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Non-Borrowing Effects of Microfinance Participation: Evidence Using Long Panel Survey Data in Bangladesh

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Abstract

Using a long panel survey data collected three times during 1991/92-2010/11, this paper examines the effects of non-credit inputs of microfinance programs in rural Bangladesh. This paper identifies the non-credit effects in three ways: first, by making a distinction between borrowers and non-borrowing participants; second, using program duration as proxy for non-participation after controlling for borrowing; and lastly, using program savings as a non-credit input. This paper finds that credit matters more for female members than for male members, while non-credit inputs (participation independent of borrowing) matters more for male members in augmenting household income and expenditure. Similarly, membership length has effects independent of borrowing, in particular in enhancing non-land asset and girls' schooling. Finally, male savings helps increase household non-land assets and net worth, while female savings increases male and female labor supply as well as household non-land asset and boys' schooling. As for the program-specific effects, female participants in BRAC seem to do better than Grameen Bank and other MFI participants in raising household welfare. This paper concludes that microfinance program members should have access to a wide range of non-credit services, besides credit, in order to have maximum benefits of the programs.

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1. Introduction

Most of the literature on microfinance benefits deals only with the borrowing effects of microfinance programs. However, microfinance programs provide a variety of services including awareness building among the poor, especially women, skill-based training, marketing support for products, extension services for inputs, plus mobilizing savings in small amounts and of course, lending. That is, MFIs provide both financial and non-financial services. While mobilizing savings and extending credit are the financial services which account for the highest shares of services provided, training and extension services constitute non-financial services, which also explains a prominent visible product of MFIs in many countries.

Bangladeshi MFIs require a certain amount of savings, although in small amounts, to be deposited by borrowers on a regular basis (mostly weekly). This is a good practice for the poor who can ultimately rely on such funds to smooth income and consumption when needed in a vulnerable agro climate context. Similarly, when people are mostly illiterate and do not have easy access to information about credit market and its products, awareness building, skill-based training, and extension services make a lot of sense. Distinguishing between effects of financial and non-financial services of microfinance programs then becomes an important exercise for two reasons: (a) Many MFIs depend on subsidized funds to develop and market microfinance products; and (b) Lending rates are high (often higher than 40 percent in some cases) because of high transaction costs associated with microfinance product development and delivery. Therefore, estimating the non-credit effects above and beyond the credit effects is a relevant exercise for determining whether subsidized funds or high micro-lending rates are at all justified. However, a very few studies have attempted to document the non-credit effects of microfinance programs, such as, Alam (2013), Karlan and Valdivia (2015), McKernan (2002).

If non-credit services matter above and beyond credit, different services would have different effects. For example, among various leading programs in Bangladesh, Grameen Bank provides mostly financial services (both savings mobilization and lending), while BRAC, the largest NGO, provides both financial and non-financial services BRAC's non-financial services include not

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only awareness building but also various skilled-based training programs. Grameen Bank also provides awareness building training but does not cover skill training to the extent BRAC does. The newer generation of MFIs, supported by the country's leading microfinance facility, PKSF, follows a model between Grameen Bank and BRAC. Hence, the program design of these three categories of microfinance (Grameen, BRAC, and others) may differ by product design and services and hence, may have different effects of non-financial services they provide to members. Our aim in this paper is to differentiate impacts of microfinance by the type of program and its services delivered. This paper, using data from along panel survey spanning over 20 years, explores the possible benefits from credit, non-credit inputs, and program design of MFIs in Bangladesh.

2. Data

The data used to estimate the non-credit effects of microfinance programs is drawn from the long panel survey scarried out by Bangladesh Institute of Development Studies (BIDS), Institute of Microfinance (InM), and World Bank. The World Bank and the Bangladesh Institute of Development Studies (BIDS) carried out the first survey in 1991/92 to study the role of microfinance in poverty reduction. This was a survey of 1,769 households randomly drawn from 87 villages of 29 upazilas in rural Bangladesh. The households were revisited in 1998/99, again with World Bank-BIDS collaboration. However, only 1,638 households were available for the re-survey due to sample attrition. The re-survey included some new households from old villages and a few newly included villages. Altogether 2,599 households were surveyed in 1998/99 out of which 2,226 were old households(allowing for household split-off) and 373 were new.

The households were resurveyed again in 2010/11, this time jointly with the Institute of Microfinance (InM). The resurvey tried to revisit all the households (2,599) surveyed in 1998/99. However, due to attrition, 2,342 households were located, which spawned to 3,082 households due to split off. The analysis of this study is based on 1,509 households from 1991/92 that are common in all three surveys. Ofcourse, because of household split-off, we have higher number of households in 1998/99 (1,758) and 2010/11 (2,322).

Figure 1 presents the breakdown of original 1,509 households from 1991/92 to 2010/11 by program participation status. In 1991/92, only 26.3 percent of 1,509 households were microfinance program participants. By 1998/99, there was a 2.8 percentage point drop in the share of participants while there was an increase in participation of 26.4 percent from the original non-participants. Similar transitions continued as we can see in the 2010/11 survey data. A trend is clear from such transitions – at each stage over time, a very high proportion of the participants remained with the programs, and also a good proportion of non-participating households later joined microfinance program, resulting in a substantial growth in membership. Importantly, more than 80 percent of the participants from earlier years remained in the programs at least for 10 years.[1] For details on the data, see Khandker and Samad (2014).

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[1] One may argue that these households are trapped as they cannot either graduate or opt out from microfinance programs. We will see shortly if this counter-argument is valid.

Figure 1: Transition of Microfinance Participation Status Over Time: 1991/92-2010/11
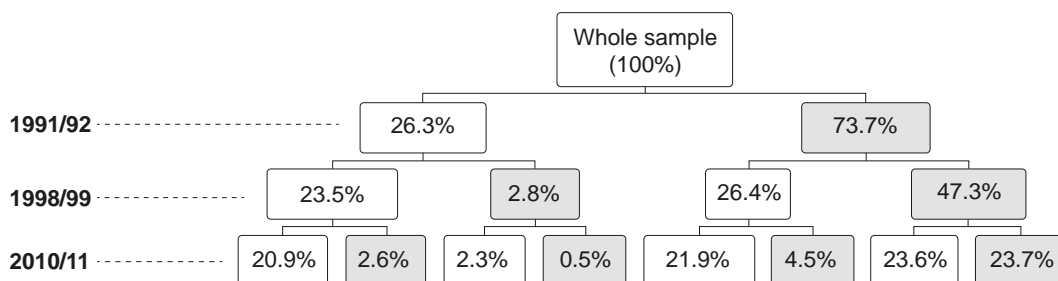
3. Evidence on the Role of Non-Credit Services

Microfinance programs provide their clients with many non-credit services. These non-credit services include vocational training, organizational and social development inputs to improve literacy, health, and social balance. It is only natural that these services have separate impacts on the behavior and welfare of members. However, many believe that, the poor have their own rationale that helps them maximize profit given their financial constraints (e.g., Yunus 1999). Nevertheless, de Mel, McKenzie, and Woodruf (2008a; 2008b) found considerable heterogeneity among micro-entrepreneurs in Sri Lanka, implying that higher cognitive abilities yield higher returns. However, most of the existing studies fail to establish any strong and significant impact of financial training on borrowers' performance. Karlan and Valdivia (2015) tried to find impact of business training on microfinance clients and institutions in Peru, using a randomized control trial. They found little or no evidence of changes in key outcomes such as business revenue, profits, or employment due to a training session over a period of one to two years. Basic business training to existing microfinance clients does not seem to generate higher profits or revenues, compared to the outcomes of present and baseline values. Karlan and Valdivia (2015) divided their analysis into four categories, namely, business outcomes, business processes and knowledge, household outcomes including empowerment in decision making and child labor, and microfinance institutional outcomes. The difference estimators, however, show business knowledge improvements and increased client retention rates for the microfinance institutions. In contrast, Epstein and Yuthas (2014) report better understanding of revenue, expense and profit among microfinance members who received training on cash flow.

