

Encouragement and distortionary effects of conditional cash transfers*

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Abstract

Conditional cash transfer (CCT) programs have become increasingly popular as a development strategy. These programs aim to reduce poverty or achieve other social goals by making the transfers conditional upon the receivers' actions. Conditions are designed to encourage some desirable behavior that recipients might otherwise underinvest in. An unintended consequence of the conditionality may be to distort recipients' actions in ways that lower their welfare. The transfer size plays an important role in shaping such distortionary effects. In certain circumstances, a larger transfer increases distortion more than that it raises benefits from stronger encouragement, implying that (i) there is an optimal transfer size for CCTs, and (ii) unconditional cash transfers (UCTs) may be better than CCTs when the transfer amount is large. We illustrate a range of distortions arising from CCT programs around the world. We then introduce an experimental design that permits a test of this distortionary effect, and implement it in a cash transfer program conditional on seasonal labor migration in rural Indonesia. We find that when the transfer size exceeds the amount required for travel expenses, the distortion created induces additional individuals to migrate who have lower (possibly even negative) migration returns, weakening overall program impacts.

Keywords: Conditional cash transfers, Distortion, Seasonal migration

JEL Codes: I38, O15, J48

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I. Introduction

Conditional Cash Transfer (CCT) programs started in the late 1990s in Latin America, and have become the anti-poverty program of choice in many developing countries around the world. They have grown from 3 countries in 1997 to 40 countries in 2010, to 64 non-OECD countries in 2014. Programs have now also been implemented in many OECD countries (Honorati et al., 2015; Medgyesi and Temesváry, 2013). CCTs are distinct from Unconditional Cash Transfer (UCT) programs in that they have behavioral conditions tied to them. Conditionalities attached to most CCT programs aim to encourage human capital investments. Examples of common conditions include school enrollment and attendance, health checkup visits of children and their vaccination (Dearden et al., 2009; Macours et al., 2012; Cahyadi et al., 2020). Other programs encourage positive environmental actions, such as leaving forest intact or planting new trees (Jayachandran et al., 2017; Jack and Jayachandran, 2019). Under a broader definition, CCTs include scholarships and workfare programs tied to participation in training or schooling, or supplying labor. Unconditional cash transfers (UCTs) are cheaper to deliver and administer because no monitoring of conditions is required. This leads to a fundamental tradeoff that policymakers designing transfer programs must grapple with: Are adding conditions to transfer programs and monitoring adherence worth it? Do CCTs improve welfare beyond UCTs?

The literature has examined the UCT-CCT tradeoff before (Baird et al., 2011; Attanasio et al., 2015; Akresh et al., 2013; Bergstrom and Dodds, 2020), but we add a new and important dimension to this debate: while CCTs may encourage desirable behaviors, it may also distort recipients' decisions into engaging in activities that may not be socially desirable. For example, the conditioning of cash transfers on adult's participation in a public works program may increase children's domestic work to compensate for their parent's absence, thereby reducing their school enrollment (Shah and Steinberg, 2019).

This article begins by illustrating examples of distortionary effects from a wide array of locations and contexts. Next we explore theoretical issues surrounding the tradeoff between

the encouraging and distortionary effects of conditional cash transfers. In what situations would we want to impose a condition or constraint on a transfer, even if the beneficiary is rational and capable of making the best decisions for themselves? Are there market failures we are trying to correct with the condition? We analyze the role of the transfer size, which potentially influences both the encouraging and the distortionary effects of the imposed condition. We characterize situations in which larger transfers increase distortionary effects while diminishing benefits from stronger encouragement. Thus, even in contexts where CCTs are successful in addressing a market failure, distortionary effects can start dominating when the size of the transfer gets large. As a result, in those settings, UCTs may be preferable to CCTs when the transfer size is large relative to household income.

Next we introduce an experimental design that can quantify this encouragement-distortion tradeoff, and implement that design in the context of a seasonal migration encouragement program in rural West-Timor, Indonesia. In many rain-fed areas of the world, poor households experience seasonal deprivation during the pre-harvest period, and seasonal migration to a city for casual labor can alleviate this deprivation (Bryan et al., 2014). We randomly select some subsistence farming families in one of the poorest regions of Indonesia to receive either an unconditional transfer, or CCT payments (of varying sizes) that are meant to defray travel costs, conditional on the household agreeing to send an individual to a nearby city in search of employment. The migration condition of the CCT is designed to correct a market failure first identified in (Bryan et al., 2014), which is the lack of an insurance market to insure the risky migration outcome of having made migration expenditures but not finding a job at the destination. Poor households close to subsistence level may hence be too risk averse to engage in often-profitable seasonal labor migration, and our subsidy provides insurance against this downside risk.

We find that the CCT induces migration, and also increases migration season earnings relative to the UCT benchmark treatment. However, when the size of the transfer is increased beyond what is needed to cover migration travel expenses, distortionary effects prevail. For

example, people who are not committed to finding employment in the city travel only to collect the CCT payment. Larger transfers induce negative selection into migration of low-return types, and program impacts deteriorate.

II. Illustrative examples of distortionary effects of CCTs

The literature on Conditional Cash Transfers reveals several demonstrated instances of the distortion of economic incentives leading to unintended and sometimes undesirable consequences. Table 1 lists several examples.

A. Education conditions

Conditioning the transfer on school enrollment of a specific child within the household can change intra-household resource allocation. Parents may choose to specialize in the education of the recipient, displacing the schooling of his or her siblings and reallocating the hours of child labor. The net effect of the transfer depends on both the expanded household budget set and these distortionary effects. A CCT program in Cambodia reduced school attendance among ineligible siblings of some program recipients (Ferreira et al., 2017). A Colombian CCT requiring school enrollment finds that girls spent more hours unpaid household work if they were not assigned to the program but their sibling was (Barrera-Osorio et al., 2008).

