

# How productive are productive safety nets?

## Evidence from Public Works in Sierra Leone

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### Abstract

This paper assesses the very short-term impacts of a Cash for Work (CfW) program in Sierra Leone targeted at unemployed youth in response to the global food, fuel, and financial crises. Using a randomized control trial approach we find that the program successfully reached youth with low levels of education who were mostly working in the agricultural sector. As a result of program participation, household monthly income increases by 26 percent. The CfW program appears to have been a highly productive safety net for beneficiary households. Participation in the program significantly increased the likelihood of enterprise creation for households and participation in informal savings groups. However, we do not find a corresponding increase in the amount of household savings reported. We also find that the CfW program has positive impacts on the beneficiary households' asset accumulation in terms of small livestock assets. Program participation also impacted household welfare through increased utilization of health services, but no impacts on education services were found. These results demonstrate that public works programs can be effective social protection instruments with positive impacts on household welfare and productive potential.

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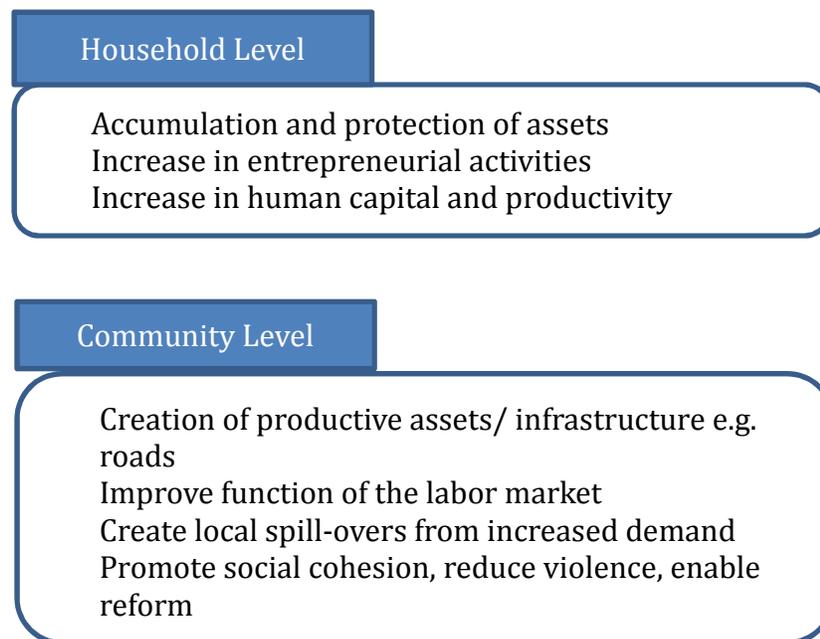
## I. Introduction

Public works (PW) programs provide income support to the poor in critical times by offering short-term employment at low wages for unskilled and semi-skilled workers on labor-intensive projects. They are increasingly being used as an instrument not just for shielding households from economic shocks but also reducing poverty and addressing youth unemployment challenges. In the context of fragile and post-conflict states, such programs are also used as a tool to rebuild basic infrastructure and promote social cohesion.

In recent years, PW programs have become a popular safety net instrument. In 2000-2010, 45 percent of World Bank social safety net projects in low-income countries supported public works programs.<sup>3</sup> Most recently, their importance has been magnified by the food, fuel, and financial crises of 2007-09. As mentioned earlier, these programs are considered attractive because they help address multiple objectives at the same time.

Some of these theorized impacts are summarized below:

**Figure 1: Potential impacts of Public Works Programs**



*Adapted from Alderman and Yemstov (2012)*

The appeal of PW for post-conflict situations is especially high due to the dual benefit PW provides: in addition to providing a source of income to beneficiaries, programs can also create small community infrastructure. PW therefore constitutes a way of promoting recovery in these contexts, even in the face of relatively low state capacity to deliver local infrastructure.

