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# Impact evaluation of the conditional cash transfer program for secondary school attendance in Macedonia

January 2018

Impact  
Evaluation  
Report 69

Education



International  
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Suggested citation: Armand, A and Carneiro, P, 2018, *Impact evaluation of the conditional cash transfer program for secondary school attendance in Macedonia*, 3ie Impact Evaluation Report 69. New Delhi: International Initiative for Impact Evaluation (3ie)

3ie Impact Evaluation Report Series executive editors: Beryl Leach and Jyotsna Puri

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Cover design: John F McGill and Akarsh Gupta

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# **Impact evaluation of the conditional cash transfer program for secondary school attendance in Macedonia**

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**3ie Impact Evaluation Report 69**

**January 2018**



## Summary

This report evaluates the impact of the Conditional Cash Transfer for Secondary School Education program in the Republic of Macedonia, and compares alternative designs of this program at the end of its second and the third years.

The program provides cash transfers to poor households (those eligible for social financial assistance) if they have children of secondary school age who attend secondary school at least 85 per cent of the time. The total amount of the subsidy is 12,000 Macedonian denars (MKD) per year, paid in quarterly instalments. The program was first implemented at the beginning of the 2010–2011 school year.

Different variants of the payment scheme were implemented from the start of the program. Firstly, the quarterly payments could be MKD 3,000 each or there could be a bonus at the end of the school year. In the latter scheme, the first three payments are of MKD 2,000 each and the last payment is of MKD 6,000. Secondly, the identity of the transfer recipient could be either the child's mother or the head of the child's household.

The comparison of different designs of the program is experimental, with different schemes implemented in different municipalities. There was random assignment of alternative payment designs to municipalities, through a lottery. We first randomized the 84 municipalities in Macedonia into two groups. In one group of 42 municipalities, the mother receives the payment. In the other group of 42 municipalities, the household head receives the payment, regardless of gender.

We then conducted a second lottery, again dividing the municipalities into two equal groups of 42. One group receives the payment in equal installments and the other receives a graduation or end of year bonus. These two lotteries ensure that the municipalities receiving different payment modalities are very similar, and therefore comparable.

Measuring the overall impact of the program (rather than comparing different designs) is more difficult since the program is implemented simultaneously in the whole country, so the choice of a control group to evaluate the program is not straightforward.

We use a difference-in-differences strategy in this study. The group of eligible households comprises social financial assistance recipients with children of secondary school age. The comparison group (slightly better off group) consists of child allowance recipients with children of secondary school age.<sup>1</sup> Although the two groups are different and therefore not immediately comparable, the assumption of this method is that the trend in outcomes experienced by child allowance households is the same as what would be experienced by social financial assistance households in the absence of the conditional cash transfer.

In order to evaluate the program and its different modalities, we collected three waves of a rich household survey that we matched with school records on school attendance and performance. Baseline household data and school records were collected between

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<sup>1</sup> Child allowance is a social program of the Government of Macedonia in which monetary assistance is provided for the purposes of covering part of the costs of upbringing and developing a child. The program targets poor households where at least one parent is working.

November 2010 and January 2011. A first follow-up was collected between October and November 2012, and a second follow-up between November 2013 and March 2014.

In this report, we examine the short- and medium-run impacts of the conditional cash transfer and its modalities on school enrolment, expenditure, and expenditure patterns. We find that the conditional cash transfer has strong impacts on school enrolment among children of secondary school age, but not on school attendance.

There are no substantial differences in household or child outcomes between receiving the payments in equal instalments or having a graduation bonus. At the end of the program's second year, there are strong differences in impact on food expenditure between paying the mother versus the head of household. This may indicate that targeting payments to mothers could change the degree of women's empowerment in their households. However, these effects are not observed at the end of the program's third year.

## **Acknowledgements**

Many have contributed to the success of this project. However, we would like to acknowledge in particular the inspiring leadership of Maja Nesterovska and Igor Krstevski throughout different stages of this project, as well as the overall support of the Ministry of Labour and Social Policy, without which this study would never have been possible.

In addition, we thank the support of:

- Vesna Pektovic from the Ministry of Labour and Social Policy
- Rosana Aleksoska, project manager at Publik, and her dedicated staff
- Milena Ristovska and all the staff from the conditional cash transfer project
- Snjezana Plevko, Trang Nguyen, and Bojana Naceva from the World Bank
- Valerie Lechene and Orazio Attanasio from University College London and the Institute for Fiscal Studies.

We gratefully acknowledge the financial support from the International Initiative for Impact Evaluation (3ie). Without the contribution of all of the above, the success of this study would not have been possible.

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## **Abbreviations and acronyms**

CA	Child allowance
CCT	Conditional cash transfer
GDP	Gross domestic product
HH	Household
ITT	Intent to treat
IV	Instrumental variable
MKD	Macedonian denar
OLS	Ordinary least squares
SFA	Social financial assistance
SWC	Social welfare centre

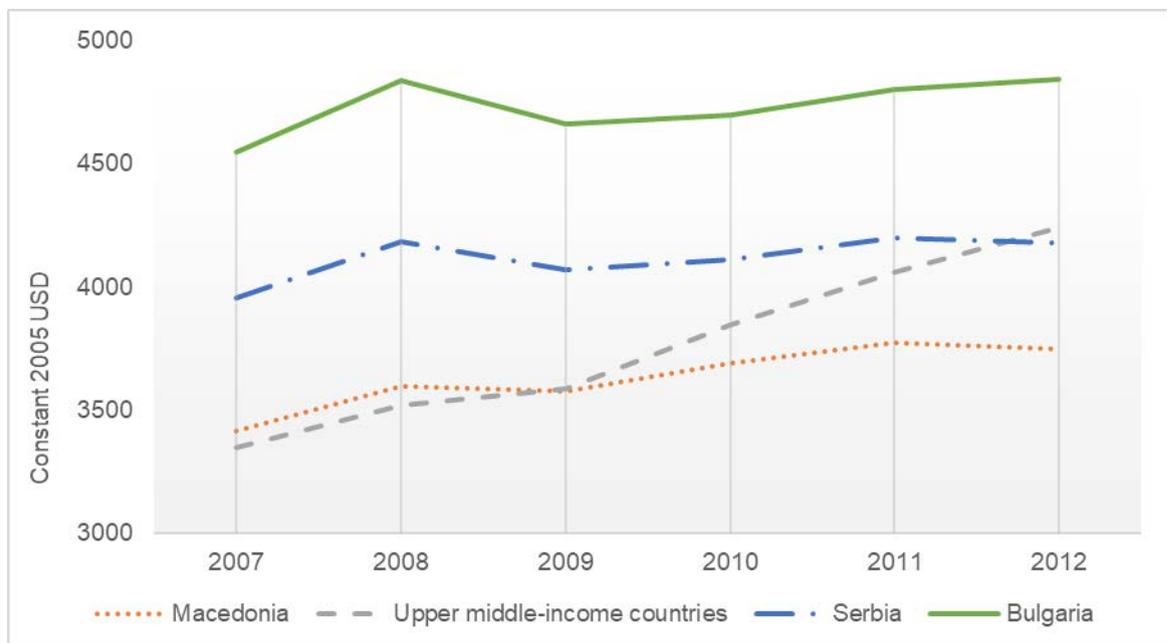
# 1. Introduction

## 1.1 The Macedonian conditional cash transfer for secondary education

### 1.1.1 Background

The Republic of Macedonia (or Former Yugoslav Republic of Macedonia) is a small landlocked country in the Balkan Peninsula in south east Europe. It is a relatively young democracy as it declared independence in 1991, following the dismantlement of former Yugoslavia. Since its formation, Macedonia has had a fragile economy characterized by high unemployment rates, ranging from 35–30%. In 2006–2014, it slowly reduced its unemployment rate but employment opportunities in the country remained low. In contrast, other former Yugoslavian countries experienced reduced unemployment rates in the first period (2006–2008) but higher rates during the world economic crisis starting 2009.

**Figure 1: GDP per capita (constant prices 2005 USD), 2007–2012**



Source: The World Bank national accounts data.

This situation is combined with a high poverty headcount (approximately 24% in 2013<sup>2</sup>), one of the lowest gross domestic product (GDP) rates per capita in Europe and an informal labor market that is estimated to represent approximately 20% of GDP. Figure 1 shows GDP per capita (in 2005 constant USD) from 2007–2012 for Macedonia and for comparison countries.

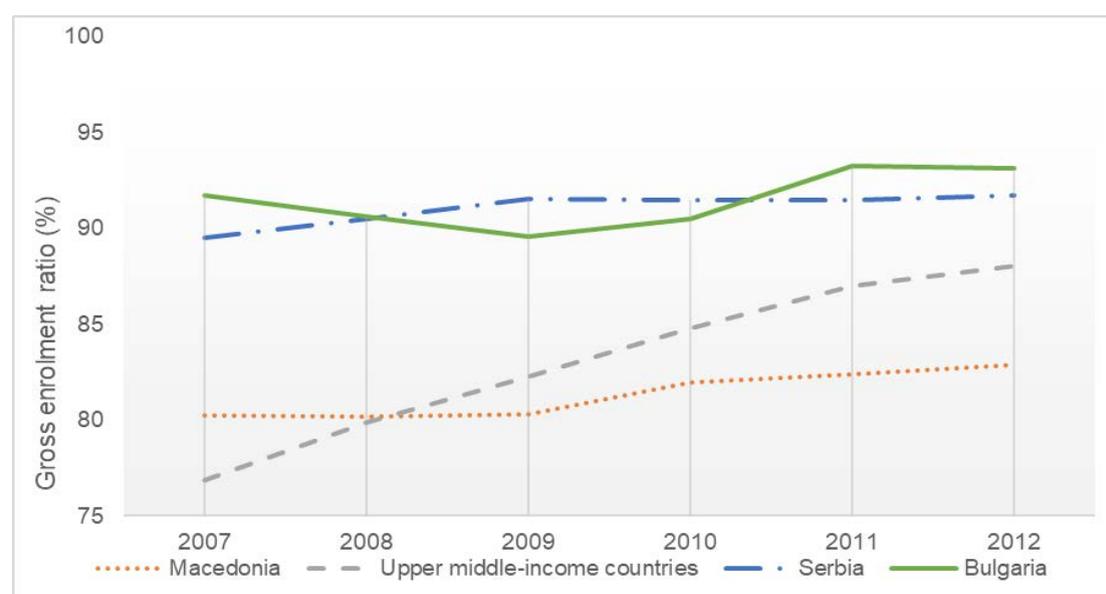
GDP per capita in Macedonia, which is about USD 3,500 (in 2005 constant prices), is approximately USD 500 smaller than that of Serbia and approximately USD 1,000 smaller than that of Bulgaria. In Macedonia, GDP per capita increased slowly over the period. It remained similar to the average for upper middle-income countries in the first part of the period, but later underperformed.

<sup>2</sup> Source: The World Bank national accounts data.

Figure 2 presents the gross enrolment ratio in secondary school for the same period, 2007–2012. For Macedonia, the ratio is approximately 80 per cent, with a very small improvement over the period. In terms of secondary school education, it underperforms both Serbia and Bulgaria by approximately 10 percentage points.

Since this statistic is a population average, if we focus on the poorest share of the population we would expect secondary school completion rates to be worse. The labor market and the living conditions in Macedonia are such that enrolling, attending and completing secondary education remain a constraint for the poorest section of the population.

**Figure 2: Gross enrolment ratio (secondary school), 2007–2012**



Note: Gross enrolment ratio is the ratio of total school enrolment, regardless of age, to the total population in the age group that officially corresponds to the level of education shown.

Source: The United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics.

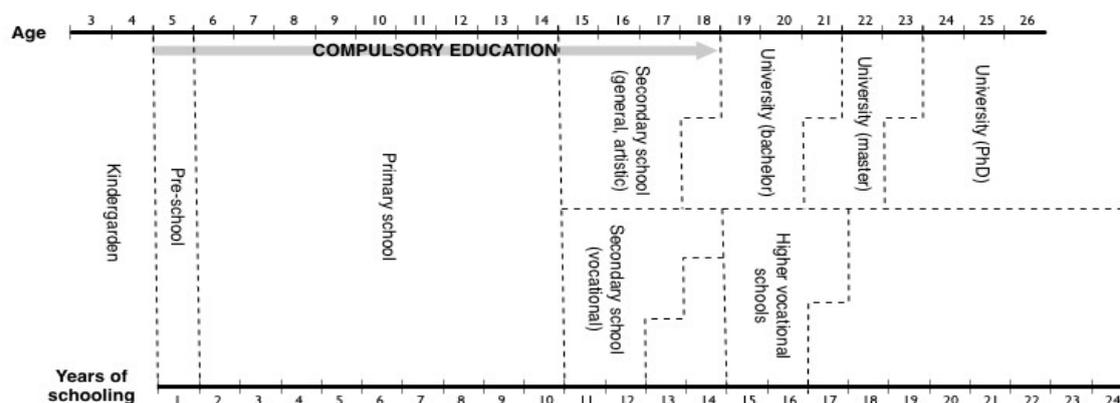
### 1.1.2 The program

The Macedonian Conditional Cash Transfer (CCT) for Secondary School Education is a social protection program that aims to increase the secondary school enrolment and completion rate among children in the poorest households of the population. The objective of the program is to increase secondary school enrolment, and particularly reduce the high drop-out rates, among the poorest segment of the population. It was first implemented by the Macedonian Ministry of Labour and Social Policy in the school year 2010–2011 and provided cash transfers to poor households, conditional on their children of school-going age attending secondary school at least 85 per cent of the time.<sup>3</sup>

Secondary education is free and is divided into two high-school tracks: academic and vocational. Attendance of either type of school fulfils the condition required by the CCT program. The legal age for leaving school is 18 years old. However, this requirement is not fully enforced. In fact, at baseline, a large proportion of children below 18 were not attending school.

