The Demand For Schooling

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What explains persistently low education?

- Considerable policy & research attention on supply or constraints:
  - Poverty & credit constraints; infrastructure; inputs; school fees; quality; accountability; parent/community participation, etc.
  - Rightly so.
- Schooling as an investment, with returns & costs
  - Underlies
    - Macro-growth models
    - Mincer, Becker micro models
  - The *demand side* of education is just as important.
    - If people don't believe there's a value to investing in schooling, you can build all the schools you want, make them free, etc., but people may still choose not to go.

The Demand for Education

- When the returns to schooling increase, do people respond? How much do they respond?

- Or, are they constrained from doing so?
  - Poverty/credit constraints
  - Cultural constraints (esp, wrt girls (women shouldn't work, etc.))
  - By access, quality, etc

- Is some of the problem of low educational attainment due to low returns (in which case, is it even a problem?)
  - Low returns → low investment

Empirical Evidence

- Foster-Rosenzweig (1996).
  - Green Revolution in India increased returns in agriculture, and following that, schooling.

- Oster-Millet (2010)

  --School enrolment & addition of call-center (Bangalore). 7-8%-age point gains for boys+girls

- Shastry (2010)

  --Areas with more English speakers (based on linguistic distance from Hindi) experienced more IT growth, and in turn had greater increases in English language school enrolment.

- Munshi-Rosenzweig (2006)

  --Boys' and girls' English language school enrolment, finance/services Mumbai.

Do (Perceived) Returns Matter? Do People Have accurate info about Returns?

"The (Perceived) Returns to Education and the Demand for Schooling," *Quarterly Journal of Economics*, 25(2), p. 515-548.

- Dominican Republic: Big drop out at end of 8th, despite 41% higher earnings with 12 yrs
- Measured returns not matter, *perceived* returns do (Manski)
- Survey data shows kids have very low perceived returns (res. seg.)

MEASURED AND PERCEIVED MONTHLY EARNINGS, MALES AGED 30–40

	(1) Measured mean	(2) Perceived (self)	(3) Perceived (others)
Primary	3,180	3,516	3,478
	[1,400]	[884]	[863]
Secondary	4,479	3,845	3,765
	[1,432]	[1,044]	[997]
Tertiary	9,681	5,127	5,099
	[3,107]	[1,629]	[1,588]
Secondary – primary	1,299	329	287
		[403]	[373]
Tertiary – secondary	5,202	1,282	1,334
		[1,341]	[1,272]

"The (Perceived) Returns to Education and the Demand for Schooling," *Quarterly Journal of Economics*, 25(2), p. 515-548.

- Providing info on measured returns incr perceptions of returns.
- Also, inc. prob(return) by ~5 pctg pts, & 0.2 - 0.4 yrs.

	Full sample				Poor households				Least poor households			
	(1) Returned next year	(2) Finished school	(3) Years of schooling	(4) Perceived returns	(5) Returned next year	(6) Finished school	(7) Years of schooling	(8) Perceived returns	(9) Returned next year	(10) Finished school	(11) Years of schooling	(12) Perceived returns
Treatment	0.041*	0.023	0.20**	367***	0.006	−0.01	0.037	344***	0.072*	0.054*	0.33***	386***
	(0.023)	(0.020)	(0.082)	(28)	(0.034)	(0.026)	(0.11)	(41)	(0.038)	(0.031)	(0.12)	(41)
Log (inc. per capita)	0.095**	0.23***	0.79***	29.0	0.054	0.26***	0.69***	188**	0.047	0.10	0.51	23
	(0.040)	(0.044)	(0.16)	(47)	(0.068)	(0.062)	(0.23)	(87)	(0.12)	(0.13)	(0.45)	(133)
School performance	0.011	0.019**	0.086**	0.74	0.001	0.015	0.064	−9.5	0.025*	0.024*	0.10**	8.2
	(0.010)	(0.009)	(0.034)	(14)	(0.014)	(0.012)	(0.048)	(13.5)	(0.013)	(0.012)	(0.048)	(22)
Father finished sec.	0.074**	0.050*	0.26**	−24	0.056	0.019	0.16	−29.1	0.096**	0.096**	0.36**	−3.8
	(0.030)	(0.030)	(0.12)	(32)	(0.045)	(0.043)	(0.18)	(62)	(0.038)	(0.038)	(0.14)	(40)
Age	−0.010	0.004	−0.006	−42*	−0.042	0.002	−0.071	−46	0.005	0.005	0.025	−35
	(0.016)	(0.015)	(0.059)	(21)	(0.030)	(0.019)	(0.088)	(32)	(0.025)	(0.035)	(0.087)	(29)
R^2	.016	.040	.049	.090	.007	.019	.014	.094	.020	.020	.029	.090
Observations	2,241	2,205	2,074	1,859	1,055	1,055	1,007	920	1,056	1,056	1,002	939

