The Household and Individual-Level Productive Impacts of Cash Transfer Programs in Sub-Saharan Africa

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The objective of most cash transfer programs is to alleviate poverty and/or food insecurity directly and through improvements in educational, health, and nutritional status (Fiszbein et al. 2009; Slater 2011). As these programs are key components of social protection strategies, understanding their impact on social outcomes is critical and a large body of literature has emerged on the social impacts of cash transfers focusing primarily on the health, nutrition, and schooling of the children of the poor (Fiszbein et al. 2009; Adato and Hoddinott 2010; Handa et al. 2010). Cash transfers may also have productive impacts, a dimension that only recently has started to receive explicit attention in the literature (Banerjee et al. 2015; Haushofer and Shapiro 2016; Tirivayi, Knowles, and Davis 2016; Hidrobo et al. 2018).

If markets function perfectly, the expectation is that providing cash to poor households should have no impact on productive activities since production and consumption are separable (Singh, Squire, and Strauss 1986). However, in the presence of credit, insurance, labor, and other market constraints, the provision of cash may help overcome market failures, leading to greater productive investment and spending, and potentially creating a household-level multiplier effect. Along with shifting investment and spending, cash may also lead to a reallocation of household

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resources, particularly labor. A relatively small number of papers have sought to address these productive impacts of cash transfers, including Boone et al. (2013) and Covarrubias, Davis, and Winters (2012) for Malawi, Gertler, Martinez, and Rubio-Codina (2012) and Todd, Winters, and Hertz (2010) for Mexico, Veras Soares, Perez Ribas, and Hirata (2010) for Paraguay, and Maluccio (2010) for Nicaragua. However, none collected data with the primary purpose of examining productive impacts and are thus limited in what they can analyze.

Understanding the productive impacts of cash transfers is important from a policy perspective, as governments often voice concerns about "dependency" when considering cash transfers. First, there is a concern that providing cash to the poor leads them to work less and to rely on the transfers. An analysis of resource use, particularly labor use, and the productive impacts of cash transfers then provides insights into whether, in the short to medium term, cash transfers induce households to reduce their productive activities or to increase them.

Second, there is interest regarding whether over the medium term a cash transfer program could induce households or individuals to transition out of poverty and to "graduate" from a program (Daidone et al. 2015). Of course, given the focus on often very poor households, as well as on breaking the intergenerational transmission of poverty through improved child outcomes, such an expectation may be unrealistic. But assessing the economic impact of cash transfers can at least determine if transfers are consistent with increased productive engagement and asset accumulation.

This article brings together evidence from seven experimental and non-experimental impact evaluations of government-run unconditional cash transfer programs in Sub-Saharan Africa (SSA). The unique focus on productive impacts of cash transfer programs was introduced into these evaluations by the From Protection to Production (PtoP) research project, itself part of the broader Transfer Project, a joint Food and Agriculture Organization (FAO), UNICEF, and University of North Carolina effort to support and systemize lessons from impact evaluations of cash transfer programs in SSA. Our article adds value to the current literature by combining evidence from evaluations with similar outcomes and analysis, focusing on seven large government-run unconditional cash transfers in SSA, a typology of program and geographic area less present in the literature. We rigorously identify the response of households and individuals to income changes and link study findings to testable hypotheses about how impacts on productive decisions, labor supply, and risk-coping strategies differ across settings.

Theoretical Framework

If markets function perfectly, the provision of cash should have no impact on household decisions with respect to production. Households that face no labor, credit, or other market constraints are assumed to be able to hire labor at the going wage, obtain credit at the prevailing interest rate, and buy and sell inputs or outputs at given market prices. Production decisions are made to provide the maximum return. Under such conditions, production and consumption decisions can be viewed as "separable" in that households first maximize profit/income from production decisions and then use the income generated from these decisions to maximize utility from consumption (Singh, Squire, and Strauss 1986). A cash transfer should influence consumption by relaxing a household's budget constraint, but not production.

Cash Transfers and Productive Investments

Poor households in the rural areas of developing countries often face missing or poorly functioning markets in a number of dimensions. Credit markets are plagued by asymmetric information, which leads to adverse selection and moral hazard. Poor households often have difficulty borrowing due to a lack of collateral and often face credit rationing due to asymmetric information or government policies (Feder et al. 1990). Similarly, markets for insurance to cope with risk are also plagued by issues of adverse selection and moral hazard. Even in localized settings where information availability might allow for enforcement of mutual insurance arrangements, the evidence suggests that only partial insurance is possible (Deaton 1992; Townsend 1994; Jalan and Ravallion 1999). As such, households faced with uncertainty often manage risk through *ex ante* strategies such as precautionary savings (via livestock or other assets) or diversification of varieties, crops and income-generating activities, which

may not provide the highest expected income but allow for hedging against risk. In the labor market, monitoring worker effort is difficult, particularly in agriculture, where yields are uncertain and it is difficult to judge individual labor effort (Dasgupta 1993). The need to supervise hired labor can inhibit hiring and create an incentive to use family labor, thus making family and hired labor imperfect substitutes. In food markets, transportation costs, opportunity costs of time for transactions, and the need to gather market information add costs to selling and buying food, creating a price difference between the selling and buying price. These high transaction costs in staple markets can make self-sufficiency the optimal choice leaving some households outside the market (Key, Sadoulet, and de Janvry 2000).

If multiple market failures exist as described above, the production and consumption decisions of households can be viewed as "non-separable" in the sense that they are jointly determined (Singh, Squire, and Strauss 1986). The choice of crops to produce is not necessarily what would be the most profitable, but what would ensure that households have enough food to eat. Households may participate in wage labor markets not because it is the highest return to labor, but to obtain liquidity to purchase inputs or as a means to hedge against risk.

Under conditions of market imperfections and thus non-separability, an infusion of cash into a household can alter household decision making. Cash provides liquidity to allow the purchase of inputs and for productive investment that alter production possibilities. For credit-constrained households, cash transfers can relax the binding credit constraint and expand the set of feasible production choices in two ways (Phimister 1995; Karlan et al. 2014; Bazzi, Sumarto, and Suryahadi 2015): (*a*) directly by increasing current liquidity; (*b*) indirectly by improving the credit rating of the beneficiary who is entitled to a future stream of cash. Further, credit constraints can be relaxed if cash transfers provide enough resources for households to save. Classic saving and consumption theories, like Friedman's Permanent Income Hypothesis (PIH), suggest that saving and spending behavior should be based on expectations for lifetime earnings and not be affected by transitory income shocks. However, in the presence of imperfect markets, precautionary savings and liquidity constraints may allow departures from the PIH. Depending on their attitude towards risk and debt, households may choose to either save more or reduce inefficient precautionary savings and other detrimental risk-coping strategies as they rely on the transfers as a form of insurance (Rosenzweig and Wolpin 1993).

Cash Transfers and Labor Supply

Cash transfers constitute an increase in non-labor income, relaxing the household budget constraint and making work less attractive relative to leisure (Moffitt 2002; Saez 2002). However, cash transfers may not lead to reductions in adult labor supply. First, the income elasticity of leisure may be quite low for very poor households, who are generally the target of the cash transfer program (Fiszbein et al. 2009). Second, the cash transfer may crowd-out other income sources such as income from remittances, when the motives for private transfers are based on altruism (Cox 1987; Cox and Jimenez 1990). Third, in the presence of market imperfections such as fixed costs to work and credit constraints, an increase in unearned income can help overcome these barriers and translate into increased labor supply (Cogan 2000; Basu, Das, and Dutta 2010). Selling their own labor might be the only viable strategy for adult household members to obtain liquidity and meet their consumption or investment needs (Rose 2001). The interplay of these channels makes it an empirical question whether, and to what extent, a given amount of CT affects the labor supply of adults and work incentives of recipient households.[1]

Similar to adult labor, the effects of cash transfers on child work cannot be determined a priori. Cash transfers may affect child labor by modifying the propensity to attend school or by changing the returns to child labor (Fiszbein et al. 2009; de Hoop and Rosati 2014). If the child begins to attend school as a result of the transfer, the time available to the child for leisure and for participation in income-generating activities is reduced. Further, if the transfer exceeds the monetary cost of education (fees, books, uniforms, etc.), the budget constraint shifts upwards and child labor

[1] See, for instance, contrasting evidence from the impact evaluation of the South African Old Age Pension program from Bertrand, Mullainathan, and Miller (2003) and Ardington, Case, and Hosegood (2009).

should unambiguously decrease. However, if the household invests the transfer in productive activities, the returns to child work may increase, thereby offsetting the income effect and possibly resulting in increased child labor.

Cash Transfers and Risk Management

Through the regular and predictable provision of financial resources, cash transfer programs can serve as insurance against risks. Further, they may improve beneficiaries' ability to manage risk and shocks. This includes avoiding detrimental risk coping strategies, such as distress sales of productive assets or children being pulled out of school. Further, cash transfers may influence production through farmers' risk preferences. With incomplete insurance markets, risk-averse farmers anticipate not being able to recover from shocks, which leads them to opt for less risky portfolios, which in turn also generate lower returns. By means of altering total farm household wealth, cash transfers can have an effect on farmers' risk attitudes and thus on their production decisions (Pope and Just 1991; Hennessy 1998; Serra et al. 2006). Under the assumption that farmers are characterized by decreasing absolute risk aversion preferences, cash transfers may reduce farmers' degree of risk aversion. Willingness to assume more risk may result in an increase in production through an increase in input use (Dercon 1996; Hennessy 1998). Hence, through increased liquidity or reduced risk aversion, cash transfers may lead farmers to embark in investment projects such as buying fertilizers and improved seeds.

Implications of Cash Transfer Design and Features

The design and implementation of a cash transfer program has an influence on its potential productive impact, which is defined here as increasing the capacity of the household to generate income through productive expenditures (not for consumption).[2] With respect to frequency of payments, for instance, individuals may treat income received as a lump sum differently to income received in multiple smaller payments. Chambers and Spencer (2008) determined that individuals spend less and save more from lump-sum tax refunds than monthly reductions in withholding (tax retention). Individuals are also more likely to make investments and/or pay down debt with a lump-sum tax refund. Bastagli et al. (2018) suggest that lumpy payments could have a higher impact on investments rather than consumption smoothing, the impact being potentially stronger if timing is linked to seasonal changes. In the Kenya Give Directly experiment, Haushofer and Shapiro (2016) randomize the timing of transfers (monthly vs. lump-sum). These authors suggest that if households are both credit- and savings-constrained, we would expect fewer purchases of expensive assets among monthly transfer recipients because the savings constraint would prevent this group from saving their transfer to buy the asset, and the credit constraint would prevent it from borrowing against the promise of the future transfer (Haushofer and Shapiro 2016, p. 2023). Conversely, recipients of a lump sum may be keen to invest it immediately into a large durable if they are not sure they can pace their non-durable consumption and save.

