FAMILY LEGACY

BREAKING THE MOLD OR REPEATING PATTERNS?

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Social Pulse in Latin America and the Caribbean **2017**

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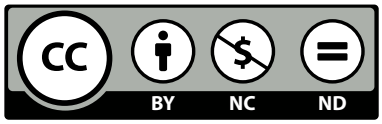

FOREWORD

Every mother or father wants the best for their children and generally aspires for them to achieve higher standards of living than he or she herself attained. Social Pulse, the Inter-American Development Bank's report on social conditions in the region, is focused on the analysis of intergenerational mobility, that is, the difference between the socioeconomic position of parents and that of their children when they are adults. This issue is particularly relevant for the region, given the close relationship between "inequality across generations of the same family" and "income inequality between families". It is important to keep in mind that the unequal development of human capital can, in turn, affect economic growth and labor productivity at the national level.

Traditionally, intergenerational mobility has been analyzed using income as a reference. However, in the absence of data for this type of analysis in Latin America and the Caribbean (LAC), studies on this topic in the region tend to measure intergenerational mobility through differences in education and occupation between parents and their children. For this reason, the first part of this report integrates the examination of education, income and domestic violence in a novel way for economic studies of social mobility. The first analysis explores the correlation between the formal education of members of different generations of a single family, including for the first time 26 countries of the region. The second turns to a series of unique data bases for Brazil and Peru that permit examination of intergenerational mobility of income associated with a sample from universities of the two countries, and compare it with recent analysis for universities of the United States. Finally, the third approach includes a question that is usually not tackled in economic studies of social mobility, and that is to what extent physical violence suffered by women at the hands of their partners and severe physical punishment of children by their parents are repeated across generations.

In the second part of the report, some thirty social indicators for the region are updated and new ones are introduced, grouped according to the life cycle. Many of the indicators include data for the Caribbean sub-region. The analysis in this part responds to the growing demand for quantitative evidence about social well-being, the trends in all countries of the region and the differences between specific groups of people. This analysis shows that, in the past two years, not only were some advances of the previous decade stalled in the region, but reversals also occurred in some key indicators of social development. Even though setbacks are consistent with the macroeconomic difficulties faced by a majority of countries, the social gains continue to be far greater than those registered in the first years of this century. However, the challenges presented by the evidence are enormous because they require that countries set in motion ambitious changes –related to learning, formal employment, female labor force participation, income inequality and efficiency of public spending– to achieve not only sustained growth but also more inclusive growth.

I invite you to read the 2017 Social Pulse, titled Family Legacy: Breaking the Mold or Repeating Patterns, a document that reminds us what we have achieved as a region and also the challenges we have before us.

Marcelo Cabrol
Manager IDB Social Sector

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The ideas and opinions expressed in this publication belong to the coordinators of the project and the authors of the corresponding chapters, and do not necessarily reflect in any way the position of the Inter-American Development Bank nor its Board of Directors.

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FAMILY LEGACY

BREAKING THE MOLD OR REPEATING PATTERNS?

Introduction

No matter the country or region, parents around the world share the core belief of wanting their children to be better off than they are in terms of a host of outcomes including health, income and education. Parents are eager to pass on positive traits, resources, and behaviors to their offspring, for example athletic ability, financial assets, or playing a musical instrument. At the same time, parents recognize that negative outcomes are also transmitted within families – drug abuse, for example. The concept of intergenerational social mobility refers to whether offspring improve or worsen their position with respect to parents' outcomes.

Family legacy is not only of interest to parents but also to policymakers. Why should policymakers care about the patterns within families? Put simply, if the rates of replication of domestic violence within families are high this will hinder policymakers' efforts to reduce the overall rates of domestic violence in society. Moreover, Latin America and the Caribbean continues to be the region with the highest income inequality in the world. The strong empirical link between income inequality and intergenerational income mobility is known as the Great Gatsby curve; and countries from the region are well represented in the quadrant of the graph with high income inequality and low intergenerational income mobility. While the relationship between inequality and mobility is more complex than summarized by the Great Gatsby curve and is certainly not deterministic, Durlauf (1996) and Corak (2013) suggest that higher inequality may impede income mobility. This contributes to the concern that intergenerational income mobility in LAC is low.

Measures

To understand intergenerational patterns, it is useful to consider the concepts of *intergenerational mobility and intergenerational persistence.* This volume will focus on these concepts in three areas: i) education, ii) income and iii) domestic violence. Mobility and persistence are typically measured in two similar but distinct ways.

A. Correlations

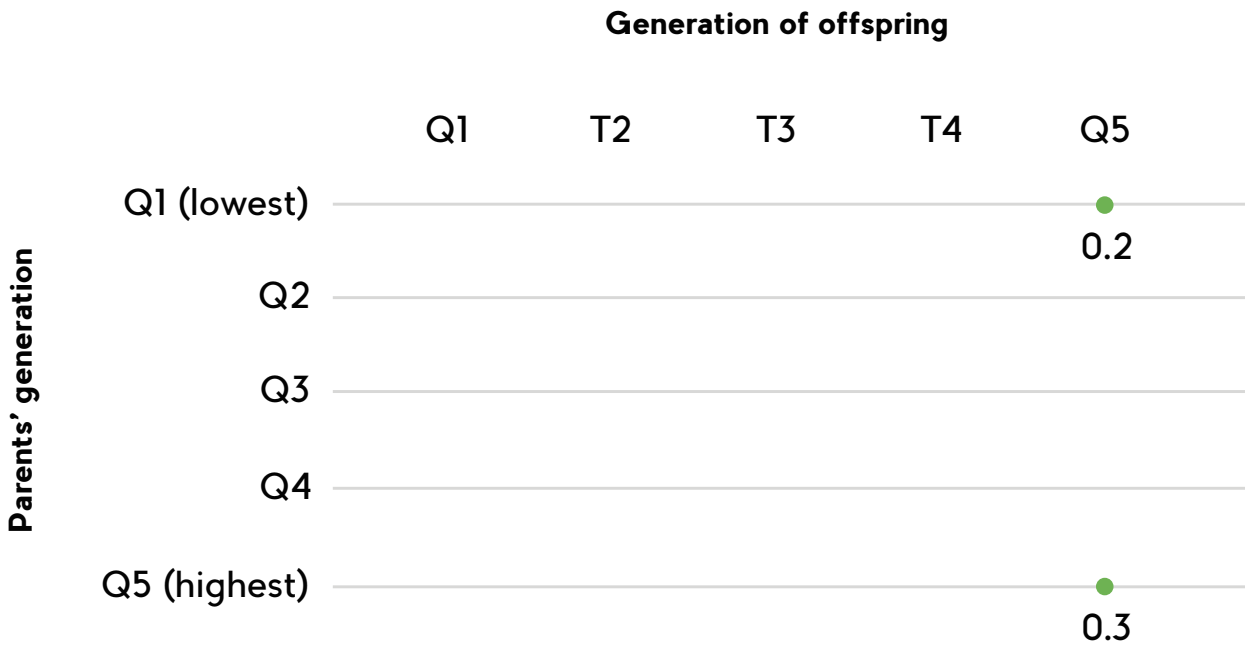
The basic estimation of the correlation between offspring and children's outcomes in the equation below is derived from the Becker and Tomes (1979, 1986) model of overlapping generations in which y^c is the outcome of interest of the younger generation (offspring), y^p is the parent's level, x^c is an array of offspring characteristics, and ε_i is an independent error term. β_1 is the measure of persistence across generations and mobility is measured as (1- β_1). Both are summary measures that indicate the degree of mobility or persistence in countries.

$$y_i^c = \beta_o + \beta_1 y_i^p + x_i^{c\prime} \psi_1 + \varepsilon_i$$

While there is no universally agreed optimal level of persistence, it is easy to see that as β_1 approaches 1, dynasties and poverty traps are realized. A high level of persistence implies that, because of their backgrounds, people are unable to fully develop their skills. In an immobile society, the lottery of birth is highly deterministic of individual outcomes (Torche 2013).

B. Transition matrices

Transition matrices are also used to produce estimates of intergenerational mobility and intergenerational persistence as in the example below. In Chapter 1, we use transition matrices to show asymmetries of the intergenerational persistence in education that summary measures hide. If we consider the example below from Chapter 2, our measure of upward mobility assesses the percentage of students who transition from families with the lowest income in the national distribution to earners with the highest incomes, or .2. Intergenerational persistence is measured by the percentage of matriculants whose parents' income was in the highest quintile of the national distribution and who subsequently achieved own earnings in the top earnings relative to their peers, or .3. Unlike the regression approach above, when analyzing transition matrices, the distribution is not weighted equally and there is no symmetry across persistence and mobility. Moreover, there tends to be more persistence at the extremes than at the middle of the distribution, reflecting that for this measure it is impossible to move higher than the top or lower than the bottom (Torche 2013).



Themes Analyzed

The study of intergenerational persistence implies studying the *replication of outcomes in families.* The analysis is by nature descriptive and does not imply a causal link to policies or opportunities. Our conceptual framework extends beyond the standard topics of intergenerational education and income to include the analysis of intergenerational domestic violence. We examine the probability that a woman whose mother experienced physical intimate partner violence will herself experience physical intimate partner violence. This is somewhat unusual as many academic approaches to intergenerational mobility, from economics to political philosophy, do not cross into the private domain of the family. For example: Roemers' equality of opportunity approach focuses on circumstances beyond the choice set of the family. Although Rawls' "A Theory of Justice" (1971) transformed political philosophy regarding distributive justice, he argued that the family was a private domain and outside of the sphere of public justice.

Our framework regarding intergenerational persistence incorporates outcomes that are very much endogenous to family conditions for two key reasons. First, while economists have tended to emphasize the role of resources or genetic ability in replicating outcomes across generations, preferences or tastes can also be the driving factor behind the intergenerational transmission of life outcomes (Lochner 2008). Second, in a limited number of topics such as family violence, the state has a compelling reason to be involved in family life. Moreover, there is a long tradition in psychology and sociology of analyzing the replication of violent behaviors across generations (Kalmuss, 1984). Our broader approach not only allows for a more comprehensive description of the dynamics behind intergenerational persistence, but points to a larger host of potential policy responses.

Summary of Results

The empirical analysis examines three different areas where policy relevant data is available. What is the probability that offspring repeats the same outcome as their parent? Addressing this question requires having information on both generations for the same outcome, which is particularly challenging in a region that does not collect population registries or other longitudinal data that allows generations to be matched and followed.

Educational persistence is addressed for the first time for all 26 countries in the region in Chapter 1, with the analysis finding that more recent cohorts born in the 1980s are one-third less likely to replicate their parent's education level than adults born in the 1950s. This increased mobility is generated largely from changes in the lower part of the distribution, in other words offspring achieving more education than mothers with the lowest levels of education. Another key finding of the chapter is the important role of public spending in reducing educational persistence in Peru and Mexico.

The chapter on income mobility associated with universities in the region exploits very unique data for a set of universities in Brazil and Peru. The methodology employed replicates the Chetty et al. 2017 study of mobility in universities in the U.S. We find that the probability of upward mobility – the probability of moving from the lowest family

income bracket to the highest earning bracket – is higher in the universities studied in Brazil and Peru compared to the comparable U.S. universities. While these are non-causal estimates they nonetheless suggest that universities, particularly public universities, can play a key role in facilitating upward social mobility in the region.

The chapter on domestic violence examines two related but distinct forms of family violence: the probability that a woman whose mother experienced physical intimate partner violence will herself experience physical intimate partner violence (IPV), and how harsh corporal punishment is transmitted across generations. The probability of experiencing IPV increases by an additional 10-15 percentage points if the woman's mother experienced IPV in five of the countries studied (Colombia, Dominican Republic, Guatemala, Honduras and Peru) and by four percentage points in Haiti. We find no significant declines over time. We also find that the probability of repeating the pattern increases by 20 percentage points in Peru and 25 percentage points in Colombia if this method of harsh physical discipline was used by one's parents. No decline over time is found for either country, with the younger generations in Peru more likely to repeat the intergenerational pattern than the oldest cohort.

This is the value-added of Part I of this report – we know that these intergenerational patterns exist – the question is whether more recent generations are breaking the mold or are merely stuck in the same pattern of replication as earlier generations. With respect to education, we demonstrate that the region is indeed breaking the mold with younger cohorts achieving more upward mobility than in earlier years. However, the same progress is not seen for domestic violence where we find that women are as likely to repeat these patterns of family violence today as women born decades earlier.

These nuanced results suggest that for some issues, including IPV and harsh parenting practices, broad social improvements are unlikely to break these ingrained patterns. Policymakers' efforts to reduce the prevalence of these outcomes will continue to be impeded. Effective programs such as home visiting programs and parenting programs that are targeted to vulnerable families can complement more universal approaches.

1

INTERGENERATIONAL PERSISTENCE IN EDUCATION

A person's education can be revealing not only of his or her occupation, income, place of residence and, even, attitudes toward certain issues, but also informative regarding the level of schooling and other socioeconomic characteristics of his or her children when they reach adulthood. In particular, having information about the correlation between the education of the members of different generations of the same family—or the intergenerational persistence of education—can be valuable, both for the family and for the public policy makers. A high correlation can indicate that family background plays a fundamental role in defining the level of schooling of individuals and, therefore, can indicate persistence in the uneven development of human capital. And if inequality means that the advantages in the competition for socioeconomic resources depend on family background during childhood, it is reasonable to expect that inequality implies greater intergenerational persistence. At the country level, the uneven development of human capital can, in turn, affect economic growth and worker productivity (see, for example, Hanushek 2017).

This reasoning has led people to think that equality of opportunity should be a desirable goal for society, that is, that everyone, with their effort and work, should have the same opportunities for success, independent of their family background. Specialized literature has insinuated that a low correlation between the education of parents and their children might not be most optimal, from the point of view of efficiency, because the returns on investment in human capital of the offspring made by the parents would tend to be low, since the child's schooling would be independent of family effort (Black and Devereux 2011). An opposite situation, of high correlation, would also not be desirable because the public policies for reducing dependence on family background for the educational outcomes of children would not be effective.

In this chapter, we provide comparable estimates of the levels and trends of intergenerational persistence of education for the countries of the region with the purpose of putting in perspective the challenges involved in addressing this issue.

We find that Latin Americans born in the decade of the 1980s are one third less dependent on the educational background of their parents than those born in the 1950s. Another finding is that the decline in intergenerational persistence occurred in all segments of the joint distribution of education, although the greatest changes took place in the lower segments.

The probability of reaching some degree of primary education, conditional on the mother's primary education, fell by almost half. Finally, in two countries of the region, we found that public spending on primary and secondary education substitutes or crowds out private spending and, for that reason, its emphasis on the children whose parents spend little on the human capital of their offspring helped to reduce the intergenerational persistence of education.

This chapter has five sections. The first section describes how we built the summary measure of intergenerational persistence and how the transition matrices inform the asymmetries of persistence within the joint distribution of education of parents and children. The second describes the characteristics of the AmericasBarometer, the principal source of data used in this chapter, which—for the first time—permits 20 Latin American countries and six Caribbean nations to be included in a study of this type. The third section displays the trends of intergenerational persistence at the subregional and country level, both the summary measure and the components of the transition matrix and, then, groups countries according to their predominant component. The fourth section, based on contributions from current research literature, responds to the following question: What factors explain the differences in intergenerational persistence? The last section summarizes the chapter and describes some of the implications of the findings.

HOW DO WE ESTIMATE PERSISTENCE?

While intergenerational persistence can be estimated using different indicators of people's socioeconomic status, perhaps the most commonly utilized measure is the one which links the parents' income with the income of their adult children. However, the literature shows that to obtain a good measurement of this type, the permanent income (average income over an extended period) of parents and of their children should be used and, ideally, the income should correspond to a phase of life that is representative of the complete work life of both generations. Transitory incomes and those obtained when the adult is very young or very old generate biased estimates—due to measurement errors or life cycle—of intergenerational persistence that are usually lower (Corak, 2006; Black and Devereux, 2011).

When information on income with the characeristics described is not available, intergenerational persistence can be estimated by using directly the information about the education of parents and their children. This option has far fewer restrictions than information about income. In principle, people know well the schooling they have, which is reached at early ages of adulthood, and recall with more certainty the schooling of their parents than other socioeconomic characteristics. In addition, since schooling is an asset that does not change in value once it is attained, it is not affected by the transitory nature of income.

The option of using education to measure intergeneratational persistence is relevant, due to the direct effects of the parents' schooling on various social outcomes of their children. Parents with more schooling spend more resources and are also more efficient in using these resources in favor of the accumulation of their children's human capital (Heckman and Mosso, 2014). Similarly, in the case of mothers, their schooling is a decisive

aspect for understanding the direction that is given to available resources in favor of the children's human capital (Schultz, 2002) and, consequently, for reducing intergenerational persistence.

Given that education is the principal determining factor of wage income, the intergenerational persistence of income depends to a large extent on the intergenerational persistence of education (Spenkuch, 2015).

Therefore, the intergenerational mobility of education analysis is important because it reveals the inequality in obtaining outcomes between people born with different educational backgrounds. No one desires a society where the children of parents with a low level of schooling end up with no training and the children of parents with higher education are almost the only youth who reach university studies.

The standard model for estimating intergenerational persistence is the following:

$$E_i^h = \alpha + \beta E_i^p + \varepsilon_i \quad (1)$$

where E_i^h is the educational attainment of the child i, E_i^p the educational attainment of the parent and ε_i the error term that is distributed independently of E_i^p with a mean of zero and a constant variance; α and β are the parameters to be estimated. The first indicates the child's level of schooling when the parent's schooling is zero and the second is the measure of intergenerational persistence. For example, $\hat{\beta}$=0.6 indicates that, if a parent has one more year of education than another parent, the adult child has on average 0.6 years more schooling than the child of the parent with less studies.

By definition, the estimate by ordinary least square of $\hat{\beta}$ is:

$$\hat{\beta} = \rho_{hp} \frac{\sigma^h}{\sigma^p} \quad (2)$$

where ρ_{hp} is the correlation coefficient between the schooling of each generation and σ^h and σ^p are their standard deviations. This expression shows that the changes in $\hat{\beta}$ can occur due to changes in the relationship between schooling of children and of their parents and changes in the distributions σ^h and σ^p. The changes in these distributions occur, for example, due to legal changes in the entrance age into the educational system or the period of compulsory school attendance, very common and heterogeneous in the reforms implemented in the the region in recent decades. $\hat{\beta}$ would overestimate persistence if $\sigma^h > \sigma^p$ and would underestimate it if the opposite takes place (Black and Devereux, 2011). To eliminate these potential biases, and thus compare more appropriately persistence over time between countries and between children's birth cohorts, we normalize the schooling

of both generations by their respective standard deviations, $\frac{E^{h}_{ic}}{\sigma^{h}_{c}}$ and $\frac{E^{p}_{ic}}{\sigma^{p}_{c}}$, for each country c (as, for example, in Checchi, Fiorio and Leonardi, 2013; Schneebaum, Rumplmaier and Altzinger, 2014). With this normalization, the measure of persistence will be invariant to changes in the distribution of education between generations and, therefore, will be a measure closer to insufficient equality of opportunity or inequality of circumstances (such as parents' education) that are independent of the effort of children.

The following equation was estimated based on information of pooled samples of 26 Latin America and the Caribbean (LAC) countries for people born in the decades between 1950 and 1989:

$$\frac{E^{h}_{ic}}{\sigma^{h}_{c}} = \alpha + \sum_{c=1}^{c=26} \beta_{c} \frac{E^{p}_{ic}}{\sigma^{p}_{c}} C_{ic} + \sum_{c=1}^{c=26} \gamma'_{c} (X_{ic} C_{ic}) + \sum_{c=1}^{c=26} \delta_{c} C_{ic} + \varepsilon_{ic} \qquad (3)$$

where C_{ic} is a variable equal to 1 if the child i lives in the country c and is equal to 0 otherwise. That is, they are the fixed effects at the country level, and X_{ic} is the matrix that contains the controls at the individual level by sex and age (a second-degree polynomial). The estimate of this single equation generates the β_c, the parameters that express intergenerational persistence of education for all countries in the region.

It is worth pointing out that this estimate does not measure a cause-effect relationship between the education of the two generations. It is simply a summary measure that shows how children's schooling varies with parental schooling and, also, with unobserved factors that can affect it (children's skills, culture and social networks of the family, etc.). That is, the values of β_c only indicate the extent of persistence in countries, whether it is high or low. Therefore, it does not show the asymmetries of persistence within the joint distribution of parents and children's education. For that reason, we complement the analysis with the **transition matrices**—cross tables that divide the joint distribution by levels—that show the probability that adult children will reach a level of education conditioned to the level reached by their parents.

Given the sample size of the surveys used, we construct the matrices so that they illustrate in aggregate form the levels of primary, secondary and tertiary education reached by the children corresponding to each of these levels reached by their parents.[1]

If the rows of the matrix show the levels of the parents and the columns the levels of the children, the results of the diagonal indicate persistence (or immobility), the results below the diagonal indicate regression (or downward mobility) and the results above the diagonal indicate mobility (or upward mobility).

Thus, according to the predominant results in a country, we can know for example the most recent situation and changes over time of the probability of individuals reaching tertiary education conditional on primary education (mobility) or tertiary (persistence) of their parents.

1. Formally, we estimate $p(j/i)$ where *i* (row) indicates the level of education of the parent and *j* (column) the level of the child. If the sum of the elements of each row of the matrix is equal to one, $\sum_j p(j/i)=1$, $p(j/i)$ is the probability that a person reaches the level *j* of education conditioned to the level of education *i* of their parent.

DESCRIPTIVE DATA AND STATISTICS

In this chapter, we utilize principally the data of the AmericasBarometer survey. Carried out since 2004 by the Latin American Public Opinion Project (LAPOP) of Vanderbilt University, this survey measures values, behavior and socioeconomic conditions using stratified probability samples that are representative at the national level for adults over 18 years of age.[2] The rounds conducted in 2012 and 2014, of the six existing surveys since 2004, are the only ones containing the information necessary for measuring intergenerational persistence of education in Latin America and the Caribbean. Together, they comprise a total sample of 89,070 interviews for the 26 countries, with a range of between 3,000 and 6,000 interviews per country. In contrast with regular surveys of the region, which have information only about the schooling of surviving parents who reside in the home of the respondent,[3] the AmericasBarometer survey also compiles information about the mothers who live in other households or who have died.

If the duration of levels of education of each country is taken into consideration, the survey asks for the last year completed or reached by the respondent and standardizes the maximum value of response at 18 years, that is, this value would include all those who studied for Master's degrees and doctorates. On the other hand, the survey questionnaire suggests that, if the respondent answers with the old system, the interviewer fills this information by harmonizing it to the levels of the current system. Likewise, in a manner consistent with the prior information, the survey asks for the educational level—primary, secondary, technical/technological and tertiary—complete or incomplete reached only by the mother of the respondent. We will show with other surveys the effects of considering alternatively the father's schooling. Therefore, the information derived from the AmericasBarometer about schooling of adults and that of their mothers has the same meaning between countries and, accordingly, constitutes an appropriate source for making comparisons of intergenerational persistence.

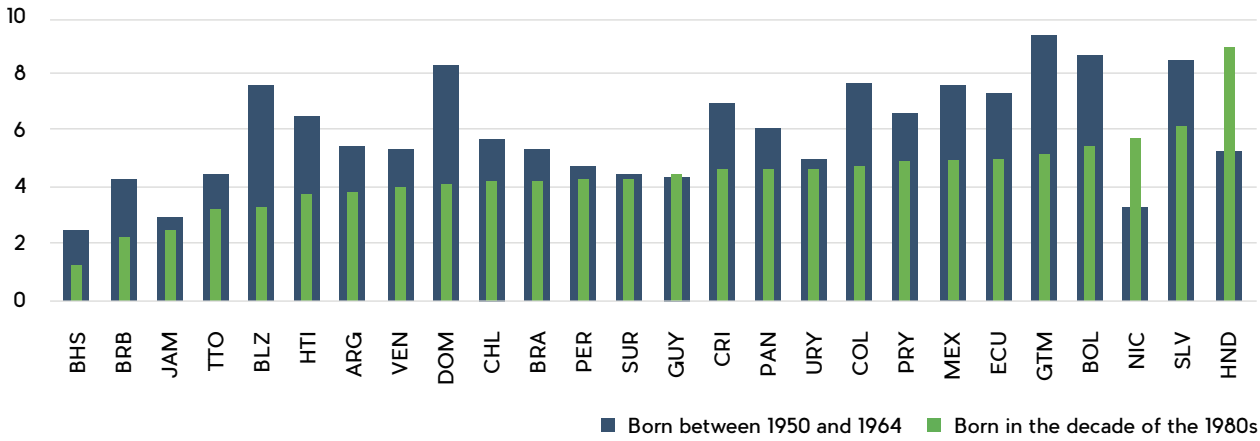
For estimating the β_c of equation (3), the information of the complete levels reached by the mother was converted to years of schooling taking into consideration the ISCED *(International Standard Classification of Education*) codes of UNESCO (2011) about the duration of levels of each country,[4] and the information about incomplete levels was converted using random numbers uniformly distributed for the intervals included between the levels completed.[5] To construct the transition matrices, the information on respondents' years of schooling was converted to levels of education also utilizing the ISCED codes and, in addition, the frequencies of the surveys.

2. More details about the design of the samples are found at www.vanderbilt.edu/lapop/survey-designs.php.
3. Among the regular surveys, the exceptions are ENAHO of Peru, ECV of Colombia, CASEN of Chile, ECV of Ecuador and ENCOVI of Guatemala, which ask about the education of one of the two parents.
4. See the link http://uis.unesco.org/indicator/edu-system-duration-level.
5. Other studies have used, for example, the mode of the years of education obtained from the countries that have available information about schooling and about the levels completed and not completed by the parents (Hertz et al., 2007).

For the two measurements, the β_c and those from the transition matrices, we consider only individuals between 25 and 65 years, with the purpose of minimizing the number of people who could be studying at the time of the interviews, and also to have a sufficient sample of older individuals. On the other hand, the sample was restricted to individuals who could show valid information about both their own education and that of their mother. In the end, the analysis is based on 45,654 interviews in 26 countries.

Table 1.1 and Graph 1.1 show the descriptive statistics for the relevant variables. The table indicates that in all countries the schooling of adults from 25 to 65 years is much higher than the schooling of their mothers (3.9 years higher, on average) and that, in general, the higher the schooling of the mother, the smaller the difference with the schooling of their children. For example, the adults of Barbados and the Bahamas have the highest level of schooling of the region, but on average it is only 15% higher than that of their mothers, while the adults of Nicaragua and Guatemala have the lowest level of schooling in the region, but it is more than double that of their mothers. The table also shows that, although the countries with less schooling were those which advanced the most in relation to the previous generation, they continue to place at the bottom of the ranking of schooling (first column of the table). Finally, the table shows that the dispersion of educational attainment dropped in countries that have more years of education (less standard deviation of schooling between the children than among the mothers). As noted before, the summary measure of the persistence used in this report is invariant to changes in the dispersions of schooling between generations within countries.

GRAPH 1.1
Differences in schooling (in years) between individuals whose mothers have low and high levels of education in LAC, by birth cohorts



Note: "Low schooling" includes up to completed primary and "high schooling" includes tertiary, incomplete or complete.
Source: Based on the microdata of the 2012 and 2014 AmericasBarometer (LAPOP).

TABLE 1.1
Descriptive statistics of the schooling of adult children aged 25-65 years and of schooling of their mothers

	CHILDREN		MOTHERS		SAMPLE
	Years	d.s	Years	d.s	
Barbados	12.2	3.2	10.4	3.4	1,795
Bahamas	12.1	2.1	10.7	3.4	1,847
Chile	11.5	3.6	6.8	4.6	1,417
Trinidad and Tobago	11.1	3.3	9.1	4.3	3,057
Peru	11.1	4.0	5.7	4.6	2,078
Panama	11.0	3.9	8.3	4.6	1,414
Venezuela	10.9	3.8	7.0	4.5	1,681
Argentina	10.8	3.8	7.4	3.9	1,426
Ecuador	10.6	4.1	5.7	4.2	1,588
Jamaica	10.4	2.7	8.2	3.2	1,190
Bolivia	10.0	5.0	4.4	4.7	2,933
Haiti	9.9	3.8	4.2	4.7	1,614
Uruguay	9.8	3.9	6.9	3.9	1,929
Dominican Republic	9.7	4.6	4.5	4.4	1,743
Colombia	9.7	4.3	5.0	4.2	1,387
Suriname	9.6	3.8	5.6	5.4	2,692
Paraguay	9.3	4.7	5.2	4.2	1,466
Guyana	9.2	3.3	6.8	3.6	1,312
Mexico	9.1	4.2	4.7	4.4	1,583
Costa Rica	8.9	4.2	5.3	3.9	1,893
Brazil	8.7	4.0	4.0	4.3	1,351
El Salvador	8.1	4.9	3.2	4.1	1,867
Belice	8.0	3.9	3.7	3.4	1,633
Honduras	7.0	4.5	3.2	3.7	1,638
Nicaragua	6.9	4.6	3.2	3.9	1,499
Guatemala	6.4	4.5	2.2	3.1	1,621
Total	9.8	4.3	5.9	4.8	45,654

Note: s.d. = standard deviation.
Source: Based on the microdata of the 2012 and 2014 AmericasBarometer (LAPOP),

On the other hand, Graph 1.1 shows the differences in schooling of adults according to the schooling of their mothers. In this graph, "low schooling" includes from zero education up to complete primary, and "high schooling" includes tertiary education —technical or university, complete or incomplete. On average, the adult children of mothers with high schooling have 4.6 more years of education than adult children of mothers with low schooling, an average that three decades ago reached 6.5 years. Despite the narrowing of this gap found in almost the entire region, the differences between countries remain very broad. For example, while the differences of schooling in the Bahamas, Barbados and Jamaica are less than three years, in El Salvador and Honduras they exceed six years. If these results are associated with those of Table 1.1, it is found that:

The higher the average level of schooling in a country, the smaller the differences in schooling among adults who come from different educational backgrounds.

The descriptive statistics thus allow for getting an approximate idea of the intergenerational persistence of education. But, they do not consider the full spectrum of outcomes that people can obtain based on their parents' education as is done with a summary measure of persistence or an intergenerational transition matrix.

INTERGENERATIONAL PERSISTENCE, TRENDS AND COMMON PATTERNS

Graph 1.2 presents the results for estimating the summary measure of intergenerational persistence of education (the β coefficients) in Latin America and the Caribbean for adults 25-65 years of age, disaggregated by birth cohorts between 1950 and 1989. At the subregional level, in both Latin America and the Caribbean, a significant reduction of persistence occurs among the youngest cohorts, falling from 0.56 on average in the 1950s to 0.37 in the 1980s. That is, there are higher levels of educational mobility for the youngest cohorts.[6] A decrease in the differences of persistence between the two subregions is also observed, dropping from 14 percentage points in the 1950s to four points in the 1980s. In other words, there is a convergence toward relatively small levels of intergenerational persistence.

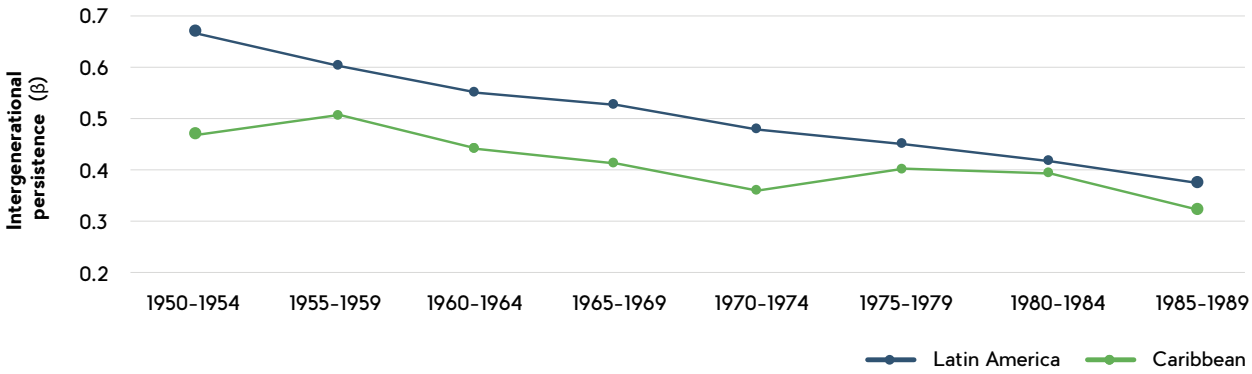
The results are consistent with the findings of previous studies in the region. The average values of estimates for the cohorts from the early years of the 1950s up to the mid-1970s for Latin America are very consistent with the estimates of standardized persistence (correlations) of Hertz et al. (2007) for comparable cohorts of seven countries in the region (Brazil, Chile, Colombia, Ecuador, Nicaragua, Panama and Peru). They are also consistent with the trends of the β coefficient of persistence observed in Behrman et al. (2001) for three countries (Brazil, Colombia and Peru), in Daude and Robano (2015) and Neidhöfer (2016) for 18 Latin American countries, as well as in the evidence reviewed by Azevedo and Bouillon (2010) and Torche (2014).

The results indicate that in Latin America and the Caribbean individuals born in the 1980s are less dependent on their parents' educational background than those born in previous decades and, therefore, they have greater probabilities of reaching higher levels of education than those achieved by their parents.

6. See the statistical significance of those results in Table A1.1 at the end of the chapter.

GRAPH 1.2

Intergenerational persistence of education in LAC by birth cohorts between 1950 and 1989

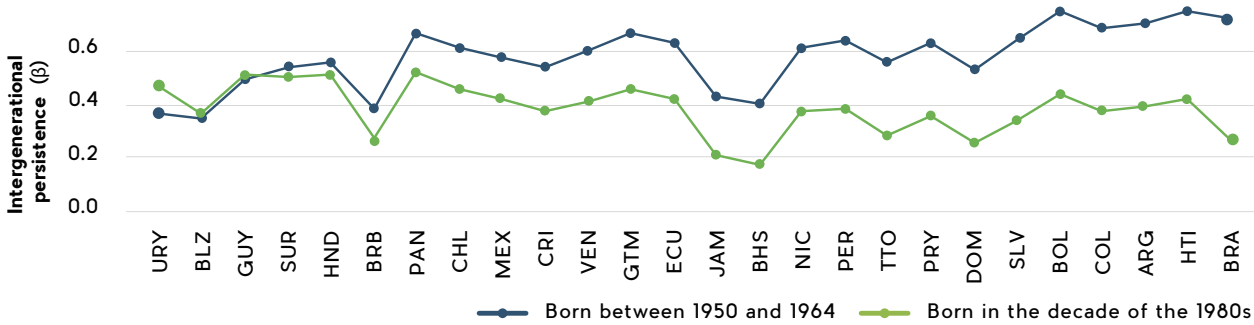


Note: The graph includes 20 Latin American countries and six Caribbean nations.
Source: Based on the microdata of the 2012 and 2014 AmericasBarometer (LAPOP).

Graph 1.3 synthesizes the results of estimating the summary measure of intergenerational persistence of the 26 countries in the region for those born between 1950 and 1964 and in the decade of the 1980s (an average distance of 25 years), which are arranged according to the size of the differences of persistence between both cohorts. Intergenerational persistence decreased in most countries and, in general, more in those that had greater levels of persistence in the older cohort. In the 10 countries that experienced greater reduction (above 20 points), from Peru to Brazil in the graph, average persistence fell from 0.62 to 0.37. Six of those countries belong to the Andean Group (Bolivia, Colombia and Peru) or to the Southern Cone (Argentina, Brazil and Paraguay) and four are part of the other subregions (El Salvador, Haiti, Dominican Republic, Trinidad and Tobago).[7] At the other extreme, there are six countries (Belize, Barbados, Guyana, Honduras, Suriname and Uruguay) where practically the same level of persistence was maintained between cohorts. In those countries, the changes were not statistically significant, as can be deduced from the detailed estimates at the end of this chapter. In the rest of the countries (from Panama to Nicaragua in the graph), in which the decreases were greater than 10 points and less than 20 points, the average persistence between cohorts diminished from 0.55 to 0.40.

GRAPH 1.3

Intergenerational persistence of education in LAC by countries



Source: Based on the microdata of the 2012 and 2014 AmericasBarometer (LAPOP).

7. Graph AE1 in the Statistical Annex of this report shows that the reduction of intergenerational persistence between those born in the 1950s and the 1980s occurred in all regions of Peru.

Given that these results of intergenerational persistence were obtained based on the schooling of the mother of the individuals, the critical question is: Would the outcomes have been very different if information about the fathers' schooling had been available? Drawing from the most recent surveys of five countries –ENCV 2015 of Colombia, ELPS 2013 of El Salvador, ELPS 2015 of Paraguay, ELPS 2002, 2004 and 2015 of Chile and ENAHO 2004-15 of Peru– which compile retrospective information about the schooling of both parents, the AE2 graphs in the Statistical Annex show that intergenerational persistence estimated with the schooling of the mother and the father converge among those born in the 1980s. This means that, for this cohort, the intergenerational persistence obtained with the mother's schooling would be very similar to that obtained with the father's schooling. Similarly, it means that the reduction of persistence between cohorts would be less due to the fact that the measurement based on the mother's schooling is higher than that based on the father's schooling for the older cohorts. However, this difference is not important. For the five countries, among those born in the 1950s and 1980s, persistence with the mother's education dropped by 40% and with the father's education the reduction was 35%. In general, these results are associated with changes in the schooling of the fathers. In those countries, while in the 1950s the father had 32% more years of schooling than the mother, in the decade of the 1970s, he had only 7% more years of studies. The results are also associated with the increasing tendency of people to select their partners with similar educational levels to their own (assortative mating). For example, in Peru the difference in years of schooling between a head of household and his mate in the 1940s was as high as 34% and in the 1980s was 13%.

The changes in intergenerational persistence in the 26 countries would have allowed the region to reach levels similar to those of other regions. Based on the microdata of the European Social Survey (ESS) and the same measurement criteria used for Latin America and the Caribbean (same birth cohorts of children, restricted to people between 25 and 65 years of age, mother's schooling as a predictive variable, educational levels converted to years with the ISCED codes,[8] rounds 2012 and 2014 of the survey, only those countires that were covered in both rounds and the same specification of equation 3), we estimate the coefficients of intergenerational persistence for 20 countries. The ESS, executed since 2002 by the Norwegian Centre for Research Data, measures the attitudes, beliefs and behavior patterns of diverse populations in more than 30 countries using probabilistic samples representative of all people age 15 or above who reside in each country.

Table A1.2 at the end of this chapter and Graph AE3 of the Statistical Annex of this report synthethize the results. The table shows the statistical significance of the estimates and the graph compares, for the cohorts of individuals born between 1950 and 1964 and 1980, the intergenerational persistence of the 26 countries of Latin America and the

8. Likewise, for the duration of the levels of tertiary education, we used Annex 3 of the OECD (2011).

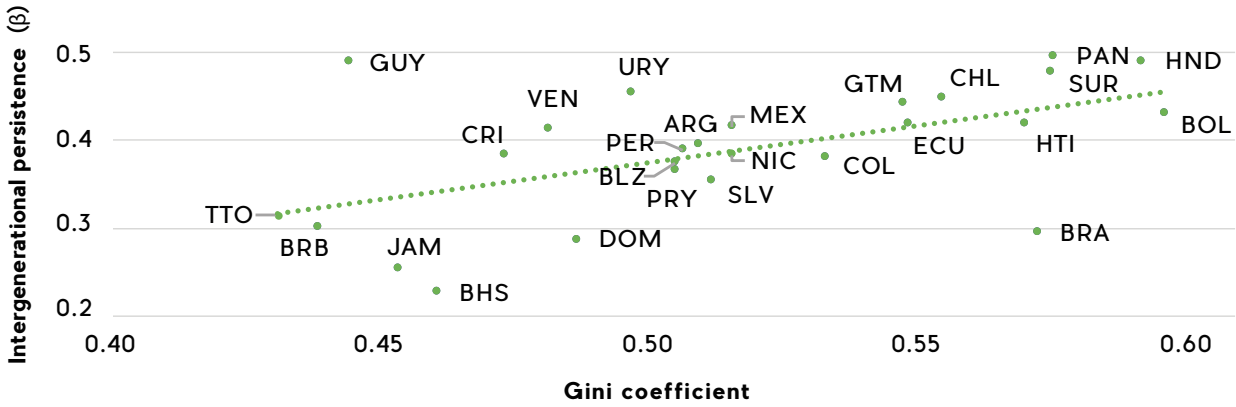
Caribbean and 20 European nations. Between these two cohorts (a span of 25 years), while persistence declined significantly in large most LAC countries, in Europe nearly one third of the countries showed no statistically significant changes, another third showed an increase and the remaining third experienced a decrease. On average, Europe preserved its levels of persistence among cohorts at 0.4 and, in the most recent cohort, LAC reached this level. Similarly, among those born in the 1980s, the countries of LAC exhibit greater homogeneity with respect to this average (50% less dispersion) than European nations.

Before describing the explanations offered by the literature about the differences in intergenerational persistence between countries, we show: 1) the existing relationship between estimates of intergenerational persistence and inequality of income distribution, evidence that has been frequently presented in recent studies about the topic and that, at the same time, is very pertinent for the region, given that it continues being the most unequal in the world (Duryea and Robles, 2016) and ii) the relationship between the results of the summary measure of persistence that is exhibited in Graph 1.3 and the different parts of the joint distribution of education of adults and their parents obtained from the intergenerational transition matrices.

The line that depicts the relationship between intergenerational persistence (or mobility) and inequality of income distribution has recently been called "the Great Gatsby Curve", an allusion to Jay Gatsby, the protagonist of the F. Scott Fitzgerald novel, *The Great Gatsby*, a character who due to his ambition and energy succeeds in scaling the social ranks in the city where he lives. This name was introduced in 2012 in a speech given by the head of the Council of Economic Advisors of the president of the United States and in the 2012 Economic Report of the President to Congress,[9] although the relationship inequality-persistence had been pointed out previously (for example, in Graphs 1 and 2 of Andrews and Leigh [2009] and in Graph 8 of Blanden [2009]).[10] Graph 1.4 displays this curve for 26 countries of the region, and was built considering the results of the estimates of intergenerational persistence of education of the cohort of children born in the 1980s and the Gini coefficient of the year 2000 (when those born in the 1980s were, on average, 15 years old). The Gini coefficient is a standard measure of inequality in income distribution. High values of this measure indicate high degrees of inequality.

9. See figures 6-7, page 177 (www.gpo.gov/fdsys/pkg/ERP-2012/pdf/ERP-2012.pdf).
10. And at least from the study of Becker and Tomes (1986), one of the most cited works in the literature on this topic, the concern about this relationship has always been present. Those authors point out that, "Although discussions of inequality among families have been almost entirely separated from discussions of inequality between generations of the same family, these inequalities are analytically closely related" (page s2).

GRAPH 1.4
Relationship between intergenerational persistence and income inequality in LAC



Notes: (1) Intergenerational persistence corresponds to the birth cohort of chidren in the 1980s and the Gini coefficient for 2000, when those born in the 1980s were, on average, 15 years old; (2) the estimated dotted line is β = - 0,049 + 0,8605*Gini.
Source: Based on the microdata of the 2012 and 2014 AmericasBarometer (LAPOP), the data base of the Standardized World Income Inequality Version 5.1 (Solt 2016), the World Development Indicators obtained with the wbopendata (World Bank, 2016), and the IDB Harmonized Household Surveys of LAC (IDB, 2017).

The curve indicates a positive relationship between both variables, that is, in the countries where inequality is high, there also tends to be a stronger legacy of the mother's schooling on the children's educational attainment. More directly, it could be said that greater inequality implies greater underinvestment in children's human capital in the bottom part of the income distribution and, therefore, more possibilities that the family background carries significant weight in the children's education. Countries with relatively low levels of inequality, such as Barbados, Bahamas, Jamaica and Trinidad and Tobago, show low levels of educational persistence between generations, while countries such as Bolivia, Honduras, Suriname and Panama, with higher levels of inequality (14 percentage points more than the four other countries), display higher levels of intergenerational persistence (21 percentage points more).

If the inclination of the curve is calculated, it proves that there is a strong relationship, greater than estimated up to now, with a limited number of countries in the region (see, for example, table 7 of Blanden, 2013). On average, for each additional point of the Gini coefficient, intergenerational persistence increases by 0.86 points (see note 2 of the Graph). If this relationship were maintained and the Gini decreased by five points, it would be expected that the average persistence of 0.40 found among those born in the 1980s would be 0.36. Although this is only a correlation –and robust in the sense that similar results are obtained for measures of intergenerational persistence, options of countries and year in which inequality is measured (Corak 2012) —and not a cause-effect relationship, the result sugests that at least some of the same factors that affect inequality would also affect intergenerational persistence, as will be seen later in this report.

Given that so far we have seen only the differences and changes of the summary measure of intergenerational persistence (the β coefficients) between countries, that is, if they are high or low, or they decreased or increased between cohorts, we now look to know in what part of the joint distribution of education of adults and their parents the principal changes occurred and whether these changes are distinct from one country to another. Table 1.2 summarizes the results of the estimate of the intergenerational transition matrices for the birth cohorts of adults in the decades of the 1950s and 1980s. The first two matrices correspond to Latin America and the next two to the Caribbean. The rows show schooling levels reached by mothers and the columns the schooling achieved by the children. Because the matrices were built so that elements of each row add up to 100, each cell can be interpreted as the probability that an adult reachs a level of education conditioned to the level reached by the mother. For example, the second row of the matrix of the 1950-59 cohort of Latin America shows that, if a mother succeeded in completing secondary studies, there was a 31% probability that her adult child would have achieved her same level of education and a 51% probability that the child would have reahed some level of tertiary studies. Given that each matrix has as many cells as rows multiplied by its columns, it is clear that it can report much more than the summary measure of intergenerational persistence. In this case, they are matrices of four rows by four columns, which produces a total of 12 cells, or conditioned probabilities.

The table reveals several remarkable facts:

- The comparison of data from the first row of the two matrices of each subregion –the bottom part of the distribution of mothers and children's education— shows a substantial reduction of intergenerational persistence between cohorts. For mothers without schooling or with some degree of primary studies, the percentage of their adult children who achieved the same educational result was reduced practically by half between cohorts: from 54% to 27% in Latin America and from 33% to 17% in the Caribbean. There also was a significant increase in intergenerational mobility derived from primary education of mothers. This occurred for Latin America both towards secondary and tertiary education of children, while for the Caribbean it was only towards the secondary education of children. In sum, those born in the 1980s show less persistence in the bottom part of the education distribution and more mobility from that part toward higher levels of education than among those born in previous decades.

- If we now compare the data of the last row of the matrices of each subregion –the top part of the education distribution of mothers and children–, it is evident that the intergenerational persistence between cohorts increased slightly in the two subregions, despite the elevated level already existing among those born in the 1950s. The probability of reaching some degree of tertiary education, conditioned to the tertiary level obtained by the mother, rose from 73% to 77% in Latin America and from 58% to 60% in the Caribbean. In sum, there is more persistence in the top part of the education distribution among those born in the 1980s than among those born in previous decades.

Finally, the matrices show that, in the middle part of the education distribution of mothers and children, both persistence (from the mother's secondary education to the children's secondary) and mobility (from the mother's secondary to the children's tertiary) are reduced in the Caribbean and remain almost without change in Latin America. In sum, now there is more persistence in the middle part of the education distribution than in the bottom part.

TABLE 1.2
Intergenerational transition matrices of education in LAC (percentage)

Mother´s education	Education of adult children			
	Up to primary	Incomplete High School	Completed high school	Tertiary
		Latin America: 1950-1959 cohort		
Up to primary	53.9	23.6	11.0	11.5
Incomplete High School	7.4	33.4	24.3	34.8
Completed high school	8.0	15.3	26.3	50.5
Tertiary	2.4	11.9	12.8	72.9
		Latin America: 1950-1959 cohort		
Up to primary	26.6	32.1	24.6	16.7
Incomplete High School	4.8	32.7	28.8	33.7
Completed high school	2.4	16.1	30.9	50.7
Tertiary	1.8	8.8	12.5	76.9
		Caribbean: 1950-1959 cohort		
Up to primary	33.1	33.7	16.0	17.3
Incomplete High School	6.1	43.3	30.2	20.5
Completed high school	2.4	36.9	25.2	35.5
Tertiary	2.7	16.5	23.0	57.9
		Caribbean: 1950-1959 cohort		
Up to primary	17.1	46.1	24.0	12.8
Incomplete High School	3.3	39.9	39.0	17.8
Completed high school	2.5	30.1	36.9	30.5
Tertiary	0.6	17.8	21.7	60.0

Source: Based on the microdata of the 2012 and 2014 AmericasBarometer (LAPOP).

How different are these patterns of intergenerational persistence and mobility within the countries of the region? How heterogeneous is the profile of intergenerational persistence/mobility in the region?

The first question is answered with Graph 1.5 which includes the data of the diagonal of the intergenerational transition matrices of each country (persistence) and the data of the cells that are found above this diagonal (mobility).[11] Due to the size of the samples used, we now consider slightly broader birth cohorts of children (1955-69 and 1975-89) and, therefore, less separated (20 years on average), and we only emphasize the changes between cohorts that are equal to or greater than five percentage points. The three quadrants on the left side of the graph refer to mobility and those on the right side to persistence. In all the quadrants, the blue dots refer to the birth cohort in 1955-69 and the green dots to 1975-89. The following results are remarkable:

- Most countries show significant reductions of the intergenerational persistence between cohorts at the primary education level (quadrant a). In general, the greatest reductions occur in countries that had higher levels of persistence in the oldest cohort. Nine countries show reductions of 20 or more percentage points (Brazil, El Salvador, Bolivia, Dominican Republic, Colombia, Guatemala, Paraguay, Ecuador and Mexico), and in another nine countries reductions are between 10 and 20 points (Haiti, Argentina, Nicaragua, Panama, Costa Rica, Trinidad and Tobago, Honduras, Belize and Jamaica).

- The changes in mother-child persistence of secondary (quadrant b) and tertiary education (quadrant c) were not generalized. Almost half of the countries had the same levels of persistence in the two cohorts and the other countries exhibited contrasting situations. Thus, while in Argentina, Costa Rica, Nicaragua, Peru, Uruguay, Trinidad and Tobago and Honduras an increase in persistence in secondary of more than 10 percentage points is observed, in Ecuador, Chile, Suriname and Haiti the reduction is more than 10 points. And in the case of tertiary education, while in Honduras, Brazil, Nicaragua, El Salvador and the Dominican Republic persistence increased by more than 20 points, Guatemala and Belize showed a reduction of at least 10 points.

- In the case of intergenerational mobility, the changes have a similar pattern to those of persistence. That is, we find a generalized increase of a component of mobility (from the mother's primary education to the children's secondary) and limited changes (positive or negative) in the other components (from the mother's primary or secondary education to the children's tertiary). In general, mobility from the mother's primary to the children's secondary (quadrant d) increased more in the countries that previously had less mobility. Four countries reflected increases of more than 20 percentage points (Brazil, El Salvador, Mexico and Trinidad and Tobago) and 12 other countries experienced increases of between

11. That is, we exclude from the analysis the data of the cells that are below the diagonal (regression).

10 and 20 points (Argentina, Colombia, Costa Rica, Panama, Bolivia, Ecuador, Guatemala, Haiti, Honduras, Nicaragua, Paraguay and the Dominican Republic).

- The increase of the probability of reaching tertiary education given that the mother completed primary education (quadrant e) was significant only in Chile, the Dominican Republic, Bolivia and Paraguay (above 10 percentage points). And the probability of reaching tertiary education given that the mother had secondary education (quadrant f) increased by 10 or more points in Ecuador, Chile, the Dominican Republic, Mexico and Haiti, but was reduced, also by 10 or more points, in Argentina, Peru, Trinidad and Tobago, El Salvador and Nicaragua.

We conclude responding to the second question posed at the beginning of this subsection:

How heterogeneous is the profile of intergenerational persistence/ mobility within the region?

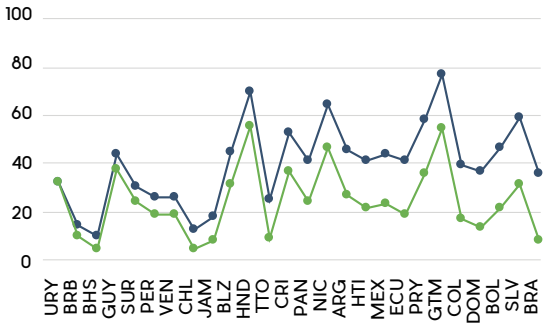
GRAPH 1.5

Probability of reaching a level of education conditioned on the mother's education (countries ordered according to the size of the differences in probability between birth cohorts of children)

PERSISTENCE

A

PROBABILITY OF REACHING PRIMARY EDUCATION CONDITIONED BY PRIMARY SCHOOLING OF THE MOTHER

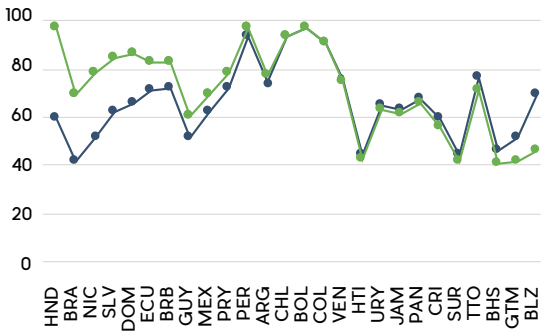


B

PROBABILITY OF REACHING SECONDARY EDUCATION CONDITIONED BY SECONDARY EDUCATION OF THE MOTHER

C

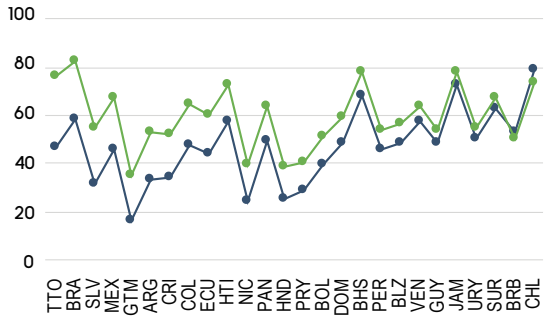
PROBABILITY OF REACHING TERTIARY EDUCATION CONDITIONED BY TERTIARY EDUCATION OF THE MOTHER



MOBILITY

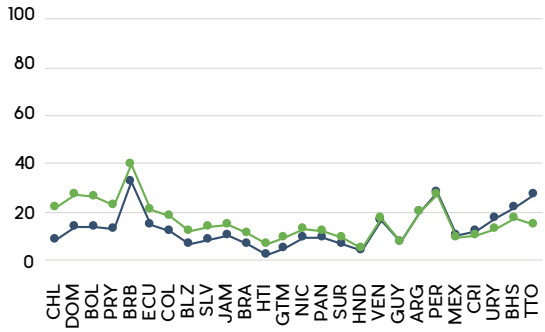
D

PROBABILITY OF REACHING SECONDARY EDUCATION CONDITIONED BY PRIMARY SCHOOLING OF THE MOTHER



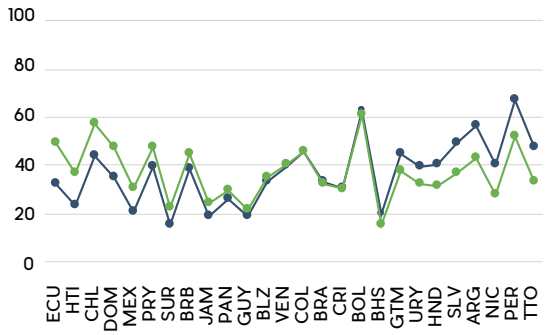
E

PROBABILITY OF REACHING TERTIARY EDUCATION CONDITIONED BY PRIMARY EDUCATION OF THE MOTHER



F

PROBABILITY OF REACHING TERTIARY EDUCATION CONDITIONED BY SECONDARY EDUCATION OF THE MOTHER

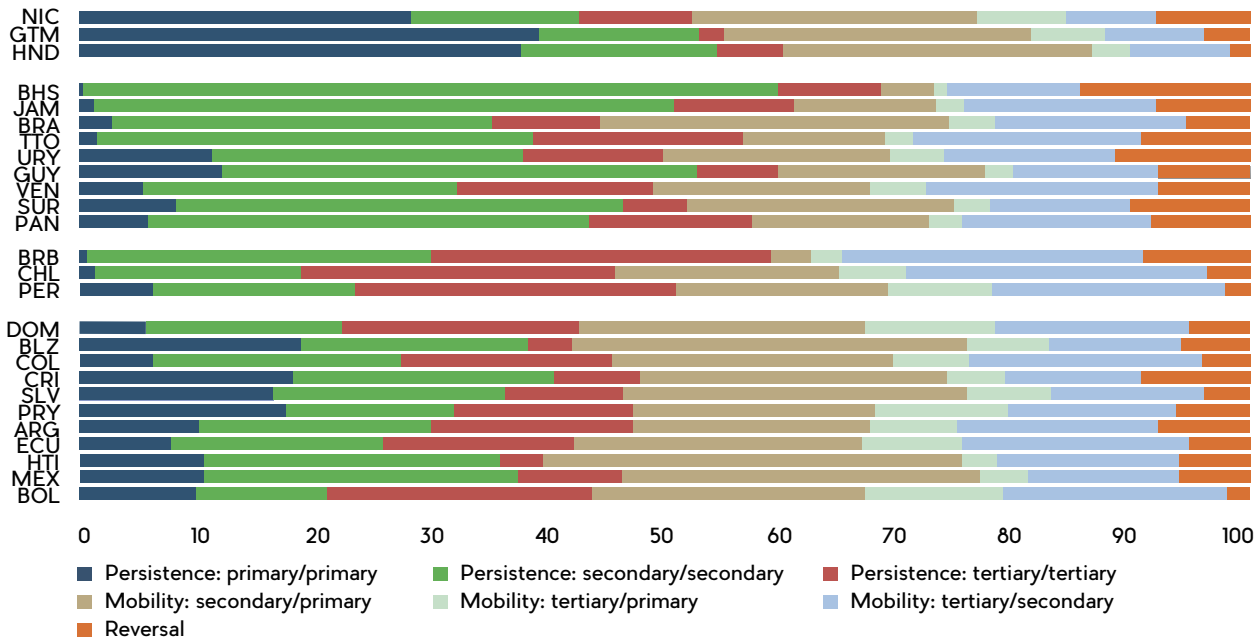


Born between 1955 and 1969 — Born between 1975 and 1989

Source: Based on the microdata of the 2012 and 2014 AmericasBarometer (LAPOP).

