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The Problem

School systems in many countries do not report repeater and dropout data. In those countries where these data are reported, the information is often of dubious reliability. Yet both repeater and dropout data are essential to the monitoring of changes in internal efficiency of the system, so that authorities may know "what works," or indeed, how well the system is working. Perhaps the most commonly used monitoring indicator is the primary school completion rate. But, as normally calculated, this rate is the result of analyzing the school history of a "re-constructed" or hypothetical cohort of 1000 entrants into the system. This school history is "re-constructed" using repeater and dropout rates. Thus, when these rates do not exist, or are of doubtful quality, the primary school completion rate cannot be known, or cannot be relied upon. Naturally, any method that can give one an approximate idea as to whether the completion rate is improving or not would be a welcome addition to the "toolkit" of educational planners and education sector analysts. This note proposes a method that is very easy to use and requires no data on repeaters and dropouts.

A Proposed Proxy Method[1]

In what follows we will assume a five grade school system, with students entering at age 5 and reaching fifth grade at age 9, but all our conclusions apply to any system.

The proxy indicator of the completion ratio proposed here is a proportion of two ratios: the ratio of enrolment in the last grade to the population cohort of corresponding age, (call it the last grade enrolment ratio), divided by the growth-adjusted

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[1]A simpler alternative to the proposed method is the ratio of current enrolment in the last grade to enrolment in the first grade six years before. The problem with this method is the inherent bias due to population growth, which would lead to overestimates of system inefficiency.

overall gross enrolment ratio[2]. In a system where this proportion is increasing, we may conclude that the completion rate is increasing.

Why a growth-adjusted gross enrolment ratio? In a system that is both stable (not growing) and perfectly efficient, the 5th grade enrolment ratio would be exactly the same as the overall enrolment ratio, since 100% of the children would flow from one grade to the next, and there would be no new "catch-up" entrants into the first grade of newly opened schools. Thus, the number of children in the first grade grade would be the same as the number of children in the first grade, and the last-grade enrolment ratio and the overall gross enrolment ratio would be exactly the same. However, a system could be very efficient, in that there are few dropouts and repeaters, and yet have a last-grade enrolment ratio which is lower than the overall enrolment ratio, due to the expansion of the system (which naturally produces a bulge in the enrolment figures of the earlier grades). In practice, for any real system typical of most LDCs, the difference between the overall enrolment ratio and the 5th grade enrolment ratio can be attributed either to inefficiency or to growth, and the growth could be due to either expansion of the school system into rural areas, or simply fast population growth. If one could find a way to remove the growth effect from the overall gross enrolment ratio, then the remaining effect is inefficiency.

How to adjust the gross enrolment ratio for system growth? Let's take as an example a five-grade primary system. If the fifth grade enrolment ratio at time t can be compared with the first grade enrolment ratio at time t-4, then much of the effect of growth can be removed. Better yet, if we take the weighted average of the first grade enrolment ratio at time t-4, second grade enrolment ratio at time t-3, and so on, and compare this to the fifth grade enrolment ratio at time t, we will have a pretty good idea of the effect of inefficiency change by itself.

Here are some examples of the calculations. Let's use boys enrolment as an example this time. First, note the population figures:

POPULATION OF BOYS (in 1000s):

Age	1983	1984	1985	1986	1987
5	72	74	76	77	89
6	70	72	73	75	77
7	68	69	71	73	75
8	66	67	69	71	73
9	64	65	67	69	71

[2]See the arithmetical statement in the appendix.

ENROLMENT OF BOYS (in 1000s):

Grade	1983	1984	1985	1986	1987
1	87	97	121	146	159
2	34	40	51	48	67
3	25	28	35	35	38
4	19	21	27	27	30
5	16	16	18	19	22

The growth-adjusted gross enrolment ratio for 1987 would therefore be (22+27+35+40+87)/(71+71+71+72+72), which yields 59.1%. Now, the fifth grade enrolment ratio for 1987 would be simply 22/71, which yields 31%. The ratio of 31 to 59.1 is 52.5%, and this is the indicator we are interested in calculating. If this number goes up, we can conclude efficiency is increasing. Note that the non-adjusted, or standard gross enrolment ratio for 1987 would be (22+30+38+67+159)/(71+73+75+77+89), which is 82.1.

The interpretation of these numbers is pretty straightforward. Note again that the last-grade enrolment ratio is about 31, whereas the gross enrolment ratio is 82. It would therefore seem that about 50% of children are being lost between first and fifth grades. But the relevant gross enrolment ratio is the growth adjusted gross enrolment ratio, which is only 59. Under this scenario, only about 30% of the children appear to be lost. This is a more realistic picture. Note that the factor that contributes to this difference is the tremendous expansion in first grade enrolment, due to a fast growing population and a school system that is expanding into rural zones. It is evident that when first grade enrolment is expanding so quickly it is inappropriate to compare the fifth grade enrolment ratio in any given year to the overall enrolment ratio for that same year. Instead, our proposed method compares fifth grade enrolment to the growth-adjusted total enrolment ratio, giving a more accurate picture.

Appendix. Arithmetical formulas.

The proposed indicator is

$$GER_{5,t} \;/\; GER^{*}_{t},$$

where

GER_5 is the fifth-grade enrolment ratio at time t, and

GER^{*}_{t} is the growth-adjusted gross enrolment ratio at time t.

The equation for GER_5 is

$$GER_5 = E_5 \;/\; P_9$$

where

E_5 = fifth grade enrolment, and

P_9 = population of nine-year-olds.

The equation for GER^{*}_{t} is

$$GER^{*}_{t} = (E_{5,t} + E_{4,t-1} + E_{3,t-2} + E_{2,t-3} + E_{1,t-4}) \;/\; (P_{9,t} + P_{8,t-1} + P_{7,t-2} + P_{6,t-3} + P_{5,t-4})$$