Choice and Effectiveness of Private and Public Schools in six countries. A reanalysis of three PISA data sets

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2008

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Allgemeiner Teil

Jaap Dronkers/Silvia Avram

Choice and Effectiveness of Private and Public Schools in seven countries. A reanalysis of three PISA dat sets[1]

Zusammenfassung: In internationalen Vergleichstudien hat sich gezeigt, dass es für den Vergleich der Effizienz von Privatschulen mit staatlichen Schulen notwendig ist, zwischen finanziell unabhängigen und staatlich alimentierten Privatschulen zu unterscheiden. Denn obwohl die Leistungsunterschiede zwischen dem privaten und staatlichen Sektor überwiegend auf die Selektivität der Privatschulen zurückgeführt werden kann, zeigen sich doch über Nationen hinweg konsistent bessere Leistungen für die staatlich alimentierten Privatschulen auch dann, wenn die Selektivität berücksichtigt wird. Unter Verwendung eines noch effizienteren statistischen Verfahrens zur Kontrolle der Selektivität erweist sich dieses Befundmuster in der Analyse dreier PISA Datensätze als robust für Deutschland und die Niederlande.

Introduction

The differences in scholastic achievement of public and private schools have been the topic of a large number of studies in the educational sciences, sociology and economics, mostly in the USA, but also to some extent in Europe (see Themenschwerpunkt, Zeitschrift für Pädagogik 5/2009). Consistently across studies, the distinction between private government-dependent schools and private-independent schools has proven to be particularly important to the discovery and understanding of differences in the effectiveness of the private and public sectors in international comparisons. Private dependent schools refer to schools that are governed by a private organisation but receive basic funding from public sourced. Private independent schools, on the other hand, rely mostly or solely on independent resources and fund-raising. The predominant type of schools differ significantly across countries depending on the social, religious and ethnic com-

1 This article is one of the products of the cross-national project „Religious education in a multicultural society: School and home in comparative context", directed by Emer Smith (Economic & Social Research Institute, Dublin) and financed by the European Commision within the 7th Frame Work (FP7-SSH-2007-1-REMC). Dronhers/Avrum (2009) give the results for all countries.

position. In many countries, these three types of schools coexist, especially in continental Europe as the result of the 19th century conflict between governments and churches over curriculum and finances of general education.

Public funding of private schools usually comes with restrictions; schools have to meet a number of requirements in order to receive public funds, severely limiting the autonomy of private schools. Financially independent private schools have usually more freedom, but they are restricted at least in two ways. First, some governments impose achievement and other standards as accountability measures. Second, university entrance exams limit the freedom in developing an alternative curriculum if a private secondary school want to remain competitive to public schools. In most countries, however, privately funded school are autonomous in their student admission and teacher hiring policy, particularly if the school fully depends on student tuition.

With the rise of neo-liberalism, particularly in England and the US during the 1980s, parental choice and school competition were hailed as the means to improve the quality of teaching and to decrease bureaucracy (Chubb/Moe 1990; Cortina/Frey 2009; Walford 2009). Private schools were seen as a way to offer parents school choice. In the United States private schools particularly appeal to parents who want to raise their children in accordance with their cultural and religious heritage. In this respect, the US private schools resemble the European tradition of government dependent religious schools (Godwin/Kemerer 2002).

The neoliberal idea of competition between public and private schools made the differences in the effectiveness of public and private schools an important research question. The debate started with the study by Coleman, Hoffer & Kilgore (1982), which found that Catholic schools in the USA had a higher effectiveness than public schools, even after controlling for differences in selectivity. This study triggered an ongoing debate and research in the USA on the issue of subsidizing religious schools, charter schools and school choice. Coleman and Hoffer (1987) and Bryk, Lee & Holland (1993) provided comprehensive follow-up studies, confirming the original findings.

1. National European Studies

In Europe, Dronkers (2004) reviewed the empirical evidence on achievement differences between public, Catholic, and Protestant schools. Despite the decreasing relevance of church and religion in most European societies, the religious schools are either growing or remaining strongly over-represented given the religious affiliation of the population (France: Langouët/Leger 1994; Germany: Dronkers/Hemsing 2005; The Netherlands: Dronkers 1996; Dijkstra et al. 1997). This effect is particularly striking for those societies in which religious schools had been abolished during the communist regimes (like Hungary, see Dronkers/Robert 2004). Efficient educational administration, stronger value-oriented community, better communication between parents and teachers and more deliberate selection of religious schools might be the most important reasons for the popularity and higher academic achievement of religious schools in Europe.

