



**Microcredit, Enhancement of Entitlement and Alleviation of  
Poverty: An Investigation into the Grameen Bank's Role in  
Bangladesh**

**A Thesis Submitted for the degree of**

**DOCTOR OF PHILOSOPHY**

**Department of Economics**

**by**

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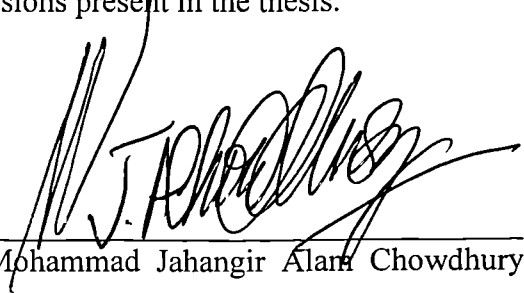
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## Declaration

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In accordance with the Higher Degree Regulations, I hereby declare that the whole thesis now submitted for the candidature of Doctor of Philosophy is a result of my own research and independent work except where reference is made to published literature. I also hereby certify that the work embodied in this thesis has not already been submitted in any substance for any degree and is not being concurrently submitted in candidature for any degree from any other institute of higher learning. I am hereby responsible for any errors and omissions present in the thesis.

Candidate: \_\_\_\_\_

  
Mohammad Jahangir Alam Chowdhury

## Abstract

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In developing countries, especially in Bangladesh, poor people are excluded from the formal financial sector credit services through the collateral requirement to receive a loan. Informal financial sector sources, especially moneylenders, are exploitative in nature. Therefore, poor people do not receive the minimum amount of capital, which is required to start any income generating activity, from either of the financial sector sources. The Grameen Bank initiated the microcredit programme in Bangladesh around 1976, to alleviate the poverty of poor households through providing them with the minimum amount of capital as credit without collateral and exploitation.

The present study evaluates the impact of microcredit on the poverty of borrowing households. Both quasi-experimental as well as non-experimental designs have been formulated to achieve the objective. The survey-design covers one group of households (programme households), which have already received more than one loans, and another group of households (comparison households), which have just joined the programme.

This study goes beyond earlier studies by developing a comprehensive framework, which covers income, consumption, assets, basic-needs, living standards, entitlement, poverty, and poverty risk of households, for assessing the impact of microcredit on the poverty of borrowing households. This study uses both subjective as well as objective measures of poverty for determining the poverty status of households. The present study compares income, consumption, basic-needs, some proxies for living standards, poverty, and poverty risk of programme households with those of comparison households to assess impacts of microcredit.

On the basis of the results obtained, the study argues that microcredit increases income, consumption, expenditure, and assets of borrowing households. Through increasing income and assets, microcredit enhances entitlement of borrowing households. Microcredit also improves fulfilment of basic-needs and living standards of borrowing households. Finally, this study argues that microcredit reduces poverty risk and alleviates poverty of borrowing households significantly.

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*This thesis is dedicated to my family  
Parents, Wife and Daughter, Brothers and Sister*

*and*

*Dipak Ghosh  
for extending care beyond his academic responsibility.*

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## List of Abbreviations

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|       |   |
|-------|---|
| ASA   | Association of Social Advancement                   |
| BBS   | Bangladesh Bureau of Statistics                     |
| BKB   | Bangladesh Krishi Bank                              |
| BRAC  | Bangladesh Rural Advancement Committee              |
| BRDB  | Bangladesh Rural Development Board                  |
| CAMEL | Capital, Assets, Management, Earnings and Liquidity |
| CEB   | Children Ever Born                                  |
| ESII  | Efficiency and Subsidy Intensity Index              |
| FIR   | Financial Interrelations Ratio                      |
| FSRP  | Financial Sector Reform Programme                   |
| GB    | Grameen Bank  |
| GDP   | Gross Domestic Product                              |
| GK    | Gonnoshatro Kendra                                  |
| HDI   | Human Development Index                             |
| HES   | Household Expenditure Survey                        |
| IAS   | Impact Assessment Study                             |
| LLRS  | Large Loan Reporting System                         |
| LRA   | Lending Risk Analysis                               |
| MMTU  | Monetary Management and Technical Unit              |
| NCMBC | National Commission on Money, Banking and Credit    |
| NGO   | Non-governmental Organisation                       |
| NLL   | New Loan Ledger                                     |
| OLS   | Ordinary Least Square                               |
| OPS   | Objective Poverty Status                            |
| PCB   | Private Commercial Bank                             |
| PKSF  | Palli Karma Shahayak Foundation                     |
| PPS   | Performance Planning System                         |
| RAKUB | Rajshahi Krishi Unnayan Bank                        |
| RDP   | Rural Development Programme                         |
| RLF   | Revolving Loan Fund                                 |
| SDI   | Subsidy Dependency Index                            |
| SDR   | Subsidy Dependency Ratio                            |
| SPS   | Subjective Poverty Status                           |
| UNDP  | United Nations Development Programme                |
| USAID | United States Agency for International Development  |

## **Chapter One: Introduction**

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### **1.1 Introduction**

This thesis aims to investigate into the role of the Grameen Bank's microcredit programme in enhancing entitlement and alleviating poverty of borrowing households in Bangladesh. It is often argued that the formal financial sector and informal financial sector in developing countries have failed to serve the poorer section of the community. Requirement for collateral, credit rationing, preference for high income clients and large loans, and bureaucratic and lengthy procedures of providing loan in the formal financial sector keep poor people outside the boundary of the formal sector financial institutions in developing countries. On the other hand, the informal financial sector has also failed to help the poor. Monopolistic power, excessive higher interest rates, and exploitation through under valuation of collaterals and high interest rates have restricted the informal financial sector from providing credit to poor people for income generating and poverty alleviation purposes. [Bhaduri, (1983); Rao, (1980); Bardhan, (1980); Ghosh, (1986), Ghat et. al., (1992)].

The limitations of the formal financial sector and the informal financial sector in providing financial services, especially credit, encouraged various microcredit programmes to evolve. Microcredit programmes were initiated, in 1976, with the objective of providing poor people with credit without collateral. The harmony among group members, the strict discipline in providing credit and collecting repayments, and supervision of borrower's activities in the microcredit system replaced the provision of collateral, which is an essential requirement for receiving credit from the



formal financial sector institutions. Professor Yunus<sup>1</sup> called the process of substituting the provision of collateral with group harmony and other aspects of microcredit as ‘freeing of credit from the bondage of collateral’ [Yunus, (1997)<sup>2</sup>]. The process of keeping poor people outside the credit facilities of formal financial sector institutions through collateral requirement is denoted as ‘financial apartheid’ by Professor Yunus [Yunus, (1997)<sup>3</sup>].

Despite many governmental efforts in Bangladesh, almost half (48%) of the total population live below the national poverty line<sup>4</sup> [UNDP, (1999)]. The first ever microcredit programme in Bangladesh was initiated in 1976 with the intention to alleviate poverty of poor people through providing them exploitation free credit without collateral. Professor Yunus’s declared aim is to see poverty in the museum in some future time. In his speech at the microcredit summit in Washington D.C. in 1997, he compared his dream to eradicate poverty completely from this world with the dream of people to fly 100 years ago. He mentioned that Wright brothers in 1903, in their first successful attempt, could stay in the air only for 12 seconds and fly only up to 120 feet. But only after 65 years of the first successful attempt of Wright brothers, people in this world are able to go to the moon and successfully come back to earth. Professor Yunus compared his dream, complete eradication of poverty from this world, with the Wright brothers’ attempt to fly and the subsequent success in flying and aviation. He mentioned that he would also be able to go to his moon, poverty-free world, in 55 years time through the microcredit programme [Yunus,

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<sup>1</sup> The first initiator of microcredit programme.

<sup>2</sup> Quoted from the speech of Professor Mohammad Yunus delivered at the Microcredit Summit, February 2-4, 1997, Washington D.C.

<sup>3</sup> Quoted from the speech of Professor Mohammad Yunus delivered at the Micro-credit Summit, February 2-4, 1997, Washington D.C.

<sup>4</sup> The poverty line defined by the government of Bangladesh.

(1997)<sup>5</sup>]. He argues that “there is no excuse left for us to let millions of people suffer the misery of poverty today. We must get our act together and set a date to create a poverty-free world. I see the year 2025 as a feasible date if we get into action right now” [Yunus, (1995)].

In 1997, the World Bank, USAID and other international donor agencies arranged an international summit on microcredit. In that summit, representatives of international donor agencies and microcredit organisations have set a target to achieve. The target is to reach 100 million poor families by the year 2007 [Morduch, (1999a); Yunus, (1998); Microcredit Summit Report, (1997)]. During that time, the Grameen Bank has also set a target for itself. The target is to reach 3 million poor Bangladeshi families by 2007. The Grameen Bank wants to help 70% of its members to graduate from below to above the poverty line by 2007 [Yunus, (1998)].

In spite of the existence of microcredit for over twenty-three years, it is surprising that there is a shortage of literature, which provide clear evidence of poverty alleviation capacity of microcredit. Only a few impact assessment studies have been conducted with carefully chosen treatment and control groups and these studies provide a mixed picture of the impact [Morduch, (1999a)]. Under these circumstances, it is important to evaluate the poverty alleviation capacity of microcredit. It is very important from a policy perspective to know whether microcredit alleviates poverty or not. We need to know whether claims made by Professor Yunus and the Grameen Bank to eradicate poverty from Bangladesh as well as from the world through microcredit are rhetoric or reality. We need to know the answers to a number of questions before making any

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<sup>5</sup> Quoted from the speech of Professor Mohammad Yunus delivered at the Micro-credit Summit,

comment on Professor Yunus's dream and the Grameen Bank's target. Does microcredit increase the entitlement of borrowing households through increasing their income and assets? Does microcredit reduce poverty risk of borrowing households? Is it really possible for microcredit programmes to alleviate poverty absolutely in Bangladesh? The present study is intended to find answers to above questions, i.e. to assess how effective microcredit programmes are in alleviating poverty.

Quasi-experimental (before and after method) as well as non-experimental (with and without method) designs have been formulated to achieve this objective. The survey design covers one group of households, which have already received more than one loan from the microcredit programme of the Grameen Bank (these households are known as programme households in this study) and an another group of households, who have just joined the programme (these households are known as comparison households in this study). This study compares income, consumption, assets, basic needs, some proxies for living standards, poverty, and poverty risk of programme households with those of comparison households to assess the impact of microcredit on those aspects of borrowing households. The study expects better status of programme households in terms of these aspects compared to those of comparison households.

## **1.2 Objectives of the Study**

The main objectives of this study are as follows:

Objective 1: To determine whether participation in the microcredit programme increases income and consumption of programme households.

Objective 2: To determine whether participation in the microcredit programme increases assets and entitlement of programme households.

Objective 3: To determine whether the participation in the microcredit programme improves fulfilment of basic needs and living standard of programme households.

Objective 4: To determine whether participation in the microcredit programme reduces poverty risk and alleviates poverty of programme households.

### **1.3 Structure of the Thesis**

**Chapter One** presents the general introduction of the study. It describes the background of accepting this topic for our dissertation. It also describes the main objectives and the structure of the thesis.

**Chapter Two** presents the theoretical background of the study. It discusses poverty, finance and alleviation of poverty. This chapter is divided into four sections. The first section of the chapter presents the concepts of poverty. This section illustrates the concept of entitlement, a comparative discussion about the concepts of absolute and relative poverty, and description of approaches to define a poverty line. The second section of the chapter presents the role of finance in development, the relationship between the formal financial sector and the poor, and also the relationship between the informal financial sector and the poor. The third section of the chapter discusses the process of alleviation of poverty of poor on the basis of the discussion in section one and two of the chapter. This chapter concludes with a summary.

**Chapter Three** looks at the poverty and finance scenario in Bangladesh. This chapter starts with introductory remarks about the chapter. The second section describes a brief historical review of Bangladesh. The third section takes a closer look at the poverty situation in Bangladesh. This section also presents the scenario of fulfilment of basic needs and the human development situation in Bangladesh. This section provides an overall picture of poverty in Bangladesh since independence in 1971. The fourth section gives an overview of the financial sector in Bangladesh. This section discusses the structure and the performance of the formal financial sector in Bangladesh. It also discusses the financial sector reform programme and the rural formal financial sector in Bangladesh. The last section of the chapter provides the summary of the chapter.

**Chapter Four** presents microcredit, the Grameen Bank and non-government organisations (NGOs) related issues in Bangladesh. This chapter starts with an introduction. The second section describes the evolution process of microcredit and the Grameen Bank in Bangladesh. This section also discusses the group approach with joint liability system in microcredit delivery system. This section also reviews the performance of the Grameen Bank in respect to credit disbursement, savings mobilisation, interest rates, recovery and outreach. The review of the performance of the Grameen Bank reveals that it has achieved a considerable success in all above-mentioned areas. Financial viability and the socio-economic status of programme participants of the Grameen Bank are also discussed in this section. The third section of this chapter discusses the role of NGOs in the microcredit sector in Bangladesh. This section reviews performance of NGOs in respect to credit disbursement, savings

mobilisation, and recovery. This section also provides information about interest rates and sources of revolving fund of NGOs in Bangladesh. The chapter ends with a summary.

**Chapter Five** is on appropriate impact assessment methodology and reviews of microcredit impact assessment studies in Bangladesh. The first section of the chapter is an introduction. The second section discusses the ‘before and after’ and ‘with and without’ methodologies of impact assessment. This section also presents important issues related to impact assessment methodologies. The third section reviews ten microcredit impact assessment studies. All these studies have assessed the impact of microcredit on poverty and poverty related issues of borrowing households in Bangladesh. This section reviews the finding and identifies limitations of those studies with the view of constructing the methodology and the research framework of the present study. The chapter concludes through summarising the chapter.

**Chapter Six** presents the theoretical framework, research objectives, a list of hypotheses and methodology of the present study. This chapter has seven sections. The first section presents introduction of the chapter. The second section illustrates the research framework of the study. This research framework uses Sen’s concept of entitlement to show the poverty alleviation process of microcredit. The research framework shows that microcredit reduces poverty of borrowing households through increasing their entitlement to basic needs. Its also shows that microcredit increases entitlement of borrowing households through increasing their income and the asset base. The third section exhibits the empirical model and the estimation strategy of the study. The fourth section provides research objectives and hypotheses. Section five

describes the methodology of the study. All issues related to data collection, e.g. sampling design, selection of sample areas and households, data collection, data cleaning, etc., have been discussed in this section. The sixth section provides limitations of the present research. The last section, section seven, is on summary of the chapter.

**Chapter Seven** is the first of three chapters on data analysis. This chapter concentrates on the impact of microcredit on income, consumption, and assets of borrowing households. Section one, two and three present introduction, main statistical techniques used for analyses, and structure of analyses respectively. Section four discusses the impact of microcredit on income of borrowing households. Results of analyses show that microcredit significantly increases agricultural income of borrowing households. Section five provides the impact of microcredit on consumption and expenditure of borrowing households. Results from analyses indicate that microcredit significantly increases consumption expenditure on food, education, and health and medicine of borrowing households. Section six is on the impact of microcredit on assets of borrowing households. The analyses of results carried out show that microcredit significantly increases current total area of agricultural land, total value of productive assets, value of the dwelling house, total financial assets, total business capital from own source, total business capital (internal as well as external), total assets and total non-land assets of borrowing households. Section seven discusses the impact of microcredit on entitlement of borrowing households. It argues that microcredit increases entitlement of borrowing households through increasing their income and assets. The last section, section eight, provides a summary of the chapter.

**Chapter Eight** assesses the impact of microcredit on basic needs of borrowing households. The first three sections present introduction, main statistical techniques used in analyses, and the structure of analyses. Section four discusses the impact of microcredit on literacy and education of borrowing households. Section five discusses the impact of microcredit on the health status of the members of the borrowing households. Section six assesses the impact of microcredit on the provision of shelter for the borrowing households. Chapter seven and eight discuss the impact of microcredit on food availability and some indicators of living standard of borrowing households respectively. All analyses in section four to eight indicate that microcredit improves fulfilment of basic needs of borrowing households through increasing their capabilities to spend more on basic needs. This chapter concludes with a summary of the chapter.

**Chapter Nine** discusses the impact of microcredit on poverty and the poverty risk of borrowing households. This chapter uses subjective as well as objective poverty concepts to analyse the impact. This chapter has six sections. Section one is the introduction of the chapter. Section two discusses the impact of microcredit on subjective poverty status of borrowing households. Analyses of results show that microcredit significantly reduces poverty of borrowing households. Section three discusses the impact of microcredit on objective poverty status of borrowing households. In this section results also indicate that microcredit reduces poverty of borrowing households significantly. Section four presents the logit models. Results of logit models demonstrate that availability of microcredit is a significant determinant of poverty, which means that poverty reduces with the increase in the amount of microcredit and membership duration of borrowing households. Section five provides



a discussion of the poverty risk reduction capacity of microcredit. It shows that microcredit reduces poverty risk of borrowing households substantially. The last section, section six, provides conclusion of the chapter.

**Chapter Ten** is the concluding chapter of the study. It provides a summary of the three main chapters on data analysis. It also provides research implications, future research directions and finally, conclusions of the study. This chapter concludes, on the basis of results of our analyses, that microcredit significantly reduces poverty and poverty risk of borrowing households.

## **Chapter Two: Poverty, Finance, and Poverty Alleviation**

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### **2.1 Poverty**

Almost one fourth of the world population live below the poverty line [World Bank, (2000)]. In most of the developing countries, poverty is an integral part of life for more than 40% of the total population [World Bank, (2000)]. It is not difficult to understand what poverty is. Almost every one understands the meaning of poverty, but development economists, sociologists and policy makers have failed to provide a universally acceptable and unambiguous definition of poverty [Callan and Nolan, (1991); Alcock, (1993)]. This is because, poverty is difficult to define. For example, How does poverty in the USA compare to poverty in Bangladesh? How is the perception of poverty modified from one generation to the next? Is poverty for one family the same as poverty for another? Do men and women experience poverty in the same way? From literature on poverty, it is very much evident that it is not possible to define poverty in a single definition. So, we will analyse broad approaches to define poverty.

Alcock (1993) argues that poverty is largely, if not entirely, a product of social policies, or social and economic policies, pursued by states in order to control and discipline their citizen. So, to understand poverty we need to know these social and economic policies, which have removed, restructured or even created it i.e. poverty. For example, in Britain in the 1990s [Alcock, (1993)], the process of ascertaining poor people and the extent of poverty, experience of poverty, and techniques of

poverty alleviation, have been heavily influenced by state policies. These policies have a long and complex history. Therefore, poverty is a complex problem, and is partially a product of socio-economic as well as political process and policy development [Alcock, (1993)].

It is also argued that poverty is a product of capitalism in some countries especially in Britain [(Alcock, (1993)]. In the seventeenth and eighteenth centuries, feudalism was replaced by capitalism in Britain, poverty was created from this point. In this time the majority of people were separated from the land and became workers, and thus they lost control over the means of producing material support and became dependent upon wages from paid labour. After this, those who could not work for wages could not support themselves and thus they became poor.

Different researchers and academicians are concerned with different types of definitions and understanding of poverty. Donnison (1982) in his book “Politics of Poverty” has attempted to narrow down these into three broad approaches, by distinguishing among *destitution*, *subsistence* and *relative poverty*. Destitution is extreme hardship or misery and it is conscious suffering which can occur in any society. This word is often used to mean problem of mass starvation, destruction of home and community and early death. This is an acute and catastrophic problem. Subsistence is not having enough to meet one’s need. This subsistence-based definition of poverty is also known as *absolute poverty*. Relative poverty is the exclusion of some people from the customary standard of living in a society or country. In our research, we will concentrate only on two broad poverty concepts, these are, absolute poverty concept and relative poverty concept. Before

understanding the absolute poverty concept and the relative poverty concept, it is important to understand the concept of entitlement, which is due to Amartya Sen (1981) and his followers [for example, Osmani, (1995); Sobhan, (1991)], to analyse poverty, hunger and famines. According to this concept, people starve or live under the poverty line not because of food shortage, but because of not having enough command over the available food in the society. From the perspective of this concept, poverty in developing countries can be defined as the lack of entitlement to the absolute necessities of life. The absolute minimum necessities of life vary from one person to person, household to household, and society to society. In the following section, we will try to discuss and explain the concept of entitlement to understand poverty.

### **2.1.1 The Concept of Entitlement**

The *concept of entitlement* consists of three segments, these are, the endowment set, the entitlement set and the entitlement mapping or e-mapping [Sen, (1981); Osmani, (1995)].

The endowment set is considered as the combination of all legally owned tangible as well as intangible assets by a person. Tangible assets include land, buildings, animals, equipments etc. and intangible assets include labour, academic qualifications and skills etc. The word legally is used to acknowledge the existence and necessity of compliance of prevailing social as well as legal norms and practices in a society and also to mean that illegally owned assets are not included or considered in the endowment set of a person. For example, if a person acquires a piece of land using his

muscle power, then that piece of land is not included or considered in the endowment set of that person.

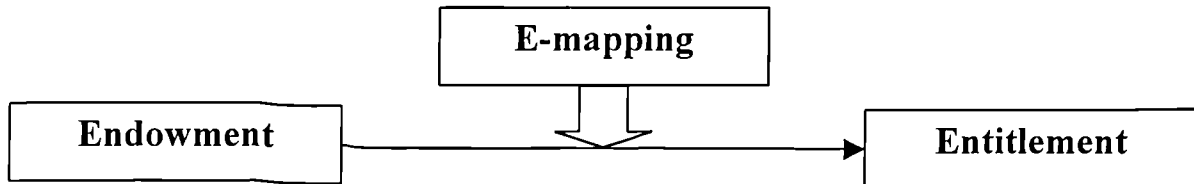
The all-possible combination of goods and services a person can attain legally by utilising his endowment set is known as the “entitlement set”. Here the word “legally” is also used to recognise the existence and necessity of compliance of prevailing of social and legal norms within the society. Illegally obtained final goods and services are not included in the entitlement set i.e. if a person collect food for himself using muscle power and without exchanging any resources for those food, is not included in the entitlement set of that person, because it is beyond the social as well as legal norms of the society. Two important issues emerge from the definition of the entitlement set [Sen, (1981); Osmani, (1995)]. First, a person can obtain many different sets of final goods and services by using any given set of resources. Although a person can obtain many different sets of final goods and services, he or she will only consume one set of final goods and services. The tastes and preferences of a person will determine the set, which he or she will consume, from the all-available sets. So, all available set of final goods and services a person can obtain using the endowment set are included in the entitlement set and a person will consume only one set at a time. Second, the endowment set can be used in different ways to obtain a final goods or services in a society. For example, a fisherman may use his labour, net, fishing boat and equipments to catch the necessary amount of fish for his consumption. A farmer may use his labour, land and capital to produce rice and then exchange rice for fish, which he wants to consume. A labourer may use his labour, skill and knowledge to earn money and then buy fish for his consumption. In a developed welfare state, an unemployed person can use his/her citizenship to claim

unemployment benefits and then can buy fish for his/her consumption. Therefore, any final goods or service can be obtained using the endowment set i.e. available resources in different ways.

The third component of the entitlement concept is entitlement mapping. Entitlement mapping (e-mapping) shows the relationship between the endowment set and the entitlement set of a person i.e. e-mapping indicates the rates at which resources in the endowment set will be converted into the final goods and services included in the entitlement set. Therefore, e-mapping includes, for the fisherman, the input-output ratio in fishing when he catches fish for his own consumption; input-output ratio in farm production and the relative price for rice and fish, when a farmer produce rice to obtain fish in exchange of it; the ratio between the wage and the price of fish i.e. the real wage rate for the labourer, when a labourer uses his labour power for fish; the unemployment benefit rate for the unemployed, when the unemployed person use the unemployment benefit to obtain fish for consumption. If we analyse the above examples, then we find three components in e-mapping. These three components are, input-output ratio for those persons who use endowment set to produce a final product or service; an exchange component for those who exchange his resources to secure final products or services and a transfer component for those who use transfer payments to obtain final products or services (Osmani, 1995).

We can represent the inter relationship of the three components of the entitlement concept in the following way:

**Diagram 2.1: The concept of entitlement**



**Source: Osmani, (1995)**

The above diagram shows that endowments are converted into entitlement by applying e-mapping and the extent of conversion from endowment to entitlement is dependent upon this. E-mapping determines at what rate endowments will be converted into entitlement. Exogenous factors can affect the first two components of the diagram i.e. the endowment and the e-mapping. Any one of these two factors can change without prior change to the other. With a constant endowment set, change in the e-mapping can change the entitlement set. A change in the price level will change the entitlement set assuming that the endowment set is constant. For example, an increase in the price level of rice will reduce the total consumption of rice of a household with a constant endowment set and vice versa. In the same way, a change in the endowment set will change the entitlement set, if the e-mapping remains constant. For example, an increase in the total area of agricultural land of a household will increase the total production of rice of that household if the input-output ratio of production remains constant and vice versa.

So far what we have meant by the term '*entitlement*', Sen (1981) termed as '*exchange entitlement*'. He argues that in a market economy, the commodities, which we consume, are achieved through exchanges. These exchanges can be done through trading or production (e.g. exchange with nature) or a combination of the two. The alternative sets of final goods and services available for consumption by a person are acquired through the exchange of the endowment set owned by that person. For this reason, Sen (1981) termed the process of acquiring final goods and services through exchange of own endowments as *exchange entitlement*.

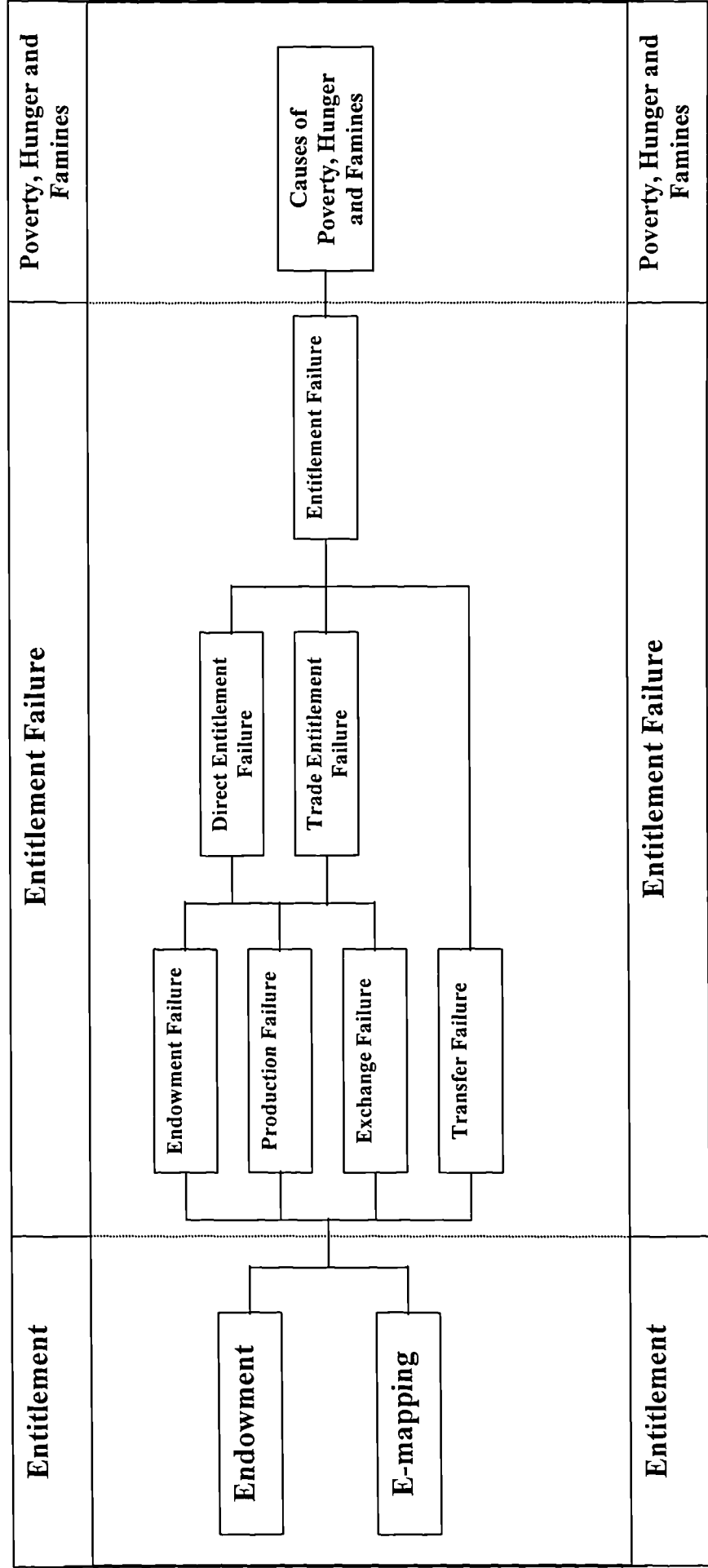
Along with the concept of exchange entitlement, Dreze and Sen (1989) later introduced the concept of *extended entitlement*. Extended entitlement implies extension of one's entitlement beyond legal rights of ownership. In some developed countries, e.g. in the United Kingdom, people are entitled to receive benefits from the state during periods of unemployment and old age. These rights are formal social rights. The concept of extended entitlement also includes informal rights, which prevail in a society, and these informal rights are well accepted in the society, even though these rights can not be established in courts of law. For example, the male head of a household receives preferential treatment during the division of total consumption among the members of that household. Dreze and Sen (1989) argue that these socially accepted informal rights play an important role in determining the extent of fulfilment of basic needs to different members of a family. In developing countries, the food handouts distributed during periods of shortage or famine, provision of free or subsidised education for (at least) some section of the population, subsidised health care (where possible) etc. are examples of extended entitlement.



Famine, hunger and poverty occur through a hostile change either in the endowment set or in the e-mapping. Hostile changes in the endowment set and the e-mapping is known as the entitlement failure. Sen argued that the aggregate availability per capita of food grains in Bengal during 1943, the main year of starvation deaths, was only 15 % - 20% lower than the average for Bengal. But per capita food grain available in 1943 was even higher than the average in 1944. The Great Bengal famine of 1943 – 44 led to the deaths of possibly three million people. These people died not because of non-availability of food grains, but because they lacked definite socially sanctioned claims and/or effective legitimate command over food that was available i.e. they lacked entitlement over available food during that time. Sen (1981) presented the failure of entitlement to cover subsistence needs as the key cause of starvation and death in famines.

Osmani (1995) argued that all possible causes of famines could be classified into two broad groups: one that affects the endowment set and the other that effects the e-mapping (see diagram 2.2). Sen (1981) divided entitlement failure into two types, these are, *direct entitlement failure* and *trade entitlement failure*. Direct entitlement failure is a fall in entitlement below subsistence needs because of a fall in the food produced for own consumption. Trade entitlement failure is a fall of entitlement below subsistence needs due to a worsening of the terms of trade between commodities one sells e.g. labour and the food that one needs to buy.

**Diagram 2.2: The Concept of Entitlement**



According to Osmani (1995), the direct entitlement failure and the trade entitlement failure are not disjoint and exhaustive. The direct entitlement failure and the trade entitlement failure are not disjoint because both can occur as a result of endowment loss and production failure. These two are not exhaustive because these two failures do not cover the transfer failure. Osmani (1995) identified four sources of entitlement failure, these are, *endowment failure*, *production failure*, *exchange failure* and *transfer failure* (diagram 2.2). For example, a farmer may lose his cultivable land because of river erosion (endowment failure), total rice production may decrease because of natural disaster (production failure), because of price increase a person can buy less amount of rice with the same amount of money (exchange failure) and an unemployed can buy less amount of food because of reduction in the unemployment benefit payment (transfer failure). People who are not dependent on exchange, their entitlement failure would take place through the first two of four entitlement failure sources i.e. endowment failure and production failure. Sen (1981) described this situation as the direct failure. People who are dependent on exchange to obtain their entitlement set, their entitlement failure may occur from any one of the first three sources of entitlement failures, i.e. endowment failure, production failure, and exchange failure. Sen described this as the trade failure. Entitlement failure in subsistence economies and developed economies are not same. Direct entitlement failures are the main sources of entitlement failures in subsistence economies and trade failures are the main sources of entitlement failures in developed economies.

In this thesis, we will mean by the term 'entitlement', unless indicated otherwise, what Sen (1981) meant by the term 'exchange entitlement'.

### 2.1.2 Absolute and Relative poverty

The absolute poverty concept defines poverty according to a minimum standard of living of a person. This concept does only include biological needs for food, water, clothing and shelter and it does not include social and cultural needs of a person. The absolute concept of poverty is associated with the concept of subsistence. Subsistence is the minimum requirement to sustain life. People experience absolute poverty when they live below the subsistence level i.e. when people do not have adequate housing, clothing, and food for themselves.

Charles Booth (1889) used this type of definition in the work 'The Life and Labour of the People'. He defined poverty as living under a struggle to obtain the necessities of life and make ends meet [Holman, (1978)]. Rowntree (1901) also used this type of definition. To define subsistence, he tried to use the independent judgement of nutritionists to determine a minimum standard of diet to act as a subsistence definition of poverty. Rowntree (1901) divided poverty into two types, these are, *primary poverty* and *secondary poverty*. He used the term primary poverty to those who did not have access to the resources to meet their subsistence needs. The term secondary poverty was used to refer to those who did have the resources but were still unable to use those resources to graduate them above the subsistence level. Although Rowntree talked about secondary poverty, he gave little attention to secondary poverty. Rowntree and Booth both understood and defined poverty in the absolute form [Holman, (1978)]. Three important elements can be identified from Rowntree's and Booth's concept of poverty. First, the poverty line is set at just that level which allows people to be physically efficient. Secondly, the concept uses the utmost stringency in

calculating the poverty line and the necessities of life. For example, Booth used a range of income between 18s to 21s per week for moderate poverty and Rowntree's standards were harsher than those of the poor law of that time were. Thirdly, the subsistence concept does not consider the incomes of society as a whole, rather that it considers only the incomes of the working class. Amartya Sen (1981) has also used the concept of absolute poverty in his renowned book "*Poverty and Famines: An Essay on Entitlement and Deprivation*" to analyse famines and poverty in Bengal and other places. His definition advocates ascertaining an absolute poverty line based on standard minimum needs for food, clothing and housing for analysing the poverty situation of a country and the poverty status of a person or household. This poverty line, based on the standard minimum needs, helps to determine the percentage of the population living under the poverty line.

Peter Townsend (1979) presented a puissant presentation of the concept of relative poverty in his definitive work *Poverty in the UK*. He is a critic of the concept of absolute poverty. He argued in an earlier work [Townsend, (1973)] that the standards to determine the absolute poverty line have a lack of relation to the budgets and customs of the life of poor people [Holman, (1978)]. Holman (1978) argues that the concept of absolute poverty considers men and women as just physical beings, but they are also psychological and social beings. They also possess personalities and they live in societies. Townsend (1979) defined relative poverty in relation to a generally accepted standard of living in a society at a particular point in time, which goes beyond the issue of satisfaction of basic minimum biological needs. This definition of relative poverty by Townsend (1979) echoed Adam Smith's concern. Adam Smith commented:

“By necessities I understand not only commodities which are indispensably necessary for the support of life but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without. Individuals ... can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged or approved, in the societies to which they belong.” [Adam Smith, (1776)]

Thus under the relative poverty concept, poverty is concerned with not only lack of money or income to buy enough food, shelter and clothing to live in the subsistence level, but also exclusions from the customs of the society. In the United Kingdom in the 1990s, poverty is not only about having to go short of food or clothing, but it is also about not being able to join a local sports club, or sending one’s children on a school trip, or going out with friends, or having a Christmas dinner [Oppenheim and Harker, (1996)].

The definition of poverty under the concept of relative poverty is based on a comparison between the standard of living of poor and the standard of living of other members of the society who are not poor. Poor or non-poor status of a person is determined on the basis of an average standard of the whole society in which poverty is being studied.

The concept of relative poverty is relevant to those communities or countries where most of the people live above the poverty line and where policy makers feel responsibility to ensure a minimum standard of living for all people beyond a mere existence, for example, good physical health. The absolute poverty concept is relevant for developing countries like Bangladesh. The large-scale starvation, destitution and malnutrition in these countries strengthen the logic or rationality for using the absolute poverty concept for poverty analysis in these countries. In developing countries, where more than forty percent of the total population live under the poverty line [World Bank, (2000)] and where a vast majority suffers from the lack of minimum food and necessary shelter to maintain life, tackling absolute poverty should be a more important policy issue.

The concept of relative poverty will fail to diagnose an increase in the severity of poverty of the people who are in the lower end of the poverty scale caused by overall economic downturn as this leads to a general reduction of income of all people of the country with an unchanged relative pattern of income [Sen, (1979)]. During a period of recession in which the overall standards drop and the relative position of the poverty line remained unchanged, policy makers would not be able to recognise an increase in poverty of the vulnerable groups/people under the concept of relative poverty. For these reasons, Sen (1979) argued that there must be some absolute concept of poverty to measure poverty in a community or a country. In spite of these criticisms of relative poverty, we can not ignore the relative concept of poverty. At some stage these two concepts are complementary. Alcock (1993) argues that the absolute poverty definitions necessarily involve relative judgements to apply them to

a particular society and the relative poverty definitions require some absolute core in order to distinguish them from broader inequalities.

### **2.1.3 Approaches to Definition of the Poverty Line**

A poverty line is necessary to determine the poverty status of a person or a household. It is also necessary to determine the percentage of the population that is poor, i.e. living below the poverty line, of a society or a country. There are four approaches to determine the poverty line in a society or in a country. These four approaches are discussed below in brief.

#### **(a) Direct Method**

Under the direct method, economists, sociologists and policy makers determine a set of basic needs first and then a target level of each item of the set is also determined. If a person or household consumes any item below the target level, then that person or household is regarded as poor. Under this method, a person or household may be identified as poor with respect to one item of the basic needs set but not poor with respect to another item of that set. For example, a person or household may be identified as ‘shelter poor’ but may not be identified as ‘food poor’<sup>6</sup>.

#### **(b) Income Method**

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<sup>6</sup> For more explanation, see ILO, (1976); Streeten, et. al. (1981); Callan and Nollan, (1991).



Income method is the indirect version of the direct method. This method also gives importance to the fulfilment of a set of basic needs like the direct method. But under this method, the total cost of attaining the target level of all items in the set of basic needs is calculated to determine the required minimum level of income to fulfil these basic needs [Callan and Nollan, (1991)]. The minimum required income could be calculated in the following way:

$$C^* (or Y^*) = p \cdot x^* = \sum p_i x_i$$

$C^*$  is the minimum cost of attaining the target level of all items in the set of basic needs,  $Y^*$  is the required minimum income to fulfil these basic needs,  $p$  represents price,  $x^*$  is the vector of all items in the set of basic needs. If income or total expenditure of a person or household fall below  $C^*$  or  $Y^*$ , then that person or household is considered as poor. This method does not allow any provision for waste or inefficient expenditure. It also does not consider expenditure on other items. Inclusion of some other items in the consumption bundle (which contained only basic needs before) would lead an increase in the minimum cost of attaining the set of basic needs and other important items.

$$C^{**} (or Y^{**}) = (1 + H) p \cdot x^*$$

$C^{**}$  represents the increased minimum cost of attaining the set of basic needs after inclusion some other items,  $Y^{**}$  represents the minimum required amount of income to fulfil basic needs and some other items, and  $H$  is the proportion of other commodities to basic needs in the consumption bundle.

### (c) The Budget Standard Approach

The budget standard approach determines a poverty line on the basis of specification and costing of a nutritionally adequate diet. The provision for non-food necessities can also be taken into consideration in determining the poverty line under this approach. The poverty line can be estimated through calculating the total cost of attaining a nutritionally adequate diet and adding the cost of obtaining other necessary non-food items. The poverty line can be calculated in the following way:

$$P^* = (p \cdot x_f^*) \frac{1}{FR}$$

where,  $P^*$  is the poverty line,  $p$  is the corresponding price vector,  $x_f^*$  is the vector of items of the nutritionally adequate diet, and  $FR$  is ratio of food expenditure to total expenditure.

The budget standard approach has two important features. First, total expenditure of obtaining the nutritionally adequate diet and other non-food necessities is calculated objectively and in a scientific manner. Secondly, this approach determines a poverty line, which represent the bare necessities of life. There is a debate in determining the poverty line under this approach, from the perspective of absolute versus relative poverty debate, as to whether the poverty line should be kept fixed in real terms over time or it should rise as the general standard of living in the society rises [Callan and Nollan, (1991)]

#### (d) Subjective Approaches

Subjective approaches<sup>7</sup> directly determine the poverty line on the basis of views in the population about the minimum income level of a person or household not to be considered as poor<sup>8</sup>. A number of approaches have been applied to determine the poverty line under this approach [Callan and Nollan, (1991)]. Dubnoff (1985) asked respondents how they would consider particular income levels for a list of hypothetical families of different composition. Rainwater (1974) asked respondents about what income hypothetical families would require to reach a satisfactory level of living. Dubnoff, Vaughan and Lancaster (1981) surveyed opinion of respondents about their own current income level. Goedhart, et. al. (1977) inquired respondents about the minimum level of income they need to make ends meet. Van Praag et al. (1982) asked respondents to describe different income levels they would consider to be 'very bad', 'bad' etc. on a income scale up to 'very good' in their own living.

Kapteyn, van de Geer, and van de Stadt (1985) used the regression technique to calculate the poverty line on the basis of answers of respondents in response to the question of what income level they would consider to be the minimum to make ends meet. They used the following regression equation to determine the poverty line.

$$Y_{\min} = a + b \ln Y^* + cZ + u_i$$

where,  $Y_{\min}$  represents answers to the minimum income question,  $Y^*$  represents actual income,  $Z$  is the vector of demographic variables,  $u_i$  is the error term, and  $a$ ,  $b$

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<sup>7</sup> Subjective approaches to determine the poverty line are also known as consensual income poverty approaches.

<sup>8</sup> For detail explanation, see Goedhart et.al., (1977); van Praag et.al., (1980, 1982); Kapteyan, van de Geer, and van de Stadt, (1985); Hagenars, (1986).

and  $c$  are co-efficients. Callan and Nolan (1991) argue that the application of consensual approach in determining the poverty line is problematic. They argue that it is not clear whether different people will consider 'making ends meet' in the same way. Walker (1987) argues that in the same household all members may not have same views and they may not have the same concept of income as the researcher has.

## **2.2 Finance, Development, and the Rural Poor**

In this section, we will examine the role of finance in the development process within a country. We will also examine the relationship between the formal financial sector and the rural poor. This section also intends to examine the relationship between the informal financial sector and the rural poor.

### **2.2.1 Role of Finance in Development**

Until the-mid sixties, finance was usually considered as a factor in growth and development, if at all, only in passing. Until the Second World War II, the general conception of economists and economic policy makers was that monetary policy only influence prices and wages and it had little impact on production and employment over the business cycle. But the Great Depression had changed this conception of economists and policy makers. The experience of the Great Depression showed that monetary policy could influence both output and employment. In spite of the experience of the Great Depression, until 1970s many economists and policy makers remained constant on their understanding that financial policies, especially the monetary policy, had little influence on output and employment [Gillis, Perkins,

Roemer and Snodgrass, (1987)]. In the late sixties and early seventies, the economists and policy makers had started recognising the importance of finance in growth and development. In 1989, the 'World Development Report' of the World Bank took 'finance and development' as the main theme of the report. The acceptance of 'finance and development' as the main theme of the World Development Report in 1989 was a recognition of the positive role of finance on development.

Although economist and researchers took a long time to recognise the role of finance in the development process, Adam Smith in the first decade of twentieth century had already acknowledged the role of finance, especially the banking system, in the growth of trade and business. He wrote:

*"I have heard it asserted, that the trade of the city of Glasgow doubled in about fifteen years after the first erection of the banks there; and that the trade of Scotland has more than quadrupled since the first erection of the two public banks at Edinburgh ... that the banks have contributed a good deal to this increase, cannot be doubted" [Smith, (1910)].*

After Adam Smith, in the late sixties and the early seventies, some economists-particularly Goldsmith, Gurley, Shaw, Patrick - have started explaining the relationship between the financial development and the real economic growth [Drake, (1980)]. Gurley and Shaw, and Goldsmith explained the relationship between the financial development and the real economic growth from the perspective of division of labour [Gurley and Shaw, (1967); Goldsmith, (1969)].

The use of money increases the opportunity for the division of labour in production. Under the monetary form of the exchange system, the scope for division of labour in production is higher than the scope of division of labour under the barter and the pre-monetary exchange system. Money decreases the transaction limits of the barter system. Thus, it increases the boundary of markets over space and time. Monetization<sup>9</sup> also originates opportunities of profitable division of labour by production type and by production process [Drake, (1980)].

The evolution of financial system contributes a beneficial division of labour between savings and investment in an economy. Without a financial system, the economic units would have to rely entirely on self-finance for investments. Thus, the volume of investment in any economy would be constrained by the shortage of funds of those persons who want to invest money in profitable investment opportunities. The persons, who want to invest money in profitable investment opportunities, will not necessarily have the required amount of money for investments. In the same way, the surplus savings units will not necessarily have profitable opportunities for investments or have willingness to take risk in investing their surplus savings in profitable investment opportunities. In this way, an absence of a financial system, which performs as an intermediary between the surplus savings units (SSUs) and the deficit savings units (DSUs), limits the growth of the volume of investments in an economy. Therefore, an evolution of a financial system in an economy provides a bridge between the surplus savings units and the deficit savings units and increases the total volume of investment of the economy.

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<sup>9</sup> Replacement of pre-monetary forms of transactions through transactions performed by money is

The existence of a financial system in an economy improves the efficiency of resource allocation through financial intermediation by financial institutions. In a financial system of a country, there are many types of financial institutions. These financial institutions perform different kinds of financial activities. Every financial institution specialises in some specific financial activities in which it becomes very efficient. The specialisation and efficiency in providing specific financial activities lowers the cost of mobilising and allocating financial resources. A network of specialised financial institutions also reduces further the costs of mobilising and allocating resources. Side by side of reducing the cost of allocating resources, the specialisation of financial institutions also raises the allocation efficiency of financial institutions. Ultimately, the reduction in costs of mobilising and allocating resources and increase in allocation efficiency raises the total volume of savings and investment of a country.

Therefore, finance, through monetization of the economy, intermediation between the SSUs<sup>10</sup> and DSUs<sup>11</sup>, reduction in costs of allocating funds and increase in the allocation efficiency, influence the real growth of a country. Financial development in any country promotes growth to the extent that it increases the size and/or improves the utilisation of the national stock of real and human capital [Drake, (1980)]. Goldsmith (1969) argues that the existence of a financial system raises the total amount of savings and investment above the levels, which could have been achieved in the absence of a financial system. For example, the total amount of savings in the Philippines responded positively to the development of financial system over the period of 1951-60 [Hooley, (1963)]. Financial system development influences the

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known as monetization.

size, composition and utilisation of the 'stock of capital' of every economy and also promotes the growth of real national income. For these reasons, Patrick (1966) advocated a policy strategy for financial development for developing countries to promote real growth of those countries. Patrick advocates the *supply leading*<sup>12</sup> policy of financial development in developing countries. He believes that "the financial system can exert a growth influence on the capital stock-by improving the composition of the existing stock of capital, efficiently allocating new investment among alternative uses, and raising the rate of capital formation by providing incentives for increased savings and investment" [Drake, (1980)].

Gurley and Shaw (1967) acknowledged the two-way relationship between financial development and real growth. Although Gurley (1967) has expressed scepticism about the universal applicability of the 'technique of finance' for mobilising savings, his opinion behind the scepticism was that social costs and inefficiencies of the technique of finance for mobilisation of savings may sometimes exceeded its benefits [Drake, (1980)].

Goldsmith developed an indicator, *financial interrelations ratio (FIR)*, to measure the financial structure of a country [Goldsmith, (1969)]. FIR is the ratio of financial assets to national wealth. FIR increases with the development of the financial sector. FIR of any country indicates the existing level of financial development of that country. Goldsmith examined the past financial history of many countries over the period of 150-200 years and he found that FIR reasonably explained the level of financial

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<sup>10</sup> Surplus Savings Units, those who have excess money after fulfilling all expenses.

<sup>11</sup> Deficit Savings Units, those who have deficit of money to fulfil all requirements.

<sup>12</sup> Supply leading means creating financial institutions, interments and services in advance of the demand for them.



progress of those countries. FIR increases with the economic development of any country, because the share of financial institutions in the ownership of financial assets increases as economic development continues. Economic development initiates a growth of indirect financing and promotes institutionalisation of savings and investment in the economy and ultimately it raises the value of FIR. In the early stage of development, the share of the banking sector in the assets of the financial sector increases with the growth of the economy. But when the country becomes highly developed then the share of the banking sector in the assets of the financial sector declines. Because, the newer and more specialised institutions start playing an important role in the economy and their share in the assets of the financial sector starts increasing [Drake, (1980)]. In Japan the FIR rose from about 0.1 in 1880 through 0.4 in 1913 to over 1.5 in 1960s. In Britain the FIR rose from 0.35 in 1880 through 1.04 in 1913 to 1.7 in 1963. In the 1960s, very poor countries had very low FIR, whereas the industrialised countries such as Great Britain, Japan and the United States of America had high FIR, well above 1.00 [Drake, (1980)].

Economists and policy makers had disagreements over the meaning of the term 'finance'. The most prominent activity in the area of finance, the provision of investible funds, can be defined from two perspectives. Firstly, "capital" i.e. the funds which are being provided to investors. Secondly, "financial system" i.e. the process of providing capital to investors and the institutions involved in the process of providing capital to investors [Krahn and Schmidt, (1994)]. Krahn and Schmidt (1994) discussed four views of "finance for development" with reference to the understanding of finance as capital, or the financial system or both.

**The First View:** Finance in the sense of capital. The traditional view stresses finance in the sense of capital and ignores finance in the sense of financial system. This traditional view assumes that an invisible mechanism transforms savings into investments. This view does not consider the role of the financial system in accumulating savings and providing these accumulated savings to investors as capital. According to this view, the invisible mechanism, which transforms savings into investments, is perfect and neutral. It also maintains that the invisible mechanism, which transforms savings into investments, does not have any influence on marginal productivity of capital and, consequently, that the process of growth is not influenced by the activities of the mechanism, which mobilises and allocates savings.

**The Second View:** Financing Specific Target Groups. Under the traditional view, countries, especially the developing countries, which had capital shortage i.e. savings shortage, started using foreign (debt and/or aid) capital to finance investments and fill up the savings gap. However, instead of contributing to GNP growth and improving the socio-economic condition of developing countries, the policy of infusing foreign capital to big development projects deteriorated the socio-economic conditions.

After the failure of the “trickle-down” development policy, the development planners started giving importance to the poorer strata of the society. The policy makers started taking development policies aiming at income generation, poverty alleviation, employment creation and other objectives to improve the socio-economic status of the poorer strata of the society. To some extent, the traditional attitude of concentrating on the entire society was changed to concentrating on specific target groups. The policy makers started giving priority to small farmers, small holders, small

entrepreneurs' etc. But understanding the term 'finance', only in the sense of capital but not of financial system, remained unchanged as in the traditional view. Only the recipients, who should be given priority in providing capital, changed. Farmers and small businesses, belonging to informal and/or non-monetized sector, became the preferred target groups instead of big business and public institutions. In the line of supply leading financial policies, policy makers emphasised the need to provide capital to specific target groups, because the policy makers assumed that the supply of credit to specific target groups would generate positive impact on development.

Because of this policy, the economists and policy makers started realising the importance of finance in the sense of financial system. The economists and policy makers would require a system, which would help to deliver capital to specific target groups. The existing banking system was found unsuitable for distributing capital to the specific target groups, which were excluded from the formal sector financial services. Therefore, the development banks were established to provide financial services to these specific target groups. The main objectives of the establishment of these development banks were not the profitability and financial viability, but their main objectives were to achieve the broadly defined macro economic objectives of policy makers and politicians. Interest rates charged by these institutions were kept artificially low. These development banks required subsidies to continue their financial services to specific target groups.

Finally, over time, policy makers as well as international donor agencies realised that these development banks were not as effective and efficient as was hoped for. The failure of development banks inspired policy makers and international donor agencies

to enlist the services of non-governmental organisations (NGOs) for providing capital to specific target groups. Saving and credit co-operatives also evolved to provide financial services to specific target groups. Under the second view, the understanding of the term 'finance' broadened and 'the financial system' received some attention from the economists, policy makers and international donor agencies. Although the financial system received some attention, the understanding of the role the financial system in development remained very narrow.

**The Third View: Financial System Development.** This view accepts the role of financial system in development. This view gives emphasis on the necessity of liberalising financial system for developing efficient financial system for a country. This view attacks strongly the policy of financial repression. Edward Shaw and Ronald Mckinnon initiated the macro-economic version of financial liberalisation. J.D. Von Pischke, Dale Adams and researchers at Ohio State University initiated the micro-economic version of financial liberalisation. The financial liberalisation policy advocates that a financial system, which is not constrained by the non-price and administrative regulations, will be able to mobilise and allocate financial resources efficiently. According to the financial liberalisation policy, if the interest rates are determined administratively<sup>13</sup>, people are encouraged to save less and financial institutions have smaller funds to provide credit to borrowers. When the financial system is repressed<sup>14</sup>, an excess demand for credit always exists in the economy and the financial institutions ration credit on the basis of non-economic criteria. Under the

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<sup>13</sup> The situation, when interest rates are not determined on the basis of demand and supply and the central bank or the government of a country determines interest rates on the basis of political criteria, is known as administratively determined interest rates.

<sup>14</sup> The condition, when interest rates are not determined on the basis of demand and supply and the central bank or the government of the country imposes decisions on the financial institutions, is known as the 'financial repression'.

financial repression paradigm interest rates are artificially held at a level below the market clearing interest rates. Due to this, there is always a chance of those projects, which fail to be financially viable under a non-repressed environment, getting financed. Therefore, financial repression causes inefficient allocation of resources.

The third view acknowledges the importance of the financial system in the development process of a country and also emphasises the necessity of an efficient financial intermediation system for the development process of a country. The third view has three propositions: (1) the available quantity and quality of financial intermediation in a country is a very important determinant of development, (2) the quality and quantity of financial intermediation is determined by the economic policy of the government of a country and (3) the best policy is the financial liberalisation i.e. deregulation of the financial system.

**The Fourth View: Finance, Institutions and Incentives.** This view also recognises the role of finance in the development process of a country. It also recognises the importance of an efficient financial system for the development process of a country. This view holds a position between the above mentioned second and the third view. According to this view, economic development of a country depends more on 'good institutions' than on anything else. From the financial point of view, all countries require a good financial sector for their economic development process. A financial system is termed as a 'good financial system' when it provides necessary incentives to promote savings, capital accumulation and capital allocation and ultimately leads to growth. In contrast to the third view, this fourth view believes that financial markets are important for the development of a country but financial markets may not perform

perfectly. Information and incentive problem e.g. adverse selection and moral hazards, prevent financial markets from functioning perfectly [Stiglitz, (1989)]. For that reason, intervention in the financial sector is required to improve the efficiency of the financial system in mobilising and allocating financial resources in a country. The main objective of the intervention in the financial sector is to increase economic welfare of the people in the country through improving efficiency of the financial markets. Therefore, the fourth view is totally opposite of the third view, which advocates liberalisation of the financial markets and less intervention in the financial sector. The fourth view does not explain how to intervene and when to intervene in the financial sector of a country.

### **2.2.2 Formal Sector Financial Institutions and the Rural Poor**

The formal sector financial institutions in developing countries are urban biased. This urban bias characteristic of the formal financial sector is clearly visible from the distribution scenario of bank branches within developing countries. This characteristic is also visible from concentration of deposit and lending activities of banks in the urban areas in developing countries. In developing countries, especially in Bangladesh, poor infrastructure and communication system in rural areas discourages the financial institutions to carry on their activities in rural areas, where the majority of the population lives. Thus majority of the population is kept out of the formal financial sector services. In rural areas, where some formal financial sector services are available, rigid, cumbersome and bureaucratic procedures of the formal financial sector institutions make it difficult for the majority of the rural population to receive the services of such institutions.

Asymmetric information problem exists heavily in rural financial markets in developing countries. Moral hazard and adverse selection problems also make rural formal sector financial institutions vulnerable when these operate in rural areas. It is not economically viable for the formal financial sector institutions to monitor all borrowers directly. For this reason, these institutions use collateral as the main loan application-screening device. The quality and value of the collateral determine the amount of the loan, which the applicant is entitled to receive. But poor people do not have enough assets to provide collateral to receive a loan. The assets, which poor people have, for example physical labour, farming skill, post-harvest crops or basic household goods etc., are not acceptable to formal financial institutions, because such institutions do not have the technology to deal with these kinds of collateral [Ghosh, (1986)]. This collateral requirement to receive a loan is the main reason of exclusion of poor people from the formal financial sector credit services.

The services of the formal financial sector institutions require literacy of the service receiver. But the literacy rate in developing countries, especially in rural areas, is very low. Because of the literacy requirement, the illiterate section of the population is deprived of the services of formal financial sector institutions.

Rural financial markets in developing countries are characterised by government intervention and financial repression. Under the financial repression paradigm, the interest rates are kept administratively below the market equilibrium interest rates<sup>15</sup>

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<sup>15</sup> In these countries, policy makers determine interest rates administratively instead of demand-supply mechanism.

[Fry, (1995)]. In most cases, the real interest rates<sup>16</sup> of these countries become negative. As a result, an excess demand for credit always exists in the economy. Because of the excess demand for credit, the credit operations of formal sector financial institutions are operated by the policy of selective allocation of credit. It is very much natural that bankers would prefer those borrowers who are their friends, or influential, or politically powerful, or has the ability to pay bribes or gifts. The monitoring of borrowers is very costly and complicated. It is easier for bankers to monitor one borrower, who borrowed one million Taka, than to monitor one hundred borrowers, each of whom received a loan of ten thousand Taka. For these reasons, the formal sector financial institutions discriminate against marginal borrowers from receiving their services by imposing different kinds of restrictions, e.g. collateral, pre-existence of a bank account etc.

The main objective of the low interest rate policy in developing countries, like Bangladesh, was to save rural people from the exploitation by moneylenders. But this objective has not been achieved. Still, moneylenders continue to dominate the rural financial markets in these countries. These moneylenders are the main source of funds for the rural people, especially the poorer section of the rural population. The interest rates charged by these moneylenders remain high [Hoff and Stiglitz, (1990)]. Although the nominal interest rates in the formal financial sector in developing countries are low; the effective borrowing costs<sup>17</sup> for obtaining loans are very high. A number of studies have found that the effective borrowing costs are two or three times higher than the nominal interest payments [Adams and Nehman, (1979); Pablo,

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<sup>16</sup> The real interest rate is calculated through deducting the rate of inflation from the nominal interest rate.

<sup>17</sup> The effective borrowing costs include all costs associated with the borrowing including the transition costs.



(1979); Adams and Graham, (1981)]. Transportation costs, waiting in line cost, legal and paper work expenses and opportunity costs inflate the effective borrowing costs for marginal borrowers. Thus when the richer section of the population get the advantage of low interest rates, the marginal borrowers suffer from high and regressive transaction costs. In other words, though the nominal interest rates are low, credit from the formal sector is not cheap for the marginal borrowers [Gonzalez-Vega, 1994)].

Another important objective of the low interest rate policy in developing countries was to redistribute income and wealth. But Fry (1995) argues that the existing formal sector financial system in developing countries usually cause concentration of income in few hands. It was also found that the formal financial sector cause transfer of resources from the low-income to high-income areas as well as from the rural to urban areas. A small proportion of borrowers captured the largest proportion of the formal sector's loan portfolio [Gonzalez-Vega, (1994); Cho, (1984)]. Thus the policy of keeping the interest rate deliberately low in these countries seem to have deteriorated income distribution in the areas where its intended intention was to improve it [McKinnon, (1973); Krugman, (1978); Fry, (1995);].

### **2.2.3 Informal Financial Sector and the Rural Poor**

Financial dualism is one of the main characteristics of the financial markets in developing countries. Formal financial markets and informal financial markets co-exist in the economy of developing countries. Financial repression, inherent dualism of socio-economic structure and non-availability of formal financial sector services

help informal financial sector to evolve and develop in the economy. In developing countries, the size of the informal financial markets varies from thirty three per cent to seventy six per cent. In Bangladesh and China, the share of rural informal credit to total credit lies between thirty three percent to sixty seven percents [Rahman, Chowdhury, and Murshid (1989); Hussain, (1983); Feder, Lau and Xiaopeng (1989)]. In India, for rural areas it is thirty eight percent and for urban areas it is forty percent. In rural areas of Korea, Malaysia, Nepal, Pakistan and Sri Lanka, the share of informal credit to total credit varies from forty five percent to seventy six percent [Montiel, Agenor, and Haque, (1993)].

Available evidence suggests that interest rates in the informal financial sector tend to be much higher than the interest rates in the formal sector [Montiel, Agenor, and Haque, (1993)]. Lenders in informal financial sector are more interested in earning higher interest income than recovering the principal sums lent to the borrowers. After researching on the informal financial markets in Pakistan, Aleem (1990) has found three reasons for high interest rates in the informal financial markets in Pakistan. These are, (i) the high costs of loanable funds, which money lenders sometimes borrow from the informal sector (ii) the relatively large costs of monitoring and administering the loans and (iii) the costs associated with default and delinquency. Another important reason for high interest rates in informal financial markets is the high opportunity costs of loanable funds, which are measured by the rates of return in alternative activities. It has been estimated that the average interest rate in the informal financial sector in 22 countries around the world as 44 percent in the period of 1948-51 and 30 percent in the period of 1968-71 [Wai, (1980)].

Studies carried out by Gapud (1958) and TBAC-UPBRF (1985) studies have found that informal lenders earn substantial amount of monopoly profit. According to a study [TBAC- UPBRF (1985)], 33 percent excess profit in the informal financial sector. The study found that this excess profit was earned by reducing risk through lenders' personalised relationship with borrowers and under-valuation of collateral or product which lenders buy from borrowers as part repayment of loan. According to Bhaduri (1977), the main reason behind interest rates in backward agriculture being high is because of monopolistic profit. He also argues that these high interest rates may increase the default rate as well as the risk premium even higher. Lenders in informal financial markets have monopoly power because of two informational advantages. Firstly, lenders live among the borrowers in the same community. For this reason, lenders in the informal financial sector have greater efficiency in monitoring, administering and executing loan application than formal sector lenders. Secondly, informal financial sector lenders have greater ability in ensuring the timely repayment of loans, through social pressure or threatening the future access to credit or physical assault. These two advantages give informal sector lenders substantial power to earn monopolistic profit. Wai (1957) and Nisbet (1967) found monopolistic profit as an important component of interest rates in informal financial sector.

In rural areas in developing countries, moneylenders use default situation as a weapon of economic exploitation. According to Bhaduri (1983), economic exploitation takes place in the form of usury in backward agriculture. This exploitation takes place through the mechanism of default. The personalised and isolated market for credit gives the lenders the opportunity to determine the interest rates at any level to his advantage. So long as the borrower maintains personalised credit arrangements with

the lender, he has no choice but to accept the usually high interest rate dictated by the lender.

In rural areas, people, especially poor people, do not have the required acceptable collateral to offer to the formal financial sector institutions for a loan. The resources, these rural people, especially poor people, have are not marketable in the formal financial sector, e.g. labour, future agricultural crops etc. However, the personalised relationship with the borrowers permits lenders in informal financial sector to accept these products as collateral. The non-marketability of products, which are provided as collateral to moneylenders in the informal financial sector, gives the moneylenders a considerable power to undervalue the price of the collateral. Lenders in informal financial sector transfer the risk associated with the loan to borrowers by undervaluation of collateral. It is often argued that in this situation the concept of risk premium in determining the interest rates in the informal financial sector becomes irrelevant [Basu, (1984)]. In case of default, the title of the collateral (physical assets) is transferred to the lender to settle credit transaction.

In remote rural areas in developing countries, moneylenders fix interest rates so high that the total repayment of interest and principal exceeds the value of the collateral. This situation encourages borrowers to default. In spite of this situation, borrowers still continue to repay their loans, because collaterals have very high personal value to them. The personal valuation of the collateral by borrowers exceeds the market value of the collateral and value to the moneylender [Ray, (1998)]. Because, in most cases, these collaterals (especially in case of land) are the only means of livelihood and survival of borrowers. This vulnerability of borrowers gives moneylenders in rural

areas, especially in remote rural areas, an excessive power and opportunity to charge excessively high interest rates. Ultimately borrowers are forced either to remain in perpetual debt bondage to the lender or to default and sell their collateral at a below the market price. The selling price is also below the valuation of borrowers. In this way, many borrowers in rural areas in developing countries lose their most valuable assets, which are the only means of livelihood to those people. Rural people, especially poor people, become more vulnerable to economic and social shocks. The economic exploitation through high interest rates and default situation continues in the informal financial sector [Rao, (1980)].

### **2.3 Alleviation of Poverty**

In the section 2.2.2 of this chapter, we have found that people are poor because they have lack of entitlement to absolute minimum necessities of life. Absolute minimum necessities of life include food, education, clothing, housing and health. Therefore, poverty of the poor people in developing countries can be alleviated by increasing their entitlement to the absolute minimum necessities of life. The government of a country may provide poor people with aid or charity (aid and charity are part of extended entitlement from the point of view of Dreze and Sen (1989)) to increase their entitlement. But aid or charity increases entitlement and raises the poor above the poverty line on a short-term basis and leaves the poor vulnerable again when aid or charity is stopped. Charity or aid has negative impact on productivity, efficiency and, most probably, incentive of poor people. Thus, a strategy of poverty alleviation based on complete reliance on extended entitlement, for example aid or charity, can only be self defeating in the long run as it reduces peoples incentive. However, this is

not to say that extended entitlement has not an important role. The types of extended entitlement, which can help to alleviate poverty, are those which help to increase poor people's endowment of human capital; viz. provision of free or subsidised education or health service. This is because such strategy helps to enhance future exchange entitlement of the recipients.

Ultimately, the enhancement of exchange entitlement to the absolute minimum necessities of life should be done on a permanent basis. Poverty alleviation programmes should be formulated and built in such a way that the poverty of poor people will be alleviated on a permanent basis and they can graduate to a position where they absorb as well as tackle any kind of shocks, e.g. natural, social, personal etc. According to the concept of entitlement, endowment of a person and the e-mapping, he/she faces, determine the extent of entitlement of that person in a society. Hence, entitlement of poor people can be increased through an increase in endowment or a favourable change in e-mapping of that person. A favourable e-mapping can be achieved through low inflation rate and/or increase in productivity of poor people. An increase in the endowment of poor people requires an increase in the capacity to invest by those poor people.

In developing countries, especially in Bangladesh, where the unemployment rate is very high and the average growth rate of GDP is very low, poor people can increase their income, and hence capacity to invest, through involving themselves in income generating activities and creating self employment opportunities. A minimum amount of capital is required to start income generating activities and to create self-employment opportunities. But poor people do not have that minimum amount of

capital. So, poor people's ability to increase income through involving themselves in income generating activities and creating self-employment opportunities is constrained by the required minimum amount of capital. Poor people can borrow the minimum amount of capital from the financial sector sources. But formal sector sources require collateral, but poor people do not have enough acceptable assets to provide the required collateral. On the other hand, informal sources are exploitative by their nature. So, poor people do not receive the minimum amount of capital, which they require to start income generating activities and to create self-employment opportunities to increase income, from either of the financial sector sources, i.e. formal financial sector sources and informal financial sector sources.

