# Rural Credit Markets in Assam- A Study of Lower Brahmaputra Valley

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**BY**

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*DEDICATED*

*TO*

*ALL UNDERPRIVILEGED RURAL*

*BORROWERS*

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# CERTIFICATE

This is to certify that **Tiken Das** has carried out the PhD work embodied in the present dissertation entitled, **"Rural Credit Markets in Assam- A Study of Lower Brahmaputra Valley "** for the partial fulfillment of the degree of the Doctor of Philosophy in Economics under my supervision. I declare to the best of my knowledge that no part of this dissertation was earlier submitted for any other degree, diploma, associate-ship and fellowship. All the assistance and help received during the course of the investigation have been duly acknowledged by him.

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# DECLARATION

I, **Tiken Das**, hereby declare that the research embodied in this dissertation entitled, **"Rural Credit Markets in Assam- A Study of Lower Brahmaputra Valley"** is carried out by me under the supervision of **Dr. Manesh Choubey, Associate Professor,** Department of Economics, in partial fulfillment of the requirement for the award of the Doctor of Philosophy in Economics from the Sikkim University.

I declare to the best of my knowledge that no part of this dissertation was earlier submitted for the award of any other degree of this university or any other university.

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*Tiken Das*

# Contents

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# List of Abbreviation

| | |
|---|---|
| RRBs | Regional Rural Banks |
| NABARD | National Bank for Agriculture and Rural Development |
| PACS | Primary Agricultural Credit Societies |
| NBFCs | Non-Bank Finance Companies |
| NER | North East Region |
| SHGs | Self Help Groups |
| SMEs | Small and Medium Enterprises |
| NEDFi | North Eastern Development Finance Corporation Ltd |
| RIDF | Rural Infrastructure Development Fund |
| SIDBI | Small Industrial Development Bank of India |
| CD | Credit Deposit Ratio |
| KCC | Kisan Credit Card |
| SDFII | Supply Driven Financial Inclusion Index |
| MFIs | Micro Finance Institutions |
| DCCBs | District Central Cooperative Bank |
| NPAs | Non Performing Assets |
| SGSY | Swarnajayanti Gram Swarojgar Yojana |
| PCLD | Per Capita Loan Disbursed |
| PCS | Per Capita Saving |
| APMAS | Andhra Pradesh Mahila Abhivruddhi Society |
| SHPA | Self Help Promoting Agencies |
| NGOs | Non Governmental Organizations |
| AIDIS | All India Debt and Investment Survey |
| NSSO | National Sample Survey Organization |
| AIRCS | All India Rural Credit Survey |
| BSR | Banking Statistical Returns |
| RBI | Reserve Bank of India |
| CGAP | Consultative Group to Assist the Poor |
| APPO | Average Population per Branch Office |
| SBI | State Bank of India |
| APPB | average rural population per branches of commercial banks |
| PCAC | Per Capita Credit of All Scheduled Commercial Banks |
| PCAD | Per Capita Deposit of All Scheduled Commercial Banks |
| ASCB | All Scheduled Commercial Bank |
| AACB | All Assam Cooperative Bank |
| APPBO | Average Population per Bank Offices |
| APPRBO | Average Population per Rural Bank Offices |
| ADPBO | Average Deposit per Bank Offices |
| ACPBO | Average Credit per Bank Offices |
| ACOPCA | Average Credit Outstanding Per Credit Accounts |
| NCAPTP | No. of Credit Account per Thousand Populations |
| PCCO | Per Capita Credit Outstanding |
| ADPTDA | Average Deposit per Thousand Deposit Accounts |
| PCD | Per Capita Deposit |

| | |
|---|---|
| ADPTDARA | Average Deposit per Thousand Deposit Accounts in Rural Areas |
| PCDARA | Per Capita Deposit Amount in Rural Areas |
| CDR | Credit Deposit Ratio |
| HABS | Households Availing Banking Services |
| RHABS | Rural Households Availing Banking Services |
| BAK | Baksa |
| BAR | Barpeta |
| BON | Bongaigaon |
| CAC | Cachar |
| CHI | Chirang |
| DARR | Darrang |
| DHE | Dhemaji |
| DIBR | Dibrugarh |
| GOAL | Goalpara |
| GOL | Golaghat |
| HAIL | Hailakandi |
| JOR | Jorhat |
| KAM | Kamrup |
| KAM (M) | Kamrup Metropolitan |
| KA | Karbi Anglong |
| KAR | Karimganj |
| KOK | Kokrajhar |
| LAKH | Lakhimpur |
| MOR | Morigaon |
| NAG | Nagaon |
| NAL | Nalbari |
| NCH | North Cachar Hills |
| SIB | Sibsagar |
| SON | Sonitpur |
| TIN | Tinsukia |
| UDA | Udalguri |
| TNA | Total North Assam |
| TLA | Total Lower Assam |
| TUA | Total Upper Assam |
| THBV | Total Hills and Barak Valley |
| DDFII | Demand Driven Financial Inclusion Index |
| HDI | Human Development Index |
| SC | Scheduled Caste |
| ST | Scheduled Tribe |
| OBC | Other Backward Classes |
| D | Districts |
| T | Total |
| GT | Grand Total |
| ND | Name of Districts |
| NG | Name of SHG |
| NM | No. of Members |

| | |
|---|---|
| DE | Date of Establishment |
| RR | Rate of Repayment |
| RIM | Rate of Interest (Members) |
| RIO | Rate of Interest (Outsiders) |
| CM | Contribution from Members |
| EG | Retained Earnings |
| TLG | Loan Outstanding |
| TSG | Total Saving of Group |
| TBG | Total Borrowing of Group |
| ML | Manual Labor |
| PE | Private Sector Employed |
| BA | Businessman |
| DOG | Households who have Gold |
| WBOS | Borrowed from other Sources apart from Studied Sources |
| L | Land |
| AL | Agricultural Land |
| AGVB | Assam Gramin Vikash Bank |
| ONB | Other Nationalized Bank |
| PB | Private Bank |
| SGs | Saving Groups |
| MLs | Money Lenders |
| IVP | Instrumental Variable Probit |
| $MDSI^{SHG}$ | Multidimensional Sustainability Index of SHGs |
| 2SLS | Two-Stage Least Squares |
| MPI | Multidimensional Poverty Index |
| PC | Planning Commission |
| WB | World Bank |
| PL | Poverty Line |
| ATT | Average Treatment Effect on the Treated |
| NCAER | National Council of Applied Economic Research |
| $MSI^{SHG}$ | Managerial Sustainability Index |
| $FSI^{SHG}$ | Financial Sustainability Index |

## Abstract

It has been broadly recognized that wide financial services have a positive impact on growth and welfare. The literature on credit has found that limited access to formal financial services could encourage the development of informal financial institutions which could act as a complement or substitute to the formal sector. However, credit demand estimations are often biased and incompetent because of data truncation, and utilization of data on individual and single loan sizes. Moreover, a vital demand-access component of credit is awareness of credit institutions. Nevertheless, though awareness is the first step towards use, not much has been explored about the determinants of awareness of credit sources and their use. The present study was concentrated in rural Assam to know and estimate credit demand by covering all three sources of credit- formal, semiformal and informal. Moreover, the study made an attempt for having an understanding about the paradox, whether awareness of credit sources leads to their use by analyzing the determinants of awareness and use of different credit sources. Further, the study tried to evaluate the effect of rural credit on income poverty and life satisfaction of the people in the study area. The result argued that borrowers and lenders-specific variables are more important determinants of the decision to borrow. In general, rural household participation in the credit market is influenced by the ability and capacity to work, the life cycle effect of the borrower as well as some other exogenous factors. But the direction of causality of the factors influencing household participation in the rural credit market is remarkably different among all three credit sources. We find evidence that suggests that the awareness of credit sources is a necessary, but not sufficient requirement for their use. Besides, broadly formal, semiformal and informal sources attend different segments of the population and it is also obvious from the diverse nature of the impact of the different factors on awareness and uses among all three sources. In addition, formal credit sources are more effective at reducing the number of poor households but only by lifting those who were closest to the poverty line, with low impacts on the poverty gap. However, semiformal and informal sources are more effective in reaching the extreme poor, but by doing so, they report low, insignificant effects on the overall incidence, bringing the extreme poor closer to the poverty line. The study pointed that the formal clients have on average a significantly higher level of life satisfaction than other clients. In addition, the study confirmed the positive relation of life satisfaction with borrowings. Moreover, the study observed that, in general, rural borrower's life satisfaction is influenced by the ability and

capacity to work, the value of physical assets of the borrower as well as some other exogenous factors. But the direction of causality of the factors influencing borrower's life satisfaction is remarkably different among all three credit sources. It was argued that 95 per cent of SHGs be positioned within the range of 'High' and 'Moderate' $MDSI^{SHG}$ status, and may maintain their function well over a long period of time.

# CHAPTER- ONE

## INTRODUCTION

### 1.1. Background of the Study

For poor people entrance to financial markets is imperative. Low-income households and microenterprises can benefit from the credit, saving, and insurance services like all economic agents. These services facilitate to deal with risk and to smooth consumption and assist people to acquire gain of advantageous business opportunities and augment their earnings potential. Further, for removing poverty and improving the living standard of people credit is useful.

However, the conventional banking systems, often serve up poor people shoddily as rural poor people do not have enough traditional forms of collateral such as physical assets to offer. In addition, transaction costs are often high relative to the small loans usually demanded by poor people. Nevertheless, in areas where population density is low, physical entrance to banking services can be extremely tough. Moreover, due to Information Asymmetry the bank faces two types of risk- Voluntary and Involuntary[1] for delivering credit services to rural poor people. These risks build the reception of collateral indispensable for the lenders. Those peoples who are living below poverty line have tiny or no asset to be provided as collateral and this makes them debarred from the traditional credit markets. However, the situation of informal financial institutions such as village moneylenders, relatives and friends, professional moneylenders etc. are different as they have broader alternatives to acknowledge as collaterals such as labor of the borrowers. Moreover, the informal money lenders have rather more information about the clients, since their lending business usually stipulated in neighboring areas. Therefore, the poor normally excluded from the formal financial institutions and have to depend on informal sources.

Since independence the government of India has been taking various policies like nationalization of banks in 1969 & 1980, establishment of Regional Rural Banks (RRBs) in 1975, National Bank for Agriculture and Rural Development (NABARD) in 1982, Lead Bank Scheme (1969), formulation of District Credit Plans, Service Area Credit Plans at village level, Service Area Management Information System, innovations like Micro-finance, Rural Infrastructure

[1] Concept of both terms has been discussed in the following section.

Development Fund, Kisan Credit Card (1998-99), General Credit Card (2005), no-frill accounts etc. India has over 32,000 rural branches of commercial banks (generally public sector commercial banks) and RRBs,14,000 cooperative bank branches, 98,000 Primary Agricultural Credit Societies (PACS), thousands of mutual fund sellers, numerous non-bank finance companies (NBFCs), and a huge post office network with 154,000 outlets that are required to focus on deposit mobilization and money transfers (Basu, 2006). However, the enormous majority of India's rural poor still does not have access to formal finance. According to Rural Finance Access Survey (2003), 70% of marginal/landless farmers do not have a bank account and 87% have no entrance to credit from formal sources. The Report of the 'Task Force on Credit Related Issues of Farmers' (GoI, 2010) submitted to the Ministry of Agriculture had looked into the issue of a large number of farmers, who had taken loans from private moneylenders. In these perspectives, the present study was motivated by the necessity to analyze the nature and scope of credit demand in rural areas. Moreover, an effort has also been made to realize the direction of the relation between credit access and economic and social improvement and life satisfaction of rural people.

Assam is situated in the North East Region (NER) of India- bordering seven states viz. Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West Bengal and two countries viz. Bangladesh and Bhutan. With a geographical area of 78,438 sq. km i.e., about 2.4% of the country's total geographical area Assam provides shelter to 3, 11, 69,272 (Census, 2011) i.e., 2.58% population of the country. The state comprises 27 districts, 2202 blocks, and 26395 villages. With the objective to bring as many as people within the bank coverage, the banking network has been increased by opening new branches in the state. Consequently, the number of reporting bank offices of all scheduled commercial banks in Assam has been increased to 1940 in the year 2013-14. Despite the fact that more than 95% of the household is financially excluded from the formal sources in the NER. The bulk of these excluded households belonged to the small and marginal farmers. At a disaggregated level the condition is much more sensitive to more than 70% of the districts in Assam having an exclusion which ranges from 96.1% – 98.5 % (Report of the Committee Financial Inclusion, 2008). Nevertheless, from literature, it was found the dominance of informal finance and traditional community-based

organization in NER of India. With these contexts, the present study was conducted in Assam[2]. Although, some studies[3] have been done relating to this area in Assam but, none of the studies addressed the above-mentioned issues in a systematic and scientific way[4].

### 1.2. Theoretical Outlook of Rural Credit Market[5]

Economic activities are spread out over time as the adoption of a new technology or a new crop requires investment today, with the payoffs coming in later. Even ongoing productive activity needs inputs in advance, with revenues accrued at afterward. Besides, this is particularly factual because casual labor or the self-employed income streams may fluctuate, and such fluctuations will be transmitted to consumption unless they are strengthened through some form of credit (Ray, 2010). Conversely, it becomes challenging with two features of the rural credit market. First, it is very difficult to scrutinize exactly what is being done with a loan. A loan may be taken for a seemingly productive purpose, but may be used for other needs such as consumption which cannot be easily altered into monetary repayment. Then again, a loan may be put into a hazardous productive activity that may fail to pay off and that creates the problem of inability to repay or involuntary default at which point there is little that a lender can do to get his money back. Secondly, there is the problem of voluntary or strategic default, in which the borrower can repay the loan, in principle, but merely does not find it in his interest to do so.

The demand for credit or capital created with three grounds. First, capital is needed for new startups or a substantial spreading out of existing production lines and is called the market for fixed capital. In contrast, credit is also wanted for ongoing production activity that occurs due to the considerable lag between the outlays required for normal production and sales receipts and this is called the market for working capital. Lastly, there is consumption credit, which in general is demanded by poor individuals who are strapped for cash, either due to an unexpected decline in their production, or an unexpected drop in the price of what they sell, or maybe because of an

[2] Detailed behind selection of Assam has discussed in Chapter-Three
[3] Studies are reviewed in Chapter-Two.
[4] Research gaps are explained thoroughly in Chapter-Two and other Chapters where respective objectives are analyzed.
[5]The relevant literature (theoretical and empirical) on the issues mentioned in this section has been reviewed broadly in Chapter-Two.

enhance in their consumption needs caused by illness, death, or festivities such as a wedding and this underline the demand for insurance.

Now the question arises who provides rural credit? There are the formal or institutional lenders: government banks, commercial banks, credit bureaus, and so on. However, the main difficulty with formal lenders is that they often do not have personal knowledge about the characteristics and activities of their clients. Often, these agencies cannot accurately observe how the loans are used. Therefore institutional credit agencies frequently insist on collateral before advancing a loan. A farmer may have a small quantity of land that he is willing to mortgage, but a bank may not find this acceptable collateral, simply because the cost of selling the land in the event of a default is too high. Nevertheless, no bank will recognize labor as collateral. Accordingly, the right sort of informal moneylender may be willing to accept collateral in these forms. Therefore, it is no surprise to find that formal banks cannot successfully reach out to poor borrowers, while informal moneylenders- the landlord, the shopkeeper, the trader- do a much better job.

In addition, the rural credit market has some special characteristics. Like in the case of any commodity, there would be a demand curve for credit and a subsequent supply curve of credit, and the intersection of the curves would determine the volume of credit and its equilibrium price as well, which is simply the interest rate. However, unfortunately, rural credit markets are pretty far removed from perfect competition and the fundamental feature that creates imperfections in credit markets is informational constraints. The second characteristic of the rural credit market is its tendency towards segmentation and many credit relationships are personalized and take the time to build up. Furthermore, a third feature, which may be considered an extension of the second, is the existence of what we might explain as interlinked credit transactions. Given a segmented market, it perhaps won't come as a surprise to learn that landlords tend to give credit mostly to their tenants or farm workers while traders favor lending to clients from whom they also purchase grain. Similarly, informal interest rates on loans exhibit immense variation, and the rates vary by geographical location, the source of funds, and the characteristics of the borrower. Moreover, informal credit markets are characterized by widespread rationing that is upper limits on how much a borrower receives from a lender. In this sense credit rationing is a puzzle: if the borrower would like to borrow strictly more than what he gets, there is some surplus here that the moneylenders can grab by simply raising the rate of interest a wee bit more. This process should

continue until the price (interest rate) is such that the borrower is borrowing just what he wants at that rate of interest. Thus, why does rationing in this sense persist? Therefore, as a special case, rationing includes the complete exclusion of some potential borrowers from credit transactions with some lenders. However, one explanation for the very high rates of interests that are sometimes observed is that the lender has exclusive monopoly power over his clients and can hence charge a much higher price for loans than his opportunity cost. Apart from that, a common feature of many loan transactions in developing countries is that credit is linked with dealings in some other market, such as the market for labor, land, or crop output. On the basis of these contentious theoretical backgrounds, the present study was conducted by focusing the above-stated issues.

### 1.3. Objectives and Research Questions

On the basis of the existing literature and the apparent gap in research in the circumstance of Assam, the specific objectives of the study were articulated as the following.

- To analyze the structure and position of rural finance in Assam by comparing with India as a whole.
- To estimate the loan demand, awareness and use of formal, semiformal, and informal finance in the study area.
- To analyze the variation and determinant of repayment performance and interest rates of formal, semiformal and informal credit sources in the study area.
- To evaluate the effect of semiformal credit on income poverty and life satisfaction of the people relative to formal and informal credit in the study area.

These objectives were used to find out the answer to the following research questions:

- What is the nature and scope of formal, semiformal and informal credit market in rural areas of Lower Brahmaputra Valley of Assam?
- Are rural people aware about the use of different credit sources in the study area?
- What are the determinants of variation of interest rate charges by formal, semiformal and informal credit sources?

- Are semiformal financial institutions successful for reducing income poverty and improving life satisfaction of people relative to formal and informal credit sources in the study area?

## 1.4. Materials and Methods

### 1.4.1. Source of Data

Secondary information from sources such as the Statistical Handbook of Assam- 2012, Census of India- 2011, Directorate of Economics and Statistics- Assam, Assam Human Development Report- 2003, Annual Health Survey- 2010-11 and 2014, Statistical Handbook of Assam - 2012, Banking and Statistical Returns of RBI- 2013, Various Reports of State Level Bankers Committee- Assam, Various Reports of Status of Microfinance Programme in India- NABARD, All India Rural Credit Survey (1954), All India Debt and Investment Survey- 1961-62, 1971-72, 1981-82, 1991-92 & 2001-2002, 59$^{th}$ and 70$^{th}$ Round of AIDIS, NSSO. The secondary data, however, provided only an idea about overall credit market scenario of Assam. Moreover, these sources had also been utilized to know the socio-economic profile of Assam vis-a-vis studied districts. Besides, the secondary sources were not sufficient to fulfill the remaining objectives of the study. Hence, primary data had to be collected to fulfill the objectives.

The locations for field investigation were limited only to the Lower Brahmaputra Valley of Assam[6]. For collecting primary data, a multi-stage sampling design was adopted. In the first stage, three districts namely- Barpeta, Baksa, and Nalbari were selected purposively among eight districts of the region- one district from each of high, average and low performing districts[7]. In the second stage, two development blocks from each district were selected. Since all the three districts have more or less equal numbers of blocks (Barpeta: 11, Baska: 7 and Nalbari: 8), therefore, equal numbers of blocks has been chosen from each district. Hence, altogether six development blocks have been chosen for study. In selecting blocks some of the factors such as populations, locations etc. has been taken care to avoid the heterogeneous characters of blocks. In the third stage, from each block, two villages were chosen to keep in view representation of variations in socio-economic conditions. Therefore, twelve villages were chosen to undertake the

[6]Because literatures discussed in Chapter Two indicates the high concentration of informal microfinance setups besides semiformal financial institutions in this region. The rational behind selection of study state and region have been discussed in Chapter-Three.
[7]Detailed selection criteria have been discussed in Chapter-Three.

study. In the fourth stage, from each village, 6 to 9 percent of household were selected at random for study, and so per village twenty households chosen for the interview. In this way, a sample of 240 households was interviewed.

Further, since from existing literature and six group discussion conducted in the selected districts on the month of August 2014, found the rising role of semiformal institutions, therefore, one questionnaire was prepared to survey the Self Help Groups (SHGs) of chosen villages to validate the present study. As it was believe that strong programs, rather than weak ones are most relevant to assessing the potential of the SHG movement, therefore SHGs were selected on the basis of their age, saving amount, loan amount, the number of times loan taken and their activities. Therefore, altogether sixty SHGs were chosen five from each village for study.

### 1.4.2. Methodology

With regard to the first objective, after documenting the financial scenario of Assam vis-a-vis respective districts, the socio-economic background of the same has also been analyzed relating with various banking parameters. This is supplemented with the information about the surveyed household characteristics. The main analytical challenge of the study, however, lied in dealing with the objectives from two to fourth. The second objective builds a theoretical framework of household participation in rural credit markets. Here loan demand is estimated in four-fold viz. households participate in all forms of credit sources[8], majority amount of loan taken from formal sources[9], majority amount of loan taken from semiformal sources[10] and majority amount of loan taken from informal sources[11]. For analyzing one group of household, other sets are taken as control households. The present objective also calculated loan demand by constructing Consideration Set Formation for awareness of sources of credit. The third objective presented a comparative analysis of variation and determinant of repayment rate among formal, semiformal and informal credit sources by separating households in four-fold like objective two. Objective fourth evaluated the impact of credit access on economic and social improvement and life satisfaction of borrowers and provided a comparative picture among above mentioned three

[8]State Bank of India, Assam Grameen Bikash Bank, Other Nationalized Bank, Private Bank, SHGs, MFIs, Money Lenders and Private Saving Groups
[9]State Bank of India, Assam Grameen Bikash Bank, Other Nationalized Bank and Private Bank
[10]SHGs and MFIs
[11]Money Lenders and Private Saving Groups

types of households. Furthermore, to validate the impact study the present objective measured group sustainability by taking organizational, managerial and financial indicators.

### 1.4.3. Tools Used

Besides diagrammatical explanation, the first objective was analyzed by constructing Financial Composite Indexes separately for state, region and district level. For estimating loan demand in objectives two we used Heckman Two-Step Model, Type Three Tobit, Probit and Conditional Multinomial Logit Model. Double Hurdle and Instrumental Variable Probit Model were used in objective third for explaining repayment rate. To make an impact analysis in objective fourth tools like Second Stage Heckit Procedure, Second Stage Tobit Selection Equation, Probit, Ordered Probit Model, and Propensity Score Matching had been used. Further, to measure group sustainability we have constructed one Multidimensional Sustainability Index of SHGs. The relevant modeling and other related materials have been elaborated in chapters two, three and fourth where we have made use of the above tools.

## 1.5. Layout of the Thesis

The study has been organized into seventh chapters. The relevant theoretical and empirical literature on the topic under study has been discussed in chapter two. The third chapter discusses banking market scenario of Assam vis-a-vis study districts basic profile. Moreover, respondent's socio-economic profiles are also underlined in chapter three. Chapter fourth traces out the estimation of loan demand. An estimation of loan demand is also carried out by constructing Consideration Set Formation of awareness in chapter fourth. Chapter fifth is a comparative discussion of the repayment rate of various sources of credit. Impacts of credit access on the economic and social enhancement of people have been analyzed in chapter sixth. Chapter sixth also elaborates the impact of credit access on life satisfaction of borrowers. In same chapter we have constructed one Multidimensional Sustainability Index of SHGs to validate our impact study. The concluding chapter (chapter seventh) of the thesis contains the summary of the main findings of the study. It also contains the implications of the study and suggestions on policy measures to be taken up.

# CHAPTER- TWO

## REVIEW OF LITERATURE

### 2.1. Introduction

It is repeatedly argued that the formal and informal financial sectors in developing countries have botched to serve the poorer segment of the society. Collateral, credit rationing, a choice for high-income clients and big loans, and long bureaucratic procedures of delivering loans keep poor people outside the boundary of the formal sector financial institutions in developing countries. At the same time, the informal financial sources have also reluctant to facilitate the poor. Monopolistic power, horribly high-interest rates, and exploitation via the undervaluation of collateral have constrained the informal financial sector in providing credit to poor people for income generating and poverty mitigation purposes. The disadvantages of both financial sectors in providing financial services, particularly credit, have motivated microcredit programs to evolve. These programs were attempted with the intention of providing poor people with tiny credit without collateral. The strict discipline in providing credit and collecting repayments, the harmonies among group members and care of borrower's activities in the microcredit system have abolished the stipulation of collateral. However, this group based programmes has also been criticized in various time because of charging the high interest rate, skewed spread among different regions, low quality of self help groups, un-sustainability of groups, giving loans irrespective of purpose etc. Thus, this chapter made an attempt to understand rural credit market and its contesting theories and divergent facts

### 2.2. Rural Credit: Contradiction between Providers and Demanders

The accessibility of inexpensive financial capital has long been acknowledged as a central factor in economic development, besides other factors, which Mosher (1971) named as "the element of a progressive rural structure". Patrick (1966) argued that in developing countries, a competent system of financial intermediaries is a necessary and sufficient condition for the growth of different financial assets and liabilities and for economic development. Moreover, the financial system transfers rising volumes of purchasing power from depositors with restricted deposit opportunities to borrowers with superior productive options (Gonzalez-Vega 1989). However, by analyzing large-scale household level survey data from India, Pal & Pal (2012) argued that the

extent of financial exclusion is quite severe in India, particularly among the poor households. Even so, the significant proportion of rich households is also found to be financially excluded in both rural and urban sectors. As the percentage of financially included households is lower in rural sectors, income related inequality in financial inclusion is higher in urban sectors. On the other hand, the outcome of their study indicated that an increase in the level of financial inclusion can have the differential consequence on income related inequality in financial inclusion across sectors.

Over the past four decades, rural financial markets have been at the centre of policy interventions in developing countries. Several governments, supported by multilateral and bilateral aid agencies, have committed substantial capital to provide economical credit to farmers in a myriad of institutional settings (Hoff & Stiglitz, 1990). However, this importance on credit need has not been free of problems. The majority these programmes have needed huge subsidies and loan recovery has repeatedly been unsatisfactory. Moreover, the rural poor has had obscurity in getting admission to these cheap loans, and in addition, it is not understandable that large increases in formal lending have accelerated growth and development. Even more notably, numerous financial intermediaries conducting these programmes are not self-sustaining (Adams & Meyer, 1989). Further, Braverman & Guasch (1986) by presenting the evidence of government intervention in rural credit markets of LDCs in the past three decades showed a significant failure of subsidized credit programs either to achieve an increase in agricultural output cost-effectively or to improve rural income distribution and alleviate poverty. In addition, many of the financial institutions that were created to channel rural credit have been shown to be inept and lacking accountability. Atieno (2001) however, by assessing the role of institutional lending policies among formal and informal credit institutions in determining the access of small-scale enterprises to credit in Kenya showed that the limited use of credit reflects the lack of supply, resulting from the rationing behavior of both formal and informal lending institutions.

Furthermore, Ramachandran & Swaminathan (2001) described and evaluated rural credit policy in India over the last three decades and examine its effects on rural workers at the level of a single village. In their study, they showed that share of the formal sector in the principal borrowed by landless labour households increased from 17% in the green revolution phase to 80% in the Integrated Rural Development Programme phase and fell to 22% in the liberalization

phase. Apart from that, the share of production and business-related loans in the proximate purposes for which all loans were taken by landless labour households was 23.8% in 1977, rose to 44.2% in 1985 and fell sharply to 22.6% in 1999.

There have been major advances in theoretical understanding of the workings of rural credit markets in the past decade. These advances have evolved from a paradigm that emphasizes the problems of imperfect information and imperfect enforcement. However, Udry (1990) by reporting result from a comprehensive survey of 198 households in northern Nigeria argued that since almost all loans are transacted within a village or kinship group, therefore, information asymmetries within such groups are irrelevant. In addition, the author evaluated the quantitative insignificance of collateral and contractual inter-linkage. According to the author, credit contracts play a direct role in pooling risk among households in the survey area.

By analyzing demand side problem through survey data from 209 banks in 62 countries Beck et al. (2008) has developed a new indicator of barriers to access and use of banking services around the world and showed that barriers such as minimum account and loan balances, account fees, and required documents are linked with lower levels of banking outreach, whereas country characteristics associated with financial depth, such as the effectiveness of creditor rights, contract enforcement mechanisms, and credit information systems, are weakly correlated with barriers. However, strong relations are noticed between barriers and measures of restrictions on bank activities and entry, bank disclosure practices and media freedom, and expansion of physical infrastructure. In addition, by using a unique proprietary data set on third-party guaranteed loans in China, Dybvig et al. (2011) investigated interaction between guarantors and lending banks in issuing guaranteed loans to Small and Medium Enterprises (SMEs), and their main result was that guarantors and banks disagree on the appraisal of loan risk. To present an explanation to this puzzling fact, the study associated the risk measure given by guarantors and banks to collateralization, as insufficient collateral is regarded as the key rationale for the use of loan guarantees. Moreover, the study argued that loan rate charged by banks is positively linked with collateralization and is predictive of loan default. In contrast, guarantor's risk measure is negatively related with collateralization and has no predictive power on default.

Thus, from above discussion, we can get a paradox between providers and demander's problem for delivering formal credit to rural poor people. But in an attempt to find solution to this paradox Gonzalez-Vega (1989) argued that financial system should offer high-quality financial services as a farmer is not interested in obtaining sufficient purchasing power from a loan; he also wants the funds to be timorously disbursed, the loan procedure to be easy and flexible, the amortization schedule to correspond adequately to his cash flow, and the loan period to be sufficiently long. Moreover, Dasgupta (2009) proposed an alternative lending mechanism for banks and emphasized on an incentive based pricing mechanism. He argued that higher growth path can be achieved by small enterprises when banks distinguish between high and low-risk firms and set the price accordingly. Furthermore, Atieno (2001) emphasized that given the established network of formal credit institutions, improving lending terms and conditions in favor of small-scale enterprises would provide an important avenue for facilitating poor rural people access to credit.

### 2.3. Does Coexistence of Formal and Informal Sources Favorable for Rural Poor?

Constructive informal financing is prevalent in regions where access to bank loans is extensive while its role in supporting firm growth decreases with the availability of bank loans and similar relations exist in much large or fast-growing emerging economy. Empirical results not only reconcile the contradictory evidence in the existing literature on the role of informal financing but also suggest formal and informal financing can be complements as well as substitutes (Allen et al. 2013). By presenting an in-depth overview of rural financial markets in developing countries, Spio & Groenewald (1997) argued that rural financial markets in developing countries should be seen as a system comprising of formal and informal sectors. The authors also gave importance to the role of financial markets in the development process, approaches to rural finance in developing countries, and formal and informal financial markets. Moreover, Floro & Ray (1997) examined the vertical linkages between the formal and informal sector in the Philippine rural financial market to study a policy that expands formal credit to informal lenders, in the hope that this will improve loan terms for borrowers who are shut out of the formal sector. The authors indicated that the effects of stronger vertical links depend on the form of lender competition, and however if the relationship between lenders is one of strategic cooperation, an expansion of formal credit may worsen the terms faced by informal borrowers.

Srivastava (1992) has been taken a fresh look at the question as to whether or not the formal and informal credit markets in India are interlinked, and in addition, he also evaluated the relevance to the Indian economy of financial repression models, McKinnon (1973) and Shaw (1975) and of the neostructuralist models of underdeveloped financial sectors. The study could not reject the assumption of lack of inter-linkage between formal and informal credit markets. Further, the resultant attenuation of one transmission mechanism implies the weakening of monetary policy in the presence of the informal credit markets, and the money-output causality implied by the financial repression and neostructuralist models were strongly rejected for the Indian data. Additionally, Gine tried to understand the mechanism underlying access to credit in Thailand (2001) by explaining two important aspects of rural credit markets viz., moneylenders and other forms of informal financing coexist with formal lending institutions such as government or commercial banks, and more recently, micro-lending institutions and second, potential borrowers face sizeable transaction costs obtaining external credit. The author showed large disparities between access to formal and informal credit. While for some households the cost of accessing a formal institution can be as large as the average amount borrowed, the transaction costs of credit from informal sources are negligible for everyone. Ngalawa & Viegi (2010) investigated the interaction of formal and informal financial markets and their impact on economic activity in quasi-emerging market economies by using a four-sector dynamic stochastic general equilibrium model with asymmetric information in the formal financial sector and the authors come up with three fundamental findings. First, it demonstrated that formal and informal financial sector loans are complementary in the aggregate, suggesting that an increase in the use of formal financial sector credit creates additional productive capacity that requires more informal financial sector credit to maintain equilibrium. Second, it is shown that interest rates in the formal and informal financial sectors do not always change together in the same direction. Third, the model showed that the risk factor (probability of success) for both high and low-risk borrowers plays an important role in determining the magnitude by which macroeconomic indicators respond to shocks.

Weak legal institutions, in particular, poor creditor protection, explain the coexistence of formal and informal financial sectors in developing credit markets. However, informal finance emerges as a response to the formal sectors inability to perfectly enforce its claims. Within this

framework, the theory incorporates for the possibility of a credit-rationed informal sector indicating that entrepreneurial and informal sector assets are either complements or substitutes (Madestam 2005).

Thus, we observed contradictory results regarding the coexistence of formal and informal sources in the rural credit market. To remove this dilemma (Bell 1990) proposed five measures- improve the decennial surveys, use the knowledge of informal lenders in the formal sector, interlink institutional credit with marketing and supply, do not restrict the trader-moneylender, and use direct measures to raise incomes in undeveloped areas.

### 2.4. Informal Credit: Contradictory Thoughts

Informal credit markets had proved to be important in the functioning of the contemporary economy. "Indigenous-style bankers," belonging to particular ethnic communities and castes, formerly provided the full range of banking services to their clients. However, with the rise of modern, western-style banking the indigenous bankers either has transformed them to serve sectors, such as wholesale trade, not well served by the modern sector or provide services which the modern bankers cannot provide. Though any estimate is very approximate, it seems that informal credit markets account for as much as 20% of commercial credit outstanding in the various markets in India. The literature revealed that a wide range of ethnic groups was now involved in informal credit markets, and the more meaningful differentiation was now functional rather than ethnic. The study indicated three important functional categories: full-service indigenous bankers who took deposits and made loans; commercial financiers who lent primarily their own resources; and brokers who connected potential lenders and borrowers (Timberg & Aiyar 1984).

Informal financial services exist not only in rural but also in peri-urban areas, and their popularity is ascribed to their flexibility in meeting the needs of the clients. Informal financial services do not require conventional collateral, and they charge low or no interest. Moreover, they have adequate information about their clients and have developed innovative ways of reducing transaction costs. Borrower prefers informal financial service mainly because of quick service, i.e. the loan is readily available to the client, while the empirical results indicated that age, level of education, type of occupation and marital status are important determinants of the

choice of a specific informal financial service whereas gender does not play a significant role in this Kgowedi (2002). The persistence of informal finance may be traced to four complementary reasons—the limited supply of formal credit, limits in state capacity to implement its policies, the political and economic segmentation of local markets, and the institutional weaknesses of many microfinance programs. It is recommended that informal finance is not simply a manifestation of weaknesses in the formal financial system, but also, a product of local political, institutional, and market interactions (Tsai 2004).

Similarly, to create a better understanding of how the informal segment of the market operates and how it differs from the formal segment, Aryeetey (1994) attempted to put together a comprehensive set of data on the characteristics of the segment, analyzed by types of institutions, and by interregional and rural-urban variations. He, however, showed clearly that informal financial agents operate in relatively confined segments, and are thus unable to make much impact on production agents that require a large dose of capital. While their assets and liabilities are short terms, the scope for their involvement in term lending is extensively limited without a change in their current structures. Despite that, firms choose to finance their fixed asset investments by informal credit. The empirical analysis argued the financial constraints as the source of informal credit use. Equally, firm size, owners' gender, and location are important firm level factors affecting firms' reliance on informal credit (Yaldiz et al. 2011).

In addition, Srivastava (1993) by using macro search costs and trading externalities highlighted the underdeveloped nature of the informal financial markets in India. The author depicted an equilibrium with aggregate credit demand determined, to show that the supply curve of (potential) credit may be horizontal in the presence of these markets, analogously to Lewis' (1974) unlimited supply of labor in dual economics. Further, the empirical analysis argued a negative impact on informal sector output on money demand in addition to the usual scale effect. Moreover, Dasgupta (2009) in a dynamic general equilibrium framework with heterogeneous firms showed that informal loans reduce the cost of credit constraints under regulated regime for small loans and foster growth by 1.1%, and this higher growth rate can be attributed to the ability of the informal market to separate the high risk from the low-risk firms due to their informational advantage.

Furthermore, Allen et al. (2013) explored various sources of informal financing based on their mechanisms to deal with asymmetric information and enforcement and examined their role in supporting firm growth. Constructive informal financing such as trade credits and family borrowings that rely on information advantages or an altruistic relationship is associated good firm performance while underground financing such as money lenders who use violence for enforcement is not associated with firm growth.

An economically significant link between participation in rotating savings and credit associations and durables accumulation of households was suggested by Besley & Levenson (1996) in Taiwan. In addition, the study presented preliminary evidence of the importance of informal finance, even in an economy that has undergone significant modernization, and underlines the notion that the informal sector can be productive, which permits individuals to reap gains from inter-temporal trade, and that leads to enlarged capital accumulation. Besides, Ayyagari et al. (2008 & 2010) made an attempt to closer look at firm financing patterns and growth using a database of 2,400 Chinese firms. The authors found that a relatively small percentage of firms in the sample utilize formal bank finance with a much greater reliance on informal sources. However, the results suggested that despite its weaknesses, financing from the formal financial system is associated with faster firm growth, but fund raising from alternative channels is not. In an attempt to examine the availability and importance of relationship-based informal credit for small firms De & Singh (2012) used a unique dataset combining panel data of reported financial information in India with data from a survey of the same firms regarding the role of relationships in the supply of inter-firm credit. The study examined that, firms that are unsuccessful in generating internal funds or bank loans appear to have better access to relationship-based credit. However, it was also found that, persistent evidence of rationing of relationship-based credit, including credit driven by business relationships as well as social relationships.

Bhende (1986) by analyzing aspects of rural financial markets in three villages of three agro-climatic zones of peninsular South India found that in Andhra Pradesh village private moneylenders are an important source of credit; whereas in Maharashtra village cooperative societies and land development banks play an important role. Moreover, institutional credit is concentrated in the richer households having the large farm and family size, and headed by more educated, older heads. On the other hand, those households who farmed more land but were less

educated, and had fewer livestock and more irrigated area relied more heavily on informal credit. The largest defaulters are those households who have borrowed most from institutional sources. In addition, relatively, households with larger families and higher dependency ratios are more prone to default. The author argued that it was not easy to explain the variation in use of credit across households. It pointed out that, those households who farmed more land, were less educated, had fewer livestock, and had more irrigated area relied more on informal credit.

By presenting an analysis of smallholders' access to rural credit and the cost of borrowing from Pakistan, Amjad & Hasnu (2007) pointed that, the tenure status, family labor, literacy status, off-farm income, value of non-fixed assets and infrastructure quality are found to be the most important variables in determining access to formal credit. On the other hand, the total operated area, family labor, literacy status and off-farm income are found to be the most important factors in determining the credit status of the smallholders from informal sources. The results showed that the cost of borrowing from formal sources falls as the size of holding increases. Apart from that, the analysis confirmed the importance of informal credit, especially to the smallest of the smallholders and tenant cultivators.

Safavian & Wimpey (2007) tested the hypothesis that enterprises may forgo formal finance in lieu of informal credit by choice and found that the likelihood of enterprises preferring to only use informal finance is inversely related to the quality of the regulatory environment, particularly the quality of tax administration and overall governance. Moreover, the authors found that when an enterprise has been asked for bribes by tax inspectors, it is 17% more likely to prefer informal finance.

Thus, we can get conflicting views concerning informal sources to deliver financial services to needy people. Timberg & Aiyar (1984) however, argued that the existence of these markets is that more credit is provided to activities such as wholesale trade and smaller-scale industry than otherwise, and their activities can be correspondingly expanded. Similarly, Aryeetey (1994) favored for changing the current structure of informal sources for their involvement in term lending. Nevertheless, financial development level in the country has significant impacts on decreasing informal credit use (Yaldiz et al. 2011)

## 2.5. What Determines Credit in Emerging Market?

Rural household involvement augmented in the organized loan market, in which interest rates were higher relative to the unorganized money market, which reported sizeable interest-free loans. Besides, literature not only established the comparatively low cost of borrowing in the informal credit market but also a low size of informal borrowing compared to formal credit-taking (Elhiraika 1999).

Credit demand (both whether individuals apply for credit and the volume of credit they apply for) can be fairly well modeled using socio-economic characteristics of households, even though a large number of people who did not apply for credit did so because they had little expectation of obtaining it. Conversely, on the supply side, the issue is not as clear, once people apply for credit since so few people who apply are completely refused such credit (Okurut et al. 2004).

By testing leading theories of low demand for financial services in emerging markets, clubbing novel survey confirmation from Indonesia and India with a field experiment, Cole et al. (2009) found a strong correlation between financial literacy and behavior. However, a financial education program has modest effects, and increasing demand for bank accounts only for those with low levels of education or financial literacy. On the contrary, small subsidies greatly increase demand, and in addition, these payments are more than two times extra cost-effective than the financial literacy training, while this calculation does not take into account any ancillary benefits of financial education. While investigating the determinants of the size of formal and informal financing and the circumstances of entrance to formal bank loans among private firms in China, Tanaka & Molnar (2008) pointed that formal banks focus on past evidence of the firm, such as credit rating, earlier tax payments, and credit history, as well as the size of the firm and manufacturing activities, however informal institutions put a moderately higher weight on current operations. They argued that amount of receivables is a very important determinant of the size of the loan extended. Further, informal sources explore the information on past borrowing from the formal banking sector to cut down monitoring costs and hence indicated the definite worth of integration of formal and informal finance.

Mohamed & Temu (2009) conducted a study in order to determine the gender characteristics of the determinants of rural households' access to credit in the formal credit markets of Unguja and

Pemba Island and showed that male and female heads as credit constrained are influenced by a diverse set of factors. They argued that degree of market integration, as well as the wealth and risk-bearing indicators (value of productive assets owned and household income level), are significant indicators in determining whether a household is a credit constrained for male headed households. Similarly, for female-headed households, simply the income level was found to be a significant factor for a household being credit constrained. Furthermore, the results suggested that human capital (education) and wealth and risk-bearing factors (maintaining financial account, worth of productive resources owned, the level of household income) are important factors in determining the strength of use of formal credit among male-headed households. On the contrary, the worth of productive resources owned and the headship status is factors that significantly influence the strength of using formal credit among female-headed households.

In an attempt to identify the social and economic factors that explain the farmers' credit constraint and stimulate farmers' decisions to transfer from informal to formal credit markets Tang et al. (2010) had argued that the credit demand is significantly influenced by household's production capability as supported by the fact that household size, land size, household head education all significantly boost household's chance to borrow, but the impact of these factors varies considerably by credit market. Apart from that, transaction costs have a significant, negative effect on formal credit demand. Likewise, the credit constraints study recommended that off-farm employment, land size and the cost of the credit are the three key important factors that boost the chance of being constrained.

By employing simultaneous equation technique Nwaru et al. (2011) examined the determinants of credit demand and supply in informal credit markets among food crop farmers in the Akwa Ibom State of Nigeria. The study indicated that farm income, profit, education, and interest amount determined demand while liquidity, experience in lending and interest amount determined supply. Moreover, the authors pointed that education is a key factor influencing credit demand and use; hence, scheming suitable educational packages for farmers, equally formal and informal such as evening schools and adult education programmes will be helpful. They recommended that government and financial institutions should make sure that credit intended for farming are utilized for farming by putting in place actions to check misuse.

Moreover, Kgowedi et al. (2007) identified factors influencing the choice of informal financial service providers in the peri-urban areas of South Africa. The results showed that personal characteristics such as age, education, occupation and marital status explain the choice of moneylenders. However, gender is not a distinguishing factor, implying that both male and female have the same choice pattern. The study argued that clients choose certain services due to low interest, quick service and the fact that they are acquaintances. In addition, monthly income, rather than other, also explained the choice of moneylenders over non-moneylenders.

Thus, there is the different set of factors which determine credit among different credit sources, between genders, among countries and among various income groups.

### 2.6. Whether Microfinance Programme Become Successful? Conflicting Views

One of the key microfinance approaches in India is the Self Help Group- Bank Linkage Programme. By formulating a quasi-experimental design Chowdhury (2008) has been found that, the poverty of borrowing household's decreases with the increase in microcredit program membership duration and microcredit loan size in countries like Bangladesh and Philippines. However, the author showed the negative relationship between microcredit program participation and poverty of borrowing households is not linear in both the countries. Moreover, Hermes (2014) examined a negative association between the measure of microfinance intensity and the level of income inequality by conducting a cross-sectional regression study for a sample of 70 developing countries for the phase of 2000 to 2008. While the analysis recommended that in countries where microfinance involvement is higher income inequality is usually lower, but, the author also indicated that the effects of microfinance on declining income inequality are tiny.

Micro-borrowing has indeed reduced borrowing from informal sources, thereby demonstrating microfinance as an effective alternative source of finance to the poor. Additionally, micro-borrowing is also found to increase voluntary savings, thus assuring that a suitable facility can enhance household savings even in a poor country such as Bangladesh. However, impacts of microfinance vary by the gender of borrowers. It was pointed that, savings outcome of micro-borrowing is more distinct for women than for men. In contrast, the informal finance impact is more pronounced for men than for women (Khandker 2000). Likewise, Coleman (1999) has presented results on the impact of a women's village bank group-lending program in Northeast

Thailand by using a unique survey designed and indicated that program loans are having modest impact even though ‘‘naive’’ calculates of impact that not succeed to account for self-selection and endogenous program assignment significantly overvalue impact.

In an attempt to show how microfinance works, by using group lending methodology for dropping poverty and how it influences the livelihood standard (saving, income etc.) of the poor people in Bangladesh Khan & Rahaman (2007) found that microfinance influences positively on the standard of living of the underprivileged people and on their lifestyle. Moreover, it has not only helped the deprived people to come out from the poverty line but has also helped them to empower themselves. In spite of the dispute regarding higher interest rate, MFIs are serving not only in alleviating the poverty and augmenting the living standards of the poor people but also in giving wide human development programs in Bangladesh. Demont (2010) used a standard adverse selection framework to show the benefit of group lending as solitary innovative lending tools, and then to appraise how the spirit of this new type of lenders might alter the equilibria on rural credit markets, taking into account the response of conventional lenders. The study argued that two opponent effects on the interest rate can act together: a typical competition effect and a more delicate composition effect whereas, the comparative weights of the two effects depend on the market structure, the risk heterogeneity of the population and the actual distance between lending tools. By using a large household survey, Deininger & Liu (2009) has assessed the financial and societal impacts of the creation of self-help groups in India, and established optimistic influences on empowerment and nutritional intake in program areas overall, whereas heterogeneity of impacts between members of pre-existing and recently created groups, as well as non-involvement. Moreover, irrespective of involvement status, female social and economic empowerment in program areas has augmented, indicating positive externalities.

Furthermore, Ghatak (1999) analyzed how group lending programs use joint liability to utilize local information that borrowers have concerning each other activities through self-selection of group members in the group creation phase. The author showed that by exploiting an intangible resource, specifically local information, that is embodied in definite social networks the association of joint liability based group lending can ease credit market failures, and it serves the objectives of both efficiency and equity by helping the poor break away from the trap of poverty by financing small-scale productive activities.

It is more expensive to reach the poorest of the poor than reaching other segments of the market even though when there are no fixed lending costs and that leverage may be much tougher to attain for MFOs that target the ‘‘low-end’’ of the market. While this seems to be a reality amply held to be true by most practitioners but that donors and policymakers have, as of late, been reluctant to accept (Conning 1999).

However, Banerjee et al. (2013) presented on the first randomized assessment of the impact of launching the standard microcredit group-based lending product in a fresh market in Hyderabad, India, and found no changes in any of the development outcomes that are often believed to be affected by microfinance, including health, education, and women’s empowerment. If the amount that a successful borrower owes for his defaulting colleague is optimally determined, and the punishment is allowed to vary across group members, then even in the absence of any social sanctions or cross-reporting, expected borrower welfare is strictly higher with group lending when both group lending and individual lending are feasible and group lending is feasible for a greater range of opportunity cost of capital (Bhole & Ogden 2010). The literature suggested that success of microfinance in countries like Bangladesh and Guatemala may be replicated in societies where social connectedness and the ability to impose social sanctions are low.

Thus, to some extent, we can argue the positive and influential role of microfinance on the well-being of rural people. However, the literature recommended that, if SHG Bank Linkage is to be scaled-up to present mass entrance to finance for the rural poor, then much more concentration will require being paid towards the endorsement of high-quality SHGs that are sustainable, clear targeting of customers, and ensuring that banks connected to SHGs price loans at cost-covering levels. In addition, in an economy as huge and diverse as India’s, there is scope for varied microfinance approaches to work together. While microfinance can, at the minimum, serve up as a rapid mode to convey finance to the poor, the medium-term strategy to scale-up access to finance for the poor should be to ‘graduate’ microfinance customers to formal financial institutions (Basu & Srivastava 2005).

### 2.7. Issues of Repayment Performance of Rural Credit

Abula et al. (2013) assessed that volume of loan borrowed, annual household income and size of farm affected repayment by beneficiaries of Microfinance Banks in Kogi State, Nigeria. The

mean loan repayment performance of respondents for all the agricultural enterprises was found to be 88.96%, and the authors argued that to achieve a better repayment performance, group lending, and credit delivery method now a common feature of microfinance credit delivery should be encouraged and sustained.

Similarly, in an attempt to examine whether repayment frequency affects loan default and delinquency, Field & Pande (2008) pointed that any observed differences in default patterns across clients on the weekly and monthly repayment schedule are attributable to features of the repayment schedule. The study found that switching from weekly to monthly installments did not affect client repayment capacity. Likewise, delinquency rates were low and not statistically different across clients on weekly and monthly repayment schedules. Besley & Coate (1993) by investigating the impact on repayment rates of lending to groups which are made jointly liable for repayment, and suggested that such schemes have both positive and negative effects on repayment rates. The positive effect is that successful group members may have an incentive to repay the loans of group members whose projects have yielded the insufficient return to make repayment worthwhile. However, the negative effect arises when the whole group defaults, even when some members would have repaid under individual lending. The authors have also shown how group lending may harness social collateral, which serves to mitigate its negative effect.

By analyzing the repayment rates of 128 credit groups belonging to three group-based credit programmes in Bangladesh, Sharma & Zeller (1997) tested the hypothesized determinants of group size, the size of loans, the degree of loan rationing, enterprise mix within groups, demographic characteristics, social ties and status, and occurrence of idiosyncratic shocks. The study concluded that if basic principles of prudential banking are adhered to, repayment rates can be good even in poor and remote communities.

Likewise, Duy (2013) compared the repayment performance of farmers and non-farmers who borrow credit in individual and group-based schemes from formal banks in the Mekong Delta in Vietnam and showed that among the borrowers, farmers have a statistically significant higher repayment performance than non-farmers. In addition, repayment in group schemes seems to be positively affected by educational level and by loans to farmers, and negatively by the loan

amount, while repayment by independent borrowers is positively affected by the loan amount, farmers as borrowers, and the gender of borrowers.

Silwal (2003) examined the repayment performance of nine village banks in Nepal and found results that are both corroborate and contradict from previous results of microfinance institutions. It corroborated previous results in that; these village banks have had no defaults – irrecoverable loans – in their roughly three-year life-span. The author argued that using default rates to represent repayment performance is misleading since they can mask delinquencies – delayed payments – which are much more frequent than default rates.

The literature highlighted that, regular monitoring and audits, high repayment frequency, consumption smoothing support through rice credit, and having group savings deposited with the lender all significantly increase repayment rates. According to the study, estimated magnitudes of their effects vastly exceed those of member's socio-economic characteristics (Deininger & Liu 2009).

The literature recommended that credit institutions or lending agencies should look out for that socio-economic characteristic that significantly influences loan repayment before granting loans and advances to the small-scale farmer to reduce the incidence of loan delinquencies and defaults (Abula et al. 2013). Moreover, their findings suggested that a slight variation of the traditional micro-finance model could allow MFIs to reach up to four times as many clients without hiring additional collection officers, and thereby significantly expand operations without incurring a loss. Apart from that, the authors argued, among micro-finance clients who are willing to borrow at either weekly or monthly repayment schedules, a more flexible schedule can significantly lower transaction costs without increasing client default (Field & Pande 2008). Furthermore, the important thing for financial institutions is to tailor services such that it becomes worthwhile for the poor to establish a profitable long-term association. In addition, more freedom to members in the process of group formation is recommended (Sharma & Zeller 1997).

### 2.8. Nature and Scope of Rural Credit in India's North East

For all the efforts of past and present governments, the North East region remains a classic case of financial exclusion. Despite the professed aim of providing universal access to finance,

supply-driven approaches have failed to increase outreach. Key indicators remain clearly are much lower than the national average. With the exception of just two districts of the North East, the credit per capita is lower than the national average: some districts have a credit per capita of ₹200 compared to the national average of ₹12, 500. Apart from that, several key indicators are moving in the wrong direction, for example, in contrast to the rest of the country, there has been a rapid withdrawal of banks from offering/ maintaining "small accounts" (₹25, 000) in the region. In addition, the current best practice models (such as joint liability, group-based systems) can indeed be replicated in the areas, (typically the plains and valleys) with a cash-based economy (Sharma 2011). Moreover, the author made an attempt to understand the processes of community-based traditional financial institutions in the north eastern region of India and tried to inform the formal sector either in developing linkages or modify products and processes of these institutions. In order to capture the information more vividly, the study has restricted itself to looking at only six districts covering Lower Assam. The study revealed that the life cycle lump sum needs of households were mostly used for diseases, education for children, marriages, social functions and house building and repair. Besides the above, another set of requirements is generated from the seasonality of income and expenditure and the mismatch that occurs between them over the entire year. However, given the lack of availability of financial instruments to meet their needs, they often seize opportunities available to them, mostly in the informal sector through either savings or credit. Whatever may be the product, the poor would use it only if it is flexible, reliable and convenient. It should be easily accessible with minimum transaction cost. The study indicated that most of these set of requirements are fulfilled by the informal sector institutions and hence they dominate the rural financial landscapes in Lower Assam and among the various informal institutions 'XONCHOIS' are the most used informal institution.

Singh (2009 & 2011) tried to identify some of the important issues relating to the formal finance and 'MARUP' for the economic development of rural areas of Manipur. The author conducted this study purely based on the primary data collected from 135 rural households from all the nine districts of Manipur, four in the valley and five in the hills, fifteen households from each district through purposive sampling. The author argued that the present day developed formal financial practices cannot wipe off traditional systems known as MARUP which is the age old one in Manipur. Quite interestingly, informal rural savings and its investment in MARUP's by the

selected rural households are found to be not depended on any variables like rural occupations, income from rural occupations, the level of educational qualifications or income from government salary and forestry. However, saving and its investment in MARUP's by the rural households were almost found to be related to the customary or social phenomenon which is not related to one's income or source of income. In addition, rich or poor, educated or uneducated, young or old, rural households are more or less inclined towards MARUP's, irrespective of their income levels. The author justified that MARUP's system of informal finance in Manipur is an age-old method of depending on friends for their financial needs and requirements.

Likewise, Das (2010) documented the organizational structure, operation and functions of both informal and semi-formal Private Savings Societies, and examined how these financial providers have responded to the credit demand in two districts of lower Assam namely Nalbari and Baska. The study concluded that these saving societies perform a necessary and useful role in areas where banking facilities are not available. In fact, these societies have become part of villagers' lives, creating a place that is convenient and safe to keep their money. Moreover, these saving societies have achieved a very high growth rate, in terms of deposit mobilization and loan disbursements. Their client base has also multiplied repeatedly over a very short time span.

By explaining the importance of savings services for the clients in the north east region of India, Moulick (2009) noted that the poor do save, but that they often lose their savings in the absence of any formal source. It reviewed the savings mechanisms adopted by the poor, some of which, in the case of the formal sector, are not in line with their needs. The author found that, the poor uses semiformal systems such as SHGs and MFIs, and informal mechanisms such as savings at home, with NBFCs, ROSCAs, and ASCAs. Additionally, the author recommended four savings products based on various attributes: security, accessibility, returns and other key preferences of low-income people.

Furthermore, Sharma & Mathews (2009) provided an overview of the village financial systems in north east India, highlighting the security, flexibility and the multiple needs met by Accumulating Savings and Credit Associations. The authors pointed out that, globally, ASCAs generally operate within the range of 6-12 months. However, in the present study, none operated

for less than 12 months. There were 8 indefinite 'XONCHOIS' ranging from 36 to 130 months old. None of these had identified a specific breaking date.

Thus, we can understand the informal nature of rural credit in the north east region of India. The literature pointed out that due to drawbacks in many areas, the amount of money, though small, in the hands of the people are not circulating in a judicious manner. There is a need to recognize the informal sector in order to design products and delivery mechanism. Moreover, the facilities for training of the people involved in the informal system, awareness programmes of the financial linkage system, easy and transparent government regulation, etc. are required for streamlining the contribution of informal sector finance in the economic and development mainstream (Singh 2009). However, Sharma (2011) recommended that in order to make microfinance institutions sustainable, and also to meet the wide variety of unmet needs in these areas, a wider market segment than the traditional poor microfinance clientele must be served.

### 2.9. Issues Find Out from Above Discussion

- Does the rural financial market in developing countries should be seen as a system, comprising of formal and informal sectors?
- It was argued that efficient system of financial intermediaries is a necessary and sufficient condition for the growth of various financial assets and liabilities and for economic development.
- Whether the cost of borrowing from formal sources falls as the size of holding increases?
- It has been pointed out that the barriers such as minimum account and loan balances, account fees, and required documents are associated with lower levels of banking outreach.
- It was further argued that significant proportion of rich households is also financially excluded in both rural and urban sectors.

- Most of the researchers argued that why firms choose to finance their fixed asset investments by informal credit.

- Whether the formal sector can also achieve the same advantage like informal sector if they follow an incentive based pricing mechanism.

- The review suggested that informal finance is not simply a manifestation of weaknesses in the formal financial system, but also, a product of local political, institutional, and market interactions.

- The study argued that the effects of stronger vertical links between formal and informal sector depend on the form of lender competition. Moreover, it is pointed out that, if the relationship between lenders is one of strategic cooperation, an expansion of formal credit may worsen the terms faced by informal borrowers

- It demonstrated that formal and informal financial sector loans are complementary in the aggregate, suggesting that an increase in the use of formal financial sector credit creates additional productive capacity that requires more informal financial sector credit to maintain equilibrium. In addition, it is shown that interest rates in the formal and informal financial sectors do not always change together in the same direction.

- Whether the weak legal institutions, in particular, poor creditor protection, explain the coexistence of formal and informal financial sectors in developing credit markets?

- Why demand for formal financial services low in emerging markets?

- It was highlighted that, while formal banks focus on past performance of the firm, such as credit rating, previous tax payments, and credit history, as well as the size of the firm and manufacturing activities, informal institutions put a relatively higher weight on current operations.

- It was showed that the negative relationship between microcredit program participation and poverty of borrowing households is not linear.

- Whether the optimistic expectations about the effectiveness of microfinance in reducing income inequality are justified?

- It was highlighted the potential importance of the link between capital accumulation and the availability of financial institutions.

- The study showed that micro-borrowing has indeed reduced borrowing from informal sources, thereby demonstrating microfinance as an effective alternative source of finance to the poor.

- There is an argument that the interest rate of microfinance institutions is high, but interestingly the study traced that most of the participants did not agree on this issue and found it to be reasonable.

- The study found no changes in any of the development outcomes that are often believed to be affected by microfinance, including health, education, and women's empowerment.

- The review suggested that despite its weaknesses, financing from the formal financial system is associated with faster firm growth, whereas fund raising from alternative channels is not.

- The study found that the likelihood of enterprises preferring to only use informal finance is inversely related to the quality of the regulatory environment, particularly the quality of tax administration and overall governance.

- The review argued that reaching the poorest of the poor is more costly than reaching other segments of the market even when there are no fixed lending costs and that leverage may be much harder to achieve for microfinance organizations that target the ''low-end'' of the market.

- The study found evidence that membership of cooperative societies provides part of the explanation for the increase in household income because there was a significant positive relationship between membership of the cooperative and an increase in household income.

- The researchers argued that to achieve a better repayment performance, group lending and credit delivery method now a common feature of microfinance credit delivery should be encouraged and sustained.

- Whether repayment frequency affects loan default and delinquency?

- It was investigated the impact on repayment rates of lending to groups which are made jointly liable for repayment.

- It was argued by researchers that, if basic principles of prudential banking are adhered to, repayment rates can be good even in poor and remote communities.

- The study showed that, among the borrowers, farmers have a statistically significant higher repayment performance than non-farmers. In addition, repayment in group schemes seems to be positively affected by educational level and by loans to farmers, and negatively by the loan amount, while repayment by independent borrowers is positively affected by the loan amount, farmers as borrowers, and the gender of borrowers.

- The author argued that the present day developed formal financial practices cannot wipe off traditional systems known as ‘MARUP’ which is the age old one in Manipur.

- It was showed the vast numbers of community-based traditional financial institutions besides semiformal Private Saving Societies are working in rural areas of the north eastern region of India.

# CHAPTER- THREE

## RURAL FINANCIAL SCENARIO OF ASSAM

### 3.1. Introduction

Assam is situated in the North East region of India- bordering seven states viz. Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West Bengal and two countries viz. Bangladesh and Bhutan. With a geographical area of 78,438 sq. km i.e., about 2.4% of the country's total geographical area Assam provides shelter to 3, 11, 69,272 (Census, 2011) i.e., 2.58% population of the country. Almost 85.91% of the total population inhabit in 26,395 nos. of villages (Census, 2011). The literacy rate is 73.18%, out of which male 78.81% and female 67.27% and the rural literacy rate is 70.44% (Census, 2011). The economy of the state of Assam has been primarily agricultural although in recent years services sector is slowly emerging as the dominant sector. Agriculture sector continues to support more than 75% population of the state directly or indirectly providing employment of more than 53% of the total workforce.

**Table 3.1 Net State Domestic Product at Factor Cost by Industry of Origin, Assam (at Constant price: 2004-05 Price) (₹ in Lakh)**

| Industry | 2014-15 | |
|---|---|---|
| | Total | % |
| **Primary Sector** | 1935283 | 21 |
| **Secondary Sector** | 1250272 | 21 |
| **Tertiary Sector** | 4553849 | 58 |
| **Total NSDP** | 7739404 | 100 |
| **Per capita NSDP (₹)** | 23968 | -- |

Source: Economic Survey, Assam, 2014-15

Tea is one of the important cash crops but is mostly restricted to Upper Assam areas, although, a few of them are also present in the study region of Lower Assam. Sericulture is another important activity and gives employment to a large number of people. Most of these are located in Lower Assam. The largest Silk cluster in Assam which is involved in the production of both yarn and cloth is located near Guwahati in a place called Sualkuchi. The state of Assam can be divided into four broad categories from the geographical point of view. They are- the North Assam, the Lower Bahmaputra Valley of Assam, the Upper Assam, and the Hills and Barak Valley. However, the study area comprising of the three districts namely Baksa, Barpeta and Nalbari which are located in the valley areas of river Brahmaputra. Hence, this chapter tried to

focus banking scenario vis- a- vis socio economic profile of assam. Moreover, socio-economic profile of unit of observations has also presented in this chapter.

### 3.2. Socio-Economic Profile of Assam by Focusing Study Districts

Like all over India, Assam is the most densely populated area, even though the decadal variation in population declines during the period of 2001-2011 in compare to 1991-2001 (Table 3.2 & Figure 3.1). However, unfortunately, the population density of Assam is higher than country level, and even the population density is higher than national level in all the study districts and it is highest in Nalbari district among the study districts.

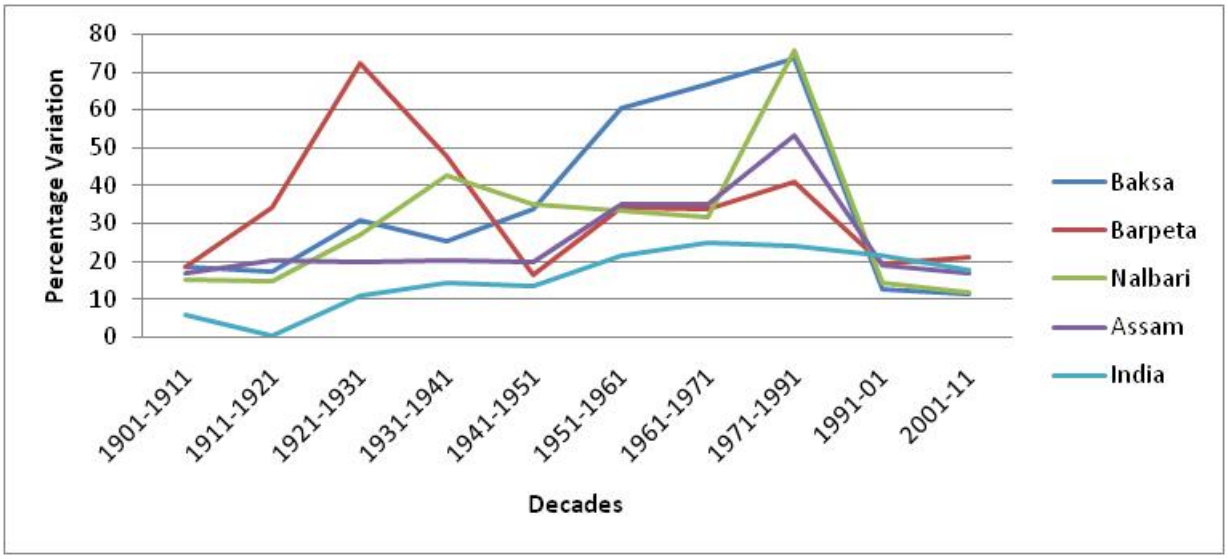
**Table 3.2 Demography Profile of Study Districts**

| District | Area (sq. km.) | Population | Population Density | Sex Ratio |
|---|---|---|---|---|
| **Baksa** | 2007.50 | 953773 | 475 | 967 |
| **Barpeta** | 2677.33 | 1693190 | 632 | 951 |
| **Nalbari** | 1009.57 | 769919 | 763 | 945 |
| **Assam** | 78438.08 | 31169272 | 397 | 954 |
| **India** | **3,287,240** | **1210193422** | **382** | **940** |

Source: Census of India, 2011

This high density has been large because of the high growth of population especially 1941 onwards which continued up to 1991. The population growth has come down only in 1991-2001 which can be seen from the Figure 3.1. This high growth has been fueled largely by the influx of population from Bangladesh and erstwhile East Pakistan into the study area which has also been the reason for the political turmoil in the state from the 1980s onwards. Unlike other study districts, in Barpeta district, the decadal variation in population expands during the period 2001-11 in compare to 1991-2001(Table 3.2 & Figure 3.1).

**Figure 3.1 Decadal Percentage Variations in Population Since 1901**




Source: Census of India, 2011

Furthermore, Table 3.2 indicates that sex ratio of Assam is in better position than all over India as well as Barpeta and Nalbari districts. Among the study districts, it is worst in Nalbari district followed by Barpeta while Baksa district is performing well even in compare to Assam also. The high growth of population coupled with low resource base has made the study districts poor in most socio-economic parameters compared to the Assam as a whole. For example, unlike Nalbari district, the per capita income is lower for both Barpeta and Baksa districts in compare to Assam (Table 3.3). This low per capita income is primary because of low resource base coupled with low labour productivity and the absence of any significant modern industrial sector to absorb the excess labour.

**Table 3.3 District Wise Per Capita Income at Constant Prices for the Year 2011-12 at Constant Prices (₹ in Lakh)**

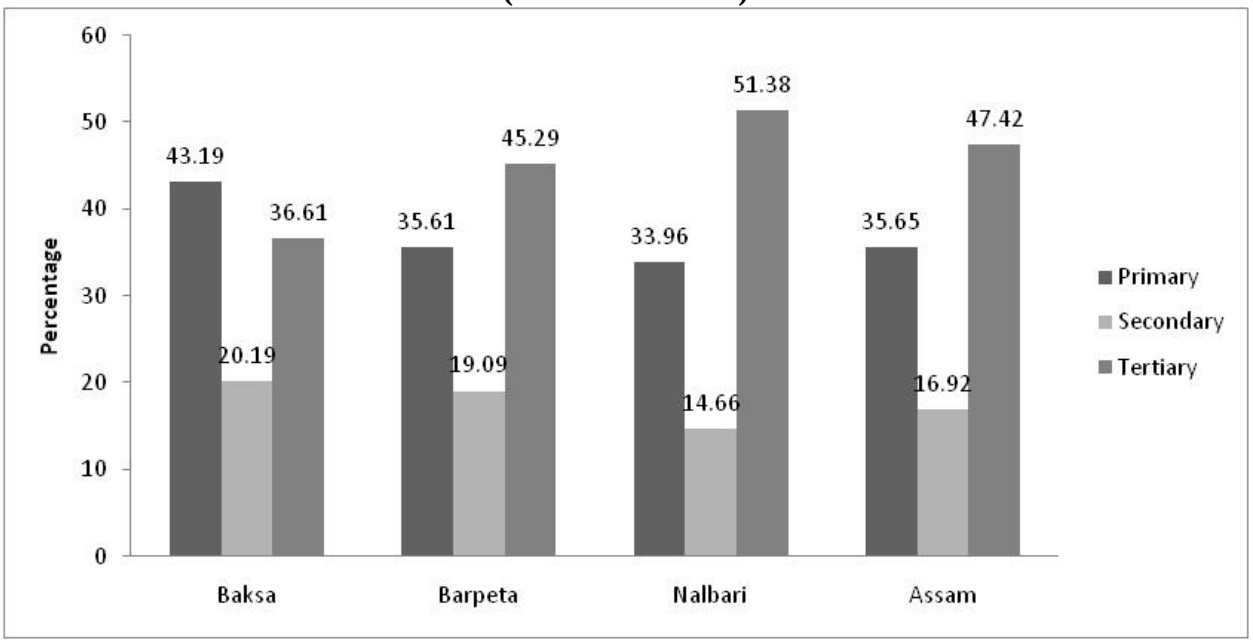
| Districts | Net District Domestic Product | Per Capita Income (₹) |
|---|---|---|
| **Baksa** | 106973 | 10967 |
| **Barpeta** | 163962 | 11202 |
| **Nalbari** | 118753 | 16457 |
| **Assam** | **4643249** | **15857** |

Source: Directorate of Economics and Statistics, Assam

Now the question arises why Nalbari district is doing well in case of per capita income, unlike Barpeta and Baksa districts. Unlike Barpeta and Baksa districts, all of these have contributed to the growth of the micro-enterprise sector in the rural non-farm sector of lower Assam, and most of these are in the service sector. As it is clearly evident from Figure 3.2, in Nalbari district the

contribution of the service sector is higher than Assam as well as other two study districts. These consist mainly of petty business and micro enterprises taken up to lift their living as the productivity of agriculture is low. However, interestingly, the contribution of secondary sector is higher in both Barpeta and Baksa districts in compare with all over Assam and Nalbari district (Figure 3.2). Does really the manufacturing sector is growing well in Barpate and Baksa district? If it so, why per capita income of these two districts is not satisfactory, even away from all over Assam.

**Figure 3.2 District-Wise and Sector Wise Distribution of the Economy for the Year 2011-12 (at Current Price)**




Source: Directorate of Economics and Statistics, Assam

Considerably, one significant point which can be seen from Table 3.4 that the workforce participation rate is lower for both Barpeta and Nalbari districts in compares to all over Assam, besides higher proportion of marginal workers in the study districts. This result highlights the high dependency ratio of study districts in compare to all over Assam.

**Table 3.4 Main and Marginal Workers as a Percentage of Total Population, Assam**

| Districts | Workforce Participation Rate (Per 1000 Population) | Main Workers | | | Marginal Workers | | |
|---|---|---|---|---|---|---|---|
| | Persons | Persons | Male | Female | Persons | Male | Female |
| **Baksa** | -- | -- | -- | -- | -- | -- | -- |
| **Barpeta** | 31.4 | 24.87 | 42.91 | 5.70 | 20.86 | 10.25 | 59.33 |
| **Nalbari** | 33.7 | 25.27 | 41.44 | 8.00 | 25.02 | 14.27 | 55.71 |
| **Assam** | **35.9** | **26.59** | **42.35** | **9.68** | **9.29** | **7.58** | **11.12** |

Source: Census of India, 2011

It is also assessed from Table 3.4 that a large portion of the female workers is in the marginal category. Not only is the income small, it is also unpredictable and unreliable given the type of activities the households are engaged in. It is, therefore, clear that the levels of poverty are much higher in the study districts as compared to the state.

In terms of the other parameters too, the study districts are much poorer than the rest of the state. In terms of Human Development Index (Table 3.5), both the districts are much lower than the state average. Similarly, the urbanization rate (Table 3.6) is much lower for these districts. In Baksa district, only 1.28% of the population is living in urban followed by 8.70% in Barpeta district, whereas among the study districts Nalbari districts performing well.

**Table 3.5 Human Development Indicators of Assam**

| Districts | HDI value | Income Index | Education Index | Health Index |
|---|---|---|---|---|
| **Baksa** | -- | -- | -- | -- |
| **Barpeta** | 0.396 | 0.385 | 0.527 | 0.279 |
| **Nalbari** | 0.343 | 0.076 | 0.641 | 0.314 |
| **Assam** | **0.407** | **0.286** | **0.595** | **0.343** |

Source: Assam Human Development Report, 2003

Besides economic factors, the study district except Nalbari is also much below the state in social indicators like literacy rate and Infant Mortality Rate etc which can be seen from Tables 3.7 & 3.8.

**Table 3.6 Urbanization in Assam**

| Districts | No. of towns | Urban Area (sq. km.) | Urban Population | % of Urban Population |
|---|---|---|---|---|
| **Baksa** | 02 | --- | 12173 | 1.28 |
| **Barpeta** | 09 | --- | 147289 | 8.70 |
| **Nalbari** | 11 | --- | 82551 | 10.72 |
| **Assam** | 214 | --- | 4388756 | 14.08 |
| **India** | **7,935** | --- | **377000000** | **31.34** |

Source: Census of India, 2011

As we can see from Table 3.7 that the literacy rate of Nalbari district is much higher than the other two study districts, even though it is higher than all over Assam and India. The position of Barpeta district is much worst followed by Baksa district.

**Table 3.7 Literacy Rate in Assam**

| Districts | Male | Female | Total |
|---|---|---|---|
| **Baksa** | 77.03 | 61.27 | 69.25 |
| **Barpeta** | 69.29 | 58.06 | 63.81 |
| **Nalbari** | 84.36 | 72.57 | 78.63 |
| **Assam** | 78.81 | 67.27 | 73.18 |
| **India** | **80.9** | **64.6** | **74.04** |

Source: Census of India, 2011

However, the picture is complete difference in the case of infant mortality rate which can be seen from Table 3.8. Here Barpeta district is outperforming both Nalbari district and all over Assam numbers whiles the picture is worst in Nalbari district followed by all over Assam.

**Table 3.8 Infant Mortality Rate of Assam (Per 1000 Live Births)**

| Districts | Infant mortality rate |
|---|---|
| **Baksa** | 44 |
| **Barpeta** | 48 |
| **Nalbari** | 64 |
| **Assam** | **60** |

Source: Annual Health Survey, 2010-11

Thus, it is clear that the study districts, as well as Assam, are far away from the country level position in most of the socio-economic parameters. Consequently, one interesting point is that Nalbari district is performing well among all other study districts and in some cases overcoming entire Assam and all over India position. In Nalbari district service sector is contributing more in net state domestic product, but at the same time in Barpeta and Baksa districts, manufacturing sector is contributing more. This is one of the conflicting results because of the fact that the per capita income of Nalbari district is higher than the Barpeta and Baksa Districts.

### 3.3. Depth of Financial Exclusion in Assam

Not only is the region very poor both economically and socially, it is also poor in banking parameters too. In this section, we have discussed the status of formal banking in Assam. Moreover, the dominance of semiformal and informal sources has also been investigated and tried to support Assam as a study state.

### 3.3.1 Formal Banking Profile of Assam

Banks are playing an important role in sustaining economic development by mobilizing deposits and credits. With the objective to bring as many as people within the bank coverage, the banking network has been increased by opening new branches in the state. Consequently, the number of reporting bank offices of all scheduled commercial banks in Assam has been increased to 1940 in the year 2013-14 as can be seen from Table 3.9. As it is indicated in Table 3.9 the aggregate advances of all scheduled commercial banks in the year 2013-14 is ₹3694049.64 Lakh and among these

**Table 3.9 Banking Profile of Assam in the Year 2013-14 (₹ in Lakh)**

| Profile | Comm. Bank | RRBs | Co-op Banks | NEDFi & RIDF & MIDC & SIDBI | Total |
|---|---|---|---|---|---|
| **Branch Network** | 1432 | 441 | 67 | 0 | 1940 |
| **Aggregate Deposit** | 7144637.08 | 646634.82 | 182313.21 | 0 | 7973585.11 |
| **Aggregate Advances** | 3096396.19 | 371331.69 | 68924.62 | 157397.14 | 3694049.64 |
| **Credit Utilize** | 210420.88 | 0 | 0 | 0 | 210420.88 |
| **CD Ratio** | 43.34 | 57.43 | 37.81 | | 46.33 |
| **Priority Sector Advances** | 1453663.73 | 315919.39 | 25643.51 | 157397.14 | 1952623.77 |
| **% to Total Advances** | 50.37 | 85.08 | 37.21 | 23.28 | 52.86 |
| **Adv. To Agriculture** | 484971.11 | 138234.38 | 7396.07 | 90956.14 | 721557.7 |
| **% to Total Advances** | 16.8 | 37.23 | 10.73 | 13.45 | 19.53 |
| **Adv. To SSI Sector** | 375575.93 | 28945.64 | 706.24 | 66441 | 471668.81 |
| **% to Total Advances** | 13.01 | 7.8 | 1.02 | 9.83 | 12.77 |
| **Recovery % of Priority Sector Advances** | 57 | 73 | 42 | 0 | 59 |
| **Overdues % of Priority Sector Advances** | 43 | 27 | 58 | 0 | 41 |

Source: Reports of State Level Bankers Committee, Assam, 2014

52.86% is directed to priority sector, whereas out of total priority sector advances 19.53% goes to the agricultural sector. The share of the small-scale industrial sector which dominating the rural economy of Assam is only 12.33%. This raises concern over the distribution of credit in rural Assam, actually who is benefiting from formal rural credit. Moreover, at the same time, the recovery rate of priority sector is only 59%. This figure highlights the problem of nonperforming assets in rural areas of Assam and consequently one of the factors hindering formal rural credit. In addition, we can point out that the credit deposit ratio of regional rural banks is much higher than the commercial banks which are a good indication due to the fact that the regional rural banks are basically concentrated for providing banking facilities to agriculture and allied activities.

Table 3.10 indicates the sequential changes in the different banking parameters in Assam during 2001 to 2011. It can be argued from the Table 3.10 that all the rural parameters, except for CD ratio, have underperformed in contrast to the parameters of other population-group. The number of bank branches in rural areas, in fact, came down during the period 2001-2011 while during the same period the number of urban branches approximately doubled. Assam experienced an overall augment of 265 branches out of which 148 were urban branches and 133 semi-urban branches but rural branches came down to 802 from 818 during the period of study. The compound growth rate between 2001 to 2011 demonstrate that rural deposits have grown at the lowest rate of 16.1 per cent in comparison to urban deposits (22.2%) and total deposits (19.6%). Likewise, the annual growth rate of rural credit was also the lowest, although the gap among other population-groups was less than that of rural deposits. The CD ratio of rural bank branches was consistently higher during 2003-11 among all population-groups.

## Table 3.10 Population Group-Wise Distribution of Banking Statistics in Assam

| year | Offices | | | | Deposits | | | | Credit | | | | CD Ratio | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rural | Semi-Urban | Urban | Total | Rural | Semi-Urban | Urban | Total | Rural | Semi-Urban | Urban | Total | Rural | Semi-Urban | Urban | Total |
| **2001** | 818 | 257 | 164 | 1239 | 2323 | 3432 | 4109 | 9864 | 800 | 778 | 1615 | 3193 | 34.4 | 22.7 | 39.3 | 32.4 |
| **2002** | 809 | 259 | 164 | 1232 | 2776 | 4071 | 4705 | 11552 | 922 | 941 | 1764 | 3627 | 33.2 | 23.1 | 37.5 | 31.4 |
| **2003** | 792 | 260 | 164 | 1216 | 3141 | 4323 | 5458 | 12922 | 1032 | 1059 | 1604 | 3695 | 32.9 | 24.5 | 29.4 | 28.6 |
| **2004** | 792 | 261 | 168 | 1221 | 3305 | 5044 | 6421 | 14770 | 1292 | 1288 | 2027 | 4607 | 39.1 | 25.5 | 31.6 | 31.2 |
| **2005** | 788 | 269 | 178 | 1235 | 3907 | 6458 | 7715 | 18080 | 1768 | 1955 | 2497 | 6220 | 45.3 | 30.5 | 32.4 | 34.4 |
| **2006** | 782 | 260 | 192 | 1234 | 4260 | 6999 | 9612 | 20871 | 2278 | 2469 | 4016 | 8763 | 53.5 | 35.3 | 41.8 | 42 |
| **2007** | 778 | 273 | 211 | 1262 | 4671 | 8476 | 12611 | 25758 | 2712 | 3606 | 4836 | 11154 | 58.1 | 42.5 | 38.3 | 43.3 |
| **2008** | 775 | 296 | 246 | 1317 | 5301 | 9899 | 16466 | 31666 | 3171 | 3946 | 5940 | 13057 | 59.8 | 39.9 | 36.1 | 41.2 |
| **2009** | 784 | 316 | 269 | 1369 | 6702 | 12109 | 20616 | 39427 | 3278 | 4702 | 7135 | 15115 | 48.9 | 38.8 | 34.6 | 38.3 |
| **2010** | 791 | 357 | 286 | 1434 | 8263 | 15430 | 25852 | 49545 | 3942 | 5586 | 8783 | 18311 | 47.7 | 36.2 | 34 | 37 |
| **2011** | 802 | 390 | 312 | 1504 | 10317 | 18326 | 30457 | 59100 | 4672 | 6137 | 10244 | 21053 | 45.3 | 33.5 | 33.6 | 35.6 |
| **CAGR** | -0.2 | 4.26 | 6.64 | 1.96 | 16.08 | 18.24 | 22.18 | 19.61 | 19.3 | 22.94 | 20.29 | 20.76 | 2.79 | 3.97 | -1.55 | 0.95 |

Source: Authors' estimation based on Basic Statistical Returns of SCBs in India, RBI; Quarterly Statistics on Deposits and Credit of SCBs, RBI; Economic Survey, Assam

**Table 3.11 Distribution of Households Having Bank Account, Post Office Account, Other Deposit Account, Kisan Credit Card and Amount of Credit Received from Kisan Credit Card per Household Having KCC as on 30.06.12 (per 1000 No. of Households)**

| Rural | | | | | |
|---|---|---|---|---|---|
| **State** | **Bank Account** | **Post Office Account** | **Other Deposit Account** | **Kisan Credit Card** | **Amount of Credit Received from KCC in 365 Days per HH Having KCC (Amount in ₹ )** |
| **Assam** | 586 (58.6) | 193 (19.3) | 67 (6.7) | 27 (2.7) | 16321 |
| **All India** | 688 (68.8) | 140 (14) | 92 (9.2) | 71 (7.1) | 46711 |
| **Urban** | | | | | |
| **Assam** | 789 (78.9) | 182 (18.2) | 101(10.1) | 5 (0.5) | 6886 |
| **All India** | 795 (79.5) | 124 (12.4) | 108 (10.8) | 7 (0.7) | 61778 |

Source: Household Assets and Liabilities, NSS 70th Round

Note: Figures in the parentheses represent per cent of households

Table 3.11 shows that per 1000 number of households in rural areas 58.6% households have bank account while in 68.8% in India as a whole. Similarly, 2.7% received KCC in Assam but 7.1% at national level. However, households having post office account larger in Assam (19.3%) in comparison to India as a whole (14%).