Research on achievement outcomes in the Netherlands (Dronkers 1996; Dijkstra et al. 1997; Sturm et al. 1998) showed that Catholic and Protestant schools were, on average, more successful than their public counterparts. However, private schools that were both non-religious and state funded were *less* successful academically than public schools when the social composition of the students was taken into account (Koopman/Dronkers 1994); orthodox-protestant schools were also not more effective than public schools or liberal Protestant schools. In addition, a context effect was found: Public schools did, in fact, outperform private schools in regions with a majority of religious schools.

Langouët and Leger (1994) found that the dropout rate between the first and the third year of secondary schools in France was 34% in the public sector compared to 24% in the private sector (see also Flitner/van Zanten 2009). This effect was most pronounced for children of middle class parents. Consistently, the graduation rate in the state sector schools was lower for comparable students than in the private schools (22% vs. 28%).

Research on the cognitive and non-cognitive benefits of parochial schools compared to public schools in Germany is less conclusive, but points in the same direction. Dronkers and Hemsing (2005) showed that students from Protestant and Catholic secondary schools in North Rhine-Westphalia attained higher test scores than those from public schools after controlling for demographic characteristics. However, these differences disappeared at the level of further academic and occupational success. Using the TIMSS data, Dronkers et al. (2002) were unable to replicate the advantage of parochial schools in academic achievement in mathematics and natural sciences based on data of three German states (Bavaria, North Rhine-Westphalia, Rhineland-Palatinate).

2. International Comparisons

Although the differences in academic achievement of public and private schools are relevant for nearly all modern countries, little cross-national research has been conducted on this topic.

Dronkers and Robert (2008a; 2008b) compared the effectiveness of public, private-dependent and private-independent schools in 22 OECD countries using PISA 2000 data. They found that the lion share of the differences in reading and mathematic tests scores between private and public schools across countries could be explained by differences in their student intake characteristics and school composition. But their analysis also showed that private government-dependent schools still had a higher net scholastic achievement in reading than comparable public schools after controlling for demographic differences. Different administrative, learning and teaching conditions did not account for this effect. However, public and private-dependent school differed significantly in their school climate suggesting climate differences to be a key and potential causal factor for the observed differences.

Private government-dependent schools were also more effective for pupils from families with less cultural capital (Corten/Dronkers 2006). Interestingly, the effects of private-independent and private-dependent schools were very similar across countries

despite the substantial structural differences (Dronkers/Robert 2008a; 2008b). This suggests that post-industrial societies' formal and informal school choice has become an important avenue for social mobility. Private government-dependent schools were able to create on average a slightly better school climate which results in a slightly better academic achievement. This universal aspect of education and its functioning has been noted by others, particularly John Meyer (see, e.g. Meyer/Hannan 1979; Ramirez/Boli 1987).

3. Disentangling Choice and Effectiveness

The literature on the possible causes of academic achievement differences between private and public school is extensive (e.g. Sammons/Hillman/Mortimore 1995; Scheerens/Bosker 1997; Teddlie/Reynolds 2000). However, empirical studies are cross-sectional in nature and usually assume that the measured parent and student variables serve as a proxy for the selectivity into the different school types. The assumption that demographic characteristics can serve as valid indicators is arguably accurate for the comparison of public schools across countries because almost all countries use catchment areas with no or (very limited) parental choice. But this assumption is hard to justify when the difference between public and private schools is compared across nations with substantial dissimilarities in size of the private sector and national regulations of access to it. In some countries like Germany and the Netherlands choice between public and private government-dependent schools is hardly influenced by tuition costs. But in the United States and United Kingdom, on the other hand, the ability and the willingness of parents to pay considerable fees for private schools figure prominently and therefore make private school attendance an option primarily for affluent parents. Therefore, different (sub-)populations of students within each countries constitute the private and public student subsamples rendering comparisons of effects across countries meaningless.

