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The Impact of Asset Transfer on Livelihoods of the Ultra Poor in Bangladesh

Akhter U. Ahmed
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April 2009

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Research and Evaluation Division, BRAC

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LIST OF ACRONYMS

CFPR	Challenging the Frontiers of Poverty Reduction
CPI	Consumer Price Index
GDBC	*Gram Daridro Bimochon* Committee
IFPRI	International Food Policy Research Institute
IGVGD	Income Generation for Vulnerable Group Development
NGO	Non-government Organization
NSUP	Not Selected Ultra Poor
PO	Programme Organizer
PRA	Participatory Rural Appraisal
PSM	Propensity Score Matching
PWR	Participatory Wealth Ranking
RDD	Regression Discontinuity Design
RED	Research and Evaluation Division
RMP	Rural Maintenance Programme
SS	*Shasthya Shebika*
STUP	Specially Targeted Ultra Poor
SUP	Selected Ultra Poor
VGD	Vulnerable Group Development
VGF	Vulnerable Group Feeding
WFP	World Food Programme

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INTRODUCTION

Bangladesh's progress in economic growth and extensive social protection interventions have contributed to a reduction in the headcount poverty rate of around 1.5 percentage points a year since the early 1990s. This progress in poverty reduction is, however, little comfort: the overall incidence of poverty persists at a high level. The most startling consequence of widespread poverty is that a quarter of the country's population — 37 million people — cannot afford an adequate diet. Chronically underfed and highly vulnerable, they remain largely without assets (other than their own labor power) to cushion lean-season hunger or the crushing blows of illness, flooding, and other calamities. These extreme poor are a group that straddles the outer limits of human survival. The need for targeted interventions to improve food security and livelihoods of the extreme poor therefore remains strong.

Bangladesh has a comprehensive portfolio of public safety net interventions to assist the poor through transfer. Some of these programmes transfer food to the poor, some transfer cash, and some provide a combination of both (Ahmed *et al.* 2007). Currently, there are about 27 such programmes.[1] However, many of these public interventions fail to reach the poorest of the poor—the ultra poor. Moreover, transfer payments help the poor over the short term, but do not by themselves trigger sustainable income growth for the ultra poor. These are the challenges that drove the BRAC to initiate an experimental programme called "Challenging the Frontiers of Poverty Reduction: Targeting the Ultra Poor (CFPR/TUP)."

BRAC launched the CFPR programme in 2002 with the vision of enhancing economic and social capabilities of the ultra poor households in Bangladesh in a manner that could be sustained by the programme participants. Chapter 2 of this report provides a detail description of the CFPR programme.

This study is an outcome of the collaborative research agreement between International Food Policy Research Institute and BRAC. IFPRI's Food Consumption and Nutrition Division and BRAC's Research and Evaluation Division jointly carried out this study to assess the impact of the CFPR programme on livelihoods of the ultra poor in Bangladesh. While several studies have looked into the components of the CFPR

[1] Interventions to improve the nutrition of children and women are excluded from the list of safety nets, since these programmes do not fall directly under the rubric of transfer programmes.

programme and its impacts (Rabbani *et al.* 2006, Haseen and Sulaiman 2007), this study uses rigorous, state-of-the-art techniques to assess the impact of the programme on welfare outcomes of its beneficiaries.

SALIENT FEATURES OF THE CFPR

BRAC and its CFPR approach

From the time of its modest inception in 1972, BRAC has emerged as one of the largest NGOs in the world. Today it operates all over Bangladesh with more than 33,000 offices and reaches millions of extreme poor with various services. BRAC has the twin objectives of poverty alleviation and empowerment of the poor, especially women. Its comprehensive approach combines generation of self-employment around agriculture and rural non-farm activities with microfinance and provision of essential health care, quality education, and other social and community services. As a part of its support to the programme participants and its financial sustainability, BRAC is also involved in various income generating enterprises. Furthermore, it has been called upon to assist in a number of developing countries. BRAC is currently working in Afghanistan, Sri Lanka, Sudan, Tanzania, and Uganda.

BRAC's years' of experiences of working with the ultra poor in Bangladesh has been one of the major driving force behind the Challenging the Frontiers of Poverty Reduction (CFPR) design. The salient features of CFPR are emphasis on rigorous targeting, entrepreneurship development among the ultra poor, creation of an enabling environment through mobilizing informal social supports and a clear exit path out of ultra poverty with time-bound phases of support.

BRAC's learning by doing: IGVGD to CFPR

Though the focus on extreme poverty has recently been renewed with the new understandings of microfinance and its trade-offs, BRAC started the Income Generation for Vulnerable Group Development (IGVGD) programme with the World Food Programme (WFP) in 1985 to create a strategic pathway out of poverty for the most vulnerable women. Since microfinance was considered not to be a suitable direct entry point for this group, this programme took a laddered approach (Matin and Hulme 2003). For the extremely food insecure households, food transfer is the overriding priority. BRAC initiated the IGVGD programme as an extension of WFP's vulnerable group feeding (VGF) programme where the beneficiary household received a monthly ration of 31.25 kg of wheat for a two-year period. However, only direct food transfer was not enough to put them on an accumulative trajectory. In the IGVGD programme, the beneficiaries received additional skill training on income earning activities and financial services to engage in those activities. Initial

success of the IGVGD approach was inspiring since the beneficiaries were able to attain an increase in income which was higher than the amount of food subsidies they received.

However, there were some key further learning from IGVGD which guided a new and more comprehensive approach called Challenging the Frontiers of Poverty reduction (CFPR). The IGVGD beneficiaries could not sustain all the gains that they had made during the intervention period (Hashemi 2001).[2] All the beneficiaries not necessarily reaped the benefits of each of the components of IGVGD, partly for the programme design (Matin and Hulme 2003) and partly for the incentive characteristics of the beneficiaries (Webb *et al.* 2002). On the part of the programme design, there were flaws in targeting, service packaging and in the orientation of the staffs.

On the part of the extreme poor, the true potential of the approach was not realized since they (a) had low aspirations because of high discount rate for future and over-dependence on the food aid, (b) could not derive peer and NGO officials' support because of limited believe in microfinance group meetings, (c) lacked confidence in skills acquired through trainings, (d) disliked the types of activities that they were trained in, and (e) lacked entrepreneurship because of their risk averse nature. New understandings of IGVGD in the fronts of targeting, programme components, and the service delivery process shaped CFPR.

It had become apparent that to bring a meaningful and sustainable change in the livelihood of the extreme poor, there is a need for a comprehensive approach with multiple interventions working simultaneously on different constraints that they live with. In CFPR, enterprise development has been taken up as the major entry point and all other components are fitted in to ensure success of their enterprise. From BRAC experience of working with the extreme poor, what they require is a boost in their entrepreneurial ability and a clear path to demonstrate the ability.

Selection of beneficiaries

Targeting is a key component of CFPR not only because of the high costs of inclusion error but also to create a sense of ownership and fairness among the community members. Conceptually, the target group of CFPR is the bottom 10 percent population in the income distribution. To reach these households, a targeting methodology is followed which combines geographical, participatory, and proxy means test targeting.[3] The selection process relies heavily on working closely with communities and

[2] A recent study suggests that IGVGD results in reasonably long-term sustainable improvements in the income of their beneficiaries (Ahmed *et al.* 2007).
[3] Rahman and Ali (2004) give a detail account of the targeting process.

drawing on local knowledge to identify the poorest areas and the poorest within areas. Based on the national severe food insecurity mapping by WFP, the districts were ranked from the poorest to the richest. This mapping is used for district and *upazila* (sub-district) selection. The programme started in 2002 by selecting 5,000 households from the poorest three districts in Bangladesh — Rangpur, Nilphamari, and Kurigram.[4]

Apart from the identification of poorest districts and sub-districts, geographical targeting also includes selection of the poorer communities/villages within each *upazila*. This is done through consultation with the staff of other BRAC programmes, which have a country wide outreach. The second stage of targeting involves participatory wealth ranking. In each of the poor communities identified within the purview of BRAC branch offices, a complete household listing is conducted through participatory rural appraisal (PRA). All the households listed in PRAs are subsequently ranked into different categories based on their wealth level. Households ranked as the poorest in these participatory wealth rankings (PWR) are considered as 'community defined ultra poor'. A final round of screening is conducted by checking a list of inclusion and exclusion criteria thorough household visits.

The five inclusion criteria are: (a) dependent upon female domestic work or begging as income source; (b) ownership of less than 10 decimals of land; (c) no male adult active member in the household; (d) children of school going engaged in paid work; and (e) possession of no productive assets by the household. These inclusion criteria have been identified by reviewing national studies of poverty indicators. The three exclusion criteria are: (a) no adult woman in the household who is able to work; (b) participating in microfinance; and (c) beneficiary of government/NGO development project. Through the household visits, all the households meeting at least two of the inclusion criteria and none of the exclusion criteria are finally selected for programme participation. These households are called Specially Targeted Ultra Poor (STUP) or Selected Ultra Poor (SUP).

In terms of targeting performance, a study finds that the SUP households are at highly disadvantaged position than other households in those communities (Matin and Halder 2004). Another study on targeting effectiveness of 2005 cohorts of beneficiaries demonstrates the effectiveness of both the PWR and indicator based targeting (Sulaiman and Matin 2006).

[4] In the first phase, which was implemented between 2002 and 2006, CFPR covered 15 districts.

Intervention package

This study evaluates the impact of the basic STUP programme in CFPR Phase I. The STUP package in Phase I had a two-year cycle from 2002 to 2004 and the beneficiaries received a range of services for different periods. The support package included income generating asset transfer, business development training, enterprise management assistance, subsistence allowance, health care facilities, and building social support network (Table 1).

The fundamental thrust of the programme was enterprise development by the ultra poor. Choosing the right enterprise for particular beneficiary to build or broaden their economic base was the first step after beneficiary selection. A number of factors such as their prior experience, capability of enterprise management as well as market, environment and social factors were considered in enterprise identification. Several rounds of discussions took place between the beneficiary household and the BRAC staff. After consulting all the members of a SUP household, an enterprise was selected. The most common enterprises were livestock and poultry rearing while some took up vegetable-nursery growing or non-farm enterprises. After the enterprise selection, they received a classroom orientation to the programme and the enterprise. The asset was usually transferred within one month of the classroom training.

Once the assets were transferred, the STUP members started receiving all the inputs required to maintain the enterprise, weekly follow-up for technical advice and supervision, and weekly stipend as a subsistence allowance. While the input supports were provided to ensure good return from the enterprise, subsistence allowances were aimed to reduce the opportunity cost of the switch to an alternative livelihood. However, the duration of the stipend varied according to the types of enterprise, depending on the gestation period.

Table 1. Support package for the STUP in CFPR phase I

Component	Beneficiaries received	Duration of support
Asset transfer	Assets for enterprise e.g. cow, goat, poultry, nursery, non-farm assets etc. (on average Tk 6,000 per beneficiary)	One-shot 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	70 Taka	(Enterprise specific) Until start getting income from their enterprise
Health care support	Free medical treatment; training to build awareness	2 years
	Regular visits by health volunteers (*Shasthyo Shebika*) for preventive diseases	2 years and continues with BRAC mainstream development programme
Social development	Awareness raising training	2 year and continues with BRAC mainstream development programme
Mobilization of local elite for support	Community supports-material, information, guidance	2 year and continues

To reduce the morbidity and the high costs associated with this, free healthcare support was provided to all the members of the STUP households. The modes of health care supply included the health volunteers in the villages, programme staff, and a panel doctor at the local BRAC office premises. The health volunteers, known as *Shasthya Shebika* (SS), were chosen from among BRAC's microfinance group members and were assigned 150 households to provide preventive and curative services for a few basic diseases. Their services were targeted towards the whole community. In addition, one TUP staff in each branch was responsible to create health awareness and practices among the STUP members. In critical cases of illness, the STUP households received treatment from the doctor and the programme took the responsibility of treatment costs.

Social development supports in the form of regular training were provided to create knowledge and awareness about their rights. They were also made conscious about the vice of different social malpractices such as dowry, child marriage and polygamy.

The final key component in the STUP package was mobilization of social support. To create an enabling environment for the ultra poor, a forum of

the local elites called *Gram Daridro Bimochon* Committee-GDBC (Village Poverty Alleviation Committee) was formed in every intervention village. The main roles of these village committees were to support the ultra poor members in emergencies and to provide them guidance. This effort can also be viewed as a counteraction to the possibility that STUP support crowded out informal insurance for the ultra poor.

Because of the intensive nature of the programme, the investment was relatively high. Total investment per beneficiary for the 2002 cohort was US$434 (Sinha *et al.* 2008). However, the cost has been declining with programme expansion. The comparable figures for 2003 and 2004 cohorts were US$423 and US$348, respectively.

