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Impact of Cash Transfers Programme on Agricultural Production in Kenya: Focus on the Orphans and Vulnerable Children

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Abstract

Orphans and children from low-income households are particularly vulnerable to the negative effects of a growing wealth gap since they are already at the bottom of the social ladder. Most of these households are found in rural areas and are engaged in farming. Governments may use programs like cash transfers (CTs) to cushion the impact of economic uncertainty on the poor. Following the introduction of the cash transfer program for orphans and vulnerable children in Kenya, this research aimed to analyze the impact of cash transfers on agricultural output and labor supply. Based on a difference-in-differences estimate, the study found that orphans and vulnerable children's families who received cash transfers had an increase in agricultural output of 8.5%. Spending on labor supply and hiring employees for agricultural operations by Orphans and Vulnerable Children households increased by 121% after the program was implemented, compared to households headed by non-Orphans and Vulnerable Children. These findings provide more evidence that governments should take action to increase direct and indirect cash transfers to disadvantaged populations like orphans, suggesting that Cash transfers have a major influence on their quality of life.

Keywords: Orphans, OVC, cash transfer

Introduction

According to FAO (2012), 1.5 billion people in developing world live in smallholder households which produce 80 percent of the food in sub-Saharan Africa (SSA). Even more notable is the estimates by Food and Agriculture Organization (FAO), that over 800 million people in the world suffer from hunger which is the lack of necessary calorie intake which is close to 11 percent of world population (FAO, IFAD, & WFP, 2015). Most of the victims live in low-income and middle-income countries.

Sub-Saharan Africa (SSA)is the only region of the world where the rural population will continue to grow beyond 2050 (Jayne et al, 2017). Over 33 percent of Gross Domestic Product (GDP) in Kenya is derived from agriculture sector, creating employment for more than 40 percent of the total population of which more than 70 percent consists of rural population (Republic of Kenya, 2019). Statistics by World Bank (2028), agriculture sector is associated with over 51 percent of Kenya's GDP of which 26 percent directly and 25 percent indirectly and creates 60 percent of employment and 65 percent of exports. Ultimately, this is the most significant sector in Kenya where most of the vulnerable population depend on for their survival.

Agricultural productivity has stagnated since independence. Given that the poor who live in the rural areas are the most hit with the fluctuations and the shocks to the agricultural sector. Factors contributing to reduced include the use of outdated methods of technology and the cost of inputs. The number of Kenyans employed in farming has been increasing in absolute terms, but is falling as a share of the workforce (Yeboah & Jayne, 2016). Despite this, there has been concerns given the productivity declining. The production of maize yields per hectare were lower in 2014 than in 1994 (World Bank, 2018) while in 1990-92 and 2014-16. In their study, Kenya was among the few countries in sub-Saharan Africa to experience an overall decline in maize yields (Wiggins, 2018).

Low agricultural production is more notable to the low-income households who lack financial capability to access the required firm inputs and use appropriate technology. The poor households who consist of the orphans and vulnerable who often have difficulty borrowing since they lack collateral which expose them to credit rationing given asymmetric information or government policies (Feder et al. 1990). Given the worrying statistics of the vulnerable and the growing recognition, there is need for social safety nets aimed at protecting households from poverty and the devastating consequences even as nations push for economic growth (de Janvry et al., 2006). According to World Bank (2013) households tend to respond to negative income shocks through strategies that make it possible to maintain their normal level of consumption. Since, the poor households often

do not have access to mechanisms that is associated consumption smoothing including and not limited to insurance and credit. The poor who include the orphans and vulnerable children (OVC) strategies for coping with shocks are different from those of rich households (Carter, Little, Mogues, & Negatu, 2007).

With the increasing concerns about this low productivity, government and non-governmental organizations (NGOs) have come up with various programs aimed at reducing rural poverty seek to diversify farmer income, increasing smallholder production remains a key component of improving farmer livelihoods. Majority of cash transfer programs aim at alleviate poverty as well as food insecurity through improvements in educational, health status and nutrition (Slater,2011) and moreso to the vulnerable groups in the society such the children, women and the orphans.

In Kenya cash transfer scheme operated in Kenya is the Hunger Safety Net Programme (HSNP). Launched in 2008 with the goal of reducing poverty and food insecurity, and increasing asset accumulation in the arid and semi-arid (ASAL)region especially in the in Kenya.

