

ON INTERGENERATIONAL (IM)MOBILITY IN LATIN AMERICA

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ABSTRACT

This paper studies intergenerational mobility in Latin America and shows that, in addition to the well-documented fact that the Latin American income distribution is highly unequal, profound differences in opportunities persist from one generation to the next. Comparing final educational achievements for 18 Latin American countries, this paper finds that measures of the persistence in educational achievements across generations, such as beta- and partial correlation coefficients, are high. This persistence is correlated with high returns to education, relatively low progressivity in public investments in education, and inequality of opportunity. An index of inequality of opportunity (including dimensions beyond an individual's control such as race, gender and parental income background) is estimated at around 40%, which is high by international standards. The paper also explores country differences in intergenerational mobility. While in Costa Rica, circumstances explain below 15% of the observed variance in education, in Chile, they amount to almost half the explained variance. The findings imply that there is room for targeted redistributive policies that improve intergenerational mobility.

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I. INTRODUCTION

The present paper analyses the extent of intergenerational transmission of educational achievements in 18 Latin American economies. While there is a large literature on the intergenerational transmission of income and status for developed economies, the evidence on the extent of intergenerational mobility for emerging countries is more restricted (due to data limitations).³ In particular, one of the main problems for the analysis of intergenerational mobility for the Latin American region is the unavailability of panel data (selected countries e.g. Chile and Mexico, have recently started to follow individuals over time) that would enable connecting the income or wealth for parents with the income of their offspring.⁴

However, using representative population samples at the country level for a large number of Latin American countries, this paper can link the educational attainment of parents with that of their children, measuring intergenerational persistence of educational attainment. Moreover, we deepen the analysis by considering different cohorts, as well as the influence of circumstances (e.g. race, gender, parental income background). As education is an important driver of labour market income and measurement errors of parental educational outcomes are much smaller than income-related variables, this approach, which has also been followed in the literature for developing countries, can be implemented for a larger number of countries.

This paper uses three measures of intergenerational educational mobility: the beta-coefficient, the partial correlation coefficient, and the overall effect of circumstances beyond an individual's control (i.e. the index of inequality of opportunity). All measures coincide in pointing out the relatively low degree of intergenerational mobility in Latin America and the importance of parental background in determining educational success.

Within Latin America there are important differences: while the persistence of educational attainment is relatively low in Costa Rica, Uruguay, Guatemala and Argentina (the beta-coefficient of educational attainment is below 50 %), in Dominican Republic, Venezuela and El Salvador it is above 70 %. The case of Chile is remarkable, as the beta-coefficient shows that the intergenerational persistence in educational achievement is 57 % -lower than the average value of 60 %- but the partial correlation coefficient is 67 % and the overall index of inequality of opportunity is 48 %, the highest value among the sample.

The remainder of the paper is structured as follows. Section II places this paper's contributions in context by presenting a brief literature review; section III describes the conceptual framework to analyse the intergenerational transmission of educational attainments and presents the data used in the empirical assessment. Section IV presents the main results for Latin America and section V discusses potential implications.

II. LITERATURE REVIEW

Income inequality in Latin America is extremely high compared to other emerging economies as well as high-income countries (e.g. see Hertz et al. 2007;⁵ OECD, 2008; Azevedo and Bouillon, 2010; Ferreira and Gignoux, 2011, 2013; Brunori, Ferreira and Peragine, 2013; Torche, 2014). In principle, this type of static income inequality across individuals (at a certain point in time) does not

³ Black and Devereux (2010) present a recent survey of the evidence and methodological problems of the research available for developed economies, especially the United States. See also Solon (2002) for an earlier survey of the evidence on earning mobility across generations.

⁴ Azevedo and Bouillon (2010) review the evidence on intergenerational social mobility by summarising a set of papers for Latin America, and find that intergenerational social mobility is lower than the levels observed in the United States or the United Kingdom. The authors also note the unavailability of panel data for the region.

⁵ Hertz et al. (2007) study the intergenerational transmission of educational outcomes in 50 developed and developing countries using household surveys. They present results for 7 countries from Latin America: Brazil, Chile, Colombia, Ecuador, Panama, Peru, and Nicaragua.

have to be bad *per se*, as the dispersion in earnings could act as a strong incentive for parents to invest in their children's education. However, for poor households to be able to grasp these opportunities, they should have access to well-functioning credit markets, as the presence of credit constraints reinforces the intergenerational transmission of income (Aiyagari et al., 2003).⁶

In principle, educational attainment is a key determinant of wage earnings. Therefore, differences in acquired education are important to understand static income inequality.

Hertz et al. (2007) estimate 50-year trends in intergenerational persistence of educational attainment for 42 countries, finding the largest intergenerational correlations in the seven Latin American countries included in their analysis. The authors find that while the beta-coefficient decreased over the last 50 years (suggesting an increase in intergenerational mobility), no trend is observed for the partial correlation coefficient. The authors suggest that while both are linear measures of statistical association and not the true causal effect, the beta-coefficient might overestimate the true structural parameter of intergenerational mobility due to the omission of other explanatory variables.

Building on the terminology proposed by Roemer (1998), which distinguishes between "efforts" (factors that individuals can control) and "circumstances" (factors beyond one's control, like race, birthplace, or family background) in determining "advantages" (outcomes as a result of the combination of circumstances and effort), Ferreira and Gignoux (2011) propose a scalar measure of inequality of opportunity. They conduct a comparative analysis of six Latin American countries and find that in three of them, inequality of opportunity is linked to racial origin (indigenous or Afro-descendants).⁷ In a later study, Brunori, Ferreira and Peragine (2013) analyse inequality of opportunity in a comparative form for 41 countries, of which 6 are in Latin America.⁸ The authors find that inequality of opportunity is positively correlated with income inequality, and negatively related to intergenerational income and educational mobility. Moreover, they find the highest levels of inequality of opportunity for these six Latin American countries among the whole sample considered.⁹

Corak (2013) also links the presence of inequality with lack of opportunities and of mobility. He argues that the presence of inequality shapes opportunities and in turn, lack of opportunity lowers mobility.¹⁰ By describing the case of the United States, Corak (2013) argues that the "American Dream" (i.e. prospects for upward mobility) makes low income earners not strong advocates of redistributive policies, because of the belief that either they or their descendants can climb the income ladder.¹¹ Corak (2013) cites Solon (2004) arguing that the Great Gatsby Curve (the relationship between more income inequality and less intergenerational mobility) can be due to high returns to education.¹² Parents with high education would have both the capacity and the incentive to invest in their children's education.

Recently, Torche (2014) discusses the literature on equality of opportunity in a set of studies for Latin America. The review finds that parental education is the most influential circumstance for an

⁶ In Latin America, as documented by Tejerina and Westley (2007) using household surveys, the poor have reduced access to credit and saving instruments.

⁷ Data for this paper come from nationally representative household surveys dated 1996 for Brazil, 2003 for Colombia, 2006 for Ecuador, 2000 for Guatemala, 2003 for Panama and 2001 for Peru.

⁸ The countries are Brazil, Colombia, Ecuador, Guatemala, Panama and Peru.

⁹ See Brunori, Ferreira and Peragine (2013): Figure 2, page 26.

¹⁰ Citing Roemer (2004), Corak (2013) argues that circumstances affect opportunity by three channels: social capital, genetic traits, and family values, and that while policies that affect social capital tend to be accepted, less consensus is placed on policies intending to offset genetic advantages, and within-family investments.

¹¹ Corak (2013) concludes that relatively less upward mobility of the least advantaged is one of the reasons why intergenerational mobility in the United States is lower than in other countries. In addition, Corak (2013) concludes that the persistence at the top 1 % of the income distribution also makes intergenerational mobility in the United States lower than in other countries.

¹² See the appendix for an analytical framework based on the Solon (2004) model.

individual, concluding that inequality of opportunity is higher in Latin America than in industrial countries. Torche argues that the high (albeit decreasing) returns to education in Latin America can foster mobility, but they might also create a situation of "inherited meritocracy", because of the barriers that the lower segments of the income distribution face in accessing education (quantity and quality). Relatedly, Azevedo and Bouillon (2010) associate the high levels of immobility in Latin America with social exclusion, low access to higher education and labour market discrimination.¹³

If societies do not bring equal opportunities based on merit and ability, independent of race, gender or social origin, then today's social and economic status may be transmitted from parents to their offspring.

The focus of this paper is precisely the analysis of mobility in terms of educational attainment for parents and children. In particular, a contribution of the paper is enriching the analysis by considering several dimensions: race, gender and parental income, and analysing the robustness of the findings across different measures of intergenerational mobility.

A second contribution of this paper is to present comparable estimates for 18 countries in the region. The available studies generally have covered these issues for a maximum of seven countries, often with larger samples that allow studying specific countries in depth. The present paper's broader country coverage complements this literature by emphasising both the common features within the region, as well as the differences across countries.

