Session 6B: Income Distribution in Middle-Income Countries
Time: Thursday, August 9, 2012 PM

Paper Prepared for the 32nd General Conference of
The International Association for Research in Income and Wealth

Boston, USA, August 5-11, 2012

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Fifteen Years of Inequality in Latin America: How Have Labor Markets Helped? [1]

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June 2012

Abstract

Household income inequality has declined in Latin America in the past decades, contributing significantly to poverty reduction in the region. Although available evidence shows that changes in the labor income are among the main factors behind these inequality trends, few studies have analyzed more closely the labor market dynamics that have led to a decline in total income inequality in some countries, but also to an increase in others. Using household survey data for a sample of 15 countries in Latin America from 1995 to 2010, this paper uses an extension of the Juhn-Murphy-Pierce (1993) methodology to decompose changes in labor income inequality (hourly wages) into a quantity effect (capturing changes in the distribution of workers' skills), price effect (reflecting returns to skills) and unobservables effect (other components, within skill groups, affecting labor income). Results show that falling returns to skills, for both education and experience is, on average, driving the decline in labor income inequality in Latin America. The quantity effect, in turn, has contributed very little to inequality reduction, mostly attributable to a larger dispersion in years of experience, possibly linked to the region's demographic transition and to significant increases in female labor force participation. Additional findings show that wage inequality, still high in the region, is coupled with inequality in terms of hours worked.

Keywords: Inequality; Decomposition; Labor Income; Latin-America

JEL Codes: Q15; I24; J30

[1] The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development, World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent. The authors' benefitted from comments from Louise J. Cord, Luis Felipe López Calva, Samuel Freije, Julian Messina, Amparo Ballivian, Maurice D. Kugler, José Antonio Cuesta Leiva, Jamele Rigolini, Francisco Ferreira, Sergei Soares, Miguel Foguel, and Leopoldo Tornarolli.

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I. Introduction

In the past decades Latin America has seen reductions in both poverty and inequality. From 1995 to 2010, the region achieved a decline in poverty of around 18 percentage points, with the moderate poverty rate going from 46 to 28 in this period. Most of the reduction took place in the last decade when the rate of decline significantly accelerated (Figure 1). Similarly, the Gini coefficient of total household income per capita declined by 9 percent from 1995 and 2010, going from 0.57 to 0.52.[2] Consistent with the sharper decline in poverty in the last decade, inequality also declined more rapidly from 2000 to 2010 than in previous periods (Table 1 and Figure A1).

The fall in inequality has indeed played an important role in reducing poverty in the region. Decomposing changes in poverty into a growth and a redistributive component (Datt and Ravallion, 1992) shows that for the past decade inequality had a significantly larger contribution to poverty reduction than that from economic growth alone. In fact, between 2000-2005 and 2005-2010, the decline in inequality accounted for 58 and 37 percent, respectively, of the total poverty reduction in Latin America, and close to 44 and 40 percent, for extreme poverty (Table 2). This is true for many countries in the region. For example, in Brazil, 60 percent of the total change in poverty between 2000 and 2005 is due to redistributive effects. In the same period, growth contributed to poverty increases in Argentina, which were offset by strong redistributive effects.

With a break from a historically high and persistent inequality in Latin America, it is key to better understand what has driven the declining trend. A number of author's have shown most of the income inequality in the Latin American region is generated in the labor market. The analysis of household survey of 15 countries from 1995 to 2010 suggests that although, on average, labor income inequality has reduced its contribution to total household income inequality in Latin America, reducing from 77 to 74 percent of total per capita household income inequality from 1995 to 2010 (Figure 2). Labor income still accounts for the highest share of total per capita household income in the region (Figure A2) and remains the main contributor to inequality.

[2] Gini calculated pooling data for all countries in the sample and excluding zero values. Other specifications are presented in Table 1.

Given the importance of earnings in driving the overall inequality trends in the region, this paper aims at disentangling the factors behind the decline in labor income inequality (hourly wages) in the past fifteen years in Latin America. Using an extension of the methodology by Juhn-Murphy-Pierce (1993) which decomposes labor income inequality into a quantity, price and unobservable (residuals) effects, we explain the trends in and drivers of labor income inequality in the region and highlight the differences in patterns across Latin American countries. Using four measures of inequality, including the commonly used Gini coefficient and the Theil-T index, findings show that the price effect, which captures returns to skills (education and experience), has been, on average, the main driver of the inequality decline.

Understanding the factors behind the declining labor income inequality has important policy implications. First, it helps determine, at least partially, how the region broke with its persistent inequality. Second, the analysis can be useful for tackling inequality in countries that have not yet joined the declining trend, both in Latin American and possibly in other regions as well. Finally, it can better inform policymakers on (i) whether the decline is likely to be sustainable over time, (ii) the possible threats to the path towards further reducing inequality and (iii) policy options that could contribute to further falls in inequality.

The next section briefly reviews some of the recent literature exploring the declining trend in inequality in the region, including labor income inequality. Section III details the JMP methodology and the adaptations employed in this paper. Section IV describes the data and the empirical strategy, while Section V and VI provide detailed results for the region and for each country in the sample. Conclusions are presented in Section VII.

II. Literature Review

Latin America has been singled out as the world's most unequal region. As such, a growing literature has tried to understand the historic reasons behind its persistent and high inequality, as well as the determinants behind the recent declining trends. This section provides a brief overview of the most recent work on inequality in the region.

Putting the recent decline in inequality into a historical perspective, Lustig and Gasparini (2011) note that inequality trends in Latin American countries have undergone two distinct periods in the past three decades. During the crisis of the 1980s and 1990s, and the period of structural reforms of the 1990s, most of the countries in their analysis experienced an increase

in inequality. This trend seems to be related to the macroeconomic crises that took place in those two decades, coupled with inexistent or inefficient social safety nets and regressive effects of structural adjustment programs.

A recent publication tries to disentangle the factors behind the recent inequality decline. López-Calva and Lustig (2010) compile a detailed analysis of the inequality trends in four countries in the region: Argentina, Brazil, Mexico, and Peru. Results show that the decline in inequality in these countries can indeed be attributed to two main factors: first, a shrinking earnings gap between skilled and low-skilled workers, from an expansion in education in the last decades. This effect was not compensated, as in the 1980s and part of the 1990s, by a higher demand for skilled labor. Second, from an equalizing effect of government transfers, related to larger and better targeted conditional cash transfer programs in these countries. Evidence in Figure A3 shows that transfers (public and private) have the highest inequality-reducing marginal effect of the various household income sources, at -2.2 percent in 2010.

Other factors are also linked to the falling inequality. For instance, recent studies refer to the role of social-democratic political regimes in the region during the past decade, and how the policies put in place by them had a more pronounced redistributive effect (Cornia, 2010; Birdsall, Lustig and McLeod, 2011). Moreover, the shrinking wage gap between skilled and unskilled workers in Argentina, for example, seems to be related to factors such as the commodity boom of the last decade, the exchange rate devaluation, and the role of labor unions, all of which pushed up the demand for unskilled labor relative to skilled labor (López-Calva and Lustig, 2010).

These and other studies point to labor income as one key factor of inequality changes. However, most of the existing literature analyzing income inequality in Latin America focuses on total income inequality, and more in-depth labor markets analyses are only available for a limited number of countries. This paper contributes to the discussion by focusing more closely on the main contributor to total household income inequality and the main source of income for Latin American households: labor income. By using a larger sample of Latin American countries, it also provides a regional perspective that thus far has not been captured in other work.

III. Methodology

This paper uses the Juhn-Murphy-Pierce (JMP, 1993) methodology to decompose labor income inequality, with an extension proposed by Foguel and Azevedo (2007) that allows for a counterfactual interpretation of inequality changes over time.

The Juhn-Murphy-Pierce methodology

The JMP approach is based on Mincer-type Ordinary Least Squares (OLS) regressions that allow decomposing labor income inequality, using any measure of inequality, in three parts. First, a quantity effect which refers to the distribution of observable workers' characteristics, such as education and labor market experience, and are included as regressors in the equation. Second, a price effect which captures changes in returns to observed characteristics through the regression's coefficients. Third, the regression residual reflects changes in inequality within education and experience groups driven by unobserved factors.

The starting point is a Mincerian equation:

$$y_{it} = X_{it}\beta_t + u_{it}, \tag{1}$$

where *i* represents a worker observed in time t, y_{it} is the log of labor income, X_{it} represents the vector of the worker's observable characteristics, β_t the vector of coefficients for time t, and u_{it} the error term assumed to have zero mean (i.e. $E[u_{it} \mid X_{it}] = 0$).

Let $F_t(. \mid X_{it})$ be the conditional cumulative distribution of the residuals for period t. Denoting θ_{it} as the percentile of individual *i* at time *t* in the residuals distribution, equation (1) can be expressed as:

$$y_{it} = X_{it}\beta_t + F_t^{-1}(\theta_{it} \mid X_{it}). \tag{2}$$

Changes in earnings over time can occur from (i) changes in the distribution of workers' observable characteristics, X_{it}, known as the quantity effect; (ii) changes in returns to these observed characteristics, β_t, or the price effect,; and, finally, (iii) changes in the distribution of unobservables ($F^{-1}(. \mid X)$).

This framework allows us to simulate the distribution of earnings for each period t by keeping some components fixed, i.e., by substituting one or more of the right-hand side components with

their mean over time. Particularly, let $\overline{\beta}$ be the vector of observable characteristics for a regression including all years; similarly; $\overline{F}(.\mid X_{it})$ is the conditional distribution of the residuals of that regression. By rewriting equation (2) with these components as

$$y_{it}^{1} = X_{it}\overline{\beta} + \overline{F}^{-1}(\theta_{it} \mid X_{it}). \quad (3)$$

it can now be interpreted as the distribution of labor income in period *t* when keeping prices and residuals constant, so that only the observable characteristics, *X*s, change over time.

Following a similar approach, we can once more rewrite equation (2) to simulate the distribution of earnings by letting both quantities and prices vary over time, while keeping the distribution of residuals fixed. This equation will be

$$y_{it}^{2} = X_{it}\beta_{t} + \overline{F}^{-1}(\theta_{it} \mid X_{it}). \quad (4)$$

A third and final simulation allows for all components to change over time, reflecting the original distribution of earnings, so that

$$y_{it}^{3} = X_{it}\beta_{t} + F_{t}^{-1}(\theta_{it} \mid X_{it}) \equiv y_{it}, \quad (5)$$

With all three simulated labor income distributions in place, the concept of inequality is introduced. Let $D(.)$ be any measure of inequality, such as the Gini coefficient or the Theil index. If $Y_{it}^{k} = exp(y_{it}^{k})$, k=1,2,3, the contribution of quantities, prices and unobservables to total inequality in period *t* (i.e., $T_{t} = D(Y_{it})$)can be expressed as

$$Q_{t} = D(Y_{it}^{1}), \quad (6)$$

$$P_{t} = D(Y_{it}^{2}) - D(Y_{it}^{1}) \quad (7)$$

and

$$R_{t} = D(Y_{it}^{3}) - D(Y_{it}^{2}). \quad (8)$$

The sum of each of these components in period t equals total inequality namely $Q_t + P_t + R_t = D(Y_{it}^3) = D(Y_{it}) = T_t$, so that total inequality is decomposed into contributions of the quantity, price and unobservables effects.

The JMP methodolgy just described has been widely used and allows for the decomposition to be interpreted as the contribution of each component to inequality in a particular year. However, a limitation of this approach is that the overall methodology is not suited for comparisons of how each effect contributes to inequality over time. More specifically, let's consider two time periods, τ' and τ'', and simplify the notation of $\overline{F}^{-1}(\theta_{it} \mid X_{it}) = \overline{F}^{-1}$ and $F_t^{-1}(\theta_{it} \mid X_{it}) = F_t^{-1}$. Taking time differences for Q_t, P_t and R_t we arrive at the following:

$$Q_{\tau''} - Q_{\tau'} = D\left(exp(X_{i\tau''}\overline{\beta} + \overline{F}^{-1})\right) - D\left(exp(X_{i\tau'}\overline{\beta} + \overline{F}^{-1})\right), \tag{9}$$

$$P_{\tau''} - P_{\tau'} = \left[D\left(exp(X_{i\tau''}\beta_{\tau''} + \overline{F}^{-1})\right) - D\left(exp(X_{i\tau''}\overline{\beta} + \overline{F}^{-1})\right)\right]$$

$$-\left[D\left(exp(X_{i\tau'}\beta_{\tau'} + \overline{F}^{-1})\right) - D\left(exp(X_{i\tau'}\overline{\beta} + \overline{F}^{-1})\right)\right] \tag{10}$$

and

$$R_{\tau''} - R_{\tau'} = \left[D\left(exp(X_{i\tau''}\beta_{\tau''} + F_{\tau''}^{-1})\right) - D\left(exp(X_{i\tau''}\beta_{\tau''} + \overline{F}^{-1})\right)\right]$$

$$-\left[D\left(exp(X_{i\tau'}\beta_{\tau'} + F_{\tau'}^{-1})\right) - D\left(exp(X_{i\tau'}\beta_{\tau'} + \overline{F}^{-1})\right)\right]. \tag{11}$$

As mentioned before, JMP is limited in providing information on changes over time in the contributions to inequality of each component. The exception is the first component, the quantity effect, expressed in (9). More specifically, the time differences in (9) show that the only component that changes between τ' and τ'' is the observable characteristics, while the $\overline{\beta}$ and $\overline{F}^{-1}$ remain fixed. Therefore, this difference in fact reflects the effect of changes in quantities between the two time periods.

