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# Mitigating Seasonal Hunger with Microfinance in Bangladesh: How Does a Flexible Program Compare with the Regular Ones?

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# Mitigating Seasonal Hunger with Microfinance in Bangladesh: How Does a Flexible Program Compare with the Regular Ones?


**Abstract**

Microfinance institutions, often criticized for inadequately addressing seasonality and hard-core poverty, have begun to introduce innovative programs designed to tackle both concerns. One such program in Bangladesh is the Programmed Initiatives for Monga Eradication (PRIME). PRIME exclusively targets the ultra-poor, especially in the country's northwest region, and offers both production and consumption loans with a flexible loan repayment schedule, and other services. This paper assesses the effectiveness of PRIME and regular microfinance programs in reducing seasonal hardship. Findings of this paper suggest that PRIME is better targeted than regular microfinance programs and also perform better in mitigating seasonal starvation.



**Keywords:** microfinance; flexible microfinance; seasonality of consumption; seasonal poverty; rural Bangladesh


## 1. Introduction

In recent decades, microfinance has succeeded in reaching a large percentage of the poor, especially women.[1] However, the ultra-poor account for only a small portion of its clientele (Webb, Coates, and Houser 2002; Datta 2004).[2] In Bangladesh, for example, where the ultra-poor comprise a significant proportion of the population, microfinance reaches no more than 20 percent of this group (Khandker 1998, 2005). A recent survey reported

service coverage as high as 40 percent in certain areas in Bangladesh (InM 2009); yet the coverage of marginal and small farmers is small, with agriculture representing only about 10–15 percent of the microfinance lending portfolio. Microfinance institutions (MFIs) have limited coverage in the Greater Rangpur (northwest) region, which is characterized by pronounced seasonality of agriculture and a high incidence of extreme poverty compared to other regions of the country (Khandker 2012).[3,4]

However, an earlier study shows that some of the households that are unable to smooth consumption due to income seasonality are more likely to participate in microcredit programs, and be engaged in rural non-farm sectors as a mechanism to avert their vulnerability to seasonality; in this way, borrowers are helped to smooth and thus reduce vulnerability to consumption (Pitt and Khandker 2002; Morduch 1998; Zaman 1999, 2004). Yet the coverage of seasonal and extreme poor in microfinance programs has been very limited in Bangladesh and elsewhere.

In recent years, various MFIs in Bangladesh, with donor assistance and under government pressure, have introduced programs to better handle seasonality and hard-core poverty. In 2002, for example, the Bangladesh Rural Advancement Committee (BRAC), the country's leading nongovernmental organization (NGO), launched a multidimensional program targeting the poorest women (Matin and Hulme 2003; Emran, Robano, and Smith 2009; Bandiera and others 2010).[5] The program emphasizes both human and physical capital development via asset transfer and skills-based training before graduating to regular microfinance. Similar programs targeting beggars and other ultra-poor groups have been introduced by the Grameen Bank. Many MFIs, including the Grameen Bank, have introduced seasonal loans as part of their regular microfinance programs to address income

seasonality. The Chars Livelihoods Programme (CLP), which operates in the riverine islands of the northwest region, offers one-time asset transfer to ultra-poor households.

Tackling both seasonality of income and extreme poverty using a single intervention, such as microfinance, presents a major challenge for policy makers (Khandker 2012). A large body of literature has indeed shown that observed seasonality in consumption is driven mainly by income seasonality and lack of access to credit, often among the poor (Rosenzweig 1988; Rosenzweig and Wolpin 1993; Chaudhuri and Paxson 2002; Paxson 1993). If the risk is idiosyncratic (i.e., specific to certain households), local risk pooling or insurance can help; but those options prove ineffective in the event of an aggregate shock (Townsend 1995). Better access to finance is a useful approach for better allocation of resources (Rosenzweig and Binswanger 1993). Pitt and Khandker (2002) find that production credit helps to smooth seasonal consumption by financing new productive activities whose "income flows and time demands do not seasonally co-vary with income generated by existing activities of households."

Without consumption smoothing or efficient resource allocation for whatever reason (e.g., lack of credit access), households cannot avoid seasonal or hard-core poverty. Introducing a microfinance program that targets the ultra-poor and offers them with initially seasonal loans and later with production loans to support year-long income generation is expected to handle both seasonal poverty and impact chronic poverty. The Programmed Initiatives for Monga Eradication (PRIME),[6] introduced by the Palli Karma-Shahayak Foundation (PKSF),[7] exclusively targets the hard-core poor—those highly vulnerable to seasonal poverty, especially in the northwest region—offering them microcredit and other services on flexible terms.

This article evaluates the extent to which PRIME's flexible microfinance program has been effective in reaching the ultra-poor and seasonally poor. It quantifies program benefits in terms of mitigating extreme and seasonal poverty. It also compares the relative effectiveness of PRIME with regular microfinance in reducing extreme and seasonal poverty.

The article is organized as follows. Section 2 discusses poverty and seasonality in the Greater Rangpur (northwest) region compared to other regions of the country and the role of various programs in combating such problems. Section 3 offers a brief overview of the PRIME program. Section 4 presents an analytical framework that lays out the role of credit in resolving income seasonality and extreme poverty. Section 5 discusses the data, drawn from a random household survey carried out in program and non-program villages in the northwest region of Bangladesh. Section 6 discusses PRIME's penetration among the ultra-poor and analyzes the factors responsible for PRIME and regular microfinance participation. Section 7 reviews the methods and results of program effects on household welfare using panel data. Section 8 concludes the paper.

## 2. Tackling Seasonal and Extreme Poverty with microfinance

Bangladesh's recent performance in poverty reduction has been significant. The country reduced poverty by about one percent per year during 1990–2000 (from 58.8 percent to 49.6 percent) (United Nations 2005); over the 2000–10 period, the poverty-reduction rate went up to over two percent per year. While that is impressive, it masks the geographical disparity. Household Income and Expenditure Survey (HIES) data reveal that while the moderate poverty rate was 33.3 percent in 2010 in rural Bangladesh, it was much higher in the Greater Rangpur (northwest) region (47.9 percent). Incidence of extreme poverty in this region was also significantly higher (32.4 percent) compared to the national rural average

(19.6 percent) (Table 1). As Table 1 shows, the difference in poverty measures between the greater Rangpur region and the rest of the country was statistically significant throughout the period of 2000-2010.

**[TABLE 1 IS ABOUT HERE]**

One major factor contributing to the higher poverty in the Rangpur region is the seasonality of food consumption in the region, locally known as *monga* which occurs from mid-September to mid-November, corresponding to the post-planting to pre-harvest period for *Aman* rice.[8] Figure 1, which shows monthly food expenditure for the four crop seasons in rural Bangladesh, suggests that while the pre-Aman food deprivation exists in other regions too, it is more severe in the Greater Rangpur region.[9] Figure 1 also shows that the situation has improved over time, both in the Rangpur region and the rest of the country. Finally, the figure also shows that the disparity in food expenditure between monga and non-monga periods has diminished over time.

