PONTIFICIA UNIVERSIDAD CATOLICA DE CHILE
SCHOOL OF ENGINEERING

COMPETITION AND SCHOOL PERFORMANCE: THE CASE OF THE CHILEAN VOUCHERS

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Thesis submitted to the Office of Research and Graduate Studies in partial fulfillment of the requirements for the Degree of Master of Science in Engineering

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Santiago de Chile, June 2008
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I wish to dedicate this thesis to my family.

ACKNOWLEDGEMENTS

I would like to thank my advisor, Professor Ricardo Paredes, for his constant support and guidance, and Professors Yadran Eterovic, Augusto Iglesias and Enzo Sauma for their very helpful comments. I would also like to thank Lorena Pérez, for generously sharing the data used in this work.

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ABSTRACT

Schools in Chile work under a voucher system that promotes competition. The poor outcome in different tests has shed doubts about the quality of education and the convenience of the voucher system. We measure the effect of competition on schools' achievement in a national standardized test and on the sorting of students between public and private schools. We find a non-linear relationship between competition and scores. The effect is positive and has a relevant magnitude in the case of voucher-funded private schools. The relationship between competition and sorting is not conclusive.

Keywords: competition, vouchers, school choice.

RESUMEN

Los colegios en Chile operan bajo un sistema de subsidios a la demanda que promueven la competencia. Los malos resultados del sistema escolar medidos por distintas pruebas estandarizadas generan dudas acerca de la calidad de la educación y la conveniencia de mantener este sistema de subsidios. En este trabajo medimos el efecto de la competencia en el rendimiento de los colegios en la prueba SIMCE y en la segregación de alumnos entre colegios particulares y privados. Encontramos una relación no lineal entre competencia y resultados del SIMCE. El efecto es positivo y de magnitud importante en el caso de los colegios particulares subvencionados. La relación entre competencia y segregación no es concluyente.

Palabras Claves: competencia, vouchers, elección de colegios.

1 INTRODUCTION

The Chilean experience constitutes an excellent opportunity to judge the performance of vouchers in education, a matter of great interest in the design of educational policies. Whilst other countries have had similar experiences, in none of them have vouchers been at work for such a long time and in such an extended way as in Chile, where close to 90% of the students attend public or private schools which receive public funding via vouchers.

Competition among schools could affect academic results mainly through two channels. On one hand, the design of the voucher system creates incentives for schools to attract students to get more funding, and one way to attract them should be by providing good education. That is, competition by itself should raise the efficiency or productivity of schools. On the other hand, competition could cause sorting or segregation of students among schools. The outcome of this would be a situation in which the best students gather in certain schools and the less qualified students in others.

The purpose of this work is to estimate the effect of competition on academic results and to find out the extent of each channel: sorting or productivity. Its main contribution is to analyze this issue with a more proper data set than previously used, and hence, to construct a better measure of competition. More precisely, we combine a dataset developed by Pérez (2008) that has the distance each school ad the ten schools closer to it in Santiago de Chile with the SIMCE database. The latter consists of a standardized test taken by all children in various grades in Chile, and also contains information on each student's household, such as family income and each parent's educational attainment.

The paper has three sections besides this introduction. Section 2 briefly describes Chile's educational system and reviews the literature. Section 3 presents the methodology of estimation and the results. Section 4 concludes.

2 COMPETITION IN A VOUCHER SYSTEM

2.1 The Chilean System

The two main features of the current Chilean educational system come from the 1981 reform that had the purpose of improving performance, efficiency and reducing the gap in achievement among students. First, the educational system passed from a centralized administration to a decentralized one. Public schools (Municipales) started to be managed by local counties. Second, a voucher per student attending was created, making no differences among public and private schools in funding, as proposed by Friedman (1955). Thus, besides privately financed private schools (Particulares Pagados), a new category of private schools emerged: those completely financed by the voucher system (Particulares Subvencionados)[1]. The core of the reform lies in the eventual competition generated, since parents are free to choose the school they want, constrained by the availability of vacancies (in the case of public schools) or by the acceptance of the school (in the case of private schools).

