

Accessing Higher Education in Developing Countries: panel data analysis from India, Peru and Vietnam

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Introduction

Higher education in developing countries

- ▶ Education levels have risen rapidly across the world (World Development Indicators)
 - ▶ primary school enrolment near-universal, secondary school enrolment rising rapidly
- ▶ This means a rising proportion of young people in developing countries could potentially go to higher education (HE)
- ▶ Yet our understanding of higher education access in these settings remains very limited
 - ▶ strong contrast with the large literature in OECD countries
 - ▶ reflects both the focus of policy on earlier stages of education and a lack of suitable data to make analytical progress

Motivation

Should we care about HE access in developing countries?

- ▶ HE affect future employment, wages and tenure security
 - ▶ inequality in access to HE could lead to inequality in later life outcomes
 - ▶ may have significant distributional consequences
 - ▶ possibility of non-pecuniary benefits, e.g. improvements to health, accentuates this concern
- ▶ HE might have an effect on economic growth
 - ▶ if so, inequality in access arising from factors unrelated to productivity is a misallocation of resources
 - ▶ implications could be not just for individuals but for economic growth
- ▶ If HE has some intrinsic value to individuals, then inequality in HE access has direct consequences for individual welfare

What we do

We use unique panel data from three middle-income countries – India, Peru and Vietnam – to focus on three related analyses:

1. Analyze correlates of access to higher education, focusing specifically on gender and SES related inequalities
2. Panel-based analysis, using rich individual data for a decade preceding college enrolment, to assess the extent to which these reflect HH circumstances vs. intra-household choices or aspirations and investments in learning through childhood and adolescence
3. Heterogeneity in the association of factors from mid-childhood/adolescence across gender, rurality and parental education

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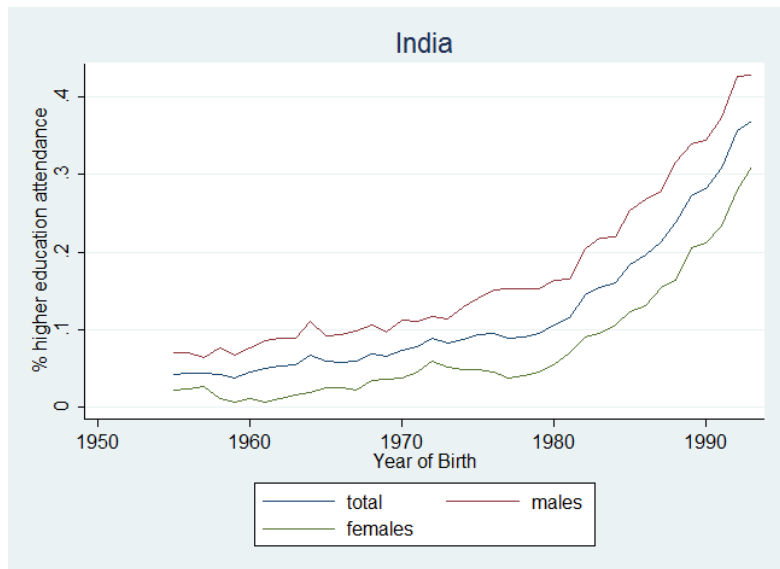
Data

The data come from the Young Lives study which has collected data on two cohorts born in 1994/95 and 2001/02 in India, Peru and Vietnam:

- ▶ Four rounds: 2002, 2006/7, 2009 and 2013/14
 - ▶ uniquely long, comparable, cohort data across countries
 - ▶ countries a good spread across MICs
- ▶ We use data on the older cohort which was aged ~8 years in 2002 and about 19-20 y in the 2013/14 round
 - ▶ by the 2013/14 round, typically in higher education or dropped out
- ▶ Data collected on a range of indicators over time: background characteristics, parent and child aspirations, HH and individual investments

