School choice in Latin America: Does migration matter?

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Over the second half of the twentieth century, the education systems in Latin America have faced a sharp increase in the number of privately run schools and of the quantity of students enrolled in them. Additionally, other phenomenon that has become very important in the globalized world is migration and its repercussion on education. The aim of this paper is to analyze the main factors that influence parent's choice about sending their children to a privately run school in Latin America with special attention to the migrant status of students. Discrete choice models were estimated using data for the eight Latin American countries surveyed in PISA 2009 and the analyses were run for the region as a whole and for each country independently. It was found that migrant status does not influence school choice in Latin America as a whole, but it has different effects in each of the Latin American countries.

Key words: school choice, migrants, extracurricular activities, Latin America.
JEL Classification: I21, I28.

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1 Introduction

Over the years, the education systems in Latin America have faced complex transformation processes. A noteworthy aspect has been the sharp increase in the number of privately run schools, and of the quantity of students enrolled in them, that has occurred over the second half of the twentieth century (Narodowski, 2000, 2008).

The expansion of the private sector of education is not a minor phenomenon and its consideration is essential to understand the characteristics of education systems. While publicly run schools are financed with taxes, the privately run schools rely mostly on fees and contribution from the family. Therefore, it is interesting to examine what are the reasons that lead parents to pay for the education of their children.

Among the factors affecting the school choice by parents, a previous work (Gertel, Cámara, & Decándido, 2012) found an important effect associated to the presence of extracurricular activities offered by schools. The basic model included family background, scarcity of qualified teachers, scarcity of educational materials and attitude towards schools among others, as explanatory variables. By using data for Argentina provided in PISA 2009, in the previous paper was found that families revealed a preference for having extracurricular activities in schools (mainly games, music and voluntary activities) so they would be willing to pay for a privately run school that offers this type of activities.

This paper seeks to extend the previous work to analyze this phenomenon in other Latin American countries included in the sample of PISA 2009[1]. We are aware about the differences in the economic and demographical structures among these countries, hence that the interest is to know whether the probability of choosing a privately run school differs between Latin American countries.

On the other hand, a phenomenon that has become very important in the globalized world and hence could not be ignored when studying school choice by families in different countries is the condition of being immigrant or not. The literature that addresses the issue of immigration and schooling in developed countries is abundant (Bernal, 2005; Betts and Freile, 2003; Brunello and Rocco, 20013; Entorf and Minoiu, 2004; Kornder and Dronkers, 2012). However, the opposite can be said for developing countries, including those in Latin America. Probably, the lack of interest in the study of the influence of immigration status on education in Latin America is due to the fact that migrant students (first and second generation) represent a low share of the student population, 1,2%[2], while it represents the 5% in the developed countries,

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[1] The Latin American countries included in the sample of PISA 2009 are Argentina, Brazil, Chile, Colombia, Mexico, Panama, Peru and Uruguay.

[2] Specifically, the share of migrant students is of 3,6% in Argentina, 0,8% in Brazil, 0,5% in Chile, 0,3% in Colombia, 1,9% in Mexico, 3,9% in Panama, 0,4% in Peru and 0,6% in Uruguay.

according to PISA 2009 (OECD, 2011). Yet migrant families also take decisions concerning the selection of schools for their children that may affect educational outcomes.

Concern for the analyses of the behavior of migrant families in school choice arises because there may be a number of social and demographic factors that lead migrant students to behave differently from the native population. In fact, we can see that if we consider the eight Latin American countries who were participated in PISA 2009, 19,7% of the student population attends to a privately run school, while this percentage drops to 14, 9% if we consider only the migrants of first generation, and to 12,9% when considering only second-generation migrants.

To explore how migration affects the selection of school type, we expand the basic choice model by incorporating additional control variables to help assess the marginal impact of migrant status on the decision of parents to send their children to a publicly run school or a private one.

Therefore, the aim of the paper is to analyze the main factors that influence parent's choice about sending their children to a privately run school in Latin America with special attention to the migrant status of families. Discrete choice models will be estimated using data for the eight Latin American countries surveyed in PISA 2009 and the analyses will be run for the region as a whole and for each country independently.

The paper is organized as follows: Section 2 is a brief review of the relevant literature on school choice and the underlying influence of migration on schools. Section 3 presents the empirical approach used in this paper to analyze migration and school choice. The data and variables are presented in Section 4 and Section 5 presents the main results. Finally, some conclusion follows.

2   School Choice

Over the years, there has been a big debate regarding school choice by families. This can be briefly summarized by the arguments of the proponents of the provision of privately run education, on one hand, and those who criticize it on the other. The main antecedent is Milton Friedman (Friedman, 1955), who put into question the extent of state responsibility in education. While recognizing the state funding for education, he argues that the main role of the state was to ensure the functioning of educational markets.

