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Politics, Public Works and Poverty

Evidence from the Bangladesh Employment Generation Programme for the Poorest

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Abstract

Public works programs can be effective safety nets if they help allocate resources toward poor households. By setting wages lower than market rates public works programs identify poor households reasonably well. When these programs are oversubscribed and lack beneficiary selection rules however, discretion by local politicians can influence their distribution and their effectiveness as safety nets. This paper tests this hypothesis using household survey data on a seasonal public works program in Bangladesh. The results show access to local politicians is a significant determinant of participation, and can increase the relative probability of participation by 110 percent. Participation has a positive impact on food and nonfood consumption of poorer participants. The same is not true for less poor participants. The results suggest rather than relying on local politicians, public works aiming to maximize their impact on poverty should rely on an objective and transparent targeting system that ensures participation of larger numbers of poorer households.

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Politics, Public Works and Poverty:
Evidence from the Bangladesh Employment Generation Programme for the Poorest*

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Acronyms

BDT	Bangladeshi Taka
BISP	Benazir Income Support Program
DiD	Difference in Difference
EGPP	Employment Generation Program for the Poorest
HIES	Household Income and Expenditure Survey
MP	Member of the Parliament
PFDS	Public Food Distribution System
PSM	Propensity Score Matching
PSU	Primary Sampling Unit
UNO	Upazila Nirbahi Officer
BDT	Bangladeshi Taka

1. Introduction

Public works programs (PWPs) are a type of safety net that can serve as effective means to alleviate poverty if they help to redistribute resources toward disadvantaged groups in a welfare-enhancing manner (Subbarao, 2003; Grosh et al, 2009; Subbarao et al, 2013). There are also clear political motivations in setting up PWPs, especially during periods of crisis when governments need to be seen to create "noticeable employment."[1] PWPs serve a dual purpose of offering temporary income support via employment while serving infrastructure requirements. The design of these programs thus varies widely, depending on the motivation for their implementation. The emphasis of the design can either be on their safety net function or on fulfilling infrastructure needs, or both. The main attractive feature of PWPs is that by setting the wage rate below the market rate, these programs are able to offer a transparent mechanism of targeting those who need the employment the most – those with lower opportunity costs generally self-select themselves into these programs.

Evaluations of various PWPs designed as safety nets suggest wide use of this instrument but with mixed results. Many of the limitations found in these programs have to do with the appropriate wage rates. For instance, Indonesia's JPS Padat Karya program, which targeted those affected by the 1998 global financial crisis, had a high incidence of misallocation of resources as the wages were too high relative to the minimum wage (Pritchett et al, 2002; Samurto et al, 2000). Similar problems with the wage rate were also found in the case of the Philippines, Botswana, India and Kenya (Subbarao, 1997; Datt and Ravallion, 1994). The Jefes Program in Argentina put in place in response to the 2002 severe economic crisis but used a below market wage rate. Evaluations of the program suggest it helped to reduce extreme poverty and contributed to protecting the poor during that crisis (Ravallion and Galasso, 2004). These studies suggest PWPs are appropriate forms of safety nets for populations who are unemployed, and whose opportunity cost of participating in PWPs is lower than the wage transfers they receive.

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[1] Franklin Roosevelt's New Deal was famous for its emergency relief and public works programs initiated in the 1930s.

A question that remains to be answered in the literature on PWPs is what happens when given budget constraints these programs are oversubscribed and the somewhat "fixed" wage rate is unable to ration the distribution of the resources across those who want to participate in the PWP. In such situations in which PWP resources essentially become discretionary at the local level, this paper argues that *local politicians* determine who benefits from these programs. The theory that vote-maximizing behavior of politicians influences the allocation of discretionary social assistance is well established and empirically shown in the literature on "pork barrel" politics (Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Dixit and Londregan, 1996; Schady, 2000; Case, 2001; Dahlberg and Johansson, 2002; Sharif, 2011). A "pork-barrel" project is a publicly funded project promoted by a politician to bring money and jobs to his or her own district. The "pork" is allocated not on the basis of need, merit or entitlement; it is solely the result of political patronage, the desire of politicians to promote the interests of their own district, and thereby build up their local support or "vote-banks." There is also a growing literature in political science on patronage and clientelism in Latin America (Diaz-Cayeros et al., 2006; Calvo and Murillo, 2004; Stokes, 2005; Weitz-Shapiro, 2005) that shows political parties may use discretionary access to state programs as a form of patronage, even if they do not generally operate major welfare networks independently from the state.

The role of politicians in determining participation in PWPs is not widely studied.[2] Analyses on the role of politicians in determining who gets to join PWPs, and the subsequent impact on household poverty can provide useful insights on ways in which these programs can function more effectively as safety nets. This is an important policy question given that public works are a relatively expensive way to transfer income to the poor.[3] Using survey data on the largest PWP in Bangladesh – the Employment Generation Programme for the Poorest (EGPP) – this paper addresses two questions: one, whether household access to

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[2] There are many studies that have looked at the determinants of participation in means tested benefit programs (Blundell et al, 1988; Chraig, 1991; Stark & Fry, 1993; Hoynes, 1996; Walter & Bengley, 1997; Blundell et al, 2000; Micklewright et al, 2004; Parker et al, 2005) but few shed light on the role of politicians.

[3] If poverty alleviation is the main objective, then a simple cash transfer would be less costly given lower administrative costs.

politicians plays a role in determining participation in the program; and two, whether participation in the program has a positive impact on household poverty.

The panel survey data we use contain information on participants of the EGPP program and similar households, including their access to local politicians. Further, the surveys were designed to collect information on the three stages of program participation – having access to knowledge about the program; submitting an application; and being selected by the program. Such detailed data allow us to unpack the relative importance of the role of politicians at the various stages of the program participation process. Using design features of the baseline and follow up surveys, we also assess the impact of participation in EGPP on household consumption expenditure as a proxy measure of poverty. Our results suggest that when EGPP is oversubscribed, politicians are likely to influence who benefits from the program. We also find that poorer households benefit relatively more from participation in EGPP than the less poor. These results emphasize the disadvantageous position of poor households who may not have access to local politicians, and provide some insights on how the Government of Bangladesh could best manage its public works interventions to ensure the most effective use of public resources earmarked for poverty reduction.

The paper is organized as follows. The next section briefly describes the Bangladesh context and the design of the EGPP program. Section 3 discusses the analytical framework and empirical strategy. Section 4 offers a description of the data and presents the main findings of the paper while section 5 concludes.

2. Context and program description

Since the 1990s Bangladesh has experienced a steady decline in poverty, which has gone hand-in-hand with remarkable improvements in human development indicators. This remarkable reduction in poverty in recent years helped Bangladesh attain both the MDG goals of halving the poverty headcount and the depth-of-poverty. Survey-based estimates using national poverty lines show that the pace of poverty reduction in Bangladesh picked up considerably during 2000-2010 compared to that observed during 1990s. The steady decline in poverty rates has been sufficient to ensure substantial reductions over the decade in the number of people living in poverty — from nearly 65 million in 2000 to 48 million in 2010, or a 26

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percent decline. The number of extreme poor people also declined from 45 million in 2000 to 26 million in 2010 – a massive 41 percent decrease. Large numbers of people however still remain poor, and an even larger number are vulnerable to falling into poverty.[4] Rural households that are engaged in casual farm labor are particularly vulnerable, and their situation can get aggravated by recurring natural disasters and strong seasonal variations in food production. Seasonal poverty, induced by agricultural cropping patterns, is often a characteristic feature of rural poverty in Bangladesh. Agricultural casual laborers typically face two lean seasons – one before harvest and another before planting – that render them temporarily unemployed. During these two lean seasons many male casual farm laborers migrate to cities looking for work leaving their families behind. This brings about an added vulnerability for these temporary female-headed households in rural areas. Female employment is traditionally low, and in rural areas it is primarily confined to unpaid home-based work. While seasonality is fairly predictable, a household's decision regarding which coping mechanism to choose depends on a combination of household-level factors, leading to the use of both informal mechanisms as well as formal options offered by government policies and programs. Bandyopadhyay and Skoufias (2012) provide empirical evidence that intra-household employment diversification prevails in rural Bangladesh as a coping mechanism. Additional coping options include migrating to cities for temporary employment, using credit to smooth consumption, and using transfers from social safety nets (World Bank, 2013).

Bangladesh has a long history of implementing a wide spectrum of safety net programs that include both cash and in-kind programs. Early efforts in social protection were rolled out as emergency relief measures in response to a cyclone or a famine crisis. The frequency and scale of efforts instilled a culture of experimentation and innovation in these responses: the nature of the crisis determined the nature of instruments. The structure of Bangladesh's social protection landscape, which consists of a large number of fragmented cash and in-kind transfer programs, was largely determined by these initial conditions. PWPs

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[4] The consumption distribution based on the nationally representative Household Income and Expenditure Survey 2010 is such that there is a wide band of households living around the poverty line making those living above the poverty line vulnerable to falling into poverty in face of shocks. In 2010 52 million non-poor people consumed less than 1.5 times the value of the poverty line (World Bank, 2013).

historically have been the government's main response to poverty and vulnerability. This approach stems from the practical need to rebuild community infrastructure while providing a safety net in the aftermath of the famines and catastrophic natural disasters Bangladesh faced in the 70s and 80s.

Building on this tradition of crisis response, the Government of Bangladesh introduced the 100-day Emergency Employment Program in 2008 to cushion the poor against the immediate impact of the rise in global food prices. Low levels of food stock availability in the Public Food Distribution System (PFDS)[5] in the wake of the 2007 global food crisis prompted the government to introduce the country's first cash based emergency workfare program. Following the abatement in the global food price crisis, and based on rapid assessments, the program underwent multiple iterations of design changes and eventually evolved into the current flagship titled Employment Generation Program for the Poorest (EGPP) in 2009. The follow on EGPP aims to mainly address seasonal poverty by providing cash for work during the two lean seasons every year. To maintain its primary focus on its safety net function the work requirements are minimal, and are aimed to essentially help with the maintenance of small scale community infrastructure.

