WHEN THE MONEY RUNS OUT: DO CASH TRANSFERS HAVE SUSTAINED EFFECTS ON HUMAN CAPITAL ACCUMPUALTION?

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Outline

- Motivation

- A CCT vs. UCT experiment in Malawi among adolescent girls and young women

- A summary of the one and two year impacts

- Four-year impacts on the beneficiaries

- Brief look at impacts on husbands and children

- Conclusions

Motivation 1: Cash Transfers

- The most common cash transfer programs worldwide give small, continuous cash transfers conditional on schooling or health care:
  - *Oportunidades* in Mexico
  - *Bolsa Familia* in Brazil
  - *Red de Protección Social* in Nicaragua
- Or disburse small amounts of money unconditionally:
  - Old age pension programs
  - South Africa's *Child Support Grant* Program
  - Indonesia's multiple UCT programs

Motivation 1: Cash Transfers

- High-frequency, palliative cash transfer programs have been shown to be effective in many rigorous studies:
    - protecting the poor by supporting consumption (Behrman et al 2009)
    - building human capital by increasing schooling and improving health care utilization (Fiszbein & Schady 2009).

- However, as these programs become larger and more long-lasting, there are increasingly questions about the dynamics:

    - **Do they help beneficiaries move to an *improved trajectory*?**
    - **What happens when people are *moved off* of CT programs?**

- **This study seeks to answer these key policy questions.**

Current Evidence: Cash Transfers

- Growing literature on the medium- to long-term effects of cash transfer programs in LMICs

- Among CCTs, cash transfer programs improve school attainment among adolescent beneficiaries BUT

  - Gains in terms of learning, employment, and income are limited or non-existent as they become young women (Baez and Camacho 2011; Behrman, Parker and Todd 2011; Barham, Macours and Maluccio 2013; Filmer and Schady 2014; Araujo, Bosch and Schady 2016).

- Increasing evidence that impacts of UCTs in LMICs may be fleeting except under very specific conditions. See for example Brudevold-Newman et al. (2017), Hicks et al. (2018) and Haushofer and Shapiro (2018).

Motivation 2: Adolescents

- There is currently large interest in investing in adolescents, particularly adolescent girls (UNAIDS, Global Fund, Nike Foundation, WB, etc.)
- Lots of different types of interventions, with positive short-run impacts, but limited evidence of long-run evidence:
  - Girl's clubs: ELA in Uganda (Bandeira et al. 2017) and Tanzania (Buehren et al. 2017), etc.
  - Vocational training: Economic Empowerment of Adolescent Girls and Young Women in Liberia (Adoho et al. 2014), etc.
  - School based interventions: Kenya HIV training and uniform support (Duflo, Dupas and Kremer 2015); scholarships for secondary school children in Ghana (Duflo, Dupas and Kremer 2017).
  - Mixed: Training and mentoring and incentives. (Buchmann et al. 2017)
  - Cash Transfers

This study…

- This study aims to compare the medium-term impacts of two years of conditional and unconditional cash transfers on adolescent girls more than two years after the cessation of support.

- Cluster-randomized cash transfer experiment.
  - Eligible: 13-22 never married young women
  - Two arms: CCT vs. UCT.
  - CCTs conditional on regular school attendance
  - Two strata: baseline schoolgirls & baseline dropouts
  - **Two-year program** during school years 2008 & 2009
  - Two-year follow-up at the end of the program in 2010; four-year follow-up in 2012.

This study…

For any intervention with a fixed duration to have a sustained effect after the cessation of support, it needs to lead to an increase in the stock of an asset that keeps producing a stream of returns…

- Enhanced human capital (education) produces higher subsequent labor earnings, returns to entrepreneurship (Blattman, Fiala, and Martínez 2014).
- Enhanced human capital (health) allows for greater productivity, better child outcomes (Macours et al. 2012).
- Increased investment in durable assets throw off a subsequent stream of returns, such as livestock (Haushofer and Shapiro 2015)
- Savings from the flow of transfers permit subsequent investments in small-scale agriculture (Gertler, Martínez, and Rubio-Codina 2012) or stimulate entrepreneurial activity (Bianchi and Bobba 2013).

Mechanisms for medium-term impacts

- In settings like Malawi, there are few labor market prospects (6% formal employment rate),
  - Unlike in Schultz (2004), the impact of CCTs are **not** likely to be wage improvements
- Could instead arise from:
  - Agriculture (Gertler et al. 2012)
  - Entrepreneurial activity (Bianchi & Bobba 2013).
- Improvements in demographic outcomes:
  - Health and empowerment
  - Fertility, quality of marriages
- Improved outcomes for children of beneficiaries:
  - Improved nutrition, mental health in 'first 1,000 days' (Barham, Macours, and Maluccio 2013)

