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# How effective is a Big Push to the Small? Evidence from a Quasi-random Experiment

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# How effective is a Big Push to the Small? Evidence from a Quasi-random Experiment

## Abstract

This paper, using data from a quasi-random control experiment on BRAC's "Targeting the Ultra Poor" program in Bangladesh, investigates whether a one-off large grant to the extreme poor enables them to participate in the regular microfinance program that typically excludes them. The extreme poor were provided income-generating assets and continued support over 18 months that included, among others, enterprise management assistance, subsistence allowance, and support for building social network. Some eligible extreme poor who did not receive assets for reasons unrelated to the ones that can lead to self-selection bias are treated as the control group.

The results for 2002 baseline and 2005 repeat survey data show that such a big push has indeed significant impact on graduation to the regular microfinance program. Social capital has significant effect on borrowing decision, and awareness of social and legal issues has significant effect on both NGO membership and borrowing decision.

**Keywords:** Extreme poverty, microfinance, social capital, awareness, cognitive skills, control experiment.

**JEL codes:** C25, C93, O17, Z13

## How effective is a Big Push to the Small? Evidence from a Quasi-random Experiment

### I. Introduction

Can a big push in terms of a one-off large grant to the extreme poor enable them to graduate to the regular microfinance program that typically excludes them? What attributes of the extreme poor are important for their graduation to the microfinance program and influence the effect of such a big push? What attributes influence the effect of the big push on their perceived access to the informal credit market? This paper addresses these questions using a unique dataset from a quasi-random control experiment on BRAC's<sup>1</sup> "Challenging the Frontier of Poverty Reduction/Targeting the Ultra Poor (CFPR/TUP)" program (henceforth, TUP) in Bangladesh. It is now well established that the traditional microfinance program that was designed to alleviate poverty has failed to reach the extreme poor in Bangladesh. Microfinance institutions deliberately exclude the extreme poor considering them as risky clients and the extreme poor also often self-select themselves out as they perceive not to generate a stream of income necessary to repay the loan (Morduch, 1998; Hashemi, 2001; Matin, 2005). The TUP program provides an ideal opportunity to study whether and how the extreme poor can be accommodated into the regular microfinance program.

To address the second question, we investigate, in addition to the role of demographic and household characteristics and economic endowments, the role of two individual level attributes: i) social capital, and ii) awareness of social malpractices and legal injustices that the extreme poor are victims of. Previous studies have investigated the effect of the participation in the microfinance program on social capital (for example, Field et al., 2009), awareness (for example, Sultana and Islam, 2009) and women empowerment (for example, Hashemi et al., 1996). In this paper, we reverse the question

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<sup>1</sup> Previously BRAC stood for Bangladesh Rural Advancement Committee. Now BRAC is a brand name. It is probably the largest NGO in the world.

to investigate the impact of endowment of social capital and awareness of the extreme poor on their participation in the microfinance program.<sup>2</sup>

From its long experience with the microfinance and other development programs, BRAC realized that the extreme poor will be able to participate in the regular microfinance program and eventually break the vicious cycle to poverty<sup>3</sup> only if a big push can elevate them to some sort of “take-off” stage. In 2002, BRAC launched the TUP program specifically designed to target the extreme poor. The first phase of the program was implemented during the 2002-2006 period with a new cohort of participants joining the program each year. Before launching the program in a particular village, BRAC selected all extreme poor households therein based on several inclusion and exclusion criteria. Some of the criteria were that a household owned no more than 10 decimals of land, had no adult male income earner, depended on females working as maid servants or begging as income source, and none in the household was member of any NGO or beneficiary of government assistance program. The selected extreme poor were given a big push— a one-off large grant that consisted of initial transfer of income-generating assets (such as livestock, poultry, vegetable gardening, nursery etc.) and associated business development training, and continued support over next 18 months that included enterprise management assistance, weekly subsistence allowance, health care facilities, and support for building social network. The program staffs and members in the participant households jointly worked on to select an enterprise (type of asset to be transferred) considering a number of factors such as prior experience, capability of enterprise management as well as local market, environment and social factors.

One-third of the villages from the first cohort in the first phase of the TUP program in 2002 were randomly selected for a baseline survey. The survey was conducted before assets were transferred to the selected households. A considerable number of selected extreme poor did not receive assets mainly because their negotiation with the program staff on enterprise selection failed. Some were adamant about receiving

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<sup>2</sup> Karlan (2007) has studied the effect of social capital on the performance in the microfinance program in terms of loan repayment, saving behavior, and member retention rate, and Ameen and Sulaiman (2006) have studied the effect on consumption expenditure of the extreme poor.

<sup>3</sup> The impact of microfinance on poverty alleviation is still unclear due mainly to the methodological problems in impact assessment (de Aghion and Morduch, 2005). Banerjee et al. (2009) recently conducted a randomized control experiment that overcomes these problems.

a particular enterprise which was not offered by the BRAC branch office implementing the program and/or the program staffs realized that the recipient would not be capable of operating that enterprise. Given that free asset transfer to the extreme poor by a NGO is unprecedented in Bangladesh, initial implementation of the TUP program also created confusion among the participants. There were some eligible members who declined to receive asset considering it as lending in guise. Some were even suspicious that BRAC's ulterior motive was to convert them to Christianity. In 2005, the households were revisited. We use the baseline and repeat survey data, and treat as the control group the extreme poor who were finally selected as eligible but did not receive assets because of the reasons mentioned above. The self-selection of some of the control members does not lead to biased estimation as it is not due to differences in the unobserved characteristics between the treatment and control members. This is important to mention that this type of self-exclusion rarely occurred in the next phases of the TUP program because of learning from the first phase. The Mantel-Haenszel test also shows that the treatment effect is not biased due to omitted unobservables.

The impact variables are several measures of the participation in the microfinance program in 2005.<sup>4</sup> More specifically, we investigate whether the big push has impacted on the following participation outcomes in the microfinance program: i) if one has been offered by any NGO, both excluding and including BRAC, to join the microfinance program, ii) if one has joined the microfinance program of any NGO both excluding and including BRAC, and iii) if one has taken loan from any NGO. We estimate the treatment effect using the difference-in-difference method. To investigate the role of endowments and their influence on the effect of the big push, we estimate cross-sectional specifications in which the dependent variables are the participation outcomes in 2005 and the right hand side variables are the values in 2002 of demographic and household characteristics, economic endowments, social capital, and awareness. We also investigate the effect on the perception of the treatment members about their access to the informal credit market where they can borrow at both zero and positive interest rates.

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<sup>4</sup> Emran, Robano and Smith (2009) have investigated the impact on income, asset, consumption and several other economic outcomes. Impact on many of these outcomes will be obvious since the repeat survey was conducted shortly after the end of the 18-month intervention period.

The results suggest that the big push has significantly increased the likelihood of participation in the regular microfinance program. The treatment members have been offered membership, and they have also joined and borrowed from NGOs at a significantly higher rate than the control members. For example, the big push has increased by about 32% both the likelihood of offer from NGOs other than BRAC and borrowing from any NGO. The results also suggest that social capital has significant effect on borrowing decision, and awareness has significant effect on both NGO membership and borrowing decision. Awareness also increases the likelihood of receiving offer from NGOs. The effect of social capital on borrowing decision can be interpreted as follows. Although decision to join the microfinance program is an individual decision, borrowing and repayment are made in peer groups, and therefore, individuals endowed with higher social capital find relatively easier to form and participate in peer groups. It has also been found that social capital amplifies the effect of the treatment on the likelihood of offer by NGOs. A NGO will invite the treatment members because of their improved economic conditions and especially those with higher social capital so that peer group formation, a prerequisite for loan disbursement, becomes less costly for the NGO. Awareness of social malpractices and legal injustices is associated with the knowledge about the rights both in the household and in the society. This implies that awareness leads to women's greater confidence in interacting outside the household, and therefore, in their joining and borrowing from NGOs for investment at a higher rate. They can also deal with resistance in the household to do business outside or encounter less resistance. However, we do not find evidence of awareness influencing the effect of the treatment.

Social capital increases the perceived access of the treatment members to interest-free loan, which is usually short-term consumption loan from relatives, friends, neighbors, and local shops. Higher social capital broadens and deepens social networks and ameliorates information asymmetry. The information of their increased creditworthiness is likely to be circulated through their larger social networks and consequently they can borrow more than before. Contrarily, awareness has been found to increase their perceived access to positive interest loan, which is usually from moneylenders, landlords or local businessmen. More aware individuals can risk entering

the informal lending market because they are more confident to do business outside home, understand contractual arrangements better and can also negotiate with the lender.

The results have important implications for the microfinance program in general. Prior to lending, intervention to develop social capital and awareness can be important for the success of the microfinance program. This also justifies the loan-plus approach practiced by some NGOs including BRAC. The TUP program is therefore correct to focus on the development of social capital and creating awareness of social and legal issues.

The rest of the paper proceeds as follows. Section II discusses BRAC's TUP program including the selection of program participants and the intervention package. Section III describes the data, construction of social capital and awareness indices, and presents the descriptive statistics of the variables included in the analysis. The method of impact measurement is discussed in Section IV. The results are presented in Section V that include participation decision in the microfinance program, access to informal credit market and factors behind differential performances among the treatment members. The sustainability of program benefits is also briefly discussed in this section. Finally, Section VI concludes.

## **II. The CFPR/TUP program**

BRAC started the TUP program in 2002 and the first phase was implemented during the 2002-2006 period with a new cohort of participants joining the program each year. The first cohort who participated in 2002 was a pilot case for BRAC. The first phase covered 100,000 beneficiaries in 15 districts. Based on the programmatic learning and research knowledge, the second phase of the TUP program that started in 2007 has incorporated diversity of intervention packages and has been designed to increase the levels of outreach to 300,000 beneficiaries in 40 districts (BRAC, 2009).<sup>5</sup>

### *II.A Selection of the “small”*

In the pilot phase in 2002, three northern districts—Rangpur, Kurigram and Nilphamari— were chosen for launching the TUP program. The TUP staffs in each

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<sup>5</sup> Appendix A.1 provides a brief history of the TUP program.



*upazila* (sub-district, where BRAC branch office is also located) had several rounds of discussion with the staffs of other BRAC programs, which have extensive coverage in almost every corner of the *upazila* and years of experience working there. Based on the discussions, the TUP staffs selected the villages based on poverty incidences.

The next stage was selection of the participants in the selected villages. In each of the villages selected, a complete household listing and their ranking based on wealth level was conducted through participatory wealth ranking (PWR) exercises. Households ranked as the poorest in these PWRs are considered as “community defined ultra poor.” According to these wealth rankings, just over 25% of the households were identified as extreme poor. A baseline survey using a structured questionnaire was conducted to collect information on, among others, demographic characteristics, land ownership and cultivation, housing, income, asset, NGO involvement and loan, and benefits from government or other sources. This survey was conducted among only the “community defined ultra poor” in order to verify that the would-be participants fulfill the inclusion and exclusion criteria set for participation in the program.

The five inclusion criteria are that a household: i) depends upon females working as maid servants or begging as income source, ii) owns no more than 10 decimals of land, iii) lacks economically active adult male member, iv) has school-going children engaged in paid work, and v) possesses no productive assets. These inclusion criteria were identified by reviewing national studies of poverty indicators. The exclusion criteria are that a household: i) has no adult woman who is able to work, ii) participates in microfinance program, and iii) is beneficiary of government/NGO development program. Only the households meeting at least two of the inclusion criteria and none of the exclusion criteria were selected for program participation.<sup>6</sup> The final selection was made after verifying the survey information both directly and secretly in several rounds by the program staffs both at the branch and regional offices. All the extreme poor households fulfilling inclusion and exclusion criteria were selected eligible and invited to join the program.

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<sup>6</sup> The TUP program still follows the same selection criteria.