**[FIGURE 1 IS ABOUT HERE]**

Monga does not imply a lack of food availability; rather, it means the lack of access to food due to a lack of income (owing to less demand for agricultural labour during the pre-harvest period), along with higher prices for basic foods (and thus less consumption) (WFP 2005). Two major factors account for this situation: (i) non-diversified economic activities dependent on agriculture (Zug 2006) and (ii) year-round ecological and economic vulnerability (Rahman 1995). Thus, seasonal deprivation is due to the working of an economic system that limits the ability of a segment of the population to acquire food and other basic necessities (Sen 1981).

Seasonal deprivation mainly affects the hard-core poor, who lack both resources to smooth consumption during the lean period and access to credit. Without well-functioning credit markets, households frequently attempt to smooth consumption during monga by drawing on informal credit-market arrangements, known locally as *dadan*. Under this arrangement, households borrow against future labour and crop production on quite unfavourable terms. Households who can afford to cope by adopting traditional self-insurance methods, such as use of buffer stocks (livestock and grain storage) and mutual insurance, such as inter-family transfers. But for many other households, such traditional methods of consumption smoothing are inadequate and inefficient. To help them cope, government institutions often provide short-term measures, such as cash transfers, food for work, food coupons, and public works. Since monga results from structural poverty caused by low income, low productivity, and lack of a diversified local economy, these measures do little to contain monga on a sustained basis.

Traditional group-based microcredit lending, an intervention provided by government and nongovernmental institutions, also has limited scope in mitigating monga on a sustained basis for reasons discussed later in this article. In fact, a microcredit scheme operating in an area prone to seasonality often gives rise to a "loss-loss" situation: It is risky for the microcredit program and ineffective for borrowers. It is little wonder then that microfinance has only recently extended its reach in the northwest region. The next section discusses how the PRIME intervention takes the limitations of traditional microfinance into account in order to tackle the seasonality of income.

## 3. PRIME Overview

For a variety of reasons, traditional microfinance programs in Bangladesh have failed to reach the ultra-poor, who are often hit hard by seasonality of income and consumption. First, the ultra-poor pose a credit risk to microcredit lenders as they lack entrepreneurial and networking ability. Second, a microloan's weekly repayment schedule is often too restrictive for these households to bear. Third, activities that generate income seasonality often limit the ability of MFIs to provide loans during the lean season. Contributing to this inability is a lending program that offers predominantly production, not consumption, loans. Finally, group-based lending works well when income variations are idiosyncratic and group members can assist one other, as opposed to systematic shocks (e.g., seasonality), which affect most people in a community. In sum, traditional microfinance appears poorly suited to address hard-core and seasonal poverty.

### *3.1 Evolution, Expansion, and Coverage*

BRAC's ultra-poor program, along with similar programs of other NGOs, was designed to help the ultra-poor by offering them one-time asset transfers, accompanied by skills-based training as a route out of extreme poverty and subsequently making them eligible, as well as motivated, to launch income-generating activities via participation in BRAC's regular microfinance program.

By contrast, the PKSF and its partners introduced PRIME to alleviate seasonal deprivation and extreme poverty in the northwest region via flexible microfinance that extends both production and consumption loans on flexible terms. Because of resource constraints, the PKSF decided to expand PRIME in three phases. The first phase (2006–07) launched PRIME in 5 *upazilas* (sub-districts) of Lalmonirhat district—areas where PKSF's partner organizations were already providing microcredit.[10] In the second phase (2007–08), coverage expanded to 18 upazilas in the districts of Rangpur, Kurigram, Nilphamari, and

Gaibandha. The third phase (2008–09) brought 12 more upazilas under PRIME operation. In all, PRIME targeted more than half a million households from 35 upazilas in the Greater Rangpur region. This population represents about three-fifths of monga-affected households and excludes those who are already members of microfinance programs. To date, about 44 percent of the target households have participated in PRIME.

### *3.2 Products and Services Offered*

PRIME offers two major interventions—cash for work and flexible microcredit—and three supplementary services—advisory services for income-generating activities, health services, and technical training. In addition, the program provides for emergency loans during monga, natural disasters, and other socioeconomic calamities. The cash-for-work program, intended to provide support during monga, paid about Tk. 60–70 per day for infrastructure development projects. Although this program provided essential income support to nearly 90,000 vulnerable people during the 2007 monga period, it was subsequently discontinued.[11]

The most important PRIME intervention is the flexible microcredit program, which targets the extreme poor. Unlike regular microcredit, this flexible lending mechanism has a 10-percent interest rate (compared to up to 20 percent for regular microfinance), with no fixed savings requirement or fixed repayment schedule. In addition, the loan amount can be used for consumption or other purposes, although it is intended for income-generating activities (IGAs). By the first quarter of 2009, more than 280,000 people had borrowed under the flexible microcredit scheme.

PRIME's emergency-loan program is intended to substitute for the cash-for-work program. This intervention offers those located in areas where infrastructure development programs are not needed or planned emergency loans for both consumption and production

activities. By March 2009, more than 13,000 individuals had benefited from the emergency loan program.

PRIME offers advisory services for selected IGAs, including crop cultivation, livestock- and poultry-related activities, vegetable and fruit production, small businesses, and handicrafts. PRIME also provides technical services for IGA implementation and veterinary services. In addition, PRIME's health services include basic health support for pregnant or lactating mothers, children, and the elderly. Furthermore, PRIME provides remittance services, which include covering government-approved migration and training costs and provision of training for distant-market employment. Because of extensive non-credit elements in its portfolio of products and services, PRIME is essentially a credit-plus program focused on seasonality and other socioeconomic crises and targeted to the ultra-poor usually not covered under traditional microcredit programs (InM 2010).

### *3.3 Target Beneficiaries*

PRIME targets the ultra-poor and most disadvantaged segment of the population, including poor women-headed households (including widows and divorced and abandoned women), family households with irregular incomes from manual labour and those dependent on child or migration labour, and families with disabled or elderly members. Such households are likely to be affected by aggregate shocks, including monga. To participate in PRIME, a household must satisfy at least one of three PRIME eligibility criteria: (i) own not more than 50 decimals of land, (ii) have a monthly income not exceeding Tk. 1,500 (about US$25), and (iii) have main employment in the daily wage market. The process of identifying target households starts with a census in every village under PRIME coverage. Those identified as target households who are not already members of any MFI qualify for the program. Households join PRIME by forming groups of 25–30 households.

