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# Does Micro-finance Really Benefit the Poor?

Evidence from Bangladesh

SHAHID KHANDKER

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Shahid Khandker is a senior economist in the Rural Development Group, Research Department of the World Bank. This paper is to be delivered at the ***Asia and Pacific Forum on Poverty: Reforming Policies and Institutions for Poverty Reduction***, to be held at the Asian Development Bank, Manila, 5-9 February 2001. The paper is based on the author's past research and an ongoing research project on micro-finance with Mark Pitt of Brown University and M.Abdul Latif, Binayak Sen and others from Bangladesh Institute of Development Studies. The author would like to express his thanks to Mark Pitt for comments and suggestions, and to Nidhiya Menon and Hussain Samad for excellent research assistance. Views expressed in this paper are entirely his and do not reflect those of the World Bank or its affiliated organizations, nor of his research collaborators.

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## I. Introduction

Micro-finance means transactions in small amounts of both credit and saving, involving mainly small-scale and medium-scale businesses and producers. The poor, who cannot run a small business because they lack capital, may also benefit from micro-finance organization. The poor, especially poor women, are the prime reason for micro-finance intervention in many countries, including Bangladesh. The question of whether micro-finance really benefits the poor depends on how we define poverty and what kind of help micro-finance offers to the poor to combat poverty. The face of poverty varies from country to country.

Poverty may mean *a lack of* some or all of the following:

- (i) Entitlement to food and other basic necessities.
- (ii) Access to public provision of economic, social, and human infrastructures.
- (iii) Credit, opportunities for income generation, and consumption stabilization.
- (iv) Empowerment in both private and public resource allocations.
- (vi) Access to a social safety net and other resources that help households withstand natural and other shocks, thus safeguarding the very existence of life and families.<sup>1</sup>

Given such a multifaceted definition of poverty, it is clear that what micro-finance can do for the poor depends on the poor's ability to utilize what micro-finance offers them. In many countries, micro-finance provides a window of opportunity for the poor to access a borrowing and saving facility. In other countries, these facilities also provide organizational help, training, safety nets, empowerment, and financial and other help during crises. Micro-finance organizations can alleviate liquidity constraints, stabilize consumption, and enhance both income and consumption for the poor, thereby augmenting the poor's welfare. Borrowing from a micro-finance facility to run a business is a self-help activity. Moreover, micro-finance satisfies the derived demand for capital in the resource-poor households. Success in such a business depends on skill and entrepreneurship, as well as local economic conditions. Many poor participants may lack such skills and may benefit very little from micro-finance. On the other hand,

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1. For broader definition of poverty, see World Bank (2001).

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since a lack of economic growth is the cause of poverty in many economies, the success of micro-finance borrowers is very much limited by their local economies.

Since micro-finance transactions with the poor are very small, the accrued benefits from micro-finance may also be small. In such a case, the important policy question is whether micro-finance is indeed a “real” help to the poor.<sup>2</sup> To understand whether micro-finance really benefits the poor, we must understand who participates in micro-finance programs, how the participants can benefit from these organizations, and whether such benefits are sustainable. When there is not much growth in an economy, borrowing can redistribute income. Micro-finance may help the poor through income redistribution, but benefits accrued to participants are unsustainable through income redistribution alone.

Income redistribution also requires net income generation in the economy. Therefore, we must know whether micro-finance helps sustain borrowers' accrued benefits. To know this, we must assess both the participant-level and aggregate-level impacts of micro-finance on both the short-term and the long-term welfare indicators in an economy. Income, consumption, and employment impacts are the immediate effects of micro-finance interventions. Assessing program impacts on such outcomes is necessary, in order to establish whether micro-finance helps the participants. However, it is difficult to establish whether micro-finance really helps the poor participants. Micro-finance's impacts are made through borrowing, without assessing the borrower-level net worth and other long-term welfare impacts of micro-finance. Similarly, in order to assess whether micro-finance impacts are substantial and go beyond the program participants, we need to assess the impacts on aggregate welfare, both in the short term and long term.

In this paper, I address both issues. First, I identify the participants of a micro-finance program and their characteristics. Are the poor being attracted to such programs? The poverty of a household can be characterized by two general factors in many countries: physical and human capital endowments. A person is poor because he or she is poor in physical and human capital resources.<sup>3</sup> Thus, I differentiate program participation by these two factors of poverty.

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2. According to some critics of the micro-finance programs, who see this as a failure, argue that it cannot be an effective tool for helping the poorest people (Adams and von Pischke 1992). Some impact studies seem to support their opinion (e.g, Coleman 1999).

3. Of course, these are two proximate factors of poverty that are easier to measure.

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Second, I assess the impacts of micro-finance on short-term and long-term welfare indicators of program participants, as well as all participants in a local economy. As mentioned earlier, micro-finance, because of its impact on savings and liquidity constraint, levels out consumption and encourages investment in riskier but higher-return activities. The immediate effects on consumption and investment do not guarantee sustainable benefits, given the nature of self-employed and low-return business activities of the poor. Measurement of the long-term impacts of programs is thus necessary to determine whether the program really helps the participants. The third aspect, measuring aggregate impacts of micro-finance, determines whether the program benefits others in addition to program participants.

