LOAN REPAYMENT AND ITS DETERMINANTS IN SMALL SCALE ENTERPRISES FINANCING IN ETHIOPIA:

CASE OF PRIVATE BORROWERS AROUND ZEWAY AREA

By

Abreham Gebeyehu

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DECLARATION

The thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Declared by:

Name: Abreham Gebeyehu

Signature: _____

Date: _____

Place: Addis Ababa University, Addis Ababa

This thesis has been submitted for examination with my approval as an M.Sc. thesis supervisor.

Name: _____

Signature: _____

Date: _____

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ACRONYMS

ACORD	Agency for Cooperation in Research and Development
AID	Agricultural and Industrial Development Bank
BA	Bank of Abyssinia
CBOs	Community Based Organizations
CPI	Consumer Price Index
DBE	Development Bank of Ethiopia
DECSI	Dedebit Credit and Savings Institution
GDP	Gross Domestic Product
GDS	Gross Domestic Savings
IDA	International Development Association
LDCs	Less Developed Countries
NBE	National Bank of Ethiopia
POCSSBO	Project Office for the Creation of Small Scale Business Opportunities
SACS	Supervised Agricultural Credit Schemes
SEALS	Social Emergency Loan Scheme
SSEs	Small Scale Enterprises

ABSTRACT

One of the most crucial and leading factors constraining Small Scale Enterprises (SSEs) development in developing countries like Ethiopia is limited access to financial capital and credit especially from the formal lending agents. This is because on the one hand, these enterprises couldn't fulfill the bank's lending requirements and on the other, the banking sector considers these enterprises as involving high credit risk. This study is conducted with the aim of identifying the major factors behind the loan default problem of SSEs with particular reference to Development Bank of Ethiopia (DBE).

In an attempt to analyze the determinants of loan repayment status of borrowers and to identify the criteria employed to ration credit two equations-loan repayment and rationing equations were estimated using survey data. The estimation result employing tobit model reveals 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 the loan recovery performance of projects.

With regards to the loan rationing mechanism, it is found that borrowers who secured high value of collateral and those with relatively longer repayment period were favored although they tend to be more risky 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 borrower.

The result leads to the suggestion that, the bank's rationing technology should be revised in such a way that Small Scale Entrepreneurs who have the managerial and entrepreneurship capacity but don't have sufficient credit access due to stringent collateral requirement could make use of the financial resource of the country and thereby contribute towards the envisaged development target as well as the bank to get out of the loan default problem.

CHAPTER ONE

INTRODUCTION

1.1. Background

In developing countries like Ethiopia where the farming system is at its traditional level and the industrial and service sectors are at their infant stage, the role of small scale enterprises (SSEs) is significant in terms of their employment generation capacity, quick production response, adaptation to weak infrastructure, use of local resources and as a means of developing indigenous entrepreneurial and managerial skills for a sustained growth need (Aryeetey, 1994 in Fasika and Daniel, 1997). For small-scale enterprises to grow up to medium and large-scale level, the need for formal credit source is indispensable because formal financial sector have the financial capacity to meet their growing credit demand, which the informal sector is incapable to supply.

Despite their importance, many of them do not have sufficient access to credit from formal financial institutes. Their major source of finance, especially at the start up stage, is the informal sector (i.e. from friends, relatives, local money lenders, e.t.c.). This poor credit access from formal financial source, based on the experience of some developing countries, arises partly from biased government policy, due to the operational practices and procedures of the formal financial institutions and the internal problems of small scale enterprises themselves. Experience from Kenya, India, Bangladesh showed that small entrepreneurs are prone to default. Sometimes they make willful default; managerial ability is poor, they don't keep accounts and it is therefore difficult to monitor their operation by the financial institutions

(Asrat, 1989). Solving the major financial constraint of this important sub-sector of the economy is an important step towards achieving the national development objective of a country. For this to succeed, the problem of high default risk associated with them, which made the financial institutes reluctant to extend loan, has to be solved.

In Ethiopia during the Derge period (1974-1991), there was no entry and exit into the formal financial system. Credit policies were set in favor of the socialized sectors (state farms, public enterprises, cooperatives) while the private sector was discriminated against. There was a fixed asset ceiling on investment made by the private sector; the ratio of security to loan amount was 2:1 for private sector as opposed to free of collateral for the favored sectors (Fasika and Daniel, 1997). Moreover, properties of those private citizens whose capital exceed some specified fixed asset ceiling were nationalized. This implies that the private sector during the period was not only marginalized in credit access but also was restricted to be at small scale level.

Understanding the role the private sector could play to the economic development of the country, under the current government, the previous credit restrictions and discrimination were lifted together with the permission of the entry of private banks in the financial market. However, the majority of potentially viable SSEs still couldn't get credit access from the formal financial market. High transaction cost, complex bureaucratic lending procedures, elaborate paper work, high collateral requirements and delays are some of the factors which militate against effective utilization of the existing banking facilities (Dejene, 1993). Because of this only limited number of SSEs could be eligible for credit from the banking sector. In

fact, the share of private sector out of the total loan portfolio has increased considerably from 10.77% in 1990 to 54.65% in 1997 (NBE, 1990/91-1996/97). On the other hand, the recent trend in credit operation of banks shows an increase in share of non-performing loans and it is now customary to watch frequent auction notice about the sale of collateral held for bank loan.

Similarly, Development Bank of Ethiopia (DBE) was one of government owned financial institute that passed through the lending policies mentioned earlier. Its major task has been extending medium and long term credit to medium and large-scale development projects. After 1991 like other financial institutes, DBE diverted its attention towards the private sector whose share never exceeded 11% during the socialist period increased to more than 77% in 2000/01 (DBE, 1970/71-2000/01). Credit access to small scale private enterprises was also improved although it didn't match with the need of customers. With the removal of restrictions imposed by the government, the bank has been given autonomy to pass its own lending decision on the basis of purely commercial criteria. Together with this there is no government guarantee unlike before in case of default. That is, the bank is required to meet its development objective keeping at the same time its financial position safe. Its success/failure of development financing as well as its financial position therefore relies on its loan recovery performance.

However, the recent trend in its repayment rate shows deterioration. Its loan recovery rate reduced dramatically from 38%and 64% in 1996/97 to 24% and 31% in 1999/2000 with and

without non-performing loans[1] respectively. The default problem mentioned above and the stringent lending criteria used by banks seem paradoxical. Because, on the one hand, only a limited number of borrowers could get credit access from the bank and, on the other hand, a considerable portion of these eligible borrowers (according to the bank's assessment) are in default problem. This paradox leads us to pose the question of whether the bank's screening criteria are efficient in screening credit worthy borrowers as well as in determining the appropriate loan size, terms and conditions that takes into account the repayment capacity of the enterprise. It also necessitate the need for making an empirical investigation on the factors behind the default problem so that the lending unit could make an appropriate precaution in its lending decision as well as revise its screening criteria in order for potentially credit worthy borrowers[2] not to be rationed wrongly, while the nations resource will not be fruitless. However, limited empirical work has been done on this problem so far in Ethiopia probably because of the short history of banks in financing the private sector and the prevalence of the problem in recent years.

1.2. Statement of the Problem

The issue of the allocation of credit has a profound implication both at the micro and macro level. When credit is allocated poorly, poor investment projects are undertaken and the nations resources are squandered, it raises costs to successful borrowers, erodes the fund that would be available for future investment, reduces banks flexibility in redirecting towards alternative activities. No other concern in financial markets has such a profound effect on the

[1] Non- performing loans are loans on which principal and interest payments are not being made as agreed (NBE Provision Directive No. SBB/7/1996).
[2] Credit worthy borrowers are borrowers who properly meet their debt obligation and show no arrears on their

performance of lenders. The problem of loan default reduces the lending capacity of a financial institution. It also denies new applicants′ access to credit as the bank's cash flow management problems augment in direct proportion to the increasing default problem. In other words, it may disturb the normal inflow and outflow of fund a financial institution has to keep to stay in sustainable credit market.

The effect of default problem experienced in DBE as mentioned earlier has been reflected on its financial position. For instance, as of June 30, 2001 the bank's debt equity ratio was 6:1 as opposed to the internationally recognized ratio of 4:1. During the same period its current ratio (i.e. the ratio of current assets to current liabilities) stood at 0.59:1 implying that the bank is in severe liquidity constraint, that is its current asset is not in a position to cover its current liability. The repayment problem could arise either from the demand side, supply side, and both or other external factors.

The supply side problems include change in the structure of the bank, change in the lending policy, failure in properly appraising the project document (i.e. in assessing the background of the promoter, technical capability, marketability, financial and economic viability of the project) and lack of responsibility and accountability of the staff members of the bank. Concerning DBE there has been no significant change introduced on the general lending policy of the bank except shifting its attention towards loan collection than loan disbursement, which in fact arisen from severe liquidity problem it has faced. Therefore the problem on the supply side relies more on implementation of the rules and regulations of the bank and on the

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loan position.

bank's efficiency of making proper credit assessment. The bank has employed its screening criteria in order to select projects which it thought are credit worthy as well as in determination of the loan amount. The question here is whether these criteria employed are really the major determinants of the loan repayment performance of projects.

The demand side on the other hand, refers to borrower's age, sex, educational level, household size, management capacity, loan utilization, availability of other source of income, bank credit experience, specific situation of the enterprise (i.e. market condition, technical capability, specific location, e.t.c.) while external factors mainly refers to the general economic condition of the country, government policy and weather condition. In order to combat these pressing problems, the major deterrents behind the poor repayment record should be identified first.

In the area where this particular study focused, almost all DBE loans extended to the private sector were to finance small-scale enterprises[3] since the maximum loan ceiling the branch was allowed to process is Birr 300,000. However their performance has been even worse than the whole bank's case where its recovery rate decline dramatically from 68% in 1995/96 to about 25% in 2000/01. Although the aggregate status of private borrowers in the area has been discouraging, variable performance was recorded when viewed at the individual or household

[3] The definition of small scale enterprises varies depending up on the level of development of a country. In the case of Ethiopia SSEs comprise activities that are independently owned and operated; managed by the owner; have a small share of the market; and employ 6-49 employees. However micro enterprises comprised the first three features of SSEs mentioned earlier and employ five or less employees (Andualem, 1997) HASIDA defined small scale manufacturing and engineering services as they use either manually operated or motive power driven machinery and equipment with a total value of fixed assets not exceeding Birr 1 million for sole proprietorship and Birr 2 million for partnership and which employ at least one person other than owners, & unpaid family worker (Fasika and Daniel, 1997)s. This definition is not applicable to SSEs other than manufacturing and engineering services and has little relevance for this study. In this study the bank's clear classification of borrowers in to SSEs and micro enterprises (which is of a quite different lending scheme) is employed. According to the bank's classification, all private projects whose loan limit does not exceed 2.5 million Birr are considered as SSEs while micro enterprise loan is group lending scheme.

level. There are those who properly carry out their debt obligation while there are others who failed to pay in accordance with the schedule. On the other side, the performance of micro enterprises financed by the bank in the area has been impressive reflected by very small arrears to outstanding ratio and high recovery rate. This inter-program and intra-program variation leads us to pose the question of why some borrowers perform better than others? and why micro enterprise programs have performed better than privately owned small-scale credit scheme? These are empirical questions that the study has to answer.

Studies conducted so far were on Micro enterprises (Mengistu, 1997; Birhanu, 1999; Teferri, 2000) and on manufacturing firms' case (relatively medium and large scale ones) located in Addis Ababa (Mengistu, 1999). However, these studies don't specifically touch the case of small-scale private enterprises. This study therefore tries to narrow the research gap paying attention to this sector of the economy. Studies done on micro enterprises are meant to evaluate the institutional sustainability of the credit scheme. However, this study focuses on identifying factors behind the loan default problem that SSEs are associated with.

1.3. Objectives of the Study

The main purpose of the study is to critically evaluate the loan repayment performance of privately owned small-scale enterprises financed by DBE and to investigate the major determinants behind their loan recovery record. Specifically, the study will pursue the following specific objectives:-

1. To examine empirically the factors behind the loan repayment performance of privately owned small-scale credit scheme financed by DBE. Here a comparative evaluation with that of micro enterprises will also be conducted.

2. To identify the major factors used as a means of screening and to evaluate whether these factors are the loan repayment determinants as well. That is to examine whether the lender's screening and rationing technology is efficient.

3. To draw policy implications for the proper utilization of the financial resource of the country to meet the envisaged development objectives and future development banking practice in the country.

1.4. Hypothesis of the Study

Borrowers` peculiar characteristics, failure of lending agencies in properly screening projects and/or borrowers, government credit policy and the general economic environment of the country are hypothesized to be central issues behind the explanation of poor loan recovery performance of small-scale private credit scheme. The main reason behind the variation in performance between small scale and micro enterprise credit lies on the difference in institutional arrangement between the two lending programs.

1.5. Significance of the Study

When Ethiopia started to adopt market economic system, the private sector which had been neglected for years has got due attention, because this sector is believed to be the main actor of the market so as to achieve the desired development target. Since Small Scale Enterprises constitute the bulk of the private sector, economic growth can't be attempted without the active involvement, promotion and development of this sector of the economy. Although this sector has been given due attention presently, still there are formidable obstacles that inhibit them from growth and expansion. One of the most crucial and leading factors is limited access to financial capital and credit especially from the formal lending agents.

The banking sector have been reluctant to provide loans to Small Scale Entrepreneurs; on the one hand, they are unable to fulfill the bank's lending requirements, and on the other hand, banks consider them as involving high risk factor, not dependable and involve excessive administrative costs. Hence, they regard them as ineligible for provision of banking services. In order to solve the financing constraint SSEs faced, there is a need to change bad perception that banks have on this sector of the economy. One issue that has to be solved in this regard is the loan default problem that SSEs are associated with.

Therefore, an analysis of factors affecting loan repayment performance of SSE borrowers would help policy makers to formulate successful credit policies and programmes that enable them to allocate scarce financial resources to the development of basic sectors of the economy. It also pinpoints a policy issue that the government should design/improve to promote the development of SSEs. The research out put could also help the financial institute (DBE) to evaluate its screening criteria and revise it accordingly. Revision of its criteria in favor of

credit worthy borrowers could also alleviate the financial constraint of SSEs which are potentially efficient but couldn't able to fulfill the bank's lending requirements. It will help the bank to identify the major characteristics that distinguish credit worthy borrowers and defaulters so that it could act accordingly for future screening purpose.

Other researchers could make use of the research outcome because it will help them to identify the problem area in the general economic condition of the country. It will give them background information on entrepreneurship capacity of SSEs, marketing and production activities of their products, and other social and economic variables influencing the repayment status of SSEs

1.6. Scope and Limitations of the Study

The study focuses on small-scale enterprise borrowers financed by DBE. In fact, other banks were also engaged on financing this sector of the economy. However, this study doesn't incorporate borrowers of other banks because of time and financial constraints. The study concentrates on DBE because it is the forefront financial institute engaged on financing development oriented investment projects. Although the study is restricted only to DBE borrowers, its finding is expected to some how reflect some of the common features of others banks (especially government owned ones) since some of the problems exhibited in DBE is also observed on others.

Furthermore, the study is limited to one specific area again due to time and financial constraint. However, since the lending rules and procedures of the bank is the same in all its branches, the result that is obtained taking case of this specific area could reflect the situation of the bank's small-scale private borrowers all over the country under normal circumstance.

1.7. Organization of the Study

The paper is Organized as follows: chapter two gives us a review of credit policy in Ethiopia, and DBE`s loan performance. Chapter three deals with a review of theoretical and empirical work done in relation to loan repayment in credit market. Chapter four refers to the method of sampling, data collection and estimation technique employed to come up with empirical result. Descriptive analysis is presented in section five. Econometric result and interpretation is contained in the sixth chapter. Conclusion and policy implications are forwarded on the last chapter based on the descriptive and estimation result obtained on the previous sections.

CHAPTER TWO

REVIEW OF CREDIT POLICY IN ETHIOPIA AND DBE`S LOAN PERFORMANCE

2.1. The Structure and Flows of Formal Credit in Ethiopia

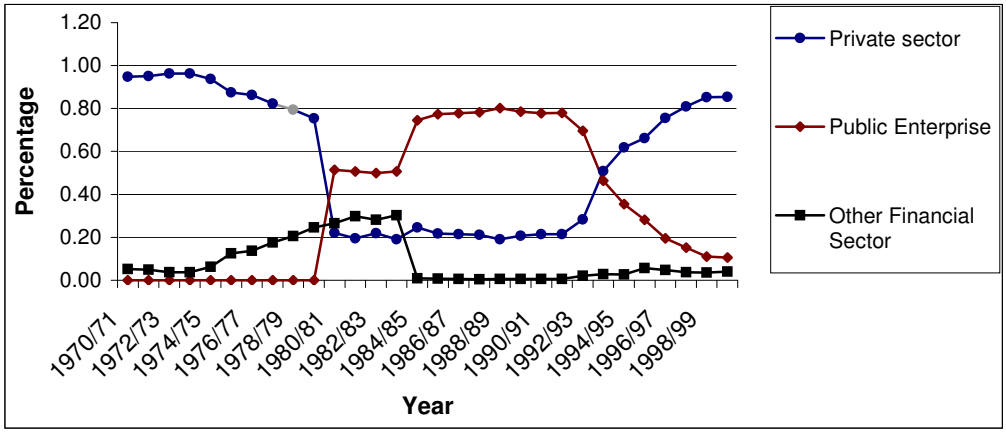
Before the Derge regime, the banking sector was partly owned by foreigners and the lending policy was mainly oriented to financing foreign enterprises and wealthy clients in the country while domestic small borrowers were rationed out and forced to seek credit from informal finance. A great part of the banks' credit was channeled to financing international trade (Mauri, 1997).

Branch concentration during the period was in few urban centers. For instance, Addis Ababa alone accounted for 64%. The collateral requirements were up to 200%. The agricultural sector, which received not more than 10% of the total bank credit by 1974, was almost neglected because financial institutions considered agricultural activity as risky investment venture (Itana, 1994).

With the withdrawal of the imperial era, the practice of banking changed fundamentally. All privately owned financial institutions were nationalized and the bank's major customers became socialized sectors (Public enterprises, state farms and cooperatives) while the private sector was marginalized. The banks were instructed to lend them in support of the government development plans. The banks were not able to refuse to implement these instructions on the basis of commercial criteria (Harvey, 1998).

The distribution of credit was not based on economic rationality but entirely on government preference. The share in domestic credit of the central government (excluding public enterprises and state farms), which was only 11% in 1974, averaged 47% during 1975-90, and in 1990/91 the central government and public enterprises together accounted for 87% of total loans and advances outstanding (Gebrehiwot, 1997). While the share of the private sector ranges from 19.1% to 24.6% during the period 1980/81 to 1990/91 (NBE, 1980/81-1990/91).

