

SCHOOL SEGREGATION IN ARGENTINA

RECONSTRUCTING THE EVIDENCE

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Abstract. This paper studies school segregation among students from different socioeconomic strata attending public and private schools in Argentina. The study contributes with empirical evidence to the measurement of this phenomenon from 1986 to the present, including projections for 2014. To this end, all major household surveys conducted in the country were used. The results suggest that the degree of school segregation has increased substantially since the mid-1980s to the present and is likely to continue rising in the early years of the 2010s.

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1. INTRODUCTION

For decades, public school was considered an essential mainstay for social cohesion and equality of opportunity in Argentina. Public schools were one of the few places where people from different social strata had daily and direct contact and received an equal service. There is a widespread perception that this cohesive role of state education has weakened over time, given the increasing migration of the less economically disadvantaged groups from public to private schools. This selective migration is shaping the phenomenon of school segregation, by which kids of different socioeconomic strata do not “mix” in the educational stage anymore, because they attend different types of school.

Despite being a widely recognized phenomenon, with constant allusions in public debate, there are not studies that provide systematic measures of school segregation in Argentina. This paper contributes with empirical evidence, measuring this phenomenon from 1986 to the present, including projections for 2014. To this end, all major household surveys conducted in the country were used: the Permanent Household Survey (Encuesta Permanente de Hogares), the Living Conditions Survey (Encuesta de Condiciones de Vida) and the National Household Expenditure Survey (Encuesta Nacional de Gastos de los Hogares).

Although the lack of information has not allowed us to construct a perfectly consistent series over time, our estimations suggest that the degree of school segregation in Argentina has increased substantially since the mid 1980s to the present date and is likely to continue rising in the early years of the 2010s. This phenomenon of increasing school segregation is interesting per se, but especially for its potentially negative educational and social consequences. Increasing segregation coincides with a period of increasing inequality in Argentina, but it does not seem to be only a mere reflection of this: even in periods of stable or declining income inequality, school segregation has increased.

The rest of the paper is organized as follows. Section 2 defines the concept of segregation, summarizes the literature on the measurement of this phenomenon and discusses in particular the indicators that were implemented in this work. Section 3 briefly describes the educational system in Argentina and provides evidence on enrollments in public and private schools. As previously mentioned, there is no single source of information to produce a consistent series of segregation over time. Thus the evidence in this work, presented in Section 4, appears segmented according to the data source used. First, the period 2003-2009 was analyzed with data from the Permanent Household Survey (EPH); then the two special modules of the EPH with educational information implemented in 1992 and 1998 were used; the next subsection drew on data from the Living Conditions Survey 1996 and 2001; while the final subsection was based on information from the three expenditure surveys implemented in Argentina in 1986, 1996 and 2005. In each of these subsections, the source of data used is detailed and the results are discussed. Section 5 assembles a “collage” of episodic evidence and presents an aggregate assessment of school segregation for the whole period 1986-2014. We conclude in Section 6 with remarks on future research lines.

2. CONCEPT AND MEASUREMENT

The concept of segregation refers to the separation of the population in units according to some attribute. This general definition involves some complexity, because the population can be separated into groups that share a certain quality in numerous ways. Massey and Denton (1988) propose to study segregation in terms of multiple dimensions. Although empirically the

dimensions they describe tend to overlap (groups segregated in a certain dimension tend to be segregated in another), they are conceptually different¹.

This paper studies two dimensions of segregation, commonly known as evenness and exposure. The first refers to the tendency of groups to be distributed unevenly among organizational units, such as schools or neighborhoods. According to this definition, it is said that a group is segregated if it is overrepresented in some organizational units and underrepresented in others. The second dimension, exposure, is associated with the potential contact or chances of interaction among members of different groups within an organizational unit. In this sense, it is said that a group is segregated if their members have little chance of meeting with members of the other groups in the organizational units to which they belong.

In general, the literature has been interested in studying residential and school segregation, dividing the population into social strata (according to attributes such as race or socioeconomic status) and investigating the distribution of these groups among districts or schools. School segregation refers to the separation of the student population among educational institutions according to a certain characteristic. In particular, in Argentina it is relevant to investigate whether groups of students of diverse socioeconomic status are distributed unequally (missing the chance of interaction) between two types of institutions: public schools, on the one hand, and private schools, on the other.

Over the last few years, Argentina has witnessed an increase in the relative importance of the private sector regarding the provision of educational services. It is reasonable to think that the evident increase in the percentage of students who attend a private school has not been symmetric for every social stratum, since families of lower socioeconomic status have little chance to send their children to a private school compared to families of other socioeconomic levels. If this assumption is right, a possible result would be less interaction among students of different social classes in educational institutions, where students of lower socioeconomic status would mix almost exclusively with individuals in a similar situation in the public school, and society would suffer the harmful social and educational consequences of segregation as a result.

There are many reasons behind the need to measure the level and evolution of this phenomenon. Education is presented in most of the discussions as the great hope to build a more integrated and socially equitable society (Llach and Montoya Roldán, 1999). However, school segregation impoverishes the cohesive role of school as a field of social integration, in which students learn to live with people of different economic, social and cultural condition. This loss contributes to the generation of phenomena of exclusion and disintegration in society, given the role that school plays in the formation of groups². Some sociological theories as the one developed in the literature of membership (Durlauf, 2006) highlight the influence of the groups in determining the individual results, either through role models or peer effects. According to this theory, the formation of groups whose members are determined by a more general economic or social process, such as those formed in schools, can generate persistent inequalities, and these may be more marked when there is a manifestation of segregation.

Part of the empirical evidence finds that less segregated schools produce better results in school tests and those students who attend these schools benefit in terms of college attendance and employment (Orfield, 2001). Regarding the equity of educational outcomes, Llach et al. (1999) study the determinants of performance on the 1997 ONE standardized tests conducted in Argentina, where they found a positive and significant relationship between the students'

¹ The dimensions of segregation proposed by Massey and Denton (1988) are: evenness, exposure, concentration, centralization and clustering. The last three refer to the geographic aspect of the phenomenon, which are not explored in this study.

² An example for the Argentine case is provided by the Survey of Education and Youth Employment (Encuesta de Educación y Empleo de los Jóvenes), developed jointly by CEDLAS, INDEC and the Civil Association Education for All in the year 2005. According to this survey, about 75% of young people between 15 and 30 years in the area of Greater Buenos Aires met their best friends at school, which illustrates the role of schools in the formation of groups.

performance and the socioeconomic status of their peers³. Regardless of the reasons of efficiency and equity that would induce to study the phenomenon, the effect of school segregation on the generation of a more integrated society makes a precise quantification of the level and evolution in Argentina relevant and necessary. This paper pursues this objective making use of the most commonly employed segregation indices and a newly proposed indicator, the Centile Gap Index.

The literature on the measurement of segregation has developed a lot of indices since its inception. The most commonly used has been the so-called Dissimilarity Index, which gained considerable popularity from the seminal article of Duncan and Duncan (1955). In the eighties, James and Taeuber (1985) developed a number of desirable properties to assess measures of segregation, while Massey and Denton (1988) classified existing indices according to the dimension of segregation that they attempt to measure. The latter authors argue that it is necessary to measure segregation with various indices to capture the different dimensions underlying the phenomenon and also recommend the use of the Isolation Index as a measure of exposure. Recently, authors such as Watson (2009) have developed indices that do not rely on the arbitrariness of the researcher in defining groups, and they exploit information related to income.

The application of traditional segregation indices in this study required the division of students into groups based on their socioeconomic status. On this basis, students were classified into poor and non-poor according to whether or not they belonged to the first quintile of household per capita income, and they were divided by the type of educational institution they attended (public or private). The first of the indices used is the Dissimilarity Index, which is defined as:

$$D = \frac{1}{2} \sum_{i=1}^k \left| \frac{x_{1i}}{X_1} - \frac{x_{2i}}{X_2} \right|,$$

where i indexes the type of school (public or private), x_{1i} represents the number of poor students in the type of educational institution i , X_1 the number of poor students, x_{2i} the number of non-poor students in the type of school i and X_2 the total non-poor students. This index captures the evenness dimension of the phenomenon of segregation and reflects the proportion of minority group students -classified in this case as poor- that should change the type of school they attend so that there is a homogeneous distribution of them between the two types of educational institutions. Their values range from 0 to 1, with 0 representing no segregation and 1 the maximum segregation⁴.

The second of the indices used in this study captures the exposure dimension of segregation. It is the so-called Isolation Index, defined as:

$$A = \sum_{i=1}^k \frac{x_{1i}}{X_1} \frac{x_{1i}}{T_i},$$

where T_i is the total number of students in the type of school i . This index can be interpreted as the probability that a minority group member (poor students in this case) meets in an educational institution with another member of his group. By capturing the degree of potential contact of poor students with other poor students, it is affected by the relative share of the

³ The authors identify three values of the socioeconomic level of peers: high, medium and low. In the case of primary education, the average performance of students with high peer effect is 60% higher than the average performance of students with low peer effect.

⁴ When the Dissimilarity Index is above 0.6, it is said that there is hypersegregation (Glaeser and Vidgor, 2001).

minority group in the total student population⁵. Like D, this index varies in the range of [0.1], 1 being the highest possible level of segregation.

