ECON 326: Economics of Developing Countries
TA Session 3

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Today's Agenda

Evidence on Cash Transfer Programs

- Effects on Child Health: Gertler (2004)
- Conditional Cash Transfers vs Unconditional Cash Transfers
- Effects on Education: Baird, McIntosh & Ozler (2011)

Gertler (2004)

Do Conditional Cash Transfers Improve Child Health? Evidence from PROGRESA's Control Randomized Experiment

Overview

- Paper evaluates the impact of a large-scale RCT in Mexico

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- Conditional Cash Transfer (CCT) Program called PROGRESA in Mexico
- Preview of result: CCTs improve child health significantly
- Suggestive that CCTs are effective and can be used to achieve equality of opportunity

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- Sizeable cash transfer - roughly 20-30% of household income

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- (without some usual ethical concerns)

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- Let's focus on ρ

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  - Look at the p-values of the difference in means
  - Tells us the likelihood of observing differences as large as the ones we observe by chance

Balance Test

TABLE 1—PRE-INTERVENTION DESCRIPTIVE STATISTICS FOR THE MORBIDITY SAMPLE OF CHILDREN AGE 0–35 MONTHS AT BASELINE

Variable	Treatment	Control	p value for difference
Child was ill in last 4 weeks (=1)	0.330	0.323	0.771
Age	1.625	1.612	0.914
Male (=1)	0.511	0.491	0.091
Father's years of education	3.803	3.840	0.980
Mother's years of education	3.495	3.829	0.062
Father speaks Spanish (=1)	0.942	0.929	0.276
Mother speaks Spanish (=1)	0.935	0.917	0.443
Own house (=1)	0.923	0.917	0.465
House has electricity (=1)	0.644	0.711	0.091
Hectares of land owned	0.809	0.791	0.553
Male daily wage rate (pesos)	30.483	31.219	0.370
Female daily wage rate (pesos)	27.258	27.844	0.493
Sample size:	4,519	3,306	

Notes: This table reports descriptive statistics for the sample of children age 0–35 months at baseline before the intervention. The p values in the third column are for the test of the hypothesis that the means of the treatment and control groups are equal and are adjusted for inter-cluster correlation at the village level.

Results

TABLE 2—ESTIMATED LOG ODDS ESTIMATES OF THE IMPACT OF PROGRESA ON CHILDREN'S PROBABILITY OF ILLNESS

		Child age 0–35 months at baseline	
Variable	Newborns	Model 1	Model 2
PROGRESA eligible = 1	0.747 (0.013)	0.777 (0.000)	
PROGRESA eligible for 2 months = 1			0.940 (0.240)
PROGRESA eligible for 8 months = 1			0.749 (0.000)
PROGRESA eligible for 14 months = 1			0.836 (0.005)
PROGRESA eligible for 20 months = 1			0.605 (0.000)

Notes: The first two columns report the estimated log odds from coefficients on dummy variables indicating whether the child was in a treatment village and eligible for PROGRESA. The p value for the hypothesis test that the estimated log odds is equal to 1 is reported in parentheses. The third column reports the results for the length of time that the child could have been on PROGRESA. The coefficients for all three models are estimated from a random-effects logit model, which allows for inter-cluster correlation at the village level and controls for the socioeconomic variables reported in Table 1, measured at baseline prior to intervention.

- Treatment newborns 25.4% less likely to be reported as having been ill in the previous month

Results

TABLE 3—ESTIMATED IMPACT OF PROGRESA ON CHILDREN'S OBJECTIVE HEALTH MEASURES

Statistic	Height	Stunted	Anemia
Estimated program impact	0.959	0.914	0.745
	(0.004)	(0.495)	(0.012)
Treatment group mean	80.725	0.396	0.410
Control group mean	79.742	0.410	0.483
Sample size:	1,552	1,552	2,010

Notes: The first row in this table reports the estimated coefficient on a dummy variable indicating whether the child was in a treatment village for height from a linear regression with village random effects, and the estimated log odds from a coefficient on a dummy variable indicating whether the child was in a treatment village for stunting and anemia from a random-effects logistic regression. The p value for the test that the coefficients are different from zero in the first two columns and different from 1 in the third column are reported in parentheses.

- Increase in children's height
- Control group more likely to be stunted (8.6%) and more likely to be anaemic (25.5%)

Open Questions

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  - What would be the effect of a UCT?

