Schooling and Learning: Understanding Inequalities and What To Do About Them

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The World Bank

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Structure of this presentation

• Understanding inequalities in schooling attainment
• Addressing school participation shortfalls by working on the demand side
• Learning achievements and how to improve them
Schooling attainment inequality across the developing world:

A global take
“Education Attainment and Enrollment Around the World”

- **Database covers**
  - 316 datasets
  - 97 countries

- **Data are**
  - 191 DHS
  - 49 MICS
  - 76 IHS

- **Regional coverage**
  - 39 SSA; 19 LAC; 16 ECA; 12 EAP; 4 MENA; 6 SA

- **Variables include**
  - School attainment (ages 15-19)
  - School participation (ages 6-10; 11-14)
  - School “survival” curves (ages 10-19)

- **All by**
  - Quintile
  - Rural/Urban
  - Gender

Within-country inequalities are as big—if not bigger—than cross-country inequalities

Sub-Saharan Africa
Within-country inequalities are as big—if not bigger—than cross-country inequalities.

Inequalities related to **poverty**: Grade 6 completion of 15-19 year olds in the richest and poorest quintiles.
Shared Prosperity?

Proportion of 15-19 year olds who complete grade 6
Overall, and richest and poorest quintiles

Overall proportion
Average Quintile 5 Quintile 1

Proportion of 15-19 year olds who complete grade 6
Shared Prosperity?

Proportion of 15-19 year olds who complete grade 6
Overall, and richest and poorest quintiles

Overall proportion
Average
Quintle 5 (smoothed)
Quintle 1 (smoothed)

Proportion of 15-19 year olds who complete grade 6

- Average
- Quintile 5 (smoothed)
- Quintile 1 (smoothed)
Shared Prosperity?

Proportion of 15-19 year olds who complete grade 6
Overall, and richest and poorest quintiles
Each 1 percentage point increase in average grade 6 completion is associated with
the following percentage point increase in grade 6 completion within each quintile

Below the median completion rate

Above the median completion rate

Note: Bars show coefficient estimates; Dots show coefficient estimates including country fixed effects
Shared Prosperity?

Proportion of 15-19 year olds who complete grade 6

Overall, and richest and poorest quintiles

Proportion of 15-19 year olds who complete grade 6

Proportion

Average Quintile 5 (smoothed) Quintile 1 (smoothed)

Overall, and richest and poorest quintiles

Proportion of 15-19 year olds who complete grade 6

GNI per capita (ln, constant PPP 2005)
Shared Prosperity?

Proportion of 15-19 year olds who complete grade 6
Overall, and richest and poorest quintiles

GNI per capita (ln, constant PPP 2005)
Shared Prosperity?

Each 10 percentage point increase in GNI per capita is associated with the following percentage point increase in grade 6 completion within each quintile.

Below GNI PC of $1000

Above GNI PC of $1000

Note: Bars show coefficient estimates. GNI PC in 2005 constant PPP $
A Methodological Point: Using Asset Indices
Rationale for Asset Indices

- DHS/MICS do not include per-capita household expenditures, the typically preferred indicator of household poverty
  - Use a ranking of households based on an index of assets and dwelling characteristics
- When using DHS/MICS, quintiles of the population based on this ranking
How do different approaches to measuring welfare compare?

Proportion of 15- to 19-year-olds who completed grade 6, by quintile

Note: Symbols indicate the poorest quintile. Each marking shows the predicted gap from the previous quintile after controlling for dummy variables for age and gender.

How do different approaches to measuring welfare compare?

Proportion of 15- to 19-year-olds who completed grade 6, by quintile

Note: Symbols indicate the poorest quintile. Each marking shows the predicted gap from the previous quintile after controlling for dummy variables for age and gender.

How do different approaches to measuring welfare compare?

Proportion of 15- to 19-year-olds who completed grade 6, by quintile

Note: Symbols indicate the poorest quintile. Each marking shows the predicted gap from the previous quintile after controlling for dummy variables for age and gender.

Patterns of grade completion are very different across countries

Changes over time in grade completion curves by quintile

- Niger 1992
- Niger 1997
- Niger 2006
- Niger 2012

Other Correlates of Schooling Attainment Inequality
Other dimensions of inequalities

• Can extend analysis to analyze …
  – Gender
  – Orphan status (in particular as a result of HIV/AIDS)
  – Disability
Interaction between poverty and gender

*Grade 6 completion gaps by gender are larger in the poorest than the richest quintile*

Male / female ratio in grade 6 completion

Poorest versus richest quintile

Enrollment, conditional on individual and household characteristics, among orphans and non-orphans ages 7 to 14.

There is substantial **heterogeneity** in the association between orphan status and enrollment. Two-parent orphans, and maternal orphans **often but not always** have lower enrollment.

Note: Graphs show predicted enrollment after controlling for sex, age, urban/rural residence, household economic status, and geographic region. Solid points indicate that the difference between orphans and non-orphans is significantly different from zero at the 5 percent level.

