

**Microfinance Repayment Performance and Related Issues in
Microfinance Institutions Model: An Empirical Examination
in the Brahmaputra Valley of Assam, India**

**(A Thesis Submitted to Indian Institute of Technology Guwahati in Partial
Fulfillment of the Requirements for the Degree of Doctor of Philosophy)**



Submitted By

**Gopal Kumar Sarma
Roll No.: 06614101**

**Department of Humanities and Social Sciences
Indian Institute of Technology Guwahati
Guwahati 781039
July 2013**



DEDICATION

This dissertation is dedicated to *my family members* and especially

to

Devasmita

&

Samriddhi





Indian Institute of Technology Guwahati
Department of Humanities and Social Sciences
Guwahati – 781039
Assam, India

DECLARATION

I do hereby, declare that the matter in this thesis entitled “*Microfinance Repayment Performance and Related Issues in Microfinance Institutions Model: An Empirical Examination in the Brahmaputra Valley of Assam, India*”, is the result of investigations carried out by me in the Department of Humanities and Social Sciences, Indian Institute of Technology Guwahati, Guwahati, India under the guidance of Prof. Saundarjya Borbora.

In keeping with the general practice of reporting observations, due acknowledgements have been made whenever the work described is based on the findings of other investigators.

Gopal Kumar Sarma
Indian Institute of Technology Guwahati
July, 2013





Indian Institute of Technology Guwahati
Department of Humanities and Social Sciences
Guwahati – 781039
Assam, India

CERTIFICATE

This is to certify that Mr. Gopal Kumar Sarma has been working under my supervision since July 26, 2006. I am forwarding his thesis entitled “*Microfinance Repayment Performance and Related Issues in Microfinance Institutions Model: An Empirical Examination in the Brahmaputra Valley of Assam, India*”, being submitted for the award of Ph.D degree of this institute.

I certify that he has fulfilled all the requirements according to the rules of this institute, and regarding work embodied in his thesis has not been submitted elsewhere for a degree.

Prof. Saundarjya Borbora
Supervisor

Department of Humanities and Social Science
Indian Institute of Technology Guwahati

July, 2013



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(GOPAL KUMAR SARMA)

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LIST OF ABBREVIATIONS

AE	Allocative Efficiency
AHDR	Assam Human Development Report
AMA	ASCA Management Agency
ANOVA	Analysis of Variance
AROE	Average Return on Equity
ARORA	Average Rate of Return on Asset
ASCA	Accumulating Savings and Credit Association
ATL	Agricultural Transportation Loan
BERI	Break Even Rate of Interest
BPL	Below Poverty Line
BPR	The Bank Perkreditan Rakyat
BRAC	Bangladesh Rural Advancement Committee
BRI	Bank Rakyat Indonesia
CAGR	Compounded Annual Growth Rate
CCACN	Central de Cooperativas de Ahorro y Credito Financieras de Nicaragua
CDR	Credit Deposit Ratio
CGAP	Consultative Group to Assist Poor
C_mRR	Cumulative Repayment Rate
CREP	Cummulative Repayment
C_rRR	Current Repayment Rate
CSO	Central Statistical Organisation
CSP: RGVN	Credit and Savings Programme : Rashtriya Grameen Vikash Nidhi
DEA	Data Envelopment Analysis
DFI	Development Finance Institution
DMU	Decision Making Unit
EBS	Equity building Society
EDL	Entrepreneurship Development Loan
EE	Economic Efficiency
FSS	Financial Self Sufficiency
GDP	Gross Domestic Product

GO-NGO	Government Organisation- Non-Government Organisation
GSDP	Gross State Domestic Product
HDI	Human Development Index
ICT	Information and Communication Technology
ILF	Irish Loan Fund
IOI	Incidence of Indebtedness
IRnet	International Remittance Network
JLG	Joint Liability Group
JLL	Joint Liability Lending
LFPR	Labour Force Participation Rate
MABS	Microenterprise Access to Banking Service
M-CRIL	Microcredit Rating International Limited
MFI	Micro Finance Institution
NABARD	National Bank for Agriculture and Rural Development
NBFC	Non Banking Financial Company
NBFI	Non-Banking Financial Intermediary
NER	North Eastern Region
NGO	Non Governmental Organisation
NGOAB	NGO Affairs Bureau
NPA	Non-Performing Asset
NSDP	Net State Domestic Product
OLS	Ordinary Least Squares
OSS	Operational Self Sufficiency
OTRR	On Time Repayment Rate
PAR	Portfolio at Risk
PKSF	Palli Karma Sahayak Foundation
RBI	Reserve Bank of India
RGVN (NE)	Rashtriya Grameen Vikash Nidhi (North East)
ROSCA	Rotating Savings and Credit Association
SBICs	Small Business Investment Companies
SBLP	Self Help Group Bank Linkage Programme
SDI	Subsidy Dependence Index

SDR	Subsidy Dependence Ratio
SEWA	Self Employed Women's Association
SFA	Stochastic Frontier Analysis
SHG	Self Help Group
SPCI	State Per Capita Income
TE	Technical Efficiency
WFPR	Work Force Participation Rate
WPR	Worker Population Ratio





ABSTRACT

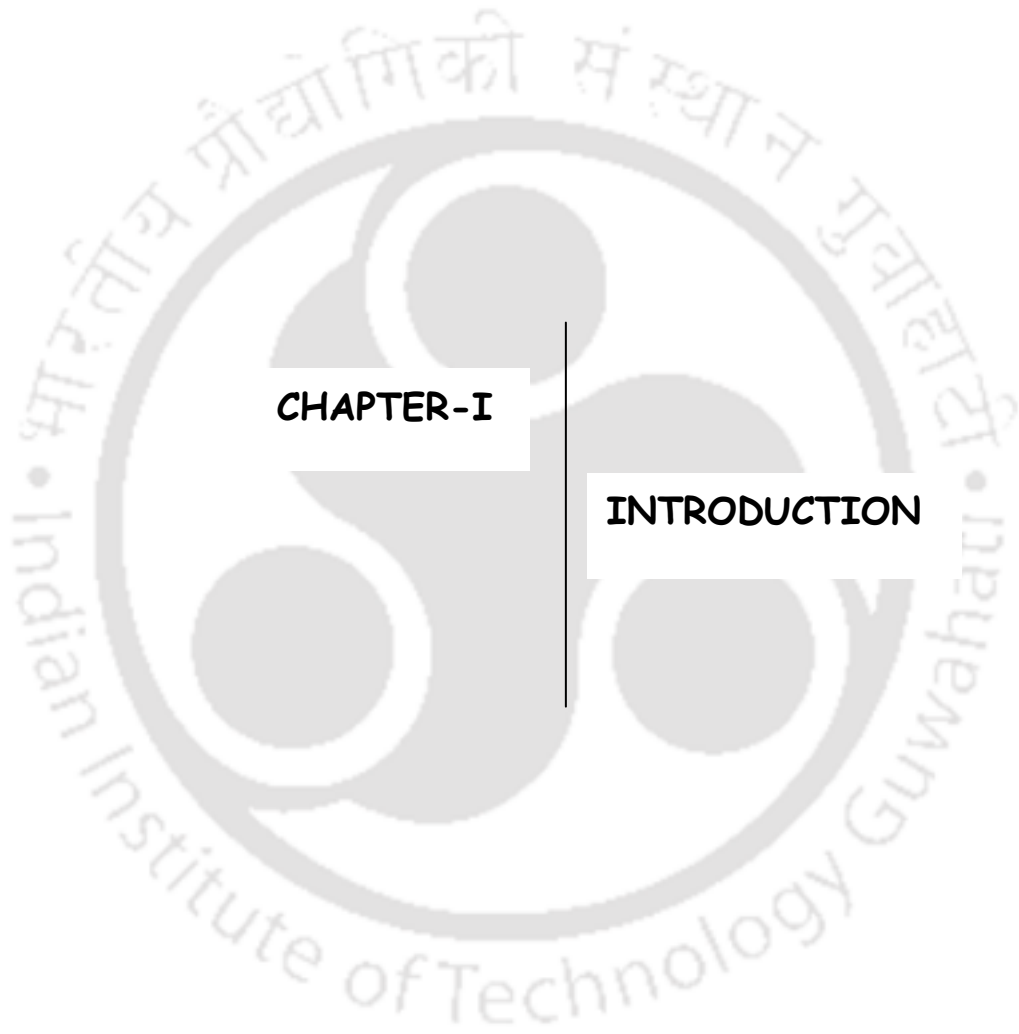
The success of microfinance in Bangladesh shows how joint liability lending contract helps in mitigating the constraints in the way to finance the un-banked but productive poor and thus making Grameen model a successful replication all over the world. The most common reason for the extensive practice of microfinance around the world is due to reported high repayment rate along with large outreach of the programme. The mechanisms of group lending, such as peer pressure, peer monitoring, screening and group solidarity are hyped as instruments to attain considerable repayment rates. Moreover, some studies indicated the role of other factors related to household and local economic environment characteristics in enhancing repayment rates. However, repayment rates are radically changed from one program to another, signifying an intrinsic instability in the financial technology.

The significance of a highly performed lending innovation such as JLL is multifaceted and Zeller and Meyer (2002) termed the core issues as *critical triangle of microfinance*, where it is based on the assumption of achieving high outreach, financial sustainability and high impact. From institutional perspective, financing poor is a risky affair in the absence of physical and financial contract. Therefore sustainability of the programme emerges as a grave issue in view of high outreach and exerts implication for repayment performance. Besides, efficiency and impact also has an implication in comprehension of sustainability in view of the repayment performance.

In view of the growing importance of microfinance as a tool of poverty reduction, the present study intends to shade light on the issues of outreach, sustainability, efficiency, impact and repayment. In this endeavour, the study uses both primary and secondary

data, where primary data is gathered from a survey of 187 borrowing groups comprising 414 borrowing members and 155 non-borrowing members accomplished in the Brahmaputra Valley of Assam, India during the period 2009 and 2012. The study uses a varied methodology for each issue and basically adopts OLS and TOBIT regression analysis as appropriate econometric tool.

The results indicate that in view of increasing outreach, achieving financial sustainability is a possible goal. In this connection interest rate has possibly a policy implication on sustainability, because, when market rate of interest reduces, tendency of a MFI moves for non- subsidized fund. However, estimation regarding efficiency confirms that repayment rate is not positively related to efficiency, but efficiency of MFI branch office becomes better if it is placed on urban centre. Branch level microfinance recovery performance is better in rural areas as indicated in the study. Furthermore, microfinance repayment rate of both group and individual are positively affected by higher degree of peer pressure, peer monitoring and homogeneity. From microfinance borrower's perspective, access to other sources of finance affect repayment rate negatively. The study indicates that higher repayment rate does not imply better income generation and thus a negative impact on the welfare of borrowing household. The study further evinced that income inequality among the microfinance borrowers is comparatively lower than non-borrowers and it is due to programme participation.



CHAPTER-I

INTRODUCTION

CHAPTER-I INTRODUCTION

I.1 BACKGROUND OF THE STUDY

Financial intermediation in general and credit and savings in particular, play an important role in economic development. On one hand, credit, savings and insurance directly handle with risky economic environment and on the other; credit and savings enhance an economy's investment efficiency (Besley, 1995). It thus implies that credit, savings and investment can play an indispensable role in protecting the families of the poor against hardship and to overcome poverty. Since, poor people lack in asset and income, as such a bundle of financial services in small amount could make changes in their economic conditions. But, in reality the formal financial sector is reluctant to offer access to financial services to the poor. The reasons for exclusion of the poor from financial market contain a risk and cost components (Kritikos & Vigenina, 2005, which is due to lack of creditworthiness¹.

Moreover, market failure is also considered as the greatest barrier associated with financing poor, which is due to a number of reasons as outlined by Hume and Mosley (1996). *First*, no lender is willing to impart on the extra costs associated with the lending to unknown customers. *Second*, no insurer is willing to compensate for borrower and lender's risk aversion. *Third*, even if first and second reason is untrue, potential borrowers are unwilling to borrow because of risk aversion. *Fourth*, social and private values of cost and benefit diverge due to externalities or otherwise, so that even if some projects are socially profitable, fails in scrutiny on the basis of private costs and benefit (Hulme & Mosley, 1996). Therefore, it is evident that higher probability of risk in

----- [1] -----

repayment and lack of acceptable collateral make poor people exclude from accessing to formal sources of finance (Hermes & Lensink, 2007).

Since 1950s developmental policy has targeted poor to uplift through a number of subsidized developmental aids and credit facilities. Moreover, after the World War II and into the 1970s, development finance was not particularly concerned about poor target groups (Khawari, 2004). It is also worth mentioning that provision of subsidized credit was instrumented in many countries from the early 1950s through the 1980s, but failed in realization of better repayment. Moreover credit was diverted towards the politically powerful persons excluding intended recipients out of services, and with a huge cost of subsidies, repayment rate often falls below 50 per cent (Morduch, 1999). The poor repayment rates of the subsidized programmes made an adverse impact on the recycling of credit. Besides, there was a mismatch between the demand for credit by the poor people particularly in terms of products and product delivery mechanism and supply of credit by conventional financial institutions (Jindal, 2008). In addition, small individual loans are considered to be unsuccessful in traditional banking system such that most institutional lenders using conventional financial technologies considered the disturbance of micro and small credits as highly inefficient (Schaefer-Kehnert, 1983).

Understanding the depth of the problem in sight of persistent poverty, a new form of institutional credit innovation, which is called microfinance, emerged in late 1970s in Bangladesh to bridge the gap of access to credit facilities for the excluded sections of people. Moreover, successful experimentation of microfinance in differential settings of Bangladesh, Bolivia and Indonesia demonstrated that micro lending could be provided to poor people without collateral requirements. As a result, enthused by the reported success of Grameen Bank in Bangladesh over hundred of replication has germinated

worldwide with extensive financial support from donor agencies over the period of three decades.

The mushrooming growth of microfinance institutions (MFIs) across the world is due to its inbuilt features of lending mechanism such as peer monitoring, intra group insurance, peer screening reduction of adverse selection and moral hazard (Besely & Coate, 1995; Ghatak, 1999; Ghatak & Guinnane, 1999; Armendariz & Morduch, 2005). In order to reduce transaction costs and the information asymmetry problem associated with uncollateralized micro loans, microfinance institutions have come up with innovations like joint liability lending (JLL)ⁱⁱ, which enable them to lend the poor with considerable degree of financial self sufficiency and higher repayment rates (Ghatak & Guinnane, 1999).

The significance of a highly performed lending innovation such as JLL is multifaceted and can be best described in what Zeller and Meyer (2002) called the critical triangle of microfinance. The triangle is based on the assumption of achieving high outreach, financial sustainability and high impact. In this connection, the objectives of JLL should not be contradictory, rather complementary. But in practice achieving all the facets of JLL is a bulky task as it is reported in MiX market database onlineⁱⁱⁱ.

The concept of microfinance has undergone a tremendous change since inception and in recent times it includes broad ranges of financial services such as, deposits, loans, payment services, money transfers and insurance to poor and low-income households and their micro enterprises. As noted by Robinson (2005) microfinance is “a small-scale financial services for both credits and deposits that are provided to people who farm or fish or herd; operate small or micro enterprises where goods are produced, recycled, repaired, or traded; provide services;, in both rural and urban areas.” In addition, MFIs also provide a wide range of services other than financial services, such as,

----- [3] -----

education, awareness, monitoring of investment projects, consultation, etc. Among the three major types of microfinance sources^{iv}, MFIs are one of the prominent sources of microfinance services in the recent times.

In view of persistent poverty, as of December 2010, 3652 microfinance institutions reached about 20 crore clients, of which, 66.99 per cent were amongst the poorest when they took their first loan and of these poorest clients, 82.3 per cent were women (Maes and Reed, 2012). National Bank for Agricultural and Rural Development (NABARD) initiated Self Help Group Bank Linkage Programme (SBLP) in India in the year 1992 with outreach of 500 Self Help Groups (SHGs) with a credit amount of ₹ 5 lakhs. The program has so far reached 11, 48, 000 SHGs with disbursed credit amount of ₹16534 crores as on March 2012 (NABARD, 2012).

Apart from SBLP, MFI model of microfinance is another important delivery channel, which has been operating in India over three decades but gained its momentum recently. The model shares 33.43 per cent against the total microfinance client outreach of 93.9 million as on 2010-11 with an outstanding credit of ₹ 20756 crore (Srinivasan, 2012).

Necessity of microfinance in Assam is also quite relevant. This is evinced by the fact that during 1999-2000^v, out of total population of the state, 36.09 per cent are below the poverty line where rural poverty constitutes 97.48 per cent (indiastat.com). Moreover according to Census of India 2011, 85.9 per cent of the total populations live in rural areas of the state. Besides, employment scenario in the state is quite pathetic, which is reflected by the work force participation rate of 35.8 per cent. Moreover, according to All India Debt and Investment Survey^{vi} institutional credit access constitutes 57.9 per cent of total credit availability, of which commercial bank including Regional Rural Banks and Government credit shares 66.5 per cent.

On the other hand non-institutional sources of credit still constitute 42.1 per cent, out of which 61.7 per cent consists of moneylenders (NSSO, 2003). This reflects that large sections of people are unable to access credit from formal financial institutions, which imply that there is a need for more institutional credit arrangement.

Microfinance is one of such arrangements in this direction, which is operating under two broad models^{vii} in the state: SHG- Bank Linkage Program (SBLP) and Microfinance Institution (MFI) Model (Ghate, 2007). SBLP is dominant microfinance program in the state in terms of outreach and credit exposure, which has linked 117809 SHGs with bank loan amounting to ₹ 630.2 Crore as on March 2012 (NABARD, 2012). Besides SBLP, MFI model of microfinance is also operating in the state under various forms^{viii}. Although a numbers of MFI are functioning in the state, Credit and Savings Programme of Rashtriya Grameen Vikash Nidhi (hereafter RGVN (NE)) and ASOMI are among the front-runner. These institutions provide microfinance under two programs: group lending program and individual lending program and one interesting feature of these institutions is that microfinance repayment rate under group lending program is over 95per cent^{ix}.

Since microfinance provides access to credit without collateral to its borrowers who are basically low-income people, their high repayment performance is phenomenal in comparison to those under formal financial sector. Therefore, the mechanism of group lending in view of high repayment performance of microfinance clients' poses research question. This is at least due to couple of reasons. First, since access to credit is without collateral and financial contract, it is interesting to investigate the factors that are responsible for such satisfactory performance. Second, considering in-built mechanism of the programme, it does not guarantee the success of the programme and improving performance since types of project and gestation periods are different. Third, the indication of high repayment performance of clients indirectly indicates the positive

impact on the programme broadly on their livelihood since they are able to repay. If it is untrue then there may exist some factors which help to maintain the performance in case of project failure.

Moreover from the institutional perspective financing poor is a risky affair in the absence of physical and financial collateral. Therefore, the question of sustainability evokes in this regard. The issue of sustainability is important since microfinance projects as a powerful tool of livelihood generation. If the programme could not be successful, then the avowed objective remains a mere dream. In this connection, there is a scope of investigation regarding the role of repayment and outreach. Besides, efficiency of the institution also sheds light in comprehension of sustainability in view of the repayment performance.

Since sustainability, efficiency and impact of MFIs are also important facets of MFIs, therefore it demands field level investigation to test the theoretical validity. An extant source of both theoretical and empirical literature has explained high repayment performance of microfinance client under group lending program. Besides, sustainability, efficiency and impact are also studied as individual entity. Therefore the present study tries to comprehend the role of microfinance repayment and its relation to the issues of sustainability, efficiency and impact.

I.2 STATEMENT OF THE PROBLEM

The extensive practice of microfinance around the world rests on reported high repayment rate along with large outreach of the program (Guttman, 2007). Repayment performance is important because it is a necessary, though not sufficient condition of sustainability. High repayment rates benefit both MFIs and borrowers. On the one hand it allows the MFI to cut the interest rate on loans which reduces the cost of credit

associated with borrowers and on the other hand, it helps in reducing dependence on subsidies from donors and improves sustainability level of the MFIs.

High repayment performance under this model relative to repayment performance under formal financial institutions attracts attention of academic researchers. In common parlance, there seems to be a chance of high delinquency in microfinance since repayment schedule starts only two to three weeks after the disbursement of the loan. Moreover, gestation period are not same for all types of project, hence returns from the project varies naturally. Besides, all members in a group may not able to realize successful return from project. In view of the context a question arises, “Why microfinance repayment rates are high?”

A host of theoretical and empirical research explains how repayment rates are high under group lending programs. The common explanation behind such huge success under group lending asserts the mechanism of joint liability lending contract. Under joint liability, key factors such as peer pressure, peer monitoring, peer screening enables high repayment rate. While due to the problem of informational asymmetry lenders are reluctant to offer credit in the absence of physical collateral, joint liability combat such type of problem by facilitating social collateral and social enforcement by the peers. But how this mechanism actually works? Although scant in nature, some of the empirical studies consider factors of joint liability as a treatment group and number of variable such as wealth, education, distance, region, social ties, loan size, staff pressure, etc as control group. In addition a few studies have explored the role of social ties and social cohesion on ensuring high repayment rate. The empirical results of the most of the studies are contradictory, which indicates that both the results and program are regional and contextual specific. A host of factors related to socioeconomic and institutional characteristics of the households could explain the differences in the rate of repayment

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on borrowed funds. Identifying those factors that are critical determinants of rate of repayment of micro loans and important for the design and implementation of lending policies.

In addition, effects of the presence of informal sector and alternative financial sources have theoretically modelled, but the evidence is empirically scant except a few theoretical and empirical studies. For example theoretical work of Jaina and Mansuri (2003) and empirical work of Paxton (1996) attempted to explore the impact of the client as well as group. Since prevalence of money lenders still exists in the state, there is a possibility that microfinance clients may borrow from informal and other financial sources to meet repayment crisis such as in the time of financial adversity. Hence it seems that the informal sector may have an effect on the high repayment performance of microfinance client. In addition, as MFIs are growing at mushrooming growth parallel to the government supported microfinance program like SBLP, there is a chance of simultaneous borrowing by a single client or group from two or more financial sources. All these possibilities need an empirical treatment to have a clearer understanding behind the performance of repayment under group lending contract and specially to test the mechanism of joint liability. There are scant empirical studies on Indian setting in general and Assam in particular. Thus realizing the gap, an attempt is made to explore the role of availability of other financial services on repayment performance along with the usual test of joint liability.

Besides, it is also essential to understand that whether joint liability features under group lending program ensure the success of project or not. The argument is justified by the fact that since microfinance repayment rate under group loan is high, is it reflects positive impact on clients. Some author demonstrate high repayment rate as a proxy for better impact on the economic condition of the client (Ledgerwood, 1999). From the

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point of view of institutional perspective, it is a good indicator for the health of the MFIs, since good repayment rate keep their credit cycle running and make a way for better outreach. But at the same time repayment rate does not indicate that borrowers are positively affected by the programs. There is a chance that they may trap with debt and may use micro financial services only to substitute for such debt clearance. Thus, if this process is in existence, ultimately the avowed objective of poverty alleviation and eradication of informal lending will be a mere dream. Therefore to understand their high repayment performance, it is pertinent to understand economic impact of the microfinance services on client. Literatures on the impact apparently show that microfinance has both positive and negative impact. But most of the study fails in rigorous empirical assessment of impact except few studies such as of Hulme and Mosley (1996). While a number of empirical treatments were conducted in Indian settings, it neglects some backward and developing areas of the country with nascent microfinance market such as Assam.

In the similar manner, sustainability and efficiency is also important issues for an in-depth study. Because reaching large outreach posit a dim picture on the issue of financial sustainability. The core of the dilemma is transaction cost. Repayment rate is also important, but the costs associated in recovery of the loans are ignored and thus it cannot be treated as an indicator of financial performance. Thus, in a broader framework of analyzing the financial sustainability, careful analysis of performance indicators are necessary to know whether MFIs are financially more sufficient as time passes out or not. Keeping in view of pervasive penetration of MFI model, it is pertinent to analyse whether outreach under this model is heading in a sustainable way?

Microfinance, now-a-days has changed from traditional way of financing and challenged by achievement of double bottom line: financial and social. Since majority of MFIs in

the world relies basically on donor fund and loans for financing clients, they are subjected to credit rating, on the basis of which their source of fund will become secure. The concept of both operational and financial sustainability evokes importance in this connection along with a set of performance indicators like *Return on Asset* and *Return on Equity*. Although these indicators and measures can help in catering fund, it is imperative for a MFI to examine the efficiency of operation so as to maintain long term need. It is a fact that MFIs are not operating in the same way as the commercial banks do, but it is no way an indication of revulsion to profitability and efficiency. Moreover, efficiency and cost ratios can serve as “wake-up calls” to program managers who need to restructure inefficient aspects of operations (Doyle & Black, 2001). The efficiency estimation is an answer to the question of how allocation of inputs produces maximum output.

With this backdrop, in view of the high microfinance repayment rate in the MFI led microfinance model, it is pertinent to study microfinance repayment performance of the clients and its determinants. The present study examines theoretical exposition of the joint liability lending contract in terms of field level investigation. Although a number of researchers studied the issue previously, the setting of empirical analysis is varied in different results. Therefore, it is important to examine the theoretical soundness and practical functioning of JLL mechanism of group based credit program of MFIs in India. In addition, the issues of sustainability, efficiency and impact of microfinance are also examined. Although a number of individual studies have conducted over recent period, all studies are centred to individual issues. In this study the issues are be studied to trace the relationship with repayment performance. Therefore, it is in this study, an attempt is made to assess the determinants of microfinance repayment performance of client and to examine the relation of repayment performance with the issues of sustainability, efficiency and impact.

I.3 OBJECTIVES AND HYPOTHESES

Based on the theoretical and empirical understanding on the theories of joint liability, sustainability and efficiency, the objective of this dissertation is to examine performance and determinants of group based credit programs under MFI model and its relation to the issues of sustainability, efficiency and impact. On empirical side, the study aim at understanding the basic mechanism of JLL, institutional financial sustainability, efficiency and impact of the program on clients. The specific objectives are:

1. To examine sustainability of microfinance institutions
2. To examine branch level efficiency of microfinance institutions
3. To examine repayment performance and its determinants of microfinance clients in group lending program
4. To analyze the economic impact of microfinance on clients

In accordance with the objectives, the study tests the following hypotheses:

- H₁. Increasing outreach prevents sustainability of the programme.
- H₂. Higher repayment rate associated with higher level of efficiency for MFIs.
- H₃. Microfinance branch offices locate in rural area have better repayment rate.
- H₄. Higher degree of peer pressure, peer monitoring and homogeneity results in better repayment performance.
- H₅. Access to other sources of finance has negative effect on repayment.
- H₆. Microfinance leads to increased consumption and reduces inequality.

I.4 DATABASE AND METHODOLOGY

The proposed study is based on both primary and secondary sources of data. Data pertaining to different socio-economic and microfinance aspects of the state are collected from various published sources from governmental and non-governmental departments.

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The secondary sources of data provide information regarding the background of the state under which microfinance is operating and it helps in contextual analysis for the genesis of microfinance. They also provide a background of the necessity for the primary information. However this is not sufficient to represent the client's economic behaviour regarding the determinant of repayment performance. To capture these dimensions, a field survey was conducted during January-June, 2009 and June 2012 to collect primary data on microfinance clients. In this pursuit, ASOMI and RGVN (NE) are selected. Due to the difference in their age of operation, these two MFIs are selected. RGVN is older relative to ASOMI and according to M-CRIL (2006), it falls under the category of rooted institutions, which is operated for more than 17 years, while ASOMI is a maturing institution. Operational differences also reflect repayment strategies in terms of product specification and staff efficiency. To cover the contextual diversity of the issues, 414 existing clients are selected from both the sample MFIs. Besides, 155 non-borrowing members^x from different groups are collected to examine impact of microfinance. The survey was conducted at two phase. The first phase was conducted during January-June 2009 to collect data pertaining to repayment behaviour of groups and borrowing members of groups and also impact of microfinance on borrowers. The second phase of survey was conducted during June-July 2012, where information pertaining to impact analysis was collected. The sample selection strategy is multistage in nature. For collection of data, branches are at first selected purposively, which is followed by selection of group, which is done according the secondary information available with the branches. Groups are selected in terms of default and non-default during the survey period. From each group at least two members (one leader and one member) are selected for interview.

In this study different methods are applied to achieve different objectives. The details of methodologies are incorporated in the respective chapters.

I.5 STRUCTURE OF THE THESIS

The thesis is structured into nine chapters as follows:

Chapter I includes a brief introduction of the problem, rationale for the study, objectives, hypotheses and methodology of the study.

Chapter II documents theoretical background of the concept of microfinance issues, its origin and later advancement, nature of the problem and empirical examinations in the areas.

Chapter III documents and analyzes the current financial environment of India in general and Assam in particular. The chapter also portrays microfinance overview of Assam along with regulatory environment. In this section microfinance supply and demand is estimated, which is followed by performance overview of sample MFIs.

Chapter IV details the basis for field study, field study location and sample design and profile of sample

Chapter V presents an analysis of factors affecting financial sustainability.

Chapter VI analyses efficiency of sample MFIs and their branches and also examine the determinants of efficiency.

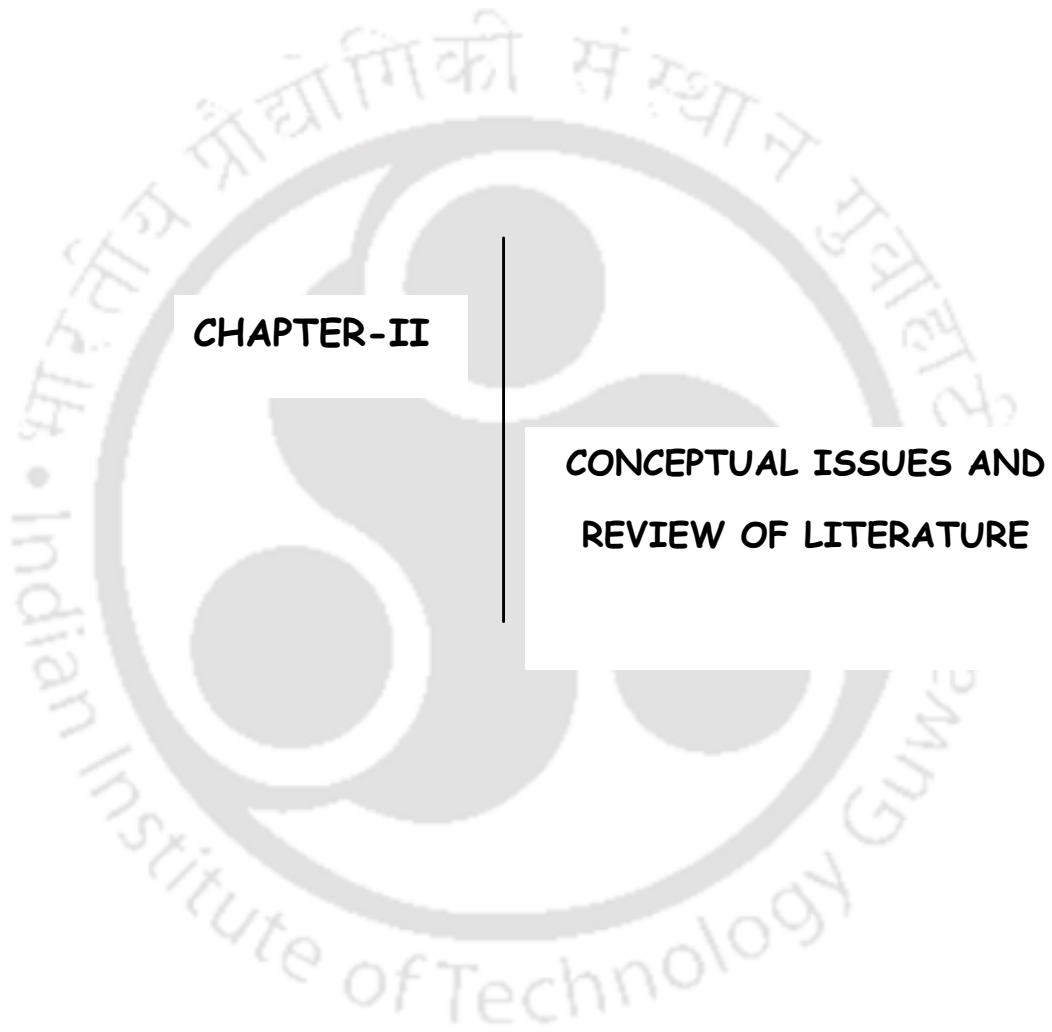
Chapter VII deals with examination of repayment performance and its determinants. This chapter considers examination of recovery performance of MFI branch offices and repayment performance and its determinants of both the group and borrowing members.

Chapter VIII analyses impact of microfinance on borrowing members. In this pursuit, the study considers participant non-participant approach and before after analysis.

Chapter IX concludes by presenting a summary of main findings, conclusion and policy implications.

Notes

- i. Lack of creditworthiness can be summarized as of two components, viz., difficulty in knowing the risk type and willingness to repay.
- ii. Joint liability lending is the provision of a private good in return for a public good (Matin, 1997). It involves the provision of loans to a group of individuals such that they are jointly liable to the repayment of the loan.
- iii. For a comprehensive overview, readers may refer to www.mixmarket.org for available online reports and analysis of more than 1300 MFIs.
- iv. According to Asian Development Bank microfinance services are supplied by three types of sources. These are; formal institutions (i.e. rural banks and cooperatives); semiformal institutions (i.e. non-government organizations) and informal sources (i.e. money lenders and shopkeepers) Institutional microfinance includes microfinance services provided by both formal and semiformal institutions. Microfinance institutions are institutions whose major business is the provision of microfinance services.
- v. Although recent BPL estimation data is available for the session 2004-05, due to the continuing methodological controversy the study avoids to note it.
- vi. The reported data is as per All India Debt and Investment Survey, (NSSO 59th round, 2003).
- vii. Micro Credit Rating International (M-CRIL) classified microfinance lending methodology under four categories which are Self-Help Group (SHG), Individual Banking Model (IB), Grameen Model and Mixed Model. While SHG model consist of 15-25 members and based on the principle of revolving the members' own savings, IB model entailing the provision of financial services by MFIs to individual clients, though they may sometimes be organized into joint liability groups, co-operatives or even SHGs. Grameen model undertake individual lending but all borrowers are members of 5-member joint liability groups, which in turn, get together with 6-9 other such groups from the same village or neighbourhood to form a centre. Mixed model is some of the MFIs started with the Grameen model, then embraced the SHG model at a later stage but did not completely do away with the Grameen model and smaller groups. These have roughly an equal mix of SHG and Grameen type groups.
- viii. MFIs in India can be broadly sub-divided into four categories of organisational form viz; NGO-MFIs, non- profit Section 25 NBFC-MFIs, cooperative MFIs and for profit NBFC-MFIs (Rao, 2008).
- ix. The repayment rate is as per annual reports (various issue) of RGVN and ASOMI.
- x. Non-borrowing members are member of MFIs, but yet to receive credit.



CHAPTER-II

**CONCEPTUAL ISSUES AND
REVIEW OF LITERATURE**

CHAPTER II

CONCEPTUAL ISSUES AND REVIEW OF LITERATURE

“Money, says the proverb, makes money. When you have got a little, it is often easy to get more. The great difficulty is to get that little.”

(Smith, Adam, 1983 (orig. 1776), p. 195)

II.1. INTRODUCTION

It is well said that money begets money. The poor, who are basically endowed with lesser physical and financial resources than their rich counterpart, particularly face a number of serious constraints for their livelihoods. Therefore they require a small push in terms of investment to gear income generation.

But due to market failure and inability to provide collateral, poor section remain excluded from the credit market, which deteriorate poverty scenario especially in developing countries. The concern, which attracted attention of economists at a wider range since the inception of Economics and after around 200 years a formal innovation, has germinated in Bangladesh, which is termed as microfinance. The innovation is designed as group based program and higher repayment rate of the program relative to other formal institutions become an amazing phenomenon to researchers across the globe.

With this background, the chapter presents a review of extant source of theoretical and empirical studies related to repayment performance, mechanism of joint liability lending and impact of microfinance. Besides, the chapter also swots up both theoretical and empirical studies on microfinance efficiency and sustainability. The chapter is underpinning for identification of existing research gaps, which the study tries to fill. The review is emphasised on all four objectives of the study.

II.2 DEFINITION AND HISTORICAL BACKGROUND OF MICROFINANCE

II.2.1 Definition of Microfinance

In common parlance, though micro-credit and microfinance is pronounced synonymously, nature of both the terms is quite different. While micro-credit means small amount of credit, microfinance implies credit plus approach. It is observed that microfinance has evolved as an economic development approach intended to benefit those sections of people who are excluded by the formal financial institutions. The term refers to the provision of financial services to low income clients, including the self employed. The definition of microfinance often includes both financial intermediation such as savings, credit, insurance, payment and transfer and social intermediation like, group formation, development of self confidence, training in financial literacy and management capabilities among members of a group (Ledgerwood, 2000). Asian Development Bank defines microfinance as “the provision of a broad range of financial services such as deposits, loans, payment services, and insurance to poor and low income households and their micro enterprises” (Conroy, 2003). The most convenient and specific definition of Robinson (2005), indicates that microfinance is a small-scale financial services for both credits and deposits that are provided to people who farm or fish or herd; operate small or micro enterprises 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.

II.2.2 History of Microfinance

The root of microfinance is due to Rotating Savings and Credit Associations (ROSCAs) (Armendariz & Morduch, 2007, pp. 57-65). A ROSCA is an organisational means for its

members to consolidate and control their financial resources. The selection of members of a ROSCA is based on mutual trust among the individual members. Such savings and credit groups that have operated for centuries include *susus* of Ghana, *chit funds* in India, *tandas* in Mexico, *arisan* in Indonesia, *cheetu* in Sri Lanka, *tontines* in Cameroon, and *hui* in Taipei, as well as numerous savings clubs and burial societies have operated for a long period of time in different corners of the world (CGAP, 2006; Armendariz & Morduch, 2007). ROSCAs and other types of informal self-help groups have been well documented in all regions of the world (Ramalingam, 1989; AFRACA, 1987; Bouman, 1988; Schrieder & Cuevas, 1992; Adams & Canavosi, 1992; Von Pischke et al., 1983; Shipton, 1992).

One of the earlier micro-credit organizations providing small loans to rural poor with no collateral was the Irish Loan Fund (ILF) system, initiated in the early 1700s by the author and nationalist Jonathan Swift. The principal purpose of ILF was making small loans with interest for short periods (CGAP, 2006). The concept of the credit union was developed by Friedrich Wilhelm Raiffeisen and his supporters. From 1870, the unions expanded rapidly over a large sector of the Rhine Province and other regions of the German States. The cooperative movement quickly spread to other countries in Europe and North America, and eventually, supported by the cooperative movement in developed countries and donors, also to developing countries.

In Indonesia, the Indonesian People's Credit Banks (BPR) or The Bank Perkreditan Rakyat (later named as Bank Rakyat Indonesia (BRI)) opened in 1895. The BPR became the largest microfinance system in Indonesia with close to 9,000 unit offices. In the early 1900s, various adaptations of these models began to appear in parts of rural Latin America. Over the years, these institutions became inefficient and at times, obnoxious.

Between the 1950s through to the 1970s, the provision of financial services by donors or governments was mainly in the form of subsidised rural credit programmes. These often resulted in high loan defaults, high loss and an inability to reach poor rural households (Robinson, 2001). Robinson states that the 1980s represented a turning point in the history of microfinance in that MFIs such as Grameen Bank and Bank Rakyat Indonesia (BRI) began to show that they could provide small loans and savings services profitably on a large scale. They received no continuing subsidies, were commercially funded and fully sustainable, and could attain wide outreach to clients (Robinson, 2001). It was also at this time that the term “microcredit” came to prominence in development parlance (MIX, 2005). The 1990,s was considered as a significant period in the history of microfinance, because in that period microfinance sector demonstrated an accelerated growth in terms of creation of MFIs and increased emphasis on reaching scale (Robinson, 2001, p.54). Dichter (1999, p.12) refers to the 1990’s as “microfinance decade”.

Meanwhile, starting in the 1970s, experimental programs in Bangladesh, Brazil, and a few other countries extended micro loans to groups of poor women to invest in micro-businesses. This type of microenterprise credit was based on solidarity group lending in which every member of a group guaranteed the repayment of all members. Some of the most important germination in the area of microfinance is worth mentioning here:

- I. Grameen Bank: The Grameen Bank, which was established in 1983, basically initiated as an action-research programme by Noble laureate Professor Yunus in 1976. Through a special relationship with rural banks, Professor Yunus disbursed and recovered thousands of loans, but the bankers refused to take over the project at the end of the pilot phase (Yunus, 2007). The Grameen Bank which was later

became bank through the support of donors, now serves more than four million borrowers.

- II. ACCION International: It is one of the premier microfinance organizations in the world, with a network of lending partners that spans Latin America, the United States and Africa.
- III. SEWA Bank: The Self Employed Women's Association (SEWA) was registered as a trade union in Gujarat, India in 1972. In 1973, to address their lack of access to financial services, the members of SEWA decided to establish "a bank of their own". Four thousand women contributed share capital to establish the Mahila SEWA Co-operative Bank. Since then it has been providing banking services to poor, illiterate and self-employed women.

Through the 1980s, the policy of targeted, subsidized rural credit came under a slow but increasing attack as evidence mounted of disappointing performance of directed credit programs, especially poor loan recovery, high administrative costs, insolvency of agricultural development bank and accrual of a disproportionate share of the benefits of subsidized credit to larger farmers. The financial systems school argued that the emphasis on interest rate ceilings and credit subsidies retarded the development of financial intermediaries, discouraged intermediation between savers and investors, and benefited larger scale producers more than small scale, low-income producers (CGAP, 2006).

Meanwhile, microcredit programs throughout the world improved upon the original methodologies and defied conventional wisdom about financing the poor. First, they demonstrated that poor people, especially women, had excellent repayment rates among the better programs, rates that were better than the formal financial sectors of most developing countries. Second, the poor were willing and able to pay interest rates that

allowed microfinance institutions (MFIs) to cover their costs. In 1990s these two prominent features, viz. high repayment and cost-recovery interest rates permitted some MFIs to achieve long-term sustainability and extend the breadth of outreach.

The growing enthusiasm for promoting microfinance as a strategy for poverty alleviation has been witnessed during 1990s. The microfinance sector flourished in many countries, leading to multiple financial services firms serving the needs of micro entrepreneurs and poor households. These gains, however, tended to concentrate in urban and densely populated rural areas. It was not until the mid-1990s that the term "microcredit" began to be replaced by a new term that included not only credit, but also savings and other financial services. "Microfinance" emerged as the term of choice to refer to a range of financial services to the poor, that included not only credit, but also savings and other services such as insurance and money transfers.

BancoSol, which was founded in 1992 by the help of ACCION, is the first commercial bank in the world dedicated solely to microfinance. The case of BancoSol in Bolivia paved the way of commercialization of microfinance and which is strengthened recently by SKS equity buy-out.

Today, practitioners and donors are increasingly focusing on expanded financial services to the poor in frontier markets and on the integration of microfinance in financial systems development. Today, the microfinance industry and the greater development community share the view that permanent poverty reduction requires addressing the multiple dimensions of poverty.

In recent times, some studies e.g., Vogelgesang, (2003) found that competition and supply of microfinance is also increasing in times of economic crisis. Moreover it is observed that the microfinance has succeeded amidst macroeconomic failureⁱ and global

crisisⁱⁱ, work as a recovery tool after disasterⁱⁱⁱ and even more commercially oriented microfinance also helped in reaching Millennium Development Goals (MDGs)^{iv}.

A number of recent innovations in financial services for the poor have been emerged out of which some prominent are mentioned below:

1. CCACN: CCACN stands for Central de Cooperativas de Ahorro y Crédito Financieras de Nicaragua. The organization is marketing its "Agriculture Salary" savings product to farmers in Nicaragua (WOCCU, 2003).
2. IRnet: In late 1999, WOCCU, in partnership with Vigo, a money transfer firm, launched International Remittance Network (IRnet). According to the Inter-American Development Bank, remittances totaling US\$67.5 billion were sent to Latin American and Caribbean counties in 2008, of which over US\$25 billion went to Mexico alone (WOCCU, 2003).
3. Credit, Life, And Funeral Insurance: This type of microfinance organization come to help those clients with endemic and critical diseases, which poses high level of financial risks to the soundness of the families of such people in Kenya. The Cooperative Insurance Company, a professional insurance provider, insures over half of Kenya's more than one million credit union members who subscribe to policies through their credit unions (WOCCU, 2003).
4. Managed ASCAs: A number of local organisations in the Nyeri District of Kenya operate as Accumulating Savings and Credit Associations (ASCAs) and receive management services provided by ASCA Management Agencies (AMAs). The AMA model serves a wider client base than the mainstream donor funded MFIs who tend to focus their attention on micro and small entrepreneurs (Mule et al., 2001).
5. Microenterprise Access to Banking Services (MABS) in the Philippines nurtures the expanded use of the credit bureau by rural banks, which was started in 2001 to

minimize client over indebtedness and defaults. MABS has helped to integrate the rural banks' microenterprise loan clients into an existing national credit bureau, by creating an e-mail encryption program that allows rural banks to share information electronically at a low cost (Campion and Owens, 2003).

6. ADOPEM in Dominican Republic thoroughly evaluated its Personal Digital Assistants program and recorded dramatic improvements. Client retention improved significantly, and the number of days between application and disbursement dropped from five days to two days. By this innovation expenses for paperwork dropped by 60 per cent and data entry expenses dropped by 50 per cent (Waterfield, 2003).
7. Savings-based, Agriculture-oriented Rural Credit Unions – SICREDI in Brazil specializes in agricultural lending, primarily for the production of rice, wheat, beef, fodder, fish, vegetables and for agricultural equipment. Loan approvals are based upon the members' savings history and credit record, with the size limited to 50 percent of production costs and dependent upon the potential return of crop sale at harvest as well as household income and debt obligations. The borrower makes monthly interest payments and then a balloon payment of the principal at harvest time (WOCCU, 2003).
8. Producer Associations as Clients of a Financial Institution: GAPI and CLUSA in Mozambique: GAPI offers investment and working capital loans to FORA (federations of associations) of small farmers and small and micro-enterprises. GAPI collaborates with CLUSA to set-up and register these FORA. Loans are secured through a solidarity group-like guarantee between the participating FORA. About 80 per cent of the profits from the sale of produce are handed back to the associations - the remaining 20 per cent of the profits are kept by the forum as interest payments (Douglas, 2003).

9. In South Africa, a network of 8,000 armored trucks equipped with thumbprint recognition and smart-card technology deliver pension payments of about \$60 each month to 4.5 million South Africans. The potential of this vast infrastructure to offer pensioners other kinds of financial services is tremendous (Helms et al., 2004).
10. Equity Building Society (EBS) in Kenya has emerged as one of Kenya's leading microfinance institutions, with over 155,000 savings clients and 41,000 borrowers. EBS transformed itself into a profitable financial-service provider by rigorously focusing on the needs of its clients - in particular, by developing a wide range of market-based financial products and services, including a mobile banking service, (Craig & Goodwin-Groen, 2003).

II.2.3 Common Models of Microfinance:

Microfinance is a specialized financial provision for the poor, which is adjusted with the local setting where it is operated. Since long back it has some prominent forms with some distinctive features around the globe, which are discussed as follows:

a. Grameen Bank Model

One of the most common models of microfinance is Grameen Model, which was initiated by Professor Yunus in Bangladesh in 1983. In this model a group of five members are voluntarily formed. The basic setup involves joint-liability^v and dynamic incentives^{vi}. These conditions make it paramount to choose suitable group members with homogeneous characteristics. Repayments are made in public, which further enhance the motive to pay instalments accordingly in order not to lose faith (Armendariz & Morduch, 2007). The group members in Grameen model are basically women, since they are more creditworthiness as compared to man (Conroy, 2003).

b. Village Bank Model

The Village bank model is common in Latin America and Africa, which consists of two building blocks, the external account and the internal account (Conroy, 2003). The external account represents capital provided by an external source that is lent to the members of the “bank”. The internal account is made up entirely by the savings of the group members, which can also be lent to other group members. The number of members is between 30 and 50 and the loans are being repaid on a weekly basis. The objective is that the “bank” will be self-sufficient, i.e. not dependent on the external account for funding.

Hence, the main difference between the Grameen model and the Village bank is the accumulation of capital in order to become autonomous from the initial source for funding. A similarity to the Grameen bank model is that joint-liability applies and that no collateral is needed. With the overall objective of becoming self-sufficient savings constitutes a vital part of the Village bank structure. One well-known example of a Village bank is FINCA, which operates in Uganda (McIntosh & Wydick, 2005).

c. Credit Union Model

A credit union is a financial cooperative (non-profit) owned and controlled by its members with the objective of issuing loans and collect savings. A credit union can provide some training to support the members. Credit union offers insurance against idiosyncratic risks at certain fee (Chua et al, 2000). Credit groups have been rather successful in Asia but in other parts of the world the results have been poorer (Conroy, 2003). There are also regional differences; in the case of Africa East Africa demonstrates moderately poor results whilst West Africa is more promising (Sherief & Sharief, 2007).

d. Self-help Groups (SHG) Model

A SHG uses the savings of the members (usually about 20 members) as the basis for lending (Conroy, 2003). Self-help groups are popular in India due to the fact that they are easy to set up within the legal framework in the country (Krishnan, 2006). However, the SHG can also turn to external sources for funding in order to increase the capital base. It is common for SHGs to be linked to NGOs where the NGOs can support the SHG by serving as an intermediary to a wide range of other social functions – health related, education related etc or by helping the SHG to bring in external capital (Krishnan, 2006). SHGs set their own interest rates based on the members’ decision on what an appropriate rate should be. It is also observed that due to its rather “loose” structure SHGs are complicated to assess in terms of outreach and performance evaluation (Conroy, 2003).

e. Microfinance Institutions Model

Apart from some other regions in the world, MFI model is also operated in India. It bears some features of Grameen Bank model and some of Village Bank model. Under this model a SHG Group or a Joint Liability Group or an individual provides loan by an institution, which may be varied in terms of legal incorporation. Although the cost of the provision of loan to borrowers differs from MFI to MFI, the lending interest rate is almost same. The repayment schedule is also varies from institution to institution. The groups are liable for repayment only to the MFI concern. This model demonstrates mushrooming growth all over the world in general and India in particular.

Although some marginal differences exist among the models, the basic similarity of all the models is joint liability, which is devised as a suitable instrument for better repayment by microfinance institutions.

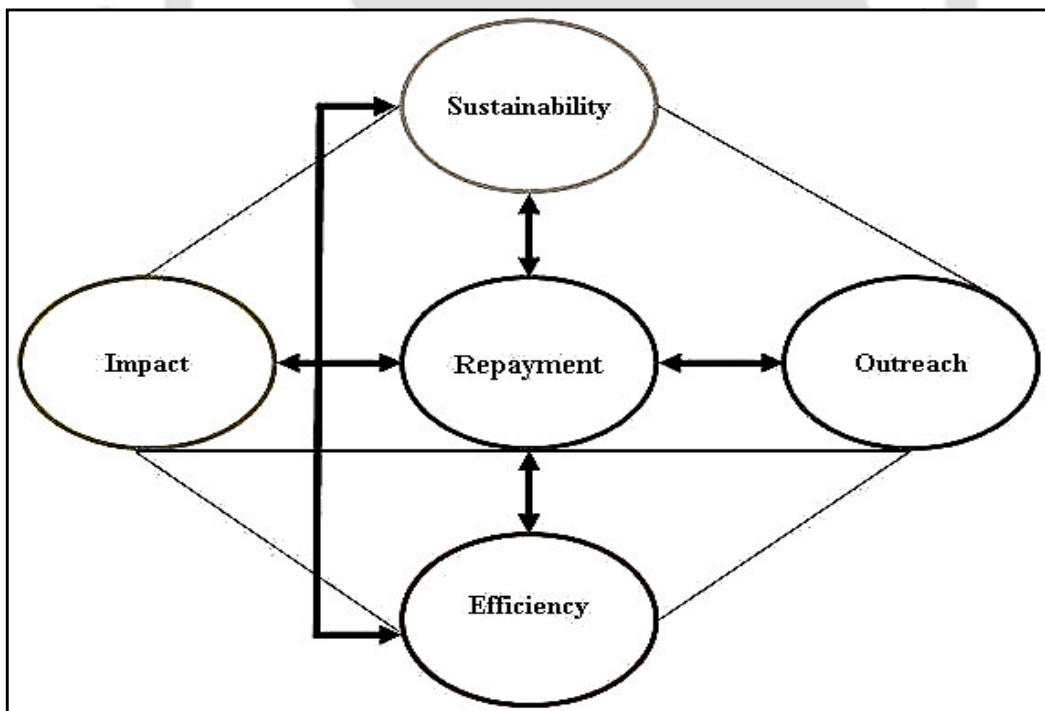
In the past four decades microfinance has emerged as a promising developmental tool in mitigating the problem of poverty, which is significantly resulting from the creativity of

microfinance practitioners in general and academician in particular. The proponents of microfinance have shown that the problems of risk and cost could be addressed by introducing new micro lending technologies that involves peer groups that are seen as a substitute for the conventional collateral and which also reduce the cost of screening, monitoring and enforcing loan contracts (Kritikos and Vigenina, 2005).

II.3 FRAMEWORK OF MICROFINANCE LITERATURE REVIEW

The review of literature is basically based on journal article and relevant reference books pertaining to the broader area of microfinance. For comprehension on the crux of the study area, a thematic structure for review of literature is developed, which is basically based on the annotated bibliographical work of Brau and Woller (2004).

Figure 2.1: Thematic Structure of Review of Literature



Source: Structured by Author

Figure 2.1 depicts that the core of microfinance study is basically delve into four major aspects of microfinance, viz. *outreach*, *impact*, *sustainability* and *efficiency*. It is found

from the extant source of literature that all the aspects are not isolated, rather interrelated. The interrelation is tagged by the issue of microfinance repayment performance. It is obvious from the microfinance literature that the world wide mushrooming growth of microfinance is due to higher repayment.

High repayment rate is a positive feature of group lending contract. But at the same time a question poses behind the growth of microfinance, what unique features of microfinance make it possible to maintain higher repayment rates? In this connection, the study conducts an elaborative review on the working and economics of group lending contract and especially joint liability lending contract.

Although repayment performance of microfinance considered as starting point of microfinance study; three interlinking core issues such as outreach, sustainability and impact, which constitute *The Triangle of Microfinance* according to Zeller and Meyer (2002) have attracted a sizeable attention of both academician and practitioners in a later stage. This is because; provision of finance for unbanked population is one of the prime objectives of microfinance. In this endeavour, if microfinance institutions make huge outreach, are they able to maintain the magical higher repayment and at the same time will they be able to achieve sustainability, since transaction cost on the part of microfinance providers may be sprouted as a concern. At the same time the impact of micro loan on the borrowers is treated as one of the area of exploration in recent times across the globe. The review of literature is thus basically geared to understand microfinance repayment performance considering sustainability, outreach and efficiency from lender's perspective and impact from borrower's perspective.