Trends in access to higher education

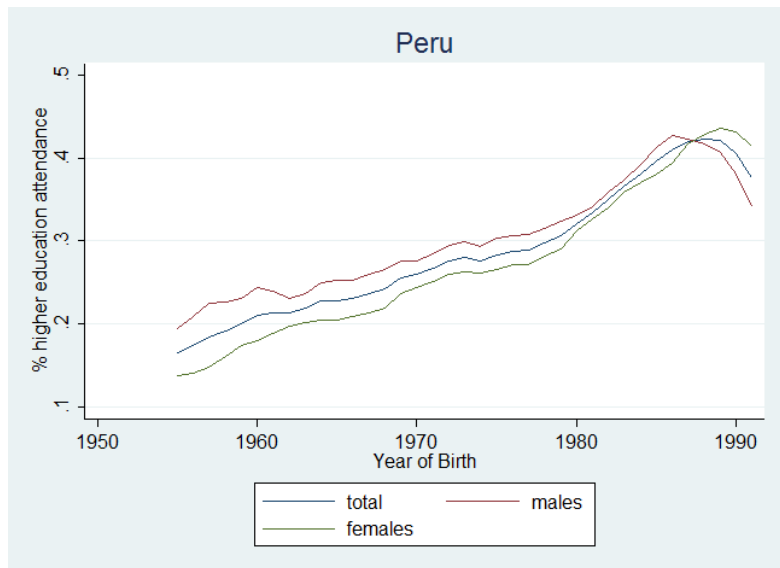
India



Source: India Human Development Survey 2012

Trends in access to higher education

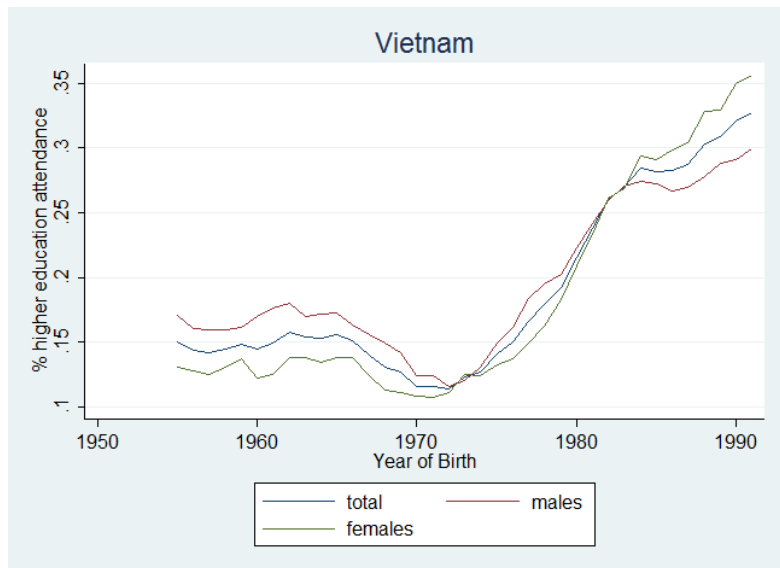
Peru



Source: National Household Survey (ENAH0, 2010)

Trends in access to higher education

Vietnam



Source: Multiple Indicator Cluster Survey (2010-11)

Descriptive statistics: Young Lives

	India			Peru			Vietnam		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
Household characteristics									
% Rural	0.76	0.43	950	0.25	0.43	622	0.82	0.39	879
Mother's education level:									
— None	0.60	0.49	944	0.10	0.30	619	0.10	0.30	872
— Primary School	0.27	0.45	944	0.35	0.48	619	0.27	0.45	872
— Secondary School	0.10	0.30	944	0.40	0.49	619	0.68	0.47	872
— higher-education	0.03	0.16	944	0.16	0.36	619	0.05	0.22	872
Individual characteristics									
Age in Round 4	18.72	0.46	950	18.41	0.57	622	18.76	0.47	878
Female	0.51	0.50	950	0.46	0.50	622	0.52	0.50	879
Height-for-age z score, (8 y)	-1.55	1.03	950	-1.41	1.01	618	-1.49	0.97	879
Aspirations at 12									
Caregiver's aspirations for child:									
— Complete Secondary or Less	0.30	0.46	915	0.06	0.23	618	0.22	0.41	871
— Higher Education	0.70	0.46	915	0.94	0.23	618	0.78	0.41	871
Child's aspirations:									
— Complete Secondary or Less	0.36	0.48	940	0.09	0.29	617	0.24	0.42	876
— Higher Education	0.64	0.48	940	0.91	0.29	617	0.76	0.42	876

