Equity and Achievement in the Chilean School Choice Experience: A Multilevel Analysis

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Abstract

The aim of this paper is to analyze, using a hierarchical linear model, the degree to which a system of choice, as the one implemented in Chile since the beginning of the 80's, can promote student achievement and equity in the social distribution of achievement. Using data from a standardized achievement test, which includes the entire population of 4th grade students and schools of the country, we investigate the association between students' socioeconomic status and achievement, within and between schools. We also investigate up to what extent different categories of schools enjoy advantages in educating low-income students. These are important issues because unlike the limited vouchers programs in the US, Chile has had a nationwide school choice program for more than 20 years.

Classification JEL: I2

Key words: school choice, educational achievement, equity.

Introduction

A school choice system exists when governments make payments directly to families that permit them to select the school, private or public, of their choice. These payments can be made directly to the family or indirectly to the school of their choice. The purposes are to increase parental choice, to promote school competition and to allow low income family access to private schools.

In an ideal world, all parents would sort themselves into different schools based on their preferences, creating the conditions for the development of effective school communities, which would in turn deliver a high quality education. However, in practice the issue of stratification cannot be put aside lightly. In fact, it represents one of the central issues in the debate over school choice.

This argument almost always carries class and/or race considerations. If more educated parents are the ones that demand more from schools, then choice may lead to stratification, concentrating the children of parents with the best education and the highest socioeconomic status (SES) in a few schools, and leaving those from lower socioeconomic backgrounds in the worst schools (Henig, 1994; Levin, 1998; Ladd, 2002; Ladd and Fiske, 2001; Berry et al, 2000; Hsieh and Urquiola, 2002).

Beginning in the early 1980s, far-reaching reforms were implemented in the Chilean educational system, involving the decentralization of the public school system and the handing over of school administration to local government authorities. The reforms also instituted public financing of private schools through a per-student subsidy mechanism. The per-student subsidy, which is equal value for public and private schools, is intended to cover running costs and, at the same time, generate competition among schools to attract and retain students[1], thereby promoting more efficient, better quality educational services[2].

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[1] This is a voucher-type system in which funds are allocated to the school according to their enrollment i.e. according to parents' choices.
[2] This reform also introduced standardized achievement tests; however, test results were only made public in 1995.

A key policy outcome was the creation of a system characterized by three types of schools: fee-paying private schools that operate on the basis of fees paid by parents, which represent 9.5 percent of the enrollment of children and young people; private subsidized schools financed by the per-student subsidy provided by the state, but privately owned and operated, which account for 33.4 percent of enrollment; and municipal (public) schools financed through the per-student subsidy and run by municipalities, which make up 55.6 percent of the enrollment[3].

Fee-paying private schools, which have always existed, do not compete with public schools, as their fee is, on average, about five times the per-student subsidy. Private subsidized schools may also be financed by contributions from parents (shared financing), a practice instituted in the mid-1990s.

A number of studies have examined the results obtained by Chilean schools. In general, they all conclude that families' socioeconomic characteristics are statistically significant to explain student performance in the different types of schools. When the performance of public and private schools is compared, the studies vary because of the tests considered (year and grade), the size of the school samples, and the methodology used to evaluate school performance[4]. All these studies used traditional econometrics models (OLS with or without Heckman correction) that do not consider the multilevel structure of the data and do not differentiate between and within school effects.

The aim of this paper is to analyze the degree to which a nation-wide school choice program, as the one implemented in Chile since the beginning of the 1980's, can promote student achievement and equity in the social distribution of achievement[5]. More specifically, we use the results from a standardized achievement test to answer the