<sup>3</sup> The program started at the beginning of the 2010–2011 school year.

**Figure 3: Educational system in Macedonia**



Note: The CCT targets children who are in SFA families and who have not completed secondary school up to age 23. Access to secondary school is provided upon completion of primary school education. Access to university is possible only after completion of general and artistic secondary school education. We have not included religious education here.

The program was offered to beneficiaries of the social financial assistance (SFA) benefit, which is the largest income support program in Macedonia, accounting for about 0.5% of the country's GDP and 50% of its total spending on social assistance (Verme 2008). SFA is a means-tested monetary transfer granted to people who are fit for work, but who are very poor and cannot support themselves and their families.

The amount paid is equivalent to the difference between each household's income and the social assistance amount determined for the household, which varies with household size and time spent in SFA: from MKD 1,825 (approximately USD 40<sup>4</sup>) for a one-person household, to MKD 4,500 (approximately USD 98) for households with five or more members. It is considered to be the benefit of last resort, in the sense that it is only provided if, after all other available benefits, the household's income is still below a particular living standards threshold.

SFA mainly targets the poorest households. Fifty five per cent of total SFA benefits are collected by households in the poorest income quintile, 22% are collected by those in the second poorest quintile, and 11% are collected by those in the middle quintile (The World Bank 2009). While being a relatively homogeneous group in terms of poverty, living standards and access to the labor market, SFA recipients are a diverse group, a characteristic that reflects the Macedonian population and has roots in the historical instability of the region.

In terms of social norms, recipients represent four main ethnic groups (Macedonians, Albanians, Roma and Turks) and two religions (Christian Orthodox and Islam). In terms of female empowerment, women are in fact characterized by very low levels of education and very little experience in the job market, and they often experience domestic violence. The diversity of the recipients, their heterogeneity in terms of social norms and the low levels of female empowerment make the CCT intervention of central importance for the whole country.

<sup>4</sup> We make use of the exchange rate of 8 August 2014 corresponding to USD 1/MKD 45.8398. Source: Macedonian State Statistical Office.

The total annual subsidy provided by the CCT, if all conditions are met, is MKD 12,000 (roughly USD 240), paid in quarterly instalments. The CCT is estimated to cover approximately 6–7% of the annual household expenditure in targeted households.

The payment periods correspond to the quarters of the school year: from September to October, November to December, mid-January to March and April to mid-June. At the end of each quarter, school officers enter attendance data in the CCT system and the Ministry of Labour and Social Policy processes payments. The payments are scheduled for December, February, May and July, but during the period of study the program experienced a large heterogeneity in the schedule of payments due schools not reporting attendance in time.

After school attendance is checked centrally by the ministry, the payment is processed. During the program's first two years, the payment was processed through checks that can be cashed in banks or post offices. It is easy to ensure compliance with payment modalities in each municipality, since the system for printing checks is fully computerized. From the third year of the program, the payments were instead processed through direct transfers to beneficiaries' bank accounts.

## **1.2 Evaluation: design, methods and implementation**

In order to learn about the impact of the program on the lives of the poor in Macedonia, the team implementing the CCT project developed an impact evaluation plan in conjunction with researchers from the Department of Economics at University College London, the Institute for Fiscal Studies, and the Centre for Microdata Methods and Practice. This plan had two main components: measuring the overall impact of the CCT program and measuring the effect of different payment modalities for transferring the CCT income.

### **1.2.1 The overall impact of the CCT**

The first component concerns measuring the overall impact of the CCT. This was assessed by comparing a set of outcomes for:

- program beneficiaries, in particular households who are beneficiaries of SFA and who have children of secondary school age
- households who are poor but not eligible for the CCT, namely beneficiaries of child allowance (CA) with children of secondary school age.

At program design stage in 2009, the CCT unit in Macedonia jointly worked with the researchers on evaluation design to measure the overall impact of the CCT and compare alternative modalities. The evaluation of the overall impact of the program became a major challenge given the national rollout of the program. We decided to compare CCT with CA, a benefit for households with at least one child of secondary school age, who are assumed to be in similar situations to recipients of SFA, but who are not eligible for the CCT.

CA is a monetary transfer that is designed to cover part of the costs of raising a child. It is provided to poor households in Macedonia where at least one parent is working. This is a non-universal, household income-based benefit, where the eligibility criteria depend on both total household income and the employment status of the child's caretaker.

Although both SFA and CA target poor families with children, the benefits rarely overlap since children from families where both parents are unemployed are not eligible for CA. Therefore, it is sensible to select CA households that are unlikely to receive SFA at the same time. From the income distribution point of view, SFA and CA recipients partly overlap, and this is confirmed both by the World Bank report and data from the baseline.

To sum up, we cannot rule out the possibility that SFA and CA recipients exhibit different trends, especially if we consider the poorest among the CA recipients. Because these two groups can be different, a naive comparison between them may not provide accurate estimates of the impact of the CCT program. Therefore, it is essential to collect information before and after the program, so the two groups can be compared at baseline (just before the program is implemented), and at two follow-up periods (at the end of the first and second years of implementation).

To quantify the total impact of the CCT, this report will focus on three outcomes of interest: the level and composition of household expenditure in durable and non-durable goods; the level of educational expenditure on children; and children's secondary school enrolment and attendance. All these variables should be higher for CA than for SFA households at baseline, since the former are slightly wealthier.

Therefore, to assess the impact of the program, we examine whether any pre-existing differences between these two groups were reduced at follow-up, and by how much. In short, we use a differences-in-differences estimator using CA households as a control group for SFA households who are eligible for the CCT. The central assumption of this estimator is that both types of households (CA and SFA) experience similar trends in outcomes (school attendance and household expenditure) in the absence of the program.

### **1.2.2 The effect of different payment modalities**

The second component of this study concerns the most effective way of delivering the CCT benefits. Two questions were of particular interest to the evaluation team. Both are incorporated in the impact evaluation design.

The first question concerns the individual to whom the payment is made. Throughout the world, payments in CCT programs are made to the mother figure in the household, regardless of whether she is the head of the household or not (Fiszbein and Schady 2009). The idea is that paying the mother will give her more decision-making power in allocating household resources, leading to more spending on desirable items such as food or investments in children, and less spending on items such as alcohol and tobacco.

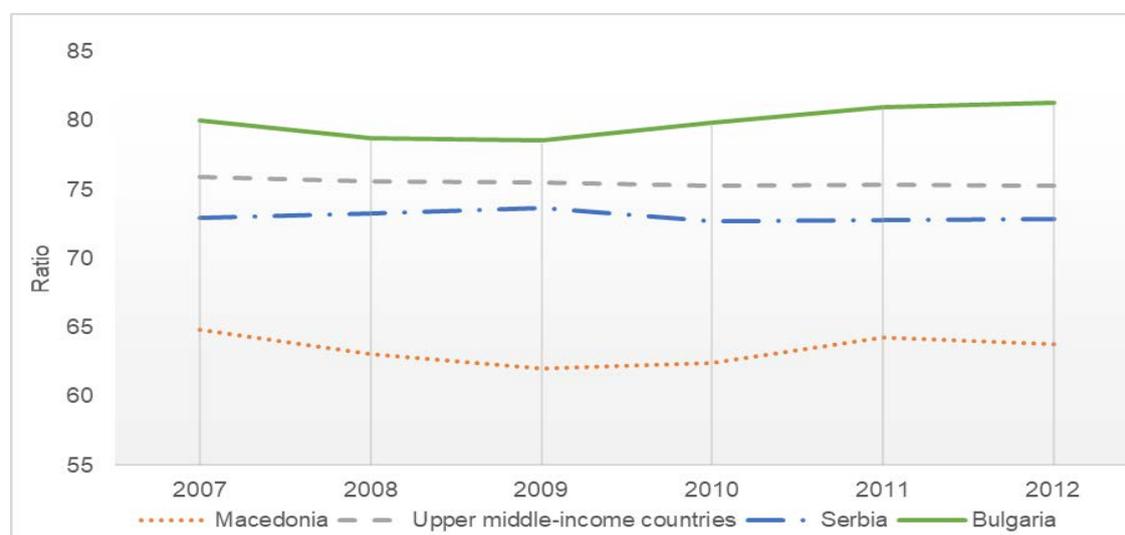
This approach may not necessarily work in the Macedonian context because, in most cases, the household head is male. As the figure of authority at home, the male household head is perhaps more capable of enforcing children's school attendance.

While the main goal of the program is to target secondary school attendance and reduce the drop-out rate among children in the poorest households, a secondary focus is aligned with empowering women. The government's objective was to introduce a program that could increase the share of income controlled by women and improve their condition within households. This is particularly relevant in Macedonia since the female-to-male labor force participation rate tends to be low.

Figure 4 shows the female-to-male labor force participation rate for 2007–2012 for Macedonia and other countries. In Macedonia, the rate was approximately 65 per cent, and was significantly (10–15 percentage points) lower than Serbia and Bulgaria, and the average for upper middle-income countries. While a clear figure is not available, we expect this condition to be much worse in the poorest share of the population, where women are less educated.

The second question concerns the timing of payments. While most CCT programs disburse payments in equal instalments, one way to encourage school attendance until the end of the year is to reduce the payments early in the academic year and provide a larger payment at the end, perhaps even making this payment conditional upon passing the school grade. The cost of such a strategy is that it may hurt the household’s capacity to smooth consumption.

**Figure 4: Ratio of female-to-male labor force participation, 2007–2012**



Note: Labor force participation rate is the proportion of the population aged 15 and older that is economically active.

Source: International Labour Organization.

The impact evaluation was designed to understand these questions better. For the first question, in half of the municipalities the transfer was disbursed to the mother of the child, while in the remaining municipalities it was disbursed to the household head,<sup>5</sup> who is generally male.<sup>6</sup> Similarly, for the second question, half of the municipalities received the payment in equal instalments and the other half received three smaller payments and a larger payment at the end of the year conditional on passing the grade.

<sup>5</sup> The CCT program defines ‘household head’ as the person in the household that is registered at the Social Welfare Centre (SWC) for SFA. According to the Macedonian financial assistance rules, the household head is determined by the following: if there is an employed person in the household, the household head is the employed person; if there is a pensioner, the household head is the pensioner; if no employed person or pensioner exists in the household, the household head is the unemployed person representing the household; for all other households, the SWC selects the household head as the person representing the household.

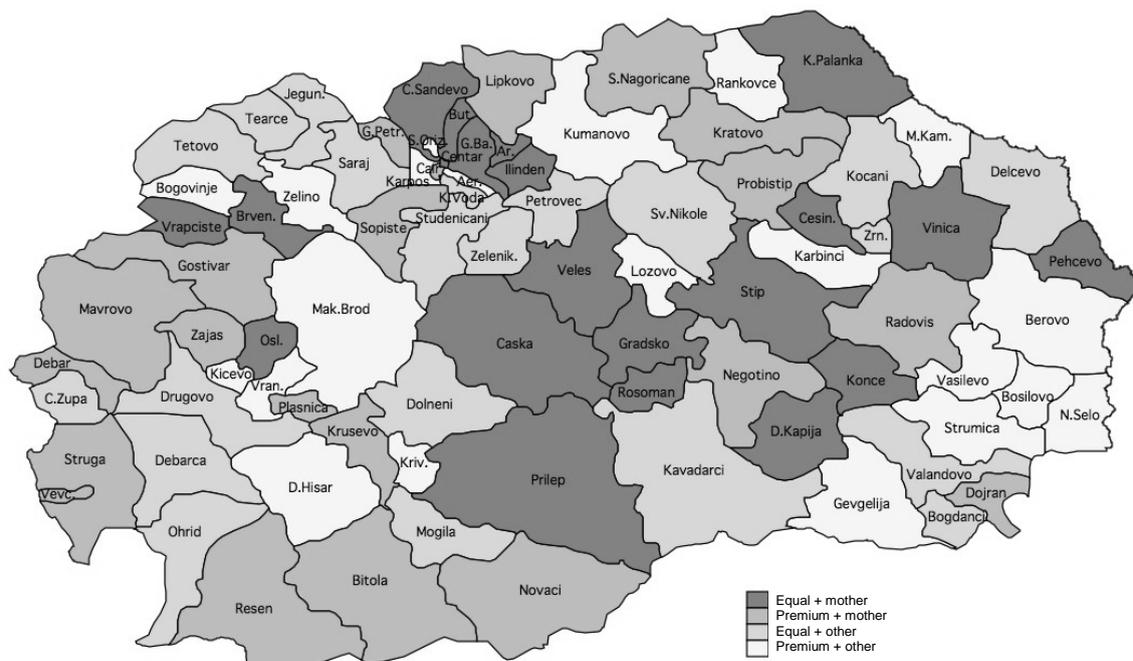
<sup>6</sup> Looking at the baseline data for SFA recipients in non-single-parent households, in 90% of households the household head is the male partner (and father of children eligible for the CCT). In single-parent households, the household head is male only in 32% of households. Non-single-parent households represent 88 per cent of SFA households.

