Conditional Cash Transfer and Health: Evidence from Kazakhstan

by

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Abstract

Using experimental data from a randomized control trail of a conditional cash transfer program (CCT), I investigate the effects of the CCT benefits on household conditions such as labor supply outcomes of parents, household's income and household's financial behavior and on child health outcomes from poor households in rural areas in Almaty region, Kazakhstan. In response to receiving cash payments, mothers are more likely to have any paid job and to earn money through a work that takes place all year round while the probability of a father to be self-employed is declined. Additionally, I find that the CCT program had no significant impact on a probability of saving and earnings in the CCT beneficiary households. On the contrary, it seems that households are around 10 percentage points more likely to borrow money. Turning to health outcomes, I find a significant increase in a probability of intake of Vitamin A which is equally driven by girls and boys and it is larger in households with two or less children. Further investigation reveals that the impact on a consumption of Vitamin A may be working through training sessions and beneficiary households seem to substitute Vitamin A rich food with Vitamin A supplements.

JEL Classification: I18, I12, J21

Keywords: conditional cash transfers, child's health, labor outcomes

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1. Introduction

One of the most remarkable policy tools applied to reduce poverty and raise human capital across developing countries over the past few decades has been the conditional cash transfers (CCTs). CCTs provide continuous cash payments to poor families contingent on a range of behavioural preconditions. These conditions typically include an enrollment and regular attendance at a pre-school and systematic medical consultations at a health clinic. The rationale behind imposing conditions for young children is that as children grow, early investments in human capital will accumulate. Then eventually in response to aggregated human capital investments, child outcomes will improve which might lead to a reduction of poverty (Cahyadi et al., forthcoming). Santiago Levy, who is one of the main architects of Mexico's PROGRESA, stated "clearly, achieving good health is a cumulative process, and temporary investments in nutrition are of little help." (Levy, 2007, p.18).

On the other hand, cash transfers could boost household income and might reduce negative effects of sever illness, unemployment and other sudden income shock. Moreover, it allows poor households to reduce liquidity constrains that associated with human capital investments. For example, cash transfers can (at least partially) cover expenses related to the school enrollment, maintaining high attendance rate, and access to health services (Fiszbein and Schady, 2009). Overall, cash benefits through changing the expected returns to studying facilitate a shift of the investment levels toward the optimal. Then, it is

expected to observe a significant positive impact on the investments from CCT. This result follows from the fact that CCTs are composed of cash transfers and conditions. Therefore, (implicitly) it is assumed that the CCT benefits alone are not enough to generate total positive effects. Conditions such as enrollment at a pre-school, high attendance rate and regular medical checkups are required to further promote investments in child health and education.

Invented in the late 1990s, Mexico, Brazil and Bangladesh were amongst the first countries which adopted CCT programs. Today 63 countries implemented at least one CCT program (Bastagli et al., 2016). Andrews, Lopez and Baez (2014) however, find that out of 142 studies only 41 investigated effects of cash transfers on health and nutrition outcomes. Ranganathan and Lagarde (2012) review 13 CCT programs in low and middle income countries which have at least one condition related to health behaviour. They conclude that CCT programs have significantly increased an application of preventive measures, raised the rates of immunisation coverage, improved some health outcomes and promoted an adoption of better health behaviour.

I examine effects of the one-year conditional cash transfer program in Kazakhstan in Almaty oblast (province) on a set of health and household's labor market outcomes. 262 okrugs (sub-districts) were grouped in 110 pairs and out of each pair one okrug was randomly selected to the treatment and control groups. Then 60 pairs were randomly selected for survey interviews which in turn allows me to estimate causal effects of the program. Beneficiary households included those that have a family member of pre-school age and find to be poor based on the proxy means test. Moreover among recipient households, 17% had also a pregnant and/or lactating woman and around 3% had children between 0 and 16 years old that have a certificate of disability. Conditions of the CCT program included an enrollment at a pre-school and maintaining 85 percent attendance rate by pre-school aged children and visits to health centers and attending training classes on antenatal and post-

natal care by pregnant or lactating woman. Households in the treatment okrugs received monthly payments and depending on the beneficiary category, payment amounts ranged from KZT 3,600 (US$24) to KZT 5,200 (US$35). 1,173 households were interviewed for the baseline survey in 2011 and 2,289 households were interviewed in 2012 for the follow-up survey.

I find mixed impact of the CCT program on labor supply of parents. The probability of a father to have any paid jobs and work during agricultural and non-agricultural seasons is increased, however the impact is not statistically different from zero. On the other hand, while the likelihood of a father to work as a self-employee and to have all year around job declines in response to the CCT program, the effects are statistically significant only for the former category. The CCT program increased the probability of a mother to have any paid job and to earn money via a work that takes place all year round. The estimated coefficients are statistically significant at 1 percent level. It also appears that mothers are 9.4 percentage points less likely to work during agricultural season.

Moreover, it seems that beneficiary households are 10 percentage points more likely to borrow money. Household's monthly level of income earned through jobs during agricultural and non-agricultural seasons and jobs that took place all year around is decreased, though the coefficient is statistically not different from zero. Note that the magnitude of the estimates are very similar to the monthly cash transfers suggesting that substitution effects of cash payments dominated income effects. These mixed estimated results are in line with ambiguous theoretical predictions. The simple economic model of labor supply expects a person who receives an unexpected cash payments to work less and earn less. However, if cash transfers are attached to behavioral conditions such as child's enrolment at a pre-school, then due to increased amount of available time, the probability of parents to work should increase. That in turn might raise overall levels of a household's income (Baird, McKenzie and Özler, 2018).

The CCT program increased the likelihood of consumption of Vitamin A among beneficiary children by around 8 percentage points. This result is particularly important because Vitamin A deficiency leads to severe health problems (West Jr, 2002). Heterogeneity analysis revealed that the impact is equally driven by girls and boys and it is larger in households with two or less children. The treatment effect on children's consumption of Vitamin A is smaller in households where a head of household had more years of education. Moreover, in such households children are more likely to have fever or cough and more likely to have a consultation at a health center. However, all estimated coefficients are not statistically different from zero in a families where a head of household is a parent to a sampled child. The latter results suggest that household heads have little influence on health status of children and it might be parents who bear most of responsibility of children well-being.

The analysis shows that one potential mechanism through which the CCT program improved children Vitamin A intake is volunteer-led training sessions on childhood development. Additionally, it appears that beneficiary households tend to substitute Vitamin A rich diet with Vitamin A supplements. Evidence suggests that one day prior the follow-up survey, sampled children are less likely to consume Vitamin A rich food such as fruits, vegetables and meats. Further, a child with one sibling from recipient households is less likely to visit a health center in the last 5 months. Suggestive evidence implies that this is might due to increased probability of spending money on medical tests and because of training class on childhood development. These results help us uncover which components of the CCT program improve health outcomes and thus contribute to the literature on understanding of precise channels through which CCT programs work (Ranganathan and Lagarde, 2012).

The reminder of the thesis is organized as follows: Chapter 2 provides an overview of relevant literature. Chapter 3 describes an institutional background on pre-school system and children health care in Kazakhstan. Chapter 4 provides detailed description of the

setting, experimental design and data. Chapter 5 discusses an experimental validity and empirical strategy. Chapter 6 provides the results for household's labor conditions and for children health outcomes. Chapter 7 considers heterogeneous treatment effects and potential mechanisms through which the CCT affects main health outcomes. Finally in Chapter 8, I will conclude the findings.

2. Literature Review

Limiting the scope to articles which by exploiting field experiments, investigate effects of conditional cash transfers on health outcomes, this section provides an overview of the related literature. One of the first large scale CCT in Latin American, Mexico's PROGRESA, offered around 20-30% of a family income per every two months to poor households, on the conditions that (i) every two months, children of age up to 2 years receive immunization and attend nutrition monitoring centers, (ii) every four months, children of age between 2 and 5 have a consultation at nutrition monitoring clinics and (iii) pregnant and lactating women to receive prenatal or postpartum care. Gertler (2004) reported a decreased illness rate among treated children aged 0-35 months. Rivera et al. (2004) found that infants born in low-income rural regions in Mexico had lower rates of anemia and better height growth. These results were associated with the nutritional effects of PROGRESA where the intervention was cash transfers, supply of micronutrient fortified foods for pregnant and lactating women, children 4-23 months or underweight children between 2 and 4 years. Using linear and logistic model specifications, Fernald, Gertler and Neufeld (2008) focused on a sub-sample of children who had been receiving benefits of the CCT their whole lives. They found that children who were exposed to the program had higher height-for-age Z score, less likely to have stunted growth and less likely to be overweight. In contrast, Behrman and Hoddinott (2005) estimated no or a negative effect of the intervention on

child hight. However applying child fixed-effects to control for unobserved heterogeneity, they showed that children 12–36 months old experienced hight growth by over 1 cm per year in response to participating in the PROGRESA.

Another large conditional cash transfer program in Brazil, Bolsa Familia, provided cash transfers to poor households under a set of conditions: regular school attendance – 85% for children up to 15 years and 80% for children between 16 and 17 years old, frequent visits to health clinics of children below 7 years old as well as pregnant and breast-feeding women. Oliveira et al. (2007) found no effects of Bolsa Familia on child immunizations. Similarly, Morris et al. (2004*a*) estimated negative impact of Bolsa Alimentação[1] on weight gain among children who benefited from the program.

Programa de Asignación Familiar (family allowance programme) in Honduras provided cash, around 10% of a family monthly consumption, to poor households under conditions of regular school attendance and visits to health care clinics by both children and pregnant women. Morris et al. (2004*b*) showed that a number of antenatal care visits increased in response to the program while there was no impact of the intervention on a 10-day post-partum check-up. Additionally, there was no effects on a number of children consultations at a health centre during the last month as well as no impact on probability of children to be vaccinated for Measles or tetanus toxoid.

