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Cash Transfers and Individual Labor

Noah Bamonte-Grebis

Abstract

This paper determines whether the receipt of a cash transfer influences an individual's labor supply. I use data from a cash transfer program in Kenya that occurred from 2007 to 2011. The program was run jointly by the Kenyan government and UNICEF. Rather than focusing on labor participation, this paper's primary focus is on an individual's weekly labor hours. I run several difference-in-means regressions to determine how receipt of a cash transfer may influence agricultural labor and wage labor differently, and to determine how a recipient's age may influence outcomes.

1. INTRODUCTION

A common economic conception is that individuals who receive a cash transfer are less likely to work. Most economic theory, and specifically the paper Cavalcanti, T., & Corrêa, M. (2014) argue that the implementation of a cash transfer program is likely to cause a decrease in the overall labor participation rate. The labor participation rate is the population of those that can work, divided by the entire population. However, economic literature analyzing cash transfer programs have yet to identify any statistically significant decrease in the labor supply attributable to the receipt of a cash transfer, with the exception of children. This paper investigates the null hypothesis that receipt of a cash transfer does not have a statistically significant effect on the hours an individual spends working in wage or agricultural labor per week. My hypothesis is that there will be no significant relationship between an individual's hours worked and receipt of a cash transfer. This would be concurrent with results from other literature that analyzed programs like the UNICEF's Transfer Project.

A cash transfer program is when a party receives an amount of cash on a scheduled basis; generally, this money comes from a government or some non-profit organization. Receipt of a cash transfer may come with stipulations such as school attendance or the need to actively "opt-in" to the program, but it is always considered passive income as the receiving party does not need to provide a service or good in exchange for it. Cash transfer programs are often implemented to provide financial support to those dealing with financial stress.

Rather than focusing on the relationship between cash transfers and labor participation, this paper will take a more micro-based approach and focus on how receipt of a cash transfer affects the hours in a week an individual engages in labor. I look at how two different types of labor (wage labor and agricultural labor) are affected, and then determine how a recipients age

affects the outcome if a cash transfer is received. I then give insight into some policy implications of my findings and state what I believe would be a beneficial focus for future studies.

2. LITERATURE REVIEW

Economic theory laid out in Cavalcanti, T., & Corrêa, M. (2014) and other similar theory-based hypotheses works, predict an increase in unearned income would positively correlate with leisure causing a reduction in labor supply. Theory predicts that a cash transfer program's intensity has a negative effect on the employment rate, while cash transfer programs coverage would have a positive effect on the employment rate, but both would have ambiguous effects on the unemployment rate. Intensity is a measure based on the size of size of the cash transfer, and coverage is a measure based on how many people are included in it. A higher amount of cash received means greater intensity, and a program the includes more people has greater coverage.

In practice, this has not been the case. In Salehi-Isfahani, D., & Mostafavi-Dehzooei, M. H. (2018) it was found that the presence of a large-scale cash transfer program led to an overall increase in labor supply. Papers looking at smaller-scale cash transfer programs such as Gahvari, F. (1994), Handa et al. (2018) and Asfaw et al. (2014) also determined that cash transfer programs did not have a significant negative effect on the labor supply. The theory laid out by Cavalcanti, T., & Corrêa, M. contained several assumptions that are not met in the situations tested in the above papers. Cavalcanti, T., & Corrêa, M. assumes the following: an economy's only two goods are a consumption good and a labor input, workers can only be in three states: employed, unemployed, or out of the workforce, only those below a government determined threshold receive a cash transfer, and there is no type of credit that exists or can be accessed.

While these assumptions make empirical work easier, the first three are generally not true in today's economies, and the fourth is not true in every case of a cash transfer program.

