

Equity and Efficiency as Implemented in School Finance Policy

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The tension between the two values of equity and efficiency is reflected in the planning of school finance policy (SFP) as well as in its implementation. As derived from this dynamics, a decentralized finance mechanism is viewed as more efficient and less equity-oriented than a centralized finance mechanism. In light of this view, the purpose of this research is to design an innovative SFP which aims to combine achieving equity and efficiency within a centralized finance system. In doing so, the design of this SFP involves to redefine the term educational equity to improve the rationalization of SFP. To this end, the evolution of educational efficiency and equity will be intertwined as the two leading concepts. In this regard, SFP that focuses on centralization /decentralization will be analyzed in accordance with their degree of achievement of efficiency and equity. Furthermore, a new SFP that combines a needs-based allocation of resources and improvement-based incentives will be presented and discussed. According to this new SFP, additional resources will be allocated to schools that will endeavor to improve the distribution of their students' pedagogical achievements. Finally, the addition of the incentives for improvement component will contribute to increase the efficiency, while achieving equity, in a centralized finance system.

INTRODUCTION

Striving to meet the two objectives, efficiency and equity, and the tension between them during the process of their implementation have a challenging effect for state-funding-school finance policy. While this view can be generalized to other educational setting, Israel provides a case study on how state-funded educational systems are struggling to meet their objectives of providing equal and efficient education for all.

Several attempts have taken place to provide if not a final clarification to the issue of equity and efficiency; at least new ideas have emerged in the latest literature on finance policy at the school level for site-based management. In this sense and up to now, the literature has mainly focused on the school inputs or outcomes. But, the actual process of learning has been left

behind. Therefore, this paper aims to provide the foundation for a new way to advance educational equity and efficiency without engaging in a process of decentralization.

The importance of this paper is based on providing a working attempt to address the issue of educational equity from a different point of view. Consistent with this new approach, productive efficiency provides the pivotal element for the view of educational equity. This approach eliminates impractical definitions that are based on inspirational, moving or any other kinds of poetic language that fails to be based on the principle of utility theory for the XXI century. In the context of this paper, inspirational means to advance a romantic view that has nothing to do with the actual productivity of individuals and groups for national competitive advantage.

To further illustrate this point of inspirational versus practical definition; this paper follows three main cases as derived from the literature in English on school finance policy. First, let us take the idea that equity is not well defined (King Rice, 2004). This means defining equity in threefold as:

(a) equal inputs (cost per students, teachers' profiles) ignores vertical equality, as equal inputs to different students' needs does not achieve equity, and the school finance policy derived from this definition of equity is evenly- based funding formulae per number of students.

(b) equal outputs (educational achievements) does not reach equality as different students attend school with different abilities and different starting points, school finance policy derived from this definition for equity is outcome based funding formulae.

(c) equality of opportunity that is – students performance should not be related to race, ethnicity, gender, immigrants, disabled, and peripheral residence, but rather to students ability, achieve vertical equality and the school finance policy implemented from this definition for equity encompass a compensating allocation needs- based funding formulae. However, this is missing one element of the ideology of schooling—that is, school should promote and improve every student achievement growth rate.

With the above definitions, it is claimed that educational equity aims at creating and reaching educational improvements. School finance policy that strives to achieve equity should encompass incentives for schools that have managed to achieve Improvement in Educational Achievement Distribution (IEAD) (BenDavid- Hadar and Ziderman, forthcoming) with meaning for national competitive advantages.

Second, efficiency is defined as one dimensional objective of higher level of achievement with less cost (i.e. more efficient systems are able to achieve more from a given set of inputs). This paper discusses productive efficiency -- that is getting education at the least cost (Hoxby, 95; King Rice, 2004).

The above approach implies that educational efficiency is the acquisition of the best knowledge derives from the least costly one. In this sense, one will have to accept that in order to achieve efficiency and equity school finance system should be designed to achieve both high level of achievement and narrower achievement gap due to cost-benefit analysis. This cost-benefit implies that school finance policy should be designed to focus and to capture the process of learning. It will also mean to develop the ability of focusing on the delta for improvement of educational-achievement distribution, rather than on inputs or outcomes. While this section has focused on the issue of defining educational equity from a theoretical point of view, below the tension between centralized and decentralized SFP and its effect on reaching educational equity is discussed. The Netherlands presents an interesting case to advance this literature review that is based on unsustainable definitions of educational equity.

In the Netherlands, for example, school finance is centralized. The finance of schooling is almost completely governmental. This is reflected in the high share of public investment on education that is 94 percent out of the total national investment on education (Appendix Table, 1, Column 4). Also, the Netherlands educational achievement distribution, as reflected in their achievement on international examinations such as Program for International Students' Assessment (PISA, 2007), are represented by a high level of achievement and a narrow achievement gap (Appendix Table 1, Column 1 and 2).

Conversely, the school finance in the United Kingdom has been reformed into a quasi-market system during the 90's. The share of public investment on education is lower than in the Netherlands and is accumulating 87 percent of the total national investment on education (Appendix Table 1, Column 4). It is interesting to note that their achievement distribution is represented by an average level of achievement and a wide achievement gap (Appendix Table 1, Column 1 and 2). One can realize that this quasi-market approach leads to more efficiency and less equity as claimed in current literature (Bradley & Taylor, 2002). These examples lead one to create the following belief: decentralization of school finance, in the sense of a lower share of public investment on education and a larger share of private investment on education, fails to provide equity and efficiency as a joint objective of education.

