ADDIS ABABA UNIVERSITY

COLLEGE OF MANAGEMENT, INFORMATION AND ECONOMIC SCIENCE

SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION

ASSESSMENT OF INSTITUTIONAL PERFORMANCE AND SUSTAINABILITY OF SELECTED MICROFINANCE INSTITUTIONS: A DATA ENVELOPMENT ANALYSIS APPROACH

BY

YITAY ELEMA BORU

JUNE 2011

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THESIS SUBMITTED TO THE SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE IN ACCOUNTING AND FINANCE

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APPROVED BY BOARD OF EXAMINERS

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TABLE OF CONTENTS

Chapter Four: Data analysis and Interpretation

Chapter Five: Summary, Conclusion and Recommendation

LIST OF TABLES

LIST OF FIGURE

Figure Description Page

List of Acronyms

Acronym	Description
ACSI:	Amhara Credit and Saving Institution
AEMFI:	Association of Ethiopian Microfinance Institution
AROA:	adjusted return on assets
AROE:	adjusted return on equity
CGAP:	Consultative Group to Assist the Poor
CRS:	Constant Return to Scale
DCSI:	Dedebit Credit and Saving Institution
DEA:	Data Envelopment Analysis
DMU:	Decision Making Unit
EUI:	Efficient Unit Isoquant
FSS:	financial self-sufficiency
GLP:	Gross Loan Portfolio
GNI:	Gross National Income
KPOSB:	Kenya Post Office Saving Bank
MBB:	Micro Banking Bulletin
MENA:	Middle East and North Africa
MFI:	Microfinance Institution
MI:	Malmquist Index
MIX:	Microfinance Information Exchange
MSE:	Medium and Small Enterprise
NBE:	National Bank of Ethiopia
NGO:	Non-governmental Organization

OCSSO:	Oromia Credit and Saving Share Company
PTE:	Pure Technical Efficiency
ROI:	Return on Investment
ROS:	Return on sale
TC:	Technological Change
TEC:	Technical Efficiency Change
TFP:	Total Factor Productivity
VRS:	Variable Return to Scale

Abstract

In this study attempts are made to evaluate the institutional performance and sustainability of six MFIs employing conventional financial performance and sustainability indicators and non-parametric DEA-based malmquist total factor productivity index model. The study period covered 2003 to 2009. DEA-based malmquist total factor productivity index model is applied on panel data to derive total factor productivity growth under both production and intermediation approach which could be decomposed as technological change and technical efficiency change.

The results of conventional financial performance and sustainability indicators revealed that all MFIs‘ outreach performance has increased during the study period. Despite the increase in outreach performance, it is difficult for the institutions to operate and expand without subsidies. This is reflected by their financial self-sufficiency ratios. During the study period all most all MFIs in the sample reported below the minimum requirement financial self-sufficiency ratio. This indicated the long-term sustainability of MFIs is in question once the subsidies are dried-up. Respondents‘ response also confirmed that grants are preferable as primary source of fund rather than retained earnings and member saving.

In the study the researcher identified that, technological change has higher value relevance than technical efficiency gain. By decomposing technical efficiency the researcher also observed pure technical efficiency gain has a substantially higher explanatory power than scale efficiency gain.

The researcher also found that the intermediation services which is the responsibility of the MFIs to transfer funds from surplus groups such as from savers and donors to the deficit groups particularly borrowers or investors are more productive than the production responsibility of MFIs which considers the institutions as producers of deposits and loans. During the study period the institutions reported average productivity growth of 20.7% under both input and output oriented intermediation approach. In both cases the shift in total factor productivity was observed due to technological progress. Under the production approach in both input and output oriented measures an average productivity deterioration of 5.3% was identified. This decline in productivity was the result of 5.6% retrogresses in technology, though there was a marginal 0.4% gain in technical efficiency.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Microfinance refers to the delivery of financial services such as credit, savings, insurance, etc. to clients who are without access to the services of formal sector financial institutions on sustainable basis (Parker 2000). Proclamation No. 626/2009 defines micro financing business as "the provision of financial services like accepting savings, extend credit, drawing and accepting drafts payable, providing money transfer services and others specified in the Article 3(2) of the proclamation.

Microfinance has emerged as a growing industry to provide financial services to very poor people. Most individuals brand and perceive microfinance institutions as non for profit organizations. However, the long term viability of any business model depends as much as on the financial viability as on its ability to deliver its avowed objectives. It can be seen that without sound financial performance the sustainability of these microfinance institutions is not possible. Microfinance institutions should be economically viable and sustainable in the long run (Schreiner 2009).

Microfinance firms are viewed predominantly as instruments of social change; their performance has been often measured by the twain of financial performance and

outreach, outreach indicators are considered as proxies for impact of MFIs (Arsyad 2005). Performance is progress toward the mission of development finance. This mission is to make the lives of poor people better. MFIs do this by producing outreach, loans and deposits used by the poor. Sustainability is the ability to repeat performance in the future

MFIs differ from banks because they provide financial services to low income customers and often provide loans based on group based collateral. Financial institutions like bank seek wealth maximization, in contrast to this, MFIs concentrate on social wealth maximization. This force MFIs to meet two objectives: (1) to generate enough revenue to cover their operating and financing cost and (2) poverty alleviation. These two objectives require input minimization (using the least resources for a given level of outputs) and output maximization (providing the most services for a given inputs).

Therefore, efficiency and productivity measurement which examine the extent to which MFIs deliver financial services in the most cost effective manner while maximizing their services with minimal resources is the core point in assessment of institutional performance and sustainability of MFIs.

In Ethiopia, several micro finance institutions (MFIs) are established and have been operating towards resolving the credit access problem of the poor particularly to those participates in the petty business. Currently there about 30 MFIs registered and operating in the country. The total outreach breadth as measured by number of active clients is more 2.2 million and the associated gross loan portfolio exceeds 6 billion birr. Therefore this study examined the institutional performance and sustainability of selected

microfinance institutions based on conventional financial and outreach performance indicators and a non-parametric model namely a DEA based Malmquist total factor productivity index. This model was applied on panel data to derive efficiency score of each institution during the sample period 2003-2009.

1.2 Statement of the problem

The microfinance industry in Ethiopia has shown a remarkable qualitative and quantitative growth since the late 1990s. The formal base has been laid by the issuance of Proclamation No. 40/1996 which established the licensing and supervision of MFIs as share companies. Wolday (2000), argues that in spite of the success in terms of outreach and size of clients, weak management information system, limited sources of funds, limited technical and banking skills of staff, and wrong perception or impression of the community that loan disbursed by the government and NGOs are not collected or could be deferred are the main problems the industry facing.

The prevailing operation of the formal or conventional financial institutions in many low income countries such as Ethiopia is inefficient in providing sustainable credit facilities to the poor. Access to institutional credit, which contributes to the increase in investment, is very limited in Ethiopia. The majority of the poor access financial services through informal channels, money lenders, Iqub, Iddir, friends, relatives, traders, etc. (Wolday 2002).

Schrieder (1996) found that financial services accessible to the rural poor might have the potential to efficiently contribute to income generation, food security and poverty alleviation. The goal of micro financing institutions as development organizations is not

only to serve financial services, as other financial intermediation, but also serve as social intermediation. These development objectives include poverty reduction through employment creation; encourage the development of new business and diversification of income generating activities.

Microfinance firms are viewed predominantly as instruments of social change; their performance has been often measured by the twain of financial performance and outreach, outreach indicators are considered as proxies for impact of MFIs (Arsyad 2005). The existence of microfinance institutions enable the potential clients to access the services provided by the institutions. These services give the clients opportunity to support their enterprises, economic activities as well as their household financial management and consumption needs.

Performance is progress toward the mission of development finance. This mission is to make the lives of poor people better. MFIs do this by producing outreach, loans and deposits used by the poor on a sustainable basis. Sustainability is the ability to repeat performance in the future. Sustainable MFIs help the poor now without harming their ability to help the poor in the future.

Therefore, efficiency and productivity measurement which examine the extent to which MFIs deliver financial services in the most cost effective manner while maximizing their services with minimal resources is the core point in assessment of institutional performance and sustainability of MFIs. Hence, this study is aimed at assessing the institutional performance and sustainability of the selected MFIs. As measurement tool conventional performance and sustainability indicators and Data Envelopment Analysis

model are used. DEA measures the efficiency scores of each MFI in providing services to the poor over the study period.

1.3 Objectives of the study and research questions

The main objective of the study is assessing the institutional performance and sustainability of microfinance institutions taking into account different performance and sustainability indicators and a non-parametric DEA based Malmquist total factor productivity index model. Besides, the following research questions are addressed throughout the study:

- What are the factors affecting the sustainability of microfinance schemes in Ethiopia?
- What are the basic constraints and challenges to the efficient performance of microfinance institutions in Ethiopia?
- How should the saving mobilization services of microfinance institutions be advantageous to lower their capital costs and build sustainable base for expansion and outreach?
- How understanding client‘s needs and appropriate product design assist microfinance institutions for their efficient performance?
- Does the informal financial sector have impact on the performance and sustainability of microfinance institution?
- What are the patterns, trends and drivers of microfinance institutions‘ efficiency?
- Is the subsidy from donors and public reliable source of finance for the long-run operations of microfinance institutions?

1.4 Significance of the study

Microfinance has emerged as a growing industry to provide financial services to the very poor. Successful microfinance institutions must reach large number of clients and become finically self-sufficient. Outreach is the central purpose of microfinance, to accomplish this microfinance institutions must have the capacity that allow for significance expansion.

Hence the study assessed the institutional performance of microfinance institutions in meeting their proposed goals and the sustainability of their operations in the future. Accordingly, the following are the significances of the study:

- The findings of the study may contribute something to the actual operations of the microfinance institutions included in the study as far as the issues of performance and sustainability is concerned.
- Stakeholders like policy makers and donors may use the output of the study to see the status of microfinance institutions.
- The output of study may contribute something to the existing literature or to the body of knowledge
- The output of the study can be used as a reference for further research.

1.5 Scope of the study

Performance is the progress toward the mission of development finance. This mission is to make the lives the poor people better. Microfinance institutions do this by producing outreach, loans and deposits used by the poor. Measuring performance sparks better performance and casts light on bad performance. Sustainability is the ability to repeat

performance in the future. Sustainable organizations have a structure and a set of incentives that let them keep making sustainable trades. Performance concentrates on past and present operations whereas; sustainability focuses on the future operations. Therefore, the study examined the institutional performance and sustainability of Eshet, Gasha, Buussa Gonaofa, Wisdom, Oromia Credit and Saving Share Company (OCSSO) and OMO microfinance institutions.

1.6 Limitation of the study

Though there are thirty microfinance institutions in the country, the study is restricted only to the six microfinance institutions randomly selected and included in the sample. Hence, the results of the study would be generalized to the microfinance institutions embraced in the study.

1.7 Organization of the paper

The study has five chapters. The first chapter is all about the introductory aspect of the study such as statement of the problem, objectives of the study, significance of the study and limitation of the study. The second chapter will be a review of literature related to performance and sustainability of microfinance institutions. In the third chapter the Methods, Specification of the model and the Data are discussed. The fourth chapter deals with data analysis and interpretation and finally the fifth chapter contained conclusions and recommendations.

CHAPTER TWO

RELATED LITERATURE REVIEW

2.1 Introduction

Microfinance gives access to financial and non-financial services to low-income people, who wish to access money for starting or developing an income generation activity. The individual loans and savings of the poor clients are small. Microfinance came into being from the appreciation that micro-entrepreneurs and some poorer clients can be ‗bankable', that is, they can repay, both the principal and interest, on time and also make savings, provided financial services are tailored to suit their needs. Microfinance as a discipline has created financial products and services that together have enabled low-income people to become clients of a banking intermediary.

2.2 Definition and goals of microfinance institutions and/or business

The definition of Microfinance institutions proposed by some authors and organizations are seemingly different from one another. However the essence of the definition is usually the same, in which microfinance refer to the provision of financial services primarily savings and credit to the poor and low income households that don't have access to commercial banks (Arsyad 2005).

Proclamation No. 626/2009 defines micro financing business as "the provision of financial services like accepting savings, extend credit, drawing and accepting drafts payable, providing money transfer services and others specified in the Article 3(2) of the proclamation.

According to Robinson M. (1998) _Microfinance refers to small-scale financial services for both credits and deposits — that are provided to people who farm or fish or herd; operate small or microenterprises where goods are produced, recycled, repaired, or traded; provide services; work for wages or commissions; gain income from renting out small amounts of land, vehicles, draft animals, or machinery and tools; and to other individuals and local groups in developing countries, in both rural and urban areas'.

The goals of microfinance institution as development organizations is to service the financial needs of un-served or underserved markets as a means of meeting development objectives such as to create employment, reduce poverty, help existing business grow or diversify their activities, empower women or other disadvantaged population groups (poor people or low income people) and encourage the development of new business. In short, microfinance institutions have been expected to reduce poverty, which is considered as the most important development objective (Arsyad 2005).

2.3 The overview of Ethiopian Financial System

Finance refers to the process by which markets deal with cash flows over time. Financial markets make possible for individuals, partnerships, and governments to borrow and lend. Institutions that perform this sort of market function, matching borrowers and lenders or traders are called financial intermediaries. Financial intermediaries include

banks, Insurance Companies, MFIs, and credit and saving associations. Financial sector can play a significant role in improving resource allocation, food security, alleviating poverty and economic growth.

The Ethiopian Financial system, generally speaking falls into three categories. These include: Formal, semi-formal and informal financial system. The formal financial system is a regulated sector, which is well organized and provides financial services mainly to urban areas with the exception of MFIs. This formal financial system in Ethiopia is mainly composed of financial institutions such as banks, insurance companies and microfinance institutions. The saving and credit cooperative are considered as semi-formal financial institutions, which are not regulated and supervised by NBE. The informal financial system includes Equib, Eddir and others, which are not regulated (Kassa, 2010). Currently there are 17 commercial banks (two government owned), 1 government owned development bank, 12 insurance companies (one of which is government) and 30 microfinance institutions (owned by regional governments, NGOs, individuals and associations etc.).

The capacity of the conventional banking sector in Ethiopia has been too weak to serve the need of the rural community. Access to institutional credit is very limited. The majority of the rural poor get access to financial services through the informal channels. The demand for rural finance is met through the informal sector.

The inability of conventional banks to address the financial demand of the rural poor is the initiation to design new strategies for delivering financial services to the poor. The

microfinance institutions are mainly designed to provide rural banking services and mobilizing small savings.

2.4 The rise and characteristics of Microfinance

Beginning in the late 1970s, there was recognition that among the obstacles preventing the working poor from improving their lives was the lack of access to financial services. From this developed a new emphasis on establishing financial systems able to reach poor clients on a more sustainable basis than had been possible under previous discredited schemes of directed credit. The Grameen Bank, established in Bangladesh in 1976 by Professor Muhammad Yunus, developed highly effective techniques for lending to the poor. These were based on techniques such as taking services to the village level, promoting and motivating groups of the poor, use of group guarantees, compulsory savings mobilization, transparency of credit transactions, intensive supervision of borrowers, and decentralized and cost effective operations.

In the 1990s, however, microfinance has captured the imagination of governments, donor agencies, and other opinion leaders in both industrial and developing countries. Microfinance has moved from the margins of the development debate to center stage. It is seen as much more than simply the provision of financial services to poor households, but as a key strategy for poverty reduction in its own right (McGuire and Conroy 2000).

McGuire and Conroy (2000*)* identified three basic characteristics that make MFIs similar in their operation: First, MFIs know their market. The poor are willing to pay for access

and convenience. Interest rates are market-oriented, but lending outlets are located near the client, application procedures are simple, and loans are disbursed quickly. Second, they use special techniques to slash administrative costs. Simple procedures are used and approvals are decentralized. Borrower groups often handle much of the loan-processing burden. Third, they use special techniques to motivate repayments. MFIs have developed a range of techniques to ensure high repayment rates, including the use of self-selected groups in which members guarantee each other‘s loans, intensive motivation and supervision of borrowers, incentives for borrowers, progressive lending, and compulsory savings requirements.

2.5 The development of Microfinance Institutions in Ethiopia

Development of microfinance in Ethiopia should be viewed as (a) an identification of considerable levels of unrealized demand and potential market growth for financial services and (b) a shift by the NGO sector and government from relief assistance to sustainable development which intersects at the point of institutionalization of microfinance provision (Fiona 1999 as cited by AEMFI 2000).

The establishment of sustainable microfinance institutions that reach a large number of rural and urban poor who are not served by the conventional financial institutions, such as the Commercial Banks, has been a prime component of the new development strategy of Ethiopia(AEMFI 2000).