Therefore, it is important to develop an innovative credit delivery system, which will provide poor people with the minimum amount of capital without collateral as well as one which will not be exploitative. The availability of the minimum amount of capital will help poor people to increase income through starting income generating activities and creating self-employment opportunities. Increase in income will also help poor people to acquire new assets. Increase in income and assets will increase entitlement of poor people on basic necessities of life, which will also decrease poverty of poor people gradually. But long term sustainability of poverty alleviation of poor people depends on an increase in income on a permanent basis. An increase in income on a permanent basis depends on accumulation of assets by poor people [Khandker and Chowdhury (1996)]. So, poverty alleviation programmes in developing countries should be formulated in such a way that it increases assets of poor people, which will ensure an increase in entitlement to minimum necessities of life and hence, alleviation of poverty of poor people on a permanent basis.

In developed countries, poverty i.e. relative poverty exists because of unequal distribution of resources. If an unequal distribution of resources continue to prevail in a society, then it is difficult to alleviate relative poverty from that society. Relative poverty will continue to exist in a developed society as long as unequal distribution of resources continues. To alleviate relative poverty, policy makers will have to ensure more equalitarian distribution of resources in the society. However, in reality relative poverty to a certain extent will always remain in a society.

## **2.4 Summary of the Chapter**

In this chapter, we tried to examine the concepts of poverty, the role of finance in development, the relationship between the rural poor and the formal as well as the informal financial sector.

From the discussion, we have found that poverty is a product of social and economic history, conditions and policies of a country. The failure of entitlement to cover subsistence needs is the main reason of poverty. Poverty can be defined from the standpoint of two broad poverty concepts, these are the absolute and relative poverty concepts. The absolute poverty concept is related to the concept of subsistence. Under the absolute poverty concept, a person is poor when he/she does not have enough income to meet his/her subsistence needs. But in the relative poverty concept, a person is poor when he/she does not have enough income to maintain the customary or decent standard of living of his/her community or country. In developing countries



like Bangladesh, the absolute poverty concept is more appropriate for poverty analysis.

Until the mid sixties, the role of finance was considered only in passing, if at all, in growth and development literature. From the late sixties and early seventies, economists and policy makers have started to recognise the importance of finance in growth and development.

In developing countries, poor people are excluded from the formal sector financial services because of such factors as lack of collateral. Poor people do not have enough acceptable assets to provide as collateral. The assets, which poor people have, are not acceptable to formal sector financial institutions, because such institutions do not have the technology to deal with these kinds of collateral. In developing countries, nominal interest rates are kept low to help the poorer section of the country, but the effective interest rates are very high because of high transaction costs, opportunity costs, waiting in que costs etc. Therefore, credit from the formal financial sector is not cheap for poor people.

In developing countries, the informal financial sector plays a significant role in the financial sector. Financial repression, inherent dualism of socio-economic structure and non-availability of the formal financial sector services help informal financial sector to evolve and develop in the economy. The share of the informal financial markets varies from thirty three percent to seventy six percent of the financial sector. The informal financial sources are exploitative in nature. The personalised and isolated market for credit gives the lenders the opportunity to determine the interest

rates at any level to their advantage. Moneylenders fix interest rates so high that the total repayment of interest and principal exceeds the value of the collateral. This situation forces borrowers to remain in perpetual debt bondage to the lender or to sell their collateral at a below the market price.

Therefore, poor people do not receive exploitation and collateral free credit from either of the financial sectors in an economy. In this way, poor people's ability to increase income through income generating activities is constrained by the required minimum capital to start income generating activities. Poverty of poor people can be alleviated through increasing their entitlement to basic needs and entitlement can be increased through increasing their income and assets. So, it is important to provide poor people with collateral and exploitation free credit, which will provide them the opportunity to start income generating activities and hence, to increase entitlement and alleviate poverty.

In the next chapter, we will discuss the poverty and the financial system in Bangladesh in the light of the theoretical discussions in this chapter.

## **Chapter Three: Poverty and Finance in Bangladesh**

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### **3.1 Introduction**

In the previous chapter (chapter two), we discussed about poverty and finance. In that chapter, we have seen that people are poor because of a lack of entitlement to basic needs. We discussed the absolute as well the relative poverty concepts. The absolute poverty concept provides emphasis on fulfilment of subsistence needs of people. On the other hand, the relative poverty concept gives emphasis on the ability of people to maintain the customary or decent standard of living. We argued that the absolute poverty concept is more relevant for a country like Bangladesh for poverty analysis. In chapter two, we also discussed the role of finance in development, the relationship between the poor people and the formal as well as informal financial sector. From the discussion, we have found that the existence of a financial system provides a bridge between the surplus savings units and the deficit savings units, reduces the costs and improves the efficiency of mobilisation and allocation of resources. We have also seen that formal sector financial institutions exclude poor from credit through collateral requirement and informal financial sector sources are exploitative in nature.

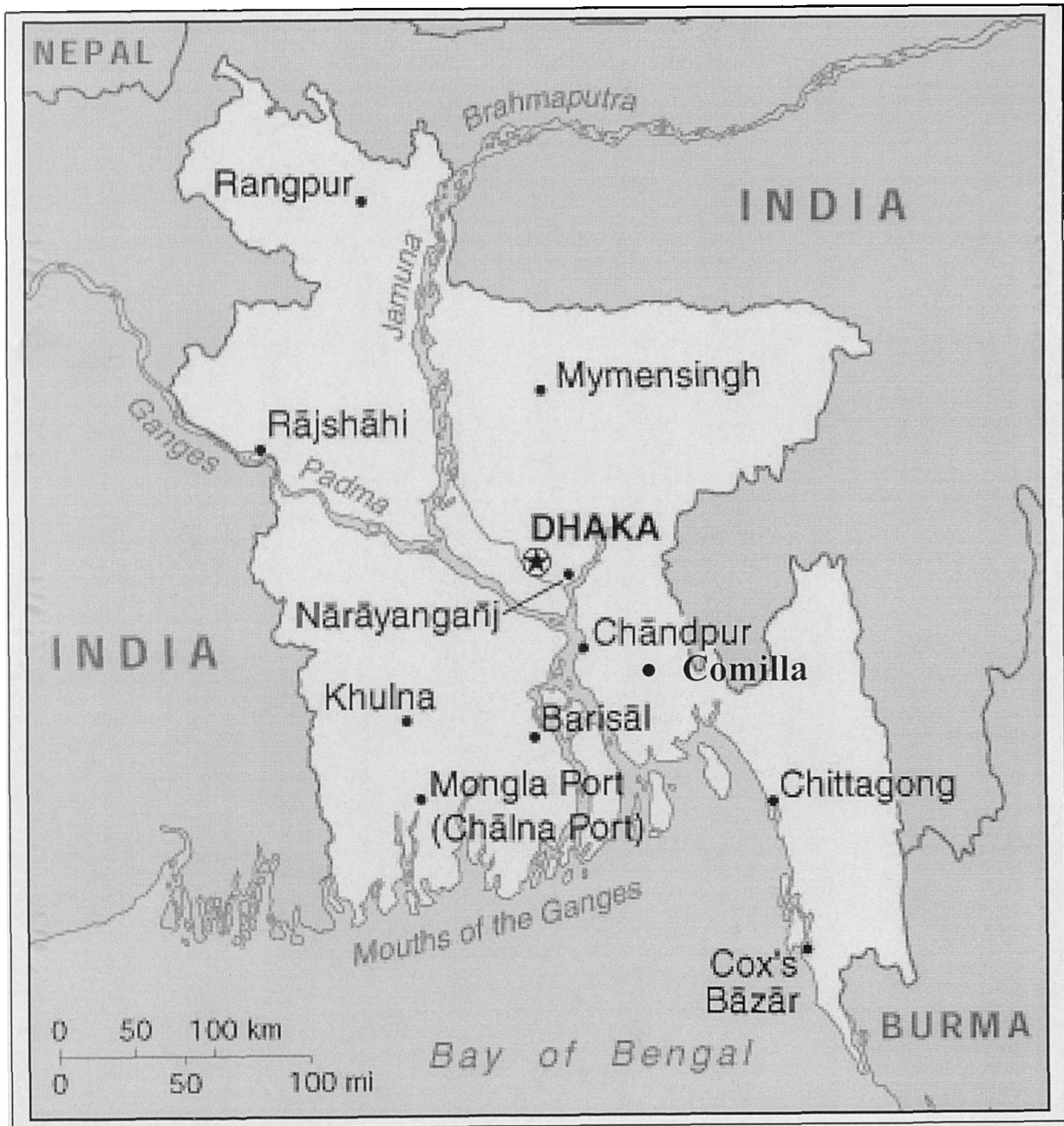
In the present chapter, we would like present a brief historical review of Bangladesh and to examine poverty and fulfilment of basic needs in Bangladesh. We will also examine the status and performance of the financial sector in Bangladesh. In an appendix to this chapter, we have presented profile of Bangladesh in statistics.

### 3.2 Historical Review of Bangladesh

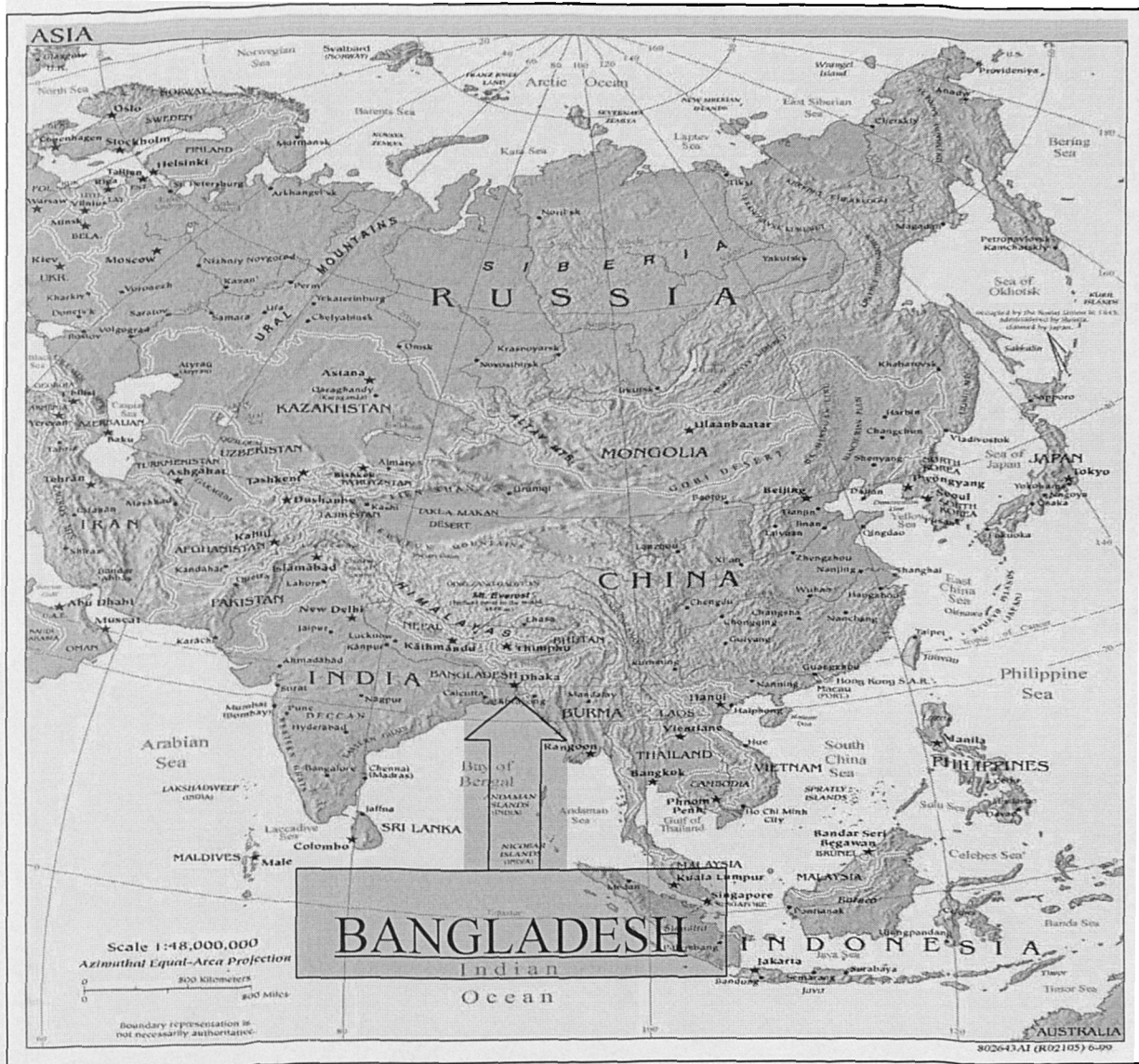
Bangladesh, formally known as 'The Peoples Republic of Bangladesh', was a part of Bengal in the Indian sub-continent before 1947 and was a part of Pakistan between 1947-1971. It became an independent state in 1971. It is located in the delta of Ganges and Jamuna rivers in the northeastern part of the Indian subcontinent. Although it gained independence in 1971, its existence, history and culture date back to the ancient past. The name of the country, Bangladesh ('land of Bangla') originated from the name of the language of its inhabitants, Bangla or Bengali. The Bengali language began to emerge in a distinct form in the 7<sup>th</sup> century AD and by the 11<sup>th</sup> century it had acquired its own literature.

Buddhism spread across the entire Indian sub-continent in the 3<sup>rd</sup> century BC under the Maurya emperor Aśoka's (reigned c. 265-238 BC, or c. 273-232 BC) patronage. But in the 3<sup>rd</sup> century BC the 'Brahmanical Hinduism' re-established its control in the region after the decline of Maurya power (321 BC – 185 BC). In the remote eastern Bengal, Buddhism continued its dominance under the Pala kings (8<sup>th</sup> – 12<sup>th</sup> century AD). But Palas were overthrown by the Sens. Sens were the worshippers of the Hindu god 'Vishnu'.

**Map 3.1: Map of Bangladesh**



Map 3.2: Bangladesh in Asia



Muslims, followers of Islam, started coming to the Indian sub-continent from the middle-east area from around 1200 AD. Since then, in the eastern part of the Indian sub-continent (present Bangladesh), people started embracing Islam on a large scale. During the Mugul dynasty (16<sup>th</sup> century – 18<sup>th</sup> century), Muslims became the majority in Bengal.

At the end of the Mugul dynasty, Bengal including Bihar and Orissa became semi-independent and named as Suba. The Muslim rulers of Suba had started facing threats from Arkanese pirates and Portuguese. In 1608, the then ruler of Suba moved the capital from Rajmohal to Dhaka (the present capital city of Bangladesh). But Suba had faced further threat from Maratha of central India. The capital of Suba again shifted from Dhaka to Murshidabad in 1704. During this time, English East India Company established its base in Calcutta.

In 1757, the British captured Bengal, after defeating Nabab Shirajuddowla, the Muslim ruler of that time at Palashy war. Gradually, the British established their control over the whole Indian sub-continent.

In 1905 the then British Governor, Lord Curzon, divided Bengal into two new provinces, Western Bengal and Eastern Bengal. Western Bengal consisted of western part of Bengal, Bihar and Orissa. Eastern Bengal consisted of eastern part of Bengal and Assam. The capital of the eastern Bengal province was Dhaka. The total population of eastern Bengal in 1905 was 31 million, of which 6 million were Bengalis. But the partition of Bengal was protested and two Bengals were reunited again in 1912.

In 1947, the Indian sub-continent gained its independence from the British Empire. The whole Indian sub-continent was divided into two independent nations, Pakistan and India, on the basis of communal division. Areas, where Muslims were in the majority, were included in Pakistan and areas, where Hindus were in the majority were included in India. The area which is now known as Bangladesh was included in Pakistan, because Muslims were majority in this region. Bangladesh part of Pakistan was known as the East Pakistan. The western part was known as the West Pakistan.

From the beginning, the relationship between the East and the West Pakistan was not good. The West Pakistan leaders tried to impose the language of West Pakistan, Urdu, on East Pakistan. People of East Pakistan protested that attempt. Many students of the University of Dhaka died during the protest on the 21<sup>st</sup> of February in 1952, when members of the armed forces fired on the protesters<sup>18</sup>. Although jute and tea of East Pakistan provided most of Pakistan's foreign exchange earnings, West Pakistani leaders did not provide the equal share of the annual development budget to the East Pakistan. Education, health, employment, industrialisation, infrastructure and all other sectors of the East Pakistan were found lagging behind those of the West Pakistan. Distrust and hatred had started growing among the people of the East Pakistan against the people of the West Pakistan. East Pakistanis (i.e. Bengalis) started realising that they had no power in Pakistan.

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<sup>18</sup> In 1999, UNESCO has declared the 21<sup>st</sup> February of each year as the 'International Mother Tongue Day' in recognition of the sacrifice of people of Bangladesh to protect their mother tongue.



In the general election of Pakistan in 1970, the Awami League won the 167 out of 313 seats of the Pakistan National Assembly; giving them the overall majority. The west Pakistani leaders refused to hand over the political power to the Awami League<sup>19</sup>. While the president of Pakistan, Yahya Khan, was negotiating with Sheikh Mujibur Rahman<sup>20</sup> in Dhaka throughout March 1971, the then government of Pakistan brought in troops from the West Pakistan. On the 25<sup>th</sup> of March in 1971, the armed forces launched a massive attack on Bengalis in Dhaka, especially on the student halls of the University of Dhaka. There were many casualties including many students and teachers. Sheikh Mujibur Rahman was arrested and taken to the West Pakistan. Most of the leaders of the East Pakistan fled to India, especially to Calcutta. The East Pakistani leaders set up a government-in-exile in Calcutta and declared Bangladesh as an independent state. Internal resistance was mobilised by some Bengali units of the regular armed forces, particularly by Major Zia-ur-Rahman. People of Bangladesh, in mass, joined the liberation forces of the government-in-exile. Pakistani armed forces surrendered on December 16, 1971 and finally, Bangladesh got its real independence from Pakistan with some help from India. During the nine months liberation war, 3 million Bangladeshis died. These people sacrificed their lives with the expectation that their sacrifice would bring justice, equality and prosperity for the people of Bangladesh.

### **3.3 Poverty in Bangladesh**

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<sup>19</sup> A political Party of the East Pakistan which had won majority of the seats.

<sup>20</sup> A leader of the Awami league. Under his leadership, Bangladesh achieved its independence from Pakistan.

Bangladesh is one of the countries with lowest per capita GDP (\$218 in 1997) in the world. Poverty is the main problem of Bangladesh, as majority of the population lives under the poverty line [UNDP, (HDR 1999)]. Although all governments, since independence of Bangladesh, declared alleviation of poverty as the main macro-economic objective of the government, questions could be raised about the integrity and efforts of governments in achieving this objective. Bangladesh separated herself from Pakistan with the objectives to decrease socio-economic inequalities between rich and poor, and to improve quality of lives of mass people. But in reality these objectives have not been achieved yet.

The poverty situation, during the period 1963 to 1995 in Bangladesh, did not experience any improvement. In 1963-64, the percentage of rural population living under the poverty line in the country, then East Pakistan, was about 44% and in 1995, it was also about 47% (Table 3.12) [Sen, (1995); Mujeri, (1997)]. But compared to the poverty situation immediately after the independence, the country had experienced about 13% decrease in poverty in twenty-two years time. The percentage of rural population living under the poverty line went down from 59.9% percent in 1973/74 to 46.8% in 1995. Poverty situation sharply deteriorated immediately after the independence due to the destruction of the infrastructure and production system of the country during the liberation war in 1971 and severe drought and floods in the period of 1972 to 1974. Great deals of contrasts have been found in calculation of proportion of rural poor people by different researchers. For example, for the year 1973/74 Muqtada (1986), Islam and Khan (1986), Osmani and Rahman (1986), and Rahman and Haque (1988) found respectively 59.9%, 47.7%, 65.3% and 55.7% of rural population as poor. Bangladesh has experienced a fluctuating poverty situation in

rural areas during the period 1973 to 1995. Poverty level increased from 59.9% in 1973/74 to 73.8% in 1981/82. But after 1981/82, the poverty situation in rural areas had experienced an improvement when it decreased to 61.9% in 1983/84. Rural poverty situation had continued the trend towards the improvement until 1995 and in 1995, the head count ratio for rural areas was 46.8%; i.e. 46.8% of rural population was living under the poverty line. In the same year, 1995, the head count ratio for urban areas was 43.6% [Mujeri, (1997)]. Poverty level in rural areas was always higher than the poverty level of urban areas in Bangladesh.

Inequality in income distribution remained almost the same in Bangladesh during the period 1973 to 1992. In 1973/74, the Gini co-efficient of income distribution in rural areas in Bangladesh was 0.36 and in 1991/92, it was also 0.36 (Table 3.13). The value of Gini co-efficient has recorded an increasing trend during the period 1974 to 1976 and in 1976/77, it became 0.45 [Muqtada, (1986)]. After 1976/77, the value of Gini co-efficient for rural areas fluctuated between 0.35 to 0.37 until 1991/92. In 1991/92, the Gini co-efficient for rural areas was 0.36 for rural areas and 0.40 for urban areas. One of the main objectives of achieving independence of Bangladesh from Pakistan in 1971 was to reduce inequality in distribution of income. The value of Gini co-efficient during the period 1973 to 1992 (Table 3.13) indicate that the above mentioned objective of independence has not yet been achieved.

The incidence of poverty<sup>21</sup> in the rural areas of Bangladesh had experienced slightly declining trend during the period 1983 to 1996 (Table 3.14). The incidence of poverty

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<sup>21</sup> Poverty Gap and Squared Poverty Gap measures provide information about incidence of poverty in a country. Poverty Gap is the ratio of the average extra consumption needed to get all poor people to the poverty line. The Poverty Gap calculates the average distance between the poor people and the poverty line as a proportion of the poverty line. The Squared Poverty Gap calculates the distance between the

in rural areas is higher than in urban areas. In 1995-96, the value of Poverty Gap measure, considering the upper poverty line, was 15.40 for rural areas and 9.19 for urban areas. During the same year, the value of the Squared Poverty Gap measure was 5.74 for the rural areas and 3.44 for urban areas. In the period 1983 to 1996, the value of Poverty Gap measure fluctuated between 16.83 to 12.50 for rural areas. The value of poverty gap measure was 16.83 in 1983/84 and it declined to 12.50 in 1985/86. After 1985/86, the value of poverty gap measure had shown an increasing trend until 1991-92, when it reached to 18.06. In 1995/96, the value of Poverty Gap had declined again and it became 15.40. The Square Poverty Gap measure for rural areas fluctuated between 7.15 to 4.27 during the period 1983 to 1996 (Table 3.14). In 1983-84, it was 6.72 and it went down to 4.27 in 1985-86. During the 1988 to 1992, the value of Square Poverty Gap had an increasing trend and it reached to 7.15 in 1991-92. But in 1995-96, the value of Square Poverty Gap value declined to 5.74.

### **3.3.1 Basic Needs and Human Development Situation in Bangladesh**

#### **A. Food**

Average per capita calorie intake in Bangladesh increased over the period 1981 to 1996. In 1981-82, the national average per capita daily intake of calorie was 1925 and in 1996, it was 2206 (Table 3.15). During the period 1981 to 1996, the average intake of calorie per day in rural areas increased at a faster rate than in urban areas. Household expenditure surveys (HES) of Bangladesh Bureau of Statistics [BBS, (1998)] during the period 1981/82 to 1995/96 show higher average calorie intake per

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poor people and the poverty line as well as the inequality among the poor people. Poverty Gap is often considered as the measurement of the depth of poverty. The Squared Poverty Gap is considered as the measurement of the severity of poverty [Foster, Greer and Thorbecke, (1984)]

day in rural than in urban areas. According to HES 1995-96, the average calorie intake per day in rural areas was 2251, but it was 2209 in urban areas [BBS, (1998)].

### **B. Clothing**

Proportion of household consumption expenditure on clothing is decreasing gradually in Bangladesh. In 1981-82, households were spending 7.85% of their monthly consumption expenditure on clothing (Table 3.16). During the period 1983-84 to 1988-89, monthly expenditure on clothing of households had decreased gradually. In 1983-84, 1985-86 and 1988-89 monthly average expenditure of households on clothing were 7.71%, 5.92% and 5.55% respectively. In 1996, the average monthly expenditure of households on clothing was Tk. 189<sup>22</sup>, which was 5.58% of the total monthly expenditure [BBS (1998)].

### **C. Housing**

The average per capita floor space at the national level is 80.18 square feet (Table 3.17). In rural areas, people enjoy more floor space than in urban areas. In rural areas in 1991, the available per capita floor space was 86.80 square feet. During the same year, people in urban areas were using 67.68 square feet per person, which was 9.12 square feet lower than the average per capita floor space in rural areas.

In urban areas, households spend more on housing than households in rural areas do. In rural areas, households in agriculture, informal occupation and formal occupation

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<sup>22</sup> Exchange rate: 1 British Pound equals to Taka 80.

group were spending on average on housing per month Tk. 251, Tk. 279 and Tk. 361 respectively in 1996 (Table 3.18). On the other hand, in urban areas, households in informal and formal occupation group spent on an average on housing Tk. 560 and Tk. 967 respectively in 1996. The average expenditure of households on housing in Bangladesh (both rural and urban combined) in 1996 was Tk. 334 per month.

#### **D. Health**

The government of Bangladesh had been increasing expenditure on health and family welfare activities during the period 1991 to 1996. Per capita expenditure on health and welfare had also increased during the same period. In 1991-92, the total government expenditure on health and family welfare was Taka 684 crore (Table 3.19). It increased to Taka 1627 crore in 1995-96. Per capita government expenditure on health and family welfare was Taka 61 in 1991-92 and it increased to Taka 133 in 1995-96. In

Table 3.20 shows a comparative picture of health condition of ten south Asian countries. In terms of availability of qualified physicians, the position of Bangladesh is eighth, only 18 qualified physicians are available for every 100,000 people. In terms of availability of qualified nurses, the position of Bangladesh is seventh (along with Nepal and Bhutan). Only 7 qualified nurses are available for every 100,000 people. In terms of availability of qualified nurses and Doctors, the position of Bangladesh lies in the bottom of the list of SAARC (South Asian Association of Regional Co-operation) countries.

Table 3.21 shows the average expenditure of households of different social categories. The Table shows that average monthly expenditure of households in Bangladesh was Taka 334 in 1998 and all households were spending only 3.34% of their monthly expenditure on an average on health. The Table also shows that households in urban areas were spending more on health than rural households.

### **E. Education**

Education is one of the main components of human development. Table 3.22 shows the comparative picture of education in ten Asian countries, which includes all member states of SAARC. In terms of adult literacy, Bangladesh has got the second lowest adult literacy rate among the countries on the list. The literacy rate of Bangladesh in 1997 was only 38.10 percent. Only Nepal's adult literacy rate was lower than that of Bangladesh in 1997. In terms of combined first, second and third gross enrolment ratio, the position of Bangladesh was the second lowest among the countries on the list. In 1997, the combined first, second and third gross enrolment ratio of Bangladesh was 35, where as the average combined first, second and third gross enrolment ratio of all developing countries was 59.

The annual expenditure on education, as percentage of GNP, in Bangladesh in 1980 was the lowest among the countries on table 3.22, when it was only 1.5% of GNP. After 1980, the proportion of GNP spent on education has increased gradually and during the period 1993 to 96, the average annual expenditure on education increased to 2.9% of GNP. During the 1983 to 1996, Nepal, India, Pakistan, Sri Lanka and Maldives were spending on an average 3.10%, 3.40%, 3.00%, 3.40%, and 6.40% of

GNP on education respectively. During the same period, the average expenditure on education of all developing countries was 3.6% of GNP.

Table 3.23 shows expenditure of households of different social groups on education in 1997. The Table indicates that average expenditure of all households in Bangladesh on education in 1997 was Taka 116 in Bangladesh. The Table also indicates that households of agriculture and informal occupation group were spending less than households of formal occupation group in both urban and rural areas, which indicates that formal occupation increases the entitlement of households to education.

#### **F. Human Development Index**

Human Development Index (HDI) is now widely used as an indicator of the level of development of a country. It has substituted the widely used per capita GNP indicator.

The following four indicators have been considered in calculating HDI of a country:

- Life expectancy at birth,
- Adult literacy rate,
- Combined first, second and third level gross enrolment ratio
- Real GDP per capita.

On the basis of the methodology, which has been used for calculating HDI since the publication of the first Human Development Report in 1990, HDI of Bangladesh in 1960 was only 0.166 (Table 3.24). The same index for Bangladesh in 1997 was 0.44. Bangladesh has gained an increment of 0.274 point during the period 1960 to 1997. During the same period, Nepal, India, Pakistan and Sri Lanka have gained an increment of 0.335, 0.339, 0.325 and 0.246 point respectively. In 1997, the rank of



Bangladesh in terms of HDI among 174 countries was 150 [UNDP (1999)]. But in 1994, Bangladesh had a rank of 144 in terms of HDI of that year. Although the human development index for Bangladesh has gained an increment of 0.072 point during the period 1994 to 1997, the rate of increase of HDI of Bangladesh was lower than that of some other comparable countries. For that reason, some countries like Togo, Yemen, Mauritania, Madagascar, etc. overtook Bangladesh in terms of HDI rank. Two SAARC countries, Nepal and Bhutan, had also overtaken Bangladesh in terms of HDI rank. In 1994, Nepal had the HDI rank of 154 among 175 countries and the same rank moved upward to 144 among 174 countries in 1997. The HDI of Nepal increased from 0.128 in 1960 to 0.463 in 1997; i.e. Nepal gained 0.335 HDI point during this period. On the other hand, Bangladesh gained only 0.274 HDI point during the same period.

### **3.4 An Overview of the Financial Sector in Bangladesh**

The financial sector of the vast majority of developing countries is characterised by financial dualism; i.e. both the formal financial sector and the informal financial sector play active role in the economy. According to Rahman (1992), the informal financial sector fulfil 65.50% of the total rural credit demand and 54.80% of total urban credit demand in Bangladesh (Table 3.1). Thus, the formal financial sector sources fulfil only 34.50% of the total rural credit demand and 45.21% of total urban credit demand in Bangladesh. The same study indicates that 73.20% of all borrowing rural households receive credit from the informal sector sources; i.e. only 26.80% of all rural borrowing households have access to the formal sector financial sources (Table 3.2). Another study [Khalily (1995)] indicates that 46.19% of all borrowing

rural households have only access to informal financial sector sources (Table 3.2). The statistics of two studies indicate that, over time, the size of the informal financial sector is declining gradually, however, it, still plays a significant role in the financial sector in Bangladesh.

Financial repression and non-availability of formal financial sector services in rural areas are the main reasons of the significant role of the informal financial sector in Bangladesh. The formal financial sector is repressed in Bangladesh. Until the end of eighties, interest rates on deposit as well as lending were determined by the central bank administratively and commercial banks did not have any authority to determine their own interest rates [Ahmed, (1993)]. For most of the time since independence, the real deposit interest rates of commercial banks were negative.

The formal financial sector in Bangladesh is predominantly urban biased. The distribution scenario of bank branches, deposit mobilisation and credit disbursement of formal sector financial institutions reflect the urban biases of the formal sector financial institutions in Bangladesh. In 1998, about 40% of all scheduled bank branches were located in urban areas, whereas only 20% of the population lived in the urban areas. In the same year, per branch population in urban areas was 10781 persons and on the other hand in rural areas, per branch population was 27742 persons (Table 3.3). Per capita deposit mobilised from rural areas by scheduled banks was Taka 1184.33 and for urban areas it was Taka 15965.10 in 1998 (Table 3.3). In the same way in 1998, the per capita advances provided by scheduled banks in rural and urban areas were Tk. 808.80 and Tk. 15869.00 respectively (Table 3.3). Therefore, it is evident from the above that in rural areas formal sector banking services are not adequate and in many rural areas, especially in remote rural areas, formal sector

banking services are not available at all. The inadequate formal financial services in rural areas and non-availability of formal financial services in some rural areas have helped the informal financial sector to play a significant as well as the dominant role in rural areas in Bangladesh.

### **3.4.1 Structure and Performance of the Formal Financial Sector in Bangladesh**

Bangladesh inherited an undeveloped and inefficient financial system from Pakistan. The whole financial system was dominated by the commercial banks. The first government of Bangladesh, headed by Sheikh Mujibur Rahman, accepted the socialistic views to achieve macro-economic objectives of the government. The government nationalised all financial institutions along with other industries in the country. The government also reorganised, except the branches of foreign banks, all financial institutions at that time. After the independence, the financial sector of Bangladesh operated with six commercial banks, three specialised Banks, two non-bank-specialised financial institutions, a few branches of foreign commercial banks and two insurance companies. Until 1982, the ownership of all financial institutions was kept under the control of the government. In 1983, the government denationalised 2 out of 6 commercial banks and allowed a number of new private commercial banks to operate in the country. Again in 1986, the government denationalised another commercial bank. Currently (in June 1998), the formal financial sector in Bangladesh has 4 nationalised commercial banks, five specialised banks, branches of thirteen foreign banks, seventeen private commercial banks (including four Islamic banks), two non-bank-specialised financial institutions and more than ten insurance companies. The financial institutions of the formal financial sector are given below:

#### A. The Central Bank

1. Bangladesh Bank

#### B. Nationalised Commercial Banks

1. Agrani Bank
2. Janata Bank
3. Rupali Bank
4. Sonali Bank

#### C. Specialised Banks

1. Bangladesh Krishi Bank
2. Bangladesh Shilpa Bank
3. Rajshahi Krishi Unnayan Bank
4. Bank of Small Industries and Commerce Bangladesh Ltd.
5. Bangladesh Shilpa Rin Sangstha

#### D. Foreign Banks

1. American Express Bank
2. ANZ Grindlays Bank PLC
3. Standard Chartered Bank
4. State Bank of India
5. Habib Bank Ltd.
6. Citi Bank N. A.
7. Credit Agricole Indosuez

8. National Bank of Pakistan
9. Muslim Commercial Bank
10. Societe Generale Bank
11. Hanil Bank
12. Hong Kong Bank
13. Faysal Islamic Bank of Bahrain E.C.

#### E. Private Banks

1. Arab-Bangladesh Bank Ltd.
2. National Bank Ltd.
3. The City Bank Ltd.
4. International Finance Investment and Commerce Bank Ltd.
5. United commercial Bank Ltd.
6. Pubali Bank Ltd.
7. Uttara Bank Ltd.
8. Estern Bank Ltd.
9. National Credit and Commerce Bank Ltd.
10. Prime Bank Ltd.
11. Southeast Bank Ltd.
12. Dhaka Bank Ltd.
13. Dutch Bangla Bank Ltd.

#### F. Islamic Banks

1. Islamic Bank Bangladesh Ltd.
2. Al-Baraka Bank Ltd.

3. Al-Arafa Islamic Bank Ltd.
4. Social Investment Bank Ltd.

#### G. Non-Bank-Specialised Financial Institutions

1. Investment Corporation of Bangladesh
2. Bangladesh Samabya Bank Ltd.

In 1983-84, the ratio of Broad Money to GDP was .2071 and the ratio continued its increasing trend up to 1993-94, when the ratio was .3516 (Table 3.4). But after 1993-94, the ratio had started declining, the ratio was .3440 in 1996-97 and in the next year, 1997-98, it increased to .3457. In 1993-94, the ratio of total bank credit to GDP was .2085 and this ratio increased to .3057 in 1991-92. After 1991-92, the ratio (total bank credit to GDP) started declining and reached to .2833 in 1996-97. But again the ratio had started increasing and in 1997-98, it reached to .2969. The contribution of the Banking and insurance sector towards GDP during the period 1983 to 1998 fluctuated between 1.27 percent to 2.03 percent of total GDP (Table 3.4). In 1983-84, it was 1.27 and it reached to its highest point in 1989-90, when the contribution of Banking and Insurance sector toward GDP was 2.05 percent of GDP. After 1989-90, the contribution of Banking and Insurance sector toward GDP gradually declined, although in 1993-94 it was 2.03, and in 1997-98 the contribution reached to 1.87 percent of GDP.

In 1973-74, the total number of branches of scheduled commercial banks in Bangladesh was 1512 and in 1997-98 it was 5952 (Table 3.3). The number of scheduled bank branches during the period, 1973 to 1998, increased at a rate of 6.14

percent annually. In 1973-74, population per branch was 50946 and in 1997-98, population per branch reduced to 21102 (Table 3.3).

From the beginning, the government of Bangladesh has taken a policy to extend the availability of financial services to rural areas in Bangladesh and it has been encouraging commercial banks to open branches in rural areas. The urban-rural proportion of bank branches improved significantly in Bangladesh over the period 1973 to 1998. In 1973-74, the proportion of urban-rural bank branches was 53:47, however the same proportion stood at 39:61 in 1998. In 1973, the real deposit<sup>23</sup> of the scheduled banks in Bangladesh was Tk. 913 crore and in 1994-95, it was Tk. 3924. The real deposit of the scheduled banks of the formal financial sector in Bangladesh increased at a rate of 7.19 percent per annum during the period 1973 to 1995 (Table 3.8). The total real credit disbursement<sup>24</sup> was Taka 831 crore in 1973 and in 1995, it was Taka 4322 crore. The annual growth rate of real credit of scheduled banks of the formal financial sector during the period 1973 to 1995 was 8.17 percent per annum (Table 3.9).

Since 1971, the central bank of Bangladesh did not have any autonomy. The government compelled the central bank and the commercial banks to follow its directives, so that it could achieve its macro-economic objectives. Commercial banks performed their operations under rigid government control and central bank regulations. The central bank fixed deposit interest rates and lending interest rates administratively and instructed all commercial banks to follow the interest rates

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<sup>23</sup> The real deposit figures have been obtained by deflating the nominal deposit figures by cost of living index for middle income people.

determined by the central bank. The government directed commercial banks to provide credit to public sector enterprises and priority sectors. The government also directed commercial banks to expand branches rapidly, especially in rural areas. The main objective of the intervention by the government in the financial sector was to achieve its political as well as macro economic objectives rather than financial objectives.

Since independence, the government of Bangladesh gave emphasis on quantity rather than on the quality of the services of the formal financial sector. Although the formal financial sector in Bangladesh has increased in size, it has not achieved the desired quality. In Bangladesh, the formal sector financial institutions adopted a rapid credit expansion policy to priority sectors, as directed by the government, without giving proper attention to the quality of loans. As a result, the recovery rate of loans gradually came down to an alarmingly low level. In 1973-74, profitability ratio of all commercial banks was 0.23 and it increased to 0.32 in 1982-83 (Table 3.5). Since 1982-83, the profitability of all banks has started decreasing gradually. In 1989-90 the ratio of profitability went down to 0.11 and the profitability ratio of all banks has become negative after 1992-93. In 1992-93, the profitability ratio of all banks was – 0.37 and the ratio slightly improved in 1993-94 to –0.24, but remained negative. Like the profitability of all commercial banks, productivity condition of all commercial banks also deteriorated during the period of 1973 to 1994. In 1973, the productivity ratio was 1.22 and increased to 1.23 in 1982-83 (Table 3.5). But after 1982-83, the ratio started decreasing and in 1993-94 it became 0.97.

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<sup>24</sup> The real credit disbursement figures have been obtained by deflating the nominal credit disbursement



The above information, related to profitability and productivity of all commercial banks during the period 1973 to 1994, indicates that formal financial sector has increased in size, but it has not grown in quality.

### **3.4.2 Financial Sector Reform in Bangladesh**

Since 1970 almost all countries have undergone financial sector reform programme as part of structural adjustment programme, prescribed by the World Bank. Overwhelming default rate, inefficiencies in the formal financial sector and pressure from the donor agencies, persuaded the government to undertake financial sector reform measures in Bangladesh. In 1986, a 'National Commission on Money, Banking and Credit (NCMBC)' was appointed by the government to identify causes of inefficiencies in the formal financial sector and to prescribe suggestions for the efficient management of the banking sector in Bangladesh. After completion of the study, the commission submitted the report to the government. In that report, the commission made some recommendations for efficient management of the banking sector in Bangladesh. These recommendations were related to adequate capital requirements of banks, overall structure of the banking system, monetary management of Bangladesh bank, problems of overdue loans, agricultural credit, supervision and inspection of commercial banks by Bangladesh Bank and the legal framework related to financial institutions etc. [Choudhuri, Choudhury, Moral and Banerjee (1995)]. During the same time, the World Bank also conducted an in depth study on these very issues. The World Bank study team, in their report to the government, suggested reform measures related to: (a) fixation of interest rates on deposits and advances, (b)

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figures by cost of living index for middle income people.

classification of overdue credits, (c) restructuring of capital base of NCBs and PCBs, and (d) market orientation in the banking transaction [Task Force Report, (1991)]. In 1990, the government of Bangladesh launched ‘the Financial Sector Reform Programme (FSRP)’ in Bangladesh with the help of IDA<sup>25</sup>, USAID<sup>26</sup> and IMF<sup>27</sup>.

Although the government of Bangladesh started reform programmes in broader scale since 1989-90, financial sector reform programme basically started in 1983, when the government denationalised two out of six nationalised commercial banks and allowed a number of new private commercial banks to operate in the country. On the basis of the recommendations of NCMBC and the World Bank study, the Bangladesh Bank adopted some reform measures, since 1989-90, to generate competition (especially price competition) among commercial banks. These measures include [Choudhuri, Choudhury, Moral and Banerjee (1995)]:

- (a) decontrol of deposit and lending rates and make them flexible according to market forces,
- (b) strengthening of criteria and procedure for loan classification and provisioning,
- (c) greater autonomy or self regulation by banks and non-bank financial institutions,
- (d) improvement of capital positions of NCBs and PCBs,
- (e) replacement of refinance facilities with a single discount window,
- (f) rationalisation of branch network,
- (g) strengthening of Bangladesh Bank’s role in the field of supervision of banks,

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<sup>25</sup> International Development Agency

- (h) adoption of indirect and market oriented monetary policy instruments,
- (i) ensuring proper legal environment for financial institutions through introduction of new banking laws and amendment of faulty banking laws,
- (j) making Taka convertible and
- (k) Computerisation of banks.

Before 1989, the Bangladesh Bank was used to determine interest rates on deposits and advances administratively without considering demand and supply of deposits and advances. Bangladesh Bank was also used to dictating commercial banks to mobilise deposits and provide advances on the basis of those administratively determined interest rates. During that period, commercial banks did not have any freedom to determine interest rates on deposits and advances of their own. In 1989, the Bangladesh Bank, for the first time in Bangladesh's history, decided to give partial freedom to commercial banks in determining their own interest rates on deposits and advances within the prescribed bands of interest rates. In 1992, Bangladesh Bank gave complete freedom to commercial Banks in determining their own interest rates on deposits and advances on the basis of demand and supply. Currently, Bangladesh Bank determines only the floor deposit interest rate, which is higher than the average inflation rate. Bangladesh Bank directs all commercial banks not to fix any deposit interest rate below that floor deposit interest rate to ensure that all real deposit interest rates are positive. Commercial Banks in Bangladesh now can charge different interest rates for different borrowers on the basis of associated risk and maturity of loans. Besides providing autonomy to commercial banks in

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<sup>26</sup> United States Agency for International Development.

<sup>27</sup> International Monetary Fund

determining interest rates, Bangladesh Bank has also stopped financing direct lending of commercial banks through refinancing facilities.

*Adequate capital*<sup>28</sup> of commercial banks is important for functioning of financial system efficiently. Adequate capital of commercial banks provides protection for depositors against possible losses in the value of assets in future. Adequate capital also ensure proper involvement of owners in the banking activities and discourage management from providing excessive amount of highly risky loans as well as from investing money in highly risky projects and assets. The Bank Companies Act 1991 in Bangladesh prescribes commercial banks to maintain 6% total demand and time liabilities of a bank as capital. Choudhuri, Choudhury, Moral and Banerjee (1995) disagree with the present system of calculating the adequate capital of commercial banks. They argue that adequate capital should be calculated on the basis of risk weighted assets of commercial banks. They also mention that in many developing as well as developed countries, capital adequacy standard is 8% of risk weighted assets. In Bangladesh, capital adequacy of commercial banks did not receive enough attention. Table 3.6 shows that in 1990 nationalised commercial banks and private commercial banks had only 67% and 68% of required capital. After 1990, as part of financial reform programme Bangladesh Bank persuaded commercial banks to maintain the required adequate capital. The government injected fresh capital of Tk. 3000 crore to improve capital condition of nationalised commercial banks. Although in 1992 capital as a percentage of required capital of NCBs decreased, it increased after 1992 and reached to 94% of required capital in 1994. Capital condition of private commercial banks (PCBs) improved after 1990 and in 1992, capital of PCBs

increased to 89 percent of required capital. But in 1994 it decreased and reached to 87% of required capital. Foreign commercial banks always maintained capital more than the required capital.

Bangladesh Bank instructed all banks in Bangladesh under the financial reform programme to classify all loans and to maintain adequate provision for classified loans. Classified loans of a bank truly reflect the quality of loan portfolio of that bank. Before 1989, there was no uniform standard of loan classification in Bangladesh. In 1989, Bangladesh Bank formulated a detailed and uniform loan classification and provisioning standard for all banks. Again in 1995, Bangladesh Bank revised the existing loan classification standard to make it comparable with the international standard. Under the latest loan classification standard, commercial banks are required to classify their loans into four categories: unclassified, sub-standard, doubtful and bad. Bangladesh Bank also instructed all banks in Bangladesh to maintain adequate provision for classified loans. According to this instruction, banks are not allowed to consider accrued interest on classified loans during calculation of annual total interest income of the bank. Banks are allowed only to consider actually received interest during calculation of annual total interest income of the bank. Table 3.6 shows that in 1994, PCBs and NCBs had classified loan of 45% and 35% of all loans respectively. Although the table shows better performance by NCBs than PCBs in terms of classified loans, in reality NCBs would have been in the same position as PCBs but for the injection of additional public funds. But during the same time period, FCBs had classified loans of only 9% of all loans. In 1994, NCBs and PCBs had only 67%

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<sup>28</sup> Adequate capital or capital adequacy indicates the ability of a bank to meet all its obligations, both in the short term and in the long term and absorb any losses that it may incur.

and 45% of required provision on classified loans. But FCBs had maintained more than required provision (103%) (Table 3.6).

Since January 1990, the Bangladesh Bank introduced indirect monetary policy instruments instead of direct monetary policy instruments. Commercial banks now determine their own interest rates instead of following interest rates determined by Bangladesh Bank. Subsidised refinancing facility for loans to priority sectors have been replaced by a more general rediscount facility at Bangladesh Bank with a uniform bank rate. Bangladesh Bank has introduced 91-days Bangladesh Bank bill as well as reserve money programme to pursue indirect monetary policy in the country. Monetary Management and Technical Unit (MMTU) and Monetary Policy Committee headed by the Governor have also been established by Bangladesh Bank to achieve the same objective, i.e. to pursue efficient indirect monetary policy.

As part of financial reform programme, Bangladesh Bank has taken initiative to implement strong supervision system on banks in Bangladesh. Bangladesh Bank has been rating commercial banks on the basis of 'CAMEL<sup>29</sup>' as part of strong supervision system since 1994. On the basis of CAMEL rating, Bangladesh Bank has started giving 'Early Warning Signals (EWS)' to banks, when rating of which fall below the minimum standard. Bangladesh Bank has also issued some banks 'Memorandum of Understanding (MOU)' to improve their performance and financial status. Bangladesh Bank has established a Credit Information Bureau (CIB) to supervise commercial banks efficiently and instructed commercial banks to receive a report on credit behaviour of borrowers, who seek loans above Tk. 5 million. It has

been done to restrict loans to defaulters, who have not paid their earlier loans. Bangladesh Bank has also established a 'Large Loan Review Cell (LLRC)' to evaluate quality of large loans. It is now mandatory for all banks (excluding BSB, BKB and RAKUB) to apply 'LRA (Lending Risk Analysis)' technique before providing loans above or equal to Tk. 10 million. These measures have been taken as part of the reform programme to improve recovery performance of commercial banks.

One of the main reasons of high default rate in Bangladesh is a lack of efficient and appropriate legal system and infrastructure. Lack of adequate number of financial courts was the predominant cause of delay in realisation of money from the sale of collaterals' provided by defaulted-borrowers. Since 1990, new laws have replaced some of old laws. 'Banking Company Ordinance 1962' has been replaced by 'Bank Companies Act 1991'. 'Non-bank Financial Institutions Order 1989' replaced 'Financial Institution Act 1993'. Several amendments have been made to 'Bangladesh Bank Order 1972'. Lengthy and time consuming procedure of settling recovery cases in financial courts under the 'Public Demand Recovery Act 1913' encouraged the government to change the law. The government passed 'Financial Loan Court Act 1993' to replace 'Public Demand recovery Act 1913'. In spite of this replacement, financial courts had 29463 cases under trial as on December 1993. Only 7655 cases had been settled and Banks could recover only 3.98% of total realisable funds [Sirker et. al. (1995)].

Under the financial sector reform programme, consultants prepared some management and operation tools for conducting efficient loan activities of banks. The

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<sup>29</sup> Camel has been developed by the United States Federal Reserve Bank to evaluate performance of

newly developed management and operational tools are Lending Risk Analysis (LRA), Large Loan Reporting System (LLRS), New Loan Ledger (NLL), Performance Planning System (PPS), Bank Supervision Techniques for the central banks etc. [Choudhuri, Choudhury, Moral and Banerjee (1995)].

Although reform programmes have been taken place since 1990, Bangladeshi financial sector has not experienced that much success yet. Side by side the reform measures, positive attitude of the management and directors of banks toward sustainable banking is also required. However, in Bangladesh, attitude and behaviour of the management and directors have changed only a little since 1990. In 1994, all banks, except branches of foreign banks, had less than the required capital, a large proportion of classified outstanding loans and shortage of required provision for classified loans. Although financial sector in Bangladesh has experienced a substantial increase in the monetization ratio, other aspects of the banking sector - for example, growth of total number of bank branches, urban-rural ratio, population coverage, effective coverage of (number of accounts per branch) – have remained almost unchanged. [Choudhuri, Choudhury, Moral and Banerjee (1995)]. Reform programmes have been initiated to bring discipline in the banking sector, to improve recovery performance of banks and to raise standard and efficiency of banking activities in Bangladesh. However, until now these objectives have remained only on paper. Performance in reality is a far cry from the formulated objectives of reforms. Bangladeshi financial sector will have to go a long way in the line of reform to achieve its desired objectives.

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banks. It takes into account *Capital, Assets, Management, Earnings and Liquidity* of a bank.



### **3.4.2 Rural Formal Financial Sector**

In Bangladesh, eighty percent of total population lives in rural areas. The main sector of the rural economy in Bangladesh is agriculture, which provides employment to 61.3% of total labour force and contributes about 38% to GDP (BBS, 1992). This significant role of agriculture demands proper attention for the rural sector from the formal financial sector in Bangladesh.

Bangladesh inherited her present banking structure from the British Empire. In 1880, the Colonial government appointed a commission, 'The Strachey Famine Commission 1880', to identify causes and remedies of famine in Bengal. 'The Strachey Famine Commission 1880' recommended that the government should provide loan to poor people. On the basis of this recommendation, the government enacted 'The Land Improvement Loans Act 1883' and 'The Agriculturists Loans Act 1884' to provide loans to rural people to overcome famine problems. Another famine commission, 'The Famine Commission 1901', advised the government to establish mutual credit associations in rural areas to meet credit needs of rural people. According to the suggestion of the Famine Commission 1901, the government passed 'The Co-operative Societies Act 1904'. The same Act was reshaped in 1940 and renamed as 'The Bengal Societies Act 1940'. In 1948, the Pakistan government established 'The East Pakistan Provincial Co-operative Bank Ltd' to provide credit to people in rural areas of East Pakistan. The Pakistan Government also established 'The Agricultural Development Finance Corporation (ADFC)' in 1952 and 'The Agricultural Bank of Pakistan (ABP)' in 1957 with the same objectives. 'The Credit Commission 1959'

advised the government to merge ADFC and ABP, and to establish a single credit providing institution for rural areas. On the basis of the recommendation of the Commission the then Pakistani government merged two rural credit-providing institutions, ADFC and ABP, and established 'Agricultural Development Bank of Pakistan' in 1961. After the independence of Bangladesh from Pakistan (1971), Bangladesh government established 'Bangladesh Krishi Bank (BKB)'. All offices and branches, along with officers, employees, assets and liabilities of 'Agricultural Development Bank of Pakistan' have been transferred to Bangladesh Krishi Bank. A separate rural financial institution, Rajshahi Krishi Unnayan Bank (RAKUB), was established to provide financial services to the people of Rajshahi Division of the country in 1986, which took control over all branches of Bangladesh Krishi Bank in Rajshahi Division.

The rural sector in Bangladesh deserves proper attention from the formal financial sector, but this sector has not received the desired proper attention from the formal financial sector. Although the total number of rural bank branches in Bangladesh, which increased from 711 in 1973-74 to 3631 in 1997-98, shows a satisfactory growth of rural financial sector, a closer look into population served by per rural bank branch and contribution of rural branches toward total deposit mobilisation and total credit disbursement of the country, reveals a picture of urban bias of the formal financial sector. In 1998, there was a bank branch for every 27742 persons in rural areas. On the other hand, in urban areas, there was a bank branch for every 10781 persons. Per bank branch population coverage in urban and rural areas shows disparity between urban and rural areas in terms of availability of financial services in Bangladesh. It also reveals, indirectly, non-availability of formal financial sector services in many

rural areas of Bangladesh. Although the total number of rural bank branches constitute about 61% of total number of bank branches, rural bank branches contribute only about 23% (1997-98) of total deposit mobilisation and only about 17% (1997-98) of total credit disbursement in the country.

Even though, BKB and RAKUB have been established to provide financial services in the rural areas of Bangladesh, some commercial banks, except foreign commercial banks, also provide financial services in the rural areas. Besides commercial banks and specialised development banks, some non-governmental organisations also provide financial services to rural people, especially to poor rural people.

In the seventies and eighties, commercial banks, BKB and RAKUB rapidly expanded their banking operation in the rural areas following direction from the government. During that period, the government adopted a policy to expand banking services in rural areas very rapidly and compelled commercial banks, especially nationalised commercial banks and specialised development banks, to expand branches in rural areas very quickly to implement its agricultural credit programme initiated in 1977 [Adam and Nelson, (1981)]. Nationalised commercial banks expanded their services in rural areas almost reluctantly. The proportion of rural branches has increased from 47% in 1973-74 to 66% in 1982-83 [Choudhuri and Choudhury, (1994)]. But after 1982-83, the proportion has started to decline. Because, after initiation of denationalisation of some nationalised commercial banks and establishment of new private commercial banks in 1982-83, almost no privatised commercial banks and new private banks have opened new branches in rural areas since then. As a result, in

1987-98, the proportion of total number of rural bank branches declined to 61% of total bank branches in Bangladesh.

In expanding rural branches rapidly, financial sustainability of new rural branches has not been given enough attention. As a result, the majority of the rural branches became non-profitable. Khalily (1991) showed that about 67% of the rural bank branches were not financially profitable. Another survey of 841 rural branches, conducted by the Financial Sector Reform Programme (FSRP), found 91% of rural bank branches as financially non-profitable. The objective of the government in Bangladesh to expand and extend financial services rapidly in rural areas has been achieved in quantity, but it has not achieved from the perspective of quality.

Total real<sup>30</sup> deposit mobilisation in rural areas by bank branches increased from Tk. 82 crore in 1973-74 to Tk. 903 crore in 1994-95 (Table 3.8). During the period 1973 to 1995, the total real deposit mobilisation in rural areas achieved a growth rate of 12.09% per annum. During the same period, total real deposit mobilisation in urban areas had experienced a growth rate of only 6.34%. Although real rural deposits had gained almost double annual growth rate compared to urban real deposits, the total rural deposits constituted only 22.88% (as on June 1998) of total deposits in Bangladesh.

Like total real rural deposits, total real rural credit disbursement had also experienced higher annual growth rate than that of total urban credit disbursement. During the period 1973 to 1995, total real rural credit disbursement had experienced a growth

rate of 18.11% per annum. On the other hand, total real urban credit disbursement had experienced a growth rate of only 8.17% per annum. In 1972-73, all rural bank branches disbursed credit amount of Tk. 35.05 crore in rural areas (Table 3.6). In 1997-98, the total credit disbursement of rural bank branches increased to Tk. 1814.53 crore. The total real rural credit had experienced its highest growth rate, 31.41% per annum during the period 1973 to 1983. After, 1982-83, total real rural credit had experienced a declining growth rate per annum. During the period 1983 to 1990 and 1990 to 1995 real rural credit had experienced a growth rate of 14.61% and 1.65% respectively.

In 1997-98, all banks mobilised total deposit about Tk. 11900 from rural areas, but these banks disbursed credit to rural areas Tk. 8126 crore only [Bangladesh Bank, (1998)]. Therefore, total deposit mobilisation and credit disbursement, in rural areas in 1997-98, indicate that all banks, except BKB and RAKUB, operating in rural areas in Bangladesh have transferred money from rural areas to urban areas. A survey of 20 rural bank branches reveals that these branches have been transferring 70% to 80% of their loanable fund, earmarked for rural borrowers, to controlling offices for subsequent lending to urban customers [Roy, Alam and Nuruzzaman, (1998)]. Only BKB and RAKUB have been providing more amount of credit than amount of deposits collected from rural areas, as their deposit to credit ratio has been only 0.3. BKB and RAKUB have been collecting rest of the amount (i.e. 70% of credit disbursement) from the government, donor agencies and Bangladesh Bank.

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<sup>30</sup> Real deposit has been obtained by deflating the nominal figures by cost of living index for middle income people.

Recovery performance of rural banking sector in Bangladesh is not satisfactory. This unsatisfactory state of recovery of rural banking sector loans could be diagnosed from the recovery rate of agricultural credit in Bangladesh. Agricultural credit is the main component of rural credit operation. In 1997-98, agricultural credit constituted 22% of total rural credit operation. The recovery rate of agricultural credit has declined gradually during the period 1981-82 to 1990-91. In 1981-82, the recovery rate of agricultural credit was 48.49% and it reached to its lowest position in 1990-91, when recovery rate of agricultural credit was 13.72% (Table 3.11). After 1990-91, the recovery rate has gained a slow rising trend. In 1997-98, the recovery rate increased to 24.46% [Choudhri, Choudhury, Moral, and Banerjee (1995)]. The low recovery is weakening the organisational as well as financial strength of rural banking operation in Bangladesh. The low recovery rate of loans also reduces loan providing capacity of banks, increases overall costs of agricultural credit and it affects sustainability or profitability of lending branches [Khalily, Huda and Lalarukh (1997)].

Choudhuri and Choudhury (1994) identifies two factors as main reasons behind low recovery rate: (1) lack of supervision of borrower's loan utilisation activities, and (2) the government interference in the form of waiver of interest and principal repayment by borrowers. In Bangladesh, two major waivers of interest and principal payments by borrowers were made in 1987 and 1992. In 1987, the government waived payment of interest of crop loans up to Tk. 10000. Again in 1992, the government waived both interest and principal payment by borrowers up to Tk. 5000 [Khalily, Huda and Lalarukh (1997)]. Choudhuri and Choudhury (1994) claims that these kinds of waivers encourage borrowers not to repay loan, as borrowers expect that politicians would announce a waiver of interest and principal repayments during the subsequent

election period. The low recovery rate has made many rural bank branches non-profitable, because rural branches are required to keep a large amount of fund as provision of classified loans.

### **3.5 Summary of the Chapter**

This chapter presents a brief historical background of Bangladesh. It also presents the current scenario of poverty situation and the financial system in Bangladesh. The statistics presented in this chapter show that Bangladesh has achieved very little improvement in poverty situation since independence from Pakistan in 1971 compared to pre-independence poverty situation. In 1995, 46.8% of the rural population and 43.6% of the urban population were living below the poverty line. The inequality between the poor and rich remained almost in the same during the period 1973 to 1992. The Human Development Index (HDI) of Bangladesh has not made any significant improvement over the period 1960 to 1997 compared to other Asian countries. Moreover, the HDI rank of Bangladesh deteriorated during the period 1994 to 1997. In 1994, Bangladesh had the rank of 144 among 174 countries, but it went down to 150 in 1997.

The financial sector of Bangladesh is dualistic in nature. The informal financial sector provides credit to almost half of rural borrowing households, i.e. it plays a significant role. The formal sector is predominantly urban biased. Although sixty percent of all bank branches are located in rural areas, per branch population of rural branches are more than double compared to urban bank branches (27742 persons per rural branch compared to 10781 persons per urban branch). Deposit mobilisation and credit

disbursements of formal sector financial institutions in rural areas are very low compared to those in urban areas. Formal sector financial institutions mobilised 23% percent of total deposit from rural areas in 1994-95. In the same year, these institutions disbursed nineteen percent of total credit disbursement in rural areas. The financial sector reform programme has been initiated in Bangladesh since 1983. But the desired objectives of financial sector reform, for example, to bring discipline in the banking sector, to improve the recovery performance of banks, to raise standard and efficiency of banking activities, have not yet been achieved. The government has established specialised agricultural banks to provide the required capital to marginal farmers and small businesses and thus, to boost the rural economy. The discussion on the formal financial sector shows that this desired objective has yet not been achieved. Moreover, this strategy has weakened the formal financial sector.

As in other developing countries, the formal financial sector has also excluded the poor people from the financial services, especially credit, and the informal financial sector exploited poor people in Bangladesh. In these circumstances, policy makers and economists felt the necessity of an innovative credit delivery system, which will provide poor people exploitation free credit without collateral. Professor Muhammad Yunus initiated this long desired innovative credit delivery system for poor people without exploitation and collateral in 1976. This innovative credit is known as microcredit and the organisation, which provides this innovative credit, is known as the Grameen Bank. Following the success of the Grameen Bank, some non-government organisations have also started providing microcredit in Bangladesh.



In the next chapter (Chapter four), we will discuss microcredit issues, the performance of the Grameen Bank, and the role of non-government organisations (NGOs) in the microcredit sector in Bangladesh.

## **Appendix Three**

## Bangladesh at a Glance

### Background

**Background:** Bangladesh came into existence in 1971 when Bengali East Pakistan seceded from its union with West Pakistan.

### Geography

**Location:** Southern Asia, bordering the Bay of Bengal, between Burma and India

**Geographic coordinates:** 24 00 N, 90 00 E

**Map references:** Asia

**Area:**

*total:* 144,000 sq km

*land:* 133,910 sq km

*water:* 10,090 sq km

**Climate:** tropical; cool, dry winter (October to March); hot, humid summer (March to June); cool, rainy monsoon (June to October)

**Terrain:** mostly flat alluvial plain; hilly in southeast

**Natural resources:** natural gas, arable land, timber

**Land use:**

*arable land:* 73%

*permanent crops:* 2%

*permanent pastures:* 5%

*forests and woodland:* 15%

*other:* 5% (1993 est.)

**Irrigated land:** 31,000 sq km (1993 est.)

**Natural hazards:** droughts, cyclones; much of the country routinely flooded during the summer monsoon season

### People

**Population:** 129,194,224 (July 2000 est.)

**Age structure:**

*0-14 years:* 36% (male 24,055,675; female 22,918,354)

*15-64 years:* 60% (male 39,924,040; female 37,992,459)

*65 years and over:* 4% (male 2,342,134; female 1,961,562) (2000 est.)

**Population growth rate:** 1.59% (2000 est.)

**Birth rate:** 25.44 births/1,000 population (2000 est.)

**Death rate:** 8.73 deaths/1,000 population (2000 est.)

**Net migration rate:** -0.77 migrant(s)/1,000 population (2000 est.)

**Sex ratio:**

*at birth:* 1.06 male(s)/female

*under 15 years:* 1.05 male(s)/female

*15-64 years:* 1.05 male(s)/female

*65 years and over:* 1.19 male(s)/female

*total population:* 1.05 male(s)/female (2000 est.)

**Infant mortality rate:** 71.66 deaths/1,000 live births (2000 est.)

**Life expectancy at birth:**

*total population:* 60.16 years

*male:* 60.4 years

*female:* 59.91 years (2000 est.)

**Total fertility rate:** 2.85 children born/woman (2000 est.)

**Nationality:**

*noun:* Bangladeshi(s)

*adjective:* Bangladesh

**Ethnic groups:** Bengali 98%, Biharis 250,000, tribals less than 1 million

**Religions:** Muslim 88.3%, Hindu 10.5%, other 1.2%

**Languages:** Bangla (official), English

**Literacy:**

*definition:* age 15 and over can read and write

*total population:* 38.1%

*male:* 49.4%

*female:* 26.1% (1995 est.)

**Government****Country name:**

*conventional long form:* People's Republic of Bangladesh

*conventional short form:* Bangladesh

*former:* East Pakistan

**Data code:** BG

**Government type:** republic

**Capital:** Dhaka

**Administrative divisions:** 6 divisions; Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Sylhet

**Independence:** 16 December 1971 (from Pakistan)

**National holiday:** Independence Day, 26 March (1971)

**Constitution:** 4 November 1972, effective 16 December 1972, suspended following coup of 24 March 1982, restored 10 November 1986, amended many times

**Legal system:** based on English common law

**Suffrage:** 18 years of age; universal

**Executive branch:**

**Chief of state:** President, the president's duties are normally ceremonial, but with the 13th amendment to the constitution ("Caretaker Government Amendment"), the president's role becomes significant at times when Parliament is dissolved and a caretaker government is installed - at presidential direction - to supervise the elections

**head of government:** Prime Minister, the leader of the party that wins the most seats is usually appointed prime minister by the president

**cabinet:** Cabinet selected by the prime minister and appointed by the president

**Legislative branch:** unicameral National Parliament or Jatiya Sangsad (330 seats; 300 elected by popular vote from single territorial constituencies, 30 seats reserved for women; members serve five-year terms)

**Judicial branch:** Supreme Court, the Chief Justices and other judges are appointed by the president

**Political parties and leaders:** Awami League or AL [Sheikh HASINA Wajed]; Bangladesh Communist Party or BCP [Saifuddin Ahmed MANIK]; Bangladesh

Nationalist Party or BNP [Khaleda Ziaur Rahman]; Jamaat-E-Islami or JI [Motiur Rahman NIZAMI]; Jatiyo Party or JP [Hussain Mohammad ERSHAD]

**International organization participation:** AsDB, C, CCC, CP, ESCAP, FAO, G-77, IAEA, IBRD, ICAO, ICC, ICFTU, ICRM, IDA, IDB, IFAD, IFC, IFRCs, IHO (pending member), ILO, IMF, IMO, Inmarsat, Intelsat, Interpol, IOC, IOM, ISO, ITU, MINURSO, MONUC, NAM, OIC, OPCW, SAARC, UN, UN Security Council (temporary), UNCTAD, UNESCO, UNHCR, UNIDO, UNIKOM, UNMIBH, UNMIK, UNMOP, UNMOT, UNOMIG, UNTAET, UNU, UPU, WCL, WFTU, WHO, WIPO, WMO, WTO, WTrO

**Flag description:** green with a large red disk slightly to the hoist side of center; the red sun of freedom represents the blood shed to achieve independence; the green field symbolizes the lush countryside, and secondarily, the traditional color of Islam

## **Economy**

**GDP:** purchasing power parity - \$187 billion (1999 est.)

**GDP - real growth rate:** 5.2% (1999 est.)

**GDP - per capita:** purchasing power parity - \$1,470 (1999 est.)

**GDP - composition by sector:**

*agriculture:* 30%

*industry:* 17%

*services:* 53% (1999 est.)

