



Can unconditional cash transfers raise long-term living standards? Evidence from Zambia[☆]



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ABSTRACT

In Africa, state-sponsored cash transfer programs now reach nearly 50 million people. Do these programs raise long-term living standards? We examine this question using experimental data from two unconditional cash transfer programs implemented by the Zambian Government. We find far-reaching effects of the programs both on food security and consumption as well as on a range of productive outcomes. After three years, household spending is on average 67 percent larger than the value of the transfer received, implying a sizeable multiplier effect, which works through increased non-farm activity and agricultural production.

1. Introduction

With one-fifth of the world's population still living in extreme poverty there remains a vital need to identify interventions which can lead to sustained increases in living standards. Recently several evaluations of 'graduation programs' have generated enthusiasm about their potential to offer a permanent escape from poverty for the world's poorest. These programs, exemplified by the NGO BRAC in Bangladesh, provide a 'big-push' to extremely poor households consisting of cash transfers, livestock assets, training and supervision in the use of the asset, life-skills training and eventually access to formal sector credit at market interest rates. An evaluation conducted by BRAC itself in Bangladesh reported a 40 percent increase in consumption four years after the supervision and other training support ended as well as a significantly larger productive asset base relative to a non-experimental comparison group (Raza et al., 2012). Subsequently, this model was subject to a multi-site randomized control trial (RCT) in six different countries across three continents by the Graduation Program Consortium. Results of program impacts across both consumption and economic domains one year after the supervisory visits ended, and approximately 2–3 years after the initial transfer of assets, show continued positive impacts on both consumption/food-security and

productive assets though with some variation cross sites (Banerjee et al., 2015). Importantly, given the large upfront cost of the big-push graduation model and the intensive hand-holding it entails, a cost-benefit assessment shows net positive returns in five of the six sites, suggesting that this type of approach makes financial sense. A more recent paper, which is based on data from BRAC beneficiaries in Bangladesh, also calculates positive benefit-cost ratios as well as large increases in more productive labor activities among women four years after the initial transfer of assets (Bandiera et al., 2016).

The BRAC approach serves as a template for similar interventions which are currently estimated to reach almost half a million people in Bangladesh and another half a million across 20 countries world-wide. Meanwhile, a recent review by the World Bank (2015) estimates that around 150 countries in the developing world have cash assistance programs and that approximately 800 million people are reached by some type of cash transfer program. Significant expansion of cash transfer programs has recently occurred in sub-Saharan Africa (SSA), with a doubling of development oriented (i.e. non-humanitarian) programs from 20 to 41 between 2010 and 2015, reaching an estimated 8–10 million households or 50 million individuals (World Bank, 2015; Garcia and Moore, 2012). Such programs are of course fundamentally

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different from graduation programs both in objective and implementation. First, their primary objective is poverty mitigation rather than economic empowerment, although many large programs on the continent do have economic empowerment as a secondary objective.¹ And second, cash transfer programs tend to be nationally owned and implemented, while the graduation model to this date is only implemented in the NGO sector, likely due to its complexity and the large initial upfront investment required to launch the programs. Given the relative simplicity of the unconditional cash transfer model, its popularity world-wide, and the sheer number of beneficiaries currently being reached, an obvious question is whether it has the potential to go beyond just protecting consumption and generate impacts on productive activity as well, which could ultimately lead to permanent increases in living standards.

How could a small, predictable sum of money, paid monthly or bimonthly lead to long-term increases in living standards? Most theories on poverty cite credit or informational constraints, lack of skills, lack of access to instruments to manage risk, and present bias (myopia) as some of the key determinants of poverty, and the graduation model addresses several of these constraints directly. An unconditional cash transfer in its simplest form, in other words absent any explicit message or complementary intervention, would in principle only directly address two constraints—liquidity and insurance. Although targeting is to the ultra-poor, even these households might spend some of the transfer on agricultural production as a way to ensure their food security, and lumpy or unpredictable transfers might be used for investment. The literature to date on the economic impacts of cash transfers is thin, both because this is not their primary aim, and because most evaluations do not follow households long enough for productive effects to establish themselves. [Gertler et al. \(2012\)](#) report positive impacts of Mexico's Progresa (now called Prospera) conditional cash transfer (CCT) on livestock holdings and small business activity 18 months after program initiation, and show that increases in consumption in the original treatment group were larger than the control group that entered the program four years later, suggesting a multiplier effect of the cash transfer over time. On the other hand, [Maluccio \(2010\)](#) did not find any productive effects of a similar conditional cash transfer program in Nicaragua after 18 months. Recently, the Food and Agricultural Organization (FAO) in collaboration with UNICEF began a major initiative to document the productive impacts of national cash transfer programs in SSA. A summary of initial results across seven unconditional cash transfer programs, all implemented by governments, suggests that there are impacts of such programs on livestock assets, engagement in non-farm business activity, and on-farm investment in fertilizer and seeds ([Covarrubias et al., 2012](#); [FAO, 2016](#); [Handa et al., 2016a](#); [PtoP, 2014](#)), with variations depending on the size and predictability of the transfer and the demographic composition of target households. And recently, Give Directly, an NGO operating in East Africa, also reported large impacts of an unconditional cash transfer on productive outcomes such as livestock, durable assets, and agriculture and business revenue after only nine months of transfers ([Haushofer and Shapiro, 2016](#)).

In 2010, the Zambian government began testing two different cash transfer models to inform future scale-up decisions. Each program was accompanied by a randomized control trial (RCT) with one baseline and several longitudinal post-intervention follow-ups starting at 24-months. Both models entailed a flat unconditional cash transfer of approximately \$12 (\$24 PPP) per month paid every two months. The Child Grant Program (CGP) targeted all households with a child under age five in three poor rural districts, while the Multiple Category Targeted Program (MCP) targeted vulnerable households, those with a female or elderly head keeping orphans, or a household with a disabled member, in two rural districts; ninety percent of beneficiaries fell below the national extreme

poverty line in each program and median beneficiary consumption was around 30 US cents per person per day. The distinct demographic criteria across the two programs meant that the same basic program was delivered to extremely poor households but with very different demographic make-ups. The CGP is composed of younger households with more prime-age members while MCP households actually have an absence of prime-age members, and instead many more adolescents and elderly care-takers. Both sets of beneficiaries are equally poor, so the difference in their demographic composition allows us to observe whether the size and pattern of impacts across programs is similar, which enhances the generalizability of our evidence.

We present comparative results for both programs across eight major domains covering both protective and productive outcomes, even though the primary objective of the programs themselves is protective. The domains are consumption, food security, assets, income and revenue, finance and debt, relative poverty, children's material needs and schooling. We find strong impacts of both programs not just on protective domains such as consumption, food security, and children's material needs, but also on productive ones, which indicates that these two programs had a transformative effect on recipient households. Also of interest is that impacts do not differ significantly across household eligibility type despite the very different age composition of members. The large impacts on both consumption (the primary objective of the programs) and productive activity suggest that transfers were invested and so might lead to sustained improvements in living standards. There are however nuances in terms of specific impacts, especially in productive domains, which we discuss in more detail in the paper. We monetize the consumption, savings and asset accumulation impacts in a one year period and compare this value to the yearly transfer to derive an income multiplier of around 1.67 averaged across both programs. In other words, beneficiary households are able to convert each Kwacha of transfer into an additional 0.67 Kwacha worth of income, suggesting that these programs go well beyond their primary goal of protecting consumption, and that even in the absence of complementary interventions such as those in the graduation model, small, predictable unconditional cash transfers may also contribute to long-term poverty reduction.

In terms of contributions to the literature, [Haushofer and Shapiro \(2016\)](#) note that the long-term effects of UCTs are 'still incompletely understood', especially in developing countries, as are UCTs delivered to populations chosen for reasons other than just poverty such as caretakers of orphans (p37). This paper addresses both these knowledge gaps by providing evidence on two UCTs from a low-income country, neither of which targets explicitly on poverty. Moreover, the two programs are different from the Give Directly (GD) model in that they are implemented by a national government which speaks to potential scalability, and provide the transfer in cash (rather than electronically) which is similar to the vast majority of programs in Africa and also avoids the potential confound of introducing savings or mobile money accounts, thus providing a clean assessment of cash alone. Also, GD makes one lump-sum transfer (average transfer amount of US 709 PPP)² whereas most national programs in Africa tend to provide smaller grants smoothed over a longer period of time as is the case in the two programs analysed in this paper. Our evidence thus comes from two programs which better represent the typical program governments introduce to address poverty. Can these programs also contribute to economic growth by raising productivity? This is the key question we address.

Three published articles and one working paper have used these data to analyse subsets of the indicators reported in this paper. [Hjelm et al. \(2017\)](#) estimate the impact of these two programs on perceived stress, and investigate food security as one potential pathway through which the

¹ For example, the Malawi Social Cash Transfer Program and Ghana's Livelihood Empowerment Against Poverty both mention economic empowerment goals as additional program objectives.

² Unconditional cash transfers are usually defined as *regular* and predictable monetary transfers designed to support poor and vulnerable people and paid to the beneficiaries without any behavioural requirement. In this respect, the GD lump-sum transfer would not be technically classified as a UCT.

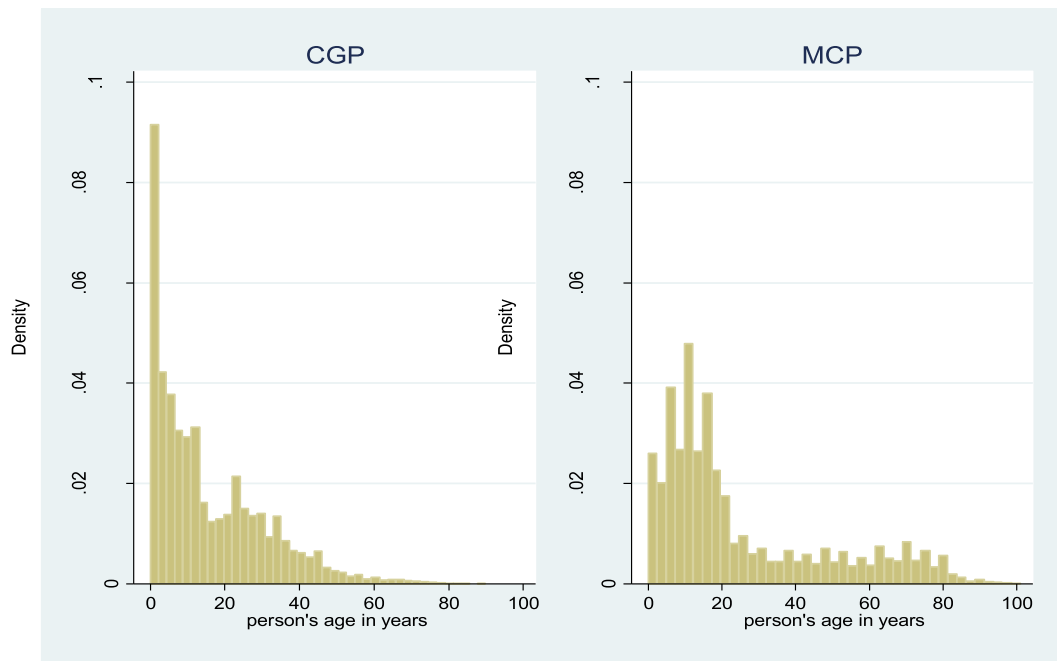


Fig. 1. Age distribution of the CGP and MCP samples at baseline.

programs impact perceived stress. While perceived stress is not used in the current paper, food security is reported here. Handa et al. (2016a) present results from the 24-month follow-up of the CGP only, and use most of the indicators reported here. However, that paper does not present results for the MCP nor for the 36-month follow-up, nor does it attempt any calculation of income multipliers which is one of the main innovations in the current paper. Handa et al. (2016b) provides a detailed investigation into the pattern of impacts on school enrolment in the CGP only. Finally, a working paper (Natali et al., 2016) provides a focused analysis of savings behaviour in the CGP, non-financial barriers to savings and whether savings have increased women's economic position in the household. None of these existing papers present the full range of indicators across all waves and domains for both programs as we do here, and none of them are thus in a position to compute multiplier effects as we do in this paper.

2. Overview of the two programs and study design

Both the CGP and MCP were implemented by the Government of Zambia's Ministry of Community Development, Mother & Child Health (MCDMCH),³ and provided a flat transfer of US\$12 per month to beneficiaries irrespective of household size. Payments were unconditional and made bimonthly in person by Ministry employees at designated pay-points. The CGP was implemented in the three rural districts of Shangombo, Kalabo (Western Province) and Kaputa (Northern Province) while the MCP was implemented in the rural districts of Serenje (Central Province) and Kaputa (Northern Province). All five districts are extremely poor such that, though the programs did not target on poverty at the household level, 90 percent of beneficiaries were below the national extreme poverty line, and median consumption was around 30 US cents per person per day; targeting was therefore effective in reaching the poorest of the poor. Using baseline data, we estimated the transfer to represent on average 24 percent of pre-program consumption.⁴ Analysis of administrative data by the study team indicated that not only were

payments made on schedule during the study period but over 95 per cent of beneficiaries collected their payments on time. An operations module fielded as part of the evaluation did not reveal any indication of leakage due to bribes or requests for payments from village elders or programme officials (AIR, 2014; AIR, 2015).

While program parameters are identical, a key difference in design is the demographic eligibility criterion. The CGP was targeted to households with a child under age 3 while the MCP was targeted to households with various types of vulnerabilities, leading to very different family structures in the two programs. As depicted in Fig. 1, the CGP beneficiaries were typically young families with prime-age members and young children while the MCP beneficiaries were 'missing generation' families with very few prime-age members and many adolescents. For example, the mean recipient age in the CGP was 30 compared to a mean age of 56 in the MCP. These stark differences in demographic composition allow for an interesting assessment of whether the programs lead to similar impacts, which would strengthen the external validity of the findings.

Both the CGP and the MCP are multisite RCTs. In each district, community welfare assistance committees (CWACs – also referred to as clusters or communities throughout the paper) were first randomly selected to enter the study and households were subsequently sampled from each selected community. After baseline data collection, clusters were then randomly assigned to intervention or delayed entry control status via a public coin toss conducted by the Permanent Secretary of the MCDMCH.⁵ In the MCP, 92 communities were randomly selected for the study (46 from each district) whereas in the CGP 90 clusters were randomly selected (30 within each district). The delayed entry control group was expected to start receiving the grant after the evaluations had terminated in late 2014. However, the Government of Zambia decided to consolidate its various grant programs into one unified program and common eligibility criteria in 2015. The new program began scale-up in new districts, and re-targeting of households in the evaluation districts did not commence until early 2016. Thus, households in the treatment areas continued to receive transfers under their existing program (CGP or

³ The ministry was recently renamed to Ministry of Community Development and Social Services (MCDSS).

