Intergenerational Mobility in Latin America: Deeper Markets and Better Schools Make a Difference

By Nancy Birdsall, Miguel Szekely
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Executive Summary

The effects of market reforms on poverty and inequality in Latin America have been of considerable concern. The region continues to have relatively great income inequalities. But measures of income inequality based on cross-sectional annual data are "snapshots." Two different societies with the same "snapshots" of income distribution may have different levels of social welfare because they have different degrees of social mobility.

In this paper we address the question whether the reforms of the last decade, implemented in various degrees in different countries, have affected mobility across generations. We analyze the effects of macroeconomic conditions and education policies on intergenerational mobility, using data from 28 household surveys, covering 16 countries over the years 1980–1996.

First, we present arguments about why family background is likely to be associated with schooling and how that association will depend on market reforms and on education policies. Then we measure the extent of schooling gaps for children in different age and household income groups for each country at different time periods and estimate the effect of family background on those schooling gaps. We use our estimates to construct two indices of intergenerational mobility. We then use the indices to explore to what extent intergenerational mobility is associated with country and period-specific macroeconomic and education indicators, which in turn reflect recent and current economic and social policies.

Our empirical results have important implications. First, reinforcing the findings of numerous studies based on single surveys, results from all our surveys show a clear negative association between parents' income and education and children's schooling gaps, with differences across countries, across time, across parental schooling quintiles, and across child age groups generally along lines one would expect. Second, and a new contribution, we find that better developed markets—in particular financial markets—increase social mobility by de-linking educational outcomes for individuals from family background; this finding is consistent with the theory that poor capital markets inhibit private investment in schooling, particularly among the poor who cannot easily finance schooling and borrow against their children's future income. Finally, our findings suggest what kinds of education policy are likely to enhance mobility. Higher spending per school-age child on primary education and better quality primary and secondary schooling are positively associated with intergenerational mobility, while relatively greater public spending on tertiary education may actually reinforce the impact of family background and reduce intergenerational mobility.

We conclude that though the immediate effects of economic and social reforms on current income distribution in Latin America may not be that strong, they are likely to have the long-run effect of increasing intergenerational social mobility.

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INTRODUCTION

The effects of market and policy reforms on poverty and inequality in Latin America and the Caribbean have been a topic of considerable recent discussion. Agreement is increasing that these reforms have had positive effects in reversing poverty increases due to economic crises in most countries in the region in the 1980s. At a minimum it is clear that the poor fared worse in the counties that delayed reform the longest. Agreement is less uniform regarding the effects of reform on income distribution. Some recent studies suggest that reforms have halted and perhaps reversed trends towards increasing inequality, while others are less optimistic. In any case the region continues to have relatively great income inequalities in comparison with other major regions (e.g., Deininger and Squire 1996), and it is unlikely that there will be radical changes in these income inequalities in the near future. Some commentators (e.g., Berry 1997, Schemo 1998) suggest that such inequalities may make the sustainability of reforms in the region very difficult, particularly in light of heightened public expectations of benefits from post-reform growth within the more democratic political contexts of most countries in the region.

But income inequality measurements in cross-sectional data are "snapshots" each at a point of time. In practice, income distributions change over time under the effect of different transition mechanisms. Transition mechanisms may affect social welfare by changing the shape of the "spot" income distributions captured in the usual "snapshots." Two different societies with the same "snapshots" of income distribution at a point of time may have different levels of social welfare because they have different degrees of social mobility. For example, Friedman (1962) argues that a given extent of income inequality in a rigid system in which each family stays in the same position in each period may be more a cause for concern than the same degree of income inequality due to great mobility and dynamic change associated with equality of opportunity. Birdsall and Graham (1998) similarly argue that to assess the impact of market reforms in the region and the probable sustainability of these reforms—including the political support for these reforms—it is essential to characterize the degree of social mobility both across generations and within generations, and whether such mobility has been affected by the recent reforms. To date, however, little attention has been paid to measuring social mobility and changes in such mobility in the region and how such changes may be related to economic and social conditions and policies.

Schooling is thought to be a major mechanism through which intergenerational social mobility is affected. If schooling has great impact on income and if schooling is strongly affected by family

background, intergenerational correlations in incomes across families will be high and intergenerational social mobility as measured by intergenerational relative income changes will be low. If family background plays a minor role in determining schooling, on the other hand, intergenerational social mobility as indicated by relative intergenerational income movements may be high.