- Nguyen (2009) finds something similar for Madagascar

"Economic Opportunities and Gender Differences in Human Capital: Experimental Evidence from India." NBER Working Paper No. 16021

- Test whether increases in employment opportunities for women increases investment in girls
  - Big gender difference in human capital: ex., literacy rates 73% for men, 48% for women
  - Some say due to low returns…
  - vs. culture
  - Including things that mean school not respond to returns: stigma, patrilocal exogamy

- Experiment: Assign variation in returns/opportunities for women in rural India via IT/BPO recruiting services

  Advantages: 1. Exogenous variation
  2. Designed to shut-off all non-returns mechanisms

- Household-level panel data (3 years)

IT/Business Process Outsourcing (BPO) Industry

- Activities/services including call centers, data entry & management, claims processing, transcription, online tech support, etc.
- A fairly new industry. Technological change (fiber optic cables) and policy shift (1990s, allowed FDI in telecoms).
- 30-40% annual growth in India in the 2000's. 95% of jobs in 7 cities.
  - NASSCOM (2009).
- Some preference for women: worldwide 70+%, India 45-50%.
  - Holman, Batt and Holtgrewe (2007). Demeanor, voice, trust. Lack alternatives?
- Large, sudden increase in demand for female labor. Well-paid (5-10kRs).
  - Esp. with high school (& computers & English)
  - Though certainly, evidence women not getting higher management jobs
- Lots of recruiting activities, businesses

The Intervention

- Awareness of and access to these jobs limited b/c so new (esp. rural)
- We hired 8 call center/BPO recruiting subcontractors
  - 6 women and 2 men, all with at least 2 years experience, specifically recruiting women.
- Drew up list of villages near Delhi would normally not visit
  - Size of village/school and distance make them higher cost (per potential recruit) than nearer areas (50+km). Thus, info and access likely to be lower there (& less chance experiment spoiled by control getting a treatment)
  - Haryana-Punjab-UP-Rajasthan
- Randomly assigned 240 villages to treatment and control groups
  - 80 controls
  - 80 treatment (girls-only)
  - 80 girls treatment + boys treatment. (no “boys-only” treatment)

The Intervention

- Recruiters first visited local schools, villages
- Recruiters spent 1-2 days in treatment villages (weekends) providing range of information and services
  - Provided overview of opportunities, information on how to apply, information about specific employers, interview tips and skills lesson and practice interviews, assessment of language skills.
  - Told no guarantee of employment, jobs were competitive.
    - But actually ended up placing quite a few women (>900 over 3 years).
  - English language, secondary school, women (rules out many/most older women).
  - High attendance, lots of interest
- Booster shot 1 and 2 years later, and continuous, 3 years of free support

Empirical Strategy

- Randomized, so simply regress

$$Y_i = \beta_0 + \beta_1 Treatment_i + \varepsilon_i,$$

$$Y_i = \beta_0 + \beta_1 Treatment_i + \sum \gamma_i Z_i + \varepsilon_i$$

$$\Delta Y_i = \beta_0 + \beta_1 Treatment_i + \varepsilon_i$$

- Levels: Education: kids 7-15.
- BMI-for-Age(BFA), Height-for-Age(HFA): 5-15. Objective measures.
- Changes: aged 7-12, 5-12 baseline. (fewer kids b/c attrition, non-msr round 1, smaller age range)