## 4. Analytical Framework

We develop the standard inter-temporal utility maximization model of consumption smoothing and present the implications of borrowing restrictions following Deaton (1991, 1992). Each household $i$ is to maximize the following utility function which is assumed to be increasing, strictly concave and differentiable

$$u = E_{t=\tau}[\sum_{t=\tau}^{T} \beta^{t-\tau} u(c_{it})] \tag{1}$$

Where $c_i$ is a single aggregate consumption good and $\beta$ the time discount rate. This is maximized subject to the dynamic asset constraint

$$A_{it+1} = (1+r)A_{it} + y_{it} - c_{it} \tag{2}$$

where $y_{it}$ is labor income that is risky, $A_{it}$ is real assets and $r$ is that real interest rate assumed to be fixed over time. If $T$ is large enough and with $A_{iT+1} = 0$, from the Euler equations we get the standard permanent income result of the marginal utility of current consumption being equal to the discounted expected marginal utility of future consumption

$$u'(c_{it}) = \beta(1+r)Eu'(c_{it+1}) \tag{3}$$

With borrowing restrictions we need to add another constraint to the consumer's decision reflecting that assets can never be negative

$$A_{it} \geq 0 \tag{4}$$

If the credit constraint binds, then the equality of (3) will be violated and households will fail to smooth consumption.

For simplicity, if we assume the utility function to be quadratic and the rate of time preference to be equal to the interest rate, then in the absence of a binding credit constraint there would be perfect consumption smoothing, i.e., $c_{it} = c_{it+1}$. If the credit constraint binds then $c_{it} < c_{it+1}$.

Figure 2 illustrates the consequences of a binding credit constraint in a two period decision model. Let us assume period 1 to be the lean season and period 2 to be the harvest season. In the absence of a credit constraint a household would maximize its inter-temporal utility by consuming at $e_1$. With the credit constraint binding the household would face a discontinuous budget line such as $q_2e_2c_c$ . The household would then be forced to consume at $e_2$ with a lower lean period consumption ($c_c < c_1$) and would be at a lower indifference curve than before. Note that even if second period (harvest season) income were to rise it would have no impact on the first period (lean season) consumption if the household fails to borrow to smooth consumption.

**[FIGURE 2 IS ABOUT HERE]**

There are a number of ways one could improve the seasonal income and consumption level in the lean period in order to help household smooth consumption during lean period. For example, if households were credit constrained, make credit available to smooth consumption, increase income in the first period through cash and asset transfers, or increase labor market opportunities to enhance income in the lean period. In fact, this model's central hypothesis is that improving access to consumption credit enhances seasonal income and lean-period consumption so that households can smooth consumption during the lean period. This is not possible under regular microfinance, which offers production loans for undertaking rural non-farm activities. But during the lean season, rural

non-farm income is also likely to be less since farm and non-farm activities are correlated; thus, regular microfinance is not of much help for the seasonal poor. Also, during pre-monga period(s), households often do not earn enough to have savings which can help them smooth consumption during the lean (monga) period. Furthermore, they cannot borrow during monga period, not even against the perceived higher income during the oncoming (post-monga harvest) period. That is, with decreased income, no savings and no credit, they are destined to suffer during the monga period.

PRIME takes agricultural seasonality of income and consumption into account, helping to smooth lean-season consumption via consumption loans or cash for work. In addition, PRIME provides production loans like regular microfinance once households can withstand seasonal shocks in consumption. The purpose of program evaluation is to determine which programs really matter in smoothing consumption. More specifically, from this analysis we would be able to ascertain the differential impacts that regular microfinance and PRIME have. We can judge the comparative advantages and disadvantages of each program. The distinction among program types is critical not only from a policy standpoint but also to the soundness of the analysis. When panel data are available, we can use fixed-effects technique to estimate program effects. With such data, we do not need to depend on the set of restrictions (based on exogenous eligibility conditions) for identification.

## 5. Survey Data Characteristics

This paper uses two sets. The first one comes from the household income and expenditure surveys (HIES) of 2000 and 2005, carried out by the Bangladesh Bureau of Statistics (BBS). The sample is nationally representative and includes 5,040 rural households in 2000 and 6,040 rural households in 2005 from all regions of Bangladesh. This data set is used to

examine the trend in seasonal poverty and hunger, both in greater Rangpur (also known as monga area) and in the rest of the country.

The second data set is used to evaluate PRIME and is taken from panel surveys conducted by the PKSF and the Institute of Microfinance (InM). A pre-intervention data-collection survey designed by the InM and implemented by the PKSF and its partner organizations immediately after the lean season (from December 2006 to February 2007) identified the Greater Rangpur region's ultra-poor population—that segment of households who would qualify for the PRIME intervention. This group, which is also vulnerable to seasonal food deprivation, was selected using the three previously mentioned criteria.[12] A randomly selected subsample of these households was administered a small survey questionnaire, the data set of which is considered the baseline for evaluating the PRIME intervention.[13] Using the baseline data, various aspects of seasonality were analyzed, including vulnerability, coping, and seasonal migration (Khandker, Khalily, and Samad 2010). About two years after the intervention (December 2008), the InM administered a detailed survey to a subsample of the baseline sample to assess the impact of PRIME. Using a multi-stage cluster sampling technique, a random sample of 4,589 households was drawn from 16 upazilas, 61 unions, and 271 villages from the population identified in the baseline survey. In addition, the InM sample included 618 eligible households from 4 upazilas of 3 districts that had been excluded from the baseline survey (i.e., areas the intervention was not intended to cover initially that received it in 2008–09). Thus, the total household sample was 5,207, consisting of 1,520 PRIME members, 1,387 regular microfinance participants, and 2,300 non-participants. The surveys collected information on various household characteristics such as head's age, dependency ratio, housing characteristics, assets (ownership of land, livestock, poultry, transport and other assets, and savings). Besides that

few community (village population, whether the village is subject to river erosion or located in riverine islands) and agro-climatic characteristics (whether village is located in highland, amount of yearly rainfall, etc.) were incorporated into the data for the analysis. Household's food deprivation status has been used to measure outcome for this study, which was expressed in terms of three mutually exclusive dummy (yes-no) variables capturing daily meal intake status: starvation (involuntary meal skipping), meal rationing (households consume less than they would normally would in a day), and full meals (households consume desired quantity of meals, which is usually three meals a day).[14] This information was recorded for both monga and non-monga periods for all households.

Table 2 shows the household distribution by program participation status and by district in the Greater Rangpur region. The sample distribution was further disaggregated by PRIME and non-PRIME areas. Three groups were identified by program participation status in PRIME, non-prime, and all areas.[15] In all areas, 29.2 percent of target households were PRIME participants, 26.6 percent regular microfinance participants, and the other 44.2 percent non-participants. In PRIME areas, the share of PRIME participants was 33.1 percent, compared to 27.0 percent for regular microfinance and 39.9 percent for non-participants. In non-PRIME areas, the share of regular microfinance participants was 23.9 percent. Although Lalmonirhat was the first of the five districts to receive the PRIME intervention, Kurigram district had the highest percentage of PRIME participants, followed by Lalmonirhat, Gaibandha, Rangpur, and Nilphamari (Table 2).