EGPP provides 40 days of employment during each of the two lean seasons[6] – March to April, and September to November, in rural areas. The first experimental phases of EGPP were implemented in September 2009 and March 2010 in only 16 districts, lessons from which were used to initiate the implementation of the program nationwide from September 2010.[7] Implemented by the Ministry of Disaster Management and Relief, the total program budget of about $200 million is distributed at the Upazila[8] level based on the proportion of poor population, with the total number of worker slots of about 1.6 million, or about 800,000 in each phase. Like other PWPs, EGPP sets wages below the prevailing market wage for

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[5] As part of the PFDS the government procures rice stocks to manage market prices as well as stock up for emergency purposes. Surplus stocks are then channeled via food based safety net programs (Food for Works, Test Relief, Vulnerable Group Feeding, Vulnerable Group Development).

[6] To accommodate rising real rural wages since 2007 and help maintain the size of beneficiaries, the number of work days was reduced from 100 to 40.

[7] The nationwide implementation of the program was supported by partially by financing from the World Bank under the Employment Generation Program for the Poorest Project.

[8] Upazila or sub-district is the second lowest level of administrative unit in rural Bangladesh.

unskilled manual workers to facilitate self-selection of the poorest households into the program.[9] Where there are more applications than worker slots a household categorical criteria is expected to be used to select participants: households whose heads are manual laborers and own less than 0.5 acre of land[10] are eligible to apply. Beyond that there are no clear guidelines on how rationing of worker slots will happen if the program is oversubscribed in each Union.[11] Workers are selected on an annual basis based on fresh applications at the local level. In each phase, an enrolled participant is entitled to receiving up to BDT 8000, or about $104, or a little over $200 if work if taken up in both seasons for the full number of days. This implies that on a monthly basis, over the course of a year, an EGPP worker can receive a maximum of monthly transfer of BDT 1300 (USD 16), or about 15 percent of the estimated average monthly per capita expenditure of the targeted extreme poor population who are expected to consume at around the lower national poverty line estimated for 2015.[12] The nature of the works supported under the program are locally identified and implemented. Ministry level officials with the help of local government officials implement the program.

For the purpose of this paper, it is also important to understand the political context within which programs like EGPP are implemented in rural Bangladesh. While not widely documented with evidence, it is generally understood that both informal and formal social protection is provided through local patronage politics (Ahmed et al, 2004). The role of local politicians in beneficiary selection is encouraged by the lack of formal national targeting system and weak administrative capacity of many safety net programs (World Bank, 2008 and 2013). Local politicians play a particularly crucial role in preparing beneficiary lists, and sometimes in the delivery of benefits as well (Ibid). Such a context allows for an ideal setting to study the links between politicians and participation in PWPs, and the impact of participation on household poverty.

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[9] Currently the wage is below the market rate at BDT200 per day. This rate is adjusted for inflation over time.
[10] These two variables are highly correlated to poverty in rural Bangladesh. The definition of functionally landless in Bangladesh is landownership of less than 0.5 acre.
[11] Union is the lowest local administrative unit in rural Bangladesh.
[12] Calculations are based on the 2010 national poverty line (adjusted for inflation). The benefit size is almost 2.5 times the average benefit offered by other safety net programs in Bangladesh.

3. Analytical Framework and Empirical Strategy

3.1 Assessing Determinants of Participation in EGPP

To assess the role of politicians and participation in EGPP, we use a model for program participation based on the model for benefit take up developed by Micklewright et al (2004) and Pundey et al (2002). Suppose U_0 is the household's level of utility if it does not participate in the EGPP and U_p is the level of utility if it does. Here U_0 is a function of household's original income (y), given the observed and unobserved household characteristics (X). U_p is a function of (y, B, C), where B is the amount of benefit the household receives if it participates, and C is any cost of participation incurred by the household, given X. The household will participate in the program if and only if $U_p > U_0$. Assuming that the utility functions are monotonous and continuous in income we have,

$$B - C > U_p^{-1}U_0 - y \qquad (1)$$

Where $U_p^{-1}U_0$ is the level of income that a household with utility level U_p needs to reach its pre participation level utility U_0. Following Parker et al (2005), we can write,

$$U_p^{-1}U_0 - y + C = e^{X\beta + u} \qquad (2)$$

Where u is the unobserved household characteristics affecting C. Substituting (2) into (1) we get,

$$lnB > X\beta + u \qquad (3)$$

The probability that a household will participate in EGPP can then be written as,

$$Pr(Participation) = Pr(u < lnB - X\beta) = F(\frac{lnB - X\beta}{\sigma}) \qquad (4)$$

Where, $\sigma^2 = Var(u)$ and F is the cumulative distribution function of the variable u/σ. We assume that u/σ follows a logistic distribution.

However a simple participation regression as in equation 4 that does not disaggregate the determinants of each of the participation stage may hide important information about underlying factors that govern the process of overall participation. There are essentially three stages or conditional steps required for any household to participate in the EGPP. First, the household must be aware of the existence of the program. Second, having the knowledge, the household must decide to participate in the program

and therefore lodge an application. Finally having applied the household must be selected by the program authorities as eligible to participate. Thus the participation regression can be broken down as follows:

$$Pr(participation) =$$

$$Pr(selection|\ knowledge,\ application).Pr(application|knowledge).Pr(knowledge) \quad (5)$$

While a simple participation regression can answer the question on whether politicians play a role in determining participation in EGPP, breaking down the participation process as per equation 5 provides us with more information on the relative role of politicians in each of the three stages of the participation process. The household's knowledge of the program, ability to apply as well as selection into the program may also depend on the household's social networks and connections to local level administrative government officials. There could also be other factors that influence the different stages of the participation process. For example, knowledge about the existence of the program may depend on the age, sex and years of education of the household head. Given rural social norms that limit women's mobility, a male household head is more likely to know about safety net programs compared to a female household head. More educated household heads are more likely to know and understand the program and the process of how it works. Household location may also be a factor, i.e. the proximity of the household to certain locations such as markets, roads, post offices, bus stations etc. can allow for increased information flow, thereby affecting household knowledge about EGPP, their ability to apply, and even their probability of being selected given their application. Households that experienced any kind of shock may be more likely to participate in a safety net program. Similarly, households who participate in other safety net programs may be more aware of EGPP, and hence more likely to apply. Both these factors may have separate independent effects on the various stages of participation in EGPP.

Given that the benefit level (wage/per day) is fixed for each household, each of the three components on the right-hand side of equation (5) can be estimated as functions of household's demographic and socio-economic characteristics as follows:

$$Prob(event) = F(X\beta) \quad (6)$$

where X is a set of household characteristics that determine the participation process outcomes. To test our hypothesis we include a "political access" index as a proxy for household access to local elected politicians where it takes the value 1 if the household has access to either the *Union Parishad* or Council member or chairman, two if the household has connection with both, and zero if it does not have any links with these individuals.[13] We also include dummy variables to reflect household access to administrative officials at the Upazila level as well as access to a powerful relative.

We estimate four separate equations: (i) *a simple participation* regression to assess whether the "political access" index is a significant determinant of participation in EGPP; (ii) *a knowledge regression* to assess whether the "political access" index is a significant factor that determines a household's ability to know about EGPP; (iii) *an application regression conditional on household knowledge* of EGPP to assess whether "political access" is significant for lodging an application to EGPP; and (iv) *a selection regression conditional on household knowledge and application to the program* to assess whether political access also plays a role in the final selection into EGPP. The same equations are run to estimate all four regressions. This allows us to understand the relative significance of the factors that affect these three participation stages, and thus help us understand why and how the "political access" index matters for EGPP participation. We estimate these equations using the baseline survey only.[14]

3.2 Assessing Impact of Participation in EGPP on Poverty

Participation in EGPP, in principle, is supposed to provide employment to those households engaged in casual labor in agriculture as they are likely to face unemployment during agricultural lean seasons. Thus, participation in EGPP is expected to mitigate a temporary drop in consumption resulting

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[13] We also conduct some robustness checks with two dummy indicators, one taking the value 1 if the household had access to the UP chairman, and another one taking the value 1 if the household had access to a UP member. These results are provided in the Appendix.
[14] The baseline has a balanced sample of participants and non-participants as it was constructed according to the sampling strategy. Two third of the participants became non-participants in the endline survey therefore not making it an appropriate sample for addressing any questions on participation.

from otherwise lack of demand for farm labor during lean seasons. In addition, there could be a direct increase in income if the size of the transfer is larger than the consumption smoothing requirements of affected households, thereby have a long term impact on household overall consumption. To assess the impact among EGPP participants we use both estimates of *the monthly food and nonfood consumption reported at the time of the survey* as well as *total annual household consumption estimated across the year* as proxies of poverty. However, identifying any program impact on poverty will depend on having information on the counterfactual consumption levels of EGPP beneficiary households in a without-program situation during a specific lean season. The survey questionnaire instrument allows us to identify beneficiary households in the various phases of the EGPP under implementation in each calendar year. Thus we take advantage of the *design* and *timing* of the household survey questionnaire to identify a reasonable comparison group of households to estimate the impact of participation in EGPP on: (i) monthly consumption at the time of the survey; and (ii) annual consumption within the past year of the survey. For (i) we compare monthly consumption among EGPP beneficiary households who participated in different EGPP phases at endline (i,e. identification is based on with or without treatment); while for (ii) we compare annual consumption among EGPP beneficiaries households with varying levels of participation in EGPP phases (i.e. identification is based on the intensity of the treatment). We use these differences in the timing of participation in EGPP among beneficiaries during the baseline and endline to run a set of difference-in-difference regressions, controlling for differences in observable household characteristics:

$$Y_{it} = \alpha + \beta T_i + \gamma t + \delta T_i t + \phi X_{it} + \eta_i + \varepsilon_{it} \qquad (7)$$

where *t* stands for the period (*t = 0* for the baseline, and *1* for the endline). Y_{it} is the outcome of household *i* in period *t*. T_i represent the treatment status of the household: it takes the value 0 if the household is in the control group and 1 if it is in the treatment group. X_{it} is a set of additional observable characteristics, η_i is unobserved time invariant household specific factors that may affect consumption and participation in EGPP, and ε_{it} is an error term. β measures the difference between treatment and

control at baseline, γ shows the difference in outcomes between baseline and endline in the absence of the program, and δ is our coefficient of interest and the estimated impact of the program on Y.