Maluccio and Flores (2005) investigated the effects of Nicaraguan Red de Protección Social (RPS) program. Eligible households from randomly assigned treatment group received bi-monthly cash transfers, around 20% of total family consumption, contingent on attending educational training classes and taking their children under 5 years old to health-

[1]Bolsa Alimentação is a smaller conditional cash transfer program in Brazil that later had been merged along with three other similar programs into Bolsa Familia. In order to receive cash transfer women were required to orderly attend health center for medical check-ups and follow vaccination schedules and children under 7 years old must comply with vaccination schedules and attend medical center for growth monitoring.

care center for preventive medical check-ups while older children – between 7 and 13 years old – must attend a school. The study found that RPS had a positive impact on a number of visits to a health center. Also, children under 5 years experienced an increase in height-for-age Z score and were less likely to stunned and underweighted. Barham and Maluccio (2009) showed that RPS had a positive effect on a vaccination coverage. The program led to a large rise of vaccination rates among children from households which were located far away from a health facility and had a mother with less years of education.

Unlike other cash transfer programs in Latin America, Bono de Desarrollo Humano (BDH) in Ecuador – a government-run program – under no conditions, distributed US $15 per month to eligible households with children in randomly treated districts. Paxson and Schady (2010) showed that although the unconditional cash transfer program had no overall impact on all measures of cognitive, behavioral and physical outcomes, the levels of hemoglobin and likelihood of receiving deworming treatments increased the poorest households in the treatment group. Another unconditional cash transfers in Kenya where the cash transfers were around US $400 PPP which corresponds to almost twice of a monthly family consumption was evaluated by Haushofer and Shapiro (2016). They find that due to the program, household monthly consumption has significantly increased and psychological well-being has improved while there was no impact on degrees of cortisol.

Evans, Holtemeyer and Kosec (2019) investigated a 2010 pilot CCT program in rural Tanzania. Households in the treatment group received a bi-monthly cash transfers up to US $36 conditional on regular visits to health centers by children aged 0–5 and people age 60 while children between 7 and 15 years old must be enrolled at a school and keep an attendance rate at 80 percent. The study showed that although clinic visits increased in midst of the intervention, the effects disappeared at the end of program. Additionally, the authors found that households in the treatment villages were more likely to participate in health insurance program run by the government, more likely to seek treatment when ill

and treat a health problem using the insurance. Cahyadi et al. (forthcoming) examined the long-term effects of CCT in Indonesia. Poor families with children or pregnant and/or lactating women in the treatment group received quarterly cash transfers conditional on the following requirements: children aged 0-6 must be immunized and be taking Vitamin A at least twice per year and must visit health facilities for growth monitoring check-ups. Six years after the program launched, the authors found a significant increase in a number of childbirth that used trained health professionals. They also showed that stunting among young children had decreased by 23 percent and the rates of school attendance of children younger than 15 years old increased.

3. Institutional Background in Kazakhstan

3.1. Pre-school System

Educational system in Kazakhstan is governed by the Law of Education which is enforced by the Ministry of Education and Sciences. Additionally, early child education is subject to an order of the Ministry of Education and Science No. 708 – "Regulations for organizing the activities of pre-school organizations". The main aims of pre-school education are to prepare children for school, develop mental and physical skills, enhance children's health and foster a healthy lifestyle. Children are taught to read, write, draw, and learn arithmetic and music.

Many early educational facilities such as kindergartens, mini-centers and zero classes were destroyed or sold off in 1990s. In order to meet high demand for pre-school education, the government of Kazakhstan has been facilitating building of kindergarten and school facilities, accelerating the process of obtaining a pre-school licensing and providing subsidies for private pre-schools for each child they enroll. This in turn lead to an increase of the rate of enrolment of children from 0 to 6 years of age at the pre-school from 23% in 2005 to 42% in 2010 (OECD/The World, 2015). In 2012, 71.5% of children from 3 to 6 years

old were attending some form of pre-school (Fimyar, Yakavets and Bridges, 2014).

3.2. Children Health Care

Since 2002 World Health Organization had officially declared Kazakhstan a poliomyelitis free country. The overall national immunization coverage in 2010 was 98 percent. Immunization rate for other vaccine-preventable diseases was the following: BCG was at 96%, measles-containing vaccine (MCV) at 98%, and DTP1 and DTP3 were at 99%. In line with the prophylactic vaccination policy, vaccine treatment against 11 infectious diseases is given to every child under age of two (Aringazina, Gulis and Allegrante, 2012).

Underweight children remains common phenomenon in many parts of the world. In 2011, around 5% of children under 5 years old were underweight. Additionally, the rate of underweight children in Kazakhstan has not changed since 1990. Mortality rate of children under 5 years old continues to decline worldwide as well as in Kazakhstan: in 2011 it was 29 per 1,000 live births. While an annual global number of new cases of tuberculosis is slightly increasing, in Kazakhstan the death rate is relatively constant at 22 per 100,000 among HIV-negative population (Organization, 2011).

In 2009, there were 7,660 rural settlements with a population of 7.4 million people. During Soviet period feldsher-midwifery posts (FAPs) were the primary place where the population sought professional health services. After the collapse of Soviet regime, many FAPs were in poor conditions. To restore the health system in rural areas, in 2006 the Ministry of Health established health institutions of a new kind: medical posts. Medical posts were larger than traditional FAPs and provided a broad set of services. By 2009, 1,718 rural physician ambulatories, 163 feldsher-midwifery posts (FAPs) and 3,847 medical posts provided health services for the population in rural areas (Katsaga et al., 2012).

4. Setting, Experimental Design and Data

4.1. BOTA Program and Experimental Design

Initially BOTA Foundation – a non-governmental organization founded by the Governments of Kazakhstan, U.S., and Switzerland[1] – was operating in Akmola and Kyzylorda provinces (oblasts) in 2009 reaching six by 2012. The one-year CCT program in Almaty oblasts started in 2011 aiming to improve lives of the children in poor families. Its short-term aims were to decrease poverty and increase accessibility to education facilities and social sector services. This in turn should promote long-run development of human capital via better education and improved health outcomes. The program targeted the poorest 30 percent of the population. O'Brien et al. (2013) provided primary quantitative report of the main results of BOTA CCT.

To determine eligibility, households (i) must have a family member that fit in one of the following categories:

[1]The Foundation was established as an institution that would help to return more than US$115 million which were recovered from an account in Switzerland to support poor children, youth, and their families in Kazakhstan.

1. Pre-school-age children (four years upwards)

2. Children with disabilities

3. Pregnant women or those with infants under 12 months

4. School-dropouts aged 16–19

and (ii) must be found to be poor according to the results of a poverty test – the proxy means test (PMT). BOTA used data from national Household Budget Surveys (HBS)[2] to construct most reliable predictors which characterize a household in poverty. Based on the results of PMT, in 2012 64% eligible families lived below poverty line (O'Brien et al., 2013). Note that while there are four general categories, the primary criteria for a household to be eligible for the CCT is to have a child of pre-school age. In other words, households that include family member who fits into categories 2-4 are households among those with a pre-school aged child.

Treatment households received payments every month which were transferred to a bank account that was specifically opened for every beneficiary household. Payment amounts ranged from KZT 3,600 (US$24) to KZT 5,200 (US$35) depending on the beneficiary category. Average cash payments amount amongst beneficiaries was 4,258 KZT which corresponds to around 5% of the mean total monthly household consumption. An electronic bank card was used to withdraw cash from a cash machine (ATM). Approximately 83% of beneficiary households attended volunteer-led training sessions on how to use the bank card. Since ATMs are typically located in towns or district's centers, payment withdraws were followed by travel expenses which correspond to around 21% of CCT cash transfers.

[2]HBS is generated by the National Statistical Agency in Kazakhstan with assistance from the World Bank.

Although cash transfers were made at the household level, conditions applied at the individual level[3]. Table 1 presents required conditions to receive cash payments across categories. Households with children of pre-school age are have to have them enrolled at a pre-school and maintain 85% attendance rate.

Table 1: Required Conditions to the Recipients of the CCT

Categories	Conditions
1. Pre-school children	The children must be enrolled in a pre-school and maintain 85 percent attendance rate of the days that it is operating.
2. Pregnant and lactating women	In the last two months, the woman must have visited a health center for an antenatal or a postnatal care and attended classes on antenatal and postnatal care.
3. Children with disabilities	In the previous two months, the carer should have attended training classes on home-based care for children with disabilities.

Notes : There were no conditions to receive the first cash transfer across all categories

Conditions for households with a family members who fits into the second or the third categories were to visit health center and attend training sessions on antenatal and postnatal care and attend training classes on a home-based care for children with disabilities respectively. Training sessions were led by volunteers who were mostly women from within each okrug. Volunteers typically had a history of working for the public in positions such as nurses, teachers or social worker. Candidates for volunteers were proposed by a local government office and were trained by BOTA.