Figure 2.1. Credit Distribution by Social Sector



Source: NBE, Annual Reports and Unpublished Data

The discrimination against the private sector is not only in credit access but also in interest rate, which was 9% for private sector as opposed to 6% for public industrial enterprises and 8% for private as opposed to 6% for public enterprises in agriculture since July 1986. Cooperatives are required to contribute at least 15% of the total investment cost of a project as opposed to 30% for private individuals (Itana, 1994). The same holds to the stringent collateral requirements as opposed to free of collateral for the socialized sectors. The unfavorable government attitude towards the private sector during the derge period remained major

deterrent to private investment and development. Lending to socialized sector was not only at government direction but also that the government had repaid their debts that were in default while the remaining were profitable. Therefore there was no conflict between commercial and non-commercial criteria and the implicit guarantee of lending appeared to have been maintained (Harvey, 1998).

With the downfall of the derge regime, the private sector, which had been marginalized, has got equal access to credit with other sectors. Banks were also given autonomy to decide by themselves with no discrimination and interference based on purely commercial criteria in addition to permitting the establishment of private banks and insurance companies[4]. Total fresh bank loans and advances disbursed which was br.1,476 million in 1992/93 reached birr 3,414 million in 2000/01. Central government share in domestic credit outstanding, which had reached 40% in 1990/91, declined to about 28% in 2000/01. As a result, loan disbursed to the private sector, which was 49% in 1992/93 rose considerably to 87.1% in 2000/01 while the socialized sector was receiving only 12.9% (NBE, 1992/93-1998/99 and unpublished data). In fact, there is still unsatisfied demand for credit from this sector of the economy due to inability to meet the banks' lending requirements.

This lending to the private sector has endangered the quality of the bank's loan portfolio. Years of lending to public enterprises, state farms and cooperatives based on government instructions with an implicit government guarantee are expected to have reduced the bank's knowledge and experience of lending using commercial criteria. The deterioration in the

[4] Until 2000/01 six private banks and 6 insurance companies were established

quality of the loan portfolio questions the banks management efficiency and its ability of screening credit worthy borrowers. It has also implication on the general business environment of the country.

2.2. DBE's Credit Operation and Its Loan Performance

One of the major financial institutions that play a vital role in mobilization of funds especially from foreign agencies for financing of investment projects are development banks. Development banks are defined as a financial intermediary, which grants medium and long-term funds for bankable projects and provides services as entrepreneurship, technical skills and managerial experience (Ligeti, 1985).

Development Bank of Ethiopia (DBE) has been one of government owned financial institution engaged in financing short (less than one year), medium (1-5 years) and long (greater than 5 years) term credit to small, medium and large scale investment projects. It is also financing short-term loans to micro enterprises, the source of finance being International Development Association (IDA). The country's first development bank was founded in 1951[5]. Later Agricultural and Industrial Development Bank was set up in 1970, taking over two earlier development banks: DBE and the Ethiopian Investment Corporation which had been established as the Investment Bank of Ethiopia (Charles Harvey, 1998). In 1994 it was restructured to do universal banking operation and it was renamed as DBE.

[5] Initially it was established as Agricultural Bank of Ethiopia in 1945 and renamed as Agricultural and Commercial Bank of Ethiopia before it came out as DBE in 1951.

Like other financial institutions, its lending policy has been affected by the kind of political system in the country. Previously it was financing mostly of large-scale investment projects while small-scale enterprises were marginalized. A high collateral requirement of 200% of the value of the loans had discouraged small-scale potential borrowers from using the bank's credit services (Itana, 1994). Hence, the contribution of the bank in financing small-scale enterprises had been scanty.

During the derge period, DBE (the then AID Bank) became the government's principal instrument for mobilizing and extending credit to the socialized sectors of the economy. It was restricted to meet the credit demand of state farms, cooperatives and public enterprises. The bank doesn't require collateral from cooperatives and state farms as opposed to at least 125% requirement for private borrowers. The bank's project evaluation criteria and requirements were usually applicable only to private borrowers and industrial establishments (Assefa, 1987). The same holds to the discrimination in interest rate as described in the previous section. The overall credit policy adopted during the period had been primarily used as an instrument to encourage and strengthen the socialized sector.

After 1990/91 on wards it diverted its attention towards the private sector. In agricultural sector, for example, DBE has totally withdrawn itself from financing of cooperatives (except those in coffee growing areas) and state farms. Loan disbursed to the private sector that was never exceeded 11% reached 37% in 1993/94, 51% in 1995/96 and further to 77% in 2000/01 (DBE Annual Reports, 1990/91-2000/01).

Loan approval for private loans was centralized at the head office until the end of 1992. One major requirement for private borrower to have access to bank loan is collateral. A minimum collateral value of 100% and 125% of the loan amount is required to finance projects situated in rural and urban areas respectively. Further, the promoter is required to contribute at least 30% of the total investment cost of the project. This being the minimum, both the collateral requirement as well as the equity contribution varies depending up on the background of the promoter and the viability of the project according to the bank's assessment. The repayment period of the investment loans are determined based on cash flow projection but does not exceed 15 years. According to the recent restructuring, the bank has 32 branches. The loan ceiling of private loans for branches ranges from 300,000 to 1 million depending up on their grading.

The recent trend in various credit operations of the bank shows that its performance gets deteriorated. Since most of the loans previously released to the socialized sectors of the economy but are still on the bank's loan balance are now on process to be written off by the government, assessing the loan status of private borrowers separately could better explain the real performance of the bank.

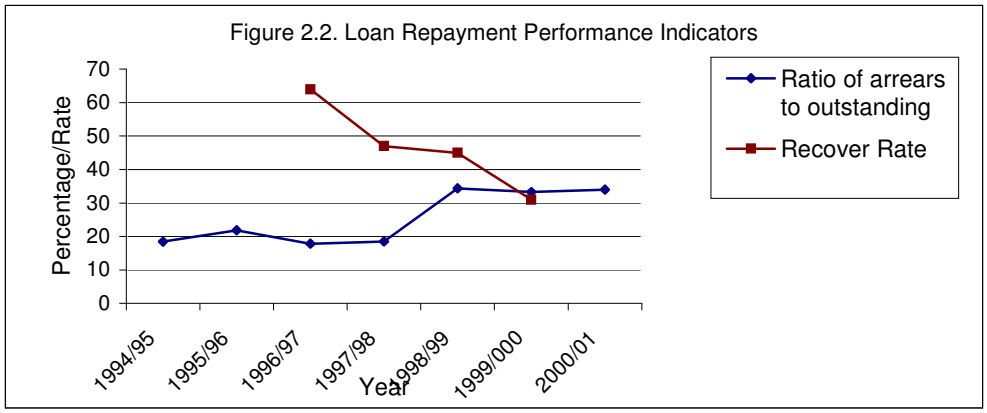
Table 2.1.:- Credit Operation of DBE's Private Borrowers (in million birr)

Year	Amount disbursed	Amount collected	Loan outstanding	Loan in arrears
1990/91	11.3	7.9	51.2	19.1
1991/92	14.5	2.5	61.7	22.1
1992/93	25.7	5.7	91.3	27.4
1993/94	135.2	16.5	-	80.5
1994/95	160.2	46.2	436.8	80.6
1995/96	292.1	70.3	750.2	163.9
1996/97	350.0	121.5	1,071.7	191.0

1997/98	500.0	260.7	1,951.5	360.5
1998/99	459.7	254.2	1,786.5	615.2
1999/2000	371.6	252.7	2,079.4	693.3
2000/01	176.0	262.6	2,197.9	747.7

Source: DBE Annual Reports (1990/91-2000/01)

As table 2.1 above revealed, loan disbursement was very small initially. Latter with the country's shift to market economy where the private sector got due attention, it rose sharply



Source: DBE Annual Reports

and reached a maximum in 1997/98, thereafter it started to continuously decline until 2000/01. Similarly, the amount of collection each year shown increment until it reaches its peak point in 1997/98. Since then it was almost stagnant. On the other side, the arrears and outstanding balance during the same period grew continuously from birr19.1 and 51.2 million as of June 30,1991 to birr 747.7 million and 2.2 billion as of June 30,2001 respectively making the arrears to outstanding ratio to increase again to 34%, although it had declined during the

period 1993/94-1997/98. The loan recovery rate[6] also declined from 64% in 1996/97 to 31% in 1999/00. This implies that there are a large amount of loans which had to be collected but not yet been realized.

The decline in disbursement in recent years was because of liquidity problem arising from low collection performance and inability to raise loanable funds from creditors. During the previous government it was National Bank of Ethiopia (NBE) which was the major source of finance. Currently, however, NBE ceased financing and DBE has to develop its capital and look for other source of fund. Funding agencies need to assess the performance of the bank before deciding on financing. However, the current financial status of the bank doesn't create confidence for the lenders to form credit relation with the bank. Besides, debt service payment made for loans whose maturity date has reached further erodes the fund that will be available for financing.

[6] Loan Recovery Rate is computed as a ratio of total loan collected to total loan demand

CHAPTER THREE

REVIEW OF LITERATURE

3.1. Theoretical Literature

3.1.1. The Nature and Role of Credit Market

Finance is central to establish and operate productive activity. Sufficient finance is a prerequisite to proper organization of production, acquiring of investment assets and/or raw materials and development of marketing outlets e.t.c. Credit is a device for facilitating transfer of purchasing power from one individual or organization to another. As indicated by Oyatoya (1983) credit provides the basis for increased production efficiency through specialization of functions thus bringing together in a more productive union the skilled labor force with small financial resources and those who have substantial resources but lack entrepreneurial ability.

The link between credit and economic development has captured the attention of economists since long (schumpeter, 1933). With improved financial intermediation, the proportion of financial savings that is diverted by the financial system into non-productive uses fails, and the rate of capital accumulation increases for a given saving rate (Mensah, 1999). He further elaborates the importance of financial intermediation as it enhances saving mobilization by providing a variety of safe financial instruments to savers and ensuring tangible returns on savings. The financial sector contributes to the efficiency of the entire economy by spreading information about expectations and allocation of resources to investors.

In more explicit analysis of the association between finance and economic development Shumpeter (1933) treated the banking system and entrepreneurship as the two key enabling agents of development. Shumpeter argues that the banking system's capacity to supply initiative and entrepreneurship in addition to credit creation enabled it to transfer resources from less productive uses to more economically rewarding uses because those who control existing resource or have claims on current wealth are not necessarily those best suited to use these resources. The banking system credit creation equipped entrepreneurs with purchasing power with which they were able to express overriding command over real productive resources. Financial theorists argue that if economic units relied completely on self-finance, investment will be constrained by the ability and willingness of each unit to save, as well as by its capacity and readiness to invest (Mensah, 1999). In his contribution to the role of financial institutions, Von Piscke (1991) admitted that even though finance is a catalyst for investment, it is also a catalyst for poor investment, political patronage, corruption and other types of opportunism.

A credit market differs from standard markets (for goods and services) in two important respects. First standard markets, which are the focus of classical competitive theory, involve a number of agents who are buying and selling a homogeneous commodity. Second in standard markets, the delivery of a commodity by a seller and payment for the commodity by a buyer occur simultaneously. In contrast, credit received today by an individual or firm in exchange for a promise of repayment in the future. But one person's promise is not as good as another. Promises are frequently broken and there may be no objective way to determine the likelihood that promise will be kept (Jaffee and Stiglitz, 1990).

Banks in many developing countries hold a truly alarming volume in non-performing assets. Differences between promised and actual repayments on loans are the result of uncertainty concerning the borrowers ability or willingness to make the repayments when they are due which creates the risk of borrowers default (Pischke, 1991; Vigano, 1993; Kitchen, 1989). The inapplicability of the standard demand and supply model for credit market give rise to credit rationing phenomena. Credit rationing as defined by Jaffee (1971) is the difference between the quantity of loans demanded and loans supplied at the ruling interest rate. In this case lending institutions make use of their own screening criteria to identify credit worthy borrowers so as to decrease the probability of default.

3.1.2.Credit Management Policies

In the past decades there have been major advances in theoretical understanding of the workings of credit markets. These advances have evolved from a paradigm that emphasis the problems of imperfect information and imperfect enforcement (Hoff and Stiglitz, 1990). They pointed out that borrowers and lenders may have differential access to information concerning a projects risk, they may form different appraisal of the risk. What is clearly observed in credit market is asymmetric information where the borrower knows the expected return and risk of his project, where as the lender knows only the expected return and risk of the average project in the economy.

Lending institutions are faced with four major problems in the course of undertaking credit activity: a) to ascertain what kind of risk the potential borrower is (adverse selection), b) to make sure the borrower will utilize the loan properly once made, so that he will be able to repay it (moral hazard). C) to learn how the project really did in case the borrower declares his inability to repay and d) to find methods to force the borrower to repay the loan if the borrower is reluctant to do so (enforcement) (Ghatak and Guinnane, 1999).

These problems of imperfect information and enforcement leads to inefficiency of credit market which in turn leads to default. Thorough credit assessment that takes into account the borrowers` character, collateral, capacity, capital and condition (what is normally referred to in the banking circles as the 5C`s) should be conducted if they are to minimize credit risk. Charles Mensah (1999) stressed the importance of credit management as follows:

> Credit management process deserves special emphasis because proper credit management greatly influences the success or failure of financial institutions. An understanding of a bank's credit risk management process provides a lending indicator of the quality of a bank's loan portfolio. The key elements of effective credit management therefore are well developed credit policies and procedures; strong portfolio management; effective credit controls and the most crucial of all a well trained staff that is qualified to implement the system. Financial institutions must maintain basic credit standards if they are to function well and make credit available to investors. These standards include a thorough knowledge of the borrowers' business by the officer in charge; reasonable debt equity ratio; marketability and viability of the investment project and other technical capabilities. Credit analysis is in general vital for the officer to judge about the credit worthiness of the borrower as well as the project to which the loan is injected.

This effective credit management policy is particularly important in the case of small-scale entrepreneurs in LDCs like Ethiopia where most of the borrowers don't have sufficient entrepreneurship capacity to conduct scientific study before deciding on investing in a

particular project. It would save the borrowers from undertaking risky project as well as the bank from default risk.

Credit risk evaluation is a complex process, which implies a careful analysis of information regarding the borrower in order to estimate the probability that the loan will be regularly repaid (Vigano, 1993). The probability of regular repayment depends on objective factors related to the borrower's operating environment, the borrower's personal attitude towards loan obligation, and the bank's ability to evaluate these two aspects through the information it has and to control credit risk specific contractual conditions. Vigano summarized factors affecting credit risk as follows: the customer's ability and willingness to pay, presence of favorable external conditions, quality of information and bank's ability to ensure the customers willingness to pay.

3.1.3. Theoretical Arguments on Loan Default Problem

Credit markets may be either of formal or informal ones. When we think of small businesses in LDCs, the major source of finance so far is informal sector. The probability of default of small scale enterprises credit from informal market is low because informal financial markets are much closer to their clients and potential clients, and through gossip and daily contact they are much more aware of their activities than a formal banker would ever be, thus they know the risks they are exposed to. On the other hand, small-scale credit scheme from formal financial markets has experienced a high rate of default in many developing countries. Banks in these countries hold a truly alarming volume of non-performing loans (Fry, 1995). Fry

listed Brazil, Cote d`Ivoire, Mali, Benin, Liberia, India, Nigeria, Malawi, and Peru as countries in which there are widespread payment delays.

There are several factors that have been attributed to the high default rates in small-scale credit. On the one hand, there are those who argue that characteristics of small-scale enterprises make the cost of administering credit very high compared to the return on the loans. Small scale enterprises possess shallow management, often with little experience and training; they are usually undiversified, one product firms, they are sometimes new businesses, with little track record, and poor financial recording; they may have a new unproven product; they have little to offer by way of security to a lender; they may be reluctant to raise outside equity capital for reasons of expense, loss of control and increased disclosure requirements. These characteristics of small-scale enterprises provide little incentive for any aggressive loan recovery mechanisms (Pischke, 1980; Beker and Dia, 1987; Kitchen, 1989; Okorie and Iheanacho, 1992; Chirwa, 1997).

There are those who argue that the failure of lending agencies in playing their roles in loan disbursement and recovery process is a major contribution to loan default (Okorie and Iheanacho, 1992; Vigano, 1993; Fry, 1995). They contend their view that determining credit worthiness requires investment of time and resources to evaluate firm specific and industry wide variable, structural or cyclical, by analysts with specific professional skills. A mistake on the evaluation of the borrowers' characteristics or the introduction of inappropriate loan conditions may increase the total risk of the transaction (Vigano, 1993). A non-economic obstacle relating to the failure of banks lies in the risk averse attitude of loan officers (Kitchen,

1989). He revealed that financial repression and credit rationing encourage unprofessional lending practices such as collusion and corruption. He has found that unprofessional practices lead to high default rates, thereby increasing risk. Taking care of this issue is more important in development banks where accountability of loan officers is often a problem.

Fry (1995) listed bank lending criteria in East Africa in order of importance to show how the method of credit analysis is weak: first, the securities offered, second, any other additional securities, third how short the period to maturity is, fourth the commissions to receive in connection with the granting of credit, fifth the standing of the would be borrower, sixth the amount and seventh the project.

Still others argue that the political framework, which affects credit systems from the designing stage to the recovery stage, is central to the explanation of the poor performance of small-scale credit systems (Fry, 1995). In some cases when government is involved in credit programs, recipients often fail to distinguish loans from grants. Morris (1985) as cited by Fry (1995) found out that the primary causes of high arrears in India, for example, is the rapid expansion of lending in response to government pressures to achieve mandated credit disbursement targets. He listed the following as causes of loan default: a) failure to tie lending to productive investment; b) neglect of marketing and linking credit recovery to the sale of the product; c) defective loan policies, delayed loan disbursement, too much or too little credit and unrealistic repayment schedules; d) misapplication of loans; e) ineffective supervision; f) indifference of bank management with respect to recovering loans and g) lack of responsibility and discipline on the part of borrower.

Different authors recommend tackling the problems raised on the side of borrowers, lending institutions and government as solution to the default problem attributed to small-scale enterprises in developing countries (Pischke, 1980; Stiglitz and Weiss, 1981; Kitchen, 1989; Okorie and Iheanacho, 1992; Fry, 1995; chirwa, 1997).

3.2. Empirical Literature

Vigano (1993), employing a credit scoring model for development banks based on 118 sample borrowers, taking the case of Development Bank of Burkina Faso, found out that customer's characteristics, enterprise characteristics and customer's activity, profitability and revenue stability, asset value and composition, financial situation, loan use, bank-customer relationship, contractual conditions and credit risk control, quality of information and the customer's banking behavior are identified to influence the bank's credit risk. The study revealed that being women, married, aged, proximity to the bank, use of better technology and being flexible to adjust to market changes, proper use of the loan, project diversification, frequency of loan maturity, collateral, personal guarantee and being a pre-existing depositor are negatively related to loan default risk. Loans in kind, long weighting period from application to disbursement and being younger firm, past default, existence of other loan are those positively related to loan default rate.

