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ASCENDANCE BY DESCENDANTS?
ON INTERGENERATIONAL EDUCATION
MOBILITY IN LATIN AMERICA

by

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PREFACE

Education is a key element for economic and social development. An educated workforce increases the overall productivity of economic activities, allows shifting successfully towards high-growth sectors and facilitates technology absorption and innovation. Beyond strictly economic aspects, education is also critical for the effective functioning of democracy, enabling people to fully exert their rights and responsibilities as citizens.

In principle, access to education could be a powerful tool to widen the set of opportunities for the disadvantaged, but certain conditions have to be met. For example, students should receive an education of similar quality, independent of their socio-economic background. In addition, societies and labour markets should value talent and skills rather than social connections and family background. If these conditions do not hold, returns to investments in education will be low for the vulnerable members of society. These reduced payoffs to acquire more schooling would therefore slowdown social mobility across generations.

The present paper by Christian Daude, economist of the OECD Development Centre, studies the degree of intergenerational transmission of educational outcomes and social status in Latin America. His research shows that Latin America is not only the most unequal region in terms of income distribution, but also opportunities to progress are extremely limited for the most disadvantaged members of society. Furthermore, while for those at the lowest end of the social ladder there have been some improvements in educational outcomes, individuals from the middle are struggling in terms of improving their situation.

One important driver of this low degree of mobility is the relative low degree of effectiveness of public expenditure in secondary education. Thus, reforms on how schools are managed and teacher's are trained and do their jobs might be a fruitful way to explore for policy reform in Latin America. Other areas for reform are the extension of early childhood development programs, setting up financing schemes for tertiary education for students from less advantaged family backgrounds, and policies that increase the social mix of schools. In all these areas, the very diverse and rich OECD experiences could provide some useful insights for effective reform in Latin America.

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March 2011

RÉSUMÉ

Cet article porte sur la mobilité sociale intergénérationnelle en Amérique latine. L'auteur montre que la persistance des résultats scolaires d'une génération à l'autre est grande dans cette région par rapport à d'autres parties du monde. Il ressort que, non seulement la distribution des revenus est très inégale en Amérique latine, mais que de profondes différences en termes d'opportunités persistent d'une génération à l'autre. Cette persistance provient d'une combinaison de facteurs: un rendement élevé de l'éducation, le caractère relativement peu progressif des investissements publics de capital humain et le manque d'accès au financement pour les familles défavorisées ou de la classe moyenne. L'article analyse l'éducation et d'autres politiques sociales susceptibles de promouvoir la mobilité ascendante dans la région.

Classification JEL: I20, J62

Mots clé: mobilité intergénérationnelle, éducation, Amérique latine

ABSTRACT

This paper studies intergenerational social mobility in Latin America. We show that persistence in educational achievements across generations is high compared to other parts of the world. That is, not only is the income distribution in Latin America highly unequal, but profound differences in opportunities persist from one generation to the next. This persistence arises from a combination of factors: high returns to education, relatively low progressivity in public investment in human capital and lack of access to proper financing for poor and middle-income families. Education and other social policies to boost upward mobility in the region are discussed.

JEL Classification: I20, J62

Keywords: intergenerational mobility, education, Latin America

I. INTRODUCTION

It is well known that income inequality in Latin America is extremely high compared to other developing countries as well as high-income countries (*e.g.* see OECD, 2008). In principle, it could be argued this type of static income inequality across individuals (at a certain point in time) is not bad *per se*, as the dispersion in earnings could act as a strong incentive for parents to invest in their children's human capital. However, for poor households to be able to grasp these opportunities, they should have access to well-functioning credit markets.¹ Furthermore, society must be open in terms of giving equal opportunities based on merit and ability, independent of race, gender or social origin.² If either of these conditions are not met, however, then today's social and economic status may be transmitted from parents to their offspring.

The present paper analyses the extent of intergenerational transmission of educational achievements in 18 Latin American economies. In particular, we analyse the issue across several dimensions (gender, age-cohorts, countries and alternative datasets). While there is a large literature on the intergenerational transmission of income and status for developed economies (especially due to better data availability),³ evidence on the extent of intergenerational persistence for developing countries is much more limited. This paper contributes to the small, but growing literature on intergenerational mobility in developing countries.

Methodologically, our approach is close to that of Hertz *et al.* (2007) who study the intergenerational transmission of educational outcomes in 50 developed and developing countries using household surveys. Their sample includes just 7 countries from Latin America. Similarly, Behrman *et al.* (2001) use the same estimation approach for four countries in the region. In contrast, we present estimates for 18 countries in the region, although our smaller samples at the country level lead us to emphasise the common features within the region in our analysis.

1 See Aiyagari *et al.* (2003) for a theoretical model on the importance of credit constraints in the intergenerational transmission of income.

2 Of course, these conditions are hardly met in any developing country. In particular, access to credit and discrimination along several dimensions remain important development problems in Latin America. For household survey evidence of the reduced access of the poor to credit and savings instruments in Latin America see Tejerina and Westley (2007). For a discussion of the evidence on discrimination in Latin America see Ñopo *et al.* (2010).

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.

Behrman *et al.* (1999 and 2001) also use alternative estimates, based on the performance of children currently still in the education system. The basic idea is to analyse the influence of parental background (income, education, etc) on the success/failure of children in school where the outcome is a child's completed grade and that corresponding to the child's cohort. Andersen (2001) and Conconi *et al.* (2007) use a similar approach. A contribution of this paper is that we compare our measures with the results from these papers and analyse the factors that might be driving the existing differences.

Finally, we also use extensively the data from test scores and socio-economic and cultural background available through the OECD's Programme for International Student Assessment (PISA) study. This allows us to analyse the impact on cognitive skills and the quality of education received by students rather than just the *quantity* as most of the previous studies do. We show that this dimension is particularly relevant to understand differences in opportunities and lack of inclusion in Latin American societies.

The remainder of the paper is structured as follows. Section II discusses a brief conceptual framework to analyse the intergenerational transmission of human capital and presents the data used in our empirical assessment. Section III presents the main results for Latin America, emphasising the comparison with other studies, regions and datasets. Section IV explores some of the potential determinants of intergenerational transmission of educational outcomes in the region. Finally, Section V presents the some public policies to boost upward mobility in Latin America.

II. METHODOLOGICAL AND DATA ISSUES

This section presents some technical background material regarding the conceptual framework for the **EMPIRICAL** model, as well as a brief description of our dataset.

II.1. Conceptual framework

In principle, human capital is a key determinant of wage earnings. Therefore, differences in acquired human capital (education) are important to understand static (at a certain point in time) income inequality. This section presents a brief sketch of a model by Solon (2004) that is useful to the intergenerational transmission of income and to assess the central role of education.⁴

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

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

where the left-hand represents disposable income and τ is the tax rate, C is parental consumption and I is investment in the offspring's human capital. 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. Human capital 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. It is important to notice that 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. Human capital increases income via a standard Mincer equation, given by:

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

Assuming that public policy can be represented by:

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

4 This model builds on the influential work by Becker and Tomes (1979; 1986).

where $\gamma > 0$. According to this equation, public investment in children's human capital 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:

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

This last equation is in effect close to what we will be able to estimate, given our dataset. However, it is important to observe that a OLS estimation of equation (7) would be biased and inconsistent, as the error term is correlated with the parent's human capital. In the next subsection we discuss the importance of this problem and how to deal with it. However, it is straightforward to show that the correct steady-state measure of intergenerational transmission of human capital is given by:

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

Thus, in theory the degree of intergeneration transmission (ψ) is an increasing function of the productivity of human capital investment (θ), the returns to human capital (p) and the persistence in intergenerational inheritance of skills and other relevant characteristics (λ), while more progressivity of public investment in education (γ) reduces the intergeneration persistence in educational attainments. Differences across countries should therefore be related to differences in these parameters.

II.2. Empirical estimation

The baseline regression for an individual i in country j we estimate is given by:

$$E_{ij} = \alpha + \beta PE_{ij} + \varepsilon_{ij}, \quad (9)$$

where E stands for person j 's own education attainment, PE the educational attainment by her parents, and ε is a white noise disturbance. There are mainly two alternative measures that could be used to quantify the importance of parental education. The first one is the estimated coefficient of parental education (beta-coefficient, henceforth). Alternatively, one can consider the correlation coefficient between E and PE (correlation coefficient, hereafter).⁵

Alternatively, we include a country fixed-effect, which would allow capturing systematic differences across countries in unobservable factors at the country level that might be correlated with parental education:

$$E_{ij} = \alpha_i + \beta PE_{ij} + \varepsilon_{ij}. \quad (10)$$

We also explore the possibility of a non-linear relationship between intergenerational education attainments by including a squared term of parental education, estimating:

$$E_{ij} = \alpha + \beta PE_{ij} + \delta (PE_{ij})^2 + \varepsilon_{ij}. \quad (11)$$

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

From our discussion of the theory in the previous section, it is clear that OLS estimates of equation (9) – (11) presents the problems of estimating equation (7), as estimates are potentially biased upwards if there is significant transmission of ability and other characteristics from parents to their offspring (*i.e.* the error term follows an autoregressive process). Empirically, the question is how large this bias could be. Clearly, the debate regarding the relative importance of innate characteristics versus environmental conditions (“nature versus nurture”) is not settled (see Björklund *et al.*, 2007), but there is evidence that the inherited of cognitive skills has only limited importance as a driver of intergenerational income mobility (OECD, 2008).