Graph 1.6 compares countries according to the relative size of probabilities conditioned of the transition matrix corresponding to the 1975-89 birth cohort of children. These probabilities were weighted by the average of educational distributions of children and their mothers.[12] The graph displays the countries in four groups defined according to the predominant conditioned probability. Within each group, countries are ordered according to the value of their persistence coefficients (the β_c). As mentioned previously, these coefficients are summary measures of the movements that occur within the joint distribution of education of children and their mothers. Therefore, the results can be interpreted as the contributions of each cell of the transition matrix to the value of the summary measure.

GRAPH 1.6
Relative size of the components of the transition matrix (cohort 1975-89)



Source: Based on the microdata of the 2012 and 2014 AmericasBarometer (LAPOP).

12. Formally, we made p(j/i)*[p(i)+p(j)]/2 , where i (row) is the level of primary, secondary or tertiary education of the mother, j (column) the level of education of the child, p(j/i) the probability that the child achieve level j conditioned to level i of his or her mother, and p(i) and p(j) are the unconditioned probabilities that the mother has level i and the child level j. Given that this sum of weighted probabilities is equal to one, graph 1.6 is expressed in percentages.

- The persistence of primary education (blue bars) is the predominant cell of the transition matrices in Nicaragua, Guatemala and Honduras. The 35% of the summary measure of persistence –which, at the same time, is the highest among the four groups of countries– is explained by the probability that people reach the same level of primary education achieved by their mothers. This percentage is 4.2 times greater than the average of 8% registered in the rest of the countries. According to the (a) panel of Graph 1.5, in those countries, more than half of those born between 1975 and 1989 of mothers with primary education also reached this level of education.

- In nine countries, five from the Caribbean (Bahamas, Jamaica, Trinidad and Tobago, Guyana and Suriname), and Brazil, Uruguay, Venezuela and Panama, the most important component of the transition matrices is the persistence of secondary education (green bars). On average, 39% of the summary measure of persistence of those countries is explained by the probability that people reach the same level of secondary education attained by their mothers. This percentage is two times higher than the 19% shown on average in the rest of the countries. According to the (b) panel of Graph 1.5, in those nine countries, two of every three children born between 1975 and 1989 of mothers with secondary education also reached that level of education.

- The persistence of tertiary education (red bars) is the predominant component of the transition matrices in Barbados, Chile and Peru. In these countries, 28% of the summary measure of persistence is explained by the probability that people achieve the same level of tertiary education reached by their mothers, a percentage that is 2.4 times higher than the 11%, on average, presented in the rest of the countries. According to the (c) panel of Graph 1.5, in those three countries, nearly 90% of those born between 1975 and 1989 of mothers with tertiary education also achieved this level of education.

- Finally, in the other countries (11 of 26), from the Dominican Republic to Bolivia in the graph, the predominant cell of the intergenerational transition matrices is mobility from primary education of the mother to secondary education of the children (beige bars). Twenty-seven percent of the summary measure of persistence is explained by the probability that the chidren of mothers with primary education reach secondary education.

WHAT EXPLAINS THE DIFFERENCES IN INTERGENERATIONAL PERSISTENCE?

The studies of Becker and Tomes (1986) and Solon (2004) make it posible to understand these differences between countries. Intergenerational transmission occurs because parents pass on to their children some of their attributes (cultural and genetic) and also because they invest in the human capital of their offspring. That investment depends on the abilities of their children, one return to human capital, family income and public spending on education of children. In one country there is more persistence than in another because they have a stronger heretability, more productive human capital investment, higher returns to human capital or less progressive public investment in human capital (see also the synthesis of Corak, 2006; Black and Devereux, 2011 and Blanden, 2013). In addition, Solon (2014) demonstrates that the differences of these factors between countries determine the differences both in intergenerational persistence and in income inequality. That is the reason that explains the positive relationship between both variables, as shown in graphs 1.4 and AE4 of the Statistical Annex of this report; and not because one is the cause of the other.

More recently, Becker et al. (2015) proposed a model that helps understand why the changes in intergenerational persistence are different among families according to their position in the socioeconomic distribution (that is, within countries). As we saw, there were significant changes in the region in the persistence of primary and tertiary education among birth cohorts. Those authors formulate a function of production of human capital of the children H_c that depends on the parents' education H_p, family investment in that capital (y), public spending on education (G) and other influences V_c. They assume that the function has a quadratic form to include the effects of interaction between those components and consider that the effects of public spending on human capital of children are different depending on whether it substitutes or crowds out (spending on educational provisions or primary or secondary education) or complements or crowds in (certain expenses in childhood development and university education) spending by the parents. For the case in which both expenditures are substitutes, the function has the following form:

$$H_c = \mu + k(y+G) + \varphi(y+G)^2 + \theta(y+G)\,H_p + \delta H_p + \gamma H_p^2 + v_c \qquad (4)$$

Here it is expected that more investment (public and private) made in children and greater parents' education elevate the human capital of their children (k and δ positive), and diminishing returns on that investment, given that it is progressively more difficult to aggregate knowledge to a fixed mental capacity (φ negative). Likewise, it is hoped that the parents with more education will be more efficient in obtaining results from the investments in their children (θ positive), an aspect that affects distinctly intergenerational

persistence in different parts of the distribution. Finally, it is expected that the marginal product of human capital of parents may be increasing, although it can be constant or decreasing (γ positive, zero or negative).

In the case in which public and private spending are substitutes, the greater public spending, the lower the parents' outlay to reach the optimal investment in their children. This means that the effect of public spending on human capital of children is greater for families with a lower level of education who tend to invest little in their children. Thus, public spending helps reduce intergenerational persistence. Despite that, if public spending were excessive for some families, even being equitable, it could turn out to be inefficient, given that it could more than replace paternal investment and, thus, generate a lower marginal return than that fixed by the market for capital in general. That is, if public spending were centered on families with lesser schooling (given that they are less efficient), it could reduce persistence and increase efficiency.

For the case in which public and private spending are complementary, the function of production of human capital has the following form:

$$H_c = \mu + ky + \varphi y^2 + \theta y H_p + \delta H_p + \gamma H_p^2 + \lambda G + \pi y G + v_c \quad (5)$$

Here, it is expected that higher public spending raises the human capital of the children (λ and π positive). In contrast with the case in which both are substitutes, an increase of public spending increases the optimal expenditure of the parents (because public spending attracts private) and, therefore, also increases intergenerational persistence, even if the increase is equal for all families. Persistence rises because the increase in public

spending elevates the effect of the father's schooling on the children's human capital, an effect that is greater the more significant the complementarities of spending are (in other words, the greater that π is).

The effect of public spending on intergenerational persistence also expands with the parents' education because it makes their spending on children more efficient, that is, when θ is large. Only if the parents' expenditures and human capital were substitutes (if θ were negative) will public spending that incentivates parental spending lead to a reduction of persistence. When public spending is complementary to private, it favors more those families with more schooling, including giving the same to all children, because they are more efficient. As that complementarity also elevates the returns to public investment, the government could bias its spending toward families with more schooling if its concern is efficiency. But if its concern is equity, the government could bias its expenditures toward children from families with a lower level of education. In the end, it could weight its decision in favor of the loss of efficiency if it compensates with the gains from reducing the underinvestment of families with low human capital.

Estimation

Given that public expenditure for education can have components that substitute for or complement parental expenses, we estimate the two equations (4 and 5) using the data from household surveys of the education ministries of Peru and Mexico. From the surveys, we obtained information about school attendance in private or public schools, the last grade and level of studies that was reached, and parental spending per student, as well as household income. From the ministries, we obtained information on public spending per student according to educational level and region of residence (only in Peru), which was introduced into the survey sampes we utilized. Public and private spending were converted to 2011 constant international dollars. With these data, 15 rounds (from 2002 to 2016) of Peru's ENAHO and 13 rounds (from 1992 to 2014) of Mexico's ENIGH,[13] we build the relevant variables restricting the sample to children (students) of heads of household between five and 24 years of age.[14]

Graph AE5 shows the basic statistics by income quintiles for these variables. The schooling of children of both countries, in both the poorest quintile and the richest, increases with parental schooling and spending on education and also with public spending for that purpose: (i) the children of the highest quintile have more years of education than those of the poorest quintile (three years more both in Peru and in Mexico), (ii) the parents of the richest quintile have much more schooling than those of the poorest quintile (six years more in Peru and seven years in Mexico) and an enormously higher level of spending on

13. A total of 357,000 households in Peru and 228,000 households in Mexico.
14. That is, of those born between 1978 and 2011 in Peru and between 1968 and 2009 in Mexico.

education of their children (eight times more in Peru and 12 times in Mexico), (iii) public spending per student in the two countries rose substantially in recent years (3.3 times from 2002 to 2016 in Peru and two times from 1992 to 2014 in Mexico), and more in favor of the children of the poorest quintile, and (iv) this expense is important for children of the poorest quintile (equivalent to 83% of their total spending on education in Peru and 88% in Mexico) and less important for those of the richest quintile (24% of their total spending in Peru and 49% in Mexico).

After building variables relevant for the model and with the purpose of estimating equations 4 and 5, the data were structured as panels, with observations that correspond to the average values of those variables at the per capita income decile level for each region and, given the size of the samples, only for children who attend primary and

TABLE 1.3
Estimate of the function of production of human capital of Becker, et al. (2015) (dependent variable (H_c): years of study passed by the children of primary and secondary)

	Substitutes				Complementary			
	Peru		Mexico		Peru		Mexico	
	Primary	Secondary school	Primary	Secondary school	Primary	Secondary school	Primary	Secondary school
Father's education	**0.094*** ** [0.012]	**0.073*** ** [0.014]	**0.118*** ** [0.011]	**0.052** ** [0.014]	**0.071*** ** [0.013]	**0.055*** ** [0.014]	**0.095*** ** [0.012]	**0.053*** ** [0.015]
(Father's education)^2	-0.001 [0.001]	0.000 [0.001]	-0.003*** [0.001]	0.000 [0.001]	-0.001 [0.001]	-0.000 [0.001]	-0.003*** [0.001]	-0.001 [0.001]
Total expenditure (public and private)	**0.446*** ** [0.021]	**0.337*** ** [0.024]	**0.087*** ** [0.020]	**0.098*** ** [0.024]				
(Total cost)^2	0.006*** [0.002]	-0.004 [0.002]	0.000 [0.000]	0.000 [0.000]				
Total expenditure * Father's education	**-0.038*** ** [0.003]	**-0.022*** ** [0.003]	**-0.007*** ** [0.001]	**-0.007*** ** [0.002]				
Private expenditure					**0.507*** ** [0.065]	**0.426*** ** [0.060]	**0.043** * [0.025]	**0.083** ** [0.028]
(Private expenditure)^2					-0.001 [0.002]	-0.005* [0.002]	0.001* [0.000]	0.000 [0.001]
Private expenditure * Father's education					**-0.034*** ** [0.005]	**-0.025*** ** [0.005]	**-0.005** ** [0.002]	**-0.005** ** [0.002]
Private expenditure					**0.332*** ** [0.020]	**0.185*** ** [0.022]	**0.185*** ** [0.043]	-0.155* [0.045]
Private expenditure * Private expenditure					**-0.429*** ** [0.043]	**-0.111** ** [0.036]	0.000 [0.003]	0.011 [0.006]
Controls (age, sex)	YES	YES	YES	YES	YES	YES	YES	YES
Fixed effects - region	YES	YES	YES	YES	YES	YES	YES	YES
Fixed effects - decile	YES	YES	YES	YES	YES	YES	YES	YES
Observations	3,739	3,730	3,185	3,169	3,739	3,730	3,167	3,157
R-square adjusted	0.617	0.62	0.67	0.706	0.608	0.614	0.668	0.704

Note: Standard errors in parentheses.
Significance: * p<0,05, ** p<0,01, *** p<0,001.
Source: Based on microdata of the ENAHO 2002-16 of Peru and ENIGH 1992-2014 of Mexico.

secondary school. Therefore, we utilize a linear regression estimator with two fixed effects (deciles and regions) to control unobserved heterogeneity specific to each group and, thus, impede the biases of omitted variables (Correia, 2017). The results are shown in Table 1.3. The significance and sign of the estimated coefficients show that, in addition to father's schooling, private and public investment in children's education elevates human capital of the children in both countries and in both levels of education. The negative sign of the interaction between parents' schooling and investment (total or private) in children show that both are substitutes and, therefore, tend to reduce the intergenerational persistence of education. The negative sign, or the reduced significance of the interaction between public and private spending proves that, more than being complementary, both types of spending are either substitutes or have elements of both aspects. In this case, the higher the public spending, the lower parents' expenditure for reaching the optimal investment in their children, the effect of public spending on children's education is greater for the less schooled parents, who generally underinvest in the human capital of their offspring. Thus, at least at the levels of primary and secondary education, public spending became more concentrated in these families over time —the children of the poorest 40% of families of Peru (2016) and Mexico (2014) benefited with 62% (55% in 2002) and 52% (43% in 1992) of total public spending in primary and secondary education, respectively—, would have helped to reduce intergenerational persistence in both countries.

CONCLUSIONS

In this chapter, we show the extent to which the LAC population moved in the joint distribution of education of parents and chidren and, also, in which part of this distribution the greatest changes occurred in recent decades. Currently, the differences that exist between the schooling of adults and their parents produce a persistence close to 0.5, that is, on average, an adult has half a year more schooling for each additional year of schooling of his or her parent than an adult with a less-schooled parent. While the intergenerational persistence is very different between countries and birth cohorts, the important fact is that it has diminished in most countries. Those born in the 1980s are 32% less dependent on the educational background of their parents than those born in the 1950s and, therefore, have more probabilities of attaining higher educational levels than those of their parents.

The reduction of intergenerational persistence occurred in all parts of the education distribution, but to a greater degree in the lowest part. The probability of having some grade of primary studies, conditioned by the primary of the mother, decreased among those born in the 1950s and 1980s, both in Latin America (from 54% to 27%) and in the Caribbean (from 33% to 17%). That reduction was much more significant than the increase of persistence in the upper part of the distribution. Despite the elevated level already displayed between those born in the 1950s, the probability of reaching some grade of tertiary, conditioned by the tertiary level of the mother, increased in Latin America (from

73% to 77%) and in the Caribbean (from 58% to 60%). At present, the young adults of Peru, Chile, Bolivia and Honduras are those who most replicate the tertiary of their mothers (more than 90%) and those of Honduras, Guatemala and Nicaragua are those who most reproduce the primary of their mothers (more than 50%).

In the chapter, we also point out that in the region there is a high positive correlation between inequality in income distribution and intergenerational persistence of education and it is argued, based on Solon (2004), that this correlation occurs because factors such as the skills of the children, investments in them and returns to education affect both persistence and inequality. On the other hand, drawing from Becker et al. (2015), an analysis is made of the issue that changes in persistence vary among families according to their position in the education distribution. Persistence is high among families with a greater level of schooling because the return on investment in children increases with the parents' schooling and it is also high among families with a lower level of studies, because spending on the human capital of their children is reduced. With data from two countries in the region, we show that, in addition to the schooling of the parents, private and public investment in primary and secondary education raises the human capital of children. Likewise, we show that both types of spending substitute for each other and that, for this reason, the effect of public spending on education of children is greater for less-schooled parents who generally invest little in the human capital of their children. Thus, at least at the level of primary and secondary education, public spending, having been concentrated in families of this type, would have helped to reduce intergenerational persistence in the two countries.

Finally, it should be mentioned that regarding the research on intergenerational persistence in LAC, after having recovered its importance since the end of the 1990s with studies limited to only a few countries (Torche, 2014), the results presented here contribute to the task of extending such research to the totality of the countries of the region.

11 APPENDIX

TABLE A1.1

Intergenerational persistence of education in Latin America and the Caribbean by birth cohorts of the children (dependent variable: schooling of children of 25-65 years)

	Latin America	Caribbean	Total		1950-64	1980	1950-89
Cohort 1950-54	0.664***	0.466***	0.619***	Country: Mexico	0.549***	0.425***	0.456***
	-0.0189	-0.029	-0.0153		-0.055	-0.0332	-0.0229
Cohort 1955-59	0.599***	0.508***	0.585***	Country: Guatemala	0.623***	0.452***	0.523***
	-0.0166	-0.0272	-0.0136		-0.0559	-0.0323	-0.0218
Cohort 1960-64	0.551***	0.438***	0.532***	Country: El Salvador	0.604***	0.361***	0.452***
	-0.0144	-0.0236	-0.0118		-0.0609	-0.0299	-0.0211
Cohort 1965-69	0.523***	0.412***	0.502***	Country: Honduras	0.540***	0.501***	0.513***
	-0.0132	-0.0225	-0.0108		-0.0557	-0.0321	-0.0219
Cohort 1970-74	0.476***	0.359***	0.446***	Country: Nicaragua	0.581***	0.390***	0.468***
	-0.0123	-0.0193	-0.00961		-0.0616	-0.0323	-0.0233
Cohort 1975-79	0.449***	0.402***	0.433***	Country: Costa Rica	0.524***	0.390***	0.430***
	-0.0111	-0.019	-0.00896		-0.0431	-0.032	-0.0209
Cohort 1980-84	0.416***	0.391***	0.402***	Country: Panama	0.627***	0.507***	0.564***
	-0.0104	-0.0182	-0.00853		-0.0535	-0.0381	-0.0233
Cohort 1985-89	0.368***	0.318***	0.348***	Country: Colombia	0.640***	0.386***	0.458***
	-0.0113	-0.0182	-0.0089		-0.0593	-0.0339	-0.024
Controls	YES	YES	YES	Country: Ecuador	0.599***	0.427***	0.479***
Fixed country effects	YES	YES	YES		-0.0495	-0.0338	-0.0222
Constant	5.991***	7.659*	6.414***	Country: Bolivia	0.693***	0.440***	0.530***
	-1.618	-3.082	-1.399		-0.035	-0.0245	-0.016
Observations	32,777	11,405	44,182	Country: Peru	0.602***	0.395***	0.481***
R-square adjusted	0.423	0.624	0.602		-0.0463	-0.0307	-0.0197
				Country: Paraguay	0.598***	0.371***	0.470***
					-0.0568	-0.0329	-0.0234
				Country: Chile	0.578***	0.456***	0.463***
					-0.0485	-0.0414	-0.0241
				Country: Uruguay	0.380***	0.463***	0.422***
					-0.0398	-0.0379	-0.021
				Country: Brazil	0.669***	0.298***	0.434***
					-0.0664	-0.0357	-0.0246
				Country: Venezuela	0.576***	0.422***	0.509***
					-0.0438	-0.0385	-0.0218
				Country: Argentina	0.657***	0.402***	0.510***
					-0.0511	-0.0392	-0.024
				Country: Dominican Republic	0.518***	0.291***	0.378***
					-0.0686	-0.0315	-0.0222
				Country: Haiti	0.689***	0.427***	0.527***
					-0.0471	-0.0356	-0.0216
				Country: Jamaica	0.436***	0.254***	0.313***
					-0.0617	-0.0457	-0.0277
				Country: Guyana	0.486***	0.499***	0.479***
					-0.0549	-0.0424	-0.0251
				Country: Trinidad and Tobago	0.536***	0.319***	0.423***
					-0.0328	-0.0262	-0.0165
				Country: Belize	0.364***	0.380***	0.383***
					-0.0528	-0.0398	-0.022
				Country: Suriname	0.524***	0.489***	0.506***
					-0.0493	-0.0279	-0.0189
				Country: Bahamas	0.412***	0.227***	0.290***
					-0.0413	-0.0328	-0.0206
				Country: Barbados	0.394***	0.305***	0.299***
					-0.0508	-0.0413	-0.0246
				Controls	YES	YES	YES
				Fixed country effects	YES	YES	YES
				Constant	-2.85	7.898	2.098***
					-10.08	-4.821	-0.39
				Observations	11,488	14,145	44,182
				R-square adjusted	0.552	0.621	0.605

Note: Standard errors are between parentheses.
* p<0,05, ** p<0,01, *** p<0,001.

TABLE A1.2

Intergenerational persistence of education in Europe by birth of adult children (dependent variable: schooling of children of 25-65 years)

	1950-64	1980
Country: Belgium	0.552***	0.505***
	-0.0458	-0.0523
Country: Switzerland	0.427***	0.395***
	-0.0525	-0.0607
Country: Czech Republic	0.319***	0.359***
	-0.0393	-0.0545
Country: Germany	0.228***	0.325***
	-0.0156	-0.0199
Country: Denmark	0.381***	0.187*
	-0.0631	-0.0803
Country: Estonia	0.336**	0.582*
	-0.113	-0.233
Country: Spain	0.657***	0.338***
	-0.0252	-0.0246
Country: Finland	0.354***	0.318**
	-0.0655	-0.113
Country: France	0.454***	0.356***
	-0.0205	-0.0225
Country: United Kingdom	0.503***	0.302***
	-0.0227	-0.024
Country: Hungary	0.472***	0.709***
	-0.0608	-0.0897
Country: Ireland	0.469***	0.439***
	-0.07	-0.0891
Country: Israel	0.651***	0.405***
	-0.0616	-0.0686
Country: Lithuania	0.261***	0.600***
	-0.0767	-0.18
Country: Netherlands	0.407***	0.320***
	-0.0372	-0.0422
Country: Norway	0.328***	0.387***
	-0.0742	-0.0751
Country: Poland	0.333***	0.501***
	-0.0237	-0.0259
Country: Portugal	0.475***	0.418***
	-0.0491	-0.065
Country: Sweden	0.301***	0.436***
	-0.049	-0.0702
Country: Slovenia	0.333***	0.363**
	-0.0968	-0.137
Controls	Sí	Sí
Country fixed effects	Sí	Sí
Constant	2.186	-5.075
	-20.41	-18.2
Observations	17,968	9,073
R-squared adjusted	0.690	0.676

Note: Standard errors are between parentheses. Significance: * p<0,05, ** p<0,01, *** p<0,001.

2.

THE ROLE OF UNIVERSITIES IN INCOME MOBILITY

INCOME MOBILITY

Income mobility has traditionally been a core theme of studies of intergenerational mobility, as this is a very concrete means of assessing whether children are reaching a higher standard of living than their parents. The intergenerational income elasticity (IGE) is a standard measure of intergenerational mobility measuring the percentage change in a child's income at adulthood associated with a percentage change in parental income, measured at similar ages for parents and offspring. Higher IGE scores are associated with higher persistence and lower social mobility. Ranging from 0 to 1, a score of 0.6 for example means that if parental income increases by 1,000 pesos, the child will earn at adulthood 600 pesos more on average than other peers. Norway, Finland and Denmark have been shown to have more intergenerational income elasticity than the UK, France and Italy (OECD 2015 Nero conference). Upward mobility is also commonly measured as a transition probability, that is, by the percentage of the younger generation hailing from the lowest income quintile of parental income that attains the highest income quintile as adults. The UK, France, Italy and Sweden have been shown to have higher mobility than the US (Alesina, Stentcheva and Teso, 2017). For example, the probability of moving from the bottom quintile of family income to the top quintile as young adults is 7.8% in the U.S., but close to 11% on average in Europe. In Latin America and the Caribbean (LAC), unfortunately there are neither i) population registries that allow tracking income across generations, or ii) comprehensive tax records in which unique identifiers can be used to connect incomes across generations. In an attempt to generate estimates of IGE for LAC, studies have used the occupation and education of the father to predict the income of the first generation.[15] While not strictly comparable, these studies suggest that mobility is lower in Brazil (Ferreira and Veloso, 2006), Chile (Nunez and Miranda, 2010) and Mexico (Torche 2010) than in the United States.

LAC is characterized by a high intergenerational persistence, particularly at the upper tail (Torche 2014). A lower level of intergenerational mobility in LAC would be predicted by the strong empirical regularity known as "The Great Gatsby Curve", referred to as such because countries with high levels of income inequality have low levels of intergenerational mobility.

As LAC continues to be the world region with the highest levels of income inequality this pattern raises concerns for policymakers.

15. These questions have been included in special modules such that they are asked of all household members retrospectively about their parents.

Perceptions of income mobility also vary across countries, although they may not perfectly correspond with the realities at hand. Upward social mobility in the United States is perceived to be extremely fluid, such that the country is characterized as the "land of opportunity" in which hard work reaps rewards. In contrast, in Latin America and the Caribbean there is more support for the view "hard work doesn't bring success, it is more a matter of connections and luck". In seven of the ten LAC countries surveyed in the 2010-2014 World Values Survey, the support for the most extreme view on this question was greater than in the United States, Spain, Sweden and Germany. Alesina, Stentcheva and Teso (2017) use a series of experiments and found that most respondents in the five countries studied —France, Italy, Sweden, U.K. and U.S.— had quite inaccurate perceptions of actual social mobility in their own country. Europeans on average are overly pessimistic about mobility and North Americans are overly optimistic, meaning that the Europeans think there is less mobility than observed while the North Americans think there is more. The authors also link support for redistributive policies to their experimental findings, for example, respondents who ex-ante identify themselves as liberal with respect to economic issues are significantly more likely to support additional redistributive policies if they are given a pessimistic message, "The chances of a poor kid staying poor as an adult are extremely large. Only very few kids from poor families will ever make it and become rich". Respondents who are ex-ante identified as having conservative values with respect to economic issues do not increase their support for redistributive policies in response to a worsening scenario for the mobility for poor children.

The lack of data that facilitates matching income information across generations in LAC not only hinders cross-country comparisons, but also impedes analysis over time to see if intergenerational mobility is rising or falling. In the U.S., Chetty et al. (2014), for example, have analyzed 40 million tax records in which children listed as dependents in parents' taxes can be followed by their social security numbers in their own tax forms as adults, and found that relative intergenerational mobility has not changed in recent decades (Chetty 2014). In other words, in the U.S., the probability of moving up from lower to higher income quintiles has not changed for more recent cohorts in comparison to cohorts who were young adults in the 1970s. Notwithstanding the stability of the relative intergenerational mobility, Chetty, et al. (2016) finds that absolute intergenerational mobility has declined.The percentage of children who at age 30 have household incomes higher than their parents (also at age 30), with incomes adjusted for inflation, has fallen from approximately 80% for those born in 1950 to approximately 50% for those born in 1985[16] (Chetty et. al 2016).

While this core analysis of intergenerational income mobility is not feasible for LAC given data limitations, a series of unique datasets for Brazil and Peru enables us to examine

16. Moreover, if inequality of parental income has increased, there will be more inequality regardless of unchanging transition probabilities. Chetty, et al. describe this as an environment of harsher consequences for the lottery of birth.

the social mobility associated with different universities in LAC, and to roughly compare results to the most recent analysis for universities in the United States (Chetty 2017). It is important to clarify that the methodology does not identify the causal effects on students of attending a university, but rather is a descriptive analysis of the intergenerational mobility associated with the universities.

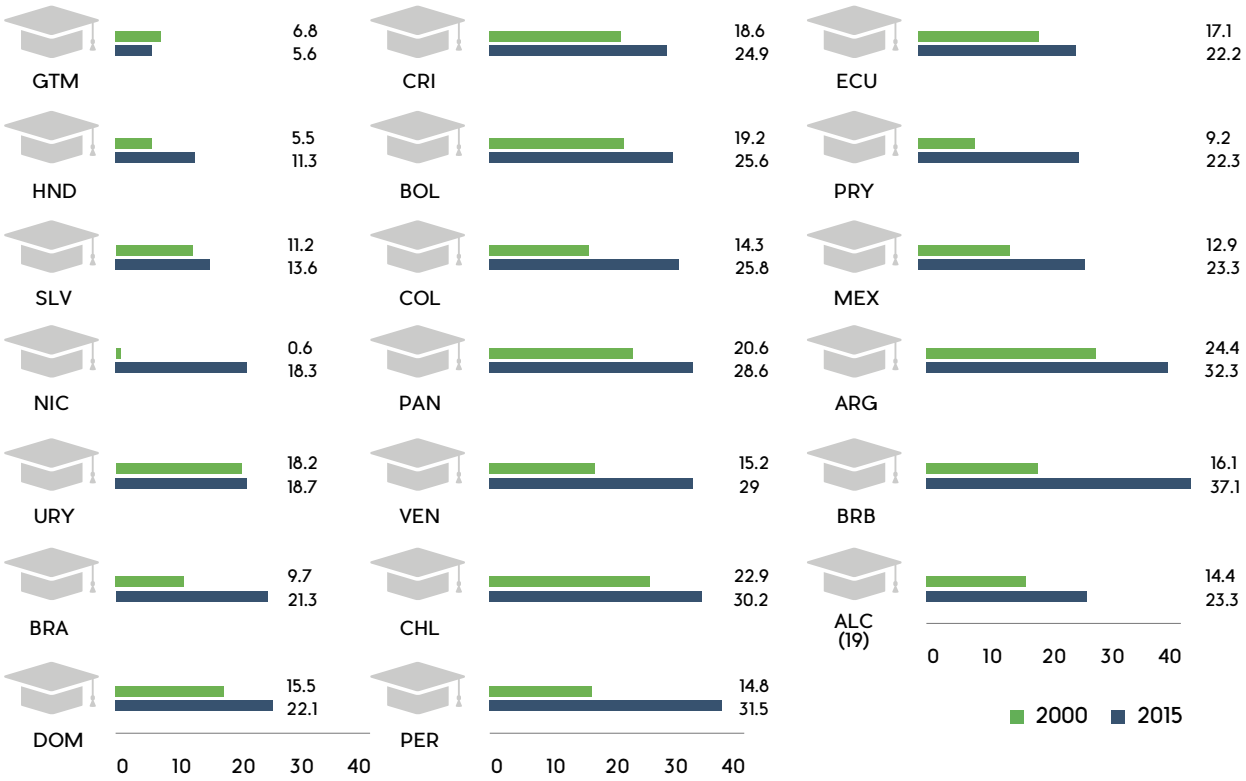
THE CONTEXT OF UNIVERSITIES IN THE REGION

As universities typically collect information at enrollment on the background of the student, including the family income, it becomes possible to track the students' subsequent earnings as a means of exploring social mobility and persistence associated with specific universities. The recent analysis by Chetty et al. (2017) serves as an important reference point not only for its tremendous impact on the dialogue on social mobility in the U.S., but also for the chance to put the results associated with income mobility for the Latin American universities within a broader perspective.

In a region widely renowned for high levels of income inequality, tertiary schooling was long characterized as the sacred territory of the elite, rather than as an elevator for the poor to reach the highest income strata. Unlike basic schooling, tertiary schooling is not compulsory and high-income students are more likely to matriculate. Government investments in public universities in the region have long been criticized as redistributing public funds from the poor to the rich (Psacharopoulos, Jee-Peng and Jiménez, 1986; Rozada y Menéndez, 2002; Busso et al., 2017). The practice of not charging tuition or fees at high quality public universities in Latin America and the Caribbean has long been characterized as a policy with good intentions that inadvertently ends up being coopted by the rich rather than lowering the barriers for the poor.

Both the supply of providers and the supply of tertiary students have expanded dramatically in the region over the past two decades, with the increase in institutions largely filled by the private sector. Graph 2.1 shows the dramatic increase in the population with tertiary schooling from 2000 to 2015. Lustig, López-Calva and Ortiz Juárez (2016) link increases in secondary and tertiary education to reductions in returns and, ultimately, declines in income inequality. A review of the key trends in tertiary education can be found in the DIA 2017. When examining intergenerational income mobility the relevant question at hand is whether universities offer opportunities for students from all income backgrounds to attain the highest ranks of earnings.

GRAPH 2.1
Percentage of Population Ages 25-65 with Tertiary Schooling



Source: IDB Harmonized Household Surveys

COMPARABILITY BETWEEN COUNTRIES

Similar but not identical data or methodologies to follow family income of students to own income as young adults.

The analysis for the universities in Brazil and Peru attempts to replicate the approach by Chetty et al. (2017) with the data available for LAC. Following these authors, we define the upward mobility rate for each university as the percentage of students who at matriculation have family income in the lowest-income bracket according to the national distribution of family income, such as the poorest 20%, and subsequently attain as young adults the highest-income bracket, again relative to their peers in the national distribution of earnings. We also measure the rate of persistence of intergenerational income associated with each university by measuring the percentage of students with family income in the highest income quintile at matriculation who maintain the highest income quintile bracket of earnings as young adults. It is important to note that, while the two measures are related, these transition probabilities of persistence and mobility are not perfect "alter-egos" as in the case of the summary measures of persistence (β) and (1- β) as measured from regressions in previous and subsequent chapters. Following Chetty et al. 2017 we calculate an index that measures the effectiveness of the university at social mobility which depends both on the upward mobility rate as well as the university's coverage of the poor students. Whereas the mobility rate measures the effectiveness on upward mobility from the perspective of a low-income individual, the college mobility index assesses the overall mobility of low-income students realized by the university. If the policy maker's objective is to maximize the chance of a low-income matriculant reaching the highest earnings bracket, the mobility rate is most relevant. But if the policy maker is interested in lifting the trajectory of low-income students to the top earnings brackets, the mobility index is more relevant. A similar index is compiled to measure the persistence associated with specific colleges. To calculate the index of college persistence the transition persistence is multiplied by the coverage of students from the highest income bracket.

Table 2.1 summarizes the key details of the samples and how the analysis differs across countries. While young adult earnings for all three countries are all measured in 2014, the cohorts followed and the time horizon after graduation varies, as do other key factors. The analysis for the U.S. covers 1,190 public universities and 1,009 private universities, with flagship public universities and Ivy-plus universities highlighted by Chetty et al. 2017. Students attending U.S. universities during the period of 1999-2004 are the focus of the analysis. In Peru the 2014 National Survey of University Graduates and Universities is a probabilistic survey of university graduates from 93 public and private universities whose sample was obtained from the group of students interviewed in the 2010 Census of National Universities (INEI 2015). Of the total 213,370 students surveyed in the 2010 census, 10,564 students were interviewed in 2014, with at least 40 graduates sampled from each university. The analysis for Brazil covers a large flagship public university, the Federal University of Pernambuco (UFPE). UFPE is a highly selective public university in

the Northeast of Brazil ranking among the top fifteen universities in Brazil and accepting on average 10% of applicants during this period (Matta et al. 2016). Undergraduate enrollment at UFPE includes approximately 30,000 students. The analysis focuses on the cohort of 9,513 students who attended UFPE in 2005-2006.

In all three cases the subsequent individual earnings of the students are contrasted with the family income at enrollment, although the sources and definitions vary. The U.S. analysis relies heavily on tax records in which the list of students attending accredited U.S. colleges are then matched by social security numbers across tax forms in which the students have been listed as dependents, typically by parent(s). The family income in the cases of Brazil and Peru are self-reported. The different cut-offs applied in Peru and Brazil (at the lower income bracket 23% and 8%, respectively) and the different upper bracket for Peru (18%) reflect the fact that family income was not measured continuously but in brackets. In the case of Brazil, the bracket of family income is assigned a percentile according to the national household income distribution as measured in the 2005 and 2006 Pesquisa Nacional por Amostra de Domicílios (National Household Survey Sample - PNAD) (IBGE, 2017).[17] In Peru, the percentile of family income corresponding to the reported brackets is determined according to the 2010 National Household Survey.

The individual earnings data also exploits more than 30 million tax records in the United States. In the case of Brazil, the individual earnings are measured using an administrative database, the Relação Anual de Informações Sociais (RAIS), that is also linked to the tax system with approximately 49.6 million records for individuals in 2014.[18] The RAIS is a longitudinal dataset at the employee-employer level, with national coverage of the Brazilian formal labor market. Alemann, Bustelo and Rodríguez Silva (2017) show that 85% of students enrolled in UFPE in 2005-2006 are matched with earnings in the 2014 RAIS. The earnings of young adults in Peru is self-reported using the sample of Encuesta Nacional a Egresados Universitarios y Universidades 2014. The ages of the students interviewed and the follow-up period varies across the countries as well. The analysis in the U.S. focuses on youth who are ages 19-22 when attending university during 1999-2004. The measure of parental income for this baseline sample of college students is measured at the time they are ages 15-19 during 1996-2000 to smooth transitory income. The follow-up of young adult earnings occurs 14 years later in 2014 when the students are 32-34 years of age. The sample of UFPE students ages 20-21 surveyed in 2005-2006 were followed up 8-9 years after in 2014 when the students are 28-29 years of age. In Peru, the measure of family income is taken when the students were interviewed in 2010 and the follow-up for individual income occurs four years later when graduates are 23-29 years old.

17. The source of the analysis for UFPE is Alemann, Bustelo and Rodríguez Silva (2017).
18. RAIS, or Yearly Social Information Report, is a large restricted-access federal dataset collected by the Brazilian Ministry of Labor. Every year, tax registered firms are legally required to report every worker formally employed at some point during the previous calendar year. This is a longitudinal dataset at the employee-employer level, with national coverage of the Brazilian formal labor market from 2006 to 2014.

The differences across the samples for the U.S., Brazil and Peru suggest that the results are not perfectly comparable. The restriction of the sample to university graduates[19] in Peru would bias upwards the mobility results as would the slightly higher cut-off for the lower income bracket, 23% rather than 20%, in comparison to the U.S. The very narrow lower income bracket in Brazil, students from the lowest 8% rather than the lowest 20% of family incomes, constrains the measure of upward mobility in UFPE relative to the measures at universities in the U.S. and Peru. In Peru, the narrower upper bracket for earnings, the top 18% rather than 20%, constrains the measure of persistence in comparison to that of the U.S. Finally, the comparisons may also be affected by the different follow-up time horizons. The follow-up period in Peru is the shortest, only four years from the initial survey of college students,[20] whereas in Brazil the earnings are measured eight to nine years later and in the U.S. 10-13 years later.

19. The 2014 follow-up survey includes graduates under 30 years of age (egresados, bachiller, or licenciados). Drop-out rate for undergraduate programs in LAC is estimated to be over 40% (Busso et al. 2017 Chapter 9).
20. Haider and Solon (2006) find measuring incomes at young ages is problematic because those with high lifetime earnings have higher steep earnings profiles especially before age 30.

TABLE 2.1
Differences in Samples for Mobility and Persistence Analysis

	U.S.	BRAZIL	PERU
Initial Sample	6.7 million students attending 2,199 universities (1,190 public and 1,099 private)	9,513 students attending 1 Federal public university in the state of Pernambuco during 2005-2006.	10,479 students attending 93 universities (35 public and 58 private) in the 2010 census (INEI Censo Nacional Universitario)
Ages at baseline	Ages 19-22 in 1999-2004 as students	Ages 20-21 in 2005-2006 as students	Ages 19-22 in 2010 as students
Ages at follow-up	Ages 32-34 in 2014 (may or may not have graduated)	Ages 28-29 in 2014 (may or may not have graduated)	Ages 23-29 (restricted to graduates)
Parental income	Parental income reflects the average of when college student was age 15-19 in 1996-2000 to smooth transitory fluctuations. The parental income is ranked relative to all other parents in national distribution who have children in the same birth cohort. Matching of student and parental tax records as described in Chetty et al 2017.	Family income is self-reported by students in 2005-2006 from entry level administrative surveys at university. Percentiles assigned by using income cutoffs for national ranking of family income in 2005 and 2006 PNAD.	Family income: self-reported by students from 2010 INEI Censo Nacional Universitario. Percentiles assigned by using income cutoffs for national ranking of family income quintiles in Encuesta Nacional de Hogares (ENAHO) 2010.
Young adult earnings	Baseline sample's tax records as reported in 2014 for wage earnings and net self-employment income. Percentiles assigned by ranking individual earnings relative to all other in same birth cohort.	Individual earnings: federal tax-related data from the Ministry of Labor (RAIS - Relação Anual de Informações Sociais or Yearly Social Information Report). Percentiles assigned by using earnings cutoffs for national ranking of individual earnings for individuals 28-29 in 2014 PNAD.	Individual earnings: self-reported from sample of university graduates of "Encuesta Nacional a Egresados Universitarios y Universidades 2014" and "Encuesta Nacional de Hogares 2014". Percentiles assigned by using earnings cutoffs for national ranking of individual earnings for individuals 23-29 in 2014 ENAHO.
Mobility	transition from lowest 20% of parental income to highest 20% of individual earnings	transition from lowest 8% of family income to highest 20% of individual earnings	transition from lowest 23% of family income to highest 20% of individual earnings
Persistence	transition from highest 20% of parental income to highest 20% of individual earnings	transition from highest 20% of family income to highest 20% of individual earnings	transition from lowest 23% of family income to highest 20% of individual earnings
Distance in years (from attendance to adult earnings)	10-13 years	8-9 years	4 years
Excluded from the sample	Analysis excludes foreign students, students who were never declared as dependents in tax returns and students whose parents declare negative income in their tax returns.	Individual earnings only includes formal sector (85% coverage) for this sample.	The 2014 survey of earnings only includes university graduates (egresados, bachilleratos and licenciados). Excludes earnings from students that did not graduate.

Notes: The 2014 National Survey of University Graduates and Universities is a probabilistic survey of university graduates from 93 public and private universities whose sample was obtained from the group of students interviewed in the 2010 Census of National Universities (INEI 2015). Of the total 213,370 students surveyed in the 2010 census, 10,564 students were interviewed in 2014, with at least 40 graduates sampled from each university.

INTERGENERATIONAL INCOME MOBILITY OBSERVED IN UNIVERSITIES OF LAC

While the analysis for the set of universities in LAC is neither comprehensive nor fully comparable to Chetty's analysis of universities in the U.S., it nonetheless permits us to assess whether the observed social mobility better aligns with a traditional perception of universities in LAC (low 10% mobility) or perceptions of universities in the U.S. (considerable mobility). Not surprisingly, in all cases as seen in Tables 2.2 and 2.3, the probability of the college student subsequently attaining the highest earnings bracket is much more likely if the student matriculates from the highest family income bracket, than if the student matriculates from the lowest income bracket.[21] For example, as seen in Table 2.3, in Peru overall, 69.4% of students from the highest income bracket continue in the highest earnings bracket as young adults while 34.4% of students with incomes from the lowest bracket (lowest 23%) attain young adult earnings in the highest bracket (highest 20%). The average for the United States is 30.8% (persistence) and 19.6% (mobility). The higher success rates in reaching the highest earning brackets for students from the highest income brackets does not contrast with the conventional wisdom about advantages of the advantaged.

Persistence, on average, is higher in private universities than in public universities, both in Peru and the United States. Here again we see a bigger difference in Peru than in the U.S. in terms of coverage of students entering college from the richest families in private versus public schools. In Peru, the coverage of the highest income quintile is on average very low in public universities (4.8%) whereas in the U.S. the coverage is 20.7%. Despite the highest income students having a higher probability of staying in the highest income quintile as young adults in Peru than in the U.S., the lower coverage of students from the highest income families in public universities in Peru implies that public universities in Peru are contributing less to the persistence of intergenerational income than in the United States. Finally, while the 71.6% persistence rate for UPFE is higher than the average for public and private colleges in the U.S. and Peru, it is important to note that there are numerous institutions, both private and public, in these countries with similar or higher rates of persistence, suggesting a more general pattern in which students who matriculate from the most advantaged families at elite institutions are able to maintain their high-income status.

The data on mobility may challenge the perception of more stagnant opportunities for mobility in LAC, with universities found to be associated with considerable intergenerational upward mobility. The observed mobility at Brazil's flagship public university, UFPE, (42.6%) is higher than the average estimated at 31 US flagship universities (33.9%).[22]

21. We should keep in mind that the comparisons are similar but not equivalent across countries.
22. Chetty et. al define public flagships using the College Board Annual Survey of Colleges (2016). There are 31 US flagships included in the average.

UFPE's coverage of low-income students, despite the restriction of the analysis measuring the poorest 8% rather than poorest 20%, is similar to the average at U.S. public flagships and in fact higher than at Ivy-league schools including Stanford, Yale and Harvard.[23] After taking into account both mobility and coverage, the overall social mobility index for UFPE (2.8%) is above the average of the U.S. public flagships as well as above Stanford, Yale and Harvard.[24]

When considering the full sample of universities in Peru, as shown in Table 2.3, the overall average of upward mobility (34.4%) is higher than the overall average for the full sample of universities in the U.S. (19.6%). Upward mobility observed for public universities in Peru (35.5%) is higher than for public universities in the U.S. (15.8%) as is upward mobility for private universities (32.1% vs. 24.0%). In addition to upward mobility, the public universities in Peru perform quite well relative to the average of the public universities in the U.S. in terms of coverage, therefore giving the mobility index a higher value in Peru than in the U.S. In this sense, the public flagship of UFPE and the public universities in Peru are quite aligned with Chetty et al.'s assertion of U.S. public flagships as "engines of social mobility".

23. This will underestimate the actual coverage of students matriculating with incomes from the poorest 20% of households.
24. Again, we are likely underestimating mobility in the case of Brazil. Results for the Ivy-league schools shown in Chetty et al 2017.

While the private universities in both Peru and the U.S. are associated with higher probabilities of upward mobility than public universities, the average coverage of the poor is almost three times lower in private universities than in public universities in Peru, while the coverage is only slightly lower in private institutions in the United States. For Peru, this implies that the average mobility index for private universities is lower than in public universities whereas in the U.S. there is no average difference in observed effectiveness between U.S. public and private universities.

TABLE 2.2
Intergenerational Income Mobility and Persistence, Federal University of Pernambuco, Brazil, and Average of U.S. Public Flagship Universities

		Mobility: % from lowest income bracket attaining top earnings bracket	Coverage: % enrolled from lowest income bracket	Index of Univ. Mobility (1x2)
Brazil	Federal University of Pernambuco	42.6	6.6	2.8
U.S.	Avg. of Flagship Public Universities	33.9	5.4	1.8

		Persistence: % from top income bracket attaining top earnings bracket	Coverage: % enrolled from top income bracket	Index of Univ. Persistence (1x2)
Brazil	Federal University of Pernambuco	71.6	36.2	25.9
U.S.	Avg. of Flagship Public Universities	47.9	46.7	22.4

Note: Brazil analysis is from Bustelo et al. 2017. Mobility in UFPE is the probability of transitioning from the lowest 8% of household income to the top 20% of individual earnings. Persistence is the probability of transitioning from the Q5 of household income to top Q5 of individual earnings eight to nine years later. The data for the U.S. comes from Chetty et al. 2017. Mobility in the U.S. is measured from Q1 to Q5 and persistence from Q5 to Q5.

TABLE 2.3
Intergenerational Income Mobility and Persistence, Private and Public Universities in Peru and the U.S.

A. Mobility		Mobility: % from lowest income bracket attaining top earnings bracket	Coverage: % enrolled from lowest income bracket	Index of Univ. Persistence (1x2)
Peru	Private Universities	24.0	10.2	2.4
	Public Universities	15.8	14.5	2.3
	Average	19.6	12.5	2.5
U.S.	Private Universities	32.1	9.1	2.9
	Public Universities	35.5	23.1	8.2
	Average	34.4	15.5	5.3

B. Persistence		Persistence: % from top income bracket attaining top earnings bracket	Coverage: % enrolled from lowest income bracket	Index of Univ. persistence (1x2)
Peru	Private Universities	34.6	32.4	11.2
	Public Universities	27.6	20.7	5.7
	Average	30.8	26.1	8.0
U.S.	Private Universities	70.4	23.3	16.4
	Public Universities	63.6	4.8	3.1
	Average	69.4	14.8	10.3

Note: Author's calculations for Peru. Data for Peru include 58 private universities and 35 public universities. Mobility in Peru is the probability of transitioning from the lowest 23% of household income to the top 20% of individual earnings. Persistence is the probability of transitioning from the top 18% of household income to top 20% of individual earnings four years later. The data for the U.S. comes from Chetty et al. 2017 and is based on 1,009 private and 1,190 public universities. Mobility in the U.S. is measured from Q1 to Q5 and persistence from Q5 to Q5.

Mobility not guaranteed

It is important to note that while we have documented considerable mobility from lowest to highest income brackets in our small sample of universities, these transitions are not realized by all students in the sample and as noted in other research in the region, some students may encounter downward mobility and/or negative private returns on their investments in tertiary education. Across the region, over 40% of students are estimated to drop-out before completing academic degrees (Busso et al. 2017).[25] The tremendous expansion in tertiary schooling has placed downward pressure on the returns to completing tertiary as compared with secondary. Not only have returns to completing tertiary versus secondary declined in recent years (DIA 2017), but studies find that the private return to graduating from college is negative for approximately 30% of students in Colombia and 20% of students in Chile (Gonzalez-Velosa et al. 2015).[26] Moreover, studies have found declines in the overall quality of tertiary schooling provided as compared with earlier years (Busso, Hincapié and Ripani, 2017). In Peru, the probability of tertiary graduates being underemployed, or in other words overeducated, for the requirements of the job, has increased over time as found by Lavado, Martínez and Yamada (2014). The decline in the quality of graduates was found to be related to the de-regulated expansion of universities in Peru that occurred after legislative changes in 1995.

Policy implications

The persistence of economic advantage as passed from one generation to another is observed in the sample of universities in Peru and Brazil where college students from high-income backgrounds are one-third to two-thirds more likely to reach the upper rungs of young adult earnings than peers from low-income backgrounds. The comparisons permissible from the available data suggest that public universities in Peru are found to generate less persistence than public universities in the U.S. The average index of persistence is lower for the public universities in Peru since the coverage of students from high-income families is much lower than in the U.S. institutions.

Contrary to many prevailing views, universities in LAC are associated with considerable intergenerational upward mobility, often higher than in U.S. institutions.

25. While this includes students who change degrees and as such may over-estimate drop-out, the high levels are considered to reflect a lack of academic preparation.
26. Private returns take into consideration the costs, including opportunity costs, of additional education not only the difference in earnings between different levels of schooling.

The results are also found for public flagship universities, institutions that have long been criticized for subsidizing the rich rather than providing a promising path for low-income students to attain the highest rungs of earnings as young adults.The analysis demonstrates that for cohorts entering between 2005-2006, the Federal University of Pernambuco (UFPE) provided more mobility than the average for U.S. flagship public universities as well as a higher index of mobility than numerous elite private universities. The sample of universities of public and private universities in Peru are observed to make a bigger "footprint" on social mobility than colleges in the U.S.[27]

The improvement in access to tertiary schooling is both a reflection of the continued improvements in the graduation rates of secondary school among the lowest quintiles and more recently to the availability of initiatives implemented in LAC to expand access to less advantaged students. Results of the evaluation of Ser Pilo Paga in Colombia find that the scholarship program for low-income students not only improves access to higher quality universities, but also improves test scores by providing a greater motivation to study for entrance exams (Londoño-Vélez, Rodríguez, and Sánchez 2017 and Laajaj, Moya, and Sánchez 2017). The evaluation of Beca 18, a scholarship program begun in 2012 and aimed at low-income Peruvian youth applying to universities, also finds improvements in access. To expand access to lower income students at private universities in Brazil, the government provides both loans and scholarship programs (FIES and PROUNI). In 2012, federal universities in Brazil began implementing a federal policy aimed to expand access to traditionally excluded students by guaranteeing 50% of entrance slots for public school students with half of those spots reserved for low-income students and a share by ethnicity and race according to the composition of the state.[28]

The effect of these policies on increasing social mobility is still in an early stage but is beginning to be assessed.[29] If quality can be strengthened rather than diminished, expanding access can fully realize the role of universities as critical drivers of social mobility in the region. One thing is clear, with the proliferation of new universities in the region, and a surge in attendance, particularly among students from lower income families, there is a key need for value-added information. Therefore, efforts have begun to focus on the causal effects of attending specific universities to be able to address the central question of attribution. A new look at the role of tertiary schooling in promoting social mobility is warranted.

27. Again, the analysis for Peru considers university graduates and a much smaller follow-up time-period than for the United States.
28. The analysis for UFPE includes cohorts that entered before the policy was implemented at UFPE.
29. The Federal Policy is an extension of earlier policy initiatives that began with the 2002 affirmative action policy at the State University of Rio de Janeiro in 2002 and spread in non-uniform ways to approximately 49 higher education institutions by 2010.

3.

INTERGENERATIONAL PERSISTENCE AND DOMESTIC VIOLENCE

This chapter integrates the theme of domestic violence into the framework typically applied by economists to study intergenerational persistence. Studies of intergenerational persistence in economics have tended to emphasize the role of parental resources such as income and time, or genetic ability. However, tastes or preferences can also be the driving factor behind the intergenerational transmission of life outcomes (Lochner 2008). The integration in this chapter of the topic of intergenerational transmission of violence may seem novel from the perspective of economics which has tended to focus on the transmission of socioeconomic outcomes, such as education and income, but in fact reflects a long tradition in the disciplines of psychology and sociology of analyzing the replication of violent behaviors across generations (Kalmuss, 1984). Moreover, with the emergence of behavioral economics and the attempt to explain why human behavior often diverges from neoclassical predictions, appearing for example far more intuitive and automatic than deliberate and rational, the role and formation of preferences is receiving more attention throughout the social sciences.[30]

The economic studies of social mobility have largely followed the prevailing theories of distributive justice in focusing on inequalities that arise from institutions outside of the family. As we integrate the topics of education, income and violence in our framework, we implicitly explore the role for the state in designing policies. Political philosopher John Rawls suggested that if individuals sat behind a "veil of ignorance" and did not know ex-ante their own personal circumstances, they would come up with principles for the functioning of a society that would allocate resources fairly. For example, if you had no knowledge of whether you might be born into a family with low or high education, you might favor education policies that generate relatively low intergenerational persistence of education since you can envision a difficult starting place in the "lottery of life."

While family interactions and decisions are regarded by many, including Rawls, as a private sphere, there are certain issues, such as domestic violence, where the state has a clear interest and justification for involvement. In other words, we can extend Rawls' "original position" to the topics of intimate partner violence (IPV) and harsh corporal punishment of children. For example, if you had no knowledge of whether you might be born into a family with a history of IPV, you might prefer a society where intergenerational persistence was low since you might originate in one of the families with this background. If you knew you would be born into a violence-free family, you might prefer a society that promoted a higher level of persistence to maintain the position of your offspring.