**Household income or consumption by percentage share:**

*lowest 10%:* 4.1%

*highest 10%:* 23.7% (1992)

**Inflation rate (consumer prices):** 9% (FY98/99 est.)

**Labor force:** 56 million (1995-96)

*note:* extensive export of labor to Saudi Arabia, Kuwait, UAE, Oman, Qatar, Malaysia, and Singapore

**Labor force - by occupation:** agriculture 63%, services 26%, industry 11% (FY95/96)

**Unemployment rate:** 35.2% (1996)

**Budget:**

*revenues:* \$4.3 billion

*expenditures:* \$6.5 billion, including capital expenditures of \$NA (1997)

**Industries:** cotton textiles, jute, garments, tea processing, paper newsprint, cement, chemical fertilizer, light engineering, sugar

**Industrial production growth rate:** 2.5% (1997 est.)

**Electricity - production:** 12.5 billion kWh (1999 est.)

**Electricity - production by source:**

*fossil fuel:* 98%

*hydro:* 2%

*nuclear:* 0%

*other:* 0% (1999)

**Electricity - consumption:** 11.039 billion kWh (1998)

**Electricity - exports:** 0 kWh (1999)

**Electricity - imports:** 0 kWh (1999)

**Agriculture - products:** rice, jute, tea, wheat, sugarcane, potatoes; beef, milk, poultry, tobacco, pulses, oilseeds, spices, fruit

**Exports:** \$5.1 billion (1998)

**Exports - commodities:** garments, jute and jute goods, leather, frozen fish and seafood

**Exports - partners:** US 33%, Germany 10%, UK 9%, France 6%, Italy 5% (1997)

**Imports:** \$8.01 billion (1998)

**Imports - commodities:** machinery and equipment, chemicals, iron and steel, textiles, raw cotton, food, crude oil and petroleum products, cement

**Imports - partners:** India 12%, China 9%, Japan 7%, Hong Kong 6%, South Korea 6% (1997)

**Debt - external:** \$16.5 billion (1998)

**Economic aid - recipient:** \$1.475 billion (FY96/97)

**Currency:** 1 taka (Tk) = 100 poisha

**Exchange rates:** taka (Tk) per US\$1 - 51.000 (January 2000), 49.085 (1999), 46.906 (1998), 43.892 (1997), 41.794 (1996), 40.278 (1995)

**Fiscal year:** 1 July - 30 June

## Communications

**Telephones - main lines in use:** 470,000 (1998)

**Telephones - mobile cellular:** 41,000 (1998)

**Telephone system:**

*domestic:* modernizing; introducing digital systems; trunk systems include VHF and UHF microwave, and some fiber-optic cable in cities

*international:* satellite earth stations - 2 Intelsat (Indian Ocean); international radiotelephone communications and landline service to neighboring countries

**Radio broadcast stations:** AM 12, FM 12, shortwave 2 (1999)

**Radios:** 6.15 million (1997)

**Television broadcast stations:** 15 (1999)

**Televisions:** 770,000 (1997)

**Internet Service Providers (ISPs):** 6 (1999)

## Transportation

**Railways:**

*total:* 2,745 km

*broad gauge:* 923 km 1.676-m gauge

*narrow gauge:* 1,822 km 1.000-m gauge (1998 est.)

**Highways:**

*total:* 201,182 km

*paved:* 19,112 km

*unpaved:* 182,070 km (1997 est.)

**Waterways:** 5,150-8,046 km navigable waterways (includes 2,575-3,058 km main cargo routes)

**Pipelines:** natural gas 1,220 km

**Ports and harbors:** Chittagong, Dhaka, Mongla Port

**Merchant marine:**

*total:* 36 ships (1,000 GRT or over) totaling 284,489 GRT/405,845 DWT

*ships by type:* bulk 2, cargo 28, container 1, petroleum tanker 2, refrigerated cargo 1, roll-on/roll-off 2 (1999 est.)

**Airports:** 16 (1999 est.)

**Airports - with paved runways:**

*total: 16*

*over 3,047 m: 2*

*2,438 to 3,047 m: 2*

*1,524 to 2,437 m: 5*

*914 to 1,523 m: 1*

*under 914 m: 6 (1999 est.)*

**Military**

**Military branches:** Army, Navy, Coast Guard, Air Force, paramilitary forces (includes Bangladesh Rifles, Bangladesh Ansars, Village Defense Parties, National Cadet Corps), Armed Police battalions

**Military manpower - availability:**

*males age 15-49: 34,683,414 (2000 est.)*

**Military manpower - fit for military service:**

*males age 15-49: 20,565,193 (2000 est.)*

**Military expenditures - dollar figure:** \$559 million (FY96/97)

**Military expenditures - percent of GDP:** 1.8% (FY96/97)

Source: *The World Factbook 2000*, Central Intelligence Agency, Washington, DC.

**Table 3.1**  
**Contribution of the Informal Financial Sector**  
**(billion Taka, 1986 estimate)**

|  | Rural        | Urban        | Total        |
|--|--------------|--------------|--------------|
| Informal Financial Sector                                | 12.30        | 4.00         | 16.30        |
| Formal Financial Sector                                  | 6.48         | 3.30         | 9.78         |
| <b>Total</b>   | <b>18.78</b> | <b>7.30</b>  | <b>26.08</b> |
| <b>Contribution of the Informal Financial Sector (%)</b> | <b>65.50</b> | <b>54.79</b> | <b>62.50</b> |

Source: Rahman (1992)

**Table 3.2**  
**Sources of Credit to Rural Households**

|                                 | Rahman (1992) | Khalily (1995) |
|---------------------------------|---------------|----------------|
|                                 | Percentage    | Percentage     |
| <b>Borrowing From:</b>          |               |                |
| Formal Sources                  | 17.00         | 43.57**        |
| Informal Sources                | 73.20         | 46.19          |
| Both Sources                    | 9.80          | 10.24          |
| <b>Households Borrowing*</b>    | <b>50.00</b>  | <b>43.96</b>   |
| <b>Households not Borrowing</b> | <b>36.30</b>  | <b>N/A</b>     |
| <b>Households Lending</b>       | <b>13.70</b>  | <b>N/A</b>     |

\* Percentage of all households,

\*\* includes formal as well as semi-formal sources

Source: Rahman (1992); and Khalily (1995).

**Table 3.3**  
**Formal Financial Sector Indicators in Bangladesh**

|                 | Total Population | Total Bank Branches | Per Branch Population | Per Capita Deposit | Per Capita Advances |
|-----------------|------------------|---------------------|-----------------------|--------------------|---------------------|
| <b>National</b> | 125600000        | 5952                | 21102                 | 4140.49            | 3820.84             |
| <b>Urban</b>    | 25120000         | 2330                | 10781                 | 15965.10           | 15869.00            |
| <b>Rural</b>    | 100480000        | 3622                | 27742                 | 1184.33            | 808.80              |

Source: Bangladesh Bank (1998).



**Table 3.4**  
**Money Supply, Bank Credit and GDP**

| Year Indicator                                   | 1983-84 | 1989-90 | 1991-92 | 1993-94 | 1996-97 | 1997-98 |
|--|---------|---------|---------|---------|---------|---------|
| Broad Money (M2) to GDP                          | .2071   | .3023   | .3147   | .3516   | .3440   | .3457   |
| Bank Credit to GDP                               | .2085   | .3024   | .3057   | .304    | .2833   | .2969   |
| Contribution of Banking and Insurance to GDP (%) | 1.27    | 2.05    | 1.96    | 2.03    | 1.93    | 1.87    |

Source: Choudhuri, Choudhury, Moral and Banerjee (1995), Bangladesh Bank, (1999) and Author's own calculations.

**Table 3.5**  
**Operational Efficiency**

| Year Indicator                 | 1973-74 | 1982-83 | 1989-90 | 1992-93 | 1993-94 |
|--------------------------------|---------|---------|---------|---------|---------|
| Profitability (in per Tk. 100) |         |         |         |         |         |
| a. all Banks                   | 0.29    | 0.32    | 0.11    | -0.37   | -0.24   |
| b. NCBs                        | 0.32    | 0.23    | 0.002   | -0.05   | 0.09    |
| c. PCBs                        | -       | 0.16    | 0.15    | 0.00    | 0.08    |
| Productivity                   |         |         |         |         |         |
| a. all Banks                   | 1.22    | 1.23    | 1.05    | 0.96    | 0.97    |
| b. NCBs                        | 1.23    | 1.18    | 1.001   | 0.99    | 1.02    |
| c. PCBs                        | -       | 1.11    | 1.04    | 1.02    | 1.04    |

a. Profitability = Net Profit/Balance Sheet Total

b. Productivity = Total Income/Total Expenditure

c. Figures relate to 1984-95

d. Including DFIs and FCBs

Source: Choudhuri and Choudhury (1993), and Choudhuri, Choudhury, Moral and Banerjee (1995)

**Table 3.6**  
**Capital Adequacy, Loan Classification and Provisioning of Commercial Banks**

|   | Year | NCBs | PCBs | FCBs | All Banks |
|---|------|------|------|------|-----------|
| Actual Capital as % of required Capital         | 90   | 67   | 68   | -    | -         |
|   | 92   | 57   | 89   | 112  | 69        |
|   | 94   | 92   | 87   | 135  | 93        |
| Loans Classified as % of Total Outstanding Loan | 90   | 29   | 25   | 21   | 27        |
|   | 92   | 32   | 31   | 13   | 31        |
|   | 94   | 32   | 45   | 9    | 35        |
| Actual Provision as % of Required Provision     | 90   | -    | -    | -    | -         |
|   | 92   | 68   | 64   | 103  | 68        |
|   | 94   | 67   | 45   | 103  | 60        |

NCBs: Nationalised Commercial Banks, PCBs: Private Commercial Banks, FCBs: Foreign Commercial Banks

Source: Choudhuri, Choudhury, Moral and Banerjee (1995)

**Table 3.7**  
**Urban and Rural Bank Branches in Bangladesh**

|   | 1973-74 | 1982-83 | 1989-90 | 1997-98 |
|---|---------|---------|---------|---------|
| Total Bank Branches   | 1512    | 4603    | 5539    | 5952    |
| Percentage of Total Branches in Rural Areas                             | 47      | 66      | 64      | 61      |
| Total Bank Branches in Rural Areas                                      | 711     | 3038    | 3545    | 3631    |
| Growth Rate of Rural Bank Branches                                      |         | 17.52   | 2.22    | 0.3     |
| Growth Rate of Urban Bank Branches                                      |         | 7.72    | 3.52    | 1.92    |
| Growth Rate of Rural Bank Branches During the Period 1973-74 to 1997-98 |         |         |         | 7.03    |
| Growth Rate of Urban Bank Branches During the Period 1973-74 to 1997-98 |         |         |         | 4.53    |

Source: Choudhuri, Choudhury, Moral and Banerjee (1995) and author's own calculations.

**Table 3.8**  
**Growth of Deposit Mobilisation**

| Year Indicator                              | 1973-74 | 1982-83 | 1989-90 | 1994-95 |
|---|---------|---------|---------|---------|
| Total Real Deposit (Taka in Crore)          | 913     | 1518    | 3236    | 3924    |
| Total Rural Real Deposit (Taka in Crore)    | 82      | 273     | 647     | 903     |
| Growth Rate of Total Real Deposit (%)       | -       | 8.03    | 9.14    | 4.58    |
| Growth Rate of Total Rural Real Deposit (%) |         | 14.28   | 13.1    | 6.88    |
| Urban-Rural Proportion                      | 91:09   | 82:18   | 80:20   | 77:23   |

\* Real Figures have been obtained by deflating the nominal figures by cost of living index for middle income people.

\* Annual Growth Rate during the Period 1973 to 95 is 7.19%

\* Annual Growth Rate of Rural Deposit during the Period 1973 to 95 is 12.09%

\* Annual Growth Rate of Urban Deposit during the Period 1973 to 95 is 6.34%

Source: Choudhuri, Choudhury, Moral and Banerjee (1995).

**Table 3.9**  
**Credit Disbursement**

|  | 1973-74 | 1982-83 | 1989-90 | 1994-95 |
|--|---------|---------|---------|---------|
| Total Real Credit (Tk in Crore)            | 831     | 1533    | 3153    | 4322    |
| Total Real Rural Credit (Tk in Crore)      | 25      | 291     | 757     | 821     |
| Growth rate of Total Real Credit (%)       | -       | 10.23   | 8.19    | 7.62    |
| Growth rate of Total Real Rural Credit (%) | -       | 31.41   | 14.61   | 1.65    |
| Urban-Rural Proportion                     | 97-03   | 81-19   | 76-24   | 81-19   |

\* Real Figures have been obtained by deflating the nominal figures by cost of living Index for middle income people.

\* Annual Growth Rate of Total Real Credit during the Period 1973 to 95 is 8.17%

\* Annual Growth Rate of Total Real Rural Credit during the Period 1973 to 95 is 18.11%

\* Annual Growth Rate of Total Real Urban Credit during the Period 1973 to 95 is 7.24%

Source: Source: Choudhuri, Choudhury, Moral and Banerjee (1995), Bangladesh Bank, (1999) and Author's own calculations.

**Table 3.10**  
**Deposit Mobilisation and Credit Disbursement**  
**by All Banks in Rural areas**

| Year    | Deposit<br>Tk. in Crore | Credit<br>Tk. in Crore | Credit as a<br>% of Deposits |
|---------|-------------------------|------------------------|------------------------------|
| 1996-97 | 11559.19                | 7792.7                 | 67.42                        |
| 1997-98 | 11900.18                | 8126.8                 | 68.29                        |

Source: Bangladesh Bank, 1998

**Table 3.11**  
**Agricultural Credit**  
**(in Crore Taka)**

| Year    | Disbursement | Due for<br>Recovery | Recovery | Recovery as<br>% of Due |
|---------|--------------|---------------------|----------|-------------------------|
| 1981-82 | 423.84       | 648.3               | 314.34   | 48.49                   |
| 1985-86 | 631.72       | 2375.19             | 607.15   | 25.56                   |
| 1990-91 | 595.6        | 4556.65             | 625.32   | 13.72                   |
| 1993-94 | 1100.79      | 5141.86             | 979.12   | 19.04                   |
| 1997-98 | 1814.53      | 7274.72             | 1779.21  | 24.46                   |

Source: Khalily, Huda and Lalarukh (1997) and Bangladesh Bank (1998)

**Table 3.12**  
**Poverty in Bangladesh**

|                                | Region | 1963/64 | 1973/74 | 1981/82 | 1983/84 | 1995 |
|--------------------------------|--------|---------|---------|---------|---------|------|
| Household Expenditure Survey * | Rural  | 43.6    |         |         |         |      |
|                                | Urban  | -       |         |         |         |      |
| Muqtada (1986)                 | Rural  |         | 59.9    |         |         |      |
|                                | Urban  |         | 37.8    |         |         |      |
| Islam and Khan (1986)          | Rural  |         | 47.7    |         |         |      |
|                                | Urban  |         | 32.3    |         |         |      |
| Osmani and Rahman (1986)       | Rural  |         | 65.3    | 79.1    | 49.8    |      |
|                                | Urban  |         | 62      | 50.7    | 39.5    |      |
| Rahman and Haque (1988)        | Rural  |         | 55.7    |         |         |      |
|                                | Urban  |         |         |         |         |      |
| Ravallion (1990)               | Rural  |         |         |         | 53.8    |      |
|                                | Urban  |         |         |         | 40.9    |      |
| BBS (1990/92), (1995) (1996)   | Rural  |         |         | 73.8    | 61.9    | 46.8 |
|                                | Urban  |         |         | 66      | 67.7    | 43.6 |

\* Quoted from Sen (1995)

Sources: Sen (1995) and Mujeri (1997)

**Table 3.13**  
**Inequality in Income Distribution in Bangladesh**

|                          | Region | 1973/74 | 1976/77 | 1978/79 | 1985/86 | 1991/92 |
|--------------------------|--------|---------|---------|---------|---------|---------|
| Muqtada (1986)           | Rural  | 0.36    | 0.45    | 0.35    |         |         |
|                          | Urban  | 0.39    | 0.52    | 0.38    |         |         |
| Ranhman and Haque (1988) | Rural  |         |         |         | 0.37    |         |
|                          | Urban  |         |         |         | 0.36    |         |
| BBS (1991/92), (1994)    | Rural  | 0.38    |         |         | 0.36    | 0.36    |
|                          | Urban  | 0.38    |         |         | 0.37    | 0.40    |

Sources: Sen (1995) and Mujeri (1997)

**Table 3.14**  
**Poverty Gap and Squared Gap Measures of Poverty**

|                            | 1983-84 | 1985-86 | 1988-89 | 1991-92 | 1995-96 |
|----------------------------|---------|---------|---------|---------|---------|
| <b>Poverty Gap</b>         |         |         |         |         |         |
| National                   | 16.52   | 12.27   | 15.35   | 17.19   | 14.37   |
| Rural                      | 16.83   | 12.50   | 16.01   | 18.06   | 15.40   |
| Urban                      | 14.26   | 10.85   | 11.06   | 12.00   | 9.19    |
| <b>Squared Poverty Gap</b> |         |         |         |         |         |
| National                   | 6.61    | 4.20    | 5.77    | 6.76    | 5.36    |
| Rural                      | 6.72    | 4.27    | 6.07    | 7.15    | 5.74    |
| Urban                      | 5.78    | 3.81    | 3.83    | 4.43    | 3.44    |

Source: World Bank (1998)

**Table 3.15**  
**Average Per Capita Daily Intake of Calorie (Kcal.)**  
**Based on Different Surveys**

|                  | <b>Bangladesh</b> | <b>Rural</b> | <b>Urban</b> |
|------------------|-------------------|--------------|--------------|
| HES 1981-82      | 1925              | 1905         | 2047         |
| HES 1983-84      | 2102              | 2113         | 2020         |
| HES 1985-86      | 2119              | 2203         | 2170         |
| HES 1988-89      | 2215              | 2217         | 2183         |
| HES 1991-92      | 2223              | 2232         | 2212         |
| HES 1995-96      | 2244              | 2251         | 2209         |
| LLDMP Survey '95 | 2206              | 2205         | 2214         |
| LLDMP Survey '96 | 2157              | 2114         | 2352         |

Source: BBS (1998)

**Table 3.16**  
**Monthly Expenditure on Clothes**

| <b>Year</b> | <b>Per Household Monthly Expenditure on Clothes<br/>% of the Total Expenditure</b> |
|-------------|--|
| 1981-82     | 7.85   |
| 1983-84     | 7.71   |
| 1985-86     | 5.92   |
| 1988-89     | 5.55   |
| 1996        | 5.58   |

Source: BBS (1998)

**Table 3.17**  
**Availability of Per Capita Floor Space from Different Surveys**

| <b>Locality</b> | <b>Household Expenditure Survey '91</b> | <b>Population Census '91</b> |
|-----------------|---|------------------------------|
| Bangladesh      | 80.18                                   | 78.25                        |
| Rural           | 86.80                                   | 85.20                        |
| Urban           | 67.68                                   | 66.23                        |

Source: BBS (1998)

**Table 3.18**  
**Distribution of Monthly Expenditure on Housing per Household**  
**per Social Group**

| Social Group    | Per Household<br>Monthly<br>Consumption<br>Expenditure<br>Tk. | Per Household<br>Monthly<br>Expenditure on<br>Housing<br>Tk. | Percentage of<br>Monthly<br>Expenditure<br>on Housing |
|-----------------|---|--|---|
| Agriculture     | 2996  | 279  | 8.64  |
| Non Agriculture | 3923  | 448  | 9.87  |
| National        | 3384  | 334  | 9.87  |

Source: BBS (1998)

**Table 3.19**  
**Health Facilities of Bangladesh**

| Facilities  | 1991-92 | 1992-93 | 1993-94 | 1995-96 |
|---|---------|---------|---------|---------|
| Government Expenditure on Health Including<br>Family Welfare Activities (in Core) | 684     | 1128    | 1330    | 1627    |
| Per Capita Government Expenditure of Health<br>and Family Welfare                 | 61      | 107     | 128     | 133     |

Source: BBS (1998)

**Table 3.20**  
**Health Facilities in Some Selected Countries**

|                                     | Doctors<br>Per 100,000<br>People<br>1993 | Nurses<br>Per 100,000<br>People<br>1993 | Public Expenditure on Health |                     |
|-------------------------------------|--|---|------------------------------|---------------------|
|                                     |  |   | as % of GNP<br>1960          | as % of GDP<br>1990 |
| Bangladesh                          | 18                                       | 5                                       | N/A                          | 1.20                |
| Nepal                               | 5  | 5                                       | 0.20                         | 1.20                |
| India                               | 48                                       | N/A                                     | 0.50                         | 0.70                |
| Pakistan                            | 52                                       | 32                                      | 0.30                         | 0.80                |
| Sri Lanka                           | 23                                       | 112                                     | 2.00                         | 1.40                |
| Maldives                            | 19                                       | 13                                      | N/A                          | N/A                 |
| Bhutan                              | 20                                       | 5                                       | N/A                          | 2.3                 |
| Indonesia                           | 12                                       | 67                                      | 0.30                         | 0.70                |
| Thailand                            | 24                                       | 99                                      | 0.40                         | 2.00                |
| Malaysia                            | 43                                       | 160                                     | 1.10                         | 1.30                |
| <b>All Developing<br/>Countries</b> | <b>5833</b>                              | <b>4691</b>                             | <b>0.9</b>                   | <b>2.1</b>          |

Source: UNDP (HDR 1999)

**Table 3.21**  
**Distribution of Monthly Expenditure on Health Per Household**  
**per Social Group**

| <b>Social Group</b> | <b>Per Household<br/>Monthly<br/>Consumption<br/>Expenditure<br/>Tk.</b> | <b>Per Household<br/>Monthly<br/>Expenditure on<br/>Health<br/>Tk.</b> | <b>Percentage of<br/>Monthly<br/>Expenditure on<br/>Health</b> |
|---------------------|--|--|--|
| Agriculture         | 2996   | 83   | 2.75   |
| Non Agriculture     | 3923   | 155  | 3.96   |
| National            | 3384   | 113  | 3.34   |

Source: BBS (1998)

**Table 3.22**  
**Literacy and Expenditure on Education of Some Selected Countries**

| <b>Countries</b>                | <b>Adult<br/>Literacy<br/>Rate<br/>1997</b> | <b>Combined 1st, 2nd<br/>&amp; 3rd Level<br/>Gross Enrolment<br/>Ratio 1997</b> | <b>Expenditure on Education</b> |                                    |
|---------------------------------|---|---|---------------------------------|------------------------------------|
|                                 |   |   | <b>As % of<br/>GNP<br/>1980</b> | <b>As % of<br/>GNP<br/>1993-96</b> |
| Bangladesh                      | 38.90                                       | 35.00   | 1.50                            | 2.90                               |
| Nepal                           | 38.10                                       | 59.00   | 1.80                            | 3.10                               |
| India                           | 53.50                                       | 55.00   | 2.80                            | 3.40                               |
| Pakistan                        | 40.90                                       | 43.00   | 2.00                            | 3.00                               |
| Sri Lanka                       | 90.70                                       | 66.00   | 2.70                            | 3.40                               |
| Maldives                        | 95.70                                       | 74.00   | N/A                             | 6.4                                |
| Bhutan                          | 44.20                                       | 12.00   | N/A                             | N/A                                |
| Indonesia                       | 85.00                                       | 64.00   | 1.70                            | 1.40                               |
| Thailand                        | 94.70                                       | 59.00   | 3.40                            | 4.10                               |
| Malaysia                        | 85.70                                       | 65.00   | 6.00                            | 5.20                               |
| <b>All Developing Countries</b> | 71.40                                       | 59.00   | 3.8                             | 3.6                                |

Source: UNDP (HDR 1999)

**Table 3.23**  
**Distribution of Monthly Expenditure on Health Per Household per Social**  
**Group**

| <b>Social Group</b> | <b>Per Household<br/>Monthly<br/>Consumption<br/>Expenditure<br/>Tk.</b> | <b>Per Household<br/>Monthly<br/>Expenditure on<br/>Health<br/>Tk.</b> | <b>Percentage of<br/>Monthly<br/>Expenditure on<br/>Health</b> |
|---------------------|--|--|--|
| Agriculture         | 2996   | 101  | 3.37   |
| Non Agriculture     | 3923   | 138  | 3.52   |
| National            | 3384   | 116  | 3.44   |

Source: BBS (1998)

**Table 3.24**  
**Human Development Index (HDI)**

|                   | Human Development Index (HDI) |       |       |       |       |       | Change in HDI | HDI Rank |
|-------------------|-------------------------------|-------|-------|-------|-------|-------|---------------|----------|
|                   | 1960                          | 1970  | 1980  | 1992  | 1994  | 1997  | 1960-1997     | 1997     |
| <b>Bangladesh</b> | 0.166                         | 0.199 | 0.234 | 0.309 | 0.368 | 0.44  | 0.274         | 150      |
| <b>Nepal</b>      | 0.128                         | 0.162 | 0.209 | 0.289 | 0.347 | 0.463 | 0.335         | 144      |
| <b>India</b>      | 0.206                         | 0.254 | 0.296 | 0.382 | 0.446 | 0.545 | 0.339         | 132      |
| <b>Pakistan</b>   | 0.183                         | 0.244 | 0.287 | 0.393 | 0.445 | 0.508 | 0.325         | 138      |
| <b>Sri Lanka</b>  | 0.475                         | 0.506 | 0.552 | 0.665 | 0.711 | 0.721 | 0.246         | 90       |
| <b>Maidives</b>   | -                             | -     | -     | -     | 0.611 | 0.716 | -             | 93       |
| <b>Bhutan</b>     | -                             | -     | -     | -     | 0.338 | 0.459 | -             | 145      |
| <b>Indonesia</b>  | 0.223                         | 0.306 | 0.418 | 0.586 | 0.668 | 0.681 | 0.458         | 105      |
| <b>Thailand</b>   | 0.373                         | 0.465 | 0.551 | 0.798 | 0.833 | 0.753 | 0.380         | 67       |
| <b>Malaysia</b>   | 0.33                          | 0.471 | 0.687 | 0.794 | 0.832 | 0.768 | 0.438         | 56       |

Source: UNDP (HDR 1999)



## Chapter Four: Microcredit and the Grameen Bank

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### 4.1 Introduction

In chapter two, we have argued that poor peoples ability to increase income through involving themselves in income generating activities is constrained by a lack of required minimum capital to start any income generating activity. In chapter three, we have seen that the formal financial sector, which excludes poor people from credit services through collateral requirement, is inefficient in Bangladesh and the informal financial sector, which is exploitative in nature, is still playing a dominant role. In chapter two, we also argued that an innovative credit programme is required for poor people, which will provide credit without collateral and will not be exploitative. A small credit programme was initiated in 1976 in Bangladesh with the objective to provide poor people exploitation free credit without collateral. This small credit programme is popularly known as *microcredit programme* and the first microcredit programme in Bangladesh is officially known as the *Grameen Bank*<sup>31</sup>.

The present chapter is intended to provide a brief discussion about microcredit, the Grameen Bank, and Non-government Organisations' (NGO's) microcredit programme in Bangladesh. As this thesis is not on the Grameen Bank as an organisation, this chapter is not going to discuss the Grameen Bank issues in detail. Information on structure, working of, and philosophy behind the Grameen Bank has been discussed extensively by a number of scholars elsewhere. A few of the major recent ones are Yunus (1998), Counts (1996), Bornstein (1996), Hashemi and Schuler

(1997), Ito (1999), Morduch (1999a), Morduch, (1999b), Morduch, (1998), Rahman (1999), Khandker, Khalily and Khan (1995), Khalily, Imam and Khan (1999), Amin, Rai and Topa (1999).

## **4.2 Microcredit and the Grameen Bank**

Muhammad Yunus, the initiator of the Grameen Bank, was a professor of economics at the University of Chittagong in Bangladesh until the end of seventies. He was also the director of the rural research programme of that university. While he was teaching at Chittagong University, he found massive poverty among people living in villages surrounding the university. As part of the rural research programme Professor Muhammad Yunus undertook a research project in 1976 to identify causes and extent of poverty of these poor people. He found some poor women who were forced to sell their handicraft products to middlemen at prices that were much lower than the market price because these poor women got their raw materials from those middlemen on credit. Then Professor Yunus tried to estimate the amount of capital, which was required by these poor people to buy the required raw materials to produce the handicraft products. Professor Yunus, to his surprise, found that forty-two poor women lacked capital amounting to a total of only Tk. 856 (\$21). Out of these forty-two poor women some required as little capital as only Taka 10 or 20<sup>32</sup> and the highest amount required was Taka 65 [Counts, (1996); Yunus (1998)]. Professor Yunus thus realised that the lack of required capital, to continue or start income generating activities in rural areas, was the root cause of poverty. He provided those

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<sup>31</sup> Grameen means 'rural'. So, Grameen Bank means 'Rural Bank'.

<sup>32</sup> The present exchange rate between the British Pound and the Bangladeshi Taka is, 1 British Pound = 80 Bangladeshi Taka.

forty-two poor women, who lacked the required capital amount of Tk. 856, from his own pocket. After that, he started contacting and pursuing the formal sector commercial banks to provide these poor people the required amount of capital to continue or start production of handicraft products. Initially, formal sector commercial banks refused to provide credit to these poor people, because these poor people did not have the required collateral to provide against loans. Formal commercial banks also argued that the proposed loans to those poor women were so tiny that interest income from those loans would not cover administrative costs of loans. In response to the questions raised by the executives of the formal sector commercial banks about the required collateral to receive loans Professor Yunus offered himself as a guarantor of those loans.

From that arrangement the Grameen Bank began its difficult journey to achieve a great objective, poverty free Bangladesh and in global perspective, a poverty free world. Professor Yunus and his colleagues have devised a unique technology to provide small credit to poor people without collateral, which is now known as microcredit model and the small loans, provided to poor people, are known as microcredit.

In 1983, the Grameen Bank became a specialised formal sector financial institution through a government statute. It is now regulated by the central bank of Bangladesh, Bangladesh Bank, like other formal sector financial institutions. A 13-member board of Directors administers the Grameen Bank. This 13-member board consists of nine poor Grameen Bank borrowers, three government officials and Professor Yunus as the Managing Director of the bank. Currently, ninety-two percent of the Grameen Bank

shares are owned by the Grameen Bank borrowers and eight percent owned by the Bangladesh government. The Grameen Bank collects fund from the central bank and commercial banks in Bangladesh and it also receives some funds from international donors. Currently, Bangladesh Bank and local commercial banks provide approximately seventy five percent of total Grameen Bank's funds and international donors provide the remaining twenty five percent [Hashemi and Schuler (1997)].

#### **4.2.1 Group Approach in Credit disbursement**

The Grameen Bank follows the group approach in providing collateral free loans to poor people. Five people, with similar socio-economic status and from the same village, form a group and they elect one person among themselves as the chairperson of the group. After formation of the group, they are required to participate in a training programme for a period of at least seven days. During the training programme, group members learn thoroughly the rules and regulations of the Grameen Bank which involve, for example, understanding the purpose of bank procedures, knowing in detail the responsibilities of the group chairperson and the centre chief, explaining the potentials of fund-saving schemes for joint activities or children's welfare etc. They also learn to write their signatures. After completion of the training, group members are eligible for their first loan and they request the local Grameen Bank branch to provide them with loans. A field officer of the branch visits the houses of the group members and assesses their socio-economic status and their loan requirement. Each member of the group provides himself as a guarantor of other members' loans and this procedure is known as *joint liability system*. Joint liability of group members replaces the collateral requirement of formal financial sector loans.

At first, only two members from the group are allowed to apply for a loan. Next two more members are allowed to apply, if the field officer finds loan repayment of first two members satisfactory. Subsequently, the fifth member receives loan on the basis of the loan repayment performance of four other members of the group.

All loan decisions, loan applications processing, loan recovery, and savings collection are made during the weekly meeting of the centre<sup>33</sup>. A field officer of the Grameen Bank branch attends the weekly meeting of the centre as the representative of the bank. The sanctioned loans to group members are to be repaid in weekly instalments and each instalment is equivalent to two percent of the principal amount of the loan. The weekly repayment system keeps instalment repayments so small that even a poor person should be able to manage it without any big trouble. If any member defaults the whole group becomes ineligible to receive additional loans. Each member of the group is responsible and liable for other members' repayment of loans. Joint liability motivates group members to ensure each other's repayments. This procedure of providing credit to a group instead of an individual is known as *group lending technique*. Group members select their own investment activities and the field officers of the Grameen Bank supervise these investment activities of group members [Chowdhury and Akhand (1993)].

Group lending technique with joint liability system provides the Grameen Bank defence against the problems arising from asymmetric and imperfect enforcement. It helps to minimise risk arising from adverse selection problems. It also assists to build

up efficient communication between programme borrowers and bank workers. In addition, group lending creates a support system for members who may not be able to pay at one time or another. It serves as a screening device for the Grameen Bank to select good borrower from potential eligible borrowers. Stiglitz (1990) argues that those, whose investments will not produce enough return to repay the loan, should be screened out by their peers at the entry point. Ito (1999) argues that group lending with joint liability system is the main factor behind the Grameen Bank's impressive financial performance, especially loan recovery.

#### **4.2.2 Credit Disbursement, Savings Mobilisation, Interest Rates, Recovery Performance and Outreach**

In this section, we are going to discuss the performance of the Grameen Bank in respect to credit disbursement, savings mobilisation, interest rates, recovery and outreach.

##### **a. Credit Disbursement**

At present the Grameen Bank provides different types of loans. These are general loans, seasonal loans, joint loans, housing loans, sanitary latrine loans, hand tube-well loans and technology loans. General loans are the most common type of loan. According to the rules of the Grameen Bank, these loans should be invested within a week of the receipt of the loan. These loans are generally used in income generating

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<sup>33</sup> Centre is a separate stage between the group and the branch of Grameen Bank. The centre comprises members of 5 to 8 groups. A Grameen Bank branch has 50 to 60 centres and maximum number of 2400 members.

activities and borrowers are supposed to repay the loan from the income. Housing loans are provided for repair of the existing dwelling house or construction of a new dwelling house. Generally, housing loans range from TK 8000 to TK 15000 with an interest rate of 8% repayable in weekly instalments over as many years as number of thousands of Taka borrowed. Seasonal loans are given for short-term investment in trading and agricultural cultivation. Joint loans are supplied to carry out jointly owned and managed enterprises. But joint loans are not very successful in the Grameen Bank. Sanitary latrine and tube-well loans are granted to construct low-cost sanitary latrines (hygienic toilet) and to purchase tube-wells for safe drinking water for households. Technology loans are provided to purchase power pumps for irrigation purposes or high yielding seeds for cultivation.

In 1976, the Grameen Bank, while it was a part of an action research project of the University of Chittagong, disbursed total amount of microcredit of only \$498 among 10 members (Tables 4.1 and 4.2). The Grameen Bank disbursed total amount of microcredit of \$2.29 million among about fifty-eight thousand members in 1983, when it became a formal financial institution. In 1997, the total amount of microcredit disbursement increased to \$385.7 million, which included 'general microcredit loan' of \$370.1 million and 'housing loan' of \$15.6 million. During the period 1983 to 1997, total yearly microcredit disbursement achieved a growth rate of 43.79% per annum (Tables 4.1 and 4.2). The cumulative microcredit disbursement of the Grameen Bank stood at \$2.2 billion in 1997. Under the housing loan scheme, the Grameen Bank disbursed \$15.6 million in 1997 and 40274 dwelling houses were built or reconstructed using housing loans in that year.

## **b. Savings Mobilisation**

Besides offering microcredit to its members, the Grameen Bank also mobilises savings from its members. It has both compulsory and voluntary savings schemes. Every member of the Grameen Bank is required to contribute compulsorily one Taka towards the group fund during the weekly meeting of the group. This contribution is regarded as the savings of that member and can be withdrawn when he/she ceases his/her membership of the Grameen Bank. Any member can take a loan from his/her group savings during the membership in the microcredit programme. The Grameen Bank's members also contribute compulsory 5% of the principal amount of all loans to the 'group fund'. The Grameen Bank members are also required to make another contribution of five Taka per thousand of any loan bigger than one thousand Taka. The Grameen Bank mobilised total amount of savings \$ 0.01 million from its 2200 members in 1979 and it increased to \$90.9 million in 1997. During this period, the Grameen Bank has achieved a growth rate of 65.93% per annum in total amount of savings of members. Total savings of the Grameen Bank members equalled total outstanding loan by 1989 [Ito, (1999)].

## **c. Interest Rates**

The average nominal interest rate of the Grameen Bank's loans varied from 11.1% to 16.8% during the period 1985 to 1994. The highest average nominal interest rate was charged in 1985, when it was 16.8%. The lowest average nominal interest rate was charged in 1990, when it was 11.1%. The average real interest rate varied from 2% in 1989 to 16.1% in 1993 during the same period (1985 to 1994). In 1994, it was 13.1%



(Table 4.4). Currently, the Grameen Bank charges a nominal interest rate of 20% per annum for general loans. It was 16% before 1991. The Grameen Bank follows the declining balance method<sup>34</sup> for calculating total amount of interest to be paid for a loan. Because of declining balance method, in reality, it charges interest only for half of the total amount of loan disbursed, i.e. for a loan of Taka 1000, it charges only for Taka 500. In case of housing loans, the Grameen Bank charges a nominal interest rate of 8% per annum. It charged 5% for similiar loan before 1991 [Murdoch, (1999a)].

#### **d. Recovery Performance**

The definition of recovery rate varies across microcredit organisations. Annual Reports of the Grameen Bank provides two types of measures related to recovery. The first is the ratio of total amount of outstanding loans not repaid in one-year to total outstanding loans. The second is the ratio of total amount of outstanding loans not repaid in two years to total outstanding loans [Murdoch, (1999a)]. Both measures are almost the same with the only difference being that the time period for considering a loan as over due. Chirsten (1997) does not consider the Grameen Bank's measures as standard. Bolivia's BancoSol<sup>35</sup> has accepted a conservative measure, following practices in the United Sates, to calculate the recovery rate. If any single loan balance remain unpaid even for a single day, BancoSol considers that unpaid balance as overdue and at risk [Murdoch, (1999a)].

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<sup>34</sup> That means, Grameen Bank takes into account the fact that total principal amount of any loam declines after payment of each instalment.

<sup>35</sup> A microcredit organisation in Bolovia.

Until 1982, the recovery rate of the Grameen Bank was 100%, which was an incomparable recovery rate in Bangladesh, as the average recovery rate of Bangladeshi commercial banks is less than 40%. During the period 1983 to 1997, the recovery rate of the Grameen Bank fluctuated between 93% to 100% (Tables 4.1 and 4.2). In 1997, the recovery rate of the Grameen Bank was 93.1%. The weighted average of the Grameen Bank's overdue loans for more than one year during the period 1985 to 1997 was 1.57% and the same average for loans overdue for more than two years during the same period was 1.12% (Table 4.3). The percentage of loans overdue for more than one year to total outstanding loans varied from 0.76% to 13.85% during the period 1985 to 1997. The highest percentage of loans overdue for more than one year to total outstanding loans was 13.85% in 1996 and the lowest was 0.76% in 1994. The percentage of loans overdue for more than two years to total outstanding loans varied from 0.63% to 6.82% during the period of 1985 to 1997. The highest percentage of loans overdue for more than two years to total outstanding loans was 6.82% in 1997 and the lowest was 0.63% in 1994 [Morduch (1999a)]. The statistics on recovery and overdue loans indicate a quite impressive recovery performance of the Grameen Bank.

#### **e. Outreach**

Outreach is considered as the proxy of success in poverty alleviation by microcredit organisation. Total number of clients served by a microcredit organisation is one of three components of measuring *Outreach* of that organisation. The severity of poverty among clients and the quality of financial services are also considered during measurement of outreach [Christen, et al. (1995); Yaron (1992)]. However, the

estimation of the severity of poverty among clients is complex and difficult, that is why, total number of clients served is considered as the indicator of outreach of a microcredit organisation.

In 1997, total number of members of the Grameen Bank increased to 2.3 million from only 10 in 1976. The Grameen Bank achieved a growth rate of 29.9% per annum in total number of members. If, we consider approximately one hundred thirty million as the total population of Bangladesh, the average family size as 5.102<sup>36</sup> in rural areas, 46.8% households are under the poverty line [BBS, (1997)] and 30% miss-targeting [Morduch, (1998)], then the Grameen Bank has successfully reached 18% of its total target population in Bangladesh. By 1997, the Grameen Bank had brought 37937 villages under its microcredit programme out of about 86000 villages in the country. Total number of branches increased from 1 in 1976 to 86 in 1983 and it further increased to 1105 in 1997. In 1976, the Grameen Bank had only one employee. The number of employees increased to 824 when it became a formal financial institution in 1983 (Tables 4.1 and 4.2). In 1997, the Grameen Bank had 12628 employees in 1105 branches, 118 area offices<sup>37</sup>, 14 Zonal (regional) offices<sup>38</sup> and the head-office at Dhaka.

All statistics mentioned in this section and presented in Tables 4.1 and 4.2 on credit disbursement, savings mobilisation, recovery performance and outreach demonstrate that the Grameen Bank has achieved a tremendous growth in terms of these banking aspects over the period 1976 to 1997.

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<sup>36</sup> Calculated from statistics given in BBS (1997)

### 4.2.3 Who Participates in the Grameen Bank's Microcredit Programme?

Membership of the Grameen Bank is limited to people who own less than half an acre of land, are not from the same family, have similar socio-economic status and are from same area. Khandker, Khalily and Khan (1995) argue that these criteria of group membership are important for better functioning of groups. The restriction of less than half an acre is imposed to restrict participation of rich people in the programme. Morduch (1998) and Zaman (1997) raised question about the strict application of these criteria, especially land ownership of less than half an acre. Zaman found miss targeting of 28% in case of *BRAC*<sup>39</sup>, which means that 28 percent borrowers had more than half an acre of land. Morduch found miss targeting of 30 percent in case of the Grameen Bank, BRAC, and RD-12<sup>40</sup>.

There is no doubt about the success of microcredit organisations, especially the Grameen Bank, in reaching poor people [Amin, Rai and Topa, (1999)]. Amin, Rai and Topa (1999) found that a poor household is more likely to join a microcredit programme than a non-poor household. But some researchers, for example, Hulme and Mosely (1997), Hashemi (1997), and Rahman (1997), raised questions about the success of microcredit organisations in reaching the poorest of poor, who are also known as hard-core poor. Hulme and Mosely (1997) argue that the benefits of microcredit programmes are unevenly distributed and for that reason, hard-core poor are largely left out. Hashemi (1997) finds that such microcredit programmes like the Grameen Bank have failed to effectively target hard-core poor. Rahman (1997) found

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<sup>37</sup> Each Area office supervises ten to fifteen Grameen Bank branches.

<sup>38</sup> Each Zonal office supervises about ten area offices.

<sup>39</sup> One of the biggest microcredit organisations in Bangladesh.

some problems from the demand side, which excluded hard-core poor from microcredit programmes.

In Bangladesh, formal sector financial institutions are gender biased. Although some banks have opened branches exclusively for women, those branches mainly collect deposits and provide a small number of loans. Prior to the Grameen Bank, women constituted only less than 1 percent of total number of borrowers [Yunus (1998)]. This exclusion of women from the services of formal sector financial institutions motivated Mohammad Yunus to give preference to women in the Grameen Bank, especially for providing microcredit loans. As he writes [Yunus (1998)]:

*“In Bangladesh, if a woman, even a rich woman, wants to borrow money from a bank, the manager will ask her, ‘Did you discuss this with your husband?’ And if she answers, ‘Yes’, the manager will say, ‘Is he supportive of your proposal?’ If the answer is still, ‘Yes’, he will say, ‘would you please bring your husband along so that we can discuss it with him?’*

*But no manager would ever dream of asking a prospective male borrower whether he discussed the idea of a loan with his wife, and whether he would like to bring his wife along to discuss the proposal. Even suggesting this would be an insult!*

*Having complained for so long that banks discriminated against women, I wanted at least 50 per cent of our projects’ (i.e. the Grameen Bank Project) borrowers to be women.”*

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<sup>40</sup> RD-12 is a microcredit programme operated by the governmental Department, Bangladesh Rural

Therefore, Professor Yunus wanted to have at least 50 per cent of the Grameen Banks' members' women. Staff and officials of the Grameen Bank have found women more motivated and compliant with rules and procedures. They also have found women more consistent in their concern for the welfare of the family. Women invest their loans properly and utilise income for the welfare of the members of the family [Hashemi and Schuler (1997); Rahman, (1999); Goetz and Sen Gupta (1996), Pit and Khandker (1997)]. These reasons motivated staff and officials of the Grameen Bank to give women preference. As of February 1997, 94 per cent of 2.07 million Grameen Banks' members were women. Helen Todd (1997) argues that during the mid-eighties the poor loan recovery performance of male centres<sup>41</sup> compared to women centres<sup>42</sup> encouraged the Grameen Bank to give women preference for its microcredit activities. At the beginning of the Grameen Bank's evolution as a microcredit organisation, it encouraged women to join the programme to maintain gender balance. Currently, it encourages men to join its microcredit programme as the gender balance among members favours women [Hashemi and Schuler (1997)].

#### **4.2.4 Financial Viability**

Financial viability along with outreach are the two most important performance indicators of microcredit organisations. Financial viability has two components, namely, *financial sustainability* and *economic sustainability*. Financial sustainability measures only the ability of a microcredit organisation to cover non-financial costs out of its revenue earned from financial services. Non-financial costs include staff

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Development Board (BRDB).

salaries, administrative costs, training costs, depreciation of fixed assets, and losses from defaults. Economic sustainability measures not only the ability to cover non-financial costs, but also the opportunity costs of funds used for providing loans. Economic sustainability indicates the capability of a microcredit organisation to run smoothly without any form of grants and subsidised funds. When a microcredit organisation becomes economically sustainable, i.e. fully self sufficient, it does not require subsidised loans or grants any longer. On the other hand, financial sustainability considers only the ability of a microcredit organisation to finance its own expenses from earned revenues.

Yaron's well known *subsidy dependency index (SDI)* is used for measuring financial viability of any microcredit organisation [Yaron, (1992)]. Khandker, Khalily and Khan (1996) developed *subsidy dependency ratio (SDR)* for the same purpose. Khandker, Khalily and Khan (1995) claims that SDI has limited policy implications because of its limited number of parameters. Khalily and Imam (1999) have developed another index, which is known as *Efficiency and Subsidy Intensity Index (ESII)*.

According to Yaron (1992), the Grameen Bank's SDI was more than 100 percent, which means that the Grameen Bank would require doubling its existing interest rate to achieve financial viability. Morduch (1999) calculated SDI for the Grameen Bank for the period of 1985 to 1994. During this period, SDI (with 3.5% provision) fluctuated between 45 to 225. The higher SDI was 228 in 1989 and the lowest, 45 was in 1994 (Table 4.5). The SDI of 45 in 1995 indicates that the Grameen Bank would

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<sup>41</sup>Grameen Bank centres with male members only,

require to increase its average nominal interest rate from 16.7% to 24.2% to achieve financial viability. The Grameen Bank could have also achieved financial viability through reducing its costs instead of increasing interest rates. SDI of the Grameen Bank during the period 1985 to 1994 indicates that it is moving towards financial viability gradually. SDI of 263 in 1990 reduced to 45 in 1994, which indicates a considerable progress of the Grameen Bank in the line of financial viability.

### **4.3 NGO's and Microcredit in Bangladesh**

Bangladesh has experienced an exceptionally rapid growth of Non-Governmental Organisations (NGOs) since independence. Prior to the independence of Bangladesh in 1971, only a handful of NGOs were operating in East Pakistan. Immediately after the independence war a number of international organisations rushed in to Bangladesh to conduct rehabilitation programme and to help the government of Bangladesh to rebuild the socio-economic infrastructure of the country. During that time some patriotic and enthusiastic Bangladeshis also formed a number of NGOs to conduct relief and rehabilitation activities. The relief and rehabilitation programmes of international and local NGOs continued till 1974 and some of these international NGOs and Local NGOs decided to continue their development activities on a long term basis after the completion of their initial task of providing relief and rehabilitation of socio-economic infrastructure. Immediately after independence, Bangladesh Reconstruction Assistance Committee (BRAC) (later renamed as Bangladesh Rural Advancement Committee) and Gono Shasthyo Kendro (GK) were established to conduct relief and rehabilitation programme. After completion of their

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<sup>42</sup>Grameen Bank centres with women members only,



initial relief and rehabilitation activities, these two NGOs continued their development activities and at present are prominent among the biggest NGOs in terms of development activities, in the country [White, (1991); Alamgir, (1997)].

NGOs have given more emphasis on rural development, especially on agriculture, after completion of their initial relief and rehabilitation programme. The Comilla co-operative model, which was popularly known as Comilla model and claimed academic as well as international attention during the sixties and seventies, influenced NGOs in to accepting the strategy of integrated rural development to alleviate rural poverty and inequalities. But by the end of seventies, NGOs realised that rural poverty condition have not changed that much. They realised that poverty was not only a problem of income, but was also a problem of lack of consciousness of rural people about their socio-economic status and rights. They also realised that income-generating programmes alone would not be able to alleviate rural poverty. This realisation helped NGOs to provide emphasis on 'consciousness raising' of rural people about their socio-economic status and rights at the political level. Besides the programmes to raise consciousness of rural poor people, NGOs have also continued their income generating programmes for poor people and initiated other programmes on literacy, health, education, sanitation, training on skill development, drinking water etc. NGOs' programmes of conscious raising activities for rural people did not achieve the expected results. Rural poor people had historically experienced severe defeats as they confronted rural power structure to establish their socio-economic right [White, (1991)]. Up to the seventies, NGOs development activities were mainly concentrated in rural areas, but in the eighties, NGOs expanded their development

activities also to urban areas, especially for urban slum people, who migrated from rural to urban areas.

Since the mid-seventies, the numbers of NGOs have grown very quickly. Thousands of NGOs registered themselves with the Ministry of social welfare and sought permission to conduct development activities. Some of these NGOs originated from local clubs, associations and informal co-operatives. Some of them had started initially as a local chapter of international NGOs and after the departure of their respective international sponsors, these local chapters were taken over by indigenous organisations. Some natural phenomenon in eighties and nineties accelerated the growth of the number of NGOs in the country, for example, the disastrous floods of 1987 and 1988 and the cyclone of 1991. Immediately after these natural disasters a huge amount of money entered into Bangladesh as relief and rehabilitation funds. International donor agencies preferred and trusted NGOs more than governmental organisations to implement their relief and rehabilitation works, because of wide spread corruption and time consuming project implementation procedure of governmental organisations.

Currently, about 20000 NGOs are registered with the Directorate of Social Welfare under the 1961 ordinance and out of them, 970 national and international NGOs (842 Local NGOs and 128 foreign NGOs) registered themselves with the Bureau of NGO Affairs as recipients of foreign funds<sup>43</sup> [Alamgir, (1997)].

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<sup>43</sup> In Bangladesh, NGOs are required to register themselves with the 'Bureau of NGO Affairs', a governmental organisation and directly controlled by the Prime Minister of the country, to receive foreign funds. Bureau of NGO Affairs monitors development activities as well as uses of foreign funds of these NGOs.

Following the innovation and success of the Grameen Bank in providing small collateral free loans to poor people for income generating activities, many NGOs adopted microcredit technology and replicated the Grameen Bank's microcredit programme. Some of these NGOs experimented with Grameen's microcredit delivery system at the beginning and gradually they developed their own microcredit delivery system (For example, BRAC and ASA). Currently, more than 1000 NGOs are operating microcredit programme and many more new ones are joining the microcredit revolution in Bangladesh [Rahman, (1999a)].

Besides microcredit and savings mobilisation programmes, some NGOs are experimenting with and implementing new innovative financial products in rural areas of Bangladesh. For example, currently, GHASHFUL, a small NGO in Bangladesh, is implementing an innovative micro-insurance product in rural areas of the southern part of Bangladesh. Under the new micro-insurance scheme, GHASHFUL collects insurance premium of Tk. 10 (about £0.13) per month per policy from the policyholders for up to five years. The insurance policy matures at the end of the fifth year. If the policyholder dies after three years of policy purchase and before the maturity of the policy then the policyholder's family receives Tk. 10000 (i.e. about £125). If the policyholder dies in the first year of policy purchase, then policy holder's family receives Tk. 3000. In the event of the policyholder's death in the second or third year of policy purchase the family receives Taka 5000. If the policyholder does not die within the maturity period, then GHASHFUL refunds the whole amount of premium (i.e. Taka 6000) plus interest computed at 7% per annum. This micro-insurance product of GHASHFUL has already received attention of a large number of poor people in southern part of Bangladesh.

### **4.3.1 Credit Disbursement, Savings Mobilisation and Recovery Performance of NGO's Microcredit Programmes**

Although more than 1000 NGOs are providing microcredit in Bangladesh, the contribution by a vast majority of them toward total yearly microcredit disbursement is insignificant. A study of 369 NGOs microcredit programmes indicates that the top twenty NGOs occupied 86% of total microcredit programme members, 89% of total net savings, 92% of cumulative credit disbursement, 90% of total outstanding loans, and 88% of total revolving loan fund. More interestingly, top three NGOs contributed 69% of total microcredit programme membership, 83% of total net savings, 85% of cumulative credit disbursement, 82% of outstanding loans, and 71% of total revolving fund (as on June 1998) [CDF (1999); Rahman (1999a)]. These statistics indicate that only a few NGOs dominate the NGO's microcredit sector.

CDF (1999) also shows that 369 NGOs had about 6.2 million microcredit programme members, out of which BRAC alone had 2.253 million in 1998. These 369 NGOs disbursed a cumulative amount of Tk. 49231 million among their 6.2 million members until June 1998. Small business sector has received the highest amount of loan, 42.13% of total cumulative disbursement. Livestock sector has received the second highest disbursement, 17.94% of total cumulative disbursement. Agriculture, fisheries, food processing, cottage industries, transport, housing, health, education, livestock and others have received 12.19%, 4.33%, 10.17%, 2.83%, 3.39%, 1.49%, 0.51%, and 0.04% of total cumulative loan disbursement respectively. In the year 1998, 369 NGOs had outstanding-loans of Taka 10590 million among 6.2 million

microcredit members. The recovery rate of outstanding loans of NGOs is more than 93 percent. The second tier microcredit organisation, PKS<sup>44</sup>, does not provide revolving loan fund to those NGOs, which have a recovery rate of less than 95%. The loan recovery performance of the NGO sector is highly satisfactory compared to that of the formal banking sector in Bangladesh. The average recovery rate of commercial banks in Bangladesh is only about 40%.

Besides providing microcredits, these NGOs also mobilise small savings from their microcredit programme members. The CDF statistics show that 369 NGOs mobilised net savings of about Taka 3,815 million (£46.69 million) until June 1998. The top three NGOs contributed 83% of this total net savings; i.e. Taka 3,159 million.

#### **4.3.2 Interest Rates of NGO's Microcredit Programmes**

The interest rates on microcredit loans differ widely among the NGOs. NGOs apply two methods, the flat rate method and the declining method, to determine total interest charged on microcredit loans. The effective interest rate of microcredit loans depends on the repayment structure of microcredit loans. If loans are repaid in a number of equal instalments, then under the flat rate method, the effective interest rates become almost double of the nominal interest rates, because borrowers pay interest for the whole loan amount for the whole year. Under the flat rate method, the interest component of instalments does not decrease with the decrease in the principal amount after instalment payments as each instalment payment includes a fraction of the principal amount as well as a fraction of total interest payment. Under the declining

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<sup>44</sup> Palli Karma Shahayak Foundation (PKSF), a second tier microcredit organisation in Bangladesh,

method the interest component of instalments decreases as principal amount decreases with instalment payments.

Most of the NGOs follow the flat rate method in calculating total amount of interest on microcredit loans. A very small number of NGOs follow the declining method in calculating total interest payments. In Bangladesh, NGOs uses 19 different rates of interest under the flat rate method and 4 different rates of interest under the declining method. Under the flat rate method, NGOs charge interest rates between 10 to 30 percent. More than 70% of all NGOs, who receive fund from PKSf at a subsidised rate of 3-5% per annum, charge interest rate of 15% under the flat rate method in the country. The top twenty NGOs, who contributed about 92% of total cumulative microcredit disbursement in 1998, charge interest rate between 12% to 15% on their microcredit loans. NGOs do not follow the market mechanism in determining their interest rates. They also do not consider loan-loss provision and inflation rate in determining interest rates [Rahman, 1999b].

Currently, NGOs pay interest on savings to their members between 5 to 14 per cent per annum. Commercial banks pay interest on deposits between 7.25% to 9.25%. The top three NGOs in the country, BRAC, ASA and Proshika, pay interest on savings of members at a rate of 6%, 8% and 5% respectively.

#### **4.3.3 Sources of Revolving Funds of NGO's Microcredit Programmes**

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which is not involved in microcredit activities directly, but provides funds to NGOs directly involved in microcredit activities.

NGOs collect their revolving funds from different sources. These sources are members' savings, PKSF, local commercial banks, foreign donor agencies, service charges, BRAC, ASA, Proshika, NGOs own fund and others. Although BRAC, ASA, Proshika are themselves NGOs and collect fund from others they also provide small funds to small NGOs. Out of the sources, foreign donors contributed the highest amount of fund; 25.95% of total revolving loan fund (RLF) in 1998. Members' savings' is the second highest source, 19.88% of total RLF. PKSF, local commercial banks and service charges provide 18.97%, 12.07% and 14.98% of total revolving funds of NGOs respectively.

#### **4.4 Summary of the Chapter**

In this chapter, we tried to discuss microcredit and the Grameen Bank issues in Bangladesh. We have seen that the Grameen Bank uses group-lending technique with joint liability to provide poor people collateral free credit. In respect to credit disbursement, savings mobilisation, recovery and outreach, the Grameen Bank has achieved tremendous success since its inception as a microcredit organisation in 1976. During the period 1983 to 1997, the Grameen Bank has attained a growth rate of 43.79% per annum in credit disbursement. In case of savings mobilisation, it realised a growth rate of 44.81% per annum (1983 to 1997). Total membership increased at a rate of 29.9% per annum and the recovery rate fluctuated between 93% to 100% during the same period. In 1993, the recovery rate was 93.1%, which shows a quite impressive success for the Grameen Bank. The Grameen Bank has successfully been moving towards financial viability, which is evident from SDI during the period of 1990 to 1994. SDI was 263 in 1990, which came down to 45 in 1994. Authors own

calculation shows that the Grameen Bank has successfully reached 18% of its total target population in Bangladesh. Some researchers argue that the Grameen Bank does not strictly follow its membership criteria in accepting new members. Morduch (1998) found 30% mistargeting in case of three-microcredit organisation including the Grameen Bank in Bangladesh. Some also argue that the Grameen Bank has failed to reach hard-core poor people. However, Amin, Rai and Topa (1999) have acknowledged that the Grameen Bank has successfully reached poor people. Currently 94% of the Grameen Bank members are women.

Non-governmental Organisations (NGOs) play a very important role in the microcredit sector in Bangladesh. Currently, approximately one thousand NGOs are providing microcredit services in Bangladesh. However, the top twenty NGOs contribute more than 80% of all microcredit services, which means other NGOs are very small in size. The top twenty NGOs charge interest rate of 12% to 15% on their microcredit loans. International donor agencies contribute approximately 26% of total revolving funds of NGOs and the rest of the total revolving funds comes from members savings, local commercial banks and government organisations.

In chapter two, we argued that an innovative credit programme is required, to provide poor people exploitation free credit without collateral. The Grameen Bank's microcredit programme is that desired credit programme. It provides poor people credit without collateral and it is not exploitative. From the analyses, we have found that the Grameen Bank has achieved quite a remarkable success in credit disbursement, savings mobilisation, outreach, recovery, and financial viability. It has successfully reached poor people in the country. These successes are from the supply



side. Now, we need to know the success of the Grameen Bank from the demand side, i.e. from borrowers side. In other words, we need to know whether microcredit has positive impact on socio-economic status and poverty of borrowing households. For this, in the next chapter, we are going to review available studies on assessment of the impact of microcredit on poverty and socio-economic status of borrowing households. In that chapter, we will review findings and methodology of those studies. We will also identify limitations of those studies, which will help us to avoid those limitations in designing the methodology of our present study.

## **Appendix Four**

**Table 4.1**  
**Grameen Bank Statistics, 1990-1997**

| Description                          | 1997<br>Million<br>US\$ | 1996<br>Million<br>US\$ | 1995<br>Million<br>US\$ | 1994<br>Million<br>US\$ | 1993<br>Million<br>US\$ | 1992<br>Million<br>US\$ | 1991<br>Million<br>US\$ | 1990<br>Million<br>US\$ |
|--------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| <b>Yearly Loan Disbursed:</b>        |                         |                         |                         |                         |                         |                         |                         |                         |
| (a) General                          | 370.1                   | 238.37                  | 343.8                   | 352.12                  | 260.24                  | 142.17                  | 86.18                   | 84.85                   |
| (b) Housing                          | 15.6                    | 4.13                    | 17.82                   | 33.53                   | 42.05                   | 14.81                   | 8.47                    | 6.29                    |
| Total Disbursement for the Year      | 385.7                   | 242.5                   | 361.62                  | 385.65                  | 302.33                  | 156.98                  | 94.55                   | 91.14                   |
| Cumulative Disbursement for the Year | 2224.1                  | 1838.33                 | 1595.83                 | 1234.21                 | 848.56                  | 546.23                  | 389.25                  | 294.6                   |
| Cumulative Amount Repaid             | 1868.6                  | 1526.89                 | 1293.31                 | 941.18                  | 618.84                  | 423.95                  | 316.89                  | 234.45                  |
| Repayment Rate (%)                   | 93.1                    | 96.22                   | 99.28                   | 99.37                   | 99.01                   | 98.17                   | 97.82                   | 98.76                   |
| Balance of Group Fund Savings        | 90.9                    | 81.48                   | 75.19                   | 60.81                   | 40.83                   | 24.37                   | 16.1                    | 12.75                   |
| No. of Houses Built                  | 40274                   | 329040                  | 331201                  | 295702                  | 258194                  | 157334                  | 118717                  | 91157                   |
| <b>Coverage:</b>                     |                         |                         |                         |                         |                         |                         |                         |                         |
| Total Number of Members              | 2272503                 | 2059510                 | 2065661                 | 2013130                 | 1814916                 | 124395                  | 1066426                 | 869538                  |
| Total Number of Group                | 465384                  | 433791                  | 424993                  | 412145                  | 372298                  | 284889                  | 213286                  | 173907                  |
| Total Number of Centres              | 64701                   | 62681                   | 61156                   | 59921                   | 57649                   | 51367                   | 42751                   | 34206                   |
| No. of Villages Covered              | 37937                   | 36420                   | 35533                   | 34913                   | 33667                   | 30619                   | 25248                   | 19536                   |
| Employees                            | 12628                   | 12348                   | 12420                   | 12230                   | 11459                   | 11772                   | 12523                   | 13626                   |
| No. of Branches                      | 1105                    | 1079                    | 1055                    | 1045                    | 1040                    | 1015                    | 915                     | 781                     |
| No. of Area Offices                  | 118                     | 115                     | 111                     | 110                     | 110                     | 108                     | 103                     | 90                      |
| No. of Zonal Offices                 | 14                      | 14                      | 12                      | 12                      | 12                      | 12                      | 11                      | 10                      |

Source: Grameen Bank's Home Page on the Internet, Web Address: <http://www.grameen-info.org/bank/hjst97-92.html>

**Table 4.2**  
**Grameen Bank Statistics, 1976-1989**

| Description                          | 1989<br>Million US\$ | 1986<br>Million US\$ | 1983<br>Million US\$ | 1980<br>Million US\$ | 1976<br>US\$ |
|--------------------------------------|----------------------|----------------------|----------------------|----------------------|--------------|
| <b>Yearly Loan Disbursed:</b>        |                      |                      |                      |                      |              |
| (a) General                          | 60.02                | 18.06                | 2.29                 | 1.1                  | 498          |
| (b) Housing                          | 7.32                 | 0.19                 | 0                    | 0                    | 0            |
| Total Disbursement for the Year      | 67.34                | 18.25                | 2.29                 | 1.1                  | 498          |
| Cumulative Disbursement for the Year | 203.46               | 55.95                | 8.19                 | 1.3                  | 498          |
| Cumulative Amount Repaid             | 115.29               | 44.48                | 6.08                 | 0.47                 | 166          |
| Repayment Rate (%)                   | 98.8                 | 98.75                | 99.87                | 100                  | 100          |
| Balance of Group Fund Savings        | 9.58                 | 2.67                 | 0.51                 | 0.09                 | 0            |
| No. of Houses Built                  | 67841                | 2042                 | 0                    | 0                    | 0            |
| <b>Coverage:</b>                     |                      |                      |                      |                      |              |
| Total Number of Members              | 662263               | 234343               | 58320                | 14830                | 10           |
| Total Number of Group                | 132452               | 46869                | 11667                | 2935                 | 1            |
| Total Number of Centres              | 26976                | 10270                | 2443                 | 326                  | 1            |
| No. of Villages Covered              | 15073                | 5170                 | 1249                 | 363                  | 1            |
| Employees                            | 9737                 | 3515                 | 824                  | 147                  | 1            |
| No. of Branches                      | 641                  | 295                  | 86                   | 25                   | 1            |
| No. of Area Offices                  | 79                   | 33                   | 0                    | -                    | -            |
| No. of Zonal Offices                 | 9                    | 5                    | 5                    | 2                    | 1            |

Source: Grameen Bank's Home Page on the Internet, Web Address: <http://www.grameen-info.org/bank/hist97-92.html>

**Table 4.3**  
**Interest Rates of Grameen Bank**

|                              | 1985  | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 |
|------------------------------|-------|------|------|------|------|------|------|------|------|------|
| Average Loan Portfolio       | 212   | 288  | 486  | 856  | 1356 | 1929 | 2233 | 3295 | 6539 | 9866 |
| Interest Income              | 36    | 44   | 65   | 113  | 162  | 214  | 316  | 522  | 1056 | 1646 |
| Inflation Rate               | 10.86 | 10.9 | 9.54 | 9.36 | 9.99 | 8.11 | 7.2  | 4.29 | 0    | 3.58 |
| Average Nominal Lending Rate | 16.8  | 15.2 | 13.4 | 13.2 | 11.9 | 11.1 | 14.1 | 15.8 | 16.1 | 16.7 |
| Average Real Lending Rate    | 5.9   | 4.3  | 3.8  | 3.8  | 2    | 3    | 6.9  | 11.6 | 16.1 | 13.1 |

Source: Morduch (1999)

**Table 4.4**  
**SDI and Financial Viability of Grameen Bank**

|  | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 |
|--|------|------|------|------|------|------|------|------|------|------|
| SDI (with 3.5% Provision)                                    | 80   | 168  | 155  | 133  | 228  | 163  | 194  | 106  | 65   | 45   |
| Total Subsidy to Bank  | 23   | 65   | 106  | 151  | 285  | 399  | 482  | 526  | 668  | 705  |
| Subsidy per 100 Taka Outstanding                             | 11   | 23   | 22   | 18   | 21   | 21   | 22   | 16   | 10   | 7    |
| Average Nominal Interest Rate without any Grants and Subsidy | 30.2 | 40.8 | 34.1 | 30.7 | 39.2 | 40.2 | 41.6 | 32.6 | 26.6 | 24.2 |

Source: Morduch (1999)

## **Chapter Five: Impact Assessment and Review of Impact Assessment Studies**

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### **5.1 Introduction**

In the previous chapter, we have seen that the financial performance of the Grameen Bank is very good. It has achieved tremendous growth in credit disbursement, savings mobilisation, outreach, recovery, and financial viability. Microcredit programmes of non-government organisations have also achieved good success in these above-mentioned aspects. All these successes are, however, reported from the supply side, i.e. the Grameen Bank's own institutional perspective. But the overall success of any microcredit organisation does not only depend on supply side successes, it also depends on successes from the demand side, i.e. from the borrowers side. For this reason, it is very important for us to examine the success of microcredit organisations from the demand side. Microcredit organisations, especially the Grameen Bank, have been established to alleviate poverty of borrowing households through increasing their income and assets. In this chapter, we will examine the success of microcredit organisations in achieving the above-mentioned objective through reviewing the available studies on assessment of the impact of microcredit on poverty and poverty related issues in Bangladesh.

