
Cash or Condition?

Evidence from a Randomized Cash Transfer Program

Sarah Baird (George Washington University)

Craig McIntosh (UC San Diego)

Berk Özler (World Bank)

Outline

- Background & motivation

 - The Zomba Cash Transfer Program (*ZCTP*)
 - Sampling and survey design
 - Research design and implementation

 - Program impacts on:
 - Education (enrollment, attendance, and achievement)
 - Marriage and pregnancy
 - How do these reconcile? An informal conceptual framework...

 - Conclusions & Policy Implications
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Background and Motivation

- Conditional Cash Transfers (CCTs) are “... targeted to the poor and made conditional on certain behaviors of recipient households.”
- As of 2007, 29 countries around the world had some type of a Conditional Cash Transfer program (CCT) in place, with many others planning or piloting one (World Bank, 2009)
- Unconditional Cash Transfer programs (UCT) are also common and have also been shown to change behaviors on which CCTs are typically conditioned.

Background and Motivation

- Whether the conditions are necessary has recently become a bigger debate.
- Proponents of CCTs point to market failures, which are addressed by the condition.
 - Evidence (a few slides from now) suggests that the effects of UCTs are (or would be) small to non-existent.
- Proponents of UCTs claim, among other objections, that the marginal contribution of the conditions have not been demonstrated, i.e. money with no strings attached would be mostly sufficient to attain the ‘desired behavior change.’

Two contributions

1. We provide the first experimental evidence on the marginal effect of the conditionality on school enrollment, using an experiment targeted at adolescent girls in Malawi, featuring a CCT and a UCT arm:
 - ❑ UCT had a modest effect on school enrollment, the size of which is less than half of that in the CCT arm.
 - ❑ Attendance and learning also improved in the CCT arm, while no such effect is detectable in the UCT arm.

Two contributions

2. However, rates of marriage and pregnancy were substantially lower in the UCT than the CCT arm:
 - entirely due to the impact of UCTs among those who dropped out of school...

- This is a bit of a puzzle, at least at first glance:
 - Turns out that the explanation is fairly straightforward.
 - Probing these findings exposes potential trade-offs that are inherent in the choice of CCT vs. UCT programs.

Evidence on the relative effectiveness of CCTs vs. UCTs

- Evidence points us heavily in favor of CCTs.
 - de Brauw and Hoddinot (2010); Schady and Araujo (2008) – using implementation glitches
 - Bourguignon, Ferreira, Leite (2003); Todd and Wolpin (2006) – using structural models.

- Two common themes to these papers:
 - All from Latin America (Brazil, Ecuador, and Mexico)
 - All with very little ‘income’ effect.

Zomba Cash Transfer Program

- Zomba Cash Transfer Program (ZCTP) is a *two-year* randomized intervention that provides cash transfers (and school fees) to young women to stay in or return to school.
- Program has multifaceted research design with contract variation in various dimensions.
 - Schoolgirls in randomly selected villages receive *unconditional* transfers.
 - Transfers split between parents and girls:
 - Parents' transfer randomized at village level between \$4-10.
 - Girls' transfer randomized at individual level between \$1-5.

Sampling and Survey Design

- 3,798 young women were sampled from 176 enumeration areas (EAs) in Zomba, a district in Southern Malawi.
- EAs randomly drawn from three strata: urban, near rural, and far rural.
- All households in each sampled EA were listed using two forms, then the sample selected from the pool of eligible young women.

Sampling and Survey Design

- Eligibility into the program was defined as follows:
 - Eligible *dropouts*: unmarried girls and young women, aged 13-22, already out of school at baseline (<15% of the target population), *AND*
 - Eligible *schoolgirls*: unmarried girls and young women, aged 13-22, who can return to Standard 7-Form 4, enrolled in school at the time of their first interview.
- Otherwise, there was *no targeting* of any kind.
- The surveys employed at baseline and at follow-up are comprised of two parts: **HH** and **participant**.

