Teacher Allocation and Equity in Malaysian Schools

R. Ramesh Rao
English Language
Teaching Centre
Ministry of Education Malaysia
Email: rameshrao08@yahoo.com

Rohana Jani
Faculty of Economics and
Administration
University of Malaya
Email: rohanajani@gmail.com

Abstract: Although inequalities in education are relatively well researched, little attention is given to the inequalities in the educational resources used in education. This is clearly a shortcoming in the course of providing equitable education to all. One of the educational resources frequently used in discussion is teachers. Other than being very mobile, teachers are often used as proxy for educational resources because of their role and importance in educating a child. However, not many researchers have evaluated them/ this resource in terms of availability in a school. In this paper, allocation of trained teachers to schools is measured. Using Malaysian data from 1986-2006 and Gini coefficient, a well known measure of distribution, trends and patterns of equity are examined. By estimating the Gini coefficient, we aim to enhance our understanding of resource inequalities and their drivers. Inequity is examined at two levels of education, i.e. primary schools and secondary schools. Initial results reveal that the level of equity in primary schools is less desirable than in secondary schools. In this paper, possible reasons on this outcome are delved into.

Keywords: education, teachers, equity, Gini coefficient

JEL classifications: D63, I21, I28, I38

1. Introduction

As in many countries, Malaysia too has allocated a large portion of its resources to education. The government's view is that education should be made available to everyone. As such, besides accessibility, equity in education has also been a concern in Malaysia. Equity has been one of the issues in education ever since education was made public ((Levačić, 2000). Equity has been a prominent objective in many countries because of the amount of resources it consumes and it has been increasing from time to time (Siphambe, 2000). Rights to education may be viewed from the perspective of access to resources of education to the outcome of education.

Teachers' placement often contributes to the inequity in public schools (Krei, 2000). In spite of this, which characteristics of a teacher are important is still debated among the scholars. While some feel that teachers' experience is important, others give prominence to teachers' qualifications because of their influence on students' performance (Reischauer *et al*., 1973).

Such arguments may have prompted the Malaysian government through its Ministry of Education (MOE) to ensure equity in the education system. In Malaysia, education is viewed as a general policy approach to reduce inequality in the society (Snodgrass, 1980). This could be done by ensuring that educational resources are distributed equitably. Allocation of teachers to schools, being one of the educational resources, is controlled by MOE. Individuals who wanted to teach in Malaysian public schools must undergo training, either at the local universities or teacher training colleges.

In this paper educational inequality is measured using the concept of the education Gini index. This index is applied to schools in Malaysia over a period of twenty years (1986-2006). In the next section literature on equity and teacher characteristics are reviewed. This is followed by a discussion on the methodology and findings. And finally some policy recommendations are made based on the findings.

2. Literature Review

Among the resources of education, teachers are the most mobile (Brimley and Garfield, 2005). This explains why teachers received a lot of interest among researchers (Belfield, 2000). Teachers are an important input in an education production function and therefore the economics of teacher inputs deserves a substantial amount of investigation (Berne and Stiefel, 1984; Belfield, 2000).

Most research on education production function use teachers as a proxy when evaluating the role of educational resources on students' outcome. When it comes to discussion on school personnel, teachers form the largest personnel in a school organization. Therefore, much attention and thought is given when selecting and evaluating teachers in many countries (Duke and Canady, 1991).

Besides selecting potential teachers, MOE is also entrusted in training them to teach. Trained teachers are an essential part of an education system. Vaizey (1975) sees trained teachers as the nucleus of an education system owing to their competence to teach effectively, eventually enhancing students' performance. As such, a school's quality is often measured by the number of trained teachers in the school (Behrman and Birdsall, 1983). It has become increasingly difficult to retain teachers, especially gifted accomplished ones, as many of them leave for greener pastures (Stinebrickner, 2001).