⁴ The transfer represents a 27 and a 21 percent increase to the household monthly consumption in the CGP and MCP respectively.

⁵ The experimental design was possible – and satisfies ethical requirements – due to limited financial resources and capacity that would have not allowed the MCDMCH to deliver the program to all eligible households at once.

MCP) until they were re-targeted.

The main household survey instrument was quite comprehensive and included modules on consumption, health, education, housing, agricultural and other productive activities. Most survey items were taken from the Zambia Living Conditions Monitoring Survey (LCMS) or the Demographic & Health Survey, both of which are conducted periodically by the National Statistics Office. The core survey was administered to one main respondent in the household, the biological mother or primary caregiver of the index child in the CGP, or the care-giver or disabled member in the MCP; this was typically the member designated by the program to receive the transfer in treatment communities. A key feature of the instrument is that we implemented the entire consumption module from the LCMS, featuring over 200 food and non-food items, so that we could make strict ‘apples-to-apples’ welfare comparisons between the population in the two programs and the rest of the country, important for assessing the targeting strategy employed by the Ministry.

The evaluation was commissioned by the MCDMCH and UNICEF-Zambia to the American Institutes for Research and the University of North Carolina at Chapel Hill. Data collection was conducted by an independent private firm (Palm Associates) that is unaffiliated with the MCDMCH and the informed consent form did not mention the programs or that the study was commissioned by the MCDMCH. The study underwent ethical review at the American Institutes for Research (AIR) in Washington, D.C. and at the University of Zambia. Questionnaires and summary reports for both programs are available on the Transfer Project website (<http://www.cpc.unc.edu/projects/transfer>). Table 1 provides an overview of program targeting criteria and key timelines.

Table 1
Program parameters and study time lines.

	The Child Grant Programme	The Multiple Category Targeting Programme
Eligibility requirements	The scheme targets households who have children under the age of five (59 months). However, in the evaluation, the eligibility criteria at entry point is for children below 3 years old (36 months) with evidence of under-5 card.	Households that meet one of the following criteria: - A female-headed household keeping orphans - A household with a disabled member - An elderly-headed household (over 60 years old) keeping orphans - A special case, being critically vulnerable
Cash transfer	In 2010, 55 Kwacha (ZMW) a month (equivalent to approximately U.S. \$12) irrespective of household size, an amount deemed sufficient to purchase one meal a day for everyone in the household for one month. Treatment households continued to receive transfers until they were re-targeted in 2016.	In 2011, eligible households receive 60 Kwacha (ZMW) a month (equivalent to approximately U.S. \$12) irrespective of household size, an amount deemed sufficient to purchase one meal a day for everyone in the household for one month. Treatment households continued to receive transfers until they were re-targeted in 2016.
Started	2010	2011
24-month follow-up	2012	2013
36-month follow-up	2013	2014
Location	Three rural districts of Zambia: Kaputa (Northern Province), Kalabo and Shangombo (Western Province)	Two rural districts of Zambia: Serenje (Central Province) and Luwingu (Northern Province)
Sample size	2519 households	3078 households
Unit of randomization	CWAC - Community Welfare Assistance Committees (90 clusters: 45 treatment and 45 control)	CWAC - Community Welfare Assistance Committees (92 clusters: 46 treatment and 46 control)
Method of randomization	Public lottery	Public lottery

3. Data, balance and attrition

3.1. Data

The baseline samples contain 2519 and 3078 households in the CGP and MCP respectively. In both cases, the study sample size was powered to detect significant effects for key program indicators that required the largest sample size. For the CGP this was child anthropometry, while in the MCP this was school attendance among secondary school age children. Sample size requirements for household level indicators such as consumption, food security and livestock ownership were smaller than for these individual indicators.

3.2. Baseline descriptive statistics

As mentioned earlier, due to the strong geographic targeting of the two programs, households are extremely poor, with mean per capita consumption at baseline of ZMW 41 in the CGP and ZMW 51 in the MCP—the latter is in 2011 units whereas the former is in 2010 units (see Table 2). When converted to US dollars at prevailing exchange rates this represents approximately 30 US cents per person per day. This low level of consumption is consistent with low levels of food security, with only around 15 (MCP) to 20 (CGP) percent of the sample not or rarely worrying about food, and 57 percent of the combined sample not going a whole day without eating in the last four weeks. Households also have low levels of education—30 percent or more of respondents had never attended school. The key difference across the two samples is driven by the distinctive targeting criteria of the two programs which leads to notably different demographic compositions: households are slightly larger in the CGP (5.7 vs 5.0 in the MCP), have more children under 5 but less secondary school-aged children (age 13–18); they also have more prime-age adults (age 19–35) and less older people. This is also reflected in the respondent's characteristics who are much older in the MCP (56 vs 30 in the CGP). Respondents in the CGP are more likely to be married (around 75 percent) while in the MCP respondent are mostly widowed (55 percent) or divorced/separated (10 percent). Finally, in the CGP virtually all respondent are women compared to 75 percent in the MCP.

The individual sub-group indicators shown in Table 3 are fairly comparable across the two samples, with slightly higher baseline savings rates among women in the CGP and slightly higher fulfilment of materials needs among children 5–17 years in the MCP though in both samples the largest deprivation for children this age comes from lack of shoes. As the CGP is focused on families with young children, we also collected anthropometric measurements for children under 5 years of age, which are reported in the Appendix (Table A2)—these indicate that 35 percent of children were stunted and 16 percent underweight at baseline.

3.3. Balance

The community level randomization for both studies resulted in balance across virtually all major program indicators. Balance tests for household characteristics and selected outcome indicators are shown in Table 2. For the CGP only two indicators are significantly different at baseline between intervention and control groups (proportion of respondents divorced/separated, and whether household owned any goats). For the MCP, one indicator—value of harvested crop—is statistically significant. Table 3 reports balance tests for indicators related to specific sub-groups of household members—women, children age 5–17 and children age 11–17. The only statistically significant differences at baseline is for school attendance among children 11–17 in the MCP, where attendance is slightly lower in the intervention group (75 versus 79 percent).

3.4. Attrition

Overall household attrition by wave three was less than five percent

Table 2

Baseline balance tests for key household and respondent characteristics.

	CGP (N = 2272)			MCP (N = 2938)		
	Control	Treatment	P-value of diff	Control	Treatment	P-value of diff
Respondent widowed	0.06	0.06	0.85	0.55	0.56	0.76
Respondent never married	0.11	0.11	0.91	0.04	0.03	0.52
Respondent divorced or separated	0.09	0.06	0.03	0.10	0.09	0.79
Respondent ever attended school	0.70	0.74	0.28	0.64	0.64	0.86
Female respondent	0.99	0.99	0.15	0.75	0.76	0.70
Age of respondent (years)	29.57	29.91	0.62	56.97	56.16	0.51
Household size	5.63	5.76	0.45	5.01	4.98	0.90
Number of members aged 0–5 years	1.90	1.89	0.85	0.68	0.72	0.49
Number of members aged 6–12 years	1.27	1.26	0.93	1.22	1.31	0.23
Number of members aged 13–18 years	0.53	0.60	0.15	0.98	0.92	0.25
Number of members aged 19–35 years	1.30	1.36	0.23	0.82	0.76	0.43
Number of members aged 36–55 years	0.53	0.54	0.89	0.54	0.52	0.53
Number of members aged 56–69 years	0.07	0.07	0.68	0.37	0.39	0.43
Number of members aged 70 years or older	0.03	0.03	0.59	0.40	0.36	0.22
Total household exp. per person (ZMW)	39.56	41.55	0.46	52.04	50.23	0.55
Asset index	0.27	0.31	0.22	0.44	0.39	0.16
Livestock index	0.20	0.22	0.39	0.30	0.26	0.28
Productive asset index	0.32	0.35	0.24	0.74	0.72	0.50
Value of harvest (ZMW)	329.10	360.17	0.51	1058.29	876.36	0.05
Does not (or rarely) worry about food	0.21	0.20	0.95	0.15	0.15	0.99
Does not (or rarely) go to sleep hungry at night	0.43	0.50	0.13	0.54	0.52	0.44
Does not (or rarely) go whole day w/o eating	0.50	0.56	0.22	0.60	0.58	0.72
Food security scale (0–24)	8.74	9.05	0.60	9.35	9.26	0.85
Owned any chickens in last 12 months	0.43	0.44	0.88	0.50	0.45	0.21
Owned any goats in last 12 months	0.01	0.03	0.03	0.13	0.10	0.17
Owns a pick	0.03	0.03	0.99	0.09	0.07	0.17

P-values are reported from Wald tests on the equality of means of Treatment and Control for each variable. Standard errors are clustered at the community level.

Table 3

Baseline balance tests for sub-group indicators.

	CGP			MCP		
	Control	Treatment	P-value of diff.	Control	Treatment	P-value of diff.
Female respondent level indicators						
Holding any savings	0.16	0.18	0.39	0.12	0.12	0.70
Amount saved last month (ZMW)	20.63	17.85	0.72	15.65	6.36	0.23
Amount saved last month (ZMW)	0.59	0.66	0.54	0.41	0.40	0.88
Believes life will be better in future	0.67	0.70	0.56	0.77	0.80	0.21
Material needs children 5–17 years						
Child has shoes	0.14	0.14	0.91	0.22	0.19	0.27
Child has two sets of clothing	0.63	0.64	0.87	0.79	0.74	0.14
Child has blanket	0.58	0.56	0.79	0.63	0.58	0.24
All needs met (shoes, blanket, clothes)	0.11	0.11	0.92	0.17	0.14	0.20
Schooling indicators children 11–17 years						
Currently attending school	0.79	0.81	0.57	0.80	0.75	0.04
Full attendance prior week	0.60	0.65	0.19	0.64	0.60	0.13
Number of days attended prior week	3.48	3.61	0.38	3.55	3.34	0.06

P-values are reported from Wald tests on the equality of means of Treatment and Control for each variable. Standard errors are clustered at the community level. Sample sizes for CGP and MCP respectively are: Female respondents: 2221 and 2,512, children 5–17: 4409 and 6,409, children 11–17: 1701 and 3594.

for both programs. However, around ten percent of households in the CGP sample were not interviewed at wave two due to the drying up of Lake Cheshi in the Kaputa district which forced many households to relocate temporarily—most of these households were subsequently recovered in wave three. Attrition rates are not statistically significantly different between treatment and control arms. An analysis of differential attrition is shown in the appendix (Tables A3 and A4) and is based on our final analytical sample which is the full panel of households, those that appear in all three survey waves, and thus excludes the CGP households that were not interviewed at wave two even though they were subsequently interviewed at wave three. For the CGP, only two of the nearly 50 indicators are significantly different between the attriters in treatment and control groups while there is no significant difference in any

indicator across the two groups in the MCP sample.⁶ While overall attrition does not affect internal validity, there are a few differences between the panel and the original sample which could affect generalizability to the entire target population (external validity). This is an important consideration for the MCDMCH so we weight our estimates by the inverse of the probability of appearing in all three waves, using an extensive list of baseline covariates including household demographic composition, district of residence, characteristics of the main respondent, consumption, assets, and exposure to shocks. This weighting approach to account for general attrition is discussed in Shadish et al. (2002), and is akin to selection on observables (Imbens, 2004; Rosenbaum and Rubin, 1983; Heckman et al., 1997).⁷

⁶ We subject the data to sensitivity analysis using Lee bounds (Lee, 2009), which provides a range of estimates using different assumptions about attrition. These are discussed below.

⁷ Estimates with and without the inverse probability weights are similar. Nevertheless, we choose to use the weights to ensure results are consistent with the official evaluation documents that are publicly available.

Table 4
Indicator list by wave and domain.

Domain	Indicators	Level	Baseline		24-months		36-months	
			MCP	CGP	MCP	CGP	MCP	CGP
Consumption	Overall per capita consumption ^a	Household	x	x	x	x	x	x
	Food consumption per capita		x	x	x	x	x	x
	Non-food consumption per capita		x	x	x	x	x	x
Food security	Does not (or rarely) worry about food	Household	x	x	x	x	x	x
	Able to eat preferred food most of the times		x	x	x	x	x	x
	Does not (or rarely) eat food he/she does not want to eat due to lack of resources		x	x	x	x	x	x
	Does not(or rarely) eat smaller meal than needed		x	x	x	x	x	x
	Does not (or rarely) eat fewer meals because there is not enough food		x	x	x	x	x	x
	Never (or rarely) no food to eat because of lack of resources		x	x	x	x	x	x
	Does not (or rarely) go to sleep hungry		x	x	x	x	x	x
	Does not (or rarely) go a whole day/night without eating		x	x	x	x	x	x
	Food security scale (0–24 where higher means more food secure) ^a		x	x	x	x	x	x
	Domestic Asset index	Household	x	x	x	x	x	x
Assets	Livestock index		x	x	x	x	x	x
	Productive index		x	x	x	x	x	x
Finance/debt	Whether woman currently saving in cash	Woman	x	x	x	x	x	x
	Amount saved by women	Household	x	x	x	x	x	x
	Whether household has new loan				x		x	x
	Reduction in the amount borrowed				x		x	x
	Not having an outstanding longer-term loan (loans taken out more than 6 months before the follow-up considered)				x		x	x
	Reduction in the amount owed				x		x	x
	Value of harvest	Household	x	x	x	x	x	x ^b
Income and revenues	Spending on agricultural inputs		x	x	x	x	x	x
	Operating a NFE				x	x	x	x
	Revenues from NFEs	Household			x	x	x	x
Relative (and/or subjective) Poverty	Does not consider household very poor		x	x	x	x	x	x
	Better off compared to 12 months ago		x	x	x	x	x	x
	Think life will be better in either 1, 3 or 5 years	Woman	x	x	x	x	x	x
Material needs	Shoes	Child (5–17 years)	x	x	x	x	x	x
	Blanket		x	x	x	x	x	x
	Two sets of clothes		x	x	x	x	x	x
	All needs met ^a		x	x	x	x	x	x
Schooling	School attendance	Child (11–17 years)	x	x	x	x	x	x
	Days attended in prior week		x	x	x	x	x	x
Nutrition of young children [CGP only]	Not underweight	Child (0–59 months)		x		x		x
	Not wasted			x		x		x
	Not stunted			x		x		x

^a Denotes lead indicators in that domain. In domains without a lead or summary indicator, an index is created based on all the indicators listed in that domain. X denotes indicator was included in the wave and study. The definition of each indicator is provided in Table A1 in the Appendix.

^b We use crop figures collected at a special 30-month follow-up which referred to the same crop season that the 36-month follow-up would have referred to.