Proclamation No. 84/94 allows private domestic investors to participate in banking and insurance activities, which were previously monopolized by the government. However,

the issuance of this proclamation alone did not totally solve the financial problem of the economically active poor people in rural and urban areas. Another Proclamation, No. 40/96 was issued to solve the problem of the delivery of financial services to the poor. Following the issuance of this proclamation the microfinance industry of Ethiopia showed a remarkable growth in terms of outreach and sustainability. Furthermore, the National Bank of Ethiopia issued a new directive on May 2002 to improve the regulation limits on loan size (Br. 5000), repayment period (one year), and lending methodology (social collateral) (Seifu (2002) as cited by AEMFI (2000)).

According to Seifu (2002), the microfinance business in Ethiopia Formally started in 1994-95. Seifu further discusses that, the licensing and supervision of Institution proclamation of the government encouraged the Spread of Institutions (MFIs) in both rural and Urban areas as it authorized them among other things, to legally accept deposits from the general public (hence diversify sources of funds), to draw and accept drafts, and to manage funds for the Micro financing business.

Know there are about 30 microfinance institutions formally established and operating the in country. Their outreach performance measured in terms number of active borrowers and gross loan portfolio reached more than 2.4 million and birr 6 billion. Actually they cover only 20% of the demand of the economically active poor.

2.6 The Regulatory Framework for the Microfinance Industry in Ethiopia

The delivery of efficient and effective microfinance services to the poor required conducive macroeconomic policies and the establishment and enforcement of legal and regulatory frameworks of a country. An effective financial system provides the foundation for a successful poverty alleviation program (AEMFI 2000).

Prudential financial regulation refers to general principles, or legal rules that aim to contribute to stable and efficient performance of financial institutions and markets and ensure the safety and soundness of the system (Chaves and Gonzalez –Vega 1994 as cited by AEMFI 2000).

Kassa (2010) suggests that the purpose of National Bank of Ethiopia Establishment Proclamation no. 591/2008 is to maintain stable rate of price and exchange, and to foster a healthy financial system in the country. The microfinance institutions are a part of the formal financial system that are regulated and supervised by national bank of Ethiopia. However, regulations in the microfinance industry do not only mean government regulations; it also involves self-regulations and code of conducts introduced by networks or associations.

Regulatory frameworks governing the microfinance industry should ensure that the MFI has a sound portfolio performance; low delinquency or default rate; high diversification to reduce the risk of specializing in the delivery of one loan product; ensure the safety of deposits through equity capital; ensure lower levels of liquidity risk; provide regular and

high quality financial information and reduce the risk arising from dependence on subsidy and influence of donor (AEMFI 2000).

There are numerous policies, laws and directives which affect the development of microfinance industry in Ethiopia. The most relevant and recent policies affecting the industry include:

- The Monetary and Banking Proclamation No. 83/1994 empowered the National Bank of Ethiopia (NBE) to license, supervise and regulate financial institutions such as banks, insurance companies, microfinance institutions and savings and credit cooperatives.
- The Licensing and Supervision of Banking Business Proclamation No. 84/1994 allowed for the first time the establishment of private financial institutions, thus breaking the state monopoly.
- Proclamation No. 40/1996 which aims to provide for the licensing and supervision of the business of micro financing clearly indicates the requirements for licensing microfinance institutions by empowering the National Bank of Ethiopia to license and supervise them.

The National Bank of Ethiopia has also issued 12 directives, which have been consistent with Proclamation No. 40/1996. These included setting a loan ceiling of 5,000 Birr and loan duration of one year. The interest rate has been waived and MFIs are now free to set their own interest rates ceiling.

The current regulatory framework requires microfinance institutions to be formed as share companies owned only by Ethiopian nationals. Foreign nationals are not allowed to invest in the financial sector, including in microfinance business. Most of the shareholders of the MFIs are regional governments, associations, individuals and NGO's (Kassa 2010).

2.7 The role of Microfinance Institutions as Financial intermediaries

With only two public and eight private commercial banks operating in the country, Ethiopia is believed to have inadequate banking service. The per capita commercial bank, which is about 9 million people per bank, is very low even by African standards (Getachew and Yishak 2005 as cited by AEMFI 2009). The contrasts with per capita commercial bank of 1.1 million for Ghana, 0.6 million for Kenya, 2.2 million for Mozambique, and 0.9 million for South Africa, this reflects the very low status of banking service in Ethiopia and the need for prudent allocation of the limited resources to involve as many sectors as possible (AEMFI 2009).

Despite the large number of MSEs (Micro and small enterprises) in the country, their access to financial services for vertical growth and diversification of activities is limited. Bank policies (public and private alike) make fixed asset collateral mandatory, thereby excluding MSEs from the credit market. Furthermore, due to various reasons, MSEs are considered high risk for commercial bank lending. Consequently, the conventional banks in the country do not dare to venture into financing MSEs. One of the key reason given is

financing MSEs is costly because the size of loans involved is small making the transaction cost per unit of loan high. The current trend is that even the very few MSEs that can offer fixed asset as collateral prefer to access loans from microfinance institutions. This is so because the loan processing methods of the commercial banks is considered lengthy and does not seem to be suitable for the nature of work of MSEs which at times depends on grabbing opportunities as they come and so do not afford to wait till tomorrow (AEMFI 2009).

MFIs in Ethiopia have been able to serve the productive poor people mainly with savings, credit, micro-insurance and other related services. Governmental and other developmental organizations have played a vital role for impressive performance the microfinance sector in the country. Total number of clients which was only 1.6 million in the year 2006/2007 now has reached 2.3 million in the year 2008/2009 (Kassa 2010).

The NBE directive issued in 2006 (MFI/18/2006) allows MFIs to provide larger loans to individuals using appropriate collateral, subject to single borrower limit of 1% of their capital. On the basis of this framework, some MFIs have started extending relatively larger loans for working capital and for investment in cases where government agencies are involved in the recovery of loans through different linkage mechanisms. Relatively bigger amounts of working capital loans are extended to those who have established businesses or can offer collateral in fixed asset form (AEMFI 2009).

2.8 What can microfinance learn from informal finance?

Schreiner (2000) defined informal finance as _Informal finance is contracts or agreements conducted without reference or recourse to the legal system to exchange cash in the present for promises of cash in the future‘. Schreiner distinguishes between informal finance and microfinance as _While both informal finance and microfinance serve poor, unbanked people, informal finance derives from the grassroots, bottom-up demand of the poor for appropriate financial services, whereas microfinance derives from donor-driven, top-down supply‘. Schreiner suggests the following six ways for microfinance to learn the virtues of informal finance.

1. Do not cap interest rates

The high interest rates (explicit or implicit) on loans from moneylenders and pawnshops are well-documented. Less well-known is that these high rates are needed to cover the cost of the supply of financial services to poor people. The poor are often very risky, and, compared to the small loans, the fixed costs of lending are high. Of course, all else constant, the poor benefit as interest rates fall, and some part of high rates may reflect the monopoly power of lenders. Legal caps reduce profits and decrease competition. Therefore, the interest rate should be as flexible as possible to allow microfinance institutions to cover their costs without unnecessary exploitation of the poor.

2. Do not outlaw informal finance

In a sense, this is an empty recommendation; informal finance, by its very nature, it outside the influence of formal laws. For example, laws probably have little effect on

whether parents make loans to their children. Probably the best course is what Schreiner (2000) call –benign neglect"; do not attempt to regulate or outlaw informal finance, because it would increase costs for the government and have little or no positive effect on financial services for the poor.

3. Allow people to form their own joint-liability groups

The first of two central innovations in microfinance is the joint-liability group in which all borrowers are liable for each other's debts. The success of such groups at the Grameen Bank in Bangladesh and at BancoSol in Bolivia has led to widespread replication. The clones usually are less successful than the models. Although members may exclude the poorest, only self-selection can ensure that members screen for risk, trust each other, and believe that they have power to enforce repayment through social sanctions. Without self-selection, groups are mere facades.

4. Let loan officers judge risk

The second central innovation in microfinance is the use of loan officers who subjectively judge the risk of potential borrowers based on their sense of smell. In this way, the loan officer is like the local moneylender or store-owner who judges risk through their knowledge of the character and cash flows of a potential borrower. Loan officers belong on the street; microfinance requires written loan applications, but what makes or breaks an evaluation are visits by the loan officer to the borrower in her home and business.

5. Use collateral that is easy to repossess

Pawn shops make loans without groups or loan officers because they take assets as collateral that are simple to repossess or—for pawn shops—pre-repossess at disbursement. Many poor people have small household items—black-and-white televisions, radios, tables and chairs, hand tools—that might back microloans. Repossession of these assets will not allow a lender to recoup losses from default, but the shame of repossession and the cost to replace an asset serves as powerful incentives to repay for the borrower. Of course, no one is happy when assets are repossessed, but the chance of loss of household items helps to ensure that borrowers carefully weigh the gains and risk of indebtedness. Lenders also have an obligation to judge risk well enough not to indebt people with high chances of default.

6. Go to where the poor are

Pawn shops are in the bad part of town; microfinance organizations should be there as well. When a deposit or repayment is small, transaction costs in terms of miles, money, and minutes are relatively high. To reduce these costs requires branches close to clients, and this requires a large number of branches. To control costs, branches must be small and simple, without the brass doorknobs and marbled floors of banks. Branches should also stay open on evenings and week-ends, the times when the working poor are more likely to be able to visit. The ultimate microfinance branch is a mobile collector that visits clients at their own homes and businesses.

2.9 Performance of Microfinance Institution

2.9.1 What is performance?

Performance is meeting a goal. The performance of MFIs affects at least six groups of stakeholders: society, poor customers, the poor, donors, workers, and investors. Each group has its own goals, and so each group asks its own questions about performance. In essence, each group asks whether it gets more benefits than costs from MFIs. Each group pursues its own goals, and this constrains how the rest of the groups can reach their goals. Good analysis of the performance of MFIs from the point of view of the poor will also look at performance from the points of view of the other groups of stakeholders. Each group depends on other groups to reach its goals. The web of agency relationships and their agency costs constrain the help MFIs can give to the poor (Schreiner 1997).

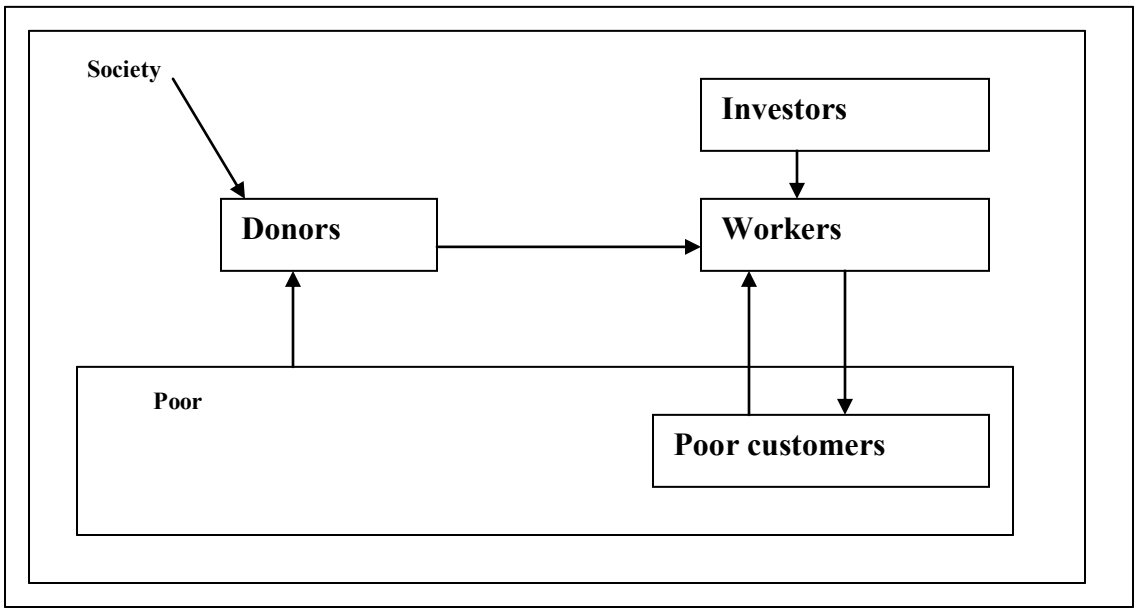

Figure 2.1: Agency relations among the six groups of stakeholders in MFIs

Source: Schreiner 1997

In each link, the principal (base of arrows in the above figure) does not have the same goal as the agent (tip of arrows). The principals cannot costlessly force the agents to do their will, so some funds meant to help the poor leak at each link. An analysis that looks at performance from all the points of view can lead to insights into cheaper ways to resolve the agency conflicts and thus to get more help to the poor (Schreiner 1997).

2.9.2 Performance issues in perspective

Schreiner (1997) stresses that the cost of subsidized MFIs matters since the poor are plenty but the development dollars are few. Subsidizing MFIs is not bad unless subsidizing something else would help the poor more. The scarce funds used by MFIs have an opportunity cost since they could be used to help the poor in other ways. The poor can use loans and deposits, but they can also use more and/or better food, water, health, clothes, houses, schools, tools, markets, or laws. The cost of MFIs is the road not taken. Therefore, it is better to see performance of microfinance from different stakeholders‘ point of view since the activities of these parties affect the sustainability of MFIs in one way or another.

COST-EFFECTIVENESS FOR THE POOR

The poor ask the question: Is a subsidized MFI the best way to get help? For the poor, good performance means that funds entrusted to MFIs buy more benefits less costs for the poor than some other project. Thus the opportunity cost of subsidized funds in equity for the poor is the return those funds could earn in the best unfunded or underfunded project of like risk meant to help the poor. The return could be increased welfare, cash left in the

MFI, or cash used to help the poor in some other way. It costs a lot to measure what the poor gain from an MFI. In contrast, it costs much less to measure what the poor lose. This loss is just the net present cost of the stream of flows between the budget of the poor and MFIs.

Schreiner do not pretend to measure benefits, rather he just tries to measure the costs and then compares costs with outputs. The poor enjoys benefits as long as the average members got surplus for each year of membership. In other words, MFIs would worthwhile as long as the average borrower got more than certain percentage of surplus on the average dollar-year of debt.

REPEATED USE BY POOR CUSTOMERS

A poor customer will use MFIs just as long as the gains to the customer exceed the costs to the customer. For customers, good performance means repeated use. A customer could make a mistake and borrow or make a deposit with MFIs once but then find out that the gain was less than the cost. But economists assume customers would not make the same mistake twice. Thus repeated use means that gains exceed costs from the point of view of the poor customer. If customers did not expect to gain, then they would not repay debts, borrow more than once, nor hold deposits through time. Repeated use of services implies MFIs improved the welfare of their poor customers. Repeated use tells whether gains exceed costs for customers but it does not tell by how much.

The other measure of repeated use is the repayment. Customers repay for one of two reasons; first, customers might repay since the net present worth of the expected stream

of future loans exceeds the gain from default. Second, honest customers, heedless of their own gain or cost, might repay to keep their word. High repayment coupled with repeated use, however, does signal the worth of an MFO for poor customers.

MARKET LEVERAGE FOR DONORS

Like the poor, donors want to know whether a subsidized MFI is the best development project on the margin. For donors, good performance means market leverage. Donors would measure performance as market leverage, the amount of output caused by public funds. Market leverage increases as MFIs funds itself more with market funds. Market funds include equity from investors, debt from private lenders, and deposits from private entities.

Market leverage helps the poor just as long as they get more surpluses with market leverage than without it. Market leverage might not be good for society since subsidies could reward private investment in an MFI in spite of higher social returns elsewhere.

In most cases, MFIs help the poor more when they aim to increase market leverage. The push for market leverage need not reduce the surplus per customer. It may increase prices, but it may also increase quality or scope. Even if market leverage does reduce the surplus per customer, it increases the number of customers who get surplus. With a low enough discount rate, this will increase the welfare of the poor.

Market leverage promotes sustainability since private sources of funds will watch the performance of the MFI. Unlike public funds, market funds are permanent. Sustainability

also increases the number of poor people who gain from the use of an MFI. Most private entities scrutinize their investments more than most donors and thus their seal of approval signals strong performance.

Private equity brings owners, and private debt brings quasi-owners. Both groups stand to lose if an MFI goes bankrupt. Private deposits also can help the poor. Taking deposits requires prudential supervision and regulation. Regulators require shareholders and a thick buffer of net worth.

FINANCIAL SELF-SUFFICIENCY FOR WORKERS

Financial self-sufficiency answers the question of the workers in an MFI. Workers ask whether they can keep their jobs and keep helping the poor when donors leave. Therefore, for the workers of MFIs, good performance means financial self-sufficiency through maintaining the real size of the MFIs. A financially self-sufficient MFI can maintain the real worth of the subsidized funds in its equity and pay market rates for the rest of its funds without public help. Financial self-sufficiency is not as strict a benchmark as self-sustainability. Financial self-sufficiency is just one part of self-sustainability. Furthermore, financial self-sufficiency for workers is less strict than private profitability for investors. Investors want a return on equity at least as high as they could get from a firm of like risk. Workers want a return on equity at least as high as inflation.