Sampling and Survey Design

- Part I is administered to the HH head, and collects information on the following:
 - ❑ household roster,
 - ❑ dwelling characteristics,
 - ❑ household assets and durables,
 - ❑ consumption (food and non-food),
 - ❑ household access to safety nets & credit, and
 - ❑ shocks (economic, health, and otherwise) experienced by the household
 - ❑ mortality



Sampling and Survey Design

- Part II is administered to the *core respondent*, who provides further information about her:
 - family background,
 - education, labor market participation, time allocation,
 - health and fertility,
 - dating patterns, detailed sexual behavior at the partnership level,
 - knowledge of HIV/AIDS,
 - social networks,
 - own consumption of girl-specific goods (soaps, mobile phone airtime, clothing, braids, handbags, etc.).

Additional data collection instruments

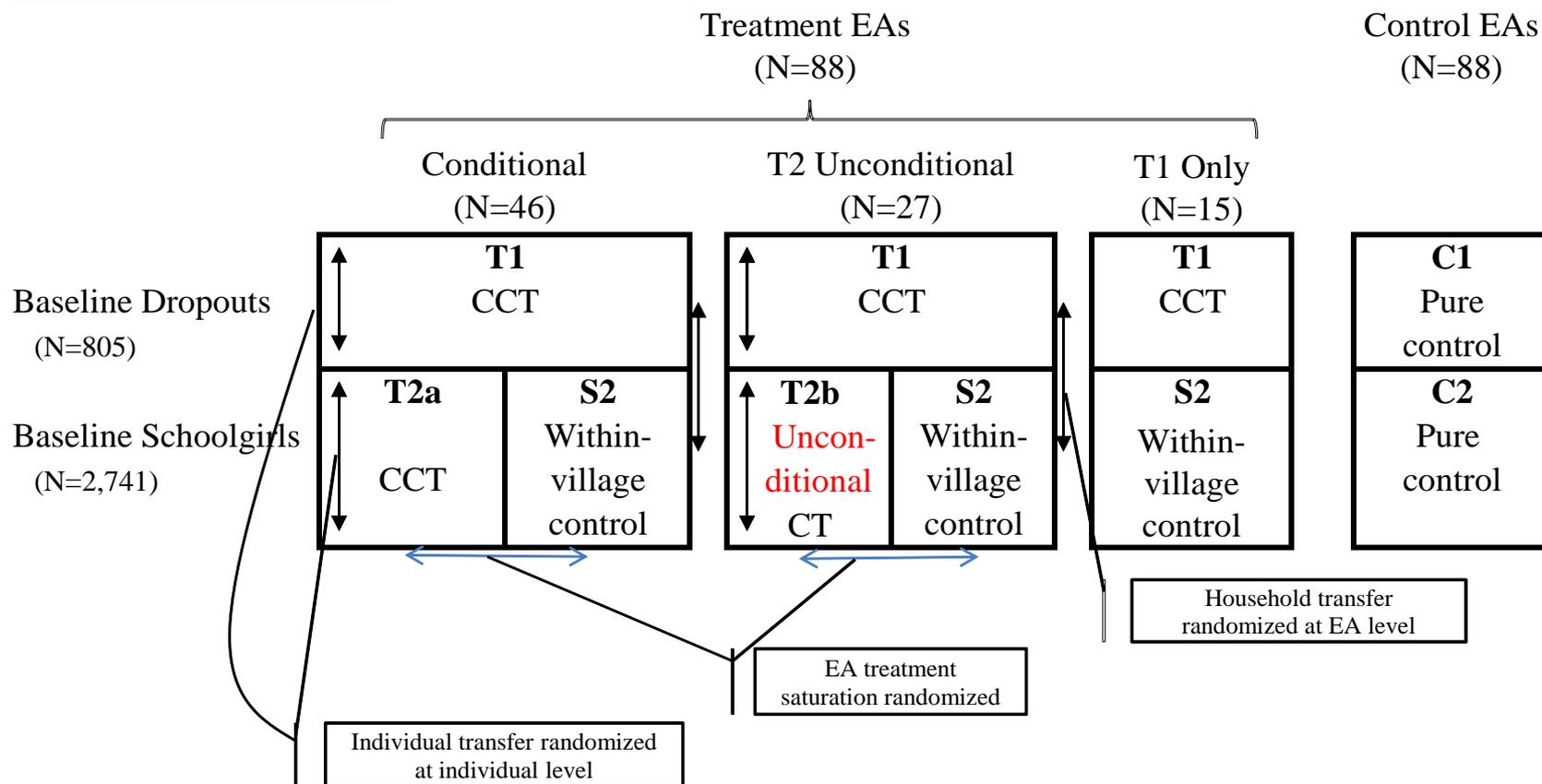
- School Survey (2009 & 2010);
- Biomarker data on HIV, HSV-2, and syphilis (2009);
- Learning assessment in mathematics, English reading comprehension, and cognitive skills (2010).
- Structured in-depth interviews (2010).

