

ESCAPING THE POVERTY TRAP IN LATIN AMERICA: THE ROLE OF FAMILY FACTORS

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ABSTRACT

Much like an inherited trait, poverty trends to pass from parent to child. How prevalent is this “curse of the poor,” why do some escape it, and how can we help improve the odds? This study sets out to gauge the extent of this “Intergenerational transmission of poverty” (ITP) in 16 Latin American countries, analyze certain factors affecting it, and raise policy considerations.

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JEL classification: D1, I2, I3, R2

Among the various a priori determinants of ITP, the study focuses on "family factors" - those more closely related to characteristics of the household, such as mother's schooling, than to its economic and social environment. The empirical results indicate that the prevalence of ITP in Latin America is strong and that family factors play an important role in the educational achievement of poor children - and hence on their expected lifetime income. Regressions for 16 Latin American countries show that children in poverty with fewer siblings, more educated parents, higher household income, and living in urban areas are significantly more likely to complete secondary education. Completion of secondary education is taken as the threshold level of schooling at or above which a child of poverty should have a fair chance of escaping the poverty cycle in the 21st century. Results for the subset of countries with the required data further show that children of the poor born to single adolescent mothers, or who did not attend a preschool program, or were undernourished, are less likely to complete secondary education than children of the poor without the corresponding attributes. Moreover, supplementary data reviewed for this study, but that could not be adequately indexed for the regressions, tend to support findings by other researchers pointing to two additional family factors affecting educational performance among children from poor households: domestic violence and ethnicity. Study results suggest that poverty-reduction strategies take into account family factors much more than is commonly the case, especially in complement to the supply of education and other basic social services that are so greatly emphasized today. As corollary, we recommend that such social services should, whenever possible, focus on the undereducated households in poverty, rather than on their members individually, to improve their children's education outcomes and thereby increase their chances of breaking out of the cycle of intergenerational poverty.

RESUMEN

Como un rasgo hereditario, la pobreza tiende a pasar de padres a hijos e hijas. ¿Cuán prevalente es esta "maldición de los pobres", por qué algunos consiguen evadirla y cómo aumentar sus probabilidades de lograrlo? El artículo pondera las dimensiones de esta "transmisión intergeneracional de pobreza" en 16 países latinoamericanos, identifica factores que la afectan y presenta consideraciones de política. De entre sus diversos posibles determinantes, el estudio enfoca los "factores familiares", aquellos más estrechamente ligados a características al interior del hogar (v.gr., la educación de los padres), más que con su entorno económico (v.gr., condiciones del mercado laboral) o social (v.gr., acceso a buenas escuelas). Los resultados indican que la prevalencia de la transmisión intergeneracional de la pobreza en América Latina es extensa y que los factores familiares juegan un papel importante en el logro escolar de los

niños y niñas pobres; y, por ende, en su ingreso esperado a lo largo de la vida. El completar la escuela secundaria se toma como el umbral educativo a partir del cual el niño pobre alcanza una probabilidad razonablemente alta de escapar de la pobreza en el curso de su vida en el siglo XXI. Regresiones realizadas para los 16 países muestran que aquellos niños/as en la pobreza con menos hermanos/as, padres más educados, ingreso del hogar más alto y residencia urbana, tienen probabilidades significativamente mayores de completar la educación secundaria. En el subconjunto de países que disponen de la información requerida, los resultados muestran, además, que el haber nacido de madre adolescente soltera, o el no haber asistido a un programa preescolar, o haber sufrido desnutrición, les reduce significativamente la probabilidad que encaran los hijos/as de los pobres de completar la educación secundaria. En adición, el examen suplementario de datos referentes a violencia doméstica y etnicidad indígena, que no son susceptibles a ser incorporados en las regresiones del estudio, tiende a confirmar resultados de estudios previos en cuanto a su efecto negativo sobre el logro educativo entre los niños/as de hogares pobres. Los resultados del estudio sugieren que se le otorgue un papel mucho mayor que lo usual a los factores familiares en las estrategias de reducción de pobreza, especialmente en complemento a la oferta de educación y de otros servicios sociales básicos que tanto (y tan merecidamente) se enfatizan actualmente. Asimismo, los resultados apuntan a las ventajas de focalizar los hogares pobres como unidades usuarias (en vez de individuos pobres) al suministrar servicios sociales básicos a las poblaciones poco educadas y sumidas en la pobreza. Con este abordaje los factores familiares se podrían incorporar estratégicamente para aprovechar mejor los servicios suministrados hacia la acumulación de capital humano, especialmente de los hijos. Así se impulsaría el logro educativo de estos niños/as y con ello su adquisición de herramientas adecuadas para escapar de la trampa de la pobreza.

“Yo soy yo y mis circunstancias”. José Ortega y Gasset,
Meditaciones del Quijote, 1914.

INTRODUCTION

Children born in households characterized by low-income and little or no parental schooling generally face significant disadvantages in achieving their human potential compared to children born in households with higher income and schooling. The children of the poor are consequently more likely to remain poor as adults. Poverty thus tends to be transmitted from one generation to the next. This pattern is ubiquitous in history and is commonly found today, especially in lower

income countries. It is often referred to as “the Intergenerational transmission of poverty” (ITP), which is the term adopted here.

It follows from this basic concept of ITP, that its prevalence across countries will depend on the extent of inequality in respect to income and schooling, which abundant research on the economics of education shows to be highly correlated. The exceptionally high levels of income-schooling inequality found in Latin America would lead to strong expectations that ITP in the region is correspondingly severe. Nonetheless, quantitative economic research of ITP in Latin America has been largely neglected. The present study is a contribution in this area.

Our study sets out to gauge the extent of ITP in 16 Latin American countries, looks at certain factors that underlie ITP, especially in urban Peru, and addresses some policy issues. Within the multiplicity of factors that could affect ITP on a priori grounds, the study focuses on so-called “family factors;” that is, those more closely associated with characteristics of household members (or the household as a unit) vis-à-vis features of the economic and social environment. For example, the focus is on factors such as parent’s schooling, ethnicity, household demographics, and children’s early child care experience instead of on the economic environment of the household such as GDP growth, unemployment and conditions of employment, inflation and other aggregate economic variables, or to the availability of schools and other basic social services.

In addition to its direct role in the size and persistence of poverty, ITP also retards economic growth as it hobbles human capital accumulation. Perhaps even more worrisome, the fundamental inequality of opportunities inherent in ITP is probably a major source of social and political discontent and instability. Moreover, even as it can be seen as a result of inequality, ITP is itself a mighty engine in the dynamics of income distribution. A particularly disturbing aspect of ITP in the region is that the number of children at risk of ITP is very large. Upwards of 37 million children under age 9 were living in poverty in 1995, and 42 million were living in households whose head had not completed primary education¹.

To design sensible policies to arrest the transmission of poverty, it is useful to understand the underlying mechanisms. In particular, we want to identify not only the factors that correlate with persistent poverty across generations (e.g., low income or substandard housing) but, more usefully, we want to detect those factors that, within the universe of households in socioeconomic poverty, can explain why some children born in poor households are able to escape poverty while others are not. Such factors, being “naturally” present in significant proportions of poor households, hold more promise for effective policy interventions to combat ITP than interventions predicated on factors exotic to them.

¹ Poverty is defined based on a \$2 per day Purchasing Power Parity Poverty Line (PPP). Estimates provided by the Social Information System, Research Department, IDB, based on its household surveys data files.

The paper is organized in four sections. The *first* section reviews relevant literature and sets out the conceptual framework for the empirical study. The *second* describes the methodological approach of the study. The *third* presents the empirical results. The *fourth* section examines challenges in the current institutional settings and derives program-relevant recommendations from the empirical study.

1. GROUNDWORK

1.1. *ITP and family factors*

The concept of *intergenerational transmission of poverty* is closely related to that of *intergenerational socioeconomic mobility*. Following Behrman (1998), *intergenerational socioeconomic mobility* is defined as a change in the socioeconomic status of one generation relative to the previous generation. ITP can be regarded as a special case of *intergenerational socioeconomic mobility*. More specifically, ITP occurs when a child of poor parents does not experience upward intergenerational economic mobility in adulthood that is sufficiently large and persistent to escape long-term poverty for the rest of his/her life.

It is useful to group factors associated with ITP on a priori grounds into the following typology: *economic environment factors*, particularly those relating to the labor markets relevant to the household, especially low wages for unskilled labor and unstable job opportunities. *Social environment factors*, such as social violence and availability and quality of education and other basic services, also play an important role in ITP. *Family factors* are those family and individual characteristics that condition the future performance of a child. Notable ones are household income and assets, demographic structure, gender of the household head, parental education, health status, adolescent pregnancy, early child care and development practices, ethnicity, domestic violence and geographical location. Natural ability also affects individual performance at school and work.

Some of these factors can be associated with more than one category, for example, gender and ethnicity. While these are clearly individual and hence family factors, they are also relevant in the environmental categories. When the socioeconomic environment is characterized by gender or ethnic discrimination—say in the classroom—it affects the quality of education received by girls or indigenous children of either sex and thus, for children in poverty, their chances to overcome ITP.