Higher education access in Young Lives

Levels and gender disparities

	India			Peru			Vietnam		
	Total	M	F	Total	M	F	Total	M	F
Never enrolled in HE	47.8	38.9	56.4	44.6	42.5	46.9	45.9	50.4	41.8
Enrolled in Secondary or lower	9.2	12.6	5.8	9.8	11.7	7.5	18.5	17.2	19.7
Ever enrolled in HE	43.1	48.5	37.8	45.7	45.8	45.6	35.6	32.5	38.5
— (a) Technical/vocational post secondary college	7.6	10.3	5.0	21.6	21.4	21.8	16.2	15.3	17.1
— (b) University	32.1	33.8	30.5	19.2	19.4	19.1	18.8	16.5	21.0
— (c) No longer enrolled	3.4	4.5	2.3	4.9	5.0	4.8	0.6	0.7	0.4
N	950			635			876		

Note: Data from the Young Lives surveys. An individual is reported as “ever enrolled in higher education” if he/she was enrolled in higher education at least one year between 2010 and 2013. Rows (a) and (b) correspond to those enrolled in 2013, the latest observation. Row (c) corresponds to those that are not enrolled in 2013 but that were enrolled in higher-education at least one year between 2010 and 2012.

Higher education access in Young Lives

Socio-economic disparities

		<u>India</u>		<u>Peru</u>		<u>Vietnam</u>	
		M	F	M	F	M	F
Location:							
Urban	%	0.54	0.59	0.50	0.53	0.43	0.49
Rural	%	0.47	0.31	0.33	0.25	0.30	0.36
Terciles of wealth:							
— Poorest third	%	0.34	0.20	0.30	0.23	0.13	0.21
— Middle third	%	0.48	0.37	0.42	0.44	0.34	0.43
— Richest third	%	0.63	0.57	0.64	0.71	0.50	0.52
Mother's education level:							
— None	%	0.38	0.28	0.31	0.27	0.07	0.08
— Primary	%	0.61	0.42	0.32	0.36	0.11	0.27
— Secondary	%	0.67	0.74	0.48	0.49	0.44	0.47
— Higher education	%	0.92	0.92	0.77	0.75	0.78	0.68

Note: Data from the Young Lives surveys. Area of location (urban and rural), wealth terciles and birth order are from Round 1 (2002); parental education is from Round 2.

Panel-based regression analyses

Core specifications

Our regression specification is as follows:

$$Y_{ij,19} = \alpha + \beta_1 \cdot X_{ij} \quad (1)$$

$$+ \beta_1 \cdot \text{ParentalAsp}_{ij,12} + \beta_2 \cdot \text{ChildAsp}_{ij,12} \quad (2)$$

$$+ \beta_3 \cdot \text{PPVT}_{ij,12} + \beta_4 \cdot \text{Math}_{ij,12} \quad (3)$$

$$+ \lambda_j + \epsilon_{ij} \quad (4)$$

- ▶ X_{ij} : mother's/father's level of education, HH wealth tercile, rural location, height-for-age at 8 y, birth order of the individual, number of siblings, age in years, and gender
- ▶ ParentalAsp : Caregiver reported aspiration for HE at 12
- ▶ ChildAsp : Child's aspiration for HE
- ▶ PPVT : Vocabulary score at 12
- ▶ Math : Math score at 12
- ▶ λ_j : Community fixed effects

Correlates of enrolment in higher education

Results

	India		Peru		Vietnam	
	(1)	(3)	(1)	(3)	(1)	(3)
Female	-0.111*** (0.031)	-0.055* (0.030)	-0.004 (0.040)	0.004 (0.039)	0.068** (0.032)	0.063** (0.031)
Rural (2002)	0.054 (0.052)	0.068 (0.048)	0.041 (0.058)	0.079 (0.058)	0.084* (0.048)	0.092** (0.047)
<i>Wealth (2002)</i>						
— Middle tercile	0.101*** (0.039)	0.077** (0.036)	0.038 (0.056)	0.002 (0.056)	0.101** (0.043)	0.068 (0.043)
— Top tercile	0.207*** (0.053)	0.160*** (0.049)	0.175*** (0.066)	0.118* (0.066)	0.158*** (0.049)	0.113** (0.048)
<i>Maternal Education</i>						
— Primary School	0.107*** (0.040)	0.039 (0.038)	-0.006 (0.075)	-0.001 (0.074)	0.038 (0.069)	-0.094 (0.071)
— Secondary School	0.203*** (0.064)	0.075 (0.061)	0.054 (0.083)	0.041 (0.081)	0.185*** (0.071)	0.016 (0.075)
— higher-education	0.272** (0.111)	0.158 (0.103)	0.184* (0.101)	0.155 (0.100)	0.414*** (0.129)	0.233* (0.129)
<i>Aspirations</i>						
— Caregiver aspirations		0.132*** (0.045)		0.042 (0.096)		0.075 (0.049)
— Child aspirations		0.126*** (0.042)		0.158** (0.080)		0.107** (0.049)
<i>Test scores (2006)</i>						
Constant	-0.510 (0.650)	-0.859 (0.604)	0.194 (0.667)	0.065 (0.665)	-3.095*** (0.656)	-2.786*** (0.642)
Number of observations	878	878	559	559	777	777
R2	0.154	0.276	0.156	0.195	0.207	0.253