Gidwitz and McGee (1999) claim that sometimes "an environment of shortage of teachers" is created so that more would be spent. For example, many teachers in Malaysia, as in other parts of the world, prefer to teach in urban schools. In Pakistan only 31% of trained teachers waiting for posting were willing to teach in rural areas (Fuller, 1986).

Teachers usually like to teach in high socioeconomic status schools (Scafidi *et al.*, 2007). The chances of a teacher transferring from a low SES school to a high SES is four times higher (Krei, 2000). This results in a higher turnover rate of teachers at rural schools. Because of this, many governments face the problem of posting and retaining teachers in rural school.

As a form of encouragement, MOE contemplates payment of extra allowance to teachers who are willing to teach at rural areas. This approach is not something new. In USA, teachers were given "loan forgiveness packages" to attract people to the teaching profession (Gidwitz and McGee, 1999; Hanushek *et al.*, 2004). There are cases too where senior teachers are given monetary incentives to teach at certain needy schools (Krei, 2000).

In countries where earning differentials exist among teachers because of a school's location, there is an increase in teacher mobility (Downing and Peckham-Hardin, 2007). Zabalza (1978) in his doctoral thesis proved that earning differences in teachers with the same qualifications cause teachers to request for a transfer to another school. However, in Malaysia, teachers' salaries are determined by the government and it does not depend on where they are posted. Instead their salary depends on their qualifications and experience.

The disparity in the availability of teachers is also caused by the increase in the workload of teachers. Increase in the workload of teachers has prompted many to leave the profession. Retaining experienced teachers has become a heavy task for many school administrators because they are unable to offer a higher salary to them and this is further compounded by the increase in their workload (Petress, 2007). Abundant job opportunities in urban areas often compel teachers to leave the profession. It is a norm in countries such as Malaysia, for teachers upon completion of their training, to serve in government funded schools.

Administration of education in Malaysia is a highly centralized system (Ratnavadivel, 1999; Marzuki and Som, 2001; Musa, 2003). Its administrative structure has four distinct hierarchical levels. They are federal, state, district and school and they are represented by the Ministry of Education (MOE), state education departments, the district education officials and schools respectively (see Figure 1). MOE is responsible for allocating trained teachers to the states. It is finally up to the District Education Office (DEO) to decide to which school a teacher is posted. Thus, in countries where education is administered through a central agency, like Malaysia, ensuring equality falls on the shoulder of the agency, i.e. MOE (Levačić, 2000).

Figure 1: Management Structure of Education in Malaysia
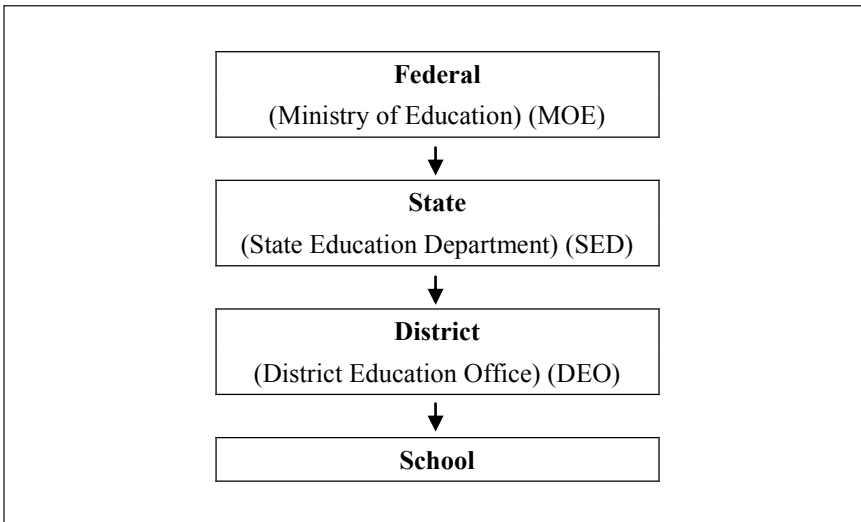
Source: Adapted from MOE (2004).