In this paper we explore some dimensions of the strength of the association of family background with child schooling and whether the strength of this association is related to some economic and education indicators. Of course there are many previous studies of associations between some dimensions of family background and schooling of children. These studies tend almost always to find significant associations of child schooling with mother's schooling and with father's schooling, with the former about 10 percent larger than the latter at the median of estimates that include both. They tend, in about three-fifths of the cases, to find significant associations with household income or some major component of household income.

But most of these studies are for one sample in a particular country at a particular point of time. No previous studies to our knowledge explore how the association of family background with child schooling may vary across countries and over time, as a function of overall economic conditions and past and current policies.

The paper is organized as follows. In the next section we summarize some standard arguments about why family background is likely to be associated with schooling and how that association can depend on market reforms and other aspects of the policy environment such as public resources devoted to schooling. In the following section we describe the extent of child schooling gaps overall and across parental schooling quintiles and child age groups and characterize the empirical association of family background—as represented by household income, father's schooling, and mother's schooling—with schooling for children aged 10–21 in Latin America based on micro data from 28 household surveys from 16 countries for the 1980–1996 time period. Estimates are made of the associations between the schooling gap—measured as expected schooling (the number of years of school an individual would have if she or he entered school at age six and advanced one grade every subsequent year) minus the number of years of school that individual actually has—and family background for each parental schooling quintile for each of four age groups for each of the 28 surveys (i.e., 5 x 4 x 28 = 560 sets of estimates). The extent of intergenerational schooling mobility then is characterized by two indices: (1) one minus the share of the total variance in the schooling gap for each of these surveys/quintiles/age groups that is explained by the three variables that we use to represent family background ("proportional intergenerational schooling mobility index") and (2) the product of the first index and the average size of the schooling gap relative to expected schooling in each subsample ("gap-adjusted intergenerational schooling mobility index"). In the fourth section we explore to what extent these intergenerational mobility indices are associated with basic economic and education indicators for the relevant countries in the relevant time periods. In the final section we draw some conclusions.

FRAMEWORK FOR ANALYSIS OF THE ASSOCIATION BETWEEN SCHOOLING AND FAMILY BACKGROUND

Becker's (1967) Woytinsky lecture on the determinants of human capital investments is a useful starting point. Within this framework schooling (and other human capital) investments are made until the private marginal benefit of the investment equals the private marginal cost of the investment. Figure 1 provides an illustration for one individual. The marginal private benefit curve depends on the expected private gains (e.g., in wages/salaries in labor markets) due to the human capital investment. The marginal private benefit curve is downward sloping because of diminishing returns to human capital investments. The marginal private cost increases with human resource investments because of the increasing opportunity costs of more time devoted to such investments and because of the increasing marginal private costs of borrowing on financial markets. (If such markets do not easily permit borrowing for such purposes, at some point the marginal private cost curve may become very steep or even vertical.) For a human capital investment such as schooling, the private returns net of costs are maximized at level H^*.

If all markets function perfectly and schooling is an investment only (i.e., with neither consumption gains nor consumption losses) everyone invests in schooling until the expected rate of return equals the expected rate of return on alternative investments (at the level H* in Figure 1) no matter what their family background. In this case the channels of any association between family background and schooling are virtually nonexistent. Given real world market imperfections, however, there are many reasons why there may be associations between family background and schooling, even if schooling is purely an investment. To illustrate, consider what happens if the marginal private benefits and/or the marginal private costs are associated with family background in the presence of market imperfections. (Because we use income and parental schooling to represent family background in our empirical estimates in the third section below, we use these indicators of family background as concrete examples in our discussion here.)

Figure 2 illustrates the implications of the marginal private benefits for human capital being associated with family background, with two alternative curves indicated—each depending on a different family background. The dashed curve is drawn everywhere above the solid curve. For the two (otherwise identical) individuals, the private incentives are to invest at level H* or level H**, depending on family background.

Figure 3 illustrates the implications of two different marginal cost curves, depending on family background, with the dashed line drawn to be lower than the solid line. With the solid line the private incentives are to invest at level H*, which is less than the privately optimal level of human capital investment at level H*** if the dashed line is relevant.

We first consider why, given market imperfections, we could expect higher marginal private benefits and lower marginal private costs for higher-income households with better-educated parents. We then do the same for lower-income households with less-educated parents. The first case would yield the generally seen positive association between parents' and children's schooling; the second case could offset that association partly or entirely.