Before reviewing the impact assessment studies, in the first section of the chapter, we will discuss issues related to the appropriate methodology for impact assessment studies. In this section, we will examine advantages and disadvantages of the 'before

and after method' and the 'with and without method' of impact assessment. This section will also examine the issues which create different kinds of problems in impact assessment studies. For example, selection bias of development programmes, selection of the experimental area, defining the appropriate impact variables, the time frame of the study, distinguishing the long term and the short term effects, the coverage of the study, and generalisation of results are discussed in this section.

In the second part of the chapter, we will review and examine a number of past impact assessment studies specifically on microcredit. As part of our review, this section will examine the sample survey design, the data collection technique and the data analysis techniques of the studies. This section will also review and examine the results of the studies. This section will try to identify problems and limitations of the reviewed studies.

## **5.2 Appropriate Methodology for Impact Assessment**

Two types of research designs can be formulated to analyse the impact of development interventions, one is quasi-experimental i.e. "before and after method" and another one is non-experimental method, which is known as "with and without method". An ideal application of the impact assessment technique requires to fulfil following requirements, (Oberi, 1992):

- (1) a large number of randomly selected areas should be chosen for implementation of the project;
- (2) there be no other development interventions in the study area;

(3) information be collected before and after of the project.

On the basis of above three requirements, the classical method of impact assessment analysis is the 'before and after method'. Under the 'before and after method', a control group with the same characteristics of the experimental group is selected and before and after intervention data are collected from both the control and the experimental group. Under this method, it is very important for researchers to collect base line data (before data) as well as data after implementation of the development programme. However, collection of base line data as well as data after implementation of the project are very expensive as well as time consuming. Some times 'before and after' method is also applied on the basis of 'memory recall', when the base line data is not available. Development programme participants or beneficiaries are asked about their status before the intervention on the basis of memory recall. The shortcoming of this approach is that the information provided by the respondents has less creditability. The extent of reliability of the information provided by the respondents depends on the time difference between before and after the intervention. The shorter is the time span between before and after the intervention, the greater is the reliability of the information and the longer the time span between before and after the intervention the lesser is the reliability of information. During the period between before intervention data collection and after intervention data collection, socio-economic conditions in the study area may have been influenced by developments other than the one whose impact is being assessed. In a situation like this, it may be difficult, if not impossible, to single out the impact of one specific intervention. For these reasons, researchers very seldom adopt the 'before and after' method to assess the impact of development interventions.



In most of the impact assessment studies, it has been found that the researchers have extensively used the 'with and without method' [for example, Mustafa et. al. (1996); Khandaker and Chowdhury (1996); Hussain (1998)]. Under the 'with and without' method a comparison group is selected from the area where the specific development intervention has not been implemented. The comparison group and the area from where the comparison group is selected should possess the same characteristics of the affected group and the area where the development programme is implemented. The impact of development intervention are assessed through a comparison of socio-economic conditions between the comparison group and the programme group after the intervention has been given a period of time to make its impact felt. The major advantage of the 'with and without method' is that this method can be implemented easily and is less time consuming and less expensive. But the 'with and without method' has one major disadvantage, unlike the 'before and after' method, this method is not able to diagnose the observed differences, which prevailed between the programme group and the comparison group prior to the programme intervention. Since in reality, it is always difficult, if not almost impossible, to find two identical groups to begin with. The differences between the programme group and the comparison group under the 'with and without method' may not reflect the net impact of the programme intervention but rather the effects of (a) systematic differences between the programme and the comparison group before implementation of the programme, and (b) different events other than the programme happening at the same time in the programme area (Oberi, 1992).

Some important factors should be given careful attention in impact assessment studies. These are: selection bias of development programmes to be assessed, choosing the experimental area, defining appropriate variables, time frame of the study, distinguishing long term and short term effects, coverage of the study, and generalisation of results. If these factors are not given careful attention, then the impact assessment studies may not be able to identify the real impact of a specific development intervention [Oberi (1992)].

#### **(a) Selection Bias**

In most of the development projects a selection bias always exists, because these projects are usually designed for and directed at some specific target groups of the society and these target groups possess some distinctive characteristics from rest of the community. This selection bias problem makes it difficult for researchers to derive significantly valid conclusions about the impact of the development programmes and it also creates obstacles to identify real impact of the intervention. Rahim and Mannan (1982) studied the impact of vocational training on fertility of women in Bangladesh. They concluded that women who participated in the vocational training programme had lower fertility than women who did not receive vocational training. However, the data of the study indicated that women who participated in the vocational training were more educated as well as younger than women who did not participate in the vocational training programme. Therefore, it was not clear that the lower fertility among vocational training programme participants was because of programme impact or because of the women being more educated and younger. So, the study of Rahim and Mannan (1982) suffered from the problem of 'selection biases'. Usually, selection

biasness of a development programme dilute impacts of the development programme with the effects other socio-cultural as well socio-economic variables.

### **(b) Choosing and Defining Appropriate Variables**

In impact studies, an important issue should be given careful attention. The issue is that of 'choosing and defining appropriate variables' for analysing impacts of development interventions [Oberi (1992)]. Some times, selection of wrong variables can dilute impacts of development intervention with impacts of other socio-economic and socio-cultural factors. For example, a study of the demographic impacts of small-scale industry promotion in the Philippines found that the small-scale industry promotion programme did not have any impact on reducing fertility in the study area. But a thorough analysis exposed that the study used children ever born (CEB) as the independent variable for analysis. Since, this variable covered information that happened before implementation of the small-scale industry programme, the dependent variable failed to illustrate real impacts of the programme.

### **(c) Time Frame**

Another important factor should be given proper attention in impact analysis studies is 'time-frame' of the research. Any development programme or initiative takes some time to affect target variables. Therefore, if any study tries to evaluate impacts of a project without allowing for appropriate time lag for the project to have any effect, then the study may not be able to show the real results of the project. If too short a time lag is taken into consideration, then the study may not identify impacts of

development intervention, because development interventions take some time to affect target variables. On the other hand, if, the study takes too long a time lag, then impacts of development interventions may be infected by impacts of other development inputs. So, the time frame of the study should depend on the time lag between the initiation of the project and the expected occurrence of results of the project.

#### **(d) Short-term and Long-term Effects**

In impact studies, short-term effects and long term effects should be distinguished properly. On the basis of short-term effects, drawing conclusions about long term impacts is not logical. Therefore, considerable caution is necessary to draw conclusion in impact studies.

#### **(e) Information about Socio-economic as well as Socio-cultural Background of Respondents**

Impact assessment studies should be broad based. Detailed information about socio-economic as well as socio-cultural background of respondents should be collected. A broad based information always help researchers to interpret results properly and also help to identify project components which have higher impacts on target variables. It is necessary for broader impact assessment studies to collect a wider range of information both at the household and community level.

#### **(f) Interpreting and Generalising the Results**

The researchers should be cautious regarding interpreting and generalising the results of the impact assessment study. The extent of generalisation of the results depends on the representativeness of the study. On the basis of the results of a small sample covering a few areas, conclusion can not be drawn about a country or the population as a whole.

### **5.3 Review of Impact Assessment Studies**

The purpose of this section is to review a number of studies on assessment of the impact of microcredit on poverty. Our review of these impact assessment studies on microcredit will help the present study to design its own methodology. For the purpose of review, this section will look on the purpose, survey design, hypotheses tested, the variables included in the analyses and the results of each study.

#### **5.3.1 Bruntrup et. al. (1997): “Impact Assessment of ASA”**

The Association of Social Advancement (ASA), a leading non government organisation engaged in microcredit activities, commissioned this study to assess the impacts of its microcredit programme on socio-economic status of micro-credit borrowers. This study tried to assess the impacts of microcredit on income, savings, health, availability of food, and productive assets of the microcredit borrowers of ASA. This study also tried to assess the impact of microcredit on the local product and labour markets and empowerment of women.

This study uses the ‘with and without method’ to analyse impacts. Two-stage random sampling technique was used to select borrowers of ASA to be included in the sample of programme beneficiaries. First, the researchers selected a sample of branches of ASA using the simple random sampling technique. Secondly, they selected the sample of borrowers using the technique of random lottery from the list of all group members who were present during a group meeting. The study collected information from 368 programme households. The comparison group was composed of 115 non-programme households. The comparison group was selected from the ASA programme villages on the basis of village wealth ranking method. The village wealth ranking was done with the help of some village key informants. The village key informants included traders, moneylenders, and NGO personnel of the respective villages. These village key personnel helped to identify the non-member households that fulfil the criteria of ASA membership. Three households were selected from each of the sample villages on the basis of random lottery.

This study only used the cross-tabulation technique and simple ratios to compare the socio-economic status of programme participants with those belonging to the comparison group. It did not use any multi-variate technique to control for background characteristics of programme participants and comparison group members as well as the respective locality. This study did not use any statistical method to test hypotheses.

The criteria of selecting the comparison group raise the question about representativeness of the comparison group. Although it is assumed that the key informants of the village know the socio-economic status of all households in the

village, it is almost impossible for an outsider to know the real condition of a household. At best, the key informants can only have some rough ideas about the socio-economic status of all households in the village. Thus, the study could have included some too poor or too rich households in the comparison sample, since the study has not conducted any prior survey to identify the eligible non-programme households in the sample villages. This study has not provided enough statistics to understand the real impacts as well as real socio-economic conditions of comparison and programme participants. For example, this study has described the changes in productive assets of programme participants and comparison group during the period 1994/95 – 1996/96, but it has not described the average productive assets of the programme participants and the member of the comparison group.

This study has found positive impact of microcredit on income, household assets, health, food and expenditure on non-food consumption of the programme participants. It detected that the long time members of ASA earn 11,000 Taka more than new members and almost twice than that of comparison households. This study also found that the average land area of old programme members is higher than that of the comparison group. The average land area of old ASA members and comparison group are 30 and 28 decimals<sup>45</sup> respectively, however, the difference (2 decimals) in land area between the comparison group and the programme group is too small and may not be statistically significant. The average increase in productive assets of old members, during the period of 1994-1997, is almost double compared to that of comparison group members (long term members 1891 Taka and comparison group members 951 Taka). This study has not found any impact of microcredit on savings of

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<sup>45</sup> One decimal of land means one hundredth of one acre of land.

programme participants. It has found that average household savings and cash holdings of long-term programme members are 16 percent lower than that of the comparison group (pp. 36). The study has also found that the old programme members as well as the new programme members can afford to eat better than the comparison group and the programme participants also eat better than the period prior to the ASA membership. This study has found that the programme participants have better position in terms of using sanitary toilet, using tubewell for drinking water and household activities, contraceptive use, immunisation and consumption of iodised salt. This study revealed that programme participants spent more than the comparison group on clothing, education of male and female children, medicine and physician but spent less for house repairing. This study also tried to evaluate the impact of microcredit on local product and labour markets. It found that in old programme villages prices of basic food items other than rice were higher than those in the new programme villages. The study identified this upward trend in prices of basic food items as a consequence of increase in the effective demand for basic food products through higher income of programme participants. However, the study did not find any difference between the wage rate of male and female labourers in old programme villages and new programme villages.

### **5.3.2 Mustafa, et. al. (1996): “Beacon of Hope: an Impact Assessment Study of BRAC’s Rural Development Programme”, (IAS-I)**

This study was commissioned by Bangladesh Rural Advancement Committee (BRAC) to assess the impacts of development inputs of its Rural Development Programme. The research and evaluation division of BRAC carried out this impact



assessment study. This study was conducted to achieve two objectives: (1) to assess impacts of development inputs of Rural Development Programme (RDP) and (2) to design and develop an impact assessment methodology and framework for assessment of impacts of development interventions. The hypotheses tested were constructed on the basis of four factors: (a) length of RDP's membership, (b) strength of RDP support (i.e. amount of credit), (c) socio-economic status of programme participants specially education and initial endowment on joining BRAC and (d) local economic activities. The study selected some indicators to evaluate impacts of RDP inputs. These impact indicators were selected to identify impacts with reference to (a) material well being of the member households; (b) seasonal vulnerability and crisis coping capacity; (c) changes in women's lives; and (d) development of village organisations as institutions.

The study was conducted through a pre-coded questionnaire survey. The 'with and without methodology' was used to identify impacts of BRAC's development inputs. A total of 2250 households were included in the sample, of which 1500 were RDP households ('with' group) and 750 were non-RDP households ('Comparison or without' group). RDP households were selected through a stratified random sampling technique from 150 RDP programme villages i.e. 10 households from each RDP programme village. The non-RDP households were selected from 75 non-RDP programme villages. The non-RDP programme villages were located on the outskirts of 15 BRAC area offices. In order to identify and understand the contextual factors, that is, the socio-economic conditions of programme and non-programme households, the study constructed profiles of 225 villages (composed of 150 RDP programme and 75 non-RDP villages) based on information from 'small groups of key informants'.

The 'north-west corner and anti-clockwise travelling method' was used to identify the eligible households in comparison villages. The first 10 households, out of a maximum of 100 household visits, were selected as comparison households in each comparison village. The study also selected 24-village organisation for case studies.

The study used ratios, cross tabulation and multiple linear regression analysis technique to assess the impacts of development inputs of RDP. They used some dummy variables in the multiple regression analysis to control for some personal characteristics of household members as well as some local socio-economic factors.

The study tried to determine the initial endowment of RDP programme households on the basis of memory recall. The study acknowledges some problems in determining the initial endowment.

A closer look on the value of average gross household assets of the new-RDP households (i.e. the households who are new to the programme) and comparison households shows a selection bias in selecting comparison households. The study should have selected a comparison group that had similar socio-economic status of programme households prior to joining the programme. The study shows that the average value of gross household assets of new RDP programme households (programme membership age less than 12 months) and non-RDP households were Tk. 10959 and Tk. 7250 respectively (p33). The average value of gross household assets of new RDP programme households was 51.15% higher than that of non-RDP households i.e. comparison households. However, it is difficult to believe that any such programme, however efficient, can have such major positive impact in less than

12 months period. So, the average value of gross household assets of new RDP households shows that the socio-economic status of new RDP households prior to the membership was not similar to the socio-economic status of comparison households. The study had selected a comparison group that was poorer than the non-RDP households were before participation in the RDP programme. Therefore, the non-RDP programme groups (the comparison group) and the RDP programme group were not identical in their baseline socio-economic characteristics and the study had a selection bias in selecting comparison households.

This study selected wealth, revenue earning assets, value of house structure, value of livestock, living quarter density, all weather roofing material for living quarter, the level of cash earned, per capita expenditure on food, and total household expenditure as indicators of material well being of households. The study found that the material well being indicators were positively related to membership length. The study used the per capita weekly expenditure on food, per capita rice consumption, per capita total expenditure, seasonal food stock and per capita cash earning to determine vulnerability of households. It found a positive impact of RDP inputs on vulnerability indicators of RDP programme households. The study also found that seasonal vulnerability was strongly present among the recent RDP programme households. The study detected that the status of the female members of RDP households improved as a result of increased access to RDP credit. Better treatment by husbands towards the wives was evident among these households.

### **5.3.3 Hussain (eds.) (1998): Poverty Alleviation and Empowerment: The Second Impact Assessment Study of BRAC's Rural Development Programme' (IAS-II)**

The research and evaluation division of Bangladesh Rural Advancement Committee conducted this study (IAS-II). This study was a continuation of the first impact assessment study (Mustafa, et. al., 1996) discussed just above. BRAC commissioned this study (IAS-II) to attain the same objectives of the first impact assessment study. An additional dimension had been added in this study. It was the focus on the poverty reduction impact of the RDP programme.

The study used the same study design that was used by the first impact assessment study (Mustafa, et. al., 1996). The cross tabulation technique, ratios and multiple regression analysis were used to assess the impacts of Rural Development Programme (RDP) inputs of BRAC. The study applied the 'with and with out methodology' as well as the 'before and after methodology' to assess impacts. The information collected during the first impact assessment study was used as the base line information for the 'before and after' analysis.

The study design made use of the household survey, the case studies, and the village profile respectively. The study collected information from 1700 households through a questionnaire survey. Out of 1700 households, 1250 were BRAC programme households, 250 were non-programme households (comparison group) and 200 were the so-called "success households", i.e. the households which demonstrated very high economic performance after joining BRAC. BRAC programme households (1250 households) and non-programme households (250 households) were selected

randomly. But the 200 success households were selected purposely as well as non-randomly. The study does not provide any explanation why it included two hundred “successful households” purposely in the sample. This purposeful selection imposed a limitation, selection bias, on the study. Two hundred and fifty non-RDP households of this study (IAS-II, the second impact assessment study commissioned by BRAC) were selected from 750 non-RDP households of the first Impact assessment study (IAS-I) using the stratified random sampling technique.

In IAS-I of BRAC, the first impact assessment study, we found that comparison households were poorer than programme households prior to their joining the programme. We also found in IAS-I that the socio-economic status of comparison households and the socio-economic status of programme households prior to their RDP membership were not identical. This problem remained in IAS-II also, because this study randomly selected comparison households from the same population of households as in IAS-I. Table A.13 (p. 193) of IAS-II shows this problem clearly. The average land holding of comparison households was 18 decimals; where as, the average land holding of RDP programme households prior to their RDP membership was 36 decimals. Table A.26 of the study (p.200) shows that the new RDP households (RDP membership length of less than 12 months) had higher aggregate level of education than that of comparison households. The adult literacy rate of the RDP households was also higher than the adult literacy rate of comparison households (Table A.27, p.201). But the average aggregate level of new-RDP households education and the adult literacy of new RDP programme households were expected to be the same as the aggregate level of education and the adult literacy rate of non-RDP households.

The study found better condition and performance of RDP member households compared with comparison households with respect to land, non-land assets, net worth, savings, per-capita calorie consumption, total food and non-food consumption, value of houses, per-capita living space, primary school enrolment, use of tubewell and sanitary latrine, occupation and poverty. The study did not find the length of RDP membership as significant in determining the determinants of land assets, non-land assets, poverty and empowerment, net worth and total expenditure. It also did not find the membership category, a dummy variable with 1 for BRAC members and 0 for non-member, as a significant determinant of land assets. The study, however, found the membership category as a significant determinant of net worth (at 10% level of confidence), savings (at 1%) and total expenditure (at 10%). The amount of BRAC loan was not used as an independent variable in determining the determinants of land assets, net worth and household expenditure. The amount of BRAC loan was found significant as a determinant of savings, poverty reduction and empowerment. However, the study excluded the comparison group from the regression analysis in their assessment of determinants of savings, poverty and empowerment.

#### **5.3.4 Proshika, (1998): Participatory Impact Assessment of Proshika's Development Interventions: Proshika Group Members' Perceptions and Their Analyses of the Impact of Development Interventions on their Lives in General and on the Lives of Women in Particular**

This study was commissioned by Proshika, a leading non-government organisation engaged in microcredit activities, and conducted by the Impact Monitoring and Evaluation Cell of Proshika. The study focused on five important issues, viz., (a)

development of Proshika members' land holding pattern; (b) Proshika's environmental education and training programme and the resultant behavioural change among the Proshika members; (c) major factors affecting Proshika members' performance in fisheries, rickshaw/van and other small businesses compared with non-Proshika members; (d) the degree to which Proshika members can influence the setting of wages; and (e) the extent of and factors affecting the reduction of physical abuse of Proshika's women members. The main objectives of the study were to investigate the impact of Proshika's intervention on the above five issues, to capture views of the end users, to explore new indicators for impact assessment and to provide insights and suggestions to Proshika's management. This study used Participatory Rural Appraisal (PRA) technique to identify impacts of Proshika's development intervention. The study selected a comparison group from non-Proshika households, to compare results and impacts with the programme group.

The study used a two-stage cluster sampling technique to select Proshika and non-Proshika households. 900 Proshika households were selected from 9 clusters and 900 non-Proshika households were selected from 10 separate clusters. Each cluster consisted of 5 to 14 villages. The study does not clearly explain how it selected the non-Proshika households. Table 4 (p.18) of the study shows that the average land holding of Proshika member households prior to the Proshika membership and non-Proshika households were 50 and 89 decimals respectively. So, the average land holding of these two groups shows that the socio-economic status of non-Proshika households and the socio-economic status of Proshika member households prior to the Proshika membership were not identical. This study also had bias in selecting comparison households like as the BRAC studies. This study concentrated only on

impact of Proshika development inputs e.g. microcredit, environmental training, on land holding of households, environmental awareness, members performance in small businesses, bargaining power of Proshika members in labour market and women empowerment. The study did not use any indicator related to the material well being and extent of poverty of Proshika member and non-member households. The study used only the cross tabulation technique, ratios and graphs to analyse impacts and it did not apply any multi-variate technique to control local and household characteristics of Proshika member households and non-Proshika households.

However, the study found that the average amount of cultivable and homestead land of Proshika households remained the same even after remaining a Proshika member for a number of years (Table 4, p18). So, it clearly reveals from the above findings of the study that the Proshika development inputs were not able to increase the average total land holding of its members. The study, however, found that there had been a significant impact of environmental training education on the level of environmental awareness and use of organic fertilisers and manure in agriculture. The study identified that Proshika's projects on fisheries, rickshaw van and small business had positive impact on income of programme households. The study discovered that the bargaining ability of Proshika members in determining and negotiating the wage rate had increased substantially. A positive impact on the reduction of women abuse had also been found by the study. Women's participation in income generating activities increased their status in the society and in their family.

### **5.3.5 Proshika (1995): 'Impact Survey Report'**



This study was conducted by the 'Impact Monitoring and Evaluation Cell' of Proshika. The main objective of the study was to assess impacts of development inputs of Proshika on economic and social empowerment indicators of Proshika member households. The study used the 'with and without methodology' to determine the impacts of development inputs comparing socio-economic status of Proshika member and non-member households. Information on economic and social empowerment indicators was collected from Proshika and non-Proshika households through sample survey.

The two-stage cluster stratified sampling technique was used in the study and the sample included 1800 households: 900 were Proshika member households and 900 were non-Proshika households. In the first stage, the study divided all Proshika villages into 500 clusters of villages and then the study randomly selected 9 clusters from these 500 clusters of programme villages to select Proshika households. Finally, 100 households were chosen from each cluster of Proshika households. The same procedure was also applied in the case of selecting non-Proshika households. In the first stage, the study eliminated all Proshika programme villages in the district where Proshika and other large NGOs (with similar programme) were active. The remaining villages were formed into clusters of non-Proshika villages and the study randomly selected 10 clusters from these. In the second and final stage, 90 households were selected from each cluster.

The study eliminated some non-Proshika household from the sample due to involvement of those households in the similar programmes of other NGOs and some Proshika households, with membership length of less than 3 years, were also excluded

from the sample. The final sample size stood at 854 and 870 for Proshika and non-Proshika respectively. The report maintains that the study eliminated those households from the comparison group which did not fulfil the membership criteria of Proshika. The report also maintains that the socio-economic conditions of Proshika households and non-Proshika households were sufficiently similar. But the report does not provide any statistics which shows that the socio-economic status of Proshika member households prior to their membership and non-Proshika households were identical. The study only used cross tabulation technique and ratios to demonstrate impacts of development inputs of Proshika. The study did not use any multi-variate analysis to control local as well as household characteristics. Though the report acknowledges the importance of testing null hypotheses (p21), it did not test any hypotheses statistically.

The study used literacy, health-education and awareness, family planning, infant mortality, empowerment of women, environmental awareness and practice, access to public resources and participation in local institution as the indicators of social empowerment. The study also used assets and indebtedness, income, savings, investment and market mobility and power as the indicators of economic empowerment. The study found better condition or status of Proshika households in terms of literacy rates, health awareness, use of contraceptives, infant mortality rate, women empowerment, environmental awareness, average household assets, income, savings, investment and rate of return on investment than that of non-Proshika households. But the study found almost similar status of Proshika and non-Proshika households in terms of immunisation and sources of drinking water.

### 5.3.6 World Bank Studies

Three papers were prepared as part of a research project titled “Credit Programmes for the Poor: Households and Intra Households Impacts and Programme Sustainability”. This research project was conducted by the World Bank to develop a methodology to estimate the costs and benefits of group based credit programmes and to analyse the financial and economic efficiency of such programmes. The project selected the *Grameen Bank*, *BRAC* and *BRDB's RD-12* programmes in Bangladesh for the research. The data were collected during 1991-92.

The project collected data from 1798 households from both programme villages and non-programme villages in rural Bangladesh during the period 1991 to 1992. The sample included programme participants, non-programme target participants, and non-target households in programme areas, and target and non-target households in non-programme areas. Three-stage stratified random sampling technique was used to select sample households. In the first stage, twenty-nine thanas<sup>46</sup> were selected randomly; eight thanas from each of the programmes (BRAC, GB, and BRDB) and five thana from the list of non-programme thanas. In the second stage, three villages were randomly selected from each of the twenty-nine thanas i.e. eighty-seven villages were selected randomly in total. In the third and final stage, a household census was carried out to determine the land ownership and programme participation status of households in the villages, which were selected in the second stage. Households were divided into two groups on the basis of household census results in the study villages. Households with less than 0.5 acres of land were considered as target households and

households with more than 0.5 acres of land were considered as non-target households. In programme villages, target households were divided again into two groups: participant and non-participant on the basis of programme participation. Twelve target participants, five target non-participants, and three non-target households were selected randomly from each village. This procedure was followed in 72 villages. However, a different procedure was followed in selecting households randomly from 15 villages for the nutritional study. From twelve BRAC and the Grameen Bank villages, fourteen target participant households and six non-participant target households were randomly selected from each of the fifteen villages. On the other hand, from three BRDB villages, eighteen participant households and seven non-participant target households were selected randomly from each of the three villages for the purpose of data collection. Information from non-participant households in programme villages and target households in non-programme villages was collected to apply the 'with and without method' for the analysis. In some cases, the 'before and after method' was also applied. Information related to socio-economic status of participant households prior to the programme membership in programme villages was collected on the basis of memory recall. In what follows, we discuss the three World Bank studies.

**(a) Khandker and Chowdhury (1996): 'Targeted Credit Programmes and Rural Poverty in Bangladesh'**

Khandker and Chowdhury (1996) tried to assess changes in poverty and welfare status of participants of three programmes, BRAC, GB and BRDB, in Bangladesh. They

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<sup>46</sup> Thana means 'police station'. In Bangladesh each district is divided into several administrative units,

compared poverty and welfare status of programme participants with non-participants to determine the changes in the poverty and welfare status of programme participants. The researchers used the head count ratio for moderate poverty, the head count ratio for extreme poverty, poverty gap index, Foster Greer and Thorbecke (FGT) index, source of drinking water, use of sanitary toilets, savings, total assets and net worth as the indicators of poverty and welfare of households.

Khandker and Chowdhury (1996) found that the incidence of poverty was lower among programme participants than among non-participants in GB and BRDB villages. But they found that the incidence of poverty in programme households was higher than that of non-programme households in BRAC villages. The study also discovered that the extent of extreme poverty was lower among participant households than among non-participant households in all study villages. In terms of using the tubewell as source of drinking water and use of sanitary toilets, the study found better status of participant households compared to non-participant households. Table 4 (p40) of the study showed that the level of indebtedness was higher among programme participant households than non-participant households in all programme villages. But the same table also shows that savings, deposits, and asset holdings are higher among programme participant households than non-participant households. The table also shows that net worth, total assets minus total liabilities, is higher among participant households than among non-participant households in programme villages. The study indicates that the incidence of poverty declines with the increase in the number of loans (Table 5.A). In the Grameen Bank villages, the study found that 76 percent of new participant households, who had taken no loan or one loan

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each of these units is known as a thana.

only, were below the poverty line. By contrast, only 57 percent of programme participant households, who had taken more than four loans, were below the poverty line. The study found that savings, assets, and net worth increase with the increase in the number of loans and the length of membership. But the study points out that the increase in assets, and net worth is not proportionate to the increase in the number of loans. It means that assets and net-worth have a non-linear relationship with the amount of loan.

The study tried to measure borrower viability in terms of accumulation of assets and savings. The study argues that the sustainability of programme participation benefits depends on the capacity to reproduce wealth and the reproduction of wealth, which in turn, depends on the accumulation of net assets. So the study used net worth and accumulation of assets and savings as the indicators of long term viability of programme households. Table 11 of the study shows that the debt to net worth ratio does not increase proportionately with growth in number of loans and the length of membership. The table also shows a reduction in the indebtedness relative to savings and net worth among the participants of all three programmes. The study discovered that participating households were better off than non-participating households in terms of ownership of assets in all programme areas. The study collected the information about the ownership of assets of programme households prior to the programme membership on the basis of 'memory recall' for 'before and after analysis'. Table 15 of the study exhibits that the total assets of programme households of all three programmes increased relative to the total assets prior to the programme membership. This table also shows that the Grameen Bank participants have larger gains in terms of increase in total assets.

Khandker and Chowdhury (1996) used a semi-logarithmic regression analysis to assess the impact of microcredit on assets, savings and net worth of target households and non-target households and also to control different household and local socio-economic characteristics. But the study did not use the amount of credit, the length of membership and the membership as independent variables in the model to identify impacts of these variables on assets, savings and net-worth of borrowing households. However, the study found that participation in the microcredit programme of the Grameen Bank, BRAC and ASA, increases the assets, savings and net worth of borrowing households.

The main findings of the study (Khandker and Chowdhury, 1995) is that the Grameen Bank programme households rise above the poverty line in slightly more than five years time, and BRAC and BRDB programme households rise above the poverty line in less than five years time. The study also explains that the Grameen Bank programme households require about eight years for economic graduation<sup>47</sup>, while this period is twelve years for BRDB households. But the study was unable to calculate the years required for BRDB programme households for economic graduation.

**(b) Chowdhury and Khandker (1994): 'Do Targeted Credit Programmes Improve the Nutritional Status of the Poor'**

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<sup>47</sup> Economic graduation is defined as a position where microcredit-borrowing households can maintain a reasonable standard of living even without taking any additional loans.

Chowdhury and Khandker (1994) tried to analyse the impact of microcredit and other development interventions by the Grameen Bank, BRAC and BRDB's RD-12 programme on nutritional status of programme households. The study was not able to quantify directly the impact of programme placement, because the study did not collect information on nutritional status from the target households in comparison villages i.e. non-programme villages. The study selected 255 target households from 15 programme villages in 5 thanas<sup>48</sup> for collecting information related to nutritional status.

The study found a slightly higher calorie intake in participant households in programme villages. It did not find any big difference in calorie intake between programme households and target non-programme households. The study found that men in participating households receive 76.50% of required calorie relative to 75.60% in target non-participating households. On the other hand, women in participating households receive 80.00% of required calorie and women in non-participating target households receive 76.42% of required calorie. The study identified a difference in calorie intake in 'peak period' and 'lean period'. Men in participating households receive 78.59% of required calorie in peak period (January – April), but 74.38% of that during the lean season (September – November) (table 3). Women in participating households receive 80.37% of required calorie in peak period and 79.62% of that in the lean season. The study discovered that gender specific programme participation promoted gender specific calorie intake. That is, women's participation increased calorie intake of women and reduced calorie intake of men. On the other hand, men's participation in the programme increased calorie intake of men

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<sup>48</sup> In Bangladesh, every district is divided into several administrative proportions, each proportion is



and decreased calorie intake of women. This gender difference in calorie intake varies from programme to programme. The difference was found least among the Grameen Bank participants.

Chowdhury and Khandker (1994) used anthropometric statistics to identify effect of programme on nutritional status of children. The study found that children in BRAC households had a higher nutritional status in terms of weight and height compared to children in Grameen and BRDB households. In reference to this result, authors conclude that BRAC has a direct health intervention programme in addition to the microcredit programme, while other two programmes have only the microcredit programme.

The study used regression technique to analyse the impact of credit on nutritional status of children under 10 and to control local as well as household characteristics. But the study used only presence of the Grameen Bank or BRDB in the village as independent variable in the model. The study did not use total amount of credit, membership length, programme participation and presence of BRAC branch in the village as independent variables in the model. From the regression analysis, the study found that target households in BRAC and the Grameen Bank villages had better calorie and protein intake. But the study found better status of BRAC households compared to Grameen and BRDB households in terms of weight, height and body-mass index of children. Moreover, the presence of the Grameen Bank and BRDB in the villages was found negative on weight, height and body-mass index of children (table 8, p33). The incidence and length of illness was found lower in both the

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known as Thana. Currently, the word 'Thana' is replaced by the word 'Upazilla'. Upazilla means sub-

Grameen Bank and BRDB villages in the study. But the impact of the presence of the Grameen Bank and BRDB in the villages was not found significant on incidence and length of illness for girls (table 9, p36-38).

**(c) Pitt and Khandker (1996): ‘Household and Intra Household Impacts of the Grameen Bank and Similar Targeted Credit Programmes in Bangladesh’**

Pitt and Khandker (1996) used a Weighted Exogenous Sampling Maximum Likelihood-Limited Information Maximum Likelihood-Fixed Effects (WESML-LIML-FE) statistical model for parameter estimation. This study considered the issues of endogeneity in the analyses. The authors argue that the earlier impact assessment studies did not consider the issue of endogeneity in analysing impacts of credit on different socio-economic aspects of households. The study compared the results of, so called, naive statistical methods (especially the OLS model) with the results of WESML-LIML-FE statistical method. The study argues that the naive statistical models do not consider the issues of endogeneity properly. But Galie and Foster (1996) raised question about the using of sophisticated statistical models in impact assessment studies. According to Galie and Foster (1996), *“the impact results might be more convincing through the rendering of simple statistical results based on quasi-experimental design, given that readers might rightly question the degree of fulfilment of required assumptions in such a complex model i.e. WESML-LIML-FE model”*.

The study used six credit variables, two variables-amount borrowed by male and amount borrowed by female-for each of the three programmes (Grameen Bank,

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district.

BRAC and BRDB), to determine the impact of microcredit on some socio-economic aspects of programme households. The study found microcredit as a significant determinant of most of the aspects of household socio-economic behaviour. However, the study did not find any positive impact of microcredit variables on Boys Body Mass Index (BMI)<sup>49</sup> (Table 5.1A). The 'credit to female' variables were found to be a determinant of greater significance in household socio-economic behaviour than was credit to male variables.

### **5.3.7 Hossain (1984): 'Credit for the Poor'**

This study was conducted in the early stage of the Grameen Bank operation and it was commissioned to evaluate initial experience of the Grameen Bank. The data for the study was collected from one of five districts where the Grameen Bank was operating. The field investigation for the study was completed during 1982-83. The study completed its analysis and evaluation on the basis of three years' data collected through field surveys of bank officials, clientele of the programme and the target households in programme villages and comparison villages. The study also used background information of programme households, which was provided in the membership applications by the programme members and was recorded by the Grameen Bank.

Two types of surveys were conducted during this study. The first one was conducted on programme households in twenty-four programme villages (three villages from

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<sup>49</sup> Body Mass Index (BMI) - weight, measured in kg, divided by height, measured in meters, squared. The normal range is between 18.5 and 25, with below 16.5 indicating severe chronic malnutrition and over 30 indicating obesity.

each of eight Grameen Bank branches) to understand socio-economic conditions of programme households and to collect information about the credit history of programme households. Twenty percent of all programme households in twenty-four villages were selected randomly and the study restricted the maximum number of programme members from any activity to 40. In these ways, the size of the sample in the first survey was 613. The second survey was conducted for the comparison purpose. In the second survey, eight programme villages were selected randomly from the programme areas (one village from each of the eight Grameen Bank branches) and two comparison villages were selected purposely from the areas, where the Grameen Bank was planning to extend its operation. In the second survey, the size of the sample of the study came to 277 comprised of 66 programme households, 149 non-programme households in programme villages and 62 target households in comparison villages. The study does not provide enough information about the identification procedure of comparison households in the comparison villages.

The study conducted three rounds of surveys on sample households. The first round of the survey was conducted to collect information on socio-economic status and programme participation from the sample households. The other two rounds of surveys were conducted to collect information on productive activities, employment and consumption of sample households. The last two rounds were to capture seasonal fluctuations, conducted in September 1982 and January 1983. The study used ratios, cross tabulation technique and the ordinary least square model to analyse impacts of microcredit on socio-economic status of programme households.

The study found that the per capita income of programme households was higher compared to that of comparison households. The study also found that per capita income of programme households was about 12 percent higher than per capita income of programme households prior to the membership in the programme. A positive relation between the size of loan and the level of income was discovered by the study. The regression analysis using the OLS model (Ordinary Least Square) also revealed a positive relationship between the income of programme households and the amount of credit from the Grameen Bank to households.

The study also tried to identify the impacts of microcredit on some other aspects of living i.e. education, health, clothing and housing. The study used only a few indicators to measure the standard of other aspects of living i.e. health, housing and clothing. The ‘percent of households incurring expenses on health’ and ‘the average expenditure on health per year’ were used to identify health status of households. The same kinds of indicators were also used to identify standard of housing. The average expenditure on clothing per year was applied to understand the standard of housing. However, the study found higher educational status of non-participating households in the programme villages compared to the participating households in the terms of literate members, school attendance, and educational expenditure. But the study found that the educational status of programme households were better than that of the target households in comparison households. Programme households were found better off in respect to health, housing and clothing compared to comparison households.

### **5.3.8 Hossain (1988): 'Credit for alleviation of Rural Poverty: the Grameen Bank in Bangladesh'**

The author conducted this study in May 1985 at the request of the Grameen Bank and it was a follow up of the previous study i.e. Hossain (1984). The data were collected through field surveys of borrowers and an in-depth household surveys in some selected programme and comparison villages. Ten percent of one to three years old branches and twenty percent of more than three years old branches were randomly selected for the study. In this way, a total of 15 branches were selected, 5 branches belonged to the second category i.e. more than three years old. One village was randomly selected from each of the branches. All programme members in the randomly selected villages were interviewed and the sample of the study stood at 975.

Another survey was conducted to understand the effects of microcredit programme of the Grameen Bank on socio-economic status of member households. Five programme villages with long established Grameen Bank branches were randomly selected. Two comparison villages were also selected. A household census was conducted in these seven villages to determine and understand the socio-economic status and land ownership of households. The households were then divided into four land ownership groups and two occupational groups (farm and non-farm) within each land ownership group. Forty households were selected from each village using the proportional stratified random sample technique. The final sample of the second survey consisted of 280 households and these households were interviewed to collect information on employment, assets, income, expenditure, and investment.

The study found that the dependence of programme households on non-institutional credit was low compared with that by comparison households. Because of the Grameen Bank intervention, the proportion of households receiving institutional loans increased to 30 percent in the programme villages. The study found a positive impact of microcredit on working capital and fixed capital of households. The average amount of working capital of programme households increased from Tk 743 to Tk. 2811. The study found that borrowers, who had taken loan from the Grameen Bank four times or more, had 6.5 times higher investment from own sources compared with the first time borrowers. Among programme households the average number of cattle owned increased by 67 percent over the average number of cattle owned before joining the programme.

The study discovered that the Grameen Bank programme intervention in the programme villages created additional employment for about one-fifth of its members. According to the study, 91 percent of programme participants agreed that participation in the microcredit programme of the Grameen Bank increased their standard of living. The study discovered that the average household income of programme members was 43 percent higher than that of target households in comparison villages. The Gini concentration ratio was lower among programme households than the target households in comparison villages. The proportion of programme households living in moderate poverty was 64 percent. Where as, the proportion of target households in comparison villages in moderate poverty was 80 percent. The proportion households living under the extreme poverty was also lower for programme households compared with target households in comparison villages. The study also identified that the average expenditure on food, education, health and

housing of programme households were higher than that of target households in comparison villages. The study did not use any regression analysis to identify impacts of microcredit and to control local as well household characteristics.

#### **5.4 Summary of the Chapter**

In the previous chapter, we have found successes of microcredit organisations, especially the Grameen Bank, in credit disbursement, savings mobilisation, outreach, recovery and financial viability. In that chapter, we argued that it is also necessary to assess successes of microcredit organisations in increasing assets, income, and consumption, improving the fulfilment of basic needs, and hence alleviating poverty of borrowing households. For this reason, in this chapter, we tried to review and examine the available studies on the assessment of the impact of microcredit on poverty and poverty related issues, for example, on income, assets, consumption, basic needs, etc., of borrowing households in Bangladesh.

Before reviewing the impact assessment studies in this chapter, we discussed the question of the appropriate methodology for impact assessment and a number of related issues. Between the two impact assessment methods, ‘before and after method’ and ‘with and without’ method, the ‘before and after’ is the better method for analysing impacts of microcredit programmes. However, because of the non-availability of base line data, socio-economic information of households prior to the membership, it is not always possible to use the ‘before and after’ method appropriately. Nevertheless, some studies used the ‘before and after’ method in analysing impacts of microcredit on some socio-economic indicators on the basis of



memory recall. The ‘with and without’ method is widely used in the microcredit impact studies. An application of this method is easier and less expensive.

All studies reviewed in this chapter found positive impacts of microcredit programme on different socio-economic aspects of programme households. Among the studies reviewed, the World Bank studies were to be found more sound from the methodological perspective.

In this chapter, we have found that some studies, for example, Bruntrup et. al.. (1997), have only used descriptive statistics for analysis. They have not used any multivariate technique to determine the impact of microcredit on poverty and poverty related aspects of borrowing households. Some studies, for example, Mustafa, et. al. (1996), Hossain (1984), were biased in selecting the sample households. These two studies selected 200 so-called ‘success households’ non-randomly for data collection. None of them have used the complete framework<sup>50</sup>, which covers all aspects of poverty, for assessment of the impact of microcredit on poverty. Only three studies, Hossain (1988), Hussain eds. (1998), and Khandker and Chowdhury (1996), have directly assessed the impact of microcredit on poverty. These three studies analysed poverty and economic welfare only from the point of view of objective poverty. None of these studies analysed poverty and economic welfare from the subjective point of view. An analysis based on objective measure of poverty can not provide or predict the real picture of “happiness” or “satisfaction with life” of household members [Ravallion and Lokshin, (1999)]. None of these studies assessed the poverty risk reduction capacity of microcredit.

In the next chapter, we will develop our research framework, research hypotheses, and the impact estimation strategy keeping in mind all limitation of the studies reviewed in this chapter.

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<sup>50</sup> The framework, which covers income, consumption, assets, basic, needs, living standard, poverty and poverty risk of households.

## **Chapter Six: Theoretical Framework, Research Objectives, Hypotheses and Methodology**

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### **6.1 Introduction**

This chapter focuses on the research framework, objectives, hypotheses, and survey design of the present study. In the last chapter, we detected some limitations of the available impact assessment studies. In that chapter, we have found that none of those studies have used a complete framework for assessing the impact of microcredit on poverty and poverty related issues of borrowing households. None of the studies have used the subjective poverty measures for identifying poverty status of households. We also found that none of the studies have assessed poverty risk of households. We will keep in mind all these limitations in developing our research framework, objectives, hypotheses, the empirical model and the survey design in this chapter.

This chapter is divided into seven sections. The second section of this chapter will discuss the research framework and the research scheme of the present study. In this section, we will discuss the relationships among microcredit, income, assets, entitlement, and poverty of households. In this section, we will also illustrate the poverty alleviation process of microcredit. In the third section, we will present an empirical model and our econometric estimation strategy. In the fourth section, discussion will focus on research objectives and hypotheses of the study. The fifth section is going to provide the methodological issues of the study. In the sixth section the limitations of the present study will be discussed. In the seventh and final section, a summary of the chapter is going to be provided.

## 6.2 Research Framework: Microcredit, Enhancement of Entitlement and Alleviation of Poverty

A person's ability to acquire absolute minimum necessities does not depend only on the availability of those necessities in the market, it rather depends on the ability of that person to acquire those minimum necessities. Abundant supply of food in the market or economy does not by itself ensure availability of minimum amount of food for every person in the economy. A person would be entitled to that amount of food on which that person has entitlement [Sen, (1981)]. People are poor when they do not have access to the absolute minimum necessities of life. Therefore, we can define poverty as the lack of entitlement to the absolute minimum necessities of life. We can express this relationship between poverty and entitlement in the following way,

$$P = p(\xi) \quad (6.1)$$

$$P' < 0$$

where,  $p$  is poverty and  $\xi$  is entitlement to the absolute necessities of life or in short 'entitlement'. In equation 6.1, poverty is the negative function of entitlement, i.e. entitlement of a person or household determine poverty of that person or household. A person or household is denoted as poor when that person or household does not have enough command over required goods and services to attain a minimum amount of food, literacy, health and nutrition, food and shelter. In every society, every person can establish command over some alternative commodity bundles. That person can

consume any one of those alternative commodity bundles. Entitlement is the set of alternative bundles of commodities on which a person can establish his/her command.

Entitlement of a person is determined by the endowments that person has and the exchange mapping (e-mapping), which that person faces. So, we can express that entitlement is the function of ‘endowments’ and the ‘e-mapping’. We can write this functional relationship between entitlement, endowments and e-mapping in the following way:

$$\xi = \xi(E_d, \overline{E_m}) \quad (6.2)$$

$$\xi' > 0$$

where,  $E_d$  is ‘endowments’ and  $E_m$  is ‘e-mapping’.

Endowment is the combination of all legally owned tangible as well as intangible assets by a person. Tangible assets include land, building, animal, equipment etc. and intangible assets include labour, academic qualification and skill etc. Illegally owned assets are not included in the endowment set of a person. E-mapping shows the relationship between the endowment set and entitlement set, i.e. e-mapping indicate the rate at which endowments are translated into entitlement. In our analyses, we are assuming that e-mapping is constant, then we can rewrite equation 6.2 in the following way,

$$\xi = \phi(E_d) \quad (6.3)$$

$$\phi' > 0$$

According to equation 6.3, entitlement is the function of endowment only. If, we consider equation 6.1 and equation 6.3 jointly, then we find the following equation.

$$P = g(E_d) \quad (6.4)$$

$$P' < 0$$

In equation 6.4, poverty (P) is the negative function of endowment ( $E_d$ ). Increase in the total amount of endowment of a person or household will decrease poverty of that person or that household. In another way, decrease in the total amount of endowment will increase poverty. Physical assets and financial assets of a household are part of total endowment of that household, that is,

$$E_d \equiv A_{HH} \quad (6.5)$$

In equation 6.5,  $A_{HH}$  represents total household tangible assets. Considering equation 6.5, we can rewrite equation 6.4 in the following way.

$$P = g(A_{HH}) \quad (6.6)$$

$$g' < 0$$

Poverty is a negative function of household assets in equation 6.6. Increase in total amount of household assets decreases poverty of households and vice versa.

Poor households in rural areas can increase their total income through income generating activities. These poor households require a minimum amount of capital to

start these activities, but poor households do not have that amount of minimum capital. Microcredit programmes help poor households through providing this minimum amount of capital to start income generating activities. Households raise their total income through investment of microcredit (we are assuming that microcredit borrowers are rational investors, i.e. borrowers invest microcredit in those projects which provide them positive net profit). So, the relationship between income and microcredit can be written in the following way.

$$I_{HH} = I(M_c) \quad (6.7)$$

$$I' > 0$$

In equation 6.7,  $I_{HH}$  represents household income and  $M_c$  represents microcredit. This equation indicates that microcredit is a positive determinant of household income, which means, participation in the microcredit programme increases income of borrowing households. Household assets have positive relationship with household income, i.e. increase in income increases total amount of household assets and vice versa. The functional relationship between income and household assets can be expressed in the following way.

$$A_{HH} = A(I_{HH}) \quad (6.8)$$

$$A'_{HH} > 0$$

Considering equation 6.7 and equation 6.8 together, we get,

$$A_{HH} = \alpha(M_c) \quad (6.9)$$

$$\alpha' > 0$$

Households assets are positive function of microcredit in equation 6.9. An increase in the total amount of microcredit or membership duration in the microcredit programme increases total amount of household assets.

Considering equations 6.3, 6.5 and 6.9 together, we get,

$$\xi = \varphi(M_c) \quad (6.10)$$

$$\varphi' > 0$$

The equation indicates that entitlement is a positive function of microcredit, i.e. microcredit increases entitlement of borrowing households.

Considering equations 6.6 and 6.9, we get the following equation.

$$P = \delta(M_c) \quad (6.11)$$

$$\delta' < 0$$

Finally, poverty is a negative function of microcredit (equation 6.11), i.e. participation in the microcredit programme gradually alleviates poverty of borrowing households.

In chapter 9 of the present study, we will examine the functional relationship, which is stated in equation 6.11, between the microcredit and poverty of borrowing households through logit models. Equation 6.11 demonstrates that poverty is a negative function of microcredit. In that chapter, we will also compare poverty of borrowing households with that of comparison households to examine whether microcredit reduces poverty of borrowing households. In chapter 7, we will examine the functional relationship, which is stated in equation 6.9, between microcredit and household assets. Equation



6.9 illustrates a positive relationship between the microcredit and household assets, i.e. microcredit increases household assets. In chapter 7, we will also examine the functional relationship, which is stated in equation 6.10, between microcredit and entitlement of borrowing households. Equation 6.10 shows that microcredit increases entitlement of borrowing households. In chapter 8, we will test whether microcredit has increased entitlement of borrowing households through a comparison of basic needs fulfilment of borrowing households and that of comparison households.

### **Poverty Alleviation Process of Microcredit**

Diagram 6.1 shows the process by which microcredit alleviates poverty of borrowing households. The diagram is divided into 7 sections. These sections illustrate different stages of the poverty alleviation process of microcredit. The first section of the diagram shows lack of entitlement and poverty of borrowing households. The second section shows participation of poor households in the microcredit programmes. The third section shows utilisation of microcredit by borrowing households. Microcredit borrowers could either invest or consume the amount of money that they have borrowed from microcredit programmes.

#### **(a) Investment of Microcredit**

If microcredit borrowers invest their microcredit then four events might happen, these four events are:

- (a) Purchase of (increase in) resources

- (b) Start of a new business or increase in capital of the existing business
- (c) Adoption of new technology
- (d) Better self-employment.

More than one of the above events could occur simultaneously. For example, head of a poor household, who was a day labourer before joining the microcredit programme, after joining the micro-programme, bought a rickshaw (transport vehicle) with the amount of money he borrowed from the programme and started to drive that rickshaw by himself.

**Diagram 6.1: Poverty, Microcredit, Enhancement of Entitlement and Alleviation of Poverty**

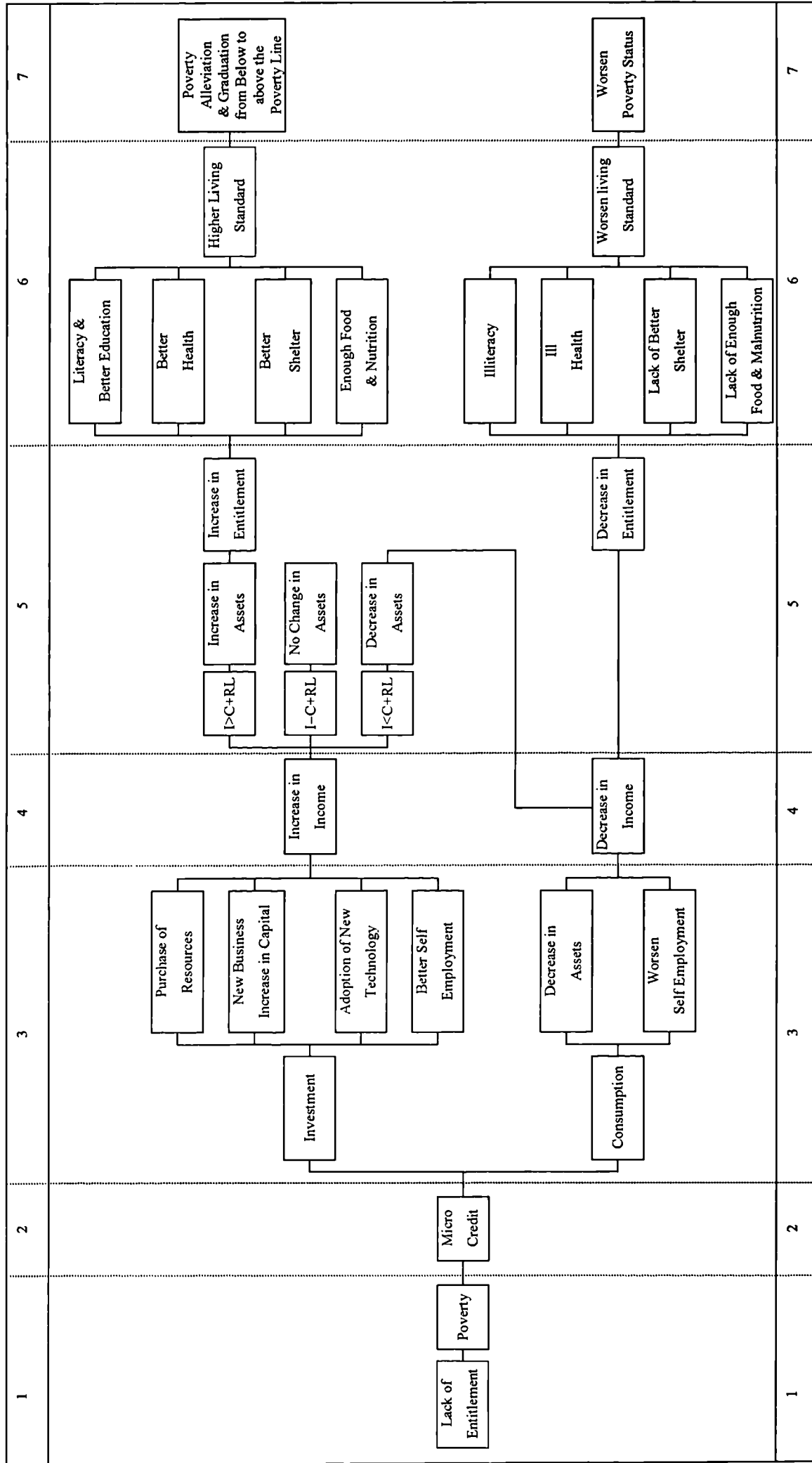


Diagram Sections: 1 – Poverty of Households, 2 – Participation of Poor Households in the Microcredit Programmes, 3 – Utilisation of microcredit, 4 – Impact on Income of borrowing households, 5 – Impact on Assets and Entitlement, 6 – Impact on Basic Needs and Living Standards, and 7 – Alleviation of Poverty or Deterioration in the Poverty Status of Borrowing Households. I = Income, C = Consumption and RL = Loan Repayment.

This investment of microcredit caused total assets of the household to rise as well as improve the self-employment condition of the household head. Microcredit borrowers could also start a new small business or increase the capital base of an existing business. Borrowers could also use microcredit to adopt new technologies. For example, they can purchase a power pump to improve the existing irrigation system or buy a mobile phone for commercial purpose<sup>51</sup>. In this study, we are assuming that microcredit borrowers are rational investors, i.e. they invest their microcredit in those projects which are expected to provide them with positive net profit and increase their income. Sections 3 and 4 of diagram 6.1 shows this process. However, an increase in income of borrowing households does not necessarily increase assets of these households. Section five of the diagram shows three situations arising from income of borrowing households.

- (a) If, total income of the borrowing household is higher than consumption plus total repayment of loan ( $I > C + RL$ ), then an increase in income will increase assets of the household.
- (b) If, total income of the borrowing household is equal to consumption plus total repayment of loan ( $I = C + RL$ ), then an increase in income will not change assets of the borrowing household.
- (c) If, total income of the borrowing household is less than consumption plus total repayment of loan ( $I < C + RL$ ), then an increase in income will not

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<sup>51</sup> Currently, Grameen Bank is providing loans to its members to purchase mobile phones for commercial purpose. Gradually, borrowers repay the loan by instalments basis. In Bangladesh, telecommunication system in the rural areas is not good. Immigrants, who stay outside the country, especially in the Middle East, for employment, can now easily communicate their family members in rural areas through mobile phones of Grameen Bank members. The person, from abroad, phones first to the mobile phone owner and requests the owner to go to the recipient's house at a pre arranged time. The mobile owner goes to the house specified and at the agreed time that person phones again and talks to his family members. The mobile owner charges an extra amount over and above the standard phone charges for the service.

increase assets; moreover the borrowing household will sell assets to finance consumption deficit.

If assets of borrowing households increase because of an increase in income then entitlement of borrowing households also increases. According to Sen, endowment (i.e. assets) of a person or household determines entitlement of that person or household. So, an increase in assets also increases entitlement of borrowing households. Section 5 of the diagram shows the link between microcredit programme and an increase in entitlement.

The increased entitlement of borrowing households should reflect on fulfilment of basic needs of borrowing households, i.e. borrowing households should have better fulfilment of basic needs after joining the microcredit programme than before joining the programme. Section six of the diagram shows the better fulfilment of basic needs of borrowing households because of increased entitlement. The borrowing households have access to better education and literacy, better health, better shelter and enough food and nutrition compared to before membership. The borrowing households should also have higher living standards compared to that of before joining the programme. Section 3, 4, 5 and 6 of the diagram, i.e. investment of microcredit, increase in income, increase in assets, increase in entitlement, better fulfilment of basic needs and higher living standards, continue in a virtuous circle. Thus, poverty of microcredit borrowing households is alleviated gradually. After some years of membership in the microcredit programme, poverty of borrowing households is alleviated totally and poor borrowing households are graduated from below to the above poverty line.

Section 7 of the diagram shows alleviation of poverty of borrowing households and graduation of borrowing households from below to the above poverty line.

### **(b) Consumption of Microcredit**

If microcredit borrowers consume the entire amount of credit received instead of making investment, then they will have to sell their household assets to repay the loan. Sale of assets to repay the loan may also worsen the self-employment status of borrowing households. Section 3 of the diagram shows decrease in assets and worsening of self-employment status of borrowing households who consume their microcredit and make no investment. A decrease in assets and worsened self-employment status will decrease income of borrowing households (section 4 of the diagram). A decrease in income will reduce entitlement of borrowing households to basic needs and living standards. Section 5 of the diagram shows decrease in entitlement of borrowing households. A decrease in the entitlement of borrowing households will cause to deteriorate fulfilment of basic needs of borrowing households. Section 6 of the diagram shows that the fulfilment of basic needs of borrowing households, who consume their microcredit, has deteriorated after joining the programme compared to their position before joining. Section 6 also shows worsening of living standards of borrowing households, who consume their microcredit. The consumption of microcredit instead of investment will worsen the poverty status of borrowing households. Section 7 of the diagram shows this deteriorated poverty status of borrowing households.

### **6.2.1 The Research Scheme**

A four-level analysis will be conducted to analyse the impacts of microcredit on the poverty of borrowing households. These four levels are related to socio-economic status of borrowing households. At the first level, the impact of microcredit on income will be discussed. At the second level, the study will illustrate the impact of microcredit on assets. At the third level, the present study will analyse impacts of microcredit on basic needs and living standard of borrowing-households. The fourth and final level will examine impacts of microcredit on poverty and poverty risk.

At the first level, three income variables will be used to analyse impacts of microcredit on income of borrowing-households. These three variables are (1) yearly total agricultural income, (2) yearly total non-agricultural income, and (3) yearly total income. A comparison between income of programme households with that of comparison households will be made to determine the level of impact of microcredit on income of borrowing households. It is expected that programme households will have higher income than that of comparison households. At this level, in addition to income variables, consumption of programme households will be used as a proxy for income of households. The study will use five consumption variables, which are (1) weekly total food expenditure, (2) monthly total fuel and cosmetics expenditure, (3) yearly total educational expenditure, (4) yearly total medical expenditure, and (5) yearly total non-food expenditure. Like income, it is also expected that programme households will have higher expenditure in all categories of consumption than that of comparison households.

The second level analysis will concentrate on the impact of microcredit on household assets. At this level, twelve variables related to assets of households will be used. These variables are (1) total area of own agricultural land (current), (2) total area of agricultural land (including rented in and leased in land), (3) total amount of productive assets<sup>52</sup>, (4) value of the dwelling house, (5) total amount of financial assets, (6) value of total household assets (value of the dwelling house plus value of household furniture, plus value of homestead land), (7) total amount of current business capital from own source, (8) total amount of current business capital (own capital plus capital from external sources), (9) total assets (including land value), (10) total non-land assets, (11) total net worth (including land value), and (12) total net worth (excluding land value). At this level, the study will try to determine whether microcredit increases assets of borrowing-households through a comparison between assets of programme households and that of comparison households. It is expected that the study will find higher volume of assets of programme households compared to that of comparison households. In this context, a further examination will be carried out to assess the impact of microcredit on entitlement of borrowing-households. Impact of microcredit on assets of borrowing-households will demonstrate the impact of microcredit on entitlement. Because, in our research framework we have seen that entitlement is a positive function of assets, i.e. increase in assets increases entitlement of households. If we find that microcredit increases assets of households, then it will be possible to conclude that microcredit also increases entitlement of borrowing-households.

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<sup>52</sup> total amount of productive assets include large farm animals, fruit gardens, machinery and equipment, fishing boat, engine and net, stocks etc.



At the third level, the study will focus on the impact of microcredit on basic needs and living standard of borrowing households. Here, a comparison between the fulfilment of four basic needs (education and literacy, health, shelter, and food and nutrition) of programme households and that of comparison households will be made to understand impacts of microcredit on basic needs. The study will also use four proxies of living standard to evaluate the impact of microcredit on living standard of borrowing-households. These four proxies are (1) possession of consumer durables such as, radio, showcase etc.<sup>53</sup> (2) savings for the rainy days and any natural disaster, (3) account of the households head with any formal sector institution, and (4) number of hired employees for the whole year. It is expected that programme households will have better status in terms of fulfilment of basic needs and proxies of living standard compared to comparison households. If the study finds better status of programme households in respect to the fulfilment of basic needs and proxies of living standard, then the study will conclude that microcredit has increased entitlement of borrowing households in real sense.

At the fourth and final level, the study will concentrate on poverty of borrowing households. At this level, objective as well as subjective measures of poverty will be used. A comparison will be made between poverty of programme households and that of comparison households to examine the impact of microcredit on poverty of borrowing-households. It is expected that programme households will have better status in terms of poverty. At this level, the study will also conduct a comparison between poverty risk of programme households and that of comparison households to assess poverty risk reduction capacity of microcredit.

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<sup>53</sup> The whole list of these items are given below in chapter 7.

### 6.3 Empirical Model and Estimation Strategy

The benefit from the programme can be estimated through using the following model [Maddala, (1983)]:

$$Y_i = X_i\beta + I_i\alpha + u_i \quad (6.12)$$

where,  $Y_i$  is the outcome,  $X_i$  is a vector of exogenous personal characteristics,  $I_i$  is the dummy variable ( $I=1$  if the individual participates in the programme;  $I=0$  otherwise) and  $u_i$  is the error term. In this model, the impact of programme is measured by  $\alpha$ . The variable  $I$  can only be used as an independent variable, if,  $I$  is an exogenous variable. But when programme participants are self-selected, then  $I$  can not be treated as an exogenous variable. In the case of self-selected programme participants,  $I$  is an endogenous variable. According to Maddala (1983), if  $I$  is an endogenous variable then the equation must be estimated by the instrumental-variable technique.

Maddala (1983) devised a more general model for estimating benefits of programme:

$$y_{1i} = X_i\beta_1 + u_{1i} \quad (6.13)$$

$$y_{2i} = X_i\beta_2 + u_{2i} \quad (6.14)$$

$$I_i^* = Z_i\gamma = \varepsilon_i \quad (6.15)$$

Equation 6.13 is formulated for programme participants, equation 6.14 is devised for non-participants and equation 6.15 is the programme participation function. The observed  $y_i$  is defined as

$$y_i = y_{1i} \text{ if } I_i = 1$$

$$y_i = y_{2i} \text{ if } I_i = 0$$

$$\text{Cov}(u_{1i}, u_{2i}, \varepsilon_i) = \begin{bmatrix} \sigma_{11} & \sigma_{12} & \sigma_{1\varepsilon} \\ \sigma_{12} & \sigma_{22} & \sigma_{2\varepsilon} \\ \sigma_{1\varepsilon} & \sigma_{2\varepsilon} & 1 \end{bmatrix}$$

We can calculate the programme benefit through deducting the expected outcome without the programme [i.e.  $E(y_{2i} | I_i = 1)$ ] from the expected outcome with programme [i.e.  $E(y_{1i} | I_i = 1)$ ]. Therefore, the expected gross benefit from the programme is<sup>54</sup>,

$$E(y_{1i} | I_i = 1) - E(y_{2i} | I_i = 1) = X_i(\beta_1 - \beta_2) + (\sigma_{2\varepsilon} - \sigma_{1\varepsilon}) \frac{\phi(Z_i\gamma)}{\Phi(Z_i\gamma)} \quad (6.16)$$

If the programme participants are self-selected, i.e. non-randomly selected, then  $(\sigma_{2\varepsilon} - \sigma_{1\varepsilon})$  is greater than zero. In case of a programme, which selects its programme members randomly i.e. not self-selected, then  $(\sigma_{2\varepsilon} - \sigma_{1\varepsilon})$  is equal to zero. When programme participants are randomly selected, then the gross benefit from the programme is,  $E(y_{1i} | I_i = 1) - E(y_{2i} | I_i = 1) = X_i(\beta_1 - \beta_2)$ , because,  $(\sigma_{2\varepsilon} - \sigma_{1\varepsilon}) = 0$ . But when programme participants are self-selected, then the gross benefit from the programme is,

$$E(y_{1i} | I_i = 1) - E(y_{2i} | I_i = 1) = X_i(\beta_1 - \beta_2) + (\sigma_{2\varepsilon} - \sigma_{1\varepsilon}) \frac{\phi(Z_i\gamma)}{\Phi(Z_i\gamma)}, \quad \text{because, } (\sigma_{2\varepsilon} - \sigma_{1\varepsilon}) > 0.$$

Therefore the econometric estimation of programme benefits will estimate higher benefits than actual benefits, if the programme participants are self-selected.

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<sup>54</sup> For detailed explanation, see Maddala (1983)

The econometric estimation of programme benefits are biased estimates if (a) programme participants are non-randomly selected (which also includes self-selection of programme members) and/or (b) programme placement is non-random [Coleman, (1999)]. The Grameen Bank in Bangladesh accepts those people as members who have less than 50 decimal of land. Since the Grameen Bank in Bangladesh accepts members on the basis of household characteristics, this meets the first criteria Coleman (1999) warned us about. Also, since it is expected that households with greater entrepreneurial capability are more likely to join the programme, this may also bias the econometric estimation of programme benefits. The non-random programme placement also creates biases in estimating benefits of the programme. For example, if microcredit programmes are implemented in those areas which have more business opportunities or have better communication infrastructure or have more dynamic leaders or are poorer, then such criteria for selecting places for programme implementation create biases in estimating programme benefits.

Coleman (1999) argues that the above mentioned sources of biases can be avoided through adopting an alternative survey method than is commonly employed. He considers members of a newly established village bank, who have not received any loan until the survey period, as members of comparison group (who are also denoted as control group members). Since, the comparison group members are also self-selected like the programme members, the bias arising from self-selection in estimating programme benefits disappears. This is why, we have also selected the comparison group members from a newly established Grameen Bank branch who are yet to receive or just received the loan. So, members of both the comparison group and the programme group are self-selected. The Grameen Bank selects all their areas

of operation non-randomly according to their own criteria. Thus, in our investigation, both the programme branch and comparison branch have been selected under similar criteria. Therefore, the bias, which arises from non-random programme placement, is also avoided from our sample. Now, the programme impacts can be estimated through using a single equation:

$$Y_{ij} = H_{ij}\alpha + L_j\theta + M_{ij}\beta + v_{ij} \quad (6.17)$$

where,  $Y_{ij}$  is the programme outcome in household  $i$  ( $i = 1, 2, \dots, n$ ) and village  $j$  ( $j = 1, 2, \dots, m$ ),  $H_{ij}$  is vector of household characteristics,  $L_j$  is the vector of local characteristics,  $M_{ij}$  is the microcredit variable and  $v_{ij}$  is the error term. In equation 6.17,  $\beta$  measures the average impact of the programme on  $Y_{ij}$ . Some unobserved households characteristics might have influenced the outcome  $Y_{ij}$ ; the unbiased and efficient estimates will be estimated through inclusion of a vector of household characteristics ( $H_{ij}$ ) in the model. Like unobserved household characteristics, some unobserved local characteristics might have also affected the outcome  $Y_{ij}$ ; the efficient and unbiased estimates will be obtained using  $L_j$  as a vector of specific local characteristics affecting  $Y_{ij}$ . Coleman (1999) argues that if control (comparison) villages are also programme villages (as in our sample), then the vector of village (local) characteristics need not be included in the econometric model. He also argues that inclusion of a vector of local characteristics in the model will generate biased results. However, our comparison bank branch is also a programme bank branch, but the comparison bank branch was established after almost 8 years of establishment of

the programme bank branch. Therefore, some unobserved local characteristics might have affected the establishment of the programme bank branch eight years before the establishment of the comparison bank branch. For this reason, the vector of local characteristics ( $L_j$ ) has been included in the model to obtain efficient and unbiased estimates.