The tying of school attendance requirements to household's receipt of cash transfers may also affect the child's mental health. An RCT in Malawi that transferred \$4/month to families conditional on their adolescent daughters' school attendance improved the mental health of girls who already went to school at baseline (Baird et al., 2013). However, when transfers are increased to \$8 or \$10/month, making the girls the breadwinner of the entire family, their mental health can deteriorate.

Table 1: Examples of conditionalities in CCT programs and behavioral distortions arising from them.

Program & country	Conditionality	Distortion	References
Conditional Subsidies for School Attendance pilot in Colombia	Enrollment in tertiary education	Increase in tertiary enrollment only in short (2 years) programs in low-quality colleges	Barrera-Osorio et al. (2019)
Conditional Subsidies for School Attendance pilot in Colombia; CESSP scholarship program in Cambodia	Enrollment in school	Households enroll boys disproportionately; reduced enrollment of non-treated siblings (Cambodia and Colombia), who work more hours (Colombia) (intra-household substitution effect)	Barrera-Osorio et al. (2008) (Colombia); Ferreira et al. (2017) (Cambodia)
Helping Outstanding Pupils Educationally (HOPE) scholarship in the US	Merit-based scholarships tied to credits earned	Students choosing STEM subjects less often	Sjoquist and Winters (2015) Rumbaugh (2016)
<i>Oportunidades</i> in Mexico; <i>Takaful</i> in Egypt	Health check-ups of children by mothers	Confinement of women to caregiving roles: increasing their supply of unpaid domestic labor and reducing their supply of paid labor	De Brauw et al. (2015) (Mexico); El-Enbaby et al. (2019) (Egypt)
Ethiopia's Productive Safety Net Program (PSNP); India's National Rural Employment Guarantee Scheme (NREGS)	Participation in public works	Children substituting labor for adults who are induced by CCT to work (more) outside household (enterprise): • Reduced school attendance and increased time spent on domestic work by younger girls (Ethiopia). • Increased agricultural labor supply by older children (India)	Hodinott and Gilligan (2010) Zibagwe et al. (2013) (India) Islam and Sivasankaran (2015) Shah and Steinberg (2019) (Ethiopia)
Seasonal migration CCT in Indonesia	Seasonal migration	Increase in transfer size beyond amount needed for transport induces additional households to select into migration, who are less productive at the destination and have lower (or even negative) returns to migration	[this article]

A pilot in Bogota, Colombia sought to encourage tertiary education via a CCT. The program increased tertiary enrollment only in short study programs and in low-quality colleges, which suggests that the primary driver of individuals' study choice was to comply with the CCT condition to receive the subsidy, rather than the intended benefit of education itself (Barrera-Osorio et al., 2019). Merit-based scholarship programs impose a performance condition instead of attendance - a minimum performance level according to a pre-specified metric. The Helping Outstanding Pupils Educationally (HOPE) scholarship program in the US is an example of such a performance-condition. Performance conditions may lead to potentially undesirable distortionary effects if people can game program rules. In the HOPE program for instance, performance evaluation was based on number of credits obtained, leading students to reduce their enrollment in Science, Technology and Math (STEM) subjects, which are perceived to be more difficult (Sjoquist and Winters, 2015; Rumbaugh, 2016).

B. Gendered conditions

Cash transfers are sometimes targeted to women to support their empowerment by increasing resources available to them, or because mothers have a greater propensity to invest in the human capital of children than fathers (Hoddinott and Haddad, 1995; Quisumbing and Maluccio, 2003; De Brauw et al., 2014; Armand et al., 2020). However, conditions specific to mothers may risk reinforcing gender norms that women take on caregiving roles. It can reduce female labor supply especially when adhering to the conditions is time-consuming. Indeed, the famous *Progresa* program in Mexico that targets cash transfers to mothers if children receive health checkups, led to a reduction in female labor supply (De Brauw et al., 2015). A CCT program in Egypt also reduced labor supply outside of the household for female recipients (El-Enbaby et al., 2019). It should be noted that income effects from the CCT could also cause the reduction in labor supply.¹ Or, households may choose to change

¹Banerjee et al. (2017) re-analyze data from seven randomized controlled trials of government-run UCT and CCT programs from six countries to examine impacts on labor supply, and find no significant effect either individually or pooled on employment or hours of work. Similarly, they find no pooled effect on

time allocation after investing the transfer in an enterprise. Indeed, the unconditional Human Development Grant in Ecuador reduced the propensity of transitioning to formal wage labor (Bosch and Schady, 2019), and a UCT program in Zambia increased labor supply on the own farm while reducing agricultural wage labor (Ervin et al., 2017; Prifti et al., 2019). Without the inclusion of a UCT comparison group in an (experimental) evaluation, it is difficult to assess to what extent empirically observed labor supply responses in a CCT program reflect distortions due to the conditionality, rather than generic behavioral responses to the cash component of the program.

C. Labor supply conditions

Where transfers are conditioned on an adult member participating in a public works program, the rationale is often that such public works have a public benefit (e.g., building roads, clearing debris after a natural disaster, or environmental conservation work). An unintended consequence can be to increase children’s supply of domestic labor or farm labor, to substitute for the reduction in parents’ labor. Such distortionary effects on child labor have been observed in the Productive Safety Net Program (PNSP) in Ethiopia (Hodinott and Gilligan, 2010; Zibagwe et al., 2013) and in India’s National Rural Employment Guarantee Scheme (NREGS) (Islam and Sivasankaran, 2015; Shah and Steinberg, 2019). Workfare programs may also divert mothers’ time from antenatal care, which in the case of NREGS, may have increased infant mortality (Chari et al., 2019). Given spatial differences in productivity and employment opportunities, some CCT programs encourage labor migration. Sections IV. and V. of this article describe a seasonal labor migration CCT we ran and analyzed.

whether work is self-employed/within family vs. outside the household, nor do they find such effects when disaggregating by gender.

