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

Nisha Arunatilake and Priyanka Jayawardena
Institute of Policy Studies, Sri Lanka
Background and motivation

- International experience suggests that
  - need-based resource allocation through formula funding
  - And, decentralized management
  - has great potential for improving resource availability and management of schools.

- However, the success of these schemes are mixed and depends on
  - the level and depth of decentralization,
  - 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)

- Study is on EQI scheme which proposes to improve Education Quality Inputs (EQI) in schools through
  - Formula based funding, and
  - Decentralized management of funds
**EQI scheme**

- Education Quality Inputs (EQI) scheme was 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, where allocated funds are credited at the beginning of each year.

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

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.
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
  - \( UR_i = \frac{tot_{exp\ school\ i}}{tot_{alloc\ school\ i}} \)

• Independent var
  - \( T_i \) - teacher characteristics,
  - \( S_i \) - school characteristics,
  - \( M_i \) - management capacity of the school,
  - \( P_i \) - principal’s characteristics
  - \( C_i \) - school community characteristics
  - \( Z \) - school administration zone,
  - \( U_{iz} \) 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

\[
UR_{iz} = \beta_1 T_i + \beta_2 S_i + \beta_3 M_i + \beta_4 P_i + \beta_5 C_i + \beta_6 Z + u_{iz}
\]
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 high (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

nisha@ips.lk

www.ips.lk
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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| **Grade Completion** |          |         |        |
| Sri Lanka            | 81.4      | 70.5    | 39.1   |
| Poorest              | 73.4      | 61.2    | 22.6   |
| Richest              | 87.4      | 75.4    | 60.6   |

Source: Own calculations using HIES 2006/07 data.
Formula based fund allocation process

1. **Step 1:** Provincial level officials decide how to allocate funds across grade cycles
   - e.g., 2005 Central Province allocation of funds:
     - Primary – 15%; Jr. Sec – 35%; Sr. Sec – 30%; Collegiate-15%

2. **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)

3. **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)