## **6.4 Research Objectives and Hypotheses**

### **6.4.1 Objectives**

In this section, the research objectives are designed and developed on the basis of the research framework introduced in 6.2 above section. The research objectives are designed in such a way that all-important socio-economic aspects of households related to poverty and standard of living could be covered by the present study. Employment, income, expenditure, assets, basic needs, living standard and poverty issues are taken into consideration in formulating research objectives.

The objective 1 is formulated to distinguish the differences in income and expenditure between programme households and comparison households. The average yearly agricultural income, the average yearly income from non-agricultural sources and average total yearly income will be taken into consideration to determine the differences in income. The average weekly total expenditure on food, average monthly expenditure on fuel, energy, and cosmetics, the average yearly expenditure on non-food items, average yearly total educational expenditure, and average yearly

total medical expenditure per household will be considered to identify the differences in expenditure.

The objective 2 is formulated to examine the differences between programme households and comparison households in terms of resources of the households. This objective will also help to determine whether programme households have higher resources base than the resource base prior to the programme membership i.e. to determine whether the microcredit programme membership increased the resource base of programme households.

The objective 3 is formulated to identify differences between programme households and comparison households in educational aspects. Expenditure on education and percentage of children between 6 to 13 years that attends school will be used as the indicators of educational attainment of households.

The objective 4 is designed to detect whether participation in the microcredit programme improves health status of household members. A comparison between programme households and comparison households in respect to some health indicators will be conducted to achieve this objective. Three health indicators, viz., visit to qualified physicians, total number of households reporting under 5 sick children and average yearly total expenditure per household on medicine, will be used for the comparison between programme households and comparison households.

The objective 5 is formulated to detect the impact of microcredit on shelter of programme households. Two comparisons will be made to achieve this objective.

Firstly, a comparison will be made between the average total area of living space, and condition of side-walls and roofs of programme households and that of comparison households. Secondly, a comparison between the value of the dwelling house of programme households and that of comparison households will also be conducted.

The objective 6 is introduced to identify whether participation in the microcredit programme improves the food availability of programme households. A comparison between the food availability of programme households and that of comparison households will be conducted. Average weekly expenditure on food, average number of food shortage months per year per household, and total number of households experiencing food shortage will be used as indicators of food availability to achieve the objective.

The objective 7 is formulated to assess the impact of microcredit on standard of living of programme households. The aim here will be to examine whether microcredit improves the standard of living of borrowing households. A comparison will be made between programme households and comparison households in terms of average consumer durables possession score, the percentage of household heads having an account with a commercial bank, the percentage of households that hire workers for the whole year, and the percentage of households that have savings for rainy days and natural disaster to achieve this objective. This objective will especially examine whether microcredit graduate borrowing households from the informal financial sector to the formal financial sector. 'The percentage of household heads that have an account with a commercial bank' will be considered as the indicator of graduation of households from the informal financial sector to the formal financial sector.



The final objective, objective 8, is designed to assess poverty status of programme households. This objective will determine whether participation in the microcredit programme has changed the poverty status of programme households. Subjective poverty measures as well as objective poverty measures will be used to assess the poverty status of households. A comparison between programme households and comparison households will be made in respect to poverty status of households. Another comparison between the poverty status of programme households prior to the programme membership and the poverty status of programme households at the time of survey will also be made.

#### **Objective 1**

To determine whether the participation in microcredit programme increased income and expenditure of programme households.

#### **Objective 2**

To determine whether participation in the microcredit programme increased endowment of programme households.

#### **Objective 3**

To determine whether participation in the microcredit programmes enhanced the educational status of programme households.

**Objective 4**

To determine whether participation in the microcredit programmes improved health status of programme households.

**Objective 5**

To determine whether participation in the microcredit programmes improved the housing and shelter condition of programme households.

**Objective 6**

To determine whether participation in the microcredit programme increased the availability of food status of programme households.

**Objective 7**

To determine whether participation in the microcredit programmes improved the standard of living of programme households.

**Objective 8**

To determine whether participation in the microcredit programmes improved poverty status of pogrom households.

## 6.4.2 Hypotheses

### **Hypotheses 1 (Income and Expenditure) (Objective 1)**

#### Hypotheses 1.1 (Income and Expenditure, With and Without)

There are no significant differences between programme households and comparison households in terms of following variables:

- 1.1.1 average yearly total agricultural income (inc1\_agri)
- 1.1.2 average yearly total non-agricultural income (inc1\_oth)
- 1.1.3 average yearly total income (inc1\_pcyinc)
- 1.1.4 average weekly total expenditure on food per household (inc1\_fe)
- 1.1.5 average monthly total expenditure on fuel, energy and cosmetics (inc1\_enc)
- 1.1.6 average yearly total non-food expenditure (inc1\_yeo)
- 1.1.7 average yearly expenditure on education per household (inc1\_yee)
- 1.1.8 average yearly total medical expenditure per household (inc1\_yem)

### **Hypotheses 2 (Endowment) (Objective 2)**

#### Hypotheses 2.1 (Endowment, With and Without),

There are no significant differences between programme households and comparison households in terms of following variables:

- 2.1.1 average area of agricultural land owned per household (as1\_owlan)
- 2.1.2 average area of agricultural land per household including rented in and leased in land (as1\_rilan)
- 2.1.3 average value of productive assets per household (as1\_pras)
- 2.1.4 average value of the dwelling house per household (as1\_vhou)
- 2.1.5 average total financial assets per household (as1\_fa)
- 2.1.6 average total household assets (as1\_hha)
- 2.1.7 average total amount of current business capital from own source (as1\_bco)
- 2.1.8 average total amount of current business capital from own as well as external sources (as1\_bco)
- 2.1.9 average value of total assets per household (as1\_tas)
- 2.1.10 average value of total non-land assets (as1\_nla)
- 2.1.11 average total net worth per household (as1\_anw)
- 2.1.12 average total net worth excluding land value per household (as1\_nw)

### **Hypotheses 3 (Education) (Objective 3)**

#### Hypotheses 3.1 (Education, With and Without)

There are no significant differences between programme households and comparison households in terms of following variables:

- 3.1.1 average per household expenditure on education per year (edu1\_eduexp)
- 3.1.2 percentage of households sending children between 6-13 years to school (edu1\_mcgs)

#### **Hypotheses 4 (Health and Medication) (Objective 4)**

##### Hypotheses 4.1 (Health and Medication, With and Without)

There are no significant differences between programme households and comparison households in terms of following variables:

4.1.1 percentage of households visiting a qualified physician for treatment during the immediate sickness of a family member (hel1\_hhtmed)

4.1.2 percentage of households reporting sick children under the age of five in last three months (hel1\_csd)

4.1.3 average yearly total medical expenditure per household (hel1\_exmed)

#### **Hypotheses 5 (Housing and Shelter) (Objective 5)**

##### Hypotheses 5.1 (Housing and Shelter, With and Without)

There are no significant differences between programme households and comparison households in terms of following variables:

5.1.1 average living space per household (hsl1\_avs)

5.1.2 percentage of households with weather proof roof (hsl1\_ro)

5.1.3 percentage of households with weather proof side-walls, i.e. side-walls of either tin or brick walls (hsl1\_sw)

5.1.4 average value of the dwelling house per household (hsl1\_vd)

## **Hypotheses 6 (food & nutrition) (Objective 6)**

Hypotheses 6.1 (food & nutrition, with and Without)

There are no significant differences between programme households and comparison households in terms of following variables:

6.1.1 average weekly total expenditure on food per household (fo1\_wex)

6.1.2 average number of food shortage months (fo1\_foshm)

6.1.3 total number of households experiencing food shortage (fo1\_fsh)

## **Hypotheses 7 (Living Standard) (Objective 7)**

Hypotheses 7.1 (living Standard, With and Without)

There are no significant differences between programme households and comparison households in terms of following variables:

7.1.1 average household consumer durables possession score (ls1\_ps)

7.1.2 percentage of household heads having an account with a commercial bank (ls1\_ba)

7.1.3 percentage of households that hire workers for the whole year (ls1\_hw)

7.1.4 percentage of households having savings for rainy days and natural disaster (ls1\_sv)

## **Hypotheses 8 (poverty and poverty alleviation) (Objective 8)**

### Hypotheses 8.1 (poverty and poverty alleviation, With and Without)

There are no significant differences between programme households and comparison households in terms of following variables:

8.1.1 percentage of households that consider themselves as non poor (pov1\_npoor)

8.1.2 percentage of households that consider themselves moderately or extremely poor (pov1\_modpoor)

8.1.3 percentage of households is poor from the perspective of objective poverty analysis (pov1\_expoor)

### Hypotheses 8.2 (poverty and poverty alleviation, Before and After)

There are no significant differences between the status of programme households at present and prior to the programme membership in terms of following variables:

8.2.1 percentage of households that consider themselves as not poor (pov2\_npoor)

8.2.2 percentage of households that consider themselves either as moderately or extremely poor (pov2\_modpoor)

## **6.5 Present Research Methodologies**

### **6.5.1 General Design Issues**

## **A. Cross-sectional Design**

This impact assessment study applied a cross-sectional design rather than longitudinal design. The non-availability of longitudinal data compelled the present study to use cross-sectional design. Programme impact has been assessed through a comparison of the responses of programme households with those of comparison households at the same point in time. Although the study has used a cross-sectional design, some longitudinal data have also been collected through memory recall of respondents. Keeping in mind the limitations of memory recall, the researcher confined data collection on the basis of memory-recall only to those variables which can be recalled with some degree of accuracy; for example, total area of household land before membership, respondents perception about their poverty status before membership etc.

## **B. Unit of Assessment**

Impact of microcredit on poverty could be assessed at individual or household level. Most impact assessment studies have been conducted at household level. A few studies have been conducted at an individual level [for example, Goetz and Sen Gupta, (1996); Peace and Hulme, (1994)]. Although impact assessment at an individual level is easier to implement, it fails to identify the impacts which go beyond individual level. Individual level impact assessment fails to distinguish between individual impacts and group impacts [Hulme, (2000)]. Though impact assessment at household level is less easy to conduct than impact assessment at an individual level, household level impact assessment is much broader in terms of



coverage than individual assessment. It covers impacts on individuals as well as impacts on other relevant aspects of households that are important for better livelihood for individuals [Hulme, (2000)]. Keeping in mind the advantages of household level impact assessment, this study has conducted impact assessment at household level.

### **C. Categories of Respondents**

The study interviewed three categories of programme participants; 2-4 years programme members, 5-7 years programme members and 8 years and above members. The Grameen Bank programme members, who joined between February 1997 to March 1994, were considered as 2-4 years members. Members, who joined between February 1994 to February 1991, were considered as 5-8 years members. Those who joined between before February 1991 were considered as 8 years and above members. The comparison group households were selected from new members of the Grameen Bank, i.e. the members who have just joined the microcredit programme but are, yet to receive any credit or have just received the first instalment of the loan. The comparison was made between programme households and comparison households to assess the impacts of microcredit. Another comparison was also made among three categories of programme members (that is 2-4 years members, 5-7 years members and 8 years and above members) to test the assumption that impact increases with longer programme exposure.

### **D. Selection of Comparison Group**

We have already explained our methodology of and reason behind choice of comparison group in section 6.3 above. In this section we will attempt to elaborate it a little further. Selection of the appropriate comparison group is very important for impact assessment studies and it also raises a number of logistical, methodological and moral problems and questions. The study selected new members instead of non-client members as comparison group members. The programme members who received more than one loan are self-selected from the perspective of initiative to join the microcredit programme. If the comparison group comprised of people who did not have any intention to join the programme, but qualified to join, i.e. not self-selected, then the comparison between the programme group households and the comparison group households would not reflect true impacts of microcredit (as also mentioned in section 6.3 of this chapter). The self-selection problem could be avoided by selecting a comparison group from new members, who have just applied for loan or just received a loan. Some AIMS<sup>55</sup> [for example, MKNelly and Lippold, (1998); Edgcomb and Garber, (1998)] studies have also used new members as comparison group members. New members are self-selected to join the programme as did old programme members (members participating in the programme for more than one year). Therefore, one would expect the new members to possess similar socio-economic status of old programme members before joining the programme. The study ensured during data collection period that comparison group members hold similar characteristics of programme members before membership to the microcredit programme. The study used the following three important indicators to assess the equality of socio-economic status of programme group households before microcredit

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<sup>55</sup> AIMS (Assessing the Impact of Micro-enterprise Services) is a project of USAID.

programme membership and current socio-economic status of comparison group households:

- ◆ the average total area of own agricultural land of programme households before membership and the average current area of own agricultural land of comparison households,
- ◆ perception of programme households about their poverty (subjective) status before membership and perception of comparison households about their current poverty (subjective) status,
- ◆ average total area of living space of programme households before the membership and average total area of current living space of comparison households.

#### **E. Coverage**

Logistics, cost and time considerations compelled the researcher to limit the number of geographic areas and the number of the Grameen Bank branches which could be covered in the present study. After considering available time and fund for data collection, the researcher decided to collect data from one more-than-eight-years-old Grameen Bank branch and one newly established branch in a district of Bangladesh. The member households of over eight years old Grameen Bank branch were treated as programme households (i.e. with programme) and the new member households of the newly established Grameen Bank branch were treated as comparison households (i.e. without programme for the impact assessment).

### **6.5.2 Selection of a District, the Grameen Bank Branches and the Respondents**

A four stage random sampling technique had been applied in selecting programme households and comparison households. In the first stage, one district (Comilla) had been selected out of 64 districts in Bangladesh. In the second stage, two branches, one branch for selecting programme households and another one for selecting comparison group households, had been selected randomly for data collection purpose. Programme households had been selected from a more than eight years old branch (Programme Branch) and comparison households had been selected from a newly established Grameen Bank branch (Comparison branch). In the third stage, centres of the Grameen Bank branches were selected. In the fourth and final stage, the researcher selected programme and comparison households. In what follows, we elaborate upon our process of sampling.

In the first stage, the researcher selected one district randomly out of 64 districts in Bangladesh. Before selecting a district for data collection, the researcher had set following criteria:

- the district should not be too far from the capital city of Bangladesh
- the district should not have severely been affected during the 1998 flood<sup>56</sup>
- the district should have Grameen Bank branches more than eight years old.

The first criteria, the district should not be too far from the Capital City, was applied because of constraints of fund and time for data collection. In many areas of Bangladesh, 1998 flood washed away accumulated impacts of microcredit [Nayar and

Faisal (1999)]. Many households, who graduated from below to above the poverty line, became poor again. For those reasons, the second criterion was designed for selecting a district for data collection. The reason of including the third criteria is explained below. After considering above criteria for selecting a district, we found five districts as eligible for selection for data collection. Out of five districts, Comilla had been selected randomly for data collection.

In the second stage of random selection, two branches had been selected randomly for data collection. For selection of the programme branch, the only criterion applied was that the branch should be more than eight years old. The impression one gets from the findings of Khandker and Chowdhury (1996) that it takes about eight years for microcredit borrowers to reach a position where they can maintain a reasonable standard of living even without taking any additional loans. Thus, the criteria, branch aged more than eight years, has been used in identifying eligible bank branches for data collection. The researcher found four branches which satisfied the criteria in the Comilla district. Out of four eligible branches, one bank branch had been selected randomly for data collection. The branch, which had been selected for selecting programme households, was about 4.5 kilometres away from the Comilla town. For that reason, the researcher tried to locate a new Grameen Bank branch, which was also situated 4 to 5 kilometres away from the Comilla town centre. The researcher found only one branch within the above-specified range of distance. Comparison households have been randomly selected from that new branch for comparison purposes.

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<sup>56</sup> Data collection was carried out in January to May 1999.

In the third stage of random sampling, centres were selected in both the programme branch and comparison branch. In the programme branch, 47 centres out of 61 centres have randomly been selected for selecting programme households. In the comparison branch, 21 centres have randomly been selected from 26 centres of the branch. Since the comparison branch was a newly established branch, that is way this branch had fewer centres. In a Grameen Bank branch, a centre constitutes of 5 to 8 groups and each group consists of 5 members.

In the fourth and final stage, programme households and comparison households were selected. In the programme branch, borrowing households represented the ‘with programme group’. In the comparison branch, borrowing households which just received the loan or just joined the programme but not received the loan yet represented the ‘without programme group’. In the programme branch, all programme borrowers of a centre have been organised into three groups:

- households with microcredit programme membership between 2 to 4 years
- households with microcredit programme membership between 5 to 7 years
- households with microcredit programme membership 8 years and above

In the programme branch, one member from each group have been selected, i.e. three members have been selected from each randomly selected centre. To draw a sample of three members, a print out of the list of all members of each randomly selected centre was obtained from the Grameen Bank branch office. In the comparison branch, seven new members were randomly selected from each randomly selected centre. To draw a sample of seven members, a printout of the list of all members of each

randomly selected centre was obtained from the comparison branch office. From that table, seven members were selected randomly.

### **6.5.3 Data Collection and Analysis Stages**

#### **A. Questionnaire Design**

The questionnaire design process had three stages. In the first stage, an initial set of hypotheses was developed. In the second stage, exploratory interviews were conducted with microcredit borrowers and executives of the Grameen Bank and other microcredit providing NGOs in Bangladesh. In the third and final stage, a pilot test of a preliminary questionnaire was conducted to identify mistakes and important missing questions in the questionnaire.

#### **Initial set of hypotheses**

The initial set of hypotheses was developed on the basis of the previous impact assessment studies of microcredit in Bangladesh. The researcher also developed a framework for assessing impacts of microcredit on poverty of borrowing households in Bangladesh independently. The researcher included objective as well as subjective measures of poverty in the framework. Hypotheses on income, consumption, assets, basic needs and living standard were included in the questionnaire.

#### **Exploratory interviews**

In the third week of January 1999, the researcher conducted exploratory interviews with some members of the Grameen Bank branch, which had been selected randomly for data collection to identify important socio-economic aspects of borrowing households. In the third week of January 1999, the researcher also conducted some exploratory interviews with some executives of the Grameen Bank and also with some executives of other NGOs in the country. During the exploratory interviews, a few mistakes in the questionnaire were identified and the executives of the Grameen Bank and other NGOs gave some suggestions to modify the questionnaire. Subsequently, the mistakes were corrected and the questionnaire was modified according to the suggestions received and shortcoming identified. In the last week of January 1999, a series of meetings with leading academics, especially at the University of Dhaka, who specialised in micro-finance in the country, were arranged. The researcher showed them the list of hypotheses and the revised questionnaire. The leading academics also gave some suggestions to restructure some questions. These questions were restructured again according to those suggestions.

### **Pilot Test**

The researcher again visited the programme branch to conduct the pilot test of the revised questionnaire during the last week of January 1999. During the pilot test, the necessity of rearrangement of some questions was felt, especially questions related to household income and consumption. The then question on household income was divided into two questions, one on income from agriculture and another one on income from non-agricultural sources. Questions on consumption and expenditure were also divided into three sections, section one on consumption from own



production, section two on consumption from purchase, and section three on consumption from gifts. After these rearrangements, the final questionnaire was finalised at the end of the last week of January 1999.

### **Translation of the Questionnaire and Printing of Questionnaires**

The final questionnaire was translated into Bengali in the first week of February 1999 and a relevant expert was hired to compose the questionnaire on computer in Bengali. Some tables were kept in English, as these tables proved difficult to compose efficiently in Bengali on computer. After the composition of the questionnaire in Bengali on computer was completed, a quality printing press was requested to print the questionnaires and the press delivered all printed questionnaires on February 7, 1999. The length of each printed questionnaire stood at twenty-four A4 size pages.

### **B. Data Collection**

The data collection stage started on the 10<sup>th</sup> of February 1999 and continued until 3<sup>rd</sup> of May 1999. Data were collected from the programme branch first and then from the comparison branch.

The study collected information from households of seven members from each of the centre of the comparison branch and 20 centres were randomly selected for the data collection. In total, information was collected from households of one hundred and forty members of the comparison branch. But during the examination of the filled in questionnaires of comparison households, some questionnaires were found with illogical as well as incomplete answers. These questionnaires were discarded. Finally,

the study found one hundred and thirty one questionnaires as useable. In the programme branch, all members were grouped into three groups, 2-4 years, 5-8 years and 8 years above, on the basis of the length of participation in the programme. One member from each programme group had been selected randomly for interview. Forty-seven centres were also selected randomly for data collection. Therefore, the study expected 47 randomly selected programme members from each group. However, in some centres, no members of 2-4 years and/or 8 years and above programme group(s) were found. These missing members of 2-4 years and 8 years and above programme groups were substituted by 5-7 years programme group members in some centres. Finally, the study was able to collect information from households of thirty-eight 2-4 years group members, sixty-four 5-7 years group members and thirty-nine 8 years and above group members. However, during the examination of the filled in questionnaires of programme group households, some answers were found to be as illogical. Some questionnaires were also found incomplete. Those questionnaires with incomplete and illogical answers were dropped. This gave a final total of thirty-seven '2-4 years group' filled in questionnaires, fifty-eight '5-7 years group' filled in questionnaires and thirty-four '8 years and above' useable filled in questionnaires, adding up to a grand total of one hundred and twenty nine filled in usable questionnaires from the programme branch.

### **C. Some Important Issues about Data Collection**

The researcher experienced that some respondents were reluctant to provide information about their income, consumption, savings and assets. When respondents had been asked about their income, consumption and assets, they were persuaded to

provide accurate answers, and were informed that their answers were confidential and would only be used for research and academic purposes. It was also made clear to them that the Grameen Bank officials would not have any access to the filled in questionnaires. During the data collection period, in every weekday a field officer of the Grameen Bank branch was used to introduce the researcher with the members of a centre during the weekly meeting of that centre, as it is argued that, this kind of introduction helps to enhance motivation of respondents [Hulme, (2000)]. During that meeting, the field officer of the relevant centre was also requested to explain the purposes of the data collection to the members of the centre and to persuade them to co-operate and provide accurate answers. The field officer also assured the randomly selected members that their answers would not affect their right on credit from the Grameen Bank. After introduction of the researcher and general description of objectives and purposes of research, the researcher followed the randomly selected members to their home, where interviews were conducted. The researcher ensured attendance of other members, especially husband of the Grameen Bank member, of the household during the interview<sup>57</sup>. It was experienced during the interview that if the household head gave a wrong answer, then his wife corrected that wrong answer or wife helped the household head to provide information accurately.

During the pilot test of the questionnaire, in the first day, the manager of the Grameen Bank branch accompanied the researcher. During the interviews the manager interrupted and influenced answers of the respondents many times and thus became a threat to receiving accurate answers from the respondents. From that experience, the researcher ensured no presence of any representative of the Grameen Bank during

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<sup>57</sup> In Chapter four, we mentioned that ninety-four per cent of Grameen Bank members are women. In

interviews. During the process of sample selection, two additional respondents were selected for every original respondent to avoid non-availability of the original respondent and were kept as standby. The researcher interviewed the first standby respondent from these two, if the main respondent was absent or non-available. In the same way, the second stand by respondent was interviewed if the original and the first stand by respondent were not available. Hulme (2000) suggests that an interview should not take more than one and half-hours. The questionnaire of the present study took one hour on an average to be filled in.

#### **D. Data Coding, Entry and Cleaning**

##### **Data Coding:**

The researcher coded data by himself. A codebook was developed before going to Bangladesh. While data entry began, new categories to be coded emerged from the filled in questionnaires. The codebook was continually modified.

##### **Data Entry:**

The process of data entry began in the first week of May 1999 in Bangladesh. During that week, data entry of 105 questionnaires was completed. However, on the 7<sup>th</sup> of May the computer, which was used for data entry, crashed because of the attack of a computer virus along with thousands of computers in Asia and Pacific. All records were lost. Then, the researcher decided not to take any more risks and to carry all

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our sample, all randomly selected members of the programme as well as comparison group are also women.

questionnaires with him back to the United Kingdom. After coming back to the United Kingdom, the process of data entry was restarted. Data entry was completed at the end September 1999. The statistical programme, DBASE III, was used for data entry. Appropriate error traps were inbuilt in the data-entry-programme (using DBASE III) to ensure that data entry errors were kept to a minimum level.

### **Data Cleaning**

The data cleaning process had two phases. In the first phase the numerical checks were conducted and in the second phase cross checks were carried out. The print out of the raw data were made and the researcher compared the print outs with the actual questionnaire entries. Wrong entries, which were found on the print out, were corrected and later entered on the computer. Further checks had been conducted through generating frequency distributions, which helped to identify all outliers for all variables. All those outliers were compared with actual questionnaire entries. The validity of data was examined through the checking of some logical or illogical pairs. For example, if the variable V811 has value of 1, then the value of the variable V812 should either be 1 or 2; but if the variable V811 has a value of 2, then the variable V812 should have a zero value. These checks helped to clean the data set.

### **E. Statistical Testing**

Appropriate Statistical tests had been conducted on the basis of the nature of the data. Statistical tests had been conducted basically to assess the impact of microcredit on poverty of borrowing households through comparing different aspects of poverty of

programme households with those of comparison households. The independent sample t-tests were conducted in case of interval data to ascertain whether differences of means were statistically significant. One way Analysis of Variance (ANOVA) was used to analyse distinction between the three programme groups (2-4 years, 5-7 years and 8 and above years programme groups). In case of categorical (nominal) data, chi-square tests have been conducted. Multi-variate analyses have also been carried out to assess the impact of microcredit on different issues of households.

#### **6.5.4 Summary of Sample Selected**

Table 6.2 shows the geographical characteristics of programme households and comparison households. It shows that comparison households and programme households have almost similar geographical characteristics. Table 6.3 presents the demographic characteristics of programme as well as comparison households. Comparison households have greater number of under five children than programme households. The average number of family members of comparison and programme households are 4.99 and 5.55 respectively. The average age of the household head and the programme member of programme households and comparison households are almost the same. But the average schooling years of members (more than six years old) of programme households is higher than that of members of comparison households. Programme households have been participating in the microcredit programme for many years and they have higher income than income of comparison households. Because of higher income, programme households have higher entitlement to education than comparison households. For that reason, the average

schooling years of programme household members is higher compared to that of comparison household members.

#### **6.5.5 The Equality Test of the Socio-economic Status of Programme Households before Membership and the Current Socio-economic Status of Comparison Households**

In section 6.5.1D, we have mentioned the importance of the equality of the socio-economic status of programme households before membership and the current socio-economic status of comparison households. In this research, we used following three indicators to test this equality.

- ◆ The average total area of agricultural land of programme households before membership and the average current area of agricultural land of comparison households.
- ◆ Perception of programme households about their poverty (subjective) status before microcredit programme membership and the perception of comparison households about their current poverty (subjective) status,
- ◆ The average total area of living space per household before microcredit programme membership of programme households and the average current total area of living space per household of comparison households.

Table 6.4a, 6.5a and 6.6a show comparative statistics of the above three indicators of programme households and comparison households. Table 6.4a shows the average total area of own agricultural land and the average total area of living space of

programme households before membership and comparison households during the data collection period. The average total area of own agricultural land of programme households before the microcredit programme membership was 14.79 decimals and the average area of agricultural land of comparison households during the data collection period was 14.11 decimals. Although programme households had slightly higher area of agricultural land before membership than that of comparison households, the difference is statistically insignificant. The average total area of living space of programme households before membership was about 129 square cubit<sup>58</sup>. On the other hand, comparison households had about 119 square cubit on an average total area of living space during the data collection period. The difference between the average living space of programme households before membership and comparison households during the data collection period is not statistically significant.

Table 6.5a shows the distribution of total area of own agricultural land of programme households before membership and comparison households during the data collection period and the table shows the almost similar distribution of agricultural land for both groups. Table 6.6a shows the perception of programme households about their poverty status before microcredit programme membership and the perception of comparison households about their poverty status during the data collection period. Table 6.6a shows almost similar distribution of poverty status of programme households before membership and comparison households during the data collection period. The statistics of three indicators, which were used to test the equality of socio-economic status of programme households before microcredit programme membership and comparison households during the data collection period, show

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<sup>58</sup> A measure by the length of the arm from elbow to the tip of the middle finger.



almost the same socio-economic status of programme households and comparison households.

## **6.6 Limitations of the Present Research**

The main limitation of the present study is coverage of the study. The study collected data only from one out of 64 districts of Bangladesh. It covered only two, one more than eight years old and another a newly established, Grameen Bank branches. From the over eight years old branch, the study collected household level data from only 129 households and from the newly established branch, the study collected household level data from 131 households. The time and financial constraints compelled the study to keep data collection small in size.

The second limitation of the study is that this study failed to incorporate the status of child nutrition of programme households as well as comparison households in the study. The time and fund constraints compelled the study to ignore the child nutrition status of programme households as well as comparison households. The data collection on child nutrition is quite complicated and time consuming. For these reasons, the study decided to ignore child nutrition aspects, but child nutrition is an important aspect of poverty.

## **6.7 Summary of the Chapter**

In the last chapter, we found that none of the available impact assessment studies have used a complete framework for assessing the impact of microcredit on poverty and poverty related aspects of borrowing households. We have also found that these studies have used only the objective measures of poverty. We also identified that the available impact assessment studies have not assessed the poverty risk reduction capacity of microcredit. We tried to overcome these limitations in designing our research framework, objective, and hypotheses. We tried to design a complete framework, which covers income, consumption, assets, entitlement, basic needs, living standard, poverty, and poverty risk, for assessing the impact of microcredit on poverty of borrowing households. The research design indicates that this study will use objective as well as subjective measures of poverty for determining the poverty status of households. A multivariate model has been designed in section 6.3 of this chapter to assess the impact of microcredit on poverty and poverty related aspects.

All available impact assessment studies on microcredit in Bangladesh have used non-participant eligible households as comparison households. This method, however, has two in built biases. These are (a) non-random selection of programme participants and (b) non-random placement of the programme. The present study avoided these two biases through selecting comparison households from new members, who just have joined or received the first loan from the programme.

The present study collected information from one hundred and forty one programme households and one hundred and forty comparison households. Some questionnaires were discarded because of illogical as well as incomplete answers. Finally, the study

found one hundred thirty one questionnaires of the comparison group and one hundred twenty nine questionnaires of the programme group as usable.

In the next three chapters (Chapter seven, eight, and nine), we will assess the impact of microcredit on income, consumption, assets, entitlement, basic needs, living standard, poverty and poverty risk of borrowing households on the basis the research design developed in this chapter.

## **Appendix Six**

**Table 6.1: Sample Size**

| Sample Group                            | Expected          |                                    | Collected |                 | Final           |                 |
|---|-------------------|------------------------------------|-----------|-----------------|-----------------|-----------------|
|   | Number of Centres | No. of HHs from each of the centre | Total HHs | Total Frequency | Total Frequency | Total Frequency |
| Comparison Group                        | 20                | 7                                  | 140       | 140             | 131             |                 |
| Programme Group 2-4                     | 47                | 1                                  | 47        | 38              | 37              |                 |
| Programme Group 5-7                     | 47                | 1                                  | 47        | 64              | 58              |                 |
| Programme Group 8 above                 | 47                | 1                                  | 47        | 39              | 34              |                 |
| <b>Total Programme Group Households</b> |                   |                                    | 141       | 141             | 129             |                 |
| <b>Total Number of Households</b>       |                   |                                    | 281       | 281             | 260             |                 |

HHs = Households

**Table 6.2 Characteristics of Sample Households (Geographical)**

| Descriptive Statistics                         | Comparison Group |                | Programme Group |                |
|--|------------------|----------------|-----------------|----------------|
|  | Mean             | Std. Deviation | Mean            | Std. Deviation |
| Average Distance of the Nearest Market         | 0.7084           | 0.5795         | 0.5345          | 0.4071         |
| Average Distance of the Nearest Metal Road     | 0.4734           | 0.4576         | 0.6733          | 0.4777         |
| Average Distance of the Nearest Primary School | 0.3151           | 0.2770         | 0.3663          | 0.5359         |
| Average Distance of the Nearest High School    | 0.7820           | 0.5402         | 0.6395          | 0.5479         |
| Average Distance of the Nearest Collage        | 2.3770           | 1.1351         | 2.3368          | 1.3720         |
| Average Distance of the District Headquarter   | 4.1209           | 1.9622         | 4.6085          | 2.1928         |

The Number of Households in the Comparison Group is 131. The Number of Households in the Comparison Group is 129.  
All Distances in miles

**Table 6.3 Characteristics of Sample Households (Others)**

| Descriptive Statistics   | Comparison Group |                | Programme Group |                |
|--|------------------|----------------|-----------------|----------------|
|  | Mean             | Std. Deviation | Mean            | Std. Deviation |
| Total HH Members Less Than 15 Years Old and more Than 60 Years Old | 2.3664           | 1.3428         | 2.3643          | 1.5509         |
| Total HH Member (15-60)  | 2.4580           | 0.9220         | 2.9380          | 1.2422         |
| Total HH Member (0-5)  | 0.7023           | 0.6872         | 0.4031          | 0.6437         |
| Total HH Family Members  | 4.9924           | 1.7910         | 5.5504          | 1.8707         |
| HH Head Age  | 38.2214          | 9.9547         | 40.1085         | 8.9820         |
| HH Programme Member Age  | 30.0076          | 7.8068         | 31.5504         | 7.6963         |
| Average Schooling Years of HH Members more than 6 Years Old        | 3.4917           | 2.3805         | 4.0893          | 2.6786         |

HH = Households

**Table 6.4 Agricultural Land Ownership and Current Total Area of Living Space of Programme Households before Microcredit Programme Membership and Comparison Households at the Time of Survey**

| Groups                              | Number of Observations | Mean   | Standard Deviation | T Test Sig. |
|-------------------------------------|------------------------|--------|--------------------|-------------|
| Total Area of Own Agricultural Land |                        |        |                    |             |
| Comparison Group: Current           | 131                    | 14.11  | 21.39              | 0.8003      |
| Programme Group: Before Membership  | 129                    | 14.79  | 22.16              |             |
| Total Area of Living Space          |                        |        |                    |             |
| Comparison Group: Current           | 131                    | 118.85 | 54.20              | 0.2887      |
| Programme Group: Before Membership  | 129                    | 128.33 | 86.19              |             |

1 Hat = 1 Cubit, a measure by the length of the arm from elbow to the tip of the middle finger.

**Table 6.5a Distribution of Agricultural Land Ownership of Programme Households before Microcredit Programme Membership and Comparison Households at the Time of Survey**

| Land Group   | Comparison Group Current |            | Programme Group Before Membership |            |
|--------------|--------------------------|------------|-----------------------------------|------------|
|              | Frequency                | Percent    | Frequency                         | Percent    |
| Landless     | 68                       | 51.91      | 68                                | 51.91      |
| 1 thru 20    | 30                       | 22.90      | 30                                | 22.90      |
| 20 thru 50   | 25                       | 19.08      | 21                                | 16.03      |
| 50 thru 80   | 6                        | 4.58       | 8                                 | 6.11       |
| 80 thru 100  | 1                        | 0.76       | 1                                 | 0.76       |
| 100 thru 150 | 1                        | 0.76       | 1                                 | 0.76       |
| <b>Total</b> | <b>131</b>               | <b>100</b> | <b>129</b>                        | <b>100</b> |

**Table 6.5b Chi-square test of Distribution of Agricultural Land Ownership of Programme Households before Microcredit Programme Membership and Comparison Households at the Time of Survey**

| chi-square Tests             | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|-------|----|-----------------------|
| Pearson chi-square           | 0.62  | 5  | 0.9872                |
| Likelihood Ratio             | 0.62  | 5  | 0.9871                |
| Linear-by-Linear Association | 0.00  | 1  | 0.9824                |
| N of Valid Cases             | 260   |    |                       |

**Table 6.6a Subjective Poverty Status of Programme Households before Microcredit Programme Membership and Comparison Households at the time of Survey.**

| Poverty Status | Comparison Group Current |            | Programme Group Before Membership |            |
|----------------|--------------------------|------------|-----------------------------------|------------|
|                | Frequency                | Percent    | Frequency                         | Percent    |
| Poor           | 116                      | 88.55      | 115                               | 87.79      |
| Not Poor       | 15                       | 11.45      | 14                                | 10.69      |
| <b>Total</b>   | <b>131</b>               | <b>100</b> | <b>129</b>                        | <b>100</b> |

**Table 6.6a Chi-square Test of Subjective Poverty Status of Programme Households before Microcredit Programme Membership and Comparison Households at the time of Survey**

| chi-square Tests             | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|-------|----|-----------------------|
| Pearson chi-square           | 0.02  | 1  | 0.8783                |
| Continuity Correction        | 0     | 1  | 1.0000                |
| Likelihood Ratio             | 0.02  | 1  | 0.8783                |
| Fisher's Exact Test          |       |    |                       |
| Linear-by-Linear Association | 0.02  | 1  | 0.8786                |
| N of Valid Cases             | 260   |    |                       |



## **Chapter Seven: Analysis of Data: Impact of Microcredit on Income, Household Assets and Entitlement**

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### **7.1 Introduction**

In the previous chapter, we attempted in our research framework (section 6.2 of chapter six) to show that microcredit increases income and hence, consumption of borrowing households through improving their employment status and providing them the opportunity to start income generating activities. We also argued that microcredit helps to increase assets of borrowing households through increasing their income. Now, it is important for us to examine empirically whether microcredit increases income, consumption and assets of borrowing households. For this reason, in this chapter, we will assess the impact of microcredit on income, consumption and assets of borrowing households. In our analysis, we will compare income, consumption and assets of programme households with those of comparison households. If we find statistically significant higher income, consumption and assets of programme households compared to those of comparison households, then it would be possible for us to conclude that microcredit has a positive impact on income, consumption and assets of borrowing households. In our research framework (Chapter six) we have shown that entitlement is the positive function of household assets. If it is possible for us to establish that microcredit increases assets of borrowing households then it would also be possible for us to conclude that microcredit also increases entitlement of borrowing households.

Three income variables have been used for comparing income of programme households with that of comparison households. These three income variables are

yearly total agricultural income, yearly total non-agricultural income and yearly total income. Five consumption variables have also been used to assess the impact of microcredit on consumption of borrowing households. These five consumption variables are weekly total food consumption expenditure, monthly total fuel and cosmetics expenditure, yearly total educational expenditure, yearly total medical expenditure and yearly total non-food expenditure. Twelve variables have been used for comparing assets of programme households with those of comparison households. These variables are (1) total area of own agricultural land (current), (2) total area of agricultural land (including rented in and leased in land), (3) total value of productive assets<sup>59</sup>, (4) value of the dwelling house, (5) total amount of financial assets, (6) value of total household assets (4 plus value of household furniture, plus value of homestead land), (7) total amount of current business capital from own source, (8) total amount of current business capital (7 plus capital from external sources), (9) total assets (including land value), (10) total non-land assets, (11) total net worth (including land value), and (12) total net worth (excluding land value).

Three types of analyses will be conducted to assess the impact of microcredit on income, consumption and assets. These are descriptive analysis, test of null hypothesis and multi-variate analysis.

## **7.2 Main Statistical Techniques Used for Data Analysis**

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<sup>59</sup> total amount of productive assets include large farm animals, fruit gardens, machinery and equipment, fishing boat, engine and net, stocks etc.

Mean, percentage and ratios have been used in descriptive analyses to compare income, consumption and assets of programme households with those of comparison households.

For testing null hypotheses, independent samples t-test and analysis of variance (ANOVA) have been used. Non-parametric test,  $\chi^2$  – chi-square test, will also be carried out to compare comparison households with programme households.

Ordinary least square technique (OLS) has also been used to assess the impact of microcredit and also to control contribution of other important variables. Two linear regression models have been developed for each dependent variable. In the first model, the amount of current microcredit has been used in the right hand side of the model i.e. as an independent variable to represent microcredit. However, David and Meyer (1983) suggested that one should not use ‘present (i.e. current) loan’ as an independent variable in the model. They argue that “specifying credit as separate production input presents a conceptual problem, because loans are claims on resources and do not directly generate output; double counting of inputs occurs when credit is treated as a separate variable”. On the basis of this argument, the second model for each of the dependent variables (outcome variables) has also been designed. In the second model, a dummy variable (PGD) for programme as well as comparison households has been included instead of current amount of microcredit (PL) to represent microcredit. Along with the microcredit variable in each of the models, variables representing local and household characteristics, and variables representing other assets have also been included to control impacts of those variables on outcome variables i.e. income, consumption and asset variables. For both the

parametric and non-parametric tests, the minimum accepted level of significance has been chosen at 10% level.

### **7.3 Structure of Analyses**

Analyses of income, consumption and assets are carried out independently and structured in the following way:

1. Descriptive analysis: in this section means and distribution of variables will be discussed.
2. Test of hypotheses: in this section relevant null hypotheses will be tested and results of the test will also be discussed.
3. Regression analyses: in this section regression results will be presented and analyses of regression results will also be discussed here.
4. Discussion: in this section the results of descriptive analyses, test of hypotheses and regression analyses are going to be discussed.
5. Summary: in this section summary of descriptive, test of hypotheses, and regression results will be presented

Test of hypotheses section will be structured in the following way:

- a. Statement of the hypotheses: in this section the statement of the hypotheses will be presented.
- b. Test results: in this section the test results will be presented.

Regression analyses section will be structured in the following way:

- a. Presentation of the model: in this section OLS models will be presented and the relevance of including each independent variable will be discussed.
- b. Regression results: in this section results of regression analyses will be presented.

#### **7.4 Impact of Microcredit on Income**

Income is recognised as a critical variable for measuring the impact of microcredit services [Inserra, (1996)]. Income is considered as an indicator of financial security and welfare of the household. It provides resources for household consumption. It also provides a hint of future consumption ability of the household. Long term increase in income ensures entitlement to basic needs of households on a permanent basis and hence, improved quality of life. This means that long term increase in income of a household ensures resources for better education, health, shelter and food for the members of that household. If income of a household increases beyond a certain level, when that household has a surplus after meeting all expenses including repayment of all debts, then that increase in income also increases the asset base of that household as the surplus is used to purchase any asset or kept as savings, which is also an asset. Therefore, it is important to assess whether microcredit increases income of households. In this study, three income variables have been used for assessing the impact of microcredit on income. These are (1) yearly total agricultural income, (2) yearly total non-agricultural income, and (3) yearly total income. Income data were

collected on the basis of memory recall. At the time of calculating the 'yearly total agricultural income', money value of consumption from own production is also included at the rate of prevailing market price during the data collection period.

#### **7.4.1 Descriptive Analysis**

Table 7.1 shows the descriptive statistics of income variables. The average yearly total agricultural income of households shows that, on an average, programme households have about 118% higher yearly total agricultural income than that of comparison households. Yearly total agricultural income of programme households and comparison households are TK 13043.18 and TK 5744.69 respectively. Programme households have higher co-efficient of variability of agricultural income than that of comparison households. One reasonable explanation of the higher co-efficient of variability of yearly agricultural income among programme households is that programme households consist of very old programme households<sup>60</sup> as well as new programme households<sup>61</sup>. Old programme households have larger area of agricultural land and can borrow larger amount of money from the microcredit programme. As a result, older programme households have higher agricultural production and income. On the other hand, new programme members have comparatively smaller area of agricultural land and have access to smaller amount of microcredit. These new borrowers have comparatively smaller agricultural production as well as smaller agricultural income. Difference in agricultural income of old programme households and new programme households results in higher co-efficient of variability of agricultural income among programme households.

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<sup>60</sup> More than 8 years in the programme

The average yearly total non-agricultural income<sup>62</sup> of households shows that programme households have 16% higher yearly total non-agricultural income than that of comparison households. The average yearly total non-agricultural income of programme households is Taka<sup>63</sup> 30559. On the other hand, the average yearly total non-agricultural income of comparison households is Taka 26137. Like the agricultural income, programme households have higher co-efficient of variability (1.55) of non-agricultural income compared to that of comparison households (0.94).

The yearly total agricultural income and the yearly total non-agricultural income are added to calculate total household income. Table 7.1 shows that programme households have 36% higher average yearly total income compared to that of comparison households. The average yearly total income of programme households and comparison households are Taka 43601 and Tk. 31882 respectively. The co-efficient of variability of yearly total income of programme households, like in yearly total agricultural income and yearly total non-agricultural income, is higher than the co-efficient of variability of yearly total income of comparison households. The co-efficient of variability of yearly total income of programme households and comparison households are 1.18 and 0.77 respectively.

#### **7.4.2 Test of hypotheses**

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<sup>61</sup> Less than one year, who have received more than one loan.

<sup>62</sup> All incomes other than the agricultural income are included in 'others income'.

<sup>63</sup> Taka is the currency of Bangladesh. The current (June 2000) exchange rate of Taka and British Pound is one British Pound equals to Eighty Bangladesh Taka.

In this section null-hypotheses on income will be tested. Independent-samples t-test and Leven's test for equality of variances have been conducted to test these hypotheses.

**a. Statement of Hypotheses:**

There are no significant differences between programme households and comparison households in terms of following:

1. The average yearly agricultural income
2. The average yearly non-agricultural income
3. The average yearly total income.

**b. Test Results:**

Table 7.2 shows results of the test of null hypotheses on income. The table shows that two out of three hypotheses have been rejected by the t-test results. The t-test results reject null hypotheses on yearly total agricultural income (significant at 1% level) and yearly total income (significant at 5% level). The t-test result does not reject the null hypothesis on yearly total non-agricultural income. These mean that programme households and comparison households are significantly different in terms of yearly total agricultural income and yearly total household income, but not significantly different in terms of yearly total non-agricultural income.

**7.4.3 Regression Analysis**



In this section, we will present regression models constructed, on the basis of the empirical model and estimation strategy discussed in section 6.3 of chapter six, to assess the extent of the impact of microcredit on two income variables and to control the impact of other important variables. Two sets of regression models have been constructed for two income variables, yearly total agricultural income and yearly total household income. In the first set, current amount of microcredit (PL) has been included in each of the models as an independent variable to represent microcredit. In the second set, following the suggestion by David and Meyer (1983) about not using current amount of loan as an independent variable in the model (explained above<sup>64</sup>), a dummy variable for programme as well as comparison households has been incorporated as an independent variable in each of the models to represent microcredit. Regression analysis for the yearly total non-agricultural income variable has not been attempted because the earlier t-test for yearly total non-agricultural income has shown insignificant result.

#### a. Presentation of the Regression Models

The first set of the two linear regression models for two dependent income variables are given below:

$$IA_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_o) \quad (\text{equation 7.1})$$

$$IT_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_o) \quad (\text{equation 7.2})$$

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<sup>64</sup> In section 7.02 of this chapter, we mentioned the argument of David and Meyer (1983) in this regard.

The second set of the two linear regression models for two dependent income variables are given below:

$$IA_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_o) \quad (\text{equation 7.3})$$

$$IT_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_o) \quad (\text{equation 7.4})$$

where,  $IA_{ij}$  is 'yearly total agricultural income of households' of household  $i$  (1,2,...260) in village  $j$  (1,2,...15),  $IT_{ij}$  is 'yearly total income of households',  $H_{mij}$  are 'household characteristics'  $m$  (1, 2, ..., 11),  $L_i$  is 'total area of agricultural land',  $P_i$  is 'total value of productive assets',  $PL_i$  is 'current amount of microcredit',  $PGD_i$  is a dummy variable for programme and comparison households ('1' if the household represents the programme group and '0' if the household represents the comparison group),  $LC_{nj}$  are 'local characteristics'  $n$  (1, 2, ..., 5) of village  $j$ , and  $U_a$  represents 'error term' of the model.

Household characteristics ( $H_{mij}$ ) include, total number of household male members between 15 to 60 years old, square of total number of household male members between 15 to 60 years old, total household members except male 15-60, square of total household members except male 15-60, age of the household head, square of age of the household head, average education score of household members, a dummy variable for household head's occupation (Agriculture), and a dummy variable for household head's occupation (Business). Local characteristics ( $LC_{nj}$ ) include, a dummy variable for the existence of a school in the village ('1' for existence and '0' for no existence), distance of the nearest market, distance of the nearest metal road,

distance of the district headquarter, and distance of the capital city from the household.

## **b. Regression Results**

The results of the first set of regression models are presented in Table 7.3. The table shows that microcredit variable ‘current amount of microcredit (PL)’ is significant in one out of two models. Current amount of microcredit (PL) significantly increases yearly total agricultural income (regression model 7.1) of borrowing households. But current amount of microcredit does not increase yearly total household income significantly.

The results of the regression model 7.1 show that one Taka increase in the current amount of microcredit loan (PL) increases the yearly total agricultural income by 20% (Table 7.3). This result is significant at 5% level. On the other hand, results of the regression model 7.2 also show that current amount of microcredit (PL) increases yearly total income of households by 11%, but the coefficient of PL is not statistically significant.

Table 7.3 also presents the results of the second set of regression models. The table shows that microcredit variable PGD is significant in one out of two models. The coefficient of PGD is statistically significant (at 5% level) in the model on yearly total agricultural income (regression equation 7.3), but not significant in the model on yearly total household income (equation 7.4).

The results of the regression equation 7.3 in table 7.3 show that participation in the microcredit programme increases yearly total agricultural income of a household by TK 3923.07 and the coefficient of PGD is significant at 5% level. In the second regression equation (7.4) of the second set, the coefficient of PGD is 544.44 and the sign of the coefficient is positive. These mean that participation in the microcredit programme increases yearly total income of households by approximately TK 544. But the coefficient is not statistically significant at the acceptable level (10%).

#### **7.4.4 Discussion of Results**

At the beginning of section 7.4 of this chapter, we argued that income is one of the most important socio-economic factors behind a household's well being. In the previous three sections (section 7.4.1, 7.4.2 and 7.4.3), we tried to assess the impact of microcredit on income of borrowing households through descriptive analyses, test of hypotheses and linear regression technique.

In the descriptive analysis section, we have found that programme households have better status in terms of all of three income variables. Programme households have 118% higher yearly total agricultural income, 16% higher yearly total non-agricultural income and 36% higher yearly total income (includes agricultural as well as non-agricultural income) compared to those of comparison households. The descriptive analyses shows that microcredit has higher impact on agricultural income of borrowing households compared to non-agricultural income.

In test of hypotheses section, we have found that programme households are significantly different from comparison households in terms of yearly total agricultural income and yearly total income. Higher averages for programme households and the rejection of null hypotheses indicate that programme households have significantly higher yearly total agricultural income and yearly total income compared to those of comparison households. But the average yearly total non-agricultural income of programme households is not significantly higher compared to that of comparison households.

Regression results of both sets of regression equations show that microcredit is a significant positive determinant of yearly total agricultural income of households. Current amount of microcredit increases yearly total agricultural income by 20% and participation in the microcredit programme increases yearly total agricultural income of households by TK 3923. Microcredit has been identified as a positive, but not statistically significant, determinant of yearly total income of households.

Therefore, all three analyses show that microcredit has significant positive impact on yearly total agricultural income of borrowing households. This result indicates that microcredit borrowers are significantly investing their microcredit in farm activities. The increased area of agricultural land (evidence in section 7.6 of this chapter) gives microcredit borrowers the opportunity to produce more agricultural commodity and hence, to increase their income. Microcredit has also positive impact on yearly total non-agricultural income as well as yearly total income of borrowing households. Although these impacts are not statistically significant, they provide an indication that

microcredit borrowers might be able to increase their non-farm income significantly in future through diversifying their investment from farm to non-farm activities.

#### **7.4.5. Summary of Results**

The assessment of the impact of microcredit on income of borrowing households indicates following results:

- programme households have 118% higher agricultural income compared to that of comparison households,
- programme households have 16% higher yearly total non-agricultural income compared to that of comparison households,
- programme households have 36% higher yearly total income compared to that of comparison households,
- programme households are significantly better off than comparison households in terms of yearly total agricultural income and total yearly total income,
- microcredit has a significant positive impact on yearly total agricultural income of borrowing households.

### **7.5 Impact of Microcredit on Consumption and Expenditure**

In the previous section, we have established that microcredit increases income of borrowing households. Income provides resources for consumption. Increased income should also cause consumption to increase. It is important to examine whether microcredit increases consumption expenditure of borrowing households. In this

section, we are going to assess the impact of microcredit on consumption expenditure of borrowing households through comparison of means, test of hypotheses and linear regression technique. A comparison between programme households and comparison households has been conducted to assess the extent of the impact of microcredit on consumption of borrowing households. In development literature, consumption is considered as a very good proxy for income of households. It is much easier for researchers to collect consumption data than income data. In the case of weekly total food expenditure, all households in both samples, i.e. programme and comparison groups, were asked to provide detailed information on all items consumed during the last week immediately before the date of the survey. Consumption from own production has been valued according to the prevailing market prices during the data collection period and then included in the calculation of weekly total food consumption expenditure. Five consumption variables have been used in this study to determine the impact of microcredit on consumption. These variables are (1) weekly total food consumption expenditure, (2) monthly total fuel and cosmetics expenditure, (3) yearly total educational expenditure, (4) yearly total medical expenditure, (5) yearly total non-food expenditure.

### **7.5.1 Descriptive Analysis**

Table 7.4 shows that programme households have higher average values for all of five consumption and expenditure variables. The average weekly total food consumption expenditure of programme households and comparison households are TK 858.58 and TK 588.85 respectively. The average weekly total food consumption expenditure of programme households is about 46% higher than that of comparison households. The

co-efficient of variability of weekly total food consumption expenditure of programme households and comparison households are 0.57 and 0.46 respectively.

It is evident from table 7.4 that the average monthly total fuel and cosmetics expenditure of programme households is higher than that of comparison households. The average monthly total fuel and cosmetics expenditure of programme households is Taka 343.29, which is 28% percent higher compared to that of comparison households. The average monthly total fuel and cosmetics expenditure of comparison households is Taka 269.15. The co-efficient of variability of monthly total fuel and cosmetics expenditure of programme households and comparison households are 0.55 and 0.52 respectively.

Table 7.4 exhibits that the average yearly total educational expenditure of programme households is 135% higher than that of comparison households. The average yearly total educational expenditure of programme households and comparison households are Taka 1669.30 and Taka 711.53 respectively. The co-efficient of variability of yearly total educational expenditure of programme and comparison households are 1.72 and 1.57 respectively.

The average yearly total medical expenditure of programme households is Taka 1334.56 (Table 7.4), which is 54% higher than that of comparison households. On the other hand, the average yearly total medical expenditure of comparison households is Taka 946.85. Programme households have lower co-efficient of variability (0.93) of yearly total medical expenditure than that of comparison households (1.02).



Table 7.4 portrays that the average yearly total non-food expenditure of programme households is TK 16101.50 and it is TK 10316 for comparison households. The average yearly total non-food expenditure of programme households is 56% higher than that of comparison households. The co-efficient of variability of yearly total non-food expenditure of programme households and comparison households are 1.37 and 1.73 respectively.

### **7.5.2 Test of hypotheses**

In this section, null hypotheses on consumption and expenditure variables will be tested. Independent t-tests and Leven's test for equality of variances have been conducted to test null hypotheses.

#### **a. Statement of Hypotheses**

There are no significant differences between programme households and comparison households in terms of following:

1. average weekly total food consumption expenditure,
2. average monthly total fuel and cosmetics expenditure,
3. average yearly total educational expenditure,
4. average yearly total medical expenditure, and
5. average yearly total non-food expenditure.

#### **b. Test Results:**

Results of the test of null hypotheses on consumption and expenditure are summarised in table 7.5. As we can observe from the table, all hypotheses were successfully rejected by the test. The rejection of null hypotheses and higher averages of the relevant variables for programme households indicate that programme households have significantly higher weekly total food consumption expenditure, monthly total fuel and cosmetics expenditure, yearly total educational expenditure, yearly total medical expenditure, and yearly total non-food expenditure compared to those of comparison households.

### **7.5.3 Regression Analysis**

In this section, the linear regression technique has been used to assess the impact of microcredit on different consumption and expenditure variables. Five dependent consumption and expenditure variables have been selected for the regression analysis. These variables are (1) weekly total food consumption expenditure, (2) monthly total fuel and cosmetics expenditure, (3) yearly total educational expenditure, (4) yearly total medical expenditure, (5) yearly total non-food expenditure. Like the previous regression analyses, two sets of regression models have been developed to assess the impact of microcredit on consumption and expenditure and to control for other important determinants of consumption and expenditure. In the first set of regression models, the current amount microcredit (PL) has been used as an independent variable to represent microcredit. Keeping in mind the suggestion of David and Meyer (1983) (discussed above in section 7.2 of this chapter), in the second set, a dummy variable for programme as well as comparison households (PGD) has been included as an

independent variable instead of current amount of microcredit (PL) to represent microcredit.

**a. Presentation of the Regression Model**

The first set of linear regression equations:

$$CFW_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_o) \quad \text{(equation 7.5)}$$

$$COM_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_o) \quad \text{(equation 7.6)}$$

$$CEY_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_o) \quad \text{(equation 7.7)}$$

$$CMY_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_o) \quad \text{(equation 7.8)}$$

$$CTY_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_o) \quad \text{(equation 7.9)}$$

The second set of linear regression equations on consumption variables:

$$CFW_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_o) \quad \text{(equation 7.10)}$$

$$COM_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_o) \quad \text{(equation 7.11)}$$

$$CEY_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_o) \quad \text{(equation 7.12)}$$

$$CMY_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_o) \quad \text{(equation 7.13)}$$

$$CTY_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_o) \quad \text{(equation 7.14)}$$

where,  $CFW_{ij}$  is ‘weekly total food consumption expenditure’ of household  $i$  ( $1,2,\dots,260$ ) in village  $j$  ( $1,2,\dots,15$ ),  $COM_{ij}$  is ‘monthly total fuel and cosmetics expenditure’,  $CEY_{ij}$  is ‘yearly total educational expenditure’,  $CMY_{ij}$  is ‘yearly total medical expenditure’,  $CTY_{ij}$  is ‘yearly total non-food expenditure’,  $H_{mij}$  are

'household characteristics'  $m$  (1, 2, ..., 11) of household  $i$  in village  $j$ ,  $L_i$  is 'total area of household agricultural land',  $P_i$  is 'total value of productive assets',  $PL_i$  is 'total current amount of microcredit',  $PGD_i$  is a dummy variable for programme as well as comparison group households ('1' if the household represents the programme group and '0' if the household represents the comparison group),  $LC_{nj}$ , are 'local characteristics'  $n$  (1, 2, ..., 5) of village  $j$ , and  $U_a$  represents the 'error term' of the model.

Household characteristics ( $H_{mij}$ ) include, total number of household male members between 15 to 60 years old, square of total number of household male members between 15 to 60 years old, total household members except male 15-60, square of total household members except male 15-60, age of the household head, square of age of the household head, average education score of household members, a dummy variable for household head's occupation (Agriculture), and a dummy variable for household head's occupation (Business). Local characteristics ( $LC_{nj}$ ) include, a dummy variable for the existence of a school in the village ('1' for existence and '0' for no existence), distance of the nearest market, distance of the nearest metal road, distance of the district headquarter, and distance of the capital city from the household.

## **b. Regression Results**

The results of the first set of regression models (equations 7.5 to 7.9) are summarised in table 7.6. The table shows that microcredit variable 'current amount of microcredit' ( $PL$ ) is statistically significant in four out of five regression models. Current amount

of microcredit significantly increases weekly total food consumption expenditure, yearly total educational expenditure, yearly total medical expenditure and yearly total non-food expenditure. Current amount of microcredit also increases monthly total fuel and cosmetics expenditure but not significantly, because coefficient is not significant at the acceptable level (10%).

In regression model 7.5, the co-efficient of current amount of microcredit (PL) is 0.0036 and the sign is positive. These results mean that the current amount of microcredit increases yearly food consumption expenditure by 18%. The coefficient of PL is significant at 10% level.

The results of the regression model 7.6 demonstrate that the co-efficient of the current amount of microcredit (PL) is 0.0006 and the sign of the coefficient is positive. These results of this model explain that microcredit increases 'monthly total fuel and cosmetics expenditure. But the coefficient of PL is not statistically significant.

The co-efficient of the microcredit variable (PL) in the regression model 7.7 is 0.0278 and the coefficient is significant at 5% level. The sign of the co-efficient is 'positive', which means that the current amount of microcredit (PL) significantly increases yearly total educational expenditure of households ( $C_{ey}$ ).

The results of the regression model 7.8 indicate that current amount of microcredit (PL) significantly influences 'yearly total medical expenditure'. The coefficient of the model is 0.0455 and significant at 1% level. These results reveal that microcredit increases household's capability to spend more on medicine and health purposes.

The co-efficient of current amount of microcredit (PL) in regression model 7.9 is 0.241 and has a positive sign. The co-efficient of PL and sign of the coefficient explain that one Taka increase in the current amount of microcredit increases 'yearly total non-food expenditure' at a rate of Taka 0.241. The co-efficient of the variable (PL) is significant at 5% level.

The regression results of the second set (equations 7.10 to 7.14) of regression equations are also presented in table 7.6. The table shows that the coefficient of the microcredit variable PGD (a dummy variable for programme as well as comparison households) is significant in three out of five regression models. Participation in the microcredit programme significantly increases weekly total food expenditure, yearly total educational expenditure, and yearly total medical expenditure. In other regression models, the coefficient of PGD is positive but not statistically significant i.e. participation in the microcredit programme increases also monthly total fuel and cosmetics expenditure, and yearly total non-food expenditure, but not significantly.

In the first regression model (7.10) of the second set, the coefficient of the microcredit variable PGD is 70.1146 (TK) and the coefficient is significant at 10% level. The sign of the coefficient is positive i.e. participation in the microcredit programme increases weekly total food consumption expenditure of households.

The coefficient of PGD in regression equation 7.11 is 18.911 and the sign is positive, which mean that participation in the microcredit programme increases 'monthly total

fuel and cosmetics expenditure ( $C_{oy}$ )' of borrowing households by Taka 9.3459. But the co-efficient is not significant at the acceptable level i.e. 10%.

The results of the regression model 7.12 indicate that microcredit programme membership of a household increases yearly household educational expenses by Tk 380.7968. The coefficient is significant at 10% level.

The results of the regression model 7.13 show that participation in the microcredit programme increases yearly total medical expenditure of a household by TK 364.6819. The coefficient of PGD is significant at 5% level, which means that microcredit programme participation increases yearly total medical expenditure of borrowing households significantly.

The results of the last regression model (7.14) reveal that microcredit has positive impact on 'yearly total non-food expenditure'. The coefficient is 2757.3004 (TK) and the sign is positive. These results demonstrate that participation in the microcredit programme increases yearly total non-food expenditure by approximately Taka 2757. But the coefficient of PGD is not significant within the acceptable level (10%).

Finally, we can see from the results of both sets of regression equations that, over all, microcredit has significant positive impact on three consumption variables, weekly total food consumption expenditure, yearly total educational expenditure, and yearly total medical expenditure. Microcredit does not have significant impact on monthly total fuel and cosmetics expenditure. The contradictory result in case of yearly total non-food expenditure (significant in the first set, but not significant in the second set)

is being caused by the wide variation of expenses among programme households. Among programme households, some households are participating in the microcredit programme for more than eight years and some are for less than two years. It is natural that more than eight years members should have higher level of expenditure compared to those with less than two years membership. This variation among programme members might have caused this contradictory result.

#### **7.5.4 Discussion of Results**

It is argued that an increase in income also increases consumption of households. In section 7.4, we have found that microcredit increases income of borrowing households. So, microcredit should have also increased consumption of borrowing households. In our research framework, we have mentioned that microcredit increases consumption of borrowing households through enhancing their entitlements i.e., capabilities. For these reasons in the previous three sections (7.5.1, 7.5.2 and 7.5.3), we have tried to assess the impact of microcredit on consumption of borrowing households.

The results of descriptive analyses show that programme households have 46% higher weekly total food expenditure, 28% higher monthly total fuel and cosmetics expenditure, 135% higher yearly total educational expenditure, 54% higher yearly total medical expenditure and 56% higher yearly total non-food expenditure compared to those of comparison households. Descriptive results show that microcredit has the highest impact on yearly total educational expenditure of borrowing households.



The results of the test of null hypotheses show that all null hypotheses have been rejected i.e. programme households are significantly different from comparison households in terms of weekly total food expenditure, monthly total fuel and cosmetics expenditure, yearly total educational expenditure, yearly total medical expenditure and yearly total non-food expenditure. The higher averages for programme households and the rejection of null hypotheses indicate that programme households have significantly better status in terms of the above mentioned consumption indicators compared to those of comparison households.

The results of linear regression analyses indicate that microcredit has significant positive impact on weekly total food consumption expenditure, yearly total educational expenditure, and yearly total medical expenditure of borrowing households. Current amount of microcredit increases total food consumption expenditure at a rate of 18% per annum and participation in the microcredit programme increases total food consumption expenditure by approximately TK 91 per week. In the same way, current amount of microcredit increases yearly total educational expenditure by approximately 3% and participation in the microcredit programme increases yearly total educational expenditure by approximately TK 381. Current amount of microcredit increases total medical expenditure by approximately 5% per annum and participation in the microcredit programme increases yearly total medical expenditure by approximately TK 365. Microcredit has also positive impact, but not significantly, on other variables related to consumption, e.g. monthly total fuel and cosmetics expenditure, and yearly total non-food expenditure.

From the analyses in the previous three sections, we found that programme households are spending more on education, health and food compared to those of comparison households. These indicate better fulfilment of basic needs of programme households. At the beginning of the section 7.5, it has been argued that long-term increase in income ensure better food, medicine and education for members of a household. Thus, better fulfilment of basic needs indicates indirectly long-term increase in income of microcredit programme households.

### **7.5.5 Summary of Results**

The assessment of the impact of microcredit on consumption of borrowing households indicate following results:

- programme households have 46% higher weekly total food expenditure compared to that of comparison households,
- programme households have 28% higher monthly total fuel and cosmetics expenditure compared to that of comparison households,
- programme households have 135% higher yearly total educational expenditure compared to that of comparison households,
- programme households have 54% yearly total medical expenditure compared to that of comparison households,
- programme households have 56% higher yearly total non-food expenditure compared to that of comparison households,
- programme households are significantly different from comparison households in terms of weekly total food expenditure, monthly total fuel and cosmetics

expenditure, yearly total educational expenditure, yearly total medical expenditure and yearly total non-food expenditure.

- microcredit has a significant positive impact on weekly total food consumption expenditure, yearly total educational expenditure, and yearly total medical expenditure of borrowing households.

## **7.6 Impact of Microcredit on Assets**

Assets are sometimes considered as a useful alternative measure of income of households. It is assumed that income is used to purchase assets, therefore information on assets of a household can provide a picture of income level of that household [Inserra, (1996)]. Apart from providing a picture on income, assets hold the capacity to generate a stream of income [Little, (1997)] and hence, to reproduce assets. It also enhances capabilities of borrowing households to tackle socio-economic shocks. The accumulation of assets allows households to maintain the same consumption level of good periods during crises, which means, it helps households to smooth their consumption and expenditure during crises [Morduch (1995); Ruggles and Williams (1989)]. Assets have several types of welfare effects. It improves household stability, creates an orientation toward the future, provides a foundation for risk taking, and increases personal efficacy, social influences and political participation of household members [Sherraden (1991)]. These indicate that it is very important for a household to increase its assets base. Therefore, it is necessary to assess whether microcredit increases assets of borrowing households. In our theoretical research framework in chapter six, we argued that microcredit increases assets of borrowing households through increasing their income. In this section, we

are going to examine this theoretical argument on the basis of available data on assets of programme households and comparison households. For this, a comparison between programme households and comparison households has been conducted. Twelve variables have been used to analyse the impact of microcredit on household assets. These variables are (1) total area of own agricultural land (current), (2) total area of agricultural land (including rented in and leased in land), (3) total value of productive assets<sup>65</sup>, (4) value of the dwelling house, (5) total amount of financial assets, (6) value of total household assets (4 plus value of household furniture, plus value of homestead land), (7) total business capital from own source, (8) total business capital (7 plus capital from external sources), (9) total assets (including land value), (10) total non-land assets, (11) total net worth (including land value), and (12) total net worth (excluding land value).

