

A comparative perspective on the effectiveness of public schools and private schools

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Abstract

This article analyzes the effectiveness of public, private, government dependent and private independent schools in 19 OECD countries using PISA 2000 data, which shows the educational achievements of 15-year-old students in reading and math. In a multi-level approach, we check step by step for sociological and demographic characteristics of pupils and parents, behavioral and attitude characteristics of pupils and parents, school composition, teaching and learning conditions of schools and the school climate. Our analysis clearly shows that private government- dependent schools are more effective than comparable public schools with the same pupils, parents and social composition. The main explanation for this higher effectiveness is the better school climate in the first, compared to the second. The different learning and teaching conditions in private, government dependent and public schools do not explain the differences in effectiveness. Our analysis also shows that private independent schools are less effective than public schools with the same pupils, parents and social composition. The most important explanation for their initially higher effectiveness is the better social composition of these schools. These effects are more or less the same in these 19 OECD countries.

Key Words: Public Schools, Private School, Educational Achievements, Social Composition

Introduction

The effectiveness of public and private schools has been the subject of numerous studies in the educational sciences, sociology, and economics, not only in the US but also in Europe. In this literature, the distinction between public and government-funded schools, private but government-funded schools (often religious schools) and private and government-funded schools is particularly important. First, in many countries, these three types of schools coexist, especially in Europe where this was the unintended outcome of the 19th-century struggle between state and church(s). Second, the functions of these three types of schools differ greatly whether along social, cultural, religious, or ethnic lines. Third, the distinction between publicly owned and funded schools, and private but

publicly funded schools, also pertains to current policy debates about organizing and financing public goods such as education.

While there are many exceptions, the general trend of this study of the effectiveness of private and public schools can be summarized as follows:

private but publicly funded schools (often religious schools) are more effective in cognitive outcomes than public or publicly funded schools, even after adjusting for the social and cultural makeup of these schools; private and publicly funded schools are less effective in cognitive outcomes than public and publicly funded schools, but only after controlling for the social and cultural makeup of these schools.

Although the effectiveness of public and private schools is relevant to almost all OECD countries, no comparative study has been done on the differences in the effectiveness of different types of schools. This lack of comparative research is partly due to the dominance of US research on the subject, and partly to the strong nation-state orientation of the social sciences. Yet another contributing factor may be the political sensitivity of the potentially lower effectiveness of public schools, especially in Europe. The only overview available is that of Dronkers (2001), who discusses the differences in effectiveness between state-funded schools and public schools in several country studies, including Belgium, France, Germany, Hungary, the Netherlands, and Scotland.

However, there is a need for comparative research, because to explain the cause of this difference in effectiveness between public and private schools, there must be sufficient variation of different school characteristics. Since this variation within a single state is often lacking, for example, due to national regulations limiting variation between schools, studies in a single country may not reflect the 'true' effect of private and public schools.

Our objectives in this article are therefore threefold. First, we will conduct a systematic empirical test of the degree of effectiveness differences in reading and math achievement of individual students in public and private secondary schools in 19 OECD countries, controlling for student and parental characteristics. Second, we will try to explain these differences in effectiveness through the different characteristics of schools. Third, we test whether these differences in effectiveness are the same across the 19 OECD countries. For these analyses, we use data from the OECD's PISA 2000 study, which is currently the best data available for such an international comparison.

Public Schools, Private independent Schools, and Private Govt. Dept. Schools

Due to the struggle between church and state within many European societies, modern private schools can have different relationships with the state. The most fundamental aspect of this relationship is the extent to which private schools are funded by the (local, regional, and national) government, in addition to tuition fees, donations, sponsorships, and fundraising by parents. In several societies, private schools are legally entitled to state funding, provided they meet certain conditions. In some cases, this right is enshrined in constitutional law (Germany, the Netherlands), while in other cases it is conferred by ordinary law (France, Hungary). This right to state funding of private schools also means a limitation of the autonomy of the state-funded private schools. While these restrictions differ from society to society and vary with the level of government funding, it can be said that in general, this reduces the autonomy of these schools concerning their curriculum, mode of examinations

In addition to these government-dependent private schools, private schools exist in several OECD countries that do not receive funding from the (local, regional, or national) government. Financially they are completely dependent on tuition fees, donations, sponsorship, and fundraising by parents. However, their school autonomy can still be limited in two ways. First, even for independent private schools, authorities could set criteria to ensure a certain minimum quality of socialization for the next generation. Secondly, independent private schools also function within a social context and are partly determined by it. For example, university admission criteria limit the autonomy of a private school's curriculum. However, the autonomy of private schools will be greatest in their student admission policies, especially given the importance of tuition fees in funding these schools. These private independent schools can now be found in sufficient numbers in Austria, Belgium, France, Hungary, Ireland, Italy, New Zealand, Poland, Portugal, Spain, Switzerland, the United Kingdom, and the USA.

