Cash Transfers and Child Schooling: Evidence from a Randomized Evaluation of the Role of Conditionality

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Introduction and Motivation:

- Cash transfer programs often given conditional on households taking certain education/health measures to improve health and human capital of their children and money usually given to mothers

- Numerous randomized evaluations showing large impacts of these CCT programs

- Understanding why these programs work is the next research/policy frontier

Introduction and Motivation:

- Randomized program evaluation of pilot cash transfer program in rural Burkina Faso

- 75 villages in Nahouri province randomly allocated to 4 treatment and 1 control group

- Goals:
    - Compare the impact of conditional versus unconditional cash transfers

    - Compare the impact of transfers given to mothers versus fathers

Research Questions

- 1. Can CT programs, especially conditional ones, work in Africa?

- 2. Are CCT programs effective because of cash transfers or conditionality?

- 3. Are CCT programs effective because the money is given to mothers? (future work)

Research Summary:

- Focus on education for children 7-15

- Enrollment (self-report and school-based), Attendance, Achievement Tests

- "Marginal Child Hypothesis"

- CCT most effective at getting parents to invest in outcomes/children they normally would not

- Conditionality pushes parents to enroll the "marginal child"—those not enrolled at baseline, girls, young children, low ability children

- CCT & UCT same impact for children enrolled at baseline, boys, older children, higher ability children
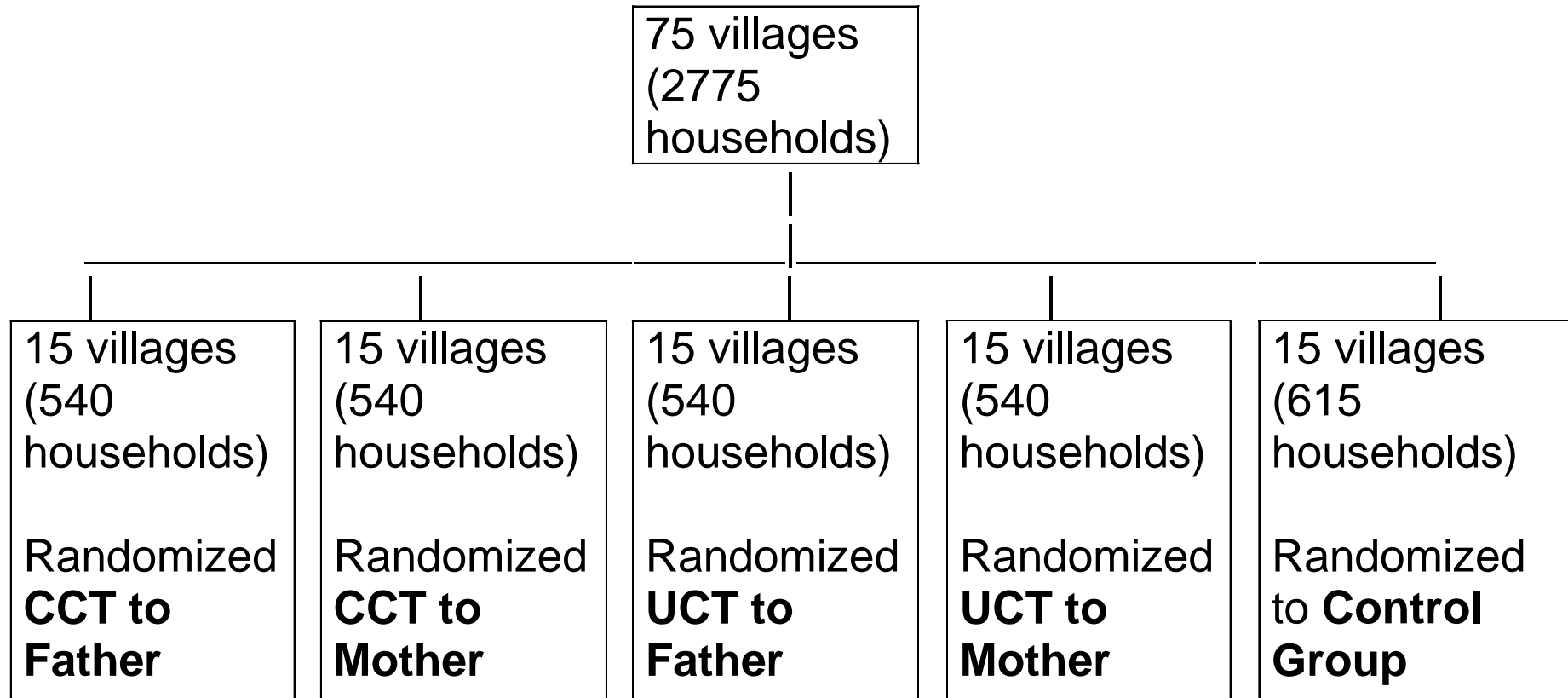
Relevant Literature

