Geography, Human Capital and Upward Mobility in Developing Countries

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Introduction and Research Question

- Countries produce goods and services and human capital
- Developing countries are inefficient in producing human capital for future generations
- Social Mobility become an essential aspect of development
- Research Question: Misallocation of Education and Labor Market opportunities:
  - Trade-offs or internal barriers?
  - Aggregate and distributional gains

This paper: 2 Building Blocks

1. **Data:** Between- and Within-Country patterns on education intergenerational transitions.
   - 23 million parent-child-matched pairs.
   - 76 developing countries, *all continents.*
   - 13,000 sub-national regions.

2. **Quantitative Model:** Inference and Counterfactuals
   - **Inference:** Trade-offs and Barriers
   - **Counterfactuals:** Cost of Misallocation

Results: Preview

- Large differences in upward educational mobility across and within countries
  - 1/3 of the variation in upward mobility is within countries.
- Subnational regions with high upward mobility are associated with lower educational inequality.
- Decompose the geographical variation in upward mobility into causal place effects vs selection effects
  - Causal place effects explain most of the spatial variation in upward mobility

Data

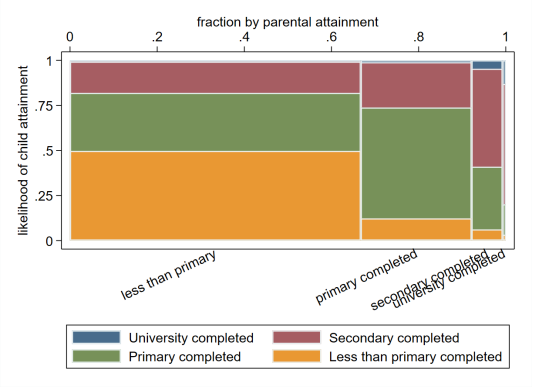
Data

- Data source: IPUMS-International
  - Representative sample from national sources: 74 LMIC countries +2 territories Countries
  - 330 country-year surveys, 3 continents, since 1960
  - Indiv.info: education, occupation, age, gender, place of residence and birth, migration.

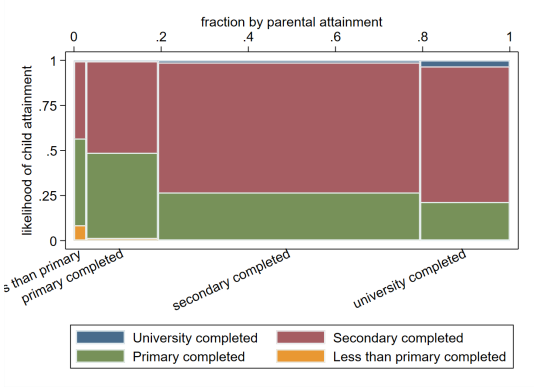
- Primary Sample
  - 23 million male children aged 18-22: IPUMS-I dataset
  - Parent(s): first-degree relative(s) older generation co-residing with child Family links
  - 88% coresidence rates across countries: → Small Coresidence bias Coresidence bias
  - Secondary schooling should have been completed → Small Life cycle bias

A Global View of the Data

Africa



North America



Other Continents

- **Main message:** Strong Intergenerational Persistence in Education

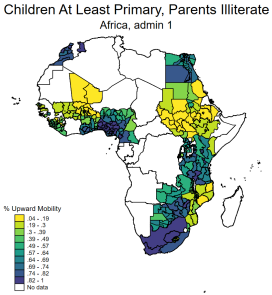
Three Measures of Absolute IM

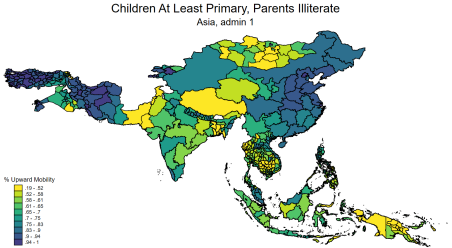
1. **Rank-Rank Measure**: % children of uneducated parents that completed secondary school.

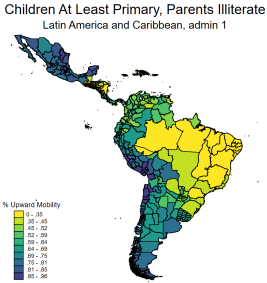
2. **Marginal Measure I**: % children that reached higher educational attainment than parents

3. **Marginal Measure II**: % children of uneducated parents that completed primary school.