The policy-relevance of the topic is not merely a thought experiment. The high levels of IPV in Latin America and the Caribbean are receiving increasing attention by policy makers in the region. It is estimated that between 16-38% of women in the region have suffered

30. One example is hyperbolic discounting in which the present tends to be valued much more than the future, making short-run behavior difficult to align with long-run preferences such as quitting smoking.

from physical abuse perpetrated by an intimate partner (Bott et al. 2012).[31] Furthermore, over 50% of parents or caregivers endorse corporal punishment as a way of disciplining their children (ECLAC-UNICEF 2009).[32] IPV and corporal punishment applied to children are serious public health issues of epidemic proportions (WHO) and their occurrence translate into important economic losses for society. It has been calculated that, in certain LAC countries, the indirect costs of domestic violence on lost productivity can range between 1.5 and 4% of lost GDP (Morrison and Orlando 1999; Ribero and Sánchez 2005).[33]

Likewise, much research has been dedicated to analyzing the effects of exposure to violence in childhood on children's subsequent outcomes such as antisocial behavior, educational attainment and health outcomes. For example, longitudinal studies have shown that children who have experienced harsh physical or psychological discipline have a higher propensity to both experience and perpetrate domestic violence as adolescents and adults (Holt et al. 2008). In a recent paper, Alemann, Bustelo and Rodríguez Silva (2017) use the latest DHS surveys for ten LAC countries to examine the relationship between children's health and mother's experience of physical or sexual IPV, finding a consistent pattern of association between children's exposure to IPV and the prevalent child illnesses, namely, respiratory illnesses (acute lower respiratory infections or ALRI), fever and diarrhea.

Many interventions have crossed the threshold into family life, such as home visiting programs, parenting programs, and even laws about corporal punishment that apply in the home.[34] Nonetheless, it remains an open question as to what extent patterns of family violence continue to repeat across generations and what policy interventions may help to break the intergenerational persistence of IPV and harsh corporal punishment against children.

This chapter will apply the basic conceptual framework of intergenerational transmission to two topics related with domestic violence:[35] physical intimate partner violence (IPV) experienced by women and harsh corporal punishment experienced by children, using the module on domestic violence in the Demographic and Health Surveys in which women are the respondents. We will assess the levels of intergenerational persistence of both outcomes as well as whether the intergenerational persistence is falling in younger generations. As a reminder, our framework estimates the persistence of the parallel outcome of the adult child on the outcome of the previous generation, i.e., the experience of physical IPV by women who observed their mothers experiencing physical IPV. Or, in the case of parenting practices, the implementation of harsh corporal punishment by mothers who experienced harsh corporal punishment in their childhood.

31. DHS surveys reported between 2007-2009.
32. One study concludes that "[i]n all the [studied] countries, violence and abuse suffered by the father and mother when they were children is the most relevant risk factor for violence against children in their families, since it leads to an intergenerational transmission of violence." (ECLAC-UNICEF 2009; p. 9)
33. It has also been estimated that femicides in LAC translate into a 0.01% of lost GDP, twice as much as that from some European countries (Jaitman et al. 2017).
34. There are currently ten countries in LAC that prohibit the use of physical and humiliating punishment against children in all settings, including the home. Uruguay and Venezuela (2007), Costa Rica (2008), Honduras (2013), Argentina, Bolivia, Brazil and Nicaragua (2014), Peru (2015) and Paraguay (2016)
35. The term domestic violence is often used to refer to intimate partner violence. Yet, this term also encompasses child or elder abuse, or abuse by any member within the household.

INTERGENERATIONAL TRANSMISSION OF VIOLENCE: THEORY AND EVIDENCE

Bandura's (1969, 1978) social learning theory, prominent in the psychology literature, has been widely applied to explain the transmission of violent behavior across generations. In families where physical violence commonly occurs, the transmission is influenced through both specific and general modeling of behavior. Specific modeling occurs when the next generation replicates the type of violence to which they were exposed. The acceptability of violence in family relationships, or the general modeling, occurs as children observe parental behavior and hear beliefs expressed by their parents (Kalmuss 1984). Children who witnessed interparental violence learn that violence is accepted in interpersonal relationships and will tend to imitate this behavior (Egeland 1993).

Estimates of the persistence of intergenerational physical IPV vary across gender. A meta-analysis of the intergenerational transmission of spouse abuse concludes that "[t]here is a stronger relationship between growing up in a violent home and becoming a perpetrator of spouse abuse for men than for women and for becoming a victim of spouse abuse for women than for men" (Stith et al. 2000). A handful of studies have found that for women, our population of study, witnessing interparental physical IPV during childhood is positively related with being victims of physical IPV later in life. It has been found that women who witness physical IPV against their mothers were more likely to be victims of abuse themselves (Stith et al 2000).

Longitudinal studies in the United States have documented the transmission of harsh parenting practices from one generation to the next (Bailey et al., 2009; Neppl et al. 2009). These studies showed a high level of validity between observational reports of parenting practices and self-reported practices. Studies outside of the developed world, either with observational or self-reported data are scarce, with no studies that have been found to examine how the intergenerational patterns of harsh parenting practices were changing across time.

BASIC MODEL

We apply our basic model from the conceptual framework to the intergenerational transmission of physical IPV and harsh corporal punishment. To that end, we perform two separate analyses: one examining the intergenerational transmission of physical IPV (mother's and daughter's experience of physical IPV) and the other examining the intergenerational transmission of harsh corporal punishment (harsh corporal punishment inflicted against the woman during childhood and woman's exercise of harsh corporal punishment with her children), as explained in Table 3.1. While the intergenerational transmission of violence extends far beyond a one-to-one symmetric model, we follow the basic conceptual framework outlined in the earlier chapter.

TABLE 3.1
Measures used from DHS (Demographic and Health Surveys) to compare outcomes across generations

Study	First Generation (parent)	Second Generation (Offspring)
Physical IPV	Indicator for whether the woman witnessed physical violence inflicted against her mother by her mother's intimate partner	Indicator for whether the woman experienced physical IPV by her most recent intimate partner
Harsh Corporal Punishment	Indicator for whether the woman experienced harsh corporal punishment by her parents during childhood	Indicator for whether the woman exercises harsh corporal punishment with her children

Our study is based on a multivariate regression analysis. Specifically, for the analysis of intergenerational persistence of physical IPV, we regress the daughter's experience of physical IPV on her mother's experience of physical IPV. For the analysis of harsh corporal punishment, we regress the woman's exercise of harsh corporal punishment on her own experience of harsh corporal punishment implemented by her parents during childhood. In each of the analyses, we add controls for individual characteristics, such as indicators for age group and an indicator for living in rural areas, in the regressions. We further augment our analysis by examining how the intergenerational persistence of physical IPV (harsh corporal punishment) varies across different cohort/age groups as a proxy of the change across time. The details of our estimations are described in Box 3.1.

BOX 3.1
Regression Specifications

Our interest is determining the persistence of symmetric outcomes - physical IPV or harsh corporal punishment - observed across generations. Let y^c and y^p denote the first and second generation's outcomes, respectively.

With information for woman *i* of cohort *j*, we estimate linear regressions of the form:

$$y^c_{ij} = \beta_0 + \beta_1 y^p_{ij} + I_j + X'_{ij}\psi_1 + \varepsilon_{ij} \quad (1)$$

where x_{ij} is an array of woman's characteristics including whether the woman lives in a rural area and her education. I_j are four *dummy* variables for ages 25-29, 30-34; 35-39; 40-44; with the omitted category 45-49 and ε_{ij} is an independent error term.

We are interested in estimating β_1, the coefficient associated with the intergenerational persistence of physical IPV or, in the second case, of harsh corporal punishment. If this coefficient is positive and statistically significant for the analysis of IPV, then this would mean that maternal experience of physical abuse is positively correlated with her daughter's experience of physical abuse. Or, in other words, the probability that the adult daughter experiences IPV is higher if the mother experienced IPV.

In our analysis, we are also interested in determining whether the intergenerational persistence of physical IPV or harsh corporal punishment has increased or decreased in younger cohorts relative to older ones. To do so, we extend equation (1) to allow for the persistence parameter $\beta_1$to vary between different cohorts in each country. Cohorts are constructed based on five-year age groups with the oldest age group the omitted category. [36]

With information for woman *i* of cohort *j*, we perform linear regressions of the form:

$$y^c_{ij} = \sum_j \beta^j_i y^p_{ij} + I_j + X'_{ij}\psi_2 + \varepsilon_{ij} \quad (2)$$

where the remaining variables are defined the same as in equation (1). Estimates of β^j_1 from equation (2) capture the intergenerational persistence of physical IPV or harsh corporal punishment for each cohort *j*. By including cohort fixed effects, we are implicitly controlling for the levels of physical IPV or harsh corporal punishments across cohorts (i.e., over time). This is similar to the adjustment made to the dependent variable in the case of the analysis of education in Chapter 2. If estimates of β^j_1 are negative, then this would imply that the intergenerational persistence of physical abuse has decreased among young women when compared to older ones. We present estimates of β^j_1 based on separate regressions following equation (2) for each country.

36. This analysis is similar to that from Vogl (2017) studying the inter-generational relationship in fertility decisions.

DATA AND MEASURES

Physical IPV

To examine intergenerational patterns of physical IPV in LAC, we utilize the module on domestic violence for six recent Demographic and Health Surveys (DHS): Colombia (2015), Dominican Republic (2013), Guatemala (2014-15), Haiti (2012), Honduras (2011-12) and Peru (2015). These surveys facilitate the analysis for two reasons. First, they include a specific module that inquires about experiences of intimate partner violence to women ages 15-49. Second, they include information that can be used to construct histories of experience of IPV in the family of origin as well as in the woman's own intimate relationships. While the DHS is increasingly including men in the sampling frame, the domestic violence module is fielded only to women, thereby restricting our analysis to women.

The DHS module specific to domestic violence consists of a shortened and modified version of the Conflict Tactics Scales (CTS) pioneered by Straus (1979, 1990). This module contains information about lifetime events of domestic violence and controlling behaviors exerted by the woman's partner. In short, this module asks women whether in their current (if married/cohabiting) or most recent relationship (if divorced/separated/widowed), their partner ever perpetrated a series of behaviorally specific acts, including physical, emotional (psychological) and sexual abuse.

In addition to questions about their own experiences, respondents are asked if their mother experienced physical abuse. Specifically, the following question is asked: "[a]s far as you know, did your father ever beat your mother?" We utilize this information to construct a proxy for maternal experience of physical IPV; specifically, physical abuse perpetrated by the woman's father against the woman's mother.[37]

For the second generation (offspring), we also focus on the physical violence dimension of IPV, constructing the definition from the battery of questions about the woman's most recent partner based on WHO definitions. In this manner, we make the outcomes symmetric across the two generations (mothers and daughters). The WHO defines physical abuse as if "[the] woman has ever been slapped or had something thrown at her; pushed, shoved, or had her hair pulled; hit with a fist or something else that could hurt; choked or burnt; threatened with or had a weapon used against her." Using this definition, we construct an indicator regarding the daughter's experience with physical IPV. Specifically, this indicator takes the value of 1 if the woman's current or most recent partner has ever

37. Ideally, we would want to observe the maternal report about her own experience of the more detailed IPV questions that include both physical and psychological abuse perpetrated by the most recent partner. However, this would require that we observe the daughters and mothers cohabitating, and for daughters between the ages of 25-49 (the age range of our estimation sample) fewer than 50% of mothers live in the same household. Instead, we use the retrospective information that is available for all respondents but only pertains to physical violence perpetrated against the mother by the father.

perpetrated one of the following actions: (i) pushed, been shaken, or had something thrown at her, (ii) slapped her, (iii) punched her with the fist or hit her with something harmful, (iv) kicked or dragged her, (v) choked or burnt her, and (vi) threatened or attacked her with a knife/gun or other weapon, and 0 otherwise.

Our final sample contains information for 20,372 women in Colombia, 4,452 women in the Dominican Republic, 5,110 women in Guatemala, 5,325 women in Haiti, 9,398 women in Honduras and 18,469 women in Peru. These samples correspond to women ages 25-49 responding the DHS module on domestic violence in each country. Additional information about our sample composition and measures for the analysis of intergenerational persistence of physical IPV is provided in Appendix 3A.

Harsh Corporal Punishment

To be able to examine the intergenerational aspects of physical discipline, we again rely on the domestic violence module collected in recent DHS surveys. Once again, these questions are fielded only to women, restricting the analysis from the broader population. However, in this case the questions on women's exposure to corporal discipline were only included within the special modules on domestic violence for Colombia and Peru. Thus, our analysis is restricted to these two countries where same questions about parental discipline practices were asked of mothers responding to the special module as well as asked about their own parents' deployment of discipline practices.[38]

Questions regarding disciplining practices that the woman's parents had exercised against her during childhood as well as those that the woman has exercised with her children are asked in the same manner in the DHS. These questions include events of corporal or psychological punishment against children as well as child neglect. Respondents who indicated that they exercise (or that their parents had exercised) hitting with an object as a disciplining method were classified as exercising/experiencing harsh physical punishment.[39]

Our final samples for Colombia and Peru comprises information for 15,681 and 16,429 women ages 25-49, respectively. All these women have children under 18 years of age. The annex presents details about the sample composition and measures for the analysis of intergenerational persistence of harsh corporal punishment.

38. All women answering the domestic violence module have cohabitated with a partner and 90% have children. The women are asked "How do you punish your children?"
39. This definition is similar to that adopted in Berlinski and Schady (2015). More details on the sample and operationalization of the survey questions are available in Appendix A. If we implement an alternative definition of physical punishment defined as (i) slapping, (ii) pushing, or (iii) hitting with an object, the results remain qualitatively similar. Appendix C presents the results with the alternate definition of corporal punishment.

RESULTS

Persistence of Intergenerational Physical IPV

Before analyzing the trends in the persistence of intergenerational physical IPV, we consider the relationship between levels of physical IPV and estimated intergenerational persistence in the six countries using the women's self-reports of physical IPV.[40] Peru and Colombia have higher rates of prevalence (33%, 32%) than Honduras (21%) , Guatemala (19%) and the Dominican Republic (18%), while Haiti has the lowest (14%).[41]

A 10-country WHO study found that rates of physical violence were higher in the communities sampled in Peru than in nine other countries (Garcia-Moreno et al. 2005). The prevalence estimated for the US is at a similar rate as for Peru and Colombia (32%) (CDC 2010). We find that the probability of an adult women experiencing physical IPV increases between 4-15 percentage points if her mother experienced physical IPV, with the largest effects found in Colombia and Peru and the smallest in Haiti. Among our small sample of countries, levels of physical IPV are higher in countries with higher intergenerational persistence as shown in Figure 1.

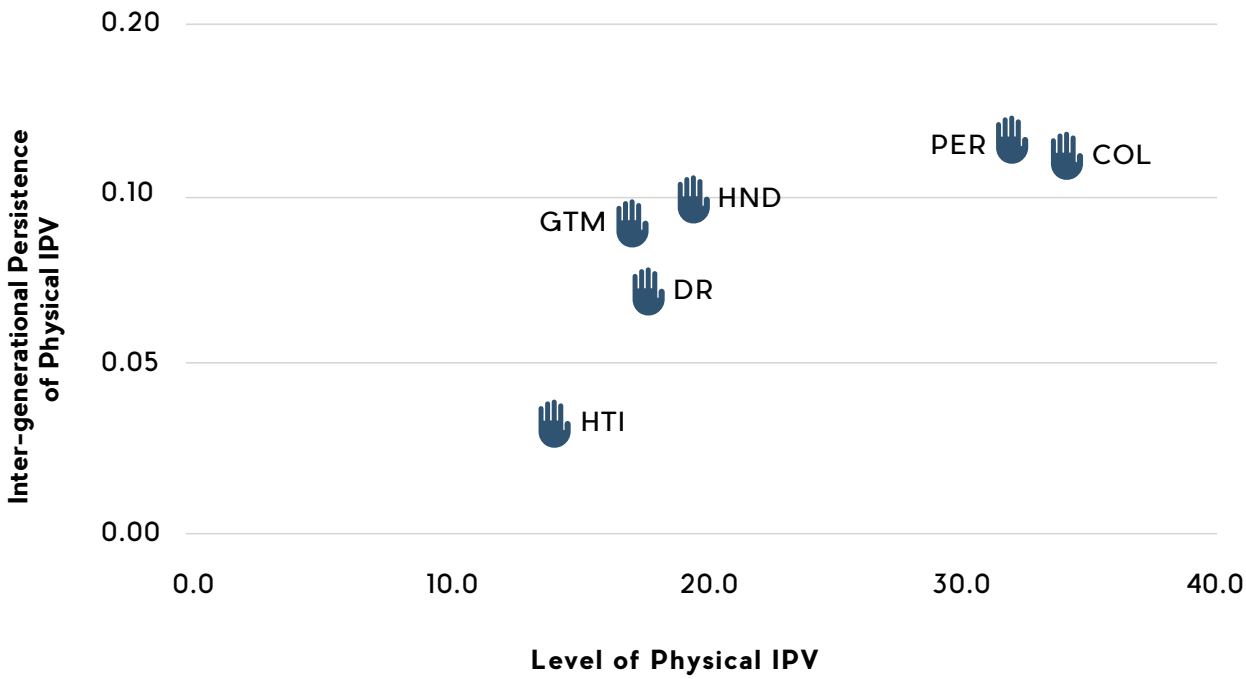
There is some speculation that the propensity to respond to survey questions about IPV may change as social norms in reporting change over time (Garcia-Moreno et al. 2005). Experts also caution against making comparisons across countries where cultural norms may differ, and have pointed out that "[f]or valid cross-national comparisons, it is important that the questions have the same meaning in all cultural contexts" (Kishor and Johnson 2004). Our main comparisons are therefore restricted within each country's most current DHS survey in which women are assumed to be responding with the same contemporaneous reporting criteria to the questions deployed about physical IPV.

We next examine the differences across two age groups to proxy the trends occurring over time.[42] As we can see in Graph 3.1, there is no significant decline observed in levels of persistence for the six countries as proxied by the differences across age groups. Not only do the women born more recently not have significantly lower levels of persistence of intergenerational physical IPV than the older cohort, in the one case of Guatemala the women born more recently have a higher probability of repeating the family pattern than women born 20 years earlier.[43]

40. While some studies have results for both sexes, the lion's share of research worldwide has focused on women since women are more likely to suffer physical violence and injuries from partners. (Bott et al. 2012)
41. The prevalence is lower than cited in PAHO since the other types of violence are not included, namely psychological. The operationalization is based on the questions available in the domestic violence module.
42. The full results of the differences across six age cohorts are available in Appendix A. The results are qualitatively the same. No significant declines in persistence are found for the younger cohorts.
43. These figures plot the estimated difference of women born 20 years earlier (women who are 45-49) with women ages 25-29. If the confidence interval (line through the point) does not cross 0 on the y-axis, then the result is statistically significant at the 95% confidence interval.

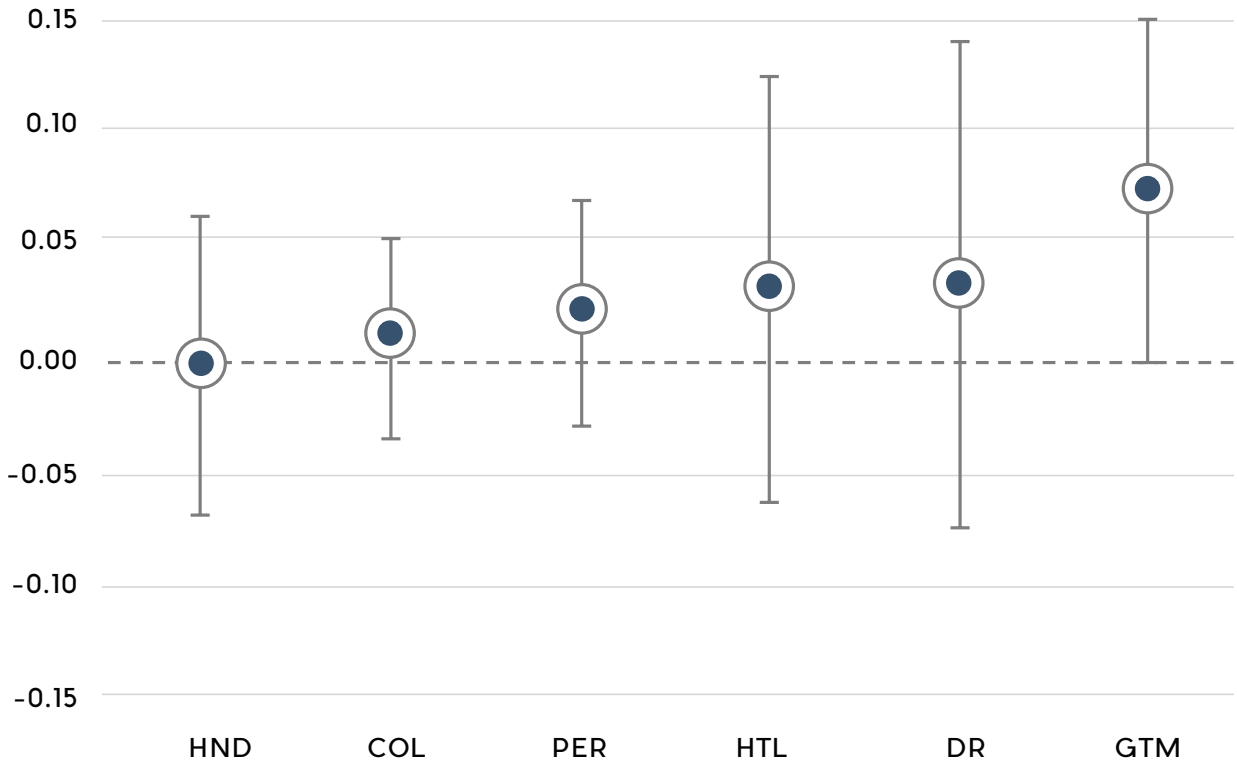
While completing secondary education reduces the probability of experiencing physical IPV in and of itself, it does not generally mediate the probability of repeating patterns within the family. In other words, in Haiti, Honduras, Guatemala and Peru, the probability of persistence (repeating the mothers' experience) increases by the same amount regardless of whether the adult daughter has completed secondary schooling or not. In Colombia, the persistence is slightly smaller with secondary schooling, and only in the Domincan Republic does secondary education offsets the overall effect of mother's experience with IPV in the Dominican Republic. Thus, in general the patterns of repetition within families are not moderated by higher education.

GRAPH 3.1
Levels and Intergenerational Persistence of Physical IPV



Notes: The figure shows the correlation between the prevalence (horizontal axis) and the intergenerational persistence (vertical axis) of physical IPV. Estimates of the intergenerational persistence of physical IPV are obtained from performing linear regressions of the form of equation (1).
Source: Authors' calculations using data from the 2015 DHS of Colombia, Dominican Republic, Guatemala, Haiti, Honduras, and Peru.

GRAPH 3.2
Intergenerational Persistence of Physical IPV
Difference between women ages 25-29 and women ages 45-49



Source: Authors' calculations using Demographic and Health Surveys for Haiti (2012), Honduras (2011-12) Colombia (2015), Peru (2015), Dominican Republic (2013), and Guatemala (2014-15).

Intergenerational Harsh Corporal Punishment

As found in many countries and regions, the use of physical violence as a parenting practice continues to be a culturally acceptable form of disciplining children in LAC. In the U.S., according to a nationally representative survey in 2014, 68% of respondents ages 18 to 65 agreed that a child sometimes needs a "good hard spanking."[44] In LAC, 50% of children younger than 15 report experiencing corporal punishment in the home (UNICEF). Berlinski and Schady (2015) show that the incidence of the use of harsh corporal discipline among women 15-49 is higher than 40% in Belize, Bolivia, Jamaica, and approximately 30% or above in Colombia, Suriname, Peru and Trinidad and Tobago.

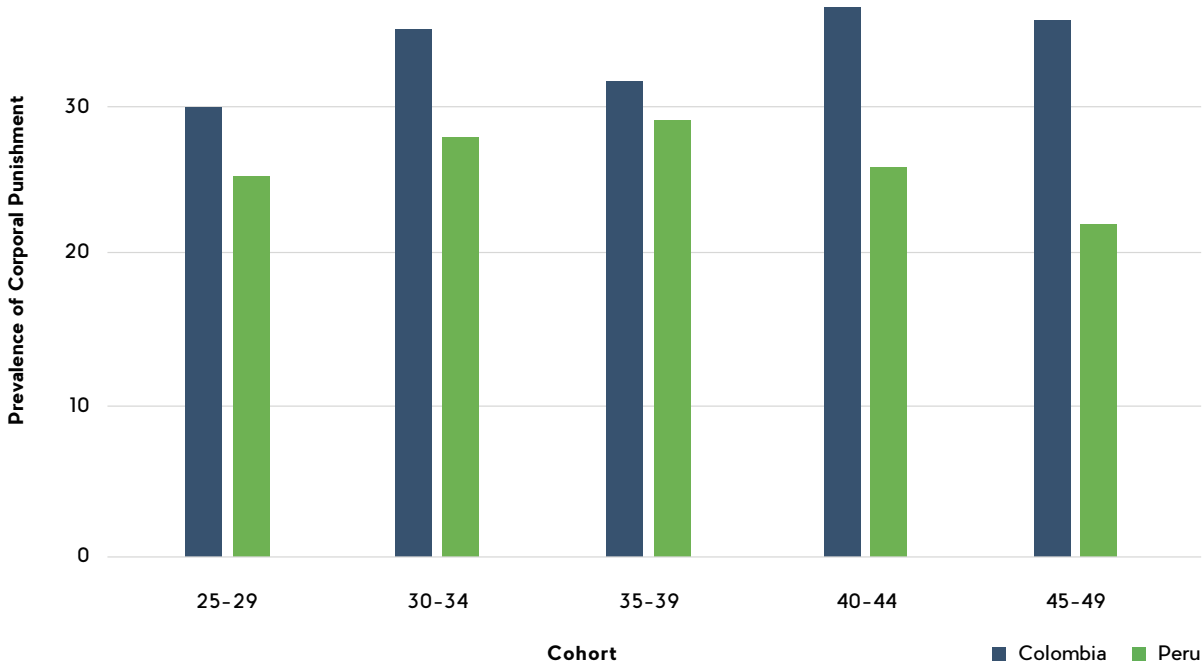
Parents who strike their children as a corrective measure typically believe they have the best interests of the children in mind. The replication of the use of physical discipline across generations can also be explained by Bandura's social learning theory. It is not only the acceptability of the use of physical correction that is learned as children from parents,

44. Source 2014 General Social Survey http://sda.berkeley.edu/sdaweb/analysis/?dataset=gss14 under module for child discipline.

but in many cases the erroneous belief that corporal punishment is an effective form of discipline. Studies have shown that corporal punishment, in fact, renders more harm than good. Children exposed to corporal punishment do not exhibit better compliance with respect to the undesirable behavior, and in the long run, are more likely to develop antisocial behavior including problems with aggression (Gershoff 2010, 2016). Studies have found that harsher forms of physical punishment, such as hitting a child with an object or closed fist, are associated with more antisocial behavior in children while the evidence is more mixed for infrequent mild corporal punishment (Lansford et al. 2012, Berlinski and Schady 2015). High frequency of either mild or harsh physical punishment also is associated with worse outcomes in children.[45]

Graph 3.3 shows the prevalence of harsh corporal punishment against children by country and cohort. Overall, the prevalence of harsh corporal punishment is greater in Colombia when compared to Peru. However, the prevalence of corporal punishment is somewhat constant across cohorts in Colombia but exhibits an increasing trend over time in Peru, with younger women reporting harsher corporal punishment as a method of disciplining their children when compared to older women.

GRAPH 3.3
Level (prevalence) of Harsh Corporal Punishment, by Cohort and Country

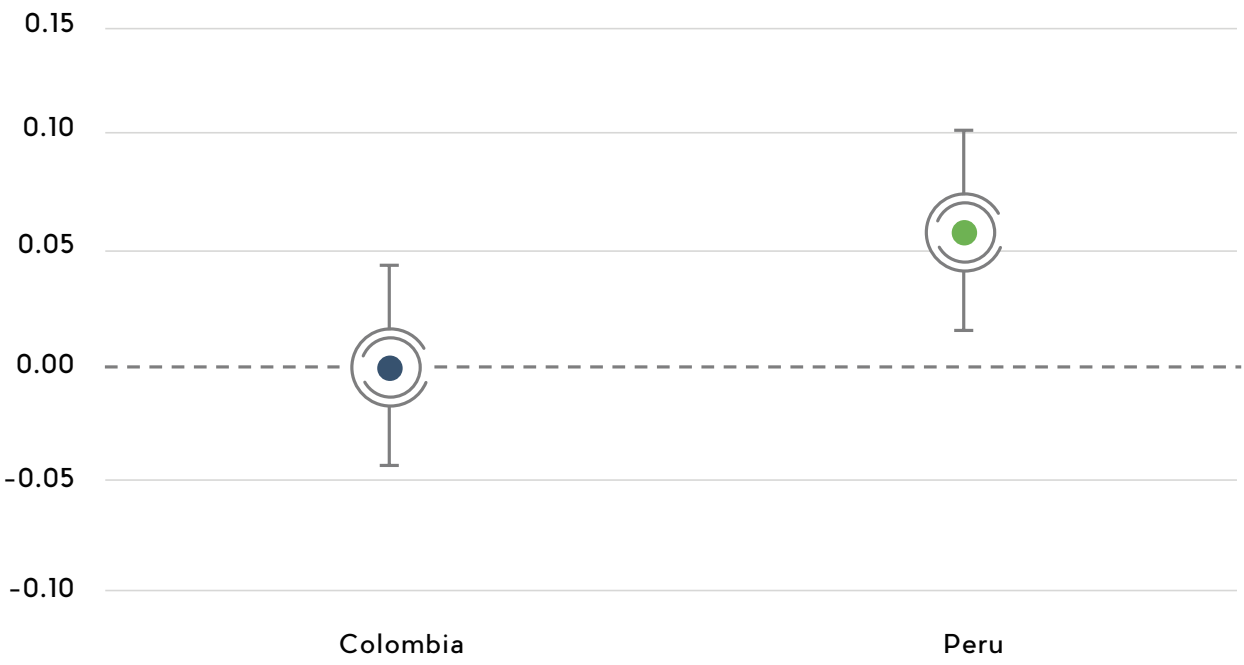


Source: Author's calculations using 2015 DHS for Colombia and Peru.

45. It is important to emphasize that these studies are correlational and do not demonstrate causality for two main reasons. First, it may be the case that children with inherited behavioral problems receive more physical punishment, in other words, reversing the causation. Second, these studies are typically longitudinal in nature and do not control adequately for other key factors such as geographic environment and parental resources. For more information see, Development in the Americas 2015, page 36.

Applying the standard model to estimate persistence suggests that the overall levels of persistence of intergenerational harsh corporal punishment are high, with an estimate of 0.25 for Colombia and 0.20 for Peru. Graph 3.4 demonstrates the cohort effects which suggest that intergenerational persistence is not declining with younger age groups. This means that the additional probability of using harsh corporal punishment conditional on having received this punishment as a child was maintained at 25 percentage points in Colombia. In Peru, however, the younger age group was found to have higher levels of persistence than the oldest age group.[46] In other words, the probability of repeating this behavior within families has increased rather than decreased over time in Peru.

GRAPH 3.4
Intergenerational Persistence of Harsh Corporal Punishment: Difference between women ages 25-29 and women ages 45-49, Colombia and Peru



Source: Authors' calculations using 2015 DHS for Colombia and Peru.

46. The full results are shown in the appendix. All three younger cohorts in Peru have significantly higher persistence than the oldest cohort of women.

CONCLUSIONS

Women are as likely to repeat these patterns of family violence today as women born decades earlier.

By comparing the change in intergenerational persistence of physical intimate partner violence across cohorts of women in the same survey we find no reduction in persistence in the six countries studied: Peru and Colombia, Peru, Guatemala, Haiti, Honduras, and the Dominican Republic. Younger cohorts of Guatemalan women have significantly higher levels of intergenerational persistence than older cohorts, suggesting that the probability of replicating this behavior across generations is increasing over time in Guatemala. Given data availability, we are able to explore the intergenerational patterns associated with harsh physical corporal punishment for only two countries.

The levels of persistence were higher in the case of harsh physical parenting than for physical IPV.

The probability of applying harsh physical parenting as measured in the Colombian and Peruvian DHS surveys increased by 25 and 20 percentage points, respectively, if the woman experienced harsh physical punishment in her childhood. Similar to the first results related to domestic violence, we find that in neither Colombia nor Peru does the analysis of intergenerational persistence across different cohorts suggest that levels of persistence are declining. The younger cohorts of women in Peru have significantly higher probabilities of replicating harsh parenting practices experienced in their childhood than the oldest cohort of women.

The analysis does not identify the exact mechanisms driving the results other than the critical role of the family. The consistent pattern of intergenerational persistence of domestic violence revealed in the analysis suggests, however, that broad social improvements are not likely to be sufficient to reduce the replication of outcomes within families.[47] Policies that stimulate the take-up of services through behavioral science approaches, and other

47. There are currently 10 countries in LAC that prohibit the use of physical and humiliating punishment against children in all settings: Uruguay and Venezuela (2007), Costa Rica (2008), Honduras (2013), Argentina, Bolivia, Brazil and Nicaragua (2014), Peru (2015) and Paraguay (ley 5659, 2016).

policies that target vulnerable families such as home visiting programs and parenting programs, should be expanded to address these legacies with adverse effects to families and society.

3.1

APPENDIX

DOMESTIC VIOLENCE

Data sources

To analyze the intergenerational persistence of physical IPV and harsh corporal punishment, we utilize information from the domestic violence module of the Demographic and Health Surveys (DHS). We restrict our analysis to include countries in LAC where the latest round of the DHS was undertaken after 2010.

The DHS collects information about health status, the use of healthcare and socio-demographic characteristics of women of reproductive age (ages 15-49). Important for our study, the DHS also collects information about topics related to domestic violence. While the DHS increasingly includes men in their sampling frame, the module on domestic violence is fielded only to women, thus restricting our analysis to women.

The DHS module specific to domestic violence consists of a shortened and modified version of the Conflict Tactics Scales (CTS) pioneered by Straus (1970, 1990). This module contains information about lifetime events of domestic violence and controlling behaviors exerted by the woman's partner. In short, this module asks women whether in their current (if married/cohabiting) or most recent cohabitating relationship (if divorced/separated/widowed), their partner ever perpetrated a series of behaviorally specific acts, including physical, emotional (psychological) and sexual abuse. Moreover, women responding to the domestic violence questionnaire are also asked whether they witnessed physical violence committed against their mothers by an intimate partner. Countries with this information include: Colombia (2015), Dominican Republic (2013), Guatemala (2014-15), Haiti (2012), Honduras (2011-12) and Peru (2015).

In addition to asking women about experiences with intimate partner violence, the domestic violence questionnaires of the DHS from Colombia (2015) and Peru (2015) also inquire about parental discipline practices. Specifically, respondents to the domestic violence questionnaire in these countries are also asked about the methods that their parents used for disciplining her during childhood as well as the methods she uses for disciplining her children. Thus, for data availability reasons, our analysis of the intergenerational persistence of harsh corporal punishment is restricted to Colombia and Peru.

The DHS protocols for the application of the domestic violence module are intended to maximize the respondent's safety as well as confidentiality. For instance, this module is applied to only one woman in the household and is not applied if privacy is not ensured. These protocols aim to allay concerns about disclosure and, because of this, the non-response rates are lower than 1%.

The DHS guidelines indicate that only one woman between 15-49 and who has ever been in a union, including currently divorced/separated women, should be randomly selected from each household to respond to the domestic violence module (DHS 2014). We restrict our analysis to women 25 and older since 90% or more of women are in a current cohabitating relationship or have had a previous cohabitating relationship by age 25. Additional information on the samples is available from the authors.

Measures

For each of the analyses – physical IPV and harsh corporal punishment – our goal is to construct symmetrical indicators across the two generations (parents and offspring).

Physical IPV. Questions regarding the experience of physical IPV differ across generations. In particular, the question related with the experience of physical IPV of the first generation (i.e., the mother) is not directly addressed to her but to her daughter (the respondent). Thus, to recover the experience of physical IPV of the mother, we use retrospective information from the woman's (daughter) recall. The question is phrased in the following way: "[a] s far as you know, did your father ever beat your mother?" We utilize this information to construct a proxy for maternal experience of physical IPV; specifically, physical abuse perpetrated by the woman's father against the woman's mother.

For the second generation – the daughter or the woman responding the questionnaire – we make use of a number of questions intended to capture partner's specific behaviors related with physical IPV. Using this information, we construct an indicator that takes the value of 1 if the woman's current or most recent partner has ever perpetrated one of the following actions: (i) pushed, shook, or had something thrown at her, (ii) slapped her, (iii) punched her with fist or hit her with something harmful, (iv) kicked or dragged her, (v) choked or burnt her, and (vi) threatened or attacked her with a knife/gun or other weapon, and 0 otherwise.

Our dependent variable for the analysis of intergenerational persistence of physical IPV is the indicator for the woman's lifetime experience of physical IPV and our main regressor of interest is the indicator for whether the woman's mother experienced physical IPV.

Harsh corporal punishment. The questions about harsh corporal punishment are similar across the two generations. The only difference is that, in the case of the first generation, the question is phrased as whether and how the woman's parents (i.e., her father and her mother, indistinctly) used to discipline her, whereas in the case of the second generation the question is phrased as to how the woman (i.e., the mother only) disciplines her children. Thus, we are not able to distinguish whether it was the woman's mother who inflicted harsh corporal punishment against her as she might exercise against her children.

The women are asked the following two questions: (i) "[h]ow do you discipline your children"? and (ii) "[h]ow did your parents used to discipline you"? Based on these two questions, we construct an indicator for the woman's experience of harsh corporal punishment during childhood and an indicator for whether the woman herself exercises harsh corporal punishment against her children. Both indicators that take the value of 1 if the woman experienced or exercises hitting with an object as a disciplining method and 0 otherwise. In this analysis, the indicator for the woman's exercise of harsh corporal punishment against her children is our dependent variable and her experience of harsh corporal punishment during childhood is our main regressor of interest.

Regression results

Appendix Table A3.1 presents the estimates for the analysis of intergenerational persistence of physical IPV associated with equation (1) in Box 1 of the main text. The table reports the resulting coefficients from a linear probability model. The estimates in Appendix Tables A3.1 through A3.3 are qualitatively the same if a Probit model are estimated. Results are available from the authors.

Table A3.3 shows the resulting coefficients from the analysis of intergenerational persistence of harsh corporal punishment. Columns 1 and 4 show the results from the regression model based on equation (1) in Box 1 of the main text, for Colombia and Peru respectively. In columns 2, 3, 5 and 6, we report the resulting coefficients from the augmented model based on equation (2) in Box 1 of the main text.

We also explore the robustness of the results when adopting an alternate definition of corporal punishment against children. This alternate indicator for corporal punishment takes the value of 1 if the woman reported that they exercised (i) slapping, (ii) pushing or (iii) hitting with an object as a disciplining method, and 0 otherwise. The results, available from the authors, are qualitatively the same using the alternative definition.

TABLE A3.1
Intergenerational persistence of physical IPV
(Dependent variable: Daughter's experience of physical IPV)

	COL	DR	GTM	HND	HTI	PER
Mother experienced P-IPV (persistence)	0.142***	0.107***	0.120***	0.128***	0.044***	0.151***
	(0.007)	(0.016)	(0.011)	(0.009)	(0.014)	(0.007)
Cohort 1: 25-29	-0.027**	0.014	-0.048***	-0.054***	0.047***	-0.117***
	(0.010)	(0.018)	(0.018)	(0.014)	(0.016)	(0.012)
Cohort 2: 30-34	-0.008	0.021	-0.039**	-0.048***	0.032**	-0.096***
	(0.010)	(0.018)	(0.018)	(0.014)	(0.016)	(0.012)
Cohort 3: 35-39	-0.009	0.025	-0.022	-0.047***	0.035**	-0.095***
	(0.010)	(0.019)	(0.019)	(0.015)	(0.017)	(0.013)
Cohort 4: 40-44	-0.017	-0.019	-0.023	-0.040**	0.016	-0.048***
	(0.011)	(0.020)	(0.020)	(0.016)	(0.018)	(0.014)
Constant	0.303***	0.150***	0.165***	0.205***	0.108***	0.339***
	(0.008)	(0.014)	(0.016)	(0.012)	(0.013)	(0.011)
Observations	20,372	4,454	5,107	9,398	5,325	18,469

Notes: The table shows the resulting coefficients from a regression based on equation (1) in Box 3.1 of the main text. Robust standard errors are reported in parentheses. The dependent variable is an indicator for the daughter's experience of physical IPV. The omitted category in the indicators for age group is the cohort of women ages 45-49. See Appendix for information about the sample composition. The data come from the DHS of Colombia (2015), Dominican Republic (2013), Guatemala (2014-15), Haiti (2012), Honduras (2011-12) and Peru (2015).

*, ** and *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.
Appendix Table A3.2 reports the resulting coefficients from the augmented regression model based on equation (2) in Box 1 of the main text. The first regression includes the cohort effects interacted with mother's experience with physical IPV. The second regression adds controls for the daughter's completion of secondary school and the interaction of secondary school with her mother's experience with physical IPV, as well as urban residence.

TABLE A3.2
Intergenerational persistence of physical IPV – augmented specifications (Dependent variable: Daughter's experience of physical IPV)

	(1) COL	(2) COL	(3) DR	(4) DR	(5) GTM	(6) GTM	(7) HND	(8) HND	(9) HTI	(10) HTI	(11) PER	(12) PER
Mother exp. P-IPV	0.128***	0.134***	0.056	0.094**	0.071**	0.067**	0.149***	0.147***	0.026	0.027	0.124***	0.124***
	(0.016)	(0.017)	(0.045)	(0.046)	(0.032)	(0.032)	(0.027)	(0.027)	(0.040)	(0.040)	(0.021)	(0.022)
Mother exp. P-IPV x Cohort 1	0.010	0.016	0.033	0.045	0.074*	0.073*	-0.002	-0.003	0.031	0.028	0.021	0.026
	(0.022)	(0.022)	(0.054)	(0.054)	(0.039)	(0.039)	(0.033)	(0.033)	(0.047)	(0.047)	(0.025)	(0.025)
Mother exp. P-IPV x Cohort 2	0.010	0.015	0.075	0.083	0.067*	0.063	-0.038	-0.038	-0.018	-0.021	0.021	0.028
	(0.022)	(0.022)	(0.056)	(0.056)	(0.038)	(0.038)	(0.033)	(0.033)	(0.049)	(0.049)	(0.025)	(0.025)
Mother exp. P-IPV x Cohort 3	0.013	0.019	0.101*	0.104*	0.057	0.054	-0.040	-0.037	0.029	0.025	0.055**	0.058**
	(0.022)	(0.022)	(0.058)	(0.058)	(0.040)	(0.040)	(0.034)	(0.034)	(0.052)	(0.052)	(0.026)	(0.026)
Mother exp. P-IPV x Cohort 4	0.040*	0.040*	0.021	0.026	0.005	0.000	-0.017	-0.015	0.048	0.044	0.025	0.028
	(0.022)	(0.022)	(0.063)	(0.062)	(0.043)	(0.043)	(0.036)	(0.036)	(0.054)	(0.054)	(0.028)	(0.027)
Cohort 1: 25-29	-0.030**	-0.017	0.012	0.023	-0.073***	-0.065***	-0.054***	-0.051***	0.043**	0.044***	-0.127***	-0.114***
	(0.013)	(0.013)	(0.020)	(0.020)	(0.023)	(0.023)	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)
Cohort 2: 30-34	-0.011	0.000	0.012	0.021	-0.062***	-0.055**	-0.039**	-0.037**	0.035**	0.038**	-0.106***	-0.096***
	(0.013)	(0.013)	(0.019)	(0.020)	(0.023)	(0.023)	(0.016)	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)
Cohort 3: 35-39	-0.013	-0.006	0.012	0.019	-0.042*	-0.038	-0.037**	-0.036**	0.032*	0.033*	-0.120***	-0.111***
	(0.013)	(0.013)	(0.020)	(0.020)	(0.024)	(0.024)	(0.017)	(0.017)	(0.018)	(0.018)	(0.017)	(0.017)
Cohort 4: 40-44	-0.031**	-0.026**	-0.021	-0.017	-0.025	-0.022	-0.036*	-0.035*	0.010	0.011	-0.059***	-0.054***
	(0.013)	(0.013)	(0.021)	(0.021)	(0.025)	(0.025)	(0.018)	(0.018)	(0.019)	(0.019)	(0.018)	(0.018)
Secondary or more education		-0.044***		-0.049***		-0.064***		-0.044***		-0.098***		-0.068***
		(0.009)		(0.013)		(0.018)		(0.013)		(0.023)		(0.010)
Mother IPV*sec educ		-0.025*		-0.110***		0.024		-0.015		0.046		-0.009
		(0.014)		(0.033)		(0.032)		(0.026)		(0.065)		(0.014)
Urban		0.0578***		0.030**		0.035***		0.047***		0.030***		0.034***
		(0.008)		(0.013)		(0.011)		(0.009)		(0.010)		(0.008)
Constant	0.308***	0.2820***	0.156***	0.149***	0.182***	0.200***	0.2002***	0.187***	0.110***	0.102***	0.351***	0.356***
	(0.009)	(0.011)	(0.015)	(0.017)	(0.019)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)
Observations	20,372	20,372	4,454	4,454	5,107	5,107	9,398	9,398	5,325	5,325	18,469	18,469
Standard errors in parentheses												
*** p<0.01, ** p<0.05, * p<0.1												

Notes: The table shows the resulting coefficients from a regression based on equation (2) in Box 1 of the main text. Robust standard errors are reported in parentheses. The dependent variable is an indicator for the daughter's experience of physical IPV. The omitted category in the indicators for age group is the cohort of women ages 45-49. See Appendix for information about the sample composition. The data come from the DHS of Colombia (2015), Dominican Republic (2013), Guatemala (2014-15), Haiti (2012), Honduras (2011-12) and Peru (2015).

*, ** and *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

TABLE A3.3
Intergenerational Persistence of Harsh Corporal Punishment (Dependent Variable: Woman's Exercise of HCP)

	1 COL	2 COL	3 COL	4 PER	5 PER	6 PER
Mother used HCP	0.246*** (0.008)	0.251*** (0.020)	0.249*** (0.021)	0.208*** (0.007)	0.126*** (0.026)	0.138*** (0.026)
Mother HCP x Cohort 1	-0.037*** (0.013)	0.002 (0.026)	0.003 (0.027)	0.028** (0.014)	0.074** (0.030)	0.090*** (0.029)
Mother HCP x Cohorte 2	-0.017 (0.012)	-0.018 (0.026)	-0.017 (0.026)	0.064*** (0.014)	0.108*** (0.029)	0.122*** (0.029)
Mother HCP x Cohort 3	-0.031** (0.012)	-0.009 (0.026)	-0.009 (0.026)	0.062*** (0.014)	0.096*** (0.030)	0.111*** (0.030)
Mother HCP x Cohort 4	-0.017 (0.013)	0.006 (0.027)	0.007 (0.027)	0.037** (0.015)	0.064** (0.032)	0.073** (0.032)
Cohort 1: 25-29		-0.039* (0.021)	-0.028 (0.022)		-0.023 (0.025)	-0.010 (0.024)
Cohort 2: 30-34		-0.005 (0.021)	0.005 (0.021)		-0.010 (0.024)	0.005 (0.024)
Cohort 3: 35-39		-0.025 (0,022)	-0.017 (0.022)		-0.004 (0.025)	0.009 (0.024)
Cohort 4: 40-44		-0.021 (0.023)	-0.019 (0.023)		-0.007 (0.027)	-0.001 (0.026)
Secondary or more education			-0.050*** (0.014)			-0.084*** (0.013)
Mother HCP x sec school			-0.002 (0.016)			-0.071*** (0.015)
Urban			-0.003 (0.009)			-0.092*** (0.008)
Constant	0.242*** (0.011)	0.239*** (0.016)	0.262*** (0.018)	0.120*** (0.013)	0.176*** (0.021)	0.286*** (0.022)
Observations	15,681	15,681	15,681	16,429	16,429	16,429

Standard errors in parentheses

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

Notes: Columns 1 and 4 of the table show the resulting coefficients from regressions based on equation (1) in Box 1 of the main text. Columns 2, 3, 5 show the resulting coefficients from regressions based on equation (2) in Box 1 of the main text. Robust standard errors are reported in parentheses. The dependent variable is an indicator for whether the woman exercises harsh corporal punishment as a disciplining method. The omitted category in the indicators for age group is the cohort of women ages 45-49. Data are from the DHS of Colombia (2015) and Peru (2015).
*, ** and *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

02 PART 2

SOCIAL CONDITIONS IN LATIN AMERICA AND THE CARIBBEAN

Introduction

In this part of the report, we analyze general trends for approximately 30 indicators that account for the living conditions of the population of Latin America and the Caribbean (LAC) with the purpose of identifying the changes that warrant the greatest attention. While various sources of information were used, most of the data were drawn from the harmonized household surveys of LAC prepared by the IDB which encompass a broad set of microdata that is comparable between countries, developed from the original surveys by the region's statistical agencies. Although we do not seek to make policy recommendations, some sections refer to studies and research that can help the reader deepen his or her analysis.

This analysis is divided into indicators of context (chapter 4), of outcomes (chapter 5), of critical inputs (chapter 6) and of multidimensional poverty (chapter 7). The indicators of outcomes describe social situations that warrant immediate attention by governments and, therefore, are the direct concern of public policy. A large part of the outcomes indicators were chosen considering the human life cycle, under the supposition that the region faces policy challenges for each stage of the cycle, so that recent progress will have sustained effects on equality and productivity (IDB 2011). The indicators of context report on the general conditions of the household and, at times, form part of medium- or long-term policy objectives. They are essential for understanding what is shown by the indicators of outcomes –for example, income is vital for understanding malnutrition or failure to attend school– and also for getting a grasp on the context in which social policies are developed. Poverty and inequality, while they are classified as indicators of context, at the same time are relevant indicators of outcomes. The indicators of critical inputs refer to the investments that aim to affect indicators of outcomes and that usually are channeled by government policies.

In this part of the report, we find not only that some social advances that were gaining ground in the region have slowed but also that several key indicators of social development have suffered setbacks. These results occurred in a macroeconomic context that changed in recent years. After experiencing a steady decline in the economic growth rate since 2011, by the close of 2016 the region had accrued three consecutive years of zero or negative growth. This had not occurred since the debt crisis at the beginning of the 1980s, and contrasts with the growth of the previous decade which had driven improvements in social indicators.

- The trends of poverty reduction and expansion of the middle class that prevailed for more than a decade suffered a rupture that, between 2014 and 2016, meant that nine million more people became poor and four million people failed to enter the middle class.
- The reduction of income inequality stagnated in the last three years, after having fallen significantly during the previous decade.

- The region could have fewer poor people (36 million less) and more members of the middle class (30 million more) if the countries, with the same average income, had the same degree of inequality as Uruguay (a Gini coefficient six points lower).

- Since 2014, unemployment increased in more than half of the countries, hitting youth hardest; female labor force participation stopped growing and informal unemployment of adults increased in several countries.

- Despite the significant advance of school attendance at the primary and secondary levels, the region continues to place in the lowest part of the global ranking of learning.

- Social gaps remain wide on various fronts: between youth and adults (unemployment), ethnic groups (graduation from secondary school), gender (inactivity of youth), economic condition (chronic malnutrition), urban-rural (quality of housing).

- Noncommunicable diseases (cardiovascular illness, cancer, respiratory ailments, diabetes) today explain nearly three fourths of the deaths in the region, and obesity, one of their principal risk factors, affects more than 30% of women and 20% of men between 35 and 69 years of age.

- Social spending as a portion of total public spending began to stagnate in 2010, signaling a need for improved efficiency of public expenditure, in such a way that it helps to consolidate social gains and avoid setbacks.

- The two programs with the greatest weight in the social assistance budget (conditional transfers and non-contributory pensions), despite the size of their beneficiary groups, show insufficient coverage among the extreme poor and high leakage among the non-poor.

Although social gains of recent years have come to a halt, social conditions remain much improved in relation to the situation at the beginning of this century. Nonetheless, economic growth in the long term will remain weak, and this complicates achieving increases in family incomes and restricts the fiscal space for responding to demands. It is necessary, then, to implement reforms that guarantee sustainable and inclusive growth in the region.

In this framework, the data of this part of the report show the need to strengthen efforts to respond to these challenges: improve learning and skills of children so they maximize their potential as adults; reduce informal employment to increase productivity and resources for old-age pensions; promote female work force participation to improve their contribution to family income; reduce inequality to maximize the effects of growth on the reduction of poverty and expansion of the middle class and, finally, increase the efficiency of public spending to improve the quality of services and the coverage of transfers for the extreme poor.

4. INDICATORS OF CONTEXT

PER CAPITA INCOME

Per capita income (GDP per capita) registers the average economic capacity of the population for financing their expenses and investments and, as a result, is one of the most used indicators for analysis of well-being. Although it refers only to the material aspect of well-being, there is abundant evidence showing that income correlates strongly with other social indicators or is a factor that helps understand what other indicators reveal. Graph 4.1 shows the income –expressed in constant international dollars using purchasing power parity (PPP) for 2011[1]– for 26 countries. Panels (a), (b) and (c) show the income index which equaled 100 in 2003 and panel (d) presents the income level in 2016 in descending order. In general, the disparities between countries are enormous, both in income levels and growth.

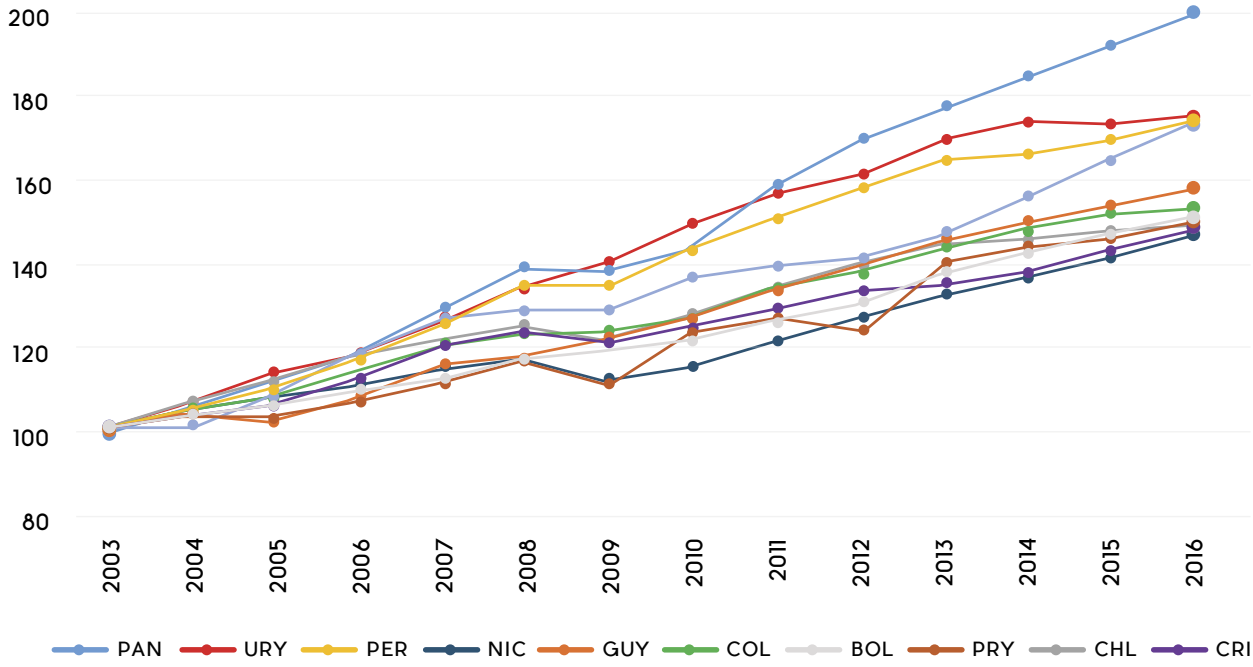
In 2016, the region accumulated three consecutive years of decline in per capita income (-0.01% in 2014, -1.2% in 2015 and -2.3 in 2016), a performance not seen since the crisis of the early 1980s and which contrasts with growth in the previous decade that stimulated improvements in social indicators. In 2016, income fell in eight countries (panel c) and more in Venezuela (-19%), Suriname (-11%), Trinidad and Tobago (-5%) and Brazil (-4%). In contrast, in 11 countries income had been rising since 2003 at an annual rate of 3% or more (panel a). Panama stands out because since then it has doubled its income, and ranked thirteenth in the world (176 countries) for highest growth. Incomes in the seven remaining countries showed low growth (0.9% per year) since 2003 (panel b), an average far below the 3.7% growth in the countries in panel (a). The trends are worrisome in four countries in particular which in the past 13 years had the lowest cumulative results: Haiti (0.8%), Belize (1.5%), Jamaica (-1.6%) and the Bahamas (-15%), and it is foreseeable that Venezuela will join this group in 2017.