An empirical study made by Ajayi (1992) on factors which influence default in mortgage finance institution with particular reference to the Federal Mortgage Bank of Nigeria using

correlation and multiple regression analysis based on 128 samples (62.7% of the population) showed that default has largely been positively influenced by cost of construction, monthly repayment, loan to value ratio, market value of property, age of borrower and the annual income of borrower. The expected rental income from property, however, had a negative influence on default.

Hunt (1996) examined the credit rationing technology of lenders and the repayment behavior of borrowers at a rural financial institution based on 504 sample observations. Loan rationing equation and loan repayment equations estimated employing Tobit model using survey data at Guyana Cooperative Agricultural and Industrial Development Bank revealed that only 33% of the criteria utilized identified credit worthy borrowers implying that the screening technology was not efficient and needed to be repaired. The results also indicated that tightening the loan contract terms by reducing the grace period on loans and rejecting applications which had long processing times enhanced the pool of credit worthy borrowers. Female borrowers were also not rationed differently than male borrowers, nor were they worse repayers than male borrowers (i.e. the variable sex was insignificant in both equations), but wealthy borrowers were bad credit risks as their repayment performance is poor. In general, the study showed that only four out of twelve explanatory variables (fishing, males in food crops and livestock, credit experience and sugar cane) enhance creditworthiness, while other variables especially grace period, delays, and joint borrowers contribute significantly to the default problem.

Chirwa (1997) estimated the probability of agricultural credit repayment utilizing data from five Agricultural Development Divisions in Malawi using a probit analysis. The result based

on 1237 sample farmer club members showed that the availability of resources from crop sales and income transfers, the size of the club, the degree of diversification and the quality of information determined the probability of repayment. In contrast, other factors such as amount of loan, sex of household's head, size of household and club experience was not statistically significant. Crop sales, income transfers, degree of diversification and quality of information are positively while size of club is negatively related with the probability of repayment.

A study made on loan repayment determinants under the Social Emergency Loan Scheme (SEALS) in Nigeria by Njoku and Odii (1991) employing multiple regression model based on 300 sample beneficiaries (9.3% of the total population) indicated that poor loan repayment performance was due to late release of loan funds, cumbersome loan application and disbursement procedures and emphasis on political considerations in loan approvals. In addition, loan diversion to non-agricultural enterprises as well as low enterprise returns resulting from low adoption rate of improved agricultural technologies contributed to poor loan repayment performance of small holders. Loan volume, years of farming experience, farming as major occupation, years of formal education, household size, loan period, farm size, farm output, value of assets and interest paid on loan were all highly significant determinants of loan default. The coefficients of loan volume, years of formal education, household size and interest paid on loan are positive while the coefficients for years of farming experience, loan period, farm size, farming as major occupation, farm output and value of assets are negative.

In an attempt to empirically analyze the loan repayment determinants in credit group of micro enterprises in Madagascar, Zeller (1998) employed a Tobit model using information obtained at the household, group and community level. The result based on 146 sample groups showed that groups with higher levels of social cohesion have a better repayment rate. The result also lead to the conclusion that it is not the level of physical and human assets of the group members but the degree of variance of risky assets among members that contributes to better loan repayment. The result therefore indicated that heterogeneity in asset holdings among members and related intra group diversification in on and off farm enterprises, enables members to pool risks so as to better secure repayment of the loan. Furthermore, gains in the repayment rate due to risk pooling diminish at the margin because of increased costs of coordination, monitoring, and moral hazard that come with greater heterogeneity in groups.

Okorie (1986) provided empirical evidence and quantification of the extent to which some factors influence loan repayment among smallholder farmers in developing countries with particular reference to Ondo state small holders in Nigeria based on 45 sample small holder farmers. Based on correlation analysis, these factors and their correlation coefficients with their signs are identified as follows: number of disbursement (+0.372), time of disbursement (+0.658), number of supervisory visits by credit officers after disbursement (+0.411) and the profitability of enterprise on which loan funds were invested (+0.309).

Arene (1992), in an attempt to evaluate the credit delivery system of Supervised Agricultural Credit Schemes (SACS) among smallholder maize farmers in Anambra State of Nigeria with emphasis on loan repayment rate, conducted multiple regression analysis. The result based on

95 sample maize farmers showed that high repayment farmers had larger loan size, larger farm size, higher income, higher age, higher number of years of farming experience, shorter distance between home and source of loan, higher level of formal education, larger household size, higher level of adoption of innovations, and lower credit needs than low repayment farmers. The regression analysis showed that size of loan, farm size, income, age, number of years of farming experience, level of formal education and adoption of innovations are significantly and positively related to repayment rate, but distance between home and source of loan, household size, and credit needs account for less.

Padmanabhan (1981) mentioned some of the specific reasons for default in rural credit projects which a development banker can possibly guard against at the time of project preparation or appraisal based on Indian experience. These factors include: under financing, over investment, imperfect analysis, incidence of loan cases per field staff, unscientific banking plan allocation, feeble technical advice (inadequate technical support), improper planning of infrustructural support, ineffective tie-up arrangements, inadequate communication between branch office and head office, unrealistic repayment schedule, cursory assessment of response from the farmers, reduction in the unit value of projects and high propensity to consume.

A technique of discriminant function analysis employed on residential mortgage delinquency and foreclosure in Oyo State Property Development Corporation in Nigeria by Ajayi (1993) based on 236 randomly selected mortgages (51.8% of the population) revealed that market values, cost of construction of properties, level of monthly repayment, type of property, the

borrowers age and employment nature, (whether in public or private sector) are proved to be statistically significant value distinguishing between good and bad loans.

A descriptive analysis made by Adeyemo (1984) on loan delinquency in multi purpose cooperative union in Kwara state, Nigeria, based on 1020 borrowers (80% of the population) revealed that natural calamities, crop failure due to pest, poor storage facilities, lack of adequate transport facilities, sales income, farm income, farm size, education, tenure status of the borrowers are factors associated with loan delinquency.

Von Pischke (1980), in his explanation about the cause of poor loan collection performance by formal agricultural lenders in developing countries, attributed to general conditions of low levels of economic development. Farm level causes of loan arrears as cited by him include small farmers' poverty, large farmers' political influence, low returns and lack of profitable innovation in tropical and sub-tropical agriculture, unfamiliarity with modern commercial practice among certain rural societies, cultural factors such as the weakness or absence of moral incentives or small group sanctions for timely repayment, illiteracy, lack of farm planning, insufficient supervision, and low level of formal education achieved by typical borrowers. Problems at the lender side include deficiency in loan administration and lack of market information such as system of credit rating based on repayment performance. In addition, difficulty in enforcing contracts through judicial or administrative law process could be cited as a country level problem constraining lender performance.

Von Pischke (1980) identified two problems as major causes of poor loan recovery performance: credit project design problems and credit project implementation problems. Credit project design problems include debt vs equity, realism vs aspiration (how realistic the projection of the project designer is), expected value vs dispersion (detailed consideration of the variety of results which occur in the field), book keeping convenience vs borrower cash flow patterns, collection mechanism, institutional scope or range of services offered, interest rates. Credit project implementation problems include low service levels, coordination, access (i.e. information problem and lack of decision making experience in lending to specific target groups) and financial recording.

The findings above revealed that the probability of loan repayment depends on the borrowers' specific characteristics (i.e. age, education, experience, sex, household size, loan utilization, e.t.c.), loan contract terms (i.e. repayment installment, collateral, frequency of maturity, grace period, loan volume, interest rate, number of disbursement, e.t.c.) and other factors such as political influence, technical advice, level of social cohesion (for micro enterprises), e.t.c. The strong side of the empirical studies reviewed above is that they assessed al1 sources of loan default, that is the borrowers` willingness and ability of repayment, the lenders` loan administration capacity, other external economic factors. However, all studies above except Hunte (1996) didn't specifically evaluate the loan rationing aspect of the lending institution.

3.3. Review with Regards to Ethiopia's Case

In Ethiopia an econometric estimation was conducted by Mengistu (1997), based on survey data, on the determinants of loan repayment performance and efficacy of screening mechanism in urban Ethiopia, taking the case of Awassa and Bahir Dar towns. The estimation result using binomial probit model revealed that for Awassa, the number of persons employed and weekly installment repayment period are significantly and positively related with repaying loan in full while loan diversion is significantly and negatively related. In terms of the probability of falling in either of the groups, it is found that there is 53% probability of repaying loan in full. In the case of Bahir Dar, loan expectation and number of workers employed have a positive relation with full loan repayment while loan diversion and availability of other sources of credit have a negative impact. The predicted probability of full loan repayment in this case is 78%. He employed 352 sample beneficiaries for the case of Awassa and 409 for Bahir Dar.

Concerning the Loan Rationing Mechanism, for the case of Awassa, seven out of nine variables are statistically significant. Loan size, supervision visits, weekly repayment period and loan diversion are positively related with loan rationing ratio. In the case of Bahir Dar, loan size, expectation for another loan and availability of other credit sources are positively related with loan rationing ratio while number of workers employed, supervision visits and loan diversion have negative impact. The results from the two equations imply that for the case of Awassa, literate and aged borrowers were incorrectly rationed despite being good payers while loan diverters and large loan applicants were not rationed but they were actually non-creditworthy borrowers. In the case of Bahir Dar micro enterprises which created employment and those which required more supervision visits were incorrectly rationed

despite the fact that they were good payers while borrowers that applied for relatively larger loan amounts and those that had other sources of credit were not rationed properly but they accounted for repayment problems.

Mengistu also made an empirical analysis on the determinants of industrial loan repayment in Ethiopia with particular reference to manufacturing firms in Addis Ababa. The regression result employing tobit model based on 65 manufacturing firms revealed that total investment cost, ratio of value of collateral to total loan amount, the firm's grace period, number of disbursement installments, and time were statistically insignificant, while repayment period and number of supervision visits are significantly and positively related to loan recovery rate. However, coefficients of loan amount and ratio of pre-operating interest to total loan amount are significant at 10% and 15% respectively and negatively related with loan recovery rate. In this case, he employed only information specific to the terms and conditions of the loan during appraisal. Other factors related to the borrower's background and other economic factors are not incorporated in the analysis.

Berhanu (1999) and Teferri (2000) made an attempt employing a binomial probit model on determinants of loan repayment performance of micro enterprises with particular reference to POCSSBO[7] in Addis Ababa and DECSI[8] in Tigray respectively. Birhanu found that loan diversion, loan size and monthly income were undermining factors while beneficiaries' age, perceived cost of default and suitability of repayment period were enhancing factors of loan

[7] Project Office for the Creation of Small Scale Business Opportunities
[8] Dedebit Credit and Saving Institution

repayment. Based on 2348 sample beneficiaries Teferri also came up with the result that education and size of loan are significant determinants in all the three cases (i.e. urban, rural and all sample beneficiaries) their sign being positive and negative respectively. Other variables such as sex, timeliness of loan disbursement and monthly income are positively and significantly related with loan repayment in rural and whole sample beneficiaries while loan diversion is negatively and significantly related with full loan repayment in urban and whole sample beneficiaries.

Fantahun (2000) also estimated a binomial probit model on Agency for Cooperation in Research and Development (ACORD) based on 200 clients under 18 Community Based Organizations (CBOs) in Dire Dawa town. The estimation result shows that the coefficients for other income sources, loan supervision visits, perceived cost of default, income from loan financed business and interest rate are all significant and positively related to full loan repayment.

Studies done so far in Ethiopia as mentioned earlier concentrated more on micro enterprises lending programmes. An attempt made on manufacturing firms' case by Mengistu refers more of relatively medium scale enterprises and even this study used limited information in that it fails to incorporate data in relation to the characteristics of borrowers and external economic influence. This study therefore tries to narrow the research gap paying particular attention to small-scale private enterprises that has got loan facility securing fixed asset as collateral and incorporating as much as possible all the relevant variables. In general empirical studies on loan default problem of private borrowers in Ethiopia is limited may be due to the short

history of banks in massively financing the private sector and the prevalence of the problem in recent years.

CHAPTER FOUR

DATA AND RESEARCH METHODOLOGY

4.1. The Data

4.1.1. Data Type and Sources

The data employed in this study is both primary and secondary, and cross sectional type. Since DBE was fully engaged on financing to the private sector in the area starting from 1995, this study covers all clients of the bank from 1995 onwards and which are listed in the bank's chart of loan account in 2000/01. It excludes borrowers whose repayment installment has not yet matured because it would be premature to assess the real performance of the projects as well as credit worthiness of the borrowers unless they are practically tested by their repayment record. The financial position of the borrowers at the end of the last fiscal year i.e. June 30, 2001(the bank's financial statement closing date) is considered.

The data sources are 1) Small-Scale Enterprise Loan Recovery Survey that is conducted for this purpose. This survey includes information that is obtained from borrowers as well as concerned bank officials. 2) Documents that is obtained from DBE Zeway branch. Furthermore, information that is obtained from Trade and Industry Bureau officials of the respective market towns of micro enterprises, from discussion that is held with some beneficiaries of the program and through direct observation from site visit is employed to have a general idea of the lending procedure from group formation to loan recovery.

Information obtained from the branch office includes:

- Credit information of the enterprise (such as loan amount (requested, approved, disbursed), investment cost, equity contribution, repayment period, number of disbursement installments, collateral coverage, loan collection, loan demand, grace period, e.t.c.
- Information on classification of loan, type of collateral, and DBE loan reputation of the borrower.

Information obtained using survey questionnaire includes:

- Borrower's characteristics such as age, sex, marital status, level of education, household size, business experience, e.t.c.
- Loan utilization and implementation of the project.
- Marketability of products/services and technical capability.
- Information on source of income for loan repayment and borrower's attitude towards default risk.
- Borrowers opinion about the lending procedure of the bank, its supervision and actions being taken in case of default.
- Measures taken on the side of borrowers and the bank to improve the repayment status and its outcome.

Information obtained from the bank about micro enterprises includes: loan size, number of beneficiaries in a cooperative, proportion of female members, the degree of economic diversification as proxied by number of economic activities, region the cooperative is located in, number of members in a cooperative, e.t.c.

4.1.2. Data Collection and Sampling

Two sets of data are employed for the empirical analysis. These are primary and secondary data. The primary data was collected through field survey administration while the secondary data was obtained from documents of DBE Zeway branch. Small Scale Enterprise Loan Recovery Survey was undertaken in the study area for one and half months (i.e. half January and whole February). In survey administration two target groups were interviewed: Bank Officials and borrowers.

Sample selection was based on stratified sampling where borrowers were selected in such a way that it comprises a diversified activity and in proportion to the population classification in terms of their loan status. During 2000/01, a total of 168 private borrowers were listed on the branch's chart of loan account out of which the repayment date for 14 borrowers was not matured, and hence are excluded from the list. Of the rest 154 borrowers whose maturity period has reached, 50 (32.5%) are credit worthy borrowers while the rest 104 (67.5%) are defaulters. A sample of 102 borrowers out of which 34 credit worthy ones and the rest 68 defaulters were interviewed. The proportion of the loan repayment status groups of the

population is kept in selection of the sample except a slight round off error. Possible effort was exerted to keep the diversification of the loan by economic activity.

This survey data has some limitation in that it can't capture information on sales income or amount of profit/loss of projects since almost all didn't have proper financial recording system. Instead it tried to assess whether the income from the project is enough to meet their debt obligation.

4.2. Methodology

An Econometric Analysis is employed to analyze factors attributed for loan default problem, to identify the major criteria used as a means of loan screening mechanism and to find out the major distinguishing features characterizing defaulters and credit worthy borrowers. For this purpose two sets of models are employed based on different objectives of assessing loan repayment performance and loan rationing mechanism.

4.2.1. Loan Repayment Performance

Before specifying the model of loan repayment equation, let's first formulate the loan diversion equation to identify factors leading to loan diversion and so as to use the fitted value as one explanatory variable in the repayment and rationing equations. The estimation of the loan diversion equation is needed since the variable is endogenous to another variables, and it is a combined effect of other exogenous variables. The use of fitted value as an explanatory

variable in the two equations is required to know the indirect effect of the variables affecting loan diversion on the loan recovery rate and rationing ratio of borrowers.

Since the dependent variable (i.e. loan diversion) is binary taking the value 0 and 1, the appropriate model employed here is probit. The probit model is chosen from other similar models such as linear probability and logit models. Linear Probability Model (LPM) is plagued by several problems such as non normality and heteroscedasticity of the error term, possibility of the dependent variable lying outside the 0-1 range most importantly it assumes that the mean value of the dependent variable is linearly related with the explanatory variable, that is the marginal effect of the explanatory variable is remaining constant through out, which seems patently unrealistic (Gujarati, 1995).

The choice of probit vs logit depends on the suitably chosen Cumulative Distribution Function (CDF). The logit model uses the cumulative logistic distribution function while the normal CDF is employed in probit model. A normal CDF assumes if a variable follows the normal distribution with mean U_t and variance σ^2. Given the assumption of normality, the probability that the dependent variable falls in either of the group can be computed from the standard normal CDF (Gujarati, 1995). Since the function employed here assumes normality, the use of normal CDF has been found useful which calls for the choice of probit model for estimation.

To specify the likelihood equation, define P as the probability of observing whatever value of loan diversion.

LOD = $\Pr(LOD_i = 1/Z_i)$ if $LOD_i = 1$ is diverted

$1 - \Pr(LOD_i = 1/Z_i)$ if $LOD_i = 0$ is not diverted

The likelihood equation as presented by Long (1997) is

$$L(\beta / LOD, Z) = \prod_{LOD=1} \Pr(LOD_i = 1/Z_i) \prod_{LOD=0} [1 - \Pr(LOD_i = 1/Z_i)]$$

Where the index of multiplication indicates that the product is taken over only those cases where LOD=1 and LOD=0 respectively.

The model is thus specified as:

$$\mathbf{Pr(LOD=1) = \gamma Z_i + \nu} \quad \text{----------(4.1)}$$

Where Z_i = vector of explanatory variables

γ = vector of parameters

ν = the error term

The model being estimated is specified as:

$$\mathbf{Pr(LOD=1) = \gamma_0 + \gamma_1 GP + \gamma_2 LRP + \gamma_3 LD + \gamma_4 FOD + \nu_i} \quad \text{----------(4.2)}$$

Where GP = Grace Period (in Months)

LRP = Loan Reputation LRP = 1 Repeated borrower

= 0 First time borrower

LD = Loan Amount

FOD = Form of Disbursement FOD = 1 in kind

= 0 in cash

The explanatory variables and their expected signs are as stated below:

Grace period:- If large grace period is given, the project will have sufficient time for implementation so that borrowers could properly utilize the loan for the intended purpose and to generate adequate income after it starts operation. Therefore, it will not face repayment problem when the loan due later. Based on this argument, the expected sign of grace period is negative.