More recently, advocates of privately run centers, mainly based on the opinion of Chubb and Moe (Chubb & Moe, 1990), argued that the existence of a diverse educational offering allows choosing the school that best suits the preferences of the family, resulting in educational gains for students.

Additionally, they support the argument that a greater autonomy in curriculum design and resource allocation encourages competition between schools for capturing students. According to this view competition generates much needed innovation in the education market and promotes efficiency (Goldwin & Frank R., 2002; OECD, 2011, 2012). Furthermore, expanded choice is seen as a factor reducing the damage caused by the political control of the schools, fomenting an increase in the degree of parental involvement and improving the link between the interests and abilities of students with pedagogy and curriculum of the school.

On the other side of the debate, critics of the school choice movement argue that the expansion of the supply of privately run education hurts students who do not have possibilities of choice because it increases social segregation and inequality and ultimately destroys the system public school system (Fuller & Elmore, 1996). They found that those students who attend private schools have more family resources, which translates into higher chances of better results. At the same time, the resources collected through tuition and fees allow the private schools to attract and recruit the best students and more qualified teachers, increasing even more the inequalities (Checchi, 2006). Additionally, Hannaway and Carnoy (Hannaway & Carnoy, 1993) like Fuller and Elmore have argued that increased competition between schools will be irrelevant if more attention is paid only to the management of the school system and very little attention is paid to reform that should influence the classroom. That is, without reforming the curriculum and pedagogy and without improving in the quality of teachers, there will be not efficiency gains by increased competition between schools. McEwan and Carnoy arrived at the same conclusion in their study for Chile (Mc Ewan & Carnoy, 2003). Additionally, high scores and improved graduation rates are not the only important results for advocates of the public schools. For them, the school is also expected to educate citizens to understand and appreciate democracy, and to behave morally responsible. Authors like Dewey (Dewey, 1916) and Mann (Mann, 1855, reimpreso en 1969) are generally cited as the founding fathers of these arguments in favor of public schools.

It should be noted that in the previous review, agents are assumed to have perfect knowledge about the different alternatives, which is hard to support. More recently, Brown (Brown, 1992) introduced uncertainty and imperfect information to frame the debate between privately run schools and state management schools. He suggests that the uncertainty arises in terms of student skills and in returns that they will get in the future. However, his analyses do not consider migration among student characteristics. In the rest of the section, we present a brief summary of the conceptual framework proposed by Brown including in it a consideration about the migration status of students.

2.1   *School choice under uncertainty*

As we mentioned above, Brown develops an approach of school choice alternative to the traditional debate. In his analysis uncertainty plays a central role. He argues that there is uncertainty about the ability of the student and the returns that he will get in the future. For this reason, families will prefer curricular diversity in order to minimize the risk of choosing a mode that not corresponds with the skills of their children. Aware of this fact, both types of schools tend to resemble each other offering a combination of contents that suits the preferences of families. Whereupon, the privately run schools have to differentiate themselves if they want "attract clients" (Brown, 1992). Apparently, the strategy of including extracurricular activities plays an important role in this regard[3].

According to these ideas, we found that the relevant Latin American countries have a standardized curriculum for both publicly and privately run centers, so should not be important the differences in the teaching that they provide (OECD, 2010). However, the progress in the privatization of education is not a minor phenomenon and, therefore, the consideration of the factors that drive it is essential to better understands it (Narodowski, 2008). Under the premise that all schools offer a similar curricular composition, privately run schools tend to differ in other aspects such as its range of extracurricular activities if they believe that expand the likelihood that parents send their children to such schools.

2.2   *School choice and immigration*

The literature that addresses the issue of immigration and schooling in developed countries is abundant. Some of these explore the differences in educational outcomes between native and immigrant student (OECD, 2012) (Entorf & Minoiu, 2004), how a higher share of immigrants affect the academic results of natives (Brunello & Rocco, 2013) (Gould, Lavy, & Paserman, 2009), the "flight" of natives students from public schools into privately run schools because of the increase of immigrant students (Betts & Fairlie, 2003) and the school choice and concentration in public schools of immigrants (Bernal, 2005) (Escardíbul & Villarroya, 2010).

However, it is interesting to note that little have been written about the influence of migrant status on school choice in developing countries, including those in Latin America. The school choice may vary according to whether the student is a native or immigrant. It has been advanced the idea that if the country of origin of the immigrants student is relatively more developed, or their parents have moved because they found a highly qualified job, then they will reveal a preference for a privately run school. Moreover, if the reasons of migration were unemployment

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[3] For a more detailed description of this approach see (Gertel, Cámara, & Decándido, 2012).

or social disruption, then it might be expected to find immigrants student attending to state-run schools rather than private ones.