4. Methodology and key measures

4.1. Methodology

We estimate program impacts using a difference-in-differences (DD) model augmented with a vector of baseline covariates and allowing for differential impacts at 24- and 36-months. The core estimating equation is

$$Y_{ijt} = \alpha + \beta_T T_j + \beta_{R2}(R2) + \beta_{R3}(R3) + \beta_{TR2}(T_j * R2) + \beta_{TR3}(T_j * R3) + \sum_{k=1}^K \theta_k X_{ki} + \varepsilon_{ijt}$$

In this framework Y_{ijt} is the outcome indicator for the household/woman/child i in community j at time (round) t . T_j is a dummy equal to one if in the treatment group, $R2$ and $R3$ capture the two follow-ups at 24- and 36-months respectively and β_{TR2} and β_{TR3} capture the intent-to-treat (ITT) effects at 24- and 36-months respectively; X is a set of pre-treatment demographic controls and ε is the error term. Regressions are estimated using OLS with robust standard errors clustered at the community level. We restrict our sample to the full panel, that is, to only households that appear in all three waves, although results are the same

when we relax this assumption and use households that appear in at least two waves. For all outcomes, we have estimated both unadjusted and covariate adjusted impacts but report only the adjusted results here due to space constraints. Adjusted regressions include pre-treatment measures for household demographic composition and size (logged), respondent's age, education and marital status, and district dummy variables. For child outcomes, we also included the age and sex of the child.⁸

Some of our outcome variables were not collected at baseline (see Table 4) so for these we estimate single difference models at 24- and/or 36-months, controlling for the same set of pre-treatment covariates. These estimates naturally rely on baseline equivalence for identification. The key assumption behind the DD is that of parallel trends. We do not have multiple pre-treatment data points to explicitly test for differences in trends between treatment arms but control communities are from the same districts as treatment ones which makes this assumption more

⁸ We used baseline age and gender for all child outcomes apart from anthropometric indicators for which we used contemporaneous age and gender; this was done in order to retain in the analysis infants born after baseline in panel households that would have otherwise not been included using baseline age and gender.

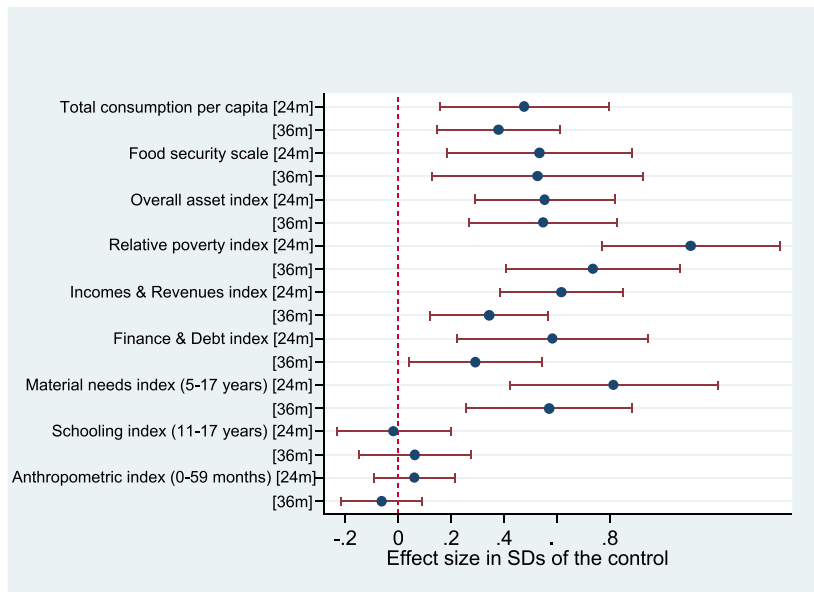


Fig. 2. Intent-to-treat effects in nine domain indices by wave (CGP).

Notes: Estimates are based on difference in differences (single difference for the 'Incomes & Revenues' indices and the 'Finance & Debt' index at 36-months). Consumption, food security and child material needs indices are standardized measures against the control group within each round; the remaining summary indices are computed as the equally weighted average of z-scores of each indicator within the domain, then standardized against the control group within each round. Impact estimates are mean standardized ITTs, therefore effect sizes are expressed in SD of the control group. Robust standard errors are clustered at the community level. Confidence intervals are adjusted using Sidak-Bonferroni. Estimates include controls for respondent's age, education and marital status, household size and household demographic composition, and districts. The Finance & Debt index at 24-months does not include debt and credit indicators; see text for further details.

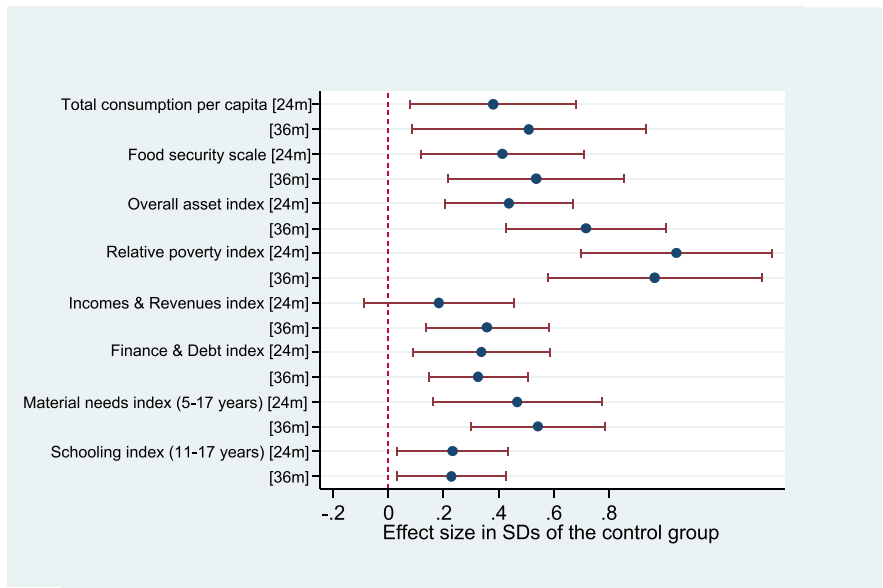


Fig. 3. Intent-to-treat effects in eight domain indices by wave (MCP).

Notes: Estimates are based on difference in differences (single difference for Income & Revenues and Finance & Debt indices). Consumption, food security and child material needs indices are standardized measures against the control group within each round; the remaining summary indices are computed as the equally weighted average of z-scores of each indicator within the domain, then standardized against the control group within each round. Impact estimates are mean standardized ITTs, therefore effect sizes are expressed in SD of the control group. Robust standard errors are clustered at the community level. Confidence intervals are adjusted using Sidak-Bonferroni. Estimations are adjusted and include respondent's age, education and marital status, household size and household demographic composition, and districts.

tenable. We analysed trends in village level prices and incidence of co-variate shocks during the study period and these showed no statistically significant differences between treatment and control arms over time.

4.2. Measures

We report results for almost 40 outcome variables – at the household,

Table 5
Effects of CGP on domains indices.

	Total consumption per capita	Food security scale	Overall asset index	Relative poverty index	Incomes & Revenues index	Incomes & Revenues index	Finance & Debt index	Finance & Debt index	Material needs index (5–17 years)	Schooling index (11–17 years)	Anthropometric index (0–59 months)
Impact at 24- Month	0.48 (0.10)**	0.53 (0.11)**	0.56 (0.08)**	1.11 (0.11)**	0.62 (0.08)**		0.58 (0.12)**		0.82 (0.12)**	−0.02 (0.07)	0.06 (0.05)
Impact at 36- Month	0.38 (0.07)**	0.53 (0.13)**	0.55 (0.09)**	0.74 (0.11)**		0.35 (0.07)**		0.29 (0.08)**	0.57 (0.10)**	0.07 (0.07)	−0.06 (0.05)
R^2	0.23	0.10	0.20	0.22	0.15	0.14	0.07	0.04	0.16	0.07	0.02
N	6813	6776	6815	6813	2272	2272	6667	2272	14,798	6027	10,074
Unadj. p-value: 24 m impact = 0	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.82	0.20
Adj. p-value: 24 m impact = 0	0.00	0.00	0.00	0.00	0.00		0.00		0.00	1.00	0.86
Unadj. p-value: 36 m impact = 0	0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.33	0.22
Adjusted p-value: 36 m impact = 0	0.00	0.00	0.00	0.00		0.00		0.01	0.00	0.97	0.89

Notes: Estimations use difference in difference modeling (single difference for the 'Incomes & Revenues' indices and the 'Finance & Debt' index at 36-months). Consumption, food security and child material needs indices are standardized measures against the control group within each round; the remaining summary indices are computed as the equally weighted average of z-scores of each indicator within the domain, then standardized against the control group within each round. Impact estimates are mean standardized ITTs, therefore effect sizes are expressed in SD of the control group. Robust standard errors clustered at the community level are in parentheses. * $p < 0.1$ ** $p < 0.05$. Adjusted p-values are Sidak-Bonferroni corrected p-values. Estimations are adjusted and include respondent's age, education and marital status, household size and household demographic composition, and districts. The Finance & Debt index at 24-months does not include debt and credit indicators; see text for further details.

Table 6
Effects of MCP Program on domains indices.

	Total consumption per capita	Food security scale	Overall asset index	Relative poverty index	Incomes & Revenues index	Finance & Debt index	Incomes & Revenues index	Finance & Debt index	Material needs index (5–17 years)	Schooling index (11–17 years)
Impact at 24-Month	0.38 (0.10)**	0.41 (0.10)**	0.44 (0.08)**	1.05 (0.11)**	0.19 (0.09)**	0.34 (0.08)**			0.47 (0.10)**	0.23 (0.06)**
Impact at 36-Month	0.51 (0.14)**	0.54 (0.10)**	0.72 (0.09)**	0.97 (0.13)**			0.36 (0.07)**	0.33 (0.06)**	0.55 (0.08)**	0.23 (0.06)**
R^2	0.27	0.08	0.25	0.17	0.07	0.06	0.08	0.03	0.07	0.04
N	8810	8733	8811	8811	2937	2937	2937	2936	18,097	10,429
Unadj. p-value: 24 m impact = 0	0.00	0.00	0.00	0.00	0.04	0.00			0.00	0.00
Adj. p-value: 24 m impact = 0	0.00	0.00	0.00	0.00	0.29	0.00			0.00	0.00
Unadj. p-value: 36 m impact = 0	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00
Adjusted p-value: 36 m impact = 0	0.00	0.00	0.00	0.00			0.00	0.00	0.00	0.00

Notes: Estimations use difference in difference modeling (single difference for Income & Revenues and Finance & Debt indices). Consumption, food security and child material needs indices are standardized measures against the control group within each round; the remaining summary indices are computed as the equally weighted average of z-scores of each indicator within the domain, then standardized against the control group within each round. Impact estimates are mean standardized ITTs, therefore effect sizes are expressed in SD of the control group. Robust standard errors clustered at the community level are in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. Adjusted p-values are Sidak-Bonferroni corrected p-values. Estimations are adjusted and include respondent's age, education and marital status, household size and household demographic composition, and districts.

woman and child level – grouped into 8/9 domains as reported in Table 4; the definition of each indicator is reported in Table A1 in the Appendix. It is now common for researchers conducting their own independent RCTs to specify their main indicators in a pre-analysis plan to guard against the temptation to cherry-pick results. Here we evaluate two national programs under contract, and so the program's stated objectives and associated results framework – both of which go through a transparent process – serve as the equivalent to a pre-analysis plan, while the technical proposal submitted during the competitive tender for the contract specifies the statistical methodology to be used. Both programs have similar stated objectives, and these relate to food security and consumption, asset ownership, children's material well-being and children's schooling. The CGP has the additional objective to reduce malnutrition among pre-school children. The key indicators associated with these objectives were identified prior to baseline in order to inform questionnaire design. In this paper, we report on three domains beyond the stated objectives of the program in order to provide comparability with Banerjee et al. (2015): subjective well-being, finance and debt, and income and revenues. We define all indicators such that higher values are positive outcomes. Note that for loans and debt (in the finance and debt domain), unlike Banerjee et al. (2015) we consider less debt and fewer loans as positive outcomes; indeed, in our study sample, virtually all loans are taken from informal sources and used for consumption, and beneficiaries report that reducing outstanding debt is a key concern of theirs. In order to compare effect sizes across indicators and domains, we follow the approach taken by Banerjee et al. (2015) and convert all variables into z-scores by subtracting the control group mean (at each wave) and dividing by the control group standard deviation (at each

wave); this implies that at each wave the control group has a mean of 0 and standard deviation of 1.

4.3. Multiple testing

Providing estimates on multiple indicators across a range of domains guards against the selective reporting of only those estimates that are statistically significant. On the other hand, with so many estimates we may find false positives just because of the sheer number of tests computed. We take two approaches to account for this multiple testing. First, for each family of outcomes, we adjust p-values using the Sidak-Bonferroni adjustment (Abdi, 2007). Second, we build summary indexes as 'lead indicators' for each domain following Anderson (2008) and Kling et al. (2007) and report the mean standardized treatment effect on the summary/lead indicators. Specifically, for each domain with the exception of consumption, food security and child material needs, the summary index is computed as the equally weighted average of z-scores of each indicator within the domain, then standardized against the control group within each round.⁹ In the case of consumption, food security and child material needs, we simply standardize total consumption, the food security scale and the child material needs, indicators as these are already summary statistics for that particular domain. We then estimated the mean standardized treatment effect (ITT) on each domain (and outcome) separately and report these estimates in the Section below.

5. Results overview

We begin by presenting a summary of results using domain indices and adjust p-values for multiple inference testing across domains—this 'omnibus' approach provides a sense of the overall pattern and magnitude of impacts of these two unconditional cash transfers. Figs. 2 and 3 show graphically the standardized impact estimates with adjusted confidence bounds for the CGP and MCP respectively. Beginning with the

⁹ Following Kling et al. (2007:89), we treat missing values as follows: "If an individual has a valid response to at least one component measure of an index, then any missing values for other component measures are imputed at the random assignment group mean. This results in differences between treatment and control means of an index being the same as the average of treatment and control means of the components of that index (when the components are divided by their control group standard deviation and have no missing value imputation), so that the index can be interpreted as the average of results for separate measures scaled to standard deviation units".