In this sense, an international comparison with OECD countries (especially high-mobility countries) can serve as a benchmark to assess the extent, to which mobility in Latin America could be increased, assuming that the importance of “nature” factors does not vary too much across countries. This seems a reasonable assumption when focusing on education outcomes more than for the case of intergenerational income/earnings transmission where networks, race and other inherited factors might play a much more important role. Furthermore, it can be argued that measurement errors of parental educational outcomes are much smaller than income-related variables.

Another way to frame the estimation problem is that there are omitted variables that are correlated with parental education. For example, the geographic location (rural areas versus cities), race and other factors are clearly candidates. Therefore, as robustness checks of our results we control for some of these factors when possible.

Furthermore, we do not observe the quality of the education perceived in these surveys, while the evidence points at huge differences in the quality of education in Latin America, correlated to the socio-economic status of students. Therefore, we use evidence from the OECD Programme for International Student Assessment (PISA) surveys that allows quantifying cognitive skills in a comparable manner and linking it to the students’ family background.

Finally, it is important to remind that our 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, as it is clearly correlated with education, which is measurable, it is still worthwhile to explore in our view.

II.3. Data description

Tables 1 and 2 present some basic summary statistics of our main variables of interest: (own) education and parental education. Clearly, 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. The increase 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.

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

Country	Education (years)					Parental education (years)				
	Mean	Std deviation	25th percentile	Median	75th percentile	Mean	Std deviation	25th percentile	Median	75th percentile
Argentina	10.4	3.6	7.0	12.0	13.0	7.6	4.2	6.0	7.0	12.0
Bolivia	8.1	5.1	4.0	8.0	12.0	4.8	5.2	0.0	3.0	9.0
Brazil	7.7	4.7	4.0	8.0	11.0	4.3	4.3	0.0	4.0	8.0
Chile	10.6	3.9	8.0	12.0	12.5	8.4	4.5	5.0	8.0	12.0
Colombia	9.1	4.8	5.0	11.0	13.0	5.1	4.6	1.0	5.0	7.0
Costa Rica	7.8	4.4	5.0	6.0	11.0	4.8	4.1	0.0	6.0	6.0
Dominican Rep.	8.2	4.8	6.0	8.0	12.0	5.5	4.9	0.0	5.0	9.0
Ecuador	8.0	4.7	6.0	6.0	12.0	5.4	4.7	0.0	6.0	6.0
El Salvador	6.7	5.0	2.0	7.0	10.0	2.6	4.2	0.0	0.0	5.0
Guatemala	4.5	4.6	0.0	4.0	6.5	2.5	4.0	0.0	0.0	5.0
Honduras	6.0	4.1	2.5	6.5	9.0	2.8	3.8	0.0	0.0	6.0
Mexico	8.6	4.8	6.0	9.0	12.0	5.0	5.1	0.0	4.0	9.0
Nicaragua	5.5	4.7	1.0	5.0	9.0	3.6	4.6	0.0	2.0	6.0
Panama	8.0	4.8	5.0	8.0	12.0	4.5	5.0	0.0	3.0	7.0
Paraguay	8.9	4.2	6.0	9.0	12.0	6.2	4.2	3.0	6.0	9.0
Peru	9.1	4.8	6.0	11.0	13.0	6.3	5.3	1.0	6.0	11.0
Uruguay	8.7	3.7	6.0	9.0	12.0	6.8	3.7	6.0	6.0	9.0
Venezuela	10.6	4.0	8.0	11.0	15.0	7.4	4.7	6.0	6.0	11.0

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

Source: Based on *Latinobarómetro* survey 2008.

In addition, it interesting to point out that there are no significant differences between the average years of education in our sample and those resulting from national household surveys.⁶ Thus, although the sample size by country is considerably smaller, the *Latinobarómetro* surveys do not seem to be considering a population that is significantly different from the national household surveys.

⁶ 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.

Table 2. Descriptive sample statistics of years of education by country

Country	Education (highest level attained)					Parental education (highest level attained)				
	Mean	Std deviation	25th percentile	Median	75th percentile	Mean	Std deviation	25th percentile	Median	75th percentile
Argentina	4.5	1.5	3.0	5.0	6.0	3.4	1.6	2.0	3.0	5.0
Bolivia	3.6	2.0	2.0	3.0	5.0	2.6	1.9	1.0	2.0	4.0
Brazil	3.4	1.7	2.0	3.0	5.0	2.3	1.5	1.0	2.0	3.0
Chile	4.5	1.6	3.0	5.0	5.0	3.6	1.8	2.0	3.0	5.0
Colombia	4.2	1.6	3.0	4.0	5.0	2.9	1.6	2.0	3.0	4.0
Costa Rica	3.6	1.6	2.0	3.0	5.0	2.6	1.5	1.0	3.0	3.0
Dominican Rep.	3.4	1.7	2.0	3.0	5.0	2.6	1.6	1.0	2.0	4.0
Ecuador	3.7	1.7	3.0	3.0	5.0	2.8	1.6	1.0	3.0	3.0
El Salvador	2.9	1.7	2.0	2.0	4.0	1.7	1.3	1.0	1.0	2.0
Guatemala	2.5	1.5	1.0	2.0	3.5	1.8	1.3	1.0	1.0	2.0
Honduras	3.1	1.4	2.0	3.5	4.0	1.9	1.3	1.0	1.0	3.0
Mexico	4.1	1.8	3.0	5.0	5.0	2.8	1.9	1.0	2.0	4.0
Nicaragua	2.9	1.7	2.0	2.0	4.0	2.2	1.6	1.0	2.0	3.0
Panama	3.7	1.7	2.0	4.0	5.0	2.5	1.7	1.0	2.0	4.0
Paraguay	3.9	1.4	3.0	4.0	5.0	3.1	1.4	2.0	3.0	4.0
Peru	4.3	1.9	3.0	5.0	6.0	3.3	2.0	2.0	3.0	5.0
Uruguay	3.8	1.2	3.0	4.0	4.0	3.2	1.3	3.0	3.0	4.0
Venezuela	4.8	1.5	4.0	5.0	6.0	3.6	1.8	3.0	3.0	5.0

Notes: Parental education refers to the highest level attained by the father or mother. Education levels correspond to: 1 (illiterate), 2 (incomplete primary), 3 (complete primary), 4 (incomplete secondary and technical), 5 (complete secondary/technical), 6 (incomplete tertiary), 7 (complete tertiary).

Source: Based on *Latinobarómetro* survey 2008.

Finally, in most countries the data show some intergenerational convergence in the years of education, as 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.⁷ 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 is needed to gain further insight.

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

III. EMPIRICAL RESULTS

In this section, we present the estimates of the measures of intergenerational persistence in educational attainment outlined in Section II.2 above. First, we present the baseline estimations, comparing them to the empirical evidence available for other region, 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 quantile regressions and transition probabilities conditional parental education, as well as the robustness of the results by including additional controls and using alternative estimation techniques. Finally, in section 3 we discuss the relationship between our results and other alternative measures used in the literature.

III. 1. Baseline estimations

Table 3 presents the baseline estimates for the population at least 25 years old in 2008. Column 1 shows that parental education has a statistically significant impact for all specifications considered. In terms of the estimated coefficient, an additional year of parental education increases on average the offspring's education by 0.65 years. Results are very similar for female and male children (columns 2 and 3). Furthermore, including country dummies does not alter significantly this result (see column 4). Alternatively, the correlation coefficient between parental and own educational attainment is around 0.6. Interestingly, this average correlation coefficient for the 18 countries in our sample is very much in line with evidence provided by Hertz *et al.* (2007) based on household surveys for 7 countries in the region (see Figure 1).⁸ How do the magnitudes compare in the international context? According to Hertz *et al.*'s 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.

