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Gender differences in child investment behaviour among agricultural households

Evidence from the Lesotho Child Grants Programme

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Abstract: We examine the impacts of an unconditional cash transfer in Lesotho using an experimental impact evaluation design. We find that the cash transfer led to different outcomes for girls and boys, overall favouring secondary school-aged girls. Girls in this age group were less likely to miss school, spent more time at school, and faced a reduced time burden in household chores. While the general results are maintained in households with a married couple present, in *de jure* female-headed households, outcomes improved among secondary school-aged boys relative to secondary school-aged girls. By contrast, having the father as recipient was more likely to have positive impacts on girls' schooling, decrease boys' labour in farming while simultaneously increasing boys' labour input in household chores. This puts into question the existence of gender preferences in schooling in Lesotho and suggests that impacts on child welfare are influenced by time and labour constraints and by gender-based differences in opportunity costs of a child's time.

Keywords: cash transfers, gender, child schooling, child time use, child farm labour, female-headed households
JEL classification: D130, I38, I25

Figures and tables: at the end of the paper.

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1 Introduction

Family and child allowances constitute about 16 percent of total spending on cash transfers (CTs) worldwide (World Bank, 2015). Several of these programmes focus on elevating household child investment behavior, particularly nutrition and schooling. In addition, old-age social pensions and poverty-targeted CTs have intended human capital investment objectives. To this effect, the impacts of CTs on child welfare outcomes have been widely studied (Hoop and Rosati, 2013) and overall show positive results in schooling, and in some cases reduction of child labor.[1] For example, the work of Bourguignon et al. (2003), Cardoso and Souza (2004), Handa et al. (2009) and Skoufias and Parker (2001) focus on the impacts of conditional CTs on child labor and schooling, in particular Brazil's *Bolsa Familia* and Mexico's *Progresa* (now called *Prospera*). These large CT programmes mandate child school attendance among other requirements for qualification, thus improving child schooling significantly. Also in Chile, Martorano and Sanfilippo (2012) find positive impacts of *Chile Solidario* CT in child attendance rates, especially among secondary students.

Similar impacts on education investments in children are found among unconditional CTs in Africa. Edmonds (2006) focuses on pensions to the elderly in South Africa, finding significant increases in schooling and declines in labor for children, mostly among boys. Examining a monthly CT to the ultra-poor in Malawi, Miller and Tsoka (2012) find improved education and reduced labor outcomes among children in beneficiary households. More recently, Akresh et al. (2013) find increased child attendance rates as a result of participating in a CT in Burkina Faso; and Handa et al. (2015) find raised school enrollment particularly amongst older children and decreased child wage labor in a CT in Zambia. Overall, the bulk of evidence show that there is substantial impacts on child schooling (enrollment and attendance), particularly among secondary school where attendance tends to be lower in poor households (World Bank, 2014).

A remaining important question about CTs is whether impact levels are equitable between boys and girls in education vis-à-vis the use of their labor. The bulk of studies on CTs suggest no consistency of higher impacts in education for either girls or boys, but rather working towards reducing ex-ante schooling gender inequalities. However, the impacts on child labor are still inconclusive and gendered, determined by the market (the types of jobs available for girls and boys and the relative gender roles assigned to them), the household structure and characteristics, and the ways in which child labor complements adult labor in the household (World Bank, 2014). The bulk of studies also suggest that outcomes are influenced by the kind of activities performed by boys and girls in the household, their related opportunity cost, their compatibility with schooling, and boys' and girls' available leisure time (World Bank, 2014). Both economic and household activities count, as the latter also frees adult's time.

In relation to household decision-making on child investment by gender, there is also the role of child preference in the use of the transfers in child investments. Since the seminal work of Becker (1965, 1981), economists have built on his theory of choice framework to analyze intra-

[1] With the term "child labor", organizations, such as the International Labour Organization, often define work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development. Engagement of children in labor activities can be difficult and demanding, hazardous and even morally reprehensible. With the available survey instrument used to collect the data for this study, it is impossible to disentangle the many kinds of work children do. For this reason, in this study we adopt the "economic" approach to the term child labor, for which terms such as child labor, child work or engagement of children in family farming or wage labor can be used interchangeably.

household and intergenerational resource transmission. The findings of Emerson and Souza (2002) in Brazil provide strong evidence that parental child preferences may generate a gender bias in child human capital investments. The authors find that higher parental schooling increases the probability that a child will attend school and decreases the likelihood that the child will be a laborer. However, while both father's and mother's schooling has strong impacts on son's education and labor, in their study only mother's schooling affects the probability that the daughter works. In addition, non-labor income (e.g. transfers) of either parent has an impact on son's school attendance but not daughter's.

A strand of the literature looks into the impacts of gender-based programme features but remain inconclusive on the policy implications. For example, Mexico's *Progresa* provided larger transfers to households with girls in order to reduce the gender gap in schooling enrollment (Handa et al., 2009). However, empirical evidence has not confirmed whether observed larger impacts on girls derive from lower initial enrollment rates for girls or from the higher payments made to them. Further, various studies have already shown that child welfare is improved when women have control of a greater share of household resources, through income (Thomas et al., 1990; Quisumbing and La Brière, 2000) or dowry (Quisumbing and Maluccio, 2003), therefore making the case for women to be designated cash recipients.

However, scarce evidence exists comparing outcomes by gender of transfer recipient. To understand how CT impacts can be driven by child preference by gender (mothers opting to benefit girls more than boys, and men opting to benefit boys more than girls), some research has been done on the differentiated impacts by gender of household recipient, in some cases suggesting prevalent gender bias in intra-household resource allocation (see Duflo (2003) on child anthropometric outcomes of a social pension in South Africa) or in others suggesting absence of gender bias (see Akresh et al. (2013), on a conditional CT in Burkina Faso on child preventive health care visits). More recently, a randomized control trial on male and female cash recipients of an education grant in Morocco finds slight differentiated impact on child schooling by gender, girls having slightly higher schooling outcomes when mothers receive the transfer as opposed to fathers. However, the difference in outcomes are not observed within an unconditional CT applied in the context of the same experiment (Benhassine et al., 2013). Others studies make the case for a strong association between cash given to mothers and child schooling, nutrition and general welfare (Behrman and Hoddinott, 2005; Manley et al., 2012; Brauw et al., 2014).. However, most of these studies fail to compare these outcomes to a scenario with male CT recipients.

The impact of gender differences in household structure on differences in girls and boys outcomes of CTs has not been widely studied either. An important question is whether female-headed households (FHH), due to their labor constraints, are more likely to bear on the intergenerational transmission of poverty by facing higher constraints for substituting child labor while investing in child education. This perspective is relevant, particularly in sub-Saharan Africa (SSA), where 26 percent of households are estimated to be headed by a woman and their prevalence has increased since the 1990s (Milazzo and Walle, 2015). The structure of FHH can also vary. *De jure* FHHs are run by single, widowed, divorced or separated women, and differ from *de facto* FHH, in which a husband is temporarily absent, for instance because working and living abroad.

In the context of SSA, age of the head of the household is relevant as, due to the HIV-AIDS pandemic, several FHHs tend to be elderly caring for their grandchildren. The extent to which FHHs are disadvantaged relative to male-headed households (MHHs) in terms of poverty, labor capacity, access to land and livestock, and lower credit and education vary greatly across studies and contexts (Kossoudji and Mueller, 1983; Handa, 1996; Quisumbing, 1996; Buvini and Geeta, 1997). In addition, for agricultural households facing non-separable production and consumption decisions, the impact of the CT on household production and therefore labor decisions of both adults and children are expected to be jointly determined with other outcomes such as schooling investment decisions (Benjamin, 1992; Bardhan and Udry, 1999; Handa et al., 2010). This paper contributes to the literature on child wellbeing by examining child investment outcomes vis-à-vis the use of their labor by including a focus on agricultural households and their gender-based differences in household structure. Using impact evaluation data from the Child Grants Programme (CGP) in Lesotho, we examine the gender-differentiated impacts on child schooling, labor and time use by comparing impacts on outcomes for boys and girls across married MHHs and *de jure* FHHs. We focus on agricultural households because in Lesotho the majority of children laborers are employed in crop and livestock production activities, and this is an important determinant of school enrollment and schooling outcomes (Kimane, 2006).[2] In addition, we analyze potential child preference by gender on child investment according to the gender of the CT recipient within married male-headed households.

2 The Child Grants Programme in Lesotho

The CGP in Lesotho is an unconditional CT that targets poor rural households with orphans and vulnerable children (OVCs). [3] Its primary objective is to improve the living standards of OVCs so as to reduce malnutrition, improve health status, and increase school enrollment. The transfer value was originally set in 2009, at the beginning of the programme, at a flat rate of LSL120 (US$12) per month per household and was disbursed every quarter. This amount corresponded to around 14 percent of the 2013 monthly consumption of an eligible household. Since April 2013, the transfer was increased and indexed to the number of children, ranging from LSL120 to LSL250 (US$25) per month. Programme beneficiaries are selected through a combination of Proxy Means Testing (PMT) and community validation and registered in the National Information System for Social Assistance (NISSA) (Pellerano et al., 2014). The evaluation of the programme was a randomized experiment. Control and treatment households were administered a detailed questionnaire in July–August 2011 (baseline) and during the same months in 2013 (follow-up), so as to avoid seasonality issues.

The impact evaluation study of the CGP (Pellerano et al., 2014) suggests that programme messaging did affect child schooling. For example, large and significant increases in spending on children's uniforms and school shoes were found, particularly among 6–12 year olds. Further, the study finds that the CGP had a large effect on the proportion of children aged 6–19 who were currently in school. The impact was mainly driven by a large decline in enrollment among older boys aged 13–17 in the control group, which would imply that the transfer helped mitigating the impact for children in beneficiary households. Enrollment for 13–17 year old boys was 6–10 percent higher among beneficiaries and the effect was concentrated among primary school pupils.[4] Impacts of the CGP on girls schooling outcomes were not statistically significant but followed similar trend than for boys". (Pellerano et al., 2014)also examined impacts of the CGP on time use of children aged 4–17. While statistically significant impacts were not observed,

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[2] An agricultural household is defined as a unit engaged in crop production or livestock activities in the 12 months prior to the household survey.

[3] A household member is considered a child if aged between 0 and 17 for the purpose of CGP distribution.

[4] Even among children aged 13–17, enrollment for this group in Lesotho is higher at the primary level rather than in secondary school, suggesting high rates of grade repetition and irregular school progression, which means that roughly 70 percent of children are not in their corresponding grade based on their age

boys enrolled in school from beneficiary households were estimated to spend more time doing homework and/or studying outside school. The observed results point to a gender-bias in investment in human capital, favoring boys, despite mostly weakly significant results on schooling and time use outcomes – typical amount of time spent on household chores, in school, working on farm – relative to spending outcomes.

The impact evaluation results from the follow-up study on child schooling and other outcomes follow the whole sample of treatment and control households. In this paper we focus on a sub-sample of households engaged in crop production and livestock rearing at baseline. We focus on this subset because children in this group are particularly vulnerable to shocks that may affect schooling. A qualitative study of the CGP found that children are commonly pulled out of school to engage in labor activities including farm work for boys and washing and child care for girls, especially in households engaged in agricultural activities (Oxford Policy Management, 2014). Our results do not contradict the results of the main impact study but are different in magnitude and significance (not direction), because we focus on the sample of households engaged in agriculture for whom stronger results are expected. In addition to examining general child outcomes this paper also examines FHH–MHH differences in household structure and gender of transfer recipient. We stratify the sample by gender, and primary school aged children, ages 6–12 and secondary school aged children 13–17.

3 Empirical framework

Although the CGP is an unconditional CT, the programme included strong messaging about spending money on the needs of children. Hence, it is expected to observe an increase in child specific investments, particularly in education, and a decrease in their participation in agricultural and household labor. However, the unconditional nature of the transfer coupled with the vulnerability of recipient agricultural households could lead households to prioritize different needs over investing in all children equally. Alternative needs include spending on other immediate consumption such as food expenditures and investments in agricultural inputs for increasing food production.