Further, we also assess whether the relative impact of participation varies across participant households living above and below the poverty line. This exercise is motivated by the fact that among the participant households, there are households who have consumption levels above the poverty line: 36.07 percent were above the 2010 national poverty line. Figure 1A shows that the distribution of EGPP participant households from the 2010 EGPP survey and compares it to the distribution of the national population in 2010 (drawn from the nationally representative 2010 Household Income and Expenditure Survey).

The key assumption of the difference-in-difference (DiD) method is that the treatment and control groups have parallel time trends. This is equivalent to the assumption that in the absence of the intervention, the difference in the outcomes between treatment and control groups would move in tandem, decreasing or increasing at the same pace. This condition will not hold if household characteristics or initial conditions affect subsequent changes in the outcome variables such that their distributions among the treatment and control groups differ from each other. Since we do not have additional observations before the baseline, it is not possible to test the hypothesis of parallel time trend between the treatment and control groups. However it is reasonable to assume that they share similar trends in the outcome variable – household consumption expenditure - since they are drawn from the same villages. Any exogenous shock that may affect the control group as a whole would affect the treatment group in the same way over time. Our data show that both control and treatment households share very similar characteristics at baseline as presented in Table 1A in the Appendix.

3. Data and Results

4.1. Sampling and Timing of Surveys

The baseline survey, collected during November – December 2010, consists of information at the initial nationwide roll out of EGPP following its previous experimentation stage conducted in limited areas.

The follow up or endline survey was conducted during November – December 2012, after two years of implementation of the program. The baseline survey consists of 3,195 households, of which 1,594 participated in the EGPP (or beneficiaries) and the rest belong to a comparison group who did not participate but nevertheless were eligible based on the two targeting criteria (or eligible non-beneficiaries). The survey follows a multistage clustered sampling design. Initially 5 *upazilas* from each of the seven divisions in the country were selected depending on the proportion of people living in poverty in each *upazila*. Then in the next stage two unions from each *upazila* were selected with probability proportional to the population. Finally, from these 70 selected unions, two villages/*mauzas* were selected which constitute the primary sampling units (PSU). The villages/*mauzas* were also selected with probability proportional to the population of the village/*mauza*. In order to identify the EGPP participants and the corresponding comparison group a census of all households in the selected 140 PSUs was conducted. A total of 34,369 non-participant households and 2,540 participant households living 140 clusters were listed in the census (Mitra and Associates, 2010). Then for each PSU, 12 non–beneficiary households and 12 beneficiary households were randomly selected from the set of eligible non-participant and participant households. In areas where there were less than 12 participating households all were selected for the baseline survey. The household level eligibility criteria, i.e. household land ownership and the occupation of the household head as a casual laborer, were used to identify similar non-beneficiary households who would otherwise be both willing and eligible to participation in EGPP.[15]

When conducting the endline survey, 207 households or about 6.5 percent of the baseline respondents were not found, and 127 new "replacement households"[16] were added in the end-line survey. The number of the original EGPP participants in the survey sample declined from baseline to end-line - only a third of the baseline beneficiary households continued to receive benefits from the program during the endline survey (see Table 1). This reduction in the number of observations of "baseline" EGPP

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[15] 90% of the participant/beneficiary households have < 0.4 acres of land while all the non-participant/non-beneficiary households have <0.32 acres of land. 95% of the household heads of the beneficiary households were casual laborers whereas the corresponding figure for the non-beneficiary households is 92%.

[16] Replacement households were selected from the original sample list prepared during the baseline survey.

beneficiary households in the endline survey is likely to be due to the process of annual beneficiary selection done at the program level.

Table 1. Distribution of households across the surveys

	EGPP	Non-EGPP	Total	Attrition	Replacement
Baseline survey	1594	1601	3195		
End-line survey	563	2553	3116	207	128

However, the number of households interested to participate in the program did not decrease much during this period. Of the 1,957 households who had knowledge about the program during both the survey rounds 66.8% were repeat applicants. Of the non-participating households who knew about EGPP in the baseline sample, 43.47% applied for the program but did not get in, while 45.66% of the households in the endline sample applied for the EGPP but did not get in. This implies some level of oversubscription to EGPP and the exclusion of households from participating in the program despite their interest to do so.[17]

The household surveys also include information on household level demographic status, spending on food and nonfood items, asset endowments, access to facilities, savings and loans, employment activities, food insecurity and shocks, as well as information on participation in EGPP across the various phases. The two phases of the program implementation reflecting the two lean seasons (i.e. phase 1 representing the October – December lean season, and phase 2 representing the March-April lean season) allow us to identify reasonable control groups for our impact analysis (see Table 2). For instance, we are able to identify the *same* EGPP households who were covered during the baseline and endline surveys except for one difference: one set of households participated in November 2010 and 2012 lean seasons (first set of treatment households or T1), while another set of households participated in November 2010 lean season and in March 2012 lean season but not in the November 2012 lean season (first set of control households or C1). We expect that both treatment and control households face seasonal poverty (as

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[17] Due to the sampling strategy we are not able to quantify the level of oversubscription at the PSU level.

evidenced by their participation in EGPP) but the only difference between the two groups is that during 2012 each received EGPP assistance in different lean seasons. We are also able to identify households who participated in both November 2010 and March 2012 (second set of control households, or C2) while another group participated in November 2010, March 2012 and November 2012 (second set of treatment households, or T2).

Table 2. Timing of participation in EGPP across the seasons

	Baseline	Endline
Total EGPP households	1594	563
EGPP households who participated in November 2010 and 2012 lean seasons only (T1)		119
EGPP households who participated in November 2010 and in March 2012 lean seasons only (C1)		106
EGPP households who participated in November 2010, March 2012 and November 2012 lean seasons (T2)		247
EGPP households who participated in November 2010 and March 2012 lean seasons only (C2)		106
Total non-EGPP households	1601	2553

4.2 Descriptive statistics

To conduct our analysis, we compare socio-economic and demographic characteristics of three sets of sampled households (see Tables 1A and 1B). Table 1A compares the beneficiaries with eligible non-beneficiaries in the baseline survey. These households constitute the sample for identifying the determinants of participation in EGPP and the role of access to local politicians on participation. Table 1B contains the second and third set of comparisons between the two sets of Treatment and Control households for analyzing the impact of EGPP participation on household consumption expenditure based on varying timing of participation across the different lean seasons.

4.2.1 Differences between EGPP beneficiaries and eligible non-beneficiaries

Columns1-5 of Table 1A compare the socio-economic and demographic characteristics between EGPP beneficiary and non-beneficiary households in the baseline survey and show that the two groups had similar socio-economic characteristics. The EGPP and non-EGPP households appear to have no significant differences in their value of assets, and other poverty correlates such as housing characteristics, access to electricity and other services. There are also no significant differences in monthly per capita food (BDT1071.44 and BDT1085.25) and non-food consumption (BDT578.9` and BDT571.15), and the average poverty rates in the corresponding *Upazilas* (34.25 and 33.15 percent) they live in. There are also no significant differences in the ownership of common assets except for cassette player. Landlessness patterns are also similar: 37% of the beneficiary households and 36 percent of the comparison households are landless in the baseline sample. We find that on average an EGPP beneficiary households have larger household sizes with older household heads. A significantly lower percentage of EGPP household heads are male (88 percent) compared to non-EGPP households (91 percent).

The data shows no significant differences in housing conditions between the two groups. Only 4.99 percent of the program households have a separate dining room, 63.51 percent possess a separate kitchen, 40% live in houses that have walls made of corrugated sheet or wood while 85 percent have roofs made of corrugated sheet. The corresponding figures for the comparison households are 4.04, 60.20, 35.85 and 83.32 percent. 51 percent of the EGPP participants use sanitary (flush, water seal and pit) latrine, 95 percent have access to tube-well water, 21.15percent households have electricity. Among the comparison households 52 percent use sanitary latrine, 94.64percent have access to tube-well water and only 18.41 percent households have electricity. However, the beneficiary households have on average significantly more rooms in the households (1.57) than the non-beneficiary households (1.48).

Both the program and comparison households use similar energy sources for cooking and lighting. 21 percent of the beneficiary households use wood, 8.72 percent use dung, 0.03 percent use solar energy for cooking. Among the non-beneficiaries, 21.15 percent use wood, 8.39 percent use dung and 0.04 percent use solar energy for cooking. Of the program households, 79.09 percent use kerosene and 19.39 percent

use electricity for lighting whereas the respective shares among the comparison households are 80.99 percent and 17.05 percent. The survey collected data on the distances of sample households from the nearest facilities – primary school, secondary school, primary health-care center, paved road, bus stop, hat/bazaar, NGO office and bank. There is no significant difference in these variables among the beneficiary and non-beneficiary households. There is a significant difference however in access to local politicians between these two groups of households: the share of EGPP beneficiary households with some level of contact with local politicians within the last year (either a Union Parishad Chair or a Union Parishad member)[18] is 93 percent, compared to only 70 percent among the non-beneficiary households (see Table 3).

