

Intergenerational Transmission of Human Capital: The Case of Thailand

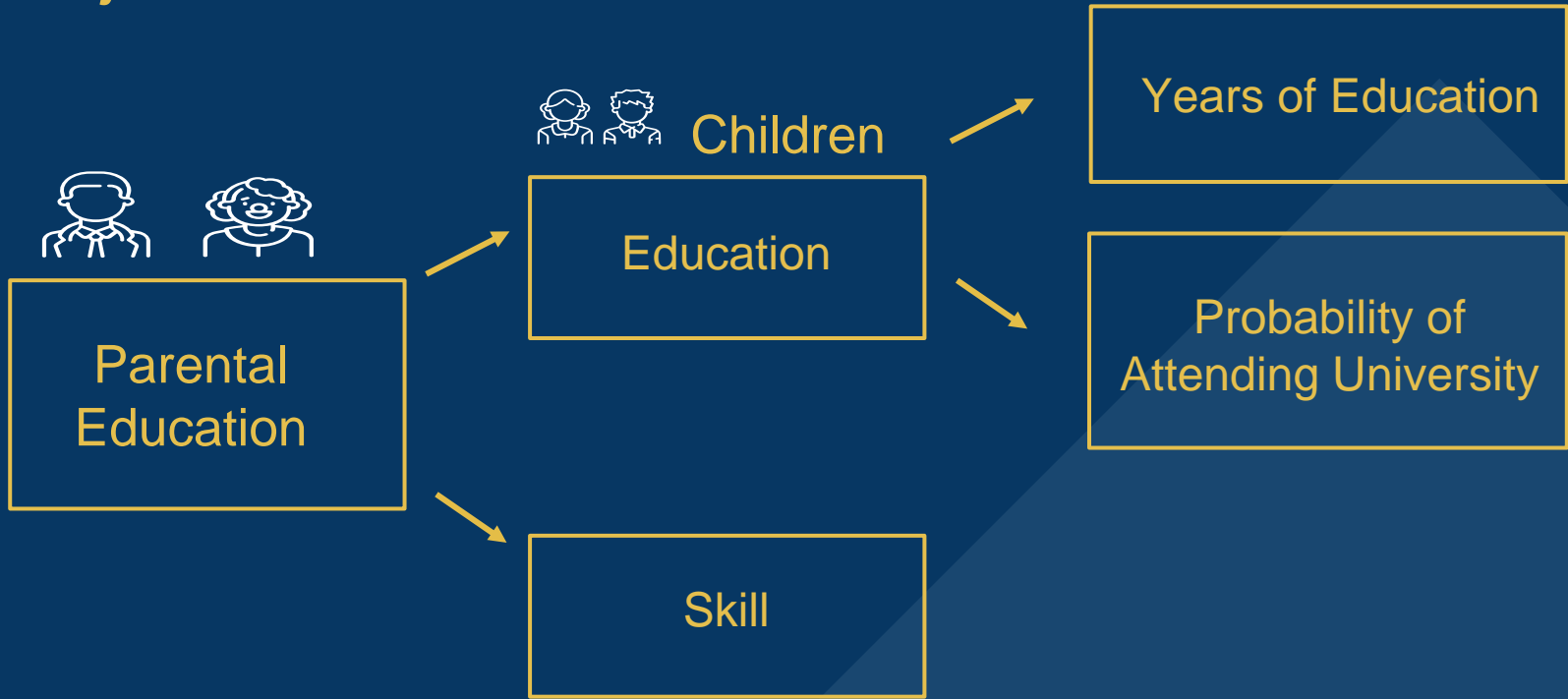
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“If you want to be successful, just have successful parents.”