Our main hypothesis is that differences in transfer allocation could be driven by differences in household structure given by the gender of household head and her/his relationship to children living in the household, and by the labor capacity of the household. First, the agricultural household model (Benjamin, 1992; Bardhan and Udry, 1999) predicts that by alleviating household credit constraints, an exogenous increase in income given by CTs may affect adult labor and thus, simultaneously affecting child labor. If CTs increase labor demand, say through greater employment opportunities on-farm, depending on the elasticities of adult and child farm labor with respect to income, an increase or a decrease in child labor are both possible. However, if child and adult labor are imperfect substitutes, then a decrease in child labor is to be expected. Further, if CTs increase adult participation in off-farm wage labor, then child labor could increase or decrease depending on the income effect of the transfer and the propensity for a household to hire outside labor. Second, we expect to find gender differences on child investment impacts due to differences in the value of human capital relative to the cost of present forgone earnings for boys and girls, by household structure. Household decisions to invest in child education depends on marginal costs – forgone earnings from child labor and direct education costs – and marginal benefits – higher expected earnings as an adult as they enter the labor market. CTs may reduce the marginal costs of education by reducing the relative value of children's time in work and leisure compared with school.

If boys expect higher wages and longer time in employment than girls, then the marginal benefit of one extra year of education for boys is higher than for girls, all else equal. If this was the case, we expect to find CTs having larger impact on boys than girls. However, if the marginal costs of child education in terms of foregone earnings remains relatively higher for boys compared to girls despite the transfer, then we may find that girls benefit more from the transfer than boys. As presented later on, baseline differences between boys and girls in our sample show that boys of both primary and secondary school ages are more likely to miss and repeat school, and are vastly more likely to participate in crop and livestock activities than girls. Boys aged 13–17 spend on average one additional hour on a typical day working on farm activities or household chores (mostly on farm activities) compared to girls. Similarly, boys aged 6–12 spend approximately half an hour more than girls on such activities. Among poor households participating in the Lesotho CGP programme, therefore, boys appear to be more disadvantaged than girls in respect to education prospects due to participation in income generating activities.

From a policy perspective, observing gendered impacts of the Lesotho CGP on child investments by FHH–MHH would suggest that giving CTs may have to be adjusted to avoid gender-bias in schooling. Our results would provide evidence as to whether the CGP design should include gender-specific features and complementary support, beyond the messaging on child investments in education, to equally promote boys' and girls' education.

In addition to examining differences in investments in boys and girls by household structure, we analyze heterogeneous impacts by gender of the CT recipient. We test the assumption of unitary household decision-making by comparing child outcomes by the gender of the transfer recipient within married MHH, in which intra-household resource allocation decisions can be made solely or jointly. By looking at both the role of household structure (FHH–MHH) and within household decision-making we provide some insights into whether household economic constraints or parental preferences drive differences in investment in boys and girls. However, as the treatment was not randomized by household structure or within households, both FHH–MHH and gender of recipient within MHH can be potentially endogenous. We assume that the bias eventually occurring while sorting across FHHs and MHHs can be adequately controlled for, by using potential differences in observable characteristics like household composition.

The paper ends with a discussion of differences in characteristics by household structure, impacts on adult labor allocation and other household decisions. Combining the causal impacts with potential explanations of why such gender differences are observed in child outcomes can help inform decision makers about the implications of providing an undifferentiated CT intervention, intended in part to improve child outcomes, to different types of households. We hypothesize that household structure could impact investments in children if different types of households prioritize the use of the transfer and the opportunity cost of a child's time differently. While the CGP was expected to promote child health and education, other unintended consequences such as increased purchase of crop inputs and increased agricultural production on kitchen garden plots were found among beneficiary households (Daidone et al., 2014). We investigate whether such changes varied by type of household and hence could have caused differences in investments in children.

4 Data and empirical strategy

4.1 Data

The empirical analysis uses both baseline and 24-months follow-up data. These surveys were representative of phase 1 (2^{nd} round) of the CGP pilot programme, which covered 5 districts – Qacha's Nek, Maseru, Leribe, Berea and Mafeteng – in 10 Community Councils (CCs) made up of 96 Electoral Divisions (EDs). EDs were split equally into treatment and control arms through public lottery events in each CC. Two criteria were used to determine households' eligibility for CGP: 1) having at least one resident child aged 0–17; 2) being among the poorest households in the community.[5]

For this analysis we include only agricultural households comprised of *de jure* unmarried FHH and married MHH. Within the total sample 98 percent of FHH were unmarried, and 85 percent of MHH were married. Further, 86 percent of the total sample at baseline consisted of agricultural households involved in crop production and/or livestock rearing. Our panel retains households that were doing any agricultural activities, either crop production or livestock rearing, at baseline and comprises of 1,006 households in each survey year. There was no attrition among this sample, although attrition for the overall sample was 6 percent.[6] Our final sample includes 468 control and 538 treatment households.

4.2 Baseline household summary statistics

Table 1 panel A presents summary statistics at baseline in 2011, across treatment and control households, while Panel B compares means across *de jure*, unmarried FHH and married MHH. The sample of households is restricted to unmarried FHH and married MHH in both panels. The 24-month panel survey for the Lesotho uses a randomized experimental design. However, as the sample is restricted to unmarried FHH and married MHH in agricultural households, some differences between the treated and control groups exist. Pairwise tests indicate that many differences across treatment and control samples are not significant, but from panel A of Table 1 we find that heads in treatment households have 0.31 more years of education, and 0.59 more household members and these differences are significant. Household composition for adult members over 18 differs by 0.33 members and is statistically significant. Similarly there is a significant difference between treatment and control groups for members' aged 0–5. Controlling for differences in household composition is likely to be important for measuring the impact of CTs on child outcomes as this reflects labor composition. Lastly, we find a significant difference between treatment and control groups in household participation in crop production, with control households 5 percent less likely to participate and producing on average 0.15 fewer fruits and vegetables. Both crop production and livestock rearing are important household economic

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[5] For more details about the identification process of the poorest households, see (Pellerano et al., 2014)

[6] The purpose of the survey was to track children. In some cases the children of one household from baseline may have split into multiple households at follow-up. For analytical purposes households containing the majority of baseline children were taken as the follow-up household (additional details and discussion in Pellerano et al., 2014).

activities for the poor and vulnerable households sampled in Lesotho with 88–93 percent and 72–74 percent engaged in crop production and livestock rearing respectively.[7]

Table 1 panel B, compares the samples of unmarried FHH to married MHH, finding significant differences in household head characteristics and attributes of the household. As anticipated, heads in FHH are on average 10.7 years older than those in MHH. FHH heads are also more educated and have 0.9 years more of schooling than MHH heads. Other significant differences include, marginally larger households, with more members over age 18 in MHH compared to FHH. Further, while there is no difference in household engagement in crop production by household structure, MHH produce fractionally more fruits and vegetables than FHH. From Figure 1, the distribution of land by household structure does not seem to differ across FHH and MHH[8], contrary to expectations. This suggests that on average both FHH and MHH are likely to engage in crop production. Lastly, there is a large difference in likelihood of engaging in livestock rearing, with 80 percent of MHH and just 66 percent of FHH engaging in the activity. Figure 2 shows that a much higher proportion of FHH own no livestock and ownership at higher numbers of livestock is generally lower between FHH, compared to MHH. On average MHH own 3.25 more livestock than FHH, and the difference is statistically significant.

One concern when comparing the impact of CGP on child outcomes by FHH–MHH is that household structure may be correlated with some omitted characteristic that interacts with the treatment. As a result, we may attribute a differential impact of CTs to the difference between FHH and MHH when in fact this difference stems from omitted variable bias. To mitigate this possibility we control for time variant observed characteristics that differ across households such as demographic composition of households, and characteristics of the household head. In addition, the use of individual fixed effects helps reduce bias that may stem from both individual and household unobserved time invariant factors. Given that the specifications used in our analysis control for time varying characteristics, there is some concern that we are including covariates that might be affected by the treatment. Controlling for baseline characteristics does not alter treatment impacts and we find no evidence that the covariates used in the analysis are affected by the treatment, thus our preferred specification uses time varying covariates with individual fixed effects.

4.3 Baseline child outcomes by gender

In Table 2 we compare how girls and boys differ before CGP payments started, particularly in the outcome variables of interest. With respect to older children, ages 13 to 17 (panel A), 56 percent of girls were enrolled in the last three grades of primary school (years 5 to 7), relative to 63 percent of boys in the same age group. However, among the same age category, 39 percent of girls were in secondary school, compared to 22 percent of boys. At baseline, 77 percent of boys aged 13 to 17 ever-repeated school (20 percent more than girls) and 37 percent of them missed school in the 30 days prior to the baseline survey (10 percent more than girls). Hence, schooling among older boys appeared more volatile and less favored than for girls. In agricultural households, this implies that the value of current earnings for a large share of older-age boys

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[7] Results presented do not use Propensity Score Matching (PSM) techniques, like reweighting for the propensity score, since impact estimates are virtually unchanged. This suggests that controlling for observables is sufficient to mitigate differences between control and treatment groups. Results are available on request to the authors.

[8] Post-survey data cleaning revealed that there may be some measurement error in household estimation of owned land. We assume that errors are random and not defined by household structure. We also only use land area owned to compare distributions.

relative to the opportunity cost of schooling may be considered greater than the value of future earnings, resulting in a lower share of boys participating in school. In addition, researchers in the area of education in Lesotho observe that boys in Lesotho have lower enrollment rates than girls, and that in the context of the HIV-AIDS pandemic, there has been a growing pressure for boys to support the household economically (Nyabanyaba, 2008).

In terms of labor and time use, 46 percent of older boys participated in own crop or livestock activities in the week prior to the survey, while only 7 percent of girls did. In addition, boys in this age group spent on average 2.5 days per week on such activities relative to girls who spent just 0.26 days. However, while older girls (aged 13–17) spend roughly 42 minutes on a typical day engaged in household chores, boys spend roughly 11 minutes less on such activities. This confirms well established gender roles in rural households among secondary school-aged boys and girls, not only seen in Lesotho but in many rural settings. Supporting this dichotomy of gender roles, results on time spent on a typical day, the sum of participation in farm activities and household chores indicates that boys spend on average nearly one hour more than girls engaged in such activities on a typical day. This difference is statistically significant and would add up to a large difference between secondary school aged boys and girls participation within a week. Hence, we find that older boys are typically more disadvantaged than girls among poor agricultural households in Lesotho, in relative time spent on non-leisure and non-schooling activities, and in schooling participation.

Among younger children (panel B in Table 2), all girls and boys aged 6–12 were enrolled in school. Similar to older boys, we observe that younger boys aged 6–12 have higher repetition rates than girls (55 vs. 42 percent) and are more likely to have missed school in the 30 days prior to the survey (27 vs. 20 percent). Further, around 30 percent of boys were engaged in farm activities in the week preceding the survey, compared to just 5 percent of girls. Although in a typical day girls spend around 91 minutes engaged in household chores (28 minutes more than boys), boys spend roughly half an hour more on a typical day on farming activities and chores in all, compared to girls. Similar to results on time allocation among non-leisure activities among older children, baseline summary statistics indicate that younger boys are also more disadvantaged than younger girls in schooling participation, and spend more time on labor activities.

Gender differences in labor allocation within the household also have implications on child investment outcomes as a result of CTs as household chores tend to be more compatible with schooling than with agricultural tasks. Therefore, girls are better able to combine schooling with household tasks (World Bank, 2014).

4.4 Baseline child outcomes by household structure

We next examine differences in observed child characteristics across FHH and MHH. For secondary school aged children (panel A, Table 3), there is a stark contrast in terms of their relationship to the household head. Specifically, 71 percent of children in MHH are sons or daughters of the head while only 43 percent in FHH have this relationship. Further, only 17 percent of boys and girls in MHHs are the grandchildren of the head, as opposed to 52 percent of grand-children in FHH. This difference together with other differences, such as the age of the household head, could lead to differences in the observed child outcomes by household structure. Grandmothers, more than mothers and fathers, may view the value of the human capital relative to the opportunity cost of time differently. Moreover, households headed by a female elder may face very different constraints in terms of labor capacity and access to assets and services than households headed by younger males.