Whilst the main elements of the 1981 reform have not been changed, a number of policies have modified the relative status of public and private subsidized schools. A key one was the Teachers' Act ("Estatuto Docente") enacted in 1991, which ensures that teachers cannot be fired from public schools, and that their salaries are fixed in a centralized way. Others are associated with a number of programs aimed at improving the quality of the worst schools and that provide additional funds to those obtained through the voucher system. Aedo and Sapelli (2001) describe thoroughly the voucher system, review the evidence about the success of this reform, and hold that these policies reduce the competitive incentives for schools.

Some of the goals of the voucher reform of 1981 have apparently been successful. The number of private schools increased and absorbed the growing demand for schooling since the early 1980s. Thus, school choice has been ensured and the decentralized administration has avoided problems typically associated with centralization. In 2008 about 90% of students attend schools financed by vouchers, and more than half of them go to privately subsidized schools. However, the great concern

[1] Later, these schools were allowed to charge a part of the fee to the parents.

is the quality of education, which in turn, has questioned the capacity of the system to induce a virtuous circle through competition, an expected key feature of the voucher system that would push schools to improve their academic performance.

In fact, there has been an ongoing discussion in Chile about the convenience of maintaining the voucher system in opposition to turning back public schools to be administered by the Ministry of Education and reducing public funding to private schools. This discussion has been motivated in part for ideological reasons and in part because of the low quality of Chilean education, on which there is a consensus. Chile has performed poorly in international tests, such as TIMSS or PISA, although the expenditure in education has increased more than 50% from 1990 to 2006. The main tool to measure and compare schools' results in Chile is the standardized SIMCE test. Once a year this test is taken by all students in either 4^{th}, 8^{th} or 12^{th} grade, whilst a salient feature in Chilean schools' results is the large difference between schools with students coming from low income families and schools with wealthier students. Sapelli and Vial (2002) asses the performance of schools under the voucher system, using the SIMCE test scores, and find that attending a voucher private school provides a significant gain in the SIMCE score for a public school student. Mizala and Romaguera (2000) discuss the segregation of students according to income, and the gap in test scores between high and low income groups.

2.2 School Competition and Academic Performance

The effect of competition on academic performance is a key issue to understand the dynamics of the "education industry", the evolution of performance, and the impact of a voucher system. This literature is relatively novel, since only a few countries have emphasized the role of decentralized and private schooling. Hoxby (1994 and 2001) studies the relationship between competition and schools' academic results using data from a voucher "experiment" in Milwaukee, USA, finding that competition has a positive effect on the average results obtained by students when public and voucher-funded private schools coexist. Ladd and Fiske (2001) study the same issue in New Zealand. In this case the authors find a negative effect of competition on test scores. The relationship between competition and scores has also been studied in places without a voucher system. Sander (1999) finds that private schools don't have an effect

on public schools' scores in Illinois, and Maranto, Milliman and Stevens (2000) find that the same is true in Florida, except in districts where the role of competition is reduced because low family income does not allow students to move to a private school. Bayer and McMillan (2005) measure competition as an elasticity which represents how a reduction in quality would affect a school's demand. They find a significant positive relationship between competition and scores with data from an urban area in the USA. Braun-Munzinger (2005) reviews most of the evidence found so far. On the theoretical side, Epple and Romano (1998) model the competition between private and public schools in a voucher system, and solving computationally conclude that this system promotes the growth of the private sector, increases sorting and benefits high-ability students. However, the assumptions behind their model differ from the reality of the Chilean system. Different voucher designs, showing that a system in which productivity but not sorting is enhanced is possible, are discussed in Epple and Romano (2002).

The Chilean experience stands out because the reform that established the voucher system was country-wide and more than two decades have passed since it was implemented, while in other countries, in general, small experiments have taken place in cities or small groups of schools. The main references to this literature are Gallego (2002), Hsieh and Urquiola (2003), Auguste and Valenzuela (2004) and Pérez (2008). These papers use data for the whole country, using each county as an observation. Hsieh and Urquiola (2003) study the effect of the voucher system on schools' results. They construct a panel with data from 150 counties between 1982 and 1996, and measure the difference in schools' results before and after the 1981 reform. They compare the changes among rural and urban schools assuming that competition, measured by the entrance of the new voucher-funded private schools, was less intense in rural than in urban areas. They conclude that the voucher system has not improved school performance and that, in turn, it has produced sorting of the students. That is, the students of higher ability, higher family income, or who are set apart in some other dimension, have transferred from public schools to voucher-funded private schools.