- What role does conditionality play?
- Accidental glitches in program implementation
  - Some households in Mexico and Ecuador did not think cash transfer program was conditional, de Brauw and Hoddinott (2010) and Schady and Araujo (2008) find school enrollment lower among those who thought cash transfers were unconditional
- Structural approach finds that UCTs would have no impact on enrollment
- Only 1 study has compared conditional and unconditional cash transfers in the same context
- Baird, McIntosh, and Özler (2011) examines the impact of CCTs and UCTs on drop-out rates of adolescent girls in Malawi enrolled at baseline and finds that CCTs outperformed UCTs

Relevant Literature

- Our results are different from theirs
- We find CCTs only more effective than UCTs for marginal children (a group that might include adolescent girls in Malawi)
- UCTs equally or more effective than CCTs for non-marginal children
- Our intervention focused on broader range of child age and gender
- On both extensive margin of school enrollment (bringing non-enrolled children into school) and intensive margin (reducing drop-outs)
- Therefore, we can explain why conditionality works and specifically for which types of children it works best for

Cash Transfer Pilot Program Randomization Plan

75 villages (2775 households)

| 15 villages (540 households) Randomized **CCT to Father** | 15 villages (540 households) Randomized **CCT to Mother** | 15 villages (540 households) Randomized **UCT to Father** | 15 villages (540 households) Randomized **UCT to Mother** | 15 villages (615 households) Randomized to **Control Group** |

Cash Transfers Overview

- Transfer amount:
  - Ages 0-6: 4000 FCFA/year
  - Ages 7-10 (Grades 1-4): 8000 FCFA/year
  - Ages 11-15 (Grades 5+): 16000 FCFA/year
- $1 USD = 455 FCFA
- Quarterly payments
- CCT:
  - Ages 0-6: Quarterly visits to health clinic for preventive care (growth monitoring)
  - Ages 7-15: School attendance rate>90%
- UCT: No requirements

Nahouri Social Protection Program Evaluation

- Panel Survey – June 2008 (Baseline before Intervention), June 2009 (1-year follow-up), June 2010 (2-year follow-up)

- Household selection
  - Eligibility based on poverty criteria and/or presence of orphans and vulnerable children (OVC)
  - Poverty targeting based on a list of durable assets correlated with household consumption

Conceptual Framework (1)

- Comparison of CCTs and UCTs usually depict investment in human capital (e.g. education or health) against another good (e.g. Das, Do and Özler 2005)

- Assumes that education is homogenous across children, and households only differ in how much they invest in their children

- Slightly different approach: introduce the notion of marginal child to motivate our hypotheses

Conceptual Framework (2)

- Marginal child = one who does not enroll or has a lower tendency to enroll in school absent an external intervention

- Non-marginal child is one that the household would be more likely to enroll

- Examples of "marginal children": not enrolled at baseline, girls, younger children (due to late start)

- Also less able children: evidence at baseline that households invest strategically in more able kids (Akresh, Bagby, de Walque and Kazianga 2012)

Conceptual Framework (3)

- For non-marginal children, the conditionality of CCT is not binding, and therefore conditionality does not induce any change in behavior. CCT is equivalent to UCT as both shift the household budget constraint to the right and both operate through income effects

- For marginal children, conditionality can change behavior as parents enroll these marginal children and make sure they attend at least 90% of the time