Excluding 3 large towns with a population of at least 50,000, BOTA selected the remaining 16 predominantly rural rayons (a rayon is a district in oblast) in Almaty oblast for the CCT program. Then, out of 262 okrugs (sub-districts) – a village, or group of villages governed by a mayor – BOTA matched 226 okrugs into 113 pairs by comparing factors

[3]There is no administrative data on compliance with conditions. However, in the follow-up survey households were asked: "What are/were the consequences if these [program] requirements are not met?" and "Are you currently enrolled on the program?". Around 88% thought that not meeting conditions means exiting the program and around 87% were enrolled in the program at the time of final survey.

such as their location, the distance to the district center and the population size[4]. Because BOTA had already lunched the intervention in at least one of okrug, three pairs of okrugs were excluded. Then from each pair, one okrug was randomly assigned to the treatment group and the other to the control group. Next BOTA randomly selected 60 of the 110 pairs to conduct surveys. Since some pairs were randomly selected twice, BOTA ended up with 54 unique pairs – 54 okrugs in treatment group and 54 okrugs in control group. So, the unit of randomization is okrug.

Lists of all children were obtained from local government offices in both treatment and control okrugs. Then 72 children of eligible age in each okrug were randomly selected. Children who are at least four years old at the day of interview and will be no older than seven years at the end of the program considered to be of the eligible age. BOTA went to each household to administer the proxy means test. BOTA ended up with a pool of 5,388 eligible children that have found to be poor based on the results of the proxy mean test. Lastly at the baseline, 10 eligible children in each okrug were randomly selected for the full interview. After one year, the same households as at the baseline round plus additional 10 children that were randomly chosen among eligible households in each okrug were interview for the follow-up survey. In total, the follow-up survey consists of 2,289 households with one sampled child. In addition to a sampled child, 388 (17%) households from the follow-up round had a woman who was pregnant or has had a delivery in the last 12 months and 79 (3.45%) households have children between 0 and 16 years old that have a certificate of disability. Moreover, 574 (25%) families had children aged 16-19[5]. Figure 1 graphically illustrates the experimental design.

[4]Some okrugs were excluded because they were consider as towns.

[5]I lack administrative data whether any of these children fall under the last category.

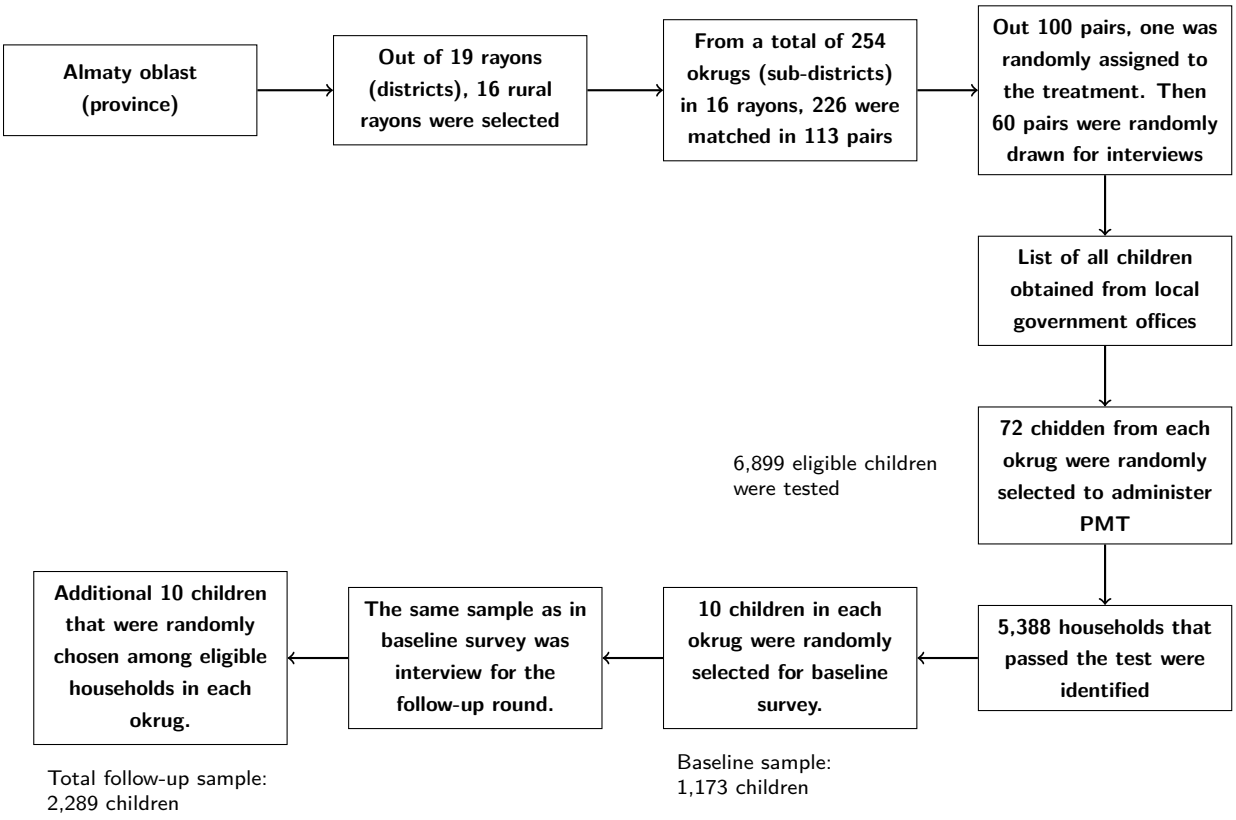

Figure 1: Graphical Illustration of the Experimental Design

4.2. Data

In investigating the impact of the CCT on the health outcomes of children, I restrict data to the sampled children only, i.e., data on pre-school-age children from the category 1 is used. Although the targeted sample was 1,200 children, the baseline survey included 1,173 children. Out of all interviewed households, there were eight households that by chance had two randomly selected children leading to a sample of 1,165 households. Due to a construction of the data, one of the children in these eight households was dropped. In the follow-up round, one sampled child per household was interviewed.

Both the baseline survey and the follow-up survey were collected by BOTA. Panel A in Table 2 reports summary statistics on whether a child was ever enrolled at a pre-school, an enrolment rate at the time of interviews for the follow-up survey and average time of

enrolment at a pre-school. A variable ever enrolled measures whether a child was ever enrolled at a pre-school before or during the intervention. A variable currently enrolled is equals one if a child who were ever enrolled at a pre-school was still enrolled or entered Class 1 of a school[6] at the follow-up.

As shown in Panel A, an overall number of children that were ever enrolled at pre-school in a treatment group nearly doubled from 47% at the baseline survey to 86% at the follow-up survey. The rate of pre-school enrolment amongst children from beneficiary households also increased from 56% at the beginning of the program to 93% at the follow-up round. These results are expected as the condition to receive cash transfers is to enroll at pre-school. In contrast, the rate of enrollment in control group increased from 37% to 69%.

From the follow-up survey, 95% of children from treatment okrugs were currently enrolled at the pre-school or were now in Class 1 of a school. High rates of ever enrolled and enrolment at the time of follow-up round are expected as children at a time of follow-up interviews were one year older and were anticipated to attend pre-school in preparation to transit to Class 1. This in turn can partially explain a raise of the enrollment rates and levels of current enrolment at the pre-school in both treatment group and control group. Also, average number of months attending the pre-school is around 11 months in the treatment group. This might indicate that the prevalent majority of households that were receiving payments stayed in the program.

While cash payments were only available to households in the treatment okrugs, some families did not take up the benefits. Using both baseline and follow-up surveys, in Panel B in Table 2 I show a number of households that actually received cash transfers across

[6]Children who were in Class 1 are included to account for these children who were 6 years old when the baseline survey was conducted

Table 2: Descriptive Statistics

	Treatment group				Control group	
	Eligible for cash transfer		Received cash transfer			
Panel A: Pre-school enrollment status	Mean	Obs	Mean	Obs	Mean	Obs
Ever enrolled pre-school? (baseline)	0.47	589	0.57	293	0.37	584
	(0.50)		(0.50)		(0.48)	
Ever enrolled pre-school? (follow-up)	0.86	1170	0.93	867	0.69	1119
	(0.34)		(0.25)		(0.46)	
Currently enrolled (of those ever enrolled)?	0.95	1,010	0.95	808	0.94	768
	(0.22)		(0.21)		(0.23)	
Mean time in pre-school (months)	10.53	1170	11.60	867	7.22	1119
	(9.75)		(9.30)		(9.82)	
	Treatment group			Control group		
Panel B: Received cash transfer?	Yes	No	Obs	Yes	No	Obs
Number of households (baseline)	295	290	585	0	580	580
	(50.4%)	(49.6 %)		(0%)	(110%)	
Number of households (follow-up)	867	303	1,170	0	1,119	1,119
	(74.1%)	(25.9%)		(0%)	(110%)	

Notes : Reported descriptive statistic is for children eligible for CCT, for actual beneficiary of cash transfers and for children in control group. Ever attended pre-school equals one if a child eligible for the CCT that received benefits attended pre-school facilities. Currently enrolled equals one if a child eligible for the CCT that received benefits is still attending pre-school. In Panel A, using baseline and follow-up surveys the number of families that received cash payments in the treatment group and in the control group are reported.

treatment and control groups. At the baseline, 50 percent of households in the treatment group received cash payments and no one in the control group received transfers. 74% of households in the treatment okrugs became beneficiaries of cash payments and nobody in the control okrugs received CCT benefits at the follow-up survey.

O'Brien et al. (2013) identified a lack of awareness of the program which accounted for about 26% of a total number of non-enrolled households as one of the main reasons why some eligible households did not participated in the program. Additionally, they note that transaction costs, the fear of being stigmatized and a design and implementation of cash payments led to a relatively low take-up rate. Importantly because nobody received payments in the control group, there is no evidence of compliance problem in the control okrugs while households in the treatment okrugs partially (or imperfectly) complied with the treatment protocol.