There is significantly more literature on smaller-scale cash transfer programs, with most of them occurring in developing countries. All referenced work, with the exception of Salehi-Isfahani, D., & Mostafavi-Dehzooei, M. H. (2018), deal with programs of this type. These cash transfer programs provided funds to poorer households that generally were reliant on some form of agriculture for their well-being. Participants did not have access to efficient credit markets and suffered from a liquidity constraint. Due to these imperfect markets, households were faced with separate strategies for sustainability and profit maximization. This limited their ability to better their living situation in the long term as they could not afford to take risks. The provision of regular and predictable cash transfers allowed them to take greater strategic risks in generating returns by investing in their current business, moving them towards optimal levels of inputs or taking time to search for better employment. While Asfaw et al. (2014) found a decrease in total hours worked for males who received cash transfers, it was determined to not be statistically significant.

Iran's cash transfer program studied in Salehi-Isfahani, D., & Mostafavi-Dehzooei, M. H. (2018) differs from the other studied programs in two significant ways. First, it is a large government-run program, and was implemented with the expectation it would last for a long time or indefinitely. In this program, government transfers were offered to everyone and over 95% of the population accepted it. Second, Iran's program is universal, so eligibility is not affected by income or hours worked. The only way transfers could affect labor supply in this program is the unearned income effect, which as determined in Cavalcanti, T., & Corrêa, M. (2014) encourages participants to spend more of their time on leisure as unearned income

increases. The usual disincentive due to the so-called “cliff effect,” which can prevent participants from working or earning more than a certain amount, does not exist in the case of Iran's program. In this respect, this program is similar to the Universal Basic Income proposals that are being debated in developed countries such as the United States.

There is a significant difference between the effects of a universal cash transfer program when one looks at gender. Salehi-Isfahani, D., & Mostafavi-Dehzooei, M. H. found there to be a slightly negative but statistically insignificant reduction in labor for male workers, but a large and positive statistically significant increase in labor for females. This is attributed to the cash transfers allowing households to achieve an income where they can afford to pay for childcare, thus freeing up females to work. Male participants in smaller-scale programs were more likely to shift away from agricultural types of labor but did not leave the workforce to a statistically significant degree.

Handa et al. (2018) determine in their analysis that cash transfers don’t decrease labor supply, but cause a shift in the types of labor participants engage in. It was found that participants shifted away from casual agriculture and other more undesirable forms of labor and focused on obtaining more desirable jobs. A type of labor requiring more skill is usually considered more desirable, this means wage labor is considered more desirable than agricultural labor and wage labor that would require a higher level of education or skill is considered more desirable than regular wage labor. Receipt of a cash transfer may have allowed an individual to put more effort into a job search or achieve a higher level of education/skill allowing them to attain a more desirable job. This means that while shifts may happen between sectors of the labor force, the size of the labor force would not significantly shrink due to cash transfers.

Past literature with a focus on the theory of cash transfers determines that they would lead to a decrease in the labor supply. All literature analyzing them in practice though has found no significant effect on labor supply or on labor participation rate.

3. DATA

The data I used is a three-wave panel dataset created to analyze a cash transfer program in Kenya. It is commonly referred to as the Cash Transfers for Orphans and Vulnerable Children (CT-OVC). This was a social program run by the Kenyan government with technical and financial assistance from UNICEF beginning in 2007. The program provided regular cash transfers to households to encourage improved care of children. Treated households received a flat monthly transfer of 1500 Kenyan shillings (~$21.00 USD), which was raised to 2000 Kenyan shillings in 2011 to adjust for inflation. Recipients of a cash transfer were informed that the payment was intended to care for the orphan or the vulnerable child, but receipt of the cash transfer was unconditional.

The program began with the first wave in 2007 with a baseline household survey that was followed up on every 24 months. This means the second wave occurred in 2009 and the third in 2011. The program was unable to be implemented in every location at the same time, so some locations whose entries occurred later were used as control sites. All locations were in Kenya. Of the seven locations scheduled to be included, four were eligible to receive treatment and two were randomized out of the initial implementation and used as controls. Household eligibility was determined by a location specific committee of citizens that identified potential households. The Kenyan Ministry of Gender, Children, and Social Development then confirmed a household's eligibility with a questionnaire. Approximately 20% of the poorest households with

eligible children in each location were entered into the program. Both treatment and control households were surveyed prior to their knowledge of being selected into the program.

