, analysis of all these three aspects of program sustainability of lending agencies (i.e., loan repayment, loan rationing and impact analysis) will be applied to the credit scheme that OCSSCO is providing. Such a study has not been conducted since the establishment of this institution.

## **CHAPTER THREE**

### **DATA AND METHODOLOGY**

#### **3.1 Data Type and Source**

The data used in this study are primary and cross-sectional in type and cover six rounds of loans. The branch office of OCSSCO in Kuyu has conducted seven rounds of loans since it began its operation in the district. Of these seven rounds only those that include loans the maturity of which has passed at the time of data collection were found eligible for the study. That is, loans extended during the first six rounds (beginning 1995/96 through 2000/01) were considered, while those granted in 2001/02 were excluded, since their maturity dates fall in 2002/03.

The data were collected using a structured questionnaire that was administered with the help of trained enumerators. Besides, discussions were made with borrowers, and relevant documents of OCSSCO Kuyu branch office were also used.

List of borrowers was found from a book called master group register. This is a book containing lists of clients recognized and registered at the office along with group number, centre number, sex and age of clients. It also contains information on clients that quitted membership, date and reason for the quitting.

Information obtained using the survey questionnaire includes:

- Borrower characteristics like age, sex, marital status, level of education, household size, occupation, etc.

- History of loan (amount of loan, purpose and utilization of loan, etc)
- Information on group formation (group monitoring, group responsibility, group action)
- Information on income (from activities financed by the loan and from other sources)
- Information like access to medical and educational facilities, nutritional status etc.
- Information on savings and financial recording
- Information on borrowers' perception of cost of default and adequacy of supervision, and
- Other relevant variables.

Information obtained from the branch office include:

- Information on loan like repayment period, loan term, loan disbursement and collection, etc.
- Information like screening mechanisms, saving services, formation of groups/centres, etc.

### **3.2 Sampling and Data Collection**

The study area has 23 PAs and 2 Kebeles in the rural and urban areas respectively. Both the two kebeles in Gebre Guracha town, the administrative capital of the district and fourteen of the PAs in the rural area are covered by OCSSCO's credit scheme.

There are a total of 51 centers, of which 2 are in the town, Gebre Guracha. As shown in table 1 below the current total number of clients stands at 2175 [84(3.86%) urban and 2091 (96.14%) rural]. The total number of female beneficiaries is 297 (13.66%), while that of the male beneficiaries is 1878 (86.34%).

Table 1 Clients being served by OCSSCO Kuyu Branch in 2002/03.

Sex	Urban		Rural		Total	
	Number	Percent	Number	percent	Number	Percent
Male	18	21.43	1860	88.95	1878	86.34
Female	66	78.57	231	11.05	297	13.66
Total	84	100	2091	100	2175	100

The survey considered 11 PAs out of fourteen and both the Kebeles in Gebre Guracha town so as to make the sample a better representative. The following procedure was used for the data collection. First Kebeles/PAs were identified after which beneficiaries were selected using simple random sampling from the list of all the borrowers found in the kebeles and PAs selected.

Obviously simple random sampling in the context of rural Ethiopia happens to be difficult. This is because it is not easy to get all the randomly selected individuals from the list of the total population of clients for the interview. In such cases interviewing others who were available during the survey in place of those selected was done to solve the problem. The sample size is 203, which is 9.3 percent of the total beneficiaries of the program. Pre-testing was made on seven beneficiaries to make some modifications on the design of the questionnaire.

### 3.3 The Study Area

The study area, Kuyu is found in Oromia National Regional State (ONRS), the largest of the nine regional states of Ethiopia. This region consists of 14 administrative zones and 190 districts. The

rural part of the region has 10,161 PAs, while the urban part has 564 Kebeles in 375 towns (CSA, 1994).

The administrative zone in which the study area is located is North Shoa, found at about 115 kms northwest of Addis Ababa. The zone is divided into 12 districts and 303 PAs. There are 28 towns of which only 7 have municipalities including the capital Fitcha (NSADD, 1999).

The study district is located at a distance of 155 kms away from Addis Ababa, along the main road towards Bahirdar. It has 23 PAs and 2 kebeles in Gebre Guracha town. In terms of climate, it can be divided into Dega/highland (40%), Woina Dega/temperate (50%) and Kola/lowland (10%) zones (KDARDO, 2002).

The estimated total population of Kuyu is 120,654. The total number of farm households in 2002 was 18,170. Estimated average family size was 6.64 persons per household. There is one public health center, two public clinics and two health posts. Regarding educational facilities, there is one senior secondary school, twenty junior secondary schools, and two private kindergartens (KDARDO, 1999). Banking services are not available to the people in the district, except that of OCSSCO, which is providing its services largely to the rural population and an insignificant proportion of urban dwellers in Gebre Guracha town.

The major economic activities in the district include farming (crop production and animal rearing) and off-farm activities especially for urban dwellers. Crops grown in the area are teff, wheat, sorghum, beans and oil crops. Regarding land use patterns, 54.3 percent of the land area is used for cultivation, 18.81 for grazing and the remaining is forest, bush, etc.

It was found that the annual production of the majority of the farmers in the district could not cover their subsistence requirements through out a year. The district office of economic development and finance reports that the district usually bears budget deficit. Severe soil erosion, diseases and pests, frost, rainfall variability, and low rate of adoption of farm inputs, etc are among the principal reasons for low productivity and food shortage. For example, about 28 percent of peasant households owned no oxen, and only 21 percent owned only one ox (KDARDO, 2002).

There are only two local market places in the district; one in Gebre Guracha town and the other in Beritie village. There are also what are known locally as “GULIT” where marketing of crops and various commodities is carried out. The infrastructure for marketing livestock is not well developed in most parts of the district.

### **3.4 Methodology**

The methodologies used in this study to investigate the determinants of loan repayment, loan rationing mechanism and assessing impact of the credit scheme are discussed in detail below.

#### **3.4.1 Loan repayment Performance**

The loan repayment equation is specified based on the assumption that the decision of the  $i^{\text{th}}$  borrower whether to repay loan in full or not depends on an unobservable utility index,  $u_i$  explained by a set of 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 defined by a regression relationship as:

$$U_i = \beta' X_i + \epsilon_i$$

Where  $u_i$  = utility index,  $\beta$ =Vector of parameters,  $X_i$ = Vector of explanatory variables (Maddala, 1983).

The reason why we use a utility index for the analysis of repayment performance is that, under normal circumstances, a borrower repays if he/she derives benefits from repaying. For example, if a borrower expects to get another round of loan, he/she will repay the current loan (Mengistu, 1997).

In order to relate this unobservable utility index (precisely a utility derived from repaying) to the decision of repaying loan in full, we assume that

$LR_i=1$ , if  $U_i>0$  (borrower repaid loan in full); or

$LR_i=0$ , if  $U_i \leq 0$  (borrower did not repay loan in full)

Where  $LR_i$  is loan repayment for the  $i^{th}$  borrower.

Assuming  $U_i$  are normally distributed with a zero mean and variance  $\delta^2$ , the probability that  $U_i > 0$  can be computed as:

$$P_i = \text{Prob}(U_i > 0) = F(U_i) = F(\beta' X_i) \text{-----} (2)$$

Where  $F$  is the CDF.

Hence the likelihood function (the joint probability) is given by: (Maddala, 1983).

$$L = \prod_{LR_i=1} P_i \prod_{LR_i=0} (1-P_i) \text{-----} (3)$$

Since we do not have actual repayment rates, i.e., what we know is only whether a borrower has repaid his loan or not, we need to categorize borrowers into two to address the issue of

determinants total loan repayment. So we have to look for an appropriate model that enables us to analyze the determinants of repayment and probability of falling in either of the two groups. Application of OLS which in this case is the Linear Probability Model (LPM)-since our dependent variable is dichotomous- will be incorrect because of the following major problems: 1) non-normality of error terms; 2) heteroscedasticity of error terms; and 3) possibility of estimated probabilities lying outside the [0,1] range.

In practice the probability of repaying loan in full is expected to be non-linearly related to a set of explanatory variables, the estimated probabilities lying in the [0,1] range. Such a specification would provide us with a Cumulative Distribution Function (CDF) from which the two commonly chosen distributions; namely, the logistic and the normal CDFs emerge. These CDFs give rise to the logit and the probit models respectively (Gujirati, 1995, Pindyck and Rubinfeld, 1981).

The logistic and the normal CDFs are very similar in their shape except that the former is slightly fatter around the tails than the latter (Maddala, 1983). Although the choice between either of these models is difficult based on theory, the probit model is chosen for the purpose of this study because of the simplicity of getting the marginal effects of the coefficients.

On the other hand, loan diversion rate, which is included as one explanatory variable in the repayment equation, is itself dependent on some of the other explanatory variables in the same equation. This necessitates the use of its fitted values to avoid interdependence between the variable and the error terms. The values of loan diversion rate (ratio of amount of loan diverted to total loan received) are limited between zero and one. Although the use of OLS is possible here,

the two-limit tobit is a commonly applied model, in cases when the outcome is a probability or a percentage (Long, 1997). This model is specified as:

$$\mathbf{LDR}_i^* = \gamma \mathbf{X}_i + \boldsymbol{\varepsilon}_i \quad (4)$$

Where  $\mathbf{LDR}_i^*$  is a latent variable and  $\mathbf{X}_i$  and  $\boldsymbol{\varepsilon}_i$  are set of explanatory variables and error terms respectively.

If  $\mathbf{LDR}_i$  is the observed variable, the Tobit model will be:

$$\begin{aligned} \mathbf{LDR}_i &= 0, \text{ if } \mathbf{LDR}_i^* \leq 0 \\ &= \mathbf{LDR}_i^*, \text{ if } 0 < \mathbf{LDR}_i^* < 1 \\ &= 1, \text{ if } \mathbf{LDR}_i^* \geq 1 \end{aligned} \quad (6)$$

Where 0 and 1 are the lower and upper limits respectively. Thus, the models for loan repayment and loan diversion can be given as follows

$$\mathbf{LR} = f(\mathbf{AG}, \mathbf{SX}, \mathbf{ED}, \mathbf{LSZ}, \mathbf{TM}, \mathbf{LDR}, \mathbf{INCOM}, \mathbf{INCA}, \mathbf{LSTK}, \mathbf{SRP}, \mathbf{SPV}, \mathbf{AREA}, \mathbf{NDP}, \boldsymbol{\xi}) \quad (7)$$

$$\mathbf{LDR} = f(\mathbf{NDP}, \mathbf{SPV}, \mathbf{ED}, \mathbf{BK}, \mathbf{INCA}, \mathbf{LSZ}, \mathbf{NTB}, \mathbf{SRP}, \boldsymbol{\zeta}) \quad (8)$$

But since the variable education is qualitative in nature, it is necessary to consider the mutually exclusive levels of education separately. Accordingly we can classify borrowers into illiterate, primary, and high school and above high school. We need three dummies to be introduced so as to take care of these four levels of education. As we shall see in the next chapter since the majority of the respondents are illiterate and only very few are in the second and third category with no one being in the fourth, it is better to classify them as those who are illiterate and those

who are literate (grades 1-12). Accordingly we need one dummy to take care of these two categories. Hence equations (7) and (8) become:

$$LR = f(D, AG, SX, LSZ, TM, LDR, INCOM, INCA, LSTK, SRP, SPV, AREA, NDP, \xi) \quad (9)$$

$$LDR = f(D, NDP, SPV, BK, INCA, LSZ, NTB, SRP, \zeta) \quad (10)$$

Below are given the list of the variables together with their definitions.