Transfer amounts may influence not only monetary outcomes but also behavioral decisions around investment and labor market participation. Sizeable transfers can trigger investment decisions versus current expenditure, while transfers that are too small to cover even the basic food consumption needs of households are unlikely to bring about such change. Bastagli et al. (2018) suggest that the size of the transfer may indeed affect the type of investment: higher amounts may be used for bulkier investments (e.g., cow) and smaller amounts for smaller investments (e.g., chickens and goats). With respect to labor supply, Del Carpio (2008) and Basu, Das, and Dutta (2010) show that unearned non-labor income and the labor supply of rural households have an inverted-U relationship: for low levels of the cash transfer, households react by increasing the amount of supplied labor, but after reaching a critical level of cash they reduce labor supply, a result also found by Prifti et al. (2018).

A key component of a program's design is the targeting of beneficiaries, as the targeting rules determine the demographic and geographic profile of beneficiary households. For instance, if a households' individuals who are eligible for a program are concentrated in particular areas of a country ("geographic targeting"), providing cash to everyone within those regions may be an effective method to

[2] We do not consider effects on health and schooling as productive, though human capital accumulation tend to have a tangible result, especially in the long term.

transfer resources (see Baker and Grosh 1994 and Elbers et al. 2007). In SSA, many cash transfer programs target labor-constrained households. With limited labor availability, the impact of cash transfers on production may be either muted or imply a reallocation of family labor to hired labor or a change in the household livelihood strategy from physically-demanding income-generating activities to other that require less-intensive labor. Households in high-potential agricultural areas may be more likely to invest in agriculture compared to those in areas with less potential, or in peri-urban areas where non-agricultural activities may have a higher return.

Other aspects of program design may also influence productive impacts. The literature on intra-household allocation shows that households may respond differently to income changes depending on who has control of the resources within a household (Quisumbing 2003). If transfers target female beneficiaries, income is likely to be used differently than if transfers target male household members. If transfers accrue to household members with certain consumption preferences or interest in a particular productive activity, resources may be used in a certain direction.

Even without explicit conditions on transfers, the fact the transfers come from the government and come with messages or expectations can influence how they are used (Pellerano and Barca 2017). Informal conditionality, often referred as "soft conditionality" may occur when beneficiaries are involved in training/education sessions that provide information on the "best use" of the transfers, or when community-based case management systems are put in place to oversee the "good use" of the transfer (Pace et al. 2019). Sometimes individuals use "mental accounting" to decide on how to use funds—that is, they dedicate income from certain sources for specific types of expenditures (Thaler 1990). The use of transfers can then depend on how beneficiaries perceive these funds and if, due to messaging or other factors, they link these transfers to certain types of spending, including productive spending. In this case, transfer income is spent differently from general income as it exerts both an income and a substitution effect.

Testable Hypotheses

The above discussion leaves us with a number of testable hypotheses to guide our interpretation of the empirical results (table 1). The potential impact on household agricultural and non-agricultural self-employment activities is conditional over a number of dimensions. The existence of a liquidity, credit and/or insurance constraint should lead to a positive impact on all self-employment economic indicators, including land and other inputs use. The availability of family labor should lead to greater productive impacts. Female-headed households may have a smaller response since women tend to be more constrained across a range of dimensions, including landownership, services, credit, etc. (Quisumbing et al. 2014; Doss et al. 2015). Female-headed households may also be confounded with less male labor. The relative profitability of crop, livestock, and/or non-agricultural activities in a given economic context is germane. If crop production is the activity of last resort, for example, then the impact on related outcomes could be negative, as households shift into other activities, and vice versa with livestock and non-agricultural activities. Impacts on livestock can be expected to be positive if cash transfers allow households to cross a "critical asset threshold", especially at a low initial level of assets (Carter and Barrett 2006). The impact on sales could be either positive if the cash increases farmer commercialization by reducing transaction costs (Key, Sadoulet, and de Janvry 2000), or negative if a liquidity constraint forces premature consumption and sales of "green" maize, which is a documented phenomenon in Malawi (FEWS NET 2002). Program messaging is also important—the stronger the social messaging, the greater the likelihood of larger impacts on social outcomes (Pace et al. 2019) and smaller impact on income-generating activities, whereas any agricultural messaging could boost the impact. Finally, missing or poorly functioning input and/or output markets would reduce the impact on income-generation outcomes.

The second panel in table 1 describes the hypotheses of the impact of cash transfer programs on labor outcomes. Agricultural wage labor is clearly an activity of last resort, while non-agricultural labor, in the context where most of these programs are taking place, is a higher-return activity (Davis, Di Giuseppe, and Zezza 2017). The potential impact on family farm and non-agricultural business labor cannot be determined a priori—if the economic activity is profitable and

Table 1. Expected Direction of Cash Transfers Impacts

	Expected impact
Income-generating outcomes	
Land use, volume of production, change in production, input use, tool ownership/use	+
Sales	+/−
Livestock	+
Non-farm enterprise	+/−
Labor Outcomes	
Agricultural wage labor	−
Family farm labor	+/−
Non ag. business labor	+/−
Non ag. wage labor	+
Child labor—wage	−
Child labor—family farm	+/−
Savings, credit, debt and risk coping	
Credit	+/−
Level of debt	+/−
Savings	+/−
Negative risk-coping strategies	−
Private transfers/remittances	+/−

liquidity-constrained, then we would expect a positive impact. If agriculture itself and/or the non-agricultural business is also a less-preferred activity, then the cash transfer could lead to a reduction in time spent in these activities.

A similar logic applies to child labor. Child wage labor is also clearly an activity of last resort, and we would expect the program to lead to a reduction. However, the expected impact on on-farm child labor could go in either direction, depending on the profitability of farming, as well the increased demand for labor given increases in household agricultural activities. This impact is conditional on the overall availability of household labor in the family (the more available labor, the less likely child labor will be employed) as well as the messaging of the program and impacts on child schooling.

The third panel in table 1 describes the hypotheses of impact on savings, credit, debt, and risk-coping outcomes. Most programs posit positive potential impacts on credit, in that cash transfers can serve as either collateral for loans or at least a signal of improved capacity to repay loans. But this supposes the existence of functioning credit markets. In fact, in most of the contexts in which these programs operate credit is available, but usually of a "loan shark" nature, with very high interest rates, and only as an option of last resort. In this context, the programs could lead to a reduction in debt levels—as households pay off debt—and a reduction in the number of loan transactions. The impact on savings cannot be determined a priori: under uncertainty, asset-based social protection interventions can significantly reduce savings by mitigating the need for precautionary saving through the provision of a welfare safety net for consumption (Hubbard, Skinner, and Zeldes 1995). Furthermore, if parents rely on children for support in old age, then expenditure on children may serve as a substitute for savings, implying that households with more children will save even less (Nerlove, Razin, and Sadka 1985). However, following the life cycle hypothesis, if farm households perceive transfers as transitory rather than permanent income, their savings can increase (Paxson 1992). The impact on negative risk-coping strategies should be clear—the receipt of cash should reduce the likelihood that beneficiaries turn to risk-coping strategies with long-term negative implications.

Finally, at the end of table 1, we suggest the possible direction of impacts of social cash transfers on private transfers and remittances. From a theoretical perspective, the impact on both kinds of transfers could be either positive or negative. If private transfers are driven by altruistic motives on the part of senders, an increase in social transfers received by a household may lead to a reduction in private transfers, or a crowding-out effect (Cox 1987). On the contrary, if private transfers are exchange-driven (as part of an explicit or implicit ex-ante arrangement or promise), they may remain the same or increase as a result of an increase in social transfers (Cox 1987, 1990; Altonji, Hayashi, and Kotlikoff 2000).

Cash Transfer Programs Analyzed

The characteristics of the seven government-run cash transfer programs analyzed in this article can be found in table 2. Most of the programs provide cash without any explicit conditions on their receipt, although in some cases there is either some messaging or other soft conditions. For example, in Ghana, caretakers of orphans and vulnerable children (OVC)

Table 2. Country Programs

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Program	Tigray Social Cash Transfer Pilot Programme (SCTPP)	Livelihood Empowerment Against Poverty program (LEAP)	Cash Transfer Program for Orphans and Vulnerable Children (CT-OVC)	Child Grants Program (CGP)	Social Cash Transfer (SCT) Program	Child Grant Program (CGP)	Harmonized Social Cash Transfer (HSCT) Program
Year initiated	2011	2010	2007	2011	2006	2010	2011
Conditionality	No conditions	No conditions for people over 65 and with disabilities; "soft" conditions for OVC caretakers	No conditions	No conditions, but strong message that cash should be spent on needs of children	No conditions	No conditions	No conditions
Overlapping programmes	No	National Health Insurance Scheme (NHIS)	No	Food Emergency Grant	No	No	No
Targeting	Ultra poor, labor-constrained households	Ultra-poor households with members in one of three categories: 1) single parent with OVC; 2) elderly poor; 3) people with extreme disability	Ultra-poor households with OVC	Ultra-poor households with children (0-18 years old)	Ultra poor, labor-constrained households	Any household with a child under five	Ultra poor, labor-constrained households

Continued

Table 2. continued

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Recipient[a]	78.48% women	80.7% women	N/A	66.7% women	N/A	98.3% women	64% women
Frequency	Monthly	Bimonthly	Bimonthly	Quarterly	Bimonthly	Bimonthly	Bimonthly
Monthly amount	155 ETB basic household transfer 25 ETB for each child <16 years (at most 4) 10 ETB for each child in primary or secondary school (at most 4) 40 ETB for each disabled child <18 years 50 ETB for each disabled adult 60 ETB for each elderly dependant	8G¢ (1 eligible hh member) 10G¢ (2) 12G¢ (3) 15G¢ (4+)	2007: 1,500KSh per hhld; 2011: 2,000 KSh per hhld	Start: 120LSL per hhld April 2013: 120LSL (1-2 children) 200LSL (3-4) 250LSL (5+)	1000 MKW (1 hh member) 1,500 MKW (2 hh members) 1,950 MKW (3 hh members) 2,400 MKW (4+ hh members) Top-ups for school attendance: 300 MKW for each member<=21 years in primary 600 MKW for each member<=30 years in secondary	60 ZMK per hhld	$10 (1 hh member) $15 (2 hh members) $20 (3 hh members) $25 (4+ hh members)

Note: Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. Currency acronyms: ETB = Ethiopian Birr; G¢ = Ghanaian Cedis; KSh = Kenyan Shilling; LSL = Lesotho Loti; MKW = Malawian Kwacha; ZMK = New Zambian Kwacha; $ = U.S. dollars. [a]Shares computed from the operational performance sections of the impact evaluation and not from administrative data.

are supposed to register the children and ensure they are enrolled in school, although these conditions are not applied (Oxford Policy Management 2013). In Lesotho, the transfer is provided with messaging on the importance of children's needs like food, clothes, shoes, school uniforms, and related expenses (Oxford Policy Management 2014; Pellerano et al. 2014), though during the time of the evaluation beneficiaries received an additional, one-time cash top-up, the Food Emergency Grant, which was delivered with the message of increasing agricultural production in response to a severe drought.