## II.B *The “big push”*

The program had a two-year cycle (for the first cohort considered in this study, the cycle was from 2002 to 2004) and the beneficiaries received a wide range of services over 18 months. The support package included transfer of income generating assets (such as livestock, poultry, vegetable gardening and nursery etc.), business development training, enterprise management assistance, subsistence allowance, health care facilities, awareness raising training, and support for building social network (Table 1). The fundamental thrust of the program is enterprise development for the extreme poor. The first step thus was identification of the right enterprise for a participant that helps build or broaden her economic base. A number of factors such as her prior experience, capability of enterprise management as well as local market, environment, and social factors were considered for enterprise identification. Several rounds of discussion took place between the members in the selected household and program staffs, and an enterprise was selected after successful negotiation. The most common enterprises were livestock and poultry rearing while some took up vegetable or nursery growing or non-farm enterprises. Once an enterprise was selected, the participant received a classroom orientation about the program and her enterprise. The asset was usually transferred within one month of the classroom training.

Insert Table 1 here

The average value of the asset for a participant was about Taka 6,000 (approximately US \$100 using the exchange rate in 2002). Although the participants had flexibility in enterprise selection, the number and value of a particular asset was predetermined by the program. For example, if a member agreed to receive cows, she would be given exactly two cows (no more no less), for which the maximum value was set at Taka 8,000. The program staff purchased two cows for the members in the local market. The value was determined based on the current market price of two average sized cows. For goat, the number was five and the maximum value was set at Taka 6,000. Actual purchase value of assets was not disclosed to the recipients. However, the program tried to ensure that the actual value of the asset for a recipient was very close to

the maximum value set for that particular asset. Therefore, variation in the purchased values of a particular asset among the recipients is negligible; it is the type of assets that is the source of the variation. Table 2 provides a list of assets and their maximum values. The maximum value is the combined value of the main asset and other inputs, if required for a particular enterprise. For example, in the case vegetable gardening, BRAC first leased land on behalf of the participant and then provided ancillary inputs such as seeds, fertilizer, pesticides etc. in several stages.

Insert Table 2 here

Once asset was transferred, the participants started receiving all other inputs required to maintain the enterprise, weekly follow-up for technical advice and supervision, and weekly subsistence allowance of Taka 70. While the input supports were provided to ensure good return from the enterprise, subsistence allowances were aimed at reducing the opportunity cost of switching to an alternative livelihood. The duration of the subsistence allowance varied depending on the gestation period of an enterprise but the maximum amount was set at Taka 4,230.

Free health care support was provided to the members of the participant households. The BRAC-supported health volunteers in the villages, TUP program staffs, and a panel doctor at the local BRAC health program were made engaged in the health care support. The *Shasthya Shebikas* (health volunteers), who are chosen from among BRAC's microfinance group members and trained by BRAC, were assigned 150 participant households to provide preventive and curative services for common illnesses. One TUP program staff in each branch office was also responsible for creating health awareness and practices among the participants. In cases of serious illness, the participant households received treatment from the doctor and treatment costs were borne by the program.

Social development supports that create knowledge and awareness about their rights were also provided through regular training so that the participants become conscious about the vices of different social malpractices such as dowry, child marriage and polygamy. The final key component in the package was mobilization of social

support. To counteract the possibility that TUP support might crowd out informal insurance for the participants as they might become alienated from the rest of the community as a result of being TUP program beneficiary, a forum of the local elites called *Gram Daridro Bimochon Committee* (Village Poverty Alleviation Committee) was formed in every intervention village. The main role of the committee was to ensure that the extreme poor gain access to local services and resources, their assets are protected, local charitable efforts are directed towards them, and they receive support and guidance in emergencies.

Because of the intensive nature of the program, direct cost per participant was relatively high at US \$434. However, cost has been declining with program expansion. The comparable figures for the 2003 and 2004 cohorts in the first phase were US \$423 and US \$348, respectively (Ahmed et al., 2009).

### **III. Data**

Before launching the program, a baseline survey was conducted to collect both household and village level information. This was done just after selecting the program participants and before transferring them assets. From every local BRAC branch office in three districts where the program was launched, one third of the villages were randomly selected. From each village, all eligible extreme poor were surveyed. These households were followed up in another round of survey in 2005.

#### *III.A Defining the control group*

A number of selected members did not receive assets for various reasons.<sup>7</sup> In most cases, negotiation on enterprise selection failed between the TUP staffs and the selected TUP member. There was a limitation on each BRAC branch office on the number of each enterprise to be offered. Some households wanted an enterprise that was not offered or the quota has already been allocated but they could not be convinced to select an alternative enterprise. Some individuals wanted a particular enterprise that BRAC staffs thought they would not be capable of operating or not profitable in the local environment.

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<sup>7</sup> The following account is based on author's discussions with the BRAC staffs at the branch offices who were directly involved in implementing the TUP program during 2002-2004.

For example, some individuals wanted livestock such as cows or goats but there was no suitable common land in the neighborhood for livestock grazing. These households refused to choose an alternative enterprise and consequently were denied any asset.

Some eligible households also self-selected themselves out. They declined to join the program as they did not believe such a benevolent intention that a NGO could deliver them free assets. They thought that free asset is in fact lending in guise and BRAC would push for loan installment upon receiving the asset. There was also a suspicion among some members that the ulterior motive of such free transfer was to convert them to Christianity. This suspicion, in some instances, was also manipulated by some local people to their benefit. For example, some well-off neighbors played a malicious role. The extreme poor often work at the well-off neighbor's house as domestic servants at below market wage. Once they were transferred assets, the well-off neighbor would lose cheap labor so it was his benefit to misguide them not to join the program. In addition, he then would have to compete with the extreme poor for common resources such as grazing land (if a participant received cows or goats) which was previously accessed by only the relatively well-offs. These individuals used religious pretext to their favor, and in some cases were successful in misguiding the eligible extreme poor not to join the program.

Anecdotal evidence will help point out how pervasive is the suspicion not only among some extreme poor but also in the community at large. In several villages, PWR sessions were initially resisted by the local community as they thought that BRAC, on behalf of the USA, was mapping locations for bombardment to kill the Muslim people as in Afghanistan (CFPR/TUP Research Team, 2004). This happened even BRAC has been working in the community for many years. This type of suspicion has intensified after the 9/11 event and subsequent US attacks on Afghanistan and Iraq. It is not possible to distinguish from data who were denied assets and who declined to receive for what reasons.<sup>8</sup> It is worth mentioning that self-selection was rare in the subsequent cohorts in

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<sup>8</sup> In the control group, disproportionately higher percentage of the households is Muslim. For example, 92.5% of the control members are Muslims compared to 87.7% in the total sample. This implies that religious misperception was a dominant factor in the case of self-selection.

the first phase and also in the second phase that started in 2007. People have learned from experiences that free asset transfer can indeed occur without any ulterior motive.<sup>9</sup>

We consider as the control group the eligible households finally selected by the program but did not receive assets for the reasons mentioned above.<sup>10</sup> Self-selection is a well-known source of bias in econometrics but in the following we argue that the bias is absent in our case. As mentioned earlier, some control members self-selected not to join because of strong religious misperception and lack of belief in free asset transfer, which is also prevalent in the community at large. If the unobserved characteristics of the treatment and control members differ, then OLS estimation of the treatment effect will be biased. The probable unobservables one can imagine at the first place are awareness, and social capital. It has been shown in Section III.C that there is no statistically significant difference between the treatment and the control group in terms of awareness, social capital and average education level of the household members, and education of the household head is indeed slightly higher for the control group. The Mantel-Haenszel tests reported in Section V.C also show that there is no such bias in the treatment effects.

In our sample we have 2,376 treatment and 412 control households. The main woman of the household (the household head or the wife of the household head) was the respondent.

### III.B *Measuring social capital and awareness*

We define social capital at the individual level following Glaeser, Laibson and Sacerdote (2002) and Karlan (2005) as a person's social characteristics, such as social skills and networks, which enable her to overcome imperfect information problems and

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<sup>9</sup> The TUP staffs in several occasions had to seek help from the *Imam* (preacher) of the local mosque to convince the participants that there was no bad intention behind such asset transfer. But this required convincing the *Imam* first, which was not easy in many instances.

<sup>10</sup> One innovation of this paper is the selection of the control group. In fact, all households initially selected by the PWRs (i.e., "community defined ultra poor") were surveyed in both rounds. The households finally selected after fulfilling the inclusion and exclusion criteria, including both recipients and non-recipients of assets, were considered as the treatment group by BRAC (BRAC define them as selected ultra poor, SUP). Those who initially selected by the PWRs but dropped out later because they failed to meet the inclusion and exclusion criteria were considered as the control group (non-selected ultra poor, NSUP). In our sample, we discard the NSUP altogether.

reap market and non-market returns from interaction with others.<sup>11</sup> The following four outcome based measures are combined to construct an index for social capital: i) if any invitation received from the non-relative neighbors in last one year, ii) if any help received from the non-relative neighbors in last one year, iii) if invited to participate in *shalish* (a social system for informal adjudication of petty disputes by community members), and iv) if voted in the last Union Parishad (lowest local government unit)/national election. One point is assigned to each “yes” and zero to each “no.” Social capital index is constructed as the sum of points normalized by four. However, the index lacks organizational membership, one important component of social capital. This is because one of the selection criteria in the TUP program was that the participants cannot be member or beneficiary of any NGO or organization. This index is comparable to the one in Guiso et al. (2004) who use two outcome based measures of social capital—electoral participation and blood donation. Similar index has also been used by, among others, Krishna and Uphoff (1999) and Narayan and Prichett (1999).

An awareness index is constructed from answers to the following eight questions that test knowledge about important social malpractices and legal injustices that the extreme poor are victims of. The questions are: i) legal age of marriage for a boy, ii) legal age of marriage for a girl, iii) legal punishment of practicing dowry, iv) legal system of divorce, v) legal age of voting, vi) legal punishment for rape, vii) legal punishment for acid throwing,<sup>12</sup> and viii) power of police to arrest someone. One point is assigned to each correct answer and zero to each wrong answer or ignorance about the issue. The awareness index is then constructed as the sum of points normalized by number of questions. For robustness check, we also construct an alternative index using the principal component analysis.

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<sup>11</sup> There is a considerable amount of ambiguity and confusion as to what social capital means. For a detailed review on social capital, see Durlauf and Fafchamps (2006) and Sobel (2002).

<sup>12</sup> Acid throwing, which is a form of violent assault, is common in Bangladesh. Perpetrators of these attacks throw acid at the victims (usually at their faces), burning them, and damaging skin tissue, often exposing and sometimes dissolving the bones. The consequences of these attacks include blindness and permanent scarring of the face and body. These attacks have been used as a form of revenge for refusal of sexual advances, proposals of marriage and demands for dowry.  
(Source: [http://en.wikipedia.org/wiki/Acid\\_throwing](http://en.wikipedia.org/wiki/Acid_throwing))

### III.C *Descriptive statistics*

Summary statistics of demographic characteristics, economic conditions, social capital, and awareness for the treatment and control members in 2002, and the participation in NGOs in 2005 are reported in Table 3.

It is evident that there are no significant differences between the two groups in most respects such as average household education level, land ownership, number of months employed, indices of social capital and awareness, and females visiting outside home alone. The treatment group has a slightly larger household size, and more members engaged in income-generating activities. On the other hand, education of the household head, percentage of self-employed household heads, per capita income, and average value of the bedroom are slightly higher for the control group.

There are about 39% and 60% treatment members who have been offered by NGOs including and excluding BRAC, respectively, to join the microfinance program in 2005. About 41% have already joined NGOs including BRAC and only 3% have joined other NGOs. About 40% have already borrowed from any NGO. The comparable figures are significantly smaller for the control members (ranging from 8% to 13%) except for membership in NGOs other than BRAC (7%). Note that more control members (13%) have joined NGOs including BRAC than those being offered membership (12%). This implies that additional control members approached NGOs for membership.

Insert Tables 3 and 4 here

Table 4 lists the partial correlation of the variables. Given that the treatment and control groups are homogenous in most respects, we report the statistics for the two groups combined. The correlation is very low, even close to zero, between any pair of variables with only three exceptions for which it is above 0.5 (in absolute value). The highest correlation has been found between gender of the household head and percentage of major purchases made by females at -0.75 (females make more purchases in female headed households), followed by between education of the household head and average education in the household (0.58), and between gender of the household head and household size (0.54).