CCTs vs UCTs

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- Theoretical default - people are rational

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Cash or Condition? Evidence from a Cash Transfer Experiment

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- UCT arm was unconditional - payment made regardless of attendance

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- In each EA, a percentage of baseline school girls was randomly selected to participate
- Cash transfer made to both the girls and the parent - amount varied by EA

Data Collection

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- Use household surveys, school surveys, school ledgers, interviews, test score data

Balance Test

TABLE II
BASELINE MEANS AND BALANCE

	Mean (s.d.)			
	(1)	(2)	(3)	(4)
	Control group	Conditional group	Unconditional group	p-value (Conditional–Unconditional)
Panel A: Household-level variables				
Household size	6.432	6.384	6.662	.202
	(2.257)	(2.146)	(2.075)	
Asset index	0.581	0.984	1.221	.623
	(2.562)	(2.740)	(2.447)	
Female-headed household	0.343	0.252**	0.245**	.899
	(0.475)	(0.434)	(0.431)	
Mobile phone access	0.616	0.583	0.605	.799
	(0.487)	(0.494)	(0.490)	
Household transfer amount	N/A	6.991	6.829	.822
		(2.319)	(2.101)	

TABLE II
(CONTINUED)

	Mean (s.d.)			
	(1)	(2)	(3)	(4)
	Control group	Conditional group	Unconditional group	p-value (Conditional–Unconditional)
Panel B: Individual-level variables				
Age	15.252	14.952*	15.424	.007***
	(1.903)	(1.827)	(1.923)	
Highest grade attended	7.478	7.246	7.896**	.004***
	(1.634)	(1.598)	(1.604)	
Mother alive	0.842	0.802	0.836	.360
	(0.365)	(0.399)	(0.371)	
Father alive	0.705	0.714	0.759	.288
	(0.456)	(0.453)	(0.428)	
Never had sex	0.797	0.797	0.775	.582
	(0.402)	(0.403)	(0.419)	
Ever pregnant	0.023	0.030	0.031	.973
	(0.149)	(0.171)	(0.173)	
Individual transfer amount	N/A	3.090	3.033	.606
		(1.431)	(1.451)	
Number of observations	1356	470	261	

Notes. Mean differences statistically different than 0 at 99% (***), 95% (**), and 90% (*) confidence. Asterisks on the coefficients in columns (2) and (3) indicate significantly different than the control group, while in column (4) asterisks indicate a significant difference between the conditional and unconditional treatment arms. Standard errors are clustered at the EA level to account for the design effect. Means are weighted to make them representative of the target population in the study EAs. The number of unique observations vary slightly across variables due to missing observations, with the total sample size ranging between 2089 and 2094.

Results: Schooling Outcomes

Student-reported school enrollment imply that UCTs are better ...

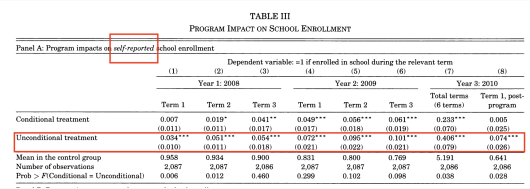


TABLE III

PROGRAM IMPACT ON SCHOOL ENROLLMENT

Panel A: Program impacts on *self-reported* school enrollment

	Dependent variable: =1 if enrolled in school during the relevant term							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Year 1: 2008			Year 2: 2009			Year 3: 2010	
	Term 1	Term 2	Term 3	Term 1	Term 2	Term 3	Total terms (6 terms)	Term 1, post-program
Conditional treatment	0.007	0.019*	0.041**	0.049***	0.056***	0.061***	0.233***	0.005
	(0.011)	(0.011)	(0.017)	(0.017)	(0.018)	(0.019)	(0.070)	(0.025)
Unconditional treatment	0.034***	0.051***	0.054***	0.072***	0.095***	0.101***	0.406***	0.074***
	(0.010)	(0.011)	(0.018)	(0.021)	(0.022)	(0.021)	(0.079)	(0.026)
Mean in the control group	0.958	0.934	0.900	0.831	0.800	0.769	5.191	0.641
Number of observations	2,087	2,087	2,086	2,087	2,087	2,087	2,086	2,086
Prob > F(Conditional = Unconditional)	0.006	0.012	0.460	0.299	0.102	0.098	0.038	0.028

Results: Schooling Outcomes

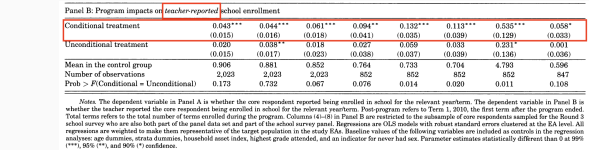
Teacher-reported school enrollment imply that CCTs are better ...