II.4 THE CONCEPT OF REPAYMENT

The proliferation of microfinance sector in different corners of the globe is enthused by considerable high repayment performance of the program (Zeller et al., 2001). Repayment performance of microfinance borrowers are basically projected in terms of repayment rate. In general, repayment rate is a ratio of total payment made to total due amount on a unit of time. The definition of repayment rate varies widely over microfinance institutions (Christen, 1997).

Although several repayment rates are practiced in microfinance sector, three commonly prevailing repayment rates and their methodology are counted as follows.

On-time Repayment Rate (OTRR): OTRR is a measure of credit discipline and it helps in cash flow management (Sa-Dhan, 2006^a). It is calculated in the following manner:

$$OTRR = \frac{(\text{Total Amounts paid as per schedule by Clients} - \text{Prepayments}) \times 100}{\text{Total Amounts Due from Clients till date as per Schedule}}$$

The steps of calculation are as follows:

- a. First, the sum of amounts, which have to be paid by the client as per repayment schedule, should be prepared.
- b. Second, prepayment, which is extra payment made over the scheduled repayment amount, should be subtracted from first step and then, it should be multiplied by 100.
- c. Third, the due amounts up to a certain reference date should be summed up.

A better OTRR indicates lower amount of interest income postponement and greater degree of efficiency of portfolio rotation and other aspects, ceteris paribus. The utility of OTRR lies mainly in the fact that it distinguishes good borrowers from delinquent and default borrowers.

Current Repayment Rate (C_rRR): CrRR is a measure to comprehend current on-lending situation against cumulative lending history. It is calculated as follows:

$$CrRR = \frac{(\text{Total amounts received during period} - \text{Prepayments}) \times 100}{\text{Total Amounts Due (to be collected during period)}}$$

The steps of calculation are as follows:

- a. First, a current period should be defined. The sum of amounts, which have to be paid by the client as per repayment schedule during the period, should be prepared.
- b. Second, prepayment should be subtracted from first step and then, it should be multiplied by 100.
- c. Third, the due amounts by clients for the period as defined should be summed up.

Current period repayment rate helps in understanding the behavior of clients and performance of the institution in the on-going period (Sa-Dhan, 2006^b).

Cumulative Repayment Rate (C_mRR): It helps to get a sense of a repayment performance over a long period of time (Sa-Dhan, 2006^c). It is calculated as follows

$$CmRR = \frac{\text{Total prepayments made by clients so far} \times 100}{\text{Total amounts due from clients till date}}$$

The steps behind calculation are mentioned as below:

- a. First, all prepayment made by the client should be summed up and it should be multiplied by 100.
- b. Second, all amount due by the client should also be summed up.

CmRR gives an overall estimate of the amounts of past due for the programme through the years and therefore it is particularly useful when assessing the performance of an MFI over a long period of time.

It is apparent from the above formulas that although OTRR and CrRR seem to be similar, they are differentiated on the basis of time factor. As the former considers a specific reference point of time, the later consider a specific period of time. CmRR is clearly distinguished from both the measures since it counts only prepayment over a period of time.

II.5 THEORETICAL REVIEW ON REPAYMENT PERFORMANCE

A number of investigations regarding the phenomenon of higher repayment have been undertaken by the researchers across different settings in the world. Although their results vary in differential settings, they found JLL mechanism has made microfinance operation a successful replication.

Since microfinance group lending contract is designed in such a way that the peer members become jointly liable to each other, therefore, microfinance programs are basically characterized by three characteristics such as joint liability, small installment payment and dynamic incentives as exemplified by the Grameen Bank. Poor borrowers in developing countries generally lack collateral that can be used to guarantee their loans, and lenders often lack the means to use the legal system to enforce repayment (Guttman, 2007). Joint liability contract is a significant methodology to secure the objective.

It is argued that groups accomplish functions of screening, monitoring, and enforcement of repayment better than the banks and therefore lead to higher repayment rates. The main argument is that, compared to socially and physically distant bank agents, group members can obtain, at low cost, information regarding the reputation, indebtedness, and wealth of the loan applicant, and about his or her efforts to ensure the repayment of the loan (Stiglitz, 1990; Varian, 1990). Thus, group members are found to be able to access complex and sensitive information just like informal lenders. It is this informational

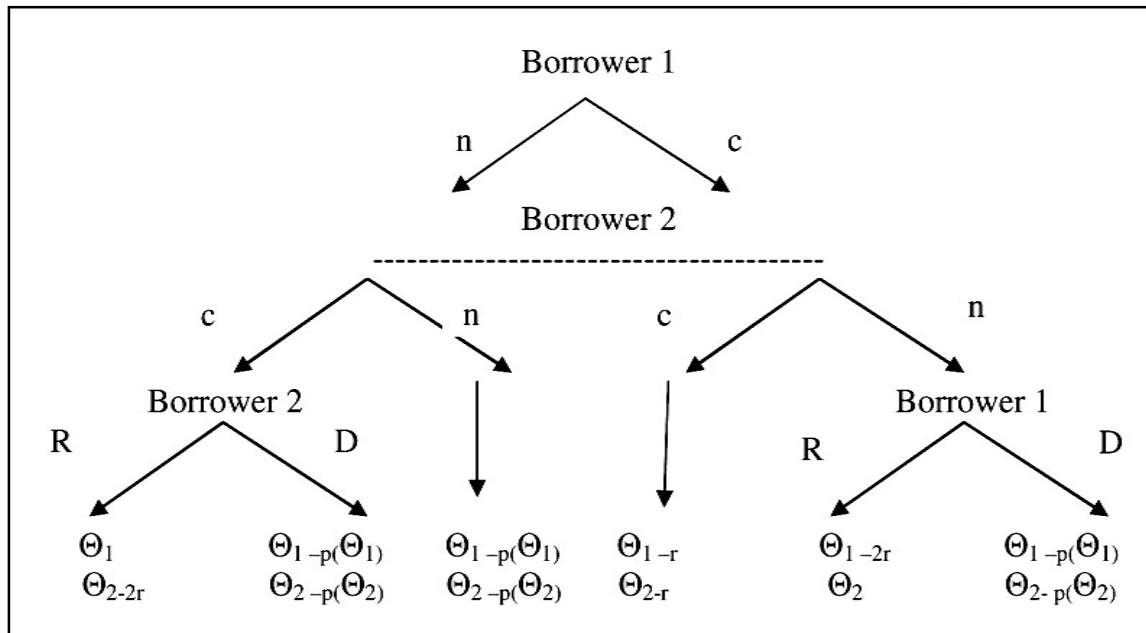
advantage that drives the suggestion of Stiglitz (1990) and Devereux and Fisher (1993) that there exists more incentive for similar individuals to form groups. Most importantly, as a first approximation the high repayment performance is based on the mechanism of group dynamics, which are documented in the following subsection.

II.5.1 Mechanism of Joint Liability Lending (JLL)

The key feature of group lending is joint liability. By joint liability, it is meant that all group members are treated as being in default if any one member of the group does not repay his loan (Ghatak & Guinnane, 1999). To understand the impact of the principle of joint liability on repayment decisions Besley and Coate (1995) developed a model of repayment game. They theoretically demonstrated interdependence between borrowers by specifying a repayment game to represent repayment incentives. In this connection they considered two countervailing incentive effects. Firstly, a positive effect, which results from the possibility that a successful borrower may repay the loan of a partner who unable to repay due to bad returns. Secondly, a negative effect, which arises if the entire group defaults, when at least some members would have repaid had they not been saddled with the weight of liability for their partners' loans.

The repayment game of Besley and Coate (1995) is a sub game perfection to analyse Nash Equilibrium. The original strategic form of the repayment game is depicted in figure 2.2.

Figure 2.2: Besley and Coate Repayment Game



Source: Besley and Coate (1998)

The game is formed with two players, who are co-member of a group. Both the borrowers provided with one unit of capital each and the returns from the project are independent in nature. The loan is due at the end of the period and each borrower has to be repaid r amount (inclusive of tax) and thus total amount to be repaid by the group is $2r$. The bank imposes penalties $p(\Theta_1)$ and $p(\Theta_2)$ respectively for both the borrowers if the group defaults when the two borrowers receive returns Θ_1 and Θ_2 . With this basic model they theoretically examined whether grouping borrowers together, and making them jointly liable, improve repayment rates.

Besley and Coate (1995) demonstrated that under group lending the loan will be repaid if at least one borrower receives a return in excess of the amount to be repaid by the group ($2r$). It may be repaid if both borrowers have returns between (r) and $(2r)$. They also theoretically proved that group lending has an advantage over the individual lending in terms of higher repayment rate when interest rates are low. They also demonstrated that if social sanctions are large enough, the superiority of group to individual lending in terms of repayment rates is guaranteed. They tested the proposition that with social

sanctions the loan will be repaid if at least one borrower receives a return in excess of $(2r)$. It may be repaid if both borrowers have returns between (r) and $(2r)$. It may also be repaid if one borrower receives a return Θ' between $qb(r)$ and $\sim b(2r)$ and the other borrower receives a return Θ that is less than (r) but is such that $p(\Theta) + s(p(\Theta') - r, \Theta) > r$. It will not be repaid otherwise.

The basic structure of JLL indicates that it has two basic advantages with reference to lending. First it can mitigate adverse selection and secondly, mitigation of moral hazard. Let us discuss how it actually mitigates such problems in lending.

i. How Group Lending Contract Mitigates Adverse Selection?

One of the prominent hurdles faced by lender in connection with providing loan is the problem of adverse selection. The problem creeps in when the lender cannot differentiate safe borrower from risky borrower. The problem is serious in the sense that it ultimately increases the lending rate of interest and eventually crowds out safer borrower by charging higher interest rate (Jaina & Mansuri, 2003). This is because, if risky borrower consist a large fraction of the total borrower and lender unable to distinguish inherently, then as a consequences the probability of loan default will become higher. As a result lenders have no option except to increase interest rate since they have to meet the cost of financing. This higher rate of interest will fall more heavily on the safer borrower, since they repay the loan timely as compared to default risky borrower. As a result of repayment, profit of safer borrower relatively becomes lesser to default borrower. Consequently, in the long run the safer borrower becomes reluctant to take loan and thus risky borrower crowds out the safer borrower. The problem regarding the selection of such risky borrower is called adverse selection and this is basically due to asymmetric information.

Armendáriz and Morduch (2007) theoretically demonstrate the role of joint liability lending mechanism in mitigating the problem of adverse selection. For theoretical simplification, borrowers are distinguished as safe and risky borrower. Again, each borrower has a one-period project requiring \$1 of investment. The fraction of the population that is safe (s) is $q < 1$ and the fraction of population that is risky is $(1-q)$. A dollar invested by safe borrower (s) yields gross return y^s with certainty and the risky borrower (r) obtains a gross return $y^r > y^s$ if successful and this occurs with probability $p < 1$. If not successful, they earn 0, which happens with probability $(1-p)$. For simplification it is assumed that both type of borrowers have identical expected returns so that $p(y^r) = y^s$. Now the basic questions which have answered by them are how the types sort themselves into groups.

Since borrowers know each other, safe borrower pair with other safe borrower and risky borrowers pair with other risky borrowers. Since the fraction of the population that is safe is $q < 1$, what is the gross interest rate r_p that the bank should charge in order to break even?

Assuming that $y^r > 2r_p$, which indicates that when lucky a risky borrower can repay for her peer. Then the expected revenue of the bank if it sets its break-even interest rate r_p is simple to calculate. With probability q the bank faces a (s,s) pair of borrowers and therefore gets repaid for sure. On the other hand, with probability $(1-q)$, the bank faces a (r,r) pair, in which it is always repaid unless both borrowers in the pair have a bad draw. The probability that bank is repaid in this case is denoted by g . Since the chance that both are simultaneously unlucky is $[(1-p) \times (1-p)]$, the chance that one or both are lucky is $g = 1 - (1-p)^2$. The expected repayment from a given borrower is thus,

$$[q + (1-q)g]r_p \dots\dots\dots(i)$$

The equation reflects that a fraction $(1-q)$ of groups return r_p always and a fraction $(1-q)$ of groups return r_p just g proportion of time. This expected payment must be equal to the bank's cost of funds k in order for the bank to break even in expectation. Solving for R_b gives

$$r_p = k/[q + (1-q)g] \dots \dots \dots (ii), \text{ which is smaller than the}$$

interest rate in absence of group lending, which arises because $g > p$.

With joint liability the process of matching means that risky borrowers can pay back their loans more often than they could if just dealing with the bank as individual. The risk is thus passed on from the bank to the risky borrowers and thus bank can reduce the interest rate and lure deserving safe types back into the market.

ii. How Group Lending Contract Mitigates Moral Hazard

Moral hazard in lending refers to situations where lenders cannot observe either the effort made or action taken by the borrower (Armendáriz & Morduch, 2007). Lender basically faces two types of moral hazard, e.g. ex ante moral hazard and ex post moral hazard.

Ex ante moral hazard refers to a situation, which occurs after disbursement of loan but before project returns are realized. In this situation, the bank is unable to observe the actions that are taken by borrowers, which is due to information asymmetry as a result of banks inability to collect require information on borrowers. Due to this problem, the banks have to set the interest rate at a higher level to cover the cost of capital. In this case, bank may lose money due to evasion of repayment of loan by borrower. As a consequence, the bank ultimately decides not to lend money at all and thus the unbanked fraction of the populations remains unable to accomplish the need of finance and thus exacerbate the problem of credit market failure.

Ex post moral hazard on the other hand refers to difficulties that arise after the loan is made and the borrower has invested. This kind of situation arises either when the lender does not fully observe the borrowers' profits or, having observed returns; the lender cannot enforce repayment by the borrower.

Stiglitz (1990) in a significant early work demonstrated how peer monitoring mitigates the problem of ex ante moral hazard. Introducing the concept of peer monitoring in group lending, he argued that group lending programme may circumvents ex-ante moral hazard by way of peer monitoring of the group and impose penalties upon the risky borrower. Moreover in group lending ex-post moral hazard can also be mitigated by way of peer monitoring. In a theoretical framework of Armendáriz and Morduch (2007) revealed that since borrowers of the group monitor each other, they know their returns from investment. If some borrower tries not to repay her part, then the co-borrower may impose social sanction to her. According to them the risky borrower may choose to pay if and only if the net benefit due to repayment exceeds the net benefit due to non-repayment plus social sanction. As against costless monitoring in case of Stiglitz (1990), Armendáriz and Morduch (2007) introduce joint monitoring cost, which help to prevent ex-post moral hazard problem and enforcement problem.

In addition, groups also have a comparative advantage in the enforcement of loan repayment. While the formal lender has usually limited options to compel repayment from delinquent borrowers, group members can potentially employ social sanctions or seize physical collateral of the defaulter (Besley & Coate 1995).

But all the theoretical prediction regarding higher repayment performance fails and MFIs may face difficulties in establishing credibility because of borrower runs (Bond & Rai, 2009). Borrower run is labelled against coordination failures among the group members.

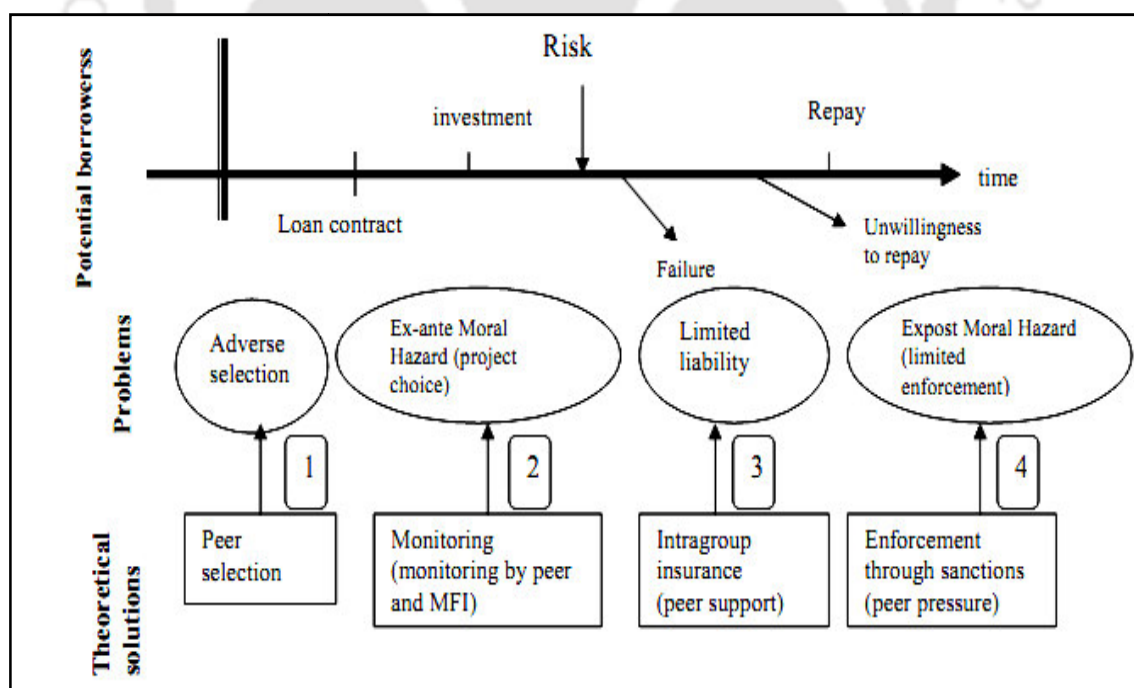
This is a typical situation which is modelled as, "if borrowers expect that the defaults of

others will lower their own future gains from microfinance, then they too will have an incentive to default” (Bond & Rai, 2009). In this context a MFI should rely on donor fund or enough start up capital so as to maintain credibility of microfinance lending. Financial self sufficiency or profitability can not solve the problem, because making loans profitable worsen the situation and therefore providing repayment incentives in the face of borrower runs could be a possible motivation (Bond & Rai, 2009).

The overall theoretical discussion on the success of group lending in terms of its demonstrated high repayment performance through the mechanism of JLL is well depicted by Simtowe and Zeller (2006), which is shown in figure 2.3. The figure reveals that a pool of potential borrowers trying to access credit at the beginning of the period.

But, access to credit is conditioned upon group affiliation, where a borrowing group will sign a joint liability contract with the lender. In this process each borrower, through peer selection tries to match with members of similar risk type.

Figure 2.3: Problems and Solutions in a Multistage Joint Liability Loan



Source: Adopted from Simtowe and Zeller (2006)

This stage is called as selection stage, which followed by an investment period. At investment stage, the lender is faced with an ex ante moral hazard problem, which occurs when a borrower either decides to invest in a risky project or misuses the funds or when the borrower does not apply enough effort to manage the investment, which may lead to low returns. In theory peer monitoring can be used to mitigate this problem. Since monitoring by MFI officers is assumed to be costly and unsustainable, joint liability lending emphasizes on monitoring by peers.

In the third stage, investment outcomes are realized. The investment may be resulted as success or failure. An investment project may fail due to a number of reasons, some of which are idiosyncratic shocks or covariant risks. The problem now is that there exists limited liability. Under joint liability lending members that do not have repayment problems can assist in paying the instalment(s) of defaulter(s). This phenomenon is termed as intra-group insurance. The final problem is related to ex-post moral hazard. It occurs when the levels of effort have been carried out and the returns of the investment have been realized, when a borrower finds it optimal to diverge the funds for repayment of the loan to other purposes. In joint liability loans, implementing peer pressure and social sanctions can solve the problem of ex-post moral hazard.

II.5.2 Success of Group Lending Beyond Joint Liability

However the success of group lending as in the case of JLL is not only due to the mechanism of joint liability. A considerable amount of extant literatures related to microfinance sector add some more input in explaining the success of the programme. Some crucial inputs which are well designed in the literature of microfinance such as dynamic incentive, frequent repayment schedule, social capital and other complementary mechanisms worth mention here.

Dynamic Incentive: Dynamic incentive is a disciplinary mechanism, which tries to maintain full repayment of the micro loan. A MFI can give incentive to borrowers by threatening to exclude defaulters from future access to loan (Armendariz and Morduch, 2005). The mechanism consist both incentive and punishment to the borrowers. In case, a borrower maintains regular repayment schedule, she will be provided larger loan size in subsequent lending. This is termed as progressive lending (Armendariz and Morduch, 2005). On the other hand, failures to keep regular repayment, the borrowers threaten to stop future lending. As a corollary, dynamic incentive indicates progressive lending assurance if the borrowers keep his repayment record default less and thereby graduating to a higher size of lending in next loan sanction.

Frequent Repayment Schedule: A basic feature of majority of MFIs is the frequent repayment schedule with small installment amount. The frequency of loan repayment is basically weekly. As for example, Grameen Bank Model in Bangladesh and Caja Los Andes in Bolivia during 1987-1995 demanded weekly repayment from about half of its clients (Armendariz & Morduch, 2007).

Weekly repayment of installment has a positive impact on repayment rate. Gonzalez-Vega, et al. (1997) and Silwal (2003) confirms the correlation between the two. The frequent repayment schedule is demanded by a MFI because it creates an early warning system and reduces the MFI's risk by selecting borrowers from other stream of household income even if investments fail.

Social Capital: Apart from the in-built mechanism of JLL, some economist demonstrated the role of social capital in achieving microfinance objectives. Although social capital has a number of definitions, the term does not have a clear and undisputed meaning (Dolfsma & Dannreuther, 2003; Foley & Edwards, 1997). Basically, social capital implies the value of social networks, bonding similar people and bridging

between diverse people, with norms of reciprocity (Dekker & Uslaner 2001; Uslaner 2001).

Amidst all the existing definitions of social capital, two important definitions are worth mentioning here. Bourdieu (1986) defines social capital as the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition. He maintained that social capital is made up of social obligations (connections), which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of a title of decency.

Putnam (1995), on the other hand defined social capital as the features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit.

Both the definitions share common issues of trust and reciprocity, which enables mutual benefits to the members of the network.

In microfinance, social capital is formed through the institutional and policy framework, the set of formal rules and norms (constitution, laws, regulations, policies) that regulate public life in a society (Benjamin & Seibel, 2000). To ensure that credit delivery ultimately leads to qualitative changes in the lives of the members, a MFI needs create and cultivate social capital. There is evidence that deliberate attempts to create trust, norms and networks have fundamentally changed the lives of the members (Dowla, 2006). But it may cost bank since the pressure to attain sustainability, the workload of the staff has increased enormously.

Complementary Mechanisms to Secure Repayment: Armendariz and Morduch (2007) have documented a numbers of additional means used by a numbers of MFI to secure repayment.

Flexible approach to collateral is one such mechanism in this regard. Since most of the microfinance borrowers are too poor to offer collateral, therefore loans are secured by means of group lending rather than collateral. But a numbers of MFIs such as BRI do require collateral. While BRI requires collateral in general, the bank is flexible in the assets that it will accept. BRI select such collateral which has sufficient personal value. Such collateral requirement discourages borrowers from defaulting on debt obligation and thus results in expected repayment of loan.

The next complementary mechanism is requirement of *financial collateral*. The form of financial collateral differs from institution to institution. First, some MFIs sanction loan to such borrowers who hold a savings account with the lender. As for example, SafeSave in the Dhaka slums required that borrowers hold a saving account for three months before borrowing was allowed. Second, some institutions demanded an obligatory deposit of some fixed ratio to loan amount to secure loan repayment. The basis of such financial collateral is to reduce the problem associated with loan default. In case of default, the micro lender can hold onto the deposits.

Another important mechanism which is adopted by a number of MFIs such as ASA and Grameen Bank of Bangladesh is *making repayment in public*. Public repayment schemes have several advantages such as it heighten the ability to generate stigma, reduce transaction costs for MFI staff, information sharing and follow-up action by bank staff and enhance transparency.

The most important supplementary mechanism is *targeting women*. The mechanism is based on several empirical evidences such as women in Bangladesh are more reliable than their male counterpart regarding repayment of loan (Hossain, 1988). Rahman (2001) further supported this notion that women borrowers are much more sensitive to the verbal hostility of fellow members and lenders when repayment difficulties arise.

However, some researcher also theoretically proved that informal finance sector may be a crucial factor the success of such performance. Jaina and Mansuri (2003) have contended that MFI members not only borrow extensively in the informal market but also use informal loans to repay MFI debt. Before the existence of MFI, there may be the possibility of existence of two types of lender, bank or formal financial institutions and informal sector. As inability to put collateral make poor people out of the ambit of formal financial sector, the informal sectors fill the gap of credit need. But when MFI come up, are they becoming extinct? Empirical literature such as Zeller, et al. (2001) and Sinha and Matin (1998) for Bangladesh shows that informal lender appear to be thriving even in regions where MFIs, such as Grameen Bank have established micro-lending program.

In presence of some situation, pre MFI environment works to facilitate informal sector or vice versa (Jaina & Mansuri, 2003). Firstly, since in pre-MFI, a particular segment of market is un-served, it is easy to see that the entry of the MFI, with its cheaper funds can lead to 'crowding in' of the informal sector, as the instalment plan allows the market to come into existence. Secondly, in which pre-MFI lending is already taking place with the informal lenders being the sole lender. In this case, it is useful to distinguish between two sub cases. In the first sub case, suppose that prior to the entry of the MFI, the informal lender was fully funding all borrowers. In that case, the entry of the MFI can only serve to 'crowd out' informal lending, which is now required only to meet the instalment payments. The second sub case is slightly more complex, which assumes that informal lenders are unable to exhaust the entire market prior to the entry of the MFI. In this sub case, they show that the entry of the MFI can 'crowd in' the informal sector by expanding the market to serve borrowers who were previously un-served and, in the process, raise the volume of informal lending and the informal sector interest rate.

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Their study unveiled the potentiality of informal sector as a screener and monitor against the high repayment performance of microfinance clients and demands an empirical study for the better understanding of microfinance repayment performance of clients.

However, it is important to note that group lending may not ensure higher repayment rates at all times. First, since the risk of loan default by an individual is shared by his peers, a member may choose a riskier project compared to the project chosen in case of an individual contract and therefore increase the probability of unwilling default. This is because the individual borrower may count on other members to repay her loan in their efforts to secure future loans. In other cases, it may be that the borrower's assessment of her peers' likelihood of defaulting triggers the borrower's own decision to default (Besley & Coate 1995).

Sustainability of group-lending programs in areas with high covariate risks depends on the ability of the financial intermediary to reschedule the loan of defaulting members or to raise funds from borrowers during a normal year to cover such contingencies.

Lastly, there is also the question of optimal group size, since groups beyond a certain size may experience increased difficulty of informational exchange and coordination; further, disincentives attached to renegeing on contracts diminish as each member may expect that the effect of her action on other members will be diluted (Glance & Huberman, 1994).

II.6 EMPIRICAL LITERATURE ON REPAYMENT PERFORMANCE

A growing body of empirical literatures anecdotes the theoretical background of group lending performance in general and determinants of the microfinance repayment performance under group lending program in differential world settings.

Theoretical discussion on section II.5 shows that the in-built mechanism of microfinance can induce high repayment performance. The theoretical prediction is also empirically tested in different settings, which support vast majority of the theoretical findings. For example, Wenner (1995) evinced that active screening successfully excludes the worst credit risks. Similarly, Al-Azzam (2006) supported that screening, group pressure and social ties plays a role in reducing delinquency. Further theoretical argument is tested in a elaborative way by Ahlin and Townsend (2007), which considers four representative model of joint liability contract, such as Stiglitz and Banerjee (1990), Besley and Guinnane (1994), Besley and Coate (1995) and Ghatak (1999). The test confirms that joint liability payment amount has a negative effect on the repayment rate which favours the Stiglitz and Ghatak model over Banerjee, Besley, and Guinnane. However, Besley and Coate model corroborates that village sanctions prevent strategic default remarkably well, especially in the rural and poorer region. However they find evidence in the line with Ghatak's inverted-U shape relationship between repayment rate and loan size. Their data does not reveal screening as a significant determinant as predicted by Ghatak. Townsend conclude that strong social ties have adverse effects on repayment performance, which is contradictory to the both previous empirical literature and the theoretical models.

JLL also helps in enforcing repayment as social interaction make strategic default more costly. The main factors influencing repayment are either related to information asymmetries, to adverse shocks affecting the borrower, or to the low performance of institutions such as justice or education (Godquin, 2004).

The problem of moral hazard can be reduced by the tool of dynamic incentives even when lenders are using individual liability contracts. The Grameen Bank of Bangladesh

and Bolivia's BancoSol, for example, are the two best-known group lending pioneers, but they have both shifted toward individual lending as their customers have matured and sought larger loans (Armendariz & Morduch 2007). The individual-lending approach allows customers and lenders more flexibility without the worry about the moral hazard induced by the use of groups. Hence, the group liability contract does not appear to be a necessary component of the microfinance model in order to maintain high repayment rates.

From the perspective of better business opportunities, delinquency rates were higher in better off towns, which supports the theory of dynamic incentives, where borrowers have better alternatives, they are likely to value the programs less, and this drives up default rates. Moreover, the presence of good information led to the ability for the groups to engage in group solidarity for those members that had uncontrollable situations and other members displayed no pressure (Paxton, 1996).

However, the success of microfinance in countries like Bangladesh rest on other factors apart from the JLL. Microfinance sector has succeeded in Bangladesh due to two broad reasons, the institutional mechanism to keep good recovery performance and governmental effort to promote the sector in the country (Gain, 1999). To facilitate the better microfinance operation by the NGOs, Government of Bangladesh has set up two institutions, namely, NGO Affairs Bureau (NGOAB) under the Prime Minister Office and Palli Karma Sahayak Foundation (PKSF). Due to Government Organisation- Non Government Organisation (GO-NGO) partnership model in Bangladesh microfinance is a success story in Bangladesh.

Apart from the reasons that support success of microfinance in Bangladesh, the task of financing poor made feasible by the NGO based credit organization in Bangladesh due to a number of reasons out of which there is five common threads that weave around the

institutional structure of NGO based credit organization (Sharma & Zeller, 1996). These are, *first*, services are strictly targeted to a well-defined set of clients, the most common criterion being the amount of land owned. *Second*, credit is always provided to small groups of borrowers on the basis of joint liability and without the pledging of any physical collateral. *Third*, at any time, the entire group is denied further credit when outstanding arrears exist for any one of the members. *Fourth*, lending activities are supplemented by training activities. *Fifth*, groups are required to contribute to an emergency fund that may be used when members experience household and other emergencies.

Group enforcement is the main reason for better repayment performance of borrowers (Brehanu & Fufa, 2007). Besides, personal trust between group members and social homogeneity are more important to group loan repayment than general societal trust or acquaintanceship between members (Cassar et al., 2007). The justification is rest on the fact that those who have been helped by other group members in the past are more likely to contribute in the future.

Besides a number of factors also enhance high repayment performance such as value of the productive assets of the households, the number of landed relatives, access to basic literacy and health services, duration of the loan, group homogeneity in terms of age the value of previous loan (Godquin, 2004), group size (Sharma & Zeller, 1996; Guttman, 2007). Moreover, loan amount has a positive and significant impact on the delinquency rate (Sharma & Zeller, 1996). They have also found that higher the size of land holding better is repayment rate. If the proportion of members in the group that are related to each other, the flow of information is expected to be better among them and hence less moral hazard associated with a relative that unable to meet the repayment requirements.

High information asymmetry and the response of group solidarity common among

family member can offset the negative effects of covariant risk (Mata, 2004). Covariant risk occurs when a situation or similarity among members affects all members, increasing the risk that loan repayment problem will not be shared and possibly leading to default. Bratton (1986), for example, analyzes the repayment record of credit groups in Zimbabwe and shows group loans performed better than individual loans in years of good harvest, but worse in drought years.

Lower the borrower's probability for a loan default, lower is the risk of the business projects of all peers in his group (Kritikos & Vigenina, 2005). Thus it is clear that no high risk businesses were able to build a stable group and to receive a group loan. However, regarding internal repayment performance, groups with a preference for group loans show more willingness for peer support so that the probability that a group member wind up with a repayment problem is smaller than for groups where the borrowers preferred an individual lending scheme. Besides, as more intensive the intra-group exchange, there is more repayment difficulties arise in a group.

The good recovery performances of some premiere MFIs such as Grameen Bank, BRAC^{vii} and ASA in Bangladesh, have rest on some reasons (Gain, 1999). As for example, loan at the doorstep, regular monitoring of credit and repayment by NGO staff, surety of support during disasters and peer pressure. A MFI may generate higher repayment in relatively remote communities, and even in communities with higher level of poverty, if the right institutional structure in place (Sharma & Zeller, 1996). However, the impact of the principle of joint liability may be mixed as it may result in a positive effect or otherwise, a negative effect. Moreover, JLL may influence repayment rate negatively creating problems like domino effect and the matching problem (Paxton, 1996).

All theoretical calculation regarding higher repayment performance may fails expectation and MFIs may face difficulties in establishing credibility because of borrower runs (Bond & Rai, 2009). In this context a MFI should rely on donor fund or enough startup capital so as to maintain credibility of microfinance lending. Financial self sufficiency or profitability cannot solve the problem, because making loans profitable may worsen the situation and therefore providing repayment incentives in the face of borrower runs could be a possible motivation (Bond & Rai, 2009).

Repayment performance is sometimes contingent upon the availability of other credit source, especially informal finance sector, which may be a crucial factor in the success of such performance. Theoretical modelling evinced the possibility how MFI members borrow extensively in the informal market and make use of the loans to repay MFI debt (Jaina & Mansuri, 2003). Empirical literature such as Zeller and Sharma (1998) and Sinha and Matin (1998) also evinced flourishing credit business by informal lender even in regions where MFIs, such as Grameen Bank have established micro-lending program. However, informal microfinance practice can also meet the financial need of a section of population, which is due to lack of formal financial infrastructure (Das, 2011).

However the success of group lending as in the case of JLL is not only due to the mechanism of joint liability. Some crucial inputs which are well designed in the literature of microfinance are dynamic incentive (Armendariz & Morduch, 2007), frequent repayment schedule (Armendariz & Morduch, 2007; Gonzalez-Vega, et al, 1997; Silwal, 2003), social capital (Benjamin & Seibel, 2000; Dowla, A. 2006) and complementary mechanisms such as flexible approach to collateral, financial collateral, making repayment in public and targeting women (Armendariz & Morduch, 2007:134-141). While social capital of borrowers improved the repayment performance of groups, cognitive social capital among group members has a positively significant relationship

with repayment (Kasarjyan et al, 2007). However, effects of social capital vary according to socio-cultural context. For instance, in Thailand and in Vietnam social capital has a positive effect on loan repayment (Dufhues et al., 2011).

Repayment is multidimensional in nature and therefore its performance is related to number of factors. As for example, factors such as gender, formal religious education, distance to the lender office, business formality, total sales per month, total loan received, loan monitoring and loan disbursement lag significantly affected borrower's repayment performance (Nawai & Shariff, 2012).

Moreover, groups that are located in communities with a high risk exposure, programs with savings services to their members, larger group size, higher variation in possession of rain-fed risky upland among group members, and groups with a higher level of social cohesion, as measured by the number of common bonds, have a better repayment rate (Zeller, 1996). But the uniqueness of result is debatable. As for example while Matta (2004) found that larger groups will result in more loan repayment problems, Zeller (1998) evinced positive relationship of group size to improved repayment performance. However, high information asymmetry and solidarity among members can offset the negative effects of covariant risk (Zeller, 1998).

However joint liability payment amount has a negative effect on the repayment rate which favours the Stiglitz and Ghatak model over Banerjee, Besley, and Guinnane (Ahlin & Townsend, 2007). They also found that higher the per cent of group members reside in the same village, the better was their repayment performance. On the other hand, the results demonstrate that higher the per cent of relatives in the group, lower the repayment. But at the same time group enforcement or peer pressure be exist in higher degree. Group enforcement is the main reason for better repayment rate performance of borrowers Brehanu and Fufa (2007). Similarly, personal trust between group members

and social homogeneity are more important to group loan repayment than general societal trust or acquaintanceship between members Cassar et al. (2007). The frequent repayment schedule is an interesting complementary mechanism to achieve high repayment rate. But weekly collection of repayment instalment by bank personal is believed to reduce default risk in the absence of collateral and on the other hand it also dramatically increases MFI's transaction cost, thereby limiting the set of loan sizes and client types. Hence to tackle the problem flexible repayment schedule is an alternative, which definitely reduce transaction cost (Field & Pande, 2007).

Dynamic incentives are powerful tools for reducing moral hazard even when lenders are using individual liability contracts. The Grameen Bank of Bangladesh and Bolivia's BancoSol, for example, are the two best-known group lending pioneers, but they have both shifted toward individual lending as their customers have matured and sought larger loans (Armendariz & Morduch, 2007). Eventually, these microfinance games show how strategic behavior and social concerns interact to yield effective contracts that can work both for customers and lenders.

In some recent studies, it has been found that religiosity has a positive impact on repayment performance. As for example, Al-Azzam et al. (2012) found more religious borrowers less likely made late payments than less religious borrowers. Moreover, recent laboratory microfinance experiment confirms that lower cost of peer monitoring in compared to the cost of lender monitoring results in higher loan frequencies, higher monitoring and higher repayment rates compared to lender monitoring (Cason et al., 2012).

Emergence of microfinance in developing countries has a positive impact on reducing the share of informal loans in rural credit. As for example share of informal credit in rural India went down from 91 percent in 1951 to 45 percent in 1991 (Planning

Commission of India, 2007). But amongst the various channels under the institutional sector, the interest rate charged by MFIs is higher than co-operative and commercial banks. This is due to increasing transaction cost where collection charges, cost on group formation and salary, conveyance, etc are the major contributors (Planning Commission of India, 2007). One interesting fact is that financial cost ratio is amongst the highest in the world at 8.5 percent in India, whereas it is 3.4 percent in Bangladesh. But the interest rate is the lowest in India due to high productivity of field staff and high repayment rates. Although outreach of Indian microfinance sector is extensive, MFIs in India are not able to take advantage of their outreach to mobilize saving because of the regulatory mechanism, which prevents MFI to from accepting savings. Moreover the challenge of outreach still prevails in some nascent regions. As for example, performance of microfinance through SHG-bank Linkage model in Assam is extremely poor in terms of repayment rate (Purakayastha, 2005).

In summary of the both theoretical and empirical part of the literature on repayment, it is observed that most of the study considers factors of joint liability as a treatment group and number of variable such as wealth, education, distance, region, social ties, loan size, staff pressure, etc as control group. A limited numbers of studies explore the impact of other financial sources on repayment performance of the client as well as group. Thus realizing the gap, the present study tries to explore the role of availability of other financial services on repayment performance along with the usual test of joint liability.

II.7 LITERATURE ON SUSTAINABILITY AND EFFICIENCY

The present section delves to comprehend the issues of sustainability and efficiency based on the extant sources of literature.

II.7.1 Literature on Outreach and Sustainability of Microfinance Institutions

Outreach in general indicates the number of clients served by a MFI or Development Financial Institution (DFI). As noted by Meyer (2002),

"The first is simply the number of persons now served that were previously denied access to formal financial services. Usually these persons will be the poor because they cannot provide the collateral required for accessing formal loans, are perceived as being too risky to serve, and impose high transaction costs on financial institutions because of the small size of their financial activities and transactions. Women often face greater problems than men in accessing financial services so number of women served is often measured as another criterion.... Although difficult to measure, depth of poverty is a concern because the poorest of the poor face the greatest access problem. Some measure of depth of outreach is needed to evaluate how well MFIs reach the very poor. Finally, the variety of financial services provided is the criterion because it has been shown that the poor demand and their welfare will be improved if efficient and secure savings, insurance, remittance transfer and other services are provided in addition to the loans that are the predominant concern of policy makers."

Therefore, measuring outreach is a multifaceted issue since it is entangled by various aspect of provision of the service. Navajas et al. (2000), in this regard indicated six aspects of measuring outreach: *depth, worth of users, cost to users, breadth, length and scope*. First, *depth of outreach*, which refers to the value the society attaches to the net gain from the use of the micro credit by a given borrower. Poor clients are identified in this aspect of outreach, since formal financial institution denies the access to credit due to failure of poor to signal repayment worthiness (Conning, 1997). Second, *worth of outreach to users* refers to how much a borrower is willing to pay for a loan. Third, *cost of outreach to user* refers to cost of a loan to a borrower. These costs to users consist of prices like interest rates and various payments that they have to pay, which could be revenue to the lender, and other loan related transaction costs like expenses on documents, transport, food, taxes, etc. Fourth, *breadth of outreach* is the number of clients being offered credit by a MFI. Fifth, *length of outreach* is the time frame in which

a microfinance organization produces loans. Finally, *scope of outreach* is the number of type of financial contracts offered by a microfinance organization. It is argued that length of a loan matter, because if the MFI support the poor only in the short run it will hamper the social welfare of the society in the long run. In the case that when the client of the microfinance institution knows that he/she will not receive additional loan in the future they would have no incentive to borrowers to repay their loan.

A key tenet is that poor households demand access to credit, not cheap credit. Therefore, programs can charge high interest rates without compromising outreach. If the argument is right, much poverty alleviation can be achieved at no cost to governments and donors or perhaps even at a small profit (Morduch, 2000). The vision has been translated into a series of “best practices”^{viii} circulated widely by the Consultative Group to Assist the Poorest (CGAP)^{ix}; the US Agency for International Development, the United Nations Development Program, and other key donors. Despite keen awareness of “best practices,” nearly all programs remain substantially subsidized. This speculation has been widely cited, and Richard Rosenberg reports that its origin is a microfinance panel discussion at Boulder, Colorado. The consensus among a group of panellists was that 1 percent or fewer of programs were presently sustainable and that not more than 5 per cent would ever be (Morduch, 2000).

One interesting answer behind the question of why more financially sustainable institutions have higher impact lies in that they can charge relatively high rates of interest, which act as a screen to deter borrower whose project have relatively low rates of returns (Hulme & Mosely, 1998).

Financial sustainability thus implies not only reliance on own source of provision of finance, but also earning of some profit margin, which incentives the lenders to run the business in near future.

But in some models such as SHG-Bank Linkage the Programme (SBLP) run with a development objective like other MFIs, but the difference exists in its subsidization motives to run the program where government agencies play a crucial role in the selection and formation of the groups. High repayment rate are necessary condition for sustainability but not sufficient condition, since high administration cost, transaction and above all high cost in the delivery of the products should be the other side of financial self sufficiency.

In the wake of persistent poverty and budding of MFIs worldwide, outreach is perceived goal from social and business point of view. The gloomy part of the story loom when sustainability of the microfinance program have arisen since it is observed that only few percent of the MFIs are sustainable to run operation without subsidies (Hulme & Mosley 1996). Outreach and impact are complementary in nature in achieving microfinance sustainability. The concept cannot be applied in general as in some cases outreach and sustainability is competitive and sustainability pre-conditioned on the reduction or removal of subsidy on microfinance. A deep attention on the concept can be attracted by taking the case of depth of outreach. For example, when an MFI serve a section of population who lives below poverty line, the probability of poor repayment in the case of adverse economic shocks to their lives increases delinquency rate. Since even a small delinquency rate can causes more annual loss of loan, hence loan loss provision increases their cost segment (Rosenberg, 1999). Sustainability of microfinance is hence nowadays becoming more complex and debatable issue from different angles of observation and which is among the one^x of the important key principles of Consultative Group to Assist Poor (CGAP). Hermes and Lensink (2011) in a recent paper also reviewed the possibility of trade off between sustainability and outreach and impact of microfinance on social and economic situations.

In common parlance sustainability of microfinance indicates permanency of the program. Within microfinance, sustainability can be viewed at several levels- institutional (group and individual) and can relate to organizational, managerial and financial aspects^{xi}. However, financial sustainability of microfinance institutions has become the critical point of focus of mainstream microfinance analysis at the expense of the sustainability of the client. In defining sustainability of microfinance, Woller et al (1999) used the definition that offered by Brinkerhoff, which stated sustainability could as the “ability of a program to produce outputs that are valued sufficiently by beneficiaries and other stakeholders that the program receives enough resources and inputs to continue production.” Pollinger et al (2007) defined sustainability as the ability to cover annual budgets including grants, donations, and other fundraising. Acharya and Acharya (2006) considered view of Sharma and Nepal (1997) to understand the concept of sustainability of microfinance institutions, where sustainability indicates excess of operating income over operating cost. The concept is from the banker’s perspective and it includes both financial viability and institutional viability of MFIs. On the whole sustainability is not an end in itself. It is just a means to the end of improving the lot of the poor (Schreiner, 1997).

Financial sustainability indicates that income from the microfinance services should be greater than the cost of providing services. Therefore, self-sufficiency is an indication for the financial sustainability of the MFIs. As the microfinance industry matures, the definition of the self-sufficiency has commenced to slender (Ledgerwood, 1999) and currently sustainability refers only two levels of sustainability by the most of the people associated with this industry. These are *Operational Self Sufficiency (OSS)* and *Financial Self Sufficiency (FSS)*^{xii}.

OSS indicates whether enough revenue has been earned to cover the MFI's direct costs, excluding the cost of capital but including any actual financing costs. Since all MFIs do not incur financial cost equally, hence for the sake of simplicity, financing cost is excluded.

FSS on the other hand portray the actual financial health of MFIs. It is clear from the definition that OSS only covers operating income and operating expenses along with a provision of loan loss. But it does not include cost of capital, which can depict a real picture of the financial sustainability of the MFIs. Thus, FSS includes cost of capital (adjusted) apart from the components in OSS. Vinelli (2002) defines FSS as income derived from operations divided by the operating expenses incurred, thus excluding revenue from subsidies. On the other hand Pollinger et al (2007) refers self-sufficiency as to organizations that can survive and add to their asset base wholly on the basis of income derived from their lending and related operations. Subsidy is a crucial factor in analysing sustainability of microfinance in general and MFIs in particular. Majority of microfinance programs in the world are subsidized in different ways, sustainability of the programs poses a question in the mind of academics and researchers. Even front line institution like Grameen Bank of Bangladesh may experience a high repayment rate, but also depends on subsidies due to higher value towards social sector (Morduch, 1999). It is observed from the experience of the Philippines that although replication of Grameen-type MFIs can be sustainable with substantial increase in outreach, but it is at the cost of subsidy (Seibel & Torres 1999).

Subsidy syndrome thus considered attention from very beginning by researchers like Yaron, Hulme and Mosely, Khandker, etc. who constructed index to examine the subsidy dependence of the MFIs. The rationality of this index is to examine the social cost

associated with such subsidies and to highlight the harmful effects of subsidies to credit (Yaron, 1992).

Subsidy Dependence Index (SDI) as first developed by Yaron assesses and quantifies subsidy dependence and also measures the extent to which the lending interest rate would have to be raised in order to cover all operating costs if any subsidies the MFIs receive were to be uncovered (Hulme & Mosley 1996). Consequently the notion of a subsidy free break-even rate for MFIs provides the argument for the upward revision in interest rates to poor borrowers^{xiii}. SDI as calculated by Yaron is a fraction of subsidy to loan portfolio that is multiplied with lending interest rate. The most interesting calculation part of the index is subsidy where it comprises of a number of cost revenue and cost components^{xiv}. A modified version of the formula was devised in by Hulme and Mosley (1996) where they used new notations and simpler to calculate. SDI shows subsidy dependence of an MFI and in calculating the index from the earning point of view only income from loan portfolio is considered.

But as it is observed that source of earning of an MFI also comprises earning on investment and others apart from loan portfolio. In addition, since cost component involves in case of all these segments of earning, thus SDI seems to be narrow in calculating subsidies. Khandker therefore proposes Subsidy Dependence Ratio (SDR) to have a better understanding on the financial health of the institution. The rationality for taking this ratio is based on the argument of Kahndakar and Khalily (1996), which stated that as the SDI compares subsidy only with revenue from lending even though MFIs also get revenue from investments in non-loan assets such as treasury bills. In principle, a MFI could decrease its subsidy dependence through increased revenues either from loans or from investments. Thus the SDR suggests that subsidy be compared with revenue both from loans and from investments (Schreiner & Yaron, 1999).

Some programs have achieved both sustainability and deep outreach to undeserved, but most have not. The challenge remains to find ways to deliver small loans and collect small deposits, which not sending fees and interest rates through the roof. And if those objectives cannot be met, the challenge is then to develop a framework for thinking about microfinance as a social tool that may not need to rely to some degree and in some places, on continuing subsidies. In reality much of the microfinance movement continues to take advantage of subsidies. The recent application of Information and Communication Technology (ICT) in the field of microfinance explores the possible way for sustainability and desired impact of microfinance program (Kauffman & Riggins, 2012).

The *Microfinance Bulletin 2003* showed that 66 out of 124 micro lenders surveyed were financially sustainable at a rate just over 50 percent (Armendariz & Morduch, 2007). Data shows that even program reaching poor clients can do so while covering the full cost of transactions but the norms remain subsidization. Given the role of subsidies in microfinance, there is an urgent need for cost benefit analysis as such that the cost involvement with subsidy overrun benefits from microfinance or not. But in fact those are completed in a small number by researchers rather than donor. However donors to date have also shown only limited interest in cost-benefit analysis, possibly due to cost benefit analysis pushed in the public finance approach are not of limited value since subsidies are only a short term aid to get microfinance problems up and running. It is of little interest to know the current benefits that subsidies deliver, the argument goes since subsidies should in the end have no place in microfinance.

There are two main reasons that this argument is inadequate. *First*, it is still useful to it is still useful to assess the cost and benefits of the start up subsidies relative to alternative uses that donor could be put. *Second*, since reality shows that subsidy remains an

ongoing part of doing microfinance for nearly all programs, cost benefit analyses should nevertheless be a routine part of evaluation.

But it is difficult to have a cost benefit analysis since it requires new data and though a dollar investment in a subsidized microfinance program outweighs its cost to benefits, critique of subsidies still cynical on its real help on poor.

The debate over subsidy is not smooth if it is to be considered that MFIs may attain financial self sufficiency after some year of operation. When outreach deepens a MFI will naturally come out of subsidy. But the case is not as smooth as one can expect. Armendariz and Morduch (2007) have considered annual report of Grammen Bank, Bangladesh for the period of 1985-1996 and they have found that in this period the bank had reported \$1.5 million as profit. But if we concentrate on the grants and donation, it amounts to a total of \$16.4 million. Thus it is a clear picture that Grammen has earned a negative profit in real sense. So where is the financial self sufficiency? Besides there are other types of subsidy^{xv} which is also not accounted and often MFIs accounts hide these element when they make their balance sheet and profit and loss accounts.

Subsidy dependence index created by Jacob Yaron is one attempt to systematically account for all of those kinds of subsidies. Ledgerhood's (2001) measurement of self sufficiency has also a similar goal^{xvi}

The cost and benefit of subsidies is a crucial point in understanding sustainability of a program. A number of researchers have studied these aspects in different parts in the world. Townscend and Yaron (2001), for example, examined cost and benefits of subsidies in Thailand, where they showed that in 1995 BAAC's fees and interest had amounted 11percent of outstanding loan portfolio. Based on Yaron's SDI index, they found that BAAC^{xvii} would have to raise its portfolio yield by 35.4per cent in 1995 in order to be able to survive without subsidies, *ceteris paribus*.

Grameen Bank as a vanguard of the microfinance movement has reported a successful repayment rate of 98 percent with modest profits while serving over two millions functionally landless borrowers. But this performance does not reveal sustainability of the MFI since Grameen relies on subsidies. Grameen uses these subsidies to improve the incomes of poor, stability, child schooling, and family planning practices. Khandakar (1998) combines estimate of Grameen's subsidies with estimates of impacts and found that subsidy cost society 91 cents for every dollar of benefit received by clients.

Brewer et al. (1996) research into the performance of Small Business Investment Companies (SBICs) between 1958 and 1996 highlighted the potential dangers of subsidized funding. Many of the institutions that failed during this period had used SBA guarantees, which allowed SBICs to issue debentures at subsidized rates. By contrast, SBICs that used little or no SBA funding comprised the most successful segment of the industry. In terms of increasing self-sufficiency, by targeting different segments of the micro business population, it is easier to generate value by lending to individuals with better credit records, due to their increased ability to handle debt and lower associated default rates. However, in doing so, an MFI must be careful not to subvert its mission. Vinelli (2002) suggests that mission drift can occur when a lender seeks profit not by working harder to make better and less expensive products but rather by searching for borrowers who are easier and cheaper to serve (Schreiner & Morduch, 2002; Vinelli, 2002). Regarding pricing and self-sufficiency, Gulli (1998) suggests that institutions must charge sufficient interest rates to cover their costs. Bhatt et al.(2002) suggest that one reason for continued institutional dependence on subsidies is an unwillingness to charge the maximum legally allowable interest rates and fees that would allow programs to cover as much expense and risk cost as possible from operations. Their survey revealed that the average MFI interest rates in California of 11 percent were significantly

beneath legal and regulatory constraints, which vary from state to state. Self-sufficiency is seen as an appropriate mechanism for achieving the long term viability of the microfinance sector. First, available resources and subsidies are too small to provide microfinance to all who might benefit from it. Second, a focus on self-sufficiency can lead to decreased costs through increased efficiency. Third, leverage is more easily attained by organizations that generate the means to repay debt. Finally, reliance on subsidies might alter a firm's incentive structure in ways that could increase the likelihood of a negative event.

II.7.2 Literature on Efficiency of Microfinance Institutions

The foundation of efficiency assessment is theory of production functions. The standard definition of efficiency is due to Pareto-Koopman^{xviii} (Thanassaoulis, 2001). There are at least five different types of approaches^{xix} that have been employed for determining the best-practice frontier against which relative efficiency scores are measured. However, there is no consensus on the preferred method. Actually frontier function is an efficient transformation of given inputs into maximum attainable output. But for estimation of efficiency of best practice production, it is necessary to have a quantifiable standard. It was Farrell (1957) who first proposed an approach to estimate the productive or economic efficiency (EE) of observed units. He decomposed production efficiency 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 efficiency (AE), which quantifies the firm's success in choosing an optimum combination of inputs (Qayyum & Munir, 2006). The measurement of efficiency involves both parametric and non-parametric method. As a parametric method *Stochastic Frontier Analysis (SFA)* is more popular and among the non-parametric method *Data Envelopment Analysis (DEA)*

is widely used. Both the method has its own merits and demerits. While major advantages of SFA are its ability to incorporate and manage statistical noise and handle outliers through a functional form, and that hypotheses can be statistically tested; on the other, the simplicity in use precisely without a functional form make DEA more popular. Efficiency of financial institutions has been long studied exploiting both the models. Burger and Humphrey (1997) conducted a comprehensive review of 130 studies across 21 countries indicating the popularity of frontier studies. But there is a dearth of literature concerning the efficiency of MFIs. In their extensive review of literature Brau and Woller (2004) have also failed to review a single research paper specifically on efficiency of microfinance.