## **IV. Measuring impact**

### *IV.A Impact variables*

The main objective of the TUP program is that the participants will sustain the benefits of the asset transfer and consequently break the barriers to extreme poverty. This will eventually enable them to graduate, if they want, to the regular microfinance program that typically excludes them. Therefore, the obvious impact measure would be whether one has graduated to the BRAC's microfinance program. But such graduation may not reflect the true demand for their participation. For example, to expand its microfinance program rapidly<sup>13</sup> or to demonstrate the success of the TUP program to the donors, BRAC may persuade or push the participants although they were not ready or willing to graduate. Therefore, we first investigate an alternative impact measure-- whether any NGO other than BRAC has offered membership in its microfinance program. The reason is that once a member gets out of extreme poverty, not only BRAC but other NGOs will also offer her membership and loan. On the other hand, BRAC has more information than other NGOs about the true performance of the participants. Therefore, if a treatment member has been offered by a NGO other than BRAC, it is most likely that she has already been offered by BRAC. Therefore, we also investigate whether anyone has been offered membership by NGOs including BRAC.

The above impact variables do not reveal whether a member has accepted the offer to become a NGO member. We thus investigate whether anyone has already

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<sup>13</sup> The field staffs in most microfinance institutions in Bangladesh including BRAC are given a target that the program coverage must be increased by a certain percentage in a specified period of time. The job performance of the field staffs depends on meeting the target so they persuade people including the non-poor to borrow. Many of these borrowers have no use of loan other than immediate consumption or lending in the secondary market. It is also one of the reasons for membership overlapping. This way of program expansion has now been a standard practice in Bangladesh but the microfinance institutions document it other way around or do not make this information publicly available. This issue has largely been unexplored in the literature.

This type of persuasion is claimed to be absent in the TUP program. When TUP members graduate, they form their own group and borrow from the TUP microfinance program, which is separate from BRAC's regular microfinance program. Credit operation for these graduated members is also looked after by the TUP staffs. When sufficient members are not available to form a group in a neighborhood, they are merged with the nearest BRAC's regular microfinance program. Author's informal discussion with the BRAC staffs implementing the TUP program in the field level reveals that there was no such pressure on them to graduate the TUP members to the microfinance program. There is even no restriction on the TUP members from joining other NGOs bypassing BRAC.

become member of NGO both including and excluding BRAC. Many NGOs including BRAC do not immediately offer loan to their members. There are also members who join not to borrow but to make precautionary saving on a regular basis. It is important to mention that in most microfinance programs in Bangladesh including BRAC, members are required to make compulsory weekly or bi-weekly saving. There are NGOs that do not even allow their members to withdraw savings without discontinuing membership. Therefore, the final impact variable is whether one has taken loan from any NGO.

We also investigate the performance of the treatment members in the informal credit market. This is important because improved creditworthiness of the treatment members, which is an expected outcome of the treatment, is likely to reduce moral hazard for the lender thus increasing access to the informal credit market and reducing interest rate on loan. However, in addition to income-generating assets, continued supports including subsistence allowances were provided over next 18 months and that demand for additional funds for productive activities can now be met by NGOs including BRAC, the treatment members would not resort to the informal credit market at least for some time. Therefore, instead of investigating their actual participation in the informal credit market (which did not actually occur), we investigate their perception about the potential access to the informal credit market. The respondents were asked the following two questions: do they think that their ability to borrow from informal sources has increased at i) zero, and ii) positive interest rate?

#### IV.B *Empirical strategy*

Given that the treatment and control groups are well defined, the program impact is measured using the difference-in-difference (DID) method. The specification is the following:

$$y_{i,t} = \alpha_0 + \alpha_1 T_i + \alpha_2 Y_{2005} + \beta T_i * Y_{2005} + \varepsilon_{i,t} \quad \text{--- (1)}$$

where  $y_{i,t}$  is the impact measure for  $i$ -th household in year  $t$ ,  $T_i$  is the treatment dummy that equals 1 if the household belongs to the treatment group and zero otherwise,  $Y_{2005}$  is the year dummy that equals 1 for the year 2005 and zero for the year 2002. The  $\beta$  parameter isolates the treatment effect on the impact measure under the assumption of

homogeneity of the treatment and control groups. We also augment equation (1) by including differential time trends in different regions:

$$y_{i,t} = \alpha_0 + \alpha_1 T_i + \alpha_2 Y_{2005} + \alpha_3 Y_{2005} * D1 + \alpha_4 Y_{2005} * D2 + \beta T_i * Y_{2005} + \varepsilon_{i,t} \quad \text{--- (2)}$$

where  $D1$  and  $D2$  are dummies for two districts. All impact variables are binary, so we estimate equations (1) and (2) by linear probability model (marginal effect in probit model gives almost identical result).

To address the second question raised in the beginning, we estimate the following specification:

$$y_{i,t} = \alpha + \beta_1 T_i + \beta_2 S_{i,t-1} + \beta_3 A_{i,t-1} + \gamma X_{i,t-1} + \varepsilon_{i,t} \quad \text{--- (3)}$$

where  $y_{i,t}$  is the impact variable in 2005, and  $S_{i,t-1}$ ,  $A_{i,t-1}$  and  $X_{i,t-1}$  are social capital index, awareness index and a vector of explanatory variables in 2002, respectively. The reason for this cross-sectional specification is our interest in the role of individual and household level endowments with particular emphasize on social capital and awareness. Moreover, there is almost no variation in many of the important variables in the  $X_i$  vector between 2002 and 2005. Given that  $y_{i,t-1}$  is systematically zero for the impact variables,<sup>14</sup> it must be that  $y_{i,t} = \Delta y_{i,t}$ . This specification is also immune to reverse causality.

Equation (3) is estimated by probit model and we report the marginal effect. The marginal effect of the treatment dummy refers to, after controlling for other factors, the difference between the treatment and control groups in the likelihood of participation in the microfinance program in 2005. It is also comparable to the  $\beta$  coefficient in equations (1) and (2). It is expected that a big push will generate a positive and significant marginal effect. Note that the treatment dummy captures not only the effect of asset transfer but also that of training and other complementary assistances. We also emphasize the marginal effect of social capital and awareness. The marginal effect of social capital (awareness) refers to, after controlling for the effects of the treatment and other factors,

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<sup>14</sup> Because one of the criteria for selecting the extreme poor in 2002 was that no household has any NGO member.

the change in the likelihood of participation in the microfinance program for unit increase in social capital (awareness). It is also expected that the marginal effect of social capital (awareness) will be positive and significant.

To understand if social capital and awareness influence the effect of the treatment, we augment equation (3) by their interactions with the treatment dummy:

$$y_{i,t} = \alpha + \beta_1 T_i + \beta_2 S_{i,t-1} + \beta_3 A_{i,t-1} + \beta_{12} T_i * S_{i,t-1} + \beta_{13} T_i * A_{i,t-1} + \gamma \mathbf{X}_{i,t-1} + \varepsilon_{i,t} \quad \text{--- (4)}$$

In the augmented model, a significantly positive (negative) magnitude of the interaction term implies that social capital (awareness) raises (lowers) the effect of the treatment on participation. In other words, a treatment member will be more likely to graduate to the microfinance program if she was endowed with higher social capital (awareness). The explanation of the marginal effect of the treatment dummy and social capital (awareness) under augmentation deserves attention. If the marginal effect of social capital (awareness) continues to be positive and significant, assuming that the effect of the interaction term is also positive and significant, then it can be inferred that social capital (awareness) increases the likelihood of graduation to the microfinance program and also amplifies the effect of the treatment; in other words, it directly affects the impact measure and also indirectly through the treatment. Contrarily, if the marginal effect turns out to be insignificant, then it can be inferred that social capital (awareness) impacts only through the treatment.<sup>15</sup>

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<sup>15</sup> The calculation of the marginal effect in the presence of interaction terms is the following. Suppose, the conditional mean of  $y$  (for simplicity, ignore the subscripts) in equation (3) is:

$$E[y|T, S, A, \mathbf{X}] = \Phi \left[ \beta_1 T + \beta_2 S + \beta_3 A + \gamma \mathbf{X} \right] \quad \text{where } \Phi \cdot \text{ is the standard normal cumulative}$$

distribution. The marginal effect of (say)  $S$  is given by:  $\partial \Phi / \partial S = \Phi' \cdot \beta_2$ . On the other hand, the conditional mean of  $y$  in augmented equation (4) is:

$$E[y|T, S, A, \mathbf{X}] = \Phi \left[ \beta_1 T + \beta_2 S + \beta_3 A + \beta_{12} T * S + \beta_{13} T * A + \gamma \mathbf{X} \right]. \text{ The marginal effect is now given}$$

by  $\partial \Phi / \partial S = \Phi' \cdot \beta_2 + \beta_{12} * T$ . Similarly, the formula for the marginal effect of other variables that are interacted ( $T$  or  $A$ ) changes accordingly but the formula for the variables that are not interacted is the same as before. The magnitude of the interaction effect (say between  $T$  and  $S$ ) is given by:

$$\partial^2 \Phi / \partial T \partial S = \Phi' \cdot \beta_{12} + \Phi'' \cdot \beta_1 + \beta_{12} * S \quad \beta_2 + \beta_{12} * T, \text{ which is different from } \partial^2 \Phi / \partial (T * S).$$

Standard errors of the marginal effects can be calculated by the “delta method.”

#### IV.C *Endowments and other controls*

The variables in the  $X_i$  vector included in equations (3) and (4) are demographic characteristics, economic indicators, proxies for women empowerment, and village level infrastructure. Demographic characteristics include age (and its square), gender, marital status and education of the household head, household size, and average education of all members in the households of school-going age and above. Both individual and average education levels are included because the latter has important human capital externalities in the household behavior. Several variables account for economic condition of the households. These include the amount of land owned, per capita annual income, number of household members engaged in income-generating activities and employed in the lean season, whether household head is self-employed, and value of the main bedroom which is a proxy for value of assets. Two proxies are intended to capture women empowerment: i) percentage of major household items purchased by females in last one year, and ii) number of females going out alone for purposes other than visiting neighbors and relatives in last three months.

To account for the effects of village level economic opportunities and marketing facilities, we construct an index for village level infrastructure or economic vibrancy. Profitability of an enterprise depends on economic vibrancy and so does the likelihood of graduation to the microfinance program. The following variables are used to construct the vibrancy score: distances from nearest bank, bazaar, bus stand, high school, all weather road and *upazila*, number of shops in the village, and percentage of households in the village with electricity connection. Since higher distances indicate poor infrastructure, reciprocal of the relevant variables were first calculated and then principal component analysis was used to construct a score.

As mentioned in Section II.B, the source of the variation in asset values among the treatment members is the type of assets they received. Dummies for different types of assets are included to account for such variation. Assets are classified in five broad categories: i) poultry, ii) livestock, iii) agricultural production (such as vegetable gardening and nursery), iv) small business (such as grocery shop), and v) others (such as rickshaw/van, sewing machine), of which four are included in the regression with poultry as the base category. The highest percentage of the treatment households in the sample

received livestock (0.537) followed by poultry (0.274) and small business (0.13), while a negligible percentage of households received vegetable gardening and nursery (0.53) and others (0.006).

We also control for the health status of the respondents for the following reason. Ailing persons are less capable of operating an enterprise or engaging in economic activities, thus resulting in poor economic performances, which in turn negatively affect their participation in the microfinance program. The respondents defined their health status in one of the following four scales: i) very good, ii) good, iii) neither good nor bad, and iv) bad. Three dummies are included in the regression with “very good” as the base category.

To account for any externality running from the treatment to the control members, we control for the percentage of the eligible extreme poor in the village receiving assets (i.e., the ratio of number of the treatment members to all eligible extreme poor). Since both the treatment and control members live in the same village, their interactions may influence the behavior of the control group including their participation decision. One important source of externality is the social awareness training provided to the treatment group. It is important to mention that village level infrastructure also captures externality to a large extent because it is easier for individuals to interact in a village with better infrastructure.