In terms of education outcomes, we do not observe meaningful differences between MHH and FHH for older children (panel A, Table 3). Only 27–28 percent of secondary school aged children are enrolled in junior secondary school (forms A–C), while most of them (59–61 percent) fell into the primary school (year 5–7) level of education, below the optimal level of education. This is indicative of a lack of resources to remain in school for children of this age group, due to household economic constraints and a high level of grade repetition. Further, there are no significant differences across MHH and FHH for other key schooling indicators, neither in the likelihood of repeating school (69 vs. 67 percent), nor in the likelihood of having missed school days in the month prior the baseline survey (34 vs. 32 percent). However, older children from FHH were 7 percent significantly more likely to have been enrolled in school in the current year.[9]

Consistent with above, we also observe a large and significant difference in the likelihood of older children participating in farm labor in the 7 days prior to the survey (34 percent in MHH vs. 24 percent in FHH). In a typical day, older children in MHH spend 81 minutes on farm activities, while those in FHH spend just 35 minutes. However, the same children in FHH spend on average 84 minutes on chores while those from MHH spend 66 minutes. Older children from MHH also spend less time at school and doing homework than those from FHH. These differences are all significant and suggest that farming activities take precedence in MHH where livestock rearing is more prevalent and take up more time among male children. From the summary statistics, labor activities in MHH for older children are likely to lead to greater substitution away from schooling relative to FHH. Older children from FHH engage more time in household chores, most likely because children are less likely to engage in livestock rearing in FHH and are more likely to substitute for FHH head time on chores, including fetching water, sibling care, cleaning, cooking, washing, and shopping.

In Table 3, Panel B we present differences across FHH and MHH for younger children. The trends for children in primary school age were similar to those for older children, with younger children from FHH more likely to be grandchildren of the head and those from MHH more likely to be sons or daughters of the head. However, contrary to schooling trends among older children, younger children from MHH are 7 percent significantly more likely to be attending primary schooling (Year 1–2). Almost all children aged 6–12 are enrolled in the current survey year at baseline. Hence, for younger children we only analyze schooling decisions at the intensive margin. Among MHH, 28 percent of younger children had missed at least one day of school in the last 30 days, relative to 18 percent of children in FHH.

Only a small share of younger children has been engaged in farm labor in the last 30 days but children in MHH were 6 percent more likely to have participated than those in FHH. Young children from MHH were significantly more likely in 2011 to have spent more time on farming activities, and significantly less time on chores in a typical day than those from FHH.

[9] Looking across labor categories, we find that children of all age groups in Lesotho are most likely to be engaged in farming and livestock activities with less than 5 percent working on off-farm wage activities.

4.5 Impact of cash transfers on child schooling, time-use and labor

Our empirical framework is based on two fundamental assumptions: i) differences between treated (eligible, cash recipient) and control (eligible, not cash recipient) groups can be mitigated by conditioning on observables, at community, household and individual level; ii) unobservable differences for individuals are time invariant and can be controlled for through individual fixed effects. We can recover the Average Treatment Effect on the Treated (ATET) of the CT on child level outcomes by estimating the following Difference-In-Difference (DID):

$$\begin{aligned} Y_{iht} &= \gamma_0 + \gamma_1 Treat_h * Post_t + \gamma_2 Post_t \\ &+ \gamma_3 \mathbf{X}_{iht} + \gamma_4 \mathbf{Z}_{ht} + \gamma_5 \mathbf{Q}_{ct} + \beta_d * \eta_t + \delta_i + \epsilon_{iht} \end{aligned} \quad (1)$$

where i indexes individual, h household, c community, d district and survey year (t = 2011, 2013). Dependent variable Y is characterized by outcomes for youth labor, schooling and time use. $Treat_h$ is an indicator variable set to 1 if the household is a CT beneficiary and $Post_t$ is an indicator denoting the follow-up period. We denote by X_{iht} a vector of individual control variables. Similarly, Z_{ht} and Q_{ct} are household and community controls respectively.

We include $\beta_d * \eta_t$ district-time fixed effects to purge any time-district specific difference from the estimation. Individual fixed effects are used to control for time-invariant individual, household and community characteristics. Household covariates include age of head, education of head, household size and household composition (to control for potential differences in labor constraints), while community variables consist of price, wage and shock indicators. Of interest to measure the impact of the CGP on child outcomes is the coefficient γ_1, the DID estimator.

Further to estimate the discrete impacts of CTs on gender-bias in child outcomes, we estimate:

$$\begin{aligned} Y_{iht} &= \alpha_0 + \alpha_1 Treat_h * Post_t * Girl_i + \alpha_2 Treat_h * Post_t + \\ &+ \alpha_3 Post_t * Girl_i + \alpha_4 Post_t \quad (2) \\ &+ \alpha_5 \mathbf{X}_{iht} + \alpha_6 \mathbf{Z}_{ht} + \alpha_7 \mathbf{Q}_{ct} + \beta_d * \eta_t + \delta_i + \epsilon_{iht} \end{aligned}$$

The above equation differs from the first equation only in its incorporation of the $Girl_i$ indicator denoting if sample individual is a girl.[10] Here, we are interested in coefficients α_1 and α_2 that measure difference in schooling, labor and time use outcomes across boys and girls, and the general treatment impact.

[10] Note that 'Girl' indicator and 'FemHead' indicator (from subsequent equation), and treatment indicator, are omitted due to individual fixed effects.

Similar to equation (2) we examine the impacts of CTs by household structure on child outcomes, for a sample stratified by girls and boys, we examine the impacts of CTs by household structure on child outcomes as well as age groups 6–12 (primary) and 13–17 (secondary):

$$
\begin{aligned}
Y_{iht} &= \alpha_0 + \alpha_1 Treat_h * Post_t * FemHead_h + \alpha_2 Treat_h * Post_t + \\
&+ \alpha_3 Post_t * FemHead_h + \alpha_4 Post_t \\
&+ \alpha_5 \mathbf{X}_{iht} + \alpha_6 \mathbf{Z}_{ht} + +\alpha_7 \mathbf{Q}_{ct} + \beta_d * \eta_t + \delta_i + \epsilon_{iht}
\end{aligned} \tag{3}
$$

where $\mathrm{FemHead_h}$ is set to one if household is *de jure* female headed.

Lastly, for the married MHH sample, we estimate the impact of the gender of CT recipient on impacts:

$$
\begin{aligned}
Y_{iht} &= \alpha_0 + \sum_{j=1}^{2} \alpha_{1j} Treat_{hj} * Post_t + \alpha_2 Post_t + \\
&+ \alpha_3 \mathbf{X}_{iht} + \alpha_4 \mathbf{Z}_{ht} + \alpha_5 \mathbf{Q}_{ct} + \beta_d * \eta_t + \delta_i + \epsilon_{iht}
\end{aligned} \tag{4}
$$

where $\mathrm{Treat_{h1}}$ is an indicator set to 1 if the household received a treatment and the gender of the recipient was female. Similarly, $\mathrm{Treat_{h2}}$ is an indicator set to 1 if household treatment recipient was male. For equations (3) and (4) a potential threat to identification stems from the fact that household structure (FHH–MHH) and gender of recipient within MHH are potentially endogenous and systematically correlated with observed household characteristics as well as other unobservable factors. To mitigate such concerns we control for observable household characteristics and utilize individual fixed effects, which should minimize time-invariant individual and household differences.

5 Results

5.1 Gender-differentiated impacts of CGP on household child investments: child schooling, time use and labor investments

Table 4 panel A presents the results from the estimation of equation (1) on the impact of the CGP on children in agricultural households. We find that older children (aged 13–17) are 12 percentage points more likely to be enrolled in school and are 20 percentage points less likely to have missed any days of schooling in the last 30 days (columns 2 and 3 respectively). Looking at impacts within the last 30 days on younger children (aged 6–12), on average we find no impacts of the CGP. This result is not totally unexpected for two reasons: 1) a ceiling effect, due to improving universal coverage of primary education in sub-Saharan countries to which Lesotho is not an exception (UNESCO - BREDA, 2009); 2) the opportunity cost of attending school because the time spent at school by children decrease their participation in household livelihoods activities. The opportunity cost is positively correlated with children age, since older children are generally more productive than younger siblings. Further this opportunity cost is even higher for poor families, especially when children are the main breadwinner (Majgaard and Mingat, 2012). In panel B we look at the heterogeneous impacts of the CGP by gender of the child, obtained by estimating equation (2). In the pooled regression, we find no signs of significant differences in investment in boys relative to girls. However, estimating equation 1 for boys and girls separately and by age groups provides some evidence that on average, a large significant impact is observed among older girls in CGP beneficiary households. These were 24 percentage points significantly more likely to be enrolled in school in the current year and 32 percentage points significantly less likely to miss school in the past 30 days relative to older girls in control areas. However, as noted this impact is not significantly different than that observed for boys, as shown by the interaction term of panel B. We also find from the equation for young boys aged 6–12 that they are 13 percentage points more likely to have missed school in the last 30 days. This impact is not significantly different among boys and girls in the pooled sample, but contradicts expectations.

Looking at the impact of CGP on the time use of girls and boys (Table 5, panel A), we observe that the CGP caused a reduction in time spent on household chores for older children by 45 minutes on a typical day. This represents a strong reduction relative to the baseline average. In addition, from column (3) older children also increase time spent at school by nearly one hour on a typical day. These changes are significant gains for poor and vulnerable households gaining access to the CGP. Further, from column (6) of Table 5, we find that older children are likely to have worked 0.9 significantly fewer days on the farm in the past week. The results on time use and farm labor for older children complement the results observed in Table 4 of the CGP impacts on child schooling. From Table 5, panel A, columns (7) to (12), the impacts of CGP on time use and labor for younger children are very minimal. The only impact from column (8) is a counter intuitive increase in participation of family labor on a typical day, including farm labor, by nearly 13 minutes, for all younger children.

Panel B, of Table 5 provides estimates of the heterogeneous impacts of CGP by gender and age group. From column (1) in the pooled regression we find that as a result of the CGP, older girls spend significantly less time, almost one hour per day, than boys on household chores. This results is reinforced in the equation for girls, where for the interaction coefficient, we observe an 85 minutes reduction on chores. While the result for the difference between girls and boys on time spent at school is insignificant (column 3), from the sub-samples equations we find that girls spend 140 minutes more on a typical day at school and this result is significant in the regression that includes only girls in the sample. We also find that the difference between boys and girls on days worked in farm labor over the past 7 days is significant. This is driven by a significant decline among boys of 1.23 fewer days worked on the farm. This is not unusual as a larger proportion of older boys engage in livestock herding and crop production in Lesotho, while girls typically spend more time on household chores. However, in terms of time allocation, older girls benefit more from the CGP, spending more time in school and less time on household activities.

From panel B, Table 5, columns (7) to (12), we do not find large differential impacts of the CGP between girls and boys aged 6–12. However, in column (7), we find that young girls spend 23 minutes less than boys on household chores, but the difference is not maintained when analyzing the sub-sample of girls separately. Further, we find the unusual result from the coefficients on the stratified sample that young boys spend 25 minutes more on a typical day engaged in family labor due to CGP. This result complements the result that the CT also increased the likelihood that young boys missed school in the past 30 days. Probably, the CGP led to a substitution effect among children: an increase in schooling and reduction in time spent on household chores for older children, which has been partially offset by an increase in time spent on household chores by younger children.