**[TABLE 2 IS ABOUT HERE]**

Out of the three measures of food intakes we use two as outcomes: starvation (skipping meals) and consumption of full meals (equivalent to the norm of three meals a day). This is done because any change in the third measure (meal rationing which falls in

between starvation and consumption of full meals) cannot be interpreted unambiguously as an improvement or deterioration of food consumption situation. For example, an increase in meal rationing can be seen as bad when compared to full meal consumption and good when compared to starvation. For the other two outcomes (starvation and full meal consumption), no such ambiguities arise. Since the two outcomes are constructed for both monga and non-monga periods, we have two sets of outcomes for two periods. In addition, we constructed a third set of measures of food intake—year-round starvation and year-round consumption of full meals. For example, a household has year-round starvation if it starves during both monga and non-monga periods, while it is considered to consume full meals year-round if it does so during both monga and non-monga periods. Table 3 shows the summary statistics of these outcome variables.[16] The table shows that the starvation rate varies little across household program participation status during non-monga period or on year-round basis (t-statistics of the difference is not statistically significant), but it does vary during the monga period. Participants of both PRIME and regular microfinance programs are better-off than the non-participants during the monga period. Program participants also do better than non-participants in consuming full meals during non-monga period. These findings, however, do not necessarily establish the positive roles of these programs in alleviating the seasonality of food consumption. To establish such causality we have to control for various confounding and unobserved factors that may affect the seasonality of consumption. We undertake such exercise later in the paper.

**[TABLE 3 IS ABOUT HERE]**

Although the ultra-poor are similar in terms of observed characteristics, those who participate in regular microfinance programs fare slightly better than PRIME participants and non-participants. As Table 4 shows, household members have a low level of education

and few landholdings and non-land assets. PRIME serves villages that are less developed than those served by regular microfinance. For example, 64 percent of the villages served by regular microfinance programs have paved roads, compared to 46 percent of those served by PRIME. Villages served by regular microfinance also have a higher electrification rate and market concentration than those served by PRIME. Most of the villages studied have some type of safety net program. More than one-fifth of the households surveyed are located on tiny island fragments known as *chars*.[17] However, the vast majority of the sampled villages are located in the highlands (see Table 4).[18]

**[TABLE 4 IS ABOUT HERE]**

## 6. Targeting Efficiency: Prime versus Regular Microfinance

PRIME is claimed to be a well-targeted program, implying that it has been open only to households that satisfy the three targeting criteria mentioned previously. Since the baseline survey was conducted just before PRIME was introduced, we can examine the pre-participation characteristics of PRIME members to determine how effective the targeting was. But since the baseline survey covers only the target population, we cannot determine what proportion of the non-target segment (30 percent of the rural population in Greater Rangpur) participated in PRIME or regular microfinance. Moreover, since the baseline survey collected data on two targeting criteria (ownership of not more than 50 decimals of land and wage employment) out of three, we cannot verify with absolute certainty how many sample households (or PRIME members in the sample) fulfilled the targeting criteria. For this reason, we investigated the two criteria to gain a sense of PRIME's targeting efficiency. Our data show that about 98 percent of the sample households met the landholding requirement and 53 percent were dependent on wage employment. With overlapping, these

two criteria covered 98.5 percent of the sample households and 98.2 percent of the PRIME members in the sample;[19] that is, targeting criteria did not matter as virtually all sample households belonged to the target group.[20]

PRIME's targeting efficiency compared to that of regular microfinance can also be viewed by examining PRIME and regular microfinance participation by the pre-participation food-consumption status of households based on the baseline data. During the monga period, regardless of food-consumption status, a household is twice as likely to join PRIME versus a regular microfinance program, which may be attributable to PRIME's focus on addressing immediate household needs during the lean season (Figure 3).

**[FIGURE 3 IS ABOUT HERE]**

Given the distribution of the three household types, we examine the determinants of participation in each of these mutually exclusive categories (1 = PRIME, 2 = regular microfinance, and 3 = non-participants). This is done by fitting a maximum-likelihood multinomial logit (MNL) model. We use household pre-intervention characteristics from the baseline data as the covariates, including those representing the two targeting criteria for PRIME participation (whether household land assets do not exceed 50 decimals and household head is wage-employed). Furthermore, unobserved village-level heterogeneity is controlled for by using village fixed effects (FE) in the MNL estimate. The MNL results suggest that the targeting criteria have no effect on household participation in either PRIME or traditional microfinance programs (Table 5). These findings are not surprising, given that 98 percent of the sample households are in the target population.

**[TABLE 5 IS ABOUT HERE]**

Among other explanatory variables, household size influences participation in both PRIME and regular microfinance programs. An extra member in the household increases household participation in PRIME by 1.2 percent and in microfinance programs by 0.9 percent. Participants in both PRIME and regular microfinance are relatively young as household age has a negative effect on participation in these programs. Households that depend more on agriculture (indicated by ownership of agricultural assets, such as a plough) are likely to join PRIME, as are those who have little cash savings (Table 5). Overall, targeting criteria do not matter in PRIME participation, but household characteristics do; those ultra-poor households that are relatively worse off are more likely to join PRIME.

## 7. Effects of Prime and Regular Microfinance Using Household Panel Data

Estimates of program effects are potentially subject to two sources of endogeneity bias: (i) program placement at the village level and (ii) participation at the household level.[21] Consider the following outcome equation:

$$Y_{ij} = \alpha^y + \beta^y X_{ij} + \gamma^y V_j + \delta^y P_{ij} + \pi^y M_{ij} + \mu_j^y + \eta_{ij}^y + \varepsilon^y{}_{ij}\,, \qquad (5)$$

where $Y_{ij}$ is the welfare outcome of the *i*-th household of the *j*-th village; $X_{ij}$ and $V_j$ are vectors of household- and village-level characteristics; $P_{ij}$ and $M_{ij}$ are the household memberships of PRIME and regular microcredit programs, respectively (1 if a household is a member and zero otherwise); $\beta^y$, $\gamma^y$, $\delta^y$ and $\pi^y$ are parameters to be estimated; $\mu_j^y$ and $\eta_{ij}^y$ are unobserved determinants of household outcome at the village and household levels, respectively; and $\varepsilon_{ij}^y$ is an unobserved random error. If all variables are observed, $\delta^y$ and $\pi^y$ would determine the program impacts without bias in an OLS estimate. However, since

$\mu_j^y$ and $\eta_{ij}^y$ are unobservable, the OLS estimates of the impacts will be biased as they are related to the unobserved variables. These biases, also called the endogeneity of program placement and that of participation, may be due to non-random program placement at the village level, non-random program participation at the household level, or both. Because of these endogeneity biases, PRIME (or for the matter participation in regular microfinance) participants and non-participants may differ in terms of unobservable characteristics that affect their outcomes.