Contribution of this study…

- Growing literature on medium term effects of cash
  - Looking at a broad range of outcomes that go beyond education and consumption.
  - Set up for long term follow-up (as control never treated)
- Add to literature on human capital accumulation and increased age of marriage on marriage outcomes:
  - Increased education typically having been found to improve marital outcomes while delaying marriage worsens them
- Contributes to a large literature on the effects of programs that support pregnant women and young children
  - What is novel in our study is that we examine the effects of targeting cash transfers to adolescent females of childbearing age and provide evidence on the important policy question of how to time interventions to protect early childhood development.
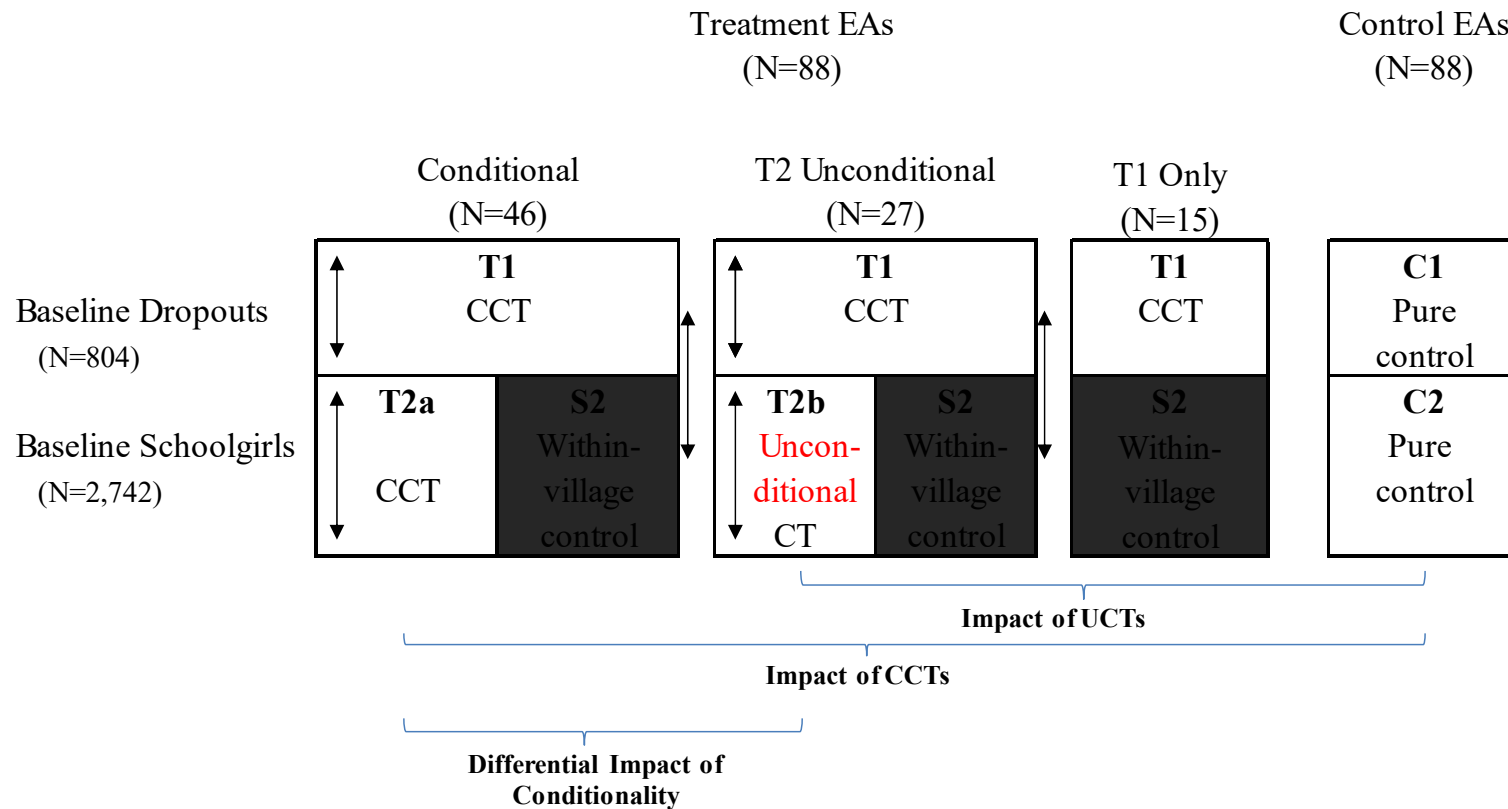
Preview of results:

- **CCTs** led to large and durable improvements in human capital (schooling) among a disadvantaged subgroup (*baseline dropouts*):
  - Knock-on effects on delayed marriage and lower fertility, **but…**
  - …no improvements in employment, wages, earnings.
  - …no improvements in skills related to agriculture, entrepreneurship.
  - … no increase in empowerment, despite more educated husbands.

- **UCTs**, which had large effects on marriage, pregnancy, HIV, nutrition, and mental health while the program was in place,
  - Saw impacts vanish completely within two years.
  - Delaying marriage without accumulating schooling may have hurt.
  - Possible durable impact on children born during the program.

CCT vs. UCT Experiment

Zomba Cash Transfer Research Design

Conditionality Analysis:

Treatment EAs (N=88)   Control EAs (N=88)

Conditional (N=46)   T2 Unconditional (N=27)   T1 Only (N=15)

Baseline Dropouts (N=804)

Baseline Schoolgirls (N=2,742)

| **T1** CCT | | **T1** CCT | | **T1** CCT | **C1** Pure control |
| **T2a** CCT | **S2** Within-village control | **T2b** Uncon-ditional CT | **S2** Within-village control | **S2** Within-village control | **C2** Pure control |

Impact of UCTs

Impact of CCTs

Differential Impact of Conditionality

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Study Design: Sampling

- Study takes place in Zomba District of Malawi; relatively poor and rural area of the country with high HIV rates.
- All 13-22 year-old never-married females listed in 176 enumerations areas (EAs) and divided into two ex ante strata:
  - Baseline schoolgirls (CCT vs. UCT vs. Control)~85% of target population
  - Baseline dropouts (CCT vs. Control)~15% of target population
- Average transfer size approximately $10/month, equivalent to roughly 10% of mean household consumption expenditure.

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.

Estimation Strategy

- Basic ITT estimation framework:

$$Y_{ic} = \alpha + \gamma^c T_c^c + \gamma^u T_c^u + \beta X_{ic} + \varepsilon_{ic}$$

- Standard errors clustered at the EA level

- Include baseline covariates specified in pre-analysis plan (for current results) that are strongly predictive of the schooling outcome

- Include indicators for strata used for block randomization (age, location)

- Stratum-specific sampling weights.