Conceptual Framework (4)

- 1) CCT increases education for marginal children, but UCT has no impact on the education of these children (or weaker version CCT has a stronger impact than UCT on marginal children)

- 2) UCT and CCT interventions have similar effects on the education of non-marginal children

Table 1b: Education by Gender, Age, Ability

Variable	Boys, Age 7-15	Girls, Age 7-15	P-value testing equality	Young, Age 7-8	Older, Age 9-13	P-value testing equality
Proportion Enrolled (self report)	0.639	0.604	0.011	0.679	0.610	0.000
	(0.480)	(0.489)		(0.467)	(0.488)	
Proportion Enrolled (school report)	0.501	0.453	0.004	0.541	0.461	0.000
	(0.500)	(0.498)		(0.498)	(0.499)	

Table 1b: Education by Gender, Age, Ability

Variable	High Ability	Low ability	P-value testing equality
Proportion Enrolled (self report)	0.699	0.622	0.000
	(0.459)	(0.485)	
Proportion Enrolled (school report)	0.534	0.481	0.005
	(0.499)	(0.500)	

Nahouri Social Protection Program Evaluation

- Baseline randomization balance

  - Across dependent variables in this paper and child, parent, and school characteristics

- Household attrition

  - After 1 year (1.26%)

  - After 2 years (3.56%)

  - Attritors are more likely to come from smaller households, with fewer adults, wives, and children

  - However, no evidence that differences between characteristics of attritors and non-attritors differs across treatment and control groups

Table 2: Baseline Means and Randomization Balance

	CCTF Mean	CCTM Mean	UCTF Mean	UCTM Mean	Control Mean	F-test p-value
HH Head Female	0.16	0.16	0.14	0.12	0.18	0.494
HH Head Educated	0.16	0.13	0.11	0.16	0.11	0.354
Household Size	6.98	6.91	7.33	7.09	6.59	0.293
Number of Wives	1.08	1.08	1.13	1.16	1.02	0.426
Number of Adults	3.31	3.16	3.37	3.20	3.09	0.502
Number Children 0-6	1.47	1.55	1.68	1.58	1.37	0.171
Number Children 7-15	2.19	2.20	2.29	2.31	2.13	0.171
Monogamous	0.56	0.55	0.55	0.59	0.55	0.685
Polygamous	0.23	0.23	0.26	0.25	0.21	0.669
Single	0.21	0.22	0.20	0.16	0.24	0.454
HH Head Age	47.43	47.46	47.43	46.52	47.85	0.867
Ethnicity = Kassena	0.57	0.36	0.56	0.71	0.52	0.190
Ethnicity = Nankana	0.38	0.49	0.26	0.15	0.40	0.149
Ethnicity = Mossi	0.03	0.07	0.12	0.08	0.06	0.418
Religion = Muslim	0.20	0.27	0.21	0.26	0.22	0.866
Religion = Christian	0.26	0.28	0.22	0.24	0.28	0.637
Religion = Animist	0.53	0.43	0.57	0.49	0.49	0.698

Table 2: Baseline Means and Randomization Balance

	CCTF Mean	CCTM Mean	UCTF Mean	UCTM Mean	Control Mean	F-test p-value
Child Female	0.49	0.46	0.47	0.48	0.49	0.530
Child Age	10.53	10.58	10.57	10.31	10.65	0.009**
Proportion Enrolled (parent report)	0.637	0.661	0.580	0.631	0.608	0.649
Proportion Enrolled (school roster)	0.491	0.534	0.486	0.481	0.395	0.226
Proportion Attending, Unconditional	0.455	0.507	0.472	0.473	0.384	0.401
French Test Z-score	-0.042	0.086	0.040	0.045	-0.134	0.377
French Reading Test	-0.093	0.083	0.038	0.004	-0.051	0.662
Math Test Z-score	-0.047	0.001	0.036	0.032	-0.097	0.542
Final Grade in School	5.338	5.188	5.336	5.414	5.336	0.862
Probability Takes Tests	0.941	0.941	0.947	0.933	0.952	0.740
Proportion Low Ability Kids (Raven Score 0-6)	0.647	0.691	0.660	0.681	0.766	0.091*
Probability Takes Raven's	0.891	0.854	0.886	0.893	0.894	0.766

