

DISCUSSION PAPER SERIES

IZA DP No. 11473

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## ABSTRACT

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# Does Workfare Work Well? The Case of the Employment Generation Program for the Poorest in Bangladesh\*

Evidence on the effectiveness of workfare as an anti-poverty program in developing countries is weak compared with the relatively well-established role of public works during economic crisis as a social safety net. This paper contributes to evidence building by examining the impact of a large-scale workfare program in Bangladesh, the Employment Generation Program for the Poorest. Taking advantage of the program's distinguishable feature of direct wage transfer to a person's bank account, the paper uses accessibility to local banks as an instrumental variable to identify the program's impacts on rural social assistance beneficiaries. Based on locality-by-time fixed effects models over two rounds of locality panel data, the analysis finds that the Employment Generation Program for the Poorest has contributed to increasing overall household consumption and reducing outstanding loans. In particular, expenditures on quality food and health care have significantly increased, which likely helps individuals continue to engage in income-generating activities in the labor market. However, the implementation costs and poor quality of public assets built through work projects could potentially undermine the program's efficiency. Moreover, further evidence is required on the impacts of work experience through workfare on subsequent labor market outcomes and the value of public assets, to assess the program's effectiveness compared with administratively simpler alternative instruments such as unconditional cash transfers.

**JEL Classification:** I32, O12, I38, O20

**Keywords:** social assistance, workfare, public works, Bangladesh, poverty, consumption

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## 1. Introduction

Public works provide opportunities for short-term employment, particularly during economic shocks. The earnings (wages) from public works could increase household welfare and reduce poverty of those families with limited means of living during times of negative shocks. The self-targeted feature of public works, where those who are desperately in need of work self-select into the scheme that provides wages lower than a typical market rate with mostly menial jobs, is critical in the effectiveness of public works. It only attracts those lacking employment opportunities and encourages a return to regular work when help is no longer needed, thus reducing opportunity costs in the labor market and resolving the issue of identification of the deserving poor (Besley and Coate 1992). Public works played a positive role in the Republic of Korea during the 1998 Asian financial crisis; in Argentina, the Jefes program, implemented during the 2002 economic crisis is well recognized for mitigating the negative impacts of these crises (See Fallon and Lucas, 2002; Subbarao et al. 2012 for a literature review).

The use of public works is, however, beyond the time of crisis, and large-scale, labor-intensive workfare is a widely-utilized safety net in anti-poverty programs in developing countries. The World Bank (2015) states that about 94 of 157 developing countries implemented public works programs in 2014, many of which were financed by governments through development assistance. Whereas the impacts of public works are relatively well observed during economic crises, a knowledge gap exists pertaining to whether recurrent and perpetual workfare programs achieve their envisaged objectives with effectiveness.<sup>1</sup> Unlike public works during economic crises, many individuals can indeed anticipate the seasonality of the labor market and work schedules in recurrent workfare programs; thus, they may substitute existing labor opportunities with workfare, in which case the opportunity costs of the program can be large.

An important question to address is whether workfare programs can achieve their objectives. Moreover, do they achieve them in an efficient manner? Studies such as Berhane et al. (2014) assessed a large-scale public works program in Ethiopia and found a modest impact on outcomes such as food (in)security with little disincentive effects. Murgai et al. (2016), however, suggest that cost effectiveness of workfare schemes is not warranted despite excellent performance in targeting,

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<sup>1</sup> Bangladesh's Employment Generation Program for the Poorest, the workfare scheme studied in this paper, along with Ethiopia's Productive Safety Net Program and India's Mahatma Gandhi National Rural Employment Guarantee, are among the most well-known examples of workfare programs.

because of the hidden costs of foregone earnings and implementation costs, based on the analysis of India's Employment Guarantee Scheme. The technical difficulty in addressing these questions lies in the absence of a counterfactual, because an individual may have worked in the local labor market had opportunities for workfare not existed.

This paper investigates the largest safety net program in Bangladesh, the Employment Generation Program for the Poorest (EGPP). Bangladesh has been implementing various safety net programs and more than 140 safety net programs operate particularly in poor rural areas (See World Bank, 2016). As these programs tend to have been introduced in response to crises and natural disasters over time, many of them are added to existing programs without a systematic process of targeting, identification, enrollment, or payment. The Ministry of Disaster Management and Relief (MoDMR) implements many of the large social assistance programs (food aid for humanitarian relief and workfare) which have long been operational in rural Bangladesh.<sup>2</sup> In 2009, in response to the global food crisis, the Ministry added a modern workfare program, EGPP, to its portfolio. Compared to other social assistance programs, EGPP is a modern system in that it has pre-determined cycles with work schedules with pre-determined rules including the number of days and wage rates, and cash payments are directly transferred to individual bank accounts.

To understand the impact of EGPP on poor households in rural areas, we acquired an administrative roster of households that have been receiving benefits from existing social assistance programs administered by MoDMR for the past 12 months. This is based on the observation that a large majority of EGPP beneficiaries have been already exposed to various social assistance programs that have been operating for a long time. The MoDMR roster revealed that a sub-sample of the beneficiaries of traditional social assistance programs have also participated in EGPP. Therefore, we examine the impact of EGPP participation among the beneficiaries of the traditional social assistance programs.

Given that EGPP participation is self-selected, we use an instrumental variable to identify the impacts of the program. Considering that the program's cash payment operates through bank accounts, we use accessibility to the closest bank in each *Union*<sup>3</sup> as an instrument. Our results suggest that EGPP helped households increase their overall consumption, mostly due to increases

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<sup>2</sup> Under this umbrella, there are two humanitarian aid programs, the Vulnerable Group Feeding and the Gratuitous Relief, and two public works programs: Test Relief and Food for Work.

<sup>3</sup> Township. The smallest local administrative unit in rural Bangladesh.

in non-food consumption such as spending on health care. Although food consumption as a whole did not seem to increase due to EGPP participation, a significant reallocation of resources was observed shifting from lower to higher quality food products. Also, increases in expenditure for adults' health care were observed, suggesting that EGPP participation is significantly associated with human capital investment, especially among adults who would need to continue income-generating activities. Participation in EGPP was also correlated with household reduction in the amount of outstanding loans. The benefits of EGPP are estimated to be similar to the level of transfers made through the program, suggesting limited evidence of substitution of usual labor activities with EGPP. However, despite these positive outcomes, high implementation costs and poor quality of infrastructure produced through workfare may undermine the effectiveness of the program.

The rest of the paper is organized as follows. Section 2 briefly describes the five safety net programs under the MoDMR, which are among the largest initiatives in the country. Section 3 presents the sampling framework of the survey and the selection of the relevant sample for this analysis. Section 4 describes the lives of the poor households receiving benefits from the five social assistance programs. Section 5 presents the methodology for identifying the impact of EGPP participation on households' poverty and well-being and the results. Section 6 discusses the efficiency and performance of the programs. Finally, Section 7 presents our conclusions.

## **2. Bangladesh's Safety Net Programs**

Bangladesh has had a long history of a variety of social safety net programs to provide cash and in-kind transfers to the poor. Expenditures for these programs have been growing steadily; the budget for fiscal year (FY) 2015–16 was up to almost 1.5 percent of the country's Gross Domestic Product (GDP).<sup>4</sup> While most of these programs are small – small benefit amounts targeted to very small groups of populations, the MoDMR operates five of the largest programs, which include EGPP in addition to its older programs such as Vulnerable Group Feeding (VGF), Gratuitous Relief (GR), Food for Work (FFW), and Test Relief (TR). Traditional programs were designed to mitigate the consequences of disasters such as floods, cyclones, and other natural calamities, and provide

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<sup>4</sup> The social security budget increased from BDT 140 billion in FY 2008–09 to close to BDT 400 billion in FY 2015–16 according to the classification of the Ministry of Finance.

selected poor households with rice, often combined with other in-kind transfers such as blankets.<sup>5</sup> They also provide work opportunities through constructing and repairing basic infrastructure for rural educational and public welfare institutions.

Selection criteria to qualify for support consider numerous factors, such as land ownership, assets, income, marital status, disability, and others. That is, households that qualify should have less than 0.5 acre of land, with no productive assets, and annual earnings of less than BDT 4,000 (approximately US\$50) with the head of household working as a day laborer. However, it is unclear how these criteria are verified and enforced. Because a straightforward application process does not exist, a local committee of elected officials selects participating households that are deemed the poorest, supposedly using the abovementioned criteria.