The conclusion is similar in other contemporary studies. Collins (2013), while assessing the impact of a mandatory financial education, observes that financial education improves self-reported behaviors, but finds no measurable effects on credit or savings. Bruhn and Zia (2013) study the impact of a comprehensive business and financial literacy program on firm outcomes of young entrepreneurs in Bosnia and Herzegovina. The training program did not influence business survival, but it significantly improved business practices, investments and terms for surviving businesses. Bruhn,Ibarra and McKenzie (2014) conducted randomized experiments around a large-scale financial literacy course in Mexico City to find that attending training on financial education increases financial knowledge and self-reported measures of saving, but has no impact on borrowing behavior.

McKernan (2002) admits that the 'impact of the noncredit aspects—such as vocational training, the provision of health and other information, and information sharing and monitoring among members—is difficult to measure', therefore takes 'productivity of all capital' as an indicator of noncredit aspects of microfinance programs. She examines the impact of microfinance borrowing on business profits and finds that borrowing (total effect) and business capital (noncredit effect) both have a positive impact on borrowers' profits. The first one comes from estimating a profit equation, whereas the latter one comes from estimating the profit equation conditional on productive capital. The study uses data on participant and nonparticipant household in microfinance programs of Grameen Bank (GB), the then Bangladesh Rural Advancement Committee (BRAC), and RD-12 of Bangladesh Rural Development Board (BRDB), to measure the total and noncredit effect. Treating productive capital and program participation endogenous in conditional profit equation, McKernan (2002) finds large positive effect of participation and the noncredit aspects of participation on self-employment profits. Results also suggest that, microfinance programs have the greatest impact on households with the least capital.

Alam (2013), while examining the effect of credit and non-credit aspects of microfinance programs on self-employment profits, replicated McKernan (2002) in a simpler way. For instance, McKernan (2002) observes profit and productive capital as limited dependent variable with a threshold level, breaks error terms up to five components to capture household and village unobservable characteristics, and takes all productive capital (credit or savings) into account, whereas Alam (2013) includes both the magnitude and dummy variables for commercial credit from the three microfinance programs in McKernan's study. Consequently, Alam's result shows that the non-credit social aspects of microfinance program affect profit and increase self-employment. In addition, it generates larger credit effect, but smaller non-credit effect, for commercial loans compared to microfinance.

## 4. Non-Credit Services of MFIs in Bangladesh

Figure 2 represents various training types received by microfinance members in 2009 and 2013 from over two hundred partner MFIs of PKSF (Palli Karma Sahayak Foundation)—an apex microfinance organization in Bangladesh. PKSF operates with designated credit programs that havetraining embedded. For PKSF partner MFIs, training receivers constitute about 13 percentage of the members. If we include Grameen Bank and ASA, two large MFIs that do not have explicit training program, the percentage becomes very negligible. Nevertheless, the comparison here still provides us with a good idea about non-credit services because PKSF partner organizations cover 30 percent members of the entire microfinance sector in Bangladesh (approximately 10 Million), whereas Grameen, BRAC and ASA cover 22, 21 and 15 percent members, respectively (Faruqee and Badruddoza, 2011).

In Figure 2, all training programs are divided into five broad categories; namely, (1) agriculture, that includes crop, vegetables, fruits and spices; (2) livestock, that mainly involves rearing goat, fattening beef, poultry, fisheries, and production of dairy items; (3) off-farm activities contain

motorized and non-motorized transportation, small business and trade, and handicrafts; (4) vocational training mainly consists of electric gadgets repairing, sewing machine, metal works and welding; and finally, (5) training on social development includes education, health, social awareness, credit management and so on. The share of training in agriculture, vocational and social development increased from 2009 to 2013, and while it decreased for livestock and off-farm trainings. Training on livestock, poultry and fisheries provided to highest number of borrowers in 2009, while in 2013 training on agriculture was provided to highest number of members.

In most cases, these programs are 'tied to' some particular product of microfinance set by PKSF. The scenario conveys a promising signal that the dominance of rearing goat is decreasing and diversity is taking place in agricultural production. However, the declining share of off-farm activities may be attributed to the political instability in Bangladesh in 2013. There are also some positive changes in social awareness, health and education. On the other hand, vocational training, though crucial for a country like Bangladesh with huge unskilled labor force, needs suitable infrastructure to flourish.

Figure 2: Training Provided by PKSF Partner MFIs to Borrowers
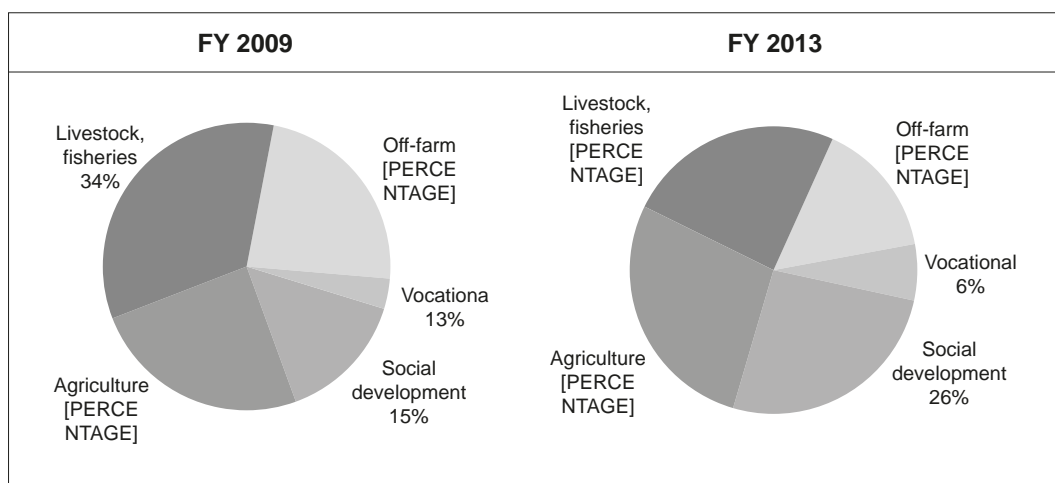
Source: PKSF (2014)

5. Do Non-Credit Inputs Matter in Enhancing Household Welfare?

In this section, we are going to examine if non-credit inputs matter to household welfare. As mentioned before, while non-credit provision was an integral part of the services provided by the first generation microfinance programs (developed in the 1980s and early 1990s), it became more and more secondary as new programs entered the market starting in the mid-1990s. Table 1 shows various training activities provided by the first generation MFIs and the share of microfinance members that received such trainings. Among the training programs, those in health and hygiene rank first. About 58 percent male members, 68 percent female members and 67 percent of all members received training in health and hygiene. Training in literacy

comes in second - 63 percent members received such training. Training in occupational skill and marketing is very important for MFIs as it can directly contribute to the productivity of the activities supported by microfinance loans. About 32 percent of the members received training in occupational skill development and 18 percent received training in marketing. Overall, almost all members (over 99 percent) received one form of training or another.