The targeting in these programs tends to emphasize very poor households with limited availability of labor. Ethiopia, Ghana, and Kenya explicitly target households with OVCs, and most programs target households that are explicitly defined as labor-constrained or that are likely to be labor-constrained by the manner in which they are identified (e.g., elderly, single parents, OVCs being supported by grandparents, or single parents). The Child Grant (CG) model of the Zambia Social Cash Transfer is an exception for two reasons: first, it targets households with children in a more narrow age range (between 0 and 5 years), which has the implication of giving preferential access to families with relatively younger parents; second, it adopts a categorical targeting approach within communities, as it aims to cover all children within selected districts.

The importance of targeting can be understood from the age pyramids of the baseline samples used for the evaluation of the seven programs (available in the online supplementary material, appendix A). In Zambia, there are a large number of children in the age band from 0 to 5 years, a large share of adults aged between 18 and 29, and very few elderly household members. The other countries show a smaller share of able-bodied adult members, and a larger share of older children and older adults.

The amount of the transfer relative to household income or expenditures and the timing of the receipt of transfers may influence its use. The CG in Zambia was the most generous transfer for the eligible population, at around 28% of median household consumption at baseline. Most of the other programs were providing between 20% and 25% of household consumption, with the noticeable exception of Ghana, at 10%—although after the follow-up survey the government tripled the amount for transfer beneficiaries. Between the baseline and the follow-up survey, some governments increased the amount of the transfer: in Zambia the increase was meant to offset the negative effects of inflation.[3] For those countries using a flat rate, the per capita value varies by household size. While for average-size households the Kenya transfer represented 14% of per capita consumption, the share ranged from 10% to 22% for large and small households, respectively.[4]

Although transfers are intended to be provided on a regular basis, this is not necessarily what happens in practice. In Zambia the transfers were delivered regularly throughout the evaluation period, with only one missed payment in Shangombo district (American Institutes for Research 2013a). In Ghana and Lesotho, the schedule suffered major disruptions with several missed payments, which were partly recovered with large lumpy amounts close to the follow-up survey.[5]

Design of the Impact Evaluations

The objective of an impact evaluation is to attribute an observed impact to a program intervention. Since one cannot observe the outcome of a household if it had not been a beneficiary, an impact evaluation is essentially a missing data problem and entails identifying a group of non-beneficiaries, the control group, as similar as possible to the beneficiary group to yield a proxy for this missing data (i.e., a counterfactual).

Randomized control trials (RCTs) are widely seen as the best way to generate a reasonable control group (Khandker, Koolwal and Samad 2010; Gertler et al. 2011). For government programs, this generally involves the use of randomized phase-in of beneficiaries into the programs (Duflo, Glennersterz, and Kremer 2007). In this approach, eligible households in villages or communities where

[3] In Zambia, the transfer amount increased from 55,000 old Zambian Kwacha (ZMK) to 60 new Kwacha (ZMW). Between the two surveys, the rebasing was introduced at a rate of 1,000 ZMK = 1 ZMW. In Kenya, the increase in transfer size took place after the 2011 follow-up survey and it was meant, as in Zambia, to deal with the negative effects of inflation.

[4] In appendix A of the online supplementary material, we graphically show the transfer size as a share of household consumption.

[5] In appendix A of the online supplementary material, we provide a visual representation of the payment frequency in the countries where we had access to administrative data.

the program will operate are identified and the order in which they will receive the program is randomly determined. The random selection is done at the village or community level to prevent spillover effects from beneficiaries to non-beneficiaries contaminating the control group. In four of the countries analyzed for this study—Kenya, Lesotho, Malawi, and Zambia—this approach was used to measure the counterfactual. Pellerano et al. (2012), Ward et al. (2010), Handa et al. (2014) and American Institutes for Research (2011) provide detailed descriptions of the different evaluation designs in these countries.

However, experimental designs are difficult to implement in practice for political, ethical, institutional, and logistical reasons, particularly when programs are owned by national governments.

In the case of the Livelihood Empowerment Against Poverty (LEAP) program in Ghana, an RCT was not possible due to practical considerations of the program, and a longitudinal propensity score matching (PSM) design was used instead. Baseline data were collected from future beneficiaries who were part of a larger nationally representative sample of households surveyed, as part of a research study conducted by the Institute for Statistical, Social and Economic Research of the University of Ghana-Legon (ISSER) and Yale University in the first quarter of 2010. A comparison group of "matched" households was selected from the ISSER sample and re-interviewed after 24 months, along with LEAP beneficiaries to measure changes in outcomes across treatment and comparison groups. The conditions surrounding the LEAP study were virtually ideal for PSM to approximate the benchmark experimental estimator as indicated by Diaz and Handa (2006) and Heckman et al. (1998), and were as follows: (*a*) a rich set of pre-program information was available from both groups of households; (*b*) information was collected in the same manner, in this case using the exact same instruments, survey protocols and field teams; and (*c*) longitudinal data were available to account for potential unobserved community differences across comparison and intervention sites over time. The main challenge, on the other hand, was the ability to generate enough observations from the national survey that were on the "thick" region of common support, given LEAP's unique eligibility criteria. This proved difficult and was ultimately addressed by applying inverse probability weighting (IPW) to the resulting samples. Further details of this design and analysis of the matched comparison group are presented in the LEAP Evaluation Baseline Report (Handa and Park 2011).

In Zimbabwe, the evaluation study of the Harmonized Social Cash Transfer (HSCT) program compared cash transfer recipient households from Phase 2 districts with eligible households in Phase 4 districts that were not going to receive the transfers during the period of the study. The major factor in the choice of a non-experimental design for the HSCT instead of a RCT was the stated policy of the government that all eligible households be enrolled once a district entered the program. After randomly selecting the study wards within treatment districts and by geographic proximity and similarity in agro-ecological conditions in comparison districts, the government conducted targeting to identify eligible households in exactly the same way in both the treatment and the comparison wards to create equivalent and comparable groups. In this sense, households in the comparison group are precisely those that are eligible for the program and that were enrolled at a future date—they are thus a genuine "delayed entry" comparison group (American Institutes for Research 2013b).

Finally, in terms of the Tigray Social Cash Transfer Pilot Programme (SCTPP) in Ethiopia, randomization was not possible given the rollout of the pilot. The evaluators from the International Food Policy Research Institute argued that it was not possible to find analogous comparison communities (*tabias*), and therefore comparison households were taken from treatment *tabias*. A PSM was used in the analysis (Berhane et al. 2012, 2015).

With the creation of a reasonable control group, the quantitative analysis in each country involved taking a random sample of treatment and control households of suitable size (based on power calculations) for assessing impact on key indicators, collecting baseline information prior to the start of the program, and administering one or more rounds of follow-up data collection to assess impact. Table 3 provides an overview of the evaluation design of the programs, noting when the first (baseline) and subsequent rounds of data were collected. It also includes the sample size for both the eligible and, when available, ineligible population.

Table 3. Programs Evaluation, Design, and Sample Size

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Rounds of data collection	Baseline: 2011 24 months endline: 2013 Five intermediate monitoring surveys	Baseline: 2010 24 months follow-up: 2012	Baseline: 2007 Midline: 2009 Endline: 2011	Baseline: 2011 24 months follow-up: 2013	Baseline: 2013 17 months follow-up: 2014	Baseline: 2010 24 months follow-up: 2012 30 months follow-up: 2013 36 months follow-up: 2013	Baseline: 2013 12 months follow-up: 2014
Design	PSM	PSM	RCT	RCT	RCT	RCT	Matched case-control
Sample size for eligible population	2012: HH 3,219 IND 9,950 2014: HH 3,173 IND 2,308	2010: HH 1,613 IND 6,113 2012: HH 1,504 IND 5,728	2007: HH 2,294 IND 12,812 2009: HH 1,907 IND 10,901 2011: HH 1,811 IND 10,399	2011: HH 1,486 IND 8,294 2013: HH 1,406 IND 8,146	2013: HH 3,531 IND 16,078 2014: HH 3,369 IND 15,407	2010: HH 2,519 IND 14,345 2012: HH 2,298 IND 13,248	2013: HH 3,063 IND 14,597 2014: HH 2,630 IND 12,725
Sample size for ineligible population	2012: HH 446 IND 2,123 2014: HH 440 IND 11,919	Not sampled	2007: HH 465 IND 2,652 2009: HH 348 IND 2,056 2011: Not sampled	2011: HH 1,568 IND 7,695 2013: HH 806 IND 4,128	2013: HH 821 IND 4,099 2014: Not sampled	Not sampled	2013: HH 923 IND 4,598 2014: Not sampled
Partner	IFPRI and Mekelle University	UNC and ISSER	UNC, OPM and Research Solutions Africa	OPM and Sechaba Consultants	UNC and CSR	AIR, UNC and Palm Associates	AIR, UNC, Ruzivo and CASS

Note: HH and IND are households and individuals, respectively. Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. Organization acronyms: IFPRI = International Food Policy Research Institute; UNC = University of North Carolina; ISSER = Institute of Statistical, Social and Economic Research at University of Ghana; OPM = Oxford Policy Management; CSR = Centre for Social Research at University of Malawi; AIR = American Institute for Research; CASS = Centre of Applied Social Sciences at University of Zimbabwe.