The structure of this paper is as follows; first the conceptual change of educational equity is discussed. Second, the relationship between efficiency and equity, as it emerges from the conceptual change on equity and with regards to decentralization of school finance, are inquired. The final part presents a different school finance policy that aims to design a coordination to reach equity and efficiency within a centralized system. It concludes by reflecting on the design of school finance policy. This reflection is based on the ongoing tension between the concepts of equity and efficiency. As such, this paper theoretical importance will advance the formulation of a different concept of educational equity. Its educational importance is in developing a new design of school finance policy (SFP) that is designed to pursue educational equity and efficiency.

EDUCATIONAL EQUITY

This section is concerned with the conceptualization of equity. To this end, it includes three subsections. Subsection 2.1 describes and analyzes the evolution of educational equity from equity to currently adequacy. Subsection 2.2 discusses efficiency. Subsection 2.3 develops the conceptualization of a new definition of equity. This conceptualization is also based on exploring the notion of improvement. From this intertextuality of concepts, a theory of change emerges to sustain the theoretical framework of this paper along the line of an application of utility theory.

Utility theory, as derived from Rhoads (1996) interpretation of Bentham's utilitarianism and echoes in the work of Checchi (2006) for the economics of education, means that education is a commodity. As such it is measurable when it is transformed into a quantifiable concept of human capital rather than a sociological qualitative concept. In this sense, human capital and utilitarianism have to deal with the consequences of school finance policies.

What have we gained from this conversion of qualitative into quantitative educational concepts? Now, one is in a practical condition to use a formal model of investment in what is also known as human capital. Human capital is the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well being (OECD, 2001). It is a tangible coupling to fuse intangible assets (knowledge) of

individuals and groups in all kinds of enterprises of which education dominates in the newly knowledge-based economy by following the development of the process below:

- 1) Learning, human development & human capital;
- 2) Organizational development;
- 3) Students as self-directed consumers; and
- 4) Productivity for socioeconomic growth.

These processes will assist in meeting the social, corporate and state demands for education. As such, these processes will provide socioeconomic mobility for all. Finally, thinking with quantifiable concepts will create the necessary alignment to generate the new meaning of equity and efficiency.

Equity

To begin with, one can find that equity as a formulated concept has been defined as one dimensional objective of a narrower achievement gap. For instance, some students will require more funding and some will require less to learn the same curriculum. Within this paradox, states and schools may need to evaluate and customize the education finance system to fit the individual needs of children in a particular school. Note that equity of funding for schools can be categorized by the following two socio-directional concepts, horizontal and vertical. Horizontal equity means equal treatment of peers. This also means that each student receives an equal allotment of budget regardless of his background features. This is also called *positional identity* in the distribution of resources. Vertical equity a.k.a *relational identity* is based on unequal funding. This means that funding on a per student basis is not equal. Rather, funding should be allocated by the needs of the students in the sense that needy students receive larger budget.

The horizontal equity at the state level implies that school districts have equal access to resources. In this sense, per student spending is often used to measure horizontal equity. Every student, every school and every school district receives an equal amount of funding on a per student basis using horizontal equity as a norm (Baker, and Green, 2008). Hawaii constitutes an example, where full state funding program satisfies horizontal equity since districts are not permitted to spend less than the level set by state, nor to exceed it (Odden and Picus, 2000). SFP designed to achieve horizontal equity and to provide equality of inputs is regressive (i.e. it enlarges the achievement gap). This is so because evenly-based funding does not encourage vertical equity, since the needs of students vary according to their differing starting points; equality of inputs is actually allocates the same resource amount to students with different starting points. With this view in mind, let us look at the concept of vertical equity.

Dimensions of vertical equity evolve around the special background features that individuals or groups of students bring to the educational system, namely students starting points. That is for example, students who happen to have low socioeconomic status, ethnic minorities, students from a household with a single parent, and special education. In this sense, SFP takes into account vertical equity that is based on compensation for a low starting point. As students' needs increase, the funding increases. Leading examples for this SFP are in the states of California (Grubb, Goe, and Huerta, 2004), New York (Iatarola and Stiefel, 2003), the Netherlands (Ritzen et al., 1997; Canton and Webbink, 2002), Israel (Shoshani, 2001; Dovrat, 2005), The United Kingdom (Adnett et al., 2002), and Florida (Owens and Maiden, 1999).

The meaning of educational adequacy evolved from the meaning of equity (Baker and Green, 2008). An adequate amount of funding is the appropriate amount of money funded by the state to meet general standards (Picus, Goerttz, and Odden, 2008). For example the constitution of Florida has the following statement that explains the role of the state in providing an adequate education as stated in the following statement: In 1998, a constitutional amendment was passed by Florida voters. This amendment required from the state government to make “adequate provision...for a uniform, efficient, safe, secure, and high quality system of free public schools” (Harris, 2004).

Adequacy is a concept that sets a floor for minimum education that each child should receive, or each district should provide (Downes and Stiefel, 2008). The shift from *equity* to educational *adequacy* means, in terms of SFP, the attainment of sufficient funding levels to meet general standards, in absolute terms.

This paper claims that SFP design to achieve "basic education" for all in absolute terms or the government commitment to provide basic education according to defined standards to every student misses the role of education as well as it creates two types of students, and leads towards increasing social segregation.

In the scope of Israel, the shift from equity towards adequacy as currently implemented in its SF will widen the socio- economic segregation. Israel has a funding formula that compensate for students with low starting point at the primary school level. This funding formula is designed according to needs-based allocation mechanism. However, this funding formula is also used to have some political elements called "national priorities". Recently and after the Supreme Court decided that this element is discriminating Israeli minority students, it has been removed from the funding formula, and it was replaced with parental income.