Moving up the 'graduation' ladder

Ensuring exit path for the ultra poor is critical for an intensive programme such as CFPR. The principal criterion of assessing whether a SUP household is on the right track is their performance in enterprise management. The programme does not end once the intensive support phase ends after 2 years. The objective of CFPR is to enable the ultra poor to extract benefit from participating in the mainstream development programmes. However, the process is not an automatic one where only the ultra poor are to be made fit for the mainstream programmes. Rather the mainstream programmes also require some fine tuning to align the pathways out of ultra poverty to moderate poverty, and finally out of poverty.

METHODOLOGY AND DATA

To measure programme impact, it is necessary to compare outcomes for beneficiaries to what those outcomes would have been had the programme not been implemented, so it is necessary to construct a counterfactual measure of what might have happened without the programme. All impact evaluation strategies need a method for constructing a proxy for these counterfactual outcomes from information on nonbeneficiaries. This requires controlling for the effects of confounding economic and contextual factors that make programme beneficiaries systematically different from an average nonbeneficiary. These confounding factors can include the relative poverty of beneficiaries in targeted programmes, exposure to economic shocks, or differences in household characteristics (e.g., demographics, skill levels, or social networks) that affect the impacts of the programme. Impact estimates that imperfectly control for these confounders suffer from "selection bias." This chapter describes the design for quantitative evaluation of impact of the CFPR. Specifically, this chapter: (i) introduces the difference-in-differences method—a central component of any rigorous impact evaluation—illustrates three principle ways in which it can be implemented, and discusses the appropriateness of each of the ways for evaluating the impact of the CFPR programme; (ii) explains the propensity score matching method used for assessing the impact of the CFPR programme, and (iii) describes the data used for the impact evaluation.

The difference-in-differences method

A central feature of impact evaluations is the use of longitudinal data (repeat observations of the same individuals or households over time) to use "difference-in-differences" or "double difference" methods. These methods rely on baseline data collected before the project is implemented and follow-up data collected after the project is fully operational for a sufficient period of time to generate impact or after the completion of the project, to develop a "before/after" comparison. These data are collected from households receiving the programme and those that do not ("with the programme"/"without the programme").

To see why both "before/after" and "with/without" data are necessary, consider the following hypothetical situation (though this is not the case for the CFPR evaluation). Suppose an evaluation only collected data from beneficiaries. Suppose that in between the baseline survey and the follow-up, some adverse event occurred (such as a flood) that makes

these households worse off. In such circumstances, beneficiaries may be worse off — the benefits of the programme being more than offset by the damage inflicted by the flooding. Alternatively, suppose that rural road construction in Northern Bangladesh improves market access and thus increases incomes. These effects would show up in the difference over time in the intervention group, in addition to the effects attributable to the programme. More generally, restricting the evaluation to only "before/after" comparisons makes it impossible to separate programme impacts from the influence of other events that affect beneficiary households.

To ensure that our evaluation is not adversely affected by such a possibility, it is necessary to know what these indicators would have looked like if the programme had not been implemented: we need a second dimension to our evaluation design that includes data on households "with" and "without" the programme. The fundamental problem, of course, is that an individual, household, or geographic area cannot simultaneously undergo and not undergo an intervention. Therefore, as part of the evaluation, it is necessary to construct a counterfactual measure of what would have happened if the programme had not been available, and this is why we also need the "with/without" comparison.

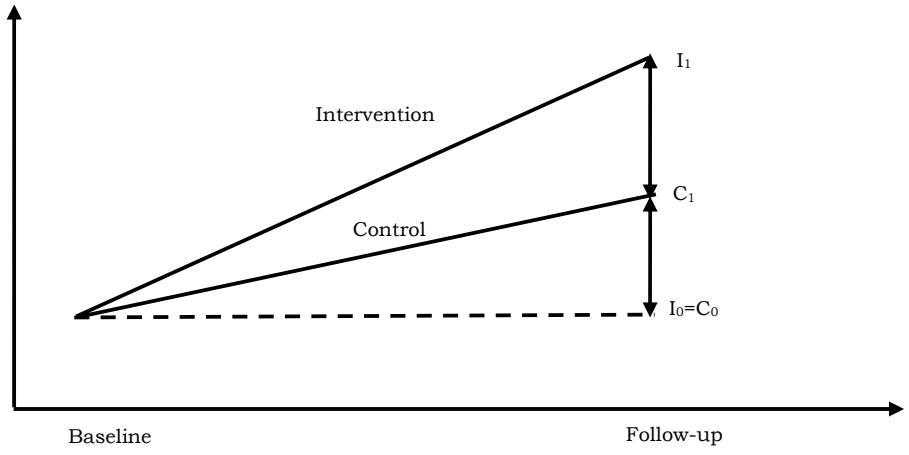
To see how the double difference method works, consider Table 2 (Maluccio and Flores 2005). The columns distinguish between groups with and without the programme — that is, households who were receiving programme benefits right after the baseline and those that were not. We denote groups receiving (with) the programme Group *I* (*I* for intervention) and those not receiving (without) the programme as Group *C* (*C* for comparison group). The rows distinguish between before and after the programme (denoted by subscripts 0 and 1). Consider one outcome of interest—increased incomes. Before the programme, one would expect the average incomes to be similar for the two groups, so that the difference in incomes ($I_0 - C_0$) would be close to zero. Once the programme has been implemented, however, one would expect differences between the groups and so ($I_1 - C_1$) will not be zero. The double-difference estimate is obtained by subtracting the preexisting differences between the groups, ($I_0 - C_0$), from the difference after the programme has been implemented, ($I_1 - C_1$). Under certain conditions (described in our description of evaluation methods, see below), this design will take into account preexisting observable or unobservable differences between the two assigned groups, thus giving average programme effects.

Table 2. Calculation of the double-difference estimate of average programme effect

Survey round	Intervention group (Group *I*)	Control group (Group *C*)	Difference across groups
Follow-up	I_1	C_1	$I_1 - C_1$
Baseline	I_0	C_0	$I_0 - C_0$
Difference across time	$I_1 - I_0$	$C_1 - C_0$	Double-difference $(I_1 - C_1) - (I_0 - C_0)$

Maluccio and Flores (2005) also show how the double-difference method can be illustrated graphically, as in Figure 1. For an arbitrary outcome indicator (say, consumption) measured over time, it is assumed (for the graph) that both the intervention and control groups start at the same level (on the vertical axis). No change in the indicator over time would lead to the outcome depicted by point $I_0 = C_0$. (Relaxing the assumption that the two groups start at identical points slightly complicates the graphical exposition, but the underlying logic remains the same). If only the intervention group were being followed, one would then naively calculate the effect of the programme as $I_1 - I_0$. However, as the control group makes clear, there was a trend over time that led to an improvement (in this example) of $C_1 - C_0$. Estimates ignoring this would overstate the effect of the programme. Instead, the correct estimate of the programme effect is $I_1 - C_1$; this is the double-difference estimate, since $I_0 = C_0$. In the case where the trend line for the control group was declining, ignoring that effect would tend to understate the programme effect.

Figure 1. Illustration of the double-difference estimate of average programme effect



Central to the application of the double-difference method is the allocation of households to be in either the intervention or control groups. There are three possible ways in which this could be carried out: Randomization, Regression Discontinuity Design (RDD), and Matching.

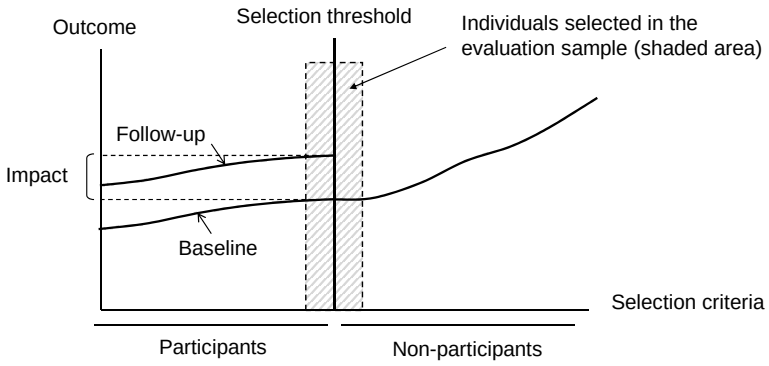
The most powerful way to construct a valid counterfactual is to randomly select beneficiaries from a pool of equally eligible candidates. If programme assignment is random, then all individuals (or households, communities, schools, etc.) have the same chance of receiving the programme. Average outcomes for those not randomly selected should provide an unbiased estimate of what beneficiaries would have experienced without the programme. However, a randomized design of impact evaluation is not feasible for the CFPR programme because the programme beneficiaries were not randomly selected. Therefore, a non-randomized impact evaluation design is needed to construct an appropriate counterfactual.

When a randomized control group is not available, quasi-experimental methods that require construction of a statistical comparison group such as RDD or a form of matching can be used. Each approach has been shown to provide reliable impact estimates under certain conditions (for RDD, see Ahmed *et al.* 2006; Buddelmeyer, and Skoufias 2003; Van der Klaauw 2002; and for propensity score matching, see Heckman, Ichimura, and Todd 1997, 1998; Heckman *et al.* 1998; McKenzie, Gibson, and Stillman 2006; Handa, and Maluccio 2006).

For estimating impacts of the CFPR programme, we first examined the feasibility of using RDD techniques. If programme participation is based on threshold for some characteristics (e.g., education, land holding), we can compare outcomes for individuals (or households) just above and just below the threshold. RDD utilizes the rule that assigns individuals to programme only below a given threshold. Those just above the threshold do not receive the programme, but should be very similar to those who participate. Figure 2 shows an example of RDD impact evaluation. The shaded band around the threshold consists of the sample of treatment (left side of the threshold) and control (right side of the threshold) individuals for assessing programme impact on the outcome indicator (measured on the vertical axis).

Figure 2. Regression discontinuity design: An example

Individuals are selected into the programme according to a clearly defined threshold based on characteristics that are not directly linked to the outcome.



More explicitly, there are three assumptions critical for the consistency of the RDD estimator (Edmonds, Mammen, and Miller 2005). The first is that the probability of treatment varies discontinuously at the threshold (cut-off point). This follows directly from the programme design.[5] The second is that households just above and below the cut-off are similar in their observed and unobserved characteristics. The final assumption is that if there were no treatment, the outcome would be continuous at the cut-off point. In other words, there should be no sharp break in outcome measures in the population at large for those just below and above the cut-off point.

RDD techniques however may not be appropriate for CFPR impact assessment for the following reasons. The validity of this approach rests on the assumption of discontinuity in programme participation but not in counterfactual outcomes. In other words, individuals are assumed to be selected into the programme based on characteristics that are not directly linked to the outcomes used for impact assessment. However, this assumption may not hold because as mentioned earlier, the CFPR beneficiaries were selected on the basis of households characteristics (land and other asset holding, shelter, food security, loans and savings, schooling, etc.), most of which are potential outcome indicators. Moreover, a disadvantage of the RDD approach is that the average

[5] Intuitively, the sharp cut-off point is serving the role of an instrumental variable in affecting programme participation but not outcomes, conditional on programme participation.

impact is assessed only for a small sub-sample of programme beneficiaries (for example, those belonging to the part of the band on the left side of the threshold in Figure 2), leaving out the poorest of the ultra-poor (those closer to the vertical axis in Figure 2) from the evaluation. Further, RDD can be difficult to explain to those who are unfamiliar with it.

Our assessment of impacts of the CFPR programme relies on the propensity score matching (PSM) technique for constructing the comparison group. Rather than assuming that those individuals just below and above the cut-off are similar in terms of their un-observables, the PSM approach more explicitly models programme participation. We believe that PSM (with double-difference) is most appropriate for rigorous estimation of impacts of the CFPR programme. We provide a formal and detailed description of the PSM technique and its suitability for evaluating the impact of the CFPR programme below.

Propensity score matching

Credible assessments of programme impact on welfare require that programme beneficiaries (the "treatment" group) are as comparable as possible to those not receiving benefits from the programme (the "comparison" group). The PSM method of programme evaluation constructs a control or comparison group by "matching" treatment households to comparison group households based on observable characteristics. The impact of the programme is then estimated as the average difference in the outcomes for each treatment household from a weighted average of outcomes in each similar comparison group of household from the matched sample.