In this paper, we propose a propensity score approach to better account for cross-national differences in selectivity (see, e.g., D'Agostino 1999; Dehejia/Sadek 2002; Rosenbaum/Rubin 1983). The „propensity" for each student of choosing a private over a public school is expressed as a function of the probability to attend a private school predicted by a logistic regression with all student, parent and visible school characteristics as predictors. The propensity score is used to create, for each country, samples of students in public and private schools that are matched based on their propensity scores. This technique approximates a quasi-experimental design by comparing individuals in a „treatment group" (in this case, students in private schools) to those in a „control group" (students in public schools) who have a similar likelihood of experiencing the „treatment" according to observable characteristics.

Note that the accuracy of the propensity score matching is based on the assumptions of conditional independence, meaning that all relevant factors that affect the independent (here school choice) and dependent variable (here: achievement) are included in the logistic regression. The same assumption is made in least-square regression analysis

which estimates the average treatment effect of school choice controlling for a list of covariates. While standard procedures use the full sample, propensity score matching is restricted to those parts of the sample for which the treated and untreated student groups have sufficient overlap in the propensity scores. If there is not a considerable overlap in the propensities of those in the treatment and the control group (like in most countries) the differences in educational achievement cannot be interpreted as the average treatment effect of school choice. The results of propensity score matching presented here should be seen as complementary to the earlier results, for which OLS regression was used, and will tend to be conservative estimates of the effectiveness difference.

There are very few applications of propensity score matching in the educational sciences, but the first dates back more than 20 years and is used for the same topic: effectiveness differences between public and catholic schools in the USA (Hoffer/Greeley/Coleman 1985).

4. Data and Methods

Three waves of the PISA survey (2000; 2003; 2006) were included in the following analysis by pooling them into one database. This strategy allows us to maximize the number of private, both independent and dependent, schools present in the database. France, Germany, USA, the UK and Japan were selected for the current analysis, because the private schools of these countries were discussed in the special issue 5/2009 of the Zeitschrift für Pädagogik. We added the Netherlands to this selection of countries because it is often seen as a special case with a large sector of private dependent schools. The PISA survey provides information on both school boards and funding. Thus, the three types of schools discusses above, namely public, private dependent (private board but mostly public funding) and private independent (private board and mostly private funding) can be distinguished in the dataset.

As a dependent variable, we used the reading literacy score provided in for all three samples (Organisation for Economic Co-operation and Development 2001; 2004; 2007).

Based on existing literature comparing private and public schools, as well as on availability of comparable data in the three waves of PISA, a variety of student, family and school characteristics likely to influence the school selection process have been included as control variables in the analysis. We differentiate two levels, i.e. student characteristics and school features. On the first level, gender, immigrant status, cultural possessions, wealth, maternal and paternal education and occupational status have been incorporated to account for family background variation in the population of private and public schools. On the second level, the school's social composition (percentage of students having at least a parent with a university degree), the school's size, its admission policies (whether it considers parental endorsement of the school's educational philosophy and attendance of its special programs as criteria when admitting students), as well as student-teacher ratio, computer-student ratio and a composite index of educational re-

sources were considered as potential factors influencing school choice. Finally, to gauge the deterring effect of tuition, a variable indicating whether the school charges tuition fees has been included as well.

The average values for the characteristics of pupils, parents and schools included in the analysis, are shown in table 1, separately for each country.

	France	Germany	Nether-lands	USA	UK	Japan
Private-independent (%)	7,8	0,2	0	6,5	3,9	27,1
Private-dependent (%)	14,2	5,5	73,3	0,5	0,6	0,6
Public (%)	77,9	94,3	26,7	92,9	95,5	72,3
Pupils and parents characteristics						
Reading Score (average)	503,2	497,2	521,3	495,0	508,8	507,7
Gender (% girls)	50,7	50,2	49,3	50,4	50,4	50,0
Immigrant (%)	24,0	18,9	17,6	20,5	13,4	0,8
Foreign language used at home (%)	5,1	7,7	11,4	10,7	2,5	0,3
Index of cultural possessions (average)	–0,3	0,04	–0,32	–0,1	–0,17	–0,4
Family wealth (average)	–0,15	0,32	0,43	0,31	0,36	–0,18
Mothers educational level (average)	4,4	3,9	4,1	4,6	4,2	4,4
Fathers educational level (average)	4,4	4,2	4,3	5,5	4,0	4,5
Mother occupational status (average)	42,5	43,3	43,1	48,1	43,4	46,6
Father occupational status (average)	44,1	45,1	48,4	46,2	44,7	44,9
School characteristics						
Social composition (% parent's tertiary education)	44,1	32,1	48,7	38,6	33,5	43,8
School size	892	666	1005	1321	978	863
Tuition % having tuition fees	68,6	31,0	91,00	66,1	35,7	52,8

