the review of income and wealth

Review of Income and Wealth
Series 57, Number 2, June 2011

USING PSEUDO-PANELS TO MEASURE INCOME MOBILITY IN LATIN AMERICA

BY JOSE CUESTA*

World Bank and Georgetown University

HUGO ÑOPO

Inter-American Development Bank

AND

GEORGINA PIZZOLITTO

Yale University

This paper presents a comparative overview of mobility patterns in 14 Latin American countries between 1992 and 2003. Using three alternative econometric techniques on constructed pseudo-panels, the paper provides a set of estimators for the traditional notion of income mobility as well as for mobility around extreme and moderate poverty lines. The estimates suggest very high levels of time-dependent unconditional immobility for the Region. However, the introduction of socioeconomic and personal factors reduces the estimate of income immobility by around 30 percent. There are also large variations in country-specific income mobility (estimated to explain some additional 10 percent of inter-temporal income variation). Analyzing the determinants of changes in poverty incidence within cohorts revealed statistically significant roles for age, gender, and education of the household head, the latter subject to distinctive effects across levels of attainment and transition in and out of poverty.

JEL Codes: D3, I3, O1

Keywords: income mobility, poverty, pseudo-panels, Latin America

1. Introduction

Latin American nations persistently rank among the most unequal in the world in terms of distribution of earnings and wealth. Discussion of this problem has produced agreement on some of its causes: the Region's disappointing distributive performance has been due to pervasive levels of macroeconomic vulnerability, inequality in political voice, and problems of social exclusion that are rooted in history (World Bank, 2004; IDB, 2007). However, the notion of mobility has not yet taken a central place in this discussion.

The role of mobility in the analysis of inequality has already been emphasized in the economic literature (see Fields, 2005, and Galiani, 2006, for recent reviews). Static measures of inequality, however, are insufficient to portray the well-being of

Note: The findings and interpretations in this paper are those of the authors and do not necessarily represent the views of the Inter-American Development Bank, the World Bank or its corresponding executive directors. Alejandro Hoyos provided valuable assistance.

*Correspondence to: Jose Cuesta, The World Bank, 1818 H Street, NW, Washington DC 20433, USA (jcuesta@worldbank.org).

Published by Blackwell Publishing, 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main St, Malden, MA, 02148, USA.

individuals in a society and must be complemented by the dynamics of mobility. The welfare of individuals in two societies with similar levels of income inequality but different patterns of income mobility would be expected to differ. Individuals in the society with higher mobility would enjoy greater incentives to exert effort and climb up the income distribution than individuals in the society with lower mobility. The aggregation of these individual incentives would in turn be translated into higher productivity in the overall economy, with subsequent beneficial outcomes.

Macroeconomic vulnerability, coupled with the lack of an effective social protection network in the Region, imposes a considerable risk for individuals to slip into poverty (as reported, for instance, in Argentina by Corbacho *et al.*, 2003). This form of individual vulnerability is associated with downward absolute mobility along the welfare distribution. Fields *et al.* (2005) have found that, in upper segments of the income distribution, there is no conclusive evidence that individuals either realize large gains during booms or experience large losses during recessions. That is to say, downward mobility might therefore not take place equally across the whole income distribution or, if it does, it happens at different rates.

The analysis of mobility and the mechanisms through which it operates constitute important tools for policymaking. When governments know the details about the most effective ways of moving people up or preventing them from falling down the income ladder, the design of policies becomes more effective. Also, when governments better understand the tools to cope with downward mobility, the welfare losses associated can be at least ameliorated. That is, an understanding of the factors behind mobility becomes a must.

This paper is a contribution to the limited literature on regional income mobility. There are several reasons for choosing a regional focus, but the most important one, from a policymaking stance, is that it allows for country-specific effects to be compared with sub-regional and Region-wide effects. Of course, the analysis of regional mobility has shortcomings of its own, such as the need to exclude countries and periods from the analysis due to data limitations, as explained below. After this introduction, Section 2 defines mobility along the lines of the categorization in Fields (2005) and discusses the methodology used to estimate *absolute* income mobility, *conditional* mobility (after controlling for personal, socioeconomic, and geographical features of households), country-specific income mobility, and poverty mobility (defined as slipping into or moving out of a poverty threshold). Section 3 describes the construction of a pseudo-panel composed of 14 Latin American countries for the period 1992–2003. The section also describes income and poverty trends for the constructed cohorts, which are innovatively constructed as biannual averages. This strategy ensures a pseudo-panel balance and avoids estimation caveats faced by unbalanced panels. Section 4 discusses the results and Section 5 provides concluding remarks.

2. The Estimation of Mobility

The measurement of income mobility, which started with Lillard and Willis (1978), basically involves the establishment of a relationship between past and present income:

$$y_{i,t} = \beta y_{i,t-1} + \mu_{i,t} \tag{1}$$

where $y_{i,t}$ is the total income for household i at time t, μ_{it} is a disturbance term, and the parameter β, the coefficient of the slope in a regression of the income over its lagged value, is the measure of mobility. Fields (2005)[1] refers to this as *time-dependence* mobility and it will be the focus of our paper. A value of β equal to 1 represents a situation with no income convergence; a value of β below 1 corresponds to a situation in which there is convergence, while zero represents an extreme case in which mobility would be total (as there would be no relationship between past and present incomes). Although there are no ex-ante restrictions on the range of values that β should take, they are regularly within the [0,1] interval. Additionally, the mobility estimator obtained from (1) is called *unconditional* in the sense that it does not take into account the presence of covariates (other than past income) that may explain present income. When the estimation is performed with additional controls, we have the time-dependence conditional estimation of mobility:

$$y_{i,t} = \beta y_{i,t-1} + \delta X_{i,t} + \mu_{i,t} \tag{2}$$

where X is a vector of covariates and δ is intended to measure the impact of those covariates on income. Given that this sort of analysis attempts to follow individuals (or households) over time, the quintessential data tool has been panel data. Unfortunately, such data have only recently become available in Latin America, and the few data panels presently in existence cover only short periods. This has constituted an important barrier to the analysis of mobility in the Region. The development of pseudo-panel techniques that was initiated by Deaton (1985) has been an interesting alternative to overcome this data limitation. A pseudo-panel is formed creating synthetic observations obtained from averaging real observations with similar characteristics (regularly, birth year) in a sequence of repeated cross-sectional datasets. In this way, the synthetic units of observations can be thought as being "followed" over time. The model then requires an appropriate modification:

$$\bar{y}_{c(t),t} = \beta_c \bar{y}_{c(t-1),t-1} + \delta_c \bar{X}_{c(t),t} + \mu_{c(t),t} \tag{3}$$

where the individual index, i, has been replaced by a cohort index, $c_{(t)}$, that is time-dependent. Analogously to equation (1), the slope β_c is the parameter of interest. The literature has then focused on exploring the conditions under which such a parameter can be consistently estimated, given the data limitations imposed by a set of repeated cross-sections (instead of real panel data). The works of Browning *et al*. (1985), Moffit (1993), Collado (1997), Girma (2000), McKenzie

[1]Fields (2005) also summarizes other definitions of mobility: positional movement (a measure of individuals' changes in economic positions); share movement (a measure of changes in individuals' shares of incomes); income flux (size of the fluctuations in individuals' incomes but not their sign); directional income movement (how many people move up or down and by how many dollars); and mobility as an equalizer of longer-term incomes (a comparison of the inequality of income at one point in time with the inequality of income over a longer period). Time-dependence mobility is the definition most vastly used.

(2004), Verbeek and Vella (2002), and Antman and McKenzie (2005), among others, have provided such sets of conditions that the interested reader can explore.