Analytical Approach

The statistical approach used to derive the average treatment effect of the cash transfer programs is the difference in difference (DiD) estimator.[6] The key assumption underpinning the DiD is that there is no systematic unobserved time-varying difference between the treatment and control groups that would cause the outcomes for the comparison group and treated group to have different trends over time. The random assignment to the groups, the geographical proximity of the samples, and the rather short duration between pre- and post-intervention measurements make this assumption reasonable. Further, the DiD was estimated in a multivariate framework, controlling for potential intervening factors that might not be perfectly balanced across treatment and control units and/or are strong predictors of the outcome. Not only does this allow for possible confounders to be controlled, but it also increases the efficiency of the estimates by reducing the residual variance in the model. The estimation model is shown in equation (1):

$$(1) \quad Y_{it} = \beta_0 + \beta_1 D_{it} + \beta_2 R_t + \beta_3 (R_t * D_i) + \Sigma \boldsymbol{\beta}_i \mathbf{Z}_i + \varepsilon_{it}$$

where Y_{it} is the outcome indicator of interest; D_i is a dummy equal to 1 if household i received the treatment, and 0 otherwise; R_t is a time dummy equal to 0 for the baseline and 1 for the follow-up round; R_t* D_i is the interaction between the intervention and time dummies; its coefficient β_3 is the double difference estimator, which captures the impact of the program, and ε_{it} is the statistical error term. To control for household and community characteristics that may influence the outcome of interest beyond the treatment effect alone, researchers in each country's case studies added $\mathbf{Z}_i$, a vector of country-specific household and community characteristics. In the online supplementary material, we provide the list of control variables across countries (appendix C) and robustness checks across specifications (appendix D).

Cluster-robust standard errors were applied to account for the lack of independence across observations due to clustering of households within communities (Bertrand, Duflo, and Mullainathan 2004). Further, in a few cases where panel data were not available (i.e., outcome variables were observed only at follow-up), a single-difference estimator or a PSM, or a combination of the two such as the IPW were applied.

Several factors can cause attrition, including migration, dissolution of the household, death and divorce, or refusal to answer. Not only does attrition potentially lead to less precise estimates of program impacts due to reduced sample size, but it can also contribute to selection bias if the treatment and control groups differ in the types of individuals who leave the sample.

In three of the studied programs (Lesotho, Zambia, and Zimbabwe), inverse probability weights were used to account for attrition in the follow-up sample. In Lesotho, the overall rate of attrition was not particularly high (8.8%), but Pellerano et al. (2014) found that there were some systematic differences in the response to the follow-up survey between the treatment and control group. In Zambia, American Institutes for Research (2013a) found small differences at the 24-month follow-up, which affected treatment and control households equally. Similarly to the CG in Zambia, American Institutes for Research (2015) found no differential attrition in Zimbabwe. However, some evidence of overall attrition emerged; for 24 out of 135 outcome indicators at baseline, statistically significant differences were found between the group of households that remained in the follow-up and the households who were missing in the follow-up.

In Ghana and Malawi, the overall attrition rate was quite low (6.7% and 4.5%, respectively). In Ghana, Handa et al. (2014) found no systematic pattern among household characteristics. In Kenya, the attrition rate was quite substantial (18% and 22% at follow-ups in 2009 and 2011, respectively). However, Kenya CT-OVC Evaluation Team (2012) suggested that attrition is not correlated with treatment assignment and other characteristics such as household size.

Baseline Balance

In appendix B of the online supplementary material, we provide a baseline assessment of the income-generating activities (table B1) and of the household socio-demographic

[6] Due to some limitations in the evaluation design and in program implementation, in Ethiopia a non-parametric PSM approach has been implemented instead of a DiD estimation.

characteristics (table B2) for the treatment and the control groups in the cash transfer programs along with tests of difference. Unsurprisingly, given the targeting of rural populations, the vast majority of beneficiaries are engaged in agricultural activities and work for themselves. The share of households dedicated to either livestock rearing or crop production is above 80% in five countries, with the exception of Ethiopia and Ghana (71% and 63%, respectively). A minority of households generate income from off-farm enterprises, the highest share being found in Ghana, where 30% of households are involved in small businesses such as retail sale. Given the lack of local labor markets, wage employment is mostly casual/temporary. Further, eligible households rely on various sources of cash and in-kind transfers, especially private remittances from friends and relatives.

With respect to baseline household sociodemographic characteristics, randomization has worked to create a good counterfactual in Malawi and Zambia, and for Lesotho there are few differences across arms. In Zimbabwe too, despite the non-experimental nature of the study, the household identification process managed to create equivalent balanced groups (Hurrell, Ward, and Merttens 2008; American Institutes for Research 2011, 2013b; Pellerano et al. 2012; Handa et al. 2014).

In Ghana, the ISSER matched sample is quite different from the sample of program beneficiaries because LEAP households are very unique and the ISSER survey was a national survey. In Ethiopia, households in the treatment group were much smaller than in the comparison group, with older heads and much more likely to be female-headed and more labor-constrained. These differences are not surprising since controls were chosen from the non-selected households in treatment communities. In Kenya too, despite the RCT design, balance at baseline was not achieved because the final priority ranking of eligible households (based on age of household head) that was performed in treatment areas was not simultaneously conducted in control areas. Tables B1 and B2 show household characteristics for these three countries after having applied IPW, with which a reasonable balance between treatment and control is achieved, though a few differences remain, especially for Ghana. This reinforces our argument for using the DID methodology in a multivariate framework.

Results

To test hypotheses that cash transfers have household-level productive effects as outlined above, four sets of indicators are examined: (*a*) agricultural production, (*b*) agricultural inputs and assets, (*c*) labor supply of adults and children, and (*d*) other livelihood strategies and risk coping behavior. Since the details of questionnaires in each country were not identical, indicator availability and definitions vary according to the country. Nonetheless, the tables of results have been organized to ensure the greatest comparability possible with data limitations noted (N/A=not available). A graphical representation of some relevant indicators available across most countries is presented in figure 1. In this graph we report the average intent-to-treat effects as z-score indices, standardized to the control group at baseline in order to facilitate cross-country comparison.

The results presented in the tables focus on full sample mean impacts. As Heckman, Smith, and Clements (1997) point out, however, judgments about the "success" of a social program should depend on more than the average treatment effect, and as noted in our discussion of the testable hypotheses above, the ultimate impact of the program may be conditional on a number of dimensions of heterogeneity. Given available data, heterogeneity analysis is carried out by gender of household head (Ethiopia, Ghana, Kenya, and Malawi), per capita transfer amount when the transfer is flat per household (Kenya and Zambia), labor availability (Lesotho, Malawi, and Zimbabwe) and by *woreda* in Ethiopia. We refer to the most significant heterogeneous results, while discussing each set of indicators. Tables with heterogeneous effects are reported in online supplementary material appendix E (from E7 to E13).

Household-Level Productive Impacts

Table 4 presents the impact of the cash transfer programs on indicators of agricultural production. In Zambia agricultural output expanded, as shown by a slightly larger share of households producing rice and groundnut and a much larger value of harvest (145.9 new Zambian Kwacha - ZMW). Cassava production fell, consistent with a reduction observed in consumption, probably as a result of the change in diets. This jump in

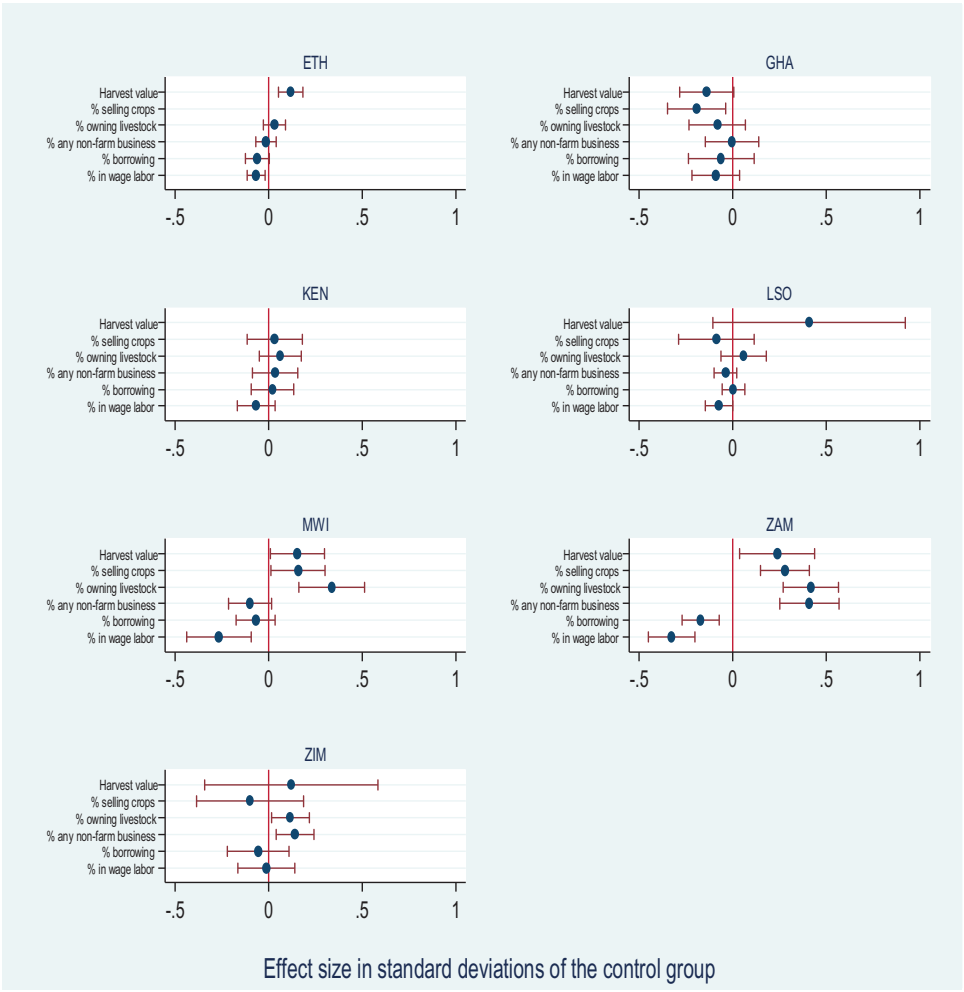

Figure 1. Average intent-to-treat effects by country, at a glance

Note: This figure summarizes the average intent-to-treat effects by country presented in tables 4 to 9. Treatment effects are presented as z-score indices, standardized to the control/comparison group at baseline. Each entry shows the standardized outcome and its 90% confidence interval. Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe.

agricultural output is associated with increases in home consumption and crop sales, the latter increasing by 12 percentage points (pp) from an overall base of 22%.

In Lesotho, the CGP led to a significant increase in maize, sorghum, and vegetable production. The latter is at least partially attributable to more rounds of planting and production. This increase in crop production did not translate into higher marketing of crops, except for a small increase in bartering. In terms of heterogeneous impact effects, the large and positive impact on the quantity of maize produced is substantially driven by labor-unconstrained households, while the impacts on sorghum are significantly larger for moderately and severely labor-constrained households.[7] Daidone et al. (2014) explain this different pattern of results by the lower labor requirements for sorghum compared to maize, especially for harvest activities. Further, households with labor capacity are also much more likely to be involved in homestead gardening.

