

**Micro-Credit and the Empowerment of Women:  
A Study of Udalguri District of Assam**

A Dissertation Submitted

To

Sikkim University

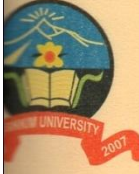


In Partial Fulfillment of the Requirement for the Degree of  
Masters of Philosophy

By

**Hangma Basumatary**  
Department of Economics  
School of Social Sciences

June 2017



# सिक्किम विश्वविद्यालय

(भारतके संसदके अधिनियमद्वारा स्थापित केन्द्रीय विश्वविद्यालय)

## SIKKIM UNIVERSITY

[A central university established by an Act of Parliament of India in 2007]

Date: .....

### DECLARATION

I, Hangma Basumatary, hereby declare that the thesis titled “**Micro-Credit and the Empowerment of Women: A Study of Udalguri District of Assam**” submitted to the Department of Economics, Sikkim University for the degree of Masters of Philosophy is my own work and that to the best of my knowledge it contains no materials previously published or written by others. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions.

I further state that no part of my thesis has already been or is being concurrently submitted for any such degree, diploma or other qualification.

**Hangma Basumatary**


**Regn. No.: 15/M.Phil/ECO/03**

Research Scholar,

Department of Economics

Sikkim University, Sikkim

We recommend this thesis to be placed before the examiners for evaluation.

  
**Dr. Rajesh Raj S. N.**

**Supervisor**

Department of Economics

Sikkim University

6<sup>th</sup> Mile, Sikkim

**Dr. Komol Singha**

**Head of the Department**

Department of Economics

Sikkim University

6<sup>th</sup> Mile, Sikkim

६ माइल, सामदुर, पीओ तादुङ-७६७१०२, गान्तोक, सिक्किम, भारत

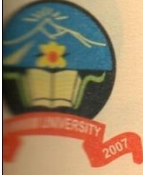
फोन : ०३५९२-२५१०६७, २५१४६८, फ्याक्स-२५१८६५

6th Mile, Samdur, P.O. Tadong 737102, Gangtok, Sikkim, India

Phone : 03592-251067, 251468, Fax : 03592-251865

Website : [www.cus.ac.in](http://www.cus.ac.in)

i



# सिक्किम विश्वविद्यालय

(भारतके संसदके अधिनियमद्वारा स्थापित केन्द्रीय विश्वविद्यालय)

## SIKKIM UNIVERSITY

[A central university established by an Act of Parliament of India in 2007]

Date: .....

### CERTIFICATE

This is to certify that this thesis entitled “**Micro-Credit and the Empowerment of Women: A Study of Udalguri District of Assam**” submitted to Department of Economics, Sikkim University in Partial fulfillment of the requirements for the degree of **Masters of Philosophy in Economics**, embodies the result of *bonafide* research work carried out by **Hangma Basumatary** under my supervision. The contents of this thesis, in full or in parts, have not been submitted to any other University or Institute for the award of any degree or diploma.

**Dr. Rajesh Raj S.N.**

Associate Professor,  
Department of Economics  
Sikkim University  
6<sup>th</sup> Mile, Samdur, Tadong  
Gangtok, Sikkim-737102

६ माइल, सामदुर, पीओ तादुङ-७६७१०२, गान्तोक, सिक्किम, भारत

फोन : ०३५९२-२५१०६७, २५१४६८, फ्याक्स-२५१८६५

6th Mile, Samdur, P.O. Tadong 737102, Gangtok, Sikkim, India

Phone : 03592-251067, 251468, Fax : 03592-251865

Website : [www.cus.ac.in](http://www.cus.ac.in)



# सिक्किम विश्वविद्यालय

(भारतीय संसद के अधिनियमद्वारा स्थापित केन्द्रीय विश्वविद्यालय)  
गुणवत्तापूर्ण प्रबंधन प्रणाली ISO 9001:2008 हेतु प्रमाणित संस्थान

## SIKKIM UNIVERSITY

[A Central University established by an Act of Parliament of India in 2007]

An ISO Quality Management System 9001:2008 Certified Institution

Date: .....

### Certificate of Plagiarism Check


This is to certify that plagiarism check has been carried out for the following M.Phil. Dissertation with the help of URKUND Software and the result is within the permissible limit decided by the University.

#### **“Micro-Credit and the Empowerment of Women:**

#### **A Study of Udalguri District of Assam”**

Submitted by Hangma Basumatary under the supervision of Dr. Rajesh Raj S.N. of the Department of Economics, School of Social Sciences, Sikkim University, Gangtok, Sikkim- 737102, India.

*Hangma Basumatary*  
Signature of the Candidate

  
Countersigned by the Supervisor

6 माईल, सामदुर, तादोंग, गंगटोक - 737102 सिक्किम, भारत  
दूराभाष : 00-91-3592 - 251067, 251403, फॅक्स :- 251067/251757

6th Mile, Samdur, PO Tadong 737102, Gangtok, Sikkim, India  
Phones : 00-91-3592-251067, 251403, Fax - 251067/251757  
website : [www.sikkimuniversity.in](http://www.sikkimuniversity.in)/[www.sikkimuniversity.ac.in](http://www.sikkimuniversity.ac.in)  
Email : [sikkimuniversity@gmail.com](mailto:sikkimuniversity@gmail.com)

iii

## ACKNOWLEDGEMENTS

I take this opportunity to express my heartfelt gratitude to one and all without whom this present dissertation work wouldn't have been completed.

I acknowledge and extend my deep sense of gratitude to my supervisor Dr. Rajesh Raj S.N. for his valuable guidance, supervision and encouragement, also for the valuable time that he spared on me inspite of his busy work schedule for the successful completion of the work within stipulated time.

I extend my heartfelt thanks to Dr. Komol Singha, the Head of Department of Economics for his encouragement. I also thank other faculty members of the Department, Dr. Manesh Choubey, Dr. Ruma Kundu, Dr. Pradyut Guha, Dr. Rangalal Mohapatra for their academic help and support.

I also thank to non-teaching staff members of the Department. I am thankful to the kind co-operation rendered to me by the staffs of the Library and other administrative section of the Sikkim University. I also like to thank to all my friends who supported me during the course of my dissertation work especially to Mr. Praveen Chauhan Chhetri for his support and encouragement without it this achievement would not have been in reality. I extend my sincere gratitude to my parents and my other family members and for their constant love, support, goodwill and blessings, which made it possible for me to come so far in my life.

Place: Gangtok

Date: .....

**Hangma Basumatary**

## LIST OF FIGURES

	<u>Page No.</u>
Figure 2.1: Female Work Participation Rate in All-India, North-East States and Assam, 1991, 2001 and 2011	16
Figure 2.2: Composition of Female Workers for All India, North-East and Assam, 2001 - 2011	18
Figure 2.3: Female Workers' Composition of Assam, 2001 and 2011	19
Figure 2.4(a): District-Wise Female Workforce Participation Rate in Assam, 1991-2011	21
Figure 2.4(b): Change in Female Workforce Participation Rate in Assam: 1991, 2001 and 2011	22
Figure 2.5(a): Gender wise Workforce Participation Rate in Rural Assam, 1991	22
Figure 2.5(b): Gender wise Workforce Participation Rate in Rural Assam, 2001	23
Figure 2.5(c): Gender wise Workforce Participation Rate in Rural Assam, 2011	23
Figure 2.5(d): Gender wise Workforce Participation Rate in Urban Assam, 1991	24
Figure 2.5(e): Gender wise Workforce Participation Rate in Urban Assam, 2001	24
Figure 2.5(f): Gender wise Workforce Participation Rate in Urban Assam, 2011	25
Figure 2.6(a): Female Main workers, 2001-2011	26
Figure 2.6(b): Female Marginal workers, 2001-2011	27
Figure 2.6(c): Change in Female Main and Marginal workers, 2001-2011	27
Figure 2.7: Sectoral Composition of Female (main workers) in Assam, 2011	29
Figure 2.8: Sectoral composition of males and females as main workers in Assam, 2011	31

Figure 2.9: District-wise estimates of migration in Assam	37
Figure 2.10(a): Area under Paddy Cultivation in Assam at the District Level, 1991-2011	38
Figure 2.10(b): Change in Area under Paddy Cultivation in Assam at the District Level, 1991-2011	39
Figure 3.1: Time Use Pattern: SHG households Vs Non- SHG households	56
Figure 3.2: Time Spent by SHG households: Pre-SHG and Post-SHG Period	57
Figure 3.3: Time Use Pattern by Gender and Credit Participation	59
Figure 3.4: Age and Time Use Pattern of Females by Credit Participation	60
Figure 3.5: Age and Time Use of Pattern of Men by Credit Program Participation	61
Figure 3.6: Education and Time Use Pattern of Females by Credit Program Participation	62
Figure 3.7: Education and Time Use Pattern of Males by Credit Program Participation	63
Figure 3.8: Family Size and Time Use Pattern by Credit Program Participation	65
Figure 3.9: Number of Dependents and Time Use Pattern: SHG Households Vs Non-SHG Households	66
Figure 3.10: Infrastructure and Time Use of SHG and Non SHG households	67
Figure 3.11: Assets and Time Use Pattern: SHG Vs Non-SHG households	68
Figure 3.12: Income of family and Time Use Pattern: SHG Vs Non-SHG households	70

## LIST OF TABLES

	<u>Page No.</u>
<b>Table 2.1:</b> Female Work Participation Rate in All-India, North-East States and Assam,1991, 2001 and 2011	15
<b>Table 2.2:</b> Composition of Workers across Occupational Categories	17
<b>Table 2.3:</b> Correlation Matrix of female workforce participation rate and its determinants	34
<b>Table 2.4:</b> Demographic indicators for Assam and India, 1999-2011	36
<b>Table 2.5:</b> Education-specific WPR of persons aged 15 years and above according to usual- principal status (2004-2005), Assam and India	41
<b>Table 2.6:</b> Determinants of Female work participation rate, 2001 and 2011	43
<b>Table 3.1:</b> Ranking of Gram Panchayats in Udalguri district	51-53
<b>Table 4.1:</b> Male and Female Time Use (hours per day)	74
<b>Table 4.2:</b> Time Use by Gender and Credit Programme participation (hours per day)	77
<b>Table 4.3:</b> Time Use by Gender and SHG households Credit Programme participation (hours per day) during pre and post SHG period	78
<b>Table 4.4:</b> Variables and their Construction	81-83
<b>Table 4.5:</b> Descriptive statistics of the Independent Variable Used in the Time-Use Models	88-89
<b>Table 4.6(a):</b> Determinants of Female Time Use: OLS Results	91-92
<b>Table 4.6(b):</b> Determinants of Male Time Use: OLS Results	92-93
<b>Table 4.7(a):</b> Determinants of Female Time Use: IV Results	95-96
<b>Table 4.7(b):</b> Determinants of Male Time Use: IV Results	96-97



<b>Table 4.8(a):</b> Determinants of Female Time Use: Tobit Regression Results	99- 100
<b>Table 4.8(b):</b> Determinants of Male Time Use: Tobit Regression Results	100- 101
<b>Table 4.8(c):</b> Determinants of Female Time Use: IVtobit Regression Results	101- 102
<b>Table 4.8(d):</b> Determinants of Male Time Use: IVtobit Regression Results	102- 103
<b>Table 4.9:</b> Determinants of Male and Female Time Use: DID Estimations	105

## CONTENTS

<b>DECLARATION</b>	<b>i</b>
<b>CERTIFICATE</b>	<b>ii</b>
<b>PLAGLARISM CHECK CERTIFICATE</b>	<b>iii</b>
<b>ACKNOWLEDGEMENTS</b>	<b>iv</b>
<b>LIST OF FIGURES</b>	<b>v-vi</b>
<b>LIST OF TABLES</b>	<b>vii-viii</b>

<b>CHAPTERS</b>	<b>TITLE</b>	<b>PAGE NUMBER</b>
<b>1</b>	<b>INTRODUCTION</b>	<b>1-13</b>
1.1	Introduction	1-3
1.2	Microcredit and Women empowerment	3-5
1.3	Theoretical Background	5-6
1.4	Literature Review	6-9
1.5	Research Gap	10
1.6	Objectives of the Study	10-11
1.7	Hypotheses	11

1.8	Data and Methodology	11
1.8.1	Data	11-12
1.8.2	Methodology	12-13
1.9	Organization of the Study	13
<b>2</b>	<b>FEMALE LABOUR FORCE PARTICIPATION IN ASSAM</b>	<b>14-45</b>
2.1	Introduction	14-15
2.2	Levels and changes in Female Workforce Participation in Assam	15-20
2.3	Trends in Female Workforce Participation at the District level	20-32
2.4	Factors Influencing Low Levels of Women's work in Assam	32-34
2.4.1	Demographic Factors	35-37
2.4.2	Economic Factors	38-39
2.4.3	Level of employment in Agriculture and FWPR	40
2.4.4	Educated Unemployment	40-42
2.5	Multivariate Analysis	42-43
2.6	Conclusion	44-45
<b>3</b>	<b>MICRO-CREDIT AND TIME-USE PATTERN: INSIGHTS FROM THE FIELD SURVEY DATA</b>	<b>46-72</b>

3.1	Introduction	46-47
3.2	Self-Help Groups in Assam: History and Spread	47-49
3.3	The Primary Data	49-54
3.4	Micro-credit participation and Time use	54-55
3.4.1	SHG households spend more time in Self-employment	55-56
3.4.2	Women Participation in SHG increases the time spent by SHG households in Self-employment	56-57
3.4.3	Women in non-SHG households spend more time in Self-employment	57-59
3.4.4	Aged females are more into wage-work and less involved in self-employment	59-60
3.4.5	SHG males are more into self-employment irrespective of their age	60-61
3.4.6	Education and time spent on self-employment by women are positively related	61-62
3.4.7	Less educated SHG men spend more time in self-employment than educated non-SHG men	62-63
3.4.8	Family Size and Time Use in Self-employment are unrelated	63-65
3.4.9	SHG households spend more time in Self-employment irrespective	65-66

	of the number of dependents in the family	
3.4.10	Self-employment is higher than wage-work for both SHG as well as Non-SHG households	66-67
3.4.11	SHG households with more assets are more into self-employment	68
3.4.12	SHG households are more into self-employment than wage-work, irrespective of their level of income	69-70
3.5	Conclusion	70-72
<b>4</b>	<b>MICRO-CREDIT AND WOMEN'S EMPOWERMENT</b>	<b>73-106</b>
4.1	Introduction	73
4.2	Credit Programme Participation and Time use by Gender	74-79
4.3	Determinants of Male and Female Time Use: Empirical Strategy	79
4.3.1	Model	79-83
4.3.2	Controlling for Endogeneity	83
4.3.3	Similar social background as an instrument for duration	83-85
4.3.4	Robustness Tests	85-87
4.4	Descriptive Statistics	87-89
4.5	Results	89

4.5.1	Baseline Results	89-93
4.5.2	Endogeneity of credit programme participation: Instrumental Variable Regressions	93-97
4.5.3	Robustness Tests	97-103
4.5.4	Robustness Tests: Difference- in- Difference Approach	104-105
4.6	Conclusion	105-106
<b>5</b>	<b>SUMMARY, CONCLUSIONS AND POLICY SUGGESTIONS</b>	<b>107-113</b>
5.1	Summary of the Findings	108-110
5.2	Policy Suggestions	111
5.3	Limitation and Scope for Further Work	112-113
	<b>REFERENCES</b>	<b>114-120</b>
	<b>APPENDIX</b>	<b>121-126</b>

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

The concept of women empowerment has received increased attention in recent years. Empowerment is a process by which those who have been denied power gain power, in particular the ability to make strategic life choices (Kabeer, 2001). Women empowerment as a concept was first coined at Nairobi (HDR, 1995). It is a multidimensional process that enables women to realize their full powers and potential in all spheres of life (Islam and Sharma, 2014). It advances capacity in women, for use in their own lives, their community, and in their society by acting on issues that they define as important. It is also conceived as a Freedom to make choices (Sen, 1999). Realizing the importance of gender equality, the World Bank (2001) has emphasized the importance of including women empowerment to be part of every sustainable development social programmes. Despite their significant contribution to any country's economic progress, women's participation in labour force is found to be significantly lower than that of men. Available evidence shows that their work participation rate at the global level is only 50 per cent as against 70 per cent for men. It is argued that female participation in labour force and employment are affected heavily by economic, social and cultural issues and care distribution at home by them (Human Development Report, 2015). This results in their lower economic independence (Kurukshetra, 2008) and low decision making power at the household level. This calls for placing greater emphasis on women empowerment that would result in greater participation of women in economic activities and improve their

decision-making power and control leading to transformative action. In a country like India, women constitute 48 percent of the total population and perform two-thirds of the work and produce 50 percent of food commodities consumed. However, they earn only one-third of remuneration and own only 10 percent of property or wealth in the country. These statistical evidences point to relatively unfavorable position of women in this country. As response to this, the government, both at the centre and states have implemented several programs through various departments to bring about women development and empowerment. These programmes have broadly focuses on two distinct areas: women's welfare and gender equity and women empowerment. As pointed out by Manimekalai *et al.* (2000), there has been significant number of studies examining the effect of these programs on women's welfare and empowerment. However, there is a lack of consensus on the real effect of these programs on improving the lives of women in India. But there is agreement on the need to improve their socio- economic condition through enhancing their knowledge on decision making for increasing income for themselves (Kishor and Gupta, 2004).

Since 1970s the idea and practice of SHGs has spread worldwide. In India the microcredit programme was launched in 1992 like other programmes around the world. It targets mainly the poor rural women. Under this scheme, women have easy access to credit as they do not need to provide any collateral as is the case with other banking institutions. Hence this scheme is believed to persuade more women to engage in income generating activities by establishing self-employed businesses, and in the process improve their household wellbeing (Bhattacharya and Battacharya, 2016). Under this scheme, credit groups referred to as Self Help groups (SHGs), consist of ten to fifteen



women members who come up together from similar socio economic background, are formed. Group formulation is facilitated by the NGOs but the Primary focus is on providing the credit rather than on capacity building. However, the implicit assumption here is that credit provision will ultimately lead to capacity building of women members in the group. The members are actually meant to be benefitted out of mutual help and solidarity and joint responsibility (Anand, 2002). The concept is drawn from the Grameen Bank of Bangladesh established in 1975 by Mohammad Yunus. After Six month of regular savings, groups become eligible for bank credit. The National Bank for Rural and Agricultural Development (NABARD), an apex rural bank, provides 100 per cent re-finance to the lending institutions. Repayment rates are consistently over 95 percent compared to the other modalities which are around 40 to 60 percent (World Bank, 2003, 2005, 2006). With around 40 million clients and on an average annual growth rate of 112.2 percent between 1999 and 2007 it is the biggest and the fastest growing microcredit scheme in the world. The success of the various organizations like Self Employed Women's Association (SEWA), Mysore Resettlement and Development Agency (MYRADA) and the initiative of National Bank for Agriculture and Development (NABARD) induced the government of India to enact the Swarnjayanti Gram Swarozgar Yojana (SGSY) Scheme in 1999. Now it has renamed as National Rural Livelihood Mission (NRLM) since 2012.

## **1.2 Micro-credit and Women empowerment**

The relationship between microcredit and women empowerment has been intensely debated in the literature (Kabeer, 2001). The increase in income and livelihood and its

effect on empowerment is suspected because there are differences across families and households owing to several cultural barriers prevailing in various parts of the country (Mahmud, 2003). There are also studies trying to highlight the difficulties in precisely capturing the role of micro-credit on women empowerment. The argument here is that there could be many non-credit features of women members that could be also driving the positive effect of micro-credit on women empowerment. For instance, a study by Mckernan (2002) has found that the effect of microcredit on women empowerment is more among members who have undergone some vocational training and other types of training. After controlling for this aspect, the study finds hardly any effect of microcredit on women empowerment. Mckenzie and woodruff (2009) says that women empowerment through aid program has less impacted women in consumption decision making through income generation than male person due to less profits for investment. Using cross section data for 26 states, Kishor and Gupta (2004) compared the empowerment of women members with that of male members and found that an average women involved in microcredit program is less empowered than an average man. The study also finds significant variation in women empowerment across the selected Indian states. Some studies were also skeptical of the methods employed to capture the effect of microcredit on women empowerment. These studies suggested the need for adding new indicators and removing the old or irrelevant ones capture the real changes in women empowerment (Schuler and Rottach, 2010). If the credit programmes are meant for women empowerment, then the strategies to transform gender relations must get much attention in the literature than just the final outcome (Hunt and Kasynathan, 2001). Just looking at the overall progress of the household could mask the real effect of these

programs as the control over the resources may still rest with the male member in the household. Therefore, it is argued that ensuring women control over loan created assets should be a critical policy objective and should be included as an indicator to capture women empowerment. Again, as the credit is meant for increasing the value of women's work time and also to increase income, hence it is also suggested to look at women empowerment by capturing the changes in time allocation following their participation in microcredit funded activities (Garikipati, 2012).

On the whole, it can be argued that the proclaimed positive relationship between microcredit and women empowerment is not clearly evident from the literature. Though some say that there is a clear positive relationship between the two, there are also studies that argue that the observed relationship is due to the influence of other variables. According to them, once we control for this endogeneity there seems to be near absence of any such positive relationship. On the other hand, the recent studies blame it on the outdated methods where more emphasis is on livelihood indicators rather than the shift in occupational activities and time use. Taking cognizance of it, in this study, the focus is on capturing the relationship between microcredit and women empowerment in the state of Assam by mainly looking at two aspects: shift in the nature of work (from wage work to self-employment) and changes in time allocation decisions.

### **1.3 Theoretical Background**

As mentioned before, the present study intended to capture the relationship between microcredit and women empowerment in terms of their labour force participation (captured through sectoral shifts), types of the market work performed (captured by two

types of work: self-employment and wage work or agriculture) and time allocation decisions. The relationship between the microcredit and women empowerment have been discussed in theoretical literature using different indicators. But the relationship between microcredit and time allocation behavior on borrower household study has been done but limited. The economic theory of the household proposed by Becker (1965) and Gronau (1973) using time allocation decisions can be used as a theoretical framework for explaining the relationship above. Since their pioneering work, there is a large body of research conducted to understand the time allocation behavior of households in developing countries. More attention has been paid to understand the determinants of women's market participation (Rose, 2000). A large number of studies have also tried to look at how male and female time allocation decisions have responded to new economic opportunities in rural areas (Newman, 2002; Paolisso et al., 2002). A very limited number of studies have examined the impact of microcredit on women empowerment by looking at their time allocation decisions (Garikipati, 2012; Pitt, 2000).

As argued in Garikipati (2012), time-use data can be valuable in capturing the impact of microcredit, provided the data are properly collected. The time-use data have a number of advantages: (a) Among the various indicators that are likely to be affected by microcredit, time use decisions are likely to change immediately; (b) changes are likely to become more noticeable over time; and (c) the direction and magnitude of changes can capture the desired impact of credit. According to Garikipati (2012), "time-use can be viewed both as a process that facilitates empowerment as well as an outcome that indicates empowerment". Interestingly, this dual role of time-use data also helps us to

find a balance to the debate on whether processes or outcomes are better indicators of women empowerment (Kabeer, 2001; Malhotra and Schuler, 2005).

#### **1.4 Literature Review**

Empowerment is a process by which those who have been denied power gain power, in particular the ability to make strategic life choices (Kabeer, 2001). Women when empowered economically and socially became a change agent of development, to make choices and opinions of their own and to change their position in society (Sen, 1999). The increase in role of women in household economy can ultimately lead to improvement in their agency and empowerment (Maholtra and Schuler, 2005). Further, women when brought under development perspective can not only benefit their countries' economy but also bring benefits to others in their households, especially the health and education of their children (Kabeer, 1999). Since 70s, microcredit is regarded as a tool for both poverty reduction and women empowerment (Islam and Sharma, 2014). Since then, the significance of women empowerment through Micro-credit Program study has been addressed by many researchers. According to some researchers, microfinance is only a part of national strategy and play important role in poverty reduction but not sufficient enough to bring the change in the lives of women especially in rural areas (Onyuma and Shem, 2005; Hume and Arun, 2011). Many argue that microfinance fails to empower women from poorest of the poor households who are the intended beneficiaries. Instead, it benefits women from those with low income households who are already better off in terms of access to resources thanks to their contacts with powerful people in the society (Fernando, 1997; Hulme and Arun, 2011). Kabeer (2005) too skeptical about the positive

role of microcredit on women empowerment. According to Hermes and Lensink (2007), the positive relationship between Microfinance and Poverty reduction is not clearly evident. A study by Hulme and Maitrot (2014) argue that microfinance has lost its moral compass in south Asia like the mainstream finance in North America and Western Europe, and it ceased to be the tool for poverty reduction and women empowerment.

There are empirical evidence both in favor of and against the role of micro finance on poverty reduction and women empowerment. Some argue that microcredit can help women to improve their ability to earn income, to gain confidence and to overcome the cultural asymmetries (Pitt and Khandker, 1998; Kabeer, 2001, Pitt et al., 2006). In their study analyzing the impact SHGs on the socio-economic aspects of women in Nagaon District of Assam, Islam and Sharma (2014) shows that there is an increase in women empowerment with respect to increased income, less dependence on moneylender and improvement in individual decision making. However, they also disclose that the program has failed to improve the collective empowerment of women in terms of societal activities in the neighborhood (Islam and Sharma, 2014). Galab and Rao (2003) too confirm that positive role of SHG participation as they find that the participation has improved credit access, lessened dependence on money lenders, enhanced the economic status of the participants and made women involved more in self-employment. Their study also presents evidence supporting reduction in gender inequality as a result of credit participation by women. Based on the primary data collected during 2006-07 from Coimbatore district of Tamil Nadu, Kalpana (2005) demonstrate that credit participation by women have increased their income and savings and also able to find time to attend group meetings. According to Pitt, Khandker and Cartwright (2006), women participation

in microcredit program resulted in women empowerment through increased access to financial and economic resources, increased mobility, greater participation in household decision making, social networking and improved bargaining power within the household.

Given that there are considerable evidences supporting the positive role of microcredit on women empowerment, there are also scholars who are skeptical about its positive role (Kabeer, 2001). The increase in income and livelihood and its effect on empowerment is suspected because there are differences across families and households owing to several cultural barriers prevailing in various part of the county (Mahmud, 2003). There are also studies trying to highlight the difficulties in precisely capturing the role of micro-credit on women empowerment. The argument here is that there could be many non-credit features of women members that could be also driving the positive effect of micro-credit on women empowerment. For instance, a study by Mckernan (2002) found that the effect of microcredit on women empowerment is more among members who have undergone some vocational training and other types of training. After controlling for this aspect, the study finds hardly any effect of microcredit on women empowerment. Mckenzie and woodruff (2009) say that women empowerment through aid program had less effect on women in consumption decision making than men due to less profit for investment. Using cross section data for 26 states, Kishor and Gupta (2004) compared the empowerment of women members with that of male members and found that an average women involved in microcredit program is less empowered than an average man. The study also finds significant variation in women empowerment across the selected Indian states. Some studies were also skeptical of the methods employed to capture the effect of

microcredit on women empowerment. These studies suggested the need for adding new indicators and removing the old or irrelevant ones to capture the real changes in women empowerment (Schuler and Rottach, 2010). If the credit programmes are meant for women empowerment, then the strategies to transform gender relations must get much attention in the literature than just the final outcome (Hunt and Kasynathan, 2001). Just looking at the overall progress of the household could mask the real effect of these programs as the control over the resources may still rest with the male member in the household. Therefore, it is argued that ensuring women control over loan created assets should be a critical policy objective and should be included as an indicator to capture women empowerment. Again, as the credit is meant for increasing the value of women's work time and also to increase income, hence it is also suggested to look at women empowerment by capturing the changes in time allocation following their participation in microcredit funded activities (Garikipati, 2012). There are studies that argue that loans given to women are typically controlled by their husbands, and depend on their husband for loan repayments which sometimes can be a cause for more domestic violence and disagreement in family decisions (Goetz and Gupta, 1996; Rahman, 1999; Leach and Sitaram, 2002).

### **1.5 Research Gap**

Though there exists a large number of studies, as is evident from the literature reviewed above, on the role of micro-credit on women empowerment, most of these studies tend to rely on livelihood indicators to capture the extent of women empowerment occurred following their participation in microcredit initiatives. There is also a lack of consensus on whether to look at processes or outcomes while measuring women empowerment.



Most of these studies have based their conclusion by focusing just on the SHG members, and their improvement before and after joining SHGs. Most of these studies are also silent on the impact that lending to women is likely to have on male time use. Taking cognizance of these gaps, the present study examines the effect of micro-credit on women empowerment using time-use data, which goes right to the heart of the debate on whether processes or outcomes are better indicators of women empowerment. In short, the study compares the time allocation outcomes for men and women belonging to SHG households with outcomes for men and women belonging to the control group, that is, non-SHG households. Further, the study also tries to compare the time allocation decision of men and women in SHG households, before and after joining the SHG.

### **1.6 Objectives of the Study**

Thus, it is important to examine effect of micro-credit on women empowerment using time-use data on various categories of work done by women on daily basis in the state of Assam. The main aim of this study is to address this obvious gap in the literature. To be specific, the main objectives of the study are

1. To understand the level and nature of female labour participation and sectoral shifts in Assam since the advent of economic reforms.
2. To examine how far the microcredit program was successful in explaining the sectoral shifts of female labour into different occupational categories.
3. To explore the linkages between micro-credit and women's empowerment.

## **1.7 Hypotheses**

1. Microcredit has led to sectoral shifts in female labour force participation.
2. Microcredit and women's empowerment are positively related.

## **1.8 Data and Methodology**

### **1.8.1 Data**

The study is based on both primary and secondary data. Secondary data is used to see first of all the overall level and nature of female labour participation in Assam since the advent of economic reforms 1991 and to analyse the sectoral shifts in the female labour force participation. This is done by examining the changes in the composition of female labour in different occupational categories in the state of Assam. Data are drawn from Census of India for the period 1991-2011 and from various rounds of employment-unemployment surveys of National Sample Survey Organization (NSSO).

For the primary survey, the study is focusing on the state of Assam among the north-eastern region (NER). The state of Assam exhibits the poorest figures when it comes to female work participation in comparison to other north-eastern states. The female work participation has been marginally above 20 per cent, and the trend seems to be similar for the last three decades of reforms in India. However, recently the state has witnessed shift away from jobs related to agricultural sector to non-agricultural sector especially household sector. It is interesting to see whether the increasing female participation in jobs in households industry and other jobs can be explained by the emergence of microcredit program in the state. The field survey is conducted among 240 households in the Udalguri district of Assam. With respect to the number of SHGs formed, Udalguri district is one of the top most districts in the state of Assam. Furthermore, majority of

SHG members in the district are from the socially and economically backward category. The details about methodology of primary data collection and the strategy employed to identify the Gram Panchayats and respondents are discussed in Chapter 3.