Not surprisingly, there are pros and cons about the use of pseudo-panels for the analysis of mobility. At least three arguments may be cited in its favor. The first is that they suffer less from problems related to sample attrition (because the samples are renewed at every period). The second is that, being constructed by averaging groups of individual observations, they also suffer less from problems related to measurement error (at least at the individual level). A third argument in favor of the use of pseudo-panels, a more practical one, is that because of the wide availability of cross-sectional data it is possible to construct pseudo-panels that are appropriately representative, covering long periods back in time, substantially more than what can be covered by real panels. The main argument against its use has to do with the fact that the decision about the clustering of observations in cohorts depends on a trade-off (number of cohorts vs. number of observations in each cohort) on which the literature has not yet been conclusive. The larger the number of cohorts, the smaller is the number of individuals per cohort. On the one hand, one would like to have a large number of cohorts so that the regressions performed with the resulting pseudo-panels suffer less from small sample problems. On the other hand, however, if the number of observations per cohort were not large enough, the average characteristics per cohort would fail to be good estimates for the population cohort means. In addition, Antman and McKenzie (2005) note two caveats from the use of pseudo-panels. They may introduce biases if the average cohort household fails to account for changing trends in household dissolution and creation (such as, for instance, migration). Also, intra-cohort mobility is utterly ignored. In this vein, Girma (2000) indicates that intra-cohort homogeneity in pseudo-panels (consistent with the notion of "representative" agents) is too strong an assumption. In any case, Bourgignon *et al.* (2006) demonstrate that results from pseudo-panel and panel data may lay reassuringly close. Their results refer to individual earnings and poverty dynamics for Korea, although they warn about the validity of certain assumptions underpinning their estimates (mainly, that labor mobility is independent of individual earnings).

The pseudo-panel approach has been recently undertaken in the Latin American Region to estimate mobility as defined above, at least by Navarro (2006) for Argentina and by Calónico (2006) for a set of eight countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Uruguay, and Venezuela).[2] The latter found low mobility patterns for all these countries during the period 1992–2002. When trying to compare the results from both papers for Argentina we still found some differences. First, the papers use different time spans. While Navarro computed mobility for the period 1985–2004, Calónico did so for 1992–2003. Second, the studies differ in the concept of income that is used. While Calónico uses monthly labor incomes, Navarro based her analysis on hourly wages received by individuals in their main occupation. Third, Navarro narrows

[2]Also, the study of mobility using real panels has been undertaken in Fields *et al.* (2007) for Argentina, Mexico, and Venezuela; and in Albornoz and Menéndez (2004) for Argentina.

her estimations to the conglomerate of Gran Buenos Aires in Argentina in order to construct a much larger pseudo-panel. All in all, Navarro (2006) presents a higher degree of income mobility than Calónico (2006), a result supported by Albornoz and Menéndez (2004) and Fields and Sánchez-Puerta (2005) using panel data for Argentina. Likewise, Antman and McKenzie (2005) report for specific age–education cohorts in Mexico between 1987 and 2001 little mobility between the earnings of rich and poor households but rapid convergence in the average household's earnings, suggesting higher levels of conditional mobility.

Our study complements previous work in both scale and scope. We examine 14 countries during the period 1992 to 2003, analyzing not only the mobility estimator, β, but also changes in the "poverty incidence" for the pseudo-individuals, analyzing the determinants of them. For that purpose, for each cohort we compute the percentage of individuals whose income is below a "poverty threshold" (poverty incidence within the cohort) and then, denoting that percentage by p, we estimate the determinants of the changes in poverty incidence in the cohorts:

$$\Delta p_{c(t),t} = \delta_c \bar{X}_{c(t),t} + \mu_{c(t),t}. \tag{4}$$

In this way we are able to provide estimators of the role of initial conditions on income mobility and the transitions up and down poverty lines.

3. Data

The raw data for this study comes from national household surveys of 14 Latin American countries in the Region: Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, Honduras, Mexico, Panama, Paraguay, Peru, El Salvador, Uruguay, and Venezuela. Although household surveys are not uniform it is possible to harmonize them to make statistics comparable across countries and over time. This survey harmonization has been done by the Research Department of the Inter-American Development Bank using similar definitions of variables in each country/year, and by applying consistent methods for data processing. Countries collect their surveys in different seasons, different years, with different frequencies and coverage (urban or national). Table A1 in the Appendix details these features for the countries in our pseudo-panel.

To maximize the number of countries and periods we considered two-year periods (instead of annual periods) and restricted the panel to one survey round (or sub-period) per country and period. In this way, we selected the survey collected in the even year in each two-year period (that is, 1992 in the 1992–93 period). Also, we selected the latest available round in a given year for those countries with multiple annual sub-periods (this was the case for Argentina, Colombia, Peru, and Venezuela). Interestingly enough, countries in this pseudo-panel collect their surveys typically in the second half of the year, with 11 out of 14 countries collecting surveys during the fourth quarter of the year. It would be therefore expected that seasonality effects, if present, are similarly distributed in the pseudo-panel.[3] We respected the surveys' coverage and did not exclude countries with sub-national coverage (only Argentina and Uruguay have sub-national coverage).[4]

Although this design entailed a loss of information from available surveys in some countries, it allowed us to reach the best combination of number of countries (in this case, 14) with number of periods (in this case, 6).[5] In other words, we dismiss the "excess" of information for some countries in favor of more countries and a lengthier pseudo-panel. Nonetheless, this implies that our interpretation of the dynamics is no longer tied to the customary annual period but to a two-year period. All in all, we construct the pseudo-panel with data from 14 countries using surveys between 1992 and 2003, focusing on household heads aged 21 to 65.

A particularly rigorous approach was taken to the harmonization of household income in the surveys to ensure a comparable definition of household incomes across countries. Based on each survey questionnaire, income from four main sources is considered: monetary labor income, non-monetary labor income, monetary non-labor income, and non-monetary non-labor income (see Table A2 in the Appendix). Countries included in the pseudo-panel share the same sources of labor monetary income: labor (approximately 75 percent of the Region's average household incomes) and non-labor monetary incomes (accounting for the remaining 25 percent). Labor monetary incomes include salary and wages from the main and secondary activity, as well as tips, paid overtime, Christmas or New Year bonuses (called "*Aguinaldo*") and commissions. Non-labor income includes incomes from interest, dividends, pensions, remittances, transfers from other relatives and friends, disability incomes, and other benefits. Once individual incomes are aggregated, household income is constructed by adding the incomes of all members of the household.

All incomes were deflated using the Consumer Price Index of each country and year, and we further adjusted incomes using Purchasing Power Parity, as reported in the World Development Indicators. Apart from the specific treatment of each country's National Institute of Statistics on their Household Surveys (adjustments by national accounts or imputations for non-response and missing values), no additional income adjustments were done in the harmonization process.[6] Countries that fail to report non-labor incomes in any of their household surveys were excluded from the pseudo-panel (as was the case for the Dominican

[3]In any case, we ensured that the income variable referred to the same reference period: the previous month to the collection of the survey. Other variables used in the analysis such as gender, sex, age, household position, and household number are either unchangeable or subject to little (and presumably unbiased) change regardless of the choice of the survey round. It is unlikely that the selection of even years instead of odd years introduces any biases into our estimates. One would not argue that election years, or domestic and international shocks, for example, take place disproportionately in either odd or even years.

[4]In addition, the 1992 survey in Colombia was urban. In Argentina and Uruguay, the urban population covered in the survey represented 62 percent and 80 percent, respectively, of the total population in 2003.