In Zimbabwe, households moved away from traditional crops such as finger millet to

[7] The 38.87 kg overall impact on the quantity of harvested maize increases up to 62.35 kg for labor-unconstrained households, while the overall 9.82 kg impact on sorghum reaches 22.74 kg and 49.32 kg for moderately and severely labor-constrained households, respectively.

Table 4. Impacts on Agricultural Production

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Agricultural output	Crop prod (prop HH):	Share producers:	Share producers:	Share producers:	Share producers:	Share producers:	Share producers:
	Teff -0.052**	maize -0.030	any crop -0.024	maize 0.030	Maize -0.013	maize 0.049	any crop -0.029
	Barley -0.031	cassava -0.098**	local maize -0.006#	sorghum 0.019	Groundnut 0.09	rice 0.031*	maize -0.015
	Maize 0.010	cocoa -0.049***	millet -0.067#	wheat 0.023	Pigeonpea -0.052	cassava -0.026	sorghum -0.036
	Sorghum 0.022	rice 0.012*	beans -0.014#	Harvest (kg):	Harvest (kg):	groundnut 0.035***	finger millet -0.042*
	Crop yield (kg per ha):	yam -0.035		maize 38.870**	Maize 15.551	Value (ZMK):	pearl millet 0.093**
	Teff -18.065	Value (GhC):		sorghum 9.817*	Groundnut 6.82	total harvest 145.9*	roundnuts 0.04***
	barley -47.399**	maize -48.61**		wheat 6.866*	Pigeonpea 0.19	Harvest (kg):	Harvest (kg):
	maize 7.011*	cassava -18.8*		Home gardening:	Value of production 1512.56*	maize 49.5	maize -56.5
	Sorghum 67.243***	cocoa -70.8***		share producing vegetables 0.055**		cassava -68.1*	sorghum -66.5
	Value of production 293.853***	rice 0.3		number of vegetables 0.227*		rice 20.4	pearl millet 34.5***
		yam 69.9*		number of seasons 0.342***			roundnuts 3.5**
				value of production (LSL): 299.75			value of production (USD): 26.98
Crop sales	Crop quantity sold (kg):	share HH selling crops -0.073**	share HH selling crops 0.014#	share selling crops -0.019	Share selling:	Share selling crops 0.120***	share HH selling crops -0.012
	Teff -5.254			share bartering crops 0.027***	Any crop 0.06*	Value of sales 81.5***	
	Barley -7.537*				Maize 0.001		
	Maize -0.052				Groundnut 0.052		
	Sorghum 5.999*				Pigeonpea 0.02		
					Crop quantity sold (kg):		
					Maize -0.357		
					Groundnut 2.95		
					Pigeon pear 0.76		
					Value of sales (MWK) 351.22		
Home consumption of crop production	N/A	N/A	Proportion food spending:	N/A	N/A	share consuming 0.059*	share consuming -0.015
			cereals 0.06			value of consumption (ZMK) 41.2	
			meat & fish 0.04				
			dairy & eggs 0.122**				
			other food 0.04***				
Livestock ownership	Share HH:	Share HH:	Share HH:	Share HH:	Share HH:	Share HH:	Share HH:
	any livestock 0.016	any livestock -0.041	any livestock 0.025#	any livestock 0.028	any livestock 0.15***	any livestock 0.209***	any livestock 0.047*
	Cows 0.003	sheep -0.047	large livestock 0.030	chickens 0.012	Chickens 0.089**	chickens 0.154***	cattle -0.037
	Sheep -0.026***	goats -0.061	small livestock 0.051	pigs 0.078**	Goats or sheep 0.109***	cattle 0.084***	goats 0.068*
	Goats -0.016	chickens -0.028	poultry -0.008	cattle -0.027	Cows, bulls or ox -0.00	goats 0.036***	chickens 0.060**
	Chickens 0.041*	cattle -0.016		Number of animals:	Pigs 0.005	Number of animals:	Number of animals:
	Number of animals:	Number of animals:		TLU total 0.067	Number of animals:	TLU, total 0.138	TLU total -0.022
	TLU total -0.055	TLU total -0.12*#		chickens -0.03	TLU total 0.039***	chickens 1.234***	cattle -0.098
	Cows -0.006	sheep -0.2		pigs 0.109**	Chickens 0.455**	goats 0.142***	goats 0.043
	Sheep -0.079**	goats -0.4*		cattle -0.091	Goats or sheep 0.275***	ducks 0.198***	chickens 0.103
	Goats -0.120**	chickens -1.0			Cows, bulls or ox 0.005		
	Chickens 0.062	cattle -0.1			Pigs 0.0026		

Note: Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. Significance level: ***= <0.01, **= <0.05, and *= <0.1. Cluster robust standard errors (not reported). N/A- indicator not available. HH stands for households, TLU for Tropical Livestock Units. # indicates that the estimate is the authors' additional calculation. In all other cases, estimates are summarized from the respective country's evaluation reports. Dark grey text highlight and white font emphasize statistically significant positive impact estimates, while light grey text highlight and black font emphasize statistically significant negative impact estimates.

roundnuts and pearl millet, and overall marketing of surplus production remained low (American Institutes for Research 2015).[8] Similarly, in other countries we observe a switch in crop production. For instance, in Ethiopia the value of production increased by 293 Ethiopian Birr, probably driven by higher sorghum yields, but production of barley decreased. In Malawi we do not observe any significant increases, nor reductions in cultivation of specific crops, though overall the value of production increased by 1,512 Malawian Kwacha (MKW). In both Ethiopia and Malawi, the impacts of the cash transfers on production are larger for male-headed households who report significantly higher values of crop production in both countries. In Ethiopia, this result is a likely consequence of the higher sorghum yields, and that male-headed households were cropping more sorghum than female-headed households. In Malawi, the larger impacts on MHH are driven by greater groundnut production.

Unsurprisingly, in Ethiopia the magnitude of the impacts on crop production is relatively higher in Hintalo-Wajirat, which is a rural *woreda*. For instance, sorghum yields increased overall by 67.2 kg, while barley yields decreased by 47.4 kg. These impacts are driven by the group of households in Hintalo-Wajirat (excluding Bahr Tseba). Since sorghum is the most important commodity in the targeted districts, it does not come as a surprise that the impact on its productivity led to positive impacts on the total value of production, which are clearly higher in Hintalo.

Further, in Malawi the heterogeneity analysis was also extended to other aspects related to livelihoods. Given the importance of the Farmer Input Subsidy Programme (FISP), Asfaw, Pickmans, and Davis (2015) reported the impacts of the SCT on crop productivity by baseline FISP and non-FISP beneficiaries. Since FISP provides subsidized improved seeds and chemical fertilizers mainly for maize, it is unsurprising that the SCT significantly contributed to higher maize productivity for FISP beneficiaries (32 kg per acre, around 12.9 kg per ha). Further, maize is the most important crop in Malawi, which also explains why the impact on the value of production is significantly larger for FISP beneficiaries compared to non-FISP receivers (2,622 vs. 1,060 MKW, respectively). These results are quite interesting, as they reveal potential complementarities between existing social protection and agricultural interventions.[9] The impacts in Ghana and Kenya on the other hand, are more muted and even suggest some shifting away from agricultural production.

With respect to livestock, findings are broadly consistent with expected results from theory. Four programs have significant impacts: large effects on the share of households investing in diverse animal species and the number of heads of livestock in Malawi and Zambia, especially chickens. More limited effects are observed in Lesotho and Zimbabwe—for Zimbabwe, the impact is concentrated on small ruminants and chickens, while for Lesotho the effect is on pigs. No impact was found in Kenya and Ghana, and disinvestment out of livestock production is observed in Ethiopia. Further, we observe a diverse pattern of impacts, also in terms of the animal species: in Malawi, FHHs tend to invest in chicken, while MHHs invest in goats. In Kenya, despite overall insignificant results, we observed positive impacts on small ruminants' ownership for small households (less than five members) and FHH. In Zambia, we observed stronger effects in livestock accumulation for larger households, as opposed to what is observed in crop production.[10] Finally, in Zimbabwe, labor-constrained households were more likely to invest in chickens, while households with labor invested in goats.

Table 5 presents the impact of the cash transfer programs on indicators of agricultural inputs. With cash available, households should potentially be able to expand the purchase of inputs if agriculture is a desirable

[8] Daidone et al. (2018) argue that data were collected at both baseline and follow-up during or right after the harvest of main cereals. This is therefore one explanation as to why we observe a small share of households selling their crops. Moreover, these results would not be surprising for two main reasons: (*a*) high levels of food insecurity affecting the beneficiary households, who therefore need to consume the harvested crops at home; (*b*) difficulty accessing markets because of remoteness, lack of transport, and roads.

[9] See Pace et al. (2018) for a complete analysis of the synergies/complementarities between the SCT and the FISP in Malawi.

[10] Livestock accumulation in rural settings is often considered a risk-coping strategy, a second-best means for precautionary savings. Therefore, an increase in livestock rearing can also be seen as a means to overcome barriers in the access to insurance and credit markets. In these evaluation surveys it is not possible to differentiate when livestock accumulation represents a source of precautionary savings compared to when it represents increases in productive investments.