Furthermore, columns 5 and 6 show that there is a concave relationship between own education and parental education.⁹ This result could be driven by the fact that upward mobility is far 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. We explore these issues of differences in educational persistence along the distribution in the next section. Considering the

8 These are Brazil, Chile, Colombia, Ecuador, Panama, Peru, and Nicaragua.

9 The estimates in column 5 and 6 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 far beyond the maximum of 16 years observed in our sample.

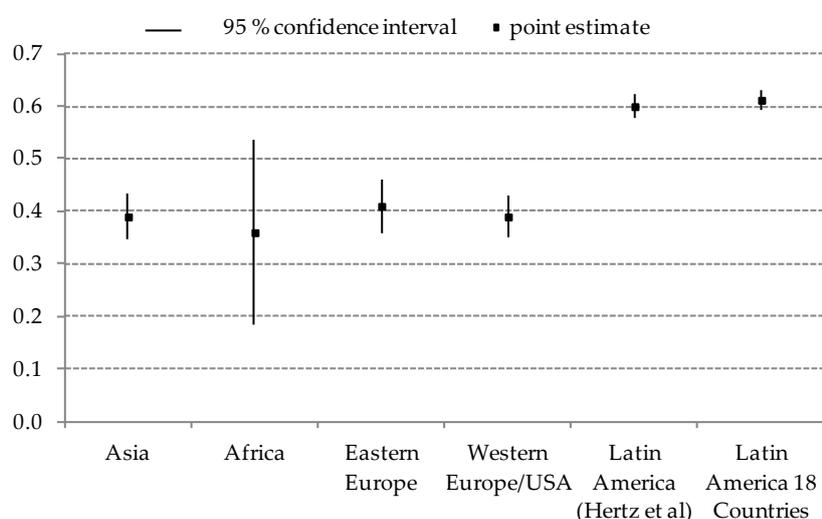
correlation coefficient measure of persistence, adding the squared term does not significantly increase the importance of parental background.

Table 3. Baseline regression results (OLS estimates)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
	All	Men	Women	All [#]	All	All [#]
Parent education (years)	0.653*** [0.006]	0.645*** [0.009]	0.660*** [0.009]	0.605*** [0.007]	0.938*** [0.019]	0.852*** [0.021]
Parent education squared					-0.022*** [0.001]	-0.019*** [0.001]
Constant	4.933*** [0.049]	5.071*** [0.072]	4.809*** [0.066]	6.027*** [0.120]	4.552*** [0.056]	5.529*** [0.129]
Observations	14196	6714	7482	14196	14196	14196
R-squared	0.374	0.375	0.372	0.403	0.384	0.410
Correlation coefficient	0.612	0.612	0.610	0.566	0.620	0.573
Country dummies	No	No	No	Yes	No	Yes

Notes: Robust standard errors in brackets. *** significant at 1%, ** significant at 5%, * significant at 10%. # Here the correlation coefficient refers to the partial correlation (between residuals of regressing in a first step parent and child education on country dummies).

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 Viet Nam; 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 Latin America 18 countries.

How does the intergenerational persistence in educational attainments vary across cohorts? Figure 2 and 3 present OLS estimates (including country dummies) for four separate cohorts. With respect to the persistence measure based on the estimated coefficient, there is a statistically significant and steep decline in the intergenerational transmission coefficient for both women and men with respect to their parent’s education. Thus, considering this first measure, the intergenerational transmission for individuals in the between 25 and 34 years-old cohort is between 23% and 33% smaller (women and men, respectively) to those over 55 years-old in 2008. Nevertheless, if we consider the correlation coefficient things change dramatically. There is basically no significant change across generation in this measure of education persistence.¹⁰

Figure 2. Beta-coefficient persistence

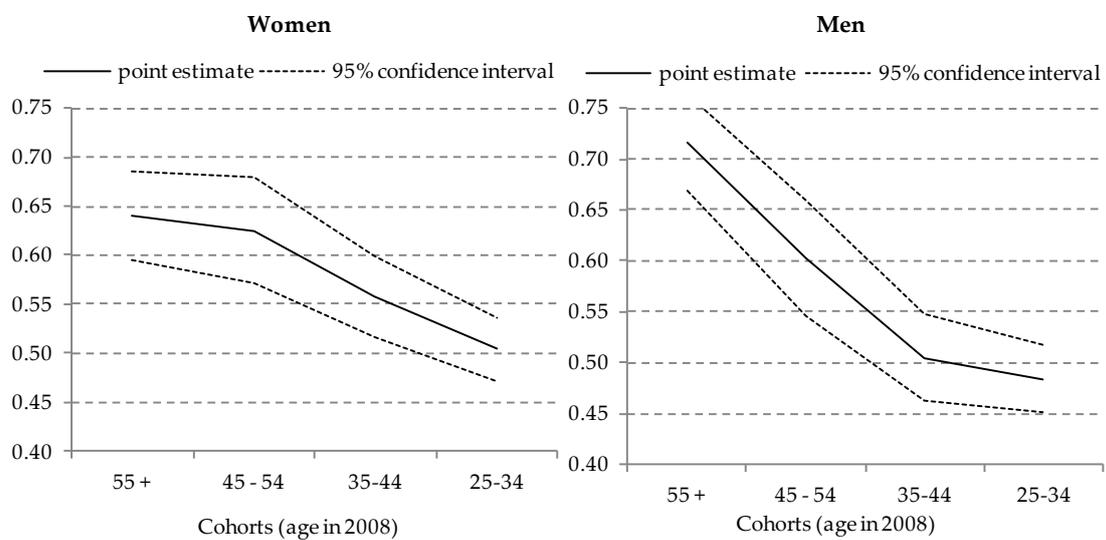
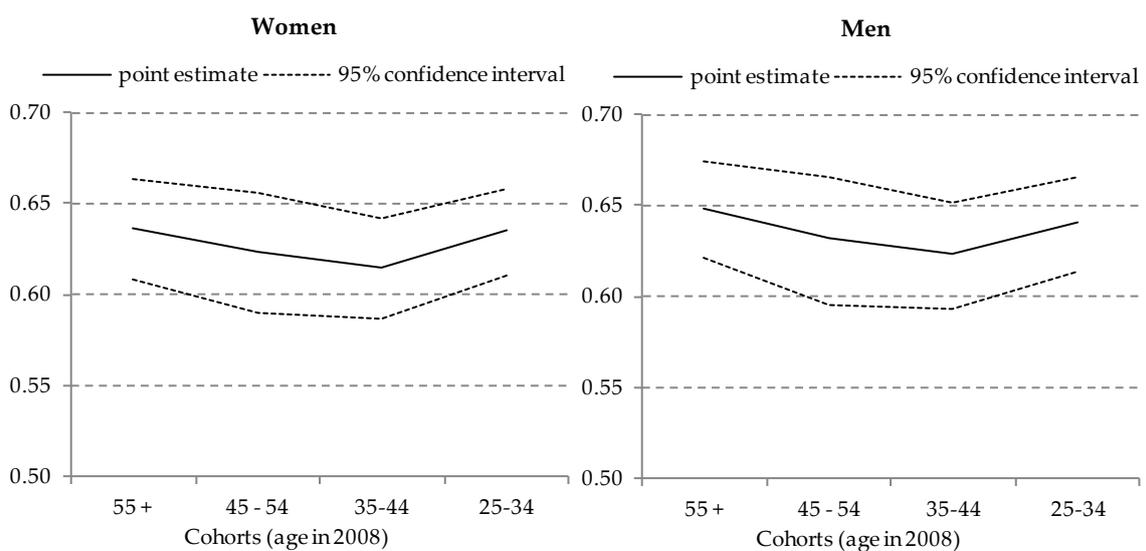


Figure 3. Correlation coefficient



10 This result has also been found by Hertz *et al.* (2007).

What explains this divergence between both measures? It is useful to remind that both measures are related, for each cohort i the following relationship holds:

$$\beta_i = \frac{\sigma_{E_i}}{\sigma_{PE_i}} \rho_{E_i, PE_i}, \quad (12)$$

where σ stands for the standard deviation and ρ is the correlation coefficient. Thus, the correlation coefficient is equivalent to the β -coefficient, adjusted by the relative variation in parental and own education. Thus, changes in the relative standard deviations will cause both measures to evolve differently. 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), but the dispersion in parental education is significantly higher for younger cohorts. Thus, the β -coefficient is lower for the young cohorts, mainly because of this issue. Clearly, the choice between these measures, depends on if interpersonal differences in educational attainment are assessed in relation to the overall dispersion in attainments or not.

