

Effective cost of school slots and efficient investment

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The objective of this study is to conduct an analysis of the financial costs of compulsory education, according to the different types of centre that teach it, whether public or subsidized private systems. Financial cost is understood to mean the final real cost that each school slot represents for the public sector (whether in public or in subsidized private centres) and which we term effective cost. The proposed study takes into account education's status as a club good and the lack of information on the costs involved in subsidized private education, which are estimated in terms of the opportunity cost they represent for the public sector.

1- REASONING AND OBJECTIVES OF THE PROJECT

The work programme “Education and Training 2010”, established by the European Union to make the Lisbon strategy a reality, sets its first specific objective as improving investment in education by “making better use of resources”. In spring of 2005, the European Council confirmed that greater and more effective investment in human capital lies at the core of this strategy. This study into the effective cost of subsidized private education with respect to public education is presented within the context of European education policies to achieve the three basic objectives of quality, openness and access. Furthermore, it constitutes a response to the request by the European Council in 2006 to carry out more work both at national and regional level¹. And it includes the conclusions of the European Council in December of that year, to promote integrated research and analysis to assist in reforms contributing to greater efficiency and equity in education and training systems.

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¹ *Efficiency and equity in European education and training systems*. Commission Staff Working Document (CE, 8.09.2006).

In most modern states, public expenditure on education represents the second-largest budgetary item after health expenditure.

In the current debate, there exists some controversy both as regards the social costs arising from education and as regards who should pay them. This problem is also related to the evaluation of academic results, educational quality and, in last case, to the serious problem of school drop-out rates. The concept of social cost involves not only economic questions, but also social, demographic and psychoeducational ones. Therefore, any economic evaluation of such costs must necessarily include them in its analysis.

As a consequence of all these interactions, such an evaluation's complexity makes it impossible to approach from a first stage of analysis. Prior studies must first be conducted to quantify essential indicators to enable the analysis, such as the efficiency of different education centres, the distribution of income that may stem from different financing systems or the measurement of educational quality, as perceived both by parents and students and by educators and society in general.

Knowing the final cost of a school slot is a necessary prior condition in order to approach any other analysis of the educational process and, as a consequence, to qualify the conclusions that may be derived by simply comparing results between education centres.

There seems to exist some consensus that subsidized private centres do indeed have less monetary costs for the public sector than publicly-managed centres because they meet costs that are not included in public budgets. The true size of this difference between education managed by the public sector and by private initiative remains to be quantified, along with what this difference would mean for the Treasury.

The objective of this study would be to outline an analysis of the economic cost arising from compulsory education, according to the different types of centres that teach it, whether public or subsidized private ones. Economic cost is understood to mean the final real cost that each school slot means for the public sector (whether it is a public centre or a subsidized private one) and which we shall henceforth term effective cost.

In this initial approach, effective cost includes:

1. Public contribution as set forth in the general state budgets and, as the case may be, regional budgets.

2. Any costs incurred by the school - in the specific case of subsidized private centres - and which must be paid for by the families.
3. Other costs that involve contributions from families which are costs relating to educational productivity not necessarily included in the sections above, such as, for example: possible opportunity costs of the physical and human capital involved.

As mentioned above, the objective pursued –and which, in this project, constitutes an end in itself -, could in fact be considered the first part of an analysis to evaluate the level of efficiency and equity of public investments in education, and propose alternative financing policies (increase in grants, amounts of subsidies or schooling cheques). Educational results have both private and social consequences. Although the positive consequences of quality education are obvious, we must also take into account that every school drop-out means a loss of human capital and therefore both a medium-to-long-term deterioration in competitiveness and capacity for economic growth and development. Furthermore, this reality is often associated with negative externalities such as social exclusion, ostracism or unemployment. All these issues must be taken into account when considering the importance of the education system and its funding. (Commission staff working document. Brussels, 8.9.2006)

2- INTRODUCTION: CHARACTERISTICS OF EDUCATION THAT CONDITION COST ANALYSIS

One of the general concerns for any Public Administration is to have detailed knowledge of the costs involved in its activities and the alternatives available with respect to proper resource management. When analyzing any public policy, we have to take into account the characteristics of the assets with which, or upon which, such policy is applied. These characteristics determine the need for and extent of public intervention and, in many cases, the mechanisms by which it is carried out. These policies' peculiarities comprise the key factors that must be considered in properly managing resources: educational policy is not an exception to these rules.