Overall, the results on child schooling, time use and labor impacts of Lesotho's CGP suggest gender differences in outcomes among agricultural households favoring older female children, with this group being less likely to miss school, more likely to spend more time at school and have less of a time burden engaging in household chores. Despite the positive results, overall programme outcomes seem not to be working towards a reduction on the existing inequalities between girls' and boys' education among agricultural households in Lesotho. To decrease gender inequality, a higher positive impact among older boys relative to older girls in schooling would be needed. In addition, while older boys' schooling outcomes have increased and their labor time have decreased, a substitution effect on agricultural tasks is affecting young boys.

5.2 Gender and age-differentiated impacts of CGP on child outcomes, by household structure

Having analyzed whether the Lesotho CGP impacts child schooling, labor and time use outcomes, and generate differential gender impacts for children, we examine whether these impacts differ by household structure. In Table 6, we interact an indicator variable for FHH with the treatment dummy and the time dummy as in estimation equation 3. We further stratify the sample, showing differential impacts by FHH–MHH structure for the whole sample, and boy and girl samples separately. Our results on child schooling in Table 6, Panel A, for older children aged 13–17, shows in the first column that there is a positive differential impact on all children in FHH relative to MHH in likelihood of repeating a school year. As observed in both the pooled sample (coefficient on the triple interaction between the treatment indicator, the time indicator and the dummy for the household being female headed) and the sample stratified by household structure, this difference stems from a significant 18 percentage point reduction in likelihood of ever repeating a school year in MHH. In addition, from the samples stratified by girls and boys, columns (2) and (3), we find that the differential impact by household structure on school repetition is driven by a large and significant 40 percentage point decline in schooling repetition among older girls in MHH.

Similar impacts for schooling repetition are not observed for older boys or girls in FHH. In column (4) for the full sample of older girls and boys, we do not find differential impacts of the CGP treatment by household structure. However, for the sample stratified by MHH–FHH, Table 6, we do find a large positive impact on schooling enrollment among older children in FHH. From columns (3) and (4) this impact is concentrated among boys in FHH, where older boys (aged 13 to 17) in FHH are 34 percentage points more likely to enroll. We also find a smaller, 18 percentage point increase in enrollment among older girls (aged 13 to 17) in MHH as a result of the CGP (significant at 10 percent level). Similarly from column (8) we observe a decline in likelihood of missing school in the 30 days prior to the survey, concentrated among girls in MHH, though the pooled sample does not indicate a statistically significant difference between girls in FHH and MHH.

Interestingly, for younger children (aged 6–12), though we did not find substantial general impacts of the CT on schooling outcomes at the intensive margin (within the last 30 days), from panel B Table 6, we find that in FHH both young boys and girls are more likely to miss school by 18–26 percentage points as a result of the CGP. On the other hand, we only find this result among children in FHH. From columns (1) to (6) in panel B, we find that young girls aged 6–12 in MHH are 23 percentage points less likely to miss any school in the last 30 days, creating a significant differential across girls in FHH and MHH. In addition, girls in MHH are likely to miss 2.2 fewer days of school in the past 30 days. This result for younger children suggest higher labor constraints amongst FHHs relative to MHHs. Given FHHs lower labor capacity, a substitution effect leads younger boys to spend less time at school and more time working on the family farm as older boys increase school participation and reduce farm labor as a result of the CT.

The results on schooling indicate that both older and younger girls in MHH are likely to gain from access to the CGP in Lesotho. However, in FHH we observe some benefits to the CGP concentrated among older boys. That is, in MHH the CGP results in a gender-bias that favors girls, while older boys in FHH are more likely to attain positive school enrollment outcomes as a result of the transfer.

Similar results can be viewed in Table 7 and Table 8 distinguishing between the impacts of CGP by household structure on girls and boys time use and farm labor outcomes. From Table 7, panel A, comparing time use outcomes across FHH and MHH, we find no differential impacts. However, for the coefficients from the stratified samples, we find older girls in MHH are less likely to engage in household chores by over one hour on a typical day, while older boys are more likely to engage in chores by nearly an hour, suggesting a substitution effect of girls' time for boys' time. Despite the lack of a significant difference in the pooled regressions, from panel A, Table 7, columns (7) to (9) indicate that in FHH older children spend an additional 114 minutes per day at school, this is statistically significant and concentrated among boys in FHH who spend an additional 79 minutes per day at school as a result of the CGP transfer. By contrast, in MHH older girls spend an additional 119 minutes. These results complement the impacts of CGP on schooling outcomes across household structures observed for older children.

From Table 7, panel B, columns (1) to (6) shows no significant impacts of CGP on time use in chores and family labor for younger children aged 6–12, across household structures, with the exception of time use patterns observed within the stratified sample for young boys on family labor. We find that young boys in FHH spend an additional 43 minutes engaged in family labor on a typical day as a result of the CGP payment. Based on previously observed results for schooling among primary school aged children in FHH this indicates that young boys may be substituting for some of the burden reduced among older boys in FHH. Similarly, from columns (8) and (9) in panel B we find young children in FHH are statistically more likely to spend time in school than children from MHH. Again, while younger girls in FHH spend an additional 35 minutes in school on a typical day as a result of the CTs, younger boys spend 42 minutes less for the same reason.

Finally, looking at impacts of the CGP on farm labor participation by FHH–MHH structures, we find no differential impact on FHH in the pooled regressions. However, from the coefficients of the equations stratified by FHH and MHH, older girls in FHH are less likely to work in farm labor in the last 7 days by 42 percentage points as a result of CGP, and work 1.51 fewer days, while older boys in FHH worked 2 fewer days in the past 7 days. Similarly, in MHH the results are observed strongly among older boys with a reduction in farm labor in the last 7 days of 34 percentage points, and 2.30 fewer days in the past week. All of these results are statistically significant. For younger children aged 6–12, very little impacts on farm labor are observed. The exception in columns (9) and (12) is that young boys in FHH are 22 percentage points more likely to work in the past 7 days and work 1.19 additional days. This result corroborates previous findings of labor-substitution impacts of CTs between older and younger boys in FHH.

5.3 Gender and age-differentiated impacts of CGP on child investment, by gender of transfer recipient in MHH

To assess the influence of potential gender bias towards boys or girls, we analyze the impacts on child investment by the gender of the CT recipient within the subsample of married MHH.[11] In Table 9, the interaction between the indicator for a female recipient and the time dummy (Treat1∗Post) denotes the CT's impact for households with female recipients, while the interaction between the indicator for a male recipient and the time dummy (Treat2∗Post) isolates the CT's impact for households with male recipients of the CT. From columns (1) to (3), for children aged 13–17, it is clear that older boys are significantly less likely to have ever repeated a school year, while only girls in households with male recipients are significantly less likely to have repeated a school year by 59 percentage points. Columns (4) to (9) show clearly that regardless of the gender of the transfer recipient girls are significantly more likely to be enrolled in school and less likely to have missed any school in the last 30 days.

Panel B of Table 8 indicates that only younger girls (aged 6–12) in households where the male is the recipient of the CT are significantly likely to benefit from improved schooling outcomes due to the CGP. We find in columns (3) and (5) that young girls are 31 percentage points less likely to have missed school in the last 30 days and are likely to have missed 2.69 fewer days given the CT in the hand of male recipients.

Table 10, distinguishes the impact of CTs on child time use outcomes by gender of the recipient within the subsample of married MHHs. Panel A, columns (1) to (3) indicate that participation in household chores among older boys (ages 13–17) increases significantly and is nearly double in households with male CT recipients. By contrast, we only observe a significant decline in participation in household chores among girls, of 80 minutes on a typical day, in households with male CT recipients. Results that distinguish between male and female transfer recipients are weak for most of the other time use activities among older children. In column (8) of panel A, we find that the previously observed impact of an increase in time spent at school for older girls is concentrated in households where women are the recipients of CTs.

In panel B, for younger children we find very weak gender differentiated impacts of CTs by gender of the transfer recipient. Lastly, from Table 11, we only find impacts on farm labor in the last 7 days among older boys. Where males are the recipients of CTs, older boys are significantly less likely to have engaged in farm labor and spend 3.5 fewer days on this type of labor in the last 7 days. Overall, the analysis by gender of cash recipient suggest that gender bias in child schooling is weak at least in households where both child parents are present. Positive and significant results in schooling for both girls and boys are observed, regardless of the gender of the recipient. However, our results suggest that in the specific context of Lesotho and the CGP, when males receive the cash, older boys reduce their labor time in the farm while simultaneously engaging more of their time both at school and in household chores.

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[11] We cannot test this potential gender bias by the gender of cash recipients in FHH, since we selected those households where *de jure* or *de facto* women are single. Hence only women receive the cash.

5.4 Substitution effects: impacts of CGP on adult labor investments, by household structure

In this section, we examine whether the observed impacts of the CGP on child schooling and labor outcomes are also related to changes in adult labor supply induced by the programme. We measure the impact of CTs on farm and off-farm labor for adults aged 18–65, under the assumption of imperfect substitution across adult and child labor. From Table 12, Panel A, we find that the CT has a positive and significant differential impact on participation of FHH in farm labor in 7 days prior to the survey. From the coefficients on the stratified equations in columns (1) and (2), Table 12, we find that adult females in FHH are 12 percentage points more likely to engage in own farm labor as a result of the CGP, while females in MHH are 10 percentage points less likely to work on the farm as a result of the CGP, significant at the 5 and 10 percent levels respectively. From columns (4)–(9) in Panel A, we find no significant impacts of the CGP programme on adult off-farm wage or non-farm own enterprise labor participation at the intensive margin, except for a negative 4 percentage point reduction in the participation of adult males in FHH in non-farm own enterprise labor, significant at the 10 percent level.

From Panel B, at the extensive margin we find that the CT increased the likelihood of female adults in FHH working on farming significantly by 1.5 days relative to those is MHH. From the stratified equations we find that females in FHH increase days worked on own farm significantly by 0.43 days while reducing wage labor (probably casual temporary work) by 0.49 days. For women in FHH the increase in number of days spent on the farm almost entirely offsets the reduction in time spent in wage labor. On the other hand, females in MHH reduce own farm labor by a significant 0.71 days, while males in MHH reduce wage labor by 0.57 days, also significant. Hence, in MHH we observe a reduction in labor of some type for both men and women.

Results from the prior subsections indicate that in FHH, boys benefit more from the CT than girls in terms of time dedicated to schooling, farm or livestock activities and other time use. The results for adult women in FHH discussed can at least partially explain the impacts on children. Given CTs have a significant positive impact on farm labor participation for women in FHH, this could partially offset child labor on farms. As older boys are more likely to participate in farm and livestock rearing, we thus expect CTs to reduce labor in FHH for this cohort and increase time spent in schooling. However, as older girls are more likely to engage in household chores, we expect that the increase in farm labor of adult women in FHH leads to an increase in time spent on household chores for older girls. On the other hand, for adults in MHH we find that adult women reduce farm labor while adult men reduce wage labor, which could lead to a substitution effect for child labor that is the opposite of results observed for older children in FHH. If women in MHH dedicate less time to farm labor, then it is likely that they dedicate more time to household activities, leading to the observed improved outcomes in time use and schooling for older girls.

6 Discussion and conclusion

In this paper, we use data from a randomized control trial aimed at measuring the impacts of the Lesotho Child Grants Programme, a CT directed to poor households with children, to investigate gender differences in household child investment behavior. The analysis focuses on a subsample of agricultural households as in Lesotho the majority of children laborers are employed in crop and livestock production activities, and this is an important determinant of school enrollment and schooling outcomes. In addition to observing impacts between boys and girls of different age cohorts, we seek to examine whether gender-differentiated impacts vary according household structure. This exercise furthers the understanding on the different constraints experienced by different typologies of households and how they respond to them when accessing CTs. We therefore analyze impacts in child investments by agricultural MHHs and *de jure* FHH, the latter having lower labor capacity constrained by older status of the head and higher household dependency ratio. Finally, we explore the relation between gender-differentiated impacts and potential gender bias determined by who in the household receives the CT. This seeks to further the evidence for or against the idea of child preference by gender, particularly in schooling. We hypothesize that in Lesotho's CGP, it is household structure, and therefore, household's capacities and constraints, rather than gender bias influencing observed gender-differentiated impacts on child investments.