**Table 3.12 District-wise Proportion of Households Availing Banking Services in Assam**

| **District** | **Rural** | | **Urban** | | **Total** | |
|---|---|---|---|---|---|---|
| | **Household** | **Rank** | **Household** | **Rank** | **Household** | **Rank** |
| **Baksa** | 33.3 | 22 | 58.2 | 25 | 33.6 | 25 |
| **Barpeta** | 33.4 | 21 | 70.7 | 18 | 36.9 | 21 |
| **Bongaigaon** | 54.3 | 3 | 81.6 | 3 | 58.9 | 3 |
| **Cachar** | 35 | 17 | 66.9 | 22 | 41 | 15 |
| **Chirang** | 34.8 | 18 | 62.7 | 24 | 36.9 | 20 |
| **Darrang** | 34.5 | 19 | 64.1 | 23 | 36.5 | 22 |
| **Dhemaji** | 32.7 | 23 | 69 | 19 | 35.7 | 23 |
| **Dhubri** | 19.3 | 27 | 56.8 | 26 | 23.3 | 27 |
| **Dibrugarh** | 46.2 | 8 | 80.4 | 5 | 53 | 6 |
| **Dima Hasao** | 37.2 | 13 | 82.5 | 2 | 51.3 | 7 |
| **Goalpara** | 30 | 26 | 52.7 | 27 | 33.3 | 26 |
| **Golaghat** | 47.2 | 7 | 77.6 | 9 | 50.2 | 9 |
| **Hailakandi** | 69.7 | 1 | 78 | 8 | 70.3 | 2 |
| **Jorhat** | 49.9 | 5 | 78.4 | 6 | 56.2 | 4 |
| **Kamrup** | 42.9 | 10 | 66.9 | 21 | 45.4 | 12 |
| **Kamrup Metropolitan** | 58.4 | 2 | 83.7 | 1 | 80 | 1 |
| **Karbi Anglong** | 36.7 | 14 | 73.3 | 16 | 41.7 | 14 |
| **Karimganj** | 33.5 | 20 | 75.4 | 14 | 37.5 | 18 |
| **Kokrajhar** | 30.4 | 25 | 80.9 | 4 | 33.7 | 24 |
| **Lakhimpur** | 43.9 | 9 | 76.8 | 10 | 47.4 | 11 |
| **Morigaon** | 42.1 | 11 | 76.3 | 12 | 45.1 | 13 |
| **Nagaon** | 32.3 | 24 | 70.7 | 17 | 37.8 | 17 |
| **Nalbari** | 53.2 | 4 | 76.2 | 13 | 55.8 | 5 |
| **Sivasagar** | 48 | 6 | 76.4 | 11 | 51 | 8 |
| **Sonitpur** | 36.3 | 15 | 78.1 | 7 | 40.7 | 16 |
| **Tinsunia** | 41.6 | 12 | 75.4 | 15 | 49 | 10 |
| **Udalguri** | 35.3 | 16 | 68.9 | 20 | 37 | 19 |
| **All Assam** | **38.3** | | **75.2** | | **44.1** | |

Source: Census of India, 2011

Table 3.12 depicts that the number of households availing banking services varies extensively across the districts. Kamrup Metro, Hailakandi, Bongaigaon, Jorhat and Nalbari top the list with half of their households having a bank account, both in rural and urban areas. Dibrugarh, Dima Hasao, Sivasagar, Golaghat, Tinsukia, Lakhimpur, Kamrup and Morigaon are districts which have a higher proportion of households with a bank account compared with All Assam average. Dhubri, Goalpara, Kokrajhar and Dhemaji are the bottom five in terms of both total households and rural households availing banking services. It also shows the wide-spread rural-urban disparities in availing banking services, both at the state level and district level. As more than three-fourth urban households have a bank account, less than two-fifth rural households hold a bank account in Assam (Table 3.12).

**Table 3.13 Deposits and Credit Accounts per 100 Adult Populations**

| Year | Deposit Accounts | | Credit Accounts | |
|---|---|---|---|---|
| | Assam | All India | Assam | All India |
| **1981** | 11.6 | 28.9 | 1.4 | 6.2 |
| **1991** | 34.9 | 60.3 | 7 | 13.9 |
| **2001** | 39.4 | 55 | 4.5 | 9.7 |
| **2005** | 39.1 | 59.3 | 5.9 | 13.3 |
| **2011** | 47.3 | 66.9 | 5.3 | 10 |

Source: Authors, estimation based on Basic Statistical Returns of SCBs in India, RBI, 2011

Table 3.13 which illustrates the advancement in the number of deposits accounts per 100 adult populations in Assam and all India level during 1981-2011 and indicates an enormous gap between the two. In 2011, as against All India figure of 67 deposits accounts per 100 populations, in Assam it was 47 deposits accounts. Similarly, the credit accounts per 100 adult population in Assam is also lower than the national average, representing lower percentage of population availing credit facility in Assam as compared to the national level. In the following section, we have undertaken an interstate analysis as a rationale behind the selection of Assam.

### 3.3.2 Credit Providers- An Interstate Analysis

The present section provided an analysis by covering availability and accessibility elements of banks to a large extent among Indian states. We have constructed one Supply Driven Financial Inclusion Index (SDFII) for the same and used following six indicators.

- Number of deposit accounts per person (as access or penetration or outreach)
- Number of credit accounts per person (as access or penetration or outreach)

- Number of offices of scheduled commercial banks per one lakh population (as availability)
- Average saving amount per deposit account (as usage/depth of the financial system)
- Average credit amount per credit account (as usage/depth of the financial system)
- Average credit amount per credit account of small borrower (as usage/depth of the marginalized groups)

Here first three indicators are normalized by population size and the remaining three indicators normalized by their respective numbers of accounts. We used distance-from-average method for constructing SDFII. First, for each indicator, the actual value is divided by the overall average of that indicator.

$$\mathbf{I_q = Y^t_{qs} / Y^t_{qs*}},$$

Where,

$\mathbf{Y^t_{qs}}$ is the value of indicator q for the state s at time t

$\mathbf{Y^t_{qs*}}$ is the mean value of indicator q for all the states at time t

$\mathbf{q}$ = 1, 2,……., 6

Subsequently, the average of all the indicators gives us the proposed supply driven composite index- **SDFII**,

$$\mathbf{SDFII = (\sum_q I_q) /6}$$

In addition, after calculation of index value, we applied one criterion for measuring the status of financial inclusion in the respective states and districts as mentioned in Table 3.14.

**Table 3.14 Criteria for Measuring Status of Financial Inclusion**

| Criteria | Status |
|---|---|
| 1 ≤ Index Value | Top Performer |
| 0.75 ≤ Index Value ≤ 1 | Average Performer |
| 0.75 ≥ Index Value | Low Performer |

Source: Authors' own development

As the distance from an average method has been used to construct the supply driven index (Table 3.15), the average or India as a whole value of the index will be unity. Consequently, the actual value of indicators will give us a clear picture of the overall country (Appendix A, B and C for overall, rural and urban respectively).

The study indicates an uneven development of financial system within India. It is apparent from the fact that the SDFII of banking outreach value of the top state (Chandigarh) is more than five times that of the bottom state (Bihar). In rural areas, the difference between the top (Chandigarh) and bottom (Daman & Diu) is close to thirteen times and in urban areas the difference between the top (Chandigarh) and bottom (Manipur) is nearly three times. As comparing the economic development of the state (in terms of per capita income) vis-à-vis the outreach of the banking services, it is observed that states Chandigarh, Delhi, Punjab, Haryana, Sikkim, Goa, Karnataka, Kerala, Tamil Nadu, Pondicherry have performed better on both the parameters. This reflects a larger spread of services among people in the states which are better developed. In outreach of financial services from banks, one observes wide disparity between rural and urban areas with the latter performing better in almost all the cases. Compared to other states Chandigarh, Delhi, Sikkim, Goa, and Lakshadweep is performing better in rural areas in compare to urban areas. In some situations, it has been observed that the outreach of financial service is concentrated among a smaller segment of the population.

**Table 3.15**: **FII across States (Overall, Rural and Urban) and their Ranks and Status using Six Indicators of Banking Outreach**

| States | Overall States | | | Rural | | | Urban | | |
|---|---|---|---|---|---|---|---|---|---|
| | Index | Rank | Status | Index | Rank | Status | Index | Rank | Status |
| **Haryana** | 1.14 | 6 | TOP | 0.87 | 8 | AVERAGE | 1.18 | 7 | TOP |
| **Himachal Pradesh** | 1.04 | 10 | TOP | 1.01 | 7 | TOP | 1.42 | 3 | TOP |
| **Jammu & Kashmir** | 0.82 | 17 | AVERAGE | 0.72 | 11 | LOW | 0.86 | 21 | AVERAGE |
| **Punjab** | 1.19 | 5 | TOP | 1.01 | 7 | TOP | 1.19 | 6 | TOP |
| **Rajasthan** | 0.76 | 19 | AVERAGE | 0.56 | 18 | LOW | 0.89 | 19 | AVERAGE |
| **Chandigarh** | 2.81 | 1 | TOP | 4.74 | 1 | TOP | 1.95 | 1 | TOP |
| **Delhi** | 2.49 | 2 | TOP | 3.21 | 3 | TOP | 1.73 | 2 | TOP |
| **Arunachal Pradesh** | 0.73 | 21 | LOW | 0.75 | 10 | AVERAGE | 0.87 | 20 | AVERAGE |
| **Assam** | 0.59 | 27 | LOW | 0.41 | 26 | LOW | 0.93 | 17 | AVERAGE |
| **Manipur** | 0.56 | 28 | LOW | 0.48 | 23 | LOW | 0.58 | 30 | LOW |
| **Meghalaya** | 0.74 | 20 | LOW | 0.61 | 17 | LOW | 0.93 | 17 | AVERAGE |
| **Mizoram** | 0.78 | 18 | AVERAGE | 0.67 | 12 | LOW | 0.67 | 29 | LOW |
| **Nagaland** | 0.69 | 23 | LOW | 0.49 | 22 | LOW | 0.76 | 26 | AVERAGE |
| **Tripura** | 0.65 | 24 | LOW | 0.56 | 18 | LOW | 0.72 | 28 | LOW |
| **Bihar** | 0.48 | 29 | LOW | 0.38 | 27 | LOW | 0.79 | 24 | AVERAGE |
| **Jharkhand** | 0.6 | 26 | LOW | 0.44 | 25 | LOW | 0.75 | 27 | AVERAGE |
| **Odisha** | 0.7 | 22 | LOW | 0.51 | 21 | LOW | 0.98 | 14 | AVERAGE |
| **Sikkim** | 1.07 | 8 | TOP | 4.22 | 2 | TOP | 1.15 | 8 | TOP |
| **West Bengal** | 0.82 | 17 | AVERAGE | 0.48 | 23 | | 0.97 | 15 | AVERAGE |
| **Andaman & Nicobar Islands** | 0.96 | 14 | AVERAGE | 0.84 | 9 | AVERAGE | 0.9 | 18 | AVERAGE |
| **Chhattisgarh** | 0.69 | 23 | LOW | 0.44 | 25 | LOW | 0.89 | 19 | AVERAGE |
| **Madhya Pradesh** | 0.7 | 22 | LOW | 0.51 | 21 | LOW | 0.81 | 22 | AVERAGE |
| **Uttar Pradesh** | 0.62 | 25 | LOW | 0.47 | 24 | LOW | 0.78 | 25 | AVERAGE |
| **Uttarakhand** | 0.97 | 13 | AVERAGE | 0.62 | 16 | LOW | 1.01 | 13 | TOP |
| **Goa** | 1.9 | 3 | TOP | 1.76 | 5 | TOP | 1.18 | 7 | TOP |
| **Gujarat** | 0.96 | 14 | AVERAGE | 0.64 | 14 | LOW | 0.95 | 16 | AVERAGE |
| **Maharashtra** | 1.03 | 11 | TOP | 0.53 | 20 | LOW | 1.33 | 4 | TOP |
| **Dadra & Nagar Haveli** | 0.87 | 16 | AVERAGE | 0.63 | 15 | LOW | 0.78 | 25 | AVERAGE |
| **Daman & Diu** | 1.03 | 11 | TOP | 0.36 | 28 | LOW | 0.8 | 23 | AVERAGE |
| **Andhra Pradesh** | 0.99 | 12 | AVERAGE | 0.65 | 13 | LOW | 1.1 | 11 | TOP |
| **Karnataka** | 1.08 | 7 | TOP | 0.65 | 13 | LOW | 1.12 | 10 | TOP |
| **Kerala** | 1.05 | 9 | TOP | 0.53 | 20 | LOW | 1.22 | 5 | TOP |
| **Tamil Nadu** | 1.22 | 4 | TOP | 0.75 | 10 | AVERAGE | 1.13 | 9 | TOP |
| **Lakshadweep** | 1.07 | 8 | TOP | 2.14 | 4 | TOP | 0.72 | 28 | LOW |
| **Pondicherry** | 1.22 | 4 | TOP | 1.02 | 6 | TOP | 0.89 | 19 | AVERAGE |
| **All India** | **0.9** | **15** | AVERAGE | **0.55** | **19** | LOW | **1.03** | **12** | TOP |

Source: Calculated from RBIs Banking Statistical Returns of Scheduled Commercial Bank in India 2012-13 and Census of India, 2011

This is evident from the number of deposit and credit accounts being very low than the average, but the average deposit and credit amount per account being substantially higher than the average, for instance, Assam, Bihar, Jharkhand, Odisha, for credit and Arunachal Pradesh, Meghalaya, Goa for deposit. Furthermore, Sikkim is the fairly better performer than other north

eastern states in terms of some of the supply driven indicators like higher density of bank offices and the high average amount of deposit per account mainly due to relatively better performance in its rural areas.

Thus, from the above discussion of SDFII we can recognize the disappointing performance of states like Assam, Manipur, Meghalaya, Mizoram, Nagaland and Bihar among all Indian states. However, among all these low performing states Assam has some special characteristics which we have discussed subsequently.

### 3.3.3. Self Help Groups Finance in Assam

Due to the failure of formal banks to finance rural people directly, the semiformal institutions particularly the self help group bank linkage program has emerged widely in rural Assam. As can be seen from Table 3.16 that total numbers of bank linked, deposit linked and credit linked self help groups are increasing over time in Assam. This is not a surprising result because of the fact that it is natural to increase the numbers of SHGs and their amount of credit and deposit over time.

**Table 3.16 Self Help Groups Financed by Banks in Assam (₹ in Lakh)**

| | Total Bank Linked SHGs | | Deposit Linked | | Credit Linked | |
|---|---|---|---|---|---|---|
| **Year** | **Number** | **Amount** | **Number** | **Amount** | **Number** | **Amount** |
| **2004-05** | 122304 | 20975.75 | 79592 | 3409.05 | 42712 | 17566.7 |
| **2005-06** | 269917 | 48239.13 | 175565 | 9846.77 | 94352 | 38392.36 |
| **2006-07** | 230902 | 58040.52 | 121474 | 5261.61 | 109428 | 52778.91 |
| **2007-08** | 257863 | 57417.7 | 142147 | 6044.72 | 115716 | 51372.98 |
| **2008-09** | 305132 | 77365.49 | 166740 | 7485.51 | 138392 | 69879.98 |
| **2009-10** | 374745 | 92724.79 | 210890 | 9123.46 | 163855 | 83601.33 |
| **2010-11** | 433954 | 118051.2 | 240032 | 11195.29 | 193922 | 106855.9 |
| **2011-12** | 499183 | 139741 | 272822 | 10928 | 226361 | 128813 |
| **2012-13** | 540566 | 164138.86 | 281018 | 12228.9 | 259548 | 151909.96 |
| **2013-14** | 589268 | 175686.05 | 319417 | 15092.27 | 269851 | 160593.78 |

Source: Various Reports of State Level Bankers Committee, Assam

According to Sa-Dhan (2008), the total demand for microfinance services in north region was estimated at ₹2600 crore out of which Assam's share was around ₹1700 crore. The demand for these services in 2012 has gone up to ₹9000 crore while the current supply chain is merely able to serve 20-22 per cent of the total demand Sa-Dhan (2013). Originally, MFIs movement in Assam was primarily driven by development financial institutions like NEDFi and SIDBI. Presently private banks as well as public sector banks have also joins hand in the microfinance movement. The position of microfinance programme in the state is stated in Table 3.17.

**Table 3.17 Microfinance Programme in Assam**

| Parameters | Particulars |
|---|---|
| Total No. of MFIs Operating in the State | 6 |
| No. of MFIs Having HQ in the State | 5 |
| Banks Providing Microfinance Services | 18 (Public Banks= 14, RRBs= 2, DCCBs= 1) |
| Total No. of SHGs under SBLP in the State | 276565 |
| Total Savings - Client Outreach | 3871910 |
| Total SHG - Savings with Banks (in Lakh) | 9845.98 |
| Total Credit - Client Outreach | 2556427 (MFIs=907101, Banks=1649326 ) |
| Total Portfolio Outstanding (in Lakh) | 162378.79 (MFIs=99357.15, Banks=63021.64) |
| No. of Districts Served by MFI | 24 |
| Out of Which No. of Poorest Districts | 11 |

Source: Sa-Dhan Website (2014)

However, it can be seen from Table 3.18 that the proportion of NPAs out of total loan outstanding in Assam is higher than all over India in almost all the years. Moreover, in the case of the percentage of NPAs out of total loan outstanding under SGSY, Assam is overcoming all over India position in almost all the years. Thus, even though the amount of saving the balance of SHGs with banks and amount of loan disbursed to SHGs by banks was lower in Assam in compare with all over India which is natural, but the share of NPAs to total loans outstanding was higher here. This raises concern over self help group bank linkage program in Assam.

**Table 3.18 Proportion of NPAs Out of Total Public Sector Bank Loan Outstanding Against SHGs**

| Year | % of NPA Out of Total Loan Outstanding | | % of NPAs Out of Total Loan Outstanding Under SGSY | |
|---|---|---|---|---|
| | Assam | India | Assam | India |
| **2007-08** | 11.4 | 2.1 | 15.8 | 3.7 |
| **2008-09** | 13.2 | 2.4 | 8.7 | 4.47 |
| **2009-10** | 5.77 | 2.6 | 5.16 | 4.95 |
| **2010-11** | 7.6 | 4.8 | 7.1 | 7.4 |
| **2011-12** | 5.5 | 6.48 | 11.19 | 8.75 |
| **2012-13** | 11.34 | 8.39 | 7.54 | 9.9 |
| **2013-14** | 10.04 | 7.02 | 7.63 | 9.62 |
| **2014-15** | 16.12 | 8.02 | 18.51 | 9.43 |

Source: Various Reports of Status of Microfinance Programme in India, NABARD

We can get the similar picture from per capita loan disbursed to SHGs and per capita saving of SHGs with public sector commercial banks that can be indicated in Table 3.19. The per capita loan disbursed to SHGs by public sector commercial banks in Assam is lower than all over India though the situation is worst in the year 2011-12 and 2012-13. The similar is the condition in case of per capita savings of SHGs with public sector commercial banks in Assam, and it is worst in the year 2012-13 (Table 3.19). Therefore, it also underlines question mark in the success story of self help group bank linkage programme in Assam.

**Table 3.19 Per Capita Loan Disbursed to SHGs and Per Capita Saving of SHGs with Public Sector Commercial Banks (Amount in ₹)**

| Year | PCLD to SHGs | | PCS of SHGs | |
|---|---|---|---|---|
| | Assam | India | Assam | India |
| **2007-08** | 4688.44 | 71718 | 37508.8 | 48239.63 |
| **2008-09** | 70508.66 | 79540.03 | 5667.86 | 7812.32 |
| **2009-10** | 77170.3 | 99667.61 | 4753.93 | 9064.82 |
| **2010-11** | 119765.2 | 146004.1 | 5406.53 | 9783.95 |
| **2011-12** | 81703.32 | 164468.5 | 5830.38 | 8992.86 |
| **2012-13** | 76026.72 | 181629.2 | 8069.917 | 13570.247 |
| **2013-14** | 78987 | 209024 | 7879.51 | 16484.64 |
| **2014-15** | 121259.46 | 202566.79 | 6956 | 16032 |

Source: Various Reports of Status of Microfinance Programme in India, NABARD

Apart from that, it is clear from Table 3.20 that, out of total numbers of SHGs formed under SGSY in Assam, the share of study districts are 4.48%, 4.36%, and 3% respectively for Barpeta, Baksa, and Nalbari districts. Out of these SHGs, the shares of SHGs which have undertaken any economic activities are 42%, 15% and 28% respectively for Barpeta, Baksa, and Nalbari districts. This indicates the problem of misutilization of money in some unproductive sectors, even though the situation is worst in Baksa district. This might be one of the factors for hindering financial inclusion policy in rural areas of Assam and assessed the unsuccessful story of self help group programme.

**Table 3.20 District Wise Physical Achievements under SGSY in Assam, 2011-12**

| Districts | SHGs Formed | | SHGs taken up Economic Activity | | Women SHGs Formed | | Women SHGs Taking Economic Activities |
|---|---|---|---|---|---|---|---|
| | Total Since 1.4.1999 | Current Year | Total Since 1.4.1999 | Current Year | Total Since 1.4.1999 | Current Year | |
| **Barpeta** | 12375 (4.48%) | 645 | 5320 (42%) | 553 | 7103 | 425 | 235 (1.89%) |
| **Nalbari** | 9231 (3%) | 236 | 2627 (28%) | 151 | 5893 | 161 | 125 (1.35%) |
| **Baksa** | 11630 (4.36%) | 0 | 1746 (15%) | 250 | 8330 | 0 | 1070 (9.20%) |
| **Assam** | **266141** | **24218** | **90036** | **15747** | **172584** | **15394** | **12564** |

Source: Statistical Handbook of Assam

In addition, the proportion of women SHGs which had undertaken economic activities was only 1.89%, 9.20%, and 1.35% respectively for Barpeta, Baksa, and Nalbari districts. Now the question arises where does the woman spend their money? Are they spending their money for daily needs? It emphasizes the need for reviewing the self help group programme in Assam.

On September 2009, APMAS & NABARD made a study in Assam for measuring the quality and sustainability of SHGs of Assam. After reviewing their study, we found several interesting results which need to be focused here. According to their study, poor quality of SHGs is one of

the basic reasons for the backwardness of the microfinance program in the region. Out of the 109 sample SHGs in Assam, 2 are 'A' grade groups, 67 are 'B' grade groups and 40 are 'C' grade groups. Consequently, these grades imply that the quality of groups in the state is very poor. Likewise, lack of member's awareness is one of the basic factors for the backwardness of the microfinance program in Assam. According to their report, though 62 groups said that the purpose of the group was to save; only 18% groups said providing loans as their purpose. Apart from that, they also reviewed that, only 62% of groups heard about grading, 58 groups know that their groups were graded, but 38 groups do not know grade they got. These raises question over the quality improvement programme and training programme undertaken by NABARD in various time over the year. Moreover, integration of two incompatible programs, i.e. SHG-Banking Program and SGSY program, has been hindering the microfinance programme in Assam. The SHG-Banking Program aimed at financial inclusive, i.e. proving financial services, hitherto un-reached and un-bankable sections, designed to run purely on commercial terms. Whereas the SGSY program is aimed at poverty alleviation through the promotion of entrepreneurship and self-employment with the capital subsidy, runs on state subsidy. Widespread corruption in SGSY program is affecting adversely the repayment to the banks, which in turn is affecting adversely the SHG-Banking Program. In this way, the integration has vitiated the SHG movement in the state. Furthermore, all the stakeholders including primary stakeholders have got limited and, in many instances, inappropriate capacity building inputs. Funds shortage and non-availability of quality capacity building inputs, especially on the institutional building are major problems at SHG and Self Help Promoting Agencies (SHPA) level. Among NGOs, big NGOs got very good training and exposure from national and state level institutions, but small NGOs have to content with local capacity building inputs.

Thus, it is clear that, although self help group programme has been helping the poor to provide financial facilities since the decade, but it is not successful to deliver their services as per expectation, and there are some underline factors which are hindering the programme in rural Assam. Now the question arises, where the rural people go to fulfill their financial needs. In the following section, we had outlined the dominance of informal finance in continuation of our discussion regarding special features of rural credit markets of Assam.

### 3.3.4. Dominance of Informal Finance in Assam

Due to the failure of formal and semiformal financial institutions to provide credit facilities to rural people, a vast portion of rural people is depending on informal finance. In this section, we have discussed the dominance of informal finance in India through special emphasis on Assam by taking different sets of AIDIS undertaken by RBI and NSSO.

#### 3.3.4.1 Informal Finance in All India Level

Although India inherited a basic network of credit cooperatives from the colonial era, the Reserve Banks first decennial All India Rural Credit Survey (AIRCS) 1951-52 (RBI, 1954) found that 92.8% of rural household relied on the informal financial sector (Table 3.21). During 1951-52, an increase in debt was recorded in all the 75 investigated districts of India. The moneylenders continued dominance at the beginning of plan period (around 70% of rural credit) despite all measures to control them, suppress or supplant had led to the suggestion that 'any realistic system of rural credit should seek to incorporate him in itself rather than compete with him or wishfully expect to eliminate him' (RBI, 1954). Loans from relatives (virtually interest-free) accounted for 14% of the reported borrowings of cultivators. About 6% of the total borrowings of cultivators were from traders and commission agents. The combined contribution of government and cooperatives was about 6% of the total rural credit, each accounting for about 3%. As for commercial banks, 1 % represented the insignificant part played by them in the direct financing of the cultivator.

**Table 3.21 Break-up of Institutional and Non-Institutional Rural Credit (%)**

| Sources | 1951 | 1961 | 1971 | 1981 | 1991 | 2002 | 2013 |
|---|---|---|---|---|---|---|---|
| **Institutional Agencies** | **7.2** | **14.8** | **29.2** | **61.2** | **64.0** | **57.1** | **56** |
| **Government** | 3.3 | 5.3 | 6.7 | 4.0 | 5.7 | 2.3 | 1.2 |
| **Co-op. Society/bank** | 3.1 | 9.1 | 20.1 | 28.6 | 18.6 | 27.3 | 24.8 |
| **Commercial bank incl. RRBs** | 0.8 | 0.4 | 2.2 | 28.0 | 29.0 | 24.5 | 25.1 |
| **Insurance** | -- | -- | 0.1 | 0.3 | 0.5 | 0.3 | 0.3 |
| **Provident Fund** | -- | -- | 0.1 | 0.3 | 0.9 | 0.3 | -- |
| **Other institutional agencies** | -- | -- | -- | -- | 9.3 | 2.4 | 4.6 |
| **Non-Institutional Agencies** | **92.8** | **85.2** | **70.8** | **38.8** | **36.0** | **42.9** | **44** |
| **Landlord** | 1.5 | 0.9 | 8.6 | 4.0 | 4.0 | 1.0 | 0.7 |
| **Agricultural Moneylender** | 24.9 | 45.9 | 23.1 | 8.6 | 6.3 | 10.0 | 33.2 |
| **Professional Moneylender** | 44.8 | 14.9 | 13.1 | 8.3 | 9.4 | 19.6 | -- |
| **Traders and Commission Agencies** | 5.5 | 7.7 | 8.7 | 3.4 | 7.1 | 2.6 | 0.1 |
| **Relatives and Friends** | 14.2 | 6.8 | 13.8 | 9.0 | 6.7 | 7.1 | 8.5 |
| **Others** | 1.9 | 8.9 | 2.8 | 4.9 | 2.5 | 2.6 | 1.4 |
| **Total** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Source: All India Rural Credit Survey (1954); All India Debt and Investment Survey, Various Issues; Note: Other Institutional Agencies includes financial corporation/institution, financial company and other institutional agencies.

AIRCS (RBI, 1954) pointed out that 'agricultural prices during the survey year witnessed a stagnation followed by a steep decline for the first time in a period of ten years'. However, a large part of the working funds borrowed by subsistence farmers seems to be related to consumption rather than production. The problem turned into more complicated one due to the socio-economic structure of the village with its characteristics of caste and inequality. Other factors that might have aided to the trend towards an increase in debt were relatively large incidence of drought, famine and inclement seasonal credit.

***All India Rural Debt and Investment Survey 1961-62***

In this second survey by Reserve Bank, the outstanding loans owed to agriculturist moneylenders accounted for about 46% of the aggregate outstanding of all rural households, nearly double the share compared to the first survey. The share of outstanding loans owing to professional moneylenders was next highest though their share declined to constitute 15% of the aggregate outstanding. As per the survey findings on the all-India basis (Table 3.21), the share of cooperatives was at 9.1%, 'others' at 8.9%, traders and commission agents at 7.7%, relatives at 6.8% and government at 5.3% in the total outstanding debt. The shares of landlords and commercial banks in the aggregate outstanding were negligible at 9.0% and 0.4%, respectively. This fact signifies the continuance of informal finance in rural India that might have prompted the nationalization of commercial banks in 1969 in the first phase.

One of the important reasons for continued dependence on moneylenders is that the formal credit delivery structure has not stretched to the villages despite its penetration. The formal credit delivery channels also lack the personal bonds that moneylenders enjoy with the borrowers. Borrowers obtain their loans more promptly from non-institutional sources (Pradhan, 2013).

From Table 3.21, it can be assessed that the informal/non-institutional finance was gradually declining during the 1960s, was very nearly broken during the 1970s, with the institutional agencies making steady inroads into the rural scene. The share of institutional credit agencies in the outstanding cash dues of the rural households at the all-India level increased from 29% in 1971 to 61% in 1981 and then the pace of increase was arrested rising to 64% in 1991. During the following decade, the share declined by about 7% points and reached 57% in 2002. It seems that credit cooperatives, commercial banks, and other formal financial sector programmes in

rural areas have not displaced informal sources of credit, altogether. The 2002 All India Debt and Investment Survey (AIDIS) revealed that 43% of rural households continue to rely on informal finance, which includes professional moneylenders, agricultural moneylenders, traders, relatives and friends, and others.

### 3.3.4.2. Persistence of Informal Credit in Rural Assam- AIDIS Surveys

Since the district wise data are not available in AIDIS surveys, we have taken all over Assam data as a proxy of study districts. From Table 3.22, it can be observed that the share of government in total outstanding cash debt in rural areas of Assam was 15.5% in 1961-62 and it increases to 23.5% in 1971-72. But its share is negligible during the period 1981-82 and 1991-92, and further increases to 15.4 in 2001-02. Likewise, the share of cooperatives increases from 8.3% in 1961-62 to 15.5% in 1991-92 but declines to 5.2% in 2001-02. The share of the commercial bank was nil during the period 1971-72 but increases to 23.0% in 2001-02.

**Table 3.22 Outstanding Cash Debt of Assam in Different years (AIDIS 1961-62, 1971-72, 1981-82, 1991-92 & 2001-02) - Credit Agency Wise (%)**

| Credit Agency | 1961-62 | 1971-72 | 1981-82 | 1991-92 | 2001-02 |
|---|---|---|---|---|---|
| **Government** | 15.5 | 23.5 | 2.0 | 5.6 | 15.4 |
| **Cooperatives** | 8.3 | 10.6 | 6.0 | 15.5 | 5.2 |
| **Commercial Banks** | -- | 0.0 | 16.0 | 9.1 | 23.0 |
| **Insurance** | -- | -- | 0.0 | -- | 0.1 |
| **Provident Fund** | -- | -- | 6.0 | -- | 7.3 |
| **Financial Institution** | -- | -- | -- | -- | 2.2 |
| **Financial Company** | -- | -- | -- | -- | 0.8 |
| **Other Institutional Agency** | -- | -- | -- | -- | 3.9 |
| **Landlords & Traders** | 6.7 | 11.6 | 2.0 | 35.9 | 1.6 |
| **Moneylenders (Agr. & Prof.)** | 50.1 | 19.7 | 6.0 | 25.8 | 26.2 |
| **Relatives & Friends** | 11.9 | 27.0 | 34.0 | 4.8 | 12.4 |
| **Others** | 7.6 | 7.6 | 28.0 | 3.3 | 1.9 |
| **Total** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

Source: All India Debt and Investment Survey- 1961-62, 1971-72, 1981-82, 1991-92 & 2001-2002
Note: Data's are edited by author

Among the non-institutional credit agencies, moneylenders (agri. & prof.) dominating the position (50.1%) in 1961-62, and its share was negligible during the period 1981-82 and further increases to 26.2% in 2001-02. The share of relatives and friends was very significant during the period 1971-72 and 1981-82 with 27.0% and 34.0% respectively.

It can be accessed from Table 3.22 that the most remarkable performance was that of the commercial banks while the share of cooperatives was declining in recent years. It appears that a large number of branches that was set up by various commercial banks in the 1970s and the

subsequent introduction of rural banking schemes have driven the commercial banks to assume the role of principal credit agency in rural areas. As a whole, in Assam, among the institutional credit agencies, the commercial banks and government were the two most important agencies in the rural sector. These two agencies together accounted for 38.4% of outstanding cash debt during the year 2001-02. As a whole, among the non-institutional agencies, moneylenders were the main source of credit followed by relatives and friends. The gradual increase in the share of formal institutional credit in agriculture witnesses some reversal during 1991-2002 mainly because of a pull back by commercial banks. Thus likewise all over India, in Assam also, we can get a continuance dominance of informal sectors in recent time (Table 3.22). There is another large segment of supplier under the informal sector in Lower Assam called the Xonchois which are missing in AIDIS report. They dominate the financial landscapes in most parts of the region. One of the reasons could be that Xonchois are constituted of friends and relatives. Hence, it might be possible that they have been included under the generic category of Friends and Relatives (Sharma, 2011).

It is important to mention here, not only is the informal sector dominant but also this dominance is found to be much more pervasive across different income classes. Amongst the poor classes, its dominance is almost 100% as compared to the national average of around 80% (Table 3.23 and Table 3.25). This dominance of informal sector continues across most of the higher asset classes. In other words, the informal sector is much more widespread in the state as compared to the country.

**Table 3.23 Number of Households Reporting Cash Loans Outstanding as on 30.06.02 per 1000 Households Over Credit Agency for each Household Assets Holding Class**

| Asset Holding Class (Rs. 000) | Assam | | | All India | | |
|---|---|---|---|---|---|---|
| | Institutional Agencies | Non Institutional Agencies | Total | Institutional Agencies | Non Institutional Agencies | Total |
| **0-15** | 2(3.3) | 58(96.7) | 60 | 36(24.0) | 120(80.0) | 150 |
| **15-30** | 3(3.3) | 87(96.7) | 90 | 62(32.6) | 139(73.2) | 190 |
| **30-60** | 11(12.2) | 80(88.9) | 90 | 87(34.5) | 177(70.2) | 252 |
| **60-100** | 10(11.9) | 74(88.1) | 84 | 109(41.1) | 177(66.8) | 265 |
| **100-150** | 20(27.8) | 51(70.8) | 72 | 136(47.1) | 179(61.9) | 289 |
| **150-200** | 6(17.1) | 28(80.0) | 35 | 146(50.9) | 171(59.6) | 287 |
| **200-300** | 13(25.5) | 38(74.5) | 51 | 162(56.4) | 157(54.7) | 287 |
| **300-450** | 48(51.6) | 45(48.4) | 93 | 187(65.2) | 132(46.0) | 287 |
| **450-800** | 96(68.1) | 46(32.6) | 141 | 220(71.0) | 130(41.9) | 310 |
| **800 & above** | 58(69.9) | 25(30.1) | 83 | 267(81.2) | 103(31.3) | 329 |
| **All** | **16(21.3)** | **59(78.7)** | **75** | **134(50.6)** | **155(58.5)** | **265** |

Source: 59th Round of AIDIS, NSSO; Note: Figures in the parentheses represent per cent to total

Another important characteristic of non-institutional informal finance in Assam is the nature of extremely small loan sizes. Table 3.24 shows that the average loan size of Assam is less than half of the national average. Not only the average size is small, this smallness persists across all the asset classes in the state. Even in the case of the richest class, the loan size in Assam is only 22.56% of the loan size of the country as a whole. It is extremely difficult for formal institutions like banks to meet the demand of extremely small loans as it is not sustainable for them.

**Table 3.24 Average Loan Size Per Rural Household by Asset Class in Assam and India**

| Household Asset Holding Class (Rs.000) | Assam | India | % of Loan Size in Assam from all over India Loan Size |
|---|---|---|---|
| **0-15** | 159 | 1423 | 11.2 |
| **15-30** | 315 | 2243 | 14 |
| **30-60** | 248 | 3153 | 7.9 |
| **60-100** | 635 | 4301 | 14.8 |
| **100-150** | 518 | 5299 | 9.8 |
| **150-200** | 274 | 5696 | 4.8 |
| **200-300** | 429 | 7058 | 6.1 |
| **300-450** | 2232 | 9857 | 22.6 |
| **450-800** | 3578 | 15090 | 23.7 |
| **800 & above** | 1868 | 33414 | 5.6 |
| **All** | **643** | **1423** | **45.2** |

Source: 59th Round of AIDIS, NSS, 2002

**Table 3.25 per 1000 Number of Rural Households, Average Value of Assets per Household and Amount of Cash Loan per Household as on 30.06.12 by Household Asset Holding Class (Amount in ₹)**

| State | Asset Holding Class | Per 1000 No. of Households | Avg. Value of Assets per HHs | Avg. Value of Cash Loan per HHs |
|---|---|---|---|---|
| Assam | 1 | 103 | 28896 | 1312 (13.52) |
| | 2 | 102 | 87793 | 1601(18.15) |
| | 3 | 115 | 154346 | 2388 (17.29) |
| | 4 | 98 | 227361 | 1915 (12.22) |
| | 5 | 132 | 329053 | 2457 (13.07) |
| | 6 | 149 | 459948 | 5979 (25.51) |
| | 7 | 110 | 635192 | 6551(22.77) |
| | 8 | 103 | 903674 | 6176 (16.40) |
| | 9 | 66 | 1516865 | 20637 (36.42) |
| | 10 | 22 | 3457939 | 25247 (22.56) |
| | **All** | **1000** | **503499** | **5256 (16.16)** |
| India | 1 | 100 | 25071 | 9705 |
| | 2 | 100 | 89593 | 8819 |
| | 3 | 100 | 151460 | 13811 |
| | 4 | 100 | 227415 | 15673 |
| | 5 | 100 | 325385 | 18800 |
| | 6 | 100 | 454192 | 23441 |
| | 7 | 100 | 635506 | 28770 |
| | 8 | 100 | 922870 | 37662 |
| | 9 | 100 | 1548889 | 56658 |
| | 10 | 100 | 5689385 | 111884 |
| | **All** | **1000** | **1006985** | **32522** |

Source: Household Assets and Liabilities, NSS 70th Round; Note: Household asset holding class refers to the 10 deciles classes of the all-India distribution (estimated distribution) of households by asset holding size. In the tables, the different deciles classes are referred to simply as 1 (lowest deciles class), 2, 3 …9, 10; Figure in the parentheses represent per cent of loan size in Assam from all over India loan size

In the present context when the prime objective of the banks are in improving their bottom lines, they would try to avoid this segment due to the high costs and restrict themselves in meeting the requirements of much larger loans. The average size of the loan of the formal banking industry in Assam is ₹112174/- (BSR, RBI, 2008). Even in the case of rural areas the average loan size financed by the formal banking sector in the state is 56852/-(BSR, RBI, 2008) which is way above the demand of ₹5256/- only for the rural households as cited in the Table 3.24. This is one of the major reasons why the rural households in Assam rely mostly on the informal financial sector to meet their credit requirements.

**Table 3.26 per 1000 Number of Rural Households, Average Value of Assets per Household and Amount of Cash Loan per Household as on 30.06.12 by Household Type (Amount in ₹)**

| State | Household Type | Avg. Value of Assets per HHs | Avg. Value of Cash Loan per HHs |
|---|---|---|---|
| Assam | Self Employed in Agriculture | 625913 | 4748 (12.21) |
| | Self Employed in Non-Agriculture | 476910 | 5396 (10.34) |
| | Regular Wage/Salary Earnings | 471853 | 12038 (30.39) |
| | Casual Labour in Agriculture | 309483 | 542 (3.36) |
| | Casual Labour in Non-Agriculture | 220088 | 901 (4.73) |
| | Others | 468568 | 2854 (19.02) |
| | **All** | **503499** | **5256 (16.16)** |
| India | Self Employed in Agriculture | 1573731 | 38888 |
| | Self Employed in Non-Agriculture | 928712 | 52162 |
| | Regular Wage/Salary Earnings | 981390 | 39617 |
| | Casual Labour in Agriculture | 304104 | 16141 |
| | Casual Labour in Non-Agriculture | 374876 | 19030 |
| | Others | 554341 | 15001 |
| | **All** | **1006985** | **32522** |

Source: Household Assets and Liabilities, NSS 70th Round; Note: Figure in the parentheses represent per cent of loan size in Assam from all over India loan size

Table 3.26 outlines the small size of average loan of Assam vis-à-vis India in household category-wise. The average loan size is low in case of casual labour in agriculture and which is only 3.36% of national level.

In addition, most of the loans are spending for consumption purpose in Assam as can be seen from Table 3.27. Basically, during the lean income period, a large segment of the loans are borrowed so that the households can meet their expenditure during this period. This frees up capital for production activities which otherwise would be needed for daily living expenses, especially during the lean times (CGAP Annual Report, 2005).

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**Table 3.27 Percentage Distribution of Loans by Purpose in Assam and India**

| | | | |
|---|---|---|---|
| Assam | **Exp in Farm Business** | **Exp in Non Farm** | **Total for Production** |
| | 13.7 | 8.1 | 21.8 |
| | **HH Exp** | **Other Exp** | **Total for Non business HH Exp** |
| | 58.9 | 18.6 | 77.4 |
| | **Total** | | 100 |
| India | **Exp in Farm Business** | **Exp in Non Farm** | **Total for Production** |
| | 32.7 | 7.2 | 39.9 |
| | **HH Exp** | **Other Exp** | **Total for Non business HH Exp** |
| | 56.7 | 9.1 | 64.9 |
| | **Total** | | 100 |

Source: 59th Round of AIDIS, NSS, 2002

This borrowing also reduces risk and vulnerabilities of the poor and hence used very extensively as a survival strategy by them. However, the nature of such loans is such that they need to be disbursed very quickly to the recipient. This can only be done by financial intermediaries who are residing in the vicinity of the clients and know them intimately; thus reducing problems of

information asymmetry leading to adverse selection and moral hazard formal sector in the rural areas of Assam.

On the basis of the above background, we have chosen Assam as a study state among all other low performing states. In the next section, we have discussed the banking profile vis-à-vis rationale behind the selection of study districts.

### 3.3.5. Banking Profile of Study Districts

Among the study districts, most of the scheduled commercial bank branches are concentrated in Barpeta district (Table 3.28) which is a good indicator because of the fact that, in Barpeta district large numbers of the population are living, unlike other study districts. It is interesting to see from Table 3.28 that, the credit-deposit ratio of all study districts are much higher than all over Assam which underlines the better position of formal credit in the study districts while among the study districts, credit deposit ratio is lowest in Baksa district and it is highest in Nalbari district. Thus, Nalbari district is healthier than other study districts in case of credit deposit ratio.

**Table 3.28 District-Wise Distribution of Aggregate Deposit and Gross Bank Credit of All Scheduled Commercial Banks in Assam (₹ in Crore)**

| Districts | As on March 2013 | | | | As on March 2014 | | | |
|---|---|---|---|---|---|---|---|---|
| | No. of Reporting Offices | Deposit | Credit | CD ratio | No. of reporting offices | Deposit | Credit | CD ratio |
| **Barpeta** | 66 | 1606 | 710 | 44.20 | 72 | 1873 | 847 | 45.22 |
| **Nalbari** | 49 | 1097 | 522 | 47.54 | 52 | 1202 | 595 | 49.50 |
| **Baska** | 27 | 386 | 194 | 50.25 | 29 | 534 | 219 | 41.01 |
| **Assam** | **1682** | **77730** | **28575** | **36.79** | **1861** | **85070** | **31714** | **37.28** |

Source: Statistical Handbook of Assam, 2014

Likewise, Table 3.29 also indicated that unlike Nalbari district, the average population per branch office of all scheduled commercial banks is higher in both study districts namely Baksa and Barpeta in compare to Assam, while the situation is worst in Baksa district. However, the situation is most horrible in all the three districts as well as of Assam if we compare it with all India level. This focuses the problem of the thin spread of bank branches generally in Assam and particularly for Baksa and Barpeta districts. Thus, we can get a poorly developed banking structure of Assam in compare with all over India, but the status is relatively superior in Nalbari district among the study districts.

**Table 3.29 Average Population per Branch Office of All Scheduled Commercial Banks of Assam as on December, 2013**

| Districts | SBI & its Associates (offices) | Nationalized Bank (offices) | Foreign Banks (offices) | RRB (offices) | OPB (offices) | NPB (offices) | Total (offices) | APPO |
|---|---|---|---|---|---|---|---|---|
| **Baksa** | 4 | 15 | -- | 9 | -- | -- | 28 | 34063 |
| **Barpeta** | 11 | 35 | -- | 17 | -- | 6 | 69 | 24538 |
| **Nalbari** | 8 | 24 | -- | 17 | -- | 3 | 52 | 14806 |
| **Assam** | 301 | 922 | 2 | 408 | 16 | 141 | 1790 | 17413 |
| **India** | **21469** | **55920** | **301** | **17524** | **6199** | **10365** | **111778** | **10825** |

Source: BSR, RBI and Census of India, 2011

Similarly, if we look at the picture of average rural population per branches of commercial banks, we can get the same situation as earlier. Here also, average rural population per branches of commercial banks is higher in both Barpata and Baksa district in compare to Assam and all over India (Table 3.30), whereas Nalbari district is relatively performing well in compare to all over Assam. Thus, one can get a point here why Nalbari district is doing well in case of rural bank branch expansion in Assam, unlike other study districts.

**Table 3.30 Average Population per Branches of Commercial Banks in Rural Areas of Assam as on March 2009**

| Districts | Rural Branches | Rural Population | APPB |
|---|---|---|---|
| **Baksa** | 22 | 941600 | 42800 |
| **Barpeta** | 38 | 1545901 | 40681 |
| **Nalbari** | 30 | 687368 | 22912 |
| **ASSAM** | 786 | 26780516 | 34071 |
| **India** | **31695** | **833000000** | **26281** |

Source: BSR, RBI and Census of India, 2011

In a similar way, the average per capita credit (Table 3.31) and average per capita deposit (Table 3.32) also indicates severe financial exclusion in the study districts as well as all over Assam in compare to overall India. As we can point out from Table 3.31 that average per capita credit of all scheduled commercial banks is much lower in Assam in compare to all over India, while the situation is worst in Baksa district. Although Nalbari district is performing well among all study districts, but unable to overcome all over Assam situation. This raises a question why Nalbari district unable to overcome all over Assam in spite of his impressive bank branch expansion.

**Table 3.31 Per Capita Credit of All Scheduled Commercial Banks of Assam as on December, 2013 (Amount in Millions)**

| Districts | SBI & its Associates (Credit) | Nationalized Bank (Credit) | Foreign Banks (Credit) | RRB (Credit) | OPB (Credit) | NPB (Credit) | Total (Credit) | PCAC (₹) |
|---|---|---|---|---|---|---|---|---|
| **Baksa** | 372 | 691 | -- | 1,066 | - | - | 2129 | 2232 |
| **Barpeta** | 3,419 | 2,054 | -- | 2,078 | - | 416 | 7967 | 4705 |
| **Nalbari** | 1,941 | 1,395 | - | 2,100 | - | 247 | 5683 | 7381 |
| **Assam** | 111040 | 123642 | 1324 | 36300 | 2804 | 24618 | 299728 | 9616 |
| **India** | **12928849** | **28831996** | **2810618** | **1480268** | **2798008** | **8536396** | **57386135** | **47418** |

Source: BSR, RBI and Census of India, 2011

In Table 3.32 also, we can get the similar situation like earlier one. The amount of average per capita deposit of all scheduled commercial banks is higher in overall India in compare to Assam as well as study districts. Here also, the position of Baksa district is nastiest among all study districts, whereas Nalbari district is doing well, but far behind the all over Assam position. This again questions the bank branch expansion policy of the government.

**Table 3.32 Per Capita Deposit of All Scheduled Commercial Banks of Assam as on December, 2013 (Amount in Millions)**

| Districts | SBI & its Associates (Deposit) | Nationalized Banks (Deposit) | Foreign Banks (Deposit) | RRB (Deposit) | OPB (Deposit) | NPB (Deposit) | Total (Deposit) | PCAD (₹) |
|---|---|---|---|---|---|---|---|---|
| **Baksa** | 1177 | 2051 | -- | 1139 | -- | -- | **4367** | 4578 |
| **Barpeta** | 6915 | 6617 | -- | 2946 | -- | 635 | **17113** | 10106 |
| **Nalbari** | 4395 | 3774 | -- | 2860 | -- | 307 | **11336** | 14723 |
| **Assam** | 296465 | 365326 | 1848 | 63190 | 9155 | 38636 | **774620** | 24852 |
| **India** | 16662038 | 38687611 | 3428709 | 2153790 | 3590672 | 10107299 | **74630119** | 61667 |

Source: BSR, RBI and Census of India, 2011

### 3.3.5.1. Advances to Priority Sectors

One of the schemes of RBI for all scheduled commercial banks is that they must provide 40% of their total credit to the priority sector in rural areas. It is visible from Table 3.33 that among the aggregate advances in 2011-12, 55.83% is devoted to priority sector and from this only 19.91% goes to agriculture and allied activities, and per capita priority sector advances are ₹5154 during the same year. It is clear from the Table 3.33 that, although advances to priority sector are increasing over time, but amount directed to agriculture and allied activities where 70% of rural people are engaging, remain stagnant over time. This also raises concern over the distribution of rural credit, whether credit is going to the right person or not.

**Table 3.33 Advances Outstanding Under Priority Sector in Assam (₹ in Crore)**

| Sectors | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Aggregate Advances** | 6497.59 | 9811.15 | 12989.44 | 16081.43 | 17750.99 | 20910.97 | 23843.62 | 30363.22 | 32825.11 | 37902.92 |
| **Total Priority Sector Advance** | 3119.99 (48.02) | 4248.21 (43.30) | 6148.70 (47.34) | 8322.25 (51.75) | 10705.50 (60.31) | 11314.92 (54.11) | 13242.59 (55.54) | 16080.72 (55.83) | 19429.10 (59.19) | 21645.83 (57.11) |
| **Agriculture & Allied Activities** | 616.15 (9.48) | 1212.84 (12.36) | 1596.74 (12.29) | 2158.80 (13.42) | 2345.86 (13.22) | 3868.37 (18.50) | 4557.40 (19.11) | 5733.91 (19.91) | 6614.39 (20.15) | 7497.58 (19.78) |
| **Industries** | 515.87 (7.94) | 685.52 (6.99) | 1018.13 (7.84) | 1281.63 (7.97) | 1460.25 (8.23) | 2054.15 (9.82) | 2490.30 (10.44) | 2819.38 (9.79) | 4326.50 (13.18) | 5158.53 (13.61) |
| **Per Capita Priority Sector Advances (₹)** | 1170 | 1594 | 2307 | 3122 | 4016 | 4245 | 4968 | 5154 | 6226 | 6938 |

Source: Various Reports of State Level Bankers Committee, Assam

However, we can get a very worst picture if we look at the situation of target achieved for advancing to priority sectors in the study districts (Table 3.34). As it can be indicated from Table 3.34, on 25.02.2014 in Baksa district the scheduled commercial banks only fulfill 6.32% of their target. The same is the position in case of regional rural banks. The status of Nalbari district is relatively better in compare to other two districts which can be shown from Table 3.34.

**Table 3.34 Target Achievement under Annual Credit Plan for Advancing to Priority Sector in Study District**

| Bank Type | Year | Target Achieved in Different Priority Sector in Study Districts (%) | | |
|---|---|---|---|---|
| | | Baksa | Barpeta | Nalbari |
| ASCB | 2009 | | 88 | 14 |
| | 2010 | 32 | 41 | 17 |
| | 2011 | 18 | 19 | 7 |
| | 2012 | -- | -- | -- |
| | 2013 | 8.2 | 15 | 14.4 |
| | 2014 | 6.32 | 24.08 | 27.93 |
| RRB | 2009 | -- | 81 | 81 |
| | 2010 | 37 | 70 | 52 |
| | 2011 | 2 | 71 | 14 |
| | 2012 | -- | -- | -- |
| | 2013 | 6.28 | 29.38 | 15.6 |
| | 2014 | 5.95 | 35.97 | 29.58 |
| AACB | 2009 | -- | 51 | 3 |
| | 2010 | 58 | 19 | 0 |
| | 2011 | 46 | 13 | 2 |
| | 2012 | -- | -- | -- |
| | 2013 | 1.2 | 2.1 | -- |
| | 2014 | 2.4 | 5.35 | -- |

Source: Various Reports of SLBC, Assam

Thus, the failure of achieving the target of priority sector lending where the majority of rural people are engaging indicates the severe financial exclusion in rural areas of Assam, and consequently, it points out that most of the credits are actually concentrated among the small portion of rich people. Although in most of the cases the position of Nalbari district is superior in compared to other study districts as well as Assam, but it is horrible in compare with all over India. This highlights the serious financial exclusion in rural areas of Assam which forcing the rural people to informal financial institutions. However, the introduction of group-based approach in 1979, although it is adopted later in Assam, has somewhat improved the situation. In the subsequent section, we provided an analysis by focusing demand side of credit in the study area for validating our study districts.

### 3.3.6. District/Region Level Financial Inclusion Index

To rationalize the selection of study region and districts we have constructed one financial inclusion index separately across districts and regions in Assam by using fourteen indicators as mentioned below-

- Average Population per Bank Offices (APPBO)
- Average Population per Rural Bank Offices (APPRBO)
- Average Deposit per Bank Offices (ADPBO) (in Million)
- Average Credit per Bank Offices (ACPBO) (in Million)
- Average Credit Outstanding Per Credit Accounts (ACOPCA) (in thousands)
- No. of Credit Account per Thousand Population (NCAPTP)
- Per Capita Credit Outstanding (PCCO) (in thousands)
- Average Deposit per Thousand Deposit Account (ADPTDA) (in Million)
- Per Capita Deposit (PCD) (in thousands)
- Average Deposit per Thousand Deposit Account in Rural Areas (ADPTDARA) (in Million)
- Per Capita Deposit Amount in Rural Areas (PCDARA) (in thousands)
- Credit Deposit Ratio (CDR) (%)
- Households Availing Banking Services (HABS) (%)
- Rural Households Availing Banking Services (RHABS) (%)

As in state level index, we have used same method and criteria for constructing and measuring the status of financial inclusion here.

## Table 3.35: Region and District-wise Distribution of Banking Performance Index Value in Assam

| Regions | IND 1 | IND 2 | IND 3 | IND 4 | IND 5 | IND 6 | IND 7 | IND 8 | IND 9 | IND 10 | IND 11 | IND 12 | IND 13 | IND 14 | Index Value | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NORTH ASSAM** | | | | | | | | | | | | | | | | |
| **UDA** | 0.46 | 0.64 | 0.64 | 1.09 | 0.30 | 0.98 | 0.48 | 0.44 | 0.46 | 0.59 | 0.47 | 1.55 | 0.82 | 0.87 | **0.70** | **LOW** |
| **DARR** | 0.89 | 0.74 | 0.71 | 0.94 | 0.42 | 0.87 | 0.60 | 0.61 | 0.64 | 0.53 | 0.33 | 1.29 | 0.81 | 0.85 | **0.73** | **LOW** |
| **SON** | 1.15 | 1.13 | 0.87 | 1.04 | 0.87 | 1.04 | 1.49 | 0.82 | 0.99 | 0.79 | 0.68 | 1.16 | 0.90 | 0.90 | **0.99** | **AVERAGE** |
| **NAG** | 0.84 | 0.87 | 1.06 | 1.04 | 0.42 | 0.98 | 0.67 | 0.73 | 0.85 | 0.63 | 0.59 | 1.00 | 1.00 | 1.04 | **0.84** | **AVERAGE** |
| **MOR** | 0.83 | 0.78 | 0.58 | 0.96 | 0.35 | 0.95 | 0.55 | 0.43 | 0.53 | 0.43 | 0.43 | 1.44 | 1.05 | 1.09 | **0.74** | **LOW** |
| **TNA (A)** | **0.83** | **0.83** | **0.77** | **1.01** | **0.47** | **0.96** | **0.76** | **0.60** | **0.69** | **0.59** | **0.50** | **1.29** | **0.92** | **0.95** | **0.80** | **AVERAGE** |
| **LOWER ASSAM** | | | | | | | | | | | | | | | | |
| **DHU** | 0.25 | 0.04 | 0.78 | 0.77 | 0.36 | 0.53 | 0.31 | 0.64 | 0.49 | 0.66 | 0.34 | 0.88 | 0.52 | 0.48 | **0.50** | **LOW** |
| **KOK** | 0.50 | 0.24 | 1.32 | 0.86 | 0.43 | 0.65 | 0.46 | 0.87 | 0.93 | 0.83 | 0.49 | 0.65 | 0.83 | 0.83 | **0.71** | **LOW** |
| **BON** | 1.10 | 0.74 | 0.97 | 0.96 | 0.56 | 0.86 | 0.79 | 0.89 | 1.10 | 0.82 | 0.52 | 0.90 | 1.31 | 1.35 | **0.92** | **AVERAGE** |
| **GOAL** | 0.77 | 0.92 | 0.74 | 0.71 | 0.38 | 0.67 | 0.42 | 0.65 | 0.64 | 0.88 | 0.63 | 0.93 | 1.14 | 0.92 | **0.74** | **LOW** |
| **BAK** | 0.52 | 1.09 | 0.56 | 0.65 | 0.34 | 0.43 | 0.24 | 0.44 | 0.36 | 0.83 | 0.84 | 0.99 | 0.74 | 0.82 | **0.63** | **LOW** |
| **CHI** | 0.79 | 1.05 | 1.29 | 1.01 | 0.45 | 0.71 | 0.53 | 0.86 | 1.03 | 1.70 | 1.73 | 0.71 | 0.82 | 0.86 | **0.97** | **AVERAGE** |
| **BAR** | 0.84 | 0.91 | 0.80 | 0.99 | 0.43 | 0.77 | 0.54 | 0.64 | 0.70 | 0.88 | 0.86 | 1.09 | 0.82 | 0.83 | **0.79** | **AVERAGE** |
| **NAL** | 1.21 | 1.31 | 0.74 | 0.88 | 0.41 | 1.21 | 0.81 | 0.68 | 0.98 | 0.87 | 0.12 | 1.19 | 0.84 | 0.80 | **0.86** | **AVERAGE** |
| **KAM** | 1.13 | 1.36 | 0.63 | 0.98 | 1.18 | 1.66 | 3.20 | 0.71 | 0.96 | 1.24 | 1.81 | 1.01 | 1.25 | 1.24 | **1.31** | **TOP** |
| **KAM M)** | 1.81 | 1.75 | 2.80 | 2.61 | 1.53 | 2.70 | 6.76 | 5.11 | 1.78 | 4.12 | 5.94 | 0.80 | 1.01 | 1.06 | **2.84** | **TOP** |
| **TLA (A)** | **0.89** | **0.94** | **1.06** | **1.04** | **0.61** | **1.02** | **1.40** | **1.15** | **0.90** | **1.28** | **1.33** | **0.92** | **0.93** | **0.92** | **1.03** | **TOP** |
| **UPPER ASSAM** | | | | | | | | | | | | | | | | |
| **LAKH** | 1.06 | 1.10 | 0.64 | 1.06 | 0.40 | 1.14 | 0.75 | 0.60 | 0.72 | 0.71 | 0.74 | 1.48 | 0.75 | 0.75 | **0.85** | **AVERAGE** |
| **DIBR** | 1.47 | 1.34 | 1.67 | 1.20 | 0.64 | 1.51 | 1.58 | 1.71 | 2.88 | 1.19 | 1.27 | 0.77 | 1.17 | 1.14 | **1.40** | **TOP** |
| **DHE** | 0.48 | 0.36 | 0.74 | 1.14 | 0.38 | 0.91 | 0.56 | 0.57 | 0.50 | 0.73 | 0.50 | 1.56 | 0.79 | 0.81 | **0.72** | **LOW** |
| **TIN** | 1.37 | 1.20 | 1.10 | 0.97 | 0.70 | 0.91 | 1.04 | 1.23 | 1.72 | 1.05 | 0.81 | 0.87 | 1.09 | 1.03 | **1.08** | **TOP** |
| **SIB** | 1.27 | 1.22 | 1.08 | 1.10 | 0.05 | 1.20 | 0.11 | 1.00 | 1.44 | 1.04 | 1.18 | 1.07 | 1.13 | 1.19 | **1.01** | **TOP** |
| **JOR** | 1.40 | 1.27 | 1.33 | 1.32 | 0.61 | 1.48 | 1.48 | 1.23 | 2.01 | 0.96 | 1.13 | 1.04 | 1.56 | 1.73 | **1.33** | **TOP** |
| **GOL** | 1.24 | 1.35 | 0.93 | 0.86 | 0.38 | 1.22 | 0.76 | 0.72 | 0.95 | 0.88 | 1.07 | 1.13 | 0.74 | 0.74 | **0.93** | **AVERAGE** |
| **TUA (A)** | **1.19** | **1.12** | **1.07** | **1.09** | **0.45** | **1.20** | **0.89** | **1.01** | **1.46** | **0.94** | **0.96** | **1.13** | **1.03** | **1.06** | **1.04** | **TOP** |
| **HILLS AND BARAK VALLEY** | | | | | | | | | | | | | | | | |
| **NCH** | 1.41 | 1.58 | 0.74 | 0.43 | 0.46 | 0.74 | 0.56 | 1.20 | 0.15 | 1.42 | 1.59 | 0.49 | 1.24 | 1.32 | **0.95** | **AVERAGE** |
| **KA** | 1.17 | 1.35 | 0.61 | 0.59 | 0.48 | 0.36 | 0.28 | 0.92 | 0.95 | 0.62 | 0.69 | 0.69 | 1.77 | 1.45 | **0.85** | **AVERAGE** |
| **CAC** | 1.18 | 1.12 | 1.34 | 1.07 | 0.59 | 1.01 | 0.97 | 1.41 | 1.67 | 1.14 | 1.15 | 0.84 | 0.91 | 0.87 | **1.09** | **TOP** |
| **HAIL** | 0.85 | 0.54 | 0.89 | 0.75 | 0.35 | 0.84 | 0.49 | 0.72 | 0.08 | 0.68 | 0.45 | 0.82 | 1.11 | 1.17 | **0.70** | **LOW** |
| **KAR** | 0.84 | 0.91 | 1.13 | 0.75 | 0.49 | 0.66 | 0.53 | 0.82 | 0.79 | 0.86 | 0.76 | 0.72 | 0.92 | 0.91 | **0.79** | **AVERAGE** |
| **THBV(A)** | **1.09** | **1.10** | **0.94** | **0.72** | **0.48** | **0.72** | **0.56** | **1.01** | **0.73** | **0.94** | **0.93** | **0.71** | **1.19** | **1.14** | **0.88** | **AVERAGE** |
| **ASSAM** | **1.18** | **1.07** | **1.30** | **1.26** | **0.67** | **1.03** | **1.08** | **1.34** | **1.71** | **0.92** | **0.86** | **0.90** | **0.98** | **0.95** | **1.09** | **TOP** |

Source: Authors' estimation based on Basic Statistical Returns of SCBs in India, RBI, 2015; Quarterly Statistics on Deposits and Credit of SCBs, March 2015; Census of India, 2011; Note: BAK= Baksa, BAR= Barpeta, BON= Bongaigaon, CAC= Cachar, CHI= Chirang, DARR= Darrang, DHE= Dhemaji, DIBR= Dibrugarh, GOAL= Goalpara, GOL= Golaghat, HAIL= Hailakandi, JOR= Jorhat, KAM= Kamrup, KAM (M) = Kamrup Metropolitan, KA= Karbi Anglong, KAR= Karimganj, KOK= Kokrajhar, LAKH= Lakhimpur, MOR= Morigaon, NAG= Nagaon, NAL= Nalbari, NCH= North Cachar Hills, SIB= Sibsagar, SON= Sonitpur, TIN= Tinsukia, UDA= Udalguri, TNA= Total North Assam, TLA= Total Lower Assam, TUA= Total Upper Assam, THBV= Total Hills and Barak Valley; $IND_j$= Indicator 1…….14; Value of IND 1 and IND 2 are subtracted by '2' to make it same direction with other indicators.

Table 3.35 reveals a skewed expansion of the financial system across districts and regions within Assam. It is apparent from the fact that the financial inclusion index of the banking outreach value of the top district (Kamrup Metro) is more than four times that of the bottom district (Dhubri). The same picture is evident from the absolute figure of each indicator (Appendix D and Appendix E). Moreover, only 25.93% districts are the top performer while 40.74% are the average performer. Thus between two Top performer regions we have selected Lower Assam as a study region because literature agrued the higher concentration of microfinance setup besides several informal community based organizations in this region. Similarly, among ten districts in this region we have selected Nalbari, Barpeta and Baksa as a study districts from each of Top, Average and Low performer districts.

### 3.3.7. Demand Driven Financial Inclusion in Study Districts

Prior to depth study in the subsequent chapters, here we presented an investigation by constructing one Demand Driven Financial Inclusion Index (DDFII) in order to validate of our study districts. We used household level data for the same[12]. Indeed, for constructing DDFII, we used three indicators for formal sector- proportion of people having formal credit, proportion of people having formal saving and proportion of people having formal insurance.

$$\mathbf{DDFII}_{F} = (\sum_{q} \mathbf{Y}^{t}_{qs}) /3$$

Where,

$\mathbf{Y}^{t}_{qs}$ is the value of indicator q for the district/village at time t

**q** = formal saving, credit and insurance

However, for semiformal and informal sectors we used two indicators- proportion of people having semiformal/informal credit and proportion of people having semiformal/informal saving.

$$\mathbf{DDFII}_{S} = (\sum_{q} \mathbf{Y}^{t}_{qs}) /2$$

Where,

$\mathbf{Y}^{t}_{qs}$ is the value of indicator q for the district/village at time t

**q** = semiformal saving and credit

$$\mathbf{DDFII}_{I} = (\sum_{q} \mathbf{Y}^{t}_{qs}) /2$$

Where,

$\mathbf{Y}^{t}_{qs}$ is the value of indicator q for the district/village at time t

**q** = informal saving and credit

[12] Detailed of data collection has been discussed in subsequent section.

Here formal sector includes all scheduled commercial banks operating in the respective districts. Likewise, the semiformal sector includes Self Help Groups linked with banks and Microfinance institutions basically BANDHAN even though, it now got bank license, and informal sector includes money lenders and various private saving groups exist in the village. Moreover, informal saving includes savings of people with various Chit Fund Company though people lost their money because of Chit Fund Scam.

As the indicators are all in percentages, they are already normalized with a minimum of zero and maximum of hundred. We used an equally weighted average of the indicators to calculate DDFII, separately for formal, semiformal and informal sources. The index is the average of these three components (in the case of formal sources) and the average of two components – saving and credit only (in the case of semiformal and informal sources), which indicates the status of availed financial services. It serves as a proxy of demand for these services.

While Table 3.36 indicates that in Baksa district the dominance of all the three sources is found to be smallest, whereas in Barpeta district all three are doing well. In Baksa district access to formal sources is one out of every three households, one out of every two households in case of both semiformal and informal sources. However, the indicator-wise indexes are mentioned in Appendix F, Appendix G and Appendix H. Indeed, in Barpeta district access to formal sources is one out of every three households, while all households are engaged in semiformal sources. But, access to informal sources is one out of every two households. Thus, we can get a very poor picture of financial inclusion in Baksa district and this raises question where do the rural people go for their financial needs.

**Table 3.36 Demand Side FII (for Formal, Semiformal and Informal) in Three Selected Districts of Assam**

| Dist/Vill | DDFII (Formal) | DDFII (Semiformal) | DDFII (Informal) |
|---|---|---|---|
| **Baksa** | **0.36** | **0.43** | **0.41** |
| Jengrengpara | 0.32 | 0.35 | 0.15 |
| Bunmajhar Pam | 0.52 | 0.45 | 0.45 |
| Bagariguri | 0.47 | 0.45 | 0.4 |
| Salbari | 0.15 | 0.48 | 0.63 |
| **Barpeta** | **0.46** | **0.72** | **0.59** |
| Bamundi | 0.45 | 0.73 | 0.65 |
| Bamunkuchi | 0.57 | 0.65 | 0.43 |
| Garemari | 0.48 | 0.7 | 0.73 |
| Bhare Gaon | 0.35 | 0.8 | 0.58 |
| **Nalbari** | **0.45** | **0.64** | **0.52** |
| Bar Makhibaha | 0.45 | 0.8 | 0.6 |
| Namati | 0.47 | 0.63 | 0.4 |
| Bamunbari | 0.48 | 0.45 | 0.28 |
| Baralkuchi | 0.4 | 0.65 | 0.8 |
| **Total** | **0.42** | **0.59** | **0.51** |

Source: Calculated from Primary Survey conducted in Assam, 2014

Since Baksa district is a conflict prone area, this also raises concern over the interrelation between conflict and financial exclusion. Apart from that, the dominance of all the three sources in Barpeta district indicates the integration of formal, semiformal and informal sources in rural areas. In all the three districts dominance of semiformal sector is found to be attractive followed by the informal sector. Nevertheless, on an average presence of semiformal sector is found to be prominent followed by the informal sector. Thus, we can point out that semiformal institutions are successful for replacing the informal institutions in rural areas. In the same way, the performance of the formal sector is found to be most ineffective in Baksa district followed by Nalbari district. However, among the three indicators of the formal sector, the first indicator proportion of people having formal credit is lowest, whereas the saving of the people with formal institutions is found to be striking. This indicates the mounting saving behavior of rural people. Equally, the dominance of semiformal and informal institutions is found to be high in Barpeta district followed by Nalbari district. Here one can get an important point why Nalbari district could not successful in overcoming Barpeta district despite its impressive development indicators like high Per Capita Income, Literacy Rate, and Work Rate Participation etc.

### 3.4. Contradiction between Socio-Economic and Banking Parameters

From above discussion it has been argued that despite lower decadal variation of population during 2001-11 and higher density of population in compare to country as a whole, in Assam the

banking parameters like number of deposit and credit account per person, number of offices of scheduled commercial banks per lakh population etc. were far behind from national level.

Moreover, we could found the pessimistic relation between some social and economic indicators and banking parameters. Despite lagging banking parameters, in all study districts and Assam, sex ratio is privileged in compare to India as a whole. Even among all study districts, sex ratio is highest in Baksa- the lowest performer of banking parameter, while it is lowest in Nalbari- the highest performer of banking parameters. Likewise, the peak performer in banking parameters Nalbari district has lowest HDI among all study districts. Similarly, Barpeta has lowest infant mortality rate, but lower per capita income, lower banking performance, and worst performer in some economic variables, while Nalbari district has highest infant mortality rate, but higher per capita income, higher banking penetration, and highest performer in some other economic variables.

Furthermore, we have observed similar kind of relation in urbanization and literacy where the good performer in banking parameters Nalbari district has the highest proportion of the urban population and literacy rate among all study districts, and the reverse is the situation in Baksa and Barpeta. In addition, more proportion of women SHGs have undertaken economic activities in Baksa district, while reverse circumstances have been observed in Nalbari district and it indicated the existence of SHGs domination where formal banks unable to catch up.

In the course of the study, it became imperative to undertake a field study either to fulfill some of the objectives and research questions or to verify some of the observations derived from secondary information. It is thought that objectives on demand, awareness, and use of credit sources, repayment rate, and the monetary and social impact of rural credit could be better understood and analyzed from the household's point of view. In addition, it was thought to conduct SHGs level study too to intensify the study. The methodological aspects of the sample survey have been outlined in the following section.

### 3.5. Sampling Design and Data Collection Tool

This study is basically based on primary data collected during September-December, 2014. As mentioned in the first chapter, a multi-stage sampling technique has been adopted to select the

field study locations. Figure 3.3 presents a map of Assam showing the study districts and development blocks. In the first stage, three districts namely- Barpeta, Baksa and Nalbari were selected purposively among eight districts of the region. In the second stage, two development blocks from each district were selected. Hence, altogether six development blocks have been chosen for study. In the third stage, from each block, two villages were chosen to keep in view representation of variations in socio-economic conditions. Therefore, twelve villages were chosen to undertake the study. In the fourth stage, from each village, 6 to 9 percent of household were selected at random for study, and so per village twenty households chosen for the interview. In this way, a sample of 240 households was interviewed. Figure 3.4 shows the selection process of the household's sample. As discussed in chapter one, for rationalizing the study we surveyed sixty SHGs in the same procedure like respondent households. Figure 3.5 shows the selection procedure of the SHGs sample.

**Figure 3.3: Study Area Showing the Sample Districts and Development Blocks in Assam**

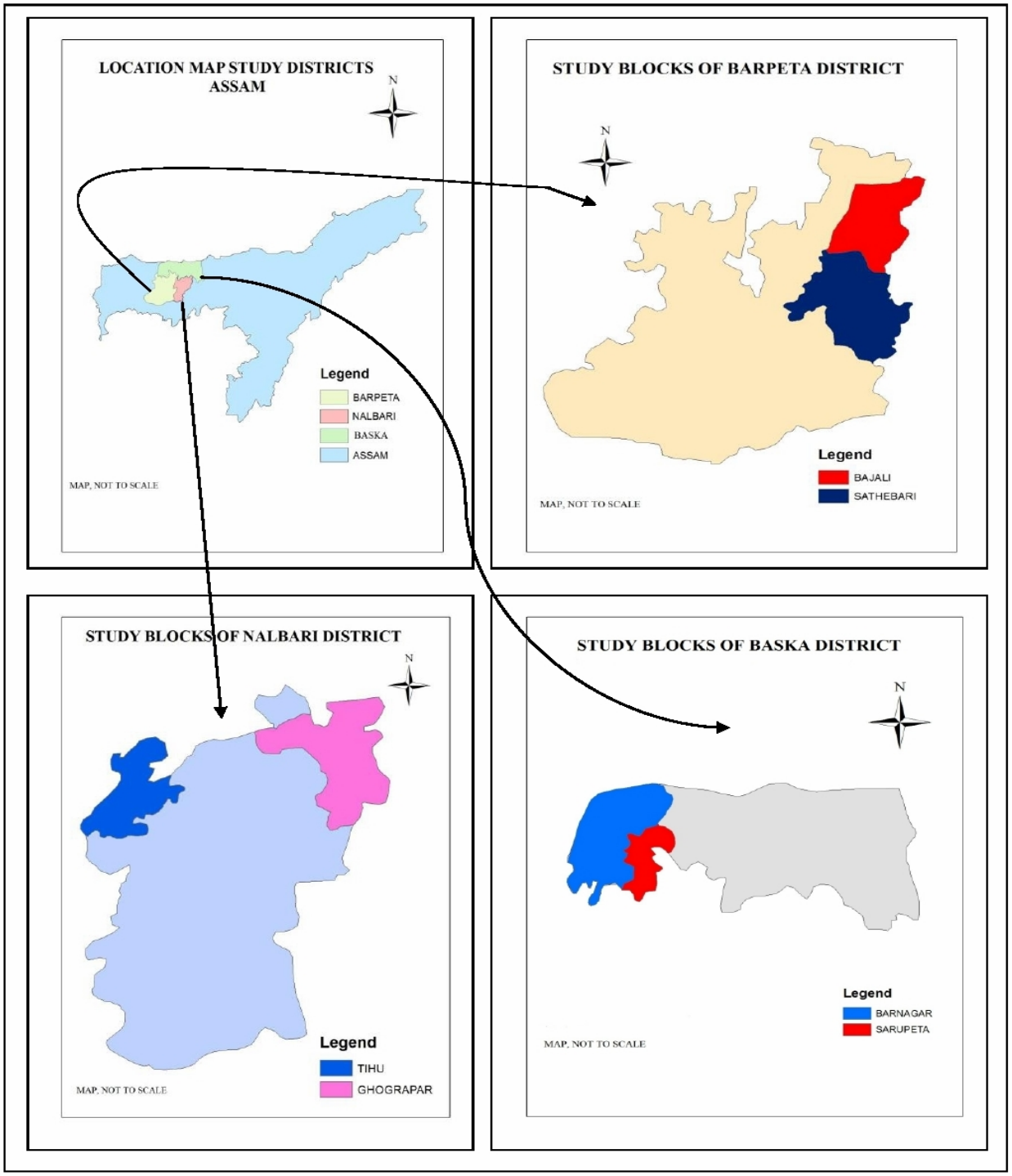


**Figure 3.4: Selection Process of the Households Sample**

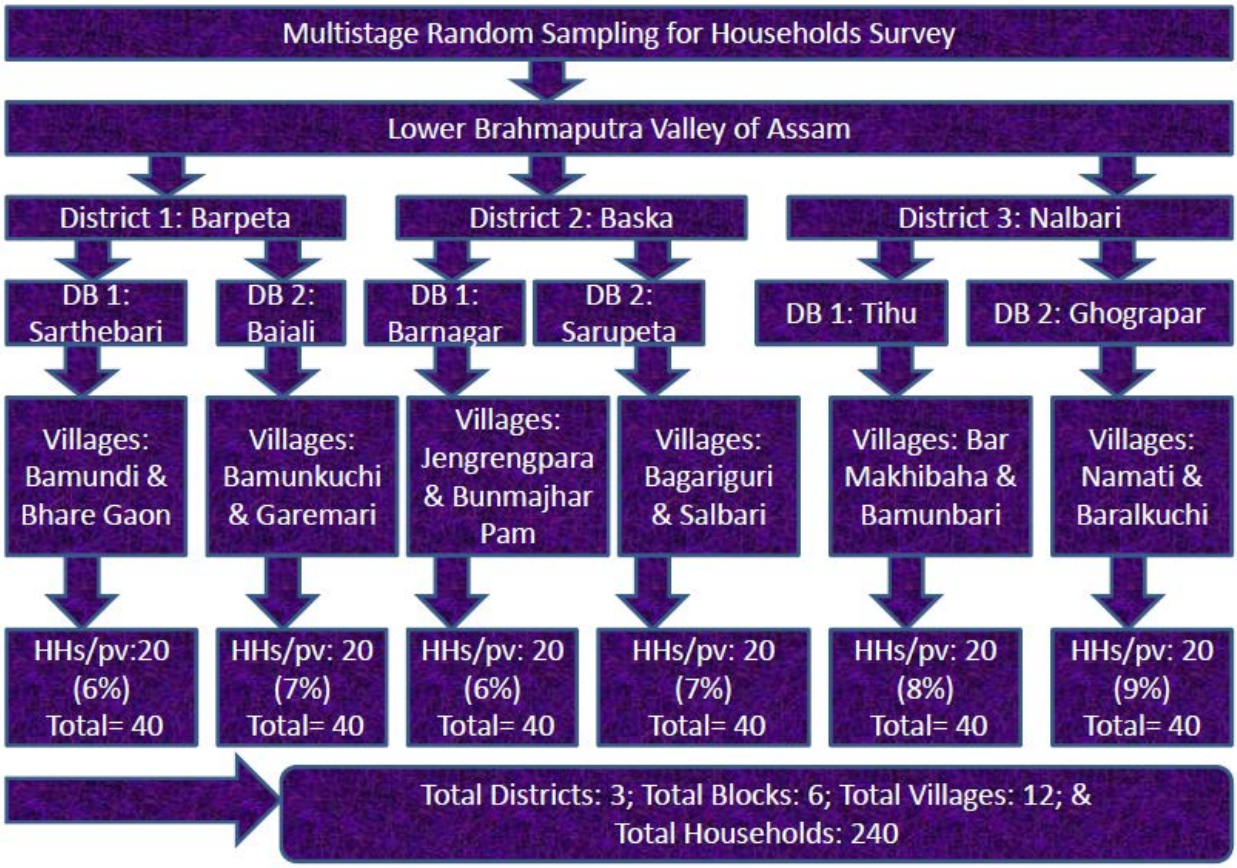
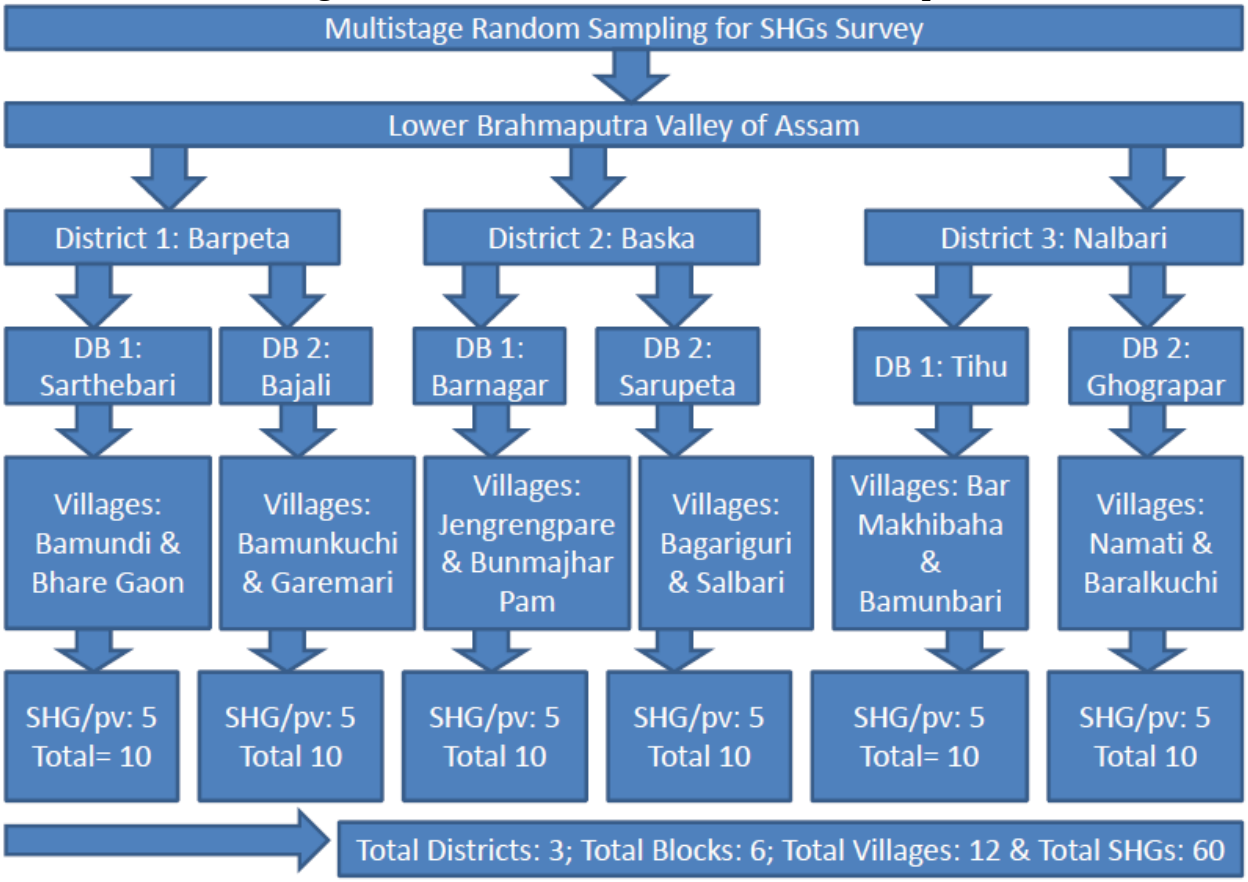


**Figure 3.5: Selection Process of the SHGs Sample**




### 3.6. Social Background of the Household Respondent's

The total number of households included in the sample is 240. Out of the total respondent, 73.8% is male and 26.25% female. Among the respondents, it is found that 39.2% are within the age group of 31-49. Similarly, 28.8% and 12.1% are inside the age group of 50-64 and $65^{+}$ respectively. Amongst the respondent households 97.92% Hindu and 2.08% are Muslim. The Table 3.37 shows that Scheduled Caste (SC) is the dominant category with 30.8% of respondent households. Percentage of Scheduled Tribe (ST), Other Backward Classes (OBC) and General Category respondent households being 21.25%, 22.5%, and 25.4% respectively. Further, out of total household respondents, 26.25% primary and 20.83% are upper primary educated respondents. Equally, 20.42%, 12.5%, 10.42%, 7.92% and 1.67% are illiterate, HSLC, HS, Graduate and M.A respectively (Table 3.38). From Table 3.39 we can understand that 54.58% of respondent households have Kutch house and remaining 28.75% and 16.67% have Semipakka and Pakka houses respectively.