Using a novel approach, Behrman et al. (1999 and 2001), Andersen (2001), Conconi et al. (2007) and Gandelman and Robano (2014) link the performance of children currently in the education system with the educational attainment of parents, using household surveys. The idea is to analyse the influence of parental background (e.g. income, education) on the success or failure of children in school, where the outcome is a child's completed grade and that corresponding to the child's cohort. A third contribution of this paper is that we are able to compare final educational attainments of children with that of parents.

III. METHODOLOGY AND DATA

This section describes the estimation techniques used in this paper to account for intergenerational educational mobility, as well as a brief description of the dataset used. We compute three measures of intergenerational educational mobility: the beta-coefficient, which quantifies the rate of transmission of educational achievements between one generation and the next, the correlation coefficient, which in addition takes into account the variation in the dispersion of the educational achievements; and the index of inequality of opportunity, which takes into account an additional set of observed variables (circumstances) in explaining the intergenerational transmission of educational attainment between parents and children.

Each measure has benefits and limitations. The beta-coefficient is very intuitive to understand and shows the difference in intergenerational transmission of education that exists in Latin America compared to the rest of the world. However, beta-coefficient estimates are in general very volatile, and do not take into account the variation in the dispersion of educational attainment for parents and children, which the partial correlation coefficient does. The partial correlation coefficient, in turn, does not consider the effect of other omitted variables that could influence intergenerational mobility, thus, we compute also an index of inequality of opportunity, which considers the overall effect of circumstances (race, gender, family income) in explaining own education.

III.1. Beta- and partial correlation coefficient estimation

The baseline estimation for an individual i in country j is given by:

¹³ Ñopo et al. (2010) present evidence of racial discrimination in Latin America, while Carrillo, Gandelman and Robano (2014) present evidence of gender discrimination in Latin America.

$$E_{ij} = \alpha + \beta PE_{ij} + \varepsilon_{ij}, \quad (1)$$

where E stands for person i 's own educational attainment, PE the parental educational attainment, and ε is a white noise disturbance. This equation allows us the quantification of the importance of parental education on own educational attainment using two related measures. The first one is the estimated coefficient of parental education (beta-coefficient, henceforth). The beta-coefficient shows the relationship between each additional year of education of parents and own education. A higher beta-coefficient implies higher persistence and thus lower intergenerational mobility.

Additionally, one can consider the correlation coefficient between E and PE (correlation coefficient, hereafter).¹⁴ The correlation coefficient shows how much of the observed dispersion in own education is explained by parental education. Again, a higher correlation coefficient implies lower intergenerational mobility. The relationship between the two measures is as follows: the beta-coefficient equals the correlation coefficient between own and parental education weighted by the ratio of the standard deviations of own and parental education:

$$\beta_j = \frac{\sigma_{E_j}}{\sigma_{PE_j}} \rho_{E_j, PE_j}, \quad (2)$$

Therefore, any apparent divergence between the two measures can be due to changes in the ratio of standard deviations.

Moreover, we include a squared term of parental education, to explore the possibility of a non-linear relationship between intergenerational education attainments and also include country fixed-effect, which enables capturing systematic differences across countries in unobservable factors at the country level that might be correlated with parental education (adding the term μ_j), estimating therefore:

$$E_{ij} = \alpha + \mu_j + \beta PE_{ij} + \delta (PE_{ij})^2 + \varepsilon_{ij}, \quad (3) \text{ and}$$

$$E_{ij} = \alpha + \mu_j + \beta PE_{ij} + \varepsilon_{ij}, \quad (4).$$

OLS estimates of the above equations are potentially biased upwards if there is significant transmission of ability and other unobservable characteristics from parents to their offspring (i.e. the error term follows an autoregressive process). Although the debate regarding the relative importance of innate characteristics versus environmental conditions ("nature versus nurture") is not settled (see Björklund et al., 2007), there is evidence that the inheritance of cognitive skills has only limited importance as a driver of intergenerational mobility (OECD, 2008).

III.2. Index of inequality of opportunity estimation

There might be additional variables influencing own educational achievement that are correlated with parental education and that are beyond the individual's control (e.g. race, gender, family background). Therefore, in the spirit of Ferreira and Gignoux (2011, 2013), we construct a scalar measure of inequality of opportunity that combines the overall effect of circumstances on an individual's educational attainment. We thus augment the baseline estimation and consider:

$$E_{ij} = \alpha + \mu_j + \beta PE_{ij} + \phi White_{ij} + \gamma Female_{ij} + \kappa PID_{ij} + \varepsilon_{ij}, \quad (5)$$

¹⁴ When considering a more general set-up with multiple regressors these moments are conditional on all other variables, i.e. partial correlations.

Where *White* is a binary variable indicating self-reported racial origin; *Female* is a binary variable indicating whether individual is female, and *PID* stands for parent income 10-quantile classification, self-reported by the offspring. Following Ferreira and Gignoux (2011, 2013) definitions and calculations, we compute here the overall effect of (our own defined set of) circumstances on the final educational attainment of individuals and construct an index of inequality of opportunity, a scalar that measures the proportion of the whole variance that is explained by the set of pre-defined circumstances. The index of inequality of opportunity (θ_{10p}) that we estimate here for each country j derives from equation (5) and is thus:

$$\hat{\theta}_{10p} = \frac{Var(\hat{E}_j)}{Var(E_j)}, \quad (6)$$

where \hat{E} comes from the parametric estimation of equation (5), the reduced-form regression of own educational attainment on circumstances, for the average person within each type of circumstance.¹⁵

Finally, these measures of intergenerational transmission of educational attainments are just a crude proxy for social status transmission. Status is a much richer, complex and multidimensional concept than education. However, while status and education are correlated, the latter is easier to observe and measure.

III.3. Data description

Data come from Latinobarómetro, a public opinion survey conducted annually in Latin American countries. For the 2008 survey, over 20,000 interviews were conducted in 18 Latin American countries. The samples are representative of the national population. Roughly 1,000-1,200 interviews by country are conducted, with an estimated 3% sampling error.¹⁶ Despite the smaller sample size of Latinobarómetro surveys, there are no significant differences between the average years of education in our sample and those resulting from national household surveys.¹⁷

Table 1 presents summary statistics of our main variables of interest: (own) education and parental education.¹⁸ In all countries there is a significant increase in the years of education (and the level attained) from one generation to the other. On average, the years of education increased by 3 years. At median levels, while parents' educational attainment is lower than primary education completed, even at the 25th percentile of children's educational distribution, primary education is completed.

The increase in educational attainment for children has been larger in most countries that started at very low levels of parental education (e.g. 4.1 years in El Salvador), although Nicaragua is an exception with the lowest increase, despite exhibiting low levels of parental educational attainment.

There are also important differences across countries. For example, higher income countries exhibit systematically higher levels of education across all points of the distribution. For example, in Argentina and Chile, 50% of the population has completed secondary education and the lowest 25% still have at least completed primary education. In contrast, Guatemala still exhibits large levels of illiteracy and even the upper 25 percentile has on average 6.5 years of education, i.e. just a little bit more than complete primary education.

¹⁵ There are a maximum of 16 years of education, two racial classifications, two gender classifications and 10 parental income decile classifications.

¹⁶ See more at www.latinobarometro.org

¹⁷ Using information from CEDLAS SEDLAC database on average years of education in the 18 countries covered by Latinobarómetro, the average difference in years of education for the population over 25 years old is 0.04, which is not significant at conventional levels of confidence.

¹⁸ See Table A.1 for summary statistics by country.

Table 1. Descriptive sample statistics of years of education by country

	Own education (years)					Parental education (years)				
	Mean	Std Dev	25th pctl.	Median	75th pctl.	Mean	Std Dev	25th pctl.	Median	75th pctl.
Argentina	10.40	3.61	7	12	13	7.57	4.18	6	7	12
Bolivia	8.14	5.07	4	8	12	4.83	5.17	0	3	9
Brazil	7.66	4.68	4	8	11	4.33	4.33	0	4	8
Colombia	9.08	4.82	5	11	13	5.12	4.56	1	5	7
Costa Rica	7.84	4.39	5	6	11	4.77	4.10	0	6	6
Chile	10.64	3.92	8	12	12.5	8.40	4.54	5	8	12
Dom. Rep.	8.22	4.77	6	8	12	5.46	4.92	0	5	9
Ecuador	8.05	4.75	6	6	12	5.44	4.65	0	6	6
El Salvador	6.70	5.00	2	7	10	2.60	4.25	0	0	5
Guatemala	4.51	4.56	0	4	6.5	2.49	3.96	0	0	5
Honduras	6.04	4.08	2.5	6.5	9	2.76	3.78	0	0	6
Mexico	8.61	4.82	6	9	12	5.03	5.05	0	4	9
Nicaragua	5.53	4.72	1	5	9	3.61	4.56	0	2	6
Panama	8.05	4.78	5	8	12	4.45	4.98	0	3	7
Paraguay	8.89	4.21	6	9	12	6.19	4.24	3	6	9
Peru	9.07	4.79	6	11	13	6.28	5.30	1	6	11
Uruguay	8.74	3.73	6	9	12	6.77	3.74	6	6	9
Venezuela	10.62	4.04	8	11	15	7.36	4.73	6	6	11

Notes: Parental education refers to the highest level attained by the father or mother.