According to Hennessy (1998) willingness to risk more increase in production through an increase in input use thus increased liquidity or reduced risk aversion, cash transfers may lead farmers to embark in investment projects, which include buying fertilizers and improved seeds thus increase farm production. Moreover, cash transfers stimulate agricultural production in the short run by changing household labour supply and hired labour demand through the initiation of the investment in farm technologies and making households engage in riskier activities and hence higher returns (FAO, 2015).

Although cash transfers (CT) play an important role on the creating social safety to the vulnerable, Ferguson (2015) argued that African CT programs are part of a new politics of distribution across the continent involving distributive transfers from government to citizens. Another important characteristic is that most food-insecure households live in poverty with few or no assets such as having no land and if any it is a very small plot of land and high dependency ratio. This presented the need for policy action to enhance the capacity of poor and vulnerable people to protect them from poverty and create better ways to manage risks and shocks (OECD, 2009).

Lawlor et al., (2019 in Zambia showed that cash transfers allowed households to thrive during the agricultural production and price shocks and increased their food consumption and overall food in the randomized study. According to Kilburn et al., (2016) cash transfers increased food production for orphans with orphan and non-orphan males from treatment households registered positive and significant impact on their Hope scores. Various empirical studies in Kenya have been carried out in Kenya on the impact of

cash transfers. According to Covarrubias et al., (2012) using Differences in differences (DID) noted that agricultural production growth was associated with increased ownership of agricultural tools and livestock. Further, Haushofer, & Shapiro (2016) in Kenya provided evidence that UCTs had a sizable effect on psychological well-being and general increase in satisfaction, while the treatment increased consumption and savings, in the form of durable good purchases as well as investment in their self-employment activities. There is no clarity on the impact of the cash transfers in Kenya on agricultural production among the OVC families. This study focused on the impact of cash transfers on the CT- OVC using DID and instrumental variable (IV) and will take advantage of the three waves of data collected for UNICEF through the Oxford Policy Management (OPM) for the UNICEF/DFID-supported districts (Garissa, Homa Bay, Kisumu, Kwale, Migori, Nairobi and Suba) for period March and August 2007. Specifically, the study aimed to determine whether monetary transfers had an effect on agricultural output among Kenya's orphans and vulnerable children (OVC), as well as whether or not they have an effect on OVC labor for agricultural activities.

Literature review

Focusing on young people, Kilburn, Thirumurthy, Halpern, Pettifor, & Handa, (2016) using logistic regression model concluded that participation in the cash transfer program led to with better mental health outcomes where the study was mainly focusing on young men, and the effect was strongest among older males aged 20–24 years and as well as the orphans. They noted that those who were treated showed fewer depressive symptoms, more hopeful about their lives and thus healthier than they were previously. They noted that the positive impact of the program was stronger among the subgroup of orphans, who consisted up to 54 percent of those who were involved. Moreover, orphan and nonorphan males from treatment households registered positive and significant impact on their Hope scores.

The South African study by Hajdu, Granlund, Neves, Hochfeld, Amuakwa-Mensah, & Sandstrom, (2020) investigated the long-term productive effects of cash transfers on rural household's livelihoods. The findings of the study suggested that households who received more income were better-off in some ways relative to those who received less income. They showed a positive correlation between receiving more CSG income and owning productive assets such as fridges, cellular phones and ploughs, rearing of poultry and crops production. Women bought these items using program CSG income accumulated in local savings group. According to Maluccio (2010) using household panel data survey implemented in both intervention and control localities of RPS before the start of the programme,

first in 2000, and then later in 2001, 2002, and 2004, concludes that it had long term impacts through increased investment in child health and education. The study pointed out weak evidence that the program increased these other investments in the rural localities in which it operated. They used the randomized community-based evaluation to achieve their intended study objectives.

The empirical analysis in Lesotho on the impacts of cash transfers by Prifti, Daidone, & Davis (2019), using randomized Control Trial as an evaluation program of Lesotho's Child Grants Program. They found overwhelming evidence that the cash transfer program increased farm production by 33.5 percent but none of these impacts are through changes in farm labour use. There was no evidence of the impact of significant changes in the use of hired-in labour.