Note: Specifications as per previous slide; not all coefficients reported.

Summary of results

- ▶ There are pronounced gradients with respect to wealth and parental education
 - ▶ parental education gradients largely disappear conditional on aspirations and test scores
 - ▶ wealth gradients do not
- ▶ Gender differences favour boys in India and girls in Vietnam
 - ▶ Indian differences halve on controlling for background, aspirations and test scores but remain strongly significant
 - ▶ Vietnam differences unchanged on controlling for characteristics
- ▶ When checking for heterogeneity, it seems gender differences in both countries only really operate in the rural subsamples
 - ▶ some sign as well of differences in the partial associations of various characteristics with higher education attendance

Table 1 : Factors affecting access to higher-education

	India		Peru		Vietnam	
	(1)	(4)	(1)	(4)	(1)	(4)
Female	-0.111*** (0.031)	-0.062** (0.029)	-0.004 (0.040)	-0.002 (0.040)	0.068** (0.032)	0.072** (0.031)
Rural (2002)	0.054 (0.052)		0.041 (0.058)		0.084* (0.048)	
<i>Wealth (2002)</i>						
— Middle tercile	0.101*** (0.039)	0.054 (0.038)	0.038 (0.056)	0.023 (0.063)	0.101** (0.043)	0.092** (0.046)
— Top tercile	0.207*** (0.053)	0.165*** (0.050)	0.175*** (0.066)	0.167** (0.077)	0.158*** (0.049)	0.124** (0.055)
<i>Maternal Education</i>						
— Primary School	0.107*** (0.040)	0.054 (0.040)	-0.006 (0.075)	0.038 (0.086)	0.038 (0.069)	-0.074 (0.079)
— Secondary School	0.203*** (0.064)	0.086 (0.062)	0.054 (0.083)	0.074 (0.092)	0.185*** (0.071)	0.010 (0.081)
— higher-education	0.272** (0.111)	0.184* (0.106)	0.184* (0.101)	0.207* (0.109)	0.414*** (0.129)	0.226* (0.132)
Height-for-age z-score, R1	0.013 (0.016)	-0.002 (0.015)	0.072*** (0.021)	0.070*** (0.022)	0.029* (0.017)	0.010 (0.018)
<i>Aspirations for higher-education:</i>						
— Caregiver aspirations		0.134*** (0.045)		0.033 (0.097)		0.083* (0.050)
— Child aspirations		0.102** (0.042)		0.133 (0.081)		0.098** (0.049)
<i>Test scores (2006)</i>						
— Receptive vocabulary		0.104*** (0.020)		0.062** (0.029)		0.057** (0.026)
— Mathematics		0.070*** (0.019)		0.070*** (0.026)		0.071*** (0.022)
Cluster Fixed Effects	No	Yes	No	Yes	No	Yes
Number of observations	878	878	559	559	777	777
R2	0.154	0.324	0.156	0.237	0.207	0.294