Source: Based on Latinobarómetro 2008 survey.

Finally, in most countries the data show some intergenerational convergence in the years of education, as the growth in educational attainment is higher at the lower end of the distribution. For example, while in most countries the lower 25 percentile of parents were basically illiterate with zero years of formal education – while in Argentina, Chile, Colombia, Paraguay, Peru, Uruguay and Venezuela they had at least some primary education – many of these countries present increases in education toward complete primary education. Furthermore, in general, the median has also benefitted more than the upper 25 percentiles in terms of increases in educational attainment.¹⁹ However, these average trends could be consistent with very little as well as high levels of intergenerational mobility. Thus, an analysis of considering the families' trajectories can provide further insight.

IV. EMPIRICAL RESULTS

In this section, we present the estimates of the three measures of intergenerational educational mobility outlined above. First, we present the baseline estimations of the correlations between own and parental educational achievement, comparing them to the empirical evidence available for other regions, countries and datasets. Second, we explore potential differences across gender, cohorts and countries within the region. Then, we explore potentially non-linear effects by estimating transition probabilities conditional on parental education. Finally, we discuss the relationship between our results and other alternative measures used in the literature.

¹⁹ Of course, part of the story is that for high levels of education, the offspring is naturally constrained to increase its education further.

IV. 1. Pooled beta- and correlation coefficient estimations

In Table 2 we present the estimates for equations (1) and (2), the beta and correlation coefficient estimates for the population at least 25 years old in 2008. The first column shows that parental education has a statistically significant impact for all the specifications considered. In terms of the estimated beta-coefficient, an additional year of parental education increases on average the offspring's education by 0.65 years (or 0.61 if country dummies are included), a result consistent with the estimates found by Hertz et al. (2007) for a smaller sample of countries.

Table 2. Beta and correlation coefficient estimates

	Beta-coefficient	Correlation coefficient	R-squared	Country fixed effects
(1)	0.653*** [0.006]	0.612	0.374	No
(2)	0.605*** [0.007]	0.566	0.403	Yes

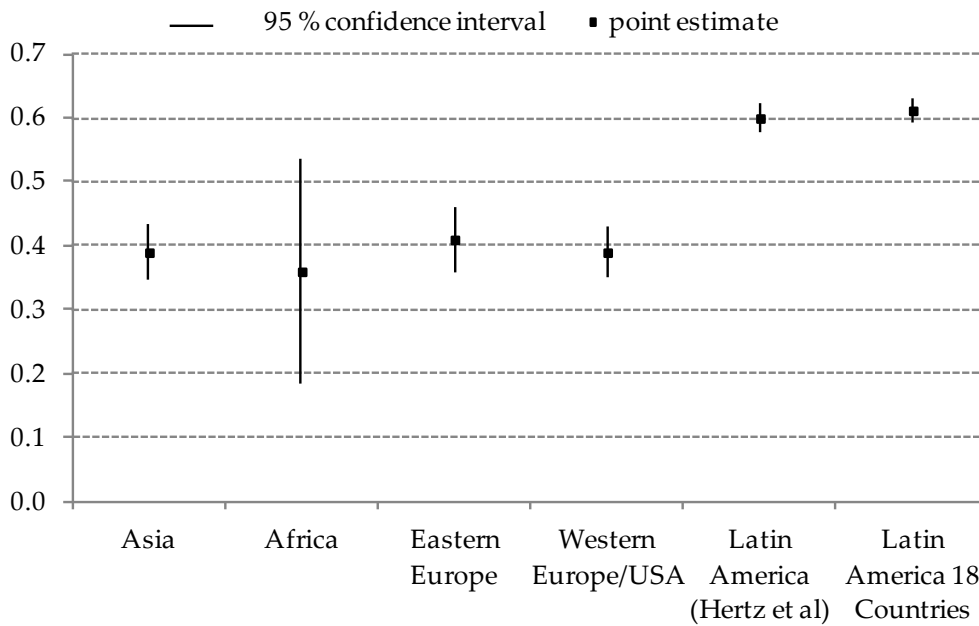
Notes: Robust standard errors in brackets. *** significant at 1 %, ** significant at 5 %, * significant at 10 %. Number of observations in all regressions: 14,196

The partial correlation coefficient shows that parental education accounts for around 61.2% of the dispersion in its offspring's educational attainment in our sample. According to Hertz et al. (2007) sample of 42 countries, the average correlation coefficient between own and parental education is around 0.4. Figure 1 shows that this average is relatively stable across developed and developing regions, with the exception of Latin America. Thus, parental background explains a significantly higher fraction of the variation in educational attainment in Latin America than elsewhere. Figure 1 also shows that our pooled estimate for the 18 Latin American countries in our sample is again very close to the average estimate by Hertz et al (2007) for the seven countries in their sample for the partial correlation coefficient.

Therefore, these first estimates show a consistent picture with the previous literature on intergenerational educational mobility in emerging economies. While the beta-coefficient shows that an additional year of parental schooling adds 0.65 years to the child's educational attainment, a significant number but not particularly high in international terms (Hertz et al. (2007) estimates for Italy show a beta coefficient of 0.67; in Ireland it is equal to 0.70), the correlation coefficient tells a bleaker story for mobility in Latin America. This apparent contradiction can be explained based on equation (2), as two countries can present the same beta-coefficient, but the correlation coefficient can be very different if the relative dispersions in parental and/or child education differ.

Regarding the correlation coefficient measure of mobility, adding the squared term does not significantly increase the importance of parental background, as it moves just marginally from 0.612 to 0.620.

Figure 1. Regional average correlation coefficients between own and parental education



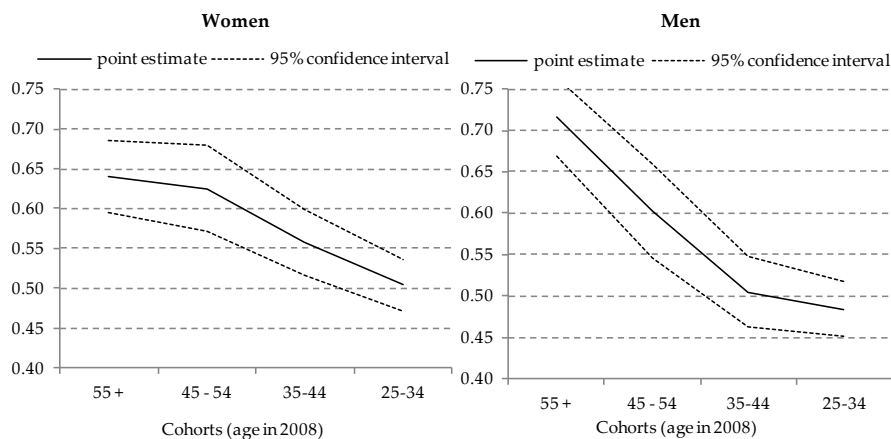
Notes: Asia includes Bangladesh, China (rural), East Timor, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, and Vietnam; Africa: Egypt, Ethiopia (rural), Ghana, South Africa; Eastern Europe: Czech Republic, Estonia, Hungary, Kyrgyzstan, Poland, Slovakia, Slovenia, Ukraine; Western Europe/USA: Belgium, Denmark, Finland, Ireland, Italy, Netherlands, New Zealand, Northern Ireland, Norway, Sweden, Switzerland, United Kingdom and USA.

Source: Hertz et al. (2007) for Asia, Africa, Eastern Europe, Western Europe/USA and Latin America; own calculations based on Latinobarómetro 2008 survey for 18 Latin American countries.

We analyse next whether this persistence of educational attainments has varied across cohorts. We estimate equation (4) for four separate cohorts, and present the results in a set of figures, considering separately the variations by gender.

