



Working Paper
No. 594

**How far does a big push really push?
Mitigating ultra-poverty in Bangladesh**

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October 2014

ISSN 0921-0210

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Abstract

BRAC implemented the *Challenging the Frontiers of Poverty Reduction: Specially Targeted Ultra-Poor* (CFPR) program in 2002 to mitigate ultra-poverty in the poorest districts of Bangladesh, providing multifaceted support in the form of asset-transfer, food-stipends, education, healthcare and social support for two years. Utilizing a four-round panel data spanning 9 years and combining regression and propensity score weighting, we* evaluate CFPR's short and long term impact on income, employment, social status, food security and asset ownership. While remarkable effects of CFPR are evident in short and medium-term (up to 6 years since baseline), longer-term effects (up to 9 years) are smaller. The latter happens due to a variety of factors including faster catch-up by the control group, due partly to various new interventions by state and non-state sectors. We see a shift from begging, working as maids and day-laboring to entrepreneurial activities in the short and medium term, but many CFPR households revert back to their baseline employment by 2011. Analyses of the heterogeneity of effects across baseline employment and gender of the household-head reveal greater long-term impact on per-capita income for entrepreneurs and greater short-term impact for female-headed households. Overall, despite the deceleration of the effects in the long run, the program was able to successfully bring its participants out of ultra-poverty and had important demonstration effects.**

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** Authors gratefully acknowledge the contribution of the Research and Evaluation Division, BRAC for collecting and sharing the data. Authors would like to thank Dr. Mushtaque Chowdhury, Vice-Chair, BRAC, Bangladesh, Prof. Arjun Bedi and Dr. Natascha Wagner from the International Institute of Social Studies, Erasmus University Rotterdam for their valuable feedback. Authors also gratefully acknowledge the support from the following members of BRAC: Mr. Narayan Das, Senior Research Fellow, Research and Evaluation Division, Dr. Mahabub Hossain, Advisor to the Executive Director and Ms. Rabeya Yasmin, former Director of the CFPR. Farzana Misha acknowledges the seed-money contribution from the Rotterdam Global Health Initiative. Ellen Van de Poel acknowledges funding support from the Netherlands Organization for Scientific Research, Innovational Research Incentives Scheme, Veni project 451-11-031.

1. Introduction

Despite numerous development interventions implemented across the world, poverty remains endemic with more than a billion people living under the \$1.25 poverty line. Over the past decade however, increasing attention had been directed towards the extreme poor, most recently epitomized by the World Bank president Jim Yong Kim declaring the goal to eradicate extreme poverty by 2030 (World Bank, 2013). Extreme poverty diverges from typical poverty in degrees of deprivation, duration and in magnitude (Smith, 2007; Chronic Poverty Research Centre, 2008). The absence of formal or informal safety nets makes it difficult for the extreme poor to access basic essentials like education, healthcare and finance, making them highly vulnerable to even the slightest shock that then results in a downward spiral of further deprivation.

Despite having one of the poorest economies in the world, Bangladesh is acclaimed for its impressive progress in poverty reduction and achieving many of the Millennium Development Goals (Chowdhury, Bhuiya, et al., 2013). Although the number of people living in poverty and ultra-poverty decreased substantially between 2000 and 2010, the proportion of the ultra-poor remains considerable at 21 percent (Bangladesh Bureau of Statistics, 2010; Gimenez, Ahmed, et al., 2013). Given the distinctive characteristics of the extreme poor, they are often circumvented by the conventional development interventions and financial services. Programs need to be designed with specific targeting mechanisms to prevent the poorest from being excluded or from opting out voluntarily (Navajas, Schreiner, et al., 2000). Hailed as one of the biggest breakthroughs against poverty, the microfinance programs that serve over 25 million poor people in Bangladesh have been found to have positive impacts on both income and

vulnerability (Hashemi and Rosenberg, 2006; Yuge, 2011). A wide body of evidence confirms its efficacy for the moderate poor. In most cases however, the ultra-poor are unable to derive any benefits from it due to entry restrictions into such programs, while at the same time, many of the ultra-poor are reluctant to join such programs in the first place due to social and economic restrictions (Evans, Adams, et al., 1999; Hulme, Moore, and Shepherd, 2001; Matin and Hulme, 2003).

BRAC, one of the largest non-government organizations (NGOs) in the world, has been directing its resources to mitigate the multifaceted aspects of poverty in Bangladesh since inception in 1972. BRAC recognized that most interventions precluded the participation of the ultra-poor which led to the inception of the program *Challenging the Frontiers of Poverty Reduction: Targeting the Ultra-Poor* (CFPR) in 2002 with the explicit intention of reaching down to the ultra-poor and pushing them out of ultra-poverty and ready them to join some of the mainstream poverty alleviation programs such as microfinance. It is important to note that BRAC's definition of ultra-poverty diverges from the \$1.25/day definition of World Bank's extreme poverty. The ultra-poor are defined by BRAC to be the lower subset of the extremely poor, earning less than \$0.60-\$0.70 per day (BRAC, 2013). The CFPR required the participants to enroll for a period of two years during which time they were provided a productive asset base, continuous and intensive training sessions, both in-class and hands on, on maintaining such assets, a food subsidy, education, and social and legal support. They were also provided with nutritional supplements and had access to BRAC's own panel doctors free of charge throughout the duration of participation. So far success of the CFPR program has been well recognized and replicated within and outside Bangladesh. More than eight organizations have

adopted and are currently implementing versions of the program in Bangladesh. BRAC is also providing technical assistance to organizations in Afghanistan, Canada, Ethiopia, Haiti, Honduras, India, Pakistan, Peru and Yemen for program implementation.

The program combines a number of targeting methods and poverty assessment tools to ensure high inclusion rates of the ultra-poor (Sulaiman and Matin, 2006). A number of studies have confirmed the positive effects of CFPR on participants' health and health related expenditures (Ahmed, 2006; Prakash and Rana, 2006; Ahmed and Hossain, 2007) food security status (Haseen, 2006; Haseen and Sulaiman, 2007; Ahmed and Rana, 2010), and socioeconomic status measured through income and the type of employment (Mehnaz and Sulaiman, 2006). While most of the studies looked at short term impacts (2002-2005), some have investigated medium term effects (2002-2008). Raza, Das, and Misha (2012), Das and Misha (2010) and Krishna, Poghosyan, and Das (2012) found the program to have significant and consistent positive impacts on per capita income, income generating assets and food security during the six year period. As the main goal of CFPR was to give the ultra-poor a big push to break the cycle of poverty, it is important to establish the program's impact in the longer run. This paper is the first to demonstrate impact of CFPR seven years after completion of the program. We study effects on a large battery of outcomes; both directly incentivized by the program and more general indicators of socioeconomic status, and investigate heterogeneity of effects across baseline employment status and gender. This paper is arranged as follows: Section 2 describes the CFPR program and gives an overview of the literature evaluating its effectiveness, Section 3 describes the data and the methods, Section 4 presents the results and Section 5 provides a discussion and conclusion.

2. CFPR Background

2.1 Description of the program

The CFPR program was first launched in Rangpur; Kurigram and Nilphamari districts of northern Bangladesh as a pilot in 2002 that was scaled up subsequently to cover 15 more districts and 100,000 participant households or nearly a half million population over the next four years.ⁱ The northern districts of Bangladesh typically suffer from acute seasonal unemployment post-cropping seasons, more commonly referred to as *monga*. As the program explicitly targeted the poorest of the poor, a thorough multi-step targeting procedure was utilized. Based on the poverty and vulnerability mapping by the World Food Program, the poorest districts and sub-districts were initially identified. Subsequently, in consultation with field level BRAC staff who have an in-depth knowledge of the localities, specific villages were designated as targets. Prior to the identification process, BRAC field staffs spent a few days in each location building rapport and gathering information on every single household and their inhabitants. This allowed them to identify the invisible households who often fail to show up in survey or census data (Sulaiman and Matin, 2008). Special attention was paid to female headed households as they generally are the most vulnerable and are most likely to be overlooked (Sulaiman and Matin, 2006).ⁱⁱ During the next stage of the targeting process, a community wealth ranking exercise known as Participatory Rural Appraisal was carried out (Chambers, 1994). According to these wealth rankings, a little more than 25% of the households were initially identified as ultra-poor. The community defined ultra-poor were then re-checked against the inclusion and exclusion criteria.ⁱⁱⁱ A final round of verification was carried out by senior level BRAC field staff to generate

the final list of households eligible for CFPR support. This final verification was conducted using a structured questionnaire to collect information on, among others, demographic characteristics, land ownership and cultivation, housing, income, assets, NGO involvement and loans, and benefits from government or other sources.

