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# Education Policies in Developing Countries

Commission on Growth and Development  
Workshop on Education

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# Introduction

- Debate on cross-country relationship between education and growth
  - Micro evidence on education and income
  - Education a large share of investment
  - Prima facie case pretty inefficient
  - Evidence accumulating on how to raise efficiency of investment
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# Outline

## I. Background

## II. Quantity

- i. Cost reductions and subsidies
- ii. School-based health interventions
- iii. Providing information

## III. Quality

- i. Inputs
  - ii. Teacher incentives
  - iii. Local control
  - iv. School choice
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# Quantity

- 85% of primary-school age in children in school
  - 100M primary age children not in school
    - 40M in Sub-Saharan Africa (83 % in school)
    - 30M in South Asia (63% in school)
    - 57M girls
  - Secondary enrollment much lower
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# Quality

- Bangladesh
  - 58% of rural children 11 and older failed to identify 7 of 8 presented letters (Greany, Khandker and Alam (1999))
- India
  - 36% of 6<sup>th</sup> graders unable to answer: “The dog is black with a white spot on his back and one white leg. The color of the dog is mostly: (a) black, (b) brown, or (c) grey” (Lockheed and Verspoor, 1991)

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# Institutional issues

- Centralization
  - Strong teachers unions
  - Weak teacher incentives
    - E.g. India -19% of teachers absent from school
    - Roughly half in class, teaching
  - Survey in Bangladesh, Ecuador, India, Indonesia, Peru, and Uganda (Chaudhury et al.)
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# Costs

- User fees
  
  - Other costs (e.g. uniforms)
    - Younger pupils
      - 26% reduction in absence rates (Evans and Kremer, 2005)
      - Stronger effects for girls
      - Estimated cost of increasing schooling by 1 year = \$127
  
    - Older pupils
      - 13.5% reduction in dropout from primary school (Duflo et al, 2006)
      - 10% reduction in teen childbearing
      - Cost of averting a pregnancy = \$300
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# Subsidies

- Conditional cash transfers
    - PROGRESA increased schooling attainment by 0.66 years on baseline of 6.80 years (Schultz, 2004)
    - Strongest effects for older girls
    - Internal rate of return of about 8%
  
  - School meals (Kenya)
    - School participation 30% higher in program schools (Kremer and Vermeersch, 2004)
    - No overall test score effect
    - In schools where teacher well trained, 0.4 SD increase in scores
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# Merit scholarships