First, we find clear gendered impacts of the CT among agricultural households. Older girls in treatment households benefit significantly more in terms of increased schooling enrollment, fewer missed days of school, and time use activities shifting away from household chores, like fetching water, sibling care, cooking and cleaning, towards schooling related activities. Among older boys too, however, we note a significant decline of 1 day less spent working in crop production or livestock activities as a result of the transfer. The results are not unusual as a larger proportion of older boys engage in livestock herding and crop production in Lesotho, while girls typically spend more time on household chores. However, older girls benefit more than boys from the CGP CT, considering that girls were already in an advantaged position before the introduction of the CT.

From a theoretical perspective, this could firstly suggest that parental preferences favor the allocation of resources towards older girls. Or it could be concluded that the current opportunity cost of boys' time, despite the CT, is perceived as being higher than the future benefit of human capital accumulation, and this difference for boys exceeds that of girls. If households rely more on boys for sustaining current agricultural incomes (which is suggested in other work in Lesotho), it is plausible that the size of the transfer was not large enough to increase secondary school aged boys participation in schooling, but sufficiently large to incentivize girls to attend school. Moreover, results on the impact of the CGP programme on adult labor investments in MHH show that adult women are more likely to reduce farm labor, while older men reduce casual agricultural wage labor. Therefore, a plausible explanation for the reduction in older girls' time spent on household chores, and increase in schooling would be a substitution effect with adult labor.

Second, we find that in agricultural *de jure* FHH the CGP improved schooling outcomes and reduced the time burden of farm labor for older boys. For older girls, the treatment impacts are not as strong as among older boys in these households. We hypothesize that female-heads of FHHs, where a larger proportion of the children are grandchildren as opposed to sons or daughters of the head, may respond differently when accessing additional income through the CT, and may have different preferences on gender and child education. One hypothesis is potential male-bias reflected on positive impacts in older boys' education vis-à-vis future prospects. Given the ex-ante disadvantages for older boys, this is a positive outcome of the programme. Adding to this, smoothing of constraints to invest in alternative agricultural activities by *de jure* FHH (increased by bulky transfer payments and by messaging on agricultural investments linked to the Food Emergency Grant), may have led to an increase of both adult women's and younger boys' agricultural labor participation. In this situation, the time of girls may still be required to participate in household chores like child care, cooking and cleaning leading to insignificant changes in the use of girls' labor.

In MHH girls benefitted much more in terms of schooling and time use outcomes than boys in the treatment evaluation. This would suggest that in MHH, where a larger proportion of older boys engage in crop production and livestock activities (80 percent in MHH relative to 66 percent in FHH), the opportunity cost of boys' time may be still too high relative to girls', despite access to the CT.

Finally, much empirical and theoretical literature supports targeting women as transfer recipients to improve household wellbeing, such as children's health and educational outcomes. This research showing women spend in more 'family-friendly' ways is primarily based on the assumption that women are systematically different from men in their preferences for types of expenditures or the welfare of particular family members. However, when transfers are allocated to women rather than men in a household, other factors beyond preferences/tastes and incentives determine whether or not differences in outcomes related to wellbeing will actually be realized (Yoong et al., 2012). These include, for instance, differences in bargaining power over allocation of resources, under the assumption that intra-household bargaining is not fully cooperative, or differences in income-generating ability, for which women may face many other constraints (such as social restrictions on occupational type, or a relative lack of training) that result in lower returns to the transfer. Our analysis also suggests that child investment, particularly for girls, may not be driven by the gender of the transfer recipient – the mother or father, contrary to what is suggested by some previous literature. In fact, receipts by the father – at least in Lesotho's context – may be more likely to have positive impacts on girls and increase boy's labor input in household chores. Or more plausibly, rather than male or female preference, it is the household structure and constraints that determine these differentiated effects.

From the perspective of programme design, our findings suggest that an undifferentiated CT for different types of households, as in the case of CGP in Lesotho, should at least include gender-specific messaging to promote boys' and girls' equal benefit in schooling. In addition, higher transfer levels, and other mechanisms that could facilitate household access to agricultural labor would be required for children to be able to spend more time at school and increase their educational level.

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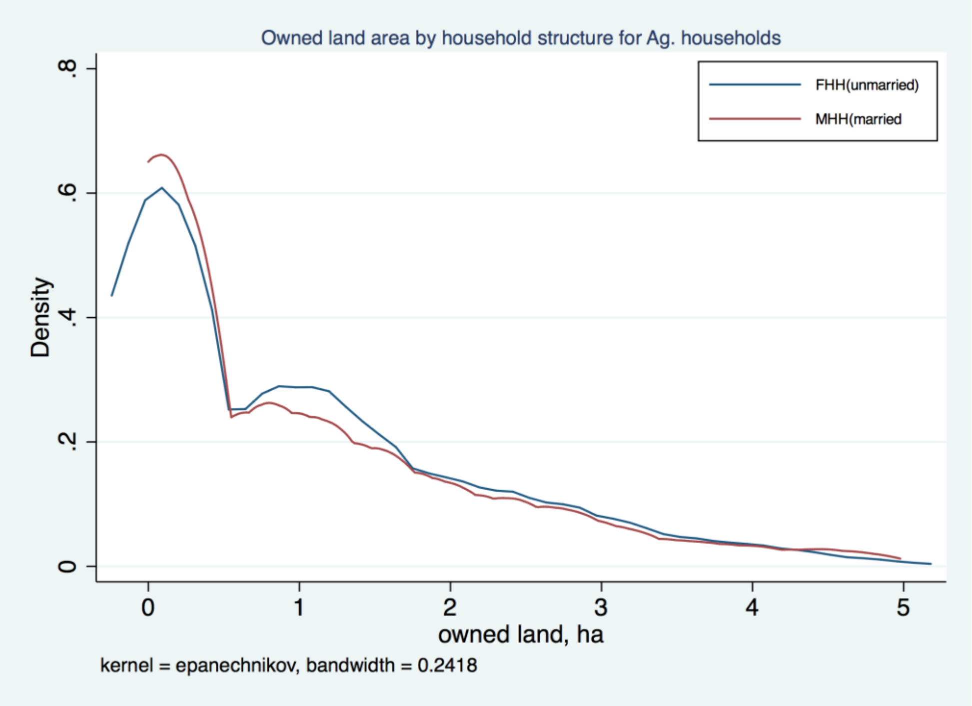
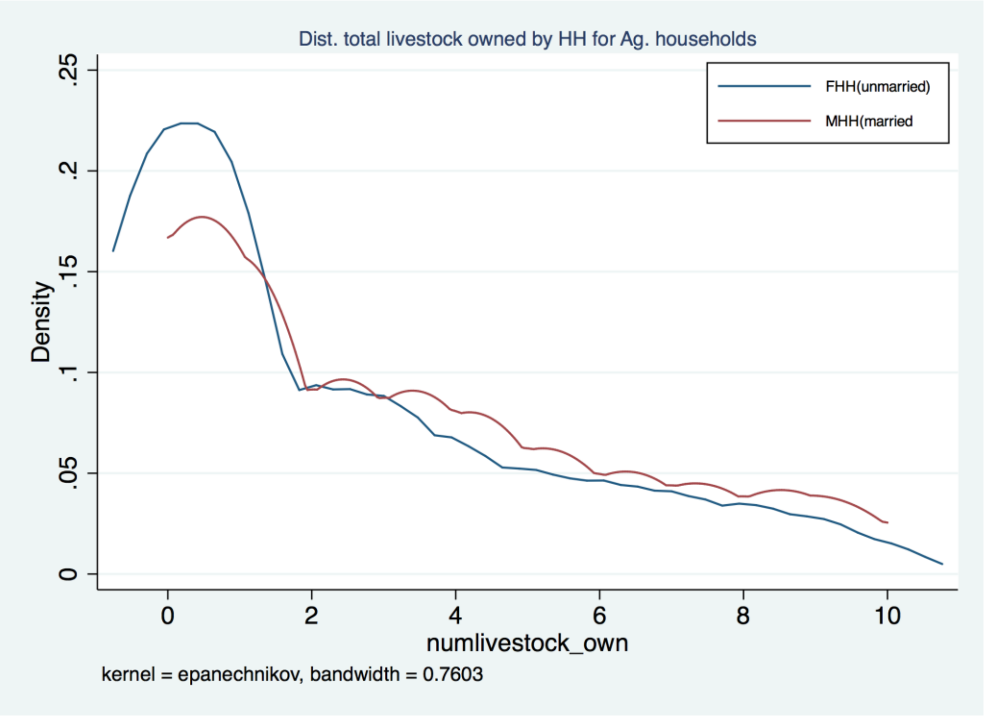
Figures and tables

Figure 1: Distribution of land area owned by household structure for agricultural households



Source: Authors' calculations.

Figure 2: Distribution of number of livestock in household by household structure for agricultural households



Source: Authors' calculations.

Table 1: Summary statistics: comparing across treatment and control groups (for unmarried FHH and married MHH sample), and by household structure

	2011 (Baseline)				
	Control		Treatment		Diff (p-val)
Panel A*	(n=468)		(n=538)		
	Mean	Std. error	Mean	Std. error	
de jure FHH (/100)	0.52	(0.50)	0.48	(0.50)	0.223
Age of household head	52.30	(15.10)	52.90	(14.70)	0.492
Years of schooling of household head	3.96	(2.83)	4.27	(2.92)	**0.091**
Household Size	5.48	(2.11)	6.07	(2.48)	**0.000**
Household Composition:					
Mem 0-5 years	0.76	(0.82)	0.94	(1.01)	**0.002**
Mem 6-12 years	1.12	(0.90)	1.21	(1.06)	0.155
Mem 13-17 years	0.76	(0.81)	0.75	(0.78)	0.860
Mem Over 18 years	2.84	(1.39)	3.17	(1.55)	**0.001**
District:					
Maseru	0.22	(0.42)	0.24	(0.43)	0.570
Leribe	0.18	(0.38)	0.15	(0.36)	0.233
Berea	0.32	(0.47)	0.25	(0.43)	**0.023**
Mafateng	0.25	(0.44)	0.35	(0.48)	**0.001**
Qacha's Neck	0.03	(0.18)	0.02	(0.13)	**0.075**
Household participates in crop production	0.88	(0.32)	0.93	(0.25)	**0.009**
num. of goods (incl. fruits and veg.)	1.65	(1.01)	1.80	(0.95)	**0.013**
num. of crops	0.96	(0.84)	1.04	(0.83)	0.129
Household participates in livestock rearing	0.72	(0.45)	0.74	(0.44)	0.454
num. of livestock owned	5.08	(7.77)	4.98	(8.22)	0.839
	MHH (Married)		FHH (single divorced, widowed)		Diff (p-val)
Panel B	(n=470)		(n=536)		
	Mean	Std. error	Mean	Std. error	
Age of household head	47.30	(14.80)	58.00	(12.80)	**0.000**
Years of schooling of household head	3.67	(3.10)	4.59	(2.56)	0.000
Household Size	6.10	(2.34)	5.49	(2.30)	0.000
Household Composition:					
Mem 0-5 years	0.99	(0.97)	0.71	(0.87)	0.000
Mem 6-12 years	1.22	(1.01)	1.12	(0.97)	0.117
Mem 13-17 years	0.68	(0.80)	0.84	(0.78)	**0.001**
Mem Over 18 years	3.21	(1.46)	2.82	(1.49)	**0.000**
District:					
Maseru	0.25	(0.43)	0.21	(0.41)	0.214
Leribe	0.15	(0.35)	0.18	(0.38)	0.160
Berea	0.31	(0.46)	0.26	(0.44)	**0.076**
Mafateng	0.28	(0.45)	0.33	(0.47)	**0.056**
Qacha's Neck	0.03	(0.16)	0.02	(0.15)	0.639
Household participates in crop production	0.92	(0.28)	0.90	(0.30)	0.502
num. of goods (incl. fruits and veg)	1.81	(1.01)	1.64	(0.95)	**0.007**
num. of crops	1.08	(0.88)	0.92	(0.78)	**0.002**
Household participates in livestock rearing	0.80	(0.40)	0.66	(0.47)	**0.000**
num. of livestock owned	6.20	(9.42)	3.85	(6.04)	**0.000**

Notes: *While baseline treatment and control groups are not balanced across some variables, using a Propensity Score Matched (PSM) sample does not change the main results of the analysis, suggesting that controlling for observables mitigates differences between control and treatment group.