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[3] The three types of schools together account for 98.5 percent of all enrollments. The remaining 1.5 percent of school children attend are run by educational corporations linked to business organizations.
[4] See Rodríguez (1988); Aedo and Larrañaga (1994); Aedo (1997); McEwan and Carnoy (2000); Mizala and Romaguera (2000, 2001); Bravo, Contreras, and Sanhueza (1999); Tokman (2002); Sapelli and Vial (2001); Gallego (2002), Hsieh and Urquiola (2002).
[5] The Chilean case is interesting because unlike the limited vouchers programs in the US, Chile has had a nation-wide school choice program for more than 20 years. West (1997), Patrinos (1999) and Gauri and Vadwa (2003) review school choice experiences around the world.

following questions: (i) Do some type of schools (public, private subsidized and private fee paying) have higher mean achievement than others? Do some kinds of school demonstrate advantages in educating low-income students? (ii) What is the association between students' SES and achievement by school type? What school characteristics predict the within school relationship between SES and achievement? and (iii) Are there differences between the students-level effects and compositional or contextual effects among the three types of schools? [6].

To answer the above questions, related to how organizations affect the individuals within them, we use a hierarchical linear model (HLM). In this case we use a two-level HLM, at the first level the units are students (within-school model), and each student's outcome is represented as a function of a set of individual characteristics. At the second level the units are schools (between-school model). The regression coefficients in the level-1 model for each school are conceived as outcome variables that are hypothesized to depend on specific school characteristics.

This methodology explicitly recognizes the clustering of students within schools and allows simultaneous consideration of the effects of school factors, not only on average school achievement but also on structural relationships within schools. An example of a structural relationship within a school is the association between students' socioeconomic level and students' achievement, i.e., the equity in the social distribution of achievement. The strength of this relationship may vary from school to school and this variation can be explained on the basis of the schools' characteristics. The HLM model permits a separation of within-school from between-school phenomena, and allows the decomposition of students-level effects and compositional or contextual effects (Bryk and Raudenbush, 1992; Seitzer, 1995, Raudenbush and Bryk, 1986).

Moreover, the use of HLM makes it possible to approach the conceptual and technical problems that arise when working with multilevel data: (i) aggregation biases, which result

[6] Compositional effects occur when the aggregate of a person-level characteristic is related to the outcome even after controlling for the effect of the individual characteristic.

from variables that have different meanings at the different levels at which the data are generated; (ii) misestimated standard errors, which reflect the failure to take into account the dependence among students responses within the same school; and (iii) heterogeneity of regression, which occurs when the relationships between individual characteristics and outcomes vary across schools (Bryk and Raudenbush, 1992).

Empirical Analysis

Our analysis is based on the standardized math test applied to 4th grade students in 1999 and the survey of parents applied at the same time of the test, in order to collect socioeconomic data from the students. This test is applied nationally and includes the entire population of 4,949 schools and 226,860 students[7].

First, we partition the variance in the SIMCE test results into its within and between-schools components by estimating a one-way ANOVA with random effects[8]. Twenty nine percent of the variance in the SIMCE mathematics test results is between- schools[9]. Second, we estimate the within school (level-1) HLM model as[10]:

$$Y_{ij} = \beta_0 + \beta_1 \text{ SES}_{ij} + \beta_2 \text{ hours of study}_{ij} + \beta_3 \text{ fail}_{ij} + \beta_4 \text{ preschool}_{ij} + r_{ij} \qquad (1)$$

Where Y_{ij} is the test result of student i who attends school j, r_{ij} is a level-1 random effect r_{ij}~$N(0, \sigma^2)$, in which σ^2 represents the residual variance at level 1.

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[7] The test and the survey are administered by SIMCE (Sistema Nacional de Medición de la Calidad de la Educación) Tables A1 to A5 in the appendix show descriptive statistics for the student and school-level data, for all the schools, and for each of the three school-types.

[8] This is a fully unconditional model, it involves no level-1 (students) or level 2 (schools) predictors.

[9] The between-school variance, τ, is 663.04. The within-school variance, σ^2 (1864.11), is adjusted for reliability (0.866) because this part of the total variance in the SIMCE test results also includes measurement error (which is captured by the reliability estimate in HLM), see Bryk and Raudenbush (1992).

