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Educational Intergenerational Mobility in Latin America: A Non-Linear Quantile Regression Analysis

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María Cristina Martínez Pantoja

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María Cristina Martínez Pantoja

Calificación:	....
Nombre del profesor, Título académico:	Diego Grijalva, Ph.D.
Firma del profesor:	....

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Derechos de Autor

Firma del estudiante: ....

Nombres y Apellidos: María Cristina Martínez Pantoja

Código: 00112210

Cédula de Identidad : 1716967730

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RESUMEN

Esta investigación estudia la movilidad intergeneracional de educación en América Latina en el periodo de 2006-2013. Mediante estimaciones de Mínimos Cuadrados Ordinarios y de Regresión Cuantílica, se prueba que la región todavía presenta niveles bajos de movilidad. Existen claras diferencias entre países, y para la mayoría de ellos, la movilidad ha aumentado a lo largo del periodo que se estudia, lo que concuerda con la reducción de desigualdad de la región en la última década. Además, las no linearidades son significativas tanto para el principal regresor (educación de los padres) como para la variable dependiente (educación de los hijos). Existe una relación cóncava significativa entre la educación de los hijos y la de los padres, y la movilidad es menor a medida que nos movemos hacia la parte más baja de la distribución de la educación de los hijos. Por lo tanto, los resultados de esta investigación sugieren la existencia de una *trampa educacional* para los que poseen menos educación. Se *sobre estima* la movilidad cuando no se incluyen no linearidades en el modelo.

Palabras clave: educación, movildiad intergeneracional, igualdad de oportunidades, desigualdad, regresión cuantílica, no linearidad, América Latina.

ABSTRACT

This paper studies educational intergenerational mobility in Latin America in the period of 2006-2013. With the use of Ordinary Least Square and Quantile Regression estimations, it shows that the region still presents low levels of mobility. There are clear differences between countries, and for most of them, mobility has increased across the period of study, which goes along with the inequality reduction of the region in the last decade. Furthermore, non-linearities are significant both on the main regressor (parental education) and on the dependent variable (educational attainment of the children). There is a significant concave relationship between educational attainment and parental education, and mobility is lower as we move towards the bottom of the children's education distribution. Therefore, the results of this paper suggest the existence of an *education trap* for the least educated. Mobility is being *overestimated* when non-linearities are not added to the model.

Keywords: education, intergenerational mobility, equality of opportunities, inequality, quantile regression, non-linearity, Latin America.

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1 Introduction

One of the main socioeconomic problems in Latin America is its inequality, being considered one of the most unequal regions in the world.[1] This is due in large part to the high concentration of income at the top of the distribution. In fact, if we drop the richest 10% of households in terms of income per capita from the distribution, in many Latin American countries the Gini coefficient would be similar to that in the United States (Birdsall et al., 2011). Inequality has declined in most countries since the early 2000s, and several economic and political causes for that been studied. However, there have also been some recent studies questioning the sustainability of this decline now that the commodities boom is over.[2]

There is plenty of research on inequality in the region.[3] Nevertheless, it is mostly based on cross-sectional data, which shows inequality at a specific point in time. Depending on the level of social mobility, two societies with similar *snapshots* of their income distributions can have different social welfare levels. This means that these two societies can have differences in the *character* of their inequality depending on their mobility levels. In particular, the opportunities to move from one quantile to the next one in the income distribution may be different from one place to another. If there both societies have the same level of inequality, but one is more rigid (less socially mobile), then we should be more concerned about this one because it offers less equality of opportunities. In this case, we do not only have class separation, but also class perpetuation.

When talking about equality of opportunities, we enter into the subject of intergenerational mobility. In order to analyze this topic, it is inevitable to study the effect of family background on future income, education, or any other socioeconomic outcome. In a perfectly mobile society, opportunities in the labor market will be the same for different people regardless of their parents' economic and social status.

It might be the case that the labor market is rewarding the kind of 'merit' that adds economic value-skills, knowledge, and intelligence. But, if there is inequality of opportunities, the

[1]See for example BID (1998); Bourguignon & Morrison (2002).
[2]See for example Gachet et al. (2017).
[3]See for example Birdsall et al. (2011); Gasparini et al. (2016); Cornia (2014).

unfairness lies not in the competition itself, but in the chances to prepare for it (Reeves, 2017). The more dependence an individual has on its parental background in order to achieve a socioeconomic outcome, the less mobile the society is, and the lower the equality of opportunities. In this context, this paper aims to study the dependence of education on parental background. We focus on this variable because of its importance as a determinant of a person's socioeconomic status.

Most of the existing literature about social mobility in Latin America is based on the average individual of a society. However, some insights such as transitional matrices suggest the existence of non-linearities, both on the dependent and the independent variables. For this reason, this paper studies intergenerational mobility adding a non-linear term of the parental background variable, and at the same time computing a quantile regression to address non-linearities across the distribution of the children socioeconomic outcome. The study is carried out for 18 Latin American countries in the period of 2006-2013.

This paper offers three major results. First, educational mobility increases across the period of study, which is consistent with the reduction of inequality in the region. Second, there are important differences of mobility between countries, but the *ranking* depends on which econometric model is used. Finally, non-linearities are significant, both for parental education and educational attainment of the offspring. Adding squared parental education shows that there is a significant concave relationship. The quantile regression suggests that mobility increases as we move towards the top of the educational attainment distribution.

2 Literature Review

2.1 Intergenerational Mobility, Equality of Opportunity and the Importance of Family Background

Parents can have a direct effect on their offspring's future income through many sources: the inheritance of genetic endowments to children, home investments, the role of their income on determining the schooling level, the choice of school, etc. All of these factors will in turn determine the children's final schooling level, on which their future income depends.

Given this dependence across generations, the main motivation for this study is the importance of intergenerational mobility for public policy in Latin America. The concept of *equality of opportunity* links them. In fact, according to Hertz et al. (2007), the correlation between the socioeconomic status of parents and their adult offspring, i.e. intergenerational mobility, can be interpreted as a measure of a society's failure to provide equality of opportunity from differing family background.

Most of the literature on equality of opportunity starts from the distinction made by Roemer (1998) between *circumstances* and *efforts*. Circumstances refer to those factors for which individuals cannot be held responsible, such as family background, birthplace, gender and race. On the other hand, efforts are factors over which individuals do have control, such as occupational choice. From this, we can define equality of opportunities as a situation in which individual socioeconomic attainment, measured in the case of this study by educational attainment, is distributed independently of circumstances (Torche, 2014). This is often viewed as a "leveled playing field". In this sense, the concept of equality of opportunity is important because inequalities of outcome are indefensible when and only when they are due to differential circumstances (Romer, 2004).

The relationship between intergenerational mobility and equality of opportunity has been widely studied.[4] In general, when family background determines more of a socioeconomic attainment (i.e. when there is less equality of opprtunity), intergenerational mobility will be lower. When the outcome does not depend on the circumstances of an individual, such as family background, equality of opportunity will be achieved. Therefore, changes in public policy should aim to promote greater benefits to the relatively disadvantaged (Corak, 2013).

Research on the importance of family background in Latin America has found that parental education is one the most, if not the most, important circumstances that affect the offsprings' outcome Torche (2014). Behrman et al. (2000) found that higher parental income and parental

[4] See for example Romer (2004); Corak (2013); Brunori & Peragine (2013).

education cause a decrease of the children's schooling gap.[5] Other studies, like Marrero & Rodriguez (2011), suggest that, although the importance of circumstances vary across countries, inequality of opportunities in Latin America is much wider than in industrialized countries.

Torche also argues that what may foster mobility in Latin America is high returns to education,[6] but at the same time, they might create an "inherited meritocracy" because of the barriers that the lower segments face to accessing education.[7] This phenomenon might be a result of educational policies in Latin America that first restricted educational expansion and later focused on the postsecondary level before expanding secondary schooling.[8] In fact, Neidhöfer (2016) found that in the region, increasing returns to human capital cause lower intergenerational mobility.

Latin America might have a similar situation as the The United States, where according to Reeves (2017) there exists a meritocratic market, but an unfair society. "The labor market does a good job rewarding the kind of 'merit' that adds economic value-skills, knowledge, and intelligence. The unfairness lies not in the competition itself, but in the chances to prepare for it" (Reeves, 2017, p. 75).

2.2 Defining Mobility

Now that the importance of intergenerational mobility has been stated as a way to guarantee equality of opportunity in the Latin American context, it is important to specify the concept of mobility that will be used in this study. Mobility is multifaceted, and different mobility indices measure different mobility concepts, which is why Fields (2005) strongly encourages researchers to first define the concept of mobility to be used.

Mobility has been a topic of study in both sociology and economics. This is what economists tend to think about it: "the transformation of a vector of incomes (or some other measure of well-being or economic achievement) in an initial period into another income vector in a second

[5] This is also consistent with the findings of Arends-Kuenning & Duryea (2006).

[6] In fact, Daude (2011) found that most Latin American countries have higher returns to education than OECD countries, and a higher correlation between parental and child education.

[7] Behrman et al. (2000) make an extensive review of why marginal private benefits of schooling may be associated with family background in the presence of market imperfections.

[8] Morley (2001) discusses these policies in Latin America.

period, and possibly onward to subsequent periods." (Ferreira et al., 2013, p. 24). However, this concept can be somewhat ambiguous, which is why three questions need to be answered in order to impart meaning to the view of mobility presented above.

The first question refers to the space of economic mobility, i.e., mobility of what? Mobility could refer to current or permanent incomes, labor earnings, consumption, education attainment, etc. The second question is about the domains of economic mobility, which can be either intragenerational or intergenerational. The former refers to the mobility of the same individual over time, while the latter refers to the mobility across generations, such as from fathers to sons or from mothers to daughters. The third question refers to the concept of mobility that one seeks to capture. For this, Ferreira et al. (2013), based on the taxonomy developed by Fields (2000), present three basic concepts of mobility:

1. Mobility as a movement, which consists of four sub-concepts:
   (a) Directional income movement: the extent of the net upward or downward movement in individual incomes.
   (b) Non-directional income movement: extent of gross movement in income (income falls are added to income gains).
   (c) Share movement: extent of movement in relative incomes.
   (d) Positional movement: Positional movement takes place when there is a change in individuals' economic positions (ranks, centiles, deciles, or quintiles)
2. Mobility as origin independence: in this view, "a more mobile society is one where one's (or one's parents') initial position is a less important determinant of one's future position" (Ferreira et al., 2013, p. 25).
3. Mobility as equalizer of long-term incomes: here, a more mobile society is one where inequality of permanent income is less than inequality at any given point in time.

This paper uses intergenerational mobility of educational attainment, and the concept to be used is as origin independence.

2.3 Studies on Latin America and Measurement

Although most of the studies about inequality in Latin America have been from a static perspective, which present *snapshots* of inequality, the literature on social mobility has grown fast, especially in the last decade. The reason why these type of studies emerged later than in developed countries is mostly the lack of panel data, which is the most appropriate for mobility questions.

Given that the region still does not count with a long-run harmonized panel data survey,[9] researchers on mobility have found at least two different ways to address this problem. The first one is the construction of synthetic panel data;[10] and the second one is a cross-section analysis, with either sibling or intergenerational correlations (Solon, 1999).

Dahan & Gaviria (2001) is one of the few studies that has implemented the methodology of sibling correlations in Latin America, finding that there are substantial differences within the region, and that social mobility increases with mean schooling and income per capita. On the other hand, there is a broader variety of studies based on intergenerational correlations. Here, there are at least two strategies to circumvent the lack of panel data. Behrman et al. (2001) use both of them: First, they rely on household surveys that included retrospective questions on parental socioeconomic characteristics. Second, they focus on teenagers co-residing with their parents to examine the effect of family background on their relative schooling success. However, this second approach needs to be restricted to young children given that adults who co-reside with their parents are not representative of their peers, which would lead to a biased sample (Torche, 2014).

The most common tool to measure intergenerational mobility is the slope coefficient from a linear regression of children's on parent's outcome. This slope (usually called beta) can be standardized in order to take into account differences within the two distributions, which yields to a correlation coefficient (Neidhöfer et al., 2017).

Another way to describe intergenerational mobility is the use of transitional matrices. "The intergenerational transition matrix is a table whose ij^{th} entry is the fraction of children whose

[9] Torche (2014) makes a review of the available mobility surveys in Latin America by country.

[10] See for example Cuesta et al. (2011); Ordeñana & Arteaga (2012)

parent or parents earned income level i, and who in turn earn income level j. The implicit social goal is to achieve a transition matrix whose rows are identical" (Romer, 2004, p. 50). One of the most recent studies that presents a transition matrix for Latin America is Neidhöfer et al. (2017), and it shows a substantial persistence of education across generations. According to this, 55.2% of children with low education come from parents with low education as well. Similarly, 57.9% of those with high educational attainment are the offspring of parents with a high level of education.

Azevedo & Bouillon (2010) review the evidence on intergenerational social mobility in Latin America. Results indicate that mobility is low in the region, even when compared with the United States[11] and United Kingdom, which rank low on social mobility. There also seems to exist lower levels of mobility at the top and bottom of the income distribution. Regarding educational mobility, the levels are still low, although there has been an improvement in recent decades. The literature reviewed in this paper suggests that the overall low mobility in the region might be associated with social exclusion, low access to higher education, and labor market discrimination.

A more recent review is Torche (2014). He starts from the first generation of class mobility research in Latin America (1960's), which was entirely conducted by sociologists. The review then gets into the second generation (1990s), where economic mobility questions are assessed. The studies show a low mobility for the region, and there is evidence of stronger persistence at the top than at the bottom in every country. For example, "in Brazil, 35% of those with origins in the poorest quintile remain poor, whereas 43% of those with origins in the wealthiest quintile remain wealthy" (Ferreira & J., 2006).

As exemplified by these two reviews, Latin America presents low levels of mobility, which are consistent with the high levels of inequality in the region.[12] In fact, Hertz et al. (2007) estimates 50-year trends in the intergenerational persistence of educational attainment for a

[11] Behrman et al. (2001) include the United States on their study to compare it with Latin America's intergenerational mobility.

[12] Studies about the Great Gatsby curve in Latin America show a negative relationship between inequality and social mobility. See for example Neidhöfer (2016).

sample of 42 nations around the globe, and the seven Latin American countries included in the sample yield the lowest mobility levels of all.

Some literature has also examined the relation between macroeconomic conditions and intergenerational mobility in the region. Behrman et al. (2000) found that better developed markets –in particular financial markets– increase social mobility. According to their results, higher spending per school-aged child on primary education, and better quality primary and secondary schooling are positively associated with intergenerational mobility, while relatively greater public spending on tertiary education may actually reduce intergenerational mobility.[13] Similarly, Neidhöfer (2016) found that economic growth is one of the main channels behind the relationship between inequality and intergenerational mobility in Latin America, while public expenditures on education is a contrasting force. I.e., "(private and public) investment in human capital is determinant for intergenerational mobility, and a strongly dispersed distribution of this feature seriously challenges equality of opportunity in a society" (Neidhöfer, 2016, p. 24).

So far, the discussion has focused on estimates regarding population averages. However, as Couch & Lilalrd (2001) note, a natural extension of the intergenerational mobility literature has been to examine the relationship between the socioeconomic status of parents and their offspring's across the distribution of earnings. With this purpose, several studies have presented transition matrices, kernel density and quantile regression techniques.[14] All the papers found that intergenerational mobility varies across the distribution of earnings.

The approach used in this paper is quantile regression, a methodology that has been used mostly on developed countries. Grawe (2001) compares intergenerational mobility in the United States with other developed countries using quantile regression, as well as with four developing nations, where Ecuador and Peru are included. He concludes that while industrialized countries might be similar between them, income mobility in developing countries may be much slower. Here, Peru presents lower mobility estimates for the bottom quantiles, while in Ecuador the opposite happens.

[13] Consistent results are found by Dahan & Gaviria (2001).

[14] For transition matrices see Corak & Heisz (1999); Couch & Lilalrd (1998). For kernel density see Corak & Heisz (1999). For quantile regression examples see Eide & Showalter (1999); Grawe (2004).

There is not much research on Latin America's intergenerational mobility using quantile regression. However, as mentioned before, Neidhöfer et al. (2017) used a transitional matrix, which shows that educational persistence at the top of the distribution is high and has not changed substantially over time. Similarly, Behrman et al. (2001) compute mobility matrices for Brazil and Colombia (the two least mobile countries in their sample), but they found that the proportion of upward mobile children from the bottom of the distribution is substantially higher than the proportion of downward mobile children from the top. Nevertheless, this last research is conditional on the parents' socioeconomic category, while quantile regression allows for distinctions in the children's status.

As Grawe (2004) states, quantile regression is far more than simply a descriptive statistic. Furthermore, Bhattacharya & Mazumder (2007) criticize the standard transition matrices approach for relying on arbitrary discretizations of the distribution (Black & Devereux, 2011). It seems that quantile regression might be the best way to capture the notion of equal opportunity:

> "we should examine the group of individuals who reach the πth centile conditional on their circumstance type. A just society will redistribute resources between circumstance types so as to maximize the utility of the least fortunate member of this group" (Grawe, 2001, p. 3).

The study by Navarro (2007) on intragenerational mobility in Argentina uses a quantile regression approach. The main result is that individual's past income is a more important explanatory variable for current individual's incomes at the middle and the bottom of the conditional income distribution than at the top. Andrade et al. (2003) compute a quantile regression in order to test the effect of borrowing constraints on intergenerational mobility in Brazil. They found that the degree of intergenerational persistence is greater for the upper quantiles, which is consistent with the presence of borrowing constraints affecting the degree of intergenerational persistence.

We can see that the literature on intergenerational mobility in Latin America is expanding, as well as the available data.[15] As explained before, this is a way of measuring equality of

[15] There is a new harmonized database built from household surveys by Neidhofer, Gasparini and Serrano. See (Neidhöfer et al., 2017) for more information.

opportunity in a society. Therefore, given the socioeconomic context of the region, the results can have important implications for public policy aimed at *leveling the playing field*. However, as Torche (2014) points out, it is not a perfect indicator. "Some mechanisms for the intergenerational persistence —for example, genetic inheritance or family socialization— would exist even in a society in which institutions fully compensated for socioeconomic disadvantages" (Torche, 2014, p. 624). In addition, when comparing mobility levels across countries, it is important to mention that the assumption made is that genetic inheritance and family socialization do not have a great variation across nations (Torche, 2014), which seems to be a reasonable assumption, especially at the regional level.