3. Methods

The data used in this study are obtained from the *Educational Statistics Yearbook* for the period 1986-2006. School enrolments and the number of teachers reported in this report are as of 30th June of each year. Since state enrolment varies, Pupil Teacher Ratio (PTR) is used in place of the number of trained teachers in a state. PTR is the number of students divided by the number of full-time teachers assigned to a school (Lewit and Baker, 1997).

PTR is computed using the following formula:

$$PTR_t = \frac{E_t}{TT_t} \tag{1}$$

where E_t is the number of students enrolled in the state for the year t; TT represents the number of trained teachers teaching in the year-t. The number of teachers included in the final count of PTR is based on the availability of trained teachers in a state. Untrained teachers are teachers who have the academic qualifications but not the necessary professional qualification, i.e. a teaching certificate.

Opinion on equity in education depends on the method used to measure it (Stiefel and Berne, 1981). There are various ways of measuring education equity. One of the ways which is recommended by many experts is Gini coefficient (Ko, 2006). There are two ways of calculating Gini coefficient

Figure 2: The Lorenz Cure and the Egalitarian Line
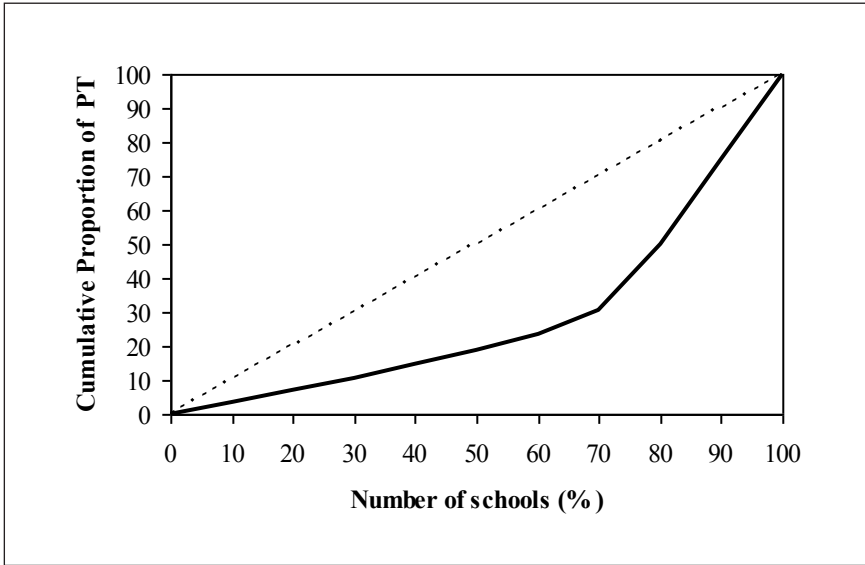
Source: Authors.

(Thomas *et al*., 2001). They are the direct method and the indirect method. The direct method uses a mathematical formula to calculate the value of Gini coefficient, while in the indirect method the value is obtained by measuring the area between the Lorenz Curve and the egalitarian curve (see Figure 2).

In this paper, we use both the methods. The formula we used to calculate the education inequality is also called the "Education Gini" coefficient (Lin, 2007):

$$Gini_t = \frac{(\sum_{i-1}^{N} \sum_{j=1}^{N} E_{it} E_{jt} \left| PTR_{it} - PTR_{jt} \right|)}{2(\sum_{i=1}^{N} E_{it})^2 \overline{PTR_{pt}})} \qquad [2]$$

where

$$\overline{PTR_{pt}} = \frac{\sum_{i=1}^{N} E_{it} (PTR_{it})}{\sum_{i} E_{it}} \qquad [3]$$

$\overline{PTR_{pt}}$ = mean of pupil teacher-ratio for the year-t

E_{it} = number of pupils in state *i*

Education Gini is calculated for primary (GPS) and secondary schools (GSS). Distribution is said to be equitable if the value of Gini Coefficient is less than 0.05 (Odden and Picus, 2000). The value of Gini education is converted to percentage by multiplying it with 100. Using Odden and Picus's (2000) judgment, any value less than 5% is assumed to be equitable.

