Wage inequality in the developing countries: Evidence from Latin America

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We study the dynamics of wage inequality in Latin America in the last two decades. We find a consistent trend reversal in wage inequality in the region since the early 2000s: wage inequality fell across all countries in a way not predicted by the trends each country had experienced in the 1990s. The decline in wage inequality is explained by a disproportional expansion in the real hourly wage among low-paid workers, reducing both lower and upper tail inequality. About 40 percent of the observed reduction in wage variance was a response to the more equal wage structure, while the rest derived from a reduction in wage dispersion among workers with similar observable traits. The equalization of the wage structure in the 2000s is correlated with a reduction in the wage premium across education, experience, and place of residence groups. The reduction in the gender gap contributed, to a lesser extent, to the trend reversal.

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I. Introduction

Latin America suffers from an excess of inequality (Londoño and Székely 2000). Between 2000 and 2015, unlike the rest of the world, Latin America experienced a sharp and sustained decline in income inequality.[1] The extensive body of work that documents the decrease in total income inequality concludes that the compression of the wage distribution was an essential force behind it. Yet, we know relatively little about the trends in the wage distribution. In particular, to what extent did the dynamics of wage inequality mimic the trend in income inequality? How much of the change in wage inequality was a response to changes in the wage structure with respect to changes in the wage dispersion of otherwise similar workers? And, most importantly from a policy perspective, which factors were behind the decline in a wage inequality that had persisted across the region over the long run?

This paper aims to fill this gap in the literature. We document the dynamics of wage inequality in the region using comparable microdata on the wage distribution in 17 countries spanning almost two decades, and, to a lesser extent, we compare our measures with a subset of other developing countries and the United States. By looking at several countries, we are able to disentangle the stylized facts from the country-specific trends. We find that wage inequality increased slightly during the 1990s and up to the early 2000s, when there was a turning point and the onset of a steady decline. Because our microdata cover both the rise and the decline in inequality, we are allowed to explore which factors comove with the trend in wage inequality. This is an advantage compared to studies that only focus on the period of the decline.

Most of the studies that have examined the decline in wage inequality at the regional level concentrate on explaining the role of the supply and demand factors behind the change in the education premium (Batiston et al. 2011; Manacorda, Sánchez-Páramo, and Schady 2010; Gasparini et al. 2011).[2] Although we also find that the education premium is an essential

[1] Gasparini et al. (2011) and López-Calva and Lustig (2010) document the regional decline in total income inequality. This decline took place between 2000 and 2013. Gasparini et al. (2016) and Cord et al. (2016) find that the social gains slowed after 2013. Our data replicate this finding (see section 1 in the Supplemental Appendix).

[2] These studies have used a supply and demand framework to estimate a Tinbergen ratio (1974) between supply and technology. In this framework proposed by Katz and Murphy (1992), an increase in the relative supply of skilled workers should result in a fall in their relative remuneration, while a positive change in the relative demand for this type of worker would increase the wage-skill premium; here, skill is defined by education because perfect substitutability across workers with different experiences is assumed. Several studies have applied this framework to Latin American countries, for instance, Mexico (Montes Rojas 2006), Chile (Gallego 2011), Panama (Galiani 2009), the five largest economies in Latin America (Manacorda et al. 2010), and 17 Latin American countries (Gasparini et al. 2011), the broadest study in terms of spatial

piece behind the reduction in wage inequality, a large part of the wage dispersion occurs among workers with the same education credentials.[3] A more comprehensive analysis of multiple factors that affect wage inequality beyond education is therefore needed.

To study the dynamics of wage inequality in Latin America, we pooled microdata from household surveys for 17 countries in the region using the SEDLAC database (World Bank and CEDLAS). The main advantage of household surveys over, for example, administrative records or population censuses is that household surveys allow us to observe both formal and informal sectors on an annual basis. In contrast, administrative records focus only on formal employment, while censuses are much less frequent than household surveys and are typically administered every 10 years. Household surveys have an important drawback as well, however. They fall short in measuring the role of sorting and firm distribution in explaining wage inequality.

The first part of the paper documents the dynamics of wage inequality in Latin America. We find that the region experienced a trend reversal in wage inequality after 2002. The average Gini of wages fell from 0.473 in 2002 to 0.410 in 2013; before 2002, wage inequality increased slightly. The precipitous fall in wage inequality is robust to the choice of aggregation method,[4] the inequality indicator,[5] and the period of analysis.[6] The reduction in wage inequality is characterized by a substantial expansion in hourly earnings at the bottom of the income distribution.[7] We also find a negative relationship between wage growth and the percentile of the wage distribution. This implies that we observed a decline in both upper and lower tail inequality.