Figure 4. Sample moments by cohorts

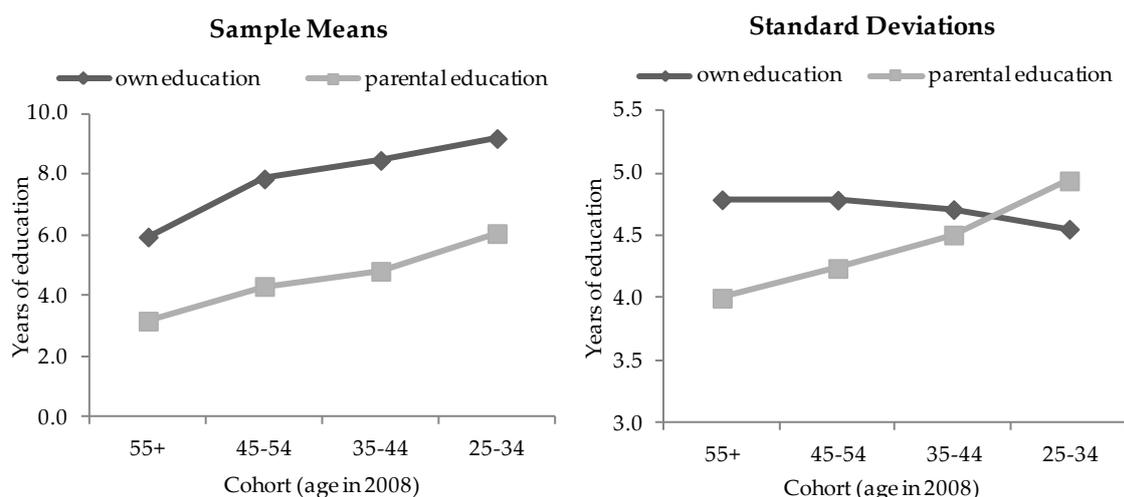


Table 4 shows the estimates for both measures of intergenerational persistence by country. There is considerable variation in the region in both measures. For example, while Costa Rica presents a β -coefficient of 0.36, for Guatemala it is 0.68, almost twice as large. These differences are economically 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 America¹¹ – these extra years could translate into a differential in wage earnings of 19% and 41%, respectively.¹² In general, countries that rank show a high persistence using the beta-coefficient

11 Psacharopoulos and Patrinos (2004).

12 Of course, many of the differences between the point estimates are not statistically significant at standard levels of confidence.

measure also present high correlation-coefficient persistence.¹³ The case of Chile is somewhat atypical, given that it ranks relatively well in terms of the beta-coefficient measure, but the standardised measure – the correlation coefficient – is among the highest in the region. Thus, while an additional year of parental education implies “only” 0.57 additional years for the offspring, the importance of parental education to explain the variation in educational attainment of their children is very high in Chile.

Table 4. Intergenerational persistence in educational attainments by country

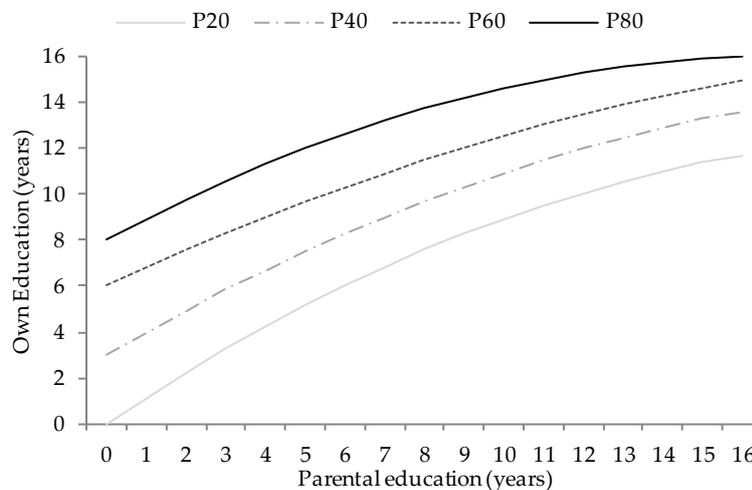
Country	Correlation Coefficient			Beta Coefficient		
	Lower 95% bound	Point estimate	Upper 95% bound	Lower 95% bound	Point estimate	Upper 95% bound
Costa Rica	0.293	0.362	0.427	0.326	0.407	0.489
Honduras	0.344	0.409	0.470	0.395	0.475	0.556
El Salvador	0.424	0.481	0.533	0.548	0.629	0.710
Colombia	0.461	0.510	0.556	0.530	0.594	0.658
Venezuela	0.471	0.520	0.565	0.422	0.472	0.522
Argentina	0.493	0.542	0.588	0.433	0.483	0.533
Uruguay	0.510	0.559	0.603	0.540	0.601	0.661
Brazil	0.517	0.564	0.607	0.627	0.695	0.762
Nicaragua	0.509	0.564	0.614	0.558	0.629	0.699
Peru	0.547	0.591	0.632	0.518	0.568	0.619
Paraguay	0.543	0.592	0.637	0.564	0.626	0.688
Mexico	0.557	0.597	0.636	0.567	0.618	0.669
Panama	0.567	0.617	0.663	0.586	0.650	0.714
Bolivia	0.575	0.620	0.661	0.593	0.651	0.708
Dominican Rep.	0.588	0.641	0.689	0.663	0.739	0.815
Ecuador	0.609	0.648	0.684	0.657	0.711	0.765
Chile	0.633	0.672	0.707	0.530	0.573	0.615
Guatemala	0.632	0.677	0.718	0.779	0.853	0.926

III.2. Extensions and robustness checks

Is this bleak picture repeated across all levels of education? The answer can be explored from two viewpoints. The first is to study the persistence between parental and child education for different levels of child education, for which we estimated quantile regressions of equation (12). The predicted levels of education for different quintiles are presented in Figure 5. If parental education were not important at a certain level, we should observe a flat line. More in general, differences in the slope across quintiles would imply a varying persistence in educational attainment. There are significant differences between the upper quintile and the lowest quintile, with parental background being more relevant for lower levels of education. This difference implies a differential impact of around additionally 0.25 years for individuals with low levels of education.

¹³ The correlation coefficient between the two measures in our sample is 0.75.

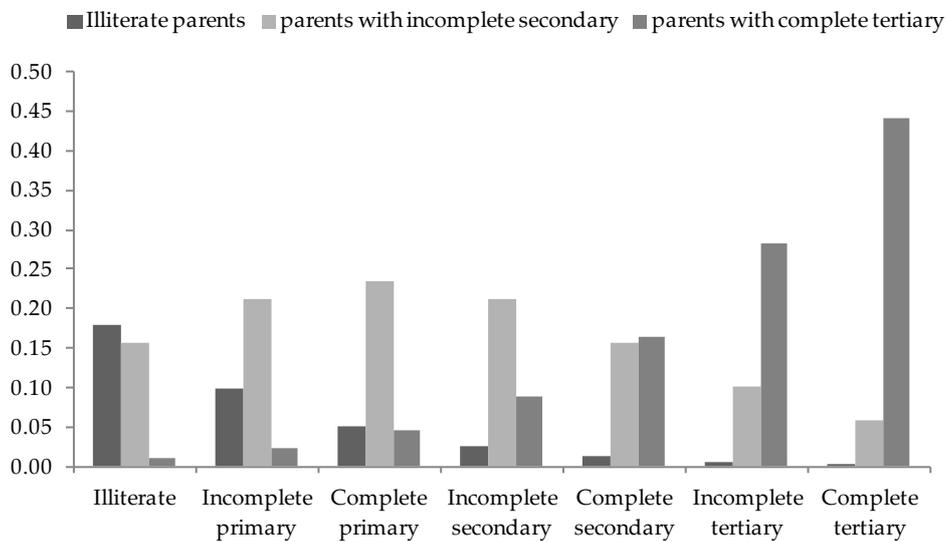
Figure 5. Predicted level of education by selected percentiles of own education
(based on quintile regressions)



The other 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 6. The graph exhibits striking differences. The probability of being illiterate given that your 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 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 basically zero.

This analysis shows that the high persistence of educational achievements in Latin America can be explained by very low downward mobility at the top, while children from middle-sectors have still a very hard time to move beyond secondary education and present a considerable risk of moving downwards. Furthermore, the most disadvantaged are most likely to have very limited opportunities to move upwards beyond some primary education.

Figure 6. Marginal probabilities of completing indicated levels of education (Conditional on parents' educational attainments)



A final set of robustness checks refers to the inclusion of additional variables, such as race (self-reported white versus non-whites), geographical location (rural versus urban) and female marital status (married or living with partner versus rest). We include these additional controls in the regressions presented in Table 5, both as additional regressors and also interactions with parental education allowing for a differential effect across groups.