### **1.8.2 Methodology**

The main purpose of the study is to find ways first to measure the credit programme participation and time use by gender and then to find its determinants on male and female time use. To analyse the impact of micro-credit on time use decisions of male and female households, the routine work activities carried out by male and female households are divided into four categories namely, self-employment, wage-work, non-market work and leisure. Self-employment means the work on households both farm and off farm. Wage work means the both the farm and off farm work on which daily wages is provided. Non-market work includes time spent in all reproductive work and household repairs and child care, elderly person. Leisure includes time allocated to sleeping, visiting friends and relatives in the evening but not time use on activities like personal care and having meal. We observe how much time they allocate for each of these categories of work as a result of activities financed through microcredit. This helps us to see whether there has been any shift in occupational activity of women households following credit support, from wage-work to self-employment. The comparison with non-SHG households also help us to see whether there has been any change in the time use by male households as a result of lending to women. We employ a linear-in-the-variables equation model to estimate the determinants of households' time allocation on various categories as discussed above. We estimate this model separately by gender because the aim is to understand how the male and female time use decisions from SHG households differ from members of the same

gender from non-SHG households. We used a vector of household characteristics and village characteristics as our explanatory variables. We also check for the robustness of our results using alternate methods such as instrumental variable regression model, tobit, instrumental variable tobit regression model and difference-in-difference method.

### **1.9 Organization of the Study**

The thesis is organized in five chapters. The first chapter presents the introduction of the study. In Chapter 2, we discuss female labour force participation in Assam since economic reform period and its sectoral composition. The various socio-economic and demographic indicators are also taken to see the determinants of female work participation rate for all districts in Assam. Chapter 3 captures the relationship between credit program participation and time use pattern by various socio-economic characteristics of the households. In Chapter 4, we explore the linkages between micro-credit and women's empowerment by comparing SHG male and female households with control group (non-SHG male and female) households. We employ econometric methods to understand the relationship between the two and also carry out some additional robustness checks. The last chapter summarizes the major findings and provides some policy suggestions. The limitations of the study as well as directions for future research are also suggested.

## **CHAPTER 2**

### **FEMALE LABOUR FORCE PARTICIPATION IN ASSAM**

#### **2.1 Introduction**

The declining female labour force participation rate (LFPR) in India in spite of significant economic growth is a disturbing phenomenon. The latest NSSO report on Employment and Unemployment showed that, during the period 2004-05 to 2009-10, women's labour force participation has declined from 33.3 per cent to 26.5 per cent in rural areas and from 17.8 per cent to 14.6 per cent in urban areas (NSSO, 2011). India is placed at 120<sup>th</sup> out of 131 countries in women's labour force participation (ILO, 2013). The female participation in labour force and employment are determined greatly by economic, social and cultural issues and care distribution at home by them (Human Development Report, 2015). This has resulted in lower economic independence of women (Kurukshetra, 2008). According to Mammen and Paxson (2008), gain in greater economic independence and better socio-economic status of women can be critically determined by their participation in workforce. Against this backdrop, this chapter aims at analyzing the level and nature of female labour force participation and sectoral shifts in Assam since the advent of economic reforms in India. This chapter further focuses on to examine the inter-district variation within the state of Assam with respect to female labour activity, its sectoral shifts in different occupational categories and to explain various demographic and socio-economic factors responsible for the change in pattern of female workforce rate across the state. To address these objectives, we mainly relied on data drawn from Census of India 1991, 2001 and 2011, but also used information

gathered from various government publications including the ones from Department of Economics and Statistics, Government of Assam.

The rest of the chapter is organized as follows. Section 2.2 presents a discussion on the levels and changes in female workforce participation in Assam. In section 2.3, we discuss the trends in female workforce participation at the district level. The factors that are likely to affect the low levels of women’s workforce participation in Assam are presented in Section 2.4. In section 2.5., we undertake a multiple regression exercise to locate the determinants of female workforce participation in Assam. The last section concludes.

## **2.2 Levels and Changes in Female Workforce Participation in Assam**

The female work participation rate for Assam, North-eastern region and all India is presented in Table 2.1 and Figure 2.1. The female workforce participation rate for all India witnessed a marginal increase from 22.27 percent in 1991 to 25.5 per cent in two decades post economic reforms. The relative share in total work participation has been less from female workers which is due to various social and cultural norms prevalent in the Indian society.

**Table 2.1: Female Work Participation Rate in All-India, North-East States and Assam, 1991, 2001 and 2011**

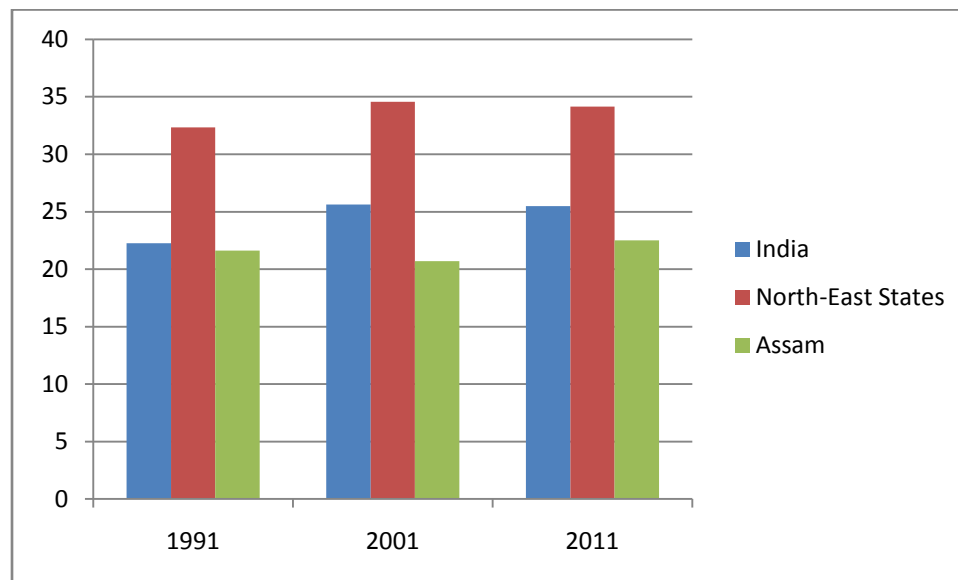
<b>Region</b>	<b>1991</b>	<b>2001</b>	<b>2011</b>
India	22.27	25.63	25.5
North-East States	32.33	34.58	34.16
Assam	21.61	20.70	22.5

**Source:** Census of India, IndiaStat

However, the trend is different for North eastern states of India. The female work participation rate is well above the all India average since reforms. The relative share of

female work participation is found to be above 30 per cent, which is a good indicator of the fact that women in this part of the country actively participate in economic activities. We can thus infer greater autonomy in decision making for females in the North eastern part of India. Surprisingly, the same cannot be said about the females in the state of Assam.

**Figure 2.1: Female Work Participation Rate in All-India, North-East States and Assam, 1991, 2001 and 2011**



**Source:** Census of India, IndiaStat

The state exhibits the poorest figures when it comes to female work participation in comparison to the North-eastern average as well as all India average. The female work participation has been marginally above 20 per cent, and the trend seems to be similar for the last three decades of reforms in India. The major reason for such low female work participation can be attributed to the geographical factors of the state. Assam is more like the other states of India with respect to landscape and climate. It shares less resemblance

to the other North-eastern states of India with respect to social, economic and cultural practices. It is also the largest state in the North-eastern region. In fact, the state shares close affinity towards the cultural practices of its neighboring state, West-Bengal. Apart from Assamese language, the Bengali language is also one of the major languages spoken throughout the state. Unlike other states of North-east India, the state of Assam is bestowed with unique climatic and locational factors (Nayak and Mahanta, 2008). Thus, the female work participation is seen to be below par in comparison to the North east average but is closely in line with the All India average.

**Table 2.2: Composition of Workers across Occupational Categories**

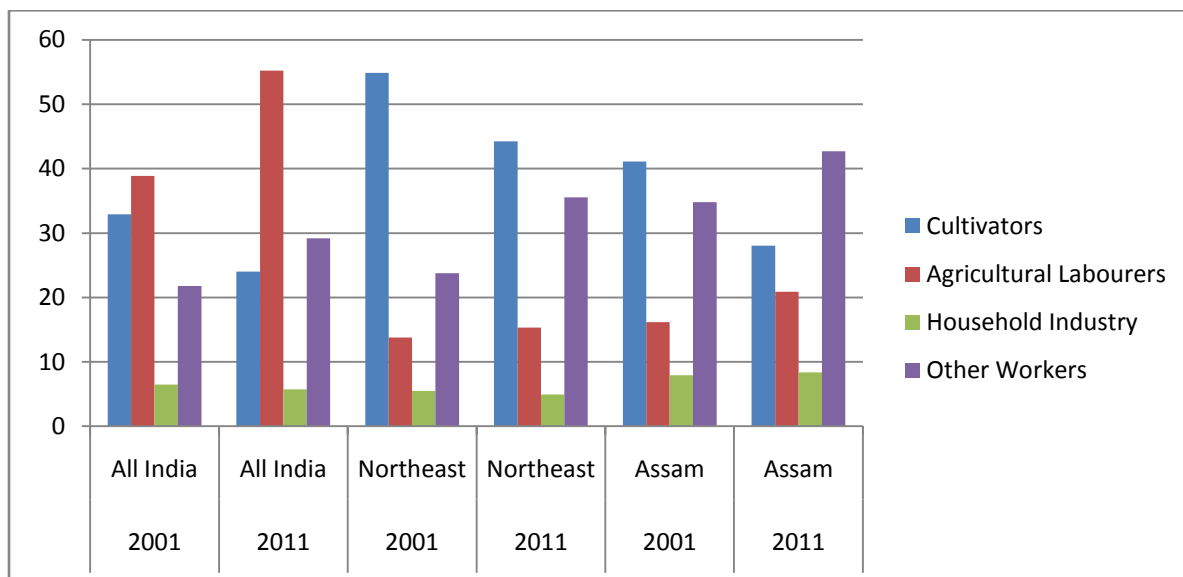
Occupation	All India			North-East States			Assam		
	2001			2001			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Cultivators	31.06	32.93	31.65	43.02	54.88	47.72	38.34	41.11	39.11
Agricultural Labourers	20.85	38.87	26.55	9.26	13.76	10.82	12.12	16.16	13.25
Household Industry	3.18	6.46	4.22	1.91	5.45	3.26	1.95	7.91	3.62
Other Workers	44.92	21.75	37.59	45.81	23.76	38.21	47.6	34.82	44.03
<b>Occupation</b>	<b>2011</b>			<b>2011</b>			<b>2011</b>		
Cultivators	24.92	24.01	24.64	38.31	44.23	40.91	36.29	28.06	33.93
Agricultural Labourers	18.56	55.21	29.96	10.11	15.33	11.93	13.22	20.89	15.42
Household Industry	2.95	5.71	3.81	1.77	4.91	2.93	2.41	8.33	4.1
Other Workers	47.2	29.18	41.6	49.81	35.55	44.23	48.08	42.72	46.55

**Source:** Labour Bureau, Ministry of Labour and Employment Government of India, 2009-2011 and 2012-13



The composition of workers for All India, North East India and Assam displayed in table 2.2 and Figure 2.2 presents an interesting picture. The comparison has been made for the period 2001-2011. The All-India average for cultivators experienced a drop from 31.06 per cent to 24.93 per cent during this period, which can be attributed to the increasing level of urbanization across the country as suggested by many studies (Assam Human Development Report, 2011). Alongside, there has been also a decline in the total cultivable land throughout the country (State of Indian Agriculture, 2015-2016). This declining trend for cultivators is evident for North East as well as Assam. Assam witnessed a decline in the share of cultivators to the tune of 5 per cent, from 39 per cent to 34 per cent during the period under study. The composition of agricultural workers in total workers too exhibited a similar decline during the period. The decline in share of these two categories (cultivators and agricultural labourers) is more or less compensated by the increase in share of other workers (working in construction, plantation, business, service and social work). However, for Assam, the decline was evident only for cultivators but the contribution from all other categories in total workers witnessed a surge during this period.

**Figure 2.2: Composition of Female Workers for All India, North-East and Assam, 2001 - 2011**



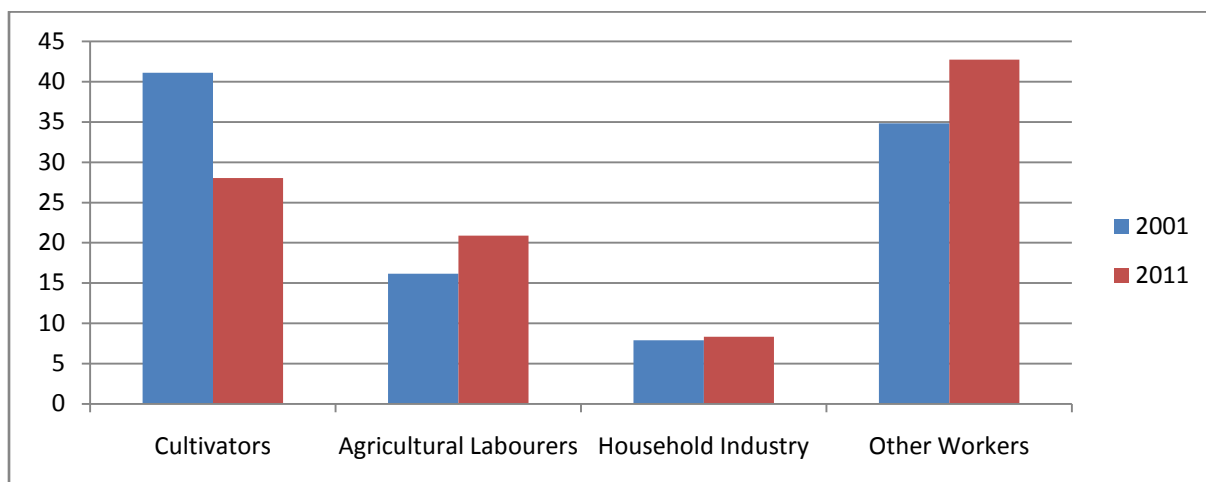
**Source:** Labour Bureau, Ministry of Labour and Employment Government of India, 2009-2011 and 2012-13

When we look at the male-female contribution across these occupational categories, a clear division can be discerned. While female participation is higher among cultivators, agricultural labourers and household industrial workers, male participation surged ahead in other workers. Barring a few exceptions, this trend remained unaltered during the period 2001-2011 and across the three regions under examination.

Over time, female participation at the all India level has seen an increase in the category of agricultural labourers and other workers category while a decline in cultivators and household industry category. Females in the North Eastern region exhibited a decrease in cultivators and household industry but an increase in agricultural labourers and other workers category. However, in the case of Assam, female composition in ‘cultivators’ category has seen a reduction while females in agricultural labourers, household industry and ‘other workers’ category has reported an increase. There has been a drastic fall for

females in the ‘cultivators’ category in Assam, which was compensated by the considerable increase in the share of females in other workers category. In short, this evidence possibly point to the fact that the female workers in Assam have shifted from cultivation to other works such as plantation, factory works and construction.

**Figure 2.3: Female Workers’ Composition of Assam, 2001 and 2011**



**Source:** Labour Bureau, Ministry of Labour and Employment Government of India, 2009-2011 and 2012-13

The figure 2.3 shows the female workers’ composition in Assam during the period 2001-2011. A large chunk of female workers are found to be employed as cultivators and other workers. Almost 75 per cent of the female in 2001 were employed in these two categories and early 70 per cent were employed in 2011. Household industry is clearly seen to be the least female employing category with just around 8 per cent female workers. Over the decade, ‘other workers’ category has substituted the ‘cultivators’ category when it comes to employing the highest share of female workers. The female cultivators have reduced from 41.11 per cent to 28.06 per cent during the period. This is relatively a higher fall for females in Assam as compared to All India level and North-Eastern states. The relative

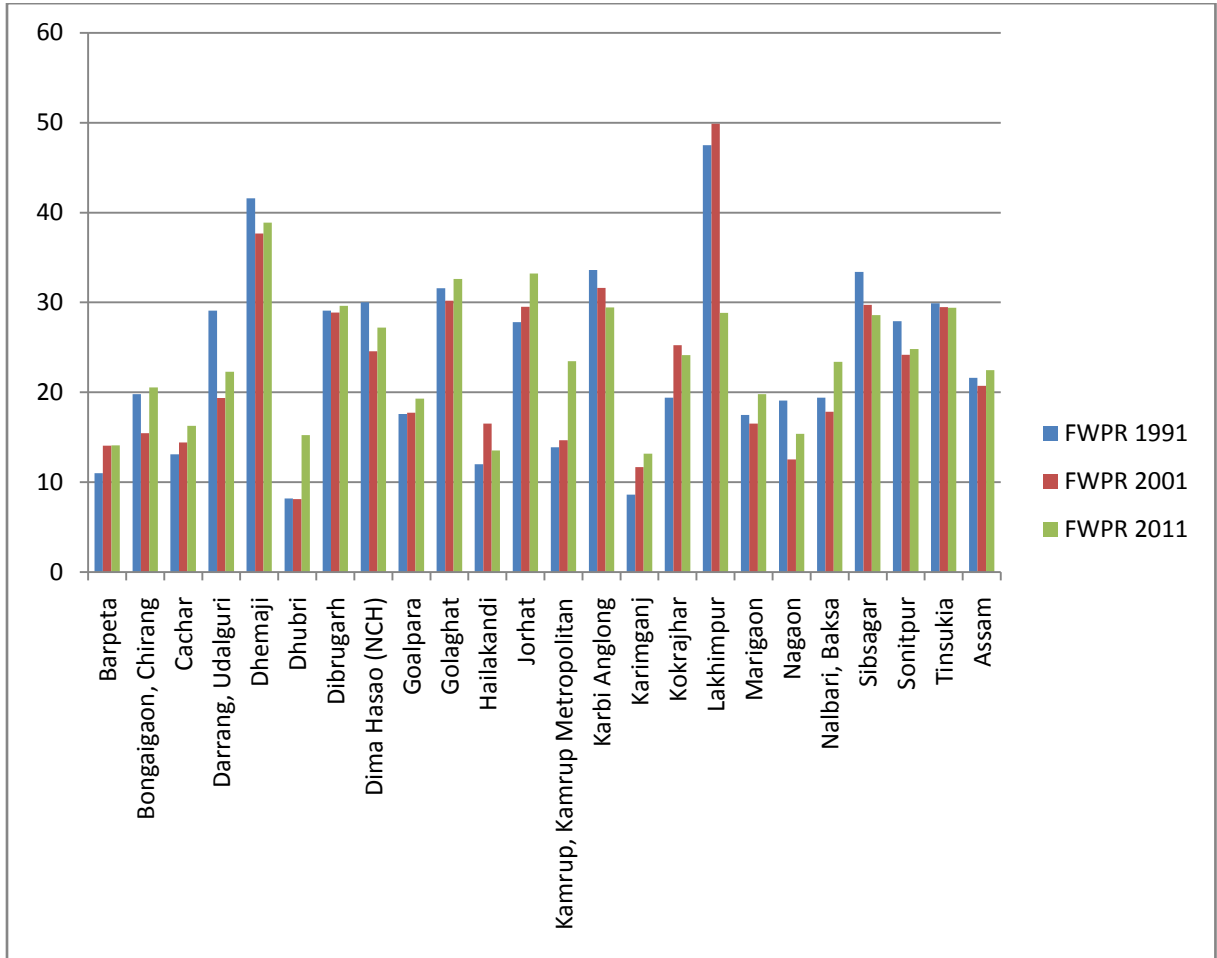
share of agricultural labourers in total female worker composition has increased from 16.16 per cent to 20.89 per cent during the period 2001-2011. Over the period, more females have involved as agricultural labourers. There has been a slight increase in the female workers into the household industry. However, a major portion of the female workforce is found to be employed as other workers such as plantation workers, factory workers, construction workers, etc. While the highest involvement of Assamese females was in the cultivator category in 2001, it is not the same in 2011. Infact, they seem to have substituted other works such as plantation, construction work, business, household industry etc for cultivation over the decade.

### **2.3 Trends in Female Workforce Participation at the District Level**

In Figure 2.4, the district-wise Female workforce Participation Rate in Assam has been illustrated which shows that there has been a decline in female WPR in most of the districts during 1991-2001. The Darrang (Udalguri) districts, alone, has accounted for almost 10 percent points decline in FWPR during this period. The districts with higher WFPR than the state average are Tinsukia, Lakhimpur, Jorhat, Sibsagar, Sonitpur, Karbi Anglong, Golaghat, Dima Hasao, Dibrugarh and Dhemaji. All these districts seem to perform, well above the state margin for the entire two decades. Though the Darrang (Udalguri) district featured in the list in 1991, the WFPR of Udalguri district has witnessed a decline for 1991 and 2001 but an increase during 2001 to 2011. This may be due to the formation of a separate district of Udalguri in 2004. The district of Nalbari Baksa is found to exceed the state average only in 2011. Over the entire period 1991-2011, almost all the districts have shown an increase in the percentage point except Tinsukia, Sibsagar, Lakhimpur, Kokrajhar, Karbi Anglong and Hailakadi. The district of

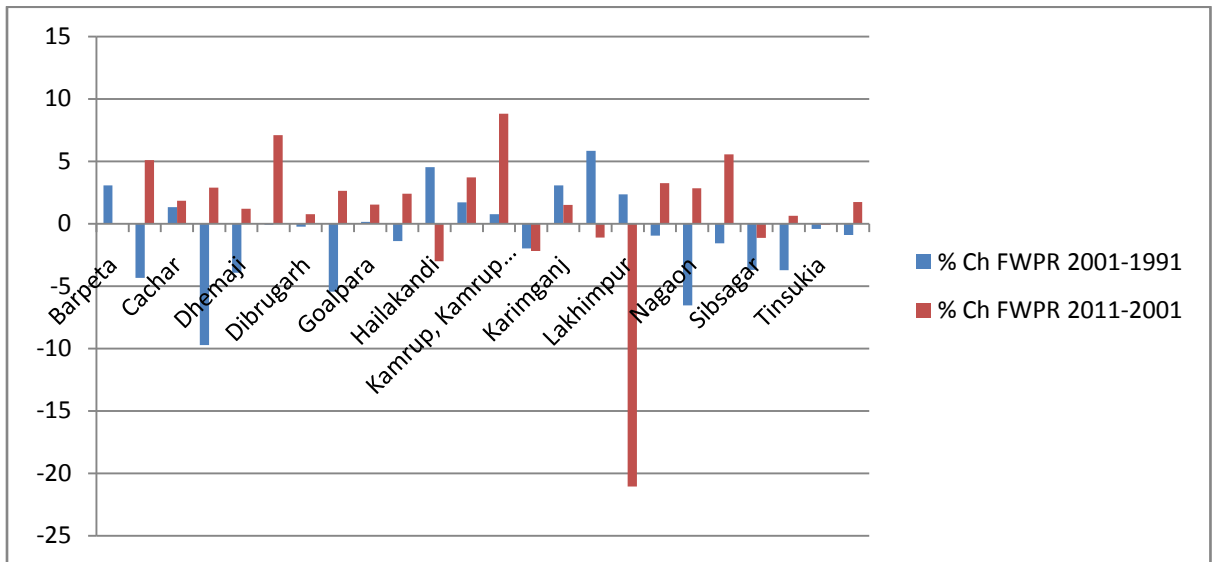
Lakhimpur has shown the highest decline in WFPR during the period. The decline has been an alarming 21 per cent.

**Figure 2.4(a): District-Wise Female Workforce Participation Rate in Assam, 1991-2011**



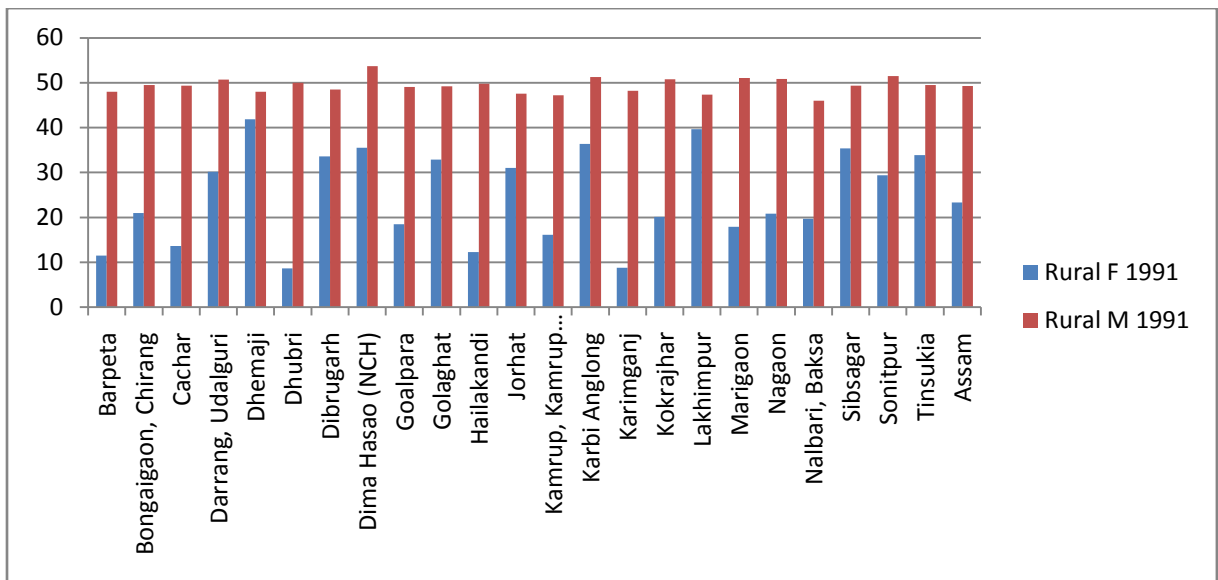
**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

**Figure 2.4(b): Change in Female Workforce Participation Rate in Assam: 1991, 2001 and 2011**



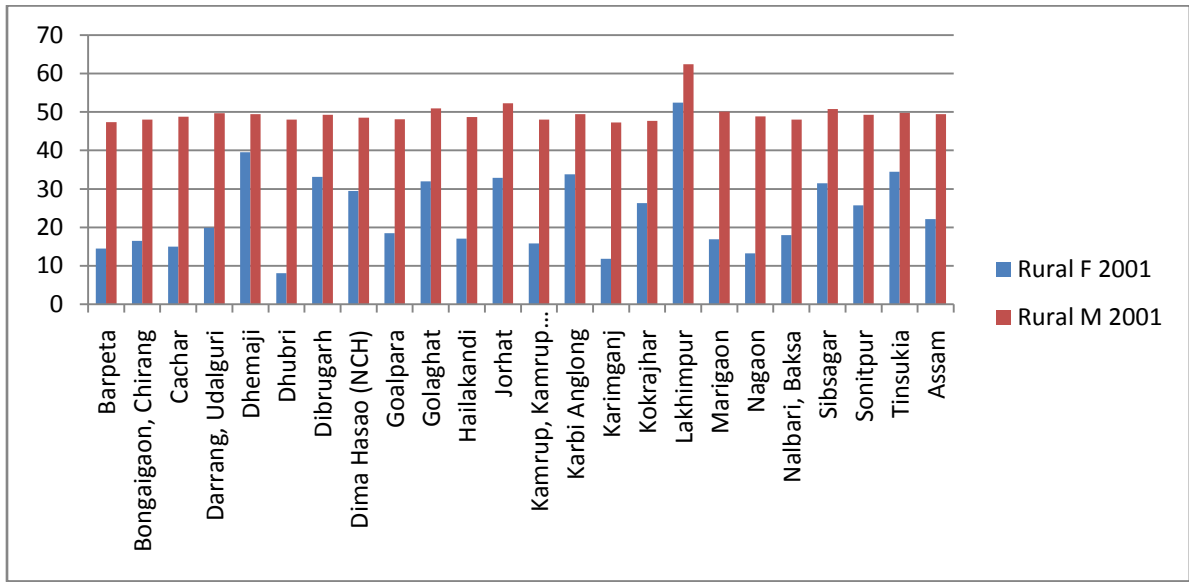
**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

**Figure 2.5(a): Gender wise Workforce Participation Rate in Rural Assam, 1991**



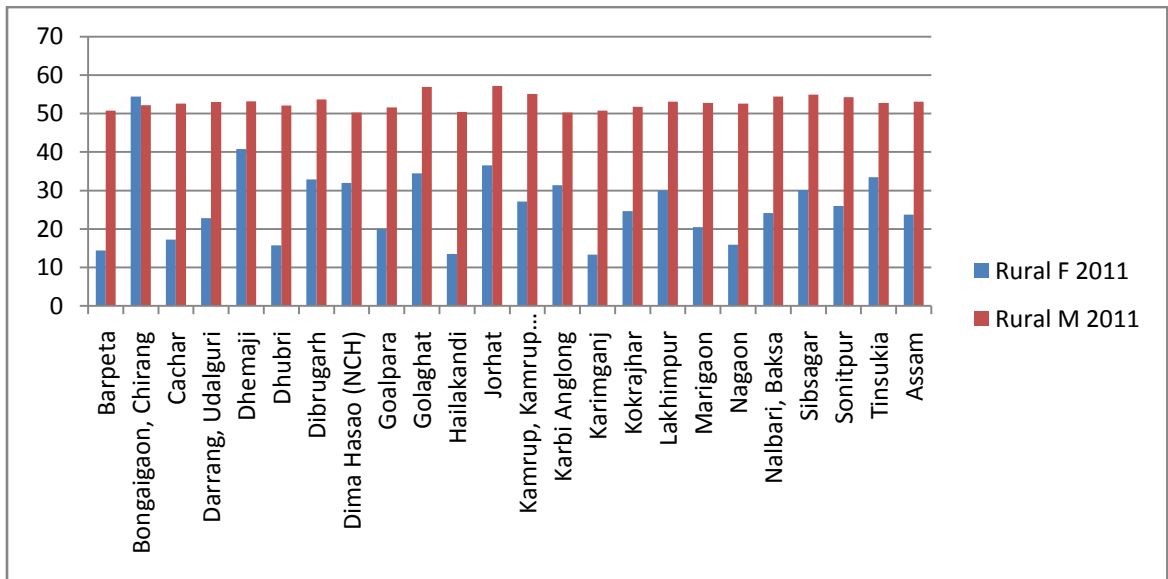
**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

**Figure 2.5(b): Gender wise Workforce Participation Rate in Rural Assam, 2001**



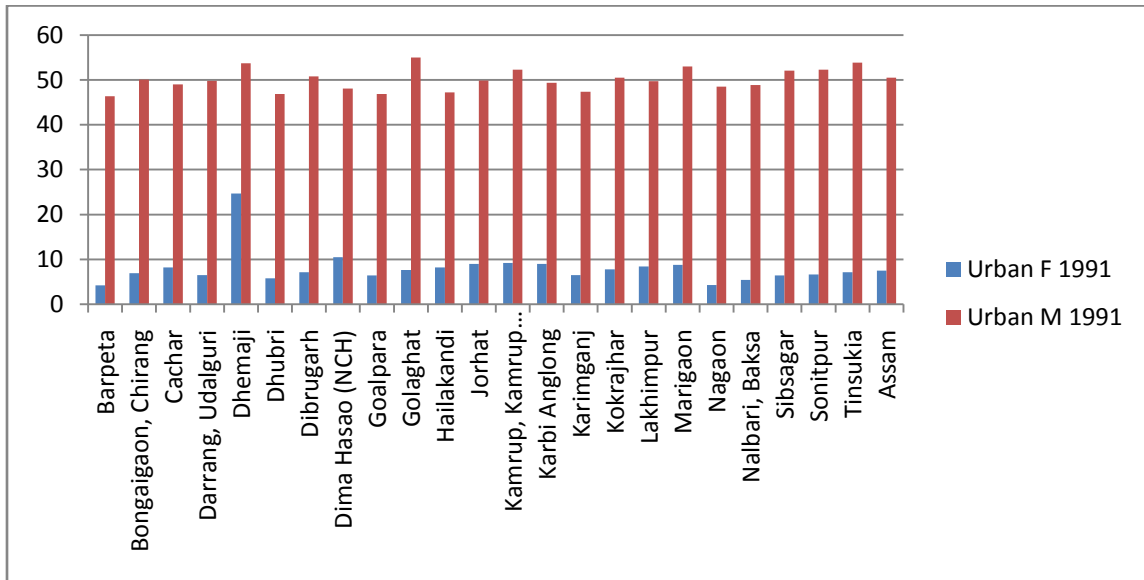
**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