Timeline

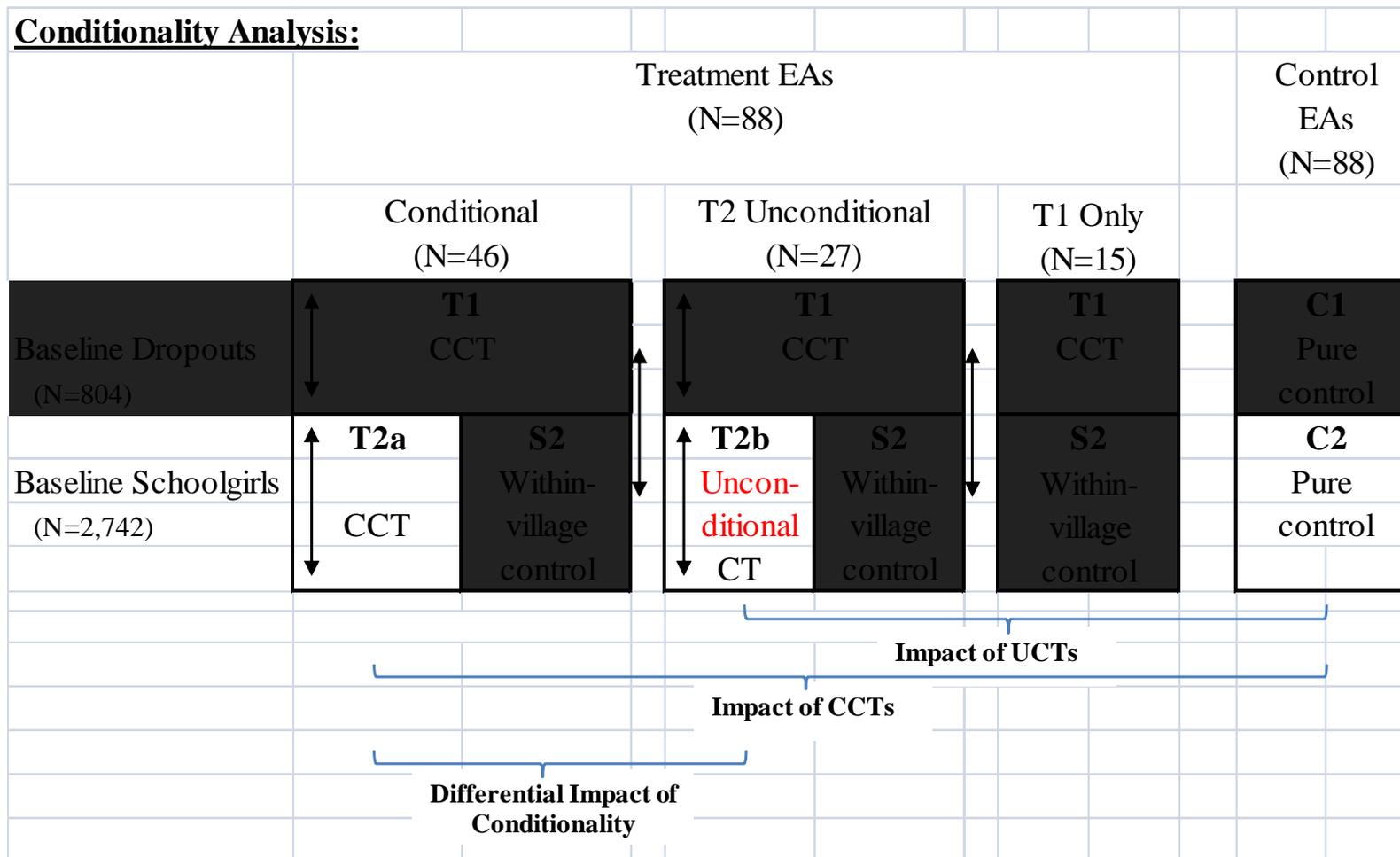
- **Baseline data collection:** September 2007 – January 2008.
- **Cash Transfers begin:** February 2008
- **Round 2 data collection:** October 2008 - February 2009.
- **Biomarker data collection:** June - September 2009.
- **Cash Transfer Program ends:** December 2009.
- **Round 3 data collection:** February - June 2010.
 - Includes independent achievement tests and qualitative data collection.