D = 1 if a borrower has gone to school (i.e., grades 1-12) and zero otherwise

LR= loan repayment (LR=1 if fully repaid, zero otherwise)

AG= age of borrower

SX= Sex of borrower

0= female      1= male

ED= educational level of borrower

1= illiterate

2= Grade 1-8

3= Grade 9-12

4= Above grade 12

LSZ= loan size in Birr

TM= timeliness of loan release

1= if timely released      0= otherwise

LDR= Loan Diversion Rate (ratio of loan diverted to total loan received)

INCOM = income from activities financed by loan (annual)

INCA= annual income from other activities (not financed by the loan).

LSTK = value of livestock in Birr

SRP= suitability of repayment period

1= if suitable            0= otherwise

BK= use of financial records

1= if borrower keeps financial records            0= otherwise

SPV= adequacy of supervision visits made to a borrower

1= if adequate            0= otherwise

AREA= location of residence of borrower (1= rural 0= urban)

NDP= number of dependents

NTB= number of times borrowed

$\xi, \zeta$  = Error terms

Description of the explanatory variables together with their expected signs is given below:

- 1. Age:** Vigano (1993) noted that with increase in age, it is usually expected that borrowers get more stability and experience. So we expect this variable to have a positive impact on repayment performance. However, since as people get older, their ability to effectively use finance and generate income declines, the variable could also have a negative impact. It may also have a non-linear relationship with loan repayment, where up to a certain level of age loan there is a positive relationship, but beyond that age the relationship changes to either negative or becomes more or less constant.
- 2. Sex of Borrower:** There is a belief among many Microfinance specialists that female are better payers than male borrowers, taking into consideration their being more entrepreneurial that results from assuming more responsibilities in the internal affairs of a household.(Vigano, 1993). Also Khanker et al. (1995) explains that loan recovery rates have been higher for women than for men in the case of Grameen Bank. But some

researchers have found the opposite result. So nothing can be said about the sign of this variable a priori.

3. **Educational Level of Borrower:** This variable is expected to have a positive impact on repayment performance in general. Considering normal circumstances, a more educated borrower is expected to use the loan effectively as compared to a less educated one. In this case we expect a positive sign for the variable.
4. **Loan size:** Von Pischke (1991) noted that efficient loan sizes fit borrowers' repayment capacity and stimulate enterprise. If amount of loan released is enough for the purposes intended, it will have a positive impact on the borrower's capacity to repay. If on the other hand the amount of loan exceeds what the borrower needs and can handle, it will be more of a burden than help, thereby undermining repayment performance. Also positive or negative sign may be expected if the loan is too small. If the loan is too small it may be easy to repay such loans thus enhancing performance (i.e. positive sign). However, too small loan may not bring commitment on borrowers to use the loan productively (Von Pischke, 1991). It may also encourage borrowers to divert the loan to other purposes, increasing credit risk and undermining performance, in which case a negative sign for the variable is expected (Vigano, 1993).
5. **Timeliness of loan release:** If loan is disbursed in time, it is unlikely that it will be diverted to non-intended purposes. Johnson and Rogaly (1997) noted that timeliness of loan disbursement is important when loans are used for seasonal activities such as agriculture. They argued that complicated appraisal and approval procedures, which might delay disbursement, influence a program of seasonal loans for farmers who use to buy inputs. Further they noted that this could in turn worsen the prospects of repayment by diverting loan to non-intended purpose. In such cases a positive sign is expected.

6. **Loan diversion:** The impact of this Variable depends on what use the diverted loan is put to. If the used for productive purposes than the intended ones then repayment will be enhanced. If on the other hand the loan is diverted to non-productive uses, it will have a negative impact. Therefore the sing of this variable can't be predetermined.
7. **Income from activities financed by the loan:** Through increased capacity of the borrower to repay loan, an increase in the borrowers income from the business financed by the loan would be expected to have a positive influence on his/her repayment performance. This is based on the assumption that it is the ability to pay rather than willingness to pay that affects repayment. Kashuliza (1993) has concluded that farmers who obtained higher income from farming were more likely to repay their loans. But sometimes borrowers may be tempted not to repay if they see that the success of their business is such that they no mare need credit from the lending institution, as Adeyemo (1984) has shown in his study about loan delinquency in a Nigerian multipurpose cooperative union. Hence this variable may have positive or negative sign
8. **Income from other activities or sources:** Some borrowers may have other sources of income like income from employment in government or private organizations of the borrower or other members of the family, pension, etc. Such sources of income are expected to have positive contribution towards loan repayment performance. But if availability of such sources creates carelessness on the part of borrowers in fulfilling their obligation of repayment possibly considering the next loan unnecessary, it may well undermine repayment performance. Hence this variable may assume positive or negative sing.
9. **Value of livestock:** The more livestock a borrower has, the higher capacity he/she has to settle loan obligation in face of income fluctuation. Bekele et al. (2003) found out that

farmers who owned more livestock were able to repay their loans even when their crops failed due to natural disaster. Some researchers have arrived at a positive relationship (e.g. Vigano, 1993) while others found a negative relationship (e.g. Yaqub, 1995) between assets (which can be proxied by livestock in rural areas) and repayment performance. So the sign of this variable cannot be predetermined.

10. **Suitability of Repayment period:** It is expected that borrowers who find the repayment period suitable, perform better. Hence we expect a positive sign for this variable in this case.
11. **Loan supervision:** If there is a continuous follow up and supervision visit to evaluate the loan utilization and repayment, this makes borrowers to observe their obligation and improve the proper utilization of the loan thereby improving repayment performance. Therefore we expect a positive relationship.
12. **Availability of other sources of credit:** If borrowers have other sources of credit, they may use these sources to be able to settle their loan obligation in case they want to continue borrowing from the same source. Therefore we expect a positive sign. On the other hand borrowers may feel careless in repaying their loan if they decide they no more want to borrow from the same source because they can get loan from the alternative sources. In such cases it may take a negative sign.
13. **Area:** This variable is a dummy capturing the fact that the borrower lives in rural or urban areas. Borrowers in rural areas are predominantly farmers. Loans extended for agricultural purposes are expected to face problem of default because of risk and uncertainty attached to agriculture. Hence we expect a negative sign for this variable.

As explained above, it is hypothesized that the loan diversion rate has been specified as one variable influencing loan repayment performance, while itself being dependent on factors that are included in the loan repayment equation and some other variables, i.e., it is endogenous. These variables, which are hypothesized to affect loan diversion, are described together with their expected signs as below:

- i. **Number of Dependents:** Defined as the total number of dependents in the family and else where that depend on the borrower for their livelihood expressed in percentage. As the number of dependents increases, the borrower will need more money to fulfill their requirements in addition to the obligation of loan repayment. As a result he/she may divert the loan to meet the needs of the dependents. Hence we expect this variable to have a positive impact on loan diversion.
- ii. **Loan Supervision:** The probability of using loan funds for non-intended purposes decreases if adequate loan supervision is made regarding loan utilization. In such cases we expect a negative sign for this variable.
- iii. **Suitability of loan repayment period:** If borrowers find the repayment period suitable, they can utilize the loan proceeds effectively for the intended purpose than those who regard the period of repayment unsuitable. So we expect a negative sign for this variable.
- iv. **Other sources of income after loan:** With increased income as a result of the availability of other sources of income created after program participation, borrowers may not be tempted to divert the loan to other purposes, since they have enough income. On the other hand if they feel that they are self-sufficient after diversifying their income

sources they may divert the loan proceeds. So this variable can either be positive or negative depending on the either of the situations explained above.

- v. **Loan size:** A loan amount in excess of investment cost is more likely to tempt the borrower change his intended investment, i.e., divert the loan funds. So a positive sign is expected for this variable.
- vi. **Use of financial recording methods:** If borrowers keep records, it will be easier for them to follow up their loan utilization situation. Otherwise, they are likely to confuse the loan proceeds with other incomes, thus finding themselves in a situation where they unintentionally divert loan to other purposes. Hence we expect a negative sign.
- vii. **Number of times borrowed:** If a borrower is a repeat borrower he may have acquired more experience on the institution's rules and regulations, and hence could efficiently utilize the loan for the intended purpose. On the other hand since such borrowers may have the feeling that after borrowing and effectively using the loans for a relatively more years they no more need the loan from OCSSCO and may be reluctant in using the loan as per the loan agreement. Hence the sign of this variable cannot be pre-determined.
- viii. **Education:** Borrowers who are literate are likely to use the loan proceeds for the intended purpose, thus undermining loan diversion. But sometimes such borrowers may divert loans in search of more profitable areas of investment. So its sign can't be determined a priori.

### 3.4.2 Loan Screening (Rationing) Mechanism

The method of analysis employed by Hunte (1996) stands appropriate for this section of the study. Unlike the loan repayment equation, the dependent variable for the loan rationing equation is continuous and limited between 0 and 1, i.e., we have some who are rationed loan and others who are not (with varying degrees). The appropriate model is tobit (Maddala, 1983). But for the purpose of this study, since we are going to use a dummy variable by defining loan rationing to be equal to 1 if a borrower is not rationed and zero otherwise. The model we are going to use will be the logit model, which will be given as:

$$\text{LRAT}_i^* = \alpha X_i + \eta_i \quad (9)$$

$\text{LRAT}_i^*$  = is loan rationing (LRAT=1 if a borrower is not rationed and zero otherwise).

$X_i$  = set of explanatory variables

$\eta_i$  = Error terms

Note that  $\text{LRAT}_i^*$  are latent variables like the  $\text{LR}_i^*$ 's. All the explanatory variables of loan repayment equation are to be employed by the  $\text{LRAT}_i$  equation as well. Comparison of the sign and level of significance of the estimates in the two equations, i.e., loan repayment and loan rationing equations, will accomplish the task of evaluating the accuracy of the screening mechanism as done in Hunte (1996).

Accordingly, if a variable is significant in the rationing equation but not in the repayment equation, it implies that variable is useless as a means of screening. This is because, there is no information observed on default probabilities, since the variable is insignificant in the loan repayment equation. Alternatively, if a variable is significant in the repayment equation but not

in the rationing equation, it reveals that the lending institution is ignoring useful information that will help to identify creditworthy applicants clearly.

A significant positive sign in both equations indicates the accuracy of the screening mechanism in identifying good borrowers while a significant negative sign in both equations reveals that the screening mechanism is efficient in identifying default prone borrowers. If a variable is significantly positive in the rationing equation but is significantly negative in the repayment equation, it shows that there is weakness in the screening mechanism since it is attracting default prone borrowers. On the other hand if a variable is significantly negative in the rationing equation but is positive in the repayment equation, it indicates that the screening mechanism is incorrectly rationing credit too strictly to credit worthy borrowers.

Since we are interested in comparing the coefficients of the estimated model with that from the loan repayment equation in an effort to evaluate the efficiency of the screening of borrowers using the methods suggested above, we are not going into the details of the expected results of the variables.

### **3.4.3 Impact Analysis**

To carry out impact analysis, control group method is one alternative. This requires a control group which is a sample of people similar in every respect but who have not received a loan, compared with samples that have (Johnson and Rogaly, 1997). In practice it is not only difficult, but also time consuming, to find control groups that fulfill such a criteria.

So to avoid the above-mentioned difficulties the methodology suggested by Fiddler and Webster (1996) will be employed for the purpose of this study. This methodology uses Wilcoxon Matched Pairs Non-Parametric test to assess the impact of a credit scheme on beneficiaries based on the situations of borrowers before and after the loan. Specifically the analysis will employ descriptive statistics to assess impact of the credit scheme on income, access to education and medical facilities, savings, employment generation, food security, etc, before and after loan.