Large geographical variation in IM







Admin-2 Level

Variance Decomposition of Upward Mobility

Table Variance Decomposition of IM across districts: Parents illiterate, children finish at least primary

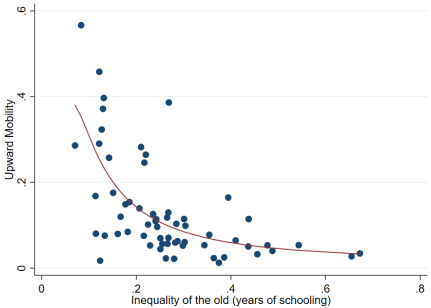
Regions	Nr countries	Census	Variance IM	Within	Between
All	74	All	0.06	33%	67%
Africa	28	All	0.06	33%	67%
Asia	23	All	0.04	25%	75%
Latin America & Carib.	25	All	0.08	37.5%	62.5%

Formula Decomposition I Decomposition II

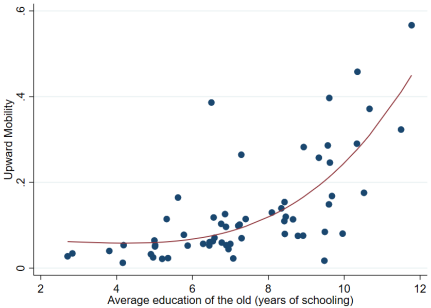
Upward Mobility Correlated with Educational Inequality

- Upward Mobility:
  - Positive Relationship with Average Education,
  - Negative relationship with Inequality

IM vs Inequality



IM vs Average Education



Within Country

Causality

Regional Exposure Effects and Selection

1. Methodology (Alesina et al., 2021, 2023; Chetty and Hendren, 2018)
2. **Semiparametric Estimates**: Separate regional causal effects from sorting
3. Look across sons aged 18-22 who currently live with their parents
   - whose family migrate outside their place of birth before age 20
   - sons of illiterate parents

If regions matter for education, sons, whose families move earlier in life should be affected the most $\Longrightarrow$ exploit timing of move

Semiparametric Regression

- For each birth cohort b collect all destination d-origin o pairs for migrants
- Calculate the difference in IM (for non-migrants):

$$\Delta_{odb} = IM_{bd}^{\text{natives}} - IM_{bo}^{\text{natives}}$$

- Estimate:

i=individual, o=origin, d=destination, b=birth cohort

m=age

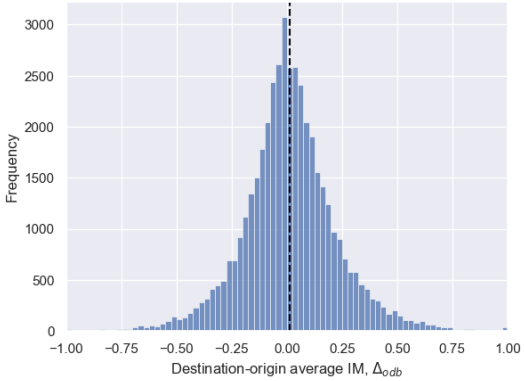
$$IM_{ibmod} = [\psi_h] + \alpha_{ob} + \alpha_m + \sum_{i=1}^{20} \beta_m \times 1(m_i = m) \times \Delta_{odb} + \sum_{b=b_0}^{B} k_b \times 1(b_i = b) \times \Delta_{odb} + \varepsilon_{ibmod}$$