Conversely, expressions (10) and (11) fail to provide a temporal interpretation. In (10), for instance, the time difference in the price component cannot be interpreted as the contribution of the price effect to changes in inequality. This is because it is not only the prices (i.e. the β s) that change in $P_{\tau''} - P_{\tau'}$, but also the Xs. Unless the distribution of quantities remains fixed over time, JMP is limited in providing a counterfactual interpretation of the price effect. A similar analysis leads us to the conclusion that a counterfactual analysis cannot be derived from $R_{\tau''} - R_{\tau'}$, given that changes over time cannot be only attributed to changes between $F_{\tau'}^{-1}$ and $F_{\tau''}^{-1}$.

Adapting JMP for a counterfactual interpretation

This study presents a modification to the original JMP method by Foguel and Azevedo (2007), so that it allows for a counterfactual interpretation over time. By letting *s* be a fixed time period (e.g., 2000) we can rewrite equations (3), (4) and (5) as follows:

$$y_{it}^{*1} = X_{it}\beta_s + F_s^{-1}(\theta_{it} \mid X_{it}), \tag{12}$$

$$y_{it}^{*2} = X_{it}\beta_t + F_s^{-1}(\theta_{it} \mid X_{it}) \tag{13}$$

and

$$y_{it}^{*3} = X_{it}\beta_t + F_t^{-1}(\theta_{it} \mid X_{it}) \equiv y_{it}, \tag{14}$$

where $F_s^{-1}(\theta_{it} \mid X_{it}) = F_s^{-1}(F(u_{it} \mid X_{it}))$, denoted as F_s^{-1} for simplicity.

Equation (12) simulates labor income allowing quantities to change over time, but keeping prices and residuals fixed at a reference period *s*. The difference with (3) is therefore straightforward: while (12) leaves prices and residuals fixed at a specific period, (3) uses the mean of prices and residuals for all periods under consideration. Similarly, equation (13) simulates a distribution of labor income where quantities and prices vary over time (as in equation (4) in the JMP methodology), but in which the distribution fo residuals is that from *s*. As equation (14) allows all components to vary it is identical to (5).

Following the same steps of JMP of (6), (7) and (8), and with $Y_{it}^{*k} = exp(y_{it}^{*k})$, $k = 1,2,3$, the quantity, price and unobservable components for period t are as defined follows:

$$Q_t^* = D(Y_{it}^{*1}), \tag{15}$$

$$P_t^* = D(Y_{it}^{*2}) - D(Y_{it}^{*1}) \tag{16}$$

and

$$R_t^* = D(Y_{it}^{*3}) - D(Y_{it}^{*2}). \tag{17}$$

As before, the sum of the three components equals total labor income inequality, i.e. $Q_t^* + P_t^* + R_t^* = D(Y_{it}^{*3}) \equiv D(Y_{it}) = T_t$. Note also that for $t = s$, $Q_s^* = T_s$ and $P_s^* = R_s^* = 0$.

This modification of the original JMP provides a counterfactual interpretation of changes in labor income inequality over time between any time period *t* and time period *s*. This is derived from the following expressions:

$$Q_t^* - Q_s^* = D\left(exp(X_{it}\beta_s + F_s^{-1})\right) - D\left(exp(X_{is}\beta_s + F_s^{-1})\right), \tag{18}$$

$$\begin{aligned} P_t^* - P_s^* = &\left[D\left(exp(X_{it}\beta_t + F_s^{-1})\right) - D\left(exp(X_{it}\beta_s + F_s^{-1})\right)\right] \\ &-\left[D\left(exp(X_{is}\beta_s + F_s^{-1})\right) - D\left(exp(X_{is}\beta_s + F_s^{-1})\right)\right] \\ &= D\left(exp(X_{it}\beta_t + F_s^{-1})\right) - D\left(exp(X_{it}\beta_s + F_s^{-1})\right) \end{aligned} \tag{19}$$

and

$$R_t^* - R_s^* = \left[D\left(exp(X_{it}\beta_t + F_t^{-1})\right) - D\left(exp(X_{it}\beta_t + F_s^{-1})\right)\right]$$

$$-\left[D\left(exp(X_{is}\beta_s + F_s^{-1})\right) - D\left(exp(X_{is}\beta_s + F_s^{-1})\right)\right]$$

$$= D\left(exp(X_{it}\beta_t + F_t^{-1})\right) - D\left(exp(X_{it}\beta_t + F_s^{-1})\right). \quad (20)$$

The difference in (18) shows that only the *X*s change between *t* and *s*, so that it can be interpreted as the effect of changes in quantities on inequality between this two periods. This interpretation can also be derived from the original JMP, with the difference that in JMP the reference period in which prices and unobservables are kept fixed for evaluating changes in quantities over time, is the mean of all periods instead of *s*.

The main difference comes when evaluating (19) and (20). In (19), for example, the difference between P_t^* and P_s^* can now only be attributed to changes in prices between *t* and *s*, as the second term in brackets will equal zero. In sum, (19) provides a counterfactual interpretation of changes in total labor income inequality between *t* and *s* from price changes between those two time periods. A similar interpretation is derived from (20) for the case of unobservables, capturing only the effect of changes in the unobservable component in changes of total labor income inequality between *t* and the reference period *s*.

As described above, this adaptation of the JMP methodology allows for a counteractual interpretation of the quantity, price and unobservables effects between *s* and *t*. It is important to keep in mind, however, that it does not allow for the evaluation of these effects' contributions to total inequality between any two periods τ' and τ'', where none of them are the reference *s*.

IV. Data and Empirical Strategy

The data used in this paper are from a harmonized database of household surveys from 15 Latin American countries compiled in the Socio-Economic Database for Latin America and the Caribbean (SEDLAC), a joint effort of the *Centro de Estudios Distributivos Laborales y Sociales of the Universidad Nacional de La Plata* and the World Bank's poverty group for Latin America and the Caribbean. The countries included in this analysis are Argentina, Bolivia (urban), Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Panama, Paraguay, Peru, and Uruguay (Montevideo-urban). So as to make time periods comparable across time we use the circa criteria

for the years 1995, 2000, 2005 and 2010. Tables A1 and A2 provide more detail of the countries, years and surveys included in this study.

Labor income is calculated as individual hourly wages (only for individuals with positive wages in the dataset), and all regional estimations are computed as working population-weighted averages. For the variables of observed workers' characteristics (X_{it}) we use two measures of skills: years of education and potential experience in the labor market. The latter is measured as age minus years of education minus six. All regressions are estimated using OLS, and workers' characteristics are included in the regression as dummies, with years of education covering a range from 0 to 17 years; experience including the following categories of potential experience (as in JMP, 1993): 0-10, 11-20, 21-30 and 31 or more; and finally, an interaction term of the years of education and potential experience dummies. The JMP methodology does not require for the same individual to be followed over time, i.e., panel data, so we use four years of cross-sectional data (1995, 2000, 2005 and 2010) to run the decompositions. The reference period chosen for this study is the year 2000, so that all results are interpreted as deviations of inequality (or each of the components) from that year.

Following Foguel and Azevedo (2007) we estimate equation (1) for each available year. The regression residuals are ranked in ascending order for each year and divided in percentiles. For each percentile in each year we estimate the mean to create a discrete empirical approximation of $F_t^{-1}(\theta_{it} \mid X_{it})$. We employ this discrete distribution to construct the earnings of each individual (i) in year (t) as $X_{it}\beta_t + F_t^{-1}(\theta_{it}^j | X_{it})$, where β_t is the vector of estimated coefficients in year t and θ^j is the mean value of residuals in percentile θ^j in which the individual was located. For $F_s^{-1}(F(u_{it} \mid X_{it}))$, we use the mean residuals for each percentile in the reference year (2000). For more details see Foguel and Azevedo (2007).

Finally, the simulations of labor income of (12), (13) and (14) are calculated using the estimated coefficients and the discrete distribution of residuals, which in turn are used to estimate the final decomposition in (15), (16) and (17). We conduct our methods using four measures of inequality, namely the Gini coefficient, the Theil-T (GE(1)) index of inequality and the ratios of mean labor income between the 90th and 10th deciles (90/10), and the 80th and 20th deciles (80/20).

V. Results

5.1 Decomposing Labor Income Inequality

As a starting point to assessing changes in labor income inequality in Latin America, Table 3 presents the evolution of labor income inequality measures in the past fifteen years. All four measures suggest a monotonic decline, on average, in labor income inequality for the region. More specifically, the regional Gini (working-population-weighted averages of countries in the sample) declined at an average rate of -0.6 percent per year and the Theil by -1.3 percent from 1995 to 2010. However, not all countries joined the declining trend in labor income inequality in this period. The labor income Gini increased for Costa Rica, Honduras, Panama and Uruguay, while the Theil also increased in those four countries in addition to El Salvador and Bolivia. The fastest fall in the Gini took place in Brazil, with a -0.75 percent annualized rate from 1995 to 2010 (Figure 3).

To explore the factors behind the regional fall in labor income inequality, Figure 4 and 5 present the adapted JMP decomposition results for Latin America. The first panel of each figure (panel A) shows the observed total changes in inequality from 1995 to 2010, with 2000 as the reference year. The rest of the panels (B-D) decompose the total changes into quantity, price and unobservable (residuals) effects. Moreover, Table 4 through 7 present detailed decomposition results for each country and each inequality measure for the period of the fastest inequality decline (2000-2010). A negative sign denotes a contribution to inequality decline, while a positive sign indicates that the component was inequality-increasing over this period.

Q**uantity effect:** focusing on the quantity effect (i.e., the contribution of changes in the composition of skills to labor income inequality, ceteris paribus), shows that in most measures (the exception being the 90/10 ratio) the quantity effect further reduced its already low contribution to inequality decline in 1995 (panel B of Figures 4 and 5), resulting in a very small share of inequality falls attributable to this factor by 2010. Results by country presented in Tables 4-7 for the last decade (2000-2010) show that in 5 out of 15 countries, the quantity component contributed to increasing the labor income Gini and the Theil index. The decompositions of the 90/10 and 80/20 measures show, however, a positive contribution of the quantity effect to labor income inequality in 11 and 9 countries, respectively.

Price effect: the driving factor behind labor income inequality declines in the past fifteen years, independent of the measure of inequality used, was the falling returns to skills (Panel C), also known as the price effect. Between 2000 and 2010, for example, around 64 percent of the total change in the Gini coefficient can be attributed to declining returns to skills. This result is consistent in most countries in the sample, with an inequality-reducing effect of the skill premia in 12 out of 15 countries for the Gini, Theil index and 90/10 ratio (13 countries for the 80/20 ratio). In fact, one

of the highest achiever in terms of declines in the labor income Gini coefficient and Theil Index from 2000 to 2010, Brazil, can attribute around 61 percent and 72 percent of the changes, respectively, to falling returns to years of education and experience. Conversely, in Costa Rica, for example, were the Gini coefficient of labor income increased in the past decade (2000 to 2010), both the quantity and the price effects were inequality-increasing.

Other factors effect: The role of **unobservables (**within skill-group inequality, measured by the residual) is very heterogeneous across countries. This effect could be capturing a wide range of things not accounted for in our empirical strategy, such as quality of education, changes across sectors or occupations (including changes in demand for workers in specific sectors), among others.

On average, inequality within groups decreased over time, although its contribution to total labor income inequality changes was relatively small by 2010. Nonetheless, this effect was particularly strong in some countries in terms of enhancing inequality, fully offsetting the role of the price and quantity effects. This is the case, for example, of Paraguay, where the Gini coefficient would have fallen between 2000 and 2010 driven by the reductions in returns, if it had not been more than compensated by the larger and positive contribution to inequality of within-group changes.

To summarize the patterns across countries of the quantity, price and unobservables effects, Table 8 presents a typology of countries based on whether the various components were inequality-increasing or inequality-decreasing in the last decade in terms of the Gini coefficient. Only in four countries in the sample, i.e., Argentina, Brazil, Mexico and Peru, all three components moved in the same direction, thus enhancing the overall change in labor income inequality.

5.2 Decomposing Labor Income Inequality by Gender and Sector

Overall regional and country trends in labor income inequality could be masking differences across subgroups. We therefore apply the adapted JMP methodology to subsamples of the working population by gender and by formal/informal sector workers. To simplify the analysis, we focus on the Gini coefficient of labor income inequality for all four subgroups (Annex tables A3-A6) in the period 2000 to 2010.

At a regional level, results show a larger decline in inequality for male workers compared to female workers from 2000 to 2010. From a country perspective, while labor income inequality declined in 12 out of the 15 countries for males, it declined in only seven countries for females. The decomposition results show that the price and unobservables effects were inequality-reducing for

both groups, but much more powerful for males. The quantity effect, on the contrary, contributed to increasing inequality only for females, as the new women joining the labor market had on average more experience (age) and education (its effect on pushing down male labor income inequality, nonetheless, is very small).

Labor income inequality in Latin America declined more in the informal than in the formal sector from 2000 to 2010. Results are very heterogeneous across countries; while inequality declined relatively more in the formal sector in Argentina, Bolivia and Peru, it fell relatively sharper in the informal sector for Brazil and Mexico. The price effect across sectors is very similar. The unobserved effects have a four times larger contribution to reducing inequality in the informal sector than in the formal sector, even if the quantity effect is inequality-increasing for the informal only. Looking at returns to skills and unobservables, returns to experience have declined relatively more for formal workers.