The comparison of different CCT modalities is experimental. For each question, the allocation of municipalities to one group or the other was carried out through a lottery in July-August 2010, before the introduction of the program. This ensured that municipalities in different groups were generally equal and therefore comparable.

To evaluate the relative merits of each modality, we made a simple comparison after the program implementation. We compared households living in these two groups of municipalities at both baseline and follow-up, allowing us to assess whether the randomization was effective and whether each payment modality generated an effect.

For each question, randomization of the payment modality was done at municipality level using stratification by population size. For the question relating to the gender of the recipient, the 84 municipalities were divided into 7 groups depending on population size, and then randomized into 2 groups of 42 municipalities. In one group, the transfer was paid to the mother of the child. In the other, the transfer was paid to the household head, regardless of gender.<sup>7</sup> Figure 5 presents the allocation of these payment modalities across different municipalities.

**Figure 5: Randomization of treatment across municipalities**



Note: Macedonia comprises 8 regions and 84 municipalities. The randomization on the gender of the recipient divided the municipalities in two groups: ‘mother’, where the payment was made to the mother of the child, and ‘other’, where the payment was made to the household head. Similarly, the randomization in the type of payment divided the municipalities into ‘equal’, where the four payments in a school year were equal, and ‘premium’, where an end of the year premium was paid.

<sup>7</sup> To carry out stratified randomization, we used population size data at municipality level provided by the State Statistical Office. The seven groups were computed using seven quantiles for the distribution of population size in Macedonia. Within each group, we randomized to each treatment modality out using Stata and a random number generator.

### **1.2.3 Theory of change**

Analysis of the program impact is based around a test of the following hypotheses, proposing first a change induced by the program as a whole and then by its payment modalities.

First, participation in the CCT program should have affected the living standard of the households targeted by the program by providing an additional source of income. Since the program presents a conditionality, participation in the CCT is expected to improve the school participation of children in the households targeted by the program.

Additional income could also have an indirect effect on school participation as children would spend more time studying as opposed to working, and households could have more resources to invest in school-related goods. The CCT could also have indirect effects on primary school completion. The program may encourage households to have their children complete primary education, so they could then enroll in secondary education and the CCT program.

We note that paying the transfer to the mother figure in the household, rather than to the head of household, could have an effect on the distribution of expenditure across different goods and the availability of durable goods as a result of giving women greater control of resources. A stronger control of expenditure by women could also have an indirect effect on children's school attendance and on monitoring school attendance if women have stronger preferences than men for educating children.

Overall, the CCT could affect the distribution of decision-making power within households, if the payment is large enough and the woman can control its use. A large body of research in fact provides evidence that the amount of resources that each household member contributes to the family affects resource allocation on consumption and suggests that this might be induced by a shift in the control of resources (see, for instance, Thomas 1990; Schultz 1990; Bourguignon et al. 1993; Browning et al. 1994; Phipps and Burton 1998).

When focusing on the payment schedule, receiving the CCT in four equal payments, rather than having a larger end-of-academic-year bonus and smaller earlier payments, could affect the distribution of expenditure across different goods and on household access to durable goods. This is particularly true if the final payment is conditional upon a child passing their school grade.

### **1.2.4 Data**

The data used in this report are a combination of three household surveys, designed and collected specifically for the impact evaluation, and administrative school records that were matched with the household surveys.

A detailed questionnaire was designed for the program evaluation, comprising several modules:

- demographics
- education
- health
- labor force participation, including employment, business enterprises, agricultural activities and other sources of income

- housing conditions
- ownership of durable goods
- food expenditure and consumption, and non-food expenditure
- expectations about returns to schooling
- women's attitudes towards domestic violence
- program participation, including knowledge about the CCT and other public programs.

The questionnaire was completed during interviews in the homes of randomly selected households. Where possible, it was answered in the presence of both parents of the eligible child.<sup>8</sup> The sampling frame and the sampling strategy are presented in online Appendix A.

The data were collected in three waves. The baseline survey was conducted between November and December 2010, coinciding with the beginning of the first school year in which the CCT program became available.<sup>9</sup> At baseline, a sample of eligible households was produced using the Ministry of Labour and Social Policy's electronic database of the recipients of all types of financial assistance in 2010. The population frame was produced using hard copy archives at SWCs, which are the main territorial units for social welfare provision. There are 27 inter-municipal SWCs and they function as the key public providers of professional services in social work. Using the electronic database for sampling identified 12,481 SFA households with at least one child of secondary school age, from which we drew a random sample.<sup>10</sup> The sample contains households that were eligible for the CCT before the introduction of the program. To be included in the sample, a household had to be receiving SFA (i.e. with all adult members in long-term unemployment) and to have at least one child of secondary school age (15–18). The second wave of the household survey was conducted between October and November 2012 (first follow-up) and a third wave was completed between November 2013 and March 2014 (second follow-up).<sup>11</sup>

While this report focuses on the results of the intervention, baseline data gave us an important picture of the target group for the CCT before the program was implemented, informing us of the main problems faced by these households. The data show an overall picture of poverty, with SFA households having low levels of consumption and expenditure, and inadequate housing conditions (in terms of access to sewage, electricity, telephones, toilets, and similar basic services).

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<sup>8</sup> In most cases, the interview was completed in the presence of both parents. However, we observe cases in which only one person was present during the interview.

<sup>9</sup> At baseline, households were interviewed during the first two months of the program, rather than before the start of the intervention. However, it is reasonable to believe that this timeline had no effect on baseline results, since program implementation was very slow at the beginning and the first payments were processed only in March–April 2011. In contrast, the survey was quick and the last interviews were carried out by the end of December.

<sup>10</sup> We aimed for a sample size of 17 households eligible for the CCT (recipients of social and financial assistance with children of secondary school age) per municipality, although in practice there was some variation in this number due to the fact that in some municipalities the eligible population was smaller than 17. Exact power calculations are presented in the online Appendix C.

<sup>11</sup> Section 2 of the report will be focusing on the effect on expenditures at the end of the first follow-up in 2012, while section 3 will be comparing outcomes at the end of the second follow-up in 2013.

Nevertheless, this low expenditure was considerably higher, on average, than the amount households receive from the CCT, which is only 6–7% of total expenditure (on average). It is important to bear the strength of this incentive in mind when thinking about potential impacts of the intervention.

Adult levels of education are fairly low. School results for children attending school are also low, although school enrolment and attendance is surprisingly high. In fact, among those enrolled in school, few children attended school less than 85 per cent of the time. Again, it is important to bear this figure in mind when thinking about the potential impact of the program, as a large fraction of the target group was already attending school, although there could be a large impact on enrolment for out-of-school children.

One striking aspect of the survey concerns women's high levels of tolerance of domestic violence, which may suggest high levels of domestic violence in Macedonia.

SFA and CA recipients are very different and therefore cannot be directly compared at a fixed point during the program implementation. CA recipients are generally richer, more educated, live in better circumstances and enjoy higher levels of expenditure. The assumption is that even though we cannot compare the levels of their outcomes at any point in time, we can compare the growth in outcomes between these two groups of beneficiaries.

In terms of experimental comparison between different modalities of the CCT payment, the data show that the municipalities experiencing each modality was as close to perfectly balanced as one could hope.<sup>12</sup> This is true across a large set of variables and is a good indication that our evaluation will produce clear, transparent and useful results.

The household survey was supplemented with school records reporting attendance and performance for each student in the surveyed households. The firm responsible for the fieldwork collected administrative data by visiting each secondary school, and completing forms especially designed to measure this information, which are included in the online Appendix A. This resulted in the collection of administrative data for almost all students.

School records were collected for the first three school years of the CCT program (2010–2011, 2011–2012 and 2012–2013). For each child in the sample who attended or enrolled in secondary school in those two years, we collected data on their average school grade, grades in specific subjects, absenteeism and program enrollment. For each secondary school, we also conducted a questionnaire related to the supply of services, in which we asked about the school's main characteristics, the number of students enrolled in each study program and the number of teachers working in the school.

### **1.3 Results from previous data collection rounds**

This section summarizes the findings from a previous evaluation, which compares the baseline and the first follow-up data collection at the end of 2012. The rest of this report focuses on the effect of payment modalities on household expenditure at the end of 2012 (section 2), and on the general impact of the program and its different modalities at the end of 2013 (section 3).

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<sup>12</sup> Table 2 presents randomization checks at household level at baseline for the sub-sample used in the follow-up survey at the end of year II in 2012.

Among households that were eligible for the CCT at baseline, more than 20 per cent of the respondents, even in 2012, did not know about its existence.<sup>13</sup> Among those who knew about the program, less than half knew the exact conditionality. There were also significantly erroneous perceptions about the identity of the CCT recipient (especially in municipalities where the mother figure received the transfer) and about the schedule of payments.

We then present a brief picture of SFA recipients in Macedonia, in 2010 and 2012. Our data are extremely rich, allowing us to provide a detailed characterization of life in these households along many dimensions, namely education, consumption, expenditure, and – to some degree – labor supply and income.

We show that expenditure levels among this group were low, but considerably larger than their reported income. The main consumption item in this population was food, which absorbed more than half of total expenditure. That was followed by utilities, home goods and clothing. Alcohol and tobacco represented about 3.5 per cent of total expenditure. Secondary school enrollment along children in these households was low, but school attendance was not a very important problem among children who were enrolled in school.<sup>14</sup>

At first follow-up, we find important impacts on secondary school enrolment, which increased by about 10 percentage points as a result of the CCT program.<sup>15</sup> This is a substantial impact, considering that the average participation in secondary education for target children was close to 60 per cent.

The data also suggest that this was due to a decrease in high-school drop-out rates at later ages, rather than an increase in enrolment at the beginning of secondary school, although this is based on relatively small sample sizes. We observe hardly any impact of the CCT on school attendance among those enrolled in school. All of the program's impact on schooling comes through enrollment.

We could not detect any impact of the CCT program on households' overall expenditure levels. In theory, the CCT is supposed to be a large component of the income of eligible households, but in reality, this figure was much smaller. Although these households reported fairly low levels of household income, they reported levels of monthly expenditure that were 5–8 times larger, which suggests underreporting of household incomes.

There are several settings around the world where expenditure is a much more accurate measure of household welfare than reported income, and this is likely to be one such case. When we consider expenditure instead of reported income, the CCT corresponds to about 6–7% of average expenditure and 3–4% of average consumption (which differs from expenditure because it may include gifts or self-production of some commodities).

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<sup>13</sup> The exact question referred to whether the respondent had ever heard about the CCT for secondary school education, so the 20 per cent figure could reflect the fact that some respondents were aware of the program but cannot associate the name with the program.

<sup>14</sup> Attendance is defined as the share of classes attended by the student over the total number of classes in the school program in which they are enrolled.

<sup>15</sup> This result was estimated using a difference-in-differences method, comparing SFA and CA recipients in 2010 and 2012, two years into the CCT program.

Therefore, it is not surprising that we do not see very large impacts of the CCT on expenditure. Larger transfers are more likely to produce strong impacts on household welfare.

We then compare households in municipalities with different payment modalities. There are essentially two comparisons to be made, one concerning the identity of the CCT recipient, and another concerning the schedule of CCT payments.

We find that paying CCTs to mothers results in a different pattern of household expenditure on durable and non-durable items. This indicates a change in the household's decision-making process, presumably through the empowerment of women, who are given control of a component of household resources. Households where the transfer recipient is the mother spent a higher proportion of their budget on food and were more likely to own durable goods such as a dishwasher, a video/camera, and a motorcycle, than households where the transfer recipient is the head of household. In contrast, the former spent less on clothing than the latter, especially girls' clothing.

Education expenditure was higher in locations where the CCT payments were stable throughout the year, and this was especially true for expenditure on girls' education. Other than that, there are no substantial differences across households, which is probably a consequence of the relatively low amount of the transfer. The different payment modalities had small impacts on schooling outcomes. In fact, we cannot be certain that differences in these outcomes across modalities are statistically different from zero.

In sum, this report shows that the CCT program in Macedonia was successful in its central goal of improving secondary school enrolment among poor adolescents. However, it had limited impacts on school attendance, probably because the levels of school attendance were already high at baseline among children attending secondary school.