Loan Reputation:- If the borrower is repeated one he may have acquired more experience on the banks rules and regulations, hence could efficiently utilize the loan for the intended purpose. Therefore, a negative sign is expected.

Loan Amount:- Its relation with loan diversion is ambiguous because it all depends on the amount of loan requirement to run a particular project and managerial capacity of the borrower. If it is above what is required to run the enterprise or more than the borrower's managerial capacity, it will create an incentive to divert to non-productive purpose. Hence will

have a negative impact on loan recovery. Otherwise, increasing the loan size will increase the production capacity leading to better repayment. Thus, the sign of the variable can't be predetermined.

Form of Disbursement:- If the loan is released in cash directly to the loane, the borrower could have an incentive to divert the loan other than the intended purpose because money is fungible. Thus, a negative sign is expected.

Coming to the loan repayment equation, uncertainty is important in loan markets as it determines the likelihood of default. The behavior of borrowers under condition of uncertainty is expressed by the expected utility function as:

$U(p \circ x) \oplus (1-p) \circ y) = pu(x) + (1-p)u(y)$ ----------(4.3)

Where p is the probability, x and y are two possible outcomes.

Loan contracts specify the amount borrowed B, and the interest rate r, so that the promised repayment is the fixed amount (1+r)B. According to Jaffee and Stiglitz (1990) there are three possible cases depending on the size of the contract repayment (1+r)B relative to the size of two possible outcomes. If the contract repayment (1+r)B is less than the bad outcome X^b, then the lender always receives the contract repayment. If the contract repayment (1+r)B exceeds the good outcome X^a, then the borrower defaults. When repayment falls between the two possible outcomes, that is when $X^b < (1+r)B < X^a$, the expected repayment is then $P^a(1+r)B +$

P^bX^b, reflecting repayment of the contracted amount (1+r)B when good outcome occurs with probability P^a and repayment of the available proceeds X^b when the bad outcome occurs (with probability P^b).

Loan contracts also include non-price terms, which constrain the borrower in order to reduce the likelihood of default. Collateral is among the most important of these. It refers to financial and tangible capital assets that are pledged by the borrower to guarantee at least partial, if not complete loan repayment. The net return to the borrower π (R, r) can then be written as:

$$\pi (R, r) = \max (R - (1+r) B; -C)$$

The return to the bank can be written as

$$\rho(R, r) = \min(R+C; B (1+r))$$

That is the borrower must pay back either the promised amount or the maximum he can pay back.

The expected utility that the individual maximizes from borrowing as cited by Stiglitz and Weiss (1981) would be:

$$\underset{R}{\mathbf{Max}} \{U(W_0 \rho^* - (1+r)B + R) p + U((W_0 - C) \rho^*) (1-p)\} \text{----------(4.4)}$$

Where W_0 = Initial Wealth

ρ^* = Return from an alternative safe investment

R = Gross return from borrowing if successful

r = Interest Rate

C = Collateral

P = Probability

B = Amount of Loan

The borrowers decision whether to repay the loan or not depends on the utility he/she derives from undertaking the project using the loan which inturn is explained by a set of certain independent variables. One can deduce from the above utility function that the probability of loan repayment relies on the expected utility that will be derived from borrowing which inturn is a function of a number of objective factors: interest rate, collateral, loan size, the return from investment, e.t.c. That is:

Prob (LR=1) = F (U_i) = F (βX_i)

Loan recovery rate is one major indicator used as a measure of the quality of loan portfolio of a financial institute/credit scheme. It also signals the financial position of a lending unit, i.e. its profitability, liquidity position (cash flow management), capital level, e.t.c. Therefore, it is this variable that is employed as a dependent variable in the loan repayment equation.

Loan Recovery Rate (LRR) = Total Loan Collected

Total loan Demand[9]

An econometric model used to empirically identify the major determinants behind the poor loan repayment record of private borrowers is **Tobit** model. This model is also recognized as censored regression model in the sense that a sample in which information on the regressand (dependent variable) is censored. This model has been used by Hunt (1996) on Guyana Cooperative Agricultural and Development Bank, Zeller (1998) on credit Groups of Micro enterprises in Madagascar and Mengistu (1997) on micro enterprise borrowers in two major towns in Ethiopia (Awassa and Bahir Dar). Variable selection in this study is based on similar studies conducted before.

The Tobit model is selected because loan recovery rate, which is our dependent variable, is continuous and should be censored at upper bound of 100 percent. In loan repayment process there are borrowers who repaid their loans in full (even in some cases advance payment is observed), there are others in different stages of repayment and others who are in full default. Obtaining efficient and unbiased estimates for models, which utilize censored samples requires the use of the tobit estimator with the assumption that the error terms are independently and normally distributed (Maddala, 1994). In this case an ordinary least squares

[9] Total loan demand is the amount of loan that has to be collected with in the period under consideration according to the loan repayment schedule. It is computed as the sum of loans in arrears + loan collected. In this case if the borrower is paying in advance of the schedule the advance payment will be deducted from the total collection.

model will lead to biased and inconsistent estimates. Furthermore use of a probit would forego valuable information because of using a dummy instead of a continuous variable.

Suppose we consider a sample of size n (LRR^*_1, LRR^*_2, --------,LRR^*_n) and record only those values of LRR^* less than 1. For those values of $LRR^* \geq 1$ we record the value of 1. The observations are:

$LRR = LRR^*$ if $LRR^* < 1$

$LRR = 1$ otherwise

The resulting sample $LRR_1, LRR_2, \ldots, LRR_n$ is said to be a censored sample. For the observations $LRR_i = 1$, all we know is that $LRR_i^* \geq 1$; that is,

$$P(LRR_i = 1) = P(LRR_i \geq 1)$$

Hence the likelihood function for estimation of the parameters μ and σ^2 is

$$L(\mu, \sigma 2/LRR) = \prod_{LRRi < 1} \frac{1}{\sigma} \emptyset\left(\frac{LRR_i - \mu}{\sigma}\right) \prod_{LRRi \geq 1} \Phi\left(\frac{1 - \mu}{\sigma}\right)$$

Then the model will be specified as

$$\mathbf{LRR_i = \beta X_i + U_i} \text{ ----------(4.5)}$$

Where LRRi = Vector of Loan Recovery Rate

X_i = Vector of Explanatory Variables

β = Vector of unknown parameters

U_i = Residuals that are Independently and Normally distributed with mean Zero and a common variance of $\sigma 2$.

The repayment rate is expected to be influenced by borrower's specific characteristics, project's specific characteristics, and other external factors. Factors expected to affect the loan repayment performance of a borrower are identified on the basis of similar studies done before. It is on the basis of theses factors that we model our loan recovery equation.

The tobit model being estimated is then specified as:

$$\mathbf{LRR = \beta_0 + \beta_1 AGE + \beta_2 EDUC + \beta_3 LOD + \beta_4 SEX + \beta_5 ETI + \beta_6 CLA + \beta_7 RP + \beta_8 OI + \beta_9 HHS + \beta_{10} EXP + \beta_{11} SEC + U_i} \quad \text{----------(4.6)}$$

Where LRR = Loan Recovery Rate

AGE = Age of Borrowers (years)

EDUC = Educational level of Borrowers

Illiterate = 0

Read and write = 1

Primary Education (1-8) = 2

Secondary Education (9-12) = 3

Tertiary Education (>12) = 4

LOD = Loan Diversion

LOD = 1 diverted

= 0 otherwise

SEX = Sex of Borrowers

SEX = 1 Male

= 0 female

ETI = Ratio of Equity to Total Investment

CLA = Ratio of Value of Collateral to Loan Amount

RP = Repayment Period (years)

OI = Availability of Other Source of Income

OI = 1 have other source of income

= 0 no other income source

HHS = Household Size (number)

EXP = Experience in Related Economic Activity (in Years)

SEC = Sector

SEC = 0 Agricultural Sector 1 Other Sectors

Below are the lists of variables with their hypothesized signs:

Age: - At younger age, people are likely to be at career stages where higher future incomes are expected. It may also be argued that the growth rate of income increases in the early stage of the earning life cycle but then declines, as one gets older. On the other side, at older age a

borrower may acquire stability, may gain a lot of experience in running a business or may feel a sense of more responsibility hence could be positively related to loan recovery. Therefore it will be ambiguous to hypothesis the sign.

Education:-It is assumed that as the borrower gets educated, he could acquire more knowledge so that his efficiency in allocation of resources increases and so does the proper utilization of the loan. His ability to adopt himself to changing situation would be better than the illiterate ones, hence would have positive relation with loan repayment.

Loan Diversion:- If the borrower diverted to more productive use than the intended project, then it will have a positive impact. However the borrower diverted it to unviable projects it will have a negative impact. Thus it all depends on the performance of the project the loan is diverted to. Therefore the sign of the variable can't be predetermined.

Sex:- Most studies attach positive sign to females in relation to repayment arguing that female borrowers feel more responsibility to their families than male.

Ratio of Equity to Total Investment: - If this ratio is higher, the borrower feels a sense of ownership and will strive to recover the loan and make the whole asset his sole property. Thus, a positive sign is expected.

Ratio of Collateral to Loan Amount: - If this ratio is higher, the borrower will exert his maximum effort not to default because the value of collateral that he may loss if he default will be higher relative to the loan size. Hence it is expected to be positively related with loan repayment.

Repayment Period:- If it is relaxed, the amount of each installment required to pay will decrease, the debt burden on the borrower will be smaller hence will not face difficulty in properly meeting his debt obligation. Hence, positive sign is expected.

Availability of Other Sources of Income:- If the borrower has other source of income, he may not spend the income that will be generated from the project for other than loan repayment. Even if the project may have faced with market failure, there could be a case that the borrower could settle the loan from other source of income (like in case of pathologically honest borrowers). Thus a positive sign is expected.

Household Size:- If the borrower has large household size, a considerable amount of income from the project could be diverted away from loan repayment to household consumption. Therefore, the sign is expected to be negative.

Sector:- Loans extended to finance agricultural projects are expected to face loan default problem because they are more exposed to risk and uncertainty relative to other sectors of the economy. Hence, the variable is expected to have positive sign.

Experience:- Borrowers who acquired extensive experience in similar economic activity before the loan knows how to run a profitable business than new ones hence could have better repayment record. Thus, a positive sign is expected.

One important variable (i.e. interest rate) that has been considered as major determinant of loan recovery in most studies is not included in this study. This is because interest rate is the same across all observations. That is the bank didn't make any distinction among borrowers in interest rate setting.

4.2.2. Loan Rationing Equation

Credit rationing is defined as a situation where the demand for loans exceeds the supply of loans at the loan interest rate (Jaffee, 1971). In the literature, two types of credit rationing have been examined. In the first case, borrowers receive less than the amount they want to borrow at a given interest rate (Keeton, 1979; Koskela, 1976 as cited in Pehlivan, 1996). In the second case, however, some borrowers receive as many loans as they want while other apparently identical borrowers don't receive loans even if they are willing to pay a higher interest rate (Stiglitz and Weiss, 1981).

Stiglitz and Weiss presented a model of what they called "true credit rationing". Two variables were identified as major criteria: interest rate and collateral.

Credit Rationing = f (interest rate, collateral)

It has been hypothesized that as the interest rate increases the demand for loan decreases since the cost of borrowing increases. On the other hand, if collateral requirement increases only those who have sufficient fixed asset as guarantee apply for a loan and thus decreases the demand for credit. However, increasing interest rate or collateral requirements could increase the riskiness of the bank's loan portfolio either by discouraging safer borrowers or by inducing borrowers to invest in riskier projects.

Hunte (1996) further developed the credit-rationing model in examining the credit rationing technology of lenders in a rural financial institute as:

CRR = f (CEXP, ETI, SEX, TOC, NW, DEL, GP, COD)----------(4.7)

Where CEXP = Credit Experience, NW = Net Worth

ETI = Equity/total investment, GP = Grace Period

TOC = Type of Commodity COD = Collateral/Demand

DEL = Delay

In this study since our observations are bank clients who were already entertained loan facility, it is the first type of credit rationing as cited by pehlivan that we are going to consider (that is a case where borrowers receive loan lower than what is requested). Different approaches have been used in computing rationing: some defined as the difference between

loan demand and loan supply, others used the ratio of loan released to loan demanded as proxy variable (Jaffee, 1971). The dependent variable in our loan rationing equation is computed as:

$$\text{Credit Rationing Ratio (CRR)} = \frac{\text{Volume of Loan Released}}{\text{Amount of Loan Requested}}$$

In order to estimate the loan rationing equation, the method of analysis employed by Hunte (1996) has been used. Loan Rationing Ratio, which is defined as a ratio of loan disbursed to loan requested, is a continuous variable lying between 0 and 1. The appropriate model for this type of variable is the TOBIT model. Since the use of OLS in this case could lead to biased and inconsistent estimate, the use of maximum likelihood estimation is preferable. The specification for the upper censoring is the same as the one indicated on the loan repayment equation in section 4.2.1.above except that we replace Credit Rationing Ratio (CRR) in place of Loan Repayment Rate (LRR).

The model is thus specified as:

$$\mathbf{CRR_i = \alpha X_i + \varepsilon} \quad \text{----------(4.8)}$$

Where CRR_i = Loan Rationing Ratio

X_i = Vector of Explanatory Variables

α = Vector of Parameters

ε = The Error Term

All the explanatory variables included in the loan repayment equation are employed here. The tobit model that will be estimated is then specified as:

$$\mathbf{CRR = \alpha_0 + \alpha_1 AGE + \alpha_2 EDUC + \alpha_3 LOD + \alpha_4 SEX + \alpha_5 ETI + \alpha_6 CLA + \alpha_7 RP +}$$

$$\mathbf{\alpha_8 OI + \alpha_9 HHS + \alpha_{10} EXP + \alpha_{11} SEC + \varepsilon_i} \text{---------- (4.9)}$$

Where the definition of all explanatory variables are as defined in the loan repayment equation in section 4.2.1.

Below are the explanatory variables with their expected signs:

Age:- A lender may consider aged borrowers as they are more experienced and responsible than younger ones hence may be favored. Thus, a positive sign is expected.

Education:- It is expected that educated borrowers may acquire better knowledge in choosing a profitable business, could have better book keeping records, could have better information about the existing investment opportunities and could achieve more success. Hence the rationing could be in favor of them.

Loan Diversion:- Borrowers who are expected to divert the loan are likely to face loan rationing because the lender will limit the loan size in order to avoid diversion. Hence, the expected sign is negative.

Sex:- In some cases there is an intention that male borrowers have better managerial ability to run an enterprise than female ones, hence may be rationed less. On the other hand females are considered as more responsible to their family than males. In this case the rationing could be in favor of females. Therefore it is ambiguous to hypothesize the sign before hand.

Value of Collateral:- If the borrower secures a high valued collateral relative to the loan size, the lender may feel that it will not be a loser in case the borrower default. Therefore, the expected sign is positive.

Availability of Other Source of Income:- If the borrower has other source of income, the lender may not be strict enough to ration credit. Because the lender may feel that the promoter has enough financial back up that could make him credit worthy even in case of project failure. Hence, a positive sign is expected.

Repayment Period:- If the repayment period is long, the probability that the project is exposed to risk and uncertainty is very high. Then the lender may prefer to release loan very smaller than the borrower's demand. Therefore, a negative sign is expected.

Ratio of Equity to Total Investment:- Borrowers who provide more equity relative to size of investment could be less rationed and the estimated parameter could have a positive sign. This is in keeping with the notion that the borrower may be demonstrating commitment to the investment.

Sector:- Borrowers engaged on agricultural projects could be rationed more since the sector is characterized by high risk and uncertainty. Hence, positive sign is expected.

Household Size:- It is expected to have a negative sign. Because large household size implies more consumption expenditure hence may erode the fund that will be available for loan repayment.

Experience:- Borrowers who acquired experience in related economic activity before the loan are expected to be favored because the lending institute may consider them as they have better knowledge as to how to run a profitable business venture. Hence positive sign is expected.

To evaluate the level of accuracy of the screening technology of a lender, we have to compare the sign and level of parameter significance of Loan Repayment and Loan Rationing Equations as used by Hunte (1996). If a variable is significant in the loan rationing equation but not in the repayment equation, it implies that the variable is a useless device as no information on default probability is observed. Alternatively, if a variable is significant in the loan repayment equation but not in the loan rationing equation, it reveals that the lender is ignoring useful information that will help to clearly identify applicants with low credit risks. A significant positive sign in both equations indicates the accuracy of the screening technology in identifying credit worthy borrowers. On the other hand, a significant negative sign in both equations reveals that the financial technology is efficient in identifying default prone borrowers (that is they are strictly rationed and they are as well causes of default).

If a variable is significantly positive in the loan rationing equation but is significantly negative in the loan repayment equation, it indicates the weakness of loan rationing

technology because of attracting default prone borrowers. On the other hand a variable significantly negative in loan rationing equation but is positive in the repayment equation, will reveal that the screening mechanism is incorrectly rationing credit too strictly to credit worthy borrowers.

A descriptive analysis is employed to delineate the characteristics behind credit worthy borrowers and defaulters. A comparative evaluation between micro enterprises and private borrowers is also made using descriptive technique based on qualitative and quantitative information obtained from survey data and through discussion with organizing bureaus (trade and industry officials) and based on observation made through site visit among some beneficiciaries of the program. The comparative analysis will focus on loan processing, procedures, conditions required to be eligible for credit, type and level of economic activities, characteristics of borrowers, loan size, e.t.c. So that the major reasons behind the significant variation in repayment performance between the two schemes could be identified.

4.3. The Study Area

The study area includes seven woredas: Adamitulu, Meskanena Mareko, Dugda Bora, Arssi Negele, Shashemene, Alaba and Siraro. This area is located on the way to southern part of the country. The area under previous administration was called South Showa Administrative Region. According to the current administration the two woredas (Alaba and Meskanena Mareko) are under Southern Nations, Nationalities and People Regional State (SNNP) while the rest are under Oromiya Region. The population size in the area based on the 1994

Population and Housing Census is estimated to be above 2 million of which 218140 (11%) are urban dwellers while the rest are rural residents.

This area is one of grain producing regions of the country. Besides, the two woredas under SNNP are well known in pepper production. Since most of the towns in the area are located adjacent to the Addis Ababa Moyale main road and some of them serve as transport center to southern part of the country, diversified type of economic activities are taking place.

