

The Impact of School Fees

on the Intergenerational Transmission of Education

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Introduction: Background

- ▶ Reforms in education systems, investments in school infrastructure and the abolition of school fees have led to improvements in enrolment in primary and secondary education in many developing countries
- ▶ For example, net primary enrolment increased from around 60% in 2000 to 76% in 2011 in low-income countries (World Bank 2013)
- ▶ However, improvements are unevenly distributed across countries and regions
- ▶ The target of universal primary education (UPE) by 2015 is not likely to be met by most developing countries
- ▶ Sub-Saharan Africa is the region that is still most behind the goal with around 22% of school-aged children not enrolled in primary education (UNESCO 2014).

Intergenerational transmission of education and impact of school fees

- ▶ Educated parents tend to invest more time and effort in the education of their children and they also tend to be wealthier
- ▶ Only few studies on intergenerational transmission of education in developing countries
- ▶ Hertz et al. 2007: Found an average correlation of 0.4
- ▶ Problem of "ability bias" can overstate the correlation between parental and children's education (Behrman and Rosenzweig 2002).

Intergenerational transmission of education and impact of school fees

- ▶ School fees and other costs of school attendance are significant barriers to educational enrolments
- ▶ Ongoing trend of abolishing school fees in developing countries
- ▶ But: Limited resources to fund education system remain a big challenge
- ▶ Limited cross country empirical evidence on the impact of abolishing school fees on children's education (Tinker et al 2013)
- ▶ Some country studies showing a clear increase in enrolment (Al-Samarrai and Zama 2000, Duflo 2001, Osili and Long 2008).

Scope of the study

- ▶ Two objectives:
 1. Analyze patterns of intergenerational mobility in education across countries and over time
 2. Analyze the direct effect of school fees on educational attainment as well as their impact on the intergenerational transmission of education
- ▶ There exists no previous comparable cross-country evidence on the impact of school fees on childrens education
- ▶ There exists no previous study that uses micro data
- ▶ There exists no previous study that concentrates on an outcome indicator of education (years of schooling).

Data

- ▶ We use the Demographic and Health Surveys (DHS), which are standardised national representative household surveys conducted since 1985
- ▶ For most countries more than one survey and up to six survey waves are available
- ▶ We pool the data by country and year: total sample of 190 surveys and 67 countries between 1990 and 2012
- ▶ Total sample: around 1 million children aged between 15 and 18 born between 1972 and 1997.

Data on school fees

- ▶ Main source: World Bank reports from 2006 and 2009 on school fees for primary education at the country level
- ▶ We define two dummy variables on free primary education:
 1. Free primary education equals 1 if primary education in the country is free and 0 otherwise, taking into account the year of introduction of free primary education and the age of the child
 2. Partly free primary education equals 1 if primary education in the country is free and the children are within the official primary education age range at time of introduction and 0 otherwise
- ▶ Example: Bangladesh: Year of introduction of free primary education: 2000; official age range of primary education: 6-11
- ▶ Free primary education = 1 if child is born after 1994
- ▶ Partly free primary education = 1 if child is aged 7-11 in 2000
- ▶ An addition, we define a more continuous variable measuring individual years of (potential) exposure to free primary education.

Estimation approach

$$C_{imjt} = \alpha + \beta E_{imjt} + \beta_2 X'_{imjt} + \beta_3 F_{imjt} + \beta_4 P_{imjt} + \delta_{imjt} + \gamma_j + v_t + \epsilon_{imjt} \quad (1)$$

- ▶ C_{imjt} = years of education of child i born to mother m in country j and year t
- ▶ E_{mijt} = Years of education of mother
- ▶ X'_{mijt} = vector of control variables (age of mother, sex of child)
- ▶ F_{mijt}, P_{mijt} = dummy whether primary education is (partly)free (=1)
- ▶ δ_{imjt} = age of child fixed-effects
- ▶ γ_j = time fixed-effects
- ▶ v_j = country fixed-effects
- ▶ ϵ_{imjt} = error term

$$C_{imjt} = \alpha + \beta E_{imjt} + \beta_2 X'_{imjt} + \beta_3 F_{imjt} + \beta_4 P_{imjt} + \beta_5 F \times E_{imjt} + \beta_6 P \times E_{imjt} + \delta_{imjt} + \gamma_j + v_t + \epsilon_{imjt} \quad (2)$$