- Obtain β_m for each age m and plot them

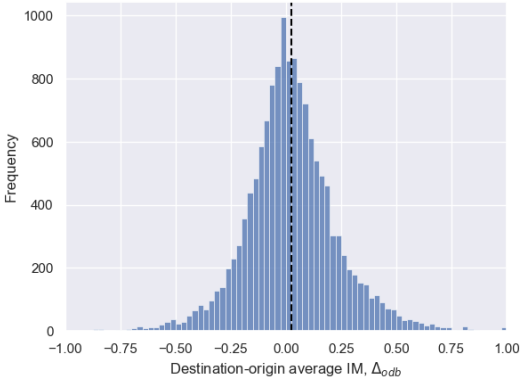
Regional Migration

Figure Destination origin mean differences, Δ_{odb}

(a) All movers



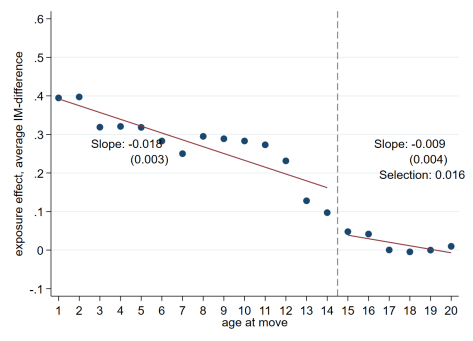
(b) Movers with brother(s) in sample $[\psi_h]$



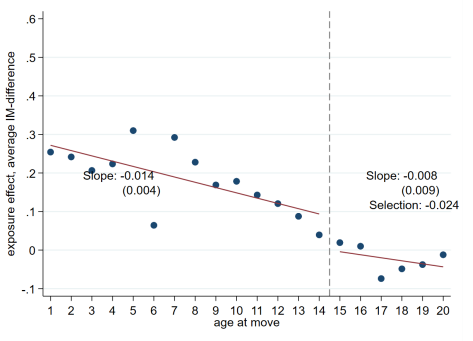
Estimates I

Figure Semiparametric Childhood Exposure Effects: Primary school

(a) All movers



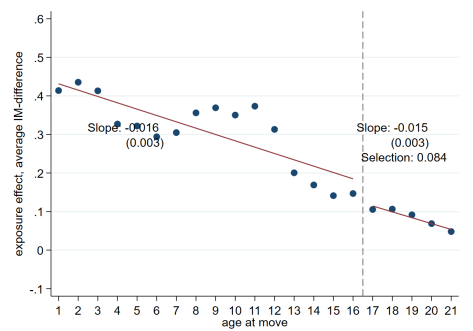
(b) Movers with brother(s) in sample $[\psi_h]$



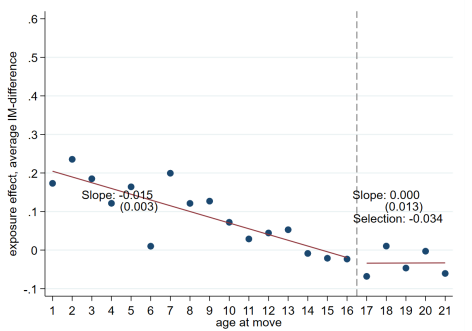
Estimates II

Figure Semiparametric Childhood Exposure Effects: Primary and Secondary

(a) All movers



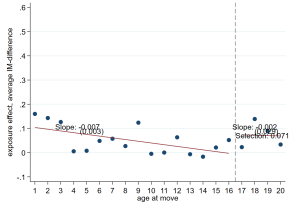
(b) Movers with brother(s) in sample $[\psi_h]$



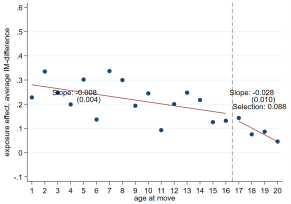
Heterogeneity

Figure Semiparametric Childhood Exposure Effects: Primary and Secondary

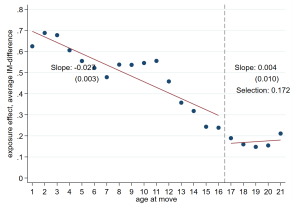
(c) All movers-Africa



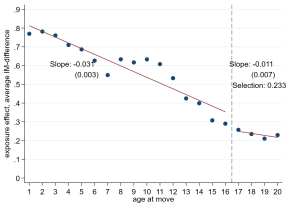
(d) All movers-Asia



(e) All movers-Latin America



(f) All movers-Brazil



Conclusion

Take Aways

Ongoing work. So far:

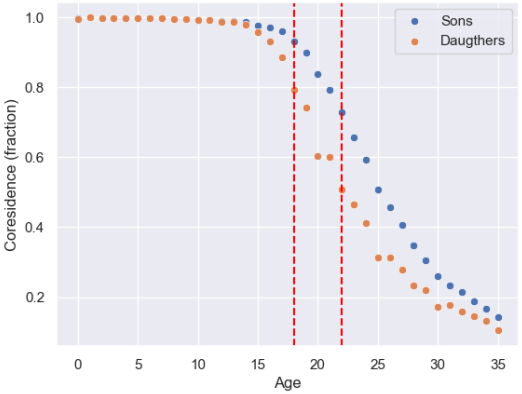
- Large dispersion across regions in terms of upward mobility in education.
- Parents matter. Locations also matter.
- Much of the dispersion is across countries, but 1/3 is within countries.
- Average education and educational inequality of the previous generation matters for IM.