Zomba Cash Transfer Research Design

Malawi Research Design:



Zomba Cash Transfer Research Design





Zomba Cash Transfer Program Implementation

- For **CCT** recipients, attendance is checked monthly at each program school using a combination of physical checks and phone calls (*with random spot checks in Year 1, i.e. 2008*).
- For **CCT** recipients, the payment for the next month is withheld if attendance is below the required threshold. However, the girl remains in the program.
- **UCT** recipients receive their transfers by *only* showing up.

Two questions on **implementation** and measurement.

1. Were the programs rules understood properly in each treatment arm?
 - As we will see the differential impacts on various outcomes shortly, the two groups clearly did not perceive the program to be the same.
 - **But, so what did they perceive exactly?**
 - The program administration was very diligent to distinguish the two types of offers. In Year 2, treatment status was reinforced every month during the cash transfers.
 - Qualitative data confirm the participants' understanding of the program rules.

Two questions on implementation and measurement.

2. Q: Why did we not conduct spot checks to measure attendance?
 - A: As can be seen from the qualitative data, UCT beneficiaries were aware of the attendance monitoring for CCT beneficiaries and knew that this was linked to their monthly payments. The study PIs were worried that any monitoring of attendance in the UCT group could give the impression that their payments were also “conditional” on school attendance.
 - Critics correctly claim that spot checks for attendance in CCT programs do not have any discernible impact on attendance. But, none of these programs had an unconditional treatment arm!

Randomization and Attrition

- Characteristics of control and various treatment groups are balanced at baseline.
- Attrition from the sample is small after one year (5-6%) and two years (<10%) and again balanced across control and various treatment groups.
 - Treatment group was more likely to take the educational tests, but:
 - No differential attrition was there between UCT and CCT.

Program impacts on schooling: Enrollment

Panel B: Program impacts on *teacher-reported* school enrollment

Dependent variable: =1 if enrolled in school during the relevant term

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<u>Year1: 2008</u>			<u>Year2: 2009</u>			<u>Total Terms</u>	<u>Year 3: 2010</u>
	Term1	Term2	Term3	Term1	Term2	Term3	(6 terms)	Term 1, Post-program
Conditional treatment	0.043*** (0.015)	0.044*** (0.016)	0.061*** (0.018)	0.094** (0.041)	0.132*** (0.035)	0.113*** (0.039)	0.535*** (0.129)	0.058* (0.033)
Unconditional treatment	0.020 (0.015)	0.038** (0.017)	0.018 (0.023)	0.027 (0.038)	0.059 (0.037)	0.033 (0.039)	0.231* (0.136)	0.001 (0.036)
Mean in the control group	0.906	0.881	0.852	0.764	0.733	0.704	4.793	0.596
Number of observations	2,023	2,023	2,023	852	852	852	852	847
Prob > F(Conditional=Unconditional)	0.173	0.732	0.067	0.076	0.014	0.020	0.011	0.108

Program impacts on schooling: Attendance

Table V: Program Impacts on Attendance from School Ledgers

	<u>Dependent variable: Fraction of days respondent attended school</u>				
	Term 1, 2009	Term 2, 2009	Term 3, 2009	Overall 2009	Term 1, 2010
	(1)	(2)	(3)	(4)	(5)
Conditional treatment	0.139***	0.014	0.169**	0.080**	0.092**
	(0.045)	(0.033)	(0.085)	(0.035)	(0.041)
Unconditional treatment	0.063	0.038	0.118	0.058	-0.038
	(0.056)	(0.033)	(0.102)	(0.037)	(0.053)
Mean in control	0.778	0.849	0.688	0.81	0.801
Number of observations	284	285	192	319	211
Prob > F(Conditional=Unconditional)	0.129	0.334	0.358	0.436	0.010