Using the household and individual-level data in Sub-Saharan Africa, Daidone, Davis, Handa, & Winters, (2019), concluded that cash transfers significantly impacted livelihoods of beneficiary households in agricultural activities with varying effect from country to country. The impacts in Ethiopia, Kenya among other nations was more selective in nature, while the LEAP program in Ghana witnessed fewer direct impacts on productive activities. Cash transfers reduced adult agricultural wage labor in all countries except Ghana and Zimbabwe. Agricultural wage labor and even many non-agricultural activities in rural areas were referred to as a "refuge" sector, where poor households work to survive, hedge against agricultural risk, or even get liquidity. In Zambia, shift in agricultural wage labor participation was rewarded by significant increases of 20 days working on farm, and by increases in nonfarm businesses.

According to Haushofer & Shapiro (2013) using randomized controls concluded that transfers strongly affected consumption with an increase in the in monthly consumption from $157 to $ 194 four months since the transfer was undertaken. They established differences between female and male households in consumption, production as well as the investment decisions. The study was based on a two-level cluster-randomized controlled trial. The study applied both the within- and across-village treatment estimates for the estimation purpose; both the within- and across-village treatment estimates which were valid.

The empirical study by Haushofer, & Shapiro (2016) investigated the impacts of unconditional cash transfers (UCTs) on important economic and psychological outcomes by evaluating the program of the NGO GiveDirectly (GD) in Kenya for the period 2011 and 2013 when GD sent UCTs of at least USD 404 per individual to randomly chosen poor households in western Kenya using M-Pesa. The GD program is a good laboratory to study the effects of unconditional transfers because existing programs often make

relatively small transfers. In this study they provide evidence that, UCTs had a sizable effect on psychological well-being; with a 0.16 std. dev. increase in happiness, a 0.17 std. dev. increase in satisfaction. They also found a 0.26 std. dev. reduction in the level of stress. The treatment effects increased both consumption and savings, in the form of durable good purchases as well as investment in their self-employment activities.

While evaluating the Taylor, Kagin, Filipski, Thome, & Handa (2013) while evaluating general equilibrium impacts of cash transfers using the Monte Carlo methods in the LEWIE analysis. They established that there was a significant positive spillover from transfers to orphans and vulnerable children. Their simulation was based on both direct and indirect effects to the relevant household groups. Their findings s suggested that interventions to loosen constraints on the local supply response were critical to avoid inflationary effects and maximize the real impact of transfers on local economies.

The empirical study by Todd, Winters, & Hertz. (2020) investigated the impact of the Oportunidades programme on agricultural production indirectly in Mexico in which they focused on consumption of food from own production, as well as directly, by looking at land use, livestock ownership and spending on crop production. In particular, the programme increased the probability of consuming a number of highly nutritious foods from own production, including fruits, vegetables and meat, ranging from 16 to 32 per cent, m implication that cash transfers increased agricultural productivity. Their results showed that there was general increase in land use, livestock ownership and expenditures on crop production. There was also notable increment in the probability of expenditures on agricultural inputs increased in the autumn and increases in livestock ownership was associated with the programme and witnessed in the spring.

Cash transfers plays an important role on ensuring food security in sub-Saharan Africa (Burchi, Scarlato, & d'Agostino,2018). Kenya is among the countries in Sub-Saharan Africa where cash transfers were found to affect food security outcomes on household dietary variety. They clearly demonstrated that cash transfers had have a significant, positive impact on the way households achieved food security through the accumulation of productive assets. They concluded that cash transfers play a vital role in reducing monetary poverty as well as enhancing' access to food by the households if they account for important aspects related to their design and implementation.

Covarrubias, Davis and Winters (2012) studied the productive impacts of the Malawi Social Cash Transfer scheme beyond the social protection function of the Malawian SCT programme and analyze the impact of the programme on productive activities for the control groups and pre-

treatment and post-treatments rounds of data collection 365 treatment and 386 control households with complete questionnaires over the 2007–2008 period. Using DID established that those agricultural investments due to the programme had increased ownership of agricultural tools and livestock. Further, households reduced participation in low-skilled activities outside the household, such as agricultural wage labour and ganyu work which is associated with vulnerability in Malawi.

The Zambian study by Lawlor, Handa, Seidenfeld, & Zambia Cash Transfer Evaluation Team(2019) using panel data from the randomized rollout of the Zambian Child Grant Programme which tracked 2515 households in rural Zambia over the period 2010 and 2012, the time in which the regions were characterized by widespread droughts and floods as well as other negative shocks. They reached to a conclusion that cash transfers allowed households to thrive during the agricultural production and price shocks in addition to increasing their food consumption and overall food in the randomized study. The impact was even more positive to the households living in communities with widespread agricultural production and price shocks.