Following Heckman, Ichimura, and Todd (1997) and Smith and Todd (2001, 2005), let Y_t^1 be a household's outcome in time period *t* if it is a recipient of programme benefits and let Y_t^0 be that household's outcome in time period *t* if it does not receive any programme benefits. The impact of the programme is just the change in the outcome caused by receiving benefits: $\Delta = Y_t^1 - Y_t^0$. However, for each household, only Y_t^1 or Y_t^0 is observed in any period, *t*. Let *D* be an indicator variable equal to 1 if the household receives programme benefits and 0 otherwise. In the literature on evaluation of social programmes, *D* is an indicator of receipt of the "treatment." We construct an estimate of the average impact of the project on those that receive it—the average impact of the treatment on the treated (*ATT*):

$$ATT = E\left(\Delta \mid X, D=1\right) = E\left(Y_t^1 - Y_t^0 \mid X, D=1\right) = E\left(Y_t^1 \mid X, D=1\right) - E\left(Y_t^0 \mid X, D=1\right), \quad (1)$$

where X is a vector of control variables. Because $E\left(Y_t^0 \mid X, D=1\right)$ is not observed, we can estimate the impact of the CFPR programme on outcome indicators using PSM as a method for estimating the counterfactual outcome for participants (Rosenbaum and Rubin 1983). Let $P(X) = \Pr(D = 1 \mid X)$ be the probability of participating in the programme. PSM constructs a statistical comparison group by matching observations on beneficiaries to observations on nonbeneficiaries with similar values of *P(X)*.

The validity of this approach rests in part on two assumptions:

$$E\left(Y_t^0 \mid X, D=1\right) = E\left(Y_t^0 \mid X, D=0\right), \tag{2}$$

and $0 < P(X) < 1.$ (3)

Expression (2) assumes "conditional mean independence," that conditional on X nonparticipants have the same mean outcomes as participants would have if they did not receive the programme. Expression (3) assumes that valid matches on $P(X)$ can be found for all values of X. Rosenbaum and Rubin (1983) show that if outcomes are independent of programme participation after conditioning on the vector X, then outcomes are independent of programme participation after conditioning only on $P(X)$. If (2) and (3) are true, PSM provides a valid method for estimating $E\left(Y_t^0 \mid X, D=1\right)$ and obtaining unbiased estimates of *ATT*. Since we have both baseline and follow-up data, we can improve our estimate of impact by subtracting off the difference in pre-programme outcomes between beneficiaries and the matched comparison group of nonbeneficiaries,

$$\begin{aligned} ATT &= E\left(\Delta_t - \Delta_\tau \mid X_\tau, D=1\right) = E\left(\left(Y_t^1 - Y_t^0\right) - \left(Y_\tau^1 - Y_\tau^0\right) \mid X_\tau, D=1\right) \\ &= E\left(Y_t^1 - Y_\tau^1 \mid X_\tau, D=1\right) - E\left(Y_t^0 - Y_\tau^0 \mid X_\tau, D=1\right), \end{aligned} \tag{4}$$

where τ and t represent time periods before and after the introduction of the programme, respectively, and the indicator D refers to receipt of the programme in an intervening period. Equation (4) is a difference-in-differences, PSM estimator that controls (conditions) on pre-programme observables, X_τ as well as controlling for unobservable, time-invariant differences between the treatment and comparison group that are controlled for by conditioning on pre-programme observables. The version of this estimator based on matching was formalized in Heckman, Ichimura, and Todd (1997) and Heckman *et al.* (1998).

Through comparisons with experimental estimators, Heckman, Ichimura, and Todd (1997, 1998) and Heckman *et al.* (1998) show that propensity score matching provides reliable, low-bias estimates of programme impact provided that (i) the same data source is used for participants and nonparticipants, (ii) the data include meaningful X variables capable of

identifying programme participation and outcomes, and (iii) participants and nonparticipants have access to the same markets.

Because the same surveys were implemented everywhere for the CFPR evaluation, criterion (i) has been satisfied. Further, the baseline survey includes a sufficiently rich set of variables to identify programme participation and outcomes related to project objectives, therefore, criterion (ii) has been satisfied. Finally, criterion (iii) can be satisfied by collecting data on beneficiary households and households in the control group within the same locality. However, there are differences in markets across localities, so it would be helpful to control for some of these differences. We include village dummies to control for unobserved village-specific effects.

PSM estimation procedure for the CFPR impact analysis

Our use of the PSM technique for assessing impacts of the CFPR programme involved several steps.

- First, for each outcome, we estimated the propensity score for participation in the programme using a probit model including both determinants of participation in the programme and factors that affect the outcome. Our use of village dummies captures many of the determinants of participation that are typically unobservable to the researcher, which helps to reduce a potentially significant source of bias in PSM estimators.
- Second, we tested the "balancing properties" of the data by testing that treatment and comparison observations had the same distribution (mean) of propensity scores and of control variables within groupings (roughly quantiles) of the propensity score. Control variables that do not satisfy this test were dropped or replaced with alternative variables and the specification was rechecked. All impact results presented in this study are based on specifications that passed the balancing tests.
- Third, Heckman, Ichimura, and Todd (1997, 1998) emphasize that the quality of the match can be improved by ensuring that matches are formed only where the distribution of the density of the propensity scores overlap between treatment and comparison observations, or where the propensity score densities have "common support." Common support can be improved by dropping treatment observations whose estimated propensity score is greater than the maximum or less than the minimum of the comparison group propensity scores. Similarly, comparison group observations with a propensity score below the minimum or above the maximum of the

treatment observations can be dropped.[6] A shortcoming of this approach identified by Heckman, Ichimura, and Todd (1997) is that treatment observations near these cut points face a potential comparison group with propensity scores that are either all lower or all higher than that of the treatment observation. To account for this problem, we modified this "min/max" approach to identifying a region of common support using the following procedure.

⇒ We first estimated the probit model for programme participation and identified the lower and upper cut points of common support in the comparison or treatment groups. Typically only comparison observations were dropped in the left of the distribution and treatment observations were dropped in the right. We then added back the 5 percent of observations from each tail that had been dropped that were closest in terms of propensity score.

⇒ In addition, we trimmed the treatment observations from the interior of the propensity score distribution that had the lowest density of comparison observations (i.e., lowest common support) to improve the quality of the match. We chose to drop 2 percent of treatment observations with this trimming procedure.

⇒ On this common support sample, the probit model was estimated again to obtain a new set of propensity scores to be used in creating the match. We also tested the "balancing properties" of the data by testing whether treatment and comparison observations had the same distribution (mean) of propensity scores and of control variables within groupings of the ranked propensity score.

- We matched treatment and comparison observations through local linear matching with a tricube kernel using Stata's PSMATCH2 command (Leuven and Sianesi 2003). Heckman, Ichimura, and Todd (1997) and Smith and Todd (2005) argue in favor of local linear matching over other matching techniques. Local linear matching performs well in samples with low densities of the propensity score in the interior of the propensity score distribution. Frölich (2004) provides evidence in support of the finite-sample properties of local linear matching relative to most other matching estimators, with the exception of an infrequently used ridge matching approach.

[6] The distribution of propensity scores for the comparison group often lies to the left of the distribution for the treatment group for targeted programmes, such as the CFPR programme. As a result, the highest propensity scores tend to come from treatment observations, while the lowest are dominated by comparison observations. Such a pattern indicates effective targeting.

- Standard errors of the impact estimates are estimated by bootstrap using five hundred replications for each estimate.

The data

The Research and Evaluation Division (RED) of BRAC furnished the data for the assessment of the CFPR programme. As mentioned in Chapter 2, in BRAC launched the CFPR programme in 2002 in Rangpur, Kurigram, and Nilphamari districts in Northern Bangladesh. RED identified potential programme participants through participatory wealth ranking exercises. Usually households in the poorest category of wealth rankings were defined as 'ultra poor' though sometimes households in the poorest two categories were considered. Among the ultra poor, a group of households were selected to receive CFPR programme benefits. These programme beneficiaries are called SUP (selected ultra poor), and the rest of the ultra poor are called NSUP (not selected ultra poor). A recent BRAC study shows that the SUP households are poorer than NSUP households, suggesting that the CFPR programme is well targeted to the poorest of the poor (Matin and Halder 2007).

RED carried out a baseline survey for the CFPR programme from June to August 2002 as a part of its evaluation plan for the programme. The survey included both SUP and NSUP households. The sample size was 5,626 households of which 2,633 were SUP and 2,993 were NSUP households. The survey questionnaire was administered to the woman household head or the wife of the household head.

In 2005, RED re-surveyed a total of 5,228 households of the 5,626 households surveyed in 2002 to construct the 2002-2005 panel. The 2005 follow-up survey included 2,474 SUP households and 2,754 NSUP households. The survey also included 278 additional, newly formed households that had split from the original households surveyed in 2002 (for detail information on the surveys, see Rabbani, Prakash, and Sulaiman 2006).

From the full baseline sample, a sub-sample of 400 households was selected for building up panel data on food consumption. In the sub-sample, 200 households were programme beneficiaries (SUP) and the rest were nonbeneficiaries (NSUP). The baseline survey for these households was conducted in June-July 2002. A total of 373 households from the baseline sub-sample were available for the follow up survey in 2004, and 365 households were available in the third round of survey in 2006. In addition to the questions included in the large-survey questionnaire, the questionnaire used for the sub-sample surveys included a food consumption module (see Haseen 2006 for details on the sub-sample panel surveys).

For the impact assessment of the CFPR programme in this study, the panel of SUP households forms the treatment group and the panel of NSUP households forms the comparison group for the difference-in-differences estimates. Since average SUP households are found to be poorer than average NSUP households (Matin and Halder 2007), we use the PSM technique (with double difference) to make the SUP and the NSUP samples of households comparable for the impact estimates.

In addition to the quantitative survey data, RED researchers collected qualitative information from a small sample of CFPR programme beneficiaries through in-depth individual interviews. This study includes five such case studies to help explain the impact pathway.

IMPACT OF CFPR ON LIVELIHOODS

The first part of this chapter presents estimates of the impact of the CFPR programme on selected livelihood outcomes of programme participants, based on data from BRAC's 2002-2005 panel household surveys. The second part provides the results of an analysis of sustainability of the gains in food consumption, using longitudinal household survey data collected in 2002, 2004 and 2006 from a sub-sample of the large household survey.

Assessing average impact of CFPR using full-sample panel data

At the outset, it is important to keep in mind that this impact analysis of the full-sample panel data is limited in two key ways. First, the indicators used for measuring livelihood impacts do not include income (or consumption as a proxy for income) — the most important indicator of livelihoods. The 2002-2005 longitudinal surveys did not collect income data in detail or consumption data from the large-sample households. Second, the indicators do not capture the direct measures of food consumption—food expenditures and energy (calorie) acquisition—owing to the non-existence of such data in the full-sample data set.

General issues

The goal of evaluating the impact of the CFPR programme is to measure differences in outcomes between the programme beneficiaries and their counterfactual, a proxy for what outcomes would have been for this group had they not received the programme. However, measuring impact as the difference in mean outcomes between all households receiving programme benefits and those not receiving the benefits, even controlling for pre-programme characteristics, may give a biased estimate of programme impact. This bias arises if there are unobserved characteristics that affect the probability of participation in the programme that are also correlated with the outcome of interest. Two important sources of this selection bias include targeting of the programme to recipients based on characteristics unobservable to the researcher and self-selection into the programme by eligible recipients. The difference-in-differences propensity score matching estimator of impact analysis is a credible way to control for these sources of selection bias (Gilligan and Hoddinott 2007).

As explained in Chapter 3, the most appropriate approach for assessing impact of the CFPR programme is difference-in-differences (or double-

difference) propensity score matching (PSM). This estimator constructs a plausible comparison group by matching programme participants to similar nonparticipants using a rich set of control variables. Then, changes in outcomes are compared across these two groups from before and after the CFPR programme to remove any remaining unobserved time-invariant differences between participants and matched non-participants.

In our application of PSM, we first estimate a probit regression where the dependent variable equals one if the household participates in the CFPR programme, zero otherwise. Because we consider a number of outcome indicators, we estimate separate probit regressions. The control variables (regressors) include both the determinants of participation in the programme and factors that affect the outcomes. These variables are either pre-programme levels (such as asset holdings at the time of the baseline survey) or contemporaneous measures of variables that are unlikely to change as a result of participation in the programme (such as education of adult household members). Also included as regressors are a set of village dummy variables that capture all time-invariant village-level characteristics such as spatial differences in markets, prices, wages, infrastructure, flood-proneness, soil fertility, local administrative and political structures, and so on. Having estimated these probit regressions, we calculate the propensity score for participation in the programme, and we match treatment and control households on the basis of these scores.[7] As an example, Table 3 presents the results of a probit regression model for the outcome variable "household has sanitary latrine." Statistically significant coefficients of all explanatory variables have the expected signs for programme participation.