Erik Plug (2007)

Objectives



Why? Thailand



Heavily investing in the education via government policies



Remarkable success in improving education of population over 30 years



Representative of household formation in developing countries

- Multi-generation members co-reside in one household

01

Comprehensive
Study#
in Context of
Developing
Countries
(Education & Skill)
(Data > 30 years)

02

Analysis of
Gender
(Parents & Children)

(In addition to study
overall effect of
parental education)

03

Skill
during
Adolescence
(Workers)

(Existing studies
only investigate
intermediate skills)

Contribution

Related Literature

- Several studies on intergenerational income mobility
 - Positive correlation between parental income & children income
 - *Björklund et al. (2002) US, Norway, Denmark, Sweden ; Bratberg et al. (2002) Norway*
- However, parental education is more favorable condition in estimation
 - Most people finish their education in mid-20s & does not change over time
 - Straight forward & no contamination from shock/labor market disruption
 - No lifecycle bias in the estimation (Black & Devereux, 2011)

- The effect of parental education on child's education and skill
 - Education - Year, level, probability to study in post-compulsory education
 - *Black et al. (2005); Chavalier et al. (2009) ; Oreopoulos, Page, and Stevens (2006)*
 - Skill - Intermediate child outcome (cognitive, literacy, numeracy)
 - *Sacerdote (2000); Carneiro et al. (2013); Lundborg et al. (2018)*
- Three main techniques widely used in the estimation (Black & Devereux, 2011)
(1) Adoption studies; (2) Twin studies; (3) Instrumental Variable approach
 - Aim to minimize bias caused by endogeneity of parental education



Endogeneity of parental education

Parental education is correlated with unobserved variables and factors
(parental ability, attitude toward education, genetics, luck)

Parental education is not exogenously determined

- Simple OLS yield biased and inconsistent estimates
 - Minimize endogeneity through the Instrumental Variable (IV) approach

Instrumental Variable (IV)

The educational reform policy of 1978 in Thailand as the IV
(following Black et al.2005)



- Require children at age of 8 to participate in primary education
- Require students to complete 6 years of compulsory schooling
- Instrument will affect parental education, which is the main key variable
 - After the reform, the years of schooling for both parents increased



DATA

Labor Force Survey of Thailand (1985-2017)

The survey asks relation of each family member to head of household

- Matching the children's with his/her parent's information



Sample 1

Over 25 years old

Adolescence stage
(Workers in labor market)



Sample 2

18-22 years old

Childhood stage
(Study in university)

Methodology & Results



Adolescence stage

Sample 1

Years of Education

- To identify the effects of parental education on child's years of education

Methodology

01

- Ordinary Least Squares (OLS) -

$$Y_{ci} = \beta_0 + \beta_1 S_{pi} + \beta_2 X_i + \varepsilon_i$$

Y_{ci} is the number of years of schooling for child i

S_{pi} is the number of years of schooling obtained by the child's parent

X_i is the set of controlling variables (child's age, age square, parents' age, family size, gender of the child, and five regional dummies)

Methodology

02

- Instrumental Variables (IV) -

- First Stage - To determine whether the education reform (R_{pi}) affected parental education

$$S_{pi} = \alpha_0 + \alpha_1 R_{pi} + \alpha_2 X_{pi} + \mu_{pi}$$

R_{pi} is a dummy variable that equals 1 if the parent was affected by the reform and 0 otherwise

- Second Stage -

$$Y_{ci} = \beta_0 + \beta_1 S_{pi} + \beta_2 X_i + \varepsilon_i$$

Result - Child's education

Dependent variable: Child's education						
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS_mom	OLS_dad	OLS_max	IV_mom	IV_dad	IV_max
Mom's years of schooling	0.428*** (0.004)			1.227*** (0.063)		
Dad's years of schooling		0.424*** (0.003)			1.772*** (0.123)	
Max years of schooling			0.430*** (0.003)			2.123*** (0.057)
Observations	87,998	87,998	87,998	87,998	87,998	87,998

Results

- The coefficients of parental education under IV is larger than OLS
 - Downward bias exists without controlling for unobserved heterogeneity
- The effect of father's education is larger than mother's education
 - One more year of father's education will increase child's year by 1.7
 - Results contradict to extant studies - mother's education has more effect
 - Context of developing countries - father is the one who make a decision
- Magnitude of coefficient is larger than those found in developed countries (0.4-0.5) - Larger spillover effect of education reform in developing economies

Result - Son/daughter's education

Dependent variable: Child's education				
	(1)	(2)	(3)	(4)
	IV Son-Mom	IV Daughter-Mom	IV Son-Dad	IV Daughter-Dad
Mom's years of schooling	1.132*** (0.088)	1.331*** (0.091)		
Dad's years of schooling			1.718*** (0.182)	1.836*** (0.165)
Observations	42,091	45,907	42,091	45,907