IPUMS I Countries

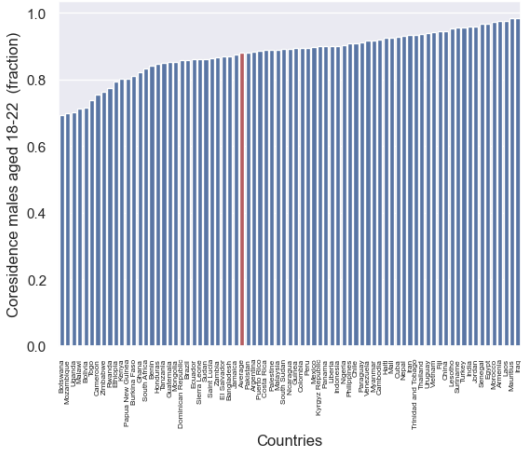
- Latin America and Caribbean (25): Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Trinidad and Tobago, Mexico, Nicaragua, Panama, Paraguay, Peru,Puerto Rico, Uruguay, Saint Lucia, Suriname, and the Venezuela.
- Asia and the Pacific (23): Armenia, Bangladesh, Myanmar, Cambodia, China, Fiji, Palestine, India, Indonesia, Iran, Iraq, Jordan, Kyrgyz Republic, Laos, Pakistan ,Nepal, Mongolia, Philippines ,Vietnam, Thailand, Turkey, Malaysia, Papua New Guinea.
- Africa (28): Benin, Botswana, Burkina Faso, Cameroon, Egypt,Ethiopia, Ghana, Guinea, Kenya, Lesotho, Liberia, Malawi, Mali, Mauritius, Morocco, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, South Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe. Back

Coresidence Rates

Across Age



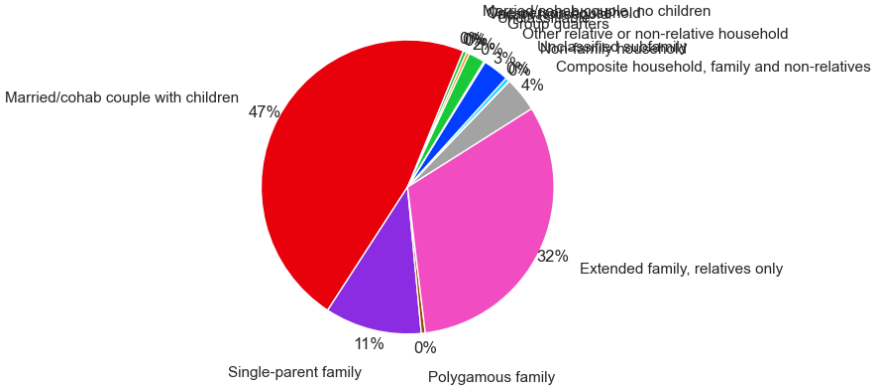
Across countries



- Coresidence rates in the age group 18-22 is relatively high Back

Living Arrangements

Figure Household Types



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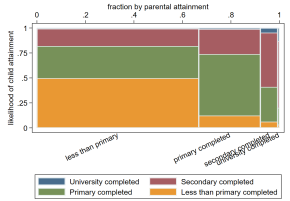
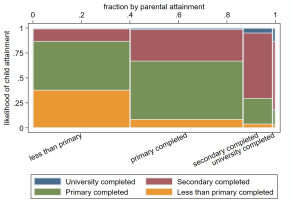
A Global View of the Data