In addition to these existing programs, a large-scale, modern workfare program, EGPP, was introduced.<sup>6</sup> The addition was justified and supported mainly due to the modern features of the program, which set it apart from the MoDMR's traditional safety net programs. First, it includes a clear and predictable work schedule with the objective of addressing seasonal poverty by providing short-term employment to agricultural laborers during the monga/lean periods (from October to December and from March to April). During the lean periods, a large segment of the rural population remains underemployed, mostly because of limited farm activities, and EGPP's community projects were anticipated to be implemented during these periods. Second, along with the clearer objective, a better administrative process with the pre-determined rules on targeting, project schedule, and wage rate, are put into practice. Each individual is required to undergo an application process (either by paper or verbal expression of interest that leads to paper application). Pro-poor targeting is enforced with more rigor as the eligibility criteria are simplified and enforced<sup>7</sup> as well as the workfare's self-targeting by low market rate.<sup>8</sup> Each beneficiary works for 40 days in each cycle up to two cycles for participation by the same individual in a given year and is paid BDT 200 (US\$2.50) for each day's work. Although the wage rate was considered to be lower than the

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<sup>5</sup> The price of rice fluctuates, but according to Food Price Monitoring and Analysis, 1kg of rice (Boro) costs about BDT 32; thus, the benefits of 10 to 20 kg of rice per month are equivalent to BDT 320 to 640 per month.

<sup>6</sup> See Sharif and Ruthbah (2017) for a detailed discussion on the background and political economy of the introduction of EGPP.

<sup>7</sup> The criteria state that a household cannot own more than 0.5 acre of land and the head of household must work as a day laborer. These two criteria were selected based on the finding of their close correlation with the poverty status of a household. See Sharif (2009).

<sup>8</sup> The wage rate of EGPP (BDT 200 per day) is also lower than that of other traditional workfare programs (8 kg of rice, equivalent to BDT 256 per day).

market rate for effective targeting through self-selection, the overall level of benefits seems to be arguably generous considering that the minimum wage of the Ready Made Garment (RMG) sector, the country's relatively competitive sector, is at BDT 5,300 per month.<sup>9</sup> Third, EGPP requires at least 30 percent participation of women at *Union* level for gender empowerment. Providing women with employment opportunities where female labor force participation has been traditionally low is an important development and effort toward gender equity. Lastly and most importantly, payment is entirely in cash and transferred directly to the individual's bank account. This was expected to address program inefficiency including leakages and challenges of procuring and transporting food benefits, by ensuring accurate and timely transfers of benefits.

In Fiscal Year 2016, the annual budget of EGPP was about US\$ 100 million reaching close to one million individuals nationwide. Despite the size of the EGPP and prevalence of other social assistance programs in Bangladesh, few studies are available to assess the program impacts and effectiveness. The most relevant study to this paper is Sharif and Ruthbah (2017), which investigated the determinants of EGPP participation among poor households and estimated its impact on household expenditure during the earlier stage of EGPP from 2010 to 2012. The study found that participation in EGPP was significantly associated with the household head's political connection to local officials and influential people in villages, which highlights the need to ensure a transparent targeting and enrollment process. Building upon earlier studies, this paper focuses on evaluating the first-order impacts of EGPP on households' consumption using more recent data.

### **3. Data and Descriptive Analysis**

#### **3.1 Data and summary statistics**

Our analysis is based on locality panel survey data collected at the household and locality levels, for which the sample was drawn from the MoDMR's nationwide beneficiary roster of the five social assistance programs described above. The first round was implemented in February and March 2015, and the second round during the same months in 2016, considering the seasonality of economic activities in rural Bangladesh. We use the main sample drawn from four traditional

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<sup>9</sup> Currently, Bangladesh has not endorsed its national minimum wage policy. The discussed level of national minimum wage of BDT 1,500 per month is not an official figure but can be found from [www.wageindicator.org](http://www.wageindicator.org). However, due to international pressure after high profile industrial accidents in the RMG sector (including the Rana Plaza factory building collapse), the sector increased its minimum wage to BDT 5,300 per month in 2013.

programs to assess the impacts of EGPP on poor beneficiaries, while EGPP beneficiaries' sample data are also drawn to provide auxiliary information specific to the EGPP program.

The sampling design of the survey adopted a stratified approach in two stages. First, a number of *Unions* as a Primary Survey Unit (PSU) were selected with a probability proportional to the budget allocated to the particular *Upazila* (upper administrative unit above *Union*). The size of the budget was used as it reflects the *Upazila*'s 2010 poverty rates and number of the poor, and it is also directly associated with the number of beneficiaries in the *Upazila*. Fifty *Unions* (PSUs) were selected at the first stage. In the second stage, from the roster of beneficiaries of the selected *Unions*, we randomly drew a representative sample of beneficiary households — 40 households in each *Union*, which yields 2,000 households for the EGPP sample and 20 households in each *Union* for four other traditional safety net programs, which yields a total of 4,000 households in the sample (hereafter Main sample).

In the second round, we construct a PSU level panel, where the same PSU was maintained although different households in the PSU were included in the sample with an updated roster. Faced with challenges in the field in locating the households on the administrative roster in the same PSUs, a few had to be replaced with adjacent PSUs in the same *Upazila*. Keeping only the PSUs that appear in both rounds of surveys resulted in 10,792 (of 11,043) households being included in a balanced panel of 103 PSUs. Therefore, our data set consists of 6,812 households as the Main sample (3.5 percent attrition rate), supplemented by 3,979 EGPP households (0.6 percent attrition rate). The data contain very rich and detailed information on household characteristics including demographics, consumption, and savings and loans profile of the beneficiary, along with the labor market activities and earnings of adult individuals in the household. In addition, program participation and program-specific information was collected. The community module of the survey captures the information on each *Union*. This includes general economic activities, agricultural production, access to infrastructure and social facilities, and local prices and wages.

Table 1. Comparison of Key Statistics of Main and EGPP Samples

	Main sample		EGPP sample	
	Mean	SD	Mean	SD
<u>Demographic characteristics of household head</u>				
Age	45.13	13.41	45.77	12.50
Literacy (share of Literate)	0.26	0.44	0.25	0.43
Education (share)				
None	0.69	0.46	0.71	0.45
Less primary	0.19	0.39	0.18	0.38
Primary and above	0.12	0.32	0.11	0.31
Day laborer (share)	0.52	0.50	0.55	0.50
No land ownership (share)	0.68	0.47	0.74	0.44
Poverty score (based on proxy means test)	680.3	26.1	679.8	26.2
Per capita expenditure (monthly) (BDT)	2,158	1,262	2,144	1,020
<u>Program participation</u>				
Social assistance	1.00	0.00	0.58	0.49
EGPP	0.11	0.31	1.00	0.00
Num. of observation	6,812		3,979	

Note: BDT indicates Bangladesh Taka. 1 USD = 78 BDT

Table 1 presents key household characteristics of beneficiaries of programs in the Main and EGPP sample, respectively. From the program participation statistics, it is clear that many of EGPP participants (about 60 percent) are coming from traditional social assistance beneficiaries. Familiarity with the safety net system and connection with local committees determining the selection of beneficiaries in case of over-subscription, may explain the large share of EGPP participants being former or current beneficiaries of traditional social assistance programs in line with the finding from Sharif and Rubath (2017). The heads of the households in both samples show similar demographic characteristics, with about one-quarter of them being illiterate and 70 percent having no formal education. The poverty scores based on the Proxy Means Test (PMT) method — a composite measure of overall economic well-being — and per capita monthly expenditure among these samples are similar.<sup>10</sup> Given the more robust enforcement of EGPP of the eligibility criteria, however, the shares of day laborers and those who do not own any land are slightly higher among individuals in the EGPP sample than those in the Main sample. Similarly, due to the requirement to include at least 30 percent women beneficiaries imposed in EGPP, the share of female participants in the program is higher among the EGPP sample.

### **3.2 Characteristics of Beneficiaries of Traditional Social Assistance Programs**

In the following sections, focusing only on the Main sample, we assess the economic lives of the poor who benefit from the traditional social assistance programs in rural Bangladesh and examine the impact of EGPP participation on these households.