Panel data at the household level can resolve the endogeneity bias due to unobserved characteristics at both the household and village level. This can be shown by estimating a household FE model, provided that the unobserved characteristics that influence the outcomes do not vary over time. We re-write equation (5) for panel data as follows:

$$Y_{ijt} = \alpha^y + \beta^y X_{ijt} + \gamma^y V_{jt} + \delta^y P_{ijt} + \pi^y M_{ijt} + \mu_j^y + \eta_{ij}^y + \varepsilon^y{}_{ijt} \quad , \qquad (6)$$

where $t$ is the time period (0 for the baseline and 1 for follow-up survey), and household- and village-level unobservables ($\mu_j^y$ and $\eta_{ij}^y$) are assumed time-invariant. For the two-year period, if we take the difference of equation (6) between follow-up and baseline periods, we eliminate the unobserved household and village characteristics; that is,

$$\Delta Y_{ij} = \beta^y \Delta X_{ij} + \gamma^y \Delta V_j + \delta^y \Delta P_{ij} + \pi^y \Delta M_{ij} + \Delta\varepsilon^y{}_{ij} \qquad (7)$$

The summary statistics of meal consumption status in 2006/2007 and 2008/2009 reveal that the status of household food consumption in the Rangpur region improved over the period (see Table 6). For example, the starvation rate during the monga period dropped from 50.1 percent to 45.1 percent, while the rate of full meal consumption during monga rose from 3.8 percent to 6.3 percent.

**[TABLE 6 IS ABOUT HERE]**

Household participation in PRIME lowers starvation during monga and non-monga periods, and also year-round (Table 7). The impact is highest for starvation during the monga period (reduction in the probability of 9.6 percentage points), followed by the non-monga period (reduction in the probability of 2.8 percentage points) and year-round (reduction in the probability of 1.8 percentage points). Regular microfinance also lowers the probability of starvation during the monga period (by 5.5 percentage points), without affecting other starvation outcomes. Household participation in PRIME increases the probability of full meal consumption only for the non-monga period (by 8.1 percentage points). However, regular microfinance programs improve all three outcomes related to full meal consumption, with the highest improvement registered during the non-monga period (increase in the probability by 4.9 percentage points).

While not reported in Table 7, the outcome regressions also include household level variables reported in Table 5. Among them household landholding, ownership of cattle, transport asset and self-employment activity lowers the probability of starvation during the monga period. These variables also increase the probability of having full meals during the period. For example, an increase of 10 percent in landholding lowers the probability of starvation during monga period by 3.3 percentage points, and increases the probability of having full meals by 1.8 percentage points during the same period. The same variables also improves the probability of having full meals during non-monga period and year-round, while having no impacts on the starvation during those periods.. Households that have savings are less likely to be subject to starvation during non-monga period or year-round. More specifically, having savings lowers the probability of year-round starvation by 3 percentage points.

Comparison of the impacts of PRIME and that of regular microfinance should be made keeping in mind that their beneficiaries are different. As mentioned, PRIME targets a segment of the population that are ultra-poor who are often bypassed by regular microfinance, as they may not have the necessary entrepreneurial ability to make good use of the microloans or may not be able to comply with the strict loan conditions imposed by regular microfinance (as discussed in Section 3). Still, looking at the impacts on household meal intake, it can be said that overall, the impacts of PRIME are higher than those of regular microfinance programs – four out of six outcomes show a higher impact for PRIME than for regular microfinance.

**[TABLE 7 IS ABOUT HERE]**

An underlying assumption of the FE estimation is that the unobserved factors that influence household outcomes do not vary over time. If they do vary, equation (7) will yield inconsistent estimates. This can be shown by making unobserved determinants time-varying in equation (5), expressed as follows:

$$Y_{ijt} = \alpha^y + \beta^y X_{ijt} + \gamma^y V_{jt} + \delta^y P_{ijt} + \pi^y M_{ijt} + \mu^y_{jt} + \eta^y_{ijt} + \varepsilon^y{}_{ijt} \qquad (8)$$

But in this case, we cannot eliminate the unobserved household and village characteristics by taking differences of equation (8) between the two periods; that is:

$$\Delta Y_{ij} = \beta^y \Delta X_{ij} + \gamma^y \Delta V_j + \delta^y \Delta P_{ij} + \pi^y \Delta M_{ij} + \Delta\mu^y_j + \Delta\eta^y_{ij} + \Delta\varepsilon^y{}_{ij} \qquad (9)$$

One way to resolve the bias due to time-varying heterogeneity in the FE model is to take into account the linkage between unobserved heterogeneity and the initial conditions of household and local characteristics. In a body of literature that addresses this issue, initial conditions are assumed to be correlated with unobservables (Heckman 1981; Chamberlain 1984; Arulampalam, Booth, and Taylor 2000). Controlling for initial conditions has also

been suggested as a way to resolve the FE estimation bias from time-varying unobservables (Khandker, Koolwal, and Samad 2010; Ravallion 2008), meaning that the time-varying unobservable trends from 2006/2007 to 2008/2009, which may bias the impacts of PRIME, are determined by the 2006/2007 household and community characteristics; that is, equation (9) can be rewritten in terms of initial household and community characteristics:

$$\Delta Y_{ij} = \beta^y \Delta X_{ij} + \gamma^y \Delta V_j + \delta^y \Delta P_{ij} + \pi^y \Delta M_{ij} + \beta_1^y X_{ij1} + \gamma_1^y V_{j1} + \Delta\varepsilon^y{}_{ij} \quad (10)$$

where $X_{ij1}$ and $V_{j1}$ are the respective vectors of household and village characteristics observed in period 1 (year 2006). As all variables are observed, equation (10) gives consistent estimates of the impacts of household participation in PRIME and regular microfinance programs.

Controlling for initial conditions does not much change the direction of PRIME and microfinance impacts on household outcomes; it simply lowers the estimates for most outcomes (Table 8). For example, the impact of PRIME participation on monga-period starvation is more than one percentage point less than it is in the FE estimate that does not control for initial conditions. And after controlling for initial conditions, PRIME participation does not have any impact on year-round starvation. The regular microfinance impacts are similar in nature as are the FE estimates that do not control for initial conditions; however the coefficients are slightly smaller. Also, other household level covariates have similar effects on outcome variables as that in models that do not control for initial condition. Overall, results of the FE estimates suggest that, as a result of participating in PRIME and regular microfinance programs, seasonal starvation is reduced and seasonal and year-round full-meal consumption is increased.

**[TABLE 8 IS ABOUT HERE]**

## 8. Conclusion

The results of this study suggest that, in recent years, microfinance has reached a large percentage of Bangladesh's ultra-poor and seasonal poor. It was found that about 62 percent of the ultra-poor participate in microfinance. In contrast, 59 percent of the ultra-poor who experience occasional starvation and 63 percent of the ultra-poor with rationed meals are beneficiaries of microfinance. The introduction of PRIME has only improved the ultra-poor's participation in microfinance. However, PRIME program placement and participation are not random but are determined by a host of factors, including prior availability of a regular microfinance program.

Evaluating the program impact of PRIME or regular microfinance programs thus requires correction for the non-random placement/participation of a microfinance program. Because an experimental evaluation design was beyond the scope of this study, a quasi-experimental method was adopted to estimate program effects. A household FE method relying on panel data, which controls for unobserved heterogeneity, yields results that underscore significant roles of both PRIME and regular microcredit programs in alleviating seasonal food deprivation.

PRIME reduces seasonal deprivation by 8.5 percentage points, compared to 3.9 percentage points under regular microfinance, when fixed effects estimates control for initial conditions. PRIME is found to reduce deprivation during monga period more than non-monga period or year-round.