Direct empirical application of our concept of ITP would require data on individuals' lifetime socioeconomic status. However, available data constrain observations to much shorter periods and preclude explicit measurement of long-run income. Our operational approach takes schooling attainment beyond a threshold as a discriminant for expected adult poverty experience.

1.2. *Schooling as the ITP marker*

Schooling correlates well with adult income and other markers of Socioeconomic Status (SES). The strong and robust correlation between education and wages has been amply documented, including net education effects estimated by Mincerian regressions² (Mincer 1974; Pritchett 1995). There are two explanations given by the human capital literature to explain the impact of education on wages. The first explanation is that education increases the individual's productivity and, therefore, the wage. The second explanation is the screening effect, whereby employers pay higher wages to those with more education because it tracks other characteristics that make the individual more productive (Arrow 1973).

Another compelling practical reason for using education as a proxy for income in the study is that individuals can generally provide more reliable information on their schooling attainment and their parent's than on their income or consumption. Thus, sociologists commonly use education as a proxy for the economic well being of successive generations (Gottschalk, Mc Lanahan and Sandefur 1994).

Social commentators have noted the crucial link between children's education and poverty over the ages. More recently, Psacharopoulos and Morley (1993) stress it in their empirical study of poverty in Latin America. In it, educational attainment has the greatest correlation with both income inequality and the probability of being poor. Such a link is also highlighted in Londoño (1996), which finds the low levels of education of the children of the poor to be the single most important factor contributing to the persistence of poverty in Latin America. More recently, education has been used in an ECLAC (1998) study as a key measure of intergenerational mobility.

1.3. *Family factors and schooling attainment*

At least three theoretical sources can illuminate how family factors affect a child's educational performance.

First, there is the *Quantity-Quality Model* developed by Becker (1975) and Mincer (1974) and further developed by Becker (1993) as the "Extended human capital model." In this model, parents value both the *quantity* of children and their *quality* (i.e., their education and health). The number of children and investments

² However, "the very strong correlation between education and income does not ... necessarily imply a casual relationship quantitatively as strong as the econometric correlation suggests. As is well known, if educational achievement and natural ability are highly correlated, the econometric estimates of the effects of education are likely to be upwardly biased. [While], it is extremely difficult to disentangle the effect of education from natural ability ..., it is unlikely that the coefficient of education reflects only the effect of natural ability. In fact, a recent study using a large sample of identical twin brothers found that omitting ability variables does not bias the education effect significantly" (Ashenfelter and Krueger, 1994) (López, 1996:6).

in their education are determined *inter alia* by household income and other resources. Given the resource constraint, the quantity of siblings and investments in their education are inversely related. The child's schooling is also affected, positively, by parental education. Place of residence also matters: urban areas increase the cost of *quantity* relative to *quality*, and the rate of return to schooling (Robbins 1999).

Second, the *Intrahousehold distribution model* relates the intrahousehold allocation of resources—notably, parental time and income—to the child's schooling attainment. Parental time and resources devoted to a child are determined by the number of siblings, the gender of the child, and age relative to that of siblings (Sen 1984, 1990).

A third source is the *Life-course perspective model* (Furstenberg, 1988), in which events and experiences early in life shape the behavior and the educational performance of the adult individual, according to personal characteristics and socioeconomic factors. This model emphasizes the key role of the family in shaping the intellectual and social development of the child, from early in life and into adulthood. Early childcare and nurturance practices, intellectual stimulation, and affection shape the child's intellectual development. Children learn social (and antisocial) patterns of behavior early in life from the family, which are then displayed at school and in the neighborhood. The model points to early childcare and development, adolescent motherhood, domestic violence, and health as important factors in the analysis of a child's educational and economic performance in the future.

Our empirical analysis draws on complementary features of the three models. Specifically, it examines the role of number of siblings, the education of the mother and the father, household income, adolescent motherhood, early childcare, order of siblings, health, ethnicity, residence, and violence on the educational attainment of a child.

1.4. *Previous empirical work*

Although early studies of intergenerational economic mobility in the United States tended to show low-income correlation across generations, more recent work using larger longitudinal panels shows the correlation to be significant (Gottschalk, Mc Lanahan and Sandefur 1994). Behrman and Taubman (1990) found the income correlation between father and son to be of 0.58 and Solon (1992) found a correlation of 0.40. Treiman and Hauser (1987 in Gottschalk, Mc Lanahan and Sandefur, 1994) obtained an intergenerational income correlation of between 0.24 and 0.36 for men aged 25 to 34. The correlation results of these three studies may be considered lower bound values of intergenerational income correlation if comparable data were available in Latin American countries, where inequality of opportunities is far greater than in the U.S.

Research in developed countries shows that family factors like parents' education, number of siblings and family structure affect children's future perfor-

mance and thus play an important role in the ITP mechanism (Jenks *et al.*, 1972; Featherman and Hauser, 1978 in Gottschalk, Mc Lanahan and Sandefur, 1994).

The abundance of economic mobility studies in developed countries contrasts with the situation in Latin America. "To date little or no attention has been paid to measuring actual or perceived mobility and changes in such mobility in the region [Latin America]" (Behrman 1998:1). Economic mobility studies in developing countries are still in their infancy due to the very limited availability of panel data³ (Fields 1998). While there are some studies on mobility in Latin America,⁴ to date there has been no suitable panel data available to carry out an ITP study. While Urrutia's (1985) pioneering work using panel data to study socioeconomic mobility in Cali (Colombia) provided important insights into differences between "winners and losers," its scope did not include the analysis of ITP determinants. More recently, there has also been very interesting work done on intergenerational mobility by ECLAC (1998), whose paper focuses on the intergenerational transmission of education using cross-sectional data for nine Latin American countries, but does not include econometric analysis of its determinants.

2. STATISTICAL ANALYSIS

The statistical analysis focuses on the effect of family factors on a child's educational attainment as proxy for judging whether the individual will escape poverty, while controlling for as many other relevant variables as possible. A child is considered to have been born poor if the head of the household has not completed primary education.⁵ If an individual born in poverty has not completed secondary education by h/er early twenties (depending on the data set being analyzed), then we assume s/he will never complete it. Those completing secondary schooling are assumed to improve their lifetime earnings experience sufficiently to escape long-term poverty. Hence, *when a child from a household whose head has not completed primary, goes on to complete secondary school, only then s/he is counted as having escaped ITP; otherwise s/he is classified as having failed to do so.*

These educational thresholds coincide with those used in ECLAC's (1998) study. The lower educational threshold for parents is also consonant with the

³ A review of mobility studies in developing countries can be found in Fields (1998).

⁴ For example, the study on directional absolute mobility of Scott and Litchfield (1994) in Chile, the study of Buvinic *et al.* (1992) in Santiago (Chile), Morley *et al.* (1998) study in Colombia, and Glewwe and Hall's (1998) study of relative mobility in Peru.

⁵ This human capital based definition of household poverty is preferred over an income (or consumption) based definition for analogous reasons given earlier concerning individual poverty. In addition, it is also superior in this context because parental education is likely to be more closely associated with hard to measure features of "the culture of poverty" that have been found to affect children's performance in school (Lewis 1961; Furstenberg 1988).

close associations between notions of “the poor” and “the undereducated” found copiously in the economic and sociological literature, such as references cited in section 1.2 above. The choice of the secondary education completion threshold for the individuals who are now in their twenties was also motivated by the intuition that it will be increasingly difficult for them to earn enough to live above poverty without at least secondary schooling over the remainder of their lives.

Since the main thrust of this paper relies heavily on this intuition, it deserves further girding. First, we believe that the “information revolution” that is spreading over the region is driving an increasingly education-biased labor demand, especially in “modern sector” labor markets associated with non-poverty wages. Here, even for entry-level positions, job applicants are routinely expected to fill out various forms requiring a measure of information-processing skills rarely acquired in the primary schools serving the poor. Also, as noted earlier, educational achievement (such as secondary completion, which also features a “sheepskin effect”) signals ability and other relevant traits to potential employers, thereby enhancing access to the better jobs –and the better life.

Although the prospective nature of our assumption on secondary completion and expected lifetime earnings precludes direct empirical support, evidence of strong association between the secondary completion threshold and present income, especially for young adults and their families, should lend additional plausibility to our key poverty forecasting proposition. Annex 1 presents two types of evidence from three large countries that, in our view, provide such evidence: i) findings on age-specific income by level of schooling for Brazil; and ii) results on the relationship between secondary completion by the household head and h/er household’s per capita income for Peru and Argentina.