The reduction in wage inequality depends on changes in the characteristics of the workforce (compositional changes) and changes in the wage structure, understood as the wage returns of each of workforce characteristics. This study focuses on the latter component for two reasons.

coverage and time coverage (1990s and 2000s). Recently, Fernandez and Messina (2016) applied the framework, including variations in the experience premium, to selected Latin American countries.

[3] A typical Mincer equation controlling only for education levels will lead to an R-squared of less than 0.3, independent of the country and year of the sample. This fact generally holds across the world.

[4] Both the weighted and unweighted regional averages converge qualitatively in the fall of labor income inequality, albeit they report some differences in terms of the trend during the 1990s.

[5] Our analysis also reaches this conclusion based on the Theil index, the mean log deviation, the Atkinson index, and the 90/10 ratio (see Appendix Figure C.1).

[6] The phenomenon of declining wage inequality was observed in 16 of the 17 countries on which we have comparable data. Only Costa Rica experienced an increase in wage inequality.

[7] Here we use interchangeable wages and hourly labor earnings. Both refer to a measure that divides total labor income in the main occupation by the number of hours worked. This definition considers both salaried and self-employed workers.

First, the compositional changes or variations in the characteristics of the workforce (that is, sex, gender, education) take place in the long term and tend to have strong inertia, which implies that these could only have a minor effect in the reversal in wage inequality that we observed in the 2000s. Second, from a policy perspective, the wage structure may be more responsive in the short term to a wide variety of policies compared with worker characteristics.

The second part of the paper quantifies the extent to which the changes in the wage structure explain the observed decline in wage inequality. To do so, we apply a parsimonious decomposition of inequality between the inequality across observed characteristics and the inequality among otherwise equal workers. We find that a decline in the dispersion of the wage structure explains 43 percent of the decrease in wage inequality, while the other part (57 percent) derives from a reduction in the variance among workers with similar characteristics, often referred to as residual wage inequality.

The third part of the paper explores the evolution of the wage structure. To do so, we use Mincer regressions over pooled microdata of 17 Latin American countries and estimate the worker wage premium across four characteristics (sex, age, education, and place of residence) by country and year.

Consistent with the previous literature, we find a trend reversal in the education premium. We find that the college wage premium (relative to workers with primary education or less) increased about 10 percent during the 1990s and declined dramatically after the 2000s. The college wage premium was 27 percent lower in 2013 than it had been in 2003. The high-school wage premium (relative to workers with primary education or less) did not experience a similar trend reversal; it shows a steady decline during the entire study period. However, between 2003 and 2013, the high-school wage premium declined by one-fourth, a much more rapid decline than the one we observed during the 1990s.

Different from the previous literature, we find a secular decreasing trend in the experience premium across workers. Notably, we find that the wage growth of young workers declined less during the 1990s and increased more during the 2000s relative to the wage growth among more experienced workers. This decline in the experience premium has been overlooked in the literature on wage inequality, except for the country-specific study of Ferreira et al. (2017) on Brazil.

We also explore the extent to which the gender gap and the wage premium in urban areas with respect to rural areas explain the observed

trend reversal in wage inequality. We find a trend reversal in the urban wage premium, defined as the conditional wage gap between workers living in urban versus rural areas. This finding suggests that the higher wage growth among workers in rural areas during the 2000s could have been a relevant factor behind the trend reversal in wage inequality in the region. We do not find a large effect of the gender gap on the trend reversal in wage inequality because most of the decline in the gender gap took place during the 1990s.

Related literature. This paper contributes to three strands of the literature. The first strand documents wage inequality. While Azevedo et al. (2013) document wage inequality for 15 countries in the Latin America and Caribbean region from 1995 to 2010 and decompose it using the methodology proposed by Jhon, Murphy, and Pierce (1993),[8] the rest of the literature analyzes wage inequality for a smaller subset of countries.[9] Our study therefore expands this work in previous studies in three ways: first, by increasing the period studied, we focus on 1993–2013. Second by using a less restrictive decomposition that is more parsimonious.[10] Third by aggregating our results at the regional level to provide a consistent regional narrative by country-year and for the region as a whole.