[5]In fact, there is not a period between 1990 and 2006 for which all 14 countries in our sample collected their household survey. Only Argentina, Costa Rica, and Venezuela collected household surveys between 1992 and 2003 without interruption.

[6]Reportedly, only MIDEPLAN does National Accounts adjustments in the CASEN survey in Chile.

Republic, Guatemala, Nicaragua, and Ecuador). We also excluded from the analysis data from Brazil and Mexico for the year 1992 as their income variables showed dramatic fluctuations around that period, likely as a result of high inflation or currency fluctuations.

Birth cohorts include household heads born in seven-year spans, starting with those born between 1927 and 1933 and ending with those born between 1976 and 1982. Alternative cohort lengths were also attempted without significant changes in the estimated results.[7] Cohorts are constructed based on year of birth, country of residence, and gender of the household head. Our pseudo-panel averages observations pertaining to the same survey weighting each observation by the corresponding expansion factors in each survey. As a result, the constructed pseudo-panel follows eight birth cohorts over six periods. This comprises a total of 139,132 individual observations collapsed into 1024 synthetic observations that constitute a representative sample of household heads for the 14 countries under consideration. This number of observations is the result of collapsing the dataset by country (14 countries), gender (1 for men and 0 for women), and the eight birth cohorts (from 1927–33 to 1976–82), for the six periods of analysis. That would imply a total of $14 \times 2 \times 8 \times 6 = 1344$ synthetic observations. However, some countries had missing household surveys for some years (especially the earlier ones), and others were not usable due to the lack of a possibility to harmonize variables, as mentioned earlier. As a result the number of synthetic observations was reduced to 1024. Table 1 reports the distribution of synthetic observations by period and across birth cohorts as well as the distribution of initial observations from the household surveys used in the analysis (that is, before collapsing the dataset by country gender and cohort). Finally, the last column in Table 1 also shows the distribution of original observations after being expanded using population factor weights in the household surveys.

This pseudo-panel exceeds both the depth and breath of other pseudo-panels for the Latin American region. Also, it shows the implications of striking a balance between a relevant number of cohorts and a meaningful size of cohort. An insufficiently large number of cohorts may cause pseudo-panel estimations to suffer from small sample problems, while an insufficiently large cohort size diminishes the quality of estimates for population cohort characteristics (McKenzie, 2004). In the case of this pseudo-panel, the result of multiple periods, birth cohorts, and cohort criteria is the small number of observations for some of the cells, which should be borne in mind at the time of interpreting our estimates.

Another special consideration of this pseudo-panel design is in order as gender of the household head has been considered one of the variables to construct the pseudo-panels. The concern may arise in light of the sustained trend of increasing female participation in Latin American labor markets (which, according to CEPAL (2009), reached about 50 percent in 2007, jumping more than 10 percentage points from 1990). It is believed that this may have contributed to sizeable household structure transformations with corresponding socio-demographic

[7]In particular, four- and six-year spans were attempted and the estimates of the time-dependence mobility did not change substantively. An online appendix reports these estimates. Neither the magnitude of the parameters, nor the significance of the controls, nor the R^2 of each specification change substantively.

TABLE 1
Cohort Sizes

Year Birth Cohort	Period: T1 1992–3	T2 1994–5	T3 1996–7	T4 1998–9	T5 2000–1	T6 2002–3	Total Synthetic Individuals	Total Household Observations (unweighted)	Total Household Observations (weighted)
1927–33	12	20	26	22	0	0	80	4,493	18,876,806
1934–40	12	20	26	28	28	28	142	12,809	74,633,988
1941–47	12	20	26	28	28	28	142	17,795	107,681,592
1948–54	12	20	26	28	28	28	142	23,550	148,562,542
1955–61	12	20	26	28	28	28	142	27,527	188,099,586
1962–68	12	20	26	28	28	28	142	26,986	221,419,153
1969–75	12	20	26	28	28	28	142	17,672	227,347,847
1976–82	0	0	8	28	28	28	92	8,300	103,806,584
Total	84	140	190	218	196	196	1,024	139,132	1,090,428,098

Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

transitions and sociological modernization processes such as increasing migration, divorce patterns, and life expectancy in Latin America during the 1990s (Arriagada, 2007).

It should be noted, however, that these structural transformations do not necessarily imply substantive changes in the gender distribution of household headship. In fact, the largest changes have taken place *within* urban bi-parental households: the proportion of those households with both parents working has increased 8 pp in detriment of those where the spouse did not work. Between groups, however, the share of bi-parental households vis-à-vis nuclear households decreased more modestly by some 4 pp, fully absorbed by female-headed single households which went up from 13 to 17 percent of the total (out of which 3 pp are explained by working female heads and 1 pp by not working female heads). In other words, female labor participation trends have not massively increased female headship, but have clearly improved their contributions to household budgets and decision-making (Arriagada, 2007; ILO/UNDP, 2009, p. 50).

Table 2 presents the basic descriptive statistics of the pseudo-panel: socioeconomic and geographical characteristics of synthetic household heads of the constructed cohorts. The average per capita household income in the pseudo-panel is about US$456 per month with a standard deviation of US$419 in PPP-adjusted real terms. The average household head is 43 years old and has seven years of education. Regarding attainment, 10 percent of household heads have no educa-

TABLE 2

Data Descriptive Statistics

Variable	Number of Observations (in pseudo-panel)	Mean	Standard Deviation	Average Inter-Period Variation (%)
Log per capita household incomes	1,024	5.36	0.68	–3.64%
Poverty incidence (US$1 a day)	1,024	0.45	0.16	–1.60%
Poverty incidence (US$2 a day)	1,024	0.64	0.11	–0.87%
% Female-headed households	1,024	0.50	0.50	0.11%
Age	1,024	43.22	13.84	0.02%
Years of education	1,010	7.15	2.26	0.89%
Schooling attainment				
No education	1,024	0.10	0.11	–10.10%
Primary incomplete	1,024	0.23	0.13	–6.56%
Primary complete	1,024	0.21	0.09	–4.37%
Secondary incomplete	1,024	0.19	0.10	3.97%
Secondary complete	1,024	0.13	0.07	3.99%
Tertiary incomplete	1,024	0.07	0.07	2.37%
Tertiary complete	1,024	0.07	0.05	–0.31%
Number of children aged 0 to 16 years	1,024	1.84	0.69	0.75%
Number of other relatives living in the household	1,024	0.60	0.40	–2.29%
Dwelling Characteristics Index	616	–0.265	1.93	15%
Sub-region				
Southern Cone	1,024	0.38	0.49	–
Andean Region	1,024	0.29	0.46	–
Mexico and Central America	1,024	0.33	0.47	–

Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

tion; 44 percent have primary education (either incomplete or complete); and 33 percent have started or completed secondary education. The remaining 14 percent have college education. The average household has almost two children. Table 2 also reports the distribution of observations by sub-regions.[8] The two measures of poverty incidence, also reported in Table 2, deserve special mention. They capture the fraction of households (or, equivalently, household heads) within each cohort whose per-capita household income falls below the two most common internationally utilized thresholds of US$1 and US$2 a day.

Interestingly, the variable measuring dwelling characteristics captures the quality of the living conditions of the households. The variable is computed using information about the quality of the materials used for the walls, the number of rooms, whether the household has a bathroom connected to a sewerage system inside the house or not, and access to a source of safe water and electricity. This variable, which we refer to as the Dwelling Characteristics Index, is constructed as the first principal component that explains most of the variance of the characteristics mentioned above. By construction, it has a zero-mean and a symmetric distribution around it. Table 2 also reports the distribution of observations by sub-regions and the average inter-period changes of the incumbent variables used in the analysis. Inter-period changes show that despite the number of years of education having only slightly increased on average, there are important changes in terms of educational attainment: sizeable decreases in the proportion of household heads with low education (primary or less), and significant increases in the proportion of secondary education household heads. Other demographic and personal characteristics have changed little. Living conditions (approximated by the Dwelling Characteristics Index) have improved substantially, even though their improvement does not follow a similar trend to that of per capita household incomes.