	France	Germany	Nether-lands	USA	UK	Japan
Admittance-parent's views considered-%	91,9	49,6	50,5	36,1	46,8	49,6
Admittance-special programs considered-%	100	74,5	66,2	71,9	57,3	78,5
Teacher-student ratio	12,6	17,6	15,8	15,4	15,0	14,0
Computer-student ratio (average)	0,13	0,08	0,17	0,28	0,25	0,19
Educational resources (average)	–0,49	0,16	0,27	0,2	0,25	0,14
Source: pooled data PISA dataset for 2000, 2003 and 2006, for France only 2000.						

Tab. 1: Descriptive Statistics for variables entered in the propensity estimation model per country

Owing to the specific national context, one of the two private sectors may be very small serving only a small fraction of students. As a result, we have conditioned the inclusion of a country in each of the two private-public comparisons by the existence of at least 10 schools and 2% of students in the private sector under consideration. This restriction leaves us with four countries for the private-independent-public comparison and three countries for the private-dependent-public analysis.

5. Results

Choice of private-independent over public schools

Logistic regressions were used to separately estimate the odds of choosing a private-independent school over a public school for France, UK, USA and Japan. They include all the individual characteristics of parents or students and the school characteristics listed above with the exception of tuition because nearly all the private-independent schools charge tuition. Therefore, this variable trivially correlated almost perfectly with the dependent variable. The upper half of table 2 shows the results for each country separately. A positive effect indicates that a higher score on a variable (for instance the amount of educational resources of the school) increases the propensity to choose a private-independent school. A negative effect indicates that a higher score on a variable (for instance school size) decreases the propensity to opt for a private-independent school. The stars indicate whether these parameters deviate significantly from no effect on the school choice.

Two school characteristics had a similar (significant) effect on the choice of a private-independent school in all four countries: the school composition and the computer-

student ratio. The higher the socio-economic composition of the private school, the higher the propensity of parents to choose that type of school; a lower computer-student ratio increased the propensity of choosing a private school. In the UK, the United States and Japan, a higher occupational status of the mother, a lower student/teacher ratio at private schools and more educational resources in the school additionally improved the prediction of the choice of a private school.

Some variables have only a significant effect in two countries: cultural possessions at home (positive in UK and USA), family wealth (positive in France and UK), fathers' and mothers' educational level (negative in UK and USA), fathers occupational status (positive in UK and USA) and attendance of special programs of the school as criteria for selection (positive in UK and USA).

Some variables have significant effects in opposite directions: in the USA male pupils have a larger propensity to choose a private-independent school, in Japan girls are more likely to do so. In the UK and USA private-independent schools are more often chosen by immigrant children, while in France these students tend to attend public schools.

In general these results show that particularly favourable teaching conditions (school-composition, student-teacher ratio, more educational resources) influence the choice of private-independent school over public schools in addition to social class characteristics like parental occupational status or education.

Choice of private-dependent over public schools

A similar logistic regression analysis was performed to predict the choice of a private-dependent school over public school in France, Germany and the Netherlands. Tuition could be included in this case because there is enough variation in the tuition payment variable among private-dependent schools. The lower half of table 2 shows the results of the logistic regression analysis for each country separately.

In all three countries higher educational resources of the private-dependent schools increase the chances of parents to choose that school type. In Germany and The Netherlands, the school's emphasis on special programs and higher computer-student ratio also increases the likelihood of choosing a private-dependent school. Two variables have contradictory significant effects in the three countries: the school composition (positive in Germany, negative in the Netherlands), and tuition (positive in Germany and the Netherlands, negative in France).

