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Does the Participation in the Microcredit Programs Increase Consumption of Participating Households? The Case of the Grameen Bank in Bangladesh

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M. Jahangir Alam Chowdhury[1]

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This paper assesses empirically the impact of the participation in the microcredit program of the Grameen Bank on consumption of participating households. A household level survey was carried out for collecting data (*N=521)*. The results of the empirical estimations indicate that the participation of a household in the microcredit program of the Grameen Bank increases consumption of participating households significantly. But there is non-linearity in the increasing trend in consumption of participating households. The consumption level goes up gradually with the increase in the membership duration up to five years of membership, but the growth rate starts declining after that period of membership.

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1. Introduction

People are poor because they lack of entitlement on absolute minimum necessities of life. Absolute minimum necessities of life include food, education, clothing, housing and health. The level of entitlement on basic necessities of a household depends on the level of the current income and endowment of that household. The level of income and endowment of a household depend on the availability of the employment opportunities for the adult members of that household. Since the availability of suitable jobs and agricultural land is scarce in a country like Bangladesh, under such a scenario, the creation of self employment opportunities becomes the most important objective of households to enhance income, and thus, to enhance the entitlement on basic necessities. But the poor households do not have the amount of capital that is required for starting up a self employment activity.

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. Collateral, credit rationing, preference for high income clients and large loans, and bureaucratic and lengthy procedures of providing loan in the formal 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 to providing credit to poor people for income generating and poverty alleviation purposes [Bhaduri, (1983), Rao, (1980), Bardhan, (1980), Ghosh, (1986), Ghat et. al., (1992].

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The limitations of the formal financial sector and the informal financial sector in providing financial services, especially credit, encouraged the micro-credit program to evolve. The micro-credit program was initiated 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 micro-credit system replaced the provision of collateral, which is very important in receiving credit from the formal financial sector institutions. The Grameen Bank has been established with the objective of alleviating poverty of the poor people through providing them with microcredit for starting up income generating activities. It is, therefore, important to evaluate the poverty alleviation capacity of the microcredit program of the Grameen Bank. The weekly total food consumption expenditures have been used as a proxy of the poverty status of a household. The poverty status of a household is determined on the basis of a poverty line. Again, the poverty line is estimated on the basis of the total food consumption expenditures that are required for an adult person to maintain the essential minimum intake of 2200 calories and 50 grams of proteins. Since the calculation of the poverty line is difficult and there is no such an up-to-date poverty line available for the sample survey area, I have decided to use the total amount of weekly food consumption expenditures as an indirect measure of poverty in this paper.

The present paper is intended to analyze how effective micro-credit programs are in increasing consumption of borrowing households. A quasi-experimental design has been formulated to achieve this objective. The survey design covers one group of households, which have already received more than one loan from the micro-credit program of the Grameen bank (these households are known as program households in this study) and another group of households, who just have joined the program or received their first loan (these households are known as comparison households). This paper compares consumption of program households with that of comparison households to assess the impact of microcredit on consumption of borrowing households. The study expects the better status of program households in terms of consumption compared to that of comparison households.

This paper is divided into seven sections. The first section is the introduction. The second section introduces the Grameen Bank. The third section presents the literature review. In the fourth, the estimation strategy and a description of two important biases related to the impact assessment and how the present study has avoided those two biases are presented. The fifth section describes the survey design of this study. In the sixth, impact of micro-credit on consumption is discussed. Finally, the conclusion of the paper is presented.

2. Microcredit and the Grameen Bank

Muhammad Yunus, the founder of the Grameen Bank, was a professor of economics at the University of Chittagong in Bangladesh until the end of nineteen seventies. He was also the director of the rural research program 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 program 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 those 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 a 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 and the highest amount required was Taka 65 [Counts, (1996), Yunus (1998)]. Professor Yunus thus realized 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 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 Grameen Bank model and the small loans, provided to poor people, are known as microcredit.

In 1983, the Grameen Bank became a specialized 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 member savings, foreign lenders and own sources. The foreign lenders contribute three percent and the members' savings contribute approximately seventy five percent of the available funds. The other sources and own fund of the Grameen Bank contribute the remaining twenty two percent of the available funds.

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 program for a period of at least seven days. During the training program, 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[2]. 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 installments and each installment is equivalent to two percent of the principal amount of the loan. The weekly repayment system keeps installment 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 defense against the problems arising from asymmetric and imperfect enforcement. It helps to minimize risk arising from adverse selection problems. It also assists to build up efficient communication between program 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.