For the higher-income households, on the benefits side:

1. Households may invest directly in children's education at home and through tutoring, or indirectly by improving their health and nutrition. If markets for these investments (or for financing these investments) are imperfect, and given that the costs of such investments-e.g. of helping with homework-are likely to be lower for higher-income households with more-educated parents, the marginal private benefits of schooling are likely to be higher for such households.

2. Children's genetic endowments may interact with schooling investments in producing education. If children's endowments are correlated with parental endowments that, in turn, are correlated with household income and with parental schooling because of direct effects of such endowments on income and through parents' human capital stocks, including their education , then the marginal private benefits of investing in their children's schooling will be higher for higher-income and better-educated parents.

3. Households may make complementary investments in job search and have contacts that affect children's search for jobs subsequent to completing schooling. If markets for financing such investments are imperfect and the costs are less for higher-income households with more-educated parents (e.g. because of more attractive possibilities for working in family enterprises and better connections for other employment opportunities), the marginal private benefits again are higher for such households.

4. Higher-income households with better-educated parents may have better information on the returns to schooling investments (in part because of better family enterprise options and better connections). Given imperfect markets for information, they face less uncertainty regarding schooling investment decisions and-holding risk aversion constant-therefore have higher marginal private benefits than poorer households.

5. Higher-income households with better-educated parents may have less risk aversion so that, in the presence of imperfect insurance markets or simply insurance that has positive private costs, their private incentives are to invest more in schooling than otherwise identical lower-income households with less-educated parents.

6. Higher-income households with more-educated parents may have better means of dealing with stochastic events-e.g., through their connections they may be more able to offset a bad performance on admissions examinations by their children than can poorer households-and therefore have private incentives to invest more in their children's schooling than otherwise identical lower-income households with less-educated parents.

7. Higher-income households with more-educated parents may have lower discount rates, and thus invest more generally, including in their children's schooling, than lower-income households with less-educated parents.

8. Public policies may favor higher-income, better-educated households, providing more or better quality schooling to such households in response to their greater economic and political power. Bourguignon (1998), for example, argues that as long as the rich invest more in education than the poor, then any improvement in the education system-particularly in the part of the

system used primarily by those who are better off, such as tertiary schooling in most countries-will benefit the rich more than the poor.

For higher-income households on the cost side:

9. Weak and imperfect capital markets mean that even creditworthy parents who are poor may have difficulty borrowing and will face higher costs of borrowing; this implies that the marginal private costs for such investments are higher for poorer parents, and of course lower for higher-income parents. For poorer households without collateral, it may be impossible to borrow at all-as current or future human capital is generally not recognized as collateral. Additionally, given their greater access to capital markets, higher income parents may be more able to smooth out income shocks by borrowing, and their children will have greater chances of going through the education system without interruptions. Children of poorer parents may have to drop out from school when faced with a shock, which increases the cost of acquiring the same years of education without interruption.

However, it is also possible, though less intuitively obvious, for marginal private benefits to be higher for poorer, less educated parents, and marginal private costs to be lower. For lower-income households, on the benefits side:

1. Public policies may favor the poor. Many governments, even in the face of greater economic and political power of better-off households, claim to favor poorer households as part of programs to reduce poverty and inequality by targeting school spending to poor households or by allocating additional education spending to basic education, which is more likely to favor the poor. For lower-income households on the cost side:

2. Some governments or private providers of schooling exempt poorer households from paying school fees for children, lowering marginal costs for them.

3. The opportunity costs of attending schooling instead of participating in the labor market are likely to be lower for poorer households-if, for example, children from better-off families have more or better alternatives because their families have more land for farming or own their own enterprises where children can work, or are better connected with other employers.

Thus, within this simple framework, there are reasons originating in both market failures and policy choices for why family background in general, and household income and parental schooling in particular, may be related to the marginal private benefits and the marginal private costs of schooling investments, and thus to schooling investments themselves.

Three points merit emphasis.

First, since different associations may have different signs, positive or negative, the total association may be positive or negative, and in any particular context there may be both positive and negative effects in part offsetting each other.

Second, the associations do not necessarily imply causality. For genetic endowments, preferences, and "connections" for example, the associations with household income and parental schooling do not reflect causal effects, but simply that these observed family background indicators are proxies for unobserved factors. For the purpose of characterizing many aspects of intergenerational mobility, however, the basic question is one of association, so the limited degree to which inferences of causality might be made is not troublesome.