Bangladesh is the pioneer of the micro-finance movement and the home of large-scale micro-finance operations. Using household survey data from Bangladesh, I assess the question of whether micro-finance really benefits the poor.

## **II. What We Know about Micro-finance in Bangladesh**

Unlike their formal counterpart, micro-finance organizations in Bangladesh have made great strides in delivering financial services (savings and credit) to the poor, especially women, at a low loan default cost. Strategies such as collateral-free, group-based lending and mobilization of savings (even in small amounts) has mitigated their formal counterpart's problems of poor outreach and high loan default costs. But the apparent success has caused Bangladeshi micro-finance organizations to bear high transaction costs, in order to keep credit discipline under group pressure and monitor borrowers' behavior. The transaction costs are substantial, and programs rely on donors to sustain their operations (Khandker 1998; Khalily, Imam, and Khan 2000; Morduch 1999; Yaron 1992, 1994). Nonetheless, governments and donors continue to support micro-finance programs in Bangladesh, expecting that such investments will benefit society.

Micro-finance programs support production and consumption by the poor. Easy loan repayment terms level out consumption and help the unemployed to become self-employed. Donor resources may assist in building community roads, schools, or health facilities. There are several ways to assist the poor with the resources used in micro-finance program operations. For governments and donors, the issue is clear: If micro-

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finance programs did not benefit the poor in a sustainable way, then efforts to channel donor resources into micro-finance would be misplaced.

To justify donor confidence in micro-credit programs, policymakers and program organizers are keen to understand micro-finance's socioeconomic impact on borrowers and on society at large. At the household level, micro-finance programs result in two types of impact: household and individual. Household-level impacts on income, employment, and poverty do not reveal the intra-household distribution of the benefits triggered by micro-finance. Intra-household impacts are thus examined to trace the distribution of benefits among household members, especially between men and women. Since women are disadvantaged in a society such as Bangladesh and hold the overwhelming share of membership, the policy question is this: Do women benefit from micro-finance and if so, how? At the societal level, the policy questions are these: Do the programs benefit non-participants as well, or does micro-finance simply redistribute income?

While the financial review of micro-finance programs in Bangladesh is less promising than one would expect, the socioeconomic benefits of micro-finance programs are substantial. Findings differ from study to study because of the underlying impact assessment methodologies, but impact assessments indicate that these programs help the poor, although all participants may not benefit equally. Hossain's early study of Grameen Bank shows how Grameen Bank has supported the poor, especially women, in terms of employment, income generation, and social indicators (Hossain 1988). Other Bangladesh Institute of Development Studies (BIDS) and non-BIDS studies also indicate the beneficial aspects of micro-finance in Bangladesh (Rahman 1996 Hashemi, Schuler, and Riley 1996; Schuler and Hashemi 1994). These studies show a positive correlation between micro-finance and the accrued benefits of program participation. However, these studies indicate no causality (showing whether programs are significant in generating such benefits for the borrowers).

The most comprehensive micro-finance impact study to establish causality is a joint BIDS and World Bank study in Bangladesh (Khandker 1998, Pitt and Khandker 1998). This body of research provides a strong indication that the programs help the poor by leveling off consumption and by building assets and net worth. The findings also support the claim that micro-finance programs promote the poor household's

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investment in human capital, through schooling and the contraceptive behavior of families. This major study also sheds light on our understanding of whether women benefit from program participation. Findings suggest that women do acquire assets of their own, and they exercise power in household decision-making.

On the other hand, Morduch (1998), using the same BIDS-World Bank survey data but a different technique, finds the program estimates nonexistent or very small. He argues that the Pitt and Khandker results are overestimates and, thus, flagship programs such as the Grameen Bank's do little to help the poor. Pitt (1999) shows that Morduch (1999) applies a method to the BIDS-World Bank data set that underestimates the program's impacts. Pitt's reestimation confirms that the impact assessment of Grameen Bank's and other programs, as shown in Pitt and Khandker (1999)'s study, is well founded.<sup>4</sup>

The positive impacts of micro-finance programs at the borrower level are thus tenable. Even so, the question arises: What are the long-term impacts of micro-finance? Are the program impacts found in 1991/1992 sustainable over time? The other question is this: If poverty reduction were possible with micro-finance at the borrower level, what would be the impact of micro-finance on aggregate poverty? Earlier estimates suggest that micro-finance contributes to a consumption rate of 18 percent in the case of female borrowing and 11 percent in the case of male borrowing. This impact on consumption rates is short-term and may be short-lived. There may be a low proportion of program participants enjoying the benefits of micro-finance and its impact on the overall economy on a sustainable basis. The World Bank study, based on the 1991/1992 household survey, indicates that less than 5 percent of borrowers lift themselves out of poverty each year by borrowing from a micro-finance program (Khandker, 1998). This 5 percent of the micro-finance borrowers represents only about 1 percent of the population, which means that the aggregate poverty impact of micro-finance program is quite negligible. Does the World Bank study imply that micro-finance programs should be resisted? Has the end product of micro-finance improved or deteriorated in the recent past?