#### **3.2.1 How poor are they?**

The overall economic well-being of a household is reflected in both income and expenditure (Deaton and Grosh, 2000). Expenditure, as an outcome of household earnings, savings and loans, and non-labor income including social assistance benefits, can capture the economic status of a household. Table 2 presents the socioeconomic characteristics of households in the Main sample. The average monthly household earnings are about BDT 6,400, yielding per worker earnings of less than BDT 3,000 (about US\$38 per month). Considering that the average monthly earnings of a paid employee from the Bangladesh Labor Force Survey in 2013 is about BDT 8,400 per worker, labor earnings in these households appear to be very low. Monthly expenditures are more than 35 percent higher than the household labor earnings, which indicates use of non-labor incomes for consumption. Per capita

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<sup>10</sup> See Sharif (2009) and Bangladesh Bureau of Statistics (2014) for the PMT discussion.

consumption of these households is about BDT 2,158, which is equivalent to US\$0.90 per person per day.

The share of households making financial transactions of savings and loans seems to be high, which may be attributable to the widespread microfinance institutions or to informal arrangements in rural Bangladesh.<sup>11</sup> Overall, about 55 percent of the sample households have positive savings and 70 percent have outstanding loans.<sup>12</sup> Savings and loans are not mutually exclusive activities, and about 48 percent of the total households have both positive savings and loans, implying that these households actively make inter-temporal resource allocation. The average amount of household loans (close to BDT 30,000 on average if positive) is substantial, almost four times greater than the amount of savings, and equivalent to 4.6 times the average monthly earnings. Considering that even a microcredit product charges an annual interest rate of about 27 percent and that private money lenders charge even higher interest rates,<sup>13</sup> the outstanding loan of BDT 30,000 means that households could be spending BDT 8,000 or more annually on interest.

In light of this environment, benefits provided through social assistance are important for improving the livelihoods of poor households. The average total benefit from the various social assistance programs is more than BDT 4,500. It is noteworthy that benefit amounts from EGPP are larger than other social assistance programs, underscoring that EGPP participation could make a substantial impact on these households.

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<sup>11</sup> It is unclear from the survey whether these financial transactions (savings and loans) are taking place in formal institutions or by informal arrangements with friends, relatives or moneylenders.

<sup>12</sup> It is not reported whether loans and savings are made through financial institutions or through informal channels such as friends and relatives, or moneylenders.

<sup>13</sup> In 2010, responding to concerns about rising interest rates among microfinance institutions, the Microcredit Regulatory Authority (MRA) capped the microfinance interest rates at 27 percent. See Cho (2016).

Table 2. Summary Statistics

	Mean	SD
<b>A. Household Earnings</b>		
Monthly labor earnings (BDT)	6,454	4,559
Monthly labor earnings per worker (BDT)	2,902	2,038
<b>B. Household Consumption</b>		
Monthly total consumption (BDT)	8,754	4,834
Per capita monthly consumption (BDT)	2,158	1,262
<b>C. Financial behavior</b>		
Savings (=1 if yes)	0.55	0.50
Loans (=1 if yes)	0.70	0.46
Amount of savings if positive (BDT)	8,043	22,620
Amount of loans if positive (BDT)	29,526	56,271
<b>D. Social assistance benefits</b>		
Traditional social assistance if positive (BDT)	2,053	2,815
EGPP if positive (BDT)	7,895	4,008
Total benefits received (Main+EGPP+others) (BDT)	4,747	6,311
Num. of observation		6,812

Note: BDT indicates Bangladesh Taka. 1 USD = 78 BDT

### 3.2.2 How they spend their money

Table 3 looks into the composition of household expenditure per month. The average total household expenditure per month is approximately BDT 8,700 (equivalent to US\$109), of which about 59 percent is spent on food consumption. This is within the range found in Banerjee and Duflo (2007), which, based on a 13-country sample, states that food typically represents from 56 to 78 percent of consumption among rural poor households. About 35 percent of the food expenditure is on cereals, a food staple in Bangladesh, and only a small share is spent on quality protein such as meat and dairy products. About 85 percent of the sample households report that they are concerned with food shortages, and about 82 percent indeed experienced insufficient food intake over the last 12 months. The distribution of expenditure is similar when per capita consumption is considered.

On a monthly basis, households regularly use the following non-food items: fuel, beauty and hygiene products, transportation, and others. The expenditure on these items is about 13 percent of the total household expenditure. Lastly, the non-food annual spending category includes health care, education, housing, and leisure; this category makes up more than one-quarter of the total household expenditure, with housing representing over 30 percent of non-food annual expenditure. Because the majority of households own their house in rural Bangladesh despite the prevalence of poverty, housing expenditures mostly derive from maintenance and repair costs instead of renting expenses.<sup>14</sup>

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<sup>14</sup> This is related to the dismal living conditions. Most houses have tin roofs and mud floors, making them vulnerable to adverse weather conditions which the country is prone to. On average, houses are 300 square feet, and the average number of rooms is less than two for more than six household members. According to UN-Habitat (2006), a dwelling is considered to be insufficient living space if each room is shared by more than three individuals. Although about one-third of the surveyed households report that they have electricity services connected to the house, cooking typically relies on wood or straw burning, and the majority use pit or kancha toilette for sanitary facilities without running water or electricity.

Table 3. Monthly Household Expenditure

Items	Monthly household expenditure (in BDT)			Monthly per capita expenditure (in BDT)	
	Mean	SD	Share out of total expenditure	Mean	SD
<b>A. Food</b>	5,158	2,673	59.0%	1,264	803
Cereal	1,821	862	20.8%	433	173
Meat and dairy product	451	689	5.2%	111	171
Fish	650	681	7.4%	157	158
Fruits	191	426	2.2%	47	106
Vegetables	735	383	8.4%	182	85
Food prepared outside home	668	405	7.6%	164	93
Others (oil, spices, lentils etc)	642	600	7.3%	164	187
<b>B. Non-food (Monthly items)</b>	1,153	628	13.2%	290	159
Fuel	557	244	6.4%	145	78
Others (beauty products, transportation etc.)	596	509	6.8%	145	122
<b>C. Non-food (annual items)</b>	2,432	2,763	27.8%	604	723
Clothes and shoes	442	290	5.1%	106	58
Health	526	941	6.0%	134	250
Education*	209	353	2.4%	110	213
Housing	744	1,577	8.5%	189	389
Other (leisure, gift, entertainment etc.)	512	1,490	5.9%	130	437
<b>Total (A+B+C)</b>	8,743		100.0%		

Notes: Per capita expenditure on education shows per child expenditure. 1 USD = 78 BDT

An interesting observation is that these poor households spend a non-negligible share of their expenditure on leisure, gifts, and entertainment. This type of spending is often related to religious festivals and life events of family members. Compared to these expenditures, spending on education is quite low. This is likely due to the small number of children in the households, about 1.6 on average, in line with the low total fertility rate (TFR) in the country.<sup>15</sup> An additional explanation is that many of these households are exempt from education fees due to stipends for primary and secondary schooling as well as school feeding programs.

Health care expenditures represent about 6 percent of the total household expenditures. Out-of-pocket expenditures on health care are an important measure of household well-being, because catastrophic health shocks and spending are often a major risk for household impoverishment. A rule-of-thumb approach recommended by the World Health Organization (WHO) is that the ratio of out-of-pocket expenditure on health care should not exceed 40 percent of household income net of subsistence needs. (See WHO, 2010.) Applying this rule to our data, the average ratio of health care expenditure to total household expenditure, net of food consumption, is about 13.4 percent. However, for about 6 percent of the sample households, the ratio exceeds 40 percent, a level of spending that suggests these households are experiencing catastrophic health care spending.

### **3.2.3 Labor market activities**

Labor market activities vary depending on the gender of the head of the household (Table 4). The share of the jobless, including the unemployed and out-of-the-labor-force individuals among household heads, is 3 percent and 30 percent for male and female headed households respectively. Nonetheless, the female household heads' overall rate of employment (70 percent) is significantly higher than the national average of 30 percent (according to the Labor Force Survey 2013). Male heads of households tend to work as either self-employed or day laborers, whereas female heads are more likely to work as paid employees. Social assistance programs often require the heads of households to be day laborers or jobless, but many are self-employed probably in subsistence business activities.

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<sup>15</sup> Unlike other countries that are similar to Bangladesh in their development status, fertility rates and population growth have steadily declined in Bangladesh. The TFR has declined from 3.1 to 2.3 between 2000 and 2014.