Source: Authors' calculations.

Table 2: Summary statistics: comparing child outcomes by gender of child

Panel A	2011 (Baseline)						
	Child aged 13–17 years						
	Boys			Girls			Diff (p-val)
	Mean	Std. error	obs.	Mean	Std. error	obs.	
Age	14.90	(1.40)	417	14.8	(1.38)	344	0.611
Current level of education:							
No school	0.00	0.00	315	0	(0.00)	287	.
Primary (Year 1 -2)	0.01	(0.10)	315	0	(0.07)	287	0.401
Primary (Year 3 -4)	0.14	(0.34)	315	0.04	(0.20)	287	**0.000**
Primary (Year 5 -7)	0.63	(0.48)	315	0.56	(0.50)	287	**0.072**
Secondary - Junior (Forms A -C)	0.21	(0.41)	315	0.35	(0.48)	287	**0.000**
Secondary -High (Forms D -E) or higher	0.01	(0.11)	315	0.04	(0.20)	287	**0.016**
Dependant variables							
Schooling:							
Ever repeated school	0.77	(0.42)	399	0.57	(0.50)	333	**0.000**
Enrolled in school this year	0.81	(0.39)	402	0.87	(0.34)	330	**0.030**
Missed school in the last 30 days	0.37	(0.48)	388	0.27	(0.44)	324	**0.003**
Labor (crop and livestock, last 7 days):							
Participated in own farm activities	0.46	(0.50)	417	0.07	(0.26)	344	**0.000**
Days participated in own farm activities	2.50	(3.10)	417	0.26	(1.17)	344	**0.000**
Time Use (time spent on typical day):							
chores (mins/ day)	63.30	(81.60)	375	91.70	(91.40)	304	**0.000**
farm activities (mins/day)	94.70	(163.00)	377	8.37	(42.30)	307	**0.000**
school(mins/day)	307.00	(182.00)	389	335.00	(185.00)	324	**0.039**
homework(mins/day)	34.80	(44.00)	389	45.60	(56.80)	324	**0.004**
Panel B	Child aged 6–12 years						
	Boys			Girls			Diff (p-val)
	Mean	Std. error	obs.	Mean	Std. error	obs.	
Age	9.06	(2.02)	587	8.95	(2.09)	575	0.388
Current level of education:							
No school	0.00	(0.03)	531	0.00	(0.05)	528	0.535
Primary (Year 1 -2)	0.48	(0.50)	531	0.39	(0.49)	528	**0.001**
Primary (Year 3 -4)	0.37	(0.48)	531	0.38	(0.49)	528	0.801
Primary (Year 5 -7)	0.14	(0.35)	531	0.23	(0.42)	528	**0.000**
Dependant variables							
Schooling:							
Ever repeated school	0.55	(0.50)	536	0.42	(0.49)	527	**0.000**
Enrolled in school this year	1.00	(0.07)	536	1.00	(0.07)	528	0.868
Missed school in the last 30 days	0.27	(0.44)	526	0.20	(0.40)	523	**0.016**
Labor (crop and livestock, last 7 days):							
Participated in own farm activities	0.30	(0.46)	587	0.05	(0.21)	575	**0.000**
Days participated in own farm activities	1.64	(2.76)	587	0.21	(1.08)	575	**0.000**
Time Use (time spent on typical day): chores (mins/ day)	31.20	(47.10)	569	42.40	(52.80)	552	**0.000**
farm activities (mins/day)	50.60	(115.00)	569	2.93	(23.60)	556	**0.000**
school(mins/day)	340.00	(109.00)	574	340.00	(115.00)	558	0.970
homework(mins/day)	18.40	(32.60)	573	25.70	(42.20)	558	**0.001**

Source: Authors' calculations.

Table 3: Summary statistics: comparing child outcomes by household structure

Panel A	2011 (Baseline) Child aged 13–17 years						
	MHH (Married)			FHH (single, divorced, widowed)			Diff (p-val)
	Mean	Std. error	obs.	Mean	Std. error	obs.	
Age	14.80	(1.42)	332	14.90	(1.37)	429	0.308
Girl (proportion)	0.46	(0.50)	332	0.43	(0.50)	429	0.366
Rel. to HH head:							
Son or daughter	0.71	(0.45)	332	0.43	(0.50)	429	**0.000**
Grand child	0.17	(0.38)	332	0.52	(0.50)	429	**0.000**
Current level of education:							
No school	0.00	0.00	254	0.00	0.00	348	.
Primary (Year 1 -2)	0.02	(0.13)	254	0.00	0.00	348	**0.014**
Primary (Year 3 -4)	0.10	(0.30)	254	0.09	(0.28)	348	0.530
Primary (Year 5 -7)	0.59	(0.49)	254	0.61	(0.49)	348	0.651
Secondary - Junior (Forms A -C)	0.28	(0.45)	254	0.27	(0.44)	348	0.724
Secondary -High (Forms D -E) or higher	0.01	(0.10)	254	0.04	(0.19)	348	**0.033**
Dependant variables							
Schooling:							
Ever repeated school	0.69	(0.46)	314	0.67	(0.47)	418	0.555
Enrolled in school this year	0.80	(0.40)	314	0.87	(0.34)	418	**0.012**
Missed school in the last 30 days	0.34	(0.47)	309	0.32	(0.47)	403	0.581
Labor (crop and livestock, last 7 days):							
Participated in own farm activities	0.34	(0.47)	332	0.24	(0.43)	429	**0.002**
Days participated in own farm activities	1.91	(2.92)	332	1.16	(2.41)	429	**0.000**
Time Use (time spent on typical day):							
chores (mins/ day)	66.10	(81.30)	300	83.90	(91.10)	379	**0.008**
farm activities (mins/day)	81.70	(159.00)	302	35.50	(100.00)	382	**0.000**
school(mins/day)	307.00	(191.00)	310	330.00	(176.00)	403	**0.088**
homework(mins/day)	35.40	(52.40)	310	43.30	(48.30)	403	**0.038**
Panel B	Child aged 6–12 years						
	MHH (Married)			FHH (single, divorced, widowed)			Diff (p-val)
divorced, widowed)	Mean	Std. error	obs.	Mean	Std. error	obs.	
Age	8.92	(2.06)	566	9.10	(2.05)	596	0.128
Girl (proportion)	0.52	(0.50)	566	0.49	(0.50)	596	0.359
Rel. to HH head							
Son or daughter	0.63	(0.48)	566	0.28	(0.45)	596	**0.000**
Grand child	0.29	(0.45)	566	0.67	(0.47)	596	**0.000**
Current level of education:							
No school	0.00	(0.05)	506	0.00	0.00	553	0.236
Primary (Year 1 -2)	0.47	(0.50)	506	0.40	(0.49)	553	**0.014**
Primary (Year 3 -4)	0.35	(0.48)	506	0.39	(0.49)	553	0.184
Primary (Year 5 -7)	0.17	(0.38)	506	0.21	(0.41)	553	0.141
Dependant variables							
Schooling:							
Ever repeated school	0.50	(0.50)	507	0.47	(0.50)	556	0.273
Enrolled in school this year	0.99	(0.08)	509	1.00	(0.06)	555	0.552
Missed school in the last 30 days	0.28	(0.45)	503	0.18	(0.39)	546	**0.000**
Labor (crop and livestock, last 7 days):							
Participated in own farm activities	0.20	(0.40)	566	0.14	(0.35)	596	**0.008**
Days participated in own farm activities	1.02	(2.29)	566	0.81	(2.13)	596	**0.097**
Time Use (time spent on a typical day):							
chores (mins/ day)	33.50	(49.00)	542	40.30	(51.60)	579	**0.025**
farm activities (mins/day)	32.20	(95.50)	544	20.80	(75.40)	581	**0.027**
school (mins/day)	342.00	(114.00)	548	338.00	(109.00)	584	0.591
homework (mins/day)	22.50	(41.10)	547	21.60	(34.00)	584	0.682

Source: Authors' calculations.

Table 4: Impact of cash transfers on child schooling outcomes

Panel A	Schooling outcomes					
	Child aged 13-17				Child aged 6-12	
	Ever repeated a school year	Enrolled in school this academic year	Missed any days of school in the last 30 days (unconditional)	How many days of school missed in those 30 days (conditional on enrolled this academic year)	Missed any days of school in the last 30 days (unconditional)	How many days of school missed in those 30 days (conditional on enrolled this academic year)
	(1)	(2)	(3)	(4)	(5)	(6)
Treat*Post	-0.06	0.12**	-0.20**	0.66	0.06	-0.22
	(0.049)	(0.054)	(0.087)	(0.493)	(0.051)	(0.306)
Individual F.E.	Y	Y	Y	Y	Y	Y
Observations	1,578	1,580	1,547	1,258	2,191	2,175
R squared	0.163	0.305	0.243	0.277	0.133	0.097
Panel B	Schooling outcomes: heterogeneous impacts by gender					
	Child aged 13-17				Child aged 6-12	
	Ever repeated a school year	Enrolled in school this academic year	Missed any days of school in the last 30 days (unconditional)	How many days of school missed in those 30 days (conditional on enrolled this academic year)	Missed any days of school in the last 30 days (unconditional)	How many days of school missed in those 30 days (conditional on enrolled this academic year)
	(1)	(2)	(3)	(4)	(5)	(6)
Treat*Post*Girl	-0.01	0.06	0.03	0.82	-0.04	-0.45
	(0.103)	(0.099)	(0.118)	(0.673)	(0.105)	(0.667)
Treat*Post	-0.06	0.10	-0.13	0.30	0.08	0.03
	(0.066)	(0.067)	(0.080)	(0.622)	(0.078)	(0.413)
Individual F.E.	Y	Y	Y	Y	Y	Y
Observations	1,578	1,580	1,547	1,258	2,191	2,175
R squared	0.163	0.314	0.243	0.283	0.134	0.100
Coefficients from equation stratified by gender						
Treat*Post	-0.02	0.24***	-0.32***	0.16	0.04	-0.53
(GIRL eqn)	(0.071)	(0.074)	(0.105)	(0.453)	(0.062)	(0.47)
Treat*Post	-0.1	0.06	-0.09	-0.3	0.13*	0.31
(BOY eqn)	(0.085)	(0.077)	(0.084)	(0.743)	(0.075)	(0.425)

Notes: Standard errors clustered at the community level, in parentheses. *** indicates p<.01; ** indicates p<.05; * indicates p<.10-

Source: Authors' calculations.