Pros and cons aside, the micro-finance movement in Bangladesh received the World Bank's support in 1996: a US\$115 million project in which the country's

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4. Those who are interested in [Mark Pitt's](http://pssc3.pssc.brown.edu/~mp/) analysis of Morduch's re-analysis of Pitt and Khadker (1998) results, may see the paper in [Mark's-Pitt's](http://pssc3.pssc.brown.edu/~mp/) website: <http://pssc3.pssc.brown.edu/~mp/>

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autonomous body PKSF acted as an intermediary for wholesaling micro-finance. The project ended in June 2000 and the World Bank prepared a follow-up project of US\$160 million at the government's request. In 1998/1999, about 8 million households out of 30 million received help from micro-finance programs. Outstanding loans for micro-finance programs were about US\$600 million in 1998/99. The NGO sector, including the Grameen Bank, accounted for more than 86 percent of this share, while only 14 percent came from the country's commercial banks.

Despite the large inflow of micro-finance, the incidence of rural poverty remains stubbornly high. The incidence of rural poverty, which was 54 percent in 1983/84, remained above 50 percent over the last decade (Ravallion and Sen 1995). A government estimate indicates that poverty fell to about 44 percent recently. Although this decrease is encouraging, the incidence of poverty remains high and reminds policymakers of the limitations of micro-finance in arresting poverty. Is the high incidence of poverty a failure of the micro-finance movement? Is the high incidence of poverty a result of the persistently low economic growth rate (3-4 percent over the last decade) in Bangladesh? Or does the high incidence of poverty justify the current emphasis on micro-finance operations?

### **III. Impact Assessment Using a Panel Household Survey**

The outstanding research issues are: Can micro-finance reduce poverty on a sustained basis at the participant level, if not at the community level? Does micro-finance really benefit those who need the most help? What are micro-finance's long-term impacts on household welfare? Are the estimated impacts compelling, given that impact estimates are sensitive to impact assessment methodologies? These issues are topics in an ongoing research project supported by the World Bank.<sup>5</sup> In 1998/1999, researchers from BIDS, Brown University, and the World Bank revisited the households that were surveyed in 1991/1992.

Program impact assessments are subject to two sources of bias: (i) program placement endogeneity and (ii) program participation endogeneity. Earlier results show that endogeneity is a serious issue and that assessment results could be misleading if the endogeneity/heterogeneity were overlooked by the impact assessment (Pitt and Khandker 1998). The methodology used in the BIDS-WB study is based on cross-

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section data and uses a quasi-experimental survey design to resolve the problems of endogeneity at the village and household levels.

The survey design has three components: (i) households are sampled in villages with and without programs, (ii) eligible and ineligible households alike are sampled in both types of village, and (iii) program participants and nonparticipants within eligible households are sampled. Program impact identification has two underlying conditions: (i) exogenous landholding and (ii) gender-based program design. Households with less than half an acre of land are eligible—this eligibility requirement makes the program's impact more apparent to researchers. Additionally, researchers identify women-only and men-only groups within villages to highlight the program impacts by gender.

Three compelling reasons for using a repeat survey and panel data analysis are the following:

- (i) Results may otherwise be less robust, as some studies show that the measurement of program impact depends on the treatment of program endogeneity (Lalonde 1986). An alternative method such as the household/individual fixed-effects method takes care of program endogeneity, without relying on controversial assumptions.
- (ii) Results may be sensitive to the land-based exclusion restriction that was imposed in the analysis. It is important to see the robustness of the results with a method that does not rely on the exogeneity of landholding in identifying the program's effects. With panel data, the fixed-effects method is less reliant on the exact application of the landholding rule by the micro-credit programs.
- (iii) Cross-section data provides short-term program effects; however, programs take a long time to influence outcomes such as net worth. A panel survey analysis will measure the long-term program effects.

BIDS and the World Bank surveyed 1,798 households selected from 87 villages in 29 thanas in 1991/1992. Eight thanas were drawn randomly from each of BRAC, Grameen Bank, and BRDB's RD-12 project thanas. Five thanas without a micro-credit program were also drawn randomly. Three villages were then drawn randomly from

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5. Besides, the ongoing research project addresses other issues such as the role of credit versus non-credit inputs, the role of group in group-based lending, and the role of micro-finance in empowering women.

each thana, where the programs had operated for at least three years. The household distribution by program participation status according to 1991/1992 survey is: (i) 8.5 percent Grameen Bank members; (ii) 11.2 percent BRAC members; (iii) 6.3 percent RD-12 project members; (iv) 40.9 percent eligible non-participants, and (v) 33.1 percent nontarget households. A follow-up survey in 1998/1999 included the households from the previous survey, new households from the same villages, new households from new villages in old thanas, and three more thanas, increasing the number of sample households to 2,599.