D. Distortions Induced by Program Qualification Requirements

When potential recipients are aware of program qualification conditions, they may alter economic behavior to meet eligibility criteria. For example, the Argentinian CCT programs, Programa Jefes de Hogar (PJH) and Universal Child Allowance for Social Protection (AUH), were targeted to the unemployed, and discouraged entry into formal employment (Gasparini et al., 2009; Garganta and Gasparini, 2015). Likewise, an Uruguayan CCT program reduced formal employment by 8 percentage points (Bergolo and Cruces, 2018). Brazil's Bolsa Alimentacao (Feeding Allowance) tied benefits to children being below a particular weight, and reportedly led to some children being kept underweight in order to qualify (Morris et al., 2004). If the size of the transfer is determined by the number of children, that can affect fertility. The Honduran CCT PRAF offered subsidies for health and nutrition to households with pregnant women or children under age 3, with a payment per child. The program increased childbearing in the short term (Stecklov et al., 2007). Such behavioral distortions can accompany either CCTs or UCTs that have program eligibility requirements.

III. Theoretical Considerations

A. Encouragement and distortionary effects of CCTs

When markets operate without friction, UCTs will dominate CCTs on efficiency grounds, since imposing a condition or constraint can only make the beneficiary (weakly) worse off. However, the rationale for tying conditions to cash transfers is the presence of market failures that lead individuals to under-invest in certain profitable and/or socially desirable behaviors. We impose conditions presumably to correct those failures.

Such market imperfections can arise from a variety of sources. First, some of the benefits of the encouraged behavior may be external to the decision-maker. This may lead to under-investment in behaviors that carry positive externalities (such as investments in the

human capital of a child), or behaviors that reduce negative externalities (e.g. vaccinations, deworming, or environmental conservation) (Miguel and Kremer, 2004; Bärnighausen et al., 2014). Second, individuals may underinvest in behaviors or technologies with positive private returns due to a lack of information about those returns, or due to psychological biases such as procrastination, present-bias, or myopic behavior associated with poverty and risk (Carvalho et al., 2016; Mani et al., 2013; Laajaj, 2017). In some cases, an initial encouragement (e.g., through a CCT) may enable the decision-maker to learn about the individual-specific returns to an investment. Examples are an agricultural input whose effect on yield may depend on the specific soil characteristics of each farmer² (Foster and Rosenzweig, 1995; Gibbons et al., 2005; Zeitlin, 2011), or migration to a destination with a lack of information about the odds of finding work or about expected earnings there (Bryan et al., 2014). Beliefs about returns to investments such as education or migration may also be biased downwards if people who invested successfully hide or under-report their returns to friends and family, out of concern of being asked to share their returns with them (Jensen, 2010; Jakiela and Ozier, 2016; Baseler, 2020).

However, tying of conditions to transfers also distorts relative prices for a recipient. A program that transfers resources to mothers conditional on health checkups for their children reduces the relative cost of healthcare, but to the extent that these checkups are time-consuming, they may also divert time from earning labor income. Hence, compared to a UCT, there is a potential efficiency cost to CCTs.

B. The role of the transfer size

The size of a cash transfer plays an important role in the magnitude of encouragement and distortionary effects of CCTs, and therefore in determining the net effects of a CCT program. Consider the case of a CCT targeting a profitable behavior that individuals underinvest in due to a market failure, but where the benefits of take-up of the CCT and compliance with the

²Voucher programs that condition a subsidy on the purchase of specific agricultural inputs are common across Sub-Saharan Africa, see Holden (2019) for a review.

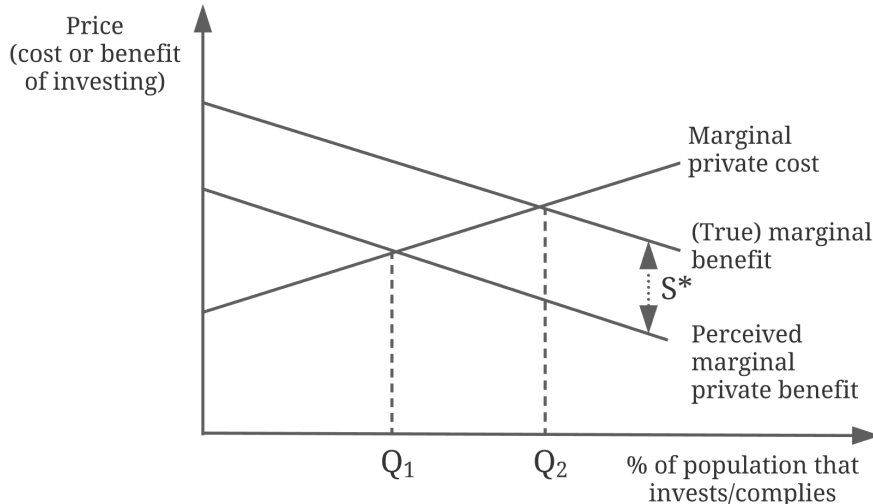


Figure 1: Individuals underestimate the returns to an investment targeted by a CCT (e.g., education, labor migration). A CCT of size S^* corrects this market failure; increases in the transfer size beyond S^* generate distortion.

condition are private to the recipient. Those benefits vary across individuals. For example, benefits of education or migration can vary with skill sets, or benefits of health checkups depend on pre-existing conditions. We assume all takers of the CCT comply with the imposed condition, and cost of compliance also varies (e.g. opportunity cost of school enrollment can differ across households). Individuals with the highest benefits and lowest cost of compliance would select into the CCT program. When the size of the transfer is increased, additional individuals with progressively lower returns and/or higher costs would choose to participate. As a result, the marginal private benefit is a downward-sloping function of the share of the population complying with the condition, and the private cost is an upward-sloping function (Figure 1). Selection into treatment on the basis of individual-specific expected gains is also referred to as essential heterogeneity (Heckman et al., 2006).