Table 5: Impact of cash transfers on child time use and labor outcomes

Panel A	*Time use and labor activities on a typical school day*											
	Child aged 13–17						Child aged 6–12					
	Time Use (mins/day)			Farm Labor (last 7 days)			Time Use (mins/day)			Farm Labor (last 7 days)		
	Chores[a]	Fam.Labor[b]	At school	Hmwk./study	Worked	Days worked	Chores[a]	Fam.Labor[b]	At school	Hmwk./study	Worked (0/1)	Days worked
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treat*Post	-45.11**	-13.82	59.01**	2.37	-0.10	-0.90***	-3.78	12.84**	-6.79	4.91	0.00	-0.13
	(18.513)	(20.745)	(24.849)	(6.748)	(0.070)	(0.340)	(6.278)	(6.225)	(11.825)	(5.043)	(0.047)	(0.287)
Indiviual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,502	1,509	1,558	1,558	1,621	1,621	2,313	2,319	2,331	2,330	2,378	2,378
R squared	0.186	0.147	0.195	0.215	0.179	0.169	0.175	0.073	0.154	0.200	0.140	0.120
Panel B	Time use and labor activities on a typical school day: heterogeneous impacts by gender											
	Child aged 13–17						Child aged 6–12					
	Time Use (mins/day)			Farm Labor (last 7 days)			Time Use (mins/day)				Farm Labor (last 7 days)	
	Chores[a]	Fam.Labor[b]	At school	Hmwk./study	Worked	Days worked	Chores[a]	Fam.Labor[b]	At school	Hmwk./study	Worked (0/1)	Days worked
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treat*Post*Girl	-58.04*	-36.68	55.52	15.40	0.15	1.11**	-23.41**	-1.81	34.15	-11.48	0.07	0.84
	(33.387)	(40.936)	(55.523)	(14.483)	(0.100)	(0.531)	(11.281)	(14.280)	(22.520)	(9.041)	(0.088)	(0.547)
Treat*Post	-21.10	2.33	32.34	-3.75	-0.17**	-1.37***	8.76	15.72	-23.87	10.64*	-0.04	-0.58
	(18.558)	(32.871)	(35.453)	(9.784)	(0.083)	(0.431)	(9.442)	(11.331)	(17.470)	(6.276)	(0.076)	(0.492)
Individual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,502	1,509	1,558	1,558	1,621	1,621	2,313	2,319	2,331	2,330	2,378	2,378
R squared	0.217	0.162	0.210	0.219	0.183	0.177	0.185	0.119	0.161	0.206	0.142	0.126
Coefficients from equation stratified by gender												
Treat*Post	-84.91***	2.52	140.63***	12.45	-0.08	-0.22	-10.66	4.27	3.05	-3.13	-0.07*	-0.22
(GIRL eqn)	(28.552)	(8.252)	(38.187)	(9.608)	(0.091)	(0.365)	(7.230)	(4.394)	(12.028)	(6.822)	(0.038)	(0.181)
Treat*Post	-8.80	-33.10	6.18	-8.96	-0.11	-1.23**	0.93	24.47*	-14.21	14.62**	0.06	-0.10
(BOY eqn)	(17.154)	(41.442)	(37.429)	(10.516)	(0.103)	(0.553)	(10.068)	(13.798)	(17.667)	(6.170)	(0.082)	(0.534)

Notes: **Chores**[a] include Helping at home - fetching water, sibling care, cleaning, cooking, washing, and shopping; **Family labor**[b] includes family farming/herding and other family business.

Standard errors clustered at the community level, in parentheses. *** indicates p<.01; ** indicates p<.05; * indicates p<.10.

Source: Authors' calculations.

Table 6: Distinguishing impact of cash transfers on child schooling by household structure

Panel A												
	Child aged 13 –17											
	Compare FHH with MHH											
	Ever repeated a school year			Enrolled in school this academic year			Missed any days of school in the last 30 days (unconditional)			How many days of school missed in those 30 days (conditional on enrolled this		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treat*Post*FemHD	0.24**	0.17	0.07	0.06	-0.11	0.28*	-0.08	-0.09	-0.14	0.41	-1.74**	2.44***
	(0.118)	(0.177)	(0.150)	(0.093)	(0.147)	(0.141)	(0.126)	(0.221)	(0.169)	(0.635)	(0.769)	(0.825)
Treat*Post	-0.18**	-0.28**	-0.16	0.10	0.29***	-0.10	-0.07	-0.26*	-0.01	0.35	1.25*	-1.88*
	(0.083)	(0.125)	(0.118)	(0.076)	(0.109)	(0.111)	(0.105)	(0.151)	(0.128)	(0.639)	(0.717)	(1.009)
Individual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,578	730	848	1,580	729	851	1,547	718	829	1,258	617	641
R squared	0.175	0.284	0.299	0.307	0.366	0.429	0.244	0.323	0.343	0.291	0.440	0.499
Coefficients from equation stratified by FHH (unmarried) and MHH(married)												
Treat*Post	0.11	-0.22	0.01	0.27***	0.15	0.34***	-0.11	-0.24	-0.15	0.72*	0.53	0.04
(FHH-Unmarried)	(0.077)	(0.191)	(0.115)	(0.072)	(0.110)	(0.079)	-0.103	-0.18	-0.117	(0.368)	-0.548	-0.305
Treat*Post	-0.18**	-0.40***	-0.14	0.07	0.18*	-0.16	-0.12	-0.41***	-0.04	0.57	-0.83	-0.91
(MHH - Married)	(0.078)	(0.128)	(0.149)	(0.080)	(0.101)	(0.128)	-0.106	-0.151	-0.149	(0.678)	-1.678	-1.34

Panel B						
	Child aged 6–12					
	Compare FHH with MHH					
	Missed any days of school in the last 30 days (unconditional)			How many days of school missed in those 30		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)
Treat*Post*FemHD	0.22**	0.24**	0.19	0.89*	0.81	0.80
	(0.108)	(0.121)	(0.147)	(0.492)	(0.659)	(0.762)
Treat*Post	-0.04	-0.07	0.04	-0.65	-0.92	-0.09
	(0.079)	(0.094)	(0.114)	(0.401)	(0.667)	(0.617)
Individual F.E.	Y	Y	Y	Y	Y	Y
Observations	2,191	1,091	1,100	2,175	1,088	1,087
R squared	0.146	0.210	0.260	0.101	0.117	0.257
Coefficients from equation stratified by FHH (unmarried) and MHH(married)						
Treat*Post	0.20**	0.18*	0.26**	0.46*	-0.11	1.30***
(FHH-Unmarried)	(0.076)	(0.099)	(0.107)	(0.273)	(0.512)	(0.429)
Treat*Post	-0.12	-0.23**	-0.03	-1.20**	-2.20*	-0.59
(MHH - Married)	(0.095)	(0.105)	(0.145)	(0.553)	(1.257)	(0.923)

Notes: Standard errors clustered at the community level, in parentheses. *** indicates p<.01; ** indicates p<.05; * indicates p<.10.

Source: Authors’ calculations.

Table 7: Distinguishing Impact of cash transfers on child time use by household structure

Time use activities on a typical day (mins/day)												
Panel A	Child aged 13–17 Compare FHH to MHH											
	Chores[a]			Fam.labor[b]			At School			Hwmk./study		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treat*Post*FemHD	39.83	48.75	10.92	5.59	10.17	-16.80	35.84	44.42	68.84	-7.78	-19.13	9.43
	(27.997)	(63.934)	(28.620)	(38.639)	(13.171)	(61.040)	(55.328)	(115.024)	(57.849)	(15.400)	(24.554)	(16.816)
Treat*Post	-62.39**	-106.54**	-15.76	-25.77	-9.61	-27.19	42.26	123.92*	-33.67	7.26	15.51	-12.46
	(26.687)	(44.658)	(25.842)	(29.436)	(12.678)	(56.128)	(39.323)	(73.297)	(49.799)	(11.195)	(18.281)	(13.364)
Individual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,502	689	813	1,509	695	814	1,558	722	836	1,558	722	836
R squared	0.200	0.422	0.316	0.162	0.319	0.274	0.198	0.284	0.325	0.218	0.366	0.258
Coefficients from equation stratified by FHH (unmarried) and MHH(married)												
Treat*Post	-14.02	-23.87	-11.70	-27.91	19.84	-48.83	114.35***	106.50	79.02*	4.93	-1.78	-4.09
(FHH-Unmarried)	(18.760)	(54.247)	(21.574)	(25.253)	(26.613)	(46.220)	(39.295)	(86.251)	(42.495)	(9.326)	(15.952)	(14.828)
Treat*Post	-60.83**	-64.59**	62.03**	15.36	-28.47	39.84	35.92	119.02**	-19.67	10.62	1.75	24.05
(MHH - Married)	(27.558)	(29.078)	(29.370)	(28.556)	(17.391)	(85.514)	(33.922)	(58.049)	(61.884)	(14.281)	(20.960)	(20.397)
Panel B	Child aged 6–12 Compare FHH to MHH											
	Chores[a]			Fam.labor[b]			At School			Hwmk./study		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treat*Post*FemHD	10.04	3.64	1.03	17.66	8.26	37.98	50.37**	74.36***	35.81	4.74	0.43	8.88
	(13.073)	(13.689)	(18.443)	(13.085)	(8.407)	(28.105)	(24.276)	(24.924)	(34.803)	(10.915)	(15.622)	(12.842)
Treat*Post	-9.70	-14.08	2.00	9.76	1.78	12.59	-31.91*	-34.29*	-33.78	0.38	-5.61	8.37
	(8.035)	(8.742)	(12.785)	(9.217)	(6.798)	(20.074)	(18.552)	(17.353)	(26.808)	(7.116)	(10.421)	(7.816)
Individual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,313	1,139	1,174	2,319	1,145	1,174	2,331	1,148	1,183	2,330	1,148	1,182
R squared	0.181	0.256	0.264	0.137	0.139	0.227	0.165	0.240	0.265	0.211	0.279	0.259
Coefficients from equation stratified by FHH (unmarried) and MHH(married)												
Treat*Post	2.13	-9.86	8.06	27.94***	14.29	43.65**	1.88	35.27**	-41.56**	3.78	-4.89	7.64
(FHH-Unmarried)	(10.216)	(9.773)	(13.783)	(9.631)	(9.007)	(20.368)	(13.689)	(15.387)	(20.835)	(7.296)	(9.222)	(9.193)
Treat*Post	-7.00	-2.33	-8.11	18.41	0.08	33.92	-12.00	-50.86**	10.77	3.53	1.00	9.87
(MHH - Married)	(8.571)	(9.640)	(14.919)	(11.348)	(5.517)	(25.997)	(23.783)	(22.004)	(31.375)	(6.346)	(10.719)	(7.481)

Notes: **Chores**[a] include Helping at home - fetching water, sibling care, cleaning, cooking, washing, and shopping; **Family labor**[b] includes family farming/herding and other family business.

Standard errors clustered at the community level, in parentheses. *** indicates p<.01; ** indicates p<.05; * indicates p<.10.

Source: Authors' calculations.

Table 8: Distinguishing impact of cash transfers on child farm labor by household structure

	Crop and livestock activities (last 7 days)											
	Child aged 13–17						Child aged 6–12					
	Compare FHH to MHH											
	Worked (0/1)			Days worked			Worked (0/1)			Days worked		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treat*Post*FemHD	0.02	0.22	-0.17	0.42	0.77	0.09	0.07	0.02	0.16	0.42	-0.09	0.97
	(0.171)	(0.229)	(0.237)	(0.756)	(0.570)	(1.175)	(0.087)	(0.077)	(0.132)	(0.514)	(0.359)	(0.832)
Treat*Post	-0.11	-0.13	-0.01	-1.17**	-0.52	-1.31*	-0.04	-0.07	-0.04	-0.36	-0.17	-0.65
	(0.108)	(0.141)	(0.153)	(0.506)	(0.450)	(0.776)	(0.071)	(0.065)	(0.108)	(0.415)	(0.297)	(0.695)
Individual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,621	749	872	1,621	749	872	2,378	1,174	1,204	2,378	1,174	1,204
R squared	0.181	0.271	0.295	0.173	0.161	0.276	0.145	0.184	0.238	0.122	0.166	0.228
Coefficients from equation stratifted by FHH (unmarried) and MHH(married)												
Treat*Post	-0.16	-0.42**	-0.24	-1.35***	-1.51*	-2.06**	0.08	-0.02	0.22**	0.42	-0.22	1.19*
(FHH-Unmarried)	(0.103)	(0.168)	(0.151)	(0.502)	(0.892)	(0.858)	(0.063)	(0.050)	(0.100)	(0.406)	(0.272)	(0.697)
Treat*Post	-0.13	-0.10	-0.34***	-1.03**	-0.27	-2.30***	-0.06	-0.04	-0.11	-0.38	0.17	-1.09
(MHH - Married)	(0.080)	(0.136)	(0.128)	(0.436)	(0.473)	(0.651)	(0.081)	(0.080)	(0.134)	(0.474)	(0.327)	(0.885)

Notes: Standard errors clustered at the community level, in parentheses. *** indicates p<.01; ** indicates p<.05; * indicates p<.10.