Table 5. Additional Controls

Sample	(1) All	(2) All	(3) All	(4) All	(5) All	(6) All	(7) Female	(8) All
Parental Education	0.597*** [0.008]	0.605*** [0.009]	0.566*** [0.008]	0.656*** [0.012]	0.605*** [0.007]	0.620*** [0.011]	0.652*** [0.016]	0.674*** [0.017]
White	0.202** [0.087]	0.327*** [0.121]						0.237** [0.119]
Parental Education x White		-0.024 [0.016]						-0.014 [0.016]
Large City			1.454*** [0.070]	2.062*** [0.095]				2.126*** [0.101]
Parental Education x Large City				-0.141*** [0.015]				-0.152*** [0.016]
Married					0.145** [0.068]	0.263*** [0.097]	0.510*** [0.130]	0.291*** [0.100]
Parental Education x Married						-0.025* [0.014]	-0.061*** [0.020]	-0.025* [0.015]
Constant	5.965*** [0.159]	5.948*** [0.160]	5.318*** [0.142]	5.006*** [0.146]	5.974*** [0.148]	5.901*** [0.154]	5.756*** [0.208]	4.764*** [0.179]
Observations	12942	12942	14196	14196	14032	14032	7405	12795
R-squared	0.406	0.406	0.421	0.425	0.404	0.404	0.404	0.427

The results show that overall the baseline estimates from Table 3 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 persistence of parental education between white and non-white individuals (columns 1 and 2). People living in large cities have on average 1.5 more years of education and the transmission of parental education is somewhat smaller (a beta-coefficient of around 0.52 versus 0.66 for small cities/rural areas). In addition, individuals that are married or live with their partner (especially women) have higher levels of education and also present level intergenerational persistence of educational attainments, but the differences tend to be small economically (columns 5 – 7).

III.3. Alternative measures and data sources

The analysis presented so far could be subject to two critiques. First, it is based on people who are active in the labour market and have already left the education system. Thus, framework conditions could have changed recently. Clearly, such changes would not be picked up by our previous analysis. Furthermore, from a policy viewpoint, it could be argued that a focus on the population currently in the education system allows for better targeted policies. Second, so far we have focused only on the *quantity* of education regardless of differences in *quality*. However, intergenerational persistence is likely to be higher if the quality of the child's education increases with the level of education of the parent. Next, we use alternative datasets to explore the relative position of Latin American economies once we take into account these problems.

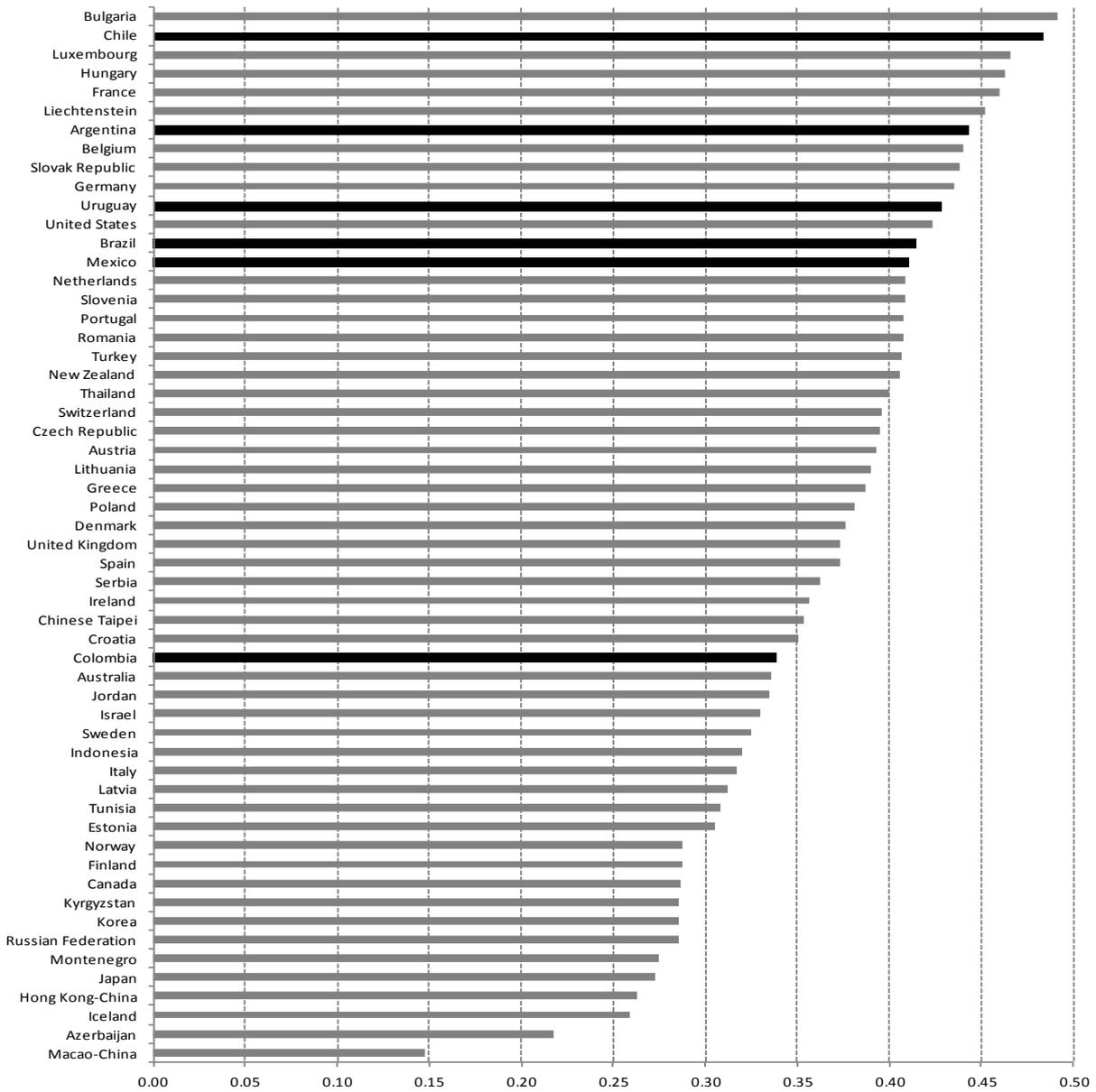
Programme for International Student Assessment (PISA)

An alternative source to test the importance of parental background comes from the OECD PISA database. The 2006 round of PISA consists in a standardised test of 15-year-olds in 57 countries, including six Latin American economies. In addition to test results, the database has also detailed information about schools and parents. In particular, to test for the importance of family background, we regress the test scores on the Economic, Social and Cultural Status (ESCS) index. This index is the normalised principal components of a series of variables that include the household's wealth, educational and cultural resources, parental education and occupational status.¹⁴

Figure 7 presents the correlation coefficient between the ESCS index and test scores for all countries surveyed by PISA. With the exception of Colombia, the remaining five Latin American countries present relatively high levels of correlation, ranking above the 0.38 average for OECD countries. Thus, the PISA data point in a similar direction to the indicators based on *Latinobarómetro* surveys: social mobility in Latin America is considerably lower than in the average OECD country. PISA scores measure *cognitive skills* – more linked to the quality of education students receive. Thus, the results show that the quality of education a child receives in any of the six Latin American countries is still very much linked to its socioeconomic background.

14 See PISA 2006 technical report at www.pisa.oecd.org/dataoecd/0/47/42025182.pdf for more details.

Figure 7. Correlation coefficient between socioeconomic background and science test scores



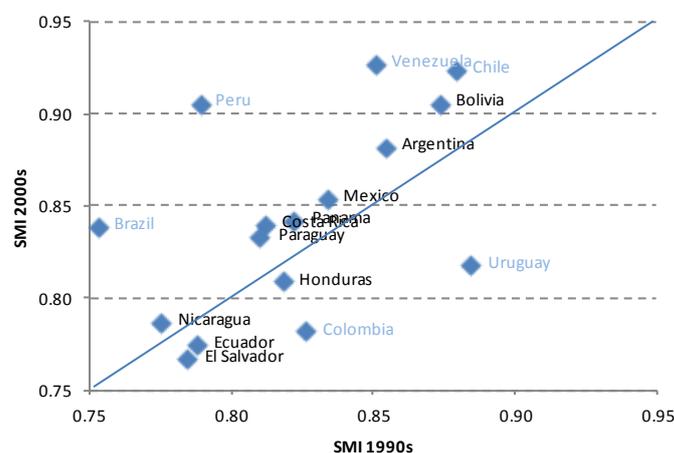
Source: Based on PISA 2006 database.