## **V. Results**

### *V.A Treatment effect on the participation in NGOs*

We now turn to the results. First, we discuss the impact estimated by the DID method for equations (1) and (2) on different impact measures. We estimate linear probability model (LPM) for both specifications. The results are presented in Table 5.

For all impact measures except whether anyone has become member of NGOs other than BRAC, the treatment effect is positive and significant at any conventional level. The estimated coefficient ranges between 0.28 and 0.49 and is the largest for offer from any NGO including BRAC. This can be explained by the fact that one of the implicit objectives of asset transfer by BRAC may be that the extreme poor, once they

break extreme poverty, will graduate to its own microfinance program. Since BRAC implemented the TUP program, it possesses more information than other NGOs about the participants' improved economic conditions, and therefore has made more offers. There can be another possibility that, in order to expand its microfinance program rapidly or to demonstrate success of the TUP program to the donors, BRAC has made more offers. The treatment coefficient for other impact variables ranges between 0.28 and 0.31.

Insert Table 5 here

The treatment effect is negative for membership of NGOs other than BRAC. The magnitude is small at -0.04 but significant at any conventional level. The result is conceivable because a treatment member will prefer BRAC because of her long close association, while the control members have no such preference.

For all the above impact measures, the treatment coefficients and the associated  $t$ -statistics are almost identical when differential time trends in different regions are allowed for in equation (2). The results therefore suggest a significant impact of the treatment on the graduation of the extreme poor to the regular microfinance program.

#### *V.B Role of endowments in the participation in NGOs*

In this section, we present the results for equations (3) and (4) both estimated by probit model. In these cross-sectional specifications, the marginal effect of the treatment dummy captures the treatment effect. It is important to mention that for each impact variable, the marginal effect of the treatment dummy and associated  $t$ -statistic are very close to those observed in the DID estimation of the equations (1) and (2) reported in Table 5, so we do not dwell on these results. Our focus will be on the effect of the endowments.

Insert Table 6 here

The results for offer from NGOs other than BRAC as the impact variable are presented in Table 6. Column 2 presents the results for equation (3), and columns 3-5

present the same for equation (4). The marginal effect of social capital is significant only when it is not interacted with the treatment dummy. On the other hand, the marginal effect of awareness is significant in all combinations of the interactions. Unit increase in awareness increases the likelihood of receiving an offer by about 0.14 percentage points. The magnitude of the interaction of the treatment dummy with social capital ranges from 0.35 to 0.38 and is significant (at 5% level), but the same with awareness is insignificant. These magnitudes should not be taken literally since social capital and awareness are constructed indices. However, the results suggest that awareness increases the likelihood of receiving offer from NGOs but does not magnify the effect of the treatment. On the other hand, mere endowment of social capital of the extreme poor does not increase the likelihood of receiving offer but it amplifies the effect of the treatment. The only other individual or household characteristics found to be significant is average education level in the household. The village level infrastructure is also positive and robustly significant.

Insert Table 7 here

When offer for NGO membership including BRAC is the dependent variable, both awareness and social capital enter significantly with their respective marginal effects being about 0.12 and 0.14 (Table 7). But both their interactions enter insignificantly implying that none of these two endowments amplifies the effect of the treatment. Households with male heads have about 10% higher likelihood of receiving an offer than households with female heads. The likelihood is also higher for individuals living in larger family. Average level of household education increases but education of the household head decreases the likelihood of such offer. Village level infrastructure now turns out to be insignificant.

Insert Table 8 here

When the dependent variable is whether anyone has become NGO member including BRAC, both the marginal effect of social capital and the magnitude of its interaction with the treatment dummy are insignificant (Table 8). The marginal effect of



awareness is significant but not the magnitude of its interaction with the treatment dummy. Other endowments explaining the likelihood of joining are the same as those explaining offers by NGOs including BRAC. In addition, health dummies are negatively significant suggesting poor health discourages from becoming NGO member.

Insert Table 9 here

Social capital, awareness or their interactions with the treatment dummy are not significant when the impact variable is whether anyone has become member excluding BRAC (Table 9). This result can be interpreted as follows. In the data, all the treatment members who have joined other NGOs have also joined BRAC, thus indicating membership overlapping. Interestingly, the same is true for the control members as well. Therefore, this dependent variable can be interpreted alternatively as membership overlapping, which is not explained by social capital or awareness. Larger household size increases the likelihood of such membership. Poor health has been found again to discourage from becoming NGO member.

Insert Table 10 here

The final outcome variable is whether a treatment member has taken loan from any NGO, and the results are presented in Table 10. Both social capital and awareness are significant in predicting borrowing decision with the same marginal effect of around 0.10. None of the interaction effects is significant. It has also been found that the likelihood of borrowing is higher if the household head is male and self-employed. The latter variable can also be considered as a proxy for entrepreneurship because self-employed remuneration is uncertain, which differentiates it from employed work (Blanchflower, 2000; OECD, 1998). However, it may also be the case that in the informal sector in the developing countries, workers engaged in low-skill, small-scale, subsistence activities become entrepreneurs to avoid unemployment (Chaudhuri et al., 2006).

The overall results suggest that endowments of social capital and awareness increase the likelihood of participation in NGOs. More specifically, social capital has

significant effect on borrowing decision, and awareness has significant effect on both NGO membership and borrowing decision. Awareness, which is associated with the knowledge about their rights both in the household and in the society, makes women confident to interact outside the household. Therefore, they join and borrow from NGOs for investment at a higher rate. They can also deal with resistance in the household to do business outside or encounter less resistance.<sup>16</sup>

Although decision to join the microfinance program is an individual decision, borrowing and repayment are made in peer groups so that individuals endowed with higher social capital find relatively easier to form and perform in a peer group. It has also been found that social capital amplifies the effect of the treatment on the likelihood of offer by NGOs. From the NGO point of view, it will invite the treatment members with higher social capital so that peer group formation, which is prerequisite for loan disbursement, becomes less costly for the NGO. Karlan (2005) finds in the case of group lending program of FINCA-Peru that individuals with stronger social connections in the peer group have higher repayment and higher saving. Karlan et al. (2009), in two low-income shantytowns in Peru, find that social capital helps secure informal borrowing; strong ties and high closure, i.e., bonding social capital are particularly important for borrowing.

Average level of education in the household has been found to be important for all impact variables suggesting the effect of within household human capital externality. The result that the household head being male increases the likelihood of borrowing can be interpreted as follows. Although loans are made to females, they are usually utilized and controlled by male adults in the households (Husain et al. 1998).

#### *V.C Sensitivity analysis: Is there any role of selection on unobservables?*

In the two previous sub-sections, we have provided evidence of the effect of the treatment on various impact measures. We discussed in detail the selection of the control group in Section III.A and argued that both the treatment and control members are similar in terms of their unobservable characteristics. In Section III.C, we have provided

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<sup>16</sup> The results do not qualitatively change if an alternative awareness index constructed by the principal component analysis is used.

evidence that the treatment and control members are comparable in many observable terms. In this section, we econometrically address the implication of the potential selection on unobservables for the estimated treatment coefficients. The results from the sensitivity analysis for the impact variables are presented in Table 11. Given that all outcome variables are binary, we report the Mantel-Haenszel  $Q_{mh}^+$  statistic under the assumption of overestimation of the treatment effect, and the associated  $p$ -values  $p_{mh}^+$  (for details see Aakvik, 2001; Becker and Caliendo, 2007). In the present context, the positive treatment effects reported in Tables 5-10 will have upward bias if there is positive selection on unobservables. The test results show that the estimated treatment effects on all impact measures are robust to allowing for a considerable level of selection on unobservables. The  $p_{mh}^+$  values for different level of selections (Gamma ranging from 1 to 3) are always zero suggesting that the treatment effect is insensitive to bias that would triple the odds of belonging to different groups due to unobservables.

Insert Table 11 here

#### V.D *Access to the informal credit market*

In this section, we investigate how the perception of the extreme poor about their access to the informal credit market has changed. We investigate only the treatment group due to large non-response from the control group. The dependent variables are whether a member's ability to borrow from the informal credit market has increased or not at both i) zero, and ii) positive interest rate.<sup>17</sup> There are 75% and 67% members, respectively, who reported that their ability to borrow has improved at zero and positive interest rate.

Insert Table 12 here

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<sup>17</sup> It may be surprising to someone who is not familiar with the settings in rural Bangladesh as to why interest-free loans are made. In rural Bangladesh where people have been living for generations, society is closely knit and individuals borrow from friends, relatives, and neighbors interest-free or even purchase from nearby shops in credit if he or she has some creditworthiness. These loans are usually made without any written contract and collateral. Brandt and Hosios (2009) discuss conditions under which interest-free lending occurs in low-income rural economies.

The results are presented in Table 12. These should be treated cautiously as there may be systematic bias in self-perceptions. When the outcome variable is interest-free loan, which is usually short-term consumption loan from relatives, friends, neighbors, and nearby shops, the marginal effect of social capital is positive and significant. This suggests that if a treatment member is endowed with higher social capital, she becomes more confident about her access to the informal sources from where she can borrow interest-free. Higher social capital broadens and deepens social networks, which enables a member in the network to overcome imperfect information problems. Given that her creditworthiness has increased after the treatment, and social capital is one of the channels through which this information is circulated, she is more confident than before about her ability to borrow at zero interest rate.

Contrarily, when the outcome variable is positive interest loan, which is usually from moneylenders, landlords and local businessmen, the marginal effect of awareness is positive and significant. More aware individuals can borrow in the informal lending market because they can confidently interact outside the household in order to do business, understand contractual arrangements better and can negotiate with the lender.

Village level infrastructure enters significantly negatively when the dependent variable is positive interest loan. This can be explained by the fact that when formal and informal loans are substitutes, access to the formal credit market, which is greater in the villages with better infrastructure, reduces demand for informal sector loans. It has also been found that younger members and those from large families perceived increased access to interest-free loan, while married and female household heads perceived increased access to positive interest loan.

#### *V.E Reasons for varying performance among the treatment members*

All treatment members received the same support except the type of assets. However, not all of them have been offered to join or able to graduate to the regular microfinance program. About 40% of them have borrowed from NGOs. Although the second round of the survey was conducted shortly after ending the support period, success of some members and failure of others still leave room for investigation of the

underlying reasons for differential performances. In order to do that, we study only the treatment group and first examine the possible sources of differences such as demography, economic indicators, social capital, and awareness. Table 13 presents descriptive statistics by offer from NGOs other than BRAC.<sup>18</sup> It has been found that the two groups are similar in several respects such as percentage of self-employed household heads, number of members engaged in income-generating activities, amount of land owned, annual per capita income, and number of females going out alone. But there are significant differences as well. The members who have been offered membership are relatively younger, have more years of schooling, higher average years of schooling of the household members, larger household size, and higher level of social capital and awareness.

Insert Table 13 here

We now estimate equation (3) without the treatment dummy by probit model. The first dependent variable is whether a member has been offered membership by NGOs other than BRAC. The results, presented in column 2 in Table 14, are the same as the ones when both treatment and control group were pooled-- social capital, awareness and average household education are the endowments that have significant positive marginal effects. Village level vibrancy has also positive and significant effect.

Insert Tables 14

Columns 3-6 present the results when the dependent variable is whether a treatment member has borrowed from any NGO. The marginal effect of social capital is significant as before but, contrary to the results for the pooled sample, the marginal effect of awareness now becomes insignificant (column 3). To know if education explains the effect of awareness, although the correlation is low in the data, we estimate the equation by excluding the education measures from the regression equation. In columns 4-5, we

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<sup>18</sup> This is most important among the impact variables considered because a benefited member may not be willing to join or borrow from NGOs. But NGOs will offer her membership to expand their microfinance program if she had performed well in the TUP program.

alternate two education measures. The marginal effect of awareness now becomes significant although weakly. The significance is also robust to exclusion of both education measures (column 6), thus supporting our conjecture that the effect of awareness on borrowing decision is explained by education.