Table 5. Impacts on Agricultural Inputs and Assets

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Agricultural inputs	Share HH using: improved seed -0.047*** fertilizer 0.058***	Share HH used/purchased: seeds 0.027 transport -0.036 fertilizers -0.024 Expenses (GhC): seeds 24.68*** transport -0.73 Days hired labour last season: total -2.1 men -3.4**	Share HH using: seeds -0.015 pesticides -0.031* organic fertilisers -0.005 inorganic fertilisers -0.028 Expenditure per acre: seeds -104.8** pesticide 7.43 organic fertilisers 10.69 inorganic fertilisers -72.45	Share HH used: seed 0.038 pesticides 0.079** organic fertilizers 0.074* Share HH purchased: seeds 0.074* pesticides 0.051 inorganic fertilizers 0.058* Purchases (LSL): any input 15.1 seeds 12	Share HH using: chemical fertilizer -0.024 organic fertilizer 0.015 pesticide 0.00 improved/hybrid seed -0.01 Amount: chemical fertilizer (kg) 1.68 chemical fertilizer per acre (kg) 0.76 Exp organic fertilizer (MWK) 157.58* Exp organic fertilizer per acre (MWK) 99.51	Share HH: purchased crop inputs 0.177*** purchased seeds 0.100*** hired labour 0.054*** Amount: crop expenses 31.2*** seeds exp 9.9*** fertilizers exp 7.6**	Share HH used: any crop input 0.026 chemical fertilizers -0.003 pesticides -0.029* Share HH purchased: any crop input 0.014 chemical fertilizers 0.024 pesticides -0.013 Purchases ($): any crop input 1.093 chemical fertilizers 1.345 pesticides -0.431
Land use	Share HH using land for production 0.039*** Crop area (ha): Teff -0.007 Barley -0.036** Maize 0.019 Sorghum 0.002	operated land (ha) -0.403**#	N/A	owned land (ha) 0.054 operated land (ha) 0.034	cropped area (ac) maize -0.1 groundnut 0.078 pigeon pea -0.078	operated land (ha) 0.18***	N/A
Agricultural tools	Share HH owned: any asset 0.062***# Sickles - imported 0.029 Pick axes, spades, and shovels 0.031 Axes -0.015 Malakino -0.016 Hoes 0.009 Leather straps -0.035** Number of assets owned: Farm tool index 0.057** sickles - imported 0.056 Axes -0.056** Malakino -0.022 Hoes -0.041 Leather straps -0.105***	Share HH used: hoes -0.027 axes -0.061 shovels -0.053** picks -0.047*	Share HH owned: hoes 0.008 axes -0.008 sickles 0.005 plough -0.008 trough 0.012***	Share HH used: any asset 0.021 hoes 0.030 plough 0.038 cultivator 0.071 scotchcart 0.085** Share HH owned: any asset 0.006 hoes 0.022 plough 0.009 cultivator 0.026 scotchcart 0.045**	Share HH owned: Hand hoe 0.01 Axe 0.051 Panga knife 0.02 Sickle 0.062* Number of assets: Hand hoe 0.178* Panga knife 0.049 Sickle 0.10***	Share HH owned: hammers 0.044*** shovels 0.031** plough 0.036** Number of assets: axes 0.184*** hoes 0.296*** hammers 0.042**	Share HH owned: hoe -0.018 axe -0.007 sickle 0.088** Number of assets: hoe 0.071 axe 0.009 sickle 0.13***

Note: Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. Significance levels: ***= <0.01, **= <0.05, and *= <0.1. Cluster robust standard errors (not reported). N/A- indicator not available. HH stands for households. # indicates the estimate is authors' additional calculation. In all other cases, estimates summarized from a respective country's evaluation reports. Dark grey text highlights and white font emphasizes statistically significant positive impact estimates, while light grey text highlights and black font emphasizes statistically significant negative impact estimates.

economic activity and inputs are available. Coherent with the results on crop production, overall this impact is most strongly seen in Zambia, where cash transfers increase the share of households purchasing crop inputs by 18 pp, especially seeds (10 pp), as well as the intensity of input purchases, which increased by around 31 ZMW.

Similar results are found in Lesotho, although not to the same degree as in Zambia. The CGP contributed to a 7.4 and a 5.8 pp increase in the share of households purchasing seeds and chemical fertilizers, respectively. An increase in the use of pesticides was also observed (7.9 pp), which is probably a reaction to an armyworm outbreak (FAO Lesotho 2014). The increase in input use could also have been influenced by the Food Emergency Grant top-up. Further, the observed impacts on agricultural inputs use and purchase are unsurprisingly driven by labor-unconstrained households, though for input expenditures no heterogeneous impact was detected.

In Ghana, the LEAP led to an increase in seed expenditures, a result driven by male-headed households, which also reduced the hiring of labor. In Kenya, on the other hand, expenditure on seeds decreased, suggesting a shift away from intensified production. In Ethiopia we observed two opposite results: a reduction in the share of households using improved seeds and an increase in the share of those using fertilizers. Male-headed households increase the use of fertilizer, while female-headed households slightly increase hiring labor and sharecropping out more land. Since almost half of the sample of women heads is composed of widows, this result suggests that investment in agriculture for labor-constrained households such as those with widows taking care of children, might occur "indirectly". While we did not observe significant impacts on the proportion of households using and/or purchasing crop inputs in Malawi, the intensity of use increased substantially for organic fertilizers, by 157 MKW. The impacts on this indicator were led by MHH and by non-FISP beneficiaries. Finally, in Zimbabwe, no significant impacts have been detected on agricultural inputs beyond a 2.9 pp reduction in pesticide use.

With respect to land use, in Zambia the CG brought about large increases in operated land (0.18 ha, which corresponds to around one-third of baseline mean). In Ethiopia, the share of households using land increased by around 4 pp, more strongly for male headed households and confirming the previous results on agricultural input use, while in Ghana land use significantly decreased by 0.3 ha. In Lesotho and Malawi, we did not observe significant changes in land owned or operated.

The cash transfer program in Zambia shows dramatic increases in agricultural tools, both for the share of households owning assets and the number of assets owned. These impacts are much higher for larger households. In other countries impacts are more selective, often linked to one asset. For instance, we observed an increase in sickle ownership in Ethiopia, Malawi, and Zimbabwe, scotch carts in Lesotho, and troughs in Kenya. While the program in Ethiopia led to an increase in an overall farm tool index, there was a decrease in selected assets. Ownership of hoes and axes is generally widespread at baseline in all countries, and unsurprisingly we do not observe statistically significant impacts for these tools.

Overall, impacts on agricultural inputs and assets use/purchase are quite heterogeneous, with magnitudes changing considerably by programs and by population subgroups, and only partially consistent with expected signs from theory. Further, and with the exception of Zambia and Lesotho, these results did not translate into greater agricultural production.

Impacts on Labor Supply

The impacts of cash transfers on labor allocation are presented in table 6 (adult labor supply) and table 7 (children work), with estimates divided across types of labor activities. Cash transfers led to a reduction in adult agricultural wage labor in all countries but Ghana and Zimbabwe. In interpreting these results, agricultural wage labor and even many non-agricultural activities in rural areas are often a "refuge" sector, where poor households work to survive, hedge against agricultural risk, or obtain needed liquidity. A reduction in participation and time worked in these activities is suggestive of improved economic conditions. In Zambia, the results show that this shift in agricultural wage labor participation is compensated by significant increases of 20 days working on farm, and by increases in nonfarm businesses (17 pp and 1.6 days weekly).

Table 6. Impacts on Adult Labor Supply

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Agricultural wage	N/A	**ag & non ag:** hh participation (%) -0.016#	**ag & non ag:** participation (%): all -0.026 women 0.010 men -0.090 days worked per year: all -17.625* women -13.993 men -51.888	**ag & non ag:** participation (%): last year -0.059* last week -0.075** hours worked last week -3.180***	HH participation in ganyu (%): Adult men -0.123*** Adult women -0.069 days worked per year in ganyu by Adult men -14.277** Adult women -11.973*	HH participation (%): any adult member -0.147*** days worked last year any adult member -13.96***	HH participation (%): -0.002 days worked last year: -0.118
Family farm	N/A	Days worked last ag season: men 7.7* women 6.1	participation (%): all -0.047 women 0.007 men -0.043 days worked per month: all -0.042 women 0.406 men -0.622	participation (%): last year 0.051 last week -0.015 hours worked last week: -0.191	HH participation (%): Adult men 0.033 Adult women -0.004 days worked last rainy season: Adult men -1.639 Adult women -1.401	HH participation (%): any adult member -0.014 days worked last year any adult membe 26.3***	HH participation (%): -0.022 days worked last year -20.363**
Non-farm business	HH participation (%): -0.042** days worked per month: men -0.652* women -1.080***	N/A	N/A	participation (%) last year -0.010 last week 0.006 hours worked last week -0.195	HH participation (%): Adult men -0.014 Adult women -0.032	HH participation (%): 0.170*** days worked last week: 1.555***	HH participation (%): 0.065 hours worked last week 1.468
Non-agricultural wage	HH participation (%): All occupations -0.033** Professional -0.011* Construction worker -0.043*** Unskilled worker 0.006 Domestic servant 0.013*	(see ag wage)	(see ag wage)	(see ag wage)	HH participation (%): Adult men 0.005 Adult women -0.018 days worked in a year: Adult men 1.879 Adult women -1.136	HH participation (%): 0.035 days worked last year 2.75	HH participation (%): 0.017 days worked last year 0.661

Note: Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. Significance levels: ***= <0.01, **= <0.05, *= <0.1. Cluster robust standard errors (not reported). N/A- indicator not available. HH stands for households. # indicates that the estimate is the authors' additional calculation. In all other cases, estimates summarized from the respective country's evaluation reports. Dark grey text highlights and white font emphasizes statistically significant positive impact estimates, while light grey text highlights and black font emphasizes statistically significant negative impact estimates. Adult 18–59 years of age, elderly 60+ years of age.

Table 7. Impacts on Children Work

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Wage labor	teenagers participation (%): boys -0.051 girls -0.001 days/month worked by teenagers: boys -0.727 girls 0.409	N/A	participation (%): total -0.006 boys -0.003 girls -0.002	participation (%): last year 0.000 last week -0.004 hours worked last week 0.0	HH participation (%): Children 10-17 0.004 Total days worked in a year: Children 1.121* Boys 10-17 1.753* Girls 10-17 -0.014	paid work -0.018	children participation (%): -0.003 children work (hrs/week): 0.062
Family farm	# hours/day worked by children: children 6-12 -0.163** boys 6-12 -0.163* teenagers 13-17 -0.024	days worked last season 0.764	participation (%): total -0.124*** boys -0.120** girls -0.072 days worked per month: total 0.072 boys -0.266 girls 0.488	participation (%): last year -0.018 last week -0.059** hours worked last week -2.2**	participation (%): children 6-9: -0.044 children 10-17: -0.009 days worked last rainy season: children 6-9: -0.724 children 10-17: 0.818	unpaid work 0.039	children participation (%): any farming -0.013 girls -0.004 boys -0.018 children intensity of work: all -5.213 girls -4.584* boys -0.629

Note: Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. Significance levels: ***= <0.01, **= <0.05, *= <0.1. Cluster robust standard errors (not reported). N/A- indicator not available. HH stands for households. # indicates that the estimate is authors' additional calculation. In all other cases, estimates summarized from the respective country's evaluation reports. Dark grey text highlights and white font emphasizes statistically significant positive impact estimates, while light grey text highlights and black font emphasizes statistically significant negative impact estimates. Teenagers in Ethiopia are 13–17 years of age.

In the other countries, Ghana shows an increase in men working on their own farms (almost eight days). In Lesotho, results on wage labor cannot be disentangled between farm and non-farm activities and are non-significant. In Malawi, the reduction in casual agricultural labor (*ganyu*) was quite relevant, especially for adult males (12 pp less and 14 days less in the last 12 months), and was not offset by either more on-farm agricultural labor or more work in non-farm family businesses. Heterogeneity analysis in Malawi also reveals that, when disaggregating by gender, adult males are more likely to work on-farm, particularly in land preparation and planting, while adult females are less likely.