According to the 1998/1999 re-survey with 2,599 households, household distribution by program participation status is: (i) 14.3 percent Grameen Bank members, (ii) 9.3 percent BRAC members, (iii) 3.6 percent RD-12 project members, (iv) 11.1 percent other NGO members, (v) 7.4 percent multiple program members, (vi) 32.0 percent eligible nonparticipants, and (vii) 22.3 percent non-target households. Program participation has increased from 26.2 percent in 1991/1992 to 45.6 percent in 1998/1999.

#### IV. Who Participates in a Micro-finance Program?

According to one household survey, about 34 percent of eligible households in 1991/1992, compared to 56 percent in 1998/1999, participated in micro-finance programs in Bangladesh. The dropout rate, about 5 percent in 1991/1992, increased to about 10 percent in 1998/1999. Net program participation among eligible households was 29 percent in 1991/1992 and 46 percent in 1998/1999. These households must have benefited from the programs; otherwise, the dropout rate would have been higher and the program participation rate would not have increased.

Among program participants, not all households satisfy the eligibility criteria of the micro-finance programs. Remarkably, however, the extent of mistargeting in micro-finance programs of Bangladesh remains constant since 1991/1992. About 23 percent of program borrowers came from the non-target households in 1991, compared to 25 percent in 1998/1999.

To determine who participates in a micro-finance program, assume that the following reduced-form credit demand by women ( $C_{ijf}$ ) and men ( $C_{ijm}$ ) of  $i$ th households in  $j$ th village of females ( $f$ ) and males ( $m$ ) is given by:

$$C_{ijf} = X_{ij} \mathbf{b}_{cf} + \mathbf{m}_{jf}^c + \epsilon_{ijf}^c \quad (1)$$

$$C_{ijm} = X_{ij} \mathbf{b}_{cm} + \mathbf{m}_{jm}^c + \epsilon_{ijm}^c \quad (2)$$

where  $X$  is a vector of household characteristics (age and education of household head),  $\mathbf{b}$  is a vector of unknown parameters to be estimated,  $\mathbf{m}$  is an unmeasured determinant of the credit demand that is fixed within a village, and  $\hat{\epsilon}$  is a nonsystematic error.

The village-level, fixed-effects estimates in the 1998/1999 survey (2,599 households) of program participation and the amount of borrowing for female and male members are shown for two sets of households: (i) all households (Table 1) and (ii) households who met the eligibility conditions of holding fewer than 50 decimals of land (Table 2).<sup>6</sup> For the regression analysis of all types of households, we find that the households that were resource-poor, both in landholding and formal education, did participate in micro-finance programs. A 10 percent increase in landholding reduces a household's micro-finance participation by about 1 percent and the total amount of borrowing by about 6 percent. Additionally, a one-year increase in female education reduces microfinance participation by 1.5 percent. Male education also reduces micro-finance participation. However, once a household decides to participate, male education helps to increase the amount of borrowing. This information supports the notion that the poor do participate in the micro-finance programs in Bangladesh.

This finding is supported further by analyzing only those households with fewer than 50 decimals of land (Table 2). While higher female education reduces program participation as well as borrowing for females, higher male education increases male borrowing from micro-finance programs. In contrast, among households meeting the landholding-based eligibility conditions, lower landholding means higher program participation. In other words, the ultra-poor do participate in micro-finance programs. In fact, an overwhelming percentage (80 percent) of micro-finance program participants in Bangladesh includes households holding either zero or fewer than 20 decimals of land. For them the most relevant question is, Do these poor micro-finance participants really benefit from their participation?

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6. The landholding is taken prior to program participation for micro-finance program members.

## V. Program Impacts on Participating Households

Both the short-term and long-term impacts of micro-finance are important for program participants. Short-term behavior such as per capita consumption or the probability of being above the poverty line determines whether the program makes any significant impact in alleviating poverty among program participants. On the other hand, micro-finance's impact on long-term behavioral outcomes (such as household net worth) determines whether the program's impacts are sustainable, make headway over a longer period of time, and allow households to accumulate assets over and above the amount of their outstanding loans.

The conditional demand for outcomes ( $Y_{ijt}$ ) (such as per capita consumption) conditional on the level of credit demand ( $C_{ij}$ ) is

$$Y_{ijt} = X_{ijt} \mathbf{b}_y + C_{ijft} \mathbf{d}_f + C_{ijmt} \mathbf{d}_m + \mathbf{m}_j^y + \epsilon_{ijt}^y \quad (3)$$

where  $\mathbf{d}_f$  and  $\mathbf{d}_m$  are the effects of female and male credit respectively.