The optimal CCT subsidy size is S^* . As in the case of Pigouvian analysis, the transfer equals the extent to which people underestimate private returns (or the size of the externality), so as to equalize the true marginal social benefits of investing with the marginal cost of compliance. Transfer sizes exceeding S^* generate distortion, with larger transfers creating greater distortion and reducing the welfare effects of the program. Hence, for large enough

transfers, UCTs can dominate the welfare effects of a CCT of the same size, even in the presence of a market failure.

Note that our analysis implicitly assumes that the private benefits and costs to each individual are independent of the transfer size. Larger transfers worsen the composition of the pool of compliers, but do not generate additional benefits per complying recipient. In some situations, larger transfers could enable recipients to make more profitable investments. For example, a larger scholarship may allow the recipient to attend a better college if those are more costly, or a larger migration subsidy may allow travel to cities farther away that offer higher wages. Larger transfers may also allow for more search, enabling a better employment match.

Larger transfers could also help address the adverse distortionary consequences of CCTs in some circumstances. For instance, when a CCT for school enrollment of a child of a specific age or gender displaces a sibling's education, a large enough CCT may enable it to pay for the schooling of the un-treated siblings. On the other hand it could intensify the distortion too. In a workfare program that diverts parents' time and attention away from children, larger transfers increase resources available for dowry, which increased child marriage rates (Tsaneva and O'donoghue, 2019).

In the next section, we apply this conceptual framework to design a CCT for seasonal migration, and test some implications of essential heterogeneity. Our experimental design varies the size of CCTs and compares them to a UCT benchmark as a way to quantify the encouragement-distortion tradeoff embedded in conditionalities.

IV. Data and experimental design

A. Experimental context

In agrarian areas around the world, labor demand and wages fall during the pre-harvest season, and the prices of staples tend to rise while the economy waits for the new crop to

grow. These combine to produce pre-harvest seasonal poverty and hunger (known as the ‘lean season’) in many poor rain-fed parts of the world (Bryan et al., 2014; Dercon and Krishnan, 2000; Jalan and Ravallion, 2001; Khandker and Mahmud, 2012; Macours and Vakis, 2010; Paxson, 1993; Fink et al., 2020). Rural areas of Eastern Indonesia experience such seasonal deprivation. In West-Timor the pre-harvest period is known as ‘musim lapar biasa’ (ordinary hunger period), which sometimes turns into famine-like conditions (known locally as ‘paceklik’) (Basu and Wong, 2015). Some rural households send seasonal migrants to cities to cope with this seasonal income shortfall. Our experiment is designed to test whether more households would benefit from employing the migration strategy, but are currently constrained from doing so. Online appendix A provides additional details about the setting and the experiment, including the cropping calendar in West-Timor and the timing of our intervention and data collection activities.

B. Sampling

Five villages in Timor Tenggara Utara (TTU) Regency in West-Timor were sampled based on poverty incidence and seasonality. Please see the Online Appendix for details on village selection. Out of 869 sampled households in these five villages, 855 gave consent to be interviewed and 775 of them satisfied the eligibility criteria of (i) having at least one household member aged 21 or above; and (ii) not owning land exceeding 200 Are (2 Hectare). Out of the baseline sample, 709 households (91%) were re-interviewed at endline, which took place from December 2017 until February 2018. Sample attrition does not differ statistically significantly across treatment arms (Appendix Table 1).

C. Experimental design

Randomization was done at the household level. First, households were randomized into either a UCT or a CCT treatment (Table 2). If a UCT-assigned household took up the offer, it received IDR 150,000 (\sim USD 10), and no condition was imposed. Households assigned

Table 2: Treatment arms (amounts in Rp.)

	CCT			UCT (D)
	High (A)	Low (B)	Low with surprise (C)	
Total subsidy	300,000	150,000	300,000	150,000
1 st disbursement at the origin	150,000	75,000	75,000	150,000
2 nd disbursement at the destination	150,000	75,000	(75,000 +150,000) =225,000	0

to the CCT arm had the choice to take up the offer and migrate (to a destination of their choice within West-Timor), or to not take up the offer. The CCT payment was divided into two installments: Half paid at the village of origin after the offer is accepted, and the other half collected at the destination city after “checking in” with a program officer. This helped us monitor adherence to the conditionality.

The CCT arm was further split into three groups with varying transfer amounts, to understand distortionary effects through differential selection of migrants. A group we label ‘CCT-high’ received IDR 150,000 at the origin, and an additional IDR 150,000 after checking in at the destination (IDR 300,000 total). People randomized into a ‘CCT-low’ group received IDR 75,000 at the origin, and they were told they would get an additional IDR 75,000 upon checking in at the destination. Hence, their total disbursement of 150,000 equalled that of the UCT group. This CCT-low group was further split into two, whereby half of the households assigned to CCT-low at baseline who check in at a destination, were ‘surprised’ upon checking in to receive a second subsidy of IDR 225,000 rather than IDR 75,000. We label this group ‘CCT-low+’. They also received IDR 300,000 in total, like the CCT-high group.