4. Findings

Scrutiny of the pattern across time shows GPS and GSS differ in terms of value (see Figure 3). Fluctuations in the Education Gini for primary schools are more compared to that in secondary schools. Using 5% as the accepted level, the value of Education Gini for secondary schools shows that MOE has managed to distribute teachers equitably after the year 1998.

On the other hand, the equity level for primary schools depends on the year. On the whole the fluctuations can be examined in two trends. They are when MOE notices inequity, followed by efforts on reducing the inequity level.

MOE implemented a new curriculum known as Primary School Integrated Curriculum (KBSR) on a trial basis at 305 primary schools selected throughout the country in the year 1982. The following year KBSR was

Figure 3: Education Gini From 1988-2006 for Primary School and
             Secondary Schools
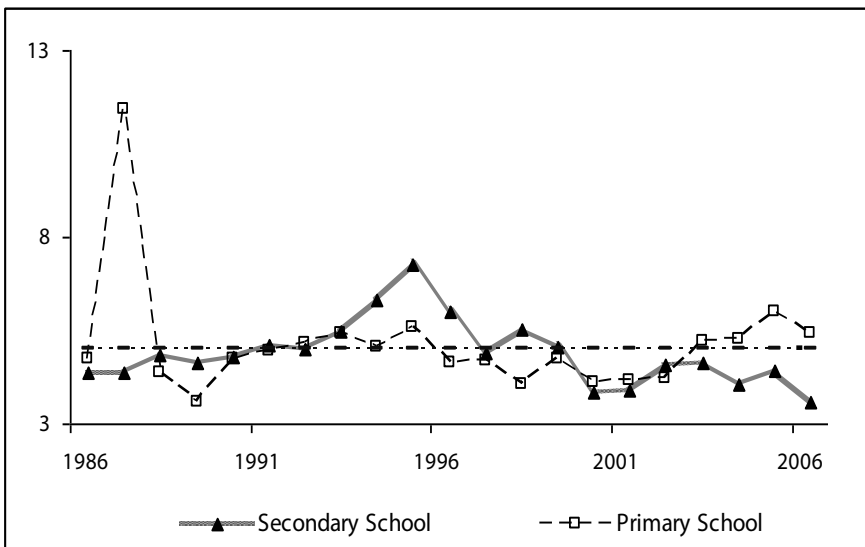
Source: Authors.

implemented in all the public primary schools in Malaysia (Keow, 2008). The goal of this new curriculum as contained in the MOE Primary School Integrated Curriculum (1991: 5) is "…to ensure the holistic development of pupils, which encompasses aspects including intellectual, spiritual, physical, emotional, talents, character, social, aesthetic values…."

Implementation of KBSR had its fair share of challenges in many schools. Teachers were sent for refresher courses to familiarize themselves with the new approach suggested in KBSR. For example teachers were expected to carry out their teaching and learning using the pupil-centred approach (Keow, 2008). The duration of some of these refresher courses ranged from 3 days to a year. When the duration of a course is longer than 42 days, a school is allowed to hire a temporary teacher, who is not necessarily trained. This altered the number of trained teachers in a school recorded at the time MOE compiles the data. However, in the following year almost all the teachers had undergone the necessary "retraining" to implement the new curriculum. This explains the improvement in the value of following years.

When GPS and GSS are compared, the Gini coefficient for secondary schools is less volatile than that of the primary schools. MOE has more time to take the necessary steps in providing teachers to secondary schools. For example, in the year 1987, the value of Education Gini for primary school was way below the accepted standard, i.e. 12%. For secondary schools an outlier value of Education Gini occurred in the year 1995, which is 8 years after 1987. This is because primary education in Malaysia is six years, while the secondary education could be broken up into two tiers. They are the lower secondary education known as Form 1 to Form 3, and upper secondary education known as Form 4 and Form 5. Subjects taught in Form 1 to Form 3 are almost similar, while at the upper secondary level it depends on the availability of resources such as the expertise of the teachers. Therefore, if the causes of inequity at secondary schools were further broken up into two, i.e. lower secondary and upper secondary, probably the Education Gini for lower secondary would be within the accepted level but not necessarily so at the upper secondary level.