With cross-sectional data (where  $t=1$ ), the estimation issue arises as a result of the possible correlation of  $\mathbf{m}_{jf}^c$ ,  $\mathbf{m}_{jm}^c$ , and  $\mathbf{m}_j^y$ , and of  $\epsilon_{ij}^c$  with  $\epsilon_{ij}^y$  (Pitt and Khandker, 1998). To resolve this endogeneity, Pitt and Khandker used the village fixed-effects method along with the exogenous gender and landholding-based exclusion restrictions to estimate the impacts female and male credit. With panel data where households have more than one observation, such complicated identification restrictions are not required. This estimation is done by differencing out the unobserved village and household attributes, which are the sources of correlation between the credit demand and household outcome equations. Differencing equation (3) at two points of time yields the following outcome equation

$$\Delta Y_{ij} = \Delta X_{ij} \mathbf{b}^y + \Delta C_{ijf} \mathbf{d}_f + \Delta C_{ijm} \mathbf{d}_m + \Delta \epsilon_{ij}^y \quad (4)$$

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Consistent estimates of the credit effect  $d_f$  and  $d_m$  can be obtained from equation (4) using the household fixed-effects method without recourse to instrumental variables estimation such as the one used in the quasi-experimental survey design.

The above fixed-effects method consistently estimates credit impact. However, if credit were measured with error, this error would be amplified when doing fixed-effects estimation, particularly with only two time periods. This measurement error would impart "attenuation bias" on the credit coefficients; they would be biased towards zero. A standard correction for this bias is the use of instrumental variables (IV) estimation. In our earlier paper (Pitt and Khandker 1998), IV method was called for because of the endogeneity of credit and it also took care of any measurement error in credit. In this household fixed-effects model, IV is not required because of endogeneity, but may still be required because of measurement error. These conditions lead us to estimate the above equation in two stages. First we regress changes in the amount of borrowing between 1991/1992 and 1998/1999 at the 1991/1992 level of household and village attributes, to get the predicted change in the amount of borrowing. Second, we use the fitted credit amount in the changes in outcomes equations with the household fixed-effects estimation.

Table 3 presents the summary statistics of all endogenous variables. Micro-finance participants do better than non-participants in both 1991/1992 and 1998/1999, in per capita income, per capita expenditure, and household net worth. The incidence of poverty among participating households is lower in 1998/1999 than in 1991/1992, and lower than among nonparticipating households in both periods.

Table 4 shows the two-stage estimates of program impacts on three short-term outcomes: (i) per capita expenditure, (ii) per capita income, and (iii) the incidence of poverty. Table 4 also shows the impact estimates on a long-term outcome: household net worth. Results show that borrowing by women has a positive significant impact (at a 1 percent level of significance) on per capita expenditure, per capita income and net worth, and a negative effect on the incidence of poverty. The response elasticity for male borrowing is 0.05 for per capita consumption and 0.11 for net worth. In contrast, the response elasticity for female borrowing is 0.03 for per capita consumption, and 0.06 for per capita income. A 10 percent increase in borrowing from a micro-finance program reduces the probability of being above poverty line by 0.3 percent for male

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borrowing and by 0.2 percent for female borrowing. The results support the assertion that programs help poor borrowers over time, and meet their immediate needs.

## VI. Micro-finance Impacts on Village Welfare

There are four major programs (Grameen Bank, BRAC, ASA, and Proshika) that account for about 65 percent of borrowers (68 percent of membership) and 72 percent of all outstanding loans in 1998/1999. Grameen Bank accounted for one fourth of the market share of the micro-finance industry in Bangladesh. The total loan outstanding was about US\$600 million in 1998/1999. This figure shows a large inflow of micro-finance funds into rural Bangladesh and is expected to make an aggregate impact on the local economy. That is, the impacts must extend beyond the program participants.

We may assess this extended impact by examining program impacts on all households with the following equation:

$$Y_{ijt} = X_{ijt} \mathbf{b}_y + C_{jft} \mathbf{d}_f + C_{jmt} \mathbf{d}_m + \mathbf{m}_j^y + \epsilon_{ijt}^y$$

where  $C_{jft}$  and  $C_{jmt}$  is the village-aggregate amount of borrowing by female and male borrowers in micro-credit programs. Unlike the earlier equation, every household in the village in this equation receives the same female and male credit irrespective of whether they participate in a micro-finance program. We use a village-level, fixed-effects method to estimate the micro-finance effect on the welfare of all households in a village.

Table 5 presents the aggregate micro-finance impact on the local economy. One set of results includes no village-level attributes such as prices and infrastructures, while the other set includes them. Without controlling for village-level attributes, we find that micro-finance affects the aggregate village-level welfare indicators such as per capita income, expenditure and net worth, but with an insignificant effect on poverty. The effects either decrease or disappear when variations in village-level attributes are controlled for. This trend also appears with the results for the nonparticipant households in the economy (Table 6). Results may indicate no substantive program impacts on village-level welfare indicators or among nonparticipating households,

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although household net worth increases with female borrowing and income increases with male borrowing for both cases.