## CHAPTER FOUR

### DESCRIPTIVE STATISTICS

As reported earlier in chapter three OCSSCO Kuyu branch is extending loans for about 2175 borrowers in the rural and urban areas of the district starting from 1995/96 up to February 2003. A sample of 203 borrowers was selected randomly for this study. Out of the total respondents 186 (91.6%) have settled their loans in full while 17(8.4%) failed to repay their loans in full. Borrowers in the urban area of the district have all managed to repay their loans while 17(8.4%) of those in the rural areas didn't.

#### 4.1 Characteristics of the sample respondents

From the total number of borrowers in the sample 26(12.8%) are from the urban area while 177(87.2%) are from the rural areas of the district. Of the total respondents only 39(19.2%) of the total sample are female, the rest 164(80.8%) are male. Looking at the urban borrowers in the sample 17(65.4%) are female while 9(34.6%) are male, and from the rural respondents 22 (12.4%) are female while 155 (87.6%) are male.

From table 2 below, it is easy to observe that the proportion of female borrowers is larger in the urban sample than in the rural. The fact that a small proportion of the female borrowers are being served in the rural areas shows that very little is done in terms of empowerment of women.

Table 2 Respondents by sex and area of residence

Area	Sex of Borrower		Total
	Female	Male	
Urban	17(65.4)	9(34.6)	26(100)
Rural	22(12.4)	155(87.6)	177(100)
Total	39(19.2)	164(80.7)	203(100)

Note: Figures in parenthesis are percentages<sup>2</sup>

As explained in the introduction part above urban borrowers have performed better than those in rural areas in terms of repayment. The main reason for low repayment performance by the rural borrowers is loss of assets acquired by the loan and crop failure due to frost. According to the results of the sample survey, 11(64.7%) of those who failed to repay their loans in full reported crop failure as the main reason for non-repayment.

The mean age for the whole sample is 44 years with the minimum and maximum being 20 and 70 respectively. The survey results show that rural borrowers are on the average older than their urban counterparts. The mean age for the rural sample is 45 ranging between 20 to 70, while that for the urban sample is 40 ranging between 20 to 60. 53.8% of the urban and 55.4% of the rural borrowers are in the age group 30-49 while 55.2% of the total borrowers lie in the same age group for the whole sample.

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<sup>2</sup> The same applies to all tables in this section. Also all tables in this section are constructed from the survey data that was collected for the purpose of this study.

Table 3 Respondents by age group and area

Age group	Urban	Rural	Total
20-29	6(23.1)	17(9.6)	23(11.3)
30-39	5(19.2)	41(23.2)	46(22.7)
40-49	9(34.6)	57(32.2)	66(32.5)
50-59	5(19.2)	48(27.1)	53(26.1)
Above 60	1(3.9)	14(1.9)	15(7.4)
<b>Total</b>	<b>26(100)</b>	<b>177(100)</b>	<b>203(100)</b>

In terms of educational background, most of the borrowers in the sample, i.e., 131(64.5%) can't read and write. Those who have attended either elementary or junior secondary school are 64(31.5%) and those who attended up to grade 12 are only 8(3.9%). Most of those who are illiterate i.e., 89(67.9%) are in the age group 40-59 while half of those who attended grades 9-12 are in the younger age group 20-29. (See table 4 below).

Table 4 Respondents by age group and level of education and area

Area	Age group	Levels of education			Total
		Illiterate	Grade 1-8	Grade 9-12	
Urban	20-29	1	2	3	6
	30-39	1	2	2	5
	40-49	2	7	0	9
	50-59	1	4	0	5
	Above 60	1	0	0	1
	<b>Total</b>		<b>6</b>	<b>15</b>	<b>5</b>
Rural	20-29	8	8	1	17
	30-39	20	20	1	41
	40-49	41	15	1	57
	50-59	45	3	0	48
	Above 60	11	3	0	14
	<b>Total</b>		<b>125</b>	<b>49</b>	<b>3</b>
<b>Grand Total</b>		<b>131</b>	<b>64</b>	<b>8</b>	<b>203</b>

As can be seen from the table 5 below 125(70.6%) of the rural borrowers can't read and write, of which 121(96.8%) don't keep financial records, while only 6(23.1%) of the urban borrowers are illiterate, 5(83.3%) being non-users of financial recording. So the large proportion of illiterate

beneficiaries in the sample explains the poor status of financial recording habits [only 26 (12.8%) of the total borrowers in the sample keep records]. Most of those who don't use financial records, i.e., 155 out of 177, which is 87.6% reported lack of knowledge as the main reason for not recording their financial transactions, while the remaining 22(12.4%) reported their financial position as being too little to keep records.

Table 5 Respondents by area, financial recording habits and level of education.

Area	Using financial recording?	Level of education			Total
		Illiterate	Grade 1-8	Grade 9-	
Urban	No	5	10	2	17
	Yes	1	5	3	9
	Total	6	15	5	26
Rural	No	121	37	2	160
	Yes	4	12	1	17
	Total	125	49	3	177

In line with the existence of more educated borrowers in the urban area [20(76.9%) being able to attend grades 1 through 12 as compared to only 52(29.4%) of the rural borrowers being able to attend the same level of education], the number of urban borrowers that keep records are 9(34.6%) while that for the rural borrowers is only 17(9.6%).

The mean loan amount is Birr 1405 with the minimum and maximum amount being Birr 700 and Birr 3000 respectively. The mean loan size for rural borrowers is 1383 ranging between Birr 700 to Birr3000, which is less than that for the urban borrowers (Birr 1553 varying between Birr 1000 to Birr 2500).

In terms of sufficiency of the loan amounts released, table 6 below shows that 174(85.7%) of the borrowers in the sample reported the loans they received to be sufficient for the purpose they planned. On the other hand 29 (14.3%) i.e., 19 (10.7%) of the rural borrowers and 10 (38.5%) of the urban borrowers declared that the loan amount they took was not sufficient. This has some implication for loan diversion.

Table 6 Respondents by area and opinion on sufficiency of loan size

Sufficiency of loan amount	Urban	Rural	Total
No	10(38.5)	19(10.7)	29(14.3)
Yes	16(16.5)	158(89.3)	174(85.7)
Total	26(100)	177(100)	203(100)

With respect to the purpose for which loan was taken, we observe that the majority of the borrowers, i.e., 71 (35.0%) took the loan for purchasing farm oxen, all of them being rural borrowers. The next activity for which most of the borrowers took loan is petty trade, 46 (22.7%). This includes all the 26 urban borrowers and 20 rural borrowers.

Table 7 Respondents by area and the purpose for which they took the loans.

Purpose	Urban	Rural	Total
Purchase of farm oxen	0	71	71
Farm oxen and agricultural inputs	0	13	13
Farm oxen and fattening	0	20	20
Farm oxen and petty trade	0	7	7
Purchase of agricultural inputs	0	20	20
Agricultural inputs and petty trade	0	1	1
Fattening	0	11	11
Fattening and petty trade	0	1	1
Petty trade	26	20	46
Others (More than two purposes from among the above)		13	13
Total	26	177	203

To see if at all purpose of borrowing has some association with loan repayment performance, table 8 is constructed from the survey data. Accordingly only 97.8% of those who borrowed for the purpose of petty trade were non-defaulters. The same trend is observed in the rest of the cases, i.e., more than 90% of the borrowers have repayed their loans except those who used the loan for purchasing agricultural inputs. This indicates that purpose of borrowing may not have a notable implication on the loan repayment performance of borrowers. In fact this could be an issue for future research.

Table 8 Respondents by repayment status and purpose of borrowing

Purpose of Borrowing	Defaulters	Non-Defaulters	Total
Purchase of farm oxen	5(7.0)	66(93.0)	71
Purchase of agricultural inputs	7(35)	13(65)	20
Fattening		11(100)	11
Petty Trade	1(2.2)	45(97.8)	46
Others	2(15.4)	11(84.6)	13
Total	15(9.3)	146(90.7)	161

Sufficiency of supervision on loan utilization is an important factor contributing to a better loan repayment performance. During the survey it was known that people from OCSSCO appear on the monthly meetings of centers and collect savings. It is during such meetings that supervision is done with main focus on loan repayment. Only 90 (44.3 %) of the respondents in the sample declared that supervision on loan utilization is not sufficient.

Table 9 Respondents' perception on adequacy of loan supervision.

Sufficiency of supervision	Urban	Rural	Total
No	11(42.3)	79(44.6)	90(44.3)
Yes	15(57.7)	98(55.4)	113(55.7)
Total	26(100)	177(100)	203(100)

From the table above, 99 (55.4%) of the rural borrowers and 15 (57.7%) of the urban borrowers in the sample reported that supervision is adequate, while 79 (44.6%) of the rural respondents and 11 (42.3%) of the urban respondents said that supervision on loan utilization is insufficient.

Regarding suitability of repayment only 25(12.3%) of the sample respondents are of the opinion that the repayment period, which is one year, is not suitable. Of these borrowers 16(64%) recommended a repayment period that is longer than a year while the rest recommended a repayment period that is less than a year, with 7(27.7%) of them showing preference of paying at least twice a year.

Another finding is that 55(27.1%) of the sample borrowers have violated the loan agreement, all of them diverting the loan proceeds to other purposes than they planned. Of these 18(8.9%) reported that the loan agreement didn't match with their true intention they had in their mind, while 8(4%) reported market problem, 6(3%) too small loan amount and 16(7.9%) reported other reasons for not keeping their agreement. Almost all the loan diverters are from the rural areas.

Looking at how loan is rationed, we observe that 29(14.3%) of the total respondents were rationed of which 19 (65.5%) are rural borrowers. In relation to loan diversion, the institution favored non-diverters by rationing only 10(34.5%) as compared to 19(65.5%) who were diverters being rationed. See tables 10 and 11 below. More will be said about loan rationing in section 4.3 below.

Table 10 Rationing by area of borrowers

	Urban	Rural	Total
Rationed	10(38.5)	19(10.7)	29(14.3)
Non Rationed	16(61.5)	158(89.3)	174(85.7)
Total	26(100)	177(100)	203(100)

Table 11 Rationing by loan diversion.

	Diverted	Not diverted	Total
Rationed	19(65.5)	10(34.5)	29(100)
Not rationed	129(74.1)	45(25.9)	174(100)
Total	148(72.9)	55(27.1)	203(100)

According to the results of the sample survey, all the borrowers in the sample believe that loan should be repaid. Similarly all borrowers interviewed have reported that the loan was issued timely. Many studies have considered attitude of borrowers towards loan repayment and timeliness of loan issuance as important variables affecting loan repayment performance. These two variables, however, are not going to be used in this study for regression, since they perfectly predict the probability of repaying loan in time; and hence are excluded from the loan repayment equation.

Since the credit delivery mechanism of OCSSCO is a group based one that relies on peer pressure and social sanctions that exist among borrowers, questions regarding these issues were included in the survey questionnaires. Almost all of the borrowers responded “yes” to questions regarding peer group that they know each other very well, feel responsible for each other and monitor each others’ action.

Another variable of concern in this study is borrowers’ attitude to cost of default. Of the total respondents almost all, i.e., 202(99.5%) reported that cost of default is high. Such an attitude has a clear implication in terms of improving loan repayment performance. Regarding the perceived costs of default 113(55.7%), i.e. the majority of the borrowers responded social sanction as the

most important factor forcing them to repay their loans in time. So we observe that group pressure and social sanctions are important factors affecting loan repayment performance of borrowers by serving as social collateral for the lending institution.