Short-term effects
(during and immediately after the program)

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Follow-up data collection schedule

- **Baseline:** **Round 1**
- **12-month follow-up:** **Round 2**
- **24-month follow-up:** **Round 3**
- ~48-month follow-up: Round 4

Summary of schooling effects
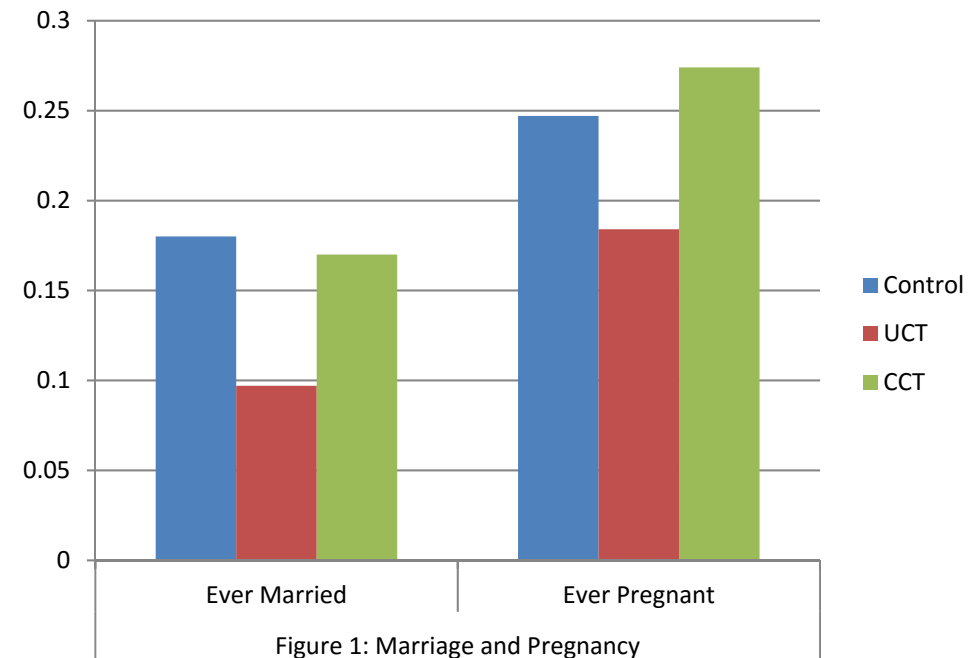
(baseline schoolgirls 24-month follow-up):

✓ **<u>Enrollment</u>**

➢ Modest improvement in UCT…

➢ … but only 43% of the effect in the CCT arm.

✓ **<u>Attendance</u>**

➢ Among those enrolled in school, some evidence of higher attendance in the **CCT** arm.

✓ **<u>Test scores</u>**

➢ Significant improvements in the **CCT** group in Math, English reading comprehension, and cognitive ability.

✓ ➔ It is fair to conclude that CCTs outperformed UCTs in terms of improvements in schooling outcomes.

Marriage and pregnancy effects
(baseline schoolgirls: 24-month follow-up)

✓ However, substantial delays in *marriage and pregnancy* in the UCT group.
  ➢ No such effect in CCT
  ➢ Similar effects on *psychological wellbeing* during the program

✓ Schooling gains in CCT achieved at the cost of denying transfers to *non-compliers* who are shown to be particularly 'at risk' for early marriage and teenage pregnancy.

Figure 1: Marriage and Pregnancy

Cash or Condition: Marriage and Enrollment at Follow-up *(baseline schoolgirls)*

Table VIII: Prevalence of being 'ever married' by school enrollment status during Term1, 2010

	Enrolled	Not enrolled	Total
	(1)	(2)	(3)
Control	1.7%	49.0%	20.2%
N (row %)	272 (59.7%)	184 (40.3%)	456 (100.0%)
Conditional treatment	0.5%	50.8%	16.2%
N (row %)	174 (69.2%)	78 (30.8%)	252 (100.0%)
Unconditional treatment	0.3%	25.3%	10.2%
N (row %)	82 (60.5%)	54 (39.5%)	136 (100.0%)
Total	1.1%	45.3%	17.4%
N (row %)	529 (62.7%)	315 (37.3%)	844 (100.0%)

Baseline Dropouts (24 Month Follow-Up)

	Number Terms Enrolled (out of 6)	English Test Score (standardized)	Math Test Score (standardized)	Cognitive Test Score (standardized)	Ever Pregnant	Ever married
	(1)	(2)	(3)	(4)	(5)	(6)
Conditional Treatment	2.348***	0.131*	0.164**	0.142**	-0.082***	-0.126***
	(0.163)	(0.070)	(0.066)	(0.071)	(0.027)	(0.036)
Mean in the control group	1.021	0.000	0.000	0.000	0.780	0.551
Number of observations	749	729	729	729	749	749

Notes: Regressions are OLS models with robust standard errors clustered at the EA level. All regressions are weighted to make them representative of the target population in the study EAs. Baseline values of the following variables are included as controls in the regression analyses: age dummies, strata dummies, household asset index, highest grade attended, and an indicator for never had sex. Parameter estimates statistically different than zero at 99% (***), 95% (**), and 90% (*) confidence.

Medium-term effects

(More than two years after the cessation of cash transfers, 48 month follow-up)

Descriptive statistics: Baseline Schoolgirls

- ~20 years of age (17-27)
- 41% still in school
- 88% passed the primary school leaving exam
- 40% ever married
- 50% ever pregnant
- 6% HIV positive
- 3% in any kind of wage work
- Mostly spend their time in school, own agriculture or domestic work.