5. Empirical Strategy

5.1. Experimental Validity

The internal validity of a randomized control trail allows to make causal inferences. One of the assumptions of the valid experimental design is the successful balance of household's characteristics across the control and treatment groups. Using baseline survey, I first show that households were randomly assigned to the treatment and control groups. Table 3 reports the baseline statistics and a randomization balance for BOTA CCT program.

In Column 1 in Table 3, the dependent variable – CCT – is a dummy variable which equals one if a child is in the treatment group and zero otherwise is regressed with respect to predetermined covariates. The estimates show that none of the characteristics predicts the probability of a child to be assigned to the conditional cash transfer program. F-tests with p-value of 0.561 for the joint significance of all the demographic variables is insignificant. Therefore, it does not reject a hypothesis that all baseline estimates are jointly equal to zero. This in turn implies that the randomization led to the balance of predetermined baseline characteristics across treatment and control groups.

Column 2 in Table 3 shows means of household characteristics. It appears that the mean age of sampled children is four years old and there was nearly equal distribution of male and female children between okrugs in the treatment and control group. Moreover,

Table 3: Baseline Statistics and Randomization Balance

	CCT	Mean(s.d)
	(1)	(2)
Children Characteristics:		
Age	0.038	4.373
	(0.035)	(0.506)
Child's gender	-0.011	0.509
	(0.025)	(0.500)
Child consulted a health care	0.012	0.226
provider in last 30 days	(0.041)	(0.418)
Household Head Characteristics:		
HH's gender	-0.005	0.811
	(0.038)	(0.392)
HH's tertiary education	0.044	0.230
	(0.035)	(0.421)
In last 12 months had any paid work	0.011	0.576
	(0.037)	(0.494)
Relation to sampled child	0.031	0.611
	(0.046)	(0.488)
Household Characteristics:		
Paid for electricity?	-0.064	0.983
	(0.131)	(0.130)
Paid for cold water?	-0.114	0.578
	(0.076)	(0.494)
Owned/inherited house	0.027	0.861
	(0.047)	(0.346)
p-value of joint F-test	0.561	
Observations	1165	
R^2	0.029	

Notes : HH's gender equals one If household head is a male. Household head's tertiary education equals one when he/she graduated from a 2-year college or a 4-year university. In last 12 months had any paid work as employee or self-employed equals one if head of household earned any income as employee or self-employed. Relation to sampled child equals one if household head is a parent to a sampled child. Paid for electricity or for cold water equals one if a household pays for electricity or for cold water. Owned/inherited house equals one if a house is either owned and paid off or inherited by a household. Raion fixed effects is applied. Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

in over 80% of households, the households head is a male. 23% and 61% of the sample reported that their household head graduated 2-year college or a 4-year university and that a household head is a parent to a sampled child, respectively. Additionally, 98%, 58% and 86% of the sample reported that their house had electricity, cold water and it is either owned or inherited, respectively.

Since 1,124 households in the follow-up survey were not interviewed at the baseline, I compare follow-up sample means in the treatment and control okrugs. In Table 4 in Columns 1, 3 and 5, the dependent variable equals one if households had been interviewed in the entire follow-up survey, in the follow-up survey only or in both surveys. There is a balance on children, household head and household characteristics between treatment and control groups across three samples.

From 1,165 households at the baseline, 79 households in the treatment okrugs and 120 in the control okrugs had not been interviewed at the follow-up survey leading to 17% overall attrition level. In order to maintain a desired sample size - 2,400 households – BOTA had randomly replaced households from the same okrug for the follow-up interviews. At the follow-up round the replacement rate was 13%. The most common reasons for a replacement were the following: household went away for extended period – 31%, refused to participate – 22%, child moved to different household – 20%, moved away - 17%.

The means of observed characteristics between attritors and non-attritors using data from the baseline survey are reported in Appendix in Table A.13. The estimates are quite similar. Nevertheless, a differential attrition is a threat to the experimental design. Table 5 presents a link between survey attrition and baseline characteristics. In Column 1 in Table 5, the outcome is a dummy variable equals one if a household from baseline survey was interviewed at the follow-up survey is regressed on a treatment indicator which equals one if a household is in the treatment okrugs and zero otherwise. Pre-determined baseline characteristics are included in Column 2. Households which were assigned to the treatment

Table 4: Follow-up Statistics and Randomization Balance

	Baseline & Follow-up		Follow-up only		Interviewed in both surveys	
	CCT (1)	Mean (2)	CCT (3)	Mean (4)	CCT (5)	Mean (6)
Children Characteristics:						
Age	0.062	5.314	0.077*	5.322	0.045	5.302
	(0.041)	(0.497)	(0.045)	(0.497)	(0.049)	(0.496)
Child's gender	0.012	0.517	0.023	0.521	-0.002	0.512
	(0.021)	(0.500)	(0.030)	(0.500)	(0.029)	(0.500)
Household Head Characteristics:						
HH's gender	-0.018	0.829	-0.015	0.825	-0.021	0.833
	(0.030)	(0.377)	(0.040)	(0.380)	(0.049)	(0.373)
HH's tertiary education	-0.001	0.225	-0.043	0.226	0.056	0.223
	(0.032)	(0.417)	(0.036)	(0.418)	(0.044)	(0.416)
In last 12 months had any paid work	0.038	0.520	0.032	0.528	0.042	0.509
	(0.035)	(0.500)	(0.039)	(0.499)	(0.047)	(0.500)
Relation to sampled child	-0.000	0.659	0.006	0.665	-0.007	0.651
	(0.036)	(0.474)	(0.044)	(0.472)	(0.051)	(0.477)
Household Characteristics:						
Paid for electricity?	0.052	0.993	0.064	0.993	0.036	0.992
	(0.164)	(0.086)	(0.202)	(0.082)	(0.205)	(0.091)
Paid for cold water?	-0.044	0.551	-0.040	0.556	-0.050	0.545
	(0.075)	(0.498)	(0.077)	(0.497)	(0.077)	(0.498)
Owned/inherited house	0.057	0.892	0.040	0.890	0.086	0.894
	(0.058)	(0.310)	(0.064)	(0.313)	(0.070)	(0.307)
p-value from test of joint signif.	0.8028		0.6665		0.7754	
Observations	2289	2289	1323	1323	966	966
R^2	0.008		0.011		0.010	

Notes : Descriptive statistics and randomization balance check are shown across three samples: the entire follow-up survey, households that were surveyed in the follow-up only and households that were interviewed in both surveys. Columns 1, 3 and 5 report results from OLS regression where the dependent variable is a dummy equals one if a household in the treatment okrugs and zero otherwise. Columns 2, 4 and 6 presents averages along with standard deviations of observed characteristics. Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, $p < 0.01$.

group, controlling for the set of baseline characteristics, were 6.6 percentage points more likely to remain in the sample. This implies a negative attrition (or retention) bias.

Following literature (Kim, 2016; Evans, Holtemeyer and Kosec, 2019), in Column 3 the documented attrition was tested to find if it was differential by baseline characteristics. The treatment variable – CCT – does not significantly predict attrition. Additionally, even though there seems to be a relation between the survey attrition and some of the

Table 5: Attrition Analysis using Control Variables from Baseline Survey

Dependent variable	Households in follow-up survey		
	(1)	(2)	(3)
CCT	0.070***	0.066***	0.018
	(0.022)	(0.022)	(0.287)
Age		-0.016	-0.023
		(0.020)	(0.035)
Child's gender		0.021	0.021
		(0.021)	(0.028)
HH's gender		-0.008	-0.023
		(0.031)	(0.042)
HH's tertiary education		0.004	0.031
		(0.024)	(0.033)
Relation to sampled child		0.046*	0.088**
		(0.025)	(0.039)
Paid for electricity?		0.110	0.166
		(0.088)	(0.171)
Paid for cold water?		-0.030	-0.082**
		(0.023)	(0.036)
Owned/inherited house		0.058	0.044
		(0.035)	(0.047)
CCT×Age			0.026
			(0.043)
CCT×Child's gender			-0.001
			(0.042)
CCT×HH's gender			0.040
			(0.062)
CCT×HH's tertiary education			-0.053
			(0.047)
CCT×Relation to sampled child			-0.093*
			(0.050)
CCT×Paid for electricity?			-0.125
			(0.196)
CCT×Paid for cold water?			0.107**
			(0.045)
CCT×Owned/inherited house			0.038
			(0.070)
Constant	0.870***	0.762***	0.780***
	(0.041)	(0.142)	(0.243)
Fixed Effects	Yes	Yes	Yes
p-value from test of joint signif.		0.3245	0.1319
Observations	1165	1165	1165
R^2	0.073	0.082	0.040

Notes : The set of demographic characteristics is from baseline survey. All specifications are OLS models with raion fixed effects. Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

baseline characteristics, F-statistics for the joint significance of baseline characteristics and all interaction terms suggests that these estimates are not jointly significant. Nevertheless, there is still a possibility that some selective attrition could compromised the results. Athey and Imbens (2017, section 4.4) suggest that by controlling for a set of covariate, the impact of biases, including these originated from attrition, may be removed.

Thus, in order to deal with (or at least mitigate) effects from the attrition bias and to use the entire follow-up survey in capturing the impact of the program on health outcomes and household's labor market outcomes, a vector of control variables is composed of two parts. First part includes a vector of baseline characteristics for these children that had been interviewed in both baseline and follow-up surveys. This is done to account for the resulted attrition bias coming from this specific half of the follow-up sample. Second part contains control characteristics for children who had been interviewed only at the follow-up survey.