However some studies shed light on the theoretical exposition of efficiency analysis while some are purely empirical in nature. As for example Nieto et al (2005) and Cinca and Molinero (2004) tried to construct better specification for input and outputs that are used in production function. The alternative method like principal component analysis in selection of representative variable and unit are also devised (Nieto et al, 2005). Using DEA with 21 specifications that made of 2 inputs and 3 outputs, authors found that out of observed 30 MFIs in Latin America, only two MFIs have efficiency specification of 18 and 12 respectively for W-Popayan and Findasa. Further in an overall assessment, analysis by multivariate analysis of DEA through *pro-fit* showed that both W-Popayan and Findasa were efficient.

The result of efficiency and its determinants varies in different settings. As for example, Hassan and Tufte (2001) using a parametric approach (stochastic frontier analysis or SFA) found that Grameen Bank's branches staffed by the female employees operated more efficiently than their counterparts staffed by the male employees. On the average they found all types of Grameen Bank branches operated close to the efficiency frontier.

In another study, Qayyum and Munir (2006) analysed 85 MFIs across Pakistan, India and Bangladesh where they found that inefficiency is mainly technical in nature. By applying DEA, Sufian (2006) tried to analyze the efficiency of Non Banking Financial Intermediaries (NBFIs) of Malaysia, for the period 2000–2004. During the period the study revealed that only 28.75 per cent of 80 observations were efficient, and that the size and the part of the market have a negative effect on the efficiency. Bassem (2008) also analysed 35 MFIs in the Mediterranean regions and observed the negative effect on the MFI efficiency. While some study demonstrate positive relationship between social efficiency and financial performance (Louis & Seret, 2013), some contradicts popular faith that women centric microfinance institution are efficient (Hermes et al, 2011).

Paxton (2006) found that the Mexican MFIs with intermediate production approach transform savings into loans; while the production efficient institutions provided a large number of financial products at the cost of least inputs. The study suggested that inefficient institutions will either be removed from business or could be transformed to encourage efficiency, in a professional financial sector.

Some studies also inspect efficiency of MFIs from the perspectives of cost, subsidy, gender, etc. (e.g. Caudill et al. (2009), (2012)). It has been found that MFIs who provided loan to a group with higher percentage of women members, had lower costs; while, presence of subsidies cost the MFI at a higher side.

Hartarska et al. (2012) employed a classical structural approach to estimate a system of equations consisting of a cost function and cost shares. Based on the results, they concluded that industry, which exhibit increasing returns to scale, were likely to lower their costs with expansion to a significant extent.

In a recent study Hartarska et al. (2013) have estimated scale economies and elasticities of substitution among inputs in MFIs for the first time, the results of which supports the

existence of a trade-off between outreach and sustainability and corroborate that improvements in efficiency can come from the growth or consolidations of MFIs.

Emphasizing operating cost as a prime factor of efficiency Gonzalez (2007) examined the drivers behind operating cost with the help of a 1003 MFIs in 84 countries and found lower loan amount along with larger operating cost responsible for inefficiency of MFIs. Gonzalez (2008) in his thesis examined the relative technical efficiency of MFIs in Mexico and found that while average loan size has a positive impact on MFI efficiency, age and for Profit Corporation MFI showed a negative impact on efficiency.

MFI efficiency may be crucial not only to the MFI but also for overall domestic financial development (Hermes et al, 2009). In their investigation of 435 MFIs they found strong supportive evidence of a positive relationship between MFI efficiency and domestic financial development. They maintained that improved regulation and supervision of microfinance may positively contribute to improving the efficiency of MFI operations. On the other hand, well-developed financial markets may also substitute for MFIs, reducing the demand for their services and thus reducing their repayment performance. Both these effects may potentially reduce their efficiency. Moreover, there exist evidence of a significant, positive relationship between social efficiency and financial performance (Louis & Seret, 2013). Subsidy has also a positive impact on efficiency, in the sense that subsidized MFIs are more efficient than non-subsidised. However, subsidization beyond a certain threshold renders the marginal effect on efficiency negative (Hudon & Traca, 2011).

Haq et al (2010) in their study investigated the cost efficiency of 39 MFIs in Africa, Asia, and the Latin America using DEA. They compared efficiency of MFIs under both production and intermediation approach and found that under the intermediation approach 4 out of 13 bank-MFIs are both input and output oriented, pure technical and

scale efficient. Under production approach, 6 out of 12 NGO- MFIs were found as the most efficient.

It is apparent from the extant sources of review of microfinance efficiency literature that empirical examination of efficiency is basically conducted with DEA and SFA approach. The determinants of efficiency are still limited to some geographical regions. Although one study partially focused on the efficiency of Indian MFI, it lacks in examining the determinants of efficiency at branch level. However there is hardly any study showing efficiency analysis of inter branches. Therefore, in this present study an attempt has been made to explore this issue.

II.8 REVIEW ON IMPACT OF MICROFINANCE

The practical image of microfinance programme can be gauged in terms of impact on borrower. There are a plethora of studies on the impact of microfinance, which demonstrate that in the presence of a supportive environment targets like millennium development goals are achievable even through commercially-oriented microfinance (Montgomery & Weiss, 2011). However, studies also suggest that microfinance has become vulnerable to financial turmoil. In the global financial crisis impact was more severe when institutions had been active in tapping domestic and international financial markets for funds and had operated in countries experiencing a severe post-crisis recession (Wagner & Winkler, 2013).

The studies on microfinance impact broadly cover empowerment, socio-economic impact and impact on poverty. The impact of microfinance on the poor has spurred on two factions. One faction of researchers believes in the positive impact of microfinance, whereas the other contended and stresses on the negative impact.

Brau and Woller (2004) found in a comprehensive review of over 350 articles that ten of these studies assess microfinance programs in Bangladesh, which shows program participation could exert a large positive impact on self-employment profits. Moreover credit has a significant impact on the well-being of poor households. In Bangladesh, referring to the study of Khandker et al they found that program participation has positive impacts on household income, production, and employment, particularly in the rural non-farm sector, and that the growth in self-employment was achieved at the expense of wage employment, which implies an increase in rural wages. Authors had also consider impact studies in Bolivia, Ecuador, Ghana and South Africa, Guatemala, Honduras and Ecuador, Indonesia, Peru, Thailand, Uganda, Zambia and in multiple countries. It was found that findings of those studies vary considerably from study to study, which indicates impacts are highly contextually specific.

Based on a review study of 32 research and evaluation reports on impact of micro enterprise credit, Sebstad and Chen (1996) found positive effects from 26 of the 32 studies. Moreover, there are evidence of positive impacts of MEC on enterprise income Sebstad and Chen (1996). Similarly, Hulme and Mosley (1996) also found that both incomes of borrowers and control group of non-borrowers increased, but the increase in income of borrower was more than non-borrowers. Chen and Snodgrass (1999) also evinced positive impact of microfinance where borrower households' mean income is higher than non-member households, while savers' incomes were 12 per cent higher than non-members.

There is also evidence of significant positive impact of commercial group-based microfinance services on business volume and profit (Brown, 2002). Besides, Sinha (2003) conducted a study to assess on a national scale the outreach and development impact of MFI programme in relation to different product designs and delivery systems

in various parts of India. However some studies also project microfinance as an effective strategy for extending financial services to the poor and other disadvantaged groups not reached by formal sector finance (Sinha, 2003).

MFIs also improve the credit market and alleviate credit constraints since enterprises in municipalities with three or more MFIs face less severe financing constraints Harttska and Nadolnyak (2007). There is also evidence of positive impact of microfinance in enhancing income of households, increase of consumption, generation of employment, reduction of income inequality and enhancement of social welfare (Mahjabeen, 2008). Microfinance has a significant positive effect on welfare if MFI loans use productively. Besides loans for productive purposes were more important for poverty reduction in rural than in urban areas. However in urban areas, simple access to MFIs has larger average poverty-reducing effects than the access to loans from MFIs for productive purposes (Imai et al., 2010).

But there also exist evidence of mixed impact of microfinance. As for example, (Rooyen et al. 2012) found in sub Saharan Africa that that microfinance does harm, as well as good, to the livelihoods of the poor. Similarly, microfinance possibly results in increased total short-term credit, consumption, agricultural investment, income growth, but decreased overall asset growth (Kaboski & Townsend, 2012).

But as against positive impact of microfinance on the poorest, some researchers also criticise the way as microfinance works and termed popular faith as misconception Scully, 2004). This is because; over-exaggeration to the power of micro enterprise credit and related assistance may possibly create ignorance on some more pertinent key structural issues to the long-term problem of women and poverty.

Hermes and Lensink (2007) comprehensively reviewed both the positive and negative kind of impact in different perspective and they were blurred whether microfinance

substantially contributes to a reduction of world poverty and urged for solid empirical research.

The extant sources of literature therefore depict a mixed response to the key issues of microfinance, which way out some critical questions on the holistic performance of microfinance sector. In this endeavour, the subsequent section reflects on the research gap as identified from literature.

II.9 EXISTING RESEARCH GAP AND CONCLUSION

In this chapter it is tried to document extant source of literature on the specific areas of this research as discussed in chapter I. This section seeks to summarize the research gap and to emphasize those research issues that are addressed in this study.

The review of literature indicate that microfinance has multidimensional facets and in connection to that researchers across the globe have tested mainly four broad areas, which are working of JLL mechanism, outreach, sustainability and impact. But empirical testing is scant in Indian setting in general and Assam in particular. However, in international settings too, some issues related to microfinance repayment performance are verified at a limited extent. For example, a few studies explore the impact of other financial sources on repayment performance of the client as well as group. Moreover, in connection to critical triangle of microfinance, the relationship between high repayment performance and sustainability were studied. A handful of studies (Zeller & Meyer, 2002; Navajas et al, 2000; Schreiner, 1997; Schreiner & Yaron, 1999) shed light on this issue but empirical examination neglect developing countries like India. Interestingly, studies on the issue of efficiency of MFIs particularly in terms of disaggregate level is scant in nature. However, there is a plethora of studies regarding impact of microfinance, they are studied from different perspectives and limited studies are associated with

Indian settings. Further, in the context of regional studies, a few impact studies consider the affect of microfinance on welfare and reduction of inequality in Assam. Therefore in view of the research gaps as identified from literature, the present study attempts to investigate microfinance from a broader framework of repayment performance, sustainability, efficiency and impact.

Notes:

ⁱ Patten et.al (2001) examined the experience of Bank Rakyat Indonesia during the East Asian Crisis of 1997 and found that amidst the crisis, the bank has succeeded due to three essential feature e.g., *ability to repay, willingness to repay and willingness to save*.

ⁱⁱ In recent Global Economic Crisis, it has neither made a negative impact on microfinance supply nor shrinks in microfinance demand worldwide. Even it has not a negative impact on repayment rates (Everett, S., 2011).

ⁱⁱⁱ Becchetti and Castrita (2011) evaluated the effectiveness of microfinance as a recovery tool after Tsunami hit considering Sri Lankan MFIs. They found that post-tsunami loan to income ratio has a significant effect on the borrowers' recovery and the effect of the loan to income ratio is significantly stronger for damaged borrowers. Their investigation offers new vistas for using donor's resources after calamities. Moreover, in parallel to the direct provision of food, investment goods, or infrastructure, fundamental to address emergency needs and rebuilding, recapitalizing MFIs under stress after calamities may provide an effective liquidity injection by acting as a sort of expansive monetary policy measure for the poor. Such measure can restart and stimulate economic activity with significant effects in terms of both worked hours and income creation.

^{iv} The run for commercialization of microfinance in recent times has become a concern about the social goals of microfinance (Charitonenko et al., 2004). But a recent study conducted by Montgomery and Weiss (2011) in Pakistan reflects that access to microcredit program has had positive impacts on monetary measures of welfare on aggregate. They found higher probability of medical treatment for children in the household and a higher probability that the provider of that treatment is trained associated with microfinance. Besides they also found that due to access to microfinance wives of male bank members report greater empowerment in family decisions than wives of members who have not yet taken out a loan. All these results reflect a contribution of microfinance in achieving Millennium Development Goals in Pakistan.

^v Joint liability contract indicates that all members in a group is treated as being in default if any other member in the same group fails to meet her payment obligation (Besley & Coate, 1995).

^{vi} Dynamic incentives means that the borrower is cut off from future borrowing if she fails to meet her payment instalments and where bigger loans are granted over time if the previous one has been paid back in an orderly manner (Morduch, 1999).

^{vii} BRAC was initiated in 1972 by Sir Fazle Hasan Abed. Formerly, it was known as Bangladesh Rehabilitation Assistance Committee and then as the Bangladesh Rural Advancement Committee. At present BRAC does not represent an acronym (Wikipedia, 2012).

^{viii} Best practice is a contextual concept. Since the field of microfinance is diverse in nature, there is no single approach, lending methodology or organizational structure appropriate for all situations. Therefore every model must be adapted to the local context and tailored to fit and reflect local needs (Villareal, L.V.; Upare, M.A. 2003).

^{ix} CGAP is a donor consortium housed within the World Bank.

^x Principal number 3 of Consultative Group to Assist Poor states that “*Microfinance means building financial systems that serve the poor*”. The principal thus has an anticipation that microfinance programs can serve the poor (in general outreach) in a sustainability way.

^{xi} Sa-Dhan Microfinance Resource Centre, 2003, Sustainability of Microfinance Interventions, Perspective Paper No. 4, Sa-Dhan, pp. 1-20

^{xii} Interpretations for both these indicators are taken from Ledgerwood (1999) and web source of UNCDF.

^{xiii} Sa-Dhan Microfinance Resource Centre, 2003, Sustainability of Microfinance Interventions, Perspective Paper No. 4, Sa-Dhan, pp. 1-20

^{xiv} For details, please refer computation part of SDI in Yaron (1992).

^{xv} The other forms of subsidy come in the way of training and institutional support to microfinance institution and majority in terms of soft loans which are seek when market interest rate is high enough. The rate of interest for such soft loans is basically 1per cent and the term of repayment is very long.

^{xvi} For the working of SDI please refer to The Economics of Microfinance by Armendariz and Morduch (2007)

^{xvii} BAAC stands for Bank for Agriculture and Agricultural Cooperatives (Thailand). It is also reckoned as one of the premier microfinance organization in the world.

^{xviii} According to Pareto-Koopman definition, the performance of a DMU is *efficient* if and only if it is not possible to improve any input or output without worsening any other input or output.

^{xix} These are data envelopment analysis, free disposal hull, stochastic frontier approach, distribution-free approach, and thick frontier approach.

The logo of Indian Institute of Technology Guwahati is a circular emblem. It features a central stylized figure with three rounded shapes above its head, resembling a traditional Indian deity or symbol. The text "Indian Institute of Technology Guwahati" is written in English around the bottom half of the circle, and its Assamese equivalent "ভাৰতীয় প্ৰযুক্তিগতী সংস্থান গুৱাহাটী" is written around the top half. The logo is rendered in a light grey color.

CHAPTER-III

**THE ECONOMY OF
ASSAM AND THE
MICROFINANCE SECTOR**

CHAPTER-III

THE ECONOMY OF ASSAM AND THE MICROFINANCE SECTOR

III.1. INTRODUCTION

The review of extant source of literatures in the previous chapter indicates some pertinent issues some of which are partially discussed and others are examined in different settings in this world. In view of its demands for an examination on the issues particularly in the context of Assam, the present chapter makes a brief review on the economy of Assam and the financial sector in general and the microfinance sector of the state in particular. The basic intention behind the attempt is to comprehend the state-of-the-art of microfinance sector in Assam in view of the socio-economic background of the state. Moreover, in order to understand the working of microfinance lending delivery mechanism in general and its micro issues like repayment, sustainability, efficiency in particular, it demands a thorough understanding of the characteristics of the program and the context in which it operates. Such background information will shade light not only on the analysis of results, but also assists in the definition and measurement of model variables and equations. This chapter specifically provides an overview of group lending scheme in Assam in general and sample MFIs in particular along with some important background information like, microfinance regulatory environment and poverty scenario in the state.

III. 2. GEOGRAPHY AND DEMOGRAPHY OF ASSAM

Assam the gateway of North East India is geographically bounded by latitudes $24^{\circ}08'10''$ N and $27^{\circ}58'15''$ N and longitudes $89^{\circ}42'05''$ E and $96^{\circ}01'14''$ E (Baruah & Choudhury, 1999). The state is bounded by two foreign countries and seven Indian states. Bhutan and

Arunachal Pradesh are in the north of the state. To the east there are Arunachal Pradesh, Nagaland and Manipur. The southern boundary is skirted by Mizoram and Meghalaya and to the west there lie West Bengal, Bangladesh and Tripura. The state shares a total of 632 kilometres of international boundary with Bangladesh (57.44 per cent) and Bhutan (42.56 per cent). It also shares 2275.3 kilometres of its national boundaries with West Bengal (5.6 per cent), Meghalaya (31.8 per cent), Nagaland (19.1 per cent), Manipur (6.9 per cent), Arunachal Pradesh (30.9 per cent) and Mizoram (5.7 per cent).

Geographically, Assam is divided into two parts- the plains and the hills. For administrative purposes the plains of the state is divided into 25 districts and the hill areas into 2 districts. Moreover, topographically Assam is divided into two major units, viz. the Brahmaputra Plain and the Barak Plain. The two plains are separated by Karbi Plateaus and North Cachar Hills (Baruah & Choudhury, 1999).

The Brahmaputra valley is spread over an area of 56339 sq. kms and is largely an alluvial plain with a length of about 772.45 km and an average width of 80.47 km. It is bounded on the north by the Bhutan and Arunachal, on the east by the hills of Patkai and its branches lying in Arunachal and on the south by the hills of Nagaland and the plateaus of Karbi and Meghalaya. The valley has 22 administrative districts which comprises about 72 per cent of the total geographical area of the state and shelters about 86 percent of total population of the state.

Barak plain is surrounded by the North Cachar hills in the north, in the east by Manipur hills and in the south by Mizoram hills. It is open only to the west. The plain is about 70 km wide on the average from the north to the south. The region is relatively small, which has only three districts and accounting for only about 8.8 per cent of the total area of the state and shelters about 7.5 percent of total population of the state.

The Karbi plateau is oval in shape and highly dissected along its margins. The plateau gives out many streams to the surrounding lowlands of Golaghat and Nagaon districts and there are terraces at places where these rivers emerge to the plain. The North Cachar Hills generally have North East-South West alignment and lie between the Karbi plateau in the north and Barak plain in the south. It is in this district that the highest hill range of Assam, i.e. Barail Range lies. It extends from the south eastern boundary of the Meghalaya Plateau and run across the North Cachar Hills district and Nagaland in the East-North-East direction and ultimately joins Patkai Range in the Indo Myanmar border. Both the region constitutes about 19.2 per cent of the total area of the state along with 6.5 percent of the state population in two administrative districts (popularly known as Hills Area Districts).

Assam shares 2.38 percent of total geographical area of India and shelters to 2.57 percent of total population of India as per Census of India 2011. According to 2011 census, the provisional total population for the state is 31169272 with a marginally better sex ratio of 954 than national average (940). The population of the state in 2011 was 26,638,407. Thus it has recorded a decadal variation of about 16.93 per cent. The density of the state has also remained very high for quite a few decades. According to the provisional population figures of 2011 census, the density of the state is 398 persons per square km as compared to 382 sq. km for the whole of India. In 2001, the density for India was found to be 312 per sq. km while that for Assam was at a higher level at 340 per sq. km.

While 68.84 per cent of total households are populated in rural areas in India, it is quite higher at 85.9 per cent in Assam. Therefore, it is indicative that the economy of Assam purely based on rural population hub. In addition literacy ratio is lesser in Assam (72.2 per cent) in comparison to all India level of 73 per cent. It is interesting to note that workforce participation rate in the state is also lower (38.4 per cent) than national level

(39.8 per cent). Male workforce in the state is much higher (53.6 per cent) as compared to female work force (22.5 per cent). Among the total workforce, main workforce allocates 72.6 per cent while marginal workers constitute only 27.4 per cent. It is noteworthy that while out of total workforce only 30 per cent are involved in agriculture and allied activity in India, it stood at 15.4 for Assam, counting dominance of female (63 per cent) in the sector.

III. 3 MACROECONOMIC CONDITIONS OF ASSAM

The economy of Assam is basically an agrarian economy where about 80 per cent of population directly or indirectly engross with agriculture and allied activities. But agriculture and agricultural and allied sector contributes about 47 per cent in Gross State Domestic Product (GSDP) of the state has been declining since 1999-00, which is clearly depicted in table 3.1. It is clear from the table that while the share of agriculture and allied sector has shown a decreasing trend for the period in concern, share of service sector has increased over the period. It is worth mentioning that the negative growth rate of agriculture and allied activity sectors in terms of its share to GSDP is faster as compared to the positive growth of services and industry sector. As per the Central Statistical Organisation of India (CSO) database, banking and insurance sector, which is a component of service sector, on the other hand depicts marginally constant improvement in their share to GSDP. The share of microfinance sector in the economy of Assam is not shown separately due to dearth of secondary information. But it may be inferred from the growth of banking and insurance sector that it has positive role in the growth of economy, since microfinance is basically linked with the commercial banking and insuranceⁱ sector. This is due to the basic structure of microfinance delivery mechanism.

Table 3.1: Share of Selected Sectors in the GSDP of Assam during 1999-00 to 2011-12

Year	Agriculture & Allied	Industry	Services
1999-00	35.21	18.29	46.50
2000-01	33.88	18.00	48.12
2001-02	32.81	18.75	48.43
2002-03	31.02	20.94	48.04
2003-04	29.70	22.03	48.27
2004-05	26.77	18.38	54.86
2005-06	26.40	17.10	56.50
2006-07	25.63	16.07	58.29
2007-08	25.43	14.84	59.73
2008-09	24.84	12.36	62.79
2009-10	24.44	11.51	64.05
2010-11	24.23	10.92	64.85
2011-12	23.74	10.39	65.87

Source: Central Statistical Organisaion online database
Handbook of Indian Economy, Various Issues, RBI
Usual Calculation is done by Author

The share of different sectors does not portray a reflective scenario of the economic growth of the state. In this regard, the growth of the economy and its share to Gross Domestic Product (GDP) is calculated as in table 3.2.

It is observed from the table that the growth of Gross State Domestic Product (GSDP) of Assam does not reflect a uniform trend. The rate of growth has increased from 2.59 per cent in 2001-02 to 7.07 per cent in 2002-03, but fails to keep the pace of growth for the subsequent period until 2008-09. Growth rate is considerably higher in 2009-10, but fails to keep uniform trend. Similarly rate of growth of State Per Capita Income (SPCI) for the period also does not demonstrate a uniform trend. However, Assam shares marginal amount of national GDP for the period. The share of state economy to national GDP has deteriorated during the period 2002-03 to 2008-09, which reflects a widening gap.

**Table 3.2: Share and Growth of GSDP of Assam
during 1999-00 to 2011-12**

(At 2004-05 prices)

Year	GSDP (₹ Crore)	State Per Capita Income (₹)	Share of GSDP* (per cent)	Growth (per cent)	
				GSDP	State Per Capita Income
1999-00	41800	16038	1.95	-	-
2000-01	42858	16254	1.92	2.53	1.35
2001-02	43970	16362	1.86	2.59	0.66
2002-03	47080	17234	1.92	7.07	5.33
2003-04	49914	18007	1.87	6.02	4.48
2004-05	53398	18993	1.80	6.98	5.47
2005-06	55214	19369	1.70	3.40	1.98
2006-07	57783	19997	1.62	4.65	3.24
2007-08	60568	20684	1.55	4.82	3.44
2008-09	64033	21589	1.54	5.72	4.38
2009-10	69794	23236	1.55	9.00	7.63
2010-11	75298	24758	1.54	7.89	6.55
2011-12	80172	26037	1.54	6.47	5.17

* Share indicates per cent of GSDP of Assam to GDP of India at 2004-05ⁱⁱ prices.

Source: CSO, Government of India and RBI Online Database

Usual calculation is done by author

III.3.1 Employment Scenario in the State

Keynes maintained a strong relationship among income, employment, consumption, production and investment in an economy. Reckoning the Keynesian theory of employment and income generation, it is maintained that a developing or underdeveloped nation should maintain moderate level of employment to grow the economy (Myrdal, 2008 (orig. 1968)). It is therefore imperative to examine the employment scenario of the state in particular and labour force participation in general. Labour-force refers to the population which supplies or offers to supply labour for production and, therefore, includes both 'employed' and 'unemployed' persons/person days. Labour-force participation rate (LFPR) is defined as the number of persons/person

days including that not in labour force in the labour-force per 1000 persons. Similarly, the number of persons/person-days employed per 1000 persons/person-days is referred to as work-force participation rates (WFPR) or worker-population ratio (WPR). For measuring LFPR or WFPR, all the three approaches, viz. usual status, current weekly status and current daily status, were adopted for collection of data in the survey. The status of labour force participation is depicted in table 3.3.

Table 3.3: Labour Force Participation Rate in India and Assam according to Usual Status (PS+SS) during 1999-00 to 2005-06

Segment	Assam (per cent)		India (per cent)	
	1999-00	2005-06	1999-00	2005-06
Rural Male	54.6	55.6	54.0	56.0
Rural Female	16.1	21.4	30.2	31.4
Rural Person	36.4	39.1	42.3	44.1
Urban Male	56.5	60.3	54.2	56.5
Urban Female	13.8	12.0	14.7	15.3
Urban Person	36.8	38.3	35.4	36.8
<i>Male</i>	<i>54.8</i>	<i>56.0</i>	<i>54.1</i>	<i>56.1</i>
<i>Female</i>	<i>15.8</i>	<i>20.6</i>	<i>26.3</i>	<i>27.6</i>
Person	36.4	39.0	40.5	42.3

Note: PS and SS indicate primary status and secondary status respectively. The latest survey regarding labour force participation is for the period 2005-06

Source: Report No. 458(55/10/2) and Report No. 522(62/10/1), NSSO, Government of India
Usual calculation is done by author

It is found that LFPR is lower in Assam in comparison to national aggregate. But growth of LFPR is marginally better as compared to all India average for the period in consideration. It is quite uniform that male still dominates with better participation in the labour force in the state as well as in the country. While participation in labour force in urban areas of Assam is comparatively higher to the national LFPR in 2005-06, it is comparatively lower in Assam than national aggregate for rural areas. It depicts that both the state and the country demands higher level of participation in the labour force so as to foster the growth of the economy. It is worth mentioning that in Assam, participation

of female in the labour force in rural areas of Assam is remarkably lower than the national average.

However, LFPR does not indicate the real employment scenario since it includes both employed and unemployed persons. It is clear from the table 3.4 that employment rates are increased in both the state and the country. Moreover the employment rate in case of urban female is quite lower as compared to urban male for both state and the country. The similar picture is observed for rural population of the state. Therefore, it seems that female participation in labour force and female employment should be strengthened to accelerate the pace of the state economy. Microfinance in this context has immense potentiality as an indispensable device to achieve the dual goal.

Table 3.4: Usual Status (PS+SS) Employment Rate in India and Assam during 1999-00 to 2005-06

Segment	Assam (in per cent)		India (in per cent)	
	1999-00	2005-06	1999-00	2005-06
Rural Male	52.9	54.2	53.1	54.9
Rural Female	15.1	20.7	29.9	31
Rural Person	34.9	38.1	41.7	43.3
Urban Male	52.2	56.3	51.8	54
Urban Female	11.2	10.1	13.9	14.3
Urban Person	33.2	35.2	33.7	35
Male	52.8	54.4	52.8	54.7
Female	14.7	20.2	27.7	28.8
Person	44.8	45.9	44.9	46.4

Note: PS and SS indicate primary status and secondary status respectively.

Source: Report No. 458(55/10/2) and Report No. 522(62/10/1), NSSO, Government of India
Usual calculation is done by author

III.3.2 Poverty in the State

The previous discussion in this sub section shows that the state economy in view of lower employment rate is inadequate to foster employment opportunities. Inadequacy of employment opportunity stands as hindrance in the growth of the state economy and as a result a vicious circle is formed which in turn results in as impediment in provisioning

adequate employment opportunities for the state. In addition it becomes necessary to be examined the poverty status so as to make comprehensive arrangement to develop a prolific strategy to provide better employment opportunities and a standard and sustainable livelihood arrangement. In table 3.5 the poverty scenario of the state is depicted which is based on the planning commission's recent database.

Table 3.5: Trend of Poverty in Assam in Compare to All India Level
(in per cent)

Survey Year	Assam	India	Difference (India-Assam)
1973-74	51.21	54.88	3.67
1977-78	57.15	51.32	-5.83
1983-84	40.47	44.48	4.01
1987-88	36.21	38.86	2.65
1993-94	40.86	35.97	-4.89
1999-00	36.09	26.10	-9.99
2004-05	15.00	21.80	6.80
2009-10 ⁱⁱⁱ	37.90	29.80	-8.10

Source: Planning Commission, Government of India

Pal, P.K. (2010), pp.169-170

It is clear from table 3.5 that since 1973-74 the poverty ratio of both Assam and India has been decreasing until 2004-05 and shows considerable increase in 2009-10. While the poverty ratio of the state does not portray a uniform pattern, the poverty ratio for the country shows a gradual deceleration. However, it is interesting to note that the difference between the poverty ratio of country and the state indicates lesser poor people in the state for the survey years 1973-74, 1983-84, 1987-88 and 2004-05. Whatever the differences, it indicates that the development programmes as initiated by the central government since independence and particularly in 1970,s pave the way for better arrangement for the poor sections of population both in the state and country. This initiative is further strengthened by adoption of microfinance programmes in 1990's in the country. For reduction of poverty, microfinance movement has an indispensable role through intensified operation across horizontally and vertically.

III.4 THE FINANCIAL SECTOR OF ASSAM

During pre-British period Assam had a self sufficient economy which was mainly based on barter system. There was hardly any need for credit while money itself was scarcely available to the public for day-to-day transactions except coins of smaller denominations and *cowries* (conch shells), which were used in minor transactions. It was only during the early part of the current century that the credit structure of Assam economy took some concrete shape. It is clearly mentioned in 'A Statistical Account of Assam' that there was no banking establishments in Assam where loans were conducted by wealthy land holders and shop keepers that combined their regular trade with money lending (Hunter, 1982 (orig. 1879)). The money lender retained the predominant hold even after the growth of banking institutions like the co-operative credit societies and bank loan offices, etc. grew up (Baruah & Choudhury, 1999).

III.4.1 Incidence of Indebtedness in the State

Before bank nationalization there was a considerable burden of indebtedness in rural areas. The only factor which has a limiting influence is the non-availability of credit in rural areas. As an approximation the average debt per indebted family in 1948 remained at much the same level as in 1929 (Goswami, 1988). After the economic depression in 1931-33, the Government of Assam took measures to relieve the rural people from the burden of indebtedness. The Assam Money Lenders Act was passed in 1934 to reduce moneylender's extortions from debtors. Compound interest rate was restricted to 9.375 percent and 12.5 percent, depending whether the loan was secured or not. The outbreak of Second World War gave a great opportunity to the people of Assam to earn in various new jobs arising out of the war efforts in the State. This helped to reduce indebtedness considerably. But even then, the heavy burden of indebtedness in 1948-49 would be

realized by comparing average debt per indebted family with the net annual average income per rural family.

Co-operative societies, which are established in 1904 in Assam, had merely provided 4 percent of the rural credit. As against, the rise of moneylenders credit operation in rural areas are due to constant touch between debtor and creditor. The Planning Commission in 1980s observed that easier credit facilities should be extended to small and marginal farmers in order to utilize the infrastructural facilities like irrigation, transport, warehousing, technical methods employed in modern farm practice, etc. (Baruah & Choudhury, 1999).

While information asymmetry on the part of formal financial institution avert intended credit outreach, moneylenders on the other hand reap the advantage of information asymmetry and thus able to secure collateralize their advances. Whatever the burden of credit along with exorbitant rate of interest, the informal credit market prevails since loan repayment requires fresh loan advances. The incidence of indebtedness in Assam has not changed after several efforts made after independence.

Table 3.6: Incidence of Indebtedness^{iv} to Institutional and Non-Institutional Agencies

(In per cent)

Region	NSSO Round	Rural			Urban		
		Institutional	Non-institutional	Any	Institutional	Non-institutional	Any
Assam	48 th (1992)	3.0	3.2	6.2	5.2	1.0	6.2
	59 th (2003)	1.6	5.9	7.5	2.2	4.0	6.0
India	48 th (1992)	15.6	9.8	23.4	11.8	9.4	19.3
	59 th (2003)	13.4	15.5	26.5	9.3	9.4	17.8

Source: NSSO 48th and 59th Round

It is depicted in table 3.6 that the incidence of indebtedness in Assam is quite lower, which indicates risk aversion on the part of poor section by not undertaking

entrepreneurial activities. It is interesting to note that while the incidence of indebtedness from non-institutional sources is lesser than institutional source in India; the scenario is quite opposite in Assam in recent period.

While the incidence of indebtedness from institutional sources has been decreased over the period in both Assam and India, it has been increased in case of non-institutional sources. Moreover share of institutional agencies in outstanding cash debt is comprehensively higher in Assam as compared to the national aggregate as it is shown in table 3.7.

Table 3.7: Share of Institutional Agencies in Outstanding Cash Debt

(In per cent)

Region	Rural			Urban		
	1981	1991	2002	1981	1991	2002
Assam	30.6	66.0	58.0	77.0	97.0	83.0
India	61.2	66.0	57.0	60.0	72.0	75.0

Source: NSSO 48th and 59th Round

It is reflected in table 3.8 that institutional credit agencies comprising government agencies, cooperative societies, commercial banks, provident funds and others has occupied predominant share of cash dues outstanding.

While the share of institutional agencies in cash due outstanding in rural areas of Assam and India portray same scenario for the period inconsideration; the share of institutional agencies in urban areas of Assam has been decreased over the period 1992-2003, while in India it demonstrated an increasing share. On the other hand it is clear from table 3.8 that the share of professional money lender in cash due outstanding has considerably increased over the period. It is noteworthy that microfinance sector has not considered in case of institutional credit agencies.

Table 3.8: Share of Different Credit Agencies in Cash Dues Outstanding

(In per cent)

Credit Agencies	Assam				India			
	Rural		Urban		Rural		Urban	
	1992	2003	1992	2003	1992	2003	1992	2003
Government etc.	17.9	15.4	17.7	6.8	6.1	2.3	11.1	7.6
Cooperative Societies	8.3	5.2	33.4	5.7	21.6	27.3	17.2	20.5
Commercial Banks	34.5	23.1	40.4	57.3	33.7	24.5	21.6	29.7
Insurance	.2	.1	1.1	5.9	.3	.3	1.4	3.5
Provident Fund	.5	7.3	3.2	2.1	.7	.3	3.3	2.0
Others	3.2	6.9	.7	4.8	1.6	2.4	15.5	11.9
All Institutional	64.4	57.9	96.6	82.5	64.0	57.1	70.0	75.1
Landlord	0	.2	0	0	4.0	1.0	.6	.2
Agricultural Moneylenders	.5	2.4	0	0	7.1	10.0	1.0	.9
Professional Moneylenders	3.5	23.8	.1	1.4	10.5	19.6	9.2	13.2
All Non- institutional	33.9	42.1	3.4	17.5	32.7	42.9	26.8	24.9
Unspecified	1.7	0	0	0	3.3	0	3.2	0

Source: NSSO 48th and 59th Round

III.4.2 Banking and Credit in Assam

At the time of independence the banking structure as a whole was very weak in the North East India. The Government treasuries were operating all monetary transactions of the governments. Later on the State Bank of India took up this activity. Due to the dearth of adequate banking services to the local people, the Gauhati Bank was established in 1926, which opened branches in urban and semi urban regions of the state. In 1950-51, 47 branches of banks operating in Assam had to wind up business as there was great rush. Even a few scheduled banks failed and some other important banks closed their operation. The revival of the Gauhati bank as the Purbanchal bank in 1972 was considered as the sole instance of a non-schedule bank surviving great bank crisis of early 50s (Barua & Choudhury, 1999). Besides State Bank of India, The United Bank has

the largest number of branches in North East India. Assam Co-operative Apex Bank was also formed in 1949. Assam Co-operative Apex Bank and Purbanchal Bank with their 42 and 38 bank branches respectively assisted local people greatly in expanding their business, trade and profession. Another four rural banks in Assam was opened with head offices at Nalbari, Golaghat, North Lakhimpur and Silchar. In subsequent period a rural bank was also opened in Karbi Anglong district.

In Assam, bank outreach in terms of number of bank branches has increased from 74 in 1969 to 767 in 1984. The share of bank branches in total bank branches at national level had increased from 0.9 per cent in 1969 to 1.6 per cent in 1984. Total bank deposits, advances and credit deposit ratios in the N.E. India are quite low. Because of the inadequate representation in the Board of Directors, the investment proposals from North East India suffer for lack of proper pleadings. At the direction of Government of India and the Reserve Bank, the banking system had advanced towards priority sector. Afterwards in 1991 banking sector reforms happened and thus a more systematic banking and financial infrastructure was advanced in India as well as Assam.

In this connection it is important to examine the recent scenario of banking sector to justify the basis and emergence of microfinance and potentiality of microfinance market in the state. It is well known that an equipped and well developed financial infrastructure is an essential property for a country to be developed. Financial institutions in general and banking institutions in particular facilitates other economic and livelihood activities to nurture and which in turn results in better economic condition of the region and better business for the institutions. Therefore, in view of high population pressure and huge unemployment scenario, financial institutions have a crucial role in catering livelihood for the huge rural population base.

It is observed from the table 3.9 that during the period 1997-2012, growth of banking centres demonstrates negative rate of growth in terms of Compounded Annual Growth Rate (CAGR) in Assam.

Table 3.9: Population Group wise Distribution of Banking Centres in Assam and India during 1997-2012

Year	Assam				India			
	Rural	Semi Urban	Urban	All	Rural	Semi Urban	Urban	All
1997	789	73	4	866	30870	5029	314	36213
1998	786	73	4	863	30771	5037	314	36122
1999	782	73	4	859	30690	5038	314	36042
2000	756	73	4	833	30524	5047	314	35885
2001	749	73	4	826	30268	5051	314	35633
2002	736	73	4	813	30157	5046	314	35517
2003	722	72	5	799	29772	5042	317	35131
2004	722	72	5	799	29674	5040	318	35032
2005	719	64	6	789	28440	5815	433	34688
2006	716	64	6	786	28333	5811	433	34577
2007	700	67	6	773	28153	5826	434	34413
2008	700	67	6	773	28280	5863	433	34576
2009	701	67	6	774	28453	5899	433	34785
2010	700	67	6	773	28484	5909	428	34821
2011	704	67	6	777	28941	5967	430	35338
2012	708	68	5	781	30462	6078	419	36959
CAGR⁺	(-0.67)	(-0.44)	(1.40)	(-0.64)	(-0.08)	(1.19)	(1.82)	(0.13)

+ CAGR for the period 1997-2012 expressed in terms of per cent

Source: Banking and Statistical Return of India, RBI, Various years

It indicates closing of banking centres. The rate of closing of those banking centres in Assam is more as compared to national aggregate. The trend is due to closing of banking centres in rural areas. It is clear from the table that the growth of banking centres in urban areas in Assam and India is comparatively better than in rural and semi urban areas. It therefore reflects a grim picture in view of persistence of rampant poverty in rural area along with inadequate arrangement for livelihood.

However, it is important to examine the exit of rural banking centres, which mark a negative impact on the basic banking provision of the state. It is depicted in table 3.10

that the size of average population per banking branch offices is comparatively larger than national average. Moreover, the numbers of population per banking branch offices demonstrate a positive growth for the period 1998-2008 as against constant growth of national average. In absolute term, there is an extra pressure of population in the range of 6000-7000 per banking branches in Assam than the national aggregate. Therefore, it demands more formal financial centres in the state. But the demands for more banking centres should be justified on the basis of banking business potentiality in the state. *Credit Deposit Ratio* (CDR) is devised in this case, where a higher CDR indicates better banking business in terms of loan creation. It is clear from table 3.10 that CDR in Assam is comparatively lesser than national average.

Table 3.10: Some Selected Banking Indicators of Assam and India

Year	Assam		India	
	APPBO (,000)	CD Ratio (in per cent)	APPBO (,000)	CD Ratio (in per cent)
1998	21	32.9	15	55.5
1999	21	32	15	54.8
2000	21	32	15	56
2001	22	32.1	15	56.7
2002	22	31.4	16	62.3
2003	22	29.3	16	59.2
2004	23	31.8	16	58.2
2005	23	35.3	16	66
2006	23	42	16	72.5
2007	23	42.8	16	75
2008	23	42.4	15	74.4
2009	22	38.5	15	72.6
2010	-	37.8	-	73.3
2011	-	36.5	-	75.6
2012	-	37.3	-	78.1

Notes: Credit-Deposit Ratio (CD Ratio) is in terms of sanction

Source: Trends and Progress of Banking in India, RBI, Various issues

Although the ratio shows improvement in loan creation for the period in concern, but the national scenario is quite advanced in compare to the state. Therefore it shows that the

business performance of banking centres in the state should be improved at the cost of expansion of banking branches.

In corollary to the foregoing discussion it seems that there is a need to improve both formal financial infrastructure and banking and financial performance in the state so as to serve financially excluded section of population in particular and whole population of the state in general. However, improvement in the scenario could fulfill the national objective of financial inclusion^v and in this connection microfinance model could be an alternative to reach the unreached vast majority of the rural population.

III.5 AN OVERVIEW OF MICROFINANCE IN ASSAM

Microfinance, in India, is operating under two broad models^{vi}, where MFI model has gained momentum recently, albeit operational for over three decades. The model shares 25.53 per cent of the total microfinance client outreach of 54.87 million as on 2007-08 with an outstanding credit of ₹ 6124 crore (Srinivasan 2009). The model has also been operating in Assam, which is a priority state in terms of SBLP^{vii} for a period of over one decade with infinitesimal share as compared to national total. The model shares only 0.98 per cent in terms of client outreach and 0.75 per cent in terms of loan portfolio (Srinivasan 2009). It is thus an indication that there is a scope of increasing outreach and the assertion is justified with the coming up of new players in the market, which have hidden potentiality.

III.5.1 Demand for Microfinance in the State

Microfinance services are basically demanded by household, formal and informal sector enterprises. While household demand for microfinance arises due to consumption smoothening and to cope up other inadvertent situations; microfinance demand is also

urged as fresh investment for livelihood in the form of small and micro enterprises at individual level.

Despite the potential role as assumed to be played in the economy of Assam, there is hardly any official estimation on demand and supply of microfinance sector. In the present study an approximation of microfinance demand is calculated to substantiate the necessity in view of entrenched poverty in the state. Appropriate estimation of demand for particular market is really a bulky task, and the problem is more delicate in estimating demand for microfinance. Although some analysts use some hypothetical ways to ballpark figure on microfinance demand in various regions in the globe^{viii}, the approaches are just an approximation since estimation of an exact microfinance demand is not possible due to appropriateness of secondary data and reliability of some base indicators^{ix}. However specific demand estimates for Indian microfinance are relatively nonexistent. George et al. (2007) has provided an approximation towards the realistic estimation of microfinance demand for India and the same method is acclimatized in this study.

In this study a slightly variant methodology as compared to George et al. (2007) has been exercised. While George et al. (2007) used incidence of poverty using population data and poverty ratios from Census 2001^x to estimate microfinance demand, the present study simply adopt India's poverty estimates for 2009-10 (Planning Commission, 2012) and mix market database. To calculate microfinance demand, first, state wise number of poor person is calculated which is based on the latest Poverty Estimation for India (Planning Commission, 2012). Secondly, average loan portfolio is calculated from a database of 1132 MFIs which were reported to MiX Market database as on 2010. To arrive at the final microfinance demand, the number of poor is multiplied by the average loan size^{xi} which is fixed for all concerned regions. In addition, based on the customary

micro loan slab^{xiii} of MFIs operating in Assam, it is also considered in estimating microfinance demand. The rationale for adoption of such a simple methodology rest on two grounds; first, so far as Indian official data base on poverty is concerned, poverty estimates for 2009-10 is the latest database which was published in the year 2012. Secondly, the theoretical microfinance exerts the notion that microfinance are for poor people. Therefore it implies that since microfinance deals with the poor section of population therefore latest official database seems to appropriate for such estimation.

Based on the methodology an estimation of microfinance demand in Assam and India is made, which is shown in table 3.11.

Table 3.11: Potential Microfinance Demand for Assam and India for the period 2009-10
(Based on National Poverty Estimates 2009-10)

Loan Size	Potential Client		Microfinance Demand (₹ Crore)		Microfinance Demand as a per cent of NSDP and GDP	
	Assam	India	Assam	India	NSDP (Assam)	GDP (India)
2000	11640000 (2.10 per cent)	354680000 (3.14 per cent)	2292	70936	2.6	1.2
5000			5730	177340	6.5	3.0
10000			11460	354680	13.0	6.0
15000			17190	532020	19.5	9.1
20000			22920	709360	26.0	12.1
25000			28650	886700	32.5	15.1
7700 (Indian Average) ^{xiii}			8824.2	273104	10.0	4.7
33175 (Global Average)			38018.6	1176651	43.2	20.1

Notes:

1. Average loan size indicates Gross Loan / Number of active borrowers, which was \$ 710.7 as on 2010. Average loan size is based on the average of 1132 MFIs as reported to Mix market database in 2010
2. Exchange rate is based on the RBI reference rate as on 31st December 2009 where ₹ 46.68 equal \$1
3. Figures in bracket indicates compounded annualized growth rate of poverty during the period '99-00 to '09-10
4. Gross Domestic Product (GDP) at factor cost (current prices) for India is considered for year '08-09, stood at ₹ 5868331 Crore and Net State Domestic Product (NSDP) at factor cost (current prices) for Assam for the same period was ₹ 88023 Crore

Source: Calculation based on National Poverty line 2009-10

The estimation indicates that the demand for microfinance in Assam ranges from ₹ 2292 Crore to ₹ 38018.6 Crore with an average demand of ₹ 8824.2 Crore. On the other hand the demand for microfinance for India ranges from ₹ 70936 Crore to ₹ 1176651 Crore with an average demand of ₹ 273104 Crore. The estimated demand for Assam shares in the range of 2.6 to 43.2 per cent of NSDP and 1.2 to 20.1 per cent of GDP of India. Although the picture shows a bright microfinance demand, is it predictive in nature? The answer is not such an easy binary type. It is apparent that the size of poverty in Assam has shown a declining trend during the period as compared to Indian scenario. Therefore it implies that since microfinance clients are basically people below the poverty line, as a result, microfinance demand will shrink in future. Contrary to this notion, as practical microfinance broadened the coverage of clients by inclusion of people just above the poverty line, therefore it seems that as an outcome of Government projects and policies, the Below Poverty Line (BPL) section may be upgraded to just above the poverty line and they may be in demand of microfinance for better livelihood. Therefore, it is clear that although the estimation does not based on in depth market research, it still provide a scenario of microfinance demand structure in state.

However there exists regional dispersion of microfinance demand due to differences in the size of poverty. It is observed from table 3.12, except the negative growth of microfinance demand in Assam and NER, all other regions demonstrate positive growth of microfinance demand for the period.

While Central regions show an increasing microfinance demand, Northern region shows bulky demand. But, is the growth pattern really reflects demand pattern for the concerned regions? Table 3.12 shows a self explicit answer to the question. It is apparent that the growth of microfinance demand for the period is positive for both Assam and NER.

Similarly, the share for the regions to all India total has been increased for the period in concern.

**Table 3.12: Region wise Potential Microfinance Demand and Share
(1999-00 to 2009-10)**

State/ Region	Microfinance Demand (in ₹)		Share to all India Microfinance Demand		Growth ¹
	1999-00	2009-10	1999-00	2009-10	
Assam	185016975000	386157000000	2.56	3.28	7.64
Northern	744778750000	450018875000	10.29	3.82	-4.91
NER	261949800000	500279000000	3.62	4.25	6.68
Eastern	2897205925000	3527199175000	40.02	29.98	1.99
Central	85725000000	3780291250000	1.18	32.13	46.03
Western	1363923775000	1354535250000	18.84	11.51	-0.07
Southern	1534974075000	1593859700000	21.21	13.55	0.38
All India	10009561000000	11766509000000			1.63

Notes:

1. Growth in terms of compounded annualized growth rate for the period 1999-00 to 2004-05

Source: National Poverty Estimate 1999-00 and 2004-05, Planning Commission, Govt. of India

On the other hand against a high positive growth of microfinance demand, Northern regions demonstrate a depleting share to all India total. It is worth mentioning that against a moderate increase in the microfinance demand for Southern regions, it shares a commendable amount of all India total microfinance demand next to Eastern region.

III.5.2 Supply of Microfinance in Assam

In Assam, microfinance is supplied basically via two broad models, e.g., SBLP model and MFI model. SBLP is a national microfinance model of India which is under the supervision of NABARD. The model was initiated in 1992 by NABARD and till then it encompasses vast outreach in terms of client outreach and credit outstanding in all regions of the country. Although SHG approach is quite older practised non formal version of microfinance in India, the new version of the microfinance approach by rural financial institutions assumed the form of the SBLP. While in this model basically credit is advanced by a number of commercial banks and government agencies; the route of

delivery is channelized in various forms as such three widely practised models exist in India. This model has worldwide attraction as a possible way of delivery microfinance services to poor that have been difficult to reach directly through banks or other institutions. Under the SHG-bank linkage program, NGOs and banks interact with the poor, especially women, to form small homogenous groups not exceeding 20 members. These small groups are encouraged to meet frequently and collect small thrift amounts from their members and are taught simple accounting methods to enable them to maintain their accounts. This is the first step in establishing links with the formal banking system. Groups then, meet often and use the pooled thrift to impart small loans to members for meeting their small emergent needs. Gradually the pooled savings grow and soon they are ready to receive external funds basically from the rural commercial banks. By aggregating their individual savings into a single deposit, self-help groups minimize the bank's transaction costs and generate an attractive volume of deposits.

MFI model on the other hand is a newer model in Assam as well as India. Under this model finance is provided by a microfinance organisation. Microfinance organisation also forms SHG not exceeding 20 members in the group and Joint Liability Group (JLG) of 3 to 5 members. The creation and formation of such groups are under the discretion of respective branch managers of the MFIs. These MFIs are registered under Societies Registration Act 1860, Section 25 Company and Non Banking Financial Corporation Act. In Assam, Bosco Reach Out was the first of its kind which supports SHGs for better livelihoods. In subsequent period another five more prominent professional MFIs were emerged, out of which RGVN (NE) and ASOMI and Bandhan have considerable depth and breadth of outreach. In this analysis based on the database of MiX Market and

Bharat Microfinance Quick Data 2010, 7 MFIs from Assam and 439 MFIs from India are considered for estimating supply of microfinance.

Table 3.13: Region wise microfinance supply in India (As on 2009)

Region/ State	SBLPModel		MFIModel		Total		Regional Share to All India Total		Share of MFIModel		Share to GDP# (in percent)
	Client Outreach (in Lakh)	Loan Portfolio (in ₹ Crore)	Client Outreach (in Lakh)	Loan Portfolio (in ₹ Crore)	Client Outreach (in Lakh)	Loan Outstanding (in ₹ Crore)	Client Outreach (in percent)	Loan Outstanding (in percent)	Client Outreach (in percent)	Loan Outstanding (in percent)	
Northern Region	24.98	678.92	2.92	290.56	27.90	969.48	3.34	2.80	10.47	29.97	0.02
Assam	13.33	328.55	1.35	70.33	14.69	398.88	1.76	1.15	9.22	17.63	0.01
North Eastern Region	17.67	469.31	1.38	70.33	19.06	539.63	2.28	1.56	7.26	13.03	0.01
Eastern Region	140.02	3023.00	30.01	1150.30	170.04	4173.30	20.36	12.05	17.65	27.56	0.08
Central Region	49.82	2045.33	7.57	363.19	57.39	2408.52	6.87	6.96	13.19	15.08	0.05
Western Region	59.02	1551.15	5.84	273.63	64.86	1824.78	7.77	5.27	9.00	15.00	0.04
Southern Region	342.14	14912.14	153.77	9793.30	495.91	24705.43	59.38	71.36	31.01	39.64	0.50
All India	633.65	22679.84	201.49	11941.30	835.15	34621.14			24.13	34.49	0.70

Note: # Share to GDP indicates supply of microfinance as per cent of GDP of India at current prices for the year 2008-09.

+ Although the supply of microfinance shares .01 per cent of GDP of India, it was .58 per cent of the Net State Domestic Product of Assam.

Source: Bharat Microfinance Quick Data 2010, Sa-Dhan
Microfinance in India 2009, NABARD
MiX Market, Online Database (Accessed August, 2010)
Calculation done by author

A recent microfinance supply scenario is portrayed in table 3.13, where it is apparent that from the table that microfinance supply in terms of total loan outstanding for the concerned period stands at ₹ 398.88 Crore, which is .01 per cent of GDP of India. Further, the share of microfinance supply of Assam is the least as compared to all other regions of the country, while southern region captures a lions' share of total

microfinance supply of India. The share of microfinance supply under MFI model in southern region is 71.36 per cent.

The supply of microfinance is basically catered by SBLP model, which shares commendably large portion of total microfinance supply both in Assam and India. But the share of loan outstanding to total loan outstanding of microfinance in Assam is comparatively higher (82.37 per cent) than the national share (65.51 per cent). It is estimated that the supply of microfinance under MFI model is still lower as compared to SBLP model in Indian states as well as Assam. Since microfinance under MFI model is a nascent delivery mechanism and the issues of equity funding and securitisation emerged as coveted mechanism, therefore it seems, the model could penetrate to the considerable depth of outreach in India and which results in better supply of microfinance via this model. Instantaneously, in Assam there are a few professional MFIs and institution like ASOMI able to receive foreign investment and now on the verge of securitisation process^{xiv}. Similarly premier MFI like SKS in India shows the way of receiving equity capital from open market.

III.5.3 Difference of Microfinance Demand and Supply in Assam

In the previous sub section the condition of demand for and supply of microfinance are discussed separately. In this section it is tried to portray the mismatch between the two with the help of table 3.14.

It is clear from table 3.14 that for all loan sizes (except ₹ 2000 and ₹ 5000 in Southern region of India) microfinance supply is deficient to meet microfinance demand. As it is observed the gap is more prominent with the larger loan sizes than smaller loan sizes. Considering mix market average loan size, it depicts that microfinance supply is 98.9 per cent deficient to meet the demand of microfinance of Assam. Similarly in India

microfinance supply only cater 3 per cent of total demand indicating a gap of 97.1 per cent.

The gap is due to the absence of adequate number of MFIs in rural areas of the state in concern and the country as a whole. NABARD,s effort in SHG financing also unable to mitigate the demand gap since there are a large number of remote rural areas in Assam as well as India are untouched and as a result they are out of the coverage of microfinance operation.