Private and public schools

For this article, to study the effectiveness of public and private schools from a comparative perspective, we have selected several countries to be included in the analysis. The selection was based on choosing those countries where both public and private education sectors are developed and which represent a wide range of different types of societies from different regions. We also distinguish between private independent schools and private government-dependent schools. This classification was previously developed by the OECD and applied to the PISA survey. The schools are classified as public or private depending on whether a public agency or a private

entity has the ultimate authority to make decisions about the affairs of the institution. An institution is classified as public if it is (1) directly supervised and administered by a public education authority or agency, or (2) supervised and administered by a government agency or administrative body (board, commission, etc.), most of which members are appointed by a government agency or elected by public suffrage. Conversely, an institution is classified as private if it is controlled and managed by a non-governmental organization (for example, a church, labor union, or business corporation), or if its board of directors consists primarily of members not selected by a public authority. The terms "government dependent" and "independent" refer only to a private school's degree of dependence on funding from government sources; they do not refer to the degree of government control or regulation. A government-dependent private school receives more than 50 percent of its core funding from government agencies. An independent private school receives less than 50 percent of its core funding from government agencies. "Core funding" refers to the funds that support the schools' basic education services. It does not include funds specifically provided for research projects, payments for services purchased or contracted by private organizations, or fees and grants received for support services such as accommodation and meals.

Sociological and demographic characteristics of students and parents Most of the independent variables used to predict student achievement are combined indices developed by PISA. These were also constructed using weighted maximum probability estimates (see Warm 1985) and were standardized to have a mean of 0 and a standard deviation of the international level of all countries. The first set of independent variables concerns the social and demographic characteristics of both students and their parents. In the analysis, we make a distinction between men and women.

Despite a small variation, we will control for a school class and age (measured in months in the data).¹ In line with established traditions of social mobility and status acquisition research, we will include the father's and mother's occupation and education as indicators of social ancestry. Occupation is measured in the data by the International Socio-Economic Index (ISEI) (Ganzeboom et al. 1992), while education is measured by the ISCED scale (OECD 1999).

Multi-level analytics

We use multi-level analyzes with four levels:

Test: reading and calculation results as dependent variables and the standard deviations of the error of these results; 2. Students: student and parent characteristics as control variables; 3.

Schools: government-dependent private schools and private independent schools as two dummy variables and public schools as the omitted reference category; other school characteristics, including social composition as control variables but also freedom of action at the school level as variables to explain effectiveness differences; 4. Country: no specific variables.

We start with an empty zero model with four levels: tests, students, schools, and countries. At the lowest level, we have either reading or math-weighted probability estimates as the dependent variable and the standard deviation of the error of this estimate. The lowest level variance is set at 1.00. This results in a measurement model of the next level of the students (see Hox, 2002). It gives a more reliable estimate of the student's actual score because the model takes into account the measured error.

Model 1 is an extension of this empty null model: we add two dummy variables to the school-level equation:

Private Government-dependent schools (privately dependent) and private independent schools ('privately independent'). Public schools act as the omitted reference category. The parameters of both dummies indicate to what extent pupils within these two types of schools score higher or lower on reading

Model 2 is an extension of model 1: we add all sociological and demographic characteristics of the students and their parents at the student level to the equation. If differences in reading or math scores between students of private independent, private government dependent, and public schools are caused by the differences in the sociological and demographic characteristics of the students and their parents, the parameters of the dummies become 'private independent' and 'private' dependent' should become insignificant.

Model 3 is an extension of model 2: we add the behavioral and attitude characteristics of pupils and parents related to education and schools to the comparison at the pupil level. If differences in reading or math scores between students of private independent, private government-dependent, and public schools remain significant, it can be concluded that the measured characteristics of the students and their parents do not sufficiently explain the differences in reading or math scores between students of private schools. Independent, private government-dependent, and public schools. The results of Model 3 can be interpreted as reliable estimates of the higher effectiveness of both forms of private schools, given the characteristics that individual students and their parents bring to their private and public schools, or develop while attending these schools.

Model 4 is an extension of model 3: we add the social composition of the school population at the school level to the equation. If differences in reading or math scores between students of private independent, private government dependent, and public schools are caused by differences in the social composition of the school population, the parameters of the dummies 'private independent' and 'private dependent' should become unimportant. The results of model 4 can be interpreted as reliable estimates of the higher effectiveness of both forms of private schools, given the composition of the school characteristics resulting from the collective choices of the individual students and parents.