The program's impacts on poverty, as measured by household expenditure, were also very mild, perhaps because the transfer amounts were small relative to the median household expenditure in the sample, and short term (since payments only last for the 3–4 years of secondary school). It was difficult to be aware of this issue before the program started as the official income levels of eligible households were very low (much lower than the expenditure levels households reported in the 2010 and 2012 surveys). Therefore, the level of the transfer as a proportion of household income was thought to be much higher for eligible households.

Different payment modalities can have strong impacts on patterns of household expenditure. We did not find large differences related to different payment schedules. Our most important finding in this area is that equal CCT payments throughout the year seem to translate into higher expenditure on education, especially for girls.

The gender of the CCT recipient turned out to be more important across several dimensions, revealing that nominating women as the recipient of public transfers can change patterns of household expenditure in important ways. This is likely to be as a result of the increased empowerment of women, which leads them to be more active in decisions on household expenditure.

Finally, we found no substantial impacts of the different payment modalities on secondary school enrolment or attendance. This study is important not only for Macedonia, but for every country implementing this type of program.

## **2. The effect of gender-targeted CCT payments at the end of year II**

In this section, we focus on the effect of gender-targeted transfers on the structure of household expenditure at the end of the CCT program's first two years. We focus specifically on the effect of female empowerment and its impact on household decisions on expenditure on consumption.

### **2.1 Do gender-targeted payments affect household expenditure?**

It is of interest for policymakers to understand whether paying cash transfers to fathers or mothers makes a difference to household outcomes. Until now, it has not been possible to test this question directly, for lack of suitable data. Indeed, even in the case of the CCT program PROGRESA/Oportunidades, where large cash transfers are given to mothers, it is only possible to compare the spending patterns of recipient households with non-recipient households at specific income levels. In that context, it has been shown that income put exogenously in the hands of mothers is spent differently from income generated through other means. This gives an indirect indication that mothers and fathers probably spend income differently, but it neither establishes this as fact, nor does it allow for measuring its extent.<sup>16</sup>

A large body of research using observational data reports evidence that the amount of resources that each household member contributes to the family affects the allocation of consumption (see, for instance, Thomas 1990; Schultz 1990; Bourguignon et al. 1993; Browning et al. 1994; Lundberg et al. 1997; and Phipps and Burton 1998). However, there is no clear consensus on the precise mechanism through which households take decisions and allocate consumption. Furthermore, relative earned or unearned incomes might depend on decisions that are not independent from observed outcomes, leading to endogeneity issues.

Attanasio and Lechene (2010) describe the effect of large cash transfers put in the hands of women in the context of the CCT program PROGRESA/Oportunidades in rural Mexico. Their paper documents the fact that the program led to an increase in total consumption and no decrease in the share of the household budget spent on food, even though the transfer represented about 20 per cent of income on average. By estimating a carefully specified Engel curve, they show that food is a necessity, with a strong negative effect of income on the budget share spent on food. In other words, higher levels of income or total expenditure are associated (in a cross-section of observations not yet affected by the CCT) with lower levels of household budgets spent on food.

Attanasio and Lechene rule out a number of explanations of the observed impacts, such as an effect of the CCT program on relative prices and changes in preferences induced

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<sup>16</sup> Another possible explanation is that targeting different household members could have an effect on the awareness about the CCT program. We do not analyse this hypothesis in detail since we do not observe any effect in terms of knowledge and awareness of the program across the different treatment modalities.

by the education component of the program leading to changes in the quality of foods consumed. In the case of PROGRESA/Oportunidades, therefore, as the program increases income and total consumption substantially, the tendency of the budget share spent on food to go down is counterbalanced by some other effect of the program so that the net effect is nil.

While PROGRESA/Oportunidades is a complex intervention with many components, Attanasio and Lechene argue that the program has not changed preferences. They propose that the key to the puzzle resides in the fact that the transfer is paid to women and that their change in control over household resources is what leads to the observed changes in behavior. In this sense, the evidence points to a substantial and strong rejection of the unitary model. However, this only constitutes indirect evidence that men and women spend income differently.

In the Macedonian CCT program, the gender of the cash transfer recipient in eligible households is randomized across municipalities as either the mother of the secondary school-aged child or the household head. It is therefore possible to compare the spending patterns of men and women in households.

Only two other studies have addressed the importance of the identity of the transfer recipient in a cash program, one in Burkina Faso (Akresh et al. 2012), and one in Morocco (Benhassine et al. 2015). They both find little or no effect of the transfer recipient on the program outcomes. In addition, Benhassine and others (2015) report that the randomization on recipient gender essentially failed in practice, and that husbands appropriated the transfer.

Appropriation of the transfer is one of the main challenges in gender-targeted cash transfer programs. While deep differences exist between Macedonia, Morocco and Burkina Faso, these countries share low levels of female empowerment. If we look at the ratio of female-to-male labor force participation rate, we can observe different patterns. In 2010, the World Bank reported this ratio in Macedonia as 0.62, in Burkina Faso as 0.86 and in Morocco a much smaller 0.35 (The World Bank 2012).

In addition, the *World Value Survey (2005, 2009)* in Macedonia, Burkina Faso and Morocco asked women the extent to which they agreed with the statement that 'when jobs are scarce, men should have more right to a job than women'. In Macedonia (1999–2004), 42.6% of respondents agreed versus 52.3% in Burkina Faso (2005–2009) and 82.9% in Morocco (1999–2004). It is therefore clear that the situation faced by women in the Moroccan program is very different to the Macedonian context.

In addition, in both Benhassine and others (2015) and Akresh and others (2012), the cash transfer programs had only been implemented in smaller regions, while in Macedonia the program has been implemented nationally. This guarantees a much larger variation in the characteristics of the population, including different religions and different social norms,<sup>17</sup> which is not present in Benhassine and others (2015).

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<sup>17</sup> The studied population is represented by two major religions (Christian Orthodox and Islam) and by four main ethnic groups (Macedonian, Albanian, Roma and Turk). It includes households living in urban and rural areas.

Here, we focus on the effect of the program at the end of its second year, in 2012. In terms of outcomes, we consider the household budget shares spent on food and other non-durables (tobacco, alcohol, clothing, health and utilities, and education). We examine whether expenditure patterns differ depending upon the gender of the transfer recipient. We consider raw, unconditional effects and we then control for a number of household and municipality characteristics.

We also implement an instrumental variable (IV) estimation to correct for program participation. In doing so, we have to address several issues linked to the CCT program design. Indeed, the randomization was not done between genders, but between mothers and heads of households. The latter could be either the mother or the father, with the choice left to the household, leading to a potential endogeneity bias. However, we are able to correct for this by instrumenting the recipient's gender with the policy instrument (whether the household resides in a municipality in which mothers or heads of households are targeted).

We find that targeting mothers has an effect on the household budget share spent on food. This effect is particularly strong for Muslim households, in which the share of food is approximately 6 per cent higher when mothers receive the transfer. There is no significant effect for non-Muslims.

## 2.2 Descriptive statistics

In terms of family structure, sample composition for this evaluation is diverse, as households can have a single parent that is either a woman or a man. Table 1 breaks down the full sample by family type and whether the household is in a 'mother' or a 'household head' municipality. Since our objective is to focus on couples, we select only households containing both parents of the child (sub-samples A1, A2, B1 and B2). In addition, to limit the household decision-making to nuclear families,<sup>18</sup> we exclude households where additional adult members, such as grandparents, are living in the same dwelling and we select at baseline and follow-up sample only the households with at least one child eligible for the CCT (aged 14–18).

We obtained a sample of 1,012 households at baseline, 87 of which were not interviewed at follow-up, generating an attrition rate of 8.60 per cent.<sup>19</sup> At follow-up, we have a sample of 807 households, where the reduction is due to exclusion from the sample of certain households included in the baseline sample due to the ageing of children.<sup>20</sup>

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<sup>18</sup> Including households with additional adult members introduces further heterogeneity in the household decision-making process. But note that our results are unchanged by the inclusion of these households in the analysis.

<sup>19</sup> Attrition is not driven by the treatment modality. A probit regression on the probability of being interviewed at follow-up on the 'mother' municipality dummy and on demographic controls returns a slightly lower probability for households living in 'mother' municipalities. Results using inverse probability weighting of follow-up observations are consistent with unweighted results.

<sup>20</sup> As discussed in the online Appendix A, the follow-up sample was integrated with a random sample of 170 households who were enrolled in the program during its second year. Appropriate reweighting is carried out, since at follow-up households participating in the program are over-sampled. The results are robust to the exclusion of these households.

**Table 1: Actual recipient of the transfer, by type of household and municipality**

Applicant	Presence of partners	Identity of the household head	Actual recipient if HEAD is targeted	Actual recipient if MOTHER is targeted	Sub-sample
Yes	Both present	Father	Father	Mother	A1
		Mother	Mother	Mother	A2
	Father only	Father	Father	Father	A3
	Mother only	Mother	Mother	Mother	A4
No	Both present	Father	-	-	B1
		Mother	-	-	B2
	Father only	Father	-	-	B3
	Mother only	Mother	-	-	B4

Note: The targeted recipient of the program is defined as the recipient indicated by the randomization of the payment modality across municipalities. The actual recipient differs due to the decision to participate in the program and heterogeneity in the household structure. - indicates that no one in the household is receiving the transfer since the household does not participate in the program.

Table 2 presents means and standard deviations for household characteristics and mean differences between the different payment modality groups. The households comprise 4.5 members on average, and the household head is a man in 83 per cent of the households. Education levels of the household heads are low, with 50% having completed upper primary (eight years of education) and 20% with only lower primary (four years of education) or no education at all. Approximately 44% live in rural areas, while 14% live in Skopje, the capital city. In terms of ethnicity, the majority are Macedonian (38%) or Albanian (32%). Roma, Turk and other ethnic groups represent the residual 30 per cent.

Table 2 also shows a joint test that checks the balance of all these variables simultaneously. To conduct the test, we ran probit regressions of treatment assignment on the variables in each group and we tested whether the coefficients in the regressions were jointly equal to zero. We do not reject this null hypothesis, which provides evidence that the households in the two payment modality groups were balanced at baseline, as well as additional evidence that randomization was effective in achieving balance in the characteristics of households.

**Table 2: Descriptive statistics on household characteristics at baseline, by treatment status**

	(1) All	(2) Head of HH	(3) Mother	(4) Diff
Schooling (husband)	8.235	8.098 [3.077]	8.368 [2.908]	0.269 (0.268)
Schooling (wife)	7.153	7.131 [3.243]	7.174 [3.437]	0.043 (0.322)
Age (husband)	45.293	45.011 [5.617]	45.568 [5.575]	0.557 (0.453)
Age difference (husband – wife)	3.338	3.264 [4.219]	3.409 [4.212]	0.146 (0.348)
Macedonian	0.364	0.407 [0.492]	0.322 [0.468]	-0.084 (0.077)
Albanian	0.328	0.270 [0.444]	0.384 [0.487]	0.114 (0.089)
Turk	0.118	0.137 [0.344]	0.099 [0.299]	-0.038 (0.047)
Roma	0.139	0.139 [0.346]	0.139 [0.346]	-0.000 (0.047)
Other ethnicity	0.052	0.048 [0.214]	0.056 [0.230]	0.008 (0.031)
Muslim	0.548	0.509 [0.500]	0.586 [0.493]	0.077 (0.077)
Part of city of Skopje	0.138	0.141 [0.348]	0.135 [0.342]	-0.006 (0.082)
Rural	0.441	0.464 [0.499]	0.418 [0.494]	-0.047 (0.115)
Children aged 0–6 years	0.143	0.141 [0.395]	0.146 [0.408]	0.005 (0.025)
Children aged 7–12 years	0.457	0.461 [0.617]	0.453 [0.655]	-0.007 (0.045)
Children aged 13–18 years	1.620	1.611 [0.671]	1.629 [0.655]	0.018 (0.049)
Children in secondary school	0.942	0.934 [0.645]	0.949 [0.679]	0.015 (0.050)
Farmer	0.198	0.237 [0.426]	0.161 [0.368]	-0.076 (0.069)
Observations	1,051	518	533	1,051
Joint equality test (p-value)				0.878

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Columns (1)–(3) report sample means for the whole sample and restricted to different treatment modalities, standard deviations in brackets. Column (4) reports the difference between columns (3) and (2) estimated using ordinary least squares (OLS) regression of the correspondent variable on the treatment indicator. Standard errors clustered at municipality level are reported in parentheses. To control for joint significance, we ran a probit regression of the treatment indicator on the selected variables and we report p-values of an F-test for the joint significance of the coefficients. Treatment indicator is equal to 1 if the transfer is made to mothers, and zero otherwise.

### **2.2.1 Expenditure**

Expenditure data were collected using a recall method, based on the purchase frequencies reported in the Macedonian household budget survey.<sup>21</sup> The expenditure section of the questionnaire was divided into sub-sections based on goods and their likely frequency of purchase. Table 3 presents the description of each category considered in the analysis.