The program operated on a two year cycle during which time the participants received a multitude of services. The initial 18 months included the transference of a choice of income generating assets (IGAs) such as livestock, poultry, vegetable gardening and nursery, small grocery shop, inputs (such as vaccinations and housing for the animals) and intensive training to maintain the IGAs, business development training, subsistence allowance so that the participants can devote time to look after the assets, access to health care, and awareness training. The last 6 months involved weaning the participants from the program support through extensive confidence building workshops and mobilizing local social support.

Post selection into the program, the first step was identification of the most appropriate IGA for a participant taking into account prior experience, capability of enterprise management as well as local market, environment, and social factors. The most popular IGAs were livestock and poultry rearing. Participants received training customized according to the enterprise they chose with an average value of the assets transferred of Bangladeshi Taka (BDT) 6,000.^{iv} Upon receipt of the IGAs, the participants began receiving additional inputs required to maintain the assets such as vaccinations, housing for the animals, weekly follow-up by BRAC staff for technical advice and supervision, and receive a weekly subsistence allowance of BDT 70 to make up for any earnings foregone as an opportunity cost of taking care of the assets. Additionally, the participants were required to save BDT 10 each week.

The health support package included BRAC-supported health volunteers, *Shasthya Shebikas*, in the villages, CFPR program staff, and a panel doctor at the local BRAC health program. The *Shebikas* were selected from each locality and trained as front-line providers of preventive and curative services for common illnesses (Standing and Chowdhury, 2008). In cases of a severe illness, members in the participant households received services from the panel doctor free of charge. Free antenatal and postnatal care including various supplements were also provided to expectant mothers.

The social development (SD) component of the program was designed to create knowledge and awareness among the participants about their rights. In addition to providing regular awareness on topics such as dowry and child marriage, the SD component also mobilized local elite support for the participants to counteract possible crowding out of informal insurance because of program participation. A forum of the local elites called *Gram Daridro Bimochon Committee* (GDBC or Village Poverty Alleviation Committee) formed in every intervention village helped in this regard.

Soon after the two year period, soft and flexible microfinance loans were availed to the interested participants to further incentivize investment in income generating activities, and discourage detrimental sources of finances such as high interest money lenders (Huda, Kaur, et al., 2011).

The expenditures per participating household for the two year duration were approximately BDT 20,000 (or US\$ 292). This figure includes the costs related to the income generating assets provided, administration and also for all the support provided over the entire duration of the program.

2.2 A review of the short and medium term effects of CFPR

A number of studies have evaluated the impacts of CFPR on the short and medium term on various outcomes. Most of this literature relies on a comparison (over time) between those households selected into CFPR and those identified as poor by the PRA but not selected into the program. We come back to the comparability between both groups in the methods section.

A qualitative study by Ahmed and Hossain (2007) found that the free health care services provided by the panel doctors were quite helpful in the sense of the service being available and easily accessible. Positive effects (8% increase) were found on women's self-reported health status in the short run (2002-2004) (Ahmed, 2006; Prakash and Rana, 2006) and substantial improvement was found in both self-reported and measured food-security status with the average calorie intake going up from 1750 to 2138 per day during 2002-2005 (Haseen, 2006; Ahmed and Rana, 2010). Also mean intakes of protein, fat, carbohydrate, calcium, iron, vitamin C, and retinol were higher among participants compared to the control group two years after the program ended (Haseen and Sulaiman, 2007).

In the short term (2002-2005), participation had significant positive effects on income and food security, household durables, and livestock, but no discernible impact on ownership of cultivable land, physical value of the household and other productive assets (Rabbani, Prakash, and Sulaiman, 2006; Walker and Matin, 2006; Haseen and Sulaiman, 2007; Emran, Robano and Smith, 2014). Raza, Das, and Misha (2012) found increasing medium-term (2002-2008) returns to program participation on per capita income (BDT 1833), and in contrast to short term findings- they reported increase on landholdings. Household durable goods, income generating assets and

food security also experienced positive changes during this period. Krishna, Poghosyan, and Das (2012) additionally report an increased probability of having savings from less than eight percent in 2002 to 94 percent in 2005 and 98 percent in 2008.

It was found that after two years of program support and provision of some flexibilities in borrowing from BRAC microfinance, in the short and medium run (2002-2008), more than two thirds of CFPR graduates could participate in the formal credit markets (Shams, Mahmud, and Das, 2010). Overall, participation in the CFPR program benefitted the participants significantly over the short term and up to 5 years after graduation.

3. Methods

3.1 Data

This paper utilizes a four round panel data set collected in three northern districts (Nilphamari, Kurigram and Rangpur) of Bangladesh, generally characterized as among the poorest in the country (Bangladesh Bureau of Statistics, 2010). The baseline survey canvassed 5626 households during the first quarter of 2002. The second survey took place around the same time in 2005 consisting of 5228 households. The third round was undertaken in 2008 comprising of 4549 households following which, the final survey of 4144 households was implemented in 2011. No new households were added on in between the waves and no households that drop out re-appear in any of the following waves. Tests for attrition bias are discussed in section 3.3. Respondents were typically the main female member of the household. The surveys were held with the entire group of households identified as the poorest within the village through the PRA exercises, so the sample includes both those households that were selected into the program and those that were identified as poor but were not selected for program participation.

For the purpose of this paper, the main outcomes of interest were divided into two groups: primary outcomes that were immediately affected by program participation (number of livestock, poultry and big trees and financial market participation) and secondary ones, affected over time, that relate to households' social and economic status (per capita income, having any cash savings, occupation, ownership of homestead or cultivable land, ownership of other income generating assets such as rickshaws and luxury items such as radios or TVs,

characteristics of the household dwelling (roof), food security status and social capital). Directly influenced outcomes are defined net of program transfer. While previous papers on the program's impact in short and medium terms have not distinguished between directly or indirectly affected outcomes, the outcome indicators measured have largely remained consistent (Das and Misha, 2010; Krishna, Poghosyan, and Das, 2012; Raza, Das, and Misha, 2012).

Landholdings not only aid the livelihood, but also convey additional status and prestige in a predominantly agrarian country such as Bangladesh (Krishna, Poghosyan, and Das, 2012). However, due to high inflow of funds from sources such as remittances, land prices face constant inflationary pressure and in general were seen to be beyond the reach of the participants prior to the program.^v Considering the little variation in the amount of landholdings in our sample^{vi}, we investigate effects of CFPR on the probability of owning any homestead or cultivable land. We use *tin* (corrugated iron sheet) for roof material as a proxy to gauge the quality of living conditions.

Occupational choices are important targets of the CFPR program. The explicit intention is that the program engenders self-reliance in terms of the participants' occupational choices and at the same time, a move away from crisis or dead-end occupations such as day laboring, working as household maids or begging. Information on employment activities and income earned (also the value of income in-kind) was obtained from all members of the household with respect to the year preceding the survey. The amounts were aggregated to arrive at the total household income. Avenues that yielded the highest remuneration over the preceding year were designated as the main source of income in this study. Self-employment in either the

agricultural or non-agricultural sector was grouped together and labeled as entrepreneurs.^{vii}

Those begging or working as maid in other households were grouped together as they predominantly represented female headed households and sample sizes by themselves limit separate analysis. As day laborers represent a substantial proportion of the sample, they were designated a stand-alone category while an '*other*' category consisted of miscellaneous forms of employment.

Socioeconomic hierarchy plays a significant role in everyday life for the members of these communities. As a proxy for social capital, information was collected on whether the members of the households had been invited to others' homes or at social gatherings.

As for food security, the questionnaire asked if the households were able to manage at least two full meals daily. Financial market participation is measured by whether or not households have formal loans, typically from microfinance institutions, or informal loans, from money lenders or loan sharks, generally at high interest rates.

All models control for baseline household information on demographics, socioeconomic status and regional characteristics. Furthermore we include indicators that reflect whether or not households meet the CFPR selection criteria. The exact definition of all outcome and control variables is provided in Tables 1 and 2.