The decline in impact due to the inclusion of village-level variables may imply that micro-finance has an impact on all households or nonparticipants, and via changes in village-level attributes such as prices and wages. In order to determine whether this correlation exists, we fit a regression by relating changes in price, wage, and other village attributes to changes in female and male borrowing between 1991/1992 and 1998/1999, after controlling for the 1991/1992 level of prices, wages, and other village attributes. The estimates appear in Table 7. The results show that micro-finance affects the local economic environment through price, wage, and village accessibility, thereby affecting the welfare of the local economy.

## **VII. Conclusion**

Program evaluation is sensitive to the methods used in impact assessment. In our earlier study based on cross-section data from Bangladesh, we find that programs make a difference to the poor households who are members of Grameen Bank and similar micro-finance programs in Bangladesh. However, the impact assessments are subject to assumptions such as exogeneity in landholding. Moreover, we use a quasi-experimental survey design to resolve the endogeneity of program participation. In order to determine whether program impact measurement is sensitive to the estimation methodology, we carry out a follow-up survey in Bangladesh. The panel household survey helps estimate the program effects by using the household fixed-effects method, removing the bias due to endogeneity of program placement and program participation. Results confirm the earlier findings that programs make a difference to poor participants by raising per capita income and consumption as well as household net worth, thereby increasing the probability that the program participants lift themselves out of poverty. The welfare impact of micro-finance is also positive for participating and nonparticipating households, indicating that micro-finance programs help the poor beyond income redistribution and income growth. The programs have spillover effects on the local economy, but the impacts are very small.

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No matter how small the aggregate impact, micro-finance is significant in Bangladesh for its innovations in rural credit markets and its impact of empowering the poor, especially women. It is also well established that micro-finance programs reach an overwhelming majority of the poor and women, to whom formal financial institutions are inaccessible. With their expenses of outreach and loan recovery, Bangladeshi programs find it difficult to achieve financial independence, despite their struggle to become cost-effective through portfolio diversification and other actions. As the majority of micro-finance clients are poor, the survival question of micro-finance is linked with the dynamics of poverty.

Even if poverty decreases through micro-finance, albeit at a slow rate, poverty is rampant in a country that has the largest presence of micro-finance programs in the world. Micro-finance is not to blame for this high incidence of poverty. We must admit that micro-finance is only an instrument among a large number of poverty reduction strategies that policymakers must pursue to reduce poverty. Certainly growth is a significant factor in reducing poverty. Investment in human capital and other means to empower the poor are also important tools for reducing poverty. Similarly, micro-finance intervention reduces poverty for a small percentage of the poor, and certainly provides an institutional credit and savings facility to a large percentage of the poor, especially women. The role of micro-finance must be evaluated from such perspectives.

Table 1. Village fixed-effects estimates of credit program participation and the amount of borrowing

| Explanatory Variables                         | Program Participation (probit) | Female Borrowing (tobit) | Male Borrowing (OLS) | Total Borrowing (tobit) |
|---|--------------------------------|--------------------------|----------------------|-------------------------|
| Maximum education of household male (years)   | -0.008<br>(-1.905)             | -0.001<br>(-0.171)       | 0.023<br>(1.692)     | -0.007<br>(-0.400)      |
| Maximum education of household female (years) | -0.015<br>(-3.200)             | -0.084<br>(-2.984)       | -0.021<br>(-1.819)   | -0.109<br>(-3.709)      |
| Household land assets (decimal)               | -0.104<br>(-10774.258)         | -0.139<br>(-7.610)       | -0.113<br>(-3.639)   | -0.538<br>(-8.377)      |
| Adjusted R squared                            | 0.207                          | 0.129                    | 0.126                | 0.107                   |
| Observations (number of households)           | 1,935                          | 1,975                    | 1,975                | 1,975                   |

Note: Complete regressions include, in addition to above variables, other household level variables.  
Source: BIDS-World Bank household surveys, 1998/1999.

Table 2. Village fixed-effects estimates of credit program participation and amount of borrowing (target households only)

| Explanatory Variables                         | Program Participation (probit) | Male Borrowing (OLS) | Female Borrowing (tobit) | Total Borrowing (tobit) |
|---|--------------------------------|----------------------|--------------------------|-------------------------|
| Maximum education of household male (years)   | -0.007<br>(-1.312)             | 0.058<br>(3.128)     | 0.006<br>(0.455)         | 0.037<br>(1.522)        |
| Maximum education of household female (years) | -0.022<br>(-3.417)             | -0.028<br>(-1.255)   | -0.053<br>(-3.346)       | -0.106<br>(-3.523)      |
| Household land assets (decimal)               | -0.033<br>(-2.072)             | 0.003<br>(0.060)     | -0.093<br>(-2.542)       | -0.166<br>(-2.351)      |
| Adjusted R squared                            | 0.156                          | 0.228                | 0.102                    | 0.086                   |
| Observations                                  | 1,233                          | 1,284                | 1,284                    | 1,284                   |

Notes: Complete regressions include, in addition to above variables, other household level variables. A Tobit model cannot be used for male borrowing because of too few right-censored observations.  
Source: BIDS-World Bank household surveys, 1998/1999.