Also increasingly, especially in Africa, these programs are also being used as a tool to address the challenge of high youth underemployment and/or unemployment. As of 2012, about 40 percent of

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<sup>3</sup> IEG (2011).

current and pipeline World Bank operations in Africa with a youth employment focus (approximately US\$320 million) were public works programs.<sup>4</sup>

Given these signs of growing adoption, what do we know about the relative development- and cost-effectiveness of PW programs in developing countries? The body of evidence on this subject, to which this study contributes, is limited but growing. Existing studies have documented positive impacts of PW programs on different dimensions. In Argentina, after accounting for the opportunity cost of their time, beneficiaries of the 'Jefes' public works program experienced a net income gain amounting to two-thirds of the wage paid and prevented some beneficiaries from falling into extreme poverty (Galasso and Ravallion 2004; Galasso 2004). Evaluations of the Ethiopia's Productive Safety Net Program (PSNP) show that participation has positive impacts on household welfare – in terms of improvements in food security and increases in livestock assets (Berhane et al 2011, Gilligan et al, 2009). There have also been several in-depth empirical studies on the world's largest PW program, India's National Rural Employment Guarantee Scheme (NREGS) program. Some of these assess the direct multiplier impact due to increased wages from program participation. Another channel estimated relates to the farm productivity improvements arising from one of the NREGA schemes to de-silt six dams – the additional output due to this was 2.2%. The positive spillovers were found to particularly benefit marginal farmers (Hirway et al. 2008). However, it has also been suggested that there might be limited awareness of the program among the marginalized and by taking (state sponsored) work to the people, the program may discourage them from moving to more economically dynamic areas (Alderman and Yemstov 2012). An evaluation of a PW program in South Africa show that they boosted local economies, but the construction of the roads under the program did not generate direct economic benefits (McCord and van Seventer 2004). Cash for work transfers in Ethiopia (Meket Livelihoods Development Project) have enabled poor households to renegotiate contractual sharecropping and livestock arrangements with richer households (Adams and Kebede 2005).

Despite the strong programmatic interest and growing empirical evidence around the PWs instrument there are gaps in our understanding of how well the instrument works and how we can make it work better. This paper is an attempt to address some of these gaps. It rigorously examines the impacts of an ongoing, relatively large-scale government-implemented Cash for Works program in Sierra Leone.

The remaining paper is organized as follows. Section II provides an overview of the project evaluated, Section III describes the impact evaluation methodology, including a description of data sources. Section IV provides descriptive analysis, Section V presents the main results of the evaluation, and Section VI concludes.

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<sup>4</sup> Africa Youth Employment Report team calculations.

## II. Evaluation Context

In 2010, in response to the global food, fuel, and financial crises and the growing challenge of youth unemployment in the country the Government of Sierra Leone launched the Youth Employment Support Project (YESP) with support from the World Bank. The project included a labor-intensive public works component, known as the Cash-for-Work (CfW) program, whose objective was to provide a safety net and income supplement for the most vulnerable youth through public works.

The CfW program is targeted at youth (defined in Sierra Leone as those ages 15 through 35) in poor and vulnerable communities. Program beneficiaries are selected through a 3-stage targeting process: (i) geographical targeting<sup>5</sup> to identify the beneficiary communities, (ii) submission of requests by communities to receive program funds for a sub-project<sup>6</sup>, and (iii) community-based targeting to identify beneficiary households within selected communities. A randomized control trial was carried out among the 275 sub-projects, details in Section III.

For targeting of individuals within communities with sub-projects, Community Oversight Committees (COCs) were set up. These CoCs were responsible for identifying the poorest households with at least one member willing and able to work between the ages of 15-35. COCs rely on local definitions of poverty in selecting beneficiaries. In addition, wage rate within the program was set lower than the market wage to discourage non-poor applicants from participating.

The National Commission for Social Action (NaCSA) has the overall responsibility for implementation of the CfW program. At the local level, the program is implemented by independent contractors hired by NaCSA. These contractors are responsible for managing the day-to-day implementation of the sub-project, including procuring necessary materials and other inputs, recording attendance of workers, and making payments to beneficiaries for days worked. In addition to being responsible for the selection of beneficiaries, COCs, are also responsible for monitoring the progress of works and payments and resolving CfW-related disputes.