As a result, we believe it is essential to be aware of the characteristics that determine education as a good, especially those relating to the cost analysis examined here.

Without wishing to present an extensive treatise on the reasons that lead to public intervention, we do think it is relevant to bear in mind that we operate in market economies, where the State acts to correct its failures or as a provider of the necessary goods that the economy cannot. The market, in general, fails for numerous reasons, preventing optimal levels of balance from being achieved in consumption and in production. In short, the market fails for reasons both of efficiency in assigning resources and for reasons of equity. And the majority of public interventions are justified for both reasons. Education is just such a case.

As regards efficiency, some examples of market failures are the lack of complete markets, information problems or the existence of monopolies and publicly-owned goods. Another general cause for public intervention is the existence of externalities or interferences by the actions of individuals (consumers or manufacturers) in the utility or productivity functions of others, increasing their welfare or productivity (positive externalities) or reducing it (negative externalities). The greater or smaller the externalities are, the greater or smaller the market failure. If the externalities are positive, the market produces less than the efficient quantity, possibly even failing to produce it, when the good is a pure externality. This last scenario is the case of pure public goods, ranging from different degrees of rivalry in consumption up to private goods in which there exists no type of externality and the market can operate efficiently.

One explanation for the existence of pure externalities (e.g. when consumption by one individual affects the consumption of all others) is that they occur because the simple fact that the good is available for a single individual allows full accessibility to everyone else to consume the good. In other words, in the case of consumption, if just one individual assumes the production cost of a good or produces it himself, the rest can have access to consume this good or benefit from it without having to pay for it, as there is no way to oblige him to pay and/or prevent him from having free access to such consumption. In economic terms, this establishes two of the characteristics that are inherent to public goods: combined offer or non-rivalry in consumption (the good is offered to everyone at the same time and everyone participates simultaneously in its consumption) and (near-) zero marginal cost of an additional individual's consumption (although the number of individuals who consume the

good increases by one unit, the cost for everyone else does not increase - they do not perceive a drop in its utility). Both characteristics have the effect that everyone consumes the same quantity of the good without anyone preventing anyone else's consumption. In short, these goods are said to exhibit no rivalry in consumption. Such characteristics, together with the impossibility of knowing how each individual values the public good, prevents an optimal market price from being established, which is a market's catalyzing factor.

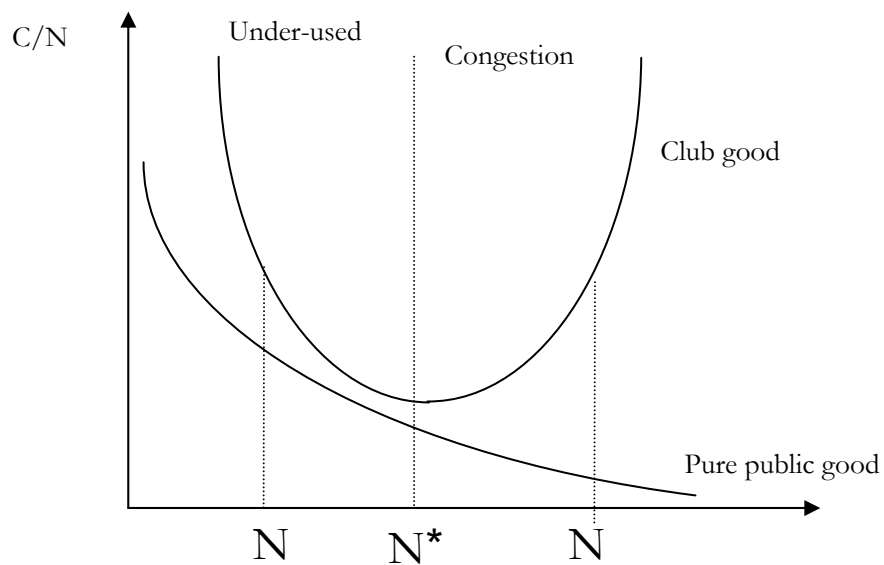
By comparison with these goods, which are, in any case, very rare (a prime example of a pure public good is air, along with Defence, Justice or Public Administration), those of an intermediate nature are more prevalent. According to the level of combined offer (number of individuals who consume at the same time) and to how impossible it is to apply an individualized price, goods require a greater or smaller scope of public intervention, from the point of view of efficiency. Thus, we have goods on a national, regional or local basis.