In general these results show that the choice patterns for private-dependent or public schools are rather dissimilar in the three countries. School's educational resources seem to be the only common factor, while the effects of individual social class characteristics like parental occupational status or education, but also of school's social composition are not consistent predictors across countries.

	Male	Immi-grant	Foreign language used at home	Cultural posses-sions	Family wealth	Mothers Educa-tional level	Fathers Educa-tional level	Mothers occupa-tional status *10	Fathers occupa-tional status *10	School soc compo-sition	School size *10	Admis-sion-parents' endorse-ment	Admis-sion-special pro-gram	Student-teacher ratio	Com-puter-student ratio	Educa-tional resour-ces of school	Tui-tion
Private-Independent schools versus public schools																	
France	–0,08	–0,55*	0,44	0,02	0,27*	0,03	–0,08	0,08	–0,09	3,81*	–0,01*	†	†	–0,02	–4,95*	0,02	†
UK	0,25	0,79*	1,11*	0,70*	0,40*	–0,20*	–0,18*	0,28*	0,29*	12,06*	–0,01*	–0,40*	0,83*	–0,97*	–3,27*	0,45*	†
USA	0,28*	0,72*	–0,44	0,18*	–0,08	–0,16*	–0,28*	0,15*	0,19*	7,01*	–0,03*	2,89*	0,52*	–0,08*	–1,07*	0,62*	†
Japan	–0,51*	0,31	0,49	0,01	0,08	0,04	–0,02	0,06*	0,03	1,51*	0,02*	2,01*	–0,10	–0,17*	–0,77*	0,22*	†
Private-Independent schools versus public schools																	
France	0,08	–0,05	0,94*	0,15	–0,02	–0,05	–0,01	–0,01	–0,02	0,32	–0,00	†	†	–0,02	1,20	0,18*	–0,22*
Germany	–0,81*	0,16	–0,37	0,22*	0,35*	–0,11*	–0,08	0,03	0,14*	2,31*	–0,00	4,01*	–1,12*	0,06*	5,54*	0,14*	2,23*
Netherlands	–0,11	–0,46*	0,01	0,04	0,03	0,00	–0,01	–0,05*	–0,03	–0,39*	0,00	1,34*	0,09	–0,01	1,23*	0,24*	0,23*

*Source: pooled data PISA dataset for 2000, 2003 and 2006, for France only 2000. † Dropped because no variance; * significant parameter p < .05*

Tab. 2: Characteristics of parents or students, the visible school characteristics and their effects on school choice.

Reading achievement of students in private-independent schools compared to that of public schools

In this section we present the results from the second step of analyzing achievement differences in reading competence between private-independent schools and public schools with propensity scores as covariate.

	Simple reading score difference between private and public schools pupils	**No of observed pupils**	**Reading score difference of the private-nearest public school neighbour in propensity scores**	**No of pupils private/ public**
private-independent school				
France	11,52 (5,68)*	1993	5,84 (8,12)	228/194
UK	74,59 (2,97)***	19104	12,23 (11,34)	648/258
USA	20,69 (5,36)***	4186	2,01 (10,43)	276/163
Japan	-13,82 (2,59)***	6152	-45,34 (4,93)***	1520/856
private-dependent schools				
France	-0,21 (5,39)	2025	0,51 (7,44	261/230
Germany	44,93 (4,02)***	7861	23,01 (6,28)**	499/368
Netherlands	-0,29 (2,18)	6793	10,26 (3,42)**	4939/1303
*Source: pooled data PISA dataset for 2000, 2003 and 2006, for France only 2000; * significant parameter p < .10; ** p < .05; *** p < .01*				

Tab. 3: Effect of attending a private-independent or private-dependent school vs. a public school on reading achievement

The first column gives the mean score difference in reading for students in private-independent schools and public schools without any control for covariates. Given prior research it is not surprising that the students of private-independent schools in France, UK and USA have higher readings scores than students in public schools. Students of private-independent schools in Japan score significantly lower, because the majority of the private-independent schools are second option schools, if a student fails to pass the entrance exam of a prestigious public secondary school. The second column gives the number of observations involved in this comparison.