Table 12 Perceived cost of default

Perceived Cost of default	Frequency	Percent
Claims against personal wealth	24	11.8
Claims against the wealth of guarantors	23	11.3
Social sanctions	113	55.7
Fear of losing another round of loan	35	17.2
Other	8	3.9
Total	203	100

On the other hand, during the survey it was observed from informal discussions with borrowers that many borrowers who took loans for purchasing farm oxen, used the oxen for farming and finally sold them in order to be able to repay their loans. Also some borrowers shift between the lending institution and moneylenders, i.e., they borrow from moneylenders for a very short period in order to repay the loan they took from OCSSCO and then they immediately repay the money lenders after OCSSCO releases the next cycle of loan.

Although this calls for a further investigation, it was known that only 6(3%) of the sample respondents were found to have other sources of credit in addition to that of OCSSCO. Four of these reported moneylenders as their additional source of credit while the rest two indicated that they also borrow from friends or relatives since their participation in the credit scheme by OCSSCO. This finding doesn't seem to support the behavior of the borrowers explained above

(i.e. based on the informal discussions made with borrowers themselves), since only 2% of the borrowers reported to have borrowed from moneylenders, after all.

Livestock is another variable of interest in this study. Accordingly 185 (91.1%) of the total sample have reported that they own livestock. Specifically 168 (94.9%) of the rural borrowers have livestock. Since livestock can be considered as a proxy for wealth particularly in rural areas, it is likely that this variable positively affects loan repayment performance.

Table 13 Respondents by area and ownership of livestock

	Urban	Rural	Total
No	9(34.6)	9(5.1)	18(9.7)
Yes	17(65.4)	168(94.9)	185(91.1)
Total	26(100)	177(100)	203(100)

Household size is another important variable considered in this study. The mean number of dependents with in the households is 6.72 varying between a minimum of 1 and a maximum of 16. The mean number of dependents supported outside of the households of borrowers that constitute 10.4% of the sample respondents is 1.62 ranging between 1 and 4. Overall the mean number of dependents stands at 6.89 varying between 1 and 16. See table 14 below.

Table 14 Descriptive statistics on number of dependents

	N	Minimum	Maximum	Mean	St. Dev.
Number of Dependents With in the Household	203	1	16	6.72	2.49
Number of Dependents Outside the Household	21	1	4	1.62	0.97
Total number of dependents	203	1	16	6.89	2.54

As shown in table 15 about 88 (56.7%) of the borrowers in the sample reported their having income source before the loan program. Of these 58(51.04%) reported income from sale of farm produce, 8(7.4%) reported income from private labor, i.e. from being hired for others and the rest 22(19.36%) reported income from various sources.

Table 15 Respondents by availability of source of income before and after program

Availability of income source before program	Before Loan		After Loan	
	Frequency	Percent	Frequency	Percent
Yes	88	43.3	42	20.7
No	115	56.7	161	79.3
Total	203	100	203	100

According to the survey results 42(20.7%) of the sample borrowers have managed to create additional sources of income after participation in the credit scheme (See table 15 above). On the other hand as shown in table 16 below the majority of the borrowers, i.e., 154(75.8%) earn an annual income ranging between Birr 1000 to Birr 3000 before loan, where as only 19(38.57%) were earning the same level of income before participating in the loan scheme. Only 15(7.4%) get an annual income above Birr 3000 after the loan. The corresponding figure for the situation before loan is 0.

Table 16 Respondents by household annual income before and after loan

Income Range	Before Program		After program	
	Frequency	Percent	Frequency	Percent
<1000	69	78.41	34	16.7
1001-2000	16	18.18	91	44.8
2001-3000	3	3.41	63	31
3001-4000	0	0	10	4.9
4001-5000	0	0	3	1.5
>5000	0	0	2	1
Total	88	100	203	100

Credit facility coupled with savings services is of much help in smoothing the income and consumption pattern of the poor. Accordingly only one of the respondents responded about his having saving before participation in the program, while 189 (93.1%) of them reported of having savings after the program, mostly saving below 10 Birr per month (i.e., about 92.1%). Almost all of those who started saving after the loan are saving nothing more than the compulsory group/center savings, which shows that much have to be done in terms of mobilizing more savings. The trend in the savings mobilized by the branch office is shown in annex I.

Table 17 Response on availability of savings before and after program

Response given	Before program		After program	
	Frequency	Percent	Frequency	Percent
Yes	1	0.5	189	93.1
No	202	99.5	14	6.9
Total	203	100	203	100

Regarding access to medical facilities 142(70%) of the respondents of reported having access to medical facilities before loan. 47(23.2%) reported of not having any access while 14(6.9%) didn't respond to the question at all. The figures for the situation after loan are 156(76.8%), 33(16.3%) and 14(6.9%) respectively. Although there is no as such a very significant increase in terms of access to medical services, the number of borrowers who reported themselves as being bearers of

medical expenditure increased from 116 to 144 while that for free service reduced from 5 to 1. This can be seen from table 18 below.

Table 18 Response on the bearer of medical expenditure

Bearer of medical expenditure	Before Loan	After Loan
Borrower him/herself	116	144
Other family members	9	6
Relatives	2	0
Free service	5	1
Borrower and other family members	10	5
Total	142	156

In terms of medical expenditure before loan and after loan, the mean annual expenditure is Birr 128.32 and Birr 200.90 ranging between Birr 5 to Birr 1000 for the former and between Birr 6 to Birr 1300 for the latter. Although we shall test whether the credit scheme has brought about any change in this respect in section 4.3, it is obvious that the average expenditure on health services has increased after the program.

Table 19 Summary statistics on expenditure items and number of enrollment of school age students

	N	Minimum	Maximum	Mean	Std. Dev.
Medical expenditure before loan	137	5	1,000.00	128.3212	160.2117
Medical expenditure after loan	156	6	1,300.00	200.8974	213.1546
Number of school age students enrolled before loan	183	0	10	1.4	1.62
Number of school age students enrolled after loan	184	0	10	2.07	1.75
Educational expenditure before loan	112	20	1,700.00	313.6696	308.3539
Educational expenditure after loan	156	1	2,800.00	443.2115	405.6354
Consumption expenditure before loan	203	300	6,000.00	1,557.14	686.2019
Consumption expenditure after loan	203	500	25,000.00	2,182.11	1,781.80

Similarly the mean number of school-age students enrolled has increased from 1.4 to 2.07, while the expenditure on education has shown an increment of Birr 129.54 on the average. The same is true of mean consumption expenditure, which has shown an increment of Birr 624.97 on the average as shown in table 19. These comparisons are made based on the data collected before and

after participation in the credit scheme, which ranges from one to five years. The mean number of years borrowed by the respondents in the sample is 3.21. We shall test all the improvements described above later when we assess the impact of the credit scheme.

#### **4.2 Creditworthy Versus Non-Creditworthy Borrowers**

In this section we will try to compare creditworthy borrowers with defaulters, in an attempt to identify the factors that influence the loan repayment behaviour of borrowers. Although, the number of the defaulters in the sample is small compared to those who settled their loans, the comparison will somehow give an idea as to how our variables are influence the loan repayment performance. The comparison is done using t-test.

As shown in chapter three we have seen that 186 (91.6%) of the sample borrowers have settled their loans in full and hence are creditworthy; while the rest 17 (8.4%) are defaulters. The mean age for creditworthy borrowers 44.6 is slightly greater than that of defaulters, which is 43.9. This implies defaulters are a bit younger than non-defaulters, showing that age is positively related to loan repayment performance.

Regarding sex, 80.7% of the creditworthy borrowers are male, which is lower than the corresponding figure (82.4%) for the defaulters. Moreover only 7.7% of the female are defaulters while the corresponding figure for the male is 8.5%. This implies that being male is negatively related to loan repayment performance as expected, although the difference is not statistically significant.

There is no significant difference between the two groups in terms of level of education, although creditworthy borrowers have attended on average grades 1-8 while defaulters are on average

illiterate. This shows the existence of a positive relationship between education and loan repayment.

The mean loan size for credit worthy borrowers is Birr 1382.35 which is greater than that of the defaulters (Birr 1406.99) showing that there is a negative relationship between loan size and loan repayment performance. This could be due to the rationing mechanism although the difference is not significant according to the t-test.

Regarding loan diversion, 52.9% of the defaulters have diverted the loans they received to other purposes than specified in their loan agreement, while only 24.7% of the creditworthy borrowers diverted the loan they took to other purposes. This shows that loan diversion is negatively related to loan repayment performance. The t-test shows that there is a significant difference between the two groups of borrowers in terms of loan diversion.

With respect to perception of borrowers about supervision on loan utilization 57% of the creditworthy borrowers think that supervision of on loan utilization is adequate, while only 41% of the defaulters are of the opinion that the supervision on loan utilization by OCSSCO staff is sufficient. So the relationship between supervision and repayment performance seems to be positive as expected.

Regarding perception of suitability of repayment period 90.3% of the respondents who consider it as suitable are creditworthy, which is greater than the corresponding figure for the non-creditworthy borrower (58.8%), which is a significant difference at the 1% level. This is an indication that the variable under consideration is positively related with repayment performance.

Concerning value of livestock owned by borrowers, the mean value of livestock for creditworthy borrowers is Birr 4330.65, while that for the defaulters is only Birr 925.00, with a significant difference between the two groups being observed in this regard, i.e., a higher value of livestock improves the loan repayment performance of borrowers. Similarly the mean annual income from the activities financed by the loan for the case of creditworthy borrowers is Birr 1000-2000 while that for defaulters is below Birr 1000, the difference between the two groups being significant.

As explained earlier from a total of 55 borrowers who diverted their loans 18(32.7%) have indicated the fact that the loan agreement is not their initial intention of investment, while 16(21.1%) of them gave other reasons for diverting the loan, of which 9 (56.3%) indicated unplanned health expenditure as a reason for their diverting the loan they received. In this regard the mean annual health expenditure of creditworthy borrowers is Birr 93.50 while that for defaulters is below Birr 154.00, though the difference between the two groups is not significant.

The mean number of dependents for the creditworthy borrowers is 6.8, which is less than that for the defaulters (7.5). Here we observe that defaulters support on average a bigger number of dependents than creditworthy borrowers, although there is no statistical difference between both. This is equivalent to saying that the number of dependents that are supported by the borrowers is negatively related to loan repayment performance.

#### **4.3 Rationed Versus Non-Rationed Borrowers**

The term rationing in this study refers to a situation where a borrower receives an amount of loan that is less than he/she requested. (See chapter two). As described in section 4.1, the proportion of those who are rationed (i.e. given loan amounts that are less than requested) is 14.3%, while the rest 85.7 were not rationed. The mean age of those borrowers who are rationed is 42.9, which is

lower than the mean age of the borrowers who are not rationed (44.1). That is younger borrowers are more rationed than their older counterparts as is expected.

In terms of sex, 13.4% of the male are rationed which is less than that for the female borrowers (18.0%). This shows that female borrowers are being more rationed (i.e., there is a positive relation between sex and loan rationing, though not significant). This seems incorrect since female have performed better in terms of repayment than the male borrowers.

Let us compare the difference between the two groups with respect to education by categorizing borrowers into those who have no education (illiterate) and those who have gone to school (literate). Accordingly 131(64.5%) of the respondents are illiterate while the rest 72(35.5%) are literate. 17(23.6%) of the literate borrowers were rationed while only 12(9%) of the illiterate borrowers were rationed, showing that the institution is rationing literate borrowers more, which seems not correct when the loan repayment performance of such borrowers is taken into consideration. As explained in the previous section literate borrowers have performed better in terms of repayment than the illiterate ones.