Third, these considerations also point to a link between the extent of association between family background and schooling on the one hand, and the economic environment and education and other policies on the other. We return to this link and its implications in the fourth section below.

FAMILY BACKGROUND AND SCHOOLING GAPS IN LATIN AMERICA

We characterize the schooling gap for a child as the expected years of schooling, i.e. the number of years that child would have completed had she or he entered at age six and advanced one grade each year, minus the number of years of schooling actually completed at the time of the survey. We utilize 28 household surveys from 16 Latin American countries in the time period between 1980 and 1996 . These include all the surveys that we have in usable form and that have the necessary variables for our analysis. We consider schooling gaps separately for four age groups: 10–12, 13–15, 16–18, and 19–21 years old. We consider these age groups separately because family background is likely to matter more at higher ages.

The marginal school decision—to stay in or to leave school—is likely also to depend on the position of a child's family background within the economy. Therefore for each survey we also consider (for each age group) five quintiles of households categorized by parental schooling. Parental schooling represents an important component of permanent household income, and may also represent such non-income characteristics as genetic endowments and preferences regarding schooling. (Remember that we are interested in characterizing associations of child schooling with family background, not in identifying causal effects.)

Both child ages and parental schooling have the advantage of being characteristics that are not likely to be affected by recent macroeconomic conditions nor by the policy variables that we use for additional analysis in the next section.

Schooling Gaps

Appendix Table 1 gives the countries and years for the household surveys that we use and, for each survey, the mean overall schooling gap, the average schooling gap as a percent of the schooling expected with initiation of schooling at age six and promotion of one grade each year, and the mean schooling gap for each parental schooling quintile. The results, in summary are:

1. The size of the schooling gap for the region as a whole is large. The average schooling gap across all surveys is 3.0 grades or 31.5 percent of the expected schooling, meaning that, on the average, a 16-year old who would have completed 10 grades of schooling if she or he had started at age six and advanced one grade each subsequent year in fact had completed fewer than seven grades.

2. The gap ranges widely across countries. For recent years, the largest gaps, of over four years, are for Brazil, Honduras, and Nicaragua, consistent with data based on school enrollments collected by UNESCO. The smallest gap is for Chile (excluding Bolivia where only urban households were covered).

3. For most countries for which there is more than one survey, gaps fell between surveys during the intervening periods of up to 14 years. There are a few exceptions: the gap increased in Mexico between 1992 and 1994 and in Argentina between 1980 and 1996.

4. Within countries there is a tendency for the gaps to be larger the lower the income quintile. The average gaps across all 28 surveys decline with increasing parental schooling quintile, suggesting that family background is playing a role in determining the schooling gaps. The average gap across surveys for the first quintile is 4.5 grades, which is over twice as large as the average across surveys for the fifth quintile of 1.8 grades.

5. There is some tendency for countries with large average schooling gaps to have relatively large gaps between the means for the first and the fifth parental schooling quintiles.

6. For most countries for which there is more than one survey, the differences between the mean schooling gaps between the first and fifth parental schooling quintiles fell between surveys. So over time there has been a tendency toward equalization of children's schooling relative to parents' schooling.

Appendix Table 2 gives the mean schooling gaps for the four age groups considered. The gaps are larger for older age groups, consistent with human capital models that emphasize the advantage of obtaining a given level of education when as young as possible in order to have a long as possible a post-schooling period in which to reap the returns. The differences in gaps by age vary across surveys, in general being larger than the average gap in Appendix Table 1. All of these findings are consistent with our expectations and with data from other sources. For most countries for which there is more than one survey, the difference in gaps between the oldest and the youngest groups fell over time.

Estimates of Association Between Family Background and Schooling Gaps

How strongly associated are these schooling gaps with family background? To explore this question we regress the schooling gap (SGAP) on three indicators of family background—father's schooling (S_f), mother's schooling (S_m), household income (Y_h), two controls (CON, whether a household is rural or urban, and limited demographic characteristics of the household, e.g., whether it is a female-headed household), and a stochastic disturbance term (e):

(1) $SGAP = a_0 + a_1S_f + a_2S_m + a_3Y_h + a_4CON + e.$

We estimate relation (1) for each of the 559 (=28*5*4-1) survey-quintile-age group subsamples. We subdivide the surveys by quintiles and by age groups because: (a) we are particularly interested in the poorest households in the bottom quintile, (b) we anticipate that there may be nonlinearities in the associations between our indicators of family background and schooling

gaps for each age group, (c) we anticipate that there are differences across age groups, and (d) this increases our sample size for the estimates of the relation between family background and survey-specific economic and social indicators to which we turn in the fourth section.