***5.3 Price Effect**: Unbundling returns to education and experience*

Given that falling returns to skills seem to be dominating, on average, inequality changes over time, we try to unbundle this price effect to better understand its dynamics. Figure 6 presents the mean returns to education, experience and unobservables over time (captured by the residual).[3] Results in Figure 6 show that returns to all three factors declined during the period of analysis and that the pace of reduction accelerated after 2005. Overall, mean returns to years of education and experience declined a total of 30 and 20 percent, between 1995 and 2010. Detailed results for males and females (Figures A4- A6) show that trends for both groups in returns to education are similar. In experience, we observe a decline for both groups, but slightly larger for males.

The decline in returns to skills has been driven by a larger supply of experienced and educated workers in the region. Both mean years of education and experience have increased in the region

[3] Returns to education and experience are calculated from the coefficients of the Mincer equation (1) for each characteristic. The mean return to education for year t, for example, is calculated as a weighted average (by population share with each level of education) of the return to each level of education, divided by the weighted average (by population share with each level of education) of each level of education. A similar approach is taken for experience level, and in both cases the interaction terms are also included in the estimations. For the unobservables, equation (1) is rewritten as $y_{it} = X_{it}\beta_t + u_{it} = X_{it}\beta_t + \sigma_t \varepsilon_{it}$, where, assuming that ε_{it} is a random independently and identically distributed variable (iid) following a normal distribution, $N(0,1)$, and σ_t is a factor (standard-deviation) that alters the dispersion of the distribution of errors, σ_t can be interpreted as capturing the "price" of unobservables. For more details see Foguel and Azevedo (2007).

for the working population (Figure 7), more sharply for education. Mean years of education and experience have increased for both sexes (Figures A5 and A6). For education, for example, investments in the past decades have resulted in a significant average increase in educational attainment of the population (1.7 additional years on average in Latin America). For experience, changes in the mean could be driven by an increase in female labor force participation and by the aging of the population (further discussed in section 5.4).

In all countries in the sample, except for the Dominican Republic and Ecuador, average education levels of workers increased in the period (Table 10). The largest expansion took place in Brazil and Mexico, where years of education of workers increased a total of 35 percent and 26 percent, respectively, from 1995 to 2010. Similarly, mean years of experience also rose in all countries (except for a slight decrease in Bolivia), although at slower rates.

Changes in returns to education show a very mixed picture across countries (Table 9). While returns to years of education declined a total of 43 percent in Brazil from 1995 to 2010, they increased in Argentina (40 percent) and Chile (83 percent). Similarly, while returns to experience fell by 34 percent in Mexico and 28 percent in Chile in the period under study, they increased by 38 percent in Honduras.

***5.4 Quantity Effect**: Unbundling inequality of education and experience*

Previous results showed that on average, the quantity effect contributed very little to the reduction of inequality in the region. It is important to keep in mind that quantity, in particular education, still play[4] an important role in explaining the high level of inequality in the region (Battistón, et al 2011). This subsection explores the factors behind the quantity effect by looking at mean levels of education and experience and the dispersion in these characteristics over time. In other words, we further explore the composition of skills among workers, all else equal.

The abovementioned expansion in years of education and experience has not been uniform across the population, resulting in changes in the distribution of these skills among the working population. On the one hand, the evolution of the standard deviation of years of education suggests that inequality in education slightly decreased (by around 2 percent) in the 2000s. This seems to be primarily driven by falling educational inequality of women (Figure A5). Overall, the reduction in

[4] Since the seminal work of Langoni (1973) several authors have found the effect of educational expansion was to increase inequality, including Bourguignon et al (2005), Reis and Barros (1991), Knight and Sabot (1983), Reyes (1988), and Lam (1999).

educational inequality reflects a catch up from those at the bottom of the education distribution. For instance, the bottom income quintile in Latin America achieved an additional 1.8 years of education from 1995-2009, while the top quintile increased by 1.3 years.[5]

On the other hand, the changing composition in years of experience has led to higher inequality of experience in workers in the past fifteen years (total increase of 1.8 percent from 1995-2010). In fact, in 11 out of 15 countries in the sample there was an increase in the standard deviation of years of experience among workers (Table 11). Both the mean and the standard deviation of experience have increased for men and women over time. By 2010, mean years of experience for women had increased more for than for men.

Looking at the workforce by sector, informal workers have increased their mean education significantly more than formal workers; the changing composition of education has resulted, however, in a growing dispersion in education for informal workers and a decline in educational inequality for the formal sector. For the formal sector, the decline in educational inequality of the formal sector is likely offset by a sharp increase in inequality of experience, not observed in the informal sector (Figures A5 and A6).

As the education and experience effect are working in opposite directions, the overall quantity effects (net effect) is, on average, small. This suggests that the experience component is, on average, dominating in the overall JMP quantity effect. The question then arises of what is driving the dispersion in experience levels?

Given that our experience variable (reflecting potential experience) is a construct including age, years of education and a constant, and given that years of education have increased and are less dispersed among the working population, it seems likely that the explanation behind a higher experience inequality lies in the aging of the working population. The age profile of people in the labor markets is likely related to two factors: (i) the demographic transition in the region, which has resulted in a bulge of newcomers into the labor market since 2000 and (ii) the increase of female labor force participation in the region.

From 1995 to 2000 alone, occupied workers between 19-24 years old increased by around 14 percent in LAC (much higher than increases in subsequent periods at 11 percent from 2000 to 2005 and 5 percent from 2005 to 2010), as the largest birth cohort of the region enters the labor market

[5] World Bank (2011).

(Cotlear 2010). As this cohort aged through 2010 and gained more experience in the labor market: (i) overall mean experience increased in the region, pushing down returns to experience and (ii) the dispersion of experience also increased, more so as they joined employment with very little experience in the first five years of our sample. The increase in experience inequality has persisted over time, but at lower rates.

The demographic transition story is complemented by a generalized increase in female labor force participation in the region. The ratio of male/female ratio of workers rate went from 1.9 in 1995 to 1.5 in 2010. Figure A7 presents the growth rate of male and female workers from 2000 to 2010 in the region and by age. As shown, the increase in women workers is significantly higher than that of men, particularly for women in their late forties and early fifties. This is possible linked to, first, the higher increase in mean experience for women compared to men (Figure A6) (given that experience is an age construct). Second, it could also result in the lower dispersion in experience observed than for men, as the bulge of young workers entering the workforce with little experience (from the demographic transition) is partially offset by a relatively older group of women (estimated to have more experience) joining the labor markets.

VI. Earnings inequality

So far the analysis has concentrated in the evolution and factors behind inequality of hourly wages. This section aims at more explicitly linking inequality in hourly wages to total household income inequality. Following Juhn, Murphy and Pierce (1993), we use annual earnings as a proxy for income under the assumption that hourly wages hold a stronger link to annual earnings than to family income per-capita. Using annual earnings as a proxy for income is reasonable in this context, given that this source of income represents around three-quarters of total household income for Latin American households.

To assess the contribution of inequality in hourly wages to that of annual earnings, we calculate the annual earnings as the product of the hourly wage and the number of hours worked per year. Departing from $y = h + w$, where y is the log of annual earnings, w is the log of hourly wages and h is the log of hours worked per year[6], the variance of log annual earnings, σ_y^2, is

$$\sigma_y^2 = \sigma_h^2 + \sigma_w^2 + 2\sigma_{hw}^2,$$

[6] Due to data constraints, we assume that all individuals worked 52 weeks per year.

where σ^2_w is the variance of log hourly wages, σ^2_h is the variance of log hours worked, and σ^2_{hw} is the covariance of log hourly wages and log hours worked.

Figure 8 shows the variance of log annual earnings and its components for the population-weighted average of countries in our sample. Over the period as a whole, the movements of the annual earnings variance depended mostly on the hourly wage variance. The variance of the weekly hours worked also contributed to the annual earnings variance, especially in the increase of both 2005 and 2010. An interesting finding is that the covariance of hourly wages and weeks worked is negative for all countries (contrary to JMP, 1993, results for the United States). This means that the higher the hourly wage, the smaller the amount of hours worked per week. Although this negative covariance is slowly approaching zero for almost every country in the period under study, this result is the reflection of the high inequality not only in terms of hourly wages but also in terms of hours worked in Latin American countries. In other words, people that earn less per hour also work more hours per week.

Finally, although wages are a key component of changes in total earnings, only 50% of the increase in the variance of annual earnings from 1995 to 2010 is due to the increase in the variance of hourly wages. This fact highlights the difference between the concepts of earnings and wage inequality, something that should be kept in mind when analyzing inequality trends.

VII. Conclusions

Latin America is finally on a path towards reducing income inequality. To better understand the factors behind this trend and given that labor income contributes the most to total household income and to total income inequality, this paper explores the drivers of labor income inequality changes. Results show that a more equitable distribution of labor market income has been the main force behind falling inequality. The decline in labor income inequality, in turn, has been mainly driven by falling returns to education and experience.

As inequality in the region remains high, two things should be consider in the path towards further inequality reduction. First, improved access to education, which has been a key driver falling inequality, needs to be coupled with improvements in quality of education. If quality of the educational system is not addressed, it will put at risk recent achievements; in other words, quality is the new margin for inequality. A recent study tests for the intergenerational persistence of

inequality using PISA scores[7] and finds that Latin American countries have relatively higher rates of intergenerational persistence of inequality in educational achievements than, for example, countries in Asia (Ferreira and Gignoux, 2010). Also employing PISA data, the Human Opportunity Index for quality of education is consistently lower for science, mathematics and reading for Latin American countries than countries in Europe and North America (Molinas et al., 2010).

Second, Latin America is currently undergoing a demographic transition with a larger proportion of working-age adults. As a result, the region is likely to generate a demographic dividend that can provide resources to be geared towards inequality and poverty-reducing investments. This favorable scenario is projected to continue until around 2020, when this ratio of workers/retirees should reach its maximum, before starting to decline again, this time due to the growing proportion of older persons and a relatively smaller workforce. It is important to notice that while such demographic transition lasted for over a century in developed countries, similar changes are occurring much more quickly in Latin America and other developing countries today. France had 115 years to accommodate the doubling of its elderly population from 7 percent to 14 percent; in Latin America this process is happening much more quickly and the adjustment will likewise need to be quicker. Chile is projected to face this change in 26 years, Brazil in 21, and Colombia in 19 years.[8]

[7] PISA refers to the OECD Programme for International Student Assessment, which is an internationally comparable dataset that assess competencies in math, reading and science for 15 year old students in many countries.
[8] Cotlear, Daniel (Editor) "Population Aging: Is Latin America Ready?" The World Bank: Washington, DC.

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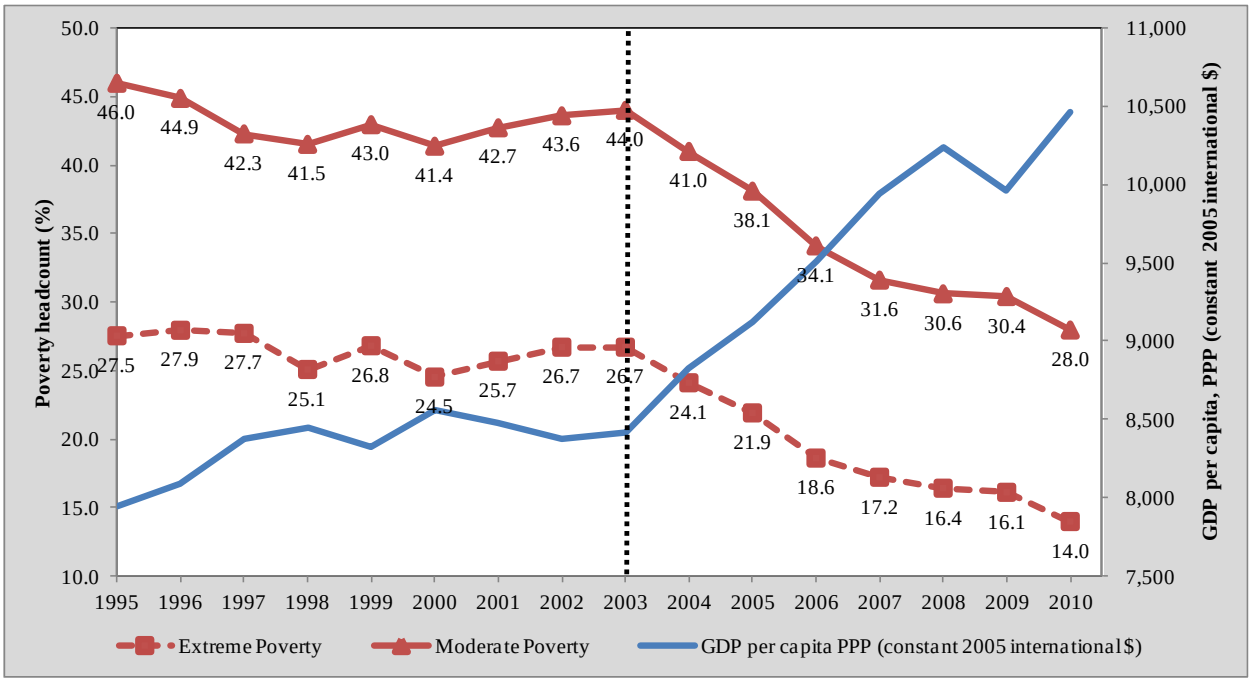
Figure 1. Headcount Poverty Ratio in Latin America, US$ 2.5/day and US$ 4/day (2005 PPP) and GDP per Capita PPP (constant 2005 international $), 1995-2010



Source: "On the Edge of Uncertainty, Poverty Reduction in LAC during the Great Recession and Beyond" by the Poverty and Gender Unit in LAC, The World Bank (2012).