The main disadvantage of using indicators developed in the literature of segregation by race to measure segregation by socioeconomic status is that the relevant groups must be defined by the researcher and the boundaries among these groups are not necessarily obvious (Watson, 2009). In this paper, we have defined two groups: poor (students that belong to the first quintile of household per capita income) and non-poor (the other students). An alternative to solve this problem of arbitrariness is to use the Centile Gap Index (CGI) proposed by Watson (2009), which constitutes the third indicator of school segregation used in this study. This index uses information on income to assess the average percentile differences between the attendees at each organizational unit and the median percentile in each of them, and is defined as:

$$CGI = \frac{0.25 - \frac{1}{N} \sum_{j=1}^N |p_j - p_{medj}|}{0.25},$$

where N is the total number of students, p_j is the income percentile of student j and p_{medj} is the percentile of the median student in the organizational unit the student j attends, public or private school. If students were fully integrated by income between public and private schools, each unit would reproduce the general distribution (percentiles from 0 to 1), the average difference between a student and the median student in his unit would be 0.25, and the index would be 0. At the other extreme, if the students were completely segregated, each unit would contain individuals with the same income and same percentile, so that the index in this case would be 1⁶.

The three indices presented here (Dissimilarity, Isolation, and Centile Gap Index) were used to provide a description of the level and evolution of school segregation in Argentina⁷. Prior to that, the historical role of public schools and the increasing migration to the private schools that could be shaping this phenomenon of segregation are discussed in the following section.

3. PUBLIC SCHOOLS IN ARGENTINA

The educational system in Argentina is based on principles established by the National Constitution, which enforced universal, free, compulsory, and common education to all inhabitants. One purpose of this system is to promote equality of opportunity between social classes and eliminate educational inequities among different regions in the country (National Educational Law 26.206, article 11). Attempts to construct an educational system that produces quality results regardless of social class, and contributes to equal opportunities have been observed throughout the centuries. Based on Sarmiento's ideas – to educate all the people to

⁵ This is not a drawback of the indicator, but a reasonable characteristic given the dimension of segregation that it intends to measure. The Eta² index, which is nothing more than the Isolation Index with a correction for this factor, showed the same trend in our analysis as the indices that capture the evenness dimension of segregation (results are available upon request).

⁶ Note that in the case of analyzing only two organizational units (public or private school), in each type of school there cannot be only students of the same percentile of income, so the index can never take the value 1. In effect, there will always be some interaction among students from different income percentiles, so that the worst possible scenario for the definition of segregation underlying the CGI is not feasible.

⁷ In addition to D, A and CGI, other indices commonly used in the literature were computed (Interaction, Information Theory, Atkinson, Gini, Ratio of Variance and Square Root), but because the conclusions derived from the results are identical to those obtained with D and A, they were not included in this study (indicators are available upon request).

prepare them to exercise their human rights- these principles have become the baseline of the Argentine educational system. As a result, schools have always embraced very diverse students from different races, cultures, nationalities, and social classes.

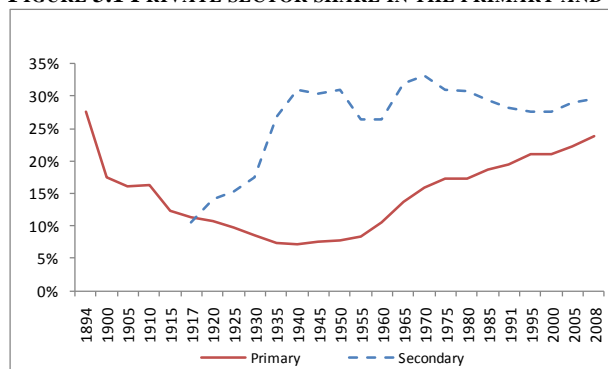
The Argentine educational system had several different structures in recent years. We will focus on the traditional system, which consists of two main groups: primary, 7-years, and secondary school, 5 years. Attendance to school is compulsory by the Argentine law; notwithstanding, parents have the right to choose the type of education they want for their children. There are two kinds of education management in the country: public and private education. There are differences in academic performance, infrastructure, teachers, etc. between public and private schools that could affect parental decisions regarding the type of education for their children.

The National Assessment Operation (Operativo Nacional de Evaluación, or ONE) conducted in Argentina in 2000 provided a first overview of these differences. The data provided by ONE, showed that private primary and secondary schools, have on average better grades in language and mathematics, differing in scoring in more than 10 percentage points from public schools. They also showed, on average, a lower number of students failing the grade in private schools. The 23.4% of students in public primary schools did not pass the grade at least once, compared to the 5.3% in private schools. The percentage of students that have repeated a grade in public secondary schools was 30.5%, while this percentage was only 11.9% in private schools in 2000.

There are differences with respect to primary school infrastructure, too; 92.5% of private schools have buildings in good condition, while only 62.9% of public schools have adequate buildings. The school furniture is better in private schools, 88.9% of them have appropriate furniture while only 46.5% of public schools have so. The percentage of private schools that have proper classroom conditions is 93.2% in contrast to 55.5% of public schools. Finally, private schools also exhibit better books and library conditions than public schools.

The differences revealed between public and private schools may help to understand some of the recent dynamics of public attendance rate. Figure 3.1 shows the historical evolution of the private sector share in the primary and secondary school enrollment of students from 1894 to the present.

FIGURE 3.1 PRIVATE SECTOR SHARE IN THE PRIMARY AND SECONDARY SCHOOL ENROLLMENT



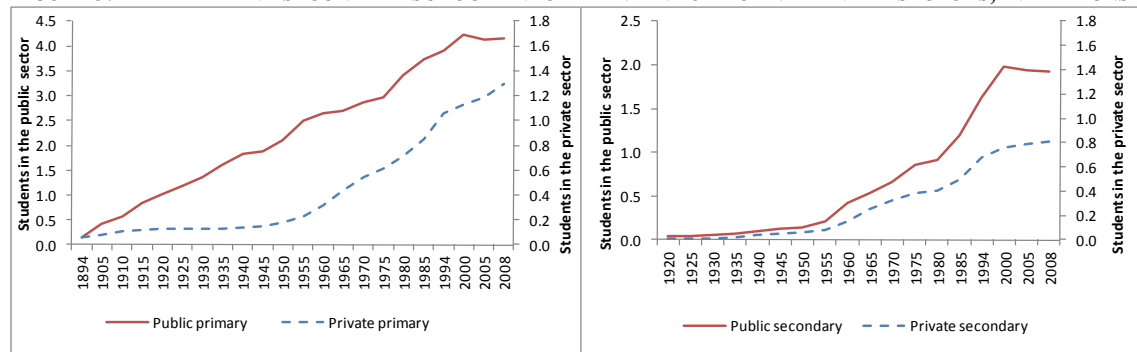
Source: 1894-1997: Morduchowicz A. et al. (2000). 1997-2008: DINIECE statistical yearbooks, Ministry of Education

At primary level, figure 3.1 reveals that the private sector share in the total enrollment decreased significantly in the early twentieth century, due to the growth of the public sector in the provision of educational services. The private primary sector shows a low share (close to 10%) during the first half of the past century. Nevertheless, there has been a change in the trend since 1955. Figure 3.2 depicts a rise on the primary enrollment in the private sector in the late fifties, and has been increasing constantly since then. In fact, while in 1940 7.2% of students were enrolled in private schools, in 2008 at least one quarter of the students (23.8%) were registered in the private sector.

At secondary level, it is clear that the private sector share had a pronounced increment from 1917 to 1940. In 1940, the percentage of students attending private schools was around 30%,

and remained relatively stable in all subsequent years, although in the eighties and nineties there was a low downward trend. Following Rivas, Vera and Bezem (2010), this downward trend was the result of disadvantaged people gaining access to public education since the restoration of democracy in 1983. The consequent increment in public school attendance more than compensated the emigration of the high and middle social strata (that historically attended public school) to the private sector. Nevertheless, there was a change in the trend in the 2000s; the share of the private sector grew similarly for both primary and secondary levels. Figure 3.2 helps to explain this fact: for the first time in the last hundred years the enrollment at public schools fell while the enrollment at private schools preserved its growing trend.

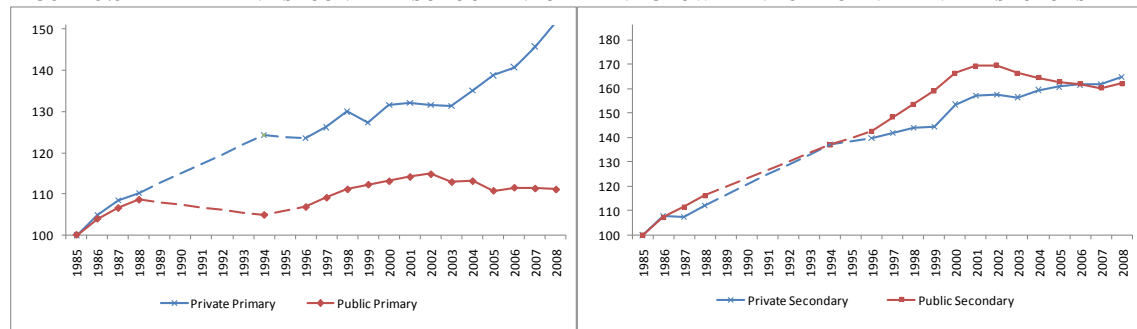
FIGURE 3.2 PRIMARY AND SECONDARY SCHOOL ENROLLMENT IN PUBLIC AND PRIVATE SECTORS, IN MILLIONS



Source: 1894-1997: Morduchowicz A. et al. (2000). 1997-2008: DINIECE statistical yearbooks, Ministry of Education

Figure 3.3 below shows that the growth in the late eighties of the primary and secondary school enrollment was similar for both private and public sectors. In the nineties, the private primary sector showed greater growth than the public primary sector. The graph reveals that the number of primary and secondary level students in public sector has decreased during the 2000s while it has increased in the private sector. On the one hand, enrollment in public schools decreased 2.7% in primary school, and 4.3% in secondary school between the years 2001 and 2008. On the other hand, private primary and secondary enrollment increased 14.7% and 4.9%, respectively. This evidence supports the notion that the private sector has intensified its enrollment in comparison with public sector enrollment.