Descriptive statistics: Baseline Dropouts

- ~22 years of age (17-27)
- 2% still in school
- 37% passed the primary school leaving exam
- 81% ever married
- 92% ever pregnant
- 16% HIV positive
- 6% in any kind of wage work
- Mostly spend their time in own agriculture or domestic work.

A few things I am not going to spend time on….

- We registered a pre-analysis plan that we follow here.
- Baseline characteristics are balanced.
- Overall attrition is relatively low (find 93%, survey 85%)
- There is no differential attrition for baseline dropouts, or between the CCT and UCT arm for baseline schoolgirls.
  - There is some overall differential attrition between the control and treatment arms for the baseline schoolgirls, but not driven by observables.
    - Can replicate results from previous analysis using this data.
    - IPW weighting does not change any results.
    - Lee bounds largely leave conclusions the same.
- Results hold with multiple-testing correction.

Five Year Effects: Education

Table 1: Education Outcomes

Panel A: Baseline Dropouts	Highest Grade Completed			=1 if Passed Primary School (PSLC)		
	Round 2	Round 3	Round 4	Round 2	Round 3	Round 4
=1 if Conditional Schoolgirl	0.579***	0.558***	0.621***	0.030	0.058**	0.081***
	(0.073)	(0.102)	(0.125)	(0.025)	(0.025)	(0.026)
Mean in Control Group	6.345	6.967	6.997	0.328	0.351	0.366
Sample Size	697	718	744	697	718	744
Panel B: Baseline Schoolgirls						
=1 if Conditional Schoolgirl	0.078	0.126*	0.120	0.030	0.013	-0.014
	(0.090)	(0.069)	(0.080)	(0.039)	(0.024)	(0.019)
=1 if Unconditional Schoolgirl	0.122	0.103	0.095	0.046	0.030	0.017
	(0.109)	(0.121)	(0.129)	(0.038)	(0.026)	(0.016)
p-value UCT vs. CCT	0.708	0.854	0.850	0.755	0.600	0.166
p-value Treatment	0.469	0.174	0.309	0.386	0.488	0.359
Mean in Control Group	8.590	9.677	10.415	0.496	0.776	0.879
Sample Size	1,965	2,019	2,049	1,967	2,019	2,047

Five Year Effects: Competencies Example

I am going to describe to you the process for optimum application of fertilizer to maize. Please listen very carefully because I am going to tell you this only once and you will need to remember how to complete the task. Please do not ask questions; I will only give these instructions once. Then I will time how long it takes you to complete it successfully. Are you ready to start?

READ THIS PART EXACTLY AS IT IS HERE, PAUSING FOR A MOMENT AFTER EACH SENTENCE:

> Take two tablespoons 23:21 and one tablespoon Can and mix them in the plate provided.
>
> Then, using the spoons and ruler provided, put one tablespoon of the resulting mixture
>
> 5 centimeters on either side of the root of the middle plant within the row of maize.

START THE TIMER - DO NOT REPEAT THE INSTRUCTIONS AGAIN.

23.	Time taken to complete (MM:SS)	[___|____] : [____|____] **MAX OF 5 MIN**	
24.	Is the mixture correct?	1= Yes 2= No	[_____]
25.	Was the correct spoon used?	1= Yes 2= No	[_____]
26.	Was the mixture placed within 4-6 cm of the "plant" and on both sides?	1= Yes 2= No	[_____]

Five Year Effects: Skills (competencies)

Table I: Program impacts on learning (beneficiaries)
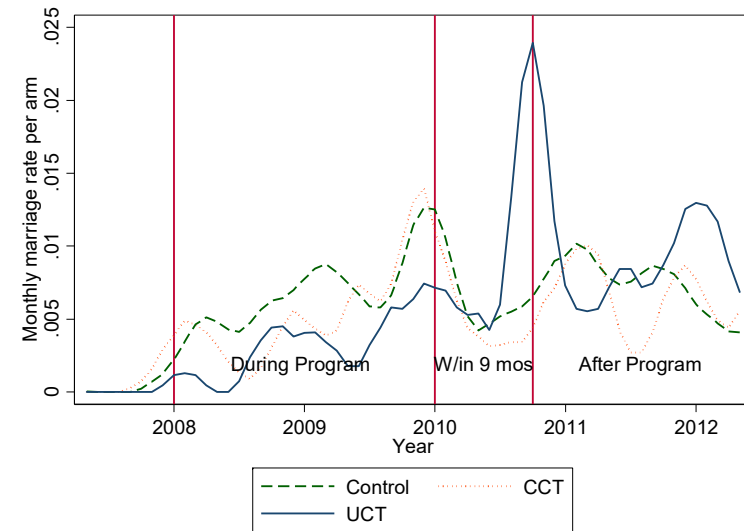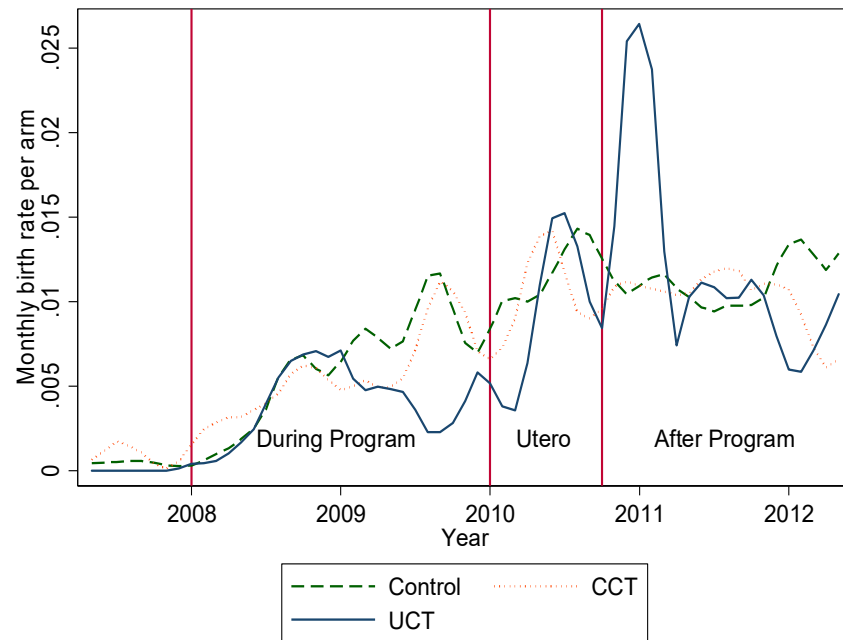
Panel A: Baseline Dropouts