Table 2 : Main results split by gender

	India		Peru		Vietnam	
	Male	Female	Male	Female	Male	Female
	(2)	(2)	(2)	(2)	(2)	(2)
Rural (2002)	0.202***	-0.041	0.157*	0.004	0.101	0.086
	(0.076)	(0.062)	(0.082)	(0.087)	(0.067)	(0.068)
<i>Wealth (2002)</i>						
— Middle tercile	0.082	0.070	-0.026	0.043	0.052	0.081
	(0.053)	(0.050)	(0.074)	(0.086)	(0.063)	(0.059)
— Top tercile	0.234***	0.101	0.103	0.184*	0.135*	0.096
	(0.076)	(0.065)	(0.089)	(0.103)	(0.071)	(0.068)
<i>Maternal Education</i>						
— Primary School	0.158***	-0.083	0.023	-0.036	-0.173	-0.039
	(0.056)	(0.053)	(0.102)	(0.110)	(0.107)	(0.098)
— Secondary School	0.087	0.063	0.101	-0.061	0.027	-0.014
	(0.090)	(0.082)	(0.114)	(0.120)	(0.112)	(0.103)
— higher-education	0.204	0.143	0.252*	-0.012	0.278	0.187
	(0.153)	(0.140)	(0.136)	(0.152)	(0.178)	(0.193)
Height-for-age z-score, R1	0.031	-0.015	0.080***	0.041	-0.010	0.025
	(0.021)	(0.021)	(0.028)	(0.034)	(0.025)	(0.024)
<i>Aspirations for higher-education:</i>						
— Caregiver aspirations	0.128*	0.171***	0.147	-0.068	0.097	0.040
	(0.074)	(0.055)	(0.140)	(0.138)	(0.067)	(0.075)
— Child aspirations	0.068	0.133**	0.152	0.139	0.032	0.188**
	(0.070)	(0.053)	(0.104)	(0.132)	(0.064)	(0.076)
<i>Test scores (2006)</i>						
— Receptive vocabulary	0.076***	0.122***	0.004	0.084**	0.045	0.045
	(0.028)	(0.025)	(0.039)	(0.040)	(0.037)	(0.031)
— Mathematics	0.091***	0.016	0.053	0.084**	0.067**	0.060**
	(0.029)	(0.025)	(0.037)	(0.036)	(0.033)	(0.030)
Number of observations	430	448	299	260	362	415
R2	0.271	0.325	0.215	0.235	0.291	0.239

Table 3 : Results split by area of location

	India		Peru		Vietnam	
	Urban	Rural	Urban	Rural	Urban	Rural
	(2)	(2)	(2)	(2)	(2)	(2)
Female	0.094	-0.098***	0.043	-0.130	0.092	0.072**
	(0.061)	(0.034)	(0.046)	(0.081)	(0.083)	(0.034)
<i>Wealth (2002)</i>						
— Middle tercile	0.300	0.077**	0.026	-0.088	-0.039	0.077*
	(0.246)	(0.037)	(0.069)	(0.094)	(0.269)	(0.043)
— Top tercile	0.376*	0.154***	0.130*	0.446	0.142	0.101**
	(0.218)	(0.054)	(0.075)	(0.470)	(0.252)	(0.050)
<i>Maternal Education</i>						
— Primary School	0.018	0.039	0.111	-0.008	0.453*	-0.145*
	(0.081)	(0.043)	(0.116)	(0.099)	(0.249)	(0.075)
— Secondary School	-0.015	0.028	0.096	0.354**	0.441*	-0.026
	(0.101)	(0.082)	(0.118)	(0.145)	(0.247)	(0.080)
— higher-education	0.016	0.324	0.199	(dropped)	0.659**	0.150
	(0.138)	(0.202)	(0.131)		(0.305)	(0.160)
Height-for-age z-score, R1	0.078**	-0.005	0.082***	-0.028	-0.003	0.011
	(0.033)	(0.016)	(0.024)	(0.047)	(0.046)	(0.019)
<i>Aspirations for higher-education:</i>						
— Caregiver aspirations	0.175*	0.136***	0.115	-0.049	0.190	0.077
	(0.100)	(0.050)	(0.140)	(0.132)	(0.189)	(0.051)
— Child aspirations	0.223**	0.107**	0.156	0.146	0.191	0.087*
	(0.087)	(0.048)	(0.098)	(0.139)	(0.159)	(0.051)
<i>Test scores (2006)</i>						
— Receptive vocabulary	0.207***	0.080***	0.055*	-0.037	0.135	0.046*
	(0.045)	(0.021)	(0.032)	(0.058)	(0.135)	(0.024)
— Mathematics	0.083*	0.056***	0.062*	0.086*	0.143**	0.051**
	(0.047)	(0.021)	(0.032)	(0.045)	(0.071)	(0.023)
Number of observations	205	673	426	133	146	631
R2	0.360	0.256	0.164	0.237	0.255	0.273