The survey collected information about expenditure over various periods for different categories:

- Household expenditure over one week on:
  - food.
- Household expenditure over one month on:
  - health expenses<sup>22</sup>
  - personal hygiene
  - transportation costs (including transport to school)
  - expenses related to sport, culture and entertainment, including meals provided at school
  - cleaning products
  - drugs
  - medical visits
  - school fees
  - household heating and lighting.
- Household expenditure over six months on:
  - household utensils
  - children's toys
  - clothes and shoes
  - ceremonies
  - housing and vehicle maintenance.
- Household expenditure over one year on:
  - utilities (electricity, gas, phone and mobile phone bills)
  - school-related costs.<sup>23</sup>

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<sup>21</sup> The survey is collected by the Macedonian State Statistical Office with the purpose of identifying expenditure attitudes by the average Macedonian household.

<sup>22</sup> In this category, we consider expenses (collected at individual level) on consultations, hospital services, medicines, surgical appliances, hearing aids, glasses, x-rays, echocardiograms and laboratory tests, transportation costs to health centres and other medical expenses.

<sup>23</sup> We consider expenses on tuition fees, uniforms and sport uniforms, school supplies, textbooks, additional courses and other expenses related to schooling.

**Table 3: Description of goods and food items**

<b>Category of goods</b>	<b>Items</b>
Food	Cereals, vegetables and fruit, meat, fish and dairy, coffee, tea and other beverages, fats, salt and sugars and other food items
Alcohol and tobacco	Beer, wine, other spirits, cigarettes and tobacco
Clothing	Clothing and footwear
Education	Tuition fees, uniforms, school supplies, textbooks, additional courses, transportation to school, meals at school and other school-related expenses
Health	Consultations, hospital services, medicines, surgical appliances, hearing aids, glasses, x-rays, echocardiograms and laboratory tests, transportation to health centers and other medical
Utilities	Electricity, gas, phone and mobile phone bills
Other goods	All other non-durable expenditure
<b>Food category</b>	<b>Items</b>
Cereals	Bread, wheat flour, rice, pasta and other cereal products
Vegetables and fruit	Fresh vegetables and fruit, canned and pickled vegetables, nuts and dried fruit
Meat, fish and dairy	Fresh meat, dried and smoked meat, fresh and canned fish, milk, yoghurt and eggs
Coffee, tea and beverages	Coffee, cocoa, Turkish tea, other teas and beverages
Fats, salt and sugars	Pig fats, suet, oil, butter and margarine, sugar, salt, honey, jam, chocolate, sweets and cookies
Other food	All other food items

Note: The definition of categories is based on the structure of the annual household budget survey collected by the Macedonian State Statistical Office. Food items within the food category are defined on the basis of households' frequency of purchase and familiarity with the item.

Using information about expenditure on individual items, we computed an expenditure aggregate for non-durable goods. Household expenditure was determined by reporting all expenditure on non-durable goods over a comparable time period and aggregating them using available information on expenditure on individual items (Deaton and Zaidi 2002). Budget (or expenditure) shares were then defined as the share of total expenditure on non-durables that was allocated to a specific good.

Table 5 presents means and standard deviations for total household expenditure and expenditure shares (columns 1 and 2) and mean differences between the different payment modality groups (columns 3 and 4). The mean share of food is 52 per cent, which is at the level one would anticipate for a middle-income country. However, in 2006 Macedonia had an official unemployment rate of about 35% and a poverty rate of about 20% (World Bank 2012). The government runs annual budget surveys, and the mean share of food for a representative sample of households is 34 per cent.<sup>24</sup>

<sup>24</sup> Source: Macedonian State Statistical Office, 2010. *Household Consumption in the Republic of Macedonia* 2010.<sup>25</sup> Macedonia is landlocked and the share of fish alone, at least from saltwater fish, is very close to zero.

In addition, households allocate 16% of their overall expenditure to utilities, 5% to education and 9% to health. Expenditure on tobacco and alcohol is about 3 per cent of total household expenditure. Differences in expenditure shares across the two treatment modality groups are not individually statistically different from zero. This provides evidence that, at baseline, households were not only balanced in terms of characteristics, but also in terms of expenditure decisions.

Similarly, columns (1) and (2) in Table 6 present the shares of overall household food expenditure allocated to different food categories. The category with the highest share is cereals, which captures on average 33% of household food expenditure. The next highest category is meat, fish and dairy, at approximately 25% of household food expenditure.<sup>25</sup>

## 2.3 Empirical strategy

In this section, we analyze the impact on household expenditure decisions of targeting the CCT to mothers versus household heads. In particular, we are interested in understanding how the gender of the CCT recipient affects the way households allocate expenditure to different goods, and for which households this effect is stronger.

### 2.3.1 Intent-to-treat and treatment endogeneity

We start by looking at intent-to-treat estimates by comparing outcomes between municipalities grouped in the different treatment modalities. The design of the intervention, characterized by a randomization of the treatment modality at municipality level, allows for a simple comparison between municipalities where the transfer is made to mothers and municipalities where the transfer is instead offered to household heads.

Let  $mother_j$  be an indicator variable equal to 1 if in municipality  $j$  the cash transfer is offered to mothers, and zero otherwise, and denote  $y_{ij}$  an outcome of interest, e.g. share of food, for household  $i$  living in municipality  $j$ . We are interested on the effect on  $y$  of targeting the transfer to mothers versus household heads and we can estimate the following relationship:

$$y_{ij} = \beta_0 + \beta_1 mother_j + X_i \beta_2 + V_j \beta_3 + \epsilon_{ij} \quad (\text{Equation 1})$$

where  $X_i$  is a vector of household characteristics,  $V_j$  is a vector of municipality characteristics and  $\epsilon_{ij}$  is a household-specific error term, which we assume to be clustered at municipality level.

Household controls include the education level, age and gender of the household head, the ethnicity and religion of the household, and the household's size and composition. Municipality controls include regional dummies, indicators of whether the municipality is rural and whether it is part of the capital city.<sup>26</sup>

<sup>25</sup> Macedonia is landlocked and the share of fish alone, at least from saltwater fish, is very close to zero.

<sup>26</sup> Since we have 84 municipalities divided across 8 regions, we do not control for the 7 randomization strata dummies, since in some specifications it generates collinearity issues.

Intent to treat (ITT) estimates are informative of the overall effect of offering the program, but do not take into account the effect of actually receiving the transfer. Since our sample is composed by potential recipients at the beginning of the program, we do observe sampled households that did not receive the transfer. In addition, we also observe households where a mother received a transfer even if the household was not living in a municipality where the CCT targeted women.

Firstly, we observe some eligible households that did not receive any transfer because program participation is voluntary. Among the initial potential recipient households, 70% enrolled during the program's first year and 40% during its second year. This reduction is mainly due to the ageing of the baseline sample and children's graduation from secondary school. However, among the potential recipients initially sampled, 82 per cent received at least one CCT payment in the program's first two years.<sup>27</sup>

Secondly, we observe women receiving transfers while living in a municipality where household heads are targeted because the choice of who within the household is declared as head is not exogenous, but driven by a specific decision process that is unobserved.<sup>28</sup> This means that in municipalities where the transfer is targeted to household heads, a mother receives the actual transfer if at the same time she is also the household head. Table 1 presents cases where the actual recipient can differ from the targeted recipient. Indeed, in an ideal world where we want to estimate the effect of targeting mothers versus targeting fathers, the only two cells that would be populated in the table would be those relating to a mother receiving the transfer in a municipality where the payment modality targets mothers and the cell of a father receiving the transfer in a municipality where the transfer targets fathers. However, program participation and household composition create problems of endogeneity when the aim is to estimate the effect of targeting a payment to the mother of a child.

Given that compliance with the CCT program was not perfect, we performed IV estimation of the impact of targeting cash transfers to mothers. We define an indicator  $d_{ij}$  equal to 1 if in the first two years of the program in household  $i$  the mother actually received at least one CCT and zero otherwise (i.e. the father received the transfer or the household did not enroll in the program).

We use the indicator for the treatment modality at municipality level, mother  $j$ , to instrument for the endogenous receipt of the transfer by a mother and we estimate the effect using a linear regression model augmented with an endogenous binary-treatment

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Results are unaffected by the inclusion of these additional controls.

<sup>27</sup> We face endogeneity in terms of eligibility, which we do not take into account since we do not have access to administrative data about enrolment in the SFA program over time. There is a share of households who do not participate in the CCT because they would lose the right to SFA, so they indirectly lose the right to apply to the CCT program. SFA households tend to lose and regain the right to SFA benefit over time, therefore it would be difficult to capture CCT eligibility from SFA self-reported status.

<sup>28</sup> The decision is antecedent to the introduction of the CCT program and is related to applying to the SFA program. The household head is the recipient of financial assistance, which can be a woman even when the household includes a couple. Approximately 10 per cent of our sample comprises non-single-parent households in which the head is female.

variable estimated by full maximum likelihood:

$$\begin{aligned} y_{ij} &= \beta_0 + \beta_1 d_{ij} + X_i' \beta_2 + V_j' \beta_3 + \epsilon_{ij} \\ d_{ij} &= \theta_0 + \theta_1 mother_j + X_i' \theta_2 + V_j' \theta_3 + \omega_{ij} \end{aligned} \quad \text{(Equation 2)}$$

where  $x_i$  is a vector of household characteristics,  $v_j$  is a vector of municipality characteristics and  $\epsilon_{ij}$  and  $\omega_{ij}$  are household-specific error terms. Similarly, for ITT estimates, we cluster standard errors at the municipality level.

One condition for the IV estimation to work is that we require the variable  $mother_j$  to be correlated with  $d_{ij}$ . Columns (1)–(3) of Table 4 present first stage OLS regressions for the actual cash transfer to a mother. The dependent variable is a dummy variable equal to 1 if a mother in the household has received at least one cash transfer in the program's first two years, and zero otherwise.

As previously discussed, a mother living in a household enrolled in the CCT program can receive a transfer if she lives in a municipality where the payments are transferred to mothers, or if she lives in a municipality where the transfer is made to household heads and she is the household head. We show that there is a strong relationship between residing in a municipality where the CCT targets mothers and the probability that a mother in the household actually received a transfer during the program's first two years. For a mother eligible for the CCT at the beginning of the program, living in these municipalities increased the probability of receiving a cash transfer by approximately 70 per cent.

Throughout this section, each outcome table will present the treatment effect estimated using OLS with and without controls (Equation 1) and using IV estimation (Equation 2). The objective is to compare the effect on the outcome of interest of offering the CCT payment to women with the effect of a woman in the household receiving a transfer. These two effects could be different if the proportion of households not enrolling in the program is high, and the effect is driven by enrolling in the program and receiving the additional income. We would expect the second effect to be larger if the ITT effect is driven by women receiving the transfer, since this is a smaller proportion than all targeted women.<sup>29</sup>

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<sup>29</sup> An additional issue linked to measuring the effect is related to potential spillover effects. While the original evaluation was not designed to measure spillovers, there could be spillover effects from different programme modalities. The change in power over resources within the household could conceivably change not only the allocation of resources in the short run, but also, more generally, attitudes towards women. Moreover, such a change could start spilling over to neighbouring households, or to family and friends, even in municipalities where the payment is given to the household head. Even though such a change in attitudes is possible, the targeted population (SFA recipients) is small compared with the overall population and we therefore expect this issue to be small. In addition, access to a secondary school is provided in almost every municipality and the possibility of children from municipalities with different treatment modalities attending the same class is low.

**Table 4: First stage regressions of actual cash transfer to mother**

	Dependent variable: Actual transfer to mother			
	(1) OLS	(2) OLS	(3) Probit	(4) Probit
Mother municipality (d)	0.733*** (0.028)	0.723*** (0.025)	0.733*** (0.028)	0.824*** (0.022)
Muslim (d)		0.003 (0.058)		-0.077 (0.111)
Controls	No	Yes	No	Yes
Observations	830	830	830	830
<i>R</i> <sup>2</sup>	0.542	0.633		

Note: Standard errors clustered at municipality level in parentheses. \*\*\* denotes significance at 1%, \*\* at 5%, and \* at 10%. The dependent variable is a dummy equal to 1 if a mother in the household has received at least one cash transfer in the program's first two years, and zero otherwise. Coefficients on the treatment indicator 'Payment to mother' are estimated using OLS regression in columns (1)–(2) and using probit in columns (3)–(4) where marginal effects are reported.

## 2.4 Results

In this section, we analyze the impact on household expenditure shares of targeting CCTs to mothers. We start by looking at the effect on the total household expenditure, and on the budget shares spent on food, tobacco and alcohol, clothing, education, health, utilities, and other goods.

Columns (5) and (6) in Table 5 present means and standard deviations for total household expenditure and expenditure shares at follow-up. As discussed in section 2.3, we tested for differences in expenditure patterns between the two payment modality groups using three different specifications. In column (7), we present a simple difference between the two groups estimated using OLS regression and no control variables. Column (8) presents the difference estimated adding controls (Equation 1), while column (9) shows the estimate of the coefficient  $\beta$  in Equation 2.