Changes in recent years, rather than advancing towards convergence of income between countries, produced an increase in divergences. For example, Chile, Panama and Uruguay are the countries with the highest levels and increases in income in recent years and Haiti, Guatemala and Belize show the lowest levels of income and increases. In 2016, average income in the first group was $21,363 and in the second group it was $5,617. In other words, the difference in income was 3.8 times while in 2003 this difference was only 2.4 times. Moreover, the dispersion of income of the 26 countries increased by 18% between 2003 and 2016 and rose by 49% between 1995 and 2016. It is worth emphasizing that income levels in the region are still far below those of the most developed countries. For example, the average income of 19 Eurozone countries –members of the European Union that use the euro as their official currency, including Germany, France, Spain, the Low Countries and Portugal, among others– was $38,893 in 2016, or triple the average of $12,934 in LAC, and was 31% greater than Trinidad and Tobago, the country with the highest income in the region.

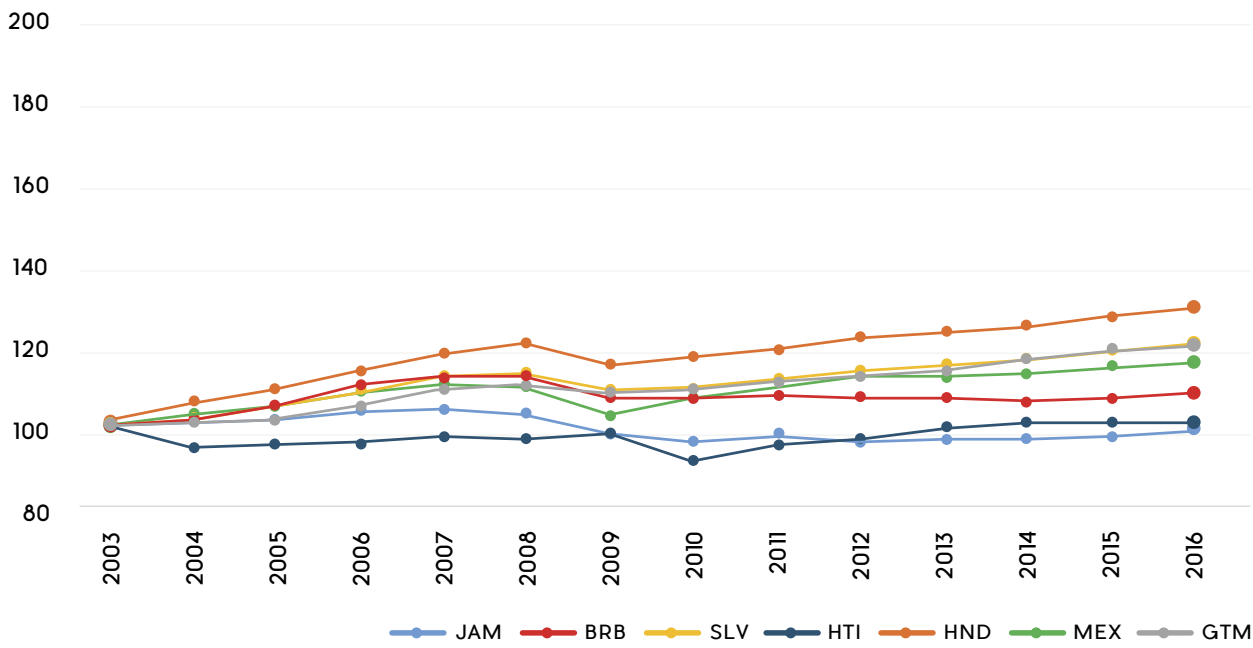
1. PPP is purchasing power parity, that is, the factor that converts local currency to one dollar that can buy the same amount of goods and services in the local market as a dollar can buy in the United States.

GRAPH 4.1
Income per capita 26 countries of Latin America and the Caribbean

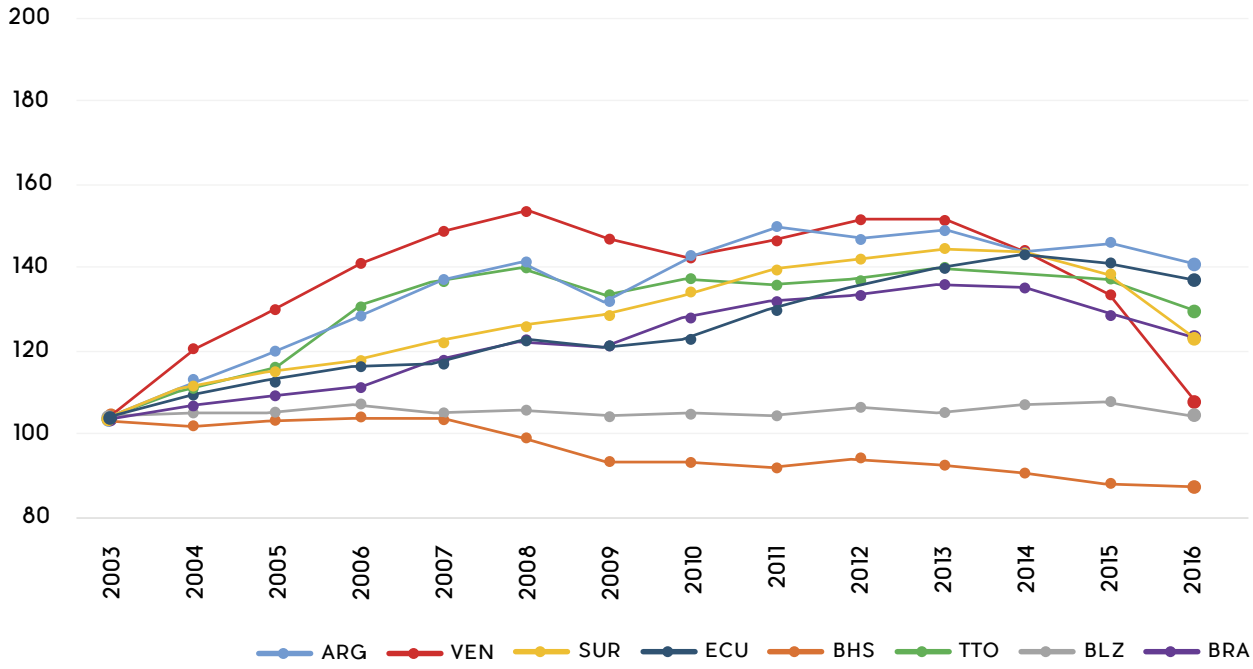
A COUNTRIES WITH GROWTH HIGHER THAN 45% SINCE 2003



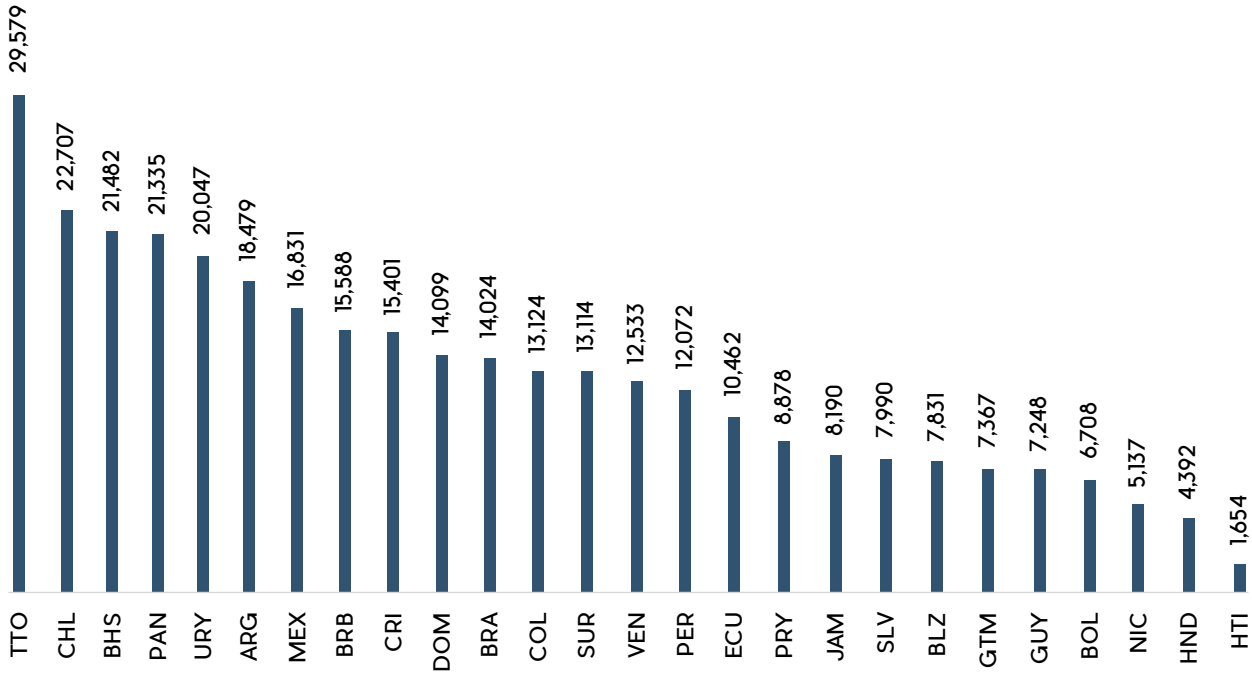
B COUNTRIES WITH LIMITED OR NO GROWTH SINCE 2003



C **COUNTRIES WITH DROPS IN RECENT YEARS**



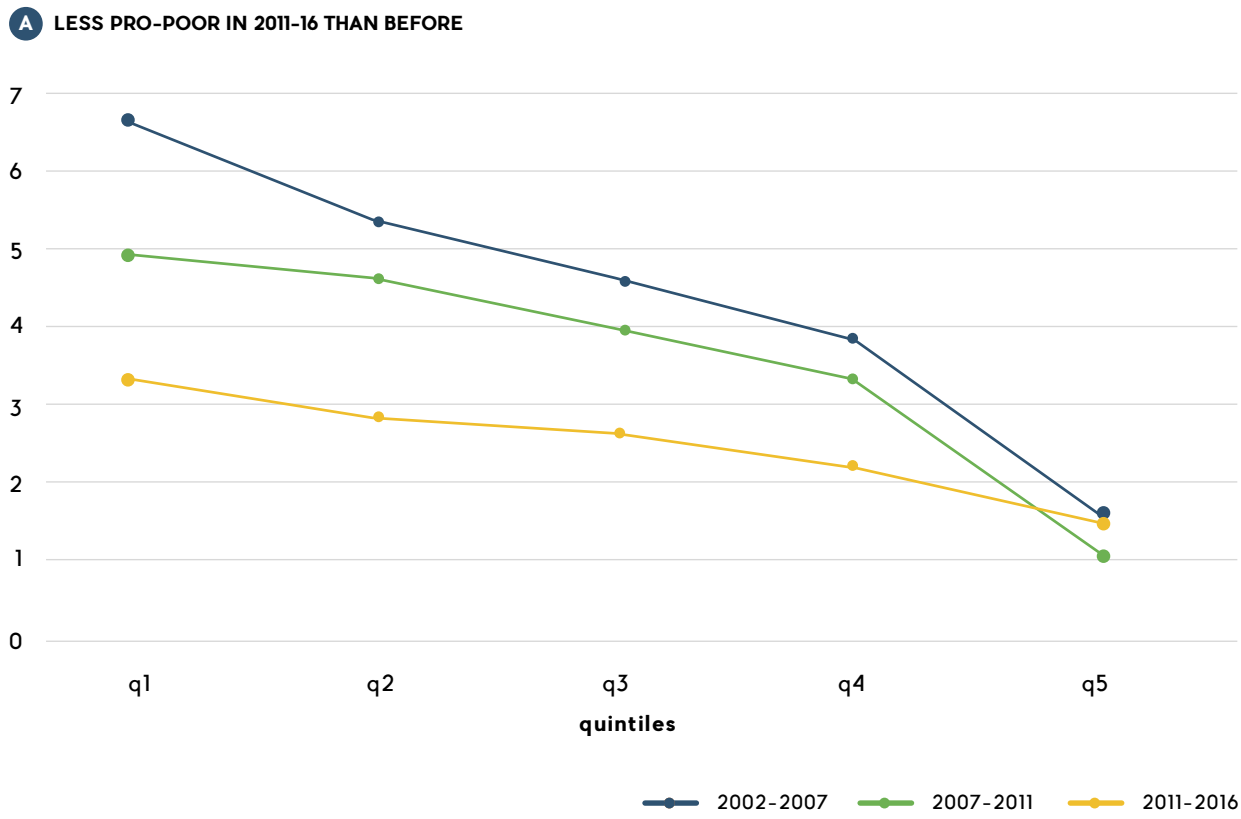
D **RANKING IN CONSTANT 2016 INTERNATIONAL US DOLLARS**



Source: Based on data from the IMF (2017) and World Bank (2017).

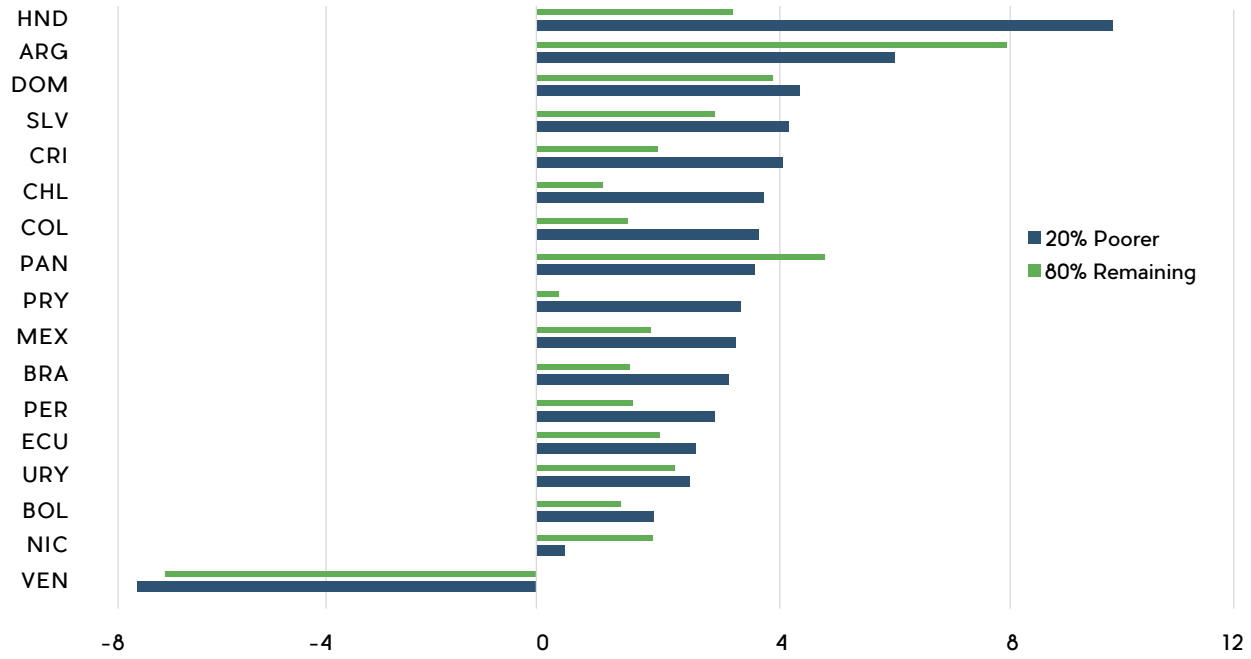
Data from the household surveys[2] show that the changes in income between and within countries were heterogeneous. Between 2011 and 2016, the increase in income in the region (17 countries) has been pro-poor (panel a of Graph 4.2), that is, greater in the poorest quintile than in the other quintiles (3.4% per year versus 2.3%), but has been much less pro-poor than in the decade of 2000. Argentina, Panama, Nicaragua and Venezuela did not display this growth pattern (panel b). In the first three, the increase of income among the poorest 20% was less than the increases of the rest of the population and in Venezuela all groups suffered significant drops in their income.

GRAPH 4.2
Income per capita in Latin America, annual growth (percentage)



2. The income obtained from surveys and national accounts has different content. For example, business profit, public investments and taxes are included in GDP, but not in the income of surveys. Ravallion (2003) and Deaton (2005) show that the level and growth of income in surveys are lower and although both have debated about the coverage, errors or fallacies of estimation, etc., what is the best source for measuring income remains an open question (Pinkovskiy and Sala-i-Martin, 2016).

B **PRO-POOR IN MOST COUNTRIES (2011-16)**



Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

INCOME GROUPS: POOR, VULNERABLE AND MIDDLE CLASS

Until a few years ago, when changes in regional macroeconomic conditions were analyzed, the tendency was to speak only of the situation of the poor, since they make up the largest group in the majority of countries. As income increased, associated with economic growth in the first decade of the 21st century, the analysis began to incorporate the other groups. The criterion used to define those groups has been the level of economic security or the probability of falling into poverty. Thus, the first studies used thresholds of $4, $10 and $50 per day adjusted with the PPP factor for 2005 to define the poor, vulnerable, middle class and the rich (e.g., Ferreira et al. 2012) and showed that the probability that the middle class slips into poverty is less than 10%. The thresholds are multiples –of 1.6, 4 and 20 times, respectively– of the line of extreme poverty of $2.5 per capita per day used to measure poverty in middle income countries.

Since this line has been updated to $3.1 with PPP of 2011 (Ferreira et al., 2016), updated thresholds –with the same previous multiples– make it possible to define the groups in the following way: the poor are those people who live in homes with per capita incomes below $5 per day; the vulnerable are those individuals with income between $5 and $12.4 per day; middle class are those who have income of between $12.4 and $62 per day

and the rich have income above $62 per day. Thus, a family with four members is poor if their annual income is below $7,242 and is middle class if they have an income between $18,104 and $90,520. The size of those groups is estimated by aggregating the individual data and then as a percentage of the total population.

In *Social Pulse 2016*, it was shown that across the region the poor are no longer the predominant group and the vulnerable became the preponderant group in 2007. We also pointed out that the expansion of the middle class was another of the landmarks of the last decade. This group increased by 87 million people between 2002 and 2014, while the poor decreased by 67 million and the vulnerable increased by 57 million. In 2015 and 2016, in line with the economic slowdown, the trends that prevailed for more than a decade broke down (panel a of Graph 4.3). Although the changes are limited, the breakdown meant nine million more people were poor and four million fewer people entered the middle class across the entire region. The Statistical Annex of this report shows that these changes, both in poverty (extreme and total) and in the middle class, occurred only in Argentina, Brazil, Ecuador, Paraguay and Venezuela. The graph also shows that the changes occurred principally among the poor and the middle class and less so among the vulnerable, although this does not mean there were no movements among the vulnerable. In reality, the mobility between groups occurs in an orderly fashion, from poor to vulnerable, and from there to middle class or vice versa, due to the different probabilities that individuals have of becoming poor or middle class (Stampini et al., 2016).

The vulnerable predominate in 10 of 18 countries (green bars from Venezuela to Brazil) and represent 37% of the region's total population (panel b); the poor are predominant only in Nicaragua, Guatemala and Honduras and make up 28% of the region's population and the middle class –the second largest group with 32% of the population– predominates in five countries (gray bars from Costa Rica to Argentina). Since mobility between income groups occurs in a gradual and orderly way, less poverty in a country implies a larger middle class. Argentina, Chile and Uruguay, for example, are the countries with the least poverty and, at the same time, those with a larger middle class (64%, 49% and 62%, respectively), and vice versa, the countries with the highest incidence of poverty such as Guatemala, Honduras and Nicaragua have a smaller middle class (14%, 15% and 10%, respectively).

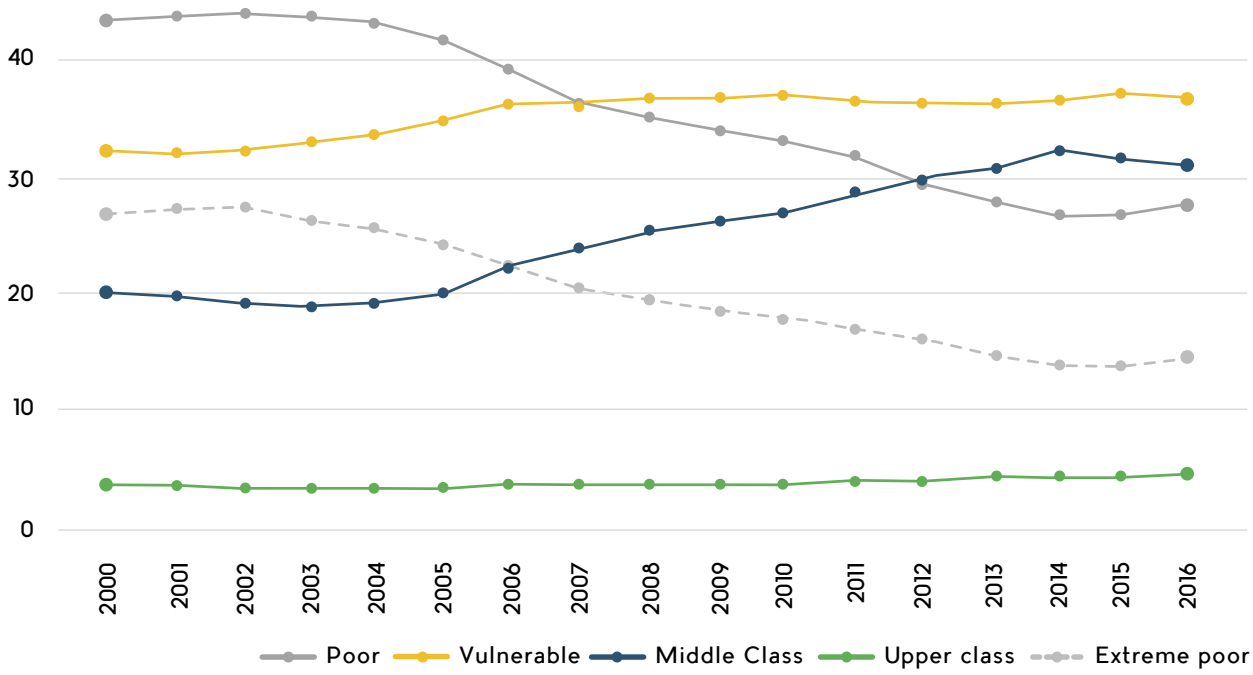
Permanence in one group or mobility toward other groups is associated not only with changes in the macroeconomic context, but also with the characteristics or capabilities of the people in each group, and these traits –in turn– help to understand their different probabilities of falling into poverty. In 2016, a typical middle class person of the region, relative to the other groups, lived in homes where:

- 47% of the youth (18-23) attended school versus 26% among the poor and 33% among the vulnerable.
- 68% of the adult women (18-64 years of age) worked versus 40% among the poor and 53% among the vulnerable.

- 39% of the employed adults (18-64 years of age) had some level of tertiary education versus 10% among the poor and 17% of the vulnerable.
- 73% of the elderly (65 years or more) had access to contributory pensions versus 13% of the poor and 53% of the vulnerable.
- The family size was 2.8 members versus 4.4 among the poor and 3.5 among the vulnerable.[3]
- 92% resided in urban areas versus 56% of the poor and 81% of the vulnerable.

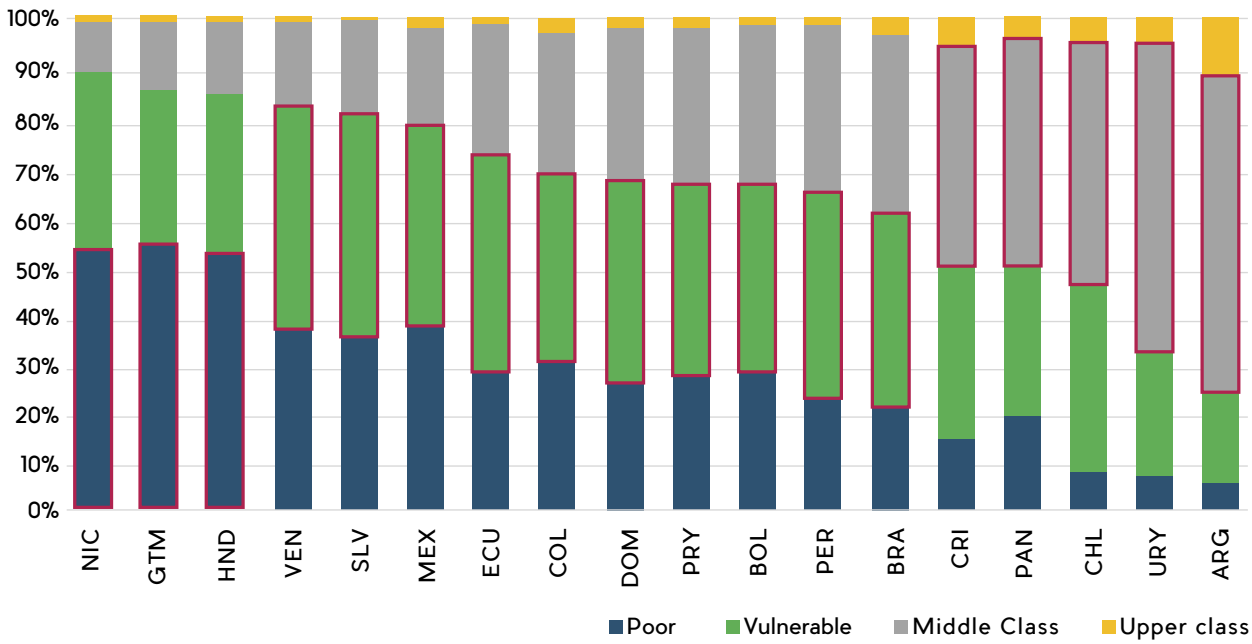
GRAPH 4.3
Poor, vulnerable and middle class in Latin America

A **SIZE OF GROUPS IN 2000-16, 18 COUNTRIES (PERCENTAGE)**



3. Given these differences, middle class homes make up the preponderant group in the region since 2012. In 2016, 24% of the homes were poor, 35% vulnerable, 37% middle class and 4% rich.

B **SIZE OF GROUPS BY COUNTRY IN ~2016 (PERCENTAGE)**



Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

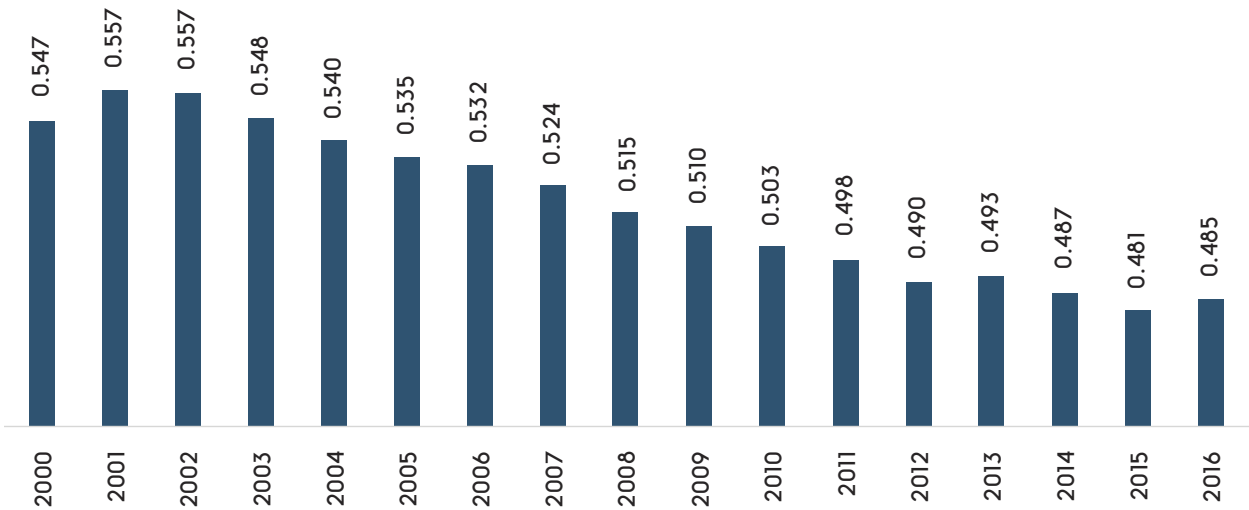
An additional feature, very distinctive of the middle class, is formal employment among its members. In 2016, 62% of adult workers (18-64 years) of this group were affiliated or paid in to social security, four times more than among the poor and 17 percentage points more than among the vulnerable. However, this characteristic varies sharply across countries. Formal workers in the middle class do not reach 40% of the work force in Bolivia (32%), Paraguay (36%) and Perú (36%), but they are the majority in Brazil (77%), Costa Rica (78%) and Uruguay (84%). A fact that confirms the importance of formal employment of this group is that 78% of the increase of this type of employment between 2003 and 2016, from 66 million to 112 million, occurred among middle class workers.

INCOME INEQUALITY

One of the disadvantages of measuring economic well-being with per capita income is that this assumes that all people have the same income, that is, the metric overlooks inequality in income distribution and, therefore, this type of measurement does not reflect the standard of living of specific groups. High inequality means that many people with low incomes underinvest in the essential aspects of human capital, which can affect labor productivity and, therefore, the capacity of households to generate income and the ability of countries to grow in a sustained manner. The Gini coefficient is one of the most used measurements for determining income distribution among the residents of a country, and varies between 0 (all people have the same income) and 1 (one person has all the income). The higher the coefficient, the greater the inequality.

According to this measurement, between 2012 and 2016, inequality in the region declined at an average rate of 0.3% per year, an amount well below the drop registered between 2002 and 2012 (1.3% per year) (Graph 4.4). The Statistical Annex of this report shows that the Gini coefficient of 16 countries fell significantly between 2002 and 2014. The exceptions were Costa Rica, where the level remained constant, and Mexico, which dropped by only one point. Despite this progress, the region continued being the most unequal in the world (Table 4.1), as has been the case since reliable data became available. The Gini of the region is 28% higher than the average of 122 countries, 33% above that of sub-Saharan Africa and 55% higher than the indicator for Europe and Central Asia. Half the countries of the region have a Gini greater than 0.5, which places them among the 20 countries with the greatest inequality in the world.

GRAPH 4.4
Income inequality (Gini coefficient) Latin America, 18 countries



Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

There is a close relationship between inequality and poverty. If inequality remains unchanged, poverty can diminish through an increase in income. But, if inequality also drops (as occurred between the beginning of the decade of 2000 and the early years of the decade of 2010), then poverty reduction is greater because the effect of the increase in income is strengthened.

TABLE 4.1
Income inequality (Gini coefficient) by world regions since 1980

Region	1980	1990	2000	2010	Last year available
LAC	0.522	0.514	0.521	0.485	0.485
SSF	0.408	0.467	0.449	0.426	0.428
MEA	0.416	0.405	0.384	0.410	0.400
EAS	0.410	0.416	0.401	0.373	0.380
NAC	0.340	0.354	0.374	0.384	0.374
SAS	0.296	0.323	0.371	0.337	0.348
ECS	0.245	0.334	0.322	0.313	0.312
Total	0.402	0.437	0.393	0.376	0.380
No. obs.	94	268	615	283	112

LAC: Latin America and the Caribbean
SSF: Sub-Saharan Africa
MEA: Middle East and North Africa
EAS: East Asia and the Pacific
NAC: North America
SAS: South Asia
ECS: Europe and Central Asia

Source: Based on the World Bank World Development Indicators (2017).

A simple simulation illustrates these relationships. If the average income of countries does not change and every country has the same distribution as Uruguay, which has the region's lowest Gini,[4] the countries would have much lower levels of poverty (panel a of Graph 4.5): Mexico and Colombia would drop 11 points lower and Panama and Paraguay would fall by nine points. At the same time, the countries would have a larger middle class: Costa Rica 13 points greater, Brazil 11 points more, Chile 10 and Colombia 9 (panel b). Thus, all countries would benefit if they had a more equitable income distribution, and those with the highest Gini coefficients would benefit the most. In sum, without modifying income the region would have 36 million fewer people in poverty and 30 million more in the middle class if the only change made were to reduce the average Gini from 0.485 to 0.423.

4. The simulation consisted of redistributing the income of each country according to the distribution of Uruguay corresponding to 100 percentiles of income per capita.

GRAPH 4.5

Simulation (~2016): changes in poverty and middle class if countries kept their average income but had the same income distribution as Uruguay (percentage of population)

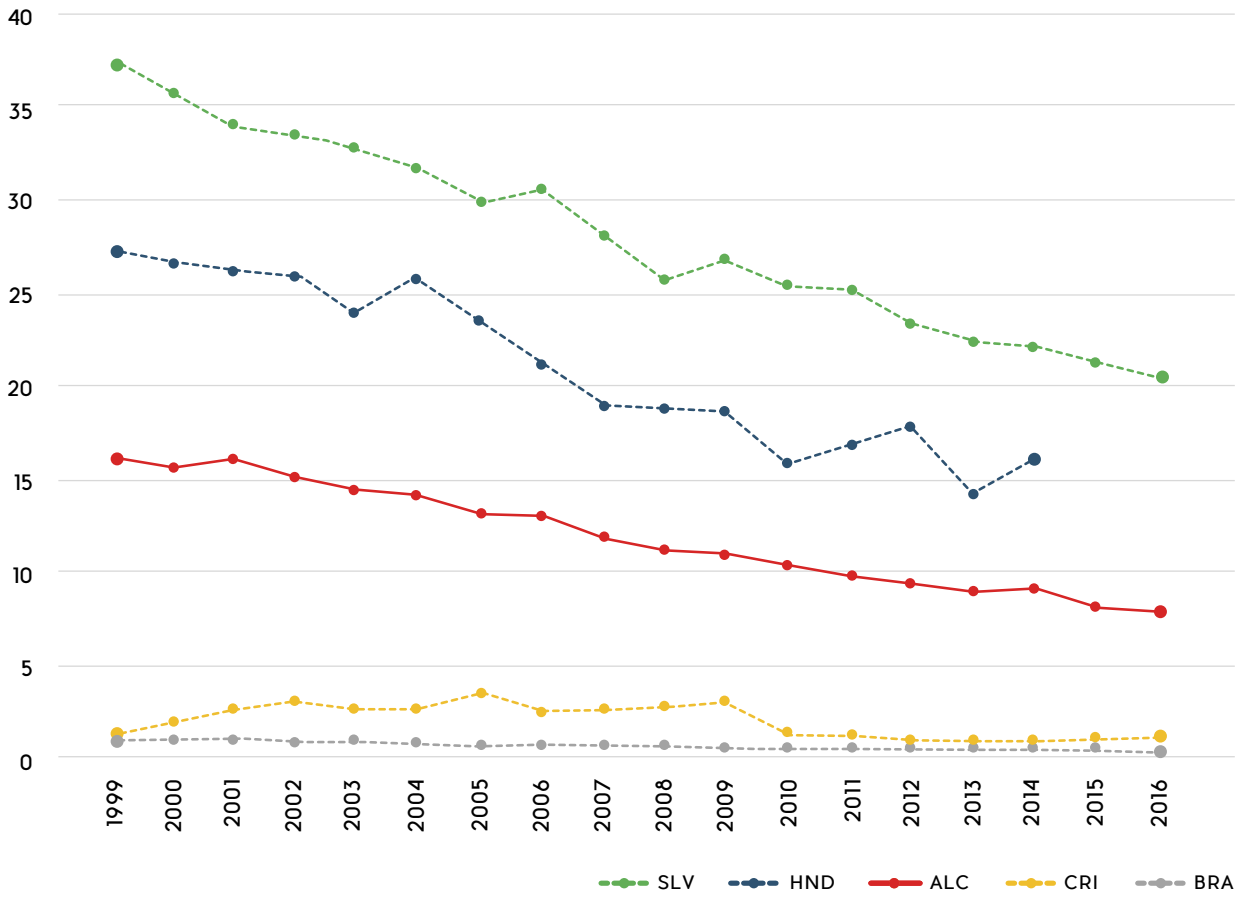
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

The standard explanation of changes in inequality is grounded in supply and demand (Atkinson 2016). Reduced inequality in earned income explains more than half of the drop in inequality in the region since the beginning of the decade of 2000 (Azevedo, Inchauste and Sanfelice 2013). In those years, salaries of the least schooled workers rose more than those of higher skilled workers due to the increase in demand for low-skilled workers associated with the raw materials boom in the region and, also, due to the increase in coverage of education in previous decades that benefited more those with lower levels of education. The role of public transfers can be added to this standard explanation. The increase in cash transfers explains one fifth of the drop in inequality. As will be shown below, conditional transfers reached 24% of households with children and non-contributory pensions were paid to 36% of the elderly without contributory pensions. Finally, the demographic transition explains about 11% of the drop in inequality. In other words, households have more members of working age and fewer children and, as a result, greater chances of having higher incomes and greater savings.

BASIC CHARACTERISTICS OF HOUSING

Housing is the material support of a set of individual, family and social activities that constitute the base for the household's productive capacity (Pradilla 1983). Therefore, the home must have adequate conditions for habitation. The lack of physical space, or crowding –defined as more than 2.5 people per room— can foster an unhealthy environment and limit biological and social activities in the home. In the region, crowding in homes declined from 15% in 1999 to 6% in 2016. Although this trend occurred in all countries, divergences between them are wide (see Graph 4.6 for some countries and the Statistical Annex of this report for the others). The gaps within countries are also wide, since the housing of indigenous and Afro descendant families continue to present the greatest challenges. Guatemala has the most pronounced differences, while the gaps are the narrowest in Chile and Uruguay (Graph 4.7). Despite reduction of gaps between groups, a significant percentage of households continue to live in precarious conditions (Statistical Annex of this report).

GRAPH 4.6
Percentage of crowded homes between 1999 and 2016



Note: The value of LAC is the average the values of 15 countries for the whole period: ARG, BOL, BRA, CHL, COL, CRI, DOM, ECU, HND, MEX, PER, PRY, SLV, TTO, URY.

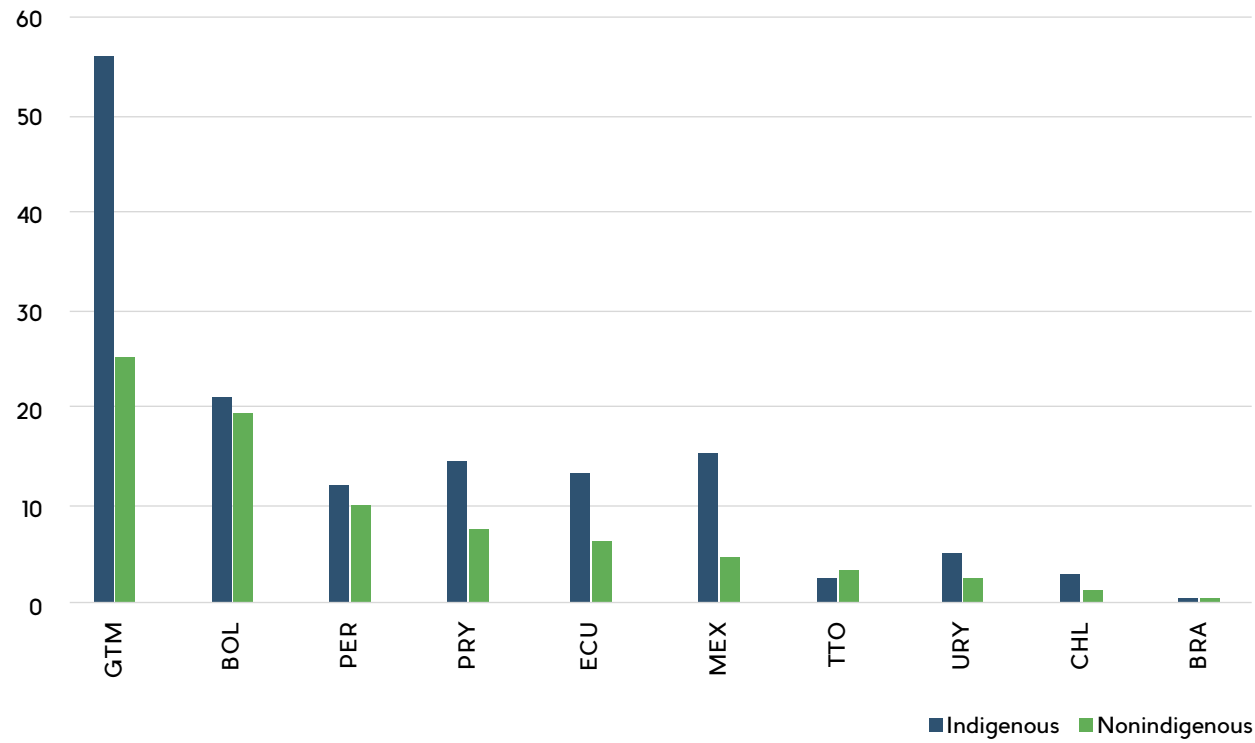
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

One of the factors that explains crowding in households is rural-urban migration. Bouillon (2012) reviews the case of Argentina, in which migration was driven by the job market in urban areas. Crowding can increase when the number of houses does not rise in proportion with population growth and also when family planning is scarce, as in the poor households that have more members living in small spaces.

Housing construction materials are another indicator of the conditions for habitation since the home must guarantee protection and security for its residents. In the region, the predominant materials for walls are permanent (brick, wood, prefabricated, zinc, cement), although in some cases discarded or non-permanent materials are used. In

general, the physical conditions of housing vary with income, gender, ethnic identity and other characteristics. In Peru and El Salvador, there are wide gaps between the homes of the richest quintile and the poorest who have walls of non-permanent material (50 and 34 percentage points, respectively, in 2016) (Graph 4.8).

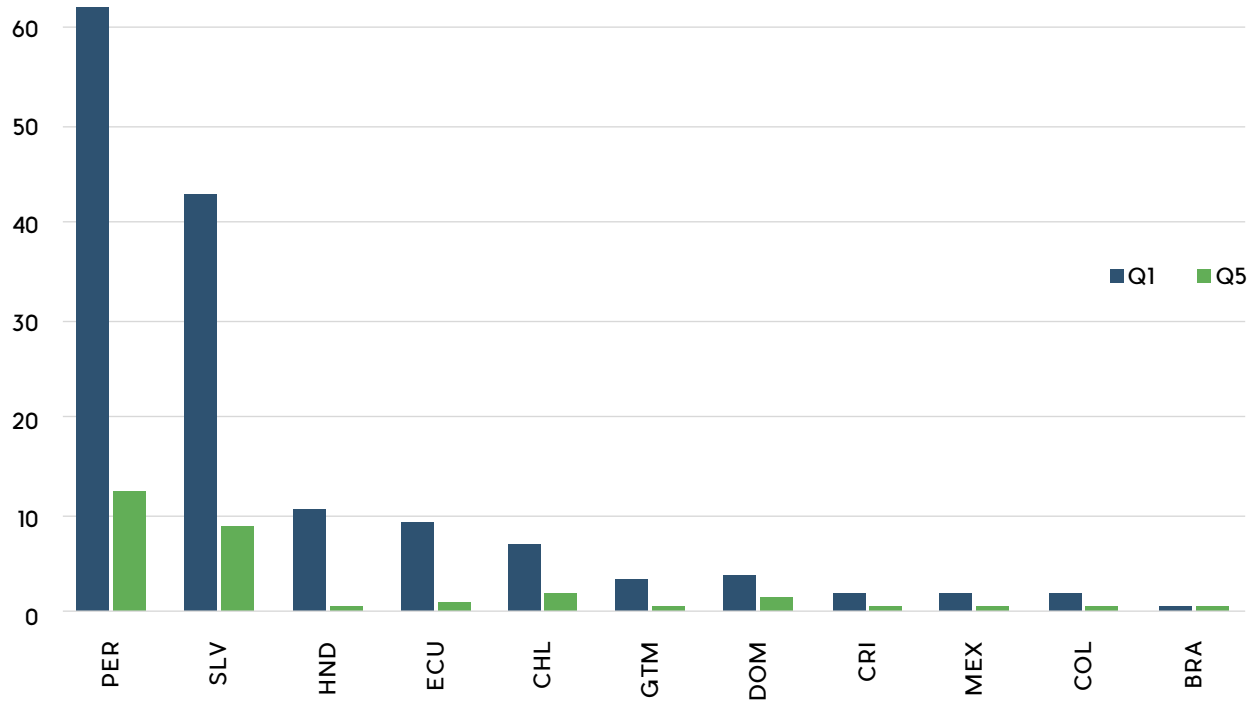
GRAPH 4.7
Percentage of crowded homes by ethnic groups, circa 2015



Note: MEX and TTO (2014), BOL, PRY, CHL and BRA (2015), and GTM, PER, ECU, URY (2016).
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

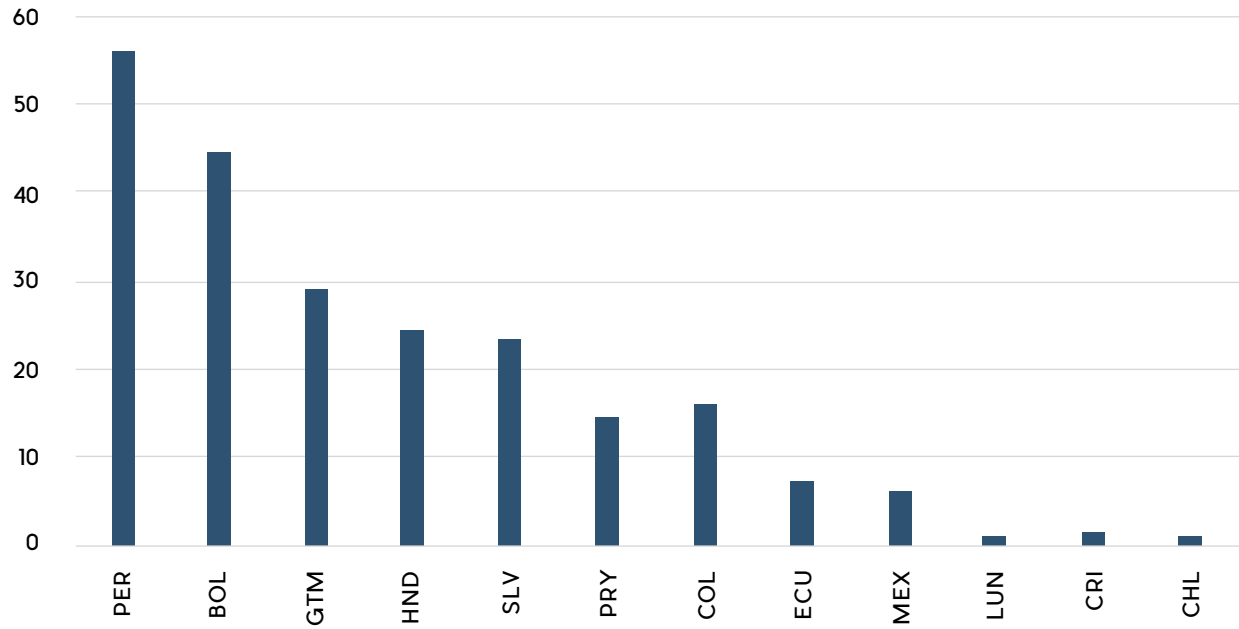
Nor is it surprising that wide gaps exist between homes in urban and rural areas in terms of the predominant material of floors. In Bolivia, El Salvador, Guatemala, Honduras and Peru, these gaps ranged between 23 and 56 percentage points in 2015 (Graph 4.9). Likewise, of 12 countries with information available, Peru, Guatemala and Bolivia are those that have the highest percentages of homes of the poorest quintile with dirt floors: 62%, 54% and 47%, respectively (see the Statistical Appendix of this report). In general, the poor quality of housing in the region is partly due to the high cost of materials or the lack of credit for buying or improving housing of the poorest (Gilbert 2001). Inadequate construction materials affect well-being, especially of children who are the most likely to contract diseases when they are raised in environments that are unfavorable for their development.

GRAPH 4.8
Percentage of homes with walls of non-permanent materials, by quintiles of income, circa 2015



Note: HND and MEX (2014); SLV, CHL, COL and BRA (2015); PER, ECU, GTM, DOM and CRI (2016).
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

GRAPH 4.9
Differences between homes in urban and rural zones with dirt floors, circa 2015 (in percentage points)



Note: HND and MEX (2014); CRI, DOM, ECU, GTM and PER (2016).
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

ACCESS TO SAFE DRINKING WATER AND SANITATION

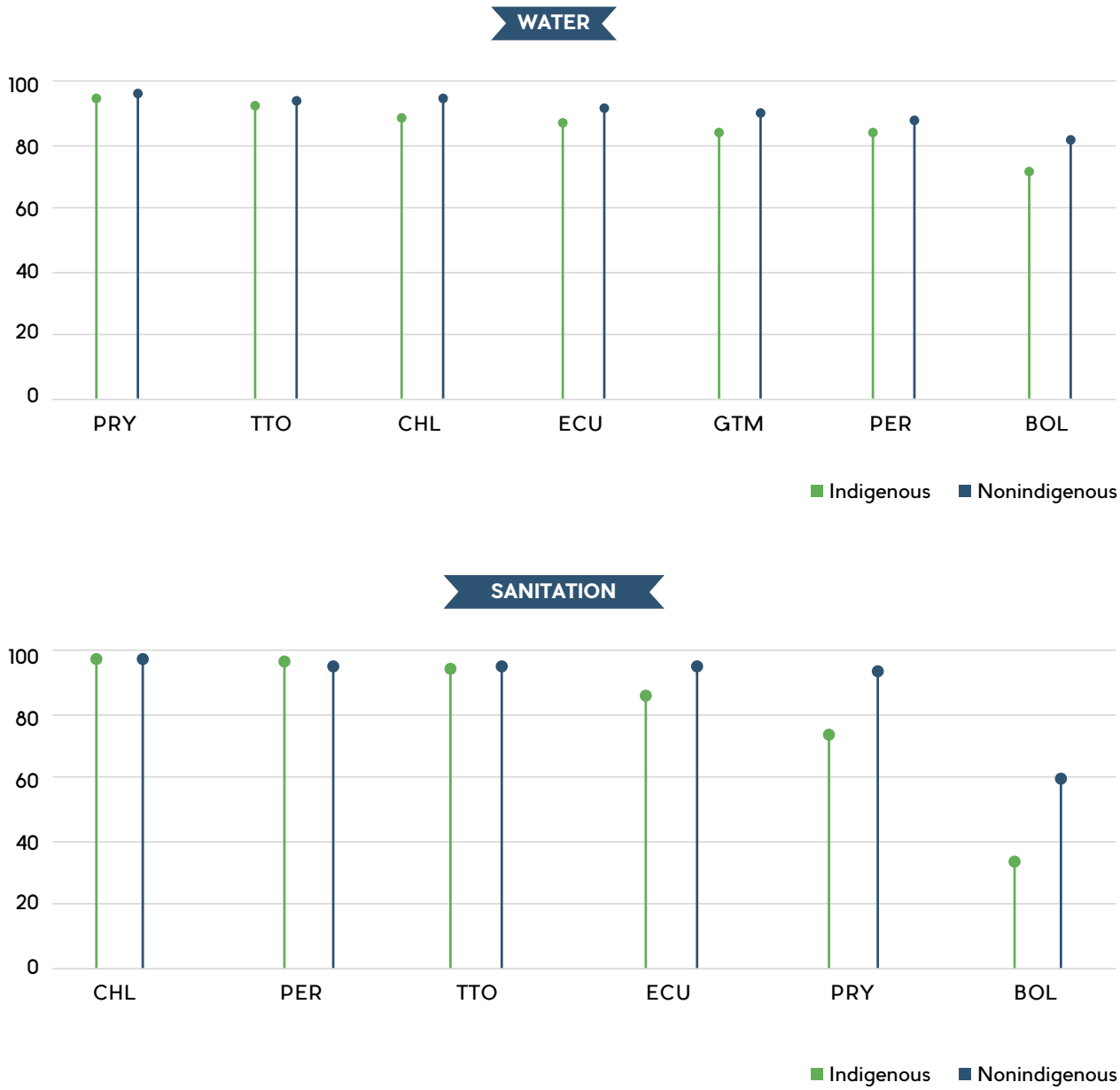
When people lack access to safe drinking water[5] or sanitation, they face risks that can compromise their health. The quality of both services can be measured considering the type of access available (see Table A4.1). Water comes from an improved source if it is protected from contamination outdoors, especially from fecal matter (see Table A4.2), and sanitation is adequate if it impedes the contact of people with human feces (WHO 2012). During the past two decades, significant advances have been made in access to these services in the region. Argentina, Brazil, Chile, Costa Rica, Colombia, Ecuador, Paraguay and Uruguay stand out because, for more than a decade, more than 90% of homes have access to water from improved sources (see the Statistical Annex to this report). El Salvador and Peru are also noteworthy because, starting from very low levels, in 2016 access reached 77% and 90%, respectively. These improvements have lowered the costs and dangers of collecting water, as well as the risks of contracting diseases, incurring medical expenses and becoming less productive (WHO 2016).

Access to improved sanitation increased in the region from 80% in 1999 to 88% in 2016. Peru is a standout because access rose from 79% to 98% of homes, as is Trinidad and Tobago, where access expanded from 81% to 97% (see the Statistical Annex of this report). According to WHO (2016b), improvements in this service make it posible to reduce tropical diseases (intestinal worms, trachoma, shistosomiasis) and the sequels and gravity of malnutrition, and also to increase attendance of girls in schools where sanitation facilities are not separated by gender.

However, progress in access to these services has not been homogeneous within countries. Disaggregation of data according to ethnic groups, shows that the greatest differences between indigenous and non-indigenous are in Bolivia (Graph 4.10) and smaller gaps exist in Chile. Two important reasons for the divergences are the difficulty of providing these services in (rural) areas where the indigenous live, and the migration of this population to urban areas with deficient systems of sewers and elimination of excrement. This situation becomes worse when the residual waters from the homes of the wealthy flow into rain water drainage systems, water courses or dumps that contaminate poor residential areas (WHO 2016b). In sum, living in a precarious home fosters an infinite number of negative effects in the health of individuals, especially among children. Table A4.3 details the principal consequences produced by residing in precarious housing.

5.Potable water is that which is used in the home, for drinking, cooking and personal hygiene (WHO 2012).

GRAPH 4.10
Percentage of people with access to water and sanitation from improved sources, by ethnic groups, circa 2015



Note: TTO (2014), PRY, CHL and BOL (2015), ECU, GTM and PER (2016).
Source: IDB Harmonized Household Surveys of Latin America and the Caribbean.

4.1 APPENDIX

TABLE A4.1
Improved sources of water and sanitation according to the Sustainable Development Goals (SDG)

	TYPE OF SOURCE	
	IMPROVED	**NO MEJORADA**
WATER	• Piped water inside the house, patio or plot • Faucet or public tap • Piped or drilled water well • Protected excavated water well • Protected spring • Rain water	• Unprotected excavated water well • Unprotected spring • Trolley with small tank or barrel • Tank trucks • Surface water (river, dam, lake, lagoon, stream, canal, irrigation canal) • Bottled water
SANITATION	• Automatic or manual hydraulic discharge connected to: sewerage network, septic tank, pit latrine • Improved pit latrine with ventilation *(Ventilated Improved Pit,* VIP) • Pit latrine with slab • Composting latrine or toilet	• Automatic or manual hydraulic discharge to any other place, that is: without sewerage system, septic tank or pit latrine • Pit latrine without slab or open pit • Bucket latrine • Latrine or hanging toilet • Shared facilities of any kind • No installation, shrub or field • Public or shared facilities

Source: WHO/UNICEF, Joint Monitoring Programme (JMP) for Water Supply and Sanitation.

TABLE A4.2
On the improved source of drinking water in household surveys

COSTA RICA	The category "rain or other" is classified as an unimproved source because water sources which are referred to as "other" cannot be classified. For this reason, whenever the category "other" is present as a variable of water or sanitation, it is classified as an unimproved source.
HONDURAS AND GUATEMALA	It is not possible to identify if the category "water is obtained from a neighbor or family member" is an improved source, so this category is excluded.
BOLIVIA	It is not specified if the water well is protected or not, but it is classified as an improved water source.
CHILE	The water that comes from the public network by hauling is considered an improved source because it is assumed that it would be equivalent to having public tap water, which is classified as an improved source.
COSTA RICA	The "rainwater" category is listed along with other categories, so it is classified as an unimproved source.
URUGUAY	In 1990 and in 2001-05 it cannot be identified whether the bathroom is private or shared.
ECUADOR	The category "latrine" cannot be disaggregated and is classified as an improved source. Beginning in 2006, it cannot be identified whether the sanitation service is private or shared.
GUATEMALA	In the period 2002-03, the questions are not comparable, and as of 2004 it is not possible to identify whether sanitation service is private or shared.
MEXICO	In 1994, it cannot be identified whether the bathroom is for exclusive or shared use.
PANAMA	The category "hole or latrine" is considered as an unimproved source.
PERU	It cannot be identified whether the bathroom is private or shared.
PARAGUAY	It cannot be identified whether the sanitation service is private or shared. If the source of sanitation is a pit or water well, it is considered as an unimproved source. From 2007, the question about sanitation changes.
EL SALVADOR	From 2009 on, it can be identified whether the sanitation service is private or shared.
BRAZIL	The water source is disaggregated into only three categories, so the classification of improved water may be overestimated or underestimated.