Data was collected from each wave in the form of a survey. Unfortunately, the format and content of each survey was inconsistent across waves, which created some difficulties in cleaning and combining the datasets for use in this paper. Because of these inconsistencies, the variables and methods that could reliably be used on this dataset were limited. This paper only uses data from the first and third waves, meaning all data is from either 2007 or 2011. These waves were chosen because they are the first and final measurements of the program and provide the greatest chance of seeing the significance of each variable. All control variables use values observed in the first wave of data, and all dependent variables use values from the third wave. This is mostly due to the survey inconsistency in labor measurements. In the first wave observations regarding labor were only collected for those age 17 and under, while in the final wave observations regarding labor were collected for all ages.

I began my data cleaning by dropping all respondents that were not present in both the first and third waves. This removed 7,497 of the original 15,464 respondents. Datasets for the first and final waves were then appended and sorted by indivcode, a unique variable used to identify each individual respondent. I then created the following variables for each observation: wave, receipt of a cash transfer, age, sex, health regarding a chronic illness, religion, ethnicity, hours worked per week in wage labor, hours worked per week in agricultural labor, and total hours per week in both wage or agricultural labor. All these variables and their potential values can be referenced in **Table 1** below.

Table 1 - Variables and the meaning of their values

Variable	Wave	Treatment	Age	Sex	Marital Status	Chronic Illness
Values	Wave 1 = 0 Wave 3 = 1	No = 1 Yes = 0	Age of respondent	Male = 0 Female = 1	Not married = 0 Married = 1	Not chronicallly ill = 0 Chronically ill = 1
Variable	Religion	Ethnicity	Wage	Agriculture	Labor	
Values	Roman Catholic = 1 Protestant = 2 Other Christian = 3 Muslim = 4 Traditionalist = 5 No religion = 6 Other religion = 7	Embu = 1 Kalenjin = 2 Kamba = 3 Kikuyu = 4 Kisii = 5 Luhya = 6 Luo = 7 Masai = 8 Meru = 9 Mijikenda/Swahili = 10 Somali = 11	Number of hours spent in wage labor per week	Number of hours spent in agricultural labor per week	Total hours spent in wage or agricultural labor per week	

Religion and ethnicity required the creation of multiple dummy variables that were included in all regressions except for the final dummy variable for each to avoid a dummy variable trap. Wage and agriculture hours per week were calculated by taking a respondent's reported hours worked per day, multiplied by the reported number of days worked in a month, divided by 4.33 which is the average number of weeks in a month. Labor is a sum of an individual's hours worked in agriculture and wage labor. After the generation and modification of the mentioned control and dependent variables, all others were dropped from the dataset. Total observations used varied from 4,981 to 4,983 depending on the regression run. This is because all observations that included a null value for any variable used in the regression were left out. Hours worked in wage labor and agriculture both had a significant amount of missing values making them the main contributors to why a lower number of observations were used.

Descriptive statistics for four of the control variables are presented in **Table 2** below. The columns are split up by total observations used, treatment observations, treatment observations, and differences between treatment and controls. Each column displays the mean of each variable. All differences are relatively small with the largest on being in age. Those in treatment groups

were more likely to be older, male, unmarried, and have a chronic illness. These results could be slightly skewed by the treatment group being approximately twice the size of the control group.

Table 2 - Descriptive Statistics

	Total N=7499	Treatment N=5271	Control N=2228	Difference
Age	27.58	28.52	25.37	3.15
Sex	0.51	0.50	0.53	0.03
Marital Status	0.16	0.16	0.18	0.02
Chronic Illness	0.04	0.05	0.03	0.02

The dataset was a limitation of this paper. Inconsistencies between the data collected in the first and final waves made it difficult to capture all controls and engage in the original desired level of analysis. These inconsistencies are also the primary reason wave 2 was left out as combining all three datasets would have been more difficult. These limitations leave serious potential for omitted variable bias. The dataset contained many null values for the dependent variables and did not have as many useful metrics for measuring respondent's labor as originally anticipated.