In a second step, we match[2] each student attending a private-independent school to one with a similar propensity score but attending a public school. Since the propensity

2 We use nearest neighbor matching.

score distributions in the UK and the US hardly overlap, the number of matched cases is drastically reduced, while the number of matched cases in France and Japan remains reasonable large. The difference in reading scores between the matched groups now gives a more accurate account of the true discrepancies in school effectiveness between private-independent and public schools („value-added").

The analysis reveals that there is no significant difference in reading achievement between private-independent and public schools in France, UK and USA once the propensity of making this school choice is taken into account. Only the Japanese private-independent schools have, in fact, significantly lower scores than public schools.[3]

At least for France, UK and USA the observed higher educational achievement scores in reading of students in private-independent schools compared to public schools can be fully attributed to the selectivity of school choice processes. For Japan, controlling for the school choice processes widens the gap in achievement between private-independent and public schools.

Reading achievement of students in private-dependent schools compared to that of public schools

Similarly to the comparison given above, we also compared the reading achievement between public schools and private-dependent schools.

Table 3 summarizes the results of our analyses, again first without controlling for the selectivity differences and then after using a rigorous propensity score matching.[4]

Without controlling for intake differences students in private-dependent schools compared to public schools show higher readings scores only in Germany. Matching students based on their propensity scores strongly reduces the number of cases the comparison is based on, especially in France and Germany. For the matched samples, significant achievement differences between students in private-dependent and public schools remained stable in Germany and are now also significant for the Netherlands. Only in France the trend is not significant. Germany and Netherlands seem to have an advantage in reading achievement even after a rigorous control of income selectivity into the private-dependent school sector.

Discussion

The presented analyses underscore the importance of understanding the processes of school selection separately for each country before analyzing private/public school dif-

3 A more refined propensity score analysis (using Mahalanobis distance for key variables) which combines matching on choice and controlling for covariates did not alter the findings.

4 Propensity score analysis using Mahalanobis distance for key variables did not alter these findings.

ferences in achievement across nations. The school choice of private-independent schools in France, UK, USA and Japan is mainly driven by school characteristics, especially the school composition, student-teacher ratio and better resources in the private-independent schools. After taking into account school choice processes, students at private-independent schools in France, UK and USA do not show higher average achievement scores in reading. The observed higher reading scores of private independent schools compared to public schools can be explained by the (nation-specific) school choice processes. There is no evidence that private independent schools are more effective in teaching reading than public schools. These results confirm those reported by Dronkers & Robert (2008a; 2008b) and contradict the neo-liberal notion that school choice is driven mainly by the parental search for the most effective schools. Instead, it lends support to the hypothesis that parents choose schools based on simple average scores and other visible school characteristics.

In Japan, students in private-independent schools have lower reading scores than students in public schools after controlling for intake differences. The majority of these Japanese private schools have general academic courses that do not differ from those of public schools. But these private schools are ranked lower than public schools because they cater to students that have failed the entrance examination of more prestigious public high schools.

The choice pattern between private-dependent and public schools is more diverse across the three countries we were able to compare (France, Germany, the Netherlands). The school's educational resources seem to be the common attracting factor for parents in these three countries, while the effects of individual social class characteristics like parental occupational status or education vary in importance between the three countries. After taking into account the specific school choice processes in each country, we found consistent higher reading scores for students in private-dependent schools compared with those of public schools for Germany and the Netherlands. In France private-dependent schools show a slight but insignificant advantage over public schools.[5] This finding does not fully support Dronkers and Robert 's (2008) conclusion which suggested a universally higher effectiveness of private-dependent schools across countries. School choice processes differ between countries due to different historic trends, legal constrains and social structure of each country which, in turn, has repercussion on the achievement advantage of private-dependent schools. On the other hand, one should not dismiss the higher effectiveness of private-dependent schools by simply referring to their intake selectivity. The evidence still supports the claim that pedagogical freedom creates the potential for more efficient instruction.