## Table 3.37 Social Profile of Respondent Households

| D | Villages | Total Households | Male | Female | 20-25 | 26-30 | 31-49 | 50-64 | 65+ | Hindu | Muslim | GEN | OBC | SC | ST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Baksa | **Bagariguri** | 20 | 12 (60) | 8 (40) | 2 (10) | 2 (10) | 6 (30) | 6 (30) | 4 (20) | 20 (100) | 0 | 0 | 20 (100) | 0 | 0 |
| | **Jengrengpara** | 20 | 19 (95) | 1 (5) | 1 (5) | 2 (10) | 6 (30) | 8 (40) | 3 (15) | 20 (100) | 0 | 0 | 20 (100) | 0 | 0 |
| | **Salbari** | 20 | 14 (70) | 6 (30) | 2 (10) | 2 (10) | 11 (55) | 5 (25) | 0 | 20 (100) | 0 | 0 | 0 | 9 (45) | 11 (55) |
| | **Bunmajhar Pam** | 20 | 12 (60) | 8 (40) | 6 (30) | 3 (15) | 6 (30) | 19 (95) | 0 | 17 (85) | 3 (15) | 3 (15) | 0 | 0 | 17 (85) |
| **T** | **4** | **80** | **57 (71.3)** | **23 (28.75)** | **11 (13.8)** | **9 (11.3)** | **29 (36.3)** | **38 (47.5)** | **7 (8.8)** | **77 (96.25)** | **3 (3.75)** | **3 (3.75)** | **40 (50)** | **9 (11.3)** | **28 (35)** |
| Barpeta | **Bamundi** | 20 | 16 (80) | 4 (20) | 2 (10) | 2 (10) | 14 (70) | 0 | 2 (10) | 20 (100) | 0 | 0 | 0 | 20 (100) | 0 |
| | **Bamunkuchi** | 20 | 14 (70) | 6 (30) | 2 (10) | 2 (10) | 6 (30) | 7 (35) | 3 (15) | 20 (100) | 0 | 20 (100) | 0 | 0 | 0 |
| | **Bhare Gaon** | 20 | 16 (80) | 4 (20) | 4 (20) | 6 (30) | 8 (40) | 2 (10) | 0 | 20 (100) | 0 | 0 | 0 | 0 | 20 (100) |
| | **Garemari** | 20 | 14 (70) | 6 (30) | 2 (10) | 2 (10) | 8 (40) | 2 (10) | 6 (30) | 20 (100) | 0 | 0 | 0 | 20 (100) | 0 |
| **T** | **4** | **80** | **60 (75)** | **20 (25)** | **10 (12.5)** | **12 (15)** | **36 (45)** | **11 (13.8)** | **11 (13.8)** | **80 (100)** | **0** | **20 (25)** | **0** | **40 (50)** | **20(25)** |
| Nalbari | **Namati** | 20 | 11 (55) | 9 (45) | 0 | 4 (20) | 6 (30) | 5 (25) | 5 (25) | 20 (100) | 0 | 6 (30) | 14 (70) | 0 | 0 |
| | **Bar Makhibaha** | 20 | 11 (55) | 9 (45) | 0 | 0 | 9 (45) | 4 (20) | 7 (35) | 20 (100) | 0 | 20 (100) | 0 | 0 | 0 |
| | **Baralkuchi** | 20 | 20 (100) | 0 (0) | 0 | 0 | 6 (30) | 13 (65) | 1 (5) | 18 (90) | 2 (10) | 2 (10) | 0 | 15 (75) | 3 (15) |
| | **Bamunbari** | 20 | 18 (90) | 2 (10) | 0 | 0 | 8 (40) | 12 (60) | 0 | 20 (100) | 0 | 10 (50) | 0 | 10 (50) | 0 |
| **T** | **4** | **80** | **60 (75)** | **20 (25)** | **0** | **4 (5)** | **29 (36.3)** | **34 (42.5)** | **13 (16.3)** | **78 (97.5)** | **2 (2.5)** | **38 (47.5)** | **14 (17.5)** | **25 (31.3)** | **3 (3.75)** |
| **GT** | **12** | **240** | **177 (73.8)** | **63 (26.25)** | **21 (8.75)** | **25 (10.4)** | **94 (39.2)** | **69 (28.8)** | **31 (12.1)** | **235 (97.92)** | **5 (2.08)** | **61 (25.4)** | **54 (22.5)** | **74 (30.8)** | **51 (21.25)** |

Source: Field Survey, 2014; Note: Here D= Districts, T= Total, GT= Grand Total; Figures within parentheses represent percentages of households

**Table 3.38 Educational Profile of Respondent Households**

| Districts | Villages | Graduate | HS | HSLC | Illiterate | M.A | Primary | Upper Primary | Total |
|---|---|---|---|---|---|---|---|---|---|
| Baksa | Bagariguri | 2 (10.5) | 2 (8) | 0 | 4 (8.16) | 0 | 6 (9.5) | 6 (12) | **20** |
| | Jengrengpara | 0 | 4 (16) | 3 (10) | 4 (8.16) | 0 | 4 (6.35) | 5 (10) | **20** |
| | Salbari | 2 (10.5) | 1 (4) | 0 | 14 (28.6) | 0 | 3 (4.76) | 0 | **20** |
| | Bunmajhar Pam | 6 (31.6) | 1 (4) | 6 (20) | 1 (2.04) | 0 | 3 (4.76) | 3 (6) | **20** |
| **Total** | **4** | **10 (52.6)** | **8 (32)** | **9 (30)** | **23 (46.9)** | **0** | **16 (25.4)** | **14 (28)** | **80** |
| Barpeta | Bamundi | 0 | 2 (8) | 6 (20) | 4 (8.16) | 0 | 6 (9.5) | 2 (4) | **20** |
| | Bamunkuchi | 4 (21.1) | 5 (20) | 5 (16.7) | 0 | 2 (50) | 2 (3.2) | 2 (4) | **20** |
| | Bhare Gaon | 0 | 2 (8) | 2 (6.67) | 4 (8.16) | 2 (50) | 6 (9.5) | 4 (8) | **20** |
| | Garemari | 2 (10.5) | 2 (8) | 4 (13.3) | 0 | 0 | 2 (3.2) | 10 (20) | **20** |
| **Total** | **4** | **6 (31.6)** | **11 (44)** | **17 (56.7)** | **8 (16.33)** | **4 (100)** | **16 (25.4)** | **18 (36)** | **80** |
| Nalbari | Namati | 0 | 0 | 2 (6.67) | 2 (4.08) | 0 | 11 (17.5) | 5 (10) | **20** |
| | Bar Makhibaha | 3 (15.8) | 2 (8) | 2 (6.67) | 6 (12.24) | 0 | 2 (3.2) | 5 (10) | **20** |
| | Baralkuchi | 0 | 0 | 0 | 8 (16.32) | 0 | 12 (19.0) | 0 | **20** |
| | Bamunbari | 0 | 4 (16) | 0 | 2 (4.08) | 0 | 6 (9.52) | 8 (16) | **20** |
| **Total** | **4** | **3 (15.8)** | **6 (24)** | **4 (13.33)** | **18 (36.7)** | **0** | **31 (49.2)** | **18 (36)** | **80** |
| **Grand Total** | **12** | **19 (7.9)** | **25 (10.4)** | **30 (12.5)** | **49 (20.4)** | **4 (1.7)** | **63 (26.3)** | **50 (20.8)** | **240** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

**Table 3.39 Type of Dwelling of Respondent Households**

| Districts | Villages | Kutch House | Pakka House | Semi-Pakka | Total |
|---|---|---|---|---|---|
| Baksa | Bagariguri | 12 (9.16) | 2 (5) | 6 (8.69) | **20** |
| | Bunmajhar Pam | 12 (9.16) | 5 (12.5) | 3 (4.35) | **20** |
| | Jengrengpara | 15 (11.45) | 3 (7.5) | 2 (2.90) | **20** |
| | Salbari | 14 (10.69) | 2 (5) | 4 (5.80) | **20** |
| **Total** | **4** | **53 (40.46)** | **12 (30)** | **15 (21.74)** | **80** |
| Barpeta | Bamundi | 12 (9.16) | 4 (10) | 4 (5.80) | **20** |
| | Bamunkuchi | 5 (3.82) | 6 (15) | 9 (13.04) | **20** |
| | Bhare Gaon | 16 (12.21) | 2 (5) | 2 (2.90) | **20** |
| | Garemari | 10 (7.63) | 2 (5) | 8 (11.59) | **20** |
| **Total** | **4** | **43 (32.82)** | **14 (35)** | **23 (33.33)** | **80** |
| Nalbari | Bar Makhibaha | 8 (6.11) | 4 (10) | 8 (11.59) | **20** |
| | Baralkuchi | 12 (9.16) | 2 (5) | 6 (8.69) | **20** |
| | Bamunbari | 8 (6.11) | 6 (15) | 6 (8.70) | **20** |
| | Namati | 7 (5.34) | 2 (5) | 11 (15.94) | **20** |
| **Total** | **4** | **35 (26.72)** | **14 (35)** | **31 (44.93)** | **80** |
| **Grand Total** | **12** | **131 (54.58)** | **40 (16.67)** | **69 (28.75)** | **240** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## 3.7. Occupational Background of the Respondent Households

Out of the total number of respondent households, 30% respondents have the main occupation of farming. Similarly, 19.17% has manual labour, 7.92% small business, 6.67% government pension holders, 9.17% government job, 5.42% artisan, 3.75% private sector employee and 4.17% shopkeeper (Table 3.40). Interestingly, 66.25% of respondents have the secondary

occupation, and out of that, 28.30% has the farmer, 16.98% manual labour and 8.18% shopkeeper[13].

**Table 3.40 Main Occupation of Respondent Households**

| Activities | Name of Districts | | | Total |
|---|---|---|---|---|
| | Baksa | Barpeta | Nalbari | |
| **Agriculture and Allied Activities** | 0 | 3 (60) | 2 (40) | **5 (2.08)** |
| **Artisan** | 1 (7.69) | 8 (61.54) | 4 (30.77) | **13 (5.42)** |
| **Chicken Farm** | 0 | 2 (100) | 0 | **2 (0.83)** |
| **Councilor** | 0 | 0 | 2 (100) | **2 (0.83)** |
| **Councilor, Panchayat Member** | 0 | 0 | 2 (100) | **2 (0.83)** |
| **Farmer** | 28 (38.89) | 24 (33.33) | 20 (27.78) | **72 (30.0)** |
| **Gaon Bura** | 0 | 2 (40) | 3 (60) | **5 (2.08)** |
| **Government/Public Employee** | 10 (45.45) | 4 (18.18) | 8 (36.36) | **22 (9.17)** |
| **Housewife** | 5 (71.43) | 2 (28.57) | 0 | **7 (2.92)** |
| **Manual Labour** | 19 (41.30) | 14 (30.43) | 13 (28.26) | **46 (19.17)** |
| **Government Pension Holders** | 1 (6.25) | 7 (43.75) | 8 (50) | **16 (6.67)** |
| **Priest** | 0 | 1 (100) | 0 | **1 (0.42)** |
| **Private Sector Employee** | 3 (33.33) | 5 (55.56) | 1 (11.11) | **9 (3.75)** |
| **Shop keeper and Agriculture** | 0 | 0 | 4 (100) | **4 (1.67)** |
| **Shopkeeper** | 0 | 2 (20) | 8 (80) | **10 (4.17)** |
| **Small Business** | 9 (47.37) | 6 (31.58) | 4 (21.05) | **19 (7.92)** |
| **Student** | 3 (100) | 0 | 0 | **3 (1.25)** |
| **Temporary Teacher** | 1 (50) | 0 | 1 (50) | **2 (0.83)** |
| **Total** | **80** | **80** | **80** | **240** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## 3.8. Land Holding Pattern of Households

Table 3.41 shows that out of 240 respondent households, 8.75% have land holdings of one Bigha, 6.67% half Bigha, 8.75% two Bigha, 5.42% three Bigha, 7.92% four Bigha, 6.67% five Bigha, 7.92% six Bigha and 6.25% seven Bigha. Similarly, out of total respondent, 65.42% have agricultural land, and from that, 19.11% has agricultural land of two Bigha, 22.93% three Bigha, 8.92% four Bigha and 12.74% has five Bigha[14].

[13] Relevant Table has been attached in Appendix I
[14] Relevant Table has been attached in Appendix J

## Table 3.41 Land Holding Pattern of Respondent Households

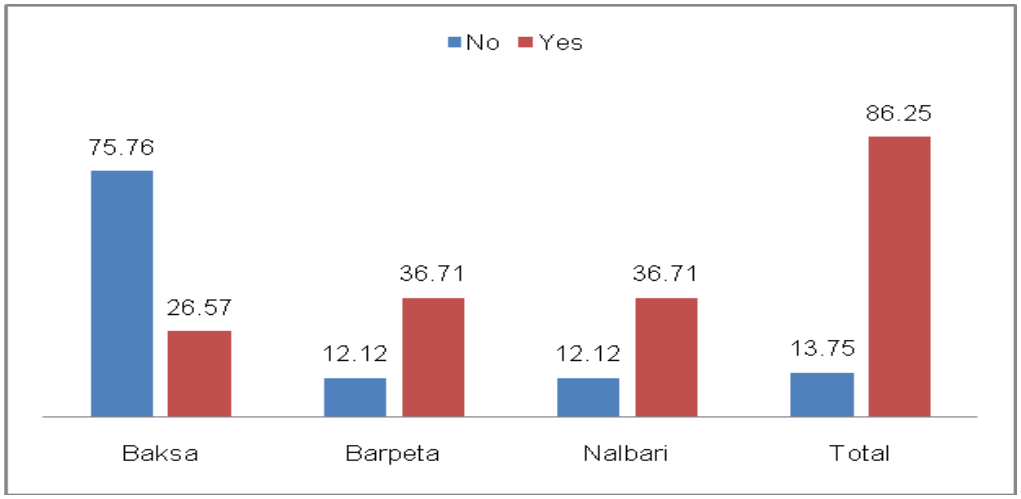
| Amount of Land (in Bigha) | Name of Districts | | | Total |
|---|---|---|---|---|
| | Baksa | Barpeta | Nalbari | |
| **1.5** | 0 | 2 (33.33) | 4 (66.67) | **6 (2.5)** |
| **1.03** | 2 (50) | 2 (50) | 0 | **4 (1.67)** |
| **1** | 3 (14.29) | 14 (66.67) | 4 (19.05) | **21 (8.75)** |
| **0.5** | 6 (37.5) | 4 (25) | 6 (37.5) | **16 (6.67)** |
| **10** | 3 (75) | 0 | 1 (25) | **4 (1.67)** |
| **11** | 1 (14.29) | 6 (85.71) | 0 | **7 (2.92)** |
| **12** | 0 | 2 (100) | 0 | **2 (.83)** |
| **16** | 1 (50) | 0 | 1 (50) | **2 (.83)** |
| **17** | 2 (28.57) | 3 (42.86) | 2 (28.57) | **7 (2.92)** |
| **18** | 0 | 2 (100) | 0 | **2 (.83)** |
| **19** | 2 (100) | 0 | 0 | **2 (.83)** |
| **2.5** | 3 (42.86) | 2 (28.57) | 2 (28.57) | **7 (2.92)** |
| **2.03** | 0 | 0 | 4 (100) | **4 (1.67)** |
| **2** | 8 (38.09) | 4 (19.05) | 9 (42.86) | **21 (8.75)** |
| **2.05** | 1 (100) | 0 | 0 | **1 (.42)** |
| **2.03** | 2 (50) | 0 | 2 (50) | **4 (1.67)** |
| **2.3** | 0 | 0 | 2 (100) | **2 (.83)** |
| **0.1** | 1 (33.33) | 2 (66.67) | 0 | **3 (1.25)** |
| **20** | 2 (50) | 2 (50) | 0 | **4 (1.67)** |
| **21** | 1 (100) | 0 | 0 | **1 (.42)** |
| **22** | 2 (100) | 0 | 0 | **2 (.83)** |
| **23** | 0 | 2 (100) | 0 | **2 (.83)** |
| **25** | 2 (100) | 0 | 0 | **2 (.83)** |
| **3.5** | 0 | 0 | 4 (100) | **4 (1.67)** |
| **3** | 7 (53.85) | 4 (30.77) | 2 (15.39) | **13 (5.42)** |
| **3.05** | 0 | 4 (100) | 0 | **4 (1.67)** |
| **3.2** | 1 (100) | 0 | 0 | **1 (.42)** |
| **3.4** | 1 (100) | 0 | 0 | **1 (.42)** |
| **0.15** | 1 (100) | 0 | 0 | **1 (.42)** |
| **37** | 0 | 2 (100) | 0 | **2 (.83)** |
| **4.5** | 0 | 2 (100) | 0 | **2 (.83)** |
| **4** | 8 (42.11) | 3 (15.79) | 8 (42.11) | **19 (7.92)** |
| **5** | 4 (25) | 7 (43.75) | 5 (31.25) | **16 (6.67)** |
| **52** | 2 (100) | 0 | 0 | **2 (.83)** |
| **6.5** | 0 | 0 | 2 (100) | **2 (.83)** |
| **6** | 5 (26.32) | 2 (10.53) | 12 (63.16) | **19 (7.92)** |
| **7** | 4 (26.67) | 7 (46.67) | 4 (26.67) | **15 (6.25)** |
| **8** | 2 (33.33) | 0 | 4 (66.67) | **6 (2.5)** |
| **0.4** | 0 | 0 | 2 (100) | **2 (.83)** |
| **84** | 0 | 2 (100) | 0 | **2 (.83)** |
| **9** | 3 (100) | 0 | 0 | **3 (1.25)** |
| **Grand Total** | **80** | **80** | **80** | **240** |

Source: Field Survey, 2014; Note: 1 Bigha= 0.3305785 Acre, Figures within parentheses represent percentages of households

### 3.9. Banking Profile of Respondent Households

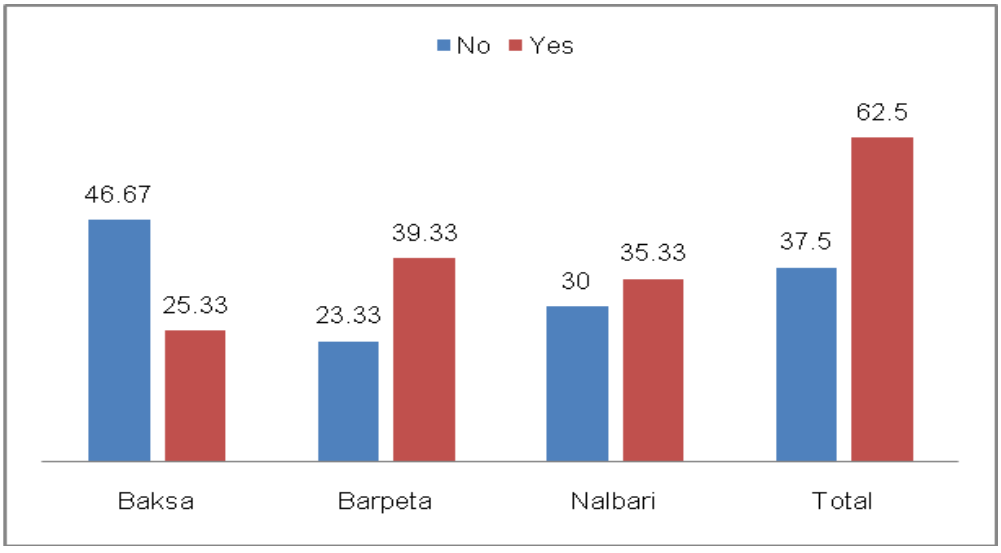
Figure 3.6 indicates that out of total respondents 86.25% (207) have the formal bank account. Out of their respective respondents in Barpeta and Nalbari districts 36.71% (76) have the bank accout but in Baksa 26.57% (55) respondent have the bank accout. Furthermore, among total respondents 62.5% (150) has saved money in formal bank account, whereas, in Barpeta 39.33% (59) and in Nalbari 25.33% (38) (Fig. 3.7). Likewise, 40.83% (98) respondent enjoyed life insurance facility. In study districts it is 24.49% (24), 38.77% (38) and 36.73% (36) respectively for Baksa, Barpeta and Nalbari (Fig. 3.8).

**Figure 3.6 Proportions of Households Having Bank Account**



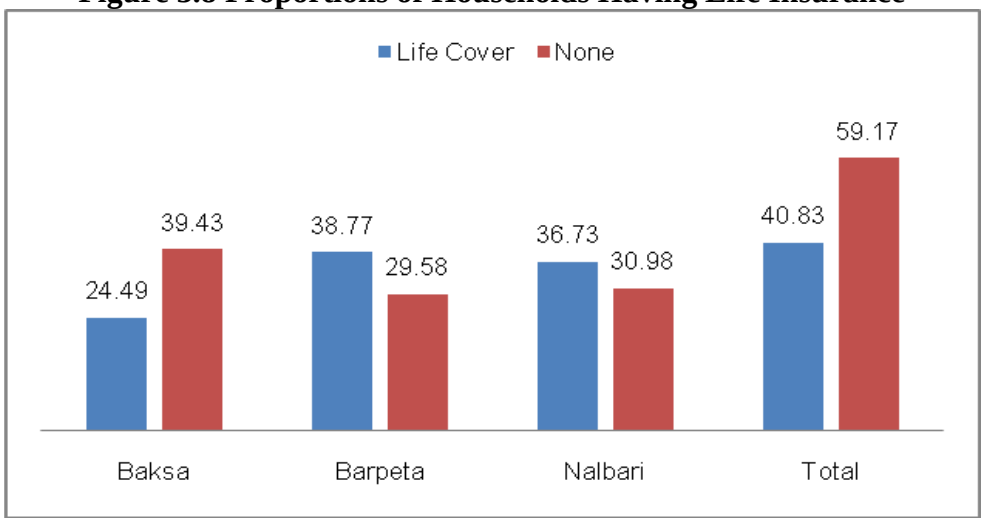

Source: Field Survey, 2014

**Figure 3.7 Proportions of Households Save Money**



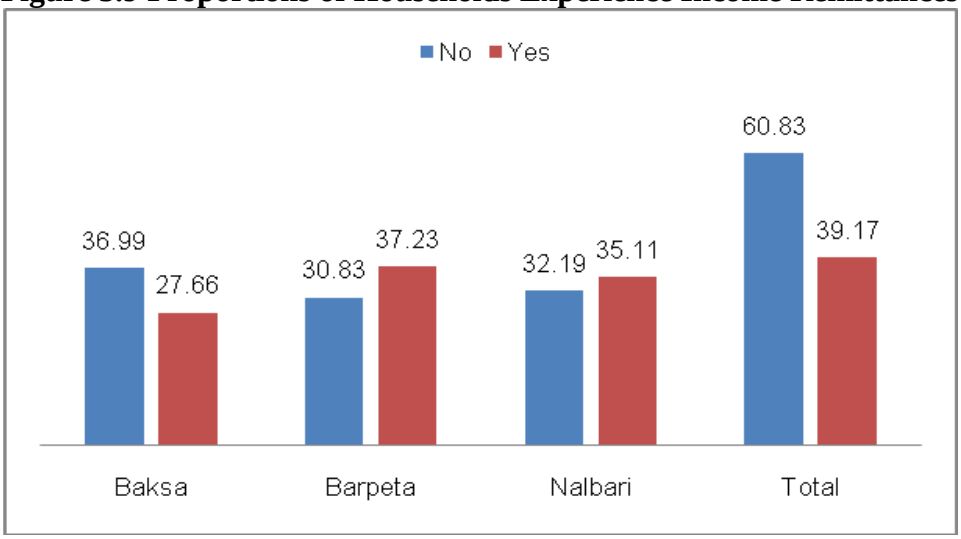

Source: Field Survey, 2014

**Figure 3.8 Proportions of Households Having Life Insurance**




Source: Field Survey, 2014

**Figure 3.9 Proportions of Households Experience Income Remittances**




Source: Field Survey, 2014

Figure 3.9 indicates the proportion of household's experiences income remittances from any sources of borrowed money, and accordingly, in total 39.17% (94) households practice income remittances. However, in Barpeta district highest 37.23% (35) observe the same among all three districts and in Baksa districts lowest 27.66% (26) view the same.

In addition, among total respondent households, 30% (70) borrowed money from formal sources. The percentages are 27.78% (20), 13.89% (10) and 36.25% (29) respectively for Baksa, Barpeta and Nalbari districts (Table 3.42).

**Table 3.42 Respondent Households Borrowed Money from Formal Sources**

| Districts | Villages | Borrow Money from Formal Sources | | Total |
|---|---|---|---|---|
| | | No | Yes | |
| Baksa | Bagariguri | 14 (8.33) | 6 (8.33) | 20 |
| | Bunmajhar Pam | 14 (8.33) | 6 (8.33) | 20 |
| | Jengrengpara | 14 (8.33) | 6 (8.33) | 20 |
| | Salbari | 18 (10.71) | 2 (2.78) | 20 |
| Total | 4 | 60 (35.71) | 20 (27.78) | 80 |
| Barpeta | Bamundi | 14 (8.33) | 6 (8.33) | 20 |
| | Bamunkuchi | 15 (8.93) | 5 (6.94) | 20 |
| | Bhare Gaon | 18 (10.71) | 2 (2.78) | 20 |
| | Garemari | 10 (5.95) | 10 (13.89) | 20 |
| Total | 4 | 57 (33.93) | 23 (31.94) | 80 |
| Nalbari | Bar Makhibaha | 9 (5.36) | 11 (15.28) | 20 |
| | Baralkuchi | 17 (10.12) | 3 (4.17) | 20 |
| | Bamunbari | 10 (5.95) | 10 (13.89) | 20 |
| | Namati | 15 (8.93) | 5 (6.94) | 20 |
| Total | 4 | 51 (30.36) | 29 (36.25) | 80 |
| Grand Total | 12 | 168 (70) | 72 (30) | 240 |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

Again Table 3.43 shows that out of formal money borrowed respondent, 38.89% (28) borrowed primarily for agriculture purpose, 34.7% (25) for house construction and 5.6% (4) for buying cows and business. Interestingly, 19.44% (14) respondent have the secondary purpose of borrowing formal money, and out of that, 35.71% (5) borrowed for house construction, and 21.43% (3) for agriculture[15].

Table 3.44 reveals that out of total respondent households, 54.58% (131) had borrowed from semiformal sources. Among study districts, in Nalbari highest 40.46% (53) respondents borrowed from semiformal sources. The percentages of Barpeta and Baksa districts are 39.69% (52) and 19.85% (26) respectively. Among the borrowers of the semiformal loan, 35.11% (46) borrowed money for daily needs, 16.79% (22) for illness and 10.69% (14) borrowed for farming (Table 3.45). Likewise, from the semiformal borrowers, 30.53% (40) of the respondent has multiple purposes of borrowing money, and among them, 37.5 (15) borrowed for daily needs and 32.5% (13) for illness[16].

Out of total respondent, 57.5% (138) borrowed money informal sources, and the percentages are 36.96% (51), 33.33% (46) and 29.71% (41) respectively for Nalbari, Barpeta and Baksa (Table 3.46). Among informal borrowers, 23.9% (33) borrowed money for farming, 21.01% (29) for

[15] Appropriate Table has been attached in Appendix L
[16] See Appendix M

daily needs, and 16.67% (23) borrowed for business and the percentage is same for illness too (Table 3.47). Moreover, 18.84% (26) borrowers has multiple purpose of informal borrowing, and among them, 42.31% (11) borrowed for illness, 26.92% (7) for daily needs and 23.08% (6) borrowed informal money for education purpose[17].

[17] See Appendix N

## Table 3.43 Primary Purpose of Borrowing Formal Money

| Districts | Villages | Agriculture | Daily Needs | Education | Fishery | Business | Buying Cows | Girl Marriage | House Construction | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Baksa | **Bagariguri** | 3 (10.71) | 0 | 0 | 1 (25) | 0 | 0 | 0 | 2 (8) | **6 (8.3)** |
| | **Bunmajhar Pam** | 0 | 0 | 0 | 3 (75) | 0 | 0 | 0 | 3 (12) | **6 (8.3)** |
| | **Jengrengpara** | 1 (3.57) | 0 | 1 (100) | 0 | 1 (25) | 1 (25) | 0 | 2 (8) | **6 (8.3)** |
| | **Salbari** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 (8) | **2 (2.8)** |
| **Total** | **4** | **4 (14.29)** | **0** | **1 (100)** | **4 (100)** | **1 (25)** | **1 (25)** | **0** | **9 (36)** | **20 (27.8)** |
| Barpeta | **Bamundi** | 2 (7.14) | 2 (66.7) | 0 | 0 | 0 | 0 | 0 | 2 (8) | **6 (8.3)** |
| | **Bamunkuchi** | 2 (7.14) | 1 (33.3) | 0 | 0 | 1 (25) | 0 | 1 (33.3) | 0 | **5 (6.9)** |
| | **Bhare Gaon** | 2 (7.14) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2 (2.8)** |
| | **Garemari** | 4 (14.29) | 0 | 0 | 0 | 0 | 0 | 0 | 6 (24) | **10 (13.9)** |
| **Total** | **4** | **10 (35.71)** | **3 (100)** | **0** | **0** | **1 (25)** | **0** | **1 (33.3)** | **8 (32)** | **23 (31.9)** |
| Nalbari | **Bar Makhibaha** | 4 (14.29) | 0 | 0 | 0 | 2 (50) | 3 (75) | 0 | 2 (8) | **11 (15.3)** |
| | **Baralkuchi** | 3 (10.71) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3 (4.7)** |
| | **Bamunbari** | 4 (14.29) | 0 | 0 | 0 | 0 | 0 | 0 | 6 (24) | **10 (13.9)** |
| | **Namati** | 3 (10.71) | 0 | 0 | 0 | 0 | 0 | 2 (66.7) | 0 | **5 (6.9)** |
| **Total** | **4** | **14 (50)** | **0** | **0** | **0** | **2 (50)** | **3 (75)** | **2 (66.7)** | **8 (32)** | **29 (40.3)** |
| **Grand Total** | **12** | **28 (38.89)** | **3 (4.2)** | **1 (1.4)** | **4 (5.6)** | **4 (5.6)** | **4 (5.6)** | **3 (4.2)** | **25 (34.7)** | **72 (100)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

**Table 3.44 Respondent Households Borrowed Money from Semiformal Sources**

| Districts | Villages | Borrow Money from Semiformal Sources | | Total |
|---|---|---|---|---|
| | | No | Yes | |
| Baksa | Bagariguri | 16 (14.68) | 4 (3.05) | **20** |
| | Bunmajhar Pam | 14 (12.84) | 6 (4.58) | **20** |
| | Jengrengpara | 14 (12.84) | 6 (4.58) | **20** |
| | Salbari | 10 (9.17) | 10 (7.63) | **20** |
| **Total** | **4** | **54 (49.54)** | **26 (19.85)** | **80** |
| Barpeta | Bamundi | 10 (9.17) | 10 (7.63) | **20** |
| | Bamunkuchi | 8 (7.34) | 12 (9.16) | **20** |
| | Bhare Gaon | 4 (3.67) | 16 (12.21) | **20** |
| | Garemari | 6 (5.50) | 14 (10.69) | **20** |
| **Total** | **4** | **28 (25.69)** | **52 (39.69)** | **80** |
| Nalbari | Bar Makhibaha | 5 (4.59) | 15 (11.45) | **20** |
| | Baralkuchi | 1 (0.92) | 19 (14.50) | **20** |
| | Bamunbari | 10 (9.17) | 10 (7.63) | **20** |
| | Namati | 11 (10.09) | 9 (6.87) | **20** |
| **Total** | **4** | **27 (24.77)** | **53 (40.46)** | **80** |
| **Grand Total** | **12** | **109 (45.42)** | **131 (54.58)** | **240** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## Table 3.45 Primary Purpose of Borrowing Semiformal Money

| Districts | Villages | Daily Needs | Education | Farming | Festival | Girls Marriage | Home Construction | Illness | Job | Land | Weaving | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Baksa | Bagariguri | 2 (4.4) | 0 | 0 | 0 | 0 | 0 | 0 | 4 (100) | 0 | 0 | **6 (4.6)** |
| | Bunmajhar Pam | 4 (8.7) | 0 | 1 (7.1) | 1 (50) | 0 | 0 | 0 | 0 | 0 | 0 | **6 (4.6)** |
| | Jengrengpara | 3 (6.5) | 0 | 2 (14.3) | 1 (50) | 0 | 0 | 0 | 0 | 0 | 0 | **6 (4.6)** |
| | Salbari | 6 (13.0) | 3 (60) | 0 | 0 | 0 | 0 | 0 | 0 | 1 (100) | 0 | **10 (7.6)** |
| **Total** | **4** | 15 (32.6) | 3 (60) | 3 (21.4) | 2 (100) | 0 | 0 | 0 | 4 (100) | 1 (100) | 0 | **28 (21.4)** |
| Barpeta | Bamundi | 6 (13.0) | 0 | 2 (14.3) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **10 (7.6)** |
| | Bamunkuchi | 0 | 0 | 0 | 0 | 0 | 2 (50) | 2 (7.7) | 0 | 0 | 0 | **10 (7.6)** |
| | Bhare Gaon | 2 (4.4) | 2 (40) | 6 (42.9) | 0 | 0 | 0 | 4 (18.2) | 0 | 0 | 0 | **16 (12.2)** |
| | Garemari | 2 (4.4) | 0 | 0 | 0 | 2 (100) | 0 | 8 (36.4) | 0 | 0 | 0 | **14 (10.7)** |
| **Total** | **4** | 10 (21.7) | 2 (40) | 8 (57.1) | 0 | 2 (100) | 2 (50) | 14 (53.9) | 0 | 0 | 0 | **50 (38.2)** |
| Nalbari | Bar Makhibaha | 2 (4.4) | 0 | 2 (14.3) | 0 | 0 | 2 (50) | 8 (36.4) | 0 | 0 | 1 (100) | **15 (11.5)** |
| | Baralkuchi | 10 (21.7) | 0 | 1 (7.1) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **19 (14.5)** |
| | Bamunbari | 2 (4.4) | 0 | 0 | 0 | 0 | 0 | 2 (9.1) | 0 | 0 | 0 | **10 (7.6)** |
| | Namati | 7 (15.2) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **9 (6.8)** |
| **Total** | **4** | 21 (45.7) | 0 | 3 (21.4) | 0 | 0 | 2 (50) | 10 (45.5) | 0 | 0 | 1 (100) | **53 (40.5)** |
| **Grand Total** | **12** | **46 (`35.1)** | **5 (3.8)** | **14 (10.7)** | **2 (1.5)** | **2 (1.5)** | **4 (10.7)** | **26 (19.9)** | **4 (10.7)** | **1 (0.8)** | **1 (0.8)** | **131 (100)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## Table 3.46 Respondent Households Borrowed Money from Informal Sources

| Districts | Villages | Borrow Money from Informal Sources | | Total |
|---|---|---|---|---|
| | | No | Yes | |
| Baksa | Bagariguri | 12 (11.76) | 8 (5.80) | 20 |
| | Bunmajhar Pam | 8 (7.84) | 12 (8.70) | 20 |
| | Jengrengpara | 17 (16.67) | 3 (2.17) | 20 |
| | Salbari | 2 (1.96) | 18 (13.04) | 20 |
| **Total** | **4** | **39 (38.23)** | **41 (29.71)** | **80** |
| Barpeta | Bamundi | 10 (9.80) | 10 (7.25) | 20 |
| | Bamunkuchi | 14 (13.73) | 6 (4.35) | 20 |
| | Bhare Gaon | 8 (7.84) | 12 (8.70) | 20 |
| | Garemari | 2 (1.96) | 18 (13.04) | 20 |
| **Total** | **4** | **34 (33.33)** | **46 (33.33)** | **80** |
| Nalbari | Bar Makhibaha | 9 (8.82) | 11 (7.97) | 20 |
| | Baralkuchi | 0 | 20 (14.49) | 20 |
| | Bamunbari | 10 (9.80) | 10 (7.24) | 20 |
| | Namati | 10 (9.80) | 10 (7.25) | 20 |
| **Total** | **4** | **29 (28.43)** | **51 (36.96)** | **80** |
| **Grand Total** | **12** | **102 (42.5)** | **138 (57.5)** | **240** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## Table 3.47 Primary Purpose of Informal Money Borrowed

| Districts | Villages | Business | Daily Needs | Education | Child | Farming | Tractor | Girl Marriage | Home Construction | Illness | Job | Land | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Baksa | Bagariguri | 2 (8.7) | 4 (13.8) | 0 | 0 | 0 | 0 | 0 | 2 (22.2) | 0 | 0 | 0 | **8 (5.8)** |
| | Bunmajhar Pam | 0 | 4 (13.8) | 1 (12.5) | 0 | 2 (6.1) | 1 (100) | 0 | 2 (22.2) | 2 (8.7) | 0 | 0 | **12 (8.7)** |
| | Jengrengpara | 0 | 1 (3.5) | 0 | 0 | 2 (6.1) | 0 | 0 | 0 | 0 | 0 | 0 | **3 (2.2)** |
| | Salbari | 1 (4.4) | 10 (34.5) | 0 | 0 | 1 (3.0) | 0 | 0 | 0 | 3 (13.0) | 2 (50) | 1 (33.3) | **18 (13.0)** |
| **Total** | **4** | **3 (13.0)** | **19 (65.5)** | **1 (12.5)** | **0** | **5 (15.2)** | **1 (100)** | **0** | **4 (44.4)** | **5 (21.7)** | **2 (50)** | **1 (33.3)** | **41 (29.7)** |
| Barpeta | Bamundi | 2 (8.7) | 2 (6.9) | 0 | 0 | 4 (12.1) | 0 | 0 | 0 | 0 | 0 | 2 (66.7) | **10 (7.3)** |
| | Bamunkuchi | 2 (8.7) | 0 | 0 | 1 (100) | 0 | 0 | 0 | 3 (33.3) | 0 | 0 | 0 | **6 (4.4)** |
| | Bhare Gaon | 2 (8.7) | 2 (6.9) | 0 | 0 | 6 (18.2) | 0 | 0 | 0 | 2 (8.7) | 0 | 0 | **12 (8.7)** |
| | Garemari | 4 (17.4) | 0 | 0 | 0 | 4 (12.1) | 0 | 2 (50) | 2 (22.2) | 4 (17.4) | 2 (50) | 0 | **18 (13.0)** |
| **Total** | **4** | **10 (43.5)** | **4 (13.8)** | **0** | **1 (100)** | **14 (42.4)** | **0** | **2 (50)** | **5 (55.6)** | **6 (26.1)** | **2 (50)** | **2 (66.6)** | **46 (33.3)** |
| Nalbari | Bar Makhibaha | 0 | 0 | 5 (62.5) | 0 | 0 | 0 | 2 (50) | 0 | 4 (17.4) | 0 | 0 | **11 (7.9)** |
| | Baralkuchi | 6 (26.1) | 2 (6.9) | 0 | 0 | 12 (36.4) | 0 | 0 | 0 | 0 | 0 | 0 | **20 (14.5)** |
| | Bamunbari | 4 (17.4) | 0 | 2 (25) | 0 | 0 | 0 | 0 | 0 | 4 (17.4) | 0 | 0 | **10 (7.3)** |
| | Namati | 0 | 4 (13.8) | 0 | 0 | 2 (6.1) | 0 | 0 | 0 | 4 (17.4) | 0 | 0 | **10 (7.3)** |
| **Total** | **4** | **10 (43.5)** | **6 (20.7)** | **7 (87.5)** | **0** | **14 (42.4)** | **0** | **2 (50)** | **0** | **12 (52.2)** | **0** | **0** | **51 (36.9)** |
| **Grand Total** | **12** | **23 (16.7)** | **29 (21.0)** | **8 (5.8)** | **1 (0.7)** | **33 (23.9)** | **1 (0.7)** | **4 (2.9)** | **9 (6.5)** | **23 (16.7)** | **4 (2.9)** | **3 (2.2)** | **138** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

### 3.10. Basic Profile of Surveyed SHGs

Table 3.48 reveals that 58.3% (35) SHGs has group members 10, and 20% (12) of them has group members 12. Moreover, 16.7% (10) of SHGs are nine year old, 15% (9) are seven year old and 11.7% (7) are only two year old. 70% (42) SHGs enjoyed 100% repayment rate, and 3.3% experienced 80% repayment rate. In addition, 41.7% (25) SHGs charged 36% interest rate per annum for members and 35% (21) SHGs 60%. Interestingly, 71.7% (43) SHGs didn't provide loan outsiders. Among them who provided the loan to outsiders, 18.3% (11) charged 60% interest rate per annum, and 5% (3) charge 120%.

Furthermore, contribution from members is ₹6000 per annum for 15% (9) SHGs, 13.3% (8) have ₹12000, 11.7% (7) ₹4800, 10% (6) 14400, 8.3% (5) ₹7200 and 6.7% ₹24000. 18.3% (11) of SHGs don't have any retained earnings, 13.3% (8) SHGs earned ₹10000 per annum, 8.3% (5) ₹50000, 6.7% (4) ₹5000, 5% (3) ₹80000, 5% (3) ₹30000, 5% (3) ₹25000 and 5% (3) earned ₹20000 per annum. 30% (18) SHGs doesn't have any outstanding loan, 8.3% (5) SHGs ₹8000, 6.7% (4) ₹4000, and 5% (3) ₹50000. Besides, 8.3% (5) SHGs has the saving of ₹5000 till date, 6.7% (4) has ₹6000 and 6.7% (4) ₹4000. Accordingly, 28.9% (17) SHGs hasnot borrowed any money from banks, 11.7% (7) borrowed ₹10000, 8.3% (5) SHGs borrowed ₹210000, 6.7% (4) ₹225000, 6.7% (4) ₹25000 and 5% (3) borrowed ₹30000 (Table 3.48.1).

## Table 3.48 Profile of Studied SHGs

| ND | NV | NG | NM | DE | RR (%) | RIM (p/a) | RIO (p/a) |
|---|---|---|---|---|---|---|---|
| Baksa | Jangapara | Rangdhali | 10 | 2011 | 100 | 36 | 60 |
| | Jangapara | Sanghamitra | 10 | 2007 | 100 | 60 | 60 |
| | Jangapara | Atma Niyojan Samiti | 10 | 2000 | 100 | 36 | 36 |
| | Jangapara | Ramdhenu | 10 | 2012 | 100 | 24 | 24 |
| | Jangapara | Aai Asomi | 10 | 2013 | 100 | 36 | -- |
| | Salbari | Salbari Nzwra Affat | 10 | 2008 | 90 | 60 | 60 |
| | Salbari | Golden | 12 | 2006 | 100 | 60 | 60 |
| | Salbari | Pakhila | 10 | 2005 | 100 | 60 | 60 |
| | Salbari | Udashri | 10 | 2011 | 100 | 60 | 120 |
| | Salbari | Rupashree | 12 | 2004 | 100 | 60 | 60 |
| | Bunmaja | 11 Star | 11 | 2009 | -- | -- | -- |
| | Bunmaja | Narikallari | 10 | 2012 | -- | -- | -- |
| | Bunmaja | Jonmoni | 10 | 2008 | 100 | 60 | -- |
| | Bunmaja | Rangjali | 12 | 2013 | -- | -- | -- |
| | Bunmaja | Baishagi | 10 | 2006 | 100 | 60 | 120 |
| | Bagariguri | Jonmoni | 11 | 2009 | -- | -- | -- |
| | Bagariguri | Nari Mukti | 10 | 2012 | -- | -- | -- |
| | Bagariguri | Jonmoni | 10 | 2008 | 100 | 60 | -- |
| | Bagariguri | Rangjali | 12 | 2013 | -- | -- | -- |
| | Bagariguri | Baishagi | 10 | 2006 | 100 | 60 | 120 |
| Barpeta | Bamundi | Jai Shiv | 10 | 2013 | 100 | 24 | -- |
| | Bamundi | Maa Kali | 11 | 2008 | 100 | 36 | -- |
| | Bamundi | Maa Kamakhya | 10 | 2014 | 100 | 24 | -- |
| | Bamundi | Sarachati | 10 | 2013 | 100 | 36 | -- |
| | Bamundi | Rupjyoti | 10 | 2012 | 100 | 36 | -- |
| | Bhare Gaon | Shudamsri | 11 | 2010 | 100 | 60 | 60 |
| | Bhare Gaon | Hainashree Mahila | 10 | 2008 | 100 | 36 | 48 |
| | Bhare Gaon | Jayamoti | 11 | 2006 | 100 | 36 | 60 |
| | Bhare Gaon | Maina | 14 | 2008 | -- | -- | -- |
| | Bhare Gaon | Mousumi | 12 | 2006 | 100 | 36 | -- |
| | Garemari | Bowari | 10 | 2011 | 100 | 60 | -- |
| | Garemari | Jaganath | 13 | 2007 | 80 | 60 | -- |
| | Garemari | Akha | 15 | 2007 | 100 | 60 | -- |
| | Garemari | Jibita | 15 | 2007 | 100 | 60 | 60 |
| | Garemari | Bhogirothi | 12 | 2008 | 100 | 60 | 60 |
| | Bamunkuchi | Pragati | 12 | 2003 | 100 | 24 | -- |
| | Bamunkuchi | Sarachati | 10 | 2006 | -- | 60 | -- |
| | Bamunkuchi | Pragati | 10 | 2007 | 100 | 36 | -- |
| | Bamunkuchi | Meghali | 12 | 2014 | -- | -- | -- |
| | Bamunkuchi | Lakhimi | 10 | 2004 | 100 | 36 | -- |
| Nalbari | Bar Makhibaha | Lakhimi | 10 | 2003 | 100 | 36 | -- |
| | Bar Makhibaha | Puwali | 10 | 2002 | -- | 36 | -- |
| | Bar Makhibaha | Milan | 10 | 2012 | 100 | 36 | -- |
| | Bar Makhibaha | Nilachal | 10 | 2008 | 80 | 36 | -- |
| | Bar Makhibaha | pragatishil | 11 | 2003 | 100 | 36 | -- |
| | Baralkuchi | Milijuli | 12 | 2002 | 100 | 36 | -- |
| | Baralkuchi | Ramdhenu | 10 | 2013 | -- | 48 | -- |
| | Baralkuchi | Shiv Shankar | 12 | 2011 | -- | 60 | -- |
| | Baralkuchi | Jontona | 12 | 2010 | 100 | 60 | -- |
| | Baralkuchi | Lakhimi | 8 | 2006 | 100 | 60 | -- |
| | Bamunbari | Maa Kamakhya | 10 | 2002 | 100 | 36 | -- |
| | Bamunbari | Udiyaman | 10 | 2006 | 100 | 36 | -- |
| | Bamunbari | Nabmilan | 10 | 2002 | 100 | 36 | 60 |
| | Bamunbari | Kapili | 10 | 2013 | -- | 48 | -- |
| | Bamunbari | Mayamoni | 12 | 2011 | -- | 60 | -- |
| | Namati | Pragati | 10 | 2006 | 75 | 36 | -- |
| | Namati | Rangdhali | 11 | 2008 | 100 | 36 | -- |
| | Namati | Nab Jyoti | 10 | 2006 | 100 | 36 | -- |
| | Namati | Abala | 11 | 2005 | 100 | 36 | -- |
| | Namati | Niyor | 10 | 2002 | 100 | 36 | -- |

Source: Field Survey, 2014; Note: ND= Name of Districts, NG= Name of SHG, NM= No. of Members, DE= Date of Establishment, RR= Rate of Repayment, RIM= Rate of Interest (Members), RIO= Rate of Interest (Outsiders)

## Table 3.48.1 Profile of Studied SHGs

| ND | NV | NG | CM (p/a) | EG | TLG | TSG | TBG |
|---|---|---|---|---|---|---|---|
| Baksa | Jangapara | Rangdhali | 4800 | 1500 | 7000 | 2226 | -- |
| | Jangapara | Sanghamitra | 2400 | -- | 17000 | 115000 | 225000 |
| | Jangapara | Atma Niyojan Samiti | 4800 | 50000 | -- | 32000 | 237000 |
| | Jangapara | Ramdhenu | 9600 | 8000 | 20000 | 2500 | 15000 |
| | Jangapara | Aai Asomi | 24000 | 2000 | 12000 | 700 | 10000 |
| | Salbari | Salbari Nzwra Affat | 12000 | 80000 | 70000 | 14500 | 210000 |
| | Salbari | Golden | 3600 | 70000 | 39000 | 12500 | 150000 |
| | Salbari | Pakhila | 2400 | 60000 | 5500 | -- | 5000 |
| | Salbari | Udashri | 6000 | 5000 | 13000 | 8000 | -- |
| | Salbari | Rupashree | 14400 | 10000 | -- | 12000 | 10000 |
| | Bunmaja | 11 Star | 5280 | -- | -- | 20000 | -- |
| | Bunmaja | Narikallari | 6000 | -- | -- | 12000 | -- |
| | Bunmaja | Jonmoni | 6000 | 10000 | -- | 4200 | 30000 |
| | Bunmaja | Rangjali | 14400 | -- | -- | 1500 | -- |
| | Bunmaja | Baishagi | 4800 | 10000 | -- | 5000 | 5000 |
| | Bagariguri | Jonmoni | 5280 | -- | -- | 20000 | -- |
| | Bagariguri | Nari Mukti | 6000 | -- | -- | 12000 | -- |
| | Bagariguri | Jonmoni | 6000 | 10000 | -- | 4200 | 30000 |
| | Bagariguri | Rangjali | 14400 | -- | -- | 1500 | -- |
| | Bagariguri | Baishagi | 4800 | 10000 | -- | 5000 | 5000 |
| Barpeta | Bamundi | Jai Shiv | 1440 | 8000 | 36000 | 9000 | 25000 |
| | Bamundi | Maa Kali | 5280 | 30000 | 80000 | 1500 | 75000 |
| | Bamundi | Maa Kamakhya | 4800 | -- | 7500 | 4000 | 15000 |
| | Bamundi | Sarachati | 2400 | 2000 | 50000 | 11000 | 65000 |
| | Bamundi | Rupjyoti | 5760 | 20000 | 60000 | 9000 | 40000 |
| | Bhare Gaon | Shudamsri | 14520 | 25000 | 22000 | 22000 | -- |
| | Bhare Gaon | Hainashree Mahila | 12000 | 20000 | 100000 | 3000 | 5000 |
| | Bhare Gaon | Jayamoti | 2640 | 80000 | 40000 | 106000 | 210000 |
| | Bhare Gaon | Maina | 4200 | -- | -- | 2500 | -- |
| | Bhare Gaon | Mousumi | 2880 | -- | -- | 142000 | 210000 |
| | Garemari | Bowari | 6000 | 5000 | 5000 | 6000 | 40000 |
| | Garemari | Jaganath | 3900 | 25000 | 1000 | 4500 | -- |
| | Garemari | Akha | 7200 | 105000 | 40000 | 7000 | -- |
| | Garemari | Jibita | 7200 | 50000 | 30000 | 15000 | -- |
| | Garemari | Bhogirothi | 14400 | 30000 | 8000 | 4000 | 30000 |
| | Bamunkuchi | Pragati | 5760 | 50000 | -- | 5000 | 125000 |
| | Bamunkuchi | Sarachati | 4800 | 50000 | -- | 4400 | 14000 |
| | Bamunkuchi | Pragati | 2400 | 25000 | 8000 | 5000 | 10000 |
| | Bamunkuchi | Meghali | 7200 | -- | -- | 1600 | -- |
| | Bamunkuchi | Lakhimi | 6000 | 40000 | 42000 | 10000 | 10000 |
| Nalbari | Bar Makhibaha | Lakhimi | 24000 | 180000 | -- | 39000 | 215000 |
| | Bar Makhibaha | Puwali | 12000 | 36000 | 9000 | 9300 | 225000 |
| | Bar Makhibaha | Milan | 6000 | 10000 | 27000 | 3675 | 10000 |
| | Bar Makhibaha | Nilachal | 12000 | 43200 | 50000 | 2400 | 225000 |
| | Bar Makhibaha | pragatishil | 5280 | 250000 | 5000 | 3150 | 120000 |
| | Baralkuchi | Milijuli | 14400 | 500 | 4500 | 6000 | -- |
| | Baralkuchi | Ramdhenu | 12000 | 500 | 8000 | 4000 | -- |
| | Baralkuchi | Shiv Shankar | 7200 | 5000 | 4000 | 24000 | 10000 |
| | Baralkuchi | Jontona | 14400 | 10000 | 20000 | 35000 | 25000 |
| | Baralkuchi | Lakhimi | 4800 | 50000 | 6000 | 3500 | 25000 |
| | Bamunbari | Maa Kamakhya | 24000 | 100000 | 2000 | 6000 | 210000 |
| | Bamunbari | Udiyaman | 12000 | 10000 | 4000 | 7359 | 125000 |
| | Bamunbari | Nabmilan | 6000 | 12000 | 4000 | 5000 | 25000 |
| | Bamunbari | Kapili | 12000 | 500 | 8000 | 4000 | -- |
| | Bamunbari | Mayamoni | 7200 | 5000 | 4000 | 24000 | 10000 |
| | Namati | Pragati | 3600 | 30000 | 70000 | 106200 | 225000 |
| | Namati | Rangdhali | 6600 | 40000 | 8000 | 9000 | 20000 |
| | Namati | Nab Jyoti | 12000 | 20000 | 10000 | 8000 | 20000 |
| | Namati | Abala | 3960 | 80000 | 50000 | 108000 | 320000 |
| | Namati | Niyor | 24000 | 100000 | 2000 | 6000 | 210000 |

Source: Field Survey, 2014; Note: CM= Contribution from Members, EG= Retained Earnings, TLG= Loan Outstanding, TSG= Total Saving of Group, TBG= Total Borrowing of SHG

### 3.11. Socio- Economic Background of Surveyed SHGs Members

Out of 647 members in 60 SHGs, 97.2% (629) are Hindu members, 2.8% (28) Muslim. Moreover, among members 26.4% (171) belongs to General category and the percentages of OBC, SC and ST are 23.2% (150), 31.4% (203) and 17.2% (111) respectively (Table 3.50).

Similarly, among members, 24% (153) are illiterate, 37.4% (238) primary school passed, 21.5% (137) upper primary school passed, 10.4% (66) HSLC, 4.7% (30) HS and 1.7% (11) graduate (Table 3.51).

Further, 21.8% (139) members remain within the income range of ₹1000-3000 per month. Likewise, 21.5% (136) have income of ₹4000-6000, 16.8% (107) ₹7000-9000, 15.9% (101) have income of ₹10000-12000 per month (Table 3.52).

**Table 3.49 Descriptive Statistics of Variables**

| Districts | Statistics | NM | CM | EG | TLG | TSG | TBG | RIM (p/a) | RIO (p/a) |
|---|---|---|---|---|---|---|---|---|---|
| **Overall** | **Mean** | 10.78 | 8353 | 31236.67 | 16808.33 | 17848.5 | 63766.67 | 45.23 | 66.75 |
| | **Minimum** | 8 | 1440 | 0 | 0 | 0 | 0 | 24 | 24 |
| | **Maximum** | 15 | 24000 | 250000 | 100000 | 142000 | 320000 | 60 | 120 |
| **Baksa** | **Mean** | 10.5 | 7848 | 16325 | 9175 | 14241.3 | 46600 | 52.29 | 70.91 |
| | **Minimum** | 10 | 2400 | 0 | 0 | 0 | 0 | 24 | 24 |
| | **Maximum** | 12 | 24000 | 80000 | 70000 | 115000 | 237000 | 60 | 120 |
| **Barpeta** | **Mean** | 11.4 | 6039 | 28250 | 26475 | 18625 | 43700 | 43.33 | 57.6 |
| | **Minimum** | 10 | 1440 | 0 | 0 | 1500 | 0 | 24 | 48 |
| | **Maximum** | 15 | 14520 | 105000 | 100000 | 142000 | 210000 | 60 | 60 |
| **Nalbari** | **Mean** | 10.45 | 11172 | 49135 | 14775 | 20679.2 | 101000 | 42 | 60 |
| | **Minimum** | 8 | 3600 | 500 | 0 | 2400 | 0 | 36 | 60 |
| | **Maximum** | 12 | 24000 | 250000 | 70000 | 108000 | 320000 | 60 | 60 |

Source: Authors estimation based on field survey, 2014

## Table 3.50 Social Profile of SHGs Members

| ND | NV | NG | NM | Religion | | Caste | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Hindu | Muslim | General | OBC | SC | ST |
| Baksa | Jangapara | Rangdhali | 10 | 10 | 0 | 0 | 6 | 4 | 0 |
| | Jangapara | Sanghamitra | 10 | 10 | 0 | 1 | 5 | 4 | 0 |
| | Jangapara | Atma Niyojan Samiti | 10 | 10 | 0 | 2 | 4 | 4 | 0 |
| | Jangapara | Ramdhenu | 10 | 10 | 0 | 0 | 3 | 7 | 0 |
| | Jangapara | Aai Asomi | 10 | 10 | 0 | 3 | 5 | 2 | 0 |
| | Salbari | Salbari Nzwra Affat | 10 | 10 | 0 | 0 | 0 | 0 | 10 |
| | Salbari | Golden | 12 | 12 | 0 | 0 | 2 | 0 | 10 |
| | Salbari | Pakhila | 10 | 10 | 0 | 1 | 6 | 0 | 3 |
| | Salbari | Udashri | 10 | 10 | 0 | 0 | 0 | 0 | 10 |
| | Salbari | Rupashree | 12 | 12 | 0 | 0 | 3 | 2 | 7 |
| | Bunmaja | 11 Star | 11 | 0 | 11 | 11 | 0 | 0 | 0 |
| | Bunmaja | Narikallari | 10 | 3 | 7 | 7 | 3 | 0 | 0 |
| | Bunmaja | Jonmoni | 10 | 10 | 0 | 0 | 0 | 0 | 10 |
| | Bunmaja | Rangjali | 12 | 12 | 0 | 0 | 0 | 0 | 12 |
| | Bunmaja | Baishagi | 10 | 10 | 0 | 0 | 0 | 0 | 10 |
| | Bagariguri | Jonmoni | 11 | 11 | 0 | 2 | 0 | 9 | 0 |
| | Bagariguri | Nari Mukti | 10 | 10 | 0 | 0 | 3 | 7 | 0 |
| | Bagariguri | Jonmoni | 10 | 10 | 0 | 1 | 6 | 3 | 0 |
| | Bagariguri | Rangjali | 12 | 12 | 0 | 0 | 2 | 10 | 0 |
| | Bagariguri | Baishagi | 10 | 10 | 0 | 3 | 4 | 3 | 0 |
| Barpeta | Bamundi | Jai Shiv | 10 | 10 | 0 | 0 | 0 | 10 | 0 |
| | Bamundi | Maa Kali | 11 | 11 | 0 | 0 | 2 | 9 | 0 |
| | Bamundi | Maa Kamakhya | 10 | 10 | 0 | 0 | 0 | 10 | 0 |
| | Bamundi | Sarachati | 10 | 10 | 0 | 0 | 0 | 10 | 0 |
| | Bamundi | Rupjyoti | 10 | 10 | 0 | 0 | 4 | 6 | 0 |
| | Bhare Gaon | Shudamsri | 11 | 11 | 0 | 0 | 0 | 0 | 11 |
| | Bhare Gaon | Hainashree Mahila | 10 | 10 | 0 | 0 | 0 | 0 | 10 |
| | Bhare Gaon | Jayamoti | 11 | 11 | 0 | 0 | 0 | 0 | 11 |
| | Bhare Gaon | Maina | 14 | 14 | 0 | 10 | 4 | 0 | 0 |
| | Bhare Gaon | Mousumi | 12 | 12 | 0 | 5 | 2 | 5 | 0 |
| | Garemari | Bowari | 10 | 10 | 0 | 5 | 2 | 3 | 0 |
| | Garemari | Jaganath | 13 | 13 | 0 | 3 | 2 | 8 | 0 |
| | Garemari | Akha | 15 | 15 | 0 | 4 | 2 | 9 | 0 |
| | Garemari | Jibita | 15 | 15 | 0 | 5 | 6 | 4 | 0 |
| | Garemari | Bhogirothi | 12 | 12 | 0 | 1 | 10 | 0 | 0 |
| | Bamunkuchi | Pragati | 12 | 12 | 0 | 10 | 2 | 0 | 0 |
| | Bamunkuchi | Sarachati | 10 | 10 | 0 | 8 | 2 | 0 | 0 |
| | Bamunkuchi | Pragati | 10 | 10 | 0 | 5 | 5 | 0 | 0 |
| | Bamunkuchi | Meghali | 12 | 12 | 0 | 5 | 1 | 6 | 0 |
| | Bamunkuchi | Lakhimi | 10 | 10 | 0 | 7 | 3 | 0 | 0 |
| Nalbari | Bar Makhibaha | Lakhimi | 10 | 10 | 0 | 10 | 0 | 0 | 0 |
| | Bar Makhibaha | Puwali | 10 | 10 | 0 | 10 | 0 | 0 | 0 |
| | Bar Makhibaha | Milan | 10 | 10 | 0 | 5 | 2 | 3 | 0 |
| | Bar Makhibaha | Nilachal | 10 | 10 | 0 | 10 | 0 | 0 | 0 |
| | Bar Makhibaha | pragatishil | 11 | 11 | 0 | 2 | 5 | 4 | 0 |
| | Baralkuchi | Milijuli | 12 | 12 | 7 | 5 | 0 | 0 | 0 |
| | Baralkuchi | Ramdhenu | 10 | 10 | 3 | 0 | 0 | 7 | 0 |
| | Baralkuchi | Shiv Shankar | 12 | 12 | 0 | 0 | 0 | 12 | 0 |
| | Baralkuchi | Jontona | 12 | 12 | 0 | 0 | 0 | 5 | 7 |
| | Baralkuchi | Lakhimi | 8 | 8 | 0 | 0 | 0 | 8 | 0 |
| | Bamunbari | Maa Kamakhya | 10 | 10 | 0 | 5 | 0 | 5 | 0 |
| | Bamunbari | Udiyaman | 10 | 10 | 0 | 3 | 2 | 5 | 0 |
| | Bamunbari | Nabmilan | 10 | 10 | 0 | 8 | 0 | 2 | 0 |
| | Bamunbari | Kapili | 10 | 10 | 0 | 6 | 4 | 0 | 0 |
| | Bamunbari | Mayamoni | 12 | 12 | 0 | 2 | 5 | 5 | 0 |
| | Namati | Pragati | 10 | 10 | 0 | 0 | 10 | 0 | 0 |
| | Namati | Rangdhali | 11 | 11 | 0 | 2 | 7 | 1 | 0 |
| | Namati | Nab Jyoti | 10 | 10 | 0 | 0 | 5 | 5 | 0 |
| | Namati | Abala | 11 | 11 | 0 | 4 | 6 | 1 | 0 |
| | Namati | Niyor | 10 | 10 | 0 | 0 | 5 | 5 | 0 |
| **3** | **12** | **60** | **647** | **629 (97)** | **28 (2.8)** | **171 (26.4)** | **150 (23.2)** | **203 (31.4)** | **111 (17.2)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of members

## Table 3.51 Educational Status of SHGs Members

| ND | NV | NG | NM | Illiterate | Primary | Upper Primary | HSLC | HS | B.A | M.A |
|---|---|---|---|---|---|---|---|---|---|---|
| Baksa | Jangapara | Rangdhali | 10 | 5 | 3 | 2 | 0 | 0 | 0 | 0 |
| | Jangapara | Sanghamitra | 10 | 3 | 5 | 1 | 1 | 0 | 0 | 0 |
| | Jangapara | Atma Niyojan Samiti | 10 | 2 | 7 | 1 | 0 | 0 | 0 | 0 |
| | Jangapara | Ramdhenu | 10 | 1 | 5 | 3 | 1 | 0 | 0 | 0 |
| | Jangapara | Aai Asomi | 10 | 4 | 3 | 2 | 0 | 1 | 0 | 0 |
| | Salbari | Salbari Nzwra Affat | 10 | 1 | 4 | 3 | 1 | 1 | 0 | 0 |
| | Salbari | Golden | 12 | 3 | 5 | 2 | 1 | 0 | 0 | 0 |
| | Salbari | Pakhila | 10 | 0 | 6 | 2 | 2 | 0 | 0 | 0 |
| | Salbari | Udashri | 10 | 2 | 4 | 3 | 1 | 0 | 0 | 0 |
| | Salbari | Rupashree | 12 | 4 | 4 | 3 | 1 | 0 | 0 | 0 |
| | Bunmaja | 11 Star | 11 | 2 | 4 | 2 | 1 | 1 | 1 | 0 |
| | Bunmaja | Narikallari | 10 | 5 | 2 | 3 | 0 | 0 | 0 | 0 |
| | Bunmaja | Jonmoni | 10 | 0 | 4 | 2 | 2 | 2 | 0 | 0 |
| | Bunmaja | Rangjali | 12 | 2 | 3 | 3 | 2 | 1 | 1 | 0 |
| | Bunmaja | Baishagi | 10 | 3 | 3 | 2 | 2 | 0 | 0 | 0 |
| | Bagariguri | Jonmoni | 11 | 3 | 5 | 2 | 1 | 0 | 0 | 0 |
| | Bagariguri | Nari Mukti | 10 | 0 | 6 | 2 | 2 | 0 | 0 | 0 |
| | Bagariguri | Jonmoni | 10 | 2 | 4 | 3 | 1 | 0 | 0 | 0 |
| | Bagariguri | Rangjali | 12 | 4 | 4 | 3 | 1 | 0 | 0 | 0 |
| | Bagariguri | Baishagi | 10 | 2 | 4 | 2 | 1 | 1 | 1 | 0 |
| Barpeta | Bamundi | Jai Shiv | 10 | 2 | 5 | 2 | 1 | 0 | 0 | 0 |
| | Bamundi | Maa Kali | 11 | 3 | 4 | 1 | 1 | 1 | 1 | 0 |
| | Bamundi | Maa Kamakhya | 10 | 4 | 4 | 2 | 0 | 0 | 0 | 0 |
| | Bamundi | Sarachati | 10 | 2 | 3 | 2 | 2 | 1 | 0 | 0 |
| | Bamundi | Rupjyoti | 10 | 1 | 4 | 2 | 1 | 1 | 1 | 0 |
| | Bhare Gaon | Shudamsri | 11 | 3 | 3 | 2 | 2 | 1 | 0 | 0 |
| | Bhare Gaon | Hainashree Mahila | 10 | 4 | 4 | 2 | 0 | 0 | 0 | 0 |
| | Bhare Gaon | Jayamoti | 11 | 3 | 3 | 1 | 1 | 1 | 1 | 0 |
| | Bhare Gaon | Maina | 14 | 4 | 3 | 3 | 2 | 2 | 0 | 0 |
| | Bhare Gaon | Mousumi | 12 | 5 | 3 | 2 | 1 | 1 | 0 | 0 |
| | Garemari | Bowari | 10 | 3 | 5 | 1 | 1 | 0 | 0 | 0 |
| | Garemari | Jaganath | 13 | 3 | 7 | 2 | 1 | 0 | 0 | 0 |
| | Garemari | Akha | 15 | 3 | 5 | 3 | 1 | 1 | 0 | 0 |
| | Garemari | Jibita | 15 | 4 | 3 | 5 | 2 | 1 | 0 | 0 |
| | Garemari | Bhogirothi | 12 | 1 | 4 | 3 | 1 | 1 | 1 | 0 |
| | Bamunkuchi | Pragati | 12 | 3 | 5 | 2 | 2 | 0 | 0 | 0 |
| | Bamunkuchi | Sarachati | 10 | 0 | 6 | 2 | 2 | 0 | 0 | 0 |
| | Bamunkuchi | Meghali | 12 | 4 | 4 | 3 | 1 | 0 | 0 | 0 |
| | Bamunkuchi | Lakhimi | 10 | 2 | 4 | 2 | 1 | 1 | 0 | 0 |
| Nalbari | Bar Makhibaha | Lakhimi | 10 | 5 | 2 | 3 | 1 | 1 | 0 | 0 |
| | Bar Makhibaha | Puwali | 10 | 0 | 4 | 2 | 2 | 2 | 0 | 0 |
| | Bar Makhibaha | Milan | 10 | 2 | 3 | 3 | 2 | 0 | 0 | 0 |
| | Bar Makhibaha | Nilachal | 10 | 3 | 3 | 2 | 2 | 0 | 0 | 0 |
| | Bar Makhibaha | pragatishil | 11 | 3 | 5 | 2 | 1 | 0 | 0 | 0 |
| | Baralkuchi | Milijuli | 12 | 0 | 6 | 4 | 2 | 0 | 0 | 0 |
| | Baralkuchi | Ramdhenu | 10 | 2 | 4 | 3 | 1 | 0 | 0 | 0 |
| | Baralkuchi | Shiv Shankar | 12 | 4 | 4 | 3 | 1 | 0 | 0 | 0 |
| | Baralkuchi | Jontona | 12 | 3 | 4 | 2 | 1 | 1 | 1 | 0 |
| | Baralkuchi | Lakhimi | 8 | 2 | 5 | 1 | 0 | 0 | 0 | 0 |
| | Bamunbari | Maa Kamakhya | 10 | 3 | 4 | 1 | 1 | 1 | 0 | 0 |
| | Bamunbari | Udiyaman | 10 | 4 | 4 | 2 | 0 | 0 | 0 | 0 |
| | Bamunbari | Nabmilan | 10 | 2 | 3 | 2 | 2 | 1 | 0 | 0 |
| | Bamunbari | Kapili | 10 | 1 | 4 | 2 | 1 | 1 | 1 | 0 |
| | Bamunbari | Mayamoni | 12 | 3 | 3 | 2 | 2 | 1 | 1 | 0 |
| | Namati | Pragati | 10 | 4 | 4 | 2 | 0 | 0 | 0 | 0 |
| | Namati | Rangdhali | 11 | 3 | 3 | 2 | 1 | 1 | 1 | 0 |
| | Namati | Nab Jyoti | 10 | 4 | 3 | 3 | 0 | 0 | 0 | 0 |
| | Namati | Abala | 11 | 2 | 2 | 5 | 1 | 1 | 0 | 0 |
| | Namati | Niyor | 10 | 1 | 4 | 3 | 1 | 1 | 0 | 0 |
| **3** | **12** | **60** | **637** | **153 (24)** | **238 (37.4)** | **137 (21.5)** | **66 (10.4)** | **30 (4.7)** | **11 (1.7)** | **0** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of members

## Table 3.52 Family Income of Members Per Month (p/m) (Amount in 000')

| ND | NV | NG | NM | 1-3 | 4- 6 | 7- 9 | 10-12 | 13-15 | 16-18 | 19-21 | 21+ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Baksa | Jangapara | Rangdhali | 10 | 1 | 5 | 2 | 1 | 1 | 0 | 0 | 0 |
| | Jangapara | Sanghamitra | 10 | 0 | 3 | 3 | 2 | 1 | 1 | 0 | 0 |
| | Jangapara | Atma Niyojan Samiti | 10 | 2 | 2 | 3 | 2 | 1 | 0 | 0 | 0 |
| | Jangapara | Ramdhenu | 10 | 0 | 3 | 2 | 2 | 1 | 1 | 1 | 0 |
| | Jangapara | Aai Asomi | 10 | 3 | 1 | 3 | 1 | 1 | 0 | 0 | 0 |
| | Salbari | Salbari Nzwra Affat | 10 | 1 | 3 | 2 | 3 | 0 | 1 | 0 | 0 |
| | Salbari | Golden | 12 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 0 |
| | Salbari | Pakhila | 10 | 0 | 5 | 1 | 3 | 1 | 0 | 0 | 0 |
| | Salbari | Udashri | 10 | 2 | 3 | 3 | 2 | 0 | 0 | 0 | 0 |
| | Salbari | Rupashree | 12 | 4 | 2 | 1 | 2 | 1 | 1 | 1 | 0 |
| | Bunmaja | 11 Star | 11 | 1 | 1 | 5 | 3 | 1 | 0 | 0 | 0 |
| | Bunmaja | Narikallari | 10 | 2 | 2 | 3 | 0 | 3 | 0 | 0 | 0 |
| | Bunmaja | Jonmoni | 10 | 3 | 3 | 2 | 1 | 1 | 0 | 0 | 0 |
| | Bunmaja | Rangjali | 12 | 2 | 2 | 3 | 2 | 2 | 1 | 0 | 0 |
| | Bunmaja | Baishagi | 10 | 1 | 4 | 2 | 1 | 1 | 1 | 0 | 0 |
| | Bagariguri | Jonmoni | 11 | 4 | 2 | 2 | 1 | 1 | 1 | 0 | 0 |
| | Bagariguri | Nari Mukti | 10 | 3 | 1 | 3 | 2 | 1 | 0 | 0 | 0 |
| | Bagariguri | Jonmoni | 10 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 |
| | Bagariguri | Rangjali | 12 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 |
| | Bagariguri | Baishagi | 10 | 4 | 2 | 2 | 2 | 0 | 0 | 0 | 0 |
| Barpeta | Bamundi | Jai Shiv | 10 | 3 | 1 | 2 | 1 | 1 | 1 | 1 | 0 |
| | Bamundi | Maa Kali | 11 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 0 |
| | Bamundi | Maa Kamakhya | 10 | 3 | 2 | 2 | 1 | 1 | 0 | 0 | 2 |
| | Bamundi | Sarachati | 10 | 1 | 2 | 4 | 2 | 1 | 0 | 0 | 0 |
| | Bamundi | Rupjyoti | 10 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |
| | Bhare Gaon | Shudamsri | 11 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| | Bhare Gaon | Hainashree Mahila | 10 | 2 | 0 | 0 | 3 | 2 | 1 | 0 | 2 |
| | Bhare Gaon | Jayamoti | 11 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 0 |
| | Bhare Gaon | Maina | 14 | 3 | 2 | 1 | 2 | 1 | 2 | 2 | 1 |
| | Bhare Gaon | Mousumi | 12 | 2 | 1 | 1 | 3 | 2 | 2 | 1 | 0 |
| | Garemari | Bowari | 10 | 3 | 0 | 0 | 2 | 0 | 3 | 0 | 2 |
| | Garemari | Jaganath | 13 | 2 | 5 | 3 | 2 | 1 | 0 | 0 | 0 |
| | Garemari | Akha | 15 | 4 | 2 | 2 | 1 | 2 | 3 | 1 | 0 |
| | Garemari | Jibita | 15 | 2 | 5 | 2 | 3 | 2 | 1 | 0 | 0 |
| | Garemari | Bhogirothi | 12 | 5 | 2 | 1 | 2 | 2 | 0 | 0 | 0 |
| | Bamunkuchi | Pragati | 12 | 3 | 5 | 2 | 2 | 0 | 0 | 0 | 0 |
| | Bamunkuchi | Sarachati | 10 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 0 |
| | Bamunkuchi | Meghali | 12 | 2 | 3 | 2 | 1 | 0 | 1 | 2 | 1 |
| | Bamunkuchi | Lakhimi | 10 | 3 | 3 | 2 | 1 | 1 | 0 | 0 | 0 |
| Nalbari | Bar Makhibaha | Lakhimi | 10 | 4 | 1 | 1 | 2 | 1 | 0 | 1 | 0 |
| | Bar Makhibaha | Puwali | 10 | 2 | 1 | 2 | 1 | 2 | 0 | 1 | 1 |
| | Bar Makhibaha | Milan | 10 | 1 | 4 | 2 | 0 | 1 | 1 | 1 | 0 |
| | Bar Makhibaha | Nilachal | 10 | 2 | 3 | 2 | 2 | 1 | 0 | 0 | 0 |
| | Bar Makhibaha | pragatishil | 11 | 3 | 2 | 1 | 2 | 2 | 1 | 0 | 0 |
| | Baralkuchi | Milijuli | 12 | 3 | 2 | 1 | 1 | 2 | 2 | 1 | 0 |
| | Baralkuchi | Ramdhenu | 10 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 0 |
| | Baralkuchi | Shiv Shankar | 12 | 2 | 0 | 0 | 3 | 2 | 1 | 1 | 2 |
| | Baralkuchi | Jontona | 12 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| | Baralkuchi | Lakhimi | 8 | 3 | 2 | 1 | 2 | 0 | 0 | 0 | 0 |
| | Bamunbari | Maa Kamakhya | 10 | 2 | 1 | 1 | 3 | 2 | 1 | 0 | 0 |
| | Bamunbari | Udiyaman | 10 | 3 | 0 | 0 | 2 | 0 | 3 | 0 | 2 |
| | Bamunbari | Nabmilan | 10 | 2 | 5 | 3 | 0 | 0 | 0 | 0 | 0 |
| | Bamunbari | Kapili | 10 | 4 | 2 | 2 | 1 | 0 | 0 | 1 | 0 |
| | Bamunbari | Mayamoni | 12 | 2 | 5 | 2 | 3 | 0 | 0 | 0 | 0 |
| | Namati | Pragati | 10 | 5 | 2 | 1 | 2 | 0 | 0 | 0 | 0 |
| | Namati | Rangdhali | 11 | 3 | 5 | 2 | 1 | 0 | 0 | 0 | 0 |
| | Namati | Nab Jyoti | 10 | 2 | 2 | 2 | 2 | 1 | 1 | 0 | 0 |
| | Namati | Abala | 11 | 2 | 3 | 2 | 1 | 0 | 1 | 2 | 0 |
| | Namati | Niyor | 10 | 3 | 3 | 2 | 1 | 1 | 0 | 0 | 0 |
| **3** | **12** | **60** | **637** | **139 (21.8)** | **136 (21.5)** | **107 (16.8)** | **101 (15.9)** | **62 (9.7)** | **45 (7.1)** | **28 (4.4)** | **18 (2.8)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of members

### 3.12. Conclusion

Thus, we can summarize that the position of Assam is behind from all over India position in most of the socio-economic characteristics, and in some cases it is far away from mainland India. Although, branch expansion policy of government of India has somewhat improved the situation, but in almost all of the banking parameters, Assam is far behind from all over India, whereas if we compare the all over India position with study districts we can get the worst picture, even though Nalbari district is performing well by overcoming mainland India position in few parameters. While it was expected that the introduction of group-based approach, although it comes later in Assam will able to provide financial facilities to rural people, but here also Assam is far behind from the mainland India position. Consequently, the continuous dominance of informal finance has found, although in recent time its share decline. However, the informal sector is much more widespread in the state as compared to the country.

# CHAPTER- FOUR

## DEMAND, AWARENESS AND USE OF FINANCIAL SERVICES IN RURAL AREAS OF ASSAM

### 4.1. Introduction

The accessibility of inexpensive financial capital has long been acknowledged as a central factor in economic development, besides other factors, which Mosher (1971) named as "the element of a progressive rural structure". It has been broadly recognized that wide financial services have a positive impact on growth and welfare (Claessens, 2006; Demirgüç-Kunt and Levine, 2008; Clarke, Xu, and Zou, 2003; Honohan, 2004; Dehejia and Lleras-Muney, 2007; Levine, 2005). The literature on credit has found that limited access to formal financial services could encourage the development of informal financial institutions which could act as a complement or substitute to the formal sector (Eswaran and Kotwal, 1989; Braverman and Stiglitz, 1989; Kiiza and Pederson, 2002). Patrick (1966) argued that in developing countries, a competent system of financial intermediaries is a necessary and sufficient condition for the growth of different financial assets and liabilities and for economic development. Moreover, the financial system transfers rising volumes of purchasing power from depositors with restricted deposit opportunities to borrowers with superior productive option (Gonzalez-Vega 1989). However, by analyzing large-scale household level survey data from India, Pal & Pal (2012) argued that the extent of financial exclusion is quite severe in India, particularly among the poor households.