In contrast to the first generation MFIs, most programs started there after disbursed loans without providing any major trainings. Still, they provided some type of non-credit services in the form of information sharing on different types of skills to help the members develop human and social capital and utilize their current loans better. For example, in a group setting, while a member waits for his or her turn to get the loan he or she learns from both the program and other members lessons on entrepreneurship, business development, discipline, accountability, etc. Moreover, members of any microfinance programs, in order to qualify for borrowing, have to save a certain amount (called member savings) on a regular basis (often on a weekly basis). Members who are eligible borrow also deposit a certain percentage toward savings with the respective microfinance programs. The idea is to improve credit discipline or savings behavior among the poor. Question is, how can we capture the non-credit dimension of microfinance programs when specific measures of training activities are not available? One way to do so is to make a distinction between borrowing and participation. As shown in Table 2, not all participants of microfinance programs are borrowers at a given time.In 2010/11, 60 percent of the male members and 82 percent of the female members of microfinance programs were borrowers. Program participation captures both credit and non-credit dimensions of the membership. Non-credit inputs can have impacts on household outcomes that are independent of the credit impacts. Consequently, the aggregate effects of program participation will capture the effects of both credit and non-credit inputs.[2]

We first attempt to estimate the aggregate effects of program participation. Consider the following equation that captures effects of participation:

$$Y_{it} = X_{it}\beta_c + P_{ift}\gamma_f + P_{imt}\gamma_m + \eta_{it} + \mu_i + \varepsilon_{it} \qquad (1)$$

where Y_{it} is the outcome such as income, labor supply and net-worth of household i in survey year t, conditional on microfinance participation of males (P_{imt}) and females (P_{ift}); X_{it} is a vector of household (e.g., sex, age and education of household head, and landholding) and village (e.g., extent of electrification and irrigation, availability of infrastructure, and price of consumer goods) characteristics, β_c is a vector of unknown parameters of X variables to be estimated, γ_m and γ_f measure the combined effects of credit and non-credit inputs, η_{it} is an unobserved household or community-level determinant of the outcome that is time-varying, μ_i is an unobserved household or community-level determinant of the outcome that is time-invariant, and ε_{it} is a non-systematic error. The household fixed-effects (FE) estimation technique can eliminate the time-invariant parameter (μ_i) through transformationof equation (1) as follows:

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[2] This does not imply that the participation effects will be higher than credit or non-credit effects.

$$Y_{it} - \overline{Y}_i = (X_{it} - \overline{X}_i)\beta + (P_{ift} - \overline{P}_{if})\gamma_f + (P_{imt} - \overline{P}_{im})\gamma_m + (\eta_{it} - \overline{\eta}_i) + (\mu_i - \overline{\mu}) + (\varepsilon_{it} - \overline{\varepsilon}_i)$$

or, $\quad \Delta Y_{it} = \beta \Delta X_{it} + \gamma_f \Delta P_{ift} + \gamma_m \Delta P_{imt} + \Delta \eta_{it} + \Delta \varepsilon_{it}$ \hfill (2)

where the bar variables (e.g., $\overline{Y}_i$, $\overline{X}_i$, $\overline{P}_{if}$) are average values for each household across years. Since μ is constant, $\mu_i = \overline{\mu}$ and thus its effect is eliminated. However, since $\eta_{it} \neq \overline{\eta}_i$, the problem of unobserved effects cannot be disregarded completely, and thus OLS estimation of equation (2) will be biased.

There are alternative methods to control for the time varying heterogeneity while using fixed effects (FE) method based on panel data (see a discussion of such methods in Khandker, Koolwal, Samad 2010). One such method is the propensity score-weighted fixed-effects method where each household included in the sample irrespective of their participation status receives a propensity score based on a participation equation where the probability of participating in a microfinance program is determined by a host of factors observed in 1991/92 (the first survey period) such as age, education, and gender of household head, landholding assets, and other factors considered exogenous in year 1991/92. Thus, following Hirano, Imbens and Ridder (2003), the weights used in the regression of equation (2) are 1 for the participating households and P/(1−P) for nonparticipating households in any year where P is the predicted probability of participation by the household.[3]

Tables 3 reports the findings on the participation effect of microfinance programs by gender of program participants. Program participation improves household male and female labor supply, non-land asset, household net-worth, and school enrollment. For example, male program participation increases female labor supply by almost 21 percentage points without affecting male labor supply. Female participation, on the other hand, increases both male and female labor supply – male labor supply by 19 percentage points and female labor supply by 46 percentage points. Male program participation increases household non-land asset by 23 percent and net-worth by 15 percent. Female program participation, however, improves non-land asset but not net-worth. But female participation in microfinance programs increases boys' school enrollment by about 9 percentage points and girls' by about 10 percentage points.

How do program participation impacts vary by individual programs? To estimate that we use following equation:

$$\Delta Y_{it} = \beta \Delta X_{it} + \sum_{k=1}^{n} \gamma_{fk} \Delta P_{ifkt} + \sum_{k=1}^{n} \gamma_{fk} \Delta P_{ifkt} + \Delta \eta_{it} + \Delta \varepsilon_{it} \hfill (3)$$

where, where k=1, 2, …n, indicates a specific program such as Grameen Bank. As Table 4 shows, of all the programs, male participation only in Grameen Bank improves household income; and household expenditure is not affected by program participation at all. The labor supply of household males is increased by male and female membership in Grameen Bank (by

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[3] An alternate method is the lagged dependent variable (LDV) method, which uses lagged dependent variable as additional regressors. But for only three rounds of survey, we find that P-score weighted FE is a better fit than the LDV method in terms of the number of significant parameters estimated.

54 percentagepoints and 30 percentage points, respectively) and female membership in other MFIs (by 18 percentage points). On the other hand, female labor supply is increased by female membership of all programs. For example, female participation in Grameen Bank, BRAC and other MFIs increases female labor supply by 37 percentage points, 25 percentage points, and 45 percentage points, respectively. Both male and female membership of Grameen Bank improves household non-land asset and net-worth, with male participation effects being higher than female participation effects. As for other MFIs, male participation has beneficial effects on both non-land asset and net-worth, while female participation does not impact any of those outcomes. As for the impacts on social outcomes, microfinance participation improves girls' enrollment more than boys' enrollment. For example,while male membership in BRAC increases girls' enrollment by 12.5 percentage points, female membership BRAC increases it by 6.5 percentage points.