Table 3: Access to Local Politicians at Baseline

	Beneficiary	Non-beneficiary	All
Hh has previous contact with UP Chair	0.639	0.417	0.454
Hh has previous contact with UP member	0.906	0.673	0.712
PAI*: 0 = No contact	0.062	0.293	0.254
1= Contact with either UP chair or member	0.33	0.325	0.326
2= Contact with both	0.608	0.382	0.420

*Political Access Index.

We define the ability to make contact with politicians as access to them. A key limitation of this approach is that it does not provide any information on the nature of the contact with local politicians. To assess the extent to which access to politicians may affect participation in EGPP, we create an index of political access (PAI) where it is zero if the household has had no contact with either the UP chair or a member; 1 if it has had contact with one of the two; and 2 if it has had contact with both the UP chair and a member. The mean PAI for the EGPP participants was 1.55 and for the non-participants it was 1.09. This difference is significant at the 1 percent level. Given the similarities in characteristics between beneficiary and non-beneficiary households, we test whether the difference in relative access to local politicians is significant in determining participation in the program.[19]

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[18] UP Chair is the leading politician at the Union level and the chair of the Union Parishad or Council, the main governing body of catchment area within the Union. The Union Parishad (UP) is composed of 12 elected members.
[19] We do not expect the few significant differences between beneficiaries and non-beneficiaries (e.g. owning a cassette player or being larger households or having an older household head) are correlated with household access to

4.2.2 Differences between treatment and the control households

Columns 1-3 in Table 1B compare the socio-economic and demographic characteristics among the first Treatment (T1) and Control (C1) households to ascertain that the control households are reasonable counterfactuals for assessing the impact of EGPP participation to mitigate seasonal poverty. There were no significant differences between the two groups in their demographic characteristics, their consumption levels, asset ownership, housing characteristics, nor in their household location variables. There are also no significant differences in the ownership of common assets except for ownership of a tube-well. Landlessness patterns are also similar: 36.59 percent of the Treatment households and 34.59 percent of the Control households are landless. Household size of the two groups are similar as is the proportion of these households with a male head, though the household head has a significantly lower level of education in Control households (1.4 years) compared to Treatment ones (2.1 years).

The data shows no significant differences in housing conditions between the two groups. Only 5 percent of the Treatment households have a separate dining room, 64 percent possess a separate kitchen, 50 percent live in houses that have walls made of corrugated sheet or wood while 88 percent have roof made of corrugated sheet. The corresponding figures for the Control households are 5, 60, 39 and 89 percent. 43 percent of the Treatment households use sanitary (flush, water seal and pit) latrine, and 96 percent have access to tube-well water. Among the Control households, 43 percent use sanitary latrine and 96 percent have access to tube-well water. The two groups differ though in terms of their source of lighting: 34 percent of Treatment households have access to electricity compared to only 19 percent among Control households; the latter group is more likely to use kerosene for lighting – 81 percent compared to 66 percent among Treatment households. Both groups use similar energy sources for cooking: 26 percent of the

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politicians. A greater concern would be whether political connection is endogenous to EGPP participation, i.e. in the process of participation in EGPP, households develop political connections. As shown in Table 2A between baseline and endline, the majority of EGPP beneficiaries continued to approach local religious leaders to seek help with EGPP application (80% at baseline while 89% at endline). The relative figures for approaching the UP Chair was 11.5% and 17% at baseline and endline respectively. Even fewer households approached a member of the UP (5% at baseline and 4% at endline). These figures while are unable to rule out the notion that participation in EGPP can lead to greater access to politicians, our analysis only uses data at baseline when EGPP reforms were rolled out, and thus by definition access to politicians in our regression is exogenous to participation in EGPP.

Treatment households and 19 percent of Control households use wood. These groups are also similar in terms of the distances from the nearest facilities – primary school, secondary school, primary health-care center, paved road, bus stop, hat/bazaar, NGO office and bank. There is no significant difference in these variables among the two groups. It appears unlikely for the time trends to be different between these two groups. Table 1B also shows there was no significant difference in total, food and non-food consumption expenditures[20] of these households at baseline. However, the consumption patterns of these households in November 2012 have significant differences. These differences also hold when we disaggregate the sample by poverty status. These figures are presented in Table 4.

Table 4: Monthly Consumption expenditure at endline (in '000BDT)

	Full Sample		p-value	Poor		p-value	Non-poor		p-value
	T1	C1		T1	C1		T1	C1	
	(1)	(2)		(3)	(4)		(5)	(6)	
Food[a] (A)	5.83	4.84	0.30	5.32	4.59	0.32	6.64	5.33	0.43
Non-food[b] (B)	3.15	2.18	0.02	2.67	2.09	0.03	3.92	2.33	0.09
Non-food (monthly)[a]	0.90	0.68	0.02	0.95	0.65	0.02	0.81	0.74	0.56
Total (A+B)	8.98	7.02	0.08	7.99	6.69	0.12	10.56	7.66	0.15

Notes: T1=Treatment group, C1= Control group. [a]For the month of November 2012. [b]non-food annual expenditure

While there is no significant difference in food consumption between these two groups of households, the differences in total non-food consumption expenditure and non-food expenditure incurred monthly are statistically significant at 5 percent level. These are presented in columns 1 and 2 of Table 4. Columns 3 and 4 present the same results for households who are poor and columns 5 and 6 present those for the non-poor households.[21] Since EGPP essentially offers wage income to households during lean seasons, we expect to see some increase in their consumption expenditures relative to similar non-EGPP households. This is consistent with what we see in Table 4.   Since consumption data was calculated in the

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[20] Food expenditure was collected for last seven days, non-food monthly expenditure was collected for last one month and non-food annual expenditure were collected for last one year. All of these items were then converted to a 30-day expenditure to generate monthly consumption expenditure.
[21] Households with consumption expenditure below or above the 2010 national poverty line are defined as poor and non-poor households respectively.

month of November, the data suggests those who participated in November had higher consumption of monthly food and non-food items during that month compared to those who participated in March. Similar differences also hold for poor households but not for non-poor households: the differences in different measures of consumption expenditures are not statistically significant for the non-poor households.

The last three columns of Table 1B provides differences between the second set of Treatment (T2) and Control (C2) households at baseline. As with the first set of Treatment and Control households we find no significant differences between them. The households in the treatment (T2) and control (C2) groups have similar demographic and socio-economics characteristics. Only 4 percent of the Treatment households have a separate dining room, 58 percent possess a separate kitchen, 46 percent live in houses that have walls made of corrugated sheet or wood while 89 percent have roof made of corrugated sheet. The corresponding figures for the Control households are 5, 60, 39 and 89 percent. 51 percent of the Treatment households use sanitary (flush, water seal and pit) latrine, and 96 percent have access to tube-well water. Among the Control households, 43 percent use sanitary latrine but the same proportion have access to tube-well water. The two groups do not differ in terms of their source of lighting, nor in their use energy sources for cooking. These two groups are also similar in terms of the distances from the nearest facilities – primary school, secondary school, primary health-care center, paved road, bus stop, and NGO office. The only main difference is that the treatment households are significantly further away from bazaars and banks compared to the control households. Given these similarities it appears unlikely for the time trends to be different between these two groups allowing us to conduct DiD techniques to identify the impact of participation in EGPP.

When we look at differences in total consumption expenditure between T2 and C2 at endline we find that they are not statistically significant (Table 5). There are also no significant differences in food, nonfood and total consumption between poor treated and control households and between non-poor treated and control households. The data seems to suggest an additional EGPP phase may not necessarily lead to higher consumption expenditure.

Table 5: Monthly Consumption expenditure at endline* (in '000BDT)

	Full Sample		p-value	Poor		p-value	Non-poor		p-value
	T2	C2		T2	C2		T2	C2	
	(1)	(2)		(3)	(4)		(5)	(6)	
Food	4.93	4.84	0.86	4.75	4.59	0.77	5.18	5.33	0.86
Non-food	2.44	2.18	0.17	2.16	2.1	0.67	2.81	2.22	0.20
Total	7.36	7.02	0.54	6.94	6.69	0.68	7.99	7.66	0.78

Notes: T2=Treatment group, C2= Control group. *Includes total annual expenditure converted to a 30 day expenditure

4.3 Does Political Access Affect EGPP Participation?

We run four sets of logistics regressions to assess the role of access to politicians in determining participation in EGPP. The odds ratio of the logistic estimates of equation 6 are presented in Table 6. Column 1 shows the odds ratio for the simple participation regression. Column 2 presents the odd ratio of the household's probability of having knowledge about EGPP, while column 3 presents the odds ratio of the probability that the household applies to join EGPP conditional on having knowledge about EGPP. Column 4 presents the relative probability that a household is selected given their knowledge of EGPP and application to receive EGPP benefits. Comparisons of the results in column 1 with columns 2-4 help to unpack how "political access" influences the various stages linked to participation in EGPP.