Table 1. Gini and Theil-T index of Total Household Income Per Capita, circa 1995-2010

Gini

Country	1995	2000	2005	2010
Argentina	0.48	0.50	0.49	0.44
Brazil	0.59	0.59	0.56	0.54
Bolivia	0.53	0.54	0.52	0.51
Chile	0.55	0.55	0.52	0.52
Colombia	0.55	0.59	0.55	0.55
Costa Rica	0.45	0.46	0.47	0.50
Dominican Republic	0.47	0.52	0.50	0.47
Ecuador	0.50	0.55	0.53	0.49
El Salvador	0.50	0.52	0.50	0.48
Honduras	0.55	0.54	0.59	0.55
Mexico	0.54	0.54	0.51	0.47
Panama	0.55	0.56	0.54	0.52
Paraguay	0.58	0.57	0.53	0.52
Peru	0.54	0.56	0.52	0.48
Uruguay	0.41	0.44	0.46	0.47
Data without zeros				
LAC (pooled data)	0.57	0.57	0.54	0.52
LAC (population weighted average)	0.56	0.56	0.54	0.51
Data with zeros				
LAC (pooled data)	0.58	0.58	0.55	0.53
LAC (population weighted average)	0.57	0.57	0.54	0.52

Theil

Country	1995	2000	2005	2010
Argentina	0.43	0.46	0.45	0.35
Brazil	0.71	0.71	0.65	0.59
Bolivia	0.57	0.60	0.56	0.54
Chile	0.62	0.65	0.56	0.58
Colombia	0.69	0.80	0.65	0.65
Costa Rica	0.37	0.38	0.41	0.49
Dominican Republic	0.42	0.55	0.49	0.41
Ecuador	0.50	0.65	0.75	0.49
El Salvador	0.49	0.53	0.47	0.44
Honduras	0.64	0.57	0.70	0.61
Mexico	0.61	0.59	0.55	0.45
Panama	0.58	0.61	0.54	0.52
Paraguay	0.69	0.69	0.60	0.65
Peru	0.58	0.66	0.52	0.44
Uruguay	0.29	0.34	0.39	0.40
Data without zeros				
LAC (pooled data)	0.67	0.66	0.61	0.55
LAC (population weigthed average)	0.65	0.66	0.60	0.54
Data with zeros				
LAC (pooled data)	0.70	0.70	0.63	0.57
LAC (population weigthed average)	0.68	0.70	0.63	0.56

Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank).

Table 2. Decomposing poverty changes: % of total poverty changes from growth and redistribution

a. Poverty at $4/day

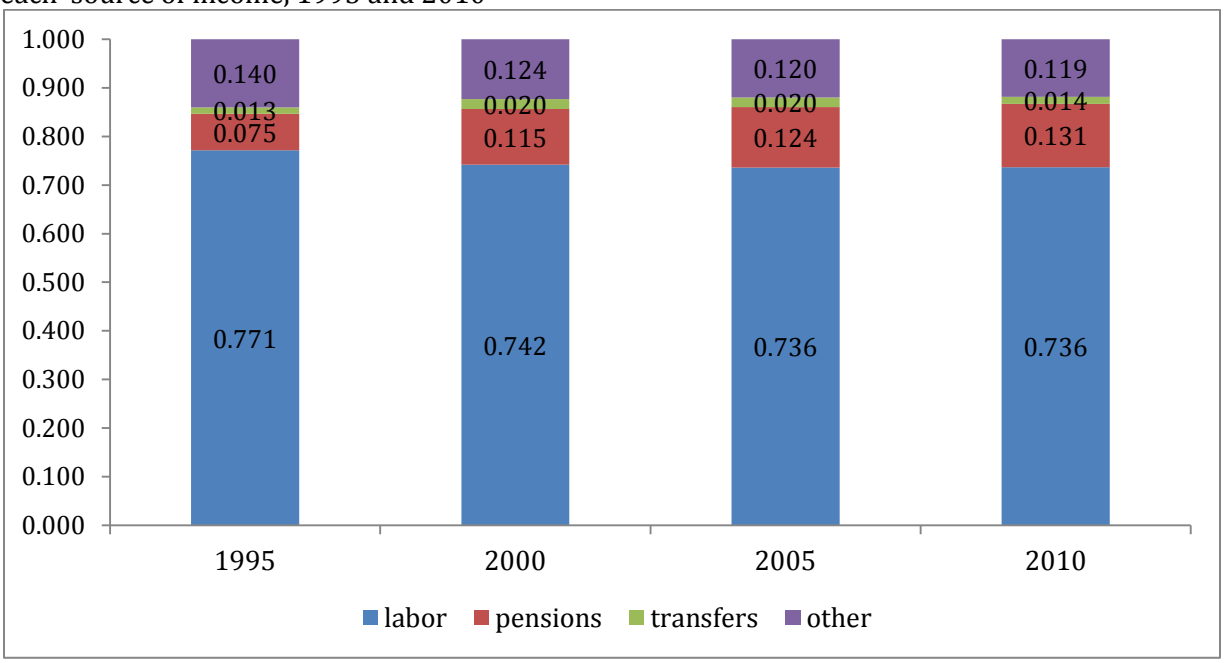
	Poverty Headcount			Poverty Gap			Poverty Gap Squared		
Countries	1995-2000	2000-2005	2005-2010	1995-2000	2000-2005	2005-2010	1995-2000	2000-2005	2005-2010
Argentina									
Growth	0.43	0.30	-0.56	0.31	0.23	-0.49	0.30	0.16	-0.44
Distribution	0.57	-1.30	-0.44	0.69	-1.23	-0.51	0.70	-1.16	-0.56
Bolivia									
Growth	0.60	-0.90	0.23	0.47	-0.61	2.00	0.33	-0.42	0.32
Distribution	0.40	-0.10	-1.23	0.53	-0.39	-1.00	0.67	-0.58	0.68
Brazil									
Growth	2.00	-0.41	-0.68	0.97	-0.23	-0.63	0.53	-0.19	-0.63
Distribution	-1.00	-0.59	-0.32	0.03	-0.77	-0.37	0.47	-0.81	-0.37
Chile									
Growth	-1.00	-0.43	-0.80	-0.96	-0.38	-1.00	-1.10	-0.34	-1.66
Distribution	0.00	-0.57	-0.20	-0.04	-0.62	0.00	0.10	-0.66	0.66
Colombia									
Growth	0.68	-0.64	-1.04	0.59	-0.47	-1.02	0.53	-0.39	-0.94
Distribution	0.32	-0.36	0.04	0.41	-0.53	0.02	0.47	-0.61	-0.06
Costa Rica									
Growth	-1.59	-1.35	-1.54	-1.38	-0.96	-1.32	-0.97	-0.72	-1.35
Distribution	0.59	0.35	0.54	0.38	-0.04	0.32	-0.03	-0.28	0.35
Dominican Rep.									
Growth	-2.00	1.33	-0.73	-2.00	1.60	-0.49	-2.00	1.97	-0.40
Distribution	1.00	-0.33	-0.27	1.00	-0.60	-0.51	1.00	-0.97	-0.60
Ecuador									
Growth	-2.00	-0.87	-0.46	-1.00	-0.88	-0.36	-1.00	-0.87	-0.30
Distribution	1.00	-0.13	-0.54	2.00	-0.12	-0.64	2.00	-0.13	-0.70
El Salvador									
Growth	-1.77	1.00	-0.35	-1.00	0.63	-0.17	-0.51	0.38	-0.12
Distribution	0.77	-2.00	-0.65	2.00	-1.63	-0.83	1.51	-1.38	-0.88
Honduras									
Growth	-0.55	-2.00	-0.79	-0.94	-1.00	-0.78	-2.00	-1.00	-0.78
Distribution	-0.45	1.00	-0.21	-0.06	2.00	-0.22	1.00	2.00	-0.22
Mexico									
Growth	-0.97	-0.44	1.00	-0.87	-0.40	0.56	-0.81	-0.38	0.46
Distribution	-0.03	-0.56	-2.00	-0.13	-0.60	-1.56	-0.19	-0.62	-1.46
Panama									
Growth	0.90	-0.60	-0.60	2.00	-0.38	-0.47	0.93	-0.28	-0.39
Distribution	0.10	-0.40	-0.40	-1.00	-0.62	-0.53	-1.93	-0.72	-0.61
Paraguay									
Growth	1.75	0.31	-0.82	1.31	0.14	-0.92	0.87	0.10	-1.00
Distribution	-0.75	-1.31	-0.18	-0.31	-1.14	-0.08	0.13	-1.10	0.00
Peru									
Growth	-2.00	0.60	-0.69	-2.00	0.29	-0.74	-1.44	0.23	-0.78
Distribution	1.00	-1.60	-0.31	1.00	-1.29	-0.26	0.44	-1.23	-0.22
Uruguay									
Growth	0.34	0.72	-1.02	0.45	0.70	-0.89	0.57	0.70	-0.84
Distribution	0.66	0.28	0.02	0.55	0.30	-0.11	0.43	0.30	-0.16
LAC									
Growth	-1.22	-0.42	-0.63	-1.36	-0.30	-0.59	-1.59	-0.26	-0.58
Distribution	0.22	-0.58	-0.37	0.36	-0.70	-0.41	0.59	-0.74	-0.42

b. Poverty at $2.5/day

	Poverty Headcount			Poverty Gap			Poverty Gap Squared		
Countries	1995-2000	2000-2005	2005-2010	1995-2000	2000-2005	2005-2010	1995-2000	2000-2005	2005-2010
Argentina									
Growth	0.27	0.24	-0.46	0.28	0.16	-0.42	0.28	0.08	-0.37
Distribution	0.73	-1.24	-0.54	0.72	-1.16	-0.58	0.72	-1.08	-0.63
Bolivia									
Growth	0.56	-0.72	1.00	0.30	-0.36	0.22	0.19	-0.24	0.09
Distribution	0.44	-0.28	-2.00	0.70	-0.64	0.78	0.81	-0.76	0.91
Brazil									
Growth	1.00	-0.25	-0.66	0.49	-0.18	-0.62	0.27	-0.15	-0.62
Distribution	-2.00	-0.75	-0.34	0.51	-0.82	-0.38	0.73	-0.85	-0.38
Chile									
Growth	-0.78	-0.37	-1.05	-1.39	-0.31	-2.00	-2.00	-0.27	-1.00
Distribution	-0.22	-0.63	0.05	0.39	-0.69	1.00	1.00	-0.73	2.00
Colombia									
Growth	0.62	-0.54	-1.10	0.51	-0.37	-0.93	0.44	-0.28	-0.79
Distribution	0.38	-0.46	0.10	0.49	-0.63	-0.07	0.56	-0.72	-0.21
Costa Rica									
Growth	-2.00	-1.05	-1.18	-0.86	-0.63	-1.33	-0.51	-0.45	-1.72
Distribution	1.00	0.05	0.18	-0.14	-0.37	0.33	-0.49	-0.55	0.72
Dominican Rep.									
Growth	-2.00	1.36	-0.51	-2.00	2.00	-0.37	-2.00	2.00	-0.30
Distribution	1.00	-0.36	-0.49	1.00	-1.00	-0.63	1.00	-1.00	-0.70
Ecuador									
Growth	-1.00	-0.93	-0.35	-1.00	-0.89	-0.28	-1.00	-0.83	-0.24
Distribution	2.00	-0.07	-0.65	2.00	-0.11	-0.72	2.00	-0.17	-0.76
El Salvador									
Growth	-1.00	0.90	-0.19	-0.41	0.34	-0.10	-0.23	0.23	-0.07
Distribution	2.00	-1.90	-0.81	1.41	-1.34	-0.90	1.23	-1.23	-0.93
Honduras									
Growth	-0.59	-2.00	-0.79	-2.00	-1.00	-0.78	-1.00	-1.00	-0.79
Distribution	-0.41	1.00	-0.21	1.00	2.00	-0.22	2.00	2.00	-0.21
Mexico									
Growth	-0.89	-0.44	0.58	-0.79	-0.36	0.39	-0.71	-0.33	0.41
Distribution	-0.11	-0.56	-1.58	-0.21	-0.64	-1.39	-0.29	-0.67	-1.41
Panama									
Growth	1.11	-0.43	-0.49	0.91	-0.26	-0.36	0.28	-0.19	-0.31
Distribution	-0.11	-0.57	-0.51	-1.91	-0.74	-0.64	-1.28	-0.81	-0.69
Paraguay									
Growth	2.00	0.13	-1.12	0.77	0.08	-1.03	0.52	0.07	-1.12
Distribution	-1.00	-1.13	0.12	0.23	-1.08	0.03	0.48	-1.07	0.12
Peru									
Growth	-2.00	0.47	-0.77	-1.12	0.21	-0.81	-0.76	0.17	-0.80
Distribution	1.00	-1.47	-0.23	0.12	-1.21	-0.19	-0.24	-1.17	-0.20
Uruguay									
Growth	0.55	0.67	-0.85	0.83	0.69	-0.79	1.75	0.73	-0.77
Distribution	0.45	0.33	-0.15	0.17	0.31	-0.21	-0.75	0.27	-0.23
LAC									
Growth	-1.13	-0.34	-0.60	-1.69	-0.24	-0.57	-2.00	-0.20	-0.56
Distribution	0.13	-0.66	-0.40	0.69	-0.76	-0.43	1.00	-0.80	-0.44

Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank). Notes: Decomposition follows Datt and Ravallion (1992). A negative sign indicates a contribution to increasing poverty, a positive sign indicates a contribution to poverty reduction.