3.2 Analytical techniques

The effect of CFPR participation is identified by comparing the trend in outcomes of those households identified as poor but not selected into the program with those that were selected into the program. While according to the program description, households selected for the

CFPR need to meet 3 of the 5 inclusion criteria and all exclusion criteria, we find limited differences in the distribution of these characteristics across the treated and control groups (see Annex Figure A1). This suggests that the in- and exclusion criteria are not implemented very strictly and precludes the application of a regression discontinuity analysis. Although three quarters of the participants fall within the poorest quartile, Emran, Robano, and Smith (2009) also confirm there are a considerable number of households who met all the selection criteria but were excluded from the program and vice versa (Sulaiman and Matin, 2006).^{viii}

We estimate effects of CFPR using difference-in-differences (DiD) regression with weights obtained from propensity score matching (Ho, Imai, et al., 2007; Imbens and Wooldridge, 2009). Combining regression and propensity score weighting has the advantage of only requiring one of the two approaches, the specification of the propensity score or the regression model, to be correctly specified – the “double robustness” property. We first estimate propensity scores ($p(X_0; \gamma)$) from a probit model of the treatment indicator on the baseline values (X_0) of all outcome variables presented in Tables 1 and 2 (see Annex Table A1 for the results of the probit model). Figure 1 illustrates the overlap in the distribution of the propensity scores across treated and control groups, with 1120 households not being on the common support. In a second step, we use linear regression where we weigh the objective function by the inverse probability of treatment or non-treatment. More specifically, we construct weights equal to 1 for treated observations and $p(X_0; \hat{\gamma}) / (1 - p(X_0; \hat{\gamma}))$ for control observations. The regression model we estimate is the following:

$$Y_{it} - Y_{i0} = \alpha_t + X_0\beta_t + \delta_t D_i + \varepsilon_{it} \quad i = 1, \dots, N; t = 2005, 2008, 2011 \quad (1)$$

where the subscript i refers to households and t to the year. Y is the outcome of interest, and D represents the treatment group indicator. Y_{i0} refers to the outcome in the year we are comparing with. In a first step we compare outcomes in 2005, 2008 and 2011 to those in 2002 to establish effects in respectively the short, medium and long term, and thereafter we compare 2008 with 2005 and 2011 with 2008 to quantify the incremental effects. The average treatment effect on the treated is captured by δ_t . Controlling for baseline characteristics X_0 weakens the identifying assumption to the requirement that, conditional on baseline observables^{ix}, outcomes for the treated group would have evolved in the same way as those of the controls in the absence of treatment. We cannot formally test for the plausibility of this parallel trends assumption, nor do we have pre-treatment trends in outcomes, but the substantial overlap in the distribution of the propensity scores does suggest that both groups are comparable in observables at baseline. Note that model (1) is only estimated on the sample that is on the common support.

To explore heterogeneity of effects across type of employment and the gender of the household head, we estimate the propensity scores and regression models separately for each subgroup.

Robustness of results is confirmed to using non-parametric matching techniques combined with DiD (Blundell and Costa-Dias, 2009). Results are reported in the Annex Table A2. We use a Nearest Neighbor (NN) matching (using 5 neighbors) algorithm as this resulted in the largest average bias reduction (21.9 percent to 1.1 percent, with the bias no longer significant). Table 3 illustrates the reduction in bias obtained from the matching for each of the variables included in the propensity scores. While we acknowledge that t-tests are heavily dependent on the sample

size (Imbens and Wooldridge, 2009), it is reassuring that differences in observables between matched treated and controls are small and in no instance statistically significant. The average treatment effect on the treated from the NN matching with DiD is obtained as follows (Blundell and Costa-Dias, 2009):

$$ATT_{MDiD} = \sum_{i \in T} \{ [Y_{it} - Y_{i0}] - \sum_{j \in C} \check{w}_{ij} [Y_{jt} - Y_{j0}] \} w_i \quad (2)$$

where T and C represent the treated and control group, \check{w}_{ij} is the weight placed on comparison observation j for the treated observation i , and w_i accounts for the reweighting that reconstructs the outcome distribution for the treated sample.

3.3 Attrition

As the data covers a time span of 9 years, the rate of attrition is relatively high with 72 percent of the households being observed in every wave. Households that drop out of the survey at any of the waves are less likely to own physical assets such as livestock or homestead land at baseline, but none of the other baseline characteristics were significant predictors of attrition later on in the panel (see Annex Table A1). In our models, attrition is only a problem to the extent that it correlates with participation in the CFPR program. The rate and pattern of attrition across the years were found to be comparable across treated and control group (a total of 32 percent and 33 percent respectively across the 9 year period).^x To test for attrition bias we use the test suggested by Verbeek and Neijman (1992); we add a leading selection indicator to the DiD model (1) and do a t-test for the significance of this indicator (Jones, Rice, et al., 2013). The null of no effect was rejected only for the models on entrepreneurship (p-

value=0.03) and having a tin roof (p-value=0.07), suggesting very limited problems of attrition bias.

4. Results

4.1 Summary statistics

Summary statistics of all control variables across survey waves and across treated and controls are presented in Table 1. Focusing on the baseline statistics, we see that working aged women (14-55 years) represent about a third of the sample (36 and 31 percent respectively for the treated and control groups). Female headed households are more prevalent in the treated group (73 percent) as compared to the control group (57 percent). The household size is significantly smaller for the treated households throughout the years (3.55 versus 3.80). In terms of education, the control group appears to fare better in general. Nearly 92 percent of household heads in the treated group have had no education compared to 87 percent in the control group at the baseline. Trends in control variables are relatively limited and similar across treated and control group, confirming limited problems of selective attrition.

Summary statistics of outcome variables are presented in Table 2. Results illustrate that the treated are significantly worse off than the control at the baseline in terms of livestock ownership. By 2011 however, the treated are more likely to have a greater number of cows/bulls (0.72 versus 0.42 for the control) and a greater number of poultry (1.95 versus 1.83 for the control). The treated are also disadvantaged in terms of participation in financial markets at baseline. The percentage of households having cash savings is more than double in the control group compared to the treated (21 percent versus 9 percent respectively). Only 4 percent of the treated (versus 32 percent of controls) reported participating in the formal financial market such as NGOs while 37 percent (versus 30 percent of treated) reported

borrowing money from high interest money lenders in the year preceding the survey. By 2011 the proportion of formal loans has increased drastically among the treated (up to 53 percent), compared to both baseline and the control.

Similar trends were also seen for the other outcomes. While treated individuals had lower per capita income than controls at baseline (BDT 2530 and BDT 2825 respectively), their income increased significantly faster over time (BDT 9051 for the treated and BDT 8264 control in 2011). The treated sample had lower rates of self-employment (20 percent) than controls (31 percent), and higher rates of unyielding occupations (18 versus 9 percent). By 2011 however, the treated have become more likely to be self-employed (to 31 percent) and less likely to be working as beggars or maids (to 15 percent), while there have not been much changes regarding employment among the controls. The majority of the respondents among both groups depended on day laboring as the main source of their income (60 and 54 percent for treated and controls respectively), and this proportion fell by 10 percentage points (pp) for the treated by 2011.

Regarding land and asset ownership, the treated were worse off at baseline with only 45 percent of the treated having any homestead land compared to 60 percent of controls. By 2011, this proportion had gone up by 15pp within the treated sample, while not much happened within the control group. The proportion owning any cultivable land was quite low for both the treated and control groups at baseline (2 percent and 8 percent respectively), and increased only slightly for the treated group by 2011. Owning houses with roofs made of tin was more common within the control group at baseline (10pp difference), but by 2011 the large majority of both groups had them (over 90 percent for both groups).

Finally, respondents in the treated group had a lower degree of food security at baseline, with 52 percent being able to manage two meals a day (versus 67 percent of controls). By 2011, the treated group had caught up. Similar patterns emerged for the probability of being invited to village social events.

In sum, we see a pattern of the treated group being worse off at baseline but catching up, and even overtaking, the controls by 2011. Table 3 shows baseline characteristics across both groups within the matched sample (using NN matching), and confirms that no significant differences between both groups are left post-matching.

In the next section, we present which part of the difference in trends between both groups can be attributed to participation in the CFPR program.

4.2 Impact of CFPR participation

The upper panel of Table 4 shows CFPR impact on primary outcomes primarily affected by program participation, as estimated by the weighted regression models. Analysis reveals that, net of program transfer, CFPR had led to an increase in the number of cows or bulls owned by 1.5 by 2005, but this effect decreased by 0.5 in each of the following waves leaving the overall effect over the full period to be only 0.4. Also the number of goats and sheep, increased by 0.39 by 2005 but this effect somewhat dissipated by 2011. As for the number of poultry, the largest effect was observed in 2008 (1.6) and diminishes afterwards. It should be noted that the decline in effects on the number of livestock over time is not so much driven by a reduction within the treated group, but rather by a catch up among the controls.^{xi}

Regarding financial participation, we find that the program substantially increased the probability of having any cash savings (62pp). This effect diminishes somewhat in later years, but even when comparing 2011 to 2002, the effect of CFPR remains substantial at 37pp. Program participation also increased the probability of borrowing from formal sources (by 32pp) by 2005 while at the same time reduced the probability of borrowing from informal sources (by 11pp). Mid-term effects are smaller at 23pp and 11pp respectively, and long-term effects are further reduced but remain significant, at least for taking up formal loans (13pp). Again these diminishing effects appear to be driven by a catch up of the controls rather than a decline in the percentage with cash savings, and formal or informal loans among the treated. In general, we see quite strong effects on most of the directly incentivized outcomes in the short and medium term, and some decline in effects in the long term. This is not necessarily undesirable if it reflects households using some of the assets and credit to develop alternative activities that also lead to welfare improvements. The following paragraphs discuss effects on the secondary outcomes that reflect household socioeconomic and social status (lower panel of Table 5).