Doubling the promised transfer from 150,000 to 300,000 changes the selection of households who migrate, and that is the potential distortion that our research design was meant to capture. However, the larger transfer may also cause ex-post actions (e.g., searching longer

for a job due to having a larger buffer, investing in household enterprises), which confounds the selection effect we are interested in. This is why the ‘surprise’ component in CCT-low+ is useful: The total transfer was 300,000, so it controls for the direct income effect, but since those households did not know that they were going to receive this when they made their offer take-up and migration decisions, we are able to capture the pure effect of the selection or distortion. We do so by comparing the effect of assignment to CCT-high or CCT-low+ on ex-post outcomes such as migration season household income. The ex-post ‘surprise’ treatment arm was inspired by Karlan and Zinman (2009), who offered different interest rates before and after loan applications are made to experimentally disentangle adverse selection from moral hazard in a credit market.

Appendix Table 1 shows no statistically significant imbalance in covariates as baseline, but household socio-economic status is nearly statistically significantly different across treatment arms. We therefore run all treatment effect estimations also when including the baseline characteristics as controls. Given that randomization was done at the household-level, there is a possibility of spillover effects on UCT assigned households (for example, by inducing some UCT assigned neighbors to (co-)migrate). The direction of spillover effects apparent in Appendix Figure 6 shows that the impact on income of the CCT (as compared to the UCT), if anything, is an underestimate of the true effect. The Online Appendix also contains a description of the construction of the variables used in our analysis.

V. Results

A. CCT versus UCT

Not surprisingly, the CCT subsidy is more likely to be spent on seasonal migration (to adhere to the condition), whereas the UCT subsidy is more likely to be spent on non-farm capital and food consumption (Appendix Figure 3). Recipients of the CCT-low group

Table 3: Impact (intent-to-treat effects) of assigned treatments on take-up of the offer, checking in at the destination, and household income during the peak of the migration season (the first two weeks of September).

	CCT subsample						Full sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable:	Accepting offer		Check-in at a destination		Migration Season income (Rp. 10k)		Accepting offer		Migration Season income (Rp. 10k)	
CCT-high	0.050 (0.045)	0.066 (0.038)	0.105*** (0.040)	0.111* (0.051)	-31.605 (20.173)	-23.441 (14.020)	-0.362*** (0.039)	-0.338*** (0.0554)	8.268 (13.411)	8.401 (7.690)
CCT-low+					1.846 (23.126)	8.258 (7.456)				
CCT-low/low+							-0.418*** (0.032)	-0.401*** (0.055)	41.612*** (14.287)	36.602* (15.680)
Socio-economic status							-0.009 (0.013)	-0.010 (0.018)	14.867** (6.637)	8.146 (5.246)
SES × CCT-high							-0.068* (0.041)	-0.055 (0.054)	4.169 (13.040)	6.870 (5.829)
SES × CCT-low/low+							0.045 (0.031)	0.052 (0.034)	-18.203 (16.649)	-16.204 (12.303)
F-test p-values:										
high = low+					0.077*	0.015**				
high = low/low+							0.018**	0.039**	0.238	0.070*
E(dep. var. CCT-low)	0.510	0.510	0.423	0.423	133.085	133.085				
E(dep. var. UCT)							0.928	0.928	90.257	90.257
Controls		✓		✓				✓		✓
Observations	526	474	526	474	474	474	775	708	708	708
R ²	0.002	0.031	0.014	0.036	0.008	0.067	0.163	0.169	0.020	0.080

* p<0.1, ** p<0.05, *** p<0.01. Robust standard errors are clustered at the household level. Migration season household income is winsorized at the 99th percentile to ameliorate the undue influence of outlying observations. Controls include the head of household's gender and years of education, whether (s)he speaks Indonesian, household size, and a socio-economic status (SES) index, and village indicators. Details on the outcome variables and the construction of the SES index can be found in the Online Appendix B.

receive the same total subsidy amount as UCT recipients. However, despite the significantly lower take-up rate in the CCT-low group (41.8%) as compared to the UCT group (93.8%), the CCT-low group dominates the UCT group in terms of the intent-to-treat effect on migration season income (columns (7)-(10) in Table 3; Appendix Figure 5). Since the emphasis of this article is on distortionary effects of CCTs, we now turn to the differences between CCT-high and CCT-low arms in columns (1)-(6).

B. Impact on the targeted behavior: migration

Within CCT assigned households, assignment to the large subsidy ('CCT-high') raised the rate at which migrants checked in at a destination by about 11 percentage points on a 'CCT-low'/'low+surprise' base of 42% (columns (3)-(4) in Table 1).³ No statistically significant differences between the CCT groups are found on the choice of destination, the duration of the migration, or on the propensity to find work (Appendix Table 3 and 4). A comparison of transport expenditures across treatment arms also suggests that the CCT-low subsidy suffices for transport to common migration destinations (Appendix Table 3 and Appendix Figure 4), and the extra transfer in the CCT-high treatment exceeds to transport expenditure requirement.