Along this line, the aim of this paper is double. First, it expands to several Latin America the analysis done in the previous paper of school choice in Argentina (Gertel, Cámara, & Decándido, 2012). And second, it seeks to expand the analysis to include the effect of immigrant status on school choice in each of the selected countries. For these purposes, a discrete choice model (*logit*) be estimated, whose characteristics are summarized in the Section 3.

3   Model of school choice

Parents, in the present model, have two mutually exclusive alternatives for education of their children: enroll them in a publicly run school or enroll them in a privately run school[4]. It's supposed that the decision is based on the available information, in order to maximize their welfare. Thus, one can think in a simple model that allows studying the determinants of the school choice (Train, 2003). Precisely, it allows to analyzing the influence on such decision of the extracurricular activities offered by schools.

For the family of the student *i*, the indirect utility of having their child in a school of type *j* is represented by U_{ij}. In this case, the indirect utility can be decomposed into the sum of two components: i) a deterministic component, V_{ij}, which depends on specific characteristics of the school, the student and his family and of unknown parameters, and ii) an unobserved random component, ε_{ij}. It can be expressed as follows:

$$U_{ij} = V_{ij} + \varepsilon_{ij} \tag{1}$$

$$V_{ij} = x`_{ij}\beta \tag{2}$$

Where, *x* is a vector of variables representing characteristics of the school, the student and his family. This is a simple representation of so-called *Additive Random Utility Model* (ARUM).

Parents opt for a privately run school if it gives them more utility than a publicly run school. It is defined $y_i = 1$ if alternative 1 (private school) is chosen and $y_i = 0$ in the opposite case. So that:[5]

$$P(y_i = 1) = P(U_{i1} \geq U_{i0})$$

$$P(y_i = 1) = P(U_{i0} - U_{i1} \leq 0)$$

Using the expression (1) and operating conveniently, it can be obtained the next expression:

$$P(y_i = 1) = P(\varepsilon_{i0} - \varepsilon_{i1} \leq V_{i1} - V_{i0}) \tag{3}$$

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[4] Note that this choice set is exhaustive. The families only have two alternatives for their decision: enroll their child in a publicly run school or in a privately run school.

[5] $P(y_i = j) = F_j(x_i, \theta)$, j=1,...,m y i=1,...,N

Where, $P(y_i = 1)$ is the probability of choosing a privately run school.

Different specifications for the distribution of the error terms (ε_0 y ε_1) generate different cumulative distribution functions ($F_j(x_i, \theta)$) and, therefore, different discrete choice models (Cameron & Trivedi, 2005). Assuming that ε_0 and ε_1 are independent and have a distribution represented by a "type I extreme value" function, the probability of choosing a privately run school can be estimated from a *logit* model. This type of model needs to be estimated by using the maximum likelihood method as has been suggested by (Cameron & Trivedi, 2005).

The estimated parameters are not directly interpretable because the resulting estimation is nonlinear and the coefficients do not represent marginal effects as shown in a regular OLS Regression. Positive values for the coefficients indicate an increase in the odds of selecting a privately run school while negative values indicate a decrease in such odds. From these coefficients one can easily obtain estimates of the odds ratios[6].

In Section 6, we will present the results obtained after estimating a *logit* model and deriving the corresponding odds ratio. As usual, the probability is expressed as:

$$p = \frac{e^{x'\beta}}{1 + e^{x'\beta}} \qquad (4)$$

So, the odds ratio is equal to:

$$\frac{p}{1 - p} = e^{x'\beta} \qquad (5)$$

Notice that, in this case, the odds ratio indicates the "chances" of choosing a privately run school over another public school, given the characteristics considered. If the ratio exceed 0,5 it means that the probability of choosing a privately run school is higher than the probability of choosing a publicly run school, given the explanatory variables included in the model.

The model and the odds ratios were estimated for the total sample of Latin American countries as well as for each country individually using information of PISA 2009. The results will be presented in Section 6.

4   Data and variables

4.1   *Data*

In this paper, we use data from the 2009 edition of the Programme for International Student Assessment (PISA). It includes a significant amount of current information about the

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[6] Many papers estimate a measure of the impact of a change in any of the regressors on the probability of choosing a privately run school, the marginal effect (ME). For an individual *i*, the ME of a change in the regresor k is $EM_{ijk} = \frac{\delta P(y_i=j)}{\delta x_{ik}} = \frac{\delta F_j(x_i,\theta)}{\delta x_{ik}}$. This approach is not of interest in this paper, for what the discussion of this measure was omitted.

characteristics of schools, students and their families, which nicely fit our need for estimating the proposed model. PISA is a program of internationally standardized assessments developed by UNESCO and the OECD, in order to measure the preparation that have fifteen years students to address the challenges of the global world when they leave the education system.