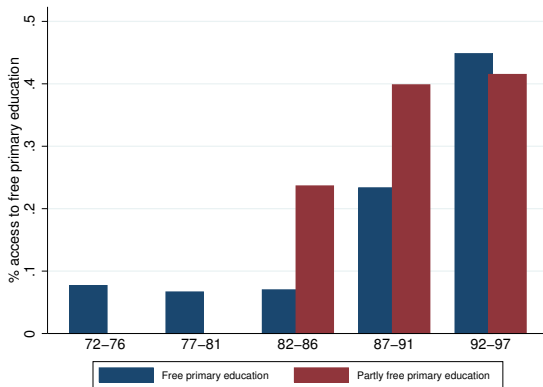
Table : Descriptive Statistics of Education

	Years of schooling					
	Children (15-18)		Mother		Father	
	Mean	SD	Mean	SD	Mean	SD
Total	6.50	3.62	4.22	4.52	5.50	4.81
Africa	5.36	3.63	3.35	4.16	4.44	4.76
Asia	6.99	3.61	4.16	4.54	5.97	4.76
Latin America	7.59	3.03	5.83	4.64	6.41	4.68
Birth cohort of child						
1972-1976	5.65	4.00	2.71	3.80	4.42	4.53
1977-1981	6.08	3.68	3.63	4.20	5.07	4.67
1982-1986	6.19	3.65	3.96	4.42	5.40	4.77
1987-1991	6.78	3.64	4.46	4.67	5.71	4.93
1992-1997	7.16	3.15	5.34	4.66	6.23	4.82

Table : Free primary education

Country	Year of introduction	Age range of primary education
Albania	1991	6-10
Armenia	1991	7-10
Bangladesh	2000	6-11
Cameroon	2000	6-12
Egypt	1999	6-12
Ethiopia	1995	7-13
Ghana	2005	6-12
Guyana	1988	6-12
India	2006	6-12
Kenya	2003	6-12
Kyrgyzstan	1990	7-11
Lesotho	1999	6-13
Madagascar	2002	6-11
Malawi	1994	6-12
Morocco	1963	6-12
Mozambique	2004	6-13
Nigeria	1999	6-12
Rwanda	2003	7-13
Swaziland	2010	6-13
Uganda	1996	6-13
Tanzania	2001	7-14
Zambia	2002	6-13

Figure : Percent of children with access to free primary education by birth cohort (age 15-18)



- ▶ 23 countries abolished school fees in primary education from which 16 countries are in Sub-Saharan Africa.

Table : Impact of school fees on educational outcomes

	(1)	(2)	(3)
Years of education (mother)	0.360*** (0.00242)	0.359*** (0.00242)	0.389*** (0.00368)
Sex of child (1=boy)	-0.146*** (0.0167)	-0.150*** (0.0166)	-0.148*** (0.0166)
Age of mother	0.0204*** (0.00112)	0.0200*** (0.00111)	0.0204*** (0.00111)
Free primary (=1)		0.177*** (0.0403)	0.523*** (0.0487)
Partly free primary (=1)		-0.191*** (0.0268)	-0.0797** (0.0350)
Free primary x years of education mother			-0.0803*** (0.00523)
Partly free primary x years of education mother			-0.0272*** (0.00491)
Observations	111,493	111,493	111,493
R-squared	0.829	0.829	0.830
Age FE	YES	YES	YES
Country FE	YES	YES	YES
Year FE	YES	YES	YES