Table 3.14: Regional Demand and Supply Condition of Microfinance in India

Microfinance Demand and Supply	Loan Size (₹)	Assam	Northern	NER	Eastern	Central	Western	Southern	All India
Microfinance Demand (₹ in lakh million)	2000	0.23	0.27	0.30	2.13	2.28	0.82	0.96	7.09
	5000	0.58	0.68	0.75	5.32	5.70	2.04	2.40	17.73
	10000	1.16	1.36	1.51	10.63	11.40	4.08	4.80	35.47
	15000	1.75	2.03	2.26	15.95	17.09	6.12	7.21	53.20
	20000	2.33	2.71	3.02	21.26	22.79	8.17	9.61	70.94
	25000	2.91	3.39	3.77	26.58	28.49	10.21	12.01	88.67
	33175	3.86	4.50	5.00	35.27	37.80	13.55	15.94	117.67
Microfinance Supply (₹ in lakh million)		0.04	0.10	0.05	0.42	0.24	0.18	2.47	3.46
Gap of Microfinance Supply to Microfinance Demand (in per cent)	2000	-82.82	-63.14	-83.42	-80.25	-89.47	-77.96	157.06	-51.22
	5000	-93.13	-85.26	-93.37	-92.10	-95.79	-91.18	2.82	-80.49
	10000	-96.56	-92.63	-96.68	-96.05	-97.89	-95.59	-48.59	-90.24
	15000	-97.71	-95.09	-97.79	-97.37	-98.60	-97.06	-65.73	-93.50
	20000	-98.28	-96.31	-98.34	-98.02	-98.95	-97.80	-74.29	-95.12
	25000	-98.63	-97.05	-98.67	-98.42	-99.16	-98.24	-79.44	-96.10
	33175	-98.96	-97.78	-99.00	-98.81	-99.37	-98.67	-84.50	-97.06

Source: Bharat Microfinance Quick Data 2010, Sa-Dhan

Microfinance in India 2009, NABARD

MiX Market, Online Database

Calculation done by author

Further SBLP is also plagued with a number of problems in catering finance to a considerable number of SHGs; out of which reluctance as expressed by public

undertaking commercial banks to offer microfinance in view of the problem growing NPA in microfinance sector is the most prominent one.

Even more, there exists still a large rural area as geographically remote in the country and MFIs also reluctant to offer the services due to the absence of supportive financial infrastructure and high transaction and operational cost of the services. It therefore appears that both public and private initiative should be constructed in a positive way for the proliferation of the sector in the state.

III.5.4 Microfinance under MFI Model in Assam

In the previous subsection, microfinance demand and supply is depicted by considering both the operational models in the state as well the country. The present subsection portrays a brief comparative overview of microfinance operation in Assam in view of national and global milieu. The database for the comparison is limited up to 2010 due to unavailability of unique data set for the compared regions. Although 8 MFIs are operating in the state, from the point of view of data accuracy only three MFIs that are listed in the database of MiXMarket database are considered.

Table 3.15: Microfinance Operational Highlights in Selected Regions

Indicators	Assam	India	World
Number of MFIs	3	66	1164
Area covered by an MFI (sq. Km)	26146	49697	127955
Average Asset (\$)	3997078	914514	43873977
Average Loan Portfolio (\$)	2823520	6680269	32907576
Average Deposit (\$)	1305004	NA	19243906
Average Number of Personnel	166	227	372
Average Active Borrowers	26459	55699	65121
Per cent of Women Member	88	98	68
Borrower Per Staff Member	160	245	175

Source: Compiled from MiX Database, 2010

Table 3.15 reflects that as against a total of 1164 operational MFIs in the world as on 2010, Assam shares a negligible size in terms of number of MFIs. But it is interesting to

note that the area coverage per MFIs in Assam is comparatively better than national and world average. While in Assam the average asset size is comparatively better than national average, it is lower to global average. It indicates state internal average is greater than the national average, but fails to generate average global internal strength in terms of asset base.

Regarding financial outreach, the average loan portfolio in Assam is quite lower as compare to both national and global average. While the global average loan portfolio is 5 times higher than the national average loan portfolio, it is 12 times higher than the state average.

Besides the average client outreach in Assam is comprehensively lower than the national and global average. The scenario indicates a lower loan size per active borrowers in the state as compared to both the country and world average.

Moreover, the depth of client outreach (in terms of per cent of women member to total client outreach) in the state is comparatively better than global average, but lower than the national average. In Assam till date cent percent women client outreach is not achieved via this microfinance delivery mechanism. It is clear from table 3.15 that productivity of microfinance in Assam is quite lower than that of national and international average. Productivity in terms of borrowers per staff member often measured *is* a combination of outreach and efficiency. Productive MFIs maximize services with minimal resources, including staff and funds. The figure in this regard in the table implies that transaction cost per borrower in Assam seems to be quite higher as compared to both national and international average international average. But there may be a chance of better monitoring and supervision of microfinance clients when borrower per staff member is less in number, which in turn may helps in better recovery

performance. But it is not statistically significant and demands an in depth field level experiment to examine the relationship.

III.6 THE MICROFINANCE POLICY AND THE REGULATORY ENVIRONMENT IN INDIA

The rapid growth of global microfinance services in terms of burgeoning client outreach has attracted a considerable attention of the microfinance practitioners and policy makers of the globe. Although microfinance regulation seems as a crucial instrument from the point of view of both providers and clients; but at the same time a concern may be arisen, because to comply with prudential regulations and supervision may costs microfinance services, which can curtail the client outreach of profit motivated MFIs (Cull et al., 2009). Therefore it is important to study regulatory framework for microfinance because it affects existing microfinance outreach and sustainability. Although microfinance has been experienced around the globe in different forms and by various institutions^{xv}; a critical challenge for regulators considering appropriate regulatory approaches are intricate since MFIs range significantly in institutional type, scale of operations, and level of professionalism (Berenbach & Churchill, 1997). A microfinance policy broadly encompasses the regulatory provisions and concerns and framed towards the need of both the customer and providers in view of broad financial sector regulation and guidelines.

Since the inception of formal microfinance in India by due effort made by NABARD in 1992, as of now the microfinance sector is strictly governed by the SBLP model, although MFI model accelerating the pace of outreach. Being a huge market, Indian microfinance sector till date does not have a consensus microfinance policy and regulation. Regulatory needs for microfinance institution is prominent since the problem of information asymmetry, moral hazard and adverse selection may create severe

problem in the form of default, Non Performing Asset (NPA) and Portfolio at Risk (PAR), which may intervene sustainable microfinance operation.

In India with effect from 1992, the term ‘regulation’ means ways in which the government, motivated by various reasons, makes rules for people and institutions in a society by legislation or decree. Although the term seems too simplified in nature, in reality it has an inbuilt intricacy. Because, as defined regulation encompasses public or government mode intervention in the microfinance sector. In Indian subcontinent besides SBLP, MFI model is also in practice. The increasing number of NGO–MFIs has posed the challenge of establishing a framework signaling the stability of the market and the provision of service (Fukaya et al, 2001). Hence a National Task Force on Supportive Policy and Regulatory framework for Microfinance was established in 1999 by RBI and NABARD, which closely examined four main issues relating to:

- (i) Mainstreaming of NGOs and other emerging institutions;
- (ii) Regulation and supervision of these bodies;
- (iii) Organizational features; and
- (iv) Requirements to increase capacity for growth and service.

On the specific issues of the emerging diversity in microfinance sector, the Task Force recommended establishing thresholds^{xvi} for different functional roles undertaken by NGOs. Though the RBI has not made specific announcements on business volumes and thresholds it has made other legal and operational policy announcements. Microfinance agencies can develop products with banks — credit and savings, at rates and terms acceptable to both parties, irrespective of legal form of the promoting microfinance agencies (RPCD. No. PL.BC. 62/04.09.01/99–2000 dated 18 February 2000). The RBI has also exempted the not-for-profit company, (Sec 25) (DNBS. 138/CGM (VSNM) dated 13 January 2000) providing micro-credit from fulfilling Non Banking Financial Company (NBFC) norms, provided they do not mobilize deposits.

In recognition of the demand for financial services among the poor, which are generally excluded section by the formal financial institutions of the country, there emerged non-governmental financial institutions. The provision of credit and other services has reached a significant size forcing NGO-MFIs to take new forms and establish new linkages. These new MFIs can be broadly divided into three categories on the basis of the legal form adopted by them:

1. Not for Profit MFIs such as societies registered under Societies Registration Act, 1860 or similar State Acts; Public Trusts registered under the Public Trust Act, 1882, and Section 25 companies of the Companies Act, 1956.
2. Mutual Benefit MFIs include co-operative societies registered under the Co-operative Societies Act of the respective state or the central Multi-State Co-operative Act, 1984; Mutual Benefit Trusts or Nidhis under Sec 620 of the Companies Act, 1956, and
3. For Profit MFIs that includes NBFCs registered under the Company Act, 1956.

At present, microfinance per-se is not covered under any specific Act. However, banks' lending's to weaker section categorised under the priority sector which form an important component of microfinance, are covered as part of general banking under three Acts, viz., Banking Regulation Act, Cooperative Societies Act and Regional Rural Banks Act. By virtue of the powers conferred on it by these Acts and the RBI Act, 1934, RBI undertakes regulation and supervision of all the banks promoting and undertaking microfinance. Any NBFCs, if providing microfinance services, will also be governed by the RBI Act.

Further, Malegam Committee recommends a new form of NBFC, called as NBFC-MFIs to provide loan under the ambit of microfinance (Reserve Bank of India, 2011). The committee sheds light on the thrust areas of microfinance, such as operational regulation of microfinance, sustainability and interest of borrower, transparency, etc. The Committee recommends a “margin cap” of 10 per cent in respect of MFIs which have an

outstanding loan portfolio at the beginning of the year of ₹100 crores and a “margin cap” of 12 per cent in respect of MFIs which have an outstanding loan portfolio at the beginning of the year of an amount not exceeding ₹100 crores. Besides, an interest cap of 24 per cent on individual loans is also recommended by the committee. Regarding transparency in interest charges, the committee has suggests that pricing of loan should consists of following three components:

- (i) Processing fee, which cannot exceed 1 per cent of gross loan amount
- (ii) An interest charge.
- (iii) An insurance premium without any administrative charges, which covers only the actual cost of insurance.

Malegam Committee recommendations are imperative in formulation of a standard microfinance regulation for the country. The committee not only targets the safety of customers but also make provisions regarding the problem of over indebtedness of borrowers in the way of minimization of adverse features of multiple-lending, over-borrowing and ghost-borrowers.

But, till date India fails in consensus of a comprehensive microfinance policy to regulate the microfinance sector in the territory. In this connection, the first Microfinance Bill was tabled in the lower house of parliament in 2007, but fails in consensus. As noted by Ramji and Taishi (2008) Microfinance Bill 2007 has the power to change the way in which, microfinance is practiced in this country and possibly in a way that will not be beneficial to the microfinance sector. This is due to the some of its defective provisions, which invoke some critical issues. At the first instance, the Bill poses question of efficacy of this bill. As it was pointed out in section one of Proposed Changes, the bill leaves out from its purview NBFCs and Section 25 companies, which take up approximately 80 per cent of microfinance loans outstanding as well as of the client base

in the sector. This essentially means that the bill is relevant only for the remaining 20 per cent. On the whole, the provisions of the Bill fail to create an enabling environment for microfinance.

Recently, The Microfinance Institutions (Development and Regulation) Bill 2012 has been introduced in *Lok Sabha*^{xvii} in 2012 with modifications to earlier bill introduced in the year 2012. According to this bill, a MFI is defined as an organisation, other than a bank, providing micro finance services. These services are defined as micro credit facilities not exceeding ₹ 5 lakh in aggregate, or with the Reserve Bank of India's (RBI) specification ₹ 10 lakh, to each individual. Other services like collection of thrift, pension or insurance services and remittance of funds to individuals within India also come under micro finance services. The Bill seeks to provide a statutory framework to regulate and develop the micro finance industry and in this connection The Reserve Bank of India (RBI) shall regulate the micro finance sector (Padmanabhan, 2012). Some important issues of the bill are highlighted as below:

1. The Bill provides safeguards against misuse of market dominance by MFIs to charge excessive rates. It allows RBI to set upper limits on lending rates and margins.
2. The Bill allows MFIs to accept deposits. Unlike banks, there is no facility for insuring customer deposits against default by MFIs.
3. The Development Fund for MFIs is to be managed by the RBI.
4. The Bill provides for the creation of micro finance committees at central, state and district levels to oversee the sector

It seems that the Bill enlarged the sphere of traditional microfinance and therefore security of both borrowers and lenders are crucial issues entangle to the Bill. However, the Bill encompasses a numbers of provisions regarding sustainability, transparency and strict monitoring of the sector.

Moreover, some researcher as Fukaya et al (2001) urges for self regulation of Indian microfinance sector. Self regulation implies a set of rules and regulation adopted by an association of microfinance providers and works as an alternative to government regulation. All institutions, acting as micro-financial intermediaries should come under the self-regulatory regime. In India, they range from SHGs to the microfinance windows of commercial banks. Therefore in the absence of a definite microfinance policy and regulation in India, some policy makers consider self regulation in Indian microfinance as an alternative option. But, self-regulation has rarely worked in developing countries due to a conflict of interest inherent in the system (Christen & Rosenberg, 1999).

3.7 CONCLUSION

This chapter basically highlights the microfinance sector of the state as well as national microfinance sector. The chapter also provides a brief description of the global microfinance scenario. To specify the position of microfinance in the state, the macro economic conditions of the state is portrayed. Moreover, the state of financial sector of the state is depicted to show the extent and strength of formal financial sector of the state and for an estimation of microfinance market size for the state. Finally, the regulatory issues are also discussed where it shows the environment under which microfinance is operating in the state. The discussion way out some of the important issues such as repayment, outreach and sustainability, efficiency and impact, this is going to be discussed in the later chapters of this thesis.

Notes

ⁱ Although micro insurance basically comes under the purview of insurance sector, in India now-a-days a number of microfinance institutions provide micro insurance under a memorandum of understanding with a number of insurance companies.

ⁱⁱ In this analysis, GDP data pertaining to India is based on constant prices of 2004-05, which is available with C.S.O. and R.B.I. GSDP data for Assam is available in two series for the period 1999-2012, e.g., 1999-00 and 2004-05 prices. To convert the series into a single base period (2004-05 in this case), the method of GDP deflator is used, consulting the similar methodology of C.S.O. Although, both the dataset are not strictly comparable due to difference in price index numbers, but the share of state GSDP can be shown in terms of GDP of India, since it is not targeted for comparison, rather to show the place of the state economy in the national perspectives.

ⁱⁱⁱ The recent estimation (2009-10) of poverty in India is based on Tendulkar methodology. For details please refer Planning Commission (2012).

^{iv} Incidence of Indebtedness (IOI) is measured as percentage of indebted households to total household.

^v Financial inclusion is delivery of banking services at an affordable cost to the vast sections of disadvantaged and low income groups. In India, with a view to enhancing the financial inclusion as a proactive measure, the Reserve Bank of India in its Annual Policy Statement for the year 2005-06, urged banks to review their existing practices to align them with the objective of financial inclusion.

^{vi} Self Help Group model and Microfinance Institutions models are two dominant models in India.

^{vii} Self Help Group Bank Linkages Program is a huge microfinance program under the aegis of National Bank for Agricultural and Rural Development, which covers 8.6 crore poor households as on 31st March 2009 in India.

^{viii} For example, Guangwen (2010) estimated microfinance demand in China and George et al. (2007) estimated microfinance demand for India.

^{ix} Base indicators in this context are confined only with population growth rate and poverty ratio.

^x Since most of the data of Census 2011 are provisional in nature, the present study avoids adoption of these data.

^{xi} Average loan size of the 1132 MFIs was calculated at \$710.68 as against \$533.4 which was equivalent to ₹ 33175. This is due to the fact that where the former is actual average loan size; the latter is average loan balance per borrower.

^{xii} By microloan slab, it meant that in India loan under microfinance sector is fragmented by the performance of the clients and by client group. The range of loan is ₹ 2000- ₹ 25000, where ₹ 2000 is the lower ceiling of microloan which is basically advanced for a fresh group or client. It is basically more prominent in SHGs rather than JLGs. As the client or group become trustworthy through outstanding repayment performance the group or client become eligible for an advanced tier of loan.

^{xiii} Indian average is based on the average loan portfolio of 88 MFIs reported to MIXMarket database.

^{xiv} Securitization is the process of pooling loans and turning these into marketable securities that can be sold to investors. The meaning of securitization in microfinance context differs from international capital markets, where securitization in Indian microfinance context has been used to describe the process of microloans for an MFI (Swanson, 2007). Incofin, a Belgium based microfinance company, has picked up a 34 per cent stake (₹ 8 crore) of Asomi Finance Private Ltd in 2009. As reported by the head office, ASOMI further the process of securitization for the safeguard of loan fund.

^{xv} MFIs are ranging from informal ROSCAs, NGOs, credit co-operatives, non-bank financial institutions, and commercial banks.

^{xvi} The Taskforce basically provided four thresholds which are, MFIs purveying credit only; MFIs purveying credit and mobilizing savings from the clients (below cut-off limit of ₹ 2 lakhs); MFIs purveying credit and mobilizing savings from the clients (above cut-off limit between ₹ 2-25 lakhs and 10 per cent reserve requirement in the form of bank deposit and rising to 15 per cent as and when the deposits go past the ₹ 25 lakh ceiling) and MFIs purveying credit and mobilizing savings from the clients and general public.

^{xvii} Lower house of parliament in India is known as *Loksabha*.



CHAPTER-IV

**FIELD STUDY LOCATION,
SAMPLING DESIGN AND
THE SAMPLE**

CHAPTER-IV
FIELD STUDY LOCATION, SAMPLING DESIGN
AND THE SAMPLE

IV.1 THE PURPOSE OF FIELD STUDY

The previous chapter overviews the state of economy and financial sector of Assam in general and microfinance in particular. It is based on aggregate level secondary data, which are collected from various sources, such as government, semi-government and private institution. It is obvious from the discussion that the problem of unemployment and poverty in the state is pervasive in nature and therefore policy makers always try to provide a sustainable source so as to reduce the menace of poverty. It is also revealed that the formal financial sector is unable to provide finance in sufficient amount for the livelihood of poor. Therefore, achievement of the avowed objective of 'Financial Inclusion' is confronted in this scenario.

As discussed in the chapter, microfinance sector stand as an alternative to this challenge and pacify client outreach. But at the same time the phenomenon of increasing outreach poses some issues before the policy makers, researchers and MFIs. Although outreach is an avowed goal; it is hindered by non-repayment and which will ultimately disturbs the efficiency of the institution. In addition the question of sustainability also arises since in the race of reaching large number clients the MFIs naturally in needs of funds to run the business. In this process some institutions get subsidized fund and depending on customs of operation, it may impair the sustainability of the institution. In addition, the issue of impact is also a concern due to at least couple of reasons. First, in view of large outreach; can microfinance demonstrate positive impact on clients? Secondly, since repayment rates are higher as compared to the formal financial institution such as banks,

is it an indicator of positive impact of microfinance on the livelihoods of the clients since they are repaying successfully?

As noted in chapter III, the wide gap between demand and supply of microfinance in the region reflects potentiality of microfinance sector in the state. But as discussed in the introduction chapter, the provision may be subject to the issues of sustainability, efficiency and repayment. In order to address the research questions as described in Chapter I, secondary data can provide partial answer to some of the issues. But for an in-depth analysis of the issues it demands detailed field level investigation.

IV.2 SURVEY MODULES

In order to achieve the research objectives as described in chapter 1, data collected basically at three levels, institution, group and individual. The modules designed in such structure are to capture the diversity of the issues. In this endeavour, five semi structured schedules were designed to gather information.

Institutional level data pertains to the information of sample MFI branches, which are readily not available with head offices of the MFIs, but crucial for the study. Branch level information is gathered from the sample branch offices. The schedules were designed in this connection. The first schedule is structured schedule, which targeted branch or unit manger, where operational and repayment record of the sample borrowers were recorded (See Annexure-I). The information is decisive in the analysis of branch level efficiency. On the other hand, the second schedule was administered to credit officer (See Annexure-II). It is a semi structured schedule where, some responses like reasons behind problematic group or borrower, nature of problem and measure to tackle the problem are open ended in nature. Since credit officers are external sources who know better the group and individual behavior, therefore it aims to gather such crucial

information, which sheds light on the issue of efficiency at branch level operation. In addition, the information thus collected will be imperative for the study of repayment behavior of clients.

Group level data was collected at subsequent level, where it was tried to gather information on repayment performance at group level. In this endeavour, group leader was consulted at the presence of other group members on the day of scheduled repayment. Both closed and open ended questions were developed to gather such information (see Annexure III). The information pertains but not limited to group age, history of group formation, group homogeneity, administration of group, delinquency information of the group, information asymmetry, group pressure, screening and monitoring, social ties, etc. At first, a group discussion was conducted, where credit officer was present on the day. The group ledger book was consulted at the initiative of group leader to gather records of the group performance and internal savings¹.

The next stage is related to collection of individual level data, where individual borrowing members were consulted to investigate repayment performance and impact of microfinance. The information pertaining to repayment was administered to individual borrower member (see Annexure IV). Similarly information was collected from individual borrowing member to examine impact of microfinance. In this connection a semi structured schedule is administered where it covers information broadly on household level characteristics (see Annexure V).

IV.3 SAMPLING PROCEEDURE

Assam the gateway of North Eastern Region (NER) of India is administratively divided into 27 districts, 169 revenue circle and 242 community development blocks, which is depicted in table 4.1.

Table 4.1: Administrative Profile of Assam

SN	District	Number (Based on Census 2011)			Number (Based on Census 2001)		
		Sub-Division	Revenue Circle	CD Block	Sub-Division	Revenue Circle	CD Block
1	Baksha ⁺	3	13	15	District was created after 2001		
2	Barpeta	2	9	11	2	8	12
3	Bongaigaon	3	5	7	3	5	6
4	Cachar	2	5	15	2	6	15
5	Chirang ⁺	2	6	6	District was created after 2001		
6	Darang	1	6	6	2	10	11
7	Dhemaji	2	4	5	2	5	5
8	Dhubri	3	8	14	3	8	14
9	Dibrugarh	1	7	7	1	7	7
10	Goalpara	0	5	8	1	5	8
11	Golaghat	3	6	8	3	5	8
12	Hailakandi	1	4	5	1	4	5
13	Jorhat	3	6	8	3	5	8
14	Kamrup	2	11	15	2	15	17
15	Kamrup Metro ⁺	1	4	3	District was created after 2001		
16	Karbi Anglong	3	4	11	3	6	11
17	Karimganj	1	5	7	1	5	7
18	Kokrajhar	3	4	5	2	5	6
19	Lakhimpur	2	7	9	2	7	9
20	Morigaon	1	5	5	1	5	5
21	Nagaon	3	10	18	3	11	18
22	Nalbari	1	8	8	1	9	12
23	N. C. Hills	2	1	5	2	4	5
24	Sivsagar	3	6	9	3	9	9
25	Sonitpur	3	7	14	3	7	14
26	Tinsukia	3	4	7	3	4	7
27	Udalgun ⁺	2	9	11	District was created after 2001		
Assam		56	169*	242*	49	155	219

Notes: * The total includes part revenue circles and part community development blocks

+ Indicates newly created districts of Assam

Source: Statistical Handbook Assam, 2004, www.assamgovt.nic.in, Census of India 2001 and 2011

The state is geographically divided into three divisions, the Brahmaputra Valley, the Barak Valley and the Hill Area Districts. As per Census of India (2001), Brahmaputra Valley is the largest geographic division of Assam which shares 85.93 per cent of total population of the state and 71.64 per cent of total area of Assam. Barak Valley is the second largest geographic division, which shares 7.54 per cent of total population of state and 21.84 per cent of total area of the state. This is followed by Hill District Area, which shares 6.51 per cent of total population in 6.52 per cent of total area of the state.

Multistage sampling procedure is adopted for data collection. The selection of groups and clients are conducted as per following procedure:

- a. First, a number of districts of Brahmaputra Valley, Assam were selected by considering Assam Human Development Report 2003, where the districts are categorized as high, medium and low Human Development Index (HDI). Districts without a single branch office of the sample MFIs were not considered.
- b. In the second stage, branches were selected. A list of branch offices is generated from the head offices of the sample MFIs and categorized these branch offices in terms of repayment rate as above 90 per cent, above 70 per cent and above 50 per cent following the sample MFI's instructions. Finally the branch offices are randomly selected.
- c. After selection of branch offices, a proportionate sample size is drawn for both the MFIs. Based on the client information, which was available with the selected branch offices, the groups and clients were selected randomly.

IV.3.1 SELECTION OF AREA FOR FIELD STUDIES

The field study locations were selected from the Brahmaputra Valley, where 8 MFIs are providing microfinance across 22 districts. The other two geographical divisions namely, the Barak Valley (comprises of three districts) and the two hills districts were not considered since the numbers of MFIs are infinitesimal as compared to the selected region, which is reflected in table 4.2.

It is clear from table 4.2 that most of the MFIs in Assam are concentrated in the Brahmaputra Valley. Among the MFIs RGVN (NE) and ASOMI are purposively selected. The selection of the sample MFIs are based on MCRIL (2006) criterion. While RGVN (NE) is a rooted institution, ASOMI is a mature institution as per MCRIL criterion. Since operational differences reflect repayment strategies in terms of product

specification and staff efficiency, therefore, to gauge the institutional performance both the MFIs are selected.

The selection of sample is based on the following considerations:

1. It is well known that microfinance repayment rate is above 95 per cent level and the sample MFIs are also not exception to this phenomenon. But it is not uniformly performed across the branch offices sample MFIs.
2. Although microfinance operation has been spread over 22 districts of the state, but there is dearth of information regarding microfinance operation at district level. This is due to the disaggregate procedure of data collection, since MFIs collect information on their branch offices. In this connection sample MFIs collect information from branch offices alone and consider summary data on operational performance for head offices and performance level data for unit offices.
3. Since performance of microfinance is depend on context and settings, therefore it is imperative to select such districts where MFIs are working. In this connection, utmost importance is given in selecting both developed and underdeveloped districts of Brahmaputra Valley. The selection of such districts is based on Assam Human development Report (AHDR) 2003ⁱⁱ where districts were identified on the basis of Human Development Index (HDI).

Table 4.2: District Wise Name and Numbers of MFIs in Assam

S.N.	District	District Category ¹	Name of MFIs	No. of MFIs
1	Dhubri	Other	PROCHESTA, Bandhan	2
2	Kokrajhar	Poorest	Integrated Institute of Rural Management, Bandhan	2
3	<i>Bongaigaon</i>	Poorest	PROCHESTA, ASOMI, RGVN and Manab Seba Sangha , Bandhan	5
4	<i>Goalpara</i>	Poorest	PROCHESTA, ASOMI and RGVN, Bandhan	4
5	<i>Barpeta</i>	Poorest	PROCHESTA, ASOMI, RGVN and Manab Seba Sangha, Bandhan	5
6	<i>Nalbari</i>	Poorest	ASOMI, RGVN, Manab Seba Sangha and Bandhan Konnagar, Bandhan	5
7	<i>Kamrup</i>	Other	PROCHESTA, ASOMI, RGVN, Manab Seba Sangh, Satra and Bandhan Konnagar, Bandhan	7
8	<i>Darrang</i>	Poorest	PROCHESTA, ASOMI, RGVN, Manab Seba Sangha and Bandhan Konnagar, Bandhan	6
9	<i>Sonitpur</i>	Other	PROCHESTA, ASOMI, RGVN, Chariduar Rural Development Centre, and Integrated Institute of Rural Management, Bandhan	6
10	Lakhimpur	Poorest	Integrated Institute of Rural Management, ASOMI, Bandhan	3
11	<i>Dhemaji</i>	Poorest	PROCHESTA, ASOMI	2
12	<i>Morigaon</i>	Poorest	PROCHESTA, ASOMI and RGVN, Bandhan	4
13	Nagaon	Other	PROCHESTA, ASOMI and RGVN, Bandhan	4
14	Golaghat	Other	ASOMI	1
15	Jorhat	Other	ASOMI and RGVN	2
16	Sibsagar	Other	PROCHESTA and ASOMI	2
17	Dibrugarh	Other	PROCHESTA	1
18	Tinisukia	Other	PROCHESTA	1
19	Cachar	Poorest	Bandhan Konnagar	1
20	<i>Baksa</i>	Other	RGVN	1
21	Karimganj	Other	Bandhan Konnagar	1
22	Hailakandi	Poorest	No Information	0
23	Karbi Anglong	Poorest	No Information	0
24	NC Hills	Poorest	No Information	0
No. of districts covered by the MFIs in Assam				21(8)

Note: 1. Sa-Dhan has categorized district as poorest district and other district

Figure in parenthesis indicates actual no. of MFIs spread over the state

Source: Online Database, Sa-Dhan and Head offices of CSP-RGVN and ASOMI

Table 4.3: District wise Human Development Index in Assam

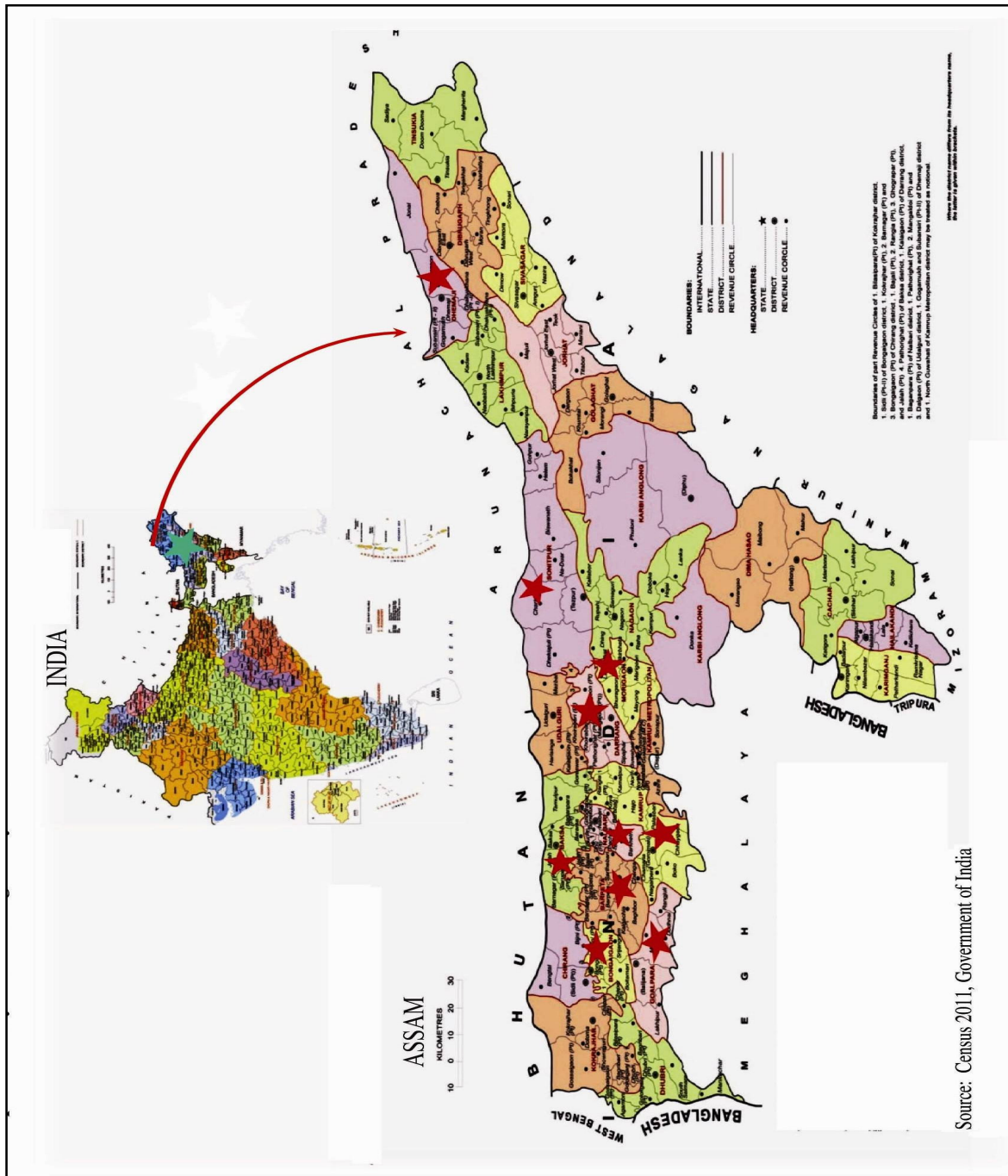
Rank	HDI	District	Rank	HDI	District
1	0.65	Jorhat	13	0.357	Sonitpur
2	0.574	Kamrup	14	0.356	Nagaon
3	0.54	Golaghat	15	0.354	Kokrajhar
4	0.494	Karbi Anglong	16	0.343	Nalbari
5	0.494	Morigaon	17	0.337	Lakhimpur
6	0.483	Dibrugarh	18	0.308	Goalpara
7	0.469	Sibsagar	19	0.301	Karimganj
8	0.402	Cachar	20	0.277	Dhemaji
9	0.396	Barpeta	21	0.263	Bongaigaon
10	0.377	Tinsukia	22	0.259	Darrang
11	0.363	Hailakandi	23	0.214	Dhubri
12	0.363	N C Hills		0.407	Assam

Source: AHDR, 2003

Table 4.3 reflects HDI for Assam based on AHDR 2003. The highlighted districts are sample districts, which are selected purposively. It is observed that out of selected nine districts, two districts have comparatively higher HDI value than state value and seven districts have comparatively lower HDI value. Therefore, based on AHDR 2003, 9 districts were selected to cover the diversity of the state. Moreover, during the period of pre-test one more newly created district was included to cover the characteristics of Bodoland Territorial Autonomous Districts. It is tried to select the districts in such a way that so it reflects the diverse characteristics of Assam. In this endeavour, economic conditions, idiosyncratic risk, ethnicity, education and dominance of agriculture sector is considered in selecting the districts. While Kamrup and Morigaon are economically advanced districts, Barpeta, Goalpara, Nagaon and Darrang show dominance of agriculture sector. Moreover, literacy rate in Barpeta, Goalpara, Bongaigaon, Darrang and Sonitpur is less than state average. Barpeta, Nalbari and Dhemaji districts are flood prone districts and thus reflect higher degree of concentration of idiosyncratic risk. Since tea industry is an important source of revenue for Assam, therefore Sonitpur district is

selected since it is characterized by dominance of tea gardens. Therefore, considering all selected districts together, it reflects the general characteristics of the state. The sample districts ranges from Dhemaji in the North East to Goalpara in the South West. A map showing study area districts is traced in figure 4.1 below.

Figure 4.1: Study Area showing Survey Districts



In the next step sample branch offices from both the MFIs are selected purposively. The selection of branch offices is based on the following considerations:

- a. Branch offices that are operating for at least two years are selected. Since newly established branch office faces a numbers of operational problems, therefore they were not considered. Moreover, newly established branch offices basically run their first loan cycle; therefore it does not reflect the actual repayment scenario of the branch office.
- b. Based on the information gathered from head offices, three types of branch offices in terms of repayment rate are selected. It includes branch offices having comparatively higher and lower repayment rate than MFI average. Therefore, a mix of both well performed and underperformed MFI branch offices are considered to reflect overall scenario of the MFIs.

From selected districts, 6 and 12 unit offices respectively purposively selected from ASOMI and RGVN (NE).

After selection of branch offices or unit offices, the next step is to determine sample size. The selection of sample borrowers is based on secondary information on client outreach. The secondary information thus collected from the head offices of sample MFIs is limited up to December, 2008. Delivery model wise client outreach is portrayed in table 4.4.

Table 4.4: Delivery Model wise Active Borrowers of the Respective MFIs

MFI	SHG		JLG		Total	
	Groups	Clients	Groups	Clients	Groups	Clients
ASOMI	1567	18483	432	1834	1999	20317
CSP-RGVN	675	7596	10784	52003	11459	59599
Total	2242	26079	11216	53837	13458	79916

Source: Head Offices, ASOMI and RGVN (NE)

It is depicted in table 4.4 that a total number of 79916 active borrowers were reached by both the MFI as on December 2008. It is clear from the table that RGVN (NE) has better outreach. Based on table 4.4 sample size is calculated in the following procedure.

As stated by Israel (1992) sample size criteria depend on three crucial considerations, which are: the level of precision, the confidence level and degree of variability. In addition there are a number of strategies for determining sample size, using a census for small populations, using a sample size of a similar study, using published data and using formulas to calculate a sample size.

Since population in the present study is not small, it is difficult to conduct census survey. Moreover, the sample of other study could not be applied in the study due to difference in environment and coverage. Therefore, to calculate sample size for the study, the following simplified formula of Yamane (1967) is adopted:

$$n = \frac{N}{1 + N(e)^2}$$

Here, n is sample size, N is population size and e is the level of precision

In addition sample size calculation is also cross checked by STATA 2.0 and Sample Size Calculator version 1.0.0.10 by Raosoft. Thus sample size is calculated at 382 with 95 per cent confidence level and 5 per cent precision level.

The next step in selection of sample is to proportionate calculation of sample sizes for both the MFIs from the total calculated size. However to estimate the impact of microfinance on client a total of 155 non clients (in- form member) are selected for examination of impact of microfinance. The calculation of sample size for the respective MFIs is portrayed on table 4.5.

Table 4.5: Delivery Channel wise Proportionate Sample size of the MFIs

MFI	SHG	JLG	Total	Non-Client	Total
ASOMI	84	9	93	31	124
RGVN	41	248	289	96	385
Total	125	257	382	127	509

Source: Calculated by author

During the month of January 2009, a pre test was conducted in 4 branch offices of the sample MFIs. The unit offices are Chenga and Baniyakuchi of ASOMI and Bijoyanagar

and Baharihat of RGVN (NE). A total number of 40 groups (both SHG and JLG) were interviewed to understand the basic functioning of groups, group formation, repayment behaviour and related socio-economic behaviour of the groups and individual. In addition, the detailed working of the microfinance branch offices was examined to comprehend the crux of efficiency and sustainability. During February-June 2009, a total number of 568 samples were collected under first phase sample collection. The 2nd phase of sample collection was conducted during May-June, 2012, where 58 members (from the 155 in-form member of first phase sample) were investigated to strengthen the case study on impact of microfinance. Sample borrowers are selected randomly by using proportionate sampling method. The number of sample from each sample branch offices is selected proportionately in terms of number of active borrower.

IV.4 SAMPLE PROFILE AND THEIR SOCIO-ECONOMIC STRUCTURE

In this section, a brief overview of the sample MFIs, sample unit offices and socio-economic characteristics of the villages pertaining to sample unit offices are described.

IV.4.1 SAMPLE MFIs AND THEIR PERFORMANCE

As discussed in the previous section, the study considers two sample MFIs, namely RGVN (NE) and ASOMI. A brief overview on methodology, functioning and performance of both MFIs is described in this section so as to comprehend working of group lending and its related facets as discussed in chapter I.

A. RGVN (NE): Context and Methodology of Credit Delivery

The Credit and Savings Programme (CSP) was initially started as an action research program in 1995 by Rashtriya Gramin Vikaskh Nidhi (RGVN), a pioneer NGO in the North Eastern and Eastern part of India to try out the aptness of micro-credit intervention in the North-eastern region. RGVN (NE) is a core microfinance provider and registered

under the legal form of Section 25 Company, which has transformed to Non Banking Financial Company (NBFC) in the year 2010 under the banner of RGVN (North East) Microfinance Limited. The main objectives of CSP are to instrumented credit for the poor, eliminating the exploitation of moneylenders and creating opportunities for self-employment. The intended client for the program is those sections of people who cannot access credit from formal financial sector. The Credit and Savings Program operates through its large network of unit and area officers.

Credit Delivery Modes of RGVN (NE)

RGVN (NE) delivers credit via two broad delivery modes, such as *Group Lending Model* and *Individual Lending Model*. Under Group Lending Model, poor women & men are provided credit through Self Help Groups (SHGs) and Joint Liability Groups (JLGs). On the other hand Entrepreneurship Development Loan (EDL) comes under Individual Lending Model. A brief overview of the three methods is portrayed in table 4.6 below:

Table 4.6: Brief Overview of the Credit Delivery Modes of RGVN (NE)

<i>Delivery Mode</i>	<i>No. of Member(s)</i>	<i>Loan Size (₹)</i>	<i>Interest Rate (per cent per annum)</i>	<i>Administrative Charge (per cent, one time)</i>	<i>Repayment Schedule</i>
SHG	10-20	4000- 12000	10	5	Weekly
JLG	3-6	3000-25000	10	5	Weekly
EDP	1	15000-25000	10	5	Weekly/ Monthly

Source: RGVN (NE)

Process of Intervention of RGVN (NE)

RGVN (NE) conducts area survey to have a better understanding on the operational potentiality in the intended area. Selection of area for operation passes through a number of procedures, such as, survey of bank availability, interaction with the *Gaon Panchayat*ⁱⁱⁱ, study on bank's Non Performing Assets (NPA) in that area, target client survey, analysis of credit needs, and competitors (other NGOs, Banks etc) analysis.

The next step after selection of the area is to form suitable group for disbursement of credit. Following steps are generally carefully conducted in selecting client's group:

- Group selection is helped by the field supervisor or credit officers.
- In case of SHGs, weekly group meetings are held for three months when the group begins the process of saving a minimum of ₹ 10/- per member per week. After this for another three months, SHG are encouraged to revolve the savings within members at a rate of interest decided by them. During this period observations are made on self and credit discipline; and on system development.
- Credit to SHGs begins only after this phase of six months.
- In case of JLGs, credit begins as soon as the group is formed.

B. ASOMI: Context and Credit Delivery Methodology

ASOMI was initially established as NGO in the year 2001 and transformed as NBFC in the year 2008 and changed its name to ASOMI Finance Private Ltd. The main objective of ASOMI is to provide credit services to the poor and needy that wants to be engaged in income generating activities for strengthening the livelihood. Presently, ASOMI is operating in the rural and urban areas through the following schemes:

1. Self Help Group (SHG) Loan

SHG loan basically caters the credit needs of the individuals' belonging to SHG. It is characterised by following features:

- i. SHG consists of 10 to 20 members.
- ii. The members of the group are homogenous in respect of sex, income and social status.
- iii. Loan is provided at the charge of 10 per cent flat rate of interest apart from one time service charge, which is 5 per cent of loan amount.

- iv. Repayment schedule for SHG loan is weekly and repayment is distributed equally for 50 weeks
- v. The minimum amount of loan to an individual member of the group is ₹ 2000 and maximum amount is ₹ 25000. The limit of loan to one SHG in 2nd and 3rd loan cycle is ₹ 2, 50,000.

2. Joint Liability Group (JLG)

When the credit need is higher than ₹ 10000, loan is provided to individual member through JLG. Generally, JLG is formed through the graduating members of SHG. In case, if it is not possible to form such a way, the unit office observe new members for six weeks and collect the secondary information on them. The followings are the basic characteristics of a JLG:

- i. A JLG consists of 3 to 5 members belong to same locality.
- ii. All members are jointly and severally liable for repayment of the loan.
- iii. Loan is provided at the charge of 10 per cent flat rate of interest apart from one time service charge, which is 5 per cent of loan amount.
- iv. Repayment schedule for SHG loan is weekly and repayment is distributed equally for 50 weeks.
- v. The minimum amount of loan is ₹ 10000 and maximum amount is ₹ 50000.

3. Enterprise Development Loan (EDL)

To cater the need of individual, EDL is considered if it is difficult to get group liability. EDL is an individual loan basically provides to graduating members from SHG or JLG. The minimum amount of loan is ₹ 10000 and maximum amount is ₹ 50000.

Apart from the above models, ASOMI also provide finances under following category:

4. Urban Microcredit

Urban Microcredit is generally provided to small shopkeepers, tea stalls and vendors. The loan is individual in nature and characterised by daily collection. The Loan amount varies from ₹ 10000 to ₹ 50000 and charge interest rate of 10 per cent along with 10 per cent administrative charges and 1 percent risk premium. The loan tenure is 365 days with a collection of 300 days

5. Dairy Loan

To provide improved variety of milch cattle to farmers; this specific product has been developed. Dairy loan can be routed through SHG, JLG and individual model. Loan amount varies from ₹ 20000 to ₹ 300000 with an interest rate of 10 per cent. The maximum tenure of loan of 24 months and a moratorium of three months is allowed. An initial deposit amounting 10 per cent of the loan amount is required to deposit as security money.

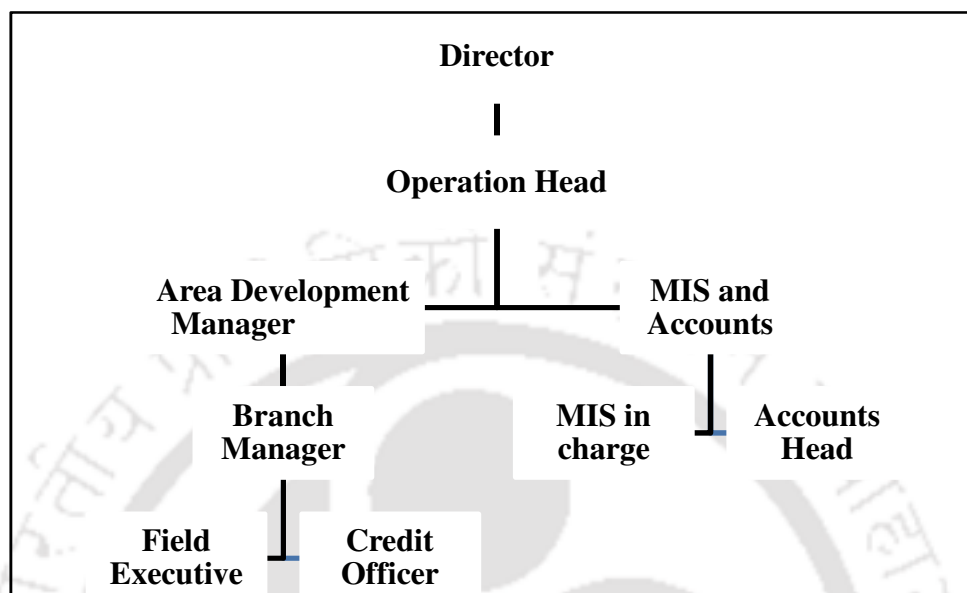
6. Agriculture Transportation Loan (ATL)

ATL is a medium term loan designed to meet the demand for three- wheeler in the rural and semi-urban area especially for agricultural goods transportation for financing to a maximum of 75 per cent of the total cost of a three- wheeler through JLG. The scheme requires two guarantors for creating the comfort level for this kind of credit service. The rate of interest for the loan varies from 9.5 -10.5 per cent based on the level of comfort level on the borrowers and down payment. The repayment instalment is collected on monthly basis through cheque or cash. Moreover, the premium for insurance for the next 2 years is also being collected on equated monthly instalments.

Managerial Structure and Operational Performance of ASOMI and RGVN (NE)

The managerial setup of both MFIs is depicted in figure 4.2.

Figure 4.2: Managerial Structures of RGVN (NE) and ASOMI



Source: Head Offices, ASOMI and RGVN

The institutions are headed by Managing Director or CEO who is also a board member of the organisation. He is followed by operation head that controls on area operation and MIS and Accounts. Credit officer and field executive are the bottom pile of the operational system. Both the sample MFIs, have targeted to make better outreach with profitability. But in all aspects RGVN (NE) is better compared to ASOMI as depicted in table 4.7.

It is clear from table 4.7 that total assets of RGVN (NE) are almost 2.5 times more as compared to ASOMI. RGVN (NE) has a large outreach although per cent of women borrower is relatively less in comparison to ASOMI. But it is noteworthy that in absolute term the women borrower is 2.3 times more than the total active borrowers of ASOMI. - RGVN (NE) also has better performance indicators as represented by Return on Asset (RoA), Return on Equity (RoE) and OSS. Moreover other indicators of performance such as yield on gross loan portfolio and operating expenses are also better compared

with ASOMI. The staff size indicates a burden for RGVN (NE) credit officer as compared to ASOMI, but this may help in reducing cost per borrower and cost per loan.

Table 4.7: Comparison of ASOMI and RGVN (NE) (As on 31-03-2011)

Indicators	ASOMI	RGVN (NE)
Total Assets (₹)	41,26,35,471	122,02,07,398
Number of Offices	53	95
Staff	242	496
Number of Active Borrowers	85,329	141420
Women Borrowers (in per cent)	100	99.34
Loan balance per borrower (₹)	3709	7229
Return on assets (RoA) (per cent)	-0.0153	3.35
Return on Equity (RoE) (per cent)	-0.0557	28.36
Operational Self Sufficiency (OSS) (per cent)	97.8	126.3
Yield on gross portfolio (real) (per cent)	14.94	11.4
Operating expense/ assets (per cent)	14.01	9.24
Cost Per Borrower (₹)	607	608.6
Active Borrower Per Staff	353	285
Portfolio at Risk (>30 days) (per cent)	0.36	0.66

Source: MiXMarket Online

IV.4.2 SAMPLE UNIT OFFICES AND THEIR OPERATIONAL DESCRIPTION

In this sub section, operational description of the sample unit offices of the selected MFIs is discussed. The operational highlights are depicted in table 4.8. It is clear from table 4.8 that in the given sample Matia unit office under RGVN (NE) is the oldest unit office and Bongaigaon is youngest unit offices of all the sample unit offices in terms of date of establishment. Regarding repayment performance, Morigaon unit offices of ASOMI has the highest per cent of repayment rate, while Konha unit office has the lowest repayment rate among all unit offices. Matia unit office of RGVN (NE) has the highest outreach, while Rampur unit office of ASOMI has the lowest outreach in terms of numbers of villages served.

Table 4.8 Operational Description of Sample Branch Offices
(As on December, 2008)

Unit Office	Date of Establishment	Name of MFI	Distance Covered		Physical Coverage		Staff	CREP (per cent)
			North-South	East-West	Village	Ward		
Matia	01/11/1995	RGVN (NE)	22	22	74	0	6	93.29
Morigaon	19/06/1997	RGVN (NE)	40	32	40	6	7	95.33
Baharihat	01/03/2000	RGVN (NE)	18	28	26	0	6	95.95
Nagarbera	01/04/2000	RGVN (NE)	18	31	27	0	5	95.81
Kharupetia	01/04/2001	RGVN (NE)	10	24	30	6	6	90.40
Dhekiajuli	01/03/2004	RGVN (NE)	30	17	40	10	5	95.66
Goreswar	01/03/2004	RGVN (NE)	24	18	16	0	5	92.91
BarpetaRoad	01/10/2005	RGVN (NE)	35	35	46	4	8	90.80
Rangapara	01/09/2006	RGVN (NE)	30	16	16	1	6	83.56
Darranggiri	03/10/2006	RGVN (NE)	30	32	17	0	6	97.84
Bongaigaon	01/01/2007	RGVN (NE)	40	20	40	2	7	97.93
Kaniha	01/01/2007	RGVN (NE)	20	24	57	0	4	74.81
Chamata	18/07/2001	ASOMI	21	30	64	0	3	85.05
Morigaon	18/07/2001	ASOMI	22	26	37	4	4	98.01
Bijohnagar	01/03/2005	ASOMI	20	20	30	0	5	97.02
Rampur	01/03/2005	ASOMI	11	14	15	0	5	97.03
Howly	18/07/2006	ASOMI	18	12	40	4	4	93.03
Silapathar	01/11/2006	ASOMI	13	22	24	1	4	97.02

Source: Field Study

IV.4.3 SOCIO-ECONOMIC CHARACTERISTICS OF SAMPLE DISTRICTS

Socio-economic characteristics of sample districts are reflected in table 4.9. It is depicted in the table that 136 villages of 10 districts were surveyed for data collection. The surveyed villages have a high density of population as compared to the average of Assam. However the sex ratio is 937, which is also less than state average. The surveyed villages are better in terms of amenities related to education and drinking water facilities.

Table 4.9: Socio-Economic Characteristics of Sample Districts

Characteristics	Statistics
Number of Village	136
Total Population	208697
Area (in sq. km)	288.13
Population Density (Per sq. KM)	724
Area per Household (in sq. KM)	0.008
Area per Person (in sq. KM)	0.001
Sex Ratio	937
Per cent of Scheduled Caste Population	9.20
Per cent of Scheduled Tribe Population	11.38
Village with Education Facility (in per cent)	94.07
Number of Primary School (Per 10,000 Population)	12
Number of Middle School (Per 10,000 Population)	5
Number of Secondary School (Per 10,000 Population)	3
Number of College (Per 100000 Population)	4
Village with Medical Facility (in per cent)	40.00
Village with Drinking Water Facility (in per cent)	97.8
Village with Bank Facility (in per cent)	18.5
Village with Power Supply (in per cent)	71.11
Average distance from town (in KM)	20.4

Source: Census 2001, Government of India

Although data shown in table 4.9 is aggregate in nature, but it has diversity in large extent, for which the study can achieve a different experience. The list of surveyed villages is appended in table 4.10.

**Table 4.10: District and Community Development Block-Wise
Number of Sample Villages**

Sl. No	District	C D Block	Village
1.	Barpeta	1. Chakchaka	Dharmapur , Kamar Gaon ,Raha Uttar, Ganakgari
		2. Chenga	Bampra, Batgaon, Ganakpara, Haripur, Khongra, Kukarpar, Matabari
		3. Gobardhana	Banmojha, Guwagacha, Howlygaon, Kaurpara, Rangdia
		4. Barpeta	Banbariya, Batikuriha, Bishnupur, Dargahpur, Debradi, Hanhchara
		5. Rupasi	Ghugabari
2.	Bongaigaon	1. Boitamari	Basbari, Conircola, Dhalagaon, Dhalapukhuri, Raghunandanpur
		2. Sidli	Bartolowa, Bhakhribhitha, Dhaligaon, Hasrabari, Hatiputa, Khalibandha, Kukurmari, Satipur, Sungaputa
3.	Darrang	1. Bechimari	Dalgaon, Jakuapara, Nagazan
		2. Dalgaon-Sealmari	Bahbari, Batabari
		3. Pub- Mangaldoi	Achintola
4.	Dhemaji	1. Sissibargaon	2 No karfulani, 2 No Tye Gaon, Fulbari Pathar, Gorkhapur, Kulamuwa, Nalani Pam
5.	Goalpara	1. Kuchdhowa	Damra
		2. Matia	Amguri, Bamunpara, Khadarijan Shingijan, Satalpara
		3. Rangjuli	Bagdoba, Barbari, Bishnupur, Chekawang, Deodhabhitha, Dhanubhanga, Dhupdhara, Domnapara Hepchapara, Khutakhuti, Sakhati, Sanpur, Saraibaho, Shimlitola
6.	Kamrup	1. Hajo	Japia, Maikhania
		2. Kamalpur	Haber
		3. Rangia	Balisatra, Baramboi, Barodanga, Atakuchi, Dhui, Dowak, Helasa, Khudra Dimu, Lari Bishnupu
		4. Samaria	Bidyagar, Kalyanpur, Palahartary
7.	Morigaon	1. Bhurbandha	Barbhagiya, Barigaon, Charaibahi, Dalbari, Dighalbari, Dowani, Gasarguri, Hugaltali, Kanphula, Manipur, Nuagaon, Sholmari, Uduri
		2. Kapili	Jaluguti, Kahibari, Mayengia
		3. Laharighat	Gerua, Niz Gerua
		4. Mayang	Thekeraguri
8.	Nalbari	1. Barkhetri	Barghopa, Ghorathal, Kuher Tari Mugdi, Mukalmuwa, Narayanpur Rampur, Sonapur

Sl. No	District	C D Block	Village
		2. Pachim Nalbari	Bari, Nijtapa, Piplibari, Thutikata
9.	Sonitpur	1. Balipara	Aragaon, Bindukuri, Bondaijonai, Garubandha, Ghogra, Kochari, Majuligaon, Moamari
		2. Dhekiajuli	Batabari, Bingaon, Jiyagabharu, Katani, Labari, Maj Roumari, Patidai, Bherala, Roumari, Shilikhabari, Simlaguri, Sirajuli, Teliagaon, Thelamara
Total	09	26	136

Note: Highlighted villages were surveyed in the year 2009 and 2012 respectively.