[7] The technical details of our approach are summarized as follows. We first estimate the probits for programme participation. We then check the balancing properties of the propensity scores. The balancing procedure tests whether or not treatment and comparison observations have the same distribution of propensity scores. (A balancing test fails when a *t*-test rejects equality of the means of these variables across ranked groupings of the propensity score.) Where this occurred, we tried alternative specifications of the probit model; the specifications used in this report are the most complete and robust specifications that satisfied the balancing tests. The quality of the match can be improved by ensuring that matches are formed only where the distribution of the density of the propensity scores overlap between treatment and comparison observations—that is, where the propensity score densities have "common support." For this reason, we used the common support approach for all PSM estimates. On the common support sample, the probit model was estimated again to obtain a new set of propensity scores to be used in creating the match. We also re-tested the balancing properties of the data. All results presented below are based on specifications that passed the balancing tests. We matched treatment and comparison observations by local linear regression with a tricube kernel. We used Stata's PSMATCH2 command with common support imposed. Standard errors of the impact estimates are calculated by bootstrap using 500 replications for each estimate.

Table 3. Probit regression estimates for participation in CFPR: An example for outcome variable "household has sanitary latrine"

Variable	Coefficient	z-statistic	p-value
Household size	0.064	4.70	0.000
Number of males completed primary education	-0.295	-4.89	0.000
Number of females completed primary education	-0.140	-2.65	0.008
Number males completed secondary education	0.100	0.58	0.562
Years of education of household head	0.021	0.96	0.336
Household head is illiterate = 1	0.160	1.20	0.229
Female-headed household = 1	0.433	9.07	0.000
Household has cow(s) = 1	-0.672	-7.84	0.000
Household has goat(s) = 1	-0.076	-1.02	0.308
Household has a rickshaw/tricycle van = 1	-0.375	-2.89	0.004
Own cultivable land (decimal)	-0.028	-4.52	0.000
Leased-in land (decimal)	0.001	0.53	0.593
Leased-out land (decimal)	0.014	1.64	0.101
Jhupri/single roofed house = 1	0.052	1.28	0.201
Number of chicken	-0.033	-3.71	0.000
Number of *sharees*	-0.060	-1.60	0.109
Every household member has winter clothing = 1	0.066	1.15	0.248
Every household member has sandal/shoe = 1	-0.111	-2.59	0.009
Household is always food deficit = 1	0.391	9.58	0.000
Household has loan = 1	-0.261	-6.12	0.000
Household has cash savings = 1	-0.389	-6.69	0.000
Location dummy	Yes		
Constant	-0.190	-1.15	0.250
Number of observations	5,018		
Pseudo R-squared	0.11		

Note: Dependent variable is programme participation dummy (participant = 1, control = 0). Results are presented as the change in the probability for an infinitesimal change in each continuous X variable, and as the discrete change in the probability from changing the value from 0 to 1 for dummy X variables.

Impact on asset holding

We begin our reporting of impacts by considering the effect of the CFPR programme on asset holding. The ownership or control of productive assets is an important indicator of livelihood because assets generate income. Physical asset bases (productive and consumption assets) also reduce the risks of vulnerability of households to disruptions in income flows, because part of the asset base can be sold in times of hardship. When income shocks occur, however, family coping strategies often lead to the sale of productive assets (for example, to meet food consumption needs or to cope with health-related emergencies), thereby aggravating these risks. Lack of assets is therefore both a cause and a consequence

of poverty. Our impact results suggest that, participation in the CFPR programme played an important role in protecting and expanding the asset bases of ultra poor households.

Access to land is the most important natural asset in rural Bangladesh. Table 4 provides the results for programme impact on cultivable land ownership. We present the double-difference (difference-in-differences) PSM results in the third row of the Table. However, for a clear understanding of the impacts, we also separately estimate single-difference PSMs for the baseline (2002) and the follow-up (2005) situations and present the results in the first and the second rows, respectively. We follow the same format for presenting the impact results in all the tables presenting impact results.

Table 4. Double-difference PSM impact estimates for owned cultivable land (in decimals)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Own cultivable land in 2002	0.30	1.13	-0.83	-5.12	0.0000
Own cultivable land in 2005	0.81	1.29	-0.47	-1.93	0.0532
Difference (2005 – 2002)	0.51	0.15	0.36	1.30	0.1945

The effect of participating in the CFPR programme on cultivable land ownership is not statistically significant, although the double difference estimate is positive. At the baseline level in 2002, the matched control group (NSUP households) owned on average 0.83 decimal more cultivable land than that of the treatment group (SUP households), and this difference is statistically significant at the 1 percent level.[8] However, the gap between the matched treatment and control groups narrowed over the 2002-2005 period, as the average size of owned cultivatable land for the SUP households increased at a faster rate than that of the NSUP households. The average cultivable land size for SUP households in 2005 was 2.7 times the size in 2002. Despite this substantial increase in cultivable land holding by SUP households, the average cultivable land size for NSUP households was 59 percent higher than that of the SUP households in 2005, and this difference is statistically significant at the 10 percent level. A study using descriptive analysis of programme impact based on the same panel data set shows similar patterns (Rabbani, Prakash, and Sulaiman 2006), although the average size of cultivable land of the unmatched NSUP households is much larger in the descriptive analysis than that of the matched NSUP households in our study.

Table 5 provides impact estimates for leased-in land. While the difference in the amount of rented/leased-in land between programme and control

[8] Note that, the explanatory variables in the probit models estimating propensity scores do not include the outcome variables (in this case, owned cultivable land).

households was not statistically significant in the base year, the SUP households rented or leased-in considerable amount of land over the project cycle, and this increase more than offset the increase recorded for the NSUP households. This resulted in a statistically significant net increase in rented/leased-in land by 1.77 decimals for the programme participants, which suggests a substantial impact.

Table 5. Double-difference PSM impact estimates for rented/leased-in land (decimals)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Leased in land in 2002	1.89	1.56	0.33	1.50	0.1341
Leased in land in 2005	4.80	2.71	2.10	6.36	0.0000
Difference (2005 – 2002)	2.91	1.15	1.77	4.78	0.0000

Livestock and poultry are important assets for the rural poor in Bangladesh. Recognizing the importance, the CFPR programme's asset transfer component largely involved the delivery of livestock (cattle and goats) and poultry to its beneficiaries. The programme also provided materials for constructing sheds for livestock and poultry. Further, the training component of the programme put emphasis on developing the livestock- and poultry-raising skills of programme participants. Because of their importance and programmatic relevance, we carried out separate impact analyses for cows, goats, and poultry.

Tables 6, 7, and 8 present the double-difference PSM impact assessment results for ownership of cows, goats, and chicken, respectively. The results suggest that, over the period 2002-2005, livestock and poultry holdings increased substantially for programme participants compared with their matched control groups, and these differences are statistically significant at the 1 percent level. The resulting strong impacts of the CFPR programme on livestock and poultry assets build-up are however not surprising since the CFPR programme mainly transfers livestock and poultry to its beneficiaries.

Table 6. Double-difference PSM impact estimates for ownership of cows (number)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Number of cows in 2002	0.34	0.13	-0.09	-7.93	0.0000
Number of cows in 2005	1.62	0.17	1.45	53.22	0.0000
Difference (2005 – 2002)	1.59	0.04	1.54	58.94	0.0000

Table 7. Double-difference PSM impact estimates for ownership of goats (number)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Number of goats in 2002	0.10	0.09	0.01	0.79	0.4287
Number of goats in 2005	0.52	0.13	0.38	13.54	0.0000
Difference (2005 – 2002)	0.42	0.47	0.37	11.60	0.0000

Table 8. Double-difference PSM impact estimates for ownership of chicken (number)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Number of chicken in 2002	0.84	1.04	-0.20	-3.00	0.0027
Number of chicken in 2005	2.49	2.17	0.32	3.00	0.0028
Difference (2005 – 2002)	1.65	1.23	0.52	4.74	0.0000

In addition to assessing the impact of programme participation on physical asset building, we estimate the change in saving behavior of the programme beneficiaries over the 2002-2005 period. The results of impact estimates presented in Table 9 suggest that, at the 2002 baseline, only 8 percent of SUP households had cash savings compared with 13 percent households in the matched control group who had savings. By 2005, the percentage of SUP households with savings increased dramatically to 91 percent (an increase of 82 percentage points), while the increase for the matched control group of NSUP households was a modest 11 percentage points. As a result, the double-difference PSM impact estimates suggest a statistically significant increase of 71 percentage points for the programme participants with savings.

Table 9. Double-difference PSM impact estimates for household having cash savings (proportion)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Household had any cash savings in 2002	0.08	0.13	-0.05	-5.25	0.0000
Household had any cash savings in 2005	0.91	0.25	0.66	57.03	0.0000
Difference (2005 – 2002)	0.82	0.11	0.71	48.13	0.0000

Impact on education

We use the net primary school enrollment rate as the outcome indicator for assessing programme impact on education.[9] The impact estimates in Table 10 suggest that the CFPR programme had no statistically significant impact on net primary school enrollment of children. Although the double-difference PSM estimates show 3 parentage points increase in

[9] Net enrollment rate = All primary-school-going children aged 6-11 years/all children aged 6-11 years.

the net enrollment rate for primary school age children (aged 6-11) from SUP households, this apparent increase is not statistically significantly different from zero.

Table 10. Double-difference PSM impact estimates for net primary school enrollment of children aged 6-11 years (rate)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Net enrollment rate in 2002	0.65	0.67	-0.02	-1.10	0.2727
Net enrollment rate in 2005	0.79	0.79	0.00	0.09	0.9255
Difference (2005 – 2002)	0.14	0.11	0.03	0.99	0.3225

Impact on perceived food insecurity

We estimate the impact of the CFPR programme on perceived food insecurity, based on respondents' qualitative notion of whether or not they were always food deficit, deficit sometimes, neither deficit nor surplus, food surplus. Table 11 shows a large reduction in the perceived food deficit situation (in other words, substantial improvement in perceived food security) of the programme participants. While 63 percent of the SUP households in 2002 had believed that they were always in food deficit situation, only 16 percent of them thought so in 2005. The corresponding figures for the matched NSUP households are 48 percent in 2002 and 34 percent in 2005. As a result, the impact estimates suggest a net reduction of 33 percentage points in the perceived food deficit situation for the programme participants. All differences in the perceived food deficit situation between the treatment and the matched comparison groups (i.e., single-differences in 2002 and in 2005, and the difference-in-differences) are statistically significant at the 1 percent level.

Table 11. Double-difference PSM impact estimates for household always in food deficit (proportion)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Always food deficit in 2002	0.63	0.48	0.15	10.78	0.0000
Always food deficit in 2005	0.16	0.34	-0.18	-13.47	0.0000
Difference (2005 – 2002)	-0.47	-0.14	-0.33	-17.84	0.0000

Impact on dwelling and sanitation facilities

We consider the situation of whether or not a household has sanitary latrine as a composite indicator reflecting the status of dwelling and sanitation facilities. The impact estimates indicate that participation in the CFPR programme led to better dwelling and improved sanitation facilities. In 2002, only 2 percent of SUP and 3 percent of NSUP households had sanitary latrine. The situation improved dramatically in

3 years for programme participants — 74 percent of SUP households had sanitary latrine in 2005 (Table 12). Although there was a sizable increase in the possession of sanitary latrine by NSUP households over the same time period, the magnitude of increase was much larger for the SUP households. The net result is a 34-percentage point increase in the possession of sanitary latrine due to programme participation, as the statistically significant impact results presented in Table 12 suggest.

Table 12. Double-difference PSM impact estimates for household having sanitary latrine (proportion)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Sanitary latrine in 2002	0.02	0.03	-0.01	-1.20	0.2304
Sanitary latrine in 2005	0.74	0.41	0.34	21.33	0.0000
Difference (2005 – 2002)	0.72	0.38	0.34	21.22	0.0000

Impact on clothing and footwear ownership

The difference-in-differences PSM impact estimates presented in Table 13 show that the CFPR programme had statistically significant positive impacts in terms of clothing and footwear ownership by the SUP households. Programme participation enabled the SUP women to have 0.21 additional *sharees* on average. Further, because of programme participation, larger percentages of SUP households had winter clothing (an increase of 11 percentage points) and shoes or sandals (an increase of 10 percentage points) for every family member.

Table 13. Double-difference PSM impact estimates for ownership of clothing and footwear

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Ownership of shares (number)					
Number of *sharees* in 2002	1.74	1.76	-0.15	-0.89	0.3717
Number of *sharees* in 2005	2.26	2.06	0.20	8.28	0.0000
Difference (2005 – 2002)	0.52	0.31	0.21	8.25	0.0000
Winter clothes for everyone (proportion)					
Winter clothes for everyone in 2002	0.14	0.12	0.01	1.40	0.1626
Winter clothes for everyone in 2005	0.34	0.22	0.12	8.29	0.0000
Difference (2005 – 2002)	0.20	0.09	0.11	6.15	0.0000
Shoes/sandals for everyone (proportion)					
Shoe/sandal for everyone in 2002	0.58	0.62	-0.04	-2.71	0.0067
Shoe/sandal for everyone in 2005	0.92	0.86	0.06	5.87	0.0000
Difference (2005 – 2002)	0.34	0.24	0.10	6.47	0.0000

Sustainability of livelihood improvements

Is the impact of the CFPR programme on livelihood improvements of programme participants sustainable? We attempt to answer this question by analyzing the data from a sub-sample of the full household survey sample.

