Benefits of Improving Young Women's Labor Market Opportunities: Evidence from Group-based Credit Programs in Rural Bangladesh[1]

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EXECUTIVE SUMMARY

Studies have shown how women's participation in group-based credit programs, relative to men, can improve a number of individual and household outcomes such as household per capita expenditure and labor supply (Pitt and Khandker, 1998), children's nutritional status (Pitt et. al., 2005), as well as self-reported measures of empowerment (Hashemi, Schuler and Riley, 1996; Zaman 1999). However, limited evidence exists on whether these effects vary for younger women who participate. Younger women arguably have greater future opportunities for employment and contribution to household income, as well as decisionmaking related to fertility.

We examine in this paper whether young women demand more credit, and whether borrowing by younger women has improved a number of their individual and household outcomes relative to borrowing by older women and men. The analysis in our paper is based on panel data on 888 rural women who were 15 or older in the first round of the panel. The data are from the Bangladesh Institute of Development Studies - World Bank (BIDS-WB) survey of 1991-92 and 1998-99. We combine this panel with data on rainfall and floods from the Bangladesh Agricultural Research Council. Our empirical strategy uses a panel fixed effects estimation to difference out any time-invariant unobserved attributes that drive selection into the program either at the village or the individual level.

We examine participation in group-based credit programs by young women aged 15-30 in 1991-92, and estimate the impact on changes in their labor supply, assets (non-land), fertility and household outcomes (consumption expenditure and children's schooling) over the period of the survey. Our results suggest that young women have a higher demand for credit than older women. Young women's borrowing increases annual household per capita consumption expenditure and reduces their fertility. There are also interesting intra-household impacts: young women's borrowing has no significant effect on the value of assets they own, but appears to increase the value of assets owned by men in their households. Men's borrowing also significantly raises value of assets owned by women. We find no impacts on young women's labor supply or on their children's school enrollment.

We also compare our results for young women's program participation with those of program participation by two other groups – older women (31 and older) and men residing in the households. The impact of young women's borrowing is statistically significantly different from that of men's borrowing but not different from that of older women. However, when we translate the program impacts on fertility and household per capita expenditure into marginal returns using the sample means for participating women, we do find that the marginal returns to program participation are significantly higher for younger women than older women.

1. Introduction

Young women in Bangladesh are less likely than young men to participate in paid work. According to one estimate, nearly 70 percent of young women (15-24) are neither in school nor at work as compared to only 12 percent of young men (World Bank 2006).[2] Studies have attributed this gender gap in labor market participation to cultural restrictions on female mobility and also low female wages (Amin 1997; Khandker 1988). In rural Bangladesh, group-based microcredit programs targeting poor households offer production credit to support self-employment and small business activities. This paper examines young women's participation in these microfinance programs and estimates how their participation has affected their outcomes over a 7-year period from 1991-92 to 1998-99.

Microfinance programs are generally found to be effective in reducing poverty and improving children's schooling and nutritional status (Morduch and Haley 2002, Kabeer 2008; Khandker 2005). In their review of evidence from a number of microfinance programs across the developing world, Morduch and Haley (2002) conclude that microfinance programs reduce vulnerability and have a positive impact on poverty reduction. Morduch and Haley's review also finds that the effectiveness of microfinance programs rests on entrepreneurial skills of the poor and their ability to take on debt. Besides the well-known Grameen Bank, Bangladesh has more than 600 non-governmental organizations offering microcredit to poor households (World Bank 2003). The clientele for these programs are households owning 0.5 acres of land or less.[3] Most of these programs target women. One study of the impact of participation in these programs by Pitt and Khandker (1998) finds that borrowing by women increases their labor supply and the value of assets. They also find that women's borrowing significantly raises household consumption expenditure and children's school enrollment; the impact of men's borrowing on these outcomes is statistically not significant. Pitt, Khandker, Chowdhury and Millimet (2003) estimate that women's borrowing raises children's nutritional status as measured by arm circumference of girls and height-for-age for girls and boys. Assessments also show that microcredit programs contribute to poverty reduction and reduce household vulnerability (Zaman 1999; Khandker 2005). Several studies also find that the women's borrowing is positively associated with self-reported measures of empowerment (Hashemi, Schuler and Riley, 1996; Zaman 1999; Pitt, Khandker and Cartwright 2006).

The contribution of this paper is to analyze *young* women's participation in group-based credit programs. To our knowledge, there are no studies examining the impact of participation in microfinance programs among young people in Bangladesh. Entrepreneurship activities among youth are frequently promoted as a way of creating jobs for the large youth cohort in many developing countries (World Bank 2006).

[2] These percentages are based on the 2000 round of Household Income and Expenditure Survey (HIES).
[3] In order to borrow, women have to become members of the organization (such as the Village Organization in case of Bangladesh Rural Advancement Committee (BRAC)). Each organization may have additional qualification criteria (Sharma and Zeller 1997).