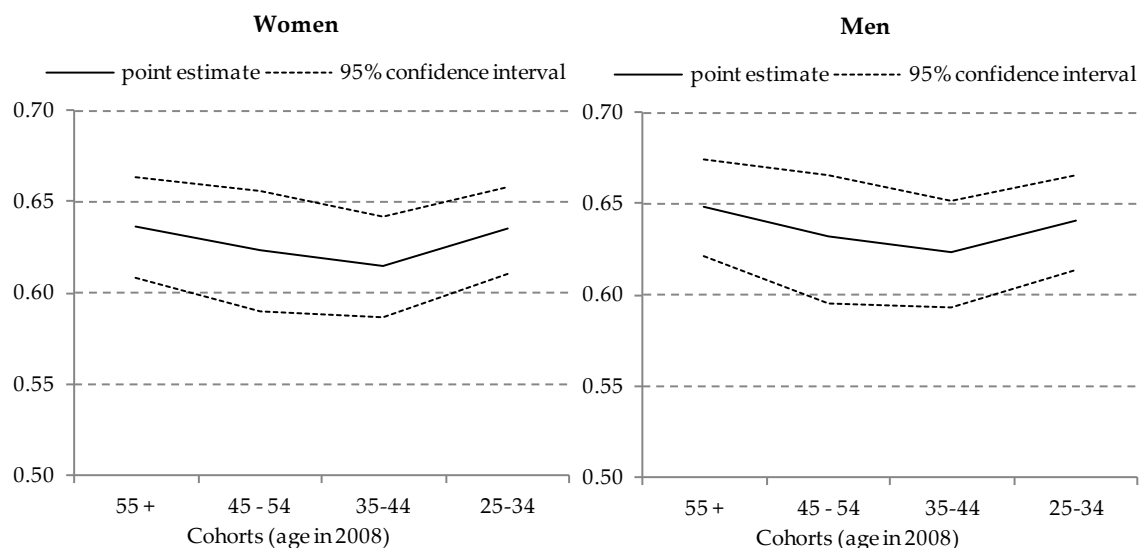
Figure 2 shows the beta-coefficient estimate, suggesting that the persistence of educational attainments decreases across cohorts, implying higher levels of mobility for the younger generations. A quantification of the impact of the intergenerational transmission of educational attainment for individuals in the 25 and 34 years-old cohort is between 23 and 33 percent smaller (women and men, respectively) to those over 55 years-old in 2008.

Figure 2. Beta-coefficient estimation



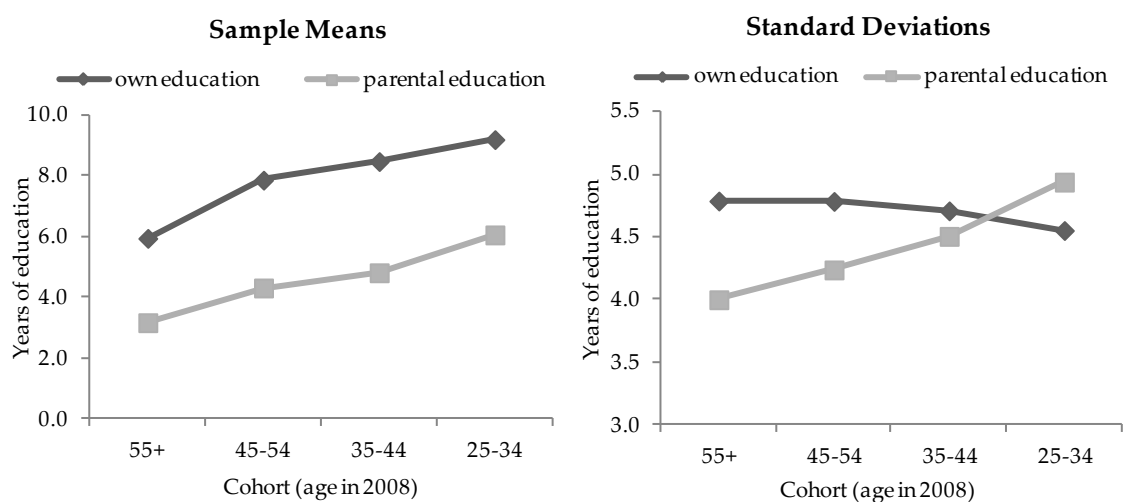
However, the analysis of the correlation coefficient shows that there is no significant change across generations in this measure of educational mobility (see Figure 3). There are no significant differences by gender.

Figure 3. Correlation coefficient



A plausible explanation for the discrepancy between beta and rho can be due to changes in the standard deviations of own education σ_E , and parental education, σ_{PE} . To assess this possibility, the left-hand panel of Figure 4 shows the steady increase in average education across cohorts. The right-hand side shows that while the dispersion of own education has remained fairly constant (with some decline for younger generations), the dispersion in parental education is significantly higher for younger cohorts. Thus, the β -coefficient is lower for the young cohorts due to the fact that the standard deviation of parental education is higher for younger cohorts. As also shown by Daude (2012), this fact is mainly driven by an increase in the dispersion in parental education (Figure 4).

Figure 4. Sample moments by cohorts



In Table 3 we present the results from estimating equation (3), which considers the possibility of a non-linear relationship between own and parental education. The new estimates imply that the tipping point, where an additional year of parental education would start to have a negative effect, is

at around 22 years of parental education, which is beyond the maximum of 16 years observed in our sample. This result could be driven by the fact that upward mobility is more common than downward mobility, such that individuals whose parents had high levels of education are also likely to remain at the higher end of the distribution, while those with very low-level parental background can by definition only move up.

Table 3. Augmented OLS estimations

	(1)	(2)
Parental education (years)	0.938*** [0.019]	0.852*** [0.021]
Parental education squared	-0.022*** [0.001]	-0.019*** [0.001]
Constant	4.552*** [0.056]	5.529*** [0.129]
Observations	14,196	14,196
R-squared	0.384	0.410
Correlation coefficient ¹	0.620	0.573
Country dummies	No	Yes

Robust standard errors in brackets. *** significant at 1 %, ** significant at 5 %, * significant at 10 %.

¹ Here the correlation coefficient refers to the partial correlation (between residuals of regressing in a first step parent and child education on country dummies).

Overall, the previous estimates confirm that for both measures our pooled estimates are in line with the previous literature on intergenerational educational mobility, despite differences in sampling and years covered. Our estimates also show that the importance of parental education in explaining differences across their children's educational attainment – measured by the correlation coefficient – is very high compared to other countries and stable across cohorts.

IV. 2. Index of Inequality of Opportunity θ

In this section we present the estimates from equation (5), augmenting the baseline estimation to include the effect of additional variables beyond an individual's control, such as race (self-reported white versus non-whites), gender, and family income (self-reported parental income status) in the correlation between parental and own educational achievements.²⁰ The index of inequality of opportunity (θ_{IOP}) for the region is 0.4, in line with Ferreira and Gignoux (2013) estimates of 0.35 worldwide and above 0.30 for Argentina, Brazil and Chile.²¹

We include these additional observed variables in the regressions presented in Table 4, both as additional explanatory variables and also their interactions with parental education allowing for a differential effect across groups.

The results show that overall the baseline estimates from Table 2 are robust to the inclusion of these additional controls. While self-reported white individuals have on average 0.2 more years of education, there is no difference in the educational mobility between white and non-white individuals (columns 1 and 2). The interaction term is only marginally significant at 10% and economically small.

²⁰ Given that there might be other circumstances beyond an individual's control that are not included in this regression, the measure of θ shall be considered as a lower-bound estimate of inequality of opportunity.

²¹ The estimates from Ferreira and Gignoux (2011) do not show a clear geographical pattern in the index of Inequality of Opportunity.

Females present lower levels of educational attainment than men (see columns 3 and 4), and again, there is no difference in the interaction term. Parental income 10-decile classification suggests higher levels of educational attainment (see columns 5 and 6). The interaction term of parental income and parental education is statistically significant and negative. However, it is relatively small and the mean effect dominates. For example, for all levels below 16 years of parental education, somebody in the highest decile would have a higher predicted level of education based on the estimates of column (6) than somebody in the first decile.²² Considering all circumstances together (columns 7 and 8) explains more than 40% of the variance of own education.