The first three columns of Appendix Table 4 summarize the average values of the coefficient estimates for the three indicators of family background for each survey (averaged across quintiles and age groups), for each quintile (averaged across surveys and age groups), and for each age group (averaged across surveys and quintiles). To make the income units comparable across surveys, we transformed the survey incomes into purchasing power parity adjusted 1985 U.S. dollars.

The results of our estimations for the 559 subsamples are consistent with our expectations and with results of numerous studies in each of which a single sample is analyzed. The coefficients of income are negative—income reduces the schooling gap—and are more negative the poorer the quintile and the older the child. The same pattern holds for mother's and father's education; the coefficient of the mother's education is on average more than three times larger for the richest compared to the poorest quintile. The effects of differences in parents' education and income are associated with sizable gaps within some countries. For example, for the lowest quintile and oldest age group in Brazil, at average education and household income for that group, the predicted total schooling gap is 6.8 years. This is sizable given that over the last three decades the average education of the labor force in the region increased by only 1.5 years.

IS INTERGENERATIONAL MOBILITY ASSOCIATED WITH MACROECONOMIC CONDITIONS AND EDUCATION POLICY?

We turn now to the question of whether and how the association between family background and children's schooling, a measure of (im)mobility, is itself associated with the economic and social environment. Our first step is to construct indices that capture the extent of the association. We then estimate an equation in which the indices are associated with indicators of macroeconomic and education conditions.

Indices of Mobility

We use the results of estimating equation (1) to construct for each of the 559 subsamples two basic intergenerational schooling mobility indices: (i) the "proportional intergenerational schooling mobility index" (the share of the total variance associated with the weighted average of the three family background variables, where the weights are the coefficient estimates), and (ii) the "gap-adjusted intergenerational schooling mobility index", defined as the "proportional index" multiplied by the average gap relative to the expected schooling for that subsample. We normalize each of these indices so that they fall between 0 and 100 inclusively and so that increases within this range indicate greater intergenerational schooling mobility (and lesser influence of family background). The two indices are positively correlated (with a correlation coefficient of 0.79) but represent somewhat different aspects of intergenerational mobility related to schooling. Our proportional intergenerational schooling mobility index is constructed to be invariant to the absolute magnitude of the average schooling gap. Bolivia 1986 and Honduras 1989 both have the same proportional intergenerational schooling mobility index (42.0). But the

average schooling gaps from these two surveys differ substantially—1.6 grades and 5.2 grades, respectively. There is a sense, therefore, in which it can be argued that family background had a more important absolute effect on the schooling gap in Honduras 1989 than in Bolivia 1986 because the gap is so much larger in the former. Our gap-adjusted intergenerational schooling mobility index captures the fact that the absolute magnitude in terms of grades of schooling of the family background association with the gap is much larger for Honduras 1989 than for Bolivia 1986—at the averages for these two surveys, 53.7 versus 85.0—even though the proportional intergenerational schooling mobility index is identical for these two surveys.

Our prior is that the three family background variables reflected in our two indices are likely to lead, if anything, to an underestimate of the total effects of family background, because these three variables are correlated less than perfectly with some aspects of family background that may be relevant, such as long-run income or wealth, influence, and connections.

The three variables turn out to be consistent with about a sixth of the sample variations across children in schooling gaps, across all age groups and all surveys. (See Appendix Table 3.) They tend to be consistent with more of the variation for older age groups when, as we have noted, family background is likely to be more important to the marginal decision to stay in or leave school. They are consistent with less variation in the two urban Bolivia samples (which yielded surprisingly low average schooling gaps given Bolivia's per capita income, and even given the sample is urban only).

The last two columns in Appendix Table 4 give the average values of our two intergenerational schooling mobility indices for the 28 surveys, for the quintiles and for the four age groups. The range of values across surveys is, as noted, from 100 (Chile 1994) to 0 (Brazil 1981) by construction (the end points happen to be the same for the two indices). The range in averages across quintiles is smaller than across surveys. The proportional index does not have a strong association with the parental schooling quintiles. The gap-adjusted index does, with the means increasing monotonically from 55.4 for the first quintile to 80.2 for the fifth quintile. For both mobility indices, means for the age groups also have, as we expected, monotonically decreasing values.