CGP, the program has had a significant impact on seven of the nine domains considered, the two exceptions being children's schooling and young child anthropometry. The largest effect sizes occur for subjective well-being (relative poverty) and for children's material needs, both at 24-months. However, both indices are subject to a ceiling effect (no further room for improvement among treatment households) which explains why their effect sizes decline at 36-months. Overall there is no clear indication that effect sizes increase over time. One important result is the lack of impacts on child nutritional status despite that being one of the primary objectives of the CGP. This is consistent with reviews on the effects of cash transfers on child nutrition reported by [Manley et al. \(2011\)](#) and [de Groot et al. \(2017\)](#). These reviews highlight the complex determinants of nutritional status, including the disease environment, sanitation and caring behaviour, which go well beyond what a simple UCT can be expected to affect, making it unlikely to find consistent impacts of such programs on child nutrition.¹⁰

In [Fig. 3](#), the MCP has had significant impacts in seven of the eight domains considered, the lone exception being Incomes & Revenues at 24-months which turns significant at 36-months. The largest point estimate is again associated with subjective well-being. Here there is some hint that effects grow larger over time, though all of the 24- and 36-month confidence bounds within domains overlap. Noteworthy is the significant impact of the MCP on schooling which is in contrast to the CGP—recall that the MCP has many more secondary school age children, and in fact, very few CGP households actually have a child over the age of 14 and this is not a priority indicator for households targeted under the CGP. Another interesting difference is that by 36-months the effect of the MCP on assets is much larger than in the CGP. On the other hand, the effect of the CGP on Incomes & Revenues appears to be larger than in the MCP at 24-months. These suggest the different ways that the two sets of households use the cash transfer, and will be discussed further in [Section 7](#).

The main take-away from these summary results is that both cash transfer programs generate significant impacts across both protective (consumption, food security) and productive domains. Both programs also have an important effect on children's material deprivation. And while the MCP significantly raises schooling among secondary school-age children, the CGP does not have an impact on nutritional status of pre-school children, despite improvements in food security and consumption at the household level.

[Tables 5 and 6](#) report the point estimates and associated p-values for the numbers underlying [Figs. 2 and 3](#), along with the unadjusted and adjusted p-values for multiple inference across domains. Looking at the bottom of the two tables there is only one case where the adjustment for multiple inference changes the significance of the point estimate—Incomes & Revenues at 24-months in the MCP. However, by 36-months the standardized estimate of the program on this domain increases substantially to 0.33 and becomes statistically significant even after adjusting the p-value.

We conduct two robustness checks on these estimates. First, we construct Lee bounds ([Lee, 2009](#)) to assess the sensitivity of the results to alternative assumptions about attrition. These are presented in [Tables A5 and A6](#) for the CGP and [Tables A7 and A8](#) for the MCP. In no instance do these bounds cross zero when our own estimate is statistically significant suggesting that our results are robust to alternative assumptions about attrition. Second, for indicators where we have both baseline and follow-up measurements (see [Table 4](#)), we estimate single difference specifications controlling for the baseline value of the dependent variable (i.e. ANCOVA). The associated point estimates are presented graphically in [Figures A1](#) (CGP) and [A2](#) (MCP) in the appendix and are broadly consistent with the difference-in-difference estimates. The exceptions are Income & Revenue in the CGP at 36-months and Finance & Debt in the

MCP at 24-months, both of which are not significant in the ANCOVA specification. However, the ANCOVA version of these indices exclude the components for which we do not have baseline measurements so estimates are not directly comparable. The other difference is the confidence bound for the school attendance point estimate which just touches zero in the MCP. Here we note that our main analytical sample is a household panel not an individual panel, while ANCOVA uses the individual panel so again, samples are slightly different.

6. Consumption and productive investment

The results overview indicates that these two programs have had a transformative effect on recipient households after three years of transfers. What is particularly interesting is the large impacts on both consumption (the primary objective of the programs) and productive activity, suggesting that transfers have been invested and so might lead to sustained improvements in living standards. In this section, we explore in more detail the impacts on these two dimensions to understand the potential long term effects of the programs. Estimates for each individual indicator contained in the other domains are provided in the [online Appendix](#), while means for all variables used in the analysis below are shown in [Appendix Table A9 and A10](#).

6.1. Consumption

Impacts on consumption per capita, measured in logarithms, are shown in the last column in [Table 7](#). As described in [Section 2](#), consumption is measured using the exact consumption module deployed by the Zambian Statistics Office in the LCMS and covers over 200 individual items with varying reference periods depending on the likely frequency of purchase. All Kwacha units are deflated to baseline values (2010 for CGP and 2011 for MCP) using published CPI figures. Both programs have had a large impact on total consumption at 24- and 36-months, and the confidence intervals for the point estimates at each time period overlap. The average effect size over both follow-up periods is approximately 27 and 30 percent¹¹ for the CGP and MCP respectively, and in the MCP in particular it seems to be driven by food consumption. The effect size is in line with the average size of the transfer in relation to baseline consumption (24 percent) so that, taken in isolation, it would appear that the whole transfer is simply consumed. However, the large impacts depicted in the previous section suggest that the story is more complex; in order to observe such a wide range of impacts, including on savings, and still have consumption increase by the exact size of the transfer implies that there must be productive investment that increases overall income and supports this magnitude of a consumption increase. We now take a closer look at the specific indicators within the three domains that encompass investment and productive activity: 'Assets', 'Finance & Debt' and 'Incomes & Revenues'.

6.2. Investment and productive activity

The results overview in [Figs. 2 and 3](#) showed significant impacts on the asset index for each program, with a noticeable increase in the effect size between 24- and 36-months in the MCP. The asset index is composed of three sub-indices covering domestic assets (furniture, appliances), livestock and productive assets (agricultural tools such as sickle and axe). [Table 8](#) reports the program impacts on these three individual components of the overall asset index and shows that for each program at each time period and asset class, there is a statistically significant program effect, and effect sizes are smallest for productive assets, where they average 0.09 compared to say the domestic assets where effect sizes are

¹⁰ In recognition of this, government run UCTs in Ethiopia and Ghana have recently incorporated components into their programs to explicitly try and affect child nutritional outcomes.

¹¹ Average coefficient sizes across the two waves are 0.24 and 0.265 respectively for the CGP and MCP. As the dependent variable is in logarithms, we take the exponential of 0.24 and 0.265 and subtract one to derive the effect sizes.

Table 7
Effects of the CGP and MCP on log consumption.

	Food consumption per capita, logged	Non-food consumption per capita, logged	Total consumption per capita, logged
Panel A: CGP			
Impact at 24-Month	0.28 (0.07)***	0.23 (0.07)***	0.28 (0.07)***
Impact at 36-Month	0.19 (0.05)***	0.19 (0.07)**	0.20 (0.05)***
R^2	0.25	0.19	0.27
N	6813	6813	6813
Unadj. p-value: 24 m impact = 0	0.00	0.00	
Adj. p-value: 24 m impact = 0	0.00	0.00	
Unadj. p-value: 36 m impact = 0	0.00	0.01	
Adjusted p-value: 36 m impact = 0	0.00	0.02	
Panel B: MCP			
Impact at 24-Month	0.26 (0.08)***	0.08 (0.07)	0.22 (0.06)***
Impact at 36-Month	0.37 (0.11)***	0.13 (0.08)*	0.31 (0.09)***
R^2	0.28	0.27	0.32
N	8810	8810	8810
Unadj. p-value: 24 m impact = 0	0.00	0.27	
Adj. p-value: 24 m impact = 0	0.00	0.46	
Unadj. p-value: 36 m impact = 0	0.00	0.10	
Adjusted p-value: 36 m impact = 0	0.00	0.18	

Notes: Estimations use difference in difference modeling. Robust standard errors clustered at the community level are in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. Adjusted p-values are Sidak-Bonferroni corrected p-values. Estimations are adjusted and include respondent's age, education and marital status, household size and household demographic composition, and districts.

almost double that number on average. And while effect sizes remain somewhat stable across time in the CGP, there is a noticeable increase at 36-months in the MCP for livestock (from 0.19 to 0.28) and domestic assets (from 0.13 to 0.24), which again suggests that there must be an income multiplier at work since the impact on consumption did not decline over time, and in fact increased at 36-months in the MCP.

We next turn to the 'Incomes and Revenues' domain where the index is composed of four variables covering participation in and revenues from non-farm enterprises (NFE), agricultural input spending and the value of total crop production. The NFE indicators were introduced at 24-months so impacts are based on single difference estimates at each time period. While the overall domain index is significant for both programs in both periods,¹² we see some important differences across programs in terms of the underlying driver of these impacts which is insightful (see Table 9). The CGP households appear to have used the transfer to move into NFE, with an increase of 17 and 14 percentage points respectively at 24- and 36-months in the proportion of households now operating a NFE. Annual

Table 8
Effects of the CGP and MCP on assets.

	Domestic Asset Index	Livestock Index	Productive asset index
Panel A: CGP			
Impact at 24-Month	0.15 (0.02)***	0.15 (0.03)***	0.10 (0.03)***
Impact at 36-Month	0.18 (0.03)***	0.16 (0.03)***	0.09 (0.03)***
R^2	0.21	0.11	0.11
N	6801	6808	6794
Unadj. p-value: 24 m impact = 0	0.00	0.00	0.00
Adj. p-value: 24 m impact = 0	0.00	0.00	0.00
Unadj. p-value: 36 m impact = 0	0.00	0.00	0.00
Adjusted p-value: 36 m impact = 0	0.00	0.00	0.01
Panel B: MCP			
Impact at 24-Month	0.13 (0.04)***	0.19 (0.03)***	0.08 (0.03)***
Impact at 36-Month	0.24 (0.04)***	0.28 (0.04)***	0.11 (0.03)***
R^2	0.13	0.12	0.25
N	8801	8580	8801
Unadj. p-value: 24 m impact = 0	0.00	0.00	0.01
Adj. p-value: 24 m impact = 0	0.00	0.00	0.02
Unadj. p-value: 36 m impact = 0	0.00	0.00	0.00
Adjusted p-value: 36 m impact = 0	0.00	0.00	0.00

Notes: See notes to Table 8.

revenues from NFE have also increased by 203 ($e^{1.11}-1$) and 125 ($e^{0.81}-1$) percent respectively at 24- and 36-months (columns 4 and 6, panel A) though these amounts are over a relatively low base of just ZMW 77 (US\$15). In contrast, there are no effects on NFE among MCP households. Rather the large impacts on the overall domain index are driven by agricultural productivity, with increases in spending on agricultural inputs averaging 242 ($e^{1.23}-1$) percent across both follow-up periods (column 2, panel B), and an associated increase in the value of crop production of 141 ($e^{0.88}-1$) percent (average across both periods).

The domain of 'Finance and Debt' is composed of six variables: holding any cash savings and amount of cash savings, outstanding loans prior to six months ago, new loans within the last six months, and the amount of outstanding debt in Kwacha on previous and new loans. We report program impacts on each of these individual indicators in Table 10. Note that none of these indicators were collected at baseline, and the loan/debt information was only collected at 36-months for the CGP, hence these are all single difference impact estimates. Loans and amount borrowed are coded so that reductions in debt and loans are positive.

Figs. 2 and 3 showed significant impacts on this domain for both programs at both periods. Results in Table 10 indicate that the overall domain result is strongly driven by an increase in both the proportion of households with any cash savings, and the total amount of those savings (this latter effect is estimated over all households and so is obviously driven by the higher proportion of non-zero savers in the treatment group). The average effect size on proportion of savers is 16 and 14 percentage points respectively in the CGP and MCP. There are also significant impacts in both programs on the number of outstanding loans taken out over six months ago and the total Kwacha amount owed on these loans, suggesting that treatment households use the transfer to pay-off older debt. There is also a reduction in new debt taken on, though this is only statistically significant in the MCP at 24-months (columns 5 and 6,

¹² The Sidak-Bonferroni adjusted p-value is not significant at 24-months for the MCP though the unadjusted p-value is 0.04.

Table 9

Effects of the CGP and MCP on incomes and revenues.

	Value of harvest,logged	Spending on ag. inputs,logged	Operating NFE	Revenues from NFEs, logged	Operating NFE	Revenues from NFEs, logged
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: CGP						
Impact at 24-Month	0.40 (0.25)	0.89 (0.19)***	0.17 (0.04)***	1.11 (0.24)***		
Impact at 36-Month	0.33 (0.28)	0.09 (0.20)			0.14 (0.03)***	0.81 (0.17)***
R ²	0.13	0.08	0.09	0.12	0.17	0.17
N	6816	6816	2272	2272	2272	2272
Unadj. p-value: 24 m impact = 0	0.11	0.00	0.00	0.00		
Adj. p-value: 24 m impact = 0	0.38	0.00	0.00	0.00		
Unadj. p-value: 36 m impact = 0	0.24	0.66			0.00	0.00
Adjusted p-value: 36 m impact = 0	0.67	0.99			0.00	0.00
Panel B: MCP						
Impact at 24-Month	0.67 (0.21)***	1.04 (0.22)***	−0.01 (0.03)	−0.02 (0.14)		
Impact at 36-Month	1.09 (0.21)***	1.41 (0.20)***			0.02 (0.02)	0.11 (0.10)
R ²	0.13	0.11	0.02	0.02	0.02	0.02
N	8811	8811	2937	2937	2934	2934
Unadj. p-value: 24 m impact = 0	0.00	0.00	0.98	1.00		
Adj. p-value: 24 m impact = 0						
Unadj. p-value: 36 m impact = 0	0.00	0.00			0.42 0.89	0.29 0.74
Adjusted p-value: 36 m impact = 0						

Notes: Estimations use single differences (difference in differences for harvest and spending on agricultural inputs). Robust standard errors clustered at the community level are in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. Adjusted p-values are Sidak-Bonferroni corrected p-values. Estimations include respondent's age, education and marital status, household size and household demographic composition, and districts.

panel B).

6.3. Effect sizes and comparison with other cash transfer programs

To place these results in context we compare effect sizes (focusing on 36-month impacts) to effects reported from other cash transfer programs. The increase in consumption after three years is on the order of 22 and 36 percent for the CGP and MCP respectively, significantly higher than the 14 percent increase in consumption reported for CCTs in Mexico (Hoddinott and Skoufias, 2004), Colombia (Attanasio and Mesnard, 2006) and Nicaragua (Maluccio and Flores, 2005). However, the effect is much larger than the 5 percent increase reported by Banerjee et al. (2015) in their six-country study of graduation programs but in line with the 29 percent reported by Blattman et al. (2016) for a graduation-type program in Uganda and the 23 percent reported in the Give Directly study (Haushofer and Shapiro, 2016).

The impacts around asset accumulation and economic activity are quite provocative given the nature of the intervention. The CGP increases participation in NFE by 14 percentage points and NFE revenues by 125 percent or 0.33 SD. While this is much lower than the 48 point increase in business enterprise engagement reported by Blattman et al. (2016), the program they evaluate provides cash *conditional* on opening a business, along with a short business skills training and ongoing supervision.¹³ The revenue impacts in the Zambian CGP are larger than the results from Give Directly of 33 percent or 0.18 SD and comparable to those reported by

Banerjee et al. (2015) of 0.38 SD.