## III. Impact Evaluation Design and Implementation

### Empirical Strategy

The evaluation uses a randomized control trial (RCT) methodology which exploits the phase-in design of program implementation to establish causal impacts of the CfW program. A total of 276 sub-projects were randomly divided into two groups: a treatment group (143 sub-projects) which would receive the CfW program during the IE period and a control group (133 sub-projects) which would not receive the program during the IE period. As per the phase-in, the control group was scheduled to receive the program a few months after the treatment group; therefore, the evaluation allows us to examine the impacts of the program only in the very short-run (approximately three

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<sup>5</sup> Geographic targeting was undertaken based on poverty and food-security estimates

<sup>6</sup> The communities are given a list, or positive menu, of eligible sub-project types, namely: (i) feeder road rehabilitation and maintenance; (ii) agriculture; and (iii) renewable energy and environmental mitigation. A subset of communities submitting requests are then selected based on whether the sub-project requested conforms to several requirements, including being on the positive list, suitability of the sub-project for the locality, and community endorsement.

months). The population for the study was of 17,608 beneficiaries (8,944 in the treatment group and 8,664 in the control).

The advantage of phased-in RCT design is that a simple comparison of outcomes for the two randomly created groups yields an unbiased estimate of the impact of the CfW program. In analyzing program impacts we undertake two sets of analysis. First, since all the surveyed households had been selected to participate in the program, we conducted intent-to-treat (ITT) analysis. We estimated the impacts of the program on various household-level outcomes of interest using ordinary least squares regression. The regression to obtain the ITT estimates is the following:

$$Y_i = \alpha + \beta \text{Treat} + \epsilon_i,$$

where *Treat* is a dummy for assignment to the treatment group (i.e., equals 1 if a household belongs to a community that was randomly assigned to the treatment group and 0 if assigned to the control group).

Despite careful efforts to ensure adherence to randomized assignment, there is a possibility of non-compliance, i.e. households that may have initially signed up for the program subsequently did not participate; or some of the control beneficiaries might have participated in the program. Household surveys show very low levels of non-compliance - around 1.8% of treatment households report not participating and 7.4% of control households report participating.

Despite very low levels of non-compliance, for robustness, we also estimate the effect of the treatment on those whose treatment status was affected by the random assignment (i.e., the compliers), which is known as the local average treatment effect (LATE)<sup>7</sup>. These estimates are the instrumental variable (IV estimates) of  $\beta$  in the equation above, using the dummy for random assignment as an instrument for treatment.

## Data

One challenge in collecting data for the evaluation was that sub-project beneficiaries – people who would be working on specific CfW sub-projects – were not pre-identified. Instead they were selected on the first day of the sub-project, largely on a first-come first-serve basis subject to eligibility criteria being met. This precluded the possibility of simultaneous baseline data collection in control and treatment households. It was assumed that the randomized cluster design (clustered at the sub-project (community) level) with 276 sub-projects would be sufficient to ensure balance between treatment and control households thereby ensuring comparability of the two groups for causal attribution.

Nonetheless we are able to present some limited evidence of pre-intervention balance between treatment and control using those variables in endline that were not expected to change over the program's short duration. As shown in Table 1, the overall treatment group is statistically comparable to the control group for most of these variables tested.

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<sup>7</sup> See Angrist and Imbens (1994, 1995).

To enable documentation and follow-up of treatment and control households, a beneficiary tracker survey was administered on the first day of implementation for treatment (beneficiary tracker administered in April 2012) and control (beneficiary administered in July 2012) projects. This tracker was the basis of which treatment and control households were identified and interviewed for the endline survey (July-Aug 2012). Note that the endline household survey coincided with the start of CfW implementation in control sub-projects, so that even though the households in control sub-projects were identified they still had not started working.