PRIVATE PROFITABILITY FOR INVESTORS

A MFI that replaces all its public funds with market funds and keep the same size and scope of service to its market niche is privately profitable. Subsidies are the unpaid opportunity costs of the equity of a MFI less what an MFI could pay for the use of equity from profit without grants and discounts. Therefore, for investors, good performance means a MFI earns them a higher return than they could get from firms of like risk.

The table 2.1 in the appendix 1 shows the goals of each stakeholder and the respective measures.

2.9.3 Performance Evaluation, tradeoffs, and Data Envelopment Analysis

All business operations/processes involve transformation – adding values and changes to materials and turning them into goods and services that customers want. The transformation involves the use of inputs made up of labor, materials, energy, machines, and other resources, and the generation of outputs of finished products, services, customer satisfaction, and other outcomes. Managers are often interested in evaluating how efficiently various processes operate with respect to multiple performance measures (or inputs and outputs). Performance evaluation and benchmarking positively force any business unit to constantly evolve and improve in order to survive and prosper in a business environment facing global competition (zhu 2009). Through performance evaluation, one can:

- Reveal the strengths and weaknesses of business operations, activities, and processes;
- Better prepare the business to meet its customers‘ needs and requirements; and
- Identify opportunities to improve current operations and processes, and create new products, services and processes.

Single-measure based gap analysis is often used as a fundamental method in performance evaluation and benchmarking. However, Camp (1995) as cited by Zhu (2009) argues that, one of the dilemmas that we face is how to show benchmarks where multiple measurements exist. It is rare that one single measure can suffice for the purpose of performance evaluation. The single output to input financial ratios, such as, return on investment (ROI) and return on sales (ROS) may be used as indices to characterize the financial performance. However, they are unsatisfactory discriminants of ―best-practice", and are not sufficient to evaluate operating efficiency. Since a business unit‘s performance is a complex phenomenon requiring more than a single criterion to characterize it.

Further, the use of single measures ignores any interactions, substitutions or tradeoffs among various performance measures. Each business operation has specific performance measures with tradeoffs. Note that the objective of performance evaluation is to evaluate the current business operation internally and to benchmark against similar business operations externally to identify the best practice. Thus, such best-practices can be empirically identified. The efficient frontier can be empirically estimated based upon

observations on one business operation/process over time or similar business operations at a specific time period through data envelopment analysis technique.

2.9.3.1 What is Data Envelopment Analysis?

Data envelopment analysis is a technique used to assess the productive efficiency of homogenous operating units such as schools, hospitals, banks, or utility companies. It is a powerful technique for measuring performance because of its objectivity and ability to handle multiple inputs and outputs that can be measured in different units. The DEA approach does not require specification of any functional relationship between inputs and outputs or a priori specification of weights of inputs and outputs. The DEA-based decision support system calculates an efficiency score for a firm. This score is a relative value computed by comparing the given firm to a pool of well-performing companies that serve as a benchmark for the company under evaluation (Malhotra et al. 2008).

Data Envelopment Analysis (DEA) was accorded this name because of the way it "envelops" observations in order to identify a "frontier" that is used to evaluate observations representing the performances of all of the entities that are to be evaluated. The term "Decision Making Unit" (DMU) was introduced to cover, in a flexible manner, any entity, with each entity to be evaluated as part of a collection that utilizes similar inputs to produce similar outputs. These evaluations result in a performance score that ranges between zero and unity and represents the "degree of efficiency" obtained by the thus evaluated entity (Cooper et al. 2006).

DEA identifies a set of "best performers" from a collection of DMUs and uses them to generate "efficiency scores" obtained by evaluating each of the n DMUs. This is accomplished by identifying a point on this frontier that assigns a value of $0 \leq E \leq 1$ to each of the n DMUs. This score is obtained by comparing the performance of the DMU to be evaluated relative to the performances of all DMUs. As obtained by DEA, this score reflects a series of weights as determined from the data by DEA — one for each output and one for each input – that produces the highest efficiency score that the data will allow relative to the values $0 \leq Ej \leq 1$ for each of the several DMUj j = 1 , . . . , n, being considered (Cooper et al. 2006).

The use of DEA which is nonparametric method in measuring efficiency and productivity change of DMU‘s has the great advantage that it does not have to assume a functional form for the production process, and that it is somewhat more flexible in analyzing general technologies described by multiple outputs and inputs(Quang and Borger 2008).

A well known Dutch-American economist Koopmans (1952) as cited by Cooper et al. (2006) defined efficiency and inefficiency as:

- The performance of a DMU is inefficient if and only if it is not possible to improve any input or output without worsening any other input or output.
- The performance of a DMU is efficient if and only if it is possible to improve some input or output without worsening some other input and output.

Thus a characterization of being inefficient holds if and only if the observation — i.e., the input-output coordinates — for the DMU being evaluated is not on the efficiency frontier of the set of production possibilities that can be generated by DEA from the data on all observations. Conversely, the geometric points associated with the performance of the DMU to be evaluated by DEA will be found to be efficient if and only if it is on the efficiency frontier (Cooper et al. 2006).

2.9.3.2 Approaches in Data Envelopment Analysis

Considering financial institutions as decision making units there are two approaches which are used to define inputs and outputs and the relationship between the input and outputs. These approaches include the production approach and the intermediation approach (Skully and Pathan 2008).

Under the production approach the financial institutions are considered as the producers of deposits and loans. The number of employees and expenses particularly operating expenses is important inputs in this approach. Number of active borrowers and number of savers are considered as outputs in this approach.

The second approach considers the financial institutions as intermediaries. As intermediaries financial institutions have the responsibility of transferring financial assets from the savers, the surplus unit to the investors, the deficit unit. In this case the inputs

can be defined as labor, operating expenses and interest payable on deposits. Whereas, loans and total savings can be considered as outputs in the intermediation approach.

The DEA method is based on the common assumption of constant return to scale (CRS) and the alternative assumption of variable return to scale (VRS). CRS provides the same efficiency results in both cases. Constant return to scale compares each unit against all other units whereas the variable return to scale compares each unit against other units of similar size. Although VRS model considers inputs increase, it does not expect increase in outputs.

2.9.3.3. The Malmquist Index

An extension of the DEA method is to apply malmquist index (MI) to panel data in order to evaluate the productivity change of a DMU between two time periods. DEA based MI was first introduced by Malmquist (1956) and later developed by Fare et al (1994) as cited by SEAAIR (2007). This technique decomposes productivity growth into two components: changes in technical efficiency over time (TEC) and shifts in technology over time (TC). Technological progress results from the advanced technology embodied in capital and is represented by the outward shifts in the production frontier over time. Technical efficiency on the other hand, results from the efficient use of technology and inputs (due to the accumulation of knowledge in the learning process, diffusion of technology, improved managerial practice, etc.) and is represented by movements towards the best practice frontier. DEA based on MI is used to measure the efficiency and productivity of a DMU between two time periods which is sometimes also referred to as

the Total Factor Productivity (TFP) index. DEA based MI was developed to allow for disentangling inefficiency effects and technological changes. The advantages of DEA based MI are numerous (SEAAIR 2007)). Among the advantages:

- MI can be decomposed into two components for explaining the productivity sources, namely, technological change and technical change;
- MI does not require price data;
- MI can accommodate multiple inputs and outputs; and
- MI does not make any restrictive value/ or behavior assumptions for economic units such as cost minimization or profit maximization.

According to SEAAIR (2007), DEA based MI uses four steps to determine the changes in total factor productivity:

- DEA method is used on a sample data to derive the production frontier to evaluate the technical efficiency of each DMU;
- the production frontier is allowed to shift over time due to technological change;
- technical efficiency change for one year relative to the prior year is computed; and
- MI is computed to denote the total factor productivity change, which is the product of technical efficiency change and technological change

In general, productivity gains can be the results of improvements in efficiency and/or the improvements in the technological progress. MI>1 indicates progress in the total factor productivity of the DMU from period 1 to 2, while MI=1 and MI<1 indicate respectively no changes and decay in total factor productivity growth (TFPG).

2.10 Performance Indicators for Microfinance Institution

As the title reflect, much attention in this paper is given to a DEA based MI performance evaluation. Besides, there are a number of financial ratios designed by Consulting Group to Assist the Poor (CGAP) a World Bank based organization to consult MFIs. These ratios are being in use by all MFIs reporting to Microfinance Information Exchange (MIX), an organization aimed at improving the reporting standards of MFIs. In Ethiopia, all members of AEMFI prepare their financial and operating reports according to the guide line issued by Micro Banking Bulletin (MBB) which the bulletin is published by MIX. Therefore, this study considers into account these financial ratios though not as a primary criteria for performance evaluation of MFIs in the sample.

Today, there is neither an agreed upon nor a widespread definition of a well-performing MFI. The performance criteria and indicators used vary significantly from one author to the next or from one organization to another, since they depend on the methodological approach, which, in turn, depends on the determination to give priority to the supply side or to the demand side of the financial intermediation (Congo 2002).

The researcher adopts an approach based on both performance criteria introduced by Yaron (1997) and those proposed by CGAP (2009). These authors suggest two key criteria to evaluate the performance of MFIs: outreach and sustainability. Besides, DEA based malmquist total factor productivity index model is used to evaluate the efficiency of the microfinance institutions during the study period 2003-2009.

2.10.1 Outreach Performance

Outreach is defined as the ability of a MFI to provide high quality financial services to a large number of clients. The indicators of outreach performance are changes in the number of clients, percentage of female clients, the amount of savings deposits, the value of the outstanding loan portfolio, the average amount of savings deposits, the average value of loans, etc (Congo 2002). Outreach performance requires microfinance institutions to reach a large public, and to have a significant and increasing volume of activities (savings, credit, insurance, etc.).

As Yaron (1997) discussed ~~–O~~utreach is a hybrid measure that assesses the extent to which a Rural Financial Institution (RFI) has succeeded in reaching its target clients and the degree to which the RFI has met the clients demand for financial services". The indicators of outreach are: the depth (types of clients reached and level of poverty) and breadth of outreach (number of clients served).

MFIs clientele is very heterogeneous, since they target both rural households and urban low-income populations. Urban clients are mainly small traders, micro-entrepreneurs, groups, and associations. Rural clients are small farmers, animal breeders, women, craftspeople, groups, and associations (Congo 2002). Poverty in Ethiopia hits mainly these categories of the population. This makes it possible to assert that MFIs reach the poor populations and even the poorest.

According to CGAP (2009), the best measurement of outreach breadth (number of clients served) is the number of clients or accounts that are active at a given point in time. The number of active clients includes borrowers, depositors, and other clients who are currently accessing any financial services. This indicator is more useful than the cumulative number of loans made or clients served during a period.

Outreach in terms depth (client poverty level) is measured as the ratio of Gross amount of loans or savings outstanding to the Number of active clients or accounts. The average outstanding balance includes only loan amounts that clients have not yet repaid, or savings that clients have not withdrawn. Average outstanding balance is roughly related to client poverty, because better off clients tend to be uninterested in smaller loans or deposit accounts (CGAP 2009). This is calculated using the following formula:

$$\text{Average outstanding balance} = \frac{\text{Gross amount of loans or savings outstanding}}{\text{Number of active clients or accounts}}$$

2.10.2 Financial sustainability (profitability)

According to CGAP (2009) technical guide ROA and ROE are appropriate indicators for institutions that do not receive subsidies. But donors and social investors typically deal with institutions that receive substantial subsidies, most often in the form of grants or loans at below-market interest rates. In such cases, the critical question is whether the institution will be able to maintain itself and grow when subsidies are no longer available. To determine this, financial reporting must be ―adjusted" to reflect the impact of the

present subsidies. Three subsidy-adjusted indicators are in common use: financial self-sufficiency (FSS), adjusted return on assets (AROA) and adjusted return on equity (AROE). Besides, a short-run sustainability measure, operational self-sufficiency can be used.

$$\text{Adjusted Return on Assets} = \frac{\text{Adjusted Net Operating Income}}{\text{Average Total Assets}}$$

This ratio indicates how well an MFI uses all its assets profitably. It indicates an overall measure of profitability that reflect both the profit margin and the efficiency of the MFI.

$$\text{Adjusted Return on Equity} = \frac{\text{Adjusted Net Operating Income}}{\text{Average Total Equity}}$$

This ratio measures the profit that equity is generating and thus accruing to shareholders.

$$\text{Operational Self-sufficiency} = \frac{\text{Financial Revenue}}{\text{(Financial expense + Loan loss provision + Operating Expense)}}$$

This ratio shows the ability of the MFI to cover its total expenses from revenues excluding grants. An operational self-sufficiency ratio exceeding 100% is indicative of an MFI‘s sustainability in the short-run.

$$\text{Financial Self-sufficiency} = \frac{\text{Adjusted Financial Revenue}}{\text{Adjusted (Financial expense + Loan loss provision + Operating Expense)}}$$

This ratio shows the ability of the MFI to cover its adjusted expenses from adjusted revenues excluding grants. A higher than 100% rates is indicative of a long-term sustainability.

2.11 SUSTAINABILITY

Performance is meeting goals. Sustainability is meeting goals now and in the long term. Sustainability looks to the future. It matters since there are poor now as well as in the future. Sustainability is not an end in itself. It is just a means to the end of improving the lot of the poor. A sustainable MFI helps a lot of poor people through a long time frame. In contrast, an unsustainable MFI helps just a few poor people through a short time frame. Sustainability requires profits. Profits protect permanency. A financially self-sufficient MFI has so much profit that when donors leave it will not shrink in real terms nor will it reduce the size or scope of its service to the poor (Manos and Yaron 2009).

Sustainability requires more than just financial self-sufficiency from profit. Just as one year of marriage does not mean happily ever after, one year of high profit and of strong performance does not mean an MFI is sustainable. Financial self-sufficiency can last in the long term only if the structure of rules and incentives and the system of organization prompt stakeholders to adapt the rules to fit changes in the market. MFIs live in a market environment that changes with time, and so MFIs must change too if they are to do well in the long term.

2.11.1 Sustainability versus self-sustainability

Sustainability is not the same as self-sustainability. Sustainability is meeting goals now and in the long term. Self-sustainability is meeting goals now and in the long term with subsidized funds replaced with market funds. Sustainability is not the same as subsidy. An MFI with a weak organization and rigid rules could perform well for a time without being able to make such stellar performance last. Sustainability requires at least financial self-sufficiency from the point of view of workers. To maintain the size and scope of its service to the poor, an MFI must maintain the real value of the subsidized funds lodged in its equity while paying market rates for the rest of its funds. A financially self-sufficient MFI could be sustainable while not being self-sustainable. Financial self-sufficiency does not mean that the MFI could replace all its subsidized funds with market funds.

2.11.2 The Trade-off between Outreach and Sustainability

It is often argued that there is a trade-off between increasing outreach to the poor and gaining financial sustainability.

Manos and Yaron (2009), argue that transaction costs per unit for small loans and savings accounts are higher compared with transaction costs per unit for larger loans and savings accounts. The difference in transaction costs per unit for small and large accounts is due to the large fixed costs component of transaction costs.

Schreiner (2002) claims that increasing outreach to the poor and achieving financial sustainability are two extreme targets that influence the approach adopted by the MFI.

The poverty approach accepts as its target the servicing of the poorest of the poor at very high costs. The self-sustainability approach accepts as its target the servicing of less-poor clients and the use of donations and subsidies to develop methods of operation that lead the MFI to becoming financially sustainable in the long run.

The pursuit by MFIs to increase outreach and improve sustainability can stimulate innovations in microfinance, which in turn can bring about improvements in technology and efficiency of operations.

Lariviere and Martin (1999) and Paxton and Cuevas (2002) as cited by Manos and Yaron (2009) argue that in short term, any increase in one element will result in a decrease in the other. In the long run, however, if technology and efficiency of operation improve, both outreach and sustainability can be increased.

2.12 Empirical evidence

The involvement of MFIs as a financial intermediary to service the financial needs of un-served or underserved group of society in both rural and urban areas of the community everywhere in the globe is increasing from time to time.

Study conducted by Manos and Yaron (2009) on the key issues in assessing the performance of MFIs, they identified that there is a trade-off between outreach and sustainability in the short run. The researchers‘ analysis was based on Production Possibility Frontier (PPF). According to the researchers‘ findings, in the short run whenever the MFIs are on the production frontier there is enviably a trade-off between increasing financial sustainability and extending outreach. However in the long – run it is

possible to improve both outreach and financial sustainability by utilizing scale of economies, improving operational modes, and introducing innovations.