5.2. Empirical Strategy

The empirical strategy starts with the following basic model specification:

$$Y_{isj} = \beta_0 + \beta_1 CCT_{isj} + X_{isj}\gamma + \alpha_j + \varepsilon_{isj} \tag{1}$$

where Y_{isj} is a set of the outcome variables for household i in sub-district s in district j. CCT_{isj} is a variable equals one if a household is in the treatment group, while α_j is a set of district (raion) fixed effects. The standard errors are clustered by sub-district (okrug) level which is also the level of randomization.

X_{isj} corresponds to a set of control variables that were generated using both baseline and follow-up surveys. More specifically, two sets of control variables are used. For the model specification with labor market outcomes of parents as dependent variables, the control

variables are the following: a sampled child's age and gender and whether a household pays for electricity, cold water and if it owns or inherited the house. Studying effects of CCT on health outcomes the control variables are children characteristics such as age, gender, household head characteristics like gender, tertiary education, relationship to sampled child[1], and whether household pays for electricity, cold water and if a family owns or inherited the house.

The equation (1) allows to estimate Intent-to-Treat Effect (ITT) – a comparison that is based on the random assignment. In other words, OLS results from the equation (1) capture the effects of access to CCT on health outcomes. However, interpreting estimates from the equation (1) as an impact of CCT program on outcomes of interest is misleading due to a selection bias. Households that actually received the cash transfers are a self-selected subgroup of those that were eligible to the treatment. To solve this selection problem, an instrumental variable method is applied (Angrist and Pischke, 2008). Controlling for the observed characteristics, a variable which indicates whether a household had received CCT benefits ($ReceivedCCT_{isj}$) is instrumented with the indicator of random assignment to the treatment.

$$Y_{isj} = \beta_0 + \beta_1 ReceivedCCT_{isj} + X_{isj}\gamma + \alpha_j + \varepsilon_{isj} \tag{2}$$

where X_{isj} is the same set of control variables from the equation (1) and α_j is raion fixed effects. The estimated coefficient of interest is $\widehat{\beta}_1$ which captures Local Average Treatment Effect (LATE). Since nobody in control group received CCT and around 74% of households in the treatment group received CCT leading to so-called "one-sided non-compliance", LATE is also the Average Treatment on the Treated (ATT).

[1]Because some children have only one parent while every family has a household head, household head's covariates are used in specifications with health outcomes

Table 6 provides the first stage estimates from the equation (2). The estimates are statistically significant at 1% level. In the model specifications with and without control variables, there appear to be a strong first stage. By the one-year follow-up round, the probability to receive a cash payments in the treatment group is increased by around 74 percentage points (p-values is less than 0.001). Also, there is less likely to be a concern of "weak instrument" as F-statistics are over 3,000.

Table 6: First-Stage Regression

Outcome:	Received CCT	
	(1)	(2)
CCT	0.740***	0.738***
	(0.023)	(0.023)
Controls	No	Yes
Fixed effects	Yes	Yes
Observations	2289	2289
F-statistic	3334.50	3322.74

Notes : This table reports first-stage regressions of CCT receipt status ("Received CCT") on baseline sub-district (okrug) treatment assignment. Column 1 reports results excluding control variables. Column 2 reports results including control variables. In the last row, F-statistics from a Cragg-Donald Wald test of the hypothesis regarding the strength of the instruments is reported. Robust standard errors clustered by okrugs (sub-district) are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Raion (district) fixed effects is implemented in both model specifications.

One of the main assumption of IV method in a framework of randomized control trials is an independence assumption – the instrument is as good as randomly assigned, which seem to hold as from Table 3, there is no statistically significant difference in predetermined characteristics between households in treatment and control groups before the intervention. Because sub-districts were randomly assigned to the treatment and control groups, the

exclusion restriction assumption most likely holds too. Then assuming that monotonicity assumption is not violated, estimates from the second-stage of 2SLS can be interpreted as LATE which is also equals to ATT.

Because randomization was done on sub-districts (okrugs) level, the spillovers across sub-districts are highly unlikely. That is because the provision of health and education services is maintained within each sub-district. Additionally, as noted before, descriptive statistics in Panel A in Table 2 show that none of the households in control group received the cash transfers.

6. Results

6.1. Household Labor Conditions

Before investigating an impact of conditional cash transfers on the labor market outcomes, it is useful to discuss expected effects of a CCT program from a theoretical point of view. The standard simple economic model of labor supply predicts that a person who receives an unexpected cash payments should work less and earn less. However, there are mechanisms that could lead to different individual responses to cash transfers. One of such channels is behavioral conditions attached to cash transfers. In case of a requirement to regularly attend a pre-school, an employment of children declines due to less available time to work while accessible time of parents to work should increase which subsequently may raise a household's income (Baird, McKenzie and Özler, 2018). Overall, conditional cash transfers have ambiguous effects on labor market outcomes of adults because income effects and the substitution effect of cash payments work in opposite directions.

I begin by examining whether the program had affected labor market outcomes of parents of sampled children. Table 7 reports the effects of CCT on various employment outcomes of the a father of sampled child where each dependent variable is a dummy variable indicating whether in the last 12 months a father worked as an employee or was in self-employment, had done any paid work, worked during agricultural and non-agricultural

seasons, had an all year round job. In Panel A, I examine effects of offering conditional cash transfers on father's employment outcomes, while in Panel B, I estimate the average treatment effects of CCT on treated using IV method.

Table 7: Effects of Cash Transfer Program on Father's Employment in the Last 12 Months

	Father was employed?	Father was self-employed?	Father worked during agricultural season?	Father worked during non-agricultural season?	Father worked all year round?
	(1)	(2)	(3)	(4)	(5)
			Panel A: Intent-to-Treat		
CCT	0.020	-0.045*	0.005	0.013	-0.012
	(0.025)	(0.024)	(0.033)	(0.021)	(0.032)
R^2	0.073	0.037	0.101	0.151	0.104
			Panel B: Second-stage of IV		
Received CCT	0.027	-0.060*	0.007	0.018	-0.016
	(0.034)	(0.032)	(0.045)	(0.028)	(0.044)
R^2	0.073	0.038	0.101	0.150	0.106
Mean Outcome in Control Group	0.637	0.258	0.313	0.129	0.706
Fixed effects	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	1994	1994	1668	1667	1668

Notes : Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Raion (district) fixed effects is implemented in all model specifications. Control variables include the following: children characteristics such as age, gender, household's controls such as household pays for electricity, for cold water and whether it owns or inherited the house. In Panel B, coefficients from the second-stage of 2SLS are reported while Panel C shows the first-stage of 2SLS. The mean outcomes in the control group reported for both OLS and IV model specifications.

Controlling for observed characteristics, I find an increase in a probability of a father to be employed but the impact is not statistically significant. On the other hand, an access to cash payments had negative effects on probability of a father to be self-employed. Specifically, the estimate imply that the offer to CCT program led to a 4.5 percentage point decrease in the probability of a father to earned any money in self-employment. The documented negative effect is small: as around 26% fathers in the control group were self-employed, the 4.5 percentage point decrease represents around 6 percent raise in the

fraction of fathers who were not self-employed. The offer to the treatment has increased the probability of a father to have a job during agricultural and non-agricultural seasons but the impact is not statistically detectable. I find negative effect on a father to work all year around however, the estimates are not statistically significant.

As it shown in Panel B, only an estimate in Column 2 is statistically significant at 10% level and it increased from 0.045 to 0.060 while other coefficients remained insignificant. They suggest that as with the access to the CTT, there is a very small and limited impact of the CCT on employment rates of a father.

Next, I investigate the effects of the program on mother's employment outcomes. Table 8 contains results from OLS regressions in Panel A and estimates from the second-stage of IV in Panel B. Controlling for demographic variables, the access to the program increases a probability of mother being employed by 6.2 percentage points (Panel A). The results in Panel B show increase paid employment of mother of 8.3 percentage points. Relative to the mean in the control group of 27.7 percent, this implies a 30 percent raise in mother's paid employment. I do not observe an increase in a probability of a mother to be self-employed or work during non-agricultural season.

The probability of mother to work during agricultural season declines by 6.7 percentage points in response to the treatment offer and by 9.4 percentage points due to the cash transfers. Relative to the average outcome in the control group of 16.8 percent, this implies a 56% reduction in paid work during agricultural season. Also in Column 5 in Table 8, there are evidence that a probability of a mother to work all year around increases due to both the access to intervention and the CCT itself. The results from IV method imply 10 percentage points increase which corresponds to 12% increase from the control average of 83.8 percent. Lastly, I find no statistically significant impact of the CCT on mothers to be self-employed or work during non-agricultural season.

Table 9 reports the impact of the access to the program and the treatment effects on

Table 8: Effects of Cash Transfer Program on Mother's Employment in the Last 12 Months

	Mother was employed?	Mother was self-employed?	Mother worked during agricultural season?	Mother worked during non-agricultural season?	Mother worked all year round?
	(1)	(2)	(3)	(4)	(5)
			Panel A: Intent-to-Treat		
CCT	0.062***	-0.011	-0.067**	-0.002	0.071***
	(0.020)	(0.011)	(0.026)	(0.010)	(0.027)
R^2	0.021	0.030	0.135	0.065	0.130
			Panel B: Second-stage of IV		
Received CCT	0.083***	-0.015	-0.094***	-0.003	0.101***
	(0.026)	(0.015)	(0.036)	(0.014)	(0.037)
R^2	0.015	0.031	0.128	0.065	0.126
Mean Outcome in Control Group	0.277	0.056	0.168	0.024	0.838
Fixed effects	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	2141	2141	735	735	735

Notes : Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Raion (district) fixed effects is implemented in all model specifications. Control variables include the following: children characteristics such as age, gender, and household's controls such as household pays for electricity, for cold water and whether it owns or inherited the house. In Panel B, coefficients from the second-stage of 2SLS are reported while Panel C shows the first-stage of 2SLS. The mean outcomes in the control group reported for both OLS and IV model specifications.

treat of cash payments on a household's income level and a likelihood of having savings and debts. Each row reports estimates of dependent variables from separate regressions. Has savings is dummy variables equal one if currently a household has any saving in bank account, with a church/mosque or community group, with friends and family, in cash safely stored somewhere or have a "chernaya kassa" or emergency fund. Borrowed money coded as one if a household has any debts or owed any money to anybody. It seems that beneficiary households do not save: the estimated coefficient in the first row is although positive but statistically insignificant and quite small. On the other hand, households are 10.2 percentage points more likely to owe money at the follow-up survey. The impact corresponds to 17.7% increase from the control average of 57.7 percent. This evidence

suggests that a steady stream of cash payments encourage households to borrow money and do not have economically important effects on household's saving behavior.