BRAC carried out three rounds of longitudinal surveys for the sub-sample of households in 2002 (baseline), 2004 (at the end of the programme), and 2006 (two years after the programme). The sub-sample included both programme participants (SUP households) and non-participants (NSUP households). The questionnaire used for the sub-sample surveys included a food consumption module in addition to the questions in the full-sample survey questionnaire.

Because food consumption is most important in the lives of the poor, it serves as an appropriate indicator of their livelihoods. For analyzing the sustainability of the programme impact on livelihood improvements we use household food expenditures and food energy consumption as outcome indicators.

We first report the programme impact on food expenditures and examine its sustainability. The sub-sample household surveys collected data on quantities of food acquisition and prices for a comprehensive list of food items. Food acquisition consists of the quantities of food purchased and obtained by home production and other sources including food transfer from various programmes and private sources. The quantities of food produced by the household and food transfer received were valued at the average unit market prices of foods and converted to monthly per capita figures. To adjust for inflation over time, we deflated total per capita food expenditures in 2002, 2004, and 2006 using the rural Consumer Price Index (CPI) in Bangladesh, and express the data in 2006 constant prices.

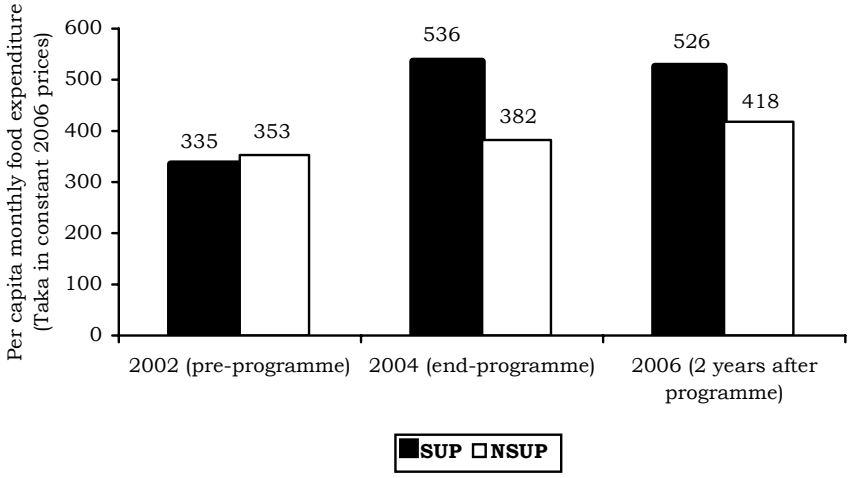
Table 14 presents the impact estimates for per capita food expenditures, and Figure 3 illustrates the results. A statistically significant difference between 2002 and 2004 presented in the fourth row of the table will show the “short-term impact” and that between 2004 and 2006 will show the “long-term impact” of the programme. The results suggest that the CFPR programme had both short and long-term impacts on food consumption in terms increasing real expenditures on food purchases by programme participants. That is, the programme made it possible for the SUP households to spend more on buying food, and to sustain their augmented food expenditures even two years after they had completed the project cycle. However, the rate of increase in food expenditure slowed down over the two-year period after the completion of programme participation.

Table 14. Double-difference PSM impact estimates for monthly per capita food expenditures (in Taka)

Outcome variable	Treat-ment	Control	Difference	t-statistic	p-value
Per capita monthly food expenditure in 2002	335	353	-18	-0.87	0.3847
Per capita monthly food expenditure in 2004	536	382	154	3.36	0.0009
Per capita monthly food expenditure in 2006	526	418	108	3.70	0.0003
Difference in per capita monthly food expenditures (2004 – 2002)	202	29	173	3.37	0.0009
Difference in per capita monthly food expenditures (2006 – 2002)	191	65	126	3.84	0.0001

Note: Per capita expenditures are expressed in real terms in constant 2006 prices.

Figure 3. Double-difference PSM impact estimates for food expenditures



Next we investigate the short and the long-term impact of the CFPR programme on food consumption in terms of total energy or calorie intakes. For this analysis, we used the data on quantities of acquisition of different food items by survey households, and converted the quantities into food energy using calorie conversion factors for Bangladeshi foods.

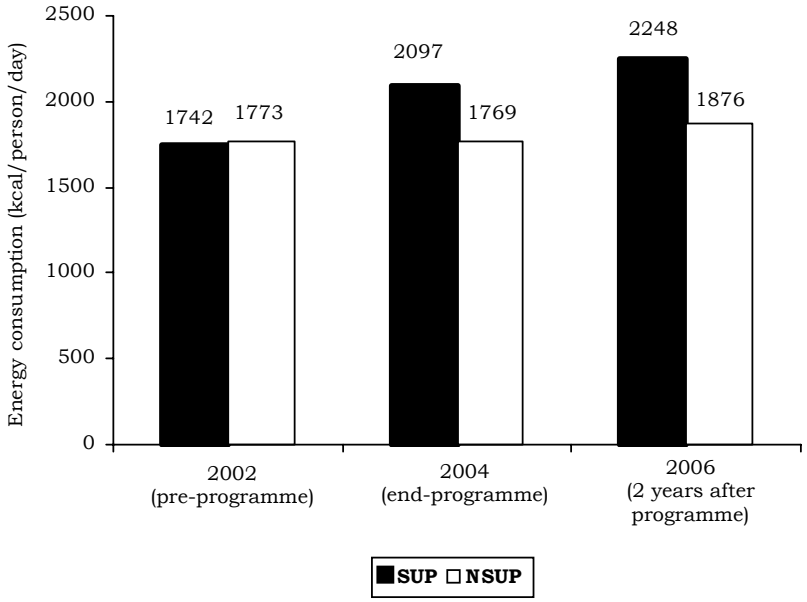
The impact estimates in Table 15 suggest that, because of programme participation, the SUP households increased their food energy consumption, and they were able to sustain the increased consumption for at least two years after their programme participation. Both short and

long-term increases in energy consumption are statistically significant. The results also show that the short-term impact on energy consumption was not only sustainable but the rate of increase was even higher in the longer run. Figure 4 demonstrates these findings. A comparison of these results with the results presented in Table 14 on food expenditures indicates that the programme beneficiaries acquired food energy at a lower cost per unit after leaving the programme.

Table 15. Double-difference PSM impact estimates for energy consumption (kcal per person per day)

Outcome variable	Treatment	Control	Difference	t-statistic	p-value
Per capita calorie consumption in 2002	1,742	1,773	-30	-0.29	0.7725
Per capita calorie consumption in 2004	2,097	1,769	328	3.19	0.0016
Per capita calorie consumption in 2006	2,248	1,876	372	2.91	0.0039
Difference in per capita calorie consumption in (2004 – 2002)	355	-3	358	2.65	0.0084
Difference in per capita calorie consumption in (2006 – 2002)	506	103	402	2.49	0.0132

Figure 4. Double-difference PSM impact estimates for energy consumption



We compare our findings of the short and the long-term impacts of the CFPR programme on food consumption with the findings of a recent study by Haseen and Sulaiman (2007) that used the same data set and a similar method of impact analysis. Although the patterns of impacts and their sustainability are comparable, the magnitude of food consumption impacts in our study is much higher than that found by Haseen and Sulaiman (2007), as shown in Table 16.

Table 16. A comparison results of two studies

Outcome variable	Present study (1)	Haseen and Sulaiman study (2)	Difference (1) – (2)
Difference in per capita food expenditures (2004 – 2002): Taka/month	173	91	82
Difference in per capita food expenditures (2006 – 2002): Taka/month	126	83	43
Difference in per capita calorie consumption (2004 – 2002): kcal/day	358	198	160
Difference in per capita calorie consumption (2006 – 2002) : kcal/day	402	246	156

Table 16 suggests that the short-term impact estimates in our study are 90 percent higher for food expenditures and 80 percent higher for energy consumption than the estimates reported in Haseen and Sulaiman (2007); and the long-term estimates (i.e., the sustainability of impacts) for food expenditures and energy consumption in our study are 52 percent and 63 percent higher, respectively.

Why the differences in impact estimates are so large between the two studies? Since both studies used the same data set for the analysis, these differences are probably due to the variation in the specific techniques used for the impact assessment. While both studies used double-difference with PSM for estimating the impacts, Haseen and Sulaiman (2007) used the radius method of PSM suggested by Dehejia and Wahba (2002), which is a variant of caliper matching. By contrast, we matched treatment and comparison observations through local linear regressions with a tricube kernel. Heckman, Ichimura, and Todd (1997) and Smith and Todd (2005) argue in favor of local linear matching over other matching techniques. In addition, we used the common support approach for all PSM estimates, and trimmed the treatment observations from the interior of the propensity score distribution that had the lowest common support to improve the quality of the match.[10] Further, for

[10] We chose to drop 2 percent of treatment observations with this trimming procedure.

calculating the propensity scores for participation in the programme, all probit regressions in our study included sets of village dummy variables that capture time-invariant village-level characteristics such as spatial differences in markets, prices, wages, infrastructure, flood-proneness, soil fertility, local administrative and political structures, and so on. Haseen and Sulaiman (2007) however did not use location dummy variables to control for local level fixed effects in estimating the propensity scores for programme participation.

IMPACT PATHWAYS: STORIES FROM PEOPLE BEHIND THE NUMBERS

The preceding findings show *average* impacts of the CFPR programme on the livelihoods of programme participants, but they do not explain how and why the programme had (or did not have) impacts on individual households; there can be no presumption that all SUP households benefited or benefited equally. BRAC-RED researchers collected qualitative information from a small sample of CFPR programme beneficiaries through in-depth individual interviews in 2004 (at the end of the programme) and 2008 (four years after the beneficiaries had left the programme). In this chapter, we present five such case studies to help explain the impact pathway. These are real stories from people behind the numbers, told in their own words.

Case 1. Pushparani's determination enabled her to build up assets

Status before programme participation

Pushparani, about 36, lives in Guchha Gram village in Domar *upazila* of Nilphamari district. Pushparani got married when she was 13. Her husband, Doyal Chandra, worked as a day-labourer for a wage of around 30 Taka per day. Pushparani also worked as a day-labourer when she could, but work was scarce and she got less wage than men. Because the other households in her neighborhood were also poor, she could not find work as a maid.

Pushparani has two sons. It was so difficult to feed the whole family with her husband's meager income that Pushparani used to live at her father's house most of the time. She never had the skills or confidence to start any enterprise of her own. She once had some chicken, but they were stolen.

Reminiscing her days before joining CFPR, Pushparani said, "We were so poor, life was so difficult. Not much crop is grown in our village because of the poor quality of land, so work is scarce. Ever since I got married I have seen only poverty." Often the only meal in a day Pushparani had for herself and her family was a handful of *chaal bhaja* (dry-fried rice). She had only one *sharee*. She could not afford to wash herself with soap or put oil in her hair.

The family lived in a one-room house with tin roof and walls made of bamboo and straw. Her father-in-law owned the homestead land. She had a tubewell (hand pump for water) provided by an NGO which she could not name.

In 2002, CFPR ranked Pushparani's household as one of the poorest in her community, and selected her as a member of the programme. She was first invited to training on poultry rearing at the local BRAC office. After the training she received 36 chicken with free feed, 3 goats, and tins for building the cage and shed for her poultry and goats.

2004: Status toward the end of the programme

After she got the assets from BRAC, Pushparani's daily chores increased. She looked after the chicken and goats, and sold eggs. She also worked as a day-labourer whenever she got an opportunity. She considered the assets transferred from the programme as a windfall, and worked as much as she could to preserve and multiply her assets. She also had to give time every week to BRAC project officers (POs) who used to visit her house to teach her how to read and count, and discussed with her the basic health and legal issues. When she used to work as day-labourer, she took the goats with her and tie them close to where she worked, so that she could keep an eye on them. Her children looked after the chicken when she was not in the house. She came home during her lunch break to feed the chicken.

"Just because I got the hens it does not mean that I will stop working. A lot of women who got assets (from BRAC) say that they don't have the time to work outside. But I am doing it, and I am managing it well. If I work outside I earn 20-25 Taka (per day) for my family. I put that money in my savings account with BRAC. The more savings I have, the better it is for me. I can do big things in the future with that money," said Pushparani.

Pushparani lived on the same plot of land as before, but she extended her house for accommodating the goats and hens. She also built a new kitchen with bamboo and straw. She bought a bed with the stipend money her son received from his school. With the first earnings from her egg sales, she bought two blankets, kitchen pots, utensils and clothes for her family. She did not buy any clothes for herself though.