[10] The variables included in level 1 are the only ones available at the student-level; in particular we can't use previous test results for the same students because they have taken only one standardized test.

This model aims to explain how students' mathematics achievement is influenced by their socioeconomic status (SES)[11], the number of hours they study at home, a dummy variable equal to 1 if they have failed a grade and a dummy variable equal to 1 if they have had preschool education. The inclusion of the grade-failed variable is intended to control for students' ability[12]. Since our focus is the relationships of students' SES to achievement, this variable and the intercept were allowed to vary among schools, while the other variables are assumed to be the same fixed value for each school (level 2 units). Table 1 shows the results.

Each student characteristic is significantly related to math achievement. The test score is positively and significantly related with the student's socioeconomic status (SES), the amount of hours he/she studies at home and attendance to preschool education. However, if the student has failed a grade his/her score in the test is lower, once we control for the other variables included in the model.

Table 1
Within-school HLM model. 4th grade mathematics achievement.
(N = 226,860 students in 4,949 schools)

Fixed effects Variable	Coefficient	Standard error
Intercept	245.390	0.460**
Students' SES	12.472	0.150**
Hours of study at home	0.988	0.030**
Failed a grade	-18.518	0.320**
Preschool education	3.257	0.374**

Random Effects	Variance component	df	Chi-squared	Reliability
Intercept	293.514	4919	22551.428**	0.615
SES Slope	12.080	4919	5944.109**	0.093
Level-1 effects	1753.299			

** Statistically significant at 1%

[11] The student SES was obtained using factorial analysis with a weighted average for the variables mother's education, father's education and family income. These data were obtained from a household survey of children taking the SIMCE test. The student SES is a variable with zero mean and standard deviation equal 1.

Chi-square tests of the HLM parameters indicate significant variability among schools in both the average achievement and the SES-achievement slope. We can conclude that average educational achievement and its distribution among students of different SES vary significantly among schools, even when other student characteristics are taken into account.

A full HLM model is estimated to explore the effects of student and school socioeconomic status on educational results. The within-model is the same as equation (1); in the between-school model (2), the variation in the adjusted mean mathematics achievement and the SES-achievement relationship is explained as a function of school characteristics; the residual parameter variance for hours of study at home, grade failure and preschool education attendance are set at zero, i.e. they do not vary between schools.

We estimate three school-level models; in the first model the adjusted mean math achievement is explained by the type of school (public, private subsidized (PS) and private fee paying (PFP)) and the interactions of the school SES with the school type[13], the students' SES-achievement slope is only explained by the school type. We differentiate by school type to test whether the socioeconomic level has a differentiating effect on the three different school types existing in the country.

Between-school model (level-2)

$$\beta_o = \gamma_{00} + \gamma_{01}\text{ PS} + \gamma_{01}\text{ PFP} + \gamma_{03}\text{ school SESj x PUBLIC} + \gamma_{04}\text{ school SES}_j\text{ x PS} + \gamma_{05}\text{ school SES}_j\text{x PFP} + \mu_{j0} \quad (2)$$

$$\beta_1 = \gamma_{10} + \gamma_{11}\text{ PS} + \gamma_{12}\text{ PFP} + \mu_{j1}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

$$\beta_4 = \gamma_{40}$$

[12] The variables students' SES and hours of study at home are centered on their grand means.

[13] The variable school SES is obtained as the average of the students' SES for each school. The average school SES is –0.188 and the standard deviation is 0.87, see table A2 in the appendix.

where $\gamma_{00}, \gamma_{01} \ldots \gamma_{40}$ are level-2 coefficients and μ_{j0} and μ_{j1} are level-2 random effects assumed to multivariate normally distributed with mean 0 and variance τ_{qq} and covariance $\tau_{qq'}$ between any two random effects q and q'.

The second between-school model incorporates more school characteristics in order to explain the adjusted schools mean math achievement; the rest of the model stays the same. The variables included are: dummy for urban schools, dummy schools for girls only, dummy schools for boys only, dummy full day schools, teachers' years of experience, student-teacher ratio, natural log of the number of students enrolled in the school, percentage of students with similar achievement in the school[14].