This paper respects the two-stage stratified sampling design of PISA survey. The first stage units are the schools attended by students of 15 years while in the second stage of sampling the units are the students of 15 years (OECD, 2002). Such sampling design requires the use of sampling weights for the estimations, to avoid bias in the estimation of population parameters (OECD, 2004)[7]. Those sampling weights are available in the PISA databases.

Besides the results of the assessments, PISA provides student data and its environment, obtained from questionnaires completed by students and principals of each school. The student questionnaire provides information about family background, socioeconomic status, student attitudes and basic demographic data that includes specific information about migration. The school questionnaire provides information on the basic characteristics of the school, school policies and practices, school climate and school resources. Additionally, PISA provides a number of indices that summarize responses from students and principals about different aspects of school administration and climate. A detailed description of the construction of the variables included in our model is presented in Table A.1 of the Annex, while Table A.2 describes the main statistics for these variables[8].

Eight Latin American countries participated in the 2009 PISA survey: Argentina, Brazil, Chile, Colombia, Mexico, Panama, Peru and Uruguay. A sample of 92.652 students nested in 1.535 schools was included in the PISA survey. In order to analyze the determinants of school choice, it is necessary to consider only those families located in areas having more than one schools, so they can select among different options. As a consequence of this, we eliminate from the sample all students located in areas with only one school. The final sample was of 76.874 students grouped in 1.420 schools. In this final sample, 19,3% of the students attend to privately run schools, while the remaining 80,6% attend publicly run schools.

4.2   Variables

The dichotomous independent variable, *privada*, indicates in our estimated *logit* model whether the student attends to a privately run school (takes the value of 1) or a publicly run school (takes

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[7] Also, a methodology of replication was used to estimate the sampling variances of the parameters (BRR or "Balanced Repeated Replication"). This methodology takes into account the variation in the estimates due to the sampling method used in PISA. The sample weights used to replicate results are also available in the database.
[8] The PISA database also provides other variables of interest, but these contain a large amount of missing data, particularly in Argentina, whose inclusion may lead to biases in the analysis.

the value of 0). There are two types of variables between the determinants of the school choice that are relevant in this paper. On one hand, an index combining the intensity and diversity of extracurricular activities offered by the school, *excuract*, that measure the relative importance attached by each school to this type of activity. We assume that for an average family a higher value of the index positively influence choosing a privately run school. On the other hand, we look at the migrant status of families to identified differential effects on the selection of a school among migrant and not migrant families. With this purpose in mind, we introduce a control variable to indicate whether the student is a first-generation immigrant (*prigen=1*) or not, and a second control variable to indicate whether the student is a second-generation immigrant (*seggen=1*) or not[9]. Based on the literature, it is assumed that if a student or his parents are immigrants reduces the probability that the student attends to a privately run school.

A second model was estimated by including several additional control variables. These variables which are similar to those proposed in the literature have been reviewed in (Gertel, Cámara, & Decándido, 2012). The following control variables were considered: at the student level, variables indicatives of the gender (*varon=1*), attitude towards school (*sirvepoco=1*) and repetition (*repitio=1*); at the household level, variables indicatives of the level of parent education (*pared*), family wealth possessions (*wealth*) and if their mother is a housewife (*amadecasa=1*) or not; at the school level, variables indicatives of socio-economic status of school (*escsm*), disciplinary climate in the classroom (*disclimam*), educational materials (*scmatedu*), teacher shortage (*tcshort*) and two variables to control for selectivity[10] (*admires=1* and *admirend=1*).

In selecting the variables, special attention was paid to the probable presence of multicollinearity. After examining the correlation matrix[11], the variables *scmatedu* and *escsm* were excluded.

5   Results

In this section we summarize the main results of the study. First, we analyze the determinants of school choice in Latin America as a whole, focusing primarily on the effect of extracurricular activities and immigrant status. Then, we analyze these determinants in each country

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[9] Immigrant students can be of first or second generation. First-generation immigrants are those who are foreign-born and whose parents are also foreign-born. Second-generation immigrants are those who were born in the country of assessment but whose parents are foreign-born (OECD, 2011).

[10] Selectivity refers to the conditionings that make schools (public and private) in front of the parent choice. These types of controls are important because they are criteria that limit the effective choice by the families.

[11] The correlation matrix has been estimated in the conventional manner and it is presented in Table A.3 of Appendix.

independently. Finally, we compare the odds ratios of choosing privately run schools instead of public schools across countries.

5.1   Determinants of school choice in Latin America

Table 1 presents the determinants of school choice estimated with a *logit* model for Latin America as a whole. Column (a) shows the effects of extracurricular activities, represented by the variable *excuract*, and the migrant status of the student, represented by the variables *prigen* and *seggen,* on the probability of choosing a privately run school. Column (b) shows the effects of these same determinants after adding several control variables of student, family and school characteristics. Positive coefficients indicate an increase in the probability of selecting a privately run school, while negative values indicate a decrease of this same probability.