This change was accompanied with the decision to move from equity towards adequacy meaning to provide sufficient level of education to all students and actually to reduce the compensation rate for low starting point from 13 percent of the total school budget to less than a 5 percent. This policy reformulation will give equal allocation resources based on the same budget for all students by keeping a horizontal equity. This trend is accompanied with a decentralized trend of SBM and higher non governmental investment on education to advance the organizational prerequisites based on the trilogy of 1) local control; 2) restructuring and 3) privatization of educational systems.

This brings one back to the first central thesis of this paper. This thesis states that based on the above example of equal governmental inputs and based on a design the SFP setting provides a proficiency level of inputs and decentralization trend where non-governmental school funding is encouraged will lead to greater inequalities.

By advancing an analysis based on school finance policy, one has become aware that this issue has implications that go beyond a simple view on SBM. Therefore, SFP in the context of Israel is also important for the fields of sociology, political theory and international relations.

In the scope of the US, this policy procedure will recreate the legal motive based on *Plessy v. Ferguson* in dividing the United States as a country (Friedman, 1985). This time the type of education that individuals and groups receive will be the tool for social segregation (Kluger, 2004).

For the purpose of clarification, Friedman (1985) has stated that *Plessy v. Ferguson*, 163 U.S. 537 (1896) was a landmark United States Supreme Court decision in the jurisprudence of the United States. Along the same line of thought, Peltason (1971) has stated that *Plessy v Ferguson* was overruled by the Supreme Court decision on *Brown v Board of Education* in 1954.

According to Jansson, (1993) the reluctant welfare state was upholding the constitutionality of racial segregation even in public accommodations that includes but was not limited to housing, railroads or school and under the doctrine of "separate but equal" until it was overruled.

Efficiency

In economic terms the concept of efficiency can be defined as the relationship between inputs and outputs, whereby economic efficiency is increased by a gain in units of output per unit of input. This can occur by holding output constant and decreasing input or by deriving greater production from the same level of input. In relation to education, then, we may say that various educational outcomes can result from a variety of different combinations of inputs such as teachers, buildings, class size, curriculum, etc.

The UNESCO definition for educational efficiency is: An ability to perform well or to achieve a result without wasted resources, effort, time, or money (using the smallest quantity of resources possible). Educational efficiency can be measured in physical terms (technical efficiency) or in terms of cost (economic efficiency). Greater educational efficiency is achieved when the same amount and standard of educational services are produced at a lower cost, if a more useful educational activity is substituted for a less useful one at the same cost, or if unnecessary educational activities are eliminated (Vlăsceanu et al., 2004, p. 38). Wojtczak (2002) defines that, greater efficiency is achieved where the same amount and standard of services are produced for a lower cost or if a more useful activity is substituted for a less useful one at the same cost.

This paper discusses efficiency as a one dimensional objective of higher achievement level with less cost (i.e., more efficient systems are able to achieve more from a given set of inputs). As one can see, this paper discusses productive efficiency - that is getting education at the least cost (Hoxby, 96).

The one dimensional point of view towards equity or efficiency is not sufficient as it fails to capture the nature of education. For instance, King Rice (2004) claims that, accountability systems generally include some consideration of the distribution of students' performance. She points out that, policy makers are concerned not only with average learning. They are also concerned with the achievement distribution by setting an absolute level of academic proficiency.

In light of King Rice's position and concomitant with Reich's (2007) conceptual view on the issues of equity and adequacy in the state's provision of education at the State of California, one can say that this against average and pro distribution view of the educational system is to be of great interest to states with large proportion of minorities in the entire population. Likewise California, for example, there are other states such as Florida, The Netherlands, The United Kingdom, and Israel that can assist in illustrating this diverged society. However, this paper is moving as one of its leading theses that the focus on distributional attitude towards equity and efficiency should not be concentrating on setting a proficiency level and standardization of education. It should rather be on the improvement of the achievement distribution by monitoring the relationship between level features, and diversity features of the distribution. King Rice refers to the distribution approach by the following two claims below.

King Rice (2004) has two claims. The first one is that the current system of accountability includes considerations of the distribution of students' performance. In her second claim, she also has stated that analyses attempting to assess efficiency must take care of the consideration of the distribution of performance rather than to focus only on students' levels for average

achievement. She finally argues that understanding the process of education for different kinds of students and schools has the potential to contribute to both equity and efficiency. However, one has to take into consideration that equity and efficiency should be defined in terms of demonstrated progress by all student groups.

Improvement

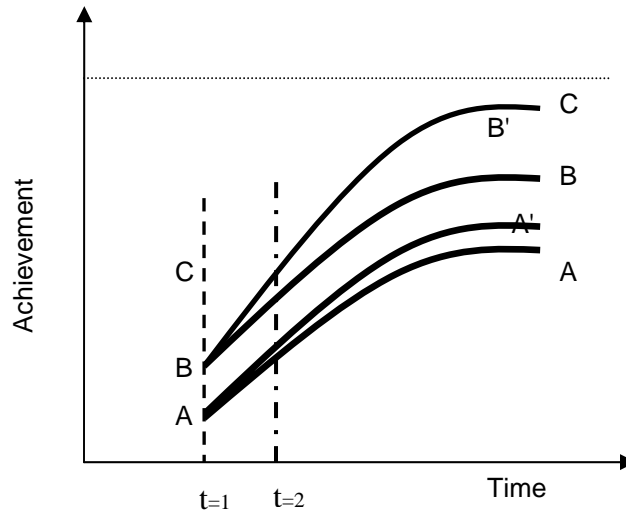
The understanding of education as a process of improvement, comprises of two-dimensional objective of making progress in education achievement distribution, whereas one dimension is the level of achievement and the other dimension is the diversity of achievement, is involved with a conceptual change of educational equity and efficiency. The relationship between these two dimensions of the educational achievement distribution is not a linear relationship but rather an inverted U shaped curve (BenDavid- Hadar, in press). The trend of the relationship is determined by the starting points. Therefore, with students that happen to have low starting points, one will have to understand that their improvement will be defined as higher level of performance and wider achievement gaps. Conversely, for students with high starting point, one can infer that it is defined as higher level of performance and lower achievement gaps.