The study conducted by Lafourcade et al. (2005) concerning the outreach and financial performance of MFIs in Africa shows that, unlike MFIs in the rest of the global regions, African MFIs have a higher number of savers than other regions of the world. In contrast to this outreach breadth in terms of borrowers in Africa is far behind their counterparts in South Asia, East Asia and the Pacific. Even, outreach in Africa varies by region. East Africa region dominates the outreach results with 52 percent of all African savers and 45percent of all African borrowers. This dominance is the result of the presence of two very large borrowing institutions in Ethiopia Amhara Credit and Saving Institution (ACSI) and Dedebit Credit and Saving Institution (DCSI) and the largest saving institution in Kenya (Kenya Post Office Saving Bank KPOSB). The depth of outreach measured by a percentage of women borrowers sub Saharan Africa has 61 percent women borrowers which is the lowest compared to 86 percent in south Asia, 80 percent in MENA, 76 percent in East Asia and pacific. With regard to financial performance, compared with other global regions MFIs in sub- Saharan Africa report the lowest Average ROA of 2 percent whereas MENA region reported 2-5 percent, Latin America and the pacific region reported 5-8 percent and Asia reported 8-10 percent.

Across African region MFIs in East Africa are the most profitable (ROA of 3.4 percent), and those in West Africa also generate positive returns (ROA of 1.7 percent). Whereas MFIs in the Central Africa (ROA of -0.6 percent), South Africa (ROA of -9.7 percent) and Indian Ocean (ROA of -3.3 percent), generate negative returns.

The study undertaken by Cull et al. (2006) on the financial performance and outreach of leading Micro banks using data on 124 MFIs from 49 developing countries identified points such as: in terms of financial viability indicators, average financial self-sufficiency of 1.035 which implies MFIs are financially self-sufficient since the minimum requirement for MFIs to breakeven is 1 or 100 percent, the average operating self-sufficiency of MFIs was 1.165 which means the MFIs are covering their cost through operating revenues. The mean adjusted ROA of -0.027 indicates MFIs are not earning positive return on their investment. They further identified Average loan size to GNP per capita which is outreach depth indicator of 0.676, percentage of women borrowers of 64.9 percent. Finally their findings indicated the mean GLP to asset ratio of 68.9 percent, average real gross portfolio yield (average interest rate) 34.8 percent and personnel expense to total asset ratio of 18.55 percent for MFIs embraced in the study.

Schicks (2007) conducted her study on the development impact and coexistence of sustainable and charitable MFIs. Her findings show that, where sustainable and charitable MFIs coexist they can harm each other, hampering the achievement of the development goals. Charitable MFIs can squeeze out or deter sustainable institutions by lowering interest rates on their loans with subsidies. Sustainable MFIs, on the other hand, can hinder charitable institutions from cross-subsidy between richer and poorer clients and push them towards grant independence. Therefore, she concludes that, well-designed institutional settings can guarantee a favorable coexistence of different types of MFIs and their cooperation can even be mutually beneficial and enhance the overall developmental impact of microfinance.

The study by Hassan and Sanchez (2002) on efficiency analysis of MFIs in developing countries based on 45 MFIs from Latin America, South Asia and MENA regions. Their analysis was based on data envelopment analysis (DEA) using 5 year data in terms of both production and intermediation approach. Their findings show that South Asian MFIs have higher efficiencies than their counterparts in Latin America and MENA countries. The source of inefficiency in Latin America and MENA are pure technical which implies that MFIs in the regions are either wasting resources or are not producing enough out puts. Therefore, the researchers further suggest MFIs to increase their pure technical efficiencies in order to maximize social wealth.

Nawaz (2009), conducted a study on "Efficiency and Productivity of Microfinance: Incorporating the role of subsidies" on 204 Microfinance Institutions in 54 countries using Data Envelopment Analysis and Malmquist index as analysis tool. His findings have revealed an average 1% increase in total factor productivity including subsidy and an average 0.8% decrease in total factor productivity excluding subsidies.

Though the availability of literatures on performance and sustainability of Ethiopian microfinance industry is limited, studies by Kereta in (2007) and Ejigu in (2009) are significantly promising. Kereta (2007) conducted a study on outreach and financial performance analysis of MFIs in Ethiopia, his findings shows that, with regard to outreach angle MFIs outreach shown an average increment of 22.9 percent in the period from 2003 to 2007. But their reach to the disadvantages particularly to women is limited to 38.4 percent.

From sustainability angle, the MFIs are operationally sustainable as measured by ROA and the industry's profit performance is improving overtime. The non performing loans to loan outstanding ratio confirms that MFIs financial sustainability is in a comfort zone with average NPLs ratio of 3.2 percent for the period. The study also identified no evidence of trade-off between outreach and financial sustainability for Ethiopian case.

The study by Ejigu (2009) on performance analysis of a sample MFIs of Ethiopia identified the following points; (1) the MFIs are not levered properly as compared to their counter parts, (2) in serving women borrowers Ethiopian MFIs are poor performers when compared to other MFIs, (3) all MFIs are also poor performers at Average loan size per GNI criteria, (4) in terms breadth of outreach measured by number of borrowers all MFIs serve large number of borrowers than their industry average, (5) size of MFIs affect profitability and sustainability positively, (6) Ethiopian MFIs are efficient as measured by operating expenses to GLP and cost per borrower ratio and also productive measured by borrower per staff.

CHAPTER THREE

METHODS, SPECIFICATION OF THE MODEL AND THE DATA

3.1 Introduction

This study employed concurrent embedded strategy of mixed research methods to assess the institutional performance and sustainability of MFIs in Ethiopia. According to Creswell (2009) when both forms of data are not equal in size and rigor, this strategy enables the study to be reduced in scope and manageable for the time and the resources available. Accordingly this strategy is suitable for the study because performance and sustainability issues of microfinance institutions focus on both quantitative and qualitative analysis since past, present and future operations of the institutions are considered.

3.2 Measures of performance in DEA- a Methodological literature

The best practice or frontier function is an efficient transformation of given inputs into maximum attainable output. In other words, it reflects the ability to produce a well specified output at minimum cost. To evaluate efficiency of firms relative to the best practice production, it is necessary to have a quantifiable standard. That standard can only be determined by those productive units which share a common technology.

The production efficiency of a firm can be decomposed into two elements:

(1) technical efficiency (TE), which measures the firm‘s success in producing maximal output with a given set of inputs; and

(2) allocative (price) efficiency (AE), which quantifies the firm‘s success in choosing an optimum combination of inputs

To simplify the exposition let us consider a MFI that uses only two inputs, X1 and X2, to produce a single output, Y. The known efficient production function can be written as:Y = f(X1, X2) (1)

Assuming constant returns to scale, Equation 1 can be expressed as:

$$I = f(X1/Y, X2/Y) \quad (2)$$

3.2.1 Input oriented measures

Equation 2 implies that the production frontier 1 can be depicted using the efficient unit isoquant (EUI), represented by UU‘ in Figure 3.1. The EUI shows the technically efficient combinations of X1 and X2 used to produce one unit of output Y. Point A, which lies above the unit isoquant, represents the combination of X1 and X2 actually used in producing Y, while point B represents a technically efficient firm using the two inputs in the same ratio as A.

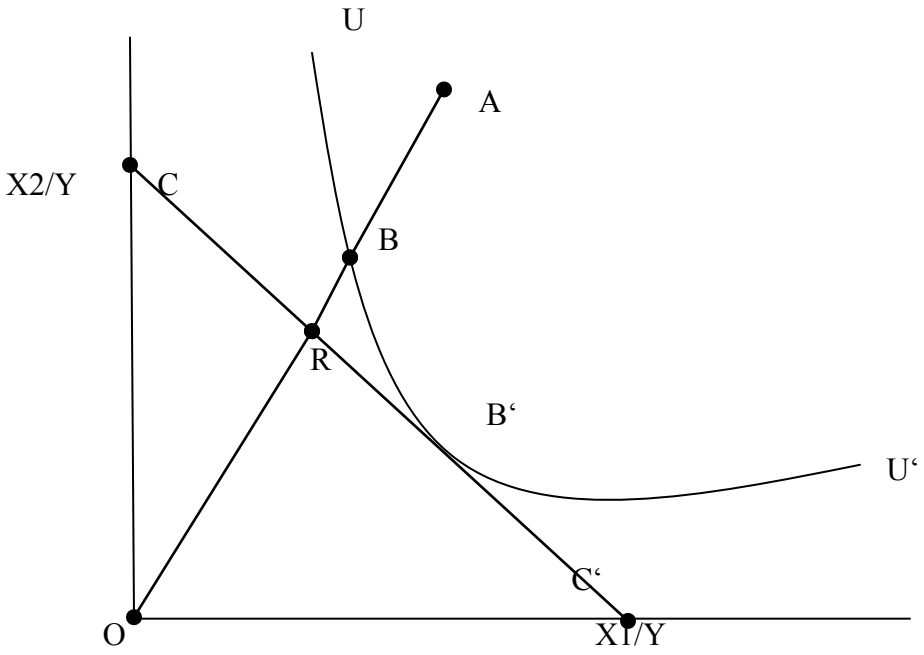

Figure 3.1: Technical and Allocative Efficiencies from Input Orientation

Source: Coelli 1996

- The optimal combination which minimize the cost of producing a given level of output is where the slope of CC‘, the price line, is equal to that of unit isoquant UU‘. Thus, B‘ is the optimal or minimum cost point of production. Firm B is producing at higher cost than B‘, although both points reflect 100 percent technical efficiency. The cost of production at B‘ is only a fraction of OR/OB of that at B. OR/OB reveals the allocative efficiency of B. Therefore, allocative inefficiency of B is 1-(OR/OB), which measures the potential reduction in cost from using optimal input proportions.
- Production or economic efficiency of firm A is given by the ratio OR/OA. Accordingly, 1-(OR/OA) is economic or total efficiency of that firm. Economic efficiency (OR/OA) is the product of technical (OB/OA) and allocative (OR/OB) efficiencies i.e., (**OB/OA) * (OR/OB) = OR/OA**

3.2.2 Output oriented measures

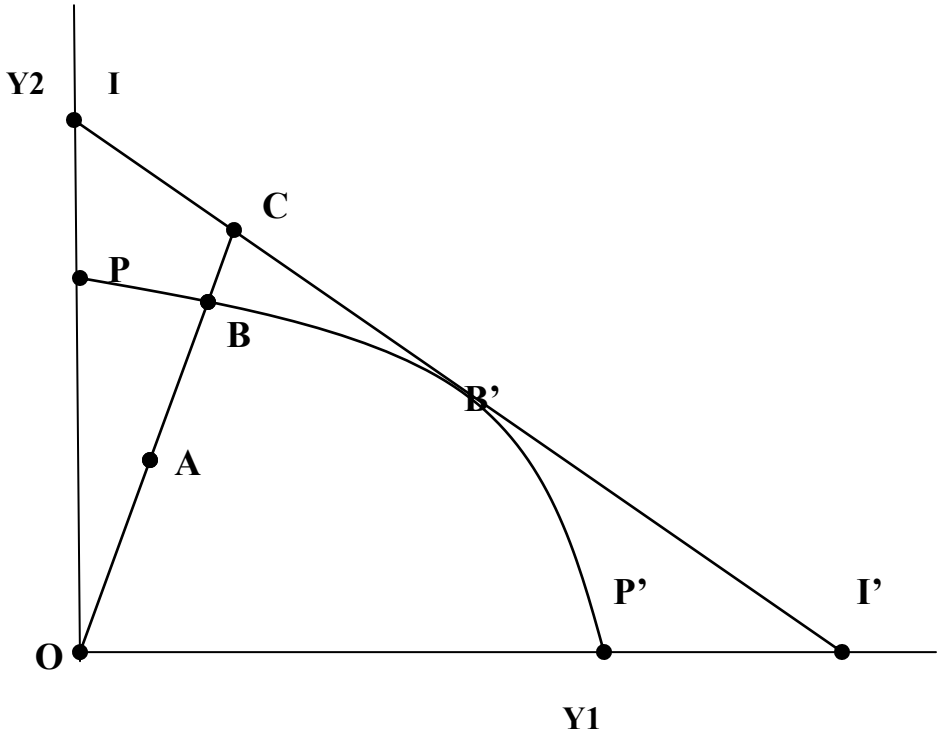

Figure 3.2 Technical and Allocative Efficiencies from Output-Orientation

Source: Coelli 1996

A MFI operating at point B is technically efficient since it lies on production possibility frontier (PPF) PP‘ while a MFI operating at point A is technically inefficient. This is because at point A it is possible to increase output without requiring extra inputs. Technical efficiency of MFI operating at point A is measured by the ratio; TE= OA/OB. Allocative efficiency is calculated based on input price ratio represented by II‘ (iso-revenue) line. Allocative efficiency is the point where iso- revenue line is tangent to the production function. Hence, a MFI operating at point B is technically efficient but allocatively inefficient. However, a MFI operating at point B‘ is both technically and allocatively efficient.

The allocative efficiency (AE) of a MFI operating at point A is the ratio of; AE=OB/OC. The distance BC or the ratio BC/OC represents an increase in revenue that would occur if production n were to occur at the allocatively or technically efficient point B‘ than only at the technically efficient point B.

Production or Economic efficiency (EE) = OA/OB * OB/OC=OA/OC

3.3 Model specification

There are a number of researches conducted using DEA techniques to evaluate the performance and / or efficiency of MFIs, banks and other organizations like schools, hospitals and utility facility institutions. In this particular study the model adopted is based on CHOUDHARY and Gupta (2009), Skully and Pathan (2008) and Quang and Borger (2008).

3.3.1 Output oriented Constant Returns to Scale (CRS) and Variable Return to Scale Measures

An output-oriented model implies that the efficiency is estimated by the output of the firm relative to the best-practice level of output for a given level of inputs.

DEA is based on technical efficiency (TE) concept which is the following formula:

$$\text{Technical efficiency (TE)} = \frac{\sum weightedoutput}{\sum weightedinput}$$

Assume that we have K decision making units (DMU) using **n** inputs to produce **m** outputs.

$$TE_K = \frac{\sum_{i=1}^{m} U_i Y_{is}}{\sum_{j=1}^{n} V_j X_{jk}} \qquad \text{Where } U_i \text{ and } V_j \geq 0)$$

Where:

- TE_k = is the TE for the DMU_k (between 0 and 1),
- K= the number of DMU_k in the sample (k = 1, . . . , K),
- n =the number of inputs used (j = 1, . . . , N)
- m =the number of outputs (i = 1, . . . , M)
- Y_{is} = the observed level of output I from DMUk,
- X_{jk} = the observed level of input j from DMU
- V_j =the weight of input j,
- U_i = the weight of output i

Therefore, the linear program which is an output oriented, representing the TE of DMUs in the sample would be written as:

Max TE_k

Subject to $\sum_{i=1}^{m} U_i Y_{ir} - X_{jr} + U_0 \leq 0$ r=1…, k

$$V_j X_{jr} - \sum_{j=1}^{n} U_j X_{jk} \geq 0$$

U_i and $V_j \geq 0$

The above Linear program equation shows CRS if U_0 = 0 and it changed into variable returns to scale (VRS) if U_0 is non-zero or used unconstrained. In the first case it leads to technical efficiency (TE) and in the second case we estimate pure technical efficiency (PTE).

3.3.2 Input oriented Constant Returns to Scale (CRS) and Variable Return to Scale Measures

Input oriented linear programming methods are used in order to obtain the minimum input mix which will give the maximum possible output. Therefore, here minimizing input does not mean reducing output. The appropriate linear program for this case is:

Min TE_k

Subject to $\sum_{i=1}^{m} U_i Y_{ir} - Y_{ir} + U_0 \geq 0$ r=1… k

$Y_{jr} - \sum_{j=1}^{n} U_j X_{jk} \geq 0$, and

U_i and $V_j \geq 0$

The above Linear program equation shows CRS if U_0 = 0 and it changed into variable returns to scale (VRS) if U_0 is non-zero or used unconstrained. In the first case it leads to technical efficiency (TE) and in the second case we estimate pure technical efficiency (PTE).

3.3.3 DEA based input oriented Malmquist index model

The Malmquist index is defined by using distance functions. In this study, an output and input distance functions are used to consider a maximum proportional expansion of the output and input, given the inputs and outputs. The Malmquist TFP index measures the TFP growth change between two data points by calculating the ratio of the distances of each data point relative to a common technology.