We find a statistically significant higher household budget share spent on food (roughly 4–5% more) when mothers received cash transfers, which is consistent across the different specifications. IV estimation is slightly larger than OLS, providing evidence that mothers actually receiving the transfer drives the larger effect. This provides evidence that targeting mothers had an effect, even if small, on the share of household expenditure allocated to food.

In addition, we observe a marginally significant decrease in the share of household expenditure spent on clothing, tobacco and alcohol when mothers receive the cash transfer, which vanishes when adding controls or estimating the difference with IV. Furthermore, we observe a reduction in the share of household expenditure spent on health-related goods by approximately 2%, which is significant only at 10%. This provides evidence that households where the transfer targets women tend to increase

the share of resources allocated to food.<sup>30</sup>

Since we mainly observe an effect on the share of household budget spent on food, we focus on the allocation of expenditure within the food basket to understand whether targeting cash transfers to mothers affects which food items households purchase.<sup>31</sup> To this end, we compared the share of total food expenditure allocated to different food categories across treatment groups. It is important to consider food shares, rather than expenditure shares, to understand how the increased resources allocated to food translated into spending allocation across different food items.

Table 6 presents descriptive statistics at baseline and follow-up on food shares. We can note that households allocate most food expenditure to cereals (approximately 33%) and to meat, fish and dairy (approximately 25%). Vegetables and fruit also capture a large share of food expenditure, of approximately 16 per cent.

Table 6 also presents estimates of differences in the shares of food expenditure allocated to different items. We cannot identify any statistically significant effect in the way households allocate expenditure within the food basket that is consistent across different estimation methods. This suggests that, while targeting cash transfers at mothers increased expenditure shares on food, this did not translate into a change in the way these additional resources are allocated within the food basket.

#### **2.4.1 Heterogeneous effects**

The sample composition in the study provides heterogeneity in terms of social norms, which could explain the effect of targeting payments to women on household expenditure. It is therefore natural to look at heterogeneous treatment effects among different subgroups in the sample. We focus specifically on religion, which is an important factor in Macedonia, capturing attitudes about intra-household decision-making.

Table 7 presents differences in expenditure shares by looking at Muslim households (columns 1–3) and non-Muslim households (mainly Orthodox Christian households, columns 4–6). We estimate the effect using simple differences and IV estimates. We can observe that the positive results on the share of the household budget spent on food are mainly driven by Muslim households, while for non-Muslims the difference is very close to zero.

For Muslim households, we observe a large increase of up to 6 per cent in the proportion of household budgets spent on food, while for non-Muslim households the effect is not significant. We also observe that Muslim households tend to allocate fewer resources to tobacco and alcohol when the cash transfers target mothers. For non-Muslim households, we observe that targeting payments to mothers increases the household budget share allocated to education and reduces that allocated to health. We do not observe any other significant difference for the other goods.

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<sup>30</sup> One possible mechanism is that households start buying items but we do not find any effect on the proportion of non-zero expenditures. Another mechanism related to this effect would be time use. We collected information on the amount of time spent by both parents on different activities the day before the interview. Again, we do not observe any effects of the payment modality on this dimension.

<sup>31</sup> We excluded alcohol expenditure from the food basket.

This provides evidence that social norms may play an important role in explaining how gender-targeted transfers might affect household spending decisions. If we compare Muslim and non-Muslim households, we can observe that in Muslim households women tend to be less educated and have less experience in the labor market compared with those in non-Muslim households. In other words, Muslim women tend to marry younger and tend not to have worked before. Therefore, one explanation of the result is that the effect of the program is larger for households where women are less empowered and present larger returns from being able to control some household resources.

**Table 5: Expenditure and budget shares by treatment status and program effect**

	BASELINE				FOLLOW-UP				
	Descriptive		Program impact		Descriptive		Program impact		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Head of HH	Mother	OLS	OLS	Head of HH	Mother	OLS	OLS	IV
Log monthly expenditure	9.574 [0.433]	9.578 [0.458]	0.004 (0.052)	0.016 (0.045)	9.717 [0.574]	9.751 [0.556]	0.035 (0.076)	-0.010 (0.065)	-0.002 (0.082)
<b>Expenditure shares:</b>									
Food	0.519 [0.147]	0.531 [0.144]	0.012 (0.016)	0.009 (0.014)	0.519 [0.158]	0.564 [0.166]	0.044** (0.020)	0.040** (0.017)	0.050** (0.023)
Tobacco and alcohol	0.034 [0.060]	0.032 [0.065]	-0.002 (0.006)	-0.003 (0.005)	0.039 [0.062]	0.028 [0.049]	-0.011 (0.007)	-0.007 (0.006)	-0.008 (0.008)
Clothing	0.056 [0.049]	0.045 [0.041]	-0.010* (0.006)	-0.002 (0.004)	0.057 [0.052]	0.046 [0.051]	-0.011* (0.006)	-0.008 (0.005)	-0.009 (0.007)
Education	0.043 [0.069]	0.051 [0.077]	0.009 (0.007)	0.007 (0.006)	0.043 [0.056]	0.048 [0.062]	0.005 (0.006)	0.005 (0.006)	0.008 (0.008)
Health	0.098 [0.130]	0.084 [0.105]	-0.014 (0.010)	-0.015 (0.010)	0.073 [0.117]	0.058 [0.095]	-0.015* (0.009)	-0.017** (0.008)	-0.027** (0.012)
Utilities	0.158 [0.091]	0.159 [0.078]	0.001 (0.010)	-0.002 (0.008)	0.181 [0.104]	0.161 [0.096]	-0.020* (0.012)	-0.017 (0.013)	-0.022 (0.017)
Other goods	0.009 [0.046]	0.013 [0.048]	0.003 (0.004)	0.002 (0.003)	0.018 [0.054]	0.024 [0.064]	0.006 (0.007)	0.003 (0.006)	0.001 (0.007)
Observations	515	528	1043	1043	410	415	825	825	825
Controls	-	-	No	Yes	-	-	No	Yes	Yes

Note: Standard deviations in brackets, standard errors clustered at municipality level in parentheses. \*\*\* denotes significance at 1%, \*\* at 5%, and \* at 10%. Budget shares are defined as the ratio between the expenditure on a specific category and the total household expenditure. In columns (3), (4), (7) and (8), differences are estimated from running the corresponding least squares regression on treatment status, equal to 1 if the transfer is made to mothers and zero otherwise. In column (9), the difference is estimated instrumenting the dummy variable equal to 1 whether a mother received at least a payment in the first two years of the CCT program, and zero otherwise, with the treatment status.

**Table 6: Food expenditure by treatment status**

	BASELINE				FOLLOW-UP				
	Descriptive		Program impact		Descriptive		Program impact		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Head of HH	Mother	OLS	OLS	Head of HH	Mother	OLS	OLS	IV
Cereals	0.331 [0.169]	0.316 [0.173]	-0.016 (0.019)	-0.010 (0.018)	0.298 [0.174]	0.297 [0.162]	-0.001 (0.016)	0.007 (0.017)	0.004 (0.024)
Vegetables and fruits	0.159 [0.112]	0.173 [0.120]	0.014 (0.014)	0.011 (0.012)	0.166 [0.125]	0.179 [0.115]	0.013 (0.011)	0.002 (0.010)	0.006 (0.012)
Meat, fish and dairy	0.252 [0.151]	0.264 [0.148]	0.011 (0.017)	0.015 (0.014)	0.271 [0.164]	0.263 [0.152]	-0.008 (0.018)	-0.004 (0.017)	-0.004 (0.023)
Coffee, tea and beverages	0.071 [0.071]	0.071 [0.062]	-0.000 (0.006)	-0.004 (0.004)	0.087 [0.077]	0.086 [0.080]	-0.001 (0.007)	-0.001 (0.007)	-0.002 (0.010)
Fats, salt and sugars	0.174 [0.103]	0.167 [0.087]	-0.007 (0.010)	-0.010 (0.008)	0.160 [0.113]	0.155 [0.093]	-0.004 (0.011)	-0.006 (0.009)	-0.011 (0.012)
Other food	0.012 [0.038]	0.010 [0.028]	-0.002 (0.003)	-0.002 (0.003)	0.019 [0.064]	0.020 [0.064]	0.001 (0.007)	0.002 (0.006)	0.005 (0.006)
Observations	515	527	1,042	1,042	408	414	822	822	822
Controls	-	-	No	Yes	-	-	No	Yes	Yes
Price controls	-	-	No	Yes	-	-	No	Yes	Yes

Note: Standard deviations in brackets, standard errors clustered at municipality level in parentheses. \*\*\* denotes significance at 1%, \*\* at 5%, and \* at 10%. Food budget shares are defined as the ratio between the expenditure on a specific food category and the total food expenditure. In columns (3), (4), (7) and (8), differences are estimated from running the corresponding least squares regression on treatment status, equal to 1 if the transfer is made to mothers and zero otherwise. In column (9), the difference is estimated instrumenting the dummy variable equal to 1 whether a mother received at least a payment in the first two years of the CCT program, and zero otherwise, with the treatment status. Beverages do not include alcohol expenditure, which is excluded from the food basket.

**Table 7: Heterogeneous treatment effect by religion**

	MUSLIM			NON-MUSLIM		
	(1) OLS	(2) OLS	(3) IV	(4) OLS	(5) OLS	(6) IV
Log monthly expenditure	-0.063 (0.085)	-0.083 (0.072)	-0.087 (0.083)	0.148 (0.106)	0.113 (0.080)	0.191 (0.119)
<b>Expenditure shares:</b>						
Food	0.052** (0.024)	0.050** (0.024)	0.054* (0.031)	0.014 (0.023)	0.016 (0.017)	0.032 (0.025)
Tobacco and alcohol	-0.014* (0.008)	-0.013* (0.007)	-0.016* (0.009)	-0.003 (0.010)	0.010 (0.010)	0.022 (0.017)
Clothing	-0.009 (0.007)	-0.007 (0.007)	-0.017 (0.011)	-0.011 (0.007)	-0.008 (0.008)	-0.012 (0.010)
Education	-0.003 (0.007)	-0.004 (0.007)	-0.001 (0.008)	0.020** (0.009)	0.016* (0.009)	0.018* (0.011)
Health	-0.005 (0.012)	-0.007 (0.012)	-0.015 (0.018)	-0.029** (0.013)	-0.029** (0.012)	-0.040*** (0.015)
Utilities	-0.019 (0.013)	-0.015 (0.013)	-0.018 (0.018)	-0.019 (0.020)	-0.021 (0.016)	-0.027 (0.021)
Other goods	0.001 (0.007)	-0.002 (0.007)	-0.004 (0.008)	0.018* (0.009)	0.010 (0.010)	0.009 (0.013)
Observations	492	492	492	333	333	333
Controls	No	Yes	Yes	No	Yes	Yes

Note: Standard deviations in brackets, standard errors clustered at municipality level in parentheses. \*\*\* denotes significance at 1%, \*\* at 5%, and \* at 10%. Budget shares are defined as the ratio between the expenditure on a specific category and the total household expenditure. In columns (1), (2), (4) and (5), differences are estimated from running the corresponding least squares regression on treatment status, equal to 1 if the transfer is made to mothers and zero otherwise. In columns (3) and (6), the difference is estimated instrumenting the dummy variable equal to 1 whether a mother received at least a payment in the first two years of the CCT program, and zero otherwise, with the treatment status.

### 3. Evaluation of the CCT program at the end of year III

#### 3.1 Introduction

In this section, we present results from the evaluation of the CCT intervention and its different modalities using the second follow-up wave of data collection, i.e. at the end of the program's third year. While the first follow-up had already provided very interesting results, the second follow-up allows a deeper analysis in at least three dimensions:

1. Longer-term program impacts;
2. More precise analysis of the impacts of the program and its modalities in households with different characteristics (according to factors such as rural status, education level, age and religion of the household head, pre-program poverty levels); and
3. An analysis of how different payment modalities compare when payments are made through bank transfer rather than check, which may change the degree to which mothers control the CCT resources.

#### 3.2 Methods

In this section, we present the methodology used to evaluate the overall impact of the CCT program and compare different payment modalities.

##### 3.2.1 Measuring the overall impact of the CCT program

The evaluation design compares the evolution in outcomes of SFA recipients from the pre-CCT to the post-CCT period, to the evolution of outcomes for CA recipients during the same period, using a difference-in-differences estimator.<sup>32</sup>

Let  $Y_{it}$  denote an outcome (e.g. school enrolment) of individual  $i$  at time  $t$  (2010 or 2012 or 2013), let  $SFA_{it}$  be an indicator taking value 1 if individual  $i$  is an SFA beneficiary at time  $t$ , let  $d2012_t$  be an indicator that takes value 1 if  $t$  is equal to 2012, let  $d2013_t$  be an indicator that takes value 1 if  $t$  is equal to 2013, let  $T_t$  be an indicator that takes value 1 if  $t$  is equal to 2012 or 2013 (post-introduction of the CCT),  $X_{it}$  be a vector of controls, and  $\epsilon_{it}$  be a residual, which is independent across municipalities, but not across households within a municipality and across time (i.e. we allow for clustering of our standard errors at the municipality level).