Figure 1 depicts regional and sub-regional trends of per capita monthly household incomes, PPP-adjusted, for selected birth cohorts. Even when trends differ across sub-regions, within each of them the cohorts of young adults, prime-age adults, and retirees follow similar patterns. This constitutes, although rudimentary, a prima facie evidence of low patterns of mobility in the region, along the lines of what Calónico (2006) found. Interestingly, these trends differ from nominal per capita household incomes and even PPP-adjusted national per capita GDP. For all the sub-regions and the Region as a whole, per capita income and GDP increased in the 1990s, as reported by CEPAL (2007), and were accompanied by a substantive decrease in poverty during the same period from 48 percent in 1990 to 39 percent in 2005.

4. Estimations of Income Mobility and the Determinants of Poverty Changes

In this section we provide estimates of income mobility (equation (3) in Section 2) and the determinants of changes in poverty incidence within the

[8]The Southern Cone includes Argentina, Brazil, Chile, Uruguay, and Paraguay; the Andean Region includes Bolivia, Colombia, Peru, and Venezuela; Central America includes Costa Rica, El Salvador, Honduras, Mexico, and Panama.

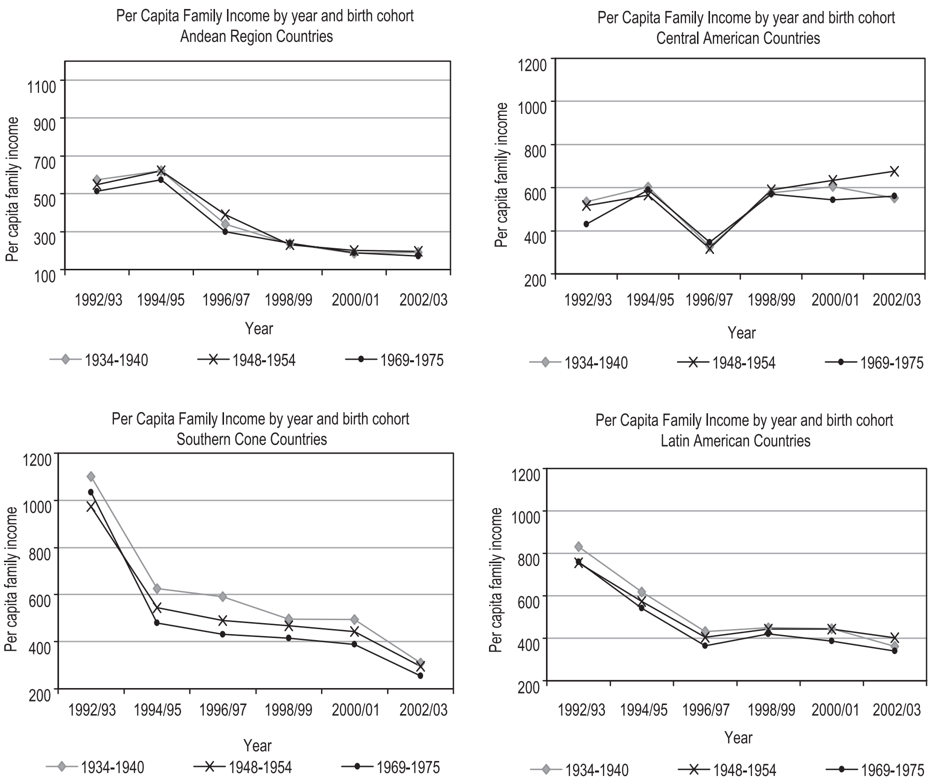

Figure 1. Income Trends by Sub-Region

Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

cohorts (equation (4) in Section 2). The observational unit is the household, with additional variables capturing the personal characteristics of the household head. The dependent variable used in our estimates is the log of per capita household incomes for the period under consideration, which Fields and Ok (1999) demonstrate to be the only measure of income movement to have a set of desired properties (scale invariance, symmetry, multiplicability, and additive separability). As outlined in the data section, our variable results from the sum of labor and non-labor incomes of all household members divided by the total household size as reported by the household survey selected in each two-year period. Table 3 reports estimates of time-dependence income mobility, measured as the elasticity of current incomes with respect to past incomes. The results are reported for the whole Region without any further controls, with sub-region specific controls (three sub-regions: Southern Cone, Andean Region, and Mexico and Central America) and with country-specific controls. These correspond to the columns of Model I, Model II, and Model III, respectively. To the extent that these models are controlling for intra-regional variability but not for individuals' characteristics, we consider

TABLE 3

Estimates of Time-Dependence Income Mobility in Latin America, Unconditional Mobility

Dependent Variable: Log of Real Per Capita Household Income (PPP) at Time t	Model I	Model II	Model III
Estimated income mobility—equation (3)			
β	0.966	0.946	0.949
	[645.45]***	[342.54]***	[199.03]***
R-squared	0.9981	0.9983	0.9986
Controlling for			
Sub-regional dummies	No	Yes	No
Country dummies	No	No	Yes
Observations	800	800	800

Notes: Absolute value of t statistics in brackets.
*Significant at 10%; **significant at 5%; ***significant at 1%.
Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

TABLE 4

Estimates of Time-Dependence Income Mobility in Latin America, Conditional Mobility

Dependent Variable: Log of Real Per Capita Household Income (PPP) at Time t	Model IV	Model V	Model VI
Estimated income mobility—equation (3)			
β	0.640	0.608	0.601
	[53.54]***	[52.47]***	[42.72]***
R-squared	0.999	0.999	0.999
Controlling for			
Characteristics of the household head (age, gender, and educational attainment)	Yes	Yes	Yes
Number of children (16 years old or less)	No	Yes	Yes
Dwelling Characteristics Index	No	No	Yes
Country dummies	Yes	Yes	Yes
Observations	800	800	500

Notes: Absolute value of t-statistics in brackets.
*Significant at 10%; **significant at 5%; ***significant at 1%.
Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

these estimators as "unconditional" according to the terminology introduced in Section 2. The results confirm a very low degree of income mobility for Latin America, as previously found in the literature. The estimate of the unconditional mobility indicator, β, is as high as 0.966 (when no control is considered).

The estimated mobility changes substantially after controls are introduced (see Table 4). Taking Model III as a point of departure and gradually adding controls for characteristics of the household head (age, gender, and educational attainment), number of children 16 years old or less living at home, and the dwelling characteristics index described above, the estimated mobility falls to almost two-thirds of its unconditional value.[9] This evidence suggests that a misleading attribution of demographic and socioeconomic impacts to past incomes may well generate a false sense of limited time-dependence income mobility.

A country-specific analysis of mobility should reveal the existing heterogeneity across the Region. Table 5 reports country-specific estimates of mobility for Models I, IV, V, and VI. As in the aggregate, the sole introduction of household head characteristics notably reduces the measured mobility. The most notorious cases are Panama and Uruguay where the estimators of mobility were reduced to less than one-third of their unconditional values. The further introduction of controls for children (16 years old or less) at home and dwelling characteristics further reduced the estimated conditional mobility, but to a lesser extent, in most countries (Brazil, Colombia, and Costa Rica being interesting exceptions).