Mobility indicators based on educational attainment of cohorts still in school

A number of researchers have pursued an alternative way of assessing intergenerational mobility by studying the importance of parental background (education of the parents and income, among other variables) in explaining the differences in the schooling gap – that is the difference between the highest grade the child has achieved and where it should be according to

its age – across households within each country.¹⁵ The thinking behind this is that when family background is an important explanatory factor these characteristics are more likely to persist across generations and therefore mobility will be lower.

Figure 8. Social mobility index 1990s versus 2000s



Notes: Countries in light blue present changes that are significant at the 95% confidence level. The social mobility index (SMI) is computed using a Fields decomposition of the importance of the household's income per capita and the highest level of parental education in explaining the schooling gap of 13-19 year-old children in a regression that includes other control variables. The SMI is bounded between 0 and 1, with higher values representing higher levels of social mobility. See Conconi *et al.* (2007) for more details.

Source: Conconi *et al.* (2007).

Figure 8 shows the evolution of a social mobility index (SMI) derived from this type of analysis for a series of Latin American countries. For 11 out of the 16 countries considered, mobility has increased (though the change is only statistically significant for Brazil, Chile, Peru, and Venezuela), while mobility has declined significantly only in Colombia and Uruguay. The picture painted supports the view that some countries have improved mobility in recent times. Chile and Peru, for example, which seem low-mobility countries when analysed using older cohorts, appear much more mobile here. In the case of Chile, this is consistent with evidence that the importance of family background in explaining math test scores has diminished significantly over the last decade.¹⁶

The apparent discrepancies with the analysis based on SMI indices – notably in the case of Chile – are the result of differences in the underlying educational measures. While the SMI index improves when the *quantity* of education expands (as well as completion rates increase), PISA scores measure *cognitive skills* – more linked to the quality of education students receive. Given that most reforms during the 1990s focused on expanding coverage and reducing repetition rates, it is natural to observe an improvement in mobility indices based on these

15 See Anderson (2001), Behrman *et al.* (2001) and Conconi *et al.* (2007). The region is a good target as the required data are available for a large number of countries.

16 Larrañaga and Teilas (2009).

phenomena. Indicators based on quality, on the other hand, show that the quality of education a child receives in any of the six Latin American countries is still very much linked to its socioeconomic background.

IV. WHAT DRIVES INTERGENERATIONAL PERSISTENCE?

Going back to our conceptual framework from section 2, using equations (5) and (7) it is straightforward to show that the variance in steady-state (log) income is given by¹⁷:

$$\text{var}(\log y) = \frac{(1 + (1 - \gamma)\theta p \lambda)p^2}{(1 - (1 - \gamma)\theta p \lambda)(1 - \lambda^2)[1 - (1 - (1 - \gamma)\theta p)^2]} \sigma_v^2, \quad (13)$$

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 human capital investments (θ), and the returns to human capital (p), 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 persistence 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.

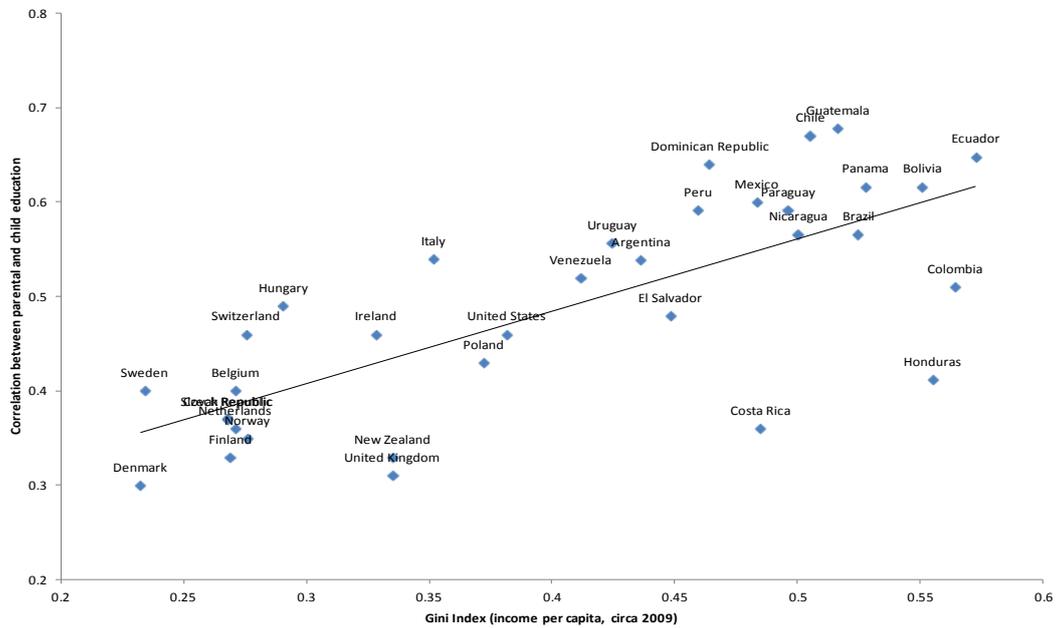
In line with this theoretical result, Figure 9 shows that intergenerational persistence in education outcomes is significantly associated with static income inequality as measured by the Gini coefficient.¹⁸ Societies that are less mobile tend also to exhibit high levels of inequality. In Latin America, only Costa Rica and Honduras seem to be outliers, with social mobility much higher than expected given their distribution of income.¹⁹ There are several ways this correlation can be interpreted. According to the analytical framework, the same factors that affect intergenerational mobility (private returns to human capital, 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.

17 See Solon (2004) for details.

18 The correlation coefficient is 0.74, significant at standard levels of confidence.

19 Of course, it is hard to establish causality. If the objective were 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.

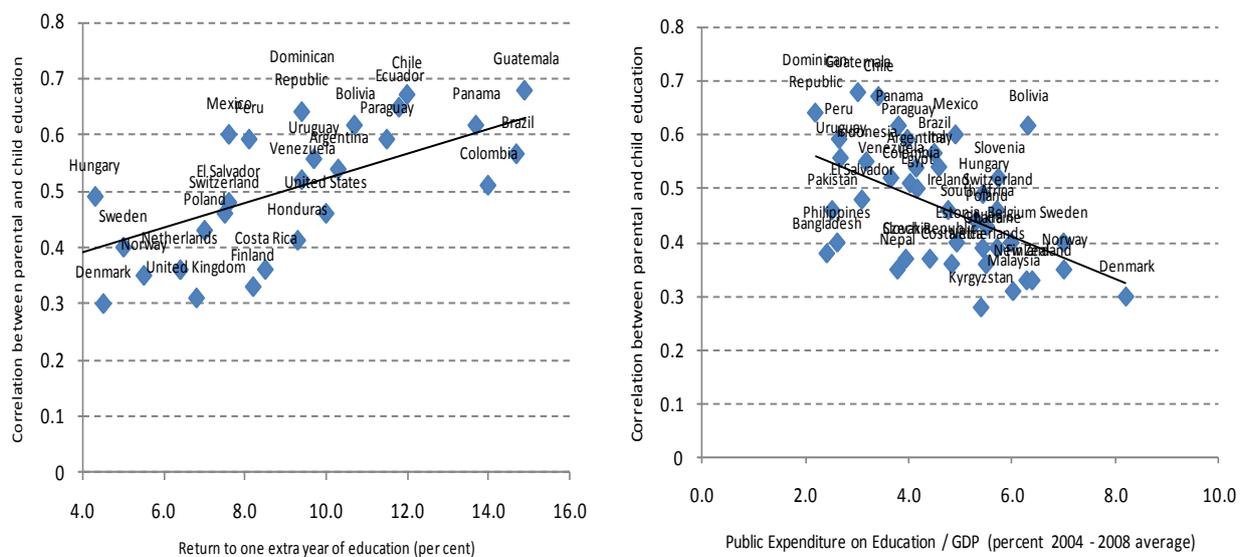
Figure 9. Income inequality and intergeneration persistence in education



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,²⁰ suggesting that public investment in education could foster mobility in the region (Figure 10, right-hand panel).

The problem is that not only is little spent on education in the region, but 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.²¹

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 human capital,²² and in Latin America access is limited to the point that it is likely to be holding children back from pursuing further studies. 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.

Social exclusion and discrimination

There is a considerable split within the population enrolment in private schooling in Latin America, with the affluent going to private schools and the poor and middle class concentrated in the public system. As Figure 11 shows, while in the poorest income quintile enrolment in private primary schools is just 4%, for the richest it represents almost 50%. For secondary schooling the trend is similar, with tertiary education presenting also a much higher incidence of private schools for low-income households.

This shape is consistent with the relatively poor performance of the region's schools in the PISA survey's measures of social inclusiveness (see Figure 12).²³ The six countries from Latin America are clustered at the bottom of the distribution, less inclusive than either the OECD average or most of their developing peers.