2.2 Grameen Bank II

The microfinance institutions are vulnerable to natural disaster risk. Immediately after a natural disaster, the recovery rate of MFIs goes down drastically. And sometimes this declining trend in the recovery rate creates a huge financial crisis for the MFIs. The Grameen Bank faced a similar problem in 1998. The recovery rate went down drastically immediately after the floods of 1998. Half of Bangladesh was under water for a period of ten weeks. The borrowers of the Grameen Bank lost most of their belongings, like other Bangladeshis, in the flood. As part of the

[2] 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.

rehabilitation program, the Grameen Bank issued fresh loans to its flood affected members. But the accumulated loans became burdensome for the borrowers. And it also became very difficult for them to repay the weekly installments as the size of the weekly installment payment exceeded their ability to repay. As a result the borrowers started defaulting on the repayments of their installments. When this repayment problem had became very severe, the management of the Grameen Bank took the initiative of redesigning the microcredit methodology to help the borrowers who had the repayment problem. The Grameen Bank named the redesigned microcredit methodology as "the Grameen Generalised System (GGS)" [Yunus (2002)]. In the microfinance world, the Grameen Bank with the new microcredit methodology, the Grameen Generalised System (GGS), is known as the Grameen Bank II.

The Grameen Generalized System (GGS) has been devised to manage the prime loan product, Basic Loan, of the Grameen Bank. Apart from this loan product, the Grameen Bank has also two other loan products: (1) the housing loan, and (2) the higher education loan. These additional two loan products continue parallel to the basic loan. Under GGS a borrower gets the basic loan and keeps on receiving the loan cycle after cycle without any interruption until she drops out herself from the program or defaults. The borrower has the opportunity to upgrade the loan size at each cycle of the loan. Professor Yunus, the founder of the Grameen Bank, labels this as the "Grameen micro-credit highway" [Yuns, (2002)]. If the borrower defaults, GGS gives her an exit option. Under the exit option, the Grameen Bank offers her a new loan which is called as "flexible loan". The flexible loan is basically a rescheduled loan of the defaulted basic loan with a new set of terms and conditions. Under the flexible loan, the repayment schedule is designed on the basis of the repayment capacity of the borrower. When a borrower defaults, she has to exit from the Grameen microcredit highway. But the defaulted borrower has the right to get back to the Grameen microcredit highway after repaying the flexible loan that was issued to her immediately after her default on the basic loan. When the borrower gets back to the Grameen microcredit highway, she requires to starting her journey on the Grameen microcredit highway from the beginning. When a borrower defaults, i.e. takes an exit from the Grameen microcredit highway, the Grameen Bank needs to keep 50% provision against the amount given under the flexible loan to the defaulted borrower. Any amount of the flexible loan that is not repaid back by the borrower within two years of the issuance of the flexible loan is regarded as overdue, and the Grameen Bank keeps 100% provision on that amount. The amount of the flexible loan that is not repaid back by the borrower within two years is regarded as bad debts, and it is written off completely from the balance sheet of the organization.

Under GGS, the Grameen Bank has dismantled the savings scheme called "Group Fund". Earlier, the members of a group jointly required saving some money in the group fund and they were not allowed to withdraw their savings from the group fund. Currently, under the GGS, borrowers require opening three obligatory savings accounts independently: (1) Personal Savings Account, (2) Special Savings Account, and (3) Pension Deposit Account. The Grameen Bank makes a deduction at source of an amount of five percent of the loan amount at the time of the disbursement of a loan. Out of this five percent, half of the amount goes to the personal savings account, and remaining half goes to the special savings account. The borrowers also deposit their weekly savings in the personal savings account and they are allowed to withdraw any amount from the account at any time. On the other hand, the borrowers are not allowed to withdraw their savings from the special savings account for the first three years. After the first three years, the

borrowers can withdraw their savings once in three years keeping a minimum balance of Tk. 2000 or half of the balance in the account, whichever is larger. For the borrowers who receive loans more than Tk. 8000, it is mandatory for them to save Tk. 50 per month in the pension deposit account. After ten years of savings, they receive an amount which is almost double of the amount they deposit in the account during the period of 120 months [Yunus, (2002), and Mainsah et al. (2004)].