The estimates of income mobility in Table 5 are expressed as elasticities, which allows for a meaningful comparison across countries with different starting income levels. Estimated elasticities vary widely across country, as predicted. High levels of conditional time-dependence income immobility (β exceeding 0.75) are found only in Brazil, Colombia, and Costa Rica, while the rest of the Region shows higher levels of mobility (lower β). El Salvador is a special case since its unconditional (as well as conditional) (im)mobility parameter, β, exceeds 1. In any case, a previous period's incomes predict very closely the next period's lower incomes. Countries such as Chile or Argentina show moderate immobility (β between 0.6 and 0.75) compared with other "mobile" countries (β below 0.6). These results confirm that higher mobility is found across countries when countries are considered separately than when countries are being pooled regionally (as was the case with results for Argentina using the separate estimations of Navarro (2006) and the pooled estimations of Calónico (2006)). Furthermore, our results are consistent with the finding of restrained mobility in Chile reported by Contreras *et al.* (2004). Even though this limited evidence does not allow for generalizations, it may be that Region-pooled estimates average out different country-specific patterns of income mobility.

We then develop an indicator that captures changes in poverty incidence within the cohorts over time—that is, mobility around a threshold that can be thought of as a poverty line. We perform the exercise for the widely used international poverty cut-offs of US$1/day and US$2/day per person. For the construction of such an indicator we first compute the poverty incidence within each cohort or synthetic observation (that is, the percentage of households that have an average per capita income below the poverty cut-offs). Then, we subtract the poverty incidence of each synthetic observation in one period with the one observed in the previous period. With this procedure we obtain a measure of the changes in poverty incidence for each cohort. Having constructed the indicator of changes in poverty incidence for the pseudo-observations we then estimate the determinants of those changes using equation (4) in Section 2. As the dependent

[9]Note that adding the dwelling characteristics index reduces the number of observations from 800 to 500. To discard the possibility of sample composition effects driving the results, we also estimated Models IV and V using only the 500 observations included in Model VI. The results are almost identical. The estimation of Model IV using the same sample as in model VI delivers $\beta = 0.632$ [42.19]***, $R^2 = 0.9994$, while for Model V results are $\beta = 0.605$ [41.95]***, $R^2 = 0.9995$.

TABLE 5

Country-Specific Estimates of Unconditional and Conditional Time-Dependence, Income Mobility in Latin America

Dependent Variable: Log of Real Per Capita Household Income (PPP) at Time t	Unconditional	Conditional		
Country	Model I β	Model IV β	Model V β	Model VI β
Argentina	0.975	0.746	0.662	0.674
	[192.90]***	[2.84]***	[2.40]**	[1.96]*
	(N = 70: R^2 = 0.9981)	(N = 70: R^2 = 0.9980)	(N = 70: R^2 = 0.999)	(N = 70: R^2 = 0.999)
Bolivia	0.973	0.423	0.289	0.244
	[125.66]***	[8.02]***	[4.77]***	[1.09]
	(N = 68: R^2 = 0.9958)	(N = 68: R^2 = 0.9996)	(N = 68: R^2 = 0.999)	(N = 26: R^2 = 0.999)
Brazil	0.982	0.803	0.829	0.855
	[840.59]***	[19.65]***	[22.03]***	[15.82]***
	(N = 56: R^2 = 0.999)	(N = 56: R^2 = 0.9997)	(N = 56: R^2 = 0.999)	(N = 56: R^2 = 0.999)
Chile	0.995	0.499	0.476	0.605
	[333.34]***	[4.65]***	[4.35]***	[5.34]***
	(N = 70: R^2 = 0.9994)	(N = 70: R^2 = 0.9998)	(N = 70: R^2 = 0.999)	(N = 56: R^2 = 0.999)
Colombia	0.964	0.781	0.822	0.808
	[204.16]***	[19.11]***	[20.97]***	[22.41]***
	(N = 70: R^2 = 0.9983)	(N = 70: R^2 = 0.999)	(N = 70: R^2 = 0.999)	(N = 70: R^2 = 0.999)
Costa Rica	0.973	0.689	0.693	0.781
	[238.98]***	[7.44]***	[7.40]***	[5.52]***
	(N = 70: R^2 = 0.9972)	(N = 70: R^2 = 0.9996)	(N = 70: R^2 = 0.999)	(N = 28: R^2 = 0.999)
Honduras	0.963	0.482	0.187	–
	[123.32]***	[3.61]***	[1.70]*	–
	(N = 44: R^2 = 0.999)	(N = 44: R^2 = 0.9991)	(N = 44: R^2 = 0.999)	–
Mexico	0.945	0.43	0.432	0.431
	[133.95]***	[14.29]***	[17.20]***	[17.02]***
	(N = 56: R^2 = 0.9969)	(N = 56: R^2 = 0.9998)	(N = 56: R^2 = 0.999)	(N = 56: R^2 = 0.999)

Table 5 continued on next page

TABLE 5 (*continued*)

Dependent Variable: Log of Real Per Capita Household Income (PPP) at Time *t*	Unconditional	Conditional		
Country	Model I β	Model IV β	Model V β	Model VI β
Panama	0.999	0.248	0.079	–
	[281.24]***	[2.46]**	[1.14]	–
	(N = 58: R^2 = 0.9993)	(N = 58: R^2 = 0.9998)	(N = 58: R^2 = 0.999)	–
Peru	0.996	0.746	0.060	–
	[175.12]***	[7.58]***	[0.57]	–
	(N = 44: R^2 = 0.9986)	(N = 44: R^2 = 0.9997)	(N = 44: R^2 = 0.999)	–
Paraguay	0.955	0.981	0.904	0.537
	[257.19]***	[9.30]***	[7.92]***	[6.50]***
	(N = 42: R^2 = 0.9994)	(N = 42: R^2 = 0.9995)	(N = 42: R^2 = 0.999)	(N = 42: R^2 = 0.999)
El Salvador	1.005	0.941	1.121	0.525
	[306.65]***	[5.11]***	[4.64]***	[2.81]**
	(N = 28: R^2 = 0.9997)	(N = 28: R^2 = 0.999)	(N = 28: R^2 = 0.999)	(N = 28: R^2 = 0.999)
Uruguay	0.932	0.270	0.269	–
	[136.44]***	[7.91]***	[7.84]***	–
	(N = 70: R^2 = 0.9963)	(N = 70: R^2 = 0.9991)	(N = 70: R^2 = 0.999)	–
Venezuela	0.896	0.582	0.558	0.484
	[151.62]***	[18.14]***	[15.52]***	[12.73]***
	(N = 54: R^2 = 0.9977)	(N = 56: R^2 = 0.9990)	(N = 56: R^2 = 0.999)	(N = 54: R^2 = 0.999)
Controlling by				
Characteristics of the household head	No	Yes	Yes	Yes
No. of children (16 years old or less)	No	No	Yes	Yes
Dwelling characteristics	No	No	No	Yes

Notes: Absolute value of t-statistics in brackets.
*Significant at 10%; **significant at 5%; ***significant at 1%.
Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

TABLE 6

Determinants of Changes in Poverty Incidence in Latin America, Tobit Models, $1/Day and $2/Day