Next, we estimate program effect by disaggregating it into credit and non-credit effect. In order to do so, we rewrite equations (2) and (3), respectively, as follows:

$$\Delta Y_{it} = \beta \Delta X_{it} + \delta_f \Delta B_{ift} + \delta_m \Delta B_{imt} + \gamma_f \Delta P_{ift} + \gamma_m \Delta P_{imt} + \Delta \eta_{it} + \Delta \varepsilon_{it} \qquad (4)$$

$$\Delta Y_{it} = \beta \Delta X_{it} + \sum_{k=1}^{n} \delta_{fk} \Delta B_{ifkt} + \sum_{k=1}^{n} \delta_{mk} \Delta B_{imkt} + \sum_{k=1}^{n} \gamma_{fk} \Delta P_{ifkt} + \sum_{k=1}^{n} \gamma_{fk} \Delta P_{ifkt} + \Delta \eta_{it} + \Delta \varepsilon_{it} \qquad (5)$$

where B_{imt} and B_{ift} refer to male and female borrowing, respectively. Since, we control for borrowing effects in equations (4) and (5), participation dummies (P_{imt} and P_{ift}) capture the effects of non-credit effects (parameters γ_m and γ_f).

Table 5 shows overall effects of borrowing and participation only, while Table 6 presents the effects by individual credit programs. As Table 5 shows, female borrowing increases household per capita income and expenditure, while female participation (without borrowing),capturing non-credit input, does not impact those two outcomes. However, both female borrowing and female non-borrowing participation increase female labor supply. For example, female borrowing increases female labor supply by 3.3 percentage points but female non-borrowing participation increases it by almost 43 percentage points. So the non-credit effects of female program participation matters more for labor supply than borrowing. Male borrowing and male non-borrowing participation have distinct effects on non-land asset – while borrowing improves it by 15 percent, non-borrowing participation increases it by 14 percent. Children's school enrollment is affected mostly by female participation. More specifically, female non-credit inputs increase boys' and girls' enrollment by 11 and 16 percentage points, respectively. It follows therefore that while credit matters, non-credit inputs also matter, especially more for female members than for male members.

Table 6 shows program-specific borrowing and non-borrowing impacts. Female borrowing from Grameen Bank and BRAC increases household income, while male borrowing from BRAC and other MFIs improves household expenditure. Male participation only in Grameen Bank improves household expenditure. Also both borrowing and participation of males improves male and female labor. On the other hand, female participation in all programs increases female labor

supply only. For example, female participation in Grameen Bank, BRAC and other MFIs increase female labor supply by 23 percentage points, 28 percentage points and 53 percentage points, respectively. Female participation of Grameen Bank and BRAC also increase household non-land asset and net-worth. Female participation, more than male participation, also improves children's school enrollment.

6. Do Program Duration and Savings Matter?

So far we considered two aspects of program membership—whether individuals are members only without borrowing from any microfinance program or whether they also borrow. Note that all borrowers have to be members to borrow, but all members are not necessarily borrowers. We considered so far the effects of these two status separately and jointly on household welfare. But since we are using a long panel we can also investigate whether duration of membership matters. Program duration can have distinct effects (from that of credit) on household welfare because not all members are borrowers at any given time, and so the duration of program membership is, in most cases, higher than the period for which a member remains a borrower. And as explained, when a member is not borrowing (that is, during the non-borrowing segment of membership period), he or she can learn valuable lessons including savings behavior which can have separate beneficial effects on their outcomes. Therefore, program savings as a distinct product of microfinance programs can be considered a major non-credit input. Program savings can earn interest which can be invested in income generation activities funded by microfinance loans. Members can also withdraw their voluntary savings (partly or completely) and invest it activities or asset acquisition.[4] Again, impacts of such savings would be supplementary to credit effects.

As equation (2), we incorporate the separate roles of program duration and savings as follows:

$$\Delta Y_{it} = \beta \Delta X_{it} + \delta_f \Delta C_{ift} + \delta_m \Delta C_{imt} + \gamma_f \Delta D_{ift} + \gamma_{imt} \Delta D_m + \lambda_f \Delta S_{ift} + \lambda_m \Delta S_{imt} + \Delta \eta_{it} + \Delta \varepsilon_{it} \text{ (6)}$$

where the parameters γ and λ capture the effects of program duration and savings, respectively.

And just like the case of program participation, the effects of program duration and savings can also vary individual programs. Given that programs follow similar strategies (such as group-based credit scheme) in terms of providing credit and other services, it is perhaps expected that programs may not vary in their impacts. However, that may not always be the case for all behavioral outcomes and we are going to investigate if program specificity matters.[5] To account for program-specific effects of such different types (credit, savings and length of membership), we use an outcome equation similar to (3).

Tables 7and 8 show the descriptive statistics of microfinance non-credit inputs, and Tables 9

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[4] Members can also withdraw their mandatory savings once their loan is paid off.

[5] In a cross-sectional analysis of 1991/92 data, Pitt and Khandker (1998) observed that some of the effects of borrowing are higher for Grameen Bank than for BRAC or RD-12. But that was not the case with two-period data analysis for the consumption and poverty effects of credit as shown by Khandker (2005).

and 10 show the regression results. As shown in Table 7, the average duration of the male participants were 4.4 years in 1991/92, which increased to 9.6 years by 2010/11. The corresponding figures for female participants are 4.2 years and 10.4 years, respectively. Participants can have both voluntary and mandatory savings. Microfinance borrowers must deposit a fixed amount money as savings every week, and the MFIs are supposed to pay at least 6 percent interest (annually) on these savings.[6] While program savings went up over time their growth rate is slow – one percent per year for male participants and 2 percent per year for female participants.[7] As expected, female borrowers, who have been with microfinance programs for a longer period and much higher in number, have larger savings than male borrowers. Over time, savings as a percentage of borrowing has decreased – more for male members and slightly for female members.

Table 8 shows program duration by sources of credit.[8] Statistics for the two major programs (Grameen Bank and BRAC) are reported separately, and combined for other programs. Program duration, for both male and female participants, is higher for Grameen Bank members than for BRAC members. However, it is the highest for other programs, which is not unexpected because it captures the sum of duration for all programs (besides Grameen Bank and BRAC) that individuals participate in.[9] Note that participation in multiple programs is a common phenomenon since the later part of 1990s.[10] In 2010, the average duration for these programs is 5 years for male participants and 4.8 years for female participants.

Table 9 show the impacts of non-credit inputs on household outcomes. While the non-credit inputs of microfinance do not have any impact on household income, they affect other outcomes. For example, microfinance program savings of female participants have positive and significant impacts on both male and female labor supply, after controlling for credit and duration. A 10 percent increase in the program savings by female participants increases male labor supply by 0.2 percentage point and female labor supply by 0.4 percentage point. Interestingly, male program duration increases female labor supply, but female program duration does not have any effects on either male or female labor supply. The impacts of non-credit inputs seem strongest on household non-land assets. Both male and female program savings increases household non-land asset, with the former having a stronger effect. Household non-land asset is also affected by male program duration. A one year increase in male program duration increases household non-land asset by one percent. Household net-worth seems to be affected by male program savings only. Female program duration improves girls' enrollment whereas female savings improve boys' enrollment. For most

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[6] Table 1 reports the aggregate of voluntary and mandatory savings. It is not possible to separate the two types of savings from the data.

[7] This shows that members withdraw money from their savings, which is done from the voluntary part of their savings during the course of the loan term.

[8] Savings information by credit programs was not collected, and thus is not available.

[9] The aggregate duration from all programs is about the same as what is reported in Table 7.