Table 1. Determinants of school choice in Latin America

Variable	Without control variables (a) Coefficients	With control variables (b) Coefficients
excuract	0,03 ***	0,01 **
Prigen (=1)	-0,44 ***	0,01
Seggen (=1)	-0,17	-0,02
Other controls		
admires (=1)		-1,33 ***
admirend (=1)		1,48 ***
tcshort		-0,04 ***
disclimam		-0,01
pared		0,11 ***
wealth		0,08 ***
varon (=1)		-0,16 ***
repitio (=1)		-0,38 ***
sirvepoco (=1)		-0,11 ***
amadecasa (=1)		-0,19 ***
Constant	-2,81 ***	-6,75 ***
N	71.877	68.156
Prob>F	0,00	0,00

*Note: *significant at 10%; ** significant at 5%; *significant at 10%.*
Source: own elaboration based on PISA 2009.

Column (a) shows a positive effect of an increase in the supply of extracurricular activities on the probability of selecting a privately run school with a significance level of 1% confirming our hypothesis. The effect of migration is negative. In the case of first-generation migrants (*prigen*) the effect is statistically significant at the 1% level. For second-generation migrants, the effect is also negative; but it is not significantly different from cero, most probably because the number

of observations in the sample is quite small. Thus, these results indicate migrants prefer sending their children to a publicly run school.

Column (b) of Table 1 presents the estimation of the model which now includes several control variables. After including control variable for different student, family and school characteristics, the effect of extracurricular activities remained statistically significant, but its value decreases. With respect to migration, after including the control variables no statistically significant effects were found. These results lead us to conclude that whether the family is immigrant or not in Latin America doesn´t seem to have, on average, a definite influence over school choice decisions. It should be noted that this result may hide differences across countries, which will be analyzed below.

Before going to the individual country analyses, let us present a brief commentary of the control variables effects found in the general equations for Latin America as a whole. In that equation (Column b), our estimates show that if the student has repeated a year (*repitio*) or if the student believes that the school will not help them for their future (*sirvepoco*), and their parents are aware of this, the probability of choosing a privately run school for their children will be lower. If the student's mother is a housewife (*amadecasa*), the probability of choosing a privately run school was lower. On the other hand, more educated parents (*pared*) and higher levels of family wealth (*wealth*) increased the probability of choosing a privately run school for their children.

The last row of Table 1 shows the p-value of the likelihood ratio test indicating the goodness of fit of the models.

5.2   *Determinants of school choice by country*

As we noted in the previous section 5.1, migrant status appeared to have no effect on school choice in Latin America as a whole. However, due to the importance of heterogeneity among countries, it is possible that a number of different conclusions may arise after analyzing school choice in each country independently. To explore these possibilities, we proceed to estimate the above model b (including control variables) for each country independently. The results are reported in Table 2.

The effect of extracurricular activities on school choice shows significant differences among countries (positive effects in Argentina, Chile and Colombia, no effects in Brazil, Panama, Peru and Uruguay, and negative effect in Mexico).

The influence of migrant status differently affects the school choice in each country. On the one hand, in Argentina and Peru immigrant status of the students seems to have no influence on the type of school selected for their parents. In these countries, the coefficients for both variables, indicating first-generation and second-generation migrant status, were not statistically significant. In Brazil and Mexico, first- generation migrant students have a smaller probability

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of attending a privately run school. In Mexico, a similar result was found if the student is second-generation migrant. Conversely, in Colombia and Panama first-generation migrant students have a higher probability of attending a privately run school. In Chile and Panama a similar result was found if the student is a second-generation migrant.

The control variables included in the model have the expected sign and statistically significance at the 10% level except: (i) disciplinary climate in Colombia, Mexico, Panama and Peru, (ii) gender in Colombia, Panama, Peru and Uruguay, (iii) repetition in Colombia and Mexico, (iv) student perception of usefulness of school for future life in Mexico and Uruguay, (v) mother housewife in Brazil and Chile.

The last row of Table 2 shows the p-value of the likelihood ratio test indicating the goodness of fit of the models.