Table 4. Labor Market Outcomes

	Gender of the household head			
	Males		Females	
	Mean	SD	Mean	SD
<b>A. Head's labor market activities</b>				
Jobless	0.032	0.177	0.297	0.457
Day labor				
Agriculture	0.322	0.467	0.143	0.350
Non-agriculture	0.157	0.364	0.133	0.340
Paid employment	0.028	0.165	0.118	0.322
Self employment	0.461	0.498	0.309	0.462
<b>B. Household labor outcomes</b>				
Monthly household expenditure (BDT)	9,198	4,780	5,370	3,802
Number of employed adults	2.44	1.05	1.44	0.87
Employment ratio	0.869	0.295	0.864	0.472
Migration (yes=1)	0.541	0.499	0.350	0.477
Remittances if positive	2,121	2,444	2,579	5,212
<b>Num. obs</b>	6,022		790	

Notes: This table presents employment status of the head of the household, and labor market outcomes of all adults in the household. The jobless category includes those out of the labor force and the unemployed.

Although female-headed households have substantially lower monthly expenditures, per capita expenditures vary little with the gender of household heads. The overall employment ratio in these households, that is, the number of employed adults over the total number of adults, is about 87 percent and does not vary by gender of the head of household. This suggests that almost the full capacity of adults in poor rural households, regardless of gender of the household's head, are engaged in economic activities, and loss of employment and labor earnings could have significantly negative consequences.

Moreover, migration to seek employment opportunities is quite common. More than one-half of the sampled households have migrant workers who did not reside in the households but sent remittances in the past year. The male-headed households are significantly more likely to have migrant workers. The presence of another male household member may influence one's decision to migrate given that the majority of migrant workers are males. Regarding remittances, however, more resources are transferred to female-headed households, which is likely an effort to compensate for their lack of incomes.

### 3.2.4 How they cope with risks

Poor households in rural areas face various shocks and risks in their lives. Regular and recurrent crises are attributed to agricultural seasonality, called *Monga*. The severity of the seasonality has declined over time as rural households diversify crops and staples. However, close to one-half of the sampled households have indicated that March and April are the hardest seasons in both rounds of the survey, which suggests that recurrent seasonality is prevalent. One of the most common measures to cope with lean periods is to reduce food quantity and quality, and deplete assets and savings (See Table 5). Households also respond to shocks by increasing the labor supply to earn more income, and the availability of workfare programs would be useful to cope with risks.

The responses to the unexpected, acute shocks are somewhat different from general coping mechanisms during lean periods. Among the 6,813 sample households in the first round of the survey, about 44 percent experienced severe shocks over the past year, similar to the finding from Santos et al. (2011). Income loss and medical expenses due to the death or illness of household members are the most common (representing 50 percent) of acute shocks. Next in prevalence are loss of housing and productive assets largely attributable to climatic shocks including floods (10.0 percent) and cyclones (8.4 percent). The median amount of financial costs due to the shocks is BDT 10,000, which is a substantial amount at this level of poverty. Households experiencing acute shocks responded in the survey that the coping mechanism they relied on the most was taking out loans from moneylenders (close to one-quarter). Relying on social networks including friends and relatives for help is also common (reported by 19 percent), in line with the informal insurance setting widely discussed in the literature. (See Rosenzweig, 1988 and Besley, 1995 for example discussions.) The role of government assistance, however, was not as prominent as expected in fighting pecuniary shocks.<sup>16</sup>

Table 5. Risk Coping Strategies

	Coping strategies during the time of crisis	
	Mean	SD
<b>A. Lean seasons</b>		
March-April (=yes)	0.478	0.500
Reduced food consumption/quality	0.818	0.386

<sup>16</sup> Only 3.2 percent of the affected households reported using government assistance including VGF and GR to cope with these shocks.

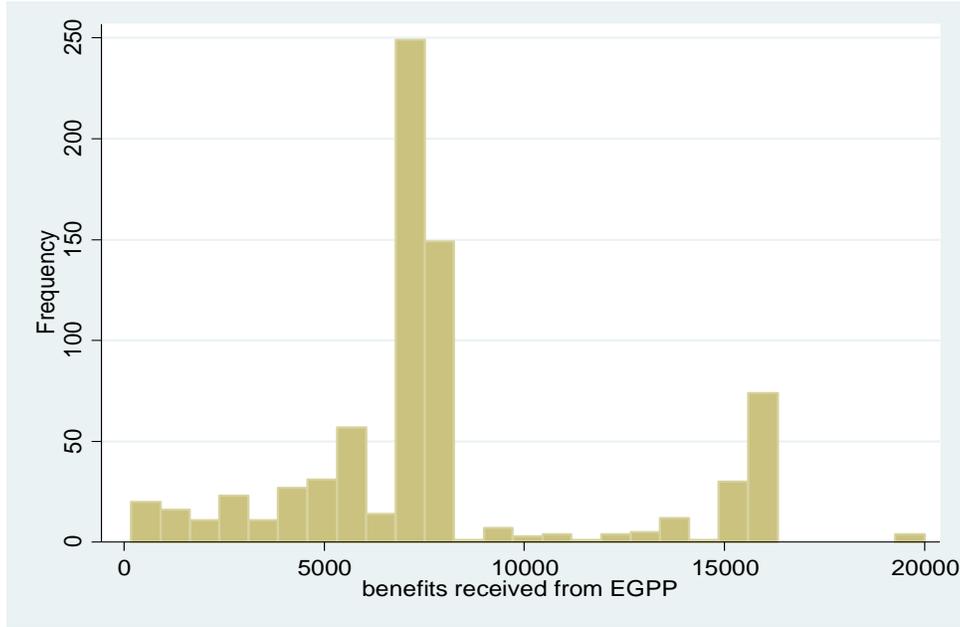
Reduced non-food spending	0.603	0.489
Loans from moneylenders	0.217	0.412
Sell assets/savings	0.703	0.457
Work more	0.413	0.492
Num. obs		6,813
<b>B. Unexpected shocks</b>		
None	0.164	0.370
Reduced food consumption	0.174	0.379
Loans from moneylenders	0.242	0.428
Social network	0.192	0.394
Other help	0.229	0.421
Total	1.000	
Amount of costs (median)		BDT 10,000
Num. obs		2,990

Notes: The survey asks coping strategies during regular lean seasons and in response to unexpected shocks. The coping strategies for unexpected shocks were asked only for those who reported experiencing unexpected shocks. The figures presented in the table are the share of respondents who reported each item. While households were allowed to report multiple strategies during the lean seasons (Panel A), but they were asked for only one major strategy that was used to respond to the most severe shock (Panel B).

### 3.2.5 Potential role of EGPP participation

EGPP participation, like other workfares, provides both employment and income generating opportunities to poor households. According to the EGPP rule — which allows the wage rate of BDT 200 per day, 40 days per cycle, and up to 2 cycles a year — participating households should be able to receive BDT 8,000 up to 16,000 as EGPP benefits. The average EGPP benefits among the surveyed households are about BDT 7,924. When plotted, many are clustered around BDT 7,000–8,000, and also around BDT 15,000–16,000 (See Figure 1). Unfortunately, the survey does not ask households about the number of cycles they participated in EGPP; thus, it is not clear whether the benefits are taken from one or two cycles. Also, there is a non-negligible share of individuals who are receiving much smaller amounts than BDT 8,000. There is a possibility that many individuals opted to participate one cycle even if they were allowed to participate twice, as many of the respondents are new participants who had only one opportunity yet at the time of the survey, or individuals may drop out without filling the full 40 days per cycle.

**Figure 1: Distribution of EGPP Benefits among the Main Sample Households**



Note: Kernel density of EGPP benefits received over the past 12 months.  
Source: EGPP sample.

At any rate, given the substantial size of the benefits, EGPP participation is expected to have greater implications on the economic behavior of participating households than experienced in other social assistance programs. Additional incomes would change the pattern of consumption and risk-coping mechanisms, while the employment opportunities would influence households' decision on labor supply.