2.4 Intergenerational Education Mobility

The final objective when studying social mobility is to determine how family background affects the socioeconomic status of children, whose most accurate quantifier is income. However, as mentioned above, in this research the dependent variable is educational attainment.

There are three main reasons to focus on schooling instead of income of the offspring. First, in Latin America there is more availability of data on education across generations than on income. Second, education is more comparable across generations than earnings. Third, as emphasized by the literature about returns to education, it is a key determinant of wage earnings. Thus, differences in educational attainment are important to understand static income inequality (Daude & Robano, 2015). In addition, Neidhöfer et al. (2017) show how educational attainment is related to economic well-being: in every country, for both cohorts analyzed, there is a clear positive association between average income and educational categories.

A particularly important concern is how intergenerational education mobility would translate into earnings mobility. For this, and due to the lack of intergenerational income data, most of the studies have focused on pathway transmissions (Dunn, 2007).[16] In fact, Dunn (2007) found that education is the most significant pathway by which earnings are transmitted in Brazil: when educational outcomes were less dependent on birth status, earnings equality of opportunity soon followed.

[16]Dunn (2007) explains theoretically the transmission of earnings through education.

"Hence, a society that is not displaying substantial mobility in education across generations is unlikely to have a great deal of intergenerational income mobility, unless markets work in a very inefficient manner (for example, by not rewarding education)" (Ferreira et al., 2013, p. 52).[17]

3 Data and Descriptive Statistics

3.1 Source of Data

The source of data for this research is the annual opinion survey Latinobarometro (Latinobarometro, 2017). It records individual and household characteristics of a nationally representative sample of adult respondents in 18 Latin American countries since 1995.[18] The sample per country is of 1000 to 1200 individuals, and around 20.000 persons are surveyed each year, representing more than 600 million inhabitants of the region. "The representativeness of the survey has varied over time reaching 100% of the total population in all countries around the year 2000" (Neidhöfer et al., 2017, p. 4). Latinobarometro Corporation, a non-profit NGO based in Santiago (Chile), is solely responsible for the production and publication of the data. It analyzes the development of democracy and economies as well as societies through indicators of opinion, attitudes, behaviour and values.[19]

Neidhöfer et al. (2017) mention the pros and cons of Latinobarometro with respect to the harmonized household database that they present. Latinobarometro's speficic objective is to make cross-country studies, for which it is harmonized ex-ante. It also includes 18 countries, in comparison to nine for the new database, given that not all household surveys include retrospective questions. On the other hand, the main advantage of National Household Surveys is that they offer a substantially higher number of observations. Their study, however, shows that results from both datasets are very similar and thus we are confident about the validity of the results.

[17] As noted before, Latin America has substantially high returns to education.

[18] Domican Republic is in the sample only since 2004. It is carried out by local firms in each country under the supervision of the Latinobarometro Corporation.

[19] See www.latinobarometro.org.

3.2 Restriction Criteria

To conduct the empirical analysis we restricted the sample along various dimensions, which are explained next.

The main restriction criterion was the availability of the retrospective questions on both, parental education and income.[20] Then, the sample was restricted to those who were 25 years old or older, given that this is the age when usually a person has finished her studies (Barro & Lee, 1993).Some literature tends to use a lower bound of 23 instead of 25. A comparative analysis was made between the distribution of education when age is equal to 23, 24 and 25. The same was computed for age greater than 23, 24 and 25. For most of the years, when age is equal to 25, the upper tail of the distribution has more density. Therefore, the age of 25 was maintained as a lower bound.

In order to drop those years that present a biased level of educational attainment, the average of this variable, by country and year, was compared to the one reported by Barro & Lee (2016).[21] The years of 2000 and 2004 were dropped because they have a significantly high upward bias in most of the countries.[22]

Regarding missing values, there are three years (2009, 2010 and 2013) in which parental education is not reported for about 20% of the sample. To make sure that these values are randomly distributed, we compared the average educational attainment, per year and country, with those individuals for whom parental education is not reported. In every year, when the missing values are removed, the mean educational attainment increases, which means that the missing values are mostly for people with lower education. Given this directional change, the mobility estimations of this paper could be considered as an upper bound.[23] However, the

[20] Self-reported income, as well as parental income, is expressed in deciles.

[21] The comparison was made for people between 25 and 64 years old given that Barro Lee report educational attainment for this age range.

[22] We also considered the possibility of dropping certain countries, specifically Colombia and Venezuela, because not only they differ significantly from Barro Lee's mean educational attainment in almost every year, but also because they report a higher average level of education than Chile, which is not close to reality. Given that Chile is the country in the region with the highest levels of education, it was taken as a benchmark to check that the educational attainment of the sample made sense. However, when the models were estimated without these two countries, the coefficients did not present a significant variation.

[23] The reason is, as shown later, that those with lower levels of education present less mobility, so when they are removed because of missing values, the mobility is overestimated.

maximum variation at the mean is around 0.18 years of schooling, which means that the missing values do no create a significant bias.

For the variables of educational attainment, both for children and parents, after 12 years of education, the categories reported by Latinobarometro are the following: incomplete university, completed university, and incomplete technical. These last two categories were recoded to 16 and 13 years of education respectively. Nevertheless, incomplete university could mean either 13, 14 or 15 years of schooling. To address this issue, for those individuals in this category, one of the three possible educational attainments was randomly assigned.

3.3 Descriptive Statistics

Table 1 presents summary statistics of educational attainment per country and year. There are clear differences across countries. Those with higher income, for example Argentina and Chile, present higher levels of education, while poorer countries like Guatemala, Nicaragua and Honduras have the lowest levels of all the region. In addition, throughout the period, in every country except Uruguay, the educational levels have grown: the average increase from 2006 and 2013 is of almost one year of education, where Ecuador presents the highest rise of about 3 years. Table 2 shows the average parental educational attainment. When comparing these two tables, we can see that there has been an increase of about 3 years of education, in the region as a whole, from one generation to the next one. This intergenerational rise took place in every country, where Guatemala had the lowest and Venezuela the highest change.

Table 3 shows that at median levels parental education did not even reach complete primary education, while the offspring's median is 8 years. In addition, percentiles 25 and 75 hold the highest educational attainment increase from parents to children (5 years). When looking only at children's education, we can tell that over the period, the highest change occurs in the percentile 25 and the median.

The increase of educational attainment from parents to children is consistent with the upward absolute mobility that Table 4 shows: over the whole period, 66.31% of children have overpassed the educational level of their parents, but there still exists 11.58% of children who

Table 1: Mean Educational Attainment per country and per year

	Year							
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2013**	**Total**
Argentina	9.08	10.01	10.04	9.92	10.06	10.19	10.22	9.93
	(3.95)	(3.69)	(3.66)	(3.65)	(3.64)	(3.46)	(3.42)	(3.66)
Bolivia	7.15	7.30	7.47	7.39	7.32	7.47	7.86	7.42
	(5.17)	(5.20)	(5.11)	(5.08)	(5.11)	(5.11)	(5.26)	(5.15)
Brazil	6.44	6.64	7.09	7.04	7.37	7.35	7.82	7.12
	(4.42)	(4.74)	(4.78)	(4.75)	(4.80)	(4.85)	(4.88)	(4.77)
Chile	9.79	9.76	10.23	10.06	10.62	10.93	10.86	10.32
	(4.00)	(4.00)	(4.03)	(3.97)	(3.48)	(3.46)	(3.53)	(3.82)
Colombia	8.71	8.40	8.63	7.23	10.49	10.82	11.21	9.36
	(4.52)	(4.61)	(4.89)	(4.72)	(4.35)	(4.16)	(4.08)	(4.69)
Costa Rica	7.47	7.49	7.47	7.58	7.88	7.38	7.89	7.59
	(4.33)	(4.41)	(4.33)	(4.33)	(4.29)	(4.32)	(4.45)	(4.35)
Dom. Rep.	7.24	7.41	7.50	7.67	7.50	7.64	7.64	7.52
	(4.72)	(4.61)	(4.66)	(4.86)	(4.89)	(4.97)	(5.03)	(4.82)
Ecuador	7.72	7.55	7.44	7.54	7.96	8.00	10.85	8.16
	(4.79)	(4.72)	(4.66)	(4.66)	(4.78)	(4.61)	(3.98)	(4.74)
El Salvador	5.89	6.24	6.22	6.27	6.08	6.30	6.06	6.15
	(4.96)	(4.93)	(4.99)	(4.97)	(4.95)	(4.95)	(4.81)	(4.94)
Guatemala	3.65	3.24	4.00	4.16	4.07	4.06	4.35	3.94
	(4.07)	(3.53)	(4.44)	(4.41)	(4.60)	(4.34)	(4.69)	(4.33)
Honduras	4.85	5.61	5.77	5.18	5.31	5.27	5.32	5.33
	(4.31)	(4.31)	(4.05)	(4.30)	(4.40)	(4.38)	(4.24)	(4.29)
Mexico	7.71	7.96	8.19	7.81	7.71	8.04	7.88	7.90
	(4.80)	(4.73)	(4.87)	(4.60)	(4.57)	(4.53)	(4.45)	(4.65)
Nicaragua	4.97	4.70	5.22	5.38	5.57	5.42	5.21	5.21
	(4.45)	(4.29)	(4.81)	(4.74)	(4.79)	(4.80)	(4.65)	(4.66)
Panama	8.30	8.15	7.55	7.94	8.13	8.47	9.38	8.28
	(4.68)	(4.38)	(4.74)	(4.78)	(4.57)	(4.58)	(4.60)	(4.65)
Paraguay	7.68	8.40	8.17	7.92	8.70	8.55	8.87	8.33
	(4.31)	(4.19)	(4.20)	(4.01)	(4.35)	(4.21)	(3.65)	(4.16)
Peru	8.83	8.83	8.53	9.39	9.33	9.34	9.48	9.11
	(4.93)	(5.02)	(5.01)	(4.95)	(4.91)	(5.00)	(5.00)	(4.98)
Uruguay	8.99	9.39	8.47	8.60	9.16	9.24	8.89	8.96
	(3.84)	(4.07)	(3.76)	(3.61)	(4.00)	(3.81)	(3.64)	(3.83)
Venezuela	8.60	8.91	10.28	9.95	9.83	9.78	10.36	9.67
	(4.32)	(4.29)	(4.13)	(3.62)	(4.21)	(3.98)	(3.65)	(4.08)
Total	7.55	7.72	7.83	7.75	8.11	8.19	8.53	7.96
	(4.75)	(4.75)	(4.79)	(4.72)	(4.81)	(4.77)	(4.75)	(4.77)

Standard errors in parenthesis.
Source: Latinobarometro.

Table 2: Mean Parental Educational Attainment per country and per year

	Year							
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2013**	**Total**
Argentina	6.37	7.28	6.97	7.12	7.43	7.18	7.44	7.10
	(3.97)	(4.11)	(4.10)	(4.06)	(4.23)	(4.15)	(3.9)	(4.09)
Bolivia	3.94	4.08	4.10	3.96	3.87	3.92	4.01	3.98
	(4.74)	(5.34)	(4.95)	(4.87)	(4.78)	(5.18)	(4.88)	(4.96)
Brazil	3.78	3.56	3.47	3.68	3.60	3.96	4.20	3.76
	(3.94)	(4.05)	(3.95)	(4.17)	(4.01)	(4.07)	(4.25)	(4.07)
Chile	7.08	7.06	7.70	7.29	7.77	8.42	7.83	7.60
	(4.65)	(4.71)	(4.49)	(4.69)	(4.52)	(4.42)	(4.50)	(4.59)
Colombia	4.75	4.48	4.49	4.10	6.30	7.36	7.16	5.55
	(4.35)	(4.23)	(4.25)	(4.49)	(5.26)	(4.67)	(4.99)	(4.79)
Costa Rica	5.22	5.17	4.41	5.06	5.46	5.13	5.48	5.13
	(4.66)	(4.39)	(3.96)	(4.48)	(4.66)	(4.43)	(4.75)	(4.49)
Dom. Rep.	4.91	4.04	4.62	4.84	3.69	4.40	4.89	4.47
	(4.37)	(4.79)	(4.63)	(5.01)	(4.65)	(4.91)	(5.53)	(4.88)
Ecuador	4.58	4.50	4.72	4.41	5.12	5.20	6.88	5.06
	(4.40)	(4.23)	(4.35)	(4.25)	(4.34)	(4.23)	(4.16)	(4.35)
El Salvador	2.54	3.20	2.16	1.83	3.03	2.98	3.20	2.68
	(4.28)	(4.53)	(3.91)	(3.63)	(4.36)	(4.17)	(4.28)	(4.19)
Guatemala	3.80	1.97	1.98	2.02	2.16	2.10	2.61	2.38
	(4.35)	(3.23)	(3.55)	(3.51)	(3.58)	(3.37)	(3.87)	(3.71)
Honduras	2.41	2.63	2.30	2.31	3.19	3.36	3.35	2.80
	(3.85)	(3.61)	(3.53)	(3.60)	(3.92)	(3.94)	(4.12)	(3.82)
Mexico	3.86	4.13	4.39	4.09	4.14	3.99	4.15	4.11
	(4.39)	(4.41)	(4.70)	(4.30)	(4.41)	(4.31)	(4.56)	(4.44)
Nicaragua	2.58	3.07	2.97	3.27	3.31	3.00	2.46	2.97
	(4.21)	(4.39)	(4.27)	(4.50)	(4.55)	(4.46)	(3.96)	(4.35)
Panama	5.24	4.97	3.65	4.53	5.66	6.14	6.26	5.19
	(4.73)	(4.75)	(4.57)	(4.66)	(4.73)	(4.95)	(5.21)	(4.88)
Paraguay	4.62	5.16	5.46	4.54	5.52	4.63	4.13	4.84
	(3.77)	(4.19)	(4.00)	(3.60)	(3.94)	(4.04)	(2.55)	(3.78)
Peru	5.51	5.87	5.50	6.21	5.97	6.20	6.55	5.97
	(5.12)	(5.17)	(5.19)	(5.19)	(4.96)	(5.06)	(5.05)	(5.12)
Uruguay	6.78	6.55	6.23	6.48	6.45	6.78	6.91	6.60
	(3.91)	(4.17)	(3.52)	(3.72)	(3.76)	(4.01)	(3.83)	(3.86)
Venezuela	4.98	4.93	6.75	3.70	5.49	7.38	6.33	5.59
	(4.30)	(4.47)	(4.62)	(2.58)	(4.75)	(3.87)	(4.2)	(4.34)
Total	4.71	4.72	4.67	4.49	5.02	5.21	5.35	4.88
	(4.53)	(4.63)	(4.59)	(4.50)	(4.69)	(4.71)	(4.70)	(4.63)

Standard errors in parenthesis
Source: Latinobarometro

Table 3: Mean and Percentiles of Children and Parental Educational Attainment

Educational Attainment (Mean and Percentiles)

	Year							
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2013**	**Total**
mean	7.55	7.72	7.83	7.75	8.11	8.19	8.53	7.96
p10	0	0	0	0	0	0	1	0
p25	4	4	4	4	5	5	6	5
median	7	7	8	7	8	8	9	8
p75	12	12	12	12	12	12	12	12
p90	14	14	14	14	14	14	14	14

Parental Educational Attainment (Mean and Percentiles)

	Year							
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2013**	**Total**
mean	4.71	4.72	4.67	4.49	5.02	5.21	5.35	4.88
p10	0	0	0	0	0	0	0	0
p25	0	0	0	0	0	0	0	0
median	4	4	4	4	5	6	6	5
p75	7	7	7	6	8	8	8	7
p90	12	12	12	12	12	12	12	12

Source: Latinobarometro.

Table 4: Absolute Mobility in Latin America

	More	**Same**	**Less**
2006	65.85%	20.99%	13.16%
2007	66.48%	21.72%	11.80%
2008	67.02%	22.07%	10.91%
2009	67.16%	21.79%	11.04%
2010	65.55%	22.95%	11.49%
2011	65.34%	23.19%	11.47%
2013	66.72%	22.10%	11.17%
Total	66.31%	22.12%	11.58%

Standard errors in parenthesis.
Source: Latinobarometro.

got less years of education. Although there is no clear trend year by year, if we only look at 2006 and 2013, the percentage of children who have more education than their parents does increase, while those who have less decreased.

4 Methodology

This section describes the econometric techniques used to measure educational intergenerational mobility in Latin America. Beta-coefficients were computed in different regression models, using both OLS and Quantile Regression. The models can be distinguished by two main considerations: linearity of the main regressor (parental education), and the inclusion of controls. At the same time, models with controls can be divided into two: with identity controls and with no identity controls.[24]

The linearity distinction emerged from the possibility of different effects on educational attainment, depending on which part of the distribution of parental education (PE) we look at. On the other hand, the inclusion of controls goes along with the extension of a traditional bivariate focus by considering diverse dimensions of social origins, i.e. circumstances, such as gender or identity (Torche, 2014).

4.1 Ordinary Least Squares (OLS)

As noted before, the most common tool to measure intergenerational mobility is the beta-coefficient from a linear regression of children's on parent's outcome. We regress the educational attainment (E) of child *i* from country *j* in year *k* on the years of education of the parent with the highest educational attainment (PE). The OLS model is the following:

$$E_{ijk} = \alpha + \beta_{jk} PE_{ijk} + \gamma_{jk} X_{ijk} + \varepsilon ijk, \quad (1)$$

where α is a constant, X is the vector of control variables, and ε is the error term. The vector X includes self-reported parental income decile (PI), gender and identity controls.[25] The beta-coefficient reflects how a child's final education is associated with parental educational attainment. A larger beta-coefficient implies less mobility given that there is more educational persistence across generations.

When non-linearity of parental education is considered, the estimation becomes:

$$E_{ijk} = \alpha + \beta_{jk} PE_{ijk} + \delta_{jk} PE^2_{ijk} + \gamma_{jk} X_{ijk} + \varepsilon ijk \quad (2)$$

[24]The reason why we make this distinction is that in 2006, Latinobarometro did not include questions about identity. So in order to keep this year in the period of analysis, we computed models with and without identity controls.

[25]The omitted category for identity controls is mestizo.

A cubic term for parental education and a quadratic one for parental income decile were also considered. But through a variance inflation factor analysis, they were dropped given multicolineality.

Equations (1) and (2) were estimated per country and per year, and also for the full sample. Neidhöfer et al. (2017); Daude (2011); Daude & Robano (2015) are recent studies that compute similar estimations for the region. The major contributions of this paper are the period of study, the inclusion, or validation, of a non-linear parental education term, and the quantile regression analysis, which we explain next.