DBE started financing small scale enterprises to private borrowers in the area since 1993 (at that time the area was under Awassa branch). However, until 1995 when Zeway branch got autonomy to extend loan in the area, the number of clients was very small. Since 1995 the branch office engaged in financing for a diversified type of economic activities. Some of the major economic activities it has been financing include grain mill, crop marketing, fattening, woodwork, metal work, crop production, store construction, clinic, hotel, pastry, supermarket, freight transport, e.t.c.

In terms of loan distribution, the lion's share of the total loan portfolio was with in agriculture during the years under consideration ranging from 47% in 1998/99 to 63% in 1995/96. The loan balance among industrial projects was higher than that of service sector until the fiscal year 1997/98 but latter gets lesser. Grain marketing, grain mill and hotel projects constitute the largest share of their respective sectoral loan balance except for service sector in 2000/01 where fright transport's loan balance is slightly higher.

Micro enterprise lending program has also been undertaken in five market towns in the area: Zeway, Arssi Negele, Shashemene, Butajira and Alaba. Beneficiaries of the program were engaged in various activities: food processing, local drink preparation, fattening, grain marketing, wood work, barbery, weaving, gold smith, food preparation, photographing e.t.c all at micro level.

The selection of the area for this study is based on the following reasons:

1. It is the area where a diversified economic activities being carried out. The borrowers composition will also be from diversified activities.

2. The area was not much affected by abnormalities unlike for example the case of cash crop areas where borrowers are affected by frequent fluctuations in international market.

3. The writer has worked in this particular area hence has better observation about the borrowers and the lending institution.

CHAPTER FIVE

DESCRIPTIVE ANALYSIS

In this section we describe the characteristics of variables and analyze their behavior with loan repayment status and loan rationing mechanism of the lending institute. Besides, analysis of variance between the mean values of each explanatory variables between creditworthy borrowers and defaulters is conducted using t-test. Comparative evaluation with micro enterprises is also conducted based on qualitative information.

5.1. Characteristics of Sample Respondents Vs Repayment and Rationing Behavior

5.1.1. Loan Default and Contract Enforcement Problems

Around the area where this particular study focused, almost all private projects financed were at small-scale level because the bank's policy doesn't allow the branch office (i.e. DBE Zeway Branch) to extend loan beyond a certain limit (i.e. Birr 300,000). The trend in the operational performance of projects financed in the area indicates a high default rate.

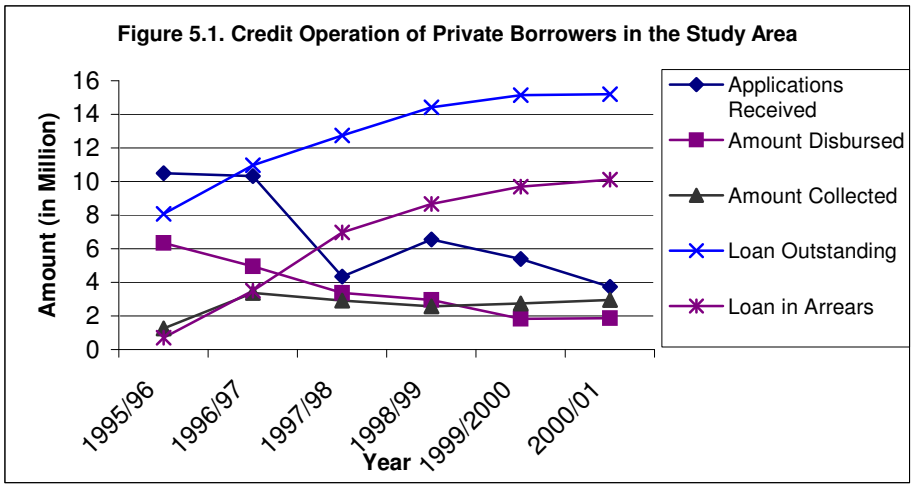
Table 5.1:- Credit Operation of Private Borrowers in the Study Area **In `million Birr**

Year	Applications Received	Amount Disbursed	Amount Collected	Loan Outstanding*	Loan in Arrears*
1995/96	10.49	6.34	1.25	8.07	0.71
1996/97	10.33	4.95	3.37	10.98	3.50
1997/98	4.35	3.37	2.92	12.75	6.98
1998/99	6.56	2.96	2.57	14.42	8.67
1999/2000	5.40	1.83	2.74	15.14	9.69
2000/01	3.74	1.86	2.96	15.20	10.12

*Loan outstanding and arrears position indicated above is as of June 30 of the respective fiscal year.

Source: DBE Zeway Branch Annual Reports (1995/96-2000/01)

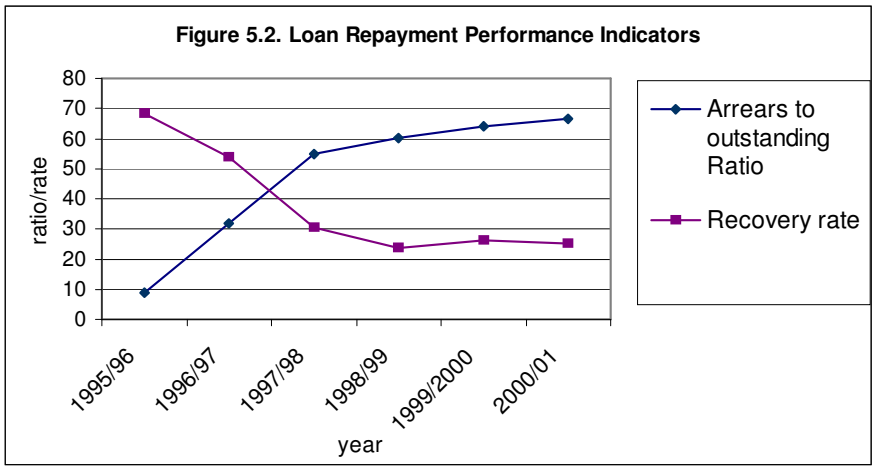
As the table above revealed that the amount of loan released is less than applications received implying that the bank makes some sort of screening. Financial institutes have their own criteria to screen borrowers which they thought are eligible as well as to approve the loan amount less than what is requested. This is what we call credit rationing. What is observed in the above table is thus credit rationing where all applicants could not be eligible for the loan and even those who are eligible get less than they requested.



Source: DBE Zeway Branch

The trend in applications received shows a continuous decline with a significant difference between the first two years and the last three years. This is mainly because large numbers of applicants ambitiously apply for loan without having sufficient knowledge on the bank's loan eligibility requirements. Starting from the fiscal year 1995/96 when the branch has got autonomy to extend loan in the area, there has been a continuous decline in loan disbursement. A 70.6% decline was exhibited in 2000/01 as compared with that of 1995/96. Initially the total collection made rose sharply (by 169%) from 1995/96 to 1996/97, thereafter it started to slightly decline (by 13.4% in 1997/98, 11.8% in 1998/99). A small revival was observed latter but not as such significant. In general the trend in collection figure was almost stagnant except in 1996/97 where 169% growth rate was recorded.

The total loan portfolio has shown continuous increment with a growth of 88.4% from 1995/96 to 2000/01. The arrears figure on the other hand increased by more than 10 fold.



Source DBE Zeway Branch

This huge increase in arrears made the arrears to outstanding ratio to rise from 8.8% in 1995/96 to 66.6% in 2000/01 while the loan recovery rate to decline from 68.3% in 1995/96 to 25.3% in 2000/01. These percentages as at June 30,2001 implies that more than half of the total loan portfolio have already passed their due date and about 75% of the total loan demand remained unrecovered.

During the fiscal year 2000/01, a total of 168 borrowers were listed on the branch's chart of loan account, out of which 14 were fresh loans whose maturity period was not reached. Out of the rest 154 borrowers, 102 samples were selected using stratified sampling method so as to keep the population proportion in terms of their repayment status. According to their loan status, 32.5% of the total populations were credit worthy borrowers while the rest 67.5% are defaulters. Accordingly, 34 creditworthy borrowers and 68 defaulters were selected out of the total population so as to keep the population proportion. The survey couldn't cover the whole population due to difficulty to get access to some of the borrowers since they are located in remote rural areas and the sparse location of the borrowers across many woredas.

Table 5.2. Loan classification of Sample Borrowers

Loan Classification	Loan Status		
	Credit Worthy	Defaulters	Total
Active	34	34	68
Foreclosure	-	32	32
Court	-	2	2
Total	34	68	102

Source: DBE Zeway Branch

According to the measure being taken by the bank, 66.7% of the sampled borrowers are active loans, 31.4% under foreclosure and the rest are on court proceedings. This indicates that more than 30% of the borrowers are under legal proceedings. Half of the active loans are defaulters for which the bank prefers to insist them to facilitate repayment instead of taking legal measure. According to bank officials the lending institute prefer to insist defaulters because the legal measure being taken using court action and foreclosure couldn't be effected in the desired pace and magnitude due to problems associated with sale of collateral. Bid was conducted for 32.4% of the cases under foreclosure or court, but only two were foreclosed or sold due to mainly social problem inhibiting to buy someone's property since they know each other, the limited purchasing power of the society and in few cases high initial bid amount. Because of this the bank was obliged to take over 84.6% of the properties auctioned since they could not be sold.

5.1.2. Characteristics of Sample Borrowers

Gender

In terms of gender composition 12.7% are females while the rest 87.3% are male borrowers. The mean loan-rationing ratio is larger for males while the mean loan recovery rate is less than female borrowers. The proportion of defaulters is 61.5% for females and 69.7% for males.

Table 5.3. Gender Composition of Sample Respondents

Sex	Number /percentage/*	Percentage of Defaulters	LRR[10]		CRR[11]	
			Mean	Std. Dev.	Mean	Std. Dev.

[10] Loan Recovery Rate
[11] Credit Rationing Ratio

Male	89(87.3)	69.7	0.5917	.6660	0.6542	.2374
Female	13(12.7)	61.5	0.65	.4052	0.5262	.2621

* Figures in parenthesis are percentages of the total
Source: Own Survey

Age

The respondent's lowest age is 24 while the highest is 69, the mean age is 46. The proportion of defaulters is highest in the age range of 40-49 and 50-59, and lowest for youngest age group.

Table 5.4. Age group of respondents

Age Group	Number /percentage/*	Percentage of Defaulters	LRR		CRR	
			Mean	Std. Dev.	Mean	Std. Dev.
20-29	5(4.9)	40	.8940	.1699	.7040	.2770
30-39	23(22.5)	56.5	.84	1.0670	.6652	.2841
40-49	38(37.3)	73.7	.4795	.4149	.6387	.2101
50-59	25(24.5)	72	.4712	.4127	.5928	.2683
60-69	11(10.8)	54.5	.6655	.5150	.65	.2084

* Figures in parenthesis are percentages of the total
Source: Own Survey

The table above depicts that both the mean loan rationing ratio and loan recovery rate decreases with age except the last age group where there is a slight increment implying that the screening criteria in this case match with the loan repayment behavior of borrowers.

Education

The majority of the sample respondents (70.6%) have attended either primary or secondary education. In terms of default rate, high proportion of defaulters is exhibited among borrowers

who have attended primary education (i.e even lower than the illiterate ones). The mean value of credit rationing ratio increased with the level of education except tertiary level where they are not favored despite their higher educational level.

Table 5.5. Educational Level of Borrowers

Level of Education	Number /Percentage/*	Percentage of Defaulters	*LRR*		*CRR*	
			Mean	Std. Dev.	Mean	Std. Dev.
Illiterate	4(3.9)	50	.665	.3967	.4125	.2940
Read and write	13(12.7)	53.8	.7369	.3910	.5846	.3080
Primary Education (1-8)	36(35.3)	75	.4189	.4402	.6753	.2350
Secondary Education (9-12)	36(35.3)	69.4	.6892	.8883	.69	.2152
Tertiary Education (>12)	13(12.7)	46.2	.6908	.4566	.5123	.1882

* Figures in parenthesis are percentages of the total
Source: Own Survey

Loan recovery, on the other hand, indicates some irregularity where both educated as well as uneducated borrowers (except those who attended primary education) have exhibited similar repayment. Although there is no as such significant variation between the educational groups, highest portion of defaulters is exhibited among those who attended primary education while is the lowest for those attended tertiary level.

Experience

12.7% of the cases didn't engage in similar business activity before the loan, 34.3% have 1-5 years experience, 26.5% have 5-10 years experience and the rest 26.5% have more than 10 years of relevant experience. The proportion of defaulters is highest for borrowers who have no experience. The mean loan recovery rate increases with an increase in level of experience

while the mean loan rationing ratio for the different category of experience decrease with an increase in the level of experience indicating that the loan rationing criteria employed here goes in contrary to the loan repayment behavior of borrowers.

Table 5.6. Borrower's Experience in Similar Economic Activity

Experience	Number /Percentage/*	Percentage of Defaulters	LRR		CRR	
			Mean	Std. Dev.	Mean	Std. Dev.
0	13(12.7)	100	.1062	.1331	.7269	.1379
1-5	35(34.3)	74.3	.4963	.4394	.69	.2484
6-10	27(26.5)	51.9	.8893	.9538	.5804	.2445
>10	27(26.5)	51.9	.6796	.4223	.5848	.2577

* Figures in parenthesis are percentages of the total
Source: Own Survey

Thus, the bank wrongly disfavored credit worthy experienced borrowers. The relation between recovery rate and experience complies with the hypothesis that more experienced borrowers have better repayment capacity since they acquire more knowledge on how to run a profitable business.

Household Size

The household size for a considerable portion of the borrowers (45.1%) ranges from 6 to10, while the rest are in group range of 1-5 (for 25.5% of the cases) and above 10 for 29.4% of the respondents.

Table 5.7. Household Size of Sample Respondents

House Hold Size	Number /percentage/*	Percentage of Defaulters/	LRR		CRR	
			Mean	Std. Dev.	Mean	Std. Dev.
1-5	26(25.5)	61.5	.6104	.4379	.6488	.2408

6-10	46(45.1)	73.9	.5687	.8264	.6109	.2349
>10	30(29.4)	56.7	.636	.4325	.6697	.2606

* Figures in parenthesis are percentages of the total
Source: Own Survey

The household size seems not smoothly related with both loan repayment rate and loan rationing ratio as reflected by the lowest mean LRR and mean CRR for HHS ranging 6-10 while is relatively higher for the two extremes.

5.1.3. Loan and Loan Repayment

For 44.1% of the respondents, the loan was extended for working capital purpose, for 45.1% of the cases for fixed investment (i.e. to cover the cost of construction of the project or for purchase of machinery, equipment, furniture or vehicle depending up on the type of project) and the rest 10.8% for both working capital and fixed investment. Less repayment was recorded on borrowers who took loan for working capital purpose relative to others reflected by average recovery rate of 47.5% compared with 70.5% of investment loans.

The loan was released in cash for 52.9% of the borrowers and in kind for 47.1% of the sample respondents. Loans in kind in this case means that the bank released the loan to the supplier of the item supposed to be purchased with the loan on behalf of the loane so that they could able to receive the item from the supplier in return without having the money on their hand. This form of disbursement is meant to avoid loan diversion. Those who took the loan in cash are relatively found to be defaulters. In terms of rationing the bank tried to ration more working

capital borrowers as well as those who took the loan in cash (in fact borrowers who took loan in cash are mostly working capital borrowers).

With respect to loan utilization 26 borrowers (25.5%) have diverted the loan for any other purpose while the rest 76 borrowers (74.5%) utilized it for the intended purpose. Those who diverted the loan are clearly found to be defaulters although the bank didn't make much distinction between the two groups in lending decision.

55.9% of the respondents have other source of income other than the project while the rest 44.1% relied solely on the project for their livelihood. Those who have other alternative income source are found to be better payers with 74.8% recovery rate as opposed to 41% of the other group. Almost all except one respondent didn't have proper financial recording system hence couldn't able to capture the profit or loss of their enterprise. However according to their response, the income from the enterprise alone for 75 borrowers (73.5% of the cases) is not enough to cover the loan repayment.

Table 5.8. Loan and Loan Repayment Characteristics of Projects

Variables	Number /percentage/*	Percentage of Defaulters	LRR		CRR	
			Mean	Std. Dev.	Mean	Std.Dev

Purpose of Loan						
Working capital	45(44.1)	68.9	.4747	.4301	.5407	.2253
Fixed investment	44(43.1)	62.2	.705	.8387	.7473	.2266
Both	13(12.8)	61.5	.6715	.3412	.6038	.2166
Form of Disbursement						
Cash	54(52.9)	70.4	.4833	.4254	.5507	.2231
Kind	48(47.1)	60.4	.7294	.7978	.7568 7	.22785
Loan Diversion						
Diverted	26(25.5)	84.6	.36	.4148	.6035	.2323
Not Diverted	76(74.5)	59.2	.6809	.6807	.6496	.2471
Source of Income						
Have other income source	57(55.9)	56.1	.7482	.7391	.6811	.2463
No other source of income	45(44.1)	77.8	.4102	.4150	.5831	.2302
Loan Reputation						
First Time borrower	76(74.5)	73.7	.5583	.6891	.6622	.2410
Repeated Borrower	26(25.5)	42.3	.7185	.4442	.5665	.2396
Repayment Period						
Short Term (≤1 Years)	29(28.4)	69	.4279	.4278	.5334	.2398
Medium Term (1-5 Years)	51(50)	58.8	.7212	.7783	.63	.2440
Long Term (above 5 Years)	22(21.6)	77.3	.5418	.4336	.7936	.1586
Sector						
Agriculture	32(31.4)	78.1	.3522	.3903	.5669	.2461
Industry	38(37.2)	68.4	.5108	.4446	.6234	.2033
Service	32(34.4)	50	.9509	.8576	.7259	.2631

* Figures in parenthesis are percentages of the total
Source: Own Survey

About 25.5% of the respondents are repeated ones while the rest 74.5% are first time borrowers from the bank. Better repayment record is observed for repeated borrowers however the bank's rationing is in favor of first time borrowers. Repayment period was short term (≤ 1 year) for 28.4% of the cases, medium term (from 1-5 years) for 50% and long term (above 5 years) for the rest 21.6% of the sampled borrowers. The bank favored those projects whose

repayment period is long term however they didn't show good repayment record especially as compared with medium term loans.

Borrowers from industrial sector constituted 37.2% of the sample respondents while those from agricultural and service comprised 31.4% each out of the total respondents. The bank's screening mechanism is in favor of the service sector followed by industry and agriculture respectively while at the same time the repayment record is poor for agricultural activity (35.2%) and is best for service sector (95.9%) followed by industry (51.1%). The bulk of agricultural borrowers were engaged on crop marketing activities. It is due to market problem because of excess production of cereals in the area that this poor loan repayment record is observed. This problem is now reflected all over the country where farmers couldn't get the appropriate price for their products. Similarly the significant part of industrial borrowers also engaged in grain mill activity. In this case also the market problem is the dominant factors behind their default rate mainly due to the establishment of similar projects in the localities where these projects are established. Over supply of one economic activity in a particular area indicates the borrowers limited entrepreneurship ability to engage in diversified activities rather imitation of the existing economic activities.