Table 2. Determinants of school choice, by country

Variables	Argentina		Brazil		Chile		Colombia		Mexico		Panamá		Peru		Uruguay	
	Coefficients		Coefficients		Coefficients		Coefficients		Coefficients		Coefficients		Coefficients		Coefficients	
excuract	0,01	**	0,04	***	0,00		0,02	**	-0,01	***	0,02		0,00		0,01	
prigen	0,08		-2,95	***	-0,52		1,40	**	-1,37	***	2,60	***	-0,20		2,20	***
seggen	0,07		-0,30		0,56	*	0,00		-0,56	***	1,15	***	-0,61		-0,89	*
Other controls																
admires	-0,97	***	-1,60	***	-0,62	**	-0,95	***	-1,79	***	-4,38	***	-2,35	***	-4,86	***
admirend	2,06	***	2,63	***	1,26	***	2,99	***	0,21	*	1,07	**	2,04	***	3,57	***
tcshort	-0,03	***	-0,07	***	-0,01	**	-0,05	***	-0,03	***	-0,07	***	-0,04	***	-0,14	***
disclimam	0,07	**	0,04	**	0,01	***	-0,03		-0,02	***	-0,01		-0,01		0,06	*
pared	0,03	***	0,15	***	0,08	***	0,11	***	0,08	***	0,17	***	0,09	***	0,11	***
wealth	0,06	***	0,12	***	0,04	***	0,09	***	0,09	***	0,17	***	0,08	***	0,06	***
varon	-0,18	***	-0,22	***	-0,19	***	-0,04		-0,30	***	-0,09		0,01		0,10	*
repitio	-0,89	***	-0,57	***	-0,23	***	0,04		0,21		-0,52	*	-0,47	**	-0,85	***
sirvepoco	-0,02	***	-0,47	***	-0,26	***	-0,17	**	-0,07		-0,61	***	-0,18	***	0,10	
amadecasa	-0,20	***	0,19	**	0,01		-0,82	***	-0,16	***	-0,97	***	-0,33	***	-0,71	***
Constant	-7,49	***	-13,13	***	-3,58	***	-8,87	***	-5,88	***	-11,67	***	-4,65	***	-4,99	**
N	3.544		13.554		3.963		6.291		31.477		2.083		4.304		2.935	
Prob>F	0,00		0,00		0,00		0,00		0,00		0,00		0,00		0,00	

*Note: *significant at 10%; ** significant at 5%; *significant at 10%.*
Source: own elaboration based on PISA 2009.

5.3 *Migrant status and the private school choice*

Table 3 shows the estimated odds ratios of choosing a privately run school instead a publicly run school for the migrant and the non migrant student population in each country and in Latin America as a whole. To calculate the odd s ratio is conveniently to proceed to build a specific situation. In this paper, we introduced two different representative situations. Case (a) is representative of non migrant students while Case (b) is representative of migrant students. Both cases are based on the following assumptions: (i) the school does not take into account the place of residence to admit the students (*admires=0*), (ii) the school does not take into account the student's performance to decide whether to admit or not the student (*admirend=0*), (iii) the student is female (*varon=0*), (iv) the student did not repeat any school year (*repitió=0*), (v) the student believes that the school serves for life (*sirvepoco=0*), (vi) the mother is a non housewife (*amadecasa=0*). It is also supposed that the variables indicative of extracurricular activities, shortage of teachers, disciplinary climate, parents' educational level and socioeconomic status assume average values of each country, respectively.

Table 3. Odds ratio in Latin America

	Case (a) - Native students	Case (b) - Migrant students
Argentina	0,44	0,44
Brazil	0,03	0,00
Chile	0,85	1,49
Colombia	0,05	0,20
México	0,19	0,03
Panamá	0,09	3,98
Peru	0,27	0,27
Uruguay	0,26	0,95
Latin America	0,17	0,17

Source: Own elaboration based on PISA 2009.

With respect to native students, Column (a) indicates that only in Chile the odds ratio is higher than in Argentina (0,85 and 0,44, respectively). That is, in Chile for every 100 students attending to public schools, there are 85 attending to a privately run school, while in Argentina for every 100 students attending to public schools, there are only 44 attending to privately run schools. By contrast, in the remaining six countries the odds ratio has a lower value than in Argentina. In these countries for every 100 students attending to public schools, there are less than 30 students attending to privately run schools. So, the probability that a native student in Chile attends a privately run school is higher than in Argentina, and in these two are higher than in the other six Latin American countries.

With respect to migrant students (first and second generation), the probability of choosing a privately run school instead a publicly run school shown in Column (b), show no differences

with respect to native students in Argentina, Peru and Latin America as a whole. But important differences were found for the rest of the countries. In Brazil and Mexico, a lower probability of choosing a privately run school was found among migrants. The opposite result was found in the case of Chile, Colombia, Panamá and Uruguay where the probability of choosing a privately run school was higher among migrants.

6 Conclusiones

Using data of PISA 2009, we analyzed the factors that determine the decision of parents to send their children to a privately run school in Latin America, focusing on the influence of extracurricular activities and the migrant status on that decision. In an attempt to reveal the preferences of families, discrete choice models were applied to estimate the determinants of school choice for Latin America as a whole and for each country independently.