Most of the teachers teaching in secondary schools hold a degree, while teachers in primary schools have either a certificate or diploma only. Since 2005, MOE has embarked on raising the teaching profession by upgrading all non-graduate teachers into graduates. This is done by sending teachers without a degree to universities. It is hoped that by 2010, all teachers teaching in secondary schools would possess at least a basic degree. Teachers without a degree are given an opportunity to obtain one. This exercise of upgrading teachers caused an inequitable situation at primary schools. As shown in Figure 3, GPS value was within the equitable level, but after 2002, it began to display an inequitable level. However, the level of inequity in terms of

allocating teachers did not stray very far from the accepted standard. This could be attributed to the fact that the number of non-graduates teachers pursuing their degree did not affect the availability of trained teachers in a school. MOE encouraged its teachers in acquiring a degree on a part-time or distance learning mode. As such, teaching and learning in schools are not interrupted.

5. Policy Recommendations and Conclusion

Results on equity show that fluctuation in primary schools is higher in comparison to secondary schools. This is unavoidable given the fact that students would have to pass through primary education before enrolling for secondary education. As a consequence, this poses a huge challenge in the course of estimating the degree of enrolment, particularly for primary school pupils in year one. Such development can be avoided if MOE collaborate with other government agencies, which is a lot feasible via computer networking among government agencies. For instance, a child enters Year 1 when he/she is 7 years old. By gathering the number of children born 6 years ago, MOE would be able to prepare the necessary number of teachers for primary school, thus cushioning increases or drops in enrolment. Ultimately the fluctuation of PTR could be reduced.

Hiring teachers is comparatively easier than terminating. Assuming MOE is able to anticipate an increase in enrolment, engaging more trained teachers would be possible. Similarly, when enrolment dwindles, terminating a teacher's tenure is rather complicated. Such complications can be avoided if MOE utilizes the services of retired teachers. Teachers, who are still able to teach, had to leave the profession when they reach the retirement age of 58. Besides harnessing on their experience, MOE would have the prerogative of engaging them too.

Since the benefits of education are also enjoyed by the private sector, i.e. through employing quality workers, it is only fair that they are allowed to contribute to education. MOE should allow private institutions to train teachers. Currently only government education institutions such as Teachers' Training Institutions and universities are allowed to offer courses to produce trained teachers. Through private sector participation, the number of trained teachers could increase. If doctors who have studied in private institutions are allowed to practice in government hospitals, the same should be for teachers too.

MOE's methods of allocating teachers prove that the level of equity is within a manageable level. Although the value of Education Gini is not very far from the accepted standard i.e. 5%, MOE should not let its guard down. Instead ways to reduce it should be identified.

References

Behrman, J.R. and Birdsall, N. (1983) "The Quality of Schooling: Quantity Alone is Misleading", *American Economic Review*, 73(5): 928-946.

Belfield, C.R. (2000) *Economic Principles for Education*, Bodmin, Cornwall: MPG Books Ltd.

Berne, R. and Stiefel, L. (1984) *The Measurement of Equity in School Finance: Conceptual, Methodological, and Empirical Dimensions*, Baltimore: The John Hopkins University Press.

Brimley, V.J. and Garfield, R.R. (2005) Financing Education in a Climate of Change (9th ed.), Upper Saddle River, NJ: Allyn and Bacon.

Downing, J.E. and Peckham-Hardin, K. (2007) "Supporting Inclusive Education for Students with Severe Disabilities in Rural Areas", *Rural Special Education Quarterly*, 26(2): 10-15.