FIGURE 3.3 PRIMARY AND SECONDARY SCHOOL ENROLLMENT GROWTH IN PUBLIC AND PRIVATE SECTORS



Source: DINIECE statistical yearbooks, Ministry of Education.

Note: Base: 1985=100

Due to the increasing participation of the private sector in primary education, and its recent evolution in the secondary level, it is interesting to study whether this migration from public to private school has been even across the different socioeconomic strata or if the budget constraint of the lower classes prevents them from paying a fee and relegates them to interact in public school mainly with students in a similar socioeconomic situation. The next section explores this issue based on the information offered by Argentine household surveys of the last years.

4. EVIDENCE OF SCHOOL SEGREGATION

The aim of this paper is to study how students of different socioeconomic strata are distributed between public and private schools in Argentina. The measurement of the school segregation phenomenon requires sources of information that must contain two basic inputs. Firstly, it is essential to be able to distinguish between the type of educational institution (public or private) that each student attends. Secondly, it is necessary to have an indicative measure of the individual social stratum, in our study the household per capita income.

In Argentina there are several surveys that make the study of school segregation possible by providing the two inputs detailed above. These are: the Permanent Household Survey (Encuesta Permanente de Hogares, or EPH), from the second half of 2003 to the first half of 2009; special educational modules developed for the EPH in 1992 and 1998; the Living Conditions Survey (Encuesta de Condiciones de Vida, or ECV) of 1996 and 2001; and the Household Expenditure Survey (Encuesta de Gasto de los Hogares, or EGH) carried out in 1996/1997 and 2004/2005. Since these surveys are not fully comparable, they will be analyzed separately in each subsection.

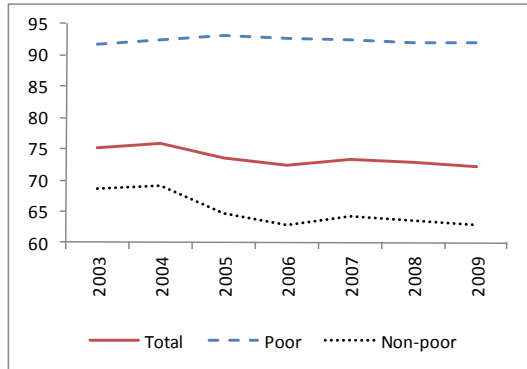
4.1 Evidence I: EPH, 2003- 2009

This section uses data from the EPH, conducted by the National Institute of Statistics and Censuses (INDEC). It is an urban survey and represents 2/3 of the total population. The EPH has been carried out since 1974 and collects individual and household income data, providing one of the basic inputs for the measurement of school segregation. Unfortunately, this survey only began to ask whether the respondent attends a private or public school since its implementation in continuous mode. Therefore, with the exception of two special cases discussed below, the EPH enables the study of the school segregation phenomena only from the second half of 2003 onwards.

The studied population is restricted to children and teenagers between 5 and 19 years old who attend primary or secondary school. These students are considered poor if they belong to the first quintile of household per capita income. Under this criterion, over the period 2003-2009 about 30% of students are considered poor. This indicates that in Argentina about three students out of ten belong to the poorest 20% of the total population⁸. If each level is studied separately, the percentage of poor students at the primary level is 35% for the analyzed period, while in secondary school this value falls to 26% of the total students. Nonetheless, this percentage increased over the period. At primary level, it went from 31% of students in 2003 to 36% in 2009. Two reasons may explain this evolution. On the one hand, the relative increase in the number of school-age children of low income sectors, and on the other, the increase in the rate of attendance of children that belongs to the first quintile of per capita family income.

Figure 4.1.1 shows the percentage of students attending public schools, according to whether they are poor or not. On the one hand, 92% of all poor students attend public schools and this percentage remained almost constant over the period 2003-2009. On the other hand, the percentage of non-poor students attending public schools fell from 69% in 2003 to 63% in 2009. These numbers give a first insight of school segregation in Argentina. Indeed, some differences are observed in the percentage of students who attend public schools according to whether they are poor or not, and these differences increased over the studied period because a proportion of non-poor students migrated to private education.

⁸ The percentage gap is mainly due to differences in the age composition of poor households with respect to non-poor households. Specifically, in 2009 the average age of the first quintile is 23 years, while for the rest of the population it rises to 35 years.

FIGURE 4.1.1 PERCENTAGE OF STUDENTS ATTENDING PUBLIC SCHOOLS

Source: Own elaboration based on EPH.

Therefore, despite the fact that we are analyzing a short period of time (6 years), some changes can be evidenced in the composition of public school enrollment. Of the total enrollment into public schools, the percentage of students considered poor increased from 35% in 2003 to 41% in 2009.

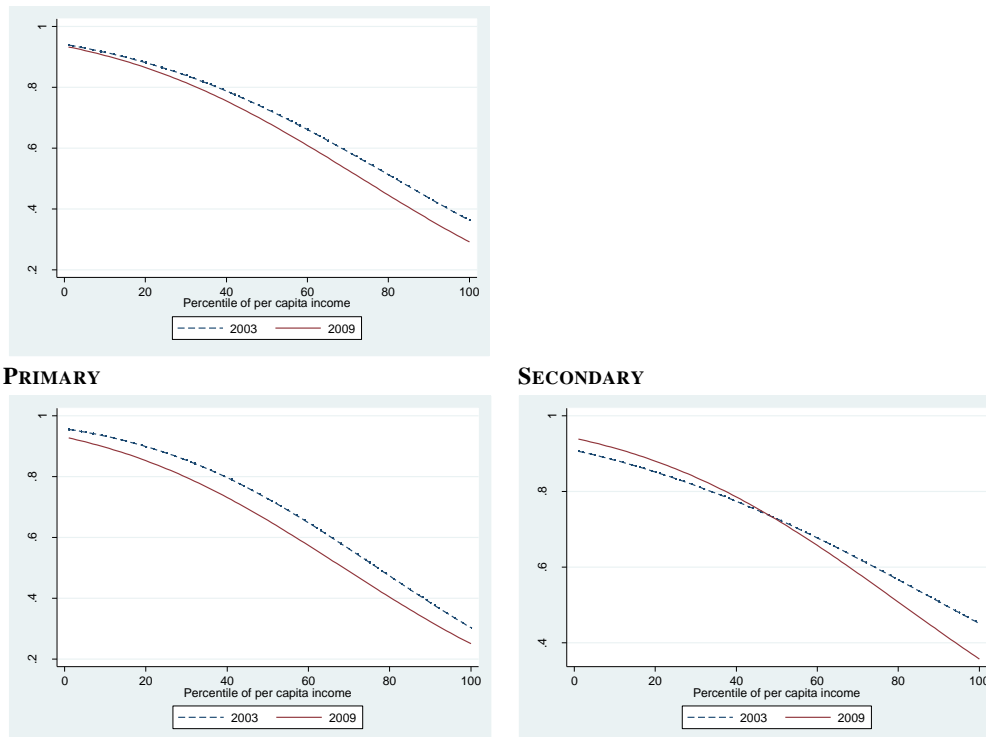
Although the descriptive analysis suggests the existence of school segregation and its increase during the analyzed period, it is necessary to study the phenomenon in a more rigorous way. One approach to analyze it, without having to define a group of poor students, is through econometric estimations of the conditional probability of attending a public school. It is interesting to study how this probability changes when family socioeconomic status increases and the evolution of this relationship over the years. Under the hypothesis that segregation is caused, at least in part, because people who have a higher income migrate from public school to private schools, looking for a different service that meets their children educational needs, the family income becomes a decisive factor regarding the likelihood of attending a public school. Clearly, other factors affect this choice, but a sufficient family income level is at least a necessary condition to afford private school fees. Wealthy families can choose the type of school that their children attend, while poorer families can hardly do so.

If the previous idea is correct, a negative relationship between the probability of attending a public school and the percentile of per capita income of each student is expected. This would indicate that the poorer the family, the greater the likelihood that their children attend a public school, holding all else constant. Under this concept, school segregation will increase if the influence of income on the probability of attending a public school becomes larger, *ceteris paribus*.

To establish this relationship, a probit model for conditional probability defined in the means of the control variables is used⁹. Figure 4.1.2 shows the relationship between the percentile of per capita income and the probability of attending a public school, for 2003 and 2009.

The relationship between the probability of attending a public school and the percentile of per capita family income is clearly negative, either for all students, or for those at primary or secondary level, for both 2003 and 2009. It can be seen that students from families from the upper part of per capita family income distribution have a low probability of attending a public school. On the contrary, students that belong to the poorest families are highly likely to attend public schools. For example, the probability of attending a public school in the tenth decile was only 0.3 at the primary level in 2009, while for the same year, students from families in the first decile showed a probability of 0.9. This would show, among other things, the existence of differences between public and private educational services, turning the richest families to private education.

⁹ Control variables include the number of family members and students' age. Moreover, the coefficient of household per capita income is significant at one percent in all cases.

FIGURE 4.1.2 CONDITIONAL ANALYSIS OF THE PROBABILITY OF ATTENDING A PUBLIC SCHOOL IN ARGENTINA TOTAL

Source: Own elaboration based on EPH.