The dependent variable – earned income – is a household's monthly income that was earned through (i) agricultural and (ii) non-agricultural jobs and (iii) any work that took place all year round measured in local currency (KZT). In both OLS and IV models, I find no statistically significant evidence of an impact on household earnings from the access to the program or from the program. Note that the magnitude of the IV estimates are quite similar to the monthly cash transfers.

Table 9: Effects of Cash Transfer Program on Earned Income, Debt and Savings

	OLS results	IV results	Control Mean
	(1)	(2)	(3)
Has savings?	0.009	0.010	0.045
	(0.011)	(0.014)	
Borrowed money?	0.075***	0.102***	0.577
	(0.027)	(0.036)	
Earned income	-2625.200	-3555.947	59133.44
	(3144.317)	(4213.341)	

Notes : Control variables include the following: children characteristics such as age, gender, and household's controls such as household pays for electricity, for cold water and whether it owns or inherited the house. Raion (district) fixed effects is implemented in all model specifications. Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Considering documented positive effects of cash transfers on a mother being employed or have a job all year around, the negative effect on earned income in the Table 9, at the first glance, might seem surprising. However, the lack of administrative data on monthly income from parents working as employee and being engaged in self-employment, the variable "earned income" only partially accounts a possible total earned income in a household.

Moreover, the program decreases a probability of a mother to have a job during agricultural season which is included in the "earned income" variable. Lastly, I observe negative and no impact of the program on father's employment outcomes[1].

Taken estimated results in the last row in Table 9, effects of the CCT program on employment outcomes of parents and the theory of labor supply together, the overall impact of BOTA CCT on household labor market's outcomes seems to be less puzzling. It appears that substitution effects of cash payments dominates income effects and the observed mean monthly household income is reduced by an amount roughly equal to the CCT benefits.

6.2. Children Health Outcomes

In this section, I examine the impact of the CCT on children health outcomes. Table 10 shows results of OLS regressions in Panel A and coefficients from IV regressions in Panel B. It appears that intake of Vitamin A/Polyvitamin increased by around 6 percentage points in response to the access to the CCT. The effects are statistically significant[2]. IV results from the second-stage suggest that a probability of intake of Vitamin A/Polyvitamin for a child in household from treatment group is increased by around 8.2 percentage points in response to the receiving CCT. The coefficient is statistically significant at 1% level. It implies that the CCT program increased Vitamin A/Polyvitamin intake by 50% relative

[1]In Appendix Table A.14, I performed the same exercise as in Table 7 on employment outcomes of household heads. The results are similar in their magnitude: the coefficients of the dependent variable whether household head was self-employed is negative but no longer statistically significant while all other estimates are also statistically not different from zero. This is an expected results as in 83% and 67% of interviewed household in the follow-up survey report that a household head is a male and a parent to the sample child respectively.

[2]In Appendix Table A.15, a logit model yields almost identical results.

to 16.5 percent average in the control group. This results may have important implications. West Jr (2002) argue that a deficiency of Vitamin A can lead to xerophthalmia a consequence of which is a blindness. It also can raise the risk of death and can lead to a range of other health related issues.

Table 10: Effects of Cash Transfer Program on Child's Health Outcomes

	Received a Vitamin A /Polyvitamin	Received iron tablets	Has child had diarrhoea?	Has child had fever/cough?	Child visited health center last month	Child visited health center in last 5 months
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A: Intent-to-Treat			
CCT	0.060***	0.012	-0.007	-0.013	0.011	0.020
	(0.018)	(0.010)	(0.010)	(0.021)	(0.022)	(0.035)
R^2	0.057	0.014	0.023	0.029	0.046	0.242
			Panel B: Second-stage of IV			
Received CCT	0.082***	0.016	-0.010	-0.018	0.015	0.028
	(0.024)	(0.014)	(0.014)	(0.028)	(0.030)	(0.047)
R^2	0.055	0.014	0.023	0.030	0.046	0.242
Mean outcome in Control Group	0.165	0.071	0.062	0.216	0.193	0.458
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2289	2289	2289	2289	2289	2289

Notes : Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Raion (district) fixed effects is implemented in all model specifications. Control variables include the following: children characteristics such as age, gender, household head characteristics like gender, tertiary education, relationship to sampled child, household pays for electricity, cold water and whether household owns or inherited the house. In Panel B, coefficients of marginal effects at the mean from a logit model are reported. In the mean outcomes in the control group reported for both OLS and logit model specifications.

I observe no detectable impact on a probability of children to receive iron tablets. It seems that the CCT decreased a probability of children to have a diarrhoea and a fever or a cough in the last 1 month but the effects are not statistically significant. Although the rate of children to visit health care provider in the last 30 days and in the last 2 months has increased due to the cash payments, the impact is not significant.

7. Heterogeneous Treatment Effects and Potential Mechanisms

7.1. Estimation Method at the Subgroup Level

In order to estimate the impact of CCT on several subgroups, I slightly modify equation (2):

$$Y_{isj} = \beta_0 + \beta_1 \mathcal{G}_i + \beta_2 ReceivedCCT_{isj} + \beta_3 ReceivedCCT_{isj} \times \mathcal{G}_i + X_{isj}\gamma + \alpha_j + \varepsilon_{isj} \quad (3)$$

where $\mathcal{G}_i$ is a range of subgroups of interest and $ReceivedCCT_{isj} \times \mathcal{G}_i$ represent the interaction between the subgroups and the indicator variable for receiving cash benefits. Heterogeneity treatment impact is investigated by gender, across households with one or two children [1], across household head's level of education and by relationship of head of household to a sample child.

Equation (3) includes two endogenous variables: $ReceivedCCT_{isj}$ and $ReceivedCCT_{isj} \times \mathcal{G}_i$ and therefore requires at least two instruments. I apply previously used instrument in-

[1]Out of the total sample, 6.8% and 32.5% of households had one child and two or less children respectively. Thus, I do not consider households with a single child due to a small sample size. Note that the average age of children across families is around 7.5 and average number of children is 3.2.

dicating the random assignment to the treatment for endogenous $ReceivedCCT_{isj}$ and use an interaction of the treatment indicator and $\mathcal{G}_i$ for the endogenous $ReceivedCCT_{isj} \times \mathcal{G}_i$. For example, when $\mathcal{G}_i$ corresponds to a gender indicator which equals one if a child is male and zero otherwise, then the second instrument is simply $CCT \times Gender$.

The existing literature on conditional cash transfers often disaggregate effects of the program by gender (Dammert, 2009; Paxson and Schady, 2010; Cahyadi et al., forthcoming). It is also possible that a variation of the impact of the CCT on health outcomes of children may be a function of a number of children per household. For example, a beneficiary family consists of a single child, then it is more likely to observe a larger impact of the program on health outcomes of a child: a single child could receive larger benefits from an allocation of cash payments across household's members. Following the same logic, I expect to observe smaller effects of the CCT program in households with a large proportion of children.

The interpretation of estimated coefficients from equation (3) is based on Dammert (2009). Examining heterogeneous effects by gender where $\mathcal{G}_i$ is a dummy which equals one if a child is male and zero otherwise, $\widehat{\beta}_1$ corresponds to the outcome difference between boys and girls. $\widehat{\beta}_2$ presents the effects of receiving cash transfers for girls and the sum of estimated coefficients $\widehat{\beta}_2$ and $\widehat{\beta}_3$ corresponds to impact of receiving CCT benefits for boys. Statistically significant $\widehat{\beta}_3$ implies heterogeneity treatment effects by gender.

7.2. Empirical Resuls

Table 11 presents the estimated second-stage IV coefficients of interaction terms and the indicator variable for receiving CCT payments. In Panel A, $\mathcal{G}_i$ corresponds to the gender subgroup and it equals one if a child is male. It appears that girls and boys experienced almost equal impact of the CCT program on intake of Vitamin A. The estimates suggest

that the BOTA's CCT program increased a consumption of Vitamin A by around 10.4 percentage points for girls and by 10 percentage points for boys. Since 14.7 percent of girls in the control group reported to consume Vitamin A, the 10.4 percentage points increase in Vitamin A intake corresponds to around 12.2 percent decrease in a proportion of girls who have not took Vitamin A. In case of boys, 10 percentage points increase in the intake of Vitamin A represents a 12.3 percent decline in the fraction of boys who did not consume Vitamin A.