- Cluster standard errors village level
- OLS here, but robust to limited dependent variable models

PANEL A. GIRLS	Round 2 Outcomes			Round 2 Outcomes			Δ (Round 2-Round 1)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Enrolled	BMI-for-Age	Height-for-Age	Enrolled	BMI-for-Age	Height-for-Age	Enrolled	BMI-for-Age	Height-for-Age
Treatment	0.046***	0.18***	0.031	0.043***	0.19***	0.043	0.051***	0.22***	0.048
	(0.017)	(0.069)	(0.068)	(0.016)	(0.069)	(0.067)	(0.20)	(0.071)	(0.054)
Log (inc per capita)				0.063***	0.14**	0.165***			
				(0.014)	(0.058)	(0.059)			
Head's Education				0.001	-0.00	0.021			
				(0.003)	(0.012)	(0.021)			
Spouse's Education				0.006***	0.003	0.031			
				(0.002)	(0.016)	(0.014)			
Family Size				-0.001	0.022*	0.031**			
				(0.003)	(0.012)	(0.013)			
Child's Age				0.004	-0.062***	-0.072***			
				(0.004)	(0.011)	(0.009)			
R^2	0.005	0.008	0.00	0.014	0.028	0.05	0.010	0.012	0.00
Observations	1,873	2,106	2,106	1,873	2,106	2,106	1,699	1,631	1,631
Control Group Mean	0.76	-1.27	-2.05	0.76	-1.27	-2.05	0.76	-1.27	-2.05
Mean Effect		0.11***			0.11***			0.14***	
		(0.027)			(0.026)			(0.027)	
F-stat		8.11			8.75			9.76	
(p-value)		0.000			0.000			0.000	

Notes: Heteroskedasticity-consistent standard errors accounting for clustering at the village-level in parentheses. Columns 1-6 use Round 2 outcomes as the dependent variable, and Columns 7-9 use the change in outcome from Round 1 to Round 2. For the first 6 columns, the sample is children aged 7-15 for schooling and 5-15 for weight and height. For the first columns, the sample is children aged 5-12 at baseline (8-15 at round 2). Weight is measured in kg and height in cm. All control variables in columns 1-6 are measured in Round 2. All regressions also include indicators for whether income or mother's or father's education data was unavailable (these household are assigned median values for these variables). "Mean effect" is the mean effect of the treatment across the three outcomes for a given specification, computed using the methodology described in Kling, Liebman, and Katz (2007). F-stat is from a joint test that the treatment variable is zero in the three specifications. *Significant at 10 percent level. **Significant at 5 percent level. ***Significant at 1 percent level.

PANEL B. BOYS	Round 2 Outcomes			Round 2 Outcomes			Δ (Round 2-Round 1)		
	Enrolled	BMI-for-Age	Height-for-Age	Enrolled	BMI-for-Age	Height-for-Age	Enrolled	BMI-for-Age	Height-for-Age
Treatment	-0.009	0.027	0.018	-0.012	0.015	0.001	-0.012	-0.016	0.013
	(0.016)	(0.075)	(0.058)	(0.016)	(0.072)	(0.058)	(0.020)	(0.068)	(0.047)
Log (inc per capita)				0.016	-0.001	0.117**			
				(0.014)	(0.072)	(0.052)			
Head's Education				0.005**	-0.026**	0.006			
				(0.002)	(0.011)	(0.008)			
Spouse's Education				0.00	0.029*	0.032**			
				(0.003)	(0.016)	(0.015)			
Family Size				-0.003	0.012	0.02			
				(0.002)	(0.017)	(0.014)			
Child's Age				-0.01***	-0.12***	-0.08***			
				(0.003)	(0.011)	(0.008)			
R^2	0.00	0.00	0.00	0.012	0.06	0.05	0.001	0.00	0.00
Observations	2,141	2,442	2,442	2,141	2,442	2,442	1,896	1,828	1,828
Control Group Mean	0.87	-1.32	-1.96	0.87	-1.32	-1.96	0.87	-1.32	-1.96
Mean Effect		0.006			-0.003			0.022	
		(0.025)			(0.024)			(0.027)	
F-stat		0.17			0.14			0.40	
(p-value)		0.92			0.94			0.75	