Various studies carried on the impact of cash transfers on agricultural production have been carried in both developed and developing world which are vulnerable in the society. Focusing on young people, Kilburn et al., (2016) concluded that there was a positive impact of the program was stronger among the subgroup of orphans. On gender, they noted orphan and nonorphan males from treatment households registered positive and significant impact on their Hope scores. Lawlor et al., (2019 in Zambia noted that cash transfers allowed households to thrive during the agricultural production and price shocks in addition to increasing their food consumption and overall food in the randomized study. Using DID, Covarrubias et al., (2012) concluded that agricultural production increased due to the programme had increased ownership of agricultural tools and livestock. Haushofer, & Shapiro (2016) in Kenya provided evidence that UCTs had a sizable effect on psychological well-being; with a 0.16 std. dev. increase in happiness, a 0.17 std. dev. increase in satisfaction, while the treatment increased consumption and savings, in the form of durable good purchases as well as investment in their self-employment activities. My study will focus on the impact of cash transfers on the CT- OVC using DID and will take advantage of the three waves of data collected for UNICEF through the Oxford Policy Management (OPM) for the UNICEF/DFID-supported districts (Garissa, Homa Bay, Kisumu, Kwale, Migori, Nairobi and Suba) for period March and August 2007.

Methodology

Theoretical Model

The government of Kenya introduced the Cash Transfer for Orphans and Vulnerable Children (CT-OVC), with aim of boosting and promoting retention of OVCs within communities, and further enhancing their human capital providing the much-needed extra income to their living caregivers (Ward, Hurrell, et al. 2010). Assuming it works as intended, the program could indirectly raise their income by allowing investment for increased farm productivity or by increasing the local demand for their produce (Tiwari et al. 2016). To assess the impact of the CT-OVC programme, the theoretical foundation of this study closely follows Koundouri et al., (2002) which emanates from the Von Neuman-Morgenstern utility model. We assume a farmer produces a single output q, with its price denoted as p, and $f(.)$ denotes the production function while X represents the vector of inputs and r is the vector of the associated input prices. Efficiency in the use of these essential inputs is assumed to vary across various farmers hence we incorporate $h(\alpha)$, where α represents farmers characteristics/ demographics. Based on this, the production function is defined as:

$qf(h(\alpha)X$……..…….....……1

Assuming that farmers are price-takers both in the input and output markets, the main problem for the farmers is to maximize the expected utility of profits/ agricultural produce, hence defined as:

$Max\ E[U(\pi)] = \int \quad [\,U(pf(\varepsilon, h(\alpha)\,X - \,r'\,X)]$ …….....….2

Where U (.) is the Von Neuman-Morgenstern utility function. Bringing in the impact of the policy intervention, that is, the cash transfer program, we now assume that a farmer benefits from the cash transfer program, defined as i= 1 for beneficiary and i=0 for non- beneficiary which is likely to affect efficiency of inputs, such that $h_1\,(\alpha) > \,h_0\,(\alpha)$ for $0 < \alpha < 1$.

In this case, the first order condition for the inputs corresponding to the case of receiving from cash transfer is given as:

$\frac{r^1}{p} = E\,\left(\frac{\partial\, f(\varepsilon,h_1(\alpha)\,X^1}{\partial\, X}\right) + \left(\frac{cov\,(U^1,\partial\, f(\varepsilon,h_1(\alpha)\,X^1}{E\,(U')}\right)$…….....……..3

While for the non-beneficiaries is given as:

$\frac{r^0}{p} = E\,\left(\frac{\partial\, f(\varepsilon,h_0(\alpha)\,X^0}{\partial\, X}\right) + \left(\frac{cov\,(U^0,\partial\, f(\varepsilon,h_1(\alpha)\,X^0}{E\,(U')}\right)$……...……..4

The program is considered beneficial to the farmers if the expected utility of receiving cash transfer is higher than the expected utility of not

receiving the cash transfer. The expected utility for the farmers who receive cash transfer is defined as:

$$E[U(\pi^1) = \int \quad [U(\, pf(\varepsilon, h_1(\alpha)\, X^1 - \, r^1 X^1)] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 5$$

While for those who do not receive the cash transfers, the expected utility is given by:

$$E[U(\pi^0) = \int \quad [U(\, pf(\varepsilon, h_0(\alpha)\, X^0 - \, r^0 X^0)] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6$$