Hsieh and Urquiola (2003) argue that the lack of effect of competition on schools performance may be due to the way in which parents choose schools. They claim that parents may choose schools with good students, which would induce schools to improve their results only by attracting good students and not by raising the quality

of the education offered. This in turn would reduce the scores of the schools that lose good students and the net effect would be zero.

Gallego (2002) tests the existence of a positive relationship between competition and school performance, and if this relationship is more important for private voucher schools than for public schools. Using cross-section regressions to explain SIMCE scores with a county-level competition index measured as the proportion of students in each county that attend private schools, and other socioeconomic variables, he finds support for both hypotheses.

Gallego (2002) states that competition is endogenous to test scores, and faces the endogeneity problem using total school enrollment per county as an instrument for the degree of competition. He also uses the degree of urbanicity in the schools' location as another possible instrument. He finds that without using instrumental variables he obtains a negative and significant effect of competition on schools' performance, which shows the importance of addressing endogeneity.

Auguste and Valenzuela (2004) study the impact of competition on schools' academic performance following Gallego (2002)'s methodology. They also find a positive effect of competition on schools' results and conclude that competition increases the sorting of students between public and private schools based on students' family income.

Pérez (2008) uses multilevel data, with observations for each student in Santiago, and taking into account the interaction between student level and school level data. The distance from each school to the closest similar one is taken as a measure of competition. No significant relationship between competition and test scores is found. Another conclusion is that in areas with a lower degree of competition, socioeconomic variables have a greater impact on students' scores.

Both Gallego (2002) and Auguste and Valenzuela (2004) use as a relative measure of the competition faced by each school the proportion of students enrolled in private schools to the whole student population in each county. The idea behind this competition proxy is that private schools are by nature, due to the incentives they face, more competitive than public schools, so in a county with few private schools there is little competition. Naturally, this measure of competition is imperfect and dominated by others, bounding the scope of the market with a spatial notion. In fact, an important assumption underlying our way of defining competition is that distance is a relevant

variable when parents choose schools. This assumption is confirmed by Gómez, Chumacero and Paredes (2008), who study the preferences of parents when choosing a school and find that distance and quality are given strong consideration.

In fact, the understanding of the demand side is fundamental for our way of defining competition in the following section, and later for the interpretation of our results. Gallego and Hernando (2007) estimate a random utility model and find out that parents take into account schools' average scores, accesibility (in terms of closeness to home) and the fees charged by schools. Also, they find that parents with higher expectations about their pupil's skills place a greater value on the schools' test scores.

With evidence from the USA, Hastings, Kane and Staiger (2005) find out that parents value proximity and schools' average test scores, and that the importance given by parents to scores is increasing in family income and in student skills. Paredes and Pinto (2008) also measure the relevance that family income has in the choice of a school in the case of Chile.

Hastings and Weinstein (2007) conclude that information is a relevant variable when parents choose schools. In the context of the No-Child-Left-Behind Act, they find that 16% of the students moved to a different school when their parents where informed about their under-performance.

2.3 Methodology

We follow a general approach to study the impact of competition on school performance, which consists in estimating a cross-section regression in which the dependent variable (R) is the average score of each school in the SIMCE test, and the independent variables are a measure of competition (C) and students' family characteristics (family income and each parent's educational attainment) averaged by school (matrix X), as in (1).

$$R = \beta_0 + \beta_1 \cdot C + \beta_2 \cdot X + \varepsilon \ , \qquad (1)$$

To measure academic performance, we follow most studies and consider academic performance through different census SIMCE scores. In turn, we explore different "extents of the market" definitions based on the distance from each school to

other schools close by, and other school characteristics, understanding that to avoid an arbitrary definition, we need to test robustness of our results to changes in the parameters that define our competition index.