Estimates of the Mobility-Macro Association

First, there is likely to be a link between public spending on education and the schooling-family background association. Public spending is likely to affect incentives for private investments in schooling directly though, as noted above, with the sign of such effects depending on how such spending is distributed among children with different family backgrounds and among school levels.

Second, the economic environment may affect the association between family background and schooling by changing the returns to schooling or the price of schooling differentially across families through changing the extent of market imperfections facing different households. Market imperfections arguably are related to the extent of overall economic development; where average education is lower, for example, failures in the markets for capital and for information are likely to be exaggerated. In addition, economic policies may alter the extent of market

imperfections (e.g., barriers to international trade), and macro instabilities may tend to increase problems with market imperfections through, for example, increasing problems of evaluation of investments (including those in human capital) due to increased uncertainty regarding future price movements. Studies using aggregate data (IDB 1996) indicate, for example, that countries in the region that have been subject to greater volatility in macro variables have had lower secondary school enrollment rates. More open economies may improve access to the labor market for previously excluded groups and may raise returns to labor differentially depending on skills. Inflation could change the relative price of schooling, especially private schooling, if school fees rise faster or slower than wages. A deeper financial market is likely to loosen the effect of family income on schooling, by improving the ability of families to borrow.

Thus, macro measures of market development, of the level of development, and of instability; and aggregate measures of education policies may affect how great is intergenerational schooling mobility through affecting the extent of market imperfections and the extent to which policies related to schooling offset or increase such imperfections. In this section we explore whether there is empirical evidence consistent with such possibilities from recent Latin American experience. We undertake this exploration by regressing our two intergenerational schooling mobility indices for our 559 subsamples on a parsimonious set of four macro and three aggregate schooling policy variables:

Macro Variables:

GDP per capita (purchasing-power-parity adjusted)

Trade openness (exports plus imports over GDP)

Financial depth (M2 over GDP)

Inflation rate

Education Policy Variables:

Government expenditures on all levels of education over GDP

> *Government expenditures on primary schooling per person of primary school age adjusted for purchasing power parity (PPP)*

Average school quality, *as represented by average schooling of teachers.*

These variables were selected on the basis of their availability and their probable centrality for the question being investigated. In order to capture the macro effects over the time that children in the samples were making schooling decisions at the margin, we use different reference periods for each age group. For children in the 10–12 age group we use averages over two years (the year of the surveys and the previous year); for 13–15, 16–18 and 19–21 year olds use three, four, and five year averages, respectively.

Table 1 presents the correlations among the two intergenerational mobility indices and these four macro and three education variables. The two indices are fairly highly correlated as noted above. Each is positively correlated with the trade openness, financial depth, and school quality variables, and negatively correlated with overall educational expenditures and inflation rates. Though the absolute magnitudes of these correlations are not all that large (all are smaller than 0.25), their signs generally are consistent with improved macro performance and education policies increasing intergenerational schooling mobility, with the notable possible exception of overall school expenditures.

Table 2 presents two sets of random effects multivariate estimates for our two mobility indices. For the first estimate for each dependent variable, the right-side variables are the seven macro and education variables and additive dummy variables for the parental schooling quintiles and child age groups. For the second estimate for each dependent variable, in addition are included multiplicative quintile dummy variables to allow the coefficients for the first and fifth quintiles to differ from those for the other three quintiles. We focus on the possibilities that the coefficients may differ for the bottom and top quintiles because we are interested in these quintiles (particularly the bottom one) from a distributional perspective and because our priors, reinforced by the patterns in the dependent variables noted in the third section, is that any nonlinearities are likely to be manifested most clearly in the tails of the distributions.

We note four important characteristics of these estimates:

First, the specifications are significant and consistent with a fair amount of the variance in the intergenerational schooling mobility indices. Chi^2 tests indicate that each of these four estimates is significant at the 0.0000 level. The R^2s indicate that these associations are consistent with from 18.6 to 28.9 percent of the variance in the intergenerational schooling mobility indices, with greater consistency with the gap-adjusted index. Particularly given the limited representation of the macro environment and education policies by just seven fairly crude aggregate variables, this consistency is supportive of our basic conjecture that macro and education factors importantly shape the associations between family background and schooling gaps and therefore intergenerational mobility. Moreover, on a general level, the four specifications suggest the same sign patterns for most of the coefficient estimates of the four macro and three education variables and quintile and age-group controls; our basic results are generally robust to different specifications.