2.1. *The basic estimating equation*

The samples used for the present study comprise poor and non-poor households⁶. A logit regression is fitted where the dependent variable, secondary, is the simple dichotomy completing/not completing secondary education (1 and 0, respectively). The basic equation can be written

$$\begin{aligned} \text{Prob}(\text{Secondary} = 1) = & F[\alpha + \beta_1 \text{ED}_{\text{father}} + \beta_2 (\text{D} \times \text{ED}_{\text{father}}) + \beta_3 \text{ED}_{\text{mother}} \\ & + \beta_4 (\text{D} \times \text{ED}_{\text{mother}}) + \beta_5 \text{SIB} + \beta_6 (\text{D} \times \text{SIB}) + \beta_7 \text{GENDER} + \beta_8 (\text{D} \times \text{GENDER}) \\ & + \beta_9 \text{Y} + \beta_{10} (\text{D} \times \text{Y}) + \beta_{11} \text{MIGR} + \beta_{12} (\text{D} \times \text{MIGR})] \end{aligned}$$

⁶ Excluding the children of non-poor households would have introduced a problem of sample truncation. The ideal method is to model the two types of households and outcomes simultaneously using a bivariate probit. However, lack of an instrumental variable precluded this approach.

where F is a logistic function and the independent variables are all measured in 1985. These are: father's education (ED_{father}), mother's education (ED_{mother}), number of siblings (SIB), gender of the child (GENDER) – with value one for male and zero otherwise –, household income (Y), and migration (MIGR) – with value one if the child is a migrant and zero otherwise. To distinguish poor from non-poor households, a corresponding set of variables are included in the regression formed by multiplying each of the independent variables by a dummy (D) with value one for household heads with primary education completed and zero otherwise.

Thus, the effect of any independent variable on the probability of secondary education completion of children from undereducated (assumed “poor”) households can be distinguished from its effect on children from all other (“non-poor”) households. Variables with a significant impact on the probability of secondary completion of children born poor – i.e., the determinants of ITP – can thereby be identified.

2.2. Data

The “Lima Panel”:

The main limitation on social mobility research in Latin America has been the scarcity of panel data⁷. Martin Cumpa constructed the only suitable panel data that we found from household surveys in Lima, Peru in 1985 and 1994, done in connection with the Living Standards Measurement Study (LSMS). Cumpa's panel consists of 856 individuals living in the same household at both interviews.

Our panel is a subset of individuals in Cumpa's panel with the required information for each independent variable. Information in the surveys goes back only nine years. Information from the 1985 survey is used as a proxy for circumstances pertaining to the individual's school years. For the 1985 data to be a good proxy of the schooling period, individuals in the 1994 survey should be chosen such that they are young enough for them to be of school age in 1985, but old enough to have had ample opportunity to complete secondary education by 1994⁸. Thus the age range for inclusion in our Lima panel sample is set at 16 to 26 years⁹ in 1994, resulting in a panel of 294 individuals.

⁷ Some initial trials have been done using simulated panel data. For example, Morley *et al's* (1998) study for Colombia, which leads to results that are sensitive to rather strong assumptions, including that mobility is only up.

⁸ In Peru, normal progression from first grade primary to secondary completion entails 11 years. Persons who received technical education and have at least eleven years of education are also considered to have completed secondary education.

⁹ A second reason why people over age 26 were excluded is that they are less likely to remain in the parental home and thus would not be captured in the 1994 survey, increasing sample attrition bias. Age 26 compromises between these considerations and sample size.

The Latin American countries

To broaden the geographical scope of the investigation to other Latin American countries, we had to settle for a less accurate procedure. Looking only at individuals beyond secondary school age in the sample, data on their educational attainment and that of their parents can be obtained from a single survey round. The value of the independent variables for that year is taken as a proxy of corresponding values during the person’s school age. While these proxies are inferior to those in the Lima panel, key ones, such as parent’s education, gender, and to a lesser extent, the number of siblings, are stock variables. This approach allows extending the study’s scope to 15 additional Latin American countries, containing most of the region’s population, for which there is no panel data.¹⁰

The sample consists of individuals between twenty and twenty-four years old, on the assumption that anyone who has not completed secondary education by 24 is very unlikely to ever do so. Older individuals were excluded to minimize sample attrition.¹¹ A cross-section logit regression is fitted for each country with dependent and independent variables defined analogously as for the Lima panel. A variable for residence was added, since most of the country surveys include both urban and rural areas.¹²

3. RESULTS

Taking the unweighted average across the 16 Latin American countries with nationally representative data, 27 percent of children born poor complete secondary education compared to 63 percent of children born in non-poor households in the “typical Latin American country”. By this count, the ITP traps about 3 out of 4 children born in undereducated households in the typical country. As noted earlier, there were about 42 million such children at risk in Latin America in 1995. To ease exposition, we label *the percent share of grown children*¹³ *from the undereducated households who completed secondary school*, the “Poverty cycle break rate”. Thus, the average rate in our sample of Latin American countries is 27 percent. The paper also uses the term “probability of a child born poor (non-poor) completing secondary education” synonymously (analogously).

10 The countries included are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. The observations used are derived from the IDB’s household survey data set managed by the Research Department.

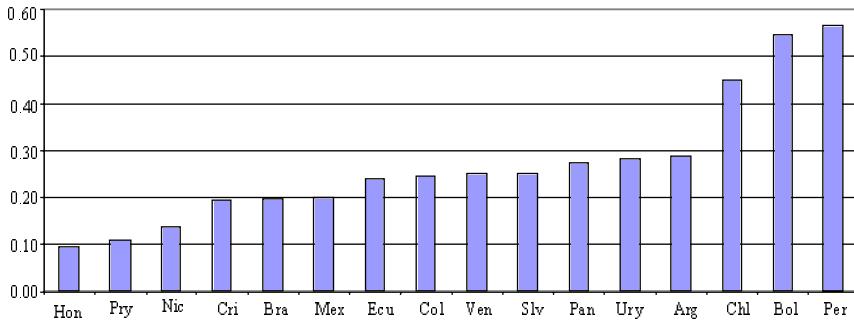
11 In the panel study the age range was extended to 16-26 year interval in a tradeoff for a larger sample size.

12 Data on migration was not available in the Latin America database.

13 I.e., those in the stipulated age group for ascertaining secondary school completion.

Based on this index, an ITP country ranking can be established (Figure 1). It varies widely across the 16 countries, ranging from less than 10 percent in Honduras to 45 percent in Chile and above 50 percent for Bolivia and Peru¹⁴. The bulk of the countries fall within the 10 to 30 percent interval.

FIGURE 1
PROBABILITY OF A CHILD BORN POOR COMPLETING SECONDARY
EDUCATION



Source: Authors' calculations using the OCE/IDB database.

3.1. ITP factors: Descriptive and analytical results

Regression results for the Lima panel are shown below (Fig. 2) and for the 16 Latin American countries are reported in Fig. 3. By and large, results are remarkably consistent in the sign and significance of the independent variables. For each variable we briefly characterize its descriptive (i.e., zero order) association with corresponding rates of secondary completion and report their (*cet. par.*) statistical significance in the regressions. To assess and compare the magnitudes of the effect of significant ITP factors on the probability of secondary education completion, we also estimated the marginal or impact effects on a representative Latin American child born in a poor household of the corresponding variables based on regression results for the available Latin American countries. The representative child is statistically defined as a boy with three siblings, a mother with 2.8 years of education and a father with two years of education, living in an urban area in a household receiving the average household income of undereducated households in the respective country.

¹⁴ The values for Bolivia and Peru seem implausibly high. Despite our best efforts, we have been unable to identify a specific source of a possible overestimate. We suspect the presence of an artifact such as differences in survey coding procedures. Although not the ideal situation, our statistical analysis is concerned with incremental differences in the index-related dependent variable *within each country*, which mitigates the consequences of *intercountry* differences in operational definitions.

FIGURE 2
 LOGIT ESTIMATES OF THE PROBABILITY OF COMPLETING AT LEAST
 SECONDARY EDUCATION. LIMA PANEL SAMPLE

Variable	C
Constant term	-1.233 **
N° of siblings	-1.337 **
N° of siblings * DR	1.329 **
Father's education	0.879 *
Father's education * DR	-0.894 *
Mother's education	0.129
Mother's education * DR	-0.073
Gender	-0.539 **
Household income	0.0004 *
Household income * DR	-0.0004
Migration	2.350 *
Migration * DR	-1.642
Mc Fadden R2	0.07
N° of observations	294

Note: ** significant at 5% level
 * significant at 10% level

Number of siblings. In general, the more siblings a poor child has, the lower h/er chances of completing secondary education. For the Latin American data, the negative relation is fairly mild for up to 3 siblings and quite strong for 4 or more. About 29 percent of the children with less than 4 siblings complete secondary, compared with 18 percent of those with 4 or more siblings. In the full regressions, the coefficient for the siblings variable is significantly negative in the Lima panel and in each of the sixteen Latin American regressions. In all regressions, except for Lima and Costa Rica, the coefficient is significant at the 1- percent level. The more siblings a child born in poverty has, the more likely it is that s/he will not complete secondary education. The marginal effect of one more sibling on the probability of ITP averages 3.2 percentage points across the Latin American countries in our sample. For Panama, Ecuador, and Mexico this effect exceeds 4 points (Annex 2).