4.2 Quantile Regression (QR)

This methodology complements the classical OLS estimation, which is conditional on the mean, by estimating different beta-coefficients along the distribution of the dependent variable. In this way we can obtain different effects of PE on the median of educational attainment, on the 10th percentile, on the 20th percentile, etc. Therefore, QR allows us to explore nonlinearities in the dependent variable. As noted in the literature review, transitional matrices have been probably the most common way to address this non-linearity issues.

The quantile regression analysis was proposed by Koenker & Basset (1978), and ever since it has been widely used in economic research. As Navarro (2007) notes, this approach has many advantages. First, based on Buchinsky (1998), the "quantile regression model assumes that covariates may not only shift the location or the scale of the conditional distribution, but also could affect the shape of the distribution as well" (Navarro, 2007, p. 4). Second, given that QR is based on a weighted sum of absolute deviations, the estimated betas are not sensitive to outliers of the dependent variable. Thirdly, the OLS estimation is efficient and unbiased when the error term follows a normal distribution, but in the case of heteroskedacity a QR approach seems to be more accurate given that the error term will have less variation per quantile of the dependent variable.[26]

[26] In fact, heteroskedacity was found using a Breusch-Pagan test.

Koenker & Basset (1978) show that quantiles can be estimated as a solution of a minimization problem. What is to be minimized in order to estimate the θ_{th} quantile is the weighted absolute sum of deviations:

$$q_\theta = argmin_c = E[\rho_\theta(Y-c)], \tag{3}$$

where ρ_θ represents the weights, and $(1-\theta)$ is assigned to the negative deviations, while θ is assigned to the positive ones. Y is the dependent variable, and c is the center of the distribution that minimizes the squared sum of deviations (Davino et al., 2014). In this sense, Equation (3) for a continuous variable becomes:

$$q_\theta = argmin_c \left((1-\theta) \int_{-\infty}^{c} |y-c| f(y) dy + \theta \int_{c}^{-\infty} |y-c| f(y) dy \right), \tag{4}$$

In the regression setting, interpreting Y as a response variable and $\mathbf{X}$ as a set of predictor variables, the unconditional mean as a minimizer can be extended to the estimation of the conditional mean function:

$$\hat{\mu}(x_i, \beta) = argmin_\mu E[Y - \mu(x_i, \beta)]^2 \tag{5}$$

Therefore, for the generic θ_{th} quantile:

$$\hat{q_Y}(\theta, \mathbf{X}) = argmin_{Q_Y(\theta, \mathbf{X})} E[\rho_\theta(Y - Q_Y(\theta, \mathbf{X}))], \tag{6}$$

where $Q_Y(\theta, \mathbf{X}) = Q_\theta[Y|\mathbf{X} = \mathbf{x}]$ represents the generic conditional quantile function. Similarly, the estimated beta for the θ_{th} is given by:

$$\hat{\beta}(\theta) = argmin_\beta E[\rho_\theta(Y - \mathbf{X}\beta)] \tag{7}$$

According to Koenker (2005), the quantile regression problem can be formulated as a linear programming method, and it is assumed to be solved by a finite number of simplex iterations. This way, the robustness of the quantile regression estimator is guaranteed. As long as the residual sign is not altered, varying the magnitude of the response variable will not change the solutions (Navarro, 2007).

Applying quantile regression to Equations (1) and (2), we obtain the following estimation models:

$$E_{ik,\theta} = \alpha(\theta) + \beta_k(\theta)PE_{ik} + \gamma_k(\theta)X_{ik} + \varepsilon_{ik}(\theta), \qquad \theta \in [0,1] \tag{8}$$

$$E_{ik,\theta} = \alpha(\theta) + \beta_k(\theta)PE_{ik} + \delta_k(\theta)PE_{ik}^2 + \gamma_k(\theta)X_{ik} + \varepsilon_{ik}(\theta), \qquad \theta \in [0,1] \tag{9}$$

The subindex j is removed here because the quantile regression was estimated only for the entire region per year. In this sense, the set of $E_{ik,\theta}$ estimates the educational attainment distribution for Latin America in year k.

5 Empirical Results

The transitional matrices presented in Table 5 provide a good insight into how parental background is related to the educational attainment of children when we include non-linearities.[27] The first two categories together (0-3 and 4-6) represent people who have up to primary education[28], the third one is for those who have from 7 years of education up to finished high school, and the last one is for those with some, or complete, higher education. The first panel is a description of the conditional probabilities for the parent to have a certain educational attainment y given the child's years of education x:

$$P(PE = y|E = x) = \frac{P(PE = y, E = x)}{P(E = x)} \tag{10}$$

We can see that the highest conditional probability, with a significant difference from the others, is to have parents at the lowest range of education given that children are located at the bottom category as well. This suggests very low mobility at the bottom of the distribution of E.

[27] The transitional matrices were computed for every year, but only the total of the period is presented given that the structure did not vary significantly between years.

[28] They were divided into two because almost 80% of PE observations are located within 0 to 6 years of education.

Table 5: Education Transitional Matrices for Latin America from 2006 to 2013

Conditional probability of PE given E				
E\PE	**0-3**	**4-6**	**7-12**	**13-16**
0-3	86.73%	10.02%	2.86%	0.39%
4-6	58.19%	33.98%	6.76%	1.06%
7-12	29.06%	35.16%	31.10%	4.68%
13-16	13.32%	25.61%	37.97%	23.09%
Conditional probability of E given PE				
E\PE	**0-3**	**4-6**	**7-12**	**13-16**
0-3	38.16%	6.93%	2.64%	1.16%
4-6	31.63%	29.04%	7.71%	3.90%
7-12	24.35%	46.33%	54.64%	26.43%
13-16	5.86%	17.71%	35.01%	68.51%

Source: Latinobarometro.

The second panel gives us some more information about how parental background might affect the educational outcome of the offspring. It shows the conditional probability for children to be at a specific educational attainment range given the parental years of education:

$$P(E = x|PE = y) = \frac{P(E = x, PE = y)}{P(PE = y)} \tag{11}$$

Contrary to the first transitional matrix, here the highest probability is located at the top of both distributions: 68.51% of the children from parents at the highest range of education are located in this category as well, while only 5.86% of children whose parents are at the bottom reached this range of educational attainment.

In the first (second) matrix, the closer we move towards the top of the distribution of children (parental) educational attainment, the more likely it is to have parents (children) with higher education. This suggests that the relationship between these two outcomes is not linear in any of the two distributions. Appendix 1 explains separately the variations from the linear model towards the non-linearities, both on the independent variable (adding squared parental education) and on the dependent variable (computing the quantile regression with linear parental education).

5.1 OLS Estimations

In Table 6, we present the estimates for Eq. (2) per country and per year. The last column shows the estimations for each country for the whole period, whereas the last row presents the estimates per year for all the countries together. Therefore, the quadrant at the lower right end of the table is the OLS estimation for the region in the period of 2007-2013.

The squared term of parental education (PE) is significant and negative, which yields a convex relationship. The negative effect is typically around 20 years of PE, which is outside of the considered range in the sample. It makes sense that parental education does not have a negative effect on the child's education, but that it does depend on the part of the distribution. As the education of the parents increases, its marginal effect on their children's education decreases.

In terms of beta-coefficients, given that parental education is not linear, it is better to look at marginal effects, which are computed at the average parental education depending on the year and country. These results are shown in Table 7. El Salvador and Costa Rica are the countries with the lowest and highest mobility, respectively. Although these results are not directly comparable with linear studies about educational intergenerational mobility in Latin America, the estimations seem to be consistent with the ranking of countries according to their mobility degrees. In general, Chile, Argentina and Uruguay are ranked as the most mobile countries of the region (Azevedo & Bouillon, 2010), and in Table 7 they also have relatively low beta-coefficients. The results on Neidhöfer et al. (2017) also rank Costa Rica as one of the countries with more mobility.

Additionally, we can see that mobility in the region has increased over the period of analysis. The marginal effect of parental education on children's education went from 0.688 in 2007 to 0.571 in 2013.[29]. This result goes along with the evidence on The Great Gatsby Curve given that inequality in the region has significantly decreased during the commodities boom. Although The Great Gatsby Curve refers to the relationship between inequality and income mobility, as explained before, educational mobility can eventually translate into income mobility.

[29]Neidhöfer (2016) founds an increase of mobility over time through a cohorts analysis

Table 6: Non-Linear OLS Estimations for Latin America from 2007 to 2013

	2007	2008	2009	2010	2011	2013	Total
				Argentina			
PE	0.666***	0.520***	0.539***	0.558***	0.574***	0.661***	0.587***
	(0.087)	(0.098)	(0.099)	(0.082)	(0.087)	(0.099)	(0.037)
PEs	-0.013**	-0.007	-0.006	-0.006	-0.010*	-0.014**	-0.009***
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.006)	(0.002)
PI	0.181***	0.257***	0.268***	0.171***	0.047	0.239***	0.198***
	(0.055)	(0.064)	(0.062)	(0.057)	(0.055)	(0.056)	(0.024)
male	0.139	-0.276	0.035	-0.371*	-0.449**	-0.461**	-0.221***
	(0.206)	(0.223)	(0.219)	(0.203)	-0.204	(0.204)	(0.086)
ind	1.764	0.199	1.534**	1.464	-1.121	0.277	0.547
	(1.190)	(1.016)	(0.723)	(1.134)	(0.835)	(0.561)	(0.390)
black	-0.792	-2.251***	-1.189	-3.014***	1.051	6.017***	-0.938
	(0.923)	(0.765)	(1.378)	(0.530)	(0.941)	(0.481)	(0.672)
white	0.335	0.793***	0.635***	0.803***	-0.064	0.048	0.392***
	(0.276)	(0.297)	(0.245)	(0.276)	(0.235)	(0.264)	(0.108)
other	-0.612	0.408	0.164	0.427	0.813	0.268	0.163
	(0.455)	(0.626)	(0.659)	(1.014)	(0.499)	(0.656)	(0.256)
				Bolivia			
PE	0.933***	0.919***	1.095***	1.034***	0.725***	0.929***	0.954***
	(0.089)	(0.104)	(0.087)	(0.103)	(0.117)	(0.107)	(0.040)
PEs	-0.024***	-0.027***	-0.039***	-0.037***	-0.020***	-0.030***	-0.030***
	(0.005)	(0.007)	(0.006)	(0.007)	(0.008)	(0.007)	(0.003)
PI	0.123*	0.386***	0.161**	0.290***	0.305***	0.474***	0.285***
	(0.070)	(0.094)	(0.077)	(0.089)	(0.091)	(0.092)	(0.034)
male	1.244***	0.991***	1.240***	1.143***	0.656**	1.127***	1.082***
	(0.265)	(0.291)	(0.257)	(0.291)	(0.328)	(0.317)	(0.118)
ind	-1.969***	-1.722***	-1.924***	-2.065***	-2.376***	-1.041***	-1.851***
	(0.319)	(0.342)	(0.303)	(0.340)	(0.398)	(0.368)	(0.140)
black	2.716***	-1.701	-1.672	-2.700	3.667***	0.377	-0.056
	(0.429)	(2.017)	(1.689)	(2.563)	(0.706)	(0.952)	(0.915)
white	0.866	-1.304	0.516	-0.408	0.978	-1.125	0.003
	(0.541)	(0.850)	(0.685)	(0.666)	(0.858)	(1.202)	(0.310)
other	-1.488**	-0.992	-2.336***	1.416	0.162	0.085	-0.820*
	(0.642)	(1.511)	(0.784)	(0.865)	(1.175)	(1.440)	(0.474)
				Brazil			
PE	0.898***	1.143***	1.036***	1.044***	0.984***	1.167***	1.054***
	(0.093)	(0.092)	(0.091)	(0.084)	(0.089)	(0.092)	(0.037)
PEs	-0.022***	-0.041***	-0.036***	-0.034***	-0.030***	-0.041***	-0.035***
	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.003)
PI	0.100	0.096	0.237***	0.183***	0.204***	0.094	0.150***
	(0.066)	(0.071)	(0.065)	(0.066)	(0.073)	(0.068)	(0.028)
male	-0.428	-0.337	-0.531**	-0.444*	-0.196	-0.335	-0.381***
	(0.276)	(0.276)	(0.268)	(0.253)	(0.262)	(0.267)	(0.109)
ind	-1.262	0.484	-0.681	-0.011	-1.538*	0.396	-0.389
	(0.859)	(0.978)	(0.915)	(0.671)	(0.857)	(0.826)	(0.368)
black	-0.178	0.132	0.162	-0.053	-0.645	0.510	-0.027
	(0.499)	(0.461)	(0.436)	(0.449)	(0.435)	(0.484)	(0.187)
white	-0.203	0.940***	0.005	0.736**	1.305***	0.988***	0.627***
	(0.415)	(0.344)	(0.337)	(0.356)	(0.368)	(0.359)	(0.147)
other	-1.063**	-0.016	-0.827*	-0.804**	-0.054	0.499	-0.413**
	(0.465)	(0.463)	(0.452)	(0.405)	(0.481)	(0.415)	(0.179)

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Table 6 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Chile			
PE	0.717***	0.827***	0.735***	0.640***	0.505***	0.608***	0.680***
	(0.075)	(0.087)	(0.087)	(0.074)	(0.074)	(0.084)	(0.033)
PEs	-0.016***	-0.020***	-0.018***	-0.014***	-0.002	-0.010**	-0.014***
	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.002)
PI	0.258***	0.253***	0.332***	0.272***	0.137**	0.240***	0.247***
	(0.066)	(0.063)	(0.068)	(0.058)	(0.054)	(0.060)	(0.026)
male	0.466**	0.608***	0.340	0.351**	0.514***	0.074	0.388***
	(0.209)	(0.192)	(0.209)	(0.175)	(0.164)	(0.182)	(0.077)
ind	-0.025	-0.053	-0.680	-0.967**	-0.422	-0.883*	-0.492***
	(0.390)	(0.435)	(0.509)	(0.375)	(0.345)	(0.457)	(0.168)
black	-1.508***	-2.866***	-6.026***	2.031	-0.693***	2.961***	-0.744
	(0.513)	(0.640)	(0.263)	(1.269)	(0.217)	(0.583)	(0.811)
white	-0.197	-0.389	0.029	-0.062	0.132	-0.108	-0.087
	(0.222)	(0.250)	(0.222)	(0.218)	(0.193)	(0.194)	(0.087)
other	-0.571	-1.142***	0.868*	-0.445	-0.351	-0.642	-0.346
	(0.765)	(0.381)	(0.500)	(0.696)	(0.576)	(0.781)	(0.278)
				Colombia			
PE	0.925***	1.061***	0.842***	0.463***	0.475***	0.379***	0.730***
	(0.085)	(0.110)	(0.093)	(0.076)	(0.089)	(0.078)	(0.036)
PEs	-0.029***	-0.042***	-0.025***	-0.006	-0.007	-0.004	-0.017***
	(0.005)	(0.007)	(0.006)	(0.004)	(0.005)	(0.004)	(0.002)
PI	0.221***	0.354***	0.106	0.375***	0.417***	0.395***	0.249***
	(0.062)	(0.081)	(0.072)	(0.063)	(0.063)	(0.063)	(0.028)
male	0.481*	-0.425	-0.009	0.699***	-0.034	-0.248	0.072
	(0.263)	(0.334)	(0.304)	(0.255)	(0.237)	(0.237)	(0.114)
ind	-2.229***	-0.708	-1.085*	-0.393	-1.020*	-0.414	-1.028***
	(0.580)	(0.598)	(0.608)	(0.581)	(0.520)	(0.649)	(0.256)
black	-0.398	-0.547	-0.512	-0.916	-1.277**	-0.406	-0.775***
	(0.548)	(0.603)	(0.641)	(0.628)	(0.630)	(0.531)	(0.251)
white	-0.608**	-0.460	-0.032	-0.276	-0.433	-0.698**	-0.571***
	(0.290)	(0.361)	(0.344)	(0.287)	(0.269)	(0.286)	(0.128)
other	0.002	-0.851	0.622	0.286	-0.418	-0.089	-0.190
	(0.649)	(0.684)	(0.579)	(0.483)	(0.438)	(0.510)	(0.241)
				Costa Rica			
PE	0.384***	0.253**	0.262***	0.197**	0.623***	-0.029	0.290***
	(0.103)	(0.106)	(0.095)	(0.093)	(0.098)	(0.112)	(0.041)
PEs	-0.001	0.008	0.005	0.014**	-0.009	0.025***	0.007**
	(0.007)	(0.008)	(0.006)	(0.006)	(0.006)	(0.007)	(0.003)
PI	0.193**	0.212**	0.293***	0.194**	0.153**	0.082	0.195***
	(0.075)	(0.088)	(0.082)	(0.077)	(0.075)	(0.100)	(0.033)
male	-0.131	0.406	0.834***	0.542*	0.295	-0.229	0.311**
	(0.347)	(0.352)	(0.318)	(0.320)	(0.317)	(0.366)	(0.138)
ind	-1.226	-2.855***	-0.879	1.263	1.538	-0.238	-0.196
	(0.844)	(1.103)	(0.810)	(1.567)	(1.011)	(1.149)	(0.424)
black	-0.825	0.733	0.072	2.615**	0.971	-0.935	0.607
	(1.615)	(2.158)	(1.316)	(1.012)	(0.966)	(1.213)	(0.537)
white	-0.586	0.076	0.032	0.575	0.320	0.053	0.086
	(0.398)	(0.388)	(0.370)	(0.353)	(0.375)	(0.425)	(0.158)
other	-0.202	-0.278	-0.336	-0.028	-0.606	-0.781	-0.402*
	(0.555)	(0.549)	(0.491)	(0.482)	(0.439)	(0.592)	(0.212)