The content of survey data is summarized below:

- The beneficiary tracker surveys collected basic demographic information from beneficiaries, contact details for tracking them in subsequent survey rounds, and information on their perceptions of the program and its processes prior to beginning work on the sites. This survey was administered at 276 sites (April 2012 for treatment sub-projects; July 2012 for control sub-projects) to a total of 17,670 beneficiaries on the first day of sub-project implementation.
- The unannounced observational visits to treatment sub-project sites midway through the physical implementation of the sub-projects (May-June 2012). The unannounced site visit survey was administered at 141 sites of the 143 original treatment sites<sup>8</sup>. This survey was a two-part survey designed to collect information on overall program implementation and specific processes, as well as beneficiary knowledge of and satisfaction with the program. Part 1 consisted of observations (e.g., worker roll call, checks of attendance and other records) and an interview with a contractor representative on site; Part 2 consisted of an interview of two (one male and one female) randomly selected beneficiaries. A total of 279 beneficiaries (3% percent of the 8,883 working on the 141 sub-projects) were interviewed, around half of whom were female.
- The endline household survey was administered concurrently to treatment and control households (July-August 2012) - at the end of implementation for the treatment group and the start of implementation for the control group. This survey was administered to an average of 20 beneficiary households from each of 275 sub-projects, as one sub-project in the Western area was cancelled during the IE implementation, for a total of 5,506 beneficiary households. The survey covered a range of topics, but focused on measuring program effects along the following dimensions: (a) labor market outcomes and economic activity; (b) household assets, consumption and savings levels; and (c) utilization of education and health services.

All data collection was carried out by Sierra Leone's national statistical agency, Statistics Sierra Leone. The administrative data was collected and maintained by NaCSA for operational and monitoring purposes.

## Rotation

It is not uncommon for Public Works programs in Sierra Leone to impose the practice of 'rotation' informally. This is based on the principle that every eligible and willing individual in the community

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<sup>8</sup> Two treatment sites were found to be inactive at the time of unannounced visit.

should have an opportunity to participate in the program. To ensure this, in sub-projects where program slots are lower than the number of eligible individuals willing to participate, beneficiaries are rotated through the life of the sub-project. Rotation is driven by the principle of fairness but is often imposed in an informal and ad-hoc fashion – which makes it difficult to measure and document.

This has implications for measurement of program impacts because as mentioned above, we measure program impacts through ‘registered beneficiaries’ who are identified on the first day of sub-project implementation. If rotation occurs, the impacts captured by the IE may be under- or over-estimated. For instance, registered beneficiaries may be more informed and better-networked than non-registered beneficiaries, which may lead them to have better outcomes even in the absence of the program, leading the IE to over-estimate the program effects. Conversely, non-registered beneficiaries may be poorer and may have a higher return to receiving the transfer (for instance through lower substitution effects), in which case the IE may be under-estimating the program’s effects.

Data collected during the unannounced site visits indicates that on average, 13.1% of beneficiaries on site at the time of the visits were not registered beneficiaries. Similarly, timesheet records show that on average, 13.6% of the workers listed on the timesheets were not registered beneficiaries. On average there are 65 registered beneficiaries per sub-project and 10 non-registered beneficiaries listed on timesheets. While this is not definitive evidence of rotation, as these non-registered beneficiaries may have simply been alternates (i.e., replacements from the same household who are nominated to work in the event of absence by the beneficiary), at least a portion of these additional workers are likely to come from households not captured by the IE. Beyond the potentially over- or understated program impacts captured by the IE, the existence of rotational practices would also imply that the actual program impacts may have been diluted, as the same total transfer amount was distributed across a larger number of beneficiaries.

## **IV. Descriptive analysis**

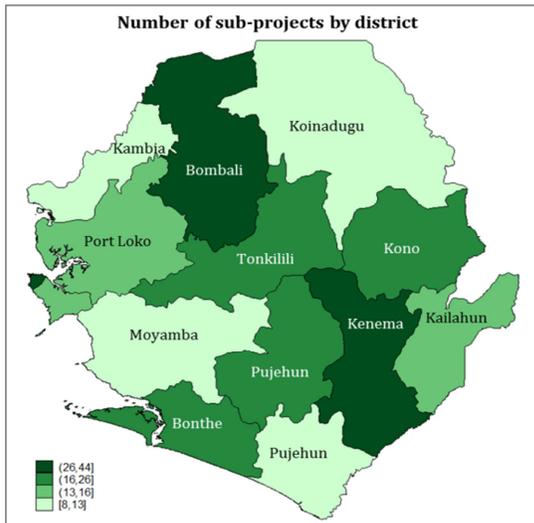
### **A. Sub-project characteristics**

The CfW sub-projects have national coverage and are spread fairly evenly across urban and rural areas. Figure 1a shows the geographical distribution of all the sub-projects covered under the IE; Figure 1b shows the precise location of the treatment sites based on GPS data.<sup>9</sup>