We look next for evidence of segregation or sorting of students which differ in some personal characteristic into different schools (public or private schools). We test whether segregation is influenced by competition. Phrased differently, sorting exists if students are not distributed randomly between public and private schools, but they are distributed according to variables such as family income, and we intend to find out if the degree of sorting is influenced by the level of competition existing in each "educational market." To do so, we estimate a regression at the county level, in which the dependent variable is a measure of sorting and the independent variables are the competition index and personal characteristics of students.[2]

The definition of competition and the way to measure it are key issues in this problem. Competition is associated with the existence of schools that seek the same objective: to attract students in order to receive more funds via vouchers. Our hypothesis is that this is done, at least to some extent, through raising the quality of the education offered. In particular, we build our competition index for each school by counting the number of schools of similar characteristics located within a certain radius. According to our definition, school X has school Y as a competitor if the fee charged by each doesn't differ by much, if school Y's SIMCE score is not too much lower than school X's, and if both schools enroll only boys, only girls or boys and girls. Initially we set the radio that defines the educational market to be 4 kilometers[3]. We also assume that two schools compete if the difference in the fee they charge is not greater than US$30. Finally, we assume that a given school has another one as its competitor if the latter has a SIMCE score not less than 40 points below the score of the

[2] The city of Santiago is composed by counties. The Metropolitan Region of Santiago consists of 52 counties, but we consider schools from 34 counties, which are urban areas.

[3] This distance is thought to be reasonable in Santiago. Probably in other cities it is not. All the parameters used for the definition of the competition variable are varied later and the results re-estimated to check their robustness.

former[4]. This definition for competition is consistent with the findings of Gómez et al. (2008) and Gallego and Hernando (2007) with respect to parent's preferences.

Another important issue is whether school size (in number of students) is relevant to understand competition. We assume that when schools compete they focus on attracting "marginal" students. In other words, what is at stake for each school is how many students are they able to attract on the margin, and not their total enrollment, at least in the short run. Under this assumption, the degree of competition faced by a school is associated with the presence of other similar schools nearby, independently of their size. When previous articles about this subject measure competition as the fraction of students enrolled in private schools in each county, they are implicitly assuming that the size of schools matters for competition. In our opinion, however, an important difference exists if, for instance, 80% of private enrollment is made up by 20 schools or by only one very large school.

Finally, we must recall that the competition variable might be endogenous. The location of new schools may depend on the quality of existing schools in each neighborhood. The reason for this is that in places where existing schools perform poorly, schools that establish themselves there will have a good prospect of attracting a large amount of students. Consequently, any estimation of a model that considers the effect of competition on performance, must address endogeneity.

[4] For example, if school X has a SIMCE score of 400, school Y is considered to be a competitor if it's SIMCE score is at least 360.

3 RESULTS

We consider different samples in our estimations, but we always exclude rural schools within Santiago and schools with missing information. Given this, we have observations for 62,177 students enrolled in 1,272 schools, in 34 counties.

As said above, because of the endogenous nature of competition, estimating equation (1) requires an instrument for this variable. Gallego (2002) and Auguste and Valenzuela (2004) used the degree of urbanicity (a proxy for entry costs) and the total enrollment per county (a proxy for market size) as instrumental variables for competition. In our case this is not possible since all observations correspond to an urban area. The total enrollment by county is a proxy for market size (which could influence schools' locations) and could be an appropriate instrument. We consider the use of this instrument as well as the total number of students enrolled in all schools found within the 4 km. radius around a school (which is a similar proxy for market size, but a more precise one, as it considers the market size of what we define as the relevant market).

The results of OLS and 2SLS estimations for each sub sample, considering school conditions are reported in table 1.[5]

Table 3-1: Effect of competition on schools' scores.

[5] We also estimated equation (1) using HLM. However, as our focus was in differences between schools, the results, that do not change much, are not reported here.