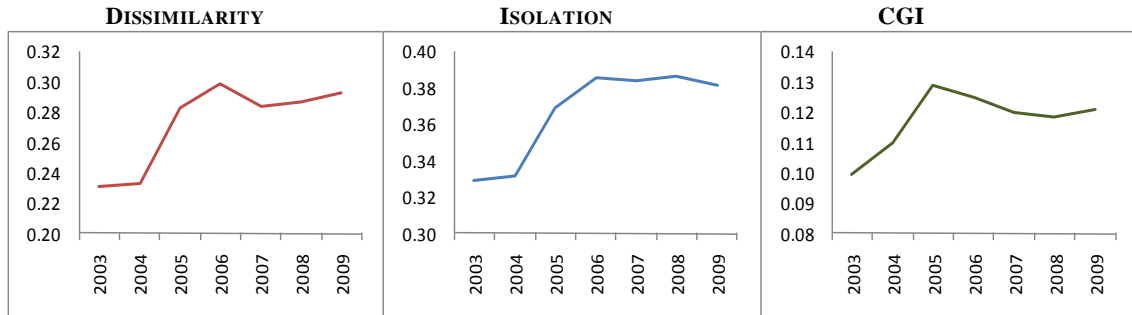
Note: Probit model estimations of probability of attending a public school are calculated using family size and age as control variables. Predicted values are obtained fixing the control variables at their average values.

Graphically, an increase in school segregation is expected the steeper the slope is, i.e. while the income percentile has more negative influence on the probability of attending a public school. Figure 4.1.2 shows that for the total educational system this phenomenon effectively occurred between 2003 and 2009, especially at the secondary level where the curves intersect. In this case, not only the slope increased but also the probability of attending a public school for students from deciles lower than fourth and decreases for the fourth decile onwards. This happens as a consequence of the slope rotation that takes place at the fourth decile.

Up to this point, descriptive and conditional analyses leave no doubt about the existence of school segregation, suggesting that this may have increased in the period 2003-2009. Below, the phenomenon is further explored through indices that allow us to summarize in one number all the information that emerges from the descriptive analysis. Segregation indices quantify the phenomenon and make comparisons possible, either with another period of time, other countries or regions, or other segregation studies.

Figure 4.1.3 shows the values of the three indices described in Section 2: Dissimilarity, Isolation and Centile Gap Index. On the one hand, the Dissimilarity Index, which evaluates the similarity dimension of segregation, shows that while in 2003 23.1% of poor students had to migrate to private schools to equalize the distribution of poor and non-poor between public and private schools, in 2009 this percentage rose to 29.3%. The Isolation Index, which captures the exposure dimension, reinforces this conclusion. In fact, while in 2003 the probability of a poor student finding another poor student in the same sector he attended was 0,329, for the year 2009 this likelihood rose to 0.382. Finally, the Centile Gap Index (with low variability) suggests an increase in school segregation between 2003 and 2005, with a subsequent stabilization at higher levels with respect to those of 2003. In particular, the CGI grew from 0,099 in the second half of 2003 to 0,121 in the first half of 2009, reflecting that the percentile distance among those attending each type of educational institution had declined on average.

FIGURE 4.1.3 SCHOOL SEGREGATION IN ARGENTINA



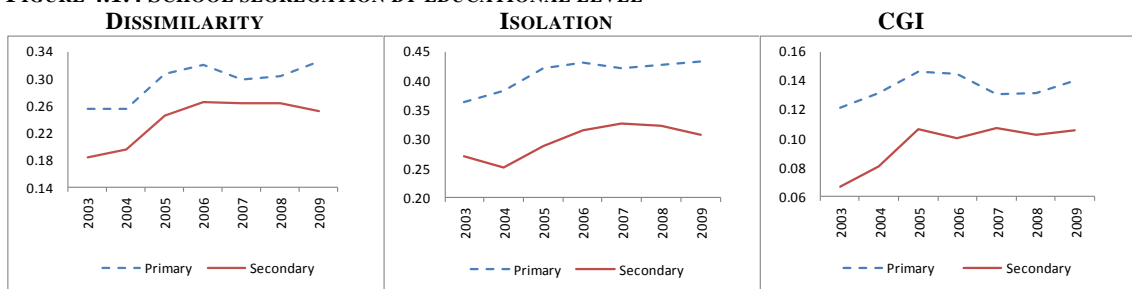
Source: Own elaboration based on EPH.

Note: The indices correspond to the first half of every year, except for 2003 where the second half is used due to lack of data on the type of school attended by each student.

As shown in Figure 4.1.4, school segregation levels differ between educational levels, but still suggest an increase in segregation between 2003 and 2009 for both primary and secondary levels. Segregation is higher in primary school regardless of the index and period used for testing. The D index indicates that during the period 2003-2009 in primary schools 29.5% of poor students who attended public schools should have moved to a private school for the groups to be equally distributed, while this percentage in secondary school went down to 23.9%. The A index is located around 0,416 in primary and 0,295 in secondary. The differences in segregation between educational levels persist when the CGI is analyzed, which corroborates the fact that people who attend primary school are more segregated than those who attend secondary school.

Among other reasons, this difference between primary and secondary school is influenced by attendance rates of poor and non-poor students in each educational level. Over the years analyzed here this rate is constant at almost 100% at the primary level, but at secondary level differences are important. Thus, school attendance of the group considered poor in year 2009 was almost 100% at the primary level, while at the secondary level it reached 76% versus 89% for the non- poor group. Changes in attendance rate do not modify the value of the indices that satisfy the size invariance property (such as the Dissimilarity Index)¹⁰. However, these indices are affected when the poor who do not attend school are the poorest of this group and therefore have lower probability of attending a private school than the average poor student. Similarly, the CGI will be affected if differences in primary and secondary school attendance are not homogeneous across all income percentiles¹¹.

FIGURE 4.1.4 SCHOOL SEGREGATION BY EDUCATIONAL LEVEL



Source: Own elaboration based on EPH.

¹⁰ The size invariance principle, proposed by James and Taeuber (1985), requires that the index is not affected if the number of poor students (or non-poor) in each type of school change at a constant rate. The A index does not meet this property.

¹¹ Valenzuela (2008) discusses the Chilean case and finds that segregation is more extended in primary school than in secondary schools. The author suggests that this evidence can be found in environments where secondary school is more selective than primary education.

While school segregation differs by educational level, the regional comparison in Argentina displays mixed results that are interesting to analyze. Figure 4.1.5 presents regional segregation indices for 2003 and 2009. In terms of D and A indices for the year 2009, the most segregated region is Greater Buenos Aires (GBA), followed by Pampeana, Cuyo, Northwest (NOA), Northeast (NEA) and Patagonia. The D index in GBA is 0,327, while NEA and Patagonia regions exhibit a D index close to 0.1. In terms of the dimension of similarity, school segregation in GBA is three times higher than in Patagonia and NEA. Although the A index displays the same regional disparities as the D index, the CGI shows a different pattern. Cuyo is, according to this indicator, the region with greater segregation in 2009, followed by NOA, GBA, Pampeana, NEA and Patagonia. This change in the regional ranking may be caused because Cuyo and NOA have poor students more integrated with non-poor than GBA and Pampeana, which is translated into lower D and A indices, but this integration seems to be with lower percentiles compared to GBA and Pampeana, finally resulting in smaller percentile differences in Cuyo and NOA and thus a higher CGI. Leaving aside this particular case, the regions that combine large concentration of population with high average income levels are those with greater levels of segregation. These variables significantly influence the quantity and quality of the provided private education as well as the ability to pay a fee in these institutions. However, there are other variables that also play an important role in explaining these regional differences, for example, income inequality in each region¹².

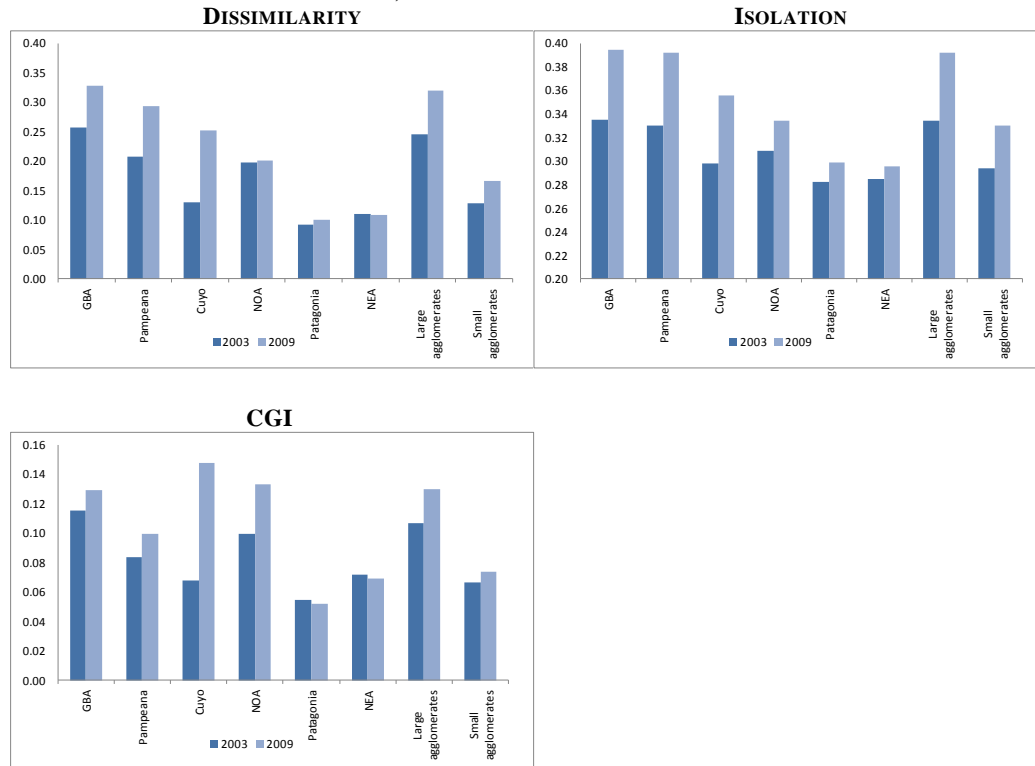
Regarding the behavior of school segregation in recent years, regions GBA, Pampeana and especially Cuyo, showed the higher increase in segregation between 2003 and 2009, whatever the index considered. NOA presents some increases in A and CGI, while in the other regions indices are virtually unchanged. The case of Cuyo is the most remarkable because it moves from fourth place in the regional ranking to first place according to the CGI and third place according to D and A indices.