[10] During the first year this panel survey (1991/92), there was no multiple membership and other program represents BRDB.

outcomes, we see the credit effects of microfinance programs do not change much in the presence of non-credit inputs.

Like Table 9, Table 10 also shows the impacts of microfinance non-credit inputs, however this time by microfinance lenders.[11] While at the aggregate level, microfinance non-credit inputs do not have any impacts on household income (Table 3), we see that, after disaggregating the inputs by individual programs, household income is positively affected by the duration of male participants of Grameen Bank. An increase of one year in the duration of male participants of Grameen Bank raises household per capita income by 1.3 percent. Household expenditure, on the other hand, is affected only by duration of BRAC female members. Like income, the labor supply of household males is also affected by the duration when participants are males from Grameen Bank. An additional year in Grameen Bank for household males increases male labor supply by 3.3 percentage points. On the other hand, program duration of female BRAC participants increases the labor supply of household males. Duration in other programs too affects both male and female labor supply. However, while duration of male participants from other programs increases both male and female labor supply, duration of female participants from other programs affects only female labor supply. As for the effects on household non-land asset and net-worth, there is none for the duration of Grameen Bank members. However, duration of male participants from other programs increases non-land asset (1.2 percent for each additional year) and duration of female participants increases net-worth (1.6 percent for each additional year).

The effects of program savings on household outcomes are similar to what were reported in Table 9, with female program savings seem to have stronger impacts on female labor supply and household non-land. A 10 percent increase in female program savings increase female labor supply by 0.45 percentage points and household non-land asset by 0.24 percent. Overall, these findings suggest that in addition to the credit effects of microfinance programs non-credit inputs have also distinct and substantial impact on household welfare.

7. Conclusion

Microfinance programs in Bangladesh are not simply credit programs, providing only financial services such as credit. They often provide non-credit services such skill-promoting training, extension services, marketing and other services which may have values as good as or more than credit itself in promoting household and individual welfare. Existing research on identification of non-credit input effects have found substantial non-credit input roles. However, in other contexts research findings are not as encouraging as found in Bangladesh. The major problem of identifying non-credit credit effects is in defining non-credit inputs. Training is certainly one form of non-credit input. However, when such training is not specifically accounted in the survey data, identifying training effects is difficult. Moreover, training of any type is not the

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[11] Since the data on program savings were not collected for individual programs, they are used in aggregate form in the regression.

only service provided by microfinance. In such a case, it is difficult to disentangle the effects of borrowing from those of non-borrowing using a cross-sectional survey data. Using the long panel survey, this paper has attempted to document the independent roles of non-credit inputs,which is distinct from that of borrowing in household welfare.

Program participation is defined by membership status where members do not borrow or have not yet borrowed. That is, for reasons to save and receive non-credit inputs such as training, awareness building and social discipline, a member can be a member of a microfinance program. Thus, members can be non-borrowing "members" of microfinance who often wait to get their turn for getting a loan, as not all members of a group secure loans at the same time. Therefore, program membership at a given time can be simply non-borrowing or borrowing members. However, in a given cross-sectional survey it is not enough to see the dynamics of membership in microfinance program. Since we have panel data over twenty years (three rounds) we can capture this dynamics by identifying who are simply members and who are both members and borrowers. In a dynamic setting, we can have not only the borrowing status as distinct from membership status, but also we can identify the extent of the length of program membership (i.e., program duration) as distinct category besides the cumulative amount of borrowing. This is to find out if length of membership matters as compared to the amount of borrowing, given that borrowers and members may be different groups of households in a given period. Also as improving savings behavior is a part of credit discipline that programs want to promote, we can include the cumulative amount of savings as a separate category of non-credit inputs in a regression. We can also identify the roles of credit versus non-credit inputs by microfinance type such a Grameen Bank, BRAC and other MFIs.

Results are interesting. Both credit and non-credit inputs (non-borrowing status, membership length, and savings) matter—credit matters more for female members than for male members, while non-credit inputs matters more for male members in augmenting household income and expenditure. This means, women are more credit constrained than men in augmenting income via an income earning activity and that men needs non-credit inputs such as awareness building more than women in improving welfare. However, non-credit inputs matter more for women in certain outcomes, such as children's schooling, than credit itself, demonstrating the values of non-credit inputs for social and human development.

Program specificity also matters for the role of non-credit inputs. Female participants in BRAC, for example, seem to do better than Grameen Bank and other MFI participants in raising household welfare (in terms of the number of outcomes for which effects are significant). Thus, female participation in BRAC increases female labor supply, non-land assets, net worth, boys' and girls' school enrollments, while female participation in Grameen Bank raises female labor supply, non-land assets and net worth only, and female participation in other MFIs increases only female labor supply and girls' schooling. In contrast, Grameen Bank does better than other programs in exerting higher credit effects on household welfare.

Membership length has an identifiable separate effect on household welfare, independent of credit effects. Being longer with a microfinance is not necessarily a liability; it can instead

increase household welfare. For example, a 10 percentage increase in length of male membership increases household non-land asset by 0.1 percent, while a similar increase in the length of female membership increases girls' schooling by 0.7 percentage points. Note that these effects are independent of the effects of borrowing. Finally, savings play a critical role in raising household welfare, independent of credit and non-credit inputs (measured by membership length, for example). Male savings help increase household non-land asset and net worth, while female savings increase male and female labor supply as well as household non-land asset and boys' schooling. These effects are independent of the positive effects of credit and length of program membership. n fact, in some cases, savings contribute more than what borrowing contributes to household welfare. For example, a 10 percent increase in male borrowing increases household non-land asset by 0.20 percent, and net worth by 0.15 percent. In contrast, a 10 percent increase in male savings increases non-land asset by 0.30 percent and net worth by 0.20 percent.

We conclude that while borrowing matters, non-credit inputs also matter and sometime matter more than credit itself. This is to say that microfinance provides an array of services other than credit that is critical for the welfare of rural poor who do not have skill, information, and network to gain access to publicly provided services toward realizing benefits for them and for their families and in the process the society at large.

References

Alam, Saad. 2013. "The Impact of Credit and Non-Credit Aspects on Self-Employment Profit: A Comparison of Microfinance Programs and Commercial Lenders in Rural Bangladesh," *Journal of Developing Areas*, Vol. 47(1): 23-45.

Bruhn, Miriam, Gabriel Lara Ibarra, and David McKenzie. 2014. "The Minimal Impact of a Large-Scale Financial Education Program in Mexico City," *Journal of Development Economics*, Vol. 108, pp.184-189.

Bruhn, Miriam, and Bilal Zia. 2013. "Stimulating Managerial Capital in Emerging Markets: the Impact of Business Training for Young Entrepreneurs," *Journal of Development Effectiveness*, Vol. 5, No. 2, pp. 232-266.

Collins, J. Michael. 2013. "The Impacts of Mandatory Financial Education: Evidence from a Randomized Field Study," *Journal of Economic Behavior and Organization*, Vol. 95(0):146 −158.

de Mel, Suresh, David McKenzie, and Christopher Woodruff. 2008a. "Returns to Capital in Microenterprises: Evidence from a Field Experiment," *Quarterly Journal of Economics*, Vol. 123 (4): 1329-1372.

_____. 2008b. "Who are the Microenterprise Owners? Evidence from Sri Lanka on Tokman v. de Soto," *Policy Research Working Paper* 4635, The World Bank.