C. Testing for distortion: impact on household income

CCT-low+ (and CCT-low) assigned households have higher household income during the peak of the migration season compared to CCT-high assigned households, and this difference is statistically significant (the test of equality of regression coefficients is on the bottom of columns (5) and (6) of Table 3; see also Figure 2). This difference is not driven by outliers (Appendix Figure 5). To explore why this is the case, columns (7)-(8) of Table 3 interacts the assigned treatments with a baseline socio-economic status (SES) index. Higher values of this

³To the recipient household, CCT-low and CCT-low+surprise treatments are indistinguishable from each other until a household member checks in at a destination, which is why we only have one regressor (CCT-high) in columns (1)-(4), and the combined 'low' transfer is the omitted category

index correspond to higher household wealth (see the Online Appendix for the construction of this index). Naturally, take-up of the offer is highest in the UCT group (93%, as shown on the bottom of columns (7)-(8)). The signs of the interaction coefficients $SES \times CCT\text{-high}$ and $SES \times CCT\text{-low/low+}$ indicate that in the CCT-high group, less wealthy households are more likely to select into accepting the offer, whereas in the CCT-low groups, this is not the case (if anything, selection into treatment positively depends on wealth in the CCT-low groups). It thus appears that additional poor households in the CCT-high group migrate, motivated by the higher subsidy. To analyze how selection into the migration CCT relates to economic returns to migration, we next analyze heterogeneous treatment effect estimates on household income during the first two weeks of September, the peak of the migration season (columns (9)-(10)).

When speaking of returns, we refer to the difference between the earnings of the household if it sends a migrant and the counterfactual earnings of that same household if it does not send a migrant. CCT-low/low+ assigned households have statistically significantly higher migration season household income as seen from the CCT-high and the CCT-low/low+ coefficients (columns (9)-(10)). The sign of the $SES \times CCT\text{-low/low+}$ interaction term suggests that this strong, positive impact for CCT-low/low+ is driven by wealthier households, with the effect for poorer households being weaker. Hence, the CCT-high distorts the incentives of potential recipient households: the additional, poor households that select into CCT-high and send a migrant are those that have lower (or even negative) economic returns to migration, compared to those selecting in the CCT-low/low+ groups. When offered a large transfer (CCT-high), these additional poor households, whose members may lack the skills for gainful employment in the urban sector, appear to take up the offer and migrate merely to collect the subsidy at the destination.⁴

⁴No effects of any of the treatments was found on household food security during the hungry season at endline (Appendix Table 5), possibly due to the hungry season not coinciding with (coming after) the migration season in West-Timor.

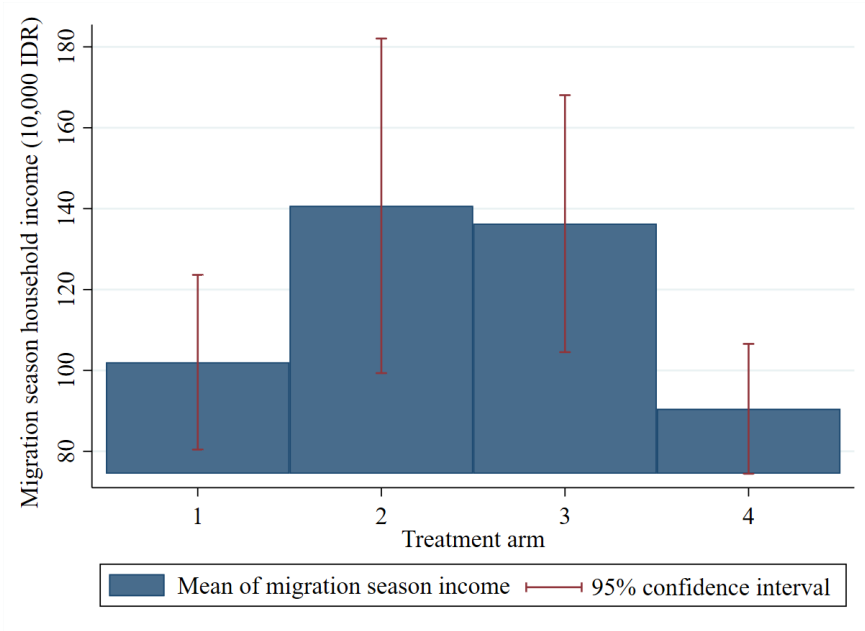


Figure 2: Household income (in 10,000 IDR) during the peak of the migration season (first two weeks of September) across treatment arms.

VI. Discussion

Policymakers face choices about whether to condition the transfers on socially desirable behaviors, about the type of conditions imposed, and about the transfer size. Theoretical considerations and credible empirical evidence can guide such decisions. A complete welfare accounting would include effects of the cash component, effects of adherence to the encouraged behavior that corrects the targeted market failure, distortionary effects of the imposed condition, distributional effects (changes in inequality), and spillover effects on treated and non-treated households. In this article, we focused on the distortionary effects on targeted households. Reviewing the literature of empirical impact evaluations of CCTs, we identified distortions brought about by CCT programs across a range of geographies, conditions, and target populations. Our conceptual framework focused on the role of the transfer size. It elucidated that in certain CCTs, the distortionary effects increase in the transfer size, so that for large enough transfers, a UCT eventually outperforms a CCT, even when there is a market failure that the CCT corrects. Applying this framework to a seasonal migration

CCT in Indonesia, we found that for increases in the transfer size beyond what is needed for recipients to comply with the migration condition, distortion increases and CCT program outcomes deteriorate.

These findings have several implications for the design of CCT programs and the design of evaluation studies. First, ex-ante theorizing about possible distortions generated by conditionality can inform the design of the condition, and nudge us to collect data on distortionary side effects (which may not be directly related to the primary outcomes). Second, the inclusion of a UCT comparison group allows a comparison of the extent to which observed behavioral responses reflect distortion due to the conditionality, rather than generic behavioral responses to the cash component of the program. Third, by experimentally varying the transfer size, the policy maker can calibrate the amount that maximizes net program welfare impacts given the encouragement-distortion tradeoff.