Household controls include the education level, age, gender, ethnicity and religion of the household head, the household size and household composition. Municipality controls include regional dummies, an indicator of whether the municipality is rural or part of the capital city. Then we estimate the following equation:

$$y_{it} = \alpha + \beta(SFA_{it} \cdot T_t) + \gamma SFA_{it} + \delta_{2012} d2012_t + \delta_{2013} d2013_t + X_{it}'\theta + \epsilon_{it} \quad \text{(Equation 3)}$$

The impact of the CCT is measured by  $\beta$  in Equation 3. It measures the impact of the CCT on outcomes of SFA recipients, relative to a situation where they would not have received the CCT. Note that all SFA beneficiaries became CCT beneficiaries, even if they had children of secondary school age (which is the case for all households in our

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<sup>32</sup> For a discussion concerning the choice of CA households as comparison group, see section 1.2.

sample). This is because only about 60 per cent of all SFA recipients with children of secondary school age take up the CCT.<sup>33</sup> Therefore,  $\beta$  measures ITT, which can be transformed into the impact of the program by scaling it up by the take-up rate (i.e.  $\beta / 0.60$ ).

Imperfect take-up of welfare programs is standard in most developed and developing programs. The most common explanations for this are a lack of information about the existence of the program, high true or perceived costs of applying for it, or stigma.

In the case of the CCT, the conditionality may also discourage program take-up, if it is seen as a very undesirable feature for the household. Results show that the Macedonian CCT take-up is associated with knowledge of the program, and with ethnicity (with the Roma population having noticeably low rates of take-up). However, our target is to focus on the overall effect of offering the program by comparing SFA and CA households as a whole, not measuring the impact of receiving the CCT.

The main assumption underlying the validity of our estimate of  $\beta$  is that the underlying trends in outcomes are similar for SFA and CA recipients. In other words, although SFA and CA beneficiaries are quite different, we assume that in the absence of the CCT they would experience the same evolution in outcomes (e.g. the same change in household expenditure or school attendance between these two years) because they are subject to the same underlying trends in the economy.<sup>34</sup>

In our main results, we restrict the sample to households with children aged 15–19 (i.e. children of secondary school age), since those are the most likely to be strongly affected by the CCT. Nevertheless, CCT payments can last until the child is aged 23, as long as they are in secondary school. Consequently, we also have available an analysis for the full sample of households, which shows similar results.

### **3.2.2 Comparing alternative CCT modalities**

The evaluation design for comparing alternative CCT modalities examines differences in outcomes across households living in municipalities with different payment modalities. Since the municipalities were allocated at random to different payment modalities, they should be identical (on average) on all other characteristics, observed or unobserved.

Therefore, a simple comparison across municipalities will give us the impact on outcomes of implementing one versus another payment modality. To be precise, let  $mother_{im}$  be an indicator that takes value 1 if household  $i$  lives in municipality  $m$  where payments are made to the main female figure in the household, and equal to 0 if payments are instead made to the head of household.

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<sup>33</sup> Using baseline households, we can observe that the CCT take-up rate was not different across treatment modalities during the third year of the program. During the program's first and second years, we observe a 5 per cent higher take-up in municipalities where the transfer targeted women. However, this difference is only slightly statistically different from zero. No difference is observed for the 'equal' versus 'payment' modality.

<sup>34</sup> As discussed in section 1, while it is not possible to test this assumption, it is reasonable to believe that SFA and CA recipients would follow the same trend in the absence of the CCT program. In fact, SFA and CA recipients represent the lower part of the income distribution in Macedonia. One possibility would be to study the education trends for older cohorts in the sample and analyse whether these follow the same trend. However, the sample size does not allow supporting the hypothesis with this test.

Similarly, let  $equal_{im}$  be an indicator that takes value 1 if household  $i$  lives in municipality  $m$  where payments are made in equal quarterly instalments, and equal to 0 if payments are unequal over the year. The remaining variables follow the same notation above. Then:

$$y_{im} = \beta_0 + \sigma_M mother_{im} + \sigma_E equal_{im} + X'_{im} \beta_2 + \epsilon_{im} \quad \text{(Equation 4)}$$

The impact on outcome  $Y_{im}$  of paying the cash transfer to the female figure in the household as opposed to paying the head of household is given by  $\sigma_M$ . The impact on outcome  $Y_{im}$  of paying the transfer in equal instalments as opposed to unequal instalments is given by  $\sigma_E$ . Note that these parameters do not measure the impact of a given mode of CCT payment relative to a situation where no payment is given. These parameters simply compare different modes of payment and answer the following question: given that the CCT is in place, what difference does it make to use a particular payment modality relative to another?

### 3.3 The overall impact of the CCT

#### 3.3.1 Impacts on school enrolment

We start by analyzing the impact of the CCT program on school enrolment, by estimating the model of Equation 3 and restricting the sample to individuals of school age. We separately consider enrolment in primary school and enrolment in secondary school to pick up the effect of the CCT on different groups of children.

Primary school enrolment regression looks at individuals aged 6–14 for each round of data collection. The secondary school enrolment regression, our main outcome of interest in this section and most likely to be affected by the CCT, includes individuals aged 15–19. The university enrolment regression looks instead at individuals aged 19–24.

We start examining secondary school enrolment for children aged 15–19, with the results shown in Table 8. Eligibility for the CCT, as measured by  $\beta$  (which we call ITT) in Equation 3, leads to a 7.8 percentage point increase in secondary school enrolment for this group of children. This impact is mainly driven by girls and in the older group, suggesting that the CCT program helped reduce the drop-out rate in this group. This result is in line with other CCTs providing support for secondary school education (Fiszbein and Schady 2009).

**Table 8: Impact of the CCT on secondary school enrolment (15–19 years old)**

	(1) 15–19 years old	(2) 15–16 years old	(3) 17–19 years old
<b>All children</b>			
ITT	0.078** (0.035)	0.009 (0.057)	0.124*** (0.043)
Observations	4,152	1,870	2,282
<b>Boys</b>			
ITT	0.058 (0.053)	0.026 (0.082)	0.077 (0.079)
Observations	2,059	949	1,110
<b>Girls</b>			
ITT	0.098** (0.046)	–0.012 (0.079)	0.154*** (0.056)
Observations	2,093	921	1,172

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Standard errors clustered at municipality level are reported in parentheses. Dependent variable is equal to 1 if the child was enrolled in secondary school at the time of the interview, and zero otherwise. We include all types of secondary school programs for which the program provides cash transfers.

The CCT could have affected not only enrolment, but also other dimensions of school participation, such as attendance and performance. In terms of attendance in secondary school, we look at the share of classes attended by each student over the total number of classes in the school program in which they are enrolled.

Table 9 shows that there is no substantial impact of the CCT on school attendance.<sup>35</sup> This result is particularly interesting for secondary school, since the conditionality should induce individuals to attend regularly. However, as we saw in the baseline report, attendance rates for those enrolled in secondary school were already very high before the CCT program, which ended up having an impact mainly on enrolment. We observe no significant effect in terms of relative school performance, defined as the end-of-year average grade of the student divided by the average grade of all students in the same school program.

<sup>35</sup> For this specification, we restrict the sample to only children enrolled in a school program.

**Table 9: Impact of the CCT on secondary school attendance and performance (15–19 years old)**

	(1) 15–19 years old	(2) 15–16 years old	(3) 17–19 years old
<b>Attendance</b>			
ITT	0.003 (0.005)	–0.002 (0.007)	0.007 (0.007)
Observations	2,568	1,250	1,318
<b>Relative performance</b>			
ITT	–0.000 (0.029)	–0.004 (0.040)	0.007 (0.043)
Observations	2,536	1,235	1,301

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Standard errors clustered at municipality level are reported in parentheses. Sample is restricted to children enrolled in secondary school. Attendance is defined as the share of classes attended by the student over the total number of classes in the school program in which the student is enrolled. Relative performance is defined as the end-of-year average grade of the student divided by the average grade of all students in the same school program.

For primary school enrolment, Table 10 shows our main results for the estimates of the ITT. The first row presents estimates for both boys and girls, the second considers only boys and the third only girls.

There is essentially no impact of the CCT on primary school enrolment. In theory, there could have been an impact on primary school enrolment, not because of the conditionality (which affects only secondary school) but because poor families receive additional income that could result in increased investments in the human capital of their children. The CCT could also be leading to early enrolment in secondary school, or to a shift in parents' attention to their children of secondary school age.

**Table 10: Impact of the CCT on primary school enrolment (6–14 years old)**

	(1) 6–14 years old	(2) 6–8 years old	(3) 9–11 years old	(4) 12–14 years old
<b>All children</b>				
ITT	–0.029 (0.025)	0.085 (0.180)	–0.034 (0.025)	–0.007 (0.030)
Observations	2,251	280	600	1,371
<b>Boys</b>				
ITT	0.014 (0.031)	0.118 (0.313)	0.007 (0.036)	0.026 (0.037)
Observations	1,112	130	290	692
<b>Girls</b>				
ITT	–0.059* (0.033)	0.02 (0.285)	0.026 (0.039)	–0.045 (0.044)
Observations	1,139	150	310	679

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Standard errors clustered at municipality level are reported in parentheses. Dependent variable is equal to 1 if the child was enrolled in primary school at the time of the interview and zero otherwise.

### 3.3.2 Impacts on household expenditure

It is important to examine whether the CCT leads to an important increase in household welfare. A direct measure is household expenditure, which is known as a more reliable measure of household welfare than income.<sup>36</sup> When we construct expenditure aggregates from our expenditure questionnaire, we obtain a median monthly expenditure for the same households of MKD 14,000–17,000. Taking this measure of expenditure, the CCT corresponds to 6–7% of total household expenditure.

If, instead of expenditure, we consider a consumption measure of welfare (which includes gifts of commodities and self-production) the median consumption aggregates in each year increase to a figure between MKD 23,000 and MKD 27,000, in which case the transfer corresponds to only about 4–5% of total household consumption. Therefore, we do not expect major impacts from the CCT on the level of household expenditure.

In order to estimate the effect of the CCT on household expenditure, we computed an expenditure aggregate for non-durable goods using information about expenditure on individual items (this procedure is presented in section 2.1. Similarly to schooling outcomes, we pool observations at baseline and post-baseline (2012 and 2013 follow-up waves) and we measure the impact of the introduction of the CCT by comparing the pre- and post-CCT periods for SFA and CA households.

Table 11 shows the impacts of the CCT program on household non-durable (log) expenditure. We present two specifications, in column (1) considering only municipality dummies as controls and in column (2) including all demographic and municipality controls. We observe a small positive effect of approximately 3 per cent, but not statistically significant, both when controlling only for municipality dummies and when controlling for individual characteristics.

**Table 11: Impact of the CCT on non-durable expenditure**

	(1) Only municipality dummies	(2) With controls
ITT	0.015 (0.050)	0.024 (0.050)
Observations	2,806	2,806

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Standard errors clustered at municipality level are reported in parentheses. Dependent variable is equal to 1 if the child was enrolled in primary school at the time of the interview and zero otherwise.

### 3.4 Alternative CCT modalities

This section compares the choices of households living in municipalities with different payment modalities, three years after the CCT program was first implemented. It is important to clarify that we are not measuring the impact of the CCT on these choices. Instead, the question we ask is the following: given that the CCT exists, how do different payment modalities translate into different household choices?

<sup>36</sup> Median reported household income for SFA recipients is about MKD 2,500 per month, and the CCT is on average MKD 1,000 per month. For recipient households (roughly 60% of the SFA recipients in our sample), this corresponds to about 40% of their income. However, it is likely that income is substantially underreported in our sample.

We focus on both types of payment modalities used in Macedonia: the gender of the recipient and the schedule of payments. Firstly, for the gender of the CCT recipient, we will consider the effect of targeting mothers by estimating the coefficient on the ‘payment to mother’ dummy variable, which is equal to 1 if the household or the child reside in a municipality where the transfer targeted women, and zero otherwise. Secondly, to estimate the effect of different payment schedules, we estimate the coefficient on the ‘equal payments’ dummy variable, which is equal to 1 if the household or the child reside in a municipality where the CCT is paid in equal instalments, and zero otherwise.

We estimate the impact using Equation 4, but including five different specifications in each table to provide estimates robust to sample composition. In column (1), we compare different modalities for eligible children in 2013 using individual controls, and in column (2) we additionally control for the average dependent variable at baseline at municipality level. In column (3), we restrict the sample only to households interviewed in 2010 at baseline. The main difference with the others is that these households were eligible for the CCT program at its beginning. In column (4), we pool observations at baseline and at 2013 for these households. In column (5), we restrict the sample to households interviewed at baseline and during the second follow-up (excluding households from baseline that did not respond at follow-up).