Do these results suggest that PRIME is just like a regular microfinance program? It should be noted that, among the ultra-poor, PRIME is more attractive than regular microfinance, perhaps owing to its flexible design. This is evidenced by the higher PRIME participation rate among the ultra-poor in areas where both types of programs operate.

Given that PRIME has been operational only since 2006 and our follow-up survey was done in 2008/2009, it is perhaps premature to say whether it equals or surpasses regular microfinance in tackling poverty and seasonality. It is also inconclusive to argue whether PRIME, and regular microfinance more broadly, can tackle seasonality and chronic poverty on a sustainable basis.

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1. Microfinance is a strategy to mitigate the moral hazard of rural lending, which is subject to covariate risk, problems of asymmetric information, lack of incentive to repay, and enforcing loan contracts (Stiglitz 1990); it also aims to reduce poverty by targeting the poor, who, for lack of physical collateral, are often excluded by financial institutions from regular lending programs.
2. Although the terms *ultra-poor*, *extreme poor*, and *hard-core poor* are often used interchangeably, for targeting purposes, MFIs specifically designate the ultra-poor based on landholdings, income, and employment.
3. The greater Rangpur region consists of five districts: Rangpur Sadar, Gaibandha, Nilphamari, Lalmonirhat, and Kurigarm.
4. In 2005, only 12 percent of villages in northwest Bangladesh had a Grameen Bank, compared to 34 percent in other regions of the country.
5. Bandiera and others (2010) used a randomized method to evaluate BRAC's large-scale, ultra-poor asset transfer and training program; results showed that asset transfers helped the ultra-poor to purchase consumer durables and improve human capital and social networking.
6. *Monga* is a Bangla term referring to seasonal food deprivation.
7. The PKSF is Bangladesh's premier wholesale MFI.
8. Bangladesh's agriculture sector is characterized by three crop seasons (based on three types of rice): *Aus*, *Aman*, and *Boro*. These three crops cover nine months out of the year; during the remaining three months—the monga period—there is virtually no economic activity. The non-farm sector is not large enough to hire the unemployed, mainly consisting of agricultural laborers and small farmers.
9. The expenditure figures are price-deflated (year 2000=100).
10. In some areas, features exclusive to PRIME were simply added to existing microfinance programs.
11 It is discontinued because it is a temporary tool; PRIME intends to offer a package of services that ultimately alleviates the sources of seasonal hunger: Lack of productive activity during the lean season or lack of savings to smooth consumption.
12. Since the criterion of owning not more than 50 decimals of land is also the overriding eligibility condition for participation in regular microfinance in Bangladesh, members of traditional MFIs automatically qualify for PRIME and thus the flexibility of not having to make weekly repayments or attend weekly meetings.
13. This survey did not cover non-eligible households.
14. An alternate and more common outcome measure of food deprivation is the quantity of food consumed or money spent in food consumption (a continuous variable). However,

such information was collected during the follow-up survey only, and hence cannot be used for the panel data analysis. That said, discrete food intake variables can be more reliable than a continuous consumption variable because the former is less subject to interview error or data entry error than the latter.

15. Thirty percent of PRIME households were former microfinance members; tests show that the impact of the PRIME intervention for two groups (former microfinance participants and non-participants) was not statistically significant.

16 Since these variables are constructed as dummy variables (yes=1, no=0), their means are interpreted as the share of households having a value of 1. Their mean values can also be interpreted as the probabilities of having a value of 1 for a household. The second interpretation is useful in explaining regression coefficients in outcome equations. For example, a 0.05 coefficient of the continuous explanatory variable $x$ in the outcome equation of starvation would mean that a unit increase in $x$ would increase the probability for a household of having starvation by 5 percentage points.

17. Created by silt in riverbeds, chars serve as shelters (often temporary) for many destitute people who are understandably more vulnerable to shocks than the poor living on the mainland.

18. Highlands are defined as land areas either above flood-water level or flooded up to 3 feet.

19. The targeting efficiency of regular microfinance, unlike that of PRIME, cannot be determined from the baseline data because most households joined these programs long before the baseline period. Nevertheless, we examined the baseline landholding information of these households, finding that, after many years of program participation, more than 98 percent still had fewer than 50 decimals of land, which is the sole eligibility criterion for participation in regular microfinance programs.

20. However, a closer look at the landholding status of PRIME members reveals that they are not uniformly distributed. Nearly one-quarter of PRIME members are landless and more than four-fifths own no more than 10 decimals of land, clearly indicating that the ultra-poor are more likely to join PRIME than the regular poor.

21. PRIME service was initially offered in areas where PKSF POs were already operating and providing regular microcredit services. This was convenient as the POs were able to leverage their establishment to offer the services of PRIME. Once POs have gained experience in PRIME services, they expanded their operations in new areas.

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# Tables

**Table 1: Poverty rates by region: 2000, 2005 and 2010**

| Poverty measures | Greater Rangpur | Rest of the country | t-statistics of the difference | Rural Bangladesh |
|---|---|---|---|---|
| | | **2000** | | |
| Moderate poverty (%) | 70.9 | 54.8 | −6.67 | 56.3 |
| Extreme poverty (%) | 60.9 | 39.9 | −8.76 | 41.8 |
| N | 440 | 4,600 | | 5,040 |
| | | **2005** | | |
| Moderate poverty (%) | 56.0 | 39.2 | −7.82 | 40.8 |
| Extreme poverty (%) | 41.9 | 24.9 | −8.83 | 26.5 |
| N | 520 | 5,520 | | 6,040 |
| | | **2010** | | |
| Moderate poverty (%) | 47.9 | 31.8 | −8.75 | 33.3 |
| Extreme poverty (%) | 32.4 | 18.4 | −9.06 | 19.6 |
| N | 580 | 7,260 | | 7,840 |

Note: Figures within the same year are adjusted by spatial price index (rural Dhaka=100), and then figures across years are adjusted by consumer price index (CPI) (2000=100) for rural Bangladesh.
Source: HIES surveys, 2000, 2005 and 2010.

**Table 2: Household participation (%) in monga intervention programs in 2008/2009**

| Program type | Gaibandha | Kurigram | Lalmonirhat | Nilphamari | Rangpur | All districts |
|---|---|---|---|---|---|---|
| **PRIME area** | | | | | | |
| PRIME | 28.7 | 39.6 | 31.9 | 36.3 | 29.9 | 33.1 |
| Regular microfinance | 28.9 | 25.4 | 26.1 | 21.3 | 31.6 | 27.0 |
| Non-participants* | 42.4 | 35.0 | 42.0 | 42.4 | 38.5 | 39.9 |
| N | 1,257 | 1,135 | 1,015 | 490 | 692 | 4,589 |
| **Non-PRIME area** | | | | | | |
| PRIME | 0 | - | - | 0 | 0 | 0 |
| Regular microfinance | 4.7 | - | - | 29.6 | 21.7 | 23.9 |
| Non-participants* | 95.3 | - | - | 70.4 | 78.3 | 76.1 |
| N | 64 | 0 | 0 | 314 | 240 | 618 |
| **All areas** | | | | | | |
| PRIME | 27.3 | 39.6 | 31.9 | 22.1 | 22.2 | 29.2 |
| Regular microfinance | 27.7 | 25.4 | 26.1 | 24.5 | 29.1 | 26.6 |
| Non-participants* | 45.0 | 35.0 | 42.0 | 53.4 | 48.7 | 44.2 |
| N | 1,321 | 1,135 | 1,015 | 804 | 932 | 5,207 |

*Non-participant households are also eligible to participate in PRIME or regular microfinance programs since non-target households were excluded from the survey.