□ Positive effect of both father's and mother's education on education of son/daughter

□ The effect of father's education is slightly larger than mother's education

Methodology & Results



Adolescence stage

Sample 1

Skill

- To identify the effects of parental education on child's brain skill (- skill used in the labor market -)

Methodology

02

- Instrumental Variables (IV) -

- I construct the brawn skill index based on occupation and industry pairs by matching the data to US job requirements following Rendall (2013)
 - The higher the index, the higher requirement of brawn skill - Farmers require more brawn skill than teachers do
- Then, run the first stage by applying similar IV (compulsory education reform)
- The second stage -
$$y_{ci} = \beta_0 + \beta_1 S_{pi} + \beta_2 X_i + \varepsilon_i$$

y_{ci} is the brawn skill index of the child (based on occupation and industry)

Result - Child's brawn skill

Dependent variable: Child's brawn skill				
	(1)	(2)	(3)	(4)
	OLS_mom	OLS_dad	IV_mom	IV_dad
Mom's years of schooling	-0.0219*** (0.000)		-0.0300*** (0.002)	
Dad's years of schooling		-0.0225*** (0.000)		-0.0363*** (0.003)
Observations	87,998	87,998	87,998	87,998

- ❑ Negative coefficient
- ❑ The child tends to work in occupation requiring less brawn skill if the parents have more years of schooling
- ❑ Father's education has slightly higher impact

Result - Son/daughter's brawn skill

Dependent variable: Child's brawn skill				
	(1)	(2)	(3)	(4)
	IV Son-Mom	IV <u>Daughter-</u> Mom	IV Son-Dad	IV <u>Daughter-</u> Dad
Mom's years of schooling	0.00166 (0.003)	-0.0627*** (0.003)		
Dad's years of schooling			0.00158 (0.004)	-0.0774*** (0.005)
Observations	42,091	45,907	42,091	45,907

- Parental education has effect only on the daughter's brawn skill
- The higher the parental education, the less likely the daughter in occupation requiring higher brawn skill
- The strong role model effects of parents on the female child in Thailand

Methodology & Results



Childhood stage

Sample 2

University Participation

- To study the effect of parental education on child's participation in university level

$$\Pr(Y=1 | X) = f(M_i, X_i)$$

where Y is equals 1 if children participated in the university, and 0 otherwise

M_i is the years of schooling of the children's maternal (or paternal) parent

X_i is a vector of the controlling variables (parents' age, five regional dummies, gender of the child, and family size)

- Note - Applying similar IV (compulsory education reform) in the first stage

Result - Probability of university participation

Dependent variable: Child's participation			
	(1)	(2)	(3)
	ProbIV_mom	ProbIV_dad	ProbIV_max
Mom's years of schooling	0.272***		
	(0.001)		
Dad's years of schooling		0.281***	
		(0.001)	
Max years of schooling			0.275***
			(0.001)
Observations	54,425	54,685	62,328

- Positive effect of parental education on the probability of the child attending university
- A one-year increase in parental years of schooling increases this probability by 27-28%

Result - Son/daughter's university participation

Dependent variable: Child's participation				
	(1)	(2)	(3)	(4)
	Prob_IV Son-Mom	Prob_IV Daughter- Mom	Prob_IV Son-Dad	Prob_IV Daughter- Dad
Mom's years of schooling	0.275*** (0.002)	0.268*** (0.002)		
Dad's years of schooling			0.281*** (0.001)	0.281*** (0.001)
Observations	29,695	24,730	29,705	24,980

- The effect of parental education is similar for all children irrespective of gender
- Extra year of parental education is associated with an increase in probability of attending university by 26-28%

Conclusion

- Parental education is positively associated with child's education and skill
- Parental education increases the probability of the child attending university
- The child tends to work in occupations requiring less brawn skill if the parents have more years of schooling
- Father's education, rather than mother's education, is the main influencer of child education in the context of developing countries

Policy Suggestion

- Generally, the rate of intergenerational transmission is low in countries with high investment in education
- However, the rate is still high in Thailand despite high investments in education
 - ✓ Even though the government has subsidized education considerably, the overall cost is still high, especially including hidden costs
- Government may increase financial transfers to parents & parenting program
 - ✓ Different policies for parent with different background



Thanks!