The above fragmented view on the definition of equity and efficiency leads one to wonder on the trade- off between these two issues, and to the following question. Whether striving to achieve equity must be at the cost of departure from efficiency? This question adds complexity on the solution of narrowing educational achievement gaps in state-funded schools. It also demands to provide a new and uncommon alternative but with a sustainable definition for equity and efficiency at the knowledge-based economy of the XXI century. As a sequel from the above paragraph, this subsection deals with the conceptualization of a new definition of equity in a graphical format to illustrate the new definition based on the economics of education.

As derived from Checchi (2006), the aim of education is to promote every student from his or her current starting point upwards, from the left to the right on his or her own improvement curve. In this sense, students' productivity differs according to their starting points and in their slopes (delta) of progress on their improvement curve (Figure 1).

Figure 1 is a graphical representation of an improvement curve on the student level that can also be understood as the micro level. Students vary in their starting points as they are represented in Figure 1 by the points A, B, and C on time $t=1$, as well as in their progress rate (delta), that is represented on Figure 1 by the slope of the curves. For example, students type A have a low starting point and can be considered as under achieving. They can have different progress rate where AA is a student with a slower progress rate with comparison to AA' which is also a student with the low A starting point however he has a faster progress rate. Students type C have a high starting point and can be considered as excellent students, as type B who happen to be average students.

FIGURE 1
GROWTH CURVES

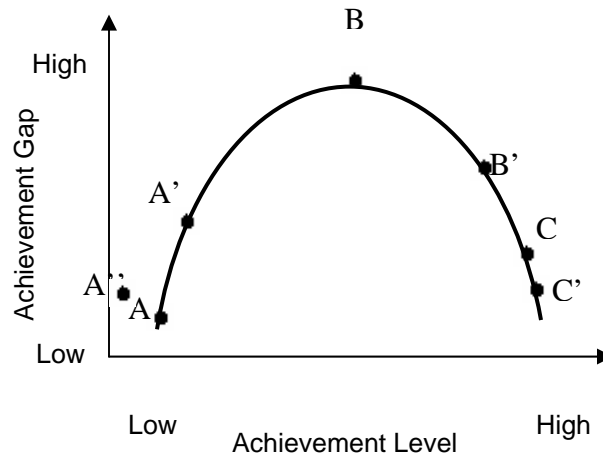


School finance that is based on adequacy, as in providing minimum proficiency level for all students, would keep the existing diversity in student starting points as different students have different needs to study the same curriculum. This SFP neglects equity as budget is allocated regardless of students needs. School Finance that is designed on needs- based resource allocation can create an alleged unified starting point as larger budget is allocated to lower starting point type of students, however, it is not designed to generate a progress. This SFP neglects efficiency as larger budget is allocated regardless of whether improvement was actually made or not¹.

Figure 2 is a graphical representation of an improvement curve on the state level that can also be understood as the macro level. The achievement distribution of each group or school at a state is represented by a point on Figure 2. Controlling for students' background characteristics such as ethnicity, socioeconomic strata, and geographical origins, let us assume that the costs are given and fixed, in this way efficiency means increasing the level of performance. While equity means narrowing the achievement gap, the relationship between them is not a linear one. It is rather an inverted U shape curve. The meaning is for the low level of performance. Efficiency is the increasing level of performance for a given set of costs that is involved with a low level of equity. This level of performance needs to be understood as widening the achievement gap. While for high level of performance, it is involved with high level of equity (see Figure 2).

¹ progress is illustrated as moving from the left to the right on the micro level growth curve (for example, moving from time $t=1$ to time $t=2$ on Figure 1)

FIGURE 2
THEORETICAL EDUCATION CURVE - ACHIEVEMENT LEVEL VS. GAP



The case A: Achievement distribution of the type A represents students, who happen to be underachievers, and where the level of achievement is low and the achievement gap is narrow. For this group progress and improvement mean to increase the level of achievement and to widen the achievement gap as a way of moving towards point A'. However, if the group is moving towards point A'', where the level of achievement decreased and the gap is wider one can say that there is not a defined improvement.

The case B: Point B on the curve represents average students with middle-range level of performance and wide achievement gap.

The case C: Point C represents excellent students where the level of achievement is high and the achievement gap is narrow. For both B and C type of educational achievement distributions (EAD) improvement is defined as higher level and narrower gap. For all the EAD improvement is defined as moving along the improvement curve from the left to the right. (This relationship is discussed in greater details in BenDavid- Hadar, and Ziderman, forthcoming).

An international comparative point of view provides an interesting scope for this discussion on educational improvement. Different countries' educational achievement distributions are represented by different points along the line of the Improvement Education Curve as seen in Figure 3. The number at the left side of the state name represents the average score of a certain state at the PISA international examination in science (2007). The number at the right side of the state name is its standard deviation.