Figure 2. Decomposition of Latin American household income inequality, by share attributable to each source of income, 1995 and 2010



Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank). Note: Calculated using total household income per capita.

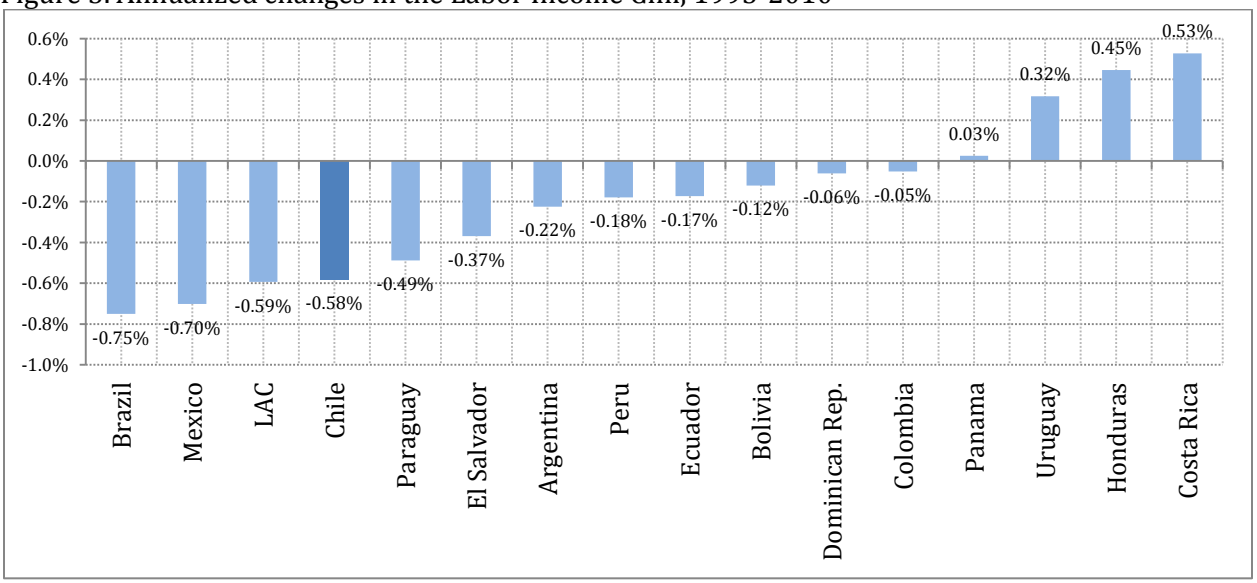
Table 3. Labor Income Inequality Indices in Latin America, 1995-2010

	Gini coefficient				Theil Index			
Country	1995	2000	2005	2010	1995	2000	2005	2010
Argentina	0.414	0.432	0.435	0.400	0.322	0.341	0.373	0.300
Bolivia	0.535	0.567	0.548	0.525	0.570	0.670	0.606	0.611
Brazil	0.581	0.571	0.548	0.519	0.709	0.712	0.670	0.613
Chile	0.597	0.558	0.548	0.547	0.873	0.727	0.713	0.690
Colombia	0.512	0.547	0.514	0.508	0.556	0.671	0.568	0.562
Costa Rica	0.418	0.425	0.445	0.453	0.338	0.354	0.431	0.407
Dom. Rep.	0.474	0.488	0.479	0.469	0.449	0.467	0.475	0.415
Ecuador	0.461	0.517	0.472	0.449	0.411	0.572	0.447	0.409
El Salvador	0.467	0.469	0.469	0.442	0.451	0.430	0.485	0.382
Honduras	0.539	0.529	0.609	0.576	0.658	0.573	0.889	0.821
Mexico	0.538	0.534	0.507	0.484	0.629	0.606	0.560	0.485
Panama	0.470	0.491	0.492	0.472	0.414	0.469	0.467	0.451
Paraguay	0.545	0.506	0.521	0.507	0.623	0.503	0.536	0.558
Peru	0.524	0.576	0.529	0.510	0.562	0.778	0.564	0.525
Uruguay	0.438	0.434	0.469	0.459	0.374	0.371	0.421	0.430
LAC	**0.547**	**0.546**	**0.524**	**0.500**	**0.638**	**0.649**	**0.601**	**0.546**

	90/10 ratio				80/20 ratio			
Country	1995	2000	2005	2010	1995	2000	2005	2010
Argentina	14.8	17.2	20.3	15.3	8.1	9.2	10.1	8.2
Bolivia	33.4	47.1	40.7	34.0	16.5	20.0	17.6	15.4
Brazil	39.5	39.4	34.5	28.8	19.4	17.8	15.2	12.7
Chile	36.0	29.2	26.4	24.9	17.8	14.4	13.3	12.8
Colombia	35.7	39.8	35.4	32.2	14.5	17.3	14.9	14.1
Costa Rica	16.0	16.9	17.9	17.5	8.1	8.4	9.1	9.2
Dom. Rep.	21.1	19.3	20.0	19.6	10.7	10.7	10.7	10.5
Ecuador	21.8	33.8	24.5	22.6	10.8	14.9	11.5	10.4
El Salvador	22.0	22.0	20.7	17.6	11.0	11.0	10.4	9.1
Honduras	35.3	40.4	82.4	54.9	16.5	17.6	29.3	22.1
Mexico	43.3	42.6	37.9	31.4	17.5	17.0	15.1	13.0
Panama	23.4	35.8	37.4	28.4	11.5	15.1	15.8	12.6
Paraguay	48.6	35.8	41.8	36.4	19.6	15.4	17.5	15.1
Peru	45.8	62.9	43.6	42.2	17.8	24.0	18.4	16.7
Uruguay	16.9	16.2	21.0	20.0	9.0	8.8	11.0	10.3
LAC	**38.3**	**39.3**	**34.7**	**29.7**	**17.3**	**17.0**	**14.9**	**13.0**

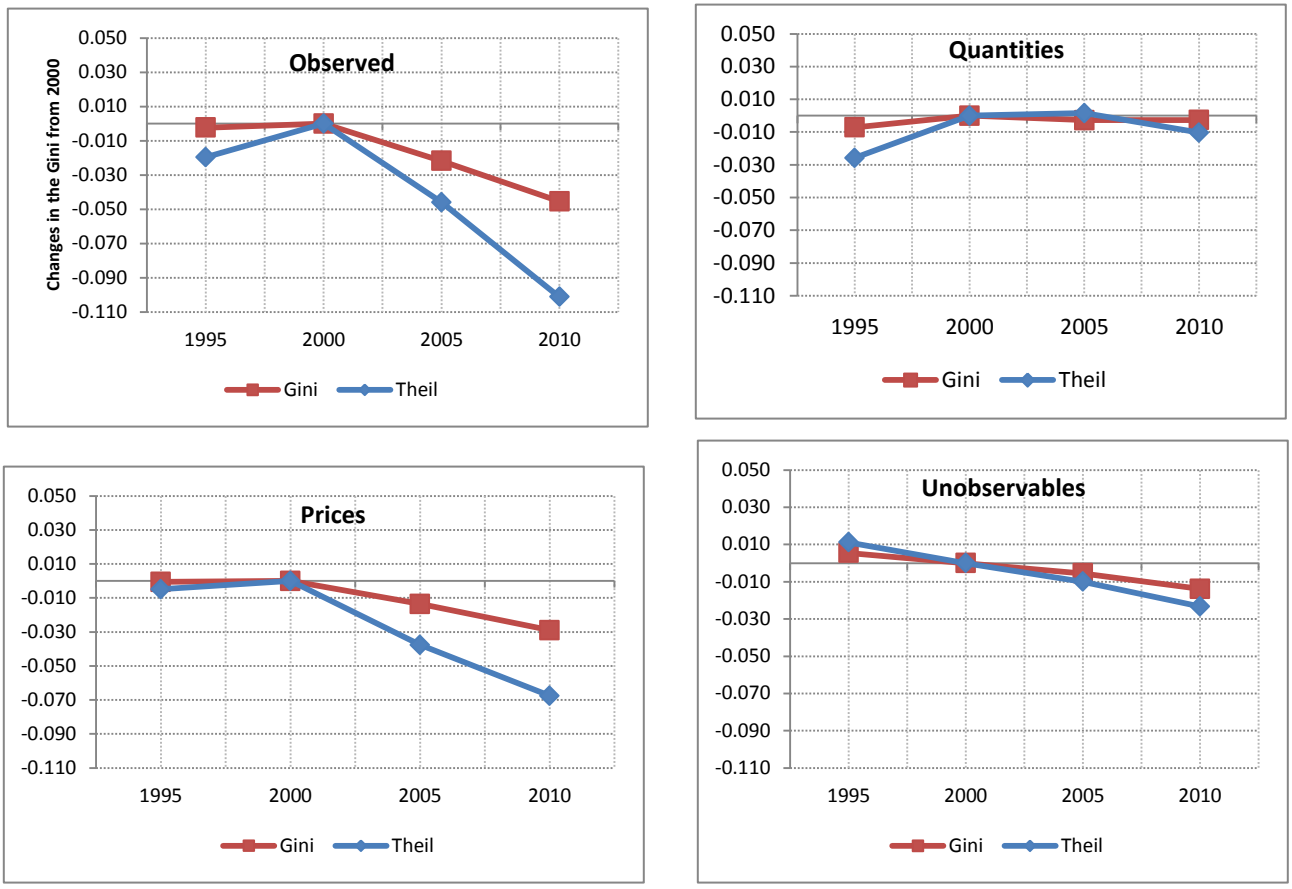
Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Figure 3. Annualized changes in the Labor Income Gini, 1995-2010



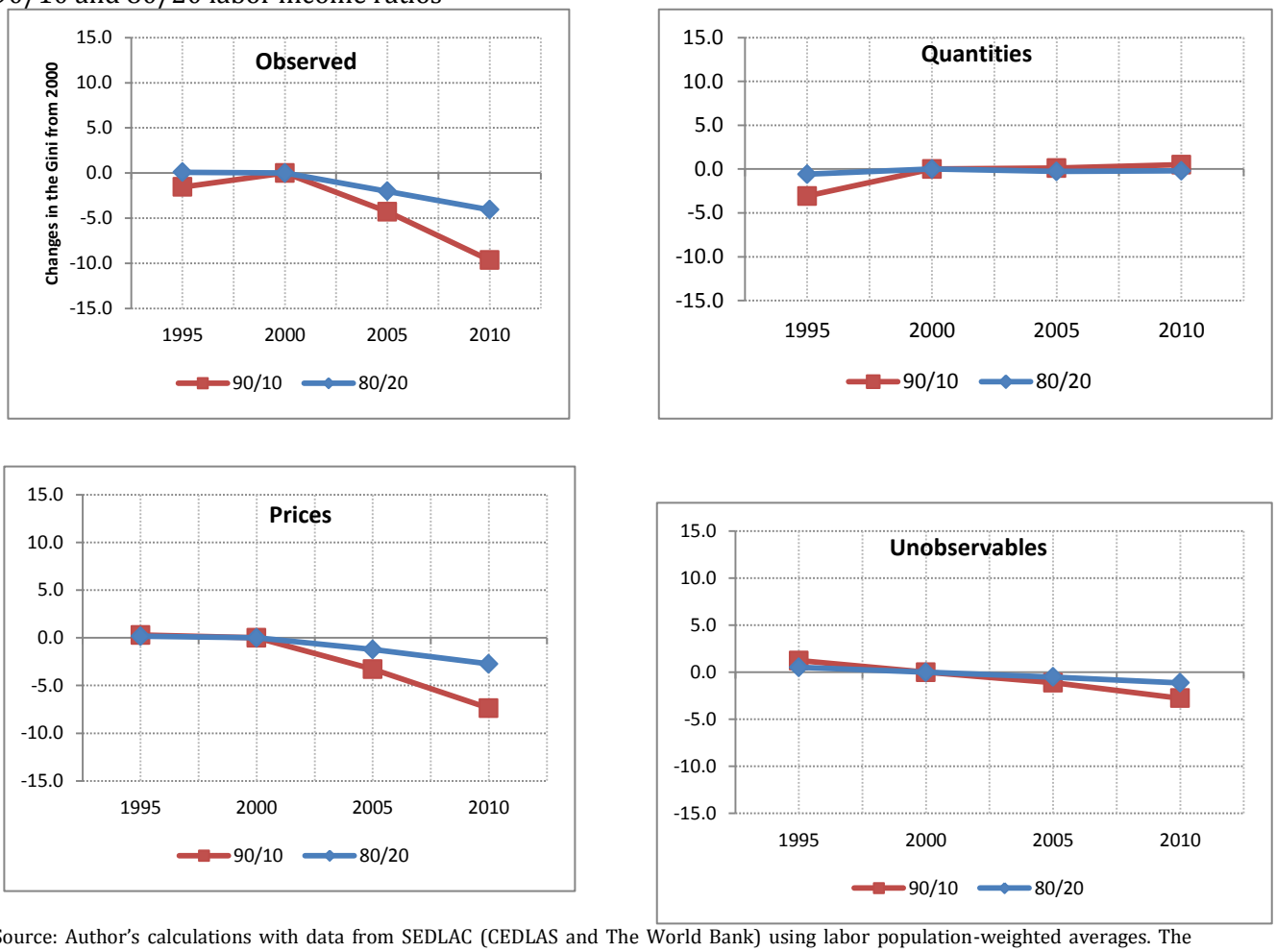
Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Figure 4. Decomposition of Labor Income (individual hourly wages) inequality changes, 1995-2010: Gini coefficient and Theil Index



Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages. The decomposition follows Foguel and Azevedo (2007).