The mean loan amount released to the borrowers who are rationed (Birr 1467.24) is higher than that for the non-rationed borrowers (Birr 1394.54). This implies the institution is probably stricter on those borrowers who request loan amounts that are abnormally larger, so that they are rationed to some extent; though the extent of rationing being not so severe that such borrowers still receive loan amounts that are on average larger than those who apply for a reasonable amount of loan according to the institution's preference. Here we observe that the more borrowers apply for larger loans the more they are rationed, just in the way explained above.

The proportion of borrowers who are rationed and non-rationed is almost similar when one considers borrowers who perceive supervision as adequate, i.e., 55.2 and 55.6 respectively. In fact there is a slight difference between the two groups with the proportion of those who are not rationed being slightly more than that for the former group, though the difference is very far from being significant. Similarly 79.3% of those who perceive repayment period as suitable are rationed, while the corresponding figure for those who are not rationed is 89.1%, indicating a negative relationship. The difference between the two groups though is not significant.

The same is true regarding the income level borrowers earn as a result of their participation in the program. With regard to value of livestock, the mean for the former group (i.e., the rationed borrowers) is Birr 3420.35, which is less than that for the latter one (Birr 4149.63). This shows that the more the value of livestock, the less the borrower faces loan rationing. In fact there is no significant difference between the two groups, in terms of value of livestock.

In relation to area, the difference between the two groups happens to be significant at the 1% level. Only 65.5% of those who are rationed are rural borrowers while a larger proportion (i.e., 90.8%) of those who are given the same amount of loan as they requested were rural borrowers. On the other hand the proportion of urban borrowers in the former group (34.5%) by far exceeds that in the latter group (9.2%). This shows that the institution rations more urban borrowers than their rural counterparts, i.e., the variable 'area' is positively related to the loan rationing mechanism employed by the institution, contrary to what is expected. This is because most of the rural borrowers are farmers and this sector is associated with high risk, so that the institution is expected to ration more rural borrowers than their urban counterparts. Moreover urban borrowers are better in terms of repayment than their rural counterparts.

The other variable of interest is number of dependents supported by the borrowers both within the household and outside. The difference between the two groups in this respect is again significant at the 10% level. Here we observe that the mean number of dependents for the former group (the rationed group) is 7.6, which is greater than that for the latter group (6.8). So this variable is negatively related to the loan rationing as is expected.

Concerning loan diversion 65.5% of the diverters are rationed while only 34.5% of the non-diverters were rationed, which is in line with our expectation. The difference between the two groups though is not significant in this regard.

#### **4.4 Loan Diverters versus Non-Diverters**

The mean number of dependents for loan diverters (6.93) is greater than that for the non-diverters (6.88); the difference between the two groups being insignificant. This indicates that there exists a positive relationship between the variable number of dependents and loan diversion rate.

The mean number of the years diverters borrowed is 3.44, which is greater than that of the non-diverters (3.13). This difference between the two groups is significant at the 10% level. This could imply that number of years borrowed is positively and significantly related to loan diversion.

Diverters earn a mean monthly income of about Birr107.55, which is less than that for the non-diverters (Birr 146.22); the difference between the two groups being significant at the 5% level. This indicates that the income variable is negatively related to the probability of diverting loan.

On the other hand diverters are on average little less than the non-diverters in terms of having additional sources of income after loan with both groups being almost similar in this regard. The

same is true with the habit of financial recording, the relationship being negative but insignificant.

The proportion of loan diverters that perceive loan supervision as adequate are 60%, which exceeds that of the non-diverters (54.1%). This is contrary to what is expected, although the difference is statistically insignificant. Possible explanation for this could be the perception level of borrowers as to what loan supervision is. As is tried to explain previously, what the majority of the respondents perceive is adequacy of the monthly appearance of the OCSSCO's loan officers on centre meetings with a main objective of collecting savings, in a way ensuring loan repayment. So this perception does not truly represent the adequacy of supervision on loan utilization.

Regarding borrowers who perceive repayment period as suitable, 78.2% of the respondents are diverters, while 91.2% are non-diverters; implying that there is a negative significant relationship between loan diversion and such a perception. Similarly 27% of literate borrowers are diverters, while 39% of the non-diverters are literate, the difference among the two groups in terms of education being almost significant at 10%.

The mean amount of loan received by the former group is Birr 1336.36, which is less than that for the latter group, which is Birr1408.11. Although this implies a negative relationship between loan diversion and loan size, which is contrary to what is expected, the difference is not significant.

The proportion of borrowers who keep records in the diverters group (12.7%) is slightly less than that in the non-diverters group (12.9%), showing the existence of negative but insignificant relationship.

## **CHAPTER FIVE**

### **ECONOMETRIC ANALYSIS**

In this section the method of model estimation will be presented and the estimation results will be discussed in detail. An attempt will be made to compare the results obtained from the descriptive analysis given in the previous section with those obtained from the econometric estimation.

#### **5.1 Determinants of Loan repayment performance**

As discussed in chapter three, one of the explanatory variables that is thought to influence the loan repayment equation is loan diversion rate. Since this variable was identified dependent on some variables that are included in the loan repayment equation, loan diversion equation was estimated first and its the fitted values were used in the equation of loan repayment performance, in order to avoid endogeniety.

It is obvious that hetroscedasticity is a problem, which is highly associated with cross-sectional data such as the one used for this study. Hetroscedasticity is a situation where the disturbance terms don't have constant variance. Since the presence of hetroscedasticity would result in inconsistent estimators, it has to be corrected before any tests are carried out based on the estimation results obtained.

As discussed in chapter three, since loan diversion rate is continuous and can assume any value between zero and one, the appropriate model to be employed here is Tobit, more specifically the two-limit Tobit model. However, this model has its own drawback in terms of correcting for hetroscedasticity, i.e., it is difficult to obtain a robust standard errors.



Observation summary:	55	uncensored observations
	148	left-censored observations
	0	right-censored observations
	0	interval observations

The estimated model is significant at the 5% level. As shown in the table 20, loan diversion is positively related to number of dependents supported by the borrower, use of bookkeeping, loan size and number of times borrowed from the same source. Education, income from other sources loan supervision and suitability of loan repayment period were found to be negatively related to loan diversion. Suitability of repayment period was found to be significant at 1%, while education and number of times borrowed were found to be significant at 10%.

The sign of the variable representing the use of financial recording systems has an unexpected sign (positive) but insignificant. The reason for this could be the fact that the vast majority of the borrowers in the sample are illiterate and even the few educated ones are unable to use modern and accurate methods of keeping financial records. The rest of the variables have exhibited the expected signs.

The results indicate that education, number of times borrowed and suitability of repayment period are significant determinants of loan diversion. The positive sign for education indicates that, literate borrowers have effectively used the loan for the intended purposes. But those who borrowed for more years on the average have contributed to the increase in the probability of diversion, may be due to the fact that they no more need further loans from the same source.

The finding about the sign for coefficients of education and loan supervision coincides with that in Teferi (2000) and Retta (2000), while that for number of dependents is similar to the findings of Mengistu (1997), Berhanu (1999) and Retta (2000).

Comparing the results obtained here with those in the descriptive statistics, there is some difference in the findings for loan size, supervision and use of financial records. Since possible explanation for the latter two variables is given in the descriptive analysis section, let's consider loan size here. This variable was found insignificant in both the analyses, implying that the discrepancy observed is not that worrying. The fact that the variable is positive in the regression seems more realistic and consistent with findings in many studies (Abreham, 2002; Berhanu, 1999; Teferi, 2000).

To see if there is any gain of using the tobit model in estimating loan diversion, OLS was run on the same variables. The result shows that only education and suitability of repayment period are significant (see annex II), implying that there is indeed a gain in using the tobit model instead of the OLS.

Coming to the discussion of the estimates of the probit model for our loan repayment equation, the existence of problem of heteroscedasticity has been detected. This has necessitated the estimation of robust model. The estimation results are presented in table 21.

The overall goodness of fit indicates that it is significant at 1%, implying that the explanatory variables used in the regression equation explain the variation in the dependent variable quite well.



Sex, loan size and number of dependents are all negatively related to the probability of loan repayment, none being inconsistent with prior expectation. Only loan size is significant at 5% level. This shows that the higher the loan size, the lower the probability of repaying the loan. The negative sign for sex indicates that female borrowers are better payers of loan than their male counterparts, although it is not significant. This result is consistent with the findings in Teferi (2000) and Berhanu (1999).

On the other hand age was found to be positive, while age squared turned out to be negative. This shows that as age increases, the probability of loan repayment increases up to a certain level of age beyond which performance will decline (i.e. there is a non-linear relation). Both these variables are statistically insignificant.

Income from activities financed by the loan, suitability repayment period, loan supervision, literacy and value of livestock are positively and significantly related to loan repayment performance. We have seen that the same conclusion was made in the descriptive analysis part. The coefficient of the dummy for education above grade 0 (i.e. grades 1-12) is significant 10% level of significance, indicating that with more education borrowers can use the loan efficiently and invest on more productive and income generating activities enabling them to settle their loan obligation in time.

Availability of other sources of credit has been included in the estimation and it was found to be positively related to loan repayment performance, consistent with prior expectation. This could be a possible explanation for the fact that some borrowers shift between OCSSCO and these other sources of credit such as moneylenders during repayment, probably despite their inability to

repay the loan in full on their own. Owing to the fact that only very few of the respondents indicated that they had additional sources of credit; this finding doesn't seem plausible and needs further study.

In summary, loan diversion and loan amount are significant factors that undermine repayment performance, while value of livestock, income, loan supervision, suitability of repayment period, and literacy level are important and significant factors that enhance the probability of repayment. The results obtained here are in complete agreement with those found using the descriptive statistics.

## **5.2 Evaluation of the Loan Rationing Mechanism**

Like the previous two equations, problem of heteroscedasticity was also detected during the estimation of the probit model for loan rationing. As a result, a robust estimation was run, the results of which are given in table 22.

Six out of the eleven variables included in the model were found to be significant. According to the estimates presented in the table, loan diverters, borrowers supporting larger number of dependents, borrowers earning more income and literate borrowers are more rationed, i.e., the probability of such borrowers being rationed is high. On the other hand, borrowers who are older, male, apply for larger loan size, perceive supervision as adequate, perceive the repayment period as suitable, and whose value of livestock is high are less rationed. Literacy level, age, suitability of repayment period, value of livestock, number of dependents and loan diversion are found to be significant in the model.

Table 22 Maximum likelihood estimate of a logit model for loan rationing

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Probit estimates	Number of obs = 197
	Wald chi2(11) = 22.95
	Prob > chi2 = 0.0180
Log likelihood = -72.055849	Pseudo R2 = 0.1246

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LRAT	Coefficients.	Robust Std. Err.	Z-Value	P> z
D	-0.5928361**	0.2545076	-2.33	0.020
AG	0.1202621***	0.064093	1.88	0.061
AGSQ	-0.0013319***	0.0007051	-1.89	0.059
SX	0.1747426	0.2897258	0.6	0.546
LSZ	0.0002257	0.0004294	0.53	0.599
SRP	0.5073275***	0.3421386	1.78	0.108
SPV	0.0408717	0.2420632	0.17	0.866
INCOM	-0.0073434	0.0050361	-1.46	0.145
LVSX	0.000075***	0.0000398	1.89	0.059
NDP	-0.1135034**	0.0502756	-2.26	0.024
FITLDR	-2.878546***	1.72271	-1.67	0.095
cons	-1.534739	1.475238	-1.04	0.298

\* Significance at 5% \*\*\* Significance at 10%

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With this brief description of the estimation result, we now go to the evaluation of the loan rationing (screening mechanism). According to Hunte (1996), if a variable is positively signed in both equations, then the borrower with such a characteristic is correctly identified as creditworthy. If it is negatively signed in both equations, then the borrower with such a characteristic is correctly identified as non-creditworthy and hence should be rationed.