However, the recently compiled Youth Employment Inventory found only 33 interventions (11 percent of the total) that promoted youth entrepreneurship and only a handful of these had a credit component (Betcherman and others 2007).

The analysis in our paper is based on data are from the Bangladesh Institute of Development Studies - World Bank (BIDS-WB) survey of 1991-92 and 1998-99. We analyze panel data on 888 rural women who were 15 or older in the first round of the panel. We combine this panel data with data on rainfall and floods from the Bangladesh Agricultural Research Council. Our empirical strategy uses a fixed effects least squares estimation to difference out any time-invariant unobserved attributes that drive selection into the program either at the village or the individual level.

We examine participation in group-based credit programs by young women aged 15-30 in 1991-92, and estimate the impact on changes in their labor supply, assets (non-land), fertility and household outcomes (consumption expenditure and children's schooling) over the period of the survey. Our results suggest that young women have a higher demand for credit than older women. Young women's borrowing increases annual household per capita consumption expenditure and reduces their fertility. Among participating young women, average borrowing of 15,170 Takas in 1998 (about US $154) translate into a decline in fertility of 31 percent and an increase in annual household per capita expenditure of 786 Taka (or US $17, equivalent to 14 percent of the moderate poverty line and 21 percent of the extreme poverty line). There are also interesting intra-household impacts: young women's borrowing has no significant effect on the value of assets they own, but appears to increase the value of assets owned by men in their households. Symmetrically, men's borrowing significantly raises the value of assets owned by women. We find no impacts on young women's labor supply or on their children's school enrollment.

We also compare our results for young women's program participation with those of program participation by two other groups – older women (31 and older) and men residing in the households.[4] The impact of young women's borrowing is statistically significantly different from that of men's borrowing but not different from that of older women. However, we do find that among participating women, marginal returns to program participation in terms of fertility and household per capita expenditure (calculated at sample means) are significantly higher for younger women than older women.

The paper is organized as follows. The next section discusses the empirical estimation strategy. Section 3 describes the survey data and discusses the summary statistics. Section 4 presents the regression results and section 5 concludes.

2. Empirical Strategy

As mentioned above, we estimate the impact participation in group-based credit programs by young women aged 15-30 in 1991-92 on a range of individual and household level

[4] Although women are targeted by most programs, some programs offer group-based credit to men as well.

outcomes; we then compare these impacts with those stemming from older women's and men's program participation. Program participation is measured by the quantity of credit obtained. Two big concerns with measuring the impact of program participation are related to which villages get the credit program and which individuals decide to join these programs. If programs target poor areas and within these areas motivated women (say, with entrepreneurial talent) decide to join these programs (selection effect) then our estimates of program participation will be contaminated by these decisions (Strauss and Thomas 1995; Pitt and Khandker 1998; Ravallion 2007). In order to estimate the impact of program attributable solely to women's exposure to the program, we control for observed characteristics of individuals and villages as well as for unobserved characteristics.

We estimate the following linear equations. Equation (1) is the reduced form equation for program participation as measured by demand for credit (Z_{ivt}) for woman i living in village v in time period t (1991-92 or 1998). Equation (2) represents the woman's conditional demand for outcomes (y_{ivt}) such as labor supply and number of additional births over the period.[5]

$$Z_{ivt} = X_{ivt}\beta + \mu_{iv} + \lambda_v + \varepsilon_{ivt} \quad (1)$$

$$y_{ivt} = X_{ivt}\delta + \gamma_{young} Z^{young}{}_{ivt} + \gamma_{old} Z^{old}{}_{ivt} + \gamma_{men} Z^{men}{}_{jvt} + \omega_{iv} + \theta_v + u_{ivt} \quad (2)$$

where X_{ivt} is vector of observed individual, household, village and district (climatic and hydrological) characteristics, and β, δ and γ are vectors of unknown parameters to be estimated. ε and u are random error terms. The climatic and hydrological data (at the village and district level) help account for initial area conditions that may affect how microfinance programs are introduced in villages over the period. Specifically, Binswanger et. al. (1993) show that programs such as credit expansion tend to locate in particular areas based on their relative earnings opportunities and political influence, which may not always be observed or measured. In a poor rural-area context, these potentially unobserved characteristics are affected by local agroclimatic conditions such as rainfall, exposure to flooding, and temperature. Thus including these agroclimatic characteristics in the estimation allows us to account for initial area conditions that could affect the dynamics of program placement going forward (Jalan and Ravallion, 1998).