FIGURE 3
CROSS-SECTIONAL LOGIT ESTIMATES OF THE PROBABILITY OF COMPLETING AT LEAST SECONDARY EDUCATION

Dependent variable: D = 1 if at least secondary education completed
= 0 otherwise

Variables	Brazil 1995	Chile 1994	Colombia 1995	Costa Rica 1995	Ecuador 1995	El Salvador 1995	Honduras 1994	Mexico 1996	Nicaragua 1994	Panama 1995	Paraguay 1995	Perú 1996	Venezuela 1995
Constant	-2.966***	-1.613***	-1.828***	-3.178	-1.935***	-2.595***	-2.999***	-2.121***	-3.022***	-1.485***	-3.775***	-0.843***	-1.998***
No of siblings	-0.227***	-0.180***	-0.111***	-0.084*	-0.191***	-0.142***	-0.295***	-0.229***	-0.133***	-0.266***	-0.252***	-0.104***	-0.163***
No of siblings*DR	0.038	-0.297	-0.006	-0.195***	0.036	0.286**	0.036	0.094**	-0.289**	0.001	0.187*	0.047	-0.047
Mother's education	0.153***	0.145***	0.132***	0.070*	0.221***	0.155***	0.107***	0.192***	0.063	0.166***	0.197***	0.149***	0.126***
Mother's education * DR	0.002	0.013	0.057**	0.108**	-0.034	0.025	0.043	-0.038	0.101	0.019	0.050	-0.010	0.056**
Father's education	0.104***	0.060***	0.069**	0.152**	0.005	0.108***	0.040	-0.054	0.106*	0.024	0.031	0.093***	0.083**
Father's education * DR	-0.041**	-0.001	0.012	0.069	0.066	-0.116***	0.078	0.110***	-0.010	0.052	0.042	-0.001	0.010
Gender	0.838***	0.585***	0.513***	0.776***	0.369	0.488***	0.522***	0.491***	1.088***	0.497***	0.872***	0.150*	0.963***
Gender * DR	0.063	-0.040	0.040	-	0.270	-0.233	0.329	0.416***	-0.429	0.247	-0.391	-	-0.155
Household income	0.001***	0.000***	0.000**	0.000***	0.000	0.000***	0.000***	0.000**	0.000*	0.001***	0.000***	0.000***	0.000**
Household income * DR	0.000***	0.000**	0.000**	0.000	0.000	0.000	0.000**	0.000**	0.000*	0.000*	0.000	0.000**	0.000
Residence	0.714***	0.777***	1.034***	1.212***	1.262***	1.132***	1.640***	0.912***	1.121***	0.662***	1.735***	1.130***	0.548***
Residence *DR	0.445***	0.204*	-0.089	-0.545*	-0.443	-0.030	0.095	0.061	1.145**	-0.259	-0.115	0.231	0.005
Single mother head	-	-	-	0.125	-	-	-	-	-	-	-	-	-
Single mother head *DR	-	-	-	1.665***	-	-	-	-	-	-	-	-	-
Mother works	-	-	-	0.269	-	-	-	-	-	-	-	-	-
Mother works * DR	-	-	-	-0.849***	-	-	-	-	-	-	-	-	-
Adoles. single mother	-	-0.754*	-	-	-	-	-	-	-	-	-	-	-
Adoles. single mother*DR	-	-0.154	-	-	-	-	-	-	-	-	-	-	-
Mc Fadden R2	0.27	0.22	0.21	0.27	0.26	0.27	0.34	0.27	0.19	0.25	0.42	0.21	0.19
No of observations	15209	9355	5446	1466	1127	1984	1397	3209	1027	1946	734	4495	4034

Note: *** significant at 1% level

** significant at 5% level

* significant at 10% level

Variable definition:

Residence is a dummy that takes the value one if the person lives in an urban area and value zero if s/he lives in a rural area.

The variable single mother head of household takes a value of 1 if the head of household is a woman and she is single, and zero otherwise.

The variable mother works takes a value of one if the mother is employed and a zero otherwise.

FIGURE 3. Continued
 CROSS-SECTIONAL LOGIT ESTIMATES OF THE PROBABILITY OF
 COMPLETING AT LEAST SECONDARY EDUCATION

Dependent variable: D = 1 if at least secondary education completed
 = 0 otherwise

Variables	Argentina ^a 1996	Bolivia ^a 1995	Uruguay ^a 1995
Constant	-2.253***	0.481**	-1.497***
No of siblings	-0.244***	-0.167***	-0.353***
No of siblings*DR	-	0.096**	0.076
Mother's education	0.232***	0.130***	0.108***
Mother's education * DR	-	-	0.021
Father's education	0.037	0.058***	0.124**
Father's education * DR	-	-	-0.068
Gender	1.137***	0.085	0.557***
Household income	0.000***	0.000*	0.000**
Household income * DR	-	-	0.000
Area	-	-	-
Area * DR	-	-	-
Mc Fadden R2	0.25	0.12	0.15
No of observations	580	1310	3267

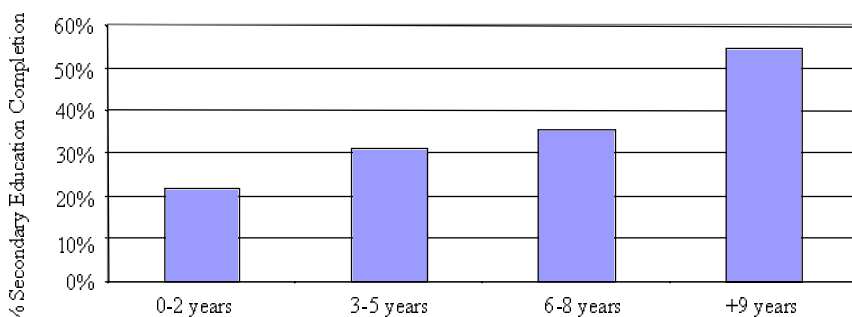
Note: ^a Urban survey.

These results are predicted by the Beckerian model and are also consonant with the bulk of findings in the literature on determinants of schooling outcomes, such as those reported in Psacharopoulos and Arriagada (1989 Brazil), Behrman and Wolfe (1987 Nicaragua) and Birdsall (1980 Colombia). Also, a review of 18 country studies, including eight Latin American countries, concluded that children with fewer siblings are more likely to be wanted children, to access public resources, to be treated more equitably relative to their siblings, to receive more parental time, and to have lower fertility aspirations when they grow up (Lloyd 1994). A large number of siblings in poor households almost inevitably have negative effects on child nutrition and hence on schooling.

Another notable result is that in 5 of the 7 regressions in which the siblings effect is significantly different between poor and non-poor households, it is, as predicted by the Beckerian model, stronger in the poor households. This result was also expected because the constraint that the number of siblings sets on family resources –e.g., parental time and public goods– does not bite as hard in non-poor households. Non-poor parents tend to work fewer hours and therefore have more time to spend with their children.

Parental education. Father's education bears a marked positive association with our outcome (ITP) variable (Fig. 4).¹⁵ The marginal effect of more years in father's education on the probability of ITP averages one percentage point for the 16 countries and is especially strong in Peru, Costa Rica and El Salvador.

FIGURE 4
SECONDARY EDUCATION COMPLETION BY FATHER'S YEARS OF
EDUCATION AMONG 20-24 YEAR BORN POOR: 16 COUNTRIES



Note: Calculation based on an average of 16 Latin American countries with nationally representative.

Source: Authors' using the OCE/IDB database.

The histogram depicting a poor child's secondary completion probability by mother's education is very similar to that for father's education and the differences on ITP rates by mother's education are even more marked. While mother's education fails the significance test in the Lima panel regression owing, mainly, to its colinearity with father's education, it has a positive and highly statistically significant effect in the country regressions.¹⁶ The importance of mother's education in children's schooling performance has been emphasized in the literature and documented in empirical studies (World Bank 1998; Schultz 1998).

The marginal effect of one more year in mother's education on the probability of ITP averages 2.3 points for the Latin American countries, more than twice than

¹⁵ Nine or more years of father's education in Figure 4 implies that the mother is the household head and has not completed primary and thus the household (and hence the child) is classified poor.

¹⁶ The positive coefficient of mother's education is insignificant for Nicaragua and in the Lima panel due to its substantial correlation with father's education— i.e., assortative mating. When father's education is dropped, mother's education is significant and its marginal effect becomes much larger. The education of the mother and that of the father are jointly significant in those regressions where either one is not significant. The marginal effects of father's education and mother's education in the Lima panel are very sensitive to the inclusion of only one of the two variables or of both in the regression. Their estimated impact effects are 2.8 for father's education and 0.4 percentage points when both variables are included in the regression.

for father's education. For half the countries, the marginal effect is 3 points or higher (Annex 2).

In sum, the effect of parental years of schooling on ITP is generally significant and their impact is appreciable. A common rationale in the theoretical models discussed previously is that more educated parents are more capable to assist their children with their homework and usually have greater aspirations for their children that motivates them to achieve a higher level of education.

Gender. While 32 percent of girls born poor complete secondary education, only 22 percent of boys born poor do so. This substantial difference is strongly supported by the panel and Latin American regressions, in which the gender coefficient was highly significant in women's favor except for Bolivia and Ecuador, where it is not significant.¹⁷ This result is consistent with other studies for Latin America (ECLAC 1998; Robbins 1999).

The representative Latin American child's probability of completing secondary education increases on average by 11.5 percentage points if the child is a girl compared to the probability for a boy. For Argentina, Nicaragua, Costa Rica and Venezuela, the impact effect of gender is particularly strong (Annex 2).

The Beckerian model would explain this finding in terms of girls' lower opportunity costs of studying. This is supported by evidence that employment rates for girls who drop out of school in Latin America are much higher than for boys. Among 15-19 year olds living in urban areas in 11 Latin American countries, 16 percent of the women were gainfully employed compared to 33 percent of men (ECLAC, 1998). These differences are even greater in rural areas.