The third between-school model incorporates the following additional variables to explain the SES-achievement slope: school SES, percentage of students with similar achievement in the school, percentage of students with similar socioeconomic level in the school[15].

The three specifications show very robust results. Once a correction has been made for the effect of SES in model 1 and other school characteristics in models 2 and 3, estimations of fixed effects show significant differences in the average scores of the different school types. Private fee-paying schools have higher mathematics mean achievement than subsidized private schools and these in turn have higher achievement scores than public schools. We conclude that higher SES schools tend to have high math achievement scores; also, and very important for the purpose of this paper, the effect of SES on achievement is different in the three types of school. The effect of SES on the school's mean math achievement is greatest in private subsidized schools, followed by municipal and then private fee-paying schools.

The SES-achievement slope (β_1) regression shows that within-school achievement slopes are flatter for private fee-paying than for private subsidized and public schools. Thus

[14] This variable intends to capture an achievement peer effect. It is measured as the percentage of students in the school obtaining mathematics test scores within the range given by the mean school achievement plus or minus 0.5 standard deviation.

private fee-paying schools have a weaker association between students' SES and achievement than private subsidized schools and the latter demonstrate weaker association than public schools. Moreover, these differences persist when we control for school's SES and the percentage of students with similar scores on the standardized test (model 3), which measures the degree of homogeneity among students by ability.

[15] This variable intends to capture a socioeconomic peer effect. It is measured as the percentage of students in the school with SES within the range given by the mean school SES plus or minus 0.5 standard deviation.

Table 2
Full HLM model of mathematics achievement, 4th grade, 1999. Fixed effects
(N = 4,949 schools)

Variables	Model 1	Model 2	Model 3
For intercept β_o (adjusted school mean achievement)			
Intercept	250.063**	247.618**	247.932**
	(0.604)	(2.266)	(2.310)
Dummy private subsidized	3.477**	4.060**	3.986**
	(0.631)	(0.751)	(0.755)
Dummy private fee paying	13.546**	14.033**	18.481**
	(2.857)	(2.924)	(3.557)
SchoolSESj x PUBLIC	7.334**	11.359**	11.678**
	(0.875)	(0.959)	(0.956)
SchoolSESj x PS	20.175**	20.962**	21.184**
	(0.824)	(0.833)	(0.851)
SchoolSESj x PFP	10.164**	9.529**	7.374**
	(1.385)	(1.392)	(1.704)
Dummy urban		-4.970**	-4.659**
		(0.873)	(0.875)
Dummy full day school		1.806**	1.730**
		(0.557)	(0.562)
Dummy girls school		3.017**	3.180**
		(1.054)	(1.071)
Dummy boys school		8.351**	8.420**
		(1.459)	(1.476)
Teachers' years of experience		0.226**	0.226**
		(0.046)	(0.047)
Student-teacher ratio		0.0002	-0.0004
		(0.003)	(0.003)
Ln total enrollment		-0.894*	-0.690
		(0.405)	(0.411)
% students similar achievement		16.040**	11.499**
		(3.162)	(3.205)
For slope β_1 (SES-achievement slope)			
Intercept	11.414**	11.503**	17.468**
	(0.230)	(0.229)	(0.958)
Dummy private subsidized	-1.320**	-1.366**	-1.704**
	(0.368)	(0.367)	(0.412)
Dummy private fee paying	-5.446**	-5.566**	-8.141**
	(0.521)	(0.521)	(1.018)
School SES			1.417**
			(0.356)
% students similar achievement			-13.053**
			(2.027)
% students similar SES			-2.269
			(1.416)
For slope β_2 (hours of study at home)	0.978**	0.979**	0.979**
	(0.030)	(0.030)	(0.030)
For slope β_3 (failed a grade)	-18.425**	-18.381**	-18.420**
	(0.319)	(0.319)	(0.319)
For slope β_4 (preschool education)	1.967**	2.468**	2.561**
	(0.379)	(0.378)	(0.378)

Standard errors in parenthesis, ** statistically significant at 1%, * statistically significant at 5%.