4. METHODOLOGY

Originally, I had wished to run a difference-in-difference regression on the data and use an interaction term of wave and treatment. However, due to the inconsistencies regarding data collection and survey content between waves, it eventually became apparent that a difference-in-difference regression was unachievable. This led to using a standard differences-in-means multiple regressions. A total of eight regressions were run to determine the significance of cash transfers on labor supply. The first regression was a simple regression using labor as the

dependent variable and treatment as the sole independent variable. This equation would include a significant amount of omitted variable bias, but I believed it would serve as a fair starting point for my analysis, it can be viewed below:

(1) $Labor = \beta_1 Treatment + \varepsilon + 15.67$

The second and third regressions introduced the control variables mentioned in the data section of this paper and used hours worked in agriculture per week (HWA) and hours worked in wage labor per week (HWWL) as their dependent variables. The goal of these regressions was to determine if the receipt of a cash transfer may affect the hours worked per week differently based on the type of labor. For example, receipt of a cash transfer may be more likely to decrease hours worked in agriculture than hours worked in wage labor. Regression two measures hours worked in agriculture and regression three measures hours worked in wage labor.

(2) $HWA = \beta_1 Treatment + \beta_2 Age + \beta_3 Sex + \beta_4 Marital\ Status + \beta_5 Chronic\ Illness + \beta_6 (Religion\ Dummies) + \beta_7 (Ethnicity\ Dummies) + \varepsilon + 34.89$

(3) $HWWL = \beta_1 Treatment + \beta_2 Age + \beta_3 Sex + \beta_4 Marital\ Status + \beta_5 Chronic\ Illness + \beta_6 (Religion\ Dummies) + \beta_7 (Ethnicity\ Dummies) + \varepsilon + 0.51$

The fourth regression uses the dependent variable labor, and all control variables. It is meant to capture the affect receipt of a cash transfer has on the hours an individual works regardless of labor type. This is considered the "final" regression and is what the bulk of my analysis is based on. The equation can be viewed below:

(4) $Labor = \beta_1\ Treatment + \beta_2\ Age + \beta_3\ Sex + \beta_4\ Marital\ Status + \beta_5\ Chronic\ Illness + \beta_6\ (Religion\ Dummies) + \beta_7\ (Ethnicity\ Dummies) + \varepsilon + 35.41$

Regressions five through eight use the same variables as the fourth regression but split up the results by age. I chose to split age into four different brackets consisting of those under the age of 21, those age 21 to 35, those age 36 to 65, and those age 66 and above. This was done to help determine how receipt of a cash transfer may influence respondents in different phases of their lives. This is important to consider because someone below the age of 21 may be more likely to decrease hours worked when receiving a cash transfer, because the extra income allows them attend school; or someone of older age may be more likely to decrease hours worked because most labor in Kenya is physically demanding and their bodies more likely to be worn. The following four formulas were used in these final regressions:

(5) $Labor = \beta_1\ Treatment + \beta_2\ (Age < 21) + \beta_3\ Sex + \beta_4\ Marital\ Status + \beta_5\ Chronic\ Illness + \beta_6\ (Religion\ Dummies) + \beta_7\ (Ethnicity\ Dummies) + \varepsilon + 29.03$

(6) $Labor = \beta_1\ Treatment + \beta_2\ (Age\ 21\text{-}35) + \beta_3\ Sex + \beta_4\ Marital\ Status + \beta_5\ Chronic\ Illness + \beta_6\ (Religion\ Dummies) + \beta_7\ (Ethnicity\ Dummies) + \varepsilon + 28.33$