At par with the existing evidence, the effects of CFPR on per capita income are very large and increasing over the medium term until 2008 (BDT 827, which represents 33% of the baseline average in 2005 and an additional effect of BDT 675 by 2008). We find no significant change in the impact between 2011 and 2008, although the sign is negative, which appears related to some catch up among the controls in the later period.

Moving to the effects on the primary source of income, we find the program to increase the probability of engaging in entrepreneurship in either the agricultural or non-agricultural sector

until 2008 (9pp by 2005 and an additional 7pp by 2008). However, this effect diminishes significantly by 12pp by 2011, which renders the long-term effect to be rather limited (4pp). Program participation also significantly decreased the probability of households undertaking unyielding occupations such as day laboring, working as maids or begging as the main source of income until 2008 (8 pp by 2005 and an additional 7pp by 2008), however, the effects also taper off by 2011. Given the relatively stable employment patterns that are observed in the control group (Table 1), it appears that while the program caused an initial shift to more entrepreneurial employment activities, by 2011 many treated households reverted back to their baseline occupations.

CFPR participation increases the probability of owning homestead land by 5pp by 2005 and by an additional 4pp by 2008, and the effects stagnate afterwards. Effects on the probability of owning cultivable land, which would typically be more expensive, are smaller, with only a significant effect of 4pp by 2008 that disappears by 2011. Program participation increased the probability of having a tin roof in the short term (7pp), but this effect reduces by half in 2008 and further by 1pp in 2011, which appears to be driven by a catch up in the control group as by 2011 the majority of households in both groups have a tin roof. While we find very little impact on ownership of radios or televisions (2pp in 2008), the effects of program participation on food security are quite substantial in the short term. The probability of being able to secure two meals a day is increased by 14pp in 2005. By 2008 however, the effect is reduced by 6pp and disappears by 2011 as close to 90 percent of households in both the treated and control group are able to manage two meals a day by 2011.

Finally, participation in the CFPR program increased the probability of being invited to others' houses or social event in the short (9pp) and medium-term (11pp). By 2011, the control group is also more socially involved, which causes the CFPR effect to disappear.

4.3 Heterogeneity of impact on income and employment

Having established average treatment effects on the full sample of treated, we now investigate heterogeneity of these effects across baseline employment and across the sex of the head of the household. Female headed households, generally more vulnerable and disadvantaged, constitute an important group in the CFPR target population and because of their distinct socioeconomic and cultural characteristics; it is interesting to investigate whether CFPR participation affects them differently as compared to their male counterparts (see Annex Table A3 for baseline comparisons). We focus on effects on income and employment, both for reasons of parsimony, but also because these could be considered most important reflections of (long term) socioeconomic status.

The first rows of Table 5 and 6 show the heterogeneity of CFPR impact on income by baseline employment status and sex of the household head. Results reveal that while short term income effects are relatively similar across employment categories (approximately BDT 850 on average), they diverge in the following years. Between 2005 and 2008, baseline entrepreneurs experience an increment of BDT 727 and day laborers an increase of BDT 626, the increment for beggars or maids are no longer significant (and even negative). In the subsequent period between 2008 and 2011, only baseline entrepreneurs gain a further BDT 784.

Table 6 shows income effects across female and male headed households. It appears that in the short term, the income effect for female headed households is more than double that of male headed households (BDT 1279 and BDT 525 respectively). Additional gains made in the following period (2008 to 2011) are comparable between the female and male headed households (BDT 562 and BDT 654 respectively) while neither group experiences further significant gains in the long run. This finding somewhat contradicts those from the heterogeneity by baseline employment characteristics, which suggested that the program is most effective in the long term for those households that could be considered better-off at baseline. Next we investigate to what extent the changes in income effects can be related to changes in the employment trajectory.

The bottom four rows of Table 5 show how the employment trajectories caused by the program vary across baseline employment categories. For those already engaged in entrepreneurial activities at baseline (columns 1-3), we see a pattern in the short term of CFPR sustaining their business (as compared to the control group). The treated are 13.1pp more likely to have remained entrepreneurs, and less likely to have become day laborers, as compared to the control group. Thereafter we see relatively little changes in occupation, except for a 7.4pp increase in the probability of having other types of professions (such as those with salaried employment, part-time workers, politicians) as compared to the controls between 2008 and 2011. The stability in entrepreneurial activities and a move to other professions, within this subgroup of baseline entrepreneurs does seem to coincide with long lasting income effects as was discussed before.

Households that were mainly begging or working as maids at baseline (columns 4-6) were initially pushed by CFPR towards entrepreneurship (16pp increase) or day laboring (8pp increase). This effect of increasing entrepreneurial activities seems to have persisted in 2008, with a further move from those that initially had gone into day laboring to starting their own business. However, by 2011 it appears that of those who were working as maids or begging in the baseline and had subsequently switched over to entrepreneurship over the years, nearly all had reverted back to their original profession or shifted to day laboring. This pattern could explain the absence of income effects after the initial period discussed before.

We see a similar trend for those households that start off as day laborers, although changes are less drastic. CFPR participation causes a 6pp increase in the probability of becoming entrepreneurs by 2005, and this probability further increases by 8pp by 2008, but starts to decrease by 2011 (11pp). This decrease appears to be driven by a move back to day laboring, and some households even go into begging or working as maids. Again this pattern could be related to the pattern in income effects, which had increased over the first two periods but started to decrease by 2011 (although not significantly).

Changes in employment trajectories across the gender of the household head (last four row of Table 6) reveal that program participation caused female headed households to move from begging or working as a maid to undertaking entrepreneurship (14pp increase) by 2005. The probability of entrepreneurial activities further increased by 9pp between 2005 to 2008 precipitated by a move away from working as day laborers. Between years 2008 and 2011 however, the probability of entrepreneurship dropped again by 13pp while the probability of working as maids or begging increased by 6pp, indicating that some of these households

reverted back. This is also reflected in the income effects, that become negative (although not significantly) by 2011.

Male headed households participating in CFPR are also initially more likely to move to entrepreneurial activities (from day laboring), but effects are smaller than for female headed households which could explain the smaller short term income effects for this group. Similar as their female counterparts, the trend of increased entrepreneurial activities is sustained in 2008, but reverts thereafter. By 2011, most of those households that started a business have moved back to day laboring or even begging/working as maid.

5. Discussion and concluding remarks

The program *Challenging the Frontiers of Poverty Reduction (CFPR): Targeting Ultra Poor* was initiated in Bangladesh in 2002 by BRAC, one of the largest non-governmental organizations in the world. The CFPR program was implemented with the explicit goal of targeting the ultra-poor and graduating them to a socioeconomic status where they could avail themselves to mainstream poverty alleviation programs such as microfinance. A number of studies have confirmed its short (2002-2005) and medium term (2005-2008) positive impacts on income, ownership of productive and non-productive assets, food security and health (Ahmed, Rabbani, et al., 2009; Ahmed, 2006; Mehnaz and Sulaiman, 2006; Rabbani, Prakash and Sulaiman, 2006; Haseen and Sulaiman, 2007; Krishna, Poghosyan, and Das, 2012; Raza, Das, and Misha, 2012). This study is the first to use a 4 round panel data over 9 years to identify the effects of the program in the long run (2002-2011). Furthermore, this paper investigates heterogeneity of program impact across baseline employment characteristics and gender of the household head. In line with existing studies, we find that outcomes that are directly affected through different program inputs such as the livestock, cash savings and financial market participation are positively affected in the short term (Raza, Das, and Misha, 2012). Between medium and long term, however, effects often start to slow down. This is driven more by a catch up of the control group than by a fallback among participants. Similar trends were observed for some of the other outcomes such as income, land and asset holdings, food security and social capital. Income effects for example, were very substantial in the short and medium term with CFPR leading to income gains of respectively 33 percent (by 2005) and 60percent (by 2008).

Thereafter though still significantly higher, income growth among the controls seems to have caught up, causing the CFPR effect to appear less striking.