Notes: Heteroskedasticity-consistent standard errors accounting for clustering at the village-level in parentheses. Columns 1-6 use Round 2 outcomes as the dependent variable, and Columns 7-9 use the change in outcome from Round 1 to Round 2. For the first 6 columns, the sample is children aged 7-15 for schooling and 5-15 for weight and height. For the first columns, the sample is children aged 5-12 at baseline (8-15 at round 2). Weight is measured in kg and height in cm. All control variables in columns 1-6 are measured in Round 2. All regressions also include indicators for whether income or mother's or father's education data was unavailable (these household are assigned median values for these variables). "Mean effect" is the mean effect of the treatment across the three outcomes for a given specification, computed using the methodology described in Kling, Liebman, and Katz (2007). F-stat is from a joint test that the treatment variable is zero in the three specifications. *Significant at 10 percent level. **Significant at 5 percent level. ***Significant at 1 percent level.

OK, but what if the opportunities are for M & F?

PANEL A. GIRLS	Round 2 Outcomes			Round 2 Outcomes			Δ (Round 2-Round 1)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Enrolled	Weight	Height	Enrolled	Weight	Height	Enrolled	Weight	Height
Treatment	0.044***	0.135*	0.013	0.041***	0.145**	0.034	0.045***	0.150**	0.041
	(0.020)	(0.069)	(0.067)	(0.019)	(0.071)	(0.064)	(0.21)	(0.057)	(0.056)
Log (inc per capita)				0.014	0.173***	0.218***			
				(0.020)	(0.064)	(0.055)			
Head's Education				0.002	0.011	0			
				(0.003)	(0.013)	(0.009)			
Spouse's Education				0.010**	-0.042**	0.025*			
				(0.005)	(0.018)	(0.014)			
Family Size				0.002	0.018	0.027**			
				(0.004)	(0.013)	(0.013)			
Child's Age				-0.00	-0.06***	-0.07***			
				(0.004)	(0.010)	(0.009)			
R^2	0.02	0.01	0.00	0.06	0.04	0.01	0.00	0.02	0.00
Observations	1873	2102	2102	1873	2102	2102	1684	1631	1631
Mean Effect		0.079**			0.089***			0.072**	
		(0.028)			(0.027)			(0.033)	
F-stat		4.72			5.26			2.81	
(p-value)		0.004			0.002			0.063	

Key Points

- All of this points to the role of the returns to schooling and the demand for schooling.
- Schooling increased without changing poverty or credit constraints, cost, access, quality, infrastructure, etc.
- And they were able to do it w/out cutting back on boys.
- For some subset of households, they were not sending kids to school because they did not believe there was a value to doing so.
- Again, this is *not* to say the other stuff doesn't matter.
- Stimulating demand better b/c want to be there? (e.g., Nguyen).

Some Open Questions & Need for Further Rsrch

- What determines how people form perceptions? What are their sources of information? What policies can help ensure good info?
- Perceptions and gender or caste inequality, e.g., DR Pigmentocracy
- The returns to WHO? Keepin' 'em Down on the Farm
- Constraints—credit, cultural. e.g, Jensen-Oster Cable TV & girls' schooling
- Back and forth between skilled labor demand and supply
  - Arora – Bagde (2010). Growth in IT industry & supply of skilled labor in India.
- What is the role of govt in increasing returns? What labor market policies are relevant/effective?
  - including with respect to gender, caste inequalities, etc.

- Aspirations, attainability. Why do some feel opps. not for them?