Will formula based funding and decentralized management improve school level resources?

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Background and motivation

• Formula based funding and decentralized management
  – Renewed interest (esp. amongst developed countries) in 1990s
  – For their potential for improving resource availability in schools.

• However, the success depends on
  – availability of information for implementation and monitoring these schemes,
  – availability of basic resources,
  – strength of school-support systems,
  – Internal, external monitoring (the ability of the central government to motivate local level players to achieve identified education goals)
  – (the level and depth of decentralization),

• Study is on EQI scheme which proposes to improve Education Quality Inputs (EQI) in schools through
  – Formula based funding, and
  – Decentralized management of funds
  – Data – school census

(De Grauwe, 2005; Ross and Levačič, 1999)
Background - School System In Sri Lanka

- General Education Aimed at children 5 - 18 years
- Education is provided through more than 10,000 schools spread throughout the country
- Around 93% of these are government schools, where tuition and facilities are provided free of charge
- Since 1987 Education has been a devolved subject
- Present administration structure consists of five levels:
  - Central Ministry of Education,
  - Provincial Ministries of Education,
  - Zonal offices,
  - Divisional offices
  - Schools

EQI scheme

- Education Quality Inputs (EQI) scheme started in Sri Lanka in 2000
  (EQI: all materials, equipment, instruments and services used to add value to the teaching learning process)
- Objective of EQI
  - to improve resources for teaching learning process in schools
- Main Features:
- Fixed % of the total government budget on education are allocated for EQI
  Recurrent (2%) and Capital (20%)
- Funds allocated according to a formula
- The schools were given the authority to manage the funds
Functioning of the EQI scheme

- Every school has a separate bank account for EQI
- Allocated funds are credited at the beginning of each year in the A/C
- Funds are assigned to schools according to a Norm Based Unit Cost Resource Allocation Mechanism (NBUCRAM), which is based on:
  - quality input norms (by educationists),
  - Size of the school (with corrections for economies of scale),
  - Grades available in the school,
  - School needs
- Schools are given authority to identify and purchase EQI goods,
  - but according to guidelines by the central MOE on:
    - Selecting suppliers, calling for quotations, how much to buy (depending storage capacity), ensuring quality

Formula

- Step 1:
  - Provincial level officials decide how to allocated funds across grade cycles
    - e.g., 2005 Central Province allocation of funds:
      - Primary – 15%; Jr. Sec – 35%; Sr. Sec – 30%; Collegiate-15%
- Step 2:
  - Based on these, weights are assigned to different schools
    - e.g., schools with only primary grades get a weight of 0.15
    - schools with both primary and jr sec grades get a weight of 0.50 (0.15+ 0.35)
- Step 3:
  - Provincial officials decide how to distribute funds across different school types
    - Funds are allocated for desired student populations for each school and school type (this results in smaller schools getting more funds)
How is allocation of funds different under EQI?

• Previous method: Need-based allocation of funds – issues
  – Effectiveness depend on the ability of school managers (principal) to identify needs
    • May lead to historical budgeting
  – Identification of needs according to guidelines (lack of flexibility)
  – Budget limitations leads to prioritizing
    • More influential/ enterprising school head receive more funds
  – … these lead to inequitable distribution of funds

• Under EQI, similar schools are treated equally

• Student characteristics, school cycles and school site differences are taken into account when allocating funds
  – Rural schools, small schools and disadvantaged schools are given more per-student funds

Distribution of EQI funds
Distribution of EQI funds

- According to school census data in 2004,
  - Schools received Rs. 579 million (USD 5.72 million)
  - Of which 81% were used by schools
  - The rest (Rs. 121.8 million or USD 1.2 million) was unspent

Study Objectives

- The study specifically examines:
  - 1) As intended, do rural schools, small schools and disadvantaged schools benefit from this scheme? (descriptive)
  - 2) IS EQI fund allocation equitable? (method: benefit-cost analysis)
  - 3) What factors affect the utilization rate of EQI funds? (method: partial equilibrium analysis)
Per Student EQI Allocation and Expenditure
- by Type of School

Larger amounts of per student funds for - disadvantaged schools

Source: Own calculations, using school census data

Per Student EQI Allocation and Expenditure
by Location of School

Larger amounts of per student funds for - rural schools

Source: Own calculations, using school census data
Per Student EQI Allocation and Expenditure by Size of School

Larger amounts of per student funds for - smaller schools

Source: Own calculations, using school census data

Allocative efficiency of EQI funds

• This indicates that overall funds are distributed according to the goal of
  – uplifting disadvantaged schools
  – taking into account economies of scale (i.e., the fact that smaller schools need
    more per student administrative funds).