- Scholarships for 6<sup>th</sup> grade girls scoring in top 15% on government exams in western Kenya
  - Impact prior to awards
    - Test scores 0.12 SD higher (0.19 sd for girls) (Kremer et al, 2006)
    - 3.5% increase in teacher attendance in program schools
  - Heterogeneity in program effect across districts
  - Cost per additional year of schooling = \$90
  - Apply to secondary school?
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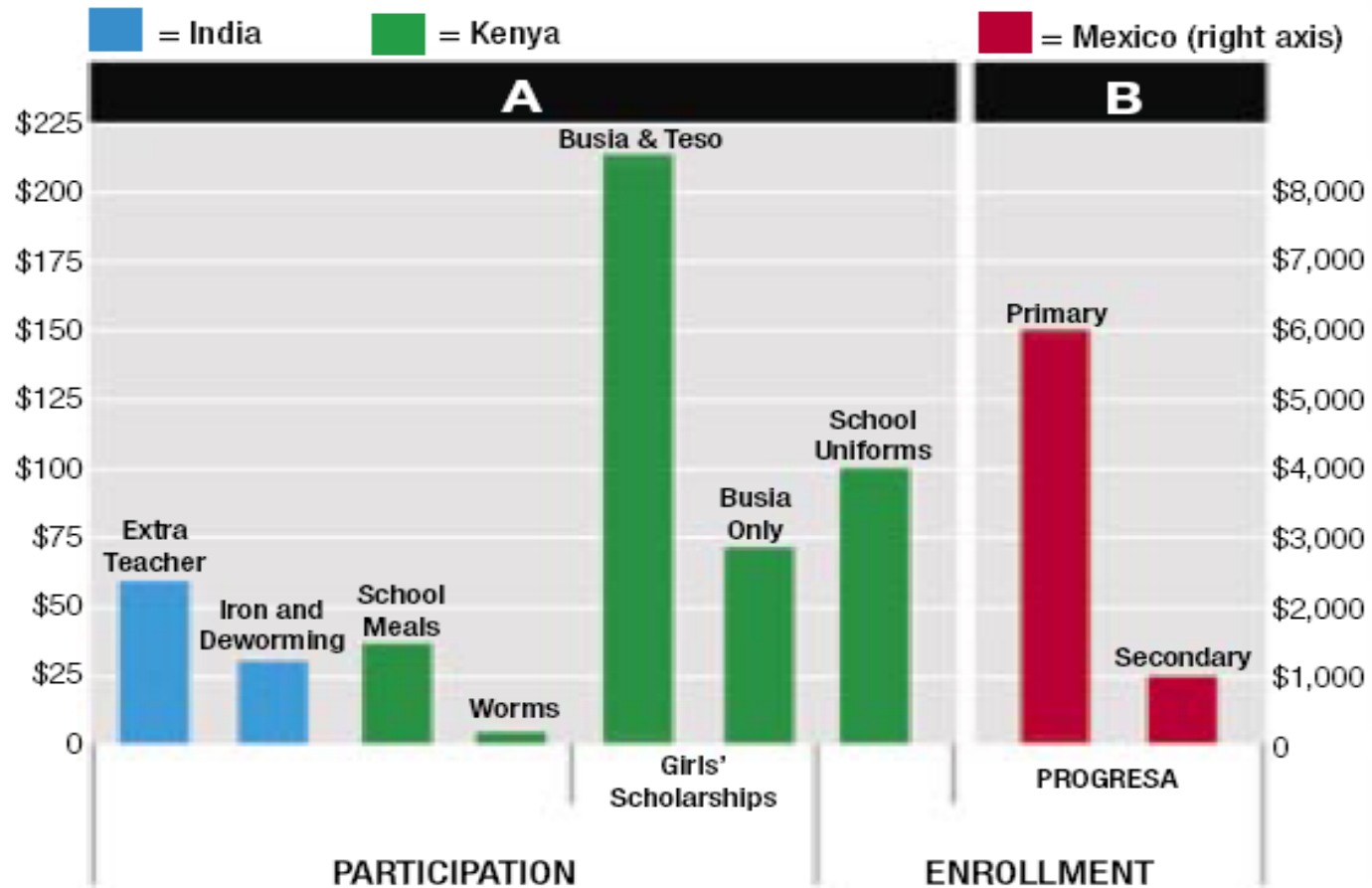
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# School Health Programs

- More than one billion people have worms
  - Twice-yearly school-based mass treatment (Miguel and Kremer, 2004)
  - Health and school participation improvements
    - Externalities to non-treated students
    - Reduced absence 25%
    - Increased schooling by 0.15 years per pupil/year treated
  - Cost per additional year of schooling = \$3.50
  - Similar results in urban India (Bobonis et al, 2004) and U.S. South (Bleakley, 2007)
  - HIV/AIDS education (Dupas, Duflo, Kremer, 2006; Dupas, 2006)
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# Cost effectiveness

## Cost Per Extra Year of Education Induced



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# Information about returns to schooling

- Perceived earnings difference for primary vs. secondary school completion only 22-25% of true difference among 8<sup>th</sup> grade boys in Dominican Republic
  - Experiment → boys provided information about true earnings difference (Jensen, 2007)
  - Results
    - Treatment boys 7% more likely to come to school next year
    - 0.20 year increase in educational attainment 4 years later
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# Inputs

- Teachers
  - Non-teacher inputs
  - Inputs correcting distortions
  
  - Non-experimental evidence (Hanushek)
  - Experimental evidence from richer countries
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# Extra teachers (Kenya)

- Extra local contract teacher for grades 1 and 2
  - Declines in pupil teacher ratio in ETP schools
  - Students with civil service teachers score no better than students in comparison schools (Duflo, Dupas, Kremer, 2007)
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# Extra teachers (India)

- Extra teacher, often female, in informal schools
  - Impact
    - No effect on test scores (Banerjee et al, 2005)
    - Increase in girls attendance by 50%
  - Similar, but smaller, results in evaluation of Operation Blackboard (Chin, 2005)
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# Textbooks