In developing countries, numerous studies have projected credit demand, but the estimates are often misleading because of data truncation, non-determination of supply and demand factors and non-division of production and consumption decisions among rural households (David, 1979; David and Meyer, 1980; Iqbal, 1983). Accordingly, Singh, Squire and Strauss (1989) described the ‘new household economics’ framework by using econometric models such as Heckman’s method, Truncated or Censoring and Switching Regression to deal with these problems. Nevertheless, estimates of credit demand are often ambiguous due to the fact that they are generally estimated either by Continuous Regression Models that don’t correct for Selectivity Bias or use data that usually record single credit transactions. E.g. Ubogu (1988) obtained a positive relationship between the cost and amount of mortgage loans by Ordinary Least Squares. The author ascribed this theoretically contradicting result to poor quality data. Indeed, the above dilemma may be due to the inappropriate definition used for

credit demand and exclusion of data censoring problems. Likewise, Olufemi (1983) estimated credit demand using individual loans. Moreover, Nagarajan et al. (1998) and Elhiraika and Ahmed (1998) estimated agricultural loan demand by using only formal and informal sources. Although the underlying relationship between the loan amounts and explanatory variables were theoretically correct, the model fit was not good due to an inappropriate definition of loan demand.

In the existence of data censoring, credit and quantity rationing and non-fulfillment of the borrower's credit necessities by single credit transaction, then the above mention estimates produced misleading results. In reality, non-borrowers, loan quantity, and loan size rationing are prevalent in rural financial markets[18]. Moreover, rural borrowers often take multiple loans from diverse credit sources offering different types of contracts. Economic theory provides tools to observe the credit demand derived by a utility maximizing borrower without any supply constraints[19].

In fact, when supply constraints and multiple credits are observed, estimates based on single loan transactions do not measure the quantity demanded. Unless individual credit transactions are aggregated by households, we cannot use the same to estimate a demand function when multiple loans are present. Hence, it is vital to build up a definition of credit demand and get data so that all credits obtained throughout a reference period can be calculated. This will aid in obtaining theoretically conceivable and empirically robust estimates of credit demand. Though credit demand is generally unobservable, under certain behavioral margins it can be obtained by aggregating individual loans received from different types of lenders. Thus, credit demand can be anticipated consistently and efficiently from surveys that cautiously collect data on all loans. The present chapter emphasises to know and estimate credit demand by covering all three sources of credit- formal, semiformal and informal[20] as structured in Figure 4.1. The novelty of the present chapter lies (a) to disentangle the effect of households, lenders and locality characteristics on estimation of different types of credit demand, (b) to provide a theoretical and econometric framework of estimating credit demand by data

[18]Credit quantity rationing arises when probable borrowers are deprived of credit while credit size rationing arises when borrowers are supplied loans smaller than demanded.

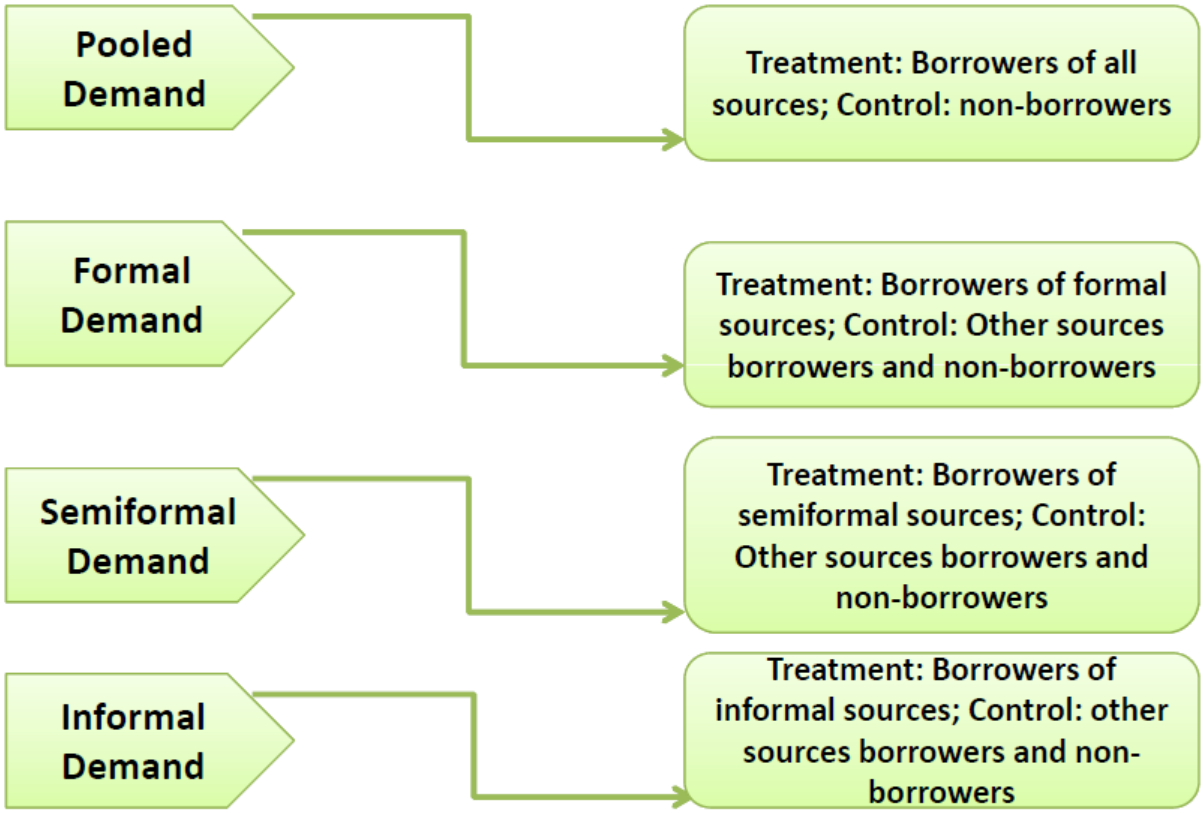
[19]Gourieroux et al. 1980; Drazen, 1980) argued that total demand is synonymous with Walrasian demand derived under no supply constraint.

[20]Formal Sources: State Bank of India, Assam Grameen Bikash Bank, Canara Bank, Syndicate Bank, ICICI Bank, Punjab National Bank, United Bank of India, UCO Bank, Union Bank, Indusben Bank, Central Bank, Allahabad Bank and Apex Bank; Semiformal Sources: SHGs and MFIs (BANDHAN and ASOMI); Informal Sources: Money Lenders and Private Saving Groups.

censoring, identifying of supply and demand factors, and dividing of production and consumption decisions and (c) to correct selectivity bias of estimating credit demand.

However, a vital demand-access component of credit is awareness of credit institutions. It is not easy for rural people to ask for a loan in an institution that they do not recognize. Claessens (2006) argued that in case of the demand side of the market, individuals are voluntarily debarred of the credit market if they are not aware of the service, do not want the service, or assume rejection, and therefore, he points that in order to have entrance to the credit market peoples should choose to be aware of the services. Moreover, Beck and de la Torre (2006) argued to differentiate between access and use when discussing financial sector outreach and found that the actual demand for credit can be lower due to lack of access because of reasons such as financial illiteracy or lack of awareness. Nevertheless, though awareness is the first step towards use, not much has been explored about the determinants of awareness of credit sources and their use. Therefore the present chapter has also tried to examine the use of credit institutions conditioning on their awareness. Hence, the novelty of the present chapter has also lies (a) to disentangle the effect of households, lenders and locality characteristics on awareness and use of different types of credit, (b) to understand the importance of knowing the specific channel through which different variables affect access to credit sources and (c) to differentiate those households that are aware of credit sources but decide not to participate from those that are not aware of credit sources.

**Figure 4.1 Types of Loan Demand across Treatment and Control Groups**




## 4.2. Operational Framework

### 4.2.1. Construction of Theoretical Framework for Estimating Credit Demand

Suppose a single lender develops the loan offer schedule, $C_s^*$ by offering a single contract to maximize his utility function. The tangency point of the iso-expected utility curves of the borrower and the lender will give the loan demand $C_D^*$ with an unimpeded loan supply at an interest rate 'r'. Conversely, both loan quantity and loan size rationing are likely outcomes when there is constrained supply. Due to incomplete and asymmetric information, restrictions on interest rates and liquidity, the supply of credit is often constrained. Thus, the total loan size, $C_D^{\times}$, derived by matching demand and supply schedules can be presented as follows;

$$C_D^{\times} = \begin{cases} C_D^* = \text{if } 0<C_d^*<C_s^*\text{: No Rationing} \\ C_S^* = \text{if } 0<C_s^*<C_d^*\text{: Loan Size Rationing} \\ C_S^* = 0 \text{ if } C_s^* \leq 0 \text{ and } C_d^* > 0\text{: Loan Quantity Rationing} \\ C_D^* = 0 \text{ if } C_d^* \leq 0\text{: No Demand} \end{cases}$$

However, there may exist some unfulfilled credit demand under a single lender. When individuals have access to non-exclusive loan contracts from multiple lenders, it can be fulfilled by borrowing from more than one lender. Suppose borrowers maximize their

expected utility and obtain their loan demand, $C_E$*, given the terms and conditions of an available marginal contract. Hence, the credit demand is fulfilled at the margin. A borrower has a contract opportunity set '$\Omega$' that consists of two non-exclusive contracts from two lenders (1 and 2) such that $\Omega_1$ is from lender 1 and $\Psi_2$ is from lender 2. In addition, there is no credit size rationing from either one of the lenders. In this situation total loan $C_E$□ can be fulfilled by taking the offer from either one of the lenders ($C_1^{\times}$ or $C_2$□) or from both lenders ($C_1^{\times}$ + $C_2$□). Thus the total loan size $C_E$□ can be expressed as;

$$C_E^* = C_1^{\times} \text{ if } 0<C_E^*<C_{S1}^* : \Omega = \{\Omega_1\}$$
$$C_E\square = C_E^* = C_2\square \text{ if } 0< C_E^*<C_{S2}^* : \Psi = \{\Psi_2\}$$
$$C_E^* = C_1^{\times} + C_2\square \text{ if } 0<C_E^*<C_{S1}^* \text{ and } 0<C_E^*<C_{S2}^* : \Psi = \{\Omega_1, \Psi_2\}$$

Where, $\Omega_1$ and $\Psi_2$ are the credit contracts and $C_{S1}$* and $C_{S2}^*$ are the supply of credits from lender 1 and lender 2 respectively; $C_1^{\times}$ and $C_2$□ are the individual loans from lender 1 and lender 2, respectively.

Suppose, lender 1 may not always satisfy the loan demand and may credit ration the borrowers, and hence, be the infra-marginal lender. On the other hand, lender 2 be the marginal lender and always satisfies the credit demand of a borrower. Let $\Psi_2$ be the marginal contract from lender 2 and suppose the infra-marginal lender, lender 1 rationed the loan size. With the terms and conditions of $\Omega_1$, the infra-marginal lender supplies loan up to $C_1$ such that $C_1$ is less than $C_E$*. Hence, the borrowers total loan size, $C_E$□ and loan demand, $C_E$* can either be the sum of maximum loan supplied by lender 1 and the rest from lender 2 or all loans taken from lender 2 only. It can be expressed as;

$$C_E^* = C_{S1}^* + C_2\square \text{ if } C_E^*>C_{S1}^* \text{ and } 0<C_E^*<C_{S2}^* : \Psi = \{\Omega_1, \Psi_2\}$$
$$C_E\square = C_E^* = C_2\square \text{ if } C_E^*>C_{S1}^* \text{ and } 0<C_E^*<C_{S2}^* : \Psi = \{\Psi_2\}$$

The above discussion provides an understanding of loan demand from the individual loans taken from different sources that are often supply constrained. This theoretical explanation of loan demand can be applied to validate the empirical estimates.

### 4.2.2. Econometric Model Building for Estimation of Credit Demand

On the basis of the theoretical explanation, it indicates that the observed borrowing can be obtained by matching the demand for and supply of credits, which is related to determinants of loan demand and determinants of loan supply. We can get total borrowing through field surveys by calculating the total amount of credit obtained by a household over some period of time. Since field data indicates multiple borrowing per household and supply constraints,

therefore, loan size rationing from an infra-marginal lender may be assumed leading to multiple borrowings. It indicates that households with only one credit choose the marginal lender to satisfy their whole credit demand.

Therefore, the structural model consisting of credit demand and credit supply can be written as;

$C_E^* = \alpha + \alpha_1 L + \alpha_2 r + u_1$ ---------- (4.1)
$C_S^* = \beta + \beta_1 N + \beta_2 r + u_2$ ---------- (4.2)
$C_E^* = C_S^*$ ---------- (4.3)
$E(Lu_1) = E(Nu_2) = 0; [E(ru_1) = E(ru_2)] \neq 0$

Where, L and N include sets of observed exogenous variables that affect credit demand and supply, respectively. Indeed, L and N are asymptotically uncorrelated with the stochastic residuals $u_1$ and $u_2$. The interest rate r is endogenously determined by the clearance condition and is correlated with $u_1$ and $u_2$. It is obvious as the observed interest rates in rural financial markets are usually lender and borrower-specific and are associated with the credit size.

While the censored nature of data because of the presence of non-borrowers in a sample leads to bias and inconsistent Ordinary Least Squares/Two Stage Ordinary Least Squares or Limited Information Maximum Likelihood estimates, a Tobit model that can produce consistent and efficient estimates on censored samples needs to be applied. Moreover, the Tobit model can be derived from a utility maximization structure, consistent with the theoretical model used in this study.

Thus, the credit demand equation ($C_E^*$) can be calculated consistently using Tobit models from the observed total credit size ($C_D^{\times}$). The basic single equation Tobit model requires to be extended to contain simultaneous estimations as interest rates are intended only for positive credit sizes.

Therefore, following Amemiya's (1985) extension of the Type Three Tobit Model, we can state the model as;

$B^* = X_{1i}\beta_1 + u_{1i}$ ---------- (4.4)
$r^* = X_{2i}\beta_2 + u_{2i}$ ---------- (4.5)
$C_E^* = C_E = X_{3i}\beta_3 + r^* + u_{3i}$ if $C_E^* > 0$ ---------- (4.6)
$= 0$ if $C_E^* \leq 0$
$B^{\times} = 1$ if $C_E^* > 0$ and $C_S^* > 0$
$= 0$ if $C_E^* \leq 0$ and $C_S^* \leq 0$
$r^{\times} = r^*$ if $C_E^* > 0$ and $C_S^* > 0$ or $B = 1$
$= 0$ if $C_E^* \leq 0$ and $C_S^* \leq 0$ or $B^{\times} = 0$

Where, $B^*$ is the likely index that affects the decision to borrow, and $B^{\times}$ is the observed index that shows the matching of the borrower's decision to borrow with the lender's decision to offer loans. $C_E$* is the demand for credits and $C_E$ is the total credit size; r* is the interest rate related to the credit demand whereas $r^{\times}$ is the observed interest rate. $X_1$ and $X_2$ are vectors or exogenous variables affecting both the demand and supply, and $X_3$ is a vector of exogenous variables that only affect the demand.

Here $X_1$ and $X_2$ are obtained by combining L and N and $X_3$ is obtained from L. Furthermore, Heckman's two stage procedure can be used to estimate equation 4.4 and equation 4.5 and to get the predicted value of interest rate. In addition, the predicted value of interest rate can be used to estimate loan demand (equation 4.6) by using Tobit.

### 4.3. Description of Variables and Descriptive Statistics

Based on the literature and theoretical considerations, a set of explanatory factors is derived for estimating loan demand. Table 4.1 presents the description of the variables, hypothesized relation, and the definition behind choosing the particular variable. The descriptive statistics of stated variables and the distribution of households under categorical variables are mentioned in Table 4.2. It indicates approximately in all borrowers, lenders and location-specific characteristics, formal borrowers are in the superior position with respect to semiformal and informal borrowers.

## Table 4.1 Variables Included in Regression for Heckman's Two Stage Procedure and Type Three Tobit Model

| **Dependent Variable-Probit (Dichotomous):** Whether Household Borrowed Money from any Sources in Last Three Years (Separately for Formal, Semiformal and Informal); **Dependent Variable-Selection Equation (Pooled Demand):** Weighted Interest Rate (Formal weight: 1, semiformal: 4.50, Informal: 6) of Formal, Semiformal and Informal Sources; **Dependent Variable- Selection Equation (Separately for Formal, Semiformal and Informal):** Un-weighted Interest Rate (Separately for Formal, Semiformal and Informal) **Dependent Variable- Type Three Tobit Model:** Total Borrowing of Households in Last three Years (Separately for Formal, Semiformal, and Informal) | | | |
|---|---|---|---|
| **Explanatory Variables** | **Notation** | **Definition** | **Hypothesized Relation** |
| **Borrower's Characteristics** | | | |
| Age of Household Head | $AHH_i$ | It measures the working ability of the household head | + |
| Occupation | $GJ_i$ | Dummy: Whether the main income source of household is government job; D=1 if it is govt. job and 0, otherwise | +/- |
| Family Members | $NFM_i$ | Number of family members in the households | +/- |
| Family Income | $FI_i$ | Household income per annum | - |
| Spends on Subsistence | $ISS_i$ | Household income spends on subsistence per annum | + |
| Spends on medical | $ISM_i$ | Household income spends on medical per annum | + |
| Spends on Investment | $ISI_i$ | Household income spent on agriculture and any other productive activities per annum | + |
| Son/Daughter Earn Income | $SDI_i$ | Dummy: Whether son/daughter earn income in the family; D= 1 if so and 0, otherwise | +/- |
| Dependent Members | $NDM_i$ | No of dependent members who do not earn any income in the family | + |
| Negative Shocks | $DNS_i$ | Dummy: Whether family face any negative shocks in the last three years; D= 1 if so and 0, otherwise | + |
| Save Money | $DSM_i$ | Dummy: Whether family saves any money; D= 1 if so and 0, otherwise | - |
| Physical Assets | $VPA_i$ | The Value of physical assets of the households: it may measure the collateral value of the households | +/- |
| $Age^2$ | $AGESQ_i$ | The Square of the age of the household head: it may measure the life cycle effects. | +/- |
| Household Head Male | $HHM_i$ | Dummy: Whether the household head is male; D= 1 if so and 0, otherwise | +/- |
| Education | $ENS_i$ | Numbers of schooling year of household head. Only for Heckman's Two-Stage Procedure | |
| **Lender's Characteristics** | | | |
| Formal Sources | $DFS_i$ | Distance to formal bank branch from the respondent's house | +/- |
| Majority Money Borrowed | $MF_i$, $MSF_i$ & $MI_i$ | Credit Source Dummy: from which sources maximum loan taken, i.e. formal, semiformal and informal (only for total credit demand and Heckman's Two- Stage Procedure); therefore, $MF_i$= 1 if formal and 0, otherwise; $MSF_i$= 1 if semiformal and 0, otherwise; $MI_i$= 1 if informal and 0, otherwise | |
| Majority from Regional Rural Banks | $WRRB_i$ | Dummy: Whether the majority borrowed from regional rural banks (only for formal sector and Heckman's Two-Stage Procedure): therefore, D= 1 if so, and 0, otherwise | |
| Majority from SHGs | $WMS_i$ | Dummy: Whether the majority borrowed from SHGs (only for semiformal sector and Heckman's Two-Stage Procedure): therefore, D= 1 if so, and 0, otherwise | |
| Majority from moneylenders | $WMM_i$ | Dummy: Whether the majority borrowed from moneylenders (only for Informal sector and Heckman's Two- Stage Procedure): therefore, D= 1 if so, and 0, otherwise | |
| Interest Rate | $r_i$ | The Predicted interest rate calculated from selection equation. Only used in Type Three Tobit | - |
| **Location Specific Characteristics** | | | |
| District Dummy | $LB_i$ & $LN_i$ | Dummy: to test for variations in loan demand and the interest rate across districts, Here Baksa district is taken as a base category; therefore, LB= 1 if Barpeta and 0, otherwise; LN= 1 if Nalbari and 0, otherwise | +/- |
| Living in Village | $HLV_i$ | How many years living in the village by the household head/their earlier generations: reputation of borrowers | + |
| Distance to Market Place | $DMP_i$ | It measures the effect of market linkage on credit and unit of measurement is kilometers | - |

Using the above explanatory variables (Table 4.1), the credit demand and supply equations can be presented as follows:

**Demand (CSIZE)** = $\alpha + \alpha_1 r_i + \alpha_2 AHH_i + \alpha_3 MP_i + \alpha_4 GJ_i + \alpha_5 NFM_i + \alpha_6 FI_i + \alpha_7 ISS_i + \alpha_8 ISM_i + \alpha_9 ISI_i + \alpha_{10} SDI_i + \alpha_{11} NDM_i + \alpha_{12} DNS_i + \alpha_{13} DSM_i + \alpha_{14} VPA_i + \alpha_{15} AGESQ_i + \alpha_{16} DFS_i + \alpha 17 LB_i + \alpha_{18} LN_i$

**Supply (CSIZE)** = $\beta + \beta_1 r_i + \beta_2 AHH_i + \beta_3 HHM_i + \beta_4 HLV_i + \beta_5 GJ_i + \beta_6 ENS_i + \beta_7 VPA_i + \beta_8 SDI_i + \beta_9 DSM_i + \beta_{10} ISI_i + \beta_{11} MSF_i + \beta_{12} MI_i + \beta_{13} LB_i + \beta_{14} LN_i$

**Table 4.2 Credit Source-Wise Descriptive Statistics of Variables (Amount in ₹)**

| Variables | Pooled | Formal | Semiformal | Informal |
|---|---|---|---|---|
| **Mean Value** | | | | |
| **$AHH_i$** | 46.4 | 53.14 | 44.85 | 45.8 |
| **$AGESQ_i$** | 2358.1 | 3065.9 | 2222.4 | 2286.4 |
| **$DMP_i$** | 6.4 | 6.8 | 6.6 | 6.8 |
| **$NFM_i$** | 5.55 | 6.3 | 5.4 | 5.63 |
| **$FI_i$** | 127000.2 | 230166.7 | 110015.3 | 109270.1 |
| **$ISS_i$** | 52000.65 | 67583.33 | 49923.7 | 51591.24 |
| **$ISM_i$** | 1000.6 | 2526.4 | 1573.3 | 1409.5 |
| **$ISI_i$** | 22000.36 | 39550 | 20574.1 | 16826.3 |
| **$DFS_i$** | 7.42 | 7.3 | 7.6 | 8.3 |
| **$VPA_i$** | 343000.92 | 679861 | 334198.5 | 242408.7591 |
| **$NDM_i$** | 3.42 | 4.03 | 3.25 | 3.55 |
| **$ENS_i$** | 6.6 | 9.3 | 6.2 | 5.7 |
| **$HLV_i$** | 78.81 | 65.22 | 55.52 | 67.24 |
| **$L_i$ (in Bigha*)** | 7.8 | 11.5 | 7.0 | 4.9 |
| **$AL_i$ (in Bigha)** | 5.87 | 9.2 | 5.2 | 3.2 |
| **Credit $Amount_i$** | 73982.55 | 172508.3 | 12974.81 | 11416.06 |
| **Interest $Rate_i$ (P/A)** | $53.92^{+}$ | 11.33 | 49.95 | 67.53 |
| **Proportion of Households Under Categorical Variables** | | | | |
| **$GJ_i$** | 20 | 48.6 | 14.5 | 16.1 |
| **$ML_i$** | 19.17 | 2.8 | 20.6 | 23.4 |
| **$PE_i$** | 4.75 | 0 | 6.1 | 1.5 |
| **$BA_i$** | 7.92 | 20.8 | 22.1 | 25.5 |
| **$SDI_i$** | 40.4 | 51.4 | 39.7 | 39.4 |
| **$DOG_i$** | 32.9 | 50 | 29 | 19.7 |
| **$DNS_i$** | 57.5 | 59.7 | 58.8 | 66.4 |
| **$DSM_i$** | 62.5 | 87.5 | 64.1 | 62 |
| **$HHM_i$** | 73.8 | 74.6 | 73.5 | 75.8 |
| **$MSF_i$** | -- | -- | 42.45 | -- |
| **$MI_i$** | -- | -- | -- | 33.49 |
| **$WRRB_i$** | -- | 36.11 | -- | -- |
| **$WMS_i$** | -- | -- | 83.08 | -- |
| **$WMM_i$** | -- | -- | -- | 64.96 |
| **$WBOSF_i$** | -- | 65.3 | 71 | 73 |
| **Kutch $House_i$** | 54.58 | 25 | 58.8 | 62 |
| **Semi Pakka $House_i$** | 28.75 | 33.3 | 28.2 | 28.5 |
| **Pakka $House_i$** | 16.67 | 41.7 | 13 | 9.5 |
| **Land $Holders_i$** | 99.01 | 97.2 | 98.5 | 97.1 |
| **Face Negative $Shocks_i$** | 61.15 | 59.72 | 58.02 | 65.7 |
| **Bank $Account_i$** | 86.25 | 95.8 | 90.1 | 86.9 |
| **Insurance $Facility_i$** | 40.83 | 66.7 | 38.9 | 38 |
| **Income $Remittances_i$** | 39.17 | 63.9 | 33.6 | 37.2 |
| **Total Observations** | **240** | **72** | **131** | **137** |

Source: Authors' Estimation Based on Field Survey; Note: ML= Manual Labor, PE= Private Sector Employed, BA= Businessman, DOG= Households who have Gold, WBOS: Borrowed from other Sources apart from Studied Sources, L= Land, AL= Agricultural Land; *1 Bigha= 0.3305785 Acre; + Weighted Interest Rate

## Table 4.3 Distribution of Households across the Purposes of Borrowing

| Distribution of Households across the Purposes of Borrowing Formal Credit | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Agriculture** | **Daily Needs** | **Education** | **Fishery** | **Business** | **Buying Cows** | **Girl Marriage** | **Home Construction** | -- | -- | -- |
| 28 (38.89) | 3 (4.2) | 1 (1.4) | 4 (5.6) | 4 (5.6) | 4 (5.6) | 3 (4.2) | 25 (34.7) | -- | -- | -- |
| **Distribution of Households across the Purposes of Borrowing Semiformal Credit** | | | | | | | | | | |
| **Daily Needs** | **Education** | **Agriculture** | **Festival** | **Girl Marriage** | **Home Construction** | **Illness** | **Job** | **Land** | **Weaving** | -- |
| 46 (`35.1) | 5 (3.8) | 14 (10.7) | 2 (1.5) | 2 (1.5) | 4 (10.7) | 26 (19.9) | 4 (10.7) | 1 (0.8) | 1 (0.8) | -- |
| **Distribution of Households across the Purposes of Borrowing Informal Credit** | | | | | | | | | | |
| **Business** | **Daily Needs** | **Education** | **Child** | **Agriculture** | **Tractor** | **Girl Marriage** | **Home Construction** | **Illness** | **Job** | **Land** |
| 23 (16.7) | 29 (21.0) | 8 (5.8) | 1 (0.7) | 33 (23.9) | 1 (0.7) | 4 (2.9) | 9 (6.5) | 23 (16.7) | 4 (2.9) | 3 (2.2) |

Source: Field Survey; Note: Figures in the parentheses represent % of households

### 4.4. Econometric Estimation of Loan Demand

For estimating credit demand, the Type Three Tobit model is applied following the procedure discussed in section 4.2. Indeed, formal, semiformal and informal credit demand functions have been fitted separately on the grounds that the terms and conditions of loan contracts might be significantly different among the three segments of the credit market. The estimates for formal, semiformal and informal loan demand are reported in Table 4.5, Table 4.6 and Table 4.7 respectively. To further test the validity of these separate regressions, pooled sample regression results for loan demand are given in Table 4.4. In all cases, several regressions were run, but only the most statistically sound one is presented and discussed here. We can assume a good model fit through significant log-likelihood functions for measuring credit demand in four folds and expect that results are consistent with the theoretical framework.

Further, although the Type Three Tobit incorporates information on non-borrowers to estimate the credit demand using pooled credits and provides consistent and efficient estimates, the model fit is not as good compared to the estimates reported using loans separately for formal, semiformal and informal sources, and this is confirmed by the better Pseudo R value.

#### 4.4.1. Econometric Estimation of Pooled Loan Demand

Table 4.4 presents the estimated pooled credit demand. The empirical result reveals that credit demand is elastic with the interest rate, and is positively affected by the ability and capacity of the borrower to focus on productive activities. The negative effect of predicted interest rate indicates the availability of alternative credit sources in the study area. This finding is in line with the findings of Nagarajan et al. (1998) and Elhiraika and Ahmed (1998), although they studied only agricultural loan demand of Philippine and Sudan respectively, by using merely formal and informal sources. Moreover, it hints multiple borrowing as the borrower may reduce the borrowing from the current sources because of higher interest rate, and starts to borrow from other credit sources. Likewise, the nature of the effect of the age of household head refers the creation of credit demand with respect to working abilities of the household head. Hence, it indicates the positive relation between employment and self-employment with credit demand, and we can assume the positive relation of agriculture and credit.

Credit demand is significantly and negatively affected by life cycle effects, and by supporting the findings of Nagarajan et al. (1998) present study argues that as the household head gets older in their activities, their credit demand decline. They may manage their activities through dissaving, however unfortunately, altogether only 62.5% households save any money per month. The negative and significant coefficient for distance to market place refers the necessity of market linkages for an investment of credit in the productive sector. Thus, credit demand is associated with proper market linkages, and may be probable cause for stopping artisan activities in rural areas.

In addition, the negative and significant effect of government job indicates the limited access to formal sources in rural areas. Moreover, it also points that most of the rural credit demand comes from non-government job holders because only 9.17% respondent household's main occupation is the government job. Furthermore, the negative and significant effect of family income reveals the linkages between employment and borrowing and financing of basic needs through borrowing. It also shows as people become richer their credit demand decline, and this is usual since rich people in rural areas are only government job holders whose numbers is negligible, as almost 91% respondent household's are engaging in the unorganized sector.

Indeed, the positive and significant effects of family income spent on subsistence, medical and investment shows the financing of daily needs, social expenditure, and agriculture by borrowing. The nature of their (subsistence and medical expenditure) relationship with credit refers that credit demand of a family augments with daily expenses. Thus, borrowers use their credit money in unproductive activities. Nevertheless, the pattern of association between investment expenditure and credit demand, argues the financing of unorganized employment by borrowing since households generally invest their credit money in unorganized sectors like artisan activities, agriculture, small business, etc., which have an uncertain outcome.

The negative sign of SDI indicates the decline of credit demand with the expansion of earning members in a family as the majority of credit demand comes from daily needs, medical expenses, and agricultural investment. Nonetheless, regrettably only 40.4% household's son/daughter earns any income. Moreover, we can get a significant and positive effect of negative shocks on borrowing, which reveals the financing of household's shocks through

borrowing. Thus, this result also argues the spending of credit money for medical purposes because 50% household's nature of negative shocks is illness and people died in serious illness.

Further, the negative impact of DSM indicates that as the majority of credit demand comes from daily needs, medical expenses, and agriculture, therefore their credit demand drops with savings. However, sadly, although 86.25% households have the formal bank account, only 62.5% respondent households save any money. Similarly, the positive and significant effect on the value of physical assets analogous to the result of Nagarajan et al. (1998) reveals the enjoying of rural credit by asset holding households. However, Elhiraika and Ahmed (1998) in their study have found the negative relationship between them. The present study indicates that rural credit demand increases with collateral as 62% households have agricultural land which is a popular form of collateral in rural areas.

**Table 4.4 Loan Demand Estimated Using Total Loans and Type Three Tobit Method**

| Variables | Borrowing Decision (Probit[1]) | Interest Rate (Selection Equation[2]) | Loan Demand (Tobit[3]) |
|---|---|---|---|
| **Constant** | -0.67** (4.76) | 65.20*** (21.81) | 10.96** (8.66) |
| **$r_i$[4]** | --- | ---- | -27.04*** (5.01) |
| **$AHH_i$** | -0.23* (0.17) | 0.11** (0.78) | 3.35* (5.60) |
| **$AGESQ_i$** | -0.84** (2.78) | 0.02*** (0.09) | -09** (0.61) |
| **$DMP_i$** | -0.08*** (0.76) | 1.22 (0.73) | -04.07* (0.29) |
| **$GJ_i$** | -2.02* (1.40) | -7.69** (6.01) | -07.23** (6.19) |
| **$NFM_i$** | 0.57*** (0.38) | -2.19 (1.58) | 0.27 (0.52) |
| **$FI_i$** | -2.01* (6.55) | -0.92 (0.78) | -0.65** (0.11) |
| **$ISS_i$** | 0.92* (3.25) | 1.29* (7.46) | 0.01** (0.46) |
| **$ISM_i$** | 6.78*** (9.45) | 2.83** (0.75) | 25.40** (6.11) |
| **$ISI_i$** | 0.25** (4.56) | -9.08* (0.00) | 1.33*** (0.36) |
| **$SDI_i$** | -1.55* (1.36) | -5.11*** (5.61) | -2.71** (1.03) |
| **$NDM_i$** | 0.93 (0.40) | 0.09 (1.92) | 7.53 (5.07) |
| **$DNS_i$** | 1.15** (0.58) | 0.63** (3.65) | 9.62* (5.3) |
| **$DSM_i$** | -1.30* (0.75) | -0.75 (4.41) | -0.09** (0.55) |
| **$VPA_i$** | 8.35** (1.12) | -2.77*** (5.15) | 0.08** (0.02) |
| **$DFS_i$** | -0.05*** (0.10) | -0.54** (0.64) | -3.34* (5.53) |
| **$LB_i$** | -1.48** (1.09) | -17.75** (5.02) | -7.25** (1.92) |
| **$LN_i$** | 1.39* (0.95) | -17.85* (5.17) | 9.85*** (3.52) |
| **$HMF_i$** | 0.11 (0.89) | -6.03 (4.13) | -- |
| **$HLV_i$** | 0.01 (0.01) | -0.01*** (0.05) | -- |
| **$HHEN_i$** | 0.11** (0.11) | -1.34** (0.50) | -- |
| **$MSF_i$** | 10.49** (6.36) | 9.12* (4.93) | -- |
| **$MI_i$** | 11.74** (3.47) | 25.36** (5.21) | -- |
| **Log Likelihood** | -23.64 | --- | -247.61 |
| **Pseudo R** | 0.73 | --- | 0.34 |
| **Wald Chi2** | -- | 116.72 | --- |
| **Rho** | --- | 0.36 | --- |
| **Number of Observations** | 240 | 240 | 240 |
| **Censored Observations** | -- | 28 | 28 |
| **Uncensored Observations** | -- | 212 | 212 |

Note: Figures in the parentheses represent Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%; 1= Model is estimated using all explanatory variables affecting both credit demand and supply; 2= Explicit interest rates estimated as a selection equation using all explanatory variables affecting credit demand and supply; 3= Total credit size of a household estimated using variables affecting credit demand; 4= Shows predicted value of interest rates

Identically, the negative and significant impact of DFS refers the importance of expansion of formal bank branches in rural areas, and this result is in line with Elhiraika and Ahmed (1998) study. This is because of the fact that the majority of rural people borrows from semiformal and informal sources as only 30% households borrow from formal sources. Compared to Nagarajan et al. (1998) study, the present study fails to produce significant results for a number of family members on credit demand.

### 4.4.2. Econometric Estimation of Formal Loan Demand

The econometric estimation of formal loan demand is presented in Table 4.5. Like pooled credit demand the result reveals that formal credit demand is elastic with respect to predicted formal interest rate. As anticipated, predicted formal interest rate has a negative effect on formal credit

demand, but only 30% respondent households borrow from formal sources. The study of Elhiraika and Ahmed (1998) also found the negative relation, but failed to make its significance. Poor people obtained formal loans in terms of the Kishan Credit Card and for purchasing cows as data indicated 38.89% households borrow formal loans for agricultural purposes, and 5.6% of purchasing cows (Table 4.3). Thus, they may shift to other credit sources if they realize regarding interest rate hike because 65.3% households borrow from other sources apart from formal sources. The relatively rich people generally borrow formal money for house construction as 34.7% households borrow formal money for house construction, and they are mostly government job holder family (Table 4.3).

Similarly, the positive influence of age of household head, which measures working ability indicates that borrowers who have achieved success in their activities competent to take the formal loan. Correspondingly, the formal credit demand is negatively influenced by the square of the age of household head which measures life cycle effect. It might be because of the fact that people do not borrow money when they become older because the majority of formal borrowers are government job holders, and, therefore, they may dissave their money for any emergency as 87.5% formal loan taking households save any money. Besides, the nature of the negative effect of distance to main market place shows the prevention of agricultural production as data reveal that 38.89% household's main purpose of borrowing formal loan is agriculture (Table 4.3).

Unlike pooled credit demand, formal credit demand is positively influenced by GJ, SDI, and FI which assumes rich people are receiving the benefits of formal sources. Formal loans are generally borrowed by rich people as data shows that 45% formal loan borrowed households have the government job and pensions. Thus, it indicates discrimination of formal loan against the poor, landless and jobless peoples. Indeed, the positive relation of SDI with formal credit demand also emphasizes the same, while only 51.4% formal loan borrowed household's son/daughter earns any income.

Further, contrasting pooled credit demand, formal credit demand is negatively affected by ISS and ISM, and similar to total credit demand positively influenced by ISI. The positive effect of ISI indicates the financing formal credit in productive sectors as only 9.2% households borrow for daily needs, and the remaining 91% households borrow for some productive purposes, and hence most probably for agriculture since 97.2% formal money borrowed households have their

own land and average agricultural land holding is 5.2 Bigha. Moreover, among formal borrowers, nobody spends credit money for medical purposes.

As expected, similar to pooled credit demand, DFS also influences formal demand negatively and discourages people to borrow from formal branches. Therefore, they may try to look some alternative credit source, while 65.3% formal borrowers borrow some money from other sources. In addition, like overall credit demand, the positive influence of DSM and VPA on formal credit indicates the enjoying of the benefit of formal credit by asset holding peoples. This result contrasts with Elhiraika and Ahmed (1998) findings as they observed the negative relation between assets and formal credit demand. Furthermore, contrasting total credit demand, the volume of formal credit demand increases in Barpeta and declines in Nalbari with the expansion of formal loan borrowing households in comparison with Baksa.

**Table 4.5 Loan Demand Estimated Using Formal Loans and Type Three Tobit Method**

| Variables | Borrowing Decision (Probit[1]) | Interest Rate (Selection Equation[2]) | Loan Demand (Tobit[3]) |
|---|---|---|---|
| **Constant** | -0.28** (3.43) | 9.67*** (2.33) | -31.92* (8.25) |
| **$r_i$[4]** | --- | --- | -28.56** (7.28) |
| **$AHH_i$** | -0.28** (0.14) | -0.03* (0.6) | 0.35* (0.25) |
| **$AGESQ_i$** | 0.04* (0.01) | 5.45* (2.01) | -10.97* (05.51) |
| **$DMP_i$** | -0.10 (0.08) | 0.11 (0.06) | -2.59** (9.07) |
| **$GJ_i$** | 9.77* (6.66) | -0.19** (0.42) | 12.37* (5.57) |
| **$NFM_i$** | -0.42 (0.22) | 0.09 (0.11) | -2.06 (9.88) |
| **$FI_i$** | 10.02** (3.68) | -2.65 (2.33) | 0.48** (0.30) |
| **$ISS_i$** | -9.38* (4.56) | 10.07 (8.25) | -6.95* (2.24) |
| **$ISM_i$** | -20.08* (13.26) | 6.20 (43.22) | -89.56* (16.90) |
| **$ISI_i$** | 15.20** (34.87) | -20.60* (5.50) | 2.58** (1.44) |
| **$SDI_i$** | 0.35*** (1.06) | -0.80* (0.56) | 15.67* (21.51) |
| **$NDM_i$** | -0.79 (0.32) | 0.14 (0.16) | -6.68 (4.06) |
| **$DNS_i$** | -04.27** (3.45) | 0.12 (0.37) | -4.54 (2.93) |
| **$DSM_i$** | 0.69 (0.63) | -0.74* (0.47) | 70.60** (62.25) |
| **$VPA_i$** | 4.15*** (6.72) | -6.18*** (3.20) | 0.25* (0.06) |
| **$DFS_i$** | -0.15 (0.09) | 0.08 (0.05) | -3.51** (8.89) |
| **$LB_i$** | -1.11* (0.74) | -1.21** (0.44) | 32.5* (7.1) |
| **$LN_i$** | 0.51** (0.74) | 1.64* (0.38) | -3.07** (5.9) |
| **$HMF_i$** | 0.26** (0.54) | -0.36 (0.35) | --- |
| **$HLV_i$** | 0.03 (0.06) | -0.02** (0.04) | --- |
| **$HHEN_i$** | 0.26** (0.10) | -0.07* (0.05) | --- |
| **$WRRB_i$** | 10.85** (6.56) | -0.29* (0.60) | --- |
| **Log Likelihood** | -28.59 | --- | -939.31 |
| **Pseudo R** | 0.81 | --- | 0.49 |
| **Wald Chi2** | -- | 108.31 | --- |
| **Rho** | --- | 0.66 | --- |
| **Number of Observations** | 240 | 240 | 240 |
| **Censored Observations** | -- | 168 | 168 |
| **Uncensored Observations** | -- | 72 | 72 |

Note: Figures in the parentheses represent Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%; 1= Model is estimated using all explanatory variables affecting both formal credit demand and supply; 2= Explicit formal interest rates estimated as a selection equation using all explanatory variables affecting formal credit demand and supply; 3= Total formal credit size of a household estimated using variables affecting formal credit demand; 4= Shows predicted value of formal interest rates

### 4.4.3. Econometric Estimation of Semiformal Loan Demand

Table 4.6 outlined the empirical results of semiformal loan demand. Like pooled and formal credit demand, the result demonstrates that semiformal loan demand is also elastic with respect to the interest rate. As presumed, the negative effect of predicted interest rate on semiformal credit demand indicates a decline of semiformal loan demand with higher interest rate, and data also point that 71% semiformal borrowing households are also borrowed from other credit sources. Similarly, akin to total and formal credit demand, the semiformal credit demand is positively influenced by the age of household head, and thus refers expansion of loan demand with the working ability of the household head. Hence, semiformal loan demand is created by

productive economic activities, but unfortunately, only 10.7% semiformal borrower's main purpose of borrowing is farming.

Moreover, unlike pooled and formal credit demand, the square of the age of household head influences semiformal credit positively and shows people borrow till their older age. It indicates poorness of semiformal borrowers as their average family income is only ₹110015.3, and merely 64.1% borrower households save any money. Similar to total and formal credit demand, distance to main market place negatively affect semiformal credit demand, and hence indicates the reduction of the volume of semiformal credit with an increase in distance to the market place. Thus, it shows the positive relation between lack of market linkages and decline of semiformal loan demand. Therefore, it may force borrowers to stop their productive activities in rural areas. Further, contrasting formal demand and akin to total credit demand, GJ influences semiformal credit demand negatively, indicates a decline of the volume of semiformal credit with an increase in government job holder borrower households in comparison with other households. It shows the unorganized nature of occupation of semiformal borrowers as only 4.6% are government job holders.

NFM, which was not significant for total and formal credit demand affects semiformal credit negatively and shows the reduction of the volume of semiformal credit with the expansion of family members. It may happen because the earning capacity of the family increases with the expansion of household members, and, therefore, credit demand decline although they are mostly engaged in the unorganized sector. Additionally, unlike total and similar to formal credit demand, FI influences semiformal credit demand positively, indicates expansion of semiformal credit demand with the upliftment of family income.

Furthermore, dissimilar to formal demand and analogous to total credit demand, ISS and ISM influence semiformal credit positively, highlights financing semiformal credit in daily needs and social sectors. Nevertheless, contrasting total and formal credit demand, there is a negative relationship between ISI and semiformal credit demand indicates the reduction of productive investment with an increase in the volume of semiformal credit. This is obvious because 35.1% semiformal borrower's main purpose of borrowing is daily needs. While 19.9% borrows for illness, and only 10.7% households for farming (Table 4.3).

Likewise, NDM affects semiformal credit demand positively which was not significant for pooled and formal credit demand. Thus, the demand of semiformal credit, boost with an increase in a number of dependent members of a family. We can support this result with respect to the proportion of semiformal borrower households borrow for daily needs. Besides, divergent from formal and akin to total credit demand, DNS effects semiformal credit demand positively, indicates financing of negative shocks by semiformal borrowing. Data shows that households finance their uncertain negative shocks through semiformal borrowing since 58.8% semiformal borrowing household's experiences negative shocks and among them 36.85% households in the form of illness.

Indeed alike pooled and formal credit demand, DSM influences semiformal credit demand positively, shows expansion of semiformal credit with an increase in borrower households who save any money. However, unfortunately, although 90.1% households have a bank account, but only 64.1% of them saves any money. Likewise, divergent to pooled and formal credit demand, there is a positive relation between DFS and semiformal credit demand. It indicates the creation of semiformal loan demand with non-availability of formal branches in rural areas as the average distance to formal sources is 7.6 km.

**Table 4.6 Loan Demand Estimated Using Semi-Formal Loans and Type Three Tobit Method**

| Variables | Borrowing Decision (Probit[1]) | Interest Rate (Selection Equation[2]) | Loan Demand (Tobit[3]) |
|---|---|---|---|
| **Constant** | -12.88** (56.67) | 133.90*** (18.85) | -70.68* (57.30) |
| **$r_i$[4]** | --- | --- | -88.68** (38.58) |
| **$AHH_i$** | -0.89* (0.41) | -2.19** (0.76) | 4.19* (5.93) |
| **$AGESQ_i$** | 0.01** (0.04) | 0.02* (0.01) | 6.29*** (5.78) |
| **$DMP_i$** | 10.34*** (23.76) | 0.12 (0.69) | -0.52** (0.60) |
| **$GJ_i$** | -0.48* (3.47) | 14.08*** (6.35) | -8.18* (4.12) |
| **$NFM_i$** | 2.76 (1.38) | 0.41 (1.61) | -14.96 (4.26) |
| **$FI_i$** | -4.50** (2.54) | -0.12* (0.60) | 0.02** (0.03) |
| **$ISS_i$** | 0.34* (0.25) | -0.90** (0.80) | 0.25*** (0.09) |
| **$ISM_i$** | 8.20* (5.26) | 0.02* (0.02) | 0.71* (1.21) |
| **$ISI_i$** | 0.50*** (0.20) | 0.66* (1.25) | -0.34** (0.08) |
| **$SDI_i$** | -7.66* (3.27) | -5.80 (4.86) | -6.41 (8.32) |
| **$NDM_i$** | 3.39 (1.39) | 3.05 (1.92) | 2.49*** (1.93) |
| **$DNS_i$** | 0.81* (1.28) | -0.92** (3.03) | 4.80* (8.65) |
| **$DSM_i$** | -5.71** (2.51) | -1.35*** (4.45) | 0.7** (5.57) |
| **$VPA_i$** | -9.75* (3.49) | -8.16 (6.14) | -0.01 (3.64) |
| **$DFS_i$** | 0.90 (0.37) | 0.36 (0.57) | 10.75** (0.46) |
| **$LB_i$** | 20.13** (8.89) | -25.72** (4.61) | 3.43** (9.65) |
| **$LN_i$** | 23.38*** (10.02) | -28.03* (5.48) | 1.19* (0.74) |
| **$HMF_i$** | -1.75* (1.62) | 1.63*** (3.45) | --- |
| **$HLV_i$** | 0.01 (0.01) | -0.03** (.04) | --- |
| **$HHEN_i$** | 0.11** (0.16) | -1.88* (0.43) | --- |
| **$WMSHG_i$** | 37.11*** (15.11) | -14.62** (7.39) | --- |
| **Log Likelihood** | -17.52 | --- | -190.98 |
| **Pseudo R** | 0.89 | --- | 0.47 |
| **Wald Chi2** | -- | 120.91 | --- |
| **Rho** | -- | 0.34 | -- |
| **Number of Observations** | 240 | 240 | 240 |
| **Censored Observations** | -- | 111 | 111 |
| **Uncensored Observations** | -- | 129 | 129 |

Note: Figures in the parentheses represent Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%; 1= Model is estimated using all explanatory variables affecting both semiformal credit demand and supply; 2= Explicit semiformal interest rates estimated as a selection equation using all explanatory variables affecting semiformal credit demand and supply; 3= Total semiformal credit size of a household estimated using variables affecting semiformal credit demand; 4= Shows predicted value of semiformal interest rates

### 4.4.4. Econometric Estimation of Informal Loan Demand

The empirical estimation of informal loan demand is presented in Table 4.7. Similar to total, formal and semiformal credit demand, the result reveals that informal loan demand is also elastic with respect to the interest rate. Thus, borrowers may move to alternative credit sources because of the higher interest rate as data shows that 73% informal borrowers borrowed from other credit sources apart from informal sources. Further, divergent of the pooled, formal and semiformal credit demand, the age of household head negatively influences informal credit demand and therefore, informal credit demand decline with the working ability of the household head. Thus, the borrower's use informal credit when they remain idle, but once they become richer; they may start borrowing from other sources i.e. from formal and informal sources.

Moreover, like semiformal and contrasting pooled and formal credit demand, life cycle effect influences informal credit demand positively, hints that borrowers cannot make the success in their activities, and remain poor until their older age. The negative effect of DMP on informal credit demand akin to total, formal and semiformal credit demand shows a reduction of the volume of informal credit with the increase in distance to main market place. We can argue in line with semiformal credit because similar to semiformal borrowers, the majority of informal borrowers is also engaged in unproductive activities, and this may be due to unavailability of the suitable market among informal borrowers.

Similarly, unlike formal and akin to pooled and semiformal credit demand, GJ influences informal credit demand negatively, refers lessening volume of informal credit with the expansion of government job holder borrowing households in comparison with other households. Moreover, it also points that bulk of informal credit demand comes from unorganized activities as only 10.2% respondent's household's main occupation is the government job, and this could be realized since average schooling years of informal borrowers is only 5.7. In line with the study of Desai and Mellor, 1993, in the present study NFM influences informal credit demand positively by contrasting semiformal credit and shows enlargement of informal credit with an expansion of family members. Thus, households earning capacity does not amplify with a number of family members and this can be observed as the majority of households are engaged in an unproductive and unorganized sector.

As well, unlike formal and similar to pooled and semiformal credit demand, variables like ISS and ISM influences informal credit demand positively. This can be visible from data that 21% and 16.7% informal borrowers spend their credit money in daily needs and medical purposes respectively. Indeed, we have found the negative relationship between ISI and informal credit demand, argues investment of informal credit in unproductive sectors by contrasting both total and formal credit demand, and similar to semiformal credit demand. Similarly, like semiformal credit demand, NDM has the positive effect on informal credit demand. Thus, demand for informal credit raises with enlargement of dependent members in a family.

Further, unlike formal demand and like pooled and semiformal demand, the positive influence of DNS on informal credit demand shows financing negative shocks by informal borrowing. As data indicates 66.4% informal borrowers experience any kind of negative shocks, and among

them 33.33% faced in the form of illness. Moreover divergent to the pooled, formal and semiformal credit demand DSM influences informal credit demand negatively and argues household manages their emergency needs by dissaving. Contrasting to the findings of Elhiraika and Ahmed (1998), the present study found the positive relation between the value of physical assets and informal credit demand indicating the rise of credit demand with collateral.

Additionally, divergent to pooled and formal credit demand and similar to semiformal credit demand, DFS has the positive impact on informal credit demand, indicates non-availability of formal sources leads to informal loan in rural areas as the average distance to formal branches is 8.3 km which is highest among all three credit sources.

**Table 4.7 Loan Demand Estimated Using Informal Loans and Type Three Tobit Method**

| Variables | Borrowing Decision (Probit[1]) | Interest Rate (Selection Equation[2]) | Loan Demand (Tobit[3]) |
|---|---|---|---|
| **Constant** | -5.82** (1.85) | 30.83*** (28.89) | -13.87*** (5.93) |
| **$r_i$[4]** | --- | --- | -43.90** (71.02) |
| **$AHH_i$** | 0.02** (0.07) | 0.28** (0.89) | -69.15*** (74.52) |
| **$AGESQ_i$** | -0.28* (0.01) | -0.60* (0.01) | 22.75** (5.90) |
| **$DMP_i$** | 0.04*** (0.07) | 2.52 (1.03) | -7.64* (6.35) |
| **$GJ_i$** | -1.56* (0.66) | -21.04* (6.84) | -0.88** (8.41) |
| **$NFM_i$** | 0.29** (0.16) | 0.38 (1.78) | 01.22** (1.16) |
| **$FI_i$** | -5.29* (3.12) | -0.80** (0.98) | -0.04 (0.21) |
| **$ISS_i$** | 5.57** (10.71) | 0.67** (0.65) | 0.01** (0.09) |
| **$ISM_i$** | 26.22*** (16.11) | 0.04* (0.02) | 1.85*** (1.46) |
| **$ISI_i$** | 4.32* (9.93) | -3.87** (1.87) | -0.18* (0.08) |
| **$SDI_i$** | -0.52 (0.49) | -10.36 (5.99) | -31.17 (8.97) |
| **$NDM_i$** | 0.09** (0.17) | 2.11 (2.14) | 2.26*** (5.50) |
| **$DNS_i$** | 0.47*** (0.32) | 1.08** (4.26) | 13.97** (37.01) |
| **$DSM_i$** | 0.63 (0.39) | -1.85 (4.80) | -0.85*** (1.61) |
| **$VPA_i$** | 3.91* (5.39) | -0.74** (8.95) | 0.01** (0.01) |
| **$DFS_i$** | 0.22** (0.06) | 0.78** (0.91) | 7.21*** (5.94) |
| **$LB_i$** | 0.60** (0.46) | -34.28* (5.38) | 07.25* (4.07) |
| **$LN_i$** | 1.94** (0.52) | -21.53** (7.27) | 29.39** (9.44) |
| **$HMF_i$** | 1.12 (0.40) | -10.49 (4.99) | --- |
| **$HLV_i$** | 20.43** (78.85) | - 0.12* (0.05) | --- |
| **$HHEN_i$** | 0.02** (0.04) | -1.07** (0.55) | --- |
| **$WMM_i$** | 4.93** (0.81) | 41.39*** (8.86) | --- |
| **Log Likelihood** | -56.03 | --- | -159.08 |
| **Pseudo R** | 0.66 | --- | 0.55 |
| **Wald Chi2** | -- | 116.73 | --- |
| **Rho** | --- | 0.97 | --- |
| **Number of Observations** | 240 | 240 | 240 |
| **Censored Observations** | -- | 103 | 103 |
| **Uncensored Observations** | -- | 137 | 137 |

Note: Figures in the parentheses represent Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%; 1= Model is estimated using all explanatory variables affecting both informal credit demand and supply; 2= Explicit informal interest rates estimated as a selection equation using all explanatory variables affecting informal credit demand and supply; 3= Total informal credit size of a household estimated using variables affecting informal credit demand; 4= Shows predicted value of informal interest rates

### 4.5. Awareness and Use of Credit Sources: Some Existing Studies

In reference to the use of credit, entrance to formal, semiformal and informal credit sources have been investigated so far as a choice process in which the person or household decides whether to use or not a particular source. Besley and Levenson (1996) and Anderson and Baland (2002) studied involvement in Roscas in Taiwan and Kenya respectively with a one-stage probit. Moreover, the demand side of the use of credit sources has also been analyzed by using multinomial models. Bendig et al. (2009) calculated the demand for savings products, loans, and insurances in Ghana through multinomial probit. Further, using a multinomial logit, Wydick et al. (2011) assess the extent to which social networks find the use of diverse sources of credit in Guatemala. Furthermore, to examine the demand for formal and informal credit in China, Tang et al. (2010) apply a multinomial product model. Besides, use of credit has also been calculated by using two-stage models. Univariate probit models can be applied to observe how a person and the household's characteristics and events might affect the possibility of a person asking for credit and being granted such credit (Zeller, 1994). The author projected the model independently for the formal and informal sources, to observe the discrepancy between formal and informal sources of credit. In addition Pal (2002) estimated the possibility that a family demands informal or formal credit through multinomial logit and then, examined the demand on informal credits conditional on having one formal loan to investigate the existence of any formal credit rationing in rural India. Nevertheless, these studies do not account the fact that no anticipation/use could be due to lack of consciousness of the credit sources that are considered. In the following section we presented the econometric model building for analysising the awareness and use of credit sources in study area.

### 4.6. Econometric Model Building for Awareness and Use of Credit Sources

With reference to earlier studies stated in section 4.5, choosing which options to consider when making a judgment is pertinent because a preference might be made when the options are not physically available, for the reason that clients must be familiar with what they are looking for or because households lack the enthusiasm to locate and examine multiple options (Andrews and Srinivasan, 1995). Moreover, consumers create consideration sets with specific characteristics, they prefer to create a consideration set of alternatives that are easy to compare or that have a high likelihood of containing their optimal alternative. Borrowers can use their past knowledge

to narrow down their awareness set which is called screening criteria and it is used when clients countenance a large set of options in order to diminish the number of options they will choose among.

However, there is a selection bias in the sample that uses financial services as we only observe the decision to ask for credit for those individuals that are aware of a specific source and that individuals choose which sources to know. To overcome this difficulty we examine the demand for credit as a two-stage decision process in which persons first choose which type of sources they want to take as possible lenders and then choose among them. We estimate the first stage through a model of credit use with consideration set formation (Andrews and Srinivasan, 1995)[21]. Rather than focusing on a specific credit source, the estimation approach uses all the information about household's awareness on all probable credit sources. In addition, it allows us to investigate information on households that are barred from the formal, semiformal and informal or all three credit sources for the reason that they are not aware of the sources, rather than focusing simply on the households that are already participating in the credit market. As given the household's choice set formed in the first stage, we model the decision process as a multinomial logit in the second stage estimation.

In our study, altogether there are eight diverse sources that offer loans: S = {SBI, AGVB, Other Nationalized Bank, Private Bank, SHGs, MFIs, Money Lenders, Village Saving Groups}[22]. Within formal sector, there are four different sources that supply loans: S= {SBI, AGVB, Other Nationalized Bank, Private Bank}. Likewise, in the semiformal sector, there have two different sources that provide loans: S= {SHGs, MFIs} and in the informal sector as well, there are two sources that provide loans: S= {Money Lenders, Village Saving Groups}. We examine the use/non-use of a particular source simply, if the household knows the source. A household (i) knows a source (s) if $y_s^{i*} = 1$ ($y_s^i > 0$),

Where

[21]Andrews and Srinivasan (1995) build the model to investigate the demand with consideration set formation for scanner data. Consideration set formation is the procedure in which the persons decide which alternatives they want to consider when making a choice.

[22]SBI= State Bank of India, AGVB= Assam Gramin Vikash Bank, ONB= Other Nationalized Bank (Canara Bank, Syndicate Bank, Punjab National Bank, United Bank of India, UCO Bank, Union Bank, Central Bank, Allahabad Bank and Apex Bank), PB= Private Bank (ICICI Bank and Induslen Bank), SHGs= Self Help Groups, MFIs= Mince Finance Institutions (BANDHAN and ASOMI), MLs= Money Lenders and SGs= Village Saving Groups.

$$y_s^i = \beta X_{is} + \alpha Z_{is} + \mu_{is}$$

Where, $\mu_{is} \sim N [0, 1]$, $\beta X_{is}$ indicates to household characteristics and $\alpha Z_{is}$ is a set of variables for being conscious of a source and that are not directly associated with the use of a lending source. Therefore, for every household, we have a consideration set $D_i \square M$, determined by $\{y_s^{i*}\}_s^8 = 1$, and M is the set of all probable subsets of set S (lending sources) excluding the empty set. Suppose, in addition to the sources that the household decides to consider (households 'i' consideration set), the households preference set ($C_i \square \Psi$) also includes the alternative not asking for a loan, i.e. $C_i = D_i$ U {not asking loan}. Thus, the set of probable choice sets is $\Psi = U_{Di \square M}$ $\{D_i\}$ U {not asking loan}. Hence, in the second stage the household prefers to apply for a loan or not, taking as given its choice set $C_i$. The household maximizes its utility and solves:

Max $\{u_{is}\}_{s \square Ci}$

Where $u_{is} = X_{is}б + ʎ_s v_i + \square_{is} \sim$ GEV (Generalized Extreme Value Distribution), $v_i \sim N [0, 1]$ is a random parameter that confine the unobserved factors through which sample selection operates. Following Greene (2006) the likelihood that household 'i' choose option s $\square$ Ci follows the multinomial logit model with sample selection:

$$P (s/C_i, X_{is}, v_i) = e^{(Xisб + ʎ svi)} / \Sigma n \square C_i e^{(Xinб + ʎ nvi)} \quad \text{if } s \square C_i$$

Or 0 if s ¢ $C_i$

Here the data are characteristics of the individual rather than attributes of the choices, then the coefficients are renormalized. Furthermore, in the second stage (use) 'not asking for a loan' has been used as the baseline group and subsequently all the coefficient should be interpreted with respect to it. To keep away from the possible endogeneity between the first stage decisions and the second stage, we permit for correlation between the error terms of the first and second step: $(\mu_{is}, v_i) \sim N [(0, 1), (1, \rho_s, 1)]$. By joint normality $f (\mu_{is}/ v_i) = N [\rho v_i, (1- \rho^2)]$. The parameters $ʎ_s$ and ρ will correct for the endogeneity between the second and first stage.

To build the maximum likelihood p(s) we require the chance of choosing institution s given that the household has choice set $C_i$: p (s/Ci) and the likelihood of being conscious of the sources belonging to the set $C_i$: p ($C_i$): The latter probability is calculated as:

$$P(C_i/\beta X_{is}, \alpha Z_{is}, v_i) = \prod p(y_n^{i*} > 0) \prod [(1- p(y_n^{i*} > 0)];$$

(For $\prod \rightarrow n \square C_i$ and $\prod \rightarrow n \notin C_i$ respectively)

$$= [\prod £(\beta X_{in} + \alpha Z_{in} + \rho_n/\sqrt{1- \rho^2}) \prod £(-\beta X_{in} + \alpha Z_{in} + \rho_n/\sqrt{1- \rho^2})];$$

(For $\prod \rightarrow n \square C_i$ and $\prod \rightarrow n \notin C_i$ respectively)

Here, $v_i$ is not identified, a random variable that captures the ignored heterogeneity. Therefore, to calculate the maximum likelihood function, we need to incorporate over the distribution of $v_i$. We assume that household heterogeneity $v_i$ is the same among households and is independent across households. Then, the chance of observing the demand for credit in source's' is:

$$R = p(s) = \prod^{i} \int_{-\infty}^{\infty} (\sum_{CiY} p(s/C_i, \beta X_{is}, \alpha Z_{is}) p(C_i/\beta X_{is}, \alpha Z_{is}) f(v_i) dv_i$$

### 4.7. Description of Variables and Descriptive Statistics for Awareness and Use of Credit Sources

Based on the literature and theoretical considerations, a set of explanatory factors is derived for awareness and use of credit sources. Table 4.8 presents the description of the variables, hypothesized relation, and the definition behind choosing the particular variable. The credit source-wise summary statistics of variables are presented in Table 4.9. It indicates that average family income of formal borrowers (₹230166.7) higher than the semiformal (₹110015.3) and informal borrowers (₹109270.1). As expected the percentages of government job holder households is greater among formal borrowers (48.6%) followed by informal borrowers (16.1%). Likewise, the average years of schooling of household head are 9.3 among formal borrowers, followed by 6.2 years in semiformal borrowers. Indeed, 66.4% informal borrowers experience any negative shocks followed by 59.7% households among formal borrowers. Alike, heads of formal borrower's households were relatively older than those of semiformal and informal borrower's household. Hence, approximately in all borrowers, lenders and location-specific characteristics, formal borrowers are in the superior position with respect to semiformal and informal borrowers.

## Table 4.8 Variables Included in Regression for Probit and Multinomial Logit Model

**Dependent Variable-** Probit Model: Whether the household head knows any source of credit (SBI, AGVB, Other Nationalized Bank, Private Bank, SHG, MFIs, Money Lenders, Village Saving Groups/ Formal, Semiformal, and Informal)
**Dependent Variable-** Multinomial Logit: Whether the household takes credit from any sources (SBI, AGVB, Other Nationalized Bank, Private Bank, SHG, MFIs, Money Lenders, Village Saving Groups/ Formal, Semiformal and Informal): Here 0= not asking loan, 1= SBI, 2= AGVB, 3= Other Nationalized Bank, 4= Private Bank, 5= SHGs, 6= MFIs, 7= Money lenders and 8= village saving groups/ For formal, semiformal and informal: 0= not asking for loan, 1= Formal, 2= Semiformal and 3= Informal)

| Explanatory Variables | Notation | Definition | Hypothesized Relation |
|---|---|---|---|
| **Borrower's Characteristics** | | | |
| Age of Household Head | $AHH_i$ | It measures the working ability of the household head | + |
| Occupation | $GJ_i$ | Main Occupation Dummy: Whether the main income source of household is government job; D=1 if it is government job and 0, otherwise | + |
| Family Income | $FI_i$ | Household income per annum | + |
| Dependent Members | $NDM_i$ | No of dependent members who do not earn any income in the family | +/- |
| Negative Shocks | $DNS_i$ | Adverse Shocks Dummy: Whether family face any negative shocks in the last three years; D= 1 if so and 0, otherwise. Here negative shocks are in the form of the car accident, failure of agriculture, flood, house damage in rain, illness, girl marriage, family members died, cows died, fishery lost and land lost. | + |
| Physical Assets | $VPA_i$ | The Value of physical assets of the households: it may measure the collateral value of the households | + |
| $Age^2$ | $AGESQ_i$ | The Square of the age of household head: it may measure the life cycle effects. | +/- |
| Household Head Male | $HHM_i$ | Household Head Dummy: Whether household head is male; D= 1 if so and 0, otherwise | +/- |
| Education | $ENS_i$ | Number of schooling years of household head | +/- |
| Spouse Education | $HHS_i$ | Number of schooling years of household head spouse | +/- |
| Member of Socio-Economic Organizations | $WMSE_i$ | Organization Dummy: Whether household head is a member of any socio-economic organization in the village or outside; D= 1 if so and 0, otherwise | + |
| Experiences any Income Remittance | $WEIR_i$ | Remittance Dummy: Whether family experiences any income remittances in the last three years; D= 1 if so and 0, otherwise | + |
| Family Members | $NFM_i$ | Number of family members in the respondent households | +/- |
| **Lender's Characteristics** | | | |
| Formal Sources | $DFS_i$ | Distance to formal bank branches from the households | +/- |
| **Location Specific Characteristics** | | | |
| Districts | $LB_i$ and $LN_i$ | District-Wise Variation Dummy: To test for variations of awareness and use across districts. Here Baksa district is taken as base district; therefore, LB= 1 if Barpeta and 0, otherwise; LN= 1 if Nalbari and 0, otherwise | +/- |
| Living in Village | $HLV_i$ | How many years living in the village by the household head/their earlier generations: it measures the reputation of borrowers | + |
| Distance to Market Place | $DMP_i$ | It measures the effect of market linkage on use and awareness of credit sources | - |
| **Instruments: To avoid identification problems (must fulfilled two conditions- first, that instruments are strongly correlated with awareness and second, that they are uncorrelated with use of credit)** | | | |
| Transportation is Good | $WTG_i$ | Instrument Dummy 1: Whether transportation facility in the locality is good; D= 1 if so and 0, otherwise. Only used for probit. | + |
| Change in Infrastructure | $WIC_i$ | Instrument Dummy 2: Whether any improvement of infrastructure occurred in your locality in last three years. Only used for probit. | + |

**Table 4.9 Credit Source-Wise Descriptive Statistics of Variables (Amount in ₹)**

| Variables | Formal | Semiformal | Informal |
|---|---|---|---|
| **Mean Value** | | | |
| **$AHH_i$** | 53.14 | 44.85 | 45.8 |
| **$AGESQ_i$** | 3065.9 | 2222.4 | 2286.4 |
| **$DMP_i$** | 6.8 | 6.6 | 6.8 |
| **$NFM_i$** | 6.3 | 5.4 | 5.63 |
| **$FI_i$** | 230166.7 | 110015.3 | 109270.1 |
| **$HLV_i$** | 65.22 | 55.52 | 67.24 |
| **$HHS_i$** | 6.5 | 4.2 | 3.5 |
| **$DFS_i$** | 7.3 | 7.6 | 8.3 |
| **$VPA_i$** | 679861 | 334198.5 | 242408.7591 |
| **$NDM_i$** | 4.03 | 3.25 | 3.55 |
| **$ENS_i$** | 9.3 | 6.2 | 5.7 |
| **Proportion of Households Under Categorical Variables** | | | |
| **$GJ_i$** | 48.6 | 14.5 | 16.1 |
| **$HHM_i$** | 74.6 | 73.5 | 75.8 |
| **$DNS_i$** | 59.7 | 58.8 | 66.4 |
| **$LB_i$** | 31.94 | 39.69 | 33.58 |
| **$LN_i$** | 40.28 | 40.46 | 37.23 |
| **$WTG_i$** | 62.5 | 36.25 | 57.5 |
| **$WMSE_i$** | 17.5 | 21.25 | 21.25 |
| **$WEIR_i$** | 55.5 | 23.75 | 11.25 |
| **$WIC_i$** | 50 | 32.5 | 27.5 |

Source: Field Survey, 2014

## 4.8. Awareness and Use of Credit Sources in Study Area

Table 4.10 and Table 4.11 indicate the awareness and use of credit sources respectively. Table 4.10 presents the number of credit sources those households in the sample aware, and which is the cardinality of their consideration set. While it can be observed, altogether only 0.42% of the households in the sample do not aware any of the 'eight' sources of credit considered in the study, thus their consideration set is empty. However, if we look at credit source-wise, then 15.4% households consideration set is empty as they do not know any formal sources, and the percentages are 18.3% and 10.8% respectively for semiformal and informal sources respectively.

Moreover, it reveals that out of total respondent households, 99.58% households know at least 'one' source of credit, however among them, 88.70% borrow money from any stated credit sources. Moreover, a bulk of households (63%) aware about 'three' credit sources followed by 'four' (60%). Similarly, 84.6% households know at least 'one' formal credit source, though among them just 35.47% borrow money from these sources. Besides, the majority of households (45.81%) aware about 'one' formal credit source followed by 'two' (39.90%).

It also shows that 81.7% households know at least 'one' semiformal credit sources, and out of them simply 66.84% borrow money from these sources. In addition, 63.78% and 36.22%

households know ‘one’ and ‘both’ semiformal sources respectively. Indeed, 89.2% households know at least ‘one’ informal source, but among them merely 64.02% borrow from these sources. Additionally, 81.78% and 18.22% households know ‘one’ and ‘both’ informal sources respectively.

**Table 4.10 Distribution of Households across Awareness**

| **Awareness of Credit Sources** | | | | |
|---|---|---|---|---|
| **Known Sources** | **Over All** | **Baksa** | **Barpeta** | **Nalbari** |
| **At least One** | 239 (99.58) | 79 (98.75) | 80 (100) | 80 (100) |
| **One** | 12 (5) | 6 (7.6) | 2 (2.5) | 4 (5) |
| **Two** | 39 (16.3) | 13 (16.5) | 11 (13.8) | 15 (18.8) |
| **Three** | 63 (26.4) | 29 (36.7) | 15 (18.8) | 19 (23.8) |
| **Four** | 60 (25.1) | 20 (25.3) | 21 (26.3) | 19 (23.8) |
| **Five** | 37 (15.5) | 5 (6.3) | 17 (21.3) | 15 (18.8) |
| **Six** | 19 (7.9) | 6 (7.6) | 7 (8.8) | 6 (7.5) |
| **Seven** | 7 (2.9) | 0 | 5 (6.3) | 2 (2.5) |
| **Eight** | 2 (0.8) | 0 | 2 (2.5) | 0 |
| **Awareness of Formal, Semiformal and Informal Credit Sources** | | | | |
| **Formal** | | | | |
| **Known Sources** | **Over All** | **Baksa** | **Barpeta** | **Nalbari** |
| **At least One** | 203 (84.6) | 62 (77.5) | 74 (92.5) | 67 (83.8) |
| **One** | 93 (45.81) | 21 (33.87) | 40 (54.05) | 32 (47.76) |
| **Two** | 81 (39.90) | 34 (54.84) | 16 (21.62) | 31 (46.26) |
| **Three** | 23 (11.33) | 4 (6.45) | 15 (20.27) | 4 (5.97) |
| **Four** | 6 (2.96) | 3 (4.84) | 3 (4.05) | 0 |
| **Semiformal** | | | | |
| **At least One** | 196 (81.7) | 65 (81.3) | 69 (86.3) | 62 (77.5) |
| **One** | 125 (63.78) | 64 (98.46) | 32 (46.38) | 29 (46.77) |
| **Two** | 71 (36.22) | 1 (1.54) | 37 (53.62) | 33 (53.23) |
| **Informal** | | | | |
| **At least One** | 214 (89.2) | 69 (86.3) | 77 (96.3) | 68 (85) |
| **One** | 175 (81.78) | 58 (84.06) | 63 (81.82) | 54 (79.41) |
| **Two** | 39 (18.22) | 11 (15.94) | 14 (18.18) | 14 (20.59) |
| **Awareness of Different Formal, Semiformal and Informal Credit Sources** | | | | |
| **Formal** | | | | |
| **Known Sources** | **Over All** | **Baksa** | **Barpeta** | **Nalbari** |
| **SBI** | 154 (75.86) | 51 (82.26) | 48 (64.86) | 55 (82.09) |
| **AGVB** | 99 (48.77) | 43 (69.35) | 50 (67.57) | 6 (8.96) |
| **Other Nationalized Bank** | 88 (43.35) | 15 (24.19) | 28 (37.84) | 45 (67.16) |
| **Private Bank** | 8 (3.94) | 5 (8.06) | 3 (4.05) | 0 |
| **Semiformal** | | | | |
| **SHGs** | 196 (100) | 65 (100) | 69 (100) | 62 (100) |
| **MFIs** | 71 (36.22) | 1 (1.54) | 37 (53.62) | 33 (53.23) |
| **Informal** | | | | |
| **Moneylenders** | 185 (86.45) | 62 (89.86) | 77 (100) | 46 (67.65) |
| **Saving Groups** | 70 (32.71) | 18 (26.09) | 14 (18.18) | 38 (55.88) |

Source: Field Survey, 2014; Note: Figures in the parentheses represent % of households

**Table 4.11 Distribution of Households across Uses Conditioning Awareness**

| Credit Source-wise Borrowed Households Conditioning Awareness | | | | |
|---|---|---|---|---|
| **Borrowed Sources** | **Over All** | **Baksa** | **Barpeta** | **Nalbari** |
| **At Least One Source** | 212 ( 88.70) | 64 (81.01) | 72 (90) | 76 (95) |
| **Formal** | 72 (35.47) | 20 (32.26) | 23 (31.08) | 29 (43.28) |
| **Semiformal** | 131 (66.84) | 26 (40) | 52 (75.36) | 53 (85.48) |
| **Informal** | 137 (64.02) | 41 (59.42) | 46 (59.74) | 51 (75) |
| **Households Borrowed from Different Formal, Semiformal and Informal Sources Conditioning Awareness** | | | | |
| **Formal** | | | | |
| **Borrowed Sources** | **Over All** | **Baksa** | **Barpeta** | **Nalbari** |
| **SBI** | 57 (37.01) | 15 (29.41) | 15 (31.25) | 27 (49.09) |
| **AGVB** | 13 (13.13) | 5 (11.63) | 6 (12) | 2 (33.33) |
| **Other Nationalized Bank** | 3 (3.41) | 0 | 3 (10.71) | 0 |
| **Private Bank** | 0 | 0 | 0 | 0 |
| **Semiformal** | | | | |
| **SHGs** | 127 (64.80) | 26 (40) | 50 (72.46) | 51 (82.26) |
| **MFIs** | 24 (33.80) | 1(100) | 9 (24.32) | 14 (42.42) |
| **Informal** | | | | |
| **Moneylenders** | 95 (51.35) | 33 (53.23) | 41 (53.25) | 21 (45.65) |
| **Saving Groups** | 52 (74.29) | 7 (38.89) | 9 (64.29) | 36 (94.74) |
| **Majority Money Borrowed from Different Sources Conditioning Awareness of at least One Credit Source** | | | | |
| **Majority Borrowed Sources** | **Over All** | **Baksa** | **Barpeta** | **Nalbari** |
| **Formal** | **60 (29.56)** | **19 (30.65)** | **19 (25.68)** | **22 (32.84)** |
| SBI | 45 (29.22) | 13 (25.49) | 11 (22.92) | 21 (38.18) |
| AGVB | 15 (15.15) | 5 (11.63) | 7 (14) | 3 (50) |
| Other Nationalized Bank | 3 (3.41) | 0 | 3 (10.71) | 0 |
| Private Bank | 0 | 0 | 0 | 0 |
| **Semiformal** | **84 (42.86)** | **15 (23.08)** | **36 (52.17)** | **33 (53.22)** |
| SHGs | 66 (33.67) | 15 (23.08) | 30 (43.48) | 21 (33.87) |
| MFIs | 17 (23.94) | 0 | 5 (13.51) | 12 (36.36) |
| **Informal** | **67 (31.31)** | **29 (42.03)** | **17 (22.08)** | **21 (30.88)** |
| Moneylenders | 42 (22.70) | 25 (40.32) | 12 (15.58) | 5 (10.87) |
| Saving Groups | 23 (32.86) | 6 (33.33) | 3 (21.43) | 14 (36.84) |

Source: Field Survey, 2014; Note: Figures in the parentheses represent % of households

Furthermore, among households familiar and takes a loan from at least 'one' credit source, 29.56% households borrowed the maximum amount of money from formal sources. Similarly, 42.86% household's borrowed majority money from semiformal sources while 31.31% households borrowed the bulk amount of money from informal sources. The Tables has also explained awareness and use of credit individually within broad sources and observe the similar pattern of relation.

## 4.9. Empirical Estimation of Awareness and Use of Credit Sources

Table 4.12 indicates the results for consciousness and Table 4.13 the results for use conditional on awareness[23]. Here awareness and use of the eight sources are calculated simultaneously. We estimate the standard errors using clusters to control for possible error correlation inside

[23]Maximum likelihood estimation of awareness and use of credit sources are presented in Appendix O and Appendix P.

localities. For interpretation of the results, the first step outlined in Table 4.12 (awareness) is modeled by using a normal distribution. Thus, the coefficients can be analyzed as the change in the predicted probability that the source of credit is part of the household's consideration set or the chance that the households are conscious of it when there is a change in one of the exogenous variables keeping everything else constant[24]. Table 4.12 presents the marginal effects at the mean. The outcome in Table 4.13 is calculated from the information on the consideration set of each household and they outline the effect of each variable on conditional use corrected for selection. 'Not asking for a loan' is the base category in the estimation in Table 4.13; therefore, all the results in this table interpreted with reference to this variable. The extent of the coefficients in 'use' can be interpreted as coefficients of a standard multinomial logit model by using odds ratios.

The age of household head, which measures the working ability of the household head, has the positive effect on awareness of formal sources SBI, AGVB, ONB, and PB. However, except AGVB for other formal sources, it affects negatively on the use of them. These results are in line with the argument of Campero and Kaiser (2013) although they studied only formal and informal sources. This may be because older people are more likely to be aware of these sources, but out of the ones that are aware of them the younger ones are the ones that use them. Similarly, it has the positive effect on the awareness of semiformal sources SHGs, but effect negatively on awareness of MFIs. Moreover, it has the positive impact on the use of SHGs and affect negatively on MFIs while influences negatively on both awareness and use of informal sources.

The employment dummy GJ has the positive effect on awareness of all formal sources, but unlike SBI and ONB it has the negative effect on the use of AGVB. This could be explained because having a formal job make it easier for the household members to show that they have a stable job and income which is necessary to get a loan from formal sources. But it affects negatively on both awareness and use of semiformal sources. Akin to semiformal sources, GJ has the positive effect on the awareness of informal sources MLs. Thus, this also emphasizes the discrimination of formal credit against poor people.

[24]The interpretation of these coefficients is the same as the interpretation of probit regression. Hence, awareness of each source of credit is modeled as a probit.