### **7.6.1 Descriptive Analysis**

Table 7.7 shows that the average total area of own agricultural land of programme households is 32% higher than that of comparison households. The average total area of own agricultural land of programme households and comparison households are 18.62 and 14.11 decimals respectively.

Programme households on an average have 43% higher total area of agricultural land, which includes own agricultural land as well as rented in and leased in agricultural land, than that of comparison households. The average total area of agricultural land

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<sup>65</sup> total amount of productive assets include large farm animals, fruit gardens, machinery and equipment, fishing boat, engine and net, stocks etc.

of programme households and comparison households are 50.88 decimals and 35.40 decimals respectively.

The average total value of productive assets<sup>66</sup> of programme households and comparison households are Taka 37,724 and Taka 15,742 respectively. Programme households have 140% higher productive assets than that of comparison households.

The average value of the dwelling house of programme households is Taka 36,298, which is 65% higher than that of comparison households. The average value of the dwelling house of comparison households is Taka 21,950.

In case of total financial assets<sup>67</sup>, programme households have 183% higher average total financial assets than that of comparison households. The average total financial assets of programme households are Taka 12,730 and Taka 4,502 respectively.

Table 7.7 shows that programme households have approximately 15% higher average value of total household assets compared to that of comparison households. The average value of total household assets of programme and comparison households are TK 135676.74 and TK 118079.39 respectively.

Programme households have higher average total business capital from own source than that of comparison households. The average total business capital from own source of programme households and comparison households are Taka 21800 and

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<sup>66</sup> Productive Assets include farm animals, machinery and equipment, gardens etc.

<sup>67</sup> Financial Assets include savings, life insurance policy, jewellery, loan to others etc.

Taka 14087 respectively. The average total business capital from own source of programme households is 55% higher than that of comparison households.

The average total business capital, which includes business capital from own source as well as external sources, of programme households is 75% higher than the average total business capital of comparison households. The average total business capital of programme households and comparison households are Taka 29665 and Taka 16977 respectively.

Table 7.7 shows that the average total assets of programme households is 28% higher compared to that of comparison households. The average total assets of programme and comparison households are TK. 271332.29 and 211223.89 respectively. Since the price of land in the survey area varies according to location, the inclusion of land value in calculating total assets of households may not necessarily reflect the true economic status of households. Therefore, the study has also calculated the total value of non-land assets of households. The average total non-land assets of programme households is TK. 96204.38, which is 99% higher than that of comparison households. The average total non-land assets of comparison households is TK. 48320.08.

The average net worth of programme households is about 26% higher than the average net worth of comparison households. The net worth of a household is calculated through deduction of total liabilities from total assets of the respective household. The net worth of a household shows its debt repayment capacity. The average net worth of programme and comparison households are TK. 259881.09 and

206973.59 respectively. The average net worth of households excluding land value of programme households is also higher (approximately 91%) for programme households compared to that of comparison households. The average net worth of households excluding land value of programme and comparison households are Taka. 84753.18 and Taka 44069.78 respectively.

Table 7.10 shows the distribution of assets of programme households by membership duration. The table indicates that assets of programme households increase with the increase in membership duration. Table 7.11 shows the distribution of assets of programme households by current amount of microcredit. The table demonstrates that assets of programme households increase with the increase in the current amount of microcredit. This means that an increase in current amount of microcredit increases ability of programme households to acquire more assets. The results of these two tables indicate that gradually microcredit increases the asset base of borrowing households.

## **7.6.2 Test of Hypotheses**

In this section, we will test twelve hypotheses on assets to assess the impact of microcredit on assets of borrowing households.

### **a. Statement of Hypotheses**

There are no significant differences between programme households and comparison households in terms of following:

1. Total area of present own Agricultural land;
2. Total area of agricultural land (including rented in and leased in land);
3. Total value of productive assets;
4. Value of the dwelling house;
5. Total amount of financial assets;
6. Value of total household assets;
7. Total business capital from own source;
8. Total business capital (including capital from external sources);
9. Total household assets (including land value);
10. Total non-land assets;
11. Total net worth (including land value);
12. Total net worth (excluding land value).

#### **b. Test Results**

The results of test of hypotheses are presented in table 7.8. Table 7.8 shows that the t-test results reject ten out of twelve null hypotheses. The t-test results reject null hypotheses on total area of agricultural land (which includes own land as well as rented in and leased in land), total value of productive assets, total amount of financial assets, value of the dwelling house, total business capital from own source, total business capital (which includes business capital from own source as well as external



sources), total assets, total non-land assets, total net worth and total net worth excluding land value. The rejection of null hypotheses on these assets and higher averages of assets of programme households in table 7.7 indicate that programme households have significantly higher assets than those of comparison households. The t-test results do not reject null hypotheses on total area of own agricultural land and value of total household assets<sup>68</sup>, i.e. programme households are not significantly different from comparison households from the perspective of total own agricultural land and total household assets. These results most probably can be explained by non-availability of land for purchase and wide differences in land prices in the survey area.

### 7.6.3 Regression Analysis

In this section, the linear regression technique has been used to assess the impact of microcredit on assets. Ten dependent variables have been selected to determine the impact of microcredit on assets. These variables are:

- (1) Total area of own agricultural land;
- (2) Total area of agricultural land (includes own land as well as rent in and lease in land);
- (3) Total value of productive assets;
- (4) Value of the dwelling house;
- (5) Total amount of financial assets;
- (6) Value of total household assets;
- (7) Total business capital from own source;

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<sup>68</sup> Household Assets include value of dwelling houses, value of homestead land, furniture, kitchen

- (8) Total business capital (own business capital as well business capital from external sources);
- (9) Total household assets (including land value);
- (10) Total non-land household assets.

Two sets of regression models for these variables have been developed for analyses. In the first set, current amount of microcredit (PL) has been used as an independent variable to represent microcredit. In the second set, a dummy variable for programme households (PGD) has been included instead of current amount of microcredit (PL) to represent microcredit following the suggestion of David and Meyer (1983)<sup>69</sup>.

#### a. Presentation of the Regression Model

The first set of regression models is presented below:

$$ALO_{ij} = f(H_{mij}, LBM_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.14)}$$

$$ALT_{ij} = f(H_{mij}, LBM_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.15)}$$

$$APA_{ij} = f(H_{mij}, LBM_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.16)}$$

$$ADH_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.17)}$$

$$AFA_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.19)}$$

$$AHA_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.20)}$$

$$ABO_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.21)}$$

$$ABT_{ij} = f(H_{mij}, L_i, P_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.21)}$$

$$ATEL_{ij} = f(H_{mij}, LBM_i, PL_i, LC_{nj}, U_{ij}) \quad \text{(equation 7.22)}$$

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utensils etc.

$$ATIL_{ij} = f(H_{mij}, LBM_i, PL_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.23})$$

The Second set of regression equations:

$$ALO_{ij} = f(H_{mij}, LBM_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.24})$$

$$ALT_{ij} = f(H_{mij}, LBM_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.25})$$

$$APA_{ij} = f(H_{mij}, LBM_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.26})$$

$$ADH_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.27})$$

$$AFA_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.29})$$

$$AHA_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.30})$$

$$ABO_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.31})$$

$$ABT_{ij} = f(H_{mij}, L_i, P_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.31})$$

$$ATEL_{ij} = f(H_{mij}, LBM_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.32})$$

$$ATIL_{ij} = f(H_{mij}, LBM_i, PGD_i, LC_{nj}, U_{ij}) \quad (\text{equation 7.33})$$

where  $ALO_{ij}$  is total area of own agricultural land of household  $i$  (1,2,...260) in village  $j$  (1,2,...15),  $ALT_{ij}$  is total area of agricultural land (includes own land as well as rented in and leased in land),  $APA_{ij}$  is total value of productive assets,  $ADH_{ij}$  is value of the dwelling house,  $AFA_{ij}$  is total amount of financial assets,  $AHA_{ij}$  is value of total household assets,  $ABO_{ij}$  is total business capital from own source,  $ABT_{ij}$  is total business capital (own business capital as well business capital from external sources),  $ATEL_{ij}$  is total assets (including land value),  $ATIL_{ij}$  is total non-land assets,  $H_{mij}$  are 'household characteristics'  $m$  (1, 2, ..., 11) of household  $i$  in village  $j$ ,  $LBM_i$  is total area of own agricultural land before membership,  $L_i$  is 'current total area of household agricultural land',  $P_i$  is 'value of total productive assets',  $PL_i$  is 'current

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<sup>69</sup> Discussed in section 7.02 of this chapter.

amount of microcredit',  $PGD_i$  is a dummy variable for programme as well as comparison households ('1' if the household represents the programme group and '0' if the household represents the comparison group),  $LC_{nj}$ , are 'local characteristics'  $n$  (1, 2, ..., 5) of village  $j$ , and  $U_{ij}$  represents 'error term' of the model.

Household characteristics ( $H_{mij}$ ) include, total number of household male members between 15 to 60 years old, square of total number of household male members between 15 to 60 years old, total household members except male 15-60, square of total household members except male 15-60, age of the household head, square of age of the household head, average education score of household members, a dummy variable for household head's occupation (Agriculture), and a dummy variable for household head's occupation (Business). Local characteristics ( $LC_{nj}$ ) include, a dummy variable for the existence of a school in the village ('1' for existence and '0' for no existence), distance of the nearest market, distance of the nearest metal road, distance of the district headquarter, and distance of the capital city from the household.

## **b. Regression Results**

Table 7.9 shows econometric results of the first set of regression equations. In the first set of equations, the current amount of microcredit (PL) has been used as an independent variable to represent microcredit. The co-efficient of PL measures the impact of microcredit on different assets of borrowing households. In the first set of equations, microcredit variable PL is significant in regression equations on total area of agricultural land (including rented in and leased in land), value of total productive

assets, value of the dwelling house, total amount of financial assets, value of total household assets, total business capital from own source, total business capital (own as well as external sources), total assets and total non-land assets. Although microcredit variable PL is not significant in equation on current total area of own agricultural land, the co-efficient of PL in this equation has positive sign, i.e. the total area of own agricultural land increases with the increase in the current amount of microcredit but not significantly.

The co-efficient of PL (current amount of microcredit) in the regression model 7.14 is 0.0001; i.e. microcredit of TK 10000 is required to increase total area of agricultural land of a borrowing household by 1 decimal. Although the coefficient is positive, it is not statistically significant at the acceptable level (10%) (table 7.9).

The results of the regression model 7.15 show that the co-efficient of PL is 0.0005 and it is positive (table 7.9). The co-efficient of PL indicates that Taka 2000 increase in current amount of microcredit increases total area of agricultural land by 1 decimal and the coefficient is statistically significant at 10% level. Total area of agricultural land includes total area of own agricultural land as well as total area of rented in and leased in agricultural land.

In the regression model 7.16, the co-efficient of PL is 1.3832 and the co-efficient shows a positive sign (Table 7.9). These results mean that one Taka increase in current amount of microcredit increases total value of productive assets by Taka 1.3832. The co-efficient is significant at 1% level.

The co-efficient of PL in the regression model 7.17 is 0.9996 and the co-efficient is significant at 1% level (table 7.9). The sign of the coefficient is positive. These results indicate that microcredit increases value of the dwelling house by approximately 100%.

The results of the regression model 7.18 indicate that current amount of microcredit increases total amount of financial assets by approximately 32%. The coefficient of PL is 0.3206 and the sign is positive (Table 7.9). The coefficient is significant at 1% level.

It is evident from the results of the regression equation 7.19 that microcredit increases total value of household assets of borrowing households. The coefficient of PL (current amount of microcredit) is 1.7008 and it is significant at 10% level (Table 7.9).

In the regression model 7.20, the results show that the co-efficient of 'current amount of microcredit (PL)' is 0.3949 i.e. one Taka increase in the 'current amount of microcredit (PL)' increases total business capital from own source by approximately 40%. The sign of the co-efficient is positive and it is significant at 5% level (table 7.9).

The coefficient of PL (current amount of microcredit) in regression equation 7.21 is 0.4589 and the sign is positive (table 7.9). These mean that one Taka increase in the 'current amount of microcredit (PL)' increases 'total business capital' by 46%, and

the coefficient is significant at 5% level. The dependent variable total business capital includes capital from own as well as external sources.

Microcredit has positive impact on total assets of borrowing households. The coefficient of microcredit variable PL (current amount of microcredit) is significant in both regression models on total assets in the first set of equations (Table 7.9). In the first (equation no 7.22) of two equations, total assets including land value is considered as the dependent variable. In the second equation (7.23), total assets excluding land value is considered as the dependent variable. In equation 7.22, the coefficient of PL is 5.4223 and the sign is positive. In equation 7.23, the coefficient of PL is 2.8050 and the sign is also positive. The coefficient of PL in both equations is significant at 1% level of significance.

In the second set of regression equations, a dummy variable for programme as well as comparison households (PGD) has been used as a microcredit variable in the right hand side of the equation, i.e. as an independent variable to represent microcredit. Econometric results of the second set of regression equations are presented in Table 7.9. The independent variable PGD is significant in all except three equations. PGD significantly determine total area of agricultural land (significant at 5% level), total value of productive assets (at 10% level), value of the dwelling house (at 5% level), total amount of financial assets (at 1% level), total business capital from own source (at 5% level), total business capital (1%), total assets including land value (at 10% level) and total assets excluding land value (at 1% level). Participation in the microcredit programme increases these assets of borrowing households. The coefficient of PGD is not significant in regression equations on total area of agricultural

land owned and value of total household assets, but the co-efficient has the expected positive sign in both equations.

In the first model (7.24) of the second set, the co-efficient of PGD is 1.7212 and the sign of the coefficient is positive (Table 7.9). These mean that participation in the microcredit programme increases total area of own agricultural land of borrowing households. The coefficient of PGD is not significant at the acceptable level.

In the second model (7.25), the results indicate that the co-efficient of the variable PGD (programme group dummy) is 10.9458 and t-value of the co-efficient is significant at 5% level. The sign of the coefficient of PGD is positive. The co-efficient of PGD demonstrates that microcredit programme membership increases total area of agricultural land of borrowing households. It also indicates that programme households have on an average 10.95 decimal of land more compared to comparison households.

Table 7.9 shows that the co-efficient of PGD (dummy for programme group households) in the model 7.26 is 11510.95 in which the dependent variable is total value of household productive assets. The coefficient of PGD is positive and significant at 10% level. These results mean that participation in the microcredit programme increases total value of productive assets of borrowing households. These results also indicate that programme households have on an average TK 11511 higher total value of productive assets compared to that of comparison households.



In the sixth regression model (7.27) of the second set, the co-efficient of PGD (programme group dummy) is 10152.6020 (Table 7.9). The sign of the coefficient of PGD is positive in this model and it is statistically significant at 10% level. The results indicate that microcredit programme membership increases value of the dwelling house of borrowing households. The results also demonstrate that programme households have TK 10153 higher value of the dwelling house compared to that of comparison households.

The results of the regression equation 7.28 demonstrate that microcredit programme membership is a significant determinant of total amount of financial assets of borrowing households. The coefficient of PGD is 5151.64 and the sign is positive, which means that microcredit programme membership increases total amount of financial assets of borrowing households. These results also show that programme households have TK 5152 higher amount of total financial assets than that of comparison households. The coefficient of PGD is significant at 1% level.

It is evident from the coefficient of microcredit variable PGD in regression equation 7.29 that total value of household assets of programme households is on an average TK 10411.1697 higher than that of comparison households. The sign of PGD is positive. But the coefficient of PGD is not significant at the acceptable level (10%).

The coefficient of PGD (microcredit programme dummy) in the regression equation (equation no 7.30) on total business capital from own source is 7423.3239 and the sign is positive (Table 7.9). These results indicate that programme households, which are engaged in business or micro-enterprises, have on an average TK 7423 higher

amount of own capital compared to comparison households. These results also indicate that microcredit programme membership increases total business capital from own source of borrowing households. The coefficient of PGD is statistically significant at 5% level.

In the regression model 7.31 on total business capital, the coefficient of microcredit variable PGD (programme group dummy) is 11213.65 and the sign of the coefficient is positive, which means that microcredit programme participation increases total business capital of borrowing households (includes capital from own as well as external sources). The coefficient of PGD in this model is significant at 1% level. These results also indicate that programme households (engaged in business and/or micro-enterprises) have significantly TK 11213.65 higher amount of total business capital (which also includes business capital from external sources) compared to that of comparison households.

The results of last two models of the second set indicate that microcredit programme membership increases total assets of households. In first of these two models, the dependent variable is total assets, which includes land value. In the other model, the dependent variable is total non-land assets, i.e. total assets minus value of land. The sign of the coefficient of PGD in both equations is positive. The coefficient of PGD in these two equations, i.e. equation 7.32 and 7.33, are 44216.8914 and 27161.4361 respectively. In equation 7.32, the coefficient is significant at 10% level and in equation 7.33, it is significant at 1% level. These results indicate that microcredit has significant positive impact on total assets as well as total non-land assets of borrowing households. These results also indicate that programme households have significantly

higher amount of total assets and total non-land assets compared to those of comparison households.

Finally, we can see that in case of eight dependent variables, total area of agricultural land, total value of productive assets, value of the dwelling house, total financial assets, total business capital from own source, total business capital (internal as well as external), total assets and total non-land assets, both sets of regression equations indicate significant positive impact of microcredit on these assets. The contradictory results in case of the other two dependent variables, total area of own agricultural land and total value of household assets (which includes value of homestead land), most probably are being caused by the effect of non-availability of agricultural land for purchase in sample areas and wide variations in land prices in the sample area.

#### **7.6.4 Discussion of Results**

At the beginning of this section 7.6, we argued that assets increase capacity of a household to produce income as well as reproduce assets in future. On the basis of Sen's (1981) entitlement theory, in our research framework in chapter six, we also argued that assets increase entitlement of a household to basic needs. Through enhancing capacity to produce income and to reproduce assets, assets ensure entitlement of households on basic needs and thus, reduce poverty of households. For sustainable poverty alleviation, it is important to increase assets of households. Khandker and Chowdhury (1996) argue that sustainability of programme benefits depends on the capacity of borrowing households to reproduce wealth. The capacity of borrowing households to reproduce wealth depends on the accumulation of assets

by these households. In the previous three sections, we intended to analyse the effectiveness of microcredit programmes in increasing assets of borrowing households.

The section on descriptive analysis reveals that programme households have 32% higher total area of own agricultural land, 43% higher total area of agricultural land (which includes rented in as well as leased in land), 140% higher total productive assets, 183% higher total amount of financial assets, 65% higher value of the dwelling house, and 55% higher total business capital from own source and 75% higher total business capital (includes own as well as external sources) compared to those of comparison households. It also reveals that programme households have 28% higher total assets (includes land value), 99% higher total non-land assets, 26% higher total net worth (includes land value) and 91% higher total net worth (excludes land value) compared to those of comparison households. Descriptive analysis show that microcredit has the highest impact on productive assets of households.

The results of the test of hypotheses show that programme households are significantly different from comparison households in respect to total area of agricultural land (which includes own land as well as rented in and leased in land), total value of productive assets, total amount of financial assets, value of the dwelling house, total business capital from own source, total business capital (which includes business capital from own source as well as external sources), total assets, total non-land assets, total net worth and total net worth excluding land value. Higher average values of the relevant variables for programme households and the rejection of null

hypotheses on assets indicate that programme households have significantly higher volume of these assets compared to those of comparison households.

The linear regression analysis indicate that microcredit has significant positive impact on total area of agricultural land, total value of productive assets, value of the dwelling house, total financial assets, total business capital from own source, total business capital (internal as well as external), total assets and total non-land assets. Microcredit has also positive impact on other assets, but not significantly in statistical term.

All three analyses indicate that microcredit increases assets of borrowing households. By increasing assets, microcredit improves household stability, creates an orientation toward the future, provides a foundation for risk taking, and increases personal efficacy, social influences and political participation of members of borrowing households. Microcredit also increases entitlement of borrowing households on basic needs through increasing assets.

### **7.6.5 Summary of Results**

The assessment of the impact of microcredit on assets reveals following key results:

- programme households have 32% higher total area of own agricultural land compared to that of comparison households,
- programme households have 43% higher total area of agricultural land (which includes rented in as well as leased in land) compared to that of comparison households,

- programme households have 140% higher total value of productive assets compared to that of comparison households,
- programme households have 183% higher total amount of financial assets compared to that of comparison households,
- programme households have 65% higher value of the dwelling house compared to that of comparison households,
- programme households have 55% higher total business capital from own source compared to that of comparison households
- programme households have 75% higher business capital (includes own as well as external sources) compared to that of comparison households.
- programme households have 28% higher total assets (includes land value) compared to that of comparison households,
- programme households have 99% higher total non-land assets compared to that of comparison households,
- programme households have 26% higher total net worth (includes land value) compared to that of comparison households,
- programme households have 91% higher total net worth (excludes land value) compared to that of comparison households,
- programme households have significantly higher total area of agricultural land (which includes own land as well as rented in and leased in land), total value of productive assets, total amount of financial assets, value of the dwelling house, total business capital from own source, total business capital (which includes business capital from own source as well as external sources), total assets, total non-land assets, total net worth and total net worth excluding land value

- microcredit has significant positive impact on current total area of agricultural land, total value of productive assets, value of the dwelling house, total financial assets, total business capital from own source, total business capital (internal as well as external), total assets and total non-land assets.

## **7.7 Impact of Microcredit on Entitlement**

The earlier analyses demonstrate that programme households have higher income, consumption, and assets than those of comparison households. According to Sen's entitlement theory and our research framework, entitlement is a positive function of assets. Table 7.7 shows that programme households have higher volume of assets than that of comparison households. Assets increase endowment and hence in other words, entitlement of households, because higher volume of assets generates higher income for households. Higher income increases entitlement of households for goods and services to satisfy basic needs. In the analyses of different famines, researchers, especially Sen (1981), have concluded that people die or starve during famines not necessarily because of food shortage, people die or starve because of lack of entitlement to food. Enough supply of food in a country does not ensure that all people of that country will have enough to eat. Availability of enough food for a household depends on its entitlement to food. People are poor because they do not have enough entitlement to basic commodities, which are required for their survival. Entitlement to basic commodities of a household is determined by the endowments of that household and the e-mapping, which the household faces. If we assume that e-mapping is constant for the household, then entitlement is determined by the endowments of that household.

In table 7.7, we have seen that programme households have higher volume of assets than that of comparison households. Assets of households are part of endowments of households. Higher volumes of household assets of programme households indicate higher entitlement of programme households. In Table 7.1, we have observed that programme households have higher levels of income compared to comparison households. Higher levels of income of programme households also indicate their higher entitlement to basic needs. In Table 7.4, we have also found that programme households have higher levels of consumption than that of comparison households. Higher levels of consumption also reflect higher entitlement of programme households.

Finally, statistics on income, consumption and households assets reveal that microcredit increases entitlement of borrowing households.

## **7.8 Summary of the Chapter**

In the research framework of this study in chapter six, we argued that microcredit increases income, consumption, and assets. We also argued that microcredit increases entitlement of borrowing households through increasing assets of those households. In this chapter, we tried to examine these theoretical arguments on the basis of available data. A comparison has been conducted between programme households and comparison households in respect to income, consumption and assets to assess the impact of microcredit on these aspects of borrowing households. The analyses show that microcredit has significant positive impact on yearly total agricultural income, weekly total food consumption expenditure, yearly total educational expenditure,



yearly total medical expenditure, current total area of agricultural land, total value of productive assets, value of the dwelling house, total amount of financial assets, total business capital from own source, total business capital (internal as well as external), total assets and total non-land assets. On the other indicators of income, consumption and assets (yearly total household income, monthly total fuel and cosmetics expenditure, yearly total non-food expenditure, current total area of agricultural land, value of total household assets) though indicate positive impact of microcredit, the relevant coefficients however, are not statistically significant. Therefore, results confirm and establish our theoretical argument that microcredit increases income, consumption and assets of borrowing households. Results also confirm that microcredit increases entitlement of borrowing households through increasing their assets.

If microcredit increases entitlement of borrowing households, then it should have reflection on fulfilment of basic needs of borrowing households, which means, programme households should have better status compared to comparison households in respect to fulfilment of basic needs. In the next chapter, we are going to examine fulfilment of basic needs of programme as well as comparison households to assess the impact of microcredit on basic needs of borrowing households.

## **Appendix Seven**

**Table 7.1**  
**Income**

| <b>Income</b>              | <b>Sample Group</b> | <b>N</b> | <b>Mean Tk.</b> | <b>Std. Deviation</b> |
|----------------------------|---------------------|----------|-----------------|-----------------------|
| Yearly Agricultural Income | Comparison Group    | 131      | 5744.69         | 7452.20               |
|                            | Programme Group     | 129      | 13043.18        | 17084.16              |
| Yearly Others Income       | Comparison Group    | 131      | 26137.40        | 24472.54              |
|                            | Programme Group     | 129      | 30558.14        | 47445.16              |
| HH Total Income            | Comparison Group    | 131      | 31882.10        | 24680.78              |
|                            | Programme Group     | 129      | 43601.32        | 51837.35              |

**Table 7.2**  
**Test of Hypotheses**  
**Income**

| Income                     | Sample Group     | N   | Levene's Test for Equality of Variances |        | T Test Sig. (2-tailed) |
|----------------------------|------------------|-----|---|--------|------------------------|
|                            |                  |     | F                                       | Sig.   |                        |
| Yearly Agricultural Income | Comparison Group | 131 | 22.5606                                 | 0.0000 | 0.0000                 |
|                            | Programme Group  | 129 |   |        |                        |
| Yearly Others Income       | Comparison Group | 131 | 6.9773                                  | 0.0088 | 0.3449                 |
|                            | Programme Group  | 129 |   |        |                        |
| HH Total Income            | Comparison Group | 131 | 8.9917                                  | 0.0030 | 0.0204                 |
|                            | Programme Group  | 129 |   |        |                        |

**Table 7.3**  
**Summary of Regression Results**  
**Income**

| Dependent variables        | Detailed Results | Model One<br>PL (Current Amount of Microcredit) |           | Model Two<br>PGD (Programme Group Dummy) |           |          |
|----------------------------|------------------|---|-----------|--|-----------|----------|
|                            |                  | Coefficients                                    | T Value   | Coefficients                             | T Value   | R Square |
| Yearly Agricultural Income | Table 7.12       | 0.2016  | 2.1249 ** | 3923.0707                                | 2.2911 ** | 0.256    |
| HH Total Income            | Table 7.13       | 0.1102  | 0.5724    | 544.4353                                 | 0.1564    | 0.231    |

\*\* Denotes that the variable concerned is significant at least at 10% level of significance. \*\*\* Denotes that the variable concerned is significant at least at 5% level of significance. \*\*\*\* Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.4**  
**Consumption**

| Consumption                                  | Sample Group     | N   | Mean     | Std. Deviation |
|--|------------------|-----|----------|----------------|
| Weekly Food Consumption Expenditure          | Comparison Group | 131 | 588.85   | 289.55         |
|  | Programme Group  | 129 | 858.58   | 488.39         |
| Monthly total fuel and cosmetics expenditure | Comparison Group | 131 | 269.15   | 141.05         |
|  | Programme Group  | 129 | 343.29   | 190.50         |
| Yearly Educational Expenditure               | Comparison Group | 131 | 711.53   | 1114.94        |
|  | Programme Group  | 129 | 1669.30  | 2869.49        |
| Yearly Medical Expenditure                   | Comparison Group | 130 | 931.69   | 946.85         |
|  | Programme Group  | 128 | 1436.68  | 1334.56        |
| Yearly total non-food expenditure            | Comparison Group | 131 | 10316.34 | 17949.73       |
|  | Programme Group  | 129 | 16101.50 | 22128.50       |

**Table 7.5**  
**Test of Hypotheses**  
**Consumption**

| Consumption                                  | Sample Group     | N   | Levene's Test for Equality of Variances |        | T Test Sig. (2-tailed) |
|--|------------------|-----|---|--------|------------------------|
|  |                  |     | F                                       | Sig.   |                        |
| Weekly Food Consumption Expenditure          | Comparison Group | 131 | 9.4170                                  | 0.0024 | 0.0000                 |
|  | Programme Group  | 129 |   |        |                        |
| Monthly total fuel and cosmetics expenditure | Comparison Group | 131 | 13.8939                                 | 0.0002 | 0.0004                 |
|  | Programme Group  | 129 |   |        |                        |
| Yearly Educational Expenditure               | Comparison Group | 131 | 16.8116                                 | 0.0001 | 0.0004                 |
|  | Programme Group  | 129 |   |        |                        |
| Yearly Medical Expenditure                   | Comparison Group | 130 | 8.0882                                  | 0.0048 | 0.0005                 |
|  | Programme Group  | 128 |   |        |                        |
| Yearly total non-food expenditure            | Comparison Group | 131 | 2.8003                                  | 0.0955 | 0.0213                 |
|  | Programme Group  | 129 |   |        |                        |

**Table 7.6**  
**Regression Results (Summary)**  
**Consumption**

| Dependent variables                          | Detail Results | OLS Model One<br>PL (Current Amount of Microcredit) |            |          | OLS Model Two<br>PGD (Programme Group Dummy) |           |          |
|--|----------------|---|------------|----------|--|-----------|----------|
|  |                | Coefficients  | T Value    | R Square | Coefficients                                 | T Value   | R Square |
| Weekly Food Consumption Expenditure          | Table 7.14     | 0.0036  | 1.7116 *   | 0.459    | 70.1146                                      | 1.8298 *  | 0.460    |
| Monthly total fuel and cosmetics expenditure | Table 7.15     | 0.0006  | 0.4377     | 0.303    | 9.3459                                       | 0.4056    | 0.303    |
| Yearly Total Education Expenses              | Table 7.16     | 0.0278  | 2.4901 **  | 0.277    | 380.7968                                     | 1.8517 *  | 0.224    |
| Yearly Total Medical Expenses                | Table 7.17     | 0.0455  | 5.1485 *** | 0.290    | 364.6819                                     | 2.1747 ** | 0.227    |
| Yearly total non-food expenditure            | Table 7.18     | 0.2410  | 2.4430 **  | 0.254    | 2757.3004                                    | 1.5150    | 0.243    |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.7  
Assets**

| Household Assets  | Sample Group     | Number of Households | Mean              |           | Std. Deviation |
|---|------------------|----------------------|-------------------|-----------|----------------|
|   |                  |                      |                   |           |                |
| Total Area of Own Agricultural Land (Present)                         | Comparison Group | 131                  | Decimal           | 15.69     | 22.44          |
|   | Programme Group  | 129                  |                   | 18.62     | 26.58          |
| Total Area of Agricultural land (Including Rent in and Lease in Land) | Comparison Group | 131                  | Decimal           | 36.99     | 43.45          |
|   | Programme Group  | 129                  |                   | 50.88     | 47.59          |
| Total Value of Productive Assets                                      | Comparison Group | 131                  | Taka <sup>1</sup> | 15741.85  | 24334.36       |
|   | Programme Group  | 129                  |                   | 37723.64  | 61557.32       |
| Value of Dwelling House   | Comparison Group | 131                  | Taka              | 21950.38  | 28667.58       |
|   | Programme Group  | 129                  |                   | 36298.45  | 40229.98       |
| Total Financial Assets  | Comparison Group | 131                  | Taka              | 4501.89   | 9289.71        |
|   | Programme Group  | 129                  |                   | 12730.35  | 14838.26       |
| Total Value of Household Assets                                       | Comparison Group | 131                  | Taka              | 118079.39 | 117829.68      |
|   | Programme Group  | 129                  |                   | 135676.74 | 121908.70      |
| Total Business Capital (Own Source)                                   | Comparison Group | 44                   | Taka              | 14087.23  | 31571.77       |
|   | Programme Group  | 62                   |                   | 21800.48  | 26665.57       |
| Total Business Capital (Including Capital from External Sources)      | Comparison Group | 44                   | Taka              | 16977.27  | 31779.45       |
|   | Programme Group  | 62                   |                   | 29664.51  | 35489.865      |
| Total HH Assets (Including Land Value)                                | Comparison Group | 131                  | Taka              | 211223.89 | 185820.07      |
|   | Programme Group  | 129                  |                   | 271332.29 | 224650.86      |
| Total HH Assets (excluding Land Value)                                | Comparison Group | 131                  | Taka              | 48320.08  | 53695.53       |
|   | Programme Group  | 129                  |                   | 96204.38  | 88954.91       |
| Total Net Worth   | Comparison Group | 131                  | Taka              | 206973.59 | 182956.16      |
|   | Programme Group  | 129                  |                   | 259881.09 | 222194.58      |
| Total Net Worth (excluding Land Value)                                | Comparison Group | 131                  | Taka              | 44069.78  | 48507.45       |
|   | Programme Group  | 129                  |                   | 84753.18  | 85877.84       |

<sup>1</sup> 1 British Pound = Approximately 80 Taka

**Table 7.8**  
**Test of Hypotheses on Assets**

| Household Assets  | Sample Group     | Mean      | Levene's Test for Equality of Variances |        | t-test for Equality of Means<br>Sig. (2-tailed) |
|---|------------------|-----------|---|--------|---|
|   |                  |           | F                                       | Sig.   |   |
| Total Area of Own Agricultural Land (Present)                         | Comparison Group | 15.69     | 3.7768                                  | 0.0531 | 0.3382  |
|   | Programme Group  | 18.62     |   |        | 0.3389  |
| Total Area of Agricultural land (Including Rent in and Lease in Land) | Comparison Group | 36.99     | 1.7152                                  | 0.1915 | 0.0146  |
|   | Programme Group  | 50.88     |   |        | 0.0147  |
| Total Value of Productive Assets                                      | Comparison Group | 15741.85  | 20.7782                                 | 0.0000 | 0.0002  |
|   | Programme Group  | 37723.64  |   |        | 0.0002  |
| Total Value of Household Assets                                       | Comparison Group | 118079.39 | 0.1834                                  | 0.6688 | 0.2377  |
|   | Programme Group  | 135676.74 |   |        | 0.2378  |
| Total Financial Assets  | Comparison Group | 4501.89   | 7.8414                                  | 0.0055 | 0.0000  |
|   | Programme Group  | 12730.35  |   |        | 0.0000  |
| Total Value of Dwelling Houses  | Comparison Group | 21950.38  | 12.3794                                 | 0.0005 | 0.0010  |
|   | Programme Group  | 36298.45  |   |        | 0.0011  |
| Total Business Capital (Own Source)                                   | Comparison Group | 4731.59   | 10.3356                                 | 0.0015 | 0.0240  |
|   | Programme Group  | 10477.75  |   |        | 0.0241  |
| Total Business Capital (Including Capital from External Sources)      | Comparison Group | 5702.29   | 1.982                                   | 0.1620 | 0.0610  |
|   | Programme Group  | 14257.36  |   |        | 0.0570  |
| Total HH Assets (Including Land Value)                                | Comparison Group | 211223.89 | 4.1265                                  | 0.0432 | 0.0194  |
|   | Programme Group  | 271332.29 |   |        | 0.0196  |
| Total HH Assets (excluding Land Value)                                | Comparison Group | 48320.08  | 26.2720                                 | 0.0000 | 0.0000  |
|   | Programme Group  | 96204.38  |   |        | 0.0000  |
| Total Net Worth   | Comparison Group | 206973.59 | 4.0017                                  | 0.0465 | 0.0369  |
|   | Programme Group  | 259881.09 |   |        | 0.0373  |
| Total Net Worth (excluding Land Value)                                | Comparison Group | 44069.78  | 29.3430                                 | 0.0000 | 0.0000  |
|   | Programme Group  | 84753.18  |   |        | 0.0000  |



**Table 7.9**  
**Regression Results (Summary)**  
**Assets**

| Dependent variables   | Detail Results | Model One<br>PL (Current Amount of Microcredit) |            |          | Model Two<br>PGD (Programme Group Dummy) |            |          |
|---|----------------|---|------------|----------|--|------------|----------|
|   |                | Coefficients                                    | T Value    | R Square | Coefficients                             | T Value    | R Square |
| Current Total Area of Agricultural Land owned                                 | Table 7.19     | 0.0001  | 1.2112     | 0.713    | 1.7212                                   | 0.8696     | 0.712    |
| Current Total Area of Agricultural land (Including Rent in and Lease in Land) | Table 7.20     | 0.0005  | 1.7885 *   | 0.352    | 10.9458                                  | 2.2474 **  | 0.313    |
| Total value of Productive Assets  | Table 7.21     | 1.3832  | 3.8713 *** | 0.242    | 11510.9455                               | 1.6959 *   | 0.205    |
| Value of Dwelling House   | Table 7.22     | 0.9996  | 3.6141 *** | 0.231    | 10152.6020                               | 1.9838 **  | 0.203    |
| Current Total Financial Assets  | Table 7.23     | 0.3206  | 3.1335 *** | 0.214    | 5151.6399                                | 2.7592 *** | 0.207    |
| Value of Total Household Assets   | Table 7.24     | 1.7008  | 1.8002 *   | 0.212    | 10411.1697                               | 0.6029     | 0.203    |
| Total Business Capital from Own Source  | Table 7.25     | 0.3949  | 2.2903 **  | 0.450    | 7423.3239                                | 2.1803 **  | 0.447    |
| Total Business Capital (Including Capital from External Sources)              | Table 7.26     | 0.4589  | 2.2341 **  | 0.473    | 11213.6476                               | 2.8193 *** | 0.491    |
| Total Assets (Including Land Value)   | Table 7.27     | 5.4223  | 4.0181 *** | 0.427    | 44216.8914                               | 1.7212 *   | 0.396    |
| Total non-land Assets   | Table 7.28     | 2.8050  | 5.3056 *** | 0.359    | 27161.4361                               | 2.6603 *** | 0.305    |

\*(\*) Denotes that the variable concerned is significant at least at 10% level of significance. (\*\*\*) Denotes that the variable concerned is significant at least at 5% level of significance. (\*\*\*\*) Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.10**  
**Distribution of Assets by Membership Duration of Programme Households**

|  | Membership Duration |            |             |
|--|---------------------|------------|-------------|
|  | 2-4 Years           | 5-7 Years  | 8 and above |
|  | Mean                | Mean       | Mean        |
| Total Area of Own agricultural Land                              | 3.9474              | 22.0889    | 20.5077     |
| Value of Total Area of Own Agricultural Land                     | 9,526.32            | 81,844.44  | 109,646.15  |
| Total Area of Agricultural land                                  | 34.37               | 55.13      | 52.77       |
| Total Value of Productive Assets                                 | 17,326.32           | 33,113.33  | 46,877.69   |
| Total Value of HH Assets (Including Value of Homestead Land)     | 72,452.63           | 125,755.56 | 99,315.38   |
| Total Value of Dwelling Houses                                   | 29,473.68           | 39,822.22  | 35,853.85   |
| Total Own Business Capital                                       | 3,789.47            | 12,067.78  | 11,332.00   |
| Total Business Capital (including Capital from external sources) | 7,789.47            | 15,022.22  | 15,618.46   |
| Total Financial Assets   | 5,047.89            | 12,981.93  | 14,801.82   |
| Total HH Assets (Including Land Value)                           | 131,737.37          | 273,988.60 | 310,297.97  |
| Total HH Assets (Excluding Land Value)                           | 60,500.53           | 89,410.82  | 111,344.12  |
| Total Net Worth  | 126,291.58          | 263,374.31 | 296,511.94  |
| Total Net Worth (excluding Land Value)                           | 55,054.74           | 78,796.53  | 97,558.09   |

HH = Household

**Table 7.11**  
**Distribution of Assets by Current Amount of Microcredit of Programme Households**

|   | Current Amount of Microcredit |                                |                                |                               |
|---|-------------------------------|--------------------------------|--------------------------------|-------------------------------|
|   | Taka 0-10<br>Thousand<br>Mean | Taka 10-20<br>Thousand<br>Mean | Taka 20-30<br>Thousand<br>Mean | Taka 30-a<br>Thousand<br>Mean |
| Total Area of Agricultural Land                                       | 7.1053                        | 20.7692                        | 19.1176                        | 21.4667                       |
| Value of Total Area of Own Agricultural Land                          | 17,421.05                     | 90,641.03                      | 91,176.47                      | 136,000.00                    |
| Total Area of Agricultural land (including Rent in and Lease in Land) | 37.32                         | 54.21                          | 56.41                          | 44.53                         |
| Total Value of Productive Assets                                      | 26,163.16                     | 28,793.21                      | 72,663.53                      | 59,206.67                     |
| Value of HH Assets (Including Value of Homestead Land)                | 71,136.84                     | 94,583.33                      | 146,058.82                     | 151,933.33                    |
| Total Value of Dwelling Houses  | 30,105.26                     | 30,301.28                      | 41,882.35                      | 69,000.00                     |
| Total Business Capital (Own Source)                                   | 8,657.89                      | 8,591.67                       | 15,116.47                      | 17,333.33                     |
| Total Business Capital (including Capital from External Sources)      | 12,815.79                     | 12,047.44                      | 16,941.18                      | 24,533.33                     |
| Total Financial Assets  | 5,470.79                      | 13,000.42                      | 18,097.29                      | 14,438.87                     |
| Total HH Assets (including Land Value)                                | 151,207.63                    | 254,060.29                     | 372,702.00                     | 398,418.87                    |
| Total HH Assets (excluding Value of Land)                             | 71,286.58                     | 82,034.65                      | 139,172.59                     | 152,752.20                    |
| Total Net Worth   | 145,182.68                    | 245,406.29                     | 351,766.94                     | 376,297.33                    |
| Total Net Worth (excluding Land Value)                                | 65,261.63                     | 73,380.65                      | 118,237.53                     | 130,630.67                    |

HH = Household

Table 7.12  
Results of the OLS Model on  
Yearly Agricultural Income

|  | Model One   |         | Model Two    |         |
|--|-------------|---------|--------------|---------|
|  | coefficient | t       | Coefficient  | t       |
| (Constant)   | 12672.1211  | 1.1252  | 10610.9130   | 0.9384  |
| Total Household Male Members 15-60                                 | 1667.9885   | 0.5566  | 2485.8989    | 0.8307  |
| Square of Total Household Male Members Between 15-60               | -57.8587    | -0.0963 | -225.6731    | -0.3748 |
| Total Household Member Except male 15-60                           | 2815.6918   | 1.4980  | 2878.4579    | 1.5330  |
| Square of Total Household Member Except Male Members Between 15-60 | -350.6927   | -1.5134 | -369.5143    | -1.5960 |
| Household Head Age   | -564.7803   | -1.2113 | -531.2395    | -1.1505 |
| Square Household Head Age  | 6.0882      | 1.0946  | 5.6502       | 1.0256  |
| Average Education Score of Household Members                       | 12.8525     | 0.0440  | -4.8305      | -0.0166 |
| Household Head Occupation (Dummy, Agriculture)                     | 1712.1405   | 0.9067  | 1930.4259    | 1.0212  |
| Household Head Occupation (Dummy, Business)                        | -2714.7014  | -1.6141 | -2770.1478   | -1.6484 |
| Total Agricultural land (Present)                                  | 71.9163 *** | 4.1578  | 69.6969 ***  | 4.0176  |
| Productive Assets  | 0.0874 ***  | 3.6799  | 0.0955 ***   | 4.1319  |
| Current Amount of Microcredit Programme Member (Dummy)             | 0.2016 **   | 2.1249  | 3923.0707 ** | 2.2911  |
| Existence of a School in the Village (Dummy)                       | -306.6244   | -0.1814 | -773.6361    | -0.4474 |
| Distance of the Nearest Market                                     | -572.5680   | -0.3452 | -334.5932    | -0.2000 |
| Distance of the Nearest Metal Road                                 | 1430.7071   | 0.7903  | 1037.7540    | 0.5648  |
| Distance of the District Headquarter                               | -153.6866   | -0.4328 | -213.1006    | -0.5978 |
| Distance of the Capital City                                       | -90.4342    | -0.9565 | -68.9196     | -0.7117 |
| R <sup>2</sup>   | 0.254       |         | 0.256        |         |
| D-W  | 1.617       |         | 1.622        |         |
| N  | 255         |         | 255          |         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.13**  
**Results of the OLS Model on**  
**Total Yearly Household Income**

|  | Model One       |         | Model Two       |         |
|--|-----------------|---------|-----------------|---------|
|  | Coefficients    | t       | Coefficients    | t       |
| (Constant)   | 20339.2357      | 0.8902  | 20378.1105      | 0.8863  |
| Total Household Male Members 15-60                                 | 9908.8932       | 1.6298  | 10179.3708 *    | 1.6730  |
| Square of Total Household Male Members Between 15-60               | -1357.2581      | -1.1129 | -1399.7358      | -1.1434 |
| Total Household Member Except male 15-60                           | 5298.6219       | 1.3894  | 5253.5758       | 1.3760  |
| Square of Total Household Member Except Male Members Between 15-60 | -595.7675       | -1.2672 | -598.2082       | -1.2707 |
| Household Head Age   | -1359.7933      | -1.4374 | -1274.2595      | -1.3572 |
| Square Household Head Age  | 13.7412         | 1.2177  | 12.7670         | 1.1397  |
| Average Education Score of Household Members                       | 1295.9250 **    | 2.1882  | 1281.9757 **    | 2.1652  |
| Household Head Occupation (Dummy, Agriculture)                     | -16449.5362 *** | -4.2936 | -16468.2608 *** | -4.2845 |
| Household Head Occupation (Dummy, Business)                        | -4804.1527      | -1.4078 | -4713.2712      | -1.3794 |
| Total Agricultural land (Present)                                  | 33.2136         | 0.9464  | 33.8153         | 0.9587  |
| Productive Assets  | 0.2548 ***      | 5.2866  | 0.2608 ***      | 5.5529  |
| Current Amount of Microcredit                                      | 0.1102          | 0.5724  |                 |         |
| Programme Member (Dummy)   |                 |         |                 |         |
| Existence of a School in the Village (Dummy)                       | 864.0406        | 0.2520  | 544.4353        | 0.1564  |
| Distance of the Nearest Market                                     | 4467.6425       | 1.3276  | 1056.8335       | 0.3006  |
| Distance of the Nearest Metal Road                                 | -316.1500       | -0.0861 | 4233.0050       | 1.2442  |
| Distance of the District Headquarter                               | -923.6280       | -1.2819 | -126.2668       | -0.0338 |
| Distance of the Capital City                                       | 273.9621        | 1.4282  | -919.6154       | -1.2688 |
| R <sup>2</sup>   | 0.284           |         | 252.9522        | 1.2847  |
| N  | 255             |         | 0.231           |         |
|  |                 |         | 255             |         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.14**  
**Results of the OLS Model on**  
**Weekly Food Consumption Expenditure**

|  | Model One    |         | Model Two    |         |
|--|--------------|---------|--------------|---------|
|  | Coefficients | t       | Coefficients | t       |
| (Constant)   | 522.9099 **  | 2.0919  | 483.6716 *   | 1.9228  |
| Total Household Male Members 15-60                                 | 115.1112 **  | 1.9324  | 129.0334 **  | 2.1737  |
| Square of Total Household Male Members Between 15-60               | -12.5957     | -1.1321 | -15.2301     | -1.3682 |
| Total Household Member Except male 15-60                           | 44.4182      | 0.9579  | 47.7241      | 1.0267  |
| Square of Total Household Member Except Male Members Between 15-60 | 0.9647       | 0.1625  | 0.3545       | 0.0595  |
| Household Head Age   | 11.3551      | 1.1095  | 12.0351      | 1.1881  |
| Square Household Head Age  | -0.1046      | -0.8583 | -0.1145      | -0.9501 |
| Average Education Score of Household Members                       | 10.0264      | 1.5327  | 9.9585       | 1.5241  |
| Household Head Occupation (Dummy, Agriculture)                     | -37.3729     | -0.8867 | -32.9347     | -0.7801 |
| Household Head Occupation (Dummy, Business)                        | 43.3916      | 1.1810  | 43.9868      | 1.1994  |
| Total Agricultural land (Present)                                  | 1.2467 ***   | 3.1810  | 1.2199 ***   | 3.1084  |
| Productive Assets  | 0.0007 *     | 1.8061  | 0.0008 **    | 2.1007  |
| Current Amount of Microcredit                                      | 0.0036 *     | 1.7116  |              |         |
| Programme Member (Dummy)   |              |         | 70.1146 *    | 1.8298  |
| Existence of a School in the Village (Dummy)                       | -14.0523     | -0.3812 | -22.2916     | -0.5894 |
| Distance of the Nearest Market                                     | -20.1101     | -0.5472 | -16.2266     | -0.4378 |
| Distance of the Nearest Metal Road                                 | 159.2782 *** | 3.8575  | 152.8559 *** | 3.6527  |
| Distance of the District Headquarter                               | -35.5630 *** | -4.5149 | -36.6444 *** | -4.6380 |
| Distance of the Capital City                                       | -8.4002 ***  | -4.0015 | -8.0446 ***  | -3.7443 |
| R <sup>2</sup>   | 0.459        |         | 0.46         |         |
| N  | 253          |         | 253          |         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.15**  
**Results of the OLS Model on**  
**Monthly Total Fuel and Cosmetics Expenditure**

|  | Model One    |         | Model Two    |         |
|--|--------------|---------|--------------|---------|
|  | Coefficients | t       | Coefficients | t       |
| (Constant)   | 56.8474      | 0.3776  | 52.3084      | 0.3455  |
| Total Household Male Members 15-60                                 | -10.2795     | -0.2876 | -8.3808      | -0.2347 |
| Square of Total Household Male Members Between 15-60               | 8.0910       | 1.2065  | 7.7262       | 1.1492  |
| Total Household Member Except male 15-60                           | -4.1103      | -0.1642 | -4.0663      | -0.1624 |
| Square of Total Household Member Except Male Members Between 15-60 | 2.3425       | 0.7606  | 2.3078       | 0.7487  |
| Household Head Age   | 10.0531      | 1.6150  | 10.2307 *    | 1.6597  |
| Square Household Head Age  | -0.1144      | -1.5455 | -0.1166      | -1.5910 |
| Average Education Score of Household Members                       | 11.8843 ***  | 3.0681  | 11.8385 ***  | 3.0583  |
| Household Head Occupation (Dummy, Agriculture)                     | -50.1242 **  | -1.9877 | -49.6417 *   | -1.9632 |
| Household Head Occupation (Dummy, Business)                        | 2.6538       | 0.1203  | 2.8010       | 0.1270  |
| Total Agricultural land (Present)                                  | 0.7891 ***   | 3.4938  | 0.7857 ***   | 3.4664  |
| Productive Assets  | -0.0002      | -0.7870 | -0.0002      | -0.7396 |
| Current Amount of Microcredit                                      | 0.0006       | 0.4377  |              |         |
| Programme Member (Dummy)   |              |         | 9.3459       | 0.4056  |
| Existence of a School in the Village (Dummy)                       | -16.6086     | -0.7432 | -17.3061     | -0.7575 |
| Distance of the Nearest Market                                     | -47.7844 **  | -2.1542 | -47.3682 **  | -2.1089 |
| Distance of the Nearest Metal Road                                 | 111.4568 *** | 4.6591  | 110.6610 *** | 4.5381  |
| Distance of the District Headquarter                               | -9.2021 *    | -1.9424 | -9.3532 *    | -1.9634 |
| Distance of the Capital City                                       | -0.8794      | -0.6927 | -0.8537      | -0.6564 |
| R <sup>2</sup>   | 0.303        |         | 0.303        |         |
| N  | 260          |         | 260          |         |

\*\*, Denotes that the variable concerned is significant at least at 10% level of significance. \*\*\*, Denotes that the variable concerned is significant at least at 5% level of significance. \*\*\*\*, Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.16**  
**Results of the OLS Model on**  
**Dependent Variable: Yearly Educational Expenditure**

|  | Model One     |         | Model Two     |         |
|--|---------------|---------|---------------|---------|
|  | Coefficient   | t       | Coefficient   | t       |
| (Constant)   | -3259.8619 ** | -2.4861 | -3397.4874 ** | -2.5634 |
| Total Household Male Members 15-60                     | 115.4230      | 0.3631  | 203.6473      | 0.6377  |
| Square of Total Household Male Members Between 15-60   | -28.5934      | -0.4794 | -44.5981      | -0.7415 |
| Household Head Age                                     | 140.1578 ***  | 2.6707  | 150.1653 ***  | 2.8644  |
| Square Household Head Age                              | -1.3271 **    | -2.1220 | -1.4484 **    | -2.3190 |
| Average Education Score of Household Members           | 169.6154 ***  | 4.9507  | 167.9115 ***  | 4.8751  |
| Household Head Occupation (Dummy, Agriculture)         | -456.8299 **  | -2.0446 | -441.4905 **  | -1.9595 |
| Household Head Occupation (Dummy, Business)            | -19.0757      | -0.0971 | -9.0378       | -0.0458 |
| Total Agricultural land (Present)                      | -0.0366       | -0.0184 | -0.1739       | -0.0865 |
| Productive Assets                                      | 0.0032        | 1.6358  | 0.0039 **     | 2.0679  |
| Current Amount of Microcredit Programme Member (Dummy) | 0.0278 **     | 2.4901  |               |         |
| Existence of a School in the Village (Dummy)           | 80.7917       | 0.4067  | 380.7968 *    | 1.8517  |
| Distance of the Nearest Market                         | 23.9640       | 0.1223  | 69.7742       | 0.3414  |
| Distance of the Nearest Metal Road                     | 343.1315      | 1.6259  | 28.2887       | 0.1417  |
| Distance of the District Headquarter                   | -62.4448      | -1.4644 | 321.7908      | 1.4858  |
| Distance of the Capital City                           | 0.9120        | 0.0808  | -67.3482      | -1.5623 |
| R <sup>2</sup>   | 0.277         |         | 0.3310        | 0.0285  |
| N  | 258           |         | 258           |         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.



Table 7.17  
Results of the OLS Model on  
Yearly Medical Expenditure

|  | Model One    |         | Model Two   |         |
|--|--------------|---------|-------------|---------|
|  | Coefficient  | t       | Coefficient | t       |
| (Constant)   | -344.9112    | -0.3274 | -420.8291   | -0.3806 |
| Total Household Male Members 15-60                                 | 203.7439     | 0.8146  | 328.9231    | 1.2618  |
| Square of Total Household Male Members Between 15-60               | -41.1930     | -0.8795 | -61.7290    | -1.2599 |
| Total Household Member Except male 15-60                           | 71.8474      | 0.4103  | 55.0787     | 0.3013  |
| Square of Total Household Member Except Male Members Between 15-60 | 9.1443       | 0.4249  | 8.3268      | 0.3705  |
| Household Head Age   | -27.7912     | -0.6364 | 3.0763      | 0.0682  |
| Square Household Head Age  | 0.3698       | 0.7102  | 0.0115      | 0.0214  |
| Average Education Score of Household Members                       | 59.8021 **   | 2.1937  | 55.6083 *   | 1.9559  |
| Household Head Occupation (Dummy, Agriculture)                     | -253.2530    | -1.4396 | -250.3307   | -1.3599 |
| Household Head Occupation (Dummy, Business)                        | 39.6934      | 0.2573  | 78.5987     | 0.4885  |
| Total Agricultural land (Present)                                  | 4.6079 ***   | 2.9255  | 4.7418 ***  | 2.8748  |
| Productive Assets  | 0.0025       | 1.6084  | 0.0040 **   | 2.5518  |
| Current Amount of Microcredit                                      | 0.0455 ***   | 5.1485  |             |         |
| Programme Member (Dummy)   | 54.3364      | 0.3474  | 364.6819 ** | 2.1747  |
| Existence of a School in the Village (Dummy)                       | 471.2374 *** | 3.0483  | 110.1901    | 0.6611  |
| Distance of the Nearest Market                                     | -89.7006     | -0.5338 | 412.8752 ** | 2.5285  |
| Distance of the Nearest Metal Road                                 | -60.9493 *   | -1.8451 | -49.1200    | -0.2752 |
| Distance of the District Headquarter                               | 9.1150       | 1.0287  | -64.5490 *  | -1.8620 |
| Distance of the Capital City                                       |              |         | 2.9703      | 0.3135  |
| R <sup>2</sup>   | 0.29         |         | 0.227       |         |
| N  | 258          |         | 258         |         |

\*,\*\* Denotes that the variable concerned is significant at least at 10% level of significance. \*\*\* Denotes that the variable concerned is significant at least at 5% level of significance. \*\*\*\* Denotes that the variable concerned is significant at least at 1% level of significance.

Table 7.18  
Results of the OLS Model on  
Yearly total non-food expenditure

|  | Model One     |         | Model Two     |         |
|--|---------------|---------|---------------|---------|
|  | Coefficients  | t       | Coefficients  | t       |
| (Constant)   | -393.0826     | -0.0325 | -1396.6269    | -0.1139 |
| Total Household Male Members 15-60                                 | -4266.6784    | -1.5274 | -3502.6932    | -1.2454 |
| Square of Total Household Male Members Between 15-60               | 1197.5198 **  | 2.2866  | 1063.5818 **  | 2.0103  |
| Total Household Member Except male 15-60                           | 2064.4485     | 1.0299  | 1990.5659     | 0.9855  |
| Square of Total Household Member Except Male Members Between 15-60 | -196.2845     | -0.8028 | -201.8956     | -0.8190 |
| Household Head Age   | 319.5866      | 0.6216  | 456.3651      | 0.8896  |
| Square Household Head Age  | -3.3221       | -0.5354 | -4.9655       | -0.8020 |
| Average Education Score of Household Members                       | 1070.1605 **  | 3.5309  | 1044.5823 *** | 3.4236  |
| Household Head Occupation (Dummy, Agriculture)                     | -4370.6105 ** | -2.2152 | -4273.1506 ** | -2.1441 |
| Household Head Occupation (Dummy, Business)                        | -1103.1427    | -0.6402 | -967.7546     | -0.5573 |
| Total Agricultural land (Present)                                  | 5.1738        | 0.2931  | 5.0710        | 0.2839  |
| Productive Assets  | 0.0406 **     | 2.3800  | 0.0479 ***    | 2.8563  |
| Current Amount of Microcredit Programme Member (Dummy)             | 0.2410 **     | 2.4430  |               |         |
| Existence of a School in the Village (Dummy)                       | -887.3233     | -0.5095 | 2757.3004     | 1.5150  |
| Distance of the Nearest Market                                     | -1397.8148    | -0.8098 | -845.0205     | -0.4702 |
| Distance of the Nearest Metal Road                                 | 1834.4148     | 0.9851  | -1523.7021    | -0.8650 |
| Distance of the District Headquarter                               | -460.9380     | -1.2483 | 1814.0974     | 0.9466  |
| Distance of the Capital City                                       | -24.1835      | -0.2430 | -501.6830     | -1.3406 |
| R <sup>2</sup>   | 0.254         |         | -40.1968      | -0.3917 |
| N  | 257           |         | 0.243         | 257     |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

Table 7.19  
Results of the OLS Model on  
Current Total Area of agricultural Land Owned

|  | Model One    |         | Model Two    |         |
|--|--------------|---------|--------------|---------|
|  | Coefficients | t       | Coefficients | t       |
| Constant)  | -21.4996     | -1.6490 | -22.2038 *   | -1.6909 |
| Total Household Male Members 15-60                                 | 2.9340       | 0.9488  | 3.3070       | 1.0679  |
| Square of Total Household Male Members Between 15-60               | -0.6385      | -1.1034 | -0.7002      | -1.2033 |
| Total Household Member Except male 15-60                           | 2.2142       | 1.0226  | 2.2300       | 1.0278  |
| Square of Total Household Member Except Male Members Between 15-60 | -0.2346      | -0.8786 | -0.2437      | -0.9108 |
| Household Head Age   | 0.1044       | 0.1944  | 0.1625       | 0.3047  |
| Square Household Head Age  | 0.0001       | 0.0195  | -0.0006      | -0.0871 |
| Average Education Score of Household Members                       | 0.5586 *     | 1.6882  | 0.5583 *     | 1.6848  |
| Household Head Occupation (Dummy, Agriculture)                     | 1.4106       | 0.6596  | 1.4349       | 0.6689  |
| Household Head Occupation (Dummy, Business)                        | 0.2598       | 0.1363  | 0.3695       | 0.1939  |
| Total Agricultural Land (Before Membership)                        | 0.9420 ***   | 21.7035 | 0.9438 ***   | 21.7337 |
| Current Amount of Microcredit                                      | 0.0001       | 1.2112  |              |         |
| Programme Member (Dummy)   |              |         | 1.7212       | 0.8696  |
| Existence of a School in the Village (Dummy)                       | 0.3865       | 0.1988  | 0.3730       | 0.1872  |
| Distance of the Nearest Market                                     | -2.1643      | -1.1348 | -2.2311      | -1.1587 |
| Distance of the Nearest Metal Road                                 | 2.2296       | 1.0771  | 2.2374       | 1.0619  |
| Distance of the District Headquarter                               | 0.4326       | 1.0547  | 0.3971       | 0.9619  |
| Distance of the Capital City                                       | 0.1364       | 1.2407  | 0.1329       | 1.1755  |
| R <sup>2</sup>   |              | 0.713   |              | 0.712   |
| N  |              | 258     |              | 258     |

'\*' Denotes that the variable concerned is significant at least at 10% level of significance. '\*\*' Denotes that the variable concerned is significant at least at 5% level of significance. '\*\*\*' Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.20**  
**Results of the OLS Model on**  
**Current Total Area of Agricultural land (including Rented in and Leased in)**

|  | Model One    |         | Model Two    |         |
|--|--------------|---------|--------------|---------|
|  | Coefficients | t       | Coefficients | t       |
| (Constant)   | -0.3405      | -0.0105 | -5.2556      | -0.1624 |
| Total Household Male Members 15-60                                 | 6.8212       | 0.8812  | 8.6331       | 1.1208  |
| Square of Total Household Male Members Between 15-60               | -0.9122      | -0.6210 | -1.2792      | -0.8714 |
| Total Household Member Except male 15-60                           | -0.1384      | -0.0258 | 0.0967       | 0.0181  |
| Square of Total Household Member Except Male Members Between 15-60 | 0.2896       | 0.4382  | 0.2408       | 0.3655  |
| Household Head Age   | 0.3588       | 0.2707  | 0.3478       | 0.2652  |
| Square Household Head Age  | 0.0001       | 0.0039  | 0.0001       | 0.0048  |
| Average Education Score of Household Members                       | 0.1957       | 0.2385  | 0.1759       | 0.2151  |
| Household Head Occupation (Dummy, Agriculture)                     | 18.6052 ***  | 3.4768  | 19.2467 ***  | 3.6020  |
| Household Head Occupation (Dummy, Business)                        | -0.1424      | -0.0301 | -0.1789      | -0.0381 |
| Total Agricultural Land (Before Membership)                        | 0.7999 ***   | 7.7438  | 0.8082 ***   | 7.8573  |
| Current Amount of Microcredit                                      | 0.0005 *     | 1.7885  |              |         |
| Programme Member (Dummy)   |              |         | 10.9458 **   | 2.2474  |
| Existence of a School in the Village (Dummy)                       | -1.8241      | -0.3771 | -3.2379      | -0.6574 |
| Distance of the Nearest Market                                     | 0.0009       | 0.0002  | 0.5388       | 0.1073  |
| Distance of the Nearest Metal Road                                 | 0.5828       | 0.1121  | -0.7555      | -0.1434 |
| Distance of the District Headquarter                               | 0.5980       | 0.5903  | 0.3575       | 0.3523  |
| Distance of the Capital City                                       | -0.1544      | -0.5663 | -0.0763      | -0.2747 |
| R <sup>2</sup>   | 0.352        |         | 0.313        |         |
| N  | 252          |         | 252          |         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

Table 7.21  
Results of the OLS Model on  
Productive Assets

|  | Model One     |         | Model Two     |         |
|--|---------------|---------|---------------|---------|
|  | Coefficients  | t       | Coefficients  | t       |
| (Constant)   | 391.9259      | 0.0089  | -2169.1780    | -0.0481 |
| Total Household Male Members 15-60                                 | -10789.0590   | -1.0379 | -7412.9787    | -0.6964 |
| Square of Total Household Male Members Between 15-60               | 3136.2750     | 1.6130  | 2652.4431     | 1.3265  |
| Total Household Member Except male 15-60                           | 8374.7842     | 1.1526  | 8175.9497     | 1.0977  |
| Square of Total Household Member Except Male Members Between 15-60 | -767.6124     | -0.8577 | -820.3116     | -0.8941 |
| Household Head Age   | -2028.7349    | -1.1247 | -1113.8770    | -0.6076 |
| Square Household Head Age  | 29.6411       | 1.3831  | 19.3204       | 0.8868  |
| Average Education Score of Household Members                       | 3430.7783 *** | 3.1012  | 3451.3059 *** | 3.0456  |
| Household Head Occupation (Dummy, Agriculture)                     | -10853.9733   | -1.5178 | -11112.3387   | -1.5153 |
| Household Head Occupation (Dummy, Business)                        | 8294.7713     | 1.2938  | 10005.5521    | 1.5271  |
| Total Agricultural Land (Before Membership)                        | 258.1699 **   | 1.9718  | 271.3000 **   | 2.0236  |
| Current Amount of Microcredit                                      | 1.3832 ***    | 3.8713  |               |         |
| Programme Member (Dummy)   |               |         | 11510.9455 *  | 1.6959  |
| Existence of a School in the Village (Dummy)                       | 2409.6569     | 0.3708  | 4367.5204     | 0.6418  |
| Distance of the Nearest Market                                     | -7823.8861    | -1.2257 | -10021.9861   | -1.5195 |
| Distance of the Nearest Metal Road                                 | 12841.3935 *  | 1.8482  | 14790.1479 ** | 2.0436  |
| Distance of the District Headquarter                               | -2383.8551 *  | -1.7325 | -2602.5082 *  | -1.8366 |
| Distance of the Capital City                                       | 366.9060      | 0.9936  | 185.5042      | 0.4773  |
| D <sup>2</sup>   | 0.242         |         | 0.205         |         |
| N  | 260           |         | 260           |         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

Table 7.22  
Results of the OLS Model on  
Value of Dwelling House

|  | Model One     |         | Model Two     |         |
|--|---------------|---------|---------------|---------|
|  | Coefficients  | t       | Coefficients  | t       |
| (Constant)   | 54650.1844 *  | 1.6642  | 51307.1724    | 1.5258  |
| Total Household Male Members 15-60                                 | 10809.7930    | 1.3865  | 13669.5135 *  | 1.7235  |
| Square of Total Household Male Members Between 15-60               | -1660.0454    | -1.1349 | -2153.5620    | -1.4422 |
| Total Household Member Except male 15-60                           | -1283.4067    | -0.2351 | -1574.5547    | -0.2831 |
| Square of Total Household Member Except Male Members Between 15-60 | 602.4015      | 0.8967  | 577.4043      | 0.8433  |
| Household Head Age   | -681.3596     | -0.5018 | -82.0779      | -0.0599 |
| Square Household Head Age  | 10.3226       | 0.6395  | 3.2863        | 0.2019  |
| Average Education Score of Household Members                       | 1364.8033     | 1.6154  | 1266.0933     | 1.4726  |
| Household Head Occupation (Dummy, Agriculture)                     | -5403.4152    | -0.9824 | -5117.1448    | -0.9111 |
| Household Head Occupation (Dummy, Business)                        | -1872.1815    | -0.3890 | -1124.4221    | -0.2296 |
| Total Agricultural land (Present)                                  | 6.5234        | 0.1324  | 7.5174        | 0.1493  |
| Productive Assets  | 0.0791 *      | 1.6529  | 0.1107 **     | 2.3270  |
| Current Amount of Microcredit Programme Member (Dummy)             | 0.9996 ***    | 3.6141  |               |         |
| Existence of a School in the Village (Dummy)                       | -8313.7880 *  | -1.7057 | 10152.6020 ** | 1.9838  |
| Distance of the Nearest Market                                     | -1722.3073    | -0.3560 | -7691.7192    | -1.5158 |
| Distance of the Nearest Metal Road                                 | -8994.7716 *  | -1.7239 | -2505.4317    | -0.5022 |
| Distance of the District Headquarter                               | -2545.4453 ** | -2.4634 | -8673.4484    | -1.6014 |
| Distance of the Capital City                                       | -466.8848 *   | -1.6860 | -2668.9727 ** | -2.5225 |
| R <sup>2</sup>   | 0.231         |         | -557.0841 *   | -1.9286 |
| N  | 260           |         | 0.203         |         |
|  |               |         | 260           |         |

'\*' Denotes that the variable concerned is significant at least at 10% level of significance. '\*\*\*' Denotes that the variable concerned is significant at least at 5% level of significance. '\*\*\*' Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.23**  
**Results of the OLS Model on**  
**Current Total Financial Assets**

|  | Model One    |         | Model Two     |         |
|--|--------------|---------|---------------|---------|
|  | Coefficients | t       | Coefficients  | t       |
| (Constant)   | -9071.3985   | -0.7468 | -11514.8857   | -0.9386 |
| Total Household Male Members 15-60                                 | 512.5835     | 0.1777  | 1588.5150     | 0.5490  |
| Square of Total Household Male Members Between 15-60               | 11.1900      | 0.0207  | -193.4901     | -0.3552 |
| Total Household Member Except male 15-60                           | 83.6480      | 0.0414  | 95.4173       | 0.0470  |
| Square of Total Household Member Except Male Members Between 15-60 | -94.7027     | -0.3811 | -113.3646     | -0.4538 |
| Household Head Age   | 500.8467     | 0.9973  | 613.6712      | 1.2286  |
| Square Household Head Age  | -6.6671      | -1.1167 | -8.0546       | -1.3566 |
| Average Education Score of Household Members                       | 949.8803 *** | 3.0394  | 922.8266 ***  | 2.9420  |
| Household Head Occupation (Dummy, Agriculture)                     | -2612.9073   | -1.2843 | -2355.6928    | -1.1497 |
| Household Head Occupation (Dummy, Business)                        | 69.5761      | 0.0391  | 172.3540      | 0.0965  |
| Total Agricultural land (Present)                                  | 55.1355 ***  | 3.0259  | 53.4648 ***   | 2.9109  |
| Productive Assets  | 0.0112       | 0.6303  | 0.0196        | 1.1283  |
| Current Amount of Microcredit Programme Member (Dummy)             | 0.3206 ***   | 3.1335  | 5151.6399 *** | 2.7592  |
| Existence of a School in the Village (Dummy)                       | 2676.0584    | 1.4843  | 2342.4073     | 1.2653  |
| Distance of the Nearest Market                                     | -1808.5541   | -1.0105 | -1624.6026    | -0.8926 |
| Distance of the Nearest Metal Road                                 | 2020.8554    | 1.0470  | 1625.8869     | 0.8228  |
| Distance of the District Headquarter                               | -54.8701     | -0.1436 | -136.6764     | -0.3541 |
| Distance of the Capital City                                       | -5.9448      | -0.0580 | 3.8821        | 0.0368  |
| R <sup>2</sup>   | 0.214        |         | 0.207         |         |
| N  | 260          |         | 260           |         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

Table 7.24  
Results of the OLS Model on  
Household Assets

|  | Model One       |         | Model Two       |         |
|--|-----------------|---------|-----------------|---------|
|  | Coefficients    | t       | Coefficients    | t       |
| (Constant)   | -43024.6217     | -0.3836 | -43747.6209     | -0.3856 |
| Total Household Male Members 15-60                                 | 36844.4929      | 1.3835  | 41135.2798      | 1.5372  |
| Square of Total Household Male Members Between 15-60               | -7914.7477      | -1.5841 | -8586.4370 *    | -1.7043 |
| Total Household Member Except male 15-60                           | 11625.2058      | 0.6234  | 10749.1571      | 0.5728  |
| Square of Total Household Member Except Male Members Between 15-60 | -1315.1101      | -0.5731 | -1319.1012      | -0.5710 |
| Household Head Age   | 2597.3136       | 0.5600  | 3904.3298       | 0.8452  |
| Square Household Head Age  | -20.9661        | -0.3803 | -36.0848        | -0.6572 |
| Average Education Score of Household Members                       | 10058.6373 ***  | 3.4854  | 9874.0196 ***   | 3.4037  |
| Household Head Occupation (Dummy, Agriculture)                     | -13680.7537     | -0.7282 | -13792.5269     | -0.7278 |
| Household Head Occupation (Dummy, Business)                        | -16277.7158     | -0.9902 | -14509.2951     | -0.8781 |
| Total Agricultural land (Present)                                  | 178.0037        | 1.0579  | 186.8979        | 1.1003  |
| Productive Assets  | 0.5047 ***      | 3.0873  | 0.5647 ***      | 3.5171  |
| Current Amount of Microcredit Programme Member (Dummy)             | 1.7008 *        | 1.8002  |                 |         |
| Existence of a School in the Village (Dummy)                       | -23978.3916     | -1.4403 | 10411.1697      | 0.6029  |
| Distance of the Nearest Market                                     | 3522.1459       | 0.2131  | -20989.6747     | -1.2260 |
| Distance of the Nearest Metal Road                                 | -5452.0116      | -0.3059 | 614.3820        | 0.0365  |
| Distance of the District Headquarter                               | -11213.0283 *** | -3.1768 | -3102.2056      | -0.1698 |
| Distance of the Capital City                                       | 647.8620        | 0.6849  | -11270.4560 *** | -3.1570 |
| R <sup>2</sup>   | 0.212           |         | 0.203           |         |
| N  | 260             |         | 260             |         |

\*, \*\* Denotes that the variable concerned is significant at least at 10% level of significance. \*\*\* Denotes that the variable concerned is significant at least at 5% level of significance. \*\*\*\* Denotes that the variable concerned is significant at least at 1% level of significance.