Table 12 looks at the effect of different payment modalities on school enrolment for children aged 6–14. For primary and secondary school enrolment, we do not observe any significant effect on targeting payments to mothers or providing equal payments. This suggests that payment modalities had no effect on the enrolment rate of children not directly targeted by the CCT.

**Table 12: Impact of CCT modalities on school enrolment (6–14 years old)**

	(1)	(2)	(3)	(4)	(5)
	Controls	Lagged dep. variable	Panel only	Pooled (unbalanced)	Pooled (balanced)
<b>Primary school enrolment</b>					
Payment to mother	0.034 (0.028)	0.035 (0.028)	0.058 (0.039)	0.03 (0.033)	0.051 (0.033)
Equal payments	-0.028 (0.018)	-0.029 (0.021)	-0.03 (0.030)	-0.047 (0.032)	-0.03 (0.031)
<b>Secondary school enrolment</b>					
Payment to mother	0.008 (0.010)	0.007 (0.010)	0.011 (0.015)	0.006 (0.015)	0.006 (0.016)
Equal payments	0.01 (0.009)	0.013 (0.011)	0.019 (0.016)	0.012 (0.014)	0.012 (0.015)
Observations	454	454	325	1,460	1,221

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Standard errors clustered at municipality level are reported in parentheses. In columns (1)–(2), we compare different modalities for eligible children in 2013 using individual controls and by adding the average dependent variable at baseline at municipality level. In column (3), we compare 2013-only households that were interviewed at baseline. In column (4), we pool observations at baseline and 2013 for the households that were originally interviewed at baseline. In column (5), we restrict the sample to households interviewed at baseline and during the second follow-up (excluding households from baseline that did not respond at follow-up).

Table 13 reports the estimated effect of different payment modalities on school enrolment for children aged 15–19. For secondary school enrolment, we observe a negative coefficient on targeting cash transfer payments to mothers.<sup>37</sup> This is contrary to the results for the CCT program's first two years, where we observed a positive coefficient on secondary school enrolment.

One possible explanation is linked to the change of the payment modality from check to bank transfer. It is possible that making direct payments through bank transfers could have discouraged households where the payment is made to mothers to enroll in the program, because it was costly to set up a bank account or because husbands strongly objected to setting up a bank account in their wives' names. However, data about bank account opening or the enforcement of payments into bank accounts with only one account holder are not available and this hypothesis cannot be tested directly.

Concerning primary school enrolment, we observe an increase of approximately 2 per cent when the transfer payment targets mothers, but this is not significant in all specifications. Concerning the other schooling outcomes, we do not observe any significant effect of cash transfer either targeting mothers or arriving in equal instalments. For university enrolment and completion of secondary school, we cannot find any significant difference between the two treatment modalities. Neither do we observe any effect on school attendance indicators. In terms of children's performance at school, we observe a decrease of approximately 2–3% of the relative grade achieved when the payment is made in equal instalments.

We then turn our attention to household level variables by looking at the effect on household expenditure and budget shares (Table 14). We do not observe any significant effect in terms of total household expenditure or the way households allocate their resources to different goods. We only observe a small significant effect in the budget share allocated to clothing when cash transfer payments are made in equal instalments. Similar to observations on school enrolment and contrary to observations during the second follow-up, we do not observe any significant effect on the household budget share allocated to food.

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<sup>37</sup> Approximately 2 per cent of children in the age group 15–19 are still enrolled in primary school.

**Table 13: Impact of the CCT modalities on school enrolment, attendance and performance (15–19 years old)**

	(1)	(2)	(3)	(4)	(5)
	Controls	Lagged dep. variable	Panel only	Pooled (unbalanced)	Pooled (balanced)
<b>Primary school enrolment</b>					
Payment to mother	0.023** (0.011)	0.027** (0.011)	0.002 (0.015)	0.031 (0.020)	0.029 (0.022)
Equal payments	0.009 (0.010)	0.014 (0.011)	0.017 (0.015)	0.041** (0.019)	0.043* (0.022)
Observations	2,717	2,715	920	2,400	1,939
<b>Secondary school enrolment</b>					
Payment to mother	-0.030* (0.017)	-0.034* (0.017)	-0.017 (0.033)	-0.072* (0.043)	-0.082* (0.048)
Equal payments	0.006 (0.017)	0.008 (0.019)	-0.036 (0.032)	-0.047 (0.042)	-0.033 (0.047)
Observations	2,717	2,715	920	2,400	1,939
<b>University enrolment</b>					
Payment to mother	-0.002 (0.005)	-0.001 (0.005)	-0.003 (0.010)	0.001 (0.012)	0.001 (0.013)
Equal payments	-0.005 (0.005)	-0.002 (0.005)	-0.015 (0.012)	-0.005 (0.012)	-0.002 (0.012)
Observations	2,717	2,715	920	2,400	1,939
<b>Finished secondary school</b>					
Payment to mother	0.000 (0.011)	0.003 (0.012)	0.031 (0.022)	0.032 (0.025)	0.016 (0.025)
Equal payments	-0.000 (0.012)	0.008 (0.011)	0.000 (0.020)	-0.029 (0.026)	-0.013 (0.026)
Observations	2,695	2,693	917	2,365	1,929
<b>Attendance</b>					
Payment to mother	-0.003 (0.003)	-0.004 (0.003)	-0.006 (0.004)	-0.005 (0.005)	-0.011* (0.006)
Equal payments	-0.002 (0.003)	-0.003 (0.003)	-0.004 (0.005)	0.001 (0.005)	0.002 (0.006)
Observations	1,777	1,775	547	1,399	1,178
<b>Relative performance</b>					
Payment to mother	-0.004 (0.012)	-0.003 (0.012)	0.005 (0.023)	0.031 (0.030)	0.032 (0.033)
Equal payments	-0.027** (0.013)	-0.029** (0.014)	-0.031 (0.026)	0.007 (0.031)	0.025 (0.033)
Observations	1,767	1,765	547	1,384	1,166

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Standard errors clustered at municipality level are reported in parentheses. Columns (1)–(2) compare different modalities for eligible children in 2013 using individual controls by adding the average dependent variable at baseline at municipality level. Column (3) compares 2013-only households that were interviewed at baseline. Column (4) pools observations at baseline and at 2013 for households that were originally interviewed at baseline. In column (5), we restrict the sample to households that were interviewed at baseline and during the second follow-up (excluding households from baseline that did not respond at follow-up).

**Table 14: Impact of the CCT modalities on non-durable expenditure and budget shares**

	(1)	(2)	(3)	(4)	(5)
	Controls	Lagged dep. variable	Panel only	Pooled (unbalanced)	Pooled (balanced)
<b>Log monthly expenditure</b>					
Payment to mother	-0.041 (0.072)	-0.044 (0.070)	0.008 (0.091)	0.041 (0.106)	0.045 (0.107)
Equal payments	0.141** (0.070)	0.126 (0.078)	0.091 (0.089)	0.049 (0.107)	0.004 (0.108)
<b>Food</b>					
Payment to mother	-0.011 (0.016)	-0.01 (0.017)	0.015 (0.024)	0.006 (0.028)	-0.000 (0.029)
Equal payments	0.011 (0.013)	0.007 (0.014)	0.005 (0.019)	-0.004 (0.028)	-0.007 (0.029)
<b>Clothing</b>					
Payment to mother	0.007 (0.004)	0.007 (0.004)	0.004 (0.006)	0.009 (0.008)	0.010 (0.008)
Equal payments	0.003 (0.005)	0.001 (0.005)	0.011* (0.006)	0.018** (0.008)	0.015* (0.008)
<b>Tobacco and alcohol</b>					
Payment to mother	0.005 (0.005)	0.004 (0.005)	0.004 (0.005)	0.005 (0.008)	0.009 (0.008)
Equal payments	0.005 (0.005)	0.002 (0.005)	0.002 (0.005)	-0.003 (0.008)	-0.004 (0.008)
<b>Education</b>					
Payment to mother	0.006 (0.007)	0.006 (0.007)	-0.002 (0.011)	-0.005 (0.013)	-0.005 (0.014)
Equal payments	0.005 (0.007)	0.005 (0.007)	0.006 (0.011)	0.011 (0.013)	0.012 (0.014)
<b>Health</b>					
Payment to mother	-0.009 (0.006)	-0.009 (0.006)	-0.002 (0.009)	-0.003 (0.014)	-0.001 (0.014)
Equal payments	0.000 (0.006)	0.000 (0.006)	-0.001 (0.009)	0.005 (0.014)	0.006 (0.015)
Observations	1,750	1,748	526	1,685	1,326

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Standard errors clustered at municipality level are reported in parentheses. In columns (1)–(2), we compare different modalities for eligible children in 2013 using individual controls and by adding the average dependent variable at baseline at municipality level. In column (3), we compare 2013-only households that were interviewed at baseline. In column (4), we pool observations at baseline and at 2013 for households that were originally interviewed at baseline. In column (5), we restrict the sample to households that were interviewed at baseline and during the second follow-up (excluding households from baseline that did not respond at follow-up).

## 4. Conclusion

In this report, we examine the short- and medium-term impacts of the Macedonian CCT program and its modalities on school enrolment, household expenditure, and household expenditure patterns.<sup>38</sup> We find that the CCT has strong impacts on the school enrolment of children of secondary school age, but not on school attendance. There are no substantial differences in household or child outcomes of receiving the cash transfer payments in equal instalments or receiving a graduation bonus.

There are strong impacts of paying the mother versus the head of household on food expenditure at the end of the second year of the program. This may indicate that targeting payments to mothers could change the level of women's empowerment in their households. However, these effects are not observed at the end of the program's third year. Further investigation will attempt to understand why there was a change in this result.

The results from the report open important questions of interest to both researchers and policymakers. The gender of the recipient of the transfer turned out to be more important across a variety of dimensions, revealing that nominating women as the recipients of public transfers can change the pattern of expenditure in the household in important ways. The mechanism through which this happens is likely to be an empowerment of women, which leads them to be more active in the way households decide how to spend their income. However, there is a need to understand the mechanism behind the effect of shifting the control of resources within the household on household decision-making. To this end, in a study building on this report, Almås and others (2015) represent a first attempt to integrate an impact evaluation with behavioral measures to understand the mechanism behind this effect. The study shows that targeting payments to women did affect their empowerment, measured using a laboratory-based elicited willingness to pay for keeping their control of a cash transfer rather than having their husband receive it. However, more evidence is needed to establish the clear mechanism behind policy change and female empowerment.

For policymakers, this provides new evidence on the efficient design of cash transfers, but it also raises new questions. While we have showed that the schedule of payments had no significant impacts on household expenditure patterns, we have demonstrated that targeting women had, at least in the short run, beneficial effects for the household outcomes.

In Macedonia, starting from the fourth year of the CCT program (the school year 2013–2014), the Ministry of Labour and Social Policy acknowledged the results provided in the first evaluation of the CCT program and removed the randomization of payment modalities. Starting from 2013–2014, the CCT program was adjusted to include only payments to mothers and payments in equal instalments.<sup>39</sup> However, this prompts a new question on how to provide cash transfers to women in the most efficient way. New

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<sup>38</sup> It would of interest for policymakers to extend the analysis with a cost-efficiency analysis of the intervention. Unfortunately, this analysis cannot be completed since information about the intervention's costs are not available to the researchers.

<sup>39</sup> At this stage, due to the political instability in Macedonia, it has not been possible to supply policymakers with the results from the current evaluation.

evidence is required on the transaction type and payment type to enable the program to generate the most beneficial outcomes for its recipients.

This study is important for every country already implementing, or interested in implementing, cash transfer programs, not only for Macedonia. There is still very little knowledge about alternative ways of designing these programs. The fact that Macedonia experimented with different designs makes this study, and the whole experience in this country, unique and innovative.

## **Online appendixes**

Note to the reader: Online appendixes are provided as received from the authors. They have not been copy-edited or formatted by 3ie.

### **Online appendix A: Sample design**

<http://www.3ieimpact.org/sites/default/files/2019-01/ow41022-appendix-a.pdf>

### **Online appendix B: Pre-analysis plan**

<http://www.3ieimpact.org/sites/default/files/2019-01/ow41022-appendix-b.pdf>

### **Online appendix C: Sample size and power calculations**

<http://www.3ieimpact.org/sites/default/files/2019-01/ow41022-appendix-c.pdf>

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Armand and Carneiro examine short- and medium-term impacts of a cash transfer program in Macedonia conditional on children enrolling in secondary school. The study provides evidence on the effectiveness of different transfer modalities on improving schooling outcomes and changing household expenditure patterns. The modalities varied the payment by gender of the recipient and the schedule.

The authors find that transferring payments to mothers led to increased spending on food, but this effect dissipated in the medium term. Further, these transfers increased enrollment in secondary school but the overall enrollments in the 15-19 age group went down. The transfers also did not impact schooling outcomes, such as attendance or performance.

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