**Source:** InM survey, 2008/2009.

**Table 3: Summary statistics of outcome variables by program participation in 2008/2009**

| Outcome indicator | PRIME members (P) | Regular microfinance members (M) | Non-participant (N) | t-statistics of the differences in outcomes between participation groups | | |
|---|---|---|---|---|---|---|
| | | | | $t_{PM}$ | $t_{PN}$ | $t_{MN}$ |
| Household had starvation during monga | 0.426 | 0.425 | 0.490 | 0.02 | –3.71 | –3.51 |
| Household had full meals during monga | 0.062 | 0.082 | 0.052 | –1.96 | 1.30 | 3.31 |
| Household had starvation during non-monga | 0.022 | 0.023 | 0.024 | –0.17 | –0.30 | –0.10 |
| Household had full meals during non-monga | 0.267 | 0.271 | 0.209 | –0.20 | 3.91 | 3.91 |
| Household had year-round starvation | 0.015 | 0.011 | 0.014 | 0.92 | 0.23 | –0.74 |
| Household had year-round full meals | 0.059 | 0.073 | 0.049 | –1.52 | 1.33 | 2.87 |
| N | 1,492 | 1,211 | 1,814 | | | |

**Source:** InM survey, 2008/2009.

**Note:** The subscripts of t in the t-statistics columns refer to the two groups that are compared.

**Table 4: Summary statistics of household-level explanatory variables using cross-sectional survey data in 2008/2009**

| variable | PRIME member | Regular micro-finance member | Non-participant | Whole sample |
|---|---|---|---|---|
| Age of household head (years) | 41.6 | 41.5 | 43.0 | 42.2 |
| | (12.6) | (12.4) | (14.4) | (13.4) |
| Gender of household head | 0.88 | 0.93 | 0.86 | 0.89 |
| (1 = M, 0 = F) | (0.33) | (0.25) | (0.34) | (0.32) |
| Education of household head | 1.33 | 1.55 | 1.34 | 1.39 |
| (years) | (2.63) | (2.73) | (2.67) | (2.68) |
| Maximum education of | 1.84 | 2.18 | 1.73 | 1.88 |
| adult males (years) | (3.13) | (3.23) | (3.03) | (3.12) |
| Maximum education of | 1.57 | 2.03 | 1.67 | 1.74 |
| adult females (years) | (2.72) | (2.94) | (2.84) | (2.84) |
| Land (decimals) | 14.6 | 14.2 | 17.7 | 15.9 |
| | (40.1) | (40.3) | (116.2) | (82.8) |
| Non-land assets (Tk.) | 18,698.3 | 23,123.6 | 17,315.9 | 19,266.5 |
| | (19,15.9) | (27,050.5) | (25,792.3) | (24,559.9) |
| N | 1,492 | 1,211 | 1,814 | 4,517 |

**Source**: InM survey, 2008/2009.
**Note**: Figures in parentheses are standard deviations.

**Table 5: Multinomial logit of household program participation (marginal effects) based on cross-sectional survey data of 2008/2009**

| Explanatory variable | PRIME | Regular microfinance |
|---|---|---|
| Age of household head (years) | –0.002** | –0.001 |
| | (0.007) | (0.001) |
| Household size | 0.012** | 0.009* |
| | (0.006) | (0.005) |
| Dependency ratio | –0.047** | –0.024 |
| | (0.043) | (0.045) |
| Household land less than 50 decimal | –0.009 | 0.072 |
| | (0.049) | (0.049) |
| Household head is wage-employed | 0.014 | –0.030 |
| | (0.023) | (0.023) |
| Total number of rooms in household dwelling | 0.013 | 0.030** |
| | (0.011) | (0.011) |
| Number of cows/buffalos owned by household | –0.034** | 0.004 |
| | (0.009) | (0.009) |
| Number of goats/lambs owned by household | 0.007 | –0.004 |
| | (0.009) | (0.009) |
| Number of chicken/ducks owned by household | –0.002 | 0.004** |
| | (0.003) | (0.002) |
| Household has agricultural asset | 0.050** | –0.029 |
| | (0.024) | (0.021) |
| Household has transport asset | 0.016 | 0.049 |
| | (0.031) | (0.030) |
| Household has business asset | 0.039 | 0.049 |
| | (0.051) | (0.039) |
| Household has savings | –0.052** | 0.160 |
| | (0.019) | (0.019) |
| Log likelihood | –3865.88 | |
| N | 4,517 | |

**Source**: InM survey, 2006/2007 and 2008/2009.

**Note**: The outcome variable (program participation) used in the estimate is from 2008/2009, while the control variables are from the 2006/2007 baseline data. The estimate also controlled for village-level FE. Figures in parentheses are robust standard errors, corrected for clustering at the village level; * and ** represent significance levels of 5 percent (or higher) and 10 percent, respectively.

**Table 6: Summary statistics of household-level outcome indicators using panel data of 2006/07 and 2008/2009**

| Outcome variable (household meal-consumption pattern) | 2006/2007 | 2008/2009 | t-statistics of the difference |
|---|---|---|---|
| Household had starvation during monga | 0.501 | 0.451 | –4.68 |
| | (0.500) | (0.498) | |
| Household had full meals during monga | 0.038 | 0.063 | 5.53 |
| | (0.191) | (0.244) | |
| Household had starvation during non-monga | 0.093 | 0.023 | –14.42 |
| | (0.291) | (0.150) | |
| Household had full meals during non-monga | 0.401 | 0.245 | –16.08 |
| | (0.490) | (0.430) | |
| Household had year-round starvation | 0.067 | 0.013 | –13.14 |
| | (0.250) | (0.114) | |
| Household had year-round full meals | 0.037 | 0.059 | 4.95 |
| | (0.188) | (0.235) | |
| N | 4,517 | 4,517 | |

**Source**: InM survey, 2006/2007 and 2008/2009.
**Note**: Figures in parentheses are standard deviations.

**Table 7: Fixed effects impact estimates of prime and regular microfinance (household-level FE) (N = 4,517)**

| Explanatory variable | Household had starvation during monga period | Household had full meals during monga period | Household had starvation during non-monga period | Household had full meals during non-monga period | Household had starvation year-round | Household had full meals year-round |
|---|---|---|---|---|---|---|
| Household is member of PRIME | –0.096** (0.029) | 0.003 (0.011) | –0.028** (0.014) | 0.081** (0.027) | –0.018* (0.011) | 0.006 (0.011) |
| Household is a member of microfinance | –0.055** (0.024) | 0.023** (0.009) | 0.002 (0.012) | 0.049** (0.023) | 0.004 (0.008) | 0.026** (0.009) |

**Source**: InM survey, 2006/2007 and 2008/2009.
**Note**: Figures in parentheses are robust standard errors, corrected for clustering at the village level; * and ** represent significance levels of 5 percent (or higher) and 10 percent, respectively.