Table 3. Summary statistics of outcome and credit variables

| Explanatory Variables                          | 1991/92                |                         |                          | 1998/99                  |                         |                            |
|--|------------------------|-------------------------|--------------------------|--------------------------|-------------------------|----------------------------|
|  | Program Participants   | Target Non-participants | Nontarget group          | Program Participants     | Target Non-participants | Nontarget group            |
| Male borrowing (taka)                          | 3,250.5<br>(7,046.1)   | 0                       | 0                        | 3,177.1<br>(10,810.0)    | 0                       | 0                          |
| Female borrowing (taka)                        | 5,697.2<br>(7,993.6)   | 0                       | 0                        | 12,689.2<br>(19,628.7)   | 0                       | 0                          |
| Household per capita Yearly expenditure (taka) | 3,979.3<br>(1,629.5)   | 3,819.1<br>(1,731.9)    | 5,867.9<br>(3,879.6)     | 5,437.9<br>(4,005.0)     | 4,534.1<br>(2,705.6)    | 7,253.3<br>(5,874.8)       |
| Household per capita Yearly income (taka)      | 4,195.4<br>(9,382.3)   | 3,735.0<br>(6,383.7)    | 4,736.1<br>(7,514.8)     | 5,193.6<br>(4,536.0)     | 4,507.6<br>(4,520.2)    | 7,501.5<br>(7,377.6)       |
| Poverty head count ratio                       | 0.900<br>(0.300)       | 0.896<br>(0.305)        | 0.665<br>(0.473)         | 0.703<br>(0.457)         | 0.778<br>(0.416)        | 0.515<br>(0.501)           |
| Household net worth (taka)                     | 63,404.7<br>(92,818.2) | 34,770.4<br>(74,260.6)  | 286,791.8<br>(369,510.3) | 138,057.6<br>(290,968.3) | 86,484.5<br>(248,994.3) | 650,362.2<br>(1,836,344.0) |
| Observations                                   | 591                    | 539                     | 233                      | 771                      | 279                     | 237                        |

Note: Figures in parentheses are standard deviations.

Source: BIDS-World Bank household surveys, 1991/92 and 1998/99

Table 4. Fixed-effects estimates of micro-finance on household welfare of participants

| Explanatory Variables | Household per Capita Yearly Expenditure | Household per Capita Yearly Income | Poverty Headcount ratio <sup>1</sup> | Household Net Worth |
|-----------------------|---|------------------------------------|--------------------------------------|---------------------|
| Male borrowing        | 0.053<br>(3.503)                        | 0.032<br>(0.706)                   | -0.032<br>(-2.292)                   | 0.109<br>(3.010)    |
| Female borrowing      | 0.032<br>(5.158)                        | 0.062<br>(3.281)                   | -0.020<br>(-3.497)                   | 0.018<br>(1.176)    |
| Adjusted R squared    | 0.029                                   | 0.003                              | 0.078                                | 0.345               |
| Observations          | 2,726                                   | 2,726                              | 2,726                                | 2,726               |

Notes: Complete regressions include, in addition to above variables, other household and village level variables. <sup>1</sup>Poverty headcount ratio in this and subsequent tables has been defined as the percentage of households with per capita expenditure below the poverty line per capita expenditure defined for the sample.

Sources: BIDS-World Bank household surveys, 1991/1992 and 1998/1999.

Table 5. Fixed-effects estimates of micro-finance on aggregate village welfare

| Explanatory Variables | Household per Capita Yearly Expenditure (OLS) |                    | Household per Capita Yearly Income (OLS) |                  | Poverty Headcount Ratio (logit) |                                 | Household Net Worth (OLS) |                  |
|-----------------------|---|--------------------|--|------------------|---------------------------------|---------------------------------|---------------------------|------------------|
|                       | Model 1                                       | Model 2            | Model 1                                  | Model 2          | Model 1                         | Model 2                         | Model 1                   | Model 2          |
| Male borrowing        | 0.0002<br>(0.082)                             | 0.005<br>(1.725)   | 0.026<br>(3.141)                         | 0.030<br>(3.835) | 0.011<br>(0.477)                | -0.002<br>(-0.101)              | 0.002<br>(0.232)          | 0.001<br>(0.196) |
| Female borrowing      | 0.001<br>(0.268)                              | -0.004<br>(-1.280) | 0.008<br>(0.743)                         | 0.005<br>(0.566) | -0.010<br>(-0.348)              | 0.026<br>(1.046)                | 0.017<br>(1.703)          | 0.033<br>(3.875) |
| Adjusted R squared    | 0.267   | 0.242              | 0.079                                    | 0.074            | ch <sup>2</sup> (28)<br>=528.77 | ch <sup>2</sup> (18)=<br>496.21 | 0.548                     | 0.578            |
| Observations          | 2,726   | 2,726              | 2,726                                    | 2,726            | 2,726                           | 2,726                           | 2,726                     | 2,726            |

Notes: Complete regressions include, in addition to above variables, other household and village level variables. Model 1 includes village variables while model 2 does not.