2.3 Performance

During the period of 1986 to 2005, the Grameen Bank had achieved a growth rate of twenty five percent per annum in cumulative disbursement of all loans (table 1). In 1986, the cumulative disbursement of all loans was $57 million. It went up to $5,026 million in 2005. The yearly disbursement of loans was $18 million in 1986 and it increased to $609 million in 2005 with a growth rate of 19 percent per year. The Grameen Bank helped its members to construct six hundred twenty seven thousand houses by 2005 through providing them with housing loans. In 1985, the total amount of member deposits was $4 million and it increased to $481 million in 2005. During this period, the total deposits of members had attained a growth rate of twenty seven percent. The total number of members of the Grameen bank was 5.6 million in 2005, but the same membership size was only 0.23 million in 1986. The growth rate in the total number of members was seven percent per year during the period of 1986 to 2005. The microcredit program of the Grameen Bank covers more than half of the area of the country. Currently, it covers sixty thousand villages out of eighty six thousand villages in the country. But it had coverage of only six percent of the whole country in 1986.

3. Literature Review

The empirical evidence on the impact of micro-credit on poverty and different aspects of wellbeing is very mixed [see for example, Chowdhury et. al. (2005), Chowdhury (2000), Coleman (1999), Morduch, (1999), Schrieder and Sharma, (1999), Edgecomb and Barton, (1998), Hussain (eds.) (1998), Bruntrup et. al. (1997), Chowdhury and Khandker (1996), Mustafa, et. al. (1996), Khandker and Chowdhury (1996), Pitt and Khandker (1996), Sebstad and Chen, (1996), Proshika (1995), Hossain (1988), Hossain (1984)]. Some impact evaluation studies have found that the access to credit by the poor has a positive, large and permanent effect on living standards. However, other studies have found that the living standards have not improved through microcredit, rather poor households simply become poorer through the additional burden of (further) debt. Since more money for micro-credit essentially means less money for other programs with similar aims.

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 additional 200 so-called ‘success households’ non-randomly for data collection. None of them have used the complete framework, which covers all aspects of poverty, for assessment of the impact of microcredit on poverty. Among the studies reviewed,

Khandker and Chowdhury (1996), Pitt and Khandker (1996), Coleman (1999), and Chowdhury et al. (2005) were to be found more sound from the methodological perspective.

4. Estimation Strategy

Given the extensive geographic coverage of microcredit in Bangladesh it is difficult to find out a perfect 'control' group that could be used to estimate the impact of microcredit on consumption of households. The choice of a household to attend a microcredit program is likely to be related to the outcomes of interest i.e. consumption in this paper. Given the outcome for household i, I estimate the following equation:

$$Y_i = \beta' x_i + \gamma MC + u_i \quad (1)$$

where x is a vector of some control variables that I assume to be exogenous (for example, education of the household members, distance of the household from the nearest market, etc.), and MC represents the microcredit program participation, and u_i is the error term.

The participation in the microcredit programs is defined by the equation given below:

$$MC = \delta' x_i + \nu_i \quad (2)$$

Where x_i represent some control variables and ν_i represent the error term of the model. While the impact of MC is estimated using the equation (1), it is assumed that the error terms of equations (1) and (2), i.e. u_i and ν_i, are not correlated. But, these two error terms become correlated, if the characteristics of the households that influence the microcredit program participation decision also determine the outcome variable, i.e. Y_i in equation (1). This problem is known as the selection bias problem. In such a situation, the OLS estimation of equation (1) yields a biased estimate of the parameter of interest γ. Two types of selection biases make u_i and ν_i correlated: (1) non-random selection of households to participate in microfinance program, and (2) non-random selection of places to establish branches of microfinance institutions.

The microfinance institutions in Bangladesh accept those people as members who have less than 50 decimal of land. This selection criteria generates the first type of two types biases that I have mentioned above. Besides the selection criteria of MFIs, the self-selection of program participants is also another source of the first bias. Since it is expected that households with greater entrepreneurial capability are more likely to join the program, this may also bias the econometric estimation of program benefits. The non-random program placement also creates biases in estimating benefits of the program. For example, if microcredit programs 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 program implementation create biases in estimating program benefits.