Our estimation provides information on the segmentation of the credit market when analyzing how income affects the demand of different credit sources. Results show that the effect of income is different among all sources for both awareness and use of credit. Family Income has the positive effect on the probability of knowing formal sources studied here, and the using formal sources SBI and ONB; however, it has a negative effect on the use of the credit of AGVB. Moreover, family income influences negatively for knowing and using all semiformal and informal sources. This provides evidence of what has been mentioned in past literature about income having a positive impact on

**Table 4.12 Marginal Effects of Probability that a Source of Credit is considered in a Consideration Set using a Normal Distribution**

| Variables/Sources | SBI | AGVB | ONB | PB | SHGs | MFIs | MLs | SGs |
|---|---|---|---|---|---|---|---|---|
| **Households Characteristics** | | | | | | | | |
| **$AHH_i$** | 0.01* | 0.01* | 0.03* | 0.006** | 0.01** | -0.02** | -0.01 | -0.05** |
| **$GJ_i$** | 0.11 | 0.27** | 0.05** | 0.08** | -0.18* | -0.06* | 0.11** | -0.22 |
| **$FI_i$** | 0.07** | 0.09* | 0.08*** | 0.06* | -0.096* | 0.088** | -0.090* | -0.05* |
| **$NDM_i$** | 0.06*** | 0.02*** | -0.02* | -0.08 | -0.01 | 0.08* | 0.02* | -0.056 |
| **$DNS_i$** | 0.03* | 0.11* | 0.05** | -0.056 | 0.02 | -0.09** | 0.13** | 0.07** |
| **$VPA_i$** | 0.070* | 0.064 | 0.0053*** | 0.042* | 0.096** | -0.083 | -0.071* | -0.048 |
| **$AGESQ_i$** | 0.086 | -0.09 | 0.003* | -0.056** | -0.06 | 0.056** | 0.07* | 0.08** |
| **$HHM_i$** | -0.08 | 0.07 | 0.022* | 0.09 | -0.03 | -0.02 | -0.05 | 0.09 |
| **$ENS_i$** | 0.09* | 0.02** | 0.01 | 0.060** | -0.056 | -0.02** | -0.01 | -0.05** |
| **$HHS_i$** | 0.005 | 0.02* | 0.02 | -0.062 | -0.02 | 0.01 | 0.01 | -0.09* |
| **$WMSE_i$** | -0.076 | 0.29** | -0.09 | 0.08 | 0.16* | 0.14 | 0.14*** | 0.15** |
| **$WEIR_i$** | -0.043 | 0.09 | -0.12 | 0.070* | 0.08 | -0.05* | -0.05 | 0.08 |
| **$NFM_i$** | 0.09 | 1.03* | 0.33 | 1.27 | 1.09*** | 0.92* | 0.02** | 1.09** |
| **Lender's Characteristics** | | | | | | | | |
| **$DFS_i$** | 0.08** | -0.02 | 0.01 | -0.050** | 0.01 | -0.01 | 0.06 | 0.02* |
| **Location Specific Characteristics** | | | | | | | | |
| **$LB_i$** | -0.21 | -0.01* | 0.10 | -0.043 | 0.03 | 0.57* | 0.22 | -0.08 |
| **LNi** | 0.07 | -0.66 | 0.43 | -- | -0.06 | 0.46 | -0.25 | 0.23 |
| **$HLV_i$** | 0.067 | 0.045 | 0.06* | -0.017 | 0.09*** | 0.054** | -0.032 | 0.032*** |
| **$DMP_i$** | -0.02* | -0.01* | 0.01 | 0.043** | -0.02*** | -0.04* | -0.01** | -0.011* |
| **Instruments** | | | | | | | | |
| **$WTG_i$** | 0.41* | -0.34 | -0.09** | -0.03** | 0.01* | -0.41* | -0.11 | -0.12** |
| **$WIC_i$** | -0.19 | -0.02** | 0.09* | 0.01** | 0.04** | 0.53** | 0.09** | 0.20* |
| **Observations** | **240** | **240** | **240** | **240** | **240** | **240** | **240** | **240** |

Note: Marginal effects are estimated at the mean; *Significance at 10%, **Significance at 5% and ***Significance at 1%

**Table 4.13 Odd Ratios of Multinomial Logit with Sample Selection and Consideration Set**

| Variables/Sources | SBI | AGVB | ONB | PB | SHGs | MFIs | MLs | SGs |
|---|---|---|---|---|---|---|---|---|
| **Households Characteristics** | | | | | | | | |
| **$AHH_i$** | 0.92** | 2.05** | 0.47** | -- | 3.05** | 0.92** | 0.92* | 0.94 |
| **$GJ_i$** | 1.03* | 0.79* | 8.05* | -- | 0.28* | 0.11* | 2.09 | 0.98** |
| **$FI_i$** | 1.28*** | 0.38 | 3.07** | -- | 7.08 | 0.87* | 0.06*** | 0.14* |
| **$NDM_i$** | 0.05 | 0.08* | 0.78* | -- | 0.79* | 0.01 | 2.08** | 2.02*** |
| **$DNS_i$** | 0.04 | 0.07*** | 0.08** | -- | 2.04*** | 0.93** | 3.08*** | 2.09* |
| **$VPA_i$** | 3.06* | 4.04* | 6.09** | -- | 0.01* | 0.92 | 4.05* | 4.09 |
| **$AGESQ_i$** | 2.08** | 0.06*** | 0.02** | -- | 0.10 | 0.45* | 3.80* | 1.06 |
| **$HHM_i$** | 1.68 | 1.29 | 10.08* | -- | 3.07 | 3.05 | 1.43 | 3.07** |
| **$ENS_i$** | 3.04** | 0.79* | 2.06* | -- | 0.86 | 0.96** | 0.83* | 0.97** |
| **$HHS_i$** | 0.85 | 0.03 | 5.04 | -- | 0.87 | 0.92 | 0.99 | 0.85* |
| **$WMSE_i$** | 5.07* | 7.03*** | 1.08 | -- | 1.02** | 7.07 | 2.05*** | 2.04** |
| **$WEIR_i$** | 2.08 | 4.02 | 5.04 | -- | 0.06 | 0.14 | 0.13* | 1.05 |
| **$NFM_i$** | 0.82 | 0.68 | 0.03** | -- | 1.07* | 4.06* | 4.84** | 2.02* |
| **Lender's Characteristics** | | | | | | | | |
| **$DFS_i$** | 1.07* | 1.08* | 1.02* | -- | 2.01* | 2.01** | 2.09 | 1.04* |
| **Location Specific Characteristics** | | | | | | | | |
| **$LB_i$** | 2.07 | 0.77 | 11.06 | -- | 3.06 | 3.06* | 0.71* | 1.02 |
| **LNi** | 5.05 | 2.08* | 7.09* | -- | 5.04 | 4.04 | 0.90 | 5.09 |
| **$HLV_i$** | 1.08** | 1.02 | 1.03** | -- | 1.06** | 1.02* | 1.01** | 0.46* |
| **$DMP_i$** | 1.08** | 0.98** | 2.01* | -- | 0.57* | 0.57*** | 0.68** | 0.55* |

Note: An odds ratio of 1.05 means the variable makes it 5% more likely to 'ask for a credit' at that source than 'not ask for a credit'; *Significance at 10%, **Significance at 5% and ***Significance at 1%

access to credit from formal institutions while some sources of informal and semiformal credit attend the residual demand, which includes households with lower income (Beck and de la Torre, 2007; Eswaran and Kotwal, 1989; Braverman and Stiglitz, 1989; Kiiza & Pederson, 2002). As Peachey and Roe (2004) explain, this could be happening because lower income households ask for small credit transactions unprofitable for formal financial service providers or because poor households have a lack of income stability or collateral.

The variable number of dependent member's influences positively on knowing formal sources SBI and AGVB, while affecting negatively on ONB. Nevertheless, it has the negative impact on the use of formal sources studied here as they may try to get some loan for any activities, but unable to obtain it because of non-availability of organized employment. Equally, it has a positive impact on knowing semiformal sources MFI and informal sources ML, even though it is insignificant in SHGs and SG. However, it has the positive impact on the use of both informal sources, and negative impact on the use of semiformal sources SHGs.

Likewise, negative shocks experienced by households have the positive impact on awareness of formal sources SBI, AGVB, and ONB, however, affects negatively on the use of studied formal sources. It indicates that poor people may not get the loan from formal sources during their

emergencies. While negative shocks have a positive effect on knowing semiformal sources SHGs, it affects negatively on MFIs and positive impact on knowing both informal sources. However, interestingly except MFIs, it has the positive impact of using all semiformal and informal sources. This result recommends that the semiformal and informal sector also acts as a complement of the formal sector. This is consistent with the literature that explains that informal networks are used as a way of sharing risk and as funds when dealing with an enterprise or family emergency due to its flexibility and rapid lending procedures (Pearlman, 2010).

As expected value of physical assets which has been used as collateral have the positive impact on both awareness and use of all studied formal sources. This finding is analogous to the result of Nagarajan et al. (1998) reveals the enjoying of rural credit by asset holding households[25]. Nonetheless, it has the negative effect of knowing semiformal source SHGs and informal source ML. Similarly, it has the negative impact on using semiformal source SHGs and positive influence on ML, even though it is insignificant in MFIs and SGs.

In addition, the square of the age of household head, which measures the life cycle effect has the positive impact on awareness of ONB whereas effect negatively on PB, and thus consistent with the study of Campero and Kaiser (2013). As well, it has the positive effect on the use of SBI, and negative effect on the use of AGVB and ONB. Thus, this indicates that people borrow money till their older age. In addition, it has also the positive impact on knowing semiformal sources MFIs and informal sources MLs and SGs. Although it affects negatively on using MFI loan, but the chance of using ML is expanded with the same.

Additionally, by supporting the results of Campero and Kaiser (2013), the number of schooling years of the household head has the positive effect on awareness of all formal sources. In addition, except AGVB, for all formal sources, uses of credit are also positively related to a number of schooling years of household head, and hence contrasting the findings of Campero and Kaiser (2013) where they argued the insignificant impact of this variable. Nevertheless, for awareness of semiformal source MFIs and informal source SGs, it affects negatively. Similarly, it affects negatively for using all semiformal and informal sources, except SHGs where it is insignificant.

[25]They estimated credit demand irrespective of awareness.

Further, no of family members is not significant for knowing formal sources, except AGVB in which it influences positively. However, its effects negatively for using formal sources ONB, whereas for other formal sources it is insignificant. This also emphasizes the nonavailability of formal loan for unemployed and unorganized sector employees. Nevertheless, in all semiformal and informal sources, it effects positively for knowing and using them. This could be explained by assuming that the household head or spouse have more members to support, they need more resources in their daily expenses and therefore, they get loans from semiformal and informal sources since these sources can lend smaller amounts in little time.

Distance to formal sources is insignificant for knowing formal sources, except SBI where it affects positively indicates the positive relation between distance to formal sources and its access by rich people. However, its effects negatively for using all other formal sources, and divergent to the results of Campero and Kaiser (2013) where they found the insignificant effect of this variable. Likewise, it has the positive impact of knowing semiformal source SHGs and informal source MLs. Moreover, except MLs, it influences positively for using all other semiformal and informal sources and contradict with Campero and Kaiser (2013) as they found the negative relation between the availability of formal sources and use of money lenders. This indicates the command of semiformal and informal sources for the reason that the nonavailability of formal branches in rural areas. This also provides evidence for the fact that substitution between formal and informal sources of credit exists.

The variable number of year's household heads is living in the village which measures the reputation of the borrowers has the positive impact of knowing formal sources ONB, while in all other formal sources it is insignificant. As expected, it affects positively for using formal sources SBI and ONB. Correspondingly, the variable has the positive impact of knowing all semiformal and informal sources, except ML where it is insignificant. Moreover, it has also the positive impact of using all semiformal and informal sources, except SGs where it affects negatively.

Furthermore, distance to the market place has the negative impact on awareness of formal sources SBI and AGVB while its effects positively on awareness of ONB and PB. In addition, it has the positive impact on the use of SBI and ONB, and negative effect on AGVB. This indicates that rich people borrow formal credit without any proper market linkage. However, interestingly

distance to main market place has the negative effect on both awareness and use of all semiformal and informal sources, and this also indicates the nonavailability of the market is the one indicator of lack of credit demand in rural areas.

### 4.9.1. Robustness Check

To gain statistical efficiency and confirm our results we grouped the credit sources in formal, semiformal and informal. Results are presented in Table 4.14 and Table 4.15. We find that some of the general results presented still hold, however, other results disappear because of contrary effects that some variables have within formal, semiformal or informal sources. No of family members still affects uses of semiformal and informal sources positively, but no longer its awareness, although it was significant for all the four semiformal and informal sources. We still get that households with a large value of physical assets are more likely to be aware and use of formal sources and that years of schooling and government employment variables have a positive effect on awareness of formal sources. Grouping all credit sources can be misleading. For example, we find that no of dependent members in a family affects awareness of only informal sources and it would seem like no of dependent members does not have an effect on the use of any type of credit source.

**Table 4.14 Probability that a Source of Credit is considered in a Consideration Set (Awareness) using a Normal Distribution**

| Variables/Sources | Formal | Semiformal | Informal |
|---|---|---|---|
| **Households Characteristics** | | | |
| **$AHH_i$** | 0.32** (0.14) | 0.04* (0.05) | -0.01 (0.06) |
| **$GJ_i$** | 3.34* (0.65) | -0.68** (0.41) | -0.37** (0.42) |
| **$FI_i$** | 0.87* (8.90) | -9.09* (1.64) | -3.10* (1.74) |
| **$NDM_i$** | -0.12 (0.14) | -0.05 (0.06) | -0.90*** (0.07) |
| **$DNS_i$** | -0.32 (0.39) | -0.11** (0.25) | -0.17* (0.27) |
| **$VPA_i$** | 3.64** (1.17) | 9.10 (4.17) | -6.50** (2.97) |
| **$AGESQ_i$** | 0.08* (0.01) | 0.65** (1.33) | 0.65* (0.43) |
| **$HHM_i$** | 0.49* (0.46) | -0.17 (0.26) | 0.10* (0.32) |
| **$ENS_i$** | 0.50** (0.12) | -0.01** (0.04) | -0.02 (0.05) |
| **$HHS_i$** | -0.12* (0.08) | -0.07** (0.04) | 0.02 (0.05) |
| **$WMSE_i$** | -0.97*** (0.76) | 1.02* (0.38) | 0.36** (0.37) |
| **$WEIR_i$** | 1.06 (0.65) | 0.40* (0.32) | 0.44 (0.37) |
| **$NFM_i$** | -0.34* (0.03) | -0.05* (0.04) | -0.11* (0.56) |
| **Lender's Characteristics** | | | |
| **$DFS_i$** | -0.20* (0.12) | 0.03* (0.05) | 0.10* (0.05) |
| **Location Specific Characteristics** | | | |
| **$LB_i$** | -0.14*** (0.55) | 0.14*** (0.31) | 0.62** (0.42) |
| **LNi** | 0.94* (0.72) | -0.25* (0.34) | -0.54* (0.41) |
| **$HLV_i$** | 0.06* (0.01) | 0.09* (0.07) | 0.87** (0.96) |
| **$DMP_i$** | 0.24** (0.16) | 0.08*** (0.06) | -0.05* (0.05) |
| **Instruments** | | | |
| **$WTG_i$** | -0.06** (0.49) | 0.03* (0.31) | -0.91*** (0.37) |
| **$WIC_i$** | 0.36* (0.59) | 0.18** (0.37) | 1.17** (0.43) |
| **Constant** | 6.11*** (3.14) | 0.66* (1.43) | 1.83* (1.74) |
| **Observations** | **240** | **240** | **240** |

Note: Figures in the parentheses represent Robust Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%

**Table 4.15 Multinomial Logit (Use) with Sample Selection and Consideration Set**

| Variables/Sources | Formal | Semiformal | Informal |
|---|---|---|---|
| **Households Characteristics** | | | |
| **$AHH_i$** | -0.03* (0.16) | 0.11 (0.15) | -0.09** (0.15) |
| **$GJ_i$** | -2.56** (1.27) | -1.99* (1.37) | -1.21** (1.31) |
| **$FI_i$** | 1.43* (5.08) | -7.36** (5.87) | -7. 06* (5.47) |
| **$NDM_i$** | 0.81 (0.34) | -0.21 (0.33) | 0.39 (0.31) |
| **$DNS_i$** | 1.49 (0.69) | 0.45** (0.61) | 1.37* (0.62) |
| **$VPA_i$** | 1.59** (1.18) | 1.64 (1.24) | 3.43** (1.34) |
| **$AGESQ_i$** | -0.43 (0.23) | -0.64 (0.05) | -0.21 (0.04) |
| **$HHM_i$** | 0.49** (0.71) | 0.86* (0.64) | 1.14* (0.67) |
| **$ENS_i$** | 0.02* (0.11) | -0.14** (0.09) | -0.08* (0.09) |
| **$HHS_i$** | 0.12** (0.11) | -0.08* (0.09) | -0.07* (0.09) |
| **$WMSE_i$** | 0.02 (0.55) | 0.52** (4.06) | 0.06** (9.07) |
| **$WEIR_i$** | 0.23* (0.86) | -0.88*** (0.81) | -0.71* (0.84) |
| **$NFM_i$** | -0.58 (0.28) | 0.09* (0.24) | 0.07** (0.23) |
| **Lender's Characteristics** | | | |
| **$DFS_i$** | -0.20** (0.11) | 0.22*** (0.11) | 0.34*** (0.11) |
| **Location Specific Characteristics** | | | |
| **$LB_i$** | 0.31* (0.84) | 1.84* (0.75) | 0.12** (0.75) |
| **LNi** | 2.27** (0.89) | 3.22** (0.87) | 1.83* (0.88) |
| **$HLV_i$** | 0.01*** (0.02) | 0.34* (0.69) | 0.01*** (0.03) |
| **$DMP_i$** | -0.08** (0.11) | -0.29** (0.13) | -0.26** (0.13) |
| **Constant** | -4.54* (4.33) | 4.09*** (3.86) | 0.84* (3.85) |
| **Log Likelihood** | -214.26 | -- | -- |
| **Pseudo R2** | 0.33 | -- | -- |
| **Observations** | **240** | **240** | **240** |

Note: Figures in the parentheses represent Robust Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%

Also, when looking at the square of the age of the household head variable, we view that it has a positive effect on awareness of formal, semiformal and informal sources and that it has no effect on the use of neither of the sources. Thus, these findings would lead to conclude that formal, semiformal and informal sources are acting similarly in the square of the age of household head, but in Table 4.14 and Table 4.15 we have not seen that.

## 4.10. Conclusion

Rural credit demand estimations are often biased and incompetent because of data truncation, and utilization of data on individual and single loan sizes which suffer from non-identifiability of aggregate demand and supply components. The present chapter attempted to stipulate and estimate an implicit loan demand function by presenting a framework to relate the sum of all loans with the loan demand of a household and applies a Type Three Tobit model to fit separate loan demand functions for household involved in the formal, semiformal and informal credit markets. The study contains both non-borrowers and borrowers. The latter type of respondents also included formal, semiformal and informal borrowers, and has indicated some multiple loan

transactions. The three estimates were compared, and the robustness of the separate estimates further tested by running an overall sample regression for all credit sources. This regression argues that pooling formal, semiformal and informal credit produces biased results. The result argues that borrowers and lenders-specific variables are more important determinants of the decision to borrow. In general, rural household participation in the credit market is influenced by the ability and capacity to work, the life cycle effect of the borrower as well as some other exogenous factors. But the direction of causality of the factors influencing household participation in the rural credit market is remarkably different among all three credit sources.

Moreover, the present chapter has also tried to know and answer the paradox, whether awareness of credit sources leads to their use by using a model of consideration set formation and correcting for selection. As it was thought that the first step for using a particular credit source is being aware of it, hence it is imperative to consider the selection problem when investigating the use of credit. Moreover, the fact is that different households' aware different sources of credit through the formation of the household's consideration set in the estimation. We find evidence that suggests that the awareness of credit sources is a necessary, but not sufficient requirement for their use. Besides, broadly formal, semiformal and informal sources attend different segments of the population and it is also obvious from the diverse nature of the impact of the different factors on awareness and uses among all three sources. The employment dummy 'whether the household's main occupation is a government job' has the positive effect on awareness of all formal sources, but it affects negatively on both awareness and use of semiformal sources. Furthermore, even individually within broad sources the direction of the impact of factors, diverse and capture different segments of populations. While adverse shocks dummy 'whether family experiences any negative shocks in last three years' has the positive impact on both knowing and using semiformal source SHGs, however in another semiformal source MFIs it effects negatively. The next chapter supplemented the present chapter by analyzing one of the supply component of rural credit i.e. repayment performance.

# CHAPTER- FIVE

# VARIATION OF INTEREST RATE AND REPAYMENT PERFORMANCE AMONG DIFFERENT CREDIT SOURCES IN RURAL AREAS OF ASSAM

## 5.1. Introduction

Microcredit has been acknowledged as playing a potentially considerable task in sinking household poverty levels (Lashley, 2004; Chowdhury et al., 2005; Brau and Woller, 2004; Ahmad, 2002; Navajas et al., 2000). This is because it addresses the lack of credit that poor households experience (Duy, 2013). Consequentially, households' wellbeing assessed by income, expenditure, asset levels and empowerments was found to be affected by credit stipulation (Khandker, 1998). However, credit provision in rural areas is a risky business for a lender since it may be negatively affected by the duplicitous and opportunistic behavior of the borrowers (Duy, 2013), and it frequently suffers from the lack of reliable information about the borrower and the use of the credit[26].

Manove et al. (2001) argued that lenders typically have modest knowledge of the investment projects that borrowers would like to take on, whereas lenders require to be able to evaluate risk and possible repayment default. In order to be beneficial repayment performance is of key importance for the lenders. Default problems can unfavorably affect lending chance when repayment performance decreases, transforming lenders into welfare agencies instead of viable financial institutions. Further, credit non-payment may lead to lenders avoiding fresh applicant's loan since cash flow management problems, boost in direct proportion to enlarge in non-payment problems (Hunte, 1996). Moreover, Bhatt and Tang (2002) argued that higher repayment rates reflect the competence of the financial institutions services to customers' want and limit the need for cross subvention of the borrowers.

The present chapter emphasises to examine the repayment performance of borrowers. Moreover, the variation of interest rate among different credit sources has also been underlined. Hence, the novelty of the present chapter lies to analyze (a) the way credit provision is structured by

[26] More hazard due to asymmetric information.

comparing repayment of formal, semiformal and informal lending and (b) the major occupation of the borrowers by comparing organized with unorganized.

Though repayment performances have been studied by others (Afolabi, 2010; Ugbomeh et al., 2008; Oladeebo and Oladeebo, 2008; Oke et al., 2007; Hamza, 2007), the present study effort to add to the existing literature by combining both the effects of the loan delivery and the lending to rural households[27]. In addition, a double hurdle approach is attempted to tackle selection bias on lending. Moreover, to check the robustness of the findings, an instrumental variable probit (IVP) model is calculated which controls the potential endogeneity of the loan amount taken out.

### 5.2. Determinants of Repayment: Some Existing Studies

By combining fractions of the principal sum and interest in each payment, repayment, usually takes the form of periodic payments. Each installment is typically estimated as the principal sum and interest due, divided by the number of installments. Otherwise, at maturity, a lump sum with interest is repaid. Credit institutions will attempt to safe repayment by customer selection, monitoring or requesting for collateral or joint liability. The causes of non-repayment can be classified into three main categories (Derban et al., 2005). First, it makes doubtful that the credit will be repaid because of the intrinsic characteristics of borrowers and their business. Second, it creates trouble for borrowers due to the characteristics of the credit institutions and the appropriateness of the credit product to the borrowers. Third, borrowers face risks from outer factors, e.g. economic, political and business environment, which may affect the borrowers' operations and performance.

It was argued that the loan repayment performance of rural borrowers is largely influenced by farmers' characteristics, e.g. years of farming experience and their level of education (Oke et al., 2007; Oladeebo and Oladeebo, 2008; Afolabi, 2010). Credit repayment is found to be affected via social relations, responsibilities of the borrowers besides credit characteristics such as interest rates and the quantity of money borrowed (Ugbomeh et al., 2008; Afolabi, 2010). Additionally, Hamza (2007) pointed that the level of livelihood diversification with the relative importance of non-farm and off-farm income of farm households seems to be essential for the loan repayment of rural borrowers. Besides, the credit repayment rate of the rural households was considerably

[27]But in Assam very limited numbers of study highlights repayment performance of rural borrowers.

influenced by the agroecology, total land holding, total livestock holding, knowledge in the use of agricultural extension services, get in touch with extension agents and income from off-farm activities (Brehanu and Fufa, 2008). Moreover, market characteristics, such as stability of the agricultural commodity prices, are found to affect repayment of credit in rural areas (Ugbomeh et al., 2008).

Laffont and N'Guessan (2000) and Ghatak (2000) recommended that repayment rates of group-based credit may be higher than those of individual borrowers. This is primarily examined through the fact that in a group-based credit the tasks of monitoring, screening, and enforcement of credit repayment are to a large extent shifted from the bank's agent to the group of the credit taker. Indeed, borrowers have more information on each other, can observe each other's investment activity more simply, and may be capable of imposing effective non-pecuniary social sanctions at low cost. The hazard of non-payment by one member will be uniformly shared by the whole group even if the loans are officially obtained individually by each member of the group.

Koopahi and Bakhshi (2002) pointed that repayment performance in individual lending to farmers was affected by socio-economic features of the borrower (e.g. income, education, farming experience), and loan characteristics (e.g. transaction costs, quantity of loan obtained, length of repayment period, bank direction of loan use, waiting time for loan reception). Further, physical capital (e.g. the use of machinery), and community characteristics (e.g. occurrence of natural adversity, cyclic and risky activities) has found to be momentous. Likewise, the repayment rate of group liability contracts depends on the honest exposure of each group member to the accomplishment of the peers' projects (Rai and Sjostrom, 2004). In addition, the group lending repayment rate has found to be influenced by the weekly sales and distance among the members (Wydick, 1999; Karlan, 2007), gender diversity and cultural uniformity (Kevane and Wydick, 2001; Bhatt and Tang, 2002; Armendariz and Morduch, 2005; Karlan, 2007), the task of group office bearer, peer monitoring, social ties, and group size (Madajewicz, 2005; Hermes et al., 2005).

Furthermore, Impavido (1998) argued that group size influences both the ability to provide punishments and level of monitoring. According to him, big groups are more difficult to handle than smaller ones. However, conversely, Madajewicz (2005) observed that a lending institution

gains more from lending to bigger groups, even if these contain a risk of low repayment rates. It is also suggested that group liability and social collateral by borrowers are not a universal remedy to safe repayment. Indeed, it has revealed that joint liability alone cannot lessen an ex-ante moral hazard dilemma (Chowdhury, 2005). By using a household bargaining model Van Tassel (2004) analyzed that a group member can invest the loan amount in risky business projects beyond his or her capacity to pay back the credit despite the fact that other members are also accountable for repaying the debts. The motivation of the borrower may be that he/she thinks the other members would be willing to pay back the credit in order to save their future credits.

### 5.3. Repayment Models

To examine the determinants of repayment, a number of econometric models have been used. Oke et al. (2007) and Afolabi (2010) analyzed the determinants of repayment performance by multiple regression models. The dependent variable in these models for individual repayment was recognized as the proportion of the loan repaid. Vigenina and Kritikos (2004) used a dummy variable for repayment performance and estimate a probit model. Here the dummy variable indicated whether or not repayments of monthly installments were made according to schedule time. Likewise, Kohansal and Mansoori (2009) implemented a logit model to study whether farmers were delayed in repaying.

However, approximately all studies have not identified the possible endogeneity of the credit amount on repayment, nor have they accounted for the likely selection bias of borrowing. Therefore, the present study has used two different models to avoid these problems. The first model is a double hurdle model, through the choice of taking out a credit considered as the first hurdle, whereas repaying is the second hurdle. Here, the first hurdle (credit amount) is instrumented in the second hurdle (repayment model). Subsequently, an instrumented probit model is calculated which has the benefit that two equations in the models are calculated concurrently.

Here, the dependent variable is a dummy variable with a value of one if the borrower repaid the loan and interest within loan maturity and zero if otherwise[28]. Studies like Ugbomeh et al. (2008) and Afolabi (2010), established that the credit size has an effect on repayment performance. Nevertheless, possibly this credit size is endogenous to repayment routine, since borrowers with good repayment routine may also borrow bigger amounts. Therefore, an anticipated credit amount resulting from a tobit model is supplemented to the model together with household, community and program characteristics.

### 5.4. Econometric Formulation of Double Hurdle Model

In our study, double hurdle model consists of tobit and probit models. Tobit model is used for censored data (Tobin, 1957). The credit size is taken to be censored to the left (zero credit amounts for non-borrowers). Taking out a credit (credit amount > 0) is undertaken as the first hurdle. Suppose there is an unobservable (i.e. latent) variable $C_i^*$ which linearly depends on $M_i$ via parameters $\alpha_i$. The observable variable $C_i^*$ for borrower 'i' is expressed as follows:

$C_i^* = \alpha_i M_i + U_i$

The random errors $U_i$ are supposed to be independent and normally distributed. The calculated credit amount is saved and introduced as an independent variable in the probit model of credit repayment, which is the second hurdle analyzed.

A Probit model is used to examine the repayment routine of the borrowers. The household's choice to repay the credit is assumed to be affected by household, location, credit and economic characteristics. The probit Model can be written as:

$H_i^* = \Psi_i N_i + \Omega C_i^{\wedge} + V_i$

Here $H_i^*$ is a dummy that a household repays the loan and it indicates the probability that a household 'i' has repaid the loan to the financial institutions within specified criteria. $N_i$ is a vector of exogenous household, location and loan variables that have an effect on $H_i^*$. $C_i^{\wedge}$ is the expected loan size estimated from Tobit model. $\Psi_i$ and $\Omega$ are the subsequent parameters of $N_i$

[28]For semiformal and informal- whether the borrowers repaid last two year loan and interest amount in current year i.e. in the third year. Because there do not have any loan maturity period and specific time limit for repayment in both sources. Therefore, this definition of repayment will assist to understand borrower's burden of loans and interest amount, and aid to identify how they handle these burdens.

and $C_i^{\wedge}$. The variable $H_i^*$ is not observed, however, we observe if the household has repaid the installments within maturity or not, where $H_i^* = 1$ if $H_i^* > 0$ and $H_i^* = 0$ if $H_i^* \leq 0$.

### 5.5. Econometric Formulation of Instrumental Variable Probit Model

Instrumental variable probit is a maximum-likelihood estimation substitute to facilitate models with dichotomous dependent variables and endogenous explanatory variables (Newey, 1987). Assume a linear statistical model in which the continuous dependent variable will be called $H^*_{1i}$ but it is not directly observed. The model can be defined as:

$H^*_{1i} = \alpha_i H_{2i} + £_i Z_i + U_i$

$H^*_{2i} = \Psi_1 Z_i + \Psi_2 K_i + V_i$

Where 'i' = 1, 2, 3, 4……..n; $H^*_{1i}$ is a dichotomous dependent variable; $H_{2i}$ is a vector of endogenous variables; $Z_i$ is a vector of exogenous variables; $V_i$ is the vector of instruments that satisfy conditions of instrumental endogeneity and relevance; $\alpha_i$ and $£_i$ are vectors of structural parameters; $\Psi_1$ and $\Psi_2$ are matrices of reduced form parameters. The $H^*_{2i}$ equation is written in reduced form and both equations are estimated simultaneously using maximum-likelihood alternatives. As a discrete choice model, $H^*_{1i}$ is not observed because the model instead fits $H_{1i}$ for $H^*_{1i} > 0$ and $H_{1i} = 0$ for $H^*_{1i} < 0$.

Here, the IVP model is constructed under the assumption that credit reimbursement decisions may be undertaken at the same time when the credit size is obtained. Therefore, the expected credit size variable is incorporated in the estimating equation as an instrumented variable. The model can be constructed as follows:

$H^*_{1i} = \alpha_0 + \alpha \text{ In (loansize}_i) + £Z_i + U_i$

$\text{In (loansize}_i) = \Psi_1 Z_i + \Psi_2 K_i + V_i$

Where $H^*_{1i}$ is the same binary dependent variable like in the above equation. ln ($\text{loansize}_i$) the instrumental variable ($H^*_{2i}$) in this model, is the log transformation of the credit amount variable; $Z_i$ is the set of variables comprising household, location, and loan characteristics as introduced above; $K_i$ is the set of variables associated with socioeconomic characteristics of households.

### 5.6. Description of Variables and Descriptive Statistics

Based on the literature and theoretical considerations, a set of explanatory factors is derived for repayment and use of credit sources. Table 5.1 presents the description of the variables, hypothesized relation, and the definition behind choosing the particular variable. The credit source-wise summary statistics of variables are presented in Table 5.2 and Table 5.3. Table 5.2 points that the average amount of money borrowed from all sources is ₹73982.6 and the overall weighted interest rate is 53.92% per annum. Similarly, the average amounts of loan for formal, semiformal and informal sources are ₹172508, ₹12974.8 and ₹11416.1 respectively, and the interest rates of the same are 11.33%, 49.95% and 67.53% per annum respectively. Thus, we can understand the tiny loan size and higher interest rate in semiformal and informal sources.

Further, Table 5.3 indicates that average family income of formal borrowers (₹230166.7) higher than the semiformal (₹110015.3) and informal borrowers (₹109270.1). Similarly, average family income spends on subsistence, medical and productive activities are also higher among formal borrowers in comparison with semiformal and informal borrowers.

As expected the percentages of government job holder households is greater among formal borrowers (48.6%) followed by informal borrowers (16.1%). Likewise, the average years of schooling of household head are 9.3 among formal borrowers, followed by 6.2 years in semiformal borrowers. Indeed, 66.4% informal borrowers experience any negative shocks followed by 59.7% households among formal borrowers. While 87.5% formal borrowers' household saves any money, the percentages are 64.1 and 62 respectively for semiformal and informal borrowers. Alike, heads of formal borrower's households were relatively older than those of semiformal and informal borrower's household. Hence, approximately in all borrowers, lenders and location-specific characteristics, formal borrowers are in the superior position with respect to semiformal and informal borrowers.

## Table 5.1 Variables Included in the Regression for Double Hurdle and Instrumental Variable Probit Models

| **Dependent Variable for Probit: Dichotomous:** Whether borrowed money from different sources (separately for formal, semiformal and informal) paid within maturity period; **Dependent Variable for Tobit:** Amount of borrowed money from different sources (separately for formal, semiformal and informal); **Dependent Variable for IVP (first equation): Dichotomous:** Whether borrowed money from different sources (separately for formal, semiformal and informal) paid within maturity period; **Dependent Variable for IVP (Instrumented):** Log of money borrowed from different sources (separately for formal, semiformal and informal) | | | |
|---|---|---|---|
| **Explanatory Variables** | **Notation** | **Definition** | **Hypothesized Relation** |
| **Borrower's Characteristics** | | | |
| **Formal Borrowed Money** | **$FBM_i$** | Log of the amount of money borrowed from formal sources in last three years | + |
| **Semiformal Borrowed Money** | **$SBM_i$** | Log of the amount of money borrowed from semiformal sources in last three years | - |
| **Informal Borrowed Money** | **$IMB_i$** | Log of the amount of money borrowed from informal sources in last three years | - |
| **Age of Household Head** | **$AHH_i$** | It measures the working ability of the household head | |
| **Occupation** | **$GJ_i$** | Dummy: Whether the main income source of household is government job; D=1 if it is govt. job and 0, otherwise | + |
| **Family Members** | **$NFM_i$** | Number of family members in the respondent households | +/- |
| **Family Income** | **$FI_i$** | Household income per annum | + |
| **Spends on Subsistence** | **$ISS_i$** | Household income spends on subsistence per annum | +/- |
| **Spends on medical** | **$ISM_i$** | Household income spends on medical per annum | +/- |
| **Spends on Investment** | **$ISI_i$** | Household income spends on agriculture and any other productive activities per annum | +/- |
| **Son/Daughter Earn Income** | **$SDI_i$** | Dummy: Whether son/daughter earn income in the family; D= 1 if so and 0, otherwise | + |
| **Dependent Members** | **$NDM_i$** | No of dependent members who do not earn any income in the family | - |
| **Negative Shocks** | **$DNS_i$** | Dummy: Whether family face any negative shocks in the last three years; D= 1 if so and 0, otherwise | - |
| **Save Money** | **$DSM_i$** | Dummy: Whether family saves any money; D= 1 if so and 0, otherwise | + |
| **Physical Assets** | **$VPA_i$** | The Value of physical assets of the households: it may measure the collateral value of the households | +/- |
| **$Age^2$** | **$AGESQ_i$** | The Square of the age of household head: it may measure the life cycle effects. | + |
| **Other Loan** | **$OL_i$** | Dummy: Whether loan taken from others apart from studied sources; D=1 if so and 0, otherwise | + |
| **Household Head Male** | **$HHM_i$** | Dummy: Whether household head is male; D=1 if so and 0, otherwise | +/- |
| **Education** | **$HHED_i$** | Education of the household head in terms of the numbers of years of schooling | + |
| **Lenders Characteristics** | | | |
| **Distance to Formal Sources** | **$DFS_i$** | Distance to formal bank branch from the households house | - |
| **Formal Interest Rate** | **$R_{fi}$** | Interest rate of formal loan per annum | - |
| **Semiformal Interest Rate** | **$R_{sfi}$** | Interest rate of semiformal loan per annum | - |
| **Informal Interest Rate** | **$R_{Ii}$** | Interest rate of informal loan per annum | - |
| **Duration of Formal Loan** | **$DFL_i$** | Duration of repayment of loan borrowed from formal sources | + |
| **Predicted Formal Loan** | **$PFL_i$** | The Predicted value of formal loan borrowed: Calculated from Tobit model | + |
| **Predicted Semiformal Loan** | **$PSFL_i$** | The Predicted value of semiformal loan borrowed: Calculated from Tobit model | - |
| **Predicted Informal Loan** | **$PIL_i$** | The Predicted value of informal loan borrowed: Calculated from Tobit model | - |
| **Location Specific Characteristics** | | | |
| **District Dummy** | **$LB_i$ and $LN_i$** | Dummy: To test variations across districts; Here Baksa district is taken as base category; therefore, LB= 1 if Barpeta and 0, otherwise; LN= 1 if Nalbari and 0, otherwise | +/- |
| **Distance to Market Place** | **$DMP_i$** | It measures the effect of market linkage on money borrowing and repayment | - |

**Table 5.2 Descriptive Statistics of Credit Amount (₹) and Interest Rate (p/a)**

| Statistics | Over all | | Formal | | Semiformal | | Informal | |
|---|---|---|---|---|---|---|---|---|
| | Amount | Interest rate (%) | Amount | Interest rate (%) | Amount | Interest rate (%) | Amount | Interest rate (%) |
| **Mean** | 73982.55 | 53.92 | 172508.3 | 11.33 | 12974.81 | 49.95 | 11416.06 | 67.53 |
| **Standard Deviation** | 155792.26 | 29.51 | 226322 | 1.501 | 14674.92 | 22.223 | 19463.44 | 28.143 |
| **Observations** | 212 (88.33) | 212 | 72 (33.96) | 72 | 131 (61.79) | 131 | 137 (64.62) | 137 |

Source: Field Survey; Note: Figures in the parentheses represent % of households

**Table 5.3 Credit Source-Wise Descriptive Statistics of Variables (Amount in ₹)**

| Variables | Formal | Semiformal | Informal |
|---|---|---|---|
| **Mean Value** | | | |
| $AHH_i$ | 53.14 | 44.85 | 45.8 |
| $AGESQ_i$ | 3065.9 | 2222.4 | 2286.4 |
| $DMP_i$ | 6.8 | 6.6 | 6.8 |
| $NFM_i$ | 6.3 | 5.4 | 5.63 |
| $FI_i$ | 230166.7 | 110015.3 | 109270.1 |
| $ISS_i$ | 67583.33 | 49923.7 | 51591.24 |
| $ISM_i$ | 2526.4 | 1573.3 | 1409.5 |
| $ISI_i$ | 39550 | 20574.1 | 16826.3 |
| $DFS_i$ | 7.3 | 7.6 | 8.3 |
| $VPA_i$ | 679861 | 334198.5 | 242408.7591 |
| $NDM_i$ | 4.03 | 3.25 | 3.55 |
| $HHED_i$ | 9.3 | 6.2 | 5.7 |
| $DFL_i$ | 5.4 | -- | -- |
| **Proportion of Households Under Categorical Variables** | | | |
| $GJ_i$ | 35 (48.6) | 19 (14.5) | 22 (16.1) |
| $HHM_i$ | 47 (74.6) | 61 (73.5) | 50 (75.8) |
| $SDI_i$ | 37 (51.4) | 52 (39.7) | 54 (39.4) |
| $DNS_i$ | 43 (59.7) | 77 (58.8) | 91 (66.4) |
| $WOAB_i$ | 16 (22.2) | 13 (9.8) | 53 (38.6) |
| $DSM_i$ | 63 (87.5) | 84 (64.1) | 85 (62) |
| $OL_i$ | 47 (65.3) | 93 (71) | 101 (73) |
| $LB_i$ | 23 (31.94) | 52 (39.69) | 46 (33.58) |
| $LN_i$ | 29 (40.28) | 53 (40.46) | 51 (37.23) |

Source: Field Survey; Note: Figures in the parentheses represent % of households; WOAB: Economic condition worse off after borrowing

## 5.7. Credit Source-Wise Repayment Performance

Table 5.4 presents the repayment performance by type of households and borrowers in the study. It reveals that in formal sources, altogether 54.2% households repaid the money within maturity period, and 68.6% and 40.5% respectively for the government job (organized employs) and non-government job holder (unorganized employs) households. In general, the percentage is higher in Nalbari district (55.2%) and lowest in Baksa (55.0%). Although, among government job holder formal borrowers, the percentage is highest in Nalbari (76.5%) and lowest in Baksa (55.6%), but amongst unorganized employs the percentage is lower in Nalbari (25%) and maximum in Baksa (54.5%).

Moreover, it indicates that overall among semiformal borrower households, 50.4% households repaid the last two years borrowed money in the third year with interest amount, and the percentages are 63.2 and 48.2 respectively for government and non-government job holder households. The percentage is highest in Baksa (57.7%) and lowest in Barpeta (46.2%). Similarly, for government and non-government job holder households the percentage is higher in Baksa (75% and 54.5%, respectively), and lowest in Barpeta (50% and 45.8% respectively).

Furthermore, in informal sources in general 42.3% households repaid the loan amount within a specified time, and the percentages are 50 and 41.7 for government and non-government job holder borrowers respectively. In general, the percentage is maximum in Baksa (65%) and lowest in Barpeta (30.4%). However, among government and non-government job holder households, the percentage is higher in Baksa (100% and 58.8%, respectively) and lowest in Nalbari (20%) and Barpeta (27.5%) respectively.

Thus, repayment performance is superior among formal borrowers, followed by semiformal and informal borrowers. While occupation-wise it is prominent among organized employs, but among three districts, it is relatively enhanced in Baksa.

**Table 5.4 Repayment Performance by Credit Source-Wise and Household Activity-Wise**

| Districts | Formal | | | | | |
|---|---|---|---|---|---|---|
| | Overall | Govt. Job (Organized) | Non-govt. job (Unorganized) | Overall (Observations) | Govt. Job (Observations) | Non-govt. Job (Observations) |
| **Overall** | 39 (54.2) | 24 (68.6) | 15 (40.5) | 72 | 35 | 37 |
| **Baksa** | 11 (55.0) | 5 (55.6) | 6 (54.5) | 20 | 9 | 11 |
| **Barpeta** | 12 (52.2) | 6 (66.7) | 6 (42.9) | 23 | 9 | 14 |
| **Nalbari** | 16 (55.2) | 13 (76.5) | 3 (25.0) | 29 | 17 | 12 |
| | **Semiformal** | | | | | |
| **Overall** | 66 (50.4) | 12 (63.2) | 54 (48.2) | 131 | 19 | 112 |
| **Baksa** | 15 (57.7) | 3 (75.0) | 12 (54.5) | 26 | 4 | 22 |
| **Barpeta** | 24 (46.2) | 2 (50.0) | 22 (45.8) | 52 | 4 | 48 |
| **Nalbari** | 27 (50.9) | 7 (63.6) | 20 (47.6) | 53 | 11 | 42 |
| | **Informal** | | | | | |
| **Overall** | 58 (42.3) | 11 (50.0) | 48 (41.7) | 136 | 22 | 115 |
| **Baksa** | 26 (65.0) | 6 (100) | 20 (58.8) | 40 | 6 | 34 |
| **Barpeta** | 14 (30.4) | 3 (50.0) | 11 (27.5) | 46 | 6 | 40 |
| **Nalbari** | 18 (35.3) | 2 (20.0) | 17 (41.5) | 50 | 10 | 41 |

Source: Authors' Estimation from Field Survey; Note: Figures in the parentheses represent % of households

### 5.8. Credit Source-Wise Determinants of Repayment

The repayment performance is expected to be influenced by a set of household, location and credit program variables. The loan amount obtained by households is modeled by a Tobit model (Table 5.5) and the repayment performance is estimated in the probit and IVP models (Table 5.6 and Table 5.7 respectively). The results of the Tobit model in Table 5.5 show that the loan size is influenced by household characteristics (i.e. age of household's head, square of the age of household head, the main occupation of the households, number of family members, family income, household spend income on subsistence and medical, etc.), asset endowment (value of physical assets and households spend income on productive activities), and location of the household (distance to formal bank, distance to main marketplace, experience any negative shocks and living district of households). Nevertheless, the direction of causality of the factors influencing household participation in the rural credit market is remarkably different among all three credit sources.

Table 5.6 and Table 5.7 estimated the coefficients of the determinants of repayment performance by type of borrowers as calculated from a probit model (double hurdle model) and an IPV model respectively. From these results, we observe that rise in the interest rate has the negative impact on the probability of repaying a formal and semiformal loan on specified time, however, its effects positively on the probability of repaying the informal credit. Thus, informal borrowers need to repay the borrowed money within a specified time irrespective of interest rate. Sometimes they forced to sell their property and home assets for repayment of an informal loan. As field data shows that 38.6% informal borrowers acknowledged worsening economic condition after borrowing while 9.8% and 22.2% respectively for semiformal and formal sources (Table 5.3). In addition, farmers seem to have taken out relatively smaller loans, with a short duration and high interest rates. This would typically involve loans used to buy inputs such as seed, fertilizers, and pesticides; hence small investments of relatively low risk. Additionally, for farmers, but also for other households, good repayment performance is a guarantee to receive future loans (Desai and Mellor, 1993).

**Table 5.5 Determinants of Credit Amount of Formal, Semiformal and Informal Sources Obtained by Tobit Model**

| Variables | Formal | | Semiformal | | Informal | |
|---|---|---|---|---|---|---|
| | Coefficient | t Statistics | Coefficient | t Statistics | Coefficient | t Statistics |
| $AHH_i$ | 11.01** (7.32) | -1.54 | 17.78** (5.72) | -3.14 | -11.73** (7.01) | -2.38 |
| $AGESQ_i$ | 8.37* (2.67) | 2.28 | 17.15* (5.68) | 3.02 | 15.59* (6.19) | 2.51 |
| $DMP_i$ | 3.67 (1.06) | 1.27 | -5.31** (7.85) | -0.86 | 12.57 (1.89) | 0.21 |
| $GJ_i$ | 3.48** (1.87) | -0.64 | -6.82*** (1.02) | -0.43 | -6.44** (5.13) | 1.42 |
| $NFM_i$ | -5.34 (8.87) | -3.45 | -7.61* (4.15) | -0.62 | 4.64*** (1.74) | 0.15 |
| $FI_i$ | 1.28* (0.24) | 5.31 | -0.08** (0.02) | -3.22 | -0.02** (0.02) | -0.80 |
| $ISS_i$ | -0.83** (1.07) | -0.77 | 0.15*** (0.09) | 1.75 | 0.22** (0.09) | 2.31 |
| $ISM_i$ | -6.83* (2.45) | -3.76 | 2.95** (1.19) | 2.48 | 0.41** (1.40) | 0.29 |
| $ISI_i$ | 2.35** (0.74) | 3.16 | -0.16*** (0.08) | -2.15 | -0.26** (0.08) | -3.07 |
| $SDI_i$ | 8.07** (4.12) | -1.61 | 1.61 (1.80) | 0.58 | -6.71 (1.14) | -1.12 |
| $NDM_i$ | 1.57 (2.10) | 3.79 | 4.87** (8.12) | 0.62 | 8.28 (4.87) | 2.04 |
| $DNS_i$ | -5.22** (6.53) | -0.71 | 6.56** (1.56) | 0.73 | 9.27** (8.43) | 1.87 |
| $DSM_i$ | 4.90*** (6.88) | 2.80 | 7.54 (4.48) | 3.18 | -7.33** (1.92) | 0.91 |
| $VPA_i$ | 0.12* (0.04) | 2.78 | 0.01 (0.00) | 1.85 | 0.01 (0.00) | -1.15 |
| $DFS_i$ | -10.61** (3.63) | -1.84 | 3.51 (5.18) | -0.79 | 8.52** (3.53) | 0.54 |
| $LB_i$ | 4.5* (3.35) | -2.19 | 6.63** (2.43) | 3.92 | 3.49*** (5.36) | 0.93 |
| $LN_i$ | -0.2** (0.45) | 1.23 | 2.97*** (4.91) | 5.02 | 9.2** (4.36) | 3.16 |
| Constant | -9.6** (9.3) | -0.48 | 61.53** (10.7) | 1.89 | 49.60** (7.22) | 0.16 |
| Sigma | 96.5 (42.14) | --- | 92.43 (10.05) | --- | 18.31 (8.58) | --- |
| Pseudo $R^2$ | 0.49 | --- | 0.32 | --- | 0.55 | --- |
| Log Likelihood | -48.89 | --- | -115.08 | --- | -182.74 | --- |
| Censored | 168 | | 109 | | 103 | |
| Uncensored | 72 | | 131 | | 137 | |
| Observations | **240** | --- | **240** | --- | **240** | --- |

Note: Figures in the parentheses represent Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%

The age of the household head, which measures the working ability has a positive impact on the probability of repaying the formal money in time while in the semiformal and informal loan it effects negatively. This result indicates the unorganized and the unstable income stream among semiformal and informal borrowers. The data also indicate that 32.1% and 21.7% semiformal borrowers the main occupation is farming and manual labor respectively. Similarly, the percentages are 27 and 23.2 respectively, for informal borrowers (Appendix Q). The square of the age of household head, which measures life cycle effects, shows the insignificant result for all credit sources. This is because of the fact that household head may repay all borrowed money prior to an older age (as their economic activities become mature or profitable) or might be repaid by their relatives and spouse.

Equally, the variable distance to main market place influences negatively on the probability of repaying the informal credit, on the other hand, it shows insignificant for formal and semiformal sources. This result highlights that the lack of market linkage or unprofitable and unorganized market is one of the factors of loan default by informal borrowers. Moreover, the insignificant

result among formal and semiformal borrowers argues the nature of unproductive investment by rural borrowers, whilst data shows that 38.89% formal borrowers use credit money on agriculture. In addition, 35.1% and 19.1% semiformal borrowers spend their loan money in daily needs and illness respectively. Similarly, among informal borrowers, 23.9% and 21% uses their credit money in agriculture and daily needs respectively.

The occupational dummy GJ has the positive influence on the probability of repaying all sources of credit within a specified criterion in comparison with the probability of other unorganized employs households. Our result is divergent with the findings of Duy (2013), where he has found the positive relation between repayment performance and farming activities. As data also argue that the repayment rate of government job holder households are 68.6%, 63.2% and 50% respectively for formal, semiformal and informal credit sources (Table 5.4). Fernaldo (2008) argued that returns in agriculture are not only more volatile, but also generally lower than those in more rural commercial and non-farm activities. In addition, Raghunathan et al. (2011) recommended that loans for agriculture have poorer repayment rates, because many loans are being provided for small businesses as opposed to agricultural purposes.

**Table 5.6 Determinants of Repayment Estimated by the Double Hurdle Model**

| Variables | Formal | | Semiformal | | Informal | |
|---|---|---|---|---|---|---|
| | Coefficient | Z Statistics | Coefficient | Z Statistics | Coefficient | Z Statistics |
| $R_{fi}$ | -0.24* (0.17) | -1.39 | -- | -- | -- | -- |
| $R_{sfi}$ | -- | -- | -0.01** (0.01) | 1.17 | -- | -- |
| $R_{ii}$ | -- | -- | -- | -- | 0.01* (0.01) | 1.48 |
| $AHH_i$ | 0.11** (0.09) | 1.24 | -0.11** (0.07) | 1.53 | -0.03** (0.06) | 0.51 |
| $AGESQ_i$ | -0.01 (0.02) | -0.89 | -0.03 (0.02) | -1.75 | -0.09 (0.05) | -0.28 |
| $DMP_i$ | 0.09 (0.07) | 1.27 | 0.02 (0.05) | 0.51 | -0.14** (0.05) | 2.89 |
| $GJ_i$ | 0.58* (0.50) | 1.16 | 1.77** (0.66) | 2.68 | 0.61* (0.48) | 1.28 |
| $NFM_i$ | -0.05 (0.14) | -0.37 | 0.30 (0.14) | 2.17 | 0.09** (0.11) | 0.86 |
| $FI_i$ | 9.98** (2.20) | 0.05 | 1.04** (2.53) | -0.04 | 5.61* (1.91) | -0.29 |
| $SDI_i$ | -- | -- | 0.72* (0.46) | -1.54 | 0.60** (0.41) | -1.49 |
| $NDM_i$ | -0.14** (0.17) | 0.83 | -0.55* (0.19) | -2.86 | -0.19** (0.14) | -1.42 |
| $DNS_i$ | -0.54** (0.51) | 1.07 | -0.42** (0.27) | -1.53 | -0.87 (0.28) | 3.03 |
| $VPA_i$ | 1.05* (3.58) | -0.29 | 1.27* (3.62) | -0.35 | 1.09** (6.18) | -1.77 |
| $LB_i$ | 0.27* (0.52) | -0.52 | -0.22** (0.41) | 0.54 | 0.86** (0.37) | -2.40 |
| $LN_i$ | 0.42** (0.64) | 0.66 | -0.31* (0.54) | 0.58 | 0.59* (0.39) | -1.49 |
| $OL_i$ | -0.47*** (0.45) | -1.05 | -0.65* (0.32) | -2.01 | 0.10** (0.31) | -0.33 |
| $DFL_i$ | 0.02** (0.14) | 0.17 | -- | -- | -- | -- |
| $HHM_i$ | -0.24* (0.46) | -0.54 | -0.99** (0.32) | -3.08 | 0.59** (0.33) | -1.80 |
| $HHED_i$ | 0.05** (0.07) | 0.76 | -0.02* (0.04) | -0.47 | -0.01** (0.04) | 0.36 |
| $PFL_i$ | 3.22* (8.67) | 0.37 | -- | -- | -- | -- |
| $PSFL_i$ | -- | -- | -0.08** (0.04) | -1.10 | -- | -- |
| $PIL_i$ | -- | -- | -- | | 2.36* (0.00) | 0.20 |
| Constant | -2.11* (3.16) | -0.67 | -0.98* (1.90) | -0.51 | -1.68** (1.68) | -1.00 |
| Log Likelihood | -41.16 | -- | -69.05 | -- | -71.98 | -- |
| Pseudo $R^2$ | 0.45 | -- | 0.50 | -- | 0.52 | -- |
| Observations | **72** | **--** | **131** | **--** | **137** | **--** |

Note: Figures in the parentheses represent Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%

Indeed, the number of family members has the positive influence on the probability of repaying informal credit within specified time, while for other two sources it is insignificant. This may be because the earning capacity of the family increases with the expansion of the family members. As expected family income has the positive impact on the probability of repaying borrowed money within a specified time for all credit sources and the effect is highest among formal borrowers followed by informal borrowers. Moreover, the son/daughter earning family has the higher probability of repaying borrowed money within specified criteria in comparison with non-earning households, and here the effect is positive for semiformal and informal credit sources. However, unfortunately, only 39.7% and 39.4% borrower's household's son/daughter earn any income among semiformal and informal borrowers respectively (Table 5.3). Alike, no of dependent members have the negative influence on the probability of repaying for all credit sources and the effect is greatest on semiformal sources followed by informal sources.

Household's experiences any negative shocks have more chance to default with respect to households without any negative shocks. Here the effect is significant and negative for formal and semiformal sources, but insignificant among informal borrowers. Thus, a majority of borrower's repayment rate turns down because of illness and expansion of medical expenditure since data refers that 32.56%, 36.84%, and 33.33% households face negative shocks in the form of illness among formal, semiformal and informal borrowers respectively (Appendix R).

Similarly, as expected, the value of physical assets which measures collateral has the positive effect on the probability of repaying for all credit sources. This finding is consistent with the result of Zeller et al. (2001), Okurut (2006), and Duy (2013) where they argued total land owned is an important determinant of access to credit and repayment. It reveals that poor people are more defaulters with respect to rich and asset holding peoples because they do not have assets or have very limited physical assets to provide as collateral. While the average value of physical assets with formal borrowers is ₹679861 but, the values are only ₹334198.5 and ₹242408.76 respectively for semiformal and informal borrowers (Table 5.3).

Further, the district dummy LB and LN has the positive effect on the probability of repaying formal and informal credit within specified time, while the negative effect on semiformal credit in comparison with the probability of Baksa district. However, data demonstrate that repayment performance of Baksa district is moderately healthier than other two studied districts (Table 5.4).

Furthermore, the dummy OL has the negative effect on the probability of repaying the formal and semiformal credit, while it affects positively on informal credit. This result indicates that multiple borrowing hinders the repayment performance among rural borrowers, but the negative effect on informal credit suggests the repayment of the informal loan from alternative sources because of the stress accomplished by informal lenders. Data shows that 73% borrowers have taken credit from other sources apart from informal sources (Table 5.3).

Households with a male household head has a negative effect on probability of repaying formal and semiformal loan in comparing with the households of women's household head, but in informal sources its effect positively. This argues that women borrowers are more credit worth by comparing to men, and in line with the findings of Roslan and Mohd Zaini (2009) and Sharma and Zeller (1997). Women are generally considered to be better borrowers because they are less

likely to spend the loans on non-productive expenditure (e.g. cigarettes or alcohol), they tend to be less mobile (e.g. risk to disappear with the money) and they are more likely to spend the money on the well-being of the households (e.g. food and education). Lending to women may open more opportunities for them to handle the household's income-generating activities and lead to their economic empowerment.

**Table 5.7 Determinants of Repayment Estimated by the Instrumental Variable Probit Model**

| Variables | Formal | | Semiformal | | Informal | |
|---|---|---|---|---|---|---|
| | Reduced Form ($1^{st}$) | Endogenous Regressors ($2^{nd}$) | Reduced Form ($1^{st}$) | Endogenous Regressors ($2^{nd}$) | Reduced Form ($1^{st}$) | Endogenous Regressors ($2^{nd}$) |
| **VPA** | 1.19* (7.89) | -- | 1.04** (0.09) | -- | 1.69** (1.53) | -- |
| **$FBM_i$** | -- | 1.05** (1.96) | -- | -- | -- | -- |
| **$SBM_i$** | -- | -- | -- | 0.11** (1.68) | -- | -- |
| **$IBM_i$** | -- | -- | -- | -- | -- | -1.29** (1.86) |
| **$HHED_i$** | 0.02** (0.01) | -- | -0.02* (0.01) | -- | -0.02** (0.01) | -- |
| **$R_{fi}, R_{sfi}, R_{ii}$** | -0.02*** (0.04) | -0.22** (0.17) | -0.01* (0.00) | 0.01** (0.01) | 0.05* (0.20) | 0.01** (0.01) |
| **$AHH_i$** | 0.02* (0.02) | 0.09 (0.08) | -0.04* (0.02) | 0.08 (0.09) | -0.05** (0.02) | -0.02* (0.09) |
| **$AGESQ_i$** | -0.04 (0.06) | -0.09** (0.20) | 0.06* (0.40) | -0.20* (0.00) | 0.70 (0.30) | 0.60* (0.00) |
| **$DMP_i$** | 0.01 (0.01) | 0.10 (0.07) | -0.05 (0.01) | 0.02 (0.09) | -0.02** (0.01) | 0.09 (0.06) |
| **$GJ_i$** | 0.23** (0.11) | 0.40** (0.63) | 0.28** (0.16) | 1.67** (0.72) | 0.28** (0.12) | 0.81** (0.65) |
| **$NFM_i$** | 0.05 (0.03) | -0.14** (0.16) | -0.04 (0.04) | 0.24** (0.16) | 0.03** (0.03) | 0.12 (0.13) |
| **$FI_i$** | 4.79** (5.08) | 6.53*** (2.08) | 4.08* (7.87) | -1.18** (1.85) | 1.34* (4.66) | 5.07** (2.93) |
| **$SDI_i$** | -- | -- | 0.03** (0.13) | -0.54 (0.48) | 0.09** (0.11) | -0.55** (0.44) |
| **$NDM_i$** | -0.01** (0.04) | 0.15** (0.17) | -0.01** (0.04) | -0.52 (0.20) | -0.05** (0.03) | -0.22** (0.16) |
| **$DNS_i$** | -0.22* (0.11) | 0.75** (0.73) | -0.02** (0.08) | -0.46** (0.30) | -0.07** (0.07) | 0.98** (0.33) |
| **$LB_i$** | 0.24** (0.12) | -0.48* (0.73) | -0.01* (0.12) | 0.20* (0.42) | 0.13* (0.10) | -0.67* (0.42) |
| **$LN_i$** | 0.24*** (0.13) | 0.24** (0.57) | -0.18* (0.13) | -0.09** (0.51) | 0.07** (0.11) | -0.35** (0.43) |
| **$OL_i$** | -0.15* (0.09) | -0.39* (0.44) | -- | -- | 0.70** (0.08) | -0.13** (0.33) |
| **$DFL_i$** | 0.25*** (0.03) | -0.26** (0.55) | -- | -- | -- | -- |
| **$HHM_i$** | -0.05* (0.10) | -0.21** (0.45) | 0.21** (0.09) | -1.03* (0.47) | 0.09** (0.09) | -0.71* (0.33) |
| **Constant** | 3.05*** (0.69) | -5.06*** (7.35) | 5.70** (0.55) | -0.50** (8.85) | 4.75* (0.46) | 3.89** (8.40) |
| **$R^2$** | 0.84 | -- | 0.33 | -- | 0.35 | -- |
| **Wald $Chi^2$** | -- | 13.63 | -- | 22.94 | -- | 27.06 |
| **Observations** | **72** | **72** | **131** | **131** | **137** | **137** |

Note: Figures in the parentheses represent Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%

By contrasting with the results of Eze and Ibekwe (2007), Bhatt and Tang (2002) and Duy (2013), the variable household heads education has the negative impact on the probability of repaying the semiformal and informal credit, while its effect is positive on repayment of the formal loan. This may be because borrowers provide less importance on informal credit and try to concentrate on formal credit with their educational level.

Additionally, predicted loan amount has positive effect on the probability of repaying formal and informal credit, while its effect is negative on probability of repaying semiformal credit. This result is consistent with the result of Duy (2013), even though the author only studied repayment

determinants of farmers and nonformers in Vietnam. Indeed, smaller loans are more likely to be repaid in time in group-based schemes, while larger loans are repaid in time by individual borrowers. This may be explained by the difference in the social-economic position of the borrowers in the different sources. Group-based borrowers are poorer in line with the targeting of lending institutions. The repayment of small loans seems for them easier than repaying large loans. Individual borrowers are relatively better endowed and have higher income levels. We can assume that the larger loans are used for more expensive projects and that increases their probability to take out credit in the future.

### 5.9. Conclusion

Credit repayment estimations are often biased and incompetent because of not identifiability of possible endogeneity of the credit amount on repayment, nor have accounted for the likely selection bias of borrowing. The present chapter attempted to stipulate and estimate the repayment performance of rural borrowers and tried to have an understanding about the paradox, whether heterogeneous determinants of repayment affect differently across credit sources by applying a double hurdle approach and instrumental variable probit model. The study contains borrowers of formal, semiformal and informal sources. The study observed better repayment performance among formal borrowers, followed by semiformal and informal borrowers. Whilst occupation-wise it is prominent among organized employs, but among three districts, it is relatively enhanced in Baksa. In general, household characteristics (occupation, educational level of the household head, family income, physical assets, etc.), loan characteristics (expected loan amount, interest rate, and distance to formal sources) and location-specific characteristics (district dummy and distance to main market place) significantly affect repayment performance. However, the nature of causality of the factors influencing repayment performance in the rural credit market is remarkably different among all three credit sources. The subsequent chapter supplemented current chapter by testing the hypothesis that credit access has influenced on poverty diminution in the rural framework

# CHAPTER- SIX

## SEMIFORMAL CREDIT AND ITS IMPACT ON INCOME POVERTY AND LIFE SATISFACTION IN RURAL AREAS OF ASSAM

### 6.1. Introduction

In the course of economic development and poverty alleviation, the importance of credit is an issue of continuing debate. During the earlier period, by assuming a trickle-down effect that would eventually help the poor, it was frequent for the state to interfere in those strategic sectors that had complexity in accessing capital. Within this framework, numerous state banking institutions were built in different developing countries in the middle 1940s and early 1950s under quasi- Keynesian ideology of financial oppression intended to augment investment. However, this thought has been intensely criticized by the Ohio School for augmenting inefficiencies in the financial sector and enhancing the troubles of moral hazard and adverse selection (Zarazua, 2007). While in the late 1970s and early 1980s, an innovation recognized at present as microfinance were advanced through institutions like the Bangladeshi Grameen Bank, the Unit Desa System of the Bank Rakyat in Indonesia and the Bolivian BancoSol which made supportive for institutional lenders to lessen informational costs associated with the screening, incentive, and enforcement problems, and for the poor to entrance institutional credit. Even though microfinance institutions have turned out to be the arguably subsidy-recipients proved as more successful channels to attain the poor, the hypothesis that it has influenced on poverty diminution has not been sufficiently analyzed in most of the cases, mainly in the rural framework, with a few exceptions, e.g. Morduch and Haley (2002), Coleman (1999), Pitt and Khandker (1998), Hulme and Mosley (1996). The present chapter concentrated to evaluate the impact of the use of credit institutions on income and multidimensional poverty. Moreover, the novelty of the present chapter lies (a) To provide an econometric framework which controls the troubles of endogeneity and self-selection, (b) To assess the probable differences among formal, semiformal and informal lending technology concerning poverty impacts as structured in Box 6.1.

However, development projects which save beneficiaries from marginalization and offer entrance to opportunities would go ahead of the stipulation of monetary possessions as they end up healing in beneficiary wounded associations with themselves by restoring dignity and self-

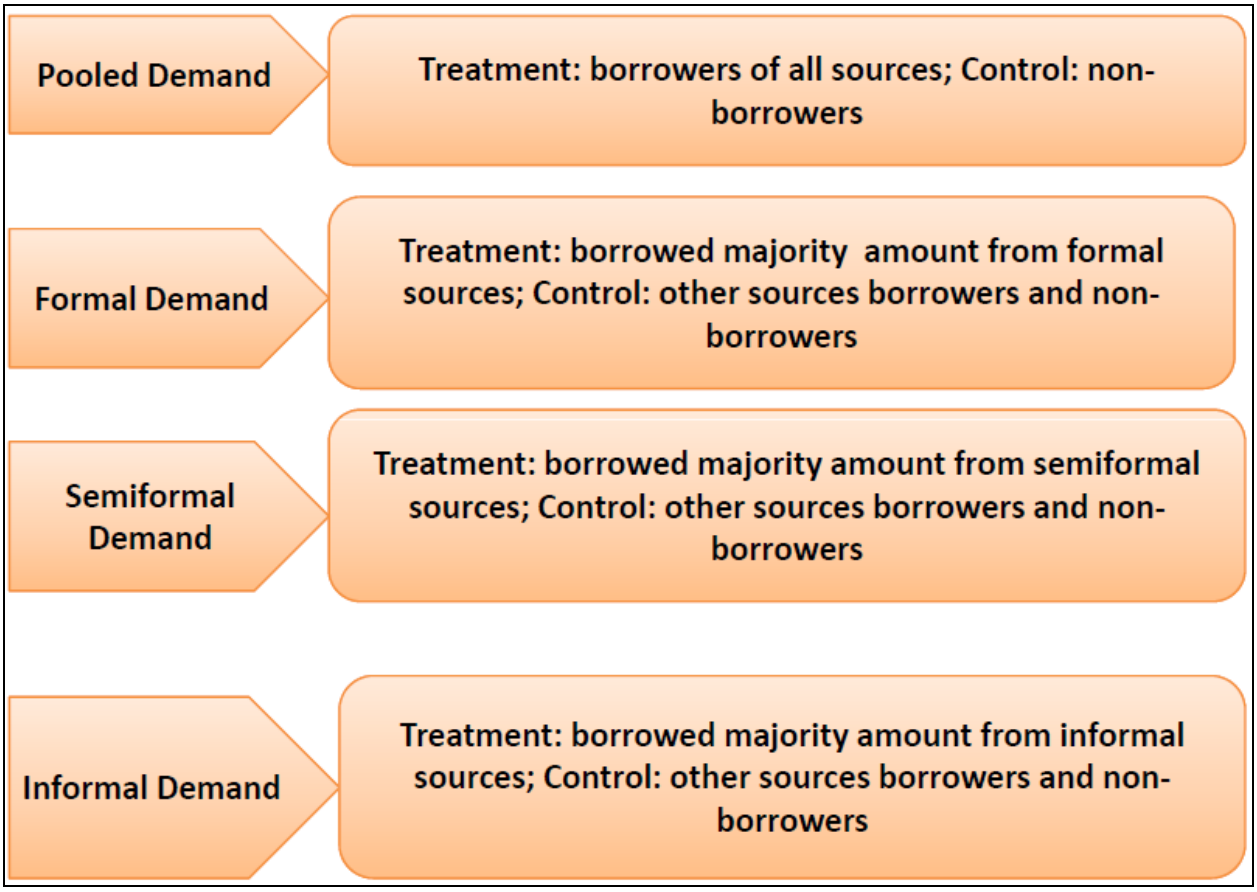
esteem and with other members of the society through social recognition and reputation. Alongside many credit institutions point that lending to the uncollateralized poor living near to the poverty line has an impact which goes beyond the simple money recognition (Becchetti and Conzo 2011). Indeed, the World Relief Organization claims that 'The world of microfinance opens the door of opportunity for the poor – providing the dignity and satisfaction that comes from working to support one's family. Microfinance is about much more than just money. It helps create stability at home, teaches individuals how to thrive, and fosters self-respect and community well-being. Once empowered, men and women are able to support their families for a lifetime – not just a few days or weeks. It's the difference between a hand up and a hand out'. To answer these claims, it is obligatory to widen the scope of credit access impact examination through considering among performance variables not only standard economic but also non-pecuniary wellbeing indicators.

According to Becchetti and Conzo (2013), this enhanced focus is vital for at least four reasons. First, the argument on the association between subjective and objective wellbeing measures and, more particularly, between income and happiness has been always more at the core of the economic debate and is pertinent not only for highly industrialized countries but also in developing countries. This emergent thought can be examined by the rising consciousness that social sustainability, local empowerment and active participation in development projects are basic for their accomplishment. Second, as they are competent to capture the effect of pertinent omitted factors on individual wellbeing results from life satisfaction estimates may be a good complement to standard impact analyzes. The argument is more imperative in rural credit where a credit to an uncollateralized borrower may protect him from social exclusion. With this argument, we may envisage the capability of an individual to contribute to social life and to make economic life as an 'iceberg'. The minor visible part is its visible contribution to the creation of economic value in the society and its visible productivity, whereas the larger hidden part made of dignity, self-esteem, and social recognition is actually the invisible pillar of the former. Third, supplementary enthusiasm may come from the fact that the life satisfaction literature has initiated to investigate the role of financial capabilities in high-income countries too. Taylor et al. (2009) articulated in their empirical study on the British Household Panel Survey that financial competence has a significant and positive impact on life satisfaction and health dropping by 15 per cent of the likelihood that an individual experience from anxiety or

depression. Fourth in the overall effect of microfinance on life satisfaction may be its impact on trust and trustworthiness. Therefore, the present chapter has also attempted to evaluate the non-monetary effect of credit access. Here, we tried (a) To provide an econometric framework which controls the troubles of selectivity bias, (b) To assess the probable differences among formal, semiformal and informal lending technology concerning non-monetary impacts as arranged in Box 6.1.

Further, to gain continual benefit from Self Help Groups (SHGs) in financial intermediation, group sustainability is having a wider concern in donor agencies, practitioners, policy makers and academicians. Group sustainability both at the institutional and financial level is a prerequisite condition for the wider impact of rural credit on poor (Shetty & Madheswaran, 2008). This is because if the SHGs are not able to maintain their performance both at the institutional and financial level, then they may further loss support from the self-help promoting institutions and donor agencies in the long run. Therefore, the issue of group sustainability is required to be examined to ensure a continued and positive impact of rural credit on the poor. Hence, the novelty of the present chapter has also lies to measure group sustainability by constructing one Multidimensional Sustainability Index of SHGs ($MDSI^{SHG}$). Here, we have estimated group sustainability by combining organizational, managerial and financial indices, while the existing literatures so far has concentrated upon only the individual measurement of organizational and financial sustainability.

**Box 6.1 Types of Borrowers across Treatment and Control Groups**




## 6.2. Description of Variables and Descriptive Statistics

Based on the literature and theoretical considerations, a set of explanatory factors is derived from an impact study. Table 6.1 presents the description of the variables, hypothesized relation, and the definition behind choosing the particular variable. The credit source-wise summary statistics of variables are presented in Table 6.2 and Table 6.3. Hence, approximately in all borrowers, lenders and location-specific characteristics, formal borrowers are in the superior position with respect to semiformal and informal borrowers. However, semiformal and informal borrowers are in a better position in the variable dependency ratio and distance to main market place.

## Table 6.1 Variables Included in Different Regression Models

**Identifying Instrumental Variable for Second Stage Heckit Procedure: Dependent Variable**- Log of Equivalent One Per Capita Income (LEOI) and Log of Maximum amount of Credit was taken (LMCT) [Separately Formal (LMFC), Semiformal (LMSFC) and Informal (LMIC)]

**Identifying Instrumental Variable for Second Stage Tobit Selection Equation: Dependent Variable**- Log of Equivalent One Per Capita Income (LEOI) and Log of Maximum amount of Last Credit Cycle (LMLCC) as a proxy for rural credit participation [Separately Formal (LMLFCC), Semiformal (LMLSFCC) and Informal (LMLICC)]

**Second Stage Heckit Procedure, Second Stage Tobit Selection Equation, OLS to confirm Second Stage Heckit Procedure and Tobit Selection Equation: Dependent Variable**- Log of Per Capita Income (LPI), Log of Equivalent One Per Capita Income (LEOI) and Log of Equivalent Two Per Capita Income (LETI)

**Probit: Dependent Variable- Binary**: Whether households, equivalent one per capita income less than an identified poverty line; HBP=1 if so and 0, otherwise

| Explanatory Variables | Notation | Definition | Expected Sign |
|---|---|---|---|
| **Agricultural Land** | **$ALMOA_j$** | Instrumental (Heckit Procedure) Dummy: Whether household among the specified borrowed sources has agricultural land more than one acre; D=1 if it is so and 0, otherwise | + |
| **Distance to Market Place** | **$DMP_i$** | Instrumental (Heckit and Tobit); Distance is measured in Kilometers. | - |
| **Dependency Ratio** | **$DR_i$** | The dependency ratio is measured: no. of dependent members/no. of total family members □ 100 | - |
| **Age of Household Head** | **$AHH_i$** | It measures the working ability of Household Head | + |
| **Household Head Male** | **$HHM_i$** | Dummy: Whether household head is male; D=1 if so and 0, otherwise | +/- |
| **Education** | **$HHED_i$** | Education of the household head in terms of numbers of years of schooling | + |
| **Marital Status** | **$MS_i$** | Dummy: Whether household head is married; D=1 if it is so and 0, otherwise | +/- |
| **Occupation** | **$GJ_i$** | Dummy: Whether the main income source of household is job; D=1 if it is govt. job and 0, otherwise | + |
| **Dwelling Pakka** | **$DP_i$** | Dummy: Whether household have pakka house; D=1 if it is so and 0, otherwise | + |
| **Occupation Engagement** | **$EMO_i$** | Numbers of years, the household head are engaging with the main occupation | + |
| **Son/Daughter Earn Income** | **$SDI_i$** | Dummy: Whether son/daughter earn income in the family; D= 1 if so and 0, otherwise | + |
| **Participate in Rural Credit, the Maximum amount Borrowed from Formal, Semiformal and Informal** | **$WPRC_j$, $WMABF_j$, $WMABSF_j$ & $WMABI_i$** | Dummy: Whether the particular households participate in rural credit programmes (separately for formal, semiformal and informal, but here, whether the households maximum amount of credit borrowed from specified source); D=1 if it is so and 0, otherwise | +/- |
| **Borrowed from Formal, Semiformal & Informal** | **$WBF_j$, $WBSF_j$ & $WBI_i$** | Dummy: Whether households borrowed from formal, Whether households borrowed from semiformal l& Whether households borrowed from informal; D=1 if so and 0, otherwise | +/- |
| **Majority of Regional Rural Banks** | **$WRRB_j$** | Dummy: Whether the majority borrowed from regional rural banks (only for formal sector): therefore, D= 1 if so, and 0, otherwise | +/- |
| **Majority from SHGs** | **$WMS_j$** | Dummy: Whether the majority borrowed from SHGs (only for semiformal sector): therefore, D= 1 if so, and 0, otherwise | + |
| **Majority from moneylenders** | **$WMM_j$** | Dummy: Whether the majority borrowed from moneylenders (only for Informal sector): therefore, D= 1 if so, and 0, otherwise | - |
| **Relationship with Lenders** | **$RL_j$** | Instrumental (Tobit); Average numbers of years of relationship with lenders (Separately for formal, semiformal and informal). | + |
| **Log Maximum Last Credit** | **$LMLCC_j$, $LMLFCC_j$, $LMLSFCC_j$ & $LMLICC_i$** | Log of the maximum amount of loan taken from all sources in the last transaction (separately for formal, semiformal and informal loan in last credit cycle) | +/- |
| **Log of Maximum Credit** | **$LMCT_j$, $LMFC_j$, $LMSFC_j$ & $LMIC_i$** | Log of Maximum amount of Credit taken from all Sources as a proxy for rural credit participation (Separately Formal, Semiformal and Informal- Households majority of credit amount taken from specified source) | +/- |

**Table 6.2 Credit Source-Wise Descriptive Statistics of Variables (Amount in ₹)**

| Variables | Statistics | Overall | Formal | Semiformal | Informal |
|---|---|---|---|---|---|
| $LPI_j$ | M | 4.17 | 4.51 | 4.04 | 4.06 |
| | SD | 0.38 | 0.5 | 0.19 | 0.24 |
| $LEOI_j$ | M | 4.25 | 4.62 | 4.12 | 4.12 |
| | SD | 0.43 | 0.49 | 0.33 | 0.33 |
| $LETI_j$ | M | 4.35 | 4.73 | 4.2 | 4.26 |
| | SD | 0.48 | 0.45 | 0.41 | 0.44 |
| $DR_j$ | M | 0.67 | 0.75 | 0.58 | 0.74 |
| | SD | 0.47 | 0.44 | 0.5 | 0.44 |
| $AHH_j$ | M | 46.41 | 51.97 | 41.77 | 45.59 |
| | SD | 14.33 | 15.33 | 12.25 | 14.23 |
| $LMCT_j$, $LMFC_j$, $LMSFC_j$ & $LMIC_j$ | M | 3.71 | 4.78 | 3.76 | 3.82 |
| | SD | 1.56 | 0.85 | 0.55 | 0.72 |
| $DMP_j$ | M | 6.4 | 6.92 | 6.01 | 6.35 |
| | SD | 2.99 | 3.66 | 2.57 | 2.85 |
| $LMLCC_j$, $LMLFCC_j$, $LMLSFCC_j$ & $LMLICC_j$ | M | 3.68 | 4.71 | 3.46 | 3.76 |
| | SD | 1.49 | 0.79 | 0.65 | 0.61 |
| $RL_j$ | M | 5.52 | 12.2 | 3.72 | 5.32 |
| | SD | 4.62 | 6.88 | 1.5 | 2.07 |
| $HHED_j$ | M | 6.6 | 9.3 | 5.82 | 5.21 |
| | SD | 4.8 | 4.35 | 4.49 | 4.86 |
| $EMO_j$ | M | 15.3 | 16.6 | 13.4 | 14.8 |
| | SD | 6.31 | 6.25 | 5.15 | 6.23 |

Source: Authors' estimation based on field survey; Note: M= Mean, SD= Standard Deviation

**Table 6.3 Proportion of Household's under Categorical Variables**

| Variables | Overall | Formal | Semiformal | Informal |
|---|---|---|---|---|
| $HHM_i$ | 177 (73.8) | 47 (74.6) | 61 (73.5) | 50 (75.8) |
| $MS_i$ | 209 (87.1) | 57 (90.5) | 69 (83.1) | 57 (86.4) |
| $GJ_i$ | 48 (20) | 30 (47.6) | 4 (4.8) | 10 (15.2) |
| $DP_i$ | 109 (45.4) | 48 (76.2) | 29 (34.9) | 19 (28.8) |
| $SDI_i$ | 97 (40.4) | 31 (49.2) | 29 (34.9) | 25 (37.9) |
| $WPRC_i$ | 212 (88.3) | -- | -- | -- |
| $WBF_i$ | 72 (30) | -- | -- | -- |
| $WBSF_i$ | 131 (54.6) | -- | -- | -- |
| $WBI_i$ | 137 (57.1) | -- | -- | -- |
| $ALMOA_i$ | 125 (52.1) | 50 (79.4) | 30 (36.1) | 28 (42.4) |
| $WMABF_i$ | -- | 63 (26.3) | -- | -- |
| $WMABSF_i$ | -- | -- | 83 (34.6) | -- |
| $WMABI_i$ | -- | -- | -- | 66 (27.5) |
| $WRRB_i$ | -- | 20 (31.7) | -- | -- |
| $WMS_i$ | -- | -- | 66 (79.5) | -- |
| $WMM_i$ | -- | -- | -- | 41 (62.1) |

Source: Authors' estimation based on field survey; Note: Figures in the parentheses represent per cent of households

## 6.3. Econometric Formulation

Suppose household 'j' makes a decision to involve in a borrowing programme to finance any particular activity. The quantity of capital provided is exogenously determined by the lender 'C', who constructs this utmost threshold on the basis of the level of involvement in the programme.

Besley and Coate (1995), Hoff and Stiglitz (1990) and Akerlof (1970) argued that the creditor is anticipated to exploit various screenings, incentive and enforcement strategy to handle the difficulty of moral hazard and adverse selection which are associated with borrowers activities. With the specific environment in underdeveloped financial markets, the demand for credit is assumed to be rationed by the creditor (Stiglitz & Weiss, 1981). Since the main purpose of the study is to calculate the effect of credit on the outcome to be investigated, that is examined by the income variable. Therefore, we can undertake the following model:

$Z_j = M_j£ + P_j\Psi + U_j$ ---------- (6.1)

Where $M_j$ is a vector of exogenous family characteristics and $P_j$ is a dichotomous variable with value P =1 if household 'j' is a programme participant, P=0 otherwise. It calculates the effect of programme involvement by the coefficient of the parameter estimate, $\Psi$. $P_j$ cannot be undertaken as exogenous with the assumption of the possible problem of selection bias[29]. Thus, we express the specification equation in the following form:

$Z_{1j} = M_{1j}£_1 + P_j\Psi + U_{1j}$ (Credit Programme Participants) ---------- (6.2)

$Z_{2j} = M_{2j}£_2 + U_{2j}$ (Credit Programme Non-Participants) ---------- (6.3)

$P_1^* = K_1\Omega_1 - \xi_1$ ---------- (6.4)

$P_2^* = K_2\Omega_2 - \xi_2$ ---------- (6.5)

Here we defined $P_j$ by two parts: $P_1^*$ indicates the decision of a household of whether or not to involve in a credit programme, and $P_2^*$ indicates the decision of the credit officer, group members and individual lenders on whether or not to accept such applicants. With this framework:

$P_1$ =1 if household j decides to involve in the borrowing programme

$P_1$ = 0, Otherwise

$P_2$ =1 if household j is accepted by group members, credit officer and individual lenders

$P_2$ = 0, Otherwise

The problem emerges here when we cannot examine households who decide either to involve or not, and households who are either accepted or discarded by credit officers, group members and individual lenders, i.e. $P = P_1 + P_2$, but simply as a single indicator $P = P_1 . P_2$. Hence, what we

[29]Selection bias occurs if the choice of a family of whether or not to involve in the borrowing programme depends not only on the effort, abilities, preferences and attitudes towards risk which engender person self-selection, what we indicate a demand-related bias but also on the selectivity unfairness made by borrowing programmes, designated to as a supply-related bias.

examine is household 'j' self-selecting to involve in the borrowing programme and being accepted by the creditor. Therefore, we can only identify the distribution of families who have been accepted to involve in the programme ($P_2^*$) and then calculate the parameter $\Omega_2$, if these households have previously self-selected ($P_1$ =1). Our calculation approach thus centered on households who have fulfilled the situation $P = P_1 . P_2$.