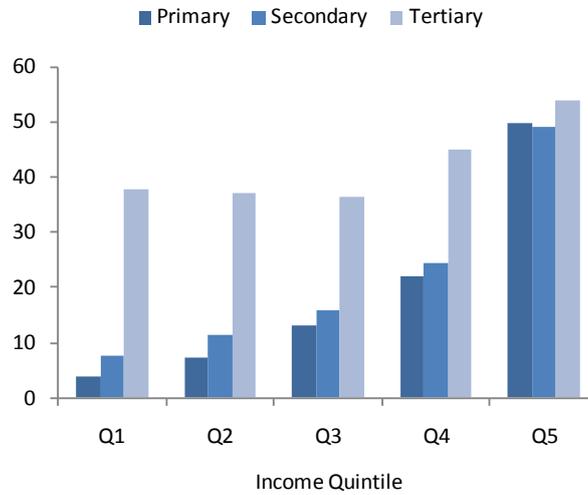
20 Again, the correlation coefficient (-0.52) is significant at standard levels of confidence.

21 See OECD (2010).

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

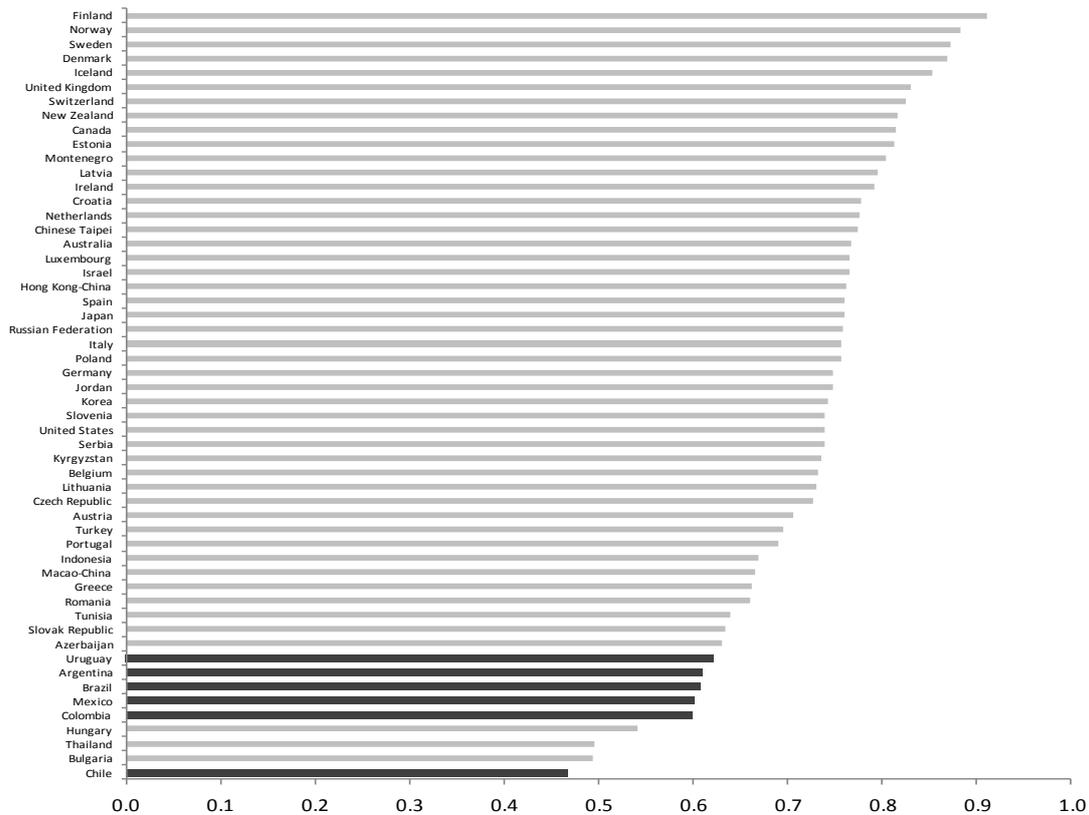
23 The index is based on a variance decomposition between and within schools of an index of economic, social and cultural status (ESCS). Values close to 0 imply that most of the variation in the ESCS is due to differences across schools, such that individuals that go to the same school tend to have similar backgrounds, while a value close to 1 implies that students with very different socioeconomic backgrounds go to the same school.

Figure 11. Percentage of students enrolled in private establishments by income group



Source: SEDLAS database, accessed April 2010, based on the latest available national household surveys, circa 2008/2009.

Figure 12. Social inclusion index in secondary schools by country



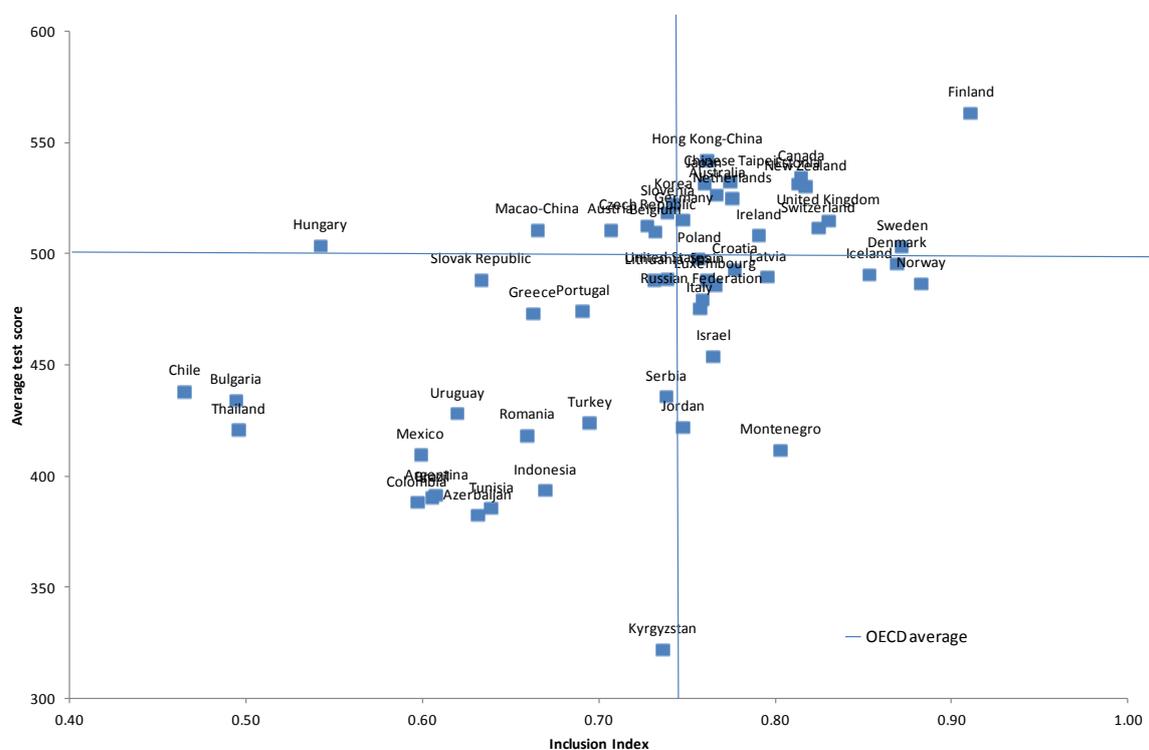
Notes: The index of inclusion is based on a variance decomposition of the PISA index of economic, social and cultural status (ESCS). It represents the proportion of the variance in the ESCS index within schools.

Source: OECD PISA 2006 database, Table 4.4b.

Low social inclusion in the education system will have two negative effects on inter-generational social mobility. Where the quality of education is significantly higher in the private system, – as it usually is – then the problem middle class and poor children have in access to education is compounded by each year of education they do get yielding lower private returns in the labour market. Second, lack of social inclusion and therefore mixing across class groups will compromise social networks for those lower down the scale.

There is some evidence for both of these effects in data from Peru which shows that returns to private education are significantly higher than to public in terms of wage-earning power – and have been increasing over the last two decades.²⁴ The difference is greatest at the primary and secondary level, precisely where the class groups are most heterogeneous in schooling. In assessing the causes of this it is difficult to disentangle the value of access to “high-value” social networks from differences in the quality of education.

Figure 13. Correlation between PISA science test scores and social inclusion index



Notes: The index of inclusion is based on a variance decomposition of the PISA index of economic, social and cultural status (ESCS). It represents the proportion of the variance in the ESCS index within schools. The test scores refer to the national average score in science normalised to have an average across OECD countries of 500 and a standard deviation of 100.