5.2. Summary Statistics and Frequency Distribution of the Variables

The mean repayment period for the total sample respondents is 3.75 years implying medium term loan while the average grace period is about three and half months. The average loan size of the sample borrowers is about 96 thousand; the range varies from as low as 12,000 to the maximum loan limit of 300,000. The mean ratio of equity contribution out of the total

investment loan is 44.6% while its variability ranges from as small as 15% to as large as 89%. 8.8% of the sampled borrowers contributed less than the minimum requirement of 30%. The collateral as a ratio of loan amount varies from 0.60 to 8.38 its mean ratio being 1.81. About 77.5% of the borrowers secured collateral above the bank's minimum lending requirement of 125%. The branch accepted less than the minimum requirement of both equity contribution and collateral value reasoning that the sampled borrowers are credit worthy. This collateral value doesn't include the value of projects if they are situated in rural areas. This implies that the bank's collateral requirement is stringent that most of the sampled borrowers were required to secure more than the minimum eligibility requirement.

Table 5.9. Summary Statistics for Independent Variables for whole sample cases

Variables	Mean	Std. Dev.	Range
RP	3.75	2.374316	1-11
GP	1.607843	3.618317	0-23
LD	95784.45	70300.06	12000-300000
AGE	45.87255	9.95104	24-69
EXP	6.666667	2.008217	0-15
EDUC	. 1.95098	1.075169	0-4
SEX	.872549	.3351243	0-1
LOD	.254902	.4379582	0-1
LRP	.254902	.4379582	0-1
ETI	.4456863	.1369361	.15-.89
OI	.5588235	.4989797	0-1
HHS	8.862745	4.941317	1-25
FOD	.4705882	.5015991	0-1
CLA	1.805784	1.15996	.60-8.38

Source: Own Survey

Since in all cases the bank made site visit on the project before approval of the loan and it was regularly visiting the project after its first due date has matured once the entire loan approved was released the number of supervision visits which has been considered as an explanatory variable is excluded.

All except twelve borrowers get loan amount less than requested. The ratio of loan disbursed to loan requested varies from as small as 12% to a maximum of 101%, the mean ratio being 0.65.

The loan recovery rate for 66.7% of the cases falls in the range of 0 to 0.19 (32.4%) and ≥1 (34.3%) implying that the majority of the borrowers lie in the two extremes.

Table 5.10 Frequency Distribution of Loan Recovery Rate and Loan Rationing Ratio

Range	LRR*	CRR*
0-0.19	33(32.35)	5(4.9)
0.2-0.39	12(11.76)	12(11.76)
0.4-0.59	5(4.9)	25(24.51)
0.6-0.79	7(6.86)	25(24.51)
0.8-0.99	10(9.80)	23(22.55)
≥1	35(34.31)	12(11.76)

* Figures in parenthesis are percentages of the total

Source: Own Survey

The recovery rate for about half of the total defaulters considered here falls in the range of 0 to 0.19 and about 67% below recovery rate of 0.40. This implies that a considerable number of borrowers are at extremely worst repayment situation. With regards to rationing ratio about half of the borrowers have got a loan in the range of 40 to 80% of the loan requested. In general 88% of the borrowers have got a loan less than requested.

5.3. Creditworthy Borrowers Versus Defaulters

As described earlier 34.3% of the sample borrowers are creditworthy while the rest 65.7% are defaulters. The mean loan recovery rate for the sample respondents is 0.60 while it varies from 0 to 5.29 implying that there are borrowers who didn't start repayment at all and there are other extremes that are paying by far in advance of the schedule. 14.7% of the sample respondents didn't start payment at all though their repayment period has already passed.

The mean ratio of collateral to loan amount for credit worthy borrowers (2.62) is greater than that of defaulters (1.56) implying that collateral is positively associated with loan repayment although not statistically different as reflected by the t-value above. The mean equity share of the former 0.50>0.42 of the latter indicating borrowers motivation for repayment as the debt equity ratio of the project decrease. Borrowers' experience in similar business activity significantly differs between the two groups. The formers have on average 6-10 years while the latter have 1-5 years experience. Weather the means of the variables mentioned above between the two groups are equal or not is tested using t-test.

Mean value of loan diversion for credit worthy borrowers is greater than that of defaulters implying that borrowers divert the loan to less productive investment than the intended purpose. Similarly the mean value of bank credit experience for the two groups implies that the proportion of repeated borrowers is higher for the former group than the latter where the majority of them are first time borrowers. Over 70% of the former and about 50% of the latter group have other source of income which indicates that borrowers relied not only on the

income of the project for which the loan was injected but also on other income sources to meet their repayment obligations.

Table 5.11. Mean Comparison Between Creditworthy Borrowers and Defaulters

Variables	Credit Worthy Borrowers	Defaulters	t-value
LD	100318.6	93711.71	-0.4387
RP	3.6563	3.7929	0.2684
GP	2.0625	1.4	-0.8569
AGE	44.5938	46.4571	0.8765
EXP	7.0937	3.4714	-3.0054
EDUC	2.5	2.4714	-0.2654
SEX	.8438	.8857	0.5849
LOD	.125	.3143	2.0576
LRP	.4063	.1857	-2.4156
OI	.7188	.4857	-2.2313
HHS	8.8125	8.8857	0.0691
FOD1	.5625	.4286	-1.2548
CLA	2.6247	1.5576	-1.0298
ETI	.4984	.4216	-2.7120
SEC	.7813	.6429	-1.9006

Source: Own Survey

When the sectoral performance of projects is examined, considering the agricultural sector on one side, and other sectors on another side, the mean value is greater for credit worthy borrowers than defaulters, implying that the proportion of agricultural borrowers is higher for the latter group than the former. This relatively poor performance in agricultural sector supports the hypothesis that the sector is subjected to risk and uncertainty. As mentioned earlier it is unstable food crop production and marketing activity due to the sector's dependence on rain fed agriculture that it has faced with loan repayment problem. Again the

existence of mean differences of the variables above with in the two payment status groups is confirmed using t-statistics.

The mean values of other explanatory variables indicated on table 5.11 other than those explained above like loan amount, repayment period, grace period, age, education, sex, household size, and form of disbursement are found to be not statistically different between the two loan repayment status groups.

5.4. Private Borrowers Vs Micro Enterprises

In the study area the bank has also involved in financing micro enterprises since 1995 the source of finance being International Development Association (IDA). Five market towns (Zeway, Arssi Negele, shashemene, Alaba and Butajira) were selected in the lending programme. The enterprises financed are involved in diversified type of economic activities. Contrary to its small-scale private borrowers their performance has been impressive.

Table 5.12: - Credit Operation of Micro Enterprises in the Study Area. **In million Birr**

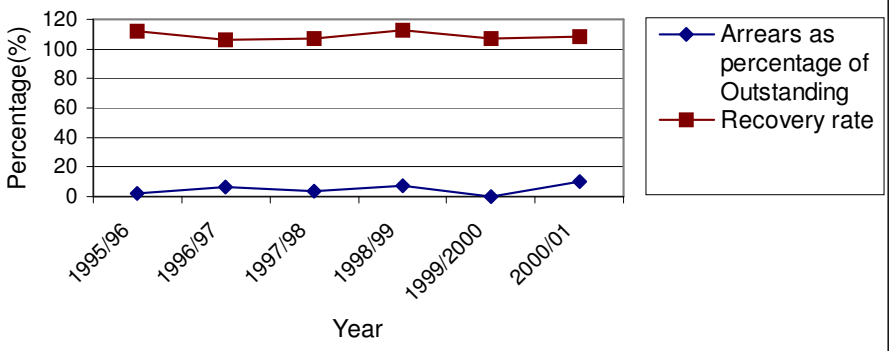
Year	Amount Disbursed	Amount Collected	Loan Outstanding*	Loan in arrears*
1995/96	0.75	0.48	0.54	0.01
1996/97	0.90	1.00	0.43	0.029
1997/98	1.55	1.44	0.79	0.027
1998/99	1.51	1.38	1.05	0.073
1999/2000	1.07	1.12	0.49	(0.072)
2000/01	1.30	1.11	0.73	0.074

* Loan outstanding and in arrears are as of June 30 of the respective fiscal year.

Source: DBE Zeway Branch Annual Reports (1995/96-2000/01)

There was a slight increment in disbursement and collection initially until 1997/98 but latter it remained stagnant. The same holds to the total loan portfolio and arrears position where there was no as such significant fluctuation during the period under consideration. The arrears to outstanding ratio never exceed 10% while the recovery rate in the aggregate was more than 100% in all fiscal years under consideration.

Figure 5.3. Repayment Performance Indicators of Micro Enterprises



Source: DBE Zeway Branch

Although there is no quantifiable data on factors behind the success of this credit scheme, a description of the borrowers screening procedure, lending requirements, type of activities, gender composition on the basis of information obtained through discussion with trade and industry bureau (organizing) officials, some beneficiaries of the program and information obtained from the bank reveal some of the major distinguishing features between the two credit schemes.

Table 5.13.Comparison between Private Borrowers and Micro Enterprises

Description	Private Borrowers	Micro Enterprises
Proportion of Females	12.7%	61%
Collateral Secured	Fixed Asset	Joint Liability
Screening body	The Bank	Members themselves with close assistance from Trade and Industry Bureau Officials
Number of Economic Activity	Single	Diversified
Enforcement Mechanism	Legal Measure	Social Sanction
Loan Ceiling per Capita	300,000	2000(for each member)
Form of organization	Sole Proprietorship	Cooperative
Repayment period	Variable (1-11 years)	One year
Repayment Installments	Semi-annually	Monthly
Recovery Rate	25.5%	107%

A cooperative comprised 4-5 groups each having 5 members. Trade and industry office of the respective market towns is responsible for organizing beneficiaries in to cooperatives although members themselves select each other to form a group. Each group will have a leader and the leaders getting together will form a committee. The chairman, secretary and treasurer of the cooperative will be elected from the committee members. It is this committee that determines the loan size, borrow the loan from the bank on behalf of the members, collect money from members when the loan matures and enforce them when they default. Although there is legal ground for a cooperative to enforce defaulters it is social sanction and eligibility for the next

round loan that has been the most effective instrument for enforcement. Therefore, it is information from informal reliable sources about the credit worthiness of a beneficiary that has been used as important screening purpose. The role of the bank in this credit programme is limited only in effecting loan disbursements and collecting money when their due date reached with out getting into the enforcement and screening process.

Since the objective of the credit programme is to alleviate the financial constraint of potentially capable to do but unable to secure the stringent collateral requirements of banks, no fixed asset is needed as security rather it is joint liability where members of a group or a cooperative will pay on behalf of the defaulters. Therefore members themselves closely follow the proper utilization of the loan and insist defaulters to pay their overdue loan balance. In this credit programme thus, the adverse impact of moral hazard and adverse selection problems is minimized as far as loan rationing and enforcement process is undertaken through active participation of the beneficiaries. Therefore the difference in loan repayment performance between the two credit groups (i.e. private borrowers and micro enterprises) lies on the difference in the institutional arrangement between the two credit programs and thereby their screening criteria and enforcement mechanism.

CHAPTER SIX

ECONOMETRIC ANALYSIS

In this section various tests, method of model estimation and estimation results will be presented.

6.1. Model Tests

For the econometric estimation to bring about best, unbiased/reliable and consistent result, it has to fulfill the basic linear classical assumptions. The basic assumptions include: linearity in parameters of the regression model, for given explanatory variables the mean value and the variance of the disturbance term (Ui) is zero and constant (homoscedastic) respectively, there is no correlation in the disturbances, no correlation between the regressors and the disturbance term, no exact linear relationship (multicollinearity) in the regressors and the stochastic (disturbance) term Ui is normally distributed (Gujarati, 1995). In this paper since the data employed is cross sectional type, the most important tests such as normality, heteroscedasticity and multicollinearity are conducted and the appropriate remedies were taken.

Normality

One of the basic assumptions of the classical linear regression model (CLRM) as described earlier is that the stochastic/disturbance term is normally distributed. To make sure that this assumption is valid or not, the residuals generated out of the regression model is plotted against the fitted values of the dependent variables. If this curve is like bell shaped distribution

it can be concluded that the disturbance term is normally distributed with mean zero and constant variance one (i.e. N~(0, 1)). To get the residuals normally distributed first we have to make sure that each variables employed are found to be normally distributed. In this case all variables except loan amount, collateral as a ratio of loan amount and repayment period are found to be normally distributed while these variables are skewed to the left. Accordingly these variables were transformed to logarithmic form and the disturbance term becomes normally distributed.

Multicollinearity

As indicated earlier we say there is multicollinearity problem when there is correlation between variables employed in the regression model (when the assumption that $cov(x_1,x_2) = 0$ is violated). That is the existence of a ``perfect`` or exact linear relationship among some or all explanatory variables of a regression model (Gujarati, 1995). The intercorrelation between the two variables can be measured by the partial correlation coefficient between one variable with another variable. As a rule of thumb, if the correlation coefficient between the two variables is greater than 0.8, one can conclude that there is a series problem of multicollinearity. Accordingly the test result shows that the correlation coefficient between all variables under consideration is less than 0.8 implying that the explanatory variables can separately contribute to the variation in the dependent variable.

Heteroscedasticity

An important assumption of the CLRM is that the disturbances U_i appearing in the regression function is homoscedastic. That is they have the same variance ($E(Ui^2)= \sigma^2$ where i= 1,2,…,n. All the equations estimated in this paper are found to face heteroscedasticity problem. Since the loan diversion equation is estimated using probit model, running robust estimation using STATA software easily solves its problem. For the rest two equations (i.e. loan repayment and rationing equations) since the dependent variables are censored the appropriate model employed is tobit. However this model has its drawback in that it is difficult to easily correct the heteroscedasticity problem. Therefore it is with this problem that the tobit maximum likelihood model is estimated.

6.2. Model Estimation

The main purpose of the study as described earlier is to identify factors behind loan default problem and evaluate the loan rationing mechanism by the lending institute. In order to empirically investigate these determinants, two equations are estimated: loan repayment and loan rationing equations. Under these equations there is a reduced form equation for the variable loan diversion, which is a combined effect of other explanatory variables. Thus it is the fitted value of this variable that is taken as an explanatory variable on the main equations. The three equations employed here are:

$$(1)\ LRR = \beta X_i + \varepsilon \qquad (6.1)$$

$$(2)\ CRR = \alpha X_i + \nu \qquad (6.2)$$

$$(3)\ LOD = \gamma Z_i + \mu \qquad (6.3)$$

Where LRR= Loan Recovery Rate, CRR= Credit Rationing Ratio, LOD= Loan Diversion Xi and Zi are vector of explanatory variables and ε, ν and μ are error terms.

The econometric model employed to estimate these equations vary depending up on the nature of the data. For loan diversion equation since the dependent variable is dichotomous (binary) where: LOD = 1 if diverted, 0 otherwise, the model employed to estimate this equation is probit.

With regards to loan repayment equation since the dependent variable (i.e. loan recovery rate) is censored from the right, the model employed for estimation is tobit. In this case borrowers who have payed in advance of the schedule are considered as fully payers (those who recorded 100% recovery rate). That is

$$LRR_i = \min (1, \beta X_i + \varepsilon_i) \qquad (6.4)$$

Where $\varepsilon_i \sim N(0, \sigma^2)$. The X`s are observed for all cases. LRR_i^* is a latent variable that is observed for values less than 1 and is censored for values greater than or equal to 1 that is censoring from above.

The same holds to loan rationing equation because the dependent variable is censored from the right since borrowers who received loan more than they requested are considered as if their credit demand is fully met. That is

$$CRR_i = \min(1, \alpha X_i + \nu_i) \quad (6.5)$$

The explanatory variables for both equations are the same. For all the three equations the marginal effects are estimated to find out the magnitude of change in the dependent variables due to a unit change in the explanatory variables.

6.3. Estimation Results

Starting with loan diversion equation the χ^2 value of 22.83 indicates that it is significant at 1% implying that the explanatory variables employed in the regression model explain the variation in the dependent variable. The Pseudo R^2 of 24.79% seems too small but it has limited value in the dichotomous response models. It is likely to be much lower than 1 for such models because corresponding to a given explanatory variable X, the dependent variable Y is either 0 or 1. Therefore all the Y values will either lie along the X-axis or along the line corresponding to 1.

As the estimation result below depicts, amount of loan is one variable that significantly affect the loan diversion behavior of borrowers. Its relation with loan diversion is positive and significant. It indicates that other things being the same, as the loan size increases, the likelihood that the borrower diverts the loan also increases. The slope coefficient also reveals that the probability of loan diversion will increase by 16.5% for a unit increase in the size of the loan. This positive association implies that the amount of loan released for borrowers who divert the loan is beyond their managerial capacity to effectively use for the intended purpose.

As anticipated, the sign of bank credit experience is negative and significant implying that repeated borrowers perform better in allocating the loan extended for the intended purpose. The slope coefficient indicates that the probability of loan diversion decreases by 18.7% as one acquired more credit experience. In other words, a borrower's ability of effective utilization of the loan for the intended purpose improves with more credit experience.

There is also a strong negative association between form of loan disbursement and loan diversion. This negative relationship implies that loan diversion is high for loans released in cash directly to the borrower while it is less for those loans released to the suppliers on behalf of the loane in exchange for the item supplied to the borrower. The marginal effect implies that for a discrete change in the dummy variable of FOD1 from 0 to 1, the probability of loan diversion decreases by 35.4%. This result complies with the bank's perception of not releasing loan in cash to the borrower as a means of avoiding loan diversion. Thus this method of disbursement is found to be an effective instrument to mitigate the loan diversion problem.

Table 6.1: Maximum Likelihood Estimate of a Probit Model for Loan Diversion Equation

Variables	Coefficient	Marginal Effect[a]	Z
LRP	-.852529* (0.3520955)	-0.1874076 (0.0682522)	-2.421
GP	-.1924289* (0.077602)	-0.0517667 (0.0193851)	-2.480
FOD1	-1.383758** (0.3543962)	-0.353917 (0.0833491)	-3.905
LnLD	.6132906* (0.2683151)	0.1649857 (0.0694291)	2.286
Cons	-6.595244 (2.97862)	-	-2.214

Pseudo R^2	0.2479
Wald χ^2	22.83
Prob. Value	0.0001
No. of Observations	102

* Significant at 5% **Significant at 1%

[a] The marginal effect indicated above is at mean value since the model assumes non linearity with the explanatory variables.