Figure 5. Decomposition of Labor Income (individual hourly wages) inequality changes, 1995-2010: 90/10 and 80/20 labor income ratios



Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages. The decomposition follows Foguel and Azevedo (2007).

Table 4. Decomposition of changes in the labor income Gini Coefficient, 2000-2010

Country	Observed	Quantities	Prices	Unobservables
Argentina	**-0.032**	-0.002	-0.027	-0.002
Bolivia	**-0.042**	-0.011	-0.041	0.010
Brazil	**-0.052**	-0.001	-0.032	-0.019
Chile	**-0.011**	-0.013	-0.015	0.016
Colombia	**-0.039**	0.004	-0.032	-0.011
Costa Rica	**0.027**	0.014	0.016	-0.003
Dominican Rep.	**-0.019**	-0.017	0.001	-0.003
Ecuador	**-0.069**	0.000	-0.016	-0.053
El Salvador	**-0.027**	0.005	-0.019	-0.013
Honduras	**0.047**	-0.001	0.001	0.047
Mexico	**-0.050**	-0.005	-0.033	-0.013
Panama	**-0.019**	0.016	-0.031	-0.003
Paraguay	**0.001**	-0.002	-0.017	0.019
Peru	**-0.067**	-0.009	-0.034	-0.023
Uruguay	**0.026**	-0.003	0.013	0.015
LAC	**-0.045**	-0.003	-0.029	-0.014

Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Table 5. Decomposition of changes in the labor income Theil Index, 2000-2010

Country	Observed	Quantities	Prices	Unobservables
Argentina	**-0.041**	-0.005	-0.043	0.007
Bolivia	**-0.059**	-0.058	-0.082	0.082
Brazil	**-0.099**	-0.001	-0.071	-0.026
Chile	**-0.038**	-0.071	-0.023	0.056
Colombia	**-0.109**	0.005	-0.077	-0.037
Costa Rica	**0.053**	0.024	0.032	-0.002
Dominican Rep.	**-0.052**	-0.045	0.007	-0.014
Ecuador	**-0.163**	-0.004	-0.039	-0.120
El Salvador	**-0.049**	0.000	-0.032	-0.017
Honduras	**0.248**	0.008	0.010	0.229
Mexico	**-0.121**	-0.001	-0.083	-0.037
Panama	**-0.018**	0.046	-0.064	0.000
Paraguay	**0.055**	-0.015	-0.027	0.096
Peru	**-0.253**	-0.093	-0.095	-0.065
Uruguay	**0.058**	-0.007	0.023	0.043
LAC	**-0.101**	-0.010	-0.068	-0.023

Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Table 6. Decomposition of changes in the labor income 90/10 ratio, 2000-2010

Country	Observed	Quantities	Prices	Unobservables
Argentina	**-1.844**	0.250	-2.582	0.488
Bolivia	**-13.122**	-1.790	-10.904	-0.428
Brazil	**-10.599**	2.148	-8.683	-4.064
Chile	**-4.323**	-2.142	-2.700	0.519
Colombia	**-7.633**	0.903	-7.056	-1.480
Costa Rica	**0.676**	0.558	1.601	-1.484
Dominican Rep.	**0.338**	-1.142	0.122	1.358
Ecuador	**-11.174**	0.478	-2.976	-8.676
El Salvador	**-4.410**	0.879	-2.575	-2.714
Honduras	**14.473**	1.050	0.504	12.919
Mexico	**-11.197**	-1.481	-7.692	-2.024
Panama	**-7.461**	1.462	-6.321	-2.601
Paraguay	**0.600**	0.653	-4.254	4.200
Peru	**-20.745**	-1.826	-12.269	-6.650
Uruguay	**3.769**	0.012	1.328	2.430
LAC	**-9.646**	0.498	-7.381	-2.763

Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Table 7. Decomposition of changes in the labor income 80/20 ratio, 2000-2010

Country	Observed	Quantities	Prices	Unobservables
Argentina	**-0.979**	0.278	-1.247	-0.009
Bolivia	**-4.594**	-0.080	-4.496	-0.018
Brazil	**-5.099**	-0.178	-3.272	-1.649
Chile	**-1.666**	-0.737	-1.317	0.387
Colombia	**-3.216**	0.439	-2.830	-0.825
Costa Rica	**0.774**	0.490	0.650	-0.366
Dominican Rep.	**-0.221**	-0.566	-0.054	0.399
Ecuador	**-4.507**	0.062	-1.181	-3.387
El Salvador	**-1.893**	0.284	-1.202	-0.975
Honduras	**4.509**	0.531	0.127	3.852
Mexico	**-3.958**	-0.538	-2.639	-0.781
Panama	**-2.509**	0.647	-2.420	-0.737
Paraguay	**-0.238**	0.496	-1.796	1.062
Peru	**-7.234**	-0.804	-4.075	-2.355
Uruguay	**1.512**	0.040	0.602	0.869
LAC	**-4.074**	-0.203	-2.738	-1.132

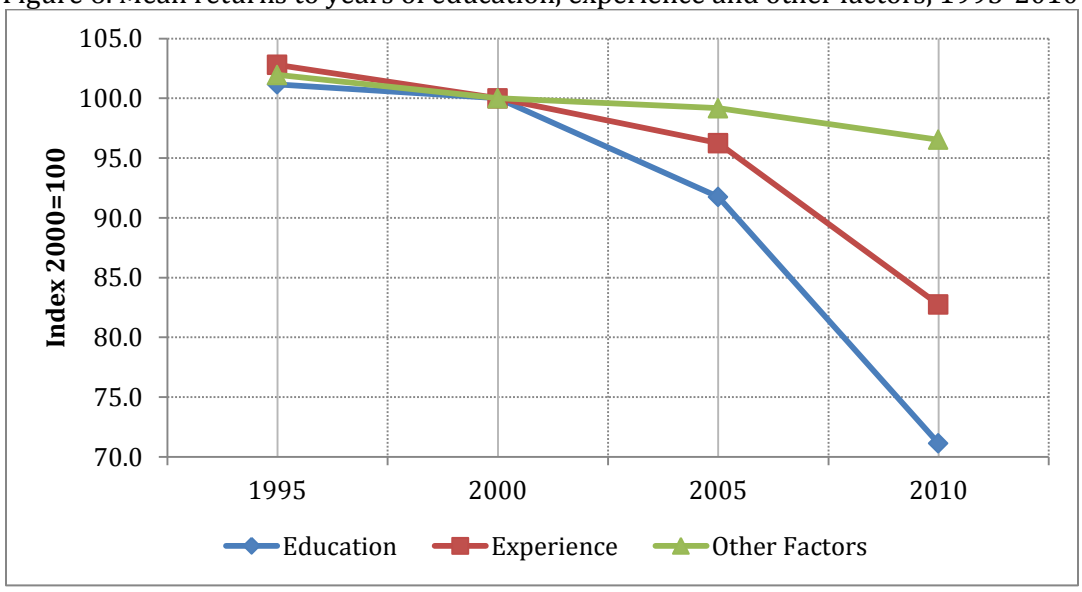
Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Table 8. Typology of Changes in the Gini coefficient of Labor Income (individual hourly wages), between 2000 and 2010

	Inequality-reducing	Inequality-increasing
Quantity effect	Argentina Bolivia Brazil Chile Dom. Rep. Honduras Mexico Paraguay Peru Uruguay	Colombia Costa Rica Ecuador El Salvador Panama
Price effect	Argentina Bolivia Brazil Chile Colombia Ecuador El Salvador Mexico Panama Paraguay Peru	Costa Rica Dominican Rep. Honduras Uruguay
Other Factors	Argentina Brazil Colombia Costa Rica Dominican Rep. Ecuador El Salvador Mexico Panama Peru	Bolivia Uruguay Chile Paraguay Honduras

Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank).

Figure 6. Mean returns to years of education, experience and other factors, 1995-2010



Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using population-weighted averages. The aggregation of the returns follows Foguel and Azevedo (2007).

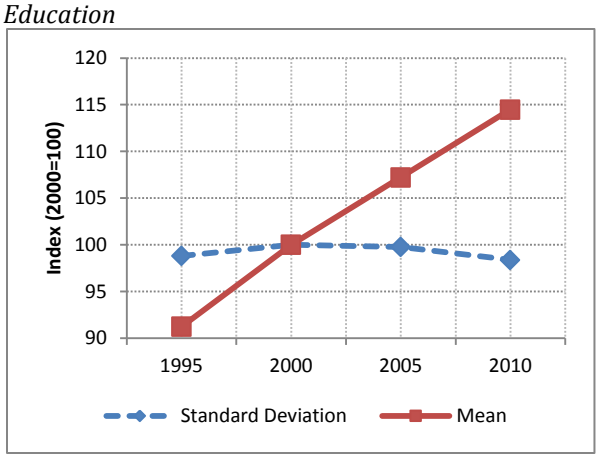
Table 9. Mean returns to education, experience and other factors, 1995-2010 (2000=100)

	Education				Experience				Unobservables			
	1995	2000	2005	2010	1995	2000	2005	2010	1995	2000	2005	2010
Argentina	52	100	114	72	93	100	90	66	94	100	108	102
Bolivia	146	100	108	40	216	100	194	165	93	100	98	97
Brazil	112	100	87	63	103	100	97	85	102	100	97	94
Chile	89	100	57	132	113	100	90	81	108	100	102	101
Colombia	106	100	83	76	79	100	88	80	103	100	101	99
Costa Rica	159	100	114	121	111	100	89	78	97	100	97	94
Dom. Rep.	117	100	109	89	105	100	95	95	109	100	104	104
Ecuador	138	100	130	94	127	100	109	68	87	100	91	89
El Salvador	99	100	71	69	85	100	74	81	96	100	100	91
Honduras	97	100	111	95	106	100	94	147	94	100	119	106
Mexico	85	100	102	71	104	100	82	69	104	100	100	99
Panama	76	100	104	100	107	100	101	81	90	100	103	96
Paraguay	86	100	58	25	131	100	145	98	108	100	109	102
Peru	87	100	68	69	99	100	141	108	103	100	94	96
Uruguay	136	100	118	158	106	100	96	92	103	100	106	106
LAC	**101**	**100**	**92**	**71**	**103**	**100**	**96**	**83**	**102**	**100**	**99**	**97**

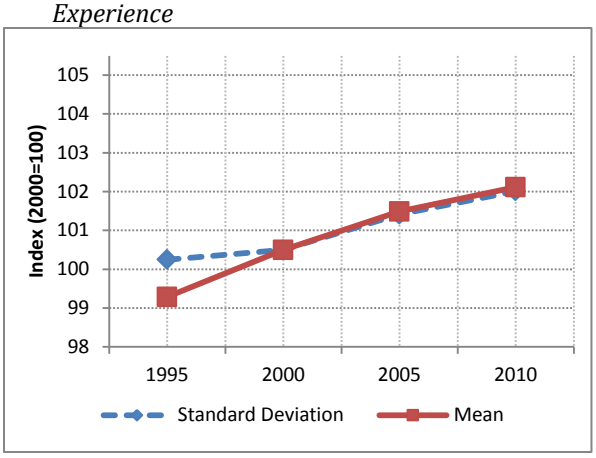
Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Figure 7. Mean and Standard deviation of education and experience (1995-2010)

Education



Experience



Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages.

Table 10. Mean education and experience, 1995-2010 (2000=100)

	Mean Years of Education				Mean Years of Experience			
	1995	2000	2005	2010	1995	2000	2005	2010
Argentina	96	100	106	110	98	100	100	100
Bolivia	98	100	99	117	101	100	102	99
Brazil	88	100	109	119	99	100	100	100
Chile	101	100	108	111	94	100	103	104
Colombia	88	100	101	107	98	100	102	103
Costa Rica	97	100	107	114	96	100	103	104
Dom. Rep.	102	100	103	98	99	100	102	109
Ecuador	122	100	103	108	89	100	103	106
El Salvador	93	100	108	109	99	100	99	100
Honduras	100	100	104	105	100	100	104	106
Mexico	93	100	110	117	100	100	102	102
Panama	105	100	104	109	93	100	102	104
Paraguay	96	100	111	119	96	100	97	97
Peru	87	100	98	105	99	100	104	104
Uruguay	97	100	108	105	99	100	102	102
LAC	**91**	**100**	**107**	**114**	**99**	**100**	**101**	**102**

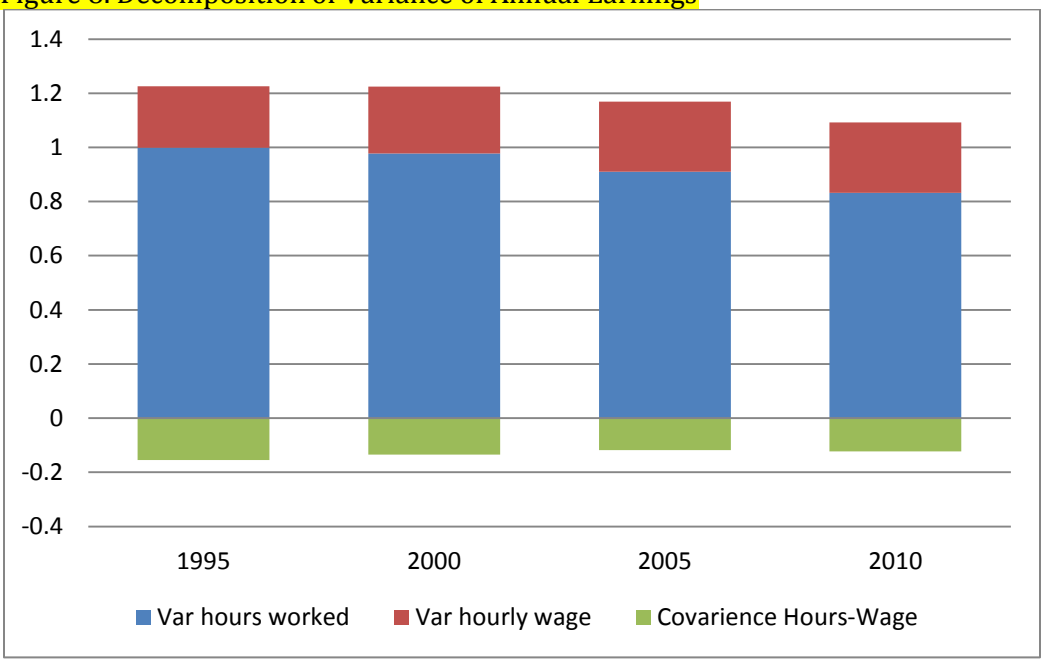
Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Table 11. Standard deviation of education and experience, 1995-2010 (2000=100)