The impact of the cash transfer program is beneficial if:

$$E[U(\pi^1) - \, E[U(\pi^0) > 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 7$$

Analytical model

In the cases where panel data is available with both pre- and post-intervention information, the appropriate statistical approach that can be taken is the derivation of the average treatment effects of the CT-OVC is the difference-in-differences (DiD) estimator. This estimation technique involves calculating the change in an indicator (Y), such as the aggregate value of agricultural produce (livestock and crop produce), between baseline and follow-up period for beneficiary (Treated) and non-beneficiary (Control) households and comparing the magnitude of these changes. The main assumption behind the DiD is that there is no systematic unobserved time varying difference between the treatment and control groups. The basic DiD model is defined as follows:

$$Y_{it} = \, \beta_0 + \, \beta_1 D_{it} + \beta_2 R_t + \, \beta_3 \, (R_t * \, D_t) + \, \epsilon \, \beta_i Z_i + \, \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots 8$$

Where, Y_{it} represents the outcome variable (value of agricultural produce in Kenya Shilings and value of labor supply in Kenya Shilings); D_{it} is a dummy variable represented as 1 for household that received the cash transfer, and 0 otherwise, R_t represents time dummy defined as 0 for baseline and 1 for follow-up/ end line; $R_t * D_t$ is the interaction term between the intervention and time dummies, and ε_{it} represents the error term. Z_i represents the vector of household characteristics/ demographics which are likely to influence the outcome variable. Z_i controls for the observable differences across households. β_0 is the constant term, β_1 captures the time-invariant differences between the treatment and control; β_2 gives the changes over time; and β_3 represents the double difference estimator which represents the impact of the programme.

Estimation issues/ diagnosis

Table 1. Variable definition and measurement

VARIABLE	MEASUREMENT
Intervention	
Cash Transfer	1 if household received the cash transfer in all three waves, 0 otherwise.[1]
Outcomes of interest	
Agricultural Output	This is the total amount earned through the sale of crop produce and livestock produce for the past 12 months based on the year of survey. The amount is presented in Kenya Shillings (Ksh).
Labor Supply	This is the total amount spend on labor supply/ hiring labor for agricultural activities both for livestock production and crop production. The amount is presented in Kenya Shillings (Ksh).
Covariates	
Sex of Household Head	1 if female, 0 otherwise.
Age of Adult Household Head (>17 years old)	Years.
Land Input	Total amount of land used for agricultural activities measured in hectares.
Education of household head	Total number of schooling years completed by the household head.

Data description and sources

The study uses the Phase 2 of the CT-OVC program involved impact evaluation, for which UNICEF contracted Oxford Policy Management (OPM). OPM undertook a baseline quantitative survey of households and communities within the seven UNICEF/DFID-supported districts (Garissa, Homa Bay, Kisumu, Kwale, Migori, Nairobi and Suba) for period March and August 2007. In each district, two locations were randomly selected to benefit from the intervention and two acted as controls, to be assisted later during program expansion. In each location, households were selected for evaluation according to the programme eligibility criteria. Among eligible households, priority was given to those with the youngest child caregivers; and/or the oldest adult caregivers; and/or disabled household members; and/or the highest number of OVCs. Within treatment localities, 1,540 eligible households were eventually selected to be CT-OVC recipients, for evaluation against 754 eligible households in the control localities (Ward, Hurrell, et al. 2010). Households in both arms were surveyed prior to knowledge of selection (Carolina Population Center 2011).

[1] We define the CT variable as representing only those households that received the transfer throughout the three waves. This allows observation of a clear trend over the given time period, therefore accurate estimation of the treatment effect. It also controls for differential attrition to ensure internal validity.

OPM re-interviewed 1,328 recipient households and 579 control households between March and July 2009[2] in a follow-up survey, following a panel design. The attrition of households between baseline and midline was higher than hoped for and was, in part, due to the 2007/08 post-election violence. A second follow-up survey was conducted by the Carolina Population Center in 2011, interviewing 1,811 of the households (Carolina Population Center 2011). This study utilizes longitudinal data comprising of merged individual level datasets from the three waves (2007, 2009 and 2011). Our data merging results in a total of 19,724 individual observations from 1,810 households[1].