**Figure 2.5(c): Gender wise Workforce Participation Rate in Rural Assam, 2011**



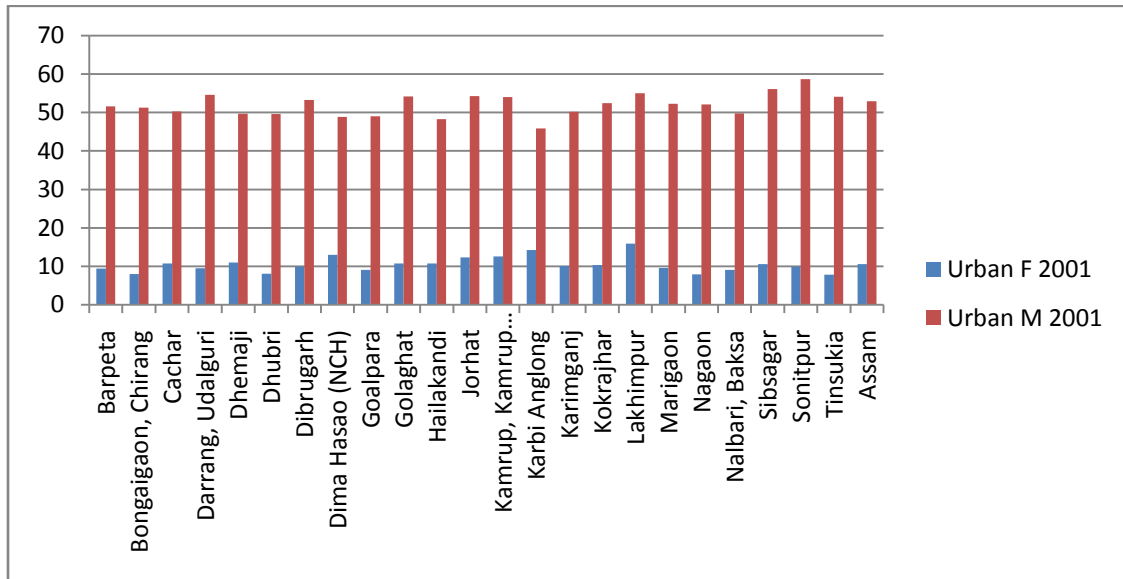
**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

**Figure 2.5(d): Gender wise Workforce Participation Rate in Urban Assam, 1991**



**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

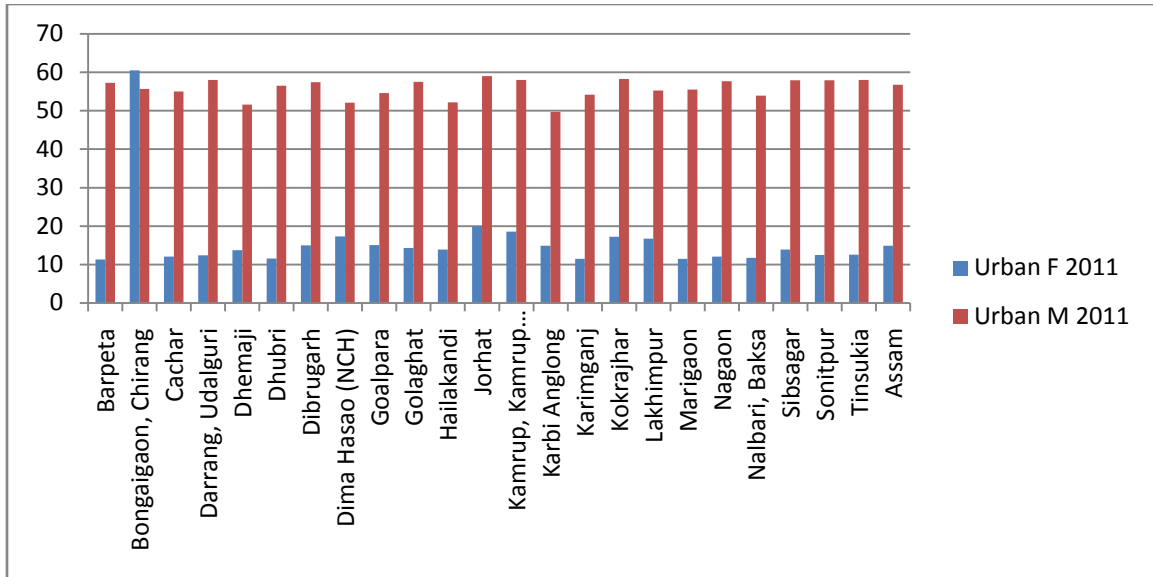
**Figure 2.5(e): Gender wise Workforce Participation Rate in Urban Assam, 2001**



**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.



**Figure 2.5(f): Gender wise Workforce Participation Rate in Urban Assam, 2011**

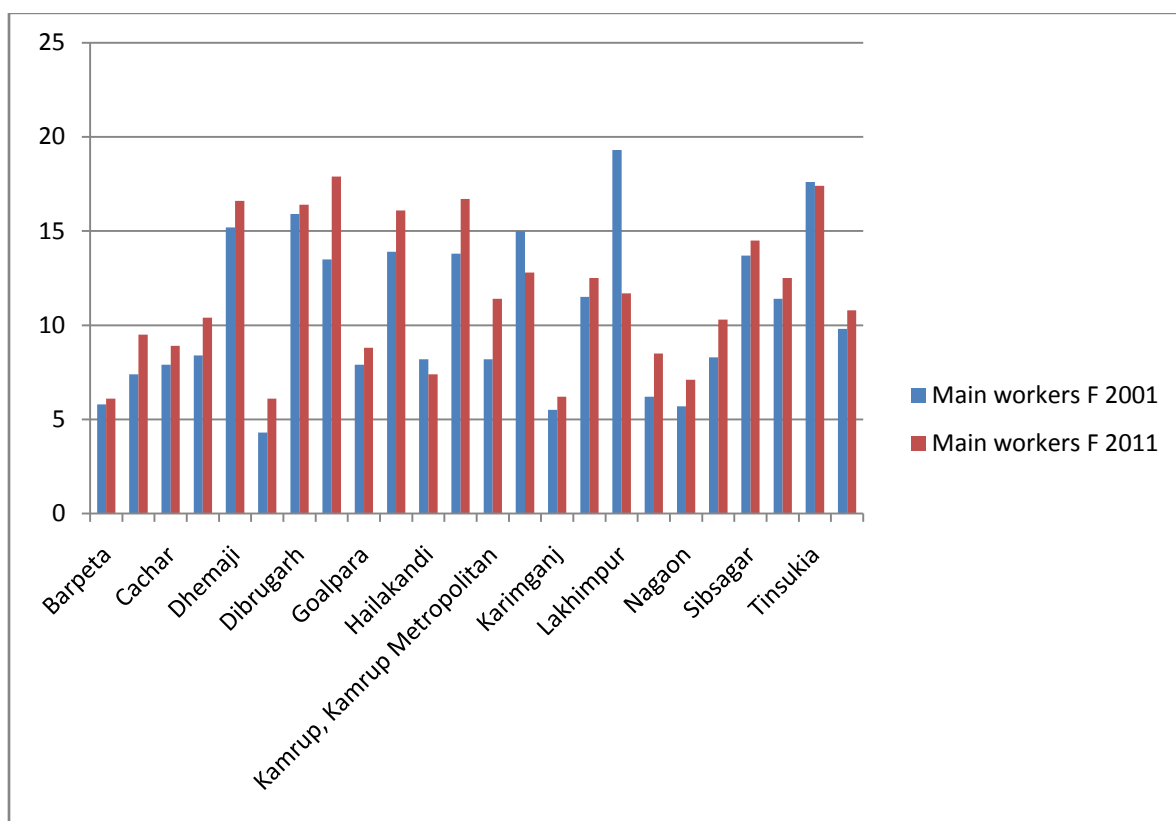


**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

The comparative estimates of both male and female workforce participation rate in rural and urban area within the districts of Assam during the year 1991, 2001 and 2011 are given in figure 2.5 (a) to 2.5 (f). It is clearly evident from the above figures that the female participation is more in rural areas as compared to urban areas while the reverse is true for male workers. The same findings can be seen for Udalguri (Darrang) district and a declining trend can be seen in case of rural FWPR and increasing trend in case of urban areas during the 1991, 2001 and 2011 consequently. During, 1991, there has been an increase in the number of workers (both male and female) in rural as well as urban areas of Assam. During 2001, the number of female workers in rural Assam has declined but has gradually shown an increase in 2011. According to the 1991 and 2001 census, Dhubri has the lowest FWPR among the rural areas, whereas, in 2011, Karimganj has the lowest. Among the urban areas, Barpeta has the lowest FWPR during 1991-2011, but

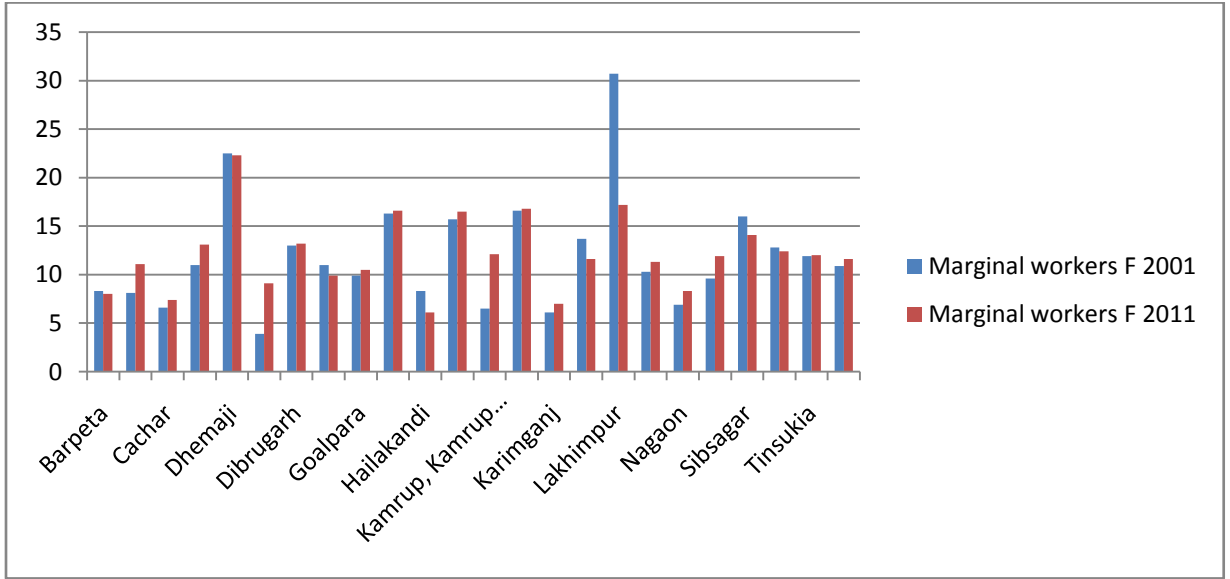
during 1991-2001, Tinsukia has the lowest. The FWPR in rural areas has been comparatively higher in the districts of Lakhimpur, Dhemaji, Bongaigaon, and Chirang during 1991-2011. The districts like Dhemaji and Lakhimpur shows the highest FWPR in Urban areas during the entire period 1991-2011. The MWPR was found to be the lowest in the districts of Nalbari, Baksa, Karimganj, Dima Hasao and Karbi Anglong in rural Assam and Barpeta and Karbi Anglong district in urban Assam. The districts like Sonitpur, Lakhimpur and Jorhat has witnessed the highest MWPR in rural areas and Golaghat, Sonitpur and Jorhat districts in urban areas.

**Figure 2.6(a): Female Main workers, 2001-2011**



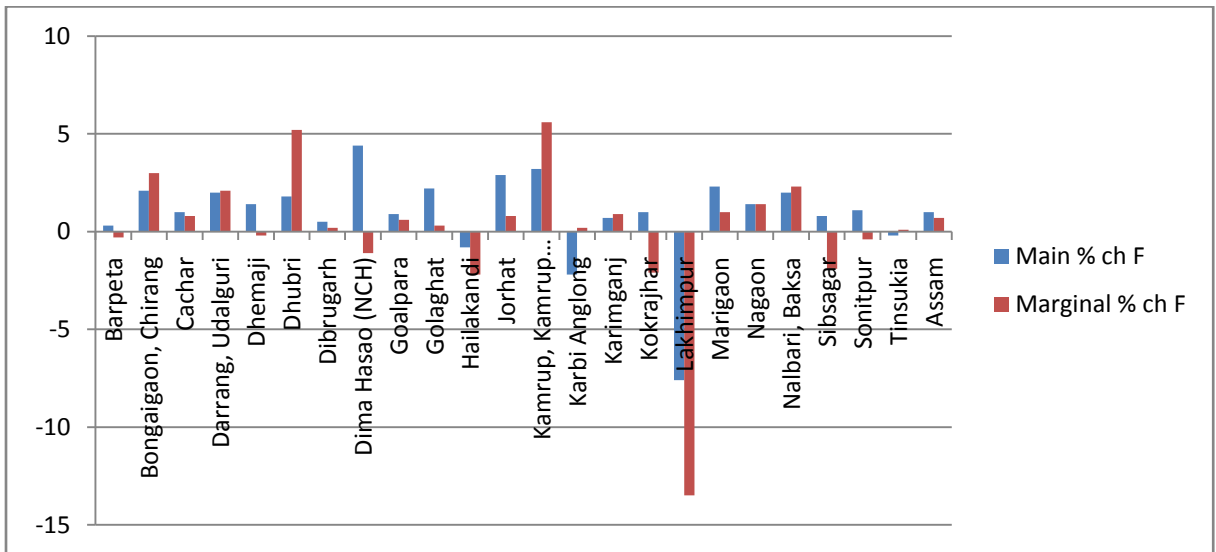
**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

**Figure 2.6(b): Female Marginal workers, 2001-2011**



**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

**Figure 2.6(c): Female Main and Marginal workers, 2001-2011**



**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

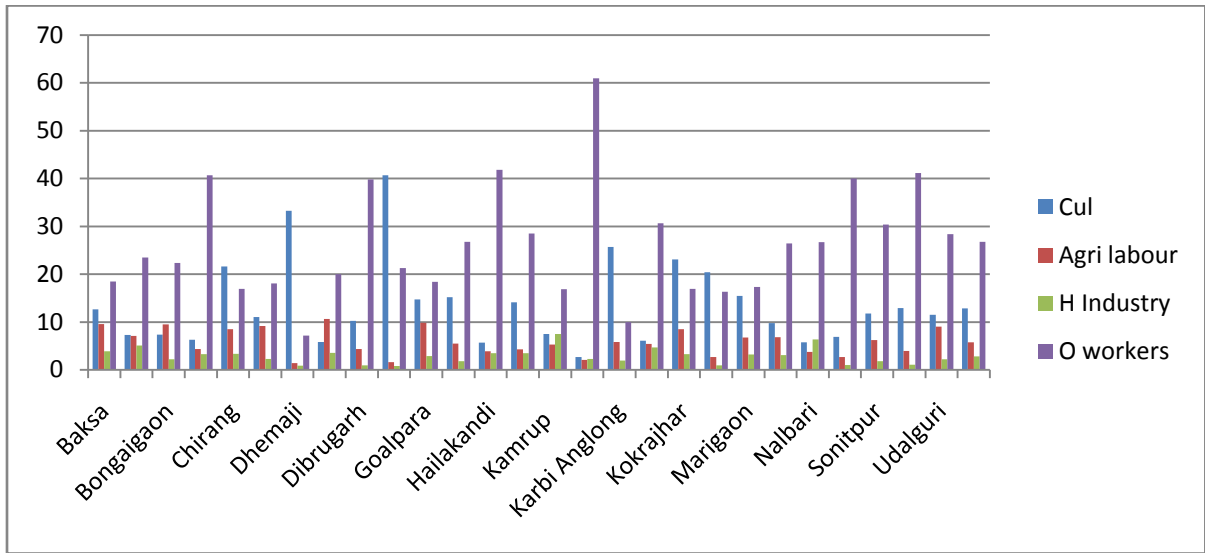
To understand the level and nature of female labour activity, an inter-district analysis has been carried out within the state of Assam during the period of 2001 and 2011. The figure

2.6 (a) and (b) presents the main and marginal female workers in the various districts of Assam respectively while figure 2.6 (c) gives the percentage change in main and marginal workers for females in various districts of Assam. The situation of females is very acute in all the districts of Assam, barring a few exceptions. From the figures it emerges that seasonal employment, as captured by the percentage of marginal workers, has been on the rise since 2001 in comparison to main workers. The same is seen in case of Udalguri district with an increase by 2 percent in main workers and 2.1 per cent in marginal workers during 2001 and 2011. In 2011, female marginal workers accounted for 11.6 percent of the total population in Assam in comparison to 10.9 percent in 2001. The districts with high share of main workers are Dibrugarh, Jorhat, Dhemaji, Golaghat, Tinsukia, and Dima Hasao. The percentage share of main workers in these districts was above 15 per cent, with highest share in the district of Dima Hasao (17.9 per cent). Similarly, the districts with high share of marginal workers are Jorhat, Dhemaji, Golaghat, Karbi Anglong and Lakhimpur. The percentage share of marginal workers in these districts was again found to be above 15 per cent, with highest share in the district of Dhemaji (22.3 per cent). Thus, as illustrated by the above table, the districts of Jorhat, Dhemaji, and Golaghat have high share of both main as well as marginal female workers in Assam. With regard to percentage change in female main workers, the districts of Karbi Anglong, Lakhimpur, Tinsukia, and Hailakandi have shown a decline while districts of Dima Hasao, Golaghat, Jorhat, Kamrup Metropolitan and Marigaon have shown an increase during the period 2001-2011. Similarly, with regard to female marginal workers in Assam, the districts of Barpeta, Dhemaji, Dima Hasao, Hailakudi, Kokrajhar, and Lakhimpur has shown a decline while the districts like Kamrup

Metropolitan and Dhubri have shown a significant increase during the same period. The highest percentage decrease in both main as well as marginal workers was seen in the district of Lakhimpur. While the highest increase in main workers for the same period was seen in Dima Hasao, the same for marginal workers was seen in Kamrup Metropolitan district of Assam. Thus, it can be seen that female labour has been increasingly marginalized in some districts like Karimganj, Hailakandi, Goalpara, and Barpeta, while the FWPR in main workers has shown remarkable improvement in Dhemaji, Golaghat, and Jorhat district of Assam. Rather newly formed districts (Udalguri, Kamrup Metropolitan, Baksa, and Chirang), the percentage of women as main workers is lesser than marginal workers in both 2001 and 2011.

Further, attempt has been made to study the change in the sectoral composition of women workers in Assam between 2001 and 2011. For the purpose of comparability, the four definitional categories of 2001 have been taken. Also the changes among only female workers in the main category have been examined. The results indicate that a significant transformation over various occupational categories has taken place in the entire state of Assam.

**Figure 2.7: Sectoral Composition of Female (main workers) in Assam, 2011**



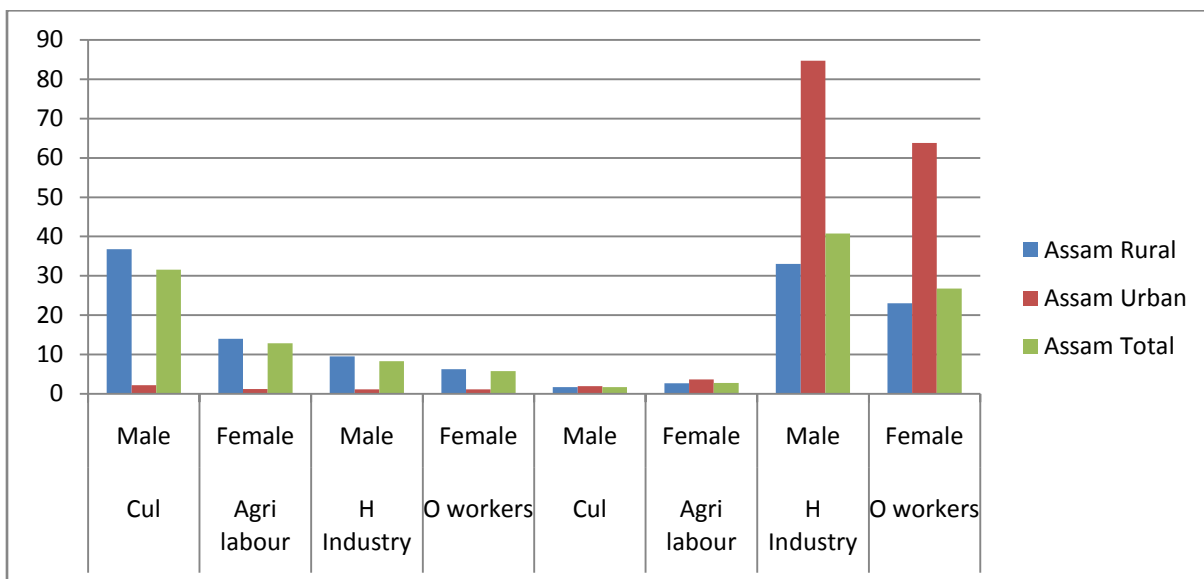
**Source:** Author’s estimates also in line with Reema Rabha’s estimation (undated); Census of India, Indiatat.

It is clear from figure 2.7 that agriculture is no longer the primary source of employment among the women in Assam. The female are found to be mostly employed as cultivators and in other workers category. For almost all the districts, a major part of female workforce is seen in cultivators and other workers category. Almost two-third of the female workers is found in these two categories. The districts of Chirang, Dhimaji, Dima Hasao, Karbi Anglong, and Kokrajhar have a higher number of female main workers with the highest in Chirang while the districts of Kamrup Metropolitan, Cachar, Dhubri, Hailakandi, Karimganj, and Nalbari have a comparatively lower share of female main workers in Assam with the lowest in Kamrup Metropolitan. The share of female main workers as agricultural labourers and in household industry is very marginal. Both these categories hardly include around 20 per cent of the total female main workers in Assam. While Dhubri has the highest percentage of female agricultural labourers, Dhemaji has the lowest share. With regard to household industry, Kamrup is found to employ the

highest percentage of female main workers while Dima Hasao has the least. The female main workers in the other workers category is high in the districts like Cachor, Dibrugarh, Hailakandi, Kamrup Metropolitan, Sibsagar, and Tinsukia, with the highest in Kamrup Metropolitan (60.98 per cent) and low in the districts of Dhemaji, Karbi Anglong, Lakhimpur, Kokrajhar, and Marigaon, with the lowest in Dhemaji (7.17 per cent). Udalguri District is lying above the average state level in agricultural labourers (3.25 per cent) and in other workers (1.56 per cent). But in the case of cultivators and household industry, the district is lying below state average by 1.33 and 0.61 percent respectively.

The category of 'other workers' is very heterogeneous along with a diverse economic activity. There is little room for deriving any meaningful insights from the emerging patterns of female workforce participation in this sector. However, increase of employment in this sector to a certain extent captures the growth of the informal sector in the state. In fact, the last decade in Assam witnessed tremendous increase in other workers involving construction which absorbs unskilled labour force otherwise displaced from rural agriculture and cultivation. It appears that redundant female work force from rural areas might have joined the informal sector in urban areas, construction being the most important channel of such alternative employment. This may be one of the reasons of high increase in female work force participation rate in the 'other workers' category as well as to a certain extent also responsible for increase in the same in the urban areas.

**Figure 2.8: Sectoral composition of males and females as main workers in Assam, 2011**



**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

Figure 2.8 shows the sectoral composition of males and females as main workers in Assam for the year 2011. It shows that the females in Assam are mostly employed in other workers category (26.80 per cent) which includes occupations like plantation, construction, business, service, etc. followed by cultivators, agricultural labourers and household industry respectively. The occupational structure is the same for rural female with almost 23 per cent of women in the other workers category. The composition is more skewed for the urban female in Assam, with almost 64 per cent of them getting employed in other workers category. Thus, the composition of female work is similar in both rural as well as urban areas of Assam with most female employed in the other workers category. The main reason behind such an inclination towards other work could be the heterogeneity in occupation in the state. Almost 20 per cent of the female workers in rural Assam are employed as cultivators and agricultural labourers as compared to a



meagre 2 per cent in the urban areas, which is quite obvious because as agriculture is no more a source of income in urban areas. Thus, a sharp divide can be seen among rural and urban female workers in Assam. The difference is even sharper for the male workers. Almost 47 per cent of the male workers in rural Assam are employed as cultivators and agricultural labourers while only around 4 per cent of them are employed in the same category in the urban areas. However, the male workers in rural Assam do not exhibit similar trend in occupational distribution as their female counterparts. The male workers in the rural Assam are mostly employed as cultivators. However, a major share of urban male workers is seen to be mostly employed in other workers category (almost 85 per cent).

#### **2.4 Factors Influencing Low levels of Women's Work in Assam**

Women's participation in workforce can be influenced by various determinants such as demographic, economic and socio-cultural factors. To examine their role in participation of women in employment, we have employed bivariate and multivariate methods to examine the strength as well direction of influence of those above selected factors on participation. In the bivariate analysis, zero order correlation-matrix was constructed to examine the relationship between Female workforce Participation Rate (FWPR) and other socio-economic and demographic variables (Table 2.9) for the 23 districts of Assam. Though Assam has 27 districts at present, 4 districts have been formed recently. We merged 4 newly created districts with their parent districts so as to have consistent data for all the two time periods. The variables included in our analysis are Male Work Participation Rate (mpw), Sex Ratio (Sex ratio), Female literacy rate (FLR), Migration (mig), Average area under Paddy Cultivation (Apcul), Average yield of total rice

(AYrice), work seekers (WorkS), Average size of total household (ATHold), Total fertility rate (TFR), Mean age of marriage (MAmarr), Dependency ratio (Dep), Average household size (AHsize), Female enrolment to higher education (FEHEdu). The variables which are found to be highly correlated with female work participation are Male Work Participation Rate Total fertility rate Mean age of marriage, Dependency ratio. The rationale for including these variables is being offered below.

The table 2.3 provides the correlation matrix of all the variables (both dependent as well as independent variables). The variables that are significantly correlated with the female work participation rate are male work participation rate, mean age of marriage, total fertility rate and dependency ratio. Among these variables, male work participation rate, mean age of marriage, are positively correlated with the female work participation rate in Assam while total fertility rate and dependency ratio are negatively correlated.

**Table 2.3: Correlation Matrix of female workforce participation rate and its determinants**

Variables	fwpr	mwp	Mig	Apcul	AYrice	WorkS	ATHold	TFR	MAmarr	Sex ratio	FLR	Dep	AHsize
mwp	0.49**												
Mig	0.04	0.31											
Apcul	-0.16	0.24	0.121**										
AYrice	-0.20	0.35*	0.59***	0.45***									
WorkS	0.0001	0.53***	0.72***	0.34	0.62***								
ATHold	0.05	0.37*	0.39***	0.36*	0.75***	0.41*							
TFR	-	-	-0.27	-0.23	-0.29	-0.37*	-0.33						
MAmarr	0.43**	0.50**	0.18	0.04	0.29	0.41*	0.42**	-0.55**					
Sex ratio	-0.10	0.20	-0.30	0.36*	0.04	-0.29	0.12	0.14	-0.31				
FLR	0.25	0.46**	0.14	-0.21	0.10	0.41*	0.17	-0.06	0.69***	-0.12			
Dep	-	-	-0.35	-0.11	-0.32	-0.52**	-0.398	0.85***	-0.81***	0.27	-0.50**		
AHsize	0.02	-	-0.52*	-0.03	-0.49**	-0.73***	-0.30	0.44**	-0.57***	0.35	-0.60***	0.59***	
FEHEdu	-0.32	0.35	0.35	0.62***	0.54***	0.63***	0.38*	-0.13	0.017	0.07	0.01	-0.12	-0.40*

*Note:* \*\*\*, \*\* and \* indicates significance at 1 %, 5% and 10% level

**Source:** Author's estimates

### **2.4.1 Demographic Factors**

The demographic factors influence the economic activity through change brought in the total population due to change in age structure and fertility and mortality of the population. In our analysis we have used three demographic variables which are total fertility rate, migration and sex ratio. The proportion of population in the working age group (15-59 years) is slated to increase from 58% in 2001 to 64% in 2021 (Census projection reports). Between 2011 and 2016, an additional 63.5 million persons will be entering the category of 15-59 years with the bulk of increase happening in the relatively younger age group of 20-35 years. This population “bulge” in the working age groups is being viewed as a distinct national advantage and is popularly termed as “demographic dividend”. This increase in number of working age population can obviously influence the female work participation rate.

The reason for choosing these variables is that total fertility influence on women work in two ways- firstly, the total fertility rate would determine the age structure of the population. Higher fertility rate would ensure higher number of people in the workforce. Sex Ratio is another variable which affects workforce participation. During 2001-2011, the sex ratio has improved in almost all the districts of Assam except Karbi Anglong. It is also quite evident that males outnumber females in almost all the districts of Assam. However, the margin between male and female population has becomes very small in 2011 (49 per cent female to 51.1 percent males). The next variable is migration which can greatly affect the total work participation and especially the Female Workforce Participation. Higher migration would substitute the native workers especially in works like construction, service, teachers, etc. Co-incidentally, this is the sector where female

are seen to actively participate in Assam. Thus, migration can displace the women of Assam and further reduce their participation rate. Thus, it is not surprising that districts like Kamrup, Goalpara, Dhubri, Cachar and Bongaigaon which have high incidence of migration also have low Female Work Participation Rate in the state.