Epstein and Yuthas. 2014. *Measuring and Improving Social Impacts: A Guide for Nonprofits, Companies, and Impact Investors*, Berrett-Koehler Publishers.

Faruqee, Rashid, and Syed Badrudozza. 2011. "Microfinance in Bangladesh: Past, Present, and Future", Occasional Paper, Institute of Microfinance InM), Dhaka, Bangladesh.

Hirano, Keisuke, Guido Imbens, and Geert Ridder. 2003. "Efficient Estimation of Average Treatment Effects Using the Estimated Propensity Score," *Econometrica*, Econometric Society, vol. 71 (4): 1161–1189.

Karlan, Dean, and Martin Valdivia. 2015. "Business Training Plus for Female Entrepreneurship? Short and Medium-term Experimental Evidence from Peru," *Journal of Development Economics*, Vol. 113(C): 33-51.

Khandker, Shahidur R. 2005. "Microfinance and Poverty: Evidence Using Panel Data from Bangladesh," *World Bank Economic Review*, Vol. 19 (2): 263-286.

_____. 1998. *Fighting Poverty with Microcredit: Experience in Bangladesh*, Oxford University Press, Washington, DC.

Khandker, Shahidur R., Gayatri B. Koolwal, and Hussain A. Samad. 2010. *Handbook on Impact Evaluation: Quantitative Methods and Practices*. The World Bank, Washington, DC.

Khandker, Shahidur R., and Hussain A. Samad. 2014. "Dynamic Effects of Microcredit in Bangladesh," *Policy Research Working Paper* No. 6821, the World Bank, Washington, DC.

McKernan, Signe-Mary. 2002. "The Impact Microfinance Programs on Self-Employment Profits: Do Non-Credit Program Aspects matter?" *Review of Economics and Statistics* Vol. 84 (1): 93- 115.

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 (June): 958-996.

Yunus, Muhammad. 1999. *Banker to the Poor: Micro-Lending and the Battle against World Poverty*, Public Affairs.

**Table 1. Share (%) of Microfinance Members Receiving
Various Trainings in 1991/92 (N=769)**

Training Type	Male Members	Female Members	All Members
Health	58.1	67.9	66.6
Literacy	55.3	62.5	63.4
Marketing	14.2	17.4	18.0
Occupational Skill	41.7	28.6	32.2
Other Training	31.9	31.6	32.2
All Training	94.4	97.8	99.4

Sources: World Bank–BIDS Surveys, 1991/92.

Table 2. Incidence of Microfinance Participation and Borrowing (N=1,509)

Year	Male Participation Rate	Female Participation Rate	Male Borrowing Incidence	Female Borrowing Incidence
1991/92	10.5	19.5	8.7	17.1
1998/99	14.3	40.9	6.9	33.2
2010/11	13.4	62.9	8.0	51.5

Sources: World Bank–BIDS Surveys, 1991/92 and 1998/99; World Bank–InM Survey, 2010/11.

Table 3. Impacts of Microfinance Participation on Household Outcomes: Propensity Score-Weighted HH FE Estimates (N_{HH}=1,509)

Microfinance Input Variables	Log Per Capita Total Income (Tk./ month)	Log Per Capita Total Expenditure (Tk./ month)	Log Male Labor Supply (hours/month)	Log Female Labor Supply (hours/month)	Log HH non-Land Asset (Tk.)	Log HH Net-Worth (Tk.)	Boys' Enrollment Rate (5-18)	Girls' Enrollment Rate (5-18)
Male participated in microfinance	-0.059 (-1.03)	0.025 (1.14)	0.102 (0.99)	0.206* (1.80)	0.232** (4.70)	0.146* (3.34)	-0.023 (-0.74)	0.031 (0.73)
Female participated in microfinance	-0.046 (-1.10)	-0.012 (-0.59)	0.185** (2.54)	0.456** (6.84)	0.194** (4.17)	0.035 (0.92)	0.091** (3.10)	0.098** (2.88)
R^2	0.137	0.374	0.206	0.240	0.452	0.651	0.076	0.066

Note: * and **refer to statistical significance level of 10% and 5% (or less), respectively. Figures in parentheses are t-statistics based on standard errors clustered at the village level. Regressions include more control variables at household- (age, sex, education of head) and village- level (village price of consumer goods; infrastructure such as availability of electricity, and schools; and proportion of village land irrigated).
Source: WB-BIDS surveys 1991/92 and 1998/99, and WB-InM survey 2010/11

Table 4. Impacts of Microfinance Participation on Household Outcomes by Programs: Propensity Score-Weighted HH FE Estimates (N_{HH}=1,509)

Microfinance Input Variables	Log Per Capita Total Income (Tk./month)	Log Per Capita Total Expenditure (Tk./month)	Log Male Labor Supply (hours/month)	Log Female Labor Supply (hours/month)	Log HH Non-Land Asset (Tk.)	Log HH Net-Worth (Tk.)	Boys' Enrollment Rate (5-18)	Girls' Enrollment Rate (5-18)
Male participated in Grameen Bank	0.218** (2.54)	-0.004 (-0.07)	0.544** (2.60)	0.273 (1.12)	0.204* (1.83)	0.148* (1.65)	-0.052 (-0.54)	0.066 (0.97)
Male participated in BRAC	-0.290 (-1.37)	0.003 (0.08)	-0.097 (-0.43)	0.262 (1.43)	0.120 (1.16)	0.123 (1.57)	-0.007 (-0.14)	0.125** (2.33)
Male participated in other MFIs	0.070 (0.77)	0.049 (1.20)	0.232* (1.95)	0.065 (0.33)	0.225** (2.72)	0.179** (2.57)	-0.025 (-0.42)	0.034 (0.38)
Female participated in GrameenBank	0.035 (0.68)	0.022 (0.91)	0.295** (3.50)	0.369** (3.35)	0.177** (3.10)	0.097* (1.84)	0.068* (1.70)	-0.018 (-0.49)
Female participated in BRAC	-0.029 (-0.67)	-0.011 (-0.47)	0.099 (1.14)	0.249** (2.14)	0.188** (4.04)	0.079 (1.56)	0.030 (0.81)	0.065* (1.74)
Female participated in other MFIs	0.008 (0.19)	-0.021 (-1.01)	0.182* (1.85)	0.446** (3.49)	0.042 (0.89)	-0.024 (-0.50)	0.039 (1.05)	0.125** (3.51)
R2	0.141	0.374	0.210	0.243	0.452	0.652	0.074	0.071

Note: * and **refer to statistical significance level of 10% and 5% (or less), respectively. Figures in parentheses are t-statistics based on standard errors clustered at the village level. Regressions include more control variables at household- (age, sex, education of head) and village- level (village price of consumer goods; infrastructure such as availability of electricity, and schools; and proportion of village land irrigated).
Source: WB-BIDS surveys 1991/92 and 1998/99, and WB-InM survey 2010/11

Table 5. Impacts of Microfinance Borrowing and Participation on Household Outcomes: Propensity Score-Weighted HH FE Estimates (N_HH=1,509)