References

- Akresh, R., D. De Walque, and H. Kazianga (2013): *Cash transfers and child schooling: evidence from a randomized evaluation of the role of conditionality*, The World Bank.
- Armand, A., O. Attanasio, P. Carneiro, and V. Lechene (2020): “The effect of gender-targeted conditional cash transfers on household expenditures: Evidence from a randomized experiment,” *The Economic Journal*, 130, 1875–1897.
- Attanasio, O. P., V. Oppedisano, and M. Vera-Hernández (2015): “Should cash transfers be conditional? conditionality, preventive care, and health outcomes,” *American Economic Journal: Applied Economics*, 7, 35–52.
- Baird, S., J. De Hoop, and B. Özler (2013): “Income shocks and adolescent mental health,” *Journal of Human Resources*, 48, 370–403.
- Baird, S., C. McIntosh, and B. Özler (2011): “Cash or condition? evidence from a cash transfer experiment,” *The Quarterly Journal of Economics*, 126, 1709–1753.
- Banerjee, A. V., R. Hanna, G. E. Kreindler, and B. A. Olken (2017): “Debunking the stereotype of the lazy welfare recipient: Evidence from cash transfer programs,” *The World Bank Research Observer*, 32, 155–184.
- Bärnighausen, T., D. E. Bloom, E. T. Cafiero-Fonseca, and J. C. O’Brien (2014): “Valuing vaccination,” *Proceedings of the National Academy of Sciences*, 111, 12313–12319.
- Barrera-Osorio, F., M. Bertrand, L. L. Linden, and F. Perez-Calle (2008): *Conditional cash transfers in education: design features, peer and sibling effects evidence from a randomized experiment in Colombia*, The World Bank.
- Barrera-Osorio, F., L. L. Linden, and J. E. Saavedra (2019): “Medium-and long-term educa-

- tional consequences of alternative conditional cash transfer designs: Experimental evidence from colombia,” *American Economic Journal: Applied Economics*, 11, 54–91.
- Baseler, T. (2020): “Hidden income and the perceived returns to migration: Experimental evidence from kenya,” *Available at SSRN 3534715*.
- Basu, K. and M. Wong (2015): “Evaluating seasonal food storage and credit programs in east indonesia,” *Journal of Development Economics*, 115, 200–216.
- Bergolo, M. and G. Cruces (2018): “The anatomy of behavioral responses to social assistance when informal employment is high,” Technical report.
- Bergstrom, K. and W. Dodds (2020): “The targeting benefit of conditional cash transfers,” *World Bank Policy Research Working Paper*.
- Bosch, M. and N. Schady (2019): “The effect of welfare payments on work: Regression discontinuity evidence from ecuador,” *Journal of Development Economics*, 139, 17–27.
- Bryan, G., M. Mobarak, and M. Morten (2014): “Underinvestment in a profitable technology: the case of seasonal migration in bangladesh,” *Econometrica*, 82, 1671–1748.
- Cahyadi, N., R. Hanna, B. A. Olken, R. A. Prima, E. Satriawan, and E. Syamsulhakim (2020): “Cumulative impacts of conditional cash transfer programs: Experimental evidence from indonesia,” *American Economic Journal: Economic Policy*, 12, 88–110.
- Carvalho, L. S., S. Meier, and S. W. Wang (2016): “Poverty and economic decision-making: Evidence from changes in financial resources at payday,” *American economic review*, 106, 260–84.
- Chari, A. V., P. Glick, E. Okeke, and S. V. Srinivasan (2019): “Workfare and infant health: Evidence from india’s public works program,” *Journal of Development Economics*, 138, 116–134.
- De Brauw, A., D. O. Gilligan, J. Hoddinott, and S. Roy (2014): “The impact of bolsa família on women’s decision-making power,” *World Development*, 59, 487–504.
- De Brauw, A., D. O. Gilligan, J. Hoddinott, and S. Roy (2015): “Bolsa família and household labor supply,” *Economic Development and Cultural Change*, 63, 423–457.
- Dearden, L., C. Emmerson, C. Frayne, and C. Meghir (2009): “Conditional cash transfers and school dropout rates,” *Journal of Human Resources*, 44, 827–857.
- Dercon, S. and P. Krishnan (2000): “In sickness and in health: Risk sharing within households in rural ethiopia,” *Journal of political Economy*, 108, 688–727.
- El-Enbavy, H., D. Gilligan, N. Karachiwalla, Y. Kassim, and S. Kurdi (2019): *Cash transfers and women’s control over decision-making and labor supply in Egypt*, volume 25, Intl Food Policy Res Inst.
- Ervin, P., E. Elisenda, D. Silvio, D. Benjamin, V. U. Paul, M. Stanfeld, H. Sudhanshu, S. David, and T. Gelson (2017): “Learning about labour impacts of cash transfers in zambia,” *Journal of African Economies*, 26, 433–442.
- Ferreira, F. H., D. Filmer, and N. Schady (2017): “Own and sibling effects of conditional cash transfer programs: theory and evidence from cambodia1,” in *Research on economic inequality*, Emerald Publishing Limited.
- Fink, G., B. K. Jack, and F. Masiye (2020): “Seasonal liquidity, rural labor markets, and agricultural production,” *American Economic Review*, 110, 3351–92.
- Foster, A. D. and M. R. Rosenzweig (1995): “Learning by doing and learning from others: Human capital and technical change in agriculture,” *Journal of political Economy*, 103, 1176–1209.