Comparison of deficits in school participation among children ages 6 to 17: partial marginal effects from multivariate model

The schooling deficit associated with disability is typically larger than that associated with other characteristics

Source: Filmer, 2008. "Disability, poverty and schooling in developing countries: Results from 14 household surveys." World Bank Economic Review
What to do to address schooling deficits?
Distance to school, poverty, gender and school participation

- Data collected in early- to mid-1990s that included access to facilities module
- 24 DHS surveys from 21 countries
  - 15 Sub-Saharan
  - 1 East Asian (Philippines)
  - 2 South Asian (Bangladesh, India)
  - 3 Latin American/Caribbean (Bolivia, Dom. Rep., Haiti)
- Analysis limited to rural areas
Estimated relationship between distance and school participation (rural population 6-14)

Average distance to nearest primary school (km)

Effect of 1km increase in distance to primary school on probability of enrollment

But the relationship between distance and school participation is small compared to the shortfalls in participation.

Simulating the effect of reducing distances to primary and secondary schools on school participation.

Why limited association between distance and school participation?

• Selective school placement
  – Not likely driver

• **Demand side** constraints
  – Evidence of impact of scholarships/conditional cash transfers

• **Quality** of schooling
  – Has potential impact on demand
Promoting schooling through demand-side transfers
Studying scholarships in Cambodia

1) Track-record of demand-side incentives in middle-income countries/LAC .... can they work in a low-income setting?
2) What’s the right amount of a transfer ... what is the price elasticity?
3) What are the spillover-effects ... beyond the recipient?
Program and Evaluation design

- At the level of each program lower secondary school
  - Rank incoming students according to poverty score
  - Establish 2 cutoff points:
    - Applicants with the highest dropout risk offered $60 per year scholarship
    - somewhat lower dropout risk offered $45
    - and others offered no scholarship

- Use Regression Discontinuity Design for evaluation
  - Compare “just above” to “just below” cutoffs
**Large program impact**

First $45 is much more cost effective (almost no discernable additional impact of $60 over $45)

- No scholarship versus $45
- $60 versus $45 scholarship

Results from **medium-term follow-up**:
Sizeable impacts beyond the scholarship period itself, especially for girls

**Girls**

<table>
<thead>
<tr>
<th>Year</th>
<th>Enrollment</th>
<th>Impact estimate</th>
<th>Non-recipient mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005 (Grade 7)</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006 (Grade 8)</td>
<td>0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007 (Grade 9)</td>
<td>0.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008 (Grade 10)</td>
<td>0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009 (Grade 11)</td>
<td>0.2</td>
<td></td>
<td></td>
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**Boys**

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<td>0.2</td>
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Other dimensions of impact

- Scholarship **recipients** were about 10 percentage points **less likely to work** for pay.
- **No negative spillovers** onto the enrollment or labor supply of **siblings** (i.e. non-recipient siblings are not withdrawn from school)
- **No negative spillovers** onto the enrollment of **other non-recipient students** in the same schools

Source: Filmer, Ferreira and Schady. 2009. “Own and sibling effects of conditional cash transfer programs : theory and evidence from Cambodia” WBPRP No 5001
Summary of CCT/Scholarship programs evaluated to-date

<table>
<thead>
<tr>
<th>Country</th>
<th>Age/Grade/Gender</th>
<th>Baseline enrollment</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>Ages 6-15</td>
<td>60.7</td>
<td>7.5***</td>
</tr>
<tr>
<td></td>
<td>Ages 8-13</td>
<td>91.7</td>
<td>2.1**</td>
</tr>
<tr>
<td></td>
<td>Ages 14-17</td>
<td>63.2</td>
<td>5.6***</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Ages 6-17</td>
<td>75.2</td>
<td>10.3**</td>
</tr>
<tr>
<td>Honduras</td>
<td>Ages 6-13</td>
<td>66.4</td>
<td>3.3***</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Ages 7-17</td>
<td>18 days out of 20</td>
<td>0.5**</td>
</tr>
<tr>
<td>Mexico</td>
<td>Grades 0-5</td>
<td>94</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>Grade 6</td>
<td>45</td>
<td>8.7***</td>
</tr>
<tr>
<td></td>
<td>Grades 7-9</td>
<td>42.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Nicaragua (1)</td>
<td>Ages 7-15</td>
<td>90.5</td>
<td>6.6***</td>
</tr>
<tr>
<td>Nicaragua (2)</td>
<td>Ages 7-13</td>
<td>72</td>
<td>12.8***</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>Ages 11-18 (Girls)</td>
<td>44.1</td>
<td>12.0**</td>
</tr>
<tr>
<td>Cambodia (1)</td>
<td>Grades 7-9 (Girls)</td>
<td>65</td>
<td>31.3***</td>
</tr>
<tr>
<td>Cambodia (2)</td>
<td>Grades 7-9</td>
<td>65</td>
<td>21.4***</td>
</tr>
<tr>
<td>Malawi</td>
<td>Ages 13-22 (Girls)</td>
<td>76.9</td>
<td>6.1***</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Ages 10-14 (Girls)</td>
<td>29</td>
<td>11.1***</td>
</tr>
<tr>
<td>Phillipinnes</td>
<td>Ages 6-11</td>
<td>93.3</td>
<td>4.5***</td>
</tr>
<tr>
<td></td>
<td>Ages 12-14</td>
<td>84.5</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Ages 15-17</td>
<td>62.3</td>
<td>-2.7</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Ages 0-18 (midline)</td>
<td>59</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Ages 0-18 (endline)</td>
<td>59</td>
<td>4</td>
</tr>
<tr>
<td>Turkey</td>
<td>Primary school</td>
<td>87.9</td>
<td>-3.0*</td>
</tr>
<tr>
<td></td>
<td>Secondary school</td>
<td>39.2</td>
<td>5.2</td>
</tr>
</tbody>
</table>