Four unobserved, and therefore unmeasured, determinants of credit demand and demand for outcomes are included in the equations. Two of these, μ_{iv} and ω_{iv}, represent time-invariant unobserved determinants of credit demand and outcomes at an individual (woman) level. The variables λ_v and θ_v represent time-invariant unobserved village level characteristics that influence credit and individual outcomes respectively. We apply

[5] Employment and fertility are censored outcomes, and a limited dependent variable approach such as a Tobit model might be appropriate in this context. However, as discussed in the following section, non-zero realizations of labor supply were limited, so that labor supply was effectively a binary variable. As for fertility, very few women had more than one child between the two rounds as well.

an individual level fixed effects method that takes the difference of individual outcomes and explanatory characteristics over time to remove the time-invariant unobserved heterogeneity that might affect program placement and participation:

$$\Delta Z_{ivt} = \Delta X_{ivt}\beta + \Delta\varepsilon_{ivt} \quad (3)$$

$$\Delta y_{ivt} = \delta\Delta X_{ivt} + \gamma_{young}\Delta Z^{young}{}_{ivt} + \gamma_{old}\Delta Z^{old}{}_{ivt} + \gamma_{men}\Delta Z^{men}{}_{jvt} + \Delta u_{ivt} \quad (4)$$

We estimate equations (3) and (4) for a sample of program eligible (those belonging to poor landless households, typically defined as those owning less than 0.5 acres of land) and ineligible women (non-poor) using Least Squares.[6] The panel data allows us to match individual women (aged 15 or older) across the two rounds to apply this differencing technique. Under the assumptions of Corr(ε, u)=0 and time-invariant unobserved heterogeneity, we estimate the causal effect of program participation on outcomes.[7] We also carry out tests of whether the impact of young women's participation differs from that of old women's and men's participation ($\gamma_{young} = \gamma_{old}$ and $\gamma_{young} = \gamma_{men}$).

We did not apply a Propensity Score Matching -double difference (or PSM-DD) approach where women who were participating, and those that were eligible but not participating, were matched on observed initial characteristics so that "treatment" and "control" groups could be defined to determine the program effect. One issue is that the credit programs were already in effect in the first round, and so matching participants and eligible non-participants on pre-program characteristics is not feasible.[8] Furthermore, borrowing in our analysis is a continuous variable, and we were initially interested in understanding the degree of participation through borrowing on outcomes. Interpreting the resulting program effect would not be clear.

3. Data Description

We use data from the BIDS–WB survey from the 1991-92 and 1998-99 rounds. The 1991-92 round covered 1,769 households drawn from 87 villages in 29 thanas or sub-districts. A number of studies, including Pitt and Khandker (1998), have used this first

[6] The borrowing equation might be more appropriately estimated as a Tobit regression, given that borrowing is a censored outcome. We did find, comparing our results from equation (3) with a panel Tobit random effects model, that the estimates were very similar to the Tobit marginal effects. However, this is an area that we are continuing to explore, given that there is a selection issue in deciding whether and how much to borrow.

[7] While we adequately account for time-invariant unobserved heterogeneity, it is possible that some unobservables are not fixed and changed between 1991-92 and 1998-99. We do not address this possible source of bias, other than accounting for local area endowments that would affect the pattern of targeting over the period. Note that Khandker (2005), in his analysis of panel data of all households from the same survey, reports that using instrumental variables to control for this time varying heterogeneity did not yield estimates statistically different from those obtained without using instruments. Nevertheless, treating the borrowing variable as potentially endogenous is a concern of ours; we discuss in the following section how our results can be interpreted, and we are exploring further how to address this issue.

[8] We might be able to compare outcomes for those who ultimately leave the program, as discussed in Jalan and Ravallion (2003). However, we are limited at this stage to the two rounds of data.

round to estimate impact of program participation. A follow-up survey conducted in 1998 included the same households but also added new households from the original villages, new villages in the original thanas, and three new thanas, raising the number of sample households to 2,599 (for more details, see Khandker 2005; McKernan, Pitt and Moskowitz 2005). It is worth pointing out that between 1991 and 1998, there was a significant increase in the number of organizations offering group-based credit. While in the 1991 round the main organizations offering group-based credit to poor households were Grameen Bank, BRAC and Bangladesh Rural Development's RD-12, by the 1998 round, these organizations were joined by non-governmental organizations such as Association for Social Advancement (ASA), PROSHIKA, and Gano Shahajyo Sangstha.

Using the two rounds of the survey, we construct a panel data set of women aged 15 and older in 1991. The 1991-92 round was conducted 3 times over three cropping seasons (November-February, March-June and July-October). The 1998-99 round was conducted only once during the December-February season. For all outcomes, except labor supply, we use panel data from the July-October survey of 1991-92 round matched with data from the 1998-99 round. For labor supply, because effect of seasonality is important, we based our estimation on data from the November-February survey of 1991-92 matched with data from the same season in 1998-99. We supplement this panel with a rich set of climatic and hydrological information from the Bangladesh Agricultural Research Council (BARC).[9]

Summary statistics for key individual and household-level borrowing and outcomes are presented in Tables 1A, 1B and 1C. Our panel sample of 888 women contains women who were eligible and participating in the program (455), those who were eligible but not participating in the program (297) and those not eligible to participate (136). About 62 percent of the sample is aged 15-30, our age group of interest (Table 1A). As Table 1A shows, the women in our sample are from low income households. For example, among eligible and participating young women in the sample, average annual household per capita expenditure in 1998 was 5,250.69 Takas (about US $117)[10], which is lower than the moderate poverty line in 1998 of 5,656.90 Takas (about US $126). Ineligible women are clearly better off than eligible women in that their household per capita expenditures are higher.