Household income. Children's education is not an inferior good and thus household income has a high statistically significant positive effect on the probability of overcoming ITP in the Lima panel and in all the Latin American regression results, except Ecuador. Also, children in lower income households are often forced to drop out of school to supplement family income.¹⁸

In about half the Latin American regressions, the (positive) coefficient of household income on overcoming ITP is statistically significant and higher in poor households than in non-poor households. In the remaining countries, the coefficients are not significantly different. However, in terms of antipoverty policy strategy, a more interesting result is that even while significant, the marginal effect

¹⁷ Although in the cases of Bolivia and Ecuador the relevant coefficients do show the probability of secondary education completion to be larger among women than among men, such difference was not statistically significant. In all other fourteen Latin American countries the difference is highly statistically significant.

¹⁸ Household income in the Lima panel, as all other independent variables, is measured nine years back in time to capture household income during the school years of the person. In the country regressions income is measured for the year of the survey, and is our best proxy of household income during the child's school years.

on the probability of ITP at a substantial (10 percent) increase in household incomes, is typically small compared to parental education and other factors. On average, the marginal effect is less than 0.5 percentage points and in no cases does it reach 1.0 point (Annex 2).

Migration. Because of data availability, the effect of migration on secondary completion could only be measured in the Lima panel regression. In the panel, migrant children are significantly less likely to complete secondary education than non-migrants, which suggests that the disruptions associated with migration during childhood, and lower school readiness by migrants swamp the better education opportunities in Lima. Other variables that could be included *only* in the country regressions are discussed below.

Urban/rural residence. Poor children in Latin American urban areas complete secondary education at a rate that is well over twice that of their rural counterparts (34 percent vs. 13 percent). The regressions for the 13 countries where surveys covered both rural and urban areas showed *residence* to be a highly statistically significant variable. On average, the representative child's probability of completing secondary falls by 14 percentage points if he lives in a rural area rather than in an urban area (Annex 2). In Peru and Ecuador, the negative impact exceeds 20 points.

The disadvantage of rural residence for secondary school completion is not confined to poor children. In most countries there is no statistically significant difference between the urban/rural impact on children born poor and non-poor.

López (1996) catalogues several possible reasons for low secondary completion rates in rural areas. Parents might value the opportunity cost of children as farm workers much higher than the present value of future returns to secondary education. Second, credit market imperfections in rural areas impede borrowing to cover the cost of keeping the child in school even if parents assess the economic returns to the child's secondary education to be sufficiently high. Third, as Becker (1975) argues, the cost of having "quantity" children is lower in rural areas, resulting in less "quality" investments per child. Fourth, accessibility and quality of secondary schooling are significantly lower in rural than in urban areas. Finally, returns to education are lower in rural than in urban areas because nonagricultural work requires more skills that correlate with higher levels of education than agricultural work (López and Valdés 2000). Data and other limitations did not allow us to further analyze the reasons behind the rural urban differential on ITP. A comprehensive analysis of the determinants of poverty in rural areas in Latin America is provided in López and Valdés (2000).

Single adolescent mothers. The variable *single adolescent mother head of household* is statistically significant only in the Chile regression. Since on *a priori* grounds and on the strength of other studies this factor can be presumed to be quite important in ITP in Latin America, we believe that the overly strong assumptions required in constructing the variable led to a poor index and hence to

the results obtained. The statistical results discussed here refer therefore to the Chile regression. The children of adolescent single mothers complete secondary education in much lower proportion than other children; and the impact effect on the representative child's probability of finishing secondary is strongly negative (-13 points; Annex 2). This result coincides with findings by Buvinic *et al.* (1992) based on a sample of households in Santiago.

A re-analysis of the sample used in Buvinic *et al.*'s (1992) commissioned for the present study indicates that adolescent motherhood's effect on the child's educational performance partly results from a higher incidence of malnutrition compared to other children, which in turn makes them more likely to repeat school years.¹⁹ Adolescent motherhood also contributes to ITP in ways not captured by our framework, notably through the additional obstacles it creates for the girl-mother towards completing secondary –especially those arising from child care responsibilities and discrimination at school. Moreover, there is evidence that adolescent motherhood is itself transmitted intergenerationally: teen mothers tend to beget teen mothers (Buvinic 1997).

Early childhood care and development. A second Lima panel was constructed from the same Lima data set to measure the impact on school progress of having attended an early childcare program. Children that were three and four years old in 1985 were selected to determine whether they had completed primary by 1994. The small size of the sample (57 children) prevented distinguishing according to “poor” vs. “non-poor” households, although household income is a variable in the regression.

For this sample, 85 percent of the children who had attended childcare programs had completed primary by age 13, compared to 52 percent of those who had not attended. The effect of childcare attendance on primary completion is positive and statistically significant in a regression that controls for number of siblings, father's education, mother's education, and household income in 1985 (Annex 3). From this regression, we estimated corresponding marginal-impact effects on the probability of a boy from a representative undereducated Lima household having completed primary by age 13. The base case attributes for the household are such that: the father and mother had completed 2 and 2.8 years of school respectively; household income was \$1.52 per capita per day; and he had not attended childcare. The impact of childcare attendance turns out to be unexpectedly large.

In this regression, coefficients of father's education and household income are statistically insignificant and, in any case, their impact is negligible (less than 1 percentage point for an additional year of father's education or for an increase of 10% in household income). An additional year of mother's education, however,

¹⁹ In the Santiago data analysis, done by John Schmitt, parental education and household income also significantly affect child stunting, which in turn affect school repetition.

increases the child's probability of primary completion by age 13 years by 3 points; having one additional sibling reduced the probability by 6 points. Having attended a childcare program increased the probability by 39 points. From other prior studies on the effects of early childcare programs on school performance, such as that noted below, we expected strong significance and impact results for this variable. It is likely, however, that our estimates exaggerate the magnitudes. Available knowledge supports the common sense that parents' degree of concern and activism for their children's mental development vary substantially, including within socioeconomic groups. Such differences will affect not only their decision (and efforts) to send the child to a pre-school program, but also many other aspects of the child's home environment and nurturance. We suspect that our coefficients are capturing the effect of these unobservables and hence resulting in much stronger estimates than would be the case otherwise.

A very strong positive impact of development-oriented early childcare programs on educational attainment is also supported by previous empirical studies. Buvinic *et al.* (1992) found that two-thirds of poor children in Santiago (Chile) have lower than expected educational performance owing to lack of meaningful development care during their early years. There are several studies based on data from Chile, other Latin American countries and elsewhere in the developing world that broadly support this finding (Deutsch, 1999). Notably, two empirical studies in the United States using randomized trials research designs and follow-up interviews of the children up to ages 15 and 27 years respectively, provide exceptionally sturdy support to the view that quality early childcare and development services to children in poverty is one of the most effective tools for breaching ITP (Karoly *et al.*, 1998; IDB, 1999).

Moreover, developmental early childcare not only helps the child's future but also allows mothers to continue their education, learn new skills, or work outside the home, thus improving the household economy and even increasing the rate at which they would otherwise succeed in overcoming their own ITP.

The signs, significance, and values of the coefficients in the country regressions and in the main Lima panel are generally robust to moderate changes in specification. The Mc Fadden R^2 of the cross-section logit regressions is highest for the Paraguay regression (0.42). This statistic is higher in the Peru countrywide cross-section regression than for the Lima panel, despite the more suitable data available for the latter. One reason is that the inclusion of the variable urban/rural residence in the countrywide sample has a high explanatory power, resulting in a considerable increase in the Mc Fadden R^2 .

In sum, the econometric results indicate that there are several family factors that significantly improve a poor child's chances of breaking out of the poverty trap: fewer siblings, more educated parents, more household income, urban residence, having been born to an adolescent mother, and attended an early childcare program.²⁰

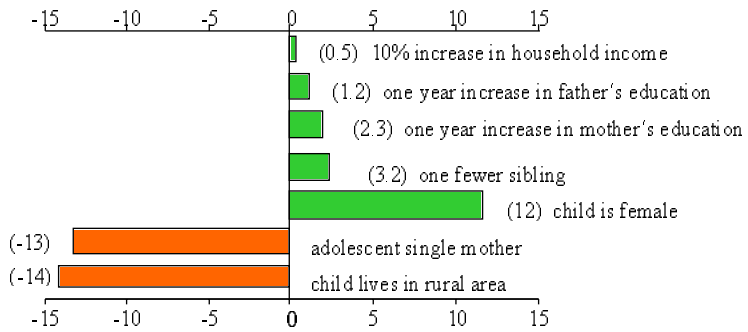
²⁰ The adolescent motherhood result applies strictly only to the Chilean case; the early childcare programs attendance only to Lima.

Marginal or impact estimates compared:

To assess which factors are most consequential in respect to ITP in the region, the marginal or impact effects of the independent variables were compared for judgmentally “modest” changes in their value, in the case of scalar variables, and qualitative changes in the case of qualitative variables. Inter-country comparisons are depicted in graphs showing marginal or impact effects of independent variables across each available country (Annex 2). In each of these graphs, the countries are shown in ascending order, from left to right, according to their poverty cycle break rate defined earlier.