Pushparani believes in *chinho rakha* (preserving a mark) from her earnings, that is, she makes sure her earnings are invested to build more assets. For example, from the money she got from selling eggs, she bought a calf for 1,500 Taka.

"I want to keep a *chinho* every time I rear hens. I like rearing cows, but that doesn't mean that I will not rear hens also. Earnings from egg sales are useful. I feel secure when I think that I have more than one kind of asset," she said.

Two of her goats suddenly got sick toward the end of 2003. She consulted the BRAC PO and sold all her goats (including a kid). She sold them for 2,500 Taka and saved all of it in her account with BRAC. Later, she added 1,500 Taka to this amount and bought a cow from a local school teacher. The BRAC PO accompanied her during the transaction. She was very happy to buy this cow because it gave milk, and she could give milk to her children. She also sold milk sometimes and kept the earnings in her savings account.

She got 54 hens from BRAC after the first batch. She sold 70 *hali* eggs (1 *hali* = 4 eggs) per week at 11 Taka per *hali*. Her expense per week was 590 Taka for feed plus 32 Taka for oil for heating. So her profit was about 148 Taka per week.

In early 2004, Pushparani took one *bigha* (one-third of an acre) of land as *adhi* (sharecropping). "Nobody would give me land before because I did not have money for cultivation. Now I can buy fertilizers with my earnings from egg sales, so people are willing to lease land to me."

Pushparani and her husband first cultivated peanuts on this piece of land. With her share of the harvest (the owner of the land took half the crop) she bought food during the *Monga* (lean season). In the following season they cultivated paddy, which they kept for their household consumption. In the next season they plan to cultivate peanuts again, and want to hire labor for helping out in cultivation.

At the end of 2004, Pushparani was ready for taking loans from BRAC. She had earnings from selling eggs, milk and peanuts. She was confident that she would be able to pay the loan instalments. Other villagers and local NGOs also offered her loans, but she thought that the interest rate and credit terms were the best at BRAC. With the loan, she would like to lease in land and cultivate paddy or buy another cow. With earnings from these assets, she would repair her house and perhaps buy land.

At the time of the interview, Pushparani said she had soap and hair oil in her house. All her family members had sandals, although they hardly wore them.

Pushparani was well aware of basic hygiene and health information. The *Gram Daridro Bimochon* Committee-GDBC (Village Poverty Reduction Committee formed by BRAC) provided a concrete base for her tubewell. She bought a sanitary latrine with 4-ring slab with the allowance she got from BRAC for attending the training, and built a tin roof for the latrine with her savings. Her family had three meals a day. They could not afford fish or meat very often, but they had vegetables with rice every day.

Status in 2008

Pushparani now lives on her own land, with a boundary wall made of bamboo. Her house has one big room and a kitchen. The old bed is broken, but there is a new bed now. She also has a wooden box for keeping clothes and valuables. Both beds have mosquito nets. She has four blankets. There are many trees around the house, which came with the land. The kitchen has three walls, but looks clean. She has planted a *tulsi* tree for prayer.

During the interview, Pushparani was planning to go to her niece's wedding in another village. She has to buy a gift or give money (at least 101 Taka). She would have to spend 160 Taka on transport for herself and her husband. She also spent 350 Taka for buying new clothes and sandals for the two of them. "We must look presentable at the wedding," Pushparani said. She wished she had high-heeled shoes and a *sharee* worth 250 Taka. Her mother was living at her house temporarily to guard her assets and to take care of her sons while she is away.

Pushparani adopted a girl who is now 2 years old. She is her brother-in-law's daughter. Her real parents do not care about the girl because they have many daughters. Pushparani takes good care of her adopted daughter – she wants to make sure that no one can say that she ignored this girl just because she is not her own daughter.

Her sons are in class 4 and in class 1. Her husband still works as a day-labourer and gets 70-80 Taka per day as wage. She also works as a day-labourer occasionally, makes *muri* (puffed rice) when there is no work, and her husband sells the *muri* from door to door.

Last year she could not find any land to lease. Three years ago she cultivated peanuts on 2 *bighas* of land. She wants to lease in 2 *bighas* again. She would do this by taking a loan of 5,000 Taka from BRAC. She can also use some of her savings for leasing land.

Pushparani bought one more cow in the meantime from earnings from her second batch of chicken. One of her cows gave birth to a calf. So, she had four cows in total. However, she sold one for 7,000 Taka and one died. She bought a bicycle for husband for 500 Taka so that he could ferry the *muri* she often made. But later, she sold that bicycle for 500 Taka, sold 3 hens for 300 Taka and took a loan of 2,000 Taka to buy her homestead land (this was 2 years ago).

She sold her VGD wheat for 500 Taka and bought a bench and a new bed.[11] She bought two blankets from her own earnings. She has one good

[11] The Vulnerable Group Development (VGD) program is a food-based government intervention that distributes free rations of rice or wheat to destitute women.

sharee (not for daily wear) and one petticoat. Each member of her family has one set of good clothes. She bought a silver necklace for 500 Taka. She has two goats which she plans to sell to buy food during the *Monga* season.

Pushparani's relationship with her in-laws is not that good. They evicted her from their land because she has so many assets. They took their land back because they thought that she was too well-off.

She hopes that her eldest son will pass primary school and she wants to send him for apprenticeship or for rickshaw pulling in Dhaka city. She wants to make two rooms for her two sons; otherwise they will fight when they will have families of their own. She wants to rent out two cows for plowing. She also wants to start saving for her daughter's wedding expenses.

Pushparani and her husband are equal partners in all their enterprises. They make plans together and make all decisions together. The good understanding and hard work of the couple are important factors behind Pushparani's success.

Points to note:

1. Pushparani fulfilled her dream of owning her own homestead land. She used to live on others land, but now she hopes to build two houses for her two sons. This gives her a great sense of stability and security, as she said, "*Ami je koshte chhilam, keo jane na. Ami pachbar ghor bhangsi ar banaisi. Ekhon ghor amar – keo ar nite parto?'* (Nobody will understand the hardships I went through. I had to shift my house from one place to another five times. Now this land is mine, now nobody can take it from me)."
2. She has acquired confidence and ability to communicate and access essential services. For example, she described how she obtained a VGD card from the local union council chairman. Before she would directly ask "*Chal kene na dish?* (Why don't you give me rice?)". Important people like the chairman would ignore her completely. But now she has learned from the BRAC PO how to talk. When she goes to the chairman's office, she first asks for permission to enter his office. If he is busy talking to someone else or doing other work, she waits patiently for him to finish. Then she asks the chairman if he has some time to talk with her. When he responds, she starts explaining why she needs the government benefit. This is how she makes sure that she is heard.
3. The fact that Pushparani adopted a child shows her confidence in sustaining her increased income. Raising a daughter in the rural Bangladesh scenario is a huge responsibility. The cost of educating

and marrying off a daughter is a significant burden for most poor families. Her child adoption shows that she believes that their improvement is sustainable.

4. She has concrete plans of buying more assets and ensuring security for her old age. Her strategy of keeping a '*chinho*' (mark) from her major earnings shows her determination and ability to continue strengthening her asset base.

5. She knows the value of education and is determined to educate her children, as she explained, "*Amio to school-e dhuksilam, kintu amar bie hoe gelo chotobelai…tokhoni amar shob shesh. Ekhon ami bujhi – eije mainsher jonno kaj korte korte amar ga kalo hoey gese na? Eita to hoito na…* (I also started going to school, but I was married off very young. That was the end for me. Now I realize—do you see how dark is my body from working for others? This would not have happened […if I was educated])."

Case 2. Sahera's lack of integrity did not let her thrive

Status before programme participation

Sahera was married when she was about 9 years old. Her husband was a student in class 6 at that time. She used to live with her mother-in-law. Her in-laws were quite well-off – they had 20-25 *bighas* of land. However, they had to sell their land to bear medical expenses for Sahera's father- and mother-in-laws. After they had died, it was very difficult for Sahera to feed herself and her family. She had two sons and a daughter. They had no land and assets left. Her husband was too ashamed to work as a day-labourer in his own village.

Sahera and her family used to have only one meal a day. Sahera would often go without food. They sold all their furniture and utensils, and left with only one cooking pot. Sahera used to cook rice in that pot, put the cooked rice on a banana leaf and then cook vegetables in the same pot. They had two plates — her husband and son would eat first, then she would have her meal. They could hardly afford any oil for cooking. They had two rooms made of bamboo and straw—one was destroyed in a storm. The remaining room had a leaking roof. When it rained, they would sit inside under an umbrella, which was also broken. She had one *sharee*. After washing it, she would sit inside the hut and wait for her *sharee* to dry before wearing it again.

Sahera never worked outside — her status would be hurt, as they were well-off once. Every 15-20 days her husband brought money from work outside the village. Her husband was alleged to gamble.

They had no latrine. In the monsoon, Sahera could not go out for toilet. She had to go outside very early in the morning or late in the evening—she suffered from stomach problems for this reason.

Sahera used water from ponds for washing, and used tubewell water only for cooking and drinking. Her neighbors were rude to her for using water from their tubewells, and her relatives were rude to her because they were poor. They could not buy gifts or serve food when relatives visited them.

Sahera's sister was relatively well-off, and she was the only one who helped her. No one would agree to give her loans. She wanted to be a BRAC member, but the BRAC *shobha netri* (borrower group leader) in her village did not allow her to join the group because she thought Sahera would not be able to repay loans.

2004: Status toward the end of the programme

Sahera received 36 chicken and 3 goats from the CFPR programme. However, she incurred losses from poultry rearing. While others had 20-30 eggs from a hen per month, she reported to RED researchers that she had only 5 eggs. Her neighbors and BRAC POs thought that Sahera had hidden her eggs. Her saving with BRAC was also low compared to other members. That is why she did not get a second batch of chicken—she got 2 goats from her savings instead.

Sahera repaired her house for 1,200 Taka from her husband's earnings. Her goats used to graze on others land, but they would get angry. The goats were unhealthy and often got sick. So she sold all 5 goats for only 1,700 Taka. She saved 600 Taka and spent 400 Taka on her son's treatment. She also claimed that she gave 500 Taka bribe for getting work at the Rural Maintenance Programme (RMP) – a government public works programme.

Sahera's eldest son started going to school at the BRAC PO's insistence, but when he was in Class 2, he dropped out and started to work. Later, Sahera's husband took their two sons to Jaipurhat for work, where each of them earned 20-30 Taka per day. But still they had economic hardship, particularly during the *Monga* season.

Sahera's daughter was married early at about 12. Sahera promised a dowry of 10,000 Taka, but could not pay it at the wedding. Her daughter's husband often threatens to send his wife back to Sahera if the dowry is not paid.

Sahera did not have good relationship with the BRAC POs. They complained that she did not listen to their advice to run her enterprise

wisely. She had little savings and sold her assets without consulting the staff. She stayed at her father's or sister's house too often and did not spend enough time for looking after her goats and poultry.

Status in 2008

In 2008, BRAC-RED researchers found Sahera working at her nephew's house as a maid. Her husband married another woman after Sahera's second son was born. Sahera lived at her father's house about a year after she found out that her husband had remarried. Neighbors reported that Sahera also remarried during this time (later, her daughter confirmed this information). After some time her husband's second wife also left, and her husband and sons convinced her to return home. This was when she became a CFPR member. She worked in the RMP programme while her husband and sons also worked. Her eldest son migrated to Dhaka once he got married. Sahera's economic situation improved during that time.

She took a loan of 2,000 Taka from BRAC and another loan of 1,000 Taka from Proshika (a national NGO) and re-built her house with that money. But her husband refused to pay the loan instalments. Sahera and her husband started to fight over this. She said she paid instalments from her sons' earnings and selling milk from her cow. Her husband claimed that he paid the instalments out of his own earnings. Six months after the house was re-built, the second wife came back. For a few months they all lived together. However, 5-6 months later, Sahera left her home to live with her brother. There she lived for one and half years. Then she moved to her sister's house and lived there for six months.

She lost the RMP work and was hoping to join RMP again, but she has to give 500 Taka savings deposit within two days to secure it. She did not have the money and did not know where to get this money from. She did not think her siblings would help her.

Sahera reported that she left her cow with her son, but she did not seem to care about it. The researchers also talked to the second wife who appeared to be quite well-off. She was wearing new clothes and gold jewelry. She is a CFPR member's daughter.

2008 – Second Visit

Sahera was unwilling to talk to the researchers when they re-visited her. Her nephew said she was away. The researchers found her husband and heard his side of the story, which is summarized below.