Table 4: Cash Transfers-School Enrollment (Self-report)

Dependent Variable: Enrollment(Self-report)	Round 3 Only	All 3 Rounds, Diff-in-Diff	Rounds 1&3, Diff-in-Diff
CCT	0.095** [0.040]		
UCT	0.012 [0.044]		
CCT * Round 3		0.055** [0.022]	0.057*** [0.019]
UCT * Round 3		0.012 [0.021]	0.014 [0.018]
CCT * Round 2		0.009 [0.024]	
UCT * Round 2		0.036 [0.023]	
Round FE?	No	Yes	Yes
Village FE?	Yes	Yes	Yes
Age & Gender FE?	Yes	Yes	Yes
Observations	5,686	16,073	10,639
P-value testing equality between CCT and UCT:			
CCT*Rd3=UCT*Rd3	0.021	0.018	0.010

Table 4: Cash Transfers-School Enrollment(School roster)

Dependent Variable: Enrollment(School roster)	Round 3 Only	All 3 Rounds, Diff-in-Diff	Rounds 1&3, Diff-in-Diff
CCT	0.179***		
	[0.049]		
UCT	0.136***		
	[0.048]		
CCT * Round 3		0.105*	0.099**
		[0.054]	[0.047]
UCT * Round 3		0.073	0.066
		[0.050]	[0.042]
CCT * Round 2		-0.004	
		[0.055]	
UCT * Round 2		-0.003	
		[0.055]	
Round FE?	No	Yes	Yes
Village FE?	Yes	Yes	Yes
Age & Gender FE?	Yes	Yes	Yes
Observations	4,425	12,241	8,110
P-value testing equality between CCT and UCT:			
CCT*Rd3=UCT*Rd3	0.307	0.362	0.276

Enrollment Results Summary

- Results robust with two different measures of enrollment:
    - Self-reports by parents in the household survey
    - School administrative ledgers
- Results robust across 3 empirical identification strategies
- Due to logistical problems, the first transfer payment was only made in late November 2008, while the school year started in October 1, 2008
- No impact of cash transfers at round 2, one year after the start of the intervention

Table 5: Cash Transfers-Enrollment: Marginal Children

Dependent Variable: Enrollment (School Roster)	Enrolled at Baseline	Not Enrolled at Baseline	Boys, Age 7-15	Girls, Age 7-15
CCT * Round 3	0.117**	0.159***	0.109**	0.092*
	[0.056]	[0.037]	[0.046]	[0.053]
UCT * Round 3	0.125**	0.090**	0.111***	0.028
	[0.053]	[0.036]	[0.041]	[0.047]
Round FE?	Yes	Yes	Yes	Yes
Village FE?	Yes	Yes	Yes	Yes
Age & Gender FE?	Yes	Yes	Yes	Yes
Observations	3,023	3,827	4,187	3,923

P-value testing equality between CCT and UCT:

CCT*Rd3=UCT*Rd3	0.763	0.047	0.964	0.061

Table 5: Cash Transfers-Enrollment: Marginal Children

Dependent Variable: Enrollment (School Roster)	Older Children, Age 9-13	Younger Children, Age 7-8	Higher Ability Children	Lower Ability Children
CCT * Round 3	0.094*	0.172***	0.144***	0.174***
	[0.055]	[0.060]	[0.054]	[0.059]
UCT * Round 3	0.076	0.060	0.152***	0.092*
	[0.048]	[0.054]	[0.054]	[0.053]
Round FE?	Yes	Yes	Yes	Yes
Village FE?	Yes	Yes	Yes	Yes
Age & Gender FE?	Yes	Yes	Yes	Yes
Observations	4587	2,271	1,681	4,477

P-value testing equality between CCT and UCT:

CCT*Rd3=UCT*Rd3	0.591	0.028	0.839	0.032

Enrollment Results Summary: Marginal Child

- For marginal children (not enrolled at baseline, girls, younger children, lower ability children): CCT has larger positive impacts on enrollment than UCT