There exists a specific group of goods more or less characterized by a collective offer for a more or less reduced group of individuals, and which are called "club goods". Examples of these goods include swimming pools or buses and, precisely, education. Consequently, education exhibits the characteristics of what is known as a "club good". This is a key feature of education as a good, considerably affecting its cost. In terms of what a "club good" consists of, a partial rivalry is created in such a way that, from a certain number of individuals upwards, each additional individual diminishes consumer utility for the rest, but not below that number. These goods fall within the group of those that could be affected by congestion. The term "congestion" refers to such loss of utility that may occur from a certain point upwards. There are more goods with partial rivalry in which congestion appears, such as local public goods (fire service, police...), or variable-usage goods and services (roads, bridges,...). In this last case, it is the possibility of excluding from consumption through price that determines whether or not a market exists. Although there are several reasons for public intervention in this field and the majority are based on arguments provided by the existence of varying degrees of externalities and by equity, what genuinely matters for the purposes of our analysis are the characteristics that constitute the concept of "club good".

The most important characteristic of club goods, such as education, is that the utility or benefit obtained depends on the number of users. On one hand, economies of scale are created by reducing the cost of

providing the service through combined consumption, although as of a certain number of users this cost saving is offset by increased costs caused by the loss of utility due to congestion. Consequently, the number of users that creates equality in these values would be the optimal number. Theoretically, the “when the per-person tax price just equals the. marginal congestion costs” (Boadway y Wildasin, 1986, p. 147). That is, the average cost curve reaches a minimum, which means using the club good at its optimal level. An example of this is shown in graph 1.

Graph 1: Cost of providing a club good



Where N represents the number of individuals who consume the good and C/N the average cost curve. As may be seen, once the good exists, the service's use by N_1 individuals is not an optimum, because the good would be under-used. The number of users could be increased to a zero marginal cost, so that average costs would decrease. While in a pure public good this trend would be maintained indefinitely, in a club good there exists an optimal N^* that minimizes the average cost curve. From this point onwards, additional individuals would increase the average cost curve due to utility costs arising from service congestion or to the fact

that it would be necessary to finance the good's increase to prevent a drop in quality.

However, this equality between price and marginal cost for an optimal number of users occurs at an arbitrary production level. Proper provision in real life must take into account optimal production level, optimal number of users and the good's production cost. If exclusion (price fixing) were possible without problems and costs were constant with a sufficiently high number of individuals, there would be perfect conditions of competition, allowing the market to provide optimal quantity to optimal number. In reality, the market is able to provide a certain combination of private club goods.

The varying reasons -both in terms of efficiency and of equity - for those provided publicly by education in co-existence with the private market, prevent the mechanisms of perfect competition from acting. Under these conditions, we cannot know the optimal production values nor the optimal number of users. However, an approximation of these values would help us know the cost of education; furthermore, education costs cannot be examined without bearing in mind that they will depend upon the number of users of each club good that makes up the classroom.