Results presented in column 1 suggest that having "political access" is a significant determinant of participation in EGPP. A higher "political access" index is associated with a higher probability of participating in EGPP, and is significant at the 1 percent level. The results suggest that among eligible households, those who have contacts with local politicians appear to have a 110 percent higher odds of participating in EGPP. When we compare the effect of the political access index across the three stages of participation, we find it is also highly significant in determining each of the three stages underlying participation but the magnitude of effects vary. Political access appears to matter most when households apply to EGPP conditional on knowledge of EGPP: political access increases the relative probability of

knowledge by 69.9 percent, the relative probability of application given knowledge by 107 percent and the

relative probablity of selection condional on knowledge and application by 38 percent. [22]

Table 6: Determinants of EGPP Participation (Odds Ratio)

	Participate in EGPP	Knowledge of EGPP	Application to EGPP conditional on knowledge	Selection into EGPP conditional on knowledge and application
	(1)	(2)	(3)	(4)
PAI	2.105***	1.699***	2.078***	1.382*
	(0.18)	(0.23)	(0.23)	(0.24)
Minority	0.513	0.272**	1.591	0.84
	(0.22)	(0.11)	(0.86)	(0.55)
Minority*PAI	1.846**	2.156***	0.811	1.483
	(0.53)	(0.63)	(0.28)	(0.59)
Contact with UNO	1.151	1.358	1.062	0.919
	(0.22)	(0.49)	(0.41)	(0.30)
Minority*contact with UNO	2.063	3.207	0.752	.
	(2.51)	(3.86)	(0.83)	.
Powerful relative	2.001***	0.931	3.150***	1.587
	(0.42)	(0.29)	(0.89)	(0.49)
Minority*powerful relative	1.138	1.04	.	0.599
	(1.29)	(1.38)	.	(1.24)
Household characteristics	Yes	Yes	Yes	Yes
Asset ownership	Yes	Yes	Yes	Yes
Distance to facilities	Yes	Yes	Yes	Yes
Observations	3,191	3,191	2,382	1,919

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. PAI = Political access index.

The important role of local politicians in facilitating the participation process in EGPP is also

supported by the results we find on the probability of knowledge about EGPP among the religious minority.

We find that households belonging to a minority religion are less likely to participate in EGPP, although

the result is not statistically significant. However, minority households who have higher access to local

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[22] To ensure that our results are not sensitive to the design of the political access index we also estimate participation regressions with different measures of political access and present the results in the Appendix. For example we use a separate dummy for access to Union Parishad Chairman, Union Parishad member and UNO. We also estimate these relationships using a single dummy for access to any of the three above mentioned individuals. In all the cases the coefficients on the political access dummy are found to be statistically sinificant at 5% level and the relative magintudes remain the same. We also estimate the disaggregated effect of PAI by estimating the effect of having one political connection as opposed to two. The results show that having two political connections has a larger effect on participation than having just one.

politicians, have a significantly higher chance of participating in EGPP. The magnitude of this effect is almost the same as the independent effect of the political access index on the average household probability of participating. When we explore the interaction effect of being a minority and the political access index across the different stages of the participation process, we find that a lower probability associated with having access to knowledge about EGPP: compared to others, being a minority household significantly reduces the probability of having access to knowledge of EGPP. The probability of having access to knowledge is significantly increased when the minority household has access to local politicians, as shown by the odds ratio of the interaction term between the dummy variable representing minority households and the index representing access to local politicians.

Hou et al (2009) find that having other social contacts can also help with participation in safety nets in Pakistan. We also find similar results: we find that while access to an *Upazila Nirbahi Officer* (UNO) does not increase the probability of participation but access to a powerful relative does. This result suggests that administrative officers at the sub-district level do not play any role in determining participation in EGPP. Even when we assess the role of these officers in the underlying processes of participation, we find that they are not of any help in providing access to information on EGPP or with helping with the application process, nor do they have any significant impact on the selection process of the beneficiary. This result is consistent with the ground realities in that selection happens at the Union and not at the Upazila level. With regards to having access to a powerful relative, we find that this access helps households in being able to apply to EGPP, but it does not have any bearing on the selection process.[23]

Overall the results suggest that local politicians play a *de facto* role in beneficiary targeting of EGPP. Informally they help to fill an important void in the administration procedures relating to dissemination of information on EGPP to potential beneficiaries, helping potential beneficiaries with application to EGPP as well as supporting their selection into the program. The results imply that when the

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[23] The two other household variables that are significant for affecting the probability of participation in EGPP include the age of the household head and the household access to remittances. The higher the age of the households head the higher is the probability of the household participating in EGPP, while having access to remittances significantly reduces the probability of participating in EGPP.

program is oversubscribed, households with access to local politicians have an edge in participating in the program over those who do not. Such discretionary targeting of EGPP benefits would be an acceptable solution if the policy maker's objective is to ensure a full uptake of the program. It is not clear however whether this would be the appropriate solution if the policy maker's objective is to maximize the impact of EGPP on poverty reduction. The vote-maximizing behavior of politicians would suggest an unwillingness on their part to differentiate between the poor and nonpoor when facilitating their participation into EGPP. The data supports this notion - access to politicians does not appear to be significantly different between poor and nonpoor beneficiary households (see Table 3B in the Appendix).[24] This is also consistent with the sample of EGPP beneficiaries in which about one in three beneficiaries had consumption levels above the poverty line (as shown in Figure 1A). The following section therefore explores the effects of such informal and discretionary targeting of EGPP benefits on the overall program objective of reducing seasonal poverty.

4.4 Impact of EGPP participation on consumption expenditure

Table 7 presents the DiD estimates that try to capture the impact of participation in EGPP on household consumption *during the November 2012 lean season* among the first set of Treatment and Control households, controlling for household level observable characteristics.[25] The results show that on average "treatment" households had BDT 1,492 more household consumption expenditure compared to "control" households. To understand the pathways of how EGPP participation contributes to household consumption increase, we also look at the impact on both food and nonfood expenditures. While the difference in food expenditure is not significant, differences in non-food expenditure is significant. We also estimate the impact on household expenditure on monthly non-food items to further focus on the short term impact of participation in non-food expenditure, and find that EGPP households spend BDT346 more on

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[24] Interacting the PAI with household poverty status does not change the results in the participation regressions as one would expect.
[25] We use the same set of household characteristics used when determining participation, e.g. household head gender, age, religion and education, household asset ownership, political access, household location and housing characteristics (roof, walls, latrines, tube well, electricity), participation in other safety nets, shocks faced by household, and access to remittances.

monthly nonfood items than non-EGPP households. This differences is significant at the 5% level. The results suggest that participation in EGPP has a significant impact on the monthly household consumption, but that beneficiaries essentially use EGPP transfers to meet their monthly non-food consumption needs.

Table 7. Impact of EGPP participation on household expenditure

	Total	Food	Non-food	Nonfood (monthly items[a])
Impact of *EGPP* (δ)	1,492.29**	302.25	1,190.04***	346.44**
	(536.48)	(488.61)	(38.33)	(139.28)
Trend for non-recipients (γ)	-914.19	-456.11	-458.08	-76.16
	(635.97)	(630.45)	(350.72)	(68/27)
Controls	Yes	Yes	Yes	Yes
R^2	0.285	0.287	0.168	0.23
Df	91	91	91	91
No. of obs.	223	223	223	223

[a]This includes only monthly non-food expenditure on fuel, cleaning, cosmetics, travel and transportation. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Given that a sizeable number of the poorer households are not able to participate in EGPP, we are interested to assess any heterogeneous impact of the program based on the income levels of households. Accordingly, we divide the sample households between two groups – poor and non-poor – and perform the above analysis for each separately. We use the 2010 weighted poverty line of BDT1601.2 (HIES 2010) as the poverty cut-off to determine these two categories of households. The impact results for the two groups of households are presented in Table 8. Participation in EGPP has a significant on the total consumption of both poor and nonpoor households, but this impact is much larger for the nonpoor (BDT. 5178) than poor (BDT. 938). There are differences however in the channels through which total consumption is affected. We find that for the poor, contrary to the results in Table 7, participation in EGPP has a significant impact on food consumption – poor EGPP beneficiaries were able to increase their food consumption by BDT. 708 compared to non-EGPP poor households. The impact on food consumption of the non-poor however is not

significant. For poor households participating in EGPP also has a significant positive impact on the consumption of monthly non-food items. The same is not true for non-poor households. When we compare the non-poor EGPP participants to the non-poor comparison group, we find while the EGPP participation led to a significantly more total consumption, but is only driven by increases in non-food consumption.

Table 8: Impact of EGPP participation on household expenditure, by poverty status

	Total	Food	Non-food	Non-food (monthly items)
Poor HH	938.27**	708.490**	229.79	364.65***
	(417.85)	(342.488)	(225.02)	(134.658)
Controls	Yes	Yes	Yes	Yes
R^2	0.46	0.55	0.46	0.40
Df	77	77	77	77
No. of obs.	143	143	143	143
Less poor HH	5,177.95**	1,985.55	3192.40**	170.132
	(2,535.20)	(2,567.24)	(977.34)	(153.271)
Controls	Yes	Yes	Yes	Yes
R^2	0.48	0.40	0.50	0.38
Df	48	48	48	48
No. of obs.	80	80	80	80

Notes: Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The results suggest while participation in EGPP has a significant impact on household non-food consumption, the impact for the poor households are positive for both monthly food and nonfood consumption. The results lend support to the important role EGPP may play for poor households in mitigating seasonal poverty. We test the robustness of our results presented in Table 8 by using an interaction term between participation and poverty status to measure the additional impact of the treatment on the different income groups. These results are presented in Table 7A in the Appendix, and are consistent with those presented in Table 8.