## 4. Empirical Strategy

### 4.1. Identification

To measure the effect that participation in EGPP has on the outcomes of interest including consumption for poor households, taking household and locality characteristics into consideration, we consider the following regression model,

$$\log R_{ijt} = \alpha + \beta H_{ijt} + \omega EGPP_{ijt} + \gamma_j + \varphi_t + \mu_{ijt} \quad (1)$$

where  $R_{ijt}$  denotes an outcome (e.g., the monthly consumption) of household  $i$ , in a *Union*  $j$  at time  $t$ ,  $H$  is a vector of the household characteristics,  $\gamma_j$  and  $\varphi_t$  are *Union* (time invariant) and time fixed effects, respectively, and  $\mu_{ijt}$  contains unobserved determinants of household consumption that vary both over time and across households. Finally,  $EGPP_{ijt}$  indicates the participation of an individual from household  $i$  in the scheme. Household characteristics include the variables that affect household production, such as the ownership of land or other productive assets, number of working age adults and the number of young children below age 5 for a given household size, and the average education level of adults (excluding household head). In addition, to capture the characteristics of the household head, variables such as age, education, gender, marital status, and health are included.

A major concern is that EGPP participation is based on self-selection and is correlated with the error terms in equation (1). To address this concern, the selection equation is modeled using the following specification;

$$EGPP^*_{ijt} = \alpha_p + \beta_p H_{ijt} + \delta Z_{jt} + \theta_j + \tau_t + \varepsilon_{ijt} \quad (2)$$

with  $EGPP_{ijt} = \begin{cases} 1 & \text{if } EGPP^*_{ijt} > 0 \\ 0 & \text{if } EGPP^*_{ijt} \leq 0 \end{cases}$  where  $EGPP_{ijt}$  equals 1 when the household participates the program and 0 otherwise. As extensively discussed in the literature, we address this issue by finding an instrument  $Z_{jt}$  that satisfies two essential properties. First, it is associated with EGPP participation, and second, it is uncorrelated with other determinants of potential outcomes of interest,  $\mu_{ijt}$ . Recognizing that EGPP's wage payments require access to an individual's bank account, we use the ease of accessibility (time and distance to a bank) to the banking service as the instrument.

#### 4.2. Validity of the instrumental variable strategy

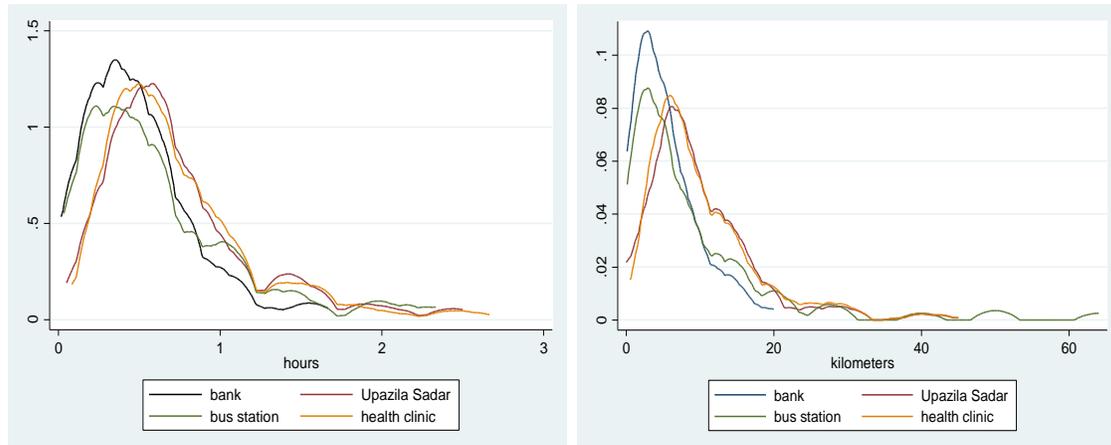
The survey collected information on whether the particular *Union* has a bank and other major infrastructure,<sup>17</sup> and if not, how long it takes to get to the closest one via different modes of travel (e.g., rickshaw, on foot, motorcycle, public transportation). Key facilities include bus and train

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<sup>17</sup> Major infrastructure includes bus and train stations; health clinics and private hospitals; *Upazila Sadars* (administrative center of the *Upazila*); post offices; and public schools.

stations; health clinics and private hospitals; *Upazila Sadars* (administrative center of the *Upazila*); post offices; and public schools. Among these facilities, widely available ones (including post offices and public schools) and rare facilities that require hours of travel (including train stations and government hospitals) present little variation across *Unions*. However, the availability of bus stations, health clinics, and *Upazila Sadars*, and banks varies largely across *Unions* and over time; in addition, travel time and distance varies when services are located outside the respondent *Union*. The share of respondents who report having these facilities in their *Union* is 46 percent for a bank, 34 percent for a bus station, 4 percent for health clinics, and 0 percent for *Upazila Sadars*. When these facilities exist outside the *Union*, the accessibility varies although they are mostly reachable within two hours of travel or 30 kilometers (Figure 2).

**Figure 2: Time and Distance to Key Infrastructure Outside the *Union***



We define easy access to these facilities when they are either in the *Union* or within 30 minutes of reach, and  $Z_{jt} = 1$  if the *Union* has easy access to a bank. We use a linear model to examine the association between the access to a bank and EGPP participation with and without the households' characteristics. Utilizing the *Union* level panel structure of the data, we use the *Union*-time fixed effects model to control for the impacts of time-invariant *Union* level characteristics that may affect individuals' EGPP participation. As presented in Table 6, having a bank within 30 minutes of reach has a statistically significant effect on the likelihood of EGPP participation ( $t=5.6$ ) by 9.3 to 9.9 percentage points. The relationship between access to a bank and EGPP participation remains robust when household characteristics such as the head's education and health, household size, and productive assets are added as covariates.

Table 6. Association between EGPP Participation and Access to Key Infrastructure

EGPP participation	Bank		Bus station		Health clinics		Upazila Sadar	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>A. Full sample</b>								
<b>Indicator of accessibility</b>	0.099*** (0.018)	0.093*** (0.014)	0.009 (0.015)	0.026 (0.103)	-0.005 (0.015)	-0.007 (0.015)	0.016 (0.015)	0.012 (0.015)
Union, time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household Characteristics	No	Yes	No	Yes	No	Yes	No	Yes
Adjusted/Pseudo R2	0.179	0.185	0.175	0.178	0.175	0.178	0.175	0.178
<b>B. Female participants sample</b>								
<b>Indicator of accessibility</b>	0.107*** (0.036)	0.098*** (0.036)	-0.041 (0.032)	-0.033 (0.032)	-0.007 (0.033)	-0.007 (0.033)	0.055 (0.040)	0.056 (0.040)
Union, time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household Characteristics	No	Yes	No	Yes	No	Yes	No	Yes
Adjusted/Pseudo R2	0.232	0.237	0.229	0.233	0.228	0.233	0.229	0.234

To assess whether access to a bank is a mere reflection of a *Union* being more accessible to various infrastructure, which facilitates the *Union*'s EGPP implementation, we examine the association of access to other facilities with EGPP participation, using the same *Union*-time fixed effects models. The results show that access to these facilities has little association with EGPP participation, and thus confirms the validity of access to bank as an instrument for EGPP participation (Columns (2) through (4) in Table 6). When we change the definition to incorporate both time and distance, where easy access means within 30 minutes of reach or within 5 kilometers boundary, or use actual time to the nearest bank, the results (See Appendix Table 1) show that the association between the easy access to banks and EGPP participation remains significant.<sup>18</sup>

Table 7. Externality Test of the Instrumental Variable

Covariates	Log(Household Expenditure)		Log(Per capita household expenditure)	
	(1)		(2)	
	base	extended	base	extended
Access to bank	-0.044 (0.029)	-0.025 (0.022)	-0.040 (0.025)	-0.018 (0.022)
Household head's age		-0.001** (0.000)		0.002*** (0.000)
Household head's education		0.013*** (0.002)		0.014*** (0.002)
Marital status (not married=1)		-0.318*** (0.017)		-0.095*** (0.017)
Disability (yes=1)		0.061*** (0.011)		0.086*** (0.011)
Household members average education		0.031*** (0.004)		0.019*** (0.004)
Ownership (cattle=1)		0.078*** (0.010)		0.071*** (0.010)
Ownership (land=1)		0.001*** (0.000)		0.001*** (0.000)
Number of children under 5		-0.100*** (0.008)		-0.079*** (0.008)
Number of working age adults		0.044*** (0.005)		0.056*** (0.005)
Union-time fixed effects		Yes		Yes
Adjusted R squared	0.140	0.517	0.088	0.298

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The table presents estimated results of the externality tests.