**Table 7.25**  
**Results of the OLS Model on**  
**Current Business Capital from Own Source**

|  | Model One      |         | Model Two      |         |
|--|----------------|---------|----------------|---------|
|  | Coefficients   | t       | Coefficients   | t       |
| (Constant)   | 21769.8777     | 0.9288  | 21811.8272     | 0.9272  |
| Total Household Male Members 15-60                                 | 132.9254       | 0.0276  | 855.3739       | 0.1769  |
| Square of Total Household Male Members Between 15-60               | 368.1224       | 0.4177  | 193.4475       | 0.2183  |
| Total Household Member Except male 15-60                           | -1156.2874     | -0.3515 | -816.2879      | -0.2486 |
| Square of Total Household Member Except Male Members Between 15-60 | 257.7752       | 0.6681  | 202.2842       | 0.5268  |
| Household Head Age   | -1391.6847     | -1.3368 | -1298.1284     | -1.2533 |
| Square Household Head Age  | 14.3899        | 1.2405  | 13.8533        | 1.1934  |
| Average Education Score of Household Members                       | -46.5005       | -0.0782 | -247.0588      | -0.4184 |
| Household Head Occupation (Dummy, Agriculture)                     | 4225.0685      | 0.7750  | 2249.6645      | 0.4189  |
| Household Head Occupation (Dummy, Business)                        | 5668.1864 *    | 1.7048  | 4554.4041      | 1.3645  |
| Total Agricultural land (Present)                                  | 26.5001        | 0.7019  | 17.0843        | 0.4501  |
| Productive Assets  | 0.1896 ***     | 3.9678  | 0.2175 ***     | 4.9222  |
| Current Amount of Microcredit                                      | 0.3949 **      | 2.2903  |                |         |
| Programme Member (Dummy)   |                |         | 7423.3239 **   | 2.1803  |
| Existence of a School in the Village (Dummy)                       | -6890.6548 **  | -2.2080 | -7908.4006 **  | -2.4409 |
| Distance of the Nearest Market                                     | 1890.9019      | 0.4345  | 1155.8618      | 0.2661  |
| Distance of the Nearest Metal Road                                 | -10225.7331 ** | -2.3942 | -11827.7050 ** | -2.6195 |
| Distance of the District Headquarter                               | 319.3955       | 0.3795  | 308.0927       | 0.3651  |
| Distance of the Capital City                                       | 193.6218       | 1.0230  | 183.6463       | 0.9704  |
| R <sup>2</sup>   | 0.45           |         | 0.447          |         |
| N  | 100            |         | 100            |         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*’ Denotes that the variable concerned is significant at least at 5% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.26**  
**Results of the OLS Model on**  
**Current Total Business Capital (including Business Capital from Own Source)**

|  | Model One       |         | Model Two       |         |
|--|-----------------|---------|-----------------|---------|
|  | Coefficients    | t       | Coefficients    | t       |
| (Constant)   | 27098.9585      | 0.9705  | 29317.8686      | 1.0669  |
| Total Household Male Members 15-60                                 | 2948.7065       | 0.5148  | 4069.5313       | 0.7204  |
| Square of Total Household Male Members Between 15-60               | -336.4888       | -0.3205 | -590.8547       | -0.5707 |
| Total Household Member Except male 15-60                           | -139.1481       | -0.0355 | 31.7659         | 0.0083  |
| Square of Total Household Member Except Male Members Between 15-60 | 180.0235        | 0.3916  | 145.0688        | 0.3234  |
| Household Head Age   | -1577.0818      | -1.2716 | -1694.7727      | -1.4006 |
| Square Household Head Age  | 15.5262         | 1.1235  | 17.3614         | 1.2802  |
| Average Education Score of Household Members                       | 812.4073        | 1.1473  | 574.9269        | 0.8335  |
| Household Head Occupation (Dummy, Agriculture)                     | 5876.8757       | 0.9049  | 3720.3884       | 0.5930  |
| Household Head Occupation (Dummy, Business)                        | 5529.1286       | 1.3960  | 4026.3100       | 1.0325  |
| Total Agricultural land (Present)                                  | 1.7843          | 0.0397  | -11.4087        | -0.2573 |
| Productive Assets  | 0.2473 ***      | 4.3455  | 0.2733 ***      | 5.2946  |
| Current Amount of Microcredit                                      | 0.4589 **       | 2.2341  |                 |         |
| Programme Member (Dummy)   |                 |         | 11213.6476 ***  | 2.8193  |
| Existence of a School in the Village (Dummy)                       | -7626.8261 **   | -2.0515 | -9541.2355 **   | -2.5208 |
| Distance of the Nearest Market                                     | 855.8628        | 0.1651  | 85.9004         | 0.0169  |
| Distance of the Nearest Metal Road                                 | -13719.8166 *** | -2.6965 | -16874.1611 *** | -3.1990 |
| Distance of the District Headquarter                               | 249.2326        | 0.2486  | 304.2610        | 0.3086  |
| Distance of the Capital City                                       | 168.4684        | 0.7472  | 197.2785        | 0.8923  |
| R <sup>2</sup>   | 0.473           |         | 0.491           |         |
| N  | 100             |         | 100             |         |

\*\*, \* Denotes that the variable concerned is significant at least at 10% level of significance. \*\*\*, \*\*\* Denotes that the variable concerned is significant at least at 5% level of significance. \*\*\*\*, \*\*\*\* Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.27**  
**Results of the OLS Model on**  
**Total Household Assets (Including Land Value)**

|  | Model One      |         | Model Two       |         |
|--|----------------|---------|-----------------|---------|
|  | Coefficients   | t       | Coefficients    | t       |
| (Constant)   | -119151.6410   | -0.7200 | -128537.9612    | -0.7527 |
| Total Household Male Members 15-60                                 | 48098.1442     | 1.2250  | 61256.1539      | 1.5204  |
| Square of Total Household Male Members Between 15-60               | -7878.4233     | -1.0728 | -9750.6476      | -1.2884 |
| Total Household Member Except male 15-60                           | 42935.4605     | 1.5644  | 42110.0954      | 1.4938  |
| Square of Total Household Member Except Male Members Between 15-60 | -5486.1261     | -1.6230 | -5687.5417      | -1.6378 |
| Household Head Age   | 87.7380        | 0.0129  | 3713.5905       | 0.5352  |
| Square Household Head Age  | 21.9715        | 0.2714  | -18.9091        | -0.2293 |
| Average Education Score of Household Members                       | 18651.6078 *** | 4.4638  | 18733.7737 ***  | 4.3679  |
| Household Head Occupation (Dummy, Agriculture)                     | -16765.5271    | -0.6207 | -17837.0500     | -0.6427 |
| Household Head Occupation (Dummy, Business)                        | 1738.9412      | 0.0718  | 8516.6148       | 0.3434  |
| Total Agricultural Land (Before Membership)                        | 4722.4011 ***  | 9.5493  | 4773.8698 ***   | 9.4078  |
| Current Amount of Microcredit                                      | 5.4223 ***     | 4.0181  |                 |         |
| Programme Member (Dummy)   |                |         | 44216.8914 *    | 1.7212  |
| Existence of a School in the Village (Dummy)                       | -36780.1543    | -1.4984 | -28837.6088     | -1.1196 |
| Distance of the Nearest Market                                     | -17062.4571    | -0.7077 | -25885.1506     | -1.0369 |
| Distance of the Nearest Metal Road                                 | 23103.9341     | 0.8804  | 30997.0387      | 1.1316  |
| Distance of the District Headquarter                               | -13190.9560 ** | -2.5382 | -14028.4449 *** | -2.6157 |
| Distance of the Capital City                                       | 1301.7094      | 0.9333  | 571.3770        | 0.3884  |
| R <sup>2</sup>   | 0.427          |         | 0.396           |         |
| N  | 260            |         | 260             |         |

\*\*\* Denotes that the variable concerned is significant at least at 10% level of significance. \*\* Denotes that the variable concerned is significant at least at 5% level of significance. \* Denotes that the variable concerned is significant at least at 1% level of significance.

**Table 7.28**  
**Results of the OLS Model on**  
**Total Household Assets excluding Value of Land**

|  | Model One      |         | Model Two      |         |
|--|----------------|---------|----------------|---------|
|  | Coefficients   | t       | Coefficients   | t       |
| (Constant)   | 8339.8588      | 0.1286  | 398.0450       | 0.0059  |
| Total Household Male Members 15-60                                 | 4511.5722      | 0.2933  | 11681.1826     | 0.7295  |
| Square of Total Household Male Members Between 15-60               | 1092.0084      | 0.3795  | 7.8792         | 0.0026  |
| Total Household Member Except male 15-60                           | 10835.4926     | 1.0078  | 10625.2119     | 0.9484  |
| Square of Total Household Member Except Male Members Between 15-60 | -872.5863      | -0.6589 | -1001.2145     | -0.7254 |
| Household Head Age   | -956.4767      | -0.3584 | 733.0110       | 0.2658  |
| Square Household Head Age  | 18.2649        | 0.5759  | -0.8945        | -0.0273 |
| Average Education Score of Household Members                       | 8010.0499 ***  | 4.8932  | 8044.5590 ***  | 4.7194  |
| Household Head Occupation (Dummy, Agriculture)                     | -22426.6324 ** | -2.1194 | -22703.8889 ** | -2.0582 |
| Household Head Occupation (Dummy, Business)                        | -1331.7628     | -0.1404 | 1838.7421      | 0.1866  |
| Total Agricultural Land (Before Membership)                        | 385.9403 **    | 1.9920  | 412.5834 **    | 2.0458  |
| Current Amount of Microcredit                                      | 2.8050 ***     | 5.3056  |                |         |
| Programme Member (Dummy)   |                |         | 27161.4361 *** | 2.6603  |
| Existence of a School in the Village (Dummy)                       | 4151.4019      | 0.4317  | 6997.9134      | 0.6836  |
| Distance of the Nearest Market                                     | -16892.3380 *  | -1.7883 | -20485.0971 ** | -2.0648 |
| Distance of the Nearest Metal Road                                 | 17881.5387 *   | 1.7393  | 20767.3049 *   | 1.9076  |
| Distance of the District Headquarter                               | -5174.9918 **  | -2.5417 | -5701.1089 *** | -2.6747 |
| Distance of the Capital City                                       | -38.0388       | -0.0696 | -325.1831      | -0.5562 |
| R <sup>2</sup>   | 0.359          |         | 0.305          |         |
| N  | 260            |         | 260            |         |

\*(\*) Denotes that the variable concerned is significant at least at 10% level of significance. (\*\*\*) Denotes that the variable concerned is significant at least at 5% level of significance. (\*\*\*\*) Denotes that the variable concerned is significant at least at 1% level of significance.

## **Chapter Eight: Analysis of Data: Impact on Microcredit on Basic Needs and Living Standards**

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### **8.1 Introduction**

In our theoretical research framework in chapter six, we argued that microcredit increases income, consumption and assets of borrowing households. We also argued that microcredit increases entitlement of borrowing households to basic needs. From the analyses carried out in the last chapter (chapter seven), we found that microcredit increases income, consumption and assets of borrowing households. We concluded that microcredit also increases entitlement of borrowing households through increasing assets of borrowing households. If microcredit increases entitlement, then the increased entitlement should reflect efficiently on the fulfilment of basic needs of borrowing households' i.e. programme households should have better status in terms of basic needs compared to those of comparison households. In this chapter, we are going to examine whether microcredit improves fulfilment of basic needs and living standards of borrowing households. For this purpose, a comparison has been conducted between programme households and comparison households in terms of four basic need components and four proxies for living standards. Four basic need components are (a) education, (b) health, (c) shelter and (d) food. Four proxies for measuring living standards are (a) possession of consumer durables, (b) savings for the rainy season, (c) bank accounts of household heads with any formal sector commercial bank and (d) number of hired employees for the whole year.

Two kinds of analyses have been conducted to assess the impact of microcredit on basic needs and proxies for living standard. These are descriptive analysis and the test of null hypotheses.

## **8.2 Main Statistical Techniques Used in the Analysis**

Mean, percentage and ratios have been used in descriptive analyses to assess the impact of microcredit on basic needs and proxies of living standard of borrowing households through comparison of the relevant variables of programme households with those of comparison households.

For testing null hypotheses, independent samples t-test and analysis of variance (ANOVA) have been used. Non-parametric test,  $\chi^2$  – chi-square test, has also been carried out to compare comparison households and programme households.

For both the parametric and non-parametric tests, the accepted level of significance has been chosen at 10% level.

## **8.3 Structure of the Analysis**

Analyses of the impact of microcredit on basic needs and living standard are carried out independently and structured in the following way:

1. **Descriptive analysis:** in this section, means and distribution of variables will be discussed.
2. **Test of hypotheses:** in this section, relevant null hypotheses will be tested and results of the test will also be presented.
3. **Discussion of Results:** in this section, we will discuss results of descriptive analyses and the test of hypotheses.
4. **Summary of Results:** in this section, summary of results of descriptive analyses and the test of hypotheses will be presented.

Test of hypotheses section will be structured in the following way:

- c. **Statement of the hypotheses:** in this section, the statement of the hypotheses will be presented.
- d. **Test results:** in this section, we will present test results.

## **8.4 Impact of Microcredit on Literacy and Education**

Education is, without any doubt, the most important basic social need. It enables an individual to participate fully in a society. Available evidence indicates that investment on education provides high rates of return in both monetary and indirect social benefits [UNCSTD (1997)]. In developing countries like Bangladesh, poor people do not have entitlement to education because they do not have capability to spend on education. For this reason, poor people prefer their children to help them in farm activities rather than sending them to schools. In this section, we are going to examine whether microcredit increases entitlement of borrowing households on

education for their children. For this purpose, two variables have been used to assess the impact of microcredit on literacy and education of borrowing households. These two variables are (1) school attendance of children between 6 to 13 years old, and (2) yearly total educational expenditure of households.

#### **8.4.1 Descriptive Analysis**

Table 8.1 shows that all children between 6 to 13 years old in 87.4% of programme households attend school. On the other hand, all children between 6 to 13 years old in 83.51% of comparison households attend school. These percentages indicate that higher percentage of programme households compared to comparison households send their children to school.

Table 8.2 shows that the average yearly total educational expenditure of programme households is Taka 1669.30 and the co-efficient of variation is 1.72. In contrast, the average yearly total educational expenditure of comparison households is Taka 711.53 and the coefficient of variation is 1.57. The average yearly total educational expenditure of programme households is 135% higher than the average yearly total educational expenditure of comparison households.

#### **8.4.2 Test of hypotheses**

In this the section, two hypotheses on education of households will be tested. Independent-samples t-test, chi-square test and Leven's test for equality of variances have been conducted to test hypotheses.



### **a. Statement of Hypotheses**

There are no significant differences between programme households and comparison households in terms of following:

- (1) school attendance of 6 to 13 years old children in the household,
- (2) the average yearly total educational expenditure.

### **b. Test Results**

Although table 8.1 shows better results in favour of programme households in terms of school attendance of 6 to 13 years old children compared to that of comparison households, the chi-square (Table 8.3) value does not reject the null hypothesis on school attendance of 6 to 13 years old children. Therefore, there is no statistically significant difference between programme households and comparison households in terms of 'school attendance of 6 to 13 years old children in the household'.

Table 8.3 presents the results of the test of null hypothesis on 'yearly total educational expenditure'. The t-test result rejects the null hypothesis. The rejection of the null hypothesis indicates that programme households are significantly different from comparison households in terms of yearly total educational expenditure.

### **8.4.3 Discussion of Results**

The descriptive analyses show better status of programme households compared to comparison households in terms of 'school attendance of 6 to 13 years old children in the household' and 'yearly total educational expenditure'. Approximately 4% more programme households are sending their 6-13 years children to school compared to comparison households. Programme households are spending 135% more on education of children compared to comparison households.

Although the descriptive analyses show better performance of programme households in terms of school attendance of 6 to 13 years old children in the household compared to comparison households, the test of hypothesis result does not reject the null hypothesis in this case. This result most probably can be explained by the existence of 'food for education programme' for girls and free education for boys up to grade five in the survey area. During the Khaleda Zia regime in Bangladesh (1991-1996), the government introduced a programme to encourage girls' education in the rural areas of Bangladesh. The programme is known as 'Food for Education' programme. Every household receives 30 KGs of wheat for sending a girl to the school. Government provides school uniform as well as books. Girls are not required to pay tuition fees up to Grade eight. Households do not receive these kinds of advantages for sending boys to the school. But education is also free for boys' up to grade 5 in rural areas. So far we perceive that the school attendance of 6 to 13 years old children of programme households is not significantly different from the school attendance of 6 to 13 years old children of comparison households for these reasons.

To summarise the discussion above, since education is free up to class five for boys and class eight for girls, the school attendance of 6-13 years children does not reflect

entitlement of borrowing households to education, rather yearly total educational expenditure reflects entitlement of households to education. This is due to the reason that for boys after class five and for girls after class eight, parents require bearing all expenses, if parents do not have capability to spend on education, then boys after class five and girls after class eight will not be able to continue their education. However, the test of hypothesis result rejects the null hypothesis on 'yearly total educational expenditure'. The rejection of the null hypothesis and higher average of yearly total educational expenditure for programme households compared to comparison households indicate that microcredit increases the entitlement of borrowing households to education through increasing their capabilities to spend more on education.

#### **8.4.4 Summary of Results**

The assessment of the impact of microcredit on education of children of borrowing households indicates following important results:

- higher number (approximately four per cent) of programme households send their 6 to 13 years children to school compared to comparison households,
- programme households spend 135% higher on education of children compared to comparison households,
- programme households spend significantly higher on education of children compared to programme households.

## 8.5 Impact of Microcredit on Health

In this section, we have used three variables for assessing impacts of microcredit on health of borrowing households. These variables are (1) households reporting sick children in last 3 months, (2) yearly total medical expenditure, and (3) the immediate last medical advice.

### 8.5.1 Descriptive Analysis

Table 8.5 shows that 42.67% percent of comparison households with children aged under 5 have reported sick children in last 3 months. In contrast, 26.83% of programme households with children aged under 5 have reported sick children in last 3 months. Therefore, comparison households have relatively more under 5 sick children compared to that of programme households.

Table 8.6 shows that the average yearly total medical expenditure of programme households is Taka 1437, while the average yearly total medical expenditure of comparison households is Taka 932. The average yearly total medical expenditure of programme households is 54% higher than that of comparison households.

Table 8.7 shows the types of medical advice households have taken during the immediate last sickness of a member of the household. Table 8.7 illustrates that while 41.09% of programme households took advice from a qualified private practitioner<sup>70</sup>,

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<sup>70</sup> In Bangladesh, the public medical sector is not efficient and is somewhat limited in its scope. It does not provide all required health services. The public sector medical facilities are not available in all places of Bangladesh, especially in rural areas. For these reasons, people go to the private medical

only 27.48% of comparison households have taken medical advice from such practitioner.

### **8.5.2 Test of hypotheses**

In this section, the null hypotheses, which have been constructed in chapter six, will be tested. Independent-samples t-test, chi-square test and Leven's test for equality of variances have been conducted to test hypotheses.

#### **a. Statement of Hypotheses**

There are no significant deferences between programme households and comparison households in terms of following:

1. households reporting under 5 sick children in last 3 months,
2. yearly total medical expenditure, and
3. the immediate last medical advice.

#### **b. Test Results**

The chi-square result (Table 8.8) rejects the null hypothesis on 'households reporting under 5 sick children'. The rejection of the null hypothesis means that there is a significant difference between programme households and comparison households in terms of under five sick children. The sickness of an under five child indicates the

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practitioners. Private medical practitioners charge fees for their medical advice and people have to buy

malnutrition of that child and it also indicates lack of enough capability of parents of that child to provide required nutritious food to the child. The rejection of the null hypothesis on 'under 5 sick children' indicates that programme households have higher capabilities to provide required nutritious food to their under 5 children.

The t-test result (Table 8.9) rejects the null hypothesis on yearly total medical expenditure, i.e. there is a significant difference between programme households and comparison households in terms of yearly total medical expenditure. This result reveals that programme households spend significantly higher amount of money on health and medical purposes compared to comparison households.

There is a significant difference between programme households and comparison households in terms of the immediate last medical advice taken by the households during the immediate last sickness of a member of the household as the chi-square result in table 8.10 rejects the null hypothesis. This means that programme households have more ability to pay fees of a qualified private practitioner and also have more ability to purchase medicine.

### **8.5.3 Discussion of Results**

The descriptive results and results of the test of hypotheses show that programme households have better status in terms of health indicators compared to comparison households. In descriptive analyses, we have found that programme households have reported fewer sick children (approximately 16% lower) compared to comparison

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prescribed medicine from private drug stores. Therefore, poor people do not go to the private medical

households. Programme households spends 54% more on health and medicine compared to comparison households. Higher number (approximately 14%) of programme households seek advice from the qualified physicians compared to comparison households.

The results of the test of hypotheses show that all three null hypotheses on health have been rejected. The rejection of null hypotheses means that programme households are significantly different from comparison households in terms of ‘under five sick children’, ‘yearly total medical expenditure’ and ‘immediate last medical advice’.

Higher percentages and averages for programme households, and the rejection of null hypotheses indicate that programme households have significantly better health status compared to comparison households. These results indicate that microcredit increases entitlement of programme households on better health through increasing their capability to spend more on health.

#### **8.5.4 Summary of Results**

The analyses of the impact of microcredit on health of borrowing households yield the following key results:

- lower percentage (16%) of programme households reports under five sick children compared to comparison households;
- programme households are spending 54% higher on health and medicine compared to comparison households;

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practitioners, because they do not have the ability to pay fees and buy prescribed medicines.

- higher percentage (14%) of programme households receive medical advice from qualified practitioners;
- programme households have significantly better status in terms of under-five sick children, yearly total medical expenditure, and advice from qualified physicians.

## **8.6 Impact of Microcredit on Shelter**

In this section, we are going to assess the impact of microcredit on shelter of borrowing households through a comparison between different indicators of shelter of programme households and those of comparison households. If we find better status of programme households' in terms of these indicators of shelter compared to comparison households, then we would be able to conclude that microcredit increases entitlement of borrowing households on better shelter. For analysing shelter status, we have used four indicators related to shelter. These four indicators are (1) total area of living space, (2) housing condition (roof), (3) housing condition (side-walls), and (4) value of the dwelling house.

### **8.6.1 Descriptive Analysis**

Table 8.11 shows that the average living space of programme households is 191.76 square cubit<sup>71</sup>. On the other hand, the average living space of comparison households is 118.85 square cubit. The average living space of programme households is 61% higher than the average living space of comparison households.



Table 8.12 reveals the condition of the roof of the dwelling house of programme as well as comparison households. The table shows that a programme household (00.76% of programme households) and a comparison household (00.78% of comparison households) have concrete roofs. 71.32% of programme households and 77.10% of comparison households have roofs of tin, 8.53% of programme households and 2.29% of comparison households have roofs of partially tin and partially leaves. 19.37% of programme households and 19.85% of comparison households have roofs of leaves only. These results indicate that 72.08% of programme households and 77.88% of comparison households have weatherproof roofs (roofs of concrete and tin). It has been expected that programme households should have better status in terms of the condition of the roof of the dwelling house, but Table 8.9 reveals that comparison households have better status in terms of that.

Table 8.13 presents the condition of side-walls of the dwelling house. While 15.50% of programme households have side-walls of bricks, this percentage share decrease to 6.11% for comparison households. From the perspective of side-walls of tin, 4.65% of programme households and 2.29% of comparison households have this type of side-walls. Table 8.13 also shows that 13.95% of programme households and 18.32% of comparison households have side-walls of bamboo fence, 3.88% of programme households and 5.34% of comparison households have side-walls of leaves and 67.94% of programme households and 62.02% of comparison households have side-walls of mud. All these statistics indicate that 20.15% of programme households and 8.40% of comparison households have weatherproof (side-walls of bricks and tin)

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<sup>71</sup> Cubit is a measure by the length of the arm from the elbow to the tip of the middle finger, equal to

side-walls of the dwelling house. Therefore, programme households have better status in terms of the condition of side-walls of the dwelling house than that of comparison households.

Table 8.14 demonstrates the present market value of the dwelling house of households. The average value of the dwelling house of programme households and comparison households are Taka 36298 and Taka 21950 respectively. The average value of the dwelling house of programme households is 65% higher than that of comparison households.

### **8.6.2 Test of hypotheses**

The null hypotheses, which have been constructed on shelter status of households, will be tested here. Three variables have been used to test null hypotheses and these are (1) total area of living space, (2) housing condition (side-walls), and (3) value of the dwelling house. The variable on 'condition of the roof of the dwelling house' has been excluded from the test of hypothesis, because the earlier descriptive analysis failed to provide any conclusive result.

#### **a. Statement of Hypotheses**

There are no significant differences between programme households and comparison households in terms of following:

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18" to 22".

- (1) total area of living space;
- (2) housing condition (side-walls); and
- (3) value of the dwelling house.

#### **b. Test Results**

Table 8.15 and 8.17 show that the t-test results reject null hypotheses on the average total area of living space and the average value of the dwelling house. The chi-square value in table 8.16 rejects the null hypothesis on the condition of side-walls of the dwelling house of households. Therefore, the rejection of null hypotheses means that programme households are significantly different from comparison households in terms of total area of living space, value of the dwelling house and the condition of side-walls of the dwelling house.

#### **8.6.3 Discussion of Results**

The descriptive analyses show that programme households have 61% more living space compared to comparison households. The descriptive statistics of housing condition (roof) do not indicate better status of programme households compared to comparison households, although the better status of programme households has been expected. On the other hand, the descriptive statistics of housing condition (side-walls) indicate better status of programme households compared to that of comparison households. Moreover, the average value of the dwelling house of programme households is 65% higher than that of comparison households.

The results of test of hypotheses reject null hypotheses on total area of living space, housing condition (side-walls) and value of the dwelling house. The better value of descriptive statistics of these indicators for programme households and the rejection of null hypotheses indicate that programme households have significantly better status in terms of these indicators of shelter compared to comparison households.

The results of descriptive analyses and test of hypotheses indicate that microcredit increases entitlement of borrowing households to better shelter through increasing their income and the asset base. The increased income and asset base enhances capability of borrowing households to spend more on the dwelling house to improve their living standard.

#### **8.6.4 Summary of Results**

The assessment of the impact of microcredit on shelter of borrowing households shows following key results:

- programme households have 61% more living space compared to comparison households;
- programme households have better side-walls of the dwelling house compared to comparison households;
- programme households have 65% higher value of the dwelling house compared to comparison households;
- programme households have significantly better position in terms of total area of living space, side-walls of the dwelling house, and the value of the dwelling house compared to those of comparison households.

## **8.7 Impact of Microcredit on Food Availability**

In this section, we are going to compare programme households with comparison households in terms of food availability to assess the impact of microcredit on availability of food of borrowing households. Two variables have been used in this section for the comparison purpose. These two variables are (1) weekly total food consumption expenditure, and (2) the availability of food of households (in months).

### **8.7.1 Descriptive Analysis**

Table 8.18 shows the average weekly total food consumption expenditure of households. The average 'weekly total food consumption expenditure' of programme households and comparison households are Taka 858.58 and Taka 588.85 respectively. The average 'weekly total food consumption expenditure' of programme households is 46% percent higher than that of comparison households.

Table 8.19 and 8.20 show the availability of food of programme households and comparison households. Programme households can command enough food for the members of the household on an average for 11.58 months of a year. On the other hand, comparison households can manage to have food for the members of the household on an average for 9.31 months of a year. These two averages demonstrate that the availability of food is greater for programme households than comparison households. The co-efficient of variation of the 'availability of food in months' of programme households and comparison households are 0.13 and 0.26 respectively.

Table 8.20 shows the distribution of 'availability of food in months' of households. The distribution shows better status for programme households. While 62.60% of comparison households have food deficit, only 10.86% of programme households have food deficit.

### **8.7.2 Test of hypotheses**

In this section, the null hypotheses on food and consumption, which have been constructed in chapter six, will be tested. Independent-Samples t-test and Leven's test for equality of variances have been conducted to test hypotheses.

#### **a. Statement of Hypotheses**

There are no significant differences between programme households and comparison households in terms of following variables:

- (1) weekly total food consumption expenditure; and
- (2) availability of food of households (in months).

#### **b. Test Results**

Table 8.21 and 8.22 shows that the t-test results reject the null hypotheses on 'weekly total food consumption expenditure and 'availability of food of households'. The rejection of null hypotheses means that programme households have significantly higher 'weekly total food consumption expenditure and 'food availability' than those of comparison households.

### **8.7.3 Discussion of Results**

The descriptive results show that programme households are spending 46% higher on food compared to comparison households. A lesser proportion (approximately 51%) of programme households has food deficit compared to comparison households. Programme households on an average have food deficit of 0.42 months per annum. On the contrary, comparison households have food deficit of 1.69 months on an average per year.

The results of the test of hypotheses reject both null hypotheses on weekly total food consumption expenditure and the availability of food. The descriptive results and results of the test of null hypotheses disclose the fact that programme households have significantly better status in terms of food availability and food consumption compared to comparison households.

Finally, we can draw the conclusion from the results that microcredit increases entitlement of borrowing households to food through increasing their income and asset, and these households can afford to spend more on food.

### **8.7.4 Summary of Results**

The assessment of the impact of microcredit on food availability and consumption reveals following key results:

- programme households expend 46% higher on food compared to comparison households;
- programme households have food deficit of, on an average 0.42 months per annum, on the other hand, comparison households have food deficit of 1.69 months;
- only 10.86% of programme households have food deficit; by contrast, 62.60% of comparison households have food deficit;
- programme households have significantly better status in terms of food availability and consumption compared to those of comparison households.

## **8.8 Impact of Microcredit on Living Standards**

In this section, we are going to assess the impact of microcredit on the living standards of borrowing households. Four proxy variables have been identified for this purpose. These four proxies are:

- (1) possession of consumer durables,
- (2) savings for the rainy days and any natural disaster,
- (3) bank accounts of household heads with any formal sector commercial bank, and
- (4) the number of hired employees for the whole year.

A household consumer durables bundle, which consists of eight important consumer durables, is constituted to compare possession of consumer durables of programme households and that of comparison households. A consumer durables possession score



is calculated for each household on the basis of possession of eight important consumer durables. Each household has received one point for possessing each one of the eight consumer durables. The maximum possible 'consumer durables possession score' a household can receive is eight. The eight important consumer durables on the basis of which the 'consumer durables possession score' is calculated are:

| <b>Consumer Durables</b>                  | <b>Point</b> |
|---|--------------|
| Tube-well                                 | 1            |
| Radio                                     | 1            |
| Cassette Recorder                         | 1            |
| Sewing-Machine                            | 1            |
| Bi-Cycle                                  | 1            |
| Standard Bed                              | 1            |
| Show Case                                 | 1            |
| Dressing Table                            | 1            |
| <b>Consumer Durables Possession Score</b> | <b>8</b>     |

### 8.8.1 Descriptive Analysis

Table 8.23a shows the average consumer durables possession score of programme households and comparison households and table 8.23b shows the distribution of the consumer durables possession score of programme as well as comparison households. The average consumer durables possession score of programme households and comparison households are 2.16 and 1.61 respectively. These averages indicate that programme households possess greater bundle of consumer durables compared to comparison households. Although one single comparison household has got the highest consumer durables possession score, programme households have got higher scores compared to comparison households (Table 8.23b).

During the data collection period, respondents of households were asked whether they have any savings other than the savings with the Grameen Bank for the rainy days or any natural disaster. The answer of households was either yes or no. Table 8.24 shows answer of all households. Sixty-four programme households (49.61%) have such savings. On the other hand, forty-one comparison households (31.30%) have savings for the rainy days and natural disaster. Table 8.24 also shows that 50.39% of programme households and 68.70% of comparison households do not have any savings. The results demonstrate that programme households have better position in terms of savings for the rainy days and natural disaster compared to comparison households.

As we have seen in chapter two that in developing countries, poor people have been kept outside the formal sector financial institutions, because they do not have enough collateral to receive a loan from a formal sector financial institution and they do not have enough savings to open a bank account with any formal sector financial institution. It is not possible for poor people to open a bank account with any formal sector financial institution when they do not have savings. For this reason, it will be interesting to see that whether microcredit increases income as well as savings of borrowing households to the level that leads households to open an account with a commercial bank. Table 8.25 shows that twenty-one household heads, 16.28%, of programme households have accounts with any formal sector commercial bank. On the other hand, only eight household heads, 6.11%, of comparison households have accounts with any formal sector commercial bank. The results indicate that microcredit is helping some borrowing households to graduate from the informal financial sector to the formal financial sector.

Table 8.26a shows the number of households which have hired employees for the whole year. The table indicates that 14.73% of programme households have hired employees for the whole year. In contrast, only 2.29% of comparison households have hired employees for the whole year. The distribution table of 'hired employees for the whole year' (table 8.26b) illustrates that eight programme households (6.20%) and two comparison households (1.53%) have hired one employee each. Eight programme households (6.20%) and only one comparison household (0.76%) have hired two employees each for the whole year. Only two programme households (1.55%) have hired four employees for the whole year. One programme household (0.78%) was found to have hired nine employees for the whole year. These results indicate that programme households hire more people for the whole year compared to comparison households.

### **8.8.2 Test of hypotheses**

In this section, the null hypotheses, which have been developed in the chapter six, will be tested to examine whether programme households are significantly different from comparison households in terms of proxies for living standards.

#### **a. Statement of Hypotheses**

There are no significant differences between programme households and comparison households in terms of following:

- (1) possession of consumer durables,

- (2) savings for the rainy days and any natural disaster,
- (3) bank accounts of household heads with any formal sector commercial bank, and
- (4) the number of hired employees for the whole year.

## **b. Test Results**

In table 8.27, results of the test of hypotheses reject null hypotheses on all four living standards proxies, i.e. ‘possession of consumer durables score’, ‘savings for the rainy days and natural disaster’, ‘bank accounts of household heads with any formal sector commercial bank’ and ‘hired employees for the whole year’. The rejection of the null hypotheses indicates that programme households are significantly different from comparison households in terms of these four proxies for living standards.

### **8.8.3 Discussion of Results**

The descriptive analyses show that programme households have, on average, 0.5 higher consumer durables possession score compared to comparison households. The higher proportion of programme households (49.61% of programme households compared to 31.30% of comparison households) have savings for the rainy days and natural disasters. The higher proportions of programme household heads have a bank account with any formal sector commercial bank (16.28% compared to 6.11% of comparison households). Programme households (16.28%) hire more workers for the whole year compared to comparison households (6.11%).

The results of the test of hypotheses reject null hypotheses on possession of consumer durables, savings for the rainy days and natural disaster, bank accounts of household heads with any formal sector commercial bank, and hired employees for the whole year. It means that programme households are significantly different from comparison households in terms of these living standards proxies.

The higher averages, ratios and percentages for programme households and the rejection of null hypotheses indicate that programme households have significantly better status in terms of possession of consumer durables, savings for the rainy days and natural disaster, bank accounts of household heads with any formal sector commercial bank, and hired employees for the whole year compared to comparison households. These results demonstrate that microcredit improves living standards of borrowing households. Some borrowing households are graduated from the informal financial sector to the formal financial sector after certain period of microcredit programme membership. Microcredit improves employment status of borrowing households and it also creates employment for other people. Finally, it can be said that microcredit improves living standards of borrowing households.

#### **8.8.4 Summary of Results**

The following key results have been obtained from the analyses of the impact of microcredit on some living standard indicators:

- programme households own more (0.5 items on an average) consumer durables compared to comparison households,
- a higher proportion of programme households (49.61%) have savings for rainy days and natural disasters compared to comparison households (31.30%),

- a higher proportion of programme household heads (16.28%) have a bank account with a formal sector commercial bank compared to comparison households (6.11%),
- programme households (14.73%) hire more workers for the whole year compared to comparison households (2.29%),
- programme households have significantly better position in terms of possession of consumer durables, savings for the rainy days and natural disasters, bank account of household heads with a formal sector commercial bank and hired employees for the whole year, and finally,
- microcredit improves living standards of borrowing households through increasing their income and the asset base.

## **8.9 Summary of the Chapter**

In the previous chapter (chapter seven), we have seen that microcredit increases income, consumption and assets of borrowing households. In that chapter as well as in the research framework in chapter six, we argued that microcredit enhances entitlement of borrowing households on basic needs and thus, living standards through increasing their income and assets. We have also argued that the increased entitlement should have effects on fulfilment of basic needs of borrowing households, i.e. programme households should have better fulfilment of basic needs compared to comparison households. In the present chapter, we tried to test this theoretical argument that microcredit improves fulfilment of basic needs of borrowing households. The available results from the analyses in the present chapter provide

significant evidences in favour of the theoretical argument that microcredit improves fulfilment of basic needs of borrowing households and thus, living standards through increasing their income and the asset base. This is due to the fact that microcredit increases capabilities of programme households to spend more on basic needs.

The results of the analyses indicate that programme households are sending more children to schools (4%) and spending more on education (135%) of children compared to comparison households. Programme households (16%) report fewer number of sick children and spend more (54%) on health and medicine compared to those of comparison households. The higher numbers (14%) of programme households receive medical advice from qualified physicians compared to comparison households. Programme households have more (61%) living space, better side-walls and higher value (65%) of the dwelling house than those of comparison households. Programme households spend more (46%) on food consumption and have lesser food deficit months (1.69 months less on an average) compared to comparison households. Programme households have more consumer durables (0.5 items more on an average), higher savings for rainy days, more bank accounts of household heads with a formal sector commercial bank, and more hired workers for the whole year compared to comparison households.

These results provide significant evidences in favour of the argument that microcredit improves fulfilment of basic needs and living standards of borrowing households. These results also justify the claim that microcredit increases the entitlement of borrowing households through increasing their income and the asset base. These results provide indirect support for the claim that microcredit alleviates poverty of

borrowing households through increasing their entitlement to basic needs. In our theoretical research framework in chapter six, we argued that microcredit reduces poverty of borrowing households. In the next chapter, we will assess the impact of microcredit on poverty of borrowing households to test this argument.



## **Appendix Eight**

**Table 8.1**  
**School Attendance of 6-13 years old Children**

| School Attendance                    |                      | Sample Group     |                 |
|--------------------------------------|----------------------|------------------|-----------------|
|                                      |                      | Comparison Group | Programme Group |
| All Children (6-13) Going to School, | Number of Households | 81               | 90              |
|                                      | Percentage           | 83.51            | 87.38           |
| Children (6-13) Not Going to School, | Number of Households | 16               | 13              |
|                                      | Percentage           | 16.49            | 12.62           |
| <b>Total</b>                         | <b>Number</b>        | <b>97</b>        | <b>103</b>      |

**Table 8.2**  
**Yearly Education Expenditure**

| Expenditure | Sample Group    | Number of Households | Mean    | Standard Deviation |
|-------------|-----------------|----------------------|---------|--------------------|
|             |                 |                      |         |                    |
|             | Programme Group | 129                  | 1669.30 | 2869.49            |

**Table 8.3**  
**School Attendance of 6-13 years old Children**  
**Chi-square Test**

|                              | Value  | df | Asymp. Sig. (2-sided) |
|------------------------------|--------|----|-----------------------|
| Pearson chi-square           | 0.6046 | 1  | 0.4368                |
| Continuity Correction        | 0.3325 | 1  | 0.5642                |
| Likelihood Ratio             | 0.6048 | 1  | 0.4368                |
| Fisher's Exact Test          |        |    |                       |
| Linear-by-Linear Association | 0.6016 | 1  | 0.4380                |
| N of Valid Cases             | 200    |    |                       |

**Table 8.4**  
**Yearly Education Expenditure**  
**Test of Hypotheses**

| Assets and Capital             | Sample Group     | Number of Households | Mean Taka | Levene's Test for Equality of Variances |        | T Test Sig. (2-tailed) |
|--------------------------------|------------------|----------------------|-----------|---|--------|------------------------|
|                                |                  |                      |           | F                                       | Sig.   |                        |
| Yearly Educational Expenditure | Comparison Group | 131                  | 711.53    | 16.8116                                 | 0.0001 | 0.0004                 |
|                                | Programme Group  | 129                  | 1669.30   |   |        | 0.0005                 |

**Table 8.5**  
**Households Reporting Sick Children**

|  |                      | Sample Group  |                 |
|--|----------------------|---------------|-----------------|
|  |                      | Control Group | Programme Group |
| Households Reporting No Sick Children                      | Number of Households | 43            | 30              |
|  | Percentage           | 57.33         | 73.17           |
| Households Reporting Sick Children                         | Number of Households | 32            | 11              |
|  | Percentage           | 42.67         | 26.83           |
| <b>Total Number of households with under five Children</b> |                      | <b>75</b>     | <b>41</b>       |

**Table 8.6**  
**Yearly Medical Expenditure**

| Sample Group     | Number of Households | Mean    | Standard Deviation |
|------------------|----------------------|---------|--------------------|
| Comparison Group | 130                  | 931.69  | 946.85             |
| Programme Group  | 128                  | 1436.68 | 1334.56            |

**Table 8.7**  
**Immediate Last Medical Advice**

| Physician Types                | Sample Group     |                 |
|--------------------------------|------------------|-----------------|
|                                | Comparison Group | Programme Group |
| Private Practitioner           | 36<br>27.48      | 53<br>41.09     |
| Thana Health Complex Physician | 36<br>27.48      | 30<br>23.26     |
| Union Parishad Physician       | 10<br>7.63       | 4<br>3.10       |
| Rural Quack Physician          | 49<br>37.40      | 36<br>27.91     |
| Homeopathic Physician          | 0<br>0.00        | 5<br>3.88       |
| Herbal Physician               | 0<br>0.00        | 1<br>0.78       |
| Total Number of Households     | 131              | 129             |

**Table 8.8**  
**Households Reporting Sick Children**

| Chi-square Test              | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|-------|----|-----------------------|
| Pearson chi-square           | 2.85  | 1  | 0.0914                |
| Continuity Correction        | 2.21  | 1  | 0.1370                |
| Likelihood Ratio             | 2.92  | 1  | 0.0874                |
| Fisher's Exact Test          |       |    |                       |
| Linear-by-Linear Association | 2.83  | 1  | 0.0928                |
| N of Valid Cases             | 116   |    |                       |

**Table 8.9**  
**Yearly Medical Expenditure**  
**Test of Hypothesis**

| Sample Group     | Sample Size | Mean Taka | Levene's Test for Equality of Variances |        | T Test Sig. (2-tailed) |
|------------------|-------------|-----------|---|--------|------------------------|
|                  |             |           | F                                       | Sig.   |                        |
| Comparison Group | 131         | 931.69    | 0.6066                                  | 0.4368 | 0.1484                 |
| Programme Group  | 129         | 1436.68   |   |        | 0.1481                 |

**Table 8.10**  
**Immediate Last Medical Advice**  
**Chi-Square Test**

|                              | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|-------|----|-----------------------|
| Pearson Chi-Square           | 14.34 | 5  | 0.0136                |
| Likelihood Ratio             | 16.77 | 5  | 0.0050                |
| Linear-by-Linear Association | 1.86  | 1  | 0.1725                |
| N of Valid Cases             | 260   |    |                       |

**Table 8.11**  
**House Space**

| Sample Group     | Number of HHs | Mean Sq. Cubit (*) | Standard Deviation |
|------------------|---------------|--------------------|--------------------|
| Comparison Group | 131           | 118.85             | 54.20              |
| Programme Group  | 129           | 191.76             | 109.03             |

(\*) Cubit is a measure by the length of the arm from the elbow to the tip of the middle finger, equals to 18" to 22".

**Table 8.12**  
**Housing Condition (Roof)**

| Housing Condition (Roof)           |                      | Sample Group     |                 |
|------------------------------------|----------------------|------------------|-----------------|
|                                    |                      | Comparison Group | Programme Group |
| Permanent                          | Number of Households | 1                | 1               |
|                                    | Percent              | 0.76             | 0.78            |
| Tin                                | Number of Households | 101              | 92              |
|                                    | Percent              | 77.10            | 71.32           |
| Partially tin and Partially Leaves | Number of Households | 3                | 11              |
|                                    | Percent              | 2.29             | 8.53            |
| Leaves                             | Number of Households | 26               | 25              |
|                                    | Percent              | 19.85            | 19.38           |
| Number of Households               |                      | 131              | 129             |

**Table 8.13**  
**Housing Condition (Side Wall)**

| Housing Condition (Side Wall) |                      | Sample Group     |                 |
|-------------------------------|----------------------|------------------|-----------------|
|                               |                      | Comparison Group | Programme Group |
| Permanent                     | Number of Households | 8                | 20              |
|                               | Percentage           | 6.11             | 15.50           |
| Tin                           | Number of Households | 3                | 6               |
|                               | Percentage           | 2.29             | 4.65            |
| Bamboo                        | Number of Households | 24               | 18              |
|                               | Percentage           | 18.32            | 13.95           |
| Leaves                        | Number of Households | 7                | 5               |
|                               | Percentage           | 5.34             | 3.88            |
| Mud                           | Number of Households | 89               | 80              |
|                               | Percentage           | 67.94            | 62.02           |
| <b>Number of Households</b>   |                      | <b>131</b>       | <b>129</b>      |

**Table 8.14**  
**House Value**

| Sample Group     | Number of Households | Mean Taka | Standard Deviation |
|------------------|----------------------|-----------|--------------------|
| Comparison Group | 131                  | 21950.38  | 28667.58           |
| Programme Group  | 129                  | 36298.45  | 40229.98           |



**Table 8.15**  
**Living Space**  
**Test of Hypothesis**

| Sample Group     | Number of Households | Mean Sq. Cubit (*) | Levene's Test for Equality of Variances |        | T Test Sig. (2-tailed) |
|------------------|----------------------|--------------------|---|--------|------------------------|
|                  |                      |                    | F                                       | Sig.   |                        |
| Comparison Group | 131                  | 118.85             | 22.92                                   | 0.0000 | 0.0000                 |
| Programme Group  | 129                  | 191.76             |   |        | 0.0000                 |

(\*) Cubit is a measure by the length of the arm from the elbow to the tip of the middle finger, equals to 18" to 22".

**Table 8.16**  
**Housing Condition (Side Wall)**  
**Chi-square Test**

| chi-square Tests             | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|-------|----|-----------------------|
| Pearson chi-square           | 5.00  | 3  | 0.1721                |
| Likelihood Ratio             | 5.28  | 3  | 0.1521                |
| Linear-by-Linear Association | 0.28  | 1  | 0.5986                |
| N of Valid Cases             | 260   |    |                       |

**Table 8.17**  
**House Value**  
**Test of Hypothesis**

| Sample Group     | Number of Households | Mean Taka | Levene's Test for Equality of Variances |        | T Test Sig. (2-tailed) |
|------------------|----------------------|-----------|---|--------|------------------------|
|                  |                      |           | F                                       | Sig.   |                        |
| Comparison Group | 131                  | 21950.38  | 12.3794                                 | 0.0005 | 0.0010                 |
| Programme Group  | 129                  | 36298.45  |   |        | 0.0011                 |

**Table 8.18**  
**Weekly Food Expenditure**

| Sample Group     | Number of Households | Mean Taka | Standard Deviation |
|------------------|----------------------|-----------|--------------------|
| Comparison Group | 131                  | 588.85    | 289.55             |
| Programme Group  | 129                  | 858.58    | 488.39             |

**Table 8.19**  
**Food Availability of Households (in Months)**

| Sample Group     | Number of Households | Mean (in Months) | Standard Deviation |
|------------------|----------------------|------------------|--------------------|
| Comparison Group | 131                  | 9.31             | 2.44               |
| Programme Group  | 129                  | 11.58            | 1.41               |

**Table 8.20**  
**Food Availability in Months**  
**Cross table**

| Months                                 | Sample Group     |                 |
|--|------------------|-----------------|
|  | Comparison Group | Programme Group |
| 0                                      | 4                | 0               |
| 2                                      | 7                | 0               |
| 3                                      | 1                | 1               |
| 4                                      | 1                | 0               |
| 5                                      | 3                | 1               |
| 6                                      | 6                | 1               |
| 7                                      | 2                | 1               |
| 8                                      | 15               | 4               |
| 9                                      | 11               | 0               |
| 10                                     | 25               | 5               |
| 11                                     | 7                | 1               |
| Total Number of Deficit Households     | 82               | 14              |
| Total Number of Non-Deficit Households | 49               | 115             |
| Total Number of Households             | 131              | 129             |

**Table 8.21**  
**Weekly Food Consumption Expenditure**  
**Test of Hypothesis**

| Sample Group     | Number of Households | Mean Taka | Levene's Test for Equality of Variances |        | T Test Sig. (2-tailed) |
|------------------|----------------------|-----------|---|--------|------------------------|
|                  |                      |           | F                                       | Sig.   |                        |
| Comparison Group | 131                  | 588.85    | 9.4170                                  | 0.0024 | 0.0000                 |
| Programme Group  | 129                  | 858.58    |   |        | 0.0000                 |

**Table 8.22**  
**Food Availability in Months**  
**Test of Hypothesis**

| Sample Group     | Number of Households | Mean (in Months) | Levene's Test for Equality of Variances |        | T Test Sig. (2-tailed) |
|------------------|----------------------|------------------|---|--------|------------------------|
|                  |                      |                  | F                                       | Sig.   |                        |
| Comparison Group | 131                  | 9.31             | 67.09                                   | 0.0000 | 0.0000                 |
| Programme Group  | 129                  | 11.58            |   |        | 0.0000                 |

**Table 8.23a**  
**Household Goods Possession Score**

| Sample Group     | Number of Households | Mean Score | Std. Deviation |
|------------------|----------------------|------------|----------------|
| Comparison Group | 131                  | 1.61       | 1.42           |
| Programme Group  | 129                  | 2.16       | 1.63           |

**Table 8.23b**  
**Consumer Durables Possession Score**

| Household Goods Score   |                      | Sample Group                        |                                       |
|-------------------------|----------------------|-------------------------------------|---------------------------------------|
|                         |                      | Comparison Group<br>N of Households | Programme<br>Group<br>N of Households |
| 0                       | Number of Households | 36                                  | 24                                    |
|                         | Percentage           | 27.48                               | 18.60                                 |
| 1                       | Number of Households | 30                                  | 26                                    |
|                         | Percentage           | 22.90                               | 20.16                                 |
| 2                       | Number of Households | 33                                  | 27                                    |
|                         | Percentage           | 25.19                               | 20.93                                 |
| 3                       | Number of Households | 20                                  | 27                                    |
|                         | Percentage           | 15.27                               | 20.93                                 |
| 4                       | Number of Households | 7                                   | 10                                    |
|                         | Percentage           | 5.34                                | 7.75                                  |
| 5                       | Number of Households | 4                                   | 12                                    |
|                         | Percentage           | 3.05                                | 9.30                                  |
| 6                       | Number of Households | 0                                   | 3                                     |
|                         | Percentage           | 0.00                                | 2.33                                  |
| 7                       | Number of Households | 1                                   | 0                                     |
|                         | Percentage           | 0.76                                | 0.00                                  |
| <b>Total Households</b> |                      | <b>131</b>                          | <b>129</b>                            |

**Table 8.24**  
**Savings for the Rainy Season and Natural Disaster**

|   |                                 | Sample Group     |                 |
|---|---------------------------------|------------------|-----------------|
|   |                                 | Comparison Group | Programme Group |
| Households Have Savings for the Rainy-Days or Any Natural Disaster        | Number of Households Percentage | 41<br>31.30      | 64<br>49.61     |
| Households Do not Have Savings for the Rainy-Days or Any Natural Disaster | Number of Households Percentage | 90<br>68.70      | 65<br>50.39     |
| <b>Total Number of Households</b>   |                                 | <b>131</b>       | <b>129</b>      |

**Table 8.25**  
**Bank Account of the Household Heads with Any Formal Sector Commercial Bank**

|   |                                 | Sample Group     |                 |
|---|---------------------------------|------------------|-----------------|
|   |                                 | Comparison Group | Programme Group |
| Household head Has a Bank Account           | Number of Households Percentage | 8<br>6.11        | 21<br>16.28     |
| Household head does not Have a Bank Account | Number of Households Percentage | 123<br>93.89     | 108<br>83.72    |
| <b>Total Number of Households</b>           |                                 | <b>131</b>       | <b>129</b>      |

**Table 8.26a**  
**Hired Employees for the Whole Year**

|                                   | Sample Group     |                 |
|-----------------------------------|------------------|-----------------|
|                                   | Comparison Group | Programme Group |
| <b>Hired Employees</b>            | 3<br>2.29        | 19<br>14.73     |
| <b>No Hired Employees</b>         | 128<br>97.71     | 110<br>85.27    |
| <b>Total Number of Households</b> | <b>131</b>       | <b>129</b>      |

**Table 8.26b**  
**Distribution of Number of Hired Employees for the Whole Year**

| Number Hired Employees      | Sample Group     |                 |
|-----------------------------|------------------|-----------------|
|                             | Comparison Group | Programme Group |
| <b>No Hired Employee</b>    | 128<br>97.71     | 110<br>85.27    |
| <b>One Employee</b>         | 2<br>1.53        | 8<br>6.20       |
| <b>Two Employees</b>        | 1<br>0.76        | 8<br>6.20       |
| <b>Four Employees</b>       | 0<br>0.00        | 2<br>1.55       |
| <b>Nine Employees</b>       | 0<br>0.00        | 1<br>0.78       |
| <b>Number of Households</b> | <b>131</b>       | <b>129</b>      |

**Table 8.27**  
**Test of Null Hypotheses on**  
**Some Important Aspects of Living Standards**

| Variables   | Test               | Value | Significance Level | Null Hypothesis Accept/Reject |
|---|--------------------|-------|--------------------|-------------------------------|
| Household Goods Possession Score                    | t-test             | 2.91  | 0.0040             | Reject                        |
| Savings for the Rainy Season                        | Pearson Chi-square | 9.06  | 0.0026             | Reject                        |
| Bank Account with the Formal Sector Commercial Bank | Pearson Chi-square | 6.79  | 0.0092             | Reject                        |
| Hired Employees for the Whole Year                  | Pearson Chi-square | 12.98 | 0.0003             | Reject                        |

If the significance level is less than 0.10, then the null hypothesis is rejected, otherwise accepted



## **Chapter Nine: Analysis of Data: Microcredit and the Alleviation of Poverty**

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### **9.1 Introduction**

In chapter seven, we have analysed the impact of microcredit on income, consumption and assets of borrowing households. From the analyses, we have found that microcredit increases income, consumption and assets of borrowing households. In that chapter, we have argued that microcredit increases entitlement of borrowing households through increasing their income and the asset base. In the preceding chapter (chapter eight), we have assessed the impact of microcredit on basic needs and living standards to test our theoretical arguments empirically. The results of analyses provide us with enough evidence in favour of the theoretical argument, which means microcredit increases entitlement of borrowing households. Results of our empirical analyses also indicate that microcredit improves living standards of borrowing households. On the basis of the results of analyses carried out in the last chapter, we argued that microcredit can reduce poverty of borrowing households through increasing their entitlement. In the present chapter, we are going to empirically test this theoretical argument through a comparison between the poverty status of programme households and that of comparison households. In the present chapter, we will also conduct econometric analyses to assess the poverty reduction capacity of microcredit and also to determine to what extent microcredit reduces the poverty risk of borrowing households. This chapter uses both the subjective and objective measures of poverty to analyse the impact of microcredit on poverty of

borrowing households<sup>72</sup>. The ratios, test of hypothesis and the logit regression technique have been used for analyses in this chapter.

## 9.2 Subjective Poverty

A comparison between the subjective poverty status of programme households and *comparison households* will be conducted to assess the impact of microcredit on poverty of borrowing households. The subjective poverty status of households is measured on the basis of the answers of respondents to the question – “do you consider your family as poor on the basis of current yearly income and assets?” The answers were either ‘yes’ or ‘no’. Dubnoff, Vaughan and Lancaster (1981) also used this kind of approach to determine the poverty status of households. Descriptive analyses and test of hypothesis technique have been used in this section.

### 9.2.1 Descriptive Analysis

Table 9.1 shows the subjective poverty status of sample households. While 46.1% programme households consider themselves as poor, the percentage share raises to 88.55% for comparison households. Thus, 53.49% of programme households and 11.45% of comparison households do not consider themselves as poor.

Table 9.2 shows the extent of poverty among those programme and comparison households which consider themselves as poor. While 76.67% of programme households which consider themselves as poor have identified themselves as

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<sup>72</sup> For definitions of subjective and objective poverty, please see chapter two (section 2.1.3) above.

'moderately poor', 67.24% among such comparison households have recognised themselves as belonging to the same category. Finally, 23.33% of programme households and 32.76% of comparison households which consider themselves as poor have described themselves as 'extremely poor'.

Table 9.3 shows the subjective poverty status of programme households before and after joining the microcredit programme. Table shows that 89.15% of programme households considered themselves as poor before joining the Grameen Bank's microcredit programme. At the time of data collection, the percentage of households that considered themselves as poor came down to 46.51%. On the other hand, while only 10.85% of programme households did not consider themselves as poor before joining the programme, the proportion of such households increased to 53.49% at the time of data collection.

Table 9.4 indicates the extent of poverty of programme households at the time of data collection (i.e. after joining the programme) and before joining the programme. The table shows that the share of programme households which considered themselves as 'extreme poor' before joining the programme (58.26%) reduced to 23.33% after joining the programme. On the other hand, while 41.74% programme households used to consider themselves as moderately poor before joining the programme, this share increased to 76.6% after joining the programme.

### **9.2.2 Test of Hypotheses**

In this section, the null hypotheses on subjective poverty of households will be tested to determine whether programme households are significantly different from comparison households in terms of the subjective poverty status. The chi-square test will be carried out to test null hypotheses.

#### **a. Statement of the Hypotheses**

- There is no significant difference between programme households and comparison households in terms of subjective poverty status.
- There is no significant difference between the before membership and after membership status of programme households in terms of subjective poverty status.

#### **b. Test Results**

Table 9.5 shows the chi-square test result of subjective poverty status of programme households and comparison households. The Pearson chi-square value rejects the null hypothesis that there is no significant difference between programme households and comparison households in terms of subjective poverty status. The chi-square value is significant at 0% level i.e. programme households are significantly different from comparison households in terms of subjective poverty status.

The chi-square value in table 9.6 rejects the null hypothesis on 'subjective poverty status of programme households before and after joining the microcredit programme'. The rejection of the null hypothesis means that there is a significant difference

between the subjective poverty status of programme households before and after the membership.

### **9.2.3 Discussion of Results**

The descriptive analyses illustrate that programme households have approximately 42% lower poverty compared to that of comparison households from the perspective of subjective poverty approach. Extreme poverty is also lower among programme households (23.33%) compared to comparison households (32.76%). Poverty among programme households after participation in the microcredit programme (46.51%) is also lower compared to that of before participation (89.15%). The extreme poverty among programme households has also been reduced after participation in the microcredit programme (extreme poverty came down from 58.26% to 23.33%).

The results of the test of hypotheses reject both null hypotheses on subjective poverty status. The rejection of the null hypothesis on subjective poverty status of programme as well as comparison households indicates that programme households are significantly different from comparison households in terms of subjective poverty status. In the same way, the rejection of the null hypothesis on subjective poverty status of programme households before and after participation in the microcredit programme indicates that subjective poverty status of programme households after membership are significantly different from that of before membership.

The better position for programme households from descriptive results and the rejection of null hypotheses on subjective poverty status indicate that programme

households are significantly in a better position in respect to subjective poverty status compared to that of comparison households and that of before membership. These results indicate that microcredit reduces poverty of borrowing households.

#### **9.2.4 Summary of Results**

The results of descriptive analyses and test of hypotheses illustrate following key results:

- subjective poverty among programme households is 42% lower compared to comparison households,
- extreme poverty from the perspective of subjective poverty approach is also lower among programme households compared to comparison households,
- subjective poverty of programme households after participation in the microcredit programme is lower (approximately 43%) compared to that of before participation in the microcredit programme,
- programme households have significantly better status compared to comparison households in terms of subjective poverty status,
- subjective poverty status of programme households after participation in the microcredit programme is significantly lower compared to that of before participation in the microcredit programme.

### **9.3 Objective Poverty**

In this section, a comparison between objective poverty status (OPS) of programme and comparison households will be conducted to assess the impact of microcredit on

poverty of borrowing households. The objective poverty status of households is determined on the basis of a poverty line based on the cost of a minimum calorie requirement of 2112 and 58 grams of protein per person for maintaining a healthy productive life and an additional 35% allowance for expenditure on non-food items. The poverty line is estimated at Taka 147<sup>73</sup> per week per equivalent adult male person. If the weekly per equivalent adult male person consumption expenditure of a household falls below Taka 147.00, the household is classified as poor. If the weekly per equivalent adult male person consumption expenditure of a household exceeds Taka 147.00, the household is classified as not poor.

### **9.3.1 Descriptive Analysis**

Table 9.7 shows the objective poverty status of programme and comparison households. From the perspective of objective poverty status, 42.64% of programme households and 62.60% of comparison households are poor. Consequently, 37.40% of programme households and 57.36% of programme households are not poor.

### **9.3.2 Test of Hypotheses**

In this section, we are going to test the null hypothesis on objective poverty status of households. The non-parametric Pearson chi-square test will be used to test the null hypothesis.

#### **a. Statement of the Hypothesis**

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<sup>73</sup> Calculated on the basis of prices prevailing at the time of data collection in 1999 (February – May).