Table 3
Full HLM model of mathematics achievement, 4th grade, 1999. Random effects
(N= 4,949 schools)

Random Effects	Variance component	df	Chi-squared[1]	Reliability
Model 1				
Intercept	193.820	4914	17067.882**	0.553
SES Slope	14.850	4917	5672.278**	0.110
Level-1 effects	1752.961			
Model 2				
Intercept	182.874	4906	16477.856**	0.543
SES Slope	15.525	4917	5671.307**	0.114
Level-1 effects	1752.717			
Model 3				
Intercept	186.238	4906	16.479.205**	0.546
SES Slope	14.088	4914	5.540.033**	0.106
Level-1 effects	1752.159			

Note 1: Chi-square statistics are based on 4,920 of 4,949 schools.
** statistically significant at 1%,

Another way to disentangle the effects of student-level and school-level SES on student outcomes is to calculate for model 1 and 2 the within-school (student-level) relationship between SES and math achievement (β_w), the between-school SES-achievement relationship (β_b) and the compositional effects (β_c) [17]. The compositional effect is the extent to which the magnitude of the school-level relationship differs from the student-level effect. This effect occurs when the aggregate of a student-level characteristic (SES in this case) is related to achievement, even after controlling for the effect of the individual characteristic. Table 4 presents student-level, school-level and compositional effects for models 1 and 2, the estimates from the two models are similar.

[17] Given that SES is centered on the grand mean the compositional effect is estimated directly and β_b is derived by simple addition of β_c and β_w, see Bryk and Raudenbush (1992).

Table 4
Student-level, school-level and compositional SES-achievement effects

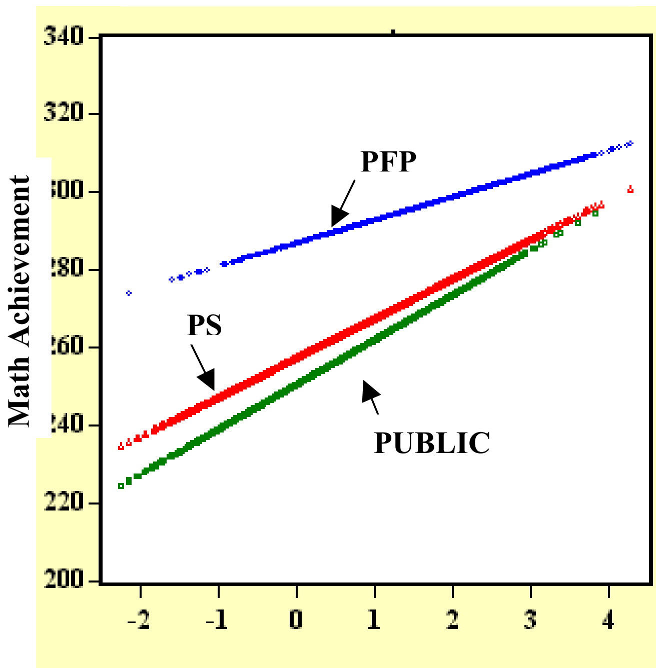
	Between schools effects β_b	**Within schools effects β_w**	**Compositional effects β_c**
Model 1			
PUBLIC	18.751	11.414	7.337
	(0.863)	(0.230)	(0.875)
PS	30.269	10.094	20.175
	(0.807)	(0.285)	(0.824)
PFP	16.133	5.969	10.164
	(1.358)	(0.467)	(1.385)
Model 2			
PUBLIC	22.862	11.503	11.359
	(0.942)	(0.229)	(0.959)
PS	31.099	10.137	20.962
	(0.822)	(0.286)	(0.833)
PFP	15.467	5.938	9.529
	(1.349)	(0.467)	(1.392)

All the effects (βs) are statistically significant at 1%. Standard errors are in parenthesis.