Sahera received 36 chicken from BRAC, but she used to hide the eggs. BRAC POs and her husband tried to stop her hiding the eggs, but she hid

them in a pot underground. A PO once sealed the cage so that she could not take the eggs out. Her husband maintained the cost for raising the poultry birds with earnings from his day-labor work. He once got frustrated and did not feed the chicken for three days. The birds almost died – he took the chicken and Sahera to the BRAC office. The POs gave feed, but said they would not help Sahera anymore. She sold the tins for buying costly food for herself. She had five goats, but she sold them to buy a cow.

Sahera sold the first calf for 2,700 Taka and spent the money on the house. Three months later she sold the cow for 6,100 Taka and bought a tricycle van with the money. The younger son used to drive the van and earned 50 Taka per day. After about 6 months, she sold the van for 3,200 Taka. Her son took 800 Taka out of this. This created some tension between the mother and the son. Sahera took the remaining money and left for Dhaka, claiming to work at a ready-made garment factory (Sahera later admitted that she went to Dhaka but she could not find any work there). Then she went to Thakurgaon to a relative's house. From there she went to her sister's house. There she secretly sold her nephew's bicycle and used the money to go to Dhaka again. She returned to her sister's house again after spending all the money. But she did not get along with her sister anymore, so she left – her husband did not know where she went after that.

The younger son earned 2,500 Taka from harvesting paddy on neighbors' land, bought a calf with that money (which Sahera claimed it was her CFPR cow).

When asked about Sahera's second marriage, her husband told that, since he was very poor, Sahera's brother took her away and married her off. She was married for 6 years there. In the meantime Sahera's first husband remarried, but his second wife also left. After that, Sahera's brother brought Sahera back. This was in 1996.

Sahera's husband complained that Sahera wasted money on watching movies, buying *sharees* and other unnecessary things. She stole money from everyone. She did not like the shares he bought for her – she gave them away.

The second wife of Sahera's husband seemed to be concerned about the researchers' visits and inquiries. She asked the researchers if BRAC would try to reconcile the relationship between Sahera and her husband. She also told some stories about Sahera's infidelity and careless spending.

Sahera's daughter

The researchers visited Sahera's daughter to validate some information. She lives in another village with her husband. She looked happy, but poor. However, the daughter was not happy with her parents' family; she said that her brothers never visited her. She has a two-year old daughter. Her father visited her only once when the baby was born, but never gave any gifts. Her daughter's in-laws made rude remarks to her because of this. She was unwilling to talk about her mother's second marriage, but did not deny the fact.

Sahera visited her daughter after she had returned from Dhaka. Sahera was ill and had nothing with her when she visited her daughter. After Sahera left, the daughter did not know where she went. She asked the researchers whether they found her mother.

Sahera – later

Sahera was very angry that the researchers talked to her husband. She admitted going to Dhaka once. She also realized that the researchers know that she lied about the cow. She said that many CFPR members do not have their assets now, and that BRAC should not come after her only.

Points to note:

1. Harmony and partnership within the family is important in maintaining and building the asset base of a household. Sahera and her husband had separate plans and failed to improve their status of their family from the BRAC assets. They were also not united in their efforts to repay the BRAC loans and blamed each other for not taking the responsibility.
2. Both Sahera and her husband were better-off when they were growing up. They were both in the habit of buying clothes and spending money on luxuries and entertainment that were beyond their affordability. When the CFPR assets generated income, Sahera spent it unwisely and for short-term enjoyment, rather than investing it for long-term financial stability.
3. Sahera had a bad reputation with the BRAC POs for lying to them and not listening to their advice. Consequently, she missed out on the support that other CFPR members received from BRAC. The BRAC POs at one point gave up on her as she had nothing to show for the investment BRAC had made on her.

Case 3. Kohinoor's asset base helped her cope with crises

Status before programme participation

Kohinoor, about 42, lives in Betgara village in Domar *upazila* of Nilphamari district. She got married when she was 13. Her husband, Ansar Ali, was related to her aunt. He had a wife before Kohinoor, but insisted on marrying her. Kohinoor's father and brothers were reluctant to marry her off to this man, but Kohinoor's aunt acted as the guarantor. Since then her aunt became Kohinoor's patron. Kohinoor spent a couple of years at her father's house after her wedding. After she moved in with her husband, her husband began to torture her for dowry. Often Kohinoor would leave for her father's house when unable to bear the violent behavior of her husband.

Kohinoor has two sons. Her husband worked as a day-labourer. She also worked on other's land for 20-25 Taka per day, but she did not get work every day. When outside work was not available, she worked at her aunt's house as a maid and received one meal for herself and her sons in return.

Kohinoor gave birth to her third son who died at birth. After this incidence, her husband stopped abusing her physically. The house she lived in had one room with three walls made of bamboo and straw, with a broken door. One side of the hut was covered with jute burlap. The family ate once a day and slept on one bamboo *macha* (platform).

2004: Status toward the end of the programme

Kohinoor received two cows from the CFPR programme. She did not go out for work anymore. She spent her time taking care of her cows and her family. Her sons cut grass for the cows. She also spent her time attending meetings at BRAC and listening to the BRAC POs when they made weekly visits to her house. Her husband did not beat her anymore. He took care of the cows. Her whole family helped with cow rearing and took good care of her cows. But her husband did not save as much as she would like him to.

Her eldest son did not go to school, the younger did. Kohinoor however was not very enthusiastic about educating her sons. She and her husband thought that their sons would not grow up to have the type of jobs that educated people get.

Kohinoor had saved her CFPR training allowance and repaired her house with that money. They also put a tin roof on the house — BRAC gave Kohinoor 4 tins, she got 3 tins from the government (she did not know the name of the government programme), and the rest of the tins were

bought with her savings. They hired labourers for building the house. She also bought some utensils from her CFPR allowance.

Kohinoor had two cows and one calf. She used to sell milk (about 2 liters per day) from the cows. They invested all earnings from milk on cows for feeding and rearing them. Once, the cows suddenly stopped giving milk. Her husband went to a *kabiraj* (traditional healer) who treated and cured the cows.

Although her aunt was sometimes rude to Kohinoor because she did not have the time to work at her house anymore and often made jealous remarks about her new wealth, she in general encouraged Kohinoor to look after her cows properly. Some of Kohinoor's neighbors were also envious and scared her that BRAC would make her a Christian.

In 2004 Kohinoor had four cows. She still lived with her family on her father-in-law's land, which they would probably get by inheritance. Her dream was to buy land close to her aunt's house and build a house there. She had asked BRAC for a loan for this purpose, but was refused.

When the researchers visited her, she was wearing torn but clean clothes. She had two *sharees* but no sandals. Her mother gave her a petticoat and blouse. Her husband had one shirt. Her uncles gave old clothes for her sons. She did not have a tubewell. Her neighbor had a tubewell, but her son had some fight there, so they did not let her take water from their tubewell. Kohinoor had to go a long way to fetch water. BRAC gave her a latrine. Her family ate two meals a day. Often they had some milk from their cows.

Status in 2008

Kohinoor's sons are grown up and working as day-labourers. Her husband cannot work anymore for old age and illness. She multiplied her assets and took several loans from BRAC in the last four years. She used her first loan of 1,000 Taka for repairing her house (buying tin and bamboo). The second loan (4,000 Taka) was invested in leasing a piece of land and growing wheat. Unfortunately, the crop failed because the seed was not good. The shock was a big blow for her husband, and he became mentally unbalanced after this. She took a third loan of 5,000 Taka and spent the entire money on treating her husband's illness. She took a fourth loan of 5,000 Taka to buy rice during the *Monga* season, cow feed, and clothes (one *sharee* and three *lungis*). All loan instalments were paid by wage earnings from her sons' labor and milk sales.

Kohinoor currently has two cows—one is expecting a calf. She has a latrine, but it is rarely used (it has no door or roof). She still brings drinking water from a neighbor's tubewell. Her house now has three

rooms — one for the cows, one for her sons, and one for herself and her husband. When her husband was mentally ill, he broke down the partition between her room and the cows' room. That wall has not been repaired. The sons' room has a bed, but Kohinoor and her husband still sleep on a bamboo *macha.*

Kohinoor's father-in-law died, but their land is still not registered in their name. She has trouble with her in-laws now. Before she was a CFPR member, they had no trouble. But now her in-laws do not let her use the passage through her brother-in-law's land to the main street. She wants to move from this house. She is planning to buy land in her father's village where she might get more support from her relatives. She is thinking of buying a cow soon. She wants to spend her savings to buy cows, since cows are easy to move if and when she relocates her house. Her living standards have improved in the last four years. She cooks twice a day. They have fish twice a week and chicken once a month.

Points to note:

1. Kohinoor's family experienced a few major shocks (crop failure and her husband's illness). Nevertheless, Kohinoor managed to overcome these shocks without depleting her asset base, because of her good management skills.
2. However, her beliefs in traditional healing and supernatural reasons for her husband's illness led Kohinoor to spend a lot more on treatment costs than necessary.

Case 4. Shefali's misery aggravates as she fails to overcome social constraints

Status before programme participation

Shefali, about 37, lives in Bujaripara village in Domar *upazila*. She was born in a very poor family. She was good-looking as a child, and in fear of her security, her father married her off when she was only 10 years old. Her husband was a migrant worker from Chittagong, so she lived with him in Chittagong after her wedding. She had a daughter who died of blood dysentery. Her husband remarried, and unable to get along with her husband's second wife, Shefali returned to her father's home in Domar. At that time she was pregnant with a son. Soon after her son was born, she married a man who lived in Magura district. This man already had a wife with 8 daughters. Her second husband married Shefali because he wanted a son. Shefali first had one daughter in this marriage. Then she gave birth to twin daughters. One of her twins died in an accident, for which she blamed her husband's first wife. Having conflict in her family again, she returned to her father, pregnant with another daughter. Her first husband died in the meantime. When her son from

the first marriage was 12, his paternal grandmother took him away to live with her in Chittagong.

Shefali struggled with poverty all her life. Her father was a day-labourer. She also worked as day-labourer on farms and at construction sites. She has a brother who was unable to support himself. Shefali was the head of the household. Her father had some land, but there were some legal complications around it and he did not have possession of this land.

Shefali's family did not have enough clothes. They slept on jute mats. Their house was dilapidated. During rain, the whole family used to huddle under a plastic sheet to keep dry. They often went without food. They had no latrine or tubewell.

Shefali encountered many social problems. Her neighbors reported that Shefali was of "loose character" and there were rumors that she was a sex worker. One of her daughters was known to have been fathered by a union council member (elected political leader) of the area (Shefali denied this accusation). Nobody wanted to be associated with her.

2004: Status toward the end of the programme

In 2002, Shefali received a cow and a nursery on 10 decimal land from the CFPR programme. She did the housework, nursery work and sometimes worked as a day-labourer for a wage of 20-25 Taka a day. She had to cut grass for her cow. Her daughter helped her with housework. She spent some time on CFPR membership responsibilities and in visiting BRAC office.

In 2004, her house was still in poor condition. The walls were broken. She bought 5 pots and other essentials. She lived on her father's land. She also leased in land from her father and planted banana trees. Every month she made 70-90 Taka from selling bananas. Her second daughter worked at an army personnel's house. From there she used to get old clothes.

Shefali had two *sharees*. She bought a *lungi* for her father. She used the earnings from her nursery to run the family. She had a saving of 3,000 Taka in her CFPR account. Shefali was able to eat two meals a day. They had fish once in two weeks and eggs once a week. The only time they have some difficulty in terms of food was during the *Monga* season.

She had a latrine and BRAC gave her a tubewell with a concrete base. She also repaired her house and was trying to reclaim some of her father's lost land. Her father had promised that he would give her some land for nursery if she could reclaim it for him. Her dream was to buy land and invest in a bigger nursery. She also hoped she could set up a small shop for her brother.

Status in 2008

In 2008, the researchers found Shefali in a great mental and physical distress. She was sick with inflated uterus and needed immediate surgery. She was wearing torn, dirty clothes; and could hardly move around without assistance. She was living alone in the same rundown hut. On investigation, a long story of legal and social shocks was revealed, which is summarized below.

In 2005, Shefali's brother's wife (supposedly a sex worker) was murdered. Shefali's son-in-law was accused of this murder case. Her brother also got arrested for cutting trees on government land. Shefali had to spend a large sum of money for releasing her brother, but only temporarily. No one in the community helped her. Further, BRAC POs were unwilling to let her withdraw her savings for legal expenses.

At one point Shefali feared arrest for her sister-in-law's murder case. She fled her house for months. During that time, a CFPR member in her neighborhood took care of her cow, but later Shefali had to pay her 1,000 Taka to retrieve the cow. Her cow also had a calf, but she never made any money out of milk sales. The woman who looked after the cow during Shefali's absence sold the milk and kept the money.