At 36-months the effect sizes for amount saved are 77 and 95 percent for the CGP and MCP respectively, compared to the close to 100 percent increase in savings reported by Banerjee et al. (2015) and Haushofer and Shapiro (2016), and the 300 percent increase reported by Blattman et al. (2016). The overall asset index effects are 0.55 and 0.72 SD in the CGP and MCP, compared to 0.25 in the six-country graduation model study presented in Banerjee et al. (2015) and 0.40 SD in the Ugandan program evaluated by Blattman et al. (2016). As mentioned earlier, the evidence on assets and economic activity from CCTs is mixed, but Covarrubias et al. (2012) report a doubling of the share of households with small agricultural tools such as axes and sickles due to the Malawi Social Cash Transfer Program, which is an unconditional cash transfer targeted to labor-constrained ultra-poor rural households and very similar to the MCP in terms of target group. Haushofer and Shapiro (2016) also report a 0.73 SD increase in the value of non-land durable assets which is similar to effect sizes for the two Zambia programs, though that program provides a lump-sum transfer which is more likely to support asset investment.

7. Multiplier effects and mechanisms

7.1. Expenditure multiplier

A relatively simple flat cash transfer, unconditional and paid bimonthly, has wide-ranging effects on ultra-poor households in rural Zambia, significantly raising consumption while at the same time strengthening economic capacity and assets. The annual amount transferred to a household is US\$144 (or US\$288 PPP). We compare this

¹³ This program also differs from a UCT in that it provides a lump-sum payment upfront which represented 30 times the baseline monthly earnings of beneficiaries.

Table 10
Effects of CGP and MCP on finance and debt.

	Holding any savings (women)	Amount saved, logged (women)	No outstanding debt	Reduction in amount owed, logged	No new borrowing	Reduction in amount borrowed, logged	No outstanding debt	Reduction in amount owed, logged	No new borrowing	Reduction in amount borrowed, logged
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: CGP										
Impact at 24- Month	0.22 (0.05)***	1.09 (0.18)***								
Impact at 36- Month	0.10 (0.05)**	0.57 (0.18)***	0.06 (0.02)***	0.26 (0.08)***	0.02 (0.03)	0.05 (0.11)				
R^2	0.08	0.10	0.02	0.02	0.01	0.02				
N	6667	6658	2272	2270	2271	2271				
<i>P-values</i>										
Unadj: 24 m impact = 0	0.00	0.00								
Adj: 24 m impact = 0	0.00	0.00								
Unadj: 36 m impact = 0	0.03	0.00	0.00	0.00	0.56	0.67				
Adj: 36 m impact = 0	0.17	0.01	0.00	0.00	0.99	1.00				
Panel B: MCP										
Impact at 24- Month	0.14 (0.04)***	0.63 (0.18)***	0.03 (0.01)**	0.11 (0.05)**	0.05 (0.02)**	0.22 (0.09)**				
Impact at 36- Month	0.14 (0.03)***	0.67 (0.14)***					0.01 (0.01)	0.02 (0.03)	0.02 (0.02)	0.10 (0.08)
R^2	0.05	0.06	0.02	0.02	0.03	0.03	0.01	0.02	0.02	0.02
N	7860	7854	2936	2930	2933	2926	2936	2932	2934	2933
<i>P-values</i>										
Unadj: 24 m impact = 0	0.00	0.00	0.03	0.03	0.02	0.01				
Adj: 24 m impact = 0	0.02	0.00	0.14	0.15	0.12	0.09				
Unadj: 36 m impact = 0	0.00	0.00					0.31	0.53	0.24	0.21
Adj: 36 m impact = 0	0.00	0.00					0.89	0.99	0.81	0.75

Notes: Estimations use single differences (difference in differences for saving outcomes). See notes to Table 9.

annual transfer to what households spend based on estimated impacts. We track and/or quantify all expenditure that we can measure in our survey instrument - notably consumption expenditures, savings, spending on non-consumption items such as agricultural inputs (tools, seeds, fertilizer) and livestock purchases -. For productive tools and livestock, we estimate the impact on the number purchased¹⁴ and monetize using market prices taken either from the community price questionnaire fielded as part of the evaluation, from the Zambia LCMS if not in our own survey, or by direct observation in local markets. Other spending items are already measured in Kwacha. All monetary values are deflated to baseline Kwacha (2010 for CGP and 2011 for MCP), annualized, and compared to the annual amount transferred to each household in Kwacha. Only statistically significant impacts (at the five percent level) are considered. We base our calculations on 24-month impact estimates, 36-month impact estimates, and the average of the 24- and 36-month impact estimates (pooled impact estimates) to get a range of estimated spending.

Results of this exercise are shown in Table 11; details on the multiplier computation, including coefficient estimates and prices for each relevant component, are provided in Table A11 in the Appendix. Our preferred estimates are those based on the pooled follow-up data which averages out the error associated with noisy outcomes such as agricultural and business spending. These pooled estimates indicate multipliers of 1.61 and 1.72 in the CGP and MCP respectively, and neither of the 95 percent confidence bound derived from the bootstrap with 1000 replications contain zero. The confidence bounds indicate that the multiplier may be as high as 2.32 in the MCP and as low as 1.07 in the CGP. The average multiplier across the two programs is 1.67 which means that households spend 67 percent more than what they actually receive through the cash transfer. These estimates are not directly comparable to those from Banerjee et al. (2015), who consider the initial two years of the graduation program as the investment period, and then calculate the benefits as the present value of the future stream of consumption and revenue assuming that benefits one year after the program ended are maintained permanently. Our estimates do not assume an investment period because the goal of these UCTs is protection and not investment and the programs are ongoing. For this reason, we prefer a ‘follow the money’ approach to see if the program leads to households boosting their spending over and above what they actually receive, a multiplier that would be generated if households used some of it to improve their income generating capacity.

The multipliers reported in Table 11 on beneficiary households only, and though it includes spill over effects among beneficiaries, should not be compared with multipliers derived from computable general equilibrium models of the local economy, as those include secondary and tertiary effects on non-beneficiaries as well. Spending and investments of program participants can generate impacts beyond the beneficiary population through economic transactions. Researchers at the FAO have built a simulation of the local economy in the CGP evaluation districts and estimated a local economy multiplier of 1.79, which includes these secondary effects (Thome et al., 2016). Hence, the estimates reported here are under-estimates of the total multiplier generated by these programs.

7.2. Explaining the multiplier

These multipliers are large and lead to the obvious question of how they are generated—what are the livelihood strategies pursued by these households that generate such large revenue? Agriculture is the

Table 11

Estimated multiplier effects of the two programs.

	CGP	MCP
24-month	1.83** [1.20, 2.47]	1.35 [0.80, 1.91]
36-month	1.39 [0.84, 1.94]	2.08** [1.24, 2.01]
Pooled	1.61** [1.07, 2.15]	1.72** [1.11, 2.32]

Notes: The multiplier effect is computed as the ratio of the sum total of annualized spending impacts over the annual value of the transfer; spending impacts include: consumption, savings, livestock purchases and productive tools. Loan repayments are excluded to maintain comparability across programs since they are not captured at 24-months in the in the CGP. Impacts are based on estimated econometric results reported Appendix Table A11. Only statistically significant (at the 5 percent level) impact estimates are considered.

dominant livelihood source in the two populations so that is an obvious channel for income generation. The results in the previous section indicated that for MCP households there is both an increase in amount spent on agricultural inputs as well as the value of harvest. On the other hand, for the CGP households, the transfer has not increased crop production but rather engagement in non-farm enterprise (NFE). We take a closer look at these two potential channels (agricultural and NFE) to understand the extent to which they can help explain the large multiplier effects reported in Table 11. To do so, we pool the follow-up data and estimate the average impact of the transfer for several indicators related to agricultural production and NFE, for each program.

In the MCP the main channel is agriculture and livestock. Table 12 shows that MCP households have managed to more than double their revenue¹⁵ from sales of harvest (column 1) over a baseline mean of ZMW 240 and have also translated their increased livestock holdings into a 26 ($e^{0.23}$ –1) percent increase in revenue though the control mean is very small (column 6). We investigated the source of additional crop sales by looking at the eight most common crops grown in the sample, and find that sales are driven by maize, sweet potatoes and other beans (columns 2–4). A comparison of prices for these crops across treatment and control communities, taken from our community price questionnaire, does not show any significant price differences, which might otherwise explain these impacts. We also found a statistically significant increase in the share of households now growing groundnuts, which is typically a cash crop, but this did not contribute to the increase in revenue from crop sales. The large increase in crop production is somewhat surprising among MCP households given their shortage of prime-age labor. Column (5) of Table 12 shows that the cash transfer led to a 141 ($e^{0.88}$ –1) percent increase in expenditure on hired labor for agricultural activity. Finally, while MCP did not lead to more households engaging in NFE, those who were already engaged in NFE however saw significant increases in profit over those in the control group. The increases in revenue documented here total to approximately ZMW 455, which is about 87 percent of the ZMK 518 increase in spending implied by the estimates in Table 11.¹⁶

In contrast, the CGP has not led to an increase in agricultural output but has increased engagement in and revenue from NFE. Table 13 documents program impacts on several aspects of NFE activity as well as sales of livestock and harvest. The program has led to an increase in profits from NFE of 120 ($e^{0.79}$ –1) percent and a 40 ($e^{0.34}$ –1) percent increase in the value of assets dedicated to NFE, and increase in revenue from the sale of crops (column 4) as well as revenue from livestock sales (column 5). However, the control means are lower than in the MCP, so that the increase in revenue from these sources combined adds to about ZMW 140, compared to the increase in spending of approximately ZMW 400 implied by the multiplier estimates in Table 12.¹⁷

¹⁴ Livestock impacts are found for cattle, goats, chickens and pigs. Three-fourths of households reported consuming their own chickens while no households reported consuming the three other types of livestock. This could lead to double-counting as poultry consumption is captured in the consumption module. Excluding chickens from our multiplier estimates leads to negligible differences in the multiplier.

¹⁵ Almost triple with an increase of 185 percent ($e^{1.047}$ –1).

¹⁶ The annual value of the MCP transfer in 2011 units is ZMW 720 and 72 percent of this is ZMW 518.

¹⁷ In 2010 ZMW the annual CGP transfer is 660. Table 12 shows a pooled multiplier of 1.61 which represents ZMW 403 of additional spending.

Table 12
MCP impacts on agricultural activity.

	Harvest sales (logged)					
	Total	Maize	Sweet potatoes	Other beans	Expenditure on hired labour (logged)	Livestock sales (logged)
	(1)	(2)	(3)	(4)	(5)	(6)
(Pooled) Impact	1.047*** (0.212)	0.550*** (0.177)	0.131*** (0.0489)	0.243** (0.0976)	0.881*** (0.147)	0.229*** (0.0782)
Treated	−0.337* (0.179)	−0.294* (0.162)	−0.114** (0.0476)	−0.0350 (0.133)	0.0178 (0.0446)	
Follow-ups dummy	−0.749*** (0.149)	−0.294** (0.136)	−0.136*** (0.0404)	−0.289*** (0.0604)	0.243*** (0.0576)	
Control mean at baseline (ZMW)	239.9	197.3	7.9	19.2	4.0	16.8 ^a
Observations	8811	7818	7818	7818	8811	
R-squared	0.049	0.060	0.020	0.038	0.122	

Notes: Impacts reported are pooled (24- and 36-months). Estimations are based on difference in difference modeling apart from livestock sales that were not collected at baseline. These estimates are therefore based on post-intervention comparisons only. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

^a Pooled follow-ups mean.

Table 13
Impact of CGP on economic activity.

Variables	Non-farm enterprises		Agriculture	
	Profits (logged)	Value of assets (logged)	Harvest Sales (logged)	Livestock sales (logged)
	(1)	(3)	(4)	(5)
(Pooled) Impact	0.794*** (0.152)	0.343*** (0.0728)	0.702*** (0.176)	0.239** (0.118)
Treated			−0.239 (0.175)	−0.0394 (0.0772)
Follow-ups dummy			−0.0978 (0.118)	0.0427 (0.0775)
Control mean at baseline (ZMW)	46.91 ^a	20.06 ^a	66.3	28.0
Observations	4544	4541	6816	6816
R-squared	0.130	0.034	0.089	0.025

Notes: Impacts reported are pooled (24- and 36-months). Estimations based on difference in difference modeling for agricultural outcomes and single-difference modeling for NFE outcomes that were not collected at baseline. These (NFE) estimates are therefore based on post-intervention comparisons only. Robust standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

^a Pooled follow-up control mean.

We are unable to completely find all sources of increased income for the household because our survey instrument does not comprehensively track all possible sources of income nor do we directly measure income itself. One potentially important income sources we are missing is revenue from agricultural and livestock by-products, such as eggs, milk, honey from beekeeping, or the sale of skins and hides. Finally, reporting of revenue and profit tends to display high variance over time and considerable measurement error, all of which can contribute to an under-measurement of income.

7.3. Additional insights from savings and NFE

The strong positive impact of both programs on cash savings within the context of the results on consumption and productive activity are consistent with an improvement in living standards under certain conditions which are likely to hold in the current context. The neoclassical model on savings and consumption behaviour (e.g. [Besley, 1995](#); [Gersovitz, 1988](#)) does not by itself predict an increase in savings with an increase in permanent income. However, an augmented model with uncertainty in income would lead to precautionary savings, while a model with borrowing constraints would also increase savings and disrupt perfect consumption smoothing, and both these conditions characterize the context of these households who live on close to 30 U.S.

Table 14
Reasons for saving among savers (percent).

	CGP		MCP	
	Treatment	Control	Treatment	Control
Investment only	20.2	19.5	24.5	15.4
Precautionary only	63.8	64.5	59.7	76.7
Both	15.1	14.3	14.0	6.9
None stated	1.0	1.6	1.9	1.0
N	392	251	808	403

Figures are based on combined 24- and 36-month follow-up data only.

cents per person per day. The cash transfer, insofar as it represents a constant predictable income source, both increases mean income but is also likely to reduce the variance of income as the transfer represents 25 percent of pre-program consumption. This reduction in the variance of income should reduce precautionary savings.

[Table 14](#) reports the main reason for savings among those who report any positive cash savings in the last 30 days, organized by whether the reasons reflected were mainly precautionary (such as for health care or purchasing bulk or other food items), mainly investment (for instance, for purchasing household durable assets or livestock) or whether the responses could be classified as either precautionary or investment (as in those cases in which the respondent reports the same number of precautionary and investment reasons). In the MCP we observe a clear shift away from precautionary to investment motives for savings as we would expect with a decline in income volatility due to the cash transfer, but in the CGP we do not observe a similar shift.¹⁸

Further insight on the role of the cash transfers on the financial position of these households can be gleaned from a question we asked about the main source of capital for the NFE for those households that actively operated an NFE at the time of survey. Recall that the CGP had an important impact on both the proportion of new households now operating an NFE, as well the value of assets and overall profits. While the prevalence of NFEs among CGP households is three times higher than in the MCP, the profile of business types is the same across study sites. The role of the cash transfer in supporting NFEs in both groups is reported in [Table 15](#), which organizes the sources into four categories including the cash transfer. Among CGP households where impacts on NFE are the strongest, there is a large shift from the ‘other’ source to the cash transfer as the main source of capital for the business, and one of the other three sources—savings—is of course itself strongly impacted by the program. In the control group, 34 percent of NFE owners cite ‘other’ sources for their capital; these sources are primarily agriculture, wage labour and

¹⁸ Further details for savings in the CGP are available in [Natali et al. \(2016\)](#).