FIGURE 3
IMPROVEMENT EDUCATION CURVE- ACHIEVEMENT LEVE VS. GAP

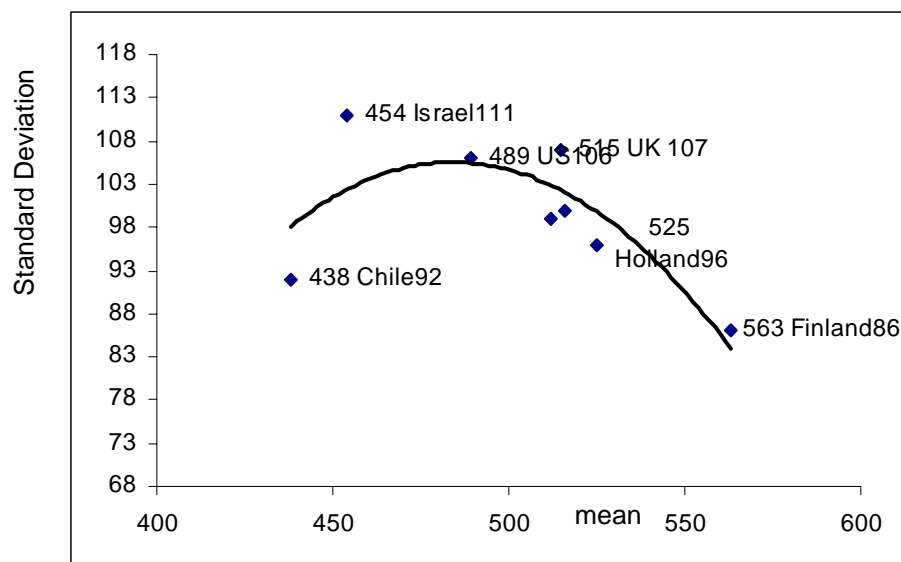


Figure 3, is an application of the above theoretical Figure 2, using PISA data (2007) on Science test scores where the OECD average was 500. We can see that Chile is on the leftmost side of the curve. The left side of the curve is represented by an EAD which is comprised of a low level of achievement with comparison to OECD's and a narrow achievement gap. It resembles type A when it is looked from the point of view of EAD (on the theoretical Figure 2). Finland, on the other end of this figure, has an EAD that is represented by high level of achievement and narrow achievement gap which almost overlaps with the type C of EAD (on the theoretical Figure 2). These two countries represent polar of the curve, while the rest of the countries' EADs are represented by the continuity along the line in Figure 3.

DECENTRALIZATION

The ways in which public primary and secondary education is financed and delivered vary greatly throughout the world. One only needs to look at these three following countries to have a rough understanding of this issue: France, the United Kingdom and the United States. In France, as derived from Bradley and Taylor (2002), one can say that education is highly centralized at the level of the national government. By looking at the paper of Adnett et al. (2002), it is also easy to help one to understand that in the United Kingdom there is a quasi market in regards to education. However, the American educational policies that have been implemented by different government administrations since the implementation of the elementary and secondary act of 1965, one can say that in the United States education is mainly the responsibility of local school districts.

Assisted by Metz (2003), one can also say that this process of decentralization in the United States has been accelerated in twofold. First, the USA federal office of education was dismantled under the administrative principles of devolution of power to the local levels after the 1980s. The

second approach is the decentralizations of state-funded schools via the instrumentation of charter schools and under the umbrella of the USA federal policy.

As defined by English (2000), decentralization is the growing emphasis on the school-based decision to control itself. For the purpose of this paper decentralization, it is understood as the transfer of decision-making authority closer to the consumer or beneficiary. A popular definition is based on the form to give additional responsibilities to schools. This is often called school autonomy or school-based management and may take the form of creating school councils and giving to them budgets and the authority to make important educational decisions.

According to Metz and English, what seems to be lost from these dialogues 'is the fact that school-based decision making is not an end in itself. Rather it can be a better means to the end of improving student achievement.' English further stated that 'research has yet to document a clear relationship between school based decision making and improved academic achievement for students'.

While Metz presents a sociological understanding of efficiency based on school decentralization that is based on the USA political expediency to placate racial tensions from the 1960s to the 1970s, English presents this issue of school decentralization from the position of the theory of the efficiency of an organization (i.e., theory of the firm/ corporation based on an accounting system or General Accounting Acceptable Principles a.k.a GAAP as the foundations for the whole idea of accountability in education after 1979).

This paper, however, will focus below on the dynamics of economics of education to provide equity and efficiency in the context of school site-based management for the managerial economics as it presented for the service industries of which school finance is one of them. As derived from Bowers (1994), however, this is the fundamental difference from manufacturing industries. In doing so, one can say that the principal in the modern context of school decentralization needs to look not only to the technical, but also to the political implications of his or her position in the distribution of resources.

The measurement of education decentralization in this paper is by looking at the percent of educational revenues that come from non governmental sources. Using this measure, education is highly centralized in countries such as Finland, and the Netherlands, and highly decentralized in countries such as, Chile, the United Kingdom, and the United States (see Appendix Table 1, Column 4).

The rationale for education decentralization tends to be associated with improved efficiency. Schools that enjoy public funds are considered less efficient (Education at a Glance, 2007, Table, B 7.2 p. 268). One of the potential benefits of decentralization is increased accountability, resulting in improved efficiency in the use of school resources. The improved efficiency results from increased outputs relative to resources or expenditures.

