Effects of cash transfers for female secondary schooling: Non-experimental evidence from Pakistan

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Preexisting conditions

- **Poor outcomes**: Prior to the program, in 2001-02, the middle school net enrollment rate for 11-13 year olds was 30%.
- 28% for girls; 24% for rural children; 19% for rural girls.

Program features

- In response, in 2003, Government of Punjab introduced cash benefits for girls that attend grades 6-8 in government schools. In 2006, the program was expanded to include grades 9-10.

- **Aim**: To increase girls' school participation in secondary grades.

- **Benefit**: Rs. 2400/year in four quarterly installments offered to the beneficiary at school. Benefit level has remained fixed over time.

- **Condition**: *De jure*: 80% attendance; *de facto*: enrollment.

- **Administration**: Program administered by the district governments in partnership with the postal system, with reporting to the provincial government.

- Currently over 400,000 beneficiaries.

Program features (cont.)

- Program also geographically-targeted using district adult literacy rates obtained from the 1998 Population Census (a single, continuous assignment variable--observable).

- Districts with literacy rates below 40% (15 out of 35 districts) were targeted for the program (distinct, observable cutoff).

- Yields a sharp change in program eligibility at 40% (a sharp regression-discontinuity (RD) design).

- Assignment variable data predetermined.

- Choice of cutoff was communicated ex-post.

- No other program was offered using the same cutoff to determine program eligibility.
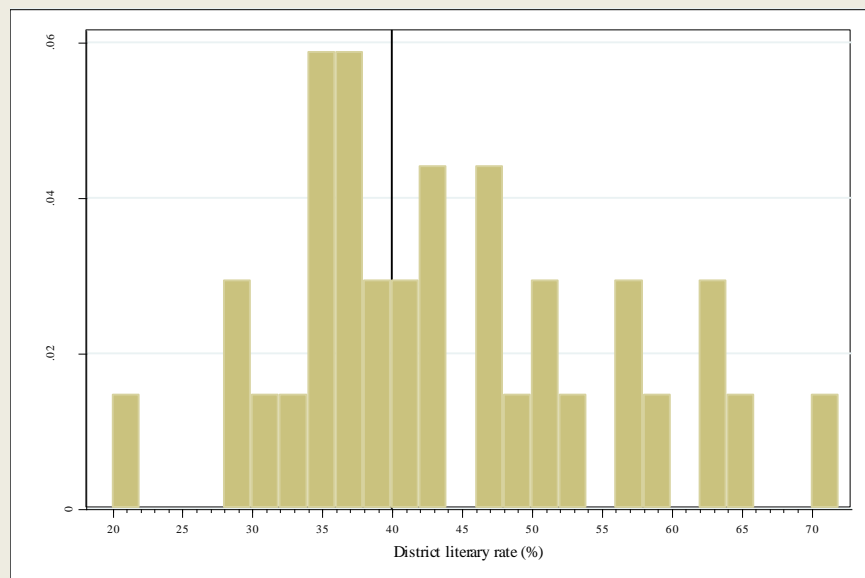
Identification strategy

- Districts become increasingly similar as one approaches the adult literacy cutoff from either side.

- **Key identifying assumption**: Specifically, in the absence of the program, the conditional means of the outcome measure on either side and "near" the cutoff are identical.

  - Testable assumption if pre-program data on outcomes are available.

- Given the assumption, post-program onset, any difference in the conditional means of the outcome measure on either side of and *near* the cutoff is attributable to the program.

Table 1. Pre-program district characteristics, 1998

Indicator	All districts		Wide neighborhood		Narrow neighborhood	
	Untreated Mean	Treated Diff	Untreated Mean	Treated Diff	Untreated Mean	Treated Diff
	(1)	(2)	(3)	(4)	(5)	(6)
Share literate *Assignment variable*	*52.127*	*−18.241*	*42.260*	*−5.710*	*41.333*	*−2.958*
Share literate, males	63.850	−17.881	56.674	−7.528	58.467	−6.622
Share literate, females	39.746	−19.072	27.426	−4.614	24.200	−0.473
Share rural	69.243	12.891	73.616	7.139	75.547	5.228
Share female	49.024	−1.074	48.746	−0.743	49.313	−1.258
Share of houses with						
pacca construction	74.978	−37.857	62.260	−21.719	66.443	−30.491
electricity connection	80.269	−25.349	68.333	−11.212	67.917	−12.587
gas connection	18.997	−15.078	9.700	−5.802	3.277	1.193
piped water	25.404	−11.618	18.698	−4.279	17.713	−7.368
Log average household size	1.922	0.026	1.930	−0.014	1.915	0.012
Log sex ratio	4.647	0.041	4.655	0.030	4.633	0.051
Log population density	8.370	−0.636	8.119	−0.350	7.635	0.507
Number of districts	19	15	5	10	3	4