(7) $Labor = \beta_1\ Treatment + \beta_2\ (Age\ 36\text{-}65) + \beta_3\ Sex + \beta_4\ Marital\ Status + \beta_5\ Chronic\ Illness + \beta_6\ (Religion\ Dummies) + \beta_7\ (Ethnicity\ Dummies) + \varepsilon + 28.14$

$$(8)\ Labor = \beta_1\ Treatment + \beta_2\ (Age > 65) + \beta_4\ Sex + \beta_4\ Marital\ Status + \beta_5\ Chronic\ Illness + \beta_6\ (Religion\ Dummies) + \beta_7\ (Ethnicity\ Dummies) + \varepsilon + 92.49$$

Each regression provides further insight and explanation into the relationship between receipt of a cash transfer and hours spent in labor per week. In the results section, I determine whether the type of labor matters and how age may influence a respondent's decision to decrease labor hours.

5. RESULTS

The first four regressions are presented in **Table 3**. Treatment was found to be statistically significant at all levels in each regression. All coefficients are negative implying that receipt of a cash transfer causes a decrease in hours worked per week regardless of labor type. The coefficient is larger for wage than agriculture, meaning that an individual in wage labor is likely to further decrease hours worked than an individual in agricultural labor. A potential explanation for this is that income received from wage labor has a more direct relationship with hours worked than agriculture. This has to do with the relationship of the income received and the labor done. Income from wage labor often increases at a direct marginal rate for each hour worked, while income agricultural labor often comes from sale of a harvest meaning the marginal increase in income for each additional hour worked in agricultural labor is unknown. Therefore, putting more time into agricultural labor is not guaranteed to generate more income, meaning an individual has likely already attempted to minimize the time they spend on agricultural labor by creating efficiencies.

Table 3 - Effects on hours worked in Wage labor, Agriculture labor, and Total hours of Labor per week

Variables	Labor	Wage	Agriculture	Labor
Treatment	-3.12**	-1.92**	-1.21**	-3.13**
Age		0.05**	0.21**	0.26**
Sex		-2.37**	-0.04	-2.40**
Marital Status		2.70**	3.16**	5.85**
Chronic Illness		-0.17	-2.25*	-2.42
Religion Controls	Yes	Yes	Yes	Yes
Ethnic Controls	Yes	Yes	Yes	Yes
Constant	15.67**	0.51	34.89**	35.41**
Observations	4,785	4,782	4,782	4,782
Adjusted R2	0.0049	0.0299	0.1689	0.1500

* Sig. at 5%
** Sig. at 1%

Analysis of the control variables provides some further insights. Age shows that older respondents are working more hours, particularly in agriculture. This could be attributed to respondents focusing on their own farms or gardens as they age and struggle to find wage employment. Sex having a negative coefficient states that women work less hours in wage labor than men, but lack of statistical significance in the agriculture regression means sex doesn't influence the hours worked per week. This is important because it shows that while women work less hours in the labor regression, all statistical significance is coming from wage labor and there is no statistically significant difference for hours worked in agricultural labor between men and women. The difference between these results could be due to women being the primary caretakers of children in Kenya. This would decrease their ability to engage in wage labor but may not have the same affect on agricultural labor if they can engage in it while remaining home.

Marital status shows married respondents work more hours, which is likely due to having dependents. Chronic illness is not statistically significant in any of these four regressions except at the 5% level in agricultural labor.

Results for the four regressions done on age brackets are present in **Table 4**. The dependent variable for all four regressions was total labor hours worked per week. The statistical significance and coefficient for treatment varies based on the age bracket. For those under the age of 21, or those age 36 to 65, receipt of a cash transfer is statistically significant at all levels and the coefficient is negative. Treatment is not statistically significant for those in age bracket 21 to 35 or those over the age of 65. The lack of statistical significance for these two brackets could be due to their low number of observations compared to the other age brackets. Treatment has a negative coefficient for those age 21 to 35 and a positive coefficient for those above age 65.