Efficiency means a major productivity and is expressed in the ratio between Outputs/Inputs. Chile is an example of a country where education was decentralized to local governments primarily in the pursuit of greater efficiency to overcome their political pressure that was not different from those other government administrations that were giving priority to a quasi centralized planning in the context of the development of their welfare state.

The effects of education decentralization policies on educational outcomes are to increased parental participation, and increased student learning by a significant, but small, amount. An Israeli research on School Based Management (SBM) shows that significant differences exist between schools of low and high socio-economic backgrounds in the relative amount of incomes coming from parental payments. (Nir and Miran, 2006). This study points out the danger

inherent in decentralization for educational equity and highlights the significance of a compensating formula. It may be explained in considering the share of parental payments of the total school income is the main contributing factor for the income inequity among schools.

FIGURE 4
DECENTRALIZATION OF SCHOOL FINANCE VS. EQUITY

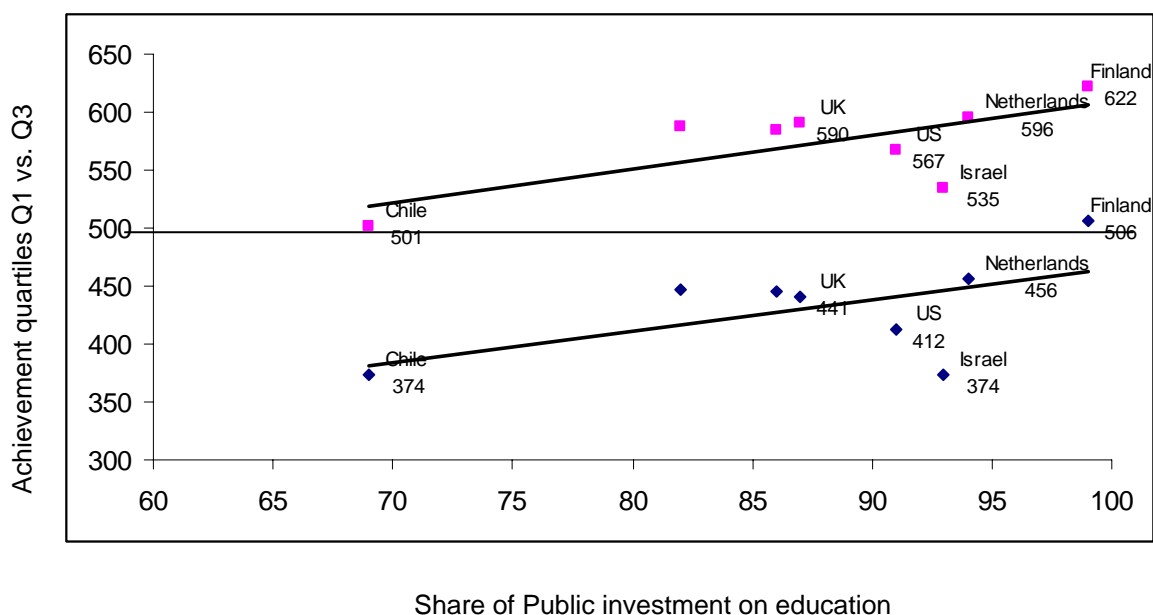


Figure 4 presents the relationship between *decentralization* of school finance (i.e. the share of public investment on education out of the total national investment per a student as presented on Appendix Table 1, Column 4.) and *equity* in its new concept of improvement in EAD (i.e. the level of achievement measured by the average score in science achievement on the PISA 2007 as presented in Appendix Table 1, Column 1, and the achievement gap measured by the lowest and the highest quartiles of science achievement on the PISA 2007 as presented in Appendix Table 1, Column 3). There is a positive high correlation between centralization and equity (r pearson = 0.7**).

Finland set an example for this positive relationship. It is located on the right high end of Figure 4, which represents a high level of achievement (the average score of Finland's students was 563 higher than the average score of the OECD's which was 500, Appendix Table 1, Column 1) and a narrow achievement gap (as reflected by the small ratio between the highest and the lowest quartiles of achievement that was calculated as 0.23, Appendix Table 1, Column 3). The less achieving students in Finland achieve similar to the average students of the OECD's. This high level of educational *equity*² in Finland is accompanied with high level of *centralization* as SFP in Finland is totally public.

Chile set a controversy example for this positive relationship. It is located on the left low end of Figure 4, and is represented by a low level of achievement (the average score of Chile's students was 438 lower than the average score of the OECD's, Appendix Table 1, Column 1) and narrow achievement gap (as reflected by the small ratio between the highest and the lowest

²Equity in its new concept of an improved EAD.

quartiles of achievement that was calculated as 0.34, Appendix Table 1, Column 3). The best achieving students in Chile approach the average score of the OECD's. This low educational *equity* of Chile is accompanied with high level of *decentralization* of school finance.

These two examples represent polar. In between these two ends of Figure 4 we see that there is a trade-off between school finance *decentralization* and educational *equity* in its new concept. For example, the United Kingdom, and the Netherlands, resemble in their diverse societies, and large proportion of minorities, however they differ in the way they finance their schools. In the UK and after the last decade market reforms SFP is more *decentralized* as only 86 percent of school finance is public (Appendix Table 1, Column 4) and less *equitate* (their average score is close to the average score of the OECD's and is 515; and as reflected by a large ratio between the highest and the lowest quartiles of achievement that was calculated as 0.34, Appendix Table 1, Column 3) as the achievement gap is widening (Bradley, and Taylor, 2002).