As noted previously, the relationship between SES and achievement is weaker within a typical private fee-paying school than it is within the typical private subsidized or public school; the difference in β_w for private subsidized and public schools, although statistically significant, is small (table 4). Figure 1 shows the within-schools effects for model 2[18] where the relationship between students' socioeconomic level and math achievement is displayed for private fee-paying, private subsidized and public schools. The graph uses the actual students' SES for each type of school; for this reason the line representing students from private fee-paying schools fades at low students' SES, while the opposite occurs with public schools which do not have high SES students.

[18] These within-school differences are based on a model that includes control variables at the within-school and at the between-school level.

Figure 1: Within – School effects



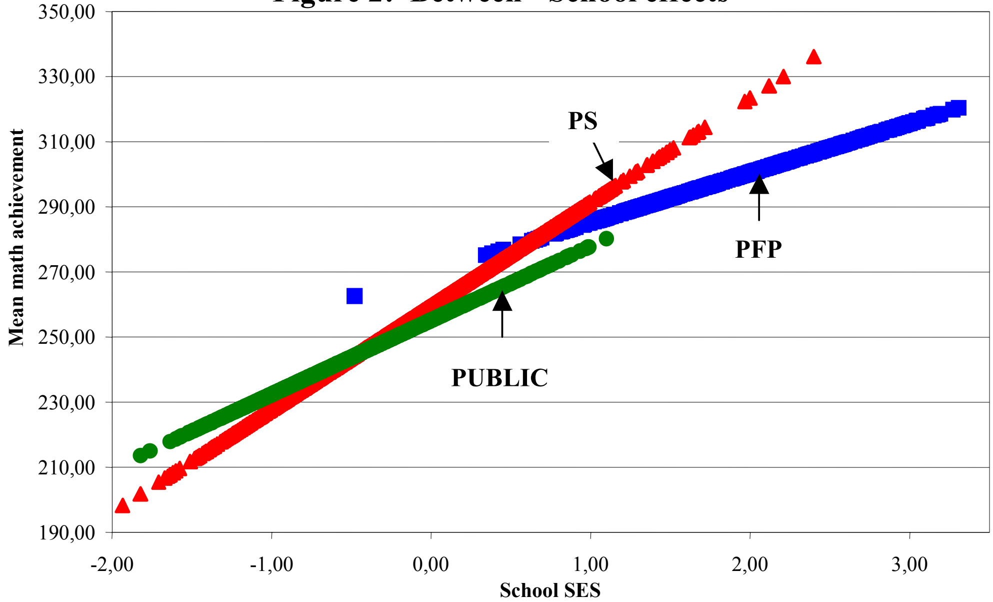
Student SES

Figure 1 also shows differences in the three types of schools by mean student achievement. Students of low, medium and high-SES obtain better educational results in private fee-paying than in private subsidized or public schools. Moreover there is a significant achievement gap between students in private fee-paying schools and the rest. Students in private subsidized schools do better than students in public schools, although the achievement difference is small and the gap tends to disappear for high-SES students.

The between-school SES-achievement relationship (β_b), i.e. when the school is the unit of analysis, shows a different behavior than the within-school one. Overall the relationship between school SES and achievement is stronger than the SES-achievement relationships within schools, showing that a school's social-class composition has a substantial effect on math achievement, greater even than individual student-level effects (table 4).

Moreover, the strength of the SES-achievement relationship for the different school types changes compared with the student-levels. Private fee-paying schools still show the weakest between-schools SES-achievement relationship, followed by public schools; private subsidized schools have the steepest slope between these two variables (table 4). Figure 2 shows between-schools effects for model 2; the graph is built using the actual school-SES data. It is important to note that private fee-paying schools have a very different social-class composition than public schools, while private subsidized schools have a broader social class composition and, more resemble public than to private fee-paying schools. Indeed, the degree of social class homogeneity among a specific school type explains the strength of the relationship between school-SES and achievement. The lowest impact of social class on achievement is to be found in more homogeneous private fee-paying schools, followed by the public schools and finally private subsidized schools which are more heterogeneous with respect to social-class composition.