There are perhaps a couple of reasons for the control group to catch up. Firstly, the catch-up may largely be attributable to actions taken by BRAC. Prior to launching of the CFPR, BRAC launched a systematic awareness campaign throughout the country that considerably raised the public discourse about the plights of the ultra-poor, especially in the *monga* affected areas (BRAC, 2013). These campaigns led to an considerable influx of public and private funding geared towards the eradication of ultra-poverty and ultimately led to trebling of public spending in social safety nets in the study districts in the 2002-2011 periods. Similarly, the number of NGOs catering to the ultra-poor in this district nearly quadrupled (Kandker et al, 2011; Ahmed et al, 2011), which led to a universal increase in welfare in the region. In 2000, the World Food Program had estimated that the rate of extreme-poverty in 20 of the 23 sub-districts were between 35-55 percent, but dropped considerably by 2010 (World Food Program, 2000 and 2014). Secondly, as both treated and control households are located in close proximity to one another, there is the possibility of spillover effects of CFPR, especially in the long run. Looking at short term spillover effects within the second phase of the CFPR program, Raza and Das (2014) find significant increases in livestock rearing as one of the main sources of income among control households.^{xii} Qualitative evidence shows that the information provided by CFPR on vaccines for livestock, and on proper housing models for animals is easily disseminated among neighboring households. This increase in knowledge and understanding leads to an overall growth of such industries within the communities (Hossain and Matin, 2007). This was also found to be true for social capital as forums such as the Village Poverty Alleviation

Committees or GDBC are purposefully formed for this function. GDBCs have been seen to visibly reduce discrimination against poorer social classes in almost all villages they operate in and ensure increased social status (Rafi et al., 2010). This finding of 'catching up' by control households due to the program itself (CFPR in our case) is a new dimension in the impact assessment of development programs. This demands further analysis and studies.

The decline in long term CFPR effects on employment status appears not so much driven by catch up among the controls due to spillovers. We see a shift from begging, working as maids and day laboring to entrepreneurial activities in the short and medium term, but many CFPR households revert back to their baseline employment by 2011. To the extent that moving away from unyielding occupations was an important aim of CFPR, this finding suggests that its long term capacity building may require further thought and consideration. Recent qualitative studies provide some insights for this shift. Intergenerational transfer of assets is extremely common in Bangladesh. Case studies show that once the children are married, especially sons, the parents are likely to transfer most of their assets to them, including homestead land and continuing with their initial occupation on the side (Ahmed et al., 2009). Alternatively, as the project concluded seven years prior to the last round of the survey, household members who had traditionally assisted in maintaining the program assets had moved (marriage, death, employment related migration and so forth) and the original receivers may have lost control over the assets. In cases where the assets actually remained with them, lack of assistance had forced them to get rid of these assets and go back to the de facto occupations (Das et al., 2013, Das and Misha, 2010).

Results also show that initial income gains are quite similar across different categories of baseline employment, but in the long run, CFPR impact on income is greater for those households who were entrepreneurs at the onset of the program than for those starting off as beggars or day laborers, confirming earlier findings of Emran, Robano, and Smith (2009) of CFPR benefitting most of those in the upper income deciles. Furthermore, we also find that those working as day laborers in the baseline are more likely to switch over to entrepreneurship and remain so in the long run compared to those who worked as maids or begged for a living before the program.

As female headed households are typically amongst the most vulnerable, special attention is paid to them during the course of the program. Despite being worse off at the baseline, the female headed households appear to substantially outperform their male counterparts, both in income and employment effects, over the short term while the income gains are comparable in medium and longer terms. This could be due to the fact that with handholding they are more likely to move to (and remain engaged in) entrepreneurial activities as compared to their male counterparts. Anecdotal evidence and field based experiences indeed suggest how that for these female headed households, participating in programs such as the CFPR is often the only opportunity to improve their livelihoods in a meaningful way and thus acts as a strong motivation to perform well. Additionally, it has also been seen that women, when in charge of allocating productive and financial assets of the family, are more likely to precipitate greater positive change (Baden and Milward, 1995). Depleting long term effects, however, are likely to precipitate by the vulnerabilities the female headed household faced in the first place and further handholding, beyond the 24 month period, may be in order to push them forward.

There are some limitations to this paper. Most importantly, the selection of treated and control groups was not done in a randomized way, leaving the possibility for unobservable heterogeneity to violate the parallel trends assumption. The substantial overlap in the propensity scores and similarity of baseline characteristics across both groups in the matched sample does, however, suggest that the matching techniques used can adequately correct for baseline differences in observable characteristics. A second limitation, which is almost inevitable with data over such a long time period, is the possibility of other events disproportionately affecting either the treatment or control group. Findings from the second phase of CFPR, which was set up as a randomized control trial (RCT), do confirm the short and midterm effects on income and employment, which suggests that our results are not merely an artifact of the purposive selection of treated and controls (Bandiera, Burgess et al., 2014).

In sum, the evidence in this paper presents an interesting picture on the impact of CFPR. While confirming earlier positive findings, we also see that effects tend to decelerate over the long term, driven mainly by catch-up among the control households. The success of the program can be considered three-fold. Firstly, the program itself was successful in bringing its participants out of ultra-poverty and keeping them so nine years after participation.^{xiii} Secondly, through spillover effects, CFPR positively affected households in the program's vicinity. Lastly, substantially raising public discourse precipitated greater efforts from both state and non-state bodies to join the movement against ultra-poverty. However not without its caveats, CFPR effects, especially on employment, are more likely to be maintained in the long term for those households that could be assumed to have more intrinsic capabilities (entrepreneurs) or motivation (female headed households). This brings into light the conundrum of whether

encouraging entrepreneurship as an occupation is suitable for all. Rigorous qualitative investigations to identify reasons why many households revert back to their original occupation would be crucial for formulating policy advice regarding CFPR. These results raise the question of whether one big push can be sufficient to alleviate ultra-poverty across the board, and whether more frequent support sustained over a longer time period can have more long-lasting impact.

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Tables and Figures

Table 1: Summary statistics of outcome variables

Variable name	Description	2002		2005		2008		2011		P-Value
		Treated	Control	Treated	Control	Treated	Control	Treated	Control	
Directly Affected Outcomes										
Livestock and nursery										
cowbull_a	Number of cow/bulls	0.035***	0.189	1.599***	0.223	1.288***	0.443	0.717***	0.42	0.000
goatsheep_a	Number of goats/sheep	0.098**	0.131	0.513***	0.158	0.588***	0.321	0.293	0.28	0.516
duckhen_a	Number of poultry	0.829***	1.454	2.495	2.564	3.655***	2.545	1.953	1.826	0.009
bigtree_a	Number of big trees	0.516***	1.333	0.518***	0.713	1.774**	2.024	2.009***	2.688	0.652
Financial Participation										
csav	Has cash savings (1/0)	0.085***	0.205	0.899***	0.303	0.912***	0.38	0.924***	0.534	0.000
formalloan	Has formal loans from NGOs (1/0)	0.036***	0.319	0.510***	0.225	0.553***	0.375	0.533***	0.424	0.000
informalloan	Has informal loans from money lenders(1/0)	0.373***	0.295	0.407**	0.529	0.234***	0.322	0.267**	0.339	0.000
Indirectly Affected Outcomes										
Socioeconomic Status										
percapinc	Annual per capita households income (BDT)	2529***	2825	3701***	3360	7678***	5979	9051***	8264	0.000
Occupation										
emp_entrepreneur	entrepreneur (ag/non-ag) (1/0)	0.197***	0.319	0.331**	0.312	0.432***	0.324	0.318	0.328	0.013
emp_begging_maid	begging or working as maids (1/0)	0.177***	0.092	0.107**	0.09	0.099	0.098	0.148***	0.091	0.040
emp_daylabourer	employed as day laborer (1/0)	0.591***	0.537	0.521***	0.553	0.421***	0.515	0.490***	0.541	0.121
emp_other	employed in other categories (1/0)	0.030***	0.048	0.042	0.039	0.046**	0.060	0.043	0.039	0.245
Asset holdings										
owl_h	Owns any homestead land (1/0)	0.457***	0.597	0.491***	0.556	0.644*	0.669	0.608***	0.651	0.000
owl_c	Owns any cultivable land (1/0)	0.018***	0.078	0.054***	0.076	0.084	0.075	0.034***	0.061	0.517
rickvan_a	Owns any rickshaws or cycle vans (1/0)	0.010***	0.031	0.065*	0.055	0.088***	0.063	0.062	0.066	0.375
roofin	Roof of the house made of tin (1/0)	0.445***	0.553	0.792***	0.771	0.924*	0.916	0.934	0.925	0.003
radiotv_a	Owns any radios/TVs (1/0)	0.008***	0.018	0.027	0.032	0.034*	0.025	0.030**	0.042	0.875
Food Security										
twicemeal	Usually can have at least two meals a day (1/0)	0.516***	0.686	0.859***	0.763	0.898***	0.836	0.885	0.884	0.000
Social Capital										
invited	Invited to non-relatives' homes	0.245***	0.29	0.374***	0.333	0.495***	0.431	0.499	0.52	0.733

NOTES: *, **, *** REFLECT STATISTICAL SIGNIFICANCE AT THE 1, 5, 10% LEVEL OF THE DIFFERENCE BETWEEN THE TREATED AND CONTROL GROUP IN EACH OF THE SURVEY YEARS. THE P-VALUE REFERS TO A TEST OF THE NULL HYPOTHESIS OF NO DIFFERENCE IN TRENDS IN OUTCOME VARIABLES BETWEEN TREATED AND CONTROLS.