<sup>18</sup> The average distance to the nearest bank when it is not located in the same *Union* is about 5 kilometers.

We also examine the validity of the identification approach for the sample consisting of female participants of the programs. Given the greater mobility constraints faced by women, it is expected that better access to a bank is more closely associated with EGPP participation among the female sample. The regression results suggest that the correlation between access to a bank and EGPP participation is stronger for women, supporting it is not a reflection of the *Union* having better accessibility to various infrastructure.

Finally, in order to ensure the exogeneity of the instrumental variable on the outcomes of interest, such as household expenditure, a regression analysis is conducted with the total or per capita household expenditure as dependent variables and the access to bank as part of covariates. Regardless of the inclusion of household characteristics, little association is observed between the access to banks and household consumption.

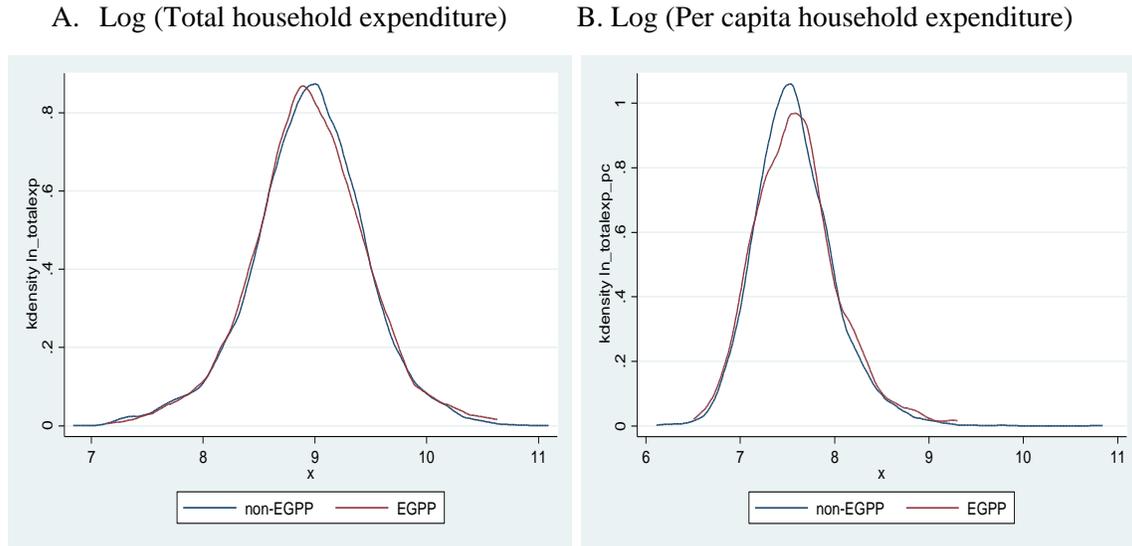
## 5. Results

Panels A and B in Figure 3 plot the distribution of total household expenditure and per capita household expenditure, respectively, using kernel density functions for non-EGPP and EGPP participating households. The total expenditure is slightly lower for EGPP participating households. The per capita distribution, on the other hand, shows that EGPP participating households have a slightly greater expenditure per person.<sup>19</sup> This suggests that household characteristics, including household size, may affect our estimation of the impact of EGPP participation on household expenditure.

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<sup>19</sup> These differences are not statistically significant at 10 percent level of significance.

**Figure 3: EGPP Participation and Household Expenditure**



We then analyze the relations between participation in EGPP and household expenditure with regression analyses. (The results are presented in Table 8.) Specifications (1) through (4) sequentially expand the set of explanatory variables by adding covariates and *Union*-by-time fixed effects. For each specification, we present both IV and Heckman approaches.<sup>20</sup> In specification (1), when no household or locality characteristics are controlled, the results are not different from those observed in the graphs above. As more explanatory variables are added in specifications (2) to (4), the results suggest consistent findings that both total household expenditure and per capita expenditure increase with EGPP participation.

The size of the increases is substantial. Overall household consumption, based on the full specification (4), increases between 7.7 to 10.6 percent on average, equivalent to BDT 680 to 933 increase per month (BDT 8,100 to 11,000 per year) due to participation in EGPP.<sup>21</sup> Considering that the average EGPP benefits received among the surveyed households were close to BDT 8,000 for the past year, the finding that the increase in consumption is similar or slightly greater than the transferred amount suggests that there is no evidence of significant disincentive for households to engage in new income-generating activities due to EGPP. It is not uncommon for increases in household income to be significantly less than transferred benefits from public works, because

<sup>20</sup> See Heckman (1979) for the methodological discussion.

<sup>21</sup> Likewise, the increase in per capita consumption is about 5.8 to 8.0 percent, equivalent to BDT 125 to 172 per month per capita. Given that the average household size is about 4.08, this increase translates to between BDT 510 and 704 per month per household (BDT 6,100 to 8,500 per year).

regular work or business activities are often substituted for public works, resulting in less actual income (See Rosas and Sabarwal (2016), for instance).

Table 8. Impacts of EGPP Participation on Monthly Expenditure

Log (monthly expenditure)	(1)		(2)		(3)		(4)	
	IV	Heckman	IV	Heckman	IV	Heckman	IV	Heckman
<u>A. Household expenditure</u>								
Total	-0.026 (0.046)	-0.046 (0.044)	0.065* (0.034)	0.044 (0.032)	0.114** (0.047)	0.077* (0.045)	0.106*** (0.036)	0.077** (0.034)
Food	-0.137*** (0.045)	-0.158*** (0.043)	-0.032 (0.032)	-0.052* (0.031)	0.055 (0.046)	0.012 (0.044)	0.055 (0.034)	0.022 (0.032)
Non-food (monthly items)	-0.031 (0.045)	-0.048 (0.043)	0.019 (0.037)	0.004 (0.035)	0.069 (0.047)	0.040 (0.045)	0.054 (0.039)	0.032 (0.037)
Non-food (annual items)	0.184*** (0.071)	0.157** (0.068)	0.265*** (0.062)	0.229*** (0.059)	0.240*** (0.075)	0.204*** (0.071)	0.214*** (0.066)	0.179*** (0.062)
Covariates	No		Yes		No		Yes	
Union-time fixed effects	No		No		Yes		Yes	
<u>B. Per capita expenditure</u>								
Total	0.080** (0.038)	0.062* (0.036)	0.037 (0.034)	0.023 (0.032)	0.027 (0.040)	0.012 (0.038)	0.080** (0.035)	0.058* (0.033)
Food	-0.031 (0.035)	-0.050 (0.033)	-0.059* (0.032)	-0.073** (0.031)	-0.031 (0.037)	-0.053 (0.035)	0.028 (0.033)	0.003 (0.032)
Non-food (monthly items)	0.075* (0.042)	0.060 (0.040)	-0.008 (0.037)	-0.017 (0.035)	-0.017 (0.045)	-0.025 (0.042)	0.028 (0.039)	0.014 (0.037)
Non-food (annual items)	0.290*** (0.066)	0.266*** (0.063)	0.238*** (0.061)	0.208*** (0.058)	0.153** (0.069)	0.139** (0.066)	0.188*** (0.066)	0.160*** (0.062)
Covariates	No		Yes		No		Yes	
Union-time fixed effects	No		No		Yes		Yes	
Num. of obs	6,718		6,718		6,718		6,718	

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The table presents estimated coefficients of EGPP participation on various outcomes using two different approaches and four different specifications.

The impact of EGPP participation on food consumption is small and statistically insignificant. There is no consensus regarding the impact of workfare on food consumption and security, or nutrition. Berhane et al. (2014) found that public works in Ethiopia did not increase food consumption although it significantly reduced food insecurity (Gilligan et al. 2009). Brown et al. (1994) found positive impacts of workfare participation on children's nutrition outcomes due to income effects. However, Beegle et al. (2017) found that there was no evidence that Malawi's public works improved food security. While there is little change in overall consumption on food, we investigate more on food security and quality of food below. Meanwhile, significant increases in expenditure due to EGPP participation are from non-food annual items, including expenses for health care, education, housing, and leisure. This finding holds for both total and per capita household expenditure.

To further investigate the pattern of consumption, we disaggregate the food and non-food annual items, and delve deeper into the association between EGPP participation and the composition of expenditures. Tables 9 and 10 report the marginal effects of EGPP participation on each subcategory of food and non-food annual items respectively, using IV and Heckman approaches with all covariates and fixed effects.<sup>22</sup> It is noteworthy that some households have no spending on certain items; thus, the number of observations varies depending on the dependent variable.