The results presented in Tables 7 and 8 capture the impact of EGPP during a lean season. Table 9 presents the DiD estimates that try to capture the impact of the intensity of participation in EGPP by

comparing the second set of Treatment and Control households, controlling for household level observable

characteristics.[26]

Table 9: Impact of Intensity of participation in EGPP on household consumption expenditure

Full sample	Total	Food	Non-food	Non-food (monthly items)
Treatment	1275.712*	735.704	540.008	83.171
	(718.809)	(582.552)	(341.208)	(56.116)
Time effect on non-participants	-1040.21	-603.866	-436.344	-74.029
	(692.891)	(635.932)	(343.4)	(62.33)
Controls	Yes	Yes	Yes	Yes
No. of obs.	350	350	350	350
Poor HHs				
Treatment	1077.522*	958.88*	118.641	75.449
	(620.793)	(565.188)	(179.325)	(53.254)
Time effect on non-participants	348.601	-127.387	475.988**	-14.081
	(428.173)	(386.621)	(158.403)	(45.141)
Controls	Yes	Yes	Yes	Yes
No. of obs.	215	215	215	215
Non-poor HHs				
Treatment	2265.166	1061.422	1203.744*	82.612
	(2000.665)	(1861.341)	(622.469)	(117.424)
Time effect on non-participants	-4181.808	-2183.463	-1998.345**	-180.972
	(2131.31)	(2024.604)	(739.13)	(124.721)
N	135	135	135	135

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The results show that on average "treatment" households who had participated in an additional

phase of EGPP had significantly higher total consumption expenditure compared to their comparison group

of households. The results are not significant when we disaggregate total consumption into food and non-

food consumption. The impact estimates are consistent with results in Table 8 in that the poorer households

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[26] We use the same set of household characteristics used when determining participation, e.g. household head
gender, age, religion and education, household asset ownership, political access, household location and housing
characteristics (roof, walls, latrines, tube well, electricity), participation in other safety nets, shocks faced by
household, and access to remittances.

benefit significantly from one additional phase of EGPP participation when it comes to their food consumption. When we disaggregate the sample into poor and non-poor households, we find that the impact of one additional phase of EGPP participation has a significant increase in total and food expenditure for the poor households. We find no significant impact of participation among non-poor households on total or food consumption. However, the impact on monthly nonfood consumption is significant at the 10 percent level, as are all of the other results in Table 9.

5. Conclusion

The results presented in this paper suggest while EGPP is an effective safety net during lean seasons, especially for the poorer beneficiaries, the ability to benefit from EGPP depends on household access to local politicians. When the program is oversubscribed, access to local politicians is a significant determinant of participation. The results suggest local politicians play an important role during each stage of the participation process, i.e. in providing access to information about EGPP, in helping households submit applications, and in helping to get selected by the program. The important role of politicians in the allocation of EGPP resources is further emphasized by the result that minority households are able to significantly increase their probability of participation when they have access to local politicians. The results lend support to the main argument of the paper that when PWP resources are oversubscribed and become discretionary at the local level, household access to local politicians determines who benefits from these programs. These results are consistent with the broad literature on "pork barrel" politics.[27]

Who benefits from EGPP is an important question to assess the overall ability of PWPs to be effective safety net instruments. The results suggest that on average households who participate in the program are able to significantly increase their household expenditure. Taking advantage of the timing of household participation in the various EGPP phases that are aligned with the different lean seasons, we are able to estimate the impact of EGPP on consumption among EGPP beneficiary households who participated

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[27] The findings of the paper also lend support to literature on social capital which suggests it is not "what you know" but "who you know" that matters in the well-being of the poor (Narayan and Woolcock, 2000).

in different EGPP phases at endline (i,e. identification is based on with or without treatment); as well on annual consumption comparing EGPP beneficiary households with varying levels of participation in EGPP phases (i.e. identification is based on the intensity of treatment). When we disaggregate the beneficiary households into below and above the national poverty line however, we find that beneficiary households below the poverty line benefit from EGPP both in terms of monthly food and non-food consumption, whereas there is no significant impact of the same among nonpoor households. These results indicate EGPP's potential to mitigate household consumption poverty particularly during lean seasons. The results also indicate that increasing the program's impact on poverty reduction will require increased targeting of poorer households.

The paper raises a number of policy implications for PWPs. One, we find that PWPs can be an effective tool to mitigate seasonal poverty especially for the poor, and thus can be important safety net instruments. Two, when oversubscribed and there is a lack of selection rules, local politicians can help to fill the administrative gap but such informal mechanisms may not help with pro-poor targeting of program benefits to help maximize the impact of PWPs on poverty. Three, PWPs require an objective and transparent targeting system to ensure that larger number of poorer households, who are more likely to benefit more than less poor households, are able to participate in these programs. Household ranking by poverty or Poverty score cards for instance can be a simple mechanism to facilitate the selection of beneficiaries from the bottom of the consumption distribution.

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Appendix

Table 1A: Household Characteristics at Baseline: Comparisons between EGPP beneficiary and non-beneficiary

Variable	Beneficiary		Non-Beneficiary		P-value[a]
	Mean	Std. error	Mean	Std. error	
	(1)	(2)	(3)	(4)	(5)
Monthly consumption ('000 in Taka)					
- Total	7.15	7.09	6.85	7.11	0.16
- Per capita total	1.57	1.30	1.59	1.30	0.70
- food	4.89	4.06	4.65	4.07	0.06
- Per capita food	1.07	0.79	1.08	0.79	0.56
- Per capita non-food	0.57	0.84	0.57	0.85	0.83
- Non-food	2.62	4.40	2.47	4.41	0.39
Asset (in '000 BDT)	6.87	35.44	5.65	35.52	0.10
Savings (in '000BDT)	1.81	28.19	2.67	28.25	0.26
Loans (in '000BDT)	9.47	27.12	9.69	27.18	0.79
Remittances (in '000BDT)	1.12	6.42	1.55	6.43	0.05
Demographics					
Characteristics of household head					
- Age (years)	44.61	0.36	41.8	0.46	0.00
- Education (years)	1.49	3.04	1.49	3.05	1.00
- Male (%)	0.88	0.34	0.91	0.34	0.02
- Married (%)	0.87	0.38	0.90	0.38	0.02
- Minority (%)	0.07	0.79	0.08	0.79	0.45
PAI	1.55	1.68	1.09	1.69	0.00
1 if hh received remittances (%)	0.17	0.75	0.23	0.75	0.00
Household size	4.71	2.23	4.55	2.23	0.04
Experienced shock last year (%)	0.57	0.85	0.54	0.85	0.38
Landless (%)	37.41	0.03	36.2	0.3	0.65
Asset Ownership (%)					
Radio	0.05	0.30	0.05	0.30	0.93
Cassette	0.02	0.09	0.01	0.10	0.02
Cycle	0.11	0.70	0.14	0.70	0.07
Fan	0.12	0.70	0.11	0.70	0.42
TV	0.07	0.53	0.10	0.53	0.10
VCR	0.01	0.12	0.01	0.12	0.59
Dish connection	0.00	0.03	0.00	0.03	0.18
Tube-well	0.27	1.14	0.29	1.14	0.27
Mobile	0.34	0.82	0.36	0.82	0.31

Variable	Beneficiary		Non-Beneficiary		P-value[a]
	Mean	Std. error	Mean	Std. error	
	(1)	(2)	(3)	(4)	(5)
Housing characteristics					
Tin roof (%)	0.85	0.69	0.83	0.69	0.39
Straw roof (%)	0.15	0.69	0.16	0.69	0.49
No latrine (%)	0.08	0.77	0.10	0.77	0.14
Sanitary latrine (%)	0.51	1.18	0.52	1.18	0.68
Kacha latrine permanent (%)	0.21	0.74	0.18	0.75	0.05
Kacha latrine temporary (%)	0.19	0.80	0.19	0.80	0.95
Brick wall (%)	0.02	0.25	0.04	0.25	0.07
Mud wall (%)	0.21	1.30	0.25	1.30	0.10
Tin wall (%)	0.40	1.08	0.36	1.08	0.14
Straw wall (%)	0.34	1.18	0.34	1.18	0.91
No. of rooms	1.57	1.30	1.48	1.31	0.01
Separate dining room (%)	0.05	0.26	0.04	0.26	0.25
Electricity connection (%)	0.21	0.85	0.18	0.85	0.16
Separate kitchen (%)	0.64	1.25	0.60	1.26	0.19
Access to tube-well (%)	0.95	0.61	0.95	0.61	0.31
Use wood (fuel) (%)	0.21	0.81	0.21	0.81	0.87
Use kerosene (lighting) (%)	0.79	0.85	0.81	0.86	0.20
Distance from (in Kilometers)					
Primary. School	0.13	0.02	0.16	0.03	0.23
Secondary. School	1.42	0.12	1.54	0.16	0.19
Primary health clinic	0.79	0.08	0.79	0.08	0.98
Paved road	1.02	0.09	1.02	0.09	0.97
Bus stop	0.44	0.07	0.44	0.09	0.99
Bazar	2.58	0.25	2.37	0.22	0.19
NGO office	0.98	0.10	1.00	0.11	0.72
Bank	2.02	0.14	2.02	0.18	0.98
Post office	3.01	0.22	3.14	0.29	0.50
No. of obs.	1594		1601		

Notes: P-value >0.05 implies that the difference in mean is not statistically significant at 5%.