[N: 5626 OBS IN 2002; 5320 IN 2005; 4831 IN 2008; 4121 IN 2011]

Table 2: Summary statistics of control variables

Variable name	Description	2002		2005		2008		2011		P-Value
		Treated	Control	Treated	Control	Treated	Control	Treated	Control	
Demographics										
fem14to55	proportions of working aged (14-55) women	0.362***	0.307	0.366***	0.319	0.356***	0.326	0.343**	0.323	0.277
hhsex	male head of household (1/0)	0.573***	0.737	0.560***	0.731	0.563***	0.732	0.549***	0.726	0.615
hhsize	household size	3.55***	3.802	3.996***	4.316	4.347***	4.668	4.114***	4.441	0.678
Socioeconomics										
hh_edunone	no education of household head (1/0)	0.917***	0.865	0.859***	0.788	0.856***	0.811	0.865***	0.804	0.329
hh_eduprim	primary education of household head (1/0)	0.064***	0.095	0.113***	0.157	0.105***	0.137	0.104***	0.146	0.333
hh_edumidhigh	secondary/higher education of household head(1/0)	0.019***	0.04	0.028***	0.054	0.038**	0.051	0.031***	0.049	0.830
Selection Criteria										
less10	households owns less than 10 decimals of land (1/0)	0.952***	0.864	0.925***	0.88	0.869	0.859	0.924***	0.876	0.420
nogovbenf	households receives no government benefits (1/0)	0.816*	0.83	0.875***	0.92	0.812***	0.861	0.820***	0.862	0.048
pro_asset	household owns any income generating assets	0.407***	0.58	0.929***	0.679	0.914***	0.773	0.748***	0.707	0.133
Location										
Rangpur	household located in Rangpur site (1/0)	0.321	0.311	0.311	0.301	0.319	0.301	0.285	0.267	0.859
Nilphamari	household located in Nilphamari site (1/0)	0.308	0.292	0.32	0.303	0.321	0.302	0.33	0.315	0.610
Kurigram	household located in Kurigram site (1/0)	0.371	0.397	0.369	0.396	0.361	0.398	0.385	0.418	0.743

NOTES: *, **, *** REFLECT STATISTICAL SIGNIFICANCE AT THE 1, 5, 10% LEVEL OF THE DIFFERENCE BETWEEN THE TREATED AND CONTROL GROUP IN EACH OF THE SURVEY YEARS. THE P-VALUE REFERS TO A TEST OF THE NULL HYPOTHESIS OF NO DIFFERENCE IN TRENDS IN COVARIATES BETWEEN TREATED AND CONTROLS.

[N: 5626 OBS IN 2002; 5320 IN 2005; 4831 IN 2008; 4121 IN 2011]

Figure 1: Distribution of propensity score across treated and control group

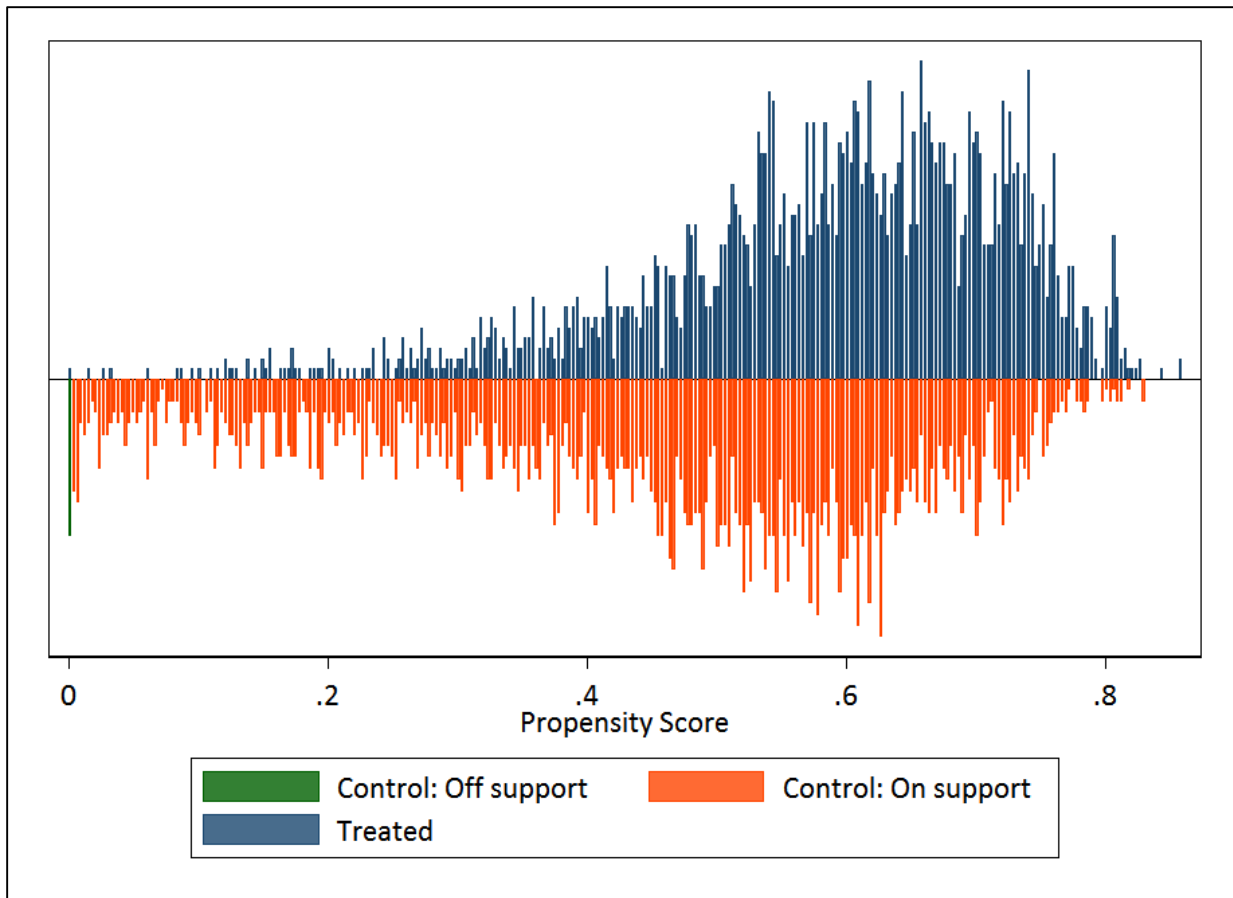


Table 3: Summary statistics across treated and control group and bias reduction after matching

Variable	Treated	Control	Difference	Percent Bias	Reduction in Bias (%)
percapinc	2502	2507	-6	-0.30	97.8
csav	0.08	0.09	0.00	-1.10	96.7
forinformaloan	0.01	0.01	0.00	-0.20	99.2
owl_h_c	0.01	0.01	0.00	-0.40	98.7
hvlv	865	884	-19	-0.80	97.3
entrepreneur	0.18	0.18	0.00	-0.40	98.3
dayl_beg_maid	0.78	0.78	0.00	0.30	98.9
cowbull_a	0.04	0.04	0.00	-0.30	98.9
goatsheep_a	0.10	0.11	-0.01	-1.80	72.8
rickvan_a	0.01	0.01	0.00	0.00	100.0
radiotv_a	0.01	0.01	0.00	-0.50	94.2
wcal	0.14	0.14	0.00	0.30	97.4
duckhen_a	0.86	0.87	-0.01	-0.40	98
egg	0.43	0.46	-0.03	-1.50	86.4
metduck	15.88	15.18	0.70	0.10	99.2
less10	0.95	0.94	0.01	3.50	88.8
nogovbenf	0.80	0.80	0.01	2.40	33.5
fem14to55	0.35	0.36	0.00	-0.90	96.2
hhedusex	0.28	0.30	-0.02	-1.00	95.4
twicemeal	0.53	0.51	0.02	4.30	87.8
pro_asset	0.42	0.44	-0.01	-2.90	91.8
prohvlv	425	440	-16	-0.70	97.7
rooftin	0.43	0.41	0.02	4.60	79
rickvan	0.01	0.01	-0.01	-1.00	93.4

NOTES: RESULTS SHOW MEANS OF AND DIFFERENCES IN BASELINE CHARACTERISTICS FOR THE TREATED AND CONTROLS IN THE MATCHED SAMPLE (USING NEAREST NEIGHBOR MATCHING WITH 5 NEIGHBORS). THE PERCENT BIAS REFERS TO THE PERCENTAGE DIFFERENCE OF THE SAMPLE MEANS OF THE TREATED AND CONTROL AS A PERCENTAGE OF THE SQUARE ROOT OF THE AVERAGE OF THE SAMPLE VARIANCES AMONG THE TREATED AND CONTROL (LEUVEN AND SIANESI, 2003).