The Malmquist input oriented TFP change index between the base period t & the following period t+1 is defined as:

$$M_0(y_{t,}x_{t,}y_{t+1,}x_{t+1}) = \frac{D_0{}^{t}\left(Y^{t},X^{t}\right)}{D_0{}^{t+1}\left(Y^{t+1},X^{t+1}\right)} \times \left[\frac{D_0{}^{t+1}\left(Y^{t+1},X^{t+1}\right)}{D_0{}^{t}\left(Y^{t+1},X^{t+1}\right)} \times \frac{D_0{}^{t+1}\left(Y^{t},X^{t}\right)}{D_0{}^{t}\left(Y^{t},X^{t}\right)}\right]^{1/2} \text{ .. } \textbf{\textit{(Model 1)}}$$

Technical Efficiency Change Index= $\frac{D_0{}^{t}\left(Y^{t},X^{t}\right)}{D_0{}^{t+1}\left(Y^{t+1},X^{t+1}\right)}$

Technological Change Index= $\left[\frac{D_0{}^{t+1}\left(Y^{t+1},X^{t+1}\right)}{D_0{}^{t}\left(Y^{t+1},X^{t+1}\right)} \times \frac{D_0{}^{t+1}\left(Y^{t},X^{t}\right)}{D_0{}^{t}\left(Y^{t},X^{t}\right)}\right]^{1/2}$

A value of M greater than unity implies a positive TFP growth from period t to period t+1.Otherwise, a value of M less than one indicates a TFP decline. Equation (1) is geometric mean of two TFP indices. The first index is calculated with respect to period t technology, while the second index is evaluated with respect to period t+1 technology.

3.3.4 DEA based Output oriented Malmquist index model

The output-oriented Malmquist TFP change index between period *t* (the base period) and period $_{t+1}$ (the terminal period) is given by:

$$M_0\left(X^{t+1}, Y^{t+1}{}_s, X^t, Y^t\right) = \frac{D_0^{t+1}\left(X^{t+1}, Y^{t+1}\right)}{D^t{}_0\left(X^t, Y^t\right)} \times \left[\frac{D_0{}^t\left(X^{t+1}, Y^{t+1}\right)}{D_0{}^{t+1}\left(X^{t+1}, Y^{t+1}\right)} \times \frac{D_0{}^t\left(X^t, Y^t\right)}{D_0{}^{t+1}\left(X^t, Y^t\right)}\right]^{1/2} \quad \ldots.$$

(Model 2)

- Where the notation $D_0^{t+1}\left(X^{t+1}, Y^{t+1}\right)$; represents the distance from the period *t* observation to the $_{t+1}$ period technology.
- A value of m_0 greater than one indicates positive TFP growth from period *t to* period $_{t+1}$ while a value less than one indicates a TFP growth decline.
- In model 2, the term outside the square bracket measures the output-oriented technical efficiency between period *t* and period $_{t+1}$ and the term inside measures technological change, which is the geometric mean of the shifts in technology observed in periods *t* and $_{t+1}$ as shown below:

  Technical Efficiency Change Index = $\frac{D_0^{t+1}\left(X^{t+1}, Y^{t+1}\right)}{D^t{}_0\left(X^t, Y^t\right)}$

  Technological Change Index = $\left[\frac{D_0{}^t\left(X^{t+1}, Y^{t+1}\right)}{D_0{}^{t+1}\left(X^{t+1}, Y^{t+1}\right)} \times \frac{D_0{}^t\left(X^t, Y^t\right)}{D_0{}^{t+1}\left(X^t, Y^t\right)}\right]^{1/2}$

In other words, TFP growth can be decomposed as:

TFP Growth = Technical Efficiency Change (Catching up Effect) × Technological Change (Frontier Effect)

3.4 Data Source, Variables and Description

The study assessed the institutional performance and sustainability of six MFIs using a panel data. The study period covered from year 2003-2009. Thus the total observation for the study would be 42 (6*7=42). The commencing year 2003 was selected based the enactment of National Bank of Ethiopia Directive No. MFI/17/2002 and Directive No. MFI 16/2002.

Directive No. MFI/17/2002 is aimed at standardizing the loan loss provision and write off policies for MFIs under the supervision of NBE. NBE requires MFIs to categorize their non-performing loans into three classes and to hold the minimum provisions against each category as indicated below.

Category	Number of days past due	Minimum Requirement
Substandard	91-180 days	25% of the outstanding balance
Doubtful	181-365 days	50% of the outstanding balance
Loss	Over 365 days	100% of the outstanding balance

Directive No. MFI 16/2002 is aimed at imposing a minimum capital ratio or capital adequacy ratio of 12 percent which is computed as a ratio of total capital to total risk-weighted assets on all MFIs through out their operation periods.

Both primary and secondary data were used in the study. Most of the secondary data were obtained from a web based data base Microfinance Information Exchange (MIX), Association of Ethiopian Microfinance Institutions and the Microfinance institutions included in the sample. As a source of primary data, questionnaire was distributed to officers of sampled Microfinance institutions at the head quarters.

To assess the institutional performance and sustainability of MFIs, conventional financial performance and outreach indicator ratios and DEA-based Malmquist indexes were used. In case of DEA-based Malmquist indexes both input and output oriented performance and/or efficiency measurement methods were employed. Besides, the study incorporated both the production and intermediation approach. Finally, different input and output variables which were believed to represent the activities of the MFIs are selected and efficiency scores are computed using DEAP version 2.1. Inputs and outputs with their respective descriptions are presented in the following table:

Definition of variable (inputs and out puts)

Production approach

Specification	Definition
Inputs	
Labour	Number of personnel/staffs which is defined as the number of individuals actively employed by the MFI. This includes contract employees or advisors who dedicate the majority of time to the MFI.
Cost per borrower	Operating expense divided by average number of borrowers
Cost per saver	Operating expense divided by average number of savers
Out puts	
Number of borrowers per staff member	Total number of active borrowers divided by total number of personnel
Number of savers per staff member	Total number of active savers divided by total number of personnel

Intermediation approach

Specification	Definition
Inputs	
Labour	Number of personnel/staffs which is defined as the number of individuals actively employed by the MFI. This includes contract employees or advisors who dedicate the majority of time to the MFI.
Operating	Operating expenses
Outputs	
Gross loan portfolio	All outstanding principal for all outstanding client loans including current, delinquent and restructure loans but not loans that have been written off. It excludes interest receivable and employee loans.
Total savings	The total of compulsory, voluntary saving, time deposit and demand deposit

Table 3.1: Definition of input and output variables

3.5 Research design, Population and Sampling

This is a concurrent embedded strategy of mixed research methods employing survey design. Samy (2005) suggests that the survey design is suitable when problems are investigated in realistic settings rather than in laboratory (e.g. consumer behavior patterns); the cost and time of survey is reasonable as the researcher can control expenses by selecting types of survey, and large amounts of data can be collected with relative ease for various sources.

The total population of the study was the microfinance institutions legally registered as per proclamation No. 40/1996 of the Federal Democratic Republic of Ethiopia. There are 30 microfinance institutions legally registered and operating in the country. The sampling design for was the single stage one since there is ease access to the population and to derive the sample. The Micro Banking Bulletin classifies microfinance institutions as small, medium and large based on their gross loan portfolio. Microfinance institutions with gross loan portfolio less than USD 2million are categorized as small, with gross loan portfolio from USD 2million to 8million as medium and with gross loan portfolio USD greater than 8million as large microfinance institution.

In order to be able to generalize about the population based on the sample, a simple random sampling technique was used. Accordingly two microfinance institutions from each category are included in the study. They are selected randomly from each category.

From small: Eshet & Gasha,
From medium: Busa Gonaofa &Wisdom
From large: Oromia credit and saving share Company (OCSSO) & OMO

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

Microfinance institutions have evolved as an economic tool to benefit low-income people. Their development goals are to create employment, reduce poverty, help existing business grow or diversify, empower women and disadvantaged population groups and encourage development of new business.

Microfinance institution is a financial intermediary and as financial intermediary aiming to give a better financial service to the low income people, the institution is expected to be financially viable achieving its self-sustainability. The performance measurement of microfinance institutions is based not only self-sustainability but also on the outreach of the institution. Outreach is measured in terms of number active borrowers and savers and it is considered as proxy for impacts of MFIs on development. The twin criteria of self-sustainability and outreach which are considered complementary by different researchers have been the yardstick of microfinance performance.

MFIs differ from banks because they provide financial services to low income customers and often provide loans based on group based collateral. Financial institutions like banks seek wealth maximization, in contrast to this, MFIs concentrate on social wealth maximization. This force MFIs to meet two objectives: (1) to generate enough revenue to

cover their operating and financing cost and (2) poverty alleviation. These two objectives require input minimization (using the least resources for a given level of outputs) and output maximization (providing the most services for a given inputs).

Therefore, efficiency and productivity measurement which examine the extent to which MFIs deliver financial services in the most cost effective manner while maximizing their services with minimal resources is the core point in assessment of institutional performance and sustainability of MFIs. Hence, in this chapter different techniques such as ratios and DEA methods are employed to assess the performance and sustainability of MFIs.

4.2Outreach performance of Microfinance Institution embraced in the study

According to CCAP (2009), the best measurement of outreach breadth is the number of active borrowers and the measurement of outreach depth (client poverty level) is outstanding gross loan portfolio. Outstanding gross loan portfolio is related to client poverty because better off clients tend to be uninterested in small loans or deposit accounts. Besides, the Micro Banking Bulletin (MBB) uses percentage of female clients, average outstanding balance or Average loan balance per borrower and the amount of savings or deposits as proxy to measure the outreach performance of the microfinance institutions.

The Ethiopian microfinance industry‘s overall outreach performance showed a significant increase during the study period 2003-2009. But statistical sources indicate that merely

20% of Ethiopia's eligible microfinance clients have access to financial intermediation. The following figures show outreach breadth and depth performance of the microfinance industry.

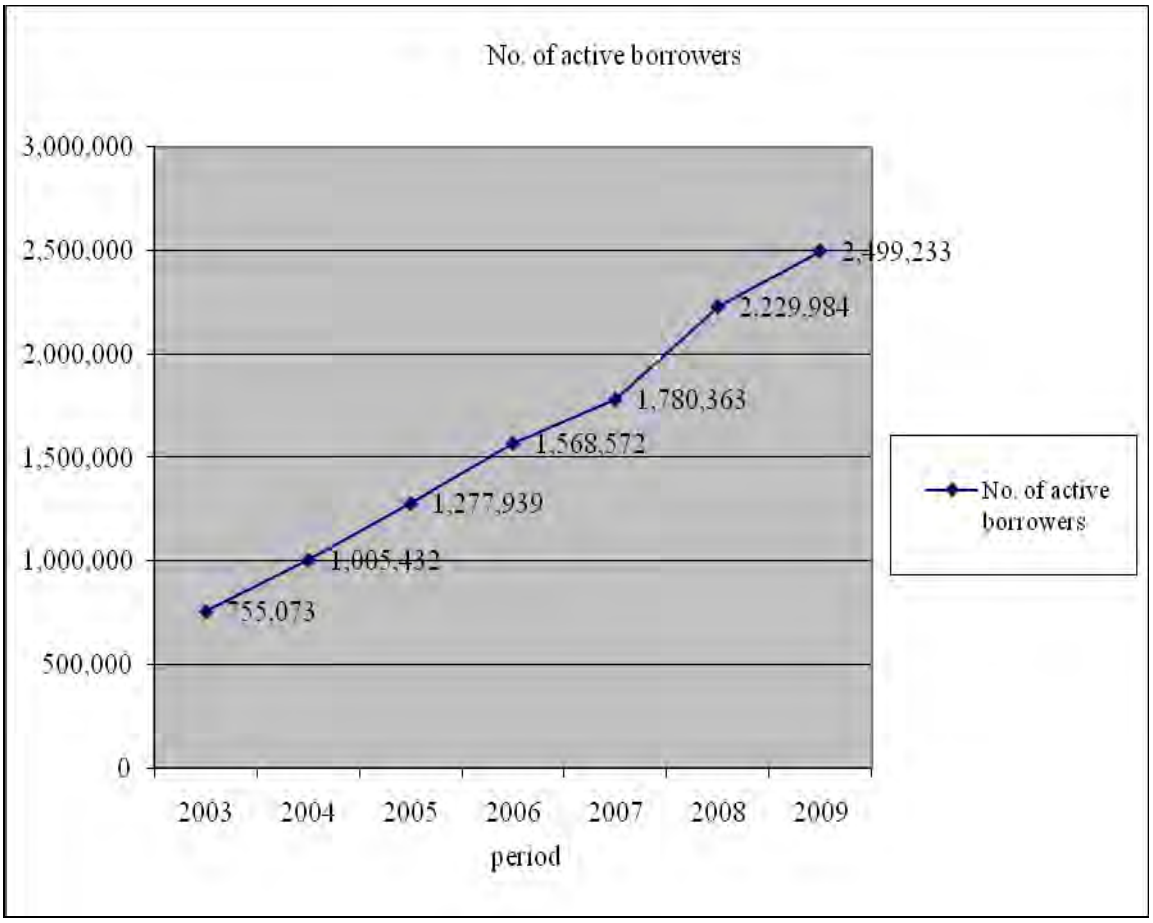

Figure 4.1 Ethiopian MFIs industry outreach breadth

Source: AEMFI

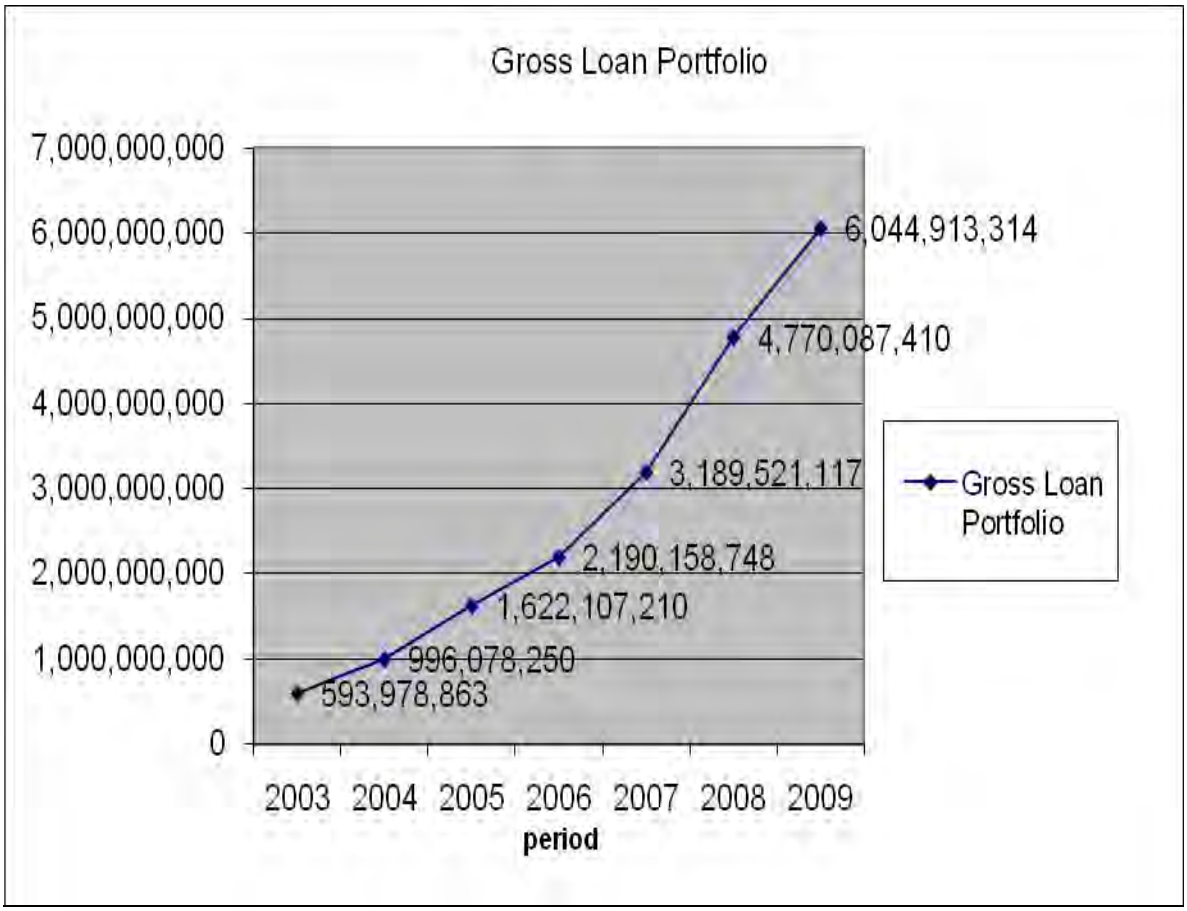

Figure 4.2 Ethiopian MFIs industry outreach depth

Source: AEMFI

In this study outreach breadth, outreach depth and saving potential of MFIs were critically examined to evaluate the outreach performance of the institutions. Number of active borrowers and outstanding gross loan portfolio are the best measurement of MFIs ability to cover a large number of unbanked and under banked people by traditional banks and their ability to meet the objective of poverty alleviation.