A second assessment compares, in a single graph (Figure 5), the identically defined marginal or impact effects for each independent variable in terms of their unweighted mean values, each averaged over the 16 countries, except for *residence*, which is averaged over 13 countries. The discussion in this section integrates several of the impact effect findings already reported in connection with each significant ITP factor.

FIGURE 5
MARGINAL OR IMPACT EFFECTS ON THE PROBABILITY
OF SECONDARY SCHOOL COMPLETION (mid 1990s)
(mean values for 16 countries, in percentage points)^a



Source: Authors' calculations using the OCE/IDB database.

Note: Calculations based on a representative Latin American boy born in poverty (3 siblings, mother 2.8 years ed., father 2 years ed., an urban household).

^aExcept for *residence*, which is based on 13 countries.

Holding all other factors constant at the stipulated levels, the effect of a ten percent increase in household income, on the probability of this representative Latin American boy born in poverty completing secondary education is on average an increase of 0.5 percentage points. This surprisingly weak effect is also found in the Lima panel (0.4 percentage points), where measurement of the income variable is less of a problem. The weak effect of income could owe partly to

including parental education in the regression, which captures the permanent income effect while the household income variable is mainly capturing the effect of transitory income on the probability of completing secondary. Excluding education of the father and mother, the marginal effect of household income increases, but remains weak relative to the other factors.²¹ While the magnitude of the marginal effect of household income is admittedly imprecise and always debatable, its relative weakness in our estimates is sufficiently marked and ubiquitous across countries to persuade us that ideal estimates would be unlikely to catapult household income into becoming the dominant factor. Moreover, this finding is supported by López and Valdés' (2000) Colombian study, where the effect of one less sibling on the child's educational attainment was ten times larger than that of a ten percent increase in per capita income.

Comparative results of the exercise bearing on the impact of the other family factors on the probability of secondary completion by the representative child can be summarized thus. If the father had one more year of education, his probability of completing secondary would increase by 1.2 percentage points. The corresponding effect of the mother's education is nearly double that of the father: 2.3 percentage points. If he had one sibling less, his probability would increase by 3.2 percentage points. If the child were a girl rather than a boy the probability would increase by 12 percentage points.²² Having had an adolescent mother decreases his probability by 13 percentage points. Living in a rural area decreases his probability by 14 percentage points. In the Lima panel, had the child been a migrant, his probability of completing secondary would drop by 24 percentage points.

Qualifications on the statistical results:

As with other statistical studies of this kind, our results deserve caution. There could be problems of reverse causality, selectivity bias, omitted variable or measurement error, all of which could alter the results of this study. However, the Lima panel results should be free of reverse causality, since the dependent variable lags the independent variables. In so far as the results for the Latin American countries are consonant with those for the Lima panel, our concern for reverse causality seriously distorting the former is somewhat lessened. Owing to limitations in the available data, our statistical results are inevitably subject to the other problems mentioned.

21 Yet another worthwhile qualification is that an increase in household income sustained over the years is likely to have an indirect effect on ITP that is not captured in our estimated coefficient; for example, by inducing additional education or training of parents or older siblings, which would provide additional support for the child's schooling.

22 The impact effect of gender in the Lima panel was of 2 percentage points, which is lower than the regional average, but similar to the impact effect of gender in the Peruvian cross-sectional regression.

Selectivity bias. In the Lima panel, individuals not reporting the same household head in both 1985 and 1994 surveys, are excluded from the sample because they can not be traced. In the Latin American country data, 20 to 24 year-olds not living with their parents are excluded from the sample for lack of family background information. Those excluded from the samples probably had lower secondary completion rates,²³ leading to biased estimates of the determinants of ITP. To overcome this limitation of this and most other studies on the subject would require an instrumental variable that affects the departure from the parental household but not educational achievement. We were unable to identify such a variable for this study. Devising one for subsequent work in this area is a worthwhile challenge.

The multiplicity of reasons why a 20-24 year old may not be living in the parental household further complicates the identification problem by requiring identification of multiple instrumental variables (Glewwe *et al.*, 1995).

To the extent that selectivity bias in our estimates is deemed to be large, then they can be regarded to apply properly only to the selected population of individuals still living in the parental household by ages 20 to 24. However, we follow Glewwe *et al.* (1995) in arguing that since the selection bias tends to make significant variables appear insignificant, “our estimates, by placing lower bounds on the effects of [the independent] variables, would still be useful for policy analysis.” (1995: 242).

In sum, the broad consonance of our results with the theoretical framework, with previous research, and among the Lima panel and country-specific regressions, provide a measure of confidence on the reliability of findings in respect to orders of magnitude and qualitative differentials.

Other factors in ITP:

Data limitations prevented including in the regressions other likely family factors. This section discusses those other ITP factors using ancillary information.

Ethnicity. Although indigenous people make up only 10 percent of the Latin American population, they account for 25 percent of the region’s poor and are more affected by ITP than non-indigenous people (IDB 1998). Whereas 36 percent of the poor non-indigenous children had completed secondary education in Peru in 1994, only 23 percent of the poor indigenous children had done so.²⁴

Education tends not to be as good a proxy for indigenous people’s socioeconomic wellbeing as it is for others. Years of schooling, together with other productive attributes, such as age and experience, accounts for only half of

23 Among children born poor, those that could not be included in the Lima panel have a secondary completion rate of 27 percent, while for those included in the panel the rate is 34 percent.

24 Authors’ calculations using a survey database assembled by Instituto Cuanto (1994).

their earnings gap relative to non-indigenous people (Patrinos, 1998). The remaining 50 percent earnings gap would reflect unaccounted factors such as discrimination, differences in infrastructure and access to services, quality of education, labor force participation, cultural, or measurement errors (Patrinos, 1998).²⁵ A policy implication is that to effectively reduce ITP among indigenous people, household-oriented strategies to promote higher secondary completion rates need to be especially complemented with measures to address socioeconomic environment issues such as those cited above. Nevertheless, family factors remain a crucial part of the strategy.²⁶

Health. Children in undereducated households are more likely to be undernourished and to suffer disease from poor sanitation and health practices, and from inadequate diets, usually compounded by environment factors such as deficient health facilities. These health problems often hamper cognitive development among poor children, and in the all too frequent cases of inadequate to severe malnutrition in early childhood, learning capacity is often drastically impaired (Selowsky, 1980; Simmons and Alexander, 1980 in Psacharopoulos, 1995; Young, 1996). As mentioned earlier, child malnutrition was found to have a large impact on the probability of repeating a year of school in Santiago, Chile. In Guatemala, poor health was also linked to late school enrolment (Jamison 1986, in Psacharopoulos 1995:7), and in rural Guatemala, nutrition was strongly related with school enrolment (Balderston *et al.*, 1981 in Psacharopoulos 1995:7).

Domestic violence. According to one estimate, some six million children in Latin America are severely abused at home (Larraín *et al.* 1997). While domestic violence is hardly unique of poor households, its effects are typically worse (Morrison and Biehl, 1999). Domestic violence has a strongly negative impact on children's education performance, even when the child is not the target. Moreover, children from violent homes tend to form violent homes as adults; in effect, an intergenerational transmission of violence.

Morrison and Orlando's (1997) study in Chile found that children who experienced or witnessed domestic violence were significantly more likely to have disciplinary problems at school and to repeat grades. In their sample, 33 percent of children who suffered domestic violence had disciplinary problems at school, compared to only 13 percent of other children. Larraín *et al.*'s (1997) Chilean study

²⁵ Patrinos argues that discrimination is the most important among such factors. However, López and della Maggiora's (2000) study of rural Peru concludes that biases in the supply of infrastructure and other public services against indigenous villages are more important than discrimination.

²⁶ According to Chiswick, "it would appear that members of more successful ethnic groups had parents with higher levels of schooling, fewer siblings to compete with for parental time and other family resources, and had mothers who were less likely to work when young children were in the household" (Chiswick, 1988, in Patrinos, 1998:8).

also showed that children who reported suffering abuse performed significantly worse in school than the rest.

A remark on non-family factors in ITP. As stated at the outset, this study deals only with a subset of factors that are known, or can be presumed to affect ITP materially. Some of the most obviously relevant among such non-family, or environment, factors left out of the study, include the accessibility and quality of basic social services to the uneducated household such as reproductive and general health services, sanitation, and police protection among the “social environment group”, and labor market conditions for undereducated labor among the “economic environment group”. And although we have analyzed the role of household experience with certain social services, such as early childhood care and development programs, crucial aspects of accessibility and quality have not been addressed.

We are keenly aware of the advantages of incorporating most such variables into the study, had it been feasible, and hope to see future research move in that direction. At the same time, we are reasonably confident that despite the omission of these important components of the ITP picture, our main findings would not be qualitatively refuted by a more comprehensive analysis of the populations included in our samples. The main reason is our strong intuition that within each country sample (and especially for the Lima panel), the bulk of the households faced social and economic environments that were not sufficiently different across households to reverse our main results.²⁷

4. CONCLUSIONS AND POLICY IMPLICATIONS

Along with other recent broad inquiries into the root causes of Latin American poverty, Londoño (1996) concludes that low educational attainment among the children of the poor is a paramount factor contributing to the persistence of inequality and the increase in poverty in the region. Associated policy prescriptions tend to emphasize the need to provide the poor with more and, especially, better schools. While our findings in no way weaken this prescription—which we happen to vigorously endorse—our findings point to the need of complementing this supply-side action (as well as actions on the supply of other basic social and economic services) with measures to address demand-side or family factors that tend to impede educational performance among the poor even when good schools may be accessible.