Dependent Variable: Change in Poverty Incidence in the Cohort	U$S1 a Day Per Person Model 1	Model 2	Model 3	U$S2 a Day Per Person Model 1	Model 2	Model 3
Initial poverty level	–0.348	–0.366	–0.561	–0.323	–0.339	–0.507
	[11.91]***	[11.33]***	[16.64]***	[12.06]***	[11.58]***	[16.96]***
Age	–0.019	–0.02	–0.017	–0.013	–0.014	–0.01
	[8.30]***	[8.71]***	[8.24]***	[7.08]***	[7.30]***	[5.88]***
Age^2	0.0002	0.0002	0.005	0.0001	0.0001	0.003
	[7.08]***	[7.16]***	[6.81]***	[5.56]***	[5.59]***	[4.26]***
Gender [= 1 if male]	–0.003	–0.004	0.005	0.0001	–0.001	0.01
	[0.60]	[0.89]	[1.28]	[0.11]	[0.15]	[2.68]***
Primary incomplete or complete	0.143	0.113	–0.325	0.121	0.104	–0.34
	[2.56]**	[2.02]**	[3.74]***	[2.57]**	[2.20]**	[4.58]***
Secondary incomplete or complete	0.019	–0.065	–0.187	–0.012	–0.053	–0.199
	[0.38]	[1.10]	[2.85]***	[0.28]	[1.06]	[3.59]***
Superior incomplete or complete	–0.032	–0.099	–0.497	–0.058	–0.094	–0.534
	[0.61]	[1.75]*	[6.04]***	[1.30]	[1.91]*	[7.47]***
Number of children	0.08	0.086	0.099	0.065	0.068	0.078
	[9.01]***	[9.49]***	[12.20]***	[8.90]***	[9.16]***	[11.63]***
Dwelling Characteristics Index	0.000	0.002	0.023	–0.001	0.001	0.019
	[0.02]	[0.52]	[5.45]***	[0.57]	[0.21]	[5.14]***
Constant	0.366	0.444	0.762	0.363	0.409	–0.01
	[6.42]***	[7.16]***	[10.05]***	[7.42]***	[7.63]***	[5.88]***
Sub-regional dummies	No	Yes	No	No	Yes	No
Country dummies	No	No	Yes	No	No	Yes
LR chi2	174.89	184.28	322.34	189.78	194.00	331.47
Log likelihood	597.26	601.96	670.99	683.08	685.19	753.92
Observations	500	500	500	500	500	500

Notes: Absolute value of t-statistics in brackets.
*Significant at 10%; **significant at 5%; ***significant at 1%.
Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

variable, by construction, is bounded between –1 and 1, the estimation is performed using a two-limit Tobit model with these two extremes as lower and upper limits, respectively. The aggregate results are reported in Table 6.

The most salient regularities on the estimations of the determinants of changes in poverty incidence are the role of age and gender of the household head, and the poverty incidence in the previous period for each pseudo-observation.[10] Results indicate that higher levels of initial poverty reduce the probability of poverty changes, in any direction, which is reminiscent of the notion of poverty traps (Barro and Sala-i-Martin, 2003) and lack of poverty convergence (Ravallion, 2009) at a country level: poorer countries have a "dynamic poverty disadvantage" (Ravallion, 2009, p. 29) regardless of human development levels as they do not grow faster than non-poor countries and their growth is not pro-poor. Similarly, at a household level, poor households should expect higher poverty immobility than non-poor households. This is also true for extremely poor households. When

[10]The number of observations in the regression models varies due to data availability in the Dwelling Characteristic Index.

estimating a quadratic impact of age, we found it to be statistically significant, with the relationship depicting a U-shape. The age of the household head at which the changes in poverty of her/his household are minimal is around the late 40s. As age increases, poverty mobility decreases up to the late 40s age peak; thereafter, age is associated with higher probability of poverty mobility (which could be either into or out of poverty). Regarding gender, estimates suggest that the gender of the head of household is not a statistically significant determinant on the chances of either moving out of poverty or falling into it, although the effect varies when countries are being controlled for. In contrast, we find evidence of a positive impact of dwelling characteristics on changes in poverty incidence when controlling for countries.[11]

In theory, the role of number of children at home (or household size) in poverty mobility is unclear. A larger household size implies larger needs to cater for within the household, on the one hand, but also, typically, additional caretakers and higher incentives for adult members to work (as discussed in Cuesta, 2006). Which thrust dominates remains an empirical question. For the sample and period analyzed, our estimates show that the aggregated effect of number of children living in a household is to increase the probability of poverty changes (again, either in or out of poverty).

The role of education of the household head deserves particular discussion. We found positive, statistically significant and economically relevant impacts of education on the changes in poverty incidence, especially among those with primary education (either complete or incomplete), for the specifications that did not make country distinctions (that is, for Models 1 and 2).[12] This implies that primary education (either complete or incomplete) increases the probability of poverty changes. This result does not specify, however, the composition of poverty mobility—that is, whether moves out of poverty dominate over moves into poverty, or vice versa. Interestingly, when introducing the set of country dummies, results are reversed. Now, educational attainments from primary, secondary, and tertiary education have all significant impacts on poverty mobility: in fact, they all have a negative impact, which suggests that education reduces poverty changes. In other words, households with higher educational accomplishments are less vulnerable to poverty mobility (in or out of poverty). A second key result is that the role of education with respect to the chances of moving in and out of poverty seems to differ by country. An analysis of the same estimations at the country level promises to deliver interesting insights about it. Table 7 presents estimates of the determinants of poverty mobility at country level for the US$2/day poverty cut-off.

Reassuringly, country results confirm by and large the main conclusions on the impacts from initial poverty level, age, gender, household size, and dwelling characteristics reported for the region as a whole in Table 6. Interestingly, education keeps playing a statistical significant role on poverty mobility by country.

[11]As outlined above, the Dwelling Characteristics Index is constructed upon the basis of five observable (and comparable across countries) characteristics. When analyzing independently the role of those characteristics in changes in poverty incidence we found that most of the effect of the aggregate index is driven by the quality of the walls of the dwellings. These results are available from the authors upon request.

[12]The base category is No Education.

TABLE 7

Determinants of the Changes in Poverty Incidence in Latin America Using $2/Day Poverty Line

Dependent Variable: Change in Poverty Incidence in the Cohort	Country									
	Argentina	Bolivia	Brazil	Chile	Colombia	Costa Rica	Mexico	Paraguay	El Salvador	Venezuela
Initial poverty level	−0.443	−1.168	−0.504	−0.129	−0.543	−0.835	−1.022	−0.815	−0.989	−1.24
	[2.15]**	[17.76]***	[5.79]***	[0.54]	[4.70]***	[8.21]***	[15.27]***	[8.07]***	[4.73]***	[12.09]***
Age	−0.019	−0.008	−0.003	−0.054	−0.017	−0.006	−0.023	−0.009	0	−0.001
	[1.43]	[1.14]	[0.94]	[3.43]***	[2.77]***	[0.71]	[4.02]***	[1.18]	[0.07]	[0.26]
Age^2	0.0002	0.00007	0.00002	0.001	0.0001	0.00002	0.0002	0.0001	0.00001	0.00001
	[1.80]*	[0.86]	[0.54]	[3.25]***	[2.13]**	[0.20]	[3.27]***	[1.11]	[0.18]	[0.06]
Gender [= 1 if male]	−0.01	0.048	0.007	−0.056	0.009	0.028	0.081	0.018	0.017	−0.002
	[0.43]	[3.42]***	[0.89]	[2.45]**	[0.86]	[2.84]**	[6.03]***	[1.20]	[0.84]	[0.27]
Primary incomplete or complete	−0.608	0.012	−0.284	2.227	−1.195	−1.064	−0.337	−0.319	−0.103	−0.199
	[0.41]	[0.18]	[1.24]	[3.03]***	[5.14]***	[4.05]***	[2.15]**	[1.29]	[0.60]	[1.20]
Secondary incomplete or complete	0.708	0.012	−0.038	1.762	−0.913	−1.29	−0.275	−0.195	0.198	−0.068
	[0.52]	[0.13]	[0.18]	[2.25]**	[4.59]***	[4.49]***	[1.81]*	[0.64]	[0.67]	[0.42]
Superior incomplete or complete	−0.114	−0.757	−0.382	1.318	−1.099	−0.747	−1.191	−0.691	−0.531	−0.436
	[0.08]	[7.54]***	[1.74]*	[1.98]*	[5.31]***	[2.75]**	[8.86]***	[2.61]**	[2.04]*	[3.29]***
Number of children	0.083	0.078	0.051	−0.008	0.097	0.160	0.163	0.076	0.058	0.089
	[2.06]**	[4.88]***	[5.10]***	[0.15]	[4.87]***	[6.84]***	[10.96]***	[4.50]***	[2.96]***	[5.43]***
Dwelling Characteristics Index	0.022	0.006	0.014	0.200	0.036	−0.103	0.020	−0.014	0.017	0.006
	[0.51]	[0.71]	[0.42]	[5.66]***	[4.98]***	[3.54]***	[2.82]***	[5.41]***	[1.10]	[0.41]
Constant	0.395	1.062	0.429	−0.356	1.635	1.407	1.242	0.951	0.735	1.054
	[0.27]	[6.18]***	[2.07]**	[0.48]	[8.95]***	[5.63]***	[8.64]***	[3.41]***	[2.37]**	[6.46]***
LR chi2	23.95	80.20	46.65	51.00	110.51	60.69	124.22	58.65	54.89	82.40
Log likelihood	109.77	72.95	152.21	86.47	150.48	64.55	129.79	88.66	81.41	133.52
Observations	70	26	56	56	70	28	56	42	28	54