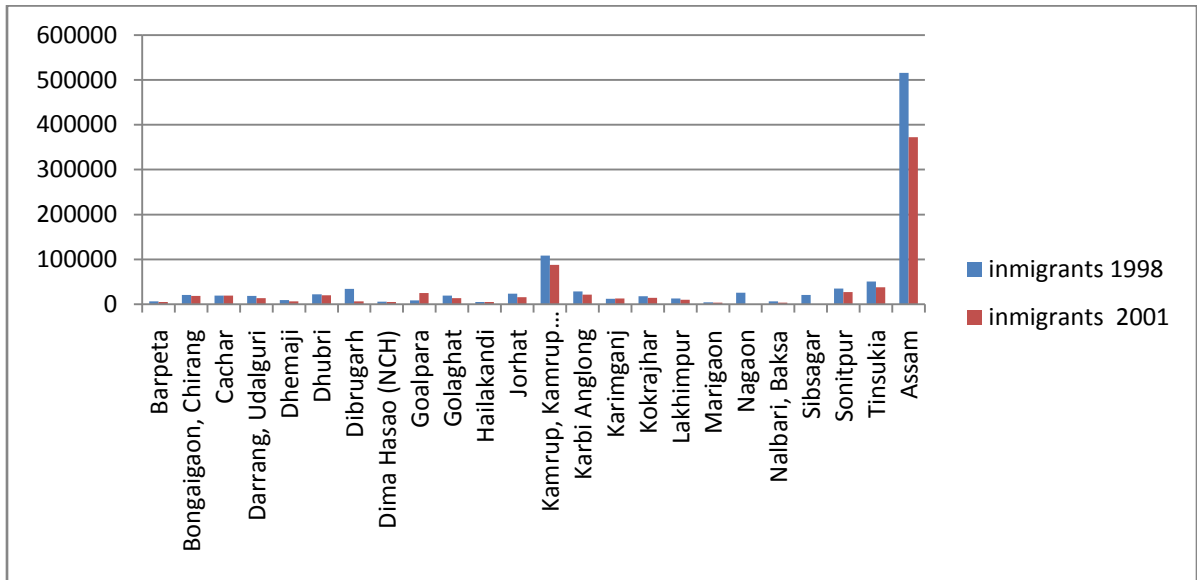
**Table 2.4: Demographic indicators for Assam and India, 1999-2011**

Variable	1999					
	Assam			India		
	Total	Rural	Urban	Total	Rural	Urban
CBR	27	28	18.9	26.1	27.6	20.8
TFR	3.2	3.3	1.9	3.5	2.3	3.2
CDR	7.7	10.1	6.2	8.7	9.4	6.3
IMR	76	79	36	70	75	44
Variable	2011					
CBR	22.8	24	15.5	21.8	23.3	17.6
TFR	2.4	2.6	1.5	2.4	2.7	1.9
CDR	8	8.4	5.6	7.1	7.6	5.7
IMR	55	58	34	44	48	29

**Source:** RGI, Bulletin, SRS, RGI, India (Bulletin April 1999), Director of Economics and Statistics, Assam; Census of India 2011.

Table 2.4 shows the trend in total fertility rate, life expectancy at birth and sex ratio at birth for both rural and urban region of Assam from 1999 to 2011. The female participation has increased in the state in the last decade. This can be basically attributed to the fall in the CBR and TFR. Lower birth give females more time to invest in market work. The decline in fertility is more pronounced in rural areas than urban.

**Figure 2.9: District-wise estimates of migration in Assam**



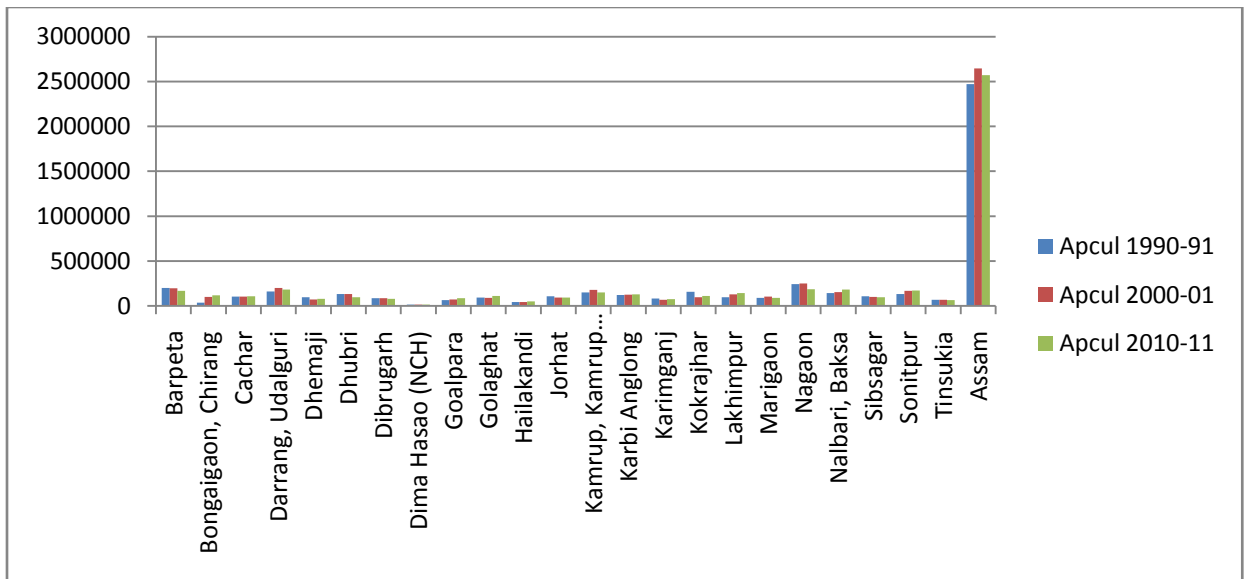
**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

The Table 2.10 depicts the total migrants in various districts of Assam during 1999-2001. Migration in Assam shows a significant association with the Female Workforce Participation, with considerable variation among the districts. The highest concentration of migrants is found in the districts of Kamrup (Kamrup Metropolitan), Tinsukia, Sonitpur, Goalpara, Karbi Anglong Dhubri, Cachar, Bongaigaon(Chirang) Jorhat,Kokrajhar, Darrang(Udalguri). The Female Workforce Participation rate during the same period is lowest in Dhubri, Karimganj, Nagaon, Barpeta,Cachar, Kamrup (Kamrup Metropolitan), Bongaigaon, Hailakandi, Marigaon, Goalpara and Nalbari. The association between migration and low Female Workforce Participation can be seen for some districts like Kamrup (Kamrup Metropolitan), Goalpara, Dhubri, Cachar and Bongaigaon (Chirang).

## 2.4.2 Economic Factors

To examine the female work participation rate economic factors such as reduction in the area under rice, change in Operational holdings, registered work seekers at the employment exchanges and were incorporated.

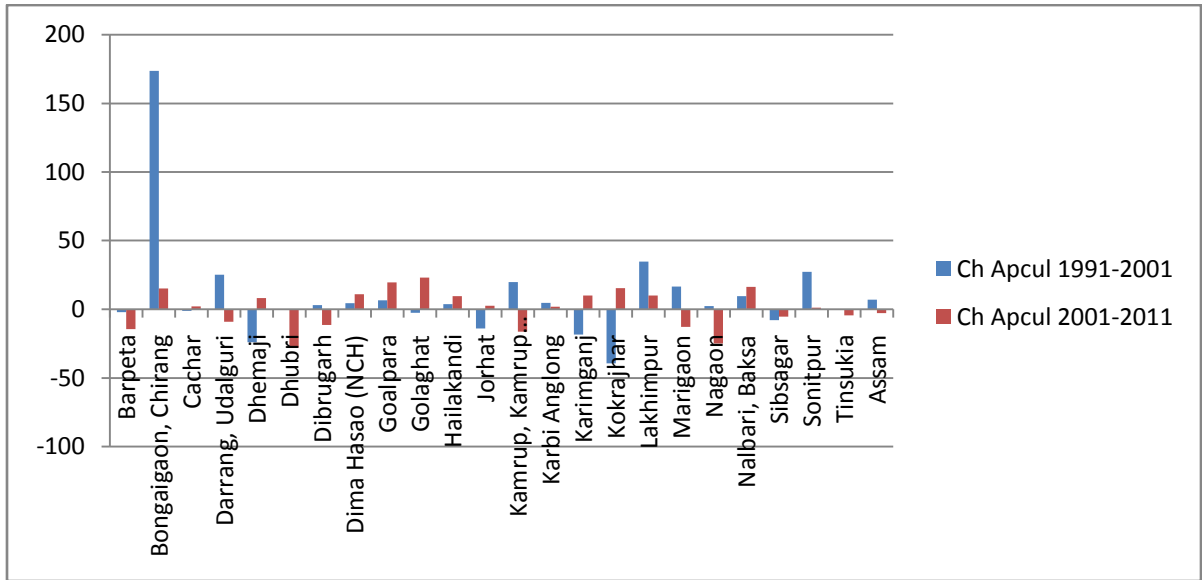
**Figure 2.10(a): Area under Paddy Cultivation in Assam at the District Level, 1991-2011**



**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiastat.

The figures 2.10 (a) and (b) depicts the area under paddy cultivation and change in area under paddy cultivation during the periods 1990-91, 2000-01 and 2010-11 for the districts of Assam respectively. The Udalguri District has witnessed an increase in area under paddy cultivation during 1991 to 2001 (by 25 per cent) but a decline during 2001 to 2011 (by 9 per cent).

**Figure 2.10(b): Change in Area under Paddy Cultivation in Assam at the District Level, 1991- 2011**



**Source:** Author's estimates also in line with Reema Rabha's estimation (undated); Census of India, Indiatat.

The decline in area under paddy is more in the districts of Dhubri, Nagaon, Kamrup (Kamrup Metropolitan), Barpeta, Marigaon, Dibrugarh, Udalguri (Darrang), Sibsagar, and Tinsukia. Consequently, the districts of Dhubri, Nagaon, Kamrup (Kamrup Metropolitan), Barpeta and Marigaon also have the low levels of Workforce Participation Rate. The reduction in area of cultivation is the main reason behind the occupational structure in these districts of Assam. Both males and females in these districts are mostly found to be employed in the other workers category which includes business, construction, plantation, service, etc.

The Variable operational holdings or area under cultivation in the state has remained the same in both the period of 2005-06 and 2010-11. Work seekers registered at employment



exchanges, is another variable that serves as a proxy to the prevalence of unemployment among the educated at the district level.

### **2.4.3 Level of employment in Agriculture and FWPR**

Agriculture has historically been the mainstay of Assam economy and the most significant sector of female employment, especially in the rural areas. However, it is evident from the census figures that women cultivators and agricultural labourers together account for only 49 percent of the female workforce in the main category in 2011 in comparison to 57.3 percent in 2001. Agriculture is no longer the most important channel for female employment in Assam. During 2001, there is also a decline in female main workers in the agriculture dominated districts of Assam. The districts like Lakhimpur, Jorhat, Sibsagar, Marigaon Nalbari( Baksa) have shown a considerable decline in female main workers (above 10 percent). In 2011, the districts like Dhemaji, Karbi Anglong, Lakhimpur, Dima Hasao, Kokrajhar, Bongaigaon, Marigaon, Goalpara, Golaghat and Darrang had more than half of the population of women workforce engaged in agriculture, either as cultivators or as wage labourers. The current trend across the districts indicates that female workforce in agriculture has decline sharply all over Assam in the latest decade. But the decline has been more pronounced for female cultivators. Districts like Lakhimpur, Hailakandi, Karbi Anglong, Sibsagar, Kokrajhar and Tinsukia have witnessed a significant decline in FWPR too.

### **2.4.4 Educated Unemployment**

The rate of unemployment in Assam has been an important issue since the past. The figures are not impressive for the state when compared to the All-India level. The situation has even worsened post reform period. The rate of unemployment in Assam was

around 10 per cent in 2011. The unemployment rate of females is higher than that of males. The unemployment problem in Assam is not just restricted to the uneducated population. The situation is even more pronounced in the rural areas of the state. Keeping this in mind, we include the number of work seekers registered at the employment exchanges in the districts as a strong proxy to capture unemployment among the educated mass.

**Table 2.5: Education-specific WPR of persons aged 15 years and above according to usual-principal status (2004-2005), Assam and India**

	Sector	Gender	Grad. & abv.	Not lit.	Lit & prim	Midl.	Sec.	H. sec.
Assam	Rural	M	88	94	78.9	60.3	56.2	79.5
		F	14.7	19	20.6	14.1	17.4	37.7
	Urban	M	86.5	86.7	71.3	70.3	68.2	72.5
		F	14.5	11	2.8	8.1	11.4	26.1
India	Rural	M	88.7	88.7	78.1	69.9	66.4	81.8
		F	41.6	32.7	25.3	20.4	16.9	28.5
	Urban	M	82.4	85.1	75	66.2	59.1	78.5
		F	25	18.6	11.7	9.5	10.3	26.5

**Source:** "Employment and unemployment Situation in India-2004-2005" NSS-61<sup>st</sup> Round.

Table 2.5 shows the Education-specific WPR of persons aged 15 years and above according to usual-principal status Assam and India. In Assam, most of the females educated in higher secondary and above in rural areas are part of the workforce than the urban female population as is evident from the latest rounds of National Sample Survey Organisation (NSSO) from 61<sup>st</sup> Rd (2004-05) and 66<sup>th</sup> Rd (2009-10). It can be inferred that higher education of female has a positive correlation with female labour participation rate because educated women are often more independent, prefer to work and have a say

in the family as compared to uneducated females who are mostly employed as unpaid workers doing housework like child care, cooking, cleaning, etc. The number of women in Rural Non farm Sector (RNFS) has increased from 15 to 20 per cent (Bhattacharyya and Goswami, 2014), which is also an alternative mode of employment for the rural women rather than farm sector.

## **2.5 Multivariate Analysis**

In this section, we carry out a multiple regression analysis to locate the variables that influence women's workforce participation in Assam. We use female workforce participation rate as dependent variable and Male Work Participation Rate (mpw), Sex Ratio (Sex ratio), Female literacy rate (FLR), Migration (mig), Average area under Paddy Cultivation (Apcul), Average yield of total rice (AYrice), work seekers (WorkS), Average size of total household (ATHold), Total fertility rate (TFR), Mean age of marriage (MAmarr), Dependency ratio (Dep), Average household size (AHsize), Female enrolment to higher education (FEHEdu) are taken as the independent variables. The regression model is fit to the Census data for 2001 and 2011 separately, and the pooled data for the period 2001-2011. We have pooled the data for 2001 and 2011 primarily to increase the number of observations. The results that emerged from this empirical exercise, are reported in Table 2.6. The variable 'dependency ratio' has been dropped from the specification for pooled data in model 3 due to the unavailability of data for the two time periods.

Model 1 presents the results for 2001, model 2 for 2011 and model 3 for 2001 and 2011 (pooled data). Across specifications, only male workforce participation rate, average yield of total rice and mean age of marriage are found to be significant at 5 per cent level.

Other variables are found to be insignificant. Our results indicate that male workforce participation rate, total rice yield and mean age of marriage are significant predictors of female participation in workforce. Further, the direction of the relationship between these variables and the independent variable is in line with our expectations.

**Table 2.6: Determinants of Female work participation rate, 2001 and 2011**

Model 1		Model 2		Model 3	
2001		2011		2001 and 2011	
Variables	Coefficients	Variables	Coefficients	Variables	Coefficients
Mwp	1.78*** (3.65)	Mwp	1.97** (2.61)	Mwp	2.22*** (5.44)
Mig	0.00001 (0.14)	Mig	0.0001 (0.85)	Mig	0.0001 (0.72)
Apcul	-0.00002 (-0.70)	Apcul	0.00001 (0.39)	Apcul	-0.00002 (-1.02)
AYrice	-0.01** (-2.27)	AYrice	-0.001 (-0.45)	AYrice	-0.004** (-2.34)
WorkS	-4.17 (-0.09)	WorkS	-0.00003 (-1.05)	WorkS	-0.00003 (-1.10)
ATHold	-4.13 (-1.15)	ATHold	1.03 (0.31)	ATHold	-1.01 (-0.44)
TFR	-0.03 (-0.02)	TFR	-5.69 (-1.03)	TFR	-1.08 (-0.02)
MAmarr	12.60*** (4.06)	MAmarr	-3.76 (-1.36)	MAmarr	5.55*** (3.15)
Sex ratio	0.14 (1.53)	Sex ratio	-0.34 (-1.76)	Sex ratio	0.03 (0.38)
FLR	-0.21 (-0.65)	FLR	0.59 (1.64)	FLR	-0.23 (-1.21)
Constant	-395.87*** (-3.38)	Dep	-0.55 (-1.33)	Time	- 244.54*** (-3.98)
R-squared	0.88	AHsize	23.94** (3.04)	Constant	-190.35** (-2.22)
No.of observation	23	FEHEdu	-0.001 (-0.79)	R-squared	0.71

		Constant	226.24 (1.21)	No. of observation	46
		R-squared	0.89		
		No. of observation	23		

**Note:** (a) \*\*\*, \*\* and \* indicates significance at 1 %, 5% and 10% level respectively; and (b) Figures in parenthesis indicates standard error.

**Source:** Author's estimates

## 2.6 Conclusion

This chapter aims at analyzing the level and nature of female labour force participation and sectoral shifts in Assam since the advent of economic reforms in India. The female work participation in Assam is found marginally above 20 per cent, and the trend seems to be similar for the last three decades of reforms in India. Following a declining trend in female workforce participation rate during 1991-2001, there has been an increase in the rate during 2001-2011. Assam fared the worst among the north-eastern states of India in female workforce participation rate. One of the major reasons for such low female work participation rate could be the socio-cultural and economic factors that share less resemblance to the other North-eastern states of India but more with other major states in India. The relative share of female workers in total work participation has been also found to be less possibly due to various social and cultural norms prevalent in the society. It is also found that, in the case of Assam, female composition in 'cultivators' category has seen a reduction while females in agricultural labourers, household industry and 'other workers' category has reported an increase. There has been a drastic fall for females in the 'cultivators' category in Assam, which was compensated by the considerable increase in the share of females in other workers category. In short, this evidence possibly point to the fact that the female workers in Assam have shifted from

cultivation to other works such as plantation, household works, factory works and construction.

Our district-wise analysis points to a decline in female WPR in most of the districts. The Darrang (Udalguri) district, alone, has accounted for almost 10 percent points decline in FWPR during this period and an increase of 3 per cent during 2001 to 2011. In rural areas, the female participation rate is found to be high as compared to urban areas while the reverse is true for male workers. The same findings can be seen for Udalguri (Darrang) district and a declining trend can be seen in case of rural FWPR and increasing trend in case of urban areas during the 1991, 2001 and 2011 consequently. The seasonal employment, as captured by the percentage of marginal workers, has been on the rise since 2001 in comparison to main workers. The same is seen in case of Udalguri district with an increase of 2 percent in main workers and 2.1 per cent in marginal workers during 2001-2011. Our multivariate analysis indicate that male workforce participation rate, total rice yield and mean age of marriage are significant predictors of female participation in workforce.

Overall, our results based on secondary data points to rise in female workforce participation rate in the period since 2001. It is also found that a shift towards occupational categories such as household works, plantations and agricultural laborers and construction also observed during the same period. It is interesting to examine what explain such a shift in occupation in the period following 2001. One of the possible reasons could be the emergence of microcredit program as an important source of employment generation for women job seekers. We examine this important aspect in the next two chapters.

## CHAPTER 3

### MICRO-CREDIT AND TIME-USE PATTERN: INSIGHTS FROM THE FIELD SURVEY DATA

#### 3.1 Introduction

Micro-credit programme is basically meant for those women who have limited access to credit, and acts as a strategy for poverty reduction and women empowerment (Hashemi, Schuler and Riley, 1996). The programme helps women to invest in starting some self-sustained small business, providing them with greater opportunities to become self-employed by having financial independence and also help them to reduce dependence on local money lenders (Albee, 1996). The relationship between microcredit and women empowerment, however, has been intensely debated in the literature (Kabeer, 2001). The increase in income and livelihood and its effect on women empowerment is suspected because there are differences across families and households owing to several cultural barriers prevailing in various parts of the country (Mahmud, 2003). There are also studies trying to highlight the difficulties in precisely capturing the role of micro-credit on women empowerment. The argument here is that there could be many non-credit features of women members that could be also driving the positive effect of micro-credit on women empowerment. Against this backdrop, in this chapter, we examine whether the microcredit programme launched in 1992 was successful in explaining the sectoral shifts of female labour participation into different occupational categories. In this chapter, we carry out a descriptive analysis wherein we try to understand the role of different social and economic factors in explaining the shifts in female participation in various

occupations. To be specific, our aim is to see whether there exists a noticeable shift in employment patterns of micro-credit households from low-paid daily labour to much remunerative self-employment. By doing so, we also investigate whether such a shift is uniform across different social and economic characteristics of micro-credit households.<sup>1</sup> The analysis is based on field survey data collected from the SHG and non-SHG households in the Udalguri district of Assam. To do this, we rely on one specific outcome of credit intervention, namely, changes in the allocation of household's work time.

The rest of the chapter is organized as follows. The next section presents a brief discussion about SHG formation and its current status in the state of Assam. Section 3.3 presents a discussion on the methodology of data collection and the primary data. Using the primary data, we present some stylized facts about the microcredit participation and time use in Section 3.4. Last section concludes.

### **3.2 Self-Help Groups in Assam: History and Spread**

The formation of SHG in Assam and its linkage to banks was first started in 1992. But the programme gathered momentum only from 2001. Till the end of March 2012, all 499183 SHGs have been linked to banks in the state out of which 2, 26,361 SHGs were credit linked (Economic Survey, Assam 2012-2013). Further, the deposit linked SHGs are higher than the credit linked SHGs, which indicate that not all SHGs are able to get loan or other financial assistance (Reports of state level Bankers Committee, SBI, Guwahati Head Office). In Assam, NABARD has extended its assistance for promotion of SHGs and its bank linkages through Individual Rural Volunteers (IRVs) which is

---

<sup>1</sup> We address this issue in depth using econometric analysis in the next chapter.



implemented by Assam Gramin Vikash Bank (AGVB). In addition, the Joint Liability Group (JLG) has actively evolved to increase the flow of credit to small borrowers having limited or no collateral. The commercial banks like Indian Bank, ICICI Bank, SBI, UCO Bank and Assam State Cooperative Apex Bank have also adopted JLG mode of financing the mid segment clients (which also include financing the production credit and handloom weaving activities).

The growth rate of SHGs credit bank in Assam has been higher than the national average in the past few years. Unlike the rest of the country where the commercial banks are active, RRBs have been found to play a leading role in Assam. The “Assam Gramin Vikas Bank” (RRB) has the largest bank branches in Assam. It basically involves the NGOs for disbursement of loan to the client indirectly rather than directly giving loan to the people. The government of India also launched another credit cum subsidy programme by the name of Swarnajayanti Gram Swarozgar Yojna (SGSY) which came into effect from 1.4.1999 by reviewing and reconstructing the following programmes such as Integrated Rural Development Programme (IRDP), Development of Rural Youth for Self Employment (DWCRA) Training of Rural Youth for Self Employment(TRYSEM), Supply of Improved Toolkits in Rural Areas(SITRA), Ganga Kalyan Yojana(GKY), Millions Well Scheme(MWS). The objective of this programme is to bring the existing poor families above the poverty line especially women from weaker sections by covering all aspects of self-employment viz. organizing rural poor into Self Help Group (SHGs) capacity building, planning activity clusters, infrastructure build up, technology, credit and marketing. The targeted families for assistance under SGSY are

selected from the BPL list duly approved by the Gram Sabha. Financial assistance is also provided to poor families in the form of subsidy from government and credit from banks.

The Swarnajayanti Gram Swarozgar Yojna (SGSY) was implemented with immediate effect in Assam. Both government and NGOs are playing a vital role in the formation as well as the linkage of SHGs to the bank in the State. On an average, the SHG includes 15 to 20 members and each member of the group save money ranging from rupees 50 to 200 per month. Some SHGs use the loan amount in group activities while other groups utilize the loan individually. The group circulates the saved amount along with bank loan to the needy members with some specified interest. This frees them from the clutches of the moneylenders. They can invest the loan amount in productive assets and own farms or even lend to other people outside the group with higher interest rate.

The advent of economic reform since 1991 has shown the changes in the composition of female labour in different occupational categories in the state of Assam and its districts studied in the previous chapter. Therefore, there is a need to cross check the results by examining whether microcredit program launched in 1992 was successful in explaining the sectoral shift of female labour participation into different occupational categories. Microcredit facilitates lending which help women to invest in non-farm enterprises, which in turn allow them to shift their work time from wage work to self-employment which is considered to be better remunerated and associated with higher social status (Garikipati, 2012). The study intends to contribute to the existing literature by seeing whether there occurred a shift from wage work (mainly in agricultural sector) to self-employment (cultivation, own shops, self-enterprise, cropping, livestock). The objective

of the study has been addressed through the primary survey data collected from the SHG and Non SHG households in the Udalguri district of Assam.

### **3.3 The Primary Data**

To address the objectives discussed above, the study undertook a primary household survey among married couple households where both male and female heads of households were economically active. Fieldwork was conducted in selected villages of the Udalguri district of Assam. The Udalguri district has the highest number of SHG formation in Assam (Statistical Handbook Assam, 2012). It also has the highest number of credit linked SHGs in Assam. Thus, Udalguri is the most appropriate district for this study. The district also provides us with an opportunity to capture the impact of credit participation on women empowerment in a comprehensive manner. The data were collected during December-February (2016-2017). The data were collected by interview method using a structured questionnaire which was developed based on a pilot survey.

To identify the final respondents, the study had employed a two- stage sampling procedure. The first stage involved selection of Gram Panchayats (GPs). To select the GPs, the study ranked the GPs using the backwardness indicator, namely the number of Below Poverty Line (BPL) households (see Table 3.1). Next, we constructed four subsamples based on the ranking and selected 4 GPs from the bottom two subsamples of the district. The selected GPs were Ratanpur, Bongaon, Sonaigaon (Kamabari) and Harisinga (highlighted in grey in the Table 3.1). All the GPs surveyed have an active SHG program. The final stage involved selection of households from the selected GPs. To identify the respondents, random sampling method was applied to the list of households supplied by the GPs. Using the random sampling method, 60 households

were selected from each selected GP, wherein 30 households are SHG households and 30 are non-SHG households. In total, data were collected from 240 households, 120 SHG and 120 non-SHG households, were identified for data collection. From the 240 households, both the males and females were selected for face-to-face interview. The researcher personally visited all the units and administered the questionnaire.

**Table 3.1: Ranking of Gram Panchayats in Udalguri district**

<b>Sub- samples based on Ranking</b>							
<b>Sl. No</b>	<b>Total HH</b>	<b>BPL households</b>	<b>Percentage</b>	<b>Rank</b>	<b>District</b>	<b>Block</b>	<b>Gram Panchayat (GPs)</b>
1	1547	328	21.20	1	Udalguri	Bhergaon	Tenkibasti
2	1758	376	21.39	2	Udalguri	Bhergaon	Hahchara
3	1583	408	25.77	3	Udalguri	Bhergaon	Orangajuli
4	4250	1476	34.73	4	Udalguri	Mazbat	Lamabari
5	1816	742	40.86	5	Udalguri	Bhergaon	Rupakhat
6	1350	571	42.30	6	Udalguri	Bhergaon	No.1 Sonajuli
7	2522	1112	44.09	7	Udalguri	Bechimari	Dalakati Borobazar
8	1930	860	44.56	8	Udalguri	Udalguri	Amjuli
9	1130	510	45.13	9	Udalguri	Bhergaon	Dimakuchi
10	1913	902	47.15	10	Udalguri	Bhergaon	Attareekhat
11	1408	677	48.08	11	Udalguri	Bhergaon	Kalikhola
12	1638	824	50.31	12	Udalguri	Bhergaon	Nonaikhuti
13	1772	942	53.16	13	Udalguri	Udalguri	Simluguri
14	1029	556	54.03	15	Udalguri	Bhergaon	Bamunjuli
15	1577	860	54.53	14	Udalguri	Mazbat	Jagyapur
16	1239	680	54.88	16	Udalguri	Mazbat	Rangpani
17	1734	995	57.38	17	Udalguri	Bhergaon	Rajagarh
18	1665	980	58.86	18	Udalguri	Mazbat	Bahipukhuri
19	944	561	59.43	19	Udalguri	Bhergaon	Pachimpatla
20	2027	1236	60.98	20	Udalguri	Mazbat	66 Dhansiri
21	1869	1163	62.23	21	Udalguri	Udalguri	Chumuapara
22	312	197	63.14	22	Udalguri	Rowta	Borigaon(Rowta)
23	1418	911	64.25	23	Udalguri	Kalaigaon	Majorchuba
24	2137	1391	65.09	24	Udalguri	Khoirabari	Kuhiarkuchi
25	1840	1228	66.74	25	Udalguri	Khoirabari	Mahaliapara

26	2516	1684	66.93	26	Udalguri	Rowta	Sivapur
27	825	556	67.39	27	Udalguri	Bhergaon	Nagachuba
28	1173	810	69.05	28	Udalguri	Udalguri	Tamulbari
29	1456	1007	69.16	29	Udalguri	Udalguri	Sapkhaiti
30	1582	1110	70.16	30	Udalguri	Udalguri	Khairajangal
31	1532	1093	71.34	31	Udalguri	Khoirabari	Jhargaon
32	1830	1342	73.33	32	Udalguri	Mazbat	Phulaguri
33	665	491	73.83	33	Udalguri	Bhergaon	Panesheli
34	2133	1577	73.93	34	Udalguri	Khoirabari	Khoirabari
35	1622	1202	74.11	35	Udalguri	Rowta	Puhurabari
36	558	414	74.19	36	Udalguri	Bhergaon	Budura
37	665	494	74.29	37	Udalguri	Bhergaon	Bholatar
38	2865	2160	75.39	38	Udalguri	Rowta	Rowta
39	1642	1242	75.64	39	Udalguri	Kalaigaon	Kacharison
40	1519	1151	75.77	40	Udalguri	Kalaigaon	Niz Kalaigaon
41	1431	1086	75.89	41	Udalguri	Udalguri	Hatigarh
42	793	603	76.04	42	Udalguri	Bhergaon	Khagrabari
43	1157	882	76.23	43	Udalguri	Kalaigaon	Ranipukhuri
44	1593	1234	77.46	44	Udalguri	Udalguri	Sastrapara
45	1288	999	77.56	45	Udalguri	Mazbat	Mazbat
46	2255	1757	77.92	46	Udalguri	Mazbat	Merabil
47	1440	1126	78.19	47	Udalguri	Borsola	Natunpanbari
48	953	749	78.59	48	Udalguri	Bhergaon	Suklai
49	1434	1136	79.22	49	Udalguri	Udalguri	Bengbari
50	1643	1308	79.61	50	Udalguri	Dalgaon Sialmari	Koupati
51	1323	1057	79.89	51	Udalguri	Udalguri	Murmela
52	1664	1332	80.05	52	Udalguri	Udalguri	Udalguri
53	1296	1042	80.40	53	Udalguri	Bhergaon	Bhergami
54	1577	1269	80.47	54	Udalguri	Udalguri	Khowrang
55	1868	1510	80.84	55	Udalguri	Pachim Mangaldai	Mudoibari
56	2783	2251	80.88	56	Udalguri	Rowta	Ekrabari
57	1608	1318	81.97	57	Udalguri	Mazbat	Saikiachuburi
58	1770	1452	82.03	58	Udalguri	Kalaigaon	Kacharitol
59	1289	1065	82.62	59	Udalguri	Kalaigaon	Dumuruguri
60	1114	927	83.21	60	Udalguri	Udalguri	Borigaon
61	595	496	83.36	61	Udalguri	Bhergaon	Mwilapara
62	960	802	83.54	62	Udalguri	Bhergaon	Garuajhar
63	1337	1146	85.71	63	Udalguri	Udalguri	Ambagaon

64	1520	1290	84.87	64	Udalguri	Mazbat	Habigaon
65	1954	1696	86.80	65	Udalguri	Udalguri, Bhergaon	Merbangchuba and Totlapara
66	860	751	87.33	66	Udalguri	Kalaigaon	kalaigaon Town
67	435	380	87.36	67	Udalguri	Mazbat	Naoherua
68	2135	1869	87.54	68	Udalguri	Kalaigaon	Bhakatpara
69	1876	1648	87.85	69	Udalguri	Kalaigaon	Naptipara
70	1517	1339	88.27	70	Udalguri	Udalguri	Santipur
71	1513	1353	89.42	71	Udalguri	Bhergaon	Goybari
72	133	119	89.47	72	Udalguri	Kalaigaon	Tepakhat
73	786	705	89.69	73	Udalguri	Rowta	Purani Hapagaon
74	477	428	89.73	74	Udalguri	Bhergaon	Jabangapathar
75	723	657	90.87	75	Udalguri	Mazbat	Rowtagaon
76	1289	1176	91.23	76	Udalguri	Udalguri	Ratanpur
77	1251	1145	91.53	77	Udalguri	Udalguri	Bongaon
78	1762	1617	91.77	78	Udalguri	Rowta	Purani Goraibari
79	1821	1673	91.87	79	Udalguri	Kalaigaon	Bhuyankhat
80	2988	2750	92.03	80	Udalguri	Mazbat,Rowta, Rowta	64 Dhansiri, Rowta Bagan and Rowta Station
81	1116	1028	92.11	81	Udalguri	Udalguri	Purandia
82	2009	1854	92.28	82	Udalguri	Kalaigaon	Chengapathar
83	1111	1028	92.53	83	Udalguri	Kalaigaon	Jhargaon Kadamguri
84	890	826	92.81	84	Udalguri	Rowta	Kajiamati
85	2966	2753	92.82	85	Udalguri	Udalguri,Mazbat	Bhairaguri and Orang
86	2951	2744	92.99	86	Udalguri	Kalaigaon	Gerua
87	847	806	95.16	88	Udalguri	Rowta	Mohanpur
88	1244	1188	95.50	89	Udalguri	Bhergaon	Gopachachuba
89	1902	1821	95.74	90	Udalguri	Udalguri	Sapangaon
90	660	633	95.91	91	Udalguri	Bhergaon	Khasiachuba
91	2575	2474	96.08	87	Udalguri	Udalguri, udalguri	Borla and Ghagra
92	1467	1423	97.00	92	Udalguri	Udalguri	Odala
93	2635	2567	97.42	93	Udalguri	Udalguri, udalguri	Jaberitola and Alabari
94	1020	999	97.94	94	Udalguri	Udalguri	Panery
95	1183	1163	98.31	95	Udalguri	Udalguri	Barnagaon
96	1146	1128	98.43	97	Udalguri	Udalguri	Bhutiachang
97	2164	2134	98.61	96	Udalguri	Mazbat	Gelabil
98	1038	1031	99.33	98	Udalguri	Rowta	Dhansiri
99	1440	1432	99.44	99	Udalguri	Kalaigaon	Balipara

100	1733	1727	99.65	101	Udalguri	Khoirabari	Niz Chinakona
101	2321	2314	99.70	100	Udalguri	Udalguri, udalguri	Khamabari and Sonaigaon
102	1527	1523	99.74	102	Udalguri	Udalguri	Harisinga

*Note:* Highted colour stands for the GPs finally selected for primary survey

**Source:** Author's estimation

Data were gathered on socio-economic and demographic characteristics of household members, their economic activities, asset holdings, credit programme participation, the time spent on different activities and household decision making. Details on most of the relevant variables were also collected from the respondents for the pre-SHG period that is, his/her before joining the SHG program. To collect information on time allocation for different activities, the 24 hour recall method was used. We rely on the time use method vis-à-vis other methods believing that it is likely to give more accurate information as well as easier for respondents to recall how much time they allocated to each task in a day . We omitted 17 women respondents who are found to be doing no wage work as our aim is to see whether there is a shift in female participation away from wage work towards self-employment.