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Table 6 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Dominican Republic			
PE	0.776***	1.111***	0.866***	0.651***	0.853***	0.429***	0.765***
	(0.099)	(0.110)	(0.107)	(0.106)	(0.119)	(0.109)	(0.044)
PEs	-0.025***	-0.038***	-0.029***	-0.022***	-0.024***	0.002	-0.021***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.003)
PI	0.243***	0.350***	0.255**	0.541***	0.311***	0.359***	0.294***
	(0.075)	(0.112)	(0.106)	(0.087)	(0.091)	(0.101)	(0.036)
male	-0.652*	-0.018	0.376	-0.785**	-0.600	-0.491	-0.341**
	(0.356)	(0.355)	(0.366)	(0.360)	(0.390)	(0.389)	(0.151)
ind	-0.928	-0.903	1.725**	-0.350	-1.443	-0.740	-0.398
	(0.717)	(0.872)	(0.739)	(1.697)	(0.973)	(0.965)	(0.378)
black	-1.106**	-0.776*	-0.309	0.416	-1.090*	0.112	-0.518**
	(0.459)	(0.466)	(0.513)	(0.492)	(0.570)	(0.612)	(0.207)
white	-0.676	0.151	-1.608**	1.500**	-1.621***	-1.147**	-0.537**
	(0.580)	(0.644)	(0.771)	(0.682)	(0.607)	(0.581)	(0.266)
other	0.463	-0.139	0.064	0.660	-0.176	-0.548	0.034
	(0.514)	(0.490)	(0.492)	(0.459)	(0.498)	(0.488)	(0.195)
				Ecuador			
PE	0.955***	0.840***	0.752***	0.870***	0.773***	0.564***	0.882***
	(0.078)	(0.078)	(0.083)	(0.084)	(0.080)	(0.103)	(0.034)
PEs	-0.022***	-0.016***	-0.011*	-0.017***	-0.012**	-0.012*	-0.019***
	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)	(0.002)
PI	0.138**	0.245***	0.321***	0.249***	0.209***	0.359***	0.233***
	(0.064)	(0.073)	(0.067)	(0.078)	(0.068)	(0.068)	(0.028)
male	0.118	0.217	-0.107	-0.088	0.372	0.540**	0.178*
	(0.245)	(0.251)	(0.255)	(0.254)	(0.251)	(0.234)	(0.103)
ind	-1.903***	-0.853**	-1.464**	-0.170	-0.734	-0.814	-1.146***
	(0.496)	(0.422)	(0.570)	(0.664)	(0.461)	(0.843)	(0.230)
black	-0.222	-1.376***	-1.338	0.540	-1.346**	0.322	-0.486*
	(0.707)	(0.527)	(0.867)	(0.656)	(0.679)	(0.508)	(0.281)
white	0.350	-0.422	0.024	0.782	0.257	-0.693	-0.024
	(0.575)	(0.502)	(0.457)	(0.545)	(0.562)	(0.491)	(0.218)
other	0.395	-0.360	0.181	0.086	0.018	-0.724	-0.015
	(0.717)	(0.552)	(0.648)	(0.529)	(0.582)	(0.496)	(0.244)
				El Salvador			
PE	1.397***	0.843***	1.138***	0.777***	1.077***	0.806***	0.985***
	(0.088)	(0.126)	(0.138)	(0.143)	(0.120)	(0.110)	(0.049)
PEs	-0.052***	-0.025***	-0.052***	-0.023**	-0.040***	-0.020**	-0.033***
	(0.006)	(0.009)	(0.012)	(0.011)	(0.010)	(0.008)	(0.004)
PI	0.217***	0.191**	0.274***	0.286***	0.213***	0.258***	0.232***
	(0.061)	(0.091)	(0.101)	(0.085)	(0.072)	(0.088)	(0.033)
male	0.514*	0.729*	1.249***	0.474	0.342	0.507	0.667***
	(0.274)	(0.382)	(0.356)	(0.372)	(0.319)	(0.329)	(0.139)
ind	0.574	0.643	-1.211	-2.370***	-0.627	0.044	-0.630*
	(0.928)	(0.739)	(0.771)	(0.620)	(0.673)	(1.020)	(0.322)
black	0.438	-0.063	0.244	0.499	1.002	-3.235***	-1.213***
	(1.160)	(0.930)	(2.287)	(0.843)	(0.917)	(0.526)	(0.377)
white	0.881*	0.300	-0.090	-1.672***	0.678	0.073	-0.083
	(0.469)	(0.659)	(0.560)	(0.529)	(0.485)	(0.390)	(0.176)
other	0.565	-0.416	0.274	-1.368**	-0.458	1.187	-0.219
	(0.544)	(0.525)	(0.707)	(0.632)	(0.746)	(1.250)	(0.276)

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Table 6 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Guatemala			
PE	0.291**	0.937***	1.014***	0.761***	0.545***	0.121	0.606***
	(0.114)	(0.138)	(0.127)	(0.136)	(0.132)	(0.127)	(0.054)
PEs	0.010	-0.017	-0.034***	-0.020*	-0.003	0.033***	-0.003
	(0.011)	(0.011)	(0.012)	(0.012)	(0.011)	(0.009)	(0.005)
PI	0.274***	0.178*	0.222***	0.375***	0.413***	0.262**	0.239***
	(0.080)	(0.092)	(0.068)	(0.096)	(0.111)	(0.109)	(0.035)
male	0.064	-0.003	0.855***	0.770**	0.887**	1.358***	0.655***
	(0.283)	(0.319)	(0.277)	(0.336)	(0.367)	(0.370)	(0.134)
ind	-1.112***	-0.548	-1.740***	-1.927***	-2.304***	-0.817	-1.420***
	(0.339)	(0.363)	(0.329)	(0.426)	(0.623)	(0.510)	(0.168)
black	-2.235***	1.958*	-1.061	-0.156	-3.769***	-4.874**	-1.228**
	(0.859)	(1.048)	(0.977)	(0.694)	(0.914)	(2.355)	(0.579)
white	-0.566	-0.992*	-0.391	-0.258	-0.594	-0.479	-0.286
	(0.611)	(0.553)	(0.492)	(0.496)	(0.625)	(0.497)	(0.210)
other	-0.792	1.346	-0.571	-1.815	-1.043	0.270	-0.956**
	(0.596)	(1.457)	(0.678)	(1.181)	(1.213)	(1.514)	(0.389)
				Honduras			
PE	0.765***	0.370***	0.755***	0.643***	0.881***	0.692***	0.652***
	(0.123)	(0.113)	(0.103)	(0.105)	(0.092)	(0.093)	(0.042)
PEs	-0.017	-0.001	-0.015*	0.002	-0.018**	-0.013*	-0.008**
	(0.012)	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)	(0.003)
PI	0.035	0.189**	0.216***	0.015	0.253***	0.297***	0.162***
	(0.068)	(0.079)	(0.074)	(0.081)	(0.079)	(0.072)	(0.030)
male	-0.285	-0.184	0.082	0.491	0.096	-0.656**	-0.065
	(0.327)	(0.327)	(0.312)	(0.329)	(0.296)	(0.295)	(0.129)
ind	-0.625	-1.245***	-0.868	-0.564	0.659	-1.634***	-0.689***
	(0.442)	(0.455)	(0.536)	(0.480)	(0.479)	(0.435)	(0.192)
black	0.107	-0.312	-0.464	-0.935	1.048	-1.711**	-0.225
	(0.892)	(0.849)	(0.886)	(0.854)	(1.009)	(0.780)	(0.405)
white	-0.165	-0.059	0.353	-1.109**	0.140	-0.840*	-0.201
	(0.509)	(0.419)	(0.453)	(0.486)	(0.460)	(0.454)	(0.192)
other	0.342	-0.894	-1.508***	-0.092	-0.439	1.145	-0.412
	(0.629)	(0.915)	(0.484)	(0.586)	(0.548)	(0.941)	(0.269)
				Mexico			
PE	0.753***	0.877***	0.648***	0.685***	0.636***	0.637***	0.697***
	(0.085)	(0.092)	(0.088)	(0.089)	(0.087)	(0.088)	(0.036)
PEs	-0.017***	-0.023***	-0.012**	-0.015***	-0.015***	-0.017***	-0.016***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.002)
PI	0.198***	0.190**	0.180**	0.339***	0.328***	0.254***	0.255***
	(0.064)	(0.076)	(0.075)	(0.078)	(0.079)	(0.079)	(0.030)
male	0.446*	0.336	0.531*	0.528*	0.989***	0.566**	0.560***
	(0.266)	(0.301)	(0.288)	(0.278)	(0.290)	(0.283)	(0.116)
ind	-1.554***	-0.801*	-0.245	-0.622*	-1.183***	-0.282	-0.789***
	(0.329)	(0.461)	(0.393)	(0.370)	(0.372)	(0.368)	(0.153)
black	0.035	-5.264***		1.884	-2.895*	0.840	-0.628
	(0.617)	(1.703)		(2.198)	(1.680)	(1.113)	(0.828)
white	-1.297***	-0.909**	-0.418	-0.387	-0.452	-1.239**	-0.799***
	(0.448)	(0.435)	(0.673)	(0.450)	(0.591)	(0.517)	(0.205)
other	-1.301**	0.363	0.185	-0.385	-1.256*	-0.191	-0.431*
	(0.525)	(0.620)	(0.690)	(0.693)	(0.656)	(0.634)	(0.259)

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Table 6 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Nicaragua			
PE	0.600***	0.335***	0.625***	0.486***	0.722***	1.004***	0.617***
	(0.109)	(0.103)	(0.114)	(0.112)	(0.120)	(0.129)	(0.046)
PEs	-0.012	0.017**	-0.017**	-0.002	-0.020**	-0.036***	-0.010***
	(0.008)	(0.007)	(0.009)	(0.007)	(0.009)	(0.011)	(0.003)
PI	0.138*	0.271***	0.352***	0.337***	0.147	0.340***	0.234***
	(0.073)	(0.081)	(0.097)	(0.096)	(0.095)	(0.080)	(0.034)
male	0.335	-0.149	0.172	-0.432	-0.716*	-0.494	-0.219
	(0.345)	(0.352)	(0.374)	(0.378)	(0.403)	(0.339)	(0.150)
ind	-1.302**	-1.878**	-1.626***	-0.958	-0.560	1.507	-1.006***
	(0.517)	(0.770)	(0.577)	(0.662)	(0.871)	(0.916)	(0.295)
black	-0.308	-2.407***	-0.436	-1.417	-0.965	0.016	-0.978***
	(0.768)	(0.825)	(0.815)	(0.936)	(0.748)	(0.800)	(0.338)
white	-0.329	-0.781	-0.370	-0.989*	-0.430	0.051	-0.608**
	(0.532)	(0.576)	(0.647)	(0.597)	(0.860)	(0.618)	(0.255)
other	0.774	-0.929	-0.273	-1.257	2.077	-2.632***	-0.272
	(0.990)	(0.729)	(0.853)	(0.808)	(1.341)	(0.595)	(0.392)
				Panama			
PE	0.935***	0.848***	0.669***	0.996***	0.649***	0.544***	0.807***
	(0.093)	(0.099)	(0.116)	(0.100)	(0.131)	(0.113)	(0.043)
PEs	-0.028***	-0.027***	-0.016*	-0.030***	-0.019**	-0.011*	-0.024***
	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)	(0.006)	(0.003)
PI	0.106	0.298***	0.328***	0.160**	0.059	0.134	0.192***
	(0.079)	(0.075)	(0.079)	(0.078)	(0.080)	(0.082)	(0.032)
male	-0.343	0.125	-0.444	0.451	-0.353	-0.098	-0.124
	(0.294)	(0.312)	(0.343)	(0.319)	(0.386)	(0.328)	(0.137)
ind	-1.383*	-3.642***	-1.462*	1.130	-1.820***	-4.334***	-1.964***
	(0.827)	(0.393)	(0.803)	(0.891)	(0.698)	(0.734)	(0.307)
black	-0.460	0.949	0.419	-0.275	0.559	-0.153	0.261
	(0.416)	(0.590)	(0.556)	(0.466)	(0.600)	(0.465)	(0.216)
white	0.268	1.727***	0.526	-0.583	-0.242	-0.731*	0.144
	(0.394)	(0.457)	(0.483)	(0.453)	(0.483)	(0.423)	(0.187)
other	-0.158	0.830	0.068	-0.599	-0.258	-0.732	-0.135
	(0.575)	(0.571)	(0.642)	(0.513)	(0.898)	(0.899)	(0.278)
				Paraguay			
PE	0.853***	0.890***	0.833***	1.156***	0.603***	-0.252**	0.642***
	(0.112)	(0.115)	(0.088)	(0.105)	(0.090)	(0.122)	(0.043)
PEs	-0.019***	-0.024***	-0.016***	-0.036***	-0.007	0.043***	-0.008***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.013)	(0.003)
PI	-0.107	0.162**	0.077	0.178**	0.380***	0.332***	0.194***
	(0.082)	(0.081)	(0.063)	(0.075)	(0.073)	(0.069)	(0.030)
male	0.455	0.564*	0.504**	0.393	0.096	0.098	0.297***
	(0.297)	(0.296)	(0.248)	(0.264)	(0.256)	(0.253)	(0.111)
ind	-1.734	-1.221	-0.050	-1.574**	0.737	-2.455	-1.023**
	(1.160)	(0.797)	(0.751)	(0.768)	(0.858)	(1.689)	(0.400)
black	0.940**	0.432	-1.544*	-1.768	-2.584	0.336	-1.035**
	(0.399)	(0.980)	(0.936)	(1.114)	(1.897)	(1.880)	(0.508)
white	0.043	0.129	-0.329	-1.069***	0.467*	-0.301	-0.325***
	(0.316)	(0.326)	(0.265)	(0.284)	(0.265)	(0.261)	(0.117)
other	0.065	-0.523	0.105	-0.235	-0.562	-1.567*	-0.468*
	(0.609)	(0.519)	(0.521)	(0.541)	(0.779)	(0.940)	(0.248)

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Table 6 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Peru			
PE	0.912***	0.730***	0.850***	0.847***	0.989***	0.717***	0.851***
	(0.092)	(0.092)	(0.092)	(0.088)	(0.091)	(0.099)	(0.037)
PEs	-0.028***	-0.017***	-0.023***	-0.023***	-0.030***	-0.016***	-0.023***
	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.002)
PI	0.213***	0.253***	0.294***	0.318***	0.239***	0.292***	0.248***
	(0.066)	(0.082)	(0.082)	(0.079)	(0.075)	(0.094)	(0.032)
male	0.756***	1.425***	0.457*	0.794***	0.695***	0.962***	0.839***
	(0.281)	(0.287)	(0.267)	(0.257)	(0.260)	(0.281)	(0.110)
ind	-0.261	-0.012	-0.034	-0.949*	-1.666***	-0.676	-0.561**
	(0.525)	(0.546)	(0.492)	(0.514)	(0.530)	(0.701)	(0.222)
black	-1.663	-0.389	-2.790***	-0.472	-2.249***	1.858***	-1.365***
	(1.042)	(0.814)	(0.994)	(0.793)	(0.803)	(0.641)	(0.413)
white	-0.832*	-0.482	-0.630	-0.815	-0.175	-0.333	-0.537***
	(0.503)	(0.526)	(0.504)	(0.516)	(0.355)	(0.462)	(0.199)
other	0.729	-0.356	-0.124	-0.654	0.247	-0.289	-0.131
	(0.873)	(0.739)	(0.568)	(0.882)	(0.919)	(0.909)	(0.321)
				Uruguay			
PE	0.661***	0.533***	0.517***	0.997***	0.632***	0.756***	0.681***
	(0.084)	(0.106)	(0.088)	(0.094)	(0.091)	(0.090)	(0.038)
PEs	-0.010**	0.002	-0.001	-0.030***	-0.011**	-0.018***	-0.011***
	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.005)	(0.002)
PI	0.139**	0.121**	0.282***	0.128*	0.103	0.315***	0.182***
	(0.057)	(0.056)	(0.064)	(0.068)	(0.068)	(0.061)	(0.025)
male	-0.319	-0.115	-0.110	-0.029	0.118	-0.270	-0.134
	(0.229)	(0.228)	(0.208)	(0.242)	(0.238)	(0.205)	(0.093)
ind	0.503	-0.995	1.773	-1.844	-0.887	0.167	-0.107
	(1.135)	(0.778)	(3.081)	(1.264)	(1.473)	(0.770)	(0.506)
black	0.213	-2.740***	-0.212	-0.359	-2.122***	-0.874	-0.918***
	(1.070)	(0.878)	(0.898)	(0.903)	(0.625)	(0.687)	(0.354)
white	0.148	-1.280**	0.771*	0.254	0.078	0.472*	0.248
	(0.485)	(0.624)	(0.426)	(0.483)	(0.375)	(0.279)	(0.170)
other	0.047	-2.509***	0.426	-0.420	0.021	0.278	-0.026
	(0.583)	(0.781)	(0.662)	(0.590)	(0.607)	(0.635)	(0.247)
				Venezuela			
PE	0.823***	0.456***	-0.054	0.466***	1.087***	0.470***	0.492***
	(0.076)	(0.093)	(0.103)	(0.086)	(0.166)	(0.080)	(0.037)
PEs	-0.026***	-0.003	0.006	-0.004	-0.042***	-0.005	-0.006***
	(0.005)	(0.005)	(0.010)	(0.005)	(0.009)	(0.005)	(0.002)
PI	0.097	0.219***	0.071	0.225***	0.184***	0.245***	0.128***
	(0.067)	(0.079)	(0.074)	(0.074)	(0.069)	(0.071)	(0.030)
male	-0.109	-0.273	0.095	-0.180	-0.142	-0.465**	-0.244**
	(0.249)	(0.260)	(0.281)	(0.284)	(0.280)	(0.216)	(0.108)
ind	-1.326***	-0.031	-1.361**	0.806	-0.165	-1.103*	-0.761**
	(0.496)	(1.080)	(0.598)	(1.169)	(0.774)	(0.608)	(0.298)
black	-1.277***	-0.540	0.797	0.055	-1.916***	0.008	-0.841***
	(0.385)	(0.529)	(0.584)	(0.795)	(0.557)	(0.587)	(0.228)
white	-0.176	0.396	-0.792**	0.018	0.015	0.295	-0.010
	(0.303)	(0.293)	(0.364)	(0.367)	(0.328)	(0.284)	(0.132)
other	-0.349	-0.313	-0.008	-0.537*	0.062	-0.118	-0.062
	(0.442)	(0.374)	(0.356)	(0.323)	(0.389)	(0.306)	(0.146)

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Table 6 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Total			
PE	0.886***	0.828***	0.815***	0.799***	0.860***	0.748***	0.827***
	(0.021)	(0.022)	(0.022)	(0.022)	(0.023)	(0.023)	(0.009)
PEs	-0.023***	-0.019***	-0.021***	-0.018***	-0.022***	-0.017***	-0.020***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
PI	0.153***	0.237***	0.244***	0.242***	0.221***	0.292***	0.222***
	(0.016)	(0.019)	(0.018)	(0.018)	(0.018)	(0.019)	(0.007)
male	0.132**	0.194***	0.286***	0.243***	0.154**	0.056	0.175***
	(0.067)	(0.071)	(0.069)	(0.069)	(0.069)	(0.069)	(0.028)
ind	-1.506***	-1.175***	-1.337***	-1.265***	-1.153***	-1.137***	-1.289***
	(0.118)	(0.133)	(0.124)	(0.136)	(0.133)	(0.146)	(0.054)
black	-0.659***	-0.473***	-0.407**	-0.170	-0.923***	-0.433**	-0.524***
	(0.156)	(0.175)	(0.182)	(0.180)	(0.174)	(0.189)	(0.072)
white	0.023	0.018	-0.057	-0.004	0.244***	-0.433***	-0.020
	(0.077)	(0.080)	(0.079)	(0.078)	(0.077)	(0.076)	(0.032)
other	-0.351***	-0.429***	0.033	-0.471***	-0.213	-0.254*	-0.280***
	(0.132)	(0.141)	(0.136)	(0.128)	(0.141)	(0.137)	(0.056)

Note: *** Significant at 1 %, ** significant at 5 %, * significant at 10 %
Robust standard errors in parentheses
Source: Latinobarometro

According to the Gini coefficient from the World Bank Data, in the period of study Ecuador is one of the countries with the highest decrease of inequality, and the results here show that it has had one of the major mobility increases. Mobility in Brazil and Nicaragua has gone in the opposite direction: these countries present less mobility in 2013 than in 2007.