Separation between large agglomerates (over 500,000 inhabitants) and small agglomerates (less than 500,000 inhabitants) is also relevant. It is possible to think that in large agglomerates is where the first private schools were installed (because there is higher demand) and it could have already reached a stable level of segregation, while in small agglomerates there is an unmet demand, less competition and therefore a greater potential profitability that could induce a higher growth of private schools. It would be expected that major changes in segregation take place in small agglomerates, as private institutions are created.

The above hypothesis does not seem to be successful. The agglomerates of more than 500,000 people not only have a higher initial level of school segregation but also higher growth in the period under review. For this to have occurred, either the demand for private schools by non-poor students continues growing in large agglomerates, or there has been an increase in public school demand from poor students, or both have occurred at the same time. Several factors may be behind these changes. For example, improvements on income levels of sectors that previously could not afford a private fee, an extension of the discrepancies in educational quality between public and private school during the analyzed years, changes in families' preference, an increase in the percentage of poor students over total students, or simply an increase in the diversity of private education that enables families to meet specific needs (such as bilingual, artistic, religious education, etc). Empirical evidence indicates that school segregation increased in large agglomerates in the period 2003-2009, although future developments will depend on how these and other factors interact in the coming years.

¹² Section 5 briefly discusses the relationship between school segregation and inequality.

FIGURE 4.1.5 SCHOOL SEGREGATION, REGIONAL ANALYSIS



Source: Own elaboration based on EPH.

In summary, either through descriptive analysis, conditional or indices (national, by level or by region), the empirical evidence from the EPH confirms the existence of school segregation between public and private schools, suggesting also an increase in such level between 2003 and 2009.

4.2 Evidence II: EPH, Special Modules

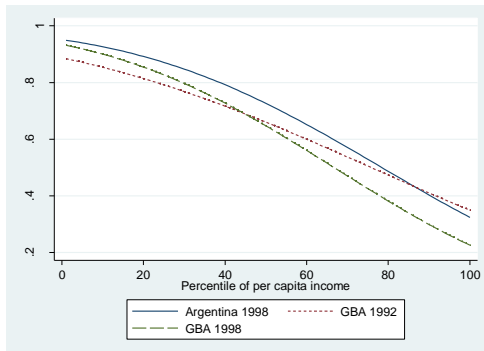
The empirical analysis presented here is based on data from the Special Modules on Education implemented with the EPH in 1992 and 1998. Prior to 2003, the EPH did not provide data about attendance to public or private education. Nonetheless, surveys of certain years included additional questions about specific subjects. The survey of May 1992 included questions about education and social services for GBA. Also, a special module on education was conducted in May 1998 at the national level. Data from both surveys allow us to extend the analysis based on the EPH to the years 1992 and 1998.

To reflect the relationship between the probability of attending a public school and the percentile of per capita income of each student, a conditional probability analysis is considered again as in section 4.1. Figure 4.2.1 shows this relationship for the primary level, secondary level, and both levels. All relationships are clearly negative, so the probability of attending a public school decreases when the percentile of the student's family increases, indicating the existence of the segregation phenomenon. GBA displayed a steeper curve in 1998 than in 1992, evidencing an increase in school segregation over those years.

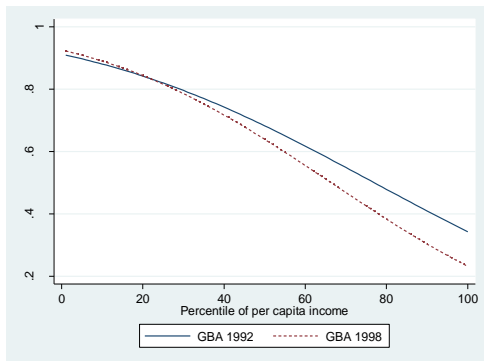
With regard to total GBA education, primary and secondary level indicated higher school segregation in 1998 than in 1992. The primary school figure shows that the probability of attending a public school was similar for the first deciles, while for the rest of deciles the probability decreased in 1998 in comparison with 1992. The probability of attending a public school decreases further in top deciles. These results might denote an increase of primary school segregation between these years, due to the fact that non-poor students moved to the private

sector, while the poor remained in public schools. As for secondary school, the probability of attending public school was higher for those students below 60 percentile, while in the upper percentiles this probability decreased in relation to 1992.

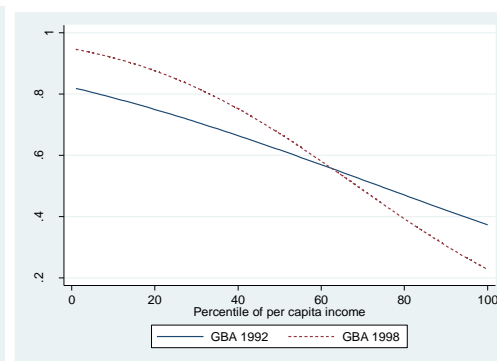
FIGURE 4.2.1: CONDITIONAL ANALYSIS OF THE PROBABILITY OF ATTENDING A PUBLIC SCHOOL TOTAL



PRIMARY



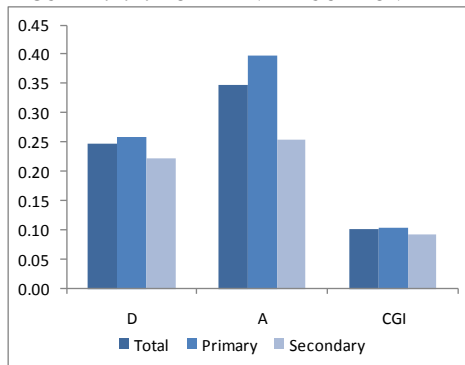
SECONDARY



Source: Authors' calculations based on Permanent Household Survey and the Special Module on Education, 1998
 Note: Probit model estimations of probability of attending a public school are calculated using family size and age as control variables. Predicted values are obtained fixing the control variables at their average values.

An alternative analysis for school segregation is through segregation indices. Figure 4.2.2 shows the three indices developed in section 2 for primary level, secondary level and total educational system in Argentina for 1998.

FIGURE 4.2.2: TOTAL AND EDUCATIONAL LEVEL SCHOOL SEGREGATION, 1998



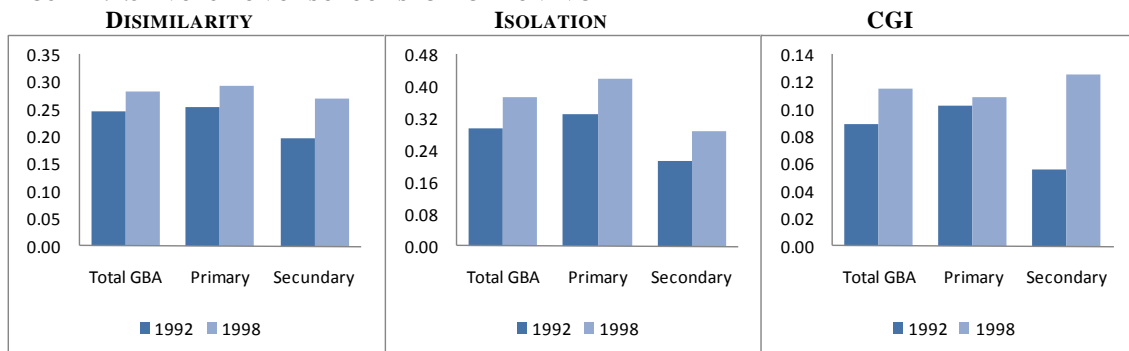
Source: Authors' calculations based on Permanent Household Survey and the Special Module on Education

The D index establishes that 24.7% of poor students who attend public school would have to change to private school to achieve an even distribution among poor and non-poor students between public and private school. In the case of primary education this percentage measure is higher (25.8%), while in secondary school is lower (22.2%). The A index indicates a 0.348 probability of exposure of a poor student to another poor student in the educational system. Also, this index shows the biggest difference between educational levels. The probability of

contact in the primary level is 57% higher than in secondary level. From CGI it is possible to observe differences by education level; the primary index is 0.104 while the secondary school index is 0.093. Therefore, the primary level shows higher school segregation regardless the index used to analyze it. .

The evolution between 1992 and 1998 of GBA's segregation indices is shown in figure 4.2.3. All of them increase, indicating higher school segregation in 1998. Education level analysis indicates that between 1992 and 1998 there was an increase in the three indices, especially in the secondary CGI. Primary level has higher school segregation compared to secondary school level. Nevertheless, secondary is the level that showed the highest CGI in 1998; we have to be cautious when interpreting this result because an analysis at the regional level and educational level involves working with a number of observations that could be insufficient for the calculation of CGI.

FIGURE 4.2.3 EVOLUTION OF SCHOOL SEGREGATION IN GBA



Source: Authors' calculations based on Permanent Household Survey and the Special Module on Education

School segregation in 1998 varied between different Argentine regions. According to the three indices considered, GBA is the most segregated region, then Pampeana, Cuyo, and NOA showed moderate segregation, and finally NEA and Patagonia are the regions with the lowest levels of segregation. It is interesting to note that D and CGI of GBA are twice that of Patagonia and NEA indices. Also, larger agglomerates are more segregated than smaller agglomerates.