The estimated impact of the factors tested on the likelihood of ITP also suggests policy implications. The magnitude of each variable’s impact (measured

²⁷ Even if the omitted variables affected poor households very differently, the results would not be biased significantly if the omitted variables were not strongly correlated with the independent variables.

in percentage points change in the probability of ITP associated with posited changes in the independent variable) is, of course, directly related to the size (or nature, for qualitative variables) of the arbitrarily posited change. Yet, it is suggestive to compare certain estimated impacts from the policy perspective.

For example, to what extent should an ITP-reduction strategy rely on income transfers to the target households compared to incorporating measures to reduce adolescent single motherhood? According to our estimates, the marginal effect on ITP of a 10 percent increase in household income is a 0.5 percentage point increase in the probability of secondary completion. For a six-member household, at the \$2 per capita per day poverty line, annual income is \$4,380 ($= \$2/h/d * 6h * 365d$). Thus, for a \$438 cost ($= 0.10 * \$4,380$) per year, we could buy a benefit of increasing a typical Latin American boy's chances of finishing secondary from 26 to 26.5 percent, an amount equal to rounding error. To buy a substantial ITP-reduction benefit, say the 13 percentage points associated with a child not being born to a teenage mother, we would need to transfer \$11,388 ($= (\$365/0.5ppt) * 13ppt$) *annually*, assuming that the income effect were to hold linearly for such a large extrapolation—not to mention the far more remote possibility that such a scheme could be fiscally or politically feasible. (Diminishing marginal returns to this factor would seem more plausible and hence the need for an even larger transfer).

Moreover, preventing a single woman from becoming a teenage mother would payoff benefits to additional children that she may have as an adult. One can easily conjecture how for an annual cost of \$11,388 per teenage girl at risk, programs to induce them to postpone motherhood until age 20 could get a far larger ITP-reduction bang for the buck. Analogous exercises comparing the cost of achieving given ITP-reduction effects through pure income transfers versus programs to affect at least 3 of the family factors in our regressions (fertility, mother's education, and father's education) would lead to conclusions favoring the inclusion of "family factor programs" in any ITP-reduction strategy that are qualitatively similar, if considerably less dramatic quantitatively.

The paper's analytical approach, by following the conventional method of assessing the impact or marginal effect of changes in one independent variable, is not well suited for making inferences on the more policy relevant questions of expected ITP effects of material changes in two or more family factor conditions. There are nevertheless, compelling reasons to believe that strong complementarities exist among several of the factors examined here.

Some of these reasons derive from the theoretical literature that underpins the paper. For example, in the Beckerian tradition, more educated parents are more efficient consumers who would use incremental household income, or the opportunities associated with urban residence, for disproportionately greater investments in child quality and supporting their children's education through secondary. It would be worthwhile to explore such potential synergies among relevant ITP factors in further research by testing functional forms that accommodate interactions among independent variables and non-linearities.

Much has been learned over the last 30 years about designing and implementing strategies to improve education opportunities for the poor and provide them with health and other basic social services that would either directly or otherwise, be expected to affect ITP outcomes. This knowledge is, of course, essential for an effective policy response to the ITP problem in the region. Any substantive discussion of this abundant literature, however, lies beyond the scope of this paper.²⁸

The evidence presented in this paper supports the view that family factors are significant determinants of secondary school attainment among the children of the undereducated poor populations of Latin America and thus belong in any comprehensive strategy to tackle the problem of ITP in the region. Poverty reduction strategies being formulated or implemented in Latin America today do not take full cognizance of the crucial role played by the family in transmitting poverty to their children. Child-oriented programs, especially in health and education, tend to focus on the children as treatment units rather than as parts of a family, neglecting the potential effects that the family and its circumstances can bring to bear in education outcomes. Integrating programs around the family would capitalize on seemingly powerful complementarities among programs and support parent efforts to invest in their children. Admittedly, institutional structures whereby the public agencies overseeing each social service are quite separate bureaucracies, with traditions and political-economic features that do not favor strategic partnerships usually hamper integrating social programs—whether around the family or even the child. Nevertheless, the history and incipient track record of a handful of integrated anti-poverty programs in the region, notably the *Programa de Educación, Salud y Nutrición (PROGRESA)* in Mexico and *Programa de Asignación Familiar (PRAF)* in Honduras are quite encouraging and provide useful case studies in this frontier (Glassman, 2000).

The challenge of how best to adapt and enhance promising practice to reduce ITP in Latin America deserves to be taken up by our governments, civil society, and ourselves as a matter of urgency. Failure to tackle this problem effectively will allow its considerable economic and social costs to persist and compound. But more importantly to us, it will condemn three out of four of the millions of children being born to disadvantaged families in our region to a life of dead-end jobs and dead-end poverty—or possibly, antisocial means to higher income. The costs of business as usual are simply too high.

28 Useful starting points to this operationally oriented literature, including comprehensive bibliographies, are IDB (1999), especially concerning Latin America and the Caribbean, and World Bank (2001).

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ANNEX 1

SECONDARY SCHOOL COMPLETION AND EARNINGS: INDICATIVE
EVIDENCE FROM BRAZIL, PERU AND ARGENTINA*Brazil*

Findings by Duryea and Székely (2000) together with supplemental data kindly provided by them, confirm a substantial earnings advantage, at all working-age groups, of secondary education graduates in Brazil in 1995, over those who did not go beyond primary education. The earnings gap of secondary graduates over those with incomplete (complete) primary ranges from a ratio of around 1.7 (1.3) in the younger groups to about 2.5 (1.5) towards the end of the working years. These findings sustain the view that secondary education is significantly associated with higher lifetime earnings prospects compared to those expected for individuals with only primary schooling. For reasons stated earlier, we expect this gap to grow over the coming years. Evidence that such a trend is already underway is given in the Duryea and Székely (2000) paper: out of 8 Latin American countries with sufficient data, returns to higher levels of schooling increased between the 1980s and the 1990s in Brazil and in 4 other countries while declining only in Chile.

Peru and Argentina

The evidence here focuses on the relationship between secondary completion by the household head and h/er household's per capita income. Specifically, we examine the relation between secondary completion and income-based poverty among households headed by relatively recent entrants into the labor force—i.e., young household heads. They are the most relevant to the population we are concerned about in the paper (i.e., present and future labor force entrants, who we believe are more and increasingly likely to face education-sensitive labor markets). Also, by excluding older household heads we control for the typically strong effect of experience-age in earnings regressions, while using a simpler statistical method to test the null hypothesis that the household's per capita income is independent of secondary completion by the household head. Thus, from each of our Peru and Argentina countrywide samples, we select households whose heads were 20 to 35 years of age. For each country, households are then distributed among four groups corresponding to the cells of the cross tabulation of: i) household income per capita per day below \$2ppp (Poor) or otherwise (Non poor); and by ii) secondary education completion of the household head (No or Yes). Each cell count for the samples is weighted by corresponding LSMS weights to render them representative of the country as a whole.

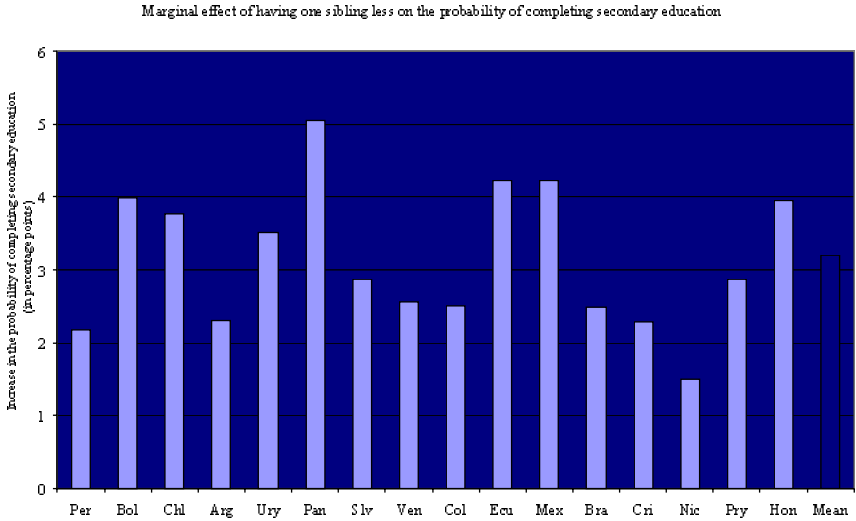
Results: For Peru, of those who *have not completed* secondary education, 66% are Poor and 34% are Non-poor. Of those *who have completed* secondary education 25% are Poor and 75% are Non-poor. For Argentina, of those who *have not completed* secondary education 24% are Poor and 76% are Non-poor. Of those *who have completed* secondary education 6% are poor and 94% are non-poor.