Panel B presents the results for the subgroup of households with two or less children. $\mathcal{G}_i$ is coded as one if a family had one or two children and zero otherwise. Households with more than two children report an increased consumption of Vitamin A by 7.3 percentage points which corresponds to around 8.7 percent decrease in a proportion of children who reported not taking Vitamin A. The effect of the CCT program on households with one or two children is 10.4 percentage points which represents 12.7% decline in Vitamin A intake. Moreover, the estimated coefficient on the interaction term in Column 6 suggests that in the last 5 months families with no more than two children decreased a probability to visit a health provider[2] by 8.8 percentage points. As 49.9 percent of children in the control group reported to have a consultation with a health care provider, 8.8 percentage points decrease represents a 17.5% increase in a share of children who were not visited a health center. The heterogeneity treatment effect is statistically significant at 1 percent level. It seems that children experienced health improvements somewhere in the middle of the intervention. On the other hand, visits to the health center during the last month are increased by 8 percentage points which corresponds to a 10 percent decline of a share of those who did not visit the health center during the last month in the control group. However,

[2]The follow-up survey asks the following question: "When was the last time that [a sampled child] consulted a health care provider (including nurse, pharmacist, traditional healer or dentist) about his/her health – for any reason?"

Table 11: IV Results on Heterogeneous Treatment Effects on Child's Health Outcomes by Subgroups

	Received a Vitamin A /Polyvitamin	Received iron tablets	Child had diarrhoea?	Child had fever/cough?	Child visited health center last month	Child visited health center in last 5 months
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A: Gender			
Received CCT	0.104***	0.015	-0.004	-0.051	0.007	0.029
	(0.038)	(0.020)	(0.016)	(0.035)	(0.038)	(0.055)
Received CCT×$\mathcal{G}$	-0.043	0.002	-0.010	0.063	0.016	-0.003
	(0.047)	(0.027)	(0.023)	(0.040)	(0.039)	(0.048)
R^2	0.056	0.014	0.023	0.029	0.045	0.242
Mean outcome in Control Group:						
$\mathcal{G}$=1	0.182	0.069	0.076	0.210	0.184	0.446
$\mathcal{G}$=0	0.147	0.072	0.046	0.223	0.203	0.471
			Panel B: Two or Less Children in a Household			
Received CCT	0.073**	0.018	-0.008	-0.034	-0.009	0.076
	(0.030)	(0.017)	(0.016)	(0.032)	(0.033)	(0.050)
Received CCT×$\mathcal{G}$	0.031	-0.005	-0.005	0.058	0.089*	-0.164***
	(0.052)	(0.031)	(0.032)	(0.053)	(0.047)	(0.049)
R^2	0.055	0.014	0.024	0.031	0.050	0.243
Mean outcome in Control Group:						
$\mathcal{G}$=1	0.179	0.074	0.074	0.225	0.207	0.499
$\mathcal{G}$=0	0.158	0.069	0.055	0.212	0.185	0.437
			Panel C: Household Head's Tertiary Education			
Received CCT	0.096***	0.021	-0.019	-0.039	-0.009	0.022
	(0.027)	(0.016)	(0.016)	(0.030)	(0.031)	(0.044)
Received CCT×$\mathcal{G}$	-0.071	-0.023	0.045	0.108**	0.122**	0.026
	(0.060)	(0.036)	(0.033)	(0.055)	(0.052)	(0.064)
R^2	0.057	0.013	0.023	0.030	0.050	0.242
Mean outcome in Control Group:						
$\mathcal{G}$=1	0.196	0.077	0.050	0.173	0.158	0.438
$\mathcal{G}$=0	0.156	0.069	0.065	0.229	0.204	0.464
			Panel D: Household Head's Relationship to Sample Child			
Received CCT	0.075*	0.006	0.007	-0.025	0.039	-0.004
	(0.043)	(0.028)	(0.026)	(0.047)	(0.055)	(0.072)
Received CCT×$\mathcal{G}$	0.010	0.014	-0.024	0.011	-0.036	0.046
	(0.053)	(0.035)	(0.028)	(0.051)	(0.056)	(0.060)
R^2	0.054	0.014	0.023	0.030	0.047	0.243
Mean outcome in Control Group:						
$\mathcal{G}$=1	0.153	0.061	0.062	0.211	0.180	0.465
$\mathcal{G}$=0	0.188	0.088	0.060	0.226	0.216	0.447
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2289	2289	2289	2289	2289	2289

Notes : All coefficients are from the second-stage of 2SLS. Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Raion (district) fixed effects is implemented in all model specifications. The set of control variables that used in all model specifications includes children characteristics (age and gender), household head's characteristics (gender, educational level and relation to the sampled children) and whether a family pays for cold water, electricity and if it owns or inhered the house.

the heterogeneity effect has low statistical power. The latter results might not necessarily suggest a deterioration of health outcomes among children. Instead, it is possible that upon attending training sessions on childhood development, parents recognized the importance of preventive measures and early treatment and thus had their children to have a consultation at a health center.

Panel C shows regression results across household head's years of education. If a household head had graduated from a 2-year college or a 4-year university then $\mathcal{G}_i$ equals one and zero otherwise. Children with less educated household head are 9.6 percentage points more likely to consume Vitamin A. The interaction with household head educational level is smaller, 2.5 percentage points, and statistically not different from zero. Additionally, children are 6.9 percentage points more likely to have fever or cough in families where household heads have more years of education. The effect corresponds to 40 percent reduction of mean outcome in the control group. The likelihood of child consultations at a health care center one month before the follow-up survey was conducted is increased by 11.3 percentage points in families with more educated head of a household i.e, an increase of 55 percent. Taken estimates in Panel C together, one might be worried that they are not on line with well known results in the empirical literature which suggest that parents with higher level of education make better use of information related to child's nutrition and health. Thus, health outcomes in such households should improve (Strauss and Thomas, 1998).

However, the documented results in Panel C might be because around 65 percent of household heads reported to be a parent to a sampled child. It might be that effects of the CCT program on children health outcomes documented in the literature are driven by parents and have a weak relationship with heads of households. To test this hypothesis, in Panel D I use an interaction between the recipients of CCT benefits with a dummy variable which is equal one if a household head is a parent to a sampled child and zero otherwise. The

interaction terms are statistically insignificant across all model specifications suggesting that there is no heterogeneity treatment effect in families where the head of household is a parent to the sampled child. This suggestive evidence might imply that household heads have less decision-making power with regards to children's health and nutrition.

Over all, estimated results in Table 11 suggest that the impact of the CCT program on Vitamin A consumption is equally driven by girls and boys. Additionally, the intake of Vitamin A is larger in families with one or two children though the effect has low statistical power. In these medium size households, the probability of a sampled child to have a consultation with a health provider is decreased due to the CCT intervention. Moreover, children with more educated head of households more likely to suffer from fever or cough and more likely visit a health center. On the other hand, I find no heterogeneity effects in families where a household head is a parent to the sample child.

7.3. Potential Mechanisms

Due to the fact that a conditional cash transfer program is a combination of cash benefits and incentives, generally it is difficult to identify particular channels through which the CCT drives consumption of Vitamin A. Nevertheless, I examine two potential mechanisms. First, it could be that the increased Vitamin A intake was due to a training that was offered to the households in the treatment okrugs. Outcomes variables in Panel A in Table 12 are indicator variables that equals one if anyone from a household attended a training class or attended a class on childhood development and zero otherwise. The estimated coefficients from separate regressions for each outcome of interest listed in each row. Columns 1 and 2 presents results with control variables for both OLS and IV models. Column 3 reports the means of outcomes in the control group.

As shown in Panel A in Table 12, households in the treatment group are around 45

percentage points more likely to attend a training class and 38 percentage points more likely to attend a volunteer-led training session on childhood development[3]. Households that falls under categories 2 and 3 of beneficiary types are required to attend training classes on antenatal and postnatal care and on home-based care for children with disabilities respectively. Thus, it is expected to observe positive impact on a training attendance in response to the cash payments. However, it is not necessary for them or for households from the first category to attend training sessions on childhood development[4]. Therefore, results in Panel A provide some evidence that training classes on childhood development could drive an increase in the consumption of Vitamin A.

Second, the CCT program might have had an impact on a child's nutrition. For example, in a response to a high Vitamin A intake, a family could spend less on food with rich Vitamin A components. In this case, it is expected to observe a lower dietary intakes of Vitamin A among sampled children at the end of the intervention. In Table 12 in Panel B, I examine whether the program had affected children nutrition one day prior to the follow-up survey. More specifically, dependent variables in Panel B are dummies indicating whether yesterday (a day before the follow-up inteviews) a child had eaten food from the specific category.

The analysis shows an overall decrease in a child consumption of food rich in Vitamin A[5]. I find negative impact on a consumption of fruits. Relative to the mean outcome in the control group of 71.7 percent, 9.4 percentage points decrease corresponds to 13% reduction

[3]Since nobody in the control group received cash payments and thus did not attend training sessions, the means of outcomes in the control group is not reported

[4]Excluding households with family members who fulfill 2nd and 3rd categories, the IV estimated coefficient is robust and very similar in magnitude to the one in Panel A in Table 12: 0.371 with p-value less than 0.001.