	English Test Score (Standardized)	TIMMS Math Score (Standardized)	Non-TIMMS Math Score (Standardized)	Cognitive Test Score (Standardized)	Competencies Score (Standardized)
			End of Program		Two Years After Program
	(4)	(5)	(6)	(7)	(8)
=1 if Conditional Schoolgirl	0.079	0.147***	0.116	0.163**	0.064
	(0.071)	(0.056)	(0.072)	(0.070)	(0.057)
Mean in Control Group	0.000	0.000	0.000	0.000	0.000
Sample Size	704	704	704	704	742
Panel B: Baseline Schoolgirls					
=1 if Conditional Schoolgirl	0.148***	0.136**	0.068	0.181***	0.065
	(0.056)	(0.069)	(0.063)	(0.050)	(0.058)
=1 if Unconditional Schoolgirl	-0.068	-0.027	0.026	0.094	0.098
	(0.090)	(0.106)	(0.090)	(0.129)	(0.067)
p-value UCT vs. CCT	0.035	0.157	0.657	0.514	0.630
p-value Treatment	0.021	0.118	0.560	0.002	0.297
Mean in Control Group	0.000	0.000	0.000	0.000	0.000
Sample Size	2,000	2,000	2,000	2,000	2,048

Five Year Effects: Marriage & Fertility

	Ever Married			Age First Marriage	Ever Pregnant			Age First Birth	Desired Fertility
	Round 2	Round 3	Round 4	Round 4	Round 2	Round 3	Round 4	Round 4	Round 4
=1 if Conditional Schoolgirl	-0.140***	-0.157***	-0.107***	0.431***	-0.057*	-0.081***	-0.040*	0.272*	-0.172**
	(0.029)	(0.037)	(0.032)	(0.155)	(0.030)	(0.027)	(0.021)	(0.164)	(0.087)
Mean in Control Group	0.291	0.575	0.809	19.644	0.610	0.784	0.924	18.499	3.217
Sample Size	698	718	744	500	698	718	744	634	744
Panel B: Baseline Schoolgirls									
=1 if Conditional Schoolgirl	0.000	-0.010	-0.035	-0.011	0.008	0.027	-0.024	-0.144	-0.072
	(0.012)	(0.024)	(0.027)	(0.148)	(0.015)	(0.027)	(0.034)	(0.136)	(0.064)
=1 if Unconditional Schoolgirl	-0.033***	-0.083***	-0.010	0.486**	-0.013	-0.063**	-0.001	0.001	-0.017
	(0.012)	(0.024)	(0.046)	(0.200)	(0.017)	(0.028)	(0.042)	(0.168)	(0.056)
p-value UCT vs. CCT	0.026	0.018	0.613	0.032	0.314	0.009	0.614	0.436	0.477
p-value Treatment	0.023	0.004	0.448	0.050	0.600	0.025	0.760	0.547	0.533
Mean in Control Group	0.047	0.180	0.402	18.651	0.092	0.247	0.501	18.718	2.974
Sample Size	1,967	2,018	2,049	821	1,966	2,019	2,049	998	2,048

Notes: Regressions are OLS models with robust standard errors clustered at the EA level. All regressions are weighted to make them representative of the target population in the study EAs. Baseline values of the following variables are included as controls in the regression analyses: age indicators, strata indicators, household asset index, highest grade attended, and an indicator for never had sex. We restrict the sample to respondents who were surveyed in Round 4. Parameter estimates statistically different than zero at 99% (***), 95% (**), and 90% (*) confidence.

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Baby boom and shotgun marriages after the program

Five Year Effects: Health

Table 1: Health

Panel A: Baseline Dropouts

	=1 if Anemic	=1 if Suffers from Psysological Distress			Number of Meals Eaten		
	Round 4	Round 2	Round 3	Round 4	Round 2	Round 3	Round 4
=1 if Conditional Schoolgirl	0.037	-0.002	0.010	0.038	0.326	0.224	0.228
	(0.034)	(0.039)	(0.036)	(0.042)	(0.202)	(0.192)	(0.181)
Mean in Control Group	0.255	0.463	0.314	0.424	3.678	3.989	3.741
Sample Size	714	698	715	743	698	718	744

Panel B: Baseline Schoolgirls

	=1 if Anemic	=1 if Suffers from Psysological Distress			Number of Meals Eaten		
	Round 4	Round 2	Round 3	Round 4	Round 2	Round 3	Round 4
=1 if Conditional Schoolgirl	0.012	-0.068**	-0.037	-0.030	0.385**	0.596***	0.072
	(0.031)	(0.032)	(0.047)	(0.032)	(0.195)	(0.174)	(0.141)
=1 if Unconditional Schoolgirl	-0.065*	-0.139***	-0.026	-0.002	0.445**	0.338**	-0.043
	(0.033)	(0.035)	(0.054)	(0.046)	(0.199)	(0.153)	(0.240)
p-value UCT vs. CCT	0.074	0.068	0.860	0.552	0.814	0.215	0.672
p-value Treatment	0.123	0.000	0.677	0.627	0.023	0.001	0.858
Mean in Control Group	0.243	0.372	0.313	0.369	3.967	4.052	4.134
Sample Size	1,979	1,963	2,013	2,045	1,967	2,018	2,047

Employment

- What are these young women doing?
  - *baseline dropouts* in our sample are household chores – such as cooking and cleaning, fetching water and firewood, and looking after children – (69.6%) and subsistence agriculture (19.4%)
  - *baseline schoolgirls*, 55.2% report household chores as their main activity, 11.1% report subsistence agriculture, while 27.5% are still in school
- No impact on any employment outcomes:
  - Limited involvement in self-employment or paid work (6% of dropouts, 3% of schoolgirls)
  - No impact on labor income, participation in wage work, etc.