Panel B: Program impacts on *teacher-reported* school enrollment								
Conditional treatment	0.043***	0.044***	0.061***	0.094**	0.132***	0.113***	0.535***	0.058*
	(0.015)	(0.016)	(0.018)	(0.041)	(0.035)	(0.039)	(0.129)	(0.033)
Unconditional treatment	0.020	0.038**	0.018	0.027	0.059	0.033	0.231*	0.001
	(0.015)	(0.017)	(0.023)	(0.038)	(0.037)	(0.039)	(0.126)	(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

Notes. The dependent variable in Panel A is whether the core respondent reported being enrolled in school for the relevant *yearterm*. The dependent variable in Panel B is whether the teacher reported the core respondent being enrolled in school for the relevant *yearterm*. Post-program refers to Term 1, 2010, the first term after the program ended. Total terms refers to the total number of terms enrolled during the program. Columns (4)–(8) in Panel B are restricted to the subsample of core respondents sampled for the Round 3 school survey who are also both part of the panel data set and part of the school survey panel. 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 0 at 99% (***), 95% (**), and 90% (*) confidence.

Results: Schooling Outcomes

Teacher-reported school enrollment imply that CCTs are better ...



Panel B: Program impacts on *teacher-reported* school enrollment								
Conditional treatment	0.043***	0.044***	0.061***	0.094**	0.132***	0.113***	0.535***	0.058*
	(0.015)	(0.016)	(0.018)	(0.041)	(0.035)	(0.039)	(0.129)	(0.033)
Unconditional treatment	0.020	0.038**	0.018	0.027	0.059	0.033	0.231*	0.001
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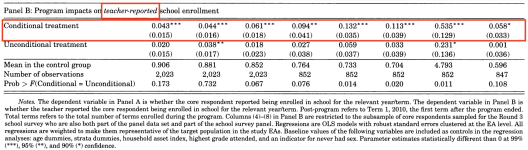

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So it seems to depend on who you ask.

But the authors believe that teacher-reported data is less likely to be biased.

Results: Attendance

Among those who stay in school, school records favour CCTs over UCTs

TABLE V

PROGRAM IMPACTS ON ATTENDANCE FROM SCHOOL LEDGERS

	Dependent variable: Fraction of days respondent attended school				
	(1)	(2)	(3)	(4)	(5)
	Term 1, 2009	Term 2, 2009	Term 3, 2009	Overall 2009	Term 1, 2010
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 the control group	0.778	0.849	0.688	0.810	0.801
Number of observations	284	285	192	319	211
Prob > F(Conditional = Unconditional)	0.129	0.334	0.358	0.436	0.010

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. The variable "Overall 2009" is defined for all core respondents who have ledger information for any of the three terms and is constructed by dividing the number of days present by the number of days in session for all terms in which there is information. 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 0 at 99% (***), 95% (**), and 90% (*) confidence.

Results: Test Scores

Test scores are also higher in the CCT group

TABLE VI

PROGRAM IMPACTS ON TEST SCORES

	Dependent variable			
	(1)	(2)	(3)	(4)
	English test score (standardized)	TIMMS math score (standardized)	Non-TIMMS math score (standardized)	Cognitive test score (standardized)
Conditional treatment	0.140***	0.120*	0.086	0.174***
	(0.054)	(0.067)	(0.057)	(0.048)
Unconditional treatment	−0.030	0.006	0.063	0.136
	(0.084)	(0.098)	(0.087)	(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

Notes. The cognitive test score is based on Raven's Colored Progressive Matrices. Math and English reading comprehension tests were developed based on the Malawian school curricula. Five questions (four from the Fourth Grade test and one from the eighth Grade test) from Trends in Mathematics and Science Study (TIMMS) 2007, which is a cycle of internationally comparative assessments in mathematics and science carried out at the fourth and eighth grades every 4 years, were added to the Math test. All test scores have been standardized to have a mean of 0 and a standard deviation of 1 in the control group. Regressions are OLS models using Round 3 data with robust standard errors clustered at the EA level. All regressions are weighted to make the results 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, an indicator for never had sex, and whether the respondent participated in the pilot phase of the development of the testing instruments. Parameter estimates statistically different than 0 at 99% (***), 95% (**), and 90% (*) confidence.

Results: Long-term Outcomes

TABLE VII

PROGRAM IMPACTS ON MARRIAGE AND PREGNANCY

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

Results: Long-term Outcomes

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Results: Long-term Outcomes

- Marriage rates unchanged in CCT group but significantly lower in UCT group
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  - Two channels for schooling to affect marriage
  - Through the CCT arm, dropouts averted
  - Through the UCT arm, girls dropped out but income effect delayed marriage
  - The second group is larger than the first group in this study

Conclusion: No Clear Winner

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- CCTs increased enrollment and regular attendance for those in school more than the UCT
- UCTs substantially lowered teenage pregnancy and marriage rates
- CCTs more cost-effective at improving schooling outcomes - they use different payment amounts to learn this
- So which program to choose may depend on the level of compliance
- Ultimately, some of these individuals need income support and are vulnerable
- "while CCT programs may be more effective than UCTs in obtaining the desired behaviour change, they can also undermine the social protection dimension of cash transfer programs"

See you next time!