Notes: Absolute value of t-statistics in brackets.
*Significant at 10%; **significant at 5%; ***significant at 1%.
Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

TABLE 8

Determinants of the Changes Out Of and Into Poverty Incidence in Latin America Using $2/Day Poverty Line

	Remains Poor	From Poor to Non-Poor	From Non-Poor to Poor	Never Poor
Primary incomplete	4.130	–0.037	0.007	–4.100
		[3.02]***	[–0.71]	[–2.76]***
Primary complete	4.296	–0.023	0.005	–4.299
		[–2.47]**	[–1.55]	[–2.49]**
Secondary incomplete	1.283	0.014	0.012	–1.310
		[–0.42]	[2.76]***	[–0.89]
Secondary complete	4.454	0.007	0.011	–4.473**
		[–2.03]**	[–0.10]	[–2.50]
Tertiary incomplete	5.536	0.025	0.014	–5.575***
		[–2.48]**	[0.02]	[–2.96]
Tertiary complete	5.853	0.056	0.014	–5.924***
		[–1.38]	[–0.17]	[–3.25]
R^2		0.7204		
Observations		672		
Log likelihood		–260.46		

Notes: Regressions control for age, gender, number of children, dwelling characteristics, and countries.
Marginal effects evaluated at mean of each variable.
Remains poor is the reference category.
z statistics in brackets.
*Significant at 10%; **significant at 5%; ***significant at 1%.
Source: Authors' calculations based on IDB Research Department Harmonized Household Surveys.

Tertiary education reduces the probability of poverty mobility at a statistically significant level and consistently across countries except for Chile, which increases that probability. In countries like Chile, Colombia, Costa Rica, and Mexico, primary and secondary education also affects the probability of poverty mobility although in different directions. In Chile, again, educational attainment increases poverty mobility, while for the rest, educational attainment decreases poverty mobility.

Results thus far do not single out compositional effects when explaining poverty changes—that is, whether, for instance, higher educational attainments are associated with a higher probability of moving out of poverty vis-à-vis a lower probability of falling into poverty. In order to better understand the role of education in the dynamics of poverty, Table 8 reports the estimated impacts of education on poverty mobility disaggregated by educational level; whether or not the level was complete; and changes out of and into poverty separately. Each transition category already controls for the initial poverty position of each pseudo-observation, so the initial poverty variable is no longer included in the regression. Results from a multinomial logit (using "always poor" as baseline category) show that after controlling for country specific effects, socioeconomic and demographic characteristics, the effects of each level of education (and whether or not level was completed) have distinct and asymmetric effects on poverty mobility.

In effect, primary education attainment reduces the probability of moving out of poverty, while secondary and tertiary increases the probability of moving out of poverty. This effect is increasingly stronger as educational attainment increases: completing tertiary education doubles the effect of incomplete tertiary education on moving out of poverty, which in turn is stronger than complete secondary education. Instead, the impact of educational attainment is mostly statistically insignificant when explaining moving into poverty (all other factors controlled for)—a surprising exception being complete secondary education that increases the probability of falling into poverty. Results, therefore, suggest that there are substantive compositional effects in the relationship between education and mobility, which vary by level of education and type of (in and out) poverty transitions.

Although the aim of the paper is not to explore country-specific explanations underlying mobility estimates, there are expectedly stark differences across countries in terms of economic growth, unemployment, informality, labor income growth and gender-based wage dispersion and rule of law all likely to affect, directly or indirectly, the generation of household incomes. These differences, although difficult to generalize, point towards a better performance among those countries with persistently high immobility (that is, Brazil, Colombia, and Costa Rica). Interestingly, educational trends purport the opposite message. Both primary and secondary enrolment rates reach substantively lower levels for the persistently immobile group than for the rest. They report the largest returns to tertiary education and are among the largest returns on secondary education as well. However, they are the only countries in which temporal trends for rates of return for secondary and tertiary education just move in opposite directions: that is, when, for example, secondary education returns increase over time from the onset to the middle of the decade, tertiary returns decrease in that same period. That would suggest a cancellation effect crippling the ability of rates of returns to affect income mobility in those three countries—at least to the population group of urban males aged 30–50 years.

5. Conclusions

Difficulties in the construction of panel-data have prevented a comprehensive analysis of mobility in Latin America and elsewhere in the developing world. This paper sheds some light on the implications of mobility in the Region by constructing, alternatively, a pseudo-panel for 14 countries over 11 years and eight birth cohorts. Our analysis focuses on the standard notion of income mobility and, in addition, explores a notion of "poverty mobility" around thresholds or poverty lines. We show that the Region as a whole is highly immobile both in income and poverty terms. However, a sizeable part of this immobility results from failing to account for the effects that personal and socioeconomic controls have on mobility (over 30 percent of the unconditional time-dependence mobility). Country-specific differences are also substantive and tend to cancel out when grouped into traditional sub-regions (Andes, Southern Cone, Central America). Current levels of incomes and poverty not explained by past levels of incomes or past poverty status may vary widely across countries, in some cases exceeding well over 50 percent of estimated changes. Specific to poverty mobility, we found statistically significant roles for age, gender, and education of the household head, the latter suggesting distinctive effects from different levels of education, completion status, and the nature of the poverty transition (statistically significant and positive for moving out of poverty; statistically insignificant for falling into poverty).

Notwithstanding the limitations of the modeling, we reject as simplistic and misleading the widely accepted notion of a dominating socioeconomic immobility throughout the Region. This is a first step towards uncovering the underlying dynamics of poverty mobility. Further modeling efforts and the construction of appropriate panel data will be critical in providing further steps. Also, it should contribute to clarify results difficult to explain thus far relating to the role of certain levels of education in specific countries.