Broader Time Use (exploratory)

- *Baseline dropouts* in the treatment group:
  - spending more hours in school (1.54 hours per week, p=0.018)
  - proportion of hours in school or work the impact is insignificant and zero (-0.001, p=0.930)
  - Additional hours in school are completely offset by additional hours in work by the control group.
- B*aseline schoolgirls*:
  - CCT arm are spending approximately 3.63 hours per week more in school (p=0.045)
  - Does translate to more time in work and school (2.4 percentage point more time in work or school, p=0.063).
  - UCT recipients there are no impacts on either additional hours in school (-0.088, p=0.964) or time in work and school (0.001, p=0.919).

  This result supports the possibility of small positive sustained impacts for *baseline schoolgirls* in the CCT arm, with clear null effects in the UCT arm.

Five Year Effects: Empowerment

Panel A: Baseline Dropouts

	Super-index of Overall Empowerment	Change in Ladder from Five Years Ago to Today	Super-Index of Unmarried Empowerment	Super-Index of Married Empowerment
=1 if Conditional Schoolgirl	-0.083	-0.032	0.018	-0.130
	(0.074)	(0.232)	(0.112)	(0.098)
Mean in Control Group	0.000	1.120	0.000	0
Sample Size	744	744	289	455

Panel B: Baseline Schoolgirls

=1 if Conditional Schoolgirl	0.049	0.276	0.111	-0.005
	(0.082)	(0.187)	(0.098)	(0.099)
=1 if Unconditional Schoolgirl	-0.159**	0.176	-0.094	-0.357**
	(0.081)	(0.190)	(0.109)	(0.173)
p-value UCT vs. CCT	0.052	0.650	0.120	0.068
p-value Treatment	0.101	0.306	0.287	0.121
Mean in Control Group	0.000	0.906	0.000	0.000
Sample Size	2,049	2,049	1,271	776

Husbands and Children

Marriage markets.

- Environments in which adolescent marriage is common may feature a preference for young brides (Foster and Khan 2000), meaning that delaying marriage may worsen marriage prospects, resulting in either lower husband quality (or bride price) or higher dowry payments (Field and Ambrus 2008).

- However, potentially counteracting this effect of increased age at marriage is human capital accumulation (Ashraf et al. 2016)

- These factors lead to a tradeoff between increased age at marriage and higher education, which jointly determine husband quality (Anderson and Bidner 2015).

Husband quality index

- *From the preregistered pre-analysis plan:*

  1. Husband Quality.

     i. Husband's highest grade completed, highest certificate attained. S25 Q2,4

     ii. Husband's wage rate S26 Q5

     iii. Currently employed S26 Q6..

     iv. Husband's score on cognitive test

     v. Husband HIV status.

     vi. Husband marital fidelity. Partners ever: S32 Q2, Partners 12 mo. S32 Q3. Concurrence: S32 Q15 answer for spouse (column 1)

     vii. Husband's mental health (constructed in same manner as CR) and then standardized.

- **Super-index of husband quality: i–vii.**

Husband outcomes

	Husband Quality Index	Highest Grade Completed	MSCE (Secondary Completion certificate)	Currently Employed	Cognitive Test	Mental Health
Panel A: Dropouts	(1)	(2)	(3)	(4)	(5)	(6)
=1 if Treatment Dropout	0.084	0.561	0.074**	-0.024	-0.049	0.014
	(0.106)	(0.348)	(0.037)	(0.040)	(0.110)	(0.126)
Number of observations	326	326	326	326	323	326
Control Group Mean	0.000	7.806	0.097	0.246	0.000	0.000
Panel B: Schoolgirls	(1)	(2)	(3)	(4)	(5)	(6)
=1 if Conditional Schoolgirl	0.141	0.046	0.059	0.045	0.014	0.154
	(0.096)	(0.271)	(0.053)	(0.051)	(0.109)	(0.126)
=1 if Unconditional Schoolgirl	-0.186	-0.454	-0.088	-0.091	-0.357**	0.016
	(0.180)	(0.425)	(0.054)	(0.093)	(0.163)	(0.194)
Number of observations	543	543	543	543	539	541
Control Group Mean	0.000	9.743	0.258	0.352	0.000	0.000
F test: CCT=UCT	3.025	1.391	4.227	1.899	4.119	0.441
p-value on F-test	0.084	0.240	0.042	0.170	0.044	0.508

note: *** p<0.01, ** p<0.05, * p<0.1

What about the children of beneficiaries:
What do we know from high income countries?

- Milligan and Stabile (2009), studying child benefits in Canada, find effects on cognitive and socio-emotional skills of children aged 4-6.

- Dahl and Lochner (2012) using the variation in Earned Income Tax Credit in the U.S., find that increased income improves children's test scores.

- Currie and Almond (2011) review the effects of "near cash" programs, such as food stamps, in the U.S. and find evidence of effects on birth weight.

- Aizer et al. (2016) and Hoynes, Schanzenbach and Almond (2016) find that children whose parents received cash transfers and food stamps in the U.S. had improved education, health, and income as adults.