	Standard Deviation of Education				Standard Deviation of Experience			
	1995	2000	2005	2010	1995	2000	2005	2010
Argentina	98	100	99	95	99	100	103	103
Bolivia	103	100	100	98	100	100	102	102
Brazil	99	100	99	98	100	100	102	102
Chile	101	100	91	89	101	100	102	103
Colombia	99	100	103	104	99	100	101	103
Costa Rica	97	100	100	103	101	100	102	104
Dom. Rep.	99	100	97	98	101	100	99	101
Ecuador	96	100	101	101	98	100	100	101
El Salvador	99	100	100	98	101	100	99	99
Honduras	99	100	103	101	99	100	99	100
Mexico	99	100	100	97	100	100	99	99
Panama	97	100	100	99	100	100	102	104
Paraguay	98	100	105	104	99	100	102	104
Peru	94	100	101	100	101	100	101	103
Uruguay	100	100	102	100	102	100	100	100
LAC	**99**	**100**	**100**	**98**	**100**	**100**	**101**	**102**

Source: Authors' calculations with data from SEDLAC (CEDLAS and The World Bank). LAC values refer to labor population weighted averages.

Figure 8. Decomposition of Variance of Annual Earnings



ANNEX

Table A1. The circa criteria

Country	Circa 1995	Circa 2000	Circa 2005	Circa 2010
Argentina	1995	2000	2005	2010
Bolivia	1997	2000	2005	2008
Brazil	1995	2001	2005	2009
Chile	1996	2000	2006	2009
Colombia	1996	2002	2005	2010
Costa Rica	1995	2000	2005	2009
Dominican Rep.	1996	2000	2005	2010
Ecuador	1995	2003	2006	2010
El Salvador	1995	2000	2005	2009
Honduras	1995	1999	2005	2009
Mexico	1996	2000	2005	2010
Panama	1995	2001	2005	2009
Paraguay	1995	1999	2005	2010
Peru	1997	2002	2005	2010
Uruguay	1995	2000	2005	2010

Table A2. Surveys in the Sample

Country	Circa 1995	Circa 2000	Circa 2005	Circa 2010
Argentina	EPH	EPH	EPH-C	EPH-C
Bolivia	ENE	ECH	ECH	ECH
Brazil	PNAD	PNAD	PNAD	PNAD
Chile	CASEN	CASEN	CASEN	CASEN
Colombia	ENH-FT	ECH	ECH	GEIH
Costa Rica	EHPM	EHPM	EHPM	EHPM
Dominican R.	ENFT	ENFT	ENFT	ENFT
Ecuador	ECV	ENEMDU	ENEMDU	ENEMDU
El Salvador	EHPM	EHPM	EHPM	EHPM
Honduras	EPHPM	EPHPM	EPHPM	EPHPM
Mexico	ENIGH	ENIGH	ENIGH	ENIGH
Panama	EH	EH	EH	EH
Paraguay	EH	EIH	EPH	EPH
Peru	ENAHO	ENAHO	ENAHO	ENAHO
Uruguay	ECH	ECH	ECH	ECH

Figure A1. Gini coefficient and Theil index of total household income per capita in LAC, 1995-2010

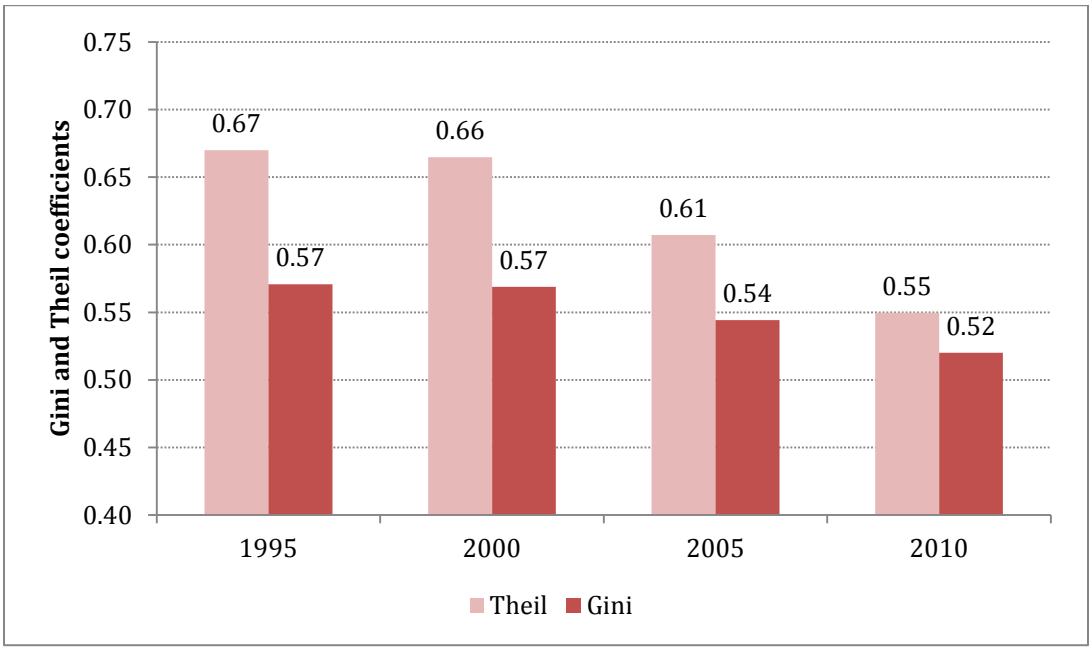
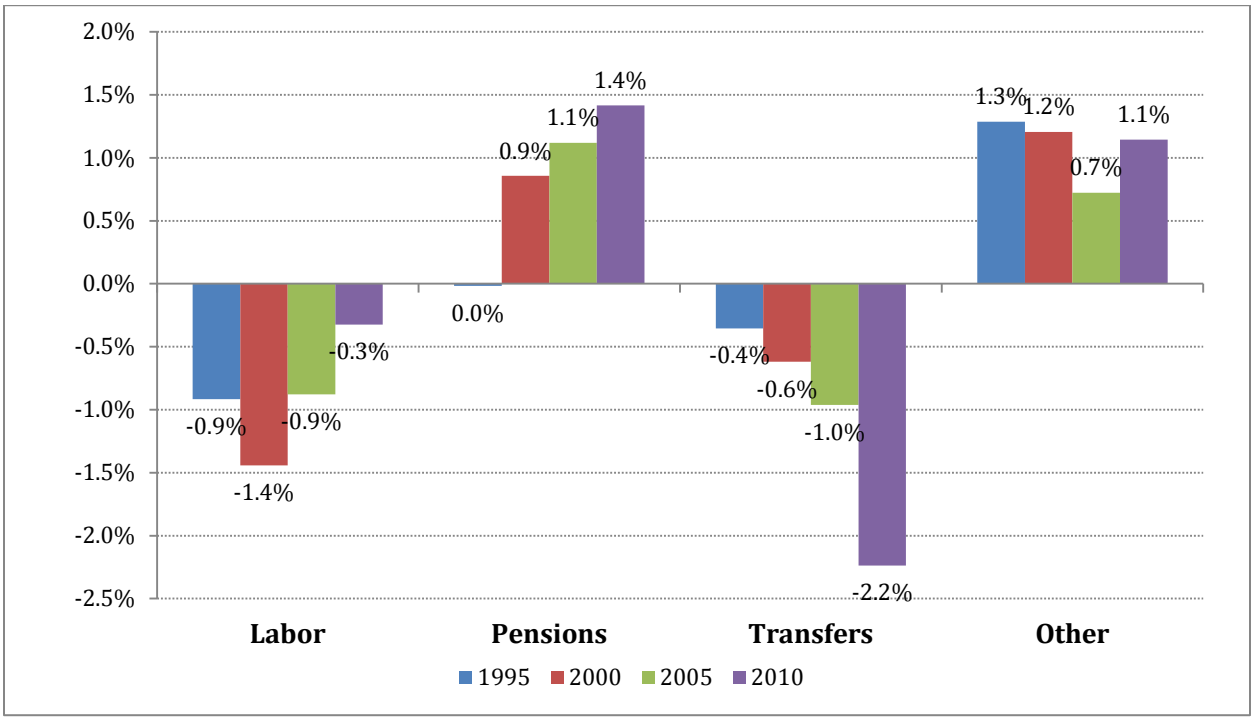


Figure A2. Shares of income sources in total household income per capita in LAC, 1995-2010

Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank).

Figure A3. Marginal effect on inequality by income source, 1995-2010



Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank).

Table A3. Female: Decomposition of changes in the labor income Gini Coefficient, 2000-2010

Country	Observed	Quantities	Prices	Unobservables
Argentina	**-0.006**	-0.003	-0.007	0.004
Bolivia	**0.002**	0.023	-0.054	0.032
Brazil	**-0.044**	0.001	-0.027	-0.017
Chile	**0.011**	0.004	-0.010	0.017
Colombia	**-0.027**	-0.004	-0.022	0.000
Costa Rica	**0.012**	0.003	0.020	-0.011
Dominican Rep.	**0.003**	-0.019	0.022	0.001
Ecuador	**-0.074**	-0.010	-0.014	-0.049
El Salvador	**-0.022**	0.012	-0.018	-0.016
Honduras	**0.031**	0.011	-0.032	0.052
Mexico	**-0.017**	0.009	-0.025	-0.002
Panama	**0.015**	0.016	-0.028	0.026
Paraguay	**0.067**	0.004	-0.009	0.073
Peru	**-0.036**	0.003	-0.022	-0.016
Uruguay	**0.020**	0.002	0.016	0.002
LAC	**-0.028**	0.002	-0.022	-0.008

Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages.

Table A4. Male: Decomposition of changes in the labor income Gini Coefficient, 2000-2010

Country	Observed	Quantities	Prices	Unobservables
Argentina	**-0.050**	0.000	-0.042	-0.008
Bolivia	**-0.070**	-0.012	-0.045	-0.013
Brazil	**-0.054**	0.000	-0.035	-0.019
Chile	**-0.018**	-0.016	-0.018	0.016
Colombia	**-0.044**	0.009	-0.034	-0.019
Costa Rica	**0.033**	0.018	0.017	-0.003
Dominican Rep.	**-0.030**	-0.020	-0.004	-0.006
Ecuador	**-0.070**	-0.002	-0.015	-0.053
El Salvador	**-0.030**	-0.001	-0.018	-0.012
Honduras	**0.057**	-0.003	0.012	0.048
Mexico	**-0.059**	-0.001	-0.040	-0.018
Panama	**-0.032**	0.013	-0.029	-0.016
Paraguay	**-0.024**	-0.007	-0.026	0.008
Peru	**-0.086**	-0.012	-0.045	-0.029
Uruguay	**0.031**	-0.006	0.015	0.021
LAC	**-0.052**	-0.001	-0.034	-0.017

Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages.