The credit, or borrowing, variable measures total cumulative borrowing in the 5 years preceding the survey. Borrowing by both young and old women has increased between the rounds (the figures are in 1991-92 Takas). Borrowing by men in these households has decreased. Since credit is fungible inside the household, this pattern of increased female borrowing and small and declining male borrowing could be a reflection of the increased reliance of households on women's borrowing, perhaps due to the increase in the number of programs that lend solely to women.

[9] The BARC data allow us to control for villages' exposure to floods. This is important for our analysis since the second round of our panel data was conducted after the widespread flooding in 1998.
[10] This is using an exchange rate of roughly 46 Bangladesh Taka per US $1 rate in 1998.

A tabulation (not reported in tables 1A-1C) of borrowing data shows that most women, young as well as old, have taken a loan; the maximum number of loans is 13 loans over the 5 years preceding the survey. What are women borrowing for? Again, there is not much difference across the two groups of women. In 1991-92, most women reported that they borrowed for purchasing dairy cows, purchasing inputs or working capital and for other business-related expenses. In 1998, women reported borrowing to purchase a draft animal or cow, agricultural inputs, paddy husking and fruit and vegetable vending.

Women's and men's labor supply days are shown in Table 1B. A notable feature, not reported in the Table, is that almost no women in our sample, young or old, reported spending any hours on wage work (agricultural or non-agricultural). All days reported by women were for self-employment activities. Looking across the groups of eligible and ineligible women, eligible women spend more time on market work than ineligible (better-off) women. However, the same is not necessarily true for men. This is a common finding in some parts of South Asia where women tend to withdraw from paid work as household income increases (Ilahi 2000).

Women's labor supply differs across the two rounds with the 1998-99 means being much lower. Our sample means indicate that the largest drop in female labor supply was in self-employed agricultural activities; young women's labor supply in this sector dropped from a mean of 10 days per month in 1991-92 to 2.9 days per month in 1998-99. Two possible explanations for this could be seasonality and the 1998 flood. We addressed the seasonality issue by basing our analysis of labor supply behavior on data from the same cropping seasons in the two rounds. The 1998-99 means could be reflecting the effect of the flood. The flood occurred between July and October and adversely affected economic activities of affected rural households (del Ninno et al 2001). Although del Ninno et al (2001) find that most workers' employment had recovered to pre-flood levels by end of October-November (our data are from December-February) it is possible that female workers' labor supply took longer to recover. We control for this effect in our regressions by including a measure of households' exposure to floods.

With regard to non-land assets, men residing in households of eligible women report, on average, a value of assets that is higher than that reported by women themselves. Children's school enrollments increased across the two rounds for all groups of women but the gap in enrollment rate between the eligible and ineligible households remained (Table 1C). This increase in enrollment rates reflects the broader increase in enrollments in Bangladesh. In terms of fertility, in 1991, the average number of children ever born was 2.8 for young women and 5.7 for older women (not shown in table). As Table 1C shows, as compared to older women, young women experienced more additional births over the period; participating young women experienced an average of 0.99 additional births while participating older women experienced only 0.28 additional births (Table 1C).

4. Results

a) Determinants of demand for credit:
Table 2 reports the least squares fixed-effects estimates, based on eq. (3), of the determinants of demand for credit. Controlling for schooling of men and women in the household and other variables of household living standards and shocks, we find that young women have a significantly higher demand for credit than old women. Other variables show impacts found by previous work in this area (Pitt and Khandker 1998; Khandker 2005). Higher female education and better local earnings prospects (as reflected by the rainfall variable) reduce demand for credit from group-based sources. Women's demand for credit increases at a decreasing rate with the size of landholdings. Shocks such as sudden crop failure and illness in family show positive impacts on the demand for credit, but these effects are not statistically significant.

b) *Impact of program participation*:
Tables 3a-3c report the least squares fixed effects estimates of program participation based on equation (4). Table 3a reports the impact of young women's program participation on household per capita expenditure and women's own labor supply, and assets (Table 3a). Young women's borrowing significantly increases household per capita expenditure. This impact is statistically similar to that of older women's borrowing as shown by the p-values of the test for equality of coefficients reported in Table 3a. Reflecting results obtained by other studies, men's borrowing does not have a significant impact on household per capita expenditure.