What about the children of beneficiaries:
Effects on cash transfers on child height

- Barham, Macours and Maluccio (2013) report that children in Nicaragua who received three years of cash transfers were 0.2-0.4 SD taller for their age (*CCT*)

- Aguero, Carter and Woolard (2006) find that children in South Africa receiving child support grants for most of the period between 0-3 years of age gained as much as 0.45 SD in HAZ (*UCT*).

- A review of *CCT* programs finds evidence of positive effects on height – for children exposed at a young age and where transfers are larger (Ruel and Alderman, 2013)

  - "...interventions to improve growth are more efficacious when they reach children during their first two years of age rather than later, and the younger within this critical age range, the greater the impact." (Leroy, Ruel, and Verhofstadt, 2009)

What about the children of beneficiaries:
Effects on cash transfers on child height

- In our experiment, more than 2,000 babies were born to study participants by Round 4 – with endogenous variation in their duration of exposure to the cash transfer program.

- We have already demonstrated that well-known channels for growth, such as maternal nutrition and stress (Black, Devereux and Salvanes 2017), improved during the two-year program.

Effects on cash transfers on child height

- In our program, we're treating "prospective" mothers with cash transfers before they're pregnant (or even have children).
  - And, we know that the program influenced both the levels and the timing of childbearing.
  - It might have also caused selection in the types of women giving birth (and when)
- So, the extensive margin impacts imply an identification problem that is endemic to any study like ours.
- However, we still do want to have an idea of the effects of cash transfers targeted to adolescents on their children's outcomes…
- Use a method of inverse propensity weighting and mediation analysis to try and get at causal impact of the program.

Effects on cash transfers on child height

- We expect heterogeneity in the impacts of cash transfers in two ways:
  - When the child was born (during, <9 months, or >9 months after the program)
  - Treatment arm (CCT vs. UCT)

- In SSA, schooling and marriage/childbearing are mutually exclusive, so a CCT conditional on schooling will screen out new (and expectant) mothers.

- Related to this is the timing of the birth →
  - Direct "income effects" on nutrition, reduced stress, etc. *in UCT group **during** program*
  - Potential effects of delayed childbearing and education *in the CCT group **after** program*

Height-for-age z-scores by month of birth
(*baseline schoolgirls*)
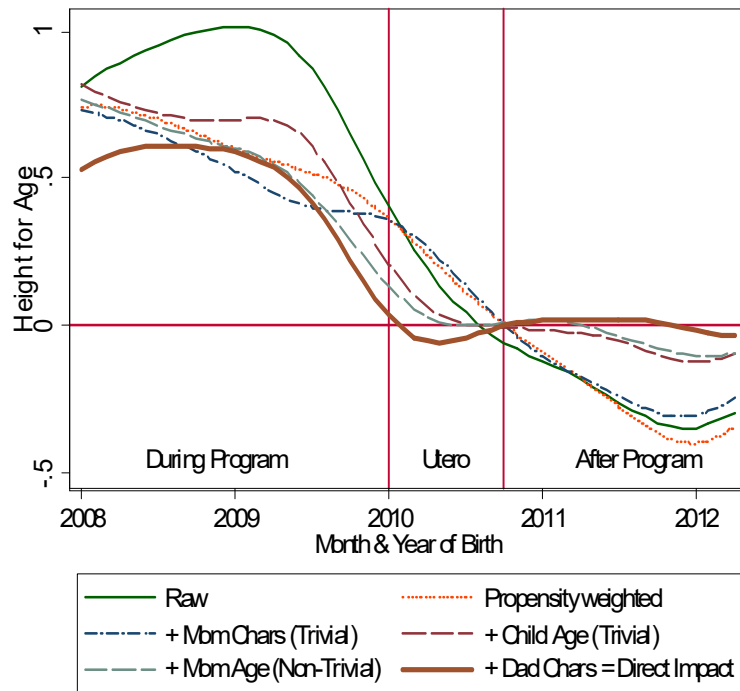
Baseline schoolgirls (UCT)
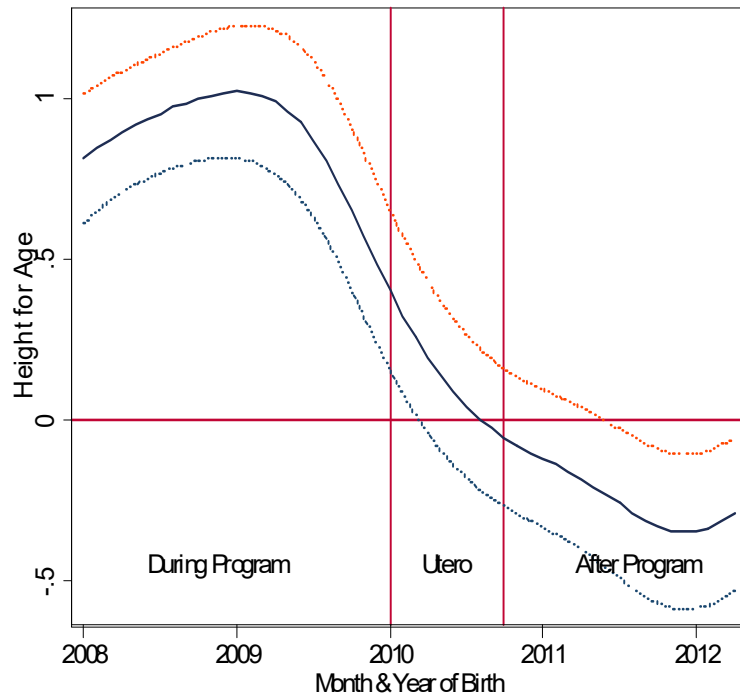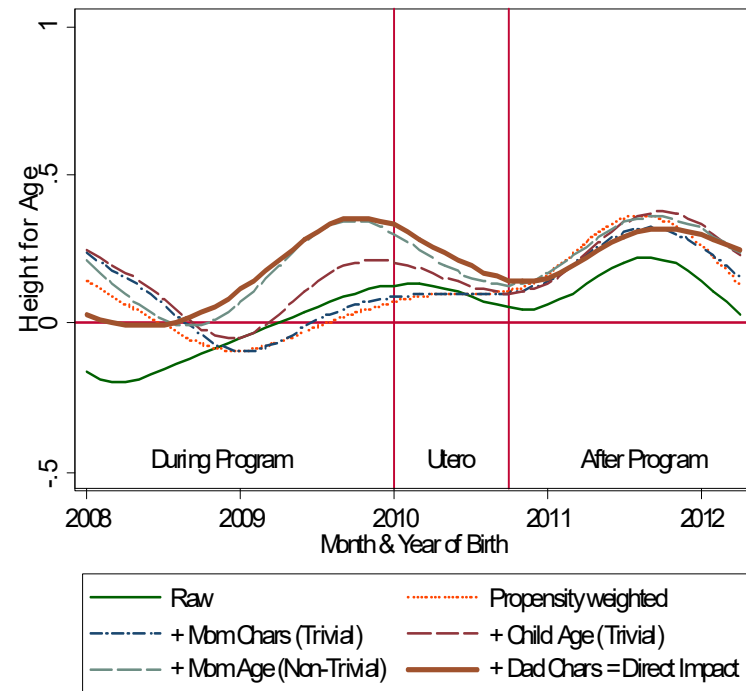