Table 4: Effects of the CFPR program across different time periods

Variables	D1(2005-2002)	D2(2008-2002)	D3(2011-2002)	D4(2008-2005)	D5 (2011-2008)
Primary outcomes					
Livestock and nursery					
cowbull_a	1.466***	0.936***	0.392***	-0.529***	-0.537***
goatsheep_a	0.387***	0.289***	0.023	-0.095**	-0.252***
duckhen_a	0.453***	1.630***	0.389***	1.187***	-1.214***
bigtree_a	0.014	0.289*	0.032	0.285**	-0.242
Financial Participation					
csav	0.619***	0.559***	0.374***	-0.061***	-0.176***
formalloan	0.324***	0.227***	0.132***	-0.098***	-0.098***
informalloan	-0.114***	-0.109**	-0.083***	-0.013	-0.027
Secondary outcomes					
Socioeconomic Status					
percapinc	826.587***	1,493.693***	1,295.178***	675.893***	-120.614
Occupation					
emp_entrepreneur	0.077***	0.155***	0.039**	0.065***	-0.118***
emp_begging_maid	-0.054***	-0.064***	-0.024*	-0.012	0.046***
emp_daylabourer	-0.029*	-0.084***	-0.028	-0.056***	0.049**
Asset holdings					
owl_h	0.048***	0.087***	0.072***	0.038**	-0.009
owl_c	0.009	0.040***	-0.002	0.030***	-0.038***
rickvan_a	0.033***	0.035***	0.006	0.004	-0.022**
roofin	0.066***	0.036***	0.023**	-0.031**	-0.016
radiotv_a	0.007	0.019***	0.003	0.013*	-0.013
Food Security					
twicemeal	0.140***	0.083***	0.023*	-0.055***	-0.064***
Social Capital					
invited	0.085***	0.110***	0.007	0.027	-0.099***

NOTES: RESULTS OBTAINED BY LINEAR REGRESSION WITH INVERSE PROPENSITY WEIGHING. * $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$.

TABLE 5: HETEROGENEITY OF IMPACT BY BASELINE EMPLOYMENT

Sub-groups (defined in 2002)	Entrepreneur			Begging or working as maids			Day labouring		
	D1 (2005-2002)	D2 (2008-2005)	D3 (2011-2008)	D1 (2005-2002)	D2 (2008-2005)	D3 (2011-2008)	D1 (2005-2002)	D2 (2008-2005)	D3 (2011-2008)
Per capita income (N: 1509)	819***	727**	784**	863***	598	-811	818***	626***	-131
emp_entrepreneur (N: 1282)	0.131***	-0.031	-0.034	0.157***	0.129**	-0.221***	0.062***	0.079***	-0.110***
emp_begging_maid (N: 1495)	0.007	-0.032*	0.021	-0.222***	-0.024	0.198***	-0.001	0.002	0.026**
emp_daylabourer (N: 1292)	-0.083***	0.059	-0.062	0.082*	-0.127**	0.053	-0.070***	-0.090***	0.085***
emp_other (N: 1514)	-0.055*	0.004	0.074**	-0.017	0.022	-0.03	0.009	0.01	-0.001

NOTES: RESULTS OBTAINED BY LINEAR REGRESSION WITH INVERSE PROPENSITY WEIGHING. * $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$.

TABLE 6: HETEROGENEITY OF IMPACT BY GENDER OF HOUSEHOLD HEAD

Sub-groups (defined in 2002)	Female headed households			Male headed households		
	D1 (2005- 2002)	D2 (2008- 2005)	D3 (2011- 2008)	D1 (2005- 2002)	D2 (2008- 2005)	D3 (2011- 2008)
Per capita income (N: 1509)	1279***	563**	-216	525***	654***	-10
emp_entrepreneur (N: 1282)	0.138***	0.088***	-0.131***	0.057***	0.058***	-0.098***
emp_begging_maid (N: 1495)	-0.107***	-0.007	0.061*	-0.002	-0.015*	0.041***
emp_daylabourer (N: 1292)	-0.009	-0.070**	0.014	-0.058***	-0.041**	0.054**
emp_other (N: 1514)	-0.023	-0.01	0.056**	0.003	-0.002	0.002

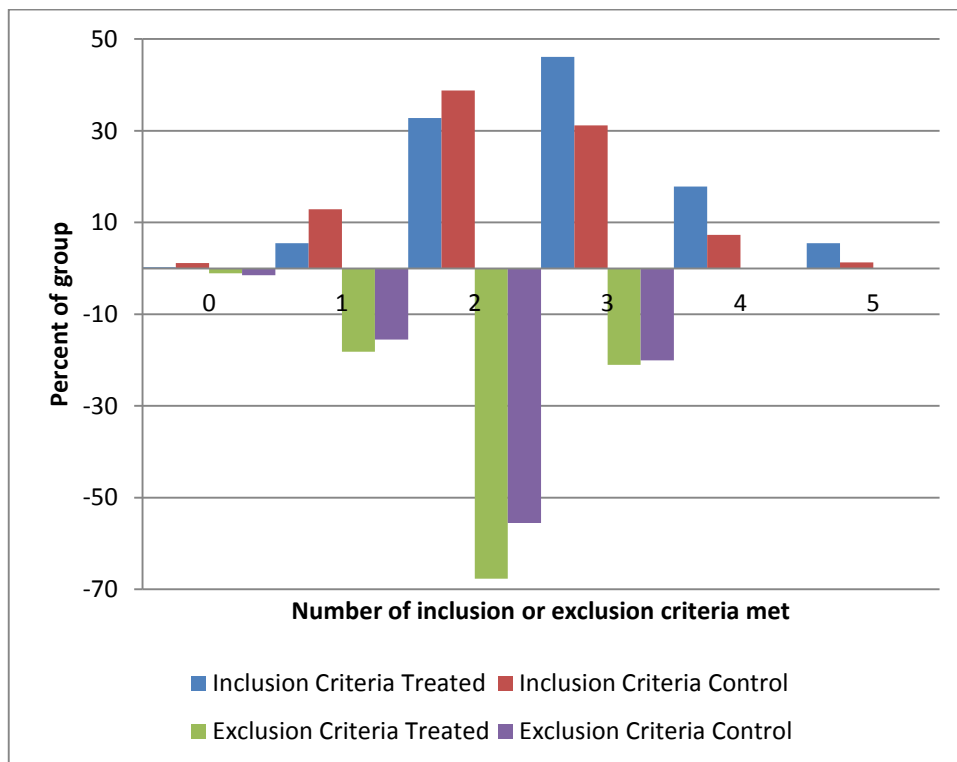
NOTES: RESULTS OBTAINED BY LINEAR REGRESSION WITH INVERSE PROPENSITY WEIGHING. * $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$.

Annexure

Annex Figure A1: Comparison between the numbers of inclusion and exclusion criteria met by the treated and the control

Note: *Inclusion criteria:* Household owns less than 10 decimals of land; Main source of income is by female member begging or working as domestic help; no active male adult (female household head); School going children working for pay; No productive or income generating assets.

Exclusion criteria: No Active female member in the household; Microfinance participants; Household members receive government benefits.



Annex Table A1: Determinants of attrition

Variables	Marginal Effects	Standard Error
beneficiary	0.035	0.018
cowbull_a	-0.018***	0.006
goatsheep_a	-0.011*	0.006
duckhen_a	-0.002	0.002
bigtree_a	-0.005	0.004
csav	0.027	0.018
formaloan	-0.013	0.015
badloan	0.012	0.013
percapinc	0.000	0.000
entrepreneur	0.006	0.033
emp_begging_maid	0.018	0.038
emp_daylabourer	-0.04	0.032
owl_h	-0.030**	0.013
owl_c	-0.028	0.027
rickvan_a	0.026	0.023
rooftin	0.026	0.016
radiotv_a	-0.012	0.036
twicemeal	-0.015	0.017
egg	-0.006	0.007
invited	0.001	0.013

NOTES: RESULTS SHOW MARGINAL EFFECTS OF A PROBIT MODEL. THE DEPENDENT VARIABLE EQUALS ONE FOR HOUSEHOLDS THAT ARE NOT IN THE BALANCED PANEL, 0 OTHERWISE. COVARIATES REFLECT BASELINE CHARACTERISTICS. * $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$.