Figure 2: Between - School effects



Public schools with low social-class composition, it should be noted, have better mean math achievement than public subsidized schools with a similar social-class composition; this relationship is inverted for schools of higher social class composition. Thus, public schools have advantages in educating low-income students[19]. Moreover, private subsidized schools, with the same social class composition, tend to have better educational results than private fee-paying schools[20]. In the small range where public and private fee-paying schools have a similar social class composition, the private fee-paying schools have better average math test scores.

The compositional effects (β_c) are larger for private subsidized schools than for public and private fee-paying schools (table 4). These effects are open to several interpretations; one possible interpretation is that the higher values represent peer-group effects that influence achievement even after controlling for the effect of the individual student-SES[21].

Final comments

HLM is a powerful tool that permits a separation of within-school from between–school phenomena together with the simultaneous consideration of the effects of school factors not only on school mean achievement but also on the structural relationships within schools. This methodology allows us to enrich the analysis of the Chilean case, not only on the relative performance of public and private schools, but also on the relationship between SES and achievement for different school types.

The within-school analysis shows us that there are large and significant differences in achievement and equity between private fee-paying schools and the other two types of schools. Private fee-paying schools have significantly higher math mean achievement and are more equitable in the social distribution of achievement than private subsidized and

[19] Tokman (2002) using a different methodology (OLS) and only the school average results obtains a similar conclusion from the 4th grade SIMCE test of 1996.
[20] This result is obtained after including control variables at the within-school and the between-school level in the model.
[21] They may also reflect the fact that average school SES acts as a proxy of variables omitted from the model, mainly schools' resources, Bryk and Raudenbush (1992).

public schools. At the within-school level, public and private subsidized schools have a similar behavior.

The between-school analysis shows us a more complex picture; first, there is high social class stratification between private fee-paying and public schools, only the private subsidized sector includes schools with broader range of social-class composition. It is important to note that private subsidized schools, created as a result of Chile's voucher system, have not "specialized" in a specific socioeconomic group but provide educational services to broad representation of the population. This result does not support the claim of school choice critics that the new schools will concentrate children of parents with high socioeconomic status.

Second, the between-school SES-achievement relationship is more equitable for public and private fee-paying schools than for private subsidized schools, probably because among private fee-paying and among public schools there is less socioeconomic differentiation. Third, public schools with a low social-class student composition are more effective than private subsidized schools with a similar student base; that is, public schools demonstrate advantages in educating low-income students. However, this relationship is reversed for schools of higher social-class composition. Also, we can conclude, comparing the two kinds of private schools, that some private subsidized schools with high social composition are more effective than private fee-paying schools.

We conclude that the SES-achievement relationship between schools is stronger than the SES-achievement relationship within schools, that is, the social-class composition of the school has a substantial effect on mean achievement, even larger than the individual student-level effect.

This finding implies a selection explanation in which the difference in the SES-achievement relationship is a result of differences between school types in the process by which students are assigned to schools. Here it should be noted that the regulations for admitting and expelling students differ between public and private schools. While public schools must admit all their applicants (as long as there are vacancies) and have serious restrictions for expelling students, private subsidized and private fee-paying schools are free to establish their own admission and expulsion policies.

Further, the amount of resources available to schools strongly differs: for while public schools are mainly financed by the uniform voucher per pupil provided by the state, private subsidized schools can also be financed by parents' contributions (shared financing), and the fees of private fee paying schools are, on average, about five times the per-student subsidy.

Given the demonstrated importance of socioeconomic factors on achievement both within and between-schools, it is important that the design of a voucher system considers an equalizing voucher, i.e., an income dependent subsidy per student[22]. This will take into account that it is more expensive to educate low-income students because the school has to compensate their socioeconomic disadvantages.