Table 15
Main source of capital for non-farm enterprise (percent).

	CGP		MCP	
	Treatment	Control	Treatment	Control
Business itself	27.6	36.8	26.1	19.6
Savings	16.7	28.8	27.7	19.6
Cash transfer	41.3	–	21.5	–
Other	14.4	34.43	24.8	60.82
N	1129	671	303	194

Figures are based on combined 24- and 36-month follow-up data only.

friends. While the impact on NFE participation is not significant in the MCP, 10 percent of households own a NFE and here we also see an important shift away from ‘other’ sources to the cash transfer and own savings as the main source of capital, and again, own savings is affected by the cash transfer itself.

Together this additional analysis provides useful insights into the effect of the cash transfer on investment and living standards. Both programs lead to significant increases in savings, and in the MCP at least, these savings are now less likely to be for precautionary reasons, as we would expect when there is a reduction in the variance of income. In addition, both the cash transfer itself and personal savings are cited as the primary sources of capital for NFE among 58 and 49 percent of NFE operators in the CGP and MCP (treatment groups) respectively, providing further evidence that the programs are enabling households to invest and improve their long term living standards.

7.4. Threats to internal validity

What are the potential threats to internal validity which might explain these large overall impacts and the resulting multiplier? An obvious one is that the control group, associating the study team with the program, might systematically under-report consumption in hopes of gaining eligibility to the program. As mentioned earlier, data collection was conducted by a private firm unaffiliated with the MCDMCH and enumerators were given clear instructions that they were not to mention the program or the MCDMCH during field work. In addition, neither program is explicitly poverty targeted so underreporting consumption could not lead to program eligibility, though potential beneficiaries may not have that level of understanding of the programs. Moreover, the consumption module itself is taken from the Zambian Central Statistics Office's LCMS, a national household survey used to estimate the poverty line and poverty rates, which includes over 200 individual items of expenditure over varying recall periods. This makes it harder to consciously under-report expenditures.

Finally, during the earlier part of the study, between 2010 and 2013 Zambia as a whole enjoyed strong GDP per capita growth, while growth dropped off after 2013 and stagnated in 2014. Figs. 4 and 5 display the evolution of per capita consumption in the two study samples and these indicate that the trends in the control group match quite consistently with the overall trend in economic performance in Zambia. The CGP control group displays a strong increase in consumption over the period 2010–2013, while the MCP control group shows an even stronger increase between 2011 and 2013, and then a slight decline in consumption between 2013 and 2014, mirroring what happened in the country as a whole over that time period. These trends suggest that consistent underreporting is unlikely to explain the difference in consumption between the two study arms.

8. Discussion and conclusion

How do we reconcile the large, across the board, impacts of the two Zambian programs with the existing literature on unconditional cash transfers? First, we believe that the simple act of placing all results together in one paper and documenting both productive and protective

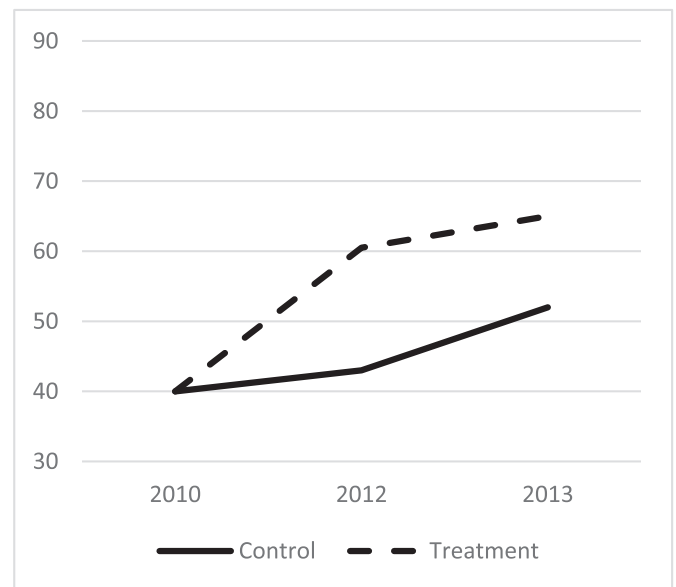


Fig. 4. Consumption trends in CGP.

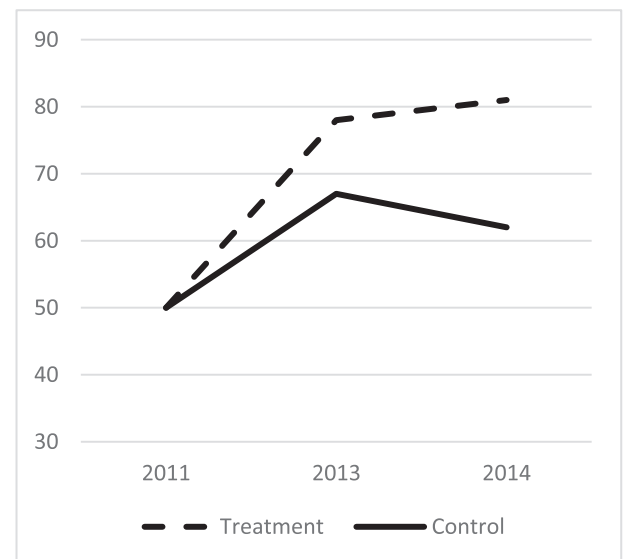


Fig. 5. Consumption trends in MCP.

outcomes might make the results appear overwhelmingly good. The practice of putting all results together in this way is rare, and the few papers that have done so have also reported large effects across multiple domains. The recent paper by Haushofer and Shapiro (2016) on Give Directly provide results across eight domains covering both production and protection, and find statistically significant impacts in five of the eight domains, with stronger effects in productive domains. That program is quite different from the Zambian programs in that it provides one-time large lump-sum which would make it easier for liquidity constrained households to make productive investments, and the transfer size is 53 percent of recipient baseline income, twice the size of the transfer in the Zambian programs in relative terms. As mentioned earlier, Banerjee et al. (2015) also show results across eight domains - with significant impacts on seven of the eight one year after the conclusion of the program; of course, that is a graduation program that explicitly aims to build productive capacity through an intensive two years of capacity building.

Two cash transfer programs which are more similar to the Zambian

programs are the Kenya Cash Transfer for Orphans and Vulnerable Children (CT-OVC) and Mexico's Progresa/Oportunidades (now called Prospera). Those are both poverty targeted cash transfer programs whose main objective is to alleviate poverty in the first instance; the Kenyan program is unconditional while the Mexican one is conditional. Both programs have been widely studied and have had positive impacts across many of the domains reported in this study, but these results have been published in separate papers, an approach which does not lend itself to the type of multiplier calculations provided here.

A recent book comparing the evidence across nine African cash transfer programs (Davis et al., 2016), including these two Zambian programs, concludes that program parameters critical for generating transformative effects such as those reported here, are the size of the transfer and the regularity, frequency and predictability of payments. The key thresholds appear to be a transfer size that is at least 20 percent of pre-program consumption, and payments which are regular (and thus predictable) and frequent (monthly or bimonthly). The two Zambian programs do well on both these dimensions. Transfer size is on average 25 percent of beneficiary pre-program consumption, has been updated regularly to maintain its real value, is paid bimonthly, and payments were not delayed or missed, operational aspects which very likely contributed to the large impacts. Our three-year evaluation window is also longer than most evaluations, giving the transfers more time to translate into widespread gains for households. In contrast the Give Directly study was based on a relatively short follow-up of 9-months. Apart from these implementation issues, we have also shown that the targeting of both programs was successful in identifying and reaching the

poorest, which could be another factor behind the impressive results estimated.

We believe the generalizability of the results presented here are quite high. The majority of existing national cash transfer programs in SSA are unconditional and target beneficiaries at similar levels of poverty. In terms of demographic structure, large programs in Kenya, Ghana, Malawi, Zimbabwe, Ethiopia and Mozambique target so-called 'labor-constrained' households with high dependency ratios and demographic profiles similar to the MCP, while the largest cash transfer program on the continent is the South African Child Support Grant which targets children up to age 17. Like the two Zambian programs, all these programs are implemented by national governments and are unconditional.

In conclusion, two government implemented unconditional cash transfer programs in rural Zambia lead to strong protective and productive impacts for ultra-poor households three years after program initiation. Some of the impacts on consumption and asset accumulation are comparable to graduation type programs recently evaluated in the literature. The overarching objective of unconditional cash transfers is to support food security and consumption, and productive objectives tend to be secondary. However, the results we present imply sizeable productive effects, leading to income multipliers of around 67 percent on average, strong evidence refuting the idea that unconditional cash transfer programs are 'hand-outs' that lead to dependency. Indeed, by allowing households to meet their consumption needs and to eventually diversify livelihoods and accumulate assets as they see fit, they contribute to the inclusive growth agenda of developing country governments, with important implications for economic development policy.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jdeveco.2018.01.008>.

Appendix

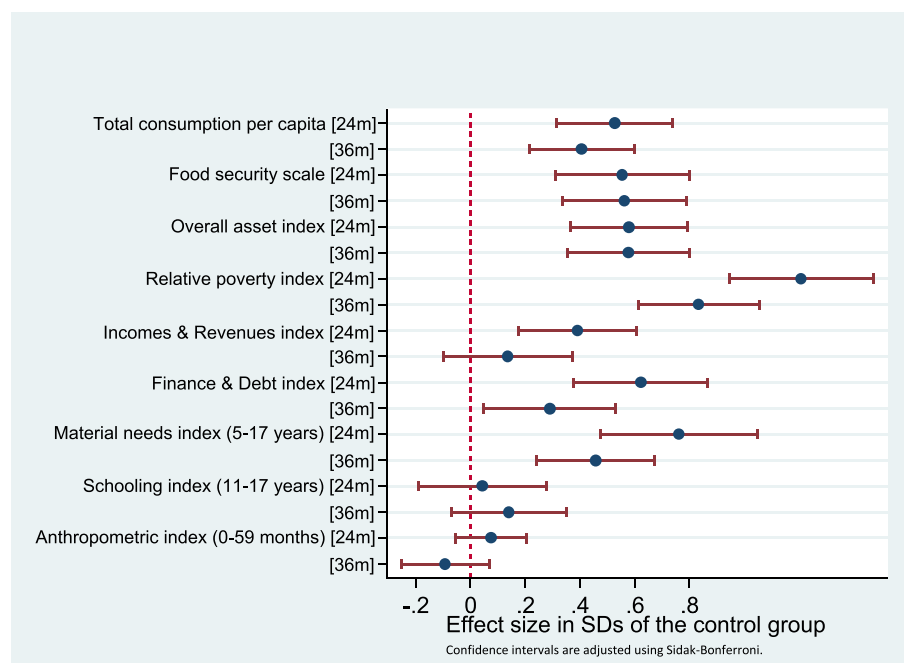


Fig. A1. Intent-to-treat effects ANCOVA estimates in nine domain indices by wave (CGP).

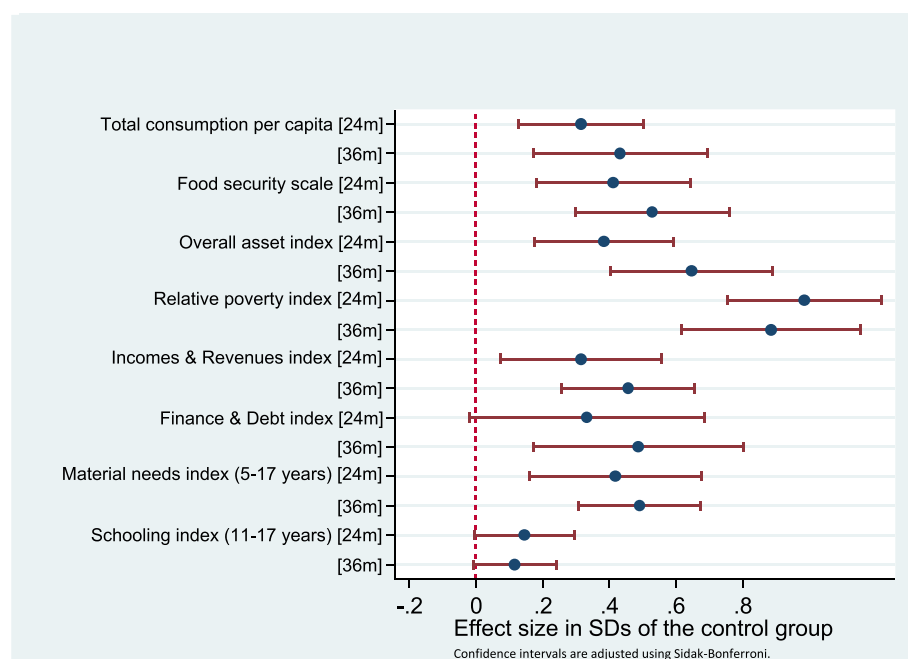


Fig. A2. Intent-to-treat effects ANCOVA estimates in eight domain indices by wave (MCP).

Table A1
Indicator definitions.