Regarding the control variables, we can see in Table 6 that parental income decile (PI) in general has a positive and significant effect on educational attainment. Being a man has a positive but not always significant effect. Similarly, the coefficient of indigenous (ind) is not significant every time, but it is worth noting its significance and negative sign in Bolivia, one of the countries with the largest proportion of indigenous people. Likewise, black people seem to have less education than mestizos (the omitted variable), although the coefficient is not always significant.

In general, the most influential circumstance of an individual on his/her final educational attainment seems to be parental education followed by parental income. The other controls not always play a role, but they are still significant if we look at the totals. All of this means that,

Table 7: Non-Linear OLS Marginal Effects

	2007	2008	2009	2010	2011	2013	Total
Argentina	0.475	0.429	0.45	0.462	0.437	0.451	0.453
Bolivia	0.734	0.697	0.783	0.751	0.564	0.688	0.712
Brazil	0.744	0.856	0.767	0.8	0.747	0.819	0.794
Chile	0.488	0.526	0.474	0.421	0.47	0.445	0.473
Colombia	0.665	0.685	0.639	0.387	0.374	0.326	0.536
Costa Rica	0.369	0.327	0.308	0.349	0.535	0.248	0.357
Dom. Rep.	0.577	0.762	0.589	0.491	0.639	0.448	0.581
Ecuador	0.759	0.69	0.657	0.7	0.649	0.405	0.691
El Salvador	1.065	0.734	0.948	0.637	0.838	0.68	0.81
Guatemala	0.332	0.871	0.875	0.675	0.532	0.291	0.591
Honduras	0.677	0.367	0.685	0.655	0.759	0.608	0.609
Mexico	0.61	0.671	0.553	0.558	0.518	0.495	0.568
Nicaragua	0.529	0.435	0.511	0.475	0.603	0.825	0.557
Panama	0.652	0.651	0.525	0.66	0.413	0.406	0.562
Paraguay	0.661	0.623	0.686	0.753	0.536	0.106†	0.561
Peru	0.581	0.546	0.57	0.574	0.622	0.504	0.576
Uruguay	0.531	0.552	0.503	0.609	0.48	0.508	0.53
Venezuela	0.571	0.415	-0.012◇	0.417	0.467	0.4	0.42
Total	0.688	0.647	0.627	0.617	0.629	0.571	0.631

◇Not significant at the 90% level
† Significant at the 95% level
The rest of values are significatn at the 99% level.

following Roemer (1998)'s literature, Latin America does not present equality of opportunities for educational attainment.

5.2 Quantile Regression Estimates

Table 8 presents the estimations per year of Eq. (9) for five different quantiles next to its estimation on the mean (OLS). The significant difference between each quantile's and the OLS' estimation was analyzed looking at the confidence intervals. The difference between coefficients was also tested.[30]

[30]Beta-coefficients of the variables male, other and square parental education were not significantly different between quantiles in every year. However, this was not the case when computing the quantile regression for the whole period.

Table 8: Non-Linear Quantile Regression Estimates for Latin America from 2007 to 2013

	OLS	**Q10**	**Q25**	**Q50**	**Q75**	**Q90**
			2007			
PE	0.886***	0.976***	1.003***	0.930***	0.989***	0.732***
	(0.021)	(0.044)	(0.041)	(0.030)	(0.031)	(0.014)
PEs	-0.023***	-0.024***	-0.021***	-0.023***	-0.028***	-0.026***
	(0.001)	(0.004)	(0.002)	(0.002)	(0.002)	(0.001)
PI	0.153***	-1.59e-17	0.144***	0.187***	0.109***	0.022
	(0.016)	(2.35e-14)	(0.029)	(0.023)	(0.035)	(0.025)
male	0.132**	-4.76e-16	-0.025	0.136	0.109	0.044
	(0.067)	(3.29e-14)	(0.093)	(0.091)	(0.085)	(0.041)
ind	-1.506***	4.76e-16	-0.959***	-1.915***	-1.304***	-1.935***
	(0.118)	(2.80e-13)	(0.183)	(0.177)	(0.190)	(0.276)
black	-0.659***	4.76e-16	-0.323	-0.957***	-0.761***	-0.583
	(0.156)	(0.073)	(0.217)	(0.203)	(0.195)	(0.421)
white	0.023	0.143	0.296*	-0.170*	-0.004	-0.044
	(0.077)	(0.176)	(0.166)	(0.099)	(0.079)	(0.047)
other	-0.351***	3.33e-16	-0.263	-0.489***	-0.113	0.022
	(0.132)	(0.032)	(0.174)	(0.181)	(0.177)	(0.100)
			2008			
PE	0.828***	0.933***	1.015***	0.866***	0.863***	0.684***
	(0.022)	(0.037)	(0.037)	(0.033)	(0.033)	(0.031)
PEs	-0.019***	-0.017***	-0.019***	-0.018***	-0.023***	-0.024***
	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
PI	0.237***	0.000	0.196***	0.295***	0.224***	0.155***
	(0.019)	(0.008)	(0.027)	(0.023)	(0.026)	(0.033)
male	0.194***	0.000	0.196**	0.255**	0.210**	0.155**
	(0.071)	(0.010)	(0.087)	(0.099)	(0.087)	(0.068)
ind	-1.175***	0.000	-0.804***	-1.297***	-1.434***	-1.345***
	(0.133)	(0.009)	(0.163)	(0.182)	(0.192)	(0.262)
black	-0.473***	0.000	-0.655***	-0.675***	-0.238	-0.310
	(0.175)	(0.087)	(0.182)	(0.245)	(0.192)	(0.327)
white	0.018	0.200	0.215*	-0.140	-0.210**	-0.155**
	(0.080)	(0.154)	(0.125)	(0.108)	(0.102)	(0.066)
other	-0.429***	0.000	-0.608***	-0.590***	-0.329**	-0.270**
	(0.141)	(0.012)	(0.172)	(0.199)	(0.161)	(0.120)
			2009			
PE	0.815***	1.000***	1.010***	0.892***	0.785***	0.574***
	(0.022)	(0.041)	(0.040)	(0.031)	(0.038)	(0.034)
PEs	-0.021***	-0.028***	-0.022***	-0.022***	-0.020***	-0.018***
	(0.002)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
PI	0.244***	0.000	0.250***	0.285***	0.250***	0.200***
	(0.018)	(0.012)	(0.024)	(0.028)	(0.030)	(0.034)
male	0.286***	0.000	0.026	0.293***	0.250***	0.251***
	(0.069)	(0.013)	(0.096)	(0.096)	(0.096)	(0.093)
ind	-1.337***	0.000	-0.776***	-1.561***	-1.250***	-1.290***
	(0.124)	(0.039)	(0.176)	(0.251)	(0.181)	(0.308)
black	-0.407**	0.000	-0.526**	-0.333	0.000	-0.400*
	(0.182)	(0.129)	(0.214)	(0.300)	(0.262)	(0.226)
white	-0.057	0.000	0.232*	-0.146	-0.250**	-0.310***
	(0.079)	(0.063)	(0.123)	(0.110)	(0.106)	(0.099)
other	0.033	0.000	-0.294	0.000	0.250	0.200
	(0.136)	(0.019)	(0.198)	(0.215)	(0.187)	(0.236)

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Table 8 – *Continued from previous page*

	OLS	Q10	Q25	Q50	Q75	Q90
			2010			
PE	0.799***	0.961***	0.993***	0.855***	0.843***	0.625***
	(0.022)	(0.039)	(0.043)	(0.034)	(0.028)	(0.032)
PEs	-0.018***	-0.021***	-0.016***	-0.018***	-0.023***	-0.021***
	(0.001)	(0.004)	(0.002)	(0.002)	(0.001)	(0.002)
PI	0.242***	0.000	0.211***	0.273***	0.244***	0.156***
	(0.018)	(0.023)	(0.026)	(0.024)	(0.023)	(0.028)
male	0.243***	0.000	0.211**	0.309***	0.244***	0.031
	(0.069)	(0.032)	(0.090)	(0.097)	(0.081)	(0.064)
ind	-1.265***	0.000	-0.606***	-1.782***	-1.512***	-0.573***
	(0.136)	(0.040)	(0.213)	(0.181)	(0.153)	(0.213)
black	-0.170	0.000	0.207	-0.327	-5.77e-15	-0.198
	(0.180)	(0.035)	(0.265)	(0.215)	(0.213)	(0.211)
white	-0.004	0.000	0.404***	-0.145	-0.463***	-0.188**
	(0.078)	(0.159)	(0.135)	(0.122)	(0.094)	(0.079)
other	-0.471***	0.000	-0.394**	-0.527***	-0.732***	-0.344**
	(0.128)	(0.052)	(0.181)	(0.187)	(0.146)	(0.161)
			2011			
PE	0.860***	1.018***	1.066***	0.952***	0.842***	0.612***
	(0.023)	(0.046)	(0.038)	(0.033)	(0.033)	(0.035)
PEs	-0.022***	-0.027***	-0.023***	-0.024***	-0.023***	-0.020***
	(0.001)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
PI	0.221***	0.000	0.202***	0.250***	0.200***	0.126***
	(0.018)	(0.016)	(0.029)	(0.022)	(0.029)	(0.024)
male	0.154**	0.000	0.030	0.250**	0.225**	0.081
	(0.069)	(0.023)	(0.092)	(0.109)	(0.092)	(0.072)
ind	-1.153***	0.000	-0.616***	-1.357***	-1.400***	-0.829***
	(0.133)	(0.027)	(0.171)	(0.200)	(0.165)	(0.270)
black	-0.923***	0.000	-0.646***	-1.357***	-1.125***	-0.441
	(0.174)	(0.072)	(0.169)	(0.234)	(0.259)	(0.281)
white	0.244***	0.571**	0.778***	0.143	-0.200**	-0.207***
	(0.077)	(0.243)	(0.142)	(0.111)	(0.092)	(0.069)
other	-0.213	0.000	-0.404**	-0.286	-0.200	-0.126
	(0.141)	(0.018)	(0.200)	(0.213)	(0.183)	(0.144)
			2013			
PE	0.748***	1.065***	0.974***	0.835***	0.671***	0.459***
	(0.023)	(0.045)	(0.040)	(0.028)	(0.034)	(0.030)
PEs	-0.017***	-0.029***	-0.017***	-0.019***	-0.016***	-0.013***
	(0.001)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
PI	0.292***	0.068*	0.284***	0.333***	0.283***	0.152***
	(0.019)	(0.035)	(0.025)	(0.023)	(0.026)	(0.028)
male	0.056	0.068	0.067	1.67e-16	0.051	0.023
	(0.069)	(0.045)	(0.083)	(0.075)	(0.087)	(0.072)
ind	-1.137***	-0.137	-0.862***	-1.333***	-1.071***	-0.667***
	(0.146)	(0.097)	(0.175)	(0.252)	(0.255)	(0.197)
black	-0.433**	-0.205	-0.929***	-0.333	-0.123	-0.340*
	(0.189)	(0.147)	(0.187)	(0.297)	(0.204)	(0.190)
white	-0.433***	0.000	-0.310**	-0.667***	-0.639***	-0.363***
	(0.076)	(0.044)	(0.126)	(0.096)	(0.097)	(0.092)
other	-0.254*	-0.137	-0.377*	-0.333*	-0.388**	-0.211
	(0.137)	(0.113)	(0.208)	(0.201)	(0.190)	(0.132)

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Table 8 – *Continued from previous page*

	OLS	Q10	Q25	Q50	Q75	Q90
			Total			
PE	0.827***	0.967***	1.002***	0.898***	0.836***	0.615***
	(0.009)	(0.016)	(0.016)	(0.016)	(0.014)	(0.014)
PEs	-0.020***	-0.022***	-0.019***	-0.021***	-0.023***	-0.020***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
PI	0.222***	0.000	0.215***	0.251***	0.203***	0.143***
	(0.007)	(0.001)	(0.010)	(0.008)	(0.013)	(0.011)
male	0.175***	0.000	0.065	0.187***	0.203***	0.098***
	(0.028)	(0.001)	(0.055)	(0.044)	(0.030)	(0.037)
ind	-1.289***	0.000	-0.858***	-1.524***	-1.407***	-1.000***
	(0.054)	(0.001)	(0.068)	(0.082)	(0.081)	(0.116)
black	-0.524***	0.000	-0.643***	-0.706***	-0.260**	-0.286***
	(0.072)	(0.001)	(0.072)	(0.110)	(0.105)	(0.105)
white	-0.020	0.056	0.215***	-0.138**	-0.220***	-0.187***
	(0.032)	(0.069)	(0.068)	(0.058)	(0.047)	(0.040)
other	-0.280***	0.000	-0.461***	-0.347***	-0.220**	-0.125**
	(0.056)	(0.001)	(0.080)	(0.082)	(0.088)	(0.059)

Note: *** Significant at 1 %, ** significant at 5 %, * significant at 10 %
Robust standard errors in parentheses
Source: Latinobarometro

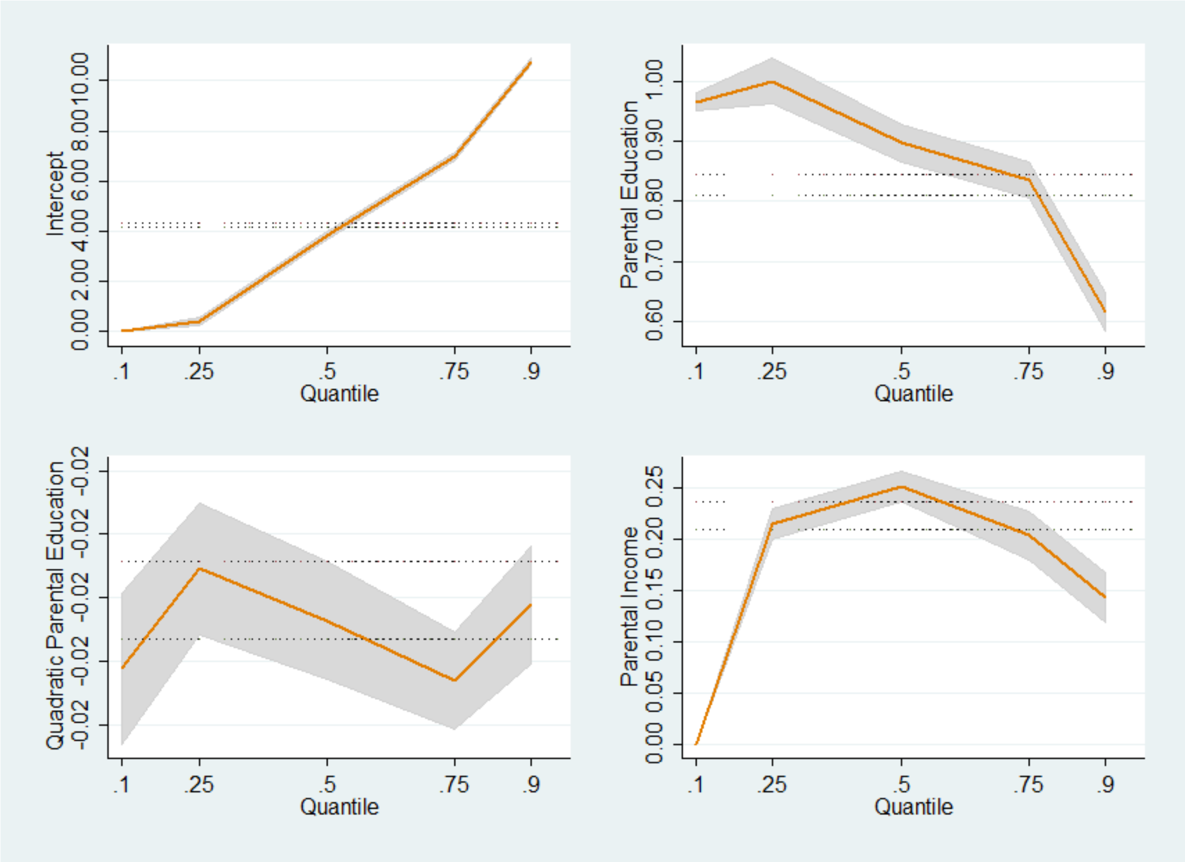
Parental education always has a positive effect on educational attainment, which varies across quantiles, and it is significantly different from the OLS-beta most of the times. Quantile .75 is the one that sometimes does not significantly differ from the mean regression.

On the other hand, the squared term of parental education is not typically different from the mean estimation. These results suggest that, unlike the linear effect of parental education, the non-linear one does not depend on the distribution of educational attainment of the child. However, it is still important because of the marginal effects, which vary depending on the point at which mobility is being evaluated. In fact, as we will see in Table 9, marginal effects in every quantile are significantly different from the OLS estimation.

Parental income decile does not seem to have a significant effect on the quantile .10, which could come from the lack of variation of this control at the bottom of the distribution. In most of the years, it is significantly different from the OLS-coefficient only at quantiles 0.10 and 0.90.

In terms of mobility, as in the OLS estimations, it has increased from 2007 to 2013. But here we also learn that the less educated children (quantile 0.10) are not part of this phenomenon. In fact, mobility has *decreased* for them over the period.