Table A5. Formal: Decomposition of changes in the labor income Gini Coefficient, 2000-2010

Gini Coefficient				
Country	**Observed**	**Quantities**	**Prices**	**Unobservables**
Argentina	**-0.049**	-0.008	-0.038	-0.002
Bolivia	**-0.044**	-0.029	-0.034	0.019
Brazil	**-0.042**	-0.005	-0.022	-0.016
Chile	**-0.014**	-0.011	-0.010	0.007
Costa Rica	**0.026**	0.011	0.018	-0.002
Dominican Rep.	**-0.031**	-0.029	-0.003	0.000
Ecuador	**-0.068**	0.003	-0.021	-0.050
El Salvador	**-0.021**	-0.003	-0.009	-0.009
Honduras	**0.036**	-0.006	-0.015	0.058
Mexico	**-0.032**	-0.014	-0.026	0.008
Panama	**-0.003**	0.016	-0.026	0.008
Paraguay	**-0.007**	-0.017	-0.007	0.017
Peru	**-0.073**	-0.019	-0.043	-0.011
Uruguay	**0.002**	0.004	0.021	-0.023
LAC	**-0.039**	-0.009	-0.024	-0.006

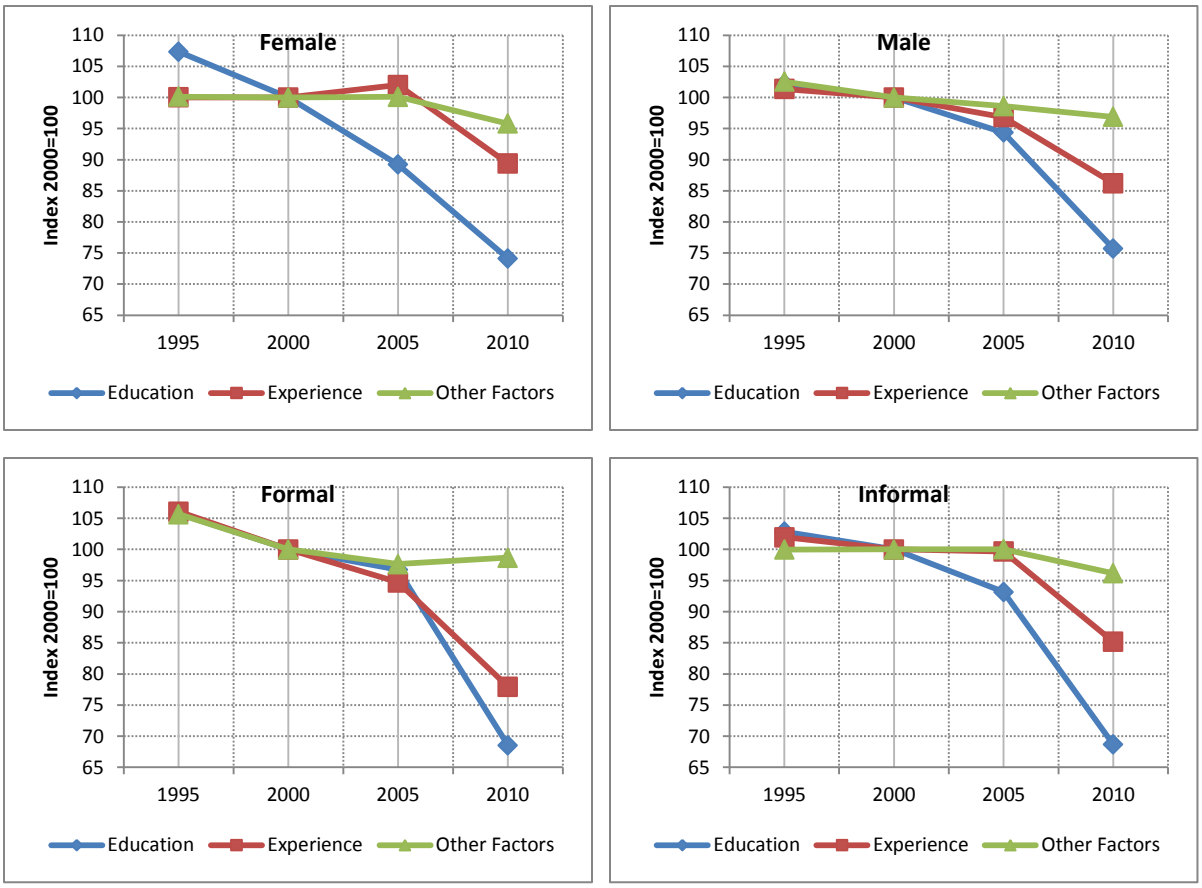
Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages.

Table A6. Informal: Decomposition of changes in the labor income Gini Coefficient, 2000-2010

Country	**Observed**	**Quantities**	**Prices**	**Unobservables**
Argentina	**-0.009**	0.001	-0.012	0.002
Bolivia	**-0.005**	0.003	-0.008	0.000
Brazil	**-0.057**	0.007	-0.036	-0.028
Chile	**0.034**	-0.004	-0.007	0.045
Costa Rica	**0.029**	0.012	0.002	0.016
Dominican Rep.	**-0.024**	-0.010	-0.004	-0.011
Ecuador	**-0.099**	-0.009	-0.016	-0.074
El Salvador	**-0.037**	0.003	-0.010	-0.031
Honduras	**0.028**	-0.001	0.006	0.023
Mexico	**-0.047**	0.011	-0.029	-0.029
Panama	**-0.002**	0.016	-0.015	-0.004
Paraguay	**0.059**	0.005	-0.004	0.059
Peru	**-0.049**	-0.004	-0.006	-0.039
Uruguay	**0.043**	-0.021	-0.007	0.070
LAC	**-0.044**	0.005	-0.025	-0.024

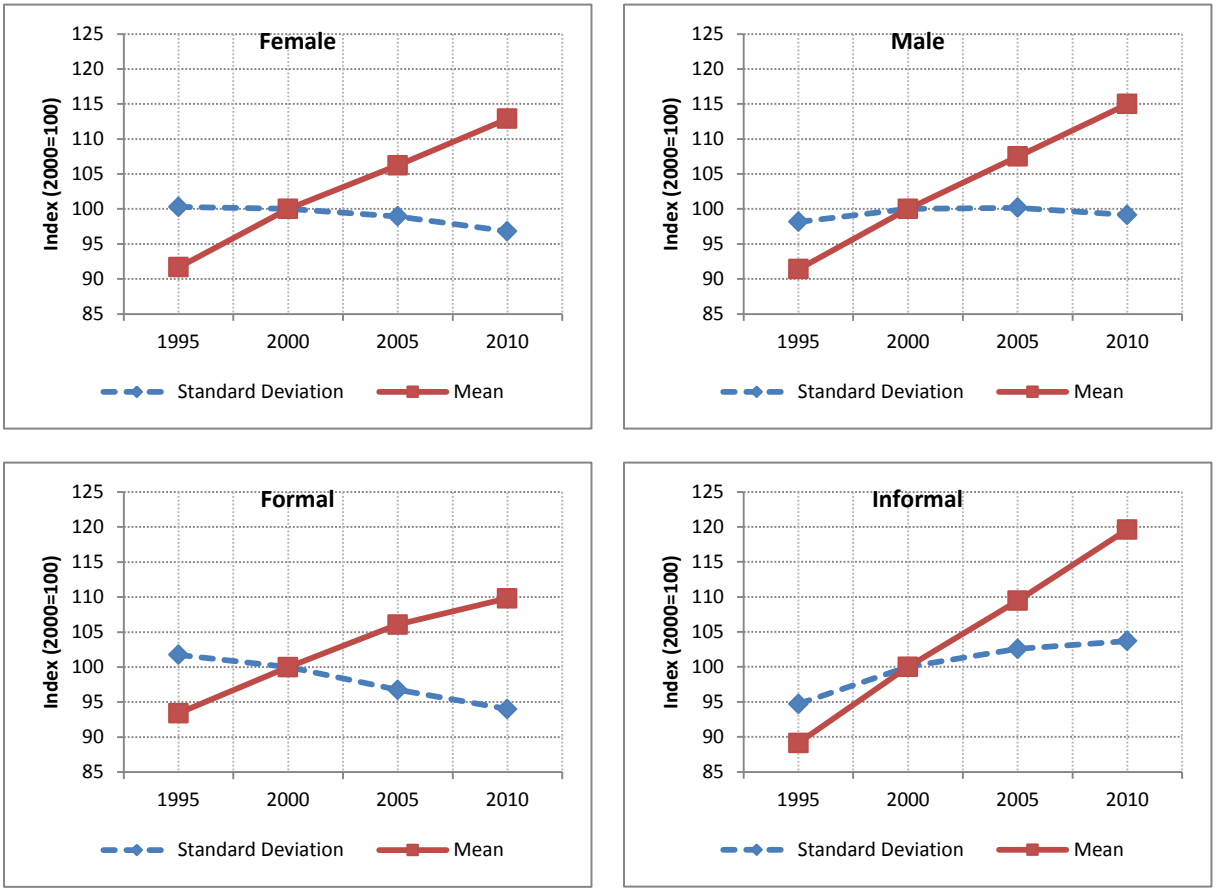
Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages.

Figure A4. Mean returns to education, experience and others, 1995-2010, by gender and sector



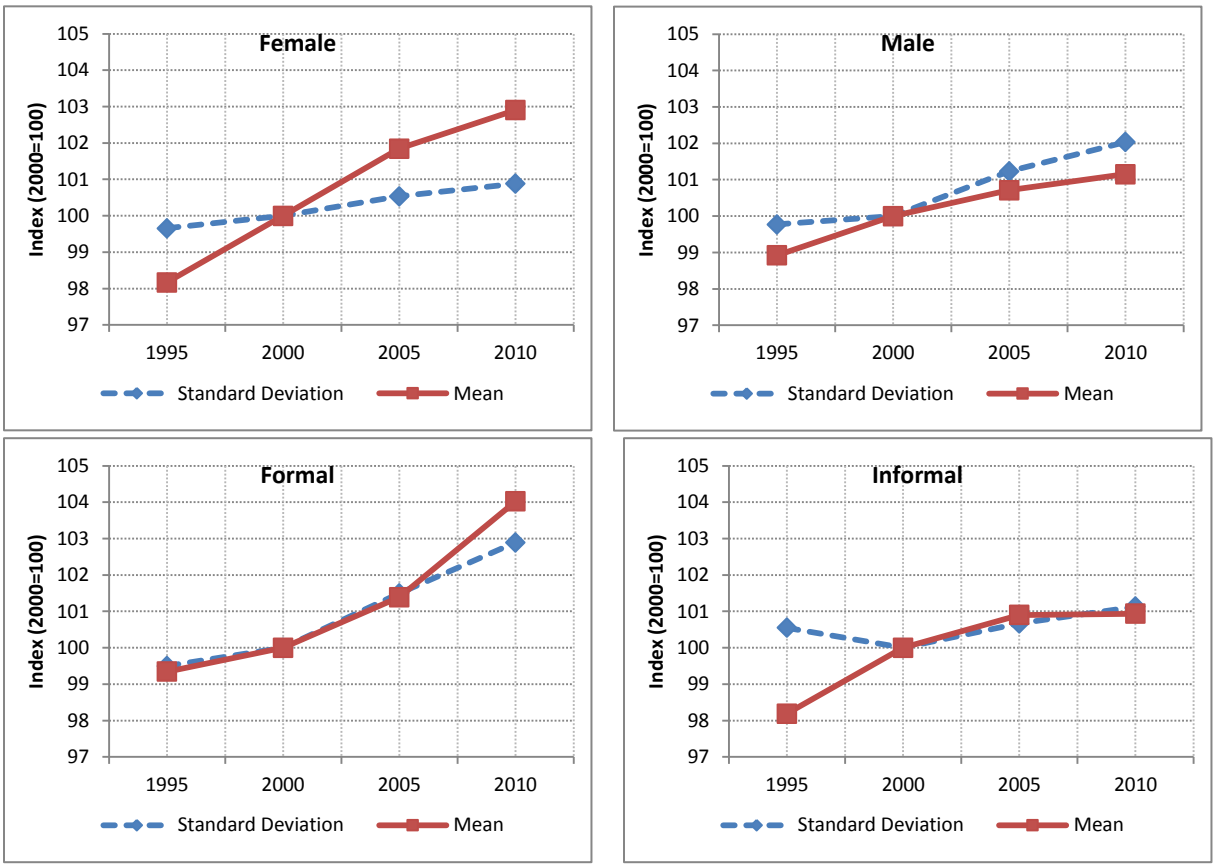
Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages.

Figure A5. Mean and Standard deviation of education (1995-2010), by sector and gender



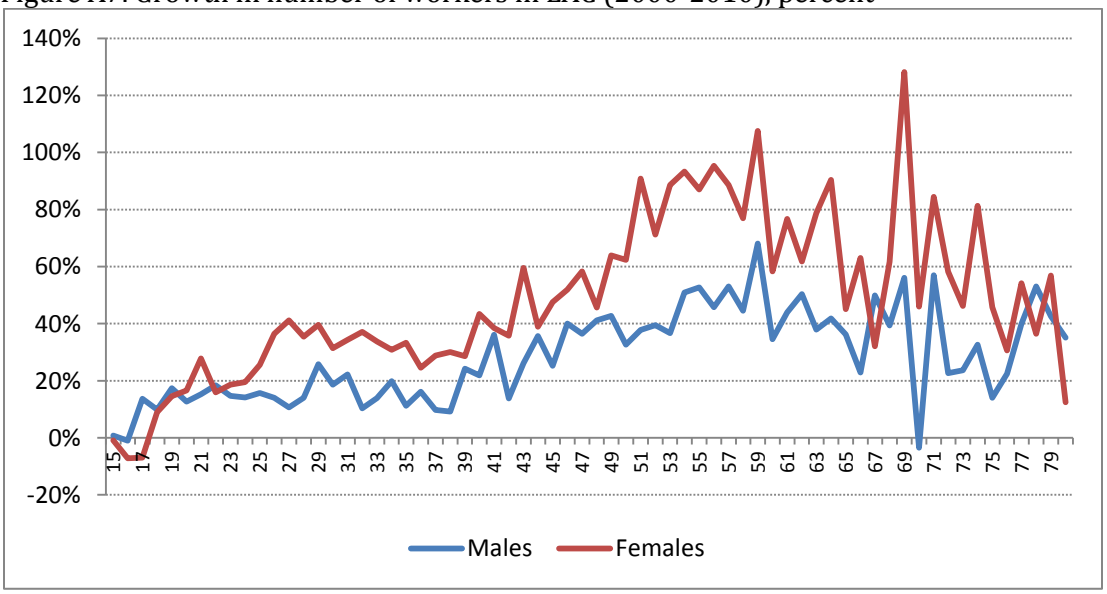
Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages.

Figure A6. Mean and Standard deviation of experience (1995-2010), by sector and gender



Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) using labor population-weighted averages.

Figure A7. Growth in number of workers in LAC (2000-2010), percent



Source: Author's calculations with data from SEDLAC (CEDLAS and The World Bank) for workers 15 and older.