**Table 8: Fixed effects impact estimates of prime and regular microfinance after controlling for initial conditions (household FE)**

**(N = 4,517)**

| Explanatory variable | Household had starvation during monga period | Household had full meals during monga period | Household had starvation during non-monga period | Household had full meals during non-monga period | Household had starvation year-round | Household had full meals year-round |
|---|---|---|---|---|---|---|
| Household is member of PRIME | –0.085** (0.027) | 0.001 (0.011) | –0.024* (0.013) | 0.073** (0.026) | –0.014 (0.011) | 0.004 (0.010) |
| Household is member of microfinance | –0.039* (0.023) | 0.022** (0.010) | 0.004 (0.012) | 0.036* (0.021) | 0.008 (0.008) | 0.024** (0.010) |

**Source**: InM survey, 2006/2007 and 2008/2009.
**Note**: Figures in parentheses are robust standard errors, corrected for clustering at the village level; * and ** represent significance levels of 5 percent (or higher) and 10 percent, respectively.

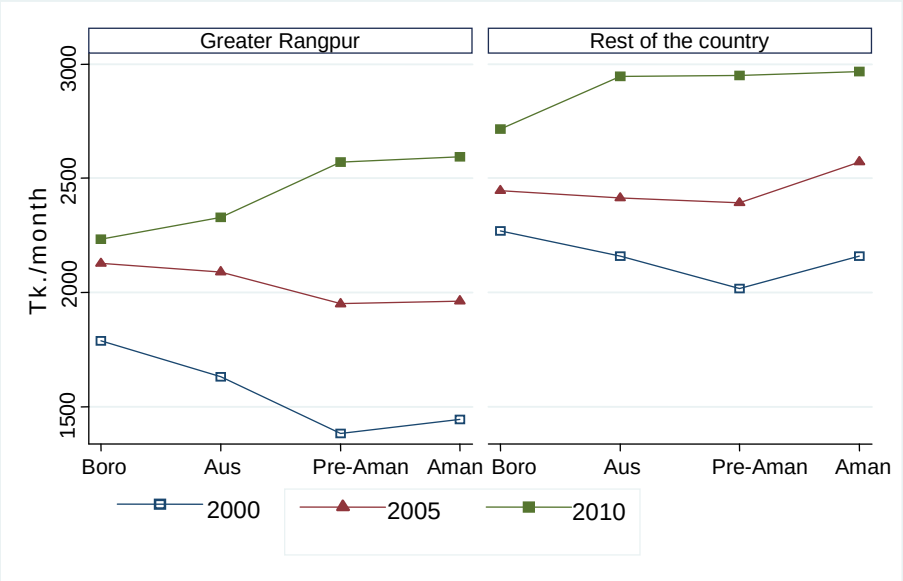
# Figures

**Figure 1. Household monthly food expenditure by season**

**Figure 2. Lean- and harvest-season consumption of credit-constrained households**

**Figure 3. Household participation in PRIME and traditional micro-finance by pre-intervention food consumption status during monga**

# Figures




Source: HIES surveys, 2000, 2005 and 2010

**Figure 1. Household monthly food expenditure by season**

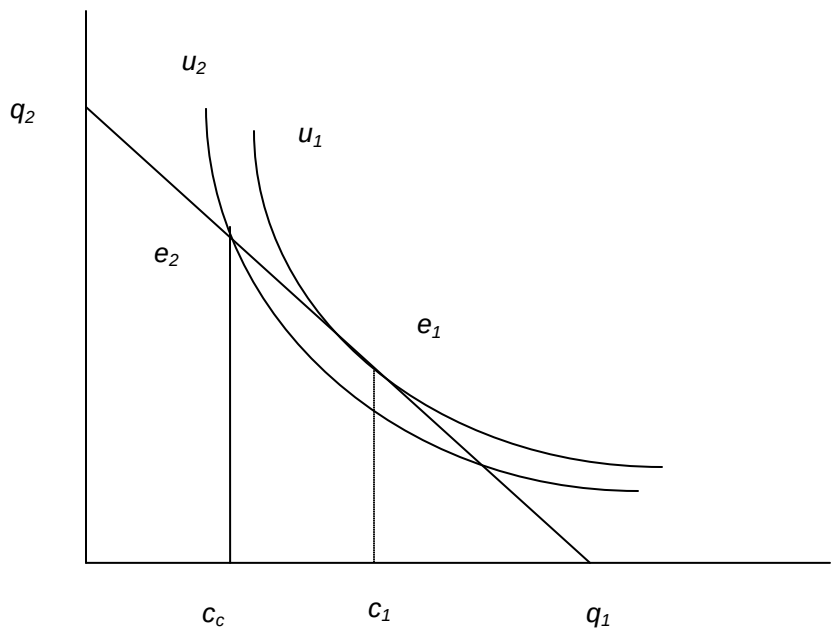
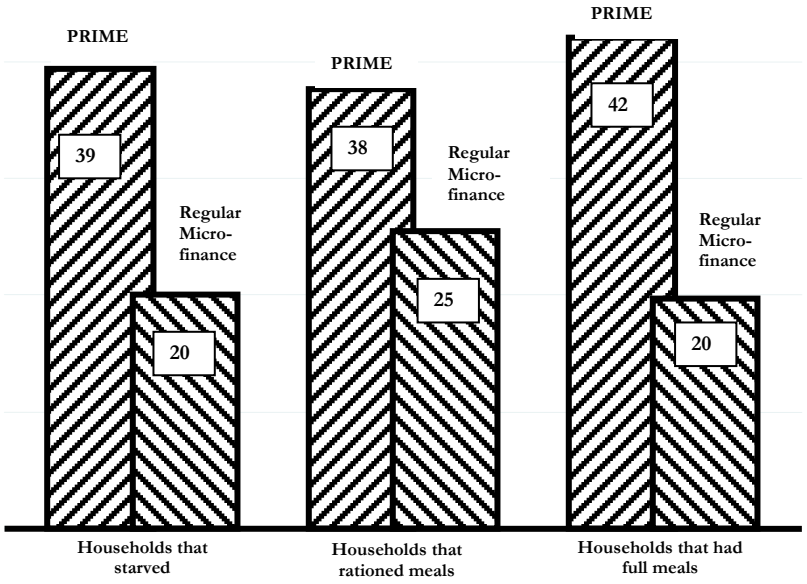



**Figure 2. Lean- and harvest-season consumption of credit-constrained households**




**Note**: Households that were members of microfinance programs prior to the PRIME intervention are excluded in order to capture the behaviour of new participants. Those households constitute thirty percent of all PRIME participants.

**Figure 3. Household participation in PRIME and traditional micro-finance by pre-intervention food consumption status during monga**