Figures in parenthesis are standard errors

The relation between grace period and loan diversion is in line with expectation. It was expected that borrowers with shorter grace period will divert the loan more than those with longer grace period since they mayn`t have enough time for implementation. The result is also found to have a negative relationship implying that projects that have given long grace period use the loan properly for the intended purpose than projects with shorter duration. Similarly the slope coefficient indicates that for a one-month increase in the grace period of a project, the probability of loan diversion decreases by 5.2%. This is due to the fact that mostly projects with long grace period are investment loans for which the loan disbursement is effected not once but on separate terms up on confirmation of the proper utilization of the previously released loans by the lending institute.

Loan Repayment Equation

The F-value of the regression model is 11.15%, which is significant at 1% level of significance implying that the explanatory variables included in the model, sufficiently explains the variation in the dependent variable. Seven of eleven explanatory variables are found to be significant of which only one variable (loan repayment period) has got the opposite sign from the expectation. Projects with longer repayment period were expected to pay better since they could have enough time to generate income. However the result shows

that it is negative and significantly related to recovery rate implying that projects with long-term repayment period are found to be defaulters. This supports the hypothesis that as repayment period of projects gets longer the probability that the loan is subjected to risk and uncertainty will increase.

Table 6.2: Tobit Maximum Likelihood Estimates of the Determinants of Loan Recovery Rate

Variables	Coefficient	Std. Error	t-value
LnCLA	0.1778003	0.1138026	1.56
LnRp	-0.1529786*	0.0926934	-1.65
SEC	0.3349809**	0.1531324	2.19
ETI	0.190381	0.4333722	0.44
OI	0.3234165**	0.1016646	3.18
LOD	-0.6953932**	0.2268827	-3.06
SEX	-0.2562591*	0.1523373	-1.68
EDUC	0.239074**	0.1133158	2.11
EXP	0.1939531**	0.0506524	3.83
AGE	-0.0075564	0.0064123	-1.18
HHS	0.0212902	0.0132702	1.60
Constant	0.3774934	0.3662985	1.03
σ	0.4284761	0.3662985	
Pseudo R^2	0.3055		
Log Likelihood	-63.409847		
LR χ^2	55.80		
Prob. Value	0.000		
No. of observations	102		

*Significant at 10% **Significant at 5%

As indicated on table 6.2 above, the variable SEC (sector) is positively and significantly related with loan recovery rate. This implies that borrowers engaged on agricultural projects

are more subjected to loan default relative to those engaged in other sectors of the economy (industry and service). This is in line with the expectation that agricultural sector is subjected more to risk and uncertainty compared to other sectors. In this case, most agricultural projects considered here are those involved in crop marketing activities. It is due to market problem of these projects that partly explain behind their default rate. The market problem arise due to frequent fluctuation in crop marketing business because of unsustainable crop production supply as a result of the sectors dependence on rainfed agriculture. The marginal effect indicates that if a borrower is engaged in agricultural activity, the probability that it will default increases by 28.4%, the loan recovery rate will decrease by 22.3% for all sample observations.

Table 6.3: Marginal Effects of Tobit Estimate at Observed Censoring Rate for Loan Repayment Equation

Variables	Unconditional Expected Value [a]	Conditional on Being Uncensored [b]	Probability Uncensored[c]
LnCLA	0.11853353	0.08314309	0.15087925
LnRp	-0.10198573	-0.07153596	-0.12981585
SEC	0.22332061	0.15664401	0.28426089
ETI	0.12692066	0.08902609	0.16155508
OI	0.21561099	0.15123624	0.27444744
LOD	-0.4635955	-0.32518027	-0.59010257
SEX	-0.17083939	-0.11983205	-0.21745846
EDUC	0.1593827	0.11179597	0.20287544
EXP	0.12930206	0.09069648	0.16458632
AGE	-0.00503759	-0.00353352	-0.00641226
HHS	0.01419348	0.00995575	0.01806663
Constant	0.25166228	0.17652373	0.3203365

[a] The marginal effect of explanatory variables on unconditional expected value of loan recovery rate

$\partial E(LRR_i)/\partial X_i = \beta_i \Phi(z)$

[b] The marginal effect of the explanatory variables on loan recovery rate of defaulters

$\partial E(LRR_i/LRR<1)/\partial X_i = \beta_I[1-z\, \phi(z)/ \Phi(z)- \phi(z)^2/ \Phi(z)^2]$

[c] The marginal effect of the explanatory variables on the probability of default

$\partial \Phi(z)/\partial X_i =(\beta_i /\sigma)\ \phi(z)$

Where $z = X\beta/\sigma$

σ is the standard error of u

$\phi(.)$ is the unit normal density

$\Phi(.)$ cumulative normal distribution function

The association between other income and loan recovery rate is positive and significant indicating that borrowers who have other alternative source of income are found to be better payers relative to those for whom the project is the sole income source. This implies that income from the projects under consideration alone couldn't be able to properly meet their debt obligation. This some how reflects the projects` limited financial capacity as one constraint behind their loan default problem. For a discrete change in dummy variable from 0 to 1, the loan recovery rate increases by 21.6% while the probability of default also decreases by 27.4%. This result supports the hypothesis and complies with the result obtained on the descriptive analysis. Similar result was also obtained by Chirwa (1997) on agricultural credit repayment in Malawi.

Another variable that adversely and significantly influence loan recovery rate is loan diversion. This result implies the problem of moral hazard. Borrowers who diverted the loan other than the intended purpose are found to be defaulters. This implies that the activities to which the loan was diverted are either non-productive ones or generate income less than what if it was properly utilized. In other words the loan diversion is mostly to less productive activities than the project under consideration. The loan diversion as indicated earlier arises from release of loan amount beyond the managerial ability of borrowers, due to form of disbursement in cash directly to the loane, limited bank credit experience and due to short grace period given to projects before start up of operation. For a unit increase in loan diversion rate, loan recovery rate declines by 46.4% while the probability of default increases by 59%.

This result complies with the result obtained by Vigano (1993), Njoku and Odii (1991) and Okorie (1986). The studies made on Ethiopia on micro enterprises by Mengistu (1997), Birhanu (1999) and Teferri (2000) supports this result.

Previous experience in related economic activity during the release of the loan also matters on loan recovery rate as reflected by the significant and positive relationship. This supports the hypothesis that experienced borrowers have better knowledge on how to run a profitable business than new ones. In fact those who engaged on similar activity before the loan may have acquired goodwill for their products and services and the purpose of the loan thus would be to facilitate and expand the existing activity. The marginal effect indicates that for one-year increase in experience of the borrower in related economic activity, the loan recovery rate increases by 12.9% while the probability of default decreases by 16.5%. Njoku and Odii (1991) and Arene (1992) also came up with similar results in their study on rural credit.

The variable SEX is negatively associated with loan recovery rate. Its relation is significant at 10% level. The negative association between them means that female borrowers are better payers relative to males. This supports the hypothesis that females feel more responsibility for their family than males. For a discrete change in dummy variable from 0 to 1, the loan recovery rate declines by 17.1% and the probability of default also increases by 20.3%. Vigano (1993) in his study on Development Bank of Burkina Faso came up with similar result.

As anticipated EDUC (education) is positively and significantly (at 5%) associated with loan repayment rate. This is inline with the expectation that educated borrowers are more efficient in resource allocation and are easily adaptable to changing situations. For a change in category of education by one unit, the loan recovery rate of the project increases by 15.9% while the probability of loan default decreases by 20.3%. Njoku and Odii (1991) came up contrasting result while Teferi (2000) found out similar result.

Other variables such as CLA (ratio of collateral to loan amount) and ratio of equity to total investment (ETI) have got the expected sign though not significant. Both are positively related with loan recovery rate. AGE and HHS are also insignificantly related with loan recovery rate.

There is a slight difference between descriptive statistics and econometric result on significance of some variables due to the difference in the dependent variable employed in the two cases. In descriptive part, it is categorical variable, which classify the borrowers in to defaulters and credit worthy ones. In this case the borrowers whose loan recovery rate is less than 1 are considered as defaulters while those greater than or equal to 1 are credit worthy. In case of econometric estimation the dependent variable employed is the actual loan recovery rate not categorical variable unlike the descriptive part.

Loan Rationing Mechanism

Like the case of loan repayment equation, the F-value of 26.61 for this model is significant at 1% level implying the overall fitness of the regression model. Out of 11 variables 4 (i.e.

45.45%) are found to be statistically significant at 10% level or better in the rationing equation indicating that the bank has an identifiable screening device designed to select among borrowers with different degrees of relative credit access. Two of the four significant variables are positively related with rationing ratio implying that the bank has no strong concern for loan disbursement.

The estimated parameters indicate that the lender limits the loan size relative to the loan requested by imposing certain collateral requirement, taking into account the repayment period and equity contribution of the project. The result on table 6.4 below show that the most important variable/criteria employed by the lending institute to limit the size of the loan relative to the request is collateral. Borrowers who secured high valued collateral as a ratio of loan request were favored by the lending institute as reflected by the positive and highly significant (1%) association with credit rationing ratio. The marginal effect implies that for a unit increase in ratio of collateral to loan amount, the loan rationing ratio increases by 26.8% while the probability of rationing decreased by 43.5%.

Table 6.4: Tobit Maximum Likelihood Estimate of Loan Rationing Equation

Variables	Coefficient	Std. Error	t-value
LnCLA	0.3035536**	0.0256022	11.86
LnRP	0.0549987*	0.0286075	1.92
SECd	-0.0128247	0.0466491	-0.27
ETI	-0.460738**	0.1207566	-3.82
OI	0.0339047	0.0309592	1.10
LOD	-0.0357101	0.0705222	-0.51

SEX	0.0130677	0.0444266	0.29
EDUC	-.0524075	0.0345266	-1.52
EXP	-.0258824*	0.0154092	-1.68
HHS	0.0052055	0.0041722	1.25
AGE	-0.0018088	0.0018733	-0.97
Cons	0.9203373	0.1096552	8.39
σ	0.1377579	0.0103969	
LR χ^2	133.19		
Log Likelihood	-5.7982277		
Prob.> χ^2	0.0000		
Pseudo R^2	0.7615		
No. of Observations	102		

*Significant at 10% **Significant at 1%

Larger loan amount as a ratio of loan request is favored for projects whose loan repayment period is relatively of long-term nature. With an increase in repayment period by one year the loan rationing ratio increases by 4.8% while the probability of being rationed decreases by 7.9%.

A quite contrasting result is exhibited for the variables equity as ratio of total investment, and years of business experience. It was expected that the lending institute could favor borrowers who are relatively educated, experienced, and contributed higher equity share during loan processing. However, the estimation result indicates that borrowers with these characteristics have got small loan size as a ratio of loan request as reflected by negative association with

loan rationing ratio. This negative association mayn`t result from a deliberate discrimination of borrowers by these characteristics but may be due to biasedness towards collateral to use as a means of rationing mechanism.

The marginal effect for these variables indicates that, as equity share of total investment cost increases by 1 unit, the unconditional mean value of loan rationing ratio decreases by 40.6% while the probability of rationing also increases by 66%. With an increase in related work experience by one year the loan rationing ratio decreases by 2.3% while the probability of being rationed increases by 7.5%.

Although the relationship of other variables with the dependent variable is not significant, variables such as having other income source and loan diversion have got the expected signs. Having other source of income is positively related while loan diversion is negatively associated with credit rationing ratio. Other variables like sex and household size are positively related while age is negatively related with loan rationing ratio. One can observe from the above loan rationing equation result that the bank used collateral as its main rationing device to limit the size of the loan as a ratio of loan requested as reflected by higher t-value at 1% level of significance.

Table 6.5: Marginal Effects of Tobit Estimate at Observed Censoring Rate for Loan Rationing Equation

Variables	Unconditional Expected Value*	Conditional on Being Uncensored**	Probability Uncensored***
LnCLA	0.2678414	0.20783925	0.43467253
LnRP	0.04852822	0.03765687	0.07875513

SECd	-0.01131592	-0.00878091	-0.01836429
ETI	-0.4065334	-0.3154613	-0.659752
OI	0.02991594	0.02321413	0.04854976
LOD	-0.03150891	-0.02445025	-0.05113495
SEX	0.01153032	0.00894729	0.01871225
EDUCd	-0.04624191	-0.03588274	-0.07504474
EXP	-0.02283738	-0.01772132	-0.03706216
HHS	0.00459307	0.00356412	0.00745397
AGE	-0.00159603	-0.00123848	-0.00259015
Cons	0.81206236	0.63014318	1.3178739

* The marginal effect of explanatory variables on the mean value of loan rationing ratio for whole sample cases

** The marginal effect of explanatory variables on the mean value of loan rationing ratio for the borrowers being rationed.

*** The marginal effect of the explanatory variables on the probability of being rationed.

As a summary the result implies that the bank has a strong preference to release larger loan to borrowers who secured high value of collateral and to projects whose repayment period is relatively long term. The bank limits the loan size for projects with higher equity share, and for relatively experienced and educated borrowers. In general the bank concentrated more on asset holdings of the borrowers not on the managerial and entrepreneurship capacity and credit worthiness criteria to ration credit.

To evaluate the efficiency and effectiveness of loan rationing device of the lending institute, we compare the sign and level of significance of the explanatory variables employed in the two regression models. As described earlier collateral has given much emphasis in using as an instrument to ration credit. Borrowers were required to secure high value of collateral relative

to the loan size in order to get the loan they requested. On the other hand, when we look at the loan repayment performance of borrowers, collateral is found to be insignificant determinants of loan recovery rate. There are borrowers who secured high value of collateral but couldn't keep on paying in accordance with the loan repayment schedule. This implies that the bank gave unnecessary emphasis to collateral for its rationing purpose.

The bank favors projects with longer repayment period during financing while it is actually found insignificant determinant of loan recovery rate implying that the bank wrongly employed loan repayment period as a rationing mechanism. In the loan rationing process the bank doesn't make distinction between borrowers engaged in agricultural sector and those in other sectors of the economy during financing. However the actual performance indicates that borrowers engaged in agricultural sector are relatively found to be defaulters. Although external factors attributed for the failurity of projects, appropriate precautions and speculation should be made during financing these projects.

Projects whose equity shares are relatively larger have been misclassified with high credit risk as the estimated parameter in the loan rationing ratio is negative while a positive parameter is estimated for loan repayment equation. No much concern is given to borrowers who have other alternative source of income during loan rationing while it is found to be major positive determinants of loan repayment. Similarly no emphasis is given during rationing to ensure the proper utilization of the loan for the intended purpose while actually loan diversion is found to be the major factors behind the loan default problem. The parameters of all the three variables

for both equations indicates that the bank's rationing mechanism didn't much with the repayment behavior of borrowers.

The loan rationing technology is in favor of male borrowers (though not significant) but female borrowers were found to show better repayment record implying that the bank wrongly favored default prone male borrowers. A quite surprising result is observed for the variables education and business experience. In the loan rationing equation both educated and experienced borrowers were wrongly classified as high credit risk while they are found to be the major positive determinants of loan recovery rate at 5% and 1% respectively. Rationing out these educated and experienced borrowers may not be a deliberate action of the lending institute but may result from biasedness towards collateral as a major rationing device. In other words these educated and experienced borrowers may not have fixed asset to secure as a collateral that is sufficient enough to get the loan request.

Other variables such as household size, and age are found to be insignificant in both equations and have got the same positive and negative signs respectively. In general the parameters of seven out of eleven explanatory variables for the two models have got the opposite sign. For three of the rest variables, although they have got the same sign, they are significant for one model and insignificant for the other. This implies that the rationing mechanism is ineffective in limiting the appropriate loan size in accordance with their credit worthiness criteria.

This result is important for small-scale enterprises that were denied access to credit due to the stringent collateral requirement of banks. Because of high collateral requirements borrowers who acquired the experience and education and have better managerial and entrepreneurship capacity couldn't get the chance of credit access to the bank and becomes obstacle to the development of the sector. In other words potentially credit worthy borrows were rationed wrongly and the nations resources flows only to those who are capable to secure fixed asset as collateral. If the banking sector favored only wealthy section of the society, its contribution to the development of the Small Scale enterprises, which are at the infant stage and need strong financial support to mature to medium and large scale level will be minimal. Besides this as far as this stringent lending requirement doesn't have significant influence on repayment behavior of borrowers, the bank will continue to suffer from loan default problem unless it gives emphasis to other characteristics of the borrowers as well as the project so that the extent of adverse selection effect because of this rationing device be minimized.

Although of a different credit scheme the impressive performance of micro enterprises financed by the bank in the study area (as described in chapter five) clearly indicates the presence of other alternative and effective means of rationing credit other than collateral. In the present situation, where there is a great deal of enforcement problem associated with sale of fixed asset held as collateral, its power of influencing the repayment behavior of borrowers is minimal. Because currently most of the collaterals held could not be sold at time of default due to social problem where the people don't prefer to buy some one's property since most of them knew each other. Therefore, rationing loan to borrowers based on collateral as major requirement switch the use of the financial resource of the country away from more productive

purpose (especially in case of small scale enterprises) while at the same time could lead the bank to loan default problem and hence bankruptcy. One can conclude from the above analysis that credit-rationing mechanism of the lending institute is one and perhaps the most important factor behind the loan default problem of borrowers in the study area.

CHAPTER SEVEN

CONCLUSION AND POLICY IMPLICATIONS

7.1. Conclusion

For small scale enterprises to develop to medium and large scale level and to keep up its contribution to the country's economic development, the need of financial support from formal financial source is indispensable. This is because these enterprises require relatively larger loan amount, which the informal sector is incapable to supply. The banking sector have been reluctant to extend loan to SSEs, on the one hand, they are unable to fulfill the bank's lending requirements and on the other hand, banks consider them as they involve high credit risk. For the financial institute to run a profitable business venture and for small-scale enterprises to continue getting a sustainable source of finance, borrowers have to keep on paying in accordance with loan repayment schedule. For the lending institute under consideration (i.e. DBE), there is a series problem of loan default, which significantly eroded the bank's liquidity position. It is with the intention of identifying the factors behind the loan default problem and evaluating the effectiveness and efficiency of loan rationing technology of the financial institute that this study is conducted.

The evidences of both descriptive analysis and econometric regression show that loan diversion is found to be one of the major determinants adversely affecting the loan recovery rate. Loan diversion itself is found to be influenced by the size of loan, grace period, and form of disbursement and credit experience of the borrower. Increasing the loan size increases the loan diversion rate. Having long grace period, previous credit experience and releasing loan in kind are found to reduce the probability of loan diversion.

Borrowers who have other alternative income source are found to show better loan repayment record. Similarly, business experience in related economic activity and education are found to be significantly and positively while repayment period and sex are negatively associated with loan repayment rate. Borrowers who have extensive experience in related activity and educated ones shows better repayment record while male borrowers and projects with long repayment period show poor repayment record.

Another variable that significantly affect loan repayment status of borrowers is the type of activity that the promoter is engaged in. Borrowers who involved in agricultural sector are found to be relatively defaulters as compared with other sectors. This complies with the hypothesis that agricultural projects are more subjected to risk and uncertainty.