• But, the formula used to allocate funds is not easily understood
  – which makes analyzing the allocative effectiveness of EQI funds difficult

• New Issue: Allocated funds are not fully utilized
IS EQI fund allocation more equitable, from the individual perspective?

Distribution of EQI Expenditure - All Schools

At the national level, EQI expenditure for all school cycles is progressive

Source: Own calculations, using school census data
**Distribution of EQI Expenditure by Education Cycle**

Progressive for primary and junior secondary school cycles and equitable for senior secondary school cycle

![Diagram showing distribution of EQI expenditure by education cycle](image)

Source: Own calculations, using school census data

**EQI Expenditure at the Collegiate Level by Education Stream**

Collegiate school cycle, by arts and science streams: expenditure on the science stream is regressive

![Diagram showing EQI expenditure at the collegiate level](image)

Source: Own calculations, using school census data
Distribution of EQI Expenditure

- EQI expenditure is distributed equitably for the most part, except at the collegiate level.
- The lower progressivity at higher school cycles are partly due to lower enrolments.
- Particularly, in the science stream.

What affects utilization rate of EQI funds?
Factors affecting utilization rate of EQI funds

• Dependent var
  – URI = tot_exp school i / tot_alloc school I

• Independent var
  Ti - teacher characteristics;  Si - school characteristics;
  Mi - management capacity of the school;  Pi - principal’s characteristics;
  Ci - school community characteristics;  Z – school administration zone;
  Uiz is a random disturbance term

• Estimated using ordered probit model (for which results are shown)
• Model was also estimated using tobit analysis which yielded similar results

\[ URiz = \beta_1 Ti + \beta_2 Si + \beta_3 Mi + \beta_4 Pi + \beta_5 Ci + \beta_6 Z + uiz \]

Model estimated for – all schools, primary schools, secondary schools, collegiate schools

Independent Variables

• Teacher Characteristics
  – Excessive leave (% teachers taking more than 25 days of leave in the school)
  – Gender (% Male)
  – Salary (% receiving different salary scales (control for experience and qualifications))

• School Characteristics
  – Grades (primary only, secondary only, etc.)
  – Student teacher ratio (in primary, math, English)
  – School size
  – School type (well facilitated, facilitated)
  – School supervision (supervised by school administration)

• Principal’s characteristics
  – Qualifications
  – Experience
  – Gender

• EQI funds specific
  – Received funds on time
  – Inspected
Results

- Teacher characteristics
  - Lower EQI utilization rates if:
    - Male (secondary)
    - Excessive leave (primary)

- School characteristics
  - Lower EQI utilization rates if:
    - High student-teacher ratios (primary and collegiate)
    - Small schools (primary)
    - Less facilitated (all & collegiate)

- Principal characteristics
  - Higher utilization rates if:
    - Qualified principals (collegiate)
    - Male principals (all & primary schools)

- State-administration
  - EQI utilization rates differ across Provinces and zones
  - Timely allocation of funds and inspections improve fund utilization rates

- Community characteristics
  - Location and community level characteristics influence EQI utilization rates (large effect)
  - EQI expenditures is lower in all provinces relative Western province

Conclusions …

- This study examine the success of the EQI Scheme that envisage improving school performance through formula based funding and decentralized management of schools

- The study finds that:
  - EQI funds are allocated equitably
    - Similar schools are treated equally and
    - Smaller schools, rural schools and more disadvantaged schools receive and spend a higher per capita allocation per student
    - However, the funding formula can be made clearer
    - So that easier to assess whether funding goals are met.

  - Fund allocation is progressive (poorer get more funds)
    - Except at higher school cycles, especially in the science stream

- However, around 20 per cent of these funds are left unspent
Conclusions

• Equitable Allocation alone not sufficient to improve school performance

• Funds need to be properly utilized.

• Same factors that affected uneven distribution of funds under the other funding models results in uneven utilization of funds under formula based funding.
  – For example, ability of principals

• This shows that fundamental management resources are a necessary condition to improve resources at the school level, under any funding model.

Recommendations

• Improving school participation at higher grades will improve benefits of EQI

• To minimize under usage of funds
  – EQI procedure need to be reformed to help managers in small rural schools
  – The provincial and zonal level administrative divisions could play a large supportive role to schools
  – But, administrative capacity at these levels should be improved

• State level monitoring and support influences education management at the school level.
Thank You

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Background

• Formal education is accessible to most

• But, problems of equity and quality

• Enrolments and achievements worse for
  – for poor
  – less developed provinces,
  – rural and small schools

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Source: Own calculations using HIES 2006/07 data.