Table 4. Index of Inequality of Opportunity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Parental education (years)	0.597*** [0.007]	0.605*** [0.009]	0.605*** [0.007]	0.596*** [0.010]	0.554*** [0.008]	0.651*** [0.019]	0.548*** [0.008]	0.638*** [0.021]
White	0.202** [0.087]	0.327*** [0.126]					0.206** [0.092]	0.269** [0.137]
Parental education x white		-0.024* [0.014]						-0.010 [0.015]
Female			-0.242*** [0.064]	-0.320*** [0.095]			-0.201*** [0.071]	-0.315*** [0.110]
Parental education x female				0.017 [0.013]				0.022 [0.014]
Parent Income Decile					0.261*** [0.018]	0.352*** [0.026]	0.252*** [0.019]	0.345*** [0.027]
Parental education x Parent income decile						-0.020*** [0.004]		-0.020*** [0.004]
Constant	5.965*** [0.139]	5.948*** [0.140]	6.160*** [0.125]	6.197*** [0.131]	5.225*** [0.143]	4.830*** [0.163]	5.300*** [0.166]	4.941*** [0.192]
Observations	12,942	12,942	14,196	14,196	12,183	12,183	11,122	11,122
R-squared	0.406	0.406	0.404	0.404	0.407	0.409	0.410	0.412
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

IV. 3. Detailed analysis by country

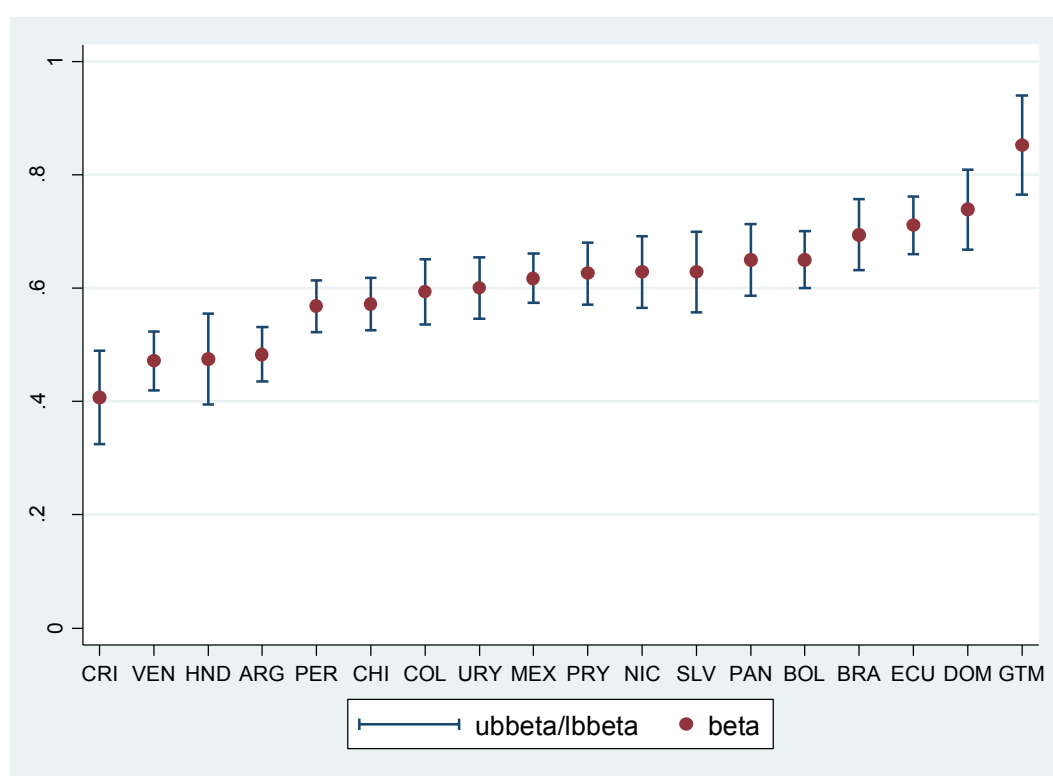
Figure 5 shows estimates for both measures of persistence of educational attainment by country, and their 95% confidence intervals. There is considerable variation in the region in both

²² This effect is even larger as income and education are positively correlated (0.33 in our sample).

measures. For example, while Costa Rica presents a beta-coefficient of 0.36, for Guatemala it is 0.68, almost twice as large. These differences are economically significant. For example, the elasticities imply that a 4-year difference in parental education would on average imply 1.6 years more of education for the next generation in Costa Rica, while in Guatemala the equivalent figure would be 3.4 years. Given a year of additional education is worth 12 % – the average return to education in Latin America²³ – these extra years could translate into a differential in wage earnings of 19 % and 41 %, respectively.²⁴

In general, countries that show low mobility using the beta-coefficient measure also present low correlation-coefficient mobility.²⁵ The case of Chile is somewhat atypical, given that it ranks relatively well in terms of the beta-coefficient measure, compared to other countries in the region. However, the correlation coefficient shows that Chile is second only to Guatemala when measuring intergenerational mobility by the correlation coefficient (which quantifies the dispersion in educational achievement within a generation).

Figure 5. Intergenerational mobility by country: beta-coefficient

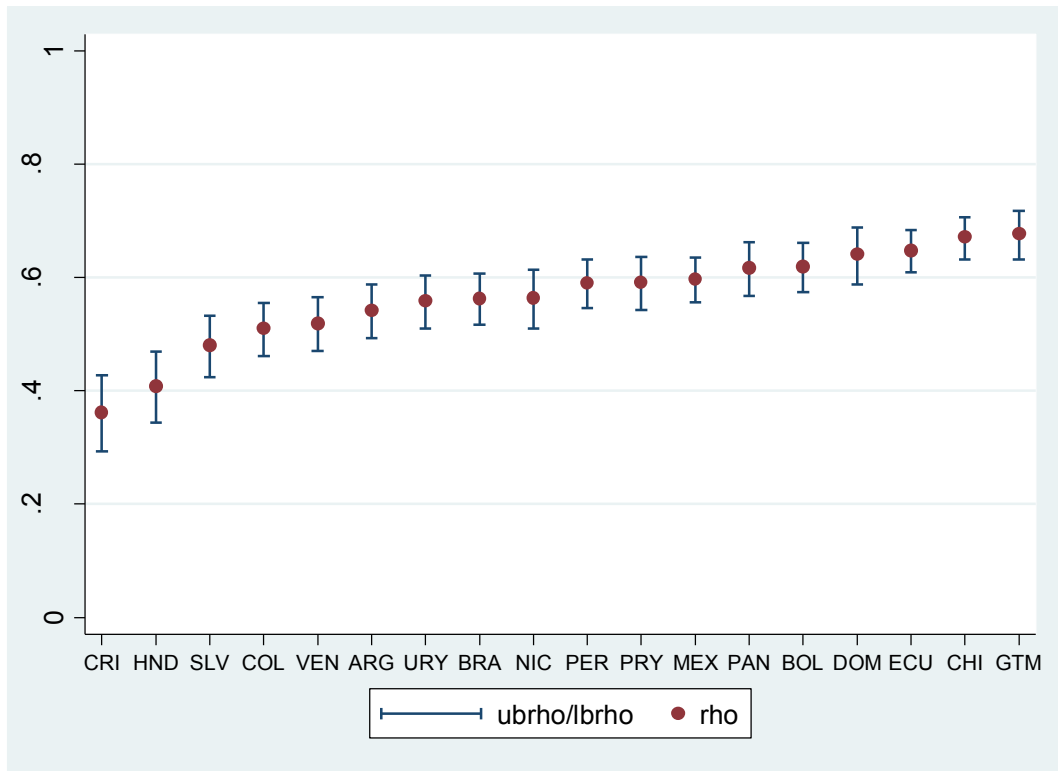


²³ Psacharopoulos and Patrinos (2004).

²⁴ Although many of the differences between the point estimates are not statistically significant at standard levels of confidence.

²⁵ The correlation coefficient between the two measures in our sample is 0.748, significant at 99 %.

Figure 6. Intergenerational mobility by country: correlation coefficient



In Table 5 we present the estimates of intergenerational mobility by country, adding a set of circumstances in explaining educational attainment. First, column (1) shows that the coefficient indicating intergenerational persistence of educational attainment is always significant, and there is no large variation among countries. Being white (column 2) has a positive a significant impact on educational persistence in Argentina, Brazil, Panama and Venezuela, while in Bolivia and Mexico, the impact is significant but negative (thus implying for these two countries that mobility is higher for the non-white). In column 3, the effect of being female on educational attainment is shown: females show lower persistence of intergenerational educational attainment in Bolivia, Chile, El Salvador, Paraguay and Peru. Column 4 shows the coefficient of parental income classification: with the exception of Brazil, parental income is significant in explaining own educational attainment in all countries.