Regression [1]								
Dependent Variable: School's Average SIMCE Score								
	Full Sample	Public Schools	Voucher Funded Private	Private Funded	Full Sample	Public Schools	Voucher Funded Private	Private Funded
Competition	-1.927 (-7.12)**	-1.001 (-2.93)**	-2.669 (-6.60)**	-2.337 (-1.84)*	-0.090 (-0.13)	-0.814 (-0.91)	0.442 (0.46)	3.616 (0.65)
Mother's Educational Attainment	5.022 (5.92)**	5.728 (4.69)**	6.040 (5.16)**	2.577 (0.75)	5.932 (4.78)**	5.792 (4.81)**	7.492 (4.05)**	1.563 (0.42)
Father´s Educational Attainment	2.409 (2.50)**	3.076 (2.26)**	1.721 (1.24)	10.712 (3.01)**	3.249 (2.89)**	3.171 (2.37)**	1.636 (0.88)	14.432 (3.01)**
Family Income	0.0000075 (1.82)*	0.0000078 (0.62)	-0.0000068 (-0.79)	0.0000040 (0.58)	0.0000053 (1.67)	0.0000087 (0.62)	0.0000072 (0.59)	-0.0000091 (-0.66)
Voucher funded private school	0.286 (0.22)				-0.706 (-0.42)			
Non voucher funded private school	-9.156 (-2.32)**				-10.370 (-2.71)**			
Constant	173.578 (26.43)**	155.032 (18.26)**	177.912 (16.98)**	75.182 (1.45)	146.901 (13.22)**	152.282 (10.63)**	143.793 (11.77)**	40.161 (0.68)
R2	0.6346	0.533	0.540	0.233	0.617	0.532	0.479	0.102
Observations	1272	412	673	187	1272	412	673	187
Method	OLS	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS

Heteroskedasticity-Robust Standard Errors. *(**) denotes significance at the 90% (95%) level.

From table 1 it appears clear that considering the endogeneity of competition changes the sign and significance of the variable. Competition, which in a first stage could be associated with a lower school performance, is not, when we consider endogeneity.

A natural step in the analysis of competition that follows an industrial organization approach and even the concentration guidelines in the USA and in Chile, suggest that the degree of competition is not linear in variables like number of competitors or concentration. That is, it suggests that our measure of competition has some thresholds or its effect should not be linear on the performance. To estimate such a possibility, we split the samples considering three ranges of competitors: from 0 to 3, from 4 to 7, and from 8 to 10.

Table 2 presents the results only for the sample of private non voucher-funded schools, which are the only ones in which the results significantly change and which show these non-linearity. In this case, the coefficient for competition becomes significant for the group of schools with 4 to 7 competitors. Its magnitude implies that one additional competitor would have a positive effect of 18,8 points in the SIMCE

score. Also, we see that the coefficient is larger in this subsample than in the ones with more and less competitors.

Table 3-2: Effect of competition on schools' scores by ranges of competition.

Regression [1]			
Method: 2SLS			
Dependent Variable: School's Average SIMCE Score			
	1	2	3
Competition	15.002 (1,15)	18.827 (2,17)**	5.634 (0.48)
Mother's Educational Attainment	1.992 (0,56)	8.573 (3,23)**	9.653 (4,48)**
Father´s Educational Attainment	6.555 (2,24)**	-1.221 (-0,49)	1.460 (0.75)
Family Income	0.0000078 (0,33)	0.0000541 (1,67)	-0.0000824 (-2,08)*
Constant	136.401 (3,62)**	46.786 (0,83)	89.724 (0,94)
R2	-	-	0.425
Observations	281	301	91

Column 1: voucher funded private schools with 0,1,2 or 3 competitors. Column 2: voucher funded private schools with 4, 5, 6 or 7 competitors. Column 3: voucher funded private schools with 8, 9 or 10 competitors. Heteroskedasticity-Robust Standard Errors. *(**) denotes significance at the 90% (95%) level.

We tested the robustness of the results presented to the competition definition and to the relevant educational market. Thus, we estimated (1) using 36 combinations of values for the three parameters that define the competition index. The results, reported in the appendix, suggest that the competition index is robust.