- For non-marginal children (enrolled at baseline, boys, older children, higher ability children): CCT and UCT have similar magnitude positive impacts on enrollment

Table 8: Cash Transfers-Attendance

Dependent Variable: Attendance(School Roster)	All 7-15	Boys 7-15	Girls 7-15
CCT * Round 3	0.134***	0.135***	0.137***
	[0.049]	[0.048]	[0.053]
UCT * Round 3	0.067	0.108**	0.032
	[0.043]	[0.042]	[0.049]
Round FE?	Yes	Yes	Yes
Village FE?	Yes	Yes	Yes
Age & Gender FE?	Yes	Yes	Yes
Observations	7,818	4,038	3,780

P-value testing equality between CCT and UCT:

CCT*Rd3=UCT*Rd3	0.044	0.464	0.002

Table 8: Cash Transfers-Attendance: Marginal Children

Dependent Variable: Attendance(School Roster)	Older Children, Age 9-13	Younger Children, Age 7-8	Higher Ability Children	Lower Ability Children
CCT * Round 3	0.146**	0.191***	0.241***	0.218***
	[0.057]	[0.057]	[0.076]	[0.058]
UCT * Round 3	0.090*	0.043	0.237***	0.091*
	[0.050]	[0.053]	[0.074]	[0.053]
Round FE?	Yes	Yes	Yes	Yes
Village FE?	Yes	Yes	Yes	Yes
Age & Gender FE?	Yes	Yes	Yes	Yes
Observations	4,377	2,222	1,598	4,300

P-value testing equality between CCT and UCT:

CCT*Rd3=UCT*Rd3	0.135	0.004	0.933	0.003

Attendance Results Summary

- Attendance measured from school administrative ledgers
- Focus on unconditional attendance
    - Broad measure of school participation
    - Accounts for enrollment and attendance impacts
- CCT has larger impacts than UCT for marginal children

Achievement Tests

- Worked with Ministry of Education and Burkina Faso education specialists to design a set of age appropriate achievement test questions in French (national language and language used in schools) and in Math

- Tests were given to all children (including enrolled and non-enrolled) in the surveyed households

- Tests were administered at home in order to capture non-enrolled children

- Consistent tests allow us to compare learning across schools

Table 9: Cash Transfers-Learning

Dependent Variable:	French Test Z-score	French Reading Test Z-score	Math Test Z-score	Final Grade in School
CCT * Round 3	-0.152	0.119	-0.043	-0.191
	[0.173]	[0.149]	[0.103]	[0.235]
UCT * Round 3	-0.221	-0.062	-0.104	-0.044
	[0.161]	[0.132]	[0.104]	[0.226]
Round FE?	Yes	Yes	Yes	Yes
Village FE?	Yes	Yes	Yes	Yes
Age & Gender FE?	Yes	Yes	Yes	Yes
Observations	3,526	3,526	3,687	3,741

P-value testing equality between CCT and UCT:

CCT*Rd3=UCT*Rd3	0.488	0.097	0.565	0.253

Learning Results Summary

- Overall, no impacts of cash transfers on learning in French, Math, or final grades in school

- No impact of cash transfers when regressions include all children (not just those enrolled)

- For some sub-groups, find positive impacts of CCTs on math scores for young children, French reading scores for low ability children

- Fair to conclude that impacts of cash transfers on learning is limited

Results Summary (1)

- "Marginal Child Hypothesis"

- CCT most effective at getting parents to invest in outcomes/children they normally would not

- CCT larger impact for children not enrolled at baseline, girls, young children, lower ability children

- CCT & UCT same impact for children enrolled at baseline, boys, 'core' school-age children,and higher ability children

Policy Implications (2)

- Results shed new light on the role of conditionality in cash transfer programs, by suggesting for which types of children CCTs outperforms UCTs

- In resource-poor settings, both UCTs and CCTs relax the budget constraint and allow households to enroll more of the children they would traditionally prioritize

- But the conditions attached to CCTs play a critical role in improving outcomes of children for whom parents are less likely to invest