Note: The location of the source is not taken into consideration to define an improved water source. If households declare access to rainwater, it is considered as an improved source without specifying whether it is protected or not. If it is not specified that the spring is protected, it is classified as an unimproved source.

TABLE A4.3
Consequences of living in a precarious house

RISK FACTORS	ASSOCIATED CONTAGIOUS DISEASES	ACCIDENTS AND NON-CONTAGIOUS DISEASES	ASSOCIATED MENTAL ILLNESSES
Poor construction, overcrowding, inadequate ventilation, humidity and earthen floors.	· Diseases caused or infections transmitted by insects, parasites, rodents, animal bites (malaria, Chagas disease) · Acute respiratory infections · Tuberculosis	· Coronary diseases · Chronic pulmonary and respiratory diseases (including asthma) · Lung cancer · Wounds · Burns · Prenatal diseases	· Deficient cognitive and psychomotor development in young children · Learning problems and behavioral disorders caused by exposure to toxic materials (lead) · Neurosis · Domestic violence · Alcoholism and drug addiction
Inadequate water and sanitation	· Fecal-oral and parasitic diseases (typhus, cholera, hepatitis and polio, among others) · Coronary diseases · Stomach cancer · Diseases related to microbiological toxins · Diseases related to insect infestation	· Coronary diseases · Stomach cancer	
Areas surrounding the dwelling (deficient services of collection and final disposal of waste, pollution, proximity to industrial areas or congested roads, recreational facilities and precarious parks)	· Diseases caused by infections transmitted by insects, parasites, rodents, animal bites · Poisoning · Acute respiratory diseases	· Coronary diseases · Chronic pulmonary and respiratory diseases · Obesity · Cancer · Traffic accidents and others	· Neurosis · Psychiatric disorders related to chemicals and other pollutants

Source: Bouillon (2012).

5. INDICATORS OF OUTCOMES

INFANCY

Infant mortality

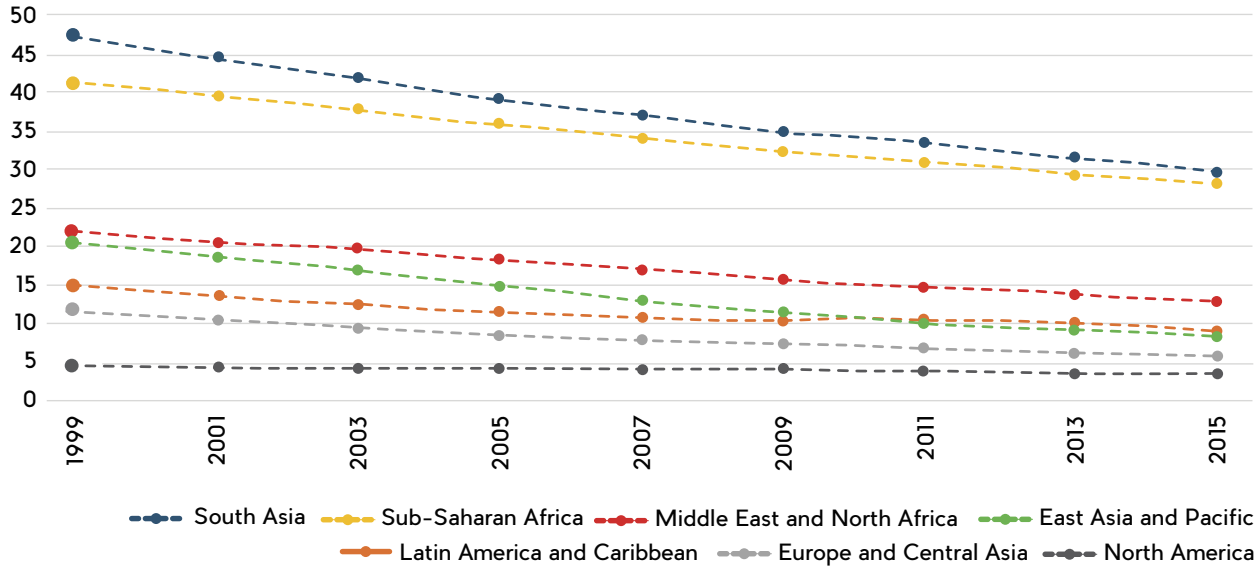
The infant mortality rate –the probability that a child will die before reaching age five for every 1,000 live births– is often used as an indicator of quality of life, attention to overall well-being or health care in a country. In recent years, infant mortality has diminished significantly worldwide (Graph 5.1). At present, South Asia and sub-Saharan Africa have the highest rates, but these fell notably between 1999 and 2015 (from 58 to 30 and 46 to 29 per 1,000 live births, respectively). In Latin America, this indicator fell by more than half in the same period (from 22 to nine for 1,000 live births between 1999 and 2015).

In general, infant mortality rates are associated with income levels. In 2015, five of the six countries with the lowest gross domestic product (GDP) per capita in the region had the highest rates (above 30 per 1,000 live births) and four of the six countries with the highest income had the lowest rates (below 13 per 1,000). Within countries, infant mortality also affects the most vulnerable populations. For example, children of the Embera Katío indigenous community in Cali, Colombia, suffered 17 times more infant mortality than children who live in areas where there is no presence of indigenous population (Minujin et al., 2016), Similarly, in the 26 countries of the region, baby boys have more probabilities of dying before reaching age five in Ecuador, Guyana, Jamaica and Suriname, at least 26% above the probability of infant mortality among girls.

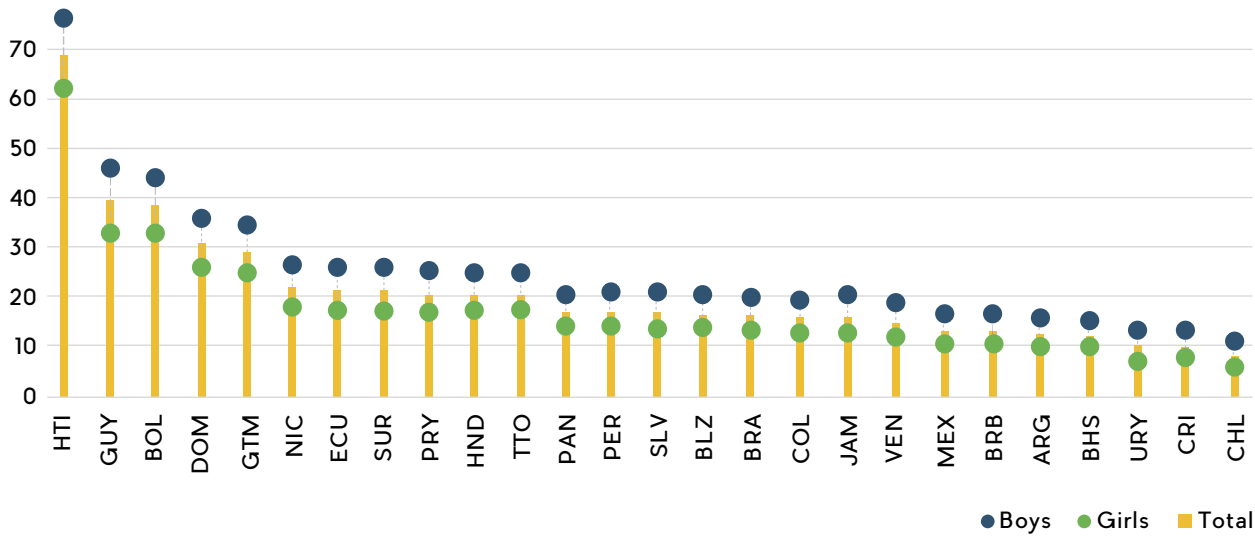
According to the United Nations Children's Fund (UNICEF), the principal causes of infant mortality are: diarrhea, malaria, neonatal infections, pneumonia, premature birth and lack of oxygen at birth. Furthermore, the risk factors associated with these ailments include low birth weight, malnutrition, absence of maternal nursing, crowding, unhealthy water and food, as well as lack of hygiene. More than half the deaths of children under five years of age are caused by illnesses that can be prevented with simple and accessible interventions, such as vaccines, proper nutrition, exclusive breastfeeding and adequate sanitation and hygiene (WHO 2016c). Children face greater possibilities of dying if they are born in rural areas and in poor households, or if their mothers did not get primary schooling.

GRAPH 5.1
Deaths of children under 5 years per 1,000 live births

A BY GEOGRAPHICAL REGIONS



B IN LATIN AMERICA BY GENDER, CIRCA 2015



Source: World Bank. World Development Indicators. Estimates by the UN Inter-Agency Group for Child Mortality.

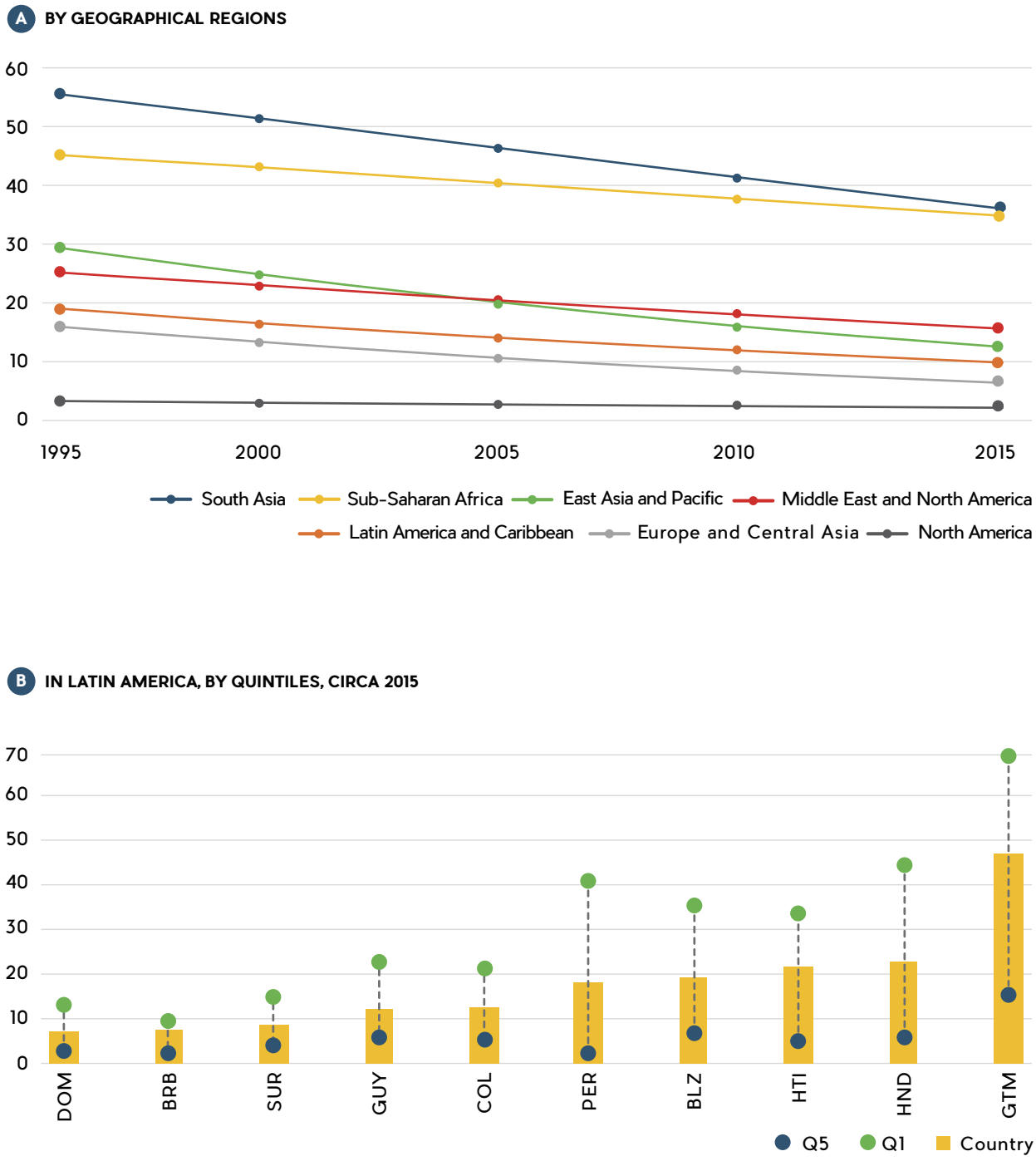
INFANT MALNUTRITION

Chronic malnutrition causes stunted growth in children below five years of age, that is, they will not reach the size expected for their age and sex (more than two standard deviations below the median size for the international reference population). This indicator is often used to measure developmental problems of children, thanks to its close relationship with problems of learning, school leaving and, in the long term, low productivity of adults. Malnutrition affects the brain and, therefore, the functional, productive, mental and intellectual capacities of individuals. In addition, a malnourished child is likely to die prematurely (due to diarrhea, pneumonia, malaria) and to contract infections and non-communicable diseases (UNICEF 2013; OMS 2016c).

Worldwide, one of every four children under five suffers from chronic malnutrition, and this number rises to one in three in developing nations (Graph 5.2). As in the case of infant mortality, South Asia and Sub-Saharan Africa are the regions that, historically, have had the highest rates of chronic malnutrition. LAC has maintained rates close to those of the most advanced regions and in the last two decades has reduced its rates by nearly half. In the region, Guatemala stands out for its high level of chronic malnutrition (47% of all children), a statistic that places the country in sixth place in a list of 115 countries. Likewise, Guatemala has the widest gap of malnutrition in the region between children from the poorest quintile and the richest (66% and 17%, respectively). The lowest rates of infant malnutrition are reported in Barbados, the Dominican Republic and Suriname.

It is a known fact that malnutrition is high when family income and the schooling of the mother and her partner are low. Children of households with this profile live in housing with inadequate infrastructure and, therefore, have a greater probability of being malnourished due to the high incidence of infections and illnesses, which leads to deterioration of their cognitive capacities. In sum, malnutrition is directly related to poverty, levels of education and limited access to health services (Paraje 2008; UNICEF 2007).

GRAPH 5.2
Chronic malnutrition, percentage of children under 5 years of age



Note: The data are the averages determined by the countries' population in regions omitting high-income countries (gross national income per capita equal to or greater than US $ 12,476). DOM (2013), BRB (2012), SUR (2010), GUY (2014), GTM (2014-2015), COL (2010), PER (2012), BLZ (2011), HTI (2012), HND (2012).

Source: World Bank. World Development Indicators

PRESCHOOL ATTENDANCE

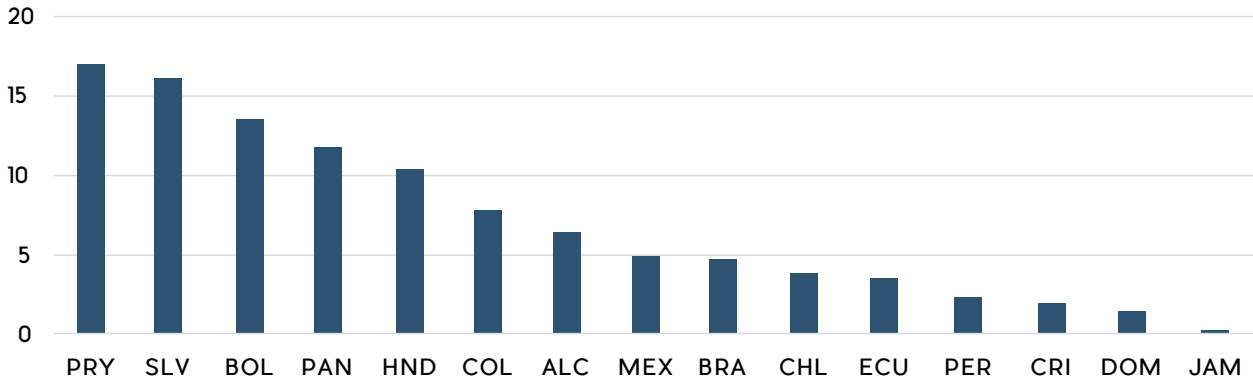
While human capital is developed throughout the life cycle, the earlier an investment is made in the individual, the higher the returns because skills acquired in one stage affect development in the following stages. Given the importance of early education for cognitive development of children, in addition to physical and emotional development,[6] several countries in the region changed the official age for entering preschool education, which has influenced rates of attendance. According to UNESCO (2017), at the beginning of the current decade, Chile, Costa Rica, Ecuador, Mexico and Panama set three years as the age of entry into the school system, similar to the entry age previously set by Argentina, Colombia, Peru, Uruguay and Venezuela. Brazil, El Salvador and Guatemala still maintain four years as the official age for entry into preschool.

Preschool attendance among children four years of age has risen from 49% to 69% between 1999 and 2016, and among five-year-olds has increased from 68% to 88%, giving the region a good position in the international context. The Southern Cone countries advanced the most in this period, particularly Argentina, Brazil and Chile, where attendance among four-year-olds doubled (see the Statistical Annex of this report), and Jamaica and Uruguay are the only countries that show attendance above 90%. Among children five years old, attendance is above 95% in nearly half of the countries, although the differences between urban and rural zones are still greater than 10% in El Salvador, Panama and Paraguay (Graph 5.3).

The increase in preschool attendance is due in part to the concern in recent decades for "early childhood" development and also stems from the access of women to education and the labor market, which brought about increasing demand for educational services for children under five (Itzcovich 2013). The current challenge is to guarantee the quality of those services with the purpose of maximizing the positive effects of early education in child development.

6. In the first three years of life, the brain establishes between 700 and 1,000 new connections per second, which are maximized with interaction with caretakers and the stimuli children receive in their environment Stimulation of these connections is the foundation for neuro-plasticity which forms the basis for developing mental and physical health, the acquisition of new social skills and the capacity to learn, adapt and be productive (UNICEF 2015).

GRAPH 5.3
Differences in school attendance of children 5 years of age between urban and rural zones, circa 2015 (percentage)



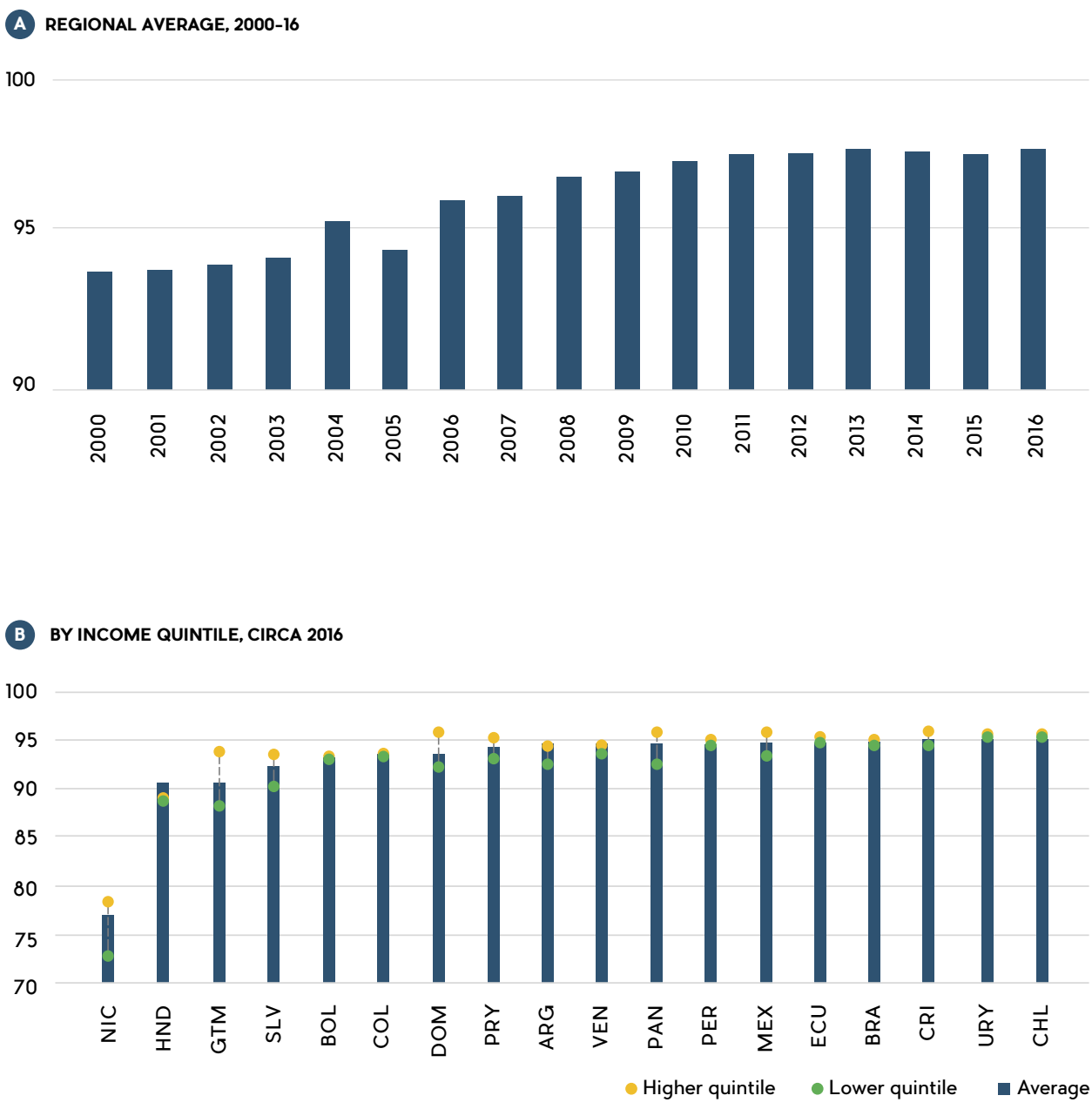
Note: JAM (2012); HND and MEX (2014); PRY, SLV, BOL, PAN, COL, BRA, CHL, DOM (2015); ECU, CRI, and PER (2016).
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

CHILDHOOD

Primary school attendance

Absence or irregular attendance in primary school is very costly because it can affect the schooling trajectory of the child and limit acquisition of basic knowledge for functioning responsibly and productively as an adult. Individuals who lack basic skills experience more difficulties finding well-paying jobs and getting out of poverty. Since the year 2000, school attendance of children between six and 12 years of age in the region rose four percentage points (Graph 5.4), and is now nearly universal. At present, with the exceptions of Nicaragua, Honduras and Guatemala, school attendance in all countries in the region surpassed 95% for this age group. Moreover: since school attendance is nearly universal in all countries, the gaps between the highest income quintile and the lowest are minimal, except in cases such as Nicaragua and Guatemala, where the differences exceed six percentage points.

GRAPH 5.4
School attendance of children ages 6 -12 (percentage)



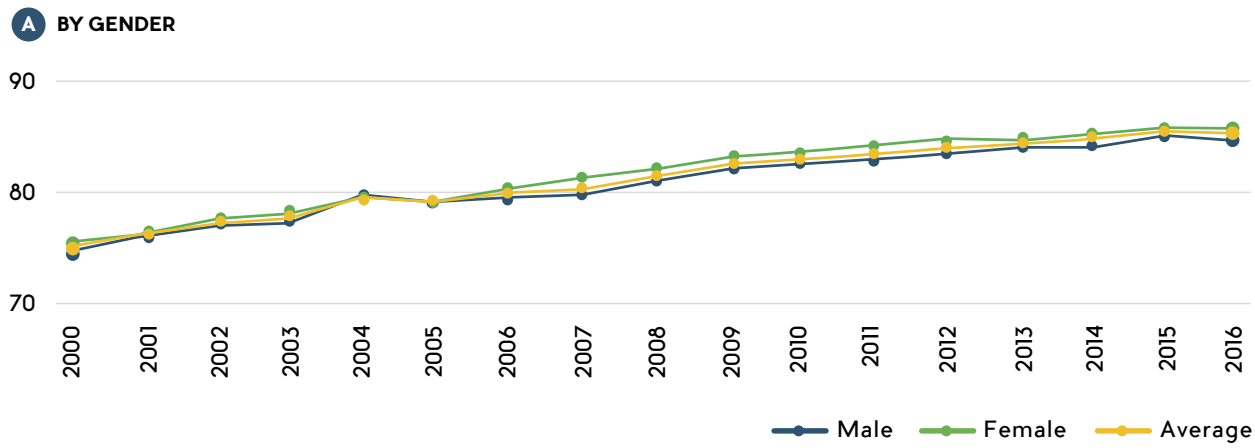
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

Secondary school attendance

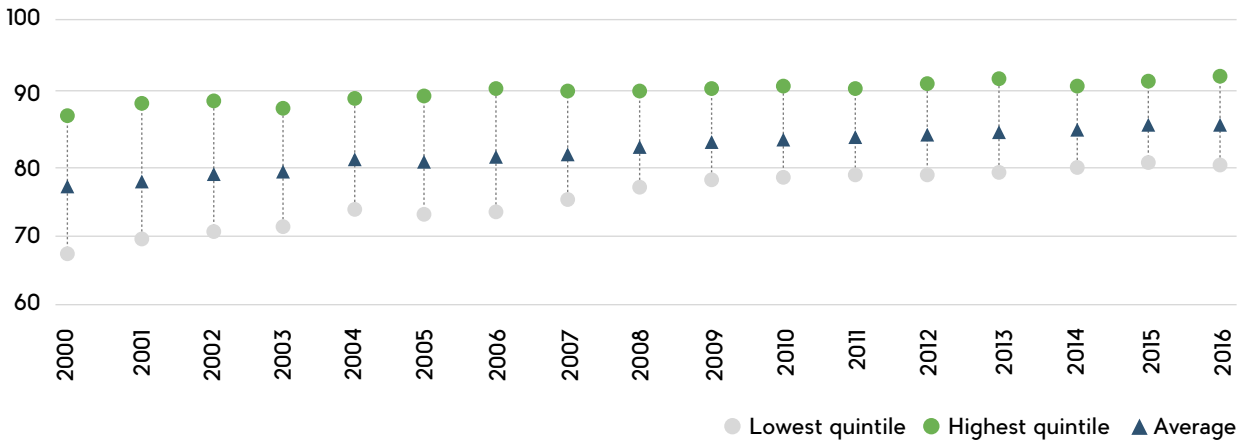
Attendance at secondary school is important because it provides a space for development of social, cognitive and non-cognitive skills of the individual which will ease the transition to the job market. As a result, it is no coincidence that universal coverage and graduation from basic secondary schooling was set as a goal for 2030 in the sustainable development objectives created in 2015. In recent years, the region has made substantial progress toward this objective.

Panel (a) of Graph 5.5 shows the region's advance in school attendance of boys and girls between ages 13 and 17 (on average, from 75% in 2000 to 85% in 2016). Progress was also made in reducing the gap in attendance between the poorest and richest quintiles, which is reflected in the drop from 22 points to 14 points between 2000 and 2016 (panel b in Graph 5.5). This advance was registered primarily in the first years of the period under study, that is, the time of highest economic growth for the region. In the last year, the situation of Honduras and Guatemala jumps out; not only do these countries show less school attendance (61% and 63%, respectively), but also the largest gaps between the poorest and richest quintiles (36 and 34 points, respectively) (Graph 5.6).

GRAPH 5.5
School attendance of children ages 13-17, 2000-16

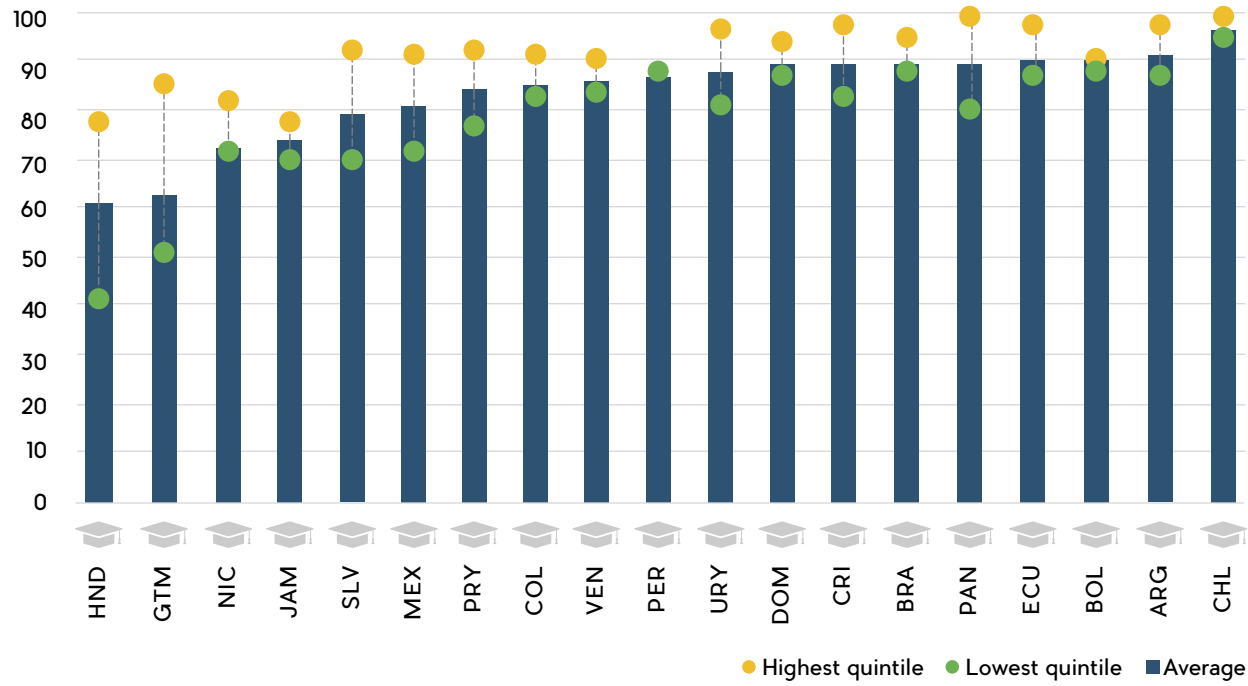


B BY INCOME QUINTILE



Note: The averages are based on data from 17 countries.
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

GRAPH 5.6
School attendance of children ages 13-17, circa 2016

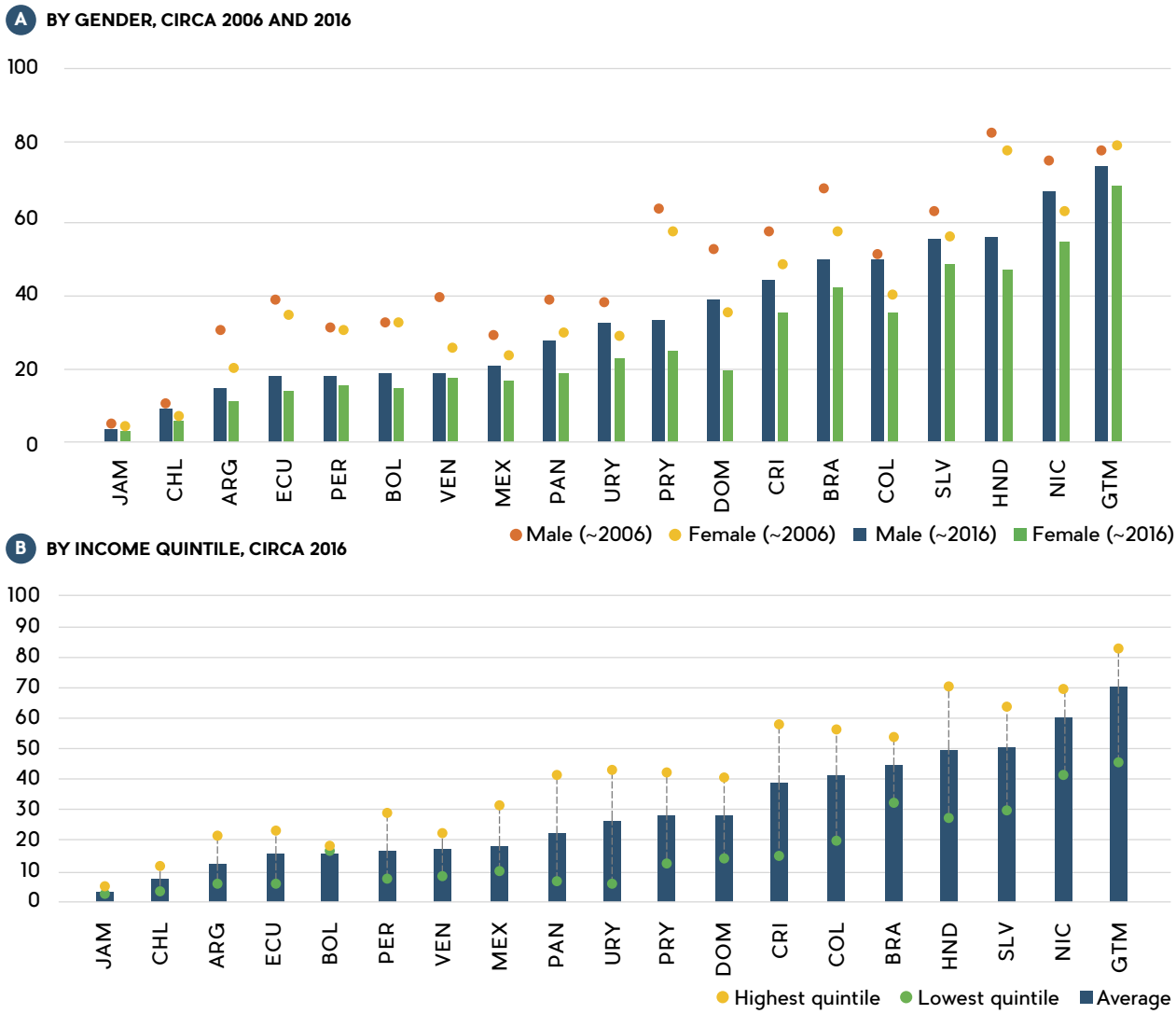


Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

Grade for Age Delays

Attendance at school demonstrates the individual's participation in the educational system, but not his or her performance in the institutions. Grade for age delays –the percentage of youths between 13 and 17 years of age who are two or more years below the level of schooling they should have for their age– is an indicator that gives an approximation of performance. Between 2006 and 2016, lagging of men and women was reduced in all countries (the dots above the bars in panel a of Graph 5.7). However, despite the advances, differences between countries continue to be broad. For example, the grade for age delay in Nicaragua and Guatemala is 13 times higher than in Jamaica and Chile (65% and 5% of youth, respectively).

GRAPH 5.7
Grade for age delay (%) among children ages 13-17



Notes: The years 2006 and 2016 are approximate. In panel (a) the data is sorted according to the lagging of males in 2016 and in panel (b) it is sorted according to the average lag.
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

Also, in all countries the percentage delayed in school is greater among men than among women (blue bars higher than green bars in 2016) and among boys in the poorest quintile compared to those in the richest quintile (yellow dots higher than green dots in panel b). Even though the gaps between quintiles was reduced in the last decade (Statistical Annex of this report), they remain wide. Of 19 countries, only in Argentina, Bolivia, Chile, Ecuador, Jamaica and Venezuela are the gaps less than 20 points (panel b of the graph). In general, grade for age delays implies more costs per student in the school system and greater probabilities of school leaving, low performance and low graduation rates, as well as lower productivity and lower growth rates for the countries.

YOUTH

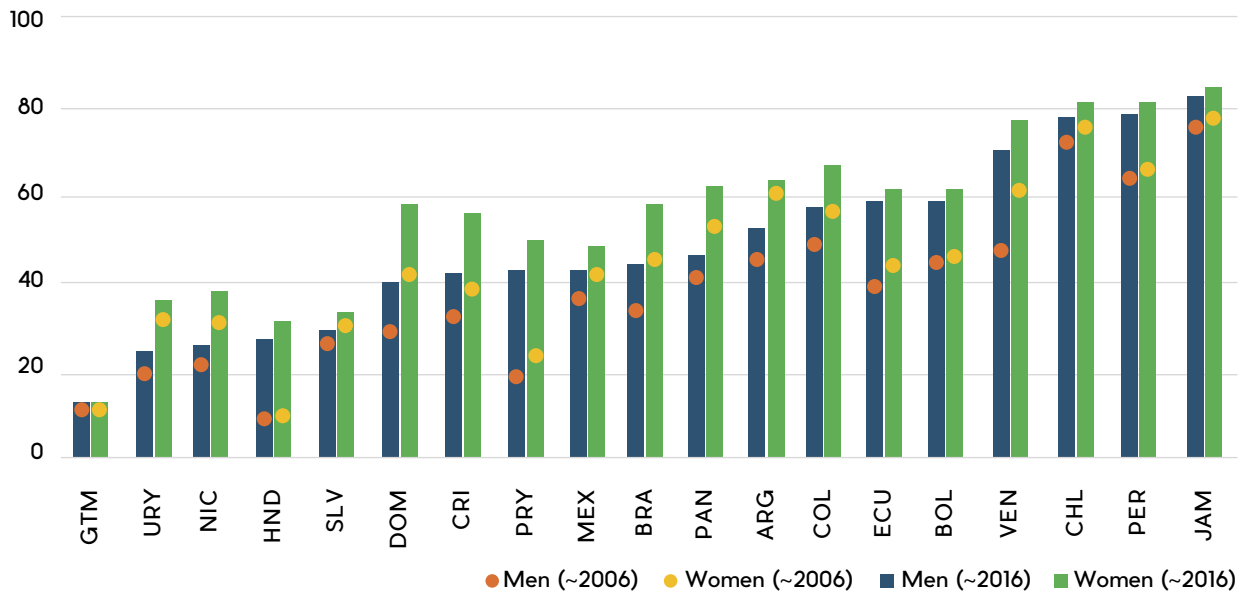
Graduation from secondary school

The percentage of youth from ages 18 to 20 who completed secondary education is another indicator of school performance that increased significantly in the past decade across the region, both among men and women. For example, in Honduras, Paraguay and Venezuela, graduation rates have risen by more than 20 points in this period (bars above dots in panel a of Graph 5.8), although women continue showing higher graduation rates in all countries (green bars above blue bars). In Panama and the Dominican Republic, the gender gap in favor of women exceeded 15 points in 2016.

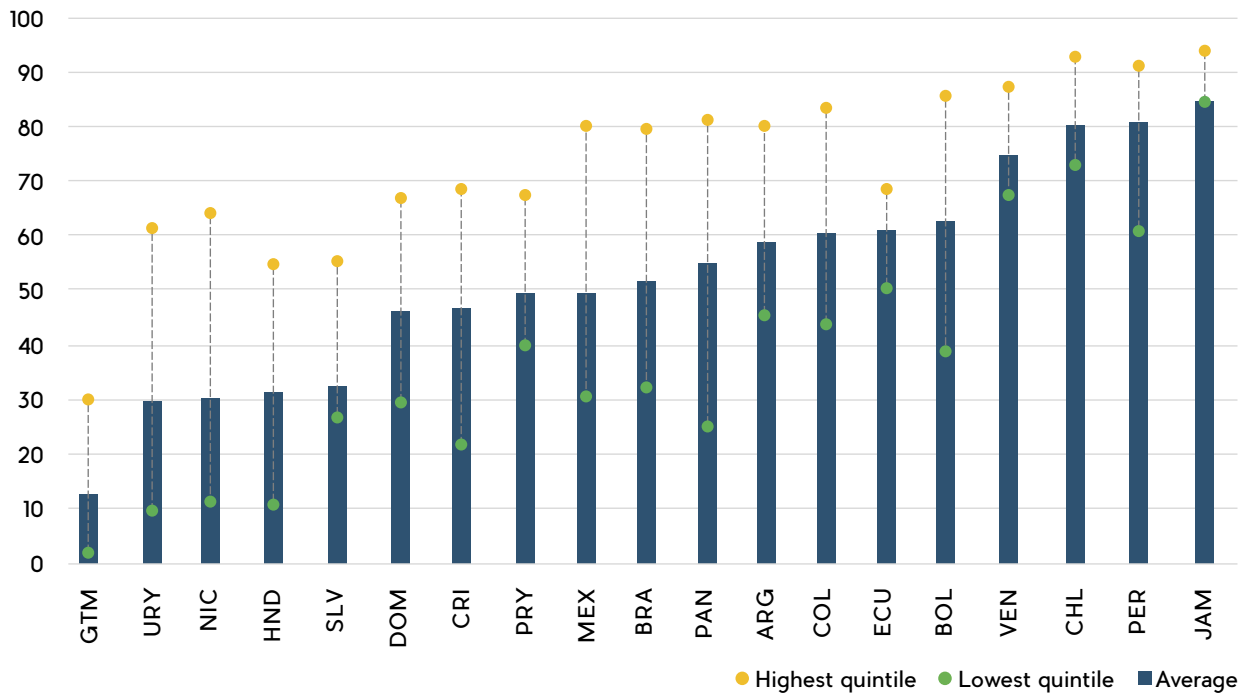
The graduation gap between rich and poor is even wider still (panel b). Although Bolivia and Peru have managed to reduce the gap by more than 20 points in the past decade, in contrast, in Honduras the gap has increased more than 27 points (see the Statistical Annex of this report). Only in Bolivia, Chile, Jamaica and Venezuela did the secondary graduation gap between rich and poor fall below 20 points in the most recent year available, while in Honduras, Panama and Uruguay, it was greater than 50 points. In El Salvador, Guatemala, Honduras and Uruguay, only 10% or less of the youth in the poorest quintile graduated from secondary school.

GRAPH 5.8
Secondary school graduation rate, youth ages 18-20

A BY GENDER, CIRCA 2006 AND 2016



B BY INCOME QUINTILE, CIRCA 2016



Notes: The years 2006 and 2016 are approximate. In panel (a) the data is sorted according to the graduation rate among males in 2016 and in panel (b) according to the average graduation rate of the groups.
The duration of the secondary of each country is taken into consideration.
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

Educational gaps among ethnic groups

In the region, school outcomes vary not only by gender and income, but gaps also exist across ethnicity. Graph 5.9 shows years of schooling achieved and rates of graduation from basic secondary education (up to ninth grade) of the indigenous and nonindigenous in two age groups (25-29 years and 45-49 years) across a time span of two decades. The following results are observed:

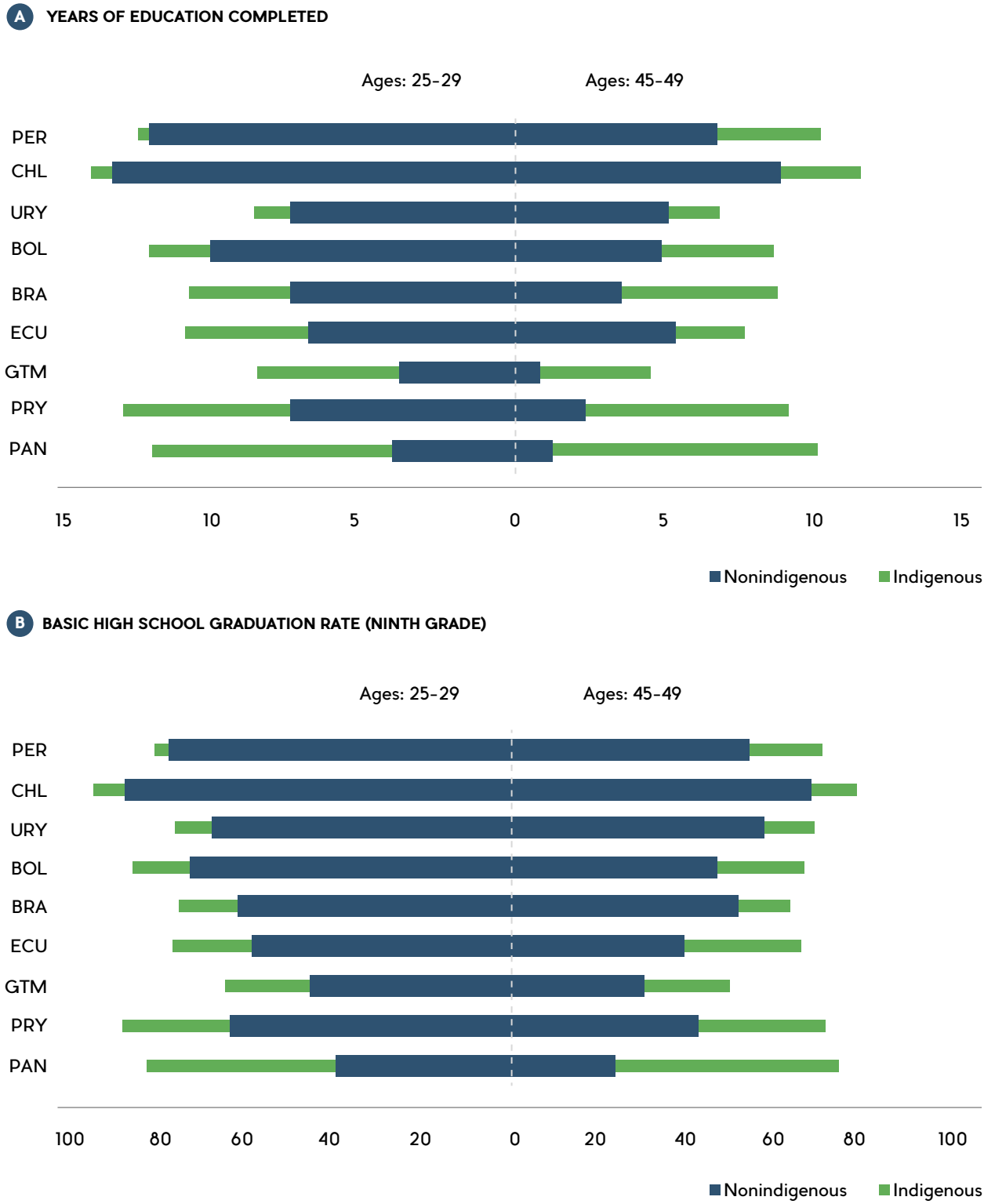
- The gap of completed years of schooling between nonindigenous and indigenous was reduced from three years on average (9.6 years for the nonindigenous versus 6.6 years for indigenous among those 45-49 years old) to two years (11.5 years for nonindigenous versus 9.2 years for indigenous among those ages 25-29).

- The gap in graduation from basic secondary education among nonindigenous and indigenous was reduced from 28% (57% among the nonindigenous versus 29% in the case of indigenous ages 45-49) to 22% (78% in the case of nonindigenous versus 56% among those 25-29 years of age).

- The reduction of gaps has been unequal. Peru succeeded in closing the gap in schooling between indigenous and nonindigenous to 0.5 years and the gap in graduation from basic secondary schooling to three percentage points, while Panama continued to have wide gaps: six years in schooling and 53 points in graduation from basic secondary education.

- In Brazil and Guatemala, there were advances in education –the group of people ages 25-29 surpassed the schooling of the group ages 45-49 among both indigenous and nonindigenous– but the gap in schooling among ethnic groups persisted without notable changes. However, the gap in graduation from basic secondary education among ethnic groups increased, with the greatest advances in attendance occurring among the nonindigenous in Brazil and Guatemala.

GRAPH 5.9
Educational achievements by age and ethnic groups, 2015



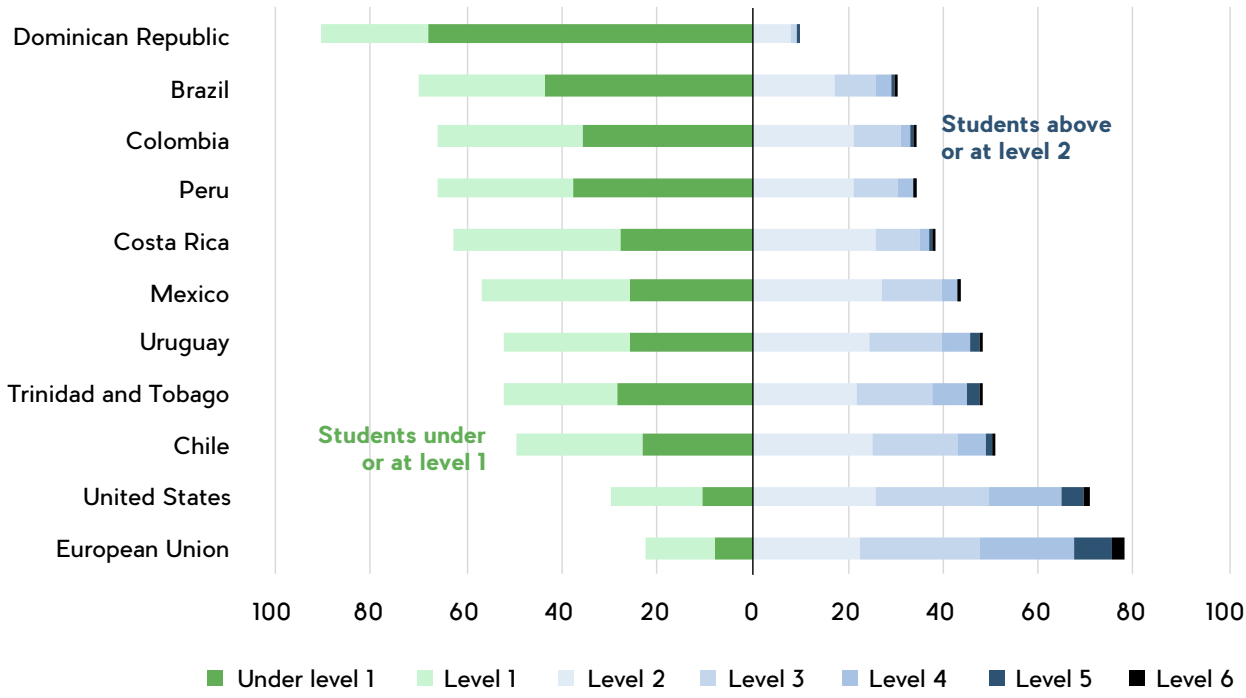
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

Learning

Educational achievements measured based on coverage or performance in schooling do not refer to the quality of learning received by youths in school. One of the greatest challenges for the region is to improve the levels of learning so that young people can acquire relevant skills that allow them to maximize their potential as members of society (IDB 2016a). The results of the latest tests of the Programme for International Student Assessment (PISA) in mathematics, applied to students aged 15 in 72 countries, continue to place the region in the lowest rankings of knowledge and skills (OECD 2016).

On average, half the students in the region obtained results that would not allow them to reach the minimal level (level 2) of competence required in mathematics for participating fully in society. That is, those who obtained scores below this level cannot either interpret or recognize basic questions, nor use algorithms, formulas or simple procedures. On average, 78% of the students of the European Union and 71% of those of the United States reached at least the minimum level of learning or surpassed it (Graph 5.10).

GRAPH 5.10
Percentage of 15-year-old students according to the average learning level in mathematics, 2015



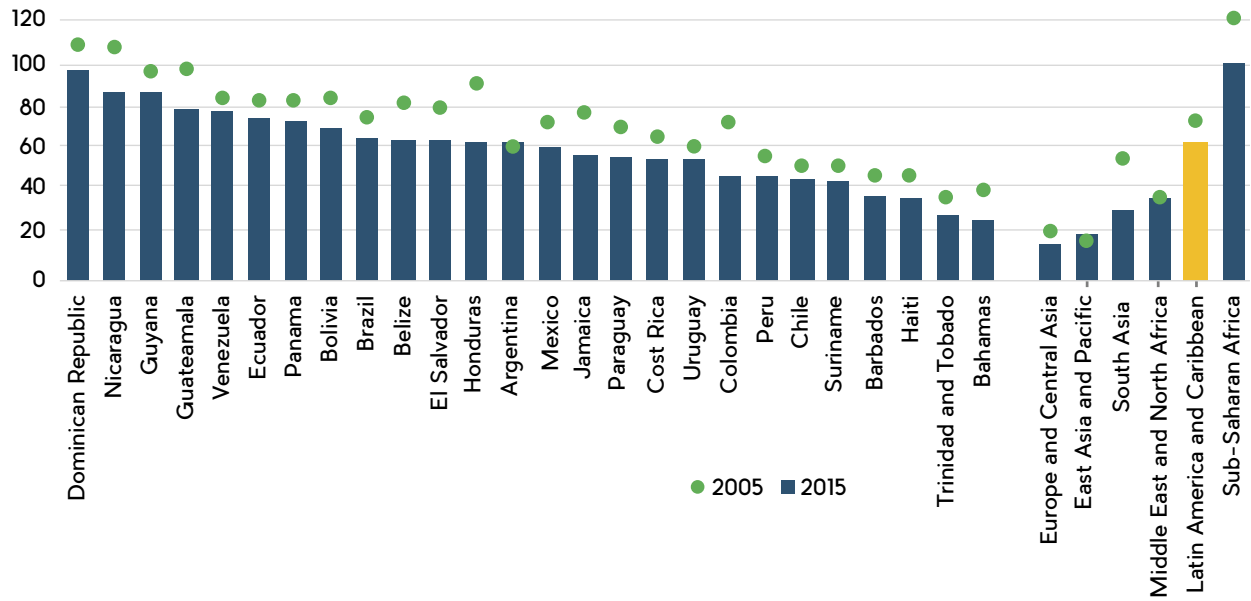
Notes: Countries are ordered from the highest to the lowest percentage of students that are at or below level 1.
Source: Generated from table I.5.1a of the PISA 2015 database (OECD 2016a); Last update: December 1, 2016.

Adolescent fertility

The Latin American and Caribbean region has the second highest rate of adolescent fertility in the world, with 64 births for every 1,000 women between 15 and 19 years of age in 2015, a rate only exceeded by the countries of sub-Saharan Africa. However, between 2005 and 2015, adolescent fertility dropped in all countries of the region with the exception of Argentina (Graph 5.11). The rate fell the most in Colombia (from 73 to 49), Honduras (from 90 to 64) and Nicaragua (from 108 to 88). In addition, except for Guyana, Jamaica and the Dominican Republic, the countries of the Caribbean exhibit the lowest rates of adolescent fertility.

Alzúa and Velázquez (2017) find a strong negative relationship between education and adolescent fertility in Argentina, using changes in the official age by level of education to identify the causal relationship. However, the current state of education has not succeeded in taking full advantage of its potential. Some qualitative studies (Näslund-Hadley and Binstock 2011) suggest that, for a subgroup of adolescents, early motherhood is the result of having limited vocational aspirations and low-quality education. Recent interventions which provide vocational guidance and training for young women have been found to reduce adolescent fertility, given that they enhance the opportunities and future aspirations of adolescent youth (Novella and Ripani 2016; Bandiera, et al. 2014).

GRAPH 5.11
Adolescent fertility rate, females ages 15-19, 2005-15



Notes: The adolescent fertility rate is the number of births per 1,000 women between 15 and 19 years of age in a particular year. The bars are located in descending order according to the fertility rate.
Source: World Bank. World Development Indicators (2017).

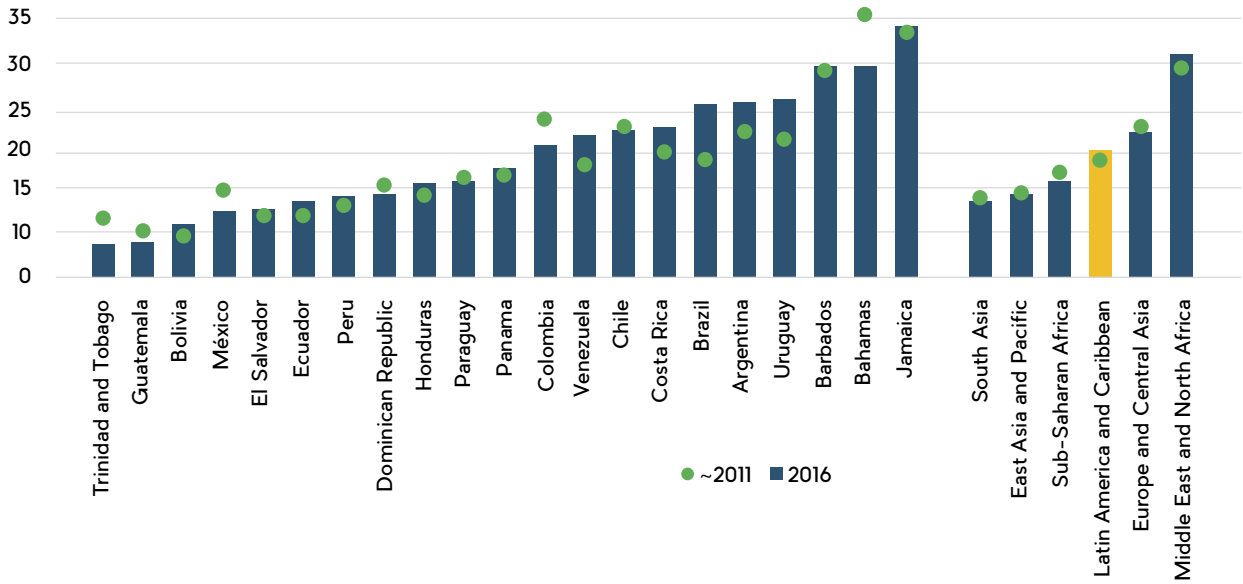
Unemployment and Inactivity

In LAC, youth unemployment –that is, the economically active population of youth ages 15-24 who are unemployed and are actively seeking work– reached 17% in 2016 (Graph 5.12), a percentage that is more than triple the rate of unemployment among adults (described in the section "Adulthood"). Unemployment among youth is one of the principal unresolved issues of the region, and is worsened by the informal nature of the work of employed youth and the salaries they receive. Part of the problem of youth unemployment in the region is attributed to the "skills gap", or differences between what is learned in school and the skills demanded in the job market (Ripani 2015).