This argument is the basis of our analysis. We bear in mind that costs are closely related to the optimal number of service users for a specific level of education and, within this, to a specific level of educational results or quality. Therefore, cost per student will represent the average cost of the classroom up to its optimal size and, from then on, cost per student will increase by adding the loss of utility due to congestion to the costs of providing the service. Costs up to optimal size for a given educational productivity, from a theoretical point of view, would be the same regardless of the type of public or private production and how this is financed, by the public sector or the private sector.

However, as mentioned above, in fact, we do not know the optimal number of users, so we have to use an approximate value. We have several alternatives for making this estimate: assume that the optimal size is the legal one, or, alternatively, that it is the average classroom size in publicly-managed public schools or privately-managed public schools. We do not compare with privately financed and operated schools, as this introduces further variables that diminish the credibility of the assumption that educational characteristics are the same (there may even

be differences in curricula, apart from other aspects that would influence academic results²).

In the lines below, and considering the issues discussed, we shall develop the methodology used.

3- METHODOLOGY FOR CALCULATING THE OPPORTUNITY COST OF SUBSIDIZED PRIVATE EDUCATION

We have seen that one of the key factors in calculating costs is optimal size. In order to work out cost per student, it would first be necessary to calculate the cost per optimal size and then we would have to distribute the costs among the number of students in the group.

To make these calculations, we know the real costs of public schools but not those of subsidized private schools. In view of the lack of data on the real costs of subsidized private centres by breaking down their budgets, we have opted for estimating them by calculating what would be the cost of subsidized private education if the cost values of public education were applied. This type of analysis would be a study on the opportunity costs of subsidized private education, as an estimation of its effective cost.

Studies based on the concept of opportunity cost, whether costs or revenues, are based on giving the unknown the value of the known alternative. For example, if we wish to assign a monetary value to leisure, we must find an aspect of it that gives an approximate evaluation. Among the different alternatives available, we can evaluate it as the cost incurred in devoting time to leisure instead of to the alternative, which would be to use this time for work. In other words: the alternative to leisure is work and, in this case, leisure is valued by the alternative, which is the result that would be obtained by devoting leisure time to work. The value of a hour of leisure would then be the income obtained from one hour's work. What it costs us to devote time to leisure is what we fail to earn.

² Factors relating to environment, parents' level of income, etc.

In the education scenario under analysis, we do not know the real cost of subsidized private education and evaluate it with the alternative that we do know, which is the cost of public education. In order to make the comparison, benchmarks must be homogeneous. In the case of the example used: leisure, this is simple - as the benchmark unit used is homogeneous: time measured in hours - and the cost is measured in lost working hours. In the case in hand, this is more difficult, because there is no automatic transfer as we are confronted with a good that it is not perfectly divisible: education. As mentioned above, in the introduction, where we examine these aspects in detail, the peculiarities of a good such as "education" make it a club good or an "impure public good", so the most appropriate reference value is the group or the classroom, and if we wish to establish a value per student, which is the most generally-used term, we will have to make some corrections.

Therefore, and to sum up, the analysis that we will carry out along the following lines involves two components of complexity: the status of education as a "club good" and the lack of data regarding the costs of subsidized private education, which are estimated by the opportunity cost it represents for the public sector.

In order to carry out this analysis, it is necessary to make a series of assumptions. Only when these are complied with can the results be considered valid. These assumptions were suggested in the introduction, though we specify them below:

1. Firstly, we must assume that the educational results are the same in either case and that, as a consequence, the resulting quality is homogeneous both for public and for subsidized private education. Therefore, we stress that in no way are we making a proposal as regards quality or which education financed with public funds is better: education through public centres or education through subsidized private centres. This type of analysis would require another methodology based on and analysis of the function of educational production and of efficiency at educational centres.
2. We assume that there are no additional costs financed by parents, either in public or subsidized private schools. This means that the only real source of financing obtained for education, both in public and in subsidized private schools, corresponds to the public sector. This assumption is closely linked to the one above. It means supposing that all education

costs financed by the public sector (both in public and in subsidized private schools) are covered by the public budgets.