In our primary survey data, an average household is consisting of 4 members with a land holding of 2.5 acres. The households mainly rely on agricultural incomes. A total of 180 women (75 per cent) and 123 men (51.2 per cent) spend most of their work time in self-employment, while 46 women (19.1 per cent) and 122 men (50.8 per cent) spend most of it in wage labour. While the majority of men and women, are either self-employed or work for daily wages, a small proportion of 4 women (1.6 per cent) and 4 men (1.6 per cent) do a bit of both. Self-employment mainly comprises of working in own farm and livestock. In addition men focus on works such as carpentry, petty trading, madding

liquor, weaving and running shops. Wage work is mainly farm based work but some men work off farm too such as construction and trading activities.

### **3.4 Micro-credit participation and Time use**

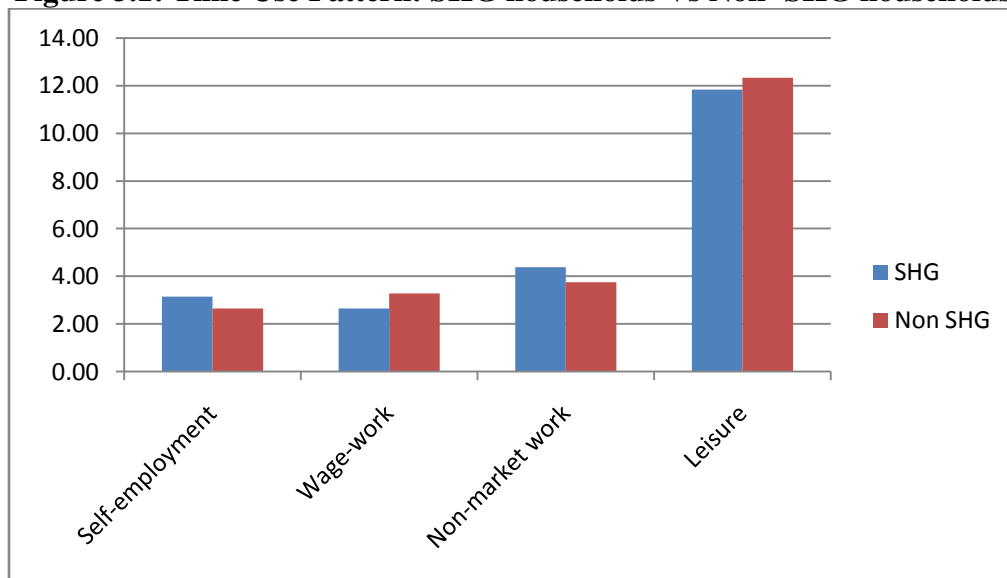
As mentioned before, the prime objective is to capture the impact of credit participation on women empowerment via changes in female time use. In what follows, using descriptive analysis, we attempt to capture the role of SHG participation of women in changes in time use pattern. It is very much possible that the effect of credit program participation on time use is likely to vary with regard to various socio-economic characteristics of the households such as age, education, family size, number of dependents in the family, income of the family and so on. For instance, a more educated individual would tend to engage in self-employment as compared to a less educated individual. Similarly, an individual who falls in the higher age category can be expected to work less and enjoy comparatively more leisure than an individual who fall in the lower age category. Again, higher income of the family would indicate that the family is capable enough to buy new assets, or invest in own farm and thus be self-employed. Hence, besides examining the role of SHG participation in time use pattern, we also examine how these changes are influenced by the socio-economic parameters of the households. Obviously, we expect SHG households to spend more time in self-employment than non-SHG household. However, in the presence of differences in socio-economic characteristics, this relationship may be affected.



### 3.4.1 SHG households spend more time in Self-employment

Figure 3.1 shows the time use between SHG and Non SHG households in the Udalguri District of Assam. As expected, SHG households spend more time in Self-employment and less in Wage-work as compared to non-SHG households. As per our estimates, SHG households, on average, spend 3.15 hours in self-employment while non-SHG households spend only 2.64 hours. On the contrary, non-SHG households spend more time in wage work as compared to SHG households. Our computations suggest that SHG households spend 2.65 hours in wage-work while non-SHG households spend 3.28 hours in wage work. It is also interesting to note that SHG households spend more time in non-market work (4.38 hours in comparison to 3.74 hours by Non-SHG) and spend less time in leisure than non-SHG households. Two findings emerge from our analysis: (a) SHG households spend more time in self-employment as compared to non-SHG households; and (b) SHG households spend more time in work and less time in leisure than Non-SHG households.

**Figure 3.1: Time Use Pattern: SHG households Vs Non- SHG households**

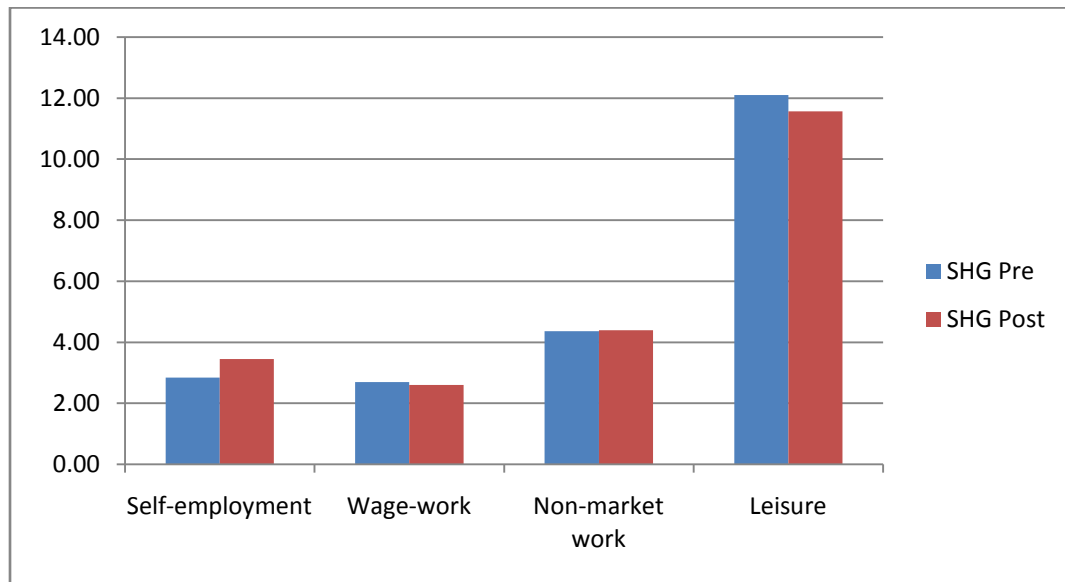


Source: Author's estimates

### **3.4.2 Women Participation in SHG increases the time spent by SHG households in Self-employment**

Figure 3.2 shows the time use pattern of SHG households during the Pre- and Post-SHG Periods. Our conjecture is that credit program participation would result in SHG households spending more time in self-employment and less time in wage-work. This is confirmed by the time use pattern of SHG households presented in the table, which shows that there is an increase in work hours in self-employment and reduction in work hours in wage-work for SHG households during the post-SHG period. After taking membership in SHGs, SHG households are found to spend, on average, 3.45 hours in self-employment in comparison to just 2.84 hours before their participation in SHG. We also witness a decline in work hours in wage-work during the post-SHG period; SHG households experienced a decline in work hours from 2.7 hours in the pre-SHG period to 2.6 hours in the post SHG period. This may be due to the fact that the loan amount from SHG is mostly invested in own assets, or own farm by the household which increases their time in self-employment. Moreover, due to increase in commitments towards work after SHG participation, we observe a fall in leisure time among the SHG households.

**Figure 3.2: Time Spent by SHG households: Pre-SHG and Post-SHG Period**



Source: Author's estimates

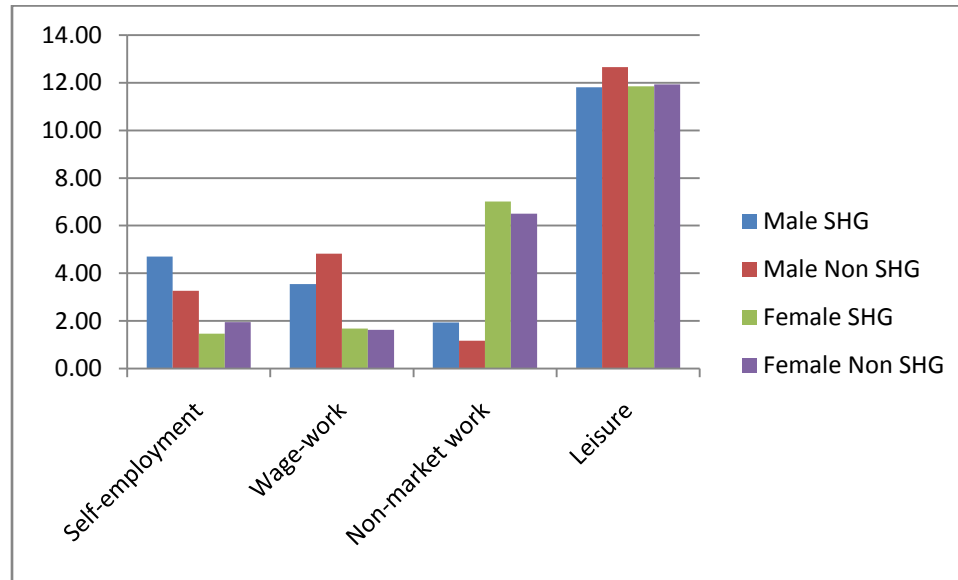
### 3.4.3 Women in non-SHG households spend more time in Self-employment

Figure 3.3 compare the time allocation by men and women in SHG and non-SHG households. It gives us the complete picture of time-use pattern across SHG and Non-SHG households as well as across gender. We find that men in SHG households spend more time in self-employment than those in non-SHG households. This possibly indicates that lending to women benefits their husbands. In other words, male members invest the loans given to their wives in productive assets or own farm. As is evident from the table, SHG males spend, on average, 4.20 hours in self-employment while non-SHG males are found to spend only 3.26 hours. As expected, rise in time allocation for self-employment reduces the time spent by the SHG males in wage work. According to our estimates, SHG males spend 3.54 hours, on average, in wage work as compared to 4.43 hours spent by non-SHG males.

It is however surprising to discover that SHG females are less self-employed involved themselves more in wage work and non-market work than non-SHG females. SHG females spend only 1.46 hours in self-employment in comparison to 1.95 hours of non-SHG females. Again, SHG females spend 1.68 hours in wage work and 7.01 hours in non-market work in comparison to 1.63 hours in wage work and 6.50 hours in non-market work by non-SHG females. Taken together, these pieces of evidences possibly suggest that credit participation fails to ensure women empowerment. On the contrary, it leads to deterioration in the status of women. The loan they are entitled to is utilized by their husbands and results in their betterment. As per the available evidence, non-SHG females are better placed than SHG females as they spend more time in self-employment and less time in wage work.

We must also note that prior to the credit participation by women, non-SHG males are found to do more wage-work and less self-employment but after the credit participation of their wives, we observe a switch-over in their time use (more self-employment and less wage work). Thus, female credit participation indirectly benefits the male in the house and does not lead to the improvement in their own status. We rather observe 'male empowerment' through female participation.

**Figure 3.3: Time Use Pattern by Gender and Credit Participation**



Source: Author's estimates

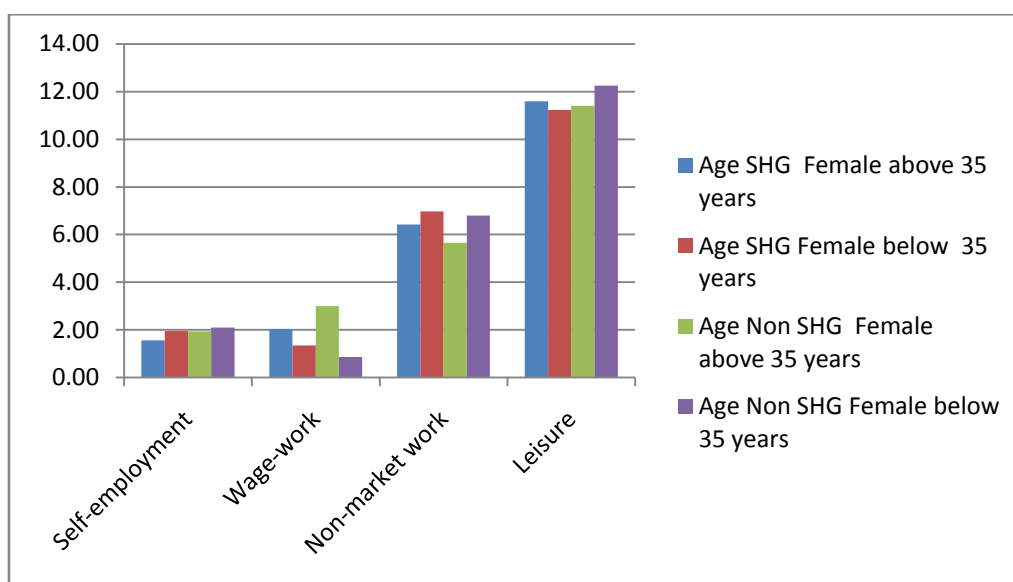
#### **3.4.4 Aged females are more into wage work and less involved in self-employment**

Age of an individual is one of the most important determinants in time use models. The allocation of time among different activities is largely affected by the age of the individual. Individuals who belong to higher age category (above the median age) are usually expected to work less and enjoy more leisure. We use median age for both male and female to categorize them into higher age and lower age categories.

Figure 3.4 captures the relationship between age and time use pattern for females across SHG and non-SHG households. Both SHG and non-SHG females who are above the median age (in our case, 35 years) are found to be less self-employed in comparison to SHG and non-SHG females below 35 years of age. SHG females above the age 35 spend only 1.56 hours in self-employment and non-SHG females above the age 35 spend only 1.93 hours in self-employment in comparison to 1.95 hours and 2.09 hours of SHG

females below the age of 35 and non-SHG females below the age of 35 respectively. Again, both SHG and non-SHG females who are above the median age are found to be spending more time in wage work (2.04 and 3.00 hours respectively) in comparison to their younger counterparts. We also observe a similar pattern in time use by females from SHG and non-SHG households who are above 35 years (leisure > non-market work > wage work > self-employment).

**Figure 3.4: Age and Time Use Pattern of Females by Credit Participation**



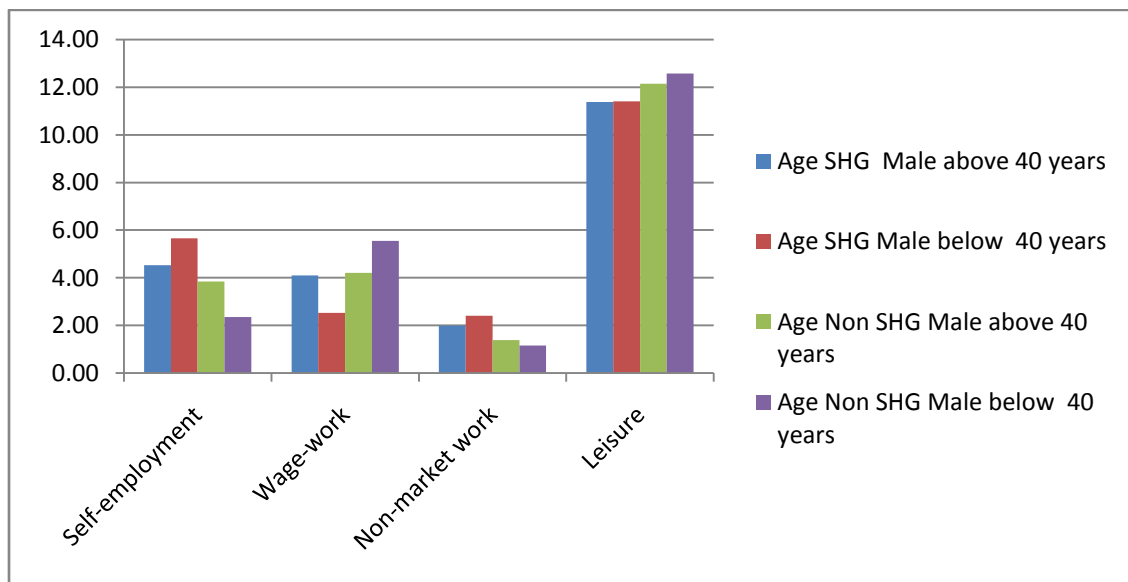
Source: Author's estimates

### 3.4.5 SHG males are more into self-employment irrespective of their age

Similar to the previous exercise, the median age for male has been calculated and simultaneously the time-use pattern of males has been studied among SHG and non-SHG households. It is evident from figure 3.5 that SHG males above the median age (40 years) are found to spend more time in self-employment (4.53 hours on average) and less in wage work (4.10 hours on average) than non-SHG males above 40 years of age.

Similarly, SHG males below 40 years of age are found to spend more time in self-employment (5.66 hours on average) than non-SHG males below 40 years of age (2.35 hours on average). The difference in time-use is almost double in case of young men (men below the age of 40). Among all categories of males, SHG males below the age of 40 are found to be mostly self-employed and least involved in wage work (5.66 hours and 2.53 hours respectively).

**Figure 3.5: Age and Time Use of Pattern of Men by Credit Program Participation**



Source: Author's estimates

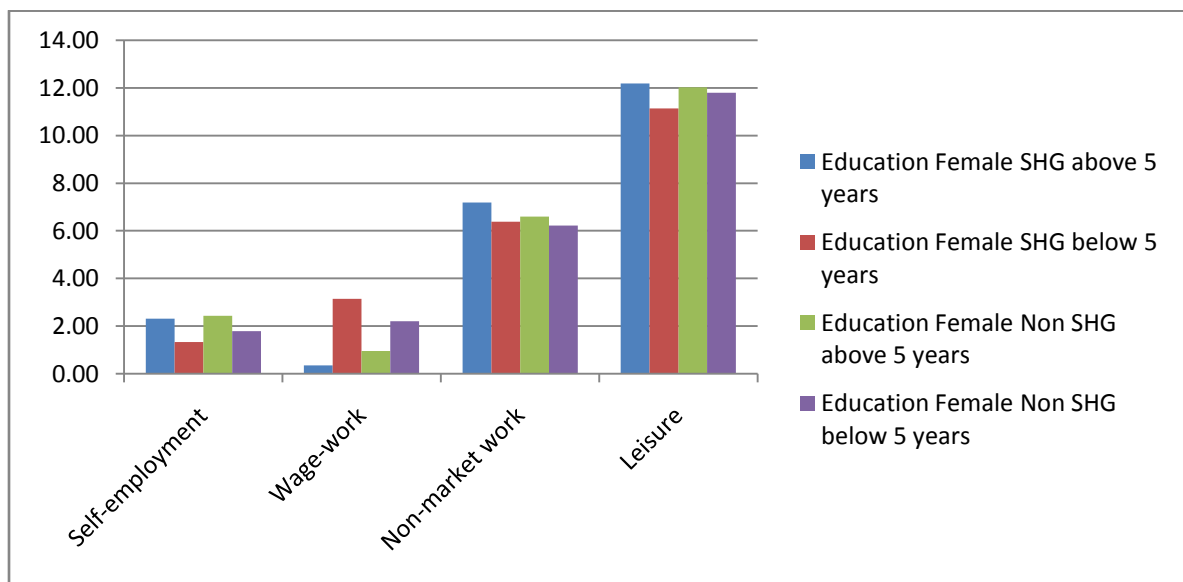
### 3.4.6 Education and time spent on self-employment by women are positively related

Education is again another most important factor that determines the time-use pattern of individuals. Educated individuals are expected to be more self-employed and less involved in wage work. Figure 3.6 depicts the time-use pattern of SHG and non-SHG females, with respect to their level of education. Education has been calculated as the number of years of schooling of the individual, and the median year of schooling has

been found to be 5 years. Females above 5 years of education (both in SHG and non-SHG households) are found to spend more time in self-employment in comparison to females below 5 years of education. SHG females with more than 5 years of education are found to spend 2.31 hours and non-SHG females with more than 5 years of education are found to spend 2.43 hours in self-employment. In contrast, SHG females with less than 5 years of education are found to spend only 1.33 hours in self-employment and non-SHG females with less than 5 years of education spend only 1.78 hours. Less educated females are also found to spend more time in wage work than more educated females.

With regard to self-employment, there is only a marginal difference between SHG and non-SHG females with years of schooling 5 or above. This shows that education has a clear impact on the amount of time spent on self-employment irrespective of whether they are members of SHG or not.

**Figure 3.6: Education and Time Use Pattern of Females by Credit Program Participation**



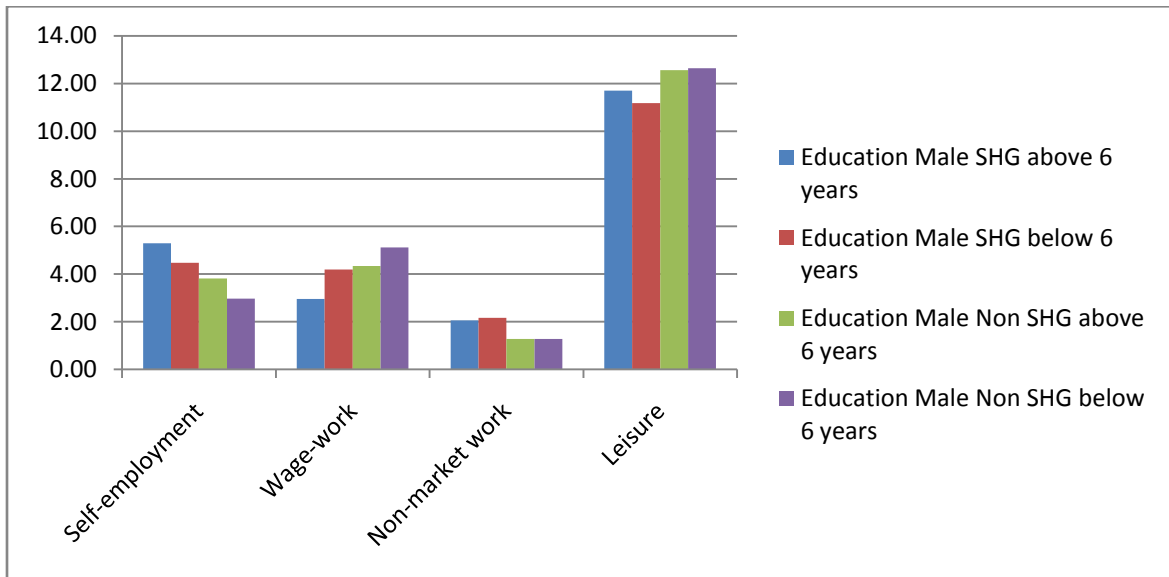
**Source:** Author's estimates



### **3.4.7 Less educated SHG men spend more time in self-employment than educated non-SHG men**

Again from the figure 3.7, the difference in time spent on self-employment is sharply evident between more educated and less educated SHG males. SHG males who are educated above 6 years (median age for male is 6 years) are found to spend more time in self-employment (5.29 hours on average) and the least in wage work (2.95 hours). In contrast, non-SHG males who are educated below 6 years are found to spend more time in wage work (5.12 hours) than self-employment (2.95 hours). Thus, SHG males spend more time in self-employment (5.29 and 4.47 hours) and less in wage work (2.95 and 4.20 hours) irrespective of the number of years of education. SHG males with less education still manage to spend more time in self-employment (4.47 hours) than non-SHG males with more education (3.82 hours). This strengthens our conjecture that SHG males are the real beneficiaries of their wives' joining SHGs as lending via SHGs help them to buy new assets and invest in their own farm, and thus manage to be self-employed.

**Figure 3.7: Education and Time Use Pattern of Males by Credit Program Participation**



Source: Author's estimates

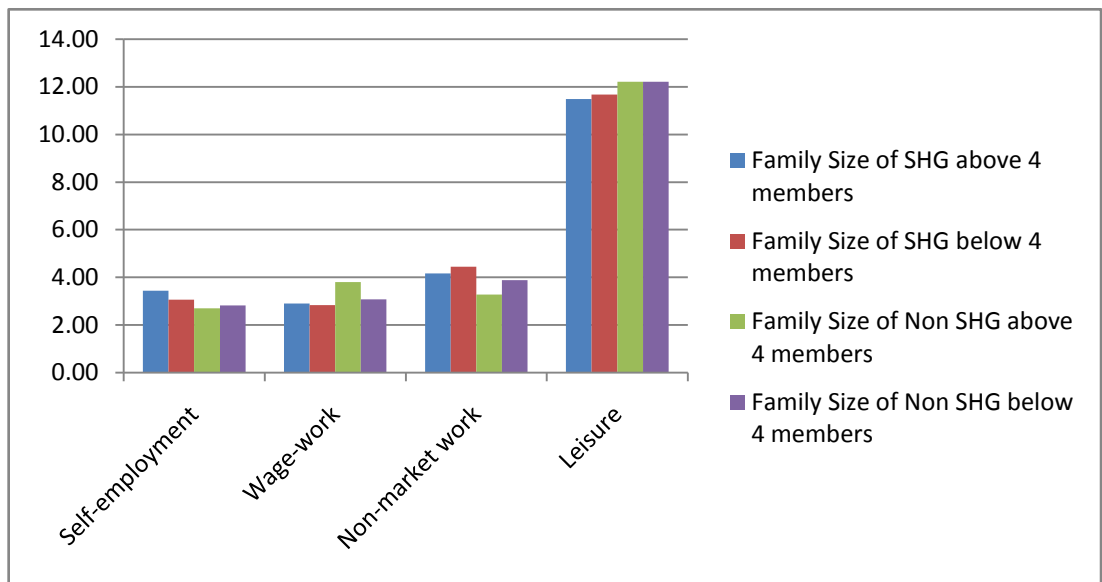
### 3.4.8 Family Size and Time Use in Self-employment are unrelated

Family size is another variable that affects time use of SHG and non-SHG households. Bigger family size would mean more mouths to be fed, more clothes to be provided, and more care to be taken. Overall, bigger family size demands more work from the bread-earner of the family and equally more domestic/non-market work from the women in the family. Thus, bigger family size acts as a catalyst, and increase the total work-time.

Figure 3.8 shows that irrespective of the size of the family, SHG households spend comparatively, more time in self-employment than non-SHG households. SHG households consisting of more than 4 members in the family spend 3.44 hours in self-employment and SHG households consisting less than 4 family members spend 3.06 hours in self-employment. Non-SHG households consisting of more than 4 members in the family spend 2.70 hours in self-employment and non-SHG households consisting less

than 4 family members spend 2.82 hours in self-employment. The SHG households are also found to spend less time in wage work than non-SHG households, irrespective of the size of the family. SHG households consisting of more than 4 members in the family spend 2.70 hours in wage-work and SHG households consisting less than 4 family members spend 2.83 hours in wage-work. Again, non-SHG households consisting of more than 4 members in the family spend 3.80 hours in wage-work and non-SHG households consisting less than 4 family members spend 3.08 hours in wage-work. Moreover, non-SHG households with more than 4 members are found to be mostly employed in wage work (3.80 hours) and least in self-employment (2.70 hours). Thus, once again we can see a clear difference between SHG and non-SHG households with respect to time use and family size.