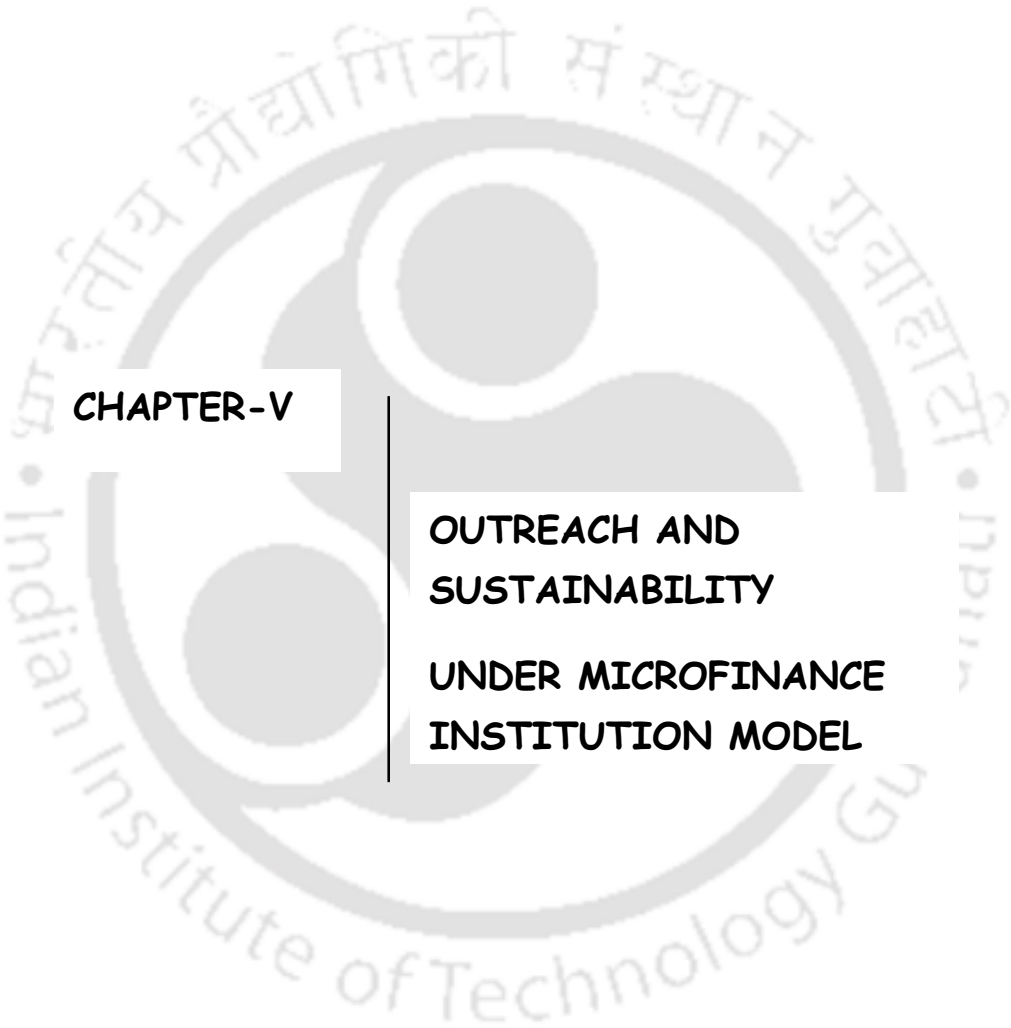
Source: Field Survey, 2009

IV.5. CONCLUSION

In this chapter, a description on the method of data collection, sampling design and sample profiles are addressed. The basic intention behind such framework is to gather micro data, which is considered as crucial for this study. The collection of data based on this framework thus help in understanding the intricacies concerned with the research questions. The collected information based on this chapter is analyzing in the subsequent chapters.

Notes

- i. Common fund is an internal savings mechanism practiced within a group. All members voluntarily agreed on a fixed amount to be deposited every week. Each borrower is allowed to take loan against deposit amount and the ceiling of such loan is limited only by the amount of repayment installment. One borrower can take loan twice during the repayment period where an interest of 4 percent is chared on loan.
- ii. Assam Human Development Report 2003 is the first and latest Human Development Report prepare for the state.
- iii. *Gram panchayats* are local government bodies at the village level in India.



CHAPTER-V

**OUTREACH AND
SUSTAINABILITY**

**UNDER MICROFINANCE
INSTITUTION MODEL**

CHAPTER-V

OUTREACH AND SUSTAINABILITY UNDER MICROFINANCE INSTITUTION MODEL

V.1 INTRODUCTION

In view of burgeoning outreach of MFI model, the concern is centered on sustainability of the program. Sustainability and outreach are widely discussed issues in the field of microfinance and two strands of thought emerge in this connection- Poverty Camp and Sustainability Camp (Morduch, 2000). While it is argued by one group that sustainability and outreach are competitive, others indicate its complementary nature (Rhyne, 1998). It thus implies that sustainability is the means to achieve outreach.

Sustainability of a program indicates permanency in realizing the intended goal of the program. A MFI might help the poor now, but it cannot help them in future if it cannot survive. A financially self-sufficient MFI would earn so much profit that when donors leave, it will neither shrink in real terms nor will it reduce the size or coverage of its service to the poor in future (Schreiner, 1997). Therefore, sustainability of the microfinance is a crucial area of microfinance operation since permanency in the solution of the problemⁱ is utmost important. Importantly, repayment also spins on sustainability and permanence of a MFI. High repayment helps MFIs to maintain the financial health of the institution. It also helps in further outreach. In this connection it may be maintained that repayment rate is different from net financial returns (Zeller et.al, 2001). Even repayment rate is 100 percent; net revenue may be negative, which reflects weakening of financial health of MFI. This may be due to couple of reasons; first, the component of repayment amount consists of principal and interest. If interest amount is calculated at a lower rate due to injection of subsidized fund, then 100 percent repayment possibly not assure positive net revenue. It is because, the amount of subsidy, which is

foregone in terms of prevailing market rate of interest is deducted from the revenue component. Secondly, the field staffs of majority of MFIs have been given in-job training to build sound operational modalities and practices so as to maintain sound repayment rate by a number of international donor agencies. Although this part is not calculated as direct cost of operation, but the latent cost component is considered in studying net revenue of a MFI. Therefore, in this scenario, there is a possibility of negative net revenue.

It therefore implies that subsidy is a crucial issue in the study of sustainability of microfinance and it is also viewed as a constraint in attaining sustainability of microfinance program. In this connection, Brewer et al.'s (1996) highlighted the potential dangers of subsidized funding. To mitigate subsidy dependence and to achieve self sufficiency, they suggested that instead of targeting different segments of the micro business population, business should be dealt with individuals with better credit records due to their increased ability to handle debt and lower associated default rates. In this regard Vinelli (2002) also suggests that mission driftⁱⁱ can occur when a lender seeks profit not by working harder to make better and less expensive products but rather by searching for borrowers who are easier and cheaper to serve. Tang et al. (2002) suggest that one reason for continued institutional dependence on subsidy is unwillingness to charge the maximum legally allowable interest rates and fees that would allow programs to cover as much expense and risk cost as possible from operations. Regarding pricing and self-sufficiency, Gulli (1998) suggests that institutions must charge sufficient interest rates to cover their costs. Therefore, it is imperative to understand the crux of sustainability in view of outreach.

Against large client outreach under SBLP, MFIs in Assam has a limited outreach although it is gaining impetus. But at the same time trade-off between outreach and

sustainability seems to be an issue of concern. The reason behind the argument rests on the organizational form of MFIs as compared to SBLP, where in former case microfinance provider has some marginal difference from the SBLP. Thus financial viability in the long run is an important aspect for these MFIs. Therefore, to examine the issue various financial performance indicators such Operational Self Sufficiency (OSS), Financial Self Sufficiency (FSS), Subsidy Dependence Index (SDI) and Subsidy Dependence Ratio (SDR) are devised.

In order to address the issues of outreach and sustainability, RGVN (NE) is considered as a case study. As described in chapter III, the numbers of MFIs in the state is infinitesimal as compared to southern region of the country. RGVN (NE) is one of the pioneer and older MFI in the state. Although numbers of MFIs are operating in the state, the rationality behind the selection of RGVN (NE) is based on the argument that as the operational years increases it may enjoys the benefits of economies of scale and under the theory of infant industry argument some form of protection may help the MFI in future to be sustain both financially and economically. Therefore it can be inferred that increase in operational year along with a growing outreach of the program, a MFI can become sustainable in the long run.

The study is based on secondary data collected mainly from the head office of RGVN (NE). In addition some other sources are also consulted, such as, Reserve Bank of India (RBI) Bulletin and Annual reports of RGVN (NE). The analysis is based on data collected for the period from 1998-99 to 2010-11. The present analysis avoids use of recent data base due to incompleteness and un-audited in nature.

V. 2 OUTREACH AND OPERATIONAL PERFORMANCE OF RGVN (NE)

Outreach basically indicates the number of clients being served by a MFI. It has been noted in literatures as core performance indicator of service they are offering. As described in chapter II, measurements of outreach have six aspects, but the present study is limited to the aspects of length and breadth of outreach.

Credit and Savings Program has completed 17 years of operation as on 2012. Before analyzing the issue of tradeoff between outreach and sustainability, a glimpse on the latest operational performance is portrayed in table 5.1 and figure 5.1.

**Table 5.1: Operational Highlights of RGVN (NE)
(2001-02 to 2011-12)**

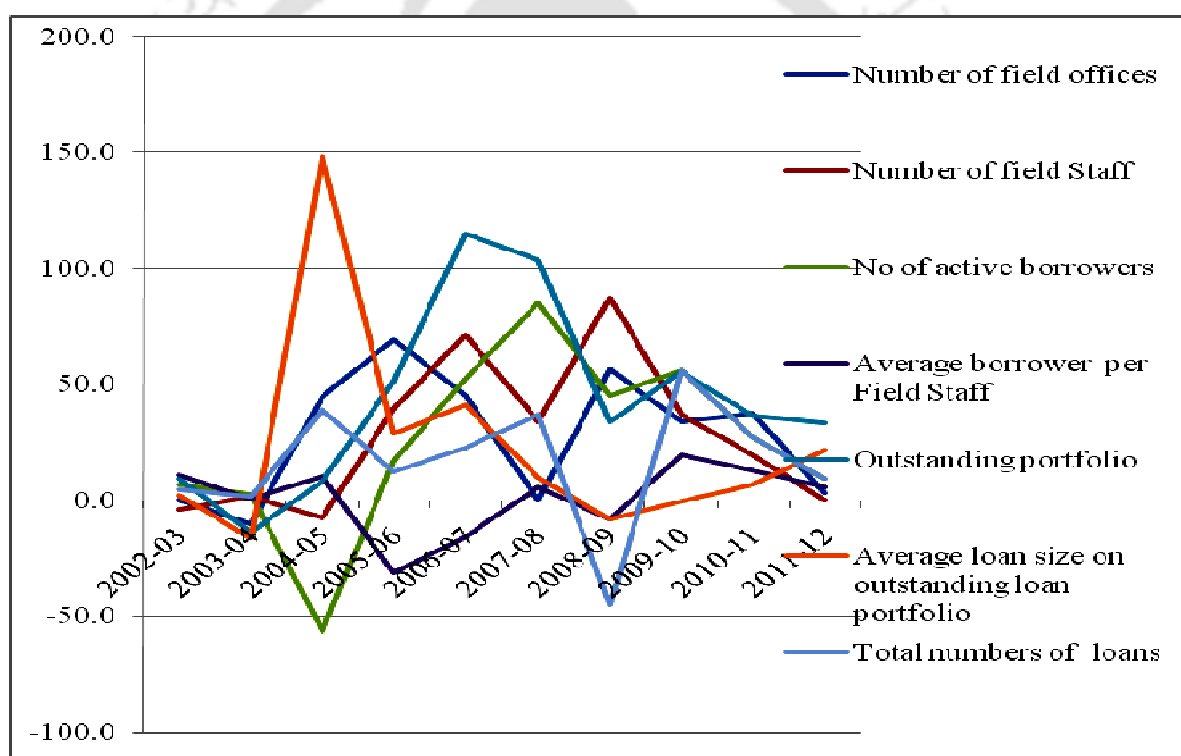
Year	Number of field offices	Number of field Staff	No of active borrowers	Average borrower per Field Staff	Outstanding portfolio (₹ in Lakh)	Average loan size on outstanding loan portfolio (₹)	Total numbers of loans
2001-02	10	55	28174	512	396.8	1408	42055
2002-03	10	53	30089	568	434.3	1443	43970
2003-04	9	54	30939	573	374.7	1211	44820
2004-05	13	50	13526	633	406.6	3006	62233
2005-06	22	70	15859	437	615.2	3879	70091
2006-07	32	120	24147	369	1322.3	5476	85935
2007-08	32	161	44722	390	2695.4	6026	117854
2008-09	50	302	65052	359	3608.3	5547	65052
2009-10	67	414	101389	430	5603.5	5527	101389
2010-11	92	495	129189	486	7653.7	5924	129189
2011-12	95	496	141420	516	10223.4	7229	141420

Source: Head Office, Credit and Savings Program - RGVN, Guwahati

The program initially operated only with 4 field offices in 4 districts of Assam in March 1996, which has spread to over 95 field offices across 20 districts as on March 2012. Thus it reflects that area coverage has increased by 24 times and client outreach in terms of active borrower by 400 per cent from 28174 in March 2002 to 141420 in 2012, which

reveals a growth of 15.8 per cent CAGR for the period of 2001-02 to 2011-12. Moreover, average borrower per field staff has demonstrated a mixed trend. It is apparent from table 5.1 that the number of borrower per field staff was higher for the period 2004-05, but afterwards it demonstrates a decreasing trend till 2006-07. On the other hand, it shows increasing trend from the period 2008-09 to 2011-12. Average borrower per field staff has registered a marginal growth of 0.07 per cent in terms of CAGR for the reference period.

Figure 5.1: Growth of some Selected Operational performance of RGVN (NE) during 2001-02 to 2011-12



Source:: Author's calculation

Moreover, the growth of staff size for the period is higher in comparison to growth of active borrower, where the former is calculated at 22.13 per cent in terms of CAGR and the later is calculated at 15.8 per cent in terms of CAGR for the period. Therefore in view of the growth of both the indicators, the growth of average staff is maintained and it implies that the staff of the MFI are neither over sized in view of growth of borrower

and nor staff is over burdened in view of growth of staff size. Besides, it is also reported that about 92 per cent among the borrowers are women.

It is clear from figure 5.1 that although the growth rate of some selected operational indicators post a positive growth in terms of CAGR, it does not reflect a uniform trend over the period so far as annual growth rate is concern. Growth of average size of loan on outstanding portfolio shows a commendable growth of 16 per cent CAGR during the period. On the other hand growth of the number of active borrowers shows marginally lesser growth in comparison to other indicators.

So far as the outreach is concerned it is implied from figure 5.1 that growth of number of active borrowers has not increased in a proportionate way. It is interesting to note that growth of numbers of active borrowers has shown a negative growth of 56.3 per cent in 2004-05. However the trend recovered in the subsequent period continuously. There may be a number of reasons for this negative growth rate. One possible explanation that can be envisaged is client drop out, completion of the repayment term and up gradation of client for higher loan size under JLG and EDP. As discussed in the chapter II, there are broadly two different modes of credit delivery method in terms of number of members under the mode. In case of SHG, there is lesser number of clients as compared to JLG and both are separate mode of credit delivery and loan sizes under former is smaller than later. When a client under these groups passes through fiscal discipline and build a sound credit history, they stand eligible for individual loan. When repayment period of clients under group model is over then they may go for further loan of bigger amount, which indicates a fall in active borrowers. In addition, some clients may be dropped out from the program due to delinquency and thus loan is written off and hence falls in number of outreach.

It is clear from above analysis that the program has registered a substantial outreach of client for the reference period, which is shown by a commendable growth of loan portfolio of 34.6 per cent CAGR while average loan outstanding amount shows a comparatively lesser growth of 16 per cent CAGR for the period. The growth of the loan portfolio implies larger outreach of the program and also indicates profitability of the program. But, it is confirmed from the audited financial statement for various years that the MFI has made a profit in 2003-04, 2005-06 and 2006-07 fiscal years. It is important to examine whether this profit are accrued either from business of the program or from other segments, which may be in the form of subsidy-in-kind or subsidy-in-cash. The importance of the issue lie on the fact that if a mature MFI like RGVN (NE), cannot reach clients profitably, then avowed theoretical win-win proposition may be reviewed.

V.3 INDICATORS OF SUSTAINABILITY

The discussion in the previous section reflects that the MFI demonstrate considerable outreach in terms of length and breadth of outreach. But, is increasing outreach indicate sustainability of a program? Or, does trade-off exist between the two? The present study adopts several indicators of sustainability to examine the issue. These are described as follows.

1.Operational Self Sufficiency (OSS): Donors and MFI management use this benchmark to assess how far an MFI has come in covering its operating expenditures with its operating income (UNCDF Online Database). There exist two variants of OSS- operating income and total operating expenditures. Expenditures in this calculation include all cash and non-cash expenditures from the profit and loss statement, such as depreciation and loan loss provision expenditures, as well as any cash cost of funds,

such as interest and fees actually paid on debt or to savers with voluntary deposits. The formula of OSS is shown as below:

$$OSS = (\text{Operating Income}) / (\text{Operating Expenditures} + \text{Provision for loan loss})$$

The formula has relatively one distinct advantage that it does not penalize MFI's that have accessed commercial financial markets, through debt or voluntary deposit to fund their portfolios.

2. Financial Self Sufficiency (FSS): FSS also measures the extent to which operating profits cover an MFI's costs (UNCDF Online Database). These adjustments are similar to those made for Average Rate of Return on Asset (ARORA) and Average Return on Equity (AROE), and attempts to show financial picture of the MFI non-subsidized fund, where funds would be raised on the commercial markets, rather than through donor grants or subsidies. The general formula of FSS is shown as below:

$$FSS = (\text{Adjusted operating income}) / (\text{Adjusted operating expenditures})$$

Therefore to calculate FSS, it requires adjusting operating expenditures of an MFI. Customer deposits (savings) and debt must be adjusted to reflect market rates on loans and deposits. Likewise, as inflation erodes the value of equity, financial equity balances must be adjusted for inflation. If an MFI receives subsidies or in-kind donation, these too must be accounted for in the adjustment. Cash donation must be excluded from operating income. Thus taking all these points in consideration, the elaborated formula of FSS is as follows:

$$FSS = \text{Operating Income} / (\text{Operating Expenditures} + \text{Financing Cost} + \text{Provision for loan loss} + \text{Cost of Capital})$$

3. Subsidy Dependence Index (SDI): Yaron (1992) was the proponent of SDI to measure the magnitude of sustainability. SDI is the ratio of subsidy received by a MFI to revenue from loans to the target group. It indicates whether a MFI could compensate

society for the opportunity cost of public funds used in a short time frame and still show a profit. The formula for SDI as developed by Yaron is:

$$SDI = \frac{\text{Subsidies}}{\text{Revenue from lending}} = \frac{E \times m + A(m - c) + K - P}{(LP \times i)}$$

Where,

E = average annual equity

M = market interest rate

A = average annual outstanding concessionary borrowed funds

C = interest rate paid on concessionary borrowed funds

P = accounting profits

K = other subsidies (Revenue Grant + Discount Expenditures)

LP = average annual outstanding loan portfolio of MFI

i = lending interest rate

The formula of SDI is further developed by Hulme and Moseley (1996), which is given as below:

$$SDI = [(i - i^*)X + (i^*E - p) + K] / (rX)$$

Where, i= borrowing interest rate

r= lending interest rate

X= loan portfolio

E= value of equity capital

p= profit before tax

K= non-interest subsidies; and

i* = interest rate which institute would pay for borrowed funds if access to concessional funds were eliminated.

In this analysis, SDI as developed by Hulme and Moseley (1996) is adopted due to simplicity of calculation without distorting interpretation. If the calculation of SDI is for a single year, the formula of Yaron requires considering loan portfolio of that year, which is termed as average loan portfolio. Since, loan portfolio data use in this analysis is gross in nature; therefore the formula as developed by Hulme and Moseley is adopted in this analysis. To overcome the problem, the gross loan portfolio of the previous year is subtracted from the gross loan portfolio of current year.

However, source of earning of an MFI also comprises of earning on investment and others apart from loan portfolio. In addition, since cost component involves in case of all

these segments of earning, thus SDI seems to be narrow in calculating subsidies. Khandker (1996) therefore proposes Subsidy Dependence Ratio (SDR) to have a better understanding on the financial health of the institution. The justification behind taking the ratio is based on the argument of Khandker and Khalily (1995), which stated that as the SDI compares subsidy only with revenue from lending even though MFIs also get revenue from investments in non-loan assets such as treasury bills. In principle, a MFI could decrease its subsidy dependence through increased revenues either from loans or from investments. Thus the SDR suggests that subsidy be compared with revenue both from loans and from investments (Schreiner & Yaron, 1999).

The formula of SDR is given as below:

$$SDR = [A(m - c) - \{p(i - c) + (1 - p)(m - c) - \mu\}F] / [ip + m(1 - p)]F$$

Where,

A= total annual concessionary borrowed fund

m= market interest rate of the concessionary fund

c= average concessionary interest rate

p= loan portfolio (Lp)/ total financial resources (F)

i= lending interest rate

μ= operating cost / total financial resources

V.3.1 SUSTAINABILITY OF RGVN (NE)

The indicators of sustainability that described in the previous sub-section are calculated from the audited statement of the sample MFI. The indicators of sustainability are described in table 5.2, which shows that throughout the period OSS is more than 100 percent, which indicate that the MFI can compensate its operational expenditures from the operational income allowing provision for loan loss.

But a close look on FSS, which includes adjusted cost of capital, can portray a precise picture about the financial sustainability of the MFI. The growth of income and expenditure also demonstrate a mixed trend. While growth of income has registered a

considerable growth of 1366.7 per cent in 2009 (table 5.5), the rate is also relatively higher for expenditure on investment per rupee for the same year.

Table 5.2: Sustainability Indicators of RGVN (NE) for the period 1998-99 to 2011-12 (in per cent)

Financial Year	OSS	FSS	SDI	SDR
1998-99	128.1	75.8	71.66	-0.36
1999-00	140.6	84.1	47.59	-4.40
2000-01	112.5	69.3	73.98	-4.86
2001-02	129.2	76.9	41.69	83.50
2002-03	165.5	88.9	-13.02	55.81
2003-04	169.2	99.4	-46.42	63.49
2004-05	121.9	78.1	8.79	95.10
2005-06	121.8	84.6	34.37	74.55
2006-07	153.4	104.4	26.37	35.63
2007-08	235.7	124.0	-20.94	-17.02
2008-09	256.2	130.2	-39.69	-26.03
2009-10	266.3	120.9	-35.75	-31.81
2010-11	246.6	117.2	2.50	-13.95
2011-12	251.2	126.2	-20.39	-11.31

Source: Audited financial statement of RGVN (NE) for the reference period

Calculation of the indicators is done by author

However both the growth rates of income and expenditures were negative for several years as depicted in the table. This clearly indicates that the MFI has attained financial self sufficiency after 12 years and thus indicate a considerable attention for the MFI to maintain the financial self sufficiency of the institution. It is worth mentioning here that the MFI has constantly maintained financial self sufficiency from 2006-07.

From the analysis, it is not clear whether FSS bears subsidy part or not. To examine the subsidy component which is added to total income part, SDI as developed by Hulme and Mosely (1996) is adopted in this endeavour.

It is clear from table 5.2 that throughout the period, the MFI is less dependent on subsidy except for two years (1998-99 and 2000-01). It is interesting to note that dependency on subsidy has decreased over the years and shows a negative dependency on subsidy for

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the periods 2002-04, 2007-10 and 2011-12. The trend of SDI shows a less dependency on subsidy since 2000-01, it is an implication that as time passes, a microfinance institution may become subsidy non-dependent and could be sustainable. In addition, the negative dependency trend of subsidy for the period indicates that the MFI could compensate its social cost in future.

As an alternative to SDI, Khandker (1996) developed SDR to examine dependency of MFIs on subsidies, calculating income from loan, investment and others. It thus reflects more detailed picture of sustainability. In the analysis, it is found that SDR indicate more subsidy dependency than SDI for the period and the trend are not similar to SDI. In this analysis, it is observed that SDR is negative for the initial period (1998-2001). The result contradicts the popular notion of subsidy dependence, which states that as an institution operated for some years, economies of scale form in the operation and eventually less depends on subsidy. While, in this analysis the popular notion is contradicted, it is observed that recently (in 2007-12); SDR shows negative dependence on subsidy. Therefore, contradiction cannot be accepted widely.

The controversy regarding trade-off between outreach and sustainability implies that as outreach increases subsidy dependence also increases. In the analysis, it is observed from figure 5.1 and table 5.1 that active borrowers for this period are increasing. Again, table 5.2 reflects that except for eight years during the reference period, MFI depends on subsidy. Analysing both the scenario, it can be argued that increasing outreach is possible at the cost of subsidy or alternately, increasing outreach hinder sustainability of the program.

To examine the inference Pearson correlation coefficient is calculated which is depicted in table 5.3.

Table 5.3 Correlation of Outreach⁺ with selected indicators

Indicator	Coefficient (Pearson)
OSS	.8006*
FSS	.7402*
SDI	-.3318
SDR	-0.7592*

+ Outreach is measured in gross loan disbursement.

* Correlation is significant at the 0.05 level (2-tailed).

Source: Author's calculation

It is observed from table 5.3 that correlation coefficient of OSS and FSS reflects higher degree of association with outreach. It implies that OSS and FSS are positively relates to outreach. Therefore the relationship indicates that increasing outreach does not prevent sustainability of MFI. Moreover, SDR demonstrates significant negative association with outreach. Thus it also indicates that to increase outreach MFI need not to depend on subsidy. The results, therefore, reject hypothesis H1.

In addition, it is important to analyse the relationship among calculation component of SDI and SDR to examine the factors which is closely connected with SDI and SDR.

Table 5.4: Correlation of SDR and SDI with some calculation components

Calculation Component	SDI	SDR
	Coefficient	Coefficient
Loan portfolio	-.407 (.243)	-.377 (.283)
Investment	-	-.198 (.584)
Total financial resources	-	-.345 (.329)
Operating cost	-	-.193 (.512)
Average concessionary interest rate	-.194 (.591)	.312 (.380)
Market interest rate for conc. Fund	.804** (.005)	-.692* (.027)
Total annual concessionary borrowed fund	-.371 (.292)	-.328 (.354)
Subsidies	.174 (.631)	NA

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

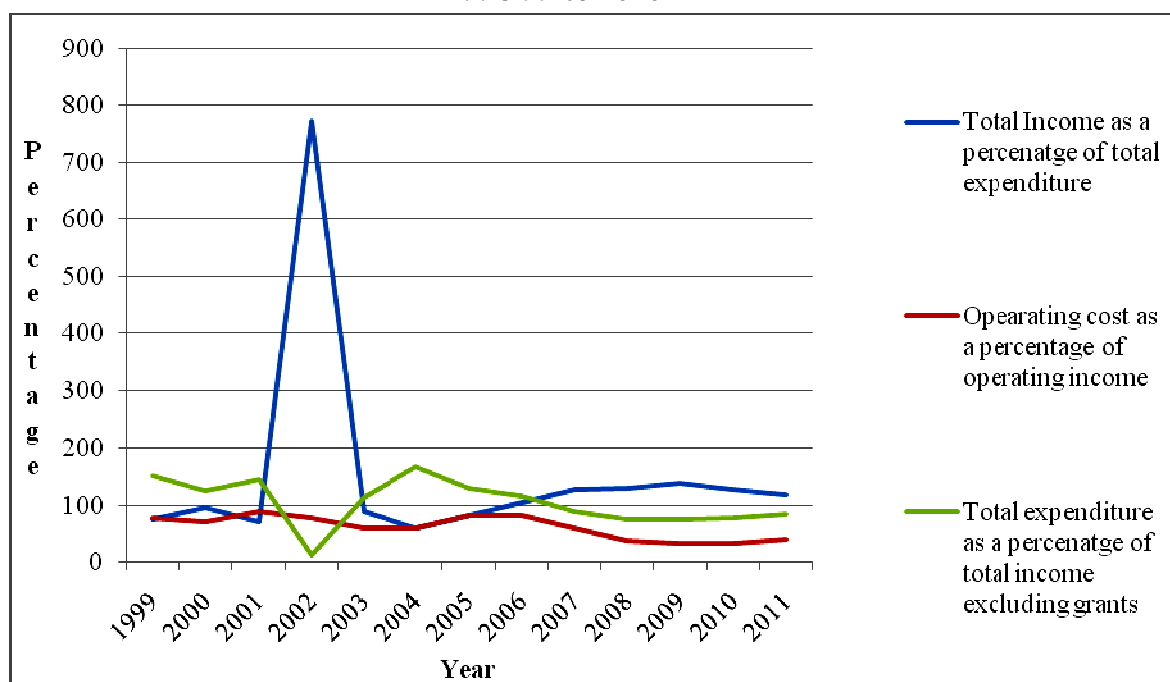
Source: Calculated from annual report various years

It is clear from the table 5.4 that SDR is negatively correlated with market rate for concessionary fund at 99 percent confidence level. It is an indication that 1 point of positive dependence on subsidy is induced by 0 .804 point positive changes in market rate of interest.

Therefore it implies that as market interest rate raises the tendency of a MFI moves toward subsidized sources of fund. As against the SDI, SDR reveals a contradictory result with the same component. It indicates that both are negatively correlated. As market rate of interest reduces, tendency of a MFI moves for non- subsidized fund. It may be due to comparatively easily available sources of fund at a lower interest rate. It is further an implication for the MFIs, that to what extent they seek such funds and the answer purely lies in their internal management of fund. But, a simple economic analysis of cost and income that incurred on and from per borrower lends a hand to the management.

To examine the issue further, an analysis of cost-income pattern per borrower over the period is shown in figure 5.2. It is argued that a MFI must earn profit to become financially sustainable. To understand the basic of financial sustainability from income expenditure statement perspective, income and expenditure component of various annual financial statements has been taken. As depicts in figure 5.2, it is observed that interest income on borrowed fund as a per cent of interest expenditure on loan has increased over the reference period. It is thus a clear indication that from the interest rate perspective the MFI can make profit and the current lending and borrowing rate allows the MFI to extend the program for a higher level of outreach.

Figure 5.2: Expenditure as a per cent of Income for the period 1998-99 to 2010-12



Source:: Author's calculation

But this is only partial story of the issue, since expenditure of a MFI not only covers interest expenditure but also a number of components such as administrative cost, loan loss provision and operating cost. Therefore for a better understanding of income and expenditure, the fraction between total expenditure to total income excluding grants expressed in per cent term is considered. It is observed from figure 5.2 that although the fraction has decreased in the period, it does not show smooth pattern. However, the fraction has demonstrated a significant negative growth rate in 2003-04, but increases in the subsequent two years. It is interesting to note that the trend in the subsequent period is almost 100 percent level except for the period 2004-11. Thus it implies that despite being a mature MFI (in terms of years), it still depends on subsidy and ignoring the subsidy component, profit from the program cannot be made. It is clear that although the MFI is profitable from the perspective of interest income and expenditure, taking overall income and expenditure portray a different picture which shows that during the period,

except for one year, the MFI is unable to make profit in real sense, if grants are excluded. Thus, it confirms that the MFI in the analysis depends on subsidy for financial operation and financially not self-sufficient.

V.4 BREAK EVEN RATE ANALYSIS AND ALTERNATE POLICY MEASURE

Apart from SDI and SDR, it is imperative to analyze the break even condition for a financial institution. It is because; without analysis of breakeven it is difficult to have an in-depth economic analysis of the financial position of the institution. It thus, demands for estimation of expected level of price of financial products. A break even condition for any financial institution over a period of time simply indicates that income of the institution should be at least equal to the expenditure. For analysis of the same, the method specified by Hume and Mosely (1996) is considered.

They described break even analysis in the following way:

$$(\alpha_j + r) \sum (1 - \rho_j) X_j + Y \geq \sum (\beta_j + i + a_j) X_j + Z \dots\dots\dots (5.1)$$

Where,

- X_j= Size of each loan
- i= Interest rate paid per unit of principal on borrowing and savings deposit
- a_j= Administrative cost per unit of principal
- r= Lending interest rate
- p_j= Expected default rate on jth borrower
- α_j = Share of principal of each loan that has to be paid back per time period to the lender (α)
- β_j = Share of principal of each loan that has to be paid back per time period by the lender (β)
- Y= Non-loan income
- Z= Non-loan expense

From the above inequality, break even rate of interest can be calculated in the following way:

$$r = [(\beta - \alpha) + i + a + \alpha p + (Z - Y)] / (1 - p)$$

The result of the calculation based on the data of the sample MFI is depicted in table 5.5.

Table 5.5: Income and Expenditure from Investment per Rupee and Break Even Interest Rate (BERI)

Year	Income	Expenditure	Growth		Difference	BERI (per cent)	Lending Rate*
			Income	Expenditure			
1999	0.003	0.105	-	-	-0.102	25.17	12.00-13.00
2000	0.007	0.123	133.3	17.1	-0.116	29.23	12.00-12.50
2001	0.012	0.157	71.4	27.6	-0.145	33.58	11.00- 12.00
2002	0.012	0.141	0.0	-10.2	-0.129	27.83	11.00-12.00
2003	0.013	0.116	8.3	-17.7	-0.103	25.23	10.75-11.50
2004	0.013	0.143	0.0	23.3	-0.13	28.26	10.25-11.00
2005	0.011	0.177	-15.4	23.8	-0.166	30.59	10.25-10.75
2006	0.011	0.142	0.0	-19.8	-0.131	24.99	10.25-10.75
2007	0.005	0.101	-54.5	-28.9	-0.096	17.89	12.25-12.50
2008	0.015	0.069	200.0	-31.7	-0.054	14.66	12.25-12.75
2009	0.22	0.16	1366.7	131.9	0.06	20.53	11.50-12.25
2010	0.2	0.16	-9.1	0.0	0.04	19.88	11.00-12.00
2011	0.12	0.1	-40.0	-37.5	0.02	15.01	11.00-12.00

* Lending rate here refers to General Minimum rate as prescribed by Reserve Bank of India.

Source: Calculation is done by author

It is apparent from the table that expenditure is greater than income for the period 1999-2008 in absolute term. Thus it registers loss in absolute term. Notably, the MFI registers profit for the period 2009-2011. It thus implies that present income level at the existing lending rate is unable to offset increasing expenditure pattern.

The question before the policy maker is how to control such an unprofitable situation. Should there be changes in the prevailing interest rate and should the MFI concentrate on internal financial management to curb cost to grow in a sustainable way? What should be alternative for the institution to be worked out?

To make a better judgment in this case, it might be helpful to calculate Break Even Rate of Interest (BERI) and to examine factors affecting the net income-expenditure position. In addition, comparative microfinance environment along with financial regulation of the settings should be understood to have a policy measure in this circumstance.

It is worth mentioning here that the prevailing lending interest rate of the institution is 10 percent per annum. Throughout the reference period break even interest rate is higher than the prevailing lending rate of the MFI and minimum lending rate as prescribed by Reserve Bank of India for Scheduled Commercial Banks. Therefore to financially break-even the MFI should charge the calculated break even rate. But whether the existing apex financial norms allow the institution to charge more?

The higher interest rate, which is charged by many MFIs in the world, has drawn an extensive attention before policy makers throughout the world. It is mentioned that currently about 40 developing countries has interest ceilings of some kind (Helmes, 2004). In an interesting study conducted by Wright and Alamgir (2003), it is revealed that although the microfinance interest rate is higher as compared to banking interest rate, it is lower relative to moneylender. Therefore, it implies that to facilitate sustainable source of credit for the excluded and underprivileged sections MFIs should be allowed a little higher interest rate than banking and the like institutions. In a country like India where social issues are more vibrant and where rural poverty persists in a pervasive way, a hike in interest rate by the MFIs may shrink outreach. It is observed from the table 5.5 that break even interest rate is still higher than recent general minimum rate and thus in view of competitive financial environment it may not permit the MFI to charge more.

It is known that, in India with the inception of the concept of Multi Agency Approach in the 80's, priority sector lending at a relatively subsidised rate has been advanced through commercial and regional rural banks. In addition, a plethora of development programmes has been implementing for the last few years through which credit is advanced at a relatively lower rate of interest. Therefore, it implies that although the apex financial body of the country allows higher rate of interest, the competitive financial environment may stand as a restraint, since due to the targeted disbursement of credit under the

priority sector, a near perfect knowledge of customer on the interest rate hype may reduce the outreach.

Charging higher interest rate may not be a feasible solution for the small and medium MFIs since, increase of interest rate by one MFI necessarily commensurate increase in the interest rate of other prevailing MFIs in the region. Besides so far expansion of MFI is concern, big player may wipe out small player with the advantage of economies of scale. Moreover, the latest Microfinance Institutions Regulation and Development Bill has not come into force as act, where it is mentioned that MFI should allow slightly higher rate of interest than commercial banks. Thus, consequently it entails a grim picture on break even interest rate.

V.5. CONCLUSION

The analysis indicates that a MFI can achieve the objective of increasing outreach without compromising sustainability. Indicators like FSS reveals that as a MFI matures in its operation, increasing outreach can be achieved with sustainability.

However dependence on subsidy is still a crucial area as indicated by SDR. Although SDR reveals negative trend for recent times, observing overall trend, it is not possible to predict a similar trend for future. Therefore, it is difficult to safely conclude that increasing g outreach can be achieved without subsidy. Moreover, the break even analysis indicates that break even interest rate is greater than lending rate of MFI as well as minimum lending rate as prescribed by RBI.

Interest rate raise may not be a feasible option in this connection. This is due to a couple of reasons-

a) If MFI increases interest rate on loan, then there is a chance of reduction in outreach, since alternative financial sources are available.

b) Interest rate raise may affect small MFI or infant MFI since big MFI reap the advantages of economies of scale and extend their outreach to such areas where small players exist.

c) Interest rate rising possibly hinders the objective of financial inclusion since prospective borrower possibly become un-interested or incapable of accessing financial resources due to high cost of capital.

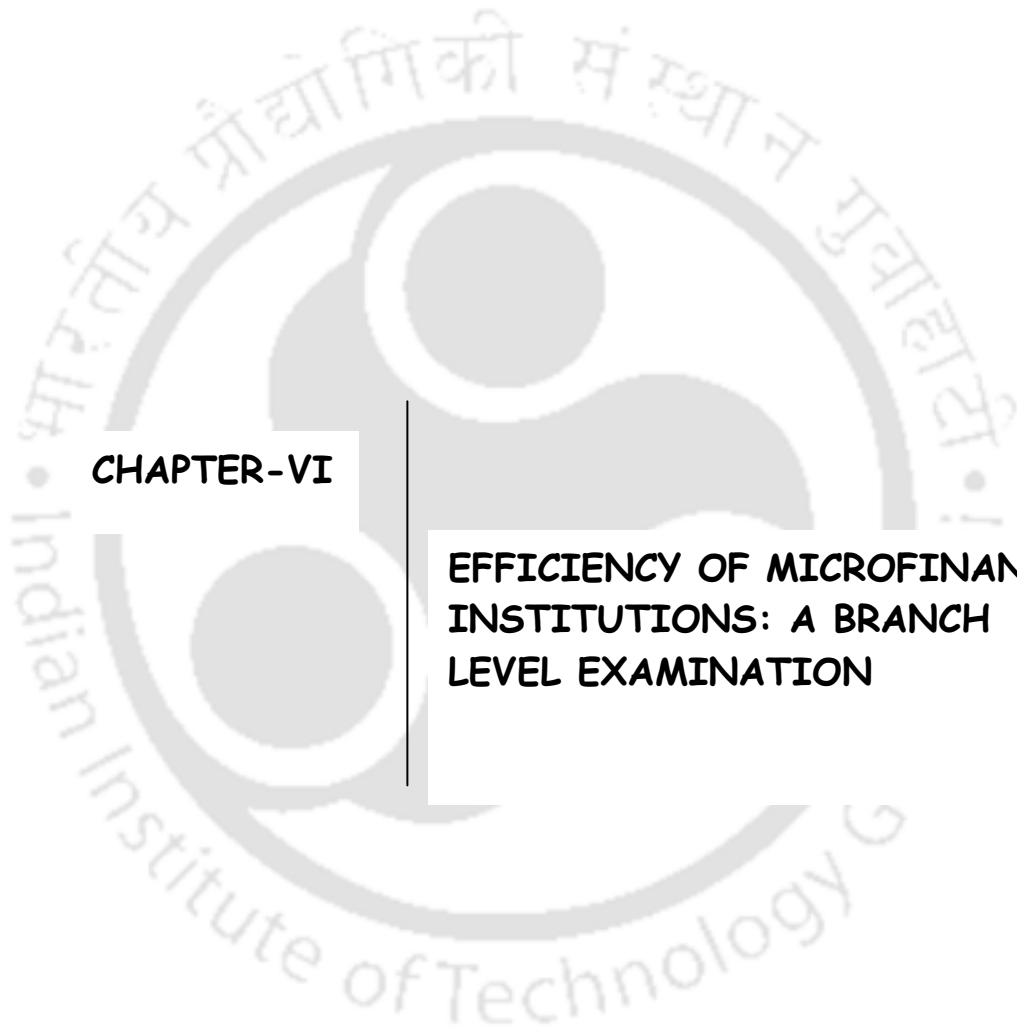
d) Last but not least, increasing interest rate may worsen the scenario of repayment. This is because raising interest rate attracts risky borrowers and discourages safe borrowers. It thus reveals that there is a possibility of non-repayment of the loan fund that forwarded towards risky borrowers.

Therefore, in the absence of a stable and structured microfinance policy, interest rate raise may not be treated as suitable policy option. Therefore, management should identify such crucial factors related to the operational context, which help them to formulate interest policy framework for better operation and to maintain sustainability.

In this connection, efficiency estimation and efficiency analysis may be proved as panacea for the problem. This is because, identifying the crucial factors of efficiency helps to identify factors behind inefficiency. Therefore, the management can frame suitable policy to contain inefficiency and thus help in keeping sustainability. In this endeavour the subsequent chapter details issues regarding efficiency.

Notes

- i. The problem is constraint in accessing credit by the poor section of people, which is due to risk in repayment, moral hazard, adverse selection and credit rationing by the financial institutions.
- ii. Armendáriz and Szafarz (2009) define mission drift “as a phenomenon whereby an MFI increases its average loan size by reaching out wealthier clients neither for progressive lending nor for cross-subsidization reasons. Thus, mission drift may arise because MFIs might find it optimal to reach out to wealthier individuals while at the same time crowding out poor clients. Mission drift can only appear when the announced mission is not aligned with the MFI actual maximization objective”.



CHAPTER-VI

**EFFICIENCY OF MICROFINANCE
INSTITUTIONS: A BRANCH
LEVEL EXAMINATION**

CHAPTER- VI

EFFICIENCY OF MICROFINANCE INSTITUTIONS: A BRANCH LEVEL EXAMINATION

VI.1 INTRODUCTION

In the previous chapter, outreach and sustainability of microfinance has been presented. The analysis in the chapter has indicated that in view of increasing outreach, achieving sustainability is a major challenge and it indicates dependence of the MFI on subsidized fund. To address the problem, the policy measures like reducing operating cost and increasing interest rate is subject to viability at different settings. One possible option as indicated in the policy implication of previous section is close internal monitoring of the MFI. Internal monitoring of MFI can possibly be maintained in terms of efficiency analysis. Efficiency of MFI is an important aspect since it helps in identifying the alarming factors against efficiency.

The importance to study of the efficiency of the MFIs in the reference area could be justified by the fact that microfinance under MFI model has recently been growing rapidly although shares infinitesimal to the microfinance sector. These institutions help poor people in unbanked areas by catering finance for their livelihoods. Besides it is interesting to note that unlike Indian context, MFIs in the state of Assam are incorporated in different legal forms¹. The efficiency concept is more significant for Section 25 MFIs and NBFC MFI, since they basically rely on donor and loan funds for fundraising. It is because, for attracting funds, they usually demonstrate their financial performance, which may be interrupted at any point of time due to the lack of inter and intra monitoring of the branch offices. Moreover, in differential operational area settings, efficiency estimation may also work as an alarming indicator for current and future

target. It may therefore help branch manager to monitor and guide the staff in better way, which will on the other hand increase productivity and efficiency of credit officers.

It is apparent from chapter 2 that extant sources of microfinance efficiency literature reflect that empirical examination of efficiency is basically conducted with DEA and SFA approach. The determinants of efficiency are still limited to some geographical regions. Although a few studies partially focused on the efficiency of Indian MFI, it lacks in examining the determinants of efficiency at branch level. However literature does not evince the studies that there is hardly any study showing efficiency analysis of inter branches. In this background, this chapter delves in examining efficiency of MFI and its branch level determinants.

The methodology adopted for the purpose is case study method, which is described in the subsequent section of this chapter. The study is based on both secondary and primary data collected from various sources. These include publications of various organizations such as Annual reports of RGVN (NE) and ASOMI and MIX Market portal. Besides, for branch level efficiency estimation primary data are collected from 18 branch offices of two MFIs. The selection of branch offices are guided by age of the branch office and selection of MFIs based on the legal incorporation status.

VI.2 METHODOLOGY AND DATA

The case study method as adopted for this analysis is divided in two stages. The first stage is targeted towards the efficiency scores, the required components of efficiency calculation is collated at three levels, viz. international, national and local. The international level consists of all continents along with world average. National level calculation components consist of average of India, ASOMI and RGVN (NE). All

information in this regard is retrieved from MixMarket database online as on 2009. Due to the lack of uniformity amongst the different unit of assessment, the period after 2009 is not considered. Local level data pertains to purposively selected MFI unit offices of the sample MFIs (ASOMI and RGVN (NE) in this case). Data at this level is purely collected from the selected unit offices. In this study, at first, efficiency scores are calculated for mean World MFIs, India, ASOMI and RGVN (NE). The estimation is further extended to the selected branches (unit offices) of the sample MFIs.

Second stage is based on the selected efficiency scores of the unit offices, the determinants of efficiency is estimated by applying TOBIT regression analysis. Data used in this analysis is collected from field level survey of respective branches of both the MFIs.

For estimation of efficiency, Data Envelopment Analysis (DEA) is devised, while to examine determinants of efficiency TOBIT Regression Analysis (TOBIT) is applied. These are elaborated in details in the subsequent sub-sections.

VI.2.1 Efficiency Estimation: Use of Data Envelopment Analysis

Recalling the definition of Pareto-Koopman, the performance of a Decision Making Unit (DMU) is *efficient* if and only if, it is not possible to improve any input or output without worsening any other input or output. In DEA, the organization under study is called a *DMU* (Decision Making Unit). Generically, DMU is regarded as the entity responsible for converting inputs into outputs and whose performances are to be evaluated. In managerial applications, DMUs may include banks, department stores and supermarkets, and extend to car makers, hospitals, schools, public libraries and so forth. In engineering, DMUs may take such forms as airplanes or their components such as jet engines. For the

purpose of securing *relative* comparisons, a group of DMUs is used to evaluate each other with each DMU having a certain degree of managerial freedom in decision making (Cooper et.al, 2002:22). In microfinance sector a DMU may be considered as a MFI or a unit office.

For the first part of the analysis DEA is applied, which is basically a linear programming technique that analyse both allocative and technical efficiency into direct measurability. DEA as a non parametric methodology has been developed by Charnes et al (1978) in the assessment of public program, which made it popularise in the later stage in using it for assessment of financial institutions and MFIs. It is popularly known as CCR model. Moreover it has been further extended by Banker, Charnes and Cooper (1984), which is known as BCC model. The basic diversity between these two models is the treatment of the return to scale. While the first one supposes that every decision making unit (DMU) operates with constant returns to scale, the last one takes into account variable returns to scale.

The basic CCR (1978) model can be explained in the following way:

$$\text{max } h_o = \frac{\sum_{r=1}^s u_r y_r o}{\sum_{i=1}^m v_i x_i o} \dots\dots\dots(6.1)$$

subject to

$$\frac{\sum_{r=1}^s u_r y_r o}{\sum_{i=1}^m v_i x_i o} \leq 1; j = 1, \dots, n.$$

$$u_r v_i \geq 0; r = 1 \dots\dots, s; i = 1 \dots\dots, m.$$

Let, *j* is a DMU. The efficiency of *j* is obtained as the maximum of a ratio of weighted outputs to weighted inputs subject to the condition that the similar ratios for every DMU be less than or equal to unity. It can be described in more precise form in equation 6.1.

Here the values of y_{rj} , x_{ij} are positive and known as output and inputs of the j^{th} DMU and the $u_r, v_i \geq 0$ are the variable weights to be determined by the solution of this problem. Equation 6.1 indicates output maximisation and can be reduced to linear programming forms.

They also developed the reciprocal of equation 6.1, which is basically a dual of the problem in linear programming terminology, which targets minimisation of cost. The reciprocal equation is depicted as follows:

$$\begin{aligned} \min f_o &= \frac{\sum_{i=1}^m v_i x_i o}{\sum_{r=1}^s u_r y_r o} \dots\dots\dots (6.2) \\ \text{subject to} \\ \frac{\sum_{i=1}^m v_i x_i o}{\sum_{r=1}^s u_r y_r o} &\geq 1; j = 1, \dots, n. \\ u_r v_i &\geq 0; r = 1 \dots\dots, s; i = 1 \dots\dots, m. \end{aligned}$$

The present study adopts CCR model where it admits an inputs orientation and a constant return to scaleⁱⁱ. Since the present analysis is concerned with input orientation therefore in general form input cost should be minimized (Coelli et al, 2005). Assuming that there are data on K inputs and F outputs for each of I firms. For i -th firm, inputs and outputs are represented by the column vectors x_i and q_i , respectively. The $K \times 1$ input matrix, \mathbf{X} , and the $F \times 1$ output matrix, \mathbf{Q} , represent the data for all I firms. In general, DEA is calculated as:

$$\begin{aligned} \min_{\theta, \lambda} & \theta Q, \\ \text{Subject to} & -q_i + Q\lambda \geq 0, \\ & Qx_i - X\lambda \geq 0, \\ & \lambda \geq 0, \end{aligned}$$

where θ is a scalar and λ is a $I \times 1$ vector of constants. The value of θ is the efficiency score for the i -th firm. It satisfies: $\theta \leq 1$, with a value of 1 indicating a point on the frontier and, hence, a technically efficient firm. This problem must be solved once for each firm in the sample, that is, I times (Coelli *et al.*, 2005).

VI.2.2 Determinants of Efficiency Estimation: TOBIT Regression Analysis

The second phase of analysis entails examination of determinants of efficiency, for which, calculated efficiency scores of the unit offices treated as dependent variable against some independent variables as described in details in the subsequent sections. Since efficiency score ranges between 0-1, where 0 indicates complete inefficiency and 1 indicates complete efficiency therefore, the values of efficiency scores are censored at lower or upper or both boundary levels.

In this case, if Ordinary Least Square (OLS) regression model is applied, then it results in violation of some of the classic properties of OLS (Greene, 2003). It is because the dependent variable is qualitative in nature and therefore, in this case qualitative dependent variable regression analysis can be devised. TOBIT regression analysis is considered as best alternative in this situation (Fraser and Wind, 1986). In this model the basic provision of estimation regarding probability and extent of the limited dependent variable remains intact (Tobin, 1958). The present study adopts a general TOBIT form which is applied by Gonzalez (2008) and Haq et al (2010). The Tobit model is specified as below:

$$E_k = rk\beta + \mu k \dots\dots\dots (6.3)$$

$$= 1 \quad \text{if } E^*k > 1$$

$$\quad \quad \quad \text{if } E^*_k \leq 1$$

Where,

E_k = efficiency of DMU k

E^*_k = true but unobservable efficiency score for DMU k ,

$rk = [1 \ \prime zk]$ is an $(1 \ * (L + 1))$ vector of uncontrollable factors plus one,

β is an $((L + 1) \ * 1)$ vector of parameters.

μ_k is a random term, normally distributed.

Tobit regression is adopted by a number of studies, e.g., Paxton (2006), Gonzalez (2008) and Haq et al. (2010). In this analysis, TOBIT model is considered as best tool of estimation due to the following reasons:

- a) The dependent variable (efficiency score) is right censored, because all efficient MFIs will be assigned a score 1 (complete efficiency) even if all the unit offices in the frontier are not equal in reality, and
- b) It is assumed that the expected value of the error term is equal to zero.

It is useful to clarify that data pertaining to calculation of branch level efficiency and its determinants was collected in 2009 by conducting field level survey during the month of January-June. Thus, in this study, the analysis is limited to investigate the sources of inefficiency for the year 2009. Although small size sample has an impact on the result of Tobit regression estimation, but it can be theoretically run (Gujarati & Sangeetha, 2007). Based on the equation 6.3, the underlying relationship between the variables is represented by:

$$TE_i = \Gamma X_{i2009} + \varepsilon_{i2009}$$

Where, $TE_{i,2009}$ is the technical efficiency score of the i -th MFI corresponding to 2009, $X_{i,2009}$ is the vector of MFI characteristics, and $\Gamma_{i,2009}$ is the error term. Based on this relationship the efficiency scores can be estimated at the desired censored level.

VI.3. SPECIFICATION OF VARIABLES

Specification of variables both in case of DEA analysis and TOBIT regression analysis is a cautious step towards estimation. The specifications of the variables are separately described in the following sub-sections.