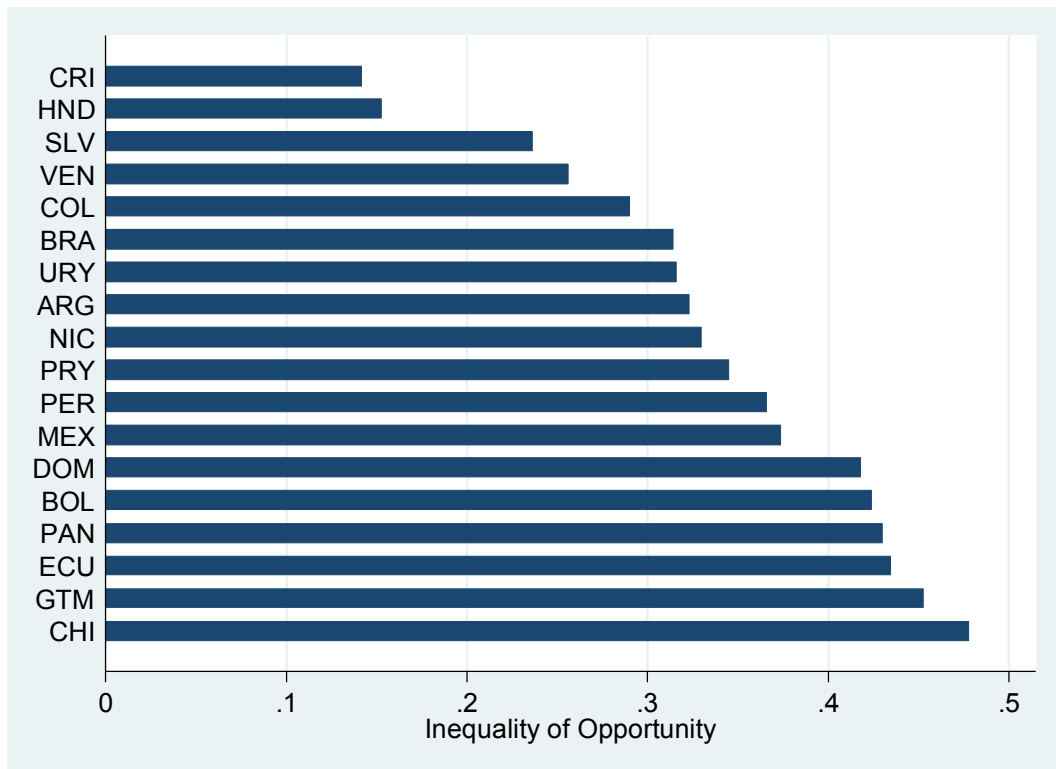
Table 5. Effect of circumstances on own educational attainment

	Parental Education (1)	White (2)	Female (3)	Parent income decile (4)	Constant (5)	Observ ations	R- squared
Argentina	0.441*** [0.029]	0.744*** [0.272]	0.347 [0.227]	0.265*** [0.065]	5.317*** [0.417]	689	0.323
Bolivia	0.596*** [0.033]	-1.429* [0.793]	-0.982*** [0.303]	0.432*** [0.096]	4.221*** [0.396]	687	0.424
Brazil	0.642*** [0.034]	0.930*** [0.288]	0.329 [0.284]	0.097 [0.073]	4.007*** [0.393]	804	0.314
Colombia	0.502*** [0.040]	-0.136 [0.355]	0.321 [0.345]	0.355*** [0.082]	5.273*** [0.422]	653	0.290
Costa Rica	0.367*** [0.047]	0.233 [0.373]	-0.476 [0.372]	0.219** [0.095]	5.252*** [0.561]	481	0.142
Chile	0.543*** [0.026]	-0.323 [0.219]	-0.647*** [0.195]	0.233*** [0.064]	6.122*** [0.363]	767	0.478
Dom. Rep.	0.676*** [0.040]	0.259 [0.596]	0.123 [0.373]	0.345*** [0.116]	3.647*** [0.532]	469	0.418
Ecuador	0.665*** [0.029]	-0.213 [0.518]	-0.204 [0.258]	0.290*** [0.074]	3.575*** [0.342]	795	0.435
El Salvador	0.567*** [0.045]	0.284 [0.656]	-0.730* [0.391]	0.195** [0.090]	4.545*** [0.439]	532	0.236
Guatemala	0.792*** [0.050]	-0.649 [0.509]	-0.012 [0.324]	0.176* [0.092]	1.873*** [0.368]	442	0.453
Honduras	0.379*** [0.048]	0.224 [0.407]	0.177 [0.331]	0.193** [0.082]	4.154*** [0.364]	515	0.153
Mexico	0.550*** [0.030]	-0.844** [0.427]	-0.344 [0.309]	0.250*** [0.075]	5.442*** [0.397]	627	0.374
Nicaragua	0.576*** [0.036]	-0.608 [0.577]	0.123 [0.361]	0.282*** [0.083]	2.826*** [0.373]	501	0.330
Panama	0.553*** [0.037]	1.914*** [0.451]	0.048 [0.332]	0.395*** [0.078]	3.622*** [0.416]	490	0.430
Paraguay	0.551*** [0.034]	0.380 [0.305]	-0.652** [0.309]	0.159** [0.080]	5.327*** [0.477]	498	0.345
Peru	0.498*** [0.029]	-0.680 [0.528]	-1.392*** [0.288]	0.246*** [0.081]	6.021*** [0.363]	728	0.366
Uruguay	0.577*** [0.031]	0.348 [0.360]	0.137 [0.233]	0.113** [0.057]	4.209*** [0.481]	709	0.316
Venezuela	0.418*** [0.030]	0.477* [0.275]	0.318 [0.265]	0.223*** [0.080]	6.348*** [0.492]	735	0.256

Robust standard errors in brackets. *** significant at 1 %, ** significant at 5 %, * significant at 10 %.

Furthermore, we compute the index of inequality of opportunity considering the set of circumstances described above (see Figure 7). The pattern is very similar to the one found above by the beta and the correlation coefficient: in Costa Rica circumstances explain the lowest proportion of the variation in own educational attainment, which implies a higher chance of intergenerational mobility. By contrast, in Guatemala, Chile and Ecuador, circumstances beyond an individual's control explain most of the observed variation in educational attainment.

Figure 7. Index of Inequality of Opportunity



We enrich the analysis by looking at transition probabilities between different educational attainments across generations.

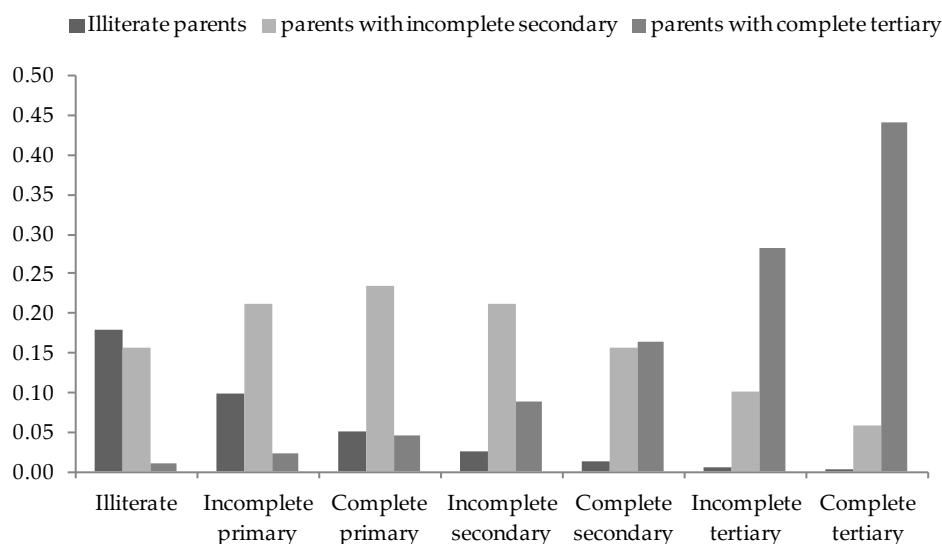
IV. 4. Robustness check: transition probabilities

Another way of looking at educational mobility is to compute transition probabilities between different levels of education across generations. In particular, we estimate an ordered LOGIT model regressing the own highest completed levels of education (rather than years) on the highest completed level of education by the parents. These estimates are used to compute the marginal probabilities given the level of parental educational attainment presented in Figure 8. The figure shows that the probability of being illiterate given that parents were illiterate is 0.18. Even for children with parents that have some secondary education, around 15 out of every 100 would end up with no formal education in the region. By contrast, children with parents that finished tertiary education basically exhibit a probability of being illiterate of just 1%. On the other end of the distribution, the probability of finishing tertiary education coming from a tertiary-educated family is 0.45. This likelihood is more than 7 times higher than for children whose parents have achieved only some secondary schooling, while the probability of a person with illiterate parents to finish tertiary is close to zero.

In line to these findings, Gandelman and Robano (2014) show that the probability of achieving at least the same educational attainment than their parents was 87% in 2010, and Causa, Dantan and Johansson (2009) estimates for OECD countries show that the probability of achieving

tertiary education are 30 % higher for children whose parents also completed tertiary education compared to those children whose parents completed secondary education.