Due to the unfavorable macroeconomic context since 2011, youth unemployment in LAC rose by two percentage points, making this region, along with the Middle East and the North of Africa, the only areas where this indicator increased. This occurred in 11 of 21 of the region's countries, and the greatest increases were reported in Brazil (8 percentage points), Uruguay (6 points), Venezuela (5 points) and Argentina (4 points).

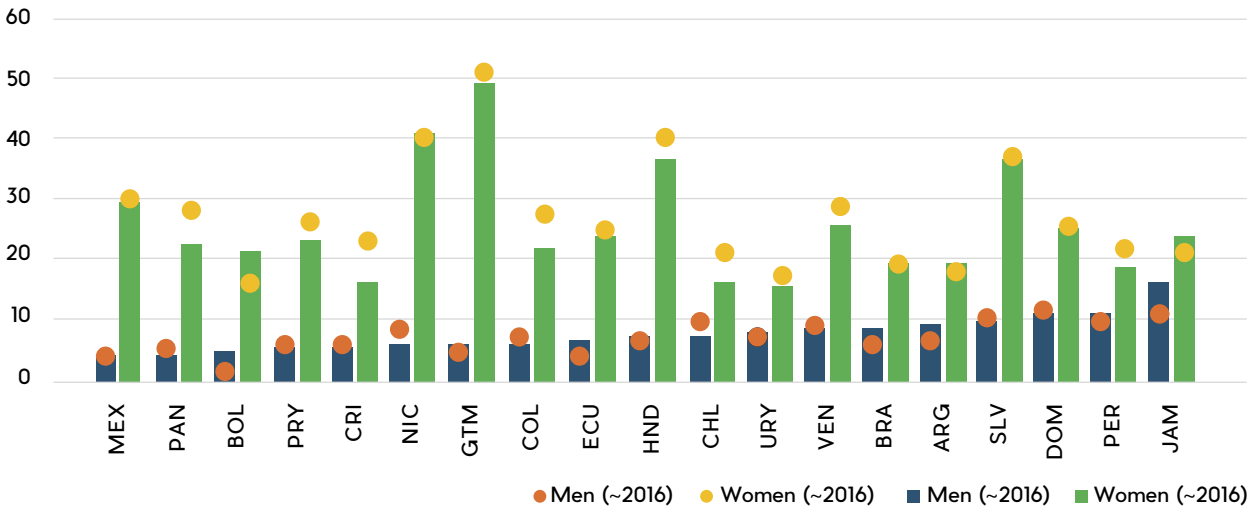
In addition to the unemployment problem which affects youth who decide to participate in the job market, another group of young people decide not to participate in the labor market and also decline to study, that is, they are affected by inactivity. In this framework, the so-called "ninis" are the youths who neither work nor study, and the "nininis" are those who neither work, nor study nor seek employment. At present, about 16% of youth between 15 and 24 years of age fit the category of nininis, or inactivity, a proportion that has remained virtually constant for a decade (Graph 5.12). This problem affects women far more than men, especially in Central American countries such as El Salvador, Guatemala, Honduras and Nicaragua where the differences between the sexes vary from 41 to 25 percentage points.

GRAPH 5.12
Unemployment rate among youth ages 15-24, 2011 and 2016



Notes: Data correspond approximately to 2011 and 2016, and are ordered according to youth unemployment in 2016.
Sources: Estimation based on the IDB Harmonized Household Surveys of LAC (2017) and World Bank. World Development Indicators (2016) for regional averages.

GRAPH 5.13
Inactivity among youth ages 15-24, by gender, 2006 and 2016



Notes: The data correspond approximately to 2006 and 2016, and are sorted according to inactivity among young men in 2016. The inactivity among young men is the percentage of the population between 15 and 24 years that does not study, work or look for a job.
Source: Estimation based on the IDB Harmonized Household Surveys of LAC (2017).

ADULTHOOD

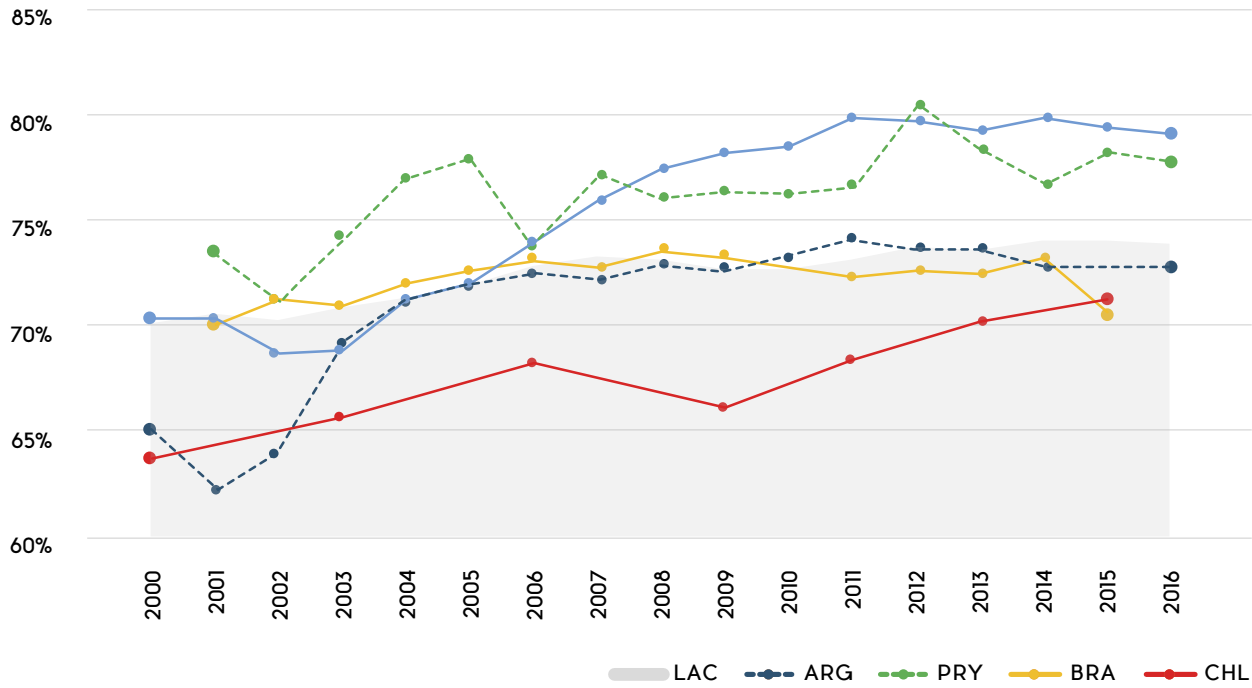
Employment rate

The job market tends to be the "thermometer of the economy" and LAC is no exception. Graph 5.14 shows that the employment rate among adults –the percentage of the total population between ages 25 and 64 holding jobs– increased from 70% in 2000 to 74% in 2016, and the greatest portion of this increase occurred in the first years, that is, the changes were consistent with the stages of economic growth and deceleration in the countries (grey area in the panels of Graph 5.14).

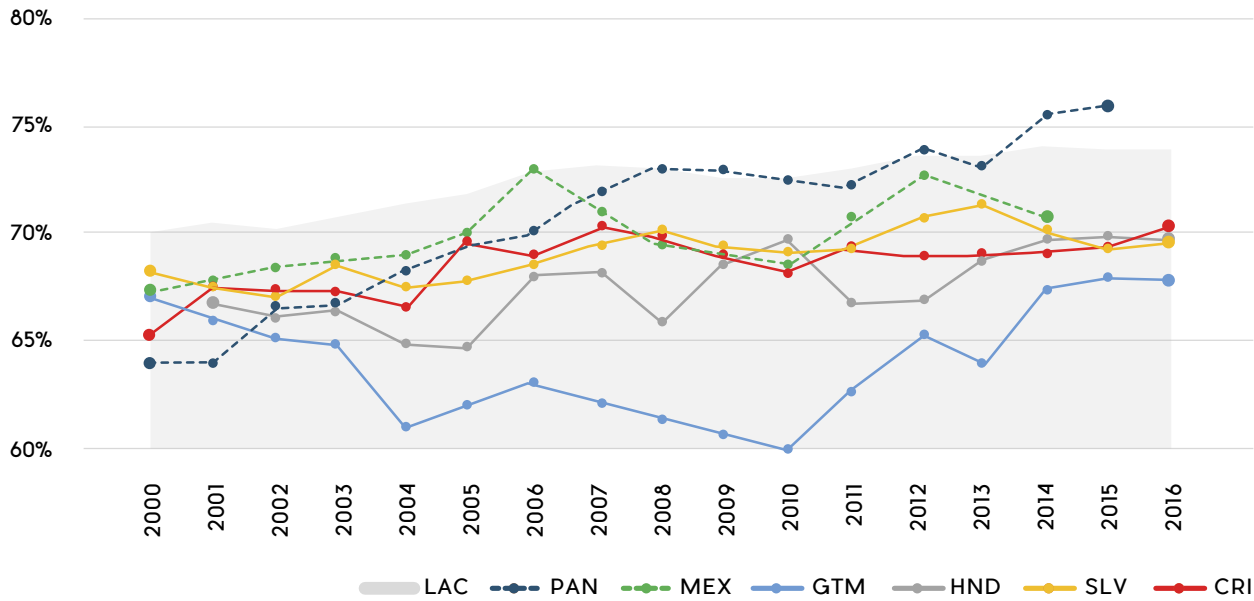
In 2016, adult employment was the highest in Peru (82%), followed by Uruguay, the Bahamas, Barbados, Bolivia, Paraguay and Ecuador, where the rate exceeded 77%. And Panama, in line with its noteworthy economic performance during this century, registered the greatest increase in this indicator (12 points between 2000 and 2015), in contrast with the decrease of 7 points in Venezuela, 4 points in Bolivia and 3 points in Brazil since 2014.

GRAPH 5.14
Employment rate among adults, ages 25-64, by subregions, 2000-16

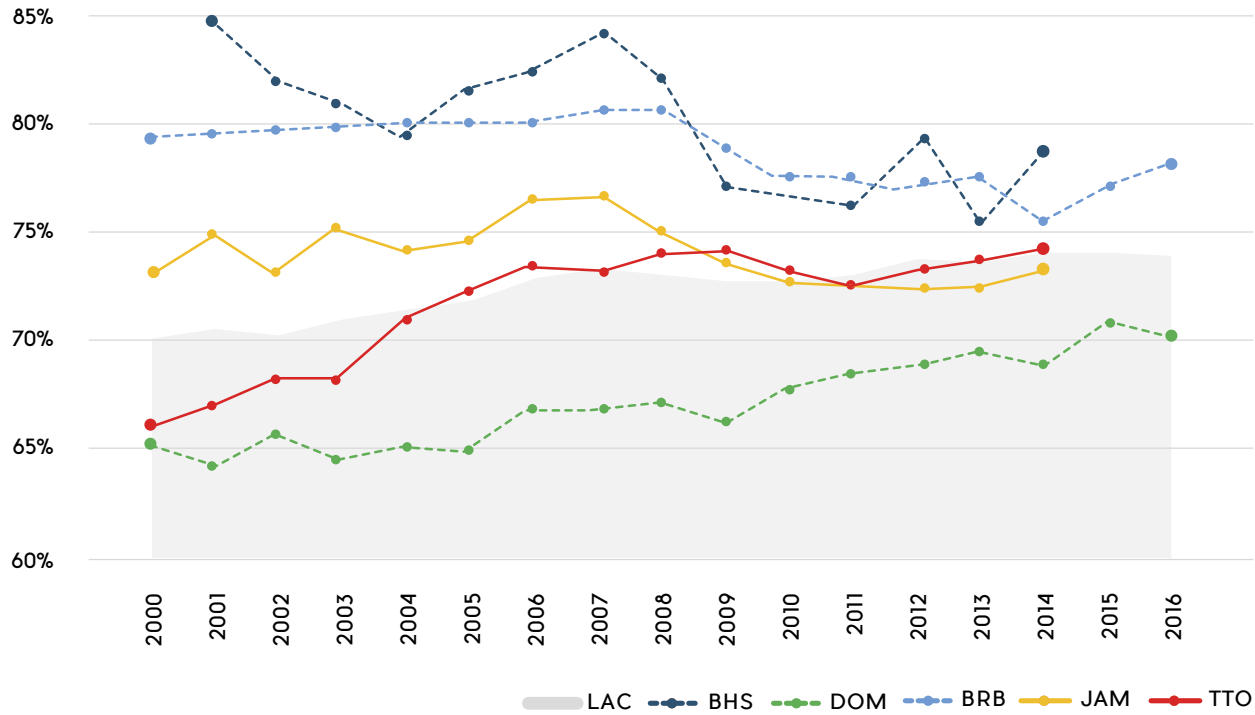
A SOUTHERN CONE



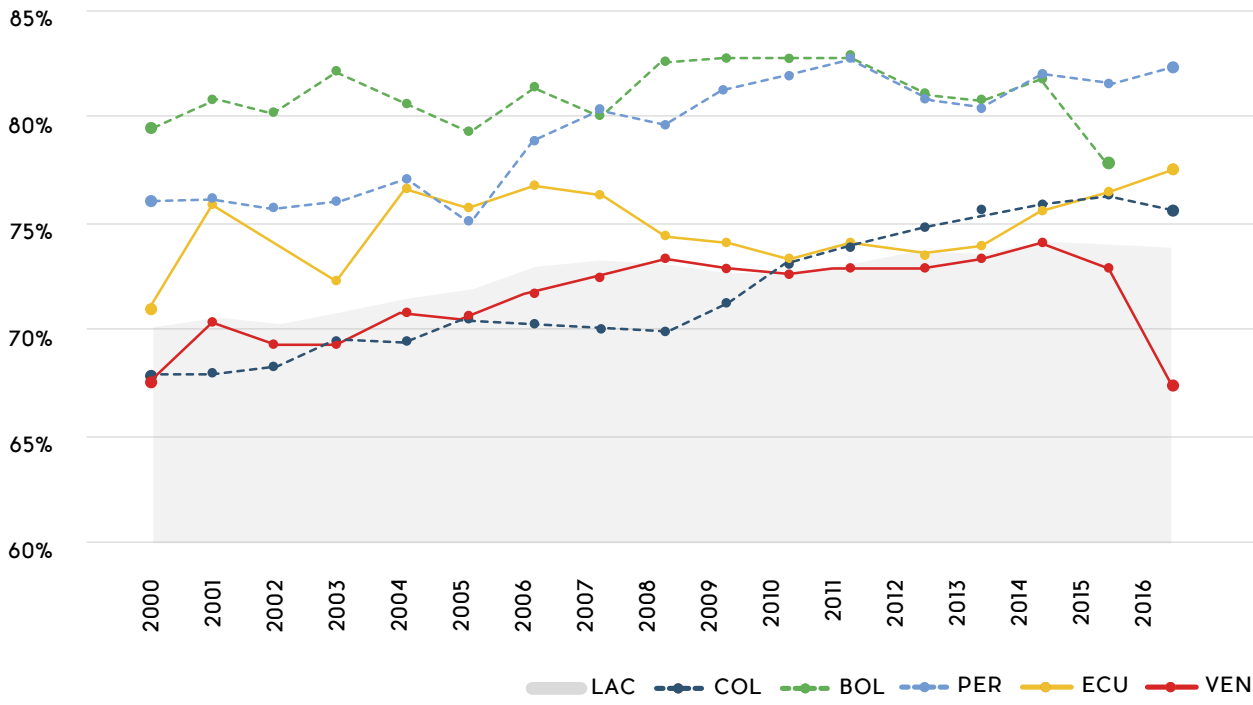
B CENTRAL AMERICA



C THE CARIBBEAN



D ANDEAN



Note: The regional average of LAC (gray area) was calculated taking data from 21 countries.
Source: IDB Harmonized Household Surveys of LAC (2017).

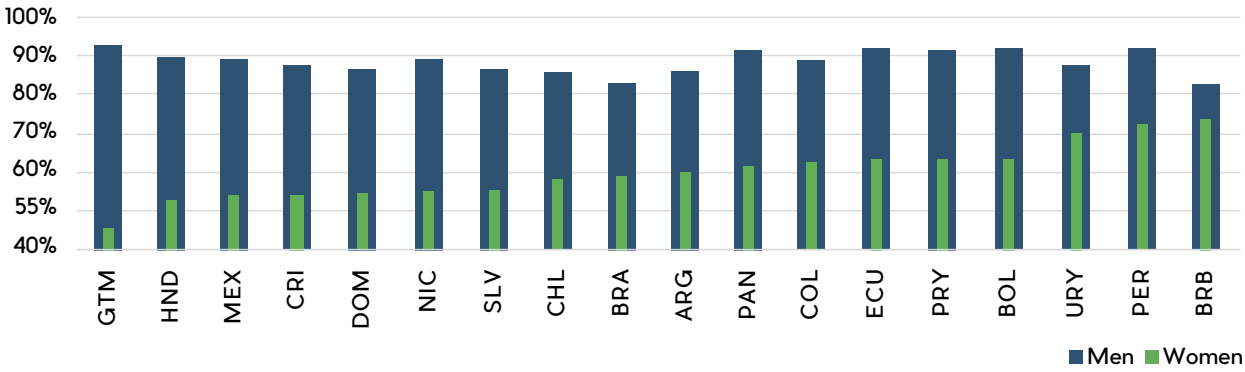
Despite the progress made, the employment rate by gender is significantly higher for men than for women. The average of 18 countries in 2016 shows that an adult male has an 89% probability of being employed while for a woman the probability is only 60% (Graph 5.15). Between countries, the gap is greater; except for Barbados there is a variation of between 18 and 47 percentage points in favor of men.

Unemployment rate

Unemployment is a fundamental variable of the job market because it is the result of the interaction between supply (workforce participation) and demand for labor (rate of employment). In other words, unemployment occurs when the former increases more than the latter. The regional average for unemployment among adults –economically active individuals between 25 and 64 years of age who are unemployed but actively seeking work– declined slightly since the beginning of the new millennium (from 6% in 2000 to 5% in 2016),[7] with variations in time that reflect economic cycles in the region and are, therefore, in line with the trends described in the previous section.

However, since 2014 adult unemployment has increased in 14 of 21 countries, with the exceptions of Panama, owing to its robust economic expansion, and the Caribbean countries which had previously experienced a significant increase beginning in 2008. Although the unemployment levels in the region remain relatively low in the international context (for example, lower than average unemployment in the European Union or North Africa, according to the International Labor Organization (ILO) (ILO 2017), recent results are worrisome due to the indicator's sensibility to the macroeconomic context and the uncertainty of economic outlooks for the region.

GRAPH 5.15
Employment rate among adults, ages 25-64, by gender, circa 2016

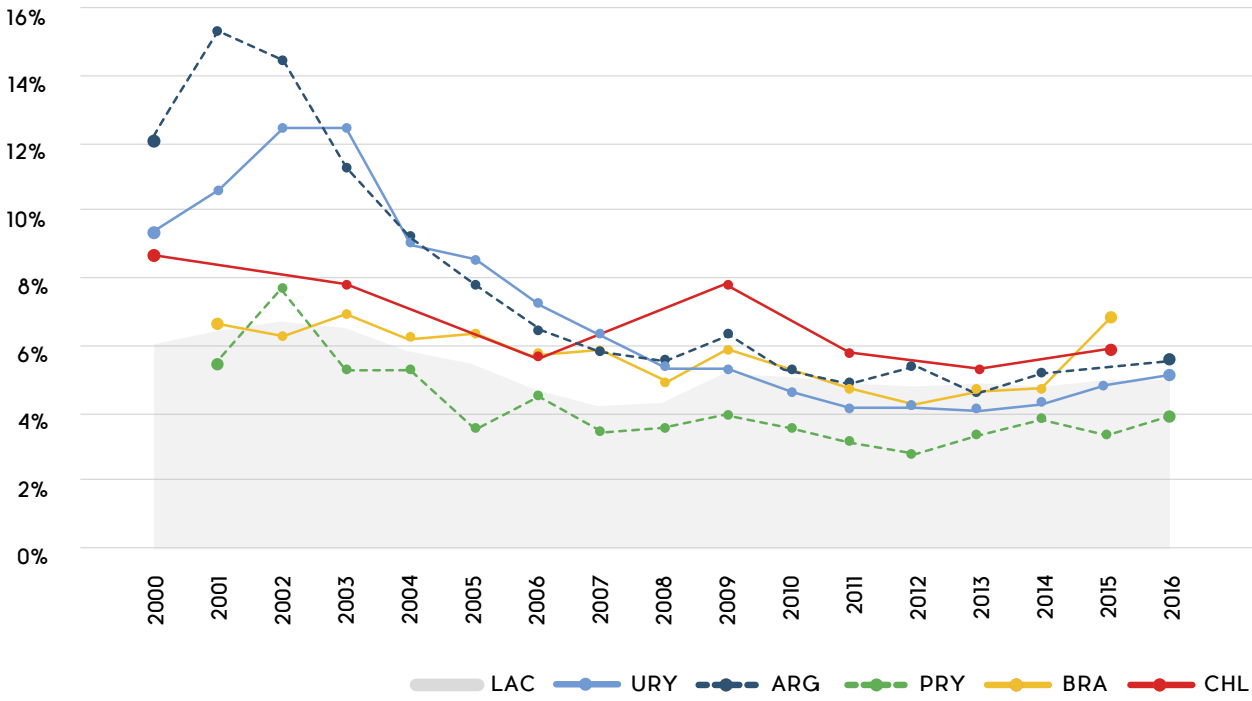


Note: The regional average of LAC (gray area) was calculated taking data from 21 countries.
Source: IDB Harmonized Household Surveys of LAC (2017).

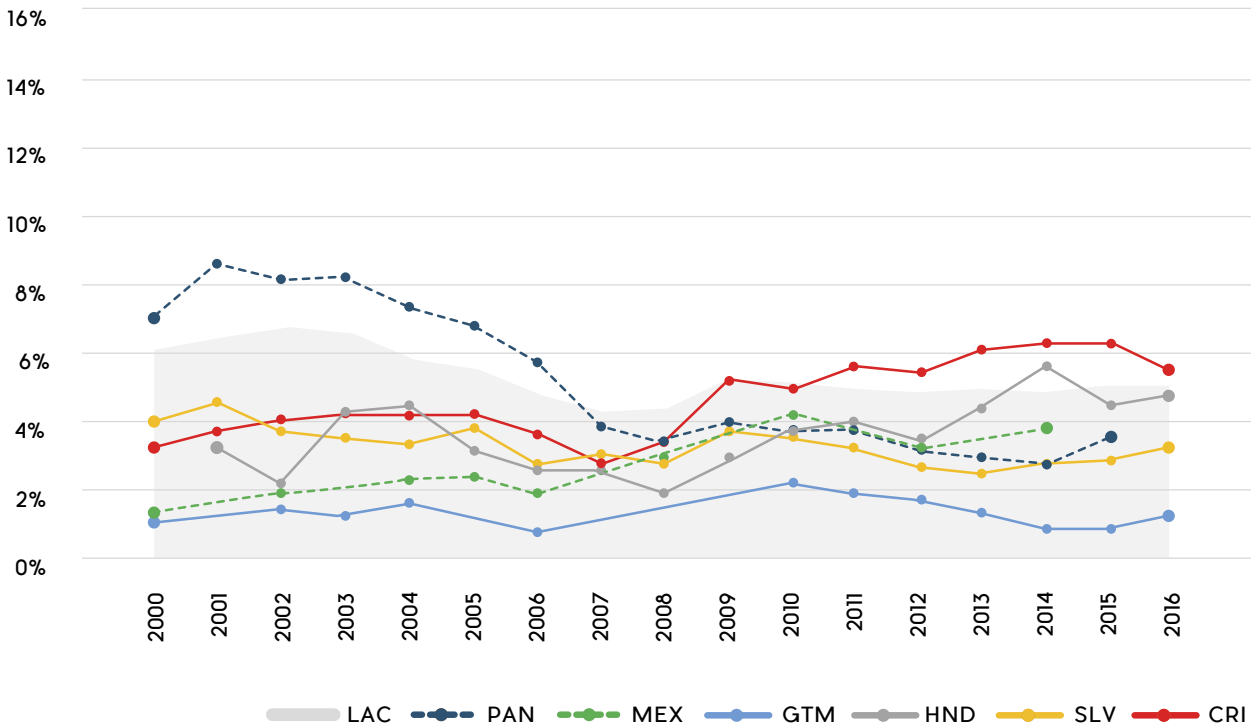
7. According to Alamo et al. (2015), between 2003 and 2013 the drop in unemployment in the region was accompanied by a significant increase in formal employment and in salaries.

GRAPH 5.16
Unemployment rate among adults, ages 25-64, by subregions, 2000-16

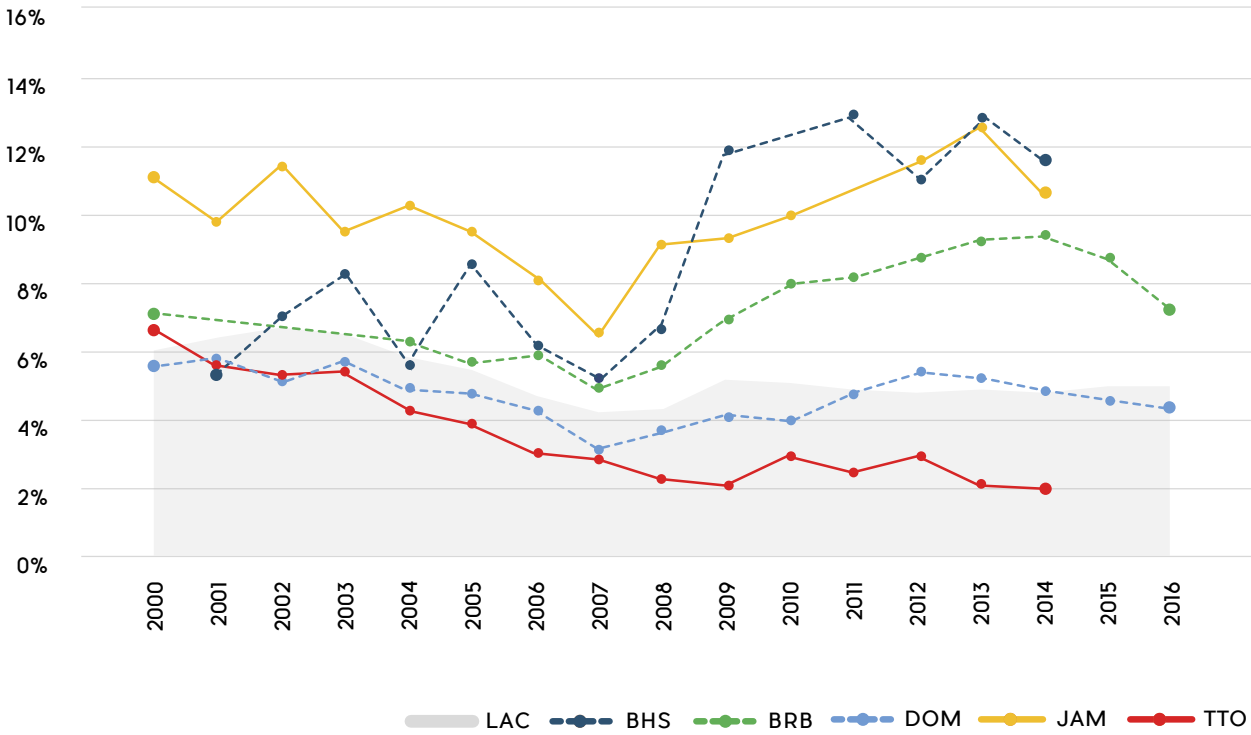
A SOUTHERN CONE



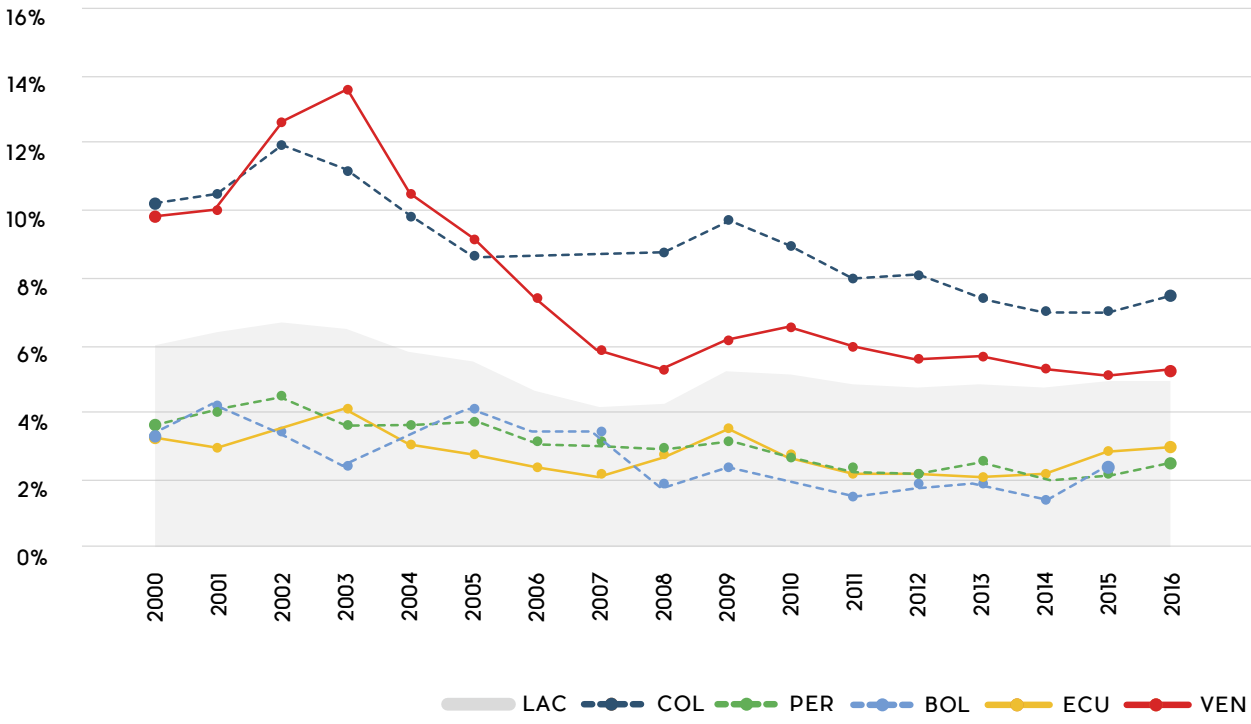
B CENTRAL AMERICA



C THE CARIBBEAN



D ANDEAN



Note: The regional average of LAC (gray area) was calculated taking data from 21 countries.
Source: IDB Harmonized Household Surveys of LAC (2017).

Female labor force participation

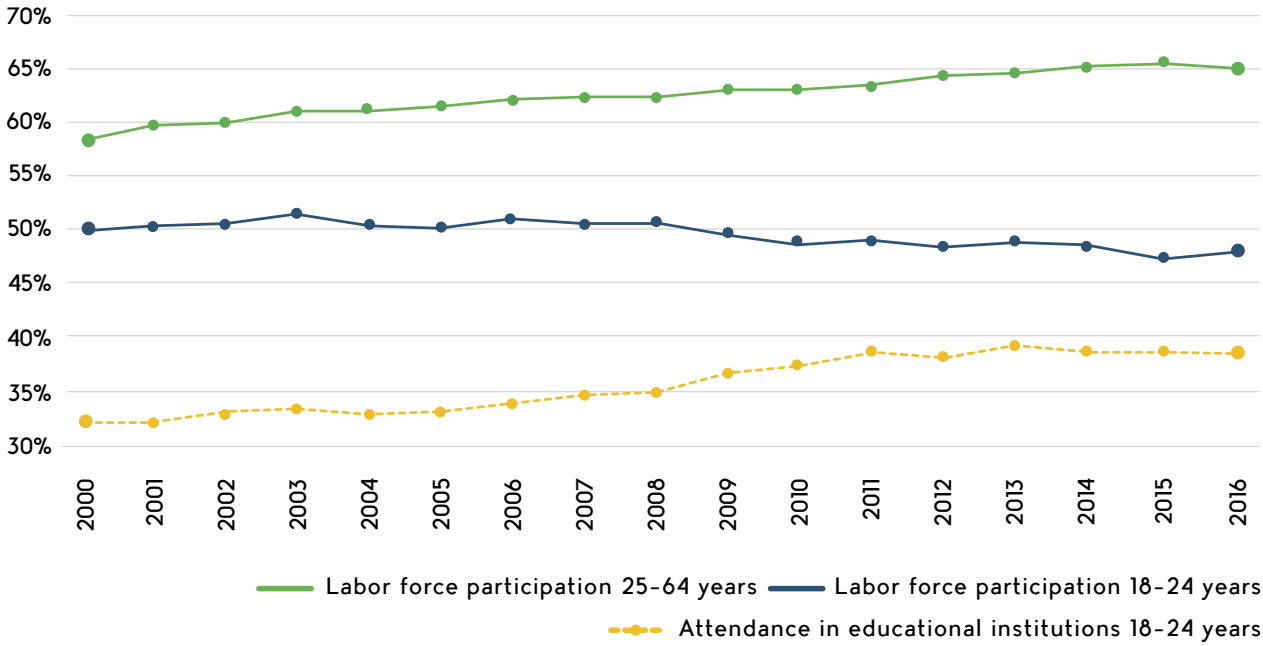
One of the drivers of employment in the region is female employment, which has risen more rapidly than male employment in recent years, particularly in terms of formal and salaried jobs (IDB 2016b). Higher female labor force participation can have a favorable effect on well-being, in society as a whole and in families, as well as on other economic and social indicators (Pagés and Piras 2010; Gasparini and Marchionni 2015).

Labor force participation of adult women –the percentage of women between 25 and 64 years of age who work or actively seek employment– remained without change, on average, since 2014, compared with the increase observed between 2000 and 2014, a period in which the numbers rose from 58% to 65% (Graph 5.17). This trend contrasts with that for young women (women between 18 and 24 years of age), which decreased in the last decade. This is likely associated with the increase in their participation in the educational system. During the same period (2006-16), average school attendance among this age group increased from 33% to 38%.[8]

8. While we do not establish a causal relationship between both variables, it is posible to assume that increased attendance of this group at institutions of tertiary education has prevented the women from greater participation in the workforce. Similarly, it can be supposed that, given that this group is of childbearing age, the women could be disadvantaged in the job market due to some recent institutuional changes, such as the increase in maternity leave in some countries (see Ramírez, Uribe and Vargas [2015], as an example of evidence of this type of cases).

GRAPH 5.17

Regional averages of adult (25-64 years) and youth (18-24) female labor force participation rates and attendance rates for female youth (18-24 years) 2006-16



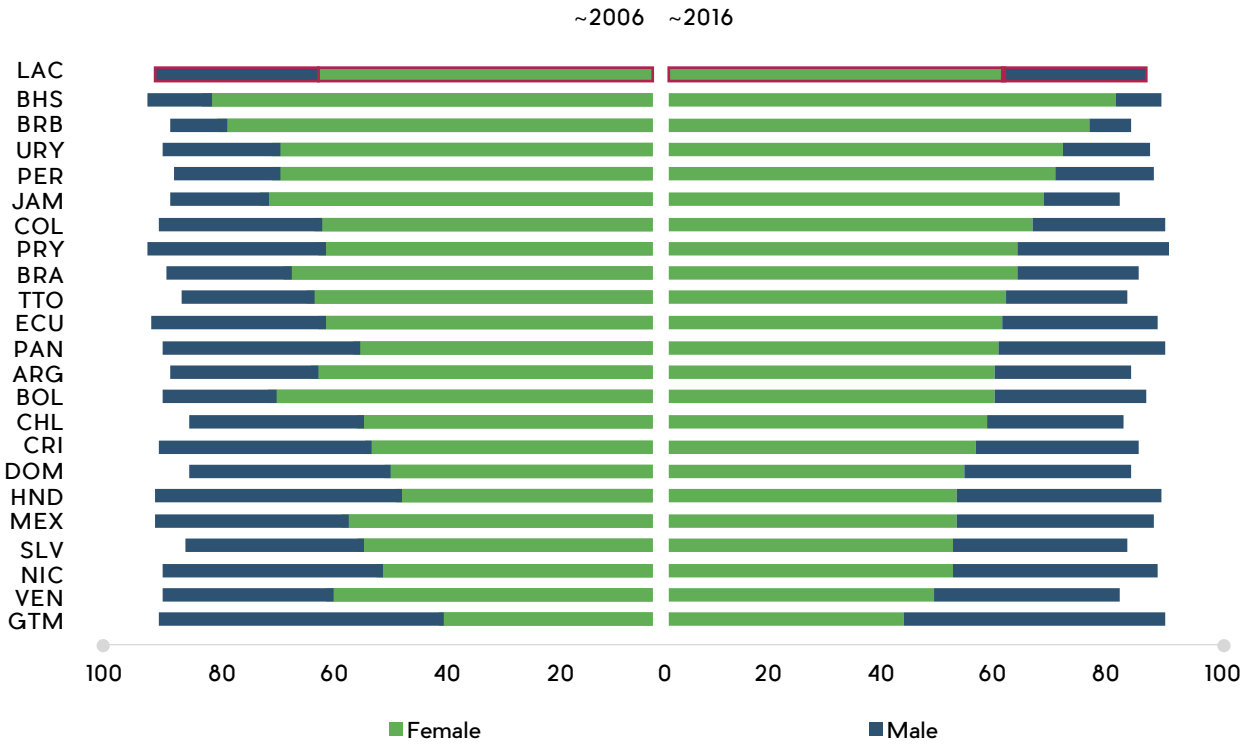
Notes: Labor force participation variables are regional averages based on data from 21 countries. The variable of attendance at an educational institution is a regional average based on data from 18 countries.
Source: IDB Harmonized Household Surveys of LAC (2017).

Despite the increase in female labor force participation in the region, it remains below that of men (61% and 88%, respectively, in 2016) (Graph 5.18). If, during the past decade, masculine participation fell by about one percentage point and female participation rose by two points, the gap between both was reduced by only three percentage points, and there are no signs that the separation will diminish substantially in the short term.

Progress in this matter at the level of countries has been heterogeneous. In the past decade,[9] Panama had the greatest increase in female labor force participation (7.8 percentage points) and the gender gap for this indicator shrank the most in Costa Rica (9 points). On the contrary, gender gaps increased in Bolivia (7.3 points), Mexico (1 point) and Venezuela (2.2 points). Finally, the Bahamas, Barbados and Jamaica stand out because, despite not showing great progress in this indicator in a decade, they have the highest rates of female labor force participation, along with Peru and Uruguay. In contrast, in Guatemala the indicator does not surpass 45% and the rate for males (91%) is more than double that of females.

9. The comparison during the decade is located around 2006 and 2016.

GRAPH 5.18
Labor force participation rates, ages 18-64, by gender, 2006 and 2016



Notes: Data are located around 2006 and 2016, and are ranked according to female labor force participation in 2016. Regional averages of labor force participation are based on data from 21 countries.
Source: IDB Harmonized Household Surveys of LAC (2017).

Contribution of women to household earned income

Increased empowerment and greater economic autonomy in household decisions on the part of women lead to gains in economic and social development. Using estimates with microdata on income and spending surveys for 12 countries of the region and the United States, Acerenza and Gandelman (2017) demonstrate that households in which a woman is the major income earner invest more in education for the family compared with households where the male is the leading provider.

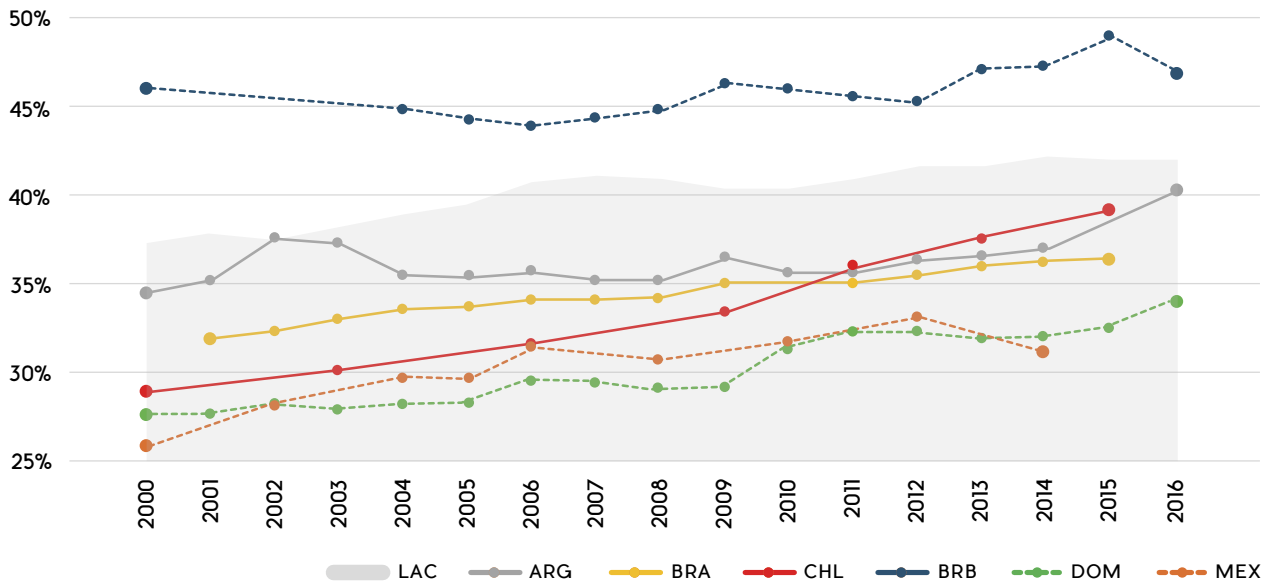
The contribution to family earned income in the region by women has increased from 33% in 2000 to 37% in 2016 (see Graph 5.19).[10] As highlighted in *Social Pulse 2016*, the Caribbean stands out for driving up the regional average. The Bahamas, Barbados and

10. The trend for the region and by countries does not vary greatly when the sample is limited to a predetermined household composition. The increase of the female contribution can reflect advances in terms of employment, hours worked or hourly salaries, but can also be the result of changes experienced by men in the same variables or changes in household composition. To explore whether the trends are robust, the analysis was restricted to households with at least one adult male and adult female, eliminating households with a single woman as head of household and in which the the woman is head of household or caretaker of a minor. With this more limited sample, the average percentage of the female contribution to household earned income has been more moderate during the new millennium, although experiencing similar growth, passing from 27% in 2000 to 31% in 2016.

Jamaica had the greatest female contribution to household earned income in all of LAC, with rates above 45%. In addition, the Dominican Republic, despite showing a relatively low contribution compared with other countries during the period, has maintained a rising trend, making it probable that it will surpass the regional average in coming years. This coincides with the notion described by Flabbi, Piras and Abrahams (2016) that working women in the Caribbean have a greater probability of occupying management positions and, therefore, are better compensated. These authors estimate that, on average, Caribbean companies have 18% of their boards filled by women, a percentage much higher than the average for the entire region (8.5%).

Chile is also one of the countries that shows great advances in this indicator, since it has moved from a rate below 30% at the outset of the new millennium to a rate near 40% in 2015. In contrast, women in Guatemala make the lowest contribution to household earned income in the entire region (below 30%).

GRAPH 5.19
Contribution of women to household earned income (18-64 years), 2000-16



Notes: The regional average (gray area) was obtained with data from 21 countries. Only households with a member aged between 18 and 64 were included, and only the earned income (monetary or non-monetary) of these household members was calculated. Those households with a working income equal to zero were discarded.
Source: IDB Harmonized Household Surveys of LAC (2017).

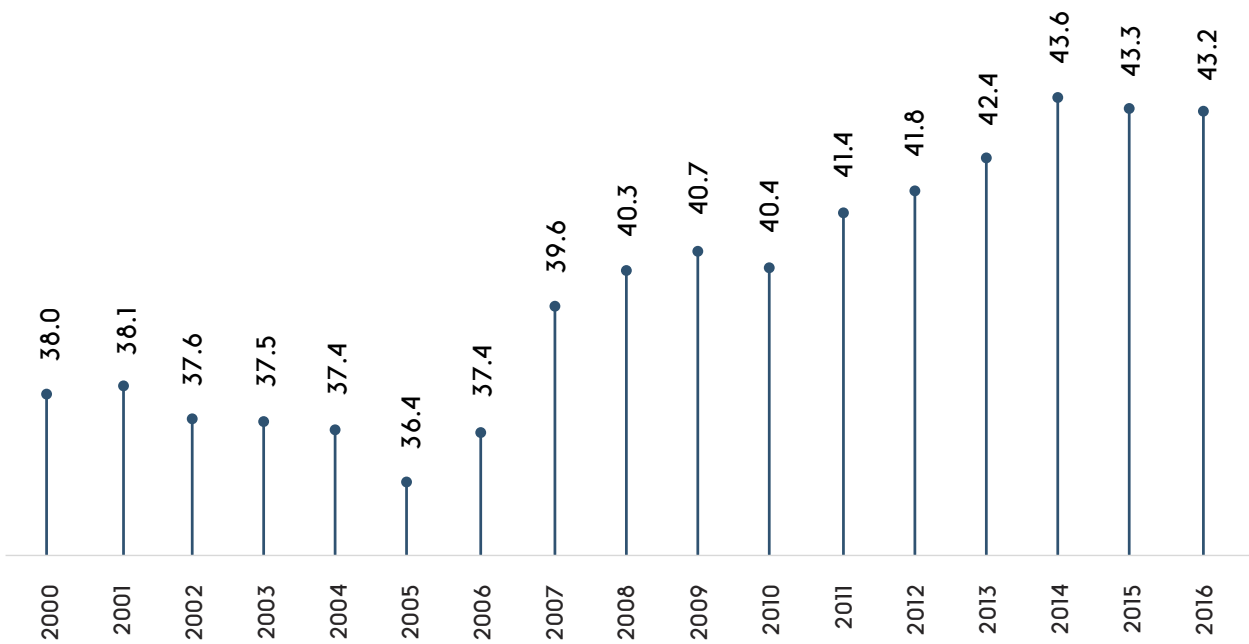
Formal employment

Formal employment provides workers with a series of benefits that improve their quality of life. It gives them the right to social security benefits, such as pensions, health coverage extensive to members of their household, family allowances, unemployment insurance, protection against workplace accidents, among other benefits. Between 2005 and 2014, formal employment of adults –the economically active population from 25 to 64 years of age who make contributions to social security– increased significantly in all LAC countries except for Guatemala and Mexico where no significant changes were observed (see the Statistical Annex of this report). During this period, formal employment in the region increased almost constantly during a decade (panel a of Graph 5.20) at a rate of 0.7% for each percentage point of growth in GDP per capita. However, in the last two years, formal employment declined. In nine of 18 countries, there were drops, and the most pronounced were reported in El Salvador (2.9 percentage points), Costa Rica (1.9 points) and Guatemala (1.7). In the Dominican Republic, Bolivia and Colombia, the indices rose by 2.2, 2.0 and 1.7 percentage points, respectively.

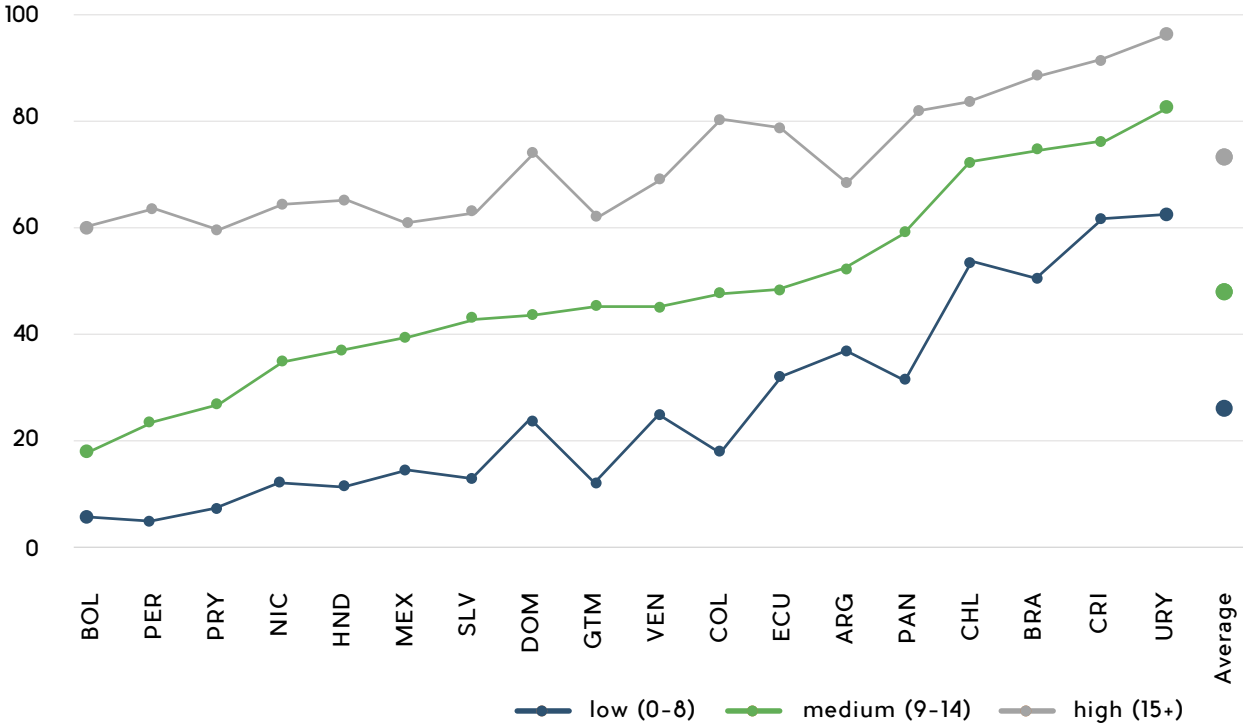
The most recent data show that on average formal employment benefits less than half the region's economically active population (see the Statistical Annex), although this number varies between countries. In Bolivia, Honduras, Guatemala, Nicaragua, Paraguay and Peru, less than one fourth of the labor force holds a formal job, in contrast with Chile, Costa Rica and Uruguay, where more than 70% of workers have formal employment.

GRAPH 5.20
Adults ages 25-64 with formal employment

A BETWEEN 2000 AND 2016 (PERCENTAGE)



B **PER YEARS OF SCHOOLING IN 2016 (PERCENTAGE)**



Source: IDB Harmonized Household Surveys of LAC (2017).

In *Social pulse 2016*, we showed that the gender differences in formal employment in the region are minimal. However, the divergences are wide according to the worker's level of schooling. Access to formal employment grows with the level of education. On average, an adult worker with more than 14 years of studies has a 73% probability of having a formal job, while a worker with nine to 14 years of study has a 48% probability, and another with less than nine years of education has only a 26% likelihood. These divergences are broader in countries where the degree of informal employment is higher.

The macroeconomic context affects formal employment of adults. If this were to grow as in 2005-13, that is, at a rate of 0.7% for each percentage point of growth in GDP per capita, and GDP per capita were to grow by 3% each year in the next decade, formal employment would only rise from 43% in 2016 to 53% in 2026. Thus, economic growth is insufficient for diminishing informal employment. Other important factors are the costs of formalization,[11] workers' education,[12] labor market rigidities, and also workers' perceptions and valuations of costs and benefits of being in the formal sector (social security benefits versus contributions, costs for meeting fiscal and labor regulations vis-à-vis the capacity to meet those costs, benefits of being a formal worker versus benefits of social programs (IDB 2016b).

11.Kugler, Kugler and Herrera-Prada (2017) show for Colombia that reduction of taxes associated with employment increases the probability of formal employment.
12. With the 2016 data on formal employment, GDP per capita and schooling in 18 countries in the region, it can be proven that the variation in formal employment is associated with 26% of the variation in GDP per capita and 64% of the variation in schooling among workers.

OLD AGE

Access to pensions

Today, the population of LAC totals 648 million, of which 8% (52 million) are elderly (65 or more years of age) Due to the demographic transition underway in the countries of the region, the segment of the population growing most rapidly is the elderly, and it is expected that by the end of the decade of 2030, it will include 15% of the total population (United Nations 2015). An aging population is associated with distinct changes of life, such as the passage from work life to retirement, reduction of income and, also, modifications in household roles. For 2016, survey data on households indicates that 15% of the elderly live alone, 28% continue working and 65% continue being the head of household.

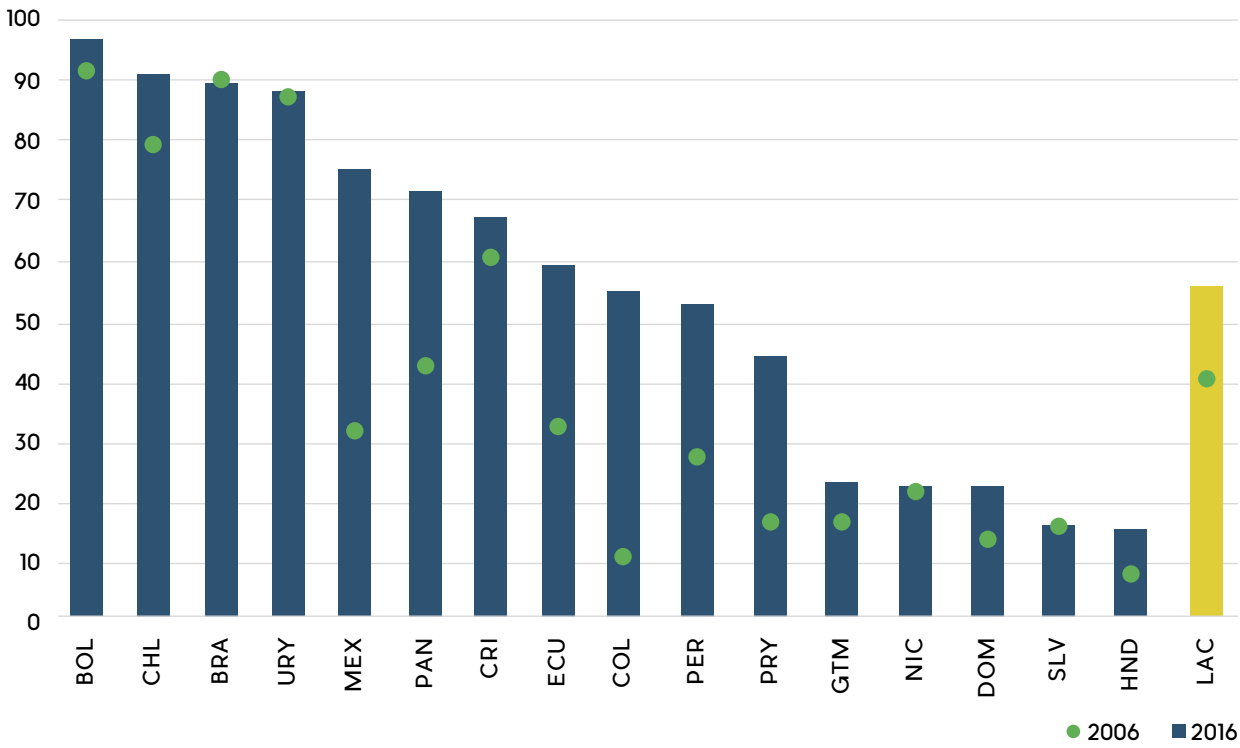
The lack of economic security, due to reduced dependence on earned income, positions the elderly to be more likely to fall into poverty. One of the challenges posed by aging in the region is related precisely to guaranteeing and protecting the incomes of the elderly through pension systems. While the majority of countries have contributory systems that protect those who paid in contributions during their working life, the broadening of coverage in recent years has occurred principally through targeted programs of non-contributory pensions created by governments as part of social assistance, Those programs, which seek to guarantee a basic level of subsistence for the most disadvantaged among the elderly, have had important impacts on various aspects of the well-being of their beneficiaries (Rofman, Apella and Vezza 2015) and, therefore, have been a tool for guaranteeing greater social inclusion in the region.