Finally, we analyze the relationship between competition and the degree of sorting or segregation of students between public and private schools. Competition could have an effect on sorting because of the following. More competition is generally provided by private schools. If parents have a preference for private schools, more competition would mean students changing from public to private schools. Also, private schools find it convenient to attract the best students in the private schools. Thus, competition could have a negative effect on scores for public schools and a positive one for private schools, increasing sorting. Following Auguste and Valenzuela (2004), we distinguish "sorting by inputs" and "sorting by outputs." Sorting by inputs is associated with the characteristics of each student, such as their family's income and their parents' educational attainment. The distribution of students by family income in public and private schools is not the same. Sorting by outputs, on the other hand, refers to the difference between schools in the scores that students get. The degree of sorting by outputs and by inputs in each county is important, and varies significantly among counties. We measure the former by the ratio of the average SIMCE score in public schools to the average SIMCE score in private schools, and it has a mean of 0.894 and a standard deviation of 0.049. The latter is measured by the ratio of average family income of students in public schools to average family income of students in private schools, and its mean is 0.445 and its standard deviation 0.228.

To test whether there is a relationship between competition and sorting in each county, we estimated:

$$S = \beta_0 + \beta_1 C + \beta_2 X + \varepsilon \qquad (2)$$

where S is the index of sorting described, C is the variable of competition in the county, and X is a matrix with the same socioeconomic variables used previously plus the fee charged by schools to parents.

In this case, each observation corresponds to a county in Santiago and the variable that measures competition is defined as the average of the competition index in each county. Again we use 2SLS with the number of students per county (a proxy for market size) as the instrument for competition. The results for sorting by inputs are shown in table 3. The coefficients are not different from zero. The same is true for the sorting by outputs estimation, which in addition, doesn't have overall significance.

Thus, we have no evidence that competition affects sorting of any kind, what is consistent with the evidence that suggests that over the last two decades, an overall excess of supply is present.

Table 3-3: Effect of competition on sorting.

Regression [2]	
Dependent Variable: Sorting by Inputs	
	2SLS
Competition	1.074 (0,5)
Mother's Educational Attainment	0.756 (0,46)
Father´s Educational Attainment	0.464 (0,23)
Family Income	-0.0000049 (-0,39)
School Fee	0.000055 (0,37)
Constant	-17.691 (-0,46)
R2	
Observations	34

Heteroskedasticity-Robust Standard Errors. *(**) denotes significance at the 90% (95%) level.

4 CONCLUSIONS

Initially we find that competition has a significant negative impact on schools' scores. This is explained by the fact that competition is endogenous to scores. In an area where scores are low, private schools have an incentive to establish themselves there to attract the unsatisfied students. When we correct this using an instrumental variable approach, we obtain positive coefficients for both voucher-funded and non voucher-funded private schools. Still, though, we find that, in every case, competition is not significant. We believe that this is due to a non-linear relationship between competition and schools' scores. In order to check this, we divide the sample by segments of the competition variable. We find that for non voucher-funded private schools, the coefficients vary in the different subsamples according to the number of competitors they face. The coefficient for the competition variable is positive in the three segments considered, and the one for schools in the middle segment, with 4 to 7 competitors, is the largest one and the only significant one.

The positive impact of competition in the results of voucher-funded private schools is especially relevant since the existence of this kind of schools is the main innovation of the reform of 1981 which established the voucher system. Thus, from a policy standpoint it should give support to the idea that competition enhances achievement when the correct incentives are in place.

With respect to the difference between public and private schools, it is possible that competition doesn't increase public schools' efficiency and causes them to lose students and lower their SIMCE scores, because there is no credible threat for them of a large cut in funding or plain closure. Let us recall that even if public schools lose funding because of the migration of students to private schools, teachers don't face the consequences given the privileges granted by the "Estatuto Docente". Also, there are several policies that give extra funding to public schools that perform poorly in the SIMCE test, such as the P-900 program that supports the 900 schools with the lowest SIMCE scores. In this way, the incentives for schools are not necessarily to improve their results in order to attract more students. Private schools, on the other hand, must strive for their existence.