- Garganta, S. and L. Gasparini (2015): “The impact of a social program on labor informality: The case of auh in argentina,” *Journal of Development Economics*, 115, 99–110.
- Gasparini, L., F. Haimovich, and S. Olivieri (2009): “Labor informality bias of a poverty-alleviation program in argentina,” *Journal of Applied Economics*, 12, 181–205.
- Gibbons, R., L. F. Katz, T. Lemieux, and D. Parent (2005): “Comparative advantage, learning, and sectoral wage determination,” *Journal of labor economics*, 23, 681–724.
- Heckman, J. J., S. Urzua, and E. Vytlacil (2006): “Understanding instrumental variables in models with essential heterogeneity,” *The Review of Economics and Statistics*, 88, 389–432.
- Hoddinott, J. and L. Haddad (1995): “Does female income share influence household expenditures? evidence from côte d’ivoire,” *oxford Bulletin of Economics and Statistics*, 57, 77–96.
- Hodinott, J. and D. Gilligan (2010): “The impact of ethiopia’s productive safety net program,” *Social protection for Africa’s children*, 71–96.
- Holden, S. T. (2019): “Economics of farm input subsidies in africa,” *Annual Review of Resource Economics*, 11, 501–522.
- Honorati, M., U. Gentilini, and R. G. Yemtsov (2015): “The state of social safety nets 2015,” *Washington, DC: World Bank Group*.
- Islam, M. and A. Sivasankaran (2015): “How does child labor respond to changes in adult work opportunities? evidence from nrega,” .
- Jack, B. K. and S. Jayachandran (2019): “Self-selection into payments for ecosystem services programs,” *Proceedings of the National Academy of Sciences*, 116, 5326–5333.
- Jakiela, P. and O. Ozier (2016): “Does africa need a rotten kin theorem? experimental evidence from village economies,” *The Review of Economic Studies*, 83, 231–268.
- Jalan, J. and M. Ravallion (2001): “Behavioral responses to risk in rural china,” *Journal of Development Economics*, 66, 23–49.
- Jayachandran, S., J. De Laat, E. F. Lambin, C. Y. Stanton, R. Audy, and N. E. Thomas (2017): “Cash for carbon: A randomized trial of payments for ecosystem services to reduce deforestation,” *Science*, 357, 267–273.
- Jensen, R. (2010): “The (perceived) returns to education and the demand for schooling,” *The Quarterly Journal of Economics*, 125, 515–548.
- Karlan, D. and J. Zinman (2009): “Observing unobservables: Identifying information asymmetries with a consumer credit field experiment,” *Econometrica*, 77, 1993–2008.
- Khandker, S. R. and W. Mahmud (2012): *Seasonal hunger and public policies: evidence from Northwest Bangladesh*, The World Bank.
- Laajaj, R. (2017): “Endogenous time horizon and behavioral poverty trap: Theory and evidence from mozambique,” *Journal of Development Economics*, 127, 187–208.
- Macours, K., N. Schady, and R. Vakis (2012): “Cash transfers, behavioral changes, and cognitive development in early childhood: Evidence from a randomized experiment,” *American Economic Journal: Applied Economics*, 4, 247–73.
- Macours, K. and R. Vakis (2010): “Seasonal migration and early childhood development,” *World development*, 38, 857–869.
- Mani, A., S. Mullainathan, E. Shafir, and J. Zhao (2013): “Poverty impedes cognitive function,” *science*, 341, 976–980.
- Medgyesi, M. and Z. Temesváry (2013): “Conditional cash transfers in high-income oecd countries and their effects on human capital accumulation,” *AIAS, GINI Discussion Paper*,

- Miguel, E. and M. Kremer (2004): “Worms: identifying impacts on education and health in the presence of treatment externalities,” *Econometrica*, 72, 159–217.
- Morris, S. S., P. Olinto, R. Flores, E. A. Nilson, and A. C. Figueiró (2004): “Conditional cash transfers are associated with a small reduction in the rate of weight gain of preschool children in northeast brazil,” *The Journal of nutrition*, 134, 2336–2341.
- Paxson, C. H. (1993): “Consumption and income seasonality in thailand,” *Journal of political Economy*, 101, 39–72.
- Prifti, E., E. Estruch, S. Daidone, and B. Davis (2019): “How much is too much: Does the size of income support transfers affect labor supply?” *Journal of Policy Modeling*, 41, 179–196.
- Quisumbing, A. R. and J. A. Maluccio (2003): “Resources at marriage and intrahousehold allocation: Evidence from bangladesh, ethiopia, indonesia, and south africa,” *Oxford Bulletin of Economics and Statistics*, 65, 283–327.
- Rumbaugh, D. (2016): *Myopic decisions of college students: Major choices and the impacts of merit based scholarships*, Ph.D. thesis, Middle Tennessee State University.
- Shah, M. and B. M. Steinberg (2019): “Workfare and human capital investment: Evidence from india,” *Journal of Human Resources*, 1117–9201R2.
- Sjoquist, D. L. and J. V. Winters (2015): “State merit aid programs and college major: A focus on stem,” *Journal of Labor Economics*, 33, 973–1006.
- Stecklov, G., P. Winters, J. Todd, and F. Regalia (2007): “Unintended effects of poverty programmes on childbearing in less developed countries: experimental evidence from latin america,” *Population Studies*, 61, 125–140.
- Tsaneva, M. and A. O’donoghue (2019): “The effect of a large-scale workfare program on child marriage in india,” *Working paper*.
- Zeitlin, A. (2011): “Understanding heterogeneity: Risk and learning in the adoption of agricultural technologies,” *Working paper*.
- Zibagwe, S., T. Nduna, and G. Dafuleya (2013): “Are social protection programmes child-sensitive?” *Development Southern Africa*, 30, 111–120.