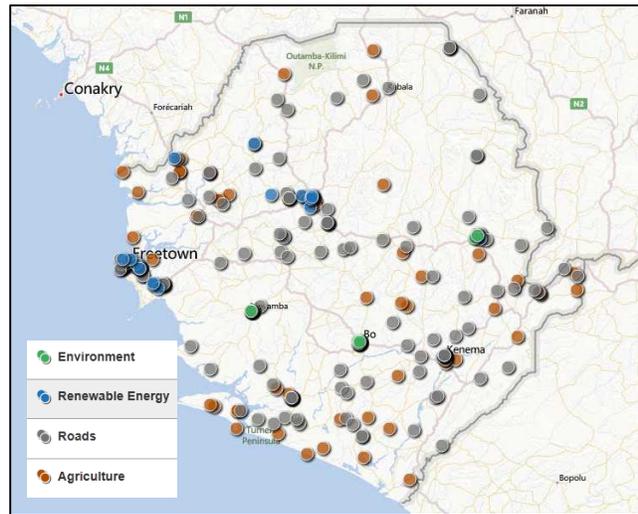
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<sup>9</sup> GPS data was only collected for treatment sites.

**Figure 1a: Geographical distribution of sub-projects**



**Figure 2b: Geographical location of treatment sites**



The most common types of sub-projects are feeder road rehabilitation projects (67%), inland valley swamp rice (9%), and other agriculture (13%). The average labor intensity of the sub-projects is 60 percent, but there is some variance, with roads sub-projects typically lower in labor intensity.

## B. Beneficiary characteristics

The average age among beneficiaries is 27 and 92% of beneficiaries are between the ages of 15 and 35, and hence fall within the eligible age group for the CfW program. The program design emphasized adequate participation of female beneficiaries and this goal seems to have been met to some extent – the average female share of beneficiaries is 33%. Female participation varies by sub-project type, with the share of female beneficiaries is highest among IVS rice sub-projects (43%) and lowest among roads sub-projects (30%).

Nearly half of beneficiaries (49%) worked in the agricultural sector as their main occupation outside of the CfW program. Other top occupation categories outside of the program included: students (15%), street and related sales and services (10%), and building and related trades workers (4%).

More than half (56%) of beneficiaries had not engaged in any remunerated work in the month prior to participating in the program. Among the 44% who had paid work outside the program, average daily earnings were \$2.5 and the majority (75%) was self-employed. Almost half (46%) of the beneficiaries reported that they engaged in unpaid family farm work.

Education levels are fairly low among CfW beneficiaries – 52% have less than primary education (i.e., incomplete primary or no schooling), 35% have completed primary, and only 12% have completed secondary or above. The average level of education is lower among female beneficiaries. Nearly 60% of females have no education compared to about 35% for males.

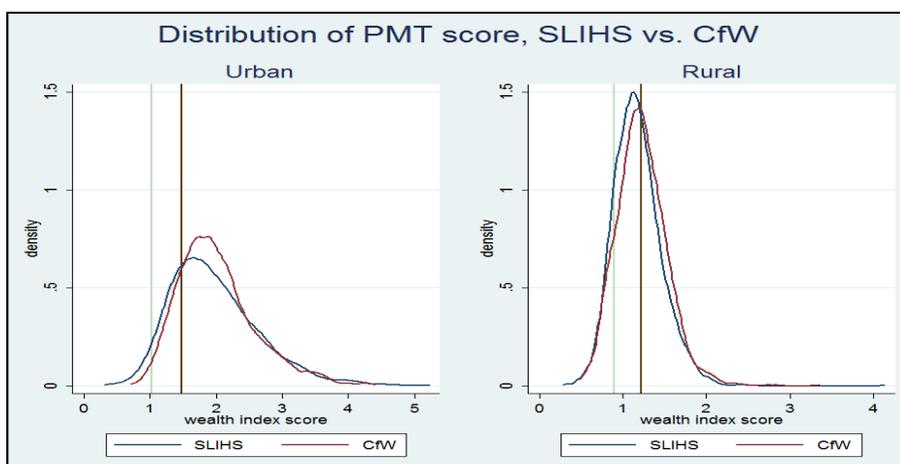
One potential concern with public works programs targeted to youth is that they may attract youth that would otherwise be attending school, leading them to drop out. Our data suggest that for the most part, the program does not lead youth to drop out of school to enter the program: only 3% of beneficiaries who had ever attended school reported that they had stopped attending school to enter the CfW program.