VI.3.1 Variables Selected for Data Envelopment Analysis

The selection of variables for DEA is very important since in DEA it is difficult to find the test of significance of the variables through regression. Moreover precaution in selecting the variables is a much needed consideration since correlation among the specified variable may biased the result (Nieto et al, 2007). In this analysis an input orientation DEA is adopted, which is based on two arguments (Coelli, 1996). First, an input orientation DEA is generally used by some authors. Secondly since input orientation DEA demands controllable inputs; it can be proved that all four inputs used in this study can be controlled by branch managers and operation head of the microfinance branch office and MFI respectively.

A number of studies relating to MFI efficiency have considered different variables in terms of production approach, intermediation approach and combination of both to understand the efficiency of microfinance institutions (Qayyum & Munir, 2006; Nieto et al, 2007; Bassem, 2008; Haq et al, 2010). In these study, MFI assets, staff size, cost per borrower, operating expenses per borrower are considered as inputs while per cent of women borrowers, operational self sufficiency, outstanding loan portfolio, interest and fee income are considered as outputs. Microfinance as a financial institutions intermediates between client and credit through their staff. Therefore, outstanding loan portfolio is taken as output under this approach while staff size and is considered as an input. Under the production approach, MFIs are considered as a producer of financial

products who use capital and labour to ensue financial transactions, such as deposits and loans.

Instead of considering performing loan segment of an MFI and its branches, in this analysis *total outstanding loan portfolio* is used as a measure of output based on the justification that these loan amount are advanced out of total inputs such as deposits, donor fund, loan fund and total assets. In addition it is noteworthy that in this study it is found that the sample branch offices have been recovering arrear and default loan amount at regular schedule, therefore it entails staff visit to the default clients.

Per cent of women borrower to total active borrower is considered as an output following Baseem (2008) and Lapneu and Zeller (2002). The variable indicates depth of outreach, which is also an important indicator of social performance of microfinance, an alternate measure to access sustainability of microfinance.

Interest fee and income is considered as output of microfinance institutions and their respective branches from the point of view of production approach. It was used by Pastor (1999). Since the MFIs use both borrowed fund and own fund for financing clients, it incurs cost per borrower apart from the base loan amount, therefore proceed of loan fund in the form of interest fee and income is considered as output.

One of the most important aspects of microfinance is considered as sustainability in its operation. As an intermediary or producer, a MFI should target in achieving sustainability in operation. Sustainability indicates permanency of the program and it is possible when it can cover its operating cost out of its income. Therefore against the MFI assets, *OSS* is introduced as an output. Although subsidy dependence index, subsidy dependence ratio and *FSS* are used to measure the sustainability of the program along

with OSS, the study is limited by data access for such measures for sample MFIs and thus considers OSS as near proxy measure for sustainability.

The most important input in microfinance is labor (particularly the efforts of loan officers). The efficiency with which this labor is deployed is influenced, in addition, by the support services that loan officers use in their tasks such as transportation costs and communication cost. Since microfinance is a character based lending and demands frequent visit to the client's address. Loan officer or credit officers are critical in assessing an applicant's creditworthiness. Thus labor variable is proxied by the *staff size*, at the time of investigation. It was also proposed by Berger and Humphrey (1997) among others. The total staff rather than the number of loan officers will be used here, because the staff involved in all the operations and administration processes are also engaged in pursuing the final goal of producing loans. The larger the proportion of the total staff, inefficiencies will be more likely since all are not loan officers.

Since *total asset* of a MFI is base for loan fund, therefore it is treated as an important input under production approach. Besides *cost per borrower* is used as a proxy for expenditure, which indicates total cost incurred in financing clients. *Operating expense* is also an important input, which considers only operational expenditure of the program as proposed by Berger and Humphrey (1997) and Pastor (1999).

All these variables selected in this study is confirmed with production and intermediation approach.

VI.3.2 Variables selected for TOBIT Regression Analysis

One of the critical steps in the analysis of efficiency and its determinant is acquiring efficiency scores. The determinants of efficiency may include characteristics of the

operating environment and management characteristics, such as human capital endowments (Fried et al., 2008). The next important step in examining determinants in efficiency is selection of econometric method. Given that the technical efficiency scores are between 0 and 1, the sources of efficiency will be explored using a censored regression model, specifically a Tobit. In this study Tobit regression analysis is adopted as devised in Gonzalez (2008). Initially a total of nine explanatory variables are identified, but due to the problem of multicollinearity and heteroscedasticity, two variables namely size of operating area and cost per borrower are excluded. The rest of the selected variables are free from multicollinearity and heteroscedasticity and found to be suitable for estimation.

Efficiency score is treated as explained variable in the econometric analysis. The first explanatory variable used in the determinants of efficiency is the age of operation of the branches (*AGE*). The importance of the variable is based on the hypothesis that as age of operation increases the branches will be able to handle financial situation in a better way, which will increase efficiency of branches. The next important variable is average loan outstanding per active borrower (*ALS*). This average size is computed as the total loan portfolio at the end of March 2009, in rupees, divided by the number of active borrowers. Keeping other things constant, a larger average loan size would be expected to show a positive association with efficiency from the intermediation perspective. This is because a larger loan size with same labour and services will reduce the cost per amount lent.

The variable repayment rate (*REPR*) is selected to explain the efficiency of branches. It is expected that a better repayment rate effect branch efficiency positively, since the recovered amount may be used for client outreach. The present study devises a new variable, namely, place of branch office (*PBO*), i.e. either the branch is located in rural or

urban area to examine branch efficiency. It is expected that since population and cluster of clients along with better employment avenues are more in urban area as compared to rural area, therefore it may reduce cost of the program and loan and thus helps in increasing efficiency. In this analysis, *PBO* is taken as a dummy for rural and urban area where 0 is assigned for rural area and 1 for urban area.

The reason behind selection of variable legal incorporation status of the selected MFI branches (*LIST*) is rest on the argument that legal incorporation may help in better outreach of the program and thus it increases efficiency of the MFI and its branches. Since sample MFIs in this analysis are legally incorporated, it is interesting to examine whether their motivation effect efficiency or not. While one selected MFI is incorporated under Section 25 Company as non-profit mode another MFI is incorporated as NBFC (private) under profit mode. The dummy variable *LIST* is assigned 0 for Section 25 Company and 1 for NBFC. It is thus expected that as legal incorporation of the MFI changes to NBFC (profit mode), there is a chance of increase in efficiency of the branches, since profit motivation demands efficient working of the branches in terms of cost reduction and sales maximization.

The next two variables are operating expenditure per active borrower (*OPEPAB*) and active borrower per credit officer (*ABPCO*). The selection of the variable *OPEAB* is based on the argument that a lower operating cost per borrower can increase profitability of branches and thus this may increase in efficiency. The importance of operating cost is also studied in Indian case, where it is reflected that increasing operating cost could cross the existing interest rate setting of MFI and therefore results in trade off between social objective of outreach and profitability (Sa-Dhan, 2004). On the other hand, *ABPCO* indicates average borrower per credit officer. The variable cannot directly imply any

relation with efficiency. Although more number of active borrower per client reduce the cost of operation, it does not guarantee better assessment of client since assessment is constrained by time factor and therefore it may results in default in loan.

VI.4 EFFICIENCY OF MFIs

VI.4.1 Results from Some Selected Regions and Sample MFIs

Before examining the efficiency of MFIs across the continents, it is useful to have a comparative descriptive analysis of the sample MFIs. In this context seven continents and selected two MFIs along with world MFI average and Indian average is considered. The basic motive is to portray a comparative picture of MFIs efficiency in Assam to the selected continents and world as a whole.

It is clearly depict in table 6.1 that one (namely, RGVN (NE)) out of two selected MFI in Assam is better compared to world MFI average in terms of staff size. While average staff size of world MFI is 107, it is approximately 287 per cent higher in case of RGVN (NE). It is also higher than Indian average, which is shown as 313. It thus indicates that RGVN (NE) is more staffed than ASOMI and all regional MFI average.

While, cost per borrower is lowest in case of RGVN (NE) (₹ 9), it is highest in Middle East and North Africa (₹ 266). It is therefore an indication that RGVN (NE) is more cost effective than ASOMI and all regional MFI averages. It is depicted in the table that on an average, MFIs of Middle East and North African are operationally more self sufficient than all MFIs and regional MFI average.

Table 6.1: Comparisonⁱⁱⁱ among the Variables of MFIs used in DEA in the selected Regions against the World Average

(in per cent)

MFIs/ MFI Region (s)	Total Assets (₹)	Staff (Nos.)	Operating Expenses (₹)	Cost Per Borrower (₹)	OSS (per cent)	Women Borrower per cent	Yield on Gross Loan Portfolio (₹)	Gross Loan Portfolio (₹)
AFRICA	7778042	120	1380562	148	102	63	1429980	4353382
EAP ^a	5225092	115	698569	52	116	81	1014271	3407139
EECA ^b	6220501	48	716022	266	109	40	990687	3970564
LAC ^c	8756539	91	1331056	179	109	61	1950244	6633673
MENA ^d	15353137	110	2494825	87	131	56	4415878	13646286
SOUTH ASIA	10335825	258	1027326	19	108	100	3314502	7265240
INDIA	17261004	313	1537971	15	107	99	2583397	9748851
ASOMI	5907221	175	1105262	30	94	97	1289104	4733985
RGVN (NE)	14354507	414	933035	9	120	91	2772541	12460712
WORLD^e	8,053,471	107	1,097,68	143	109	64	1,572,27	5,540,064

Note: a. EAP: East Asia and the Pacific, b. EECA- Eastern Europe and Central Asia, c. LAC-Latin America and the Caribbean, d. MENA- Middle East and North Africa

e. WORLD represents the mean size of the respective parameters of the 1132 MFIs.

Source: Calculation done by author

Women outreach in terms of per cent of women borrower to total borrower is highest in South Asia (100 per cent) and it is lowest in case of Eastern Europe and Central Asia. While Indian MFI average attracts highest total asset base (₹17261004), gross loan portfolio is highest in Middle East and North Africa (₹13646286).

In table 6.2, comparative efficiency scores along with efficient input target and output target are calculated for all contingent average MFI, world MFI average, Indian MFI average, ASOMI and RGVN (NE). Here, all average MFIs and individual MFIs are considered as DMU. Table 6.2 clearly indicates that 7 out of 10 samples DMU are relatively efficient. It is interesting to note that while the world average MFI fails in efficiency, the South Asian, Indian and both the MFIs from Assam attain efficiency.

Table 6.2: Calculated Efficiency Scores of MFIs in the Selected Regions

DMUs	Efficiency Score	Return to Scale	Efficient Input Target				Efficient Output Target			
			Total Assets	Staff	Operating Expenses	Cost Per Borrower	OSS	per cent of Women Borrower	Yield on Gross Loan Portfolio	Gross Loan Portfolio
Africa	0.797	irs	-25.40	-25.40	-53.92	-150.31	0.00	2.41	0.00	6.08
EAP	1.000	crs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EECA	1.000	crs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LAC	0.999	drs	-0.13	-0.13	-7.84	-9.76	13.15	0.00	1.57	0.00
MENA	1.000	crs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
World	0.926	irs	-7.99	-7.99	-7.99	-16.44	5.66	0.00	3.59	0.00
South	1.000	crs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
India	1.000	crs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ASOMI	1.000	crs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RGVN	1.000	crs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: MIX Market Database

Calculation done by author

Where Latin American and the Caribbean MFIs are inefficiently operating at decreasing return to scale, African and World average MFIs are operating at increasing return to scale. The world average MFIs have to reduce cost per borrower and operating expenses by 16.44 and 7.99 percent respectively as it is clearly observable from table 6.2. A similar explanation regarding rest of the inefficient DMUs also could be made.

VI.4.2 Efficiency of Some Selected Branches of MFIs in Assam

In the previous sub section it is found that both the MFIs from Assam attain efficiency. Therefore, it is imperative to examine whether all the branches are equally efficient or not. In this analysis about 28 per cent branch offices are from ASOMI, a MFI under NBFC incorporation and rest of the 72 per cent is from RGVN (NE), a Section 25 Company undertaking. RGVN (NE) is relatively older in microfinance operation as compared to ASOMI.

Table 6.3: Calculated Efficiency Scores of Selected MFI Branches

Branches (DMUs)	Efficiency Score	Return to Scale	Efficient Input Target					Efficient Output Target				
			Total Assets	Staff	Operating Expenses	Cost Per Borrower	OSS	Women Borrower	Gross Loan Portfolio	Gross Loan Portfolio		
RGVN 1	0.95	irs	-7.90	-21.19	-	0.00	0.00	6.77	0.00	0.95		
RGVN 2	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
RGVN 3	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
RGVN 4	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
ASOMI 1	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
RGVN 5	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
RGVN 6	0.92	irs	-	-	-	0.00	0.00	33.9	0.00	0.92		
RGVN 7	0.99	irs	-2.76	-68.22	-0.02	0.00	0.00	25.7	0.00	0.99		
ASOMI 2	0.96	irs	-5.84	-21.13	-0.30	-	0.00	26.8	0.00	0.96		
RGVN 8	0.85	irs	-5.58	-61.50	-	0.00	0.00	46.2	0.00	0.85		
RGVN 9	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
RGVN 10	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
RGVN 11	0.96	irs	-	-0.14	-	0.00	0.00	4.80	0.00	0.96		
ASOMI 3	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
RGVN 12	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
ASOMI 4	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
RGVN 13	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		
ASOMI 5	1.00	const	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		

Source: Field Survey, 2009, Calculation done by author

It is clearly depicts in table 6.3 that out of 18 sample branch offices 12 are relatively efficient. Out of these 4 out of 5 branch offices of ASOMI are the relatively efficient, while 8 out of 13 branch offices of RGVN (NE) are efficient. All inefficient branches demonstrate increasing return to scale. It is therefore imperative to understand how inefficient branch could manage their inputs and output so as to achieve efficiency. It is apparent from the table that all inefficient branches should reduce total assets, staff size and operating expenses.

The efficient output target to achieve efficiency is for increase of women borrower and increase in loan portfolio. Therefore, it is a policy question for branch management,

whether to decrease inputs or increase output. It seems from the analysis that since it is difficult to curb some inputs such as staff along with the increase in some outputs such as loan portfolio, therefore a judicious mix of input-output should be exercised by the respective management so as to achieve efficient operation. This also depends on the better understanding of the competitive microfinance environment since it found in the field survey that a number of MFIs located in same location.

Above analysis only depicts efficiency of branch offices not the determinants of such efficiency or inefficiencies. Therefore in the subsequent subsection an econometric analysis behind the determinants of efficiency is drawn.

VI.4.3 Determinants of Branch Level Efficiency

Based on the efficiency score of the microfinance branches of the selected MFIs, it is interesting to investigate the determinants behind the efficiency of branches. The descriptive statistics for the selected variables shows that on the average the sample MFI branches are near efficient. It is perceptible from table 6.4 that the average age of the branches is in the category of maturing branches with an average loan size of Rs. 4650^{iv}.

Table 6.4: Descriptive Statistics related to TOBIT Regression Analysis

Variable	Mean	Standard Error
EFFSCORE (between 0 to 1)	0.998	0.0009
AGE (Number of year of operation)	5.7	0.8228
ALS (₹)	4650	530.8116
REPRT (per cent)	93.9	1.4705
PBO (0- Rural, 1-Urban)	0.45	0.1205
LIST (1- NBFC, 0- Section 25 Company)	0.33	0.1143
ABPCO (in number)	250	29.5322
OPEPAB (₹)	28.5	3.81497

Source: Field Survey, 2009

The loan size indicates on an average prevalence of second loan cycle since loans are by law gradually increases from Rs. 4000 onwards. It is therefore an indication that there may be client exit since age of operation reveals continuation of 6th average cycle. The repayment rate is low as compared to industry standard of 95 per cent. Although average borrower per credit officer is higher at 250 as compared to 102 for world average (MiX Market database), operating expense per active borrower is low at ₹ 28.5.

Table 6.5 shows the result of Tobit regression analysis which examines the determinants of efficiency. On the basis of the relevant variables as defined in section VI.3, it is found that the variables are fitted in the model as indicated by $\text{prob} > \chi^2$. In the present study Pseudo R^2 is negative. Pseudo R^2 can be negative in Tobit regression model. According to Sribney (1997), $\text{Pseudo-}R^2 = 1 - L_1/L_0$, where, L_0 and L_1 are the constant-only and full model log-likelihoods, respectively.

If, $L_1 > 0$ and $L_0 < 0$, then $L_1/L_0 < 0$, and $1 - L_1/L_0 > 1$

$L_1 > L_0 > 0$ and then $L_1/L_0 > 1$, and $1 - L_1/L_0 < 0$

Hence, this formula for pseudo- R^2 can give answers > 1 or < 0 for continuous or mixed continuous/discrete likelihoods like Tobit. So, it makes no sense. Thus, it is better to report the model chi-squared and its p -value.

It is apparent from the table 6.5 that variables *age*, *als*, *reprt*, *pbo*, *list* and *opepab* are the statistically significant at 5 percent level. The coefficient for *age* implies that an increase in one year of experience of each MFI branches will decrease, on average, the relative efficiency score by 1.4 per cent points. The result is similar to the findings by Gonzalez (2008).

The result seems to be contradiction against expectation. But it may be due to a numbers of underlying factors such as exit of client, inclusion of new clients, and same staff size

along with increasing loan portfolio, which may induce cost component to be increased. The reasons cited here are probable in nature; therefore it demands an in-depth investigation at both macro and micro level.

Table 6.5: Determinants of Efficiency

Number of observations = 18		
LR $\chi^2(7)$ = 34.87		
Prob > χ^2 = 0.0000		
Pseudo R^2 = -1.7499		
Log likelihood = 27.400224		
EFFSCORE	Coefficient	t
AGE*	-.0146563	-15.75
ALS*	.0000147	12.03
REPRT*	-.0194509	-16.13
PBO*	.0047837	4.98
LIST*	.0515839	15.62
OPEPAB*	-.0002312	-9.95
ABPCO	-0.0000098	-1.64
_cons	2.852049	24.85
/sigma	.0006058	

* Significant at 5 percent

Source: Field Study, 2009

The coefficient for *REPRT* indicates an inverse relation with the efficiency. It implies that one percent increase in the repayment rate would reduce efficiency by 1.9 per cent. Based on the estimation made in this study, an inverse relationship is observed between repayment and efficiency. Although theoretically it seems that increase in repayment rate may supplement outreach, but at the same time high degree of outreach may not guarantee efficiency of microfinance institutions. This may due to diversified depth and breadth of outreach^v. Although there is dearth of literature regarding direct relationship between repayment rate and efficiency, some study indirectly trace its contradictory relationship. As for example, Hermes et al. (2009) maintained that reduced repayment rates leads to decreased financial performance and has adverse consequences for the

efficiency of MFIs. McIntosh and Wydick (2005), on the other hand shows that there may be adverse effects of increased competition in microfinance.

The result of the present study shows that repayment rate has a marginal negative impact on efficiency, which may be due to rigid repayment schedule^{vi}. Since frequent loan collection entails a collection costs, it directly enlarge the volume of operational cost and therefore may have a negative impact on efficiency. The result is further supported by the study of Nghiem (2004) where he concluded that most of the inspected plans are technically effective, and to lead suitably this efficiency one has to consider two fundamental aspects namely: the dimension of the loan and the flexibility of repayment.

The coefficient of *PBO* indicates that efficiency of MFI branches is positively lean towards urban branches as apparent from table 6.5. It implies that as MFI branches are placed in urban areas, it would increase on an average 0.47 percent increase in efficiency of the MFI. The coefficient of *LIST* is also indicates such an implication. Incorporation of MFI as NBFC increases efficiency by about 5 per cent. It may be due to better management discipline and professionalism along with profit motivation of such MFIs.

The coefficient for *OPEPAB* demonstrates an expected result. It indicates that an increase of one rupee would reduce efficiency by 0.023 points. Efficiency of a MFI branch may also reduce by the increase in the number of active borrower per credit officer, which is shown by the coefficient of *ABPCO*. It implies that an increase of one active borrower per credit officer may reduce efficiency of the MFI branches by 0.0001 percentage.

It is clear from the foregoing analysis that the branch level efficiency is determined by a number of both internal and external factor(s). The external factor such as repayment rate is uncontrollable in nature. Therefore it is an implication for the management of MFI that

it should judiciously regulate their internal factors, which would results in increasing efficiency.

VI.5 CONCLUSION

Microfinance has recently provoked a lot of interest among policy makers and researchers as a tool of poverty reduction. In the context of competitive microfinance environment, an MFI is faced with challenges to increase in outreach along with sustainability. To maintain sustainable outreach, the MFI should be accustomed in frequent efficiency analysis, which helps in formulating better policy guideline for internal management of the institutions. In addition, exercising efficiency analysis at branch level also helps to branch level manager to monitor both internal and external factors relating to efficiency which may help in guiding credit officers.

In this study it is observed that South Asian MFI average including Indian MFI average is more efficient as compared to world average MFI. In addition it is also demonstrated that MFIs of nascent area can also expand outreach efficiently as it is evinced by ASOMI and CSP-RGVN of Assam. However there is a room for microfinance branch level efficiency analysis as conducted in this study. So far as review of extant literature is concerned such type of inter and intra branch level study has not been undertaken in Indian setting. Therefore this attempt may be extended in future studies along with inclusion of more representative variables. The analysis from the present study indicates that both internal and external factors are responsible for inefficiency or efficiency. Management should identify such factors those are interwoven with the local operational setting so as to formulate better operational guidelines and policy for microfinance operation in the contextual setting. Acclimatization to and implementation of modern

technologies especially communication technology may be a panacea in reducing the transaction cost segment relating to clients as in the case of ACCION's Porta Credit and Grameen Phone (Yunus, 1998; Accion, 2004).

The study reveals an interesting finding that microfinance repayment is inversely related to efficiency. In general, it expects that better repayment rate helps to maintain efficiency. Therefore, it is imperative to understand the gamut of repayment performance for better comprehension of the related issues. In this backdrop the subsequent chapter is geared towards analysis of microfinance repayment performance.

Notes:

- i. The legal form of MFIs in India is broadly classified as Societies Registration Act 1860, Section 25 Company and Non-Banking Financial Institutions.
- ii. For a better exposition of CCR model please refer Charnes et al (1978).
- iii. The comparison of variables among the mean world MFI, different regions and the sample MFIs is drawn to show the position of sample MFIs in the world microfinance perspective. Here, different regions and World MFI indicate mean size of the variables for respective regions.
- iv. The amount could be converted to USD, considering \$1= Rs. 50.86 on 31st March 2009. For currency conversion please refers to <http://www.xe.com/ict>.
- v. Diversified depth and breadth of outreach indicates a heterogeneous category of microfinance clients which consists of both poorest and poor, along with a sparse geographical coverage of microfinance clients.
- vi. In this survey it is observed weekly repayment schedule for both the MFIs.



CHAPTER-VII

**REPAYMENT PERFORMANCE
AND ITS DETERMINANTS
UNDER MICROFINANCE
INSTITUTION MODEL**

CHAPTER-VII**REPAYMENT PERFORMANCE AND ITS DETERMINANTS
UNDER MICROFINANCE INSTITUTION MODEL****VII.1 INTRODUCTION**

In the light of enthusiastic goal of increasing outreach, MFIs expand its operation not only in un-banked areas but also to banked areas¹. These institutions require hefty size of fund for operation, which is generally financed by donor agencies or organizations, government agencies and commercial banks. MFIs cast high repayment rate as indicator of their success apart from common sustainability index such as *OSS* and *FSS* to attract the funders for potential financial support. However, the self-explicitness of the indicators is a questionable matter. This is because high repayment rate does not necessarily indicates success of programme, since participation in it does not guarantee better financial condition and thus there is a chance that the high repayment rate possibly be maintained at the cost of over indebtedness. Moreover, the question regarding the credibility of those indicators is still in debate at academic as well as practitioner level.

Discussion on sustainability of MFIs in chapter V reveals that although common sustainability indices such as *OSS* and *FSS* have been increasing, subsidy indices like *SDR* and *SDI* portray its dependency on subsidy. Further, the inefficiency of MFI branch offices also indirectly linked with repayment performance, as it pointed in chapter VI. Improving repayment rates might help in reducing the dependence on subsidies of the MFIs, which would improve sustainability and efficiency and thus each MFI should try to maximize its repayment performance. High repayment rates are indeed largely associated with benefits both for the MFI and the borrower. They enable the MFI to

increase outreach and allow cutting interest rate that it charges to the borrowers. This in turn reduces the financial cost of credit and induces financial inclusion.

The present chapter discusses microfinance repayment performance in a broad framework. The chapter tries to portray the repayment performance under microfinance institution model and the factors responsible for its performance. In this pursuit, the chapter analyses the factors from the perspective of institutional, group and individual level.

VII.2 METHODOLOGY AND DATA

The methodology adopted in this chapter is guided to examine repayment performance from three different perspectives, such as, institutional, group and individual level. It is frequently reported that, the successes of microfinance are usually demonstrated by the MFIs in terms of qualitative impact of credit as a release to credit constraint and more precisely, it exhibit how small amount of finance can way out the opportunities of livelihood. These stories are further supported by higher repayment rate and based on the statistical information provided by branch offices. Moreover, to maintain higher rate of repayment, a number of different methodologies have been adopted by different MFIs in the world. All methodologies basically target clients and groups to maintain the timely repayment. These methodologies are commanded by branch offices, which dictate the group and ultimately the clients. It therefore seems that microfinance repayment performance is a complex issue and need to comprehend from a wide angle.

In this pursuit three different models are formulated to examine the nature of microfinance repayment performances, which are explained in subsequent sections of

this chapter. The models try to capture such variables, which can influence the repayment performance at branch, group and individual level.

The first model relates to branch level repayment performance of the sample MFIs, namely ASOMI and RGVN (NE). In an attempt to study the factors affecting branch level repayment, a survey was conducted during February- June 2009, in which 18 branch offices across 10 districts of Assam were visited.

The second model relates to group level repayment performance, for which 187 groups interviewed during the reference period. The selected groups consist of both default group and repaying group. A-priori information was collected from branch offices regarding the repayment performance of groups. This information limited only to financial level data. A composite semi structured interview schedule is therefore constructed to capture the vital information to examine the group level repayment performance. The interview was conducted at the time of group meeting where usually most of the members were present. The required group level information was collected from group leader and it was recorded after discussion with the co-members.

In the third model, it is tried to capture such variables, which can affect repayment performance of borrowing members of the group. It is noteworthy that, both SHG and JLG members were selected for this purpose. In this connection, 414 members from 187 groups were interviewed and individual level information pertaining to the group members was collected. The selected members were group leader as well as co-members. Out of these samples 31 per cent clients are from SHGs and remaining 69 per cent are from JLGs.

VII.3 ANALYSIS ON RECOVERY PERFORMANCE OF MICROFINANCE BRANCH OFFICES

Microfinance branch offices are intermediaries between the clients and MFI head offices. On the one hand, microfinance branch offices as an intermediary are close observer of group and individual behavior regarding credit need, credit use, intra-group administration, repayment discipline, etc. On the other hand, they are implementing agency of various group related regulations as commanded by the respective head offices. Moreover, they strictly maintain the financial soundness of the institutions, which are indicated via various indicators such as PAR, repayment rate, efficiency score and sustainability indices like OSS and FSS. Since all the issues from financial perspective depend on application of fund and its recovery, therefore branch recovery is considered as one of the crucial issue.

VII.3.1 Empirical Model on Determinants of Branch Recovery

In this study, the branch recovery performance was captured by interviewing the branch managers as well as credit officers. In this connection a number of operational and financial information were gathered to construct a simple econometrical model with a few feasible but instrumental variables. Since theoretical literature on recovery performance of microfinance branch office is scant in nature, therefore both theoretical understanding and common practices of branch offices are applied in constructing the model. The empirical strategy focuses on testing whether or not particular variables are associated with repayment performance.

To construct a model on determinant of branch recovery, let us assume that j is a branch office and R_j is the recovery of loan associated with it. Recovery rate is the summation of all repayment installment paid by members against the due amount at a point of time. It

is expected that recovery rate is mainly affected by loan amount along with three sets of characteristics such as locational character (L_j), operational character (O_j) and productivity character (P_j). The relationship among the variables can be expressed in terms of the following recovery function.

$$R_j = f(LAPB, L_j, O_j, P_j) \quad (7.1)$$

It is worth mentioning that the function is defined only for $LAPB > 0$ (Zeller, et.al, 2001). Moreover, the function is specified with basic property that $\lim_{lapb \rightarrow 0} (R_j) = 0$. It is assumed due to the fact that recovery is not possible or equal to 0, if loan amount likely to be zero.

In this framework, recovery (R) is a censored variable with value ranging from 0 to 1. Therefore, variable R_j has both upper and lower limit. Since dependent variable is truncated at one (complete recovery), using Ordinary Least Squares (OLS) results in biased and inconsistent parameter estimates even asymptotically (Gujarati & Sangeetha, 2007). The Tobit regression model is one of the methods that used to overcome such problems (Tobin, 1958). Recovery rate is expressed as ratio with a range of 0-1 and thus, a two-limit Tobit model is applied in this analysis adopting Brehanu and Fufa (2007) and following Rossett and Nelson (1975). The standard model is given as:

$$R^*_j = \alpha + \beta X_j + \varepsilon_j, j=1, 2, \dots, n \quad (7.2)$$

where R^*_j is a vector of latent variable that is observed for $0 \leq R^*_j \leq 1$, X_j is an observed vector of explanatory variables, β is vector of unknown parameters and ε_j is vector of the error terms that are distribute normally with 0 mean and variance σ^2_j , where $j= 1,2,3, \dots, n$ represents the number of observations.

If R_j is the observed variable, representing the proportion of loan recovered and its value is censored at minimum (L) = 0 and at maximum (U) = 1. Thus;

$$\begin{aligned}
 R_j &= L; \text{ if } R_j^* \leq L \\
 &= R_j^*; \text{ if } L \leq R_j^* \leq U \\
 &= 1; \text{ if } R_j^* \geq U
 \end{aligned}
 \tag{7.3}$$

Equation 7.2 is estimated by using TOBIT maximum likelihood technique (Maddala, 1983). The model was tested and corrected for heteroscedasticity by using the method proposed by Greene (1993). Therefore, equation 7.1 can be reconstructed by using equation 7.2, which is given as:

$$R_j = \alpha + \beta_0 LAPB + \beta_1 L_j + \beta_2 O_j + \beta_3 P_j + \varepsilon_j \dots\dots\dots (7.3)$$

where, R_j is recovery rate, α is constant term of the equation, $LAPB$ is loan amount per borrower, L_j is locational vector, O_j is operational vector, P_j is productivity vector, $\beta_0, \beta_1, \beta_2$ and β_3 are the unknown parameters to be estimated and ε_j is vector of the error terms.

The equation can be written in the following way by introducing full set of variables to the model:

$$R_j = \alpha + \beta_0 LAPB + \beta_1 PBO_j + \beta_2 STAFF_j + \beta_3 YOP_j + \beta_4 IPB_j + \varepsilon_j \dots\dots\dots 7.4$$

VII.3.2 Description of Variables in the Model

In the sub-section above, equation 7.3 is developed considering a numbers of explained and explanatory variables. This sub-section describes the underlying variables of the model. As mentioned above, apart from $LAPB$, three more vector of variables are used in this model. PBO is used to represent locational vector (L) of variable, $STAFF$ and YOP are used for operational vector of variables (O) and IPB is used for productivity vector of

variable (P). The variables that hypothesize to affect the recovery of the branch offices are described below.

Recovery rate (RECOV): Recovery rate is defined as total loan amount collected against loan due. It ranges between zero (0) and one (1). Zero indicates failure to collect single repayment installment by the branch office and one indicates complete recovery of loan amount. RECOV is dependent variable of the model.

Loan amount per borrower (LAPB): This is an explanatory variable, which measures volume of loan received by a borrower in Rupeesⁱⁱ. The variable is derived from total credit amount of branch office divided by the number of active borrower. It is expected that with increase in LAPB, the branch office may find difficulty in recovery of the loan amount due to risk associated with it. Therefore, the variable is expected to be related to the loan recovery rate of branch offices negatively.

Settlement of branch offices (PBO): This is a dummy variable, which takes a value 1 if the branch office is placed in urban area and 0, if settled in rural area. Since majority of microfinance operation are concentrated in rural area, therefore microfinance branch offices, which are settled in rural areas expect to be resulted in better recovery performance than the urban areas. Therefore, it is expected that placement of branch offices in urban areas affect the recovery rates of branch offices negatively. PBO is an independent variable of the model.

Staff size (STAFF): This is also an explanatory variable, which measures the number of staff per branch office. It is expected that higher the staff size, better the external monitoring and pressure. As such, it can make a positive impact on the recovery rate. It is therefore, expected that size of staff is positively related to branch recovery rate.

Years of operation of branch office (YOP): The variable YOP indicates age of branch offices in years. It is expected that as the branch offices become older, on the one hand, it gain economies of scale in terms of financial operation and on the other hand, the branch office treasured all crucial information related to credit need and credit behavior of inhabitant of the operation area. Therefore, it is hypothesized that increase in YOP positively relates to recovery rate of branch office. YOP is also an explanatory variable of the model.

Interest earned per borrower (IPB): The variable IPB is an explanatory variable of the model, which measures interest earned per borrower in Rupees. It is a productive variable, which is derived from total interest income earned by branch office divided by the total number of active borrower. Since incentive of microfinance operation of profit motivated MFIs is based on interest earned from lending operation, therefore it is expected that higher the size of interest earned per borrower, higher will be stimulus for the branch offices, which in turn increases the recovery rate. Therefore, it is expected in the model that IPB relates positively to recovery rate.

VII.3.3 Recovery Performance of MFI Branch Offices and Its Determinants

This sub-section presents the results and analysis on factors affecting branch recovery rates. Before the analysis of main results, a glimpse on some of the selected operational indicators is highlighted in table 7.1.

It is observed from table 7.1 that on an average, the sample MFI branch offices have 1339 active borrowers with an average outstanding balance of ₹ 0.58 crore. More precisely, the average outstanding loan balance per borrower is ₹ 4331, which is comparatively lower than the global average (MiXmarket portal, 2012). It is apparent

from the table that the mean cumulative recovery rate is marginally lower than Grameen repayment rates (Grameen Foundation online).

A single branch office is unable to count for 100 percent recovery record. Recovery rate is more than 95 per cent for majority of branch offices (61 per cent). However, it does not portray a sound picture of financial health of the branch offices, since; the rate of portfolio at risk (PAR) is considerably higher.

Table 7.1: Selected Operational Highlight of Sample Branch Offices

Unit Office	Name of MFI	Number of Active Borrowing Members				Outstanding Balance (₹ Crore)	Recovery Rate (per cent)		PAR [@] (per cent)
		SHG	JLG	EDP	Total		On time	Cumulative	
Nagarbera	RGVN	22	694	45	761	0.67	98	99	5.12
Rangapara		52	1510	0	1562	1.01	92	89	15.51
Matia		415	601	46	1062	0.72	96	97	16.44
Darangiri		307	1217	17	1541	0.81	98.7	97.2	1.91
Baharihat		446	738	42	1226	0.73	95	99	7.02
Barpeta Road		185	1231	154	1570	1.07	94	94	8.59
Dhekiajuli		80	602	0	682	0.23	97	91	16.91
Kharupetia		2207	1325	36	3568	0.71	93	98	22.61
Marigaon		461	1206	154	1821	1.12	94	96	9.38
Goreswar		40	898	63	1001	0.47	95	98	9.56
Bongaigaon		0	1082	63	1145	0.89	98.3	99.5	2.26
Kaniha		79	462	0	541	0.27	71	84	59.00
Howly		ASOMI	1230	188	95	1513	0.30	100	86.15
Morigaon	890		24	89	1003	0.36	95	88	8.04
Silapathar	459		0	65	524	0.17	90	82	17.65
Chamata	636		20	54	710	0.15	94	95	25.77
Bijoynagar	2303		0	174	2477	0.46	95.8	95	8.59
Rampur	908		425	57	1390	0.23	94	97	17.12
Total		10720	12223	1154	24097	10.40	-	-	-
Mean		596	679	64	1339	0.58	93.6	92.3	12.93
Standard Deviation		697.24	505.49	52.29	747.12	0.32	6.24	5.53	16.10

Note: @ indicates Portfolio at Risk (PAR) > 30 days

Source: Branch Offices, 2009

This is depicted by PAR > 30days, which reflects that the average PAR > 30 days is 12.93. It is considerably higher for Koniha branch office (59 per cent) of CSP RGVN, followed by Howly branch office of ASOMI (55.8 per cent). While repayment rate has smaller degree of variation, dispersion of PAR is higher, which indicates that condition of PAR is not at all equal for the branch offices.

The high recovery rate of above 90 per cent as depicted in table 7.1, demands for examination of factors behind the performance of the branch offices. In this connection Tobit regression model is constructed following equation 7.3. Descriptive statistics for both the explained and explanatory variables and their expected effects on recovery rate are described in table 7.2

Table 7.2: Descriptive Statistics and Expected signs of Regression Variables

Variable	Mean	S.D.	Expected Sign
Dependant			
RECOV	0.94	.05	
Independent			
PBO	0.39	0.50	Negative (-)
YOP (in years)	5.89	3.53	Positive (+)
LAPB (in ₹)	4650	2252.04	Negative (-)
IPB (in ₹)	79.78	59.11	Positive (+)
STAFF	5.33	1.28	Positive (+)

Source: Author's calculation based on Field Survey, 2009

It is apparent from the table 7.2 that the mean on time recovery rate of selected branch offices is 0.94 with a smaller degree of variation as indicates by the value of standard deviation. Similarly mean and standard deviation of the explanatory variables along with expected sign is presented in the table. The analysis of Tobit regression model is made with the help of this background information.

The result of Tobit regression model is summarized in table 7.3. It is apparent from the table that the model is significant, which is indicated by Prob > $\chi^2 = 0.0013$. Although

Pseudo R^2 is negative, for goodness of fit in case of Limited Dependent model (like Tobit, Probit) the value of Pseudo R^2 is of secondary importance. The critical matter in such estimation is the expected sign of regression coefficient and Chi^2 (Shribney, 1997; Gujarati & Sangeetha, 2007).

In concurrence with the a-priori expectation, the sign for the age of branch office (AGE) was positive and significant at 5 per cent level. It is found that increase in years of operation (YOP) marginally increases the recovery rate. Therefore, the hypothesis that years of operation of branch office affects recovery rate positively is accepted.

Table 7.3: Determinants of Branch Repayment

Tobit Regression		Number of Observations: 18
Log likelihood = 35.00778		LR $\text{chi}^2(5) = 30.28$
Dependent Variable = RECOV		Prob > $\text{chi}^2 = 0.0000$
		Pseudo $R^2 = -0.7619$
Explanatory Variable	Coefficient	t- ratio
YOP	0.004463**	2.55
STAFF	0.025078***	4.37
IPB	0.000903***	5.18
LAPB	-0.000019***	-4.16
PBO	-.0.042796***	-3.50*
CONS.	0.813793***	30.55

*** and ** significant at 1per cent and 5 per cent level respectively.

Source: Author's calculation based on Field Survey, 2009

Similarly, the variables STAFF and IPB are positively significant at 1percent level. The result suggests that one unit increase in staff results in approximately 2 per cent positive change in recovery rate. Similarly, increase of interest earned per borrower ₹ 1000, results in 1 percent increase in recovery rate. This may be due to the expectation of credit officers, which are guided by incentive mechanism in terms of increase in salary in

future. But, it is probable since this study does not make detail examination between the relation of interest earning and recovery performance.

In consensus with the expectation the variables LAPB and PBO are related negatively related and significant. The table reflects that an increase of loan amount by ₹1000, make negative impact on recovery rate by 2 per cent. Similarly, microfinance branch office in urban affect recovery rate negatively. An urban microfinance branch office may results in 4 per cent decrease in recovery rate. Although, enough evidences have not been found in literature in this aspect, it is found in this study that rural microfinance branch offices have majority of rural clients which are basically from the surrounding villages around the microfinance branch offices. But urban MFI branch offices do not have majority of urban clients as found in this study. Contrasting to it, urban branch offices have more rural clients since it targets surrounding villages as operation area. Although, in both the cases most of the clients are from rural areas, the main reason for comparatively lower recovery rate in urban area is due to large size of operation area as compared to rural branch office. As area of operation become larger, it creates difficulty to properly monitor the groups and thus create the problem of default in some instances. Once the problem of default creeps out, it create additional problem to credit officer for additional collection of repayment instalment and as a consequence recovery rate falls. It is therefore, the hypothesis that urban microfinance branch offices affect recovery rate negatively is accepted and thus hypothesis H3 is accepted.

Thus, although limited in nature, the analysis indicates that good recovery of branch offices are due to better operational and productive factors and negatively affected by treatment variable, such as loan amount and location factor.

VII.4 REPAYMENT PERFORMANCE OF MICROFINANCE BORROWING GROUPS

In the previous section recovery performance of microfinance branch offices is examined with some operational variables. The results reflect only single dimension of microfinance repayment performance under MFI model. It is therefore; in this section repayment performance is examined for microfinance borrowing groups, which consist of both JLGs and SHGs. The objective behind taking microfinance borrowing groups rest on the ground that it sheds light on the critical micro issues relating to group mechanism and other related variables of a group, which help in better comprehension of repayment mechanism and repayment performance of MFI model.

In this analysis the dependent variable is cumulative repayment rate, which ranges from 0 to 1, therefore a Tobit regression model is framed similar to equation 7.2 to examine the repayment performance of microfinance borrowing groups. The extended form of the equation can be written as:

$$\begin{aligned}
 CREP_i = & \alpha_i + \beta_0 GRPSIZE_i + \beta_1 GRPAGE_i + \beta_2 GRPSEX_i \\
 & + \beta_3 LOANCYC_i + \beta_4 DISTOFF_i + \beta_5 TRUST_i + \\
 & \beta_6 DISPROM_i + \beta_7 SCREEN_i + \beta_8 HOMEG_i + \\
 & \beta_9 LOAMNT_i + \varepsilon_j \dots\dots\dots [7.5]
 \end{aligned}$$

VII.4.1 Explanation of Variables and Summary Statistics

In this framework, the main intention is to examine the affects of 10 independent variables specified in the right hand side of the equation on the dependent variable that specified in left part of regression equation 7.5. Before describing all the variables used in the model, a minor specification is necessary regarding mathematical symbols that are used in the model. In the equation α is a constant, β_0 - β_9 are coefficients and ε is error term of the model.

CREP: Cumulative repayment rate (*CREP*) is dependent variable of the model, which is a ratio level variable with lower limit 0 for complete non-repayment and 1 for complete repayment.

GRPSIZE: Group size (*GRPSIZE*) is a continuous independent variable of the model, which indicates number of members in a borrowing group. It is a crucial feature for effective performance of a group. Since in this study, both JLGs and SHGs are considered, therefore *GRPSIZE* is instrumented to examine the effect on repayment. The literatures on repayment performance suggest mixed relationship of repayment with the variable. While some studies show positive relationship, some other studies depict negative relationshipⁱⁱⁱ. Therefore it is difficult to predict the nature of relationship. Small size group permits closer ties among members and can reduce costs of information within the group. But as an approximation, it seems that the probability of repayment problem with a large group is comparatively less to a small group. The main problem with large group is costly external monitoring and therefore it may create problem of asymmetry of information, which has a negative impact on repayment performance (Morduch, 1998). But, a large group may not create repayment problem if it is cohesive and otherwise it may create problems like domino effect (Paxton, 1999). In addition, in case of repayment problem of co-borrower in the group, the probability of co-operation of the group is relatively higher than a smaller group. Therefore, it is expected in this study that higher the size of group, better the repayment rate.

GRPAGE: Weeks of group formation (*GRPAGE*) is an independent variable of the model. It is expect that larger the group age, the group becomes more cohesive along with higher degree of information sharing and thus reducing the problem of asymmetry of information. This in turn helps MFIs in realisation of better repayment.

GRPSEX: Sex of group is another independent variable of the model. This is a dummy variable where 0 is assigned for female borrowing group and 1 for male group. The extant sources of literatures suggest that female borrowing groups have a better repayment history than their male counterpart. With this backdrop, the study expects that repayment rate is positively associated with female borrowing group.

LOANCYC: Loan cycle (*LOANCYC*) in progress of a group is another independent variable, which is measured in number. It is expected that as a group graduating from first cycle to consecutive higher cycles, there is a chance of gradual elimination of problematic member of the borrowing group in the presence of higher degree of screening. Thus higher loan cycle is associated with better repayment probability.

DISTOFF: Distance from MFI branch office is a continuous independent variable measured in kilometre. A negative relationship of repayment is expected with the variable. This is due to that credit officer basically found it difficult to invest proper time in such group, which are located comparatively located at far from branch office. Thus the problem of external monitoring may hinder repayment performance.

TRUST: Trust is a dummy variable delve in examining the impact of trust of MFI on borrowing group. In some studies^{iv} trust is considered as an internal variable, which relate to internal group mechanism. But, the present study makes a slight deviation from the traditional methodology and instead considers TRUST as external variable, where group leader is asked whether MFI branch office trust on them in repayment of loan in case when the group failed to repay. This is further corroborated by the number of times a MFI extends co-operation to a group.

DISPROM: This is a dummy variable and it is equal to 1 when the group made a discussion with a member with repayment difficulty and 0, otherwise. The variable is

devised to examine the effect of peer monitoring on repayment performance. It is expected in this study that peer monitoring improve repayment rate.

SCREEN: It is a dummy variable, which is captured by asking group leader ‘has anyone ever been rejected to join the group?’ Value 1 is assigned if the response is yes and 0, otherwise. Since the nature of the variable is related to selection of peer member, therefore it implies that all group members have no bad credit history or social conflict. Thus, it is expected that better screening helps in improved repayment performance.

HOMEG: Homogeneity (*HOMEG*) is an index level variable. It is constructed by considering three different variables, caste, religion and same village. If all the group members belong to same caste, religion and belong to same village then 1 is assigned for all individual variables and 0, otherwise. Finally, the summation of all the assigned values of variable is divided by 3 to arrive at *HOMEG*.

LNAMNT: *LNAMNT* is the amount of loan receive by the group in terms of Rupees (₹). It is found that higher loan size is associated with greater probability of the unwilling default (Zeller et. al, 2001). Therefore, a negative relationship is expected in this study.

Descriptive statistics for both the dependent and the explanatory variables and their expected effects on repayment are described in table 7.4. The analysis pertains to 187 borrowing groups, where the mean cumulative repayment rate is 0.8867 or 88.67 per cent (table 7.4) with a standard deviation of about 13 per cent. The mean size of sample groups is approximately 5, while mean group age is 98 weeks or 1.88 years.

Table 7.4: Descriptive Statistics and Expected Sign of Regression Variables

Variable	Description	Mean	Standard Deviation	Expected Sign
Dependent Variable				
CREP	Cumulative repayment rate (in ratio)	0.8867	0.12676	
Independent Variable				
GRPSIZE	Number of group members in the group	5.0097	2.09228	+
GRPAGE	Group formation in weeks	98.0507	36.7142	-
GRPSEX	Sex of borrowing group (0 for female, 1 for male)	0.4517	0.49826	+
LOANCYC	Current cycle of loan disbursed to the group	1.6618	0.52690	+
DISTOFF	Distance of borrowing group from the branch office (in km.)	13.6691	7.97600	-
TRUST	Trust of borrowing group on MFI (1 = yes, 0 = no)	0.7555	0.21548	+
DISPROM	Presence of peer monitoring (1= yes, 0= no)	0.8775	0.20772	+
SCREEN	Whether some individuals who wanted to join the group rejected	0.2898	0.38657	+
HOMEG	Homogeneity index consist of three variables, caste, religion and same village (in ratio)	0.8178	0.20675	+
LNAMNT	Amount of loan sanctioned to the group (in ₹)	52980.68	18535.21	-

Source: Author's calculation based on Field survey, 2009

It is depicted in table 7.5 that, out of 187 sample borrowing groups, majority are JLGs (72.73 per cent) and majority of groups are female group (54.55 per cent). It is also depicted in table 7.4 that the average size of group loan is ₹ 52980.68 with a higher standard deviation (₹ 18535.21).

Table 7.5: Sex and Microfinance Delivery Mode Wise Number of Borrowing Groups

Sex	Self Help Group	Joint Liability Group	Total
Male	11	74	85 (45.45)
Female	40	62	102 (54.55)
Total	51(27.27)	136 (72.73)	187

Source: Field Survey, 2009

The variables regarding group mechanism indicates higher value except screening (SCREEN). As for example, the mean value of peer monitoring (DISPROM) is 0.87 with nearly homogeneous group.

VII.4.2 Determinants of Repayment Performance of Microfinance Borrowing Groups

Considering the background information described in previous sub-section, a Tobit regression model is estimated for the sample groups, which is depicted in table 7.6. The main objective behind the Tobit regression estimation is to examine the relationship of some variables related to joint liability mechanism with repayment performance.

Table 7.6: Determinant of Group Repayment Performance

Tobit Regression (<i>Two Limit</i>)		Number of observations: 187	
		LR $\chi^2(12) = 641.65$	
		Prob > $\chi^2 = 0.00$	
		Pseudo $R^2 = -6.1346$	
Log likelihood = 373.12512			
Dependent Variable: CREP			
Explanatory Variable	Coefficient	T-ratio	
GRPSIZE	0.016354 ***	6.06	
LOANCYC	0.134787 ***	11.52	
DISTOFF	-0.006208 ***	-8.90	
GRPSEX	0.096206 ***	11.36	
TRUST	0.14684 ***	6.09	
SCREEN	-0.53137 ***	-4.54	
DISPROM	0.156254 ***	6.09	
HOMEG	0.0248371	1.05	
GRPAGE	-0.0006365 ***	-4.24	
LNAMNT	-0.000002 ***	-7.44	
CONS.	0.5421039 ***	12.41	

***= significant at 1per cent level;

Source: Author's calculation based on Field Survey, 2009

It is clear from table 7.6 that except variable SCREEN, the calculated results are as per expected relationship as depicted in table 7.4. A-priori expected relationship between screening (SCREEN) and repayment performance is positive, but the estimated relationship reflect a negative relationship. This probably due that the observed mean value of SCREEN is low as 0.2898, therefore statistically it fails to claim expected relationship.

Considering group mechanism related variables such as peer monitoring (DISPROM) and homogeneity (HOMEG), it is found that while DISPROM is significantly positively related to repayment (CREP), the relationship with HOMEG is not statistically significant, although relational direction is as per expectation.

It is found in the estimation that GRPSIZE significantly and positively affects repayment rate (CREP). For example, an increase of one group member results in 1.6 per cent increase in CREP. This may be due to higher degree of homogeneity of the groups as indicated in table 7.4.

TRUST is another important variable of group, which indicated that higher degree of TRUST results in better repayment performance. The result indicated that higher degree of TRUST on MFI reflects better credible group and thus reciprocity results in higher repayment rate. Similarly, higher the loan cycle (LOANCYC) better the repayment rate (CREP). Although the study does not attempt any time series micro study regarding the relationship of the variable with repayment rate, but it probably due to theoretical argument that consecutive loan cycles indicate a more homogeneous, highly peer monitored and more cohesive group. This is because, the problematic borrowing member can be gradually removed from the group as a group graduate from one loan cycle to another and thus it may helps better repayment. The variables LNAMNT and DISTOFF significantly negatively related to CREP. It is clear from table 7.6 that increase in loan size affects marginally negative to repayment rate. Similarly, as distance of borrowing groups increases from MFI branch office, it affect negatively to repayment rate. As for example, an additional 1 kilometre distance from the borrowing groups, decreases repayment rate by 0.6 per cent.

The results as described above support second part of hypotheses H4, where it indicates that higher degree of peer monitoring results in higher repayment rate. For the first part of hypotheses H4, the study considers repayment behavior of borrowing members, which is discussed in the subsequent section.

VII.5 REPAYMENT PERFORMANCE OF MICROFINANCE BORROWERS

In the preceding section, microfinance repayment performance of borrowing groups and its determinant is discussed. The analysis is restricted to group level variables, since basic objective was to comprehend group dynamism. The results and analysis emphasises the role of peer monitoring, screening and trust along with loan amount on repayment performance. Besides, other corroborative variables also examine its affect on repayment performance. The analysis partially answers a few questions on the working of joint liability mechanism in better repayment performance. But the analysis remains incomplete without examining the performance of microfinance borrowing member. Therefore, in order to draw conclusion regarding microfinance repayment performance, a holistic approach is necessary for which, examination on the performance of microfinance borrower is structured in this analysis.

The objective of this section is to corroborate first part of hypotheses H4 and to test hypotheses H5. In this endeavour, a Tobit regression model is framed similar to equation 7.2 to examine the repayment performance of microfinance borrowing members. Since the objective of study is to identify factors affecting microfinance repayment rate, therefore cumulative repayment rate (CREP) is regressed over 15 explanatory variables. Equation 7.2 can be written in extended form in the following way:

$$\begin{aligned}
CREP_i = & \alpha_i + \beta_0 SEX_i + \beta_1 AGE_i + \beta_2 LANDT_i + \beta_3 SELFY_i \\
& + \beta_4 FAMY_i + \beta_5 LNSLF_i + \beta_6 LNUSE_i + \beta_7 OTRLN_i \\
& + \beta_8 RATION_i + \beta_9 PRRES_i + \beta_{10} EXTPRES_i + \beta_{11} PEERMON_i \\
& + \beta_{12} FRSHK_i + \beta_{13} TRUST_i + \beta_{14} RECEP_i + \beta_{15} EDN_i + \varepsilon_j \dots \dots \dots [7.6]
\end{aligned}$$

VII.5.1 Description of Variables and Summary Statistics

From the theoretical literature on repayment performance and theoretical framework discussed at the beginning of the chapter, the empirical specification is based on 15 explanatory variables, which is shown in equation 7.6. All the explanatory variables categorised in 6 broad categories such as individual characteristic variables, production variables, group level variables, external variables and control variables. These are described as follows:

CREP: Cumulative repayment rate (*CREP*) is dependent variable of the model, which is a ratio level variable with lower limit 0 for complete non-repayment and 1 for complete repayment. It is defined as fraction of total amount recovered till repayment day to total amount due till the day of repayment.

SEX: Sex of borrower is an independent variable of the model and it is fall under the category of individual characteristic variable. This is a dummy variable where 0 is assigned for female borrower and 1 for male borrower. The extant sources of literatures evinced that repayment performance of female borrower is comparatively better than male borrower. Therefore, it is expect that repayment rate of female borrower higher than male borrower and thus the relationship of sex with repayment rate is expected to be negative in this analysis.

AGE: Age of borrower (*AGE*) is an explanatory variable measured in years, which reflect individual characteristic. With increase in age, borrowers are expected to have better

experience that would help them in generation of higher level of income. Moreover, matured borrowers are expected to have more accumulated wealth than younger one. But this expectation is contingent upon at least two factors such as, lower degree of indebtedness and lower dependency ratio^v.