It was found that considering Latin America as a whole, the presence of extracurricular activities increases the probability of selecting a privately run school. This conclusion remains strong even after considering an extensive number of control variables. However, important differences were shown to exist among countries. A positive effect was found in Argentina, Chile and Colombia, no effects were shown in Brazil, Panama, Peru and Uruguay, and negative effect was found in Mexico.

On average, taken Latin America as a whole, school choice decisions are not affected by the migrant status of students. However, the different countries cases analyzed in the paper shown that important differences exist with respect to the effect of migration on school choice across countries. In Argentina and Peru, immigrant status of the students have not influence on the type of school that they attend. In Brazil and Mexico, the probability of attending a privately run school is lower when the student is of immigrant origin. Conversely, in Colombia and Panama if the student is first-generation migrant the probability of attending a privately run school is higher while in Chile and Panama if the student is second-generation migrant the probability of choosing a privately run school is higher.

The paper also presented an estimation of the odds ratios of choosing a privately run school instead of a public school considering whether the student is migrant or not. The highest ratios for the native population were found for Chile (0,8) and Argentina (0,4). While for the migrant population, the highest ratios corresponded to Panama (4) and Chile (1,5). This led us to conclude that migrant population differs greatly among countries in terms of socio-economic status.

7 References

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8 Appendix

Table A.1. Description of variables

Etiquette	Variable	Expected Sign	Definition
privada	Privately run school		Dependent variable. 0 if the student attends to a publicly run school and 1 if the student attends to a privately run school.
varon	Male gender	(-)	Dummy variable. 1 if the student is male and 0 otherwise.
repitio	Repeat a grade	(-)	Dummy variable. 0 if the student, at 15 years old, is in 10th grade or at a higher level and 1 otherwise.
sirvepoco	School serve little	(-)	Dummy variable. 1 if the student thinks that the school serves little for the adult life and 0 otherwise.
pared	Parents´ education	(+)	Higher educational level of parents, in years of education.

homepos	Home possessions	(+)	Index of home possessions (wealth, cultural possessions and educational resources)
amadecasa	Mother housewife	(-)	Dummy variable. 1 if the student´s mother is a housewife and 0 otherwise.
wealth	Family´s wealth possessions	(+)	Index of family's wealth possessions.
escsm	Socio-economic status of school	(+)	Index calculated as an average of "ESCS" by school, where "ESCS" is an index that captures the socio-economic and cultural status of the family based on parental occupational status, educational level, and household possessions: wealth, cultural possessions and educational resources. Higher values in "ESCM" indicate better socio-economic and cultural background of school.
disclimam	Perception of disciplinary climate in classrooms	(+)	Index obtained as the average of "disclima" by school, where "disclima" is an index derived from the responses of the students on how often the following things happens in the classroom: i) students do not hear what the teacher says, ii) there is noise and disorder, iii) teachers have to wait a considerable time for students to settle down, iv) students cannot work well, and v) students do not start working until a long time after the start of class. The items were re-scaled, so that higher values on the index reflect better disciplinary climate.
scmatedu	Educational materials	(+)	Index derived from seven items measuring the perception of the director on some factors that may hinder instruction in his school: i) shortage or inadequacy of science laboratory equipment, ii) lack or inadequate instructional materials, iii) lack or inadequate computers instruction, iv) slow or inadequate internet connection, v) shortage or inadequate computer software, vi) shortage or inadequate materials in the library, and vii) lack or inadequate audio-visual resources. All items were re-scaled, so that a larger index value indicates a better quality of educational resources.
tcshort	Teacher shortage	(-)	Index derived from four items that measure the perception of the director on some factors that may hinder instruction in his school: i) lack of qualified teachers in science, ii) lack of qualified teachers in mathematics, iii) lack of qualified teachers in lecture, and iv) lack of qualified teachers in other subjects. Higher values on this index mean greater shortage of teachers in the school.
admires	Admission for residence	(-)	Dummy variable. 1 if the school takes into account the student's residence as one of the criteria for admission and 0 otherwise.
admiren	Admission for performance	(+)	Dummy variable. 1 if the school considers the student's past academic performance as one of the admission criteria and 0 otherwise.
excuract	Extracurricular activities	(+)	Index derived from thirteen responses of the director about extracurricular activities offered at the school: i) band, orchestra or chorus, ii) games or music, iii) newspaper, magazine or yearbook, iv) volunteer activities or services, v) readership circle, vi) debate club or debating activities, vii) club of foreign language skills, math and science, viii) academic club, ix) art club or art activities, x) sports team or sports activities, xi) conferences and seminars, xii) collaboration with local libraries, and xiii) collaboration with local newspapers. A higher value of this index means higher level of extracurricular activities offered by the school.