Chi-squared tests reject, at the one percent level, the null hypothesis in both countries that the two variables (secondary education completion and poverty) are independent. Underlying cross-tabs and statistical test values are available from the authors on request.

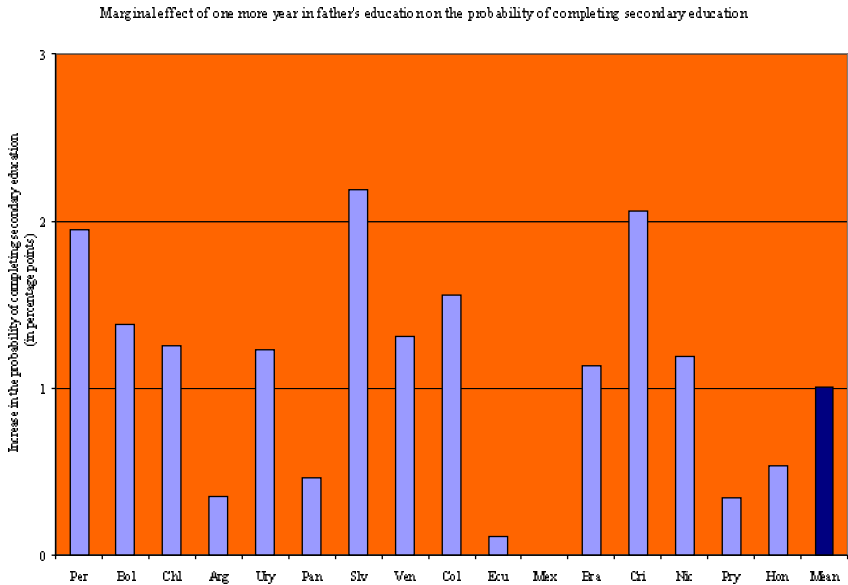
ANNEX 2
MARGINAL OR IMPACT EFFECTS OF THE ITP FACTORS

In the graphs below, countries are ordered from left to right according to their ITP inequality index (from less ITP to more).

Number of siblings

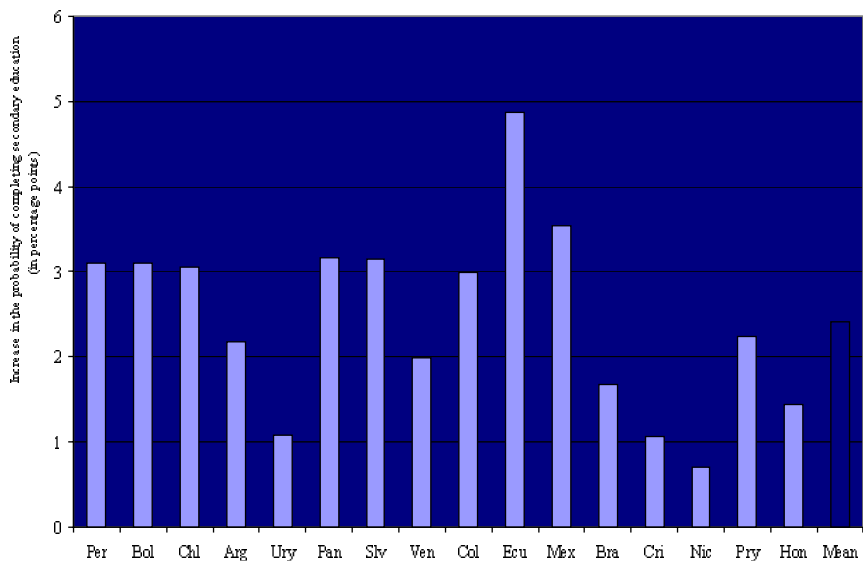


Father's education



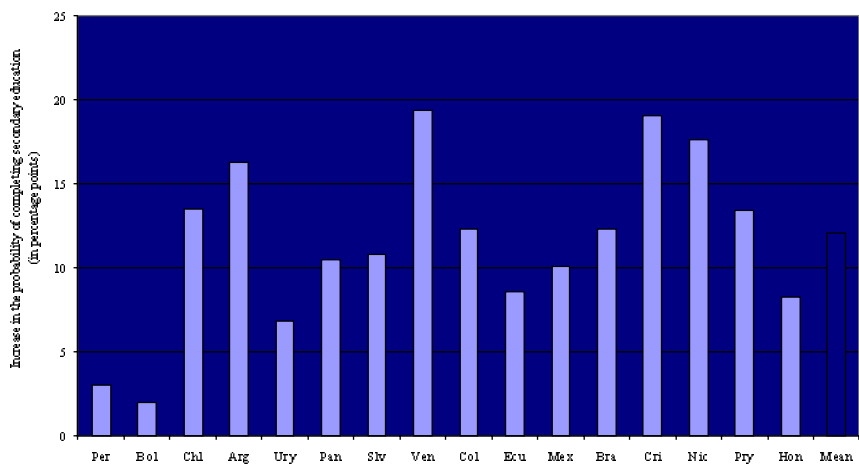
Mother's education

Marginal effect of one more year in mother's education on the probability of completing secondary education



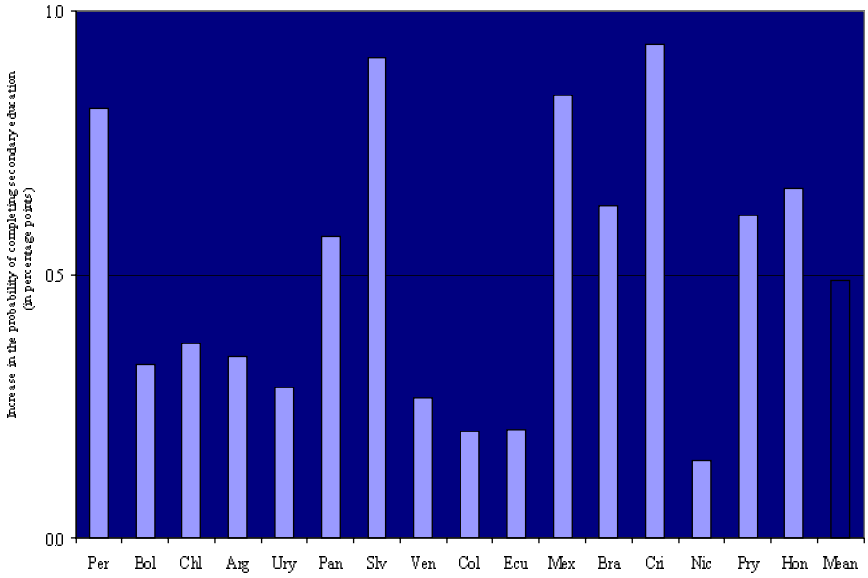
Gender

Impact effect of being a girl as opposed to a boy on the probability of completing secondary education



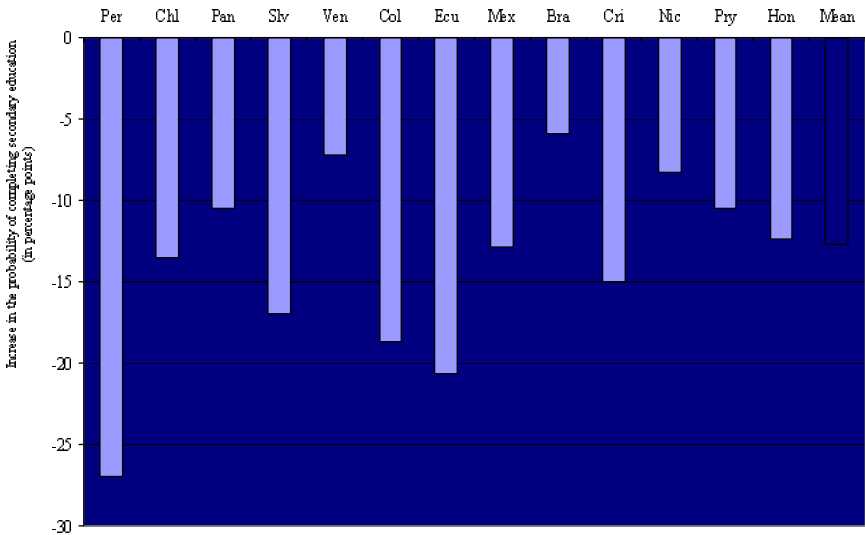
Household income

Marginal effect of a 10% increase in household income on the probability of completing secondary education



Urban or rural residence

Impact effect of living in a rural area as opposed to an urban area on the probability of completing secondary education



ANNEX 3
EARLY CHILDCARE PROGRAM ATTENDANCE AND PRIMARY SCHOOL
PERFORMANCE

This table shows logit estimates for the probability of children from poor households completing at least primary school by age 13 using the Lima panel subsample.

Dependent variable^a : D = 1 if at least primary education completed by age 13
= 0 otherwise

Variable	Coefficient
Constant	-4.764*
N° of siblings	0.610*
Father's education	0.051
Mother's education	0.316*
Household income	-4.9E-05
Childcare program ^b	2.107*
Mc Fadden R ²	0.21
N° of observations	57

Note:

* significant at 5% level.

^a Dependent variable measured in 1994, independent variables measured in 1985.

^b The variable *Childcare program* is a dummy variable with value one if child attended an early childcare program and zero otherwise.