EDN: Education is productive variable, which is measured in terms of number of years of schooling. Education increases borrower's ability to access, process and use of information from various sources. Educated borrowers are thus expect to use relevant information related to livelihood, entrepreneurship and market, which helps in higher income generation and thus affect repayment rate positively. Therefore it is expected in this study that higher the level of education, better the repayment rate.

LANDT: Amount of land held (*LANDT*) by the borrowing household is a productive variable, which is measured in *Bigha*^{vi}. Higher the size of land, better the opportunity for use of loan fund in productive use, which possibly generate higher income. Therefore it is expect that *LANDT* is positively related to repayment rate.

TRUST: Trust is group level variables, which delve in examining the impact of trust of MFI on borrowing member. It is a dummy variable, which relate to internal group mechanism. But, the present study makes a slight deviation from the traditional methodology and instead considers *TRUST* as external variable, where borrower is asked whether MFI branch office trust on him in certain repayment problem. It is expect that higher degree of *TRUST* results in better repayment and thus a positive relationship is assumed.

LNAMNT: *LNAMNT* is treatment variable, which indicates the amount of Rupees (₹) received by borrowing member. Literatures related to microfinance reveals that

higher loan size is associated with greater probability of risk and un-wilful default (Zeller et. al, 2001). Therefore, a negative relationship is expected in this study.

LNUSE: Use of loan is a dummy variable. If loan is used by the borrowers itself then 0 is assigned, otherwise, 1. It is expect that if loan is used by the borrower himself then the probability of repayment of loan is better than used by other or lent to other. This is because; it is riskier when loan is amount is lent to other in expectation usurious interest. In the pilot phase of field study it was found that in a number of groups, group members were exercising this practice and ultimately group as whole affected. In this background a positive relationship is expected with repayment rate.

OTRLN: Amount of other loan (*OTRLN*) is a control variable measure in terms of rupees. Some studies like (Jaina and Mansuri, 2003) theoretically demonstrated that other loan creates additional repayment burden to borrower and therefore increase in the probability of default. It is therefore expected that other loan affect repayment rate negatively.

RATION: Credit rationing (*RATION*) is a control variable, which is expressed in ratio. *RATION* is defined as a ratio of loan amount sanctioned against applied amount of loan. A negative relationship is assumed with this variable, because the rationed amount may create start up problem for livelihood in terms of size limitation of investment project or resort to other sources for additional loan.

PRPRES: Peer pressure is a group level variable. It is dummy variable. If peer member exert pressure on the member for repayment in the past repayment days, then value 1 is assigned against it and 0, otherwise.

EXTPRES: External pressure is an external variable basically commanded by credit officer in case of repayment problem. If credit officer pressurised the borrower in the

past then 1 is assigned against it and 0, otherwise. It is expect that external pressure may deteriorate repayment rate, since borrower may become reluctant with such behaviour. It is too some extent depends on the psychology borrower.

FRSHK: Frequency of shock is a control variable, which denotes numbers of idiosyncratic risk experienced by the borrower in the current loan cycle. It is expect that the increase in number of such events decrease the repayment rate.

PEERMON: This is a dummy variable and it is equal to 1 when the group made a discussion with a member with repayment difficulty and 0, otherwise. The variable is devised to examine the effect of peer monitoring on repayment performance. It is expect in this study that peer monitoring improve repayment rate.

RECEP: Reciprocity is an individual characteristic variable. Reciprocity indicates that if a borrower helped any or some or peer member and if in return he receives help in time of his difficulty, then it is termed as reciprocity. Reciprocity is a dummy variable assigning 1 if he received help and 0 otherwise. It is expect that *RECEP* is positively related to repayment rate.

Descriptive statistics of the explanatory variables and its expected signs are presented in Table 7.7. It is clear from the table that mean cumulative repayment rate of sample borrowers is 88.7 per cent. However, cumulative repayment rate is different by the types of sex group. Table 7.8 depicts that while minimum repayment rate for male borrower is 70 per cent, it is 48 per cent for female borrower. Besides, it is found that male borrower have a better repayment rate than female borrower, which is depicted in the table that that 34 per cent of male borrowers share repayment rate over than 90 per cent, while it is 27.8 per cent for female borrowers.

Table 7.7: Descriptive Statistics of the Selected Variables related to Group Members

Variable	Mean	Std. Dev.	Expected Sign
CREP	0.886691	0.12676	
Explanatory Variables			
SEX	0.471015	0.499763	-
AGE	33.94686	11.02812	-
TOTLAND	10.74589	11.55624	+
LNAMNT	12106.28	5468.227	+
LOANUSETP	0.647343	0.478375	-
OTHRLOAN	11665.94	9341.904	-
RATION	0.343317	0.193386	-
GRPRESS	0.271618	0.172294	+
EXTPRESS	0.64372	0.321538	-
PEERMON	0.877536	0.207721	+
FRSHK	1.309179	1.919963	-
TRUST	0.471015	0.499763	+
RECEP	33.94686	11.02812	+
EDN	10.74589	11.55624	+

Source: Author's calculation based on Field Survey, 2009

It is also clear from table 7.9 that majority of sample borrowers consists of female borrowers (54.8) per cent.

Table 7.8: Cumulative Repayment Rate of Borrowing Members

Cumulative Repayment Rate (per cent)	Sex of Borrowing Member	
	Male	Female
< 50	0 (0.0)	11 (4.8)
51-90	46 (24.6)	101(44.5)
91-99	78 (41.7)	98 (43.2)
100	63 (33.7)	17 (7.5)
Total	187	227
Minimum	0.70	0.48
Maximum	1.00	1.00

Source: Field Study, 2009

It is noteworthy that the choice of joining same sex groups depends on certain reasons. As for example 56.8 percent members join same sex group due to convenience of discussion with same gender, while 81.2 percent join same sex group due to they know

each other for a long time. More than one reason is associated behind joining same sex group.

Table 7.9: Sex Group Wise Number of Sample Borrowers

Sex of Borrower	Number of borrowers
Male	187 (45.2)
Female	227 (54.8)
Total	414

(Figures in parentheses indicates per cent of total number of sample borrowers)

Source: Field study, 2009

It is depicted in table 7.7 that mean loan size of borrowers is ₹12106 with higher degree of dispersion. The mean loan size other than MFI is ₹11666. Most of the borrowers (90.3 percent) accessed to other sources of loan apart from MFI.

Table 7.10: Reason wise Frequency of Members Joining Same Sex Group

Reason for joining the same sex group	Number of members
Convenient for discussion with same gender	235 (56.8)
Counter sex group may create financial problem	88 (21.3)
Counter sex group may create repayment problem	107 (25.8)
We Know each other for a long time	336 (81.2)

(Figures in parentheses indicate per cent of total number of sample borrowers)

Source: Field study, 2009

It is clear from table 7.11 that 90.3 per cent of borrowers have accessed to other sources of finance. Moneylender financed about 41 per cent of borrowers followed by other MFI. The average interest rate charged by other financial source is 40.07 percent per annum, with a higher degree of variability. The minimum rate of interest is 8 percent, which is charged by bank and as high as 120 that charged by moneylender. Therefore it implies the presence of higher degree of indebtedness among microfinance borrowers. For example, as indicates in table 7.12, the aggregate debt size of borrowing members is ₹ 23772.22 and 50.93 per cent of total debt includes other debt.

Table 7.11: Other Sources of Credit and Rate of Interest

Sources of Credit	Number of Borrower	Percent	Interest Rate (per cent)			
			Mean	S.D	Min	Max
Bank	28	7.49				
Other MFI	98	26.2				
Credit Society	79	21.12				
Moneylender	152	40.64				
Contributory Fund	17	4.55				
Total	374		40.07	32.44	8	120

Source: Field study, 2009

Therefore, it implies that microfinance borrowers are highly indebted by other financial source than microfinance.

Table 7.12: Summary Statistics on Indebtedness of Borrowing Members

Summary Statistics	Size
Mean Size of Total Debt (in ₹)	23772.22
Standard Deviation of Total Debt (in ₹)	12578.88
Mean Size of Microfinance Debt (in ₹)	12106.28
Standard Deviation of Microfinance Debt (in ₹)	5461.00
Mean Size Other Debt (in ₹)	11665.94
Standard Deviation of Other Debt (in ₹)	9352.87
Per cent of Other Debt in Total Debt (in per cent)	50.93
Per cent of Microfinance Debt in Total Debt (in per cent)	49.07

Source: Field study, 2009

It is useful to glance at some of the characteristic variable of sample borrower to make analysis of econometric estimation. These variables pertain to amenity level characteristics, minimum subsistence characteristics and public support system.

Descriptive characteristics related approachability to some selected amenities is presented in Table 7.13.

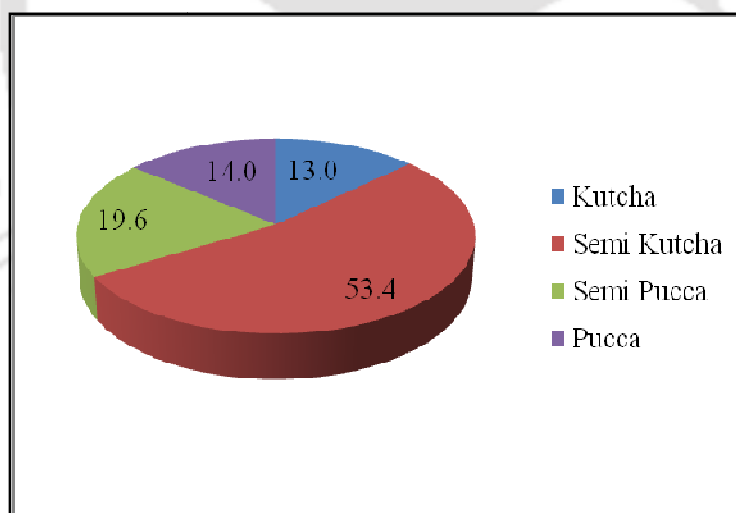
Table 7.13: Descriptive Characteristics of Approachability to Selected Amenities

Characteristics	Mean	SD	Min	Max
Distance from Transportable Road (in metres)	701.33	1046.94	0	6000
Distance from Usual Market (in metres)	1544.01	1484.35	50	8000
Distance from Weekly Haat [†] (in metres)	2535.27	2005.30	100	7000
Distance from Major Market (in metres)	18565.22	43360.11	1000	20000
Distance from Medical Facility (in metres)	1541.79	2318.51	100	15000
Distance from School (in metres)	737.56	622.95	50	4500
Distance from Post Office (in metres)	3247.83	2966.27	200	9000
Distance from Bank (in metres)	5706.28	4205.41	600	16000

Note: † *Weekly Haat* is one type of village market, which is prevailing across the state of Assam. It is basically held once in a week, but in some areas it is observed that a *weekly haat* is also held even twice or thrice in a week.

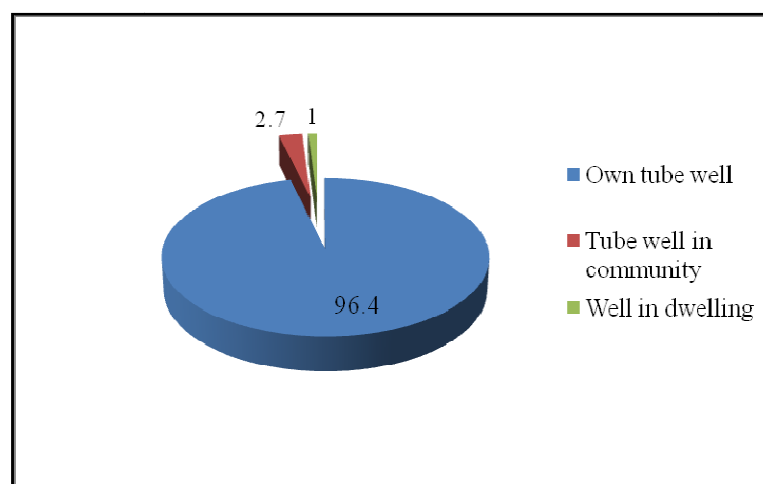
Source: Field Work, 2009

Type of house is a demonstrated physical indicator of poverty. It is reflected in figure

Figure 7.1: Type of House^{viii} wise number of Borrower

Source: Field Work, 2009

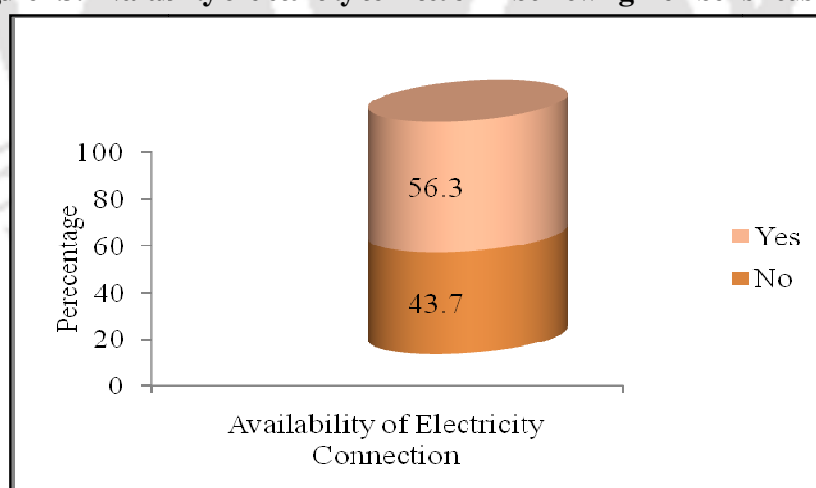
7.1 that a majority of borrowers own semi pucca house (53.4 percent), which is respectively followed by semi pucca, pucca and kutchha house. It is found in the study that no borrower is deprived of shelter.

Figure 7.2: Drinking water source of borrowing members

Source: Field Work, 2009

Apart from type of house, drinking water availability is one of the important indicators of basic amenities. It is found that all borrowers availed with water, where 96.4 percent borrowers have own tube well as source of drinking water (figure 7.2).

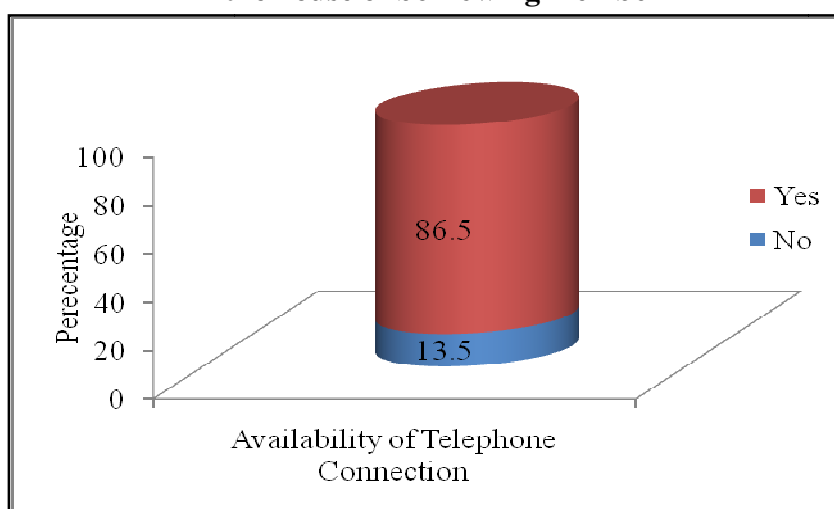
While 56.3 percent borrower's household installed with electricity facility, 43.7 percent is deprived from the amenities (figure 7.3).

Figure 7.3: Availability of electricity connection in borrowing member's household

Source: Field Work, 2009

It is also found that most of the borrowers have telephone (mobile phone) connection, which indicates the probability of higher degree of dissemination of information (figure 7.4).

Figure 7.4: Availability of telephone (mobile phone) connection in the house of borrowing member



Source: Field Work, 2009

In addition to the amenities mentioned above, it is worthwhile to consider public support system in terms of provision of family identity card, which provides essentially basic minimum commodities like rice, sugar and kerosene at subsidized rate.

Table 7.14: Number of Borrowers by Type of Family Identity Card

Type of Family Identity Card	Number of Borrower	Percent
No Family Identity Card	15	3.6
Antodoya Card	17	4.1
BPL Card	146	35.3
APL Card	236	57.0
Total	414	100.0

Source: Field Work, 2009

It is clear from table 7.14 that most of the borrowers' family have family identity card (96.4 percent). Most of the borrowers have APL card, which is provided to the families above the poverty line. Similarly, 35.3 percent of borrowers possess BPL family identity card.

VII.5.2 Determinants of Repayment Performance of Microfinance Borrowers

The discussion in the preceding section reflects some of the background information of borrower. With the help of this information, it is now useful to analyze the microfinance repayment performance and its determinant. It is depicted in table 7.13 in preceding section that cumulative repayment rate of sample borrower is 0.8866 or 88.66 per cent. The rate is comparatively lower than the microfinance repayment rate in Bangladesh. It therefore, demands identification of factors behind such repayment performance.

In this analysis, it is tried to test two important hypotheses as introduction section of this chapter. Although hypothesis H4 is partially answered, in the preceding section, this section tries to test the hypotheses to draw conclusion.

It is observed from table 7.15 that peer monitoring (PEERMON) significantly positively affect the repayment rate. As for example, 100 percent peer monitoring results increase of 22 percent repayment rate. Similarly, peer pressure (PRPRES) is also significantly positively affecting the repayment rate. It implies from the table that 100 percent peer pressure increases repayment rate by about 9 percent. Therefore, both the variables turn positively and in concurrence with the expectation at a higher significance of 1 percent level. Therefore, based on the test, hypotheses H4 is accepted. Thus, it is maintained that higher degree of peer monitoring and peer pressure results in better repayment rate.

The nature of peer pressure can be demonstrated by the following information as depicted in table 7.16. It is observed from table 7.16 that out of 414 sample-borrowing members, 15.5 per cent of borrowers face no consequences despite being default. It implies weak group administration and absence of group sanction in such groups. However, 84.5 per cent of borrowers face some kind of consequences.

Table 7.15: Determinants of Borrowing Members' repayment performance

Tobit regression		Number of obs = 414
		LR chi2(16) = 856.08
		Prob > chi2 = 0.0000
		Pseudo R2 = -8.1846
Log likelihood = 480.34026		
Dependant Variable = CREP		
Explanatory Variable	Coef.	t
SEX	-0.0554***	-6.13
AGE	-0.0013***	-4.80
LANDT	0.0025***	8.67
LNAMNT	0.000004***	-5.42
LNUSE	-0.0154*	-1.78
OTRLN	0.000001**	-1.99
RATION	0.0303	1.62
PRPRES	0.0876***	5.10
EXPRESS	-0.0265**	-2.49
PEERMON	0.2049***	12.06
FRSHK	-0.0069***	-3.67
TRUST	0.2049***	11.49
RECEP	0.1576***	13.66
EDN	0.0059***	8.32
CONS	0.4949***	25.90

***= significant at 1per cent level, **= significant at 5per cent level and *= significant at 10per cent level

Source: Author's calculation based on Field Survey, 2009

Further, it is observed from the table that 68.8 per cent of total borrowers who have faced consequences due to being default is forced to repay the amount by co-members. Similarly, 31.6 parentages of borrowers facing consequences, loss reputation at village level due to inability for timely repayment.

Table 7.16: Consequence wise Number of Default Borrowing Members

Consequence	Number of member	Percent
Face no consequence	64	15.5
Face consequences	350	84.5
i. Forced to repay by co-members	285	68.8
ii. Loss reputation in village	131	31.6
iii. Both forced to repay by co-members and loss reputation in village	77	18.6

Source: Field study, 2009

Interestingly, 18.6 per cent of borrowers facing consequences both forced to repay by co-members and loss reputation at village level.

Hypotheses, H5 is about other loan source. It is hypothesized that higher amount of other loan source affect repayment rate negatively. It is found in this analysis that increase in the amount from other loan source affect repayment rate negatively at 5 percent level of significance. Although, it reveals a marginal negative effect of increase in the amount for other loan source, the hypotheses can be accepted due to its statistical significance.

Frequency of shock (FRSHK) is a control variable, which affects repayment rate negatively. It is evinced by table 7.15 that occurrence of one idiosyncratic risk decrease repayment rate by 0 .70 percent. The fact poses a question on the repayment capacity of borrowers in that situation. To supplement answer, the information in table 7.17 may be useful.

It is indicated in the table that when a borrower is failed to repay and not able to manage installment amount, it ultimately leads the group as a whole default at the time of repayment date, if and only if co-members are not willing to pay for defaulter. In such situation, group takes some kind of disciplinary actions on the default member. However,

in some cases it is observed that if non-repayment is not willful, then such defaulter is ashamed at his inability.

All of the variables except RATION are in concurrence with the expectation and statistically significant.

Table 7.17: Category Wise Number of Member Facing Idiosyncratic Shock during Loan Period

Category	Number of Member	Percent (Out of 414 member)
Shock not faced	106	25.6
Shock faced	308	74.4
Repayment Problem due to shock	288 (93.5) ^{\$}	69.6
Able to repay during shock period	152 (52.7) ^{\$\$}	36.7

*Note: \$=Figures in parentheses indicates per cent of total number of borrowers faced shock
 \$\$=Figures in parentheses indicates per cent of total number of borrowers who have repayment problem due to shock*

Source: Field study, 2009

VII.6 CONCLUSION

Joint liability lending feature of microfinance is a significant mechanism, which has immense potentiality in achieving high repayment rate under the model as discussed in the literatures. The present study analyses microfinance repayment performance from three different perspectives, which is guided for holistic understanding of microfinance repayment performance under MFI model. The study considers three sets of variables such as locational, productive and operational apart from loan amount to identify the factors that affect branch recovery performance. The result indicates that increase in years of operation, staff size, interest earned per borrower have positive effect on recovery performance. However, there is probability of risk in recovery if the size of

loan amount per borrower increases. In addition, microfinance recovery performance is negative when branch offices are placed at urban centre. The result thus reveals that operational and productive factors have a positive impact on recovery performance. However, the management of MFI should be cautious in establishing microfinance branch office since urban centers are susceptible of negative recovery rate.

Guided by theoretical and empirical literatures, the study examines a number of instrumental variables pertaining to group and individual level. The analysis reveals that repayment rate of microfinance borrowing groups are positively affected by factors like increase in group size and loan cycle, higher degree of trust, peer monitoring and homogeneity. However, group repayment performance is negatively affected by increase in loan amount, group age and distance from office. Therefore, it is imperative for the policy makers to contain controllable variables for a better repayment performance potentiality.

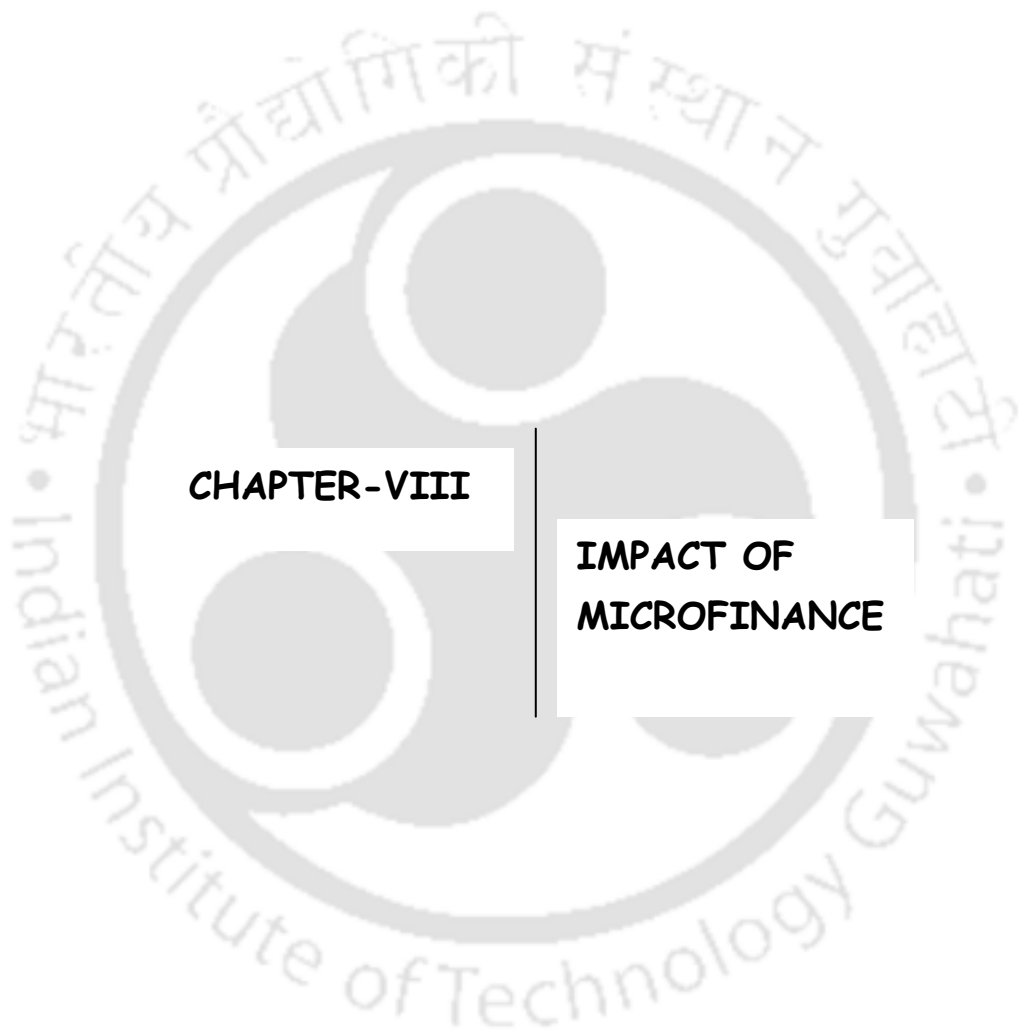
From individual borrowers perspective, it is found that repayment rate of microfinance borrower is positively affected by a number of variables, such as, higher land size, higher degree of peer pressure, higher degree of peer monitoring, higher level of education and higher degree of reciprocity. On the other hand, it is negatively affected by factors such as age, larger amount of loan, higher degree of external pressure and higher size of idiosyncratic shock.

The chapter reveals that microfinance repayment rate of the borrowing groups, individual borrowing members are considerably better, and which is due to both internal and external factors related to the system. The result of the chapter implies that microfinance has a positive impact on the borrowing members. Is it true in reality? In this chapter, the evidence of multiple borrowing is prominent, which indicates

probability of indebtedness. Indebtedness indicates leakage of income in term of installment premium and which is basically higher in case of moneylender. Therefore, there is a chance of negative impact of finance in general and microfinance in particular in the presence of multiple borrowing. It is therefore imperative to examine the impact of microfinance on the borrowers. The subsequent chapter sheds light on the impact of microfinance on the welfare of borrowers.

Notes

- i. It is observed in the field study that microfinance branch office is generally established in such area, where banking financial institutions exist. This is because MFI branch offices deposit their collection at those bank branches.
- ii. Rupees (₹) is Indian currency. \$1= ₹ 47.87 as on 30.06.2009. The reference date indicates survey period.
- iii. Zeller et. al (2001) and Gutman (2007) evinced a negative relationship of group size with repayment rate. This evidence indicates that increase in the size of groups increases the probability of increase in default or augmenting non-repayment.
- iv. In one interesting study Cassar et. al (2007) evinced that personal trust between group members and social homogeneity are more important to group loan repayment than general societal trust or acquaintanceship between members.
- v. In this analysis dependency ration is differently meant than conventional meaning. Dependency ratio here refers to number of non-earners to total numbers of earner in the family.
- vi. 1 bigha equals to 14400 ft².
- vii. It is observed that transportable road in Assam consists of both gravel road and bitumen topped road.
- viii. In this survey, basically four type of house is identified, viz. *pucca*, *kutch*a, *semi-pucca* and *semi-kutch*a. A house is classified as *pucca* if both wall and floor are made of 'pucca' materials (concrete items like cement, burn brick, sand and stone) and the roof is made of either pucca materials or galvanized steel sheet. On the other hand a *kutch*a house is classified as such house, if wall, roof and floors are made of 'kutcha' materials. In the present survey we classified such houses as *Kutch*a houses where the roof is made of 'Chaun Kher' (a kind of hay used to make roof) and wall is made of either by bamboo or clay. *Semi-Pucca House* is classified here as such type of houses where roof is made of tin or steel, floor is made of pucca materials and wall is either half constructed by concrete items or half by kutcha materials. So, any house, which is neither 'pucca' nor 'kutcha', is 'semi-pucca'. On the other hand, *Semi-kutch*a house is termed here as such type of house where floor is made of kutcha material. Walls is a mixture of both kutcha and pucca materials, and roof is made of tin and asbestos.



CHAPTER-VIII

**IMPACT OF
MICROFINANCE**

CHAPTER-VIII
IMPACT OF MICROFINANCE ON CLIENTS

VIII.1 INTRODUCTION

The discussion in the previous chapter reveals that repayment rate associated with microfinance is considerably higher than formal financial institutions in India. A number of factors behind such performance were identified and examined from the perspectives of both microfinance system mechanism and microfinance group and microfinance borrowing members. The identified factors suggest to further repayment rate in view of sustainability of microfinance program. But at the same time it demands for assessment of impact of microfinance on the beneficiaries in view of high repayment.

Since microfinance has been envisaged as a prolific tool to reduce poverty by way of income generation, therefore the success of the program can be gauged in terms of the positive impact realized by the borrowing members. As detailed in chapter II, a number of studies indicate that microfinance repayment rate may be higher due to presence of some corroborative factors like borrowing from other source, repayment from savings and closure of project due to repayment rigidity. Therefore, it implies that higher repayment rate may not be use as marker for proving impact. In this endeavour it is tried in this chapter to examine the facet of impact to understand the depth of microfinance practice in view of higher repayment, whether it is ascertained with a positive impact or the rate is maintained with a negative side of impact.

With this backdrop, the present chapter tries to examine the impact of microfinance on income, welfare and inequality. The motivation of the chapter guided towards understanding of real image of microfinance repayment performance in view of its impact.

VIII.2 DATA AND METHODOLOGY

The present study uses primary data to examine the impact of microfinance. In this connection a field study was conducted in two rounds. The first round of data collection was conducted during January-June, 2009. A semi-structured interview schedule is administered for data collection (see Annexure-V). The questions that are incorporated in the schedule are designed with careful consideration. The social-economic variables are incorporated to assess the impact of the programme on such dimensions. As indicated in chapter II, the extant sources of literatures indicate that microfinance work in a competitive environment, where both formal and informal financial sector works together (Jain & Mansuri, 2003). In this backdrop, non-borrowers were asked some questions, such as, loan need, availability and use of loan. This is due to a couple of reasons: (a) to examine the other loan sources apart from MFI. (b) to examine the impact in view of other loan sources. The intention of inclusion of such question is to normalise the impact of microfinance programme on borrowers.

During first round of data collection, 414 borrowing members and 155 non-borrowing membersⁱ were interviewed. The second round of data collection was conducted during May-July, 2012, where 58 borrowing members were interviewed. These members are non-borrowing members of first round of data collection.

Analysis of impact of microfinance program on client basically depends on the methodological precision. This is because; microfinance participation can affect households in many ways (Armendariz & Morduch, 2007). For instance, microfinance may affect certain socio-economic variable of beneficiary simultaneously. Due to availability of microfinance, the household of borrowing member may enhance income generation capacity, fulfill educational commitment of children, cover expenses for ceremonies and so on. On the other hand, a dark side may arise due to availability of loan

such as over indebtedness, loss of social reputation due to non-repayment, etc. All these are outcome of possible microfinance injection, but all the effects are interrelated. Therefore a number of possible biasness, such as attrition bias and selection bias, may arise in examination of the impact of microfinance. Moreover, some impact evaluation studies proxies increasing income as proving impact of microfinance, but it is not a single metric to judge microfinance (Armendariz & Morduch, 2007). This is because, a plethora of studies analysed a range of social and economic impact of microfinance (Sebstad & Chen, 1996). Therefore the methodological preciseness is the corner stone of microfinance impact evaluation.

There are a number of methods in this use, out of which the present study is limited to cross sectional analysis between non member and members of microfinance. To use microfinance client as control group and non microfinance client as treatment group, utmost care has to be taken in the sample selection procedure itself. Self selection bias is inevitable in this case. But it may be reduced by selecting same type of client regarding their economic and social conditions. This is possible if sample selection is based on prior information on members.

Karlan (2001) on the methodological issue of impact assessment noted that use of new members as control variables and veteran members as treatment group may deteriorate the actual impact scenario. He showed that the dropout biases which arises from incomplete sample bias and attrition bias in a cross-sectional impact evaluation are problematic but solvable. However, the selection and institutional dynamics problems are more difficult. Depending on the circumstances in a given project and economic setting, these issues suggest that any findings cannot be attributed easily to the programme, and hence the cross-sectional approach is not appropriate. A solid understanding of the selection process, economic environment, and institutional

dynamics is important in deciding whether or not to employ this mid-level, cross-sectional approach. Meyer (2007) detailed number of problems associated with quantitative impact analysis. The study is limited to only after experiment. Albeit the shortcomings of the method, the present study intend to gauss the economic impact of microfinance on client.

To address the empirical objective in this chapter, experiment is conducted in three stages.

1. In the first stage, it is examined whether access to credit makes any difference to income and expenditure of the borrower's household along with some other control variables. In this endeavor, the experiment considers 414 borrowing members and 155 non-borrowing members of both the sample MFIs to examine the difference. Further, to compare both the group representatively, only those members are selected, who under the category of marginal land sizeⁱⁱ holder. Since different asset base impact income level differently, therefore only land holding size is considered in this analysis. Moreover, there are also other variables relate to income level of a household, but the problem of measurement may arise for those variables, since measurement differs by the nature of variables. In this situation self estimated value may be biased and therefore due to tangibility in nature land is considered as representative variable. Moreover, land is also an important base of income generation. Therefore, adjusting for land size, finally 392 out of 414 borrowing members and 139 out of 155 non borrowing are considered. Analysis of variance (ANOVA) is applied to examine the differences.
2. In the second stage of experiment, it is tried to examine impact of microfinance on welfare of borrowing members and thus family expenditure of the borrower's household is taken as a proxy against the variable. The experiment considers 414 borrowing members, which were interviewed during January-June, 2009.
3. In third stage, out of 155 non-borrowing members of the second stage, 58 borrowing members were interviewed during May-July, 2012. Adjusting for the land size, 50 members are selected for the analysis. These members are non-borrowers in the first round of survey conducted in 2009, which were active

borrowing member in 2012. The collected samples are used to test the evidence of reduction in inequality among microfinance borrowers.

VIII.3 EMPIRICAL FRAMEWORK

As discussed above, the empirical strategy developed in this chapter is guided to comprehend impact of microfinance on the members particularly in two facets- welfare and inequality. The present study develops three different but related empirical frameworks to evince impact of microfinance on economic welfare and income inequality. The following sub-sections detail all empirical frameworks.

VIII.3.1 Impact of Microfinance: Participant- Non Participant Approach

The empirical strategy is adopted to examine the difference of selected socio- economic variables between the borrowing members (participant) and non-borrowing members. The motive behind this strategy is to analyse whether participation in microfinance programme make difference to socio-economic conditions of borrowing members. To estimate impact of participation in microfinance programme on the instrumental variables, the sample was collected in 2009 (non-borrower) and in 2012 (borrower) and treated as control and treatment group respectively. During 2009, the members were not received credit from the sample MFIs; while they received credit during 2012. Therefore, the difference observed between the periods for the selected variable is realised as impact of the programme. In this attempt, Analysis of Variance (ANOVA) is applied to test the difference between the groups.

In general, ANOVA is a collection of statistical models used to examine the difference between group means and their related procedure. The concept has a varied use and interpretation (Gelman, 2005). ANOVA can be performed with several procedures such as one way ANOVA, Multifactor ANOVA, Variance Component Analysis and General

Linear Model. Basically the difference between means is calculated in terms of F statistic. The general formula for F Test is:

$$F = \frac{\text{Explained Variance}}{\text{Unexplained Variance}}$$

The F statistic is based upon comparison between and within sums of squares (BSS and WSS). Some statisticians also take into account degrees of freedom for the test (Barrow, 2006). Therefore, considering degrees of freedom to adjust for the number of observations and for the number of factors, the formulae for F Test is:

$$F = \frac{BSS/(k - 1)}{WSS/(n - k)}$$

Formally, the test statistic is which has $k - 1$ and $n - k$ degrees of freedom. k is the number of factors

In this estimation, seven instrument variables are tested against participation type. Participation type indicates participation in borrowing programme. Participation type is a dummy variable, where 0 indicates for non-participant members and 1 for participant members. Further, type of participation is derived from amount of micro loan received by the members. If a member received a loan amount from MFI then it is coded as 1 and 0 otherwise. The estimation of ANOVA involves six independent variables, such as average education level (MEDU), land size (LANDTOT), net agricultural income (AGRINET), total volume of debt (DEBTTOT), total income (YTOT) and total expenditure (XTOT) of borrower's household.

VIII.3.2 Impact of Microfinance on Welfare of Borrowers

Welfare is a complex concept to comprehend, which is broadly categorised into social and economic welfare. The present study limits its sphere only to economic welfare, where consumption is taken as proxy to gauge the impact. The empirical strategy starts

with categorizing members of MFI as borrowing and non- borrowing members. In this framework at first a comparison of income and expenditure between borrowing and non-borrowing member groups is made. Since, both income and expenditure of borrowing members group is relatively more than non-borrowing member group, therefore it implies positive impact of microfinance on the borrowers. But the critical question is whether impact is due to microfinance or some other factors. Therefore, a simple regression analysis is run to examine the factors affecting expenditure. In this endeavour, only borrowing members that were interviewed in the first round of data collection is considered.

The basic intention behind selecting borrowing members is to gauge the impact of microfinance on welfare of borrowers. Since borrowers receive credit from the MFIs, therefore, does it exert a positive impact on the welfare of borrowers or is welfare maintained with some other factors. Therefore, the basic objective of the chapter is to examine the positive impact of microfinance on borrower. Impact of microfinance is a multidimensional facet. Because it may affect a number of areas related to welfare, income generation, reduction of inequality, providing better education and health and son on. This study is limited only to welfare impact of microfinance, where it is per capita expenditure proxies as an indicator of welfare. In this connection a cross section data is considered.

Since estimation of impact is a bulky task, the present study therefore considers a simple framework. A number of econometric tests were conducted in this endeavour, but the present study resort only to Ordinary Least Square (OLS) estimation. The econometric framework is deviate from Colemon (1999 and 2002). While Colemon uses log linear model in his estimation, the present study uses simple OLS model. Since, the motivation of present study is to estimate the impact of microfinance on borrower's consumption

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level, therefore a linear relationship is assumed between the regressand and regressor. The basic model is depicted in equation 8.1 (Gujrati & Sangeetha, 2007).

$$Y = \alpha + \beta_0 X + u \dots\dots\dots [8.1]$$

In equation 8.1 Y is the dependent variable of the model and X is the independent variable (s) of the model. Besides, α is the constant term of the function, β 's are coefficient to be estimated and u is random error term of the function. Equation 8.1 can be extend to the estimate the impact of micro loan amount on consumption. The OLS regression form of the model is constructed in the following way.

$$PCX_i = \alpha_i + \beta_0 PCI_i + \beta_1 LNSZ_i + \beta_2 VOLCOV_i + \beta_3 AGE_i + \beta_4 SEX_i + \beta_5 DEPEND_i + \varepsilon_j \dots\dots\dots [8.2]$$

Equation 8.2 contains six independent variables along dependent variables. PCX_i is the dependent or explained variable of the model. PCX_i is used as proxy for welfare, which indicates monthly per capita expenditure of borrowing household members.

PCI_i is an independent variable of the model, which indicates monthly per capita income of borrowing household members. The variable bears a linear relationship with the dependent variable and thus a positive relationship is assumed in this estimation.

Loan size ($LNSZ_i$) is also an independent variable of the model. It indicates amount of loan received by a borrower. The use of loan dictates the relationship with expenditure. If loan is use in productive activity, it generates income and thus it may increase family expenditure. On the other hand, if it is used in non-productive use; it does not generate income, but for a certain period of time increases expenditure. In this regard the present model assumes positive relationship with dependent variable.

Estimated amount of loss due to covariant risk ($VOLCOV_i$) is a control variable of the model. Idiosyncratic or covariant risk, such as natural calamities, death of some relatives, etc. make leakage to the income flow of a household. Because, it entails a cost of

rehabilitation in subsequent period and thus working capital is affected, which in a later stage effect income generation. Thus, a negative relationship is assumed in this analysis.

DEPEND_i is also an independent variable of the model. It is a ratio level variable, which is calculated as a ratio between non-earning members of borrowing household to total number of members.

AGE indicates mean age of borrower's household. It is assumed that as age of the family members increases, it demands a variety of requirements mainly in terms of consumption expenditure. Therefore a positive relationship is assumed in this analysis.

SEX indicates mode sex of borrower's household, which is basically a dummy variable. In this estimation it is assumed that expenditure of a male dominant household is comparatively more than female dominant household. The model is tested and adjusted for multicollinearity and heteroscedasticity.

VIII.3.3 Income Inequality among Microfinance Borrowers

In the third model it is tried to examine the income inequality among microfinance borrowers. The framework is conducted in two steps. In the first step, income inequality between credit constrained borrower (non-borrowing member) and credit unconstrained borrower is examined with the help of Gini coefficient, which is a popular tool of inequality estimation. In the second step, income inequality is examined by considering non-borrowing member of first round (2009) of data collection. With the help of second round of data (2012), a comparison of income inequality is made. The present study is limited only to estimation of income inequality for the concerned groups for the referred period. In this analysis, further examination of factor affecting income inequality is not undertaken.

VIII. 4 IMPACT OF MICROFINANCE

On the basis of the empirical framework developed in the preceding section, in the present section, a discussion of all the results of empirical estimation pertaining to the objective is made.

VIII.4.1 Impact of Microfinance: A Participant- Non Participant Approach

In this section the impact of microfinance on welfare via consumption expenditure is devised through ANOVA Analysis. It is tried to understand whether participation in microfinance leads to increased expenditure and increased income. The summary of descriptive statistics and ANOVA is presented in table 8.1.

Table: 8.1: Comparison of Descriptive Statistics and ANOVA between Participant and Non-Participant Members

Variable	Participant		Non- Participant		ANOVA
	Mean	Std. Dev.	Mean	Std. Dev.	F Statistic
MEDU (year)	6.57635	2.347614	5.26942	3.989427	20.179 ^{***}
LANDTOT (bigha)	5.8771	3.996732	3.13566	3.623789	44.716 ^{***}
AGRINET (₹)	9937.08	10568.05	4910.72	9930.021	23.330 ^{***}
DEBTOTPM (₹)	1461.75	947.9119	729.317	1695.81	36.760 ^{***}
YTOT (₹)	24306.6	33519.95	18173.9	16925.59	4.225 ^{**}
XTOT(₹)	21079.7	31551.7	15924.7	15856.66	3.372 [*]

***= significant at 1 per cent level; **= significant at 5 per cent level; *= significant at 10 per cent level;
Source: Field Study, 2009 and 2012

Table 8.1 above indicates that due to the participation in microfinance, consumption expenditure and income of participant is comparatively appears better than non-participant. The above table reveals that mean size of land is significantly differs from participant to non-participant and statistics indicates that it is due to programme participation. Similarly, mean size total debt is significantly differs from participant to non-participant as indicated by F statistic.

The results depicted in table 8.1 indicate all instrument variables differ positively for participant relatively to non-participant. Considering welfare level variable such as total

family expenditure, it is observed that mean family expenditure of participant household is higher by on an average amount of ₹ 5155. Therefore, it is an indication of economic welfare and in view of present analysis; this is due to programme participation.

Although, the analysis hints positive impact on welfare of borrowers, but with the only use of ANOVA, it is difficult to confirm the result. It thus demands econometric treatment to examine the affect. The subsequent section, analyses this vary aspect of the issue.

VIII.4.2 Impact of Microfinance on Welfare of Borrowers

Discussion on the previous sub-section indicates programme participation make a positive change on the welfare of participant members. Since, ANOVA alone can not confirm a relationship, therefore in this section; the relationship of expenditure is examined with six independent variables including loan size (LNSZ). The descriptive statistics of variables used in the model is depicted in table 8.2.

Table 8.2: Descriptive Statistics for Regression Variable on Impact of Welfare

Variable	Description	Unit	Mean	Std. Dev
PCX _i	Per capita expenditure of borrowing household per month	₹	4743.78	5069.894
PCY _i	Per capita income of borrowing household per month	₹	5560.28	5450.784
LNSZ _i	Amount of MFI loan	₹	12106.28	5468.227
VOLCOV _i	Amount of loss due to covariant risk	₹	16828.74	53265.91
AGE _i	Age of borrower	In years	33.95	11.03
SEX _i	Sex of borrower is a dummy variable. (1=male, 0= female)	Number	0.47	0.49
DEPEND _i	Dependency ratio, which is defined as number of dependent divided by total number of family member.	Ratio	0.68	0.14

Source: Field Study, 2009

Table 8.2 reveals that mean PCX_i is calculated at ₹ 4743.78 with a higher degree of dispersion. Similarly, mean PCI_i is ₹ 5560.28 with a higher variation. The average loan size is ₹ 12106.28, which indicates that on an average the borrowers on 3rd cycle of loan. Estimated amount of loss due to covariant risk ($VOLCOV_i$) is a control variable of the model. The descriptive statistics indicates that mean amount of covariant loss is widely dispersed. Similarly, AGE and SEX are also independent variables of the model, which indicate age and sex of borrowing members respectively. The descriptive statistics indicates that the average numbers of borrowers are in the young age bracket and most of the borrowers are female. $DEPEND_i$ is also an independent variable of the model. The descriptive statistics indicate that dependency is more among the sample borrowers, but with lower degree of variation. It indicates the large presence of non-earners. The regression result is depicted in table 8. 3.

Table 8.3: Determinants of Family Expenditure

Linear regression (Robust, hc3)		Number of obs = 414 F(6, 407) = 13803.91 Prob > F = 0.0000 R ² = 0.9800
Dependent Variable= PCX		
Explanatory Variable	Coefficient	t-value
PCY	0.906362***	171.6
LNSZ	-0.039793***	-6.13
VOLCOV	0.002101***	5.32
AGE	-24.39516***	-4.87
SEX	490.395***	6.01
DEPEND	2898.824***	6.01
CONS	-1224.668***	-4.53

*** = Significant at 1 per cent level;

Source: Field Study, 2009

The result indicates that all the variables except loan size (LNSZ) and mean age of borrower's household (AGE) are in the line of expectation. It is found in the estimation that increase of loan amount by ₹1000 decreases per capita expenditure by ₹397. The

result therefore confirms the rejection of the first part of hypothesis H6. However, the relationship of increase in per capita income is linear to per capita expenditure. Besides, table 8.3 depicts that increase in dependency considerably increases per capita expenditure.

Table 8.4: Test of Multicollinearity among explanatory variable

Variable	VIF	Tolerance (1/VIF)
SEX	1.43	0.699732
LNSZ	1.31	0.761326
VOLCOV	1.21	0.826048
AGE	1.18	0.849163
YPAD	1.13	0.887633
DEPENDENCY	1.05	0.953055
Mean VIF	1.22	0.8196

Source: Calculation done by author

The regression test is adjusted for heteroscedasticity and multicollinearity. Table 8.4 portrays test of multicollinearity among the independent variables and confirms lesser degree of the presence of multicollinearity among the explanatory variables. In addition, heteroscedasticity is adjusted by considering robust estimation using hc3 command in STATA 11 version.

The results depicted in table 8.3 indicate that participation in microfinance programme has a negative impact on the expenditure of borrowers' family. Therefore the first part of the hypothesis H6 is rejected and it may be maintained that microfinance is not able to increase the level of welfare in terms of consumption. However the traditional relationship of income with expenditure is maintained in this analysis.

VIII.4.3 Income Inequality among Microfinance Borrowers

The discussion in the previous sub-section refutes the first part of hypothesis H6. Therefore, in this section, it is tried to estimate the inequality of income among the microfinance borrowers. In this endeavour based on the methodology as described in

methodology section, a Lorenz curve and Gini coefficient is calculated. A comparison of income variables between two periods is presented in table 8.5. It is worth mentioning here that during 2009, the microfinance borrowers were non-borrowing member, while during 2012 they have completed two consecutive loan cycles and termed as active borrowing members.

Table 8.5: Descriptive Statistics of income variable related to Before-after analysis

Variable	2012 (Mean)	2009 (Mean)	Change (CAGR per cent)
Nominal Income of Member (₹)	4179.48	2838.36	49.08
Per Capita Nominal Income (₹)	5496.44	4269.40	42.91
Per Capita Nominal Expenditure (₹)	3994.44	3221.36	41.33
Real Income of Member (₹)	683.98	553.34	41.20
Per Capita Real Income (₹)	899.52	832.28	36.03
Per Capita Real Expenditure (₹)	653.76	627.88	34.71

Source: Calculation based on Field Survey, 2009 and 2012

It is found in table 8.5 that both nominal and real income and expenditures have been increased during the period. But the growth of nominal income and expenditure is more as compared to growth of real income and expenditure. Therefore, it implies that in real sense, the growth of income and expenditure is not faster as much as that in case of nominal sense. Besides, mean difference of some selected variables also calculated to comprehend socio-economic conditions too.

Table 8.6 depicts that all variables except total savings shows positive change during the period 2009-2012. It is observed from the table that after participation in microfinance programme total monthly debt size of the clients have registered a positive change of ₹ 34.52 over the period. However, the result does not confirm whether it is due to participation in the microfinance programme. Similarly, mean age, mean level of education also shows a positive change during the period.

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Table 8.6: Conditions Before and After Access to Credit of Selected Variables

Variable	Before (2009) (n=50)		After (2012) (n=50)		Difference
	[1]		[2]		[3=2-1]
	Mean	Standard Deviation	Mean	Standard Deviation	Mean
Total amount of debt (monthly)	211.54	245.174	246.06	229.054	34.52
Amount of loan received from MFI	0.00	0.000	6120.0	2335.529	6120.00
Repayment of MFI loan installment	0.00	0.000	140.76	53.717	140.76
Total savings	153.40	294.165	153.40	294.165	0.00
Amount of loss due to covariant risk	1196.40	2537.345	2858.33	7019.694	1661.93
Age of the borrowing family	25.76	11.699	28.18	11.699	2.42
Level of education	5.12	3.940	7.62	3.940	2.50
Land size	6.54	6.994	6.68	6.960	0.14
Family size	4.04	0.903	4.12	0.824	0.08

Source: Field Study, 2009 and 2012

The descriptive statistics discussed in table 8.5 income level of borrower's has been increased considerably over the period of time. This is really a positive sign for microfinance practice. But whether the increase in income properly distributed or it benefits only a fraction. In this connection the present study calculates Gini coefficient to examine income inequality. Income inequality is examined in two categories; first, for credit constrained and credit unconstrained borrower and second, for non borrowing members of first round of data collection (2009) who becomes active borrowing member in second round of data collection (2012).

The results depicted in table 8.8 indicate comparatively lower degree of income inequality among the borrowing members to non borrowing members. It is clear from the table that income inequality among the credit unconstrained borrower or those who have access to credit are smaller by 0.035 Gini Coefficient than the credit constrained borrower or those who have no access to credit.

**Table 8.7 Calculated Gini Coefficient for the Sample Borrowers
(Credit Constrained versus Credit unconstrained borrower)**

Borrowers Type	Gini Coefficient
Credit unconstrained borrower (n=392)	0.4386
Credit constrained borrower (n=139)	0.4738

Source: Calculation based on Survey 2009

Table 8.7 depicts that income inequality among credit constrained borrower is more by 8 per cent than credit unconstrained borrowers. The result therefore indicates that income equality among the microfinance borrower is lesser as compared to non-borrowing or credit constrained member.

The result analysed above does not indicate about reduction of inequality among microfinance borrower. In this connection, sample of 50 non-borrowing members are considered, where they are exposed to before and after treatment in terms of inequality analysis. Therefore, in order to examine inequality condition of microfinance borrowers, Gini coefficient is calculated for 50 microfinance borrower for the period 2009 and 2012. These members were non-borrowing member in 2009 and become active borrowing members in 2012.

**Table 8.8: Calculated Gini Coefficient for the Sample Borrowers
(Before and after Access to Credit)**

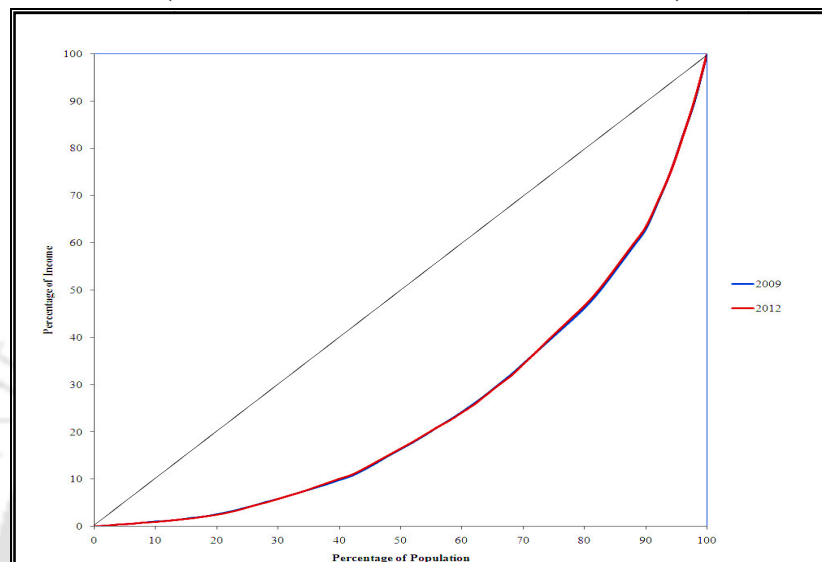
Period of Access to Credit	Gini Coefficient
Before Access to Credit (2009)	0.4995
After Access to Credit (2012)	0.4974
Change (2012-2009)	- 0.0021

Source: Calculation based on Survey 2009 and 2012

Table 8.8 indicates that income inequality among the microfinance borrower is considerably higher during the period in consideration. But in comparison to inequality condition during 2009, inequality conditions during 2012 shows a marginal reduction in

terms of Gini coefficient. It is observed in the table that income inequality during 2009 is 0.4995, which has reduced to 0.4975 in 2012. Thus in relative sense it registers a meager 0.21 per cent reduction in inequality.

Figure 8.1 Lorenz Curve showing Household Income Distribution (Income for the Period 2009 and 2012)



Source:: Author's calculation

The same result is graphically represented with the help of Lorenz curve in figure 8.1. The Lorenz curve and Gini coefficient indicates reduction of inequality after participation in the microfinance programme and thus supports the second part of the hypothesis H6.