• Impacts tend to …
  – Be larger when baseline enrollments are lower
  – Be larger at transition points
  – Be larger for poorer families

Source: Updated from Fiszbein and Schady (2009)
But …
No impact of program on measures of learning

Consistent with findings elsewhere

- Ecuador and Mexico: No increase in test scores among recipient students

- Mexico: No increase in test scores for those who were offered a transfer (despite increased enrollment)
Why limited impacts on learning?

• **Marginal students?**
  – Selection into schooling based on expected gains

• **Poor quality/inappropriate teaching?**
  – Although in Cambodian case impacts aren’t larger in “higher quality” schools

• **Other** explanations?
What is poor quality?
Teaching time lost

Percent of time officially allocated to schooling; when a teacher is present; and spent in teaching and learning activities.
Severe Shortfalls in the Delivery of Education Services

Service Delivery Indicators

<table>
<thead>
<tr>
<th></th>
<th>Kenya</th>
<th>Senegal</th>
<th>Tanzania</th>
<th>Uganda</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Share of teachers with minimum knowledge:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English/French</td>
<td>10%</td>
<td>29%</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>Mathematics</td>
<td>75%</td>
<td>75%</td>
<td>73%</td>
<td>36%</td>
</tr>
<tr>
<td><strong>Classroom teacher absence rate</strong></td>
<td>47%</td>
<td>29%</td>
<td>53%</td>
<td>57%</td>
</tr>
<tr>
<td><strong>Classroom teaching time</strong></td>
<td>2h 19m</td>
<td>3h 15m</td>
<td>2h 04m</td>
<td>2h 58m</td>
</tr>
<tr>
<td><em>(scheduled teaching time)</em></td>
<td>(5h 40m)</td>
<td>(4h 36m)</td>
<td>(5h 12m)</td>
<td>(7h 20m)</td>
</tr>
</tbody>
</table>
Service Delivery shortfalls have **consequences** …

Percent of SACMEQ 6<sup>th</sup> grade Math test-takers who score at each performance level

Percent of PASEC test-takers who perform at a level less than **random guessing**

- **Competent and above (5,6,7,8)**
- **Beginning numeracy (Level 4)**
- **Pre, Emergent and Basic numeracy (Levels 1,2,3)**
Making Schools Work: New Evidence on Accountability Reforms

Reviews evidence on impact evaluations of

- Information for accountability
- School-based management
- Teacher incentives
Return to Cambodia
Primary School Scholarships Program

• Schools randomly assigned to
  – Treatment ➔ cohort of students that began receiving scholarships in 2008/2009 school year
  – Control ➔ same cohort did not receive scholarships

• Half of the schools each randomly assigned to
  – Poverty targeted scholarships
  – Merit-based scholarships
Is there a targeting tradeoff?

A) 21%
B) 27%
C) 27%
D) 25%
Primary school scholarships increased schooling participation attainment

“Merit” recipients performed better on tests, “poverty” recipients did not.

Even poor merit-based scholarship recipients improved their test scores.

Potential role of “framing” of cash transfer

2005

Cambodia Education Sector Support Program (P070668)

2010

Education Sector Support Scale Up Action Program (P109925)

2015

Evaluation of prior secondary scholarship programs

Implement secondary scholarships with transparent targeting

Evaluation of impact of secondary school scholarships

Scale-up at lower transfer amount

Implement primary school scholarships with evaluation about of how to increase learning

Build better school readiness through early child development

Evaluation of primary school scholarships

Evaluation of ECD programs

Proposed evaluation of redesigned ECD scale-up

Scale-up access to ECD with careful attention to implementation quality

Implement primary and secondary school scholarships targeting poor with academic potential

Science of Delivery?
What to make of all this?

• **Inequalities** in schooling are large …
  – Especially with respect to *poverty*
  – “Prosperity” not always shared

• **Demand-side** interventions work …
  – But *implications for learning* limited

• **Service delivery is poor** in many counties…
  – With implications for learning outcomes

• Attention should be paid to **framing** of interventions…
  – Can affect *motivation and effort* … with impact on outcomes