This paper also contributes to the strand of the literature that studies the wage structure in the region. An extensive body of work has focused on the education premium at the country level.[11] At the regional level, the most comprehensive analysis is done by Acosta et al. (2019).[12] The authors use the relative supply and demand framework, developed by Murphy and Katz (1993), to explain the education premium. This paper contributes to the literature by highlighting other wage premiums that should be included in a more complex version of the framework: the experience and urban wage premium.[13] It is important to highlight thoroughly the set of studies that use

[8] Messina and Silva (2018) reproduced and properly cite our findings on wage inequality in their study that focuses on creating a narrative for our findings (see introduction and chapter 2).

[9] The growing literature on wage inequality at the country level uses different indicators, sample definitions, and trimming criteria, making regional conclusions a difficult task. Moreover, most of these studies only focus on understanding the trend during the wage inequality decline, that is, after the 2000s. This limits the ability to detect the factors that contribute to the trend reversal in wage inequality because, by definition, they never observe a reversal in the factors they analyze. Some of these country-specific studies are Paz and Urrutia (2015) on Peru; Aristizabal et al. (2015) on Bolivia, Colombia, and Ecuador, and Messina and Fernandez (2016) on Argentina, Brazil, and Chile. This last study is the only one that exploits long-term trends.

[10] The methodology proposed by Jhon, Murphy, and Pierce (1993) has been widely criticized for the assumption on rank preservation in the residuals in the wage distribution (see Lemieux 2006).

[11] Several studies have applied the supply and demand framework proposed by Katz and Murphy (1992) to examine the skill premium in Latin American countries, for example, Montes and Rojas (2006) for the case of Mexico, Gallego (2011) in the case of Chile, Galiani (2009) for Panama, and Manacorda et al. (2010) for the five largest economies in Latin America.

[12] This paper is an updated and modified version of Gasparini et al. (2011).

[13] Ferreira, Firpo, and Messina (2021) also highlight the importance of the experience premium, but only in Brazil.

country-level data on the formal sector to perform more rich, full decompositions that consider individual and firm fixed effects (Alvarez et al. 2018). This study differentiates from these by providing a regional perspective and also a view that considers the informal sector.

The third strand of the literature that we contribute to is the branch that focuses on the reasons behind the observed changes in wage inequality. Several potential suspects have been mentioned in country-specific studies focusing on technology,[14] trade,[15] or minimum wages.[16] Cornia (2015) and Messina and Silva (2018) are the only two studies that build a regional qualitative narrative that connects different reasons behind the reduction in wage inequality. Also, Firpo and Portella (2019) offer a similar summary for the case of Brazil. Similar to Silva and Messina (2018), we provide a regional narrative but with the difference that ours is connected to the stylized facts found on this paper and a modest correlation exercise between changes in Gini and changes in the wage structure that exploit the variation of the data we construct for Latin America

The reminder of the paper presents the data and sample criteria (section II) and the trends in wage inequality (section III). To explain this, it explores the role of wage structure relative to the residual wage variation (section IV). It also delves into the changes in the wage structure (section V). Section VI combines the results of the previous two sections with a summary of the literature on wage inequality. Section VII concludes.

II. Data and measures: from country noise to a regional signal

A. Main dataset

Most stylized facts on Latin America are produced using harmonized national household surveys from the SEDLAC Project. The surveys are collected by the respective national statistics offices (NSOs) and harmonized through the SEDLAC Project. This study uses microdata for 17 countries over a span of 20 years, which accounts for 90 percent of the population in the region. Annex A provides more

[14] Acosta et al. (2019), Messina, Pica, and Oviedo (2016).

[15] Some studies that focus on trade are Revenga (1997), Esquivel and Rodriguez-Lopez (20013) and Verhoogen (2008) for the case of Mexico; Galiani and Sanguinetti (2003) for the case of Argentina; Attanasio, Goldberg, and Pavnick (2004) for Colombia.

[16] Engbom and Moser (2017), Gérard et al. (2021), and Ferreira, Firpo, and Messina (2021).

detail on the microdata used for each country-year pair.[17] In most of the countries, the information is available on a yearly basis (the rare exceptions are Chile, Guatemala, Mexico, and Nicaragua).