Source: BIDS-World Bank household surveys, 1991/1992 and 1998/1999.

Table 6. Estimates of micro-finance on village prices and wages

| Explanatory Variables | Household per Capita Yearly Expenditure (OLS) |                    | Household per Capita Yearly Income (OLS) |                  | Poverty Headcount Ratio (logit) |                                | Household Net Worth (OLS) |                  |
|-----------------------|---|--------------------|--|------------------|---------------------------------|--------------------------------|---------------------------|------------------|
|                       | Model 1                                       | Model 2            | Model 1                                  | Model 2          | Model 1                         | Model 2                        | Model 1                   | Model 2          |
| Male borrowing        | 0.0003<br>(0.067)                             | 0.005<br>(1.103)   | 0.023<br>(1.647)                         | 0.026<br>(1.974) | 0.023<br>(0.580)                | 0.027<br>(0.567)               | 0.008<br>(1.048)          | 0.002<br>(1.605) |
| Female borrowing      | 0.0004<br>(0.069)                             | -0.001<br>(-0.249) | 0.011<br>(0.624)                         | 0.016<br>(1.117) | -0.011<br>(-0.226)              | -0.006<br>(-0.118)             | 0.009<br>(0.850)          | 0.025<br>(2.947) |
| Adjusted R squared    | 0.408   | 0.357              | 0.091                                    | 0.056            | ch <sup>2</sup> (28)<br>=253.44 | ch <sup>2</sup> (18)<br>=70.19 | 0.731                     | 0.720            |
| Observations          | 994   | 994                | 994                                      | 994              | 932                             | 932                            | 994                       | 994              |

Note: Complete regressions include, in addition to above variables, other household and village level variables. Model 1 includes village variables while model 2 does not.

Sources: BIDS-World Bank household surveys, 1991/1992 and 1998/1999.

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### References

- Adams, D.W., and J.D. Von Pischke** 1992, "Microenterprise Credit Programs: Déjà vu" *World Development*, 20 (October): 1463-70.
- Coleman, B.E.**, 1999, "The Impact of group lending in Northeast Thailand" *Journal of Development Economics*, 60 (October): 105-141.
- Hashemi, Syed M., Sidney R. Schuler, and Ann P. Riley**, 1996, "Rural Credit Programs and Women's Empowerment in Bangladesh" *World Bank* 24 (April): 635-53.
- Hossain, Mahabub**, 1988, "Credit for Alleviation of Rural Poverty: The Grameen Bank in Bangladesh." *IFPRI Research Report 65*, IFPRI, Washington, D.C.
- Khalily, M. B., M. O. Imam, and S. A. Khan**, 2000, "Efficiency and Sustainability of Formal and Quasi-formal Micro-finance Programs-- An Analysis of Grameen Bank and ASA," *The Bangladesh Development Studies, A Special Issue on Microfinance and Development: Emerging Issues*, 26 (June/September): 103-146, edited by Rushidan I. Rahman and Shahidur R. Khandker.
- Khandker, Shahidur R.**, 1988, *Fighting Poverty with Microcredit: Experience in Bangladesh*, Oxford University Press for the World Bank.
- Lalonde, R.**, 1986, "Evaluating the Econometric Evaluations of Training Programs with Experimental Data", *American Economic Review*, 76: 604-620.
- Morduch, J.**, 1998, "Does Microfinance Really Help the Poor? New Evidence from Flagship Programs in Bangladesh" *Unpublished mimeo*.
- Morduch, J.**, 1999, "The Role of Subsidies in Microfinance: Evidence from the Grameen Bank" *Journal of Development Economics*, vol. 60 (October): 229-248.
- Pitt, Mark M.**, 1999, "Reply to Jonathan Morduch's 'Does Microfinance Really Help the Poor? New Evidence from Flagship Programs in Bangladesh'" *Unpublished Manuscript*.
- Pitt, Mark M. and Shahidur R. Khandker**, 1998, "The Impact of Group-Based Credit Programs on Poor Households in Bangladesh: Does the Gender of Participants Matter?" *Journal of Political Economy*, 106 (October): 958-96.
- Rahman, Rushidan I.**, 1996, "Impact of Grameen Krishi Foundation on the Socioeconomic Condition of Rural Households," *Working paper No. 7*, BIDS.
- Ravallion, Martin, and Binayak Sen**, 1995, "When Methods Matter: Towards a Resolution of the Debate about Bangladesh's Poverty Measures," *Policy working paper 1259*, World Bank, Washington, D.C.
- Schuler, Sidney R., and Syed M. Hashemi**, 1994, "Credit Programs, Women's Empowerment, and Contraceptive Use in Rural Bangladesh," *Studies Family Planning*, 25 (March/April):65-76.
- Yaron, Jacob**, 1994, "What Makes Rural Finance Institutions Successful?" *The World Bank Research Observer* 9 (1): 49-70.