Table A.2. Descriptive statistics of variables

Variables	Publicly run schools					Privately run schools					All of schools				
	Students	Mean	Std. Dev.	Min.	Max.	Students	Mean	Std. Dev.	Min.	Max.	Students	Mean	Std. Dev	Min.	Max.
privada	-	-	-	-	-	-	-	-	-	-	92652	0,18	0,38	0	1
nocomp	75692	0,19	0,39	0	1	15410	0,09	0,28	0	1	91102	0,17	0,37	0	1
excuract	74005	47,25	16,55	0	100	15353	55,47	16,15	0	100	89358	48,78	16,78	0	100
admires	75522	0,46	0,50	0	1	15299	0,21	0,41	0	1	90821	0,42	0,49	0	1
admirend	75592	0,35	0,48	0	1	15352	0,69	0,46	0	1	90944	0,41	0,49	0	1
admireco	75539	0,31	0,46	0	1	15371	0,60	0,49	0	1	90910	0,36	0,48	0	1
scmatedu	76074	44,18	18,40	0	100	15360	70,06	23,81	0	100	91434	48,79	21,84	0	100
tcshort	75604	31,48	22,60	0	100	15325	13,65	19,20	0	84	90929	28,30	23,06	0	100
disclimam	77151	40,24	6,81	7	100	15501	41,11	6,73	0	76	92652	40,40	6,81	0	100
escsm	77151	45,34	8,49	0	73	15501	53,92	8,62	20	100	92652	46,86	9,12	0	100
pared	75499	10,21	4,29	3	17	15225	13,76	3,28	3	17	90724	10,84	4,35	3	17
varon	77151	0,48	0,50	0	1	15501	0,47	0,50	0	1	92652	0,48	0,50	0	1
homepos	75365	52,52	8,96	0	95	15355	62,60	8,64	6	100	90720	54,34	9,71	0	100
sirvepoco	74620	0,25	0,43	0	1	15256	0,22	0,41	0	1	89876	0,24	0,43	0	1
amadecasa	77151	0,29	0,45	0	1	15501	0,19	0,39	0	1	92652	0,27	0,44	0	1
repitio	77091	0,52	0,50	0	1	15468	0,27	0,45	0	1	92559	0,48	0,50	0	1
wealth	76438	51,63	11,31	0	100	15381	63,73	11,17	0	100	91819	53,77	12,20	0	100
prigen	74539	0,01	0,08	0	1	15217	0,00	0,07	0	1	89756	0,01	0,08	0	1
seggen	74539	0,01	0,08	0	1	15217	0,00	0,07	0	1	89756	0,01	0,08	0	1

Source: Own elaboration based on PISA 2009.

Table A.3. Matrix of correlations

	privada	excuract	admires	admirend	admireco	scmatedu	tcshort	discli~m	escsm	pared	varon	homepos	sirvepoco	amadecasa	repitio	wealth	prigen	seggen
privada	1																	
excuract	0,18	1																
admires	-0,23	-0,08	1															
admirend	0,29	0,20	-0,05	1														
admireco	0,26	0,10	0,16	0,33	1													
scmatedu	0,48	0,23	-0,09	0,16	0,08	1												
tcshort	-0,33	-0,10	0,08	-0,03	-0,02	-0,43	1											
disclimam	0,05	0,09	-0,13	0,11	-0,03	0,06	-0,07	1										
escsm	0,39	0,15	-0,07	0,12	0,10	0,36	-0,23	0,04	1									
pared	0,32	0,15	-0,08	0,16	0,11	0,26	-0,16	0,01	0,33	1								
varon	-0,01	-0,01	0,00	0,00	0,00	0,00	0,02	-0,03	0,00	0,06	1							
homepos	0,42	0,13	-0,03	0,13	0,14	0,37	-0,23	0,00	0,39	0,49	0,03	1						
sirvepoco	-0,03	-0,03	-0,04	0,02	-0,01	-0,06	0,04	-0,05	-0,06	-0,02	0,06	-0,06	1					
amadecasa	-0,09	-0,04	-0,06	0,01	-0,03	-0,10	0,05	0,03	-0,14	-0,19	0,00	-0,17	0,06	1				
repitio	-0,17	-0,20	0,12	-0,19	0,01	-0,13	0,07	-0,16	-0,15	-0,15	0,08	-0,14	0,05	0,00	1			
wealth	0,40	0,11	-0,01	0,10	0,14	0,37	-0,23	-0,02	0,37	0,44	0,06	0,93	-0,06	-0,16	-0,09	1		
prigen	-0,02	-0,03	0,01	-0,02	-0,01	-0,01	0,01	-0,01	-0,01	-0,01	-0,02	-0,02	0,02	0,01	0,04	-0,01	1	
seggen	-0,01	-0,01	-0,02	-0,01	-0,01	-0,02	-0,01	0,00	-0,03	-0,02	-0,02	-0,03	0,02	0,01	0,04	-0,03	-0,01	1

Source: Own elaboration based on PISA 2009.