In conclusion, the underlying reasons that explain differential performances of the treatment members are the same as those that explain the differential performances between the treatment and control members.

### *V.F Sustainability*

One important question remains to be answered is the sustainability of the benefits accrued from the big push. It is yet to be known of how many of these members or borrowers will continue in the future. However, this question is equally valid for the impact of the regular microfinance program as well. There is always some discontinuation or dropout in the regular microfinance program mainly because of failure to gain any benefit or to sustain the initial benefit. If the objective of the TUP program is to get the treatment members out of extreme poverty so that NGOs no more exclude them from the regular microfinance program, then the effect of the big push is commendable. Note that about 60% of them have received offer and 40% have already borrowed from NGOs shortly after the end of the intervention period. Conversely, if the objective is to achieve something that the regular microfinance program has failed to do so far, then several follow-ups in the future will be required.

### **VI. Concluding remarks**

This paper investigates whether a big push to the extreme poor in terms of a one-off asset transfer can elevate them to some sort of “take off” stage so that they can participate in the regular microfinance program that typically excludes them. We use data from a quasi-random control experiment in the first phase of BRAC’s TUP program. The selected extreme poor were transferred income-generating assets and provided continued supports over next 18 months that included enterprise management assistance, subsistence allowance, health care facilities, and support for building social network.

Some extreme poor did not receive assets for reasons unrelated to the ones that can lead to self-selection bias. These excluded extreme poor are treated as the control group.

We find that such a big push indeed enables the extreme poor to participate in the regular microfinance program. Social capital has significant effect on borrowing decision. Awareness positively impacts on membership offer by NGOs and decision on borrowing. However, awareness does not influence the effect of the treatment. We also find that the treatment members gain greater confidence in their access to interest-free informal loan from relatives, friends and neighbors if they are endowed with higher social capital. On the other hand, they gain greater confidence in their access to positive interest loan in the informal credit market if they are endowed with higher level of awareness. However, it remains to be known what explains their varying initial social capital and awareness.

Not all the treatment members have been equally benefited as only around 40% of them have borrowed from any NGO. It should not be expected that everyone wants to be an entrepreneur, and therefore, will borrow from NGOs for investment. It may also be the case that members who benefited greatly from the asset transfer are now capable of financing their enterprise from internal funds so they did not approach NGOs. In either case, assessing impact based solely on simple participation in or borrowing from NGOs will not capture the full extent of the program benefits. Changes in income or consumption can be an alternative measure. However, since the second round of survey was conducted shortly after end of the intervention period, it is almost certain that income or consumption of the treatment group will also be higher.

The TUP program is costly in terms of value of assets transferred, complementary supports and intensive nature of involvement of the program staffs. Although cost has been decreasing with program expansion, the intervention must continue to rely on donor support. Nonetheless, this type of intervention can be considered to be useful since the only known alternative is creating safety net for the poor that has not been proved to break the barriers to extreme poverty.

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## Tables

**Table 1: Support package for the treatment group**

Component	Description	Duration of support
Asset transfer	Assets for enterprise e.g. cow, goat, poultry, nursery, non-farm assets etc.	One-off in the beginning
Enterprise development training	Classroom orientation and training	3-5 day training before asset transfer
	Hands-on training by enterprise management and technical supervision	2 years
Support for enterprise	All inputs required to maintain the enterprise	The first cycle of the enterprise
Weekly stipend	Daily Taka 10 (weekly Taka 70) but total amount not exceeding Taka 4,320.	Until started getting income from their enterprise (around 18 months)
Health care support	Free medical treatment; training to build health awareness	2 years
	Regular visits by health volunteers ( <i>Shasthyo Shebika</i> ) for preventive diseases	2 years and continues with BRAC mainstream development program
Social development	Awareness raising training	2 year and continues with BRAC mainstream development program
Mobilization of local elite for support	Community support-materials, information, guidance	2 year and continues

Source: Ahmed et al. (2009), and author's discussion with TUP staffs in the branch offices who implemented the program

**Table 2: List of assets, number and maximum value of each asset**

Type of asset	Quantity/Number	Maximum value (Taka)
Cow	2	8,000
Goat	5	6,000
Poultry*	36	1,800 + 3,600 + Poultry food
Small business + 1 cow		2,000 + 4,000
Vegetable gardening	Land lease (50 decimal) + fertilizer + pesticides	8,000
Nursery	Land lease (10 decimal) + fertilizer + pesticides	8,000
In addition, if each treatment member was given two fruit saplings if she owned at least some homestead land where these sapling can be planted. Those who did not own any land (usually live in other's land) were not given anything else in lieu of fruit saplings.		

\* Each chick costs Taka 50 (36 X Taka 50 = Taka 1,800); Poultry cage worth Taka 3,600; Costs for poultry food ranged between Taka 8,000-12,000.

Source: Author's discussion with TUP staffs in the branch offices who implemented the program.

**Table 3: Summary statistics of selected variables and notation of the variables used in regression.**

Variables	(2) Notation	(3) Control group	(4) Treatment group	(5) <i>p</i> -value of difference in mean
<b>2002</b>				
Age of household (hh) head (year)	AGE	42.00 (13.85)	43.252 (12.544)	0.089
Gender of the hh head (1 = male, 0 = female)	GEND	0.544	0.581	0.155 <sup>ψ</sup>
Years of schooling of the hh head	EDUH	0.488 (1.634)	0.325 (1.323)	0.056
Employment status (1 = self-employed, 0 = otherwise)	SELF	0.258	0.205	0.017 <sup>ψ</sup>
Household size	FSIZE	3.286 (1.729)	3.602 (1.743)	0.001
Number of hh members engaged in income-generating activities	IGA	1.392 (0.635)	1.489 (0.707)	0.006
Average years of schooling in the hh (age > 5)	EDUAV	0.680 (1.164)	0.645 (1.022)	0.523
Amount of land owned (decimal)	LAND	2.861 (9.036)	2.204 (5.379)	0.153
Annual per capita income (Taka)	INPC	2686.39 (1821.69)	2477.97 (2059.27)	0.055
Value of bed room (Taka)	ROOM	1028.33 (1429.81)	850.10 (1025.16)	0.016
Number of hh member employed in the lean season	KAREMP	1.949 (1.200)	2.001 (1.159)	0.399
Social capital score	SOCAP	0.382 (0.213)	0.389 (0.208)	0.574
Awareness score	KNLEG	0.155 (0.167)	0.153 (0.166)	0.777
% of major purchase made by female	FEMPR	0.457 (0.439)	0.417 (0.429)	0.081
Number of female going out of home alone	VISIT	0.007 (0.085)	0.004 (0.065)	0.398
Score for village vibrancy	VIBR	0.084 (1.546)	-0.010 (1.251)	0.239
Percentage of eligible extreme poor in the village received assets	ASSETPER			
Marital status (dummies)	MRST			
Self reported health status (dummies)	HEALTH			
<b>2005</b>				
Offer from NGOs other than BRAC (%)		7.77	39.18	0.000 <sup>ψ</sup>
Offer from NGOs including BRAC (%)		11.89	60.35	0.000 <sup>ψ</sup>
NGO membership including BRAC (%)		13.11	40.99	0.000 <sup>ψ</sup>
NGO membership excluding BRAC (%)		7.28	3.54	0.000 <sup>ψ</sup>
If borrowed from NGO including BRAC (%)		8.74	39.56	0.000 <sup>ψ</sup>

Note: First the null hypothesis of the equality of the variance was tested. Based on rejection or non-rejection of the null, the equality of the mean was tested.

Figures in parentheses are standard deviations.

<sup>ψ</sup> *p*-value of the Pearson Chi-square statistics.

**Table 4: Partial correlation of the variables**

Variable*	GEND	AGE	EDUH	SELF	EDUAV	IGA	FSIZE	LAND	INCPC	ROOM	KAREMP	FEMPR	VISIT	KNLEG
AGE	-0.0413													
EDUH	0.1219	-0.0487												
SELF	0.0693	0.0870	0.0513											
EDUAV	0.0354	-0.0575	<b>0.5778</b>	0.0013										
IGA	0.0723	0.1115	-0.0103	-0.0269	0.0247									
FSIZE	<b>0.5353</b>	-0.1227	0.1034	0.0020	0.1522	0.3652								
LAND	0.0831	0.1026	0.0096	0.0011	0.0697	0.0320	0.1203							
INCPC	-0.0326	0.0518	0.0597	0.0847	-0.0051	-0.0465	-0.2532	0.0255						
ROOM	-0.0063	0.0131	0.0665	0.0225	0.0845	-0.0108	0.0656	0.1999	0.0314					
KAREMP	0.1068	0.1020	0.0179	-0.0486	0.0930	0.3590	0.2392	0.1651	0.0925	0.0845				
FEMPR	<b>-0.7428</b>	0.0860	-0.0766	0.0052	-0.0588	-0.0878	-0.5017	-0.0949	0.0321	-0.0119	-0.0961			
VISIT	0.0152	-0.0081	0.0377	0.0287	0.0432	-0.0249	-0.0151	-0.0094	-0.0173	0.0046	-0.0186	-0.0209		
KNLEG	0.0270	-0.0963	0.0396	0.0027	0.1212	-0.0146	0.0483	0.0317	-0.0225	0.0500	0.0378	-0.0194	0.0500	
SOCAP	-0.0087	0.1121	-0.0161	-0.0161	0.0070	0.0801	0.0497	0.0257	0.0226	0.0165	0.1385	0.0049	-0.0081	0.0482

**Table 5: Impact of program on participation in NGOs (DID estimation)**

$$y_{i,t} = \alpha_0 + \alpha_1 T_i + \alpha_2 Y_{2005} + \beta T * Y_{2005} + \varepsilon_{i,t} \quad \text{--- (1)}$$

$$y_{i,t} = \alpha_0 + \alpha_1 T_i + \alpha_2 Y_{2005} + \alpha_3 Y_{2005} * D1 + \alpha_4 Y_{2005} * D2 + \beta T * Y_{2005} + \varepsilon_{i,t} \quad \text{--- (2)}$$

Outcome variables	Treatment effect ( $\beta$ )	
	Equation (1)	Equation (2)
If any NGO other than BRAC has offered membership?	0.314*** (18.85)	0.328*** (19.17)
If any NGO including BRAC has offered membership?	0.485*** (25.55)	0.491*** (25.50)
If anyone has become NGO member including BRAC?	0.278*** (14.20)	0.278*** (13.97)
If anyone has become NGO member other than BRAC?	-0.038*** (-2.85)	-0.037*** (-2.72)
If anyone has taken NGO loan?	0.308*** (17.85)	0.309*** (17.59)

Figures in parentheses are White (1980) corrected robust  $t$ -statistics. \*\*\* Significant at the 1% level.