Notes: Data are from the 1998 Population Census. Columns (2), (4), and (6) report differences from the respective means in Columns (1), (3), and (5).
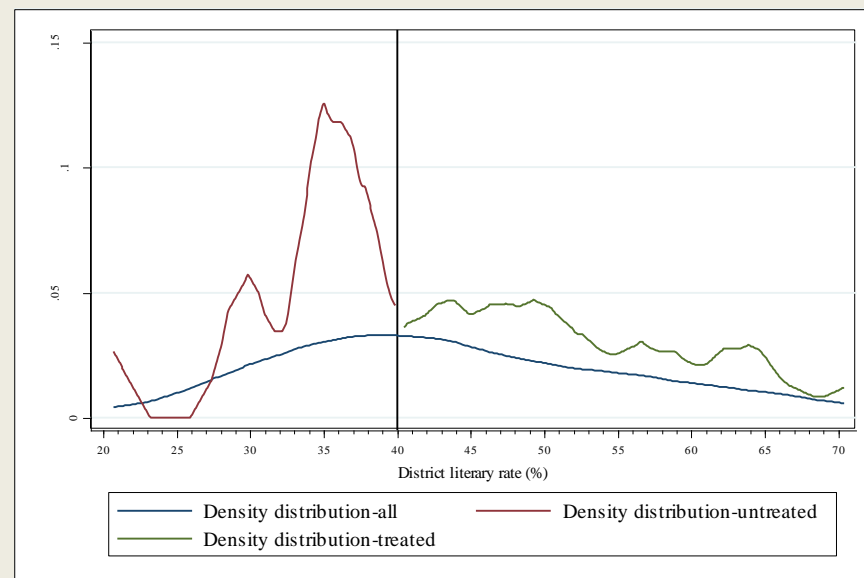
Research question

- What are the average causal effects of the program (at the cutoff) on outcomes of interests for girls?

- Three evaluation studies discussed; others ongoing, exploiting the same identification strategies.

  - Chaudhury and Parajuli (2010) – **CP**

  - Hasan (2010) – **H**

  - Alam, Baez, and Del Carpio (2011) – **ABD**

Empirical strategies and outcomes of interests

- **CP**: Compares (i) outcomes before and after program onset, (ii) between girls' secondary schools and boys' secondary schools, and (iii) between schools in program and nonprogram districts, within the neighborhood of the district literacy rate cutoff (**DDD+RD**).

- **Outcome of interest**: girls' enrollment.

- **H**: Compares (i) outcomes before and after program onset and (ii) between secondary schools in program and nonprogram districts (**DD**).

- **Outcomes of interest**:
  - girls' enrollment;
  - boys' enrollment; and
  - student-teacher ratios.

Data

- **CP**: Annual government school censuses (2003 and 2005); use *school level data*.

- **H**: Annual government school censuses (2003 to 2008); uses *school and grade level data*.

- **ABD**: District-representative household sample survey data (2003 and 2008); *use individual level data*.

Empirical strategies and outcomes of interest

- **ABD**: Compare (i) outcomes before and after program onset and (ii) between young females (ages 15+) in program and nonprogram districts, within the neighborhood of the district literacy rate cutoff (**DD+RD**).

- **Outcomes of interest**:
    - girls' middle school completion;
    - girls' high school completion;
    - labor force participation; marriage; and
    - fertility (children).

- **Impact parameter**: ITT at the cutoff.

Summary of findings

- **CP**: Increase in enrollment in girls' secondary schools in program districts.

- **H**: (1) Increase in enrollment in girls' secondary schools in program districts, with the impact increasing with time (from 2004 to 2008). Similar patterns across grades.

- (2) Increase in enrollment in boys' secondary schools in program districts with the impact increasing with time. Similar patterns across grades.
  - Author attributes this finding to positive spillovers.

- (3) Increase in student-teacher ratios in schools in program districts with the impact increasing with time.
  - Author states that this indicates congestion, with possible adverse effects on student achievement.

Summary of findings (cont.)

- **ABD**: (1) Increase in the incidence of young females' middle school completion in program districts.

- (2) Decline in young females' labor force participation rate in program districts.

- (3) Decline in young females' marriage rate (i.e. delayed marriage) in program districts.

What aids these evaluations?

- Program assignment compliance:
  - Fixing the effective treatment unit at an important tier of government (the district).
  - Offering the program to relatively disadvantaged districts (in this case, using the adult literacy rate) – nonprogram districts are likely to resist less.
  - **Drawback from an evaluation standpoint**: The effective treatment unit yields a small number of (possibly-disparate) observations. Particularly problematic in RD settings, when only observations near the cutoff are effectively used for any estimations.
- Evaluation data:
  - **Use of secondary data**: Unit of observation (e.g., school), the type of outcome measure (e.g., enrollment, completion) and scale of intervention (several districts) allows the use of administrative data (school censuses) and repeated (or panel) household sample surveys conducted by statistical agencies.