In recent times MFIs have to focus on financial systems approach that recognizes the importance of savings rather than the poverty lending and obligatory savings products to

the poor. The Microfinance business Proclamation No. 626/2009 Article 3(2) and National Bank of Ethiopia Directive No.MFI/16/2002 strengthen the researcher‘s idea by encouraging MFIs to gradually move out from dependence on donated and subsidized funds to commercial source of funds. The institutions can achieve this objective by mobilizing savings, as alternative source of fund, from the public and borrow money for their usual business operations and expansions.

In line with these issues, saving mobilization capability of MFIs has a significant role in meeting the objective of improving outreach performance either in depth or breadth. This is because of the following three reasons:

1. Savings are attractive source of funds since their financial costs are normally lower than other sources of funds like borrowing from interbank market;
2. Savings are a more stable funding source than donor funds; and
3. The associated low liquidity risk- MFIs are less exposed to liquidity risk than it would be if larger withdrawals were made from larger savings accounts.

In this study, the researcher used trend analysis and within category analysis instead of inter-category analysis. The reason is the categorization technique the researcher used is based on the gross loan portfolio amount expressed in USD. In contrary to this, the categorization procedure used by AEMFI and National Bank of Ethiopia is based on the number of active borrowers. Due to this there was overlap in categorization. For instance in the early period of the sample the MFI might be in the small category, unfortunately after two years of operation in might be included under large category if the number of active borrowers were used as a categorization procedure. However, if gross loan

portfolio in terms of USD is used, as a researcher did, the MFI would remain under the same category. Therefore, industry averages are used for indicative purpose only not for analyzing.

Outreach performance of small MFI

The outreach and sustainability of MFI approach is prominent tool to assess the impact of micro finance scheme on poverty alleviation. The assumption is that if outreach has been expanded and institution is sustainable, then the program is judged to have a positive impact as it has widened the financial market. This assumption leads one to conclude, MFIs' financial services led to improve household security and economic status of the clients.

Number of active borrowers as a measure of outreach reflects actual service delivery capability of MFIs. Especially this reflects the truth in case of Ethiopian MFIs. CGAP suggests number of active borrowers as a proxy to measure outreach breadth in membership-based organizations which provide loan on group based collateral. This is because there may be inactive members which are not borrowers at that particular time.

As can be seen from table 4.1 in the appendix 2 , the number of active borrowers for the sampled small MFIs were relatively the same for the first two sampled periods but the difference begun in 2006 and then the difference in their outreach performance continued significantly in more than a double till the last sample period. This clearly indicates Eshet MFI is performing better than its counterpart Gasha MFI in outreach breadth.

Outreach depth measured based on gross loan portfolio indicated the same performance as outreach breadth. Eshet MFI again dominated its counterpart Gasha in the same manner as it did in outreach breadth. Though roughly related, gross loan portfolio can be used as a proxy to measure client poverty level since better off clients tends to be uninterested in smaller loans or deposit accounts. This implies, Eshet MFI is meeting its poverty alleviation objective better than its counterpart Gasha.

With regard to saving mobilization performance, in contrary to outreach breadth and depth, Gasha microfinance overwhelmingly performed better than Eshet MFI. Here the reason may be Eshet had not yet introduced compulsory saving. Actually compulsory saving do not contribute directly to the client‘s self-financing potential, they rather increase their access to credit. Robinson (1996) as cited by CGAP (1999) clarified that the utilization of forced savings and the mobilization of voluntary savings reflect two different savings approaches. The former perceives savings as an integral part of credit; savers learn financial discipline and qualify for credit by a convincing savings record. The latter assumes that savings and credit are integral components of financial intermediation and that savers already know why and how to save. Therefore, here one can conclude that without teaching clients‘ about financial discipline through compulsory saving it is difficult to implement voluntary saving. Besides, the Microfinance business Proclamation No. 626/2009 Article 3(2) requires the MFIs to engage in accepting both compulsory and voluntary saving activities.

Allowing clients for loan without restriction or without compulsory saving will attract many clients and will show good outreach performance in the short-run but it may harm

the long-run performance of the institution specially if clients default or huge withdrawals are made from voluntary saving.

Introducing savings facilities may considerably improve an MFI‘s client outreach. Through deposit activities, an MFI can lower their capital costs and build a sustainable base for expansion. Well-designed and well-delivered deposit services can lead to the successful intermediation of financial services by MFIs‘ reducing their dependency on external funding and generating a stable source of capital to support their financial operations.

From the above table 4.1 one can judge that Gasha‘s saving mobilization potential performance is better than that of Eshet, this makes Gasha better off in minimizing its cost of capital and having a sustainable base for expansion. The outreach performance of Eshet may be due to the non inclusion of compulsory saving. Besides, the sustainability of Eshet is in question as it has not doing well in reducing its capital cost through saving mobilization which is again a long-run base for its outreach performance. This may justified from just having a glance on sustainability and profitability indicators of the last three sample period.

Outreach performance of Medium MFI

Table 4.2 in the appendix 2 shows the outreach performance of sampled medium MFIs.

From the year 2003-2004 there was a slight decrease in outreach breadth performance (-7%) for Buussa Gonofa MFI, while Wisdom reported a significant increase (64%) in its outreach breadth performance. Starting from 2005 Buussa Gonofa reported positive

growth in its outreach breadth ranging from 82% in 2005 to 8% in 2009. During the same period Wisdom microfinance reported the highest growth in outreach breadth performance in 2006 (61%) and a -1% depreciation in performance was reported in 2009. From this the researcher concluded that, both institutions are relatively performing well in terms of outreach breadth performance.

With regard to outreach depth performance of Buussa Gonofa, the lowest or depreciation in gross loan portfolio of -0.8% was reported in 2004 and 269% appreciation in gross loan portfolio was recorded in 2005. In the following years the appreciation in gross loan portfolio was more than 50% except for the year 2006, a 30% increase reported.

The peak growth in gross loan portfolio of 74% was recorded in 2006 for Wisdom microfinance and in the immediate following operation period or in 2007 the institution reported -22% depreciation in gross loan portfolio. More than 50% appreciation in gross loan portfolio was reported only in 2004 and 2006. This implies that Buussa Gonofa‘s outreach depth performance is better than its counterpart Wisdom microfinance. Though roughly related to clientele poverty level, Buussa Gonofa is better off in improving the economic status of its clients than Wisdom.

Since 2005 Buussa Gonofa concentrated only on compulsory saving. Funds from forced savings can serve as a stable capital base for an MFI and can facilitate liquidity management, but compulsory saving does not contribute directly to the client‘s self-financing potential. The mere benefit of forced saving is increasing access to credit and motivating clients to repay their loan. Wisdom microfinance is mobilizing more savings than its counterpart Buussa Gonofa. Although the portion of potential client‘s savings

deposited in MFIs depends to a large extent on the feature of the saving products offered, MFIs like Buussa Gonofa should teach their customers about the benefit of saving.

Outreach performance of large MFI

In Ethiopia large microfinance institutions have an impressive outreach performance either in terms of breadth or depth. For instance in 2008 93% of market share as a proxy of gross loan portfolio was controlled by few large microfinance institutions. In 2009, 95.55% of market share in terms of number of active borrowers and 98.16% of market share in terms of gross loan portfolio belongs to large microfinance institutions. Table 4.4 in the appendix 2 shows outreach performance of sampled large microfinance institutions.

As can be seen from table 4.3, both MFIs have been reporting an increasing outreach breadth and outreach depth performance in an increasing trend till 2008, but in 2009 OCSSC reported a negative growth in outreach breadth(-12%) and small change (4%) in outreach depth. The peak growth (57%) in outreach breadth for OCSSC was reported in 2008 and depth 83% in 2007. The outreach breadth of OMO had an increasing trend from 7% in 2004 to 39% in 2009. OMO‘s outreach depth performance is impressive even by national standards. The minimum outreach depth growth was 29% in 2004 while the maximum was 133% in 2008 which makes OMO number one in outreach depth performance even by national level. In the last two years of the study period OMO have been dominating all MFIs in the country as long as the outreach performance indicators are considered.

In terms of saving mobilization both institutions are performing well scoring an increasing trend which may be the reason for their outreach breadth and depth performance.

Outreach performance Questionnaire result

Questionnaire in this study is used as subsidiary to the quantitative analysis to get additional insight about institutional performance and sustainability of microfinance institutions. In total 24 questionnaires for each MFI's head office officers were distributed and 17 collected making the response rate 71%.

Out of the total respondents 16 (94%) are degree graduates and the remaining one is masters holder. With regard to work experience, five (29%) respondents have worked below 2 years, 3 (18%) respondents are within 2-5 years work experience, 7 (41%) respondents have been in work for 6-10 years and 2 (12%) respondents have a work experience of more than 10 years. From this respondents' general profile, the researcher believed to have a substantial input which further strengthen the quantitative analysis.

Sources of fund and the level of importance

This is based on question number one. Throughout the ranking process, grant was ranked 12 times (70%) as the most important, 2 times (12%) as moderately important, and 3 times (18%) as less important sources of funds. Whereas, retained earnings was ranked 5 times (19%) as most important, 7 times (42%) as moderately important, and 5 times (29%) as less important. With regard to member saving, it is ranked 7 times (41%) as most important and 10 times (59%) as less important.

From this one can conclude that, there is no source of fund which is uniformly important for all microfinance institutions under consideration. Out of the three, grants was ranked 70% as the most important followed by member saving 41% and retained earnings 29%. Grants, member saving and retained earnings were ranked 12%, 0% and 42% respectively as moderately important. Therefore, most microfinance institutions under consideration have been using and prefer grant as most important and retained earnings and member saving as moderate sources of funds. Most of the time grants are not reliable source of funds and it is difficult for microfinance institutions to operate sustainably without subsidies.

Operating area selection and poverty level measurement

In question 2 with regard to operation area selection, out of 17 respondents, 2 (12%) respondents replied that there is no explicit criteria for operation area selection, 10 (59%) responded their organization considers the issue and 5 (29%) said operation area selection is the most important criteria regulated in the strategic planning. In question 3, 12 (71%) respondents replied that their organization measures poverty level of the client and the rest 5 (29%) said their organization does not measure the poverty level of its clients. All those microfinance institutions which measure poverty level have used per capita house hold income as proxy to measure poverty level, as all 12(100%) respondents from question number three confirmed. This implies that about 88% of the MFIs under consideration select their operation area using poverty as criteria. This is truly in line with the main objective of microfinance institutions which is poverty alleviation. Out of the total responses, 71% responded their respective organization measures poverty level of its

clients using per-capita house hold income. This measure uses after joining and before joining house hold incomes to compare improvements in economic status of clients. This is again in line with the main objective of MFIs.

Availability of alternative loan type and client need

In question 4 regarding the availability of alternative loan, 10 (59%) of the respondents replied that their organization provides alternative loan and the rest 7 (41%) responded the unavailability of alternative loan. From providing alternative loans, as respondents said, their organization carefully secures its loan, interest income can be generated and some service charges can be made. From the angle of clients', clients can get loan for their immediate business purpose and this may change the economic status of the client. In question 4, all 100% of the respondents responded the availability of loans specifically tailored to clients' productive needs. From this we can judge, all MFIs considered more or less are rendering services which are targeted on improving the economic wellbeing of the poor and the poorest of the poor.

Identifying existing and potential clients' needs

In question 6 regarding identification of existing and potential clients needs, 10 (59%) respondents replied that their organization uses formal group discussion and interview to identify their current and prospective clients while the remaining 7 (41%) said informal field observation is the appropriate tool to identify their clients' needs. From this one can judge these microfinance institutions are in good position and doing well to understand the heartbeat of their existing and potential clients.

In question 7, regarding the success of MFIs‘ measured in terms of outreach and sustainability, all 17 (100%) of the respondents replied that their organization is performing moderately. From this we can say there are measures that MFIs need to take in order to improve their performance one-step forward.

Client training

In question 9 about client training, 15 (88%) of the respondents replied that their organization is providing client training and the rest 2 (12%) relied that there is no client training arranged at all. In some cases the training is arranged when the client join the MFI and in other cases, MFIs arrange quarterly and semi-annually training, from this we can understand that, the MFIs are on the right track in client follow-up and training.

Advantages and disadvantages of client saving

Both compulsory and voluntary savings are source of funds with less cost of capital. Easy of withdrawal and timely availability makes clients to favor voluntary saving. Compulsory saving is relatively a long period fund source compared to voluntary saving. Since there is no withdrawal from compulsory saving there will not be cash shortage problem which arise due to withdrawal. Compulsory savings can be used as a guarantee for loan.

Among the disadvantages of savings, cash shortage may happen due to significant amount of withdrawal from voluntary saving account. Most of the clients are not interested in compulsory saving.

4.3 Sustainability and profitability of Microfinance institution

The development of financially sustainable microfinance institutions requires that these institutions place particular emphasis on the integration into the local financial sector. Financial integration includes access to domestic debt, mobilizing saving and equity investment. The primary concern for such integration is access to fund growth. Having access to capital is a critical determinant of the ability of microfinance institutions to continue expanding client outreach (outreach breadth) and deepen services at a pace which permit them to meet the demand for their services and to fulfill their potential for poverty alleviation.

Profitability and efficiency are key indicators for financial viability of a microfinance institution. Financial viability of microfinance institution concentrates on operational self-sufficiency and financial self-sufficiency. Profitability considers AROA and AROE. Profitability and financial viability inevitably affect the sustainability of MFIs.

4.3.1 Adjusted Return on Asset (AROA) and Adjusted Return on Equity (AROE)

Return on equity (ROE) and return on assets (ROA) are the two of the most commonly used indicators to measure an institution‘s ability to continue in the future.

The return on asset (ROA) depicts how well an MFI has used its assets base to generate income or how well the institution is managing its asset to optimize profitability. It measures the return on funds (total assets, which includes both liabilities and equity) that are owned by the MFI. Subsidy adjusted return on assets takes into account only true profits. Adjusted return on assets measures an MFI‘s net profit or loss (including

adjustments) in relation to the MFI's total assets. In subsidy adjusted return on assets, all subsidies are deducted from nominal income and ROA adjusted for subsidies would be below the nominal ROA.

Return on equity is the single most common accounting measure of the financial performance of a private firm from the point of view of investors. It signals the rate of return earned on the invested equity and allows investors and donors to determine how their investment in a particular MFI compares against alternative investment. A subsidy adjusted ROE would compare not accounting profit but rather true profit with average equity. In reality, subsidy adjusted ROE are below their nominal values.

The negative AROA and AROE reflect the microfinance institutions are not profitable after adjustment for subsidy. Positive values of AROA and AROE indicate that the microfinance institutions have been able to perform as a profitable and sustainable microfinance.

Till 2005 with the exception of Eshet microfinance institution, all other MFIs reported negative AROA and AROE. In 2006 Eshet, Wisdom and OCSSC were profitable after adjustment. In following year only OCSSC was profitable and the remaining sampled MFIs reported negative figures. In 2008 except Wisdom microfinance which is at its break-even point after adjustment, the remaining all reported positive AROA and AROE. Most sampled microfinance institutions started reporting positive figures in 2008, from this one can understand that it has been difficult for Ethiopian microfinance institutions to continue operating without subsidy. After adjustment for key adjustment variables most MFIs have shown loss.

There are three internal factors that may contribute to profitability of microfinance institution.

1. High level of operating efficiency of microfinance institution contributes to their profitability.
2. High level of client deposit (saving) accompanied by high growth of loans disbursed also play a significant role in the profitability of the microfinance institutions.
3. High repayment rate of the microfinance contributes the profitability as well.

Conducive macroeconomic environment also contributes to the profitability of microfinance institutions.