Contrary to findings by Pitt and Khandker (1998), our results show that young women's borrowing has no impact on their labor supply (either on- or off-farm) or value of own assets. The reason for this divergence in findings could be the data as well estimation methodology. Pitt and Khandker's results are based on cross-section data from 1991-92 round of the BIDS-WB survey and they employ instrumental variables and village fixed effects techniques to control for selection bias, while our estimates are based on panel data with fixed effects least squares regression technique.

The impact of women's borrowing on men's labor supply and value of assets owned are reported in Table 3B. We see that women's borrowing had no impact on men's labor supply. However, there appear to be interesting within-household effects. Both young women's and old women's borrowing significantly increases the value of assets owned by men (Table 3B) while men's borrowing significantly raises the value of assets owned by women (Table 3A). This partly reflects the fungibility of credit: women and men can borrow to finance household asset creation.

Given that we see no impact of borrowing on young women's own labor supply, the significant impact of their borrowing on household per capita expenditure and household (men's) assets suggests that program participation likely raised the productivity of the activity financed using the loans.

We also estimate the impact of young women's borrowing on their children's schooling and number of additional births (Table 3C). Young women's borrowing has no significant impact on the percentage of their daughters or sons enrolled in school.

However, the effects are significant for older women; their borrowing significantly increases enrollment rate among sons and daughters. This difference in impacts on children's schooling between young and old women is statistically significant and most likely attributable to the former having younger children. Our estimates of the impact on fertility show that young women's borrowing significantly reduces the number of additional births. A similar effect was estimated for older women's borrowing. This suggests that credit is being used by households in ways that is increasing the productivity of women's time and consequently reducing fertility.[11]

For all outcomes, except children's school enrollment, we find that the marginal effect of young women's borrowing does not significantly differ from that of older women's borrowing. The marginal effects across young women and older women may not be different statistically due to group effects. That is, if younger and older women join credit groups together, improvements in their outcomes may also follow similar patterns. We are also exploring this possibility in the data. The impact of young women's borrowing differs significantly from the effect of men's borrowing for household per capita expenditure.

c) *Marginal returns to women's program participation*

Tables 3A-3C report the marginal impacts of program participation. We next use these estimates of marginal impacts together with sample means of borrowing, household per capita expenditure and additional births from the 1998-99 round, to calculate returns to program participation for women who participated in the program. In order to eliminate extreme values of borrowing we deleted from our sample the top and bottom 2.5 percent of the borrowing distribution. Table 4 shows the marginal returns for young and old women's participation. The marginal effects are first calculated per 1000 Taka (about US $22) of borrowing and then converted to the sample average borrowing for young and old women.

The marginal returns of program participation show that, for young women, 1000 Taka of borrowing raises her household per capita expenditure by 46 Takas (about US $1) and reduces her fertility by nearly 33 percent. If we calculate these effects at the average borrowing of the sample of women who participate in the program, then the impact on consumption expenditure is equivalent to 14 percent of the moderate poverty line and 21 percent of the extreme poverty line. While these returns appear to be quite low, Khandker (2005) calculates that group-based credit programs likely account for about 40 percent of the overall reduction in moderate poverty in rural Bangladesh between 1991 and 1998. For fertility, the marginal return calculated at sample average borrowing of participants is equivalent to a reduction of about 31 percent.

Table 4 also presents p-values of the t-test of equality of marginal returns for participating young and old women. Even though the underlying marginal impacts (coefficients on borrowing and p-values of test of equality reported in Tables 3A and 3B) are not statistically different for young and old women, when we factor in the distribution

[11] A few credit programs, such as the Grameen Bank, encourage female members to keep their families small but to our knowledge none of the programs offer family planning services.

of borrowing, household per capita expenditure and additional births for the two groups of women, we find that there is a significant difference in the returns: the marginal returns for young women are significantly higher than that for older women. One possible explanation for this result could be that, as compared to older women, young women are using microcredit to undertake activities with higher productivity which is reflected in higher household per capita expenditure as well as higher productivity of women's time; the latter effect can bring about a large reduction in fertility.

As mentioned in the earlier section, the extent of borrowing is also potentially a function of time-varying unobserved heterogeneity. We are exploring different methods to address this issue in revising this paper. However, examining the results for the determinants of borrowing in Table 2, we can see that less-educated women from poorer households tend to borrow more. With the assumption that education and landholdings (as a measure of wealth) tend to improve individual and household outcomes such as per capita expenditure and fertility, our estimates may provide a lower bound for the program effect.

5. Conclusions

Using an individual-level panel dataset from Bangladesh covering the period 1991-92 and 1998-99, we examined participation by young women (aged between 15-30 years in 1991-92) in group-based credit programs in rural Bangladesh that target poor, landless households. We compared the effects of young women's participation across a range of outcomes, including fertility, asset accumulation, labor supply, and household outcomes such as annual per capita expenditure and children's schooling, with those for older women who participated in these programs. We used a fixed-effects least squares estimation technique to difference out unobserved individual and village-level heterogeneity, and also account for local agroclimatic endowments of villages that would affect program placement.