**Table 6: Marginal effects of probit regression (Dependent variable: If any NGO other than BRAC has offered membership?)**

Explanatory variables	Equation (3)		Equation (4)	
	(2)	(3)	(4)	(5)
Treatment dummy	0.332*** (17.89)	0.273*** (6.18)	0.330*** (13.66)	0.277*** (5.75)
ASSET (Livestock)	-0.000 (-0.01)	-0.002 (-0.06)	-0.000 (-0.01)	-0.002 (-0.07)
ASSET (Small business)	-0.018 (-0.39)	-0.019 (-0.41)	-0.018 (-0.39)	-0.019 (-0.41)
ASSET (Agriculture)	0.032 (0.91)	0.033 (0.94)	0.032 (0.91)	0.033 (0.94)
ASSET (Other)	0.285** (2.21)	0.284** (2.21)	0.284** (2.21)	0.285** (2.21)
GEND	0.012 (0.28)	0.014 (0.32)	0.012 (0.28)	0.014 (0.31)
MRST (unmarried)	0.056 (0.37)	0.054 (0.36)	0.057 (0.37)	0.053 (0.36)
MRST (widow)	-0.025 (-0.55)	-0.026 (-0.57)	-0.025 (-0.55)	-0.026 (-0.57)
MRST (separated)	-0.024 (-0.44)	-0.026 (-0.47)	-0.024 (-0.44)	-0.026 (-0.47)
MRST (divorced)	-0.003 (-0.04)	-0.001 (-0.02)	-0.003 (-0.04)	-0.001 (-0.02)
AGE	-0.000 (-0.05)	-0.000 (-0.04)	-0.000 (-0.05)	-0.000 (-0.04)
AGE-Square	-0.000 (-0.67)	-0.000 (-0.68)	-0.000 (-0.67)	-0.000 (-0.69)
EDUH	-0.011 (-1.38)	-0.012 (-1.43)	-0.011 (-1.38)	-0.012 (-1.43)
SELF	0.005 (0.21)	0.005 (0.22)	0.005 (0.21)	0.005 (0.23)
EDUAV	0.028** (2.48)	0.028** (2.50)	0.028** (2.48)	0.028** (2.51)
IGA	-0.019 (-1.17)	-0.019 (-1.18)	-0.019 (-1.17)	-0.019 (-1.18)
FSIZE	0.010 (1.27)	0.010 (1.27)	0.010 (1.27)	0.010 (1.27)
LAND	-0.001 (-0.63)	-0.001 (-0.69)	-0.001 (-0.64)	-0.001 (-0.68)
INCPC	0.006 (1.27)	0.006 (1.27)	0.006 (1.27)	0.006 (1.27)
ROOM	0.011 (1.21)	0.011 (1.18)	0.011 (1.21)	0.011 (1.19)
KAREMP	0.012 (1.31)	0.012 (1.29)	0.012 (1.31)	0.012 (1.29)
FEMPR	-0.012 (-0.34)	-0.011 (-0.31)	-0.012 (-0.33)	-0.011 (-0.31)
VISIT	0.087 (0.55)	0.090 (0.56)	0.087 (0.55)	0.090 (0.56)
KNLEG	0.139** (2.42)	0.143** (2.49)	0.138** (2.37)	0.146** (2.56)
SOCAP	0.098** (2.04)	0.075 (1.49)	0.098** (2.05)	0.074 (1.48)
TUP* KNLEG			0.099 (0.53)	0.033 (0.18)
TUP*SOCAP		0.375** (2.05)		0.384** (2.16)
HEALTH (Good)	0.006 (0.17)	0.006 (0.16)	0.006 (0.18)	0.006 (0.16)
HEALTH (Not good not bad)	-0.022 (-0.63)	-0.021 (-0.60)	-0.022 (-0.63)	-0.021 (-0.60)
HEALTH (Bad)	-0.011 (-0.31)	-0.012 (-0.31)	-0.011 (-0.30)	-0.012 (-0.32)
VIBR	0.016** (2.16)	0.017** (2.17)	0.016** (2.16)	0.017** (2.17)
ASSETPER	-0.119 (-1.41)	-0.132 (-1.55)	-0.120 (-1.42)	-0.131 (-1.54)
N	2595	2595	2595	2595
Log likelihood ratio	-1544.02	-1542.27	-1544.02	-1542.24
Predicted probability	0.326	0.325	0.326	0.325

Figures in parentheses are White (1980) corrected robust z-statistics.  
 \*\*\*, \*\*, and \* are significant at the 1%, 5% and 10% level, respectively.



**Table 7: Marginal effects of probit regression (Dependent variable: If any NGO including BRAC has offered membership?)**

Explanatory variables	Equation (3)		Equation (4)	
	(2)	(3)	(4)	(5)
Treatment dummy	0.518*** (24.22)	0.477*** (10.95)	0.520*** (18.86)	0.481*** (10.22)
ASSET (Livestock)	-0.024 (-0.92)	-0.025 (-0.95)	-0.024 (-0.92)	-0.025 (-0.96)
ASSET (Small business)	0.024 (0.46)	0.024 (0.45)	0.024 (0.46)	0.024 (0.45)
ASSET (Agriculture)	-0.004 (-0.11)	-0.003 (-0.08)	-0.004 (-0.11)	-0.003 (-0.09)
ASSET (Other)	0.257** (2.20)	0.257** (2.20)	0.257** (2.20)	0.257** (2.20)
GEND	0.094* (1.95)	0.095** (1.97)	0.094* (1.95)	0.095** (1.97)
MRST (unmarried)	0.037 (0.23)	0.035 (0.22)	0.036 (0.23)	0.034 (0.22)
MRST (widow)	-0.004 (-0.08)	-0.005 (-0.09)	-0.004 (-0.08)	-0.005 (-0.09)
MRST (separated)	0.013 (0.22)	0.012 (0.20)	0.013 (0.22)	0.013 (0.20)
MRST (divorced)	-0.033 (-0.45)	-0.032 (-0.43)	-0.033 (-0.45)	-0.031 (-0.43)
AGE	-0.000 (-0.07)	-0.000 (-0.07)	-0.000 (-0.07)	-0.000 (-0.07)
AGE-Square	-0.000 (-0.80)	-0.000 (-0.81)	-0.000 (-0.80)	-0.000 (-0.81)
EDUH	-0.026*** (-2.74)	-0.026*** (-2.75)	-0.026*** (-2.74)	-0.026*** (-2.76)
SELF	0.009 (0.35)	0.010 (0.37)	0.009 (0.35)	0.010 (0.37)
EDUAV	0.046*** (3.60)	0.046*** (3.60)	0.046*** (3.60)	0.047*** (3.61)
IGA	0.005 (0.27)	0.004 (0.26)	0.005 (0.27)	0.004 (0.26)
FSIZE	0.020** (2.25)	0.020** (2.26)	0.020** (2.24)	0.020** (2.26)
LAND	0.000 (0.03)	-0.000 (-0.01)	0.000 (0.03)	-0.000 (-0.01)
INCP	0.005 (0.89)	0.005 (0.88)	0.005 (0.89)	0.005 (0.88)
ROOM	0.010 (0.97)	0.009 (0.94)	0.010 (0.98)	0.010 (0.95)
KAREMP	0.005 (0.49)	0.005 (0.49)	0.005 (0.49)	0.005 (0.48)
FEMPR	0.003 (0.08)	0.003 (0.09)	0.003 (0.08)	0.003 (0.08)
VISIT	0.097 (0.63)	0.099 (0.64)	0.096 (0.63)	0.098 (0.64)
KNLEG	0.138** (2.15)	0.140** (2.18)	0.139** (2.15)	0.143** (2.22)
SOCAP	0.127** (2.44)	0.118** (2.23)	0.127** (2.43)	0.117** (2.22)
TUP* KNLEG			-0.031 (-0.16)	-0.069 (-0.35)
TUP*SOCAP		0.200 (1.19)		0.207 (1.24)
HEALTH (Good)	-0.035 (-0.87)	-0.035 (-0.88)	-0.035 (-0.87)	-0.035 (-0.88)
HEALTH (Not good not bad)	-0.051 (-1.30)	-0.050 (-1.28)	-0.051 (-1.30)	-0.050 (-1.28)
HEALTH (Bad)	-0.026 (-0.63)	-0.026 (-0.63)	-0.026 (-0.63)	-0.027 (-0.63)
VIBR	0.013 (1.53)	0.013 (1.53)	0.013 (1.53)	0.013 (1.53)
ASSETPER	-0.030 (-0.29)	-0.041 (-0.40)	-0.030 (-0.29)	-0.040 (-0.39)
N	2595	2595	2595	2595
Log likelihood ratio	-1547.44	-1546.70	-1547.44	-1546.66
Predicted probability	0.525	0.525	0.525	0.525

Figures in parentheses are White (1980) corrected robust z-statistics.  
 \*\*\*, \*\*, and \* are significant at the 1%, 5% and 10% level, respectively.

**Table 8: Marginal effects of probit regression (Dependent variable: If anyone has become NGO member including BRAC?)**

Explanatory variables	Equation (3)		Equation (4)	
	(2)	(3)	(4)	(5)
Treatment dummy	0.282*** (12.07)	0.245*** (5.28)	0.294*** (10.00)	0.258*** (5.28)
ASSET (Livestock)	-0.016 (-0.64)	-0.016 (-0.67)	-0.016 (-0.65)	-0.017 (-0.68)
ASSET (Small business)	0.071 (1.40)	0.070 (1.39)	0.070 (1.39)	0.070 (1.39)
ASSET (Agriculture)	-0.038 (-1.10)	-0.037 (-1.08)	-0.039 (-1.12)	-0.038 (-1.10)
ASSET (Other)	0.154 (1.06)	0.154 (1.06)	0.155 (1.07)	0.155 (1.07)
GEND	0.102** (2.29)	0.103** (2.31)	0.102** (2.29)	0.102** (2.30)
MRST (unmarried)	0.158 (1.08)	0.156 (1.08)	0.156 (1.07)	0.154 (1.06)
MRST (widow)	-0.001 (-0.01)	-0.001 (-0.03)	-0.001 (-0.01)	-0.001 (-0.03)
MRST (separated)	0.020 (0.33)	0.019 (0.32)	0.020 (0.34)	0.019 (0.32)
MRST (divorced)	-0.056 (-0.82)	-0.055 (-0.81)	-0.056 (-0.81)	-0.055 (-0.80)
AGE	0.004 (0.88)	0.004 (0.89)	0.004 (0.88)	0.004 (0.89)
AGE-Square	-0.000 (-1.35)	-0.000 (-1.36)	-0.000 (-1.35)	-0.000 (-1.36)
EDUH	-0.021** (-2.38)	-0.021** (-2.39)	-0.021** (-2.40)	-0.021** (-2.41)
SELF	0.034 (1.39)	0.035 (1.40)	0.035 (1.40)	0.035 (1.42)
EDUAV	0.025** (2.22)	0.026** (2.23)	0.026** (2.23)	0.026** (2.25)
IGA	0.014 (0.86)	0.013 (0.84)	0.014 (0.86)	0.013 (0.84)
FSIZE	0.028*** (3.45)	0.029*** (3.45)	0.028*** (3.44)	0.028*** (3.44)
LAND	0.000 (0.24)	0.000 (0.21)	0.000 (0.24)	0.000 (0.20)
INCP	0.011** (2.07)	0.011** (2.06)	0.011** (2.07)	0.011** (2.06)
ROOM	-0.001 (-0.10)	-0.001 (-0.14)	-0.001 (-0.08)	-0.001 (-0.12)
KAREMP	-0.008 (-0.83)	-0.008 (-0.84)	-0.008 (-0.84)	-0.008 (-0.85)
FEMPR	0.007 (0.21)	0.008 (0.22)	0.007 (0.19)	0.007 (0.20)
VISIT	0.018 (0.13)	0.020 (0.14)	0.018 (0.12)	0.019 (0.13)
KNLEG	0.119** (1.98)	0.121** (2.00)	0.124** (2.05)	0.127** (2.10)
SOCAP	0.053 (1.09)	0.047 (0.94)	0.052 (1.07)	0.045 (0.90)
TUP* KNLEG			-0.071 (-0.39)	-0.098 (-0.54)
TUP*SOCAP		0.176 (1.15)		0.193 (1.24)
HEALTH (Good)	-0.042 (-1.21)	-0.043 (-1.21)	-0.042 (-1.20)	-0.043 (-1.21)
HEALTH (Not good not bad)	-0.069** (-1.98)	-0.068** (-1.97)	-0.069** (-1.98)	-0.068** (-1.96)
HEALTH (Bad)	-0.026 (-0.68)	-0.026 (-0.68)	-0.026 (-0.68)	-0.026 (-0.69)
VIBR	-0.012 (-1.61)	-0.012 (-1.61)	-0.012 (-1.60)	-0.012 (-1.60)
ASSETPER	0.163 (1.63)	0.154 (1.54)	0.166* (1.65)	0.156 (1.56)
N	2595	2595	2595	2595
Log likelihood ratio	-1583.40	-1582.89	-1583.22	-1582.61
Predicted probability	0.357	0.357	0.357	0.357

Figures in parentheses are White (1980) corrected robust z-statistics.  
 \*\*\*, \*\*, and \* are significant at the 1%, 5% and 10% level, respectively.