With regards to the loan rationing mechanism, collateral is found to be the major device for credit rationing purpose. Borrowers with high value of collateral are clearly favored by the lending institute. Similarly projects with long repayment period are favored by the bank, as reflected by the positive and significant association with loan rationing ratio.

Projects with higher equity share as a ratio of total investment and borrowers who are relatively educated and acquired extensive experience in related economic activities are not favored by the lending institute. It may not be a deliberate action of the lender but due to biasedness towards collateral as main screening device, which rationed educated and experienced borrowers who don't have sufficient security to be offered.

When we compare the result of the loan repayment and rationing equations it is found that the lender gave unnecessary emphasis to collateral as it has no significant impact on loan repayment behavior of borrowers. The variables having other source of income, loan diversion, sectoral distribution of loan were not given much concern during loan rationing but they are found to be major determinants of loan recovery rate of borrowers. Similarly, projects with higher equity share, experienced and relatively educated borrowers were discouraged during rationing, and however they are found to be the major positive determinants of loan repayment status of borrowers.

In general most of the variables in the two equations have got the opposite sign which clearly implies that the rationing mechanism is ineffective in identifying credit worthy borrowers. In other words the banks screening mechanism doesn't go in line with the repayment behavior of borrowers.

Descriptive analysis based on qualitative information seems to imply that better performance in micro enterprise loans relative to that of private borrowers is a result of the difference in the institutional arrangement between the two lending programs. The main reason behind the success story of micro enterprises lies on the active participation of the beneficiaries themselves in screening and enforcement process so that the adverse and moral hazard problems are minimized.

7.2. Policy Implications

Based on the findings of the study mentioned earlier, the following policy recommendations are forwarded:

It has been asserted that loan diversion is one major determinant adversely affecting the loan repayment rate of borrowers. It is in turn a combined effect of the borrower's limited credit experience, due to release of loan in cash, short grace period given for implementation of projects and due to large loan size. All these variables revolve around the effectiveness of the appraisal technique and method of disbursement. Therefore a thorough assessment of the borrowers bank credit experience, appraisal of the project to determine the appropriate loan size and terms of the loan should be conducted to ensure the proper utilization of the loan for the intended purpose. Further supervisory visits by credit officers after loans have been disbursed facilitate proper use of borrowed funds thereby enhancing chances for higher profitability of enterprises and loan repayment.

Borrowers engaged in agricultural activities are relatively found to be defaulters as compared with other sectors. This emanates from the sector's vulnerability to risk and uncertainty. Most of agricultural projects considered here involved in crop marketing activities. The default problem associated with these projects is market failure. This arises from unsustainable situation in crop production supply due to its vulnerability to weather condition. In this regard government's role is imperative to stabilize the grain price. A mechanism should also be designed so that the sector's vulnerability to external shocks such as weather condition is minimized.

The positive and significant association between education and loan recovery rate seems to suggest the need for training to small scale entrepreneurs so as to develop their entrepreneurship and managerial capacity. Further the loan size should also be limited in such away as to fit with the managerial capacity of borrowers.

Projects with longer repayment period are found to be defaulters reflected by negative and significant relation. This leads to suggest that repayment period should be set in accordance with the financial viability of the project, loan size and market situation.

When we compare the loan-rationing situation of the financial institute with the actual repayment behavior of borrowers, project with high value of collateral as a ratio of total investment and long repayment period were favored however they didn't significantly affect loan repayment. On the other hand, experienced and educated borrowers are found to be better payers although were rationed by the lending institute. Similarly projects with higher equity share as a ratio of total investment were not favored during rationing but are found to be not causes of default. In general the lending institute employed collateral as its main rationing device. This strategy rationed out experienced and educated borrowers leading the institute to loan default problem. This leads us to suggest that the bank should not give special emphasis only to collateral; rather equal importance should be given to other characteristics of the borrowers during loan rationing so that credit worthy borrowers will not be left out.

Since the study under consideration refers to a government owned financial institute, a means by which the rationing technology be revised should be designed so that Small Scale

Entrepreneurs who have the managerial and entrepreneurship capacity but don't have sufficient credit access due to stringent collateral requirement could make use of the financial resource of the country and thereby contribute towards the envisaged development target.

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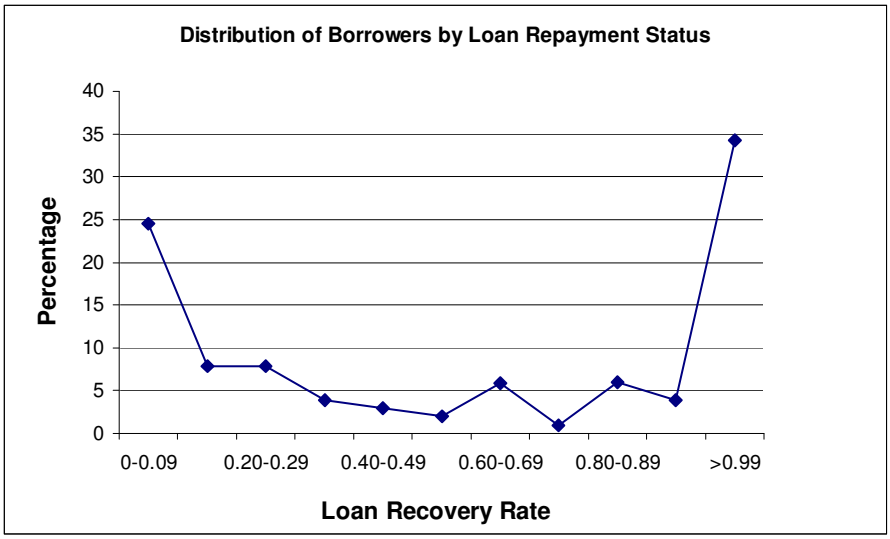
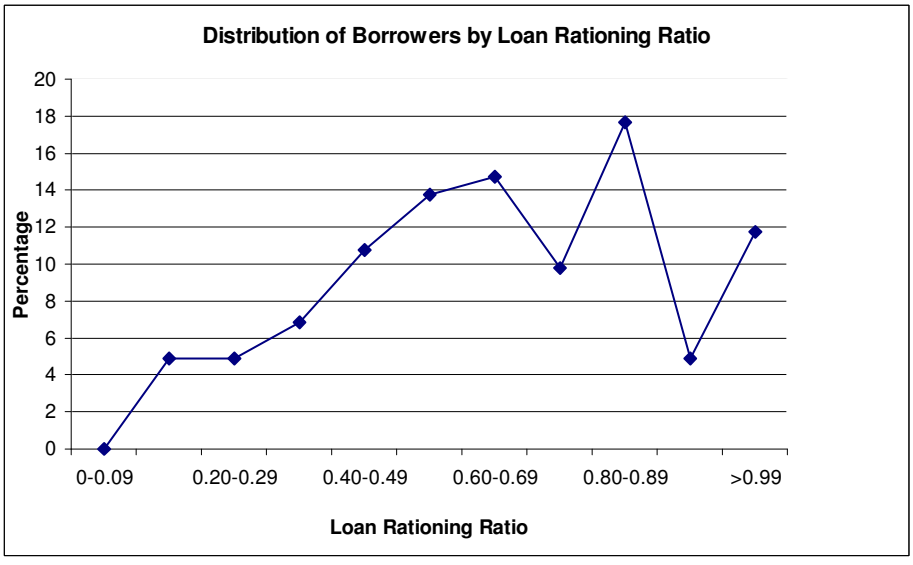
Appendix-1

Loan Repayment Performance of Borrowers by Economic Activity in the study Area (Ratio of Arrears to Outstanding (%))

Economic Sector	Economic Activity	Year					
		1995/96	1996/97	1997/98	1998/99	1999/00	2000/01
1.Agricult.	Pesticide	0	_	_	_	_	_
	Cattle Fattening	_	15.2	35.4	54.1	79.8	94.6
	Store	_	_	14.4	36.9	26.9	14.2
	Combine Harvester	0.4	_	_	_	_	_
	Crop Marketing	5	39.1	75.3	86.2	92.7	100
	Horticulture Farming	_	_	_	25.7	28.9	64.7
	Crop Production	_	30.6	57.1	72.9	96.5	100
	Sub- total	**3.9**	**34.8**	**69**	**80.8**	**87.5**	**85.2**
2. Industry	Grain Mill	30.8	28.5	46.7	59.7	67.6	73.9
	Metal Work	_	_	18.7	26.3	41.6	54.8
	Wood Work	2.9	38.7	73	64.2	71.7	77.8
	Oil Mill	27.5	46.6	62	72.1	86.8	100
	Gold Smith	_	_	23.2	10.8	52.1	100
	Cement Production	12.3	_	23.2	37.6	60.5	75.4
	Flour Mill	_	_	_	_	_	_
	Sub- total	**24.9**	**29.2**	**45.7**	**50.6**	**64.7**	**76.5**
3. Service	Pastry	0	15.6	30.8	41.3	14.2	6.2
	Fuel Station	_	9.5	7.9	10.6	8.3	14.4
	Grocery	_	59.3	100	100	100	100
	Hotel	16.2	39.4	63.8	75.9	73.3	76.1
	Pension	_	_	_	2.4	_	6.3
	Garage	_	18.9	37.7	62	_	34.9
	Freight Transport	_	_	_	0.7	1.8	5.8
	Clinic and Pharmacy	0.2	9.1	24	63.8	13.7	31.1
	Tyre Repair	_	_	_	23.5	_	29.2
	Tailoring	_	_	28.8	43.7	100	100
	Supermarket	_	_	_	_	_	3.2
	Sub- total	**10.3**	**28.3**	**35.1**	**31.7**	**25.5**	**28.5**
	Total	**9.9**	**31.9**	**54.8**	**59.6**	**64**	**66.6**

Appendix - 2


Distribution of Borrowers by Loan Repayment Status
Percentage
40
35
30
25
20
15
10
5
0
0-0.09
0.20-0.29
0.40-0.49
0.60-0.69
0.80-0.89
>0.99
Loan Recovery Rate


Distribution of Borrowers by Loan Rationing Ratio
Percentage
20
18
16
14
12
10
8
6
4
2
0
0-0.09
0.20-0.29
0.40-0.49
0.60-0.69
0.80-0.89
>0.99
Loan Rationing Ratio

Appendix-3

Survey Questionnaire to Study Loan Repayment Determinants of Small Scale Enterprises with Particular Reference to Private Borrowers Around Zeway Area

Your response to this Questionnaire will serve as source of information to the research paper to be done for thesis purpose. Any response you provide here is strictly confidential and will be used exclusively for the research purpose. Your honesty in responding the right answer is vital for the research outcome to be reliable.

Enumerator's Name: _____

Questionnaire No.: _____

Date: _____

I. BORROWER'S CHARACTERISTICS

1.1. Borrower's Name _____

1.2. Address

Region _____ Zone _____

Woreda _____ Town _____

Kebele _____

1.3. Age _____

1.4. Sex 0 female 1 male

1.5. Marital Status

1 single 2 married

3 divorced 4 widowed

1.6. Education

0 illiterate 1 primary education

2 secondary education 3 tertiary education (above grade 12)

4 others (specify) _____

1.7. Household Size (Number of dependents in the household) _____

1.8. How many individuals being supported by the borrowers outside household members? _____

II. THE PROJECT

2.1. Name _____

2.2. Type of Activity _____

2.3. Location

Region _____ Zone _____

Woreda _____ Town _____ Kebele _____

2.4. How much distance is the Project from the branch office?

2.5. How much is it distant from the borrower's residential place?

2.6. Is it accessible to road transport? 1 Yes 0 No

2.7. If the answer to Q2.6. is yes, is it all weather road or dry weather road?

0 dry weather road 1 all weather road

2.8. Are utilities available? (Electricity, water, telephone)

1 Yes 0 No

III. **MANAGEMENT AND EMPLOYMENT SITUATION**

3.1. Are you the manager of the enterprise?

1 Yes 0 No

3.2. If your answer to Q. 3.1. is no, what is the educational level of the manager?

0 illiterate 1 primary education

2 secondary education 3 tertiary education

4 others (specify)

3.3. How many employees are working in the enterprise?

3.4. How much years of experience the manager or you have (if you are the manager) in running such enterprise?

0 less than 1 year 1 from 1-5 years

2 5-10 years 3 greater than 10 years

3.5. What type of labour do you employee?

1 family labour 2 hired labour

3 both 4 others (specify) _____

IV. **LOAN UTILIZATION**

4.1. What was the purpose of the loan?

0 for working capital

1 for fixed investment

4.2. Was the loan released in cash or in kind?

1 in cash 2 in kind 3 both

4.3. Did you use the entire loan for the intended purpose?

1 yes 0 no

4.4. If your answer to Q 4.3. is no, how much did you spend for other purpose?

1 fully 0 partially

4.5. If your answer to Q. 4.3. is no, what is your reason for loan diversion?

1 the loan released is not enough for the intended purpose

2 it was my initial intention

3 market problem the project faced

4 others (specify) _____

4.6. Did you get the loan at the right time?

1 yes 0 no

4.7. If your answer to Q. 4.6. is no, what is the reason for delay?

1 lengthy period the bank took in processing

2 failure to timely provide the necessary documents by the promoter

3 failure of the promoter to timely fulfill the preconditions stipulated on the loan contract

4 delay in settlement of the previous loan

5 others (specify) _____

V. **PROJECT IMPLEMENTATION**

5.1. How long grace period is given for the project by the lending institute?

5.2. Was the grace period given enough for the implementation of the project?

1 yes 0 no

5.3. Was the project fully implemented with in the intended period of time?

1 yes 0 no

5.4. If your answer to Q 5.1 is no, what is the constraint behind project implementation problem?

1 financial constraint 2 technical constraint

3 shortage of materials 4 others (specify) _____

5.5. If your answer to Q 5.4 is 1, what was the reason for the problem?

1 inflation

2 underestimation of the initial investment cost

3 inabilities to raise own contribution

4 expansion of the project

5 inadequate loan released

6 others (specify) _____

VI. **TECHNICAL SITUATION**

6.1. Did the project situated at the intended site?

1 yes 0 no

6.2. If your answer to Q 6.1. is yes, is the site area enough for the operation of the enterprise?

1 yes 0 no

6.3. If your answer to Q 6.1 is no, what is the reason for shifting its place?

1 in search of better market

2 change in land policy

3 to be proxy to raw material area

4 others (specify) _____

6.4. Did the project yet encountered technical problem after it started operation?

1 yes 0 no

6.5. If answer to Q 6.4 is yes, from which side due you think is the problem?

1 the supplier side

2 borrower's handling problem

3 the very nature of the equipment

4 others (specify) _____

6.6. If your answer to Q 6.4 is yes, what corrective measure was taken? What was the outcome? _____

VII. **<u>MARKET AND FINANCIAL SITUATION</u>**

7.1. Is the market situation stable or fluctuating?

1 stable 0 fluctuating

7.2. Is the market situation as expected?

1 more than expectation

2 in line with expectation

3 less than expectation

7.3. If answer to Q 7.2. is less than expectation, what do you think is the reason for this?

1 income decline of customers

2 Road root change

3 change in center of government organization

4 establishment of similar projects in the area

5 excess production

6 others (specify) _____

7.4. Do you have other source of income?

1 yes 0 no

7.5. If your answer to Q. 7.4. is yes, have you paid from the project come or other source of income?

1 project income only

0 other income source as well

7.6. Do you have proper financial recording system?

1 yes 0 no

7.7. If your answer to Q. 7.6 is yes, how much is the sales income and net profit of the project?

Sales income_____

Net Profit/loss_____

VIII. **SUPERVISION VISITS**

8.1. Did the bank visit the project site before approval of the loan?

1 yes 0 no

8.2. When the bank visiting the project after it started operation?

1 regularly

2 only when default occurs

3 others (specify) _____

8.3. Have you ever gone to the bank after you took the loan?

1 yes 0 no

8.4. If your answer to Q. 8.3 is yes, how many times? if no why?

8.5. If your answer to Q.8.3. is yes, what benefit you derive from the advice?

8.6. Were you well briefed about the loan contract before you sign it?

1 yes 0 no

IX. **LOAN AND LOAN REPAYMENT**

9.1. How many times did you take loan from DBE?

9.2. Was the loan you took recently (i.e. this active loan) enough for the intended purpose? 1 yes 0 no

9.3. What was the amount you requested?

9.4. Do you have believe that the loan has to be repaid to the bank?

1 yes 0 no

9.5. Which of the following is the most important one in motivating you to repay your loan on time?

1 not to loss collateral

2 to keep social status

3 in expectation of getting another loan

4 knowing that paying bank loan is my obligation

5 others (specify) _____

9.6. Is the repayment period scheduled enough?

1 yes 0 no

9.7. If your answer to Q 9.6 is no, what do you think is the suitable repayment period?

9.8. Is the semi annual installment suitable for your repayment?

1 yes 0 no

9.9. If your answer to question Q 9.8 is no what should be the period of repayment

installment?

9.10. How do you get the method of disbursement of the loan?

1 suitable 0 not suitable

9.11. If your answer to Q 9.12 is not suitable, what do you think is the suitable form of disbursement?

X. <u>TO DEFAULTERS</u>

10.1. Have you ever failed to repay according to the schedule?

1 yes 0 no

10.2. If your answer to Q 10.1. is yes, how many times?

1 once 2 twice 3 three and more times

10.3. If your answer to Q 10.1 is yes, what was the reason for failure?

1 market problem

2 technical problem

3 working capital shortage

4 others (specify) _____

10.4. What mechanism you designed to pay the overdue loan balance?

1 change of the project site

2 loan diversion

3 sell of property

4 others (specify) _____

10.5. Was the measures taken in Q 10.5 brought an improvement in repayment status of the project? 1 yes 0 no

XI. <u>TO BANK OFFICIALS ABOUT DEFAULTERS</u>

11.1. What alternative measures were taken on the side of the bank to improve the

repayment situation?

1 loan rescheduling

2 additional loan

3 frequently insisting the promoter

4 others (specify) _____

11.2. Were the measures taken brought an improvement in repayment status of the project? 1 yes 0 no

11.3. If your answer to Q 11.2. is no, what measure was taken by the bank to enforce repayment?

1 foreclosure 2 court proceedings

3 others (Specify) _____

11.4. How was the loan enforcement mechanism?

1 effective 0 ineffective

11.5. If your answer to Q 11.4. is ineffective, what is the reason behind this?

1 buyers don't want to buy some one's property because of bank loan

2 limited purchasing power of the society

3 high initial bid amount

4 others (specify) _____

11.6. What is the last measure taken if your answer to Q 11.4. is ineffective?

1 taking over the property

2 transfer to other individual on credit basis

3 others (specify) _____