With respect to food, a clear pattern is observed both in total and per capita consumption (Table 9): households consume more meats, dairy, and fish as they shift away from eating vegetables and fruits and food prepared outside the home. Poor households in developing countries generally do not consume a sufficient amount of quality protein, especially from animal sources, and Bangladesh's nutrition assessment depicts similar challenges (Food and Agriculture Organization, 2014). In light of this situation, EGPP participation has resulted in households consuming more proteins, especially meats, which is an encouraging development. With this effect, EGPP participation helps improve food security, which has been demonstrated by fewer households reporting insufficient food intake, and fewer households using food cuts as a risk-coping strategy, and expressing concerns over food.<sup>23</sup>

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<sup>22</sup> Limiting the analysis to the female sample yields very similar results.

<sup>23</sup> The impacts on each of these three outcomes are estimated as 10.3, 8.4, and 9.5 percentage points, respectively, when using full specification regressions.

Table 9. Impacts of EGPP Participation on Food Consumption

Log (monthly expenditure)	Total		Per capita		Num of obs
	IV	Heckman	IV	Heckman	
Cereal	0.040 (0.028)	0.032 (0.027)	0.014 (0.026)	0.013 (0.025)	6,718
Meat and dairy	0.234*** (0.079)	0.204*** (0.074)	0.217*** (0.079)	0.196*** (0.074)	6,083
Fish	0.241* (0.127)	0.156 (0.119)	0.234* (0.128)	0.161 (0.119)	4,364
Fruit	-0.195 (0.125)	-0.206* (0.118)	-0.223* (0.126)	-0.226* (0.118)	4,918
Vegetables	-0.040 (0.038)	-0.069* (0.036)	-0.066* (0.038)	-0.087** (0.036)	6,718
Food prepared outside home	-0.099** (0.050)	-0.125*** (0.047)	-0.125** (0.050)	-0.143*** (0.047)	6,720
Covariates, fixed effects	Yes		Yes		

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The table presents estimated coefficients of EGPP participation on various outcomes using two different approaches with a full specification based on column (4) in Table 7.

Table 10 indicates that EGPP participating households have significantly increased their expenditures on health care and other items including leisure, festivals, and gifts. The large and significant increases in the expenditure for health care is notable for both genders. The average expenditure on health care among the sample households is about BDT 527 per month, which is equivalent to 6 percent of total household expenditure as noted earlier, an increase by almost 35 percent that amounts to BDT 184. Increased spending on leisure, festivals, and gifts — mostly luxury rather than necessity goods — indicates a strong income effect of EGPP participation and extra income. Considering that the average expenditure on these items is about BDT 512 per month, the 80 percent increase in expenditures is about BDT 410, a very significant resource allocation. In contrast to increased spending on health care and leisure, mostly for adults, investment in education and purchase for clothes and shoes shows insignificant differences or slight reduction for EGPP participating households. This situation may be attributable in part to the fact that childless households comprise close to one-quarter (23 percent) of the sample, and households with children may be already receiving educational subsidies. Alternatively, with labor required for public works, intra-household resource allocation may be made favorably to adults, especially in their health, than children.

Table 10. Impacts of EGPP Participation on Non-food Consumption

Log (monthly expenditure)	Total		Per capita		Num of obs
	IV	Heckman	IV	Heckman	
Clothes and shoes	-0.069 (0.049)	-0.077* (0.046)	-0.095** (0.048)	-0.095** (0.045)	6,718
Health care (men)	0.375*** (0.129)	0.372*** (0.121)	0.375*** (0.129)	0.372*** (0.121)	6,256
Health care (women)	0.344*** (0.124)	0.334*** (0.117)	0.344*** (0.124)	0.334*** (0.117)	6,603
Education (boys)	-0.055 (0.188)	-0.192 (0.175)	-0.055 (0.188)	-0.192 (0.175)	2,508
Education (girls)	-0.220 (0.199)	-0.241 (0.186)	-0.220 (0.199)	-0.241 (0.186)	2,618
Housing	0.020 (0.081)	-0.013 (0.077)	-0.006 (0.081)	-0.032 (0.077)	6,675
Others (leisure, festivals, gifts, etc.)	0.842*** (0.217)	0.799*** (0.204)	0.820*** (0.216)	0.784*** (0.204)	6,552
Covariates, fixed effects	Yes		Yes		

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The table presents estimated coefficients of EGPP participation on various outcomes using two different approaches with a full specification based on column (4) in Table 7.

Households' disposable incomes are affected by labor market earnings, savings and loans decisions; thus, we also examined the impact of EGPP participation on these decisions. Table 11 reports that EGPP participation has not changed labor supply decisions of the households maintaining the same level of employment both in numbers and ratios. Also, the propensity to have a migrant worker in the household did not vary by EGPP participation. To contrast, EGPP households have significantly reduced their amount of outstanding loans. Recall that about 70 percent of the sample households have an outstanding loan, and the median [average] loan amount is about BDT 15,000 [30,000] — about 1.9 [3.8] times the monthly household expenditure. The EGPP participating households experience about a 40 percent reduction in the amount of outstanding loans, equivalent to BDT 6,750 at the median level, larger than any other reallocation of expenditure discussed previously.

Table 11. Impacts of EGPP Participation on Household Decisions

Outcome	Total		Num of obs
	IV	Heckman	
Number of employed	0.038 (0.071)	0.083 (0.067)	6,812

Employment ratio (num. employed over num. adults in hh)	0.026 (0.029)	0.026 (0.027)	6,812
Migration worker in the household (yes=1)	0.005 (0.044)	-0.013 (0.042)	6,812
Log (Savings)	-0.138 (0.159)	-0.217 (0.150)	3,669
Log (Outstanding loans)	-0.405*** (0.142)	-0.415*** (0.133)	4,689
Covariates, fixed effects	Yes		

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The table presents estimated coefficients of EGPP participation on household savings and outstanding loans. All regressions include covariates and fixed effects used in Table 8.

## 6. Program Efficiency

As shown above, EGPP has helped participating households increase consumption of quality foods and investment in health and leisure while also reducing outstanding loans. Based on the finding that the increase in overall consumption is similar to the amount of resources transferred from the program and that little change was observed in labor supply, there is little sign of substitution effects of EGPP of regular employment and disincentives for work.

The question worth asking now is whether EGPP has achieved these outcomes in an efficient way. Potential efficiency loss (gain) of EGPP compared to alternative options mainly depends on three factors: (i) targeting accuracy; (ii) payment delivery (leakages); and (iii) operational costs and quality of projects under the workfare. In order to assess each aspect, we look into the EGPP sample and delve deeper into the program implementation, and discuss its efficiency compared to other alternative options such as unconditional cash transfer of the same amount through bank accounts.

The first issue of benefits going to the non-poor (e.g., inclusion errors) is one of multiple dimensions to measure targeting accuracy. As the level of benefits (such as wage rates for EGPP) does not vary by household characteristics, the marginal impacts of the benefit would be greater for poorer households that are more credit constrained. Therefore, by improving targeting accuracy, the poverty-reducing and welfare-enhancing impacts of social assistance programs can be enhanced with efficiency gains. Utilizing income quintiles based on per capita consumption,<sup>24</sup> we analyzed

<sup>24</sup> The latest nationally representative Household Income and Expenditure Survey was conducted in 2010. Based on per capita household consumption, the income cut-off for each quintile is calculated. Using the Consumer Price Index available as part of the World Development Indicators of the World Bank, each income cut-off level was price adjusted and used for the benefits and beneficiary incidence analysis.

the share of beneficiaries originating from households in the bottom 2 quintiles (poor) versus top 3 quintiles (non-poor). The results of the benefits and beneficiary incidence analysis suggests that about 62 percent of total EGPP beneficiaries come from poor households (34 percent for the lowest and 28 percent for the second lowest quintile). Given that the average beneficiary incidence of the bottom 2 quintiles among social assistance programs in the Low Middle Income Countries to which status Bangladesh reached in 2014, is about 38 percent,<sup>25</sup> the level of inclusion errors of EGPP seems to be relatively low.