In the past decade, access of the elderly to a pension (contributory or non-contributory) rose on average by 16 percentage points (panel a of Graph 5.21). In Bolivia, Brazil, Chile and Uruguay, the coverage of pensions remains nearly universal. Limited increases in coverage occurred in El Salvador, Guatemala, Nicaragua, Honduras and the Dominican Republic despite their low level of coverage (no more than 25% of the elderly). Nevertheless, substantial increases have taken place in Mexico (from 30% to 75% between 2006 and 2016), Panama (from 41% to 71%), Ecuador (from 31% to 59%), Colombia (from 10% to 54%), Peru (from 26% to 52%) and Paraguay (from 14% to 43%). Data from household surveys show that access to contributory pensions rose in 10 years by five points and to non-contributory pensions increased 14 points.

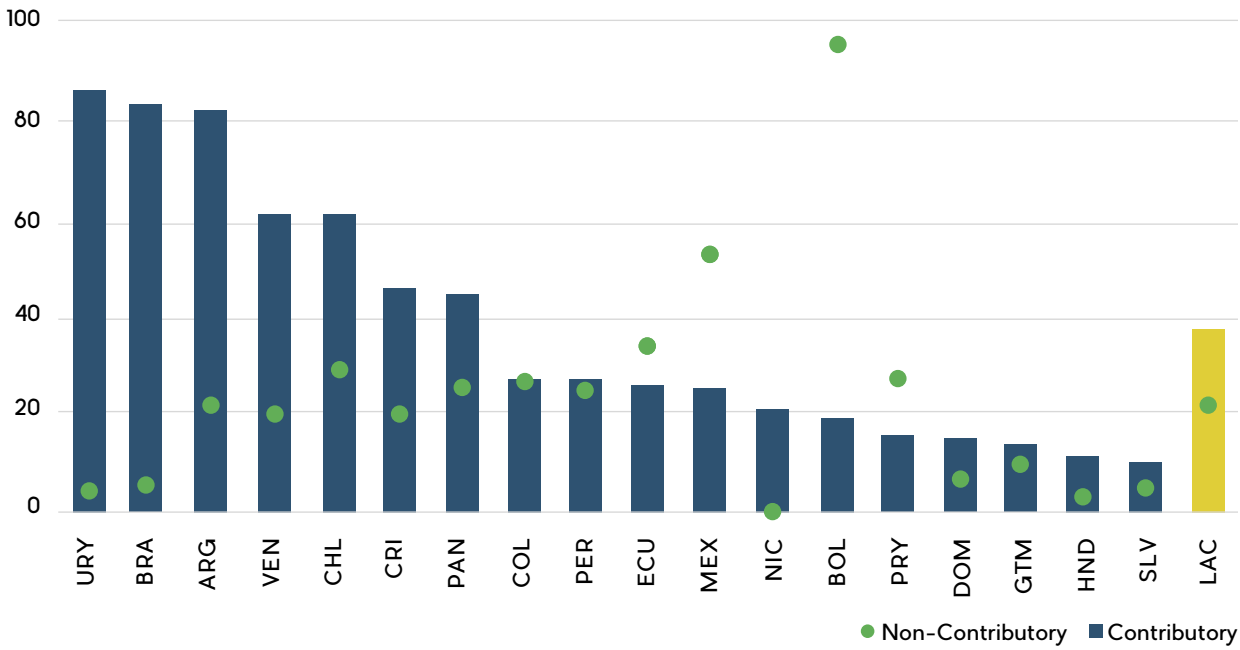
Despite the changes described, contributory pensions continue to predominate, except in Bolivia, Ecuador, Mexico and Paraguay, where non-contributory pensions have greater coverage (panel b). The differences between countries are due in part to the fact that non-contributory pensions in some cases complement the contributory ones, while in others they are directed exclusively to the poor or vulnerable elderly or they are universal (as in Bolivia). In Argentina, Brazil and Uruguay, contributory pensions are not only predominant, but also provide coverage to more than 85% of the elderly. In Colombia and Peru, the

GRAPH 5.21
Pension coverage for adults ages 65 and over (percentage)

A CONTRIBUTORY AND NON-CONTRIBUTORY PENSION



B BY TYPE OF PENSION 2016



Note: The data for the region is the simple average of the countries shown.
Source: IDB Harmonized Household Surveys of LAC (2017).

reach of non-contributory pensions is as broad as the contributory, and in the rest of the countries the coverage of contributory pensions is nearly double that of non-contributory pensions.

Last year, average coverage of pensions for the region (without distinguishing what type of pension) was 39% for the elderly in extreme poverty and 59% for all others. While non-contributory pensions in general are designed above all for serving the elderly with lower incomes, average regional coverage of those pensions reached 32% for the elderly in extreme poverty and 24% for all others. This result suggests that the increase of this type of pensions in recent years would have been accompanied by problems of leakage (non-poor beneficiaries) and undercoverage (extreme poor without benefits), as is detailed in the section on public transfers to households. These pensions are also challenged to confront not only growing fiscal budgets given the aging of the population, but also the disincentives that their expansion can have on savings in contributory systems and on formal employment, given that informal workers receive benefits without paying for them through their wages.

Expansion of coverage based only on the non-contributory components is not sufficient to guarantee acceptable levels of pensions for the entire population. It is necessary to consolidate in laws and institutions the successes to date and, also, to restructure the current pension system, integrating adequately the contributory and non-contributory pillars to achieve universal coverage in a way that is sustainable, equitable and efficient (IDB 2016b). Likewise, within a framework of comprehensive policies, it is necessary to establish programs that promote formalization of jobs and joining social security systems, inform and raise awareness about the benefits of formality, and, finally, that create financially sustainable and fair interventions.

Mortality and noncommunicable diseases

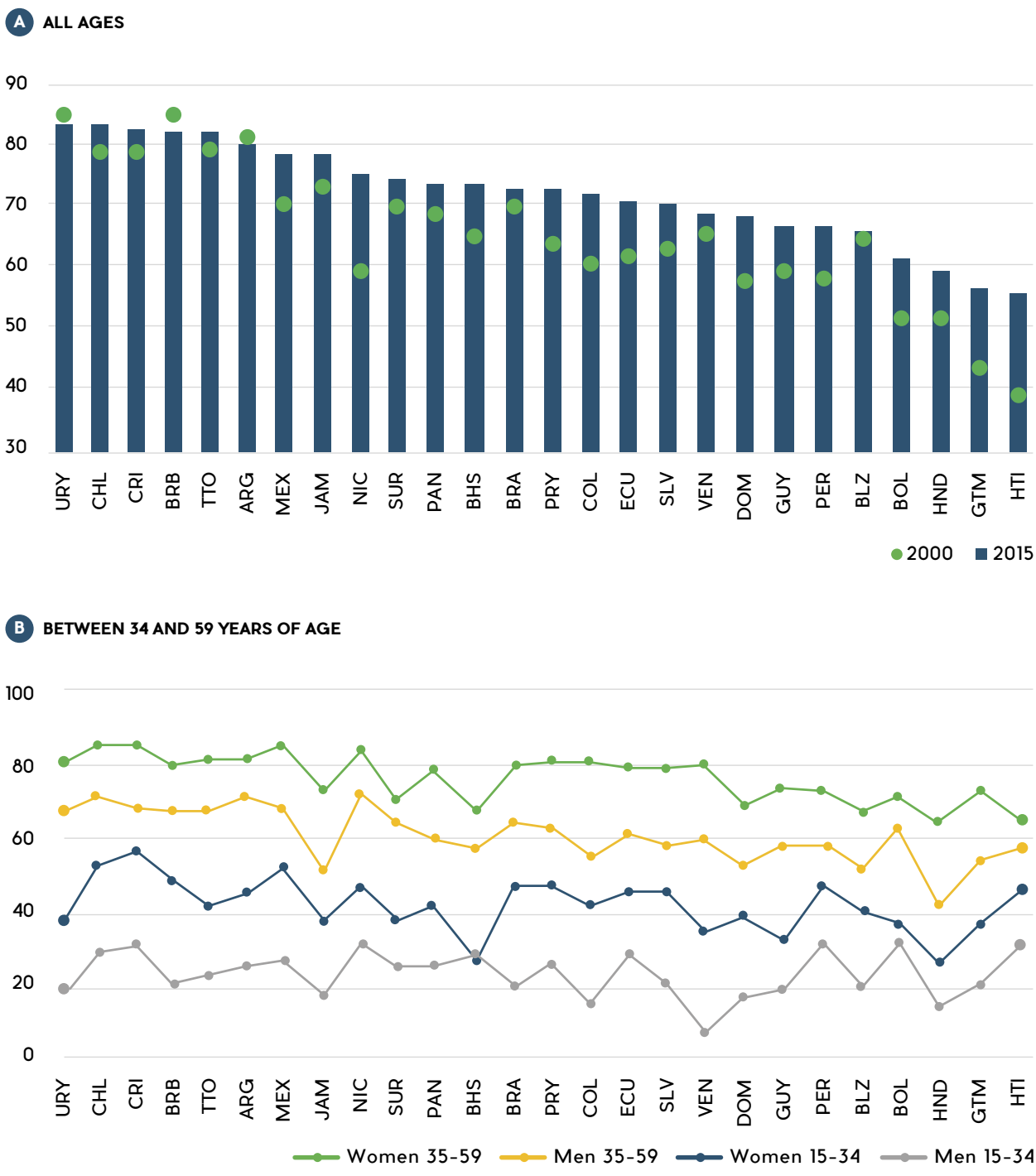
Noncommunicable diseases (NCDs) are the result of a combination of genetic, physical psychological, environmental and behavioral factors. NCDs are responsible for 40 million deaths every year, an amount equal to 70% of the deaths worldwide. The principal NCDs are cardiovascular ailments, which are linked to 17.7 million deaths, followed by cancer (8.8 million), respiratory illnesses (3.9 million) and diabetes (1.6 million) (WHO 2017). In Latin America, the impact of NCDs varies across countries; those most affected are Uruguay, Barbados, Chile, Costa Rica and Trinidad and Tobago (Graph 5.22) which account for more than 80% of total deaths. At the other extreme, Guatemala and Haiti have the lowest percentages of fatalities from these illnesses, although these two countries, together with Nicaragua, are those that experienced the greatest increases in NCDs (about 16 points) between 2000 and 2015.

Although people of all ages are prone to contract an NCD, the most likely candidates tend to be adults between 35 and 59 years of age (a likelihood two times higher than the prevailing rate among people between 15 and 34 years), especially among women (40%

more than among men). Generally, people of any age are exposed to risk factors that favor development of NCDs, such as unhealthy diets, lack of physical activity, consumption of tobacco or excessive consumption of alcohol. These factors, in turn, can lead to increases in arterial pressure, increase of glucose in the blood, excess of lipids in blood and obesity (WHO 2017).

Suffering from NCDs is related to poverty. Since NCDs are silent diseases, it is uncommon for them to be detected in time among the poor. The lack of resources limits access to frequent health monitoring, and in many cases, the illnesses are detected in an advanced stage and treatments can be very costly. Therefore, interventions to prevent and control NCDs can be of fundamental importance.

GRAPH 5.22
Percentage of deaths due to noncommunicable diseases



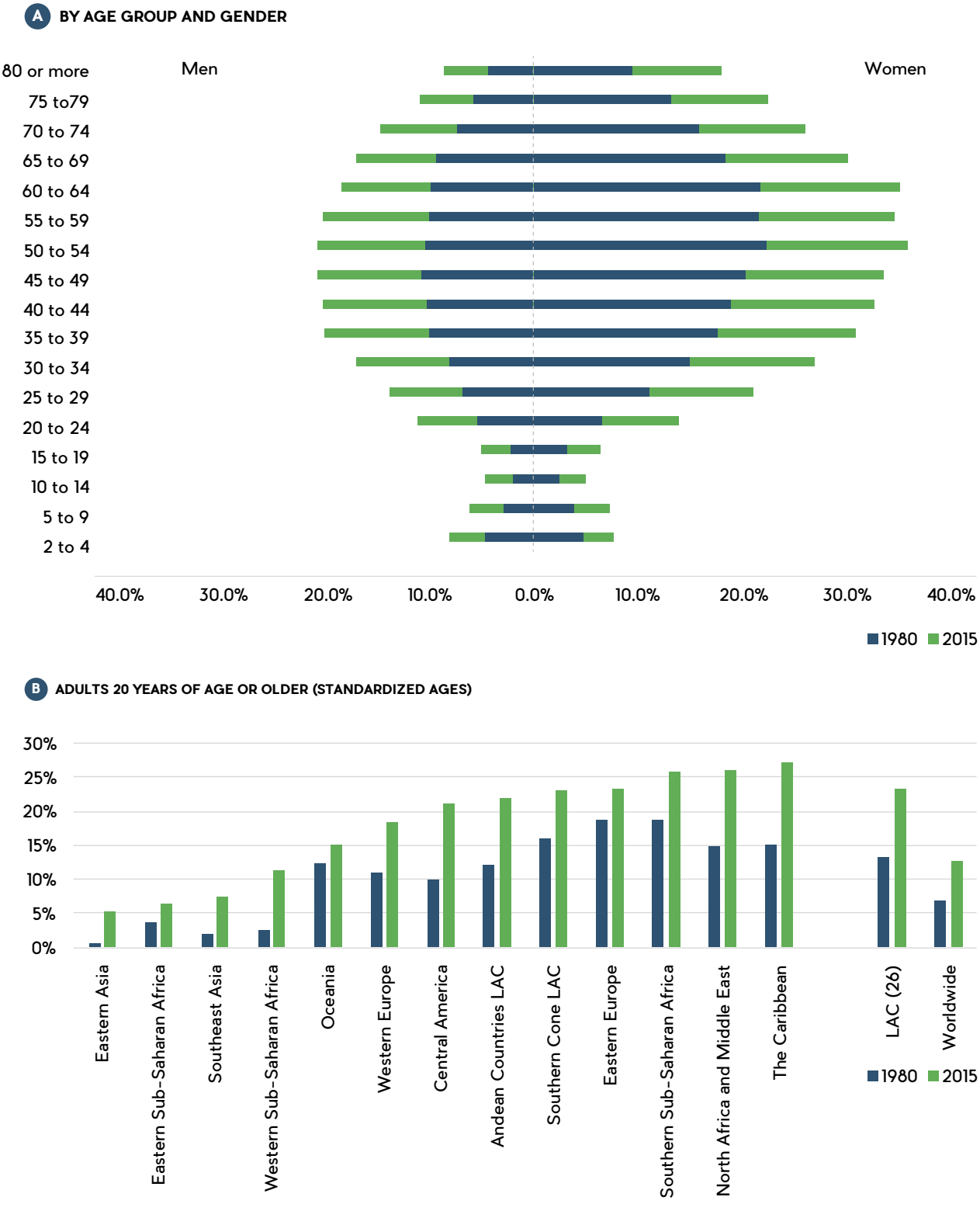
Source: World Bank. World Development Indicators (2017).

Obesity and life cycle

Obesity, defined as a body mass index equal or greater than 30, increased substantially since 1980, in all ages and in both sexes (panel a of Graph 5.23). The indices increased slightly more for women than for men, and the result has been an average regional rate of obesity in 2015 of more than 30% for women between 35 and 69 years and 20% for men in the same age group (double the rate in 1980).

The age profile of a population is strongly associated with obesity worldwide, and LAC is no exception. If we consider the rise in obesity in LAC between 1980 and 2015, an increase from 9.2% to 19.8% for women of all ages and from 5.6% to 12.8% for all men, the shift in age structure, toward an older population with fewer children under 15 years of age, explains the 32% increase in the rate of obesity among women and 24.5% for men. To isolate the influence of demographic changes, standardized ages are commonly used as in panel (b) of Graph 5.23 which examines the changes in obesity rates in different regions of the world. Five of seven subregions with the highest rates of obesity are in Latin America and the Caribbean.

GRAPH 5.23
Obesity in Latin America and the Caribbean, 1980 and 2015



Source: Based on data collected by IHME (2017).

6

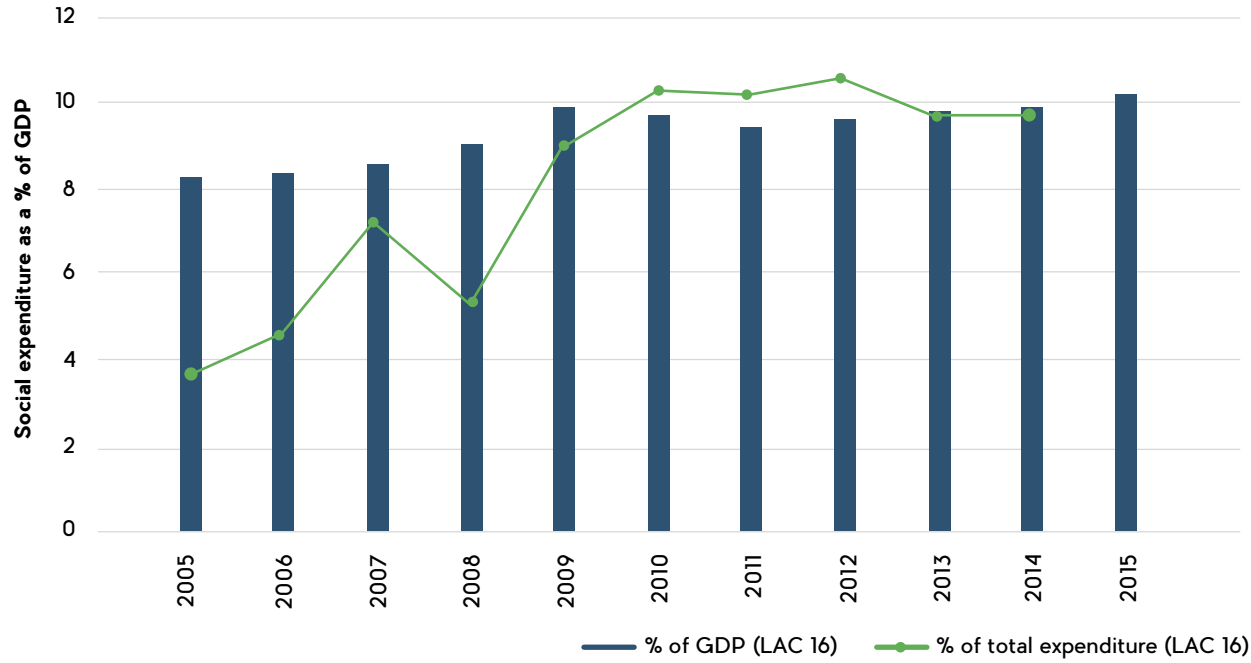
CRITICAL INPUTS

SOCIAL SPENDING

Public social spending covers the expenditures of governmental institutions on health, education, and assistance and social protection, including old-age pensions. As seen in Graph 6.1, this spending in LAC has increased since 2005, both as a percentage of GDP (from about 8% to more than 10%) and as a percentage of total public spending (from less than 50% to about 53%).[13] Graph 6.2 shows that social spending has increased in 11 of 16 countries where data are available. However, this spending represents a much higher percentage of GDP in OECD member countries from outside LAC (21% of GDP on average) and is above 30% of GDP in France and Finland (OECD 2016).

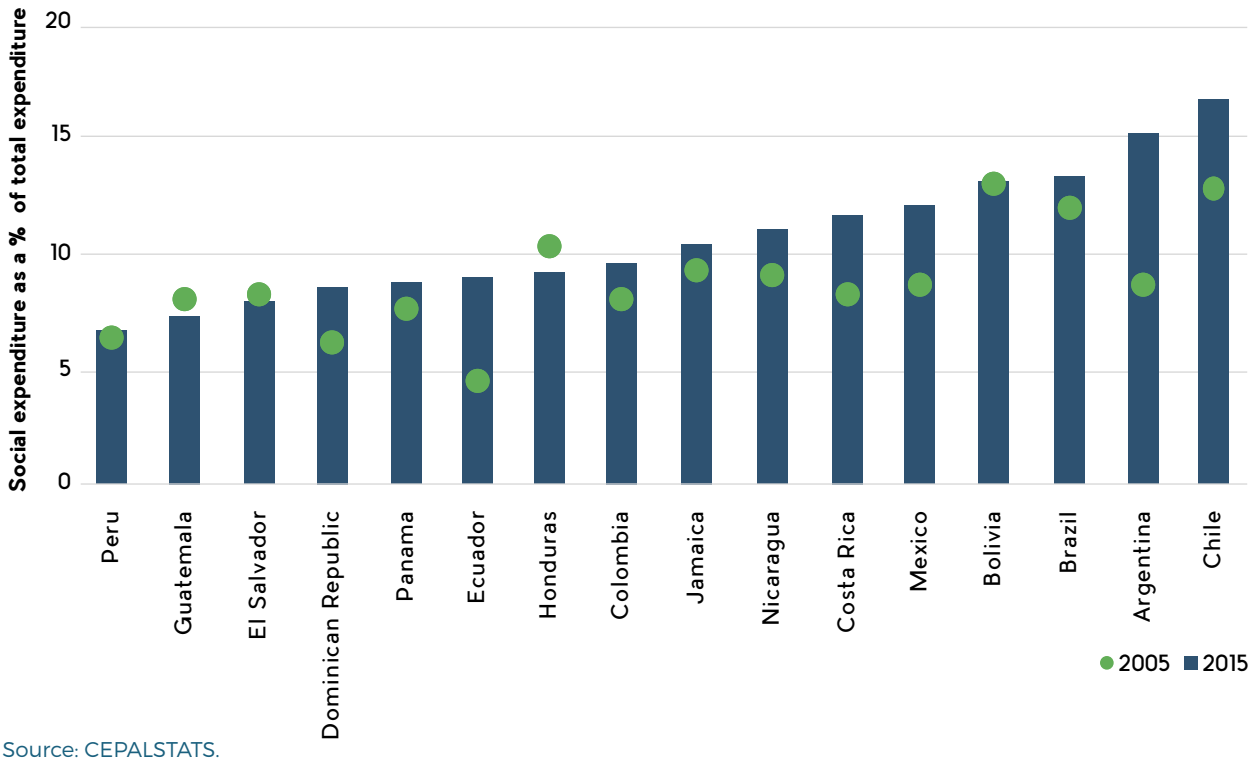
13. UNECLAC has revised its reporting methodology for social spending. A weighted average, based on giving weights to the GDP and the size of social spending, is no longer reported for LAC. The average now is a simple median (CEPALIST).

GRAPH 6.1
Social public expenditure in LAC as a percentage of GDP and percentage of total expenditure



Source: CEPALSTATS.

GRAPH 6.2
Public social expenditure as a percentage of GDP

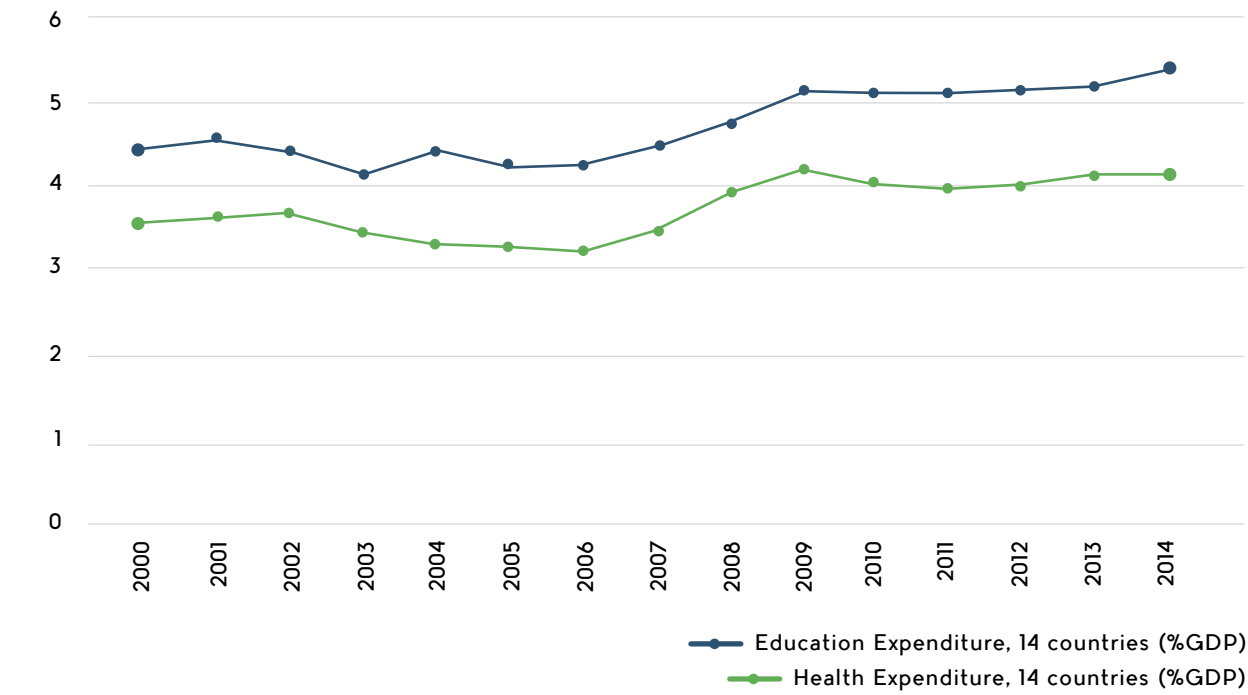


Source: CEPALSTATS.

Expenditures in education and health constitute an important part of total social spending. Weighted trends by country in Graph 6.1 show that government spending on education and health rose modestly between 2000 and 2015, and the greatest part of this growth occurred between 2006 and 2009. The trend of increased public spending on education is more pronounced for secondary education and weaker for primary education, as shown by the regional averages in Graph 6.4. While in 2000 spending on primary schooling surpassed spending on secondary education by a half percentage point, in 2015 spending on both school systems was practically equal. Graph 6.5 shows the rapid growth in spending in Bolivia, Brazil and Costa Rica, where outlays increased by one percentage point in the 15-year period, in contrast with Chile and Peru where expenditures rose by only 0.2 to 0.3 percentage points.

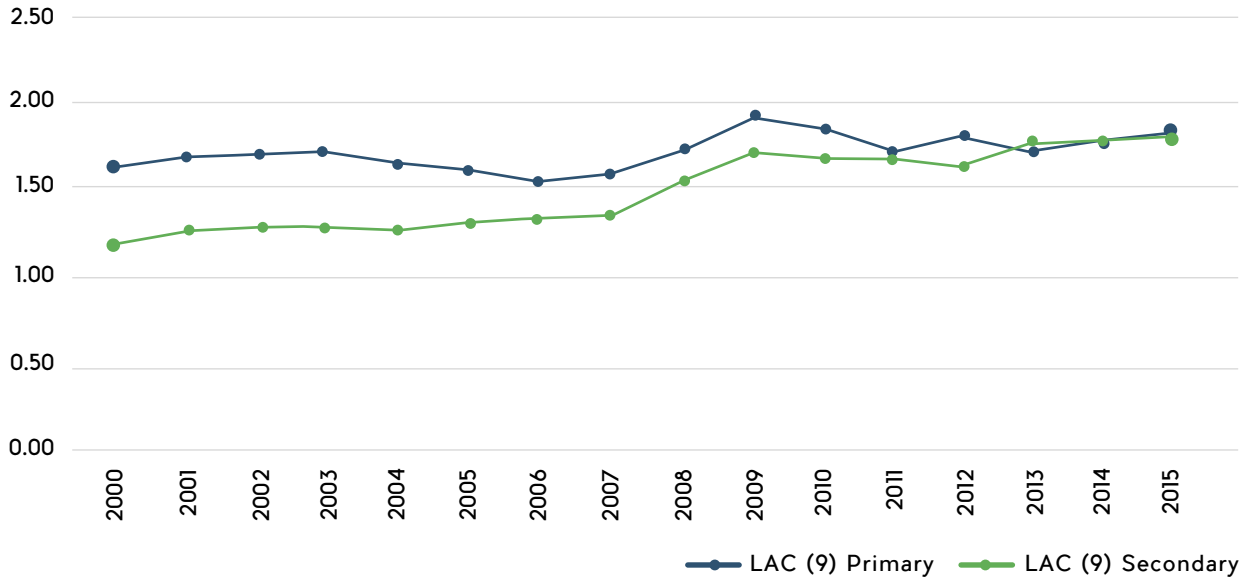
As described in Duryea et al. (2017), there is a wide margin and pressing need to improve the efficiency of social spending. Although macroeconomic conditions have improved in some countries, the design of social policies remains a challenge, given the more restrictive fiscal conditions that generally prevailed during the 2000-2010 decade. To ensure that the less favorable context does not result in setbacks to social gains, and secure ongoing progress in social benefits, it is crucial to continue improving the efficiency of social spending.

GRAPH 6.3
Public expenditure on education and health in LAC (percentage of GDP)



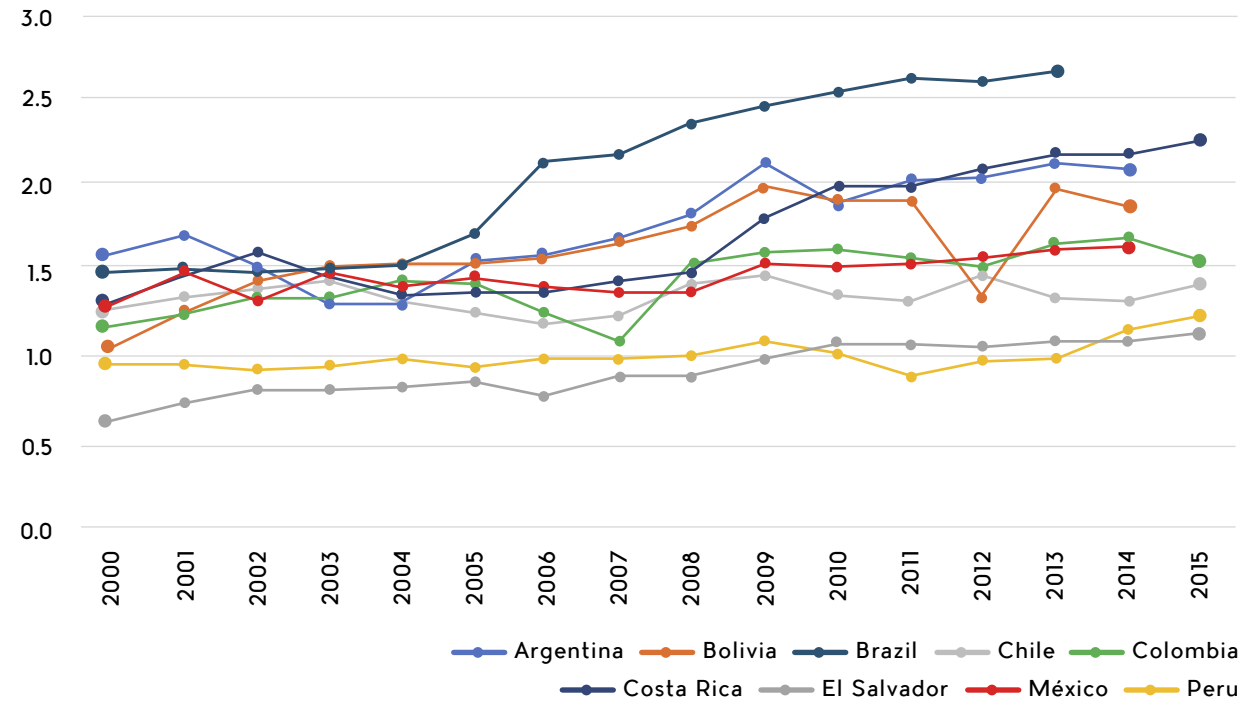
Source: UNESCO (http://data.uis.unesco.org) and WHO Global Health Expenditure Database.

GRAPH 6.4
Public expenditure on primary and secondary education (percentage of GDP)



Source: UNESCO (http://data.uis.unesco.org/).

GRAPH 6.5
Public expenditure on secondary education (percentage of GDP)



Source: UNESCO (http://data.uis.unesco.org/).

PUBLIC TRANSFERS TO HOUSEHOLDS

Since reforms of the region's social programs began and more targeted programs were initiated in the middle of the 1990s, government transfers to households have been one of the line items of public spending that increased the most.[14] At the same time, a significant number of studies has shown the positive effects of these transfers on reducing poverty and inequality (e.g., Azevedo, Inchauste and Sanfelice 2013 and Lustig, López-Calva and Ortiz-Juárez 2013). At the global level, interest in this topic has grown. The agenda of sustainable development goals (SDG) included social protection systems[15] that offer broad coverage to poor and vulnerable people as part of the goals to "end poverty in all its forms and everywhere" (Goal 1) and "reduce inequality within and among countries" (Goal 10).

Conditional cash transfers (CCT) and non-contributory pensions (NCT) are two transfer programs that consume major portions of the total social assistance budgets of countries.[16] CCTs seek to alleviate extreme poverty of households with children and/or pregnant women and aim to reduce the transmission of poverty to the next generation. NCTs are intended to reduce poverty among the elderly who did not make contributions to savings plans during their working life (Ibarrarán et al. 2017; Bosch and Melguizo 2013). In spite of the effects of these programs on various aspects of well-being of their beneficiaries (Bastagli et al. 2016; Rofman, Apella and Vezza 2015), concern is mounting about their performance in some countries (Levy and Schady 2013). CCTs have produced significant increases in the use of health and education services, but have had limited impact on the final outcomes of human capital. Also, it is thought that the increase in transfers in recent years –equivalent to 30%-40% of the net income of beneficiaries in some cases– could be affecting incentives for working or for formal employment. Meanwhile, NCPs embody the challenge of meeting not only their expanding budgets, given the aging of the population, but also the disincentives that NCP expansion can mean for saving in contributory systems and for formal employment, given that informal workers receive social assistance without having paid for it from their salaries.

Based on the latest national household surveys, Tables 6.1 and 6.2 show the coverage and distribution of beneficiaries of CCTs and NCPs according to the level of poverty of the population. The levels are defined based on family income without the transfers of these programs and international poverty lines (in US dollars according to the PPP of 2011).[17] The extreme poor live in households with per capita income below $3.1 per day; the moderately poor have incomes of between $3.1 and $5 per day, and the non-poor have incomes above $5. We define as beneficiaries of CCTs those who live in households with at least one member under 18 years of age, and recipients of CNPs as those who

14. Spending on social assistance rose five-fold, from 0.3% of GDP in 2000 to 1.5% in 2015 (World Bank 21017a).
15. Social assistance programs, social security programs and passive and active labor market programs.
16. For example, 98% in Bolivia, 92% in Costa Rica, 85% in Brazil, 88% in Honduras, 76% in Uruguay (World Bank 2017b).
17. We use the same criteria as Robles, Rubio and Stampini (2015).

live with at least one household member more than 64 years old who does not receive a contributory pension. Specifically, we compare the undercoverage (percentage of extreme poor not covered by the program) and leakage (percentage of program beneficiaries who are not poor) of the CCTs and CNPs.[18] Undercoverage measures the need for additional resources to reach the target population and, therefore, is associated with the efficacy of the program in serving this group. Leakage measures the inappropriate use of resources by persons who should not receive benefits and, therefore, is associated with the efficiency in usage of program resources.

18. Examination of the results of these measurements must consider that the extreme poor are not the target population of all the programs.

TABLE 6.1
Coverage and distribution of beneficiaries of CCT programs according to poverty status (percentages)

Country	Year	Program	Coverage			
			Extreme poverty	Moderate poverty	Non-poor	Total
Bolivia	2015	BJP	77.6	77.3	63.4	67.8
Brazil	2015	BF	65.7	46.3	14.3	30.2
Chile	2015	SSyOO	27.6	31.0	15.4	16.2
Colombia	2016	FA	48.6	38.0	15.1	24.2
Costa Rica	2016	AV	25.2	25.4	13.0	14.8
Dom. Rep.	2016	PCS	49.3	42.9	27.0	33.3
Ecuador	2016	BDH	45.9	29.1	10.1	19.4
El Salvador	2015	CSRU	14.9	7.4	1.9	5.5
Guatemala	2014	MBS	37.6	21.6	8.0	23.1
Honduras	2016	BVM	41.4	17.0	8.2	23.7
Mexico	2015	PPIS	54.6	30.9	12.6	22.6
Panama	2015	RDO	47.4	26.3	4.8	13.6
Paraguay	2016	TKO	42.9	27.9	5.3	12.3
Peru	2016	JUN	57.5	40.9	8.3	18.0
Uruguay	2016	AF	96.4	89.8	38.1	46.0
Average			48.8	36.8	16.4	24.7

Country	Year	Program	Distribution			
			Extreme poverty	Moderate poverty	Non-poor	Total
Bolivia	2015	BJP	20.0	16.5	63.5	100
Brazil	2015	BF	45.8	20.6	33.6	100
Chile	2015	SSyOO	2.4	7.4	90.2	100
Colombia	2016	FA	32.4	25.6	42.0	100
Costa Rica	2016	AV	13.3	11.4	75.4	100
Dom. Rep.	2016	PCS	23.1	23.2	53.7	100
Ecuador	2016	BDH	40.2	25.1	34.7	100
El Salvador	2015	CSRU	48.4	30.6	21.0	100
Guatemala	2014	MBS	68.3	18.4	13.3	100
Honduras	2016	BVM	73.9	12.0	14.1	100
Mexico	2015	PPIS	38.2	25.2	36.6	100
Panama	2015	RDO	56.2	17.5	26.3	100
Paraguay	2016	TKO	38.5	28.2	33.3	100
Peru	2016	JUN	38.2	26.7	35.1	100
Uruguay	2016	AF	14.2	14.9	70.9	100
Average			36.9	20.2	42.9	100

Source: IDB Harmonized Household Surveys of LAC.

TABLE 6.2
Coverage and distribution of beneficiaries of the NCPs by poverty status (percentages)

Country	Year	Program	Coverage			
			Extreme poverty	Moderate poverty	Non-poor	Total
Bolivia	2015	RDIG	96.1	97.0	95.5	95.8
Brazil	2015	BPC	64.9	45.5	16.2	30.4
Chile	2015	PBS	96.9	91.3	70.7	72.4
Colombia	2016	PCM	67.2	59.7	27.7	38.0
Costa Rica	2016	RNCP	74.6	57.6	32.7	40.3
Dom. Rep.	2016	AAM	9.4	8.4	4.0	5.9
Ecuador	2016	PAM	73.7	61.0	37.5	48.5
El Salvador	2015	PBU	14.6	8.2	2.7	5.8
Guatemala	2014	AM	13.7	9.4	6.6	10.1
Mexico	2015	PAMA	53.6	41.0	32.9	38.0
Panama	2015	AEAM	52.6	48.2	44.7	47.2
Paraguay	2016	PAMP	57.6	45.9	22.2	29.9
Peru	2016	PEN65	64.3	49.1	13.8	24.8
Average			56.8	47.9	31.3	37.4

Country	Year	Program	Distribution			
			Extreme poverty	Moderate poverty	Non-poor	Total
Bolivia	2015	RDIG	28.0	13.0	59.0	100
Brazil	2015	BPC	41.3	14.6	44.1	100
Chile	2015	PBS	3.4	6.2	90.4	100
Colombia	2016	PCM	26.5	21.2	52.3	100
Costa Rica	2016	RNCP	26.6	9.4	64.0	100
Dom. Rep.	2016	AAM	34.5	22.0	43.4	100
Ecuador	2016	PAM	31.5	18.6	49.9	100
El Salvador	2015	PBU	42.5	28.7	28.8	100
Guatemala	2014	AM	56.9	17.6	25.5	100
Mexico	2015	PAMA	24.7	19.1	56.2	100
Panama	2015	AEAM	29.5	10.7	59.8	100
Paraguay	2016	PAMP	24.7	20.5	54.8	100
Peru	2016	PEN65	35.0	23.5	41.6	100
Average			31.2	17.3	51.5	100

Source: IDB Harmonized Household Surveys of LAC.

The charts show that, despite the reach of CCTs and CNPs in the region today (24% and 36% of the population in households with at least one child below 18 years of age and an elderly adult over 64 years old who does not receive a contributory pension, respectively), there is insufficient coverage among the extreme poor and a high leakage among the non-poor. In other words, there is space for improving the efficacy and efficiency of spending on these programs. CCTs benefit only half the population that lives in households with children in extreme poverty and, at the same time, serve 42% of the population that is not poor. Meanwhile, the CNPs benefit only 54% of the population in households with elderly people in extreme poverty and, at the same time, benefit 52% who are not poor. While all countries follow this pattern, the CCTs of Costa Rica, Chile, El Salvador and Guatemala are the least effective: on average, they benefit only 26% of the extreme poor. Those of Chile and Costa Rica have, at the same time, the highest percentages of non-poor beneficiaries. The CCTs of Bolivia and Uruguay also display high levels of undercoverage (extreme poor who are not served) and high levels of leakage (non-poor who are recipients). In the case of CNPs, in Guatemala, El Salvador and the Dominican Republic, more than 80% of the elderly in extreme poverty and lacking contributory pensions do not benefit. In Chile, Costa Rica, Mexico and Panama, the problem is more concentrated in leakage: more than half the beneficiaries of CNPs are not poor. In Mexico, there is a high degree of undercoverage. In Bolivia, since CNPs are universal, that is, they benefit all elderly persons regardless of their state of poverty, leakage reaches 59%.

From this information, it is easy to deduce that if extreme poverty affects 16% of the population of the 15 countries studied, the CCTs cover 25% of the population, 43% of the beneficiaries are not poor and 51% of people living in extreme poverty are not covered, a redistribution that eliminates transfers to the non-poor and channels them to extreme poor who do not receive them would succeed in getting CCTs to 100% of the extreme poor and, in addition, would produce fiscal savings since 0.25x0.43 > 0.51x0.16. Despite this evidence and data showing the reduction of extreme poverty and inequality in the region in recent years, no government except for Ecuador has taken drastic action to improve performance of the CCTs. The Human Development Bond (known by its Spanish acronym BDH) program is the umbrella for both the CCTs and NCPs of Ecuador which currently transfer $50 monthly to poor households conditioned on meeting co-responsibilities for improving the capacities of children, and $50 to the elderly and vulnerable disabled who are not affiliated with a public protection system.[19]

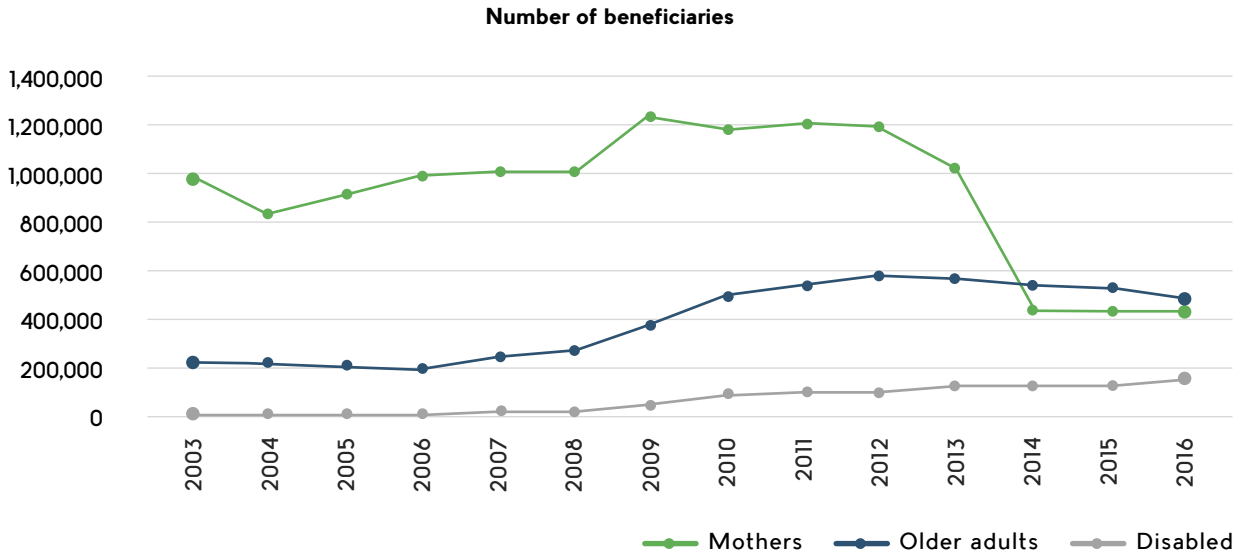
In 2013, Ministerial Agreement No. 197 dated March 28 ordered the exclusion from the data base of citizens eligible for BDH payments to persons (i) placed above a minimum level of well-being established with the Social Registry Survey of the Coordinating Ministry of Social Development, (ii) with at least one household member who receives a salary of more than $280 from the State, and (iii) who receive a social security pension. The responsible

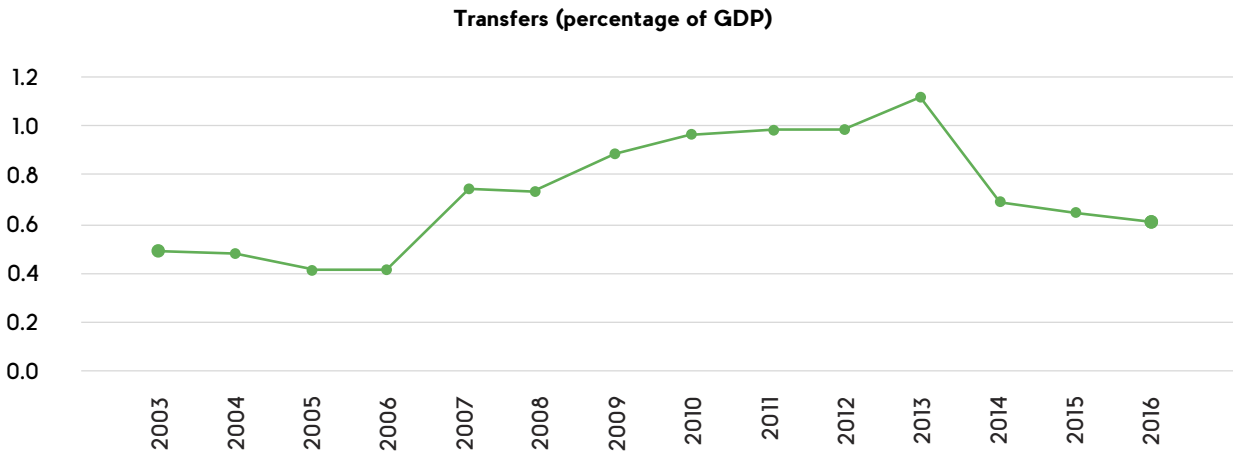
19. For additional details, see www.inclusion.gob.ec/bono-de-desarrollo-humano1 .

agency, the Vice ministry of Non-contributory Insurance and Social Mobility, using the identification data of the Social Registry Survey to update information on beneficiaries and cross these data with various public entities, managed to reduce the number of beneficiaries by half between 2013 and 2014, and spending on BDH transfers dropped by 45% (Graph 6.6). It is worth pointing out that between 2000 and 2016 Ecuador reduced substantially its total poverty levels from 64% to 23%, extreme poverty fell from 40% to 9% and the Gini coefficient declined from 0.57 to 0.47.

The data from Ecuadorean household surveys (INEC 2017) make it possible to know how changes in the number of beneficiaries and in the BDH budget could have affected the conditions of poverty and inequality in the country. If we define all people in households with at least one member who receives transfers from the program as BDH beneficiaries and the condition of poverty is estimated using net family income (without transfers) and the national lines of poverty, the results are shown in Graphs 6.7 and 6.8.

GRAPH 6.6
Number of beneficiaries and amount of transfers from the BDH of Ecuador

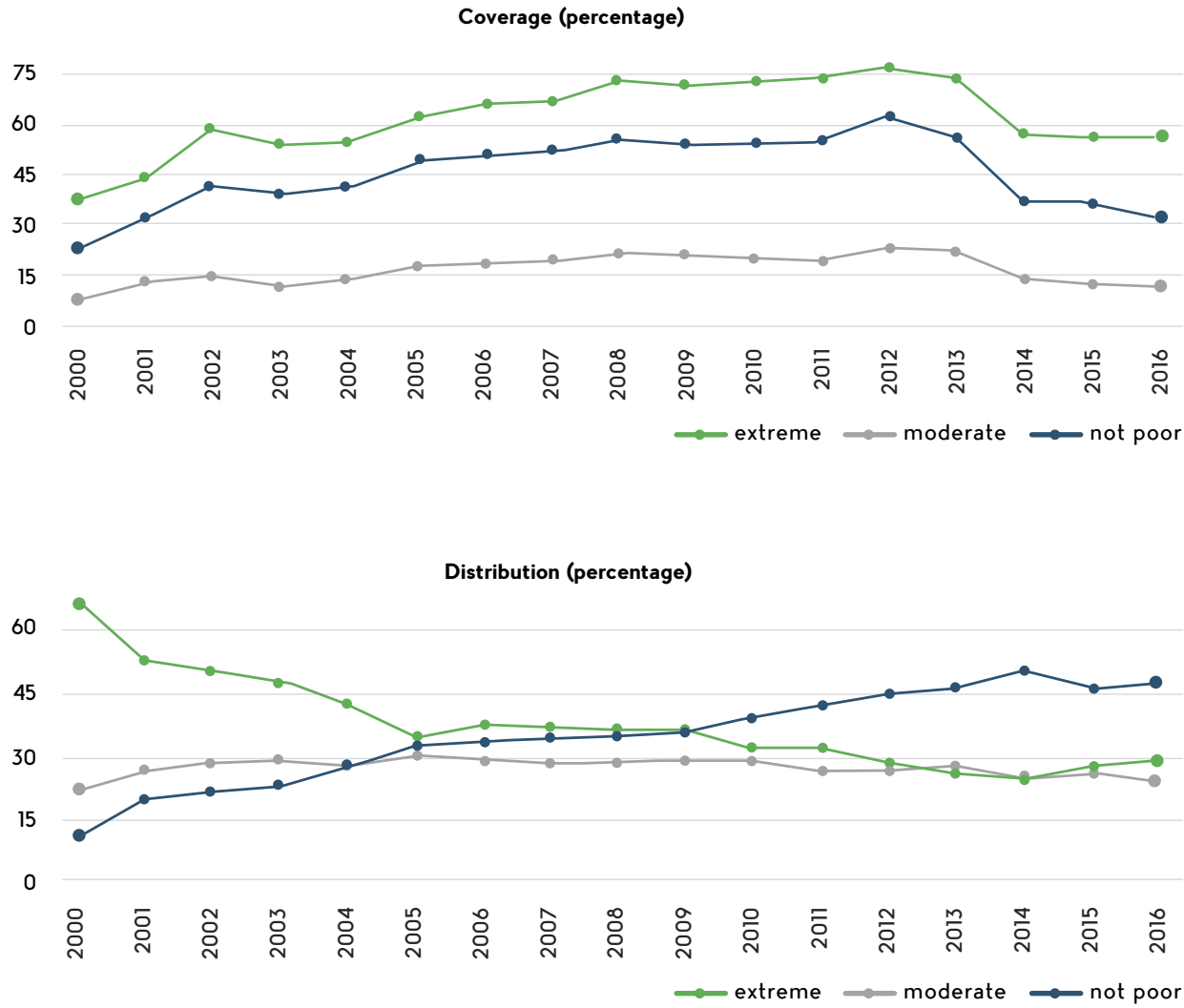




Source: Social Development Coordination Ministry of Ecuador (2017).

GRAPH 6.7

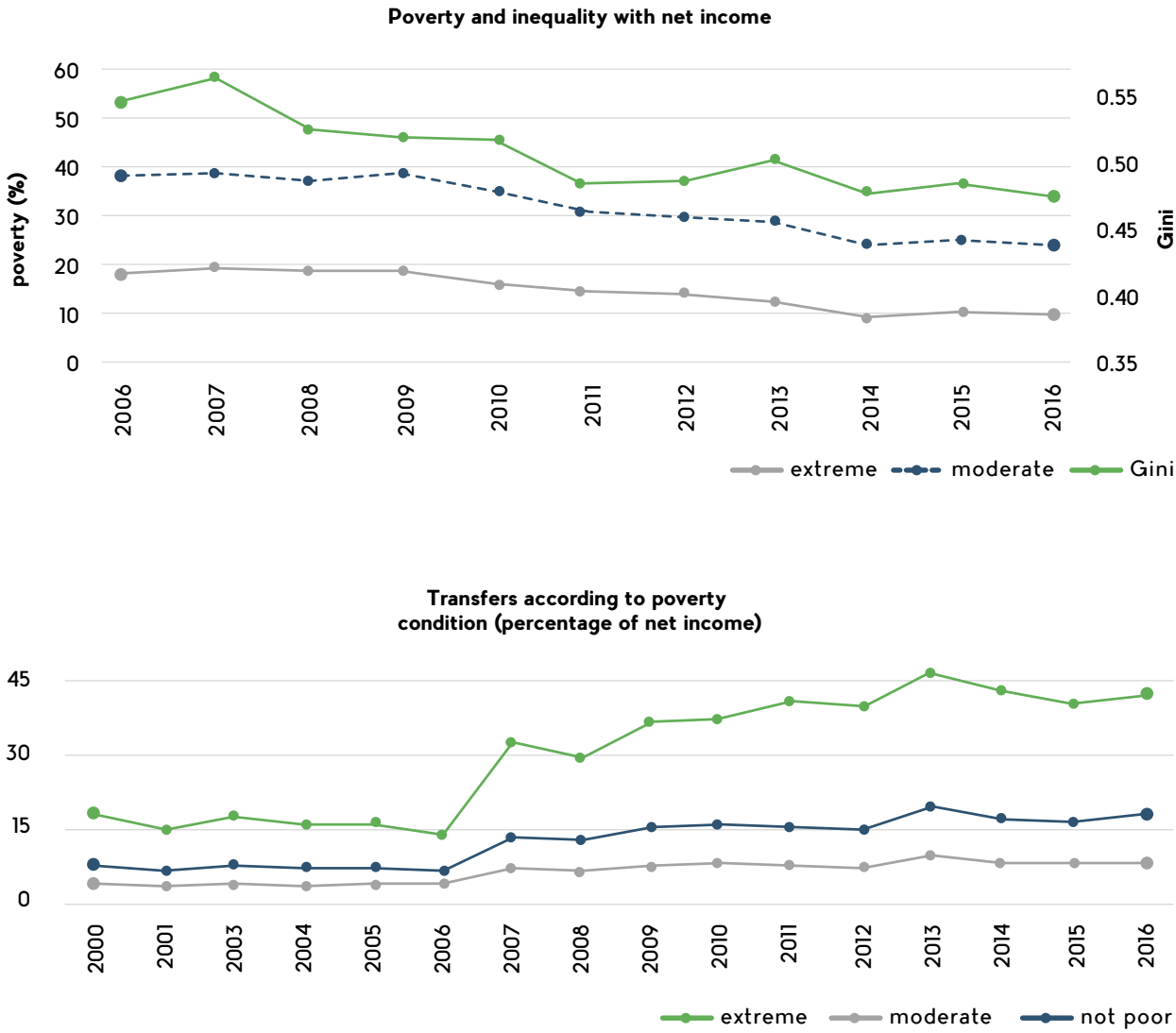
Beneficiaries' coverage and distribution of the BDH of Ecuador, according to poverty condition



Note: The poverty condition was measured with the family income per capita without the BDH transfers.

Source: National Survey of Employment, Unemployment and Underemployment (ENEMDU) 2000-16 (INEC).

GRAPH 6.8
Poverty, inequality and amount of BDH transfers



- Between 2013 and 2014, the coverage of BDH among the extreme poor was lowered by much less (75.6% to 56.3%) than among the rest of the population (35.1% to 21.5%).

- Between 2014 and 2016, the coverage of the Human Development Bond (known by its Spanish acronym of BDH) continued to decline, but only among the non-poor and moderate poor, which made it possible to increase the proportion of extreme poor among the beneficiaries (25% to 29%).

Note: The poverty condition was measured with the per capita family income without the BDH transfers
Source: National Survey of Employment, Unemployment and Underemployment (ENEMDU) 2000-16 (INEC).