**Table 9: Marginal effects of probit regression (Dependent variable: If anyone has become NGO member excluding BRAC?)**

Explanatory variables	Equation (3)		Equation (4)	
	(2)	(3)	(4)	(5)
Treatment dummy	-0.040** (-2.18)	-0.076* (-1.96)	-0.031 (-1.54)	-0.064 (-1.64)
ASSET (Livestock)	0.012 (1.28)	0.012 (1.22)	0.012 (1.26)	0.011 (1.19)
ASSET (Small business)	0.012 (0.51)	0.011 (0.50)	0.011 (0.50)	0.011 (0.49)
ASSET (Agriculture)	-0.017 (-1.46)	-0.016 (-1.41)	-0.017 (-1.52)	-0.017 (-1.47)
ASSET (Other)	-----	-----	-----	-----
GEND	-0.013 (-0.77)	-0.013 (-0.76)	-0.013 (-0.77)	-0.013 (-0.76)
MRST (unmarried)	0.037 (0.57)	0.036 (0.56)	0.034 (0.55)	0.032 (0.54)
MRST (widow)	-0.018 (-1.33)	-0.018 (-1.37)	-0.018 (-1.33)	-0.018 (-1.38)
MRST (separated)	-0.006 (-0.34)	-0.006 (-0.38)	-0.006 (-0.33)	-0.006 (-0.38)
MRST (divorced)	-0.021 (-1.42)	-0.021 (-1.47)	-0.021 (-1.44)	-0.021 (-1.50)
AGE	0.002 (1.12)	0.002 (1.15)	0.002 (1.10)	0.002 (1.14)
AGE-Square	-0.000 (-1.01)	-0.000 (-1.04)	-0.000 (-0.99)	-0.000 (-1.02)
EDUH	-0.002 (-0.56)	-0.002 (-0.61)	-0.002 (-0.57)	-0.002 (-0.63)
SELF	0.005 (0.57)	0.005 (0.57)	0.005 (0.59)	0.005 (0.59)
EDUAV	0.001 (0.34)	0.002 (0.37)	0.001 (0.34)	0.002 (0.38)
IGA	-0.002 (0.36)	-0.002 (-0.37)	-0.002 (-0.36)	-0.002 (-0.36)
FSIZE	0.008*** (3.22)	0.008*** (3.23)	0.008*** (3.20)	0.008*** (3.20)
LAND	0.000 (0.23)	0.000 (0.15)	0.000 (0.24)	0.000 (0.17)
INCPC	-0.001 (-0.34)	-0.001 (-0.35)	-0.001 (-0.33)	-0.001 (-0.35)
ROOM	0.001 (0.48)	0.001 (0.44)	0.002 (0.51)	0.001 (0.48)
KAREMP	-0.001 (-0.19)	-0.001 (-0.20)	-0.001 (-0.19)	-0.001 (-0.21)
FEMPR	0.017 (1.14)	0.017 (1.16)	0.017 (1.12)	0.017 (1.14)
VISIT	-----	-----	-----	-----
KNLEG	0.017 (0.82)	0.018 (0.90)	0.014 (0.66)	0.002 (0.70)
SOCAP	0.000 (0.01)	0.004 (0.24)	-0.000 (-0.03)	0.003 (0.20)
TUP* KNLEG			-0.045 (-1.04)	-0.058 (-1.40)
TUP*SOCAP		0.054 (1.20)		0.062 (1.39)
HEALTH (Good)	-0.022** (-2.12)	-0.022** (-2.14)	-0.022** (-2.13)	-0.022** (-2.16)
HEALTH (Not good not bad)	-0.022** (-2.05)	-0.021** (-2.01)	-0.022** (-2.06)	-0.021** (-2.01)
HEALTH (Bad)	-0.008 (-0.74)	-0.008 (-0.74)	-0.009 (-0.76)	-0.009 (-0.78)
VIBR	-0.002 (-0.67)	-0.002 (-0.66)	-0.002 (-0.65)	-0.002 (-0.63)
ASSETPER	-0.022 (-0.84)	-0.026 (-1.01)	-0.020 (-0.77)	-0.024 (-0.94)
N	2569	2569	2569	2569
Log likelihood ratio	-427.36	-426.50	-427.12	-426.06
Predicted probability	0.036	0.036	0.036	0.036

Figures in parentheses are White (1980) corrected robust z-statistics.

\*\*\*, \*\*, and \* are significant at the 1%, 5% and 10% level, respectively.

(Other assets = 1, and VISIT =1 predict failure perfectly, so they are dropped)

**Table 10: Marginal effects of probit regression (Dependent variable: If anyone has taken NGO loan?)**

Explanatory variables	Equation (4)			
	Equation (3) (2)	(3)	(4)	(5)
Treatment dummy	0.319*** (16.73)	0.323*** (9.23)	0.332*** (13.95)	0.333*** (9.05)
ASSET (Livestock)	-0.028 (-1.18)	-0.028 (-1.17)	-0.028 (-1.19)	-0.028 (-1.19)
ASSET (Small business)	0.057 (1.16)	0.057 (1.16)	0.057 (1.15)	0.057 (1.15)
ASSET (Agriculture)	-0.037 (-1.10)	-0.037 (-1.10)	-0.037 (-1.12)	-0.037 (-1.12)
ASSET (Other)	0.162 (1.13)	0.162 (1.13)	0.164 (1.14)	0.164 (1.14)
GEND	0.116*** (2.67)	0.116*** (2.67)	0.116*** (2.66)	0.116*** (2.66)
MRST (unmarried)	0.182 (1.22)	0.183 (1.22)	0.179 (1.21)	0.180 (1.21)
MRST (widow)	-0.010 (-0.22)	-0.010 (-0.22)	-0.010 (-0.22)	-0.010 (-0.22)
MRST (separated)	0.021 (0.36)	0.021 (0.36)	0.022 (0.37)	0.022 (0.37)
MRST (divorced)	-0.087 (-1.36)	-0.087 (-1.36)	-0.086 (-1.34)	-0.086 (-1.35)
AGE	0.006 (1.15)	0.006 (1.16)	0.006 (1.15)	0.006 (1.15)
AGE-Square	-0.000* (-1.73)	-0.000* (-1.73)	-0.000* (-1.72)	-0.000*** (-1.72)
EDUH	-0.023*** (-2.62)	-0.023*** (-2.62)	-0.023*** (-2.64)	-0.023*** (-2.64)
SELF	0.043* (1.73)	0.043* (1.73)	0.043* (1.76)	0.043* (1.76)
EDUAV	0.023* (2.04)	0.023** (2.04)	0.023** (2.06)	0.023** (2.06)
IGA	0.009 (0.57)	0.009 (0.57)	0.009 (0.57)	0.009 (0.57)
FSIZE	0.024*** (2.97)	0.024*** (2.97)	0.024*** (2.96)	0.024*** (2.96)
LAND	0.000 (0.32)	0.001 (0.32)	0.000 (0.31)	0.000 (0.31)
INPC	0.010* (1.95)	0.010* (1.95)	0.010* (1.94)	0.010* (1.94)
ROOM	0.002 (0.18)	0.002 (0.19)	0.002 (0.21)	0.002 (0.21)
KAREMP	-0.006 (-0.60)	-0.006 (-0.60)	-0.006 (-0.61)	-0.006 (-0.61)
FEMPR	0.029 (0.82)	0.029 (0.82)	0.028 (0.81)	0.028 (0.81)
VISIT	0.042 (0.29)	0.042 (0.29)	0.040 (0.28)	0.040 (0.28)
KNLEG	0.099* (1.67)	0.099* (1.67)	0.109* (1.82)	0.109* (1.82)
SOCAP	0.101** (2.10)	0.103** (2.10)	0.100** (2.07)	0.100** (2.05)
TUP* SOCAP		0.029 (0.18)		0.047 (0.29)
TUP* KNLEG			-0.107 (-0.57)	-0.106 (-0.57)
HEALTH (Good)	-0.032 (-0.90)	-0.031 (-0.90)	-0.031 (-0.90)	-0.031 (-0.90)
HEALTH (Not good not bad)	-0.051 (-1.49)	-0.051 (-1.49)	-0.051 (-1.48)	-0.051 (-1.48)
HEALTH (Bad)	-0.020 (-0.53)	-0.020 (-0.53)	-0.020 (-0.53)	-0.020 (-0.53)
VIBR	-0.010 (-1.38)	-0.010 (-1.38)	-0.010 (-1.36)	-0.010 (-1.36)
ASSETPER	0.135 (1.29)	0.136 (1.31)	0.138 (1.32)	0.138 (1.34)
N	2595	2595	2595	2595
Log likelihood ratio	-1532.47	-1532.45	-1532.13	-1532.13
Predicted probability	0.330	0.330	0.329	0.329

Figures in parentheses are White (1980) corrected robust  $z$ -statistics.  
 \*\*\*, \*\*, and \* are significant at the 1%, 5% and 10% level, respectively.

**Table 11: Sensitivity analysis (for equation (3))**

Outcome variables	Gamma	Without interactions		With interactions	
		$Q_{mh}^+$	$P_{mh}^+$	$Q_{mh}^+$	$P_{mh}^+$
If any NGO other than BRAC has offered membership?	1.00	38.52	0.00	38.55	0.000
	1.10	37.58	0.00	37.61	0.000
	1.30	35.99	0.00	36.01	0.000
	1.50	34.68	0.00	34.70	0.000
	2.00	32.20	0.00	32.23	0.000
	3.00	29.04	0.00	29.06	0.000
If any NGO including BRAC has offered membership?	1.00	44.51	0.00	44.50	0.000
	1.10	43.31	0.00	43.30	0.000
	1.30	41.29	0.00	41.28	0.000
	1.50	39.66	0.00	39.65	0.000
	2.00	36.64	0.00	36.63	0.000
	3.00	32.85	0.00	32.83	0.000
If anyone has become NGO member including BRAC?	1.00	39.53	0.00	39.63	0.000
	1.10	38.56	0.00	38.66	0.000
	1.30	36.91	0.00	37.01	0.000
	1.50	35.56	0.00	35.66	0.000
	2.00	33.01	0.00	33.11	0.000
	3.00	29.75	0.00	29.84	0.000
If anyone has become NGO member excluding BRAC?	1.00	14.39	0.00	14.39	0.000
	1.10	14.08	0.00	14.08	0.000
	1.30	13.50	0.00	13.50	0.000
	1.50	13.02	0.00	13.02	0.000
	2.00	12.10	0.00	12.10	0.000
	3.00	10.92	0.00	10.92	0.000
If anyone has taken NGO loan?	1.00	38.86	0.00	38.97	0.000
	1.10	37.91	0.00	38.03	0.000
	1.30	36.30	0.00	36.42	0.000
	1.50	34.98	0.00	35.10	0.000
	2.00	32.49	0.00	32.60	0.000
	3.00	29.29	0.00	29.40	0.000

$Q_{mh}^+$  is the Mantel-Haenszel statistic under the assumption that the estimated treatment effect is overestimated, and  $p_{mh}^+$  is the corresponding  $p$ -value.