Maddala (1999) argued to examine $P_2^*$ over the whole population, i.e. recognizes families with their activity or living in the same locality, and then estimate the model from the truncated sample where the parameters $\Omega_1$ and $\Omega_2$ can be calculated by maximizing a likelihood function, e.g. probit or tobit. The point is, Maddala argues that in principle $P_2^*$ exists even for the non-applicants. Hence, the observed $Z_j$ can be stated as $Z_j = Z_{1j}$ if $P_j = 1$, and $Z_j = Z_{2j}$ if $P_j = 0$, where the involvement choice function is given by $P_j^* = Z_j\Omega = \xi_j$. Besides, Maddala (1999) defines the covariance matrix as follows:

$$\text{Cov}\,(U_{1j}, U_{2j}, \xi_j) = \begin{matrix} \alpha 11 & \alpha 12 & \alpha 1\xi \\ \alpha 12 & \alpha 22 & \alpha 2\xi \\ \alpha 1\xi & \alpha 2\xi & 1 \end{matrix} \quad \text{---------- (6.6)}$$

It helps us to assess the impact of programme involvement on the outcome of interest, through comparing the likely outcome for treatment and control groups. Thus, we can follow the model as:

$Z_{1j} = M_{1j}£_1 + U_{1j}$ (Treatment Group) ---------- (6.7)

$Z_{2j} = M_{2j}£_2 + U_{2j}$ (Control Group) ---------- (6.8)

### 6.3.1. Heckman Process with $P_j$ as Endogenous Regressors

In spite of the fact that we consider that our sample strategy addresses the difficulty of self-selectivity, we can still encounter a trouble of endogeneity in the model of programme involvement if the explanatory variable $P_j$ is associated with unobservable factors which are relegated to the random error term $U_j$. To avoid the probable endogeneity problem, we pursue a heckit calculation process (Heckman, 1979) through an identifying instrumental variable (IV). Thus, the maximum likelihood approach has the following model:

$Z_j = M_j£_z + P_j\Psi + U_j^z$ ---------- (6.9)

$P_j = M_j£_I + K_j\Omega + U_j^I$ ---------- (6.10)

Where, $M_j$ is a 1 x K vector of household characteristics. We initiate an exogenous regressor $K_j$ in equation (6.10) as the identifying instrument which has not been included in the equation (6.9). $K_j$ is an observable variable different from those in $M_j$ that affects $P_j$ but not the outcome of interest $Z_j$ conditional on $P_j$.

The heckit process permits us to check for the assumption of no self-selectivity by calculating the inverse Mills ratio, $\lambda(.) \equiv \varphi(.)/\Phi(.)$, resulting from the relationship between the density of the distribution function, $\varphi(.)$, and the cumulative distribution function of the standard normal, $\Phi(.)$. Heckman (1979) indicated that we can calculate consistently the parameters $£_I$ and $\Omega$ by exploiting the properties of the first stage probit estimation and then get the calculated inverse Mills ratio, $\hat{\lambda}$. In the second stage, we attain the parameters $£_z$ and $\Psi$ from ordinary least squares through inverse Mills ratio incorporated to the regressor as:

$$Z_j = M_j£_z + N_j\psi + P_j\Psi + \lambda H + U_j^z \quad \text{---------- (6.11)}$$

Here we have also incorporated $N_j$ i.e. a 1 x K vector of credit market features that captures the effect of formal, semiformal and informal credit agents. The justification behind including these variables into $N_j$ relies on the assumption that if we do not control for the effect of other intermediaries on the outcome of interest $Z_j$, then the parameter $\Psi$ that captures the effect of programme involvement may be inconsistent.

The two-stage least squares (2SLS) method produces consistent results in the parameter of interest $\Psi$ where H and $\lambda$ are the inverse Mills ratio and its parameter estimate, respectively (Wooldridge, 2002). The simple technique of testing for self-selectivity is with the null hypothesis of no selection bias, $H_0$: $\lambda = 0$, using the usual 2SLS 't' statistic.

The point is that the calculation process aware us with information on the impact of credit programme involvement at the mean of the dependent variable; but, it does not provide us to what extent those participants are really poor (Zarazua, 2007). Additionally, we can observe that the parameter $\Psi$ examines the average impact of credit programme participation on $Z_j$; nevertheless, it does not capture the effect of borrowing over time. Treatment families with just one or two years of association are likely to account a lower impact than those households with

say five years of membership. To address this issue, we broaden the heckman process to a Tobit selection equation.

### 6.3.2. Heckit Procedure for a Tobit Selection Equation

We substitute the treatment dichotomous variable $P_j$ in equation (6.10) by a continuous variable $G_j$, that measures the maximum amount of money borrowed during the last credit cycle. We believe that $G_j$ is exogenously determined by the creditor N, who identifies this maximum threshold with reference to the level of involvement in the programme. Therefore, the equation can be written as follows:

$G_j^* = M_j £_G + K_j \Omega + U_j^G$ ---------- (6.12)

Where

$G_j = \text{Max}(0, Gj^*)$, i.e. ---------- (6.13)

$G_j = G_j^*$ if $G_j^* > 0$ (Treatment Group) ---------- (6.14)

$G_j = 0$ if $G_j^* \leq 0$ (Control Group) ---------- (6.15)

Here,

$U_j \mid M_j \sim \text{Normal}(0, \sigma 2)$

Accordingly $G_j$ takes a maximum value and a lower threshold zero in the form of a censored tobit model (Tobin, 1958) with a $G_j > 0$ for treatment groups and $G_j = 0$ for control groups.

In this way, we believe to be capturing a more precise measure of the impact of programme participation by using $G_j$ in the reduced form equation, where $\Psi$ now measures the impact of credit per additional unit of capital borrowed. Here, the use of OLS for the sub-sample for which $G_j$ will produce inconsistent estimators of $£_G$ and $\Omega$ since we are using only the data on uncensored observations (Wooldridge, 2002), causing a downward bias result (Greene, 2003). Thus, the tobit model implies that the probability of observing $G_j > 0$ and $G_j = 0$ are $\phi$ (.) and $p(G_j < 0) = Ó(0)$, respectively, where $\phi$ (.) and $Ó(0)$ denote the same density function and the cumulative density function of the standard normal. These assumptions are very similar to those implied in the probit selection equation, but now the log-likelihood function takes the form:

$\text{In } C = \sum_{Gj>0} [- \text{In } \sigma + \text{In } \phi \ (G_j - M_j £_G / \sigma)] + \sum_{Gj=0} \text{In } [1 - Ó \ (M_j £_G / \sigma)]$ ---------- (6.16)

We are particularly interested in looking at the conditional mean function of the observed dependent variable $G_j$ that is censored at zero for control groups and has disturbances normally distributed. Therefore, we can estimate now a credit function for the level of programme participation, which is determined by the marginal effects of the independent variables on the maximum amount of capital borrowed during the last credit cycle, $G_j$ as follows:

$G_j = \beta_G + M_j£_G + K_j\Omega + N_j\psi_G + U_j^G$ ---------- (6.17)

Where $M_j$ is a 1 x K vector of household characteristics; $K_j$ is a set of observable variables distinct from those in $M_j$ that affects $G_j$, but not the outcome of interest $Z_j$ conditional on $G_j$ that plays the role of the identifying instruments; $N_j$ is a vector of financial market characteristics; $\beta_G$, $£_G$, $\Omega$ and $\psi_G$ are the intercept and the unknown parameters, respectively whereas $U_j^G$ is the error term that captures unmeasured household characteristics that determine borrowing levels.

The function for the outcome of interest $Z_j$, i.e. income, conditional on the level of programme participation $G_j$ takes the form:

$Z_j = \beta_Z + M_j£_Z + N_j\psi_Z + G_j\Psi + U_j^Z$ ---------- (6.18)

Where $\beta_Z$, $£_Z$, $\psi_Z$, and $\Psi$ are the intercept and the unknown parameters respectively, whilst $U_j^Z$ is the error term reflecting unmeasured determinants of $Z_j$ that vary from household to household. Given that we are including $G_j$ as the explanatory variable in the equation (6.18), we may expect some level of endogeneity emerging now from the lender's policy-specifics that affect the upper limit of credit available and not only the accessibility to it.

Instrumental variable enables us to estimate a 2SLS tobit procedure, the type of method that Amemiya (1984) has referred to as Type III Tobit model. We derive this estimation equation as follows:

$Z_j = \beta_Z + M_j£_Z + N_j\psi_Z + G_j\Psi + E_j\boldsymbol{p} + e_j$ ---------- (6.19)

Where $E_j$ and $\boldsymbol{p}$ are the predicted tobit residuals and its parameter estimate, respectively, and $e_j \equiv U_j^Z - E(U_j^Z|E_j)$, where $(e_j, E_j)$, are assumed to be independent of $M_j$, i.e. $E(e_j|M_j, E_j) = 0$. The predicted residuals from the tobit equation are estimated when $G_j>0$ in (6.17) and then included as another regressor in (6.19) to yield consistent and efficient estimators (Wooldridge, 2002). The null of no selection bias is tested in the similar fashion as the heckit procedure; however, we

now use the 2SLS heteroskedasticity-robust 't' statistic on the predicted residuals: when $\rho \neq 0$ we encounter a selection problem.

However, since we are interested in examining poverty impacts, we can expect larger effects from credit amongst those households who are better off. We examine this particular issue through probit model by looking at the relationship between the severity of deprivation and poverty impacts from the three credit sources.

### 6.3.3. Econometric Model Building for Probit Estimation

Here, we ran a probit estimation equation in the form:

$HBP_j = \beta_j + G_j\Psi + U_j$ ---------- (6.20)

Where, the dependent variable $HBP_j$ is a binary variable that takes the values

$HBP_j$ = {1 if $j^{th}$ household is below the poverty lines and value of multidimensional poverty greater than the specified criteria and 0, Otherwise} and $G_j$ is the same continuous variable in the equation (6.19) that measures the maximum amount of credit borrowed in logarithmic form. We have run (6.20) with adopting different poverty lines and using by default the definition of income per adult equivalent one[30]. For comparative purposes, we have also run equation (6.20) with $P_j$ as a substitute for $G_j$ where $P_j$ is the dichotomous variable previously defined with value P =1 for treatment households and P = 0 for control groups.

By estimating the marginal effects of $G_j$, we were able to capture in $\Psi$ the impact of a relative change in the amount of capital borrowed by a poor household on the probability of staying below the poverty line. Alternatively, if we included $P_j$ in the probit equation, we were able to capture in $\Psi$ the impact of the individual choice of a poor household to participate in a credit programme on the probability of staying in poverty.

### 6.3.4. Stated Poverty Line

We proceed to calculate the incidence of poverty and the poverty gap amongst households' by computing two different monetary thresholds of income deprivation and one threshold in social context.

[30]Poverty lines and income per adult equivalent are explained in the subsequent section.

a) India's planning commissions' (PC) poverty line ($PL_1$), in 2014: ₹972 (US$15) a month in rural areas for food expenditure.
b) World Bank (WB) international poverty line ($PL_2$): $1.78 per day (₹96) on 2011 PPP basis[31].
c) To divert our attention from income poverty, we have used one criterion-Multidimensional Poverty Index (MPI) in the social context[32].

### 6.3.5. Criteria for Determining Per Capita Income

For empirical estimation, we have used the income per capita and two diverse definitions of income per adult equivalent. Utilization of adult equivalence scales is usually justified because of the fact that children, in general, have lower consumption expenses than adults and so they should be specified a smaller weight (Zarazua, 2007). Dreze and Srinivasan (1997) recommended that additional adults should be weighted less than the first adult after taking into account economies of scale. It is argued that poverty rates can be responsive to equivalence scales and hence, alter the conclusions reached on the impact of rural credit on poverty lessening (Zarazua, 2007). With this perception, it becomes imperative to look at this specific issue.

In developing countries there have been fresh attempts to add weights to the distribution of income and wealth by conveying adult equivalencies to family members with reference to their age and sex (Posel & May, 1995; Hentschel & Lanjouw, 1995; Zarazu, 2007). However, we decided to use the equivalence factors adopted by Rothbarth (1943).

The equivalence factor takes the form $E_h = (B_h + \phi N_h)^{\theta}$, where $E_h$ is the equivalence factor for household h, $B_h$ is the number of adults (age 18 to 65) and $N_h$ is the number of children in household h. The parameter $\theta$ is equal to 1 and $\phi$ has different values corresponding to the age and sex of every child. With this framework, boys in the range 0-5 years have a $\phi$ value of 0.661 whereas girls have one of 0.609; boys in the range of 6 to 12 years have a parameter $\phi$ of 0.750 whilst girls have one of 0.664; young men in the range of 13 to 18 years have a parameter of

[31]Dollars are converted at ₹58.5 per dollar- average exchange rate of 2014-15
[32]The Global Multidimensional Poverty Index (MPI) was developed in 2010 by the Oxford Poverty & Human Development Initiative and the United Nations Development Programme and uses different factors to determine poverty beyond income based lists. The dimension and indicators of MPI has been discussed in Appendix S. For more detail visit- http://www.ophi.org.uk/policy/multidimensional-poverty-index/.

0.633 at the same time young women in the same range of age have a weight of 0.635. Lastly elderly men and women (65 years of age and older) were attached values of 0.553 and 0.570, respectively. In our study, we have referred to this measurement as equivalence factor one.

Furthermore, we also incorporate other equivalence factors to perform a sensitivity analysis. Therefore, we pursue the adult equivalence scales developed by Wagstaff and Van Doorslaer (1998) where it is specified the parameters $\phi$ and $\theta$ a value equal to 0.75 and children are indicated as those aged less than 14 years. We entitle this measurement as the equivalent factor two. In addition, we have included income per capita as an additional proxy for distribution of household income and wealth for comparative purposes. But, for empirical purposes, we have concentrated on the equivalent factor one.

### 6.4. Distribution of Income by Different Equivalent Factors

As we were expecting, after taking into account distributional factors, the level of individual welfare was influenced by equivalent factors, with Income per capita being the measurement that most overstated the level of deprivation (Table 6.4).

## Table 6.4: Intra-Household Distribution of Income by Different Equivalent Factors

| Figures in ₹ | Overall | | Formal | | Semiformal | | Informal | |
|---|---|---|---|---|---|---|---|---|
| | Control | Treatment | Control | Treatment | Control | Treatment | Control | Treatment |
| **Average Household Income Per Month** | 8017.86 | 10943.4 | 7338.98 | 19769.84 | 12547.78 | 6921.69 | 11750 | 7575.76 |
| **Household Income as a per cent of Treatment Group** | 73.27 | 100.0 | 37.12 | 100.0 | 181.28 | 100.0 | 155.09 | 100.0 |
| **Average Monthly Per Capita Income** | 1813.09 | 1989.87 | 1473.51 | 3362.02 | 2273.72 | 1393.31 | 2173.67 | 1430.3 |
| **Per Capita Income as a per cent Treatment Group** | 91.12 | 100.0 | 43.83 | 100.0 | 163.19 | 100.0 | 151.97 | 100.0 |
| **Equivalent One Per Capita Income Per month** | 1966.79 | 2195.87 | 1624.07 | 3700.51 | 2488.88 | 1564.33 | 2402.54 | 1553.81 |
| **Equivalent One Per Capita Income as a per cent of Treatment Group** | 89.57 | 100.00 | 43.89 | 100.0 | 159.1 | 100.0 | 154.62 | 100.0 |
| **Equivalent Two Per Capita Income Per Month** | 2620.18 | 3089.65 | 2214.18 | 5340.66 | 3515.73 | 2125.31 | 3369.12 | 2153.68 |
| **Equivalent Two Per Capita Income as a per cent of Treatment Group** | 84.81 | 100.0 | 41.46 | 100.0 | 165.42 | 100.0 | 156.44 | 100.0 |

Source: Authors' estimation based on field survey

### 6.5. Identification of Instrumental Variable for Second-Stage Heckit Procedure

The present study investigated instruments used by other researchers to choose the instrumental variable. For example, Pitt and Khandker (1998) have identified a specific exogenous rule that institutions such as the Grameen Bank and BRAC in Bangladesh have set up to control programme involvement in non-poor families. This particular exogenous rule is associated with land ownership, and has been referred as families owning more than half an acre of land. Zarazua (2007) pointed that given the existence of credit rationing in the market, it is realistic to presume that the level of programme involvement is exogenously identified by the creditor. Therefore, the author liked to focus on the supply side to recognize the instrument. Here, we have used households having agricultural land more than one acre (dummy) as an instrumental variable.

**Table 6.5 Identifying Instrumental Variable for Second Stage Heckit Procedure**

| Coefficients | Overall | Formal | Semiformal | Informal |
|---|---|---|---|---|
| **$ALMOA_i$ (For Equation: 8.10)** | -0.03** (0.07) | 0.62** (0.24) | -0.81* (0.24) | 0.12*** (0.25) |
| **$ALMOA_i$ (For Equation: 8.11)** | 0.04* (0.03) | 0.06** (0.03) | 0.06* (0.03) | 0.06 (0.03) |
| **$R^2$ (For Equation: 8.10)** | 0.91 | 0.46 | 0.33 | 0.15 |
| **$R^2$ (For Equation: 8.11)** | 0.62 | 0.57 | 0.57 | 0.58 |
| **Observations** | **212** | **63** | **83** | **66** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; Figures in the parentheses represent standard errors; while the study incorporated other explanatory variables, but here we discussed the relevant one.

**Table 6.6 Distances to Main Market Place as an Indentifying Instrumental Variable for Second Stage Heckit Procedure**

| Coefficients | Overall | Formal | Semiformal | Informal |
|---|---|---|---|---|
| **$DMP_i$ (For Equation: 8.10)** | -0.02** (0.01) | 0.03* (0.04) | -0.03*** (0.04) | -0.50** (0.04) |
| **$DMP_i$ (For Equation: 8.11)** | 0.05 (0.20) | 0.01 (0.03) | 0.01 (0.02) | 0.06 (0.04) |
| **$R^2$ (For Equation: 8.10)** | 0.91 | 0.47 | 0.33 | 0.15 |
| **$R^2$ (For Equation: 8.11)** | 0.62 | 0.58 | 0.58 | 0.57 |
| **Observations** | **212** | **63** | **83** | **66** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; Figures in the parentheses represent standard errors; while the study incorporated other explanatory variables, but here we discussed the relevant one.

From Table 6.5 we can get that the instrumental variable households having agricultural land more than one acre influenced the equivalent one per capita income for overall, formal and semiformal credit sources. Therefore, we cannot take it as an instrumental variable, and need to go for some other variables. Hence, we have taken one new instrumental variable- distance to the main market place from respondent's home.

In Table 6.6 we observe that the instrumental variable DMP has not influenced the equivalent one per capita income for all credit sources. Thus, we can take distance to main market place as the identifying instrument for the heckit procedure.

### 6.6. Second-Stage Heckit Procedure: Impact of Credit Programme Involvement on Household's Income

Now we turn to the outcome of the calculation of the effect of credit programme involvement on household income indicated in Table 6.7. The coefficient of the inverse Mills ratio indicated no confirmation of selection bias permitting us to focus on the OLS estimation. If we encountered endogeneity problems, we should have concentrated on the heckit estimation.

The parameter calculates $\Psi$ of the impact variable; $P_j$ reveals the difference in the mean log income per adult equivalent of treatment households relative to the control group. The slope coefficients show, as expected, a positive sign for each of the three credit programmes; however, the coefficients were only statistically significantly different from zero in the case of overall and formal credit source. The reasons for examining the significant levels of $\Psi$ were to observe the degree to which it might be related to the severity of deprivation amongst families (Zarazua, 2007). Indeed, a number of scholars have investigated that very poor debtors are more possibly to present low income impacts not only because they are occupied in low-return self-employment activities (Hulme & Mosley, 1996; Wood & Shariff, 1997; Zarazua, 2007; Zaman, 2004), but also due to the course of decision making under uncertainty is driven by risk-averse behavior, mainly at low levels of income (Ravallion, 1988; Sinha & Lipton, 1999).

## Table 6.7 Impact of Borrowing Programme Participation on Household's Income (Heckit Two Stage Procedure)

| **Endogenous Explanatory Variable ( $P_i$):** $LMCT_i$ (or $LMFC_j$, $LMSFC_i$ & $LMIC_j$)[@] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Dependent Variables** | **Coefficient** | **Overall** | | **Formal** | | **Semiformal** | | **Informal** | |
| | | **OLS** | **Heckit** | **OLS** | **Heckit** | **OLS** | **Heckit** | **OLS** | **Heckit** |
| **Dependent Variable: $LPI_j$ (Equation. 8.11)** | **$LMCT_j$ (or $LMFC_j$, $LMSFC_i$ & $LMIC_j$)** | 0.04** (0.01) | 0.14* (0.07) | 0.04* (0.01) | 0.11*** (0.04) | 0.03 (0.03) | 0.31 (0.26) | 0.02 (0.03) | 0.46 (1.13) |
| | **Mills** | -- | -0.69 (1.38) | -- | -0.16 (0.13) | -- | -0.40 (0.26) | -- | 0.66 (1.77) |
| | **$R^2$** | 0.60 | -- | 0.61 | -- | 0.56 | -- | 0.57 | -- |
| | **Pseudo $R^2$** | -- | 0.09 | -- | 0.49 | -- | 0.31 | -- | 0.13 |
| **Dependent Variable: $LEOI_j$ (Equation. 8.11)** | **$LMCT_j$ (or $LMFC_j$, $LMSFC_i$ & $LMIC_j$)** | 0.04* (0.01) | 0.16** (0.05) | 0.04** (0.01) | 0.09* (0.04) | 0.01 (0.03) | 0.34 (0.27) | 0.03 (0.03) | 0.44 (1.09) |
| | **Mills** | -- | -0.50 (0.99) | -- | -0.16 (0.12) | -- | -0.42 (0.28) | -- | 0.63 (1.70) |
| | **$R^2$** | 0.61 | -- | 0.62 | -- | 0.57 | -- | 0.58 | -- |
| | **Pseudo $R^2$** | -- | 0.09 | -- | 0.49 | -- | 0.31 | -- | 0.13 |
| **Dependent Variable: $LETI_j$ (Equation. 8.11)** | **$LMCT_j$ (or $LMFC_j$, $LMSFC_i$ & $LMIC_j$)** | 0.04*** (0.01) | 0.17*** (0.06) | 0.05* (0.01) | 0.12** (0.04) | 0.02 (0.03) | 0.30 (0.24) | 0.02 (0.03) | 0.48 (1.20) |
| | **Mills** | -- | -0.54 (1.07) | -- | -0.17 (0.12) | -- | -0.38 (0.25) | -- | 0.69 (1.87) |
| | **$R^2$** | 0.62 | -- | 0.64 | -- | 0.58 | -- | 0.59 | -- |
| | **Pseudo $R^2$** | -- | 0.09 | -- | 0.49 | -- | 0.31 | -- | 0.13 |
| **Censored Observations** | | -- | 28 | -- | 177 | -- | 157 | -- | 174 |
| **Uncensored Observations** | | -- | 212 | -- | 63 | -- | 83 | -- | 66 |
| **Observations** | | **212** | **240** | **63** | **240** | **83** | **240** | **66** | **240** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; @The Heckman procedure transforms $LMCT_j$ (or $LMFC_j$, $LMSFC_j$ & $LMIC_j$) into a dummy variable for treatment group = 1 if $P_j > 0$; Robust standard errors in parentheses; Although the study incorporated other explanatory variables, but here we discussed only credit programme participation.

Nevertheless, the study experienced a degree of variability in the coefficient of $P_j$ when various criteria of income per adult equivalent were incorporated; indicating that the impact study of credit might be responsive to the intra-household distribution of welfare, and consistent with the result of Zarazua (2007) (Table 6.7).

### 6.7. Identification of Instrumental Variable for Two Stage Tobit Selection

In order to identify the additional instrument contained in $K_j$, we explored the incentive devices employed by the different credit sources that could affect $G_j$ but not the outcome of interest $Z_j$. The selected identifying instrument was the relationship with the lenders. This variable was assumed to be related to progressive lending, an incentive device exploited by credit sources to deal with the problem of moral hazard and reduce operational costs in the long run.

**Table 6.8 Determining Instruments for the Two Stage Tobit Selection Equation**

| Equations | Coefficients | Overall | Formal | Semiformal | Informal |
|---|---|---|---|---|---|
| **Equation: 8.17** | **$DMP_i$** | -0.01** (0.02) | 0.02*** (0.03) | -0.08* (0.03) | -0.01** (0.03) |
| | **$RL_i$** | 0.22* (0.02) | 0.23** (0.01) | 0.49** (0.05) | 0.36* (0.04) |
| | **$R^2$** | 0.45 | 0.74 | 0.48 | 0.36 |
| **Equation: 8.19** | **$DMP_i$** | 0.01 (0.00) | 0.03 (0.02) | 0.04 (0.03) | 0.02 (0.01) |
| | **$RL_i$** | 0.05 (0.04) | 0.07 (0.05) | 1.28 (0.45) | 2.01 (0.60) |
| | **$R^2$** | 0.62 | 0.63 | 0.58 | 0.58 |
| **Observations** | | **212** | **63** | **83** | **66** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; Standard errors in parentheses; while the study incorporated other explanatory variables, but here we discussed the relevant one.

Table 6.8 reveals that when we estimated equation (6.17) with distance to main market place and relationship with lenders as the identifying instruments contained in vector $K_j$ , the p-values of the t statistic for the coefficient $\Omega$ for each of the credit sources rejected the null of $H_0 : \Omega = 0$ , i.e. it reflected the statistically significance correlation between the maximum level borrowing, and the two instruments contained in $K_j$; however, when we included $K_j$ in equation (6.19), the parameter estimate $\Omega$ accepted the null of no correlation against the outcome of interest $Z_j$. As a result, we were able to use them as identifying instruments for the Tobit selection procedure.

### 6.8. Heckit Procedure for a Tobit Selection Equation: Impact of Borrowing Programme Participation on Household's Income

It is shown in Table 6.9 that the predicted residuals from the second-stage Tobit selection equation report statistically insignificant levels in the parameter estimates *p*, confirming, as in the heckit procedure, the assumption of no selectivity. It is possible to argue thus that the

decision process that involves increasing levels of borrowing is largely a function of the policy specifics that are exogenously determined, and linearly correlated to progressive lending (captured by the length of relationship with lenders).

The parameter estimate $\Psi$ of the impact variable, $G_j$, reported a positive sign for each of the three credit sources; however, the coefficients were only significantly different from zero in the case of overall and formal credit sources (Table 6.9). This result is important for two reasons: First, it confirms that our findings are in line with the statistically significant impacts that we reported in equation (6.11); however, by substituting $G_j$ for $P_j$ we were able to discount the effects that older borrowers have on the average impact of programme participation, allowing us to obtain a more accurate estimation. Second, our results confirm the findings of other researchers (Morduch, 1998; Coleman, 1999; Zarazua, 2007) in relation to the small (or insignificant) effects that credit has on the level of individual income.

**Table 6.9 Impact of Borrowing Programme Participation on Household's Income by Two Stage Tobit Selection Equation**

| **Endogenous Explanatory Variable ( $G_j$):** $LMLCC_j$ (or $LMLFCC_j$, $LMLSFCC_j$ & $LMLICC_j$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Dependent Variables** | **Coefficient** | **Overall** | | **Formal** | | **Semiformal** | | **Informal** | |
| | | **OLS** | **2S-Tobit** | **OLS** | **2S-Tobit** | **OLS** | **2S-Tobit** | **OLS** | **2S-Tobit** |
| **$LPI_j$: (Equation 8.19)** | **$LMLCC_j$ (or $LMLFCC_j$, $LMLSFCC_j$ & $LMLICC_j$)** | 0.04** (0.01) | 0.07** (0.02) | 0.04* (0.01) | 0.06** (0.03) | 0.11 (0.09) | 0.15 (0.10) | 0.09 (0.05) | 0.14 (0.10) |
| | **$R^2$** | 0.60 | -- | 0.61 | -- | 0.57 | -- | 0.58 | -- |
| | **Log Likelihood** | -- | -323.32 | -- | -322.03 | -- | -378.99 | -- | -385.94 |
| | **Alpha** | -- | -0.05 (0.02) | -- | -0.03 (0.02) | -- | -0.00 (0.02) | -- | -0.02 (0.02) |
| **$LEOI_j$: (Equation 8.19)** | **$LMLCC_j$ (or $LMLFCC_j$, $LMLSFCC_j$ & $LMLICC_j$)** | 0.06* (0.05) | 0.09** (0.06) | 0.07** (0.04) | 0.09* (0.07) | 0.15 (0.10) | 0.17 (0.12) | 0.10 (0.05) | 0.16 (0.11) |
| | **$R^2$** | 0.60 | -- | 0.62 | | 0.57 | | 0.57 | -- |
| | **Log Likelihood** | -- | -319.52 | -- | -315.60 | -- | -373.69 | -- | -379.35 |
| | **Alpha** | -- | -0.04 (0.02) | -- | -0.03 (0.02) | -- | -0.00 (0.02) | -- | -0.02 (0.02) |
| **$LETI_j$: (Equation 8.19)** | **$LMLCC_j$ (or $LMLFCC_j$, $LMLSFCC_j$ & $LMLICC_j$)** | 0.07*** (0.03) | 0.10*** (0.07) | 0.09* (0.05) | 0.11** (0.09) | 0.12 (0.08) | 0.19 (0.15) | 0.11 (0.07) | 0.17 (0.09) |
| | **$R^2$** | 0.62 | -- | 0.64 | | 0.58 | | 0.58 | -- |
| | **Log Likelihood** | -- | -313.86 | -- | -307.52 | -- | -370.16 | -- | -376.71 |
| | **Alpha** | -- | -0.04 (0.02) | -- | -0.04 (0.02) | -- | -0.01 (0.02) | -- | -0.02 |
| **Observations** | | **212** | **240** | **63** | **240** | **83** | **240** | **66** | **240** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; Robust standard errors in parentheses; although the study incorporated other explanatory variables, but here we discussed only credit programme participation.

### 6.9. Impact of Rural Credit on Poverty Reduction

The estimation of the incidence of poverty and poverty gap is presented in Table 6.10. The incidence of poverty has been computed as the percentage of programme participants whose income per adult equivalent one was below the selected poverty line. The study also estimated the poverty gap by estimating the mean aggregate income per adult equivalent one shortfall relative to the poverty line across the sample. Likewise, MPI among credit programme participants is presented in Table 6.11. Moreover, Table 6.12 stated the distribution of deprived households under different indicators for construction of MPI.

## Table 6.10 Income Poverty amongst Credit Programme Participants

| | Concept | Overall | | | Formal | | | Semiformal | | | Informal | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample | Control | Treatment | Sample | Control | Treatment | Sample | Control | Treatment | Sample | Control | Treatment |
| PL | Overall | 240 | 28 (11.67) | 212 (88.33) | 212 | 177 (83.49) | 63 (29.72) | 212 | 157 (74.06) | 83 (39.15) | 212 | 174 (82.07) | 66 (54.55) |
| PC | LEOI ≤$PL_1$ | 50 (20.83) | 9 (32.14) | 41 (19.34) | 50 (23.58) | 46 (26) | 4 (6.3) | 50 (23.58) | 32 (20.4) | 18 (21.7) | 50 | 31 (17.8) | 19 (28.8) |
| | Poverty Gap | 7.82 | 10.61 | 5.03 | 4.59 | 6.89 | 2.29 | 5.21 | 6.75 | 3.66 | 6.83 | 4.28 | 9.38 |
| | Depth of Poverty (in ₹) | 287.06 | 321.26 | 252.85 | 303.96 | 257.77 | 350.14 | 243.04 | 322.05 | 164.02 | 275.1 | 233.69 | 316.51 |
| WB | LEOI ≤$PL_2$ | 188 (78.33) | 26 (92.9) | 162 (76.4) | 188 (88.68) | 162 (91.5) | 26 (41.3) | 188 (88.68) | 111 (70) | 77 (92.8) | 188 (88.68) | 129 (74.1) | 59 (89.4) |
| | Poverty Gap | 47.42 | 54.89 | 39.94 | 34.13 | 50.04 | 18.22 | 42.92 | 37.59 | 48.24 | 44.33 | 38.45 | 50.20 |
| | Depth of Poverty (in ₹) | 53.47 | 56.75 | 50.18 | 47.44 | 52.48 | 42.39 | 50.91 | 51.89 | 49.93 | 51.86 | 49.78 | 53.94 |

Source: Authors' estimation based on field survey; Note: Figures in parentheses represent per cent of households

## Table 6.11 MPI amongst Credit Programme Participants

| Concept | Overall | | | Formal | | | Semiformal | | | Informal | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample | Control | Treatment | Sample | Control | Treatment | Sample | Control | Treatment | Sample | Control | Treatment |
| Overall | 240 | 28 (11.67) | 212 (88.33) | 212 | 177 (83.49) | 63 (29.72) | 212 | 157 (74.06) | 83 (39.15) | 212 | 174 (82.07) | 66 (54.55) |
| MPI≥33 (Poor) | 106 (44.2) | 12 (42.9) | 94 (44.3) | -- | 96 (54.2) | 10 (15.9) | -- | 60 (38.2) | 46 (55.4) | -- | 68 (39.1) | 38 (57.6) |
| MPI | H= 44.2 (0.44) A= 59.02 (0.59) MPI= (0.44 ˣ 0.59)= 0.26 (25.96) | | | H= 15.9 (0.16) A= 51.40 (0.51) MPI= (0.16 ˣ 0.51)= 0.08 (8.16) | | | H= 55.4 (0.55) A= 57.52 (0.58) MPI= (0.55 ˣ 0.58)= 0.32 (31.9) | | | H= 57.6 (0.58) A= 61.87 (0.62) MPI= (0.58 ˣ 0.62)= 0.36 (35.96) | | |

Source: Authors' estimation based on field survey; Notes: Here, H: Percentage of people who are MPI poor (Incidence of Poverty) and A: Average intensity of MPI poverty across the poor (per cent); Figures in parentheses represent per cent of households

**Table 6.12 Distribution of Households Deprived Under Different Indicators for Calculation of MPI**

| Dimension | Indicators | Overall | Formal | Semiformal | Informal |
|---|---|---|---|---|---|
| **Health** | **Child Mortality** | 20 (48) | 20.6 (13) | 15.7 (13) | 19.7 (13) |
| | **Nutrition** | 47.1 (113) | 22.2 (14) | 59 (49) | 56.1 (37) |
| **Education** | **Years of Schooling** | 18.8 (45) | 4.8 (3) | 24.1 (20) | 25.7 (17) |
| | **School Attendance** | 8.3 (20) | 1.6 (1) | 13.3 (11) | 6.1 (4) |
| **Living Standards** | **Cooking Fuel** | 45 (108) | 15.9 (10) | 57.8 (48) | 56.1 (37) |
| | **Toilet** | 64.2 (154) | 38.1 (24) | 77.1 (64) | 75.8 (50) |
| | **Water** | 20.4 (49) | 3.2 (2) | 10.8 (9) | 45.5 (30) |
| | **Electricity** | 32.9 (79) | 7.9 (5) | 44.6 (37) | 39.4 (26) |
| | **Floor** | 54.6 (131) | 23.8 (15) | 65.1 (54) | 71.2 (47) |
| | **Assets** | 47.9 (115) | 25.4 (16) | 59 (49) | 56.1 (37) |

Source: Authors' estimation based on field survey; Note: Figures in parentheses represent per cent of households

We observed a larger incidence of poverty amongst treatment households at semiformal and informal than at formal when $PL_1$ and $PL_2$ were employed. The estimated poverty gap was also higher in informal sources followed by semiformal sources. Poor borrowers at formal sources had to cover, on average, an income shortfall of ₹350.14 per month in order to cross the $PL_1$, whereas poor borrowers at semiformal and informal had to cover only ₹164.02 and ₹316.51, respectively.

Equally, we can get the similar picture from MPI scores. Treatment households of semiformal and informal sources are more multidimensionally poor than formal sources (see Table 6.11). However, in informal sources, we observed largest MPI poor treatment households among all three sources. For both semiformal and informal borrowers the status of MPI is severely multidimensionally poor, however, for formal sources borrowed households are deprived but not near- multidimensionally poor.

Now we might have the case here where some credit sources (formal) are more effective at reducing the number of poor households but only by lifting those who were closest to the poverty line, with low impacts on the poverty gap. Other sources (semiformal and informal) might be more effective in reaching the extreme poor, but by doing so, they report low, insignificant effects on the overall incidence, bringing the extreme poor closer to the poverty line. One way to find out whether our assumptions are correct is by estimating the marginal effects of borrowing across the poverty lines. We presented the results of probit in Table 6.13 and Table 6.14 respectively, for income poverty and MPI.

## Table 6.13 Effect of Rural Credit Programme Participation on the Probability of Staying in Poverty

| LEOI 1≤Specified Poverty Line | Variables | Overall | | Formal | | Semiformal | | Informal | |
|---|---|---|---|---|---|---|---|---|---|
| | | $LMLCC_j$ (Cj) | $WPRC_j$ (Pj) | $LMLFCC_j$ (Cj) | $WMABF_j$ (Pj) | $LMLSFCC_j$ (Cj) | $WMABSF_j$ (Pj) | $LMLICC_j$ (Cj) | $WMABI_j$ (Pj) |
| Planning Commission Poverty Line | Coefficient | -0.20 (0.06) | -0.40 (0.27) | -0.21 (0.06) | -0.88 (0.27) | -0.01* (0.05) | -0.05** (0.19) | 0.08* (0.05) | 0.36** (0.20) |
| | Marginal effects | -0.06 (0.02) | -0.13 (0.09) | -0.06 (0.02) | -0.20 (0.05) | -0.003** (0.01) | -0.01* (0.06) | 0.02** (0.01) | 0.11* (0.06) |
| | Pseudo $R^2$ | 0.04 | 0.01 | 0.06 | 0.05 | 0.00 | 0.00 | 0.01 | 0.07 |
| | Log Likelihood | -117.33 | -121.70 | -114.85 | -116.31 | -122.79 | -122.79 | -121.72 | -121.15 |
| World Bank Poverty Line | Coefficient | -0.56* (0.11) | -0.75** (0.37) | -0.36* (0.04) | -1.59** (0.21) | -0.23 (0.06) | -0.91 (0.23) | 0.14** (0.06) | 0.60** (0.23) |
| | Marginal effects | -0.14** (0.02) | -0.16* (0.06) | -0.09** (0.01) | -0.50* (0.07) | -0.06 (0.02) | -0.22 (0.05) | 0.04* (0.02) | 0.15* (0.05) |
| | Pseudo $R^2$ | 0.16 | 0.02 | 0.29 | 0.25 | 0.07 | 0.07 | 0.02 | 0.03 |
| | Log Likelihood | -105.48 | -123.01 | -88.61 | -94.07 | -116.80 | -116.50 | -122.36 | -121.78 |
| **Observations** | | **240** | **240** | **240** | **240** | **240** | **240** | **240** | **240** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; Figures in parentheses represent robust standard errors

## Table 6.14 Effect of Rural Credit Programme Participation on the Probability of Staying in MPI Poverty

| | Variables | Overall | | Formal | | Semiformal | | Informal | |
|---|---|---|---|---|---|---|---|---|---|
| | | $LMLCC_j$ (Cj) | $WPRC_j$ (Pj) | $LMLFCC_j$ (Cj) | $WMABF_j$ (Pj) | $LMLSFCC_j$ (Cj) | $WMABSF_j$ (Pj) | $LMLICC_j$ (Cj) | $WMABI_j$ (Pj) |
| MPI≥33 (poor) | Coefficient | -0.15** (0.06) | -0.04* (0.25) | -0.26** (0.05) | -1.11** (0.21) | 0.11** (0.04) | 0.44** (0.17) | 0.09** (0.05) | 0.47** (0.18) |
| | Marginal effects | -0.06* (0.02) | -0.01** (0.09) | -0.10* (0.02) | -0.38* (0.06) | 0.04* (0.02) | 0.17* (0.07) | 0.06* (0.02) | 0.18* (0.07) |
| | Pseudo $R^2$ | 0.02 | 0.00 | 0.11 | 0.09 | 0.02 | 0.02 | 0.01 | 0.02 |
| | Log Likelihood | -161.06 | -164.71 | -146.25 | -149.62 | -161.67 | -161.47 | -162.64 | -161.41 |
| **Observations** | | **240** | **240** | **240** | **240** | **240** | **240** | **240** | **240** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; Figures in parentheses represent robust standard errors

As expected, the slope coefficient reported negative signs for the overall, formal and semiformal sample when $PL_2$ included as dependent variables, but they only showed statistically significant levels when we estimated the probit equation for programme participants at overall and formal sources. For informal lenders, it is showing a statistically significant positive relationship. However, in the case of $PL_1$ the overall and formal samples indicate negative sign, but are not statistically significant. Indeed, the slope coefficient reported negative sign for the semiformal sample when $PL_1$ included as a dependent variable, but are not significant in the case of $PL_2$. Thus, we could not find statistical evidence to confirm a poverty impact from the formal and the overall sample at the lowest point of deprivation, where the extreme poor were grouped. This might confirm our hypothesis with regard to the idea that some lenders are more effective at having poverty impacts, but just at the upper limits of deprivation, where they can take those who are closest to the poverty line out of poverty. Likewise, the slope coefficient reported negative signs for overall and formal sample and the positive sign for semiformal and informal when MPI≥33 included as the dependent variable (Table 6.14).

### 6.10. Determinants of Life Satisfaction: Some Existing Studies

The well-known Easterlin (1974) paradox pointed the decoupling between the dynamics of per capita income and happiness in the post-war USA. Further, in general, and ahead of the aggravation of the paradox, the attention in this strand of the literature arises from the wish to experiment empirically the undemonstrated assumptions regarding the shape of utility functions which are at the basis of economic models once a broad array of large databases including information on self-confirmed life satisfaction has become accessible.

Life satisfaction empirical literature has studied the relationship between happiness and numerous determinants such as income (Easterlin 1995, 2001; Winkelmann and Winkelmann 1998; Frey and Stutzer 2000; Ravallion and Lokshin 2001; Ferrer-i-Carbonell and Frijters 2004; Ferrer-i- Carbonell 2005; Di Tella et al. 2005; Clark and Lelkes 2005) , employment position (Winkelmann and Winkelmann 1998), marital status (Argyle 1999; Johnson and Wu 2002; Frey and Stutzer 2002a, 2006b; Blanchflower and Oswald 2004), unemployment and inflation (Clark and Oswald 1994; Gallie and Russell 1998; Di Tella et al. 2001; Di Tella and MacCulloch 2003), relational goods (Becchetti et al. 2011b), natural capital (Engelbrecht 2011) and several other

factors. Moreover, life satisfaction analysis are also of practical attention as they indicate themselves extremely helpful for calculating with approaches like the compensating surplus, the shadow value of various non-marketable goods such as air quality and pollution (Welsch 2006, 2002), airport noise (Van Praag and Baarsma 2005), terrorism (Frey et al. 2007), the fear of crime (Moore and Shepherd 2006), marriage (Johnson and Wu 2002; Blanchflower and Oswald 2004; Frey and Stutzer 2006) and unemployment (Clark and Oswald 1994; Gallie and Russell 1998; Di Tella et al. 2001).

As of a methodological point of view, life satisfaction has been calculated either as a short run response to daily events (momentary effect) with the diary method (Kahneman and Krueger 2006) or as a wide-ranging long-run evaluation of one's own satisfaction regarding life. The major ingredient of empirical contributions has followed this second direction, allowing that a clearer assessment of one's own satisfaction requires the role of an inner resounding of living experiences. The exercise of interview-based information on respondent's valuation concerning the overall quality of their life is not free of methodological evils well explained in this literature – i.e. the signal on the inner state of the respondent assorted with the noise created by the current effect (Schwarz and Strack 1999), the inter-comparability of ordinal scales across diverse cultures, etc. Despite these difficulties, there is considerable confirmation that life satisfaction conceded a series of validation checks (Frey and Stutzer 2002b).

A good number of empirical studies examine determinants of life satisfaction in high-income countries, whereas research on the effects of development projects in low-income countries, not simply on economic indicators but also on wider concepts of wellbeing and life satisfaction, is still lagging behind. However, in the last decade, different authors (e.g. Narayan et al. 2000a, b; Ravallion and Lokshin 2002a, b; Herrera et al. 2006) have attempted to bridge this gap by arguing that the mixture of quantitative and qualitative wellbeing indicators can yield vital extra insights also in the case of development studies. More purposively, as inclusion processes undertake essential noneconomic effects (on self-esteem, dignity, social recognition), whereas varies in economic conditions have indirect effects on population cultures and habits, and hence, the wider wellbeing effect of development policies does not overlap with the conventionally calculated economic ones.

In addition, life satisfaction indicators may assist to calculate shadow values of nonmarket goods for the affected populations and the authentic distribution of the fruits of a given policy program among various stakeholders. With this framework, Rojas (2008) studies the intra-household allocation of health satisfaction and investigates in this way gender inequalities that can be because of cultural discrimination and bargaining in family arrangements. Herrera et al. (2006) compare Madagascar and Peru and point that the correlation between subjective well-being and income is stronger in poorer environments. Becchetti et al. (2011a) obtained similar results by comparing the life satisfaction effect of affiliation fair trade in two areas with markedly diverse standard of living. Likewise, Becchetti and Castriota (2010) demonstrate how exogenous shocks on income, such as the negative lottery of the tsunami, and the successive project to recapitalize microfinance institutions, find out changes in the life satisfaction of the borrowers hit by the catastrophe that emerge stronger than those experiential with parallel exogenous shocks in rich countries (Gardner and Oswald 2004; Frijters et al. 2004a, b).

Besides, the second peculiarity of determinants of life satisfaction in developing countries is that we usually view a more optimistic response to income inequality than in high-income countries because wellbeing improvements by peers are interpreted as amplified opportunities for social mobility (Herrera et al. 2006). This is consistent with what pragmatic in transition countries, in which the Hirschman's (1973) tunnel effect usually prevails over the negative impact of inequality (Senik 2004). The subsequent section described about data and variables used in empirical investigation.

### 6.11. Description of Variables and Descriptive Statistics for Life Satisfaction of Borrowers

Based on the literature and theoretical considerations, a set of explanatory factors is derived for an impact study. Table 6.15 presents the description of the variables, hypothesized relation, and the definition behind choosing the particular variable. The credit source-wise summary statistics of variables are presented in Table 6.16 and Table 6.17. Hence, approximately in all borrowers, lenders and location-specific characteristics, formal borrowers are in the superior position with respect to semiformal and informal borrowers.

Moreover, Table 6.18 (or Figure 1 to Figure 4) reveals the credit source-wise distribution of households under different life satisfaction scores. Overall, 32.5 per cent (78) households scored ‘five’ in their life satisfaction, while 23.3 per cent (56) ‘eight’, 14.2 per cent (34) ‘six’ and 12.5 per cent (30) scored ‘three’ in their life satisfaction. However, in formal sector, 49.2 per cent (31) scored ‘eight’, 19 per cent (12) ‘seven’, 12.7 per cent (8) ‘six’ and 7.9 per cent (5) scored ‘three’ in their life satisfaction. Similarly, in semiformal sector, 54.2 per cent (45) scored ‘five’, 14.5 per cent (12) ‘six’, 10.8 per cent (9) ‘seven’ and 9.6 per cent (8) scored ‘eight’ in their life satisfaction. Equally, in the informal sector, 22.7 (15) of households scored ‘three’ and ‘eight’ respectively, in their life satisfaction, while 33.3 per cent (22) scored ‘five’ and 16.7 per cent (11) scored ‘six’ in their life satisfaction.

## Table 6.15 Variables Included in the Regression For OLS, Ordered Probit, and Propensity Score Approach

| **Dependent Variable for OLS and Ordered Probit Model:** Life Satisfaction Ranges from 0-10 | | | |
|---|---|---|---|
| **Explanatory Variables** | **Notation** | **Definition** | **Hypothesized Relation** |
| **Whether Non-Borrowers** | **$WNB_j$** | Dummy: Whether the household didn't borrow money in last three years, but borrow money prior to that; D=1 if so and 0, otherwise | - |
| **Sick Members** | **$WSM_i$** | Dummy: Whether there have any major sick members of the households; D=1 if so and 0, otherwise | - |
| **Dwelling Pakka** | **$WDP_i$** | Dummy: Whether the household has pakka dwelling; D=1 if so and 0, otherwise | + |
| **Age of Household Head** | **$AHH_i$** | It measures the working ability of Household Head | + |
| **Occupation** | **$GJ_i$** | Dummy: Whether the main income source of household is govt. job; D=1 if it is govt. job and 0, otherwise | + |
| **Family Members** | **NFMi** | Number of family members in the respondent households | +/- |
| **Family Income** | **$FI_i$** | Household income per annum | + |
| **Spends on Subsistence** | **$ISS_i$** | Household income spends on subsistence per annum | +/- |
| **Access to Health Care** | **$WAHC_i$** | Dummy: Whether the household can access to basic health care facility; D=1 if so and 0, otherwise | + |
| **Good Sanitation** | **$WGS_i$** | Dummy: Whether the household has pakka sanitation facility; D=1 if so and 0, otherwise | + |
| **No of Son/Daughter** | **$NSD_i$** | Numbers of son and daughter of household head | +/- |
| **Dependent Members** | **$NDM_i$** | No of dependent members who don't earn any income in the family | - |
| **Improvement In Occupation** | **$WIO_i$** | Dummy: Whether any improvement in occupation of household in last five years | + |
| **Cover Expenditure** | **$WCE_i$** | Dummy: Whether the household income covers day to day expenditure; D=1 if so and 0, otherwise | + |
| **Physical Assets** | **$VPA_i$** | The value of physical assets of the households: it may measure the collateral value of the households | + |
| **Own Livestock** | **$WOL_i$** | Dummy: Whether the household owns any livestock; D=1 if so and 0, otherwise | +/- |
| **Other Loan** | **$OL_i$** | Dummy: Whether loan taken from others apart from studied sources; D=1 if so and 0, otherwise | - |
| **Household Head Male** | **$HHM_i$** | Dummy: Whether household head is male; D=1 if so and 0, otherwise | +/- |
| **Education** | **$HHED_i$** | Education of the household head in terms of numbers of years of schooling | +/- |
| **Amount Save** | **$AS_i$** | The Amount of money, saves by households per annum | +/- |
| **Married** | **$HHM_i$** | Dummy: Whether the household head is married; D=1 if so and 0, otherwise | +/- |
| **Distance to Market Place** | **$DMP_i$** | It measures the effect of market linkage on money borrowing | - |
| **Borrowers** | **$WB_j$** | Dummy: Whether borrow money from any sources; D=1 if so and 0, otherwise. This variable is only used in propensity score matching. | +/- |
| **Majority Formal** | **$WMF_j$** | Dummy: Whether majority borrowed from formal sources; D=1 if so and 0, otherwise. This variable is only used in propensity score matching. | +/- |
| **Majority Semiformal** | **$WMSF_j$** | Dummy: Whether the majority borrowed from semiformal sources. This variable is only used in propensity score matching. | +/- |
| **Majority Informal** | **$WMIF_j$** | Dummy: Whether the majority borrowed from informal sources. This variable is only used in propensity score matching. | +/- |

**Table 6.16 Credit Source-Wise Descriptive Statistics of Variables (Amount in ₹)**

| Variables | Statistics | Pooled | Formal | Semiformal | Informal |
|---|---|---|---|---|---|
| $AHH_j$ | **M** | 46.41 | 51.97 | 41.77 | 45.59 |
| | **SD** | 14.33 | 15.33 | 12.25 | 14.23 |
| $DMP_j$ | **M** | 6.4 | 5.92 | 6.01 | 6.35 |
| | **SD** | 2.99 | 3.66 | 2.57 | 2.85 |
| $NFM_j$ | **M** | 5.55 | 6.22 | 4.81 | 5.92 |
| | **SD** | 2.47 | 2.67 | 1.56 | 3.2 |
| $FI_j$ | **M** | 127225 | 237238.1 | 83060.24 | 90909.09 |
| | **SD** | 123788.1 | 160001.4 | 67137.53 | 76195.04 |
| $ISS_j$ | **M** | 52650 | 68095.24 | 43807.23 | 49636.36 |
| | **SD** | 26714.25 | 30654.01 | 19671.98 | 25051.11 |
| $NDM_j$ | **M** | 3.42 | 4.02 | 2.81 | 3.79 |
| | **SD** | 1.99 | 2.32 | 1.25 | 2.42 |
| $VPA_j$ | **M** | 343916.7 | 726984.1 | 211325.3 | 187575.76 |
| | **SD** | 543460.6 | 825785.3 | 348077.55 | 176922.94 |
| $ENS_j$ | **M** | 6.6 | 9.3 | 5.82 | 5.21 |
| | **SD** | 4.8 | 4.35 | 4.45 | 4.86 |
| $NSD_j$ | **M** | 2.22 | 2.41 | 2.01 | 2.24 |
| | **SD** | 1.39 | 1.15 | 1.44 | 1.51 |
| $AS_j$ | **M** | 1405.83 | 3780.95 | 606.02 | 374.24 |
| | **SD** | 3278.34 | 5348.29 | 974.35 | 483.68 |
| **Observations** | | **240** | **63** | **83** | **66** |

Source: Authors' estimation based on field survey; Note: M= Mean, SD= Standard Deviation

**Table 6.17 Proportion of Household's Under Categorical Variables**

| Variables | Pooled | Formal | Semiformal | Informal |
|---|---|---|---|---|
| $WNB_i$ | 28 (11.7) | -- | -- | -- |
| $HHM_i$ | 177 (73.8) | 47 (74.6) | 61 (73.5) | 50 (75.8) |
| $GJ_i$ | 48 (20.0) | 30 (47.6) | 4 (4.8) | 10 (15.2) |
| $WSM_i$ | 84 (35.0) | 29 (46.0) | 21 (25.3) | 23 (34.8) |
| $WDP_i$ | 109 (45.4) | 48 (76.2) | 29 (34.9) | 19 (28.8) |
| $WAHC_i$ | 108 (45.0) | 41 (65.1) | 27 (32.5) | 21 (31.8) |
| $WGS_i$ | 86 (35.8) | 39 (61.9) | 19 (22.9) | 16 (24.2) |
| $WIO_i$ | 96 (40.0) | 38 (60.3) | 30 (36.1) | 20 (30.3) |
| $WCE_i$ | 149 (62.1) | 55 (87.3) | 41 (49.4) | 44 (66.7) |
| $WOL_i$ | 143 (59.6) | 42 (66.7) | 43 (51.8) | 42 (63.6) |
| $HHM_i$ | 209 (87.1) | 57 (90.5) | 69 (83.1) | 57 (86.4) |
| $OL_i$ | -- | 41 (65.1) | 55 (66.3) | 37 (56.1) |
| **Observations** | **240** | **63** | **83** | **66** |

Source: Authors' estimation based on field survey; Note: Figures in the parentheses represent per cent of households

**Table 6.18 Credit Source-Wise Distribution of Households under Different Life Satisfaction Scores**

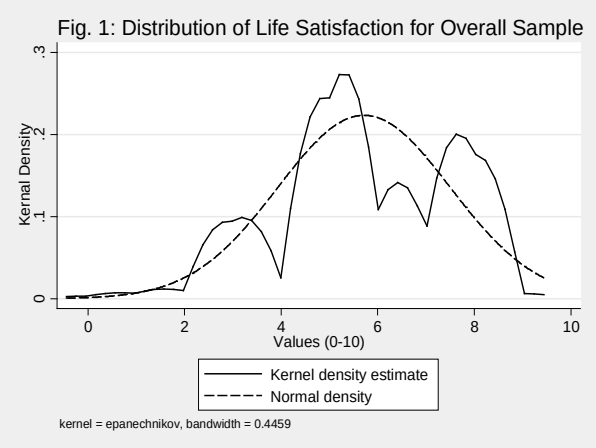
| Scores | Pooled | Formal | Semiformal | Informal |
|---|---|---|---|---|
| **0** | 1 (0.4) | 0 | 0 | 0 |
| **1** | 2 (0.8) | 0 | 1 (1.2) | 0 |
| **2** | 3 (1.3) | 0 | 0 | 0 |
| **3** | 30 (12.5) | 5 (7.9) | 5 (6.0) | 15 (22.7) |
| **4** | 8 (3.3) | 1 (1.6) | 3 (3.6) | 0 |
| **5** | 78 (32.5) | 4 (6.3) | 45 (54.2) | 22 (33.3) |
| **6** | 34 (14.2) | 8 (12.7) | 12 (14.5) | 11 (16.7) |
| **7** | 26 (10.8) | 12 (19.0) | 9 (10.8) | 3 (4.5) |
| **8** | 56 (23.3) | 31 (49.2) | 8 (9.6) | 15 (22.7) |
| **9** | 2 (0.8) | 2 (3.2) | 0 | 0 |
| **10** | 0 | 0 | 0 | 0 |
| **Observations** | **240** | **63** | **83** | **66** |

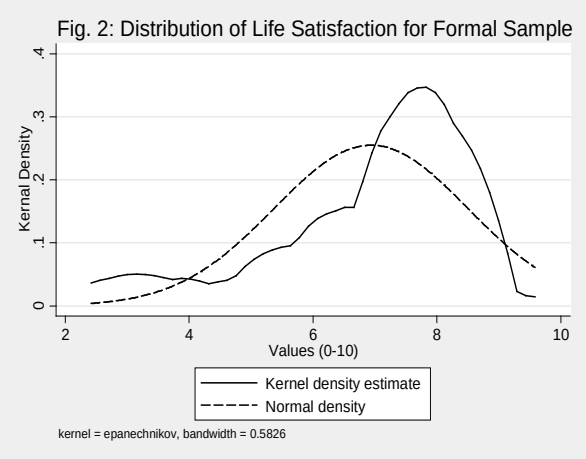
Source: Authors' estimation based on field survey; Note: Figures in the parentheses represent per cent of households

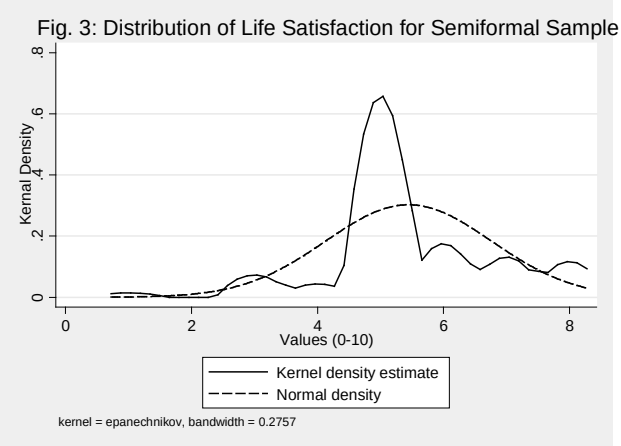
**Table 6.19 Nonparametric tests (Wilcoxon Signed-Rank) on differences in life satisfaction and income between groups**

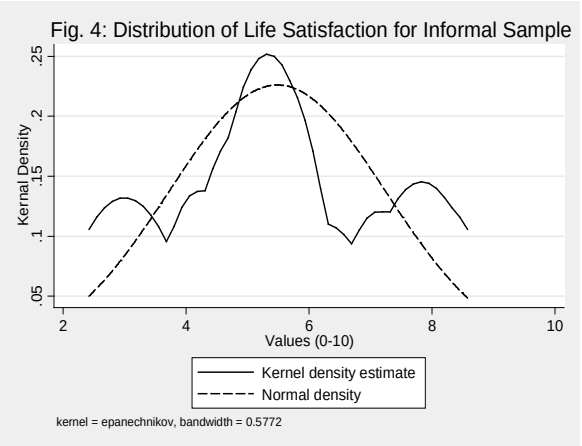
| **$H_0$ = Two Distributions are the Same, i.e. $X_1 \sim X_2$** | | | | |
|---|---|---|---|---|
| **Comparison** | **Life Satisfaction** | | **Income (p/a)** | |
| | **Z- stat.** | **p -value** | **Z- stat.** | **p -value** |
| **Pooled versus Formal Sample** | -5.06 | 0.00 | -4.73 | 0.00 |
| **Pooled versus Semiformal Sample** | -1.84 | 0.04 | 0.75 | 0.05 |
| **Pooled versus Informal Sample** | -1.72 | 0.05 | -0.02 | 0.03 |
| **Formal versus Semiformal Sample** | 4.98 | 0.00 | 6.05 | 0.00 |
| **Formal versus Informal Sample** | 4.32 | 0.00 | 5.10 | 0.00 |
| **Semiformal versus Informal Sample** | -0.45 | 0.05 | -1.46 | 0.01 |

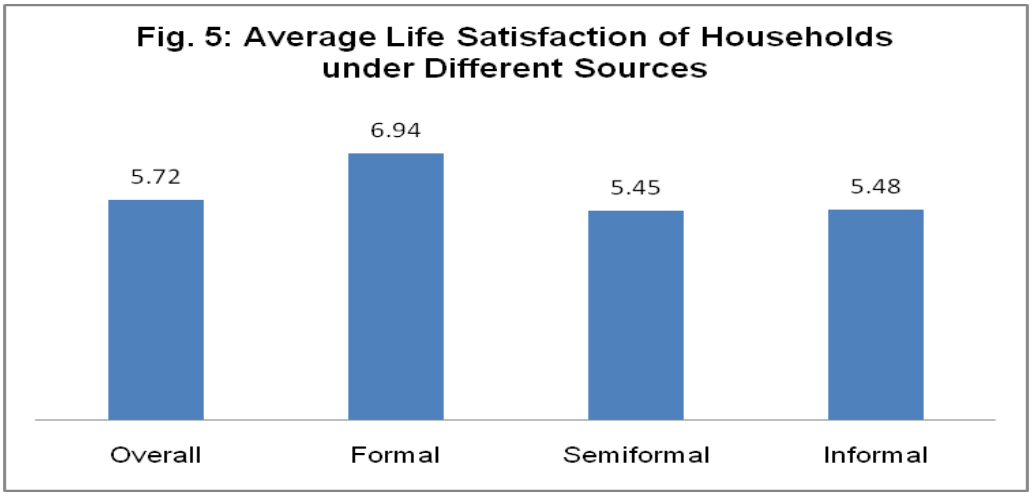
Source: Authors' estimation based on field survey




The Wilcoxon nonparametric test documents that formal clients have on average a significantly higher level of life satisfaction than pooled clients. Moreover, average life satisfaction of pooled

clients is significantly greater than semiformal clients. As well, average life satisfaction of pooled clients is greater than informal clients, formal clients are greater than semiformal and informal clients, and informal clients are greater than semiformal clients (see Figure 5 and Table 6.19).

### 6.12. Econometric Model Building for Life Satisfaction

To study the effect of rural credit participation on life satisfaction, we calculate the following econometric arrangement:

$$\textbf{Life Satisfaction}_j = \alpha_0 + \alpha_1 WNB_j + \alpha_2 WSM_j + \alpha_3 WDP_j + \alpha_4 AHH_j + \alpha_5 GJ_j + \alpha_6 NFM_j + \alpha_7 FI_j + \alpha_8 ISS_j + \alpha_9 WAHC_j + \alpha_{10} WGS_j + \alpha_{11} NSD_j + \alpha_{12} NDM_j + \alpha_{13} WIO_j + \alpha_{14} WCE_j + \alpha_{15} VPA_j + \alpha_{16} WOL_j + \alpha_{17} OL_j + \alpha_{18} HHM_j + \alpha_{19} HHED_j + \alpha_{20} AS_j + \alpha_{21} HHM_j + \alpha_{22} DMP_j$$

We calculate the model for the pooled, formal, semiformal and informal borrowers separately. Life satisfaction is considered as a categorically ordered variable based on the reply to the question 'How satisfied are you with your life, all things considered?' The replies are rated from 0 (totally dissatisfied) to 10 (totally satisfied). As the dependent variable points on an ordinal scale, life satisfaction regressions are usually calculated with an ordered probit or logit. However, Van Praag and Ferrer-i-Carbonell (2006, 2007) demonstrate that the simple linear models are as good as the probit and logit model, but computationally much easier. Therefore, we put forward both ordinary least squares (OLS) and ordered probit (OPROBIT) estimates in order to confirm the robustness to estimating techniques of each model specification.

### 6.13. Evaluation of Non-Monetary Effect of Credit Access

The maximum likelihood and OLS estimation of the ordered probit model is presented in Appendix T. The calculation of the marginal effect of a change in a regressor on the probability of declaring oneself very happy in the ordered probit estimate is obtained by the following formula:

$$\Delta \Pr(\text{Highest Satisfied}) = N(AS + \Delta AS - Hc) - N(AS - Hc)$$

Where ‘N’ is the cumulative normal distribution, ‘AS’ the predicted average satisfaction level and ‘Hc’ the highest cut point. We interpreted coefficients with this result and presented in Table 6.20.

By applying this formula, we find that in pooled sample a unit change in the non-borrower households leads to 0.002 per cent lower probability of declaring the highest life satisfaction score in comparison to borrower households. Thus, this highlights the positive relation of life satisfaction with borrowings and consistent with the result of Taylor et al. (2009) in which they have found the positive relation between financial capabilities and life satisfaction through reduction of anxiety and depression.

The average age of the household’s head, which measures the working ability of the household, had the positive impact on life satisfaction of pooled and formal borrowers; however it has the negative influence on semiformal and informal borrowers. This may be because earning capacity and working abilities of formal borrowers expand with the increase in their age, unlike semiformal and informal borrowers. In addition, semiformal and informal borrowers generally invest their credit in unproductive activities, so they unable to accrue more benefit with the expansion of their age and working abilities. Accordingly, because of that, they may remain in stress for repayment of their credit which is difficult due to unprofitable investment.

Likewise, distance to market place has the negative influence on life satisfaction of pooled and semiformal borrowers; conversely, for formal and informal sources it is insignificant. This may be for the reason of the reduction of potential demand of the borrower’s economic activity. Nevertheless, the insignificant result of formal and informal borrowers indicates the irrelevance of a market for their activities as the majority of formal borrowers used their credit in house construction while informal borrowers spend their credit on the daily needs and medical purposes.

In addition, a number of family members have a positive effect on life satisfaction of pooled, formal and informal borrowers, but it affects negatively on semiformal borrowers. This may be due to nonavailability of basic essential goods and services among semiformal borrowers with the increase of their family members. Equally, in the same empirical finding life satisfaction of

borrower declines with the augment in numbers of son/daughter in the family and probability of declaring the highest level of life satisfaction declines by 0.09 per cent and 0.08 per cent respectively, for semiformal and informal borrowers, while for formal borrowers it increases by 0.065 per cent.

As expected family income has the positive effect on life satisfaction of pooled, formal and informal borrowers, however, it is not significant for semiformal borrowers. This finding supported the puzzle since the empirical life satisfaction literature has provided plenty evidence of the fact that such variables should be significant for the happiness of the poor (Di Tella and MacCulloch 2008). In order to avoid the risk that the income variable is misinterpreted (or that household income is a poor proxy for permanent income and/or monetary pleasure which are anticipated to affect more directly life satisfaction) the study adds the total value of physical assets among regressors. However, the variable is strongly significant in the model estimated for all credit sources. Our interpretation of the income puzzle is that family income is just one of the factors influencing permanent income and monetary pleasure. Other factors include government job, the amount of saving, households borrowed from other credit sources, improvement in present occupation and even the marital status which may capture economic as well as an effective component.

Household expenditure on subsistence has the negative effect on life satisfaction of pooled, semiformal and informal borrowers while insignificant for formal borrowers. The negative effect may be because of the fact if they spend their credit money on daily expenses, they may get satisfied in the short run, however, faced difficulty and harassed at times of repayment of credit in the long run.

Further, HHM has the negative impact on life satisfaction of formal borrowing households, whereas for other sources it is insignificant. This may be for the reason that women borrowers are more creditworthy, and they can spend money in the most proper way by scrutinizing the purpose of borrowing.

Additionally, household's life satisfaction is positively related to the numbers of schooling years of the household head for pooled, formal and informal borrowers, while for semiformal

borrowers it affects negatively. A conceivable interpretation is that, as it is well known, education raises expectations and this may have a counterbalancing (negative) effect on life satisfaction with respect to the projected positive one. The point is well resumed by Frey and Stutzer (2002a) claiming that the level of education, as such, bears little relationship to happiness. Education is decidedly associated with income. Education may indirectly contribute to pleasure by allowing a better adaptation to altering environments. But it also tends to raise aspiration levels. Further, it has been found that the well educated are more anxious than the less educated when they are hit by unemployment (Clark and Oswald 1994).

Moreover, WDP has the positive impact on life satisfaction of pooled and formal borrowers. However, for semiformal and informal borrowers the probability declines by 0.032 per cent and 0.04 per cent respectively. The negative effect is may be due to the fact that if the borrowers utilize their loan in house constructions which do not have any direct economic gain and returns, they faced difficulty in repayment because of higher interest rate charged by semiformal and informal organizations.

Likewise, borrowers with access to health care facilities have the positive impact on life satisfaction of pooled, formal and informal borrowers, while for semiformal borrowers it is insignificant. Furthermore, good sanitation facility has the positive impact on the probability of declaring the highest level of life satisfaction score by 0.028 per cent and 0.087 per cent respectively for overall and semiformal borrowers with respect to the borrowers who doesn't have sanitation facility, while for formal and informal borrowers it is not showing significant. These results can be supported by the 'happy slave paradox': if individuals are so deprived of their rights, they may be in a circumstance of not even wish their emancipation and, therefore, remain pleased with their state of slavery (Sen 2005). The sufficient empirical literature, however, indicates that happy slave paradoxes are irrelevant when drawing inferences from large samples which always reveal a strong positive correlation between life satisfaction and capabilities (Frey and Stutzer 2002b).

The probability of declaring the highest level of life satisfaction score declines by 0.005 per cent and 0.13 per cent, respectively, for semiformal and informal borrowers with the families who own any kind of livestock in comparison with the family who do not have livestock. However,

for overall borrowers, it boosts by 0.009 per cent. The negative effect may be because of non-availability of market, lack of demand, need more manpower, and high cost of maintaining their activities.

As well, the probability of declaring highest life satisfaction score declines by 0.057 per cent with the increase in the amount of saving among formal borrowers, while for other borrowers it is not showing significant. The negative effect may be because borrowers save money by reducing their present consumption of entertainment and some luxurious activities which may directly be related to their life satisfaction.

Indeed, the probability of declaring the highest level of life satisfaction scores turn down by 0.039 per cent, 0.004 per cent and 0.04 per cent, respectively, for pooled, semiformal and informal borrowers with the increasing numbers of the household head who got married in comparison with the non-married household head. However, for formal borrowers, it increases by 0.087 per cent. This result is contradictory to the result of Becchetti and Conzo (2013) in which they found the positive relation between life satisfaction and marital status for microfinance organization borrowers.

Life satisfaction of borrower's increases with the expansion of household who have borrowed money from other sources apart from studied sources. This variable indicates that borrowers may meet their unfulfilled desire by borrowing from other sources apart from studies sources. Sometimes they may face difficulty because of multiple borrowings, and is generally happening in the case of informal borrowers as they need to pay higher interest rate without any economic return from borrowed money.

Apparently, the arrangement calculated in columns 3 and 4 under formal sources (see Appendix T) is fully subject to selection bias which is particularly severe in rural credit studies. Do the nexus between life satisfaction and the borrower status driven by involvement with rural credit or is it pre-existent and because of heterogeneous characteristics between treatment and control sample? In this second circumstance, a reverse causality nexus applies: individuals endowed with specific personality traits (insolence, friendliness, etc.) are both happier and more likely to be successful in their jobs and activities. Such individuals are thus more prone to receive a loan

and, by considering them as the treatment group, the impact of rural credit participation might be overestimated. As well the presence of a selection bias, through overestimating the influence of the treatment on the treated, leads to wrong policy conclusions on its effectiveness. Essentially, the argument for the endogeneity between income and happiness applies also to the relationship between life satisfaction and rural borrower status. As a partial solution to the heterogeneity problem among treatment and control sample undertake nevertheless that control sample individuals are chosen among those as other sources customers and few are non-borrowers. They, therefore, live in the same villages, have income which falls into the category of potential rural borrowers and can start an economic activity.

A problem which prevents us from interpreting our result in the second arrangement as a causality nexus is the survivorship bias. What we examine are merely successful borrowers (those for which the loan, the ex-post economic performance and, seemingly, life satisfaction are positively associated) of the studied source. However, the initial pool of borrowers incorporated also those who abortive at a given credit cycle and, therefore, terminated their relationship with the studied lenders. This second group of initial borrowers is more likely to register a non-positive nexus between the rural credit participation, economic success, and life satisfaction. In order to have an evaluation of the impact of rural credit, which mitigates survivorship bias, we estimated it separately for semiformal and informal sources (see Appendix T, columns 6 and 8). Moreover, as a third specification, in order to reduce heterogeneity between treatment and control group we estimated the model in the treatment group by using one variable- whether households borrowed from other sources apart from studying sources.

A typical objection which may be raised in a survey measuring the effects of rural credit on happiness is that borrowers may feel obliged to declare higher happiness levels if they figure that the credit institutions may in some way check their answers. The study, however, find that our result is robust to the inclusion of estimation separately for all three credit sources.

**Table 6.20 Marginal Effects of Ordered Probit Model for Determination of Life Satisfaction for Rural Borrowers**

| Variables | Pooled | Formal | Semiformal | Informal |
|---|---|---|---|---|
| $WNB_i$ | -0.002** | -- | -- | -- |
| $AHH_i$ | 0.091* | 0.0016*** | -0.010 | -0.09*** |
| $DMP_i$ | -0.004*** | -0.060 | -0.050*** | 0.22 |
| $NFM_i$ | 0.003* | 0.053* | -0.080* | 0.11* |
| $FI_i$ | 0.04** | 0.027*** | 0.055 | 0.096*** |
| $ISS_i$ | -0.093*** | 0.008 | -0.030* | -0.011* |
| $NDM_i$ | -0.008 | -0.076 | -0.09* | -0.06 |
| $VPA_i$ | 0.013* | 0.0037** | 0.0050*** | 0.0038** |
| $HHM_i$ | -0.05 | -0.073** | -0.09 | -0.27 |
| $GJ_i$ | 0.008*** | 0.0077* | -0.01 | -0.25*** |
| $HHED_i$ | 0.0067* | 0.078* | -0.019* | 0.007* |
| $WSM_i$ | -0.009 | -0.026 | -0.056 | -0.04 |
| $WDP_i$ | 0.007** | 0.01** | -0.032*** | -0.04* |
| $WAHC_i$ | 0.028*** | 0.052* | 0.09 | 0.13** |
| $WGS_i$ | 0.104* | 0.0075 | 0.087* | -0.29 |
| $NSD_i$ | 0.060 | 0.065* | -0.090** | -0.08*** |
| $WIO_i$ | 0.001 | 0.073*** | 0.05 | 0.06 |
| $WCE_i$ | 0.050* | 0.097 | 0.007* | 0.21* |
| $WOL_i$ | 0.009*** | -0.080 | -0.005*** | -0.13** |
| $AS_i$ | -0.207 | -0.057*** | -0.052 | 0.0076* |
| $HHM_i$ | -0.039* | 0.087* | -0.004* | -0.04** |
| $OL_i$ | -- | 0.095*** | 0.043*** | -0.03*** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent

### 6.13.1. Robustness of Ordered Probit Model and Propensity Score Approach

The estimated results may be potentially subject to other types of selection bias. From descriptive statistics, we observe that formal borrowers are, on average richer and lives closer to the main market place. In principle, if formal borrowers living nearer to the main road run a healthier business this could feel them happier and, consequently, create a downward bias in our findings. Conversely, the interpretation can go the other way round since it might be hypothesized that individuals with activity nearer to the main marketplace can be more stressed by overwork. In such situation, we have an upward bias. The problem is only partly taken into explanation in our estimation when we control for the distance from the main market place.

An additional potential downward bias in our results arises if non-borrowers and borrowers of other sources apart from studies sources overstate their happiness levels in sort to present good signals about their quality as likely borrowers of the sources estimated. Hence, if the reasoning applies the significance of our results should be stronger. Evidently, too this bias could work in the contradictory direction (borrowers may have the incentive to demonstrate themselves joyful toward interviewers).

Given these considerations, the main hazard which can generate an upward bias with the danger of invalidating our results is a confounder which associates positively with the treatment, the outcome, and assortment into the treatment. These confounder can be for example the unobservable skills and enterprising ability which guide both to higher success in economic activities and superior capability in finding the entrance to financing sources or, alternatively, the observable distance from the main market place which implies less stress from overwork and so associates positively both with the outcome (happiness) and selection in the treatment (majority borrowed from estimated sources).

To address the potential selection bias, we exercise the propensity score approach and assess the Average Treatment Effect on the Treated (ATT) of the rural borrowers (separately for overall, formal, semiformal and informal borrowers) on the probability of announcing the highest level of life satisfaction. The propensity score is calculated by using the following probit specification:

**[Pr (Overall Borrowers), Pr (Formal Borrowers), Pr (Semiformal Borrowers) & Pr (Informal Borrowers)]** $= \alpha_0 + \alpha_1 WB_j + \alpha_2 WSM_j + \alpha_3 WDP_j + \alpha_4 AHH_j + \alpha_5 GJ_j + \alpha_6 NFM_j + \alpha_7 FI_j + \alpha_8 ISS_j + \alpha_9 WAHC_j + \alpha_{10} WGS_j + \alpha_{11} NSD_j + \alpha_{12} NDM_j + \alpha_{13} WIO_j + \alpha_{14} WCE_j + \alpha_{15} VPA_j + \alpha_{16} WOL_j + \alpha_{17} WMF_j + \alpha_{18} HHM_j + \alpha_{19} HHED_j + \alpha_{20} AS_j + \alpha_{21} HHM_j + \alpha_{22} DMP_j + \alpha_{23} WMSF_j + \alpha_{24} WMIF_j + U_j$

**Table 6.21 Result of Propensity Score Approach**

| **Outcome Variable:** Life Satisfaction; **Treatment Dependent Variable:** $WB_j$, $WMF_j$, $WMSF_j$ and $WMIF_j$; **Estimator:** Propensity Score Matching | | | | |
|---|---|---|---|---|
| **Sources** | **ATET** | **Coefficient** | **Z- test** | **Observations** |
| **Pooled** | **$WB_j$** | $2.05^{***}$ (1.06) | 1.94 | **240** |
| **Formal** | **$WMF_j$** | $1.41^{**}$ (0.66) | 2.13 | **240** |
| **Semiformal** | **$WMSF_j$** | $0.70^{*}$ (0.41) | 1.72 | **240** |
| **Informal** | **$WMIF_j$** | $0.56^{**}$ (0.39) | 1.43 | **240** |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; Figures in the parentheses represent standard errors

The estimated ATET is 2.05 and is significant supporting the hypothesis of the positive effect of borrowers on life satisfaction. Similarly, for formal, semiformal and informal sources estimated ATET are 1.41, 0.70 and 0.56 respectively, and they are significant, indicating the positive effect of all credit sources on life satisfaction in compared to their respective control samples.

### 6.14. Group Sustainability: Some Existing Facts

The term 'sustainability' in rural credit is defined as the repeating performance in the future. Such permanency requires a flexible organization and a structure of incentives to maintain performance in spite of changes in the environment (Schreiner, 1997). In addition, sustainability of SHGs refers to the ability of the group to maintain internal integrity without breaking up as it climbs through to higher order financial services (Srinivasan, 2008). Further, group sustainability implies the acquisition of skills and knowledge necessary to ensure that group is financially and institutionally sustainable.

To attain the institutional sustainability, groups need to independently manage and handle their group activities, whereas the financial sustainability of the group is studied through the ability of the group to meet its costs through resources mobilized (Shetty & Madheswaran 2008). Sustainability of SHGs can also be defined as the levels of skills and confidence of the group to approach the local institutions in order to mobilize resources at its own command (Rajasekhar, 2002). Hulme and Mosley (1996) distinguish between the "intended beneficiary school and "intermediary school" where the former is concerned with the impact of micro finance on the intended beneficiary individuals or households and later with the institutional outreach and institutional sustainability. Moreover, Mayoux (1998) provides three contrasting, but overlapping paradigms of financial self-sustainability, poverty alleviation and feminist empowerment. Apprehensions have been expressed whether the groups could be on their own managing their affairs once NGOs withdraw from the scene (Srinivasan, 2008), otherwise federation need to serve the purpose of undertaking those roles that can not be performed well by individual SHGs on their own (Reddy, 2008; Nair, 2005). Christen & Ivatury (2007) however makes the point that if federations are to contribute the long term viability of SHG they must not only provide critical services, but must do so in a manner that is sustainable.

There are a good number of literatures available regarding the issue of the sustainability of SHGs (Tankha, 2002; Christen & Ivatury, 2007; Shetty & Madheswaran, 2008; Srinivasan, 2008; Meenai, 2003; Roy & Gummadi, 2010), even though, very limited research has been done on measuring the group sustainability. Therefore, in present chapter we test the hypothesis that whether the SHGs can able to sustain their performance in the long run by constructing one

$MDSI^{SHG}$. For doing so, we test the same separately for organizational, managerial and financial sustainability through their respective indicators.

### 6.15. Organizational Sustainability of SHGs

Organizational sustainability is a pillar for making a sound platform for the SHGs for becoming managerially and financially viable entities. However, very few studies are carried out on the measurement of organizational sustainability of SHGs. The study made by the National Council of Applied Economic Research (NCAER) (2008) attempts to measure the organizational sustainability of SHGs in terms of dropout rate of the members. The present chapter tried to measure the organizational sustainability of SHGs by following the methodology of NCAER (2008).

$$\text{Dropout Rate} = \frac{\text{Number of Dropouts}}{\text{Number of Current SHG Members} + \text{Number of Dropouts}}$$

However, there is one difference with the methodology followed by NCAER (2008) and the present study. NCAER (2008) has not defined any criteria for examining the nature of group sustainability at the organizational level, but our study has developed a criterion for examining the nature of organizational sustainability (Table 6.22).