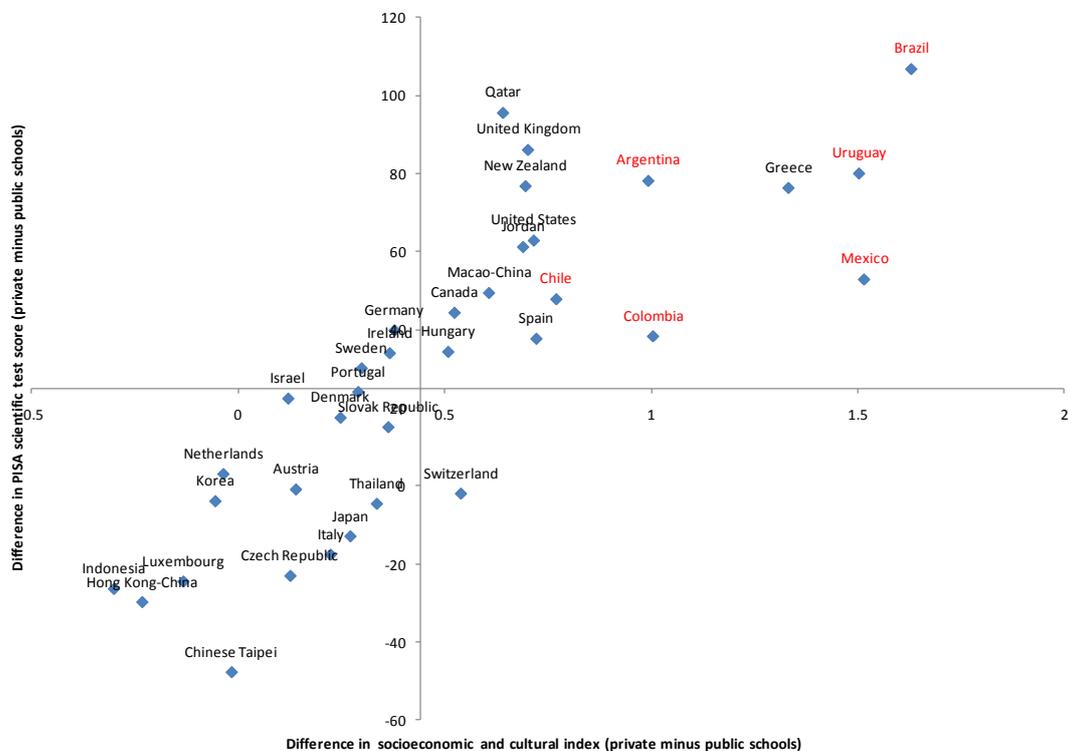
Private schools in Latin America are certainly selective. This might work to society’s advantage if they and the public schools play to their pupil’s strengths. Figure 13 plots the degree of inclusiveness of the education system and average PISA science test scores across

24 Calónico and Ñopo (2007). Not all private schools are the same; within the private system there is a considerable amount of heterogeneity in terms of the quality of education.

countries. It shows that more inclusive systems are generally associated with better overall educational outcomes (this relationship is statistically significant). Does Latin America buck the trend? No. In fact all six countries from Latin America are in the “bad” quadrant of below average performance even given their low levels of inclusiveness.²⁵

Figure 14 perhaps shows why parents persist with private education when they can. It shows the close association between differences in the socioeconomic background of secondary school students at private and public institutions and the differences in their average science test scores.²⁶ The differences in both test scores and socioeconomic background of students in Latin America are huge – even compared to other developing countries. For example, in Brazil, students in the private system on average perform better than those in the public system by a little more than 100 points. This implies approximately that a student in the private system in Brazil has additional cognitive skills comparable to almost three extra years of education.²⁷

Figure 14. Private and public education: differences in performance and socioeconomic status



The problem from society’s perspective is that this outperformance is not the result of private schools in Latin America being particularly good. In fact compared with the rest of the sample, private schools in Latin America underperform given the socioeconomic background of their pupils. If the relationship between socioeconomic background and test scores were the

25 Of course, this finding does not necessarily imply any causality.

26 The correlation coefficient is 0.82, significant at conventional levels.

27 Studies based on PISA data for OECD member countries show that a difference of 38 points in science scores correspond on average to a difference of one year of study.

same in Latin America as the average outside the region, test score differences would be significantly higher: in Brazil the test score advantage would be 136 instead of 106 (a difference of almost an additional year of education in terms of cognitive skills); in Uruguay 124 instead of 80; in Mexico 125 instead of 53; in Colombia 80 instead of 38. Only Argentina and Chile perform close to the average.

In summary, the current education framework in the region promotes selection for those who can afford it. By itself selection tends to depress overall educational outcomes, and the region's private schools compound this by failing to make the most of their privileged intake. Nevertheless, selection succeeds in boosting the relative position of those in the upper layer. A system that under-delivers and comes at the price of perpetuating inequalities will therefore continue to be something that parents aspire to – at least until policy provides them with an attractive alternative.

V. POLICY IMPLICATIONS AND CONCLUSIONS

The analysis in the previous sections has documented the relatively low degree of intergenerational social mobility in Latin America and the importance of parental background in determining educational success. Low access to educational services in both quantity and quality is a problem for the region's poor and middle sectors compared to their peers in OECD countries as well as affluent households in their own countries. The good news is that these issues are amenable to policy action, as empirical evidence for OECD countries shows (see OECD, 2010). The bad is that any deep reform of education system will take sustained effort, since success can only be measured over the period of a school career.

Early childhood development

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.²⁸ Conditional cash-transfer programmes (like *Bolsa Família* 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.²⁹ Furthermore, 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.³⁰ There is no reason to suppose that an expansion of ECD programmes to cover a significant part of the population in Latin America would not bring similar benefits.³¹ Yet there are many countries in the region where enrolment rates of children in pre-school programmes are still low, even among the richest quintile. Of course, 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.

28 See Vegas and Santibáñez (2010).

29 See de Janvry *et al.* (2006).

30 Causa and Chapuis (2009).

31 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.

More and better secondary education

While enrolment rates in primary education have generally reached the Millennium Development Goals,³² secondary schooling is far from being universal across either the disadvantaged or the middle sectors in most countries in the region. 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 parental education as a result of the expansion of compulsory education have a significant positive effect on the educational outcomes of their offspring.³³ Such an extension of compulsory education requirements might have the greatest impact for the middle sectors. For poorer households there may be need for a material incentive to ensure compliance.³⁴

The complement to increasing the quantity of public education will be increasing its quality. An important aim in itself, better quality would also boost equity in education. It would narrow the gap between public and private education, reducing the differences in the skills acquired by the disadvantaged and the middle sectors with respect to the affluent. It should also reduce the drop-out rate and increase demand for education, given the greater returns that would be expected to flow from a given investment of time. Middle-sector parents, able to support their children yet with much scope to increase education, might be well placed to respond to such measures, especially at the secondary level.

How to increase quality? Although there is no unique path or instrument to achieve this goal, schools and teachers are going to be at the heart of any meaningful reform. Better administration of schools, meaning greater flexibility combined with more accountability and a modern system of evaluation and incentives for school administrators can improve the return on current expenditures. Countries need to think about effective incentive structures for teachers, while also upgrading the skills and qualifications of the teaching base. Experiences in OECD countries provide a useful guide to what has proved effective – and ineffective (OECD, 2009b).

Better social mix within schools

Social policies should seek to reduce inequalities in access to high-quality education. Within the public system, instruments should aim to limit selection to prevent schools picking

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

33 Oreopoulos *et al.* (2006).

34 Of course, compulsory education could also be extended to pre-school levels, in combination with ECD programmes.

only students from similar socioeconomic backgrounds.³⁵ Reserving slots for children from outside a school's catchment area and allowing parents to choose public schools in other neighbourhoods would foster greater social diversity. Housing and urban planning policies have a role to play in this too. As academic selection – highly correlated to socioeconomic background – is often the solution in the case of over-subscribed schools, some combination of residence criteria and lotteries have been used in several OECD countries to avoid a deterioration in equity.³⁶

Given the importance of private provision of educational services in the region, policies aimed only at public schools may not be enough – though combined with an increase in the quality of public education they would help reduce the current gap. However, programmes that promote a better social mix, such as vouchers and school choice or affirmative action, are likely to be ineffective if students and their families do not identify themselves with the objectives of the school and their peers.³⁷

Financing tertiary education

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.

Redistributive policies and income support

Finally, many of the 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 MacLeod and Urquiola (2009).

36 See Field *et al.* (2007) for more details, especially chapters 3 and 5.

37 See Akerlof and Kranton (2002).

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