- Provision of official government textbooks in rural Kenya
    - No impact on test scores for typical student (Glewwe, Kremer, and Moulin (2003))
    - 0.2 SD increase for pupils in top quintile of pre-test
  - Points to systemic distortion in education system
    - Centralized, single curriculum set at level for elite
    - Texts written in English
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# Remedial education

## ■ Balsakhi program

- Young women from community teach basic literacy and numeracy to 3<sup>rd</sup> and 4<sup>th</sup> graders in urban India
- 0.14 SD increase in test scores in year 1, 0.28 SD increase in year 2 (Banerjee et al, 2006)
- Greatest gain at bottom of distribution

## ■ Ability tracking

- Increases scores of both high and low ability students in western Kenya (Duflo et al, 2007)
  - Increases attendance of civil service teachers
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# Radio and computer learning

## ■ India

- Computers with math games in primary schools (Banerjee et al, 2006)
- 0.47 SD increase in math test scores

## ■ Nicaragua:

- Radio mathematics instruction (Jamison et al, 1981)
  - 1 SD increase in math scores after 1 year
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# Teacher incentives: input based

- Kenya (preschools)
    - Bonuses paid for presence
    - Headmasters did not effectively monitor absence (Chen and Kremer, 2001)
  - India (informal schools)
    - Cameras for teachers to take pictures with students everyday in morning and evening
    - Pay based on presence documented in photos
    - Impact (Duflo and Hanna, 2006)
      - Teacher absence rate almost cut in half
      - No effect on activity while in school
      - 0.17 SD increase in test scores after 1 year
      - 43% increase in graduation rate to mainstream primary schools
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# Teacher incentives: output based

Country	Basis of Prize	Teacher Attendance	Test Scores	Pedagogy	Other
Kenya (Glewwe, Ilias, Kremer, 2003)	School performance on district exams	No effect	0.14 SD increase	Increase in exam prep sessions	Gains not retained
India (Muralidharan and Sundararaman, 2006)	Improvements in average test score	No effect	0.19 SD (math) 0.12 SD (language)	Increase in exam prep sessions, plus more homework	Gains both conceptual and mechanical

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# Local control

- Three interventions in rural communities in India
    - Meetings on school conditions
    - Meetings plus community participation in student testing
    - Meetings plus participation plus training community volunteers to teach children to read
  - Tentative outcomes
    - Information does little, training volunteers to teach reading does a lot (Banerjee, Banerji, Duflo, Glennerster, Khemani and Mullainathan (ongoing))
  - Kenya school committees, cash grants
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# Local contract teacher and SBM

- Local contract teacher
    - Paid fraction of civil service teacher
    - Students score much higher
  
  - SBM
    - Some evidence of increased attendance of civil service teachers
    - Evidence of test-score gains for civil service teachers
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# School choice

## ■ School vouchers (Colombia)

- Demand for vouchers exceeded supply → lottery
- Allowed to attend private schools
- Renewable conditional on satisfactory performance

## ■ Impact

- Lottery winners 10% more likely to complete 8th grade, scored 0.2 SD higher on standardized tests (Angrist et al, 2002)
- Winners were 5-7% more likely to graduate high school, on a base of 25-30%; higher test scores (Angrist et al, 2006)

## ■ Channels of impact

- Lottery winners more likely to attend private schools
- Some pupils who would have attended private schools anyway now able to attend more expensive schools
- Lottery winners had incentive to devote more effort

## ■ General equilibrium effects?

- Hsieh and Urquiola, 2006
  - Gallego, 2006
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# Conclusion

## ■ Quantity

- Costs and subsidies have a significant impact on school participation
- School health programs cost-effective way to increase quantity; explore information efforts

## ■ Quality

- Resources do not necessarily translate into better outcomes
  - Some targeted programs are very effective
  - Ambiguous evidence on teacher incentives
  - Local hiring of contract teachers and school choice promising
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# School grants

- Cash grants to school committees in rural Kenya
  - Impact
    - Decreased dropout rates (Glewwe, Iyer, and Kremer (2002))
    - Increased repetition
    - Positive impact on test-scores (0.12 SD) only in first year
    - Impact similar to textbook provision: high ability children benefit more
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