Microfinance Input Variables	Log Per Capita Total Income (Tk./ month)	Log Per Capita Total Expenditure (Tk./ month)	Log Male Labor Supply (hours/month)	Log Female Labor Supply (hours/month)	Log HH Non-Land Asset (Tk.)	Log HH Net-Worth (Tk.)	Boys' Enrollment Rate (5-18)	Girls' Enrollment Rate (5-18)
Male borrowed from microfinance	-0.027 (-0.39)	-0.015 (-0.58)	0.098 (0.77)	-0.328 (-1.13)	0.148** (2.08)	0.067 (0.85)	-0.100 (-1.11)	0.032 (0.59)
HH female borrowed from microfinance	0.072* (1.77)	0.054* (1.92)	0.304** (3.70)	0.033* (1.73)	0.113* (1.88)	-0.053 (-1.04)	-0.014 (-0.31)	0.040 (0.64)
Male participated (without borrowing) in microfinance	-0.043 (-0.70)	-0.007 (-0.28)	0.040 (0.30)	0.402** (2.60)	0.143** (2.13)	0.107* (1.67)	0.040 (0.83)	0.011 (0.20)
Female participated (without borrowing) in microfinance	-0.108 (-1.10)	0.001 (0.02)	-0.074 (-0.74)	0.429** (3.02)	0.097 (1.46)	0.079 (1.40)	0.106** (2.17)	0.064* (1.76)
R2	0.138	0.375	0.208	0.242	0.454	0.651	0.076	0.067

Note: * and **refer to statistical significance level of 10% and 5% (or less), respectively. Figures in parentheses are t-statistics based on standard errors clustered at the village level. Regressions include more control variables at household- (age, sex, education of head) and village- level (village price of consumer goods; infrastructure such as availability of electricity, and schools; and proportion of village land irrigated).
Source: WB-BIDS surveys 1991/92 and 1998/99, and WB-InM survey 2010/11

Table 6. Impacts of Microfinance Borrowing and Participation on Household Outcomes by Programs: Propensity Score-Weighted HH FE Estimates (N_{HH}=1,509)

Microfinance Input Variables	Log Per Capita Total Income (Tk./month)	Log Per Capita Total Expenditure (Tk./month)	Log Male Labor Supply (hours/month)	Log Female Labor Supply (hours/month)	Log HH Non-Land Asset (Tk.)	Log HH Net-Worth (Tk.)	Boys' Enrollment Rate (5-18)	Girls' Enrollment Rate (5-18)
Male borrowed from Grameen Bank	0.106 (0.82)	-0.058 (-0.88)	0.065 (0.31)	0.502** (2.01)	0.197* (1.72)	0.124 (0.99)	0.223 (1.29)	0.058 (0.70)
Male borrowed from BRAC	-0.325 (-1.52)	0.061* (1.70)	0.197 (0.71)	-0.185 (-1.18)	0.434 (1.57)	0.171 (0.96)	-0.223 (-1.17)	0.032 (0.35)
Male borrowed from other MFIs	-0.073 (-0.90)	0.069** (2.36)	-0.075 (-0.54)	-0.112 (-0.59)	0.165** (2.56)	0.051 (0.66)	-0.085 (-1.39)	-0.010 (-0.15)
Female borrowed from Grameen Bank	0.038* (1.80)	-0.022 (-0.55)	0.225* (1.64)	0.385** (2.19)	0.045 (0.49)	-0.126 (-1.56)	0.092 (1.25)	0.187* (1.84)
Female borrowed from BRAC	0.105* (1.68)	-0.003 (-0.12)	0.092* (1.69)	-0.030 (-0.20)	0.016 (0.25)	-0.130 (-1.06)	-0.069 (-1.38)	0.025 (0.35)
Female borrowed from other MFIs	-0.015 (-0.29)	-0.020 (-0.76)	0.120 (1.50)	-0.140 (-1.11)	0.084 (1.14)	-0.031 (-0.58)	0.052 (1.52)	0.013 (0.28)
Male participated in GrameenBank	0.144* (1.77)	0.039 (0.94)	0.499** (3.32)	-0.105 (-0.43)	0.060 (0.48)	0.051 (0.35)	-0.212 (-1.14)	0.023 (0.27)
Male participated in BRAC	-0.135 (-1.26)	-0.032 (-0.62)	-0.182 (-0.60)	0.527** (2.51)	-0.090 (-0.44)	0.041 (0.31)	0.134 (1.46)	0.115 (1.37)
Male participated in other MFIs	0.114 (1.03)	0.001 (0.03)	0.296* (1.88)	0.130 (0.57)	0.121 (1.39)	0.139* (1.73)	0.039 (0.55)	0.037 (0.46)
Female participated in Grameen Bank	0.067 (0.89)	0.043 (0.95)	0.102 (0.76)	0.227** (2.14)	0.142* (1.63)	0.202** (2.13)	-0.027 (-0.33)	-0.187 (-0.73)
Female participated in BRAC	-0.092 (-1.33)	-0.010 (-0.30)	0.030 (0.20)	0.283* (1.87)	0.154** (2.26)	0.169** (2.26)	0.097* (1.98)	0.043* (1.69)
Female participated in other MFIs	0.013 (0.27)	-0.004 (-0.18)	0.100 (0.93)	0.533** (3.25)	-0.004 (-0.07)	-0.001 (-0.02)	-0.002 (-0.06)	0.115** (2.91)
R2	0.144	0.376	0.211	0.246	0.454	0.653	0.076	0.075

Note: * and **refer to statistical significance level of 10% and 5% (or less), respectively. Figures in parentheses are t-statistics based on standard errors clustered at the village level. Regressions include more control variables at household- (age, sex, education of head) and village- level (village price of consumer goods; infrastructure such as availability of electricity, and schools; and proportion of village land irrigated).
Source: WB-BIDS surveys 1991/92 and 1998/99, and WB-InM survey 2010/11

Table 7. Descriptive Statistics of Program Duration and Savings

Year	Male Program Duration (years)	Female Program Duration (years)	Male Program Savings (Tk.)	FemaleProgram Savings (Tk.)
1991/92 (N=769)	4.4	4.2	557.7 (0.07)	594.4 (0.07)
1998/99 (N=1,099)	6.4	5.9	607.5 (0.08)	870.1 (0.07)
2010/11 (N=1,770)	9.6	10.4	665.7 (0.03)	845.8 (0.06)

Note: This analysis is restricted to program participants only. Figures in parentheses are share of program savings in cumulative loans over 5 years preceding the survey years
Sources: World Bank–BIDS surveys, 1991/92 and 1998/99; World Bank–InM survey, 2010/11.

Table 8. Descriptive Statistics of Program Duration by Programs

Year	Grameen Bank Duration of HH Males (years) (N=1,612)	Grameen Bank Duration of HH Females (years) (N=1,612)	BRAC Duration of HH Males (years) (N=1,612)	BRAC Duration of HH Females (years) (N=1,612)	Other MFI Duration of HH Males (years) (N=1,612)	Other MFI Duration of HH Females (years) (N=1,612)
1991/92	1.2	1.5	1.9	2.1	1.4	0.5
1998/99	1.8	2.4	1.5	2.3	3.2	1.5
2010/11	3.4	4.2	1.7	3.7	5.0	4.8

Note: This analysis is restricted to program participants only
Sources: World Bank–BIDS surveys, 1991/92 and 1998/99; World Bank–InM survey, 2010/11.