All these models assume that the parameters of the 'privately independent' and 'privately dependent' dummies are defined at the country level. This means that these effects have been estimated assuming that they do not differ significantly between the 19 countries. However, if the parameters of the 'private independent' and 'private dependent' dummies at the country level are significantly arbitrary, then the differences in reading or math scores between students of private independent, private government dependent, and public schools do not hold for a large number of countries. We test for this possibility of random variance of the slope of the 'private-independent' and 'private-dependent' dummies in all models independently and separately, both for reading and math separately, and the results are reported in Table 4b and 4b, respectively. 5b. Finally, Tables 4b and 5b give the relationship between the slope of the dummy in question and the level of the intercept of that model, allowing us to see whether the variations in the slope of the dummy can be explained by a bottom or a ceiling effect. A significant relationship between the slope of the dummy in question and the level of the point of intersection indicates that the slope and point of intersection are not independent. A positive relationship suggests a floor effect: the slope of this school variable is higher if that school's intercept is higher, while a negative relationship suggests a ceiling effect: the slope of this school variable is higher if that school's intercept is lower. We only test the significance of the slope of the 'privately independent' and 'privately dependent' dummies at the country level, but not the significance of the variances of the slopes of other independent variables, which are not the subject of this article. We also do not test the significance of the slope of the dummies 'privately independent' and 'privately dependent' at the school level, because then we only test whether the effect of these schools varies within countries, not whether this effect varies between countries.

Result and discussion

The results for the dependent variable reading scores are in Tables 4a and 4b and for the dependent variable math score in Tables 5a and 5b. Since we assume that the effect of private and

public schools will not differ greatly on these two dependent variables, we discuss the results of the multilevel analysis for both dependent variables together.

Model 0: differences at student, school, and country level

The null model shows the degree of variance at the different levels of student, school, and country. As always, the largest variance of the dependent variables is by student level (60% for reading, 56% for math), followed by school level (36%, 33%) and country level (5%, 11%). However, the variance at all levels is significant and needs to be explained.

The changes in the number of residual variances at the different levels in the different models illustrate that the independent variables explain a substantial part of these variances. The variance at the individual level decreases by 28% for reading scores (from 4397 in model 0 to 3166 in model 6) and by 22% for math scores (2905 to 2267). The decrease in the remaining variance at the school level is even stronger between models 0 and 6: 73% for reading scores (from 2638 to 713) and 70% for math scores (from 1717 to 516). However, the change in residual variance at the country level has an inverted U-shape. It rises sharply from model 0 to model 2 (201% reading (348 to 699) and 132% for math score (556 to 780)) and then slowly drops to model 6 to a level above model 0 (591 for reading, 680 for mathematical score). This sharp increase in residual variance occurs in Model 2, where the sociological and demographic

Such an increase in the residual variance at a higher level is not surprising when important variables at a lower level are included in a multi-stage equation. Nevertheless, such increases indicate that differences in the dependent variables are hidden by differences at a lower level, in this case, the sociological and demographic characteristics of the students and their parents. This means that the differences between the educational outcomes of the countries analyzed are greater than might appear at first sight, but only if the differences in the sociological and demographic characteristics of the students and their parents are taken into account.

Model 1: without any control

The first model of Tables 4a and 5a shows that students in private independent schools and private government-dependent schools have higher scores on reading and math tests than students in public schools. In addition, students in private independent schools score higher than students in private government-dependent schools. Although reported in a different form, the coefficients of Model 1 are analogous to the results of Table 1. However, these differences are not yet a reliable indicator of the higher effectiveness of private independent and private government-

dependent schools, because these schools also have different learners and parents, and a different composition of their population. Tables 4b and 5b show that these different effects of private independent schools and private government-dependent schools do not differ significantly between countries. The variances of the slopes are not at least twice as large as their standard errors, and so the variances of the slopes do not deviate significantly from the country-level fixed coefficient.

Models 2 & 3: controlling for pupil and parent characteristics

In models 2 and 3 we control the effects of private free schools and private government-dependent schools only for pupil and parent characteristics. The sociological and demographic characteristics of the students and their parents (Model 2 in Tables 4a and 5a) do not fully explain the higher reading and math test scores of students in private independent and government-dependent schools, but these variables roughly explain half of the original benefits on students' reading and math tests in private independent schools and private government-dependent schools. Therefore, the differences in these characteristics between schools only partially explain the higher effectiveness of private independent schools and private government-dependent schools.

We do not discuss the effects of the various control variables, both because they are mostly self-explanatory and because of space constraints. We only discuss those results that are counterintuitive or that provide more insight into the possible causes of the higher effectiveness of free independent schools and free government-dependent schools. The effect of parental wealth is significantly negative, but this is only true because we have strong controls for the social and cultural characteristics of the students and their parents. This simply means that high reading and math scores depend on the social and cultural characteristics of students and their parents, and that family wealth in itself can be more of a hindrance than an advantage given these social and cultural characteristics.