**Figure 3.8: Family Size and Time Use Pattern by Credit Program Participation**



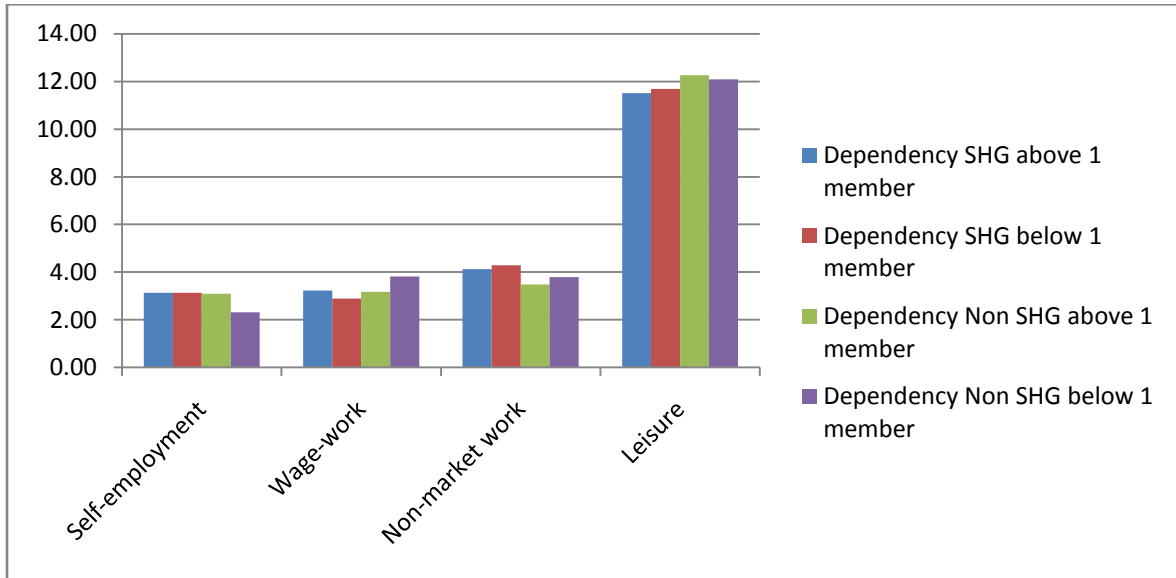
Source: Author's estimates

### **3.4.9 SHG households spend more time in self-employment irrespective of the number of dependents in the family**

Dependency is defined as the number of elderly people above the age of 65 and the number of children below the age of 14 in the family. The number of dependents also plays a very vital role in explaining the time-use pattern of households. More number of dependents would demand more resources for survival as well as more care and attention from the mother in the house.

Figure 3.9 shows the time use pattern between SHG and non-SHG households with numbers of dependents above and below the median value (in this case, the median value is 1). Self-employment is found to be high for SHG households irrespective of the number of dependents in the family. Both SHG and non-SHG households spend equal time in self-employment (3.13 hours) which is higher than the time spent by non-SHG households in self-employment. It is surprising to find that the amount of time spent in self-employment is less for non-SHG households with one dependent in the family (2.31 hours) than non-SHG with more than one dependent (3.09). The amount of time spent in wage work is the highest for non-SHG households with less than one dependent member (3.81 hours). Expectedly, higher number of dependency is also found to be associated with less leisure time for both types of households.

**Figure 3.9: Number of Dependents and Time Use Pattern: SHG Households Vs Non-SHG Households**



**Source:** Author's estimates

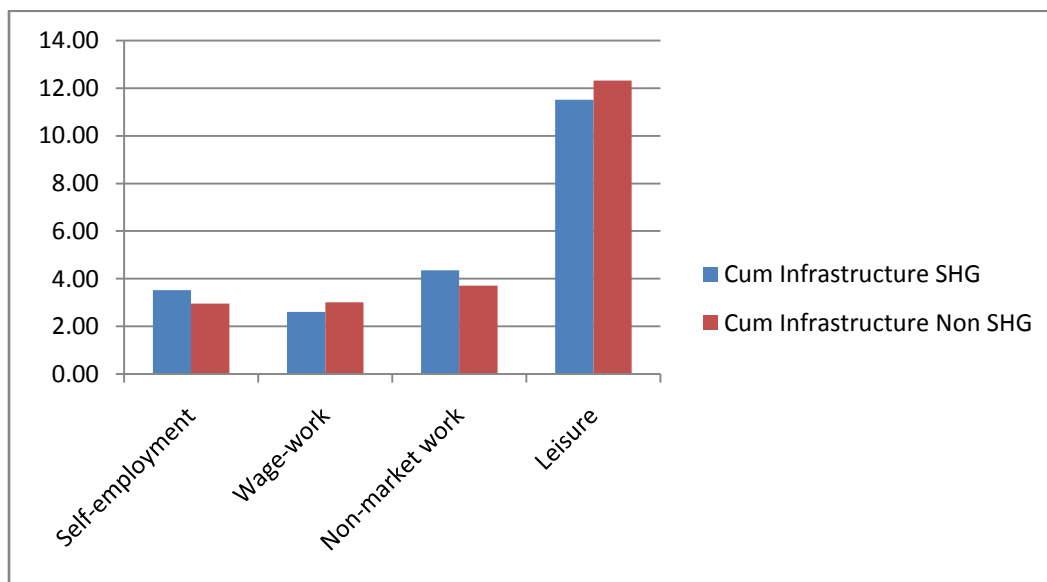
### **3.4.10 Self-employment is higher than wage work for both SHG as well as Non-SHG households**

Infrastructure is yet another variable of importance in this study. It affects the amount of time use in households in its own unique way. The infrastructure facilities within the village for which we considered four infrastructural variables: electricity, pucca road, school, drinking water facilities and toilet facilities. Equal weight is assigned to all the four infrastructural variables. The value of the index ranges between 0 and 5. For instance, electricity in the house means at least village has connection with outside world, school in the village means children can go to school by themselves saving parents work time, toilet within the premise would mean that the individual do not waste time in reaching the destination (which in rural area is usually far), drinking water facilities within home also suggest saving time as they need not go outside home to collect water which is the main source living. Similarly, pucca road in the village would again save the

journey time of the individual. Thus, better quality of infrastructure is associated with saving-time which can be used either in work or leisure.

Figure 3.10 shows the time-use of both SHG as well as non-SHG households with better quality of infrastructure. As expected, time spent in self-employment is higher than that in wage work for SHG households in villages with better infrastructure. SHG households are found to spend 3.52 hours in self employment and 2.61 hours in wage work. Moreover, non-SHG households are found to spend more time in wage work (3.02 hours) than in self employment (2.96 hours). This means better infrastructure can facilitate SHG household to spend more time use in self-employment work. On the other hand, non-SHG household does not have any impact with better infrastructure.

**Figure 3.10: Infrastructure and Time Use of SHG and Non SHG households**



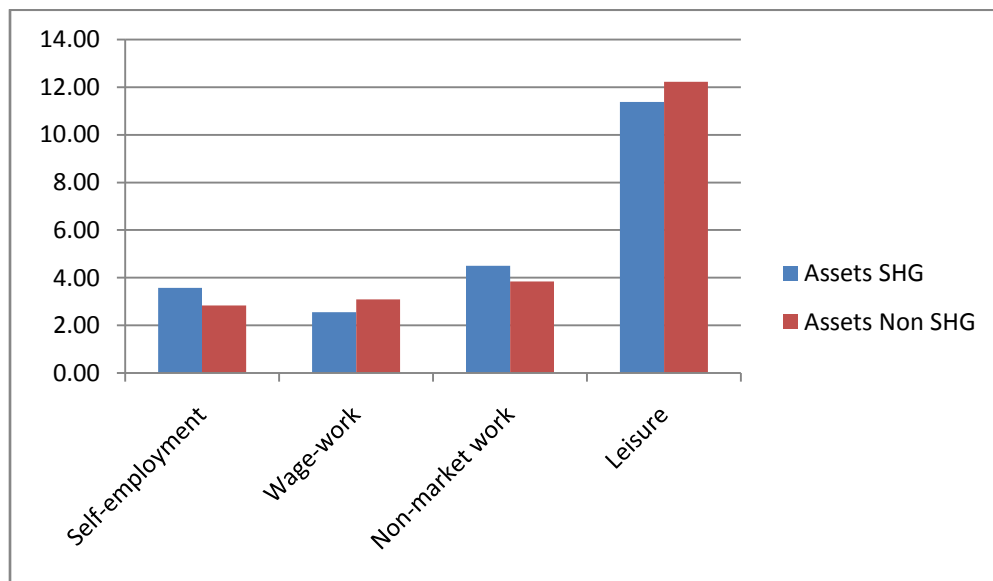
*Note:* Cum Infrastructure includes electricity in the household, pucca road, school facilities (in the village), drinking water and toilet facilities (within the premises).

**Source:** Author's estimates

### 3.4.11 SHG households with more assets are more into self-employment

Asset is another variable of interest in this study. We construct an index for the presence of assets within the households. We identified four assets from our survey data: Television, Cooking Gas, Washing Machine and Vehicles at home. We construct the index by assigning equal weight to all the four assets. The value of the index ranges between 0 and 4, and a value of 0 indicates the absence of family assets. If a family has all the four assets, then the index takes the value of 4. Household with more assets is expected to engage more in self-employment than wage work. It is again evident from figure 3.11 that SHG households with more assets spend more time in self-employment (3.57 hours) and less time in wage work (2.55 hours). But non-SHG households with assets usually spend more time in wage work (3.09 hours) than self-employment (2.84). The difference in time-use is sharper between self-employment and wage work for SHG households than for non-SHG households.

**Figure 3.11: Assets and Time Use Pattern: SHG Vs Non-SHG households**



*Note:* Assets include households' vehicles, television, cooking gas and washing machine.

**Source:** Author's estimates

### **3.4.12 SHG households are more into self-employment than wage work, irrespective of their level of income**

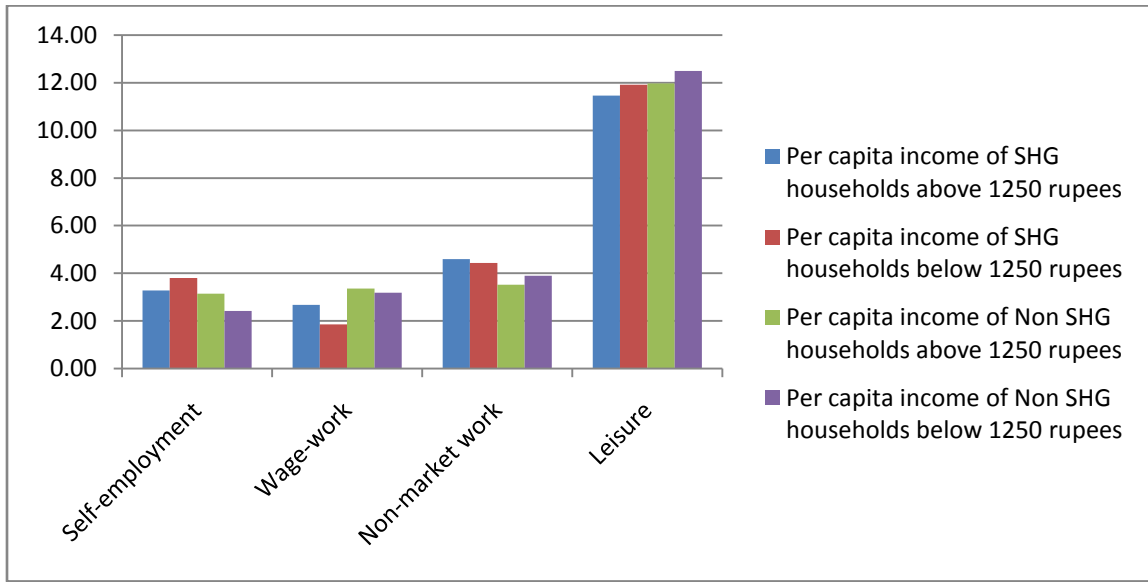
Income of the household is another crucial element in time use studies. Income of the family largely explains the time-use pattern of the household. Higher income suggests that the households enjoy higher standard of living and thus have more assets, own land, etc which allows them to spend time in self-employment. An individual from a higher income category would definitely prefer to be self-employed than work for wage. For the comparison between higher and lower income categories, per capita income has been calculated.

Both types of households (SHG and non-SHG) belonging to the higher income category should have been found to be more into self-employment than those from the low income category. But we do not find this to be true in our case. In figure 3.12, it has been found that SHG households spend more time in self-employment than wage work, irrespective of their level of income. SHG households belonging to the higher income category are found to spend 3.28 hours in self-employment and 2.68 hours in wage work. Exhibiting a similar trend, SHG households falling in the lower income category spend 3.80 hours in self-employment and 1.86 hours in wage work.

On the other hand, the trend seems to be in the reverse for non-SHG households. Available evidence shows that non-SHG households from the higher income group spend 3.15 hours in self-employment but 3.36 hours in wage work. When it comes to lower income group, non-SHG households spend only 2.42 hours in self-employment but a higher 3.19 hours in wage work. Thus, non-SHG households are more into wage work and less into self-employment irrespective of their level of income.



**Figure 3.12: Income of family and Time Use Pattern: SHG Vs Non-SHG households**



**Source:** Author's estimates

### 3.5 Conclusion

The prime objective of this chapter is to capture the impact of credit participation on women empowerment via changes in female time use. Using descriptive analysis, we made an attempt to capture the role of SHG participation of women in changes in time use pattern. As it is very much possible that the effect of credit program participation on time use is likely to vary with regard to various socio-economic characteristics of the households, besides examining the role of SHG participation in time use pattern, we also examine how these changes are influenced by the socio-economic parameters of the households. Our findings suggest that SHG households spend more time in self-employment as compared to non-SHG households, and also the former spend less time in leisure and more time in work as compared to their counterparts. The credit participation by women in the household resulted in increased work hours in self-employment by the SHG households while time spent on wage-work has shrunken. Perhaps SHG households

have utilized the lending to women by credit groups to invest in own assets, or own farm which explain the increase in their time in self-employment. An analysis across gender shows that men in SHG households spend more time in self-employment than men in non-SHG households. On the other hand, it is surprising to learn that SHG females are less self-employed and involved themselves more in wage work and non-market work than non-SHG females. These evidences, possibly indicates that credit participation has benefited male members in the households rather than the participating women. In other words, our descriptive analysis possibly points to the positive benefits of female credit participation to the men in the household, and fails to provide any improvement in the work status of women.

When we analyze these changes by socio-economic characteristics of the households, some interesting observations emerge. Our findings show that aged females are more into wage work and less involved in self-employment while men are more into self-employment irrespective of their age. In the case of females, education has a clear impact on the amount of time spent on self-employment irrespective of whether they are members of SHG or not. When it comes to male members, we find that even less educated SHG men spend more time in self-employment as compared to more educated non-SHG men. This strengthens our conjecture that SHG males are the real beneficiaries of their wives' joining SHGs as lending via SHGs help them to buy new assets and invest in their own farm, and thus manage to be self-employed. We also observe a clear difference between SHG and non-SHG households with respect to time use and family size. As expected, time spent in self-employment is higher than that in wage work for

SHG households in villages with better infrastructure. We also find that SHG households are more into self-employment than wage work, irrespective of their level of income.

Overall, our results point to noticeable differences in time use decisions between SHG and non-SHG households as we observe a perceptible shift in employment patterns of micro-credit households from low-paid daily labour to much remunerative self-employment. These results can be taken as only suggestive as we cannot ignore the role of various socio-economic characteristics in determining the magnitude of shift between these households. This is clearly evident in our analysis that the changes in time use between SHG and non-SHG households are also dictated by the differences in social and economic characteristics. In the presence of such influences, we are not sure whether credit participation really explains the observed shift in time use decisions of households or not. In other words, the non-credit features of women members that could be also driving the positive effect of micro-credit on women empowerment, and one needs to control for their influence, if we need to derive any inferences on the real effects of credit participation on the differences in time use decisions of SHG and non-SHG households. We attempt to address this concern in the next chapter by employing a number of econometric methods which would permit us to derive inferences on the significant role of credit participation by women on time use while controlling for the influence of other factors.

## CHAPTER 4

### MICRO-CREDIT AND WOMEN'S EMPOWERMENT

#### **4.1 Introduction**

The descriptive analysis carried out in Chapter 3 demonstrated that credit participation has resulted in SHG households spending more time in self-employment and less time in wage-work. It is also noticed that the women participation in microcredit has benefited the male members more than the female members. These results are only suggestive as it is very much possible that many non-credit features of women members could have bearing on the this observed relationship between credit participation and time use decisions of household members. Clearly, these results require further investigation. Taking cognizance of it, we carry out an econometric analysis to investigate the factors that drive the male and female time use decisions to see whether our findings are sustained in a multivariate framework. As our objective is to see how the time use decisions of males and females in the SHG households differ from males and females in the non-SHG households, we estimate time use regressions separately by gender, not between the genders of same households. We also employ a number of robustness tests to ensure that our core results are sensitive to endogeneity and other concerns.

This chapter is organized as follows. Next section compares the time allocation decisions of men and women from SHG households and non-SHG households. Section 4.3 presents a discussion on the methods and variables used in this Chapter. Section 4.4 presents summary statistics for the variables used in the analysis. The main results emerged from

out econometric analysis are presented in Section 4.5. Section 4.6 presents the concluding observations.

## 4.2 Credit Programme Participation and Time use by Gender

In this section, we compare the time allocation decisions of men and women from SHG households and non-SHG households. To do this, following Garikapati (2012), we classify the routine activities performed by the households into four categories: *Self-employment*, *Wage-work*, *Non-market work* and *Leisure*. Under *self-employment*, we include work related to household agriculture and non-agriculture assets. Daily wage work in both farm and non-farm sectors are considered under *Wage-work*. *Non-market work* includes routine household chores and management such as cooking, laundry, shopping, gardening, cleaning and caring for children, the ill and the elderly and household repairs. Time spent on sleeping, entertainment and cultural activities, socializing with friends and family and media activities are classified as *Leisure* activities. However, time spent on personal care and eating and drinking are not included under *Leisure*.

**Table 4.1: Male and Female Time Use (hours per day)**

Activity	Male, n=240	Female, n= 233	t-statistic
Self- employment	4.12 (4.18)	1.93 (1.91)	-7.13***
Wage- work	4.15 (4.15)	1.65 (3.25)	-7.17***
Non-market work	1.69 (1.23)	6.61 (1.66)	36.45***
Leisure	12.04 (1.29)	11.79 (1.74)	-1.75*

**Note:** (a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; (b) Standard deviations are given in the parentheses; (c) t -statistic compares mean values of variables for men and women in the sample; and (d) Total hours do not add up to 24 because time spent on routine tasks like personal care and eating are excluded.

**Source:** Author's estimates based on household primary survey.

We report in Table 4.1 the time spent on routine activities by men and women in our sample. The time use is computed and reported in average hours. A gendered pattern of time use, as evident across India, is clearly evident with women spending more than 6 hours on non-market work in comparison to men who spent less than 2 hours on the same type of work. This is in line with other findings in the literature (Newman, 2002; Garikapati, 2012). However, the amount of time spent on work is less than time spent on leisure for both men and women. It seems that men usually work outside the house for livelihood and women work in the house.

It is also evident from the time-use data that women spend less time in market work than men. Out of the total time spend in market -work, females on average spend only around 42 per cent of their total time on wage-work while men spend around 50 per cent of their total time. The males in our sample spend almost equal time in both self-employment and wage-work. As expected, women spend more time in self-employment (around 58 per cent) than men, who spend nearly 50 per cent of their market work time in self-employment.

We find evidence contradictory to the exiting argument that women mostly work for wages, and men mostly work on own assets (Garikipati, 2012). These findings reflect the fact that the gender-based division of market work usually seen for rural India is not reflected in the case of Udalguri district of Assam. This is evident even when we look at the aggregate picture based on the data available from the Census 2011. According to the Census 2011, 55.21 per cent of female workers in India have been classified as agricultural labourers compared to 18.56 per cent of male workers (Government of India,

2011). However, this trend of feminization of agricultural wage-workers is not strong in Assam. For instance, according to the census for Assam, in 2011, 20.89 per cent of female rural workers were agricultural labourers compared to 13.22 per cent of male workers.

It is widely argued in the existing studies that lending to women can challenge the gender work patterns evident in the data on time-use (Garikipati, 2012). Credit participation is identified as a very crucial instrument to uplift the status of women in the society. It is argued that women, when provided financial assistance, can utilize the same towards asset building and enjoy greater freedom in deciding how to spend the amount. Credit participation also helps women to improve the value of their market time and also enable them to bargain for a reduction in their domestic burdens (Garikipati, 2012). It will be interesting to investigate whether lending to women has resulted in such changes in time allocation of women. To do this, we carried out a comparison of time allocation by men and women from SHG households with that from non-SHG households in the Udalguri district of Assam. We report the male and female time allocation in various activities by credit programme participation of female spouse of the household in Table 4.2. The table shows that there is no significant difference in time-use variables for SHG and Non-SHG women. Barring non-market work, the t-statistic of comparing time-use by females in SHG and non-SHG households is insignificant for all activities. For men, however, the amount of time spent in self-employment, wage-work, non-market work and leisure differs significantly. Men with SHG wives spend more time in work as compared to men with non-SHG wives. For instance, on average, men in SHG households spent 11 hours in work (self-employment, wage-work and non-market work together) as compared to

men in non-SHG households. This implies that men with SHG wives spent more time in working and less time in leisure as compared to those from non-SHG households. Another important finding that emerge from the table is that men with SHG wives spend more time in Self-employment and less time in wage-work as compared to their counterparts in non-SHG households, whose time allocations are exactly the reverse.

**Table 4.2: Time Use by Gender and Credit Programme participation (hours per day)**

Activity	Male, n=240			Female, n=233		
	SHG n=120	Non-SHG n=120	t-statistic	SHG n= 111	Non-SHG n=112	t-statistic
Self-employment	4.94 (4.14)	3.29 (4.07)	-3.11**	1.82 (1.74)	2.04 (2.06)	0.84
Wage- work	3.48 (4.24)	4.83 (3.96)	2.55**	1.65 (3.21)	1.66 (3.29)	0.03
Non-market work	2.09 (1.47)	1.29 (0.73)	-5.34***	6.86 (1.65)	6.36 (1.64)	-2.26**
Leisure	11.49 (1.48)	12.59 (0.75)	7.25***	11.66 (1.90)	11.93 (1.55)	1.17

**Note:** (a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; (b) Standard deviations are given in the parentheses; (c) t -statistic compares mean values of variables for men and women in the sample; and (d) Total hours do not add up to 24 because time spent spend on routine tasks like personal care and eating are excluded.

**Source:** Author's estimates based on household primary survey.

We also perform a comparison of average time use of males and females in the SHG households before and after joining the SHG programme. Table 4.3 shows this comparison. With respect to 111 female and 120 male SHG household respondents, we do not find considerable differences in time use among men and women in the SHG households in the pre- and post-SHG periods. Though the t-statistic is found to be significant for average female time use in the case of self-employment, the time spent on self-employment do not suggest a significant shift towards self-employment by females in the SHG households. Though t-statistic is insignificant, a similar increase in average



time spent in self-employment can be found in the case of males as well in the post-SHG period. However, in comparison with female time use of 1 to 2 hours per day in self-employment, men spent, on average, 5 hours per day in self-employment. The time spent in wage work experienced a marginal decline for males and females in the post-SHG period, however the decline is found to be insignificant. In short, the comparison of average male and female time use in the pre- and post-SHG period does not suggest that credit programme participation of women have allowed them to shift their work time from wage-work to self-employment.

**Table 4.3: Time Use by Gender and SHG households Credit Programme participation (hours per day) during pre and post SHG period**

Activity	SHG Male, n= 240			SHG Female, n=222		
	Pre-SHG	Post-SHG	t statistics	Pre-SHG	Post-SHG	t statistics
Self-employment	4.47 (3.80)	4.94 (4.14)	0.93	1.09 (1.00)	1.83 (1.74)	3.88***
Wage-work	3.61 (4.39)	3.48 (4.24)	-0.24	1.71 (3.30)	1.65 (3.21)	-0.14
Non-market work	1.78 (1.33)	2.09 (1.47)	1.75*	7.16 (1.77)	6.86 (1.65)	-1.29
Leisure	12.15 (1.26)	11.49 (1.48)	-3.70***	12.04 (1.84)	11.66 (1.90)	-1.51

*Note:* (a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; (b) Standard deviations are given in the parentheses; (c) t -statistic compares mean values of variables for men and women in the sample; and (d) Total hours do not add up to 24 because time spent spend on routine tasks like personal care and eating are excluded.

**Source:** Author's estimates based on household primary survey.

Our results on time-use allocations presented in tables 4.1, 4.2 and 4.3 suggest the following:

- i) There is no gender based division of market work for women in Udalguri district of Assam. In general, women (both SHG and Non-SHG), are also mainly engaged in self-employment like their male counterparts.

- ii) Out of the total time spent in market work, women spend more time in Self-employment (58 per cent) than men (50 per cent).
- iii) Men with SHG-wives seem to spend more time in self-employment than those with non-SHG wives, which perhaps suggest that the credit received by the SHG women is being utilized by their husbands in business or other assets. It possibly indicates that credit participation fails to draw labour out of wage-work and non-market work into self-employment. On the contrary, the credit participation by wives perhaps helped the husbands to enhance the amount of time they spend in self-employment. The descriptive analysis is suggestive and therefore, demands a much deeper investigation. In what follows, we carry out an econometric analysis to investigate the factors that drive the male and female time use to see whether our conjectures are upheld in a multivariate framework.

#### **4.3 Determinants of Male and Female Time use: Empirical Strategy**

In this section, we explain the econometric analysis employed to locate the determinants of male and female time use in various activities. Our aim in this study is to examine whether the credit programme participation of women helped them to shift their work time from wage work to self-employment, which is considered as an activity that offer them better remuneration and social status as compared to wage-work. Following Garikipati (2012), we undertake the estimation separately by gender as the objective is to see how the time use decisions of males and females in the SHG households differ from males and females in the non-SHG households, not between the genders of same households.

### 4.3.1 The Model

We use econometric analysis to formally understand the determinants of male and female time use in various activities. Our basic model to estimate the determinants of respondents' time allocation takes the following form:

$$TU_{ij} = \beta_0 + \beta_1 DURATION_i + \sum_{k>1} \beta_k Z_i^L + \sum_{m>1} \beta_m Z_i^H + \sum_{r>1} \beta_r Z_i^V + \varepsilon_i \quad (4.1)$$

The dependent variable is TU, which stands for the amount of time that the respondent  $i$  allocates to activity  $j$ . We consider all the four activities explained before namely, Self-employment, wage work, non-market work and leisure. For each activity, we estimate a time use model. Altogether, four time use models are estimated separately for men and women. *DURATION* is our variable of interest capturing the effect of SHG participation on time allocation by individuals. In the case of female time use models, it stands for number of years elapsed since she joined the SHG. In the case of male time use models, it represents the length of his wife's membership. In time use models for women, we expect a positive coefficient of *DURATION* for self-employment and a negative coefficient for wage-work. Our expectation is that through credit program participation women are able to draw their labour out of wage-work and housework into self-employment, thereby empowering her status as decision-maker.

$Z_i^L$  is a vector of individual specific control variables that capture the characteristics of the individuals in the sample. We consider six control variables, namely, age of the respondent (Age) and its square term (Age squared), educational qualification of the respondent (Education), number of sons the respondent has (Nsons), number of daughters

the respondent has (N<sub>dau</sub>) and whether the respondent is head of the family (HoF).  $Z_i^H$  is a vector of household specific variables that capture the socio-economic characteristics of the households surveyed. Our household specific control variables are amount of cultivable land owned by husband in acres (L<sub>hus</sub>), any other female member (excluding female respondents) in the family has dominance over family decisions (Dominance), poverty status (Pov), cumulative index for assets (C<sub>Iassets</sub>), type of house (TypeHouse), caste of the respondent (Caste), loan from other sources (OthLoan) and number of dependents (dependency).  $Z_i^V$  is the vector of variables that control for the influence of village specific factors on our core results. We include two village specific control variables in our estimations, access to market (MktAccess) and cumulative index for infrastructure (CumInfra). In the case of control variables, we expect a positive coefficient for age and education for self-employment time use model for men and women and a negative coefficient for wage-work model for men and women. As age and education level increases, individuals tend to spend less time on stressful and low-skilled wage work and more time in self-employment. For C<sub>Iassets</sub> and TypeHouse, we anticipate a positive sign of the coefficient for self-employment model. Our conjecture is that higher the wealth of a household, lesser will be the time spent on physically demanding work and higher will be the time spent in self-employment. In the case of L<sub>hus</sub>, we expect a positive coefficient in self-employment model for men and a negative coefficient for wage-work model for men. Our expectation is that possessions of more cultivable land tend to reduce men's dependence on wage work and increase their time spent in self-employment. With regard to other variables, there are no explicit

expectations on the signs of the coefficients. The variables, their construction and expected signs are presented in Table 4.4.

**Table 4.4: Variables and their Construction**

<b>Variable</b>	<b>Description</b>	<b>Anticipated Sign of the coefficient</b>
<b><i>Dependent Variable</i></b>		
Time Use	Amount of time the respondent allocated to different activities (in hours)	
<b><i>Independent Variables</i></b>		
<b><i>Program Related Variable</i></b>		
DURATION	Number of years elapsed since the female respondent joined the SHG	For women: + for self-employment model - for wage work model
<b><i>Individual Characteristics</i></b>		
Age	Age of respondents' measured in years	Men and Women: + for self-employment model - for wage work model
Age squared	Square of Age	
Education	Number of years of schooling	Men and Women: + for self-employment model - for wage work model
Nsons	Number of sons the respondent has	No explicit expectation
Ndau	Number of daughters the respondent has	No explicit expectation
HoF	Whether the respondent is head of the family; Yes =1 and No = 0	No explicit expectation
<b><i>Family Characteristics</i></b>		
Lhus	Amount of cultivable land owned by husband in acres	Men: + for self-employment model - for wage work model
Dominance	whether any other female member (excluding female respondents) in the family has dominance over family decisions; Yes =1 and No = 0	No explicit expectation
Pov	Whether the respondent is BPL or APL; BPL = 1 and APL = 0	No explicit expectation
Clasets	Cumulative index for family assets; four assets are considered: Television, Cooking Gas, Washing Machine and Vehicles at home.	Men and Women: + for self-employment model

	Index is constructed by assigning equal weight to all the four assets. The value of the index ranges between 0 and 4; 0 for absence of family assets and 4 for presence of all four assets	
TypeHouse	Whether the house is Pucca or Kutcha? Pucca =1 and Kutcha = 0	Men and Women: + for self-employment model
Caste	Social background of the respondent	No explicit expectation
OthLoan	Whether the respondent obtained loan from sources other than SHG? Yes =1 and No = 0	No explicit expectation
Dependency	if households has children below aged 15 years which implies burden on income earner of the family	No explicit expectation
<b><i>Village Characteristics</i></b>		
MktAccess	the distance of market from the respondent's residence (in kilometers)	No explicit expectation
CumInfra	the infrastructure facilities within the village. Considered four infrastructural variables: electricity, school, drinking water facilities and toilet facilities. Equal weight is assigned to all the four infrastructural variables. The value of the index ranges between 0 and 4.	No explicit expectation

#### **4.3.2 Controlling for Endogeneity**

There are two main econometric issues associated with relating credit program participation to women empowerment using time use models: (a) issues that arise due to the measurement error associated with using primary survey data; and (b) endogeneity concerns associated with our program related variable. While examining the relationship between credit program participation and male and female time use, we assume that SHG program related variable (DURATION), is exogenous. However, due to the endogeneity

of decision to participate in the program and the presence of unobserved household characteristics, associating our program related variable, DURATION, to time allocation can give rise to an endogeneity problem. On the one side, the unobserved heterogeneity between SHG and non-SHG households that include unobserved behaviour and attributes of members of the family can influence our core results. Another pertinent issue is the pre-existing autonomy of women members in the family. There is every possibility that women with more autonomy within the family are more likely to join any credit program as compared to those with less autonomy. Further, it is also possible that women with more autonomy are expected to spend greater part of their time in activities that give them a better returns and higher reputation. In the presence of this endogeneity problem, we are likely to obtain biased estimates of credit program participation on time use.