MFIs	Sustainability and profitability of sampled MFIs							
Eshet	Year	2003	2004	2005	2006	2007	2008	2009
	Adjusted Return on asset	-5%	4%	3%	3.7%	-3%	0%	N/A
	Adjusted Return on equity	-9%	10%	9%	11.9%	-11%	1%	N/A
	Operational self-sufficiency	104%	155%	148%	160%	105%	101%	N/A
	Financial self-sufficiency	81%	120%	117%	123%	87%	62%	N/A
Gasha	Adjusted Return on asset	-16%	-12%	-2%	-11.2%	-7.8%	2%	1%
	Adjusted Return on equity	-23%	-25%	-4%	-27%	-17.7%	8%	6%
	Operational self-sufficiency	61%	73%	110%	94%	113.5%	112%	130%
	Financial self-sufficiency	41%	45%	91%	61%	73.3%	49%	107%
Wisdom	Adjusted Return on asset	-4%	-3%	-2%	1.1%	-7.8%	0%	-2%
	Adjusted Return on equity	-11%	-5%	-5%	2.6%	-19%	0%	-4%
	Operational self-sufficiency	89%	116%	107%	129%	99.1%	96%	107%
	Financial self-sufficiency	79%	88%	91%	105%	72.7%	56%	88%
Buussa Gonofa	Adjusted Return on asset	-5%	-5%	-9%	-1.3%	-0.8%	7%	7%
	Adjusted Return on equity	-5%	-6%	-12%	-2%	-1.6%	16%	15%
	Operational self-sufficiency	104%	100%	77%	125%	130%	145%	145%
	Financial self-sufficiency	87%	80%	64%	94%	96.9%	82%	120%
	Adjusted Return on asset	-7%	-1%	1.1%	0.4%	0.7%	4%	3%
	Adjusted Return on equity	-9%	-1%	2.1%	0.9%	2%	17%	14%
	Operational self-sufficiency	95%	152%	146%	182%	166.4%	153%	155%
OCSSC	Financial self-sufficiency	64%	95%	110.1%	104%	105.5%	63%	128%
	Adjusted Return on asset	-10.9%	-6%	-2%	-0.5%	-1.3%	2%	2%
	Adjusted Return on equity	-50.8%	-40%	-17.9%	-4.9%	-11%	23%	17%
	Operational self-sufficiency	88.7%	106%	111.6%	141%	122.2%	129%	102%
OMO	Financial self-sufficiency	49.1%	63%	82.6%	96%	89.6%	73%	84%

Table 4.4 Profitability and sustainability indicators of sampled MFIs

Source: AEMFI

4.3.2 Operational self-sufficiency and financial self-sufficiency

Financial viability refers to the ability of MFI to cover its costs with the earned revenue. The financial viability of microfinance institutions consists mainly in finding a balance between the profit gained from providing financial services and the costs of carrying them out. The two indicators of financial viability are operational self-sufficiency and financial self-sufficiency.

Operational self-sufficiency ratio requires microfinance institutions to cover their financial expenses, impairment losses on loan and operating expenses from their financial revenue. An operational self-sufficiency ratio greater than 100% depicts that an organization has reached the level of operational sustainability.

Financial self-sufficiency indicated the ability of microfinance institutions to earn enough revenue to cover both direct costs, including financial costs, provision for loan losses, an operating expense, and indirect costs, including the adjusted cost of capital. Adjusted cost of capital is the cost of maintaining the value of the equity relative to inflation. It is similar to operational self-sufficiency; however the ratio also includes inflation and subsidy adjustment. The effect of adjustment increases financial expenses and loan loss provisions. The financial self-sufficiency ratio below 100 percent implies that the MFI has not yet achieved financial breakeven.

The difference between financial self-sufficiency and operational self-sufficiency is, the financial self-sufficiency measures not only an institution‘s ability to cover its operating

costs but also its ability to maintain the value of its equity relative to inflation, and to operate and expand without subsidies.

The sampled microfinance institutions have a good performance in meeting the minimum standard of operational self-sufficiency, especially from 2005 onwards. The microfinance institutions can further improve their operational self-sufficiency by utilizing economies of scale and reducing costs related to administrative and personnel. Economies of scale is particularly applicable to large microfinance institutions. Except Eshet and OCSSC, all other microfinance institutions have reported below standard (100%) financial self-sufficiency throughout the study period. This shows for Ethiopian microfinance institution, it is difficult to operate and expand without subsidies.

Efficiency, regulation and sustainability Questionnaire result

Problem identification and ranking

In question number 8, the MFIs under consideration have identified the following problems and ranked them as; severe problems for the efficient operations include informal (unregistered and unregulated) lenders, availability of capital to lend to clients, changing the interest rate. Moderate problems that affect the operations of the industry include availability of skilled manpower in the microfinance area, client focus service provision and educational level of clients.

Factors affecting performance and sustainability of the sector

Factors that adversely affect the industry include bad weather condition, inflation, weak management system and shortage of loan funds. Factors that positively affect the industry

include high demand for the service, high agricultural productivity, good market for the product, enhanced capacity building and government saving policy.

Involvement of national bank

In question 12, all 100% of respondents replied the involvement of NBE as very important. As they have said, there must be a high regulation from the side of NBE because MFIs are financial institutions which affect the economic situation of the country either positively or adversely. Therefore, regulation of microfinance institution is a question of must.

4.4 Malmquist index model results

In malmquist index all indices are relative to the previous year. Hence, in this study the malmquist index results begin with year 2004 rather than from the base year. In short, 2003 is considered as the base year.

Changes in the total factor productivity of the microfinance institutions can be estimated by the values of technical efficiency and technological change indices. This is because the total factor productivity is derived from multiplying the technical efficiency change and the technological change. The productivity improvements or otherwise, hence can be derived as a result of efficiency gains or losses, technological progress or retrogress or both. The overall efficiency change on the other hand is the product of pure technical efficiency and scale efficiency change.

Technological progress results from the advanced technology embodied in capital and is represented by the outward shifts in the production frontier over time. Technical

efficiency on the other hand, results from the efficient use of technology and inputs (due to the accumulation of knowledge in the learning process, diffusion of technology, improved managerial practice, etc.) and is represented by movements towards the best practice frontier (SEAAIR, 2007).

4.4.1 Production approach input oriented Malmquist index model results

The malmquist productivity indices have been compared for productivity of sampled microfinance institution. Table 4.4 below depicts the averaged and decomposed results of productivity of sampled microfinance institution under input oriented production approach.

Malmquist index summary of annual means of sampled MFIs					
Year	EFFCH	TECHCH	PECH	SECH	TFPCH
2004	0.936	1.111	0.973	0.962	1.039
2005	0.983	0.970	1.018	0.965	0.954
2006	1.135	0.708	1.112	1.020	0.804
2007	1.070	0.853	0.964	1.109	0.913
2008	1.135	0.897	1.048	1.083	1.018
2009	0.807	1.210	0.847	0.953	0.977
Mean	1.004	0.944	0.990	1.014	0.947

Table 4.5 malmquist index summary of annual mean of sampled MFIs input oriented Production approach

EFFCH= Technical Efficiency Change index

TECHCH= Technological Change index

PECH= Pure Technical Efficiency Change index

SECH= Scale Efficiency Change index

TFPCH= Total Factor Productivity Change index

TFP is a geometric mean of two components, i.e., technical efficiency change and technological change, any changes in the productivity growth could be attributable to either these components. As can be observed from the above table (table 4.4), the total factor productivity change (TFPCH) in performance of sampled microfinance institutions' production shown a negative growth of 5.3% (0.947-1*100%) during the period 2004-2009. The decomposition of total factor productivity change showed that the mean technological change declined by 5.6% where as mean technical efficiency change slightly increased by 0.4% during the sample period.

Malmquist index summary of sampled MFIs' mean					
MFIs	EFFCH	TECHCH	PECH	SECH	TFPCH
Eshet	1.000	0.905	1.000	1.000	0.905
Gasha	1.130	0.895	1.062	1.063	1.011
Wisdom	0.933	0.969	0.924	1.010	0.904
Buussa Gonofa	1.000	0.806	1.000	1.000	0.806
OCSSC	0.970	1.115	0.961	1.009	1.082
OMO	1.000	1.002	1.000	1.000	1.002
Mean	1.004	0.944	0.990	1.014	0.947

Table 4.6 malmquist index summary of sampled MFIs' mean approach input oriented Production

The above table shows malmquist index of sampled microfinance institutions' productivity mean. The highest growth rate in total factor productivity change has been recorded by OCSSC (8.2%) followed by Gasha microfinance (1.1%) and OMO microfinance (0.2%). The reasons for the growth in the total factor productivity change differ among these three microfinance institutions. OCSSC's and OMO microfinance's growth was solely attributed to technological progress where as the change for Gasha microfinance was observed due to technical efficiency gain. The other three microfinance institutions, namely, Eshet, Wisdom and Buussa Gonofa have shown a declining trend in growth of productivity.

The highest technical efficiency change was observed in case of Gasha microfinance (13%), while Eshet, Buussa Gonofa and OMO microfinance institutions a constant efficiency during the sample period. Wisdom microfinance and OCSSC recorded a declining technical efficiency change.

OCSSC has reported the highest technological change (11.5%) which would have a crucial impact on the total factor productivity change. OMO microfinance followed with 0.2% technological change. The remaining four microfinance institutions reported depreciation in technological change.

With regard to pure technical efficiency and scale efficiency Eshet, Buussa Gonofa, and OMO microfinance institutions shown a constant efficiency. The highest pure technical and scale efficiencies was observed in case of Gasha microfinance institution (6.2% and 6.3% respectively).

4.4.2 Intermediation approach input oriented Malmquist index model results

In this case malmquist productivity indices have been compared for productivity of microfinance institutions‘ intermediation capacity. Table 4.6 shows the annual averaged and decomposed results of productivity of microfinance institutions under the intermediation approach.

Malmquist index summary of annual means of sampled MFIs					
Year	EFFCH	TECHCH	PECH	SECH	TFPCH
2004	0.868	1.457	0.984	0.882	1.265
2005	1.098	1.295	0.923	1.190	1.422
2006	0.969	1.020	1.003	0.966	0.988
2007	1.015	1.165	0.959	1.059	1.183
2008	0.984	1.500	1.077	0.913	1.476
2009	0.856	1.166	0.948	0.903	0.998
Mean	0.962	1.256	0.981	0.980	1.207

Table 4.7 malmquist index summary of annual mean of sampled MFIs input oriented Intermediation approach

The total factor productivity change in performance of sampled microfinance institutions during the study period was averaged to 20.7%. This total factor productivity change can be decomposed into technological change and technical efficiency change. During the period the mean technological change was increased by 25.6% while the mean technical

efficiency change declined by 3.8%. The average total factor productivity growth was found to be driven mainly by adoption of new technology or technological progress rather than gains in efficiency improvement.

Malmquist index summary of sampled MFIs‘ mean					
MFIs	EFFCH	TECHCH	PECH	SECH	TFPCH
Eshet	0.945	1.225	1.000	0.945	1.158
Gasha	0.903	1.296	1.000	0.903	1.170
Wisdom	0.887	1.262	0.911	0.973	1.119
Buussa Gonofa	1.011	1.241	0.958	1.055	1.254
OCSSC	1.000	1.286	1.000	1.000	1.286
OMO	1.034	1.225	1.021	1.012	1.267
Mean	0.962	1.256	0.981	0.980	1.207

Table 4.8 malmquist index summary of sampled MFIs' mean input oriented intermediation approach

As can be observed from table 4.7, the highest productivity growth rate was reported by OCSSC (28.6) followed by OMO microfinance institution (26.7%) and Buussa Gonofa microfinance (24.5%). In the intermediation approach all sampled microfinance institutions shown an increasing trend in productivity growth and during the period the minimum productivity growth rate was 11.9%.

The highest technological change was observed in case of Gasha microfinance (29.6%) followed by OCSSC with 28.6%. Gasha has shown a declining technical efficiency change and scale efficiency change with a constant efficiency in pure technical case. The

declining trend in these two efficiency score has made Gasha to report 17% productivity growth, where as OCSSC has shown a constant technical, pure technical and scale efficiencies. The technological change for OCSSC was 28.6% which is equal to total factor productivity change. Therefore, the growth in total productivity would be attributed to technological change. Wisdom microfinance has the third highest technological change but it has shown a declining trend in technical, pure technical and scale efficiency. Only Buussa Gonofa and OMO have shown an increasing trend in technical efficiency.

4.4.3 Production approach output oriented Malmquist index model results

As indicated in table 4.8, a decline of 5.3% in the average total factor productivity was observed from sampled microfinance institutions during the period 2004-2009. This decline in total factor productivity was the result of a slight gain (0.4%) in technical efficiency and decline in technological change of 5.6%. total factor productivity is the product of technical efficiency change (1.004) and technological change (0.944).

Malmquist index summary of annual means of sampled MFIs					
Year	EFFCH	TECHCH	PECH	SECH	TFPCH
2004	0.936	1.111	0.977	0.958	1.039
2005	0.983	0.970	0.950	1.035	0.954
2006	1.135	0.708	1.064	1.066	0.804
2007	1.070	0.853	1.137	0.941	0.913
2008	1.135	0.897	1.021	1.112	1.018
2009	0.807	1.210	0.922	0.875	0.977
Mean	1.004	0.944	1.009	0.995	0.947

Table 4.9 malmquist index summary of annual mean of sampled MFIs output oriented production approach

As shown in table 4.9 below; three out of six microfinance institutions had positive increase in their total factor productivity. The highest total factor productivity among sampled microfinance institutions was observed in case of OCSSC followed by Gasha and OMO microfinance institutions. OCSSC recorded an 8.2% increase in total factor productivity; this increase in productivity growth was due to 11.5% in technological progress and a 1.1% gain in pure technical efficiency. With regard to technical and scale efficiency changes, OCSSC reported a declining trend during the sample period.

The second highest total factor productivity was observed in case of Gasha microfinance (1.1%). During the period Gasha reported retrogress in technological change and has shown gains of 13%, 7.1% and 5.5% in technical, pure technical and scale efficiencies. It

is the combination of these technical scores that made Gasha to enjoy positive factor productivity growth during the period.

The third highest or positive factor productivity belongs to OMO microfinance with 0.2%. OMO‘s positive total factor productivity was solely due to the technological progress of 0.2%. OMO reported constant efficiency in other efficiency scores.

Malmquist index summary of sampled MFIs‘ mean					
MFIs	EFFCH	TECHCH	PECH	SECH	TFPCH
Eshet	1.000	0.905	1.000	1.000	0.905
Gasha	1.130	0.895	1.071	1.055	1.011
Wisdom	0.933	0.969	0.977	0.955	0.904
Buussa Gonofa	1.000	0.806	1.000	1.000	0.806
OCSSC	0.970	1.115	1.011	0.960	1.082
OMO	1.000	1.002	1.000	1.000	1.002
Mean	1.004	0.944	1.009	0.995	0.947

Table 4.10 malmquist index summary of sampled MFIs’ mean output oriented production approach

The remaining three microfinance institutions, namely Eshet, Wisdom and Buussa Gonofa reported negative total factor productivity. Except Wisdom which reported retrogress in technology and loss in technical efficiency resulted in negative total factor productivity growth, the remaining two‘s negative productivity was solely due to technological retrogress.

4.4.4 Intermediation approach output oriented Malmquist index model results

A positive averaged mean of 20.7% in total factor productivity was reported during the period from output oriented intermediation approach (as indicated in table 4.10). This growth in total factor productivity is backed by technological progress occurred during the period. In the same period loss in technical efficiency change of 3.8% was registered.

Malmquist index summary of annual means of sampled MFIs					
Year	EFFCH	TECHCH	PECH	SECH	TFPCH
2004	0.868	1.457	0.910	0.954	1.265
2005	1.098	1.295	0.920	1.193	1.422
2006	0.969	1.020	0.982	0.987	0.988
2007	1.015	1.165	1.018	0.997	1.183
2008	0.984	1.500	1.084	0.908	1.476
2009	0.856	1.166	0.947	0.903	0.998
Mean	0.962	1.256	0.975	0.986	1.207

Table 4.11 malmquist index summary of annual mean of sampled MFIs output oriented Intermediation approach

The loss in technical efficiency change may rise due two factors or can be decomposed into pure technical efficiency change and scale efficiency change.

As shown in table 4.11, all sampled microfinance institutions reported positive total factor profitability from their intermediation business service. This impressive

performance is associated with the technological progress observed during the period. The highest total factor productivity was recorded by OCSSC (28.6%). This total factor productivity efficiency score was merely due to the technological progress occurred during the study period. OMO microfinance has the second highest total factor productivity growth (26.7%), this growth was resulted from 25.5% in technological progress and 3.4% technical efficiency gain. Technical efficiency gain can be further decomposed as 2.5% pure technical and 0.9% scale efficiency gains. Buussa Gonofa has the third highest total factor productivity (25.4%). Buussa Gonofa's total factor productivity growth was backed by 24.1% change in technological progress and 1.1% gain from technical efficiency. Eshet, Gasha, and Wisdom microfinance institutions have also reported more than 11% total factor productivity growth but their growth was associated only to the technological progress observed during the period. The technical efficiency changes of these three microfinance institutions have shown a declining trend during the study period.

Malmquist index summary of sampled MFIs‘ mean					
MFIs	EFFCH	TECHCH	PECH	SECH	TFPCH
Eshet	0.945	1.225	1.000	0.945	1.158
Gasha	0.903	1.296	1.000	0.903	1.170
Wisdom	0.887	1.262	0.894	0.992	1.119
Buussa Gonofa	1.011	1.241	0.938	1.077	1.254
OCSSC	1.000	1.286	1.000	1.000	1.286
OMO	1.034	1.225	1.025	1.009	1.267
Mean	0.962	1.256	0.975	0.986	1.207

Table 4.12 malmquist index summary of sampled MFIs' mean output oriented intermediation approach

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

The role of microfinance as a tool to fight against poverty by providing financial services to the poor and microenterprises has become an accepted principle. However, this key role can be accomplished only if the microfinance institutions are sustainable .i.e., can operate in the long run without subsidy.