The parameter parenting support of the family is negative, which might lead to the strange conclusion that families should not support their children in education. However, this support measures, among other things, how often the student reports that the parents help the student with homework. This parental help is normally more frequent when school results are low, and is more or less absent as long as school results are good. This revised causal direction may explain the negative parameter.

The behavioral and attitude characteristics of students and parents concerning education and schools (model 3 of tables 4a) do not change the higher scores on reading and math tests of

students in private independent and private government-dependent schools, compared to the scores in model 2 (using only sociological and demographic characteristics of the students and their parents as control variables). This does not mean that the behavioral and attitude characteristics of pupils and parents related to education and schools are unimportant for the prediction of the level of scores on reading and math tests. It just means that they are irrelevant to explaining the higher effectiveness of private independent and private government-dependent schools.

The negative sign of the teacher support coefficient can be explained in the same way as that of family parenting support, namely by a revised causal direction. An increase in help from teachers is often more related to poor school results than to good results. The negative signals of the school discipline climate and performance pressure variables will only surprise those unfamiliar with the didactic literature.

The results of Model 3 can be interpreted as reliable estimates of the higher effectiveness of both forms of private schools, given the different characteristics that individual students and their parents bring to their private and public schools, or develop while attending these schools.

Model 4: checking for school Composition

In model 4 we control for the social composition of schools. This is an essential step in assessing the effects of schools, as the (self) selection and allocation processes of schools and parents mean that the social composition of schools will differ greatly. This differential social composition will help determine the opportunities within schools to teach and learn at a given level, independent of the individual characteristics of students and parents, as it affects the actual time spent teaching and the degree of non-academic disability. The Model 4 results show the importance of controlling for school social composition in explaining the higher reading and math test scores of students in private independent and private state-dependent schools. The higher scores on reading and math tests of pupils in private independent schools can even be fully explained by the social composition of these schools. This means that private independent schools are not necessarily more effective in their teaching than public schools, but rather that the former schools on average attract more children from the upper classes of society (in terms of occupational status, wealth, and academic interest), which in turn creates a better opportunity structure for learning and teaching. The negative sign for private independent schools in Model 4 even suggests that these schools are less effective than public schools of the same social composition, although this negative coefficient is not yet significant (it will become significant in Model 6).

The same is not equally true for private schools that depend on the government. Although the strength of the positive coefficient decreases considerably (it decreases by more than 50%) when adjusting for the social composition of the schools, it remains positive and significant for reading, and positive but insignificant for math. In model 4 we also control for other characteristics of the school composition, such as the % of girls and the characteristic of the location of the school.

While these variables have significant and interesting effects, they are not responsible for the change of sign of the coefficient concerning private independent schools.

The results of Model 4 can therefore be interpreted as reliable estimates of the higher effectiveness of both forms of private schools, taking into account the characteristics that individual students and their parents bring to or get from their private and public schools through the composite school characteristics, and which are the result of the totality of choices made by students and parents.

Conclusions

Our analysis clearly shows that private government-dependent schools are more effective than comparable public schools with the same pupils, parents, and social composition. The main explanation for this higher effectiveness is the better school climate in the first than in the second. The different learning and teaching conditions in private, government-dependent, and public schools do not explain the differences in effectiveness. This does not mean that private schools that depend on the government do not have a more favorable social composition and that this fully explains the higher educational achievement of their students. Rather, it means that, in addition to pupils, parents, and social composition, the more favorable school climate fully explains the higher educational outcomes of pupils in public and private independent schools.

In contrast, our analysis also shows that private independent schools are less effective than public schools with the same pupils, parents, and social composition. However, poorer learning and teaching conditions or a more negative school climate cannot explain this lower effectiveness. The most important explanation for their initially higher effectiveness is the better social composition of these schools. Due to this better social composition, the educational results of the pupils of these schools rise significantly above the level of the other schools, as shown by analyzes without school composition as a control variable. It could be that this positive effect of a better social composition reduces the need for private independent schools to further increase their effectiveness because their students achieve high educational outcomes even with lower effectiveness due to the better social

composition of these schools. Even parents willing to pay a hefty sum may not be overly concerned about this positive effect on the social makeup of these private independent schools. The causes of the higher effectiveness of schools are less important for parents' choice, as long as their child's final grade is not substantially lower than desired. This also gives these private independent schools teaching and learning time, which can be spent on acquiring qualifications other than mere school qualifications (e.g. teamwork, competition, leadership, cultural capital).

These different outcomes underline the different functions and positions of private independent and private government-dependent schools within the education systems of these countries. It is therefore incorrect to treat these two school types equally in their relation to the student market or as interchangeable forms of private schools (Vandenberghe & Robin, 2003). On the contrary, private independent schools need not be effective because the characteristics of their students and parents, as well as the composition of the school, are so favorable that further increases in school scores would be inefficient due to low marginal productivity. Private independent schools are good because they can 'attract' or 'buy' the best average.

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