Since Shefali did not stay at her own house for many months, she could not invest in her nursery or other assets. In the meantime, her father passed away and her brother was in jail. Her cow and calf had gotten stolen, but the BRAC PO retrieved them from another village. The BRAC staff, by this time, was convinced that Shefali was incapable of taking care of the cows or maintaining her nursery. They cancelled her membership with CFPR and closed her account. Her cow and calf were given to another household that was listed as ultra poor. Although Shefali is no longer a CFPR member, she still expects support from BRAC and is hopeful of getting help for establishing her nursery again. Currently she has no assets and no savings.

Shefali's youngest daughter (third) got married recently but she has not been taken by her in-laws yet because Shefali could not pay the dowry. Her daughter's husband visits once in a while and stays at a nearby relative's house (he was present during the interview—he looked no older than 15).

Shefali needs at least 5,000 Taka for her treatment. Doctors recommended her to go to Rangpur for surgery. Her relatives (maternal uncles) gave her 1,250 Taka. She spent 550 Taka for an ultrasound and has 700 Taka in hand. Her immediate plan is to arrange more money and move to Rangpur for the surgery. She shifted her meagre belongings to her relative's house because she feared they would be stolen if left

unattended when she is in the hospital. Her youngest daughter also lives at the relative's house and often brings food for Shefali.

Shefali has not given up her hope to run a nursery on her own again. But she needs around 5,000 Taka to start it. She has her father's land. If she recovers from this illness, she is confident that she can start this enterprise without any help from anyone. She blames her community for her present state. She believes they spread rumors about her character and convinced BRAC POs not to help her.

Points to note:

1. Shefali faced severe social constraints and non-cooperation from her community. These problems hindered her ability to maintain and develop her assets and enterprise.
2. Given her nature and lifestyle, cow rearing and nursery seem to have been the wrong choice of enterprise for Shefali.
3. She has not been able to overcome the crises in her life without depleting all her assets and savings in the process.

Case 5. Minoti's asset management skills led her to prosperity

Status before programme participation

Minoti Bala, about 34, lives in Noyoni Bagdokra village in Domar *upazila*. When she was 12, she was married to a man with wife and a daughter because her father was too poor to pay a large dowry. Even then he had to pay 3,000 Taka for dowry. Minoti moved into her husband's house with her husband, his first wife, their daughter and her mother-in-law. Her husband worked as a day-labourer. Minoti gave birth to two sons, and the pressure on her husband to support the family became higher. They would hardly have two meals a day. Very often they would go without any food. Minoti's husband had 10 decimal of homestead land and a house with two rooms. But the house was severely damaged by a storm. They had no latrine or tubewell. They did not visit or ask for help from any relatives out of shame for their extreme poverty situation.

Minoti's husband died ten years after her marriage. Life became even harder for the family after that. Minoti called her husband's first wife *Didi* (elder sister in Bangla) out of respect to her. With no other bread earner in the household, Minoti and her *Didi* started to work as day-labourers. Minoti was the smarter of the two women. Her *Didi* could not even count money. So Minoti became the household head by default. The two of them worked in other people's houses and fields, but often got nothing more than a meal in return. However, their wage increased gradually as time passed.

Minoti never went too far for work since she worked long hours. She was scared of being harassed by men, so she wanted to stay close to her home. They could not feed their family with their meager earnings. So Minoti sent her two sons to her brother, and her brother-in-law took her mother-in-law. Later, she brought back her youngest son. The two women shared two *sharees*. When they washed one *sharee*, Minoti wore the other to work and her *Didi* sat inside the hut all day with only a torn shawl to cover herself.

2004: Status toward the end of the programme

In 2002, Minoti received 36 chicken from the CFPR programme. After a first round of successful enterprise, she received another transfer of assets consisting of 56 chicken and 3 goats. She stopped going to work for others and spent all her time looking after the goats and chicken. Her *Didi* and her sons cultivated vegetables on their homestead land. In 2003, she leased in some land and cultivated rice. She was able to feed her family three meals a day. She got 4 tins from the CFPR programme for the chicken shed. She built the shed and stayed in it with the chicken because she did not have a room of her own. Later her *Didi*'s son-in-law gave them 12 tins to build a house with a kitchen.

The egg production was low in the beginning, so Minoti could not save much. She sold one goat and saved that money. Eventually she made 180-200 Taka weekly from selling eggs. She sold the eggs to a wholesaler.

Minoti was confident about the success of her enterprise and made careful plans to build her asset base. She wanted to get 300 chicken from the programme. Her *Didi*'s son-in-law helped with labor in all her work—Minoti never had to pay him.

Minoti bought a wall clock (to tell time for feeding the chicken), some utensils, and a table; fixed the door of the house, and got electricity connection for her chicken. She paid her brother-in-law 15 Taka per month for electricity bill.

She bought 10 decimal of land for 8,000 Taka. To pay for the land, she used the accumulated proceeds of 1,700 Taka from egg sales and the rest from selling trees and borrowing. She cultivated vegetables on this land. She made a profit of about 1,000 Taka by selling her vegetables. From this garden, the family also got a regular supply of vegetables for consumption.

Minoti and her *Didi* had four sets of clothes, her elder son had a pant, and her younger son had a shirt and a pant. She also bought a mosquito net. She sent her elder son for work at other's house for three years. From his son's salary, she spent 2,500 Taka on cultivating land. In 2004, she cultivated rice on one *bigha* of land.

Minoti's lifestyle improved significantly. She cooked twice a day. They had fish once a week and eggs twice a week. She built a latrine and got a tubewell from the CFPR programme. She sent her younger son to school in class 6 and hoped to educate him more.

Status in 2008

Minoti is a model of success for the CFPR programme. Her household is now both financially and socially independent. Her two sons are working and they earn about 250 Taka per day. They have no difficulty in meeting their food needs now. Her sons are well-dressed and both have wristwatches. Minoti and her *Didi* still share *sharees*, but now they have 3 *sharees*, with one good *sharee* for special occasions. Neighbors come to Minoti for advice and sometimes for loans. She is often invited to weddings and attends them wearing a good *sharee*, and she also gives gifts.

Minoti bought a cow with the earnings from her goats and poultry enterprise. This cow has a calf and she bought another cow with her sons' earnings. She still grows enough vegetables for home consumption and for selling. In 2006, Minoti leased in 28 decimals of land with 24,000 Taka. She cultivated rice on that land for consumption. Her husband's brothers have a jointly owned pond where she cultivates fish. The fish from this pond is enough to feed her family. There are many trees around her house also. She has 22 *Shupari* (Betel Nut) trees, 2 Mango trees, 2 *Jaam* (black berry) trees, 2 Ipilipil trees (for poultry feed) and 1 *Orjun* tree. She regularly sells *Shupari* from her trees.

She obtained several loans from BRAC since 2004. The first loan of 3,000 Taka was used for buying tins for her house. The second loan (5,000 Taka) was used to repay the informal loans she had taken for leasing land for paddy cultivation. She bought more tin with a third loan (6,000 Taka) and bought seeds and fertilizers for her vegetable garden. A fourth loan of 8,000 Taka was used for leasing in land. She repaid her outstanding loans from a fifth loan of 12,000 Taka, and also bought household essentials with this loan.

Now she does not want to take any more loans. Her family's food requirements are fully met from her own production of rice, vegetables and fish. Other expenditures are met from her sons' income. She is still the head of the household. Her sons give her all of their earnings and she invests the money for generating income.

She had applied for RMP work earlier, but did not win in the lottery for selection into the programme. This year she applied again and has been selected. She has to pay 500 Taka deposit and will get a salary of 2,800 Taka per month, with a lump sum of 30,000 Taka at the end of the cycle after 4 years. With this money she plans to lease in more land and buy

some furniture for her family. Her *Didi* also gets old-age pension from the government, but she had to pay 500 Taka bribe for this.

Minoti's *Didi*'s daughter got married for 12,000 Taka dowry. Her son-in-law is very helpful and provides labor and advice whenever needed. Minoti expects as high as 80,000 Taka in dowry for each of her two sons. Both her sons are working, and since she is well-off, she thinks the families of potential brides would be willing to pay big dowries for marrying their daughters into Minoti's family. Before her sons get married, she plans to make a big house with separate rooms for her sons.

When BRAC-RED researchers went to interview Minoti, she was at the *shalish* (legal prosecution) for her land. Four years ago she bought a small plot of land for 10,300 Taka. But the owner did not register the land in her name. She has been using the land, but did not get the ownership title. Some witnesses accompanied her to the *shalish.* The witnesses include a GDBC member, her sons, and her *Didi*'s son-in-law.

Minoti treated everyone at the *shalish* with tea and snacks. The case was settled after several hours. It was decided that the land would be registered in Minoti's name, but she has to pay 7,000 Taka to the previous owner for using the land for the last 4 years. Minoti was happy with this resolution.

Points to note:

1. Minoti Bala's strong leadership and asset management abilities led her family to a good economic situation. She maintains good relationship with her *Didi* and her sons, which is why they trust her to run the family.
2. She did not face any major shocks to push her back into extreme poverty. She has been able to capitalize on all her opportunities.
3. Minoti successfully accessed government and NGO assistance programmes for herself and her *Didi* in the last few years. She has several sources of income, which help her plan and manage finances efficiently.

SUMMARY AND CONCLUSION

We assess the impact of BRAC's "Challenging the Frontiers of Poverty Reduction: Targeting the Ultra Poor (CFPR)" programme in Phase I that had a two-year cycle from 2002 to 2004. The beneficiaries of the programme—impoverished rural women—received a range of assistance from BRAC. The support package included income generating asset transfer, business development training, enterprise management assistance, subsistence allowance, healthcare facilities, and building social support network.

Our quantitative assessment of programme impact is based on data from longitudinal household surveys carried out by the Research and Evaluation Division (RED) of BRAC. We use the difference-in-differences propensity score matching method of impact evaluation—the most appropriate approach for assessing impact of the CFPR programme. The key findings of our assessment are:

- Participation in the CFPR programme played an important role in protecting and expanding the asset bases of ultra poor households.
- Although programme participation had no significant effect on ownership of land, it resulted in a substantial increase in leased-in land for cultivation.
- Livestock and poultry holdings increased substantially for programme participants. The strong impacts of the programme on livestock and poultry assets build-up are however not surprising since the CFPR programme mainly transfers livestock and poultry to its beneficiaries.
- Programme participation induced positive change in the saving behavior of the programme beneficiaries.
- The CFPR programme had no impact on net primary school enrollment of children of programme participants.
- The results show a large reduction in the perceived food deficit situation (in other words, substantial improvement in perceived food security) of the programme participants.
- There was a sizable increase in the possession of sanitary latrine owing to programme participation, reflecting a significant improvement in the status of dwelling and sanitation facilities.
- The programme had positive impacts in terms of clothing and footwear ownership by the participating households.

A major limitation of using the data set from the BRAC-RED panel survey for impact evaluation is that the main surveys did not collect

consumption data from the sample households. However, BRAC-RED carried out three rounds of longitudinal surveys for a sub-sample of the large household survey, and collected food consumption data from the sub-sample households. The surveys were conducted in 2002 (baseline), 2004 (at the end of the programme), and 2006 (two years after the programme). Using the sub-sample data set, we analyzed whether the CFPR programme had any impact on food consumption of the participating households, and if it had an impact, then whether the gains in food consumption were sustainable.

Our impact estimates suggest that the programme made it possible for its beneficiaries to increase their household food consumption, and to sustain their augmented food consumption even two years after they had completed the project cycle.

We compare our findings of the short- and the long-term impacts of the CFPR programme on food consumption with the findings of another study that used the same data set. Although the patterns of the impact and its sustainability are comparable, the magnitude of the short- and the long-term impacts on food consumption in our study is much higher than that found by the other study. Since both studies used the same data set for the analysis, these differences are probably due to the variation in the specific techniques used for the impact assessment. We believe that our use of rigorous, state-of-the-art techniques to assess the impact of the programme provided us with accurate estimates.

The quantitative estimates show *average* impacts of the CFPR programme, but they do not explain how and why the programme had (or did not have) impacts on individual households; there can be no presumption that all programme participants benefited or benefited equally. We present five qualitative case studies to help explain the impact pathway. These are real stories from people behind the numbers, told in their own words. BRAC-RED researchers collected these stories from programme beneficiaries in 2004 (at the end of the programme) and 2008 (four years after the beneficiaries had left the programme). Pushparani, Kohinoor, and Minoti narrated how each of them became successful in their life with the support of the CFPR programme. Determination, confidence, and the ability to communicate effectively to access essential services enabled Pushparani to build up assets. Kohinoor's asset base helped her cope with crises. Minoti's asset management skills led her to prosperity. By contrast, lack of integrity and family conflicts did not let Sahera maintain her asset base. Shefali failed to overcome crises in her life as she faced severe social constraints, depleting all her assets and savings.

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