Source: Authors’ calculations.

Table 9: Distinguishing impact of cash transfers on child schooling outcomes by recipient gender for married MHH

Panel A	Child aged 13–17 MHH - by household recipient gender											
	Ever repeated a school year a school year			Enrolled in school this academic year academic year			Missed any days of scholl in the last 30 days (unconditional)			How many days of school missied in those 30 dayas (conditional on enrolled this academic year)		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Treat1 * Post$ ❑	-0.27**	-0.38	-0.69***	0.22**	0.85***	0.06	-0.36**	-1.09***	-0.16	-1.53**	-0.11	0.22
	(0.126)	(0.245)	(0.204)	(0.100)	(0.206)	(0.268)	(0.146)	(0.214)	(0.293)	(0.727)	(1.017)	(0.236)
$Treat2 * Post$ ❑❑	-0.37**	-0.59**	-0.93***	0.16	0.78***	0.01	-0.28**	-0.83***	-0.24	-0.78	0.85	12.88***
	(0.163)	(0.259)	(0.316)	(0.101)	(0.171)	(0.292)	(0.136)	(0.232)	(0.357)	(0.927)	(1.202)	(0.251)
Post	0.20	-0.45	0.71	-0.36	-1.35***	-0.02	0.72***	2.02***	0.38	2.21*	1.15	-10.57***
	(0.304)	(0.336)	(0.633)	(0.245)	(0.331)	(0.588)	(0.269)	(0.393)	(0.649)	(1.257)	(1.108)	(0.584)
Individual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	663	348	315	664	346	318	657	344	313	527	294	233
R squared	0.347	0.465	0.513	0.442	0.712	0.709	0.390	0.553	0.650	0.258	0.545	0.742

Panel B	Child aged 6–12 MHH - by household recipient gender					
	Missed any days			How many days of school		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)
Treat1*Post	-0.12	-0.19	-0.07	-1.56*	-2.16	-1.30
	(0.103)	(0.122)	(0.169)	(0.914)	(1.523)	(1.353)
Treat2*Post	-0.15	-0.31*	0.01	-1.15*	-2.69*	0.12
	(0.127)	(0.164)	(0.173)	(0.680)	(1.376)	(1.168)
Post	-0.28	0.50**	-0.36	-1.43	4.19**	-3.06
	(0.196)	(0.236)	(0.328)	(1.923)	(1.896)	(2.141)
Individual F.E.	Y	Y	Y	Y	Y	Y
Observations	1,020	518	502	1,009	517	492
R squared	0.230	0.349	0.418	0.202	0.335	0.392

Notes: Recipient gender ❑Treat 1 is an indicator equal to one if recipient of cash transfer in HH was female; Treat 2 is an indicator equal to one if recipient of cash transfer in HH was male

Standard errors clustered at the community level, in parentheses. *** indicates p<.01; ** indicates p<.05; * indicates p<.10.

Source: Authors' calculations.

Table 10: Distinguishing impact of cash transfers on child time use by recipient gender for married MHH

Panel A	Child aged 13–17											
	MHH - by household recipient gender											
	Time use on a typical day (mins/day)											
	Chores[a]			Fam. Labor[b]			At school			Hmwk./study		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Treat1 * Post$ ¤	-57.78	-45.47	59.88*	26.49	-22.21	50.64	54.00	161.24**	-9.75	14.10	19.08	13.59
	(34.919)	(45.527)	(35.118)	(57.161)	(18.647)	(120.444)	(42.500)	(80.232)	(71.561)	(16.405)	(23.171)	(28.289)
$Treat2 * Post$ ¤¤	-68.05**	-79.53**	107.27***	1.32	-32.75	61.22	7.69	86.63	-114.38	-2.78	-11.74	18.56
	(32.609)	(38.445)	(38.762)	(41.266)	(22.944)	(139.927)	(39.667)	(62.452)	(89.521)	(14.458)	(22.102)	(29.551)
Post	176.55***	171.31**	21.86	33.78	-0.67	381.24**	-152.03	-238.49	-181.04	24.60	34.46	30.40
	(59.783)	(76.188)	(57.962)	(109.108)	(37.132)	(186.961)	(115.530)	(171.634)	(117.061)	(24.868)	(26.803)	(39.565)
Observations	637	331	306	640	334	306	655	344	311	655	344	311
R squared	0.352	0.789	0.574	0.231	0.656	0.474	0.368	0.694	0.586	0.370	0.634	0.519
Panel B	Child aged 6–12											
	MHH - by household recipient gender											
	Time use on a typical day (mins/day)											
	Chores[a]			Fam. Labor[b]			At school			Hmwk./study		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Treat1*Post	-9.57	-18.46	-9.84	32.89*	-1.30	53.40	-26.95	-49.50	0.65	8.52	13.49	14.94
	(11.931)	(14.744)	(18.362)	(17.259)	(7.033)	(32.758)	(29.442)	(31.501)	(41.010)	(7.007)	(14.580)	(9.202)
Treat2*Post	-2.92	9.74	-5.64	8.62	0.67	12.80	3.27	-50.36*	24.57	-3.67	-11.00	3.02
	(12.731)	(13.206)	(20.301)	(13.945)	(5.412)	(30.905)	(25.992)	(28.363)	(37.299)	(7.404)	(12.371)	(7.607)
Post	58.40***	40.63	86.29***	-53.57*	5.50	-85.85*	26.14	100.12	-60.54	14.12	-37.46	21.34
	(22.011)	(32.418)	(28.531)	(27.087)	(16.874)	(50.487)	(62.487)	(61.641)	(70.049)	(25.437)	(47.494)	(15.292)
Observations	1,077	537	540	1,080	540	540	1,087	541	546	1,086	541	545
R squared	0.304	0.350	0.452	0.145	0.250	0.268	0.218	0.326	0.387	0.266	0.380	0.514

Notes*:* **Chores**[a] include Helping at home - fetching water, sibling care, cleaning, cooking, washing, and shopping; Recipient gender ¤Treat 1 is an indicator equal to one if recipient of cash transfer in HH was female ¤¤ Treat 2 is an indicator equal to one if recipient of cash transfer in HH was male; **Family labor**[b] includes family farming/herding and other family business

Standard errors clustered at the community level, in parentheses. *** indicates p<.01; ** indicates p<.05; * indicates p<.10.

Source: Authors' calculations.

Table 11: Distinguishing impact of cash transfers on child farm labor by recipient gender for married MHH

Panel A	Child aged 13–17					
	MHH - by household recipient gender					
	Crop and livestock activities (last 7 days)					
	Worked (0/1)			Days worked		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)
$Treat1 * Post$ ¤	0.02	-0.13	-0.08	-0.38	-0.35	-1.25
	(0.110)	(0.161)	(0.153)	(0.670)	(0.685)	(1.176)
$Treat2 * Post$ ¤¤	-0.22**	-0.09	-0.64***	-1.44**	-0.24	-3.51**
	(0.099)	(0.153)	(0.197)	(0.679)	(0.555)	(1.630)
Post	-0.10	0.27	-0.55**	-0.56	0.68	-2.29
	(0.244)	(0.195)	(0.277)	(1.120)	(0.786)	(1.901)
Observations	685	355	330	685	355	330
R squared	0.478	0.388	0.761	0.373	0.333	0.638
Panel B	Child aged 6–12					
	MHH - by household recipient gender					
	Crop and livestock activities (last 7 days)					
	Worked (0/1)			Days worked		
sample:	ALL	GIRLS	BOYS	ALL	GIRLS	BOYS
	(1)	(2)	(3)	(4)	(5)	(6)
Treat1*Post	-0.12	-0.10	-0.12	-0.47	0.01	-0.84
	(0.092)	(0.097)	(0.144)	(0.537)	(0.372)	(0.936)
Treat2*Post	-0.01	-0.01	-0.09	-0.32	0.25	-1.43
	(0.097)	(0.080)	(0.170)	(0.574)	(0.330)	(1.109)
Post	-0.02	-0.02	-0.04	-0.31	-0.40	-0.55
	(0.188)	(0.170)	(0.265)	(1.216)	(0.681)	(1.880)
Observations	1,116	553	563	1,116	553	563
R squared	0.214	0.348	0.343	0.180	0.357	0.324

Notes: Recipient gender ¤Treat 1 is an indicator equal to one if recipient of cash transfer in HH was female ¤¤ Treat 2 is an indicator equal to one if recipient of cash transfer in HH was male.

Standard errors clustered at the community level, in parentheses.*** indicates p<.01; ** indicates p<.05; * indicates p<.1.

Source: Authors' calculations.

Table 12: Distinguishing Impact of cash transfers on adult labor by household structure

Panel A	Adult aged 18-60								
	Worked (0/1)								
		Farm Labor			Off-Farm Wage Labor			Non-Farm Own Enterprise	
sample:	ALL	WOMEN	MEN	ALL	WOMEN	MEN	ALL	WOMEN	MEN
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treat*Post*FemHD	0.15**	0.27**	-0.01	-0.03	-0.03	-0.01	-0.03	-0.04	-0.02
	(0.072)	(0.104)	(0.101)	(0.060)	(0.071)	(0.092)	(0.038)	(0.054)	(0.027)
Treat*Post	-0.07	-0.14**	0.02	-0.04	-0.05	-0.02	0.02	0.02	0.01
	(0.051)	(0.063)	(0.071)	(0.054)	(0.064)	(0.072)	(0.024)	(0.032)	(0.023)
Individual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	4,416	2,414	2,002	4,416	2,414	2,002	4,416	2,414	2,002
R squared	0.062	0.105	0.100	0.285	0.311	0.311	0.052	0.094	0.104
Coefficients from equation stratifted by FHH (unmarried) and MHH(married)									
Treat*Post	0.06	0.12**	-0.06	-0.07	-0.08	0.04	0.03	0.06	-0.04*
(FHH-Unmarried)	(0.060)	(0.060)	(0.097)	(0.059)	(0.074)	(0.096)	(0.031)	(0.046)	(0.024)
Treat*Post	-0.03	-0.10*	0.05	-0.07	-0.06	-0.07	-0.01	-0.01	0.00
(MHH - Married)	(0.050)	(0.057)	(0.077)	(0.064)	(0.071)	(0.084)	(0.023)	(0.031)	(0.025)
Panel B	**Days Worked**								
		Farm Labor			Off-Farm Wage Labor			Non-Farm Own Enterprise	
sample:	ALL	WOMEN	MEN	ALL	WOMEN	MEN	ALL	WOMEN	MEN
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treat*Post*FemHD	1.01**	1.52**	0.50	-0.32	-0.40	-0.22	-0.07	-0.16	0.07
	(0.450)	(0.631)	(0.623)	(0.230)	(0.273)	(0.408)	(0.188)	(0.263)	(0.138)
Treat*Post	-0.50*	-0.93**	0.00	-0.27	-0.13	-0.49*	0.06	0.13	-0.03
	(0.286)	(0.355)	(0.428)	(0.203)	(0.221)	(0.294)	(0.099)	(0.135)	(0.111)
Individual F.E.	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	4,416	2,414	2,002	4,416	2,414	2,002	4,416	2,414	2,002
R squared	0.068	0.104	0.114	0.074	0.084	0.131	0.054	0.097	0.107
Coefficients from equation stratifted by FHH (unmarried) and MHH(married)									
Treat*Post	0.40	0.43*	0.14	-0.60***	-0.49**	-0.76*	0.19	0.33	-0.03
(FHH-Unmarried)	(0.392)	(0.243)	(0.641)	(0.212)	(0.198)	(0.403)	(0.183)	(0.284)	(0.055)
Treat*Post	-0.38	-0.71**	0.02	-0.34	-0.19	-0.57*	-0.06	-0.02	-0.07
(MHH - Married)	(0.278)	(0.337)	(0.481)	(0.222)	(0.203)	(0.343)	(0.086)	(0.109)	(0.126)

Source: Authors' calculations.