Unfortunately, the PISA data do not allow for the distinction between secular and parochial private schools to further investigate which aspect of private dependent school organisation makes these schools outperform public scholl in many countries. The lack

5 This might be caused by the smaller number of available schools for France. information about school characteristics is for France available only in the PISA 2000 wave. This information is not longer available in the two other waves.

of distinction between religious and non-religious private schools within the private-independent school-sector of the US might also explain why were unable to replicate the results of Coleman, Hoffer and Kilgore (1982) or Byrk, Lee and Holland (1993) who reported consistent advantages of private-independent schools in the USA. It is important to bear in mind that the presented results do not necessarily mean that an educational system with a high percentage of private government-dependent schools is more efficient at providing the best education to all children. As we have seen, the social composition of private schools explains an important part of the selectivity of private schools. If the social composition of schools within an educational system is very polarized between public schools and private schools (which means a small overlap in propensity scores, like the US), such an educational system will be less efficient because the public school students attain lower educational outcomes than they would have in a less polarized system.A polarized educational system is probably less efficient for the society at large than an educational system without private schools altogether.

Within a balanced educational context without too many rights in the private sector, a private provider of collective goods like education can produce better outcomes for two reasons: Market sensitivity and curricular flexibility. Because of the larger vulnerability to competition, the private provider has to be more concerned with the quality of his product than a public provider. At the same time, a private provider is more flexible to influence the quality of its product than a public provider who faces more legal and political constraints. The better outcomes of private providers in supplying education as a collective good can be constrained by a public context (such as financing, regulations, final examination, etc.). As long as pronounced provileges in the social composition of private schools is, like in Germany, structurally prohibited, private schools are forced to obtain higher quality through better organization and efficiency and not through selectivity.

Literature

Bryk, A.S./Lee, V.E./Holland, P.B. (1993): Catholic schools and the common good. Cambridge (Mass.)/London: Harvard University Press.

Chubb, J.E./Moe, T.M. (1990): Politics, markets, and America's schools. Washington DC: The Brookings Institution.

Coleman, J.S./Hoffer, T.B./Kilgore, S. (1982): High school achievement: Public, Catholic, and other private schools compared. New York: Basic Books.

Coleman, J.S./Hoffer, T. (1987): Public and private high schools. The impact of communities. New York: Basic Books.

Corten, R./Dronkers, J. (2006): School Achievement of Pupils From the Lower Strata in Public, Private Government-Dependent and Private Government-Independent Schools: A cross-national test of the Coleman-Hoffer thesis. Educational Research and Evaluation 12, pp. 179–208.

Cortina, K./Frey, K. (2009): Privatschulen in den USA: Geschichte und aktuelle Kontroversen. In: Zeitschrift für Pädagogik 5/54, S. 701–715.

D'Agostino, R.B. (1998): Tutorial in Biostatistics. Propensity Score Methods for Bias Reduction in the Comparison of a Treatment to a Non-Randomized Control Group. Statistics in Medicine, 17, pp. 2265–2281.