Baseline schoolgirls (CCT)

Height-for-age z-scores by month of birth
(*baseline schoolgirls*)

Longer-term effects: Summary

- Among *baseline schoolgirls*, almost all of the effects of cash were transitory and faded out very quickly.

- In contrast, very large and durable effects of CCT among *baseline dropouts*, who experienced very large increases in school attainment.

- Caveats:
  - No experiment with UCT among *baseline dropouts*
  - Even *baseline dropouts* did not see major long-term improvements outside of marriage, fertility, and assortative matching with more educated husbands.
  - Schoolgirls are still transitioning.

Unconditional cash transfers

- **Importance** of cash…
  - With small, frequent, and reliable cash transfers, we are able to cause improvements in multiple domains:
    - Nutrition
    - Mental health
    - HIV/STDs
    - Reductions in teen pregnancies and child marriages

- …even though such transfers do not necessarily cause substantial increases in capital accumulation (human or physical)

Unconditional cash transfers

- **Limitations** of cash…
  - However, all of the effects observed during the program disappear soon after the cessation of support.
  - Worse, the desired trends reversed themselves (HIV, total fertility, etc.)
  - No lasting effects of any kind for a broad range of outcomes (empowerment, consumption, health, marriage markets)
  - Even though still transitioning into adulthood, don't see much promise for improved future outcomes.

- UCTs are great for social protection, but we should not expect promotion from them (for the next generation or the current one)
  - Possible exception: income is good for the development of young children (Gertler 2004; Aguero, Carter, and Woolard 2006; Fernald, Gertler, and Neufeld 2009; Shah and Steinberg 2013, 2015; Barham, Macours, and Maluccio 2013a)

Conclusions: Policy Implications

- Strong contemporaneous effects of CT programs on poverty did no translate into longer-term benefits in this context.

- Without well-paying jobs or profitable income generating activities, the only way to convert increased schooling into future welfare gains is through marriage…

- While designing CCT programs, don't forget about children who are already out of school.

- CCT programs may penalize adolescent girls at exactly the wrong moment for dropping out of school
  - A base UCT topped up by a CCT? → *a good candidate for experimentation!*

Universal transfers to women of childbearing age?

- Indeed, (Currie and Almond 2011) have suggested that targeting transfers towards women of childbearing age may be beneficial in the U.S. context, so as to maximize benefits to children *in utero*.

- This form of targeting would suffer from remarkably little 'leakage' in the Malawian context; two thirds of women aged 20-24 gave birth by age 20 and virtually all females have started childbearing by age 25 (NSO 2005).

- Our results suggest that targeting unconditional transfers towards low-income adolescents and young women can generate substantial human capital benefits for the next generation in Sub-Saharan Africa.

THANK YOU.

Our approach:

1. To investigate how differential exposure to CCTs and UCTs drives treatment effects, we consider the sample of children born during three epochs:

   1. Directly exposed to the program (max. 2 years – combination of *in utero* and child)

   2. Exposed *in utero* only (max. 9 months -- born within nine months of the end of cash transfers)

   3. Not exposed (born more than nine months after the end of cash transfers)

Our approach:

2. How do we move from a "naïve" treatment-control comparison towards a suggestive causal estimate that answers a simple question: "do cash transfers confer a protective effect on the height of a given child?"

- To answer this question, we use two approaches simultaneously

3. We use *inverse propensity weighting* intended to make the observed sample of mothers be representative of the full sample of core respondents.

$$P = \alpha + \beta T + \gamma X + \delta T*X,$$

where P is the propensity to give birth in a given epoch

Our approach:

4. Finally, using the inverse propensity weights, we add a sequence of endogenous control variables that remove observable forms of heterogeneity via OLS regression adjustments on the intensive margin.
   - This approach to mediation analysis is widely used in social science (Baron and Kenny 1986) and medicine (MacKinnon 1994).

- We cumulatively control for:
  - Baseline characteristics used in the construction of IPW - minus mother's age (trivial)
  - Child age in months (trivial)
  - Mother's age (non-trivial)
  - Father's characteristics (non-trivial)

AUT 2019