In sum, the data indicate that CfW program primarily reaches youth with low levels of education working in the agricultural sector.

### C. Poverty targeting

Although in practice the program aimed to target youth from vulnerable households, the project had no explicit objective of targeting vulnerable youth; moreover, vulnerability was not defined. Nonetheless, it is worthwhile to assess the program's poverty targeting performance. Construction of a wealth index for beneficiary households and comparison with nationally representative household survey data indicates that the program is not well-targeted to poor households.<sup>10</sup> As shown in 3, the distribution of wealth index scores for CfW beneficiary households is similar to the national sample, suggesting many CfW beneficiaries belong to the upper quintiles.

**Figure 3: Targeting performance of CfW program**



### D. Beneficiary perceptions

Overall, beneficiaries have positive impressions of the program. Among the random sample of beneficiaries interviewed during the unannounced site visits, 90% rated their experience as good or very good. Perceptions of the program were similar for females and males. Beneficiaries are drawn to the program primarily for the financial gain, with 75% of beneficiaries reported pay as the most appealing aspect of the program. Work experience and social aspects, such as development and cohesion of the community, were also cited as important by 11% of beneficiaries.

<sup>10</sup> For this analysis, only data from control households was used to avoid capturing program wealth effects. For the complete targeting study, see Rosas and Solbes (2013).

## V. Main Evaluation Findings

### A. Impacts on economic activity, savings, and asset accumulation

Evaluation estimates suggest that, despite its short-term nature, the CfW program has significant positive impacts on economic activity, savings, and asset accumulation (summarized in Table 2). We find that treatment households are significantly more likely to be engaging in remunerated work. They also have higher reported income. On average, the total value of reported cash and in-kind payments received by household for work in the previous month increases by 26%. Household members in treatment households are also 34% more likely to have had paid work in the last 12 months.

Despite the fact that the CfW program's emphasis was on temporary employment rather than on productive aspects, we find positive effects on some key areas that can be considered as improving household's productive capacity. For instance, treatment households are nearly 4 times more likely to set up a new enterprise than control households. Only 8.9% of control group households reported that someone in the household had set up a new enterprise in the last 3 months, compared to 33.6% in the treatment group. Participation in informal savings groups (*osusus*) also increased by 16%; however, we do not find a corresponding increase in the amount of household savings reported.<sup>11</sup>

Interestingly, the average increase in cash income reported by treatment households (approximately 41,100 Leones) is less than one-third of what these households were entitled to receive under the program over the period under analysis. This discrepancy could potentially be due to a simple substitution effect (i.e., beneficiaries reduced the amount of work outside the program upon entering the program). However, this figure is not much higher (about 51,200 Leones) when calculating it only among households in which the beneficiary reported not having engaged in any paid work prior to entering the CfW program (i.e., those for whom the substitution effect should have been zero). This implies that the difference between the observed increase in income and the expected increase given the program's intended transfer amount cannot be explained by the substitution effect alone.