On the basis of the above arguments, we can say that a comparison between a group of program participants, who are self selected, and a group of non-participants, who are not self-selected, would generate a bias in estimating the impact of microcredit on outcome variables. In the same way, the estimates will be biased if program group members are selected from a place that has

been non-randomly selected by MFIs on the basis of some characteristics and control group members from a place without those characteristics. On the basis of the above understanding; the present study uses an alternative survey method (Coleman,1999; Chowdhury, 2000) than is commonly employed. We selected new members from a newly established branch as well as old branches of MFIs, who were yet to receive or just received the first loan, as members of the control group. Since, the comparison group members are also self-selected like the program members, the bias arising from self-selection in estimating program benefits disappears. The MFIs select all their areas of operation non-randomly according to their own criteria. Thus, in our investigation, both the program branch and the comparison branch have been selected under similar criteria. Therefore, the bias, which arises from non-random program placement, is also avoided from our sample. Now, the program impacts can be estimated through using a single equation:

$$Y_{ij} = H_{ij}\alpha_y + L_j\theta_y + M_{ij}\beta_y + \nu_{ij} \quad (3)$$

where, Y_{ij}, H_{ij}, and M_j, are defined as above; and V_i represents the error of the model that arises from the household and village level variables that are not included in the model. In the equation 3, M_{ij}, the vector of microcredit variables, includes two variables: D_{ij} is the duration (in months) of the membership of the household j in the village i in the Grameen Bank's microcredit program; and L_j is a dummy variable coded "1" if the household is a new member and it has not received any microcredit loans and coded "0" otherwise. This model has been estimated using two specifications of microcredit variables. The first specification is a simple linear specification:

$$M_{ij} = L_j\phi_1 + D_{ij}\phi_2 \quad (4)$$

The second is a quadratic specification:

$$M_{ij} = L_j\phi_1 + D_{ij}\phi_2 + D_{ij}^2\phi_3 \quad (5)$$

The second specification has been designed to see the non-linearity in the impact of microcredit on different outcome variables. The microcredit variable L_{ij} has been included to control the characteristics that have contributed new members, yet to receive any microcredit, to join after those members, who have already received microcredit. We believe that these 'new members without loan' and 'old members' are systematically different in terms of those factors that contributed one group to join the microcredit program before the other group.

The other variables that are included in the regression models are given in the table 2 along with mean and standard deviations those variables. The variables included in the vector of household characteristics (H_{ij}) are religion, land ownership, education and the demographic composition of the household. The variables included in the vector of village-level characteristics (L_{ij}) are the presence of a primary school, a secondary school, a tube well and electricity in the village, along with the distance to the nearest market, paved road, commercial bank, district headquarters and Dhaka.

5. The Data

Four-stage random sampling technique has been applied in selecting program households and comparison households. In the first stage, one district had been randomly selected out of 64 districts in Bangladesh. In the second stage of random sampling, three branches of Grameen Bank, two branches for selecting program households and the other one for selecting comparison households, had been selected randomly for data collection purpose. Program households had been selected from two more than eight years old branches (program branch) of the Grameen Bank and comparison households had been selected from a newly established Grameen Bank branch (comparison branch). In the third stage, we randomly selected thirty *centres*[3] from the comparison branch and sixty centers from two program branches. In the fourth and final stage, the study randomly selected six members from each of the program branch centre and seven members from each of the comparison branch centre.

In total, the study collected information from two hundred and ten member households of the comparison branch and from three hundred and sixty member households of program branches. However, during the examination of the filled in questionnaires of comparison households, it was found that some questionnaires contained illogical as well as incomplete answers. The study dropped these questionnaires. This left the study with two hundred and five useable questionnaires from the comparison branch and three hundred and sixteen usable questionnaires from two program branches usable.

Besides information on microcredit and consumption, the survey collected detailed information on a variety of factors. For example, demographic information (age, sex, marital status, etc.) and socio-economic information (education, employment, food consumption, expenditure on health, etc.) were collected for all household members. Detailed village-level information was also collected, such as distance to nearest primary school, secondary school, market and district headquarters, along with variables describing village infrastructure, such as the presence of schools, markets, roads, electricity, etc. Information relating to the size of loan received, date of joining and other membership characteristics was provided by branch officials and matched to the data.

6. Results

The weekly total household food consumption expenditures are composed of the sum of the total market value of food purchases, value of consumption out of home produce, and all current transfers and benefits, either cash or kind. It is expected that the total value of consumption expenditures is correlated to the size of the household. For this reason, the total amount of consumption expenditures, the dependent variable in equation (3), has been deflated by the size of the household. In a household all the members do not belong to the same age group. The level of consumption of household members varies with the age. For this reason, all members in a household have been converted into equivalent adults through using an equivalence scale (age 0-17=0.5, and age 18 and above = 1), and finally, the total amount of per equivalent adult food

[3] Each Grameen Bank branch consists of 50-60 centres, each centre consists of 8 groups and each group consists of 5 members.

consumption expenditures of a household has been calculated through dividing weekly total food consumption expenditures by the number of equivalent adults.

