

L16 Education Policy and Development

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Introduction

- **Q1:** What are effects of education on productivity and incomes?
- **Q2:** Evidence on effectiveness of specific education policies on education?
- *References:* Orazem, Glewwe and Patrinos, 'The Benefits and Costs of Alternative Strategies to Improve Educational Outcomes' (besides Ch 18 in UPP)

OLS estimates of Private RoR to Education in LDCs

- Mincer regressions of log earnings on years of schooling, with age and experience as controls
- Table 4.1 in text reports results from 63 household cross-section data sets from 42 LDCs
- OLS estimates of RoR for males: 7.2%, for females 9.8%; urban: 8.3%, rural 7.5%
- Higher for higher percentiles of the earnings distribution (interquartile range: 5-10% for males, 9-12% for females)

Key points to note

- Average RoR significantly positive (remember growth regressions!); slightly higher than for developed countries
- Higher than returns to most investments in physical capital
- Higher for women
- Higher in urban areas

Schultz Hypothesis regarding Education RoR

- TW Schultz argued value of education expected to be higher in dynamic environments, e.g. when technology is changing, when new opportunities arise
- Supporting evidence: returns to education in rural areas of India and Indonesia rose during the 1970s in areas most affected by Green Revolution
- These studies showed farmer education was positively correlated with adoption of new seed varieties

Schultz Hypothesis regarding Education

RoR: contd.

- Education also positively correlated with rural-urban migration when urban labor demand rises
- RoR higher (9.9% vs 6.4%, Fig 4.1) in countries with more 'economic freedom' , i.e., with fewer restrictions on mobility, trade, entry or price controls

Years of Schooling or Cognitive Skills?

- Cognitive skills (e.g. literacy) matters, rather than years of schooling *per se* in Mincer regressions
- When both variables are included in the regression, literacy is the more significant determinant rather than years of schooling
- Education is an important means of acquiring cognitive skills, for most people

Relation between Education and Literacy

- Strong relation between education and literacy:
Figure 4.2
- 95% confidence intervals for percent literate:
 - 7-25% for those with no education
 - 35-85% for those with 1 year of schooling
 - 58-95% for those with 2 years
 - 80-99% for those with 3 years
 - 90-99% for those with 4 years
 - 97-99% for those with 5 years
- Implication: universal literacy will require universal primary schooling

Primary versus Secondary versus Tertiary Education

- Varying estimates of benefits to primary, secondary and tertiary education, but within a range of 7-15%
- Costs vary far more: secondary/tertiary education costs 2/34 times as much as primary education
- Implies higher net benefit of primary education
- Rationale for MDG of universal primary education
- Recent research indicating even higher returns to early-childhood interventions (pre-school)

Need for Govt Interventions: Social versus Private Returns

- Range of external social benefits from increased schooling:
 - lower fertility rates
 - improved health
 - benefits for children
 - lower crime, drug problems
 - improved civic sense
- External costs? Lower earnings of already educated

Need for Govt Interventions: Missing Financial Markets

- Additional reason for underinvestment in education: parents are credit-constrained, cannot borrow to pay for children's education
- Particularly for poor parents, sacrifice involved (in terms of foregone consumption) can be very large:
- 'Affordability' problems, importance of transitory income shocks (eg., natural disasters, pensions, price changes) esp in LDCs

Need for Govt Interventions: Missing Financial Markets, Equalizing Opportunity

- Immediate costs versus distant, uncertain rewards
- Missing insurance markets; low risk-bearing capacity of poor households
- Many smart children from poor households unable to get same opportunities as those from rich backgrounds
- Enhanced social mobility and equality of opportunity: additional goals of education policy

Building New Schools, versus Reducing Dropouts

- Excluding China, E Europe, C. Asia (where percent not completing 5th grade is below 5%), 30% of children in LDCs fail to complete grade 5 (41% in Africa, 32% in S Asia): Table 4.2
- Of these 55% started school but dropped out before completing 5th grade
- Orazem *et al* argue its more cost-effective to reduce drop-outs than to try to build new schools to reduce numbers of those who never attend school
- Capitalize on existing school capacity, parent willingness to send kids to school

What Kinds of Interventions will be Most Effective?