Controversy, in the Netherlands SFP is *centralized* as 94 percent of school finance is public (Appendix Table 1, Column 4) and *equitate* (their average score is higher than the average score of the OECD's and is 525; and as reflected by the smaller ratio between the highest and the lowest quartiles of achievement that was calculated as 0.31, Appendix Table 1, Column 3).

Another interesting example is the US and Israel, both resembles by their trend of *decentralization* (91 percent and 93 percent of school finance is public for the US and Israel respectively, Appendix Table 1, Column 4); and by their low educational *equity* as reflected in their low level of achievement which is lower than the average of the OECD's (489, and 454 for the US and Israel respectively, Appendix Table 1, Column 1), and by their large achievement gap (measured by the ratio between the highest and the lowest quartiles of achievement that was calculated as 0.38, and 0.43, for the US and Israel respectively, Appendix Table 1, Column 3).

Based on the above rational tour, this paper moves itself to present a new SFM (school finance mechanism). This mechanism is designed to achieve equity in its new concept of improvement in achievement distribution by allocating school resources according to students starting points as well as incentives to the progress they made while keeping the government as a key player in the education arena.

As derived from the UK experience privatization of education finance (i.e. lower share of public investment and higher share of private investment on education) is a key for less equality, wider achievement gap that leads toward segregation in society. Moreover, Bradley and Taylor (2002) state that there is a trade-off between equity (i.e. narrower achievement gap) and efficiency (i.e. higher level of performance at the same cost) as the relationship between them is linear and negative in the meaning that the more efficient SFP is the less equitable it is.

One claims, however, that talking about educational efficiency or equity cannot be on a one dimensional scope, it should be at least two dimensions with respect to students starting points and to the slope on their growth curve. Claiming that efficiency means raising the level of achievement using the same resources is not appropriate for the educational arena. Therefore, we claim that the new definition should focus on the question of how does one manage to allocate resources in a way that improve educational distribution? Then, the question is this: How does one allocates resources to generate improvement in education?

Therefore, the SFM presented here that is designed to improve the educational achievement distribution while kipping the government as a key player in school finance is more efficient and more equitable.

SCHOOL FINANCE POLICY

The aim of education is to promote every student from his or her current starting point upwards. From this point of view, every student will go from the left to the right on his or her own improvement as reported in the achievement curve. Now one can see that students differ in their starting points and in their slopes on their improvement curve. Then, striving to achieve the new concept of equity i.e. to make an improvement for every student requires that one improves the understanding of two features that composite in the school funding formula.

To further advance this understanding of the school funding formula, it requires the compensating of those students with the lower starting points. It also requires the encouragement of them to generate progress on education the improvement curve.

It is also interesting to note that the first component refers to needs- based allocation per a student. This means that the budget follows each student's needs, and that the larger budget is allocated to students according to their current background features. For example larger budget will be allocated to students whose parental education is low. The second component will be based on incentives for improvement of a student's performance as he or she goes along with clear delineated support to achieve equal educational opportunity. The incentives for improvement will be based on measuring the slope or the delta on the improvement curve. This combination of compensation for students with low starting points and the fact of giving incentives to encourage their progress will help to achieve equity in its new concept.

This school funding formula is designed to achieve equity and efficiency in a centralized system. For some students, the governmental requirement of a minimum level proficiency is the only resource that they have and for other students to add to that minimum their parents' investment will compensate to improve their children education. This new reality of understanding the funding dynamics is getting clearer in relationship to the negative impact for decentralized systems of finance. This means that the part of public investment is decreased on education. Now, the national investment will have SBM schools with budget autonomy but with the encouragement to increase their budget from a non- governmental resource.

Therefore, one argues as the second leading thesis in this paper that within the centralized SF the government should fund education to include incentives to progress throughout the mechanism embedded in school funding formula. In doing so, this will generate the shift toward an improved educational achievement distribution. The incentives for progress will be based on schools' value added. As explained below value added is a.k.a value creation in the context of pricing for the contribution to the explained variation among students performance. These incentives are going to be allocated to schools that have managed to create a progress in achievement distribution. For students with low starting points in order for them to increase the level of achievement this approach will wide the achievement gap while for high starting point it means increasing the level of achievement while narrowing the achievement gap.

For countries with high proportion of minority students or large proportion of students with low starting points, this approach requires for example the allocation of a higher budget to minority students. In fact, this allocation will benefit these societies in the future as these students will be promoted and can contribute to society's economics growth.

The important point here is that chief decision makers or policy makers in position of centralized system of education need to develop a new understanding that conveys to grasp the dynamic relationship that take place among and within the concept of value, pricing, demand,

and costs to make decisions on the basis of this new understanding to enhance the current competitive advantage and the profitability that derives from a high level of human capital.