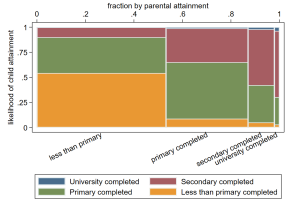
Africa



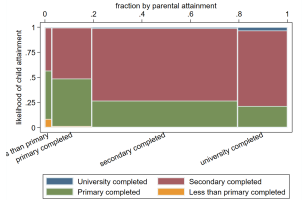
Asia and the Pacific



Latin America and the Caribbean



North America



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Variance Decomposition I

Table Variance Decomposition of IM: Parents primary children secondary school

Regions	Nr countries	Census	Variance IM	Within	Between
All	75	All	0.016	0.006	0.010
Africa	28	All	0.026	0.004	0.022
Asia	23	All	0.024	0.007	0.016
Latin America & Carib.	24	All	0.009	0.005	0.004

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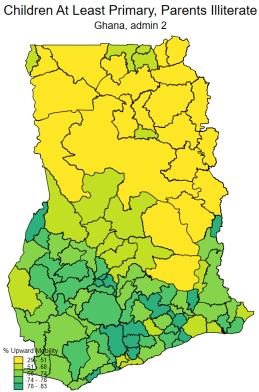
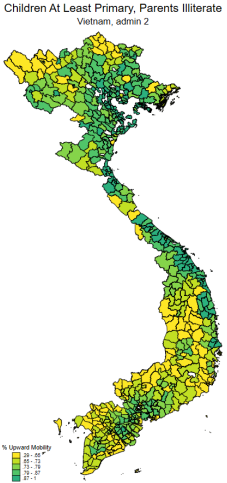
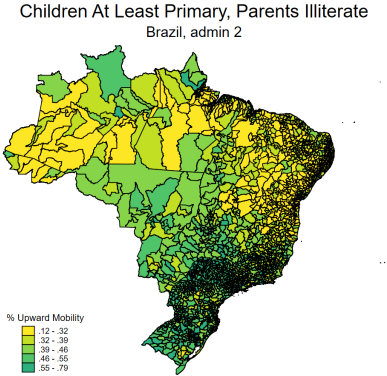
Large within-country variation: Admin-2 Level







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Variance Decomposition Equation

$$\underbrace{\sum_l \omega_l (I\bar{M}^{l,c} - I\bar{M})^2}_{\text{Between-location dispersion}} = \underbrace{\sum_c \omega_c \, \text{Var}_c(I\bar{M}^{l,c})}_{\text{within country}} + \underbrace{\sum_c \omega_c (I\bar{M}^{c} - I\bar{M})^2}_{\text{between country}},$$

- $\omega_l = \frac{n_l}{n}$ fraction of children in location l
- $\omega_c = \sum_{l \in L_c} \omega_l$ observation weight of country c
- $I\bar{M}^c \equiv \sum_{l \in L_c} \frac{\omega_l}{\omega_c} I\bar{M}^{l,c}$ is the mean IM of the country c
- $\text{Var}^c(I\bar{M}^{l,c}) \equiv \sum_{l \in L_c} \frac{\omega_l}{\omega_c} (I\bar{M}^{l,c} - I\bar{M}^c)^2$ cross-location variance within region c.

Back

Variance Decomposition II

Table Variance Decomposition of IM: Parents illiterate, children secondary school

Regions	Nr countries	Census	Variance IM	Within	Between
All	73	All	0.017	0.003	0.014
Africa	28	All	0.052	0.003	0.049
Asia	22	All	0.016	0.002	0.013
Latin America and Carib.	23	All	0.006	0.004	0.003

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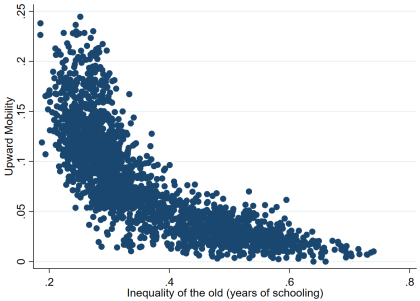
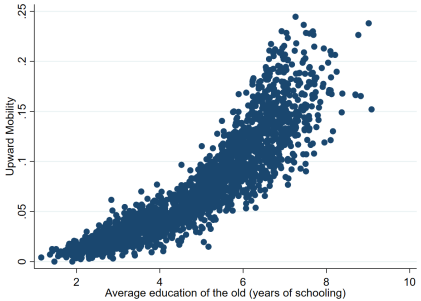
Upward Mobility Correlated with Educational Inequality: Brazil

- Upward Mobility:
  - Positive Relationship with Average Education,
  - Negative relationship with Inequality

IM vs Inequality



IM vs Average Education



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