Figure 8. Marginal probabilities of completing indicated levels of education (Conditional on parents' educational attainments)



IV. 5. Drivers of Intergenerational Mobility

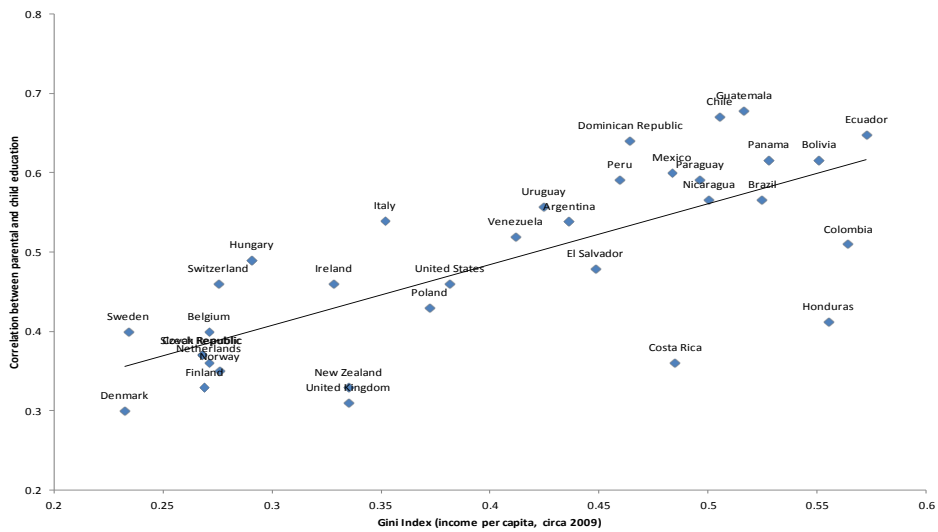
This section explores some of the possible determinants of intergenerational mobility. Rather than presenting causal evidence, it shows some cross-country correlations in order to motivate future research in this area. As Angrist and Pischke (2009) point out, correlation is an important predictor of the existence of causality.

We present in Figure 9 the relationship between intergenerational persistence in educational attainments and income inequality, as measured by the Gini coefficient. We include OECD countries in the regression in order to allow for more variation. Otherwise it should be noted that Latin American countries are sufficiently similar (in mobility and the correlates), such that none of these correlations are significant within the region. The estimated correlation coefficient is 0.74, significant at standard levels of confidence. Societies that are less mobile tend also to exhibit high levels of inequality. In Latin America, only Costa Rica and Honduras seem to be outliers, with social mobility much higher than expected given their distribution of income.²⁶

There are several ways this correlation can be interpreted. According to the analytical framework described in the appendix, the same factors that affect intergenerational mobility (private returns to education, progressivity of public investment in education, and other transmissible factors such as abilities, race and social networks) also determine the cross-sectional distribution of income in the long-run. In the transition period, a decline in income inequality (perhaps due to changes in the skill premium or returns to education) or an increase in the progressivity of public expenditure on education would cause an increase in social mobility.

²⁶ Of course, it is hard to establish causality. If the objective was to analyse the impact of income inequality on intergenerational mobility, one should consider the Gini index lagged by at least one or two decades instead of its contemporaneous value.

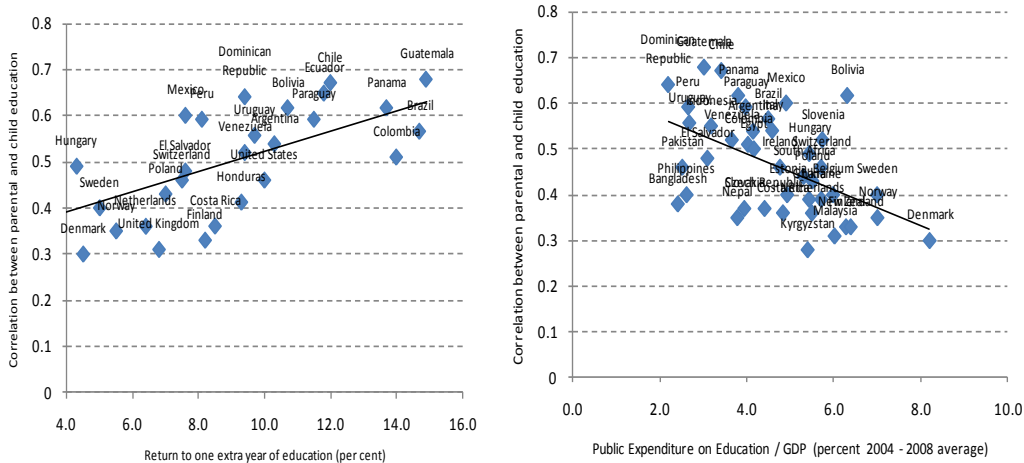
Figure 9. Income inequality and intergeneration persistence in education



Source: Based on Latinobarómetro (2008), Hertz et al. (2007), and the SEDLAC database 2010.

Figure 10 shows that there is also a significantly positive correlation between lower mobility and higher returns to education, as predicted above. In particular, most countries in Latin American present both higher returns to education than OECD countries, and a higher correlation between parental and child education.

Figure 10. Returns to education, public education expenditure and social mobility



Source: Based on the *Latinobarómetro* 2008 survey, Hertz et al. (2007), UNESCO indicators database and Menezes-Filho (2001).

Progressive investment funded by the public sector could, in principle, equalise opportunities for children of different social and economic background. The empirical evidence shows a negative relationship between the intergenerational correlation of educational outcomes and public expenditure on education, suggesting that public investment in education could foster mobility in the region (Figure 10, right-hand panel).²⁷

²⁷ Again, the correlation coefficient (-0.52) is significant at standard levels of confidence.

The problem is that not only little is spent on education in the region, but also its effectiveness in generating mobility is low. All countries, with the exceptions of Costa Rica and El Salvador, present lower levels of mobility than would be expected for their current rate of public investment on education. To be effective policy actions will need to address quality as well as quantity – a conclusion very much in line with findings for OECD countries which show that how spending on education is used often matters more than how much is spent.²⁸

Public expenditure is only part of the picture. Limited access to credit or savings for disadvantaged and middle-sector households can also be a significant hurdle to investment in education, and in Latin America access is limited to the point that it is likely to be holding children back from pursuing further studies.²⁹ There are thus good efficiency reasons in education for policy to seek to increase middle-sector access to finance, to which can be added the spin-off mobility benefits flowing from more developed domestic financial markets and greater access. Therefore, the significant correlation between private returns to educational investment and intergenerational persistence in educational attainments could be mitigated by increasing the access to financial markets for poor and middle-income households and specially designed programs that reduce borrowing constraints.

V. POLICY IMPLICATIONS AND CONCLUSIONS

Recent research points towards the importance of early childhood development (ECD) – comprising cognitive and emotional development as well as adequate health and nutrition – in boosting opportunities for the disadvantaged in developing countries.³⁰ Conditional cash-transfer programmes (like Bolsa Familia in Brazil, Chile Solidario or PROGRESA/Oportunidades in Mexico), which are often conditional on participation in ECD activities, have shown to be a useful tool for increasing early childhood investments and protecting these investments from adverse shocks.³¹ Evidence from OECD members shows that higher enrolment rates and increased public spending on pre-school education in early childhood significantly weakens the link between parental education and child secondary education performance.³² An expansion of ECD programmes to cover a significant part of the population in Latin America could bring similar benefits.³³ While ECD by itself is not enough to ensure equal opportunities later on, but given its complementarity with subsequent investments in skills, it is a precondition – and an area where public policy action could be extremely powerful.

While enrolment rates in primary education have generally reached the Millennium Development Goals, secondary schooling is far from being universal in most countries in the region.³⁴ Making secondary education universal is therefore a natural target for education policy in Latin America. How best to achieve this will vary from country to country depending on its circumstances. For example, in several countries compulsory education covers only nine years of education (and so ends at age 15). Here an extension to a 12-year requirement is feasible – Argentina went from ten compulsory years to 13 in 2007. There is a secondary benefit to this: even compulsory changes in educational level have transmissible consequences. Evidence from OECD countries – where extensions to compulsion typically have been at the secondary level – confirm that even increases in

²⁸ See OECD (2010).

²⁹ Ayagari et al., 2003; Becker and Tomes (1979 and 1986); and Solon (2004).

³⁰ See Vegas and Santibáñez (2010).

³¹ de Janvry *et al.* (2006).

³² Causa and Chapuis (2009).

³³ Of course, a careful analysis of the incentives and cost-recuperation aspects for non-poor households should be an important part of any public programme in this area.

³⁴ The main exceptions are the extremely poor in the region's middle-income countries and some of the poorer countries in Central America.

parental education as a result of the expansion of compulsory education have a significant positive effect on the educational outcomes of their offspring.³⁵

Grants and student loans are an importance tool in boosting access to tertiary education. Evidence for OECD countries shows that the probability of students from less favourable family backgrounds completing tertiary studies is higher in countries that provide universal funding (available in principle to all students).

Finally, many social policies prove complementary to those discussed here. Better access to unemployment insurance, health services and social protection would allow disadvantaged and middle-sector families to withstand the kind of liquidity shocks that currently often require teenagers to postpone or abandon their studies in order to provide supplementary income for the household.

³⁵ Oreopoulos *et al.* (2006).