- Supply-side Interventions: building more schools, distributing free textbooks, spending more on teachers, enhancing teacher incentives, school management reforms
- Demand-side interventions: lowering schooling costs, health/nutritional supplements, conditional cash transfers (CCTs)

Stated Reasons For Not Attending School

- World-wide averages (Table 4.3):
 - Lack of interest: 47-44%
 - Poverty:18%
 - Work:15%
 - Health reasons:6-5%
 - Inadequate school supply:2-5%
 - Other: 11-12%

Effectiveness of Supply-Side Interventions: Evidence

- Indonesian school construction program during 1970s: 3% increase in average years of schooling (Duflo 2001)
- (Duflo study provides IV/DoD estimate of returns to schooling: 10% versus OLS estimate of 7%)
- Distance to schools: negligible impacts on years of schooling (Filmer 2004)
- RCEs in Kenya distributing textbooks (Glewwe et al 2009): zero average effect

Effectiveness of Supply-Side Interventions: Teachers

- Teacher attributes matter, but these are unrelated to training or pay
- Govt school teachers are paid 2 to 8 times what private school teachers are paid in most LDCs, with little difference in teaching quality
- Why?

Effectiveness of Supply-Side Interventions: Teachers, contd.

- Govt teachers better qualified on average (more technical training in education and pedagogy)
- Higher rates (20%) of teacher absenteeism in public schools with high pay (Chaudhry et al 2006)
- Absenteeism difficult to control owing partly to strong teacher unions in public schools

Effectiveness of Supply-Side Interventions: Privatization

- Recent attempts to allow parents to switch their children to private schools using education vouchers (e.g. Chile, Bolivia, Colombia, Pakistan): no significant improvements overall
- E.g. in Pakistan's LEAPS program: poorly performing public schools that improved their quality; highly performing private schools that raised their prices; no changes for others
- Tendency towards greater inequality (good private schools tend to accept children with above average grades and parental background)

Effectiveness of Supply-Side Interventions: Decentralizing School Management

- School management reforms (e.g., decentralization to local governments, PTAs): small, uneven benefits in Latin America
- Brazil, Colombia: no improvement in test scores, increased enrollment of students from poor households (Madeira, Rodriguez 2008)
- Argentina: schools with better pre-reform performance improved considerably, while in below-average schools performance fell (Galiani et al 2006)

Supply-Side Interventions: In-Kind Benefits for School Children

- Nutritional supplements (e.g., mid-day meals, school breakfasts)
- Immunization programs
- Bicycles for school-going girls in Bihar

Supply-Side Interventions: In-Kind Benefits for School Children, contd.

- Early childhood interventions: pre-school programs, day care, child nutrition
- Numerous studies evaluating effects on cognitive development, school enrollment, nutrition
- Emerging consensus that these are more effective than schooling interventions in later years

Demand-Side Interventions

- Orazem et al argue that demand-side interventions have been more effective in increasing enrollment
- Two (not three) categories of demand-side interventions:
 - subsidizing school costs
 - conditional cash transfers (CCTs)

School Cost Subsidies

- **Free Primary Schooling:** increasing trend towards making primary schooling tuition-free (75/93 countries reviewed)
- Large positive effects on enrollment amongst girls, and children from poor and rural households
- E.g., Colombia Gratuidad program: 3-6% enrollment rate effects at pre-secondary level; Fafchamps-Minten study of Madagascar natural experiment

School Cost Subsidies, contd.