If on the other hand a variable is positive in the loan repayment equation and negative in the rationing equation, then the screening technique is incorrectly rationing a creditworthy borrower. Similarly, if a variable is negative in the repayment equation but positive in the rationing

equation, it implies that the borrower having such a characteristic that results in poor loan recovery is less rationed while he/she must have been rationed more.

To proceed with the method of evaluation described above, the estimates of the probit models for loan repayment and loan rationing are reproduced in table 23 below for easy reference.

Table 23 Comparison of the two estimates

Variables	Loan Repayment			Loan Rationing		
	Coefficients	Robust Std. Err.	Std. P> z	Coefficients	Robust Std. Err.	Std. P> z
D	1.218347***	0.681713	0.074	-0.5928361**	0.254508	0.02
AG	0.0077951	0.123421	0.95	0.1202621***	0.064093	0.061
SX	-0.1295234	0.633571	0.838	0.1747426	0.289726	0.546
OSC	3.057801*	1.112444	0.006			
LSZ	-0.0020723**	0.001014	0.041	0.0002257	0.000429	0.599
SRP	2.166316*	0.610789	0	0.5073275***	0.342139	0.138
SPV	0.9705793***	0.581182	0.095	0.0408717	0.242063	0.866
INCOM	0.0346739*	0.01451	0.017	-0.0073434	0.005036	0.145
LVS	0.0013884*	0.00036	0	0.000075***	3.98E-05	0.059
NDP	-0.0415804	0.112019	0.71	-0.1135034**	0.050276	0.024
FITLDR	-9.794303**	4.710661	0.038	-2.878546***	1.72271	0.095

\* Significance at 10%    \*\* Significance at 5%    \*\*\* Significance at 10%

Accordingly borrowers who are aged, perceive the repayment period as suitable, perceive loan supervision as adequate and own larger value of livestock are correctly identified as being creditworthy and were not rationed or are less rationed. Similarly borrowers who are loan diverters and support larger number of dependents are correctly identified as being non-creditworthy, and hence are rationed.

On the other hand, borrowers who earn more income from activities financed by the loan and who are more educated are incorrectly rationed despite being creditworthy, while those who applied for larger loan amount and those who are male are less rationed in spite of the fact that they contribute to poor loan recovery rate. Here the screening technique happens to be problematic. In fact the rationing of borrowers with more income could be taken as a deliberate pro-poor strategy followed by the institution.

Overall according to the evaluation technique given above the screening mechanism employed by OCCSCO Kuyu branch seems to be fair (sound), since in six of the ten variables, the criteria used were correct.

Hunte (1996) further went on to investigate signs of the coefficients in conjunction with significance of the variable to evaluate the *accuracy* of the screening technique. Accordingly, only four variables are significant in both equations; namely: Suitability of repayment period, value of livestock, education and loan diversion. So borrowers who have larger value of livestock and perceive repayment period are correctly identified as being creditworthy, while literate borrowers were incorrectly rationed despite their being better in terms of loan repayment. Loan diverters are however, correctly identified to be non-creditworthy and rationed accordingly. Mengistu (1997) got the same result for the case of Awasa regarding education.

The fact that borrowers who are literate are incorrectly rationed is consistent with what has been stated earlier in the descriptive statistics. The institution rationed literate borrowers despite their good performance in loan repayment. This is an important issue for the institution to look into and take a corrective measure.

In concluding this section, it is important to point out that although in over half of the criteria discussed above the screening technique was sound, there are serious mistakes that are being committed. Overall four of the ten factors on the one hand and one of the four significant factors on the other, were incorrectly used by the institution for screening, which necessitates a careful examination of the screening technique being used by the institution.

### **5.3. Assessing Impact of OCSSCO's Micro Financing Scheme**

As explained in chapter three, the methodology that will be used to deal with this part of the study is the before-after approach of impact assessment. The impact indicators to be used include effect of the program on income, access to education, access to health facilities and nutritional status.

We have attempted to quantify the changes achieved in this regard in the descriptive analysis. However, such effects of the credit scheme should be analyzed by comparing the indicators before and after participation in the loan scheme. This requires hypothesis testing by formulating the null and the alternative.

Test of hypothesis can be classified into two: parametric and non parametric. The former is just the standard tests like the t-test, which are based on the distributions of the population. Such tests require assumptions about certain properties of the parent population from which the sample is taken.

The non-parametric tests on the other hand do not require such assumptions. They are used with two related variables to test the hypothesis that the two variables have the same distribution. It makes no assumptions about the shapes of the distributions of the two variables. These tests take into account information about the magnitude of differences within pairs and give more weight to pairs that show large differences than to pairs that show small differences. The test statistic is based on the ranks of the absolute values of the differences between the two variables. Since such tests are helpful in comparing the situation before and after participation in the loan scheme, we will employ Walcoxon's matched pairs non-parametric test.

This test calculates the differences between each observed values and ranks these differences in order of magnitude, beginning with the smallest absolute difference. Next the actual signs of the differences will be sorted out to corresponding ranks and the sums of the positive and negative ranks are calculated, after which they are denoted as  $T^+$  and  $T^-$  respectively.

If  $Y_b$  and  $Y_a$  denote a variable  $Y$  that is observed before and after a certain change, then the alternative hypothesis and the test statistic can be set as follows (the null hypothesis being  $Y_a=Y_b$ )

<u>Alternative hypothesis</u>	<u>Test Statistic</u>
$H1: Y_a < Y_b$	$T^+$
$Y_a > Y_b$	$T^-$
$Y_a \neq Y_b$	Smaller of $T^+$ or $T^-$

We start checking whether the living and economic condition of the borrower has improved after the loan using the income variable. Denoting the mean annual income before and after the loan by  $TAINCB$  and  $TAINCA$  our hypothesis becomes:

$$H_0: TAINCA = TAINCB$$

H1: TAINCA > TAINCB, and the following test result was obtained:

Ranks		N	Mean Rank	Sum of Ranks
TAINCA - TAINCB	Negative Ranks	67 <sup>a</sup>	45.79	3068
	Positive Ranks	21 <sup>b</sup>	40.38	848
	Ties	115 <sup>c</sup>		
	Total	203		

a TAINCA < TAINCB    b TAINCA > TAINCB    c TAINCB = TAINCA

Test Statistic <sup>b</sup>	TAINCA - TAINCB
Z	-4.821 <sup>a</sup>
Asymp. Sig. (2-tailed)	0.000

a Based on positive ranks.    b Wilcoxon Signed Ranks Test

The above test indicates that the null hypothesis is rejected at the 1% level of significance. This confirms that the average annual income of the borrowers after loan is significantly greater than that before the loan.

The next variable we are going to use in order to assess the effect of OCSSCO's credit scheme is access to educational facilities. Denoting the annual average expenditure on education before and after the loan by EDXPb and EDXPa respectively, our hypothesis will be hypothesized as:

Ho: EDXPa = EDXPb

H1: EDXPa > EDXPb

The following result was obtained.

Ranks		N	Mean Rank	Sum of Ranks
EDXPA – EDXPB	Negative Ranks	6 <sup>a</sup>	52.42	314.5
	Positive Ranks	144 <sup>b</sup>	76.46	11010.5
	Ties	33 <sup>c</sup>		
	Total	183		

a EDXPA < EDXPB    b EDXPA > EDXPB    c EDXPB = EDXPA

Test statistic <sup>b</sup>	EDXPA - EDXPB
Z	-10.055 <sup>a</sup>
Asymp. Sig. (2-tailed)	0.000

a Based on negative ranks.      b Wilcoxon Signed Ranks Test

This test result leads us to the rejection of the null hypothesis at the 1% significance level, showing that the average annual expenditure on education after the loan is significantly greater than that before loan.

Since the data on educational expenditure is not reliable because it was collected based on the estimating and recalling capacity of each borrower, enrollment of school age dependent can be used to ensure the reliability of the above result. Accordingly denoting the enrollment before and after loan by EDCA and EDCB respectively, the following test result was obtained.

Ranks		N	Mean Rank	Sum of Ranks
EDCA - EDCB	Negative Ranks	12 <sup>a</sup>	28.67	344
	Positive Ranks	78 <sup>b</sup>	48.09	3751
	Ties	93 <sup>c</sup>		
	Total	183		

a EDCA < EDCB      b EDCA > EDCB      c EDCB = EDCA

Test Statistics <sup>b</sup>	EDCA - EDCB
Z	-7.027
Asymp. Sig. (2-tailed)	0.000

a Based on negative ranks.      b Wilcoxon Signed Ranks Test

Again the above test result indicates that the null hypothesis is rejected at the 1% level of significance further confirming the result obtained using the annual expenditure data.

Next we see effect of the program on access to medical facility through the expenditure on health. Denoting the annual health expenditure before and after loan by HLTXPB and HLTXPA respectively we obtained the following result.

Ranks		N	Mean Rank	Sum of Ranks
HLTXPA - HLTXPB	Negative Ranks	3	89	267
	Positive Ranks	132	67.52	8913
	Ties	44		
	Total	179		

a HLTXPA < HLTXPB      b HLTXPA > HLTXPB      c HLTXPB = HLTXPA

Test Statistics <sup>b</sup>	HLTEXPA – HLTEXPB
Z	-9.501
Asymp. Sig. (2-tailed)	0

a Based on negative ranks.      b Wilcoxon Signed Ranks Test

The above result leads us to the rejection of the null hypothesis at the 1% significance level, showing that the average annual expenditure on health after the loan is significantly greater than that before loan.

Finally we see the effect of the credit scheme on household nutritional status using the average annual expenditure on household consumption expenditure. Denoting the consumption expenditure before and after loan by CONEXPB and CONEXPA respectively the following test results are found.

**Ranks**

	N	Mean Rank	Sum of Ranks
CONEXPA - CONEXPB Negative Ranks	2 <sup>a</sup>	181.50	363.00
Positive Ranks	198 <sup>b</sup>	99.68	19737.00
Ties	3 <sup>c</sup>		
Total	203		

- a. CONEXPA < CONEXPB
- b. CONEXPA > CONEXPB
- c. CONEXPB = CONEXPA

**Test Statistics<sup>b</sup>**

	CONEXPA - CONEXPB
Z	-11.834 <sup>a</sup>
Asymp. Sig. (2-tailed)	.000

- a. Based on negative ranks.
- b. Wilcoxon Signed Ranks Test

The above test result leads to the rejection of the null hypothesis at the 1% level of significance, indicating that the annual expenditure on consumption after loan is significantly greater than that before the loan. In general the above tests show that there is improvement in the living conditions of the beneficiaries, and in line with this 92.4% of the respondents have reported such an improvement during the survey.

Before concluding this section, there are some points that deserve explanation about the above-mentioned positive impact of the loan scheme. In all the cases, we have seen income and expenditure levels after loan being significantly greater than that before the loan. But mere

increase in income and expenditure levels may not necessarily imply that the living condition of the borrowers has improved. Cost of living rises over time due to various reasons and household size gets larger and larger from time to time. This may be reflected in increased expenditures of consumption, education and health care; while no notable improvement is observed in terms of the nutritional health status, etc. Also there is problem of recalling earlier sources and levels of income.