Table : Impact of school fees on educational outcomes

	(4)	(5)
Years of education (mother)	0.538*** (0.00548)	0.578*** (0.00577)
Sex of child (1=boy)	-0.150*** (0.0166)	-0.148*** (0.0165)
Age of mother	0.0240*** (0.00112)	0.0243*** (0.00112)
Years of exposure to free primary	0.0321*** (0.00694)	0.0667*** (0.00711)
Years of exposure x years of education mother		-0.0109*** (0.000482)
Observations	111,493	111,493
R-squared	0.831	0.832
Age FE	YES	YES
Country FE	YES	YES
Year FE	YES	YES
Mean of years of exposure	4.06	

Table : Impact of school fees on educational outcomes by regions

	(1) Africa	(2) Africa	(3) Africa	(4) Non-Africa	(5) Non-Africa	(6) Non-Africa
Years of education (mother)	0.347*** (0.00265)	0.348*** (0.00265)	0.343*** (0.00416)	0.417*** (0.00545)	0.412*** (0.00540)	0.452*** (0.00779)
Sex of child (1=boy)	-0.106*** (0.0193)	-0.109*** (0.0193)	-0.147*** (0.0192)	-0.216*** (0.0325)	-0.240*** (0.0325)	-0.321*** (0.0322)
Age of mother	0.0272*** (0.00126)	0.0270*** (0.00125)	0.0198*** (0.00125)	0.0103*** (0.00219)	0.00724*** (0.00219)	-0.00575** (0.00236)
Free primary (=1)		0.122*** (0.0468)	0.289*** (0.0550)		1.140*** (0.110)	1.186*** (0.126)
Partly free primary (=1)		-0.279*** (0.0318)	-0.257*** (0.0416)		0.740*** (0.0778)	0.370*** (0.0962)
Free x years of edu mother			-0.0341*** (0.00633)			-0.213*** (0.0107)
Partly free x years of edu mother			0.0138** (0.00565)			-0.0962*** (0.0119)
Observations	81,529	81,529	81,529	29,964	29,964	29,964
R-squared	0.822	0.822	0.824	0.849	0.849	0.852
Age FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Table : Impact of school fees on educational outcomes for children living without their biological parents

	(1)	(2)	(3)
Years of education (mother)	0.198*** (0.00300)	0.197*** (0.00300)	0.199*** (0.00325)
Sex of child (1=boy)	0.278*** (0.0266)	0.278*** (0.0266)	0.276*** (0.0266)
Age of mother	0.00892*** (0.00125)	0.00879*** (0.00124)	0.00835*** (0.00125)
Free primary (=1)		0.466*** (0.0842)	0.612*** (0.100)
Partly free primary (=1)		0.0767 (0.0575)	0.0685 (0.0704)
Free primary x years of education mother			-0.0460*** (0.0112)
Partly free primary x years of education mother			0.000450 (0.00910)
Observations	67,099	67,099	67,099
R-squared	0.770	0.770	0.771
Age FE	YES	YES	YES
Country FE	YES	YES	YES
Year FE	YES	YES	YES

Table : Impact of school fees on educational outcomes for children living without their biological parents

	(1)	(2)
Years of education (mother)	0.433*** (0.00808)	0.437*** (0.00821)
Sex of child (1=boy)	0.221*** (0.0266)	0.221*** (0.0266)
Age of mother	0.0128*** (0.00125)	0.0128*** (0.00125)
Years of exposure to free primary	0.0561*** (0.00858)	0.0712*** (0.00973)
Years of exposure x years of education mother		-0.00348*** (0.000980)
Observations	67,099	67,099
R-squared	0.774	0.774
Age FE	YES	YES
Country FE	YES	YES
Year FE	YES	YES

Results and discussion

- ▶ The results show a positive impact of mothers's education and access to free primary education on children's education
- ▶ The results indicate the extent to which user fees influence the intergenerational transmission of education and perpetuate educational inequality
- ▶ There is a significant gradient in mothers education in the benefits of lifting school fees
- ▶ Estimate assumes linearity in returns to the education of the mother
- ▶ We assumed that the introduction or removal of user fees is exogenous.

Thank You!