- Effects of abolishing primary school tuition in Uganda in 1997: Deininger (2003) estimated reduction in schooling cost was 60% (\$16), associated with 60% rise in enrollment;
- Subsequent DoD and IV estimates (Nishimura et al 2008) show significant causal impact on enrollment and 5th grade completion rates for girls and rural children
- Kenya RCE study by Kremer et al (2003): 15% enrollment increase following textbook/uniform subsidies worth \$15 per child (but no effects on test scores)

Conditional Cash Transfers (CCTs)

- Large cash transfers to parents, conditional on sending children to school and medical check-ups
- Originally in Latin America (since 1995), following Mexico's PROGRESA/OPPORTUNIDADES program
- Spreading now elsewhere: World Bank \$2.8 billion program for CCTs in Bangladesh, Pakistan, Kenya. Philippines (since 2009)
- Large scale of these programs: national programs in Mexico (5 million households), Brazil (Bolsa Familia: 11 million), Colombia (1.5 million)

Figure 1 CCTs in the World, 1997 and 2008

1997



2008



Size of Transfers

Table 3 Impact of CCTs on Poverty Measures, Various Years

Poverty measure		Colombia		Honduras		Mexico			Nicaragua		
		2002	2006	2000	2002	1998	Jun. 1999	Oct. 1999	2000	2001	2002
Headcount index	Control	0.95	0.90	0.88	0.91	0.89	0.93	0.94	0.84	0.91	0.90
	Impact	A	-0.03*	A	B	0.02**	-0.01**	0.00	A	-0.07**	-0.05**
Poverty gap	Control	0.58	0.54	0.49	0.54	0.47	0.55	0.56	0.43	0.50	0.50
	Impact	A	-0.07**	A	-0.02*	0.01*	-0.03**	-0.02**	A	-0.13**	-0.09**
Squared poverty gap	Control	0.53	0.43	0.30	0.36	0.28	0.35	0.36	0.26	0.32	0.32
	Impact	A	-0.02**	A	-0.02*	B	-0.03**	-0.03**	A	-0.12**	-0.09**

Source: Authors' calculations.

CCT Impacts

- PROGRESA phased in a randomized manner at village level to allow evaluation of impacts
- Reduced drop-out rates in 6th and 7th grades in Mexico by 9%, in Cambodia by 11%
- Transfers provided income security of poor households, reduced child labor, child health benefits
- Well targeted: benefits largest for poorest households; minimum scope for political manipulation

Table 4 Impact of CCTs on School Enrollment and Attendance, Various Years

Country	Program	Age/Gender/ Grade	Baseline enrollment (%)	Impact ^a	Transfer (% of PCE) ^b	Evaluation method	Reference
<i>Latin American and Caribbean countries</i>							
Chile	Chile Solidario	Ages 6–15	60.7	7.5*** (3.0)	7	RDD	Galasso (2006)
Colombia	Familias en Acción	Ages 8–13	91.7	2.1** (1.0)	17	PSM, DD	Attanasio, Fitzsimmons, and Gómez (2005)
		Ages 14–17	63.2	5.6*** (1.8)			
Ecuador	Bono de Desarrollo Humano	Ages 6–17	75.2	10.3** (4.8)	10	IV, randomized	Schady and Araujo (2008)
Honduras	Programa de Asignación Familiar	Ages 6–13	66.4	3.3*** (0.3)	9	Randomized	Glewwe and Olinto (2004)
Jamaica	Program of Advancement through Health and Education	Ages 7–17	18 days ^c	0.5** (0.2)	10	RDD	Levy and Ohls (2007)
Mexico	Oportunidades	Grades 0–5	94.0	1.9 (25.0)	20	Randomized	Schultz (2004)
		Grade 6	45.0	8.7*** (0.4)			
		Grades 7–9	42.5	0.6 (56.4)			
Nicaragua	Atención a Crisis	Ages 7–15	90.5	6.6*** (0.9)	18	Randomized	Macours and Vakis (2008)
Nicaragua	Red de Protección Social	Ages 7–13	72.0	12.8*** (4.3)	27	Randomized	Maluccio and Flores (2005)