This finding has several plausible explanations. One such explanation is a household level substitution effect, in which, as a result of one household member entering the program, other non-beneficiary household members reduce the time devoted to work (and thus their income). However, the available data on time use do not suggest this is the case –the IE did not find significant decreases in time spent selling something in the street or time spent working on a farm or with livestock among non-beneficiaries. An alternative explanation is that there may have been payment leakages, for instance due to corruption or fraud, that prevented the full transfer from reaching the beneficiaries. While there is no concrete evidence of payment leakages found by the IE, the program implementers have acknowledged that the payment arrangement in place during the IE (in which contractors were responsible for making payments to beneficiaries) left a high risk of leakage. Another potential explanation is rotation, a practice in which a sub-project accepts more

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<sup>11</sup> This result holds even when comparing the control group to the group that received CfW plus training on money management.

beneficiaries working fewer days than it is designed to, typically because socially it is perceived as more fair. This had been a common practice in previous rounds, and although the data does not allow us to ascertain the exact extent to which it occurred, it does provide an indication that it likely rotation occurred. A discussion of the evidence on rotation can be found in Section VIII.

The results of the IE also indicate that program has impacts on the beneficiary households' asset accumulation, namely in small livestock assets.<sup>12</sup> Treatment households are 34% more likely to own goats or pigs and the number of poultry owned is 26% higher than control households. The fact that the IE shows these impacts on asset accumulation is an important finding, as it shows that the program supports households in accumulating assets, thereby providing them with a buffer against future shocks.

### **B. Health-related impacts**

The evaluation also aimed to capture program impacts on households' health-seeking behavior. The IE finds positive impacts on beneficiary households' utilization of health services, particularly for young male children. These results are summarized in Table 3. On average, treated households reported 12% more visits to health facilities than the control group and the proportion of boys aged 0 to 5 who were taken to a health facility when sick was 9% higher in treatment households. If we consider all boys ages 0 to 5 irrespective of their health status at the time they were taken to the doctor, the increase is even higher (23%).<sup>13</sup>

In addition, the IE finds that spending on drugs and medications increases. Treated households reported spending 18% more on drugs and medications in the previous month than the control group. These results are in line with the finding of increased utilization of health services.

These findings are particularly interesting as the intervention did not have any specific design aspects intended to encourage more health-seeking behavior. Since part of the transfer was spent on health, this suggests that the transfer may have relieved a financial constraint that beneficiary households faced in accessing health services.

### **C. Impacts on other household expenditures**

The evaluation included a short consumption module to capture program impacts on key expenditure categories. The main expenditure categories included were: utilities (e.g., water, electricity, fuel, phones), food, children's schooling, hygiene, home improvements, transfers out to non-household members, cigarettes and tobacco, and festivities.

In addition to accumulating small assets and starting up new businesses, beneficiary households used a portion of the transfers on important household expenditures. The IE shows that program has positive impacts on beneficiary households' spending on food, in line with the CfW design as a mechanism to support beneficiary households in meeting their food needs, particularly in the face

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<sup>12</sup> Households in the treatment group are also more likely to own a motorbike – 15% compared to 10% in control households. This points to the fact that the program is not very well-targeted, as in the nationally representative data from the 2011 SLIHS, less than 5% of poor households own motorbikes.

<sup>13</sup> There was no effect was found for girls or other household members.

of rising food prices (see Table 4). Treatment households reported spending 8% more on food in the past month than control households.<sup>14</sup> Household expenditures on hygiene products and on home improvements also increased, by 15% and 33%, respectively.<sup>15</sup>

## VI. Conclusions

Public works have become a popular policy instrument for protecting the poor from income shocks. They have the added perceived benefit of creating useful public goods or services for the communities, making them particularly attractive for post-conflict societies. However, increasingly their development effectiveness is being judged, not just by the degree of stabilization they provide during adverse economic shocks but also by their ability to improve the overall productivity of beneficiary households through investments in productive assets and human capital development.

Using this lens we provide evidence around the very short term effectiveness a Cash for Work program in Sierra Leone targeted at unemployed youth in poor and vulnerable communities to mitigate impacts from the global food, fuel, and financial crises. The phase-in implementation of the program was exploited to implement a community-level randomized control trial which helps measure the impacts of the program on household outcomes over a period of three months,

We find that, as per design, the program succeed in attracting young people (ages 15-35) with low levels of education who were predominantly working in the agricultural sector.