In Ethiopia, we observed a significant reduction in the number of days worked in off-farm family businesses, especially for women, even though it was small in magnitude (1 day per month), and a reduced participation in non-agricultural wage labor, even though statistical significance and intensity vary by type of occupation. Finally, in Zimbabwe we observe a significant (at 5%) 20 days reduction in the number of days worked on-farm in the last rainy season. This reduction is particularly strong in magnitude in labor-unconstrained households (-35.8 days).

With respect to the engagement of children in work activities, participation in family farming decreased overall in Kenya and Lesotho for younger children in Ethiopia and for girls in Zimbabwe. With respect to paid labor, results were generally statistically not significant, with a significant reduction in wage labor for boys in Ethiopia and an increase in the number of days worked by boys in Malawi. However, despite the statistical significance, the latter results are quite modest in magnitude (0.7 days/month reduction in Ethiopia, 1 day/year increase in Malawi).

Impacts on Other Livelihood Strategies and Risk-Coping Behaviour

Tables 8 and 9 present results on other livelihood strategies and risk-coping behavior where information is available. The cash transfer programs in Zambia and Zimbabwe led to significant increases in non-farm enterprises. In Zambia, the impact is quite large in magnitude both on the share of households operating a business (almost 17 pp) and on the intensive margin of these operations (1.5 more months in operations and 78 ZMW more monthly profits for cash transfer

Table 8. Impacts on Other Livelihood Strategies

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Non-farm enterprise (NFE)	HH operating NFE (%):	HH operating NFE (%):	HH operating NFE (%):	HH operating NFE (%):	HH operating NFE (%):	HH operating NFE (%):	HH operating NFE (%):
	overall -0.003	last year 0.003	last year 0.016	last year -0.038	overall -0.042	last year 0.178***	last year 0.048**
	trading -0.026**			last 30 days -0.048*	petty trader 0.026		% reporting profits 0.051***
	food processing -0.009			intensity of NFE operations:	charcoal -0.043*	intensity of NFE operations:	
	crafts -0.004			# months in operation -0.226	intensity of NFE operations:	# months in operation 1.575***	intensity of NFE operations:
				# enterprises -0.036	# businesses -0.047	monthly profits 78.91***	# businesses 0.059**
					# months in operation -0.479*		# months in operation 0.119
Informal transfers made		gifts giving:	N/A	HH made transfer (%):	HH made transfer (%):	N/A	HH made transfers (%):
	% HH giving transfers -0.015	HH given gifts (%) 0.125***#		cash 0.012	any transfer 0.045		any transfer 0.112**
		amount given (GhC, AE) -0.137#		food 0.184***	cash 0.01		cash 0.024
	Amount given -2.527	% HH donating:			food 0.031		inkind 0.072
		food -0.026#		amount of cash given (LSL)-12.2	value of transfers made (MWK):		ag inputs 0.057*
		non food 0.131***#			any transfer -2.266		value of transfers made (USD):
					cash 6.99		food/cash 8.413
					food 37.83		
Informal transfers received		receiving food gifts:	N/A	cash transfers received (%):	HH received transfers (%):	N/A	HH received transfers (%):
	% HH receiving transfers: -0.002	HH received (%) -0.019#		from family members 0.001	any transfer -0.026		cash/food 0.08
		value of food (GhC) 3.469**#		from non-family members 0.009	cash 0.036		ag inputs/labour 0.03
				cash transfers amount (LSL):	food -0.032		transfers value (USD):
	amount received (ETB): -46.58			from family members -53.029	transfers value (MWK):		cash/food (if received) -24.58
				from non-family members 8.84	any transfer -617.83		
				in-kind transfers received (%):	cash 185.24		
				food 0.150***	food -598.857		
				labour -0.028			
Remittances	N/A	HH received (%) -0.020	N/A	HH received (%) -0.024	N/A	N/A	N/A
		amount received† 0.186**		amount received (LSL) -406.2*			

Note: Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. Significance levels: ***= <0.01, **= <0.05, *= <0.1. Cluster robust standard errors (not reported). N/A- indicator not available. HH stands for households. † As share of AE consumption. # indicates that the estimate is the authors' additional calculation. In all other cases, estimates summarized from the respective country's evaluation reports. Dark grey text highlights and white font emphasizes statistically significant positive impact estimates, while light grey text highlights and black font emphasizes statistically significant negative impact estimates.

Table 9. Impacts on Savings and Risk Coping Behavior

	ETH	GHA	KEN	LSO	MWI	ZAM	ZIM
Negative risk coping	N/A	N/A	N/A	send children… living elsewhere -0.06*** for wage employment -0.053* out of school -0.080*** reduce health care spending -0.074***	Asset sale: HH sold assets (%) -0.006 sales amount (MKW) -147.34*	N/A	N/A
Savings	N/A	HH savings: % HH saved (%) 0.108*	N/A	HH saved (%): total -0.024 stockvel -0.029 formal institutions -0.20* savings amount (LSL): total -26.7 stockvel -1.3 formal institutions -3.8	N/A	HH savings: % HH saved (%) 0.238*** Savings amount (ZMK) 39.98***	N/A
Purchase on credit	(see debt payment)	N/A	HH sought credit (%) 0.010	HH purchased on credit (%) 0.025	HH purchased on credit (%) -0.057*	HH purchased on credit (%) -0.048	purchases on credit last 12 months: % hh purchasing 0.070* amount of purchases (US$) 0.994 outstanding amount (US$) -2.738
Debt payment	Borrow/purchase on credit: HH borrowed (%) -0.036* amount borrowed -331.58***	Loans: HH hold (%) -0.032 # loans -0.124** amount repaid† 0.234* amount outstanding† -0.191	HH received loan (%) 0.007	HH borrowing (%): total 0.003 community group -0.042	Loans: HH hold (%) -0.014 amount outstanding (MKW)… *from previous loans -162.33* *from recent loans -107.23* Borrowing last year: HH borrowed (%) -0.031 amount borrowed (MKW) -196.91	Borrowing: HH borrowed (%) 0.017** amount borrowed (ZMK) -0.3	loans older than 12 months: HH still own money (%) 0.00 outstanding amount (US$) -1.988 loans last 12 months: HH borrowing (%) -0.020 amount borrowed (US$) -2.904 outstanding amount (US$) -6.626

Note: Country labels are as follows: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. Significance levels: ***= <0.01, **= <0.05, *= <0.1. Cluster robust standard errors (not reported). N/A- indicator not available. HH stands for households. † as share of AE consumption. # indicates that the estimate is the authors' additional calculation. In all other cases, estimates are summarized from the respective country's evaluation reports. Dark grey text highlights and white font emphasizes statistically significant positive impact estimates, while light grey text highlights and black font emphasizes statistically significant negative impact estimates.

beneficiaries compared to the control group). In Zimbabwe, the impacts are smaller in size but still economically relevant, with almost 5 pp increases in the proportion of households running this kind of business. The impact of the HSCT on non-farm activity is driven by statistically significant and positive results, especially for severely labor-constrained households that report more businesses and more profits. In other countries we did not find similarly strong results.

In terms of private transfers, we were able to disentangle remittances from informal transfers received within the communities from family members and/or non-family members. In Ghana, remittances increased by 18% of adult equivalent consumption, while in Lesotho the amount received decreased. With respect to other informal private transfers, generally we observed positive impacts, especially food transfers (Ghana and Lesotho). Overall, findings from the Lesotho evaluation are consistent with the view that remittances are more linked to the altruistic motive, while private transfers within the community are more exchange-driven.

With respect to risk-coping behavior, impact results suggest that households are better able to handle risk. For saving and risk-coping strategies, however, data were not collected consistently and we were able to run the analysis on only a few countries. For example, in Malawi, beneficiary households report smaller amounts from sales of assets compared to control households, indicating a reduction in the distress sale of assets. In almost all countries, beneficiary households were significantly less likely to take children out of school (Handa and de Milliano 2015), and in Lesotho beneficiaries were less likely to send them to work or to live elsewhere.

In Ghana and Zambia, the proportion of households' savings increases by approximately 11 pp and 24 pp, respectively. Further, cash transfers in Ghana and Ethiopia contributed to a reduction of loans and higher debt repayments. These results likely reflect households' preferences and risk-aversion towards being in debt, and/or the relatively expensive nature of most informal credit in these contexts. In Zambia and Ethiopia, the 1.7 and 5.3 pp increase, respectively, in the share of households borrowing could represent the more risk-seeking attitude of beneficiary households that are now more creditworthy because of the CG, and of the SCTPP that allowed greater investment in income-generating activities (though in Ethiopia only in agricultural inputs).

Multiple Hypothesis Testing

The analysis done at both the household and individual levels tested for the impact of each cash transfer program on selected one-by-one outcomes. Beyond the complexity of comparing results across countries and programs and of comparing variables that were differently constructed, overall we are examining the impacts on a large set of outcomes (from 45 in Kenya to 91 in Malawi). Further, we did not include in the results' tables other outcomes that were analyzed in country studies. This raises questions of multiple hypotheses testing, as some of the significant results may be due to chance.

When dealing with multiple outcomes, one approach is to aggregate them into particular groupings, or "family" of outcomes, and test whether the impact of the treatment on this index is statistically different from zero (Kling, Liebman, and Katz 2007; Banerjee et al. 2015). However, interpreting these average effects can be problematic, and we are interested in individual outcomes because they tell us more about the channels of impact. Therefore, we consider multiple-test procedures that allow to correct the significance of individual coefficients (adjusted p-values or q-values).

Traditionally, scientists have controlled for either the family-wise error rate (FWER) or false discovery rate (FDR). In this article, our preferred option is to calculate q-values using the Benjamini-Hochberg step-up method (Simes 1986; Benjamini and Hochberg 1995) to control for the FDR. This procedure has two advantages over other methods, especially those based on the FWER: (*a*) it has more power to detect real differences with the same uncorrected p-value, especially if the number of measured parameters is large (the average treatment effect estimated for each outcome); (*b*) it is less conservative as it allows for correlation across test statistics, while other methods such as Bonferroni are based on the assumption of independence. This is unlikely to be the case in our study, where many outcome variables are correlated, especially within "family".