**Table 12: Marginal effects of probit regression for equation (3) (Dependent variable: Has the ability to borrow from the informal sector increased?)— Only the treatment group**

Explanatory variables	without interest		with interest	
	(2)	(3)	(4)	(5)
ASSET (Livestock)	-0.010 (-0.47)	-0.010 (-0.47)	-0.019 (-0.77)	-0.022 (-0.92)
ASSET (Small business)	0.121*** (3.58)	0.120*** (3.52)	0.110** (2.53)	0.112** (2.59)
ASSET (Agriculture)	-0.043 (-1.33)	-0.055* (-1.65)	-0.015 (-0.45)	-0.011 (-0.32)
ASSET (Other)				
GEND	0.046 (1.05)	0.043 (0.97)	-0.087* (-1.75)	-0.085* (-1.72)
MRST (unmarried)	-0.016 (-0.11)	-0.009 (-0.06)	-0.073 (-0.45)	-0.079 (-0.48)
MRST (widow)	0.015 (0.34)	0.015 (0.34)	-0.146*** (-2.61)	-0.146*** (-2.60)
MRST (separated)	-0.001 (-0.03)	-0.004 (-0.06)	-0.157** (-2.27)	-0.157** (-2.27)
MRST (divorced)	-0.067 (-0.94)	-0.068 (-0.94)	-0.155* (-1.89)	-0.158* (-1.92)
AGE	-0.011** (-2.42)	-0.012** (-2.54)	-0.002 (-0.42)	-0.002 (-0.46)
AGE-Square	0.000* (1.92)	0.000** (2.04)	-0.000 (-0.26)	-0.000 (-0.24)
EDUH	0.009 (1.05)	0.009 (1.04)	0.007 (0.73)	0.007 (0.73)
SELF	-0.012 (-0.51)	-0.011 (-0.49)	0.000 (0.01)	0.003 (0.13)
EDUAV	-0.009 (-0.84)	-0.008 (-0.74)	0.013 (1.03)	0.014 (1.11)
IGA	0.022 (1.40)	0.022 (1.43)	0.004 (0.26)	0.007 (0.41)
FSIZE	0.017** (2.00)	0.017** (2.02)	0.008 (0.96)	0.008 (0.88)
LAND	0.000 (0.07)	0.000 (0.18)	0.001 (0.50)	0.001 (0.49)
INCPC	0.007 (1.16)	0.007 (1.18)	-0.005 (-0.94)	-0.005 (-0.93)
ROOM	.010 (1.04)	0.011 (1.15)	0.011 (1.00)	0.011 (1.03)
KAREMP	-0.007 (-0.82)	-0.009 (-1.02)	-0.004 (-0.43)	-0.005 (-0.53)
FEMPR	-0.009 (-0.27)	-0.010 (-0.30)	-0.009 (-0.24)	-0.007 (-0.18)
VISIT	0.139 (1.40)	0.143 (1.49)	-0.024 (-0.14)	-0.005 (-0.03)
KNLEG	0.070 (1.21)	0.080 (1.37)	0.187*** (2.92)	0.178*** (2.77)
SOCAP	0.107** (2.25)	0.100** (2.09)	0.045 (0.87)	0.048 (0.92)
HEALTH (Good)	0.012 (0.34)	0.006 (0.17)	0.089** (2.57)	0.083** (2.37)
HEALTH (Not good not bad)	0.030 (0.89)	0.023 (0.69)	0.122*** (3.57)	0.114*** (3.31)
HEALTH (Bad)	0.010 (0.30)	0.004 (0.10)	0.063* (1.71)	0.055 (1.47)
VIBR		-0.006 (-0.79)		-0.020*** (-2.73)
ASSETPER		0.280*** (3.02)		-0.009 (-0.09)
N	2197	2197	2197	2197
Log likelihood ratio	-1191.87	-1186.81	-1345.20	-1341.95
Predicted probability	0.760	0.761	0.678	0.678

Figures in parentheses are White (1980) corrected robust z-statistics.  
 \*\*\*, \*\*, and \* are significant at the 1%, 5% and 10% level, respectively.

**Table 13: Summary statistics of selected variables for the treatment group by offer from NGOs other than BRAC**

	<b>If received offer from NGO other than BRAC</b>	<b>If did not receive offer from NGO other than BRAC</b>	<b><i>p</i>-value of difference in mean</b>
<b>Variables</b>	(2)	(3)	(4)
Age of household (hh) head (year)	41.61 (12.01)	44.31 (12.77)	0.000
Gender of the hh head (1 = male, 0 = female)	0.619	0.557	0.000 <sup>‡</sup>
Years of schooling of the hh head	0.396 (1.481)	0.279 (1.211)	0.0433
Employment status (1 = self-employed, 0 = otherwise)	0.203	0.206	0.849 <sup>‡</sup>
Household size	3.756 (1.692)	3.503 (1.769)	0.000
Number of hh members engaged in income-generating activities (IGA)	1.486 (0.711)	1.491 (0.704)	0.875
Average years of schooling in the hh (age > 5)	0.735 (1.143)	0.586 (0.932)	0.001
Amount of land owned (decimal)	2.106 (4.575)	2.267 (5.839)	0.453
Annual per capita hh income (Taka)	2507.324 (2492.927)	2458.976 (1722.211)	0.605
Value of bed room (Taka)	904.169 (1114.569)	815.262 (961.963)	0.046
Number of hh member employed in the lean season	2.056 (1.201)	1.966 (1.130)	0.065
Social capital score	0.382 (0.205)	0.364 (0.200)	0.042
Awareness score	0.168 (0.178)	0.143 (0.156)	0.000
% of major purchase made by female	0.384 (0.413)	0.438 (0.438)	0.003
Number of female going out of home alone	0.006 (0.080)	0.003 (0.053)	0.177
Score for village vibrancy	0.080 (1.438)	-0.068 (1.111)	0.005
N (sample size)	931	1445	

Note: First the null hypothesis of the equality of the variance was tested. Based on rejection or non-rejection of the null, the equality of the mean was tested.

Figures in parentheses are standard deviations.

<sup>‡</sup> *p*-value of the Pearson Chi-square statistics.

**Table 14: Marginal effects of probit regression for equation (3)—Only the treatment group.**

Explanatory variables	DV: Offer from any NGO other than BRAC?	DV: If borrowed from any NGO?			
	(2)	(3)	(4)	(5)	(6)
ASSET (Livestock)	-0.001 (-0.05)	-0.030 (-1.18)	-0.029 (-1.13)	-0.029 (-1.15)	-0.028 (-1.13)
ASSET (Small business)	-0.022 (-0.45)	0.063 (1.22)	0.066 (1.26)	0.066 (1.28)	0.066 (1.28)
ASSET (Agriculture)	0.033 (0.90)	-0.051 (-1.43)	-0.049 (-1.37)	-0.050 (-1.40)	-0.049 (-1.36)
ASSET (Other)	0.277** (2.26)	0.179 (1.27)	0.167 (1.17)	0.183 (1.31)	0.172 (1.22)
GEND	0.005 (0.09)	0.123** (2.54)	0.113** (2.34)	0.116** (2.41)	0.112** (2.32)
MRST (unmarried)	-0.024 (-0.15)	0.130 (0.83)	0.115 (0.72)	0.119 (0.76)	0.114 (0.71)
MRST (widow)	-0.027 (-0.53)	-0.013 (-0.25)	-0.010 (-0.20)	-0.008 (-0.15)	-0.009 (-0.16)
MRST (separated)	-0.027 (-0.44)	0.013 (0.20)	0.013 (0.20)	0.016 (0.25)	0.015 (0.23)
MRST (divorced)	-0.005 (-0.07)	-0.112 (-1.55)	-0.115 (-1.60)	-0.109 (-1.51)	-0.113 (-1.57)
AGE	-0.001 (-0.23)	0.006 (1.08)	0.006 (1.17)	0.006 (1.05)	0.006 (1.14)
AGE-Square	-0.000 (-0.47)	-0.000 (-1.60)	-0.000 (-1.70)	-0.000 (-1.59)	-0.000* (-1.67)
EDUH	-0.006 (-0.62)	-0.024** (-2.49)		-0.013 (-1.60)	
SELF	-0.006 (-0.22)	0.026 (0.95)	0.024 (0.89)	0.024 (0.89)	0.023 (0.87)
EDUAV	0.026** (2.08)	0.027** (2.10)	0.009 (0.83)		
IGA	-0.020 (-1.11)	0.008 (0.45)	0.008 (0.46)	0.006 (0.36)	0.007 (0.41)
FSIZE	0.009 (0.97)	0.024*** (2.70)	0.024*** (2.70)	0.026*** (2.93)	0.025 (2.83)
LAND	-0.002 (-1.07)	0.001 (0.36)	0.001 (0.44)	0.001 (0.47)	0.001 (0.48)
INPC	0.006 (1.23)	0.010* (1.83)	0.009 (1.61)	0.010* (1.78)	0.009 (1.64)
ROOM	0.010 (0.98)	-0.006 (-0.60)	-0.008 (-0.71)	-0.006 (-0.56)	-0.007 (-0.67)
KAREMP	0.014 (1.36)	-0.005 (-0.51)	-0.004 (-0.39)	-0.003 (-0.33)	-0.003 (-0.33)
FEMPR	-0.009 (-0.24)	0.0380 (0.98)	0.031 (0.81)	0.032 (0.84)	0.030 (0.78)
VISIT	0.124 (0.65)	0.091 (0.54)	0.083 (0.50)	0.102 (0.61)	0.090 (0.54)
KNLEG	0.152** (2.34)	0.103 (1.55)	0.113 (1.71*)	0.120* (1.82)	0.015* (1.81)
SOCAP	0.133** (2.49)	0.098* (1.81)	0.098* (1.82)	0.098* (1.80)	0.098* (1.81)
HEALTH (Good)	0.012 (0.30)	-0.0266 (-0.68)	-0.029 (-0.74)	-0.028 (-0.72)	-0.029 (-0.75)
HEALTH (Not good not bad)	-0.023 (-0.61)	-0.047 (-1.21)	-0.047 (-1.23)	-0.046 (-1.19)	-0.0470 (-1.22)
HEALTH (Bad)	-0.024 (-0.58)	-0.023 (-0.55)	-0.023 (-0.55)	-0.021 (-0.51)	-0.022 (-0.53)
VIBR	0.022** (2.26)	-0.011 (-1.26)	-0.011 (-1.27)	-0.010 (-1.20)	-0.011 (-1.24)
ASSETPER	-0.153 (-1.41)	0.378*** (3.46)	0.374*** (3.42)	0.369*** (3.38)	0.370*** (3.39)
N	2211	2211	2211	2211	2211
Log likelihood ratio	-1445.81	-1428.49	-1431.57	-1430.65	-1431.91
Predicted probability	0.394	0.397	0.397	0.397	0.397

Figures in parentheses are White (1980) corrected robust z-statistics.  
 \*\*\*, \*\*, and \* are significant at the 1%, 5% and 10% level, respectively.



## Appendix

### A.1: A brief history of the CFPR/TUP program

The history of CFPR/TUP program dates back to 1985 when BRAC started the Income Generation for Vulnerable Group Development (IGVGD) program in collaboration with the World Food Program (WFP) to create a strategic pathway out of poverty for the most vulnerable women (Hashemi, 2001; Webb, Coates and Houser, 2002; Matin and Hulme, 2003 provide a detailed discussion of the IGVGD program, its implementation, and success. This discussion is drawn on them.). The IGVGD program was initiated as an extension of the WFP's Vulnerable Group Feeding (VGF) program where the extremely food insecure households received a monthly ration of 31.25 kilogram of wheat for a two-year period. However, BRAC realized that only food subsidy was not enough to get the beneficiaries out of extreme poverty, and therefore, extended the program further to provide the beneficiaries skill development training on income-generating activities and financial services so that they can engage in those activities.

Initial success of the IGVGD program approach was inspiring since the beneficiaries were able to attain an increase in income higher than the amount of food subsidies they received. However, not all the beneficiaries were able to reap the benefits of the program and many also failed to sustain the benefits, partly due to incomplete program design and partly due to the characteristics of the beneficiaries. On the part of the program design, there were flaws in targeting, service packaging and orientation of the staffs. The extreme poor could not realize the maximum potential of the approach because of a combination of several reasons: (i) they discounted highly the future and overdepended on food subsidy, (ii) they could not derive peer and NGO officials' support because of lack of belief in microfinance group meetings, (iii) they lacked confidence in skills acquired through trainings, (iv) they disliked the types of activities that they were trained in, and (v) they were risk averse to undertaking entrepreneurial initiatives. These experiences from the IGVGD program helped shape the TUP program. BRAC had realized that only a comprehensive approach with simultaneous multiple interventions can overcome various constraints that the extreme poor are subject to. It had also realized

that the most important of the interventions is development of or boosting entrepreneurial ability. Thus the enterprise development has been taken up as the main thrust of the TUP program and all other components are fitted in to ensure success of the enterprise.