In summary, for 1992 – the first year for which data is available from Permanent Household Survey- and for 1998, empirical evidence indicates the existence of school segregation between public and private schools in GBA. In 1998, it is possible to find some evidence of national school segregation. Finally, between 1992 and 1998, important increases in GBA segregation are seen regardless the method used to measure this phenomenon.

4.3 Evidence III: ECV, 1996 and 2001

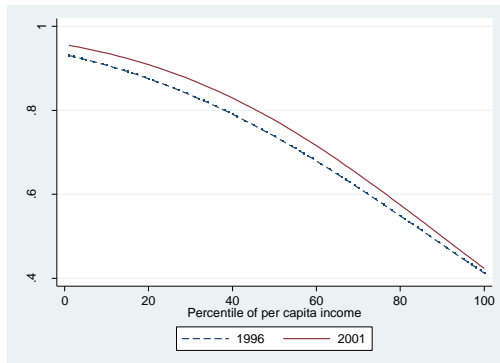
The third source of data used is the Living Conditions Survey (ECV). The geographical coverage of this survey extends to the towns of more than 5000 inhabitants, which represents approximately 96% of urban population and 84% of the total population. Similar to other surveys in the world, the ECV was surveyed in Argentina in 1996 (under the name of Social Development Survey - Encuesta de Desarrollo Social) and in 2001. In both cases the data allowed us to make a measurement of the phenomenon, providing a third source of information for the analysis of school segregation by socioeconomic status¹³.

Figure 4.3.1 presents the results of conditional analysis of the probability of attending a public school for the years 1996 and 2001. In the two years analyzed, the slope clearly indicated that

¹³ Nevertheless, the results should be interpreted with caution due to the fact that the survey of 2001 has inconsistent responses in 15% of the observations (20% of the population represented by the survey) that were set aside for the analysis. If inconsistent observations are distributed randomly, it may be a minor problem. However, if they are focused on a specific group of individuals (e.g. the poor), the findings may not be representing the reality.

the relationship between the probability of attending a public school and the percentile of per capita income was negative. In addition, we observed that the probability of attending a public school increased for all percentiles of per capita income in the period under examination, probably because of the loss of purchasing power of families in these years due to the economic recession. Even though the smaller increase in the probability of attending a public school takes place in the upper percentiles of the distribution, it is not possible to detect which was the evolution of school segregation in those years at a glance. It can be stated by graphic analysis that segregation occurred in both years, although it is not possible to identify whether there were changes in its level.

FIGURE 4.3.1 CONDITIONAL ANALYSIS OF THE PROBABILITY OF ATTENDING A PUBLIC SCHOOL IN ARGENTINA

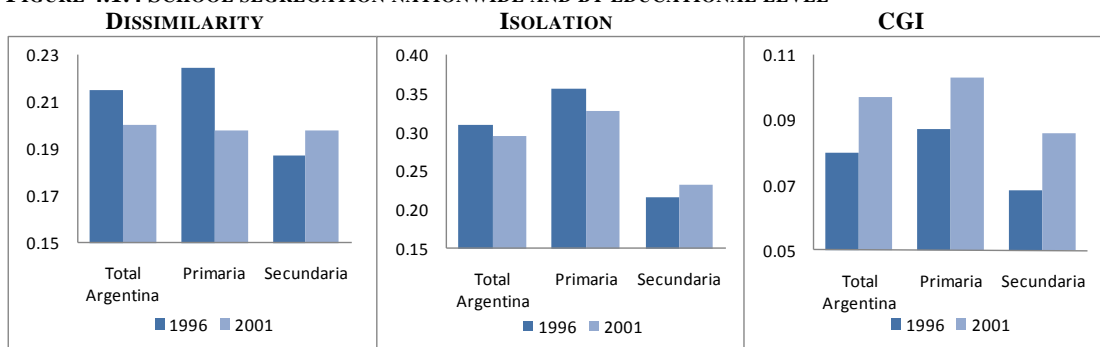


Source: Own elaboration based on ECV.

Note: Probit model estimations of probability of attending a public school are calculated using family size and age as control variables. Predicted values are obtained fixing the control variables at their average values.

In this sense, the analysis carried out on segregation indices allows us to have a broader view of what happened with school segregation in the period 1996 to 2001. Figure 4.3.2 shows the segregation indices for Argentina and for each level of education.

FIGURE 4.1.4 SCHOOL SEGREGATION NATIONWIDE AND BY EDUCATIONAL LEVEL



Source: Own elaboration based on ECV of 1996 and 2001.

In this period, the evolution of school segregation has different patterns according to the group that was analyzed, poor and non-poor students, or students from different income percentiles. For total students, indices D and A decreased in 2001 compared to 1996, while the CGI increased. The evolution of segregation at the primary level follows this trend, while at the secondary level there is an increase in segregation, whatever the index used to measure it. Note that the uneven performance of indices D and A regarding the CGI at the primary level shows that segregation decreases for the group of poor students as regards the non-poor, while percentile differences within different types of school are reduced. Again, the recession suffered by Argentina, which began in 1998, provides a possible explanation for this phenomenon. It is possible that some non-poor families in 1996 who sent their children to private schools, then in the middle of the 2001 crisis decided to send their children to a public school because it was difficult for them to afford the fee of that kind of institutions. The above process reduces segregation between the poor and non-poor because it implies more non-poor students attending

public schools. However, the percentile differences could increase if the non-poor who joined the public school were located near the 20 percentile, and this is precisely what seems to have happened in the period under analysis.

From a regional point of view, the evidence continues in the same direction as the one stated in the previous sections, where the regions that present more school segregation are Pampeana and GBA, followed by Cuyo, NOA, NEA and Patagonia.

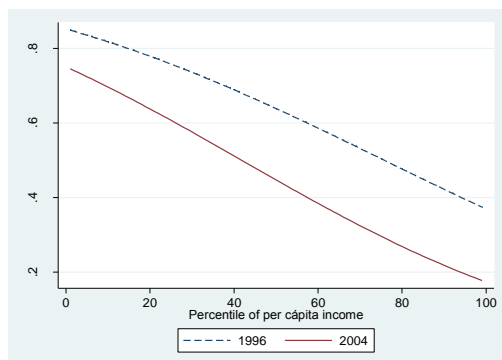
In short, regardless of the analysis used in the years 1996 - 2001 there was evidence of school segregation between public and private schools in Argentina. Over the period analyzed here segregation between poor and non-poor has fallen, but it has increased among students of different percentiles.

4.4 Evidence IV: ENGH, 1986, 1996 and 2005

The National Survey of Household Expenditure (Encuesta Nacional de Gasto de los Hogares, or ENGH), conducted by INDEC, is the last source of information explored in this study. The first antecedent of this survey was the Survey of Income and Expenditure of Households (Encuesta de Gastos e Ingresos de los Hogares) 1985/86, addressed only to households in the Greater Buenos Aires area. Between February 1996 and March 1997, the first urban nationwide survey of this kind was performed. The third and last edition was conducted between October 2004 and December 2005, this time with urban and rural coverage, although data in this paper is only available for the City of Buenos Aires. While these surveys capture household income and explore socio-demographic characteristics of the population, something similar to what happened with the EPH occurred: a question about attendance to public or private schools was only included in the 1996/97 and 2004/05 editions, so that the analysis of school segregation on the basis of this survey was restricted, in principle, to the years 1996/97 and 2004/05.

Because of these restrictions in coverage and data availability, this section focuses on analyzing the evolution of school segregation in the City of Buenos Aires. The conditional analysis provides a first approximation to the phenomenon of interest. Figure 4.4.1 shows the relationship between the percentile of per capita income and the probability of attending a public school for the City of Buenos Aires in 1996/97 and 2004/05. In both periods, the figure showed a negative relationship between the probability of attending a public school and the percentile of per capita income of a student's family, suggesting the existence of school segregation between public and private schools in the City of Buenos Aires. Moreover, there was a fall in the probability of attending a public school throughout income distribution. While it may be argued that the smaller reduction in the probability of attending a state school can be seen in the lower percentiles, the evolution pattern of segregation suggested by this graph is not clear, so that an analysis of segregation indices for these years becomes indispensable.

FIGURE 4.4.1 CONDITIONAL ANALYSIS OF THE PROBABILITY OF ATTENDING A PUBLIC SCHOOL IN THE CITY OF BUENOS AIRES



Source: Authors' calculations based on the ENGH.

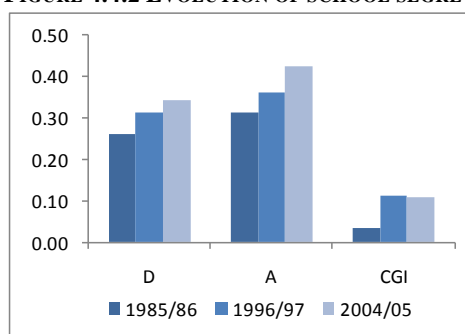
Note: Probit model estimations of probability of attending a public school are calculated using family size and age as control variables. Predicted values are obtained fixing the control variables at their average values.

As mentioned above, the expenditure survey 1985/86 does not allow to distinguish the type of school an individual attended. Having data for those years would be very interesting because so far all the analysis has been later than the beginning of the privatization boom in the nineties, and there is a perception that in the eighties the phenomenon of school segregation was of less magnitude. Under the assumption that students who attend public school are those whose households do not spend money on school fees, the expenditure survey 1985/86 year may, however, provide an approximation to the level of school segregation in these years.