Moreover change in the access to health may come about due to various reasons such as changes in the health infrastructure (e.g., new health centers being built in the area), prevalence of health problems necessitating health care. So the findings about improvement of the situations after loan as tested by the Wilcoxon Matched Pairs Test should be seen in light of these limitations.

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## CHAPTER SIX

### SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

#### 6.1 Summary of the findings of the study

In this study attempt was made to look into the factors that affect the repayment performance of micro finance borrowers and to evaluate the loan rationing mechanism used by the institution. Moreover it assessed the impact of the credit scheme on the economic and living conditions of the borrowers. Both descriptive statistics and econometric analysis were carried out to accomplish the above-mentioned tasks.

The descriptive statistics show that only 19.2% of the respondents are female. The proportion of female respondents in the rural sample is even smaller (12.4%). This indicates that little is done on the part of the institution in terms of woman empowerment, particularly in the rural areas. The majority of the respondents are illiterate (64.5%). Rural borrowers receive on average smaller loan amounts than their urban counterparts.

Above 87% of the respondents reported that the repayment period is suitable. This belief is likely to have a positive impact on loan repayment. All of the respondents believe that loan from such lending institutions is something to be repaid back. Similarly all reported that loan was released timely. Regarding group formation and peer pressure issues, almost all of them reported that they know each other, monitor each other's actions and impose sanctions on members that default. These issues may have contributed to a relatively better repayment rate (91.6%).

Regarding loan utilization 27.1% of the respondents have violated loan agreement, their main reasons being inconsistency of the agreement with their initial intention and market problems.

The majority of the respondents (91.1%) own livestock of which 90.8% of them were rural borrowers. More than half of the respondents had some source of income prior to the loan scheme, their main source being sale of farm produce. Currently 75.8% earn an income level of Birr 1000-3000 after using the loan from OCSSCO. This improvement has to be seen against the average number of dependents of 6.89.

A large proportion (93.1%) are now saving some amount of money with the institution, while only one was saving personally before the launching of the credit scheme. This is one area of a positive contribution of the program, although most of the borrowers are saving just the compulsory (center and group) saving amounts set by OCSSCO.(See annex I).

With the aim of identifying the determinants of loan repayment, an attempt was made to compare defaulters with non-defaulters Accordingly the former were found to be on average a bit younger with more proportion of them being male, illiterate, and loan diverters. They also receive a smaller loan amounts, earn smaller income, own livestock of less value and support more dependents than the non-defaulters. The difference between the two groups was found to be significant in terms of loan diversion, value of livestock, and income.

The same analysis was done on loan rationing. Accordingly, borrowers who are younger, applied for larger loan amount, whose income and value of livestock is less and who support more dependents are disfavored. Also a larger proportion of those who are rationed were literate and

loan diverters, while a relatively less proportion of them perceive supervision as adequate and the repayment period as suitable.

Concerning loan diversion, diverters on average support more dependents, have borrowed for more years, have fewer sources of additional income and receive smaller loan amounts.

The findings of the econometric analysis presented in chapter 5 reveal that, education, suitability of repayment period and number of years borrowed are significant determinants of the probability of loan diversion. Regarding direction of influence, number of dependents, loan size, use of financial records and number of years borrowed enhance, while education, loan supervision and suitability of repayment period undermine the probability of loan diversion. (See page 72 and 92 for the comparison of these findings with those in other relevant studies).

Factors that are found to be significant determinants of loan repayment performance were education, loan size, loan diversion, availability of other credit sources, loan supervision, suitability of loan repayment period, income and value of livestock. All of these factors except loan diversion and loan size increase the probability of loan repayment. Number of dependents and being male reduce the loan repayment performance in addition to loan diversion and loan size.

These findings tally with those in the descriptive statistics mentioned above with the exception of loan size. Similar results were obtained regarding age loan size and supervision in Retta (2000), Berhanu (1999) and Mengistu (1997). Also the sign of the coefficient for sex is consistent with

that of Abreham (2002) and Berhanu (1999), while that of education and income is same in all these studies.

Coming to the screening technique, the empirical evidences show that although there were some problems of separating between creditworthy borrowers from those who are not, in most of the cases the technique was found to be good. Factors like income, level of education were incorrectly used to ration creditworthy borrowers, while the institution wrongly used loan size and sex to identify borrowers who shouldn't be rationed despite their being non-creditworthy. The rest six variables were used efficiently and accurately to identity borrowers into creditworthy and non- creditworthy.

Mengistu (1997) got similar results regarding incorrect rationing of educated borrowers who were actually found to be good payers, and failing to ration those who applied for larger loan amounts despite the fact that they were found to be non-creditworthy.

Regarding impact, it was found that the credit scheme has contributed positively towards improving the income, access to education, access to health service, and nutritional status of borrowers. Overall it seems that the scheme is contributing towards reducing poverty.

Comparison of the studies that were conducted with somehow similar objectives as the current one is presented below. Looking at the determinants of loan repayment there seems to be a consensus in the findings (sign), particularly concerning the variables education, income, loan size, loan supervision and loan diversion. Regarding evaluation of the loan rationing mechanism similar findings were obtained in terms of the signs of education, suitability of repayment period,

loan size, loan supervision and sex. Studies that assessed impact as one of their objectives were Retta(2000), Teferi(2000) and Berhanu(1999), and all them had similar findings, that the credit schemes have contributed positively to the improvement of the living condition of their beneficiaries.

Table 24 Comparison of findings on determinants of Loan Repayment Performance from various studies

Author	Area/institution studied	Methodology employed	Sample size	Sampling Procedure	Findings on the variables used (sign and significance)																			
					AG	AGSQ	ED	OS	SRP	LSZ	IN	INCA	LS	NDP	BK	LD	SPV	SX	TM					
Abreham (2002) <sup>5</sup>	DBE borrowers in Zeway	Tobit	102	Stratified	-		+	*					+	*		+		-	*		-			
Retta (2000)	WFCs in A.A	Probit	130	SRS <sup>6</sup>	-	-	-*		+	*	-	+	+	*				+	+	*				
Teferi (2000)	DECSI in Tigray	Probit	251	2 stage SRS	-	+	+	*			-*	+	+				+	-	*	+	+	+		
Berhanu (1999)	POCSSB O in A.A.	Probit	241	2 stage SRS	+	*	-	+			-*	-*	+	*					-	*	+	-		
Mengistu (1997)	Micro enterprises in Bahir Dar and Awasa	Probit	757	SRS	+	*		+	-*	+	*	-	+						-	*	-/+ <sup>7</sup>	+		
Jemal (2003)	OCSSCO in Kuyu	Logit	203	SRS	+		-	+	*	+	+	-*	+	*	+	*	-		-	*	+	*	-	

Table 25 Comparison of findings on determinants of Loan Rationing Performance from various studies

Author	Area/institution studied	Methodology employed	Findings on the variables used (sign and significance)																			
			AG	AGSQ	ED	OS	SRP	LSZ	IN	INCA	LS	NDP	LD	SPV	SX							
Abreham(2002)	DBE borrowers in Zeway	Tobit Model	-		-				+				+		-			+				
Mengistu(1997)	Micro enterprises in Bahir Dar and Awasa	Tobit Model	-*		-	*	+	+	*	+	*	-			+/- <sup>8</sup>	+/- <sup>9</sup>		+				
Jemal (2003)	OCSSCO in Kuyu	Logit Model	+	*	-	*		+	+	-	*	+	*	-	-	+		+				

\* Shows significance

<sup>5</sup> Abreham used such factors as ratio of equity and value of collateral to total investment, business experience and sector of investment due to the nature of the lending institution that is different from a micro financing institution.

<sup>6</sup> SRS= Simple Random Sampling

<sup>7</sup> Negative for Awasa and positive for Bahir Dar

<sup>8</sup> Positive for Awasa and negative for Bahir Dar

<sup>9</sup> Positive for Awasa and negative for Bahir Dar

## **6.2 Conclusions and Policy Implications**

Based on the major findings of this study, the following conclusions could be drawn along with some policy implications to be brought to the attention of the institution and any other interested parties.

Generally the evidences in the study reveal that the overall repayment performance of the borrowers and the screening technique, which the institution follows to ration loan to its clients, were found to be sound. Similarly, it was found that the credit scheme has contributed positively in terms of improving the incomes, access to education, access to health facilities and nutritional status of the borrowers.

Specifically, loan diversion was found to be one of the important and significant factors influencing loan repayment performance negatively, i.e., it increases default risk significantly. This variable is itself influenced by many factors, of which loan supervision, education and suitability of repayment period were found to reduce the probability of diverting loan to non-productive uses that ultimately lead to reduced recovery rate. So there is a need for a continuous supervision on loan utilization and training so as to reduce both the problem of using loan for non-income generating activities as well as lack of skill observed because of the wide-scale illiteracy (particularly in the rural areas).

The other significant determinant that was found to undermine the repayment performance was loan size. This implies that there is a need to determine an appropriate loan amount that just suffices the project cost or purpose of the borrowing, through a thorough investigation of the demand for loans and proposals/plans submitted by borrowers.

Factors like income, value of livestock, availability of other sources of credit and being female were found to enhance the probability of repayment. Although designing the lending strategy in such a way that factors enhancing the repayment performance are duly taken in to account can be recommended in general, this needs a great care. For instance income was found to significantly increase the probability of repaying loan in full. But it is not recommended to exclude those with low income hoping to reduce loan default, since this contradicts the very objective of MFIs.

On the other hand evidences in this study show that female borrowers have performed better in terms of loan repayment than their male counterparts. But we have seen that the number of women being served particularly in the rural parts of the district is very small. This is also in conflict with one of the objectives of the establishment of such an institution; i.e., empowerment of women. So the institution has to do much in this direction.

In line with the basic idea of improving the loan repayment performance, the screening of borrowers deserves good attention. From the evidence provided in this study, borrowers with more income and educational level were incorrectly rationed despite their being creditworthy, while those applying for larger loan amounts and those who are male were rationed less despite their being non-creditworthy.

Rationing those with more income could be seen, as a deliberate pro-poor action on the part of the institution, if at all it is done with such an intention. On the other hand the majority of the institution's clients whose eligibility for participation in the scheme is based on the criteria of being poor are illiterate. Since most of the time literacy and wealth are positively related, and that

it seems that the institution is focusing more on equity than efficiency by rationing the literate clients more strictly than the illiterate ones.

Although promoting equity may help OCSSCO move towards its objective of poverty reduction, it cannot sustain such an objective on a permanent basis. Screening of the clients is carried out by the Local Poor Representatives and PA administrators, assisted by the branch staff. Since this procedure is meant to identify the poor who are the target clients of OCSSCO, the issue of equity is somehow being addressed in the screening process. So it should focus more on making its services sustainable rather than promoting equity temporarily. Hence the institution is advised not to incorrectly ration creditworthy borrowers (the literate ones in this case) and also not to leave non-creditworthy borrowers un-rationed (those applying for larger loan amounts and those who are male).

Moreover we have seen that only four out of eight variables that were significant in the loan repayment equation were also found significant in the rationing equation during the comparison of the two equations that was made to evaluate the rationing mechanism. This means that important information is being ignored as in the case where some variables contributing to good repayment performance are neglected when it comes to the use of these variables in identifying good borrowers with such characteristics. So another area of focus as far as rationing is concerned should be towards using more of the factors that can be used for identifying clients into creditworthy and non-creditworthy, while at the same time the institution should attempt to avoid incorrect use of such factors as criteria for rationing.