Annex Table A2: Effects of the CFPR program across different time periods using non-parametric DiD with matching

Variables	D1(2005-2002)	D2(2008-2002)	D3(2011-2002)	D4(2008-2005)	D5 (2011-2008)
Directly affected outcomes					
Livestock and nursery					
cowbull_a	1.477***	0.940***	0.414***	-0.550***	-0.526***
goatsheep_a	0.405***	0.278***	0.01	-0.115***	-0.247***
duckhen_a	0.506***	1.634***	0.403***	1.111***	-1.231***
bigtree_a	0.014	0.25	0.097	0.236	-0.216
Financial Participation					
csav	0.625***	0.563***	0.398***	-0.065***	-0.161***
formalloan	0.303***	0.221***	0.125***	-0.093***	-0.089***
informalloan	-0.124**	-0.104*	-0.071***	-0.020***	-0.024**
Indirectly affected outcomes					
Socioeconomic Status					
percapinc	826.51***	1493.63***	1163.73***	679.67***	-180.72
Occupation					
emp_entrepreneur	0.083***	0.177***	0.040**	0.098***	-0.137***
emp_begging_maid	-0.059***	-0.067***	-0.027**	-0.009	0.051***
emp_daylabourer	-0.035**	-0.107***	-0.022	-0.073***	0.074***
Asset holdings					
owl_h	0.050***	0.080***	0.075***	0.034*	0.0003
owl_c	0.007	0.036***	-0.008	0.033***	-0.039***
rickvan_a	0.028***	0.035***	-0.003	0.007	-0.032*
rooftin	0.063***	0.026**	0.019*	-0.040***	-0.007
radiotv_a	0.011*	0.018***	0.008	0.004	-0.008
Food Security					
twicemeal	0.137***	0.071***	0.002	-0.070***	-0.059***
egg	0.365***	0.326***	0.1768**	-0.038	-0.200***
Social Capital					
invited	0.0527**	0.086***	-0.016	-0.033	-0.097***

NOTES: * $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$.

Annex Table A3: Summary statistics of baseline characteristics across male and female headed households

Variable name	Description	2002		Difference
		Female Headed	Male Headed	
Socioeconomic Status				
percapinc	Annual per capita households income (BDT)	2354	2633	-321***
csav	Has cash savings (1/0)	0.103	0.164	0.061***
Occupation				
emp_service	salaried employment (1/0)	0.023	0.023	-0.001
emp_entrepreneur	entrepreneur (ag/non-ag) (1/0)	0.129	0.229	0.100***
emp_begging_maid	begging or working as maids (1/0)	0.325	0.036	-0.289***
emp_daylabourer	employed as day laborer (1/0)	0.409	0.647	0.238***
emp_other	employed in other categories (1/0)	0.048	0.01	-0.038***
Asset holdings				
owl_h	Owens any homestead land (1/0)	0.421	0.58	0.158***
owl_c	Owens any cultivable land (1/0)	0.035	0.053	0.018***
cowbull_a	Number of cow/bulls	0.045	0.143	0.098***
goatsheep_a	Number of goats/sheep	0.085	0.129	0.044***
duckhen_a	Number of poultry	0.833	1.287	0.454***
bigtree_a	Number of big trees	0.534	0.841	0.307**
rickvan_a	Owens any rickshaws or cycle vans (1/0)	0.006	0.028	-0.022***
radiotv_a	Owens any radios/TVs (1/0)	0.005	0.017	0.012***
rooftin	Roof of the house made of tin (1/0)	0.531	0.479	-0.052***
Financial Participation				
formalloan	Has formal loans from NGOs (1/0)	0.029	0.083	0.054***
informalloan	Has informal loans from money lenders(1/0)	0.361	0.317	-0.044*
Food Security				
twicemeal	Usually can have at least two meals a day (1/0)	0.537	0.631	0.094***
egg	Number of eggs consumed in the past week	0.44	0.643	0.202***
Social Capital				
invited	Invited to non-relatives' homes	0.217	0.293	0.076***

NOTES: *, **, *** REFER TO SIGNIFICANCE AT THE 1, 5 AND 10% LEVEL OBTAINED FROM T-TESTS.

Annex Table A4: Effects of the CFPR program in the Rangpur District

Variables	D1(2005-2002)	D2(2008-2002)	D3(2011-2002)	D4(2008-2005)	D5 (2011-2008)
Directly affected outcomes					
Livestock and nursery					
cowbull_a	1.309***	0.920***	0.413***	-0.383***	-0.492***
goatsheep_a	0.434***	0.427***	0.177**	-0.005	-0.243**
duckhen_a	0.502**	1.750***	0.465*	1.260***	-1.100***
bigtree_a	0.379**	0.519**	0.077	0.145	-0.395
Financial Participation					
csav	0.618***	0.671***	0.592***	0.054**	-0.060**
formalloan	0.378***	0.224***	0.107***	-0.155***	-0.105***
informalloan	-0.057	-0.032	-0.034	-0.090	-0.116
Indirectly affected outcomes					
Socioeconomic Status					
percapinc	984.634***	1,717.551***	1,728.290***	748.770***	221.886
Occupation					
emp_entrepreneur	0.058**	0.134***	0.085**	0.075**	-0.040
emp_begging_maid	-0.054**	-0.067***	-0.054*	-0.013	0.013
emp_daylabourer	-0.013	-0.076**	-0.059	-0.063*	0.013
Asset holdings					
owl_h	0.127***	0.152***	0.088**	0.024	-0.049
owl_c	0.020	0.061***	-0.005	0.061***	-0.052***
rickvan_a	0.036**	0.060***	0.008	0.025	-0.035
roofin	0.062***	0.019	0.012	-0.045**	-0.001
radiotv_a	0.009	0.019	-0.013	0.01	-0.028*
Food Security					
twicemeal	0.101***	0.094***	0.084***	-0.004	-0.071**
egg	0.403***	0.360***	0.142*	-0.044	-0.251**
Social Capital					
invited	0.107***	0.142***	-0.01	0.029	-0.132***

NOTES: RESULTS OBTAINED BY LINEAR REGRESSION WITH INVERSE PROPENSITY WEIGHING. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Notes

ⁱ Positive short term impact and learnings from the first phase paved the way for CFPR Phase II, which was operational from 2007 to 2011 and encapsulated approximately 300,000 households across 40 districts. Issues specifically faced during the first phase such as heterogeneity among the ultra-poor were incorporated into a diverse intervention package. This paper however deals exclusively with the first phase of the program.

ⁱⁱ These households often reside within other households maintaining a clientelistic relationship with the latter, though in all intents and purposes are individual economic entities (Emran, Robano, & Smith, 2009).

ⁱⁱⁱ The inclusion criteria include (3 of 5 have to be met): Household owns less than 10 decimals of land; Main source of income is by female member begging or working as domestic help; no active male adult (female household head); School-aged children working for pay; No productive or income generating assets. The exclusion criteria, of which all have to be met, include: No Active female member in the household; Microfinance participants; Household members receiving government benefits such as old age pensions.

^{iv} The exchange rate in 2002 was USD \$1=Bangladesh Taka (BDT) 69.28 while the PPP \$1=BDT 16.25 during the same time (World Bank, 2013).

^v Despite the global economic downturn, Bangladesh received over USD \$7 billion during the latter half of 2013 as remittances, nearly 13% of the national GDP (World Bank, 2013).

^{vi}Ninety-seven percent of respondents own less than 10 decimals of homestead land while more than half reported owning none at the baseline. Ninety-seven percent of the surveyed responded negatively to owning any amount of cultivable land.

^{vii} Entrepreneurial activities also include households that have skilled labor such as carpenters and blacksmiths to households that sell milk from livestock or eggs from poultry.

^{viii}Emran et al (2014) use these assignment errors as an instrument to identify impact of the program. This approach however leads to small samples of treated and controls, and does not identify the effect of the program on the full sample of treated.

^{ix} We prefer controlling for baseline characteristics as opposed to time-varying characteristics because with such a comprehensive intervention the latter could be affected by program participation.

^x The rate of attrition for the treated and controls were 6.16 and 7.99 percent respectively until 2005. Between 2005 and 2008, the rates were around 10 percent for both groups, while between 2008 and 2011, the attrition was around 15 percent for both groups. The attrition rate was the highest during the last interval due to one of the local BRAC branch offices closing down, leading to similar declines in the number of observations for both the treated and the control groups.

^{xi} The average number of cows/bulls increased 20 fold during the entire period whereas the number of goats/sheep and poultry more than doubled.

^{xii} In some localities in Kurigram and Nilphamari district, a watered-down version of CFPR has been implemented in the 2007-2011 period. This could potentially bias downward our impact estimates. We have conducted a separate analysis for the Rangpur district, in which no such

programs were implemented before 2011 and confirmed that estimates were qualitatively similar to those in the full data, and quantitatively slightly larger (see Annex Table A4).

^{xiii}While the average per capita income per day among the treated was \$0.43, by 2011, it increased to \$1.53.