Figure 1: Non-Linear Quantile Regression Estimates for Latin America from 2007 to 2013



In order to analyze how the effect of parental education varies across quantiles, it is easier to look at it graphically. Figure 1 presents the intercepts across quantiles, as well as the beta-coefficients for the linear and non-linear term of parental education and for parental income. The confidence intervals of the OLS and the QR are also indicated.

The top right quadrant shows how mobility increases (beta decreases) as we move towards the top of the distribution of children's education. Moreover, if we only look only at the linear term, it seems that those at the quantile .25 are the ones with less educational mobility. At the same time, the graph shows the low variation of the squared parental education coefficient across quantiles. The bottom right corner shows the parental income betas and it indicates that this variable may have a higher effect at the median.

In the same way as with the OLS estimations, given that the model is not linear on parental education, it is more accurate to look at marginal effects when determining which quantile has more or less mobility. In order to compute this on the totals row, we calculated a weighted

Table 9: Marginal Effects of the Quantile Regression

OLS	Q10	Q25	Q50	Q75	Q90
0.632	0.913	0.898	0.688	0.482	0.254

All values are significant at the 99% level.

average parental education for each quantile following the same structure of quantile regression; i.e. giving more (less) weight to the positive (negative) deviation as we move towards the top (bottom) quantiles. The results are shown in Table 9.

Now that both coefficients of parental education are combined, the results show that actually the bottom 10% are the children with less educational mobility, and not the 25%. The beta decreases from here to the top by about 72%. Furthermore, the biggest mobility increase takes place when going from quantile .75 to .90. This shows how the top of the distribution greatly differs from the rest in terms of educational mobility. As said before, the non-linear effect of parental education did not seem to vary across quantiles. However, when computing a linear combination, the marginal effects across all the distribution are significantly different from the OLS estimation.

6 Conclusions

This paper shows that educational intergenerational mobility in Latin America remains high,although it has increased over the years for most of the countries. This reduction may be the result of lower poverty and inequality levels over the region in the wake of the commodities boom and its leftwing governments. Average public education spending over the past decade increased from 4.5% of GDP to 5.0%. However, this spending did not increase enough the quality, nor the coverage of secondary or higher education (UNESCO, 2014).

The fact that Latin America still shows a deficient quality of education, and intermediate to low coverage of higher than primary education levels, may be one of the sources of lower mobility rates at the bottom of the distribution. There are significant differences in access to education, both in terms of quality and quantity, among social classes. Furthermore, the results of this paper suggest a type of *educational trap* for the less educated, given that they have the lowest mobility rates.

The literature about inequality in Latin America advises that now that the commodities boom is over, the process of decreasing inequality is no longer sustainable. For example, Gachet et al. (2017) show that in Ecuador there has been a shift away from market sources towards sources of income derived from government expenditures. After the fall in oil prices, this has led to stagnation in the inequality reduction. This may have important implications for the increase of mobility observed during the last decade. Therefore, it would be interesting to analyze mobility on the years after the commodities boom once the data becomes available.

This paper also finds important differences among countries. The ranking is slightly different when comparing the linear and the non-linear OLS estimations: in the former, Ecuador is the least mobile country followed by Brazil, while El Salvador and Brazil are at the top in the latter. Costa Rica is the country with more educational mobility in both models. In general, the results of this paper are not directly comparable with most of the existent evidence, given that the model specifications are different, and quantile regression has not been computed for the entire region. Furthermore, many of the available literature is based on periods before the one analyzed here.

Regarding the non-linearities, we find that it is important to include the squared term of parental education, not only because of its significance, but because without it, mobility is being *over-estimated*. This means that reality may be worse than what the literature based on linear models suggest. This statement is reinforced when computing the quantile regression, which yields the *educational trap* mentioned before. The OLS estimation increases by about 44% and decreases 60% when going from the mean towards the bottom and top quantiles, respectively. Therefore, we cannot talk about one mobility estimation for the whole distribution. There is non-linearity of parental education, although it does not vary across quantiles.

Given the meritocracy in the labor market in Latin America -meaning high returns to education-, the *educational trap* may have important implications in the future income of the less educated ones. At the same time, this could affect inequality levels, turning into a vicious circle. As Reeves (2017) states, meritocracy is not synonymous with fairness. Latin America's labor market is doing a good job rewarding education, but not when providing opportunities to acquire this merit.

Among the circumstances that were included in the model, parental education is by far the most influential one on children's educational attainment. Latin America is failing to provide equality of opportunities to access education, especially for those at the bottom of the distribution. In the future of those people, the dependence on their parents' education might translate into low income in the labor market because they did not acquire the kind of merit that is being rewarded:

> "Children born into upper middle-class families have successfully avoided what James Heckman, the Nobel Prize-winning economist, describes as 'the biggest market failure of all', picking the 'wrong' parents" (Reeves, 2017, p. 30).

7 References

Andrade, E., Veloso, F., & Madalozzo, R. Ferreira, S. (2003). Do borrowing constraints decrease intergenerational mobility in brazil? a test using quantile regression. *INSPER Working Paper*.

Arends-Kuenning, M. & Duryea, S. (2006). The effect of parental presence, parents' education, and household headship on adolescents' schooling and work in latin america. *Journal of Family and Economic Issues*, *27*(2).

Azevedo, V. & Bouillon, C. (2010). Intergenerational social mobility in latin america: A review of existing evidence. *Revista de Análisis Económico*, *25*(2), 7–42.

Barro, R. & Lee, J. (1993). International comparisons of educational attainment. *Journal of Monetary Economics*, *32*, 363–94.

Barro, R. & Lee, J. (2016). Barro and lee long-run education dataset.

Behrman, J., Birdsall, N., & Székely, M. (2000). *New Markets, New Opportunities? Economic and Social Mobility in a Changing World*, chapter Intergenerational mobility in Latin America: deeper markets and better schools make a difference. Washington, D.C.: Brookings Institution and Carnegie Endowment Press. 135-67.

Behrman, J., Gaviria, A., & Székely, M. (2001). Intergenerational mobility in latin america. *Economia*, *2*, 1–31.

Bhattacharya, D. & Mazumder, B. (2007). Nonparametric analysis of intergenerational income mobility with application to the united states. *Federal Reserve Bank of Chicago WP*.

BID (1998). América latina frente a la desigualdad.

Birdsall, N., Lustig, N., & McLeod, D. (2011). Declining inequality in latin america: Some economics, some politics. *Center for Global Development: Working Paper*.

Black, S. & Devereux, P. (2011). *Handbook of Labor Economics, Volume 4b*, chapter Recent Developments in Intergenerational Mobility. Amsterdam: Elsevier B.V. 1487-1541.

Bourguignon, F. & Morrison, C. (2002). Inequality among world citizens: 1820-1992. *American Economic Review*, *92*(4).

Brunori, P., F. H. F. & Peragine, V. (2013). *Getting Development Right: Structural Transformation, Inclusion, and Sustainability in the Post-Crisis Era*, chapter Inequality of opportunity, income inequality and economic mobility: some international comparisons. Palgrave Macmillan. 85-115.

Buchinsky, M. (1998). Recent advances in quantile regression models: A practical guideline for empirical research. *The Journal of Human Resources*, *33*(1).

Corak, M. (2013). Income inequality, equality of opportunity, and intergenerational mobility. *Journal of Economic Perspectives*, *27*(3).

Corak, M. & Heisz, A. (1999). The intergenerational income mobility of canadian men: Evidence from longitudinal income tax data. *Journal of Human Resources*, 504–33.

Cornia, G. (Ed.). (2014). *Falling inequality in Latin America. Policy changes and lessons*. Oxford University Press.

Couch, K. & Lilalrd, D. (1998). Sample selection rules and intergenerational correlation of earnings. *Labour Economics*, *5*, 504–33.

Couch, K. & Lilalrd, D. (2001). Nonlinearities in intergenerational mobility: A comparison of germany and the united states. *Presented at the International Workshop on Intergenerational Mobility, Statistics Canada*.

Cuesta, J., Ñopo, H., & Pizzolito, G. (2011). Using pseudo-panels to estimate income mobility in latin america. *Review of Income and Wealth*, *77*(2).

Dahan, M. & Gaviria, A. (2001). Sibling correlations and intergenerational mobility in latin america. *Economic Development and Cultural Change*, *49*(3).

Daude, C. (2011). Ascendance by descendants? on intergenerational education mobility in latin america. *OECD Development Centre Working Papers No. 297*.

Daude, C. & Robano, V. (2015). On intergenerational (im)mobility in latin america. *Latin American Economic Review*, *24*(9).

Davino, C., Furno, M., & Vistocco, D. (2014). *Quantile Regression: Theory and Applications*. UK: Wiley.

Dunn, E. (2007). The intergenerational transmission of lifetime earnings: Evidence from brazil. *The B.E. Journal of Economic Analysis Policy*, *7*(2).

Eide, E. & Showalter, M. (1999). Factors affecting the transmission of earnings across generations: A quantile regression approach. *Journal of Human Resources*, *34*, 253–67.

Ferreira, F., Messina, J., Rigolini, J., López-Calvia, L., Lugo, M., & Vakis, R. (2013). *Economic Mobility and the Rise of the Latin American Middle Class*. Washington, D.C.: The World Bank.

Ferreira, S. & J., V. (2006). Intergenerational mobility of wages in brazil. *Brazilian Review of Econometrics*, *26*(2), 181–211.

Fields, G. (2000). *New Markets, New Opportunities? Economic and Social Mobility in a Changing World*, chapter Income Mobility: Concepts and Measures. Washington, D.C.: Brookings Institution and Carnegie Endowment Press. 101-33.

Fields, G. (2005). The many facets of economic mobility. *Dept. of Economics Mimeo, Cornell University*.

Gachet, I., Grijalva, D., Ponce, P., & Rodríguez, D. (2017). Vertical and horizontal inequality in ecuador: The lack of sustainability. *Social Indicators Research*.

Gasparini, L., Cruces, G., & Tornarolli, L. (2016). Chronicle of a deceleration foretold: Income inequality in latin america in the 2010s. *CEDLAS Working Papers*.

Grawe, N. (2001). Intergenerational mobility in the us and abroad: Quantile and mean regression measures. *Dissertation: University of Chicago*.

Grawe, N. (2004). Reconsidering the use of nonlinearities in intergenerational earnings mobility as a test for credit constraints. *Journal of Human Resources*, *39*(3), 813–27.

Hertz, T., Jayasundera, T., Piraino, P., Selcuk, S., Smith, N., & Verashchagina, A. (2007). The inheritance of educational inequality: International comparisons and fifty-year trends. *The B.E. Journal of Economic Analysis Policy*, *7*.

Koenker, R. (2005). *Quantile Regression. Econometric Society Monographs*. Cambridge University Press.

Koenker, R. & Basset, G. (1978). Regression quantiles. *Econometrica*, *46*, 1149–58.

Latinobarometro, C. (2017). Latinobarometro: Opinión pública latinoamericana.

Marrero, G. & Rodriguez, J. (2011). *Inequality of Opportunity: Theory and Measurement*, chapter Inequality of opportunity in the United States: trends and decomposition, (pp. 217–46). Bingley, UK: Emerald.

Morley, S. (2001). *The Income Distribution Problem in Latin America and the Caribbean*. Santiago, Chile: ECLAC.

Navarro, A. (2007). Exploring income mobility patterns in argentina using quantile regression. *Department of Economics, Universidad de San Andres, Universidad Austral*.

Neidhöfer, G. (2016). Intergenerational mobility and the rise and fall of inequality: Lessons from latin america. *School of Business Economics, Freie Universität Berlin: Discussion Paper*.

Neidhöfer, G., Serrano, J., & Gasparini, L. (2017). Educational inequality and intergenerational mobility in latin america: A new database. *ECINEQ Working Paper Series*.

Ordeñana, X. & Arteaga, E. (2012). Middle-class entrepreneurship and the effect of social capital. *Working Paper IDB-WP-319*.

Reeves, R. (2017). *Dream Hoarders: How the American Upper Middle Class is Leaving Everyone Else in the Dust, Why That is a Problem, And What to do About It*. Washington, D.C.: Brookings Institution Press.

Roemer, J. (1998). *Equalitty of Opportunity*. Cambridge, MA and London: Harvard University Press.

Romer, J. (2004). *Generational Income Mobility in North America and Europe*, chapter Equal opportunity and intergenerational mobility: going beyond intergenerational income transition matrices. Cambridge and New York: Cambridge University Press. 48-57.

Solon, G. (1999). *Handbook of Labor Economics, Volume 3*, chapter Intergenerational Mobility in the Labor Market. Oxford: Elsevier Science B.V. 1761-1800.

Torche, F. (2014). Intergenerational mobility and inequality: The latin american case. *Annual Review of Sociology*, *40*, 619–642.

UNESCO (2014). Regional report about education for all in latin america and the caribbean: Global education for all meeting.

8 Appendix

This appendix presents the variations from the OLS linear model regarding the non-linearities introduced in this paper, i.e. on the independent variable (adding squared parental education) and on the dependent variable (computing the quantile regression with linear parental education).

Table 10 presents the estimations of Eq. (1) per year and per country. The only difference with Table 6 is the omission of the squared parental education variable.

Parental education always has a positive and significant effect on children's educational attainment. Similarly, parental income decile has a positive effect, and it is significant most of the times. The gender and identity controls vary across years and countries, although we can identify a generally positive effect for being a man, and a negative one for being indigenous or black. Again, the most influential circumstance of an individual on his final educational attainment seems to be parental education followed by parental income.

Unlike the marginal effects from Table 7, here the least mobile country is Ecuador with a beta-coefficient of 0.640, followed by Brazil. Costa Rica is again the most mobile country. Looking at mobility over time, in every country, except Brazil, Nicaragua and Guatemala, there is an increase of mobility, which as explained before is consistent with the inequality reduction in the region. In fact, looking at all the countries together, the beta-coefficient went from 0.582 in 2007 to 0.525 in 2013.

When going from Eq. (1) to Eq. (2), the linear effect of parental education increases. For example, looking at the estimations for the region from 2007 to 2013, it goes from 0.561 in Eq (1) to 0.827 in Eq (2). Now, if we compute the marginal effect on the average parental education for Eq. (2)[31], it yields a beta coefficient of 0.632. This means that educational mobility is being *over estimated* on the regression to the mean if we only take into account the linear term of parental education.

[31] Marginal effect=$0.827 + 2 * (-0.02) * 4.88$, where 4.88 is the average parental education

Table 10: Linear OLS Estimations per country and per year

	2007	2008	2009	2010	2011	2013	Total
				Argentina			
PE	0.468***	0.419***	0.444***	0.463***	0.425***	0.439***	0.443***
	(0.027)	(0.029)	(0.029)	(0.028)	(0.026)	(0.028)	(0.011)
PI	0.182***	0.261***	0.272***	0.167***	0.041	0.235***	0.198***
	(0.055)	(0.065)	(0.062)	(0.057)	(0.055)	(0.056)	(0.024)
male	0.165	-0.302	0.045	-0.374*	-0.450**	-0.441**	-0.220**
	(0.208)	(0.224)	(0.218)	(0.203)	(0.205)	(0.205)	(0.086)
ind	1.520	0.194	1.539**	1.398	-1.042	0.048	0.513
	(1.129)	(1.022)	(0.718)	(1.098)	(0.847)	(0.637)	(0.389)
black	-0.701	-2.292***	-1.179	-2.995***	1.119	5.371***	-0.935
	(0.981)	(0.810)	(1.411)	(0.543)	(0.987)	(0.373)	(0.678)
white	0.388	0.783***	0.648***	0.772***	-0.038	0.067	0.399***
	(0.279)	(0.297)	(0.245)	(0.274)	(0.236)	(0.267)	(0.108)
other	-0.623	0.316	0.187	0.394	0.824	0.201	0.138
	(0.449)	(0.637)	(0.655)	(1.025)	(0.508)	(0.644)	(0.257)
				Bolivia			
PE	0.590***	0.556***	0.579***	0.554***	0.447***	0.527***	0.545***
	(0.024)	(0.034)	(0.029)	(0.032)	(0.032)	(0.031)	(0.012)
PI	0.129*	0.372***	0.176**	0.290***	0.304***	0.482***	0.285***
	(0.070)	(0.094)	(0.078)	(0.090)	(0.090)	(0.093)	(0.035)
male	1.206***	1.002***	1.246***	1.205***	0.667**	1.198***	1.099***
	(0.268)	(0.294)	(0.263)	(0.295)	(0.329)	(0.318)	(0.120)
ind	-2.089***	-1.840***	-2.139***	-2.239***	-2.490***	-1.070***	-1.988***
	(0.319)	(0.344)	(0.301)	(0.342)	(0.396)	(0.372)	(0.140)
black	2.340***	-1.852	-1.165	-2.519	3.660***	1.074	0.115
	(0.410)	(2.120)	(1.631)	(3.088)	(0.817)	(0.987)	(0.954)
white	0.860	-1.782**	-0.112	-0.358	0.967	-1.103	-0.202
	(0.543)	(0.794)	(0.684)	(0.708)	(0.859)	(1.343)	(0.312)
other	-1.759***	-0.874	-2.168***	1.347	0.244	0.117	-0.833*
	(0.656)	(1.551)	(0.817)	(0.953)	(1.121)	(1.350)	(0.471)
				Brazil			
PE	0.620***	0.636***	0.576***	0.632***	0.620***	0.639***	0.624***
	(0.031)	(0.034)	(0.034)	(0.030)	(0.031)	(0.030)	(0.013)
PI	0.113*	0.097	0.236***	0.205***	0.199***	0.062	0.153***
	(0.065)	(0.072)	(0.067)	(0.066)	(0.073)	(0.068)	(0.028)
male	-0.424	-0.319	-0.530*	-0.481*	-0.156	-0.347	-0.380***
	(0.278)	(0.282)	(0.273)	(0.257)	(0.264)	(0.272)	(0.110)
ind	-1.104	0.583	-0.474	-0.091	-1.485*	0.521	-0.295
	(0.829)	(1.057)	(0.889)	(0.693)	(0.860)	(0.803)	(0.367)
black	-0.096	0.067	0.281	-0.207	-0.694	0.584	-0.024
	(0.501)	(0.476)	(0.449)	(0.455)	(0.437)	(0.491)	(0.190)
white	-0.129	0.953***	-0.040	0.769**	1.363***	1.182***	0.685***
	(0.417)	(0.349)	(0.339)	(0.360)	(0.372)	(0.365)	(0.149)
other	-1.016**	-0.038	-0.927**	-0.854**	-0.028	0.451	-0.431**
	(0.465)	(0.471)	(0.452)	(0.410)	(0.486)	(0.426)	(0.181)