In table 10, for Lesotho we show the 28 outcomes for which impact estimates are significant at the 10% level when examined individually, and compare them with q-values

Table 10. Significant p-values and their Adjusted p-values for Lesotho

		Adjusted p-values		
Outcome	p-value	bonferroni	simes	simes_FW
Maize harvest (kg)	0.033**	1.000	0.182	0.143
Sorghum harvest (kg)	0.074*	1.000	0.278	0.211
Wheat harvest (kg)	0.099*	1.000	0.283	0.221
% producing vegetables	0.047**	1.000	0.207	0.158
# vegetables	0.084*	1.000	0.281	0.211
# seasons	0.000***	0.032**	0.011**	0.008***
HH bartered crops	0.006***	0.529	0.066*	0.064*
Pig owned by HH	0.036**	1.000	0.182	0.143
# pig owned by HH	0.033**	1.000	0.182	0.143
HH used pesticide	0.037**	1.000	0.182	0.249
HH used organic fertilizer	0.099*	1.000	0.283	0.328
HH purchased seed	0.085*	1.000	0.281	0.328
HH purchased inorganic fertilizer	0.095*	1.000	0.283	0.328
HH used scotchcart	0.036**	1.000	0.182	0.249
HH owns scotchart	0.023**	1.000	0.169	0.249
% adults in wage lab, last year	0.067*	1.000	0.267	0.202
% adults in wage lab, last week	0.012**	0.975	0.097*	0.053*
# hours worked by adults in wage lab, last week	0.000***	0.028**	0.011**	0.003***
% children in family ag lab, last week	0.043**	1.000	0.199	0.129
# hours worked by children in family ag lab, last week	0.024**	1.000	0.169	0.129
% hh operating NFE, last month	0.099*	1.000	0.283	0.370
HH provided food to network members	0.001***	0.103	0.018**	0.009***
HH received food from network members	0.001***	0.047**	0.012**	0.009***
Remittances received from non-resident members	0.083*	1.000	0.281	0.370
Children sent living elsewhere	0.006***	0.504	0.066*	0.026**
Children sent working wage	0.001***	0.110	0.018**	0.009***
Children sent out of school	0.000***	0.004***	0.004***	0.001***
HH reduced health care spending	0.011**	0.890	0.097*	0.035**
HH saved money last 12 month in a formal institution	0.055*	1.000	0.229	0.143

Note: Significance levels: ***= <0.01, **= <0.05, *= <0.1. FW=family wise. HH=household.

calculated via Bonferroni method, Benjamini-Hochberg individually, and within six families of outcomes, which follow the structure of the results tables. If we look, for instance, at maize harvest, the p-value of 0.033 is indicative that the CGP brought about a significant 38.9 kg increase in maize harvest. However, this impact on maize harvest should be read with care, as it might be observed by chance to be significant among a set of outcomes. The adjusted p-value of 0.143 for maize harvest in Lesotho means that if one were to search for an effect among the seventeen agricultural output variables in table 4, at least one effect this large would be observed 14.3% of the time.

As shown in table 11 (and unsurprisingly) Bonferroni represents the most restrictive

Table 11. Number of p-values and Adjusted p-values <0.1, by Country and Method

Country	p-value	Adjusted p-value		
		Bonferroni	Simes	Simes FW
ETH	31	4	18	17
GHA	23	4	6	8
KEN	8	4	4	5
LSO	29	4	10	10
MWI	21	1	1	4
ZAM	38	20	35	34
ZIM	20	0	0	3
Total	170	37	74	81

Note: Country labels: ETH = Ethiopia; GHA = Ghana; KEN = Kenya; LSO = Lesotho; MWI = Malawi; ZAM = Zambia; ZIM = Zimbabwe. FW=family wise.

method, as the number of significant impact estimates drop from 170 to 37. Further, considering one of the two less conservative approaches of Benjamini-Hochberg for each country weakens the significance of results, even though it remains mostly valid the following: (*a*) impacts observed for Zambia remain quite robust across the domains; (*b*) Malawi and Zimbabwe are the countries mostly "penalized" by the p-values correction, though for the former the story on livestock accumulation remains; (*c*) for Lesotho, results on agricultural output become less significant, though impacts on social networks and reduction in risk-coping strategies remain quite robust.[11]

Discussion

Evidence on the effects that the seven cash transfer programs have on productive activities included in the PtoP project reveals some common trends as well as contrasts across countries. The CG program in Zambia had a broad range of impacts across productive outcomes, while the other programs had more selective impacts. The results provide some indication as to the conditions that enable cash transfer programs to have a stronger effect on transforming livelihoods and increasing productive activities.

Targeting

The adoption of different targeting criteria had large implications for the demographic characteristics of beneficiary households across programs. The varying degree of labor availability likely contributes in part to the differences in productive impacts observed across programs. While labor-constrained households may hire in labor and carry out limited economic activities, households with available labor are in a better position to take advantage of the cash for productive activities in both the short and long terms.

Transfer Value and Predictability

The amount of money transferred to a beneficiary household is clearly a factor in the range and intensity of impacts on productive activities. Zambia, with the higher per capita transfer, had the most consistent set of productive impacts, while Ghana, the lowest, had the least consistent set. The frequency and predictability of cash transfers are also important. At the time of their respective evaluations, operational performance varied from country to country. While in Zambia the transfers were delivered regularly throughout the evaluation period, in Ghana payments were also meant to be bi-monthly, but the schedule suffered major disruptions. The Lesotho CGP was the program with the least frequent payment schedule (quarterly), yet it was also affected by significant delays.

Messaging

Messaging and information provided to beneficiaries regarding the expected use of the resources provided also likely influenced the use of resources. The Lesotho CGP had especially strong messaging on spending the money on children's needs. Impact analysis confirmed large impacts on children's food security and expenditures on children's clothes, shoes, and uniforms. At the same time, in Lesotho one payment delivered five months prior to the follow-up data collection included a top-up—the Food Emergency Grant—which was delivered to cash recipients with the intent to increase agricultural production in response to a severe drought that had affected the country the previous year. The CGP evaluation could not disentangle the effect of the CGP *vis-à-vis* the Food Emergency Grant, but we assume that this additional cash had an immediate impact on some of the positive outcomes in agricultural activities, for instance on pesticide purchases or on homestead gardening.

Evaluation

The length of the evaluation period is a critical dimension in explaining impacts. For instance, the quasi-experimental approach in Zimbabwe was able to create a very robust comparison group, but the follow-up survey round occurred only 12 months after the baseline. With only six payments, it is difficult to obtain results comparable to those that similar programs achieved in two years of program implementation. Similar considerations apply for Malawi. The original design called for a follow-up survey 12 months after baseline (July/August 2013) when beneficiary

[11] A full list of p-values and adjusted p-values for all outcomes and countries is available in appendix F of the online supplementary material.

households would have received 8–10 months of transfers. However, due to the delay in the start of the payment (May 2014), the follow-up survey was postponed until November 2014, at which time beneficiary households would have received five payments (10 months' worth).

Conclusions

This article brings together the critical mass of evidence that has emerged from recent rigorous impact evaluations of government-run cash transfer programs in SSA. We find that cash transfers can have significant impacts on the livelihoods of beneficiary households, particularly with regard to agricultural activities, although they vary from country to country, and context to context. In Zambia, the CG program activated a transformative process, leading to a stronger engagement of beneficiary households in capital investment (e.g., agricultural tools and inputs, livestock) for agricultural production and new economic activities. The impacts in Ethiopia, Kenya, Lesotho, Malawi, and Zimbabwe were more selective in nature, while the LEAP program in Ghana had fewer direct impacts on productive activities, and more on various dimensions of risk management.

In most countries we have constantly found a reduction in the supply of casual agricultural wage labor, which is often seen as a refuge sector to access liquidity, where poor households work to survive or hedge against agricultural risk. In Ghana and Zambia this reduction in casual wage labor has been offset by an increase in on-farm family labor, and in Zambia also in off-farm work. There is no evidence that cash transfers translated into an overall reduction of labor supply or work effort—in fact quite the opposite: the transfers were used to improve household income-generating activities. The cash transfers contributed to a higher proportion of beneficiary households investing in livestock and on diverse types of animals in Malawi and Zambia, while impacts were concentrated on small ruminants in Kenya and Zimbabwe and on pigs in Lesotho. With respect to informal cash and in-kind private transfers and remittances, generally we did not observe a crowding-out effect induced by the cash transfers. In fact, positive impacts were found on informal transfers and sharing arrangements made within the communities, especially around food and agricultural inputs. These results are consistent with the story that emerged from qualitative fieldwork regarding the re-engagement of beneficiaries with local social networks of reciprocity (Fisher et al. 2017).

Mixed results were found in other areas related to rural income-generating activities. The cash transfer programs in Lesotho and Zambia, and to a lesser extent in Malawi, brought about significant and positive impacts on agricultural production through greater input purchases and/or use. However, results in other countries are more nuanced. Similarly, cash transfer programs increased non-farm business opportunities in Zambia and Zimbabwe, while significant impacts did not emerge in the other countries. Impacts on the engagement of children in work activities are also not uniform.

The differences in impacts across countries can be attributed to a variety of factors, including the availability of labor given the demographic profile of beneficiary households and program design and implementation features. The level of transfers, the predictability of payments, and the type of messaging associated with the disbursement appear to be critical factors that can be managed by program implementers to facilitate economic impacts. Transfers that are lumpy by design but regular may be spent on productive investment, and at the same time can still facilitate consumption smoothing. Further, timing of payment would matter a great deal if designed to support both production and consumption, as this should consider both cycles in agricultural production and access to food throughout the year. The adequacy of the transfer is important; if giving cash is intended to have productive impacts, transfers must be large enough to enable ultra-poor households to make meaningful investments without compromising basic consumption needs.

The strongest and most consistent impacts are found in Zambia, which had all the stars aligned—a robust evaluation design, labor availability, sufficiently large and predictable payments, light messaging, and a local economic context where the key household-level constraint appeared to be liquidity.

Overall, while cash transfer programs have clear implications for beneficiary livelihoods, these do not seem to be sufficient to sustainably move households out of poverty. Poor

households in rural areas, which in the absence of labor markets are largely responsible for generating their own income through household farm and non-farm activities, face multiple constraints in terms of generating sustainable livelihoods. Cash transfers and other social protection measures have proven successful at reducing hunger and poverty, in meeting basic consumption needs, and as we have shown in this article, reducing some of the market failures faced by the smallholder farmers benefiting from the programs. However, cash transfers cannot address all of these constraints. Agricultural interventions, for example, can promote growth in smallholder productivity by addressing structural constraints that social protection cannot address and that limit poor households' access to land and water resources, inputs, financial services, advisory services, and markets. Other non-agricultural livelihood programs can help rural households diversify income-generating activities. The challenge is to strengthen the productive potential of beneficiary households, both in the agricultural and non-agricultural sector, without distorting the original objectives of the programs. Together, livelihood and social protection programs are needed to transform the livelihoods of the rural poor and strengthen agricultural and rural development.

Supplementary Material

Supplementary material are available at *American Journal of Agricultural Economics* online.

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