[22] Many authors suggest an income dependent voucher to reduce the inequality of educational expenditures; Epple and Romano (1998), Gauri and Vadwa (2003), Bearse et al (2000), among others.

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Appendix: Descriptive Statistics

Table A1
Student-level data

	N	Minimum	Maximum	Mean	Std. Deviation
SIMCE math test scores	281468	111	396	250.02	49.99
Students SES	238047	-2.271	4.287	0	1.000
Hours of study at home	251135	1	13	4.85	3.29
Failed a grade	296299	0	1	.11	.32
Preeschool education	296299	0	1	.78	.41
Number of observations	226860				

Table A2
School-level data: All schools

	N	Minimum	Maximum	Mean	Std. Deviation
Total Enrollment	5457	158.25	353.86	246.180	28.559
Private fee-paying schools	5457	0	1	.09	.29
Private Subsidized schools	5457	0	1	.33	.47
Public schools	5457	0	1	.58	.49
Urban schools	5453	0	1	.67	.47
Teachers -years of experience	5050	.00	41.00	15.620	6.457
Full day school	5454	0	1	.39	.49
Girls schools	5447	0	1	.043	.20
Boys schools	5447	0	1	.028	.17
Student/teacher ratio	5009	.750	2019.000	34.088	48.276
Ln enrollment	5452	.000	6.286	3.632	.928
School SES	5398	-1.934	3.307	-.188	.870
% students with similar SES	5398	.000	1.000	.418	.166
% students with similar achievement	5457	.000	1.000	.377	.116
Number of observations	4949				

Table A3
School-level data: Private subsidized schools

	N	Minimum	Maximum	Mean	Std. Deviation
Total enrollment	1779	158.25	326.29	250.692	26.980
Urban school	1777	0	1	.85	.35
Teacher - years of experience	1580	.00	41.00	11.338	6.258
Full day school	1777	0	1	.32	.47
Girls schools	1773	0	1	0.068	.25
Boys schools	1773	0	1	0.042	.20
Student/teacher ratio	1560	1.333	2019.000	42.253	62.832
Ln enrollment	1777	1.609	6.286	3.794	.835
School SES	1751	-1.934	2.399	-. 031	.617
% student with similar SES	1751	.0000	1.000	.434	.147
% students with similar achievement	1779	.0000	1.000	.383	.102
Number of observations	1530				

Table A4
School-level data: Public schools

	N	Minimum	Maximum	Mean	Std. Deviation
Total enrollment	3186	162.00	353.86	236.398	22.119
Urban schools	3185	0	1	.52	.50
Teacher – years of experience	3096	.00	30.00	18.407	4.907
Full day school	3185	0	1	.40	.49
Girls schools	3185	0	1	.017	.13
Boys schools	3185	0	1	.010	.10
Student/teacher ratio	3090	.750	1128.000	30.623	40.595
Ln enrollment	3184	.000	5.835	3.546	.994
School SES	3156	-1.823	1.098	-.598	.413
% Student with similar SES	3156	.000	1.000	.424	.178
% Students with similar achievement	3186	.000	1.000	.368	.124
Number of observations	3061				

Table A5
School-level data: Private fee-paying schools

	N	Minimum	Maximum	Mean	Std. Deviation
Total enrollment	496	208.92	345.12	292.978	18.612
Urban schools	495	0	1	.98	.15
Teacher – years of experience	378	.00	32.90	10.712	5.672
Full day school	496	0	1	.50	.50
Girls schools	493	0	1	.12	.32
Boys schools	493	0	1	.093	.29
Student/teacher ratio	363	3.000	337.500	28.452	27.527
Ln enrollment	495	1.609	5.545	3.610	.706
School SES	495	-.480	3.307	1.873	.643
% Student with similar SES	495	.000	.833	.329	.112
% Students with similar achievement	496	.105	.778	.417	.098
Number of observations	362				