#### **4.3.3 Similar social background as an instrument for duration**

To construct a valid instrument that is correlated with DURATION but not with the error term, we follow Garikpati (2012). The instrument that we use is based on the number of households within a neighborhood cluster that belonged to similar social background. This instrument is identified based on the existing official rules governing the formation of SHGs. The explicit policy directives from the NABARD, necessitates the formation of group that include members from comparable socio-economic background (NABARD, 2007). In the case of rural areas, this implies members who share cultural similarity in terms of caste grouping and coming from analogous wealth or income categories. The NABARD's directives to banks and NGOs involved in group formation, through its training material strictly encourages the implementation of these rules. Available evidence also points to the utmost importance attached to these rules during the formation

of credit groups (see Harper, 2002; Badatya et al. 2006; Garikpati, 2012). Our fieldwork data also corroborates this finding as we found that women belonging to a neighborhood have a higher likelihood of forming a group if they hail from comparable socio-cultural and economic background. For instance, in our sample, all SHGs were neighborhood groups indicating that women hailing from the same neighborhood collectively form the groups. Our survey data also shows that significant majority of the SHG members originate from the same sub-caste category. With these two evidences, we constructed our instrument for *DURATION*. We call this instrument *SubCaste*, and it takes the value one if the participant is from a sub-caste that had not less than 15 households in his/her neighborhood. This instrument meets the exclusion criteria as residing in a neighborhood with adequate number of within caste households does not influence the time use outcomes conditional on program participation, though the caste of the person may affect outcomes (See Garikpati (2012) for more details).

By employing a two-stage instrumental variable estimation model, we address the issue of endogeneity bias. We proceed as follows. In the first stage, we regress the variable *DURATION* on all independent variables that we identified as determinants of time use and the instrument, *SubCaste*.

$$\begin{aligned}
 DURATION_{ij} = & \beta_0 + \beta_1 SubCaste + \sum_{k>1} \beta_k Z_i^k \\
 & + \sum_{m>1} \beta_m Z_i^m + \sum_{r>1} \beta_r Z_i^r + \varepsilon_i \quad (4.2)
 \end{aligned}$$

We estimate equation (4.2) separately for male and female time use models, and obtain predicted values. In the second stage, we run equation (4.3) as shown below.



$$\begin{aligned}
TU_{ij} = & \beta_0 + \beta_1 DURATION_i^p + \sum_{k>1} \beta_k Z_i^k \\
& + \sum_{m>1} \beta_m Z_i^m + \sum_{r>1} \beta_r Z_i^r + \varepsilon_i
\end{aligned} \tag{4.3}$$

Where,  $DURATION_i^p$  is a predicted values of DURATION obtained from the first stage.

We use the predicted values of men in male time use models and women in female time use models. These equations are estimated using IVREGRESS command in STATA.

#### 4.3.4 Robustness Tests

We subject our core baseline regression results to a number of other robustness checks. First, we perform a similar estimation exercise by using the share of time a respondent allocates to a particular activity over total time as the dependent variable. We employ tobit and ivtobit to perform this exercise. Second, as we have data from respondents on various parameters before and after joining the credit group, we also employ a difference-in-difference in approach to see whether the results confirm the findings based on our core baseline regression results.

#### **Robustness Check: Share of Time Allocated as the Dependent Variable**

In this robustness test, we replace the number of hours spent on each activity with the share of time a respondent allocates to particular activity over total time as the dependent variable. As argued by Juster and Stafford (1991), by using the share in total time spent rather than total hours, we will be able to lessen time measurement errors and potential biases if these errors are specific to individuals and influence all reported hours of an individual in the same way. The specification is same as in equation (4.1) except for the

fact that now the dependent variable, TU, stands for share of time spent on each activity to total amount of time spent. We estimate the time use models for self-employment, wage-work and non-market work, separately for men and women. We first estimate this model using tobit. Tobit is argued to be most ideal in this context as some respondents in the dataset did not perform some of the activities, and there is likely to be high proportion of zero observations (see Schindler (2008) for a discussion on this). To address the endogeneity associated with credit program participation as discussed before, we also check for the robustness of our results using instrumental variables tobit (ivtobit).

### **Robustness Check: Difference-in-Difference Approach**

As we have information on most of the variables from the respondents prior to joining credit groups, we have also employed a difference-in-difference (DID) approach to check for the robustness of our results. This method captures the effect of credit participation by comparing pre- to post-intervention change in the outcome of interest for the treated group (in our case, SHG households) relative to a comparison group (non-SHG households). The crucial assumption in this context is what is known as the “Parallel Paths” assumption, which postulates that the average change in the comparison group epitomises the counterfactual change in the treatment group if there were no treatment. As we have data for pre- and post- SHG periods for SHG and non-SHG households, we will employ the DID method using this following generic form:

$$STU_{ij} = \beta_0 + \beta_1 SHG_i + \beta_2 POST_i + \beta_3 SHG_i * POST_i + \omega_i \quad (4.4)$$

Where,  $STU_{ij}$  stands for the share of time a respondent allocates to a particular activity. SHG is a binary variable that takes the value 1 for the respondent belonging to the SHG category and 0 if he/she from the non-SHG category. If  $\beta_1$  is greater than zero and statistically significant, we would conclude that there is a shift in time use towards that particular activity for SHG households as compared to non-SHG households.  $POST$  is a dummy for post-SHG period (1 = post-intervention time allocation). If  $\beta_2$  is greater than zero and statistically significant, this would imply that there is an increasing participation towards that particular activity in the post-SHG period vis-à-vis pre-SHG period. To capture the role of credit participation on time use, we introduce an interaction term  $SHG*POST$ , where we interact our  $SHG$  and  $POST$  variables. A positive and statistically significant  $\beta_3$  would imply that credit participation has led to increased time allocation for households in SHG category as compared to those from non-SHG category. We included in our basic model (4.4) all other exogenous variables as mentioned in equation (4.1) to control for their possible influences on our core findings.

#### **4.4 Descriptive Statistics**

The summary statistics for all the variables used in the empirical analysis by gender and credit programme participation for both SHG and the non-SHG groups are presented in Table 4.5. The variables selected are classified into those depicting the individual characteristics, household characteristics and village characteristics of the male and female members from the SHG and Non-SHG households. Most of the variables considered for our analysis do not differ much between SHG with Non-SHG households possibly suggesting the treatment and control group are comparable. Table 4.5 reveals that the mean age of SHG female is 37.3 years while that of Non-SHG female is 34.99

years. On the other hand, the mean age of SHG male is 43.21 years and that of Non-SHG male is 40.35 years. SHG females are the more educated among all four categories of individuals. Female as head of the household is higher among the non-SHG households in comparison with SHG households. Land ownership is higher among the SHG households as compared to non-SHG households. Poverty status is found to be similar among all four categories of households. Again, SHG households possess more assets around 1.35 on an average than non-SHG households. The dependency ratio is, on average, higher among the non-SHG households (1.10) than SHG households (about 0.70). SHG households are also found to be farther away from the market than non-SHG households. On an average, the market distance of SHG households is around 0.75 kilometer from their residence while that of non-SHG households is around 0.50 kilometer. Both SHG and non-SHG households score well in cumulative infrastructure Index (above 4), which shows that both types of household have similar sets of infrastructure quality.

**Table 4.5: Descriptive statistics of the Independent Variable Used in the Time-Use Models**

Variables	Male, n=240		Female, n=223	
	SHG, n=120	Non SHG, n=120	SHG, n=111	Non SHG, n=112
<b>Individual Characteristics</b>				
Age	43.21 (11.02)	40.35 (10.27)	37.30 (10.25)	34.99 (9.45)
Age squared	1495.12 (833.77)	1312.8 (-774.05)	1987.46 (1016.1)	1732.77 (969.3)
Edu	0.68 (0.61)	0.60 (0.51)	0.83 (0.66)	0.73 (0.61)
Nsons	1.14 (0.91)	0.96 (0.86)	1.13 (0.92)	1.01 (0.87)
Ndau	0.55	0.88	0.88	0.57

	(0.70)	(0.88)	(0.88)	(0.69)
HoF	0.04 (0.19)	0.11 (0.31)	0.04 (0.20)	0.10 (0.30)
<b>Family Characteristics</b>				
LHus	0.04 (0.20)	0.10 (0.30)	1.84 (2.58)	1.64 (3.05)
Dominance	0.14 (0.34)	0.12 (0.13)	0.13 (0.33)	0.12 (0.13)
Pov	0.51 (0.50)	0.52 (0.50)	0.52 (0.50)	0.53 (0.50)
Classets	1.38 (0.93)	1.00 (0.81)	1.34 (0.91)	1.00 (0.84)
TypeHouse	0.05 (0.21)	0.06 (0.24)	0.03 (0.18)	0.06 (0.24)
Caste	0.84 (0.37)	1.18 (0.74)	0.84 (0.37)	0.93 (0.25)
OthLoan	0.03 (0.16)	0.02 (0.13)	0.02 (0.13)	0.01 (0.09)
Dependency	0.69 (0.83)	1.08 (1.08)	0.72 (0.83)	1.12 (1.08)
<b>Village Characteristics</b>				
MktAccess	0.74 (0.81)	0.55 (0.73)	0.78 (0.82)	0.54 (0.74)
CumInfra	4.43 (0.94)	4.44 (0.93)	4.39 (0.93)	4.43 (0.96)

**Source:** Author's estimates based on household primary survey.

## 4.5 Results

### 4.5.1 Baseline Results

Tables 4.6(a) and 4.6(b) present the results of the time use regression estimates for female and male respondents respectively. Each column in the tables present the results for separate time use model that probes whether the credit program participation impacted the amount of time spent by the respondent for that particular activity. The coefficient of our variable of interest, *DURATION*, is statistically insignificant in all the time use models for women but found to be statistically significant in two out of four time use models for men: column (1) and column (3). The coefficient of *DURATION* has a

positive sign for self-employment (Column 1) and negative sign for non-market work (Column 3). Though insignificant, the coefficient of DURATION is also negative in the time use model for wage work. This result indicates that, controlling for the influence of other variables, men whose wives are SHG members allocate less time for non-market and wage work and more time in self-employment. In other words, it possibly suggests that, as a result of their wives SHG membership, husbands are now spending more time in self-employment rather than focusing on unpaid non-market work and physically demanding and socially debasing wage work. Our conjecture based on the finding is that in the aftermath of their wives joining SHGs, men have experienced substantial increase in returns from self-employment as compared to that of wage-work, which possibly would have influenced their decision to reallocate their work time from non-market work and wage-work to self-employment. Though we lack enough evidence to substantiate it, it could well be also indicating that more men would have taken up self-employment as a preferred option using the loan obtained through their wives' participation in credit groups, which does not necessarily reflect that they find the activity to be remunerative. In any case, the main finding emanating from the results of time use models is that lending to women affects the allocation of time on various activities by their husbands by allowing them to spend more time on better remunerated and socially respectable self-employment and less time in other works, paid or unpaid. On the other hand, the program failed to achieve its established objective of empowering women by helping them draw their labour out of conventional jobs into self-employment.

Barring a few exceptions, our control variables yield results on expected lines. Education has a positive effect on the amount time women spent on self-employment suggesting

that higher education levels enhance their ability to seek self-employment opportunities. On the other hand, the coefficient of education carries a negative sign for wage-work model for women indicating that better educated women may prefer better remunerative opportunities than wage-work. Having more sons and daughters have a negative effect on female time in self-employment indicating that bigger family size significantly reduces the time they can spend on self-employment. As expected, land ownership and assets have a positive coefficient for male and female time in self-employment and negative coefficient for male and female time in wage work. Given the socially demeaning nature of wage-work, members from households with better asset and land ownership are likely to spurn wage-work, and focus more on self-employment. In line with our expectations, residing in a remote village, far away from the main market, has a negative effect on female time on wage-work and positive effect on non-market work.

**Table 4.6(a): Determinants of Female Time Use: OLS Results**

Variables	Self-employment	Wage-work	Non-market work	Leisure
	(1)	(2)	(3)	(4)
<b>Program Related Variable</b>				
DURATION	-0.01 (0.04)	-0.74 (0.06)	0.04 (0.03)	0.05 (0.03)
<b>Individual Characteristics</b>				
Age	0.10 (0.08)	0.03 (0.13)	-0.14 (0.07)	0.01 (0.08)
Age squared	-0.001 (0.001)	0.0004 (0.002)	0.001 (0.001)	-0.0005 (0.001)
Edu	0.56** (0.03)	-0.12** (0.05)	0.01 (0.02)	0.05* (0.03)
Nsons	-0.36** (0.15)	0.03 (0.24)	0.25** (0.13)	0.08 (0.14)
Ndau	-0.37** (0.17)	0.49* (0.28)	-0.09 (0.14)	-0.03 (0.16)
HoF	0.60 (0.50)	-1.05 (0.83)	0.18 (0.43)	0.28 (0.48)

<b>Family Characteristics</b>				
LHus	0.15*** (0.04)	-0.09 (0.07)	-0.03 (0.04)	-0.03 (0.04)
Dominance	-0.30 (0.50)	2.10** (0.81)	-1.10** (0.42)	-0.71 (0.47)
Pov	0.18 (0.29)	-0.59 (0.47)	0.14 (0.24)	0.27 (0.27)
Classets	0.38** (0.15)	-0.43* (0.25)	0.28** (0.13)	-0.22 (0.14)
TypeHouse	0.32 (0.57)	0.09 (0.94)	-0.77 (0.49)	0.35 (0.55)
Caste	-0.35 (0.21)	1.10*** (0.35)	-0.75*** (0.18)	-0.01 (0.20)
OthLoan	2.35** (1.05)	1.09 (1.75)	-2.54*** (0.90)	-0.91 (1.01)
Dependency	0.21 (0.14)	-0.06 (0.22)	-0.08 (0.12)	-0.07 (0.13)
<b>Village Characteristics</b>				
MktAccess	0.20 (0.17)	-0.71** (0.28)	0.27* (0.14)	0.24 (0.16)
CumInfra	0.29* (0.17)	0.20 (0.28)	-0.12 (0.15)	-0.37** (0.16)
Constant	-1.61 (1.73)	-0.22 (2.85)	10.48*** (1.47)	13.36*** (1.65)
R-squared	0.24	0.28	0.27	0.16
No. of observations	223	223	223	223

*Note:* (a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

*Source:* Author's estimates based on household primary survey.

**Table 4.6(b): Determinants of Male Time Use: OLS Results**

<b>Variables</b>	<b>Self-employment</b>	<b>Wage-work</b>	<b>Non-market work</b>	<b>Leisure</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<b>Program Related Variable</b>				
DURATION	0.19** (0.07)	-0.10 (0.07)	-0.09* (0.02)	0.003 (0.02)
<b>Individual Characteristics</b>				
Age	-0.26 (-1.63)	0.18 (0.16)	-0.003 (0.05)	-0.001* (0.001)
Age squared	0.003 (0.16)	-0.002 (0.002)	0.0001 (0.001)	0.01 (0.02)



Edu	0.10 (0.06)	-0.11* (0.06)	-0.004 (0.02)	0.01 (0.02)
Nsons	0.29 (0.31)	-0.21 (0.31)	-0.03 (0.10)	-0.05 (0.10)
Ndau	-0.40 (0.34)	0.39 (0.34)	-0.13 (0.11)	0.14 (0.11)
HoF	-1.33 (1.03)	1.74* (1.03)	0.09 (0.33)	-0.50 (0.34)
<b>Family Characteristics</b>				
LHus	0.41*** (0.10)	-0.38*** (0.10)	-0.001 (0.03)	-0.02 (0.03)
Dominance	-1.16 (1.05)	1.32 (1.05)	0.37 (0.33)	-0.52 (0.35)
Pov	-0.86 (0.58)	0.73 (0.58)	-0.25 (0.19)	0.38** (0.20)
Classets	0.71** (0.32)	-0.70** (0.32)	0.19* (0.10)	-0.20* (0.11)
TypeHouse	0.74 (1.30)	-1.15 (1.30)	-0.13 (0.41)	0.54 (0.44)
Caste	1.48* (0.81)	-1.89** (0.81)	0.21 (0.26)	0.19 (0.27)
OthLoan	0.74 (1.30)	2.75 (1.81)	0.55 (0.58)	-0.96 (0.61)
Dependency	0.02 (0.28)	0.08 (0.28)	-0.20** (0.09)	0.10 (0.09)
<b>Village Characteristics</b>				
MktAccess	-0.06 (0.35)	0.09 (0.35)	0.16 (0.11)	-0.19 (0.12)
CumInfra	0.67* (0.36)	-0.62* (0.36)	0.03 (0.11)	-0.08 (0.12)
Constant	3.85 (4.24)	5.83 (4.24)	1.62 (1.34)	10.70*** (1.42)
R-squared	0.26	0.25	0.13	0.14
No. of observations	240	240	240	240

**Note:**(a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

**Source:** Author's estimates based on household primary survey.

#### 4.5.2 Endogeneity of Credit Program Participation: Instrumental Variable Regressions

The results of our IV estimations are presented in Table 4.7(a) and 4.7(b). Table 4.7(a) presents the time use regression estimates for female respondents and Table 4.7(b)

presents the estimates for male respondents. Though we ran different specifications using IV method, the Durbin–Hu–Hausman test indicates strong presence of endogeneity only in certain specifications (Model 3 among time use estimations for women and Models 3 and 4 among time use estimations for men). The various test statistics show that the IV procedure works well for our estimations.<sup>2</sup> We do not report R-squared statistics in both the tables since it has no natural interpretation in IV regressions (O’Brien and David, 2009). First, IV method though produces better estimates of the ceteris paribus effect of an endogenous variable on a dependent variable, overall goodness-of-fit of a model may very well decline when a variable is treated as endogenous (Wooldridge, 2003). Second, it is inappropriate to check if including an endogenous variable in the model incrementally improves overall model fit (O’Brien and David, 2009).

For IV estimations too, we follow the same order in the specifications that we test as in Tables 4.6(a) and 4.6(b). The IV two stage least squares estimates yield more or less similar results as the Ordinary least square estimates. We find that the coefficient of *DURATION* is statistically insignificant in all the time use models for women while statistically significant in two out of four time use models for men. The coefficient of *DURATION* is positive and significant for self-employment (Column 1) and negative and significant for wage work (Column 3) in time use models for men. Only difference of IV results with that of OLS results is that the coefficient is significant for wage work model while insignificant in time use model for non-market work. However, the coefficient for non-market work model in IV regression retains the same sign as that in OLS regression estimates. Our results are thus robust to concerns arising from endogeneity of credit

---

<sup>2</sup> The instrument passes the overidentification and weak identification tests, which are not reported in the tables.

program participation, and these results unequivocally highlight the impact of microcredit participation of women on significant increase in male hours in self-employment and a reduction in male hours in wage and non-market work. On the whole, our estimates from time use regressions suggest that women continue to spend most part of their time in wage and non-market work, and being part of credit groups fails to change this trend. The real beneficiaries of microcredit program are men, who are able to reallocate their work hours towards self-employment through their wives' participation in credit program. This indicates that women's loans eventually benefit men.

**Table 4.7(a): Determinants of Female Time Use: IV Results**

Variables	Self-employment	Wage-work	Non-market work	Leisure
	(1)	(2)	(3)	(4)
<b>Program Related Variable</b>				
DURATION	0.41 (0.45)	0.36 (0.65)	0.99 (0.76)	0.22 (0.36)
<b>Individual Characteristics</b>				
Age	-0.11 (0.24)	-0.18 (0.35)	0.36 (0.40)	-0.07 (0.19)
Age squared	0.001 (0.002)	0.003 (0.004)	-0.004 (0.004)	0.0003 (0.002)
Edu	0.04 (0.04)	-0.14** (0.06)	0.06 (0.07)	0.04 (0.03)
Nsons	-0.34* (0.18)	0.05 (0.26)	0.20 (0.31)	0.09 (0.14)
Ndau	-0.23 (0.26)	0.63* (0.37)	-0.43 (0.43)	0.02 (0.20)
HoF	1.40 (1.05)	-0.22 (1.52)	-1.77 (1.77)	0.60 (0.83)
<b>Family Characteristics</b>				
LHus	0.08 (0.09)	-0.16 (0.13)	0.14 (0.15)	-0.06 (0.07)
Dominance	-1.73 (1.66)	0.62 (2.39)	2.40 (2.78)	-1.29 (1.30)
Pov	-0.28 (0.60)	-1.06 (0.87)	1.24 (1.01)	0.08 (0.47)
Classets	0.21	-0.61	0.70	-0.29

	(0.26)	(0.38)	(0.44)	(0.21)
TypeHouse	0.42 (0.71)	0.20 (1.03)	-1.02 (1.20)	0.39 (0.56)
Caste	-0.11 (0.36)	1.35** (0.52)	-1.32** (0.61)	0.09 (0.29)
OthLoan	0.99 (1.96)	-0.32 (2.82)	0.78 (3.28)	-1.45 (1.54)
Dependency	0.52 (0.37)	0.26 (0.54)	-0.84 (0.63)	0.05 (0.29)
<b>Village Characteristics</b>				
MktAccess	-0.25 (0.53)	-1.17 (0.76)	1.37 (0.88)	0.05 (0.41)
CumInfra	0.82 (0.61)	0.74 (0.87)	-1.41 (1.01)	-0.16 (0.47)
Constant	-0.08 (2.70)	1.37 (3.88)	6.74 (4.51)	13.97 (2.11)
No. of observations	223	223	223	223
F	7.80	7.80	7.80	7.80
<b>Presence of Endogeneity (Durbin-Wu-Hausman test)</b>				
Chi2	1.42855 (0.2320)	0.566759 (0.4515)	11.7567 (0.0006)	0.25455 8 (0.6139)
F	1.31526 (0.2528)	0.519791 (0.4718)	11.3536 (0.0009)	0.23313 6 (0.6297)
<b>Coefficient value of Instrument</b>				
SubCaste	0.76 (0.54)	0.76 (0.54)	0.76 (0.54)	0.76 (0.54)
<b>Test for Validity of the Instrument</b>				
Eigen value statistics	2.00037	2.00037	2.00037	2.00037

*Note:*(a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

*Source:* Author's estimates based on household primary survey.

**Table 4.7(b): Determinants of Male Time Use: IV Results**

Variables	Self-employment	Wage-work	Non-market work	Leisure
	(1)	(2)	(3)	(4)
<b>Program Related Variable</b>				
DURATION	2.69** (1.18)	-2.36** (1.09)	-0.22 (0.16)	-0.11 (0.17)
<b>Individual Characteristics</b>				

Age	-1.29** (0.61)	1.12** (0.56)	0.05 (0.08)	0.12 (0.09)
Age squared	0.01** (0.005)	-0.01* (0.01)	-0.0004 (0.001)	-0.001 (0.001)
Edu	-0.07 (0.16)	0.05 (0.15)	0.005 (0.02)	0.02 (0.02)
Nsons	0.43 (0.73)	-0.35 (0.68)	-0.03 (0.10)	-0.06 (0.10)
Ndau	0.58 (0.92)	-0.50 (0.85)	-0.18 (0.13)	0.10 (0.13)
HoF	1.17 (2.70)	-0.53 (2.49)	-0.03 (0.37)	-0.61 (0.38)
<b>Family Characteristics</b>				
LHus	0.18 (0.25)	-0.18 (0.24)	0.01 (0.04)	-0.01 (0.04)
Dominance	-5.15* (3.11)	4.93* (2.87)	0.57 (0.43)	-0.35 (0.44)
Pov	-3.13* (1.74)	2.80* (1.61)	-0.13 (0.24)	0.48** (0.25)
Classets	-1.09 (1.12)	0.93 (1.04)	0.28* (0.15)	-0.12 (0.16)
TypeHouse	4.65 (3.59)	-4.69 (3.31)	-0.33 (0.49)	0.37 (0.51)
Caste	5.95** (2.84)	-5.93** (2.62)	-0.02 (0.39)	-0.002 (0.40)
OthLoan	-8.03 (5.05)	7.90* (4.66)	0.84 (0.69)	-0.71 (0.71)
Dependency	1.60 (0.99)	-1.35 (0.92)	-0.28 (0.14)	0.03 (0.14)
<b>Village Characteristics</b>				
MktAccess	-2.47* (1.40)	2.28* (1.30)	0.28 (0.19)	-0.09 (0.20)
CumInfra	3.44** (1.54)	-3.13 (1.43)	-0.11 (0.21)	-0.20 (0.22)
Constant	12.23 (10.79)	-1.76 (9.94)	1.19 (1.48)	10.33 (1.53)
No. of observations	240	240	240	240
F	8.09	8.09	8.09	8.09
<b>Presence of Endogeneity (Durbin-Wu-Hausman test)</b>				
Chi2	27.8437 (0.0000)	22.816 (0.0000)	0.714856 (0.3978)	0.48389 4 (0.4867)
F	29.0024 (0.0000)	23.2169 (0.0000)	0.660229 (0.4174)	0.44648 6 (0.5047)

<b>Coefficient value of Instrument</b>				
SubCaste	1.80 (0.80)	1.80 (0.80)	1.80 (0.80)	1.80 (0.80)
<b>Test for Validity of the Instrument</b>				
Eigen value statistics	5.06469	5.06469	5.06469	5.06469

*Note:*(a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

**Source:** Author's estimates based on household primary survey.

### 4.5.3 Robustness Tests

We carry out a number of additional robustness checks in order to evaluate the sensitivity of the empirical results reported in Tables 4.6(a) and 4.6(b).

#### **Tobit and IVtobit using time shares as the dependent variable**

We replace the dependent variable in equation (4.1) with share of time allocated to each activity over total time, and estimate the specification using Tobit model. Results are reported in Tables 4.8(a) and 4.8(b). Table 4.8(a) and 4.8(b) report the results of time use models for self-employment, wage work and non-market work for women and men respectively. Our coefficients of interest retain the same sign and significance in the tobit regression estimates too thereby indicating that our core findings are insensitive to alternate specifications and methods. The coefficient of DURATION is insignificant in all time use models for women (Table 4.8(a)) and significant in two out of three time use models estimated for men (Table 4.8(b)). The coefficient is positive and significant in self-employment model and negative and significant in non-market work model for men. Barring some exceptions, other control variables have also maintained the same sign and significance as the results of our baseline econometric specification.

To overcome the possible endogeneity bias associated with the variable capturing the credit program participation, we also estimate the same specification using instrumental variable tobit model (ivtobit) wherein we use *SubCaste* as an instrument for *DURATION*. We follow the same order in the specifications that we test as in tobit. Results are presented in Tables 4.8(c) and 4.8(d). The results are in line with our expectations and the sign of the coefficients and their statistical significance is consistent with our baseline regression results. These results present clear evidence that the credit participation of women has helped men to consolidate the time they spent on self-employment.

**Table 4.8(a): Determinants of Female Time Use: Tobit Regression Results**

Variables	Share of Self-employment	Share of Wage-work	Share of Non-market work
	(1)	(2)	(3)
<b>Program Related Variable</b>			
DURATION	0.0002 (0.004)	-0.03 (0.03)	0.01* (0.004)
<b>Individual Characteristics</b>			
Age	0.01 (0.01)	0.01 (0.04)	-0.01 (0.01)
Age squared	-0.0001 (0.0001)	0.0001 (0.001)	0.0001 (0.0001)
Edu	0.01** (0.01)	-0.05*** (0.02)	0.005 (0.003)
Nsons	-0.03** (0.15)	-0.02 (0.08)	0.03** (0.02)
Ndau	-0.04** (0.02)	0.18*** (0.09)	-0.01 (0.02)
HoF	0.07 (0.05)	-0.52 (0.37)	0.03 (0.05)
<b>Family Characteristics</b>			
LHus	0.01*** (0.004)	-0.03 (0.02)	-0.004 (0.005)
Dominance	-0.07 (0.05)	0.57** (0.28)	-0.13*** (0.05)
Pov	0.03 (0.03)	-0.17 (0.17)	0.02 (0.03)
Classets	0.03**	-0.15	0.01

	(0.01)	(0.10)	(0.02)
TypeHouse	0.04 (0.06)	0.08 (0.35)	-0.04 (0.06)
Caste	-0.05** (0.02)	0.25*** (0.09)	-0.06*** (0.02)
OthLoan	0.21** (0.11)	0.26 (0.59)	-0.28** (0.11)
Dependency	0.02 (0.01)	-0.01 (0.08)	-0.01 (0.01)
<b>Village Characteristics</b>			
MktAccess	0.03* (0.02)	-0.39*** (0.14)	0.04** (0.02)
CumInfra	0.02 (0.02)	0.05 (0.09)	-0.03* (0.02)
Constant	-0.09 (0.17)	-0.83 (1.02)	1.10*** (0.18)
No. of observations	223	223	223
LR Chi2	62.11	72..24	67.04
Log Likelihood	23.89197	-194.0266	69.167996
Pseudo R2	4.3349	0.1569	-0.9402

*Note:*(a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

**Source:** Author's estimates based on household primary survey.

**Table 4.8(b): Determinants of Male Time Use: Tobit Regression Results**

Variables	Share of Self-employment	Share of Wage-work	Share of Non-market work
	(1)	(2)	(3)
<b>Program Related Variable</b>			
DURATION	0.04*** (0.01)	-0.02 (0.01)	-0.01*** (0.002)
<b>Individual Characteristics</b>			
Age	-0.04 (0.03)	0.03 (0.03)	0.001 (0.005)
Age squared	0.0004 (0.0003)	-0.0003 (0.0003)	-8.04 (0.00005)
Edu	0.02 (0.01)	-0.02** (0.01)	0.0001 (0.002)
Nsons	0.05 (0.06)	-0.04 (0.06)	-0.01 (0.01)
Ndau	-0.09	0.09	-0.01



	(0.07)	(0.06)	(0.01)
HoF	-0.52** (0.24)	0.21 (0.18)	0.01 (0.03)
<b>Family Characteristics</b>			
LHus	0.07*** (0.02)	-0.11*** (0.02)	-0.001 (0.003)
Dominance	-0.23 (0.20)	0.39** (0.19)	0.03 (0.02)
Pov	-0.17 (0.11)	0.17 (0.11)	-0.03** (0.02)
Classets	0.12** (0.06)	-0.18*** (0.07)	0.01 (0.01)
TypeHouse	0.22 (0.23)	-0.52 (0.32)	0.002 (0.04)
Caste	0.30* (0.16)	-0.37** (0.14)	0.01 (0.02)
OthLoan	-0.48 (0.35)	0.56* (0.33)	0.02 (0.05)
Dependency	0.005 (0.05)	0.02 (0.06)	-0.02** (0.01)
<b>Village Characteristics</b>			
MktAccess	-0.04 (0.07)	0.03 (0.06)	0.003 (0.01)
CumInfra	0.12* (0.07)	-0.16** (0.07)	-0.01 (0.01)
Constant	0.09 (0.79)	0.92 (0.80)	0.18 (0.12)
No. of observations	240	240	240
LR Chi2	34.63	85.25	34.63
Log Likelihood	143.02375	-187.7772	143.02375
Pseudo R2	-0.1377	0.1850	-0.1377

*Note:*(a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

**Source:** Author's estimates based on household primary survey.

**Table 4.8(c): Determinants of Female Time Use: IVtobit Regression Results**

Variables	Share of Self-employment	Share of Wage-work	Share of Non-market work
	(1)	(2)	(3)
<b>Program Related Variable</b>			
DURATION	0.03	0.32	-0.06

	(0.04)	(0.91)	(0.06)
<b>Individual Characteristics</b>			
Age	-0.01 (0.02)	-0.16 (0.18)	0.02 (0.03)
Age squared	0.00003 (0.0002)	0.002 (0.002)	-0.0002 (0.0003)
Edu	0.005 (0.004)	-0.07** (0.03)	0.01 (0.01)
Nsons	-0.03* (0.02)	-0.02 (0.13)	0.03 (0.02)
Ndau	-0.03 (0.02)	0.29 (0.19)	-0.03 (0.03)
HoF	0.14 (0.10)	0.19 (0.84)	-0.09 (0.14)
<b>Family Characteristics</b>			
LHus	0.01 (0.01)	-0.09 (0.07)	0.01 (0.01)
Dominance	-0.18 (0.16)	-0.63 (1.25)	0.08 (0.21)
Pov	-0.004 (0.06)	-0.55 (0.46)	0.09 (0.08)
Classets	0.02 (0.03)	-0.30 (0.21)	0.03 (0.03)
TypeHouse	0.04 (0.07)	0.22 (0.53)	-0.05 (0.09)
Caste	-0.04 (0.04)	0.48* (0.28)	-0.10** (0.05)
OthLoan	0.10 (0.19)	-0.87 (1.45)	-0.08 (0.25)
Dependency	0.04 (0.04)	0.26 (0.29)	-0.06 (0.05)
<b>Village Characteristics</b>			
MktAccess	-0.01 (0.06)	-0.76* (0.42)	0.11 (0.08)
CumInfra	0.06 (0.06)	0.49 (0.46)	-0.11 (0.08)
Constant	0.03 (0.26)	0.42 (1.98)	0.87** (0.34)
No. of observations	223	223	223
F	7.80	7.80	7.80
<b>Wald test of exogeneity</b>			
Chi2	0.83	2.14	2.79
<b>Coefficient value of Instrument</b>			

SubCaste	0.76(0.54)	0.76(0.54)	0.76(0.54)
Wald Chi2	47.97	23.61	32.68

*Note:*(a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

*Source:* Author's estimates based on household primary survey.