REFERENCES

- Adnett, N., Bougheas, S., & Davies, P. (2002). Market-based reform of public schooling: some unpleasant dynamics. Economics of Education Review, 21, (4), 323-330.
- Baker B. D, & Green P. C. (2008). Conception of equity and adequacy in school finance. Handbook of Research in Education Finance, In Ladd, H. F., Fiske, E. B., (Eds.). 203-221. New-York: Routledge.
- BenDavid-Hadar, I. (2008). Inequality in education: investigating the achievement gap in Israel. Education and Society, (in press).
- BenDavid- Hadar, I., & Ziderman A. (forthcoming). A new model for equitable and efficient resource allocation to schools: The Israeli case.
- Bowers, P. H. (1994). Managerial economics for the service industries, New York: Chapman & Hall.
- Bradley S., & Taylor J. (2002). The effect of the quasi- market on efficiency- equity trade- off in the secondary school sector. Bulletin of Economic Research, 54, (3), 3007-3378.
- Canton, E., & Webbink, D. (2002). The Dutch education system: Options for institutional reform. CPB Report, 2002/2: The Hague, 26-31. Retrieved on June 9, 2008 from http://www.cpb.nl/eng/pub/cpbreeksen/cpbreport/2002_2/
- Cecchi, D. (2006). The Economics of Education: Human Capital, Family Background and Inequality, New York: Cambridge University Press.
- Dovrat Committee (2005). Report of the National Task Force for the Advancement of Education in Israel, Jerusalem: Ministry of Education. (in Hebrew).
- Downes T. A., & Stiefel L.(2008). Measuring equity and adequacy in school finance. In Ladd, H. F., Fiske, E. B. (Eds.). (2008). Handbook of Research in Education Finance, 222-237. New-York: Routledge.
- English, F. W. (2000). Standards and assumptions of the curriculum management audit. In Frase, L., English, F. W. and Poston, W. K. (Eds.). (2000). The curriculum management audit: Improving school quality. 4-18. Lanham, Maryland: The Scarecrow Press, Inc.
- Friedman, L. M. (1985). History of American law (2nd. Ed.). New York: Touchstone Book.
- Grubb N. W., Goe L., and Huerta L. A. (2004). The unending search for equity: California policy, the “improved school finance,” and the Williams case. Teachers College Record, 106, (11), 2081–2101.

Harris D. N. (2004). Funding Florida's schools: Adequacy, costs, and the state constitution. Education policy studies laboratory. Education Policy Research Unit. Retrieved on January 23, 2008 from <http://edpolicylab.org>

Hoxby C. M. (1995). Is there an equity- efficiency trade- off in school finance? Tiebout and a theory of the local public good producer. NBER Working Paper # 5265.

Hoxby C. M. (1996). Are Efficiency and equity in school finance substitutes or complements? The Journal of Economic Perspectives, 10, (4), 51-72.

Iatarola, P. and Stiefel, L. (2003). Intradistrict equity of public education resources and performance. Economics of Education Review, 22, 69- 78.

Jansson, B. S. (1993). The Reluctant Welfare State: A History of America Social Welfare Policies (2nd. ed.). Pacific, Grove, California: Brooks/Cole Publishing Company.

King Rice J. (2004). Equity and efficiency in school finance reform: Competing or complementary goods? Peabody Journal of Education, 79, (3), 134-151.

Kluger, R. (2004). Simple justice: The history of Brown v. Board of Education and black America struggle for equality. Random House, Inc., New York (Originally published by Alfred A. Knopf, Inc., New York in 1976).

Metz, M. H. (2003). Different by Design: The Context and Character of Three Magnet Schools. New York: Teachers College Press.

Nir A. E., and Miran M. (2006). The equity consequences of school-based management. International Journal of Educational Management, 20, (2), 116-126.

Organization for Economic Co-operation and Development (OECD). (2007). Education at a Glance: OECD Indicators 2007. Paris: Retrieved on January 23, 2008 from <http://www.minocw.nl/documenten/39313286%5B1%5D.pdf>.

Organization for Economic Co-operation and Development (OECD). (2001). The Well-being of Nations: The Role of Human and Social Capital. Retrieved on January 23, 2008 from <http://213.253.134.43/oecd/pdfs/browseit/9601011E.PDF>

Organisation for Economic Co-operation and Development (OECD). (2007). Measuring Student Knowledge and Skills: The Programme for International Student Assessment (PISA) assessment of reading, mathematical and scientific literacy. Paris: OECD.

Odden, A., & Picus, L.O. (2000). School Finance: A Policy Perspective. Second edition McGraw- Hill.

Owens, T., and Maiden, J. (1999). A comparison of interschool and interdistrict funding equity in Florida. Journal of Education Finance 24, (4), 305-318.

Peltason, J. W. (1971). 58 Lonely Men: Southern Federal Judges and School Desegregation. Chicago: University of Illinois Press.

Picus L. O., Goerttz M., and Odden A. (2008). Intergovernmental aid formulas and case studies. In Ladd, H. F., Fiske, E. B. (Eds.). Handbook of research in education finance. 257- 275. New-York: Routledge.

Reich, R. (2007). Equality and Adequacy in the State's Provision of Education: Mapping the Conceptual Landscape, Getting Down to Facts Project. Stanford University.

Ritzen, J., Van Dommelen, J. and De Vijlder, F. (1997). School finance and school choice in the Netherlands. Economics of Education Review, 16, (3), 329- 335.

Rhoads, S. E. (1996). The Economist's View of the World: Government, Market, & Public Policy. New York: Cambridge University Press.

Shoshani Committee, (2001). The Report of the Committee Examining the Budgetary Allocation Mechanism. Israel: Ministry of Education (in Hebrew). Retrieved on June 9, 2007 from http://cms.education.gov.il/NR/rdonlyres/3F2D67A5-0E18-4078-A0F7-D39A81F9FB8F/5660/doch_male1.doc

Vlăsceanu, L., Grünberg, L., and Pârlea, D.(2004). Quality assurance and accreditation: A glossary of basic terms and definitions. Retrieved on January 23, 2008 from <http://www.cepes.ro/publications/Default.htm>

Wojtczak, A. (2002). Glossary of Medical Education Terms, Retrived on January 23, 2008 from <http://www.iime.org/glossary.htm>

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