Table 9. Impacts of Microfinance Credit and Noncredit Inputs on Household Outcomes: Propensity Score-Weighted HH FE Estimates (N_{HH}=1,509)

Microfinance Input Variables	Log Per Capita Total Income (Tk./month)	Log Per Capita Total Expenditure (Tk./month)	Log Male Labor Supply (hours/month)	Log Female Labor Supply (hours/month)	Log HH Non-Land Asset (Tk.)	Log HH Net-Worth (Tk.)	Boys' Enrollment Rate (5-18)	Girls' Enrollment Rate (5-18)
Log loans of HH males (Tk.)	0.003 (0.22)	0.007 (1.16)	0.048** (2.93)	0.036* (1.66)	0.020* (1.74)	0.015* (1.72)	-0.117 (-1.19)	-0.165 (-1.62)
Log loans of HH females (Tk.)	-0.006 (-0.93)	0.004* (1.76)	0.023** (2.03)	0.027** (2.09)	0.025** (3.37)	0.017** (2.40)	0.062 (1.13)	-0.010 (-0.15)
Program duration of HH males (years)	-0.003 (-0.50)	-0.004 (-1.08)	0.014 (1.40)	0.018* (1.90)	0.010** (2.04)	0.001 (0.20)	0.012 (0.56)	-0.028 (-1.16)
Program duration of HH females (years)	0.002 (0.62)	0.0001 (0.07)	0.006 (1.03)	0.010 (1.20)	0.004 (1.15)	0.001 (0.28)	-0.026 (-1.28)	0.065** (2.94)
Log program savings of HH males (Tk.)	-0.008 (-0.74)	0.004 (0.94)	-0.008 (-0.56)	-0.011 (-0.54)	0.030** (3.21)	0.020** (2.48)	0.010 (0.44)	-0.004 (-0.15)
Log program savings of HH females (Tk.)	0.007 (0.92)	-0.003 (-1.05)	0.023* (1.79)	0.040** (2.70)	0.017** (2.37)	-0.010 (-1.31)	0.015* (1.72)	0.022 (0.45)
R2	0.138	0.376	0.211	0.242	0.457	0.652	0.324	0.229

Note: * and **refer to statistical significance level of 10% and 5% (or less), respectively. Figures in parentheses are t-statistics based on standard errors clustered at the village level. Regressions include more control variables at household- (age, sex, education of head) and village- level (village price of consumer goods; infrastructure such as availability of electricity, and schools; and proportion of village land irrigated).
Source: WB-BIDS surveys 1991/92 and 1998/99, and WB-InM survey 2010/11

Table 10. Impacts of Microfinance Credit and Noncredit Inputs on Household Outcomes by Programs: Propensity Score-Weighted HH FE Estimates (N$_{HH}$=1,509)

Microfinance Input Variables	Log Per Capita Total Income (Tk./ month)	Log Per Capita Total Expenditure (Tk./ month)	Log Male Labor Supply (hours/month)	Log Female Labor Supply (hours/month)	Log HH Non-Land Asset (Tk.)	Log HH Net-Worth (Tk.)	Boys' Enrollment Rate (5-18)	Girls' Enrollment Rate (5-18)
Log Grameen Bank loans of HH males (Tk.)	0.032 (1.28)	0.004 (0.45)	0.057 (1.14)	0.055 (1.34)	0.013 (0.62)	0.023 (1.41)	-0.017 (-0.79)	-0.012 (-0.86)
Log Grameen Bank loans of HH females (Tk.)	0.003 (0.29)	0.005* (1.90)	0.030** (2.17)	0.017* (1.72)	0.010 (1.40)	0.010* (1.65)	0.006 (1.22)	-0.005 (-0.060)
Log BRAC loans of HH males (Tk.)	-0.053 (-1.47)	-0.007 (-0.76)	0.042** (2.18)	0.062 (1.56)	0.056** (2.52)	0.008 (0.53)	-0.002 (-0.19)	0.031** (2.84)
Log BRAC loans of HH females (Tk.)	0.007 (0.80)	0.001 (0.21)	0.003 (0.23)	-0.001 (-0.08)	0.018** (2.21)	0.002 (0.22)	0.0001 (0.01)	0.003 (0.53)
Log other MFI loans of HH males (Tk.)	0.016 (1.35)	0.009 (1.41)	0.035** (2.05)	0.029 (1.22)	0.013 (1.22)	0.013 (1.27)	0.001 (0.20)	0.003 (0.27)
Log other MFI loans of HH females (Tk.)	0.001 (0.13)	-0.002 (-0.92)	0.016* (1.73)	0.001 (0.10)	-0.0002 (-0.03)	-0.003 (-0.51)	0.001 (0.17)	0.008* (1.83)
Grameen Bank duration of HH males (years)	0.013** (2.05)	0.001 (0.49)	0.033** (3.12)	-0.006 (-0.44)	0.010 (1.39)	0.0005 (0.08)	-0.009 (-0.87)	0.002 (0.54)
Grameen Bank duration of HH females (years)	0.002 (0.54)	0.002 (0.89)	-0.003 (-0.36)	-0.005 (-0.52)	0.001 (0.24)	-0.007 (-1.15)	-0.002 (-0.52)	0.001 (0.15)
BRAC duration of HH males (years)	-0.026 (-1.62)	-0.002 (-0.62)	-0.031 (-1.08)	0.003 (0.15)	-0.001 (-0.04)	0.005 (0.59)	0.010 (1.24)	0.012 (1.52)
BRAC duration of HH females (years)	-0.003 (-0.61)	0.002* (1.88)	0.015* (1.80)	0.018 (1.54)	0.009 (1.44)	0.016** (2.80)	0.005 (1.36)	-0.003 (-0.58)
Other MFI duration of HH males (years)	-0.005 (-0.63)	-0.007 (-1.22)	0.017* (1.63)	0.032** (2.42)	0.012* (1.84)	-0.001 (-0.08)	0.002 (0.41)	-0.0002 (-0.04)
Other MFI duration of HH females (years)	0.002 (0.46)	-0.003 (-1.21)	0.004 (0.42)	0.040** (2.89)	0.004 (0.73)	0.005 (0.90)	-0.0005 (-0.09)	0.013** (3.24)
Log program savings of HH males (Tk.)	-0.009 (-0.99)	0.004 (1.00)	-0.004 (-0.30)	-0.009 (-0.47)	0.030** (3.34)	0.021** (2.61)	-0.002 (-0.34)	0.003 (0.36)
Log program savings of HH females (Tk.)	0.001 (0.21)	-0.002 (-0.56)	0.022* (1.80)	0.045** (3.19)	0.024** (3.86)	-0.003 (-0.53)	0.008* (1.77)	0.004 (0.62)
R2	0.145	0.378	0.215	0.247	0.458	0.654	0.078	0.075

Note: * and **refer to statistical significance level of 10% and 5% (or less), respectively. Figures in parentheses are t-statistics based on standard errors clustered at the village level. Regressions include more control variables at household- (age, sex, education of head) and village- level (village price of consumer goods; infrastructure such as availability of electricity, and schools; and proportion of village land irrigated).
Source: WB-BIDS surveys 1991/92 and 1998/99, and WB-InM survey 2010/11

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