Domain	Indicators	Level	
Consumption	Overall per capita consumption* Food consumption per capita Non-food consumption per capita	Household	Sum of responses for 217 individual consumption item for food and non-food. Module taken in its entirety from Zambia Living Conditions Monitoring Survey. Recall period ranges from last 7 days for frequent items to last month, last 3 months and last 12 months for less frequent items. Food includes value of own production. All items include value of gifts. All reported expenditures on food and non-food items were converted to a uniform reference period (monthly). The final consumption aggregate in local currency (ZMW) terms is deflated to study baseline (either 2010 or 2011 in CGP and MCP respectively), further expressed in per capita terms (deflated by household size) and logged.
Food security	Does not (or rarely) worry about food Able to eat preferred food most of the times Does not (or rarely) eat food he/she does not want to it due to lack of resources Does not (or rarely) eat smaller meal than needed Does not (or rarely) eat fewer meals because there is not enough food Never (or rarely) no food to eat because of lack of resources Does not (or rarely) go to sleep hungry Does not (or rarely) go a whole day/night without eating Food security scale ^a (0–24 where higher means more food secure)*	Household	Reference period is last 4 weeks. Codes are 0 = never; 1 = rarely (once or twice); 2 = sometimes (3–10 times); 3 = often (more than 10 times). We turn this categorical variable into a dummy by considering food secure those households that never or rarely (codes 0 and 1) experience each one of the 8 situations described.
Assets	Domestic Asset index Livestock index Productive index	Household	Scale score created by aggregating the responses to the eight individual food security questions Computed by PCA on number of household assets (such as radio, sofa, etc.), livestock (such as goats, chickens, etc.) and productive assets (such as hoe, pick, etc.) owned. Restricted to assets for which information is available in all waves. The index is then turned positive through a monotonic transformation and then logged.
Finance/debt	Savings, extensive margin Savings, intensive margin	Woman	Binary variable equals to 1 if woman is currently saving in cash Amount saved by women in the last month, initially expressed in local currency (ZMW) terms, deflated to study baseline (either 2010 or 2011 in CGP and MCP respectively), and then logged.
	Whether household has new loan Reduction in the amount borrowed	Household	Binary variable computed from the question: 'In the last year did you or anyone in the household borrow money from any person or institution?' Amount borrowed in local currency, logged and turned negative (obtained from the question: 'How much did your household borrow overall from each source, in the last 6 months?')
	Not having an outstanding longer-term loan (loans taken out more than 6 months before the follow-up considered) Reduction in the amount owed		Binary variable computed from the question: 'Does your household still owe money for any loan contracted before ... ?' (6 months before follow-up considered)

(continued on next page)

Table A1 (continued)

Domain	Indicators	Level	
Income and revenues	Value of harvest	Household	Amount borrowed in local currency (ZMW), logged and turned negative (obtained from the question: 'How much does your household still owe?')
	Spending on agricultural input		Value of (the last agricultural season) harvest, expressed in local currency terms (ZMW), deflated to study baseline (either 2010 or 2011 in CGP and MCP respectively), and then logged.
	Operating a NFE		Value of crop expenditures during the last agricultural season, expressed in local currency terms (ZMW), deflated to study baseline (either 2010 or 2011 in CGP and MCP respectively), and then logged.
	Revenues from NFEs		Binary variable computed from the question: 'Did you operate any non-farm enterprises or provide any services (store, transport, home brewing, trade, etc.) in the last 12 months?'
Relative (and/or subjective) poverty	Not considering household very poor	Household	Total revenue from the (above mentioned) businesses in an average month, expressed in local currency terms (ZMW), deflated to study baseline (either 2010 or 2011 in CGP and MCP respectively), and then logged.
	Better off compared to 12 months ago		Binary variable computed from the question: 'Do you consider your household to be non-poor, moderately poor or very poor?' (1 if household 'non poor' or 'moderately poor', 0 if 'very poor')
	Think life will be better in either 1, 3 or 5 years	Woman	Binary variable computed from the question: 'Compared to 12 months ago, do you consider your household to be better off, the same or worse off now?' (1 if household is better off, 0 otherwise).
Material needs	Shoes	Child (5–17 years)	Binary variable computed from the following three questions: Do you think your life will be better in [...] from now? - 1 year - 3 years - 5 years
	Blanket		The dummy equals 1 if any of the three questions reported above is 'yes'.
	Two sets of clothes		Binary variable computed from the question: 'Does [...] have a pair of shoes?'
	All needs met*		Binary variable computed from the question: 'Does [...] have a blanket? (either shared or owned)'
Schooling	School attendance	Child (11–17 years)	Binary variable computed from the question: 'Does [...] have at least two sets of clothes?'
	Days attended in prior week		Dummy variable equals 1 if the child has all the above mentioned needs (shoes, blanket, clothes) met.
Nutrition of young children [CGP only]	Not underweight	Child (0–59 months)	Binary variable computed (for children 11–17 years old) from the question: 'Is [...] currently attending school?'
	Not wasted		Number of days attended by the child (11–17 years old) in the previous week, computed from the question 'How many days did [...] attend in the past week?'
	Not stunted		Binary variable equal to 1 if the child (0–59 months) is not underweight. The (moderate) underweight definition is as follows: below minus two standard deviations from median weight for age of reference population
			Binary variable equal to 1 if the child (0–59 months) is not wasted. The (moderate) wasting definition is: below minus two standard deviations from median weight for weight of reference population.
			Binary variable equal to 1 if the child (0–59 months) is not stunted. The (moderate) stunting definition is: below minus two standard deviations from median height for age of reference population.

^a These are the same eight questions usually employed to compute the 'Household Food Insecurity Access Scale' (HFIAS; see Coates et al., 2007).

Table A2
Baseline balance tests for children under five [0–59 months] [CGP].

	All	Control	Treatment	P-value of diff.
Not stunted	0.65	0.65	0.66	0.64
Not wasted	0.94	0.94	0.94	0.45
Not underweight	0.84	0.84	0.83	0.65
Child's weight-for-age: z-score	−0.90	−0.87	−0.93	0.32
Child's height-for-age: z-score	−1.42	−1.41	−1.42	0.92
Child's weight-for-height z-score	−0.18	−0.16	−0.20	0.60

P-values are reported from Wald tests on the equality of means of Treatment and Control for each variable. Standard errors are clustered at the community level.
N = 3564; of which 1778 in the treatment group.

Table A3
Attrition analysis of key and outcome indicators among households at baseline [CGP].

	Control			Treatment			Difference	
	Attritors	Non-attritors	P-value	Attritors	Non-attritors	P-value	Col(1)-Col(4)	P-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Respondent widowed	0.06	0.06	0.99	0.12	0.06	0.08	−0.05	0.21
Respondent never married	0.06	0.11	0.01	0.07	0.11	0.07	−0.01	0.75
Respondent divorced or separated	0.08	0.09	0.78	0.08	0.06	0.41	−0.00	0.90
Respondent ever attended school	0.79	0.70	0.01	0.79	0.74	0.16	0.00	0.96

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Table A3 (continued)

	Control			Treatment			Difference	
	Attritors	Non-attritors	P-value	Attritors	Non-attritors	P-value	Col(1)-Col(4)	P-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female respondent	0.98	0.99	0.32	0.98	0.99	0.72	0.00	0.97
Age of respondent (years)	30.22	29.57	0.54	31.38	29.91	0.11	-1.16	0.43
Household size	5.66	5.63	0.88	5.72	5.76	0.87	-0.05	0.88
Number of members aged 0–5 years	2.11	1.90	0.00	1.80	1.89	0.29	0.30	0.00
Number of members aged 6–12 years	1.15	1.27	0.36	1.31	1.26	0.75	-0.15	0.40
Number of members aged 13–18 years	0.46	0.53	0.34	0.61	0.60	0.86	-0.15	0.14
Number of members aged 19–35 years	1.28	1.30	0.74	1.30	1.36	0.45	-0.02	0.85
Number of members aged 36–55 years	0.55	0.53	0.83	0.58	0.54	0.58	-0.03	0.74
Number of members aged 56–69 years	0.10	0.07	0.19	0.08	0.07	0.71	0.02	0.63
Number of members aged 70 years or older	0.02	0.03	0.31	0.03	0.03	0.85	-0.02	0.36
Total household expenditure per person (ZMW)	38.19	39.56	0.67	40.81	41.55	0.85	-2.51	0.60
Value of harvest (ZMW)	509.72	329.10	0.02	279.21	360.17	0.10	228.85	0.01
Does not (or rarely) worry about food	0.13	0.21	0.08	0.23	0.20	0.64	-0.09	0.15
Able to eat preferred food	0.13	0.21	0.06	0.23	0.21	0.74	-0.10	0.11
Does not (or rarely) go to sleep hungry at night	0.40	0.43	0.60	0.44	0.50	0.27	-0.04	0.60
Does not (or rarely) go whole day w/o eating	0.48	0.50	0.74	0.55	0.56	0.83	-0.07	0.47
Food security scale	7.92	8.74	0.20	9.29	9.05	0.68	-1.37	0.09
Owned chickens last 12 months	0.37	0.43	0.14	0.33	0.44	0.02	0.04	0.44
Owned goats last 12 months	0.04	0.01	0.15	0.03	0.03	0.60	0.01	0.57
Owens a pick	0.02	0.03	0.80	0.01	0.03	0.05	0.02	0.29

Overall N for control is 1259 (In study/non-attritors = 1133; Attritors = 126). Overall N for treated is 1260 (In study/non-attritors = 1139; Attritors = 121). T-tests based on standard errors clustered at the community level.

Table A4

Attrition analysis of key and outcome indicators among households at baseline [MCP].

	Control			Treatment			Difference	
	Attritors	Non-attritors	P-value	Attritors	Non-attritors	P-value	Col(1)-Col(4)	P-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household size	4.67	5.01	0.44	4.78	4.98	0.49	-0.12	0.84
Number of members aged 0–5 years	0.87	0.68	0.19	0.79	0.72	0.46	0.07	0.66
Number of members aged 6–12 years	1.00	1.22	0.30	1.01	1.31	0.01	-0.01	0.96
Number of members aged 13–18 years	0.74	0.98	0.10	0.89	0.92	0.81	-0.16	0.38
Number of members aged 19–35 years	0.81	0.82	0.94	0.87	0.76	0.35	-0.06	0.72
Number of members aged 36–55 years	0.49	0.54	0.70	0.53	0.52	0.89	-0.04	0.80
Number of members aged 56–69 years	0.34	0.37	0.68	0.23	0.39	0.00	0.11	0.19
Number of members aged 70 years or older	0.42	0.40	0.82	0.45	0.36	0.15	-0.03	0.74
Total household expenditure per person (ZMW)	62.00	52.04	0.14	70.67	50.23	0.01	-8.00	0.42
Female respondent	0.79	0.75	0.47	0.77	0.76	0.86	0.02	0.77
Age of respondent (years)	57.78	57.01	0.75	55.47	56.20	0.72	2.36	0.49
Respondent widowed	0.10	0.56	0.00	0.06	0.56	0.00	0.04	0.46
Respondent never married	0.04	0.04	0.96	0.03	0.03	0.85	0.00	0.94
Respondent divorced	0.08	0.10	0.57	0.07	0.09	0.32	0.01	0.87
Respondent ever attended school	0.66	0.64	0.81	0.64	0.64	0.91	0.02	0.86
Value of harvest (ZMW)	710.78	1058.29	0.00	837.40	876.36	0.74	-128.54	0.42
Does not (or rarely) worry about food	0.17	0.15	0.71	0.16	0.15	0.82	0.01	0.88
Able to eat preferred food	0.16	0.16	0.99	0.15	0.14	0.86	0.01	0.93
Does not (or rarely) go to sleep hungry at night	0.56	0.54	0.83	0.69	0.52	0.00	-0.13	0.17
Does not (or rarely) go whole day w/o eating	0.62	0.60	0.77	0.70	0.58	0.03	-0.09	0.34
Food security scale	9.45	9.35	0.89	10.30	9.26	0.09	-0.85	0.38
Owned chickens last 12 months	0.38	0.50	0.11	0.44	0.45	0.80	-0.05	0.59
Owned goats last 12 months	0.04	0.13	0.00	0.09	0.10	0.74	-0.05	0.16
Owens a pick	0.06	0.09	0.31	0.12	0.07	0.15	-0.06	0.22

Overall N for control is 1517 (In study/non-attritors = 1464; Attritors = 53). Overall N for treated is 1561 (In study/non-attritors = 1474; Attritors = 87). T-tests based on standard errors clustered at the community level.

Table A5

Robustness analysis for potential attrition bias [CGP 24-months] Lee bounds: 95% confidence interval for the treatment effect.

Summary indices	Impact at 24-month	Effect 95% conf. interval		N
		Lower bound	Upper bound	
Total consumption per capita	0.48*** (0.10)	0.37	0.53	6813
Food security	0.53*** (0.11)	0.37	0.53	6776
Overall asset index	0.56*** (0.08)	0.37	0.6	6815

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Table A5 (continued)

Summary indices	Impact at 24-month	Effect 95% conf. interval		N
		Lower bound	Upper bound	
Relative poverty index	1.11*** (0.11)	0.97	1.14	6813
Incomes & Revenues index	0.62*** (0.08)	0.54	0.78	2272
Finance & Debt index	0.58*** (0.12)	0.48	0.65	6667
Material needs index (5–17 years)	0.82*** (0.12)	0.57	0.8	14,798
Schooling index (11–17 years)	–0.02 (0.07)	–0.1	0.18	6027
Anthropometric index (0–59 months)	0.06 (0.05)	0.02	0.18	10,074

Consumption, food security and child material needs indices are standardized measures against the control group within each round; the remaining summary indices are computed as the equally weighted average of z-scores of each indicator within the domain, then standardized against the control group within each round. Impact estimates are mean standardized ITTs, therefore effect sizes are expressed in SD of the control group.

Table A6

Robustness analysis for potential attrition bias [CGP 36-months] Lee bounds: 95% confidence interval for the treatment effect.

Summary indices	Impact at 36 months	Effect 95% conf. interval		N
		Lower bound	Upper bound	
Total consumption per capita	0.38*** (0.07)	0.26	0.37	6813
Food security	0.53*** (0.13)	0.41	0.52	6776
Overall asset index	0.55*** (0.09)	0.52	0.65	6815
Relative poverty index	0.74*** (0.11)	0.58	0.66	6813
Incomes & Revenues index	0.35*** (0.07)	0.31	0.41	2272
Finance & Debt index	0.29*** (0.08)	0.28	0.39	2272
Material needs index (5–17 years)	0.57*** (0.10)	0.37	0.52	14,798
Schooling index (11–17 years)	0.07 (0.07)	0.03	0.11	6027
Anthropometric index (0–59 months)	–0.06 (0.05)	–0.08	–0.01	10,074

See notes to [Table A5](#).

Table A7

Robustness analysis for potential attrition bias [MCP 24-months] Lee bounds: 95% confidence interval for the treatment effect.

Summary indices	Impact at 24-month	Effect 95% conf. interval		N
		Lower bound	Upper bound	
Total consumption per capita	0.38*** (0.10)	0.13	0.31	8810
Food security	0.41*** (0.10)	0.21	0.37	8733
Overall asset index	0.44*** (0.08)	0.15	0.34	8811
Relative poverty index	1.05*** (0.11)	0.75	0.91	8811
Incomes & Revenues index	0.19** (0.09)	–0.08	0.32	2937
Finance & Debt index	0.34*** (0.08)	0.2	0.46	2937
Material needs index (5–17 years)	0.47*** (0.10)	0.32	0.46	18,097
Schooling index (11–17 years)	0.23*** (0.06)	0.07	0.63	10,429

See notes to [Table A5](#).

Table A8

Robustness analysis for potential attrition bias [MCP 36-months] Lee bounds: 95% confidence interval for the treatment effect.