Nonetheless, the use of such an assumption has some weaknesses. Indeed, to assume that if a household spends on school fees all its members who attend school go to a private institution overestimates the number of students in private schools, a bias that seems to be higher in the 1985/86 expenditure survey than in the subsequent ENGHs. In particular, the proportion of poor students in private schools resulting from the application of this assumption in the eighties induces us to suspect about the reliability of this calculation. However, two arguments partially justify its use. On the one hand, the assumption seems to behave reasonably well in the years where it is possible to check its predictive power with real data (1996/97 and 2004/05)¹⁴. On the other hand, the importance of having some quantification of the phenomenon in the eighties encourages us to use this approach, although the results should be interpreted with extreme caution.

Figure 4.4.2 shows the indices of Dissimilarity, Isolation, and Centile Gap for the City of Buenos Aires in the years 1985/86, 1996/97 and 2004/05¹⁵, using the previously explained assumption to approximate the levels of school segregation in the eighties. The figure reveals that school segregation actually increased between 1996/97 and 2004/2005, except when it is measured with the CGI. This suggests that although segregation between the groups of poor and non-poor increased, the integration of students of different income percentiles in the public and private schools rose between those years. The estimates for 1985/86 suggest, meanwhile, that the phenomenon under study is not new: a sharp increase in school segregation would have occurred between the mid-eighties and the nineties in the City of Buenos Aires¹⁶.

FIGURE 4.4.2 EVOLUTION OF SCHOOL SEGREGATION IN THE CITY OF BUENOS AIRES



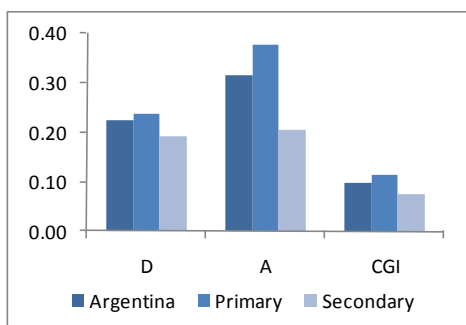
Source: Authors' calculations based on the ENGH.

Results by educational level and region based on the 1996/97 ENGH confirm the conclusions previously found that school segregation is greater in primary school and in the regions of GBA and Pampeana. Figure 4.4.3 shows D and A indices and CGI for the whole country and for each educational level separately emerging from this survey.

¹⁴ In 1996/97, the assumption for the City of Buenos Aires correctly predicts whether a student attends a public or private school in 79% of the cases, while this percentage fell to 73% in 2004/05.

¹⁵ Results by level of education for the City of Buenos Aires are not presented because the number of observations is considered insufficient to draw any general conclusions.

¹⁶ Results for the entire Greater Buenos Aires suggest an evolution in the same direction, although smaller in magnitude: between 1985/86 and 1996/97 the Dissimilarity Index would have risen from 0,290 to 0,294, the Isolation Index from 0,320 to 0,347 and the Centile Gap Index from 0,072 to 0,119.

FIGURE 4.4.3 SCHOOL SEGREGATION IN ARGENTINA BY EDUCATIONAL LEVEL, 1996/97

Source: Authors' calculations based on the ENGH.

While the main conclusion from the analysis based on expenditure surveys is that school segregation in the eighties, at least for the City of Buenos Aires, would have been well below that of the 2000s, it is necessary to emphasize again that this result should be interpreted with caution due to the previously mentioned constraints. The next section explores in detail the evidence presented so far to help rebuild the evolution of school segregation in the past 25 years and put together the “collage” of episodic evidence.

5. RECONSTRUCTING SCHOOL SEGREGATION EVIDENCE

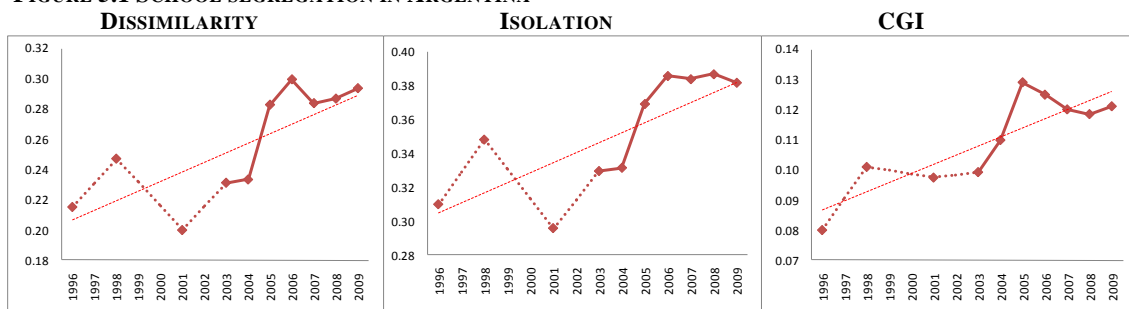
In this section, we collect the evidence of school segregation presented in Section 4. We also compare the phenomenon of segregation with the degree of income inequality in the country. Finally, we present estimated levels of school segregation for the coming years.

According to the empirical school segregation evidence obtained from the various surveys analyzed above, this phenomenon is a reality in Argentina. The results we have found allow us to approximate the degree of segregation of students from different social status between public and private schools. Our findings are alarming, not only for its level but also because of its evolution in recent decades.

The first evidence of segregation is from the mid-eighties, the Survey of Household Expenditure for the City of Buenos Aires suggests that school segregation was higher in subsequent years than it was in the eighties. The nineties show an intensification of the phenomenon, as suggested by the analysis of special education modules of 1992 and 1998 for GBA. As mentioned above, this period passed through intensive reforms in the education system, in which the pursuit of efficiency prevailed over the objective of integration. This, combined with increases in incomes of middle and high classes, the financing problems of public education as a result of decentralization, and the general perception of a differentiated service, among other factors, gave as a result an increased migration of students from not disadvantaged families to schools with private management, leading to an increase in school segregation.

Since 1998, there has been a change in the trend. Argentina began a period of recession that led to the 2001 crisis, and the resulting drop in income could explain the reduced levels of school segregation during these years. Apparently, this decrease is due to non-poor students pass from private school to public school. It is interesting to observe that the family of these students belongs to upper percentiles but close to the twenty percentile. This can be verified through the conditional analysis and the evolution of the indices presented in the previous section. In particular, the CGI remains almost invariant, while the other indicators show a substantial reduction.

FIGURE 5.1 SCHOOL SEGREGATION IN ARGENTINA



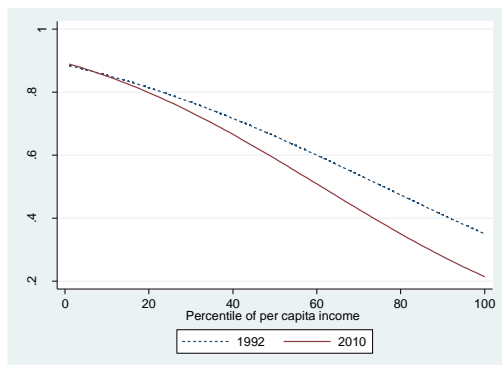
Source: Authors' calculations based on ECV and EPH.

Note: Graphics include a linear trend.

Over the last decade, this phenomenon has increased and its evolution has deteriorated the integrative role of public schools in the educational system. From 2003 to 2009, school segregation increased; Figure 5.1 shows that the three indices discussed previously increased in this period. Of all the periods studied in this document, 2003-2009 was the one with a greater increase in segregation. In fact, the enrollment of students in public schools dropped, while it increased in private ones for the first time in Argentinean history. As before, we suggest that the growth of household incomes and the deterioration of the public education sector have been determining factors for this change. Figure 5.1 illustrates the dynamics of segregation, from the indices calculated based on different surveys for Argentina between 1996 and 2009.

The conditional probability analysis of GBA between 1992 and 2009 gives an approximation of the national segregation school evolution since the nineties to the present date. From Figure 5.2, we can observe an influence of family income in the choice of school, the probability of attending public school for students from poor families increases, and it decreases for the remainder progressively as per capita income increases.

FIGURE 5.2 CONDITIONAL ANALYSIS OF THE PROBABILITY OF ATTENDING A PUBLIC SCHOOL IN GBA



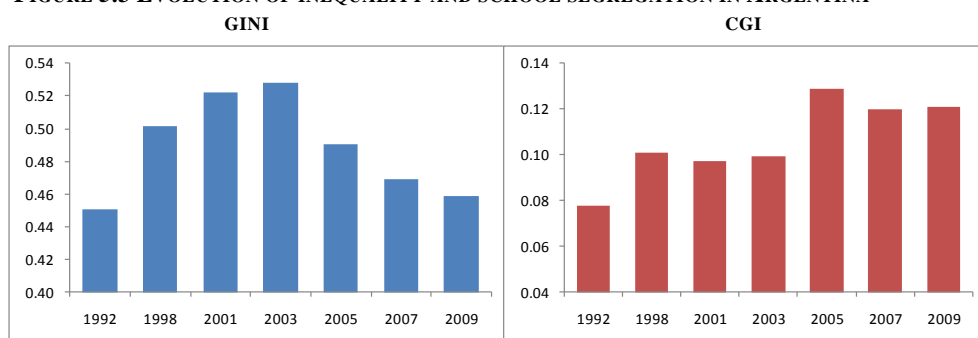
Source: Authors' calculations based on ECV and EPH.