Program impacts on schooling: Test Scores

Table VI: Program Impacts on Educational Achievement

	<u>Dependent Variable:</u>			
	English test score (standardized)	TIMMS math score (standardized)	Non-TIMMS math score (standardized)	Cognitive test score (standardized)
	(1)	(3)	(2)	(4)
Conditional treatment	0.140*** (0.054)	0.120* (0.067)	0.086 (0.057)	0.174*** (0.048)
Unconditional treatment	-0.030 (0.084)	0.006 (0.098)	0.063 (0.087)	0.136 (0.119)
Number of observations	2,057	2,057	2,057	2,057
Prob > F(Conditional=Unconditional)	0.069	0.276	0.797	0.756

Summary of program impacts on schooling

1. While there was a modest decline in the dropout rate in the UCT arm in comparison to the control group, it was only 43% as large as the impact in the CCT arm.
 2. Among those enrolled in school, there is some evidence of higher attendance in the CCT arm.
 3. Finally, the CCT arm also outperformed the UCT arm in tests of English reading comprehension.
- → It is fair to conclude that CCTs outperformed UCTs in terms of improvements in schooling outcomes.

Program impacts on marriage and pregnancy

Table VII: Program Impacts on Marriage and Pregnancy

	<u>Dependent variable:</u>			
	=1 if ever married		=1 if ever pregnant	
	2008	2009	2008	2009
	(1)	(2)	(3)	(4)
Conditional treatment	0.007 (0.012)	-0.012 (0.024)	0.013 (0.014)	0.029 (0.027)
Unconditional treatment	-0.026** (0.012)	-0.079*** (0.022)	-0.009 (0.017)	-0.067*** (0.024)
Number of observations	2,087	2,084	2,086	2,087
Mean in control	0.043	0.180	0.089	0.247
Prob > F(Conditional=Unconditional)	0.024	0.025	0.265	0.003

How do we reconcile the differential program impacts on schooling, marriage, and pregnancy?

- Girls in the CCT arm are less likely to drop out of school than those in the UCT arm, but are also more likely to be ever married or pregnant at the end of the two-year intervention.
 - Bit of a head-scratcher...
 - Existing evidence from sub-Saharan Africa suggests that reducing school dropout should lead to declines in teen marriage and pregnancy rates (Duflo, Dupas, and Kremer 2010; Ozier 2010; Ferré 2009, Osili and Long 2008).
 - There may also be income effects (Field and Ambrus 2008; Dupas 2010).

How do we reconcile the differential program impacts on schooling, marriage, and pregnancy?

- To help think about this issue, notice that we can categorize the target population into three latent strata:
 1. **UCT compliers:** A UCT offer is enough to prevent dropout in this stratum.
 2. **CCT compliers:** A UCT offer is NOT enough to prevent dropout, but a CCT offer is.
 3. **Non-compliers:** Girl would drop out of school under both offers.
- Two caveats:
 - Girls receiving infra-marginal transfers are in the first group.
 - We assume away the possibility of UCT being MORE effective than CCT in preventing dropout.

Marriage and Enrollment at Follow-up

Table VIII: Prevalence of Being ‘Ever Married’ by School Enrollment Status during Term1, 2010

	Enrolled	Not enrolled	Total
	(1)	(2)	(3)
Control	1.7%	46.9%	19.9%
(row %)	(59.8%)	(40.2%)	(100.0%)
Conditional treatment	0.5%	50.8%	16.0%
(row %)	(69.2%)	(30.8%)	(100.0%)
Unconditional treatment	0.3%	25.2%	10.1%
(row %)	(60.5%)	(39.5%)	(100.0%)
Total	1.1%	44.2%	17.2%
(row %)	(62.7%)	(37.3%)	(100.0%)

Marriage and Enrollment at Follow-up

Table IX: Program impacts on school enrollment and marital status

Dependent variable	=1 if enrolled term 1 2010	=1 if ever married	=1 if ever married	=1 if ever married
	(ALL)	(ALL)	(enrolled)	(Not enrolled)
	(1)	(2)	(3)	(4)
CCT	0.058*	-0.026	-0.012	0.033
	(0.034)	(0.037)	(0.015)	(0.097)
UCT	-0.000	-0.088***	-0.011	-0.159**
	(0.036)	(0.030)	(0.010)	(0.067)
Mean in control	0.598	0.199	0.017	0.469
Sample Size	844	844	490	354
Prob > F(CCT=UCT)	0.099	0.106	0.857	0.088

Concluding Discussion

- The CCT arm had a significant edge in terms of schooling outcomes over the UCT arm: a large gain in enrollment and a modest yet significant advantage in learning.
 - UCTs improved school enrollment, but the impact is modest
 - The impact in the CCT arm was more than twice as large
 - CCTs accomplished the goal of ‘behavior change’ and were more cost-effective in improving school enrollment.