Summary indices	Impact at 36 months	Effect 95% conf. interval		N
		Lower bound	Upper bound	
Total consumption per capita	0.51*** (0.14)	0.36	0.47	8810
Food security	0.54*** (0.10)	0.36	0.46	8733
Overall asset index	0.72*** (0.09)	0.5	0.63	8811
Relative poverty index	0.97*** (0.13)	0.64	0.72	8811
Incomes & Revenues index	0.36*** (0.07)	0.15	0.47	2937
Finance & Debt index	0.33*** (0.06)	0.44	0.62	2936
Material needs index (5–17 years)	0.55*** (0.08)	0.37	0.42	18,097
Schooling index (11–17 years)	0.23*** (0.06)	0.1	0.15	10,429

See notes to Table A5.

Table A9

Table of means by wave and treatment for key outcome variables (panel households) [CGP].

	Baseline		24-months		36-months		
	Control	Treatment	Control	Treatment	Control	Treatment	Control
	mean	mean	mean	mean	mean	mean	sd
Total consumption per capita* (ZMW)	39.56	41.55	43.30	59.87	51.38	64.40	37.60
Food consumption per capita (ZMW)	29.14	30.87	31.93	44.77	38.87	48.30	29.44
Non-food consumption per capita (ZMW)	10.42	10.68	11.37	15.10	12.51	16.10	13.90
Food security scale (0–24)*	8.74	9.05	11.62	14.38	12.49	15.19	4.59
Domestic asset index	0.27	0.31	0.28	0.47	0.32	0.54	0.37
Livestock index	0.20	0.22	0.17	0.34	0.17	0.35	0.30
Productive asset index	0.32	0.35	0.34	0.47	0.38	0.49	0.36
Harvest value (ZMW)	329.10	360.17	447.00	595.50	448.19	728.34	754.55
Spending on agricultural input (ZMW)	12.59	25.57	22.33	60.03	26.60	35.46	130.64
Operating NFE			0.30	0.47	0.31	0.46	0.46
Revenues from NFEs (ZMW)			76.74	252.85	100.37	203.00	404.75
No outstanding debt					0.88	0.94	0.33
Amount owed (ZMW)					14.19	24.77	70.07
No new borrowing					0.79	0.80	0.41
Amount borrowed (ZMW)					36.44	31.04	475.46
Women only							
Held any savings	0.16	0.18	0.22	0.47	0.22	0.35	0.42
Amount saved (ZMW)	20.63	17.85	181.79	72.78	32.05	87.70	144.51
Children 5–17 years							
All needs met (shoes, 2 sets of clothing, blanket)	0.11	0.11	0.26	0.61	0.39	0.66	0.49

Standard deviation is for the control group at endline.

Table A10

Table of means by wave and treatment for key outcome variables (panel households) [MCP].

	Baseline		24-months		36-months		
	Control	Treatment	Control	Treatment	Control	Treatment	Control
	mean	mean	mean	mean	mean	mean	sd
Total consumption per capita* (ZMW)	52.04	50.23	65.45	76.98	62.80	81.59	43.02
Food consumption per capita (ZMW)	40.47	38.24	48.96	58.07	46.02	60.96	33.49
Non-food consumption per capita (ZMW)	11.57	12.00	16.49	18.92	16.78	20.63	15.52
Food security scale (0–24)*	9.35	9.26	12.25	14.04	11.49	14.16	5.09
Domestic asset index	0.44	0.39	0.41	0.49	0.43	0.62	0.39
Livestock index	0.30	0.26	0.22	0.37	0.25	0.49	0.39
Productive asset index	0.74	0.72	0.77	0.83	0.75	0.84	0.34
Harvest value (ZMW)	1058.29	876.36	694.49	873.95	666.38	876.54	1933.43
Spending on agricultural input (ZMW)	61.35	34.73	50.89	69.85	68.13	107.20	193.08
Operating NFE			0.12	0.10	0.08	0.10	0.27
Revenues from NFEs (ZMW)			19.34	32.38	16.18	29.12	104.08
No outstanding debt					0.96	0.97	0.19
Amount owed (ZMW)					5.04	7.63	67.06
No new borrowing					0.85	0.87	0.36
Amount borrowed (ZMW)					22.50	15.71	122.85
Women only							

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Table A10 (continued)

	Baseline		24-months		36-months		
	Control	Treatment	Control	Treatment	Control	Treatment	Control
	mean	mean	mean	mean	mean	mean	sd
Held any savings	0.12	0.12	0.19	0.34	0.11	0.26	0.31
Amount saved (ZMW)	15.65	6.36	20.96	33.22	31.75	35.36	555.73
Children 5–17 years							
All needs met (shoes, 2 sets of clothing, blanket)	0.17	0.14	0.38	0.57	0.40	0.63	0.49

Standard deviation is for the control group at endline.

Table A11

Multiplier computations for the CGP and the MCP.

	CGP								
	Impacts			Multiplied by			Annualized spending per household		
	Pooled	24-month	36-month	Months	Mean household size	Price ZMW	Pooled	24-month	36-month
Total monthly consumption per capita (ZMW)	12.78	14.56	11.00	12	5.7		874.36	996.07	752.32
Amount saved last month (ZMW)	9.30	11.38	7.21	12			111.65	136.59	86.48
Number of ducks owned	0.18	0.19	0.17			30	5.45	5.80	5.10
Number of chickens owned	1.37	1.15	1.59			23	31.46	26.43	36.49
Number of goats owned	0.12	0.15	0.10			196	23.85	29.00	18.70
Number of hammers owned	0.04	0.04	0.03			50	1.87	2.20	1.54
Number of hoes owned	0.28	0.29	0.27			30	8.40	8.63	8.17
Number of axes owned	0.21	0.16	0.26			25	5.21	3.93	6.49
Number of saws owned	0.02	0.02	0.01			40	0.65	0.81	0.49
Total of annualized spending (A)							1062.91	1209.45	915.79
Annual value of the transfer at baseline in 2010 (B)							660	660	660
Multiplier (A/B)							1.61 (0.2763)	1.83 (0.3234)	1.39 (0.2814)
	MCP								
	Pooled	24-month	36-month	Months	Mean household size	Price ZMW	Pooled	24-month	36-month
	Pooled	24-month	36-month	Months	Mean household size	Price ZMW	Pooled	24-month	36-month
Total monthly consumption per capita (ZMW)	17.02	13.37	20.68	12	5		1021.38	802.20	1240.60
Amount saved last month (ZMW)	5.90	4.95	6.82	12			70.78	59.40	81.85
Number of chickens owned	1.73	1.51	1.94			23	39.76	34.82	44.71
Number of goats owned	0.46	0.35	0.58			196	91.06	68.45	113.67
Number of shovels owned	0.03		0.06			30	0.96	0.00	1.80
Number of hoes owned	0.28	0.23	0.32			30	8.29	6.88	9.70
Number of axes owned	0.16	0.15	0.16			25	3.89	3.81	3.98
Total of annualized spending (A)							1236.13	975.56	1496.30
Annual value of the transfer at baseline in 2011 (B)							720.00	720.00	720.00
Multiplier (A/B)							1.72 (0.3096)	1.35 (0.2817)	2.08 (0.4269)

Notes: Impact estimates are obtained through difference in differences models. Total monthly consumption per capita and amount saved last month are expressed in ZMW. To account for outliers, the top five percent of the variable ('amount saved') were dropped. Only significant impacts at the five percent level are used in the calculations. Bootstrapped (1000 repetitions) standard errors of multipliers in brackets. In the MCP, the impact on shovels at 24-months has a p-value of 0.06 and so is not included in the multiplier at that wave, but is significant in the pooled estimates and so is included there. The impact on saws is significant in the CGP but not in the MCP. Loan repayments were not collected at 24-months in the CGP and so are excluded from all calculations, although impacts are significant at 36-months in the CGP and in both waves of the MCP. Numbers in bold are the calculated multipliers displayed in Table 11 in the main text.

References

- Abdi, H., 2007. Bonferroni and Šidák corrections for multiple comparisons. In: Salkind, N.J. (Ed.), *Encyclopedia of Measurement and Statistics*. Sage, Thousand Oaks, CA.
- Anderson, M.L., 2008. Multiple inference and gender differences in the effects of early intervention: a reevaluation of the abecedarian, perry preschool, and early training projects. *J. Am. Stat. Assoc.* 103 (484), 1481–1495.
- AIR, 2014. Zambia's Child Grant Program: 36-month Impact Report. Author, Washington, DC.
- AIR, 2015. Zambia's Multiple Category Cash Transfer Program: 36-month Impact Report. Author, Washington, DC.
- Attanasio, O., Mesnard, A., 2006. The impact of a conditional cash transfer programme on consumption in Colombia. *Fisc. Stud.* 27 (4), 421–442.
- Bandiera, O., Burgess, R., Das, N., Gulesci, S., Rasul, I., Sulaiman, M., 2016. Labor Markets and Poverty in Village Economies. LSE working paper.
- Banerjee, A., Duflo, E., Goldberg, N., Karlan, D., Osei, R., Pariente, W., Shapiro, J., Thuysbaert, B., Udry, C., 2015. A multifaceted program causes lasting progress for the very poor: evidence from six countries. *Science* 348 (6236) (May 14, 2015): 1260799–1260799.
- Besley, T., 1995. Nonmarket institutions for credit and risk sharing in low-income countries. *J. Econ. Perspect.* 90 (3), 115–127.
- Blattman, C., Green, E.P., Jamison, J.C., Lehmann, M.C., Annan, J., 2016. The returns to microenterprise support among the ultra-poor: a field experiment in post-war Uganda. *Am. Econ. J. Appl. Econ.* 8 (2), 35–64.
- Coates, J., Swindale, A., Bilinsky, P., 2007. Household food insecurity access scale (HFIAS) for measurement of household food access: indicator Guide (v. 3). Acad. Educ. Dev. 3.
- Covarrubias, K., Davis, B., Winters, P., 2012. From protection to production: productive impacts of the Malawi Social Cash Transfer scheme. *J. Dev. Effect.* 4 (1), 50–77.
- de Groot, R., Palermo, T., Handa, S., Ragno, P., Peterman, A., 2017. Cash transfers and child nutrition: pathways and impacts. *Dev. Pol. Res.* 35, 621–643.
- Davis, B., Handa, S., Hypher, N., Winder-Rossi, N., Winters, P., Yablonski, J., 2016. From Evidence to Action: the Story of Cash Transfers and Impact Evaluation in Sub Saharan Africa. Oxford University Press.
- FAO, 2016. Cash Transfers: Their Economic and Productive Impacts. Food and Agricultural Organization, Rome. Available at: <http://www.fao.org/documents/card/en/c/d4fe560c-8916-43ca-86c1-45e69898c034/>.
- Garcia, M., Moore, C., 2012. The Cash Dividend: the Rise of Cash Transfer Programs in Sub-saharan Africa. The World Bank, Washington, DC.
- Gertler, P., Martinez, S.W., Rubio-Codina, M., 2012. Investing cash transfers to raise long-term living standards. *Am. Econ. J. Appl. Econ.* 4 (1), 164–192.
- Gersovitz, M., 1988. Saving and development. In: Srinivasan, T. (Ed.), *Handbook of Development Economics*, vol. 1. Elsevier Science Publishers.

- Handa, S., Seidenfeld, D., Davis, B., Tembo, G., the Zambia Cash Transfer Evaluation Team, 2016a. The social and productive impacts of Zambia's child grant. *J. Pol. Anal. Manag.* 35 (2), 357–387. Spring 2016.
- Handa, S., Natali, L., Seidenfeld, D., Tembo, G., the Zambia Cash Transfer Evaluation Team, 2016b. The impact of Zambia's unconditional child grant on schooling and work: results from a large-scale social experiment. *J. Dev. Effect.* 8 (3), 346–367.
- Haushofer, J., Shapiro, J., 2016. The short-term impact of unconditional cash transfers to the poor: experimental evidence from Kenya. *Q. J. Econ.* 131 (4), 1973–2042.
- Heckman, J., Ichimura, H., Todd, P., 1997. Matching as an econometric evaluation estimator: evidence from evaluating a job training program. *Rev. Econ. Stud.* 64, 605–665.
- Hoddinott, J., Skoufias, E., 2004. The impact of PROGRESA on food consumption. *Econ. Dev. Cult. Change* 53 (1), 37–61.
- Hjelm, L., Handa, S., de Hoop, J., Palermo, T., 2017. Poverty and perceived stress: evidence from two unconditional cash transfer programs in Zambia. *Soc. Sci. Med.* 177, 110–117.
- Imbens, G., 2004. Nonparametric estimation of average treatment effects under exogeneity: a review. *Rev. Econ. Stat.* 86 (1), 4–29.
- Kling, J., Liebman, J., Katz, L., 2007. Experimental analysis of neighborhood effects. *Econometrica* 75, 83–119.
- Lee, D., 2009. Training, wages, and sample selection: estimating sharp bounds on treatment effects. *Rev. Econ. Stud.* 76, 1071–1102.
- Maluccio, J., Flores, R., 2005. Impact Evaluation of the Pilot Phase of the Nicaraguan Red de Protección Social. Research Report 141. International Food Policy Research Institute, Washington, D.C.
- Maluccio, J., 2010. The impact of conditional cash transfers on consumption and investment in Nicaragua. *J. Dev. Stud.* 46 (1), 14–38.
- Manley, J., Gitter, S., Slavchevska, V., 2011. How Effective Are Cash Transfer Programs at Improving Nutritional Status? Working Paper No.2010-18 Towson University.
- Natali, L., Handa, S., Peterman, A., Seidenfeld, D., Tembo, G., the Zambia Cash Transfer Evaluation Team, 2016. Making Money Work: Unconditional Cash Transfers Allow Women to Save and Re-invest in Rural Zambia. Innocenti Working Paper No.2016-02. UNICEF Office of Research, Florence.
- PtoP, 2014. The Economic Impacts of Cash Transfer Programmes in Sub-Saharan Africa. FAO Policy Brief.
- Raza, W.A., Das, N.C., Misha, F.A., 2012. Can ultrapoverty be sustainably improved? Evidence from BRAC in Bangladesh. *J. Dev. Effect.* 4 (2), 257–276.
- Rosenbaum, P., Rubin, D., 1983. The central role of the propensity score in observational studies for causal effects. *Biometrika* 70 (1983), 41–55.
- Shadish, W.R., Cook, T.D., Campbell, D.T., 2002. Experimental and Quasi-experimental Designs for Generalized Causal Inference. Wadsworth Cengage Learning, Belmont, CA.
- Thome, K., Taylor, J.E., Filipski, M., Davis, B., Handa, S., 2016. The Local Economy Impacts of Social Cash Transfers a Comparative Analysis of Seven Sub-Saharan Countries. FAO.
- World Bank, 2015. The State of Social Safety Nets 2015. World Bank, Washington, DC.