**Table 4.8(d): Determinants of Male Time Use: IVtobit Regression Results**

Variables	Share of Self-employment	Share of Wage-work	Share of Non-market work
	(1)	(2)	(3)
<b>Program Related Variable</b>			
DURATION	0.78** (0.36)	-0.37** (0.18)	-0.02 (0.02)
<b>Individual Characteristics</b>			
Age	-0.34* (0.18)	0.17* (0.09)	0.01 (0.01)
Age squared	0.003* (0.002)	-0.002* (0.001)	-0.0001 (0.0001)
Edu	-0.04 (0.05)	0.001 (0.03)	0.001 (0.002)
Nsons	0.08 (0.21)	-0.07 (0.11)	-0.01 (0.01)
Ndau	0.18 (0.27)	-0.05 (0.14)	-0.02 (0.01)
HoF	-0.25 (0.82)	-0.19 (0.41)	-0.01 (0.04)
<b>Family Characteristics</b>			
LHus	0.01 (0.07)	-0.07* (0.04)	0.001 (0.003)
Dominance	-1.37 (0.92)	0.94** (0.48)	0.05 (0.04)
Pov	-0.88* (0.52)	0.48* (0.27)	-0.02 (0.02)
Classets	-0.41 (0.34)	0.07 (0.17)	0.03* (0.02)
TypeHouse	1.41 (1.06)	-0.10* (0.58)	-0.02 (0.05)
Caste	1.65** (0.86)	-0.94** (0.43)	-0.02 (0.04)
OthLoan	-2.16 (1.50)	1.34* (0.77)	0.06 (0.07)
Dependency	0.47 (0.30)	-0.21 (0.15)	-0.03** (0.01)

<b>Village Characteristics</b>			
MktAccess	0.94* (0.47)	0.37* (0.21)	0.02 (0.02)
CumInfra	0.94** (0.47)	-0.54** (0.24)	-0.02 (0.02)
Constant	2.45 (3.14)	-0.29 (1.66)	0.12 (0.15)
No. of observations	240	240	240
F	8.09	8.09	8.09
<b>Wald test of exogeneity</b>			
Chi2	24.78	16.31	1.26
<b>Coefficient value of Instrument</b>			
SubCaste	1.80** (0.80)	1.80** (0.80)	1.80** (0.80)
Wald Chi2	10.83	29.33	17.89

*Note:*(a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

**Source:** Author's estimates based on household primary survey.

#### **4.5.4 Robustness Test: Difference-in-Difference Approach**

As a final robustness check, we estimate equation (4.4) using difference-in-difference approach. The results obtained using OLS and Tobit models are presented in Table 4.9. OLS estimation is carried out using number of hours as the dependent variable and tobit estimation using time share as the dependent variable. We observe a positive coefficient of SHG variable in self-employment and a negative coefficient in wage-work models for men. This implies that SHG males spend more time in self-employment and less time in wage-work than non-SHG males. The shift from wage work to self-employment is evident in the case of males whose wives are SHG members. However, the same is not observed in the case of females. On the contrary, our results point to the shift in female work hours towards wage-work from self-employment, as reflected by the negative coefficient of SHG for self-employment and positive coefficient for wage-work. However, there is no evidence to suggest that such a shift has happened during the post-

SHG period as the coefficient of *SHG\*POST* is insignificant for both gender and both models estimated. One needs to exercise caution while relying on this result using this method as the information obtained for some of the variables may be biased as the recall period dates back to the period prior to the formation of SHGs.

**Table 4.9: Determinants of Male and Female Time Use: DID Estimations**

Variables	DID(OLS): Female Time Use Models			DID(OLS): Male Time Use Models		
	Share of hrs in Self-employment	Share of hrs in Wage-work	Share of hrs in Non-market work	Share of hrs in Self-employment	Share of hrs in Wage-work	Share of hrs in Non-market work
SHG	-0.09*** (0.02)	0.09*** (0.03)	-0.0001 (0.03)	0.09* (0.05)	-0.16*** (0.05)	0.07*** (0.01)
POST	0.02 (0.01)	0.01 (0.03)	-0.03 (0.03)	-0.004 (0.05)	-0.02 (0.05)	0.02* (0.01)
POST*SHG	0.04 (0.03)	-0.03 (-0.04)	-0.01 (0.04)	0.02 (0.07)	-0.01 (0.07)	-0.01 (0.12)
DID(tobit): Female Time Use Models			DID(tobit): Male Time Use Models			
SHG	-0.11*** (0.02)	0.38** (0.15)	-0.0001 (0.03)	0.24** (0.10)	-0.18* (0.10)	0.07*** (0.01)
POST	0.02 (0.02)	0.01 (0.13)	-0.03 (0.03)	-0.005 (0.10)	-0.02 (0.09)	0.02 (0.01)
POST*SHG	0.05 (0.03)	-0.10 (0.19)	-0.01 (0.04)	0.03 (0.13)	-0.02 (0.13)	-0.01 (0.02)

*Note:*(a) \*\*\*, \*\* and \* indicates significance at 1%, 5% and 10% levels respectively; and (b) Standard errors are given in the parentheses

*Source:* Author's estimates based on household primary survey.

## 4.6 Conclusion

In this chapter, we have investigated the role of credit program participation on male and female time allocation decisions so as to draw inferences on the relationship between credit and women empowerment. We carefully observed whether the credit programme participation of women helped them to shift their work time from wage work to self-employment, an activity that offer them better remuneration and social status as

compared to wage-work. To investigate this, we have collected time use data from men and women belonging to poor households in rural Assam. Our econometric exercise yields unambiguously that credit participation had little effect of time use decision of women as it fails to draw their labour out of wage-work and housework into self-employment. In contrast, lending to women impacted the allocation of time on various activities by their husbands by allowing them to spend more time on better remunerated and socially respectable self-employment and less time in other works, paid or unpaid. Our results are robust to concerns arising from endogeneity of credit program participation and also to alternate methods and specifications. In essence, our estimates from time use regressions do not provide any evidence to support the link between micro credit and women empowerment as women continue to spend most part of their time in wage and non-market work, and being part of credit groups fails to change this trend. There is clear evidence that suggest that the real beneficiaries of microcredit program are men, who are able to reallocate their work hours toward self-employment through their wives' participation in credit program. This indicates that though the microcredit program is targeted to women, the real gainers are men.

## CHAPTER 5

### SUMMARY, CONCLUSIONS AND POLICY SUGGESTIONS

In this chapter, the forgoing discussion is summarized and the major conclusions are highlighted. Additionally, the possible policy inferences that can be drawn from the study, the limitations and directions for research are also indicated. Since the launch of microcredit programme in 1992 with the twin objectives of poverty reduction and women empowerment, a large number of studies have attempted to examine the role of microcredit on women empowerment. There is also lack of consensus on whether to look at the processes or outcomes while measuring women empowerment. Majority of these studies have relied on livelihood indicators to capture the extent of women empowerment following women participation in microcredit programme. However, these studies are silent on the impact that lending to women is likely to have on male time use. In this study, an attempt is made to examine the effect of micro-credit on women empowerment using time-use data that capture male and female time allocation decisions. The main purpose was to study how both male and female members react to credit intervention and hence how they are impacted upon. To be specific, we compared the time allocation outcomes for men and women belonging to SHG households with outcomes for men and women belonging to the control group. The study also compared the time allocation decision of men and women in SHG households, before and after joining the SHG.

The study is based on data from both secondary and primary sources. The secondary data are obtained largely from the National Sample Survey Office (NSSO), Census of India, Statistical Profile on Women Labour 2009-2011, 2012-2013, Economic Survey of

Assam, 2014-2015 and Indiastat. Data from these sources are largely used to understand the determinants of female labour force participation in Assam. In addition, the primary data are collected from selected villages of Udalguri district of Assam to examine the impact of microcredit on male and female time use.

The empirical analysis is based on growth rates, percentages and shares represented through tables and charts. Correlation exercise is performed to understand the relationship between the determinants of female labour force participation in Assam. A multiple regression model is fit to the data to assess the determinants of female labour force participation in Assam. Further, a linear-in-the-variables equation is employed to estimate the factors that determine the time allocation decisions of men and women. An instrumental variable regression model is also employed to correct for the possible bias in our core results due to the endogeneity of credit program participation by women. We also employed a series of additional robustness checks to ensure that our results are not sensitive to alternate methods and specifications. These additional robustness checks include tobit, instrumental variable tobit regression model and difference-in-difference method.

## **5.1 Summary of the Findings**

In **Chapter 2**, an attempt is made to analyze the level and nature of female labour force participation and sectoral shifts in Assam since the advent of economic reforms in India. The female work participation in Assam is found to be marginally above 20 per cent, and the state fared the worst among the north-eastern states of India in female workforce participation rate. One of the reasons highlighted for such low female work participation rate is socio-cultural and economic factors that shares less resemblance to the other



North-eastern states of India but more with other major states in India. The relative share of female workers in total work participation has been also found to be less possibly due to the various social and cultural norms prevalent in the society. Despite the low participation females in workforce, results also point to the drastic fall of females in the ‘cultivators’ category in Assam, which was compensated by the considerable increase in the share of females in other workers category. Our analysis thus points to the shift in female participation in works related to agricultural sector to jobs emanating from the non-agricultural sector. We also observed a decline in female workforce participation in most of the districts of Assam. The Darrang (Udalguri) district, alone, has accounted for almost 10 percent points decline in FWPR during the period under study. Our multivariate analysis indicate that male workforce participation rate, total rice yield and mean age of marriage are significant predictors of female participation in workforce.

The prime objective of **Chapter 3** was to capture the impact of credit participation on women empowerment via changes in female time use. Using descriptive analytical tools, we captured the role of SHG participation of women in influencing their time use pattern. Our findings suggest that SHG households spend more time in self-employment as compared to non-SHG households, and the former also spend less time in leisure and more time in work as compared to their counterparts. The credit participation by women in the household resulted in increased work hours in self-employment by the SHG households while time spent on wage-work has shrunken. An analysis across gender shows that men in SHG households spend more time in self-employment than men in non-SHG households. On the other hand, we also observe that SHG females are less self-employed and involve themselves more in wage work and non-market work than non-

SHG females. These evidences possibly indicate that credit participation has benefited male members in the households rather than the participating women. Overall, our results point to noticeable differences in time use decisions between SHG and non-SHG households as we observe a perceptible shift in employment patterns of micro-credit households from low-paid daily labour to much remunerative self-employment.

Our analysis of changes in time use by socio-economic characteristics of the households clearly suggest that changes in time use between SHG and non-SHG households are also dictated by the differences in social and economic characteristics. To derive any inferences on the real effects of credit participation on the differences in time use decisions of SHG and non-SHG households, one needs to control for the influence of these non-credit features of women members, which we addressed in **Chapter 4** by employing a number of econometric methods. Our econometric exercise carried out in Chapter 4 clearly suggest that credit participation had little effect of time use decision of women as it fails to draw their labour out of wage-work and housework into self-employment. In contrast, lending to women impacted the allocation of time on various activities by their husbands by allowing them to spend more time on better remunerated and socially respectable self-employment and less time in other works, paid or unpaid. Our results are robust to concerns arising from endogeneity of credit program participation and also to alternate methods and specifications. In essence, our estimates from time use regressions do not provide any evidence to support the link between micro credit and women empowerment as women continue to spend most part of their time in wage and non-market work, and being part of a credit group fails to change this trend. There is thus clear evidence to suggest that the real beneficiaries of microcredit program

are men, who are able to reallocate their work hours toward self-employment through their wives' participation in credit program. This indicates that though the microcredit program is targeted to women, the real beneficiaries are men.

## **5.2 Policy Suggestions**

The inferences drawn from the present study as well as the evidence in available literature are used to make the following policy recommendations.

- (1) As we find that microcredit programme participation of women have hardly affected their time use pattern, there is a need to design methods that could help target loan usage rather than disbursement of loan (also pointed out by Garikipati, 2012). A plausible strategy would be to ensure women exercising control over decisions about their loans and about the ownership of loan created assets. This can be made possible through providers who convince households to accede to greater female control over assets that are created through microcredit lending (Garikipati, 2012). Such a move will give them more freedom to access such assets for work and improve their bargaining position within the family in the long run.
- (2) The non-credit features of women members may exert a positive effect on women empowerment. The study by Mckernan (2002) shows that the effect of microcredit on women empowerment is strong among members who have undergone some vocational training and other types of training. Thus, the provision of such trainings to all the SHG female members would result in better outcome in terms of women empowerment. Our field level evidences also suggest that women should be given

- adequate technical training that concentrates on enhancing the efficiency of their labour so as to administer and utilize the loan appropriately.
- (3) Education is clearly found to have a positive effect on women's self-employment. Therefore, government should lay more emphasis on education of women.
- (4) Another possible option is to include SHG women in value and supply chains to promote markets for services used by women.

### **5.3 Limitation and scope for further research**

As there are limited studies on the role of microcredit on women empowerment, the findings of this study can be considered as initial insights towards comprehending the role of microcredit on time use decisions of SHG households as well as on women empowerment. However, an important aspect that can be included in such studies is the returns to assets, especially enterprises, created through lending to women. Such an analysis will let us examine the differences in returns from male and female businesses and in the case of lower returns to females as compared to males would suggest a relook into the compulsive targeting of women members.

One possible avenue for future research that emerged from our study is to examine those female SHGs belonging to Non-BPL households and their time use. Since we have already found that SHG female from poor households did not experience any shift in time allocation from wage-work to self-employment, it would be interesting to see if the females from Non-BPL category also experienced similar time-use pattern.

Another scope for future research would be to collect information on the amount of loan received by the females through credit participation. The amount of loan is a very crucial

factor in determining the use of loan. It is possible that the amount of loan is too meagre to involve herself in self employment by starting a business of her own, or investing in productive assets and own farm. Instead, the amount may be used in the day-to-day activities like buying groceries, or to pay electricity bills. Therefore, information on the amount of loan may prove to be vital in determining the shift of females towards self employment.

Since this study is based on a small sample from only a few selected villages in the Udalguri district of Assam, the findings cannot be generalized to other districts of the state. More extensive studies that include a larger sample size from different districts could shed more light on the role of microcredit to women empowerment.

## REFERENCES

- Albee, A. (1996). Beyond “banking for the poor”: Credit Mechanisms and Women’s empowerment, 4(3), 45-53.
- Anand, S. J. (2002). Self-Help Groups in Empowering Women: Case study of selected SHGs and NHGs, Kerala Research Programme on Local Level Development, Centre for Development Studies, Discussion Paper, No. 38.
- Assam Human Development Report –2003, Dispur, Guwahati: Planning and Development Department, Government of Assam.
- Badatya K.C., Wadavi, B. B., & Ananthi S. (2006). Microfinance for Microenterprises An Impact Evaluation Study of Self Help Groups, *Evaluation Study Series*, 13, NABARD.
- Becker, G. S. (1965). A Theory of Allocation of Time, *Economic Journal*, 75(299), 493-517.
- Bhattacharya, P., & Battacharya, P. (2016). Economic Empowerment of Rural Women Through Self Help Groups : A Case Study Of Fallangani Gaon Panchayat under Golaghat District of Assam, *A Peer Reviewed Multidisciplinary Indexed E-Journal*, 3(2), March-April.
- Mahanta B. (2008). Women Empowerment in Assam, A Human Development Approach, Working Paper, department of Economics, North Eastern Hill University, Shillong,
- Census of India 2001, Assam State, New Delhi: Directorate of Census of India, Government of India.

Census of India 2011, Assam State, New Delhi: Directorate of Census of India, Government of India.

DeMel, S., McKenzie, D., & Woodruff, C. (2009). Are Women More Credit Constrained? Experimental Evidence on Gender and Microenterprise Returns, *American Economic Journal: Applied Economics*, 1(3), 1-32.

Duflo, E. (2012). Women Empowerment and Economic Development, *Journal of Economic Literature*, 50(4), 1051-1079.

Fernando, J. (1997). Non-governmental Organizations, Micro-Credit, and Empowerment of Women. *The Annals of the American Academy of Political and Social Science*, 554, 150-177. Retrieved from <http://www.jstor.org/stable/1049572>

Galab, S., & Chandrasekhara, R. N. (2015). Women's Self – Help Groups, Poverty Alleviation and Empowerment, *Economic and Political Weekly*, 38 (12/13), 1274-1283.

Garikipati, S. (2008). The Impact of Lending to Women on Household Vulnerability and Women's Empowerment Evidence from India, *World Development*, 36(12), 2620-2642.

Garikipati, S. (2012). Microcredit and Women's Empowerment: Through the Lens of Time-Use Data from Rural India, *Development and Change*, 43(3), 719-750.

Goetz, A. & Gupta. S. R. (1996). Who takes the credit? Gender, Power and Control over Loan Use in Rural Credit Programs in Bangladesh, *World Development*, 24(1), 45-63.

Government of India, NSSO, *Employment and Unemployment Situation in India 2004-05*, NSS-61th Rd.

Government of India, NSSO, *Employment and Unemployment Situation in India 2009-10*, NSS-66th Rd.

Gronau, R. (1973). The Intra-family Allocation of Time: The Value of Housewives' Time, *American Economic Review*, 63 (4), 634-51.

Guha, S. & Gupta, G. (2005). Microcredit for Income Generation: The Role of Rosca, *Economic and Political Weekly*, 40(14), 1470-1473.

Harper, M. (2002). Self-Help Groups and Grameen Bank Groups: What are the Differences? In Fisher, Thomas and Sriram MS: *Beyond Micro-credit – Putting Development Back into Micro-Finance* New Delhi: Vistaar.

Hashemi, S. M., & Schuler, S. R., & Riley, A. P. (1996). Rural Credit Programs and Women's Empowerment in Bangladesh, *World Development*, 24 (4), 635-653.

Hulme, D. & Arun, T. (2011). What's wrong and Right with Microfinance, *Economic and political Weekly*, XLVI (48), 23-26.

Human Development Report 1995: Gender and Human Development Technical Report. UNDP, New York.

Human Development Report 2015: Work for Human Development.

Hume, D. & Arun, T. (2011). What's wrong and rights with the microfinance -missing an angle on responsible finance? BWPI working paper 155.



- Hunt, J. & Kasynathan, N. (2001). Pathways to Empowerment? Reflections on Microcredit and Transformation in Gender Relations in South Asia, *Gender and Development*, 9(1), 42-52.
- Islam, M. & Sarmah, J. K. (2014). Impact of Self Help Groups in Empowering Women: A Study of Rural Assam, *Social Change and Development*, XI (2), 90-98.
- Juster, F. & Stafford, F. (1991). The Allocation of Time: Empirical Findings, Behavioural Models, and Problems of Measurement, *Journal of Economic Literature*, 29(2), 471-522.
- Kabeer, N. (2001). "Reflections on the measurement of women's empowerment" In *Discussing Women's Empowerment-Theory and Practice*, Sida Studies No.3. Novum Grafiska AB: Stockholm.
- Kabeer, N. (2005). Gender Equality and Women's Empowerment: A Critical Analysis of the Third Millennium Development Goal, *Gender and Development*, 13(1), 13-24.
- Kalpana, K. (2005). Shifting Trajectories in Microfinance Discourse, *Economic and political Weekly*, 5400-5409.
- Kempen, V. L. (2009). The 'Downside' of Women Empowerment in India: An Experimental Inquiry into the Role of Expectations, *Social Indicators Research*, 94(3), 465-482.
- Khandker, S. R. (1988). Determinants of Women's Time Allocation in Rural Bangladesh, *Economic Development and Cultural Change*, 37(1), 111-126.
- Kishor, S. & Gupta, K. (2004). Women's Empowerment in India and Its States: Evidence from the NFHS, *Economic and Political Weekly*, 39(7), 694-712.

Leach, F. & Sitaram, S. (2002). Microfinance and Women's Empowerment: A Lesson from India, *Development in Practice*, 12(5), 575-588.

Mahmud, S. (2003). Actually how Empowering is Microcredit? *Development and Change*, 34(4), 577-605.

Malhotra, A. & Schuler, S. R. (2005). Women's Empowerment as a variable in International Development, In *Measuring Empowerment: Cross-Disciplinary Perspectives*, edited by D. Narayan, 219-246, Washington, DC: World Bank.

Mammen, K. & Paxson, C. (2008). Women's Work and Economic Development, *The Journal of Economic Perspectives*, 14 (4), 141-164.

Manimekalai, N. & Rajeswari, G. (2000). Empowerment of Women through Self Help Groups, *MARGIN*, 32(41). July -Sep.

McKernan, M. S. (2002). The Impact of Microcredit Programs on Self-Employment Profits: Do Non-Credit Program Aspects Matter? *The Review of Economics and Statistics*, 84(1), 93-115.

Misra, K. J. (2006). Empowerment of Women in India, *The Indian Journal of Political Science*, 67(4), 867-878.

NABARD (2007). *Assessing a Self Help Group: Note for Guidance*, Mumbai, NABARD.

<http://www.nabard.org/microcredit/assessmentmethods.asp> (accessed 8 may 2010)

National Human Development Report 2001, New Delhi: Planning Commission of India, Government of India.

Newman, C. (2002). Gender, Time Use and Change: The Impact of the Cut Flower Industry in Ecuador, *The World Bank Economic Review*, 16(3), 375-96.

- NSSO, (2011). Employment and Unemployment Situation in India, Ministry of Statistics and Program Implementation, *Government of India*, 537.
- O'Brien, J. & David, P. (2009). Firm Growth and Type of Debt: The Paradox of Discretion, *Industrial and Corporate Change*, 19(1), 51-80.
- Onyuma, O. S. & Shem, O. A. (2005). Myths of Microfinance as a Panacea for Poverty Eradication and Women Empowerment, *Savings and Development*, 29(2), 199-222.
- Paolisso, M. J., Hallman, K., Haddad, L. & Regmi, S. (2002). Does Cash Crop Adoption Detract from Child Care Provision? Evidence from Rural Nepal, *Economic Development and Cultural Change*, 50(2), 313-37.
- Pitt, M. M. (2002). The Effect of Nonagricultural Self- Empowerment Credit on Contractual Relations and Employment in Agriculture: The Case of Microcredit Programs in Bangladesh, Bangladesh, *Bangladesh development Studies*, 2/3, 15-48.
- Pitt, M. M., Khandker, R. S. & Cartwright, J. (2006). Empowering Women with Micro Finance: Evidence from Bangladesh, *Economic Development and Cultural Changes*, 54(4), 791-831.
- Rahman, S. (2010). Consumption Difference between Microcredit Borrowers and Non-Borrowers: A Bangladesh Experience, *The Journal of Developing Areas*, 43(2), 313-326.
- Rose, E. (2002). Gender Bias, Credit Constraints and Time Allocation in Rural India, *The Economic Journal*, 110(465), 738-58.
- Schindler, M. (2008). Measuring Financial Integration: A New Dataset, Staff Papers, International Monetary Fund, forthcoming.

Schuler, R. S., & Rottach, E. (2010). Women's Empowerment Revisited: A Case Study from Bangladesh, *Development in Practice*, 20(7), 840-854.

Sen, A. k. (1999). *Development as Freedom*, Knopf press, New York.

Woolridge, J. M. (2003). Cluster Sample Methods in Applied Economics, *The American Economic Review*, 133-138.

World Bank (2001). *Engendering Development through Gender Equality in Rights, Resources and Voice*, Oxford University Press: New York.

World Bank (2003). *Microcredit in India: Issues, Challenges and Policy Options*. World Bank: Washington DC.

World Bank (2005). *Scaling-up Microcredit for India's Rural Poor*, *World Bank Policy Research Working Paper 3646*. World Bank: Washington DC.

World Bank (2006). *Microcredit in South Asia: Towards Financial Inclusion for the Poor*. World Bank: Washington DC.

Yunus, M. (2004). Grameen Bank, Microcredit and Millennium Development Goals, *Economic and Political Weekly*, 39(36), 4077-4080.

**APPENDIX**

**Microcredit and Women Empowerment**

**Household Survey Questionnaire of SHG members (2016)**

**State: Assam**

**District: Udalguri (Assam)**

**Block: Udalguri (B.T.A.D)**

\_\_\_\_\_

\_\_\_\_\_

Village Name: \_\_\_\_\_

Gram Panchayat Name: \_\_\_\_\_

Household Number: \_\_\_\_\_

**1. Village Characteristics:**

(a) Whether having electricity facilities in the household? 0. Yes 1. No

(b) If yes, what is the frequency of power-cuts? \_\_\_\_\_

(c) What is the mode of transport available in the village?

\_\_\_\_\_

(d) What is distance of transport centre from your house (in Kms/hrs)?

\_\_\_\_\_

(e) Whether having vehicles at home? 0. Yes 1. No

(f) If yes, what type of vehicles? \_\_\_\_\_

(g) Whether there is a pucca road in your village? 0. Yes 1. No

(h) If yes, which year it was constructed? \_\_\_\_\_

(i) Whether having market in the Village? 0. Yes 1. No

(j) If yes, how long it takes for you to reach the market (in Kms/hrs)?

\_\_\_\_\_

(k) Whether having School in the village? 0. Yes. 1.No

(l) If no, where is it located? \_\_\_\_\_

(m) Whether your children go to school by themselves? 0. Yes. 1.No

(n) If no who used to drop them to school? \_\_\_\_\_

(o) How long it takes to reach the school from your house (in kms/hrs)?

\_\_\_\_\_

(p) What is the source of drinking water? \_\_\_\_\_

(q) Whether the drinking water is available within the premises? 0. Yes. 1.No

(r) If no, where is it located? \_\_\_\_\_

(s) How long you have to walk to fetch water (in hrs)? \_\_\_\_\_

(t) Whether having toilet facilities within the premises? 0. Yes. 1.No

(u) Where do they throw their household waste materials? \_\_\_\_\_

**2. Personal Details:**

Sex	Name	Date of Birth/ Age	Educational Qualification in yrs (including Diploma)	Income (SHG/others)	Occupation	Time spent in main occupation(per day)
Male(Spouse)						
Female						

3. (a) Type of family: i) Nuclear family ii) Joint family

(b) What is monthly income of the family (in Rupees)? \_\_\_\_\_

(c) What is the family source of income? \_\_\_\_\_

**(d) Family Details:**

Sl. No. of the family members	Relation to the respondents	Age	Education (in yrs)	Occupation	Income earner	Monthly income of the individual family members	Source of income	
							SHG	Others

**4. Household Characteristics:**

(a) Who is the head of the family? \_\_\_\_\_

(b) What is the caste of the family? \_\_\_\_\_

(c) What is the religion of the family? \_\_\_\_\_

(d) Whether having any dependency member in the family? 0. Physically handicapped 1.

Other(specify)\_\_\_\_\_

(e) What is nature of Dwelling of the family? 0. Permanent 1. Temporary

(f) What is the type of house the family have? 0. Katcha 1. Pucca

(v) Whether the family owned any land? 0. Yes. 1.No

(g) If yes, what is the total amount of land (in acres)? \_\_\_\_\_

(h) What is it size and price? \_\_\_\_\_

(i) Year of purchase? \_\_\_\_\_

(j) What is the type of land? 0. Wasteland 1. Cultivable land

(k) If having cultivable land who is the owner of that land? 0. Male 1. Female 2.

Others(specify)\_\_\_\_\_

(l) What is the size and price of cultivable land? \_\_\_\_\_

(m) Year of cultivable land purchase? \_\_\_\_\_

(w) Whether family is involved in MGNREGA Scheme? 0. Yes. 1.No

(n) If yes, which year and duration of employment? \_\_\_\_\_

(x) Whether any other Scheme received by the family? 0. Yes. 1.No

(o) If yes, which year and duration of employment? \_\_\_\_\_

(p) Whether the family is an APL/BPL card holder? \_\_\_\_\_

**5. Female respondent's parents details:**

Relation	Occupation	Education (in yrs)	Land given to the respondent (in acres)
Father			
Mother			

**6. SHG details:**

Name of the SHG	
Year of establishment	
No. of SHG members	
Year of joining SHG	
Whether the SHG is involved in any group activity?	
If yes, what kind of group activity?	
Group meetings (frequency)	
Whether group has received any loan	
Reason for joining SHG	For loan
	Peer influence



7. Whether your neighbor is self-employed (occupation)? \_\_\_\_\_

8. Which caste the majority of your neighbour belongs to?

\_\_\_\_\_

**9. Loan details:**

Details	SHG loan (female)	Other loan (female)	Loan (male)	Other family members
Amount of loan taken				
Year of loan taken				
Duration of loan				
Rate of interest				
Collateral				
Amount repaid				
Amount remaining to be paid				
Loan utilized(activities)				

**10. Enterprise details:**

Details	Female	Male
Do you have an enterprise?		
Year of establishment		
Who runs the enterprise?		
Whether run by the family members or hired workers?		
Amount of loan invested in own enterprise		
Whether enterprise is in your own farm or rented?		
Whether it is in partnership; If yes, with whom?		

**11. Pre- SHG and Post- SHG details:**

Details	Female		Male	
	pre	post	pre	Post
Income				
Occupation				

Loan spent on firm				
--------------------	--	--	--	--

**12. (a) Pre- SHG and Post- SHG details time spend in a day**

How do they spend a day (Details)?	Female		Male	
	pre	post	pre	Post

(b) Whether there is a household maid in the family? 0. Yes 1. No

(c) Whether having cooking gas in the family? 0. Yes 1. No

(d) If yes, which year did they purchase? \_\_\_\_\_

(e) Whether having washing machine in the family?

(f) If yes, which year did they purchase? \_\_\_\_\_

(g) Whether having TV at home? 0. Yes 1. No

(h) If yes, which year did they purchase? \_\_\_\_\_

**(i) Pre- SHG and Post- SHG details (on time used models):**

Time spend Details on activities	Female		Male	
	pre	post	pre	Post
Self employment				
Wage work				
House work				
Leisure				