The targeting performance of EGPP is an outcome of self-targeting and committee-based rationing. One way to improve targeting performance in self-targeted schemes such as the workfare is, as Ravallion (1991) suggests, to increase costs of program participation so only the most needy would participate. Local committee-based selection of participants may improve targeting by incorporating further information on characteristics of desired participants or worsen it by subjectively selecting beneficiaries to extract rents.<sup>26</sup> The extent to which there are over-subscription, rationing, and unmet demand for EGPP is difficult to assess because no data have been collected for those who applied for EGPP but were not selected. If a PMT-based targeting method is additionally applied to the current pool of EGPP participants and only households in the bottom 40 percent of the distribution of poverty scores are allowed to participate, the data suggest that the beneficiary incidence of the poor would increase to 73 percent. Targeting performance can even further improve if costs of participation (e.g., stigma) increase due to clear signaling for poverty targeting with an addition of a PMT-based selection mechanism. Unconditional cash transfers would not be able to achieve the outcome of self-targeting without the work requirement and opportunities that workfare offers, unless the PMT-based targeting alone outperforms self-targeting.

The second issue related to beneficiaries not receiving their full entitlements is associated with payment delivery, and this aspect of efficiency does not change even if cash transfer instead of workfare is introduced. Discrepancy between entitled and received benefits has commonly existed in social assistance programs, especially in the case of food aid, which provides support for transition from food aid to cash payment. As discussed earlier, even for EGPP, which pays benefits

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<sup>25</sup> This is from the Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) database.

<sup>26</sup> A study based on Pakistan's Benazir Income Support Program suggests that politician picked beneficiary selection significantly showed favoritism towards well connected, less deserving households. See Haseeb and Vyvorny (2017).

through a bank account, a gap exists between the entitled and received wages.<sup>27</sup> The gap may stem from the practice of paying fees to collect benefits quickly from banks without having to wait in queues for a long time; mid-way through the process, resources are wasted and the potential for fraud and corruption is created. Only 46 percent of the sample households indicate that they have banks within their *Union*, which likely imposes significant time costs and explains why people are willing to accept measures to bypass the wait.

Compared to the first two issues, the third issue of leakage associated with the quality of public works receives less attention in policy discussions related to workfare's social accountability. Workfare typically has dual objectives: one is to reduce poverty by providing livelihoods and earnings opportunities to poor individuals with limited labor market opportunities; and the other is to build community assets and infrastructure through public works. While the former is greatly emphasized, little policy attention has been paid to the latter objective. The EGPP budget allocation reflects close to 90 percent of wages for beneficiaries, with the remaining 10 percent allocated for operation costs (materials and tools) and supervisors' allowances.<sup>28</sup> Similarly, the shares are 80 percent for Ethiopia's Productive Safety Net Program and 88 percent for Rwanda's Umurenge Program (See Zimmerman, 2014).

To gauge the quality of the workfare schemes (mostly roads repair and re-construction), a series of questions regarding selected projects were examined (Table 12). While a large majority of EGPP participants agree that the benefits of community projects would be broad-based, participants are not properly equipped with tools and materials necessary for works. For the question whether the project value would last more than a year, respondents were evenly split, suggesting that there are doubts on sustainability. Also, when asked about the scheme being well-maintained, about three-quarters of EGPP participants positively responded. The survey responses imply that projects under workfare programs improve the condition of roads, but the improvement may be temporary without proper maintenance.

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<sup>27</sup> Recall from Figure 1 that there is a non-negligible share of households that receives less than entitled amounts of BDT 8,000 or 16,000.

<sup>28</sup> Administrative data from the Department of Disaster Management. Other administrative costs (staff costs of the Ministry) are not reflected in the EGPP budget.

Table 12. Quality of Workfare Implementation

Quality of workfare implementation	Share of those who agree or strongly agree (%)	Share of those who disagree or strongly disagree (%)
1. Selected projects benefit only a narrow group of people in village	19.6%	78.10%
2. Workers were provided with adequate tools for completing the projects	8.7%	90.70%
3. Projects had adequate supply of materials	25.7%	73.20%
4. The project will provide benefits for one year or longer once completed	47.7%	47.80%

Note: The questions were asked to EGPP participants.

## 7. Conclusions

Workfare is an important policy instrument for social protection for the poor in developing countries. Many of these programs are in part financed by donors, and thus evaluating these programs is critical to assess the development effectiveness of aid. Despite its popularity and importance, there is surprisingly limited evidence regarding how well and efficiently workfare programs work. This paper contributes to building a robust evidence base for social policies by examining the first-order impacts of a large-scale, modern workfare program, EGPP, on poor households receiving traditional social assistance benefits.

Utilizing the fact that EGPP requires a bank account and direct transfer of cash benefits to beneficiaries, we used access to banks as an instrument variable for the evaluation. Our findings show that EGPP participation has both qualitative and quantitative impacts on households' welfare. Program participation not only increases a household's per capita consumption, it also improves the quality of food consumption by increasing the expenditures on better quality protein (meat and dairy products as well as fish) and increases investments in health for both genders. In addition, the program benefits include substantially reducing households' outstanding loans, and reducing the reliance on loans in response to shocks, which in turn alleviates the burden of indebtedness.

Based on these findings, we also discuss the effectiveness of workfare compared to its operationally simpler alternative, unconditional cash transfers.<sup>29</sup> The poverty-reducing impacts of the two, in theory, should be the same as long as the same amount is transferred to the equally targeted populations. However, in practice, there may be differential impacts due to behavioral changes. For instance, while there is abundant evidence of impacts of unconditional cash transfers particularly on increases in children’s human capital (e.g., Edmonds, 2006; Baird et al. 2011), significant increases in adults’ health expenditure due to EGPP participation suggest that workfare may induce more investment in adults’ labor which would serve as a source of income. Both workfare and unconditional cash transfers are often faced with concerns on substitution effects or work disincentives. As shown earlier, there is little evidence of substitution effects for EGPP, while Banerjee et al. (2016) concluded that the study assessing cash transfer programs in six developing countries also did not find systematic evidence that the cash transfer programs reduce labor supply. With respect to targeting performance, workfare may achieve better outcomes based on self-targeting if well designed and implemented.

Political economy of social assistance programs may favor workfare programs compared to unconditional cash transfers due to their provision for work experience and public assets and infrastructure. By engaging in productive activities in the labor market, individual workers can improve work experience and skills that would be useful in other labor market activities. Indeed, an increasing number of public works programs combine training and public works (termed a ‘public works plus’ model) in order to further promote human capital accumulation. However, more evidence is needed regarding the value of infrastructure built through public works, the implementation efficiency of the work projects, and the impact of participation in workfare on human capital and future employment in order to assess the comparative advantages of public works relative to unconditional cash transfers. It is therefore inconclusive whether the workfare would achieve the same objectives as efficiently as unconditional cash transfer. However, it is clear that efficiency of the workfare program can be further strengthened by reducing various sources of leakages – targeting, payment delivery, and quality of assets built.

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<sup>29</sup> Unconditional cash transfers are considered to be operationally simpler compared to public works which tend to involve construction and compliance verifications in addition to wage transfers. However, this does not mean that the operating costs of cash transfers are negligible because the costs often vary with the Government to Persons (G2P) payment infrastructure.

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Appendix Table 1. First Stage EGPP Participation

EGPP participation	Banks within 30 mins of reach (1)		Banks within 30 mins of reach or within 5 kilometers (2)	
	base	extended	base	extended
Access to bank	<b>0.099***</b> <b>(0.018)</b>	<b>0.093***</b> <b>(0.018)</b>	<b>0.076***</b> <b>(0.023)</b>	<b>0.070***</b> <b>(0.023)</b>
Household head's age		0.000 (0.000)		0.000 (0.000)
Household head's education		-0.001 (0.001)		-0.001 (0.001)
Marital status (not married=1)		-0.016 (0.013)		-0.016 (0.013)
Disability (yes=1)		0.017* (0.009)		0.017* (0.009)
Household members average education		-0.006** (0.003)		-0.006** (0.003)
Ownership (cattle=1)		-0.013* (0.008)		-0.014* (0.008)
Ownership (land=1)		-0.000** (0.000)		-0.000** (0.000)
Number of children under 5		-0.004 (0.006)		-0.004 (0.006)
Number of working age adults		-0.004 (0.004)		-0.005 (0.004)
Union-time fixed effects		Yes		Yes
Adjusted R squared	0.179	0.182	0.177	0.179

Notes: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The table presents estimated results of the first stage EGPP participation.