Our results show that young women have a higher demand for credit than older women. Young women's borrowing significantly raises household per capita expenditure. In addition, their borrowing reduces fertility. Contrary to findings from previous studies, we find no impact of program participation on children's schooling or women's labor supply. However, like previous studies we find that women's borrowing has a significant positive impact on household per capita expenditure, while men's borrowing does not. Although we find that borrowing did not significantly raise women's labor supply, the impacts on household per capita expenditure and value of household assets taken together suggest that the loans are in some way enhancing women's productivity.

Finally, we find that — while young women have a higher demand for credit — the marginal impact of borrowing on household and individual level outcomes is similar for young and old women. However, as discussed in section 4c, when we translate the program impacts on fertility and household per capita expenditure into marginal returns using the sample means for participating women, we do find that the marginal returns to program participation are significantly higher for younger women than older women,

particularly with regards to fertility decline. For participating young women, the marginal return in terms of household per capita expenditure is also not trivial; it is equivalent to 14 percent of the moderate poverty line and 21 percent of the extreme poverty line.

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Table 1A: Means and Standard Deviation of Credit and Consumption Variables (in 1991-92 Takas)

	Eligible and participating	**Eligible and non-participating**	**Not eligible**	**All Women**
	Mean (Std. Dev.)	**Mean (Std. Dev.)**	**Mean (Std. Dev.)**	**Mean (Std. Dev.)**
Share of young women (aged 15-30 in 1991-92)	0.60 (0.49)	0.69 (0.46)	0.55 (0.50)	0.62 (0.49)
1991-92				
Borrowing by young women over preceding 5 years (Taka)	3462.27 (5398.85)	0.00 (-)	0.00 (-)	1696.45 (4154.00)
Borrowing by older women over preceding 5 years (Taka)	4760.48 (6391.80)	0.00 (-)	0.00 (-)	2611.94 (5290.56)
Borrowing by men in household (Taka)	3855.64 (7064.78)	0.00 (-)	0.00 (-)	1957.94 (5388.67)
Household per capita expenditure – young women	3999.02 (1968.39)	3974.77 (1661.14)	5685.30 (4096.39)	4215.94 (2332.50)
Household per capita expenditure – old women	3999.11 (1520.95)	3958.14 (1650.03)	7363.0 (6075.49)	4606.05 (3234.45)
1998-99				
Borrowing by young women over preceding 5 years (Taka)	14,500.10 (18,499.57)	0.00 (-)	0.00 (-)	6540.81 (14,359.40)
Borrowing by older women over preceding 5 years (Taka)	13,376.05 (17,387.48)	0.00 (-)	0.00 (-)	5918.60 (13,324.47)
Borrowing by men in household (Taka)	1107.96 (6491.66)	0.00 (-)	0.00 (-)	493.39 (4363.90)
Household per capita expenditure – young women	5250.69 (3794.82)	4482.22 (2724.48)	8082.28 (5690.88)	5155.91 (3719.71)
Household per capita expenditure – old women	5997.84 (5413.75)	5434.20 (3798.65)	9178.78 (7890.24)	6273.98 (5399.39)
Number of women in sample	*455*	*297*	*136*	*888*

Table 1B: Hours and Days Worked by Women and Men

	Eligible and participating	Eligible and non-participating	Not eligible	All Women Sample
	Mean (Std. Dev.)	Mean (Std. Dev.)	Mean (Std. Dev.)	Mean (Std. Dev.)
1991-92				
Days worked in last month in self-employed agricultural activities – young women	10.11 (2.94)	6.52 (11.27)	7.09 (11.64)	8.14 (12.17)
Days worked in last month in self-employed agricultural activities – old women	8.32 (11.6)	6.11 (11.1)	7.66 (12.4)	7.44 (11.6)
Days worked in last month in self-employed non-agricultural activities – young women	2.08 (6.41)	0.56 (3.41)	0.74 (3.76)	1.25 (5.03)
Days worked in last month in self-employed non-agricultural activities – old women	3.63 (8.57)	1.61 (6.13)	0.48 (3.81)	2.37 (7.20)
For all men in HH: total number of days worked in last month in wage-based agricultural activities	5.28 (11.02)	6.36 (11.27)	1.87 (5.58)	5.19 (10.60)
For all men in HH: total number of days worked in last month in wage-based non-agricultural activities	5.65 (12.19)	8.03 (14.80)	9.05 (17.69)	7.10 (14.26)
For all men in HH: days worked in last month in self-employed agricultural activities	19.11 (27.10)	13.34 (21.75)	43.82 (39.09)	20.66 (29.32)
For all men in HH: days worked in last month in self-employed non-agricultural activities	12.92 (17.52)	9.33 (15.99)	8.21 (14.00)	10.88 (16.75)
1998-99				
Days worked in last month in self-employed agricultural activities – young women	2.92 (8.30)	3.15 (8.71)	2.49 (7.82)	2.98 (8.44)
Days worked in last month in self-employed agricultural activities – old women	3.89 (8.94)	2.49 (7.76)	1.07 (5.44)	2.67 (7.84)
Days worked in last month in self-employed non-agricultural activities – young women	1.58 (5.94)	1.18 (4.92)	0.40 (3.15)	1.22 (5.13)
Days worked in last month in self-employed non-agricultural activities – old women	1.54 (5.75)	0.08 (0.98)	0.00 [(a)] (-)	0.51 (3.31)
For all men in HH: total number of days worked in last month in wage-based agricultural activities	7.08 (14.02)	6.20 (12.01)	2.65 (7.99)	6.11 (12.83)
For all men in HH: total number of days worked in last month in wage-based non-agricultural activities	4.53 (9.78)	2.88 (8.10)	0.91 (5.31)	3.22 (8.55)