Appendix: Data Sources

TABLE A1
Coverage of Data Sources

Country	Survey	Number of Surveys Per Year	Chosen Survey	Coverage
Argentina	Encuesta Permanente de Hogares (EPH)	May and October	October	Urban—15 cities (1992–98)
Brazil	Pesquisa Nacional por Amostra de Domicilios (PNAD)	Once a year	September	Urban—28 cities (1999–2002)
Bolivia	Encuesta de Hogares	Once a year	October–November	National
Chile	Encuesta de Caracterización Socioeconómica Nacional (CASEN)	Once a year	November	National
Colombia	Encuesta Continua de Hogares	Once a year	Monthly	National
Costa Rica	Encuesta de Hogares de Propósitos Múltiples (EHPM)	Once a year	July	Urban (1992) National (1993–2002)
Honduras	Encuesta Permanente de Hogares de Propósitos Múltiples	May and September	September	National
Mexico	Encuesta Nacional de Ingreso y Gastos de los Hogares (ENIGH)	Once a year	August–November	National
Panama	Encuesta de Hogares	Once a year	August	National
Paraguay	Encuesta Permanente de Hogares	Once a year	August–December	National
Peru	Encuesta Nacional de Hogares sobre Medición de Niveles de Vida	Quarterly	IV quarter	National
El Salvador	Encuesta de Hogares de Propósitos Múltiples (EHPM)	Once a year	January–December	National
Uruguay	Encuesta Continua de Hogares	Once a year		National
Venezuela	Encuesta de Hogares por Muestreo	Twice a year	July–December	Urban

Source: Own calculations based on IDB Research Department Harmonized Household Surveys.

TABLE A2

Components to Construct Consistent Definitions of Household Income Over Time and Across Countries

No.	Country	Monetary Labor Income	Monetary Non-Labor Income	Labor Non-Monetary Income	Non-Monetary Non-Labor Income
		Type of Income			
1	Argentina	x	x		
	Belize	x			
2	Bolivia	x	x		
3	Brazil	x	x	x	
4	Chile	x	x		
5	Colombia	x	x		
6	Costa Rica	x	x		
	Dominican Republic	x	x		
	Ecuador	x	x	x	
7	El Salvador	x	x		
	Guatemala	x	x	x	
	Guyana	x	x	x	
8	Honduras	x	x		
	Jamaica	x	x		
9	Mexico	x	x	x	
	Nicaragua	x	x	x	
10	Panama	x	x		
11	Paraguay	x	x		
12	Peru	x	x	x	
13	Uruguay	x	x	x	
14	Venezuela	x	x		

Source: Own calculations based on IDB Research Department Harmonized Household Surveys.

References

Albornoz, Facundo and Marta Menéndez, "Income Dynamics in Argentina During the 1990s: 'Mobiles' Did Change Over Time," Mimeo, World Bank, 2004.

Antman, Francisca and David McKenzie, "Earnings Mobility and Measurement Error: A Pseudo-Panel Approach," Mimeo, Stanford University, 2005.

Arriagada, Irma, *Familias y Políticas Públicas en América Latina. Una Historia de Desencuentros*, CEPAL, Santiago de Chile, 2007.

Barro, Robert and Xavier Sala-i-Martin, *Economic Growth*, 2nd edition, MIT Press, Cambridge, 2003.

Bourgignon, Francois, Chor-ching Goh, and Dae Il Kim, "Estimating Vulnerability to Poverty Using Pseudo-Panel Data," World Bank Policy Research Working Paper No. 3375, World Bank, Washington DC, 2006.

Browning, Martin, Angus Deaton, and Margaret Irish, "A Profitable Approach to Labor Supply and Commodity Demand Over the Life-Cycle," *Econometrica*, 53, 503–44, 1985.

Calónico, Sebastian, "Pseudo-Panel Analysis of Earnings Dynamics and Mobility in Latin America," Mimeo, Inter-American Development Bank, 2006.

CEPAL, *Panorama Económico y Social de América Latina y el Caribe 2005*, CEPAL, Santiago de Chile, 2007.

———, CEPALSTAT: Databases and Statistical Publications, http://www.eclac.org/estadisticas/default.asp?, accessed August 2009.

Collado, Dolores, "Estimating Dynamic Models from Time Series of Independent Cross Sections," *Journal of Econometrics*, 82, 37–62, 1997.

Contreras, Dante, Ryan Cooper, Jorge Herman, and Christopher Neilson, "Dinámica de la pobreza y movilidad social en Chile," Mimeo, Universidad de Chile, 2004.

Corbacho, Ana, Mercedes Garcia-Escribano, and Gabriela Inchauste, "Argentina: Macroeconomic Crisis and Household Vulnerability," Mimeo, IMF, 2003.

Cuesta, Jose, "The Distributive Consequences of Machismo: A Simulation Analysis of Intra-Household Discrimination," *Journal of International Development*, 18, 1065–80, 2006.
Deaton, Angus, "Panel Data from Times Series of Cross-Sections," *Journal of Econometrics*, 30, 109–26, 1985.
Fields, Gary, "The Many Facets of Economic Mobility," Mimeo, Cornell University, 2005.
Fields, Gary and Efe Ok, "Measuring Movement of Incomes," *Economica*, 66, 455–71, 1999.
Fields, Gary and Laura Sánchez-Puerta, "Earnings Mobility in Urban Argentina," Background Paper Prepared for the World Bank, World Bank, Washington DC, 2005.
Fields, G., R. Duval, Samuel Freije, and Laura Sánchez-Puerta, "Intergenerational Income Mobility in Latin America," *Economia*, Spring, 101–54, 2007.
Galiani, Sebastian, "Notes on Social Mobility," Mimeo, Universidad de San Andrés, 2006.
Girma, Sourafel, "A Quasi-Differencing Approach to Dynamic Modeling from a Time-Series of Independent Cross Sections," *Journal of Econometrics*, 98, 365–83, 2000.
IDB (Inter-American Development Bank), *Outsiders? The Changing Patterns of Exclusion in Latin America and the Caribbean, 200*8 *Report on Economic and Social Progress in Latin America*, Inter-American Development Bank, Washington DC, 2007.
ILO/ UNDP (International Labour Organization/United Nations Development Programme), *Trabajo y Familia: Hacia Nuevas Formas de Conciliación con Corresponsabilidad Social*, Maval, Santiago de Chile, 2009.
Lillard, Lee and Robert Willis, "Dynamics Aspects of Earnings Mobility," *Econometrica*, 46, 985–1012, 1978.
McKenzie, David, "Asymptotic Theory for Heterogeneous Dynamic Pseudopanels," *Journal of Econometrics*, 120, 235–62, 2004.
Moffit, Robert, "Identification and Estimation of Dynamic Models with a Time Series of Repeated Cross-Sections," *Journal of Econometrics*, 59, 99–124, 1993.
Navarro, Ana, "Estimating Income Mobility in Argentina with Pseudo-Panel Data," Mimeo, Universidad de San Andres, 2006.
Ravallion, Martin, "Why Don't We See Poverty Convergence?" World Bank Policy Research Working Paper No. 4974, World Bank, Washington DC, 2009.
Verbeek, Marno and Francis Vella, "Estimating Dynamic Models from Repeated Cross-Sections," Mimeo, K.U. Leuven Center for Economic Studies, 2002.
World Bank, *Inequality in Latin America: Breaking with History?* World Bank, Washington DC, 2004.

Supporting Information

Additional Supporting information may be found in the online version of this article:

Table 1. Estimates of Unconditional and Conditional Time-Dependence Income Mobility in Latin America Using Four-Year Cohorts

Table 2. Estimates of Unconditional and Conditional Time-Dependence Income Mobility in Latin America Using Six-Year Cohorts

Please note: Wiley-Blackwell are not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed tothe corresponding author for the article.