Dehejia, R./Sadek, W. (2002): Propensity Score Matching Methods for Non-Experimental Causal Studies. Review of Economics and Statistics 84, pp. 151–161.
Dijkstra, A.B./Dronkers, J./Hofman, R. (1997). Verzuiling in het onderwijs. Actuele verklaringen en analyse. Groningen: Wolters-Noordhoff.
Dronkers, J. (1996): Dutch public and religious schools between state and market. Zeitschrift für Pädagogik 35, pp. 51–66.
Dronkers, J. (2004): Do Public and Religious Schools Really Differ? Assessing the European Evidence. In: Wolf, P.J./Macedo, S. (eds.): Educating Citizens. International Perspectives on Civic Values and School Choice. Washington DC: Brookings Institution Press, pp. 287–314.
Dronkers, J./Baumert, J./Schwippert, K. (2002): Are German Non-Public Secondary Schools More effective at Teaching Mathematics and Natural Sciences? San Domenico di Fiesole: European University Institute. Paper presented for the Session Public & Private Education from a Global Perspective of the XV World Congress of Sociology, Brisbane (Australia) July 7–13, 2002.
Dronkers, J./Avram, S. (2009): A Cross-national Analysis of the Relations between School Choice and Effectiveness Differences between Private-Dependent and Public Schools. A New Approach. Paper presented at the International Seminar Education Markets/Penser les Marchés Scolaires. March 12–14, 2009, University of Geneva (Swiss).
Dronkers, J./Hemsing, W. (2005): Differences in Educational Attainment and Religious Socialization of Ex-Pupils from Grammar Schools with Public, Catholic, Protestant, and Private Backgrounds in the German State of Nordrhein-Westfalen during the 1970s and 1980s. International Journal of Educational Policy, Research, & Practice 5, pp. 73–93.
Dronkers, J./Robert, P. (2004): Has educational sector any impact on school effectiveness in Hungary? A comparison of the public and the newly established religious grammar schools. European Societies 6, pp. 205–236.
Dronkers, J./Robert, P. (2008a): Differences in Scholastic Achievement of Public, Private Government-Dependent, and Private Independent Schools: A Cross-National Analysis. Educational Policy 22, pp. 541–577.
Dronkers, J./Robert, P. (2008b): School Choice in the Light of the Effectiveness Differences of Various Types of Public and Private Schools in 19 OECD Countries. Journal of School Choice 2, pp. 260–301.
Flitner, E./van Zanten, A. (2009): Von der Konfessionsschule zum geschützten Sozialmilieu – Entwicklungen und Funktionen des privaten Sektors im französischen Schulsystem. In: Zeitschrift für Pädagogik 5/54, S. 686–700.
Godwin, R.K./Kemerer, F.R. (2002): School Choice Tradeoffs. Liberty, Equity, and Diversity. Austin: University of Texas Press.
Hoffer, T./Greeley, A.M./Coleman, J.S. (1985): Achievement Growth in Public and Catholic Schools. Sociology of Education, 58, pp. 74–97.
Koopman, P./Dronkers, J. (1994): De effectiviteit van algemeen bijzondere scholen in het algemeen voortgezet onderwijs. Pedagogische Studien 71, pp. 420–441.
Langouët, G./Leger, A. (1994): Ecole publique ou école privée? Trajectoires et réussites scolaires. Paris: Editions Fabert.
Meyer, J.W./Hannan, M.T. (1979): National development and the worldsystem; educational, economic and political change, 1950–1970. Chicago: University of Chicago Press.
Organisation for Economic Co-operation and Development (2001). Manual for the PISA 2000 Database. Paris: OECD.
Organisation for Economic Co-operation and Development (2004). Learning for Tomorrow's World: First Result from PISA 2003. Paris: OECD.
Organisation for Economic Co-operation and Development (2007). PISA 2006. Sciences Competencies for Tomorrow's World. Paris: OECD.

Ramirez, F.O./Boli, J. (1987): The political construction of mass schooling: European origins and worldwide institutionalization. Sociology of Education 60, pp. 2–17.
Rosenbaum, P./Rubin, D. (1983): The Central Role of the Propensity Score in Observational Studies for Causal Effects. Biometrika 70, pp. 41–55.
Sammons, P./Hillman, J./Mortimore, P. (1995): Key characteristics of effective schools: A review of school effectiveness research. London: Office for Standards in Education and Institute of Education.
Scheerens, J./Bosker, R. (1997): The Foundations of Educational Effectiveness. Kidlington/New York/Toyko: Pergamon.
Sturm, J./Groenendijk, L./Kruithof, B./Rens, J. (1998): Educational Pluralism - a historical study of so-called ‚pillarization' in the Netherlands, including a comparison with some developments in South African education. Comparative Education 34, pp. 281–297.
Teddlie, C./Reynolds, D. (2000): The international handbook of school effectiveness research. London: Falmer.
Walford, G. (2009): Private schools in England. In: Zeitschrift für Pädagogik, 5/54, S.716–731.

Abstract: In international comparative studies on academic achievement, the distinction between private government-dependent schools and private-independent schools has proven to be particularly important for understanding the differences in the effectiveness of the private and public school sectors. Despite the fact that higher achievement scores in the private sector are mainly due to their intake selectivity, private-dependent schools still tend to outperform public school in most countries if these differences are taken into account. Using a more rigorous statistical technique to control for selectivity in the analysis of three PISA data sets, it is demonstrated that the substantive advantage in the efficacy of private-dependent schools compared to public schools remains for Germany and the Netherlands.

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