VIII.5 CONCLUSION

Microfinance now-a-days is treated as strategic policy importance as development tool coupled with the limited availability of funds for financing the unbanked and productive poor. In addition, it is theoretically expected that credit provided at market rate of interest results in marginal benefits to credit constrained section, but it has no welfare enhancement for unconstrained section (Simtowe, 2008). Moreover, in view of high repayment rate, examining the impact of microfinance is a crucial issue. Therefore, the

policy makers should be more cautious in designing microfinance credit portfolio so as it is equally beneficial for credit constrained as well as credit unconstrained borrowers.

The chapter investigates the impact of access to credit among the borrowing members as well as non-borrowing members. As a test of causal difference, ANOVA technique is devised in addition to OLS estimation. Further, the analysis has extends its sphere in examining the impact of microfinance on inequality.

The results and discussion reveal that expenditure, which is considered as proxy of economic welfare differs positively in case of participant than to non-participant. Similarly ANOVA also indicates the due participation in the programme; there exist positive difference to borrower's expenditure in compare to non-borrower. But the regression analysis rejects the hypothesis that increase in expenditure is due to programme participation. However, the results confirm marginal reduction of inequality of income among the microfinance borrower.

Therefore, in view of the results discussed in this chapter, it may be concluded that microfinance make a positive impact on some socio-economic variable of borrower's household and helps in reduction of inequality in terms of income generation.

Notes

- i. Non-borrowing member refers to those members of a newly formed borrowing group, which are currently not eligible for loan. A non-borrowing member basically develops internal savings habit and rotates the internal fund depending on requirement.
- ii. In the NSS 48th Round of Survey, National Sample Survey Organisation under the Ministry of Statistics and Programme Implementation has merged "broad size classes" of land holding pattern in to five size groups along the lines adopted in Agricultural Census in India. These are marginal, small, semi-medium, medium and large size groups. According to this classification marginal land holding size group indicates land holding size of less than 1.01 hectare or around 7.475 bigha in India.



CHAPTER-IX

**SUMMARY OF
FINDINGS,
CONCLUSION
AND POLICY
IMPLICATIONS**

CHAPTER-IX

SUMMARY OF FINDINGS AND CONCLUSION

IX.1 INTRODUCTION

It is well recognised that economic growth of an economy depends on investment capacity, where finance plays a pivotal role. One of the greatest hindrances in the path of growth of developing world is lack of access to formal finance, where considerably large sections of population do not have adequate physical assets to pledge as collateral to secure loan. Microfinance devised as a novel approach to address the problem of information asymmetry as well as the problem of lack of collateral. The innovation has built-in advantage of involving agreements between the lender and a group of borrowers without physical collateral. Although microfinance group lending with joint liability model has been successful in some countries, it fails in expectation in some other countries such as Malwai (Simtowe, 2006).

A number of issues have been growing in achieving the objectives of microfinance, which are broadly outreach, sustainability and discernible impact. Although, outreach is an avowed goal, financing outreach becomes a challenge. This is because, except donor funds, all sources of funds are subject to the financial soundness of MFIs, which are gauged in terms of outreach of programme, repayment record, sustainability index and portfolio at risk. Thus, outreach of microfinance programme broadly faces two fold problems. On the one hand from microfinance institutions perspective, the problem of sustainability and repayment is interwoven with the problem of outreach itself and on the other, the impact of microfinance is related from the social perspective. This study is motivated by the debate, discussions, controversy and on going research around these

areas of microfinance, especially in the context of developing countries and microfinance emerging regions.

The present study tries to examine the issues of outreach, sustainability, efficiency and impact in view of repayment performance so as to comprehend the linkage among the issues and to frame a suitable policy options for sustainable microfinance. In this endeavour, this study evaluates outreach, sustainability, efficiency and recovery of microfinance institutions and repayment performance under group lending considering borrowing group and microfinance borrower. The study analyses the problem of outreach, sustainability, efficiency and recovery from institutional perspective and on the contractual side, the study assessing the extent of joint liability lending mechanism on repayment performance of both the microfinance borrowing groups and borrowers. On the impact side, the study examines the impact of programme on increment of income and welfare of borrowers and on reduction of inequality among them.

A number of studies individually attempted to analyse the relationship between outreach and impact, outreach and sustainability and sustainability and impact. Besides, a plethora of studies across different settings in the world attempted to analyse the effectiveness of joint liability mechanism leading to high repayment rate, however empirical results are not common. In order to address the research gap identified in literature, chapters V, VI, VII and VIII dealt with specific issues related to four objectives raised in chapter I.

The objective of this chapter is to summarise the research findings presented in preceding chapters, to provide conclusions and policy implications. The rest of the chapter is organised as follows. In section IX.1, summary of principal findings related to the chapters on specific objective are presented, which is followed by overall conclusion of the study in section IX.2. Policy implications based on findings and conclusion are

presented in section IX.3 and subsequently limitations of research and suggestions for further research in section IX.4.

IX.2 PRINCIPAL FINDINGS

Before drawing the final conclusion and working out the policy implications, it may be worthwhile to go over the principal findings of the study. A summary of these findings is presented in the following sub-sections.

IX.2.1. Outreach and Sustainability of Microfinance

The first objective of the present study is to examine sustainability of microfinance institutions, which has been discussed in chapter V. A number of debates have been growing in this issue in view of mounting outreach. Therefore, the present study examines the issue of sustainability in view of outreach in the context of a nascent microfinance market. The major findings of the study are summarised in the following points:

- The study reveals that outreach has been increased for the period 2002-12 by 15.8 per cent in terms of CAGR and 400 per cent in relative term. This is a clear indication of increasing outreach in terms of number of active borrowers. However, the growth of average borrower per field staff is relatively lower to growth of outreach (0.07 per cent CAGR) for the reference period.
- While growth of average size of loan on outstanding portfolio shows a commendable growth of 16 per cent CAGR during the period, growth of the number of active borrowers demonstrate relatively lower growth.

- Calculated sustainability indicators show that through out the reference period OSS is more than 100 percent, which indicate that the MFI can compensate its operational expenditures from the operational income allowing provision for loan loss. But, from the point of view of FSS, it is found that MFI has attained financial self sufficiency after 12 years and thus imply a considerable attention for the MFI to maintain the financial self sufficiency of the institution. It is worth mentioning here that the MFI has constantly maintained financial self sufficiency from 2006-07.
- Regarding subsidy dependency, it is found in this study that although the MFI depends on subsidy for a maximum period, it also shows negative dependence in terms of SDI. The trend of SDI shows less dependency on subsidy since 2000-01, it is an implication that as time passes, a MFI may become subsidy non-dependent and could be sustainable. In addition, the negative dependency trend of subsidy for the period indicates that the MFI could compensate its social cost in future. Moreover, it is observed in the study that recently (during 2007-12) SDR shows negative dependence on subsidy.
- The estimated correlation coefficient of OSS and FSS reflects a higher degree of positive correlation with outreach. Moreover, SDR demonstrates a significant negative association with outreach. Thus it indicates that to increase outreach MFI need not to depend on subsidy.
- It is clear from the table 5.4 that SDR is negatively correlated with market rate for concessionary fund. It is an indication that 1 point of positive dependence on subsidy is induced by 0 .804 point positive changes in market rate of interest. Therefore it implies that as market interest rate raises the tendency of a MFI moves toward subsidized sources of fund.

- It is observed that interest income on borrowed fund as a per cent of interest expenditure on loan has increased over the reference period. It is thus a clear indication that from the interest rate perspective the MFI can make profit and the current lending and borrowing rate allows the MFI to extend the program for a higher level of outreach.
- It is apparent from the study that expenditure is greater than income for the period 1999-2008. Thus it registers loss in absolute term. It thus implies that present income level at the existing lending rate is unable to offset increasing expenditure pattern.
- The result regarding break even interest rate implies that to facilitate sustainable source of credit for the un-banked and credit constrained sections, MFIs may be allowed a little higher interest rate than banking and the like institutions. It is found in the analysis that break even interest rate is still higher than mentioned general minimum rate and therefore, the competitive financial environment can not allow MFIs to charge more interest rate.

The above findings satisfy the objective of examining sustainability of microfinance under MFI model. The results indicate that in view of increasing outreach, achieving financial sustainability is a possible goal. Therefore the analysis confirms that increasing outreach does not prevent sustainability of microfinance programme and thus hypothesis H1 is rejected. However, interest rate possibly has an impact on the relationship, because, when market rate of interest reduces, tendency of a MFI moves for non-subsidized fund. It is further an implication for the MFIs, that to what extent they seek such funds and the answer purely lies in their internal management of fund. The study further suggests that increasing interest rate is not a sustainable solution for break even.

IX.2.2. Efficiency of Microfinance

The second objective of the present study is to examine branch level efficiency of MFIs, which has been discussed in chapter VI. Efficiency estimation is a crucial tool to understand internal financial health of a financial institution. In this endeavor the present study estimates efficiency for world MFI average, continental averages, national average and sample MFIs. Subsequently, estimation of efficiency scores for selected branches of sample MFIs also estimated in this study. Finally, the study examines the determinants of branch level efficiency considering efficiency scores of sample branches. The major findings regarding the objective are summarized below.

- The study reveals that average staff size of RGVN (NE) is 287 per cent higher than the world average of 107. It thus clearly indicates that RGVN (NE) is more staffed than all regional MFI average. Moreover, RGVN (NE) also cost effective in terms of cost per borrower (₹ 9), which indicates that it is lowest among the MFIs and regional MFI average.
- Efficiency calculation in this study indicates that while the world average MFI demonstrates inefficiency, South Asian, Indian and both the sample MFIs attain efficiency. Where Latin American and the Caribbean MFIs are inefficiently operating at decreasing return to scale, African and World average MFIs are operating at increasing return to scale.
- The estimation reveals that although both the sample MFIs attain efficiency, regarding branch level estimation it is found that 12 out of 18 branch offices are efficient. All inefficient branches demonstrate increasing return to scale.

- The result from the estimation implies that all inefficient branches should reduce total assets, staff size and operating expenses. The efficient output target to achieve efficiency is for increase of women borrower and increase in loan portfolio.
- The result from the TOBIT regression analysis indicates that coefficient for *age* implies that an increase in one year of experience of each MFI branches will decrease, on average, the relative efficiency score by 1.4 per cent points. The coefficient for operating expenditure per borrower (*OPEPAB*) also demonstrates such type of relationship with efficiency where it is found that an increase of one rupee would reduce efficiency by 0.023 points. However, coefficient for average loan size (*asl*) shows that an increase of one percent point in the average size of loans provided by MFI branches would increase on an average, the efficiency scores by 0.015 percent.
- The result of the present study shows that repayment rate has a marginal negative impact on efficiency, which may be due to rigid repayment schedule.
- It is found from the analysis that efficiency of microfinance branch offices is better for MFI branch offices that are placed in urban areas. Similarly, incorporation of MFI as NBFC increases efficiency by about 5 per cent.

The above findings indicate that it satisfy the objective of assessing branch level efficiency. While estimation in this study reject hypothesis H2, it accept hypothesis H3. Therefore it can be maintained that repayment rate is not positively related to efficiency, but efficiency of MFI branch office become better if it is place on urban centre. Further, the analysis from the present study indicates that both internal and external factors are responsible for inefficiency or efficiency and in this connection management have a proactive role in identifying factors that area related to the local operational setting and operational environment.

IX.2.3. Repayment Performance under MFI Model

The third objective of the study is examination of microfinance repayment performance and its determinants under MFI model. In accordance with the objective, three hypotheses are formed. The major summary findings regarding the objective are summarized in the following points.

- The study reflects that average outstanding loan balance per borrower is ₹ 4331, which is comparatively lower than the global average. However, mean cumulative recovery rate is marginally lower than Grameen repayment rates (Grameen Foundation online).
- The study comes out with one interesting feature that average PAR > 30 days is 12.93 for the sample branch offices with higher degree of dispersion. As for example, it is considerably higher for Koniha branch office (59 per cent) of RGVN (NE). However, mean on time recovery rate of selected branch offices is 94 per cent.
- It is found from the Tobit regression estimation that age of branch office (AGE) is positively significant. It is also found that increase in years of operation (YOP) marginally increases the recovery rate. Similarly, the variables STAFF and IPB are positively significant at 1percent level. The result suggests that one unit increase in staff results in approximately 2 per cent positive change in recovery rate. Similarly, increase of interest earned per borrower ₹ 1000, results in 1 percent increase in recovery rate.
- The results from the estimation indicate a significant negative relationship with variables loan size and place of branch office. It is found that microfinance branch office in urban affect recovery rate negatively.

- The variables related to group mechanism such as peer monitoring and homogeneity shows a positive relationship. But, homogeneity is not statistically significant as it is in case of peer monitoring.
- The study comes with one interesting finding that the relationship between screening and repayment rate is significantly negative. While group size, trust of group on MFI and higher loan cycle demonstrate a significant positive relationship with repayment rate, loan amount and distance are significantly negatively related to repayment.
- It is also found in the analysis that moneylender financed about 41 per cent of borrowers followed by other MFI. The average interest rate charged by other financial source is 40.07 percent per annum, with a higher degree of variability. The minimum rate of interest is 8 percent, which is charged by bank and as high as 120 that charged by moneylender. The study also reflects that average debt size of borrowing members is ₹ 23772.22 and 50.93 per cent of total debt includes other debt.
- From the point of view of individual group members, peer monitoring and peer pressure significantly positively related to repayment rate.
- The study reveals significant negative relationship of other loan amount with repayment rate. Similarly, variables shocks in terms of number of occurrence, higher degree of external pressure and higher loan size affect repayment rate negatively.
- The result shows that on an average the other loan size of clients were ₹ 11666 with a S.D. of ₹ 9342. Other debt shares 5.93 per cent of total debt of borrowers. The regression result indicates a marginal detrimental effect of other loan on repayment at 5 percent significance level.

- The study also identifies one corroborative factor that loan use by other than borrower or applicant results in decreasing repayment rate. In other words, other uses of loan induce loan default.

In terms of above findings, it may be concluded that the study satisfy third objective. Hypotheses H3, H4 and H5 are in concurrence with expectation. Therefore, it can be maintained that branch level microfinance recovery performance is better in rural areas. Furthermore, microfinance repayment rate of both group and individual is positively affected by higher degree of peer pressure, peer monitoring and homogeneity. From microfinance borrower's perspective, access to other sources of finance affect repayment rate negatively. The study reveals that microfinance repayment rate of the borrowing groups, individual borrowing members are considerably better, and which is due to both internal and external factors related to the system.

IX.2.4. Impact of Microfinance

The fourth objective of this study is to analyse the economic impact of microfinance on clients. A hypothesis is formed to achieve the stated objective. The summary of principal findings can be counted in the following points.

- It is found in the study that that consumption expenditure and income of participant is comparatively appears better than non- participant. Considering welfare level variable such as total family expenditure, it is observed that mean family expenditure of participant household is higher by on an average amount of ₹ 5155. Therefore, it is an indication of economic welfare and in view of present analysis; this is due to programme participation.

- It is found in the estimation that increase of loan amount by ₹1000 decreases per capita expenditure by ₹397. However, the relationship of increase in per capita income is linear to per capita expenditure. The results indicate that participation in microfinance programme has a negative impact on the expenditure of borrowers' family.
- It is found in study that both nominal and real income and expenditures have been increased during the period. But the growth of nominal income and expenditure is more as compared to growth of real income and expenditure.
- The results in the study depict comparatively lower degree of income inequality among the borrowing members to non borrowing members. It is found in the study that income inequality among the credit unconstrained borrower is relatively smaller by 0.035 points in terms of Gini Coefficient to the credit constrained borrower.
- The calculated Gini coefficient indicates that compare to inequality condition in 2009, inequality conditions in 2012 shows a marginal reduction of 0.21 per cent in terms of Gini coefficient. The Lorenz curve and Gini coefficient indicates reduction of inequality after participation in the microfinance programme.

The findings regarding impact of microfinance satisfy the fourth objective of the study. The estimated results partially accept hypothesis H6, since first part of the hypothesis is rejected, but the later part is accepted. The study on the impact of microfinance evince that although microfinance borrowers are better compared to non-borrower, but statistical procedure fails to confirm the evidence that it is due to participation in the microfinance programme. Moreover, it is evinced by the study that income inequality among the microfinance borrower is comparatively lower than non-borrower and further the before-after analysis confirms that it is due to participation in the microfinance programme.

IX.3 CONCLUSION:

From the above findings it can be safely concluded that the study fulfils all the stated objectives. While analyzing outreach and sustainability of microfinance institutions of the state, it is found that although state share a meagre amount to national total outreach, the rate of growth of outreach shows an increasing trend and which reflect potentiality of microfinance sector in the state. Moreover, the study reflects that there is lesser degree of trade-off exists between sustainability and outreach. It is therefore implied that outreach can be increased without costing sustainability. The results reflect that hypothesis H1 is rejected.

The study also reflects that the level of efficiency of sample MFIs are higher as compared to global MFIs. But efficiency levels differ from branch to branch. Branch level efficiency is positively affected by increase in average loan size, branch office location particularly in urban centre and incorporation of MFI as NBFC. Interestingly it is found that increase in repayment leads to decrease in efficiency. The result contradicts with hypothesis H2 and thus it is rejected. Therefore, from the analysis it may be maintained that efficiency possibly not affected by repayment rate.

Hypotheses H3, H4 and H5 are in concurrence with the expectation. The result reflects that from institutional perspective, microfinance branch office located in rural area enhances recovery performance of branch offices. The study also empirically confirms the mechanism of JLL, where peer pressure, peer monitoring and homogeneity results in better repayment performance for the group. From individual borrower's perspective apart from other variable, the study found that presence of informal financial sector and loan from other source induces negative repayment rate.

H6 also gets partial acceptance as increase in the amount of microfinance, leads to negative growth in expenditure and thus a negative impact on family welfare. However the study accepts second part of hypothesis H6 as it indicates that access to microfinance reduce inequality among the microfinance borrower.

The overall discussion reflect that microfinance outreach in nascent areas shows possibility of sustainability in the long run along with better repayment performance and considerable impact on borrower in terms of reducing inequality.

IX.4 POLICY IMPLICATION:

In the light of above findings the study has identify a couple of policy implications, which are mentioned below:

1. From the institutional perspective, partial dependency of MFI on subsidies may be tackled either by lowering the operating cost or increasing repayment rate, which demands thorough monitoring on the internal management of institution. Management should identify such factors those are interwoven with the local operational setting so as to formulate better operational guidelines and policy for microfinance operation in the contextual setting. For furthering recovery rate and repayment performance, the branch offices of MFI must take a vigilant role so as to monitor their activity. In this aspect increasing staff size and placing branch offices in rural areas has an important policy implication.

2. It is found in the study that other source of loan has significant marginal impact on the repayment rate. Therefore, MFIs must be careful in selecting borrowers for the programme, especially in terms of checking multiple borrowing. Although this seems a difficult option, but it is practicable, for which couple of measures may be introduce.

First, the period of time between formation of group and first loan delivery should be more. This enables the branch office to identify the different characteristics and attributes of group members and thus screen borrowers with multiple debt record. Second, the management should train the field staff in such way that they can identify the features of borrowers without confusion. In this connection, allowing more time per group is a workable solution.

3. The next policy implication is from governmental perspective. In view of ongoing discussion and above analysis, the study implies that government should formulate a comprehensive microfinance act so as to safeguard both customers and MFIs, which will create a better contract and thus make microfinance outreach more sustainable.

IX.5 LIMITATIONS OF THE STUDY

The study faces a number of limitations out of which some of the important are appended below:

1. First, the study suffers usual limitations regarding some primary information, such as income and expenditure.
2. Second, the study considers only 50 borrowing members for impact analysis. The result may become representative if the sample size is enlarged.
3. The study considers sustainability from financial perspective although a variety of sustainability study exists in microfinance sector. Therefore, the conclusion regarding sustainability is not exclusive in nature.
4. The empirical treatment in this study is limited by geographical coverage. Due to dearth of time and finance, the study encompasses only The Brahmaputra Valley of

Assam. A more precise result could have been drawn, if the geographical coverage could be extended.

5. The study is limited by the period of analysis. While the repayment related issues cover data pertaining to period 2009, impact level estimation is based on both the period 2009 and 2012. The limitation is due to the cost and time component.
6. The study does not consider a detailed examination on debt, especially regarding necessity of debt, which varies from person to person. Use of loan has an implication on repayment, but this vary aspect is not examined in a broad framework in the study.
7. The study uses 18 observations for both efficiency and branch level recovery performance analysis. Therefore, small sample size may have a consequence on the Tobit regression, although it may be devised.
8. The study does not consider the social aspect of efficiency. Since the main intention of this study is to comprehend the linkage of repayment to efficiency in view of other related issues, therefore, the study does not consider the vary aspect.

IX.6 SUGGESTIONS FOR FURTHER RESEARCH:

- The study shows vast potentialities regarding a number of issues out of which examination of the impact of external sector on microfinance is considered as important. The study needs rigorous empirical treatment with suitable and strong methodological support such as randomized evaluation method.

- The study further shows potentiality of rigorous impact assessment of microfinance on the borrower from a wider angle. The study also divulges the potentiality of impact of repayment discipline on different facets of borrower.
- The present study further shows the potentiality of developing sound statistical method for collection and estimation of data regarding quantification of the relationship between repayment and social capital.





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ANNEXURE-I**Operational Highlight****Unit Office, ASOMI/ CSP-RVGN**

Area of operation (in km)	North to South:		East to West:			
Number of villages covered under the unit office						
Number of town and ward covered under the unit office						
Number of Staff (including unit manager and office boy)						
Types of Group (All Loan Cycle)	No. of active Groups	No. of Borrowing Groups	No. of Active Client	No. of Borrowing Client	Amount of Loan Disbursed	Amount of Loan Recovered
SHG						
JLG						
EDL/EDP						
Total						
Types of Group (1st Loan Cycle)	No. of Active Groups	No. of Borrowing Groups	No. of Active Client	No. of Borrowing Client	Amount of Loan Disbursed	Amount of Loan Recovered
SHG						
JLG						
EDL/EDP						
Total						
Outstanding Portfolio (₹)						
Average Loan Size on Outstanding Portfolio (₹)						
Cumulative Amount of Loan Disbursed (₹)						
Average Loan Size on Disbursement Amount (₹)						
Repayment per cent (on time)						
Cumulative Repayment per cent						
Portfolio at Risk (>30 days) (per cent)						
Amount of loan overdue (₹)						
Expenditure on administration (Q3, 2008-09)						
Expenditure on personal (Q3, 2008-09)						
Expenditure on transaction (fuel allowance, etc.) (Q3, 2008-09)						
Total expenditure of the unit office (Q3, 2008-09)						
Total income of the unit office (last month)			Interest Income			
			Other Income (sale of form, fine, etc.)			

ANNEXURE-IIInterview Schedule for Field Officer**Determinants of Microfinance Repayment Performance
And Impact of Microfinance on Clients under Group Lending Program**

1. When did you join this unit office?
2. What is your total experience in this sector? (*In months/years*)
3. What is your current client size?
4. How many groups do you usually visit per day?
5. What is your coverage area? (*In km.*) North to South: East to West:
6. Do you provide necessary guidance to the group members when they face crisis in managing livelihood? (*Yes-1, No-2*)
7. How much time usually you take for loan collection from a JLG group? (*in minutes*)
8. How much time usually you take for loan collection from a SHG group? (*in minutes*)
9. Have you taken initiative in group formation? (*Yes-1, No-2*)
10. If yes, please mention the number.
11. Please indicate your know how about the clients?
(**A**) About 100per cent, (**B**) About 90per cent, (**C**) About 80per cent, (**D**) About 70per cent, (**E**) Only the group leaders and few members, which is about 50per cent
12. Is there problematic group/client in your area of operation? (*Yes-1, No-2*)
13. If yes, mention the number of such **groups** and **clients**.
14. What kind of problem they create? (*including their intra group crisis*)

15. What is the reason behind the problem so far as you experience is concern?

16. Do you able to solve the problem? (*Yes-1, No-2*)
17. If yes, how do you solve?

Schedule for GroupANNEXURE-III

**Determinants of Microfinance Repayment Performance
and Impact of Microfinance on Clients under Group Lending Program**



**Department of Humanities and Social Sciences
Indian Institute of Technology Guwahati, Guwahati-39, Assam**

A. Identification of the Group:

- a. Type of the Group: SHG / JLG (Strikeout the irrelevant)
- b. Name of the JLG/SHG Group:
- c. Number of members in the group:
- d. Current Loan Cycle and instalment (scheduled) 1/ 2/ 3/ 4
- District:
- e. Location Block/MB/MC/TC/
- Village/Ward No.
- f. Name of the MFI from where loan is accessed:
- g. Identification number as given by the MFI:
- h. Survey Identification Number:
- i. Number of visit for survey: (Tick the appropriate box)
- j. Date of visit (DD/ MM/ YY):
- k. Result of Visit

B. Information on Group:**I. Group Age:**

1. When was the group established?

2. When was the first loan disbursed?

II. History of the group with the MFI and Group Formation

3. Who formed your group? (1- Self selection, 2- Formed by the MFI, 3- Both)
4. Since group members are self selected, who first take the initiative?
5. How many households consist of your group?
6. What is the sex of the group members (1- Female, 2-Male, 3- Both)

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7. How many members have changed in your group since its inception?
8. Does your group replace exit member(s) with new members? (1-Yes, 0- No)
9. How many member(s) of your group have left since the group's first loan?
10. Is it replaced by other member(s)? (1-Yes, 0- No)

III. Group Homogeneity

11. Do you know the following information of other members?

Variables ↓ Clients	No. of Family members	Caste (Code)	Age	Sex (Code)	Same Village Distance to the other members house	Religion (Code)	Education (in yrs)	Own Telecommunication (Code)	Electricity Connection (Code)	Principal Occupation	Subsidiary Occupation (Code)	Land Size (in Bigha)	No. of Earners in Household
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

IV Group Administration and Group Meeting:

12. Does your group meet regularly? (1-Yes, 0- No)
13. What is the monthly frequency of such meeting?
14. Does the group meet for any other reason? (1-Yes, 0- No)

C. Loan Size and Use of Loan

15. What is the loan size for your group? Rs.
16. What is the frequency of repayment schedule?
(1- Weekly, 2- Fortnightly, 3-Monthly)
17. Is repayment schedule make repayment problem to your group? (1-Yes, 0-No)

18. What should be the duration of repayment schedule according to you?

D. Repayment of Loan

(Consult from the clients deposit book.)

19. Loan amount to be paid?

20. Loan amount actually paid?

21. Did your group fail to repay installment(s)? (Yes-1, No-0)

22. If yes how many weeks?

23. During the repayment cycle of current loan, does any member of your group missed repayment or had to borrow their portion of the repayment from someone else? (1- yes, 0- no)

24. If the answer to question 23 is 'no', prior this loan, how many times did your group encounter a problem with any of the members of your group?

25. If the answer to question 23 was 'yes', how many people in your group have not been able to pay for themselves one or more times? (1, 2, 3, 4 or 5)

26. Who helped the member(s) who had difficulty in repaying?

a.) no one, and amount is default b.) family c.) husband

d.) the group e.) friends f.) shopkeeper

E. Group Solidarity

27. Did the group ever pay for one of its members who had difficulty in repaying? (Yes=1, No=0)

28. If the answer to Qn.27 is 'yes', how did the members cover for the member who couldn't pay?

a.) common fund b.) Each member contributed c.) Group leader paid

d.) One member paid

29. What is the frequency of meeting other than on the repayment day?

30. Did group discuss with member who faced repayment problem? (Yes=1, No=0)

F. Group Size and Information Sharing

31. Do all members in the group share all information except personal with all? (Yes-1, No-0)

32. What is the amount of group expenditure per month? (Rs.) _____

33. Do your group have common fund? (Yes-1, No-0)

34. If, yes does all member contribute? (Yes-1, No-0)

35. If yes, what is the volume of the common fund? (Rs.) _____

36. Do you use this fund in repayment of loan, when member (s) face problem?

(Yes-1, No-0)

37. Do your group use common fund to cover group related expenditure?

(Yes-1, No-0)

G. Group Pressure

38. Does your group react if one of its members can't repay? (Yes=1, No=0)

39. Does your group pressurize you in case of repayment difficulty? (Yes=1, No=0)

40. Has your group ever turned to an authority (the MFI, the Block, and the *Panchayat* President) to resolve a repayment problem within the group? (Yes=1, No=0)

H. Screening

41. Has anyone ever been rejected to join the group? (1-Yes, 0- No)

42. Are there people who would like to join the group but cannot? (1-Yes, 0- No)

43. Do you aware of the earnings of other member? (1-Yes- 0- No)

44. Are other group members aware of your earning? (1-Yes, 0-No)

I. Trust:

45. Did MFI trust on your group in times of repayment crisis? (1 Yes, 0 No)

46. If yes, how many times?

ANNEXURE-IV

**Determinants of Microfinance Repayment Performance
and Impact of Microfinance on Clients under Group Lending Program**



**Department of Humanities and Social Sciences
Indian Institute of Technology Guwahati, Assam, INDIA**

(For members or group leader)

A. Identification of the Group:

- a. Type of the Group: SHG / JLG (Strikeout the irrelevant)
- b. Name of the JLG/SHG Group:
- c. Number of members in the group:
- d. Current Loan Cycle and instalment (scheduled) 1/ 2/ 3/ 4
- e. Location
District:
Block/MB/MC/TC/
Village/Ward No.
- f. Name of the MFI from where loan is accessed:
- g. Identification number as given by the MFI:
- h. Survey Identification Number:
- i. Number of visit for survey:
- j. Date of visit (DD/ MM/ YY):
- k. Contact No. of the Respondent (*if any*)
- l. Result of Visit

B: Respondent Details:

Qns.	Particulars	Response
1	Name	
2	Sex (Code)	
3	Religion (Code)	
4	Caste (Code)	
5	Household type (Code)	
6	Type of ownership of the house (Code)	
7	Nos. of years staying in the current residence	
8	Is a group leader or member (Code)	

9. Name of credit officer associated with the group: _____

10. Details of Household Members of the respondent

S.N	Relation to Respondent (Code)	Age (in years)	Sex (Male-1, Female-2)	Education Completed (in years)	Marital Status (Code)	Occupational Status (Code) ^{\$}	
						Principal	Subsidiary
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

11. Information on Assets:**a. Land**

Classification of Land	Own Land (1)	Land Leased in (2)	Land Leased Out (3)	Land Held ((1+2)-3)
Homestead				
Orchard				
Pond				
Piggery				
Dairy				
Cultivation				
Others (<i>Specify</i>)				
Total				

b. Productive and Other Assets:

Assets	Nos	Present Market Value	Ownership Status (Own-1, Hired-2, Shared-3)	Assets	Nos	Present Market Value	Ownership Status (Own-1, Hired-2, Shared-3)
Agricultural				Others			
Plough				Bicycle			
Power Tiller				Motorcycle			
Tractor				Carrier Van			
Pump set				Bullock Cart			
Sprayer				Thela			
Wither				Rickshaw			
Others				Other			

12. Livestock Details:

Category	No. of Animals	Production in quantity	Productive Periods (in months)	Nature of Production ⁱ	If commercial Average sale Proceed in a year
Milch Animal		Itrs			
Bullock					
Young Cattle					
Goat					
Sheep					
Cock/Hen					
Pigeon					
Pig					
Duck					
Others (Specify)					

i= 1- Self, 2- Commercial, 3- Both

C. Household Characteristics and Related Information

Q.N.	Information	Response
13	Type of house (Code)	
14	Type of sanitation (Code)	
15	Source of drinking water (Code)	
16	Distance from the source of drinking water	
17	Availability of Electricity connection (Code)	
18	Type of electricity connection (Code)	
19	Availability of own telephone or mobile phone (Code)	
20	Distance from transportable road	
21	Distance from usual market	
22	Distance of weekly haat	
23	Distance from the major market	
24	Usually where do you go for medical treatment? (Code)	
25	Distance from medical facilities	
26	Where do you send you children for schooling	
27	Distance of school from your house	
28	Distance from post offices	
29	Distance from banks	
30	Type of ration card (Antodaya-1, BPL-2, others-3)	

D. Livelihood Assessment of the Respondent:

Instructions: If client engaged in cultivation then ask questions (31-38)

If client engaged in daily wage earning then ask questions (39-40)

If client engaged in petty trade or small enterprise, then ask (41-59)

I. Cultivation:

31. How many times you cultivate in a year? (e.g. 1, 2, 3... times)

32. Do you use irrigation for cultivation? (1-Yes, 0-No)

33. If yes, what is the mode irrigation?

(STW-1, manual/Animal driven-2, DTW-3, others-4)

34. Ownership nature of irrigation system (Own-1, Group-2, Hired-3)

35. Do you use HYV seeds for cultivation? (1-Yes, 0-No)

36. Do you use fertilizers and micronutrients? (1-Yes, 0-No)

37. Since you own an agricultural farm equipment then, how much earn from the system in a year if you are leasing out? (₹) _____

38. Income expenditure from cultivation:

Rabi Crop		Kharif Crop		Vegetables and others	
Income	Expenditure	Income	Expenditure	Income	Expenditure

II. Daily Wage Earning:

39. Where do you go for wage earning? _____

40.

No. of days work in last week	No. of months engaged in a year	Whether jobs are easily available	Nature of jobs	Wage Rate (Per day)

III. Petty trade or small enterprise:

41. In what type of business activities you are engaging?

(1-Petty trade, 2-Small enterprise)

a) If you are engaged in **Petty Trade**,

42. What is the nature of business? (1- Mobile, 2-fixed)

If mobile,

43. How many days in a week you visit the places?

44. What is the area of your business? (Area in km)

45. What is the volume of your business? (In ₹) _____

46. Do you sell your products at credit? (1-Yes, 0-No)

47. If yes, how much credits constitute your sales? _____

48. If yes, what is the frequency of collection?

If fixed,

49. How many days in a week do you engaged?

50. What is the average investment expenditure? _____

51. What is the average income from the investment? _____

52. Do you sell your products at credit? (1-Yes, 0-No)

53. If yes, what is the frequency of collection

If you have a (micro) enterprise, then

54. What is the daily/weekly/monthly income from the source? _____

55. What is the daily/weekly/monthly average investment expenditure? _____

56. Do you sell your products at credit? (1-Yes, 0-No)

57. If yes, what per cent of sales credit share

58. What is the frequency of collection? (e. g. weekly, monthly)

59. How many such type of enterprise available in your locality?

60. Income Expenditure Details of the Respondent: (Present)

Family Members	Income (₹) (Daily/Weekly/ Monthly)		Expenditure (₹) (Daily/Weekly/ Monthly)	
	Principal	Subsidiary	Consumption	Others
Respondent				
Family				

61. Details on the Governmental Assistance Received

Types of	Year	Monetary Value (₹)	Used Assistance in

E. Information on Group:**a. Group Age:**62. When was the group established? 63. When was the first loan disbursed? **b. History of the group with the MFI and Group Formation**64. Who formed your group? (1- Self selection, 2- Formed by the MFI, 3- Both) 65. Since group members are self selected, who first take the initiative?
_____66. Do you know all members of the group? (1-Yes, 0- No) *(If yes, go to the question 76 & 77)*67. How many households consist of your group? 68. What is the sex of the group members (1- Female, 2-Male, 3- Both)

69. Why did you choose these women and not others? (in case of more women client)

- a. It is convenient for discussion with same gender.
- b. Male may create financial problems by mismanaging common fund.
- c. Male may create repayment problem.
- d. We are known to each other for a long time.

e. Others (*specify*) _____70. How many members have changed in your group since its inception? 71. Does your group replace exit member(s) with new members? (1-Yes, 0- No, 99- DNA) 72. If yes, reason for member's exit?

_____73. How many member(s) of your group have leaved since the group's first loan? 74. If at least one member left the group, what are the reasons behind exit?

_____75. Now, is it replaced by other member(s)? (1-Yes, 0- No, 99- DNA)

c. Group Homogeneity

76. Do you know the following information of other members?

Variables → Clients ↓	No. of Family members	Caste (Code)	Age	Sex (Code)	Same Village	Distance to the other	Religion (Code)	Education (in yrs)	Own Telecommunication (Code) Electricity Connection (Code)	Principal Occupation (Code)	Subsidiary Occupation (Code)	Land Size (in Bigha)	No. of Earners in Household
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

77. Please provide information on the following:

Variables → Clients ↓	Debt (₹)					Savings and Insurance (₹)				
	Present MFI	Other MFI	Bank	Individual	Societies, etc.	Present MFI	Other MFI	Bank	Insurance	Societies, etc.

d. Group Administration and Group Meeting:

78. Does your group have group leader? (1-Yes, 0- No)

79. Does your group meet regularly? (1-Yes, 0- No)

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80. What is the monthly frequency of such meeting?
81. Does the group meet for any other reason than for loan repayment? (1-Yes, 0- No)
82. If yes, specify the type of reasons:

F. Loan Size and Use of Loan

83. What is the loan size for your group? ₹
84. What is your loan size? ₹
85. Who use loan fund? (Self =1, Other =0)
86. Do you take loan from other member(s)? (Yes-1, No-0)
87. What is the frequency of repayment schedule? (1- Weekly, 2- Fortnightly, 3-Monthly)
88. Is the repayment schedule makes problem in repayment? (1-Yes, 0-No)
89. If yes, tick reasons (Yes-1, No-0)
- a. Usually, unable to manage loan installment due to family expenditure.
 - b. Usually, unable to manage loan installments due to insufficient income.
 - c. Unable to manage loan installments due to multiple debt repayment.
 - d. Sometimes unable to manage loan installment from peer members.
 - e. Income cash flow is monthly scheduled.
 - f. Shock
 - g. Others
90. What should be the duration of repayment schedule according to you?
91. What is the intended purpose of your loan? _____
92. Have you taken any training for the activity? (Yes-1, No-0)
93. Statement of actual use of loan:

Sl. No	Loan used in	Amount
1		
2		
3		
4		
5		
Total		
Amounts in hand		

G. Interest Rate and Credit Rationing

94. What is the rate of interest on your current loan size? (*per cent per annum*)
95. Would you prefer to borrow more at this interest rate? (*1-Yes, 0-No*)
96. How much would you prefer to borrow at this interest rate? (₹)
97. What is the total amount of the project for which you take loan?
98. What was the amount available with you?
99. What was the amount you seek from the MFI?
100. How much amount the MFI released?
101. Is it making problem to your project? (*1-Yes, 0-No*)
102. If yes, what type of problems?

103. How you manage the rest of the amount? (Yes-1, No-0)

- a) Taking loan from village moneylender.
- b) Taking loan from friends.
- c) Taking loan from societies.
- d) Taking loan from other SHGs.
- e) By selling household assets.
- f) Reducing the volume of intended business.
- g) Curtailing household expenditure.
- h) Others (Specify) _____

104. If, no is it still create problem in repaying loan? (*1-Yes, 0-No*)

H. Other Financial Sources (*Put 1-Yes, 0-No in the appropriate boxes*)

105. Do you receive credit from any other source apart from MFI at present?
106. If yes, what is the source?
107. What is the amount you have taken?
108. Is collateral required?
109. If yes, type of collateral (*use code*)
110. What is the rate of interest of the loan? (*per cent per annum*)
111. Are both principal and interest required to pay in installments?
112. Is repayment of loan fall at the same time along with MFI?

113. If yes, which one is important to repay first? (1-MFI, 0- Other)

114. Why, it is important?

I. Repayment of Loan

(Consult from the clients deposit book.)

115. Loan amount to be paid?

116. Loan amount actually paid?

117. Did you fail to repay installment(s)? (Yes-1, No-0)

118. If yes how many weeks?

119. What type of problem do you faced in repayment?

120. Who paid for you? (*Strikeout the irrelevant*)

a) Group leader b) Group member(s)

b) Common fund d) Relatives

e) Family member f) none

a / b / c / d / e / f / g

121. Do you repay your part in the later stage? (Yes-1, No-0)

122. If yes, why do you repay? (*Put Yes-1, No-0 in the box*)

a. I need larger loan size to improve my livelihood.

b. Group pressurizes me.

c. My cash flow becomes normal in the later stage.

d. I do not want to break relationship with the members

e. Threatening by the MFI, not to give loan in the future

f. Other, _____

123. If no, then why you are not repaying? (*Put Yes-1, No-0 in the box*)

a. I am unable to cover family expenditure with current income.

b. I am indebted to other sources, thus unable to pay.

c. I am not interested to pay since I don't require further loan.

d. I am agitated by the credit officer.

e. Group members do not support me.

f. Other

124. During the repayment cycle of current loan, has any member of your group missed repayment or had to borrow their portion of the repayment from someone else? (1- yes, 0- no)
125. If the answer to question 124 is 'no', prior this loan, how many times did your group encounter a problem with any of the members of your group?
126. If the answer to question 124 is 'yes', how many people in your group have not been able to pay for themselves one or more times? (1, 2, 3, 4 or 5)
127. In your opinion, why have these member(s) had difficulty in repaying?
- a) Bad harvest b) lost one of the animals of the herd
- c) Large family expense (marriage, funeral, education, etc.)
- d) No particular reason e) don't know f) sickness g) shocks
- h) Out of town i) caught with other debt trap (to be confirmed after consulting others)
- j) Others (Specify) _____
128. Who helped the member(s) who had difficulty in repaying?
- a.) no one, and amount is default
- b.) family
- c.) husband
- d.) the group
- e.) friends
- f.) shopkeeper

J. Group Solidarity

129. Did the group ever pay for one of its members who had difficulty in repaying? (Yes=1, No=0)
130. If the answer to Qn.129 is 'yes', how did the members cover for the member who couldn't pay?
- a.) common fund b.) each member contributed
- c.) group leader paid d.) One member paid
131. How many times did you paid for one member's installment?
132. What is the frequency of meeting other than on the repayment day?
133. Did you discuss with member who faced repayment problem? (Yes=1, No=0)

K. Group Size and Information Sharing

134. Do all members in the group share all information except personal with all? (Yes-1, No-0)

135. What is the amount of group expenditure per month? (₹) _____
136. Do your group have common fund? (Yes-1, No-0)
137. If, yes does all member contribute? (Yes-1, No-0)
138. If yes, what is the volume of the common fund? (₹) _____
139. Do you use this fund in repayment of loan, when member (s) face problem?
(Yes-1, No-0)
140. Do your group use common fund to cover group related expenditure? (Yes-1, No-0)

L. Group Pressure

141. Does your group react if one of its members can't repay? (Yes=1, No=0)
142. Does your group pressurize you in case of repayment difficulty? (Yes=1, No=0)
143. Has your group ever turned to an authority (the MFI, the Block, and the *Panchayat*) to resolve a repayment problem within the group? (Yes=1, No=0)
144. In general, what type of problems does a person with arrears face?
 a) None b) She's excluded from the credit group
 c) She's forced to repay by the members of her group
 d) She loses her reputation at the village level (ashamed)
 e) other (Specify) _____

M. External Pressure

145. Does credit officer suggest you regarding loan repayment? (Yes-1, No-0)
146. Specify, _____
147. Does credit officer guide you regarding your business apart from collection of installments? (Yes-1, No-0)
148. Did credit officer pressurize you to repay in case of repayment failure? (Yes-1, No-0)
149. Specify the nature of the pressure? _____

N. Screening

150. Did the group reject anyone from joining? (1-Yes, 0- No)
151. Are there people who would like to join the group but cannot? (1-Yes, 0- No)
152. Do you aware of the earnings of other member? (1-Yes- 0- No)
153. Are other group members aware of your earning? (1-Yes, 0-No)

O. Social Ties and Co-operation

(Fill in the blanks with appropriate answers (1- group members, 2-Other than group members))

Since the sanction of the loan,

154. Is anyone in the group coordinated with-----to choose the place of business?
155. Has anyone in the group referred a customer to _____?
156. Has anyone in the group helped_____ with free labor?
157. Has anyone in the group helped_____ with money?
158. Has anyone in the group coordinated with_____ to buy input goods?
159. Has anyone in the group coordinated with_____ to sell goods?
160. Can you get help from your group member when you need it? (1 Yes, 0 No)
161. (In case of women client) If you were caring for a child and needed to go out for a while, would you ask your group member for help? (1 Yes, 0 No)
162. Have you visited a group member in the past week? (1 Yes, 0 No)
163. In the past week, how many times you had conversed with your group members?
164. If you have a dispute with your group member, are you willing to seek mediation from others? (1 Yes, 0 No)
165. Do you prefer to buy or sell goods or services from other group members or from other individuals? (1 from group member, 2 from other individuals)
166. Do you prefer to go for social institutions along with group members? (1 Yes, 0 No)

P. Reciprocity

167. Did you help other members in time of crisis? (1 Yes, 0 No)
168. If yes, how many times?
169. Do you receive help from those members? (1 Yes, 0 No)

Q. Trust:

170. Did MFI trust on you when you failed to repay? (1 Yes, 0 No)
171. If yes, how many times?
172. Do you think that the MFI could make you livelihood better? (1 Yes, 0 No)

R. Covariant Risk:

173. Do you face any kind of shocks during the loan period? (Yes-1, No-0)

174. If yes, please answer the followings:

Types of shocks	Frequency (times)	Effect of the shock (Explain)	Amount of loss(₹)
Flood			
Thunder storm			
Animal Disease			
Human Disease			
Theft			
Drought			

175. Do you have insurance policy? (Yes-1, No-0)

176. If yes, please provide the details.

Types of insurance	Amount Insured (₹)	Instalment Schedule (monthly-1, quarterly-2, half-yearly-3, annually-4, one time-5)	Instalment amount (₹)
Life	1		
	2		
	3		
	4		
General	House		
	Vehicle		
	Enterprise		
Crop			

177. Have you claimed insurance during the loan period? (Yes-1, No-0)

178. If yes, please mention the type(s) of insurance. (use code)

179. Do you face repayment problem due to the shocks mentioned above? (Yes-1, No-0)

ANNEXURE-V**IMPACT OF MICROFINANCE**

(For Non Borrowing Members)

Identification:

	District:	<input type="text"/>
a. Location	Block/MB/MC/TC/CT	<input type="text"/>
	Village/Ward No.	<input type="text"/>
b. Survey Identification Number:		<input type="text"/>
c. Date of visit (DD/ MM/ YY):		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
d. Contact No. of the Respondent (<i>if any</i>)		<input type="text"/>
e. Result of Visit (<i>Code</i>)		<input type="checkbox"/>

Respondent Details:

Qns.	Particulars	Response
1	Name	
2	Sex (Code)	
3	Religion (Code)	
4	Caste (Code)	
5	Household type (Code)	
6	Type of ownership of the house (Code)	
7	Nos. of years staying in the current	

8. Details of Household Members of the respondent (present)

S.N	Relation to Respondent (Code)	Age (in years)	Sex (Male-1, Female-2)	Education Completed (in years)	Marital Status (Code)	Occupational Status (Code) ^{\$}	
						Principal	Subsidiary
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

9. Information on Assets:**A. Land**

Classification of Land	Own Land (1)	Land Leased in (2)	Land Leased Out (3)	Land Held ((1+2)-3)
Homestead				
Orchard				
Pond				
Piggery				
Dairy				
Cultivation				
Others (<i>Specify</i>)				
Total				

B. Productive and Other Assets:

Assets	Nos	Present Market Value	Ownership Status (Own-1, Hired-2, Shared-3)	Assets	Nos	Present Market Value	Ownership Status (Own-1, Hired-2, Shared-3)
Agricultural				Others			
Plough				Bicycle			
Power Tiller				Motorcycle			
Tractor				Carrier Van			
Pump set				Bullock Cart			
Sprayer				Thela			
Wither				Rickshaw			
Others (<i>Specify</i>)				Other (<i>Specify</i>)			

10. Livestock Details:

Category	No. of Animals	Production in quantity	Productive Periods (in months)	Nature of Production ⁱ	If commercial Average sale Proceed in a year
Milch Animal		ltrs			
Bullock					
Young Cattle					
Goat					
Sheep					
Cock/Hen					
Pigeon					
Pig					
Duck					
Others (Specify)					

i= 1- Self, 2- Commercial, 3- Both

11. Household Characteristics and Related Social information

Q.N.	Information	Response
i.	Type of house (Code)	
ii.	Type of sanitation (Code)	
iii	Source of drinking water (Code)	
iv	Distance to the source of drinking water	
v	Availability of Electricity connection (Code)	
vi	Type of electricity connection (Code)	
vii	Availability of own telephone or mobile phone (Code)	
viii	Distance from transportable road	
ix	Distance from usual market	
x	Distance of weekly <i>haat</i>	
xi	Distance from the major market	
xii	Usually where do you go for medical treatment (Code)	
xiii	Distance from medical facilities	
xiv	Where do you send you children for schooling	
xv	Distance of school from your house	
xvi	Distance from post offices	
xvii	Distance from banks	
xviii	Type of ration card (Antodaya-1, BPL-2, others-3)	

Livelihood Assessment of the Respondent:

Instructions: If client engaged in cultivation then ask (12.i – 12.viii); If client engaged in daily wage earning then ask (13.i – ii) and If client engaged in petty trade or small enterprise, then ask (14.i – ix)

12. Cultivation:

- i. How many times you cultivate in a year? (e.g. 1, 2, 3... times)
- ii. Do you use irrigation for cultivation? (1-Yes, 0-No)
- iii. If yes, what is the mode irrigation?
(STW-1, manual/Animal driven-2, DTW-3, others-4)
- iv. Ownership nature of irrigation system (Own-1, Group-2, Hired-3)
- v. Do you use HYV seeds for cultivation? (1-Yes, 0-No)
- vi. Do you use fertilizers and micronutrients? (1-Yes, 0-No)
- vii. Since you own an agricultural farm equipment then, how much earn from the system in a year if you are leasing out? (₹)
- viii. Income expenditure from cultivation:

Rabi Crop		Kharif Crop		Vegetables and others	
Income	Expenditure	Income	Expenditure	Income	Expenditure

13. Daily Wage Earning

- i. Where do you go for wage earning? _____
- ii.

No. of days work in last week	No. of months engaged in a year	Whether jobs are easily available	Nature of jobs	Wage Rate (Per day)

14. Petty trade or small enterprise

- i. In what type of business activities you are engaging? (1-Petty trade, 2-Small enterprise)

If you are engaged in **Petty Trade,**

- ii. What is the nature of business? (1- Mobile, 2-fixed)

If mobile,

- iii. How many days in a week you visit the places?
- iv. What is the area of your business? (Area in km)

- v. What is the volume of your business? (₹) _____
- vi. Do you sell your products at credit? (1-Yes, 0-No)
- vii. If yes, how much credits constitute your sales?

- viii. If yes, what is the frequency of collection?

If fixed,

- ix. How many days in a week do you engaged?
- x. What is the average investment expenditure? _____
- xi. What is the average income from the investment? _____
- xii. Do you sell your products at credit? (1-Yes, 0-No)
- xiii. If yes, what is the frequency of collection

If you have a (micro) enterprise, then

- xiv. What is the daily/weekly/monthly income from the source?

- xv. What is the daily/weekly/monthly average investment expenditure? _____
- xvi. Do you sell your products at credit? (1-Yes, 0-No)
- xvii. If yes, what per cent of sales credit share
- xviii. What is the frequency of collection? (e. g. weekly, monthly)
- xix. How many such type of enterprise available in your locality?

15. Income Expenditure Details of the Respondent (Present):

Family Members	Income (₹) (Daily/Weekly/ Monthly)		Expenditure (₹) (Daily/Weekly/ Monthly)	
	Principal	Subsidiary	Consumption	Other
Respondent				
Family				

16. Details on the Governmental Assistance Received

Types of Assistance	Year	Monetary Value (₹)	Used Assistance in

17. Debt, Savings and Insurance Details of the respondent

	Debt (₹)				Savings and Insurance (₹)				
	<i>MFI</i>	<i>Bank</i>	<i>Individual</i>	<i>Societies, etc.</i>	<i>MFI</i>	<i>Bank</i>	<i>Post Office</i>	<i>Societies, SHGs etc.</i>	<i>Insurance</i>
Respondent									
Family									

Loan Need, Availability and Use of Loan

18. Did you approach any financial sources for loan? (1-Yes, 0-No)

19. If yes, please indicate the type of financial institutions (code)

20. Have you received loan from that source?

21. What is your loan size? ₹

22. What is the frequency of repayment schedule? (use code)

23. Is the repayment schedule makes problem in repayment? (Yes-1, No-0)

24. What should be the duration of repayment schedule according to you

25. What the intended purpose of the loan is as stated in the loan application form? _____

26. How many years you have experience in the current activity?

27. Have you taken any training for the activity? (Yes-1, No-0)

28. If yes, is it improving your skill in the activity? (Yes-1, No-0)

29. Statement of actual use of loan:

Sl. No	Loan used in	Amount (₹)
1		
2		
3		
4		
5		
Total		
Amounts in hand		

Covariant Risk:

30. Do you face any kind of shocks during the loan period? (Yes-1, No-0)

31. If yes, please answer the followings:

Types of shocks	Frequency (times)	Effect of the shock (Explain)	Estimated Loss (₹)
Flood			
Thunder storm			
Animal Disease			
Human Disease			
Theft			
Drought			

32. Do you face repayment problem due to the shocks mentioned above? (Yes-1, No-0)

33. Do you have insurance policy? (Yes-1, No-0)

34. If yes, please provide the details.

		Amount Insured (₹)	Instalment Schedule (monthly-1, quarterly- 2, half-yearly-3, annually-4, one time- 5)	Instalment amount (₹)
Life	1			
	2			
	3			
	4			
General	House			
	Vehicle			
	Enterprise			
Crop				

35. Have you claimed insurance during the loan period? (Yes-1, No-0)

36. If yes, please mention the type(s) of insurance. _____



LIST OF PUBLICATIONS

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2. Borbora, S. and Sarma, G.K. (2010), “Branch Level Efficiency of Microfinance Institutions and Its Determinant: An Application of Data Envelopment Analysis in Assam, India” In *Proceedings of 4th International Borneo Business Conference (IBBC 2010)*. University Malaysia Sarawak , Sarwak
3. Sarma, G.K. and Borbora, S. (2011), “Is Microfinance Outreach Sustainable? A Case of Microfinance Institution Model in India.” In *Proceedings of Second European Research Conference on Microfinance*, University of Groningen, The Netherlands, [<http://www.rug.nl/research/globalisation-studies-groningen/research/conferencesandseminars/conferences/eumicrofinconf2011/papers/3a.kumarsarma-borbora.pdf>]
4. Borbora, S. and Sarma, G.K. (2011), “Microfinance Institutions: Sustainability and Outreach.” In *Conference Proceedings of World Business Economics and Finance Conference*, World Business Institute Australia, Melbourne, Victoria, Australia, [<http://www.wbiconpro.com/314-Borbora.pdf>]
5. Sarma, G.K. and Borbora, S. (2012), Sustainability of Microfinance under Microfinance Institution Model: A Case of Assam. *Finance India*, Vol. XXVII , No. 1