Continued on next page

Table 10 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Chile			
PE	0.487***	0.535***	0.486***	0.436***	0.473***	0.457***	0.482***
	(0.026)	(0.026)	(0.029)	(0.025)	(0.023)	(0.027)	(0.011)
PI	0.239***	0.230***	0.302***	0.249***	0.135**	0.232***	0.230***
	(0.066)	(0.064)	(0.068)	(0.057)	(0.053)	(0.060)	(0.026)
male	0.432**	0.644***	0.314	0.327*	0.516***	0.040	0.377***
	(0.209)	(0.193)	(0.210)	(0.177)	(0.163)	(0.182)	(0.078)
ind	-0.109	0.035	-0.585	-0.979**	-0.431	-0.934**	-0.505***
	(0.393)	(0.446)	(0.499)	(0.381)	(0.344)	(0.467)	(0.170)
black	-1.261**	-2.945***	-5.705***	2.036*	-0.765***	2.945***	-0.715
	(0.518)	(0.714)	(0.248)	(1.086)	(0.203)	(0.461)	(0.791)
white	-0.200	-0.473*	-0.013	-0.074	0.127	-0.142	-0.113
	(0.224)	(0.252)	(0.224)	(0.219)	(0.193)	(0.193)	(0.088)
other	-0.758	-1.045***	0.912*	-0.427	-0.358	-0.698	-0.379
	(0.735)	(0.390)	(0.505)	(0.673)	(0.579)	(0.775)	(0.276)
				Colombia			
PE	0.536***	0.489***	0.515***	0.379***	0.373***	0.326***	0.486***
	(0.029)	(0.040)	(0.034)	(0.026)	(0.031)	(0.026)	(0.012)
PI	0.216***	0.334***	0.100	0.363***	0.410***	0.392***	0.237***
	(0.063)	(0.082)	(0.072)	(0.062)	(0.063)	(0.063)	(0.028)
male	0.461*	-0.364	-0.006	0.680***	-0.036	-0.260	0.052
	(0.267)	(0.344)	(0.307)	(0.254)	(0.237)	(0.238)	(0.115)
ind	-2.379***	-0.929	-1.244**	-0.377	-1.036**	-0.426	-1.077***
	(0.597)	(0.629)	(0.619)	(0.583)	(0.523)	(0.648)	(0.260)
black	-0.481	-0.466	-0.559	-0.965	-1.295**	-0.384	-0.788***
	(0.553)	(0.600)	(0.640)	(0.622)	(0.632)	(0.531)	(0.252)
white	-0.668**	-0.375	-0.069	-0.293	-0.462*	-0.688**	-0.589***
	(0.294)	(0.372)	(0.349)	(0.287)	(0.267)	(0.286)	(0.129)
other	-0.019	-0.706	0.680	0.269	-0.450	-0.100	-0.193
	(0.662)	(0.694)	(0.567)	(0.483)	(0.431)	(0.508)	(0.239)
				Costa Rica			
PE	0.364***	0.351***	0.325***	0.391***	0.506***	0.334***	0.379***
	(0.040)	(0.045)	(0.037)	(0.038)	(0.038)	(0.042)	(0.016)
PI	0.192**	0.214**	0.291***	0.207***	0.158**	0.078	0.196***
	(0.074)	(0.088)	(0.082)	(0.078)	(0.075)	(0.099)	(0.033)
male	-0.129	0.433	0.827***	0.537*	0.295	-0.239	0.309**
	(0.346)	(0.354)	(0.318)	(0.322)	(0.318)	(0.370)	(0.138)
ind	-1.247	-2.789***	-0.877	1.284	1.543	-0.316	-0.175
	(0.835)	(1.078)	(0.812)	(1.542)	(1.001)	(1.126)	(0.423)
black	-0.822	0.767	0.024	2.705***	1.018	-0.634	0.612
	(1.621)	(2.122)	(1.325)	(0.997)	(0.966)	(1.239)	(0.534)
white	-0.588	0.079	0.021	0.616*	0.349	0.040	0.082
	(0.397)	(0.388)	(0.369)	(0.357)	(0.375)	(0.432)	(0.158)
other	-0.203	-0.277	-0.332	0.006	-0.593	-0.716	-0.397*
	(0.553)	(0.546)	(0.492)	(0.485)	(0.439)	(0.596)	(0.212)

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Table 10 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
			Dominican Republic				
PE	0.467***	0.643***	0.493***	0.376***	0.535***	0.456***	0.497***
	(0.035)	(0.039)	(0.034)	(0.036)	(0.042)	(0.034)	(0.015)
PI	0.245***	0.346***	0.275***	0.518***	0.325***	0.358***	0.300***
	(0.076)	(0.114)	(0.106)	(0.087)	(0.091)	(0.101)	(0.036)
male	-0.633*	-0.058	0.407	-0.750**	-0.561	-0.489	-0.331**
	(0.358)	(0.362)	(0.371)	(0.362)	(0.394)	(0.389)	(0.152)
ind	-0.803	-0.842	1.708**	-0.322	-1.661*	-0.747	-0.367
	(0.708)	(0.920)	(0.750)	(1.706)	(0.944)	(0.963)	(0.379)
black	-0.956**	-0.689	-0.245	0.407	-1.144**	0.108	-0.465**
	(0.464)	(0.476)	(0.517)	(0.494)	(0.573)	(0.611)	(0.208)
white	-0.469	0.034	-1.408*	1.433**	-1.838***	-1.146**	-0.517*
	(0.586)	(0.652)	(0.774)	(0.692)	(0.602)	(0.581)	(0.267)
other	0.547	-0.258	0.099	0.770*	-0.108	-0.563	0.104
	(0.513)	(0.494)	(0.498)	(0.460)	(0.501)	(0.487)	(0.196)
			Ecuador				
PE	0.687***	0.637***	0.625***	0.657***	0.622***	0.390***	0.640***
	(0.030)	(0.029)	(0.030)	(0.030)	(0.028)	(0.032)	(0.012)
PI	0.159**	0.252***	0.318***	0.238***	0.211***	0.353***	0.233***
	(0.064)	(0.073)	(0.067)	(0.078)	(0.068)	(0.068)	(0.028)
male	0.109	0.222	-0.111	-0.086	0.318	0.534**	0.160
	(0.247)	(0.251)	(0.256)	(0.255)	(0.249)	(0.235)	(0.104)
ind	-2.132***	-0.992**	-1.590***	-0.287	-0.815*	-0.814	-1.326***
	(0.496)	(0.428)	(0.561)	(0.681)	(0.462)	(0.837)	(0.232)
black	-0.378	-1.429***	-1.313	0.633	-1.378**	0.357	-0.506*
	(0.704)	(0.526)	(0.870)	(0.655)	(0.672)	(0.502)	(0.282)
white	0.205	-0.397	-0.063	0.725	0.217	-0.665	-0.069
	(0.569)	(0.505)	(0.457)	(0.554)	(0.560)	(0.479)	(0.219)
other	0.450	-0.329	0.152	0.078	0.006	-0.773	-0.025
	(0.712)	(0.546)	(0.643)	(0.525)	(0.586)	(0.485)	(0.241)
			El Salvador				
PE	0.747***	0.552***	0.551***	0.505***	0.605***	0.575***	0.601***
	(0.030)	(0.043)	(0.053)	(0.044)	(0.046)	(0.037)	(0.017)
PI	0.186***	0.204**	0.281***	0.293***	0.215***	0.266***	0.234***
	(0.065)	(0.091)	(0.102)	(0.086)	(0.072)	(0.088)	(0.033)
male	0.518*	0.718*	1.312***	0.471	0.340	0.500	0.672***
	(0.289)	(0.384)	(0.363)	(0.374)	(0.324)	(0.330)	(0.141)
ind	1.323	0.679	-1.171	-2.316***	-0.631	-0.003	-0.577*
	(0.927)	(0.737)	(0.780)	(0.619)	(0.667)	(1.018)	(0.322)
black	-0.314	-0.078	0.414	0.763	0.845	-3.236***	-1.223***
	(1.129)	(0.932)	(2.602)	(0.814)	(1.008)	(0.543)	(0.389)
white	0.879	0.184	-0.026	-1.720***	0.462	0.106	-0.065
	(0.556)	(0.664)	(0.581)	(0.539)	(0.486)	(0.394)	(0.178)
other	0.432	-0.581	0.424	-1.354**	-0.257	1.293	-0.260
	(0.622)	(0.525)	(0.738)	(0.646)	(0.740)	(1.247)	(0.281)

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Table 10 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Guatemala			
PE	0.389***	0.753***	0.652***	0.549***	0.516***	0.483***	0.574***
	(0.052)	(0.049)	(0.052)	(0.053)	(0.057)	(0.050)	(0.021)
PI	0.273***	0.173*	0.201***	0.377***	0.412***	0.277**	0.239***
	(0.080)	(0.092)	(0.067)	(0.096)	(0.111)	(0.112)	(0.035)
male	0.067	-0.033	0.797***	0.764**	0.880**	1.315***	0.652***
	(0.283)	(0.317)	(0.279)	(0.336)	(0.366)	(0.375)	(0.133)
ind	-1.129***	-0.571	-1.837***	-2.011***	-2.316***	-0.671	-1.426***
	(0.342)	(0.367)	(0.328)	(0.421)	(0.622)	(0.511)	(0.167)
black	-2.236**	2.184**	-1.017	-0.263	-3.757***	-4.854*	-1.222**
	(0.875)	(1.029)	(1.018)	(0.637)	(0.917)	(2.566)	(0.580)
white	-0.624	-0.915*	-0.374	-0.233	-0.598	-0.542	-0.279
	(0.611)	(0.552)	(0.491)	(0.501)	(0.626)	(0.509)	(0.210)
other	-0.835	1.342	-0.682	-1.777	-1.037	0.080	-0.952**
	(0.596)	(1.475)	(0.654)	(1.176)	(1.211)	(1.428)	(0.388)
				Honduras			
PE	0.598***	0.364***	0.591***	0.664***	0.676***	0.539***	0.567***
	(0.049)	(0.047)	(0.045)	(0.039)	(0.041)	(0.040)	(0.018)
PI	0.035	0.189**	0.218***	0.015	0.246***	0.298***	0.163***
	(0.068)	(0.079)	(0.074)	(0.081)	(0.079)	(0.072)	(0.030)
male	-0.323	-0.185	0.044	0.501	0.114	-0.636**	-0.074
	(0.325)	(0.326)	(0.313)	(0.323)	(0.298)	(0.296)	(0.129)
ind	-0.578	-1.244***	-0.850	-0.561	0.654	-1.674***	-0.688***
	(0.441)	(0.455)	(0.537)	(0.479)	(0.482)	(0.435)	(0.192)
black	0.162	-0.313	-0.460	-0.920	1.092	-1.767**	-0.232
	(0.890)	(0.849)	(0.901)	(0.852)	(1.034)	(0.773)	(0.407)
white	-0.166	-0.058	0.377	-1.111**	0.083	-0.807*	-0.194
	(0.502)	(0.417)	(0.455)	(0.486)	(0.446)	(0.448)	(0.191)
other	0.389	-0.893	-1.563***	-0.094	-0.505	1.129	-0.412
	(0.627)	(0.913)	(0.489)	(0.586)	(0.551)	(0.943)	(0.269)
				Mexico			
PE	0.523***	0.539***	0.497***	0.484***	0.444***	0.414***	0.487***
	(0.030)	(0.030)	(0.030)	(0.033)	(0.032)	(0.032)	(0.013)
PI	0.217***	0.214***	0.179**	0.344***	0.339***	0.260***	0.263***
	(0.063)	(0.076)	(0.075)	(0.078)	(0.079)	(0.079)	(0.030)
male	0.498*	0.343	0.530*	0.487*	0.982***	0.589**	0.564***
	(0.266)	(0.305)	(0.289)	(0.279)	(0.291)	(0.284)	(0.116)
ind	-1.612***	-0.868*	-0.324	-0.702*	-1.171***	-0.306	-0.839***
	(0.329)	(0.463)	(0.390)	(0.370)	(0.372)	(0.376)	(0.154)
black	0.177	-5.002***		1.796	-2.798*	1.072	-0.488
	(0.557)	(1.720)		(2.319)	(1.605)	(1.101)	(0.828)
white	-1.323***	-0.965**	-0.379	-0.385	-0.429	-1.281**	-0.816***
	(0.445)	(0.435)	(0.668)	(0.456)	(0.587)	(0.513)	(0.204)
other	-1.239**	0.313	0.175	-0.342	-1.265*	-0.224	-0.431*
	(0.531)	(0.639)	(0.693)	(0.688)	(0.660)	(0.639)	(0.261)

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Table 10 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Nicaragua			
PE	0.454***	0.549***	0.407***	0.465***	0.466***	0.580***	0.489***
	(0.040)	(0.036)	(0.048)	(0.039)	(0.046)	(0.052)	(0.018)
PI	0.135*	0.299***	0.350***	0.336***	0.133	0.356***	0.229***
	(0.073)	(0.080)	(0.097)	(0.096)	(0.095)	(0.082)	(0.034)
male	0.340	-0.087	0.186	-0.435	-0.757*	-0.578*	-0.233
	(0.345)	(0.351)	(0.376)	(0.377)	(0.404)	(0.345)	(0.150)
ind	-1.243**	-1.814**	-1.577***	-0.960	-0.592	1.561*	-0.998***
	(0.524)	(0.782)	(0.566)	(0.663)	(0.868)	(0.915)	(0.295)
black	-0.294	-2.482***	-0.484	-1.418	-1.006	0.049	-0.975***
	(0.762)	(0.836)	(0.808)	(0.934)	(0.722)	(0.822)	(0.336)
white	-0.331	-0.858	-0.279	-0.978*	-0.491	-0.030	-0.587**
	(0.533)	(0.584)	(0.645)	(0.587)	(0.823)	(0.612)	(0.254)
other	0.772	-1.004	-0.264	-1.252	2.148	-2.305***	-0.247
	(1.003)	(0.740)	(0.836)	(0.803)	(1.367)	(0.489)	(0.390)
				Panama			
PE	0.577***	0.508***	0.461***	0.599***	0.372***	0.381***	0.489***
	(0.030)	(0.037)	(0.039)	(0.034)	(0.045)	(0.034)	(0.015)
PI	0.096	0.329***	0.329***	0.160**	0.066	0.128	0.194***
	(0.079)	(0.075)	(0.080)	(0.077)	(0.082)	(0.083)	(0.032)
male	-0.267	0.061	-0.497	0.376	-0.350	-0.129	-0.158
	(0.299)	(0.315)	(0.343)	(0.325)	(0.388)	(0.329)	(0.138)
ind	-1.398*	-3.781***	-1.579**	0.825	-1.867***	-4.558***	-2.151***
	(0.847)	(0.395)	(0.785)	(0.919)	(0.716)	(0.720)	(0.313)
black	-0.364	1.014*	0.483	-0.420	0.698	-0.224	0.270
	(0.432)	(0.588)	(0.554)	(0.472)	(0.607)	(0.458)	(0.217)
white	0.288	1.928***	0.491	-0.679	-0.107	-0.675	0.214
	(0.404)	(0.453)	(0.482)	(0.453)	(0.481)	(0.422)	(0.188)
other	-0.151	1.069*	0.038	-0.782	-0.285	-0.845	-0.154
	(0.582)	(0.579)	(0.650)	(0.535)	(0.905)	(0.904)	(0.283)
				Paraguay			
PE	0.589***	0.535***	0.622***	0.626***	0.510***	0.099*	0.531***
	(0.031)	(0.034)	(0.029)	(0.033)	(0.031)	(0.051)	(0.014)
PI	-0.128	0.140*	0.080	0.204***	0.382***	0.333***	0.192***
	(0.082)	(0.080)	(0.063)	(0.075)	(0.072)	(0.069)	(0.030)
male	0.471	0.609**	0.502**	0.362	0.081	0.095	0.297***
	(0.298)	(0.299)	(0.249)	(0.269)	(0.256)	(0.255)	(0.111)
ind	-1.683	-1.463*	-0.210	-1.936**	0.717	-2.384	-1.088***
	(1.211)	(0.816)	(0.788)	(0.835)	(0.855)	(1.790)	(0.403)
black	0.987**	0.442	-1.582*	-1.886*	-2.635	0.153	-1.042**
	(0.463)	(1.177)	(0.922)	(1.136)	(1.949)	(1.883)	(0.516)
white	0.072	0.124	-0.342	-1.147***	0.454*	-0.265	-0.332***
	(0.317)	(0.328)	(0.265)	(0.288)	(0.265)	(0.263)	(0.117)
other	0.001	-0.552	0.062	-0.277	-0.581	-1.622*	-0.491**
	(0.616)	(0.520)	(0.522)	(0.571)	(0.767)	(0.911)	(0.249)