Duke, D.L. and Canady, R.L. (1991) *School Policy*, New York: McGraw-Hill.

Fuller, B. (1986) "Raising School Quality in Developing Countries: What Investment Boost Learning?", *World Bank Discussion Papers*, retrieved 17 November 2007 from http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1d/ae/10.pdf.

Gidwitz, R.J. and McGee, G.W. (1999) *Supply and Demand for Education Staff*, Illinois: Illinois State Board of Education, Research Division.

Hanushek, E.A., Kain, J.F. and Rivkin, S.G. (2004) "Why Public Schools Lose Teachers", *Journal of Human Resources*, 39(2): 326-354.

Keow, C.L. (2008) *Philosophy and Education in Malaysia*, Kuala Lumpur: Kumpulan Budiman Sdn. Bhd.

Ko, J.W. (2006) "The Impact of New Funding Formula on School Finance Equity in Missouri", *Education*, 126(3): 559-568.

Krei, M.S. (2000) "Teacher Transfer Policy and the Implications for Equity in Urban School Districts", paper presented at the American Educational Researchers Association, New Orleans.

Levačić, R. (ed.) (2000) *Linking Resources to Learning Outcomes*, London: Sage.

Lewit, E.M. and Baker, L.S. (1997) "Class Size", *The Future of Children*, 7(3): 112-121.

Lin, C.H.A. (2007) "Education Expansion, Educational Inequality, and Income Inequality: Evidence from Taiwan, 1976-2003", *Social Indicators Research*, 80: 601-615.

Marzuki, S.C. and Som, H.M. (2001) *Isu Pendidikan di Malaysia: Sorotan dan Cabaran*, Kuala Lumpur: Utusan Publications & Distributors Sdn. Bhd.

Ministry of Education (MOE) (2004) *Annual Report Ministry of Education 2004*, Putrajaya: Ministry of Education Malaysia.

Ministry of Education (MOE) (1991) *Primary School Integrated Curriculum*, Putrajaya: Ministry of Education Malaysia.

Musa, M.B. (2003) *An Education System Worthy of Malaysia*, Petaling Jaya: Strategic Information Research Development.

Odden, A.R. and Picus, L.O. (2000) *School Finance: A Policy Perspectives* (2nd edition), New York: McGraw-Hill.

Petress, K. (2007) "How We Can Attract and Retain Quality Teachers", *Education and Urban Society*, 28(2): 234-236.

Ratnavadivel, N. (1999) "Teacher Education: Interface between Practices and Policies – The Malaysian Experience 1979-1997", *Teaching and Teacher Education*, 15(2): 193-213.

Reischauer, R.D., Hartman, R.W. and Sullivan, D.J. (1973) *Reforming School Finance*, Washington: The Brookings Institution.

Scafidi, B., Sjoquist, D.L. and Stinebrickner, T.R. (2007) "Race, Poverty, and Teacher Mobility", *Economics of Education Review*, 26(2): 145-159.

Siphambe, H.K. (2000) "Rates of Return to Education in Botswana", *Economics of Education Review*, 19(3): 291-300.

Snodgrass, D.R. (1980) *Inequality and Economic Development in Malaysia*, Kuala Lumpur: Oxford University Press.

Stiefel, L. and Berne, R. (1981) "The Equity Effects of State School Finance Reforms: A Methodological Critique and New Evidence", *Policy Science*, 13: 75-98.

Stinebrickner, T.R. (2001) "Compensation Policies and Teacher Decisions", *International Economic Review*, 42(3): 751-789.

Thomas, V., Wang, Y. and Fan, X. (2001) "Measuring Education Inequality: Gini Coefficients of Education", *Policy Research Working Paper* #2525, 42.

Vaizey, J. (1975) *Education in the Modern World*, London: Weidenfeld and Nicolson.

Zabalza, A. (1978) "Internal Labour Mobility in the Teaching Profession", *Economic Journal*, 90(88): 314-330.