	Eligible and participating	Eligible and non-participating	Not eligible	All Women Sample
	Mean (Std. Dev.)	**Mean (Std. Dev.)**	**Mean (Std. Dev.)**	**Mean (Std. Dev.)**
For all men in HH: days worked in last month in self-employed agricultural activities	10.19 (21.36)	10.73 (24.15)	22.34 (34.78)	12.40 (25.50)
For all men in HH: days worked in last month in self-employed non-agricultural activities	16.40 (25.96)	12.82 (21.84)	19.13 (36.85)	15.48 (27.02)
Number of women in sample	*455*	*297*	*136*	*888*

Notes:
(a) Based on responses by 60 women.

Table 1C: Summary statistics of Children's Schooling, Additional Births and Asset Accumulation

	Eligible and participating	Eligible and non-participating	Not eligible	Total
	Mean (Std. Dev.)	**Mean (Std. Dev.)**	**Mean (Std. Dev.)**	**Mean (Std. Dev.)**
1991-92				
Share of boys 5-12 currently enrolled in school	0.61 (0.47)	0.61 (0.47)	0.71 (0.43)	0.63 (0.46)
Share of girls 5-12 currently enrolled in school	0.64 (0.47)	0.51 (0.47)	0.79 (0.39)	0.62 (0.46)
Total value of individual non-land assets accumulated	1661.54 (6087.32)	989.58 (4249.83)	3324.19 (18402.62)	1645.47 (8793.57)
For all men in HH: total value of individual non-land assets accumulated	11,752.96 (15,381.08)	12,908.31 (25,344.12)	55,410.51 (91,525.79)	19.022.1 (43,900.21)
1998-99				
Share of boys 5-12 currently enrolled in school	0.73 (0.42)	0.73 (0.43)	0.85 (0.34)	0.75 (0.41)
Share of girls 5-12 currently enrolled in school	0.77 (0.40)	0.75 (0.42)	0.86 (0.33)	0.78 (0.40)
Total value of individual non-land assets accumulated	3803.54 (72,184.14)	44.24 (406.57)	166.65 (961.81)	1603.10 (46,199.30)
Number of additional births, young women	0.99 (0.89)	1.11 (0.92)	0.84 (0.81)	1.02 (0.89)
Number of additional births, older women	0.28 (0.72)	0.41 (0.78)	0.32 (0.63)	0.32 (0.73)
For all men in HH: total value of individual non-land assets accumulated	1704.62 (8152.79)	1347.33 (9616.47)	6140.8 (31,077)	2533.04 (15,383.1)
Number of women in sample	*455*	*297*	*136*	*888*

Table 2: Fixed Effects Estimates of Determinants of Demand for Credit

	Log of Amount Borrowed
Max years of schooling among adult women in household , 1991-92,*year	-0.203*** [-3.546]
Max years of schooling among adult men in household, 1991-92,*year	0.107** [2.397]
Young woman*year	1.103*** [4.020]
Log household losses (in Taka) from crop failure/loss	0.047 [1.218]
Log household losses (in Taka) from sudden illness in family	0.038 [0.832]
Log household landownings in 1991-92*year	8.142** [2.062]
Log household landownings, squared in 1991-92*year	-4.095** [-2.067]
Total annual rainfall in district (cm)	-0.142*** [-3.635]

Notes:
(1) *t*-statistics in parenthesis. *t-statistic is significant at 10 percent level or better. **t-statistic is significant at 5 percent level or better. ***t-statistic is significant at 1 percent level or better. Standard errors used to calculate *t*-statistics account for clustering at the village level.

(2) Regression also includes the following variables: year; proportion of adult women in household; log household losses (in Taka) from crop failure/loss; log household losses (in Taka) from sudden illness in family; total annual rainfall in district (cm); number of days village exposed to 1998 flooding; number of months with average temperature (in district) below 18 degrees Celsius*year; number of months (in district) with more than 5 average daily hours of sunshine*year; distance from village to Thana headquarters*year.