There is no significant difference between programme households and comparison households in terms of objective poverty status.

#### **b. Test of Hypothesis Result**

Table 9.8 shows the results of the test of null hypothesis on objective poverty status of programme households and comparison households. The Pearson chi-square value rejects the null hypothesis and is significant at 0% level. The rejection of the null hypothesis indicates that programme households are significantly different from comparison households in terms of objective poverty status.

#### **9.3.3 Discussion of Results**

The descriptive analyses of objective poverty status of programme as well as comparison households indicate that poverty among programme households is 20% lower compared to comparison households. The results of the test of null hypothesis indicate that programme households are significantly different from comparison households in terms of objective poverty status. The better descriptive results for programme households and the rejection of the null hypothesis indicate that programme households are in a significantly better position in terms of objective poverty status compared to that of comparison households, which on the other hand means microcredit reduces poverty of borrowing households.

#### **9.3.4 Summary of Results**



Form the above analyses and discussions, we have found the following key results:

- objective poverty among programme households is 20% lower compared to comparison households;
- programme households have significantly better status in terms of objective poverty status compared to comparison households.

## 9.4 Logit Models

In this section, two logit models have been estimated, on the basis of the discussion of the empirical model and estimation strategy in section three of chapter six, to assess the impact of microcredit on poverty of borrowing households and to control for the impact of other socio-economic variables. In the first logit model, the membership duration of households has been included as an independent variable to represent microcredit. In the second logit model, a dummy for programme households has been included in the model as an independent variable to represent microcredit.

### 9.4.1 Presentation of models

The logit models are presented below:

$$\text{Prob (Ps}_{ij}=1) = f(\text{H}_{mij}, \text{L}_{nj}, \text{MD}_i, \text{V}_i) \quad (\text{equation 9.1})$$

$$\text{Prob (Ps}_{ij}=1) = f(\text{H}_{mij}, \text{L}_{nj}, \text{PGD}_i, \text{V}_i) \quad (\text{equation 9.2})$$

where,  $\text{Ps}_{ij}$  is a dummy for the ‘subjective poverty status’ of household  $i$  ( $1, 2, \dots, 260$ ) in village  $j$  ( $1, 2, \dots, 15$ ) (‘1’ if the household is a poor household, and ‘0’ if the

household is a non-poor household),  $H_{mij}$  is the vector of ‘household characteristics’  $m$  (1,2,...11),  $L_{nj}$  is the vector of local characteristics  $n$  (1,2...5),  $MD_i$  is ‘microcredit programme membership duration of households in months’,  $PGD_i$  is a dummy variable for programme households (‘1’ if the household is a programme household and ‘0’ if the household is a comparison household), and  $V_i$  represents ‘error term’ of the model.

Some unobserved households characteristics might have influenced poverty status of households ( $Ps_{ij}$ ); for that reason, a vector of household characteristics ( $H_{mij}$ ) has been included in the model to estimate the unbiased and efficient estimates. Households characteristics include total household male members between 15-60 (VMM1560), square of total household male members between 15-60 (SVMM1560), total household members except male members between 15-60 (VTMXM1560), square total household members except male members 15-60 (SVTMXM1560), household head’s age (VHHAG), square of household head’s age (SVHHAG), average education level of household members above 6 years old (VATES), dummy for household head’s occupation – agriculture (HHHO\_AG), dummy for household head’s occupation – business (HHHO\_BU), current total agricultural land (VTAL) and total productive assets (VPA).

Like unobserved household characteristics, some unobserved local characteristics might have also affected the poverty status of households ( $Ps_{ij}$ ); therefore, a vector of specific local characteristics ( $L_{nj}$ ) has been included in the model to estimate the efficient and unbiased estimates. Local characteristics include a dummy variable for existence of a primary school in the village (VPSCH), distance of the nearest market

(VBAZ\_D), distance of the nearest metalled road (VPROA\_D), distance of the district headquarter (VDHQ\_D) and distance of the capital city - Dhaka (VDHA\_D).

#### 9.4.2 Logit Results

Table 9.10 and 9.11 show the results of logit models 9.1 and 9.2. In the first of two logit models (9.1), the co-efficient of the independent variable MD (microcredit programme membership duration) is .0146 (Table 9.10) and the sign of the co-efficient is negative. The negative sign of the independent variable MD indicates that poverty of households is decreasing with the increase of microcredit programme membership duration. The co-efficient is significant at less than 1% level. Therefore, it is evident from the results that microcredit significantly reduces poverty of borrowing households. Along the independent microcredit variable MD, the co-efficient of some other independent variables are also showing significant results. The other significant independent variables in the regression model 9.1 are: average education level of household members above six years old (VATES), household head's Occupation (dummy for agriculture, HHHO\_AG), total area of agricultural land (VTAL), distance of the nearest metalled road from the household (VPROA\_D), distance of the capital city Dhaka from the household (VDHA\_D). All these variables are showing the expected sign except the independent variable VPROA\_D. The expected sign of the independent variable VPROA\_D is positive i.e. poverty increases with the increase in the distance of the nearest metalled road from the household, but the co-efficient of VPROA\_D has been found to have a negative sign in table 9.10. This is an awkward result and needs further investigation.

Table 9.11 shows the results of the logit model 9.2. The table shows that microcredit variable PGD (the dummy variable for programme households) is a significant determinant of poverty of households. The coefficient of PGD (-1.6197) is significant at less than 1% level. The co-efficient also shows the expected negative sign. The results indicate that the inclusion of a household in the programme group decreases poverty of that household significantly, which means, participation in the microcredit programme significantly reduces poverty of households. In this logistic regression model other significant independent variables are: household head's age (VHHAG), average education level of household members above six years old (VTAES), household head's occupation (dummy for agriculture, HHHO\_AG), total area of household agricultural land (VLAL), distance of the nearest metalled road (VPROA\_D) and distance between the capital city Dhaka from the household (VDHA\_D). Like the previous logistic regression model, these significant variables are showing the expected sign except the independent variable independent variable VPROA\_D. The expected sign of the independent variable VPROA\_D is positive, but it shows negative sign.

## **9.5 Risk Reduction Capacity of Microcredit**

In previous sections, we have seen that poverty among programme households is lower compared to that of comparison households. This indicates that microcredit reduces poverty of borrowing households. The co-efficient of microcredit variables in both the logit models are highly significant with expected negative sign. The significant co-efficient of microcredit variables with expected negative sign indicates that microcredit significantly reduces poverty of borrowing households. It also

indicates that microcredit reduces poverty risk of borrowing households. But we do not know to what extent microcredit reduces poverty risk of borrowing households. Therefore, it is important now to determine the poverty risk reduction capacity of microcredit. The poverty risk reduction capacity of microcredit is assessed on the basis of the second logit model (9.2) presented in section 9.4 of this chapter. In this chapter, we assumed that poverty of each household is a random event, which is household, local, and microcredit specific. On the basis of the estimated co-efficient of the logit model, we can calculate the joint effect of more than one independent variable on poverty and we can also calculate the effect of any independent variable on poverty.

Probability of being poor of a household can be calculated in the following way,

$$Pr ob(Ps_{ij} = 1) = \frac{1}{1 + e^{-z}}$$

where,  $Z = H_{mij}\alpha_m + L_{nj}\theta_n + PGD_{ij}\beta + v_{ij}$ ,  $Ps_{ij}$  is the subjective poverty status of comparison as well as programme households (dummy variable, '1' if the household is not poor and '0' if the household is poor),  $H_{mij}$  is the vector of household characteristics,  $L_{nj}$  is the vector of village characteristics, PGD is the dummy variable for programme households ('1' if the household is a programme household and '0' the household is comparison household) and  $v_{ij}$  is the error term.

The percentage change in the probability of being poor after participation in the programme can be calculated in the following way,

$$\Delta P = \frac{P_w - P_{wo}}{P_{wo}} * 100$$

Where,  $\Delta P$  is the percentage change in the probability of being poor after participating in the programme,  $P_w$  is the probability of being poor of a household with programme, and  $P_{wo}$  is the probability of being poor of a household without participation in the programme.

Table 9.12A and Graph 9.1 show that the average probability of being poor for comparison households is 0.8854, while the average probability of being poor for programme households is 0.4651. This means that participation in the microcredit programme reduces the probability of being poor of a borrowing household by 47.47% (Table 9.12B). In general, if the estimated probability of an event is less than 0.5, then it is considered that the event will not occur. The average probability of being poor of comparison households and programme households indicate that microcredit substantially reduces poverty risk of borrowing households.

In the last chapter (chapter eight), we have seen that programme households have greater entitlement to basic needs compared to that of comparison households. Lower poverty among programme households compared to that of comparison households and the average probability of being poor of programme households less than 0.5 indicate that microcredit alleviates poverty of borrowing households though increasing their entitlement to basic needs.

## 9.6 Summary of the Chapter

In chapter seven, we have found that microcredit increases income, consumption and assets of borrowing households. In that chapter, we presented a theoretical argument that microcredit increases entitlement of borrowing households through increasing their income and the asset base. In the last chapter (chapter eight), we have found enough evidence of increased entitlement of borrowing households from the results of the assessment of the impact of microcredit on basic needs and living standards of these households. In that chapter, we argued theoretically that microcredit reduces poverty of borrowing households through increasing their entitlement. Although we have found indirect evidences of reduced poverty of borrowing households from the better fulfilment of basic needs of programme households compared to that of comparison households in the last chapter, we directly assessed the impact of the *microcredit on poverty of borrowing households* in the present chapter. Both the subjective poverty judgement technique and the objective poverty judgement technique have been used to determine the poverty status of programme households and comparison households.

Poverty is approximately 42% lower among programme households compared to comparison households from the point of view of subjective poverty judgement. Poverty is approximately 20% lower among programme households compared to comparison households in respect to objective poverty judgement. Poverty among programme households has also been significantly reduced (approximately 43%) after participating in the programme. The results of the test of null hypotheses reject hypotheses on subjective poverty as well as objective poverty, which mean,

programme households are significantly different from comparison households from the point of view of the subjective poverty judgement as well as the objective poverty judgement. The lower rate of poverty among programme households and the rejection of null hypotheses indicate that poverty among programme households is significantly lower compared to that of comparison households, which on the other hand indicate that microcredit reduces poverty of borrowing households. The results of logit regression analyses indicate that microcredit significantly reduces poverty of borrowing households. Moreover, the logit regression analyses also indicate microcredit reduces poverty risk of borrowing households by 47.47%.

Therefore, the results of all analyses in the present chapter provide enough evidences, which justify the theoretical argument that microcredit significantly alleviates poverty of borrowing households.



## **Appendix Nine**

**Table 9.1**  
**Subjective Poverty Status Of**  
**Programme households and Comparison Households**

| Poverty Status             |                      | Sample Group     |                 |
|----------------------------|----------------------|------------------|-----------------|
|                            |                      | Comparison Group | Programme Group |
| Poor                       | Number of Households | 116              | 60              |
|                            | Percentage           | 88.55            | 46.51           |
| Not Poor                   | Number of Households | 15               | 69              |
|                            | Percentage           | 11.45            | 53.49           |
| Total Number of Households |                      | 131              | 129             |

**Table 9.2**  
**Subjective Poverty Level Of**  
**Programme households and Comparison Households**

| Level of Poverty           |                      | Sample Group     |                 |
|----------------------------|----------------------|------------------|-----------------|
|                            |                      | Comparison Group | Programme Group |
| Moderate Poor              | Number of Households | 78               | 46              |
|                            | Percentage           | 67.24            | 76.67           |
| Extreme Poor               | Number of Households | 38               | 14              |
|                            | Percentage           | 32.76            | 23.33           |
| Total Number of Households |                      | 116              | 60              |

**Table 9.3**  
**Subjective Poverty Status of Programme households**  
**Before and After Membership in the Microcredit Programme**

| Poverty Status             |                      | Programme Group   |                  |
|----------------------------|----------------------|-------------------|------------------|
|                            |                      | Before Membership | After Membership |
| Poor                       | Number of Households | 115               | 60               |
|                            | Percentage           | 89.15             | 46.51            |
| Not Poor                   | Number of Households | 14                | 69               |
|                            | Percentage           | 10.85             | 53.49            |
| Total Number of Households |                      | 129               | 129              |

**Table 9.4**  
**Subjective Poverty level of Programme households**  
**Before and After Membership in the Microcredit Programme**

| Level of Poverty           |                      | Programme Group  |                   |
|----------------------------|----------------------|------------------|-------------------|
|                            |                      | After Membership | Before Membership |
| Moderate                   | Number of Households | 46               | 48                |
|                            | Percentage           | 76.67            | 41.74             |
| Extreme                    | Number of Households | 14               | 67                |
|                            | Percentage           | 23.33            | 58.26             |
| Total Number of Households |                      | 60               | 115               |

**Table 9.5**  
**Subjective Poverty Status Of**  
**Programme households and Comparison Households**  
**Chi-square Test**

| <b>chi-square Tests</b>      | <b>Value</b> | <b>df</b> | <b>Asymp. Sig. (2-sided)</b> |
|------------------------------|--------------|-----------|------------------------------|
| Pearson chi-square           | 52.52        | 1         | 0.0000                       |
| Continuity Correction        | 50.62        | 1         | 0.0000                       |
| Likelihood Ratio             | 55.74        | 1         | 0.0000                       |
| Fisher's Exact Test          |              |           |                              |
| Linear-by-Linear Association | 52.32        | 1         | 0.0000                       |
| N of Valid Cases             | 260          |           |                              |

**Table 9.6**  
**Subjective Poverty Status of Programme households**  
**Before and After Membership in the Microcredit Programme**  
**Chi-square Test**

| <b>chi-square Tests</b>      | <b>Value</b> | <b>df</b> | <b>Asymp. Sig. (2-sided)</b> |
|------------------------------|--------------|-----------|------------------------------|
| Pearson chi-square           | 53.73        | 1         | 0.0000                       |
| Continuity Correction        | 51.80        | 1         | 0.0000                       |
| Likelihood Ratio             | 57.32        | 1         | 0.0000                       |
| Fisher's Exact Test          |              |           |                              |
| Linear-by-Linear Association | 53.52        | 1         | 0.0000                       |
| N of Valid Cases             | 258          |           |                              |

**Table 9.7**  
**Objective Poverty Status Of**  
**Programme households and Comparison Households**

| Poverty Status             |                      | Sample Group     |                 |
|----------------------------|----------------------|------------------|-----------------|
|                            |                      | Comparison Group | Programme Group |
| Poor                       | Number of Households | 82               | 55              |
|                            | Percentage           | 62.60            | 42.64           |
| Not Poor                   | Number of Households | 49               | 74              |
|                            | Percentage           | 37.40            | 57.36           |
| Total Number of Households |                      | 131              | 129             |

**Table 9.8**  
**Objective Poverty Status Of**  
**Programme households and Comparison Households**  
**Chi-square Test**

| chi-square Tests             | Value | df | Asymp. Sig. (2-sided) |
|------------------------------|-------|----|-----------------------|
| Pearson chi-square           | 10.39 | 1  | 0.0013                |
| Continuity Correction        | 9.60  | 1  | 0.0019                |
| Likelihood Ratio             | 10.46 | 1  | 0.0012                |
| Fisher's Exact Test          |       |    |                       |
| Linear-by-Linear Association | 10.35 | 1  | 0.0013                |
| N of Valid Cases             | 260   |    |                       |

**Table 9.9**  
**List of Variables**

| Name       | Description  |
|------------|--|
| VMM1560    | Total Household Male Members 15-60   |
| SVMM1560   | Square of Total Household Male Members Between 15-60   |
| VTMXM1560  | Total Household Members Except Male Members Between 15-60  |
| SVTMXM1560 | Square of Total Household Members Except Male Members Between 15-60  |
| VHHAG      | Household Head's Age   |
| SVHHAG     | Square of Household Head's Age   |
| VATES      | Average Education Level of Household Members above 6 Years old   |
| HHHO_AG    | Household Head's Occupation (Dummy, Agriculture)   |
| HHHO_BU    | Household Head's Occupation (Dummy, Business)  |
| VTAL       | Total Agricultural land (Present)  |
| V32A1      | Total Productive Assets  |
| MD         | Programme Membership Duration (in months)  |
| PGD        | Dummy for Programme Households ('1' if the Household is Programme Household, '0' if the household is a Comparison Household) |
| VPSCH      | Existence of Primary School in the Village (Dummy)   |
| VBAZ_D     | Distance of the Nearest Market   |
| VPROA_D    | Distance of the Nearest metalled Road  |
| VDHQ_D     | Distance of the District Headquarter   |
| VDHA_D     | Distance of the Capital City   |

**Table 9.10**  
**Logit Analysis of the Probability of a Household's**  
**Falling Below the Poverty Line**

| <b>Explanatory Variables</b>  | <b>Estimated Coefficient</b> | <b>Standard Error</b> |
|---|------------------------------|-----------------------|
| VMM1560   | 0.1899                       | 0.6800                |
| SVMM1560  | -0.0637                      | 0.1299                |
| VTMXM1560   | 0.2814                       | 0.4122                |
| SVTMXM1560  | -0.0364                      | 0.0494                |
| VHHAG   | -0.2545                      | 0.1596                |
| SVHHAG  | 0.0029                       | 0.0019                |
| VATES   | -0.1765 ***                  | 0.6830                |
| HHHO_AG   | 0.9016 *                     | 0.4754                |
| HHHO_BU   | 0.4246                       | 0.3891                |
| VTAL  | -0.0126 ***                  | 0.0039                |
| V32A1   | -0.0000045                   | 0.00001               |
| MD  | -0.0146 ***                  | 0.0045                |
| VPSCH   | -0.7699                      | 0.6404                |
| VBAZ_D  | 0.6763                       | 0.4210                |
| VPROA_D   | -0.9126 *                    | 0.4667                |
| VDHQ_D  | 0.0943                       | 0.0904                |
| VDHA_D  | 0.0561 **                    | 0.0243                |
| Constant  | 4.4814                       | 3.7177                |
| '**' Denotes that the variable concerned is significant at least at 10% level of significance.<br>'**' Denotes that the variable concerned is significant at least at 5% level of significance.<br>'***' Denotes that the variable concerned is significant at least at 1% level of significance. |                              |                       |

|   |        |
|---|--------|
| -2 Log Likelihood (Constant Only)             | 327.17 |
| -2 Log Likelihood (All Independent Variables) | 235.33 |
| Goodness of Fit                               | 237.97 |
| Cox and Snell - R <sup>2</sup>                | 0.298  |
| Nagelkerke - R <sup>2</sup>                   | 0.416  |

|                                    | <b>chi-square</b> | <b>df</b> | <b>Significance</b> |
|------------------------------------|-------------------|-----------|---------------------|
| Model                              | 91.84             | 17        | 0.0000              |
| Block                              | 91.84             | 17        | 0.0000              |
| Step                               | 91.84             | 17        | 0.0000              |
| <b>Percent Correctly Predicted</b> |                   |           | <b>79%</b>          |

**Table 9.11**  
**Logit Analysis of the Probability of a Household's**  
**Falling Below the Poverty Line**

| Explanatory Variables | Estimated Coefficient | Standard Error |
|-----------------------|-----------------------|----------------|
| VMM1560               | 0.0178                | 0.6622         |
| SVMM1560              | -0.0295               | 0.1242         |
| VTMXM1560             | 0.2467                | 0.4206         |
| SVTMXM1560            | -0.0318               | 0.0501         |
| VHHAG                 | -0.2935 *             | 0.1683         |
| SVHHAG                | 0.0033                | 0.0020         |
| VATES                 | -0.1876 ***           | 0.0704         |
| HHHO_AG               | 0.8746 *              | 0.4828         |
| HHHO_BU               | 0.4357                | 0.3930         |
| VTAL                  | -0.0126 ***           | 0.0040         |
| V32A1                 | -0.000005             | 0.0000         |
| PGD                   | -1.6197 ***           | 0.3894         |
| VPSCH                 | -0.6942               | 0.6466         |
| VBAZ_D                | 0.5231                | 0.4230         |
| VPROA_D               | -0.8704 *             | 0.4683         |
| VDHQ_D                | 0.1015                | 0.0918         |
| VDHA_D                | 0.0441 *              | 0.0253         |
| Constant              | 6.4788 *              | 3.9148         |

‘\*’ Denotes that the variable concerned is significant at least at 10% level of significance. ‘\*\*\*’ Denotes that the variable concerned is significant at least at 1% level of significance.

|  |        |
|--|--------|
| -2 Log Likelihood (Constant Only)                          | 327.17 |
| -2 Log Likelihood (Constant and All Independent Variables) | 227.03 |
| Goodness of Fit  | 235.78 |
| Cox and Snell - R <sup>2</sup>                             | 0.320  |
| Nagelkerke - R <sup>2</sup>                                | 0.447  |

|                                    | Chi-square | df | Significance |
|------------------------------------|------------|----|--------------|
| Model                              | 100.141    | 17 | 0.0000       |
| Block                              | 100.141    | 17 | 0.0000       |
| Step                               | 100.141    | 17 | 0.0000       |
| <b>Percent Correctly Predicted</b> |            |    | <b>80%</b>   |



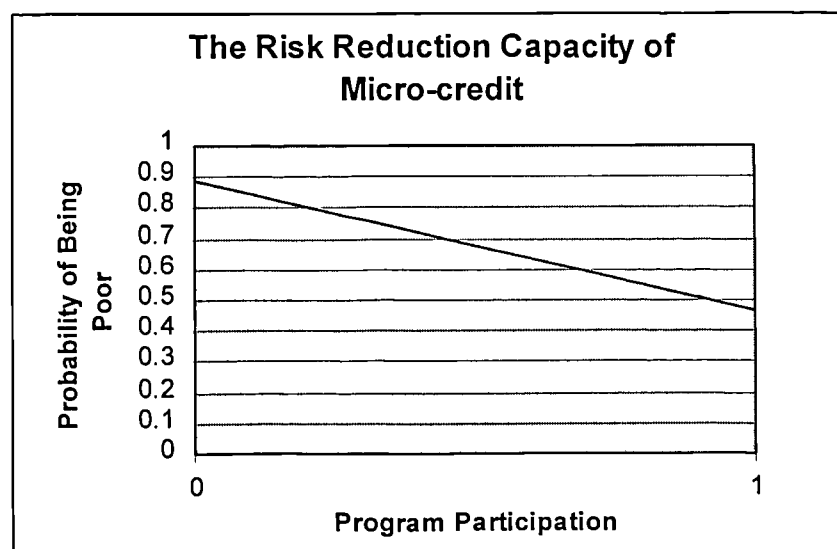
**Table 9.12A**  
**Probability of Being Poor of Households**

|   | Probability |
|---|-------------|
| The Average Probability of being Poor of a Household With Out Microcredit Programme Participation | 0.8854      |
| The Average Probability of being Poor of a Household With Microcredit Programme Participation     | 0.4651      |

**Table 9.12B**  
**Probability of Being Poor of Households**

|  | Percentage Change |
|--|-------------------|
| Percentage Change in Probability of being Poor After Programme Participation | 47.47%            |

**Graph 9.1**



0 = With out Microcredit Programme Participation  
1=With Microcredit Programme Participation

## **Chapter Ten: Summary, Research Implications, and Future Research**

### **10.1 Summary**

Almost one fourth of the total world population and 48% of the total population of Bangladesh live under the poverty line. There is no universally agreed definition of poverty. Some argue that poverty is largely, if not entirely, a product of social policies, or social and economic policies, pursued by states in order to control and discipline their citizen. According to Amartya Sen, people are poor because of a lack of entitlement to basic needs. This study argues that in a country with high unemployment rate like Bangladesh, poor people require to start income generating activities to increase their income and hence, to alleviate poverty. But poor people lack the minimum amount of capital to start income generating activities.

In developing countries, especially in Bangladesh, poor people are excluded from the formal sector financial services. The collateral requirement to receive a loan is the main reason for the exclusion of poor people from the formal financial sector credit services. Poor people do not have enough assets to provide collateral to receive loans from the formal sector. Poor people in rural areas have access only to informal financial sector sources. But informal sources, especially moneylenders, are exploitative in nature. This exploitation takes place through high interest rates and the mechanism of default. Since poor people are excluded from the formal financial sector financial services and informal financial sector sources are exploitative in nature, poor people do not received that minimum amount of capital required to start any income generating activity from either of the financial sector sources.

The Grameen Bank initiated microcredit programme in Bangladesh around 1976, to alleviate poverty of poor households through providing them with the minimum amount of capital as credit without collateral and exploitation. The innovative group lending technology, supervision of microcredit utilisation activities of borrowers and joint liability system replaced the collateral requirement of formal sector financial institutions. The Grameen Bank's target is to reach 3 million poor families and help 70% of its borrowers to graduate from below to above the poverty line by 2007. The present study is intended to evaluate the poverty alleviation capacity of the Grameen Bank's microcredit programme. It is also intended to know how realistic the target of the Grameen Bank is. On the basis of the results obtained, this study argues that microcredit reduces poverty risk and alleviates poverty of borrowing households significantly. This chapter summarises the findings of the study, which have led to this conclusion. Its also presents the implications of these findings and the future research scope.

### **Impact of Microcredit on Income, Consumption and Assets**

Analyses carried out indicate that programme households have significantly higher levels of income compared to that of comparison households. This means that microcredit increases income of borrowing households. Three income variables, viz., yearly total agricultural income, yearly total non-agricultural income, and yearly total household income, have been used for assessing the impact of microcredit on income of borrowing households. Results indicate that microcredit increases yearly total agricultural income of borrowing households significantly. It also increases yearly

non-agricultural income and yearly total income, but not significantly. Results indicate that microcredit borrowers invest their microcredit significantly in farm activities. These results also show that microcredit borrowers can increase their non-agricultural income significantly through diversifying their investment from farm activities to non-farm activities.

Five consumption variables have been used to assess the impact of microcredit on consumption of borrowing households. These variables are weekly total food consumption expenditure, monthly total fuel and cosmetics expenditure, yearly total educational expenditure, yearly total medical expenditure, and yearly total non-food expenditure. Analyses indicate that programme households have higher levels of consumption expenditure compared to comparison households. Results of analyses indicate that microcredit has significant positive impact on weekly total food consumption expenditure, yearly total educational expenditure, and yearly total medical expenditure. Microcredit has also positive, but not statistically significant, impact on monthly fuel and cosmetics expenditure and yearly total non-food expenditure. Out of five consumption expenditure variables, microcredit has the highest impact on yearly total educational expenditure of borrowing households.

Assets increase entitlement of a household to basic needs and hence, reduce poverty of that household. For these reasons, this study has assessed the impact of microcredit on assets of borrowing households. Twelve categories of assets have been used to assess the impact of microcredit on assets of borrowing households. These twelve categories of assets are total area of own agricultural land (current), total area of agricultural land (including rented in and leased in land), total amount of productive

assets, value of the dwelling house, total amount of financial assets, value of total household assets (value of the dwelling house plus value of household furniture, plus value of homestead land), total amount of current business capital from own source, total amount of current business capital (includes capital from internal as well as external sources), total assets (including land value), total non-land assets, total net worth (including land value), and total net worth (excluding land value). Programme households have higher amount of assets of all categories compared to those of comparison households, which means microcredit increases assets of borrowing households. Among these assets microcredit has significant positive impact on total area of agricultural land, total value of productive assets, value of the dwelling house, total financial assets, total business capital from own source, total business capital, total assets and total non-land assets. In our theoretical framework, we argued that assets determine the level of entitlement to basic needs of a household, which means that with the increase in assets the entitlement of that household also increases. Putting these findings together, we can conclude that microcredit increases entitlement to basic needs of borrowing households through increasing their assets.

### **Impact of Microcredit on Basic Needs of Borrowing Households**

Increased entitlement of borrowing households should reflect on the fulfilment of basic needs, which means borrowing households should have better fulfilment of basic needs during the survey period compared to that of before membership. This study has carried out a comparison between the fulfilment of basic needs of programme households and that of comparison households to assess the impact of microcredit on basic needs of borrowing (programme) households. Four basic needs,

education, health, shelter, and food availability have been considered for analyses in this study.

For reasons already discussed at length above, no statistically significant difference could be found between programme and comparison households in terms of school attendance of children (6-13 years old). However, results of analyses show that programme households are spending on education significantly higher than that of comparison households, which means microcredit has significant positive impact on educational expenses of borrowing households. These results also indicate that microcredit increases entitlement of borrowing households to education.

Lower percentage of programme households reports under five sick children compared to comparison households. Programme households are significantly different from comparison households in terms of under five sick children. Programme households spend significantly more on medicine and health compared to comparison households. Higher percentage of programme households seeks medical advice from qualified practitioners compared to comparison households. All these indicate that programme households have higher entitlement to better health compared to comparison households, which in turn indicate that microcredit has significant positive impact on health of members of borrowing households.

Programme households have significantly higher area of living space and better side-walls of the dwelling house compared to comparison households. Programme households have also significantly higher value of the dwelling house compared to comparison households. All these results indicate that programme households have

better status in terms of shelter compared to comparison households. These results also indicate that microcredit has significant positive impact on shelter, i.e. increases entitlement of borrowing households on shelter.

Food is the most important basic need of human beings. Results of analyses show that programme households spend significantly more on food and also have significantly fewer months of food deficit compared to comparison households. These results indicate that microcredit has significant positive impact on food. These results also indicate that microcredit increases entitlement of borrowing households on food, which on the other hand increases capabilities of borrowing households to spend more on food.

Finally, after considering all of the results of the impact of microcredit on basic needs together, we can conclude that microcredit has significant positive impact on basic needs, i.e. microcredit increases entitlement of borrowing households to basic needs.

### **Impact of Microcredit on Living standards of Borrowing Households**

Besides basic needs, this study has also used four proxies for living standards of households to assess the impact of microcredit on living standards of borrowing households. These four proxies for living standards are possession of consumer durables, savings for the rainy days and any natural disaster, bank account of the household head with any formal sector commercial bank, and number of hired employees for the whole year.

Programme households own more consumer-durables compared to comparison households. Higher numbers of programme households have savings for rainy days and natural disasters compared to comparison households. A greater number of programme household heads have bank accounts with formal sector commercial banks compared to comparison household heads. Programme households hire more workers for the whole year compared to comparison households. Results of test of hypotheses indicate that programme households have significantly better status in terms of these proxies for living standards compared to those of comparison households. All these results illustrate that microcredit programme membership significantly improves living standards of borrowing households.

### **Does Microcredit Reduce Poverty of Borrowing Households?**

Results of the assessment of the impact of microcredit on income, consumption, assets, basic needs and proxies for living standards indirectly indicate that microcredit alleviates poverty of borrowing households through increasing their entitlement. But in this study we have also tried to assess the impact of microcredit on poverty of borrowing households directly. Subjective as well as objective measures of poverty have been used to determine the poverty status of programme as well as comparison households.

Results indicate that comparison households are significantly poorer compared to programme households in terms of subjective poverty status (SPS). SPS indicate that comparison households are more likely to be extremely poor compared to programme households. Objective poverty status (OPS) indicate that poverty is higher among



comparison households compared to programme households. All these results indicate that programme households have significantly better position in terms of poverty status compared to comparison households. The study has also constructed two logit models to assess the impact of microcredit on poverty of borrowing households. Results of logit models indicate that microcredit has a significant negative impact on poverty. With an increase in current amount of microcredit and microcredit programme membership duration decreasing poverty of borrowing households significantly. These results directly provide enough evidences that microcredit reduces poverty of borrowing households.

### **Does Microcredit Reduce Poverty Risk of Borrowing Households?**

It is evident from our results that besides alleviation of poverty, microcredit also reduces poverty risk of borrowing households. The study has tried to calculate the extent to which microcredit reduces poverty risk of borrowing households on the basis of the results of logit models. The calculation shows that microcredit programme membership reduces poverty risk of borrowing households at a rate of forty-seven percent, which is a significant reduction.

### **Is Alleviation of Poverty of Borrowing Households Sustainable in Long Term?**

The success of a microcredit programme does not depend only on alleviation of poverty in short term but also depends on the sustainability of poverty alleviation of

borrowing households in long term. It is argued that long-term sustainability of poverty alleviation depends on the capacity of borrowing households to continue to reproduce wealth. The capacity of borrowing households to reproduce wealth depends on accumulation of assets by these households. In this study, we have seen from results of analyses that besides poverty alleviation microcredit also increases assets of borrowing households. Therefore, we can conclude that microcredit ensures long-term sustainability of poverty alleviation of borrowing households through increasing their asset base.

## **10.2 Research Implications**

Poverty is still the main socio-economic problem in Bangladesh. Results of analyses indicate that policy makers can use microcredit technology for alleviating poverty in Bangladesh. But it does not mean that microcredit is the only way of alleviating poverty. Microcredit technology can be used besides other well established poverty alleviation options. On the basis of our findings it seems reasonable to expect that the target of the Grameen Bank, graduation of seventy percent of borrowers from below to above the poverty line by 2007, can be made achievable if other socio-economic aspects at micro as well macro level do not deteriorate.

## **10.3 Future Research**

The findings of the study are sketched from intensive research among a limited number of Grameen Bank members in one district in Bangladesh. It is assumed that the socio-economic conditions of the survey areas are representative of most of the areas where the Grameen Bank is operating its microcredit activities. In spite of this assumption, further research in other geographical areas is also required to justify and strengthen results of this study. In this study, the sample size is small. Financial and time constraints compelled the study to keep the sample size small. An increase in the sample size also increases reliability of results. Further research is necessary with a bigger sample size.

Although results of this study provide a clear picture of poverty alleviation capacity of microcredit, the study failed to calculate the average graduation time of borrowing households from below to above the poverty line. This study did make an attempt to calculate the graduation time and found approximately sixty-one months as an average graduation time. However, later the study found that the calculation of graduation time was econometrically unsound due to gaps in the observations. The study realised that it is very much necessary to have a panel data set to calculate the graduation time of borrowing households. A panel data set on the beneficiaries of microcredit programme would require collecting data from pre-randomly selected households at regular intervals over a long period of time. Panel data is also better suited to handle endogeneity issues compared to cross section sectional data.

Subjective poverty measures show that some households successfully graduated from below to above the poverty line after remaining as a member of the Grameen Bank for

a number of years, but some households have remained poor in spite of the membership of the Grameen Bank over the same period of time. Future research should try to explain why some households succeed and others fail.

This study has tried to assess the impact of microcredit at household level. It has not tried to assess the impact of microcredit at village-level. Future research should be conducted to assess spillover impacts of microcredit at village level, i.e. whether microcredit has any impact on socio-economic status of other non-participating households in the village. A cross sectional data set is not able to capture this spillover impact of microcredit at village level. Follow-up surveys over a longer period are required to capture spill over effects of microcredit at village level.

## **Appendix: Questionnaire**

**Department of Economics**  
**University of Stirling**  
 Stirling, Scotland; UK

**Study on “Microcredit and Poverty Alleviation in Bangladesh”.**

**Questionnaire**

- 1.1 Sample No: \_\_\_\_\_
- 1.1 Name of the Respondent: \_\_\_\_\_
- 1.3 Village Name: \_\_\_\_\_
- 1.4 Thana: \_\_\_\_\_
- 1.5 Division: \_\_\_\_\_
- 1.6 Name of the Interviewer: \_\_\_\_\_
- 1.7 Date of the Interview: \_\_\_\_\_
- 1.8 Local Information:

|                            | Existence Code | Number | Distance from the Household |
|----------------------------|----------------|--------|-----------------------------|
| Market                     |                |        |                             |
| Primary School             |                |        |                             |
| Secondary School           |                |        |                             |
| College                    |                |        |                             |
| Madrasa (Religious School) |                |        |                             |
| Bank                       |                |        |                             |
| Shop                       |                |        |                             |
| Thana Headquarter          |                |        |                             |
| Deep Tube-well             |                |        |                             |
| Electricity                |                |        |                             |
| Maktab (Informal School)   |                |        |                             |
| School of NGOs             |                |        |                             |
| District Headquarter       |                |        |                             |
| Capital City Dhaka         |                |        |                             |
| India-Bangladesh Border    |                |        |                             |

Existence Code: 1 = Yes, 2 = No.

## 2.1 General information about family members of the HH:

| ID        |            | Name | HH Status Code | Sex Code | Age  |        | Marital Status Code | Literate/Illiterate (Code) | For 6-13      |       | Highest   |  |
|-----------|------------|------|----------------|----------|------|--------|---------------------|----------------------------|---------------|-------|-----------|--|
| Sample No | Serial No. |      |                |          | Year | Months |                     |                            | Attend School | Grade | Ins. Type |  |
|           |            |      |                |          |      |        |                     |                            |               |       |           |  |
|           |            |      |                |          |      |        |                     |                            |               |       |           |  |
|           |            |      |                |          |      |        |                     |                            |               |       |           |  |
|           |            |      |                |          |      |        |                     |                            |               |       |           |  |
|           |            |      |                |          |      |        |                     |                            |               |       |           |  |
|           |            |      |                |          |      |        |                     |                            |               |       |           |  |
|           |            |      |                |          |      |        |                     |                            |               |       |           |  |

HH Status (code): 1 = HH head, 2 = programme member, 3 = general member

Sex Code: 1 = Male and 2 = Female

Marital Status Code: 1 = Married and 2 = Unmarried, 3 = Divorce and 4 = widow/ Wife died

Literate/illiterate code: 1 = literate, 2 = signature, 3 = read only 4 = read and write

For 6-13 Attend School: 1 = Yes, 2 = No

Institution Code: 1 = General educational Institution, 2 = Madrasa, 3 = NGO school

## 2.1 General information about family members of the microcredit receiving HH: Employment status

| ID        |            | Employment Status after Membership |                 |                        | Employment Status before Membership |                 |                        |
|-----------|------------|------------------------------------|-----------------|------------------------|-------------------------------------|-----------------|------------------------|
| Sample No | Serial No. | Employed Code                      | Occupation Code | Earn any income (Code) | Employed Code                       | Occupation Code | Earn any income (Code) |
|           |            |                                    |                 |                        |                                     |                 |                        |
|           |            |                                    |                 |                        |                                     |                 |                        |
|           |            |                                    |                 |                        |                                     |                 |                        |
|           |            |                                    |                 |                        |                                     |                 |                        |
|           |            |                                    |                 |                        |                                     |                 |                        |
|           |            |                                    |                 |                        |                                     |                 |                        |
|           |            |                                    |                 |                        |                                     |                 |                        |

**Employed Code:** 1 = Employed, 2 = Self employed 3 = unemployed and 99= not applicable (0-15 years old)

**Occupation Code:** 1 = wage labour, 2 = business/trading, 3 = manufacturing, 4 = service, 5 = others

**Earn any income (Code):** 1= yes and 2= no

## 2.3 General information: NGO membership

**2.3.1 General information: NGO membership of the respondent**

| ID No | Membership |        | Ist Loan |       | NGO Name (Code) | Member of any other NGO |             |  |
|-------|------------|--------|----------|-------|-----------------|-------------------------|-------------|--|
|       | Year       | Months | Year     | Month |                 | Membership (Code)       | Type (Code) | Receive Credit from any other NGO (Code) |
|       |            |        |          |       |                 |                         |             |  |

**NGO Name (code):** 1= Grameen Bank and 2= ASA

**Member of any other NGO membership (Code):** 1= yes and 2= no

**Member of any other NGO Type (Code):** 1= credit based NGO, 2= Credit and Savings based NGO, 3= Development NGO and 4= Others

**Receive Credit from any other NGO (Code)=** 1= yes and 2= no

**2.3.2 Please mention the number of family members (other than the programme member) are member of any NGO :**

**2.3.3 please mention the number of family members (other than the respondent) receive credit from any NGOs :**



### 3.0 Assets and liabilities

#### 3.1 Assets and liabilities: Agricultural Assets

|               | Before Membership |       |  |   |      |       | Current Position |       |               |   |       |            |      |       |
|---------------|-------------------|-------|--|---|------|-------|------------------|-------|---------------|---|-------|------------|------|-------|
|               | Currently Owned   |       |  | Cultivated currently but not owned Lease/Rent |      |       | Currently Owned  |       |               | Cultivated currently but not owned Lease/Rent |       |            |      |       |
|               | Size              | Value |  | Share Cropped                                 | Size | Value | Size             | Value | Share Cropped | Size  | Value | Lease/Rent | Size | Value |
| Irrigated     |                   |       |  |   |      |       |                  |       |               |   |       |            |      |       |
| Non Irrigated |                   |       |  |   |      |       |                  |       |               |   |       |            |      |       |
| Total         |                   |       |  |   |      |       |                  |       |               |   |       |            |      |       |

**3.2 Assets and Liabilities: Other Assets:**

| Assets Description   | Before Membership                |  | Current Position                 |  |
|--|----------------------------------|--|----------------------------------|--|
|  | Number/<br>Size/<br>No. of times | Total Present<br>Value/<br>Total Value | Number/<br>Size/<br>No. of times | Total Present<br>Value/<br>Total Value |
| a. Productive Assets   |                                  |  |                                  |  |
| 1. Large Farm Animals (owned or Shared)                                |                                  |  |                                  |  |
| 2. Fruit Gardens   |                                  |  |                                  |  |
| 3. Building, Machinery and Equipment (Farm and non-farm)               |                                  |  |                                  |  |
| 4. Fishing Boat and/or Engine and Net (large)                          |                                  |  |                                  |  |
| 5. Stalls or store and stocks (overall valuation of the present goods) |                                  |  |                                  |  |
| 6. Remittance from Fully Employed Children (in last 1 year)            | No. of times                     | Total Amount                           | No. of times                     | Total Amount                           |
| 7. Any other Productive Assets (from the question no. 3.6)             |                                  |  |                                  |  |
| b. House Assets  |                                  |  |                                  |  |
| 1. House Plot  | Size                             |  | Size                             |  |
| 2. House   |                                  |  |                                  |  |
| 3. Major Consumer Goods (Especially Vehicles from House Index)         |                                  |  |                                  |  |

|   |  |  |  |  |  |
|---|--|--|--|--|--|
|   |  |  |  |  |  |
| c. Financial Assets   |  |  |  |  |  |
|   |  |  |  |  |  |
| 1a. Savings (Programme)   |  |  |  |  |  |
| 1b. Savings (Non-programme)   |  |  |  |  |  |
| 2. Jewelry/Gold   |  |  |  |  |  |
| 3. Any other Non-productive Assets (ref. from the question no. 3.7) |  |  |  |  |  |
|   |  |  |  |  |  |
| Total Estimated Value of Household Assets                           |  |  |  |  |  |
|   |  |  |  |  |  |

**3.3 Assets and Liabilities: Liabilities**

| Description  | Before Membership |   | Current Position |               |   |
|--|-------------------|---|------------------|---------------|---|
|  | Number            | Current outstanding/<br>Present valuation | Number           | Interest Rate | Current outstanding/<br>Present valuation |
| 1. Debts with Financial Institutions                             |                   |   |                  |               |   |
| 2. Debts with Informal Money lenders                             |                   |   |                  |               |   |
| 3. Large Debts with Friends, Relatives (Cash or Kinds)           |                   |   |                  |               |   |
| 4. Debts with Suppliers / Wholesalers                            |                   |   |                  |               |   |
| 5. Any Other Financial Obligation That Can Be Financially Valued |                   |   |                  |               |   |
| Total HH Liabilities   |                   |   |                  |               |   |

### 3.4 Assets: Land Sale, Mortgage Out and Share Cropping out During the Membership;

| Sale/out Code | Sale |       |      |             | Mortgage Out |       |      |        |             | Lease /Rent Out |       |      |        |             |
|---------------|------|-------|------|-------------|--------------|-------|------|--------|-------------|-----------------|-------|------|--------|-------------|
|               | Area | Value | Year | Reason Code | Area         | Value | Year | Period | Reason Code | Area            | Value | Year | Period | Reason Code |
|               |      |       |      |             |              |       |      |        |             |                 |       |      |        |             |
|               |      |       |      |             |              |       |      |        |             |                 |       |      |        |             |
|               |      |       |      |             |              |       |      |        |             |                 |       |      |        |             |
|               |      |       |      |             |              |       |      |        |             |                 |       |      |        |             |
|               |      |       |      |             |              |       |      |        |             |                 |       |      |        |             |
|               |      |       |      |             |              |       |      |        |             |                 |       |      |        |             |
| Total         |      |       |      |             |              |       |      |        |             |                 |       |      |        |             |

**Land Code:** 1=Household, 2=Cultivable, 3=Garden, 4=Ponds with fish, 5=Ponds without fish and 6=others

**Reason code:** 1= family consumption, 2= to repay a loan of the Grameen Bank or ASA, 3= to repay other loans, 4= to pay Dowry and marriage expenses, 5= to send a son to a foreign country for job, 6= to recover losses from natural disaster, 7= to purchase another land or assets, 8= to start a business, 9= to educate son or daughters and 10= others

### 3.5 Assets: Structure and Value of Houses

| House No | House Type Code | Year of Establishment | Present Structure Code | Structure at the Beginning of Membership Code |
|----------|-----------------|-----------------------|------------------------|---|
| 1        |                 |                       |                        |   |
| 2        |                 |                       |                        |   |
| 3        |                 |                       |                        |   |
| 4        |                 |                       |                        |   |
| Total    |                 |                       |                        |   |

**House type Code:** 1=Bed Room, 2=Kitchen, 3=Goal Ghar, 4=Living Room, 5=Storage Room, 6=Others

**Structure Code:** 1=Permanant Structure, 2=Semi-Permanant, 3=Wooden Structure and Teenshed Roof, 4=Bamboo Structure and Hempen Roof, 5=Others.

### 3.6 Assets and Liabilities: Sources of Capital of business/ store

| Sources          | Before membership Sources of Capital | Current Position Sources of Capital |
|------------------|--------------------------------------|-------------------------------------|
| Own Source       |                                      |                                     |
| External Sources |                                      |                                     |
| Total            |                                      |                                     |

#### 4.0 Income and Consumption:

#### 4.1 Income

#### 4.1.1 Agricultural Income in last 1 year

| Products            | Production Cost | Consumed |       | Sold     |       | Total Production Value | Profit |
|---------------------|-----------------|----------|-------|----------|-------|------------------------|--------|
|                     |                 | Quantity | Value | Quantity | Value |                        |        |
| Paddy               |                 |          |       |          |       |                        |        |
| lentils             |                 |          |       |          |       |                        |        |
| Vegetables          |                 |          |       |          |       |                        |        |
| Milk                |                 |          |       |          |       |                        |        |
| Fish                |                 |          |       |          |       |                        |        |
| Poultry             |                 |          |       |          |       |                        |        |
| Cattle              |                 |          |       |          |       |                        |        |
| Other Agri-products |                 |          |       |          |       |                        |        |

at market price

#### 4.1.2 Others Income in last one year

| Sources                              | Total Amount |
|--------------------------------------|--------------|
| Daily Labour                         |              |
| Salary                               |              |
| Income from Shop                     |              |
| Business                             |              |
| Remittance from other family members |              |

#### 4.1 Consumption:

#### 4.2.1 Food consumption in last one week

|                         | Quantity | Price    |                |      | Total Value |
|-------------------------|----------|----------|----------------|------|-------------|
|                         |          | Purchase | Own Production | Gift |             |
| <b>Rice Related</b>     |          |          |                |      |             |
| Rice                    |          |          |                |      |             |
| Flour                   |          |          |                |      |             |
| Muri/chira/khoi         |          |          |                |      |             |
| Shemai/shuji            |          |          |                |      |             |
| Bread                   |          |          |                |      |             |
| Others                  |          |          |                |      |             |
| <b>Lentiles Related</b> |          |          |                |      |             |
| Kheshari                |          |          |                |      |             |
| Mashur                  |          |          |                |      |             |
| Mug/Kalai               |          |          |                |      |             |
| Motor/Boot              |          |          |                |      |             |
| Others                  |          |          |                |      |             |
| <b>Fish:</b>            |          |          |                |      |             |
| Big Fish                |          |          |                |      |             |
| Medium fish             |          |          |                |      |             |
| Small Fish              |          |          |                |      |             |
| Dried Fish              |          |          |                |      |             |
| Sea Fish                |          |          |                |      |             |
| <b>Egg:</b>             |          |          |                |      |             |
| Hen/Duck                |          |          |                |      |             |
| <b>Meat:</b>            |          |          |                |      |             |
| Beef                    |          |          |                |      |             |
| Mutton/Lamb             |          |          |                |      |             |
| Chicken/Duck            |          |          |                |      |             |
| Others                  |          |          |                |      |             |
| <b>Vegetables</b>       |          |          |                |      |             |
| Aubergine               |          |          |                |      |             |
| Kumra                   |          |          |                |      |             |
| Lau                     |          |          |                |      |             |
| Potato                  |          |          |                |      |             |
| Kachu                   |          |          |                |      |             |
| Karala                  |          |          |                |      |             |
| Patal                   |          |          |                |      |             |
| Chichinga/jhinga        |          |          |                |      |             |
| Dhundul                 |          |          |                |      |             |
| Green Banana            |          |          |                |      |             |
| Sweet Potato            |          |          |                |      |             |
| Cauliflower             |          |          |                |      |             |
| Bhada Kafi              |          |          |                |      |             |
| Barbati                 |          |          |                |      |             |
| Tomato                  |          |          |                |      |             |
| Tharash                 |          |          |                |      |             |
| Others                  |          |          |                |      |             |

#### 4.2.1 Food consumption in last one week (Continued)

|                     | Quantity | Price    |                |      | Total Value |
|---------------------|----------|----------|----------------|------|-------------|
|                     |          | Purchase | Own Production | Gift |             |
| <b>Spinach</b>      |          |          |                |      |             |
| Lal Shak            |          |          |                |      |             |
| Pui Shak            |          |          |                |      |             |
| Kachu Shak          |          |          |                |      |             |
| Lau Shak            |          |          |                |      |             |
| Kumra Shak          |          |          |                |      |             |
| Mula Shak           |          |          |                |      |             |
| Others              |          |          |                |      |             |
| <b>Milk</b>         |          |          |                |      |             |
| Natural Milk        |          |          |                |      |             |
| Powder Milk         |          |          |                |      |             |
| Milk Products       |          |          |                |      |             |
| Ghol                |          |          |                |      |             |
| Others              |          |          |                |      |             |
| <b>Sweetmeat</b>    |          |          |                |      |             |
| Roshgolla/Kalajam   |          |          |                |      |             |
| Jilapi/Amriti/Kunda |          |          |                |      |             |
| Badasha/Kadma       |          |          |                |      |             |
| Sugar/Gur/Misri     |          |          |                |      |             |
| Ice-cream           |          |          |                |      |             |
| Gaja/Khaja          |          |          |                |      |             |
| Others              |          |          |                |      |             |
| <b>Oil</b>          |          |          |                |      |             |
| Mustard Oil         |          |          |                |      |             |
| Soybean             |          |          |                |      |             |
| Ghee/Dalda          |          |          |                |      |             |
| Others              |          |          |                |      |             |
| <b>Spices</b>       |          |          |                |      |             |
| Green Chili         |          |          |                |      |             |
| Dried Chili         |          |          |                |      |             |
| Onions              |          |          |                |      |             |
| Garlic              |          |          |                |      |             |
| Tarmaric            |          |          |                |      |             |
| Ginger              |          |          |                |      |             |
| Salt                |          |          |                |      |             |
| Others              |          |          |                |      |             |
| <b>Fruit</b>        |          |          |                |      |             |
| Cocunut             |          |          |                |      |             |
| Banana              |          |          |                |      |             |
| Papaya              |          |          |                |      |             |
| Guava               |          |          |                |      |             |
| Pineapple           |          |          |                |      |             |
| Others              |          |          |                |      |             |

#### 4.2.1 Food consumption in last one week (Continued)

|                              | Quantity | Price    |                |      | Total Value |
|------------------------------|----------|----------|----------------|------|-------------|
|                              |          | Purchase | Own Production | Gift |             |
| <b>Drinks</b>                |          |          |                |      |             |
| Tea                          |          |          |                |      |             |
| Coke Type                    |          |          |                |      |             |
| Others                       |          |          |                |      |             |
| <b>Battle Leaves/Tobacco</b> |          |          |                |      |             |
| Battle Leaves                |          |          |                |      |             |
| Tobacco Leaves               |          |          |                |      |             |
| Ciggarates                   |          |          |                |      |             |
| Tamak                        |          |          |                |      |             |
| Gul                          |          |          |                |      |             |
| Others                       |          |          |                |      |             |
| <b>Others</b>                |          |          |                |      |             |
|                              |          |          |                |      |             |
|                              |          |          |                |      |             |
|                              |          |          |                |      |             |
|                              |          |          |                |      |             |

#### 4.2.2 Expenditure related to Firewood/Fuel, Electricity, and Cosmetics in last one month

|                                  | Quantity | Price    |                |      | Total Value |
|----------------------------------|----------|----------|----------------|------|-------------|
|                                  |          | Purchase | Own Production | Gift |             |
| <b>Firewood/Fuel/Electricity</b> |          |          |                |      |             |
| Firewood                         |          |          |                |      |             |
| Ghuta/Ghushi                     |          |          |                |      |             |
| Tush/Vhushi                      |          |          |                |      |             |
| Patkathi                         |          |          |                |      |             |
| Kerosene                         |          |          |                |      |             |
| Khar                             |          |          |                |      |             |
| Leaves                           |          |          |                |      |             |
| Firebox                          |          |          |                |      |             |
| Candle                           |          |          |                |      |             |
| Gas                              |          |          |                |      |             |
| Electricity                      |          |          |                |      |             |
| Coal                             |          |          |                |      |             |
| Others                           |          |          |                |      |             |



**4.2.2 Expenditure related to Firewood/Fuel, Electricity, and Cosmetics in last one month (Continued)**

|                     | Quantity | Price    |                |      | Total Value |
|---------------------|----------|----------|----------------|------|-------------|
|                     |          | Purchase | Own Production | Gift |             |
| <b>Cosmetics</b>    |          |          |                |      |             |
| Soap                |          |          |                |      |             |
| Washing Soap/Powder |          |          |                |      |             |
| Cream               |          |          |                |      |             |
| Powder              |          |          |                |      |             |
| Perfume             |          |          |                |      |             |
| Shampoo             |          |          |                |      |             |
| Toothpaste          |          |          |                |      |             |
| Haircut             |          |          |                |      |             |
| Hair Brush          |          |          |                |      |             |
| Hair Oil            |          |          |                |      |             |
| Others              |          |          |                |      |             |

**4.2.3 Other non-food expenditure in last one year**

| Items                   | Quantity | Price    |                |      | Total Value |
|-------------------------|----------|----------|----------------|------|-------------|
|                         |          | Purchase | Own Production | Gift |             |
| <b>Clothing: Female</b> |          |          |                |      |             |
| Shari                   |          |          |                |      |             |
| Blouse                  |          |          |                |      |             |
| Petticoat               |          |          |                |      |             |
| Shallower               |          |          |                |      |             |
| Kamij                   |          |          |                |      |             |
| Orghna                  |          |          |                |      |             |
| Frok                    |          |          |                |      |             |
| Pant                    |          |          |                |      |             |
| Gengi                   |          |          |                |      |             |
| Shal/Chadar             |          |          |                |      |             |
| Sweater/cardigan        |          |          |                |      |             |
| Others                  |          |          |                |      |             |

#### 4.2.3 Other non-food expenditure in last one year (Continued)

|                          | Quantity | Price    |                |      | Total Value |
|--------------------------|----------|----------|----------------|------|-------------|
|                          |          | Purchase | Own Production | Gift |             |
| <b>Clothing: Male</b>    |          |          |                |      |             |
| Lungi                    |          |          |                |      |             |
| Shirt                    |          |          |                |      |             |
| Pant                     |          |          |                |      |             |
| Punjabi                  |          |          |                |      |             |
| Pyjama                   |          |          |                |      |             |
| Gangi/ T-shirt           |          |          |                |      |             |
| Under Pants              |          |          |                |      |             |
| Shal/Chadar/Muffler      |          |          |                |      |             |
| Sweater/cardigan         |          |          |                |      |             |
| Half Pant                |          |          |                |      |             |
| Others                   |          |          |                |      |             |
| <b>Clothing: Others</b>  |          |          |                |      |             |
| Gamcha                   |          |          |                |      |             |
| Bed Cover                |          |          |                |      |             |
| Pillow Cover             |          |          |                |      |             |
| Table Cloth              |          |          |                |      |             |
| Widow Curtain            |          |          |                |      |             |
| Mosquito Net             |          |          |                |      |             |
| Duvet                    |          |          |                |      |             |
| Mattress                 |          |          |                |      |             |
| Katha                    |          |          |                |      |             |
| Kambal                   |          |          |                |      |             |
| Others                   |          |          |                |      |             |
| <b>Shoe/Sandal</b>       |          |          |                |      |             |
| Shoe                     |          |          |                |      |             |
| Sandal (Skin)            |          |          |                |      |             |
| Sandal (Rubber)          |          |          |                |      |             |
| Kharam                   |          |          |                |      |             |
| Shoe Polish              |          |          |                |      |             |
| Others                   |          |          |                |      |             |
| <b>Furniture</b>         |          |          |                |      |             |
| Ghat                     |          |          |                |      |             |
| Table/Chair              |          |          |                |      |             |
| Drassing Table           |          |          |                |      |             |
| Almari/Book shelf        |          |          |                |      |             |
| Floor Mattress           |          |          |                |      |             |
| Others                   |          |          |                |      |             |
| <b>Cooking Materials</b> |          |          |                |      |             |
| Cooking Pots             |          |          |                |      |             |
| Cooking stove            |          |          |                |      |             |
| Other Kitchen Materials  |          |          |                |      |             |

**4.2.3 Other non-food expenditure in last one year (Continued)**

|                                   | Quantity | Total       |      | Total Value |
|-----------------------------------|----------|-------------|------|-------------|
|                                   |          | Expenditure | Gift |             |
| <b>Leisure</b>                    |          |             |      |             |
| Radio                             |          |             |      |             |
| Cassette Player                   |          |             |      |             |
| Cinema                            |          |             |      |             |
| Games                             |          |             |      |             |
| Others                            |          |             |      |             |
| <b>Other Households Materials</b> |          |             |      |             |
| Trunk/Suit-Case                   |          |             |      |             |
| Lamp                              |          |             |      |             |
| Sewing Machine                    |          |             |      |             |
| Others                            |          |             |      |             |
| <b>Personal Materials</b>         |          |             |      |             |
| Umbrella                          |          |             |      |             |
| Watch                             |          |             |      |             |
| Hand Bag                          |          |             |      |             |
| Glasses                           |          |             |      |             |
| Ornaments                         |          |             |      |             |
| Others                            |          |             |      |             |

**4.2.3 Other non-food expenditure in last one-year (Continued)**

|   | Total Expenditure |
|---|-------------------|
| <b>Expenditure Related to dwelling Houses</b> |                   |
| Construction of Dwelling Houses               |                   |
| Repair of Dwelling Houses                     |                   |
| Others  |                   |
| <b>Tax/Interest Payments</b>                  |                   |
| Interest                                      |                   |
| Tax   |                   |
| Penalty                                       |                   |
| Remittance to Others Family Members           |                   |
| Others  |                   |
| <b>Education</b>                              |                   |
| Tuition Fees                                  |                   |
| Tutor   |                   |
| Education Materials                           |                   |
| Others  |                   |

#### 4.2.3 Other non-food expenditure in last one-year (Continued)

|                              | Total Expenditure |
|------------------------------|-------------------|
| <b>Medical Expenditure</b>   |                   |
| Physicians's Fee             |                   |
| Medicine Cost                |                   |
| Other Medical Expenditure    |                   |
| <b>Other Expenditure</b>     |                   |
| Transportation Costs         |                   |
| Legal Costs                  |                   |
| Religious Festivals          |                   |
| Expenses Related to Marriage |                   |
| Donation                     |                   |
| Social Festivals             |                   |
| Others                       |                   |

### 5.0 Living standards

#### 5.1 Living standards: Size of the Houses

| Before Membership   |                    |             |                  | After Membership    |                     |             |                  |
|---------------------|--------------------|-------------|------------------|---------------------|---------------------|-------------|------------------|
| No of living houses | Area of Floor pace | Roof (Code) | Side Wall (code) | No of living houses | Area of Floor Space | Roof (Code) | Side Wall (code) |
|                     |                    |             |                  |                     |                     |             |                  |

#### 5.2 Living standards: Sources and Quality of Water

5.2.1 Do you have a tube well in your house (Code) ?

1= Yes and 2= No

5.2.2 If yes, please mention the year of establishment

Please write only months and years .

5.2.3 Please mention the type of ownership, (Code)

1= Personal, 2= Shared with others, 3= Established by an NGO, 4= Established by the Government and 5= Others

#### 5.2.4 Source and Distance of Source of Water:

| Water Type     | Code | Water Source Code |
|----------------|------|-------------------|
| Drinking Water | 1    |                   |
| Cooking Water  | 2    |                   |
| Washing water  | 3    |                   |

**Water Source Code:** 1= Tube Well, 2= Ponds, 3= Well, 4= River and 5= Others

5.3 Living standards: Toilet

5.3.1 Living standards: Toilet (Present Condition)

Please mention the type of toilet your family members use, (code)

**Code:** 1= Sanitary/Ring, 2= Garden, 3= Open field, 4= River side, 6= Pond Side, 7= Hanging Trees, and 8= Mud Structure

5.3.2 Living standards: Toilet (Before Membership Condition)

Please mention the type of toilet your family members use, (code)

**Code:** 1= Sanitary/Ring, 2= Garden, 3= Open field, 4= River side, 6= Pond Side, 7= Hanging Trees, and 8= Mud Structure

5.4 Living standards: Electricity

5.4.1 Do you have electricity in your home, (Code) ?

**Code:** 1= Yes and 2= No

5.4.2 If yes, Please mention the date of connection in your house (Only months and years)

|  |  |
|--|--|
|  |  |
|--|--|

5.4.3 Please mention purposes of electricity use, (code )

**Code:** 1= Only for lighting, 2= Only for irrigation, 3= lighting and irrigation, 4= Only for industrial use, 5= lighting and industrial uses, 6= others

5.4.4 Please mention the date of connection in your locality

|  |  |
|--|--|
|  |  |
|--|--|

5.5 what kind of cooking pots do you use for preparing the main meal (Code)?:

**Code:** 1 = Normal clay pots, 2 = aluminium pots

5.6 Do you have enough winter cloths for all HH members (Code) :

**Code:** 1 = yes, 2 = No

5.7 Ownership of Consumer Durables:

| Consumer Durables | Ownership Code | Purchase Date |
|-------------------|----------------|---------------|
| Radio             |                |               |
| Two-in-One        |                |               |
| Sewing Machine    |                |               |
| Cycle             |                |               |
| Motor Cycle       |                |               |
| Standard Bed      |                |               |
| Show-case         |                |               |
| Dressing Table    |                |               |

Ownership Code: 1 = Yess, 2 = No.

5.8 How much money you spent for children clothing during the last Eid-ul-fitr:  
TK\_\_\_\_\_

5.9 Could you please mention the amount you have spent for animal sacrifice during the last Eid-ul-azha? Tk\_\_\_\_\_

6.0 Health and Medicine:

6.1 Where did you receive medical advice during immediate last sickness of any member of the household (Code)?

Medical advice (Code): 1 = qualified medical practitioner, 2 = thana medical complex physician, 3 = unio-parishad medical practitioner, 4 = village quack physicians, 5 = homeopathy physician, 6 = herbal Physician, 7 = religious person, and 8 = others

6.1 please mention, number of sick days (0-5 children only) in last 3 months:

| ID No. | Total sick days in last 1 month |
|--------|---------------------------------|
|        |                                 |
|        |                                 |
|        |                                 |
|        |                                 |
| Total  |                                 |

7.0 Food and Nutrition:

7.1 Could you please mention the number of months you can provide food from your own income?

7.2 Currently, do you have any saving to buy food in an emergency (Code)?  
Code: 1 = Yes and 2 = No

7.3 Could you please mention, the number of months you could provide food from your own income Before the membership?

7.4 Did you have any savings to buy food in an emergency before the membership ?  
Code: 1 = Yes and 2 = No

7.5 At present time, are you and your family eating better (Code) ?  
Code: 1 = Yes and 2 = No

8.0 Poverty and Poverty Alleviation:

8.1.1 Do you consider your family as a poor (Code)?

Code: 1 = Yes and 2 = No

8.1.2 If yes, Could you please mention which of the following categories is appropriate for your family ?

| Poverty Category | Moderately Poor | Extremely Poor |
|------------------|-----------------|----------------|
| Code             | 1               | 2              |

8.1.3 Did you consider your family as a poor before the membership (Code)?

Code: 1 = Yes and 2 = No

8.1.4 If yes, Could you please mention which of the following categories was appropriate for your family before the membership (Code)?

| Poverty Category | Moderately Poor | Extremely Poor |
|------------------|-----------------|----------------|
| Code             | 1               | 2              |

8.2 Do you think that total income of your family members has increased after becoming a Grammeen Bank member (Code)?

Code: 1 = Yes and 2 = No

8.3a Could you survive or earn enough income for survival of your family members, if the microcredit service is stopped at this moment (Code) ?

Code: 1 = Yes and 2 = No

8.3b If no, How long you need this service in future (in months)?

8.4a Do you think this microcredit programme can alleviate your poverty (Code)?

Code: 1 = Yes and 2 = No

8.4b If No, please mention problems of this programme:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

9.0 Others,

9.1 Does any member of your family have a bank account with any commercial bank (code)?

Code: 1= Yes and 2 = No

9.1 How many members of your family have a bank account with a commercial bank?

Code: 1= Yes and 2 = No

9.3 How many members of your family had a bank account before the membership?

9.4 others: NGO training

9.4.1 Have you received any training from your NGO (Code)?

Code: 1= Yes and 2 = No

9.4.2 Please, mention the types of training you have received from your NGO?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

9.5 Others: Employment Creation

9.5.1 Do you employ any man or women for your business or HH work (code) ?

Code: 1 = yes and 2 = no

9.5.2 please mention, how many men or women you employ for your business or HH activities:(other than the agricultural field work)

|       | Business         |        | HH Activities    |        | Grand Total      |        |
|-------|------------------|--------|------------------|--------|------------------|--------|
|       | No. of Employees | Salary | No. of Employees | Salary | No. of Employees | Salary |
| Total |                  |        |                  |        |                  |        |

10.0 Loan

10.1 Loan: from NGO

| 1 <sup>st</sup> Loan |        | Immediate Previous Loan |        | Present Loan |        | Since Membership |            | Total amount Of overdue loan |
|----------------------|--------|-------------------------|--------|--------------|--------|------------------|------------|------------------------------|
| Date                 | Amount | Date                    | Amount | Date         | Amount | No. of Loans     | Total Loan |                              |
|                      |        |                         |        |              |        |                  |            |                              |



10.2 If you have any overdue loan, please, mention the reason of overdue (Code):

**Code:** 1= Yes and 2 = No

10.3 Please mention uses of loans:

| Loans                   | Purpose mentioned<br>in the loan pplication<br>form (Code) | Actual Use |         |         |
|-------------------------|--|------------|---------|---------|
|                         |  | 1st Use    | 2nd Use | 3rd Use |
|                         |  | Code       | Code    | Code    |
| Present Loan            |  |            |         |         |
| Immediate Previous Loan |  |            |         |         |

10.4 Please mention the percentage of loan you have invested in income generating activities:

|  | 1st Loan | 2nd Loan | Immediate<br>Previous Loan | Present<br>Loan |
|--|----------|----------|----------------------------|-----------------|
| % of loan invested in<br>income generating<br>activities |          |          |                            |                 |

10.5 Is income from investment of microcredit enough to repay loans (Code) ?

**Code:** 1 = Yes and 2 = No

10.6 Have you sold any property since your membership to repay a loan (code) ?

**Code:** 1 = Yes and 2 = No

10.7 Have you taken any further loan from the programme or any other source to repay a loan (code) ?

**Code:** 1 = Yes and 2 = No

## **Bibliography**

## **Bibliography**

---

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