Results and discussion

This part presents the findings from the descriptive statistics analysis, which characterizes the characteristics of the study's variables at both the outset and later points. Agricultural production, monetary transfers, labor supply, sex of household head, age of household, and land inputs are all considered. According to Table 2, when the OVC-CT program was included in the analysis, agricultural output increased. Most notably, the intervention was linked to a rise in output as measured by a rise in the mean output from 1559.4114 to 3494.8445. Since the categorization was based on whether or not a person received a transfer of cash, the mean decreased from 0.2303 to 0.2169. There was a drop in land inputs from 14.7365 to 11.9013 over the follow-up period. The research presents the maximum and lowest values, which represent the extremes, and discusses the distribution in terms of skewness and kurtosis, both of which are connected to the normal distribution.

Table 2. Descriptive statistics

	Variable	Mean	SD	Min	Max	Skewness	Kurtosis
Baseline	Agric_Output	1559.4114	6493.7071	0	9.61e+04	6.4692	55.2121
	Cash_Tran	0.2303	0.4210	0	1.0000	1.2812	2.6416
	Labor_Sup	192.7444	1466.0652	0	5.00e+04	16.8580	388.3585
	Sex_HHH	0.5250	0.4994	0	1.0000	-0.1001	1.0100
	Age_HH	42.5235	20.8590	18	110.0000	0.4002	1.8762
	Land_Input	14.7365	80.8232	0	2880.0000	30.4927	1076.8170
Follow-Up	Agric_Output	3494.8445	9837.8034	0	9.61e+04	4.2287	24.7405

[2] One household is dropped from our study sample so that we remain with 1,810 households instead of the original 1,811 by Carolina Population Center. This is due to missing data on variables along the row created by our difference-in-differences model specification.

Cash_Tran	0.2169	0.4123	0	1.0000	1.3741	2.8880
Labor_Sup	616.5657	3352.2617	0	5.00e+04	10.1463	125.4902
Sex_HHH	0.5436	0.4982	0	1.0000	-0.1750	1.0306
Age_HH	31.6529	15.6240	18	100.0000	1.6037	5.0426
Land_Input	11.9013	28.6136	0	98.0000	2.6283	8.0376

Instrumental variable and OLS model results

Comparing the pooled OLS and the IV, we find that cash transfers considerably raise agricultural production by 30.4% and 72.5%, respectively. The pooled OLS and IV estimate that an increase in labor supply would boost agricultural output by 4.44 percent and 4.62 percent, respectively. When comparing OLS and IV, agricultural output was lowered by 18.9 percentage points due to a female participant. In both situations, the influence is noticeable enough to the coefficients that it may be considered substantial. In both circumstances, unexpected land inputs reduce agricultural production for OVC families. The use of land for agricultural purposes lowered yields by 0.474 and 0.488 percent. In both situations, the constants represent the levels of output that would be achieved if the influence of the independent variables were held constant (see table 3).

While cash transfers were found to reduce spending by $256.5 on labor supply activities in the OLS, they were shown to raise revenue by $1,634 in the IV. This discrepancy is statistically significant. Because of the potential for biases generated by confounding factors and measurement errors in the omitted variable, OLS estimation is not as robust as IV. The female breadwinner effect in OVC families was 172.4 points lower in OLS and 168.1 points lower in IV. In conventional least squares and instrumental variables models, age has the largest effect when the labor supply is the dependent variable, raising it by 8.746 and 6.812, respectively. The impact of business inputs on the outcome of land inputs is negative and insignificant in both scenarios (Table 3).

Table 3. Instrumental variable and OLS model results

	Agriculture Output		Labor Supply	
	OLS	IV	OLS	IV
Cash Transfer	0.304***	0.725**	-256.5***	1,634**
	(0.0803)	(0.335)	(89.90)	(638.1)
Labor Supply	6.59e-05***	6.85e-05***	--	--
	(9.98e-06)	(1.02e-05)	--	--
Sex of HHH	-0.189***	-0.178***	-172.4**	-168.1**
	(0.0674)	(0.0683)	(76.42)	(79.82)
Age of HH	-0.000696	-0.000997	8.746***	6.812***
	(0.00165)	(0.00167)	(1.850)	(2.038)
Land Input	-0.00474***	-0.00488***	-0.124	-0.643
	(0.00105)	(0.00106)	(0.384)	(0.437)
Constant	8.546***	8.461***	412.4***	78.61