- However, the improvement in the CCT arm was achieved at the cost of denying transfers to non-compliers who are shown to be particularly ‘at risk’ for early marriage and teenage pregnancy.
 - It would be wise for policymakers to clarify what exactly they are trying to achieve among the target population.

Concluding Discussion

- If *non-compliers* can be thought of as a vulnerable group in a given context, UCTs may deserve careful consideration given the possible trade-offs indicated here.
- To estimate (ex-ante) the relative effect of a CCT vs. a UCT program on a non-schooling outcome, we need estimates of:
 - The sizes of the three latent strata
 - Income and schooling effects on the outcome of interest in these strata
 - Social welfare weight for this outcome in the target population

THE END

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TABLE 1

OVERALL AVERAGE EFFECT OF PROGRAM ON PROBABILITY OF REPEATING A GRADE, DROPPING OUT, AND REENTERING SCHOOL

Age	Probability of Repeating among Those Enrolled in School			Probability of Dropping Out among Those Enrolled in School			Probability of Reentering among Those Dropped Out of School		
	T	C	Diff.	T	C	Diff.	T	C	Diff.
6	39.8	46	-6.2	.8	1.6	-.8
7	26.7	34	-7.1	1.0	1.0	.0	100.0	100.0	.0
8	26.9	32	-5.5	.3	.7	-.4	100.0	96.0	4.0
9	23.9	30	-6.5	1.0	1.4	-.4	97.2	94.7	2.5
10	24.2	25	-.8	1.6	2.9	-1.3	94.4	87.5	6.9
11	19.8	24.8	-5.0	6.3	12.2	-5.9	65.5	45.8	19.7
12	30.0	33.7	-3.7	10.4	16.8	-6.4	44.5	29.7	14.8
13	34.6	39.7	-5.1	12.2	22.7	-10.5	34.1	16.9	17.2
14	49.3	47.4	1.9	23.3	34.9	-11.6	16.9	15.5	1.4
15	57.8	61.9	-4.1	31.3	37.7	-6.4	14.2	10.8	3.4

Note. T = treatment, C = control, Diff. = difference.

Offer Letters

Conditional Transfers

- The Zomba Cash Transfer Program (ZCTP) with funding from the World Bank would like to offer you, [NAME] , a cash transfer to help you and your family with the burdens of school attendance for the 2009 school year. By accepting this offer, in return for going to school you will be given:
- You are receiving this money in order to help you return to school or stay in school. In order to receive this money you **MUST** attend school at least **80% of the days for which your school is in session.**

Unconditional transfers

- The Zomba Cash Transfer Program (ZCTP), with funding from the World Bank, would like to offer you, [NAME] , a cash transfer to help you and your family. By accepting this offer you will be given:
- These monthly transfer amounts specified above are given to you as a result of a lottery. You **are not required to do anything** more to receive this money. You will receive this money for 10 months between February and November, 2009.

1. The rules of the program were well understood by the girls in the UCT arm:

Int: At the beginning of the program, for a person to be in the program, for you to participate in the program, were you required to do anything?

Res: No, I was not required to do anything.

Int: Nothing? Were there no rules? Didn't they give you some regulations for you to follow so that you should be in the program?

Res: No.

2. Girls in the UCT arm knew about the CCT arm:

- Int: Earlier you talked of conditional and unconditional. What did you say about the rules for conditional girls?
- Res: They had to attend class all the time...not missing more than 3 days of classes in a week – like I already explained.
- Int: How did you say the program managers knew about the missed school days?
- Res: They would go to the schools...For example, I have a friend, Jane [not real name], who was learning at NYU [not real name]. They would go each month to the school to monitor her attendance, and if she was absent for more than three days she would not get her monthly money.

Int: Were you ever afraid that if you skipped school you would not receive money?

Res: [giggles] No.