Table 4 - Effects on total hours of Labor per week by age

Variables	< 21 years	21 - 35 years	36 - 65 years	> 65 years
Treatment	-1.16**	-2.79	-3.78**	2.38
Age	0.85**	0.99**	-0.20**	-0.62**
Sex	-1.78**	-10.95**	-5.61**	-7.71**
Marital Status	-2.59	6.44**	-1.71	-2.47
Chronic Illness	0.35	2.50	-8.86**	-6.77**
Religion Controls	Yes	Yes	Yes	Yes
Ethnic Controls	Yes	Yes	Yes	Yes
Constant	29.03**	28.33**	28.14**	92.49**
Observations	2,480	767	1,013	522
Adjusted R2	0.0725	0.1319	0.0778	0.0932

* Sig. at 5%

** Sig. at 1%

It is likely that those under age 21 are decreasing their hours worked per week in favor of attending school or some sort of job training. The increase in the absolute value of the coefficient in age brackets 21 to 35 and 36 to 65 can likely be explained by a couple factors. The average age of a mother when she has her first child in Kenya is 29. (index mundi) Respondents in these age brackets likely have children to care for and decrease their working hours to put time into their family. Another explanation for the trend in coefficients is that most labor in Kenya is physically demanding. As a respondent gets older, physically demanding work would become less desirable, meaning receipt of a cash transfer would provide an incentive to work less hours. The coefficient for above age 65 is positive, but statistically insignificant.

The R-squared values in these tables are recognizably low. While this shows that much of the total variance is not explained by model variance, it does not mean the model is inherently

flawed. The low R-squared values are due to inherently unexplainable variation derived from human behavior and external institutional influences. These are unable to be captured by the model, yet result in lower R-squared values.

6. CONCLUSIONS

After examining the relationship between receipt of a cash transfer and an individual's labor hours per week, I reject my null hypothesis. There is a statistically significant negative relationship between receipt of a cash transfer and hours worked per week. Individuals are more likely to decrease labor hours in wage labor than agricultural labor and tend to decrease their hours by a larger amount if they are older. Past literature and theory on this subject has focused on labor participation, but this paper differs in that it studies an individual's hours worked. This is because receipt of a cash transfer would often not supplement one's income enough to remove their need for employment, but it may decrease the hours they choose to work to spend more time on school or family.

A significant limitation of this paper was the dataset. The inconsistencies between the data collected in the first and final waves made it difficult to capture all controls and engage in the original desired level of analysis. These inconsistencies are also the primary reason wave 2 was left out of my analysis as attempting to combine all three datasets would have proved even more difficult. These limitations leave the potential for omitted variable bias. The dataset contained many null values for the dependent variables and did not have many useful metrics for measuring respondent's labor. Future research could overcome these limitations with a more robust dataset.

The policy implications of this study focus on the impacts implementation of a cash transfer program could have on labor supply. If receipt of a cash transfer decreases an

individual's hours worked per week, then an economy may see a short-term drop in productivity. However, I believe it is important to consider what an individual would do with their newfound time. If an individual is decreasing labor hours, but increasing their hours spent on education, family care, or another unmeasured but productive activity, a cash transfer program could increase overall productivity in the long run. The most important take away is that a cash transfer program relieves some financial strain causing individuals to decrease hours spent working. If that time is put towards other productive activities, then a cash transfer program can be beneficial to not only those receiving a transfer, but the economy in the long run.

While I believe we need more research on all aspects of cash transfer programs and labor supply, it would be beneficial to see future literature focus less on labor participation, and more on either how much individuals are working or the quality of their work. It would also be beneficial to study the implications of large-scale programs like the one in Iran.

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APPENDIX

Table 1

Table 1 - Variables and the meaning of their values

Variable	Wave	Treatment	Age	Sex	Marital Status	Chronic Illness	Religion	Ethnicity	Wage	Agriculture	Labor
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Table 2

Table 2 - Descriptive Statistics

	Total N=7499	Treatment N=5271	Control N=2228	Difference
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