**Table 6.22 Criterion for Examining the Nature of Organizational, Managerial, Financial and Multidimensional Sustainability of SHGs**

| **Organizational Sustainability** | |
|---|---|
| **Dropout Rate** | **Nature of Sustainability** |
| 0 | Score: 0; Nature: Highest |
| 0< Dropout Rate ≤5 | Score: 25; Nature: High |
| 6≤ Dropout Rate ≤ 11 | Score: 50; Nature: Medium |
| 12≤ Dropout Rate ≤ 17 | Score: 75; Nature: Low |
| More than 17 | Score: 100; Nature: Lowest |
| **Managerial and Financial Sustainability** | |
| **$MSI^{SHG}$ and $FSI^{SHG}$ Value** | **Nature of Sustainability** |
| $MSI^{SHG}$ and $FSI^{SHG}$= 3 | Score: 0; Nature: Highest |
| 2.5 ≤ $MSI^{SHG}$ and $FSI^{SHG}$ ≤ 2.9 | Score: 25; Nature: High |
| 2 ≤ $MSI^{SHG}$ and $FSI^{SHG}$ ≤ 2.4 | Score: 50; Nature: Medium |
| 1.1≤ $MSI^{SHG}$ and $FSI^{SHG}$ ≤1.9 | Score: 75; Nature: Low |
| $MSI^{SHG}$ and $FSI^{SHG}$ =1 | Score: 100; Nature: Lowest |
| **Multidimensional Sustainability** | |
| **$MDSI^{SHG}$ Value** | **Nature of $MDSI^{SHG}$** |
| 0 ≤ $MDSI^{SHG}$ ≤ 10 | Highest |
| 11 ≤ $MDSI^{SHG}$ ≤ 20 | High |
| 21 ≤ $MDSI^{SHG}$ ≤ 30 | Medium |
| 31 ≤ $MDSI^{SHG}$ ≤ 40 | Low |
| 41≤ $MDSI^{SHG}$ ≤ 50 | Lowest |

Source: Authors' development

Out of total 647 SHG members, 45 (6.96 per cent) have dropped out from groups. In addition, 21 (35 per cent) SHGs have experienced dropout while among all dropout members, 15 (33.33 per cent) members main reason for dropout is unable to deposit compulsory saving in groups (Table 6.23). However, NCAER (2008) found that the most important reason for members dropping out (44 per cent) was the lack of benefits from SHGs. The distribution of groups across dropout rate is presented in Appendix U.

**Table 6.23 Distribution of Groups under Organizational Sustainability Indicator**

| | |
|---|---|
| Total Dropout SHGs | 21 (35) |
| No. of Dropout Members | 45 (6.96) |
| Average No. of Dropout Members | 2.14 |
| Average Dropout Ratio | 2.35 |
| Dropout Members Because of Unable to Save | 15 (33.33) |
| **Total SHGs** | **60** |
| **Total SHG Members** | **647** |

Source: Authors estimation based on field survey; Note: Figures in the parentheses represent per cent

## 6.16. Managerial Sustainability of SHGs

Managerial sustainability of SHGs can be defined as the managing and handling of the group activities and resolving various internal or external conflicts associated with the group functioning independently and efficiently. It implies that groups will become managerially sustainable once they are able to manage their activities and resolve the conflicts successfully without the intervention of their promoter agency or any other organization. Managerial un-sustainability may lead to the dropping out of members of the group. The indicators for measuring managerial sustainability are stated in Table 6.24.

**Table 6.24 Indicators for Measuring Managerial Sustainability**

| Sl. No | Indicators | Options | Score | Weight |
|---|---|---|---|---|
| 1 | Frequency of the Group Meeting (FM) | Weekly | 3 | 0.20 |
| | | Fortnightly | 2 | |
| | | Monthly | 1 | |
| 2 | Attendance of the Members in the Meeting (AM) | Over 90per cent | 3 | 0.20 |
| | | 70per cent-90per cent | 2 | |
| | | Less than 70per cent | 1 | |
| 3 | Maintenance of Group Records (MGR) | Group Members | 3 | 0.20 |
| | | Promoter Agency | 2 | |
| | | Others | 1 | |
| 4 | Decision Making Process (DMP) | Consensus | 3 | 0.20 |
| | | Group Leader | 2 | |
| | | Promoter Agency | 1 | |
| 5 | Rotation of Group Leadership (RGL) | Half Yearly | 3 | 0.10 |
| | | Annually | 2 | |
| | | Not Rotating | 1 | |
| 6 | Conflict Resolve Capacity of the Group (CRC) | Extremely Efficient | 3 | 0.10 |
| | | Efficient | 2 | |
| | | Poor | 1 | |

Source: Authors' development

After assigning the scores to the various indicators of the managerial sustainability of SHGs, a weighted average is taken to calculate the Managerial Sustainability Index for each SHG ($MSI^{SHG}$). Thus, $MSI^{SHG}$ is a weighted average of all the indicators of managerial sustainability at the group level.

### 6.16.1. Construction of $MSI^{SHG}$

Let $Z_{ij}$ denote the value of the 'j'$^{th}$ indicator of managerial sustainability for the 'i'$^{th}$ SHG and $W_j$ be the weights given to the various indicators of managerial sustainability. Then the general form of $MSI^{SHG}$ can be expressed as;

$$MSI^{SHG} = \sum_{j=1}^{6} WjZij \quad ; 1 \leq MSI^{SHG} \leq 3$$

Where,

$MSI^{SHG}$ = Managerial Sustainability Index of SHGs

$$\sum_{j=1}^{6} Wj = 1$$

$W_j$ = 0.20 for j = 1, 2, 3 and 4

= 0.10 for j = 5 and 6

The value of $MSI^{SHG}$ ranges between '1' and '3'. When all the indicators of managerial sustainability of SHGs take the lowest number, the value of $MSI^{SHG}$ becomes '1' whereas with

all the indicators taking the highest figure, the value of $MSI^{SHG}$ will be '3'. It indicates that when all the indicators of group sustainability at managerial level show the highest level of performance, $MSI^{SHG}$ value will be '3' and when they show the lowest performance level, the $MSI^{SHG}$ value will be '1'. The $MSI^{SHG}$ value not only measures the managerial sustainability of SHGs but also examines its nature. The criteria used for examining the nature of managerial sustainability of SHGs on the basis of $MSI^{SHG}$ value are shown in Table 6.22.

The distribution of groups across various managerial sustainability indicators being presented in Table 6.25 (or Appendix V) reveals that among all groups majority (56.7 per cent) have conducted monthly group meetings. About 70-90 per cent attendance of members at the meeting was found in 65 per cent of the group. Moreover, maintenance of group records by group members has been found in 63.3 per cent of groups among all groups. Again in the decision-making processes, all members' participation was observed in 43.3 per cent of the group. Further, group leadership was not rotated by 73.3 per cent of the group. In 71.1 per cent of the group, the conflict resolving capacity is extremely efficient.

**Table 6.25 Distribution of Groups under Various Managerial Sustainability Indicators**

| Managerial | Options | Proportion |
|---|---|---|
| $FM_i$ | Weekly | 43.3 |
| | Fortnightly | 0 |
| | Monthly | 56.7 |
| $AM_i$ | Over 90per cent | 35 |
| | 70-90per cent | 65 |
| | Less than 70per cent | 0 |
| $MGR_i$ | Groups Members | 63.3 |
| | Promoter Agency | 20 |
| | Others | 16.7 |
| $DMP_i$ | Consensus | 43.3 |
| | Group Leader | 38.3 |
| | Promoter Agency | 18.3 |
| $RGL_i$ | Half Yearly | 6.7 |
| | Annually | 20 |
| | Not Rotating | 73.3 |
| $CRC_i$ | Extremely Efficient | 71.1 |
| | Efficient | 21.7 |
| | Poor | 6.7 |

Source: Authors' estimation based on field survey

### 6.17. Financial Sustainability of SHGs

If the SHGs are to play the intended role, then it is important that such groups must emerge as sustainable entities - not only organizationally and managerially but also financially. The indicators for examining the financial sustainability of groups are mentioned in Table 6.26.

**Table 6.26 Indicators of Financial Sustainability**

| Sl. No | Indicators | Options | Score | Weight |
|---|---|---|---|---|
| 1 | Total Savings of the SHGs (TSG) | More than ₹ 10000 | 3 | 0.13 |
| | | ₹ 5000- ₹ 10000 | 2 | |
| | | Less than ₹ 5000 | 1 | |
| 2 | Total Borrowing of the SHGs (TBG) | More than ₹ 100000 | 3 | 0.13 |
| | | ₹ 50000- ₹ 100000 | 2 | |
| | | Less than ₹ 50000 | 1 | |
| 3 | Repayment of Loan by the SHGs (RLG) | Over 90 per cent | 3 | 0.13 |
| | | 70per cent-90 per cent | 2 | |
| | | Less than 70 per cent | 1 | |
| 4 | Total Lending of the SHGs (TLG) | More than ₹ 10000 | 3 | 0.13 |
| | | ₹ 5000- ₹ 10000 | 2 | |
| | | Less than ₹ 5000 | 1 | |
| 5 | Repayment of Loan by the SHGs Members (RLM) | Over 90 per cent | 3 | 0.13 |
| | | 70per cent-90 per cent | 2 | |
| | | Less than 70 per cent | 1 | |
| 6 | Provision of Loan for Productive Purposes (PPP) | Over 90 per cent | 3 | 0.13 |
| | | 70per cent-90 per cent | 2 | |
| | | Less than 70 per cent | 1 | |
| 7 | Utilization of Loan by the SHG Members for the Productive Purposes (UMPP) | Fully | 3 | 0.13 |
| | | Partially | 2 | |
| | | Other Purposes | 1 | |
| 8 | Dependence of SHG Members on Informal Sources (MDIL) | None | 3 | 0.13 |
| | | Less than 10 per cent | 2 | |
| | | More than 10 per cent | 1 | |

Source: Authors' development

As the scores are assigned to the various indicators of financial sustainability of SHGs, a weighted average is taken to calculate the Financial Sustainability Index for each SHG ($FSI^{SHG}$). Thus, $FSI^{SHG}$ is a weighted average of all the indicators of financial sustainability at the group level.

### 6.17.1. Construction of $FSI^{SHG}$

Let $Z_{ij}$ denote the value of the 'j'$^{th}$ indicator of financial sustainability for the 'i'$^{th}$ SHG and $W_j$ be the weights given to the various indicators of financial sustainability. Then the general form of $FSI^{SHG}$ can be expressed as;

$$FSI^{SHG} = \sum_{j=1}^{8} W_j Z_{ij} \quad ; 1 \leq FSI^{SHG} \leq 3$$

Where

$FSI^{SHG}$ = Financial Sustainability Index of SHGs

$\sum_{j=1}^{8} W_j = 1$

$W_j = 0.13$ for j=1, 2….8

The value of $FSI^{SHG}$ ranges between '1' and '3'. The nature of interpretation of the value '1' and '3' is same as in managerial sustainability and follow similar criteria (Table 6.22).

Table 6.27 (or Appendix W) indicates the distribution of groups across various financial sustainability indicators. The estimate shows that among all SHGs, 36.7 per cent of the group has a total savings of less than ₹5000 while 70 per cent of the group have total borrowing of less than ₹50000 and 46.51 per cent of groups repaid less than 70 per cent of their loan. Lending amount less than ₹5000 was found amongst the 43.3 per cent of SHGs and out of total borrowed money by SHG members, in the case of 45.24 per cent of groups less than 70 per cent of the money was repaid. Over 90 per cent of the money was lent for the provision of productive purposes in case of 38.09 per cent of the group. The loans being partially utilized for productive purpose among 48.84 per cent of members. More than 10 per cent of SHGs members are relying on informal lenders in case of 80 per cent of SHGs among all.

**Table 6.27 Distribution of Groups under Various Financial Sustainability Indicators**

| Indicators | Options | Proportion |
|---|---|---|
| $TSG_i$ | More than ₹10000 | 33.3 |
| | ₹5000- ₹10000 | 30 |
| | Less than ₹5000 | 36.7 |
| $TBG_i$ | More than ₹100000 | 26.7 |
| | ₹50000- ₹100000 | 3.3 |
| | Less than ₹50000 | 70 |
| $RLG_i$ | Over 90 per cent | 13.95 |
| | 70-90 per cent | 39.53 |
| | Less than 70 per cent | 46.51 |
| $TLG_i$ | More than ₹10000 | 35 |
| | ₹5000- ₹10000 | 21.7 |
| | Less than ₹5000 | 43.3 |
| $RLM_i$ | Over 90 per cent | 21.43 |
| | 70-90 per cent | 33.33 |
| | Less than 70 per cent | 45.24 |
| $PPP_i$ | Over 90 per cent | 38.09 |
| | 70-90 per cent | 35.71 |
| | Less than 70 per cent | 26.19 |
| $UMPP_i$ | Fully | 23.26 |
| | Partially | 48.84 |
| | Other Purposes | 27.91 |
| $MDIL_i$ | None | 10 |
| | Less than 10 per cent | 10 |
| | More than 10 per cent | 80 |

Source: Authors' estimation based on field survey

### 6.18. Construction of $MDSI^{SHG}$

Let $Z_{ij}$ denote the value of the 'j'$^{th}$ indicator of multidimensional sustainability for the 'i'$^{th}$ SHG and $W_j$ be the weights given to the various indicators of multidimensional sustainability. Then the general form of $MDSI^{SHG}$ can be expressed as;

$$MDSI^{SHG} = \sum_{j=1}^{3} WjZ_{ij} \quad ; \; 0 \leq MDSI^{SHG} \leq 50$$

Where,

$MDSI^{SHG}$ = Multidimensional Sustainability Index of SHGs

j = Organizational, Managerial and Financial Sustainability Index respectively

$W_j$ = 0.1 for Managerial Sustainability and 0.2 for both Organizational and Financial Sustainability.

$Z_{ij}$ = Sustainability Score of $j^{th}$ for $i^{th}$ SHGs

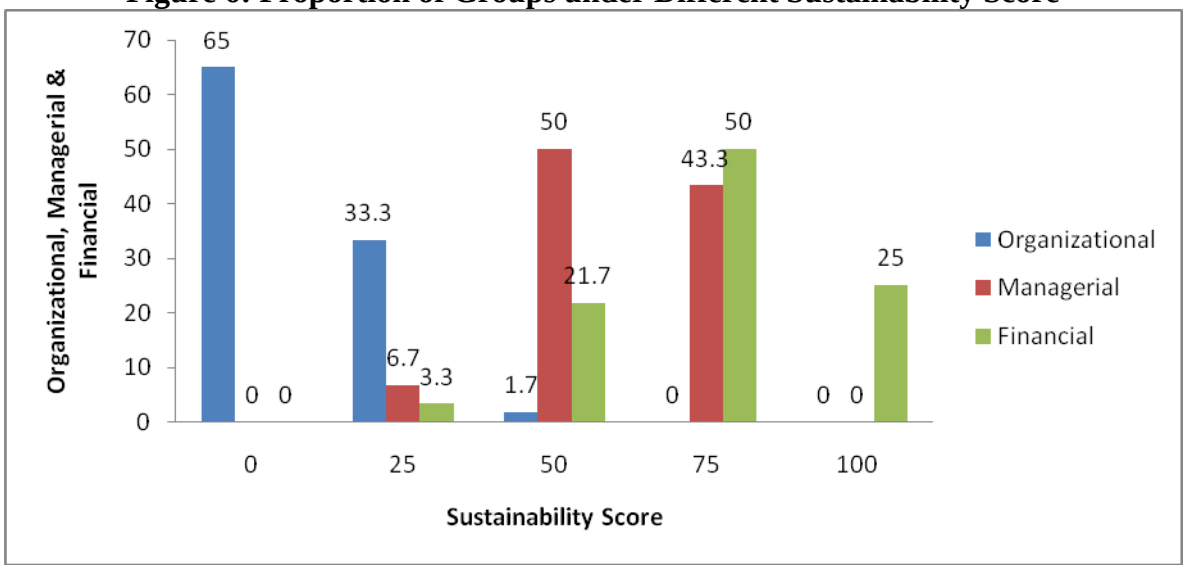
i = SHGs from 1 to 60

Thus, we have constructed $MDSI^{SHG}$ by combining organizational, managerial and financial sustainability indices of SHGs. It signifies that when all the indicators of multidimensional sustainability show the highest level of performance, $MDSI^{SHG}$ value will be '0' and when they show the lowest performance level, the $MDSI^{SHG}$ value will be '50'. Besides, the criterion for examining the nature of $MDSI^{SHG}$ is attached in Table 6.22.

### 6.19. Status of Group Sustainability

Among all SHGs, 65 per cent (39) groups having organizational sustainability score of '0', while 33.3 per cent (20) had secured '25'. Thus, almost all (98.03 per cent) SHGs are situated within the range of 'Highest' and 'High' organizational sustainability status (Figure 6). This may be because of their similar socioeconomic status, and trust and coordination among group members.

**Figure 6: Proportion of Groups under Different Sustainability Score**

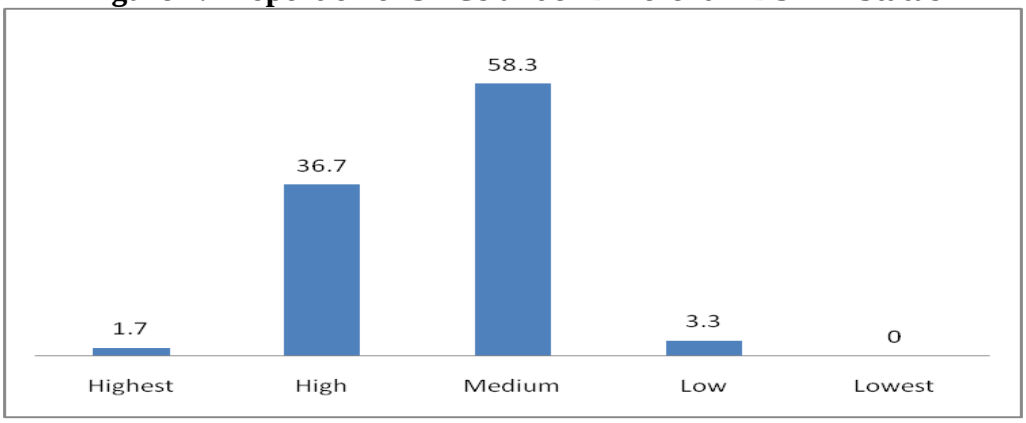



Source: Authors estimation based on field survey

Moreover, it shows that amongst all groups, 50 per cent (30) had secured managerial sustainability score '50', whereas, 43.3 per cent (26) '75', and the remaining 6.7 per cent (40) have secured '25'. Thus, unlike organizational sustainability, the majority of SHGs (93.3 per cent) is placed in the managerial sustainability status of 'Medium' and 'Low' (Figure 6). The data also highlight that only 43.3 per cent of SHGs conducted the group meeting weekly, 65 per cent of SHGs attendance of members in group meeting lies within 70-90 per cent, in 38.3 per cent of SHGs the group leader takes all decisions, and in 73.3 per cent of SHGs group leadership does not rotate. However, surprisingly, conflict resolution capacity is extremely efficient for 71.1 per cent of SHGs (Table 6.25).

Similarly, 50 per cent (30) SHGs has secured the financial sustainability score '75', 25 per cent (15) '100', and 21.7 per cent (13) '50'. Thus, like managerial sustainability, the majority of the SHGs (75 per cent) are positioned within the range of 'Low' and 'Lowest' financial sustainability status (Figure 6). This is obvious because data show that 36.7 per cent of the SHGs total saving amount is less than ₹5000, 46.51 per cent of the SHGs repayment rate of bank loan is less than 70 per cent, and more interestingly in the case of 80 per cent of SHGs, more than 10 per cent of SHGs members borrow from informal money lenders (Table 6.27). In addition the sustainability score of organizational, managerial and financial sustainability are presented in Appendix X.

**Figure 7: Proportion of SHGs under Different MDSI$^{SHG}$ Status**




Source: Authors' estimation based on field survey

From Figure 7 we reveal that 1.7 per cent (1) SHGs has received 'Highest' MDSI$^{SHG}$ status, 36.7 per cent (22) 'High', 58.3 per cent (35) 'Moderate', and 3.3 per cent (2) 'Low'[33]. However, under 'Lowest' MDSI$^{SHG}$ none of the SHGs was found. Hence, the majority of SHGs (95 per cent) was found within the range of 'High' and 'Moderate' MDSI$^{SHG}$ status, and may continue to function well over a long period of time. Although the present study is more or less first attempt to construct MDSI$^{SHG}$, however, our results are in line with Parida & Sinha (2010) where they argued that only female SHGs are sustainable, and the factors that determine the sustainability include recovery of loans, per capita savings, and linkage with an SHG federation. Moreover, some other studies such as Nair (2005), Moyle et al. (2006), and Chakrabarti (2004) has assessed that SHG federations play a critical role in improving the sustainability of SHGs through financial and organizational support. Nevertheless, in our case SHGs are constructed by members themselves, and some of them are promoted by banks.

## 6.20. Conclusions

An important number of impact studies have attempted to evaluate the effect of credit on poverty; but, many of these studies have not paid sufficient attention to the problems of endogeneity and selection bias. In present chapter we attempted to provide an econometric framework that controls the troubles of endogeneity and self-selection, and to assess the probable differences among formal, semiformal and informal lending technology concerning poverty

[33]The details construction of MDSI$^{SHG}$ is stated in Appendix Y. Moreover, group-wise status of MDSI$^{SHG}$ is presented in Appendix Z.

impacts by using a model of heckit procedure, tobit selection equation and probit. To lessen possible selection problems, the present chapter conducted a quasi-experiment household survey in four folds. Moreover, the study used income poverty line of the Planning Commission of India and World Bank while Multidimensional Poverty Index was utilized as social context. Further, for empirical estimation the study employed the logarithm of income per capita and two diverse definitions of income per adult equivalent. The study observed that the level of individual welfare was influenced by equivalent factors, with income per capita being the measurement that most overstated the level of deprivation. In addition, it was observed a larger incidence of poverty amongst treatment households at semiformal and informal than at formal borrowers. The estimated poverty gap was also higher in informal sources followed by semiformal sources. The chapter argued that the formal credit sources are more effective at reducing the number of poor households but only by lifting those who were closest to the poverty line, with low impacts on the poverty gap. However, semiformal and informal sources are more effective in reaching the extreme poor, but by doing so, they report low, insignificant effects on the overall incidence, bringing the extreme poor closer to the poverty line.

In addition, lending to the uncollateralized poor living near to the poverty line has an impact which goes beyond the simple money recognition. The present chapter has also attempted to provide an econometric framework that controls the troubles of selectivity bias, and to evaluate the possible variations among formal, semiformal and informal credit sources concerning non-monetary impacts by using a model of the ordered probit and propensity score approach. We find evidence that suggests that the formal clients have on average a significantly higher level of life satisfaction than other clients. In addition, the chapter confirmed the positive relation of life satisfaction with borrowings. Moreover, the study observed that, in general, rural borrower's life satisfaction is influenced by the ability and capacity to work, the value of physical assets of the borrower as well as some other exogenous factors. But the direction of causality of the factors influencing borrower's life satisfaction is remarkably different among all three credit sources. Further, the propensity score approach also indicates the positive effect of all credit sources on life satisfaction of borrowers in compared to their respective control samples.

Furthermore, in the present chapter we measured the status of group sustainability for roubustness of the impact study.The present chapter attempted to examine the status of group

sustainability by constructing one Multidimensional Sustainability Index of Self Help Groups. We estimated group sustainability by combining organizational, managerial and financial indicators, whereas the existing literature so far has concentrated on only the individual measurement of organizational and financial sustainability. The study examined that almost all SHGs are situated within the range of 'Highest' and 'High' organizational sustainability status. In addition, unlike organizational sustainability, the majority of SHGs is placed in the managerial sustainability status of 'Medium' and 'Low', whereas 75 per cent of the SHGs are positioned within the range of 'Low' and 'Lowest' financial sustainability status. However, it was argued that 95 per cent of SHGs be positioned within the range of 'High' and 'Moderate' $MDSI^{SHG}$ status, and may maintain their function well over a long period of time.

# CHAPTER- SEVEN

## CONCLUSION AND POLICY IMPLICATIONS

In the preceding chapters, the standpoint of the rural credit market with reference to the Lower Brahmaputra Valley of Assam has been presented. A detailed account of this is found in chapters 3 to 6, which deal with banking market scenario, estimation of loan demand, awareness and use of credit, repayment rate of various sources of credit, impacts of credit access on the economic and social enhancement of people, and Multidimensional Sustainability Index of SHGs respectively.

Chapter three summarizes that the position of Assam is behind from all over India position in most of the socio-economic characteristics, and in some cases it is far away from mainland India. Although, branch expansion policy of government of India has somewhat improved the situation, but in almost all of the banking parameters, Assam is far behind from all over India, whereas if we compare the all over India position with study districts we can get the worst picture, even though Nalbari district is performing well by overcoming mainland India position in few parameters. While it was expected that the introduction of group-based approach, although it comes later in Assam will able to provide financial facilities to rural people, but here also Assam is far behind from the mainland India position. Consequently, the continuous dominance of informal finance has found, although in recent time its share decline. However, the informal sector is much more widespread in the state as compared to the country.

Chapter four argues that the rural credit demand estimations are often biased and incompetent because of data truncation, and utilization of data on individual and single loan sizes which suffer from non-identifiability of aggregate demand and supply components. The chapter attempted to stipulate and estimate an implicit loan demand function by presenting a framework to relate the sum of all loans with the loan demand of a household and applies a Type Three Tobit model to fit separate loan demand functions for household involved in the formal, semiformal and informal credit markets. The three estimates were compared, and the robustness of the separate estimates further tested by running an overall sample regression for all credit sources. This regression argues that pooling formal, semiformal and informal credit produces biased results. The result argues that borrowers and lenders-specific variables are more important

determinants of the decision to borrow. In general, rural household participation in the credit market is influenced by the ability and capacity to work, the life cycle effect of the borrower as well as some other exogenous factors. But the direction of causality of the factors influencing household participation in the rural credit market is remarkably different among all three credit sources. The chapter recommends that by specifying a correct theoretical and econometric framework, and also through representing the necessity of cautiously collecting data on all credit sources, it is possible to provide an efficient credit demand estimate by incorporating all potential factors.

Moreover, in the same chapter we attempted to know and answer the paradox, whether awareness of credit sources leads to their use by using a model of consideration set formation and correcting for selection. The chapter emphasizes that the awareness of credit sources is a necessary, but not sufficient requirement for their use. Besides, broadly formal, semiformal and informal sources attend different segments of the population and it is also obvious from the diverse nature of the impact of the different factors on awareness and uses among all three sources. The employment dummy 'whether the household's main occupation is a government job' has the positive effect on awareness of all formal sources, but it affects negatively on both awareness and use of semiformal sources. Furthermore, even individually within broad sources the direction of the impact of factors, diverse and capture different segments of populations. While adverse shocks dummy 'whether family experiences any negative shocks in last three years' has the positive impact on both knowing and using semiformal source SHGs, however in another semiformal source MFIs it effects negatively. The chapter recommends that the semiformal and informal sector acts as a complement of the formal sector due to its characteristics, such as flexibility and quick approval of loans. Additionally, there might be complement role played by each other's individually within each of the respective sources.

Chapter fifth reveals that credit repayment estimations are often biased and incompetent because of not identifiability of possible endogeneity of the credit amount on repayment, nor have accounted for the likely selection bias of borrowing. The chapter attempted to stipulate and estimate the repayment performance of rural borrowers and tried to have an understanding about the paradox, whether heterogeneous determinants of repayment affect differently across credit sources by applying a double hurdle approach and instrumental variable probit model. The

chapter observed better repayment performance among formal borrowers, followed by semiformal and informal borrowers. Whilst occupation-wise it is prominent among organized employs, but among three districts, it is relatively enhanced in Baksa. In general, household characteristics (occupation, educational level of the household head, family income, physical assets, etc.), loan characteristics (expected loan amount, interest rate, and distance to formal sources) and location-specific characteristics (district dummy and distance to main market place) significantly affect repayment performance. However, the nature of causality of the factors influencing repayment performance in the rural credit market is remarkably different among all three credit sources. It was recommended for ensuring productive opportunities and efficient market linkages in rural areas so that borrowers can invest their credit money in the right way for gainful returns. It will be useful for better repayment performance and to reduce default rates among unorganized employs of semiformal and informal borrowers.

An important number of impact studies have attempted to evaluate the effect of credit on poverty; but, many of these studies have not paid sufficient attention to the problems of endogeneity and selection bias. Chapter sixth provided an econometric framework that controls the troubles of endogeneity and self-selection, and to assess the probable differences among formal, semiformal and informal lending technology concerning poverty impacts by using a model of heckit procedure, tobit selection equation and probit. To lessen possible selection problems, the chapter conducted a quasi-experiment household survey in four folds. Moreover, the study used income poverty line of the Planning Commission of India and World Bank while Multidimensional Poverty Index was utilized as social context. Further, for empirical estimation the study employed the logarithm of income per capita and two diverse definitions of income per adult equivalent. The chapter observed that the level of individual welfare was influenced by equivalent factors, with income per capita being the measurement that most overstated the level of deprivation. In addition, it was observed a larger incidence of poverty amongst treatment households at semiformal and informal than at formal borrowers. The estimated poverty gap was also higher in informal sources followed by semiformal sources. The chapter argued that the formal credit sources are more effective at reducing the number of poor households but only by lifting those who were closest to the poverty line, with low impacts on the poverty gap. However, semiformal and informal sources are more effective in reaching the extreme poor, but

by doing so, they report low, insignificant effects on the overall incidence, bringing the extreme poor closer to the poverty line.

It was argued that the lending to the uncollateralized poor living near to the poverty line has an impact which goes beyond the simple money recognition. Therefore, the same chapter provided an econometric framework that controls the troubles of selectivity bias, and to evaluate the possible variations among formal, semiformal and informal credit sources concerning non-monetary impacts by using a model of the ordered probit and propensity score approach. We find evidence that suggests that the formal clients have on average a significantly higher level of life satisfaction than other clients. In addition, the study confirmed the positive relation of life satisfaction with borrowings. The study observed that, in general, rural borrower's life satisfaction is influenced by the ability and capacity to work, the value of physical assets of the borrower as well as some other exogenous factors. But the direction of causality of the factors influencing borrower's life satisfaction is remarkably different among all three credit sources. Further, the propensity score approach also indicates the positive effect of all credit sources on life satisfaction of borrowers in compared to their respective control samples.

To gain continual benefit from SHGs in financial intermediation, group sustainability is having a wider concern in donor agencies, practitioners, policy makers and academicians. Group sustainability both at the institutional and financial level is a prerequisite condition for the wider impact of rural credit on poor. This is because if the SHGs are not able to maintain their performance both at the institutional and financial level, then they may further loss support from the self-help promoting institutions and donor agencies in the long run. Therefore, to validate the impact study in chapter sixth we tried to measure group sustainability by constructing one Multidimensional Sustainability Index of SHGs. Here, we have estimated group sustainability by combining organizational, managerial and financial indices, while the existing literatures so far has concentrated upon only the individual measurement of organizational and financial sustainability. The study examined that almost all SHGs are situated within the range of 'Highest' and 'High' organizational sustainability status. In addition, unlike organizational sustainability, the majority of SHGs is placed in the managerial sustainability status of 'Medium' and 'Low', whereas 75 per cent of the SHGs are positioned within the range of 'Low' and 'Lowest' financial sustainability status. However, it was argued that 95 per cent of SHGs be

positioned within the range of ‘High’ and ‘Moderate’ $MDSI^{SHG}$ status, and may maintain their function well over a long period of time. Thus, the chapter recommended for enlargement of semi-formal financial institutions in rural areas of Assam.

## Appendix A: Indicators of Banking Outreach and their Ranks across States (Overall)

| States | Deposit a/c/ pp | Rank | Credit a/c/pp | Rank | Ave Deposit per a/c | Rank | Ave Credit per a/c | Rank | Ave credit per a/c Small borrower | Rank | No of offices per lakh Population | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Haryana** | 0.93 | 14 | 0.08 | 11 | 61848 | 13 | 585019 | 6 | 73204 | 2 | 11.92 | 13 |
| **Himachal Pradesh** | 1.09 | 7 | 0.09 | 10 | 51042 | 22 | 252678 | 16 | 58729 | 11 | 16.98 | 5 |
| **Jammu & Kashmir** | 0.81 | 16 | 0.05 | 14 | 49287 | 24 | 246552 | 19 | 63157 | 6 | 9.55 | 19 |
| **Punjab** | 1.17 | 6 | 0.08 | 11 | 53331 | 20 | 585987 | 5 | 66320 | 5 | 15.69 | 6 |
| **Rajasthan** | 0.52 | 27 | 0.06 | 13 | 41824 | 30 | 322679 | 15 | 62908 | 7 | 7.19 | 26 |
| **Chandigarh** | 2.46 | 2 | 0.26 | 2 | 151943 | 2 | 1690910 | 2 | 78928 | 1 | 34.41 | 2 |
| **Delhi** | 1.81 | 3 | 0.21 | 5 | 225652 | 1 | 1830166 | 1 | 42705 | 26 | 17.17 | 4 |
| **Arunachal Pradesh** | 0.53 | 26 | 0.05 | 14 | 79020 | 8 | 193591 | 24 | 62604 | 8 | 3.53 | 35 |
| **Assam** | 0.53 | 26 | 0.06 | 13 | 40032 | 32 | 142668 | 32 | 44961 | 24 | 5.26 | 33 |
| **Manipur** | 0.29 | 33 | 0.03 | 16 | 52456 | 21 | 138500 | 33 | 62562 | 9 | 3.45 | 36 |
| **Meghalaya** | 0.47 | 29 | 0.05 | 14 | 79465 | 7 | 192952 | 25 | 49633 | 20 | 7.99 | 23 |
| **Mizoram** | 0.45 | 30 | 0.07 | 12 | 68770 | 10 | 161345 | 29 | 55500 | 13 | 10.17 | 17 |
| **Nagaland** | 0.36 | 32 | 0.05 | 14 | 80080 | 6 | 144685 | 31 | 55307 | 14 | 5.45 | 32 |
| **Tripura** | 0.65 | 21 | 0.09 | 10 | 43887 | 28 | 96235 | 34 | 35000 | 33 | 7.38 | 25 |
| **Bihar** | 0.39 | 31 | 0.05 | 14 | 34780 | 33 | 85882 | 36 | 38537 | 29 | 4.48 | 34 |
| **Jharkhand** | 0.54 | 25 | 0.05 | 14 | 48974 | 25 | 174108 | 28 | 34998 | 34 | 6.61 | 29 |
| **Odisha** | 0.63 | 23 | 0.09 | 10 | 46923 | 26 | 160605 | 30 | 37402 | 31 | 7.91 | 24 |
| **Sikkim** | 0.73 | 19 | 0.06 | 13 | 90525 | 4 | 348894 | 12 | 68047 | 3 | 14.64 | 8 |
| **West Bengal** | 0.69 | 20 | 0.05 | 14 | 58756 | 15 | 513681 | 9 | 38292 | 30 | 6.64 | 27 |
| **Andaman & Nicobar Islands** | 0.96 | 12 | 0.08 | 11 | 54964 | 18 | 241718 | 20 | 67409 | 4 | 12.14 | 12 |
| **Chhattisgarh** | 0.49 | 28 | 0.04 | 15 | 53904 | 19 | 341419 | 13 | 44355 | 25 | 6.25 | 30 |
| **Madhya Pradesh** | 0.56 | 24 | 0.05 | 14 | 41128 | 31 | 239296 | 21 | 61713 | 10 | 6.62 | 28 |
| **Uttar Pradesh** | 0.64 | 22 | 0.05 | 14 | 33886 | 34 | 175456 | 27 | 47655 | 22 | 6.06 | 31 |
| **Uttarakhand** | 0.94 | 13 | 0.08 | 11 | 59145 | 14 | 250803 | 17 | 54721 | 15 | 14.33 | 9 |
| **Goa** | 2.65 | 1 | 0.17 | 7 | 94301 | 3 | 423185 | 10 | 51234 | 18 | 35.73 | 1 |
| **Gujarat** | 0.79 | 17 | 0.06 |  | 63866 | 12 | 557526 | 7 | 49051 | 21 | 9.19 | 20 |
| **Maharashtra** | 0.89 | 15 | 0.23 | 4 | 15243 | 35 | 553064 | 8 | 20008 | 36 | 8.55 | 21 |
| **Dadra & Nagar Haveli** | 0.99 | 9 | 0.02 | 17 | 46429 | 27 | 598250 | 3 | 31600 | 35 | 11.66 | 15 |
| **Daman & Diu** | 1.21 | 5 | 0.02 | 17 | 69742 | 9 | 595333 | 4 | 35666 | 32 | 13.99 | 10 |
| **Andhra Pradesh** | 0.93 | 14 | 0.18 | 6 | 43623 | 29 | 247145 | 18 | 46535 | 23 | 9.84 | 18 |
| **Karnataka** | 0.98 | 10 | 0.14 | 8 | 68449 | 11 | 333822 | 14 | 51274 | 17 | 11.68 | 14 |
| **Kerala** | 1.08 | 8 | 0.21 | 5 | 5555 | 36 | 216246 | 22 | 52180 | 16 | 14.99 | 7 |
| **Tamil Nadu** | 0.96 | 12 | 0.3 | 1 | 57344 | 17 | 213235 | 23 | 42507 | 27 | 10.59 | 16 |
| **Lakshadweep** | 0.98 | 10 | 0.09 | 10 | 89730 | 5 | 91500 | 35 | 56000 | 12 | 18.75 | 3 |
| **Puducherry** | 1.22 | 4 | 0.25 | 3 | 50802 | 23 | 177977 | 26 | 49757 | 19 | 13.75 | 11 |
| **All india** | **0.75** | **18** | **0.11** | **9** | **57902** | **16** | **366994.97** | **11** | **41849** | **28** | **8.33** | **22** |

Source: Calculated from RBIs Banking Statistical Returns of Scheduled Commercial Bank in India 2012-13 and Census of India, 2011

## Appendix B: Indicators of Banking Outreach and their Ranks across States (Rural)

| States | Deposit a/c per person | Rank | Credit a/c per person | Rank | Ave Deposit per a/c | Rank | Ave Credit per a/c | Rank | Ave credit per a/c Small borrower | Rank | No of offices per lakh Population | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Haryana** | 0.35 | 17 | 0.04 | 11 | 30453 | 16 | 312602 | 32 | 81131 | 1 | 5.66 | 15 |
| **Himachal Pradesh** | 0.89 | 6 | 0.08 | 7 | 36859 | 9 | 169935 | 29 | 58608 | 10 | 13.86 | 6 |
| **Jammu & Kashmir** | 0.51 | 11 | 0.03 | 12 | 30909 | 15 | 159887 | 28 | 61463 | 6 | 6.89 | 12 |
| **Punjab** | 0.53 | 10 | 0.04 | 11 | 39185 | 8 | 388873 | 33 | 75534 | 2 | 8.29 | 11 |
| **Rajasthan** | 0.23 | 25 | 0.03 | 12 | 19262 | 28 | 112740 | 20 | 67375 | 4 | 3.8 | 26 |
| **Chandigarh** | 6.14 | 1 | 0.38 | 2 | 107275 | 1 | 1418363 | 34 | 70500 | 3 | 82.76 | 2 |
| **Delhi** | 2.33 | 5 | 0.05 | 10 | 50103 | 4 | 2886684 | 35 | 53700 | 14 | 18.85 | 5 |
| **Arunachal Pradesh** | 0.36 | 16 | 0.03 | 12 | 51294 | 3 | 131500 | 24 | 58409 | 11 | 5.07 | 19 |
| **Assam** | 0.31 | 20 | 0.03 | 12 | 13789 | 35 | 66092 | 5 | 39541 | 28 | 3.05 | 31 |
| **Manipur** | 0.11 | 29 | 0.01 | 14 | 28010 | 19 | 102640 | 19 | 57631 | 12 | 2.42 | 34 |
| **Meghalaya** | 0.28 | 23 | 0.03 | 12 | 40060 | 7 | 100050 | 18 | 43164 | 26 | 5.53 | 16 |
| **Mizoram** | 0.31 | 20 | 0.05 | 10 | 30159 | 17 | 90370 | 13 | 46130 | 22 | 11.05 | 7 |
| **Nagaland** | 0.12 | 28 | 0.02 | 13 | 28390 | 18 | 96875 | 17 | 53076 | 15 | 2.91 | 32 |
| **Tripura** | 0.39 | 14 | 0.07 | 8 | 24938 | 20 | 58679 | 4 | 30303 | 33 | 4.98 | 20 |
| **Bihar** | 0.21 | 26 | 0.03 | 12 | 17670 | 31 | 46349 | 1 | 35343 | 30 | 2.76 | 33 |
| **Jharkhand** | 0.32 | 19 | 0.04 | 11 | 20892 | 24 | 54210 | 2 | 27937 | 34 | 4.33 | 22 |
| **Odisha** | 0.42 | 13 | 0.06 | 9 | 17871 | 30 | 57580 | 3 | 32884 | 32 | 5.19 | 18 |
| **Sikkim** | 5.62 | 2 | 0.48 | 1 | 45190 | 5 | 220636 | 30 | 61428 | 7 | 130.43 | 1 |
| **West Bengal** | 0.38 | 15 | 0.04 | 11 | 20055 | 27 | 77819 | 11 | 34211 | 31 | 4.08 | 24 |
| **Andaman & Nicobar Islands** | 0.64 | 8 | 0.06 | 9 | 33980 | 11 | 147642 | 26 | 59300 | 9 | 9.28 | 10 |
| **Chhattisgarh** | 0.3 | 21 | 0.03 | 12 | 18243 | 29 | 67438 | 7 | 38834 | 29 | 3.77 | 27 |
| **Madhya Pradesh** | 0.25 | 24 | 0.03 | 12 | 15164 | 33 | 96336 | 16 | 62114 | 5 | 3.51 | 29 |
| **Uttar Pradesh** | 0.39 | 14 | 0.04 | 11 | 14410 | 34 | 68106 | 8 | 44461 | 25 | 3.53 | 28 |
| **Uttarakhand** | 0.58 | 9 | 0.06 | 9 | 31470 | 13 | 124962 | 22 | 4969 | 35 | 9.79 | 8 |
| **Goa** | 2.4 | 4 | 0.11 | 6 | 55874 | 2 | 222344 | 31 | 54775 | 13 | 36.59 | 4 |
| **Gujarat** | 0.29 | 22 | 0.04 | 11 | 33087 | 12 | 129612 | 23 | 51233 | 17 | 4.96 | 21 |
| **Maharashtra** | 0.23 | 25 | 0.03 | 12 | 23910 | 22 | 138729 | 25 | 45385 | 24 | 3.85 | 25 |
| **Dadra & Nagar Haveli** | 0.34 | 18 | 0.01 | 14 | 34967 | 10 | 158000 | 27 | 52000 | 16 | 6.01 | 14 |
| **Daman & Diu** | 0.07 | 30 | | 0 | 24000 | 21 | | | | 0 | 3.33 | 30 |
| **Andhra Pradesh** | 0.39 | 14 | 0.12 | 5 | 13463 | 36 | 67224 | 6 | 43150 | 27 | 4.96 | 21 |
| **Karnataka** | 0.44 | 12 | 0.08 | 7 | 17507 | 32 | 95089 | 15 | 48184 | 20 | 6.4 | 13 |
| **Kerala** | 0.14 | 27 | 0.03 | 12 | 31234 | 14 | 123159 | 21 | 49357 | 19 | 2 | 35 |
| **Tamil Nadu** | 0.44 | 12 | 0.13 | 4 | 20868 | 25 | 77490 | 10 | 50448 | 18 | 5.43 | 17 |
| **Lakshadweep** | 2.83 | 3 | 0.21 | 3 | 42525 | 6 | 85666 | 12 | 59666 | 8 | 57.14 | 3 |
| **Puducherry** | 0.76 | 7 | 0.21 | 3 | 21546 | 23 | 71535 | 9 | 48063 | 21 | 9.62 | 9 |
| **All india** | 0.34 | 18 | 0.05 | 10 | 20248 | 26 | 92547 | 14 | 45804 | 23 | 4.31 | 23 |

Source: Same as Appendix A

## Appendix C: Indicators of Banking Outreach and their Ranks across States (Urban)

| States | Deposit a/c per person | Rank | Credit a/c per person | Rank | Ave Deposit per a/c | Rank | Ave Credit per a/c | Rank | Ave credit per a/c Small borrower | Rank | No of offices per lakh Population | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Haryana** | 2.21 | 8 | 0.15 | 14 | 65675 | 20 | 729872 | 5 | 68067 | 4 | 23.6 | 7 |
| **Himachal Pradesh** | 2.75 | 4 | 0.18 | 11 | 92524 | 10 | 565295 | 11 | 59310 | 12 | 44.79 | 1 |
| **Jammu & Kashmir** | 1.59 | 21 | 0.11 | 18 | 65055 | 21 | 318424 | 22 | 65075 | 6 | 16.6 | 21 |
| **Punjab** | 2.73 | 5 | 0.15 | | 48232 | 31 | 700366 | 6 | 61167 | 11 | 27.95 | 5 |
| **Rajasthan** | 1.68 | 18 | 0.14 | 15 | 44827 | 32 | 475222 | 14 | 58947 | 14 | 17.47 | 17 |
| **Chandigarh** | 2.35 | 7 | 0.25 | 6 | 155237 | 2 | 1709155 | 2 | 79613 | 2 | 33.04 | 3 |
| **Delhi** | 3.54 | 1 | 0.22 | 8 | 116724 | 4 | 1824516 | 1 | 42650 | 30 | 17.09 | 19 |
| **Arunachal Pradesh** | 1.08 | 29 | 0.12 | 17 | 109968 | 7 | 250947 | 26 | 66952 | 5 | 13.25 | 30 |
| **Assam** | 1.89 | 13 | 0.21 | 9 | 66325 | 19 | 214533 | 29 | 51433 | 21 | 18.67 | 12 |
| **Manipur** | 0.7 | 31 | 0.08 | 21 | 60389 | 23 | 151880 | 32 | 63239 | 7 | 6.23 | 35 |
| **Meghalaya** | 1.22 | 26 | 0.12 | 17 | 115304 | 5 | 297855 | 24 | 59244 | 13 | 17.82 | 15 |
| **Mizoram** | 0.57 | 32 | 0.09 | 20 | 88132 | 12 | 196833 | 30 | 61657 | 8 | 9.28 | 33 |
| **Nagaland** | 0.97 | 30 | 0.13 | 16 | 95408 | 9 | 167000 | 31 | 56403 | 15 | 11.73 | 32 |
| **Tripura** | 1.38 | 24 | 0.17 | 12 | 58860 | 25 | 138612 | 34 | 40707 | 31 | 14.15 | 28 |
| **Bihar** | 1.99 | 11 | 0.16 | 13 | 44607 | 33 | 148181 | 33 | 44428 | 28 | 17.9 | 14 |
| **Jharkhand** | 1.32 | 25 | 0.09 | 20 | 67872 | 18 | 335378 | 18 | 48099 | 25 | 13.8 | 29 |
| **Odisha** | 1.71 | 17 | 0.2 | 10 | 82214 | 14 | 320602 | 21 | 45611 | 27 | 21.49 | 8 |
| **Sikkim** | 1.21 | 27 | 0.09 | 20 | 153166 | 3 | 560266 | 12 | 81142 | 1 | 18.83 | 11 |
| **West Bengal** | 1.88 | 14 | 0.08 | 21 | 59787 | 24 | 950326 | 3 | 43294 | 29 | 12.12 | 31 |
| **Andaman & Nicobar Islands** | 1.49 | 22 | 0.13 | 16 | 69864 | 17 | 298263 | 23 | 74083 | 3 | 16.78 | 20 |
| **Chhattisgarh** | 1.13 | 28 | 0.09 | 20 | 85752 | 13 | 620033 | 8 | 51870 | 20 | 14.43 | 26 |
| **Madhya Pradesh** | 1.67 | 19 | 0.12 | 17 | 43861 | 34 | 327861 | 19 | 61415 | 9 | 14.74 | 25 |
| **Uttar Pradesh** | 1.89 | 13 | 0.1 | 19 | 40865 | 36 | 326574 | 20 | 53056 | 17 | 14.86 | 24 |
| **Uttarakhand** | 1.78 | 15 | 0.13 | 16 | 80068 | 15 | 377907 | 17 | 61210 | 10 | 24.96 | 6 |
| **Goa** | 2.8 | 2 | 0.2 | 10 | 114301 | 6 | 34283 | 36 | 50065 | 23 | 35.17 | 2 |
| **Gujarat** | 2.09 | 10 | 0.1 | 19 | 49938 | 29 | 756978 | 4 | 47784 | 26 | 14.86 | 24 |
| **Maharashtra** | 2.79 | 3 | 0.46 | 2 | 105646 | 8 | 586929 | 10 | 17874 | 36 | 14.24 | 27 |
| **Dadra & Nagar Haveli** | 1.74 | 16 | 0.04 | 23 | 48964 | 30 | 638428 | 7 | 26250 | 35 | 18.01 | 13 |
| **Daman & Diu** | 1.59 | 21 | 0.03 | 24 | 70371 | 16 | 593333 | 9 | 34000 | 34 | 17.49 | 16 |
| **Andhra Pradesh** | 2.56 | 6 | 0.31 | 4 | 43636 | 35 | 383053 | 16 | 49454 | 24 | 19.63 | 10 |
| **Karnataka** | 2.56 | 6 | 0.24 | 7 | 63099 | 22 | 460968 | 15 | 53211 | 16 | 20.05 | 9 |
| **Kerala** | 2.11 | 9 | 0.41 | 3 | 57351 | 27 | 224037 | 27 | 52436 | 18 | 29.21 | 4 |
| **Tamil Nadu** | 1.9 | 12 | 0.48 | 1 | 54993 | 28 | 253314 | 25 | 39931 | 32 | 16.09 | 22 |
| **Lakshadweep** | 0.48 | 33 | 0.06 | 22 | 164625 | 1 | 97000 | 35 | 52000 | 19 | 8 | 34 |
| **Puducherry** | 1.43 | 23 | 0.26 | 5 | 58055 | 26 | 218502 | 28 | 50497 | 22 | 15.59 | 23 |
| **All india** | **1.64** | **20** | **0.24** | **7** | **88772** | **11** | **492697** | **13** | **39800** | **33** | **17.2** | **18** |

Source: Same as Appendix A

## Appendix D: District-Wise Absolute Numbers of Banking Performance Parameters in Assam

| Districts | IND 1 | IND 2 | IND 3 | IND 4 | IND 5 | IND 6 | IND 7 | IND 8 | IND 9 | IND 10 | IND 11 | IND 12 | IND 13 | IND 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | APPBO | APPRBO | ADPBO | ACPBO | ACOPCA | NCAPTP | PCCO | ADPTDA | PCD | ADPTDARA | PCDARA | CDR | HABS | RHABS |
| **BAK** | 25677.70 | 25346.83 | 188.67 | 87.21 | 76.57 | 29.76 | 2.27 | 12.73 | 5.61 | 12.73 | 5.68 | 41.01 | 33.6 | 33.3 |
| **BAR** | 20162.16 | 30319 | 268.29 | 132.33 | 96.38 | 54.08 | 5.21 | 18.54 | 10.96 | 13.44 | 5.80 | 45.22 | 36.9 | 33.4 |
| **BON** | 15719.23 | 34944.11 | 326.14 | 128.93 | 126.35 | 59.84 | 7.56 | 25.55 | 17.31 | 12.61 | 3.53 | 37.47 | 58.9 | 54.3 |
| **CAC** | 14234.56 | 24502.63 | 449.02 | 143.31 | 132.35 | 70.31 | 9.30 | 40.81 | 26.2 | 17.47 | 7.79 | 35 | 41 | 35 |
| **CHI** | 20963.56 | 26283.82 | 432.73 | 135.56 | 101.91 | 49.81 | 5.07 | 24.84 | 16.25 | 25.97 | 11.68 | 29.59 | 36.9 | 34.8 |
| **DARR** | 19343.75 | 34920.24 | 237.37 | 126.52 | 95.12 | 60.60 | 5.76 | 17.47 | 10.13 | 8.10 | 2.24 | 53.76 | 36.5 | 34.5 |
| **DHE** | 26389.73 | 45560.57 | 247.730 | 152.65 | 84.92 | 63.23 | 5.37 | 16.55 | 7.89 | 11.25 | 3.35 | 65.02 | 35.7 | 32.7 |
| **DHU** | 30457.15 | 54548.65 | 261 | 103.48 | 80.41 | 36.77 | 2.95 | 18.59 | 7.71 | 10.09 | 2.31 | 36.78 | 23.3 | 19.3 |
| **DIBR** | 9210.65 | 18349.23 | 557.24 | 161.03 | 143.29 | 105.77 | 15.15 | 49.26 | 45.33 | 18.22 | 8.55 | 31.96 | 53 | 46.2 |
| **GOAL** | 21450.70 | 30004.17 | 247.40 | 95.91 | 85.10 | 46.96 | 3.99 | 18.79 | 10.11 | 13.46 | 4.28 | 38.75 | 51.3 | 37.2 |
| **GOL** | 13171.45 | 17947.25 | 310.65 | 114.86 | 85.31 | 84.92 | 7.24 | 20.89 | 14.96 | 13.46 | 7.25 | 47.01 | 33.3 | 30 |
| **HAIL** | 19978.66 | 40743.73 | 298.18 | 101.03 | 79.40 | 58.63 | 4.65 | 20.83 | 1.20 | 10.39 | 3.02 | 34.28 | 50.2 | 47.2 |
| **JOR** | 10402.43 | 20272.60 | 445.85 | 177.17 | 136.75 | 103.44 | 14.14 | 35.55 | 31.69 | 14.72 | 7.63 | 43.46 | 70.3 | 69.7 |
| **KAM** | 15175.42 | 17859.06 | 211.95 | 131.26 | 264.20 | 116.20 | 30.70 | 20.51 | 15.18 | 18.92 | 12.25 | 42.06 | 56.2 | 49.9 |
| **KAM (M)** | 3317.29 | 6997.64 | 936.75 | 350.08 | 343.70 | 188.49 | 64.78 | 147.42 | 28.00 | 63.06 | 40.12 | 33.36 | 45.4 | 42.9 |
| **KA** | 14489.59 | 17943.55 | 202.71 | 79.60 | 107.97 | 24.81 | 2.67 | 26.57 | 15.00 | 9.57 | 4.66 | 28.72 | 80 | 58.4 |
| **KAR** | 20142.39 | 30242.86 | 376.45 | 100.81 | 110.70 | 45.98 | 5.09 | 23.60 | 12.46 | 13.15 | 5.11 | 30.05 | 41.7 | 36.7 |
| **KOK** | 26092.41 | 48953 | 443.17 | 116.02 | 96.79 | 45.17 | 4.37 | 25.10 | 14.59 | 12.8 | 3.31 | 26.92 | 37.5 | 33.5 |
| **LAKH** | 16283.39 | 25021.15 | 215.37 | 142.51 | 90.24 | 79.31 | 7.15 | 17.42 | 11.38 | 10.86 | 5.02 | 61.73 | 33.7 | 30.4 |
| **MOR** | 20370.70 | 34004.80 | 193.40 | 129.21 | 78.90 | 66.33 | 5.23 | 12.40 | 8.32 | 6.58 | 2.89) | 59.98 | 47.4 | 43.9 |
| **NAG** | 20169.77 | 31464.53 | 353.56 | 139.80 | 94.26 | 68.14 | 6.42 | 21.06 | 13.35 | 9.71 | 4.01 | 41.73 | 45.1 | 42.1 |
| **NAL** | 13779.26 | 19136.36 | 246.78 | 117.46 | 91.51 | 84.50 | 7.73 | 19.68 | 15.50 | 13.29 | 0.78 | 49.5 | 37.8 | 32.3 |
| **NCH** | 10195.33 | 11662.53 | 247.80 | 57.71 | 103.34 | 51.83 | 5.35 | 34.62 | 2.42 | 21.74 | 10.75 | 20.57 | 55.8 | 53.2 |
| **SIB** | 12648.90 | 21686.54 | 361.19 | 147.08 | 12.09 | 84.13 | 1.01 | 28.97 | 22.64 | 15.99 | 7.97 | 44.41 | 51 | 48 |
| **SON** | 14800.84 | 24309.23 | 292.22 | 139.31 | 195.27 | 72.92 | 14.24 | 23.55 | 15.51 | 12.09 | 4.57 | 48.12 | 40.7 | 36.3 |
| **TIN** | 10974.61 | 22149.70 | 366.40 | 130.54 | 156.37 | 63.73 | 9.96 | 35.35 | 27.09 | 16.12 | 5.45 | 36.21 | 49 | 41.6 |
| **UDA** | 26828 | 37814 | 215.32 | 145.93 | 67.33 | 68.76 | 4.63 | 12.58 | 7.25 | 9.02 | 3.16 | 64.58 | 37 | 35.3 |
| **ASSAM** | **14177.90** | **25751.23** | **435.15** | **168.91** | **149.59** | **71.72** | **10.39** | **38.71** | **26.86** | **14.08** | **5.83** | **37.28** | **44.1** | **38.3** |

Source: Authors' estimation based on Basic Statistical Returns of SCBs in India, RBI, 2015; Quarterly Statistics on Deposits and Credit of SCBs, March 2015; Census of India, 2011; Note: BAK= Baksa, BAR= Barpeta, BON= Bongaigaon, CAC= Cachar, CHI= Chirang, DARR= Darrang, DHE= Dhemaji, DIBR= Dibrugarh, DHU= Dhubri, GOAL= Goalpara, GOL= Golaghat, HAIL= Hailakandi, JOR= Jorhat, KAM= Kamrup, KAM (M) = Kamrup Metropolitan, KA= Karbi Anglong, KAR= Karimganj, KOK= Kokrajhar, LAKH= Lakhimpur, MOR= Morigaon, NAG= Nagaon, NAL= Nalbari, NCH= North Cachar Hills, SIB= Sibsagar, SON= Sonitpur, TIN= Tinsukia, UDA= Udalguri; $IND_j$= Indicator 1…….14.

## Appendix E: District-Wise Distribution of Rank of Absolute Numbers of Banking Performance Parameters in Assam

| Districts | APPBO | APPRBO | ADPBO | ACPBO | ACOPCA | NCAPTP | PCCO | ADPTDA | PCD | ADPTDARA | PCDARA | CDR | HABS | RHABS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BAK** | 24 | 14 | 28 | 26 | 26 | 27 | 27 | 26 | 26 | 17 | 12 | 14 | 25 | 23 |
| **BAR** | 19 | 19 | 16 | 13 | 15 | 20 | 18 | 22 | 19 | 13 | 11 | 9 | 21 | 22 |
| **BON** | 14 | 23 | 12 | 17 | 9 | 18 | 10 | 10 | 8 | 18 | 20 | 16 | 3 | 3 |
| **CAC** | 10 | 12 | 3 | 8 | 8 | 11 | 8 | 3 | 6 | 6 | 7 | 20 | 16 | 18 |
| **CHI** | 22 | 16 | 7 | 12 | 13 | 22 | 20 | 12 | 9 | 2 | 3 | 25 | 21 | 19 |
| **DARR** | 16 | 22 | 22 | 18 | 16 | 17 | 14 | 23 | 20 | 27 | 27 | 5 | 22 | 20 |
| **DHE** | 26 | 26 | 19 | 5 | 22 | 16 | 15 | 25 | 23 | 20 | 21 | 1 | 23 | 24 |
| **DHU** | 28 | 28 | 17 | 22 | 23 | 26 | 25 | 21 | 24 | 23 | 26 | 18 | 27 | 28 |
| **DIBR** | 2 | 6 | 2 | 4 | 6 | 3 | 3 | 2 | 1 | 5 | 5 | 23 | 6 | 8 |
| **GOAL** | 23 | 17 | 20 | 25 | 21 | 23 | 24 | 20 | 21 | 12 | 18 | 15 | 7 | 14 |
| **GOL** | 7 | 5 | 13 | 21 | 20 | 5 | 11 | 16 | 14 | 11 | 9 | 8 | 26 | 27 |
| **HAIL** | 17 | 25 | 14 | 23 | 24 | 19 | 21 | 17 | 28 | 22 | 24 | 21 | 9 | 7 |
| **JOR** | 4 | 8 | 4 | 2 | 7 | 4 | 5 | 5 | 2 | 9 | 8 | 11 | 2 | 1 |
| **KAM** | 13 | 3 | 25 | 14 | 2 | 2 | 2 | 18 | 12 | 4 | 2 | 12 | 4 | 5 |
| **KAM (M)** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 22 | 12 | 10 |
| **KA** | 11 | 4 | 26 | 27 | 11 | 28 | 26 | 9 | 13 | 25 | 16 | 26 | 1 | 2 |
| **KAR** | 18 | 18 | 8 | 24 | 10 | 24 | 19 | 13 | 17 | 15 | 14 | 24 | 15 | 15 |
| **KOK** | 25 | 27 | 5 | 20 | 14 | 25 | 23 | 11 | 15 |  | 22 | 27 | 19 | 21 |
| **LAKH** | 15 | 13 | 23 | 9 | 19 | 8 | 12 | 24 | 18 | 21 | 15 | 3 | 24 | 26 |
| **MOR** | 21 | 21 | 27 | 16 | 25 | 14 | 17 | 28 | 22 | 28 | 25 | 4 | 11 | 9 |
| **NAG** | 20 | 20 | 11 | 10 | 17 | 13 | 13 | 15 | 16 | 24 | 19 | 13 | 13 | 11 |
| **NAL** | 8 | 7 | 21 | 19 | 18 | 6 | 9 | 19 | 11 | 14 | 28 | 6 | 18 | 25 |
| **NCH** | 3 | 2 | 18 | 28 | 12 | 21 | 16 | 7 | 27 | 3 | 4 | 28 | 5 | 4 |
| **SIB** | 6 | 9 | 10 | 6 | 28 | 7 | 28 | 8 | 7 | 8 | 6 | 10 | 8 | 6 |
| **SON** | 12 | 11 | 15 | 11 | 3 | 9 | 4 | 14 | 10 | 19 | 17 | 7 | 17 | 16 |
| **TIN** | 5 | 10 | 9 | 15 | 4 | 15 | 7 | 6 | 4 | 7 | 13 | 19 | 10 | 12 |
| **UDA** | 27 | 24 | 24 | 7 | 27 | 12 | 22 | 27 | 25 | 26 | 23 | 2 | 20 | 17 |
| **ASSAM** | **9** | **15** | **6** | **3** | **5** | **10** | **6** | **4** | **5** | **10** | **10** | **17** | **14** | **13** |

Source: Same as Appendix D; Note: Follow Appendix D

## Appendix F: Demand Side Indicators of Formal Sources in Three Selected Districts of Assam

| Dist/Vill | Iq (Credit) | Iq (Saving) | Iq (Insurance) | FII D |
|---|---|---|---|---|
| **Baksa** | **0.24** | **0.46** | **0.39** | **0.36** |
| Jengrengpara | 0.25 | 0.45 | 0.25 | 0.32 |
| Bunmajhar Pam | 0.35 | 0.6 | 0.6 | 0.52 |
| Bagariguri | 0.25 | 0.55 | 0.6 | 0.47 |
| Salbari | 0.1 | 0.25 | 0.1 | 0.15 |
| **Barpeta** | **0.29** | **0.7** | **0.4** | **0.46** |
| Bamundi | 0.25 | 0.65 | 0.45 | 0.45 |
| Bamunkuchi | 0.4 | 0.8 | 0.5 | 0.57 |
| Garemari | 0.35 | 0.7 | 0.4 | 0.48 |
| Bhare Gaon | 0.15 | 0.65 | 0.25 | 0.35 |
| **Nalbari** | **0.34** | **0.65** | **0.36** | **0.45** |
| Bar Makhibaha | 0.5 | 0.6 | 0.25 | 0.45 |
| Namati | 0.25 | 0.8 | 0.35 | 0.47 |
| Bamunbari | 0.45 | 0.65 | 0.35 | 0.48 |
| Baralkuchi | 0.15 | 0.55 | 0.5 | 0.4 |
| **Total** | **0.29** | **0.6** | **0.38** | **0.42** |

Source: Calculated from field survey conducted in Assam

## Appendix G: Demand Side Indicators of Semiformal Sources in Three Selected Districts of Assam

| Dist/Vill | Iq (Credit) | Iq (Saving) | FII D |
|---|---|---|---|
| **Baksa** | **0.36** | **0.5** | **0.43** |
| Jengrengpara | 0.35 | 0.35 | 0.35 |
| Bunmajhar Pam | 0.3 | 0.6 | 0.45 |
| Bagariguri | 0.35 | 0.55 | 0.45 |
| Salbari | 0.45 | 0.5 | 0.48 |
| **Barpeta** | **0.67** | **0.76** | **0.72** |
| Bamundi | 0.6 | 0.85 | 0.73 |
| Bamunkuchi | 0.65 | 0.65 | 0.65 |
| Garemari | 0.65 | 0.75 | 0.7 |
| Bhare Gaon | 0.8 | 0.8 | 0.8 |
| **Nalbari** | **0.64** | **0.63** | **0.64** |
| Bar Makhibaha | 0.75 | 0.85 | 0.8 |
| Namati | 0.65 | 0.6 | 0.63 |
| Bamunbari | 0.35 | 0.55 | 0.45 |
| Baralkuchi | 0.8 | 0.5 | 0.65 |
| **Total** | **0.56** | **0.63** | **0.59** |

Source: Same as Appendix D

## Appendix H: Demand Side Indicators of Informal Sources in Three Selected Districts of Assam

| Dist/Vill | Iq (Credit) | Iq (Saving) | FII D |
|---|---|---|---|
| **Baksa** | **0.54** | **0.28** | **0.41** |
| Jengrengpara | 0.2 | 0.1 | 0.15 |
| Bunmajhar Pam | 0.7 | 0.2 | 0.45 |
| Bagariguri | 0.45 | 0.35 | 0.4 |
| Salbari | 0.8 | 0.45 | 0.63 |
| **Barpeta** | **0.6** | **0.59** | **0.59** |
| Bamundi | 0.6 | 0.7 | 0.65 |
| Bamunkuchi | 0.4 | 0.45 | 0.43 |
| Garemari | 0.8 | 0.65 | 0.73 |
| Bhare Gaon | 0.6 | 0.55 | 0.58 |
| **Nalbari** | **0.56** | **0.48** | **0.52** |
| Bar Makhibaha | 0.5 | 0.7 | 0.6 |
| Namati | 0.45 | 0.35 | 0.4 |
| Bamunbari | 0.45 | 0.1 | 0.28 |
| Baralkuchi | 0.85 | 0.75 | 0.8 |
| **Total** | **0.57** | **0.45** | **0.51** |

Source: Same as Appendix D

## Appendix I: Secondary Occupation of Respondent Households

| Activities | Name of Districts | | | Total |
|---|---|---|---|---|
| | Baksa | Barpeta | Nalbari | |
| **Agriculture and Allied Activities** | 0 | 5 (23.81) | 16 (76.19) | **21 (13.21)** |
| **Agriculture and Fishery** | 0 | 0 | 2 (100) | **2 (1.26)** |
| **Agriculture and Manual Labour** | 0 | 0 | 2 (100) | **2 (1.26)** |
| **Agricultural Laborer** | 0 | 2 (100) | 0 | **2 (1.26)** |
| **Artisan** | 1 (10) | 2 (20) | 7 (70) | **10 (6.29)** |
| **Big Business** | 0 | 0 | 2 (100) | **2 (1.26)** |
| **Cook, Priest and Manual Labour** | 0 | 2 (100) | 0 | **2 (1.26)** |
| **Dairy** | 0 | 1 (100) | 0 | **1 (0.63)** |
| **Farmer** | 16 (35.56) | 19 (42.22) | 10 (22.22) | **45 (28.30)** |
| **Govt/Public Employee** | 0 | 8 (88.89) | 1 (11.11) | **9 (5.67)** |
| **Manual Labour** | 7 (25.93) | 6 (22.22) | 14 (51.85) | **27 (16.98)** |
| **Government Pension Holders** | 2 (100) | 0 | 0 | **2 (1.26)** |
| **Private Sector Employee** | 0 | 4 (57.14) | 3 (42.86) | **7 (4.40)** |
| **Shop keeper and Agriculture** | 0 | 2 (50) | 2 (50) | **4 (2.51)** |
| **Shopkeeper** | 2 (15.38) | 7 (53.85) | 4 (30.77) | **13 (8.18)** |
| **Small Business** | 4 (50) | 3 (13.5) | 3 (37.5) | **10 (6.03)** |
| **Total** | **32 (20.13)** | **61 (38.36)** | **66 (41.51)** | **159 (66.25)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## Appendix J: Agricultural Land Holding Pattern of Respondent Households

| Amount of Land (in Bigha) | Name of Districts | | | Total |
|---|---|---|---|---|
| | Baksa | Barpeta | Nalbari | |
| **1** | 2 (50) | 0 | 2 (50) | **4 (2.55)** |
| **11** | 0 | 2 (100) | 0 | **2 (1.27)** |
| **12** | 1 (100) | 0 | 0 | **1 (0.64)** |
| **14** | 2 (25) | 4 (50) | 2 (25) | **8 (5.09)** |
| **15** | 2 (50) | 1 (25) | 1 (25) | **4 (2.55)** |
| **16** | 0 | 2 (100) | 0 | **2 (1.27)** |
| **18** | 2 (100) | 0 | 0 | **2 (1.27)** |
| **2** | 11 (36.67) | 7 (23.33) | 12 (40) | **30 (19.11)** |
| **20** | 3 (100) | 0 | 0 | **3 (1.91)** |
| **22** | 0 | 2 (100) | 0 | **2 (1.27)** |
| **23** | 2 (100) | 0 | 0 | **2 (1.27)** |
| **3** | 12 (33.33) | 10 (27.78) | 14 (38.89) | **36 (22.93)** |
| **30** | 0 | 2 (100) | 0 | **2 (1.27)** |
| **4** | 2 (14.29) | 10 (71.43) | 2 (14.29) | **14 (8.92)** |
| **40** | 2 (100) | 0 | 0 | **2 (1.27)** |
| **5** | 6 (30) | 2 (10) | 12 (60) | **20 (12.74)** |
| **6** | 3 (30) | 2 (20) | 5 (50) | **10 (6.37)** |
| **7** | 2 (100) | 0 | 0 | **2 (1.27)** |
| **8** | 3 (50) | 2 (33.33) | 1 (16.67) | **6 (3.82)** |
| **80** | 0 | 2 (100) | 0 | **2 (1.27)** |
| **9** | 1 (33.33) | 2 (66.67) | 0 | **3 (1.91)** |
| **Total** | **56 (35.67)** | **50 (31.85)** | **51 (32.48)** | **157 (65.42)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households; 1 Bigha= 0.3305785 Acre

## Appendix K: Nature of Negative Shocks Faced by Borrowers

| Shocks | % of Households |
|---|---|
| **Car Accident** | 11 (8.7) |
| **Cows Died** | 6 (4.8) |
| **Failure of Agriculture** | 10 (7.9) |
| **Fishery Lost** | 2 (1.6) |
| **Flood** | 14 (11.1) |
| **Home Demage in Rain** | 7 (5.6) |
| **Illness** | 43 (34.1) |
| **Girl Marriage** | 6 (4.8) |
| **Lost Land** | 5 (4) |
| **People Died** | 20 (15.9) |
| **Problem from Village People** | 2 (1.6) |
| **Total** | **126 (59.43)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## Appendix L: Secondary Purpose of Borrowing Formal Money

| Districts | Villages | Agriculture | Fishery | House Construction | Purchase Bike | Tractor Loan | Total |
|---|---|---|---|---|---|---|---|
| Baksa | Bagariguri | 0 | 2 (100) | 1 (20) | 0 | 1 (100) | 4 (28.6) |
| | Bunmajhar Pam | 1 (33.3) | 0 | 0 | 1 (33.3) | 0 | 2 (14.3) |
| | Jengrengpara | 0 | 0 | 0 | 0 | 0 | 0 |
| | Salbari | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **4** | **1 (33.3)** | **2 (100)** | **1 (20)** | **1 (33.3)** | **1 (100)** | **6 (42.9)** |
| Barpeta | Bamundi | 0 | 0 | 0 | 0 | 0 | 0 |
| | Bamunkuchi | 0 | 0 | 2 (40) | 0 | 0 | 2 (14.3) |
| | Bhare Gaon | 0 | 0 | 2 (40) | 0 | 0 | 2 (14.3) |
| | Garemari | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **4** | **0** | **0** | **4 (80)** | **0** | **0** | **4 (28.6)** |
| Nalbari | Bar Makhibaha | 2 (66.7) | 0 | 0 | 0 | 0 | 2 (14.3) |
| | Baralkuchi | 0 | 0 | 0 | 0 | 0 | 0 |
| | Bamunbari | 0 | 0 | 0 | 2 (66.7) | 0 | 2 (14.3) |
| | Namati | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **4** | **2 (66.7)** | **0** | **0** | **2 (66.7)** | **0** | **4 (28.6)** |
| **Grand Total** | **12** | **3 (21.4)** | **2 (14.3)** | **5 (35.7)** | **3 (21.4)** | **1 (7.1)** | 14 (19.4) |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## Appendix M: Secondary Purpose of Borrowing Semiformal Money

| Districts | Villages | Business | Daily Needs | Education | Home Construction | Illness | Total |
|---|---|---|---|---|---|---|---|
| Baksa | Bagariguri | 0 | 0 | 0 | 0 | 0 | **0** |
| | Bunmajhar Pam | 0 | 0 | 0 | 0 | 0 | **0** |
| | Jengrengpara | 0 | 0 | 0 | 0 | 0 | **0** |
| | Salbari | 0 | 0 | 0 | 0 | 0 | **0** |
| **Total** | | **0** | **0** | **0** | **0** | **0** | **0** |
| Barpeta | Bamundi | 0 | 0 | 0 | 0 | 0 | **0** |
| | Bamunkuchi | 0 | 5 (33.33) | 0 | 2 (50) | 0 | **7 (17.5)** |
| | Bhare Gaon | 0 | 6 (40) | 0 | 2 (50) | 0 | **8 (20)** |
| | Garemari | 0 | 2 (13.33) | 0 | 0 | 0 | **2 (5)** |
| **Total** | | **0** | **13 (86.67)** | **0** | **4 (100)** | **0** | **17 (42.5)** |
| Nalbari | Bar Makhibaha | 2 (50) | 0 | 4 (100) | 0 | 0 | **6 (15)** |
| | Baralkuchi | 2 (50) | 2 (13.33) | 0 | 0 | 7 (53.9) | **11 (27.5)** |
| | Bamunbari | 0 | 0 | 0 | 0 | 6 (46.2) | **6 (15)** |
| | Namati | 0 | 0 | 0 | 0 | 0 | **0** |
| **Total** | | **4 (100)** | **2 (13.33)** | **4 (100)** | **0** | **13 (100)** | **23 (57.5)** |
| **Grand Total** | **Total** | **4 (10)** | **15 (37.5)** | **4 (10)** | **4 (10)** | **13 (32.5)** | **40 (30.5)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## Appendix N: Secondary Purpose of Informal Money Borrowed

| Districts | Villages | Daily Needs | Education | Fishery | Illness | Total |
|---|---|---|---|---|---|---|
| **Baksa** | **Bagariguri** | 0 | 0 | 0 | 0 | **0** |
| | **Bunmajhar Pam** | 0 | 0 | 0 | 1 (9.09) | **1 (3.85)** |
| | **Jengrengpara** | 0 | 0 | 0 | 0 | **0** |
| | **Salbari** | 0 | 6 (100) | 0 | 0 | **6 (23.08)** |
| **Total** | **4** | **0** | **6 (100)** | **0** | **1 (9.09)** | **7 (26.92)** |
| **Barpeta** | **Bamundi** | 0 | 0 | 0 | 0 | **0** |
| | **Bamunkuchi** | 0 | 0 | 0 | 0 | **0** |
| | **Bhare Gaon** | 2 (28.57) | 0 | 0 | 0 | **2 (7.69)** |
| | **Garemari** | 0 | 0 | 0 | 0 | **0** |
| **Total** | **4** | **2 (28.57)** | **0** | **0** | **0** | **2 (7.69)** |
| **Nalbari** | **Bar Makhibaha** | 0 | 0 | 0 | 3 (27.27) | **3 (11.54)** |
| | **Baralkuchi** | 5 (71.43) | 0 | 2 (100) | 5 (45.45) | **12 (46.15)** |
| | **Bamunbari** | 0 | 0 | 0 | 2 (18.18) | **2 (7.69)** |
| | **Namati** | 0 | 0 | 0 | 0 | **0** |
| **Total** | **4** | **5 (71.43)** | **0** | **2 (100)** | **10 (90.91)** | **17 (65.38)** |
| **Grand Total** | **12** | **7 (26.92)** | **6 (23.08)** | **2 (7.69)** | **11 (42.31)** | **26 (18.84)** |

Source: Field Survey, 2014; Note: Figures within parentheses represent percentages of households

## Appendix O: Awareness of Different Credit Sources Correcting for Selection

| Probability that a Source of Credit is Considered in a Consideration Set using a Normal Distribution<br>Dependent Variable: Awareness of Sources of Credit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Variables/Sources** | **SBI** | **AGVB** | **ONB** | **PB** | **SHGs** | **MFIs** | **ML** | **SG** |
| **Households Characteristics** | | | | | | | | |
| **$AHH_i$** | 0.04** (0.06) | 4.03** (1.05) | 0.08** (0.05) | 0.43* (0.26) | 0.04* (0.05) | -0.09** (0.06) | -0.06* (0.06) | -0.16** (0.05) |
| **$GJ_i$** | 0.33* (0.46) | 0.73* (0.45) | 0.14*** (0.33) | 0.55* (0.99) | -0.68** (0.41) | -0.27*** (0.38) | 0.55** (0.38) | -1.07 (0.46) |
| **$FI_i$** | 3.13*** (2.19) | 1.07*** (1.45) | 2.07** (1.38) | 2.67** (4.52) | -9.09*** (1.64) | 2.92* (1.76) | -2.09** (1.51) | -3.77** (2.29) |
| **$NDM_i$** | 0.19* (0.07) | 0.05* (0.96) | -0.06*** (0.05) | -0.28 (0.25) | -0.05 (0.06) | 0.02* (0.06) | 0.10* (0.06) | -0.01 (0.06) |
| **$DNS_i$** | 0.09** (0.24) | 0.31** (0.25) | 0.09** (0.20) | -0.66 (0.74) | 0.11* (0.25) | -0.36** (0.23) | 0.57** (0.24) | 0.25* (0.23) |
| **$VPA_i$** | 8.41* (4.37) | 4.91* (2.87) | 4.18*** (2.65) | 2.11** (5.36) | -9.10** (4.17) | -1.20 (3.55) | -1.58** (2.81) | -1.96* (5.77) |
| **$AGESQ_i$** | 0.56 (2.65) | -1.20 (0.80) | 0.45** (0.63) | -0.01*** (0.05) | -0.78 (2.50) | 0.80** (0.25) | 0.75* (0.30) | 0.88** (0.70) |
| **$HHM_i$** | -0.27** (0.27) | 0.23** (0.27) | 0.66** (0.24) | 1.60* (0.97) | -0.17** (0.26) | -0.08* (0.27) | -0.21 (0.26) | 0.34 (0.26) |
| **$ENS_i$** | 0.28* (0.05) | 0.06* (0.04) | 0.02* (0.03) | 0.13* (0.11) | -0.01 (0.04) | -0.01** (0.04) | -0.06 (0.04) | -0.06** (0.04) |
| **$HHS_i$** | 0.52*** (0.94) | 0.07** (0.04) | 0.06 (0.03) | -0.06** (0.12) | -0.07** (0.04) | 0.03 (0.04) | -0.05 (0.42) | -0.01** (0.04) |
| **$WMSE_i$** | -0.69* (0.35) | 0.80*** (0.33) | -0.27* (0.27) | 0.39 (0.94) | 1.02* (0.38) | 0.52 (0.33) | 0.78** (0.32) | 0.49* (0.31) |
| **$WEIR_i$** | -0.97** (0.30) | 0.26* (0.32) | -0.34 (0.25) | 0.77** (0.94) | 0.39** (0.32) | -0.23** (0.28) | -0.19*** (0.30) | 0.29*** (0.28) |
| **$NFM_i$** | 1.02 (0.19) | 0.69** (0.02) | -0.48 (0.11) | -0.09 (0.12) | 0.22*** (0.02) | 1.06* (0.26) | 0.05** (0.08) | 2.05* (1.06) |
| **Lender's Characteristics** | | | | | | | | |
| **$DFS_i$** | 2.35* (0.84) | -0.07 (0.04) | 0.02 (0.04) | -0.06** (0.10) | 0.33 (0.05) | -0.03* (0.04) | 0.01* (0.04) | 0.06* (0.04) |
| **Location Specific Characteristics** | | | | | | | | |
| **$LB_i$** | -0.62*** (0.32) | -0.03** (0.28) | 0.27* (0.26) | -0.40*** (0.66) | 0.14** (0.31) | 1.97** (0.44) | 1.11** (0.38) | -0.30*** (0.29) |
| **LNi** | 0.23* (0.33) | -3.06** (0.52) | 1.17* (0.29) | 2.45** (1.76) | -0.25*** (0.34) | 1.61* (0.46) | -0.92* (0.33) | 0.75* (0.32) |
| **$HLV_i$** | 0.64 (0.73) | 0.50 (3.40) | 0.76*** (0.65) | -0.01* (0.01) | 0.64* (2.50) | 0.37** (0.09) | -0.55* (0.03) | 0.76** (0.80) |
| **$DMP_i$** | -3.05** (0.05) | -0.02*** (0.04) | 0.03* (0.04) | 0.04** (0.08) | -0.08** (0.06) | -0.01* (0.06) | -0.05*** (0.04) | -0.01** (0.04) |
| **Instrument** | | | | | | | | |
| **$WTG_i$** | 1.30* (0.35) | -1.05* (0.28) | -0.24** (0.28) | -0.42*** (0.75) | 0.03** (0.31) | -1.69*** (0.48) | -0.49* (0.32) | -0.43*** (0.32) |
| **$WIC_i$** | -0.55* (0.38) | -0.06** (0.37) | 0.26* (0.32) | 1.19* (0.78) | 0.18* (0.37) | 1.78* (0.52) | 0.46** (0.36) | 0.65** (0.36) |
| **Constant** | -2.57*** (1.47) | -1.00** (1.36) | 0.38*** (1.21) | -10.45** (5.23) | 0.66* (1.43) | 0.46** (1.52) | 3.82*** (1.57) | 2.44* (1.37) |
| **Observations** | **240** | **240** | **240** | **240** | **240** | **240** | **240** | **240** |