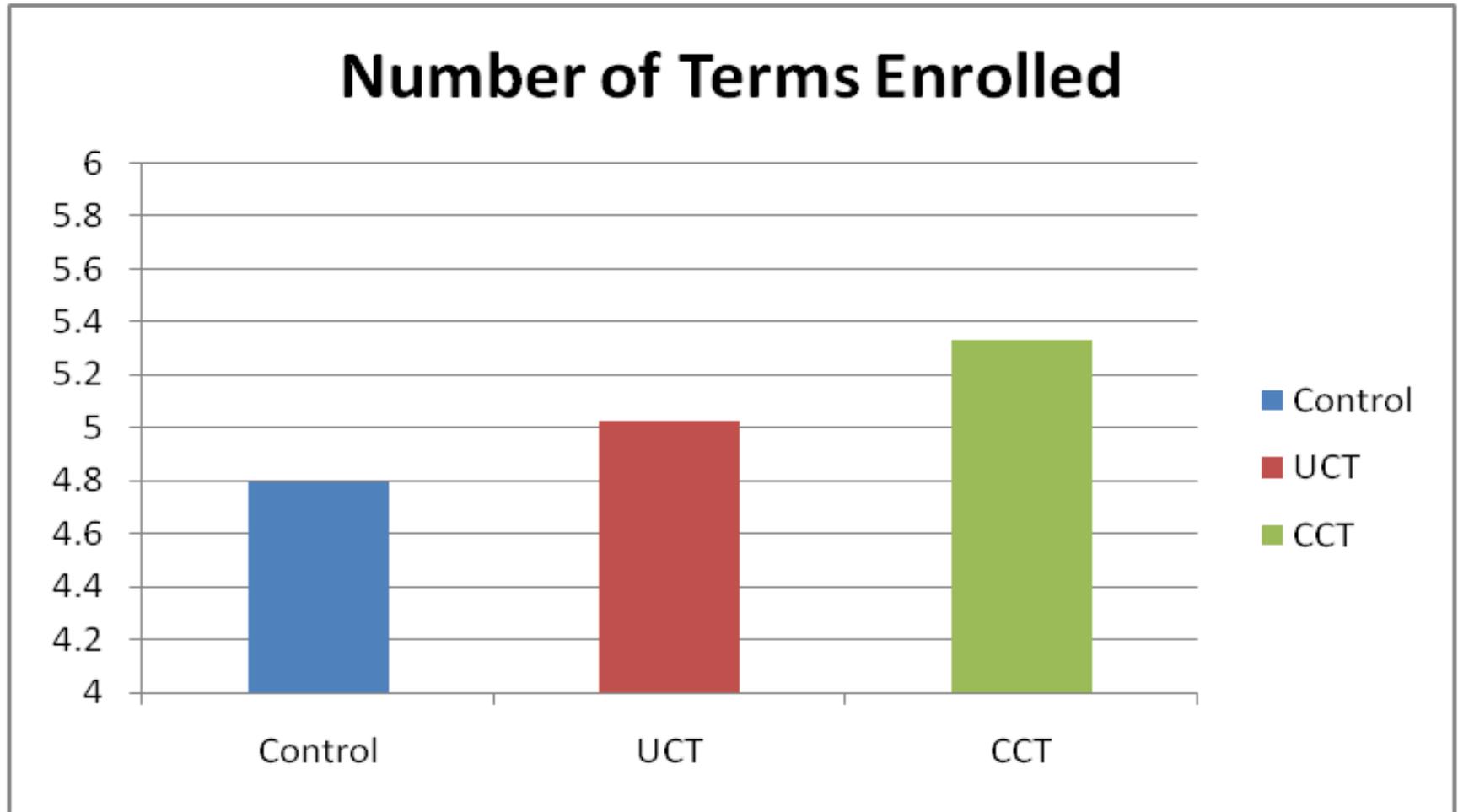
Int: No. you were sure that come what may at the end of the month you will receive your money?

Res: Yes. I was receiving money.