	(0.0816)	(0.105)	(89.89)	(145.7)
R-squared	0.041	0.028	0.007	0.034

The researcher estimated the DID and the average treatment impact of the treated (ATET) for agricultural production and labor supply after obtaining findings from the IV and OLS models (see table 4). It was found that those that received financial transfers had an increase in agricultural output of 8.5% compared to those who did not. Among OVC who got financial transfers, agricultural output increased dramatically, suggesting the intervention was critical. On the other hand, after the implementation of the cash transfers, the total amount spent by OVCs in the country on labor supply and employing labor for agricultural operations, including livestock production and crop production, in the designated regions increased significantly by 121% as compared to non-beneficiaries of the cash transfers (table 4).

Table 4. Difference in Difference for Agricultural output and labor supply

	Agricultural Output	**Labor Supply**
Before_Diff	0.289***	-0.563***
	(0.087)	(0.102)
After_Diff	0.374*	0.649*
	(0.304)	(0.534)
ATET (Cash Transfer (1vs0))	0.0851*	1.212**
	(0.316)	(0.544)
Observations	1714	4014
R-squared	0.034	0.0179
Adjusted for covariates	Yes	yes

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The DID relies heavily on the ability to give evidence for the identification assumption of the parallel trend. This will help prove that if the intervention hadn't taken place, the trend between the control and treatment groups would have been the same. Diagnostic charts for the years 2007-2009 are offered as proof. The trend demonstrates the validity of the parallel trend assumption by using observed averages and linear trends after 2007. Whether or whether treatment is given, the unobserved differences between the test and control groups persist throughout time. This approach gets rid of the problem of bias that arises when comparing the treatment group to itself over time, which could be the result of trends due to other causes of the outcome, and the treatment group to the control group in the post-intervention period, which could be the result of permanent differences between the groups. Efforts to demonstrate and defend this assumption in the research are depicted in figures 1 and 2 for the availability of labor and

agricultural output, respectively. The early graphs in our setting demonstrate the correctness of this assumption, providing support for DID.

Figure 1. Parallel Trend for agricultural output

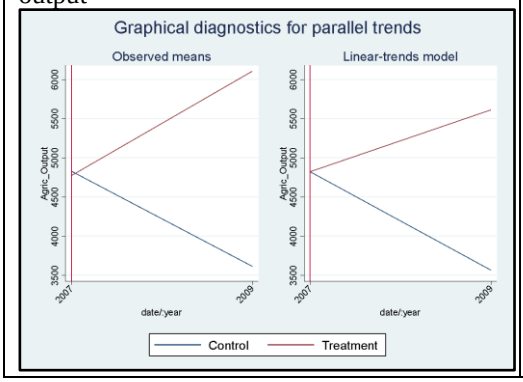
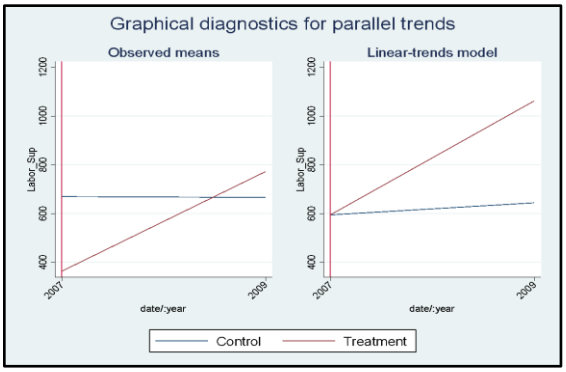


Figure 2. Parallel Trend for labor supply output



Summary conclusion

The purpose of this research was to examine the effect of cash transfers on agricultural output for orphans and vulnerable children in seven regions of Kenya. Cash transfers boost agricultural productivity for OVCs by 30.4% and 72.5%, as shown using pooled OLS. Contrarily, OLS-based CTs were shown to decrease labor supply by 256.5 percent, while IV estimates showed that cash transfers would increase labor supply by 1,634 percent. The recipients of financial transfers increased their agricultural output by 8.5%, according to a difference-in-differences estimate. Further, compared to those who did not get financial transfers, Orphans and Vulnerable Children's spending on labor supply and employing workers for agricultural activities rose by 121% after the program was put into place. These results suggest that CTs have a significant impact on the quality of life for vulnerable populations like orphans and support the need for policymakers to take steps to enhance direct and indirect cash transfers to this population. This is essential in giving people the economic agency to better their lives.

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