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APPENDIX

This appendix presents a brief sketch of a model by Solon (2004) that is useful to analyse the intergenerational transmission of income and to assess the central role of education.

We assume that the parental budget constraint of household i is given by:

$$(1 - \eta)y_{it-1} = C_{it-1} + I_{it-1}, \quad (1)$$

where the left-hand represents disposable income and η is the tax rate, C is parental consumption and I is investment in the offspring's education. The parent's utility function is given by:

$$U_{it-1} = (1 - \alpha)\log C_{it-1} + \alpha \log y_{it}, \quad (2)$$

such that parent care about the own consumption and their offspring's income level. Educational attainment is composed by two parts: a deliberate accumulation process (either through public (G) or private (I) investment in education) and an inheritable fraction (e).

$$h_{it} = \theta(I_{it-1} + G_{it-1}) + e_{it}, \quad (3)$$

The inheritable endowments follow a stationary autoregressive process of order one given by:

$$e_{it} = \delta + \lambda e_{it-1} + V_{it}, \quad (4)$$

where the last term is a white noise random shock. These endowments should be interpreted in a broad sense. They include innate ability, but also other attributes that are determined by the family's network, race, or culture. Educational attainment increases income via a standard Mincer equation, given by:

$$\log y_{it} = \mu + \rho h_{it}. \quad (5)$$

Following Solon (2004), public policy can be represented by:

$$\frac{G_{it-1}}{(1 - \tau)y_{it-1}} \cong \varphi - \gamma \log y_{it-1}, \quad (6)$$

where $\gamma > 0$. According to this equation, public investment in children's educational attainment is progressive in relative terms, as public investment as a fraction of parental disposable income decreases with the level of income. Utility maximisation and operating yields the following steady state relationship between parental and own education:

$$h_{it} \cong \theta \left[(1 - \gamma)\mu + \varphi + \log \left(\frac{\alpha \theta \rho (1 - \tau)}{1 - \alpha(1 - \theta \rho)} \right) \right] + \theta \rho (1 - \gamma) h_{it-1} + e_{it} = \mu^* + \psi h_{it-1} + e. \quad (7)$$

An OLS estimation of equation (7) would be biased and inconsistent, as the error term is correlated with the parent's education. However, it is straightforward to show that the correct steady-state measure of intergenerational transmission of educational attainments (ψ) is given by:

$$\psi = \frac{\theta \rho (1 - \gamma) + \lambda}{1 + \theta \rho (1 - \gamma) \lambda}. \quad (8)$$

Thus, in theory the degree of intergeneration transmission is an increasing function of the productivity of educational attainments (θ), the returns to education (ρ) and the persistence in intergenerational inheritance of skills and other relevant characteristics (λ), while more progressivity

of public investment in education (γ) increases intergenerational educational mobility. Differences across countries should therefore be related to differences in these parameters.

Furthermore, using equations (5) and (7), the variance in steady-state (log) income is given by:

$$\text{var}(\log y) = \frac{(1 + (1 - \gamma)\theta \rho \lambda) \rho^2}{(1 - (1 - \gamma)\theta \rho \lambda)(1 - \lambda^2)[1 - (1 - (1 - \gamma)\theta \rho)^2]} \sigma_v^2, \quad (9)$$

where σ_v^2 is the variance of the innovation term in equation (4). Therefore, in steady state the dispersion in income increases with the degree of inheritability (λ), the productivity of educational investments (θ), and the returns to education (ρ), and decreases with the progressivity of public policies (γ), just like the intergeneration elasticity (see equation 8).

However, there is no one-to-one mapping between intergenerational mobility and inequality, as the latter depends also on the dispersion of income related characteristics that are not included in the beta-coefficient measure used in our analysis.

Table A.1 Summary Statistics by country

Argentina						Bolivia					
Variable	Obs	Mean	Std. Dev.	Min	Max	Variable	Obs	Mean	Std. Dev.	Min	Max
Own Education	1200	10.40	3.61	0	16	Own Education	1200	8.14	5.07	0	16
Parental Education	1068	7.57	4.18	0	16	Parental Education	1027	4.83	5.17	0	16
White	1111	0.78	0.42	0	1	White	1139	0.04	0.21	0	1
Female	1200	0.53	0.50	0	1	Female	1200	0.50	0.50	0	1
Parent Income Decile	1045	4.95	1.85	1	10	Parent Income Decile	1099	4.10	1.86	1	10
Brazil						Colombia					
Own Education	1204	7.66	4.68	0	16	Own Education	1200	9.08	4.82	0	16
Parental Education	1143	4.33	4.33	0	16	Parental Education	1158	5.12	4.56	0	16
White	1193	0.48	0.50	0	1	White	1047	0.29	0.45	0	1
Female	1204	0.52	0.50	0	1	Female	1200	0.63	0.48	0	1
Parent Income Decile	1128	4.64	1.97	1	10	Parent Income Decile	962	4.03	2.24	1	10
Costa Rica						Chile					
Own Education	1000	7.84	4.39	0	16	Own Education	1200	10.64	3.92	0	16
Parental Education	826	4.77	4.10	0	16	Parental Education	1040	8.40	4.54	0	16
White	916	0.47	0.50	0	1	White	1133	0.72	0.45	0	1
Female	1000	0.50	0.50	0	1	Female	1200	0.53	0.50	0	1
Parent Income Decile	833	5.44	1.91	1	10	Parent Income Decile	1117	4.41	1.61	1	10
Dominican Republic						Ecuador					
Own Education	1000	8.22	4.77	0	16	Own Education	1200	8.05	4.75	0	16
Parental Education	687	5.46	4.92	0	16	Parental Education	1182	5.44	4.65	0	16
White	988	0.15	0.36	0	1	White	1119	0.09	0.29	0	1
Female	1000	0.50	0.50	0	1	Female	1200	0.50	0.50	0	1
Parent Income Decile	914	4.06	1.71	1	10	Parent Income Decile	1123	4.20	1.95	1	10
El Salvador						Guatemala					

Own Education	1000	6.70	5.00	0	16	Own Education	1000	4.51	4.56	0	16
Parental Education	963	2.60	4.25	0	16	Parental Education	834	2.49	3.96	0	16
White	926	0.11	0.32	0	1	White	923	0.15	0.35	0	1
Female	1000	0.53	0.50	0	1	Female	1000	0.50	0.50	0	1
Parent Income Decile	765	4.33	2.31	1	10	Parent Income Decile	801	3.58	2.07	1	10
Honduras						Mexico					
Variable	Obs	Mean	Std. Dev.	Min	Max	Variable	Obs	Mean	Std. Dev.	Min	Max
Own Education	1000	6.04	4.08	0	16	Own Education	1200	8.61	4.82	0	16
Parental Education	910	2.76	3.78	0	16	Parental Education	1193	5.03	5.05	0	16
White	949	0.19	0.39	0	1	White	887	0.12	0.33	0	1
Female	1000	0.50	0.50	0	1	Female	1200	0.52	0.50	0	1
Parent Income Decile	843	4.06	2.29	1	10	Parent Income Decile	1018	4.59	2.15	1	10
Nicaragua						Panama					
Own Education	1000	5.53	4.72	0	16	Own Education	1000	8.05	4.78	0	16
Parental Education	907	3.61	4.56	0	16	Parental Education	820	4.45	4.98	0	16
White	915	0.09	0.28	0	1	White	984	0.18	0.39	0	1
Female	1000	0.51	0.50	0	1	Female	1000	0.50	0.50	0	1
Parent Income Decile	865	3.36	2.31	1	10	Parent Income Decile	804	4.43	2.15	1	10
Paraguay						Peru					
Own Education	1200	8.89	4.21	0	16	Own Education	1200	9.07	4.79	0	16
Parental Education	995	6.19	4.24	0	16	Parental Education	1162	6.28	5.30	0	16
White	838	0.47	0.50	0	1	White	1082	0.07	0.25	0	1
Female	1200	0.50	0.50	0	1	Female	1200	0.50	0.50	0	1
Parent Income Decile	1122	4.47	1.94	1	10	Parent Income Decile	1093	3.83	2.04	1	10
Uruguay						Venezuela					
Own Education	1200	8.74	3.73	0	16	Own Education	1200	10.62	4.04	0	16
Parental Education	1010	6.77	3.74	0	16	Parental Education	1161	7.36	4.73	0	16

White	1164	0.87	0.34	0	1	White	1094	0.34	0.47	0	1
Female	1200	0.53	0.50	0	1	Female	1200	0.50	0.50	0	1
Parent Income Decile	1023	5.07	2.08	1	10	Parent Income Decile	1057	5.00	1.75	1	10

Note: White is a binary variable indicating self-reported racial origin – question s11; Female is a binary variable indicating whether individual is female; PID stands for parent income 10-quantile classification – question p12stb.