Table 2B: Household Characteristics at Baseline: Comparisons between EGPP beneficiary Treatment and Control Households

Variable	Treatment group 1		Control group 1		P-value[a]	Treatment group 2		Control group 2		P-value[a]
	Mean	Std. error	Mean	Std. error		Mean	Std. error	Mean	Std. error	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Monthly consumption ('000 in Taka)										
- Total	7.57	7.65	7.74	7.22	0.83	6.96	11.00	7.76	7.21	0.26
- Per capita total	1.58	1.31	1.68	1.24	0.42	1.66	1.89	1.69	1.24	0.8
- food	5.28	5.82	5.17	5.49	0.87	4.71	8.36	5.18	5.48	0.37
- Per capita food	1.08	1.04	1.13	0.98	0.62	1.11	1.50	1.14	0.98	0.73
- Per capita non food	0.56	0.64	0.61	0.60	0.43	0.63	0.93	0.62	0.61	0.8
- Non-food	2.71	4.21	2.94	3.97	0.57	2.55	6.10	2.94	3.99	0.34
Asset (in '000 BDT)	8.13	20.53	7.29	22.2	0.81	9.59	2.17	7.29	2.15	0.46
Savings (in '000BDT)	1.50	4.07	1.41	6.66	0.90	1.58	0.53	1.41	0.64	0.83
Loans (in '000BDT)	13.11	14.45	5.41	12.6	0.01	8.15	1.23	5.41	1.22	0.10
Remittances (in '000BDT)	0.93	7.08	2.12	9.88	0.25	0.88	0.22	2.12	0.95	0.21
Demographics										
Characteristics of household head										
- Age (years)	43.50	1.25	46.65	1.23	0.06	46.2	0.99	46.65	1.23	0.79
- Education (yrs)	2.16	3.77	1.41	3.54	0.09	1.05	5.42	1.41	3.53	0.37
- Male (%)	0.85	0.43	0.86	0.41	0.92	0.86	0.62	0.85	0.41	0.94
- Married (%)	0.82	0.53	0.84	0.50	0.77	0.86	0.76	0.84	0.5	0.75
- Minority (%)	0.08	0.16	0.03	0.15	0.12	0.07	0.22	0.03	0.15	0.18
PAI	1.80	0.89	1.76	0.85	0.74	1.47	1.12	1.56	0.73	0.3
HH received remittances (%)	0.16	0.46	0.18	0.43	0.68	0.19	0.66	0.18	0.43	0.79
HH size	4.98	2.04	4.63	1.93	0.26	4.4	2.94	4.63	1.92	0.29
Experienced shock last year (%)	0.59	0.54	0.66	0.51	0.32	0.59	0.78	0.66	0.51	0.22
Landless (%)	36.58	0.5	34.58	0.6	0.78	0.39	0.04	0.35	0.06	0.51
Asset Ownership (%)										
Radio	0.03	0.43	0.08	0.41	0.19	0.06	0.62	0.08	0.41	0.69
Cassette	0.02	0.08	0.01	0.08	0.31	0.01	0.12	0.01	0.08	0.93
Cycle	0.10	0.36	0.09	0.34	0.83	0.09	0.51	0.09	0.34	0.89
Fan	0.18	0.42	0.10	0.39	0.19	0.13	0.6	0.1	0.39	0.46
TV	0.09	0.29	0.05	0.27	0.35	0.08	0.41	0.05	0.27	0.41
VCR	0.03	0.11	0.01	0.11	0.46	0.01	0.16	0.01	0.11	0.78
Dish connection	0.02	0.12	0.01	0.12	0.83	0	0.17	0.01	0.11	0.57
Tube-well	0.16	0.59	0.33	0.56	0.01	0.28	0.86	0.33	0.56	0.42
Mobile	0.40	0.56	0.33	0.53	0.31	0.32	0.81	0.33	0.53	0.97
Housing characteristics										
Tin roof (%)	0.88	0.39	0.89	0.36	0.82	0.89	0.56	0.89	0.37	1

Variable	Treatment group 1		Control group 1		P-value[a]	Treatment group 2		Control group 2		P-value[a]
	Mean	Std. error	Mean	Std. error		Mean	Std. error	Mean	Std. error	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Straw roof (%)	0.09	0.39	0.11	0.36	0.66	0.1	0.56	0.11	0.37	0.89
No latrine (%)	0.09	0.38	0.09	0.35	0.91	0.1	0.55	0.09	0.36	0.74
Sanitary latrine (%)	0.43	0.68	0.43	0.64	0.99	0.51	0.97	0.43	0.64	0.21
Kacha latrine permanent (%)	0.26	0.66	0.22	0.63	0.48	0.22	0.96	0.22	0.63	0.96
Kacha latrine temporary (%)	0.21	0.62	0.26	0.59	0.45	0.17	0.89	0.26	0.59	0.14
Brick wall (%)	0.00	0.12	0.01	0.12	0.31	0.03	0.17	0.01	0.11	0.23
Mud wall (%)	0.14	0.57	0.21	0.54	0.22	0.19	0.82	0.21	0.53	0.63
Tin wall (%)	0.50	0.63	0.39	0.59	0.18	0.46	0.9	0.39	0.59	0.3
Straw wall (%)	0.29	0.74	0.35	0.70	0.36	0.29	1.07	0.35	0.7	0.34
No. of rooms	1.63	0.77	1.64	0.98	0.97	1.58	1.49	1.64	0.98	0.62
Separate dining room (%)	0.05	0.26	0.05	0.21	1.00	0.04	0.01	0.05	0.02	0.68
Electricity connection (%)	0.34	0.46	0.19	0.56	0.06	0.21	0.04	0.19	0.05	0.71
Separate kitchen (%)	0.64	0.52	0.60	0.61	0.63	0.58	0.04	0.60	0.06	0.78
Access to tube-well (%)	0.96	0.20	0.96	0.26	0.92	0.96	0.06	0.96	0.03	0.94
Use wood (fuel) (%)	0.26	0.44	0.19	0.48	0.27	0.19	0.03	0.19	0.05	0.95
Use kerosene (lighting) (%)	0.66	0.45	0.81	0.56	0.05	0.79	0.03	0.81	0.05	0.72
Distance from (in Kilometers)										
Primary. school	0.14	0.04	0.12	0.04	0.68	0.16	0.7	0.12	0.46	0.52
Secondary. school	1.00	0.18	1.14	0.20	0.59	1.27	3.13	1.14	2.05	0.51
Primary health clinic	0.67	0.10	0.71	0.12	0.80	0.76	1.92	0.71	1.26	0.72
Paved road	0.91	0.17	0.91	0.16	0.99	1	2.52	0.91	1.65	0.63
Bus stop	0.23	0.05	0.40	0.10	0.10	0.44	1.62	0.4	1.06	0.7
Bazar	2.42	0.43	1.95	0.30	0.33	3.54	4.75	1.95	3.11	0.02
NGO office	0.74	0.14	0.83	0.14	0.63	1.05	2.25	0.83	1.47	0.21
Bank	1.88	0.18	1.86	0.25	0.97	2.3	3.96	1.86	2.59	0.09
Post office	3.37	0.42	2.63	0.30	0.11	3.59	4.63	2.63	3.03	0.03
No. of obs.	119		106			247		106		

Notes: During baseline both the treatment and control groups participated in EGPP. During end line the control group 1 participated in March and the treatment group 1 participated in November. During endline the control group 2 participated in March while the treatment group 2 participated in March and November

Figure 1A: Distribution of EGPP households

Kernel density estimate

kernel = epanechnikov, bandwidth = 113.2429
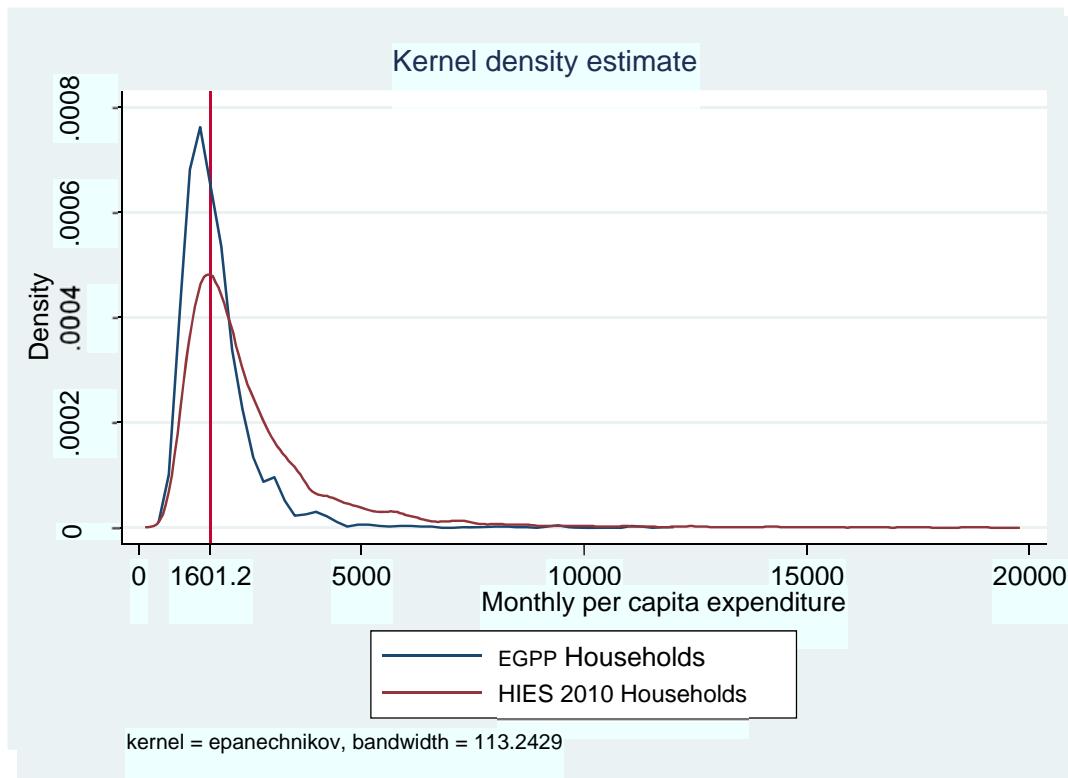
Table 2A: Person approached by sample households for participating in the EGPP (percent)

Person approached	Baseline	End-line
Non-elected local influential person	4.17	3.63
Government employee	0.37	0.20
Village leader	30.84	7.98%
Religious leader	80.16	89.12
Friend/family	1.00	095
Union Parishad chairman	11.58	16.98
Another member of Union Parishad committee	5.03	3.97
Other	1.48	2.87
Number of Households	1428	981

Table 3A: Determinants of Participation (Logistic Estimation – Marginal Effects)

	Participate in EGPP	Knowledge of EGPP	Application to EGPP conditional on knowledge	Selection into EGPP conditional on knowledge and application
	(1)	(2)	(3)	(4)
PAI	0.744***	0.530***	0.731***	0.323*
	(0.09)	(0.13)	(0.11)	(0.17)
Minority	-0.668	-1.300**	0.464	-0.176
	(0.43)	(0.39)	(0.54)	(0.65)
Minority*PAI	0.613**	0.768***	-0.209	0.394
	(0.29)	(0.29)	(0.34)	(0.40)
Contact with UNO	0.141	0.306	0.06	-0.084
	(0.19)	(0.36)	(0.39)	(0.33)
Minority*contact with UNO	0.724	1.165	-0.286	.
	(1.22)	(1.21)	(1.11)	.
Powerful relative	0.693***	-0.071	1.147***	0.462
	(0.21)	(0.31)	(0.28)	(0.31)
Minority*powerful relative	0.13	0.039	.	-0.513
	(1.13)	(1.33)	.	(2.07)
Household characteristics	Yes	Yes	Yes	Yes
Asset ownership	Yes	Yes	Yes	Yes
Distance to facilities	Yes	Yes	Yes	Yes
Observations	3,191	3,191	2,382	1,919

Note: Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. PAI = Political access index.