The dynamics of school segregation recently described led us to investigate the relationship between this phenomenon and income inequality. So far there was no reference to this latter phenomenon, which can be closely related to segregation. As Reardon and Bischoff (2010) argue, inequality is a necessary (though not sufficient) condition for the existence of segregation by income. In fact, in the extreme case where there was no income inequality, all individuals would have the same income and then all schools would have the same distribution of students. We could expect a positive relationship between inequality and segregation, when a market for educational services based on ability to pay and quality differentiation between schools are combined with inequality in income. Higher income inequality produces more difference in the

quality of schools that families can afford so you might expect, *ceteris paribus*, a more unequal distribution of students of different income levels among schools¹⁷.

Figure 5.3 illustrates the dynamics of inequality and school segregation in Argentina for the period 1992-2009. We present the Gini coefficient and the Centile Gap Index, because the latter is an appropriate indicator of segregation to study the relationship between these two phenomena (Watson, 2009)¹⁸. The figure suggests that segregation of students from different socioeconomic levels between public and private schools is not a simple reflection of the level of inequality. The increase in segregation has occurred in periods of rising inequality (1992-1998) as well as in periods of strong reduction of inequality (2003-2009). Nevertheless, the analysis is a simple comparison of trends and it cannot state much about the relationship between these two phenomena; future research will work thoroughly this particular issue.

FIGURE 5.3 EVOLUTION OF INEQUALITY AND SCHOOL SEGREGATION IN ARGENTINA



Source: Authors' calculations based on ECV and EPH.

Note: The CGI index for 1992 is calculated from the GBA index multiplied by a correction factor. This factor is the ratio between the total index for Argentina and for GBA according to 1998 EPH (that is a closest survey to 1992 that provides national data).

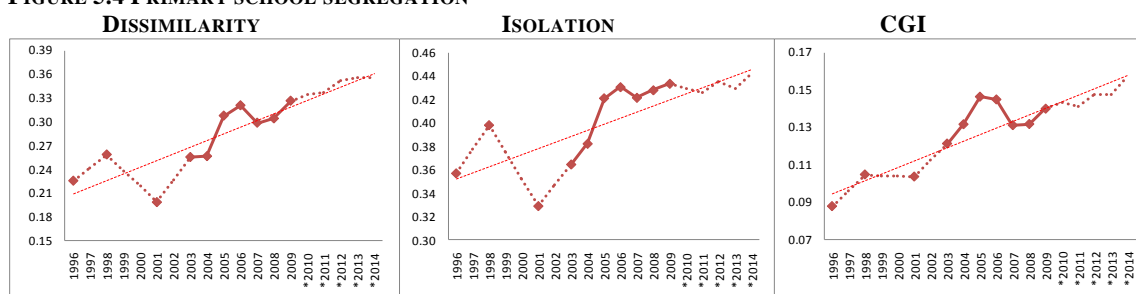
Another issue of interest is to inquire into the future evolution of segregation levels for the coming years. Projections of school segregation are made based on certain assumptions: it is assumed that all students pass grades, continue in the same type of school, their position in income distribution remains unchanged, and that new students are distributed among public and private schools in relation to income the same way as the other students. These assumptions allow a very simple estimate of the evolution of school segregation for the coming years. The computation of the indices is based on leaving out those students who would graduate each year. For example, we consider for the projection of 2010 for the primary level, that the primary school is composed of 2009 students who attended grades one through six and that students who entered first grade do not change the level of segregation.

Figure 5.4 shows segregation indices obtained in the previous sections for the primary level and the projected indices based on 2009 EPH. According to the three indices presented here, school segregation shows a rising trend, due to the higher level of segregation in the early years of primary level.

In other words, if the way students are distributed among public and private schools does not change in relation to the 2009 distribution, it is likely that school segregation between public and private schools will continue to rise in 2010s.

¹⁷ This idea is not so clear as regards whether the analysis is restricted to poor and non-poor students and public and private schools as a set of organizational units. You might think that given a level of income, a less unequal distribution can cause many of the families to have similar possibilities to choose the type of establishment their children attend and, therefore, segregation decreases. But it can also happen that a less unequal distribution, with the same average income, leads to a smaller group of families that do not have an income to access a private education, and in this case, a lower inequality of income increases the segregation of this group compared to the rest of the distribution.

¹⁸ The conclusions are the same regardless of the segregation indicator used.

FIGURE 5.4 PRIMARY SCHOOL SEGREGATION

Source: Own estimates based on ECV 1996, EPH 1998, ECV 2001, EPH 2003 to 2009 and projections based on EPH 2009.

Note: Graphics include a linear trend

6. FUTURE RESEARCH

This study is a first effort to document the patterns of school segregation in Argentina. Our agenda for future research in this area is extensive and involves significant challenges. Firstly, this paper adopts a convenient and simplifying assumption, dividing the population into poor and non-poor, using household per capita income and an arbitrary categorization (poor = bottom income quintile). It is relevant to extend the study using other measures of wellbeing as well as alternative definitions of socioeconomic groups to assess the robustness of these results.

Secondly, this paper studies the distribution of students between two groups, public and private schools. In reality, there is heterogeneity within each group which makes the analysis of segregation less clear and more interesting. While household surveys only allow us to distinguish between the types of school that students attend (public or private), other surveys may provide information at school level (i.e. those belonging to the National Assessment of Educational Quality).

Thirdly, this is a descriptive study that documents a phenomenon, but it only makes conjectural explanations of its evolution. The natural next step is to investigate the determinants of segregation. In particular, it is interesting to examine how the existence of an educational service with differential quality based on affordability merges with economic growth and changes in the level of inequality. The causal relationship between school segregation and inequality is particularly interesting. While the document suggests an effect from inequality to segregation, it is also reasonable to think about the existence of a causal link from segregation to inequality, or one in which the two phenomena are jointly determined by other factors.

Fourthly, the concept of social equity is closely related to equality of opportunities. According to a widespread view, equity requires that people face similar sets of opportunities independently of their initial socioeconomic status. Educational opportunities have a central role in the set of opportunities to equalize due to the large amount of evidence that indicates the importance of education in income generation and socio-economic opportunities. Intuition suggests that the phenomenon of segregation is closely linked to the distribution of educational opportunities, so this link should be further investigated in the future.

Fifthly, as it is mentioned in the introduction, the Argentinean society seems to have experimented segregation not only as regards schools but also in other dimensions. One of the most notorious and potentially relevant is residential segregation. For several years, the increasing concentration of households which belong to upper and middle classes in private neighborhoods has been present in political discourse and in society's perception, while poor neighborhoods are growing faster. It is particularly interesting to examine the relationship between school and residential segregation. It is interesting to investigate if parents, especially in the early years of education, are choosing schools for their children among those closest to

home, or if private schools are installed in specific neighborhoods based on their socioeconomic status, or if the students living in gated communities attend certain types of schools that differ from those attended by students residing in other areas, and other related phenomena.

Finally, it is on our agenda to extend the study of school segregation to other Latin American countries using the information included in several household surveys in the region. This information is not only interesting per se, but may be illustrative to better understand the determinants of segregation nationwide.

REFERENCES

- Duncan, Otis D. y Duncan, Beverly (1955). "A Methodological Analysis of Segregation Indexes", *American Sociological Review*, Vol. 20, No. 2, pp. 210-217.
- Durlauf, Steven (2006). "Groups, Social Influences, and Inequality: A Memberships Theory Perspective on Poverty Traps", *Poverty Traps*, eds. S. Bowles, S. Durlauf, and K. Hoff, Princeton, Princeton University Press.
- Glaeser, Edward L. y Vidgor, Jacob L. (2001). *Racial Segregation in the 2000 Census: promising news*. Center on Urban and Metropolitana Policy. The Brookings Institution-Survey Series.
- James, David R. y Taeuber, Karl E. (1985). "Measures of Segregation", *Sociological Methodology*, Vol. 15, pp. 1-32.
- Llach, Juan J., Montoya, Silvia y Roldán, Flavia (1999). *Educación para Todos*. Instituto de Estudios de la Realidad Argentina y Latinoamericana (IERAL). Buenos Aires.
- Massey, Douglas, S. y Denton, Nancy, A. (1988). "The Dimensions of Racial Segregation", *Social Forces*, Vol. 67, No. 2, pp. 281-315.
- Morduchowicz, Alejandro (coord.) (2000). *La Educación Privada en la Argentina: Historia, Regulaciones y Asignación de Recursos Públicos*. Centro de Estudios para el Desarrollo Institucional (CEDI) de la Fundación Gobierno y Sociedad. Buenos Aires.
- Orfield, Gary (2001). "Schools More Separate: Consequences of a decade of resegregation", The Civil Rights Project, Harvard University, Cambridge MA.
- Reardon, Sean F. y Bischoff, Kendra (2010). "Income Inequality and Income Segregation", *Working Paper*, Stanford University.
- Rivas, Axel, Vera, Alejandro y Bezem, Pablo (2010). *Radiografía de la Educación Argentina*. Fundación Centro de Implementación de Políticas Públicas para la Equidad y el Crecimiento (CIPPEC). 1 ed. Buenos Aires.
- Valenzuela Juan P. (2008). "Evolución de la Segregación Socioeconómica de los Estudiantes Chilenos y su Relación con el Financiamiento Compartido", Proyecto FONIDE, No. 211 – 2006, Ministerio de educación de Chile, Universidad de Chile.
- Watson, Tara (2009). "Inequality and the Measurement of Residential Segregation by Income in American Neighborhoods", *NBER Working Paper*, No. 14908.
- www.dineece.me.gov.ar (Operativos Nacionales de Evaluación. Dirección Nacional de Información y Evaluación de la Calidad Educativa. Ministerio de Educación de la Nación Argentina. March, 2010).
- www.indec.gov.ar (Instituto Nacional de Estadísticas y Censos. March, 2010).