Second, there is evidence that the effects differ by parental schooling quintiles, though the strength and nature of the results are sensitive to the particular specification used. The single strongest result, in terms of statistical significance, is for the additive quintile effects on the gap-adjusted index. The point estimates for the additive quintile effects suggest a definite monotonic increase in social mobility with higher parental-schooling quintiles. (The estimates are much less precise, and have one deviation from a monotonically increasing pattern, if there also are interactive quintile effects.)

Third, there is strong evidence that the estimates differ by age groups. All of these effects are additive. Joint tests indicate that the additive age group dummy variables are significant at the

0.0000 level in each of the four estimates. The individual parameter estimates indicate, as we would expect, decreasing social mobility with increased age for each of the four estimates.

Finally, and most important, a number of the macro and education variables have significant coefficient estimates, with plausible *a priori* interpretations.

Two of the macro variables have significant coefficient estimates. The first is for financial depth, which is probably our best single indicator of the extent of general internal market development. Financial depth has significant positive effects that are robust across the four specifications. Within the framework discussed in the second section, these provide strong support for the role of internal market development in increasing social mobility.

The second macro variable with significant coefficient estimates is inflation, for which there is no clear *a priori* expectation regarding the sign. If inflation effectively increases imperfections in markets by reducing the quality of information due to rapidly changing absolute and relative prices, negative coefficient estimates would be expected. But inflation may work in the opposite direction by increasing the sensitivity to market changes given the high cost of lags in market behavior or may weaken the capacity for families to cope with rapid changes, both of which may lead to positive associations of the intergenerational indices with inflation. The latter type effects seem to dominate for both intergenerational school mobility indices, with significant coefficient estimates for the gap-adjusted index.

Two of the three education policy variables have significant coefficient estimates. School quality has significant positive effects for all four specifications (based on joint tests with quintile interactions for the second specification). PPP adjusted governmental expenditures on primary schools relative to the pool of primary-age students have positive coefficient estimates in all four specifications that are significantly nonzero in the specifications for the gap-adjusted intergenerational school mobility index (based on joint tests with quintile interactions for the second of these specifications). Total governmental expenditures on education, in contrast, has negative (though not significant even at the 10 percent level) coefficient estimates in all four specifications. These negative estimates weakly suggest that, once there is control for resources devoted to primary schooling and to improving school quality at the basic levels, the total educational expenditures are reflecting largely expenditures that, if anything, reinforce family background and reduce intergenerational social mobility, such as public subsidies for tertiary schooling for children of upper-middle- and upper-class families.

Thus there seems to be strong support for our basic conjecture in this paper that market reforms, through affecting the extent of market imperfections, and the nature of aggregate public educational expenditures both can have important effects on the role of family background in determining schooling and, through this channel, on intergenerational social mobility. Therefore, although the recent macro changes and schooling policy changes in the region have not had as strong effect on the current income distribution as some may have hoped, they well may have had important and largely positive effects on increasing intergenerational social mobility. Such effects may make recent policies more politically acceptable and therefore sustainable and may have longer run equalizing and growth-inducing effects on the economies in the region.

CONCLUSIONS

Our empirical results confirm for a large number of countries over many years that family background has a significant association with children's schooling. As expected, children of higher-income and better-educated parents everywhere and at all times are likely to do better. More to the point of our study, our results also suggest that the implied link is itself subject to substantial variation across countries and periods, depending on macroeconomic conditions and on public policy in education.

We find that macro conditions—in particular those related to the extent of internal market development—importantly shape intergenerational mobility by loosening the strong link between parents' background and children's education. Similarly, education policies can loosen that link, thus enhancing mobility. Increasing public resources available for basic schooling in general and for improving school quality in particular have important positive impacts on intergenerational schooling mobility. Raising other educational expenditures, however, such as those on tertiary education, may reinforce the impact of family background and reduce intergenerational mobility.

We conclude that even though the immediate effects of macro market reforms and schooling policy reforms on current income distribution may not have been that strong, there may be important longer-run effects through increasing intergenerational social mobility.

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