Table 3 shows the average per equivalent adult consumption expenditures of old microcredit member households and new microcredit member households of the Grameen Bank. The average consumption of the households in the comparison group is Taka one hundred and forty seven. On the other hand, the same consumption is Taka one hundred and seventy five for the households in the program group. The program households on an average consume nineteen percent higher compared to comparison households and it is statistically significant. This result illustrates that the participation of a household in the microcredit program of the Grameen Bank for a longer period increases consumption of that household.

The key coefficients of the estimated equations are summarized in Table 4. The dependent variable is total weekly per equivalent adult consumption. The natural log of this variable is taken and a log-lin relationship is established with the majority of the equation. This non-linear relationship exhibits the following property: a one-unit change in x will create a percent change in y. This functional form is also adopted because the natural log helps to avoid problems with heteroskedasticity by minimizing the variance across the sample. The coefficients of the microcredit variables in the linear specifications are given in column (1). The same coefficients of the quadratic specification are given in column (2). The coefficients of the microcredit program duration dummies are presented in column (3). In all the models, the variable "*L*" is not statistically significant at the conventionally acceptable level. It indicates that the selection bias problem is not a problem in estimating the impact of microcredit program participation on consumption. The results of the estimation of the linear model indicate that the participation of a household in the microcredit program of the Grameen bank increases the level of consumption of that household. An increase in the membership duration by one year increases the level of consumption by one and half percent. The results of the quadratic specification also suggest that microcredit program participation increases consumption of a household at a declining rate. The results from the estimation of the model with microcredit program duration dummies suggest that the consumption level goes up gradually with the increase in the membership duration up to five years of membership, but the growth rate starts declining after that period of membership.

7. Conclusion

This paper tries to assess the impact of the participation of a household in the microcredit program of the Grameen Bank on consumption. Considering the endogeneity in the microcredit program participation of households, the study has made a comparison between new member households and old member households to assess the impact of microcredit program participation on consumption of households. The results indicate that old member households consume nineteen percent higher compared to new member households. The results also indicate that the microcredit program participation significantly positively increases the level of consumption of participating household. An additional year of membership in the microcredit program of the Grameen Bank increases on an average the level of consumption of participating households by one and half percent. The increasing trend in the level of consumption of participating households continues up to five years of membership. The growth in the consumption of households starts showing a declining trend after five years of membership. On

the basis of the estimated results, it can be said that the participation in the microcredit program of the Grameen Bank increases the consumption level of participating households.

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Table 1: Performance of the Grameen Bank

Performance Indicators	1986	1990	2000	2005
Cumulative Disbursement (All Loans, in $ million)	56.51	248.08	3,060.44	5,025.61
Disbursement During the Year (All Loans, in $ million)	18.18	68.73	268.44	608.79
Year-end Outstanding Amount (All Loans, in $ million)	10.09	38.60	193.26	415.82
Housing Loan Disbursement During the Year (in $ million)	0.19	6.82	1.41	2.95
Number of Houses Built Cumulative	2,042	91,157	533,041	627,058
Total Deposits (Balance, in $ million)	4.10	25.86	126.78	481.22
Number of Members (million)	0.23	0.87	2.38	5.58
Percentage of Female Members	74	91	95	96
Number of Villages covered	5,170	19,536	40,225	59,912
Number of Branches	295	781	1,160	1,735
Profit/Loss (For the Year, in $ million)	0.00	0.00	0.21	15.21