Performance of microfinance institutions is analyses from two perspectives; first, an evaluation of historical performance based on analysis of financial statements and second, an assessment of their potential to survive in the long-run. Performance is the progress toward the mission of development finance. This mission is to make the lives of the poor people better. MFIs do this by producing outreach, loans and deposits used by the poor. Sustainability is the ability to repeat performance in the future.

Currently there are about 30 microfinance institutions in the country under the membership of AEMFIs. These MFIs make-up more than 2.4 million clients with more than 6.4 billion gross loan portfolio at the end of 2009. Though the outreach performance of Ethiopian MFIs is increasing during the study period, only 20% of the demand is met. The main objective of this study is to examine the institutional performance and sustainability of selected microfinance institutions namely, Eshet, Gasha, Wisdom,

Buussa Gonofa, OCSSC and OMO. The sampling design of the study was single stage since there is ease access to the population and to derive the sample. MBB classifies MFIs as small, medium and large based on their gross loan portfolio. Therefore, a simple random sampling technique was applied to derive two representatives MFIs from each category.

The study is a concurrent embedded strategy of mixed research methods. This approach is applicable when the forms of data are different in size and type. In this study much weight is assigned to quantitative data and qualitative data collected through questionnaire were used as a subsidiary to the quantitative data.

Data collected were analyzed using different financial performance and sustainability indicators and data envelopment analysis models were applied to evaluate the trend in performance and sustainability of MFIs considered in this particular study. Data envelopment analysis based malmquist total factor productivity index model is used to derive the efficiency scores of each MFI. The study considered both the production and intermediation approaches under input and output oriented measurement. Since the objective of the study is to examine the institutional performance and sustainability of MFIs, the following findings are identified and the respective conclusions are made.

5.2 Conclusion

The aim of this study is to examine the institutional performance and sustainability of MFIs considered in the study. Conventional performance and sustainability performance indicators and DEA based input and output oriented malmquist total factor productivity index are used to evaluate the institutions and the following findings are identified.

The outreach performance of MFIs considered in the study is increasing over the study period. From small MFIs Eshet microfinance is dominating its counterpart Gasha in terms of outreach breadth and depth measured in terms number of active borrowers and gross loan portfolio. With regard to saving mobilization, Gasha overwhelmingly dominated Eshet microfinance. Comparable to its outreach performance Eshet reported the lowest saving. This is due to Eshet concentrated only on voluntary saving. Compulsory saving teaches savers financial discipline and makes them qualify for credit by convincing the institution through good saving record. Eshet missed this point and allowed clients without good saving record which has made it to look good in outreach breadth and outreach depth performance. Eshet also missed the source of fund with low cost of capital which would be used as a base for sustainable outreach performance. Eshet is not in a position to recover from cash shortage if significant amount of withdrawals are made from voluntary saving.

Both Buussa Gonofa and Wisdom MFIs have relatively the same outreach breadth and depth performance. The significance difference was observed in saving mobilization potential. Buussa Gonofa has employed only compulsory saving. Compulsory saving

can facilitate liquidity management and motivate clients to repay their loan but it has no contribution directly to the clients‘ self-financing potential.

OCSSC and OMO MFIs have relatively the same outreach breadth and depth performance except in the last two years the growth of OMO microfinance was overwhelmingly above that of OCSSC. Both institutions have the same trend in saving mobilization. The economies of scale played a significant role in their performance.

As respondents responses justify, most microfinance institutions prefer grants as primary source of funds followed by retained earnings and member savings. Different researchers suggest that relying on grant as primary source is not advisable because once the grant dried-up it is difficult for MFIs to operate sustainability. Most MFIs under review consider and incorporate operating area selection in their strategic plan on the basis of poverty as criteria. In line with this, the institutions measure poverty level of their clients based on per-capita house hold income. Most microfinance institutions identify existing and potential clients‘ needs through formal group discussion and interviews.

Microfinance institutions under review cover their operational cost through revenue generated by their financial services. But most MFIs are not able to meet the minimum standards of FSS ratio. Therefore, for most MFIs it is difficult to operate and expand without subsidy. Weak management performance, bad weather condition, inflation and shortage of funds are the main problems that affect the performance and sustainability of these organizations.

In the study the researcher identified that, technological change has higher value relevance than technical efficiency gain. By decomposing technical efficiency the researcher also observed pure technical efficiency gain has a substantially higher explanatory power than scale efficiency gain.

The researcher also found that the intermediation services which is the responsibility of the MFIs to transfer funds from surplus groups such as from savers and donors to the deficit groups particularly borrowers or investors are more productive than the production responsibility of MFIs which considers the institutions as producers of deposits and loans. During the study period the institutions reported average productivity growth of 20.7% under both input and output oriented intermediation approach. In both cases the shift in total factor productivity was observed due to technological progress. Under the production approach in both input and output oriented measures an average productivity deterioration of 5.3% was identified. This decline in productivity was the result of 5.6% retrogresses in technology, though there was a marginal 0.4% gain in technical efficiency.

The annual mean of production approach input oriented malmquist index identified 5.3% decrease in total factor productivity. This is associated with a 5.6% decline in technology and a marginal mean technical efficiency gain of 0.4%.

The production approach input oriented MFIs‘ mean identified three positive growths in total factor productivity. An 8.2% productivity growth in case of OCSSC and 0.2% of OMO resulted from technological progress of 11.5% and 0.2% respectively. Gasha‘s

productivity growth of 1.1% is backed by 13% technical efficiency gain which can be decomposed as 6.2% pure technical efficiency gain and 6.3% scale technical gain.

The annual mean of sampled MFIs under output oriented production approach revealed a 5.3% decline in average productivity during the study period. This decline productivity was observed due to a marginal (0.4%) gain in technical efficiency and a 5.6% technological retrogress.

Under output oriented production approach out of six three MFIs reported positive total factor productivity growth. OCSSC's growth of 8.2% was due to 11.5% technological progress and 1.1% pure technical efficiency gain. Gasha's growth was resulted from 13%, 7.1% and 5.5% in technical, pure technical and scale efficiency gains.

Under input oriented intermediation approach the annual mean of sampled MFIs have shown 20.7% growth in total factor productivity. This growth was the result of a 25.6% technological progress and a 3.8% loss in technical efficiency.

Under output oriented intermediation approach, all MFIs scored the same productivity scores as the input oriented except some changes in pure technical and scale efficiency scores.

5.3 Recommendation

This is not a definitive study of Microfinance Institution performance in terms of efficiency and productivity measures. Many factors could influence the chosen performance measures including data quality and non-discretionary variables in terms of MFIs‘ characteristics and differences in the operating environment. However, the results from this study do provide preliminary indicators on the performance of MFI‘s considered into account in terms of efficiency and productivity measures. Therefore the concerned MFIs can use the output of the study too see their efficiency level in terms of the variables embraced in the study.

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Appendix 1

Stakeholder	Goal to maximize	Question asked	Opportunity cost	Time frame		Measure
				Birth onward	Now onward	
1. Society	Benefits-costs of all people in the world	Are the gains from MFIs more than its costs?	Gain from best other use of public funds	Yes	Yes	Benefit-Cost Analysis
2.Poor customers	Benefits-costs of poor customers	Are the gains of using MFIs more than the costs?	Gain from best other source of loans/deposits.	No	Yes	Repeated use
3. The poor	Benefits-costs of the poor	Is MFIs the best way to help the poor?	Return to the poor in best other development project	Yes	Yes	Cost-effect. analysis
4. Donors	Benefits to the poor from microfinance	How much microfinance is sparked by donor funds?	Return to the poor in best other MFO	Yes	Yes	Market leverage
5. Workers	Life of MFIs	Would MFIs shrink if donors left?	Inflation and cost to MFIs of market debt	No	Yes	Financial Self-sufficiency.
6. Investors	Profit	Will MFIs earn more than a firm of like risk?	Return on best investment of like risk	Yes	Yes	Private profitability

Table2.1: Characteristics of the point of view of the six groups of stakeholders in MFIs

Source: Schreiner, 1997

Appendix 2

Outreach performance of small MFIs								
Year		2003	2004	2005	2006	2007	2008	2009
No. of active borrowers	Eshet	6,540	9,728	12,432	24,490	27,742	27,268	24,836
	Gasha	6,423	8,121	9,953	8,333	11,953	12,934	12,851
	Average	4,760	7,121	8,916	7,777	10,611	8,354	5,757
Adjusted gross loan portfolio	Eshet	3,826,461	7,343,034	11,606,030	24,688,837	31,674,672	36,823,956	33,102,983
	Gasha	2,751,235	5,772,922	13,706,128	11,513,122	13,185,831	15,725,404	14,503,934
	Average	3,013,736	4,788,359	8,421,662	7,962,082	10,720,093.50	9,803,823	8,443,624.50
Total saving	Eshet	456,596	850,800	1,395,648	2,433,686	4,624,999	5,423,674	6,125,960
	Gasha	2,110,068	3,212,941	5,172,149	4,873,299	4,777,282	4,959,089	4,732,808
	Average	1,053,460	1,700,635	2,579,970	2,051,124	N/A	2,566,303	1,675,153

Table 4.1 Outreach performance of small MFIs *Source: AEMFI*

Outreach performance of Medium MFIs								
Year		2003	2004	2005	2006	2007	2008	2009
No. of active borrowers	Buussa Gonofa	5,999	5,571	10,117	18,217	31,150	38,921	42,146
	Wisdom	12,151	19,912	27,388	44,940	48,168	56,735	56,302
	Average	10,664	14,649	17,085	24,352	30,007	32,032	21,877
Adjusted gross loan portfolio	Buussa Gonofa	2,133,046	2,116,415	7,806,587	10,177,869	19,830,265	31,368,645	48,928,779
	Wisdom	11,626,351	18,710,578	26,780,922	46,666,837	60,175,252	82,307,145	95,822,168
	Average	7,650,884	14,776,219.50	14,852,960	22,358,360	29,998,579	38,274,165	29,527,070
Total saving	Buussa Gonofa	458,880	749,178	1,195,132	2,375,425	4,331,767	7,398,881	8,647,584
	Wisdom	4,034,453	5,633,654	7,452,658	12,009,936	16,392,445	20,372,150	21,620,836
	Average	2,760,366	3,618,354	4,212,245	6,297,521	N/A	11,362,943	7,587,723

Table 4.2 Outreach performance of medium MFIs *Source: AEMFI*

Outreach performance of Large MFIs								
Year		2003	2004	2005	2006	2007	2008	2009
No. of active borrowers	OCSSC	62,150	86,998	125,782	181,403	263,971	414,823	364,584
	OMO	70,590	75,439	82,400	115,999	156,975	212,986	296,638
	Average	161,854	212,583	222,974	256,364	306,800	378,037	225,221
Adjusted gross loan portfolio	OCSSC	63,397,462	87,981,405	136,073,280	216,589,246	396,423,389	703,366,490	734,540,219
	OMO	25,319,880	30,807,793	67,882,984	104,116,906	179,654,227	418,684,029	462,403,284
	Average	120,368,882	201,362,544	288,361,542	371,079,822	566,998,026	873,171,171	524,130,033
Total saving	OCSSC	19,469,477	28,477,424	43,485,228	80,524,658	139,229,781	245,316,989	358,951,066
	OMO	10,787,126	25,969,672	34,908,949	50,210,683	35,757,852	132,945,564	162,552,956
	Average	75,563,073	90,255,380	109,940,605	147,772,937	N/A	333,718,844	242,517,428

Table 4.3 Outreach performance of large MFIs

Source: AEMFI

Appendix 3

ADDIS ABABA UNIVERSITY

SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION

Department of Accounting and Finance

Dear respondents:

This is a questionnaire designed to collect data on the performance and sustainability of Microfinance Institutions which will be used as an input for a thesis in a partial fulfillment of Msc in Accounting and Finance. Your genuine response is solely used for academic purpose and the data will be treated utmost confidentiality. Therefore, your kindly cooperation is appreciated in advance.

NB. Dear respondents you can use English, Amharic or Afan Oromo as appropriate for writing in the spaces.

Respondents' general profile:

Educational background (Put a tick (√) mark in the box):

☐ 12 or 10 complete

☐ Degree

☐ Certificate

☐ Masters and above

☐ Diploma

Work experience (Put a tick (√) mark in the box):

☐ Below two years ☐ Six to ten years

☐ Two to five years ☐ Above ten years

1. Please indicate the level of importance of the below listed sources of funds or finance for your organization and rank them using the following criteria (put the numbers in boxes in front of the items listed).

   1= for less important
   2= for moderately important
   3= for most important

☐ Retained earning

☐ Grant

☐ Members saving

☐ Others (if any give rank and please specify)----------

---

2. Does your organization select operating areas based on criteria of poverty? Please tick (√) in the box?

   ☐ No explicit criteria for operation area

   ☐ Considers, but not as a primary criteria

   ☐ Is one of the most important criteria regulated in the strategic planning of the MFI

3. Does your organization measure the poverty levels of its clients? Please tick (√) in the box?

☐ Yes ☐ No

If you say _yes‘ your organization useswhich one of the following method; Please tick (√) in the box?

☐ Per capita house hold income

☐ Per capita household expenditure

☐ Employment creation

☐ Others (please specify)----------

If you say _No‘, does the MFI plan to do so in the near future? ----------

---

---

4. Does your organization provide loans with alternative forms of collateral (for example collateral backed by assets acquired with the loan)? Please tick (√) in the box

☐ Yes ☐ No

If you say _yes‘ what benefits do you expect from the client as well as from the organization point of view? ----------

---

If you say _No‘ is there any plan to do so in the near future? ----------

---

---

5. Does your organization provide loans specifically tailored to clients‘ productive needs such as agricultural loans, microenterprise loans, or long term loans?

☐ Yes ☐ No

6. How does your organization identify the needs of its clients and its potential clients?

☐ There is no specific procedure to identify the needs of existing and potential clients

☐ Informally through field staff interactions

☐ Formally through focus group discussions and interviews with clients

7. Is your organization providing financial services expected to eventually cover its costs with operating revenues from clients?

☐ Yes ☐ No

If you say _Yes‘ how often the MFI meet this goal? ----------

---

---

8. Please tick(√) for the items in the following box if the items are problems to your organization and put(×) if the items are not problems to your organization and rank 1-4 based the following scale.

4= the factor is a severe problem

3= the factor is a moderate problem

2= the factor is a minor problem

1= the factor is not a problem

You can put (√) or (×) in one of the cell from 1-4 for ranking of the factors

Factor	√	×	1	2	3	4
1. Lack of information about client						
2. Informal lenders(unregistered and unregulated lenders)						
3. Educational level of clients						
4. Changing of the interest rate as possible						
5. Delivering what the client want(client focus service provision)						
6. Availability of skilled manpower in the microfinance area						
7. Availability of capital to lend to client						
8. Competition from other MFI						
9. Client drop-out						

9. Does your organization offer to clients training aim at improving capability of using the loan as efficient as expected?

☐ Yes ☐ No

If you say _Yes', how often or regularly you do this----------

If you say _No' is there any plan to so in the near future----------

---

10. Could you mention factors that affect performance and sustainability of microfinance industry (both adversely and positively)?

    Factors adversely affecting the industry

    1. ---
    2. ---
    3. ---

    Factors positively affecting the industry

    1. ---
    2. ---
    3. ---

11. Could you list the apparent advantages and disadvantages of voluntary and compulsory savings from your organization point of view?

    Advantages of voluntary saving

    1. ---
    2. ---
    3. ---

Disadvantages of voluntary saving

1. ----------
2. ----------
3. ----------

Advantages of compulsory saving

1. ----------
2. ----------
3. ----------

Disadvantages of compulsory saving

1. ----------
2. ----------
3. ----------

12. How do you consider the involvement of National Bank of Ethiopia in regulating the Microfinance industry and the impact is has on outreach performance in expansion of financial services for the poor?

☐ Sometimes important ☐ Important ☐ Very important

In any of the above case, please give some points the way it impact with reference to the industry and the economy as a whole.

Thank you for your kindly cooperation!!!!

Declaration

I the undersigned, declare that this thesis is my original work, has not been presented for any other university and that all sources of materials used for the thesis have been duly acknowledged.

Declared by:

Name: Yitay Elema

Signature _____

Date _____

Confirmed by Advisor:

Name: Dr. Ulanghatan

Signature _____

Date _____

Place and date of submission: Addis Ababa University, June 2011