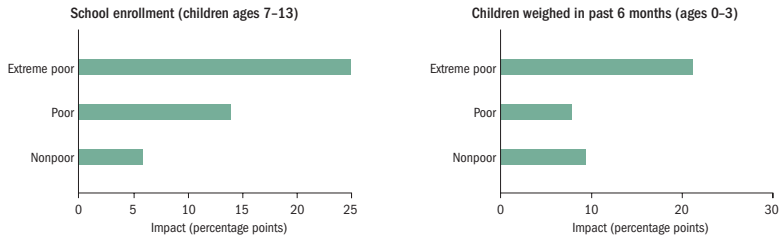
Table 4 continued

Country	Program	Age/Gender/ Grade	Baseline enrollment (%)	Impact ^a	Transfer (% of PCE) ^b	Evaluation method	Reference
<i>Non-Latin American and Caribbean countries</i>							
Bangladesh	Female Secondary School Assistance Program	Ages 11–18 (girls)	44.1	12.0** (5.1)	0.6	FE	Khandker, Pitt, and Fuwa (2003)
Cambodia	Japan Fund for Poverty Reduction	Grades 7–9 (girls)	65.0	31.3*** (2.3)	2–3	DD	Filmer and Schady (2008)
Cambodia	Cambodia Education Sector Support Project	Grades 7–9	65.0	21.4*** (4.0)	2–3	RDD	Filmer and Schady (2009c)
Pakistan	Punjab Education Sector Reform Program	Ages 10–14 (girls)	29.0	11.1*** (3.8)	3	DDD	Chaudhury and Parajuli (2008)
Turkey	Social Risk Mitigation Project	Primary school	87.9	–3.0* n.a.	6	RDD	Ahmed et al. (2007)
		Secondary school	39.2	5.2 n.a.			

Table 5 Impact of CCTs on Health Center Visits by Children, Various Years

Country	Program	Outcome	Age range (years)	Baseline level (%) ^a	Impact ^b	Transfer (% of PCE) ^c	Evaluation method	Reference
Chile	Chile Solidario	Regular checkups	0–6	17.6	2.4 (2.7)	7	RDD	Galasso (2006)
Colombia	Familias en Acción	Child taken to growth and development monitoring	0–1	n.a.	22.8*** (6.7)	17	PSM, DD	Attanasio et al. (2005)
			2–4	n.a.	33.2*** (11.5)			
			4+	n.a.	1.5* (0.8)			
Ecuador	Bono de Desarrollo Humano	Child had growth control in last 6 months	3–7	n.a.	2.7 (3.8)	10	R	Paxson and Schady (2008)
Honduras	Programa de Asignación Familiar	Child taken to health center at least once in past month	0–3	44.0	20.2*** (4.7)	9	R	Morris, Flores, et al. (2004)
Jamaica	Program of Advancement through Health and Education	Number of visits to health center for preventive reasons in past 6 months	0–6	0.205	0.278*** (0.085)	10	RDD	Levy and Ohls (2007)
Mexico	Oportunidades	Number of visits to all health facilities in past month	0–2	0.219	-0.032 (0.037)	20	R	Gertler (2000)
			3–5	0.221	0.027 (0.019)			

Figure 4 Heterogeneity of Impacts by Socioeconomic Status, Nicaragua, 2000



Source: Maluccio and Flores 2005.

Benefits vs. Costs of Different Interventions

- CCTs have been very large interventions, with large effects and large costs
- Table 4.5 in Orazem et al: Mexico Progresa benefit \$17565, cost \$2585; Nicaragua benefit \$5920, cost \$1574
- Compare with vouchers in Colombia: benefit \$476, cost \$193; scholarships in Pakistan benefit \$3924, cost \$108
- Magnitude of net benefits higher for CCTs, benefit-cost ratio higher for other interventions

Qualification Concerning Policies Raising Enrollment Rates in Public Schools

- Creates overcrowding in public schools
- Negative spillover effects on already-enrolled
- Overcrowding creates negative effects on quality of education: *big concern now*
- Orazem et al suggest vouchers for private schools as a solution
- Most interventions have not increased test scores of children, or quality of education

Emerging Focus of Educational Policy

- Considerable success in raising primary school enrollments world-wide as a result of concerted policy efforts
- Main concern now is how to improve quality of education
- Many experts are recommending going back to supply side interventions, to improve school quality
- Also on pre-school and early childhood interventions