Table 2: Variables used in analysis

Variable	Definition	Mean	Std. Dev.
conspea	Total Weekly Per Equivalent Adult Consumption (in Taka)	164.01	90.10
nw	Total Net Worth of the Household (HH) (in Taka)	161,212	139,369
L	New HHs that haven't received any microcredit yet (Dummy)	0.03	0.18
D	Membership Duration in the Microcredit Program	43.22	37.25
$D_{7\text{-}12}$	Membership Duration 7 months to 12 months (Dummy)	0.19	0.39
$D_{13\text{-}24}$	Membership Duration 13 months to 24 months (Dummy)	0.10	0.31
$D_{25\text{-}36}$	Membership Duration 25 months to 36 months (Dummy)	0.02	0.16
$D_{37\text{-}48}$	Membership Duration 37 months to 48 months (Dummy)	0.02	0.14
$D_{49\text{-}60}$	Membership Duration 49 months to 60 months (Dummy)	0.03	0.17
$D_{61\text{-}72}$	Membership Duration 61 months to 72 months (Dummy)	0.10	0.30
$D_{73\text{-}84}$	Membership Duration 73 months to 84 months (Dummy)	0.11	0.30
$D_{85\text{-}96}$	Membership Duration 85 months to 96 months (Dummy)	0.17	0.38
$D_{97\text{-}108}$	Membership Duration 97 months to 108 months (Dummy)	0.05	0.22
reli	Religion (Dummy)	0.92	0.30
land	Total Area of Agricultural Land (Decimal)	25.40	42.95
edumxm	The maximum schooling years of a male member in the HH	5.64	4.08
edumxf	The maximum schooling years of a female member in the HH	4.46	3.52
tfm5t15	Total female members in the age category of 5 to 15	0.93	0.99
tmm5t15	Total male members in the age category of 5 to 15	0.99	0.97
tfm16t24	Total female members in the age category of 16 to 24	0.36	0.59
tmm16t24	Total male members in the age category of 16 to 24	0.47	0.73
tfm25t40	Total female members in the age category of 25 to 40	0.65	0.49
tmm25t40	Total male members in the age category of 25 to 40	0.62	0.58
tfm41t60	Total female members in the age category of 41 to 60	0.22	0.42
tmm40t59	Total male members in the age category of 41 to 60	0.46	0.50
tfm60a	Total female members in the age category of 61 and above	0.05	0.23
tmm60a	Total male members in the age category of 61 and above	0.08	0.27
mark	Existence of a market in the village (Dummy)	0.39	0.49
Metroad	Existence of a metal road in the village (Dummy)	0.44	0.51
psch	Existence of a primary school in the village (Dummy)	0.79	0.41
ssch	Existence of a secondary school in the village (Dummy)	0.26	0.44
elec	Existence of the electricity in the village (Dummy)	0.79	0.41
dtw	Existence of a deep tube well in the village (Dummy)	0.59	0.49
dmark	Distance of the household from the nearest market (in km)	0.74	0.67
dmetroad	Distance of the household from the nearest metal road (in km)	0.65	0.68
dbank	Distance of the household from the nearest bank branch (in km)	1.23	0.93
ddhq	Distance of the household from the district headquarters (in km)	14.83	14.11
ddhaka	Distance of the household from the capital city Dhaka (in km)	43.09	20.79

Table 3: Weekly Per Equivalent Adult Consumption

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Old Members	313	174.93	5.41	95.65	164.30	185.57
New Members	206	147.40	5.46	78.31	136.65	158.16
combined	519	164.00	3.96	90.10	156.24	171.78
diff		27.53	8.00		11.82	43.25
T test						
diff =mean(Old Members) - mean(New Members)						t = 3.4415
Ho: diff = 0						degrees of freedom = 517
Ha: diff < 0			Ha: diff != 0			Ha: diff > 0
Pr(T < t) = 0.9997			Pr(T > t) = 0.0006			Pr(T > t) = 0.0003

Table 4: Determinants of Log Weekly Per Equivalent Adult Consumption

Duration Specification	Log Weekly Per Equivalent Adult Consumption		
	(1)	(2)	(3)
	Linear	quadratic	Dummies
L	0.0181 [0.17]	0.0567 [0.53]	-
D	0.0013 [2.14]	0.0054 [2.02]	-
D^2	-	-0.00004 [1.58]	-
$D_{7\text{-}12}$	-	-	0.0708 [1.18]
$D_{13\text{-}24}$	-	-	0.0296 [0.39]
$D_{25\text{-}36}$	-	-	0.0295 [0.23]
$D_{37\text{-}48}$	-	-	0.1087 [0.83]
$D_{49\text{-}60}$	-	-	0.2172 [1.91]
$D_{61\text{-}72}$	-	-	0.1916 [2.53]
$D_{73\text{-}84}$	-	-	0.1762 [2.33]
$D_{85\text{-}96}$	-	-	0.0829 [1.25]
$D_{97\text{-}108}$	-	-	0.1154 [1.16]

Notes: Ratio of coefficient to its standard error shown in brackets. Equations also include control variables shown in Table 2 but coefficients are not reported. The complete set of estimates is available from the author on request.