3. Another assumption we take into account is that the characteristics of the children are homogeneous in every respect. Educational results are strongly influenced by family aspects, social environment, etc. In short, by factors operating outside of school and the assumption of homogeneity in quality should include this. This assumption is also necessary from the point of view of optimal number of users, as different characteristics would cause different optimal numbers. Teachers' attention capacity or dedication cannot be the same if students, in turn, have different capacities caused or influenced by the above-mentioned external factors.
4. A further assumption is that there are no voluntary modifications to the educational system, which could alter the figures we use. This assumption implies that the results are for the years studied and for the total number of existing students. It therefore invalidates the model for making projections such as cost in the event that there were an increase in the number of immigrants at school age, increasing the number of students at all educational levels and almost certainly forcing an increase in the number of students in public centres. This would raise the average number of students in public centres and would affect the result achieved in this analysis, without the real cost per student in subsidized private education varying at all.
5. Finally, it is not assumed the public sector's objectives include guaranteeing freedom of choice of centre, but merely to guarantee the free coverage of compulsory education. Again, this assumption bears a relation to the ones mentioned above. If there exists equality between the educational programmes, between students' characteristics and between centres, as we have supposed, it would make no difference whether we choose one or another, or, in other words, an objective of guaranteeing free choice of centre would make no sense.

Using these assumptions and a series of different hypotheses with respect to optimal classroom size, resulting in a cost value within a range that shows the quantity is not an exact, definitive figure, but rather an approximate value somewhere between a maximum and minimum

amount, caused by the current differences in classroom size between public and subsidized private centres. To a certain extent, this range also reflects the differences between centres and, consequently, the fact that, in reality, not all the assumptions we have presented are met. The most important points refer to the lack of uniformity in the education system, implying different quality levels or results in academic performance, different characteristics of students which affect the point above and different contributions from parents as a complement to public contributions, which are difficult to quantify due to their "voluntary" nature. This non-compliance prevents a single cost value per student from being established, although it does allow an approximation. Such an approximation, however, is quite significant, as it gives some idea of the limits between which the cost varies and offers a reasonably objective evaluation of it. Nevertheless, despite all assumptions made and their non-compliance, as an additional factor to bear in mind would be the fact that presenting the results by giving a maximum and minimum variance/interval is much closer to reality than an absolute value. Logically, considering the range of characteristics that subsidized private centres exhibit, both in terms of ownership (religious or lay) or of equipment (e.g. sports areas), cost values are not established as single figures.

Another alternative, in this line of opportunity cost, from a physical point of view, would be to verify what net cost the public sector would have to face if it were obliged to absorb all the students from public and subsidized private education, with the alternative of having on average the number of students from subsidized private education or with the alternative of having on average the current number of students from public education. This evaluation would be one of the closest to the concept of opportunity cost that we have initially presented.

To calculate the opportunity cost, we propose the hypothetical situation that the public sector were obliged to assume all the students currently taught in subsidized private education. How do we carry out the hypothetical redistribution of students in public centres? Do we incorporate them into existing centres or do we build new centres? What impact does this choice have on costs? We shall postulate three hypotheses which could reflect different realities of the current capacity of public centres on the different levels.

HYPOTHESIS 1: Existing schools have enough physical capacity to incorporate every student from subsidized private education.

HYPOTHESIS 2: Current public centres can only absorb half of the groups from subsidized private education. The other half would have to be taken care of by creating new schools.

HYPOTHESIS 3: The public system does not have capacity to absorb any students from subsidized private education in currently existing schools, so these students would have to be taken care of in new schools.

Once these costs per student have been calculated, it is easy to work out how much subsidized private education costs or saves the public sector. We compare total costs calculated according to the concept of opportunity cost with the amount of the subsidy. If the subsidy amount is greater there is no saving; but if it is lower, the difference represents the saving involved for the public sector that takes place in public education through subsidized private centres. As cost per student is not an exact value, the resulting saving or cost cannot be an exact figure either, but a value that ranges along a spectrum, as mentioned above. The result would involve the idea that some subsidized private schools make a genuine effort in funding and saving while others do not.