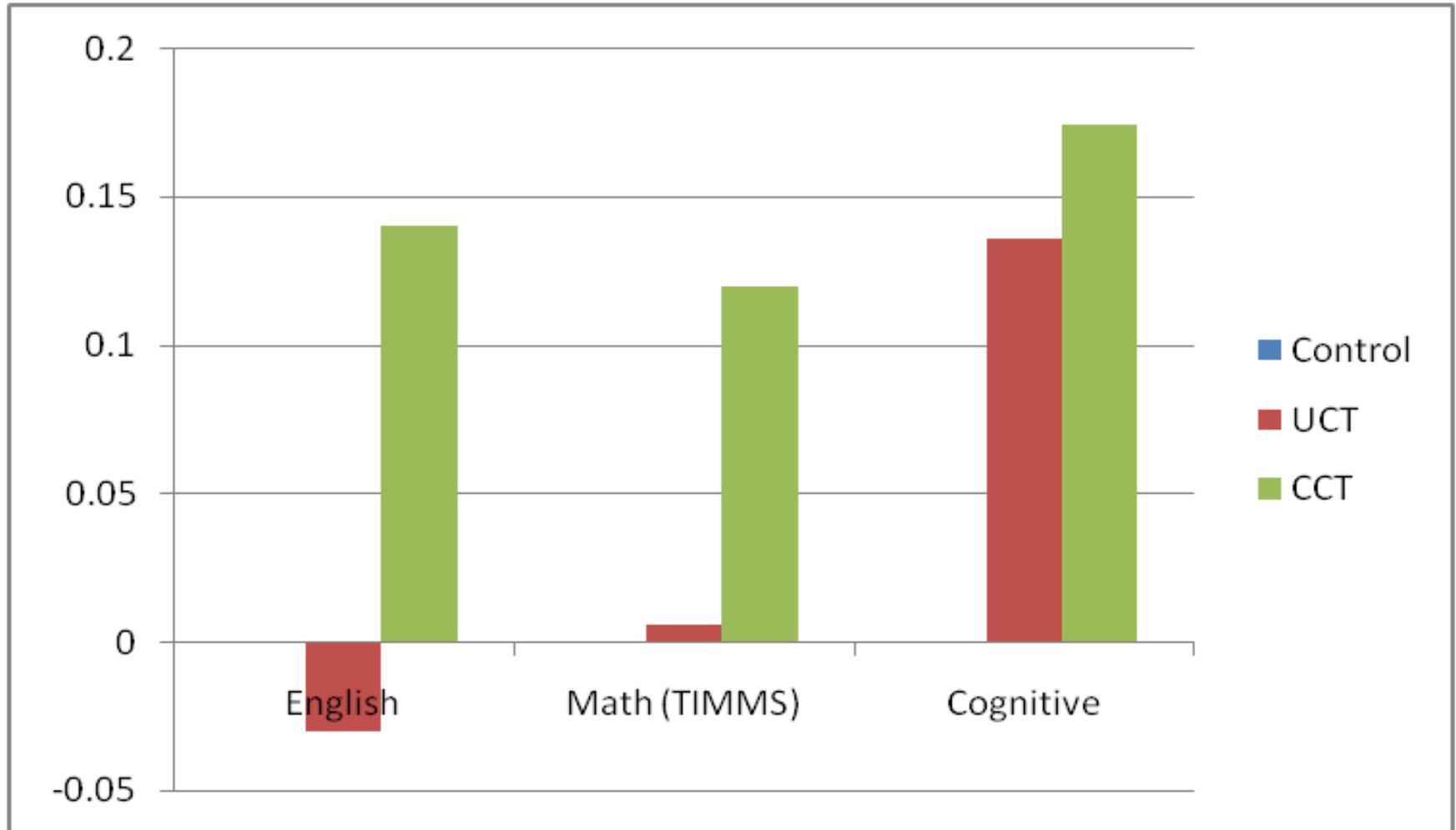
Summary of the conditions under which the UCT experiment took place:

1. UCT beneficiaries fully understood their treatment status and were never worried about not receiving their payments due to school attendance.
2. However, the UCT experiment did not happen in a vacuum. It took place in a district where a CCT program was simultaneously running in neighboring communities. Hence, the UCT experiment took place under a rubric of education.

Program impacts on enrollment



Program effects on achievement



Differential program effects on non-schooling outcomes

Latent Stratum	Intervention	Enrolled in school?	Receive monthly transfer?
UCT compliers	CCT	YES	YES
	UCT	YES	YES
CCT compliers	CCT	YES	YES
	UCT	NO	YES
Non-compliers	CCT	NO	NO
	UCT	NO	YES