- The reduction of beneficiaries and of the BDH budget did not affect the levels of poverty and inequality in the country. Between 2013 and 2014, extreme poverty diminished from 12% to 10% and moderate poverty fell from 29% to 24%, probably due to the increase in income associated with GDP growth of 4% (IMF 2017).

- In 2015 and 2016, these rates were maintained at the same levels as in 2014, despite nearly zero growth and the drop of GDP (0.2% in 2015 and -2.2% in 2016). Meanwhile, the Gini coefficient was maintained at 0.48 during the last three years.

In sum, the drastic changes in coverage and in the BDH budget were innocuous in terms of outcomes in poverty and inequality but were significant for improving the efficiency of public spending channeled to this program. With almost half of the BDH budget, the results for poverty and inequality remained at the same levels. However, as with the majority of CCT and NCP programs in the region, there are still high levels of undercoverage and leakage in the BDH. Therefore, there is still room for making more efficient use of public resources. The changes made could have produced better results in terms of targeting. In addition, concerns persist about the size of the current allocations for BDH transfers. Since 2011, these equal 40% or more of the net income of the extreme poor who receive BDH payments, an amount 2.7 times higher than the levels existing before 2006. As noted before, this manner of assistance could be affecting incentives for work, formal employment and savings.

7.

THE MULTIDIMENSIONAL POVERTY INDEX

Having insufficient income to buy a minimal basket of goods and services –or monetary poverty– is one of several privations faced by people living in poverty. The lack of education, health, employment, housing, security and, even, the lack of representation in society are other privations that also can affect well-being. Although at the level of countries there is a correlation between insufficient income and other social deprivations, a measurement of the level of individuals that considers multiple dimensions of poverty of households reveals areas of deprivation that are hard to observe with unidimensional measurement, as is shown in this section. With a measurement of this type, together with monetary measurement, it is possible to gain a more comprehensive vision of the privations experienced by poor people and changes over time. In addition, this evidence can help monitor –with a regional perspective– fulfillment of the first goal of the 2030 SDG agenda, "end poverty in all its forms everywhere". Specifically, this goal points out that the number of men, women and children of all ages who live in all the dimensions of poverty must be reduced by half by 2030.

While various countries of the region (Chile, Colombia, Costa Rica, El Salvador, Ecuador, Mexico) make official calculations of this type of measurement, each one utilizes its own methodology. To produce comparable statistics, the IDB utilizes 12 indicators built the same way for all countries. These are then transformed into privations, utilizing thresholds for each indicator. These privations and thresholds were selected taking into consideration the experiences of Mexico (since 2009), Colombia (since 2011) and Chile (since 2014) and the studies of the United Nations Development Programme (UNDP) (since 2010), Santos et al. (2010 and 2015) and Alkire and Santos (2014) about measurement of multidimensional poverty. In the selection, information available in regular household surveys of countries of the region was considered, as well as the susceptibility of these privations to being overcome with public interventions and the fact that privations indicate hardships according to the life cycle stage. Table 7.1 ennumerates the privations utilized to build the measurement of poverty and Table A7.1 of the Annex gives a detailed definition of each.

TABLE 7.1
Deprivations of multidimensional poverty

Dimensions	Life cycle				
	Children	Youth	Adults	Older adults	All of them
Education	Absence (5) Absenteeism (6-17) Lag (7-17)		Low schooling (18-64)		
Employment / Protection		Nini (15-24)	Unemployment (18-64) Informal employment (18-64)	Without pension (65+)	
Services / Housing					Without aqueduct Without sewer Bad housing Crowding

Note: The age of the individuals has been placed in parentheses. See the annex for the description of each deprivation.

Specifically, the incidence and adjusted incidence of multidimensional poverty were estimated using 261 data bases of 18 countries from the harmonized household surveys of LAC of the IDB corresponding to the 2000-16 period. Box 7.1 synthesizes the methodology used for estimating the two measurements, the contribution of each deprivation to the adjusted measurement, the breakdown of the change in poverty, identification of the multidimensional poor and the weighting of privations. The following paragraphs describe the situation of multidimensional poverty and then compare it with monetary poverty.

BOX 7.1
Construction and breakdown of the measurement of multidimensional poverty

With the selected privations and following Alkire et al. (2015), we identify as the poor those who suffer a minimal number of privations and, then, aggregate the data in two measurements of multidimensional poverty: (i) incidence H (number of poor in the population as a whole) and (ii) adjusted incidence Mo = H*A, where A is the number of privations suffered by the poor (intensity of poverty). H counts the poor without distinguishing the number of privations they suffer and Mo counts them expressing each one as a proportion of a poor individual who suffers all the privations.

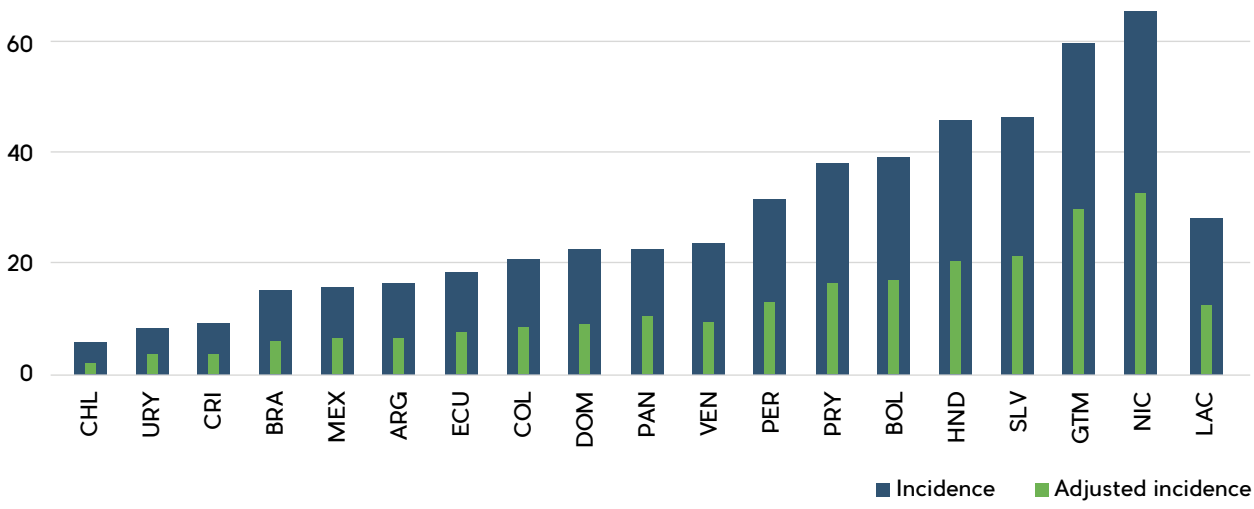
Mo can be broken down by population groups and by privations. The contribution of each group is equal to the value of its Mo weighted by the size of the population, and the contribution of each privation is equal to the proportion of the poor who suffer the privation (weighted by their weight) relative to the total population. For two points in time, the contribution of each privation to the change in Mo can be obtained by multiplying the change in the privation for the poor by the average of the relative contribution of the privation to Mo at the two points.

According to the experience of countries that officially measure multidimensional poverty, the measurements of poverty were constructed considering (i) the household as a unit of analysis (we assume that all members suffer the same privations), (ii) at least four privations for identifying the multidimensional poor (a number equivalent to 33.3% or one third of the total number of privations) and (iii) the same weight for each dimension and for each privation within each dimension. When data have not been produced on a privation during a year, the other privations of the dimension have been re-weighted with the purpose of giving the same weight to that dimension as to the others.

The poor experience multiple privations. In 2016, 28% of the population of Latin America experienced multidimensional poverty, that is, these people suffered at least four privations simultaneously. The greatest prevalence of multidimensional poverty is found in Nicaragua and Guatemala, nine times greater than in Chile and Uruguay where the lowest incidences are reported (blue bars in Graph 7.1). The region's poor, on average, experience five privations at the same time (42% of the 12 under consideration), but those who live in countries with a higher incidence of poverty face a greater number of privations (Graph 7.2).

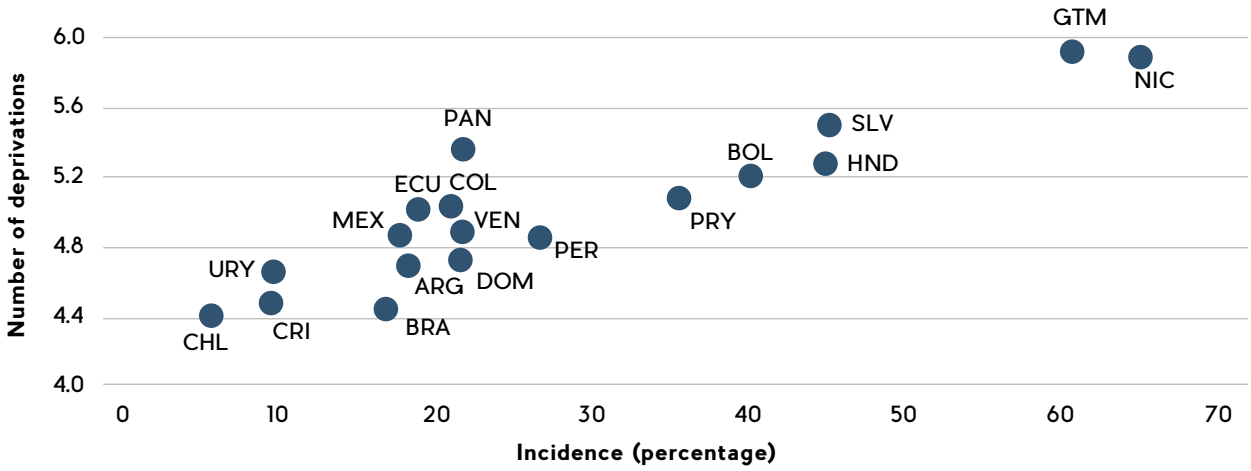
Poverty is very heterogeneous across countries. In 2016, the adjusted incidence in the region rose on average to 12% (=0,28*0,42 in %). Since the adjustment standardizes the poor according to the number of privations they experience, expressing these in terms of a poor person who suffers all the privations, the result indicates that poverty is the equivalent of 12% of the population who suffer all the privations. This adjustment allows for making appropriate comparisons and, therefore, measuring better the heterogeneity between countries. Graph 7.1 shows that the differences of the adjusted incidence (green bars) are wider than the incidence without adjustment (blue bars). For example, the relationship between the two countries with the highest and lowest incidence of adjusted poverty is 12 times, an amount nine times more than the incidence without adjustment, as seen in the previous paragraph. The result for the region can also be interpreted in terms of privations. In other words, the population suffers on average 12% of the privations: 28% of the population suffers 42% of the privations and 72% of the population suffers 0%.

GRAPH 7.1
Adjusted and unadjusted incidence of multidimensional poverty (~ 2016, as percentage)



Source: IDB Harmonized Household Surveys of LAC.

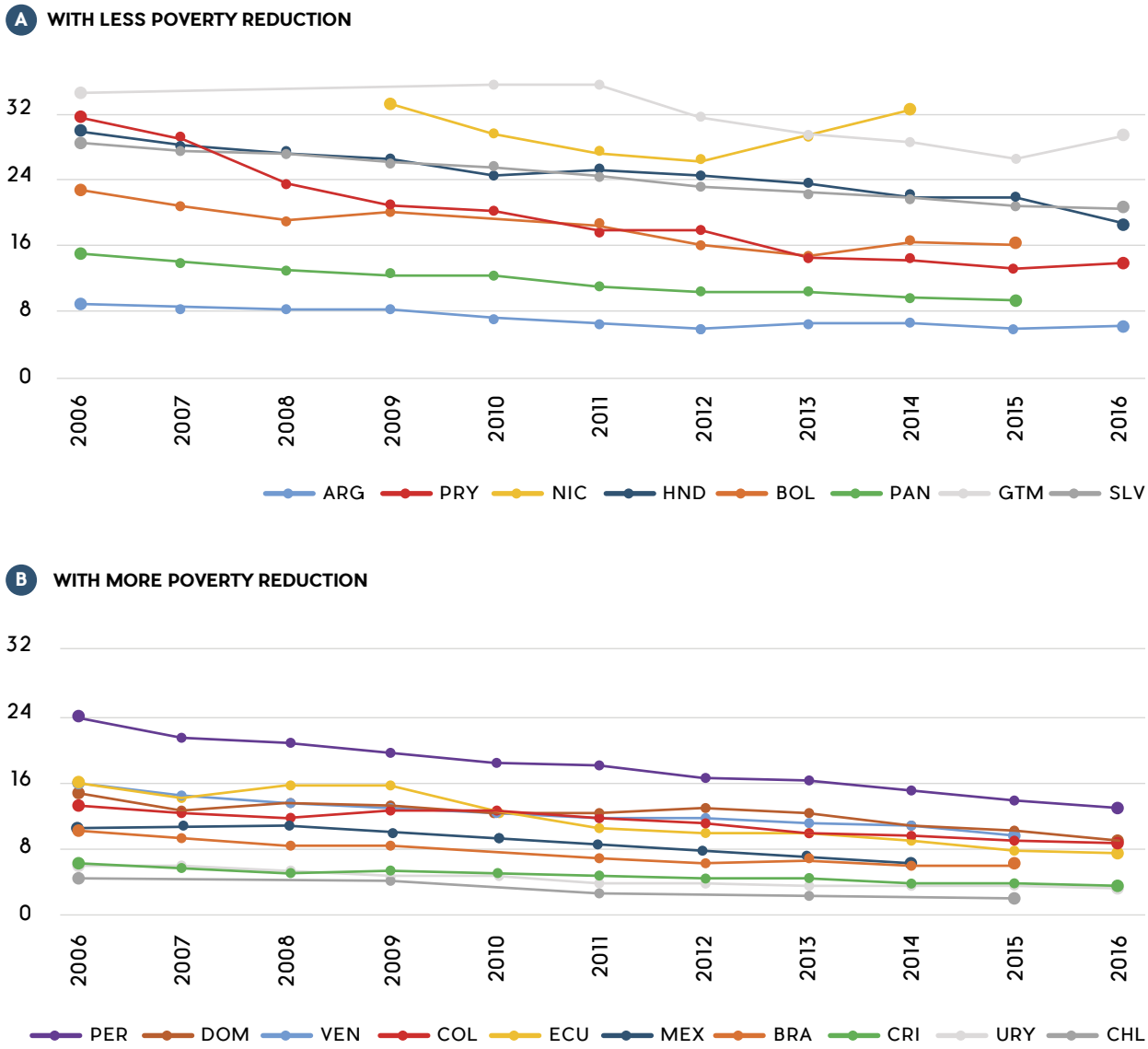
GRAPH 7.2
Number of deprivations and incidence of multidimensional poverty (~2016)



Poverty was reduced in all countries. The economic slowdown did not affect progress in reducing poverty. From 2009 to ~2016, poverty fell by 5% per year on average. The most outstanding case was Chile (panel b of Graph 7.3) because, despite having the lowest rate of poverty in the region, the country cut its rate to less than half (from 4.2% in 2009 to 2%). Other remarkable advances in poverty reduction took place in Ecuador (from 15% to 7%) and Mexico (from 11% to 6%). Among countries where poverty dropped by an amount lower than the regional average (panel a), Panama stands out because, while its economic growth was the highest in the region, the country could not reduce its level of poverty to a greater degree (it fell only from 13% to 10%). Paraguay and Peru experienced strong economic growth and a large drop in poverty, but the levels of poverty continue to be higher than the regional average.

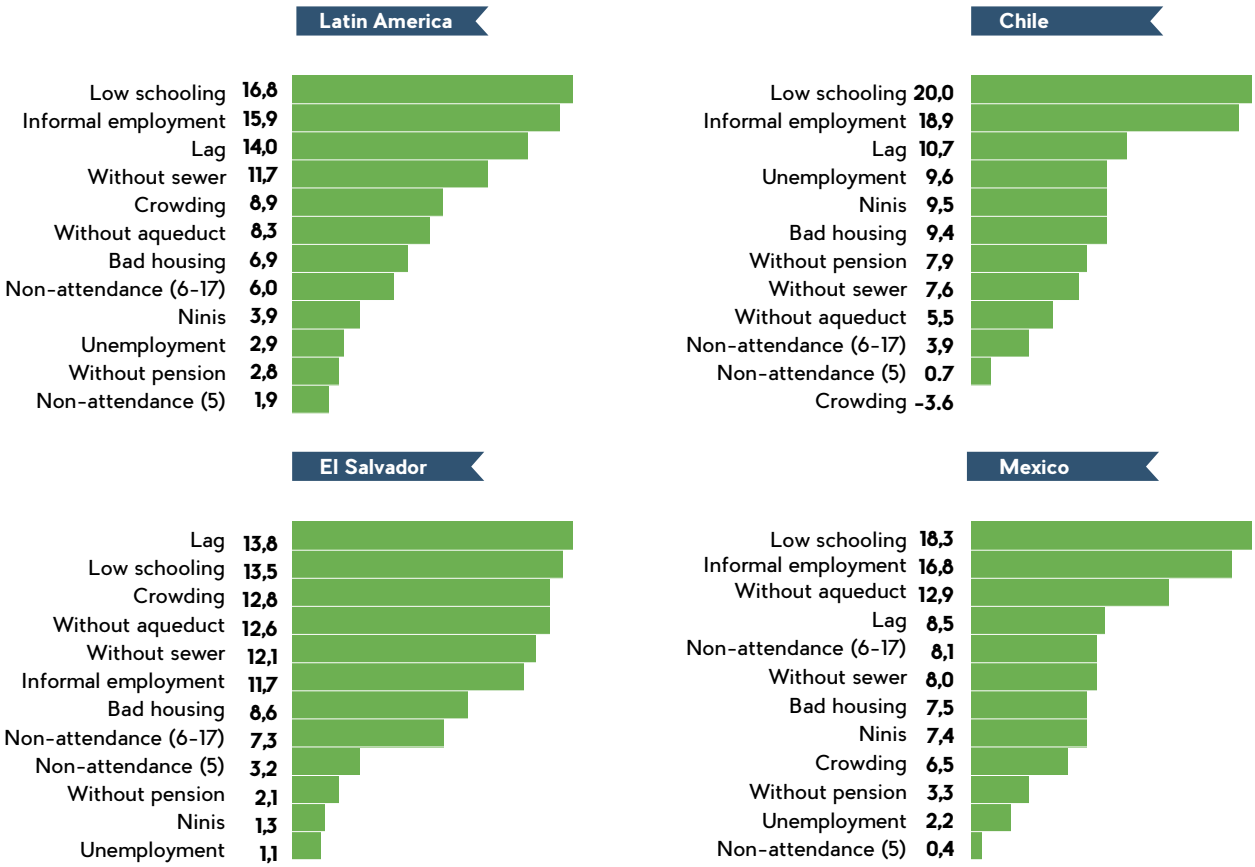
Poverty decreased due to lower privations in schooling, formal employment, educational lags, sanitation and water (Graph 7.4). The drops in these privations explain on average the 75% reduction in poverty (adjusted incidence) of the region since 2009, an outcome that varied widely between countries. For example, in Chile the improvements in the first three privations explain half the reduction in poverty, and are also important factors in the lower rates of unemployment and inactivity among youth. On the contrary, in El Salvador the changes in these two privations made a small contribution, and the reduction of privations related to education and basic services played a fundamental role in poverty reduction. In Mexico, almost half the drop in poverty was due to improvements in schooling, employment and access to safe water. Improvements in the level of schooling of children were also significant. It is worth pointing out that the contribution of a privation depends on the change shown over time and also on the incidence of that lack among the poor. The weight of the privation plays no role in measuring poverty since all privations have the same value.

GRAPH 7.3
Adjusted multidimensional poverty trend (in percentage)



Source: IDB Harmonized Household Surveys of LAC.

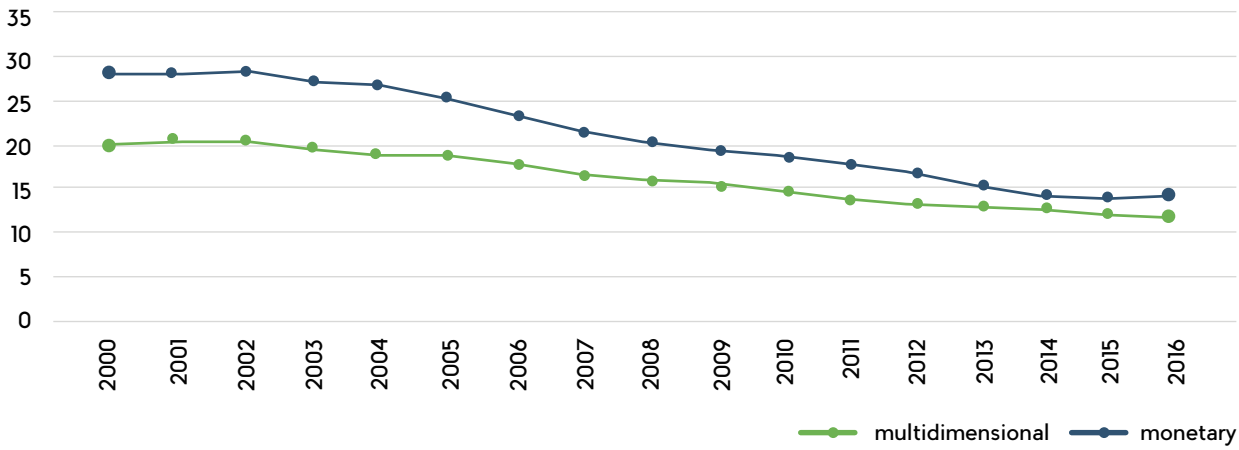
GRAPH 7.4
Contribution of each deprivation in the reduction of multidimensional poverty, ~ 2009 and ~ 2016



Source: IDB Harmonized Household Surveys of LAC (2017).

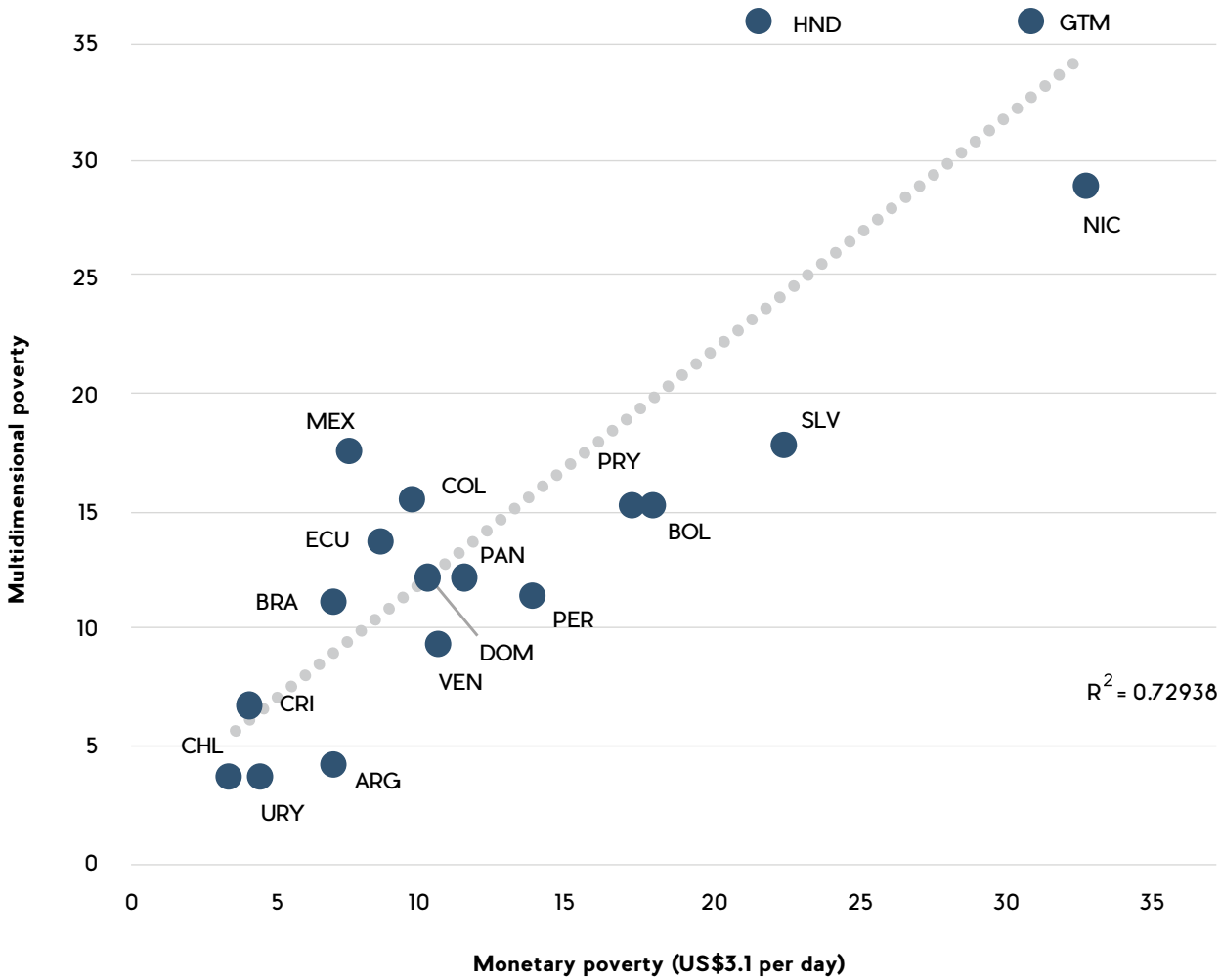
There is a strong correlation between monetary and multidimensional poverty. The comparison between the two measurements allows us to know not only the size of each type of poverty but also the association and superposition between them. This can be useful for designing interventions that seek to reduce these two types of poverty. Although data from household surveys shows that since the beginning of the decade of 2000, the reduction of monetary poverty (extreme) –people in households with a per capita income below $3.1 per day (according to PPP of 2011, updated to the year of the survey)– and adjusted multidimensional poverty have advanced differently, there is a significant association between the two measurements (at the level of countries). Monetary poverty was reduced by nearly half (from 27,4% in 2004 to 14,6% in 2014), which was 40% faster, and more consistent with the economic cycle, than the reduction of multidimensional poverty which fell from 19.2% to 12.2% (Graph 7.5). Despite this, Graph 7.6 shows that, generally, the countries with more poverty of one measurement also have higher poverty with the other measurement. The variation of monetary poverty can predict 73% of the variation of multidimensional poverty, evidence that tends to be observed when monetary poverty is correlated with nonmonetary poverty at the level of countries. For example, Graph A7.1 of the Annex shows the relationship between the social progress index that synthesizes 53 indicators for 132 countries (Porter, Stern and Green, 2016) and GDP per capita (IMF 2017). GDP explains 81% of the variation of the index for the set of countries and 69% for 18 countries of the region. The graphs show that a better measurement of the relationship between the two dimensions of poverty is to consider the intersection between them.

GRAPH 7.5
Trends of monetary and multidimensional poverty (percentage)



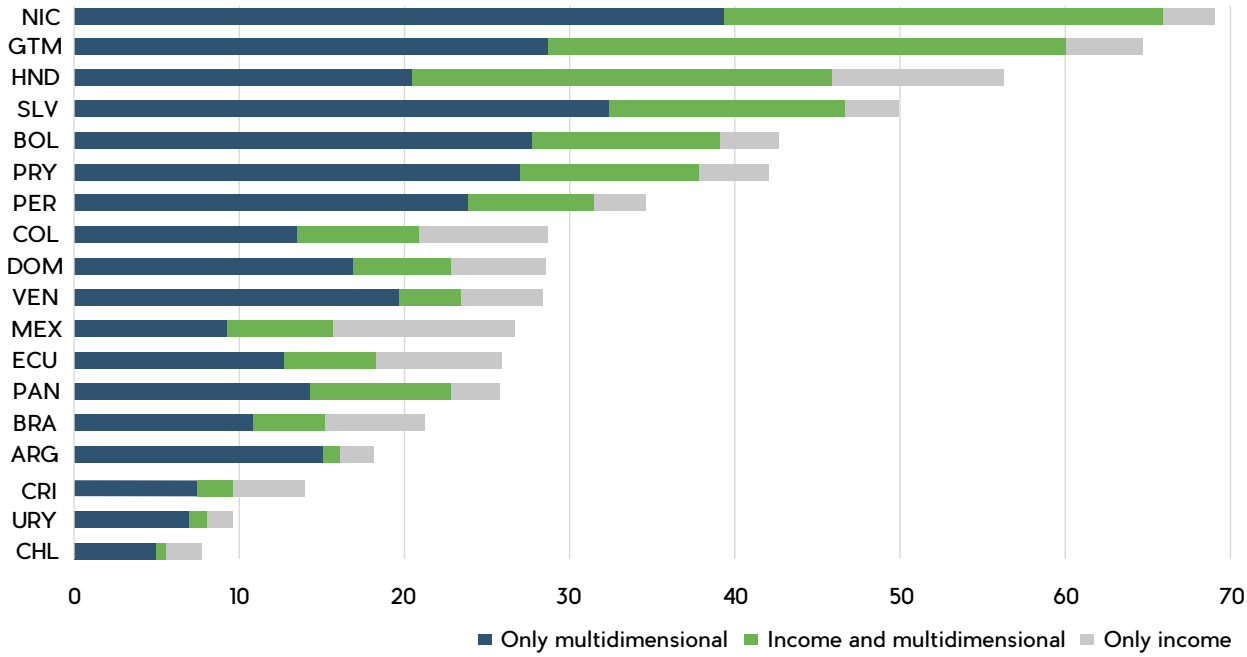
Source: IDB Harmonized Household Surveys of LAC.

GRAPH 7.6
Relationship between monetary and multidimensional poverty adjusted in ~ 2016 (percentage)



Different types of poverty predominate in the countries of the region. The correlations between the two measurements of poverty do not necessarily refer to the same people, that is, they do not indicate whether they are the same poor people or others who are counted in each measurement. Therefore, we quantify multidimensional poverty and income poverty experienced by each individual with the last household survey available in each country. Utilizing the measurements of unadjusted multidimensional poverty and of monetary poverty (extreme), the aggregate results indicate that on average poverty affected 33% of the population. In other words, one of every three individuals has an income below $3.1 per day or suffers at least four social privations.

GRAPH 7.7
Types of poverty, ~2016 (percentage)



Source: IDB Harmonized Household Surveys of LAC.

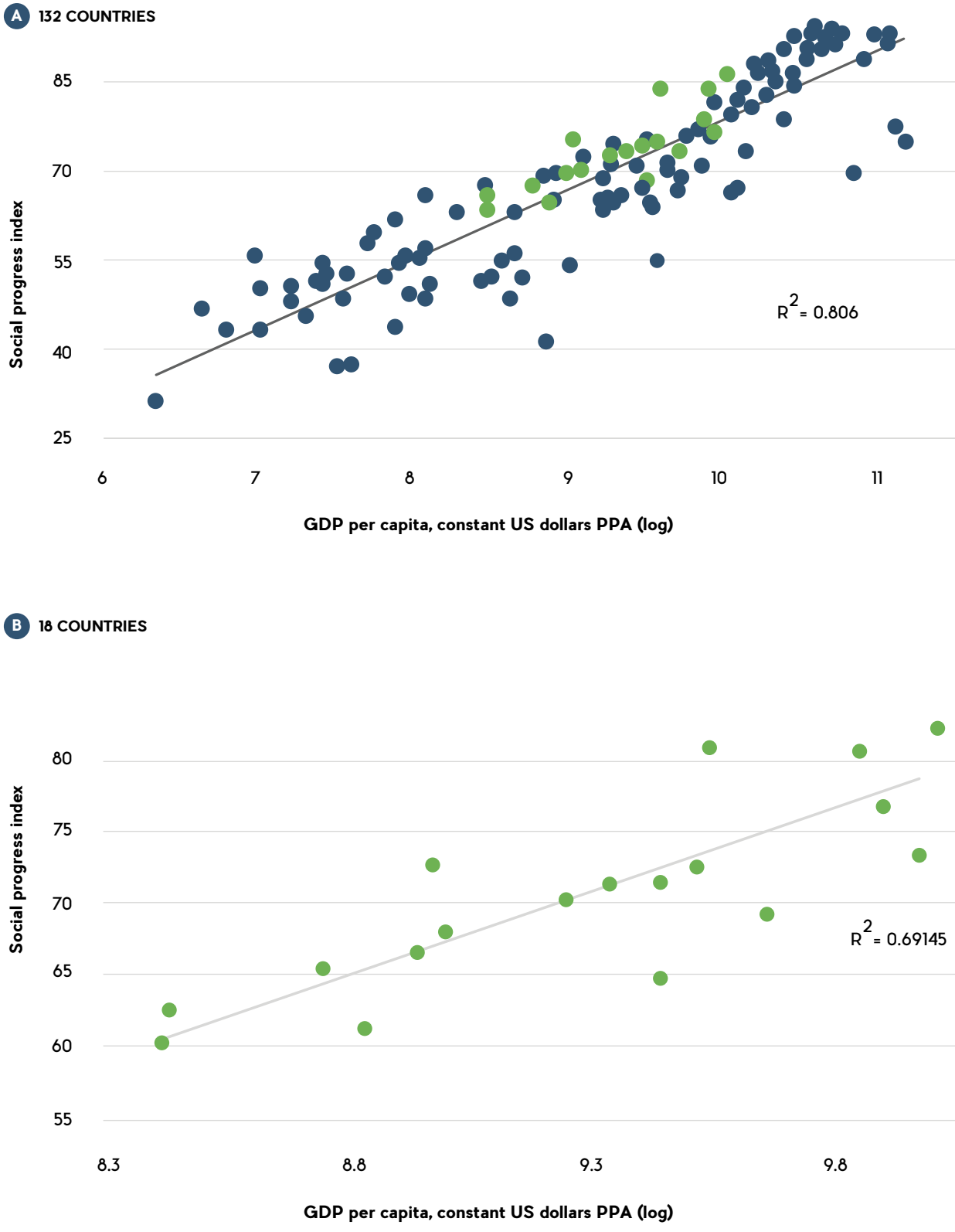
Graph 7.7 shows this information for 18 countries of the region, disaggregated by the type of poverty faced by the population. Among all poor people, 29% suffer the two types of poverty, 15% are living in income poverty only and 56% experience only multidimensional poverty. Likewise, with those numbers it can be pointed out that two thirds of the poor measured by income suffer at the same time multidimensional poverty and only 35% of those in multidimensional poverty also experience monetary poverty. Mexico is the only country in which monetary poverty predominates (it is larger than the other two types of poverty). Forty-one percent of the Mexican poor suffer this type of poverty (11% of 27%). Guatemala and Honduras are the only two countries where the majority of the poor suffer simultaneously the two types of poverty. In the remaining 15 countries, only multidimensional poverty predominates.

7.1 APPENDIX

TABLE A7.1
Dimensions and deprivations used to estimate the measurement of multidimensional poverty

Education
• Child absence: If at least one five-year-old member of the household does not attend school • Non-attendance at school: If at least one member of the household aged 6-17 does not attend school • Educational lag: If at least one member between 7 and 17 years lags two or more years behind the grade level of school he should attend • Low education: If at least one member between 18 and 64 years has less than nine years of education
Employment and social protection
• NiNi: If at least one household member 15 to 24 years old does not study, work or look for a job • Unemployment: If at least one economically active member 18 to 64 years old is unemployed • Informal employment: If at least one economically active member 18 to 64 years old is not affiliated with the pension system • Older adults without a pension: If at least one member 65 or older does not have a contributory or non-contributory pension
Housing and basic services
• Lacking access to improved water: If the home does not have a connection to the public drinking water service • Lacking access to improved sanitation: If the home does not have adequate sewerage service • Low quality housing: If the home has floor, walls or ceiling made of precarious materials • Crowding: If the home has more than 2.5 members living in each room

GRAPH A7.1
Social progress index 2016 and GDP per capita



Note: The green dots in panel (a) and (b) correspond to 18 countries in Latin America.
Source: Based on Porter, Stern and Green (2016) and IMF (2017).

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METHODOLOGICAL ANNEX

This annex brings together the definitions and breakdowns of the indicators utilized in this report. It also shows the acronyms used in the charts and graphs, the codes for countries and the acronyms of social programs. In addition, it offers a list of the national surveys consulted for the analysis.

Intergenerational persistence of education

- **Intergenerational persistence of education:** The correlation between the education of parents and that of their children when they are adults. For example, a measurement of intergenerational persistence of education of 0.6 indicates that, if one parent has one year more of education than another, his or her adult child has on average 0.6 year more schooling than the child of a parent with less schooling. Almost all the analysis in this report was carried out based on the schooling of the mother.

- **Intergeneracional mobility of education:** This is the opposite of intergenerational persistence of education, that is, 1 minus persistence. In the previous example, mobility would be 0.4 = 1 – 0.6. A high value denotes more mobility, that is, a level of schooling less dependent on the educational background of the parents. In terms of a matrix of transition (see below) it corresponds, for example, to the probability of a child reaching tertiary education conditioned by the secondary education of the mother, while persistence would be the probability of reaching tertiary education conditioned by the tertiary education of the mother.

- **Equality of opportunities:** This is the idea of social justice which affirms that all persons, with their effort and labor, should have the same opportunities for success, independently of their family background.

- **Matrix of transition:** Cross tabulation that divides the overall distribution into levels. In this publication, the rows show the education achieved by mothers and the columns the education reached by their children. The sum of the elements of each row of the matrix is equal to 100 and each cell can be interpreted as the probability that an adult will reach a level of education conditioned by the level of education of the mother. The results on the diagonal indicate persistence (or immobility), the results below the diagonal indicate regression (or downward mobility) and the results above the diagonal indicate mobility (or upward mobility).

- **Intergeneracional persistence of income:** Correlation that links the income of parents and that of their children when they are adults. For greater precision, permanent income must be used –that is, the average over a long period– of both the parents and the children and, ideally, the income corresponding to a stage of life that is representative of the entire work life of both groups.

- **Gatsby curve:** It refers to the line that displays the relationship between intergenerational persistence (or mobility) and inequality in income distribution. Its name alludes to Jay Gatsby, protagonist of the F. Scott Fitzgerald novel, *The Great Gatsby*, who succeeded in amassing great wealth and rising in the social scale.

- **Gini coefficient:** Measures inequality in distribution of family income per person. It is expressed in values between 0 (completely equal distribution) and 1 (distribution completely unequal).

- **Public and private spending on education as substitutes:** When the former substitutes for or crowds out the latter, such as spending on educational provision or primary and secondary education. The greater the level of public spending, the lower will be spending by the parent for achieving optimal investment in his or her children.

- **Public and private spending on education as complements:** When the former complements or crowds in the latter, such as certain expenditures on infant development and university education. The greater the level of public spending, the higher will be spending by the parent for achieving optimal investment in his or her children.

The role of universities in income mobility

- **Rate of mobility:** The percentage of students who, when they enter university, have a family income that corresponds to the lowest rank in national distribution of family income and when they are young adults their salaries correspond to the highest quintile in the national distribution of salaries for the same age group.

- **Coverage of low-income students:** The percentage of students who, when they enter university, have a family income that corresponds to the lowest rank in national distribution of family income.

- **Index of mobility**: Measures the effectiveness of the university in intergenerational mobility. It is equal to the product of the mobility rate and coverage of low-income students.

- **Rate of persistence:** The percentage of students who, when they enter university, have a family income that corresponds to the highest rank in national distribution of family income and when they are young adults their salaries also correspond to the highest quintile of national distribution of salaries of the same age group.

- **Coverage of high-income students:** The percentage of students who, when they enter university, have a family income that corresponds to the highest quintile in national distribution of family income.

- **Index of persistence:** Measures the effectiveness of the university in intergenerational persistence. It is equal to the product of the rate of persistence and the coverage of high-income students.

Intergenerational persistence and domestic violence

- **Intergenerational persistence:** The increase in the probability of suffering physical violence from the partner in adulthood if the mother had been a victim.

- **Physical violence committed by an intimate partner:** This indicator takes the value of 1 if the woman's current or most recent partner has carried out at some time one of the following actions: 1) pushed or shaken the woman or thrown something at her, ii) slapped her, iii) hit her with the fist or with a blunt object, iv) kicked or dragged her, v) strangled or burned her, and vi) threatened or attacked her with a knife/firearm or other arm. This information is only available for women victims.

- **Severe physical punishments:** This includes hitting a child with the closed fist or with an object, as well as other physical punishments. In demograhic and health surveys, severe physical punishments are measured in terms of hitting a child with an object.

Indicators of context

Income

- **Family income:** Is the sum of labor income and non-labor income of all members of the household. It excludes implicit income derived from the own or occupied housing, and taxes whenever possible. It does not include imputations for missing, zero or atypical income, additional to those that already exist in the data bases provided by national statistics offices. Nor does it include adjustments for differences of regional prices. The income is expressed in US dollars adjusted with Purchasing Power Parity (PPP) of private consumption of 2011 (US$ 2011 PPP).

- **Household income per capita:** Total income of the household divided by the number of members of the household.

- **Purchasing power parity (PPP):** Is a factor that converts the currency of one country to US dollars that can buy on the local market the same quantity of goods and services that the dollars can buy in the United States.

Income groups[1]

- **Poor:** Quotient between the number of people who live in households with income per capita below US$5 2011 PPP per day (1.6 times the poverty line of US$3.1) and the entire population.

- **Vulnerable:** Quotient between the number of people with incomes between US$5 and US$12.4 2011 PPP per day (between 1.6 and 4 times the line of US$3.1) and the entire population.

- **Middle class:** Quotient between the number of people with incomes between US$12.4 and US$62 2011 PPP per day (between 4 and 20 times the line of US$3.1) and the entire population.

- **Rich:** Quotient between the total of people with incomes above US$62 2011 PPP per day and the entire population.

1. In *Social Pulse 2016*, it was shown that: i) US $ 3.1 per day is the average value and the average of the lines established for extreme poverty (equivalent to the value of a basic food basket) in 18 Latin American countries, expressed in PPP dollars of 2011; ii) the identification of each group is made by comparing income with the poverty lines which are adjusted with the consumer price index (CPI) from 2011 up to the year when each country conducted its survey.

Income inequality

- **Gini coefficient**: Measurement of inequality in distribution of family income per person. It takes values between 0 (completely equal distribution) and 1 (completely inequal distribution).

Housing conditions

- **Percentage of crowded households:** Quotient between the number of homes with 2.5 or more people per room and the total number of homes.
- **Percentage of homes with dirt floors:** Quotient between the number of homes with dirt floors and the total number of homes.
- **Percentage of homes with walls of non-permanent materials:** Quotient between the number of homes that build their exterior walls principally of waste material and the total number of homes.
- **Improved drinking water source:** That which protects drinking water from contamination from external sources, particularly from fecal material, for example: household connections, public taps, drilled wells, protected excavated wells, protected springs and rainwater collection. To define an improved source, the location of the source is not taken into account. If a home states that it has access to rainwater, that is considered an improved source without specifying whether it is protected or not. If it is not specified that the spring is protected, it is classifed as an unimproved source.
- **Percentage of households that use an improved drinking water source:** Quotient between the number of people with access to drinking water from an improved source and the total number of households, multiplied by 100.
- **Improved sanitation services:** Those that hygienically impede contact of people with human feces. The most common sources of improved sanitation are: residential sewer connections, septic tanks, siphon latrines, improved and ventilated pit latrines and latrines with slabs or covered pits. Shared systems include public bathrooms and are not considered improved since sharing sanitation services with other families can cause transmission of contagious diseases.
- **Percentage of homes that use improved sanitation services:** Quotient between the number of homes with access to improved sanitation services and the total number of homes, multiplied by 100.

Indicators of outcomes

Infancy and childhood

- **Rate of infant mortality:** Number of children who die before reaching five years of age for each 1,000 live births.

- **Chronic infant malnutrition:** Percentage of children under 5 years of age whose stature in relation to his or her age and sex is below more than 2 standard deviations of the average of children of the same age and sex in the reference population.

- **Preschool attendance:** Percentage of children ages 4 and 5 who are identified as attending a formal schooling center at the time of the interview.

- **Rate of primary school attendance:** Quotient between the number of children from 6 to 12 years of age who are attending school and the total number of children ages 6 to 12 years.

Youth

- **Rate of secondary school attendance:** Quotient between the total number of youth from 13 to 17 years of age who are attending school and the total number of youth ages 13 to 17.

- **Rate of lagging in secondary school:** Percentage of youth from 13 to 17 years of age with two or more years of schooling below the level of studies they should have for their age.

- **Rate of graduation from secondary school:** Percentage of students between 18 and 20 years of age who graduate from secondary school.

- **Rate of adolescent fertility:** The number of births for each 1,000 women between 15 and 19 years in a particular year.

- **Gap in years of education between indigenous and nonindigenous:** The difference in average years of schooling between nonindigenous and indigenous for two cohorts: 25-29 years of age (youths) and 45-49 years of age (adults).

- **Gap in education level between indigenous and nonindigenous (in percentage):** Difference in percentage of people with basic secondary education (to ninth grade) among nonindigenous and indigenous for two cohorts: 25-29 years of age (youths) and 45-49 years of age (adults).

- **Youth unemployment rate:** Percentage of the economically active population from 15 to 24 years of age who are unemployed but are actively seeking work and are willing to work. A person is considered unemployed if he or she did not work at least one hour during the reference period, but is willing to work and has taken concrete actions to find work during the reference week.

- **Youth inactivity rate:** Quotient between the young people from 15 to 24 years old who neither study, nor work, nor seek employment ("nininis") at the moment of the survey and the total number of young people from 15 to 24 years of age, multiplied by 100.

Adulthood

- **Employment rate:** Quotient between the number of people employed from 25 to 64 years old and the total population of this age. A person is considered employed if he or she has worked at least one hour during the reference period (generally, the period covered

is the previous week or the previous month), or who has a job but has not worked for extraordinary reasons (sick leave, strike, vacations, etc.).

- **Unemployment rate:** The percentage of the economically active population between 25 and 64 years who have no job, but are actively seeking work during the period studied.

- **Economically active population:** The total number of people between 25 and 64 years who work or actively seek employment.

- **Female labor force participation:** Quotient between the total of the female economically active population from 25 to 64 years old and the total number of women of this age, multiplied by 100.

- **Female contribution to household labor income:** Ratio between the total labor income of women from 25 to 64 years old and the total household labor income (from men and women). The calculation includes only monetary income derived from the principal work activity. The calculation excludes households without positive income from this source. In the case of independent workers who do not receive a salary, their earnings are calculated as sales of their goods and services minus the operating costs of their activity. In any household, the contribution of women can vary from 0% to 100% of total labor income. The country indicator represents the average of households.

- **Percentage of formal employees:** Quotient between the total number of contributors to social security and the total number of employed persons, multiplied by 100. In the case of formal salaried workers, the denominator is the total number of salaried workers.

- **Workers who contribute to social security:** Quotient between the total number of contributors to social security and the total number of employed persons, multiplied by 100.

Old age

- **Percentage of the elderly who receive a pension (contributory and non-contributory):** Quotient between the total number of people 65 years of age and older who receive a contributory or non-contributory pension, and the total number of people 65 years of age and older, multiplied by 100.

- **Noncommunicable diseases (NCD):** Illnesses that are not infectious nor communicable. They are the result of a combination of genetic, physical, psychological, environmental and behavioral factors. These are also known as chronic illnesses and tend to be long-lasting, such as cardiovascular and respiratory diseases, cancer or diabetes.

- **Prevalence of obesity:** A World Health Organization (WHO) indicator referring to the percentage of individuals with a body mass index equal or superior to 30 kg/m2. The indicator is calculated using the individual's height and weight measurements.

Critical inputs

- **Public social spending:** Expenses of governmental institutions on health, education and assistance and social protection, including old-age pensions.
- **Beneficiaries of conditional cash transfers (CCT):** People who live in households with at least one member under 18 years of age.
- **Beneficiaries of non-contributory pensions (NCP):** People who live in households with at least one member older than 64 years of age who does not receive a contributory pension.
- **Monetary poverty:** Income insufficient for buying a minimum basket of goods and services.
- **Multidimensional poverty**: Quotient of the total number of people who suffer four or more privations at the same time and the total population. The lack of education, health care, employment, housing, security and also the lack of representation in society are the lacks/privations that, in addition to monetary poverty, can also affect well-being.

Disaggregations

- **Total:** Average at the national level by country and year.
- **By gender:** Average for men and women by country and year.
- **By area:** Average by urban and rural area by country and year. Not all countries have data available for rural areas (see, below, the list of surveys).
- **By income quintile:** Averages by groups of households or individuals ordered from the poorest to the richest according to income, and divided into five equal parts, by country and by year. The first quintile represents the 20% of households or the population that are the poorest, and the fifth quintile represents the richest 20%.
- **By ethnic group:** Averages for households or indigenous people, Afro descendants and the rest of the population, by country and year. Self-identification was prioritized when national surveys also questioned respondents about their spoken language. For Paraguay, given that most of the population speaks Guaraní, the question, "What language do you speak most of the time at home?" could overestimate the size of the indigenous population. Despite this, the analysis used by that country was maintained in the report since the objective is to highlight ethnic differences within countries. For Mexico, although questions were recently added to capture information about self-identification, the criterion of spoken language was still used for the purpose of making comparisons over time. In the case of the averages for households, we defined a household as indigenous or Afro descendent if the head of household said that he or she belonged to these ethnic groups, either by ethnic self-identification or language spoken. The distinctions of ethnic groups were made only in those countries that included questions related to ethnic group or race in their surveys.

Country	Last year of survey	Criterion used to identify the group	Percentage of the group in the sample			Percentage of the group in expanded sample		
			Afro	Indigenous	Rest	Afro	Indigenous	Rest
Bolivia	2015	Self-identification	0	23.9	76.1	0	27.3	72.7
Brazil	2015	Self-identification	57.4	0.5	42.1	54	0.4	45.6
Chile	2015	Self-identification	0	11.7	88.3	0	9	91
Ecuador	2016	Self-identification	4.6	14.5	80.9	4.8	8.5	86.7
Guatemala	2016	Self-identification	0.1	29.2	70.7	0.1	35.6	64.3
Mexico	2014	Spoken language	0	10.2	89.8	0	9.1	90.9
Peru	2016	Self-identification	2.4	32.5	65.1	2.8	29	68.2
Panama	2015	Self-identification	0	8	92	0	6.5	93.5
Uruguay	2016	Self-identification	4	1.5	94.5	4.1	1.5	94.4

Country	Code	Country	Code
Argentina	ARG	Haiti	HTI
Latin America and the Caribbean	LAC	Honduras	HND
Bahamas	BHS	Jamaica	JAM
Barbados	BRB	Mexico	MEX
Belize	BLZ	Nicaragua	NIC
Bolivia	BOL	Panama	PAN
Brazil	BRA	Paraguay	PRY
Chile	CHL	Peru	PER
Colombia	COL	Dominican Republic	DOM
Costa Rica	CRI	Suriname	SUR
Ecuador	ECU	Trinidad and Tobago	TTO
El Salvador	SLV	Uruguay	URY
Guatemala	GTM	Venezuela	VEN
Guyana	GUY		

Source: International Organization for Standardization (www.iso.org).

Harmonized household surveys

Country	Code	Survey	Acronym	Years
Argentina	ARG	Encuesta Permanente de Hogares - Puntual	EPHP	1999-2002
Argentina	ARG	Encuesta Permanente de Hogares - Continua	EPHC	2003-2016
Bolivia	BOL	Encuesta Continua de Hogares	ECH	1999-2009,2011- 2015
Bahamas	BHS	Labour Force Survey	LFS	2001-2009, 2011-2014
Brazil	BRA	Pesquisa Nacional por Amostra de Domicilio	PNAD	1999, 2001-2009, 2011-2015
Barbados	BRB	Continuous Labour Force Sample Survey	CLFS	2000, 2004-2016,
Chile	CHL	Encuesta de Caracterización Socioeconómica Nacional	CASEN	2000, 2003, 2006, 2009, 2011, 2013, 2015
Colombia	COL	Encuesta Nacional de Hogares-Fuerza de Trabajo	ENH-FT	1999-2000
Colombia	COL	Encuesta Continua de Hogares	ECH	2001-2005
Colombia	COL	Gran Encuesta Integrada de Hogares	GEIH	2006-2016
Costa Rica	CRI	Encuesta de Hogares de Propósitos Múltiples	EHPM	1999-2009
Costa Rica	CRI	Encuesta Nacional de Hogares	ENAHO	2010-2016
Ecuador	ECU	Encuesta Periódica de Empleo, Desempleo y Subempleo	ENEMDU	1999-2016
El Salvador	SLV	Encuesta de Hogares de Propósitos Múltiples	EHPM	2010-2016
Guatemala	GTM	Encuesta Nacional de Ingresos y Gastos Familiares	ENIGFAM	1998-1999
Guatemala	GTM	Encuesta Nacional de Condiciones de Vida	ENCOVI	2000, 2006, 2011
Guatemala	GTM	Encuesta Nacional de Empleo e Ingresos	ENEI	2002, 2003, 2004, 2010, 2016
Honduras	HND	Encuesta Permanente de Hogares de Propósitos Múltiples	EPHPM	1999-2016
Jamaica	JAM	Labour Force Survey	LFS	1999, 2000, 2003, 2010, 2012, 2013, 2014

Country codes

Country	Code	Survey	Acronym	Years
Jamaica	JAM	Survey of Living Conditions	SLC	1999, 2000, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010
Mexico	MEX	Encuesta Nacional sobre Ingresos y Gastos de los Hogares	ENIGH	1998, 2000, 2002, 2003, 2005, 2006, 2008, 2010, 2012, 2014
Nicaragua	NIC	Encuesta Nacional de Hogares sobre Medición de Niveles de Vida	EMNV	2001,2005, 2009, 2014
Nicaragua	NIC	Encuesta Continua de Hogares	ECH	2010-2012
Panama	PAN	Encuesta de Hogares	EH	1999-2010
Panama	PAN	Encuesta de Propósitos Múltiples	EHPM	2011-2015
Panama	PAN	Encuesta de Niveles de Vida	ENV	2003, 2008
Paraguay	PRY	Encuesta Permanente de Hogares	EPH	1999-2016
Peru	PER	Encuesta Nacional de Hogares	ENAHO	1999-2016
Dominican Republic	DOM	Encuesta Nacional de Fuerza de Trabajo	ENFT	2000-2016
Trinidad and Tobago	TTO	Continuous Sample Survey of Population	CSSP	1999-2014
Uruguay	URY	Encuesta Continua de Hogares	ECH	1999-2016
Venezuela	VEN	Encuesta de Hogares por Muestreo	EHM	1999-2016

Notes: The surveys are urban in Uruguay before 2006 and in Ecuador before 2000 and in 2002.

Acronyms and names of conditional cash transfer (CCT) and non-contributory pension (NCP) programs

Country	Acronym	Name of the CCT program	Acronym	Name of the NCP program
BOL	BJP	Bono Juancito Pinto	BJP	Renta Universal de Vejez "Renta Dignidad"
BRA	BF	Bolsa Familia	BF	Benefício de Prestação Continuada
CHL	SSyOO	Subsistema de Seguridades y Oportunidades (Ingreso Ético Familiar)	SSyOO	Pensión Básica Solidaria
COL	FA	Familias en acción	FA	Programa Colombia Mayor
CRI	AV	Avancemos	AV	Régimen no Contributivo de Pensiones por Monto Básico
DOM	PCS	Progresando con Solidaridad	PCS	Apoyo a Adultos Mayores
ECU	BDH	Bono de Desarrollo Humano	BDH	Pensión para Adultos Mayores
SLV	CSRU	Comunidades Solidarias Rurales y Urbanas	CSRU	Pensión Básica Universal/ Nuestros Mayores Derechos
GTM	MBS	Mi Bono Seguro	AM	Programa de Aporte Económico o del Adulto Mayor
HND	BVM	Bono Vida Mejor		
MEX	PPIS	Prospera Programa de Inclusión Social	PAMA	Pensión para Adultos Mayores
PAN	RDO	Red de Oportunidades	AM70	Asistencia Económica para Adultos Mayores de 70 y Más
PRY	TKO	Tekoporã	PAMP	Pensión Alimentaria para Adultos Mayores en Pobreza
PER	Juntos	Juntos	PEN65	Programa Nacional de Asistencia Solidaria "Pensión 65"
URY	AF	Asignaciones Familiares (Plan Equidad)	PNVI	Pensión no Contributiva por Vejez e Invalidez

Source: Based on data from the official registries.

STATISTICAL ANNEX

https://publications.iadb.org/handle/11319/8649