The other possible explanation for this difference would be a positive relationship between competition and the sorting of students between private and

public schools. However, we have found that the results are not statistically significant. A possible reason for this is the limited number of observations. The coefficient is positive, meaning that more competition is associated with a higher level of sorting. This is reasonable, because competition is usually due to the presence of private schools, which are established more frequently than public ones. Sorting is produced by the flight of students from public to private schools, which occurs more easily in neighborhoods where there are more private schools nearby. The positive coefficient, if it were significant, would have helped explain the difference between the positive impact of competition on private school's scores and the negative impact on public schools' ones.

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APPENDIX A: ROBUSTNESS OF THE RESULTS

Table A-4 shows the results of repeating regression [1] with different values for the parameters that specify competition. The observation unit is each school. The estimated coefficients for the competition and its t-test value are shown, both for the OLS and the 2SLS cases.

Table A-4 : Robustness of the results under different parameters.

Robusteness of the estimated coefficient for the competition variable in regression [1] to variations in the parameters that define the measurement of this variable							
				OLS		**2SLS**	
Case	Radius	Difference in Fee	Diference in SIMCE score	Coefficient	t	Coefficient	t
1	2	5	20	-3.368	-10.62**	-0.2021134	-0.14
2	2	5	40	-1.701	-5.54**	-0.1687192	-0.14
3	2	5	70	-0.724	-2.44**	-0.1705415	-0.14
4	2	15	20	-3.573	-13.51**	-0.1133626	-0.14
5	2	15	40	-1.890	-6.89**	-0.0946383	-0.14
6	2	15	70	-0.618	-2.41**	-0.0920954	-0.14
7	2	25	20	-3.716	-14.90**	-0.0964226	-0.14
8	2	25	40	-2.096	-8.01**	-0.0795309	-0.14
9	2	25	70	-0.725	-2.94**	-0.0754491	-0.14
10	4	5	20	-3.438	-10.97**	-0.20177	-0.13
11	4	5	40	-1.752	-5.77**	-0.1676411	-0.13
12	4	5	70	-0.751	-2.56**	-0.1696813	-0.13
13	4	15	20	-3.627	-13.95**	-0.1087544	-0.13
14	4	15	40	-1.927	-7.12**	-0.0895914	-0.13
15	4	15	70	-0.636	-2.51**	-0.0871804	-0.13
16	4	25	20	-3.792	-15.45**	-0.0929146	-0.13
17	4	25	40	-2.157	-8.34**	-0.0757362	-0.13
18	4	25	70	-0.761	-3.11**	-0.0718534	-0.13
19	7	5	20	-3.434	-10.97**	-0.2863923	-0.19
20	7	5	40	-1.750	-5.77**	-0.2382396	-0.19
21	7	5	70	-0.750	-2.56**	-0.2412952	-0.19
22	7	15	20	-3.624	-13.95**	-0.1546924	-0.19
23	7	15	40	-1.926	-7.12**	-0.1274561	-0.19
24	7	15	70	-0.636	-2.50**	-0.1240633	-0.18
25	7	25	20	-3.790	-15.45**	-0.1321761	-0.19
26	7	25	40	-2.156	-8.34**	-0.107767	-0.19
27	7	25	70	-0.761	-3.11**	-0.1022703	-0.19
28	10	5	20	-3.459	-11.05**	-0.3605132	-0.23
29	10	5	40	-1.768	-5.82**	-0.2994819	-0.23
30	10	5	70	-0.763	-2.60**	-0.3036583	-0.23
31	10	15	20	-3.653	-14.10**	-0.1938086	-0.23
32	10	15	40	-1.947	-7.20**	-0.1594514	-0.23
33	10	15	70	-0.650	-2.55**	-0.1552267	-0.23
34	10	25	20	-3.819	-15.64**	-0.1652886	-0.23
35	10	25	40	-2.178	-8.43**	-0.1345661	-0.23
36	10	25	70	-0.775	-3.16**	-0.1276703	-0.23

Heteroskedasticity-Robust Standard Errors. *(**) denotes significance at the 90% (95%) level.