[5]According to FAO (2001) the sources of Vitamin A are fruits, vegetables, milk, eggs, fish, and liver and organ meats

Table 12: Effects of Cash Transfer Program on Child Food Consumption and Health Seeking Behavior

	OLS results	IV results	Control Mean
	(1)	(2)	(3)
Panel A: Training			
Received a training	0.330***	0.448***	
	(0.027)	(0.033)	
Received training on childhood development	0.282***	0.383***	
	(0.023)	(0.029)	
Panel B: Child Food Consumption			
Yesterday ate cereals, breads and bakery	-0.030*	-0.041*	0.952
	(0.018)	(0.024)	
Yesterday ate potato	-0.045*	-0.061*	0.723
	(0.024)	(0.033)	
Yesterday ate fruits	-0.070***	-0.094***	0.717
	(0.023)	(0.031)	
Yesterday ate vegetables	-0.051**	-0.069**	0.818
	(0.021)	(0.028)	
Yesterday ate flesh meats	-0.029*	-0.039*	0.859
	(0.017)	(0.023)	
Yesterday ate eggs	0.042*	0.057*	0.299
	(0.024)	(0.032)	
Yesterday ate pasta	-0.009	-0.012	0.592
	(0.029)	(0.039)	
Yesterday ate legumes and nuts	0.015	0.020	0.060
	(0.013)	(0.017)	
Yesterday drank milk	0.000	0.000	0.817
	(0.019)	(0.026)	
Yesterday ate organ meats/offal	-0.005	-0.006	0.038
	(0.009)	(0.012)	
Yesterday fish/seafood	0.017	0.022	0.056
	(0.013)	(0.018)	
Yesterday had butter, oils and fat	-0.013	-0.017	0.927
	(0.013)	(0.018)	
Yesterday ate sweets/sugar/honey	-0.004	-0.005	0.979
	(0.008)	(0.011)	
Panel C: Incurred Expenses Last Month?			
Medication	0.021	0.028	0.244
	(0.026)	(0.035)	
Medical tests	0.012**	0.016**	0.007
	(0.005)	(0.007)	

Notes : Control variables are the same as in Table 6. Raion (district) fixed effects is implemented in both model specifications. Column 5 shows the mean for each outcome in the control group. Robust standard errors clustered by okrugs (sub-district) are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

of fruits consumption. The consumption of vegetables is also decreased in response to the CCT program: 6.9 percentage points corresponds to around 8.5% decrease relative to control means of 81.8 percent. Sampled children were 3.9 percentage points less likely to eat flesh meats. This negative results correspond to 4.5% decrease relative to 85.9 percent average in the control group. The probability of children to eat organ meats is also decreased but the effect is not statistically significant.

On the other hand, children were 5.7 percentage points more likely to have consumed eggs which corresponds to 19% increase relative to the average in the control group. The probability to consume fish and seafood is also increased but the impact has a low statistical power. Moreover, children were 4.1 and 6.1 percentage points less likely to consume cereals, breads, bakery and potatoes which relative to the mean outcome in the control group of 95.2 and 72.3 percent, corresponds to 4.3% and 8.4% decrease respectively.

Heterogeneity analysis of the treatment effect of the CCT program revealed a decline of probability of consultations with health care provider in last five months in households with one or two children. This could be due to a household's decision to self-medicate an ill child. In this case, a household is expected to spend more money on medication. However, the likelihood of sampled children visiting health center during the last month before the follow-up survey increases. It also could be that after visiting training classes on childhood development, parents of a child with slight symptoms of being ill, before seeking medical treatment, would want to determine whether or not their child is actually sick. Then, in these households expenses related to medical tests should increase.

In Panel C in Table 12, I test these predictions. I find no statistically significant evidence of increased medication expenses one month before interviews for the follow-up survey. Spendings on medical tests, on the other hand, 1.6 percentage points more likely to occur among beneficiary children. The result is statistically significant at 5 percent level but very small in magnitude: it corresponds to around 1.6 percent decrease in a share of

households who did not spend money on tests in the control group.

Even though there is a plethora of rigorously evaluated evidence suggesting that CCTs are effective in improving health outcomes, a little is known about mechanisms which can illuminate how exactly CCTs help poor households improve their health (Ranganathan and Lagarde, 2012). Thus, the findings described in this section are of particular interest as they uncover some channels through which the CCT has an impact on health outcomes.

8. Conclusion

This thesis provides evidence of short-term effects of the conditional cash transfer (CCT) in Kazakhstan on households labor market conditions and children health outcomes. I find evidence of health improvements for sampled children: an intake of Vitamin A is increased by around 8 percentage points. The documented effects are almost equally driven by girls and boys and the magnitude of the impact is larger in households with one or two children. Moreover, heterogeneity analysis revealed that in families where a head of the household has less years of schooling, children are more likely to increase their Vitamin A consumption while children with household heads who spent less years in school/university are more likely to suffer from fever/cough and more likely to visit health center in the last month. On the other hand, there are no statistically significant effects of the CCT benefits in households where the head of household is a parent to a sampled child. These findings might explain why children's health outcomes with more educated household heads had not improved which is an opposite of what the literature predicts: it has been established that nutritional and health outcomes of children with more educated parents are expected to improve (Strauss and Thomas, 1998).

Exploring possible mechanisms of improvements in health outcomes, I find that beneficiary households are more likely to attend training sessions on childhood development. Additionally, children from beneficiary households are reported to consume fewer food that

is rich with Vitamin A. This in turn suggests that households might be substituting a lack of intake of natural sources of Vitamin A such as fruits, vegetables and meats with Vitamin A supplements. These results are of special importance as they help us understand which components of the CCT program may improve health outcomes and subsequently contribute to close a gap in the literature that examines mechanisms through which CCTs work (Ranganathan and Lagarde, 2012).

I find mixed evidence of labor market outcomes for parents of sampled children. While a father from a beneficiary household is less likely to be involved in self-employment, the probability of working during agricultural season for a mother declines. On the other, a likelihood of having any paid job and earn money via a work that takes place all year around for a mother is increased in response to both an offer to the CCT – intention to treat – and the CCT benefits – average treatment effect on treated. Moreover, there is no statistically significant evidence of savings of any kind amongst recipients of CCT benefits. Instead, results from 2SLS suggest that households are around 10 percentage points more likely to borrow money. The monthly income which was earned through jobs during agricultural and non-agricultural seasons and jobs that took place all year around is decreased by the amount quite similar to monthly CCT benefits, though the estimated coefficient is not statistically significant.

The BOTA's CCT program provided a little help to households which were receiving cash payments to transform their labor outcomes such as employment and earnings and thereafter elevate them from a poverty. The fact that the CCT program was only in place for one year and there was no mid-round survey limits a scope of policy implications. However, based on documented results that the CCT help poor households make human capital investments such as an enrolment at a pre-school and increased consumption of Vitamin A, a decline of intergenerational transmission of poverty could be the key contribution of the CCT intervention. Further avenues of research might include analysis of targeting

mechanisms of the CCT program by matching households from the follow-up survey with administrative data on national poverty rates.

A Appendix

Table A.13: Attrition Levels in the Baseline

	Attritors	Non-Attritors
	Mean(s.d.)	Mean(s.d.)
	(1)	(2)
Age	4.39	4.37
	(0.52)	(0.50)
Child's gender	0.46	0.52
	(0.50)	(0.50)
Child was ill in last 30 days	0.28	0.22
	(0.45)	(0.41)
HH's gender	0.77	0.82
	(0.42)	(0.38)
HH's tertiary education	0.24	0.23
	(0.43)	(0.42)
In last 12 months had any paid work	0.54	0.58
	(0.50)	(0.49)
Relation to sampled child	0.53	0.63
	(0.50)	(0.48)
Paid for electricity?	0.97	0.99
	(0.17)	(0.12)
Paid for cold water?	0.66	0.56
	(0.47)	(0.50)
Owned/inherited house	0.81	0.87
	(0.39)	(0.33)
Observations	199	966

Notes : Column 1 shows means and standard deviations across demographic characteristics of the attritted sample while Column 2 reports averages of non-attritors using baseline data.

Table A.14: Effects of Cash Transfer Program on Household Head's Employment in Last 12 Months

	Household Head was employed?	Household Head was self-employed?	Household Head worked during agricultural season?	Household Head worked during non-agricultural season?	Household Head worked all year round?
	(1)	(2)	(3)	(4)	(5)
			Panel A: Intent-to-Treat		
CCT	0.027	-0.029	0.019	0.018	-0.029
	(0.024)	(0.020)	(0.034)	(0.023)	(0.032)
R^2	0.050	0.031	0.097	0.132	0.107
			Panel B: Second-stage of IV		
Received CCT	0.037	-0.040	0.026	0.025	-0.040
	(0.032)	(0.026)	(0.045)	(0.031)	(0.043)
R^2	0.051	0.031	0.098	0.130	0.108
Mean Outcome in Control Group	0.475	0.197	0.315	0.136	0.708
Fixed effects	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	2289	2289	1457	1456	1457

Notes : Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Raion (district) fixed effects is implemented in all model specifications. Control variables include the following: children characteristics such as age, gender, and household's controls such as household pays for electricity, for cold water and whether it owns or inherited the house. In Panel B, coefficients from the second-stage of 2SLS are reported while Panel C shows the first-stage of 2SLS. The mean outcomes in the control group reported for both OLS and IV model specifications.

Table A.15: Effects of Cash Transfer Program on Child's Health Outcomes – Logit

	Received a Vitamin A /Polyvitamin	Received iron tablets	Has child had diarrhoea?	Has child had fewer/cough?	Child consulted a health care provider in last 30 days	Child consulted a health care provider in last 2 months
	(1)	(2)	(3)	(4)	(5)	(6)
CCT=1	0.060***	0.012	-0.007	-0.014	0.010	0.020
	(0.018)	(0.010)	(0.010)	(0.021)	(0.022)	(0.035)
Mean outcome in Control Group	0.165	0.071	0.062	0.216	0.193	0.458
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2289	2289	2289	2289	2289	2289

Notes : Robust standard errors clustered by okrugs are reported in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Raion (district) fixed effects is implemented in all model specifications. Control variables include the following: children characteristics such as age, gender, household head characteristics like gender, tertiary education, relationship to sampled child, household pays for electricity, cold water and whether household owns or inherited the house. In Panel B, coefficients of marginal effects at the mean from a logit model are reported. In the mean outcomes in the control group reported for both OLS and logit model specifications.

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