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Table 10 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Peru			
PE	0.509***	0.489***	0.519***	0.534***	0.553***	0.479***	0.519***
	(0.028)	(0.029)	(0.027)	(0.028)	(0.027)	(0.032)	(0.011)
PI	0.220***	0.256***	0.293***	0.295***	0.218***	0.277***	0.240***
	(0.067)	(0.082)	(0.083)	(0.080)	(0.077)	(0.094)	(0.032)
male	0.816***	1.395***	0.392	0.789***	0.692***	0.969***	0.830***
	(0.284)	(0.289)	(0.268)	(0.259)	(0.264)	(0.283)	(0.112)
ind	-0.468	-0.107	-0.195	-1.182**	-2.106***	-0.790	-0.772***
	(0.533)	(0.549)	(0.503)	(0.510)	(0.528)	(0.705)	(0.224)
black	-1.591	-0.312	-2.701***	-0.269	-2.206**	1.791***	-1.288***
	(1.030)	(0.801)	(0.997)	(0.810)	(0.902)	(0.620)	(0.415)
white	-0.863*	-0.707	-0.692	-0.936*	-0.482	-0.354	-0.661***
	(0.496)	(0.528)	(0.492)	(0.515)	(0.369)	(0.462)	(0.198)
other	0.539	-0.333	-0.059	-0.669	0.019	-0.298	-0.155
	(0.934)	(0.734)	(0.592)	(0.896)	(0.924)	(0.915)	(0.325)
				Uruguay			
PE	0.510***	0.557***	0.501***	0.538***	0.459***	0.472***	0.506***
	(0.026)	(0.031)	(0.030)	(0.034)	(0.028)	(0.028)	(0.012)
PI	0.129**	0.120**	0.282***	0.119*	0.093	0.300***	0.177***
	(0.057)	(0.056)	(0.064)	(0.070)	(0.067)	(0.061)	(0.025)
male	-0.312	-0.114	-0.108	-0.012	0.130	-0.277	-0.128
	(0.229)	(0.228)	(0.208)	(0.246)	(0.239)	(0.206)	(0.093)
ind	0.559	-1.002	1.759	-1.782	-1.123	0.291	-0.092
	(1.148)	(0.776)	(3.073)	(1.328)	(1.483)	(0.750)	(0.506)
black	0.216	-2.752***	-0.201	-0.125	-2.092***	-0.940	-0.875**
	(1.054)	(0.876)	(0.892)	(0.881)	(0.621)	(0.692)	(0.351)
white	0.177	-1.277**	0.775*	0.348	0.025	0.501*	0.263
	(0.490)	(0.623)	(0.424)	(0.483)	(0.377)	(0.281)	(0.171)
other	0.037	-2.481***	0.431	-0.431	-0.036	0.270	-0.061
	(0.585)	(0.769)	(0.662)	(0.593)	(0.604)	(0.639)	(0.247)
				Venezuela			
PE	0.503***	0.409***	-0.014	0.405***	0.418***	0.396***	0.405***
	(0.029)	(0.030)	(0.054)	(0.030)	(0.046)	(0.028)	(0.013)
PI	0.083	0.218***	0.069	0.220***	0.160**	0.247***	0.127***
	(0.068)	(0.079)	(0.073)	(0.074)	(0.071)	(0.071)	(0.030)
male	-0.119	-0.285	0.098	-0.174	-0.258	-0.466**	-0.254**
	(0.252)	(0.259)	(0.281)	(0.284)	(0.290)	(0.216)	(0.108)
ind	-1.426***	-0.046	-1.360**	0.825	0.053	-1.141*	-0.776***
	(0.521)	(1.080)	(0.598)	(1.162)	(0.865)	(0.609)	(0.300)
black	-1.164***	-0.529	0.791	0.025	-1.817***	-0.020	-0.833***
	(0.394)	(0.528)	(0.585)	(0.797)	(0.553)	(0.580)	(0.228)
white	-0.161	0.398	-0.793**	0.003	-0.012	0.293	-0.014
	(0.305)	(0.293)	(0.363)	(0.365)	(0.341)	(0.284)	(0.132)
other	-0.355	-0.317	-0.008	-0.536*	0.025	-0.101	-0.056
	(0.445)	(0.372)	(0.355)	(0.323)	(0.407)	(0.306)	(0.147)

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Table 10 – *Continued from previous page*

	2007	2008	2009	2010	2011	2013	Total
				Total			
PE	0.582***	0.570***	0.546***	0.559***	0.562***	0.525***	0.561***
	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.003)
PI	0.154***	0.241***	0.248***	0.239***	0.222***	0.292***	0.223***
	(0.016)	(0.019)	(0.018)	(0.018)	(0.018)	(0.019)	(0.007)
male	0.136**	0.171**	0.278***	0.230***	0.139**	0.053	0.166***
	(0.067)	(0.071)	(0.069)	(0.069)	(0.070)	(0.069)	(0.028)
ind	-1.612***	-1.273***	-1.455***	-1.383***	-1.297***	-1.234***	-1.404***
	(0.119)	(0.134)	(0.125)	(0.137)	(0.133)	(0.146)	(0.054)
black	-0.626***	-0.428**	-0.364**	-0.233	-0.913***	-0.464**	-0.521***
	(0.158)	(0.176)	(0.185)	(0.180)	(0.177)	(0.190)	(0.072)
white	0.125	0.120	0.024	0.048	0.306***	-0.367***	0.048
	(0.077)	(0.080)	(0.079)	(0.078)	(0.078)	(0.076)	(0.032)
other	-0.331**	-0.437***	0.057	-0.465***	-0.176	-0.219	-0.262***
	(0.132)	(0.142)	(0.137)	(0.129)	(0.143)	(0.137)	(0.056)

Note: *** Significant at 1 %, ** significant at 5 %, * significant at 10 %
Robust standard errors in parentheses
Source: Latinobarometro

Given that these are linear estimations, they are comparable with the existent evidence. For example, Daude (2015) has a very similar model for 2008; the main difference is the number of identity controls. His estimates and the ones presented on Table 10 are similar for every country, showing that for this year, Guatemala is where parental education has the highest association to educational attainment of the offspring; while Costa Rica again presents the highest mobility.

However, as explained before, the correctly specified model seems to be the one with squared parental education. When adding this term to Eq. (1), it becomes Eq. (2), whose results are presented in the Empirical Results section (Table 6). On the other hand, adding non-linearities to Eq. (1) on the dependent variable yields the estimations of Eq. (8), which are shown in Table 11.

The only difference with Table 8 is the omission of the non-linear parental education variable. Again, the significance of the difference between each quantile's and the OLS's estimation was analyzed using the confidence intervals. The effect of parental education is always different from the regression to the mean and between quantiles.

Table 11: Linear Quantile Regression Estimates for Latin America from 2007 to 2013

	OLS	**Q10**	**Q25**	**Q50**	**Q75**	**Q90**
			2007			
PE	0.582***	0.667***	0.718***	0.625***	0.528***	0.348***
	(0.007)	(0.009)	(0.014)	(0.008)	(0.013)	(0.012)
PI	0.154***	2.78e-17	0.103***	0.167***	0.139***	0.087**
	(0.016)	(1.71e-14)	(0.027)	(0.021)	(0.024)	(0.041)
male	0.136**	-1.39e-16	0.026	0.167**	0.167**	0.174*
	(0.067)	(1.82e-14)	(0.067)	(0.085)	(0.082)	(0.092)
ind	-1.612***	3.47e-17	-1.564***	-2.000***	-2.250***	-1.652***
	(0.119)	(1.04e-13)	(0.114)	(0.165)	(0.182)	(0.245)
black	-0.626***	3.47e-17	-0.308	-0.875***	-0.778***	-0.826***
	(0.158)	(0.017)	(0.261)	(0.153)	(0.217)	(0.282)
white	0.125	0.667***	0.282***	-0.083	-0.083	-0.087
	(0.077)	(0.216)	(0.101)	(0.096)	(0.111)	(0.082)
other	-0.331**	-2.78e-17	-0.128	-0.583***	-0.417**	0.000
	(0.132)	(4.58e-14)	(0.127)	(0.185)	(0.180)	(0.209)
			2008			
PE	0.570***	0.688***	0.740***	0.613***	0.479***	0.328***
	(0.008)	(0.011)	(0.013)	(0.009)	(0.012)	(0.011)
PI	0.241***	0.000	0.183***	0.282***	0.236***	0.259***
	(0.019)	(0.007)	(0.029)	(0.024)	(0.029)	(0.033)
male	0.171**	0.000	0.163*	0.250***	0.181*	0.103
	(0.071)	(0.006)	(0.085)	(0.086)	(0.104)	(0.104)
ind	-1.273***	0.000	-1.356***	-1.484***	-1.875***	-1.362***
	(0.134)	(0.007)	(0.146)	(0.161)	(0.249)	(0.247)
black	-0.428**	0.000	-0.529**	-0.444**	-0.167	-0.345
	(0.176)	(0.019)	(0.229)	(0.201)	(0.186)	(0.372)
white	0.120	0.750***	0.260**	0.016	-0.097	-0.138
	(0.080)	(0.187)	(0.109)	(0.094)	(0.111)	(0.108)
other	-0.437***	0.000	-0.538***	-0.476**	-0.472**	-0.276
	(0.142)	(0.006)	(0.176)	(0.198)	(0.205)	(0.225)
			2009			
PE	0.546***	0.667***	0.706***	0.609***	0.464***	0.309***
	(0.008)	(0.010)	(0.016)	(0.010)	(0.011)	(0.012)
PI	0.248***	0.000	0.191***	0.250***	0.286***	0.250***
	(0.018)	(0.015)	(0.031)	(0.025)	(0.028)	(0.033)
male	0.278***	0.000	0.132	0.250**	0.250***	0.353***
	(0.069)	(0.013)	(0.086)	(0.103)	(0.093)	(0.112)
ind	-1.455***	0.000	-1.485***	-1.500***	-1.750***	-1.353***
	(0.125)	(0.047)	(0.132)	(0.226)	(0.189)	(0.263)
black	-0.364**	0.000	-0.706**	-0.109	-0.179	-0.603***
	(0.185)	(0.043)	(0.340)	(0.302)	(0.266)	(0.223)
white	0.024	0.333	0.191	0.000	-0.286***	-0.294**
	(0.079)	(0.209)	(0.122)	(0.105)	(0.101)	(0.116)
other	0.057	0.000	-0.294	0.094	0.036	0.147
	(0.137)	(0.018)	(0.196)	(0.181)	(0.134)	(0.320)

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Table 11 – *Continued from previous page*

	OLS	Q10	Q25	Q50	Q75	Q90
			2010			
PE	0.559***	0.688***	0.741***	0.600***	0.468***	0.308***
	(0.008)	(0.013)	(0.013)	(0.007)	(0.011)	(0.012)
PI	0.239***	0.000	0.185***	0.200***	0.261***	0.192***
	(0.018)	(0.021)	(0.026)	(0.022)	(0.022)	(0.032)
male	0.230***	0.000	0.185**	0.200**	0.162*	0.115
	(0.069)	(0.024)	(0.084)	(0.083)	(0.090)	(0.093)
ind	-1.383***	0.000	-1.370***	-1.800***	-1.910***	-0.808***
	(0.137)	(0.045)	(0.155)	(0.183)	(0.280)	(0.204)
black	-0.233	0.000	0.074	-0.400*	-0.486**	-0.385
	(0.180)	(0.054)	(0.252)	(0.228)	(0.210)	(0.304)
white	0.048	0.625**	0.333***	-1.11e-16	-0.297***	-0.231**
	(0.078)	(0.262)	(0.111)	(0.094)	(0.093)	(0.105)
other	-0.465***	0.000	-0.333**	-0.400**	-0.676***	-0.308*
	(0.129)	(0.029)	(0.170)	(0.160)	(0.161)	(0.186)
			2011			
PE	0.562***	0.688***	0.737***	0.609***	0.467***	0.306***
	(0.008)	(0.014)	(0.014)	(0.009)	(0.011)	(0.010)
PI	0.222***	0.000	0.202***	0.217***	0.217***	0.139***
	(0.018)	(0.010)	(0.028)	(0.025)	(0.023)	(0.029)
male	0.139**	0.000	0.101	0.130	0.217**	0.111
	(0.070)	(0.016)	(0.092)	(0.095)	(0.092)	(0.094)
ind	-1.297***	0.000	-1.293***	-1.391***	-1.767***	-0.972***
	(0.133)	(0.025)	(0.134)	(0.168)	(0.255)	(0.225)
black	-0.913***	0.000	-1.121***	-1.130***	-1.000***	-0.361
	(0.177)	(0.022)	(0.210)	(0.207)	(0.237)	(0.226)
white	0.306***	1.000***	0.545***	0.217**	-0.100	-0.139
	(0.078)	(0.146)	(0.131)	(0.093)	(0.092)	(0.094)
other	-0.176	0.000	-0.303	-0.261	-0.183	-0.111
	(0.143)	(0.007)	(0.205)	(0.171)	(0.194)	(0.214)
			2013			
PE	0.525***	0.714***	0.727***	0.571***	0.389***	0.261***
	(0.008)	(0.016)	(0.017)	(0.010)	(0.010)	(0.011)
PI	0.292***	0.143***	0.273***	0.286***	0.284***	0.174***
	(0.019)	(0.045)	(0.025)	(0.028)	(0.026)	(0.028)
male	0.053	0.000	0.091	0.000	0.053	0.087
	(0.069)	(0.078)	(0.107)	(0.085)	(0.082)	(0.084)
ind	-1.234***	-0.286**	-1.455***	-1.286***	-1.242***	-0.870***
	(0.146)	(0.144)	(0.230)	(0.210)	(0.222)	(0.192)
black	-0.464**	-0.429**	-1.273***	-0.286	-0.126	-0.348*
	(0.190)	(0.171)	(0.285)	(0.231)	(0.223)	(0.202)
white	-0.367***	0.143	-0.273**	-0.571***	-0.453***	-0.522***
	(0.076)	(0.088)	(0.121)	(0.105)	(0.089)	(0.102)
other	-0.219	-0.143	-0.273	-0.286	-0.358**	-0.174
	(0.137)	(0.145)	(0.192)	(0.179)	(0.178)	(0.177)

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Table 11 – *Continued from previous page*

	OLS	Q10	Q25	Q50	Q75	Q90
			Total			
PE	0.561***	0.688***	0.735***	0.611***	0.468***	0.314***
	(0.003)	(0.001)	(0.006)	(0.004)	(0.004)	(0.006)
PI	0.223***	0.000	0.176***	0.222***	0.226***	0.171***
	(0.007)	(1.35e-13)	(0.010)	(0.012)	(0.012)	(0.017)
male	0.166***	0.000	0.118**	0.167***	0.194***	0.114***
	(0.028)	(6.73e-14)	(0.052)	(0.044)	(0.037)	(0.038)
ind	-1.404***	0.000	-1.412***	-1.667***	-1.919***	-1.057***
	(0.054)	(6.50e-13)	(0.051)	(0.080)	(0.124)	(0.098)
black	-0.521***	0.000	-0.618***	-0.667***	-0.468***	-0.429***
	(0.072)	(3.16e-13)	(0.129)	(0.098)	(0.078)	(0.127)
white	0.048	0.625***	0.206***	-0.056	-0.226***	-0.229***
	(0.032)	(0.076)	(0.045)	(0.047)	(0.033)	(0.050)
other	-0.262***	0.000	-0.353***	-0.333***	-0.323***	-0.114
	(0.056)	(2.39e-13)	(0.072)	(0.079)	(0.073)	(0.095)

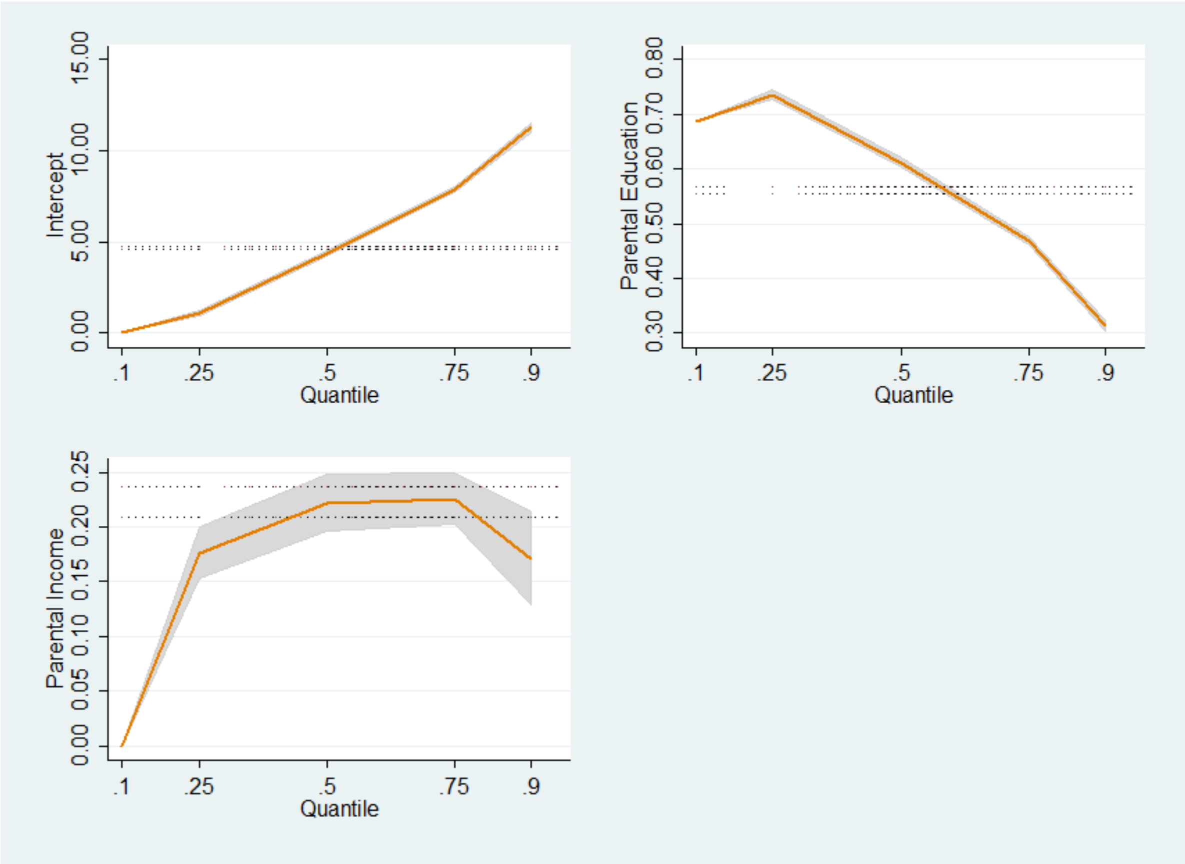
Note: *** Significant at 1 %, ** significant at 5 %, * significant at 10 %
Robust standard errors in parentheses
Source: Latinobarometro

Parental education always has a positive and significant effect on educational attainment, which varies across quantiles, and each of them is significantly different from the OLS-beta. Parental income decile does not seem to have a significant effect on the quantile .10. As before, mobility increases from 2007 to 2013. But this time not only quantile .10 is not part of this phenomenon, but also quantile .25.

Again, it is more convenient to look at a quantile regression graph in order to see the differences between quantiles. Figure 3 presents the intercepts across quantiles, as well as the beta-coefficients for the linear term of parental education and for parental income. The confidence intervals of the OLS and the QR are also indicated.

We can see a similar behavior to that of Figure 1, where mobility increases as we move to the top of educational attainment distribution. As of parental income decile, its effect also increases up to the median, then it remains constant, and then it decreases for quantile 0.9.

Figure 2: Linear Quantile Regression Estimates for Latin America from 2007 to 2013



Going from the estimates of Eq. (1) to those of Eq. (8) prove that non-linearities on the dependent variable are significant, given that the effect of parental education is different for every quantile in every year, as shown in Figure 1 and 3.

Subsection 5.2 shows the estimations when both non-linearities are combined.