Finally there are some important points that may need further investigation. These issues may serve as points of departure for further research. We have seen that complementarity was observed between the credit scheme of OCSSCO and that of the moneylenders operating in the area of study. Since from the data collected for this study the number of respondents that reported having access to other credit sources is very few, this finding needs to be further studied. Also there may be a need to test if there is some sort of association between loan repayment and purpose of borrowing. Also it would be better to employ the control group approach of assessing impact of such credit schemes, probably by employing the methodology suggested by Karlan (2001), which uses first time borrowers as the control group. This method may solve the problem related to the costliness of the control group approach of assessing impact.

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**Annex I** Number of clients being served by OCSSCO Kuyu Branch, Repayment Rate and Savings Deposit

Year	Number of Clients			Amount of loan extended			Repayment Rate(%)	Savings Deposit
	Male	Female	Total	Male	Female	Total		
1995/96	243	23	266	121484.3	9471.59	130955.9	100	25863.59
1996/97	153	77	230	160700.2	9113	169813.2	100	28021.31
1997/98	755	172	927	726450	146650	873100	100	140878.5
1998/99	1350	172	1522	1422839	139516	1562355	100	232086.5
1999/00	1349	291	1640	2078730	218710	2297440	99.91	585526
2000/01	1873	347	2220	2178345	371960	2550305	92.12	593532.31
2001/02	1870	305	2175	2490365	361730	2852095	n.a	655952.45

**Annex II** OLS estimation for loan diversion

LDVR	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
D	-.0633728	.0320203	-1.98	0.049	-.1265254 -.0002201
NTB	.0079533	.0150224	0.53	0.597	-.0216749 .0375816
NDP	.0025386	.0058819	0.43	0.667	-.0090621 .0141394
INCA	-9.41e-06	.0000461	-0.20	0.839	-.0001004 .0000815
BK	.0458713	.0500829	0.92	0.361	-.0529055 .1446481
SPV	-.0091645	.029392	-0.31	0.756	-.0671334 .0488044
LSZ	.0000423	.0000456	0.93	0.354	-.0000475 .0001322
SRP	-.1091256	.0424052	-2.57	0.011	-.1927601 -.0254912
_cons	.1152355	.0803967	1.43	0.153	-.0433284 .2737993

**Annex III** The Survey Questionnaire

KEBELE/PA \_\_\_\_\_  
 ENNUMERATOR \_\_\_\_\_  
 DATE \_\_\_\_\_

**I: PERSONAL DETAILS**

- 1.1 Name of Borrower \_\_\_\_\_ 1.2 Age \_\_\_\_\_  
 1.2 Sex \_\_\_\_\_ 0. female 1. male  
 1.3 Marital Status \_\_\_\_\_ 1. Single 2. married 3. divorced 4. widowed  
 1.4 Educational level \_\_\_\_\_ 1. illiterate 2. grade1-8 3. grade 9-12 4. above grade 12  
 1.5 Number of dependents: With in the household \_\_\_\_\_ Outside the household \_\_\_\_\_  
 1.6 Occupation: Main \_\_\_\_\_ Second \_\_\_\_\_ Third \_\_\_\_\_

**II: INFORMATION ON GROUP FORMATION**

- 2.1 How many members does the group in which you belong have? \_\_\_ 1. 4 2. 5 3. 6  
 2.2 Did you know all (most) of the members in your group? \_\_\_ 1. Yes 0. No

- 2.3 Did you feel responsible to other members of your group?\_\_\_\_ 1. Yes 0. No
- 2.4 Did you have the feeling that you might be sued in case of failure to repay the loan?\_\_ 1.Yes 0.No
- 2.5 Do you attempt to know or monitor the loan utilization of the other members of your group?\_\_\_\_ 1.Yes 0. No
- 2.6 If yes, what action do you take in case you observe wrong utilization of the loan, say usage of loan for non-intended purpose?\_\_ 1) Inform OCSSCO 2) Accuse the diverter 3) Put social sanction 4) Other(specify)\_\_\_\_\_

### III: LOAN AND ITS REPAYMENT

- 3.1 Did you have any source of credit other than OCSSCO and/or IQUB?\_\_ 1. Yes 0. No
- 3.2 If yes, what is your source?\_\_ 1)Iddir 2)Money lenders 3)Friends/relatives 4) Banks 5) Other
- 3.3 How many times and how much money did you receive from these sources during the past 12 months?

Source	Year	Amount of loan

- 3.4 Have you finished repayment on loan from these sources?\_\_\_\_ 1. Yes 2. No
- 3.5 How much money did you receive in loan from OCSSCo's credit scheme?

	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6
Year						
Amount						

- 3.6 Is the repayment period set by OCSSCo suitable in your opinion?\_\_ 1.Yes 0. No
- 3.7 If no, recommend a suitable repayment period:\_\_\_\_\_
- 3.8 Was the loan issued timely? \_\_\_\_\_ 1. Yes 0. No
- 3.9 If no, what was the impact of the delay?\_\_\_\_\_

- 3.11 What is the status of recent loan? \_\_\_\_\_  
 1. Fully repaid 2. Repayment on schedule 3. Repayment in arrears

3.12 If in arrears what is the balance remaining?\_\_\_\_\_

- 3.13 What was the problem for the loan to be in arrears?
1. Loan based business activity was not profitable
  2. Used some of the loan for household living expense
  3. Sold on credit but did not get paid back on time
  4. Loss of assets acquired by the loan
  5. Other (specify)\_\_\_\_\_

3.14 Do you perceive the cost of default to be high? \_\_\_\_\_ 1. Yes 0. No

- 3.15 If yes, which of the following is the most important in forcing you to repay the loan in time?
1. Claim against personal wealth
  2. Claim against guarantors
  3. Social sanctions (e.g. loss of social status)
  4. Fear of losing another loan in future
  - 5) Other (specify)\_\_\_\_\_

### IV: LOAN UTILIZATION

- 4.1 What was the purpose for which the loan was taken ?\_\_\_\_ 1. Purchase of farm oxen 2. Purchase of agricultural inputs 3.Fattening 4. Petty trade

- 5 Other (specify) \_\_\_\_\_
- 4.2 Was the amount of loan you took enough for the purpose intended? \_\_\_\_  
1. Yes 0. No
- 4.3 If no, what was the amount you requested? Birr \_\_\_\_\_
- 4.4 Did you spend the entire loan on purposes specified in the loan agreement? \_\_\_\_ 1. Yes 0. No
- 4.5 If no, state those non-intended purposes and the amount spent on them
- | <u>Purpose</u> | <u>Amount spent (Birr)</u> |
|----------------|----------------------------|
| 1 _____        | _____                      |
| 2 _____        | _____                      |
| 3 _____        | _____                      |
| 4 _____        | _____                      |
- 4.6 What was/were the reason(s) for spending part/entire loan on non intended purposes? \_\_\_\_
1. The loan amount was not enough for the intended purpose
  2. The loan agreement did not coincide with my initial intention
  3. Market problem
  4. To repay another loan
  5. To make a more profitable business
  6. Other (specify) \_\_\_\_\_

#### **V: SUPERVISION, ADVISORY VISITS AND TRAINING**

- 5.1 Have you ever been supervised regarding loan utilization by OCSSCO staff?  
1. Yes 0. No
- 5.2 Have you ever been supervised for loan repayment? \_\_\_\_ 1. Yes 0. No
- 5.3 If yes to either on. No. 5.1 or 5.2, how many times were you supervised? \_\_\_\_
- 5.4 If yes to either 5.1 or 5.2, was it adequate in your opinion? \_\_\_\_ 1. Yes 0. No
- 5.4 Do you consider supervision as being important for loan repayment? \_\_\_\_ 1. Yes 0. No
- 5.5 Did you get any training before receiving loan? \_\_\_\_ 1. Yes 0. No
- 5.6 If yes, what kind of training was it? \_\_\_\_  
1. Business 2. Marketing 3. Saving 4. Book keeping 5. Other (specify)
- 5.7 Do you think that the training has helped you increase your income? \_\_\_\_ 1. Yes 0. No

#### **VI: INCOME AND WEALTH**

- 6.1 Did you have a source of income (cash income) for your household before five years, i.e., before joining the program loan? \_\_\_\_ 1. Yes 0. No
- 6.2 If yes, what was/were the source(s) and level of your income?
- | <u>Source</u> | <u>Annual Income</u> |
|---------------|----------------------|
| _____         | _____                |
| _____         | _____                |
| _____         | _____                |
- 6.3 What was your annual income from activities financed by the loan during the last 12 months?
1. Below Birr 1000
  2. Between Birr 1001-2000
  3. Between Birr 2001- 3000
  4. Between Birr 3001-4000
  5. Between Birr 4001-5000
  6. Above Birr 5000
- 6.4 Do you have other/new sources of income currently? \_\_\_\_ 1. Yes 0. No
- 6.5 If yes, what are these other sources and your annual income from them?
- | <u>Source</u> | <u>Annual Income</u> |
|---------------|----------------------|
| _____         | _____                |
| _____         | _____                |
- 6.6 What is the estimated value of your assets currently (this is excluding livestock)?



9.3 If no, please indicate the main reasons? \_\_\_\_

1. Lack of educational facilities
2. Unaffordable cost of educational facilities
3. Low level of income
4. Distance of educational facilities
5. Other( specify)\_\_\_\_\_

## **X. CONSUMPTION AND LIVING CONDITIONS**

10.1 What is the average annual consumption expenditure of your household:

- During the last twelve months? Birr \_\_\_\_\_
- Before some five years, i.e., before prior to participation in the program? Birr \_\_\_\_\_

10.2 Who was the bearer: During the last 12 months? \_\_\_\_ Before 5 years? \_\_\_\_\_

1. Myself
2. Other family members
3. Myself and other family members
4. Donors
5. Other (Specify)

10.3 What is the status of the household diet currently after the credit? \_\_\_\_

1. Improved
2. Same
3. Worsened

10.4 If it has improved, do you think the nutritional status has improved after program participation? \_\_\_\_ 1. Yes 0. No

## **XI. MARKET SITUATION AND CREDIT BENEFIT**

11.1 Please list the major products and/or services produced from your business that is financed by the loan from OCSSCO?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

11.2 How was the demand for your product? \_\_\_\_ 1. High 2. Average 3. Low

11.3 What was the trend of profits in the level of your business in the past two years or so? \_\_\_\_ 1. Increased 2. Decreased 3. Stayed the same

11.4 If increased, what do you think is the reason?

1. Sufficient fund
2. Availability of market
3. Favourable price
4. Quality advantage
5. Other (Specify) \_\_\_\_\_

## **XII. INFORMATION ON OTHER ISSUES**

12.1 Did you have a saving account before participating in the credit scheme of OCSSCO? \_\_\_\_ 1. Yes 0. No

12.2 If yes, what is the average amount that you manage to save monthly? Birr \_\_\_\_\_

12.3 Do you have a saving account after program participation? \_\_\_\_ 1. Yes 0. No

12.4 If yes, what is the average monthly amount of your saving? Birr \_\_\_\_\_

12.5 Do you keep accounting records? \_\_\_\_ 1. Yes 0. No

12.6 If yes, for what purpose?

- 1) To evaluate profit and loss
- 2) For loan repayment purpose
- 3) Other (specify) \_\_\_\_\_

12.7 If no, explain the reason(s) of not keeping records?

1. Lack of knowledge
2. Transaction too small to keep a record
3. Other (specify) \_\_\_\_\_

12.8 Has your living condition improved in genera because of your participation in the credit scheme? \_\_\_\_ 1. Yes 2. No

12.10 What is your overall opinion about the credit scheme?

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