Table 3B: Differences in access to local politicians between poor and non-poor households

Panel A	Poor		Non-poor		P value
	Mean	SD	Mean	SD	
All households	1.15	0.044	1.20	0.413	0.18
Participants	1.52	0.032	1.57	0.043	-0.36
Non-participants	1.07	0.049	1.12	0.047	0.30
Panel B					
All households	0.74	0.022	0.75	0.016	0.72
Participants	0.94	0.010	0.93	0.018	0.35
Non-participants	0.70	0.025	0.72	0.021	0.67

Note: In Panel A, PAI = 0 if household has no connection to local politicians, 1 if has connection with either the UP chair or the UP member and 2 if has connection with both. In Panel B, PAI =0 if household has no connection with local politicians and 1 if has connection with either the UP chair or the UP member or both.

Table 4A: Determinants of Participation (Logistic Estimation with alternative formulation of political access index)

	Participate in EGPP	Knowledge of EGPP	Application to EGPP conditional on knowledge	Selection into EGPP conditional on knowledge and application
1 if minority	-0.084	-0.233**	0.104	-0.011
	(0.076)	(0.091)	(0.15)	(0.192)
PAI[a]	0.222***	0.221***	0.251***	0.199***
	(0.026)	(0.043)	(0.041)	(0.063)
Minority*PAI	0.119	0.173	-0.073	0.102
	(0.077)	(0.112)	(0.158)	(0.203)
Contact with UNO	0.038	0.079	0.064	-0.007
	(0.024)	(0.075)	(0.08)	(0.073)
Minority*contact with UNO	0.135	0.347	-0.058	.
	(0.153)	(0.256)	(0.233)	.
1 if have powerful relative	0.091***	-0.015	0.242***	0.105
	(0.026)	(0.062)	(0.062)	(0.069)
Minority*powerful relative	0.044	0.082	.	-0.112
	(0.131)	(0.245)	.	(0.476)
Household characteristics	Yes	Yes	Yes	Yes
Asset ownership	Yes	Yes	Yes	Yes
Distance to facilities	Yes	Yes	Yes	Yes
No. of obs.	3,191	3,191	2,382	1,919

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
[a]Political Access Index (PAI) = 1 if the household has contact with either the UP chair or Member or both, 0 otherwise

Table 5A: Determinants of Participation (Logistic Estimation using separate dummy variables for political access)

	Participate in EGPP	Knowledge of EGPP	Application to EGPP conditional on knowledge	Selection into EGPP conditional on knowledge and application
1, if minority	-0.089	-0.228**	0.03	0.017
	(0.064)	(0.077)	(0.135)	(0.17)
1, if has contact with UP chair	0.059***	0.007	0.180***	0.03
	(0.017)	(0.035)	(0.042)	(0.042)
Minority*Contact with UP chair	0.076	0.263**	-0.174	0.13
	(0.052)	(0.122)	(0.117)	(0.094)
1, if has contact with UP member	0.156***	0.214***	0.120**	0.144**
	(0.024)	(0.04)	(0.045)	(0.071)
Minority*Contact with UP member	0.083	0.041	0.122	0
	(0.059)	(0.101)	(0.156)	(0.169)
1, if has contact with UNO	0.025	0.09	0.008	-0.011
	(0.024)	(0.075)	(0.084)	(0.072)
Minority*contact with UNO	0.089	0.202	-0.029	.
	(0.157)	(0.247)	(0.238)	.
1, if has powerful relative	0.087***	-0.022	0.245***	0.098
	(0.026)	(0.062)	(0.058)	(0.067)
Minority*powerful relative	0.016	0.005	.	-0.114
	(0.141)	(0.265)	.	(0.456)
Household characteristics	Yes	Yes	Yes	Yes
Asset ownership	Yes	Yes	Yes	Yes
Distance to facilities	Yes	Yes	Yes	Yes
No. of obs.	3,191	3,191	2,382	1,919

Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6A: Determinants of Participation (Odds Ratio using number of political connection)

	Participate in EGPP	Knowledge of EGPP	Application to EGPP conditional on knowledge	Selection into EGPP conditional on knowledge and application
1 if minority	0.52	0.320**	1.62	0.95
	(0.31)	(0.15)	(1.13)	(0.83)
PAI[a]	5.593***	2.950***	3.202***	2.486***
	(1.07)	(0.64)	(0.65)	(0.73)
Minority*PAI	2.52	2.33	0.71	1.60
	(1.50)	(1.28)	(0.52)	(1.48)
Contact with UNO	1.345	1.473	1.345	0.967
	(0.25)	(0.54)	(0.50)	(0.32)
Minority*contact with UNO	2.846	5.451	0.762	.
	(3.38)	(6.78)	(0.82)	.
1 if have powerful relative	2.020***	0.928	3.076***	1.619
	(0.41)	(0.28)	(0.91)	(0.51)
Minority*powerful relative	1.403	1.493	.	0.598
	(1.42)	(1.78)	.	(1.30)
Household characteristics	Yes	Yes	Yes	Yes
Asset ownership	Yes	Yes	Yes	Yes
Distance to facilities	Yes	Yes	Yes	Yes
No. of obs.	3,191	3,191	2,382	1,919

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
[a]Political Access Index (PAI) = 1 if the household has contact with either the UP chair or Member or both, 0 otherwise

Table 6B: Determinants of Participation (Odds ratio using separate dummy variables for political access)

	Participate in EGPP	Knowledge of EGPP	Application to EGPP conditional on knowledge	Selection into EGPP conditional on knowledge and application
1, if minority	0.5	0.327**	1.154	1.082
	(0.25)	(0.13)	(0.74)	(0.85)
1, if has contact with UP chair	1.582***	1.036	2.339***	1.145
	(0.21)	(0.18)	(0.49)	(0.22)
Minority*Contact with UP chair	1.814	3.631*	0.44	1.815
	(0.73)	(2.17)	(0.25)	(0.78)
1, if has contact with UP member	3.367***	2.865***	1.762**	1.938**
	(0.65)	(0.59)	(0.37)	(0.65)
Minority*Contact with UP member	1.909	1.225	1.783	0.999
	(0.88)	(0.61)	(1.32)	(0.77)
1, if has contact with UNO	1.217	1.556	1.04	0.95
	(0.23)	(0.58)	(0.42)	(0.31)
Minority*contact with UNO	2.007	2.698	0.87	.
	(2.45)	(3.26)	(0.98)	.
1, if has powerful relative	1.969***	0.896	3.178***	1.569
	(0.40)	(0.27)	(0.90)	(0.48)
Minority*powerful relative	1.135	1.027	.	0.593
	(1.25)	(1.34)	.	(1.24)
Household characteristics	Yes	Yes	Yes	Yes
Asset ownership	Yes	Yes	Yes	Yes
Distance to facilities	Yes	Yes	Yes	Yes
No. of obs.	3,191	3,191	2,382	1,919

Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7A: The heterogeneous effect of EGPP on household expenditure: using poverty interaction term

	Total	Food	Non-food	Non-food (monthly)
Effect EGPP on non-poor (δ_1)	3600.735*	893.195	2707.540***	309.462*
	(1864.356)	(1701.299)	(891.88)	(179.966)
Time effect between the poor and non-poor in the control group (δ_3)	4907.760***	2263.438	2644.322***	264.706**
	(1805.485)	(1647.943)	(767.929)	(127.245)
Difference in treatment effect between poor and non-poor (γ)	-3222.648	-849.505	-2373.142**	77.759
	(2272.328)	(2067.607)	(965.619)	(147.992)
Time effect for the control non-poor (β_1)	-4043.062**	-1893.502	-2149.56***	-242.7*
	(1777.778)	(1666.056)	(753.245)	(133.52)
Household characteristics	Yes	Yes	Yes	Yes
Asset ownership	Yes	Yes	Yes	Yes
Distance to facilities	Yes	Yes	Yes	Yes
No. of obs.	223	223	223	223

Note: The underlying regression equation here is $y_{it} = \alpha_i + \beta_1 t + \beta_2 T_i + \beta_3 P_i + \delta_1 T_i t + \delta_2 T_i P_i + \delta_3 P_i t + \gamma T_i P_i t + X \Theta + u_{it}$. In the first difference form we can only estimate the parameters $\beta_1, \delta_1, \delta_3, \gamma$ and Θ. Here β_1 measures the time difference in the dependent variable for the non-poor households in the control group, δ_1 measures the treatment effect for the non-poor households, δ_3 measures the difference in time effects between the poor and non-poor households in the control group and γ measures the difference in treatment effect between the poor and non-poor households. If the program had heterogeneous effects on the poor and non poor households we would have a statistically significant γ.