Table 3A: Fixed Effects Estimates of the Impact of Women's Credit on Household Expenditure, Individual Labor Supply and Assets

	Log household expenditures	Days worked in last month in self-employed farm activities	Days worked in last month in self-employed nonfarm activities	Log individual assets (Takas)
	(1)	(2)	(3)	(6)
Young women's borrowing in last 5 years (1000s Taka)	0.009***	-0.005	0.010	-0.015
	[4.985]	[-0.40]	[1.37]	[-1.185]
Older women's borrowing in last 5 years (1000s Taka)	0.006**	0.020	-0.009	0.012
	[2.614]	[0.87]	[-0.69]	[0.593]
Borrowing by men in HH in last 5 years (1000s Taka)	0.002	0.316	-0.010	0.044*
	[0.434]	[1.07]	[-1.61]	[1.855]
R-squared	0.174	0.07	0.02	0.431
P-value: young women's borrowing=older women's borrowing	0.55	0.34	0.26	0.23
P-value: young women's borrowing=men's borrowing	0.09	0.21	0.04	0.03
P-value: older women's borrowing=men's borrowing	0.28	0.76	0.95	0.33

Table 3B: Fixed Effects Estimates of the Impact of Women's Credit on Men's Outcomes

	Days worked by men in last month in self-employed farm activities	Days worked by men in last month in self-employed nonfarm activities	Log Men's Assets (Taka)
	(7)	(8)	(11)
Young women's borrowing in last 5 years (1000s Taka)	-0.004 [-0.05]	-0.033 [-0.43]	0.043** [2.574]
Older women's borrowing in last 5 years (1000s Taka)	0.255*** [2.83]	-0.004 [-0.02]	0.047** [2.007]
Borrowing by men in HH in last 5 years (1000s Taka)	0.016 [0.04]	0.340 [0.92]	0.070*** [3.902]
R-squared	0.114	0.05	0.848
P-value: young women's borrowing=older women's borrowing	0.01	0.89	0.85
P-value: young women's borrowing= men's borrowing	0.95	0.35	0.28
P-value: older women's borrowing=men's borrowing	0.54	0.40	0.45

Table 3C: Fixed Effects Estimates of the Impact of Women's Credit on Children Schooling, and Additional Births

	Share of boys aged 5-12 in HH currently enrolled in school	Share of girls aged 5-12 in HH currently enrolled in school	Number of additional births since 1992
	(12)	(13)	(14)
Young women's borrowing in last 5 years (1000s Taka)	-0.001 [-0.141]	-0.003 [-1.171]	-0.004* [-1.771]
Older women's borrowing in last 5 years (1000s Taka)	0.016** [2.532]	0.008* [1.969]	-0.006* [-1.898]
Borrowing by men in HH in last 5 years (1000s Taka)	0.003 [0.757]	0.005 [1.140]	-0.007 [-1.067]
R-squared	0.174	0.232	0.544
P-value: young women's borrowing=older women's borrowing	0.03	0.02	0.57
P-value: young women's borrowing=men's borrowing	0.55	0.11	0.66
P-value: older women's borrowing=men's borrowing	0.12	0.60	0.88

Notes:

(1) *t*-statistics in parenthesis. *t-statistic is significant at 10 percent level or better. **t-statistic is significant at 5 percent level or better. ***t-statistic is significant at 1 percent level or better. Standard errors used to calculate *t*-statistics account for clustering at the village level.

(2) Regression also includes the following variables: year; proportion of adult women in household; a dummy for whether the woman was 15-30 years of age in 1991*year; years of schooling of household head*year; log household losses (in Taka) from crop failure/loss; log household losses (in Taka) from sudden illness in family; total annual rainfall in district (cm); number of days village exposed to 1998 flooding; number of months with average temperature (in district) below 18 degrees Celsius*year; number of months (in district) with more than 5 average daily hours of sunshine*year; distance from village to Thana headquarters*year.

Table 4: Marginal Impacts in 1998-99 for Women Who Participated in the Program

	Change in Household Yearly Per Capita Expenditure (Taka)		Percentage Reduction in Fertility	
	Per 1000 Taka of borrowing	At Sample Borrowing in 1998	Per 1000 Taka of borrowing	At Sample Borrowing in 1998
Young Women	45.9 (32.8)	786.50 (1386.7)	32.7 (17.8)	30.8 (16.8)
Older Women	35.3 (35.7)	575.51 (769.2)	6.1 (4.6)	4.9 (3.8)
p-value: t-test of effect for young women = effect for older women	0.001	0.07	0.00	0.00

Note: Based on effects reported in Tables 3A and 3C; for effects measured at sample borrowing, we trimmed the top and bottom 2.5 percent of the borrowing distribution.