As a result of program participation, household monthly income increases by 26 percent. Part of the increased income is spent on food, health services, hygiene products, and home improvements. The CfW program appears to have been a highly productive safety net for beneficiary households. Participation in the CfW program significantly increased the likelihood of enterprise creation for households. Further, program participation also boosted participation in informal savings groups. However, we do not find a corresponding increase in the amount of household savings reported. We also find that the CfW program has positive impacts on the beneficiary households' asset accumulation in terms of small livestock assets. Program participation also impacted household welfare in other more direct ways. We find positive impacts on beneficiary households' utilization of health services, particularly for young male children, but not education services.

This impact evaluation has generated clear evidence that even labor-intensive public works programs, even when short-term in nature, can act as productive safety nets by improving households' overall welfare and enabling them to accumulate assets and enter into new economic activities that can protect them against future shocks. It has also shown that these programs can have important positive spillover effects for women in beneficiary households. Furthermore, it has shown that public works programs are capable of delivering strong results in post-conflict environments.

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<sup>14</sup> Sierra Leone Youth Employment Support Project Emergency Project Paper (June 2010).

<sup>15</sup> The IE also finds some puzzling decreases in the household spending on fuel (19%) for lighting, heating, and cooking.

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## Tables

**Table 1: Balance tests**

Variable	Mean in treatment	Mean in control	Statistically significant difference
<i>Urban, % of households</i>	48.7	50.1	No
<i>District code</i>	26.4	27.2	No
<i>Number of children ages 6-14</i>	1.1	1.0	No
<i>Age of head</i>	41.2	40.9	No
<i>Head is female, % of households</i>	24.4	17.7	Yes***
<i>Head ever attended school, % of households</i>	41.6	42.4	No
<i>Highest degree head attained (categorical, 1-11)</i>	3.3	3.4	No
<i>Head did not complete primary, % of households</i>	63.4	62.4	No
<i>Distance to main water source, minutes</i>	9.1	8.7	No

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 2: Impacts on economic activity, savings, and asset accumulation**

	Value of cash and in-kind payments (Le., past month)	% of HH members working for cash in last 12 mos.	Dummy if HH set up new enterprise in last 3 mos.	Dummy if HH participated in an <i>osusu</i> in last 3 months	Dummy if HH owns goats or pigs	Number of poultry owned by HH
ITT	58,852 [18,229]***	0.112 [0.0122]***	0.247 [0.0283]***	0.0408 [0.0206]**	0.057 [0.0247]**	0.744 [0.248]***
Control	224,184	0.332	0.089	0.260	0.168	2.973
N	5,506	5,502	5,487	5,497	5,498	5,499
LATE	67,008 [20,778]***	0.128 [0.0140]***	0.282 [0.0323]***	0.0464 [0.0236]**	0.0645 [0.0283]**	0.847 [0.284]***
Control	217,232	0.319	0.0594	0.255	0.161	2.885
N	5,506	5,502	5,487	5,497	5,498	5,499

Note: Standard errors in brackets.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3: Impacts on utilization of health services**

	Number of visits to health facility in past 4 weeks	Number of boys 0-5 who were sick and went to a health facility in past 4 weeks	Number of boys 0-5 who went to a health facility in past 4 weeks	Total spent on drugs or medication in the past 4 weeks
ITT	0.447 [0.256]*	0.0774 [0.0309]**	0.0773 [0.0262]***	11,119 [4,577]**
Control	3.633	0.846	0.337	61,072
N	5,506	713	1,559	5,506
LATE	0.509 [0.293]*	0.0868 [0.0352]**	0.0852 [0.0291]***	12,660 [5,232]**
Control	3.580	0.837	0.331	59,759
N	5,506	713	1,559	5,506

Note: Standard errors in brackets.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4: Impacts on household expenditures**

	Amount HH spent on food in past month (Leones)	Amount HH spent on hygiene products (past month)	Amount HH spent on household improvements (past 2 months)
ITT	21,994 [12,383]*	3,939 [2,192]*	7,466 [3,357]**
Control	269,614	25,440	22,626
N	5,100	5,215	
LATE	24,871 [14,032]*	4,490 [2,492]*	8,488 [3,807]**
Control	267,177	24,970	21,761
N	5,100	5,215	5,185

Note: Standard errors in brackets.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1