Note: Figures in the parentheses represent Robust Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%

## Appendix P: Use of Different Credit Sources Conditional on Awareness Correcting for Selection

| Multinomial Logit with Sample Selection and Consideration Set<br>Dependent Variable: Use of Sources of Credit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Variables/Sources** | **SBI** | **AGVB** | **ONB** | **PB** | **SHGs** | **MFIs** | **MLs** | **SGs** |
| **Households Characteristics** | | | | | | | | |
| **$AHH_i$** | -0.08** (0.18) | 0.02** (0.26) | -1.47 (8.89) | -- | 0.01** (0.17) | -0.02** (0.27) | -0.08* (0.16) | -0.06 (0.20) |
| **$GJ_i$** | 1.96* (1.27) | -3.79* (2.11) | 12.52* (9.01) | -- | -1.93* (1.41) | -22.11* (1.16) | 0.19 (1.31) | -1.98** (1.67) |
| **$FI_i$** | 0.66*** (5.05) | -0.62 (0.22) | 0.57** (0.02) | -- | 6.58 (5.76) | -6.87* (0.90) | -4.55** (5.05) | -0.86* (0.44) |
| **$NDM_i$** | -0.39 (0.34) | -0.65* (0.49) | -4.79* (0.42) | -- | -0.21* (0.34) | -0.91 (0.58) | 0.48** (0.33) | 0.04*** (0.37) |
| **$DNS_i$** | -0.39 (0.79) | -2.47*** (1.07) | -6.48* (7.53) | -- | 0.34*** (0.62) | -0.07** (0.94) | 0.88*** (0.65) | 0.59* (0.76) |
| **$VPA_i$** | 1.96* (1.30) | 2.68* (1.90) | 7.06** (0.67) | -- | -2.61* (1.33) | -4.92 (4.34) | 1.65* (1.47) | 2.49 (2.38) |
| **$AGESQ_i$** | 0.98** (0.20) | -8.06*** (1.76) | -0.02** (0.95) | -- | -0.89 (0.50) | -0.55* (0.76) | 2.20* (0.02) | 0.76 (0.02) |
| **$HHM_i$** | 0.68* (0.81) | 0.71** (1.13) | 8.88*** (5.40) | -- | 0.73* (0.68) | 1.03*** (1.05) | 0.43** (0.71) | 1.75** (1.01) |
| **$ENS_i$** | 0.34** (0.16) | -0.21* (0.17) | 3.29* (0.72) | -- | -0.14 (0.11) | -0.04** (0.18) | -0.17* (0.11) | -0.03** (0.15) |
| **$HHS_i$** | -0.15* (0.13) | -0.43** (0.18) | 3.34** (1.79) | -- | -0.13** (0.10) | -0.08* (0.16) | -0.01 (0.11) | -0.15* (0.14) |
| **$WMSE_i$** | 19.37* (6.88) | 4.30*** (0.88) | 0.48 (0.28) | -- | 0.24** (0.88) | 5.27 (1.88) | 0.08*** (0.09) | 0.34** (0.06) |
| **$WEIR_i$** | 0.68 (1.03) | 1.22** (1.21) | 1.68** (2.82) | -- | -1.86 (0.89) | -1.86 (0.89) | -1.13* (0.91) | 0.50 (1.03) |
| **$NFM_i$** | -0.13** (0.31) | -0.28 (0.38) | -1.99** (5.38) | -- | 0.06* (0.26) | 1.16* (0.58) | 0.26** (0.26) | 0.25* (0.29) |
| **Lender's Characteristics** | | | | | | | | |
| **$DFS_i$** | -0.07* (0.13) | -0.18* (0.16) | -0.52* (1.67) | -- | 0.31* (0.12) | 0.31** (0.12) | 0.39 (0.12) | 0.42* (0.15) |
| **Location Specific Characteristics** | | | | | | | | |
| **$LB_i$** | 0.76*** (1.07) | -0.23** (1.23) | 13.86*** (4.97) | -- | 1.69*** (0.79) | 1.69* (0.79) | -0.29* (0.81) | 0.72** (1.12) |
| **LNi** | 4.45* (1.18) | 0.78* (1.67) | 5.06* (6.22) | -- | 2.64* (0.95) | 2.64*** (0.95) | -0.10* (1.06) | 3.99** (1.18) |
| **$HLV_i$** | 0.80** (0.01) | 0.02 (0.01) | 0.04** (0.45) | -- | 0.86** (0.01) | 0.22* (0.01) | 0.01** (0.01) | -0.54* (0.01) |
| **$DMP_i$** | 0.08** (0.14) | -0.02** (0.17) | 0.16* (0.72) | -- | -0.43* (0.14) | -0.43*** (0.14) | -0.32** (0.14) | -0.45* (0.19) |
| **Constant** | -7.13*** (5.40) | -7.48*** (7.19) | -23.60*** (1.86) | -- | 3.06*** (4.28) | -23.43* (2.64) | 2.56*** (4.21) | -1.14*** (5.48) |
| **Log Likelihood** | -258.96 | -- | -- | -- | -- | -- | -- | -- |
| **Pseudo R2** | 0.42 | | | -- | | | | |
| **Observations** | **240** | **240** | **240** | **240** | **240** | **240** | **240** | **240** |

Note: Figures in the parentheses represent Robust Standard Errors; *Significance at 10%, **Significance at 5% and ***Significance at 1%

## Appendix Q: Credit Source-Wise Main Occupation of Households

| Occupation | Formal | Semiformal | Informal |
|---|---|---|---|
| **Both Agriculture and Allied** | 2 (2.8) | 3 (2.3) | 4 (2.9) |
| **Artisan** | 2 (2.8) | 7 (5.3) | 11 (8) |
| **Member of Panchayat** | 2 (2.8) | 4 (3) | 4 (3) |
| **Only Farming** | 17 (23.6) | 42 (32.1) | 37 (27) |
| **Gaon Bura*** | 1 (1.4) | 2 (1.5) | 2 (1.5) |
| **Government Job** | 18 (25) | 6 (4.6) | 14 (10.2) |
| **Manual Labor** | 2 (2.8) | 31 (21.7) | 34 (23.2) |
| **Government Pension Holder** | 14 (19.4) | 6 (4.6) | 2 (1.5) |
| **Priest** | 1 (1.4) | -- | 1 (0.7) |
| **Both Shopkeeper and Agriculture** | 2 (2.8) | 2 (1.5) | 4 (2.9) |
| **Only Shopkeeper** | 4 (5.6) | 6 (4.6) | 6 (4.4) |
| **Small Business** | 7 (9.1) | 11 (7.9) | 15 (10.9) |
| **Poultry** | -- | 2 (1.5) | -- |
| **Private Employ** | -- | 8 (6.1) | 2 (1.5) |
| **Temporary Teacher** | -- | 1 (0.8) | 1 (0.7) |

Source: Field Survey; Note: Figures in the parentheses represent % of households; *Gaon Bura= Village Head

## Appendix R: Credit Source-Wise Nature of Negative Shocks

| Shocks | Formal | Semiformal | Informal |
|---|---|---|---|
| **Car Accident** | 4 (9.30) | 4 (5.26) | 9 (10) |
| **Failure of Agriculture** | 4 (9.30) | 9 (11.84) | 8 (8.89) |
| **Flood** | 4 (9.30) | 7 (9.21) | 9 (10) |
| **Home Damage in Rain** | 5 (11.63) | 4 (5.26) | 7 (7.78) |
| **Illness** | 14 (32.56) | 28 (36.84) | 30 (33.33) |
| **Girl Marriage** | 2 (4.65) | 6 (7.89) | 3 (3.33) |
| **Family Members Died** | 8 (18.60) | 9 (11.84) | 11 (12.22) |
| **Problems from Village People** | 2 (4.65) | -- | -- |
| **Cows Died** | -- | 4 (5.26) | 6 (6.67) |
| **Fishery Lost** | -- | 2 (2.63) | 2 (2.22) |
| **Land Lost** | -- | 3 (3.95) | 5 (5.56) |

Source: Field Survey; Note: Figures in the parentheses represent % of households

## Appendix S: Dimension and indicators of Multi-Dimensional Poverty Index (MPI)

| Dimension | Indicators | Deprived | Weight |
|---|---|---|---|
| **Health** | **Child Mortality** | If there was a child death in the household within last 5 years from the date of the survey, or to a woman of age 35 or less | 1/6 |
| | **Nutrition** | If at least one of the two following conditions are satisfied: (a) There is a child, 0-59 months of age, who is shorter for the age (height-for-age z score) according to the WHO standards, and (b) There is an adult (15 or older) with the Body Mass Index (BMI) <18.5. | 1/6 |
| **Education** | **Years of Schooling** | If no one in the household has 6 years or more of education among those who are old enough to have achieved 6 years of education. | 1/6 |
| | **School Attendance** | If at least one child of age between the primary school entering age +1 and the primary school entering age +8 is not attending school | 1/6 |
| **Living Standards** | **Cooking Fuel** | If not uses solid fuel for cooking and heating | 1/18 |
| | **Toilet** | If has not accessed to improve sanitation (MDG indicator 7.9) | 1/18 |
| | **Water** | If has not accessed to improve drinking water sources (MDG indicator 7.8) which is less than 30-minute walk from home | 1/18 |
| | **Electricity** | If has not accessed to electricity | 1/18 |
| | **Floor** | If has not a finished floor (Here we have taken proxy: Whether household has pakka house) | 1/18 |
| | **Assets** | (a) Allow access to information (radio, TV, telephone)<br>(b) Support mobility (bike, motorbike, car, truck, animal cart, motorboat)<br>(c) Support livelihood (refrigerator, own agricultural land, own livestock)<br><br>A household is not deprived in assets if it has at least one asset from group (a) and at least one asset from groups (b) or (c). | 1/18 |
| **Definition of Poverty States** | **A.** A household is considered Multi- dimensionally poor if the total of weighted deprivations is equal to 1/3 or more.<br>**B.** A household is considered severely Multi-dimensionally poor if the deprivation score is 1/2 or more.<br>**C.** A household is considered near- Multi-dimensionally poor if the deprivation score is 1/5 or more but less than 1/3.<br>**D.** A household is considered deprived but not near- Multi-dimensionally poor if the deprivation score is positive but less than 1/5.<br>**E.** If a household is deprived, then all its members are deprived. | | |

## Appendix T: Determinant of Life Satisfaction for Borrowers in Rural Areas

| Variables | Pooled Sample | | Formal Sample | | Semiformal Sample | | Informal Sample | |
|---|---|---|---|---|---|---|---|---|
| | OLS | OPROBIT | OLS | OPROBIT | OLS | OPROBIT | OLS | OPROBIT |
| $WNB_j$ | -1.18** (0.28) | -0.96** (0.24) | -- | -- | -- | -- | -- | -- |
| $AHH_j$ | 0.04* (0.01) | 0.05** (0.01) | 0.05* (0.02) | 0.33** (0.08) | 0.02 (0.02) | 0.02 (0.02) | -0.02** (0.02) | -0.04** (0.03) |
| $DMP_j$ | -0.02*** (0.03) | -0.01*** (0.03) | 0.06 (0.05) | 0.57 (0.27) | -0.09* (0.06) | -0.18** (0.08) | 0.03 (0.07) | 0.05 (0.08) |
| $NFM_j$ | 0.12* (0.08) | 0.10** (0.07) | 0.08** (0.10) | 0.27** (0.37) | -0.57** (0.21) | -0.81* (0.26) | 0.15* (0.20) | 0.17* (0.25) |
| $FI_j$ | 2.75** (1.83) | 3.48* (1.69) | 7.06* (2.32) | 2.03* (8.36) | 3.23 (4.23) | 1.89 (5.94) | 8.18** (4.80) | 2.05*** (2.01) |
| $ISS_j$ | -5.94* (5.69) | -6.73*** (5.00) | 5.87 (0.04) | -3.00 (0.80) | -5.03*** (0.34) | -2.06** (0.05) | -0.09*** (0.50) | -0.70* (0.09) |
| $NDM_j$ | -0.11** (0.09) | -0.06* (0.07) | -0.12** (0.13) | -1.69** (0.65) | -0.21** (0.16) | -0.37* (0.20) | -0.05** (0.21) | -0.01** (0.26) |
| $VPA_j$ | 2.27*** (2.55) | 3.93* (2.74) | 2.47*** (2.97) | 4.88* (1.18) | 1.70** (7.65) | 4.25*** (1.18) | 6.60** (1.17) | 8.39* (1.30) |
| $HHM_j$ | 0.27 (0.21) | 0.32 (0.18) | -0.03* (0.38) | -0.72*** (1.38) | 0.03 (0.29) | 0.02 (0.36) | 1.23 (0.54) | 1.76 (0.63) |
| $GJ_j$ | 0.02** (0.33) | 0.23** (0.29) | 0.05** (0.47) | 1.17* (1.24) | 0.92 (0.82) | 0.24 (1.07) | -0.78*** (0.66) | -1.53** (0.81) |
| $HHED_j$ | 0.04* (0.03) | 0.03* (0.02) | 0.19** (0.06) | 1.69*** (0.39) | -0.03** (0.04) | -0.01** (0.04) | 0.04** (0.05) | 0.07** (0.06) |
| $WSM_j$ | 0.19 (0.20) | 0.16 (0.17) | 0.19 (0.34) | 2.31 (0.98) | -0.26** (0.33) | -0.34* (0.38) | 0.51 (0.38) | 0.74 (0.44) |
| $WDP_j$ | 0.64** (0.25) | 0.56*** (0.22) | 2.02** (0.41) | 9.62** (2.09) | -0.52** (0.41) | -1.04** (0.50) | -0.49** (0.51) | -0.71*** (0.62) |
| $WAHC_j$ | 0.11** (0.23) | 0.03* (0.20) | 0.03** (0.52) | 0.40* (1.23) | -0.20 (0.36) | -0.17 (0.45) | 1.79* (0.72) | 2.45* (0.95) |
| $WGS_j$ | 0.04*** (0.28) | 0.02** (0.23) | -1.03 (0.67) | -6.55 (1.71) | 0.65** (0.50) | 0.71*** (0.60) | -1.26 (0.67) | -1.84 (0.82) |
| $NSD_j$ | -0.03 (0.09) | -0.01 (0.08) | 0.56** (0.21) | 5.86*** (1.34) | -0.19** (0.16) | -0.35** (0.20) | -0.80*** (0.19) | -0.03*** (0.23) |
| $WIO_j$ | 0.77** (0.21) | 0.66*** (0.18) | 0.18** (0.35) | 3.91* (1.27) | 0.79** (0.34) | 1.39** (0.46) | 0.14** (0.59) | 0.06** (0.70) |
| $WCE_j$ | 0.59** (0.22) | 0.45* (0.18) | 0.78 (0.56) | -3.48 (1.72) | 0.62*** (0.32) | 0.51* (0.42) | 1.30* (0.43) | 1.70* (0.55) |
| $WOL_j$ | 0.16* (0.18) | 0.10** (0.16) | 0.84 (0.39) | 10.43 (2.29) | -0.26** (0.29) | -0.67** (0.37) | -0.97** (0.40) | -1.32** (0.46) |
| $AS_j$ | 0.07 (0.20) | 0.20 (0.06) | -0.30** (0.50) | -0.45** (0.60) | -0.06 (0.05) | 0.09 (0.05) | 0.25 (0.60) | 0.60* (0.40) |
| $HHM_j$ | -0.09** (0.30) | -0.03** (0.25) | 0.99** (0.61) | 4.26* (1.77) | -1.00** (0.38) | -1.26** (0.49) | -0.87** (0.92) | -1.07** (1.05) |
| $OL_j$ | -- | -- | 0.23** (0.33) | 1.62** (0.73) | 0.15** (0.27) | 0.18*** (0.32) | -0.36*** (0.33) | -0.45** (0.37) |
| Constant | 3.67** (0.50) | -- | 1.66 (1.24) | -- | 5.00*** (0.89) | -- | 2.31** (1.20) | -- |
| Observations | 240 | 240 | 63 | 63 | 83 | 83 | 66 | 66 |
| $R^2$ | 0.52 | -- | 0.77 | -- | 0.56 | -- | 0.71 | -- |
| Pseudo $R^2$ | -- | 0.23 | -- | 0.69 | -- | 0.34 | -- | 0.44 |
| Log Likelihood | -- | -325.16 | -- | -29.14 | -- | -77.57 | -- | -54.23 |

Note: *Significance at 10 per cent, **Significance at 5 per cent and ***Significance at 1 per cent; Figures in the parentheses represent standard errors

## Appendix U: Distribution of Groups across Dropout Rate

| ND | NV | NG | NM | ND | DR |
|---|---|---|---|---|---|
| Baksa | Jangapara | Rangdhali SHG | 10 | 0 | 0.00 |
| | Jangapara | Sanghamitra SHG | 10 | 0 | 0.00 |
| | Jangapara | Atma Niyojan Samiti | 10 | 6 | 6.60 |
| | Jangapara | Ramdhenu SHG | 10 | 0 | 0.00 |
| | Jangapara | Aai Asomi SHG | 10 | 1 | 1.10 |
| | Salbari | Salbari Nzwra Affat SHG | 10 | 0 | 0.00 |
| | Salbari | Golden SHG | 12 | 0 | 0.00 |
| | Salbari | Pakhila SHG | 10 | 0 | 0.00 |
| | Salbari | Udashri SHG | 10 | 0 | 0.00 |
| | Salbari | Rupashree SHG | 12 | 2 | 2.17 |
| | Bunmaja | 11 star SHG | 11 | 0 | 0.00 |
| | Bunmaja | Narikallari SHG | 10 | 0 | 0.00 |
| | Bunmaja | Jonmoni SHG | 10 | 0 | 0.00 |
| | Bunmaja | Rangjali SHG | 12 | 0 | 0.00 |
| | Bunmaja | Baishagi SHG | 10 | 0 | 0.00 |
| | Bagariguri | Jonmoni SHG | 11 | 0 | 0.00 |
| | Bagariguri | Nari Mukti SHG | 10 | 0 | 0.00 |
| | Bagariguri | Jonmoni SHG | 10 | 0 | 0.00 |
| | Bagariguri | Rangjali SHG | 12 | 0 | 0.00 |
| | Bagariguri | Baishagi SHG | 10 | 0 | 0.00 |
| Barpeta | Bamundi | Jai Shiv SHG | 10 | 0 | 0.00 |
| | Bamundi | Maa Kali SHG | 11 | 0 | 0.00 |
| | Bamundi | Maa Kamakhya SHG | 10 | 0 | 0.00 |
| | Bamundi | Sarachati SHG | 10 | 0 | 0.00 |
| | Bamundi | Rupjyoti SHG | 10 | 0 | 0.00 |
| | Bhare Gaon | Shudamsri | 11 | 0 | 0.00 |
| | Bhare Gaon | Bhare Gaon Hainashree Mahila SHG | 10 | 2 | 2.20 |
| | Bhare Gaon | Jayamoti SHG | 11 | 0 | 0.00 |
| | Bhare Gaon | Maina SHG | 14 | 2 | 2.14 |
| | Bhare Gaon | Mousumi SHG | 12 | 0 | 0.00 |
| | Garemari | Bowari SHG | 10 | 0 | 0.00 |
| | Garemari | Jaganath SHG | 13 | 3 | 3.23 |
| | Garemari | Akha SHG | 15 | 0 | 0.00 |
| | Garemari | Jibita SHG | 15 | 0 | 0.00 |
| | Garemari | Bhogirothi SHG | 12 | 0 | 0.00 |
| | Bamunkuchi | Pragati SHG | 12 | 0 | 0.00 |
| | Bamunkuchi | Sarachati SHG | 10 | 3 | 3.30 |
| | Bamunkuchi | Pragati SHG | 10 | 0 | 0.00 |
| | Bamunkuchi | Meghali SHG | 12 | 0 | 0.00 |
| | Bamunkuchi | Lakhimi SHG | 10 | 1 | 1.10 |
| Nalbari | Bar Makhibaha | Lakhimi SHG | 10 | 1 | 1.10 |
| | Bar Makhibaha | Puwali SHG | 10 | 3 | 3.30 |
| | Bar Makhibaha | Milan SHG | 10 | 2 | 2.20 |
| | Bar Makhibaha | Nilachal SHG | 10 | 2 | 2.20 |
| | Bar Makhibaha | pragatishil SHG | 11 | 1 | 1.09 |
| | Baralkuchi | Milijuli SHG | 12 | 0 | 0.00 |
| | Baralkuchi | Ramdhenu SHG | 10 | 0 | 0.00 |
| | Baralkuchi | Shiv Shankar SHG | 12 | 0 | 0.00 |
| | Baralkuchi | Jontona SHG | 12 | 0 | 0.00 |
| | Baralkuchi | Lakhimi SHG | 8 | 4 | 4.50 |
| | Bamunbari | Maa Kamakhya SHG | 10 | 2 | 2.20 |
| | Bamunbari | Udiyaman SHG | 10 | 2 | 2.20 |
| | Bamunbari | Nabmilan SHG | 10 | 2 | 2.20 |
| | Bamunbari | Kapili SHG | 10 | 0 | 0.00 |
| | Bamunbari | Mayamoni SHG | 12 | 0 | 0.00 |
| | Namati | Pragati SHG | 10 | 1 | 1.10 |
| | Namati | Rangdhali SHG | 11 | 2 | 2.18 |
| | Namati | Nab Jyoti SHG | 10 | 1 | 1.10 |
| | Namati | Abala SHG | 11 | 0 | 0.00 |
| | Namati | Niyor SHG | 10 | 2 | 2.20 |

Note: ND= Name of District, NG= Name of Groups, NM= No. of Members, ND= No. of Dropout, DR= Dependency Ratio

## Appendix V: Status of Groups under Managerial Sustainability Indicators

| ND | NV | NG | FM | AM (%) | MGR | DMP | RGL | CRC |
|---|---|---|---|---|---|---|---|---|
| Baksa | Jangapara | Rangdhali | Weekly | 100 | Own members | Consensus | Not rotating | Extremely efficient |
| | Jangapara | Sanghamitra | Monthly | 90 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Jangapara | Atma Niyojan Samiti | Weekly | 90 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Jangapara | Ramdhenu | Weekly | 95 | Others | Group leaders | Not rotating | Extremely efficient |
| | Jangapara | Aai Asomi | Weekly | 100 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Salbari | Salbari Nzwra Affat | Monthly | 95 | Banks | Consensus | Not rotating | Extremely efficient |
| | Salbari | Golden | Monthly | 90 | Banks | Consensus | Not rotating | Extremely efficient |
| | Salbari | Pakhila | Monthly | 80 | Own members | Consensus | Not rotating | Extremely efficient |
| | Salbari | Udashri | Monthly | 100 | Own members | Promoter agency | Not rotating | Extremely efficient |
| | Salbari | Rupashree | Monthly | 90 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Bunmaja | 11 star | Monthly | 99 | Others | Group leaders | Not rotating | Extremely efficient |
| | Bunmaja | Narikallari | Weekly | 100 | Banks | Group leaders | Not rotating | Extremely efficient |
| | Bunmaja | Jonmoni | Monthly | 80 | Banks | Group leaders | Annually | Extremely efficient |
| | Bunmaja | Rangjali | Weekly | 100 | Own members | Group leaders | Annually | Extremely efficient |
| | Bunmaja | Baishagi | Weekly | 85 | Own members | Consensus | Annually | Extremely efficient |
| | Bagariguri | Jonmoni | Monthly | 90 | Own members | Consensus | Annually | Efficient |
| | Bagariguri | Nari Mukti | Weekly | 85 | Own members | Promoter agency | Not rotating | Efficient |
| | Bagariguri | Jonmoni | Monthly | 75 | Others | Promoter agency | Not rotating | Efficient |
| | Bagariguri | Rangjali | Weekly | 100 | Others | Promoter agency | Not rotating | Efficient |
| | Bagariguri | Baishagi | Weekly | 100 | Others | Consensus | Not rotating | Efficient |
| Barpeta | Bamundi | Jai Shiv | Weekly | 100 | Banks | Consensus | Not rotating | Extremely efficient |
| | Bamundi | Maa Kali | Weekly | 99 | Banks | Consensus | Not rotating | Extremely efficient |
| | Bamundi | Maa Kamakhya | Weekly | 90 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Bamundi | Sarachati | Weekly | 95 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Bamundi | Rupjyoti | Weekly | 85 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Bhare Gaon | Shudamsri | Monthly | 80 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Bhare Gaon | Hainashree Mahila | Monthly | 75 | Own members | by consensus | Annually | Extremely efficient |
| | Bhare Gaon | Jayamoti | Monthly | 70 | Banks | by consensus | Annually | Extremely efficient |
| | Bhare Gaon | Maina | Monthly | 100 | Banks | by consensus | Annually | Extremely efficient |
| | Bhare Gaon | Mousumi | Monthly | 99 | Banks | by consensus | Annually | Extremely efficient |
| | Garemari | Bowari | Weekly | 90 | Own members | by consensus | Annually | Efficient |
| | Garemari | Jaganath | Monthly | 85 | Own members | by consensus | Not rotating | Efficient |
| | Garemari | Akha | Weekly | 80 | Own members | Consensus | Not rotating | Efficient |
| | Garemari | Jibita | Weekly | 90 | Own members | Consensus | Not rotating | Efficient |
| | Garemari | Bhogirothi | Weekly | 90 | Own members | Consensus | Not rotating | Efficient |
| | Bamunkuchi | Pragati | Weekly | 90 | Own members | Promoter agency | Half yearly | Extremely efficient |
| | Bamunkuchi | Sarachati | Monthly | 80 | Own members | Promoter agency | Not rotating | Efficient |
| | Bamunkuchi | Pragati | Monthly | 85 | Own members | Consensus | Not rotating | Efficient |
| | Bamunkuchi | Meghali | Monthly | 90 | Others | Consensus | Not rotating | Efficient |
| | Bamunkuchi | Lakhimi | Monthly | 80 | Others | Consensus | Not rotating | Extremely efficient |
| Nalbari | Bar Makhibaha | Lakhimi | Weekly | 85 | Own members | Consensus | Not rotating | Extremely efficient |
| | Bar Makhibaha | Puwali | Weekly | 85 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Bar Makhibaha | Milan | Weekly | 85 | Own members | Group leaders | Not rotating | Extremely efficient |
| | Bar Makhibaha | Nilachal | Monthly | 90 | Own members | Group leaders | Half yearly | Extremely efficient |
| | Bar Makhibaha | pragatishil | Weekly | 95 | Own members | Group leaders | Half yearly | Extremely efficient |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Baralkuchi** | **Milijuli** | Monthly | 95 | Others | Promoter agency | Half yearly | Extremely efficient |
| | **Baralkuchi** | **Ramdhenu** | Monthly | 100 | Others | Promoter agency | Annually | Extremely efficient |
| | **Baralkuchi** | **Shiv Shankar** | Monthly | 100 | Banks | Promoter agency | Annually | Extremely efficient |
| | **Baralkuchi** | **Jontona** | Monthly | 100 | Own members | Consensus | Annually | Extremely efficient |
| | **Baralkuchi** | **Lakhimi** | Monthly | 95 | Own members | Consensus | Not rotating | Poor |
| | **Bamunbari** | **Maa Kamakhya** | Monthly | 90 | Own members | Consensus | Not rotating | Poor |
| | **Bamunbari** | **Udiyaman** | Monthly | 80 | Own members | Consensus | Not rotating | Poor |
| | **Bamunbari** | **Nabmilan** | Weekly | 80 | Own members | Consensus | Not rotating | Poor |
| | **Bamunbari** | **Kapili** | Monthly | 85 | Others | Group leaders | Not rotating | Extremely efficient |
| | **Bamunbari** | **Mayamoni** | Monthly | 85 | Banks | Group leaders | Not rotating | Extremely efficient |
| | **Namati** | **Pragati** | Monthly | 80 | Banks | Group leaders | Not rotating | Extremely efficient |
| | **Namati** | **Rangdhali** | Monthly | 90 | Own members | Promoter agency | Not rotating | Extremely efficient |
| | **Namati** | **Nab Jyoti** | Weekly | 90 | Own members | Promoter agency | Not rotating | Extremely efficient |
| | **Namati** | **Abala** | Weekly | 90 | Own members | Consensus | Not rotating | Extremely efficient |
| | **Namati** | **Niyor** | Monthly | 90 | Own members | Consensus | Not rotating | Extremely efficient |

## Appendix W: Status of Groups under Financial Sustainability Indicators

| ND | NV | NG | TSG | TBG | RLG (%) | TLG | RLM (%) | PPP (%) | UMPP | MDIL (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| Baksa | Jangapara | Rangdhali | 2226 | 0 | -- | 7000 | 70 | 90 | Partially | 30.00 |
| | Jangapara | Sanghamitra | 115000 | 225000 | 80 | 17000 | 75 | 80 | Partially | 20.00 |
| | Jangapara | Atma Niyojan Samiti | 32000 | 237000 | 75 | 0 | -- | -- | Fully | 40.00 |
| | Jangapara | Ramdhenu | 2500 | 15000 | 50 | 20000 | 90 | 85 | Other purposes | 20.00 |
| | Jangapara | Aai Asomi | 700 | 10000 | 40 | 12000 | 95 | 50 | Partially | 0.00 |
| | Salbari | Salbari Nzwra Affat | 14500 | 210000 | 90 | 70000 | 80 | 30 | Partially | 30.00 |
| | Salbari | Golden | 12500 | 150000 | 80 | 39000 | 75 | 70 | Other purposes | 33.33 |
| | Salbari | Pakhila | 0 | 5000 | 70 | 5500 | 50 | 75 | Other purposes | 50.00 |
| | Salbari | Udashri | 8000 | 0 | -- | 13000 | 20 | 90 | Partially | 60.00 |
| | Salbari | Rupashree | 12000 | 10000 | 20 | 0 | -- | -- | -- | 0.00 |
| | Bunmaja | 11 star | 20000 | 0 | -- | 0 | -- | -- | -- | 0.00 |
| | Bunmaja | Narikallari | 12000 | 0 | -- | 0 | -- | -- | -- | 10.00 |
| | Bunmaja | Jonmoni | 4200 | 30000 | 67 | 0 | -- | -- | -- | 20.00 |
| | Bunmaja | Rangjali | 1500 | 0 | -- | 0 | -- | -- | -- | 25.00 |
| | Bunmaja | Baishagi | 5000 | 5000 | 90 | 0 | -- | -- | -- | 40.00 |
| | Bagariguri | Jonmoni | 20000 | 0 | -- | 0 | -- | -- | -- | 45.45 |
| | Bagariguri | Nari Mukti | 12000 | 0 | -- | 0 | -- | -- | -- | 0.00 |
| | Bagariguri | Jonmoni | 4200 | 30000 | 30 | 0 | -- | -- | -- | 0.00 |
| | Bagariguri | Rangjali | 1500 | 0 | -- | 0 | -- | -- | -- | 0.00 |
| | Bagariguri | Baishagi | 5000 | 5000 | 20 | 0 | -- | -- | -- | 10.00 |
| Barpeta | Bamundi | Jai Shiv | 9000 | 25000 | 85 | 36000 | 30 | 100 | Partially | 10.00 |
| | Bamundi | Maa Kali | 1500 | 75000 | 90 | 80000 | 35 | 86 | Partially | 18.18 |
| | Bamundi | Maa Kamakhya | 4000 | 15000 | 75 | 7500 | 40 | 87 | Partially | 30.00 |
| | Bamundi | Sarachati | 11000 | 65000 | 70 | 50000 | 45 | 90 | Fully | 30.00 |
| | Bamundi | Rupjyoti | 9000 | 40000 | 70 | 60000 | 50 | 100 | Partially | 30.00 |
| | Bhare Gaon | Shudamsri | 22000 | 0 | -- | 22000 | 20 | 100 | Partially | 36.36 |
| | Bhare Gaon | Hainashree Mahila | 3000 | 5000 | 100 | 100000 | 25 | 100 | Partially | 40.00 |
| | Bhare Gaon | Jayamoti | 106000 | 210000 | 100 | 40000 | 30 | 95 | Fully | 36.36 |
| | Bhare Gaon | Maina | 2500 | 0 | -- | 0 | -- | -- | -- | 21.43 |
| | Bhare Gaon | Mousumi | 142000 | 210000 | 40 | 0 | -- | -- | -- | 16.67 |
| | Garemari | Bowari | 6000 | 40000 | 50 | 5000 | 35 | 95 | Other purposes | 50.00 |
| | Garemari | Jaganath | 4500 | 0 | -- | 1000 | 40 | 90 | Other purposes | 46.15 |
| | Garemari | Akha | 7000 | 0 | -- | 40000 | 23 | 60 | Partially | 46.67 |
| | Garemari | Jibita | 15000 | 0 | -- | 30000 | 90 | 65 | Partially | 60.00 |
| | Garemari | Bhogirothi | 4000 | 30000 | 35 | 8000 | 95 | 78 | Partially | 25.00 |
| | Bamunkuchi | Pragati | 5000 | 125000 | 45 | 0 | -- | -- | -- | 16.67 |
| | Bamunkuchi | Sarachati | 4400 | 14000 | 50 | 0 | -- | -- | -- | 20.00 |
| | Bamunkuchi | Pragati | 5000 | 10000 | 60 | 8000 | 99 | 89 | Partially | 20.00 |
| | Bamunkuchi | Meghali | 1600 | 0 | -- | 0 | -- | -- | -- | 8.33 |
| | Bamunkuchi | Lakhimi | 10000 | 10000 | 70 | 42000 | 100 | 90 | Fully | 10.00 |
| Nalbari | Bar Makhibaha | Lakhimi | 39000 | 215000 | 77 | 0 | -- | -- | -- | 20.00 |
| | Bar Makhibaha | Puwali | 9300 | 225000 | 89 | 9000 | 100 | 30 | Partially | 30.00 |
| | Bar Makhibaha | Milan | 3675 | 10000 | 90 | 27000 | 89 | 56 | Fully | 30.00 |
| | Bar Makhibaha | Nilachal | 2400 | 225000 | 95 | 50000 | 90 | 50 | Partially | 40.00 |
| | Bar Makhibaha | pragatishil | 3150 | 120000 | 100 | 5000 | 95 | 38 | Fully | 36.36 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Baralkuchi** | **Milijuli** | 6000 | 0 | -- | 4500 | 87 | 95 | Other purposes | 33.33 |
| | **Baralkuchi** | **Ramdhenu** | 4000 | 0 | -- | 8000 | 85 | 100 | Other purposes | 50.00 |
| | **Baralkuchi** | **Shiv Shankar** | 24000 | 10000 | 10 | 4000 | 78 | 97 | Partially | 41.67 |
| | **Baralkuchi** | **Jontona** | 35000 | 25000 | 15 | 20000 | 75 | 96 | Other purposes | 50.00 |
| | **Baralkuchi** | **Lakhimi** | 3500 | 25000 | 25 | 6000 | 90 | 90 | Other purposes | 37.50 |
| | **Bamunbari** | **Maa Kamakhya** | 6000 | 210000 | 30 | 2000 | 100 | 100 | Fully | 20.00 |
| | **Bamunbari** | **Udiyaman** | 7359 | 125000 | 50 | 4000 | 93 | 96 | Fully | 20.00 |
| | **Bamunbari** | **Nabmilan** | 5000 | 25000 | 30 | 4000 | 67 | 97 | Partially | 20.00 |
| | **Bamunbari** | **Kapili** | 4000 | 0 | -- | 8000 | 30 | 95 | Other purposes | 10.00 |
| | **Bamunbari** | **Mayamoni** | 24000 | 10000 | 50 | 4000 | 35 | 30 | Other purposes | 41.67 |
| | **Namati** | **Pragati** | 106200 | 225000 | 60 | 70000 | 67 | 50 | Other purposes | 50.00 |
| | **Namati** | **Rangdhali** | 9000 | 20000 | 90 | 8000 | 90 | 70 | Partially | 45.45 |
| | **Namati** | **Nab Jyoti** | 8000 | 20000 | 95 | 10000 | 100 | 72 | Partially | 60.00 |
| | **Namati** | **Abala** | 108000 | 320000 | 100 | 50000 | 20 | 98 | Fully | 54.55 |
| | **Namati** | **Niyor** | 6000 | 210000 | 87 | 2000 | 60 | 100 | Fully | 20.00 |

## Appendix X: Sustainability Score of Groups

| ND | NV | NG | SSDR | SSMI | SSFI |
|---|---|---|---|---|---|
| **Baksa** | **Jangapara** | **Rangdhali** | 0 | 25 | 75 |
| **Baksa** | **Jangapara** | **Sanghamitra** | 0 | 75 | 50 |
| **Baksa** | **Jangapara** | **Atma Niyojan Samiti** | 50 | 50 | 75 |
| **Baksa** | **Jangapara** | **Ramdhenu** | 0 | 50 | 75 |
| **Baksa** | **Jangapara** | **Aai Asomi** | 25 | 50 | 75 |
| **Baksa** | **Salbari** | **Salbari Nzwra Affat** | 0 | 50 | 50 |
| **Baksa** | **Salbari** | **Golden** | 0 | 75 | 50 |
| **Baksa** | **Salbari** | **Pakhila** | 0 | 50 | 75 |
| **Baksa** | **Salbari** | **Udashri** | 0 | 75 | 75 |
| **Baksa** | **Salbari** | **Rupashree** | 25 | 75 | 75 |
| **Baksa** | **Bunmaja** | **11 star** | 0 | 75 | 100 |
| **Baksa** | **Bunmaja** | **Narikallari** | 0 | 50 | 100 |
| **Baksa** | **Bunmaja** | **Jonmoni** | 0 | 75 | 100 |
| **Baksa** | **Bunmaja** | **Rangjali** | 0 | 25 | 100 |
| **Baksa** | **Bunmaja** | **Baishagi** | 0 | 25 | 100 |
| **Baksa** | **Bagariguri** | **Jonmoni** | 0 | 50 | 100 |
| **Baksa** | **Bagariguri** | **Nari Mukti** | 0 | 75 | 100 |
| **Baksa** | **Bagariguri** | **Jonmoni** | 0 | 75 | 100 |
| **Baksa** | **Bagariguri** | **Rangjali** | 0 | 75 | 100 |
| **Baksa** | **Bagariguri** | **Baishagi** | 0 | 50 | 100 |
| **Barpeta** | **Bamundi** | **Jai Shiv** | 0 | 50 | 50 |
| **Barpeta** | **Bamundi** | **Maa Kali** | 0 | 50 | 75 |
| **Barpeta** | **Bamundi** | **Maa Kamakhya** | 0 | 50 | 75 |
| **Barpeta** | **Bamundi** | **Sarachati** | 0 | 50 | 50 |
| **Barpeta** | **Bamundi** | **Rupjyoti** | 0 | 50 | 75 |
| **Barpeta** | **Bhare Gaon** | **Shudamsri** | 0 | 75 | 75 |
| **Barpeta** | **Bhare Gaon** | **Hainashree Mahila** | 25 | 50 | 75 |
| **Barpeta** | **Bhare Gaon** | **Jayamoti** | 0 | 75 | 25 |
| **Barpeta** | **Bhare Gaon** | **Maina** | 25 | 50 | 100 |
| **Barpeta** | **Bhare Gaon** | **Mousumi** | 0 | 50 | 75 |
| **Barpeta** | **Garemari** | **Bowari** | 0 | 50 | 75 |
| **Barpeta** | **Garemari** | **Jaganath** | 25 | 75 | 100 |
| **Barpeta** | **Garemari** | **Akha** | 0 | 50 | 75 |
| **Barpeta** | **Garemari** | **Jibita** | 0 | 50 | 75 |
| **Barpeta** | **Garemari** | **Bhogirothi** | 0 | 50 | 75 |
| **Barpeta** | **Bamunkuchi** | **Pragati** | 0 | 50 | 100 |
| **Barpeta** | **Bamunkuchi** | **Sarachati** | 25 | 75 | 100 |
| **Barpeta** | **Bamunkuchi** | **Pragati** | 0 | 75 | 75 |
| **Barpeta** | **Bamunkuchi** | **Meghali** | 0 | 75 | 100 |
| **Barpeta** | **Bamunkuchi** | **Lakhimi** | 25 | 75 | 50 |
| **Nalbari** | **Bar Makhibaha** | **Lakhimi** | 25 | 50 | 75 |
| **Nalbari** | **Bar Makhibaha** | **Puwali** | 25 | 75 | 50 |
| **Nalbari** | **Bar Makhibaha** | **Milan** | 25 | 50 | 75 |
| **Nalbari** | **Bar Makhibaha** | **Nilachal** | 25 | 50 | 50 |
| **Nalbari** | **Bar Makhibaha** | **pragatishil** | 25 | 25 | 50 |
| **Nalbari** | **Baralkuchi** | **Milijuli** | 0 | 75 | 75 |
| **Nalbari** | **Baralkuchi** | **Ramdhenu** | 0 | 75 | 75 |
| **Nalbari** | **Baralkuchi** | **Shiv Shankar** | 0 | 75 | 75 |
| **Nalbari** | **Baralkuchi** | **Jontona** | 0 | 50 | 75 |
| **Nalbari** | **Baralkuchi** | **Lakhimi** | 25 | 50 | 75 |
| **Nalbari** | **Bamunbari** | **Maa Kamakhya** | 25 | 75 | 50 |
| **Nalbari** | **Bamunbari** | **Udiyaman** | 25 | 75 | 50 |
| **Nalbari** | **Bamunbari** | **Nabmilan** | 25 | 50 | 75 |
| **Nalbari** | **Bamunbari** | **Kapili** | 0 | 75 | 75 |
| **Nalbari** | **Bamunbari** | **Mayamoni** | 0 | 75 | 75 |
| **Nalbari** | **Namati** | **Pragati** | 25 | 75 | 75 |
| **Nalbari** | **Namati** | **Rangdhali** | 25 | 75 | 75 |
| **Nalbari** | **Namati** | **Nab Jyoti** | 25 | 50 | 50 |
| **Nalbari** | **Namati** | **Abala** | 0 | 50 | 25 |
| **Nalbari** | **Namati** | **Niyor** | 25 | 50 | 50 |

Note: SSDR= Sustainability Score of Dependency Ratio, SSMI= Sustainability Score of Managerial Indicators and SSFI= Sustainability Score of Financial Indicators

## Appendix Y: Construction of Multidimensional Sustainability Index of SHGs

| ND | NV | NG | Organizational | Managerial | Financial | $MDSI^{SHG}$ |
|---|---|---|---|---|---|---|
| **Baksa** | **Jangapara** | **Rangdhali** | 0 | 2.5 | 15 | 17.5 |
| **Baksa** | **Jangapara** | **Sanghamitra** | 0 | 7.5 | 10 | 17.5 |
| **Baksa** | **Jangapara** | **Atma Niyojan Samiti** | 10 | 5 | 15 | 30 |
| **Baksa** | **Jangapara** | **Ramdhenu** | 0 | 5 | 15 | 20 |
| **Baksa** | **Jangapara** | **Aai Asomi** | 5 | 5 | 15 | 25 |
| **Baksa** | **Salbari** | **Salbari Nzwra Affat** | 0 | 5 | 10 | 15 |
| **Baksa** | **Salbari** | **Golden** | 0 | 7.5 | 10 | 17.5 |
| **Baksa** | **Salbari** | **Pakhila** | 0 | 5 | 15 | 20 |
| **Baksa** | **Salbari** | **Udashri** | 0 | 7.5 | 15 | 22.5 |
| **Baksa** | **Salbari** | **Rupashree** | 5 | 7.5 | 15 | 27.5 |
| **Baksa** | **Bunmaja** | **11 star** | 0 | 7.5 | 20 | 27.5 |
| **Baksa** | **Bunmaja** | **Narikallari** | 0 | 5 | 20 | 25 |
| **Baksa** | **Bunmaja** | **Jonmoni** | 0 | 7.5 | 20 | 27.5 |
| **Baksa** | **Bunmaja** | **Rangjali** | 0 | 2.5 | 20 | 22.5 |
| **Baksa** | **Bunmaja** | **Baishagi** | 0 | 2.5 | 20 | 22.5 |
| **Baksa** | **Bagariguri** | **Jonmoni** | 0 | 5 | 20 | 25 |
| **Baksa** | **Bagariguri** | **Nari Mukti** | 0 | 7.5 | 20 | 27.5 |
| **Baksa** | **Bagariguri** | **Jonmoni** | 0 | 7.5 | 20 | 27.5 |
| **Baksa** | **Bagariguri** | **Rangjali** | 0 | 7.5 | 20 | 27.5 |
| **Baksa** | **Bagariguri** | **Baishagi** | 0 | 5 | 20 | 25 |
| **Barpeta** | **Bamundi** | **Jai Shiv** | 0 | 5 | 10 | 15 |
| **Barpeta** | **Bamundi** | **Maa Kali** | 0 | 5 | 15 | 20 |
| **Barpeta** | **Bamundi** | **Maa Kamakhya** | 0 | 5 | 15 | 20 |
| **Barpeta** | **Bamundi** | **Sarachati** | 0 | 5 | 10 | 15 |
| **Barpeta** | **Bamundi** | **Rupjyoti** | 0 | 5 | 15 | 20 |
| **Barpeta** | **Bhare Gaon** | **Shudamsri** | 0 | 7.5 | 15 | 22.5 |
| **Barpeta** | **Bhare Gaon** | **Hainashree Mahila** | 5 | 5 | 15 | 25 |
| **Barpeta** | **Bhare Gaon** | **Jayamoti** | 0 | 7.5 | 5 | 12.5 |
| **Barpeta** | **Bhare Gaon** | **Maina** | 5 | 5 | 20 | 30 |
| **Barpeta** | **Bhare Gaon** | **Mousumi** | 0 | 5 | 15 | 20 |
| **Barpeta** | **Garemari** | **Bowari** | 0 | 5 | 15 | 20 |
| **Barpeta** | **Garemari** | **Jaganath** | 5 | 7.5 | 20 | 32.5 |
| **Barpeta** | **Garemari** | **Akha** | 0 | 5 | 15 | 20 |
| **Barpeta** | **Garemari** | **Jibita** | 0 | 5 | 15 | 20 |
| **Barpeta** | **Garemari** | **Bhogirothi** | 0 | 5 | 15 | 20 |
| **Barpeta** | **Bamunkuchi** | **Pragati** | 0 | 5 | 20 | 25 |
| **Barpeta** | **Bamunkuchi** | **Sarachati** | 5 | 7.5 | 20 | 32.5 |
| **Barpeta** | **Bamunkuchi** | **Pragati** | 0 | 7.5 | 15 | 22.5 |
| **Barpeta** | **Bamunkuchi** | **Meghali** | 0 | 7.5 | 20 | 27.5 |
| **Barpeta** | **Bamunkuchi** | **Lakhimi** | 5 | 7.5 | 10 | 22.5 |
| **Nalbari** | **Bar Makhibaha** | **Lakhimi** | 5 | 5 | 15 | 25 |
| **Nalbari** | **Bar Makhibaha** | **Puwali** | 5 | 7.5 | 10 | 22.5 |
| **Nalbari** | **Bar Makhibaha** | **Milan** | 5 | 5 | 15 | 25 |
| **Nalbari** | **Bar Makhibaha** | **Nilachal** | 5 | 5 | 10 | 20 |
| **Nalbari** | **Bar Makhibaha** | **pragatishil** | 5 | 2.5 | 10 | 17.5 |
| **Nalbari** | **Baralkuchi** | **Milijuli** | 0 | 7.5 | 15 | 22.5 |
| **Nalbari** | **Baralkuchi** | **Ramdhenu** | 0 | 7.5 | 15 | 22.5 |
| **Nalbari** | **Baralkuchi** | **Shiv Shankar** | 0 | 7.5 | 15 | 22.5 |
| **Nalbari** | **Baralkuchi** | **Jontona** | 0 | 5 | 15 | 20 |
| **Nalbari** | **Baralkuchi** | **Lakhimi** | 5 | 5 | 15 | 25 |
| **Nalbari** | **Bamunbari** | **Maa Kamakhya** | 5 | 7.5 | 10 | 22.5 |
| **Nalbari** | **Bamunbari** | **Udiyaman** | 5 | 7.5 | 10 | 22.5 |
| **Nalbari** | **Bamunbari** | **Nabmilan** | 5 | 5 | 15 | 25 |
| **Nalbari** | **Bamunbari** | **Kapili** | 0 | 7.5 | 15 | 22.5 |
| **Nalbari** | **Bamunbari** | **Mayamoni** | 0 | 7.5 | 15 | 22.5 |
| **Nalbari** | **Namati** | **Pragati** | 5 | 7.5 | 15 | 27.5 |
| **Nalbari** | **Namati** | **Rangdhali** | 5 | 7.5 | 15 | 27.5 |
| **Nalbari** | **Namati** | **Nab Jyoti** | 5 | 5 | 10 | 20 |
| **Nalbari** | **Namati** | **Abala** | 0 | 5 | 5 | 10 |
| **Nalbari** | **Namati** | **Niyor** | 5 | 5 | 10 | 20 |

# Appendix Z: Nature of MDSI$^{SHG}$ of Various Groups

| ND | NV | NG | 0-10 (Highest) | 11-- 20 (High) | 21-- 30 (Medium) | 31-- 40 (Low) | 41-- 50 (Lowest) |
|---|---|---|---|---|---|---|---|
| **Baksa** | **Jangapara** | **Rangdhali** | -- | Yes | -- | -- | -- |
| **Baksa** | **Jangapara** | **Sanghamitra** | -- | Yes | -- | -- | -- |
| **Baksa** | **Jangapara** | **Atma Niyojan Samiti** | -- | - | Yes | -- | -- |
| **Baksa** | **Jangapara** | **Ramdhenu** | -- | Yes | -- | -- | -- |
| **Baksa** | **Jangapara** | **Aai Asomi** | -- | | Yes | -- | -- |
| **Baksa** | **Salbari** | **Salbari Nzwra Affat** | -- | Yes | -- | -- | -- |
| **Baksa** | **Salbari** | **Golden** | -- | Yes | -- | -- | -- |
| **Baksa** | **Salbari** | **Pakhila** | -- | Yes | -- | -- | -- |
| **Baksa** | **Salbari** | **Udashri** | -- | -- | Yes | -- | -- |
| **Baksa** | **Salbari** | **Rupashree** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bunmaja** | **11 star** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bunmaja** | **Narikallari** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bunmaja** | **Jonmoni** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bunmaja** | **Rangjali** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bunmaja** | **Baishagi** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bagariguri** | **Jonmoni** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bagariguri** | **Nari Mukti** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bagariguri** | **Jonmoni** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bagariguri** | **Rangjali** | -- | -- | Yes | -- | -- |
| **Baksa** | **Bagariguri** | **Baishagi** | -- | -- | Yes | -- | -- |
| **Barpeta** | **Bamundi** | **Jai Shiv** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Bamundi** | **Maa Kali** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Bamundi** | **Maa Kamakhya** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Bamundi** | **Sarachati** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Bamundi** | **Rupjyoti** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Bhare Gaon** | **Shudamsri** | -- | -- | Yes | -- | -- |
| **Barpeta** | **Bhare Gaon** | **Hainashree Mahila** | -- | -- | Yes | -- | -- |
| **Barpeta** | **Bhare Gaon** | **Jayamoti** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Bhare Gaon** | **Maina** | -- | -- | Yes | -- | -- |
| **Barpeta** | **Bhare Gaon** | **Mousumi** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Garemari** | **Bowari** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Garemari** | **Jaganath** | -- | -- | -- | Yes | -- |
| **Barpeta** | **Garemari** | **Akha** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Garemari** | **Jibita** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Garemari** | **Bhogirothi** | -- | Yes | -- | -- | -- |
| **Barpeta** | **Bamunkuchi** | **Pragati** | -- | -- | Yes | -- | -- |
| **Barpeta** | **Bamunkuchi** | **Sarachati** | -- | -- | -- | Yes | -- |
| **Barpeta** | **Bamunkuchi** | **Pragati** | -- | -- | Yes | -- | -- |
| **Barpeta** | **Bamunkuchi** | **Meghali** | -- | -- | Yes | -- | -- |
| **Barpeta** | **Bamunkuchi** | **Lakhimi** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bar Makhibaha** | **Lakhimi** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bar Makhibaha** | **Puwali** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bar Makhibaha** | **Milan** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bar Makhibaha** | **Nilachal** | -- | Yes | -- | -- | -- |
| **Nalbari** | **Bar Makhibaha** | **pragatishil** | -- | Yes | -- | -- | -- |
| **Nalbari** | **Baralkuchi** | **Milijuli** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Baralkuchi** | **Ramdhenu** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Baralkuchi** | **Shiv Shankar** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Baralkuchi** | **Jontona** | -- | Yes | -- | -- | -- |
| **Nalbari** | **Baralkuchi** | **Lakhimi** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bamunbari** | **Maa Kamakhya** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bamunbari** | **Udiyaman** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bamunbari** | **Nabmilan** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bamunbari** | **Kapili** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Bamunbari** | **Mayamoni** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Namati** | **Pragati** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Namati** | **Rangdhali** | -- | -- | Yes | -- | -- |
| **Nalbari** | **Namati** | **Nab Jyoti** | -- | Yes | -- | -- | -- |
| **Nalbari** | **Namati** | **Abala** | Yes | -- | -- | -- | -- |
| **Nalbari** | **Namati** | **Niyor** | -- | Yes | -- | -- | -- |
| **3** | **12** | **60** | **1 (1.7)** | **22 (36.7)** | **35 (58.3)** | **2 (3.3)** | **0** |

**Appendix Z.1**

**Rural Credit Markets in Assam- A Study of Lower Brahmaputra Valley**
**Questionnaire for Household Interview**

Questionnaire No---------- Date:

## General Household Information

**1.** Name of village
Village name

**2.** Name of block
Block name

**3.** Name of district
District name

**4.** Name of respondent:

**5.** Age of respondent

**01.** 0-10 yrs **02.** 11-19 yrs **03.** 20-25 yrs **04.** 26-30 yrs
**05.** 31-49 yrs **06.** 50-64 yrs **07.** 65+ yrs

**6.** Sex of respondent

**01.** Male **02.** Female 03**.** Others (Specify)

**7.** Religion of the respondent

**01.** Hindu **02.** Muslim **03.** Sikh **04.** Christen **05.** Others (Specify)

**8.** Caste of the respondent

**01.** ST **02.** SC **03.** OBC **04.** GEN **05.** Others (Specify)

**9.** Marital Status

**01.** Below Age **02.** Bachelor **03.** Married **04.** Divorced
**05.** Widowed

**10.** How many years are you living in the village?

**01.** 0-5 yrs **02.** 6-10 yrs **03.** 11-15 yrs **04.** 16-20 yrs
**05.** 21-25 yrs **06.** 26-30 yrs **07.** 31+ yrs

**11.** How much Distance to market centre from your home?

**01.** Less than 1km **02.** 1-3km **03.** 4-6km **04.** 7-9km **05.** 10-12km
**06.** 13-15km **07.** 16-20km **08.** 21-30km **09.** 31km and more

**12.** Do you have any membership of socio-economic organization in the locality?

**01.** Yes **02.** No

**13.** If yes, mention the name of the organization

**14.** Occupation of the respondent

**01.** Landlord **02.** Agricultural Labourer **03.** Artisan
**04.** Merchant/trader **05.** Govt/Public Employee
**06.** Private Sector Employee **07.** Farmer **08.** Unemployed
**09.** Others (Specify)

**15.** How many years you are engaging with this occupation?

**01.** 0-3 yrs **02.** 4-7 yrs **03.** 8-12 yrs **04.** 13-17 yrs **05.** 18-22 yrs
**06.** 23-27 yrs **07.** 28-32 yrs **08.** 33-37 yrs **09.** 38+ yrs

**16.** Do you experience any changes in your occupations over the last five years (i.e. size of livestock kept, farm size, business, use of labour, etc)?

**17.** Education of the respondent

**01.** Illiterate **02.** Primary School **03.** Upper Primary School
**04.** HSLC **05.** HS **06.** Graduate **07.** Others (Specify)

**18.** Education of the respondent spouse

| | |
|---|---|
| | |

**01.** Illiterate **02.** Primary School **03.** Upper Primary School
**04.** HSLC **05.** HS **06.** Graduate **07.** Others (Specify)

**19.** Number of Members in the Family

| | |
|---|---|
| | |

**01.** One **02.** Two **03.** Three **04.** Four **05.** Five **06.** Six
**07.** Seven **08.** Eight **09.** Nine **10.** Others (Specify)

**20.** Number of son/daughters in the Family

| | |
|---|---|
| | |

**01.** One **02.** Two **03.** Three **04.** Four **05.** Five **06.** Six
**07.** Seven **08.** Others

**21.** Number of Male and Female Children's in the Family

| | | |
|---|---|---|
| M | | |
| F | | |

**22.** Male Children's Education

| | | |
|---|---|---|
| Sl. No. | | |
| | | |
| | | |
| | | |
| | | |

**01.** Illiterate **02.** Primary School **03.** Upper Primary School
**04.** HSLC **05.** HS **06.** Graduate **07.** Below Age
**08.** Others (Specify)

**23.** Female Children's Education

| | | |
|---|---|---|
| Sl. No. | | |
| | | |
| | | |
| | | |

**01.** Illiterate **02.** Primary School **03.** Upper Primary School
**04.** HSLC **05.** HS **06.** Graduate **07.** Below Age
**08.** Others (Specify)

**24.** Does no one in the household have 6 years or more of education among those who are old enough to achieve 6 years of education?

| | |
|---|---|
| | |

**01.** Yes **02.** No

**25.** Does at least one child of age between the primary school entering age +1 and the primary school entering age +8 is not attending school?

| | |
|---|---|
| | |

**01.** Yes **02.** No

**26.** Distribution of Family Members across Age Groups

| Age Groups | No. of Family Members | Approximate Average Height | Approximate Average Weight |
|---|---|---|---|
| 65 and Older Females | | | |
| 65 and Older Males | | | |
| 13-18 Females | | | |
| 13-18 Males | | | |
| 6-12 Females | | | |
| 6-12 Males | | | |
| 0-5 Girl Child | | | |
| 0-5 boy Child | | | |
| 19-64 | | | |

**27.** Health, sanitation and fuel

| | |
|---|---|
| | |
| | |
| | |

**01.** Access to the health center **02.** Access to family planning programme **03.** Access to clean/good drinking water **04.** Good sanitation **05.** Access to electricity **06.** Cooking gas

**28.** Was there a child death in the household within last 5 years to a woman of age 35 or less?

| | |
|---|---|

**01.** Yes **02.** No

**29.** Type of Dwelling

| | |
|---|---|

**01.** Apartment **02.** Village House **03.** Rural House
**04.** Separate Room **05.** Informal Housing **06.** Others (Specify)

**30.** Possession of Dwelling

| | |
|---|---|

**01**. Owned **02.** Rented **03**. Furnished and Rented **04.** With Job
**05.** Squattered **06.** Others (Specify)

**31.** Family Income per Month (Rs.)

| | |
|---|---|

**32.** Total Family expenses per month (Rs.)

| | |
|---|---|

**33.** Does the household income meet family needs? Assess over a period of five years.

**01.** Yes **02.** No

**34.** How households do spend their incomes per month?

| **Item** | **Subsistence: food, clothing, shelter** | **School fees, Medicare, transport** | **Investment (specify: farming, livestock, business, etc)** | **Entertainment/festival** | **Others (specify)** |
|---|---|---|---|---|---|
| **Amount (Rs)** | | | | | |

**35.** Number of household members at work

**01.** One **02.** Two **03.** Three **04.** Four **05.** Five **06.** Six **07.** Eight **08.** None

**36.** Do your son/daughters earn money?

**01.** Yes **02.** No

**37.** If Yes, What is the source of their Income?

**01.** Service **02.** Farmer **03.** Manual Labour **04.** Others (Specify)
**05.** Not Applicable

| Sl. No. | | |
|---|---|---|
| | | |
| | | |

**38.** Son/daughters income per month (Rs.)

| Sl. No. | | |
|---|---|---|

**39.** Number of dependent members in the family

**01.** One **02.** Two **03.** Three **04.** Four **05.** Five **06.** Six **07.** Eight **08.** None

**40.** Approximate value of physical assets inherited by household

**41.** Assets of the Households

| **Asset Types** | **If Yes (Put Tick Mark)** |
|---|---|
| Radio | |
| TV | |
| Telephone | |
| Bike | |
| Car | |
| Truck | |
| Animal Cart | |
| Refrigerator | |

**42.** Do you own land?

**01.** Yes **02.** No

**43.** If Yes, How much?

**01.** Less than 1bighas **02.** 1 -3 bighas **03.** More than 3 – 8 bighas
**04.** More than 8 -12 bighas **05.** More than 12- 15 bighas **06.** More than 15- 25 bighas
**07.** Others (Specify)

**44.** Homestead Land

**01.** Less than 1bighas **02.** 1 -3 bighas **03.** More than 3 – 8 bighas
**04.** More than 8 -12 bighas **05.** More than 12- 15 bighas **06.** More than 15- 25 bighas
**07.** Others (Specify)

**45.** Agricultural Land

**01.** Less than 1bighas **02.** 1 -3 bighas **03.** More than 3 – 8 bighas
**04.** More than 8 -12 bighas **05.** More than 12- 15 bighas **06.** More than 15- 25 bighas
**07.** Others (Specify)

**46.** How many members engaged in farming in your land?

**47.** What type of crops do you grow?

**48.** What are the objectives of growing these crops?

**01.** Commercial **02.** Subsistence **03.** Habit **04.** Don't know
**05.** Others (specify)

**49.** What is the approximate value of your production per annum?

**50.** How much you spend per annum for production of crops?

**51.** What is the pattern of land ownership of household?

**52.** Do you own any livestock?

**01.** Yes **02.** No

**53.** If yes, specify the name

**54.** What is their approximate value?

**55.** Do you own any gold?

**01.** Yes **02.** No

**56.** If yes, How much?

**57.** Do you face any negative shock during last five years?

**01.** Yes **02.** No

**58.** If yes, mention the nature of negative shock

**59.** What is the status of public transport in your locality?

**60.** Do you experience any change in infrastructure in your locality during last five years?

**61.** Do you have a bank account?

**01.** Yes **02.** No

**62.** If yes, name the type of account.

**01.** Savings **02.** Current **03.** Cheque **04.** Transmission
**05.** Other (specify)

**63.** Do you lend any money to someone?

**01.** Yes **02.** No

**64.** If yes, to whom you lend money?

**65.** How much you lend in last three years?

**66.** What is the interest rate you charge?

**67.** Do you save money per month?

**01.** Yes **02.** No

**68.** If yes, Where?

| | |
|---|---|
| | |
| | |

**69.** How much money you save per month?

| | |
|---|---|

**01.** Less than Rs. 500 **02.** Rs. 500-1000 **03.** More than Rs. 1000-1500
**04.** More than Rs. 1500-2000 **05.** More than Rs. 2000-2500 **06.** More than Rs. 2500 and Above

**70.** Do you have insurance policy?

| | |
|---|---|
| | |
| | |

**01.** None **02.** Education plan **03.** Life cover **04.** Investment
**05.** Annuity **06.** All of the above

**71.** What is the monthly premium?

| | |
|---|---|

**72.** Any income remittances from any source for the last five years?
(Specify where possible)

| | |
|---|---|

**73.** Do you satisfy in your life?

| | |
|---|---|

**01.** Zero **02.** One **03.** Two **04.** Three **05.** Four **06.** Five
**07.** Six **08.** Seven **09.** Eight **10.** Nine **11.** Ten

## Borrowing from Formal Sources

**1.** Do you know any formal sources or place where you can borrow or ask for a credit?

**01.** Yes **02.** No

**2.** If yes, mention their names

**3.** Do you borrow any money from these formal sources?

**01.** Yes **02.** No

**4.** If yes, Does the borrower is women?

**01.** Yes **02.** No

**5.** Is she married?

**01.** Yes **02.** No

**6.** If yes, mention the name of sources from where you borrowed money

**7.** Do you have any branch of these formal credit sources in your locality?

**01.** Yes **02.** No

**8.** How much money you borrowed from them in last three years?

**9.** Mention the source-wise amount of borrowed money

| **Source** | | | | | | |
|---|---|---|---|---|---|---|
| **Amount (Rs.)** | | | | | | |

**10.** What is the purpose of borrowing formal sector loan?

| | |
|---|---|
| | |
| | |
| | |

**11.** How you spend the borrowed money?

| Items | Consumption | Education | Production including agricultural | Health | Emergency | Others (Specify) |
|---|---|---|---|---|---|---|
| Amount (Rs) | | | | | | |

**12.** Do you have any written contract with them?

**01.** Yes **02.** No

**13.** What is the time taken from date of application to receipt of credit?

**01.** one week **02.** One month **03.** Six month **04.** One year
**05.** Others (Specify)

**14.** Minimum money requirement for opening an account

**01.** Rs. 200 **02.** Rs. 500 **03.** Rs. 1000 **04.** None **05.** Others (Specify)

**15.** Mention the requirements for obtaining the loan

**01.** Membership **02.** No other loans **03.** Trustworthiness **04.** Others (Specify)

**16.** What is the amount of the last loan you asked?

**17.** What is the amount of the last loan you received?

**18.** What is the duration of loan?

**19.** How many years you have relationship with the lenders?

**20.** What is the distance to banks and other formal credit sources from your house?

**21.** How much money you spend for borrowing money in last three years?

**22.** What is the interest rate per annum?

**23.** How much interest rate you paid per annum?

**24.** Do you repay the all borrowed money within the maturity period?

**01.** Yes **02.** No

**25.** If yes, how much money you repay out of total borrowed money?

**26.** What is the amount of the last installment you paid?

**27.** What is the nature of periodicity of loan collection?

**01.** Weekly **02.** Monthly **03.** Quarterly **04.** Half yearly **05.** Yearly
**06.** Others (Specify)

**28.** What was the monthly installment?

**29.** Do you surrender of title to lender?

**01.** Yes **02.** No

**30.** Do you mortgage any land for credit?

**01.** Yes **02.** No

**31.** Collateral, in the form of

**01.** Money/Property **02.** Land **03.** Bank account **04.** Trust
**05.** Other **06.** None

**32.** Compulsory savings

**01.** Required (please mention how much) **02.** Not required
**03.** Required with conditions (please mention)

**33.** Entrance fee

**01.** Required (please mention how much) **02.** Not required
**03.** Required with conditions (please mention) **04.** Not applicable

**34.** Do you face any sanction/punishment if the borrowed money is not repaid in time?

**01.** Yes **02.** No

**35.** If yes, mention the nature of sanction/punishment

**01.** Fines **02.** Cultural/social sanction **03.** Other (please mention)

**36.** Do ever your loan application was rejected?

**01.** Yes **02.** No

**37.** If yes, mention the reasons of rejection

**38.** Do you face any problem in repaying the borrowed money?

**39.** What are the reasons for involvement in formal rural credit programme?

**40.** Institutional problems in accessing formal rural credit

**01.** Lack of access due to unstable/low income
**02.** Lack of collateral
**03.** Lack of access due to live in remote areas
**04.** Lack of access due to high debt of previous loan
**05.** Lack of access due to unable to repay the loan (high interest rates)
**06.** Others (Specify)

**41.** Administrative problems in accessing formal rural credit

**01.** Long procedure **02.** Too many fee **03.** Poor management **04.** Others (Specify)

**42.** What is your understanding about formal rural credit scheme available in your area?

**43.** What is the role of local government and central government in facilitating formal rural credit programme in your area?

**44.** Why did you choose that credit source?

**45.** Do you have any suggestion for formal credit sources?

**46.** Reasons of not borrowing from formal sector

| | |
|---|---|
| | |
| | |
| | |

**47.** How do you rate and compare your farming and household economic conditions before involved in formal rural credit programme and after involved in formal rural credit programme?

**01.** Worse-off **02.** The same **03.** Better-off

| | |
|---|---|
| | |

## Borrowing from Semiformal Sources

**1.** Do you know any semiformal sources or place where you can borrow or ask for a credit?

**01.** Yes **02.** No

**2.** If yes, mention their names

**3.** Do you borrow any money from these Semiformal sources?

**01.** Yes **02.** No

**4.** If yes, Does the borrower is women?

**01.** Yes **02.** No

**5.** Is she married?

**01.** Yes **02.** No

**6.** If yes, mention the name of sources from where you borrowed money

**7.** Do the semiformal organizations are located in your locality?

**01.** Yes **02.** No

**8.** How much money you borrowed from them in last three years?

**9.** Mention source-wise amount of borrowed money

| **Source** | | | | | | |
|---|---|---|---|---|---|---|
| **Amount (Rs.)** | | | | | | |

**10.** What is the purpose of borrowing semiformal sector loan?

| | |
|---|---|
| | |
| | |
| | |

**11.** How you spend the borrowed money?

| Items | Consumption | Education | Production including agricultural | Health | Emergency | Others (Specify) |
|---|---|---|---|---|---|---|
| Amount (Rs.) | | | | | | |

**12.** Do you have any written contract with them?

| | |
|---|---|

**01.** Yes **02.** No

**13.** Mention the requirements for obtaining the loan

| | |
|---|---|
| | |

**01.** Membership **02.** No other loans **03.** Trustworthiness

**14.** What is the amount of the last loan you asked?

| | |
|---|---|

**15.** What is the amount of the last loan you received?

| | |
|---|---|

**16.** What is the duration of loan?

| | |
|---|---|

**17.** How many years you have relationship with the lenders?

| | |
|---|---|

**18.** What is the distance to these semiformal credit sources from your house?

**19.** What is the time taken from date of application to receipt of credit?

| | |
|---|---|
| | |

**01.** One week **02.** One month **03.** Six month **04.** One year
**05.** Others (Specify)

**20.** How much money you spend for borrowing money in last three years?

| | |
|---|---|

**21.** What is the interest rate per annum?

**22.** How much interest rate you paid per annum?

**23.** Do you repay the last two years borrowed money in current year?

**01.** Yes **02.** No

**24.** If yes, how much money you paid out of total loan amount?

**25.** If no, are you a previous member of these credit sources?

**01.** Yes **02.** No

**26.** What is the amount of the last installment you paid?

**27.** What is the nature of periodicity of loan collection?

**01.** Weekly **02.** Monthly **03.** Quarterly **04.** Half yearly **05.** Yearly
**06.** Others (Specify)

**28.** Do you have compulsory meetings in semiformal credit sources?

**01.** Yes **02.** No

**29.** Do you surrender of title to lender?

**01.** Yes **02.** No

**30.** Do you mortgage any land for credit?

**01.** Yes **02.** No

**31.** Do you face any problem in repaying the borrowed money?

**32.** Collateral, in the form of

**01.** Money/Property **02.** Land **03.** Bank account **04.** Trust **05.** Other **06.** None

**33.** Compulsory savings

**01.** Required (please mention how much) **02.** Not required
**03.** Required with conditions (please mention)

**34.** Entrance fee

**01.** Required (please mention how much) **02.** Not required
**03.** Required with conditions (please mention) **04.** Not applicable

**35.** Do you face any sanction/punishment if the borrowed money is not repaid in time?

**01.** Yes **02.** No

**36.** If yes, mention the nature of sanction/punishment

**01.** Fines **02.** Cultural/social sanction **03.** Other (please mention)

**37.** Do ever you loan application was rejected?

**01.** Yes **02.** No

**38.** If yes, mention the reasons of rejection

**39.** How many times you have taken loan from these sources?

**01.** One time **02.** Two times **03.** Three times **04.** Four times
**05.** Five times **06.** Six times **07.** Seven times **08.** Eight times **09.** Others (Specify)

**40.** How many members were there?

**41.** Is the qualification for membership determined by one or more of the following criteria?

**01.** Age **02.** Kinship **03.** Ethnic affiliation **04.** Locality
**05.** Occupation **06.** Education **07.** Religious affiliation
**08.** Place of work

**42.** How is the composition of the membership?

**01.** Women only **02.** Men only **03.** Mostly women
**04.** Mostly men **05.** Both men and women

**43.** How often is the member allowed to be granted a loan?

**01.** Once **02.** Twice **03.** Thrice **04.** As many as possible
**05.** As long as you have a good record

**44.** How often do you meet?

**01.** Monthly **02.** Once in six months **03**. In times of need

**45.** What is your monthly/weekly contribution?

**46.** What do you discuss in a meeting?

**01.** General issues **02.** How to make more money **03.** Problems

**47.** How do you decide who should receive the first payment?

**01.** Alphabetical order of surnames **02.** Order of the date's members joined
**03.** Drafted list

**48.** How much does an individual receive?

**49.** Is a party thrown when a member receives a purse?

**01.** Yes **02.** No

**50.** If there are officials or organizers what are their functions?

**01.** Chair and secretary **02.** Chair, secretary and treasurer **03.** No officials

**51.** By what criteria are they selected?

**01.** Hard work **02.** Trustworthiness **03.** None **04.** Voting

**52.** Is there a constitution or a set of formal rules?

**01.** Yes **02.** No

**53.** What is the term of office of the officials or committee?

**54.** Give the problems that you are encountering in your association

**01.** Absenteeism **02.** Poor repayment 03. Others (Specify)

**55.** What are the reasons for involvement in semiformal rural credit programme?

**56.** Reasons of not borrowing from semiformal sector

**57.** What is your understanding about semiformal rural credit scheme available in your area?

**58.** What is the role of local government and central government in facilitating semiformal rural credit programme in your area?

**59.** What are the disadvantages/problems to be involved in semiformal rural credit programme? Please mention

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**60.** Do you have any suggestion for semiformal credit sources?

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|---|---|
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| | |

**61.** How do you rate and compare your farming and household economic conditions before involved in semiformal rural credit programme and after involved in semiformal rural credit programme?

| | |
|---|---|
| | |

**01.** Worse-off **02.** The same **03.** Better-off

## Borrowing from Informal Sources

**1.** Do you know any informal sources or place where you can borrow or ask for a credit?

**01.** Yes **02.** No

**2.** If yes, mention their names

**3.** Do you borrow any money from these informal sources?

**01.** Yes **02.** No

**4.** If yes, does the borrower is women?

**01**. Yes **02.** No

**5.** Is she married?

**01.** Yes **02.** No

**6.** If yes, mention the name of sources from where you borrowed money

**7.** Do the informal credit sources are located in your locality?

**01.** Yes **02.** No

**8.** If no, from where they are coming?

**9.** How much money you borrowed from them in last three years?

**10.** Mention source-wise loan taken

| **Source** | | | | | | |
|---|---|---|---|---|---|---|
| **Amount (Rs.)** | | | | | | |

**11.** What is the purpose of borrowing informal sector loan?

| | |
|---|---|
| | |
| | |
| | |

**12.** How you spend the borrowed money?

| **Items** | **Consumption** | **Education** | **Production including agricultural** | **Health** | **Emergency** | **Others (Specify)** |
|---|---|---|---|---|---|---|
| **Amount (Rs.)** | | | | | | |

**13.** Mention the requirements for obtaining the loan

| | |
|---|---|
| | |

**01.** Membership **02.** No other loans **03.** Trustworthiness

**14.** Do you have any written contract with them?

| | |
|---|---|
| | |

**01.** Yes **02.** No

**15.** What is the amount of the last loan you asked?

| | |
|---|---|
| | |

**16.** What is the amount of the last loan you received?

| | |
|---|---|
| | |

**17.** What is the duration of loan?

| | |
|---|---|
| | |

**18.** How many years you have relationship with the lenders?

| | |
|---|---|
| | |

**19.** What is the distance to these informal credit sources from your house?

| | |
|---|---|
| | |

**20.** How much money you spend for borrowing money from these informal credit sources in last three years?

**21.** What is the interest rate per annum?

**22.** How much interest rate you paid per annum?

**23.** Do you repay the last two years borrowed money in current year?

**01.** Yes **02.** No

**24.** If yes, how much money you repaid out of total borrowed amount?

**25.** What is the amount of the last installment you paid?

**26.** How long was the time expected for repayment of that loan (in months)?

**27.** What do you think would have happened to you if you could have failed to repay the loan?

**01.** Property repossessed **02.** Arrested **03.** Beated
**04.** Confiscation of ID & bank card

**28.** Do you face any sanction/punishment if the borrowed money is not repaid in time?

**01.** Yes **02.** No

**29.** If yes, mention the nature of sanction/punishment

**01.** Fines **02.** Cultural/social sanction **03.** Other (please mention)

**30.** Do ever you loan application was rejected?

**01.** Yes **02.** No

**31.** If yes, mention the reasons of rejection

**32.** What is the nature of periodicity of loan collection?

**01.** Weekly **02.** Monthly **03.** Quarterly **04.** Half yearly
**05.** Yearly **06.** Others (Specify)

**33.** Do you surrender of title to lender?

**01.** Yes **02.** No

**34.** Do you mortgage any land for credit?

**01.** Yes **02.** No

**35.** Collateral, in the form of

**01.** Money/Property **02.** Land **03.** Bank account **04.** Trust
**05.** Other **06.** None

**36.** Do you face any problem in repaying the borrowed money?

**37.** Is the interest rate reasonable?

**01.** Yes **02.** No

**38.** Was the loan used for its intended purpose?

**01.** Yes **02.** No

**39.** If no, what was its intended purpose?

**40.** What was your monthly/weekly payment of the loan?

**41.** How long did it take for your loan to be approved?

**01.** Hours **02.** Weeks **03.** Days

**42.** How often do you borrow money from them?

**01.** Every month **02.** Once in two months **03.** Once in six months
**04.** Once a year

**43.** Is the informal lender running his business from his office or house?

**01.** Office **02.** House

**44.** Did the interest rate of that particular informal lender change in the past months?

**01.** Increased **02.** Decreased **03.** Constant **04.** Don't know

**45.** Specify the amount (in %) by which it has changed e.g. 30% to 25%

**46.** Why do you think that informal lenders are better than formal banks?

**47.** Did you ever experience a problem with informal lenders?

**01.** Yes **02.** No

**48.** If yes, explain the nature of the problem

**49.** Do you think that you can survive without the help of the informal lenders?

**01.** Yes **02.** No

**50.** If no, explain why you can't survive

| | |
|---|---|
| | |
| | |

**51.** How did you know about the informal lenders?

| | |
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| | |

**52.** Reasons for involvement in informal rural credit programme

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|---|---|
| | |
| | |

**53.** Reasons of not borrowing from informal sector

| | |
|---|---|
| | |
| | |

**54.** What are the disadvantages/problems to be involved in informal rural credit programme? Please mention

| | |
|---|---|
| | |
| | |

**55.** How do you rate and compare your farming and household economic conditions before involved in informal rural credit programme and after involved in informal rural credit programme?

| | |
|---|---|

**01.** Worse-off **02.** The same **03.** Better-off

**56.** Do you have any suggestion for informal credit sources?

| | |
|---|---|
| | |
| | |

**Date** **Name of Interviewer**
**Place** **Signature**

## Appendix Z.2

### Rural Credit Markets in Assam- A Study of Lower Brahmaputra Valley
### Questionnaire for SHGs Survey

**1.** Name of village
Village name

**2.** Name of block
Block name

**3.** Name of district
District name

**4.** Name of respondent:

**5.** Do the respondent an office bearer of the SHGs?

**01. Yes 02. No**

**6.** Name of SHGs:

**7.** Composition of Members: a. Male Members b. Female Members

**8.** Date of Establishment:

**9.** Distribution of Members across Religion and Caste

| Religion/Caste | No. of Members |
|---|---|
| Hindu | |
| Muslim | |
| General | |
| SC | |
| ST | |
| OBC | |

**10.** Distribution of Members across Educational Status

| Educational Status | No. of Members |
|---|---|
| Illiterate | |
| Primary | |
| Upper Primary | |
| HSLC | |
| HS | |
| Graduation | |
| Master's | |

**11.** Distribution of Members across Family Income Category (p/m)

| Income Category | No. of Members |
|---|---|
| 1000-3000 | |
| 4000-6000 | |
| 7000-9000 | |
| 10000-12000 | |
| 13000-15000 | |
| 16000-18000 | |
| 19000-21000 | |
| More than 21000 | |

**12.** Current contribution frequency: Amount per member:

**13.** No. of members (Previous): a. Male No. b. Female No.

**14.** No. of new members added: a. Male No. b. Female No.

**15.** Shares added to same households:

**16.** No. of dropouts:

**a.** Current term: **i.** Deaths **.** Others

**b.** Previous term **i.** Deaths **.** Others

**17.** Previous contributions frequency: Amount per month:

**18.** How much money you lend per month?

**19.** What is the maximum amount of loan you sanctioned?

**20.** What is the minimum amount of loan you sanctioned?

**21.** Frequency of loan repayment

**22.** Mode of repayment

**23.** Repayment rate

**24.** Loan outstanding

**25.** Members presently having loan

**26.** Rate of interest for members (p/a)

**27.** Rate of interest for outsiders (p/a)

**28.** In what purpose you lend money to them?

**29.** Mention the requirements for obtaining the loan

**30.** Collateral, in the form of

| | |
|---|---|
| | |
| | |

**31.** Do you have any sanction/punishment if the borrowed money is not repaid in time?

**01.** Yes **02.** No

| | |
|---|---|
| | |

**32.** If yes, mention the nature of sanction/punishment

| | |
|---|---|
| | |
| | |

**33.** How often is the member allowed to be granted a loan?

| | |
|---|---|
| | |

**34.** Managerial and Financial Factors of SHGs

| **Factors** | **Options** | **Put Tick Mark** |
|---|---|---|
| Frequency of the Group Meeting | Weekly | |
| | Fortnightly | |
| | Monthly | |
| Attendance of the Members in the Meeting | Over 90per cent | |
| | 70per cent-90per cent | |
| | Less than 70per cent | |
| Maintenance of Group Records | Group Members | |
| | Promoter Agency | |
| | Others | |
| Decision Making Process | Consensus | |
| | Group Leader | |
| | Promoter Agency | |
| Rotation of Group Leadership | Half Yearly | |
| | Annually | |
| | Not Rotating | |
| Conflict Resolve Capacity of the Group | Extremely Efficient | |
| | Efficient | |
| | Poor | |
| Provision of Loan for Productive Purposes | Over 90 per cent | |
| | 70per cent-90 per cent | |
| | Less than 70 per cent | |
| Utilization of Loan by the SHG Members for the Productive Purposes | Fully | |
| | Partially | |
| | Other Purposes | |
| Dependence of SHG Members on Informal Sources | None | |
| | Less than 10 per cent | |
| | More than 10 per cent | |

**35.** Financial Information

| **Contribution from members** | **Retained earnings** | **Total Borrowing of SHGs** | **Loan Outstanding** | **Total Saving of SHGs** | **Cash in hand** | **Recurring deposit in bank** | **Fixed deposit in bank** | **Total Lending of the SHGs** |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

**36.** Suggestion for improvement of semiformal credit sources for rural poor

| | |
|---|---|
| | |
| | |

**Date** **Signature**
**Place** **Name of Interviewer**

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