An additional contribution of this study is the effort to minimize the intrinsic noncomparability of surveys over long periods of time. Household surveys in developing countries change constantly their methodology in several aspects, such as questionnaire structure, question phrasing, and sample design. To improve the within- and cross-country comparability of our analysis, we clean our data in four steps.

First, whenever a country-specific analysis is performed, we use period ranges in which within-country comparability is guaranteed.[18] We do not apply any correction to the regional aggregate. The logic behind this is that countries do not create comparability issues in a synchronized fashion. The regional aggregate is therefore fairly robust on a yearly basis.

Second, we clean the data in country-year cells defined by the full combination of three education groups, four experience groups, sex, and area of residence. We exclude the cells in which we observe comparability issues for any of the following reasons: (1) We eliminate skill cells in which more than 10 percent of the employed have missing wage information. (2) We use the wage growth in the average wage for each country-year and exclude those cases in which wage growth is outside 3 standard deviations of the country-wage growth distribution.[19] (3) For each country-year and skill cell, we trim the observations that are below the 1st and above the 99th percentiles of the conditional wage distribution. In this line, we focus on the inequality among the workers who earn a positive labor income and do not belong to the top 1 percent according to the household surveys.

Third, to control for compositional effects that arise by the expansion of the universe of household surveys, we eliminate all subnational areas on which information was not consistently collected during the two decades covered by our study. This filter affects some regions in Argentina, Brazil, Colombia, and Uruguay.

Non-Latin American countries. To provide a benchmark for our statistics, we also collect data on more than 30 middle- and high-income countries from the Global Wage Report Gini database produced by the International Labour Organization (ILO). Additionally, we collect microdata from other middle-income countries,

[17] In addition, part of the analysis in section 3 uses aggregated information on República Bolivariana de Venezuela to present a more comprehensive picture on labor income inequality in Latin America.

[18] A consolidated database of country comparability for income variables was provided by the Team for Statistical Development for Latin America at the World Bank (see table A.1). We use this dataset to define the circa period in our country-specific analysis (see table B.1).

[19] These criteria exclude from our analysis almost all the skill cells in Brazil in 1992 and 2007 and Paraguay in 1990.

such as the Russian Federation, South Africa, Turkey, and the United States (see annex A for details).

B. The measure of the wage distribution

We use the monthly labor income (after taxes) associated with the principal occupation to construct our main variable of interest. This variable is available for both formal and informal workers and is comparable across countries and within countries over time. As Székely and Hilgert (2007) point out, labor income is a variable much more comparable than total income because household surveys tend to construct labor income using similar questions, recall periods, and income definitions (monetary income after taxes). Moreover, at the top percentiles, labor income suffers less from underreporting than total income (Székely and Hilgert 2007).

Our main variable of interest is wages, defined as labor income per hour worked. Because the objective is to obtain the most accurate estimates of wages, we limit our analysis to the sample of full-time workers (35+ hours per week) ages 15–64.[20] Depending on the country, this accounts for about 75 percent to 85 percent of all workers. There are several advantages of focusing the analysis on the sample of full-time workers: (1) this reduces the dispersion of hourly wages that could result from measurement error; (2) it allows those workers to be tracked who are strongly attached to the labor force, which attenuates compositional problems;[21] and (3) it isolates our analysis from the particularities of the part-time labor market, which is not the purpose of this study.

Finally, the data series are spatially deflated between urban and rural areas using a factor of 15 percent of the differences in the cost of living. This decision obeys the data limitations of the harmonization process decided by the SEDLAC Project and the lack of a proper country-specific spatial deflator that is harmonized across countries. The use of a wrong spatial deflator affects the country-specific level of wage inequality, but not the trend; this implies that the spatial deflator does not impact the wage inequality measures at the regional level. This impliesthat the interpretation of our results is the compounded effect of the unequal cost of living and the unequal pay structure across regions, in line with most of the studies on

[20] The main consequence of considering only full-time workers is that labor income inequality may be lower, and the trend may not necessarily be the same if we include part-time workers in the analysis. We verify that the trend among part-time workers is the same. All our results are qualitatively similar to the case of including part-time workers.

[21] We prefer full-time workers because these workers are more attached to the labor market. Because we use multiple cross sections, having a group strongly attached to the labor market reduces the concern that we are following a group of workers exhibits high rotation.

wage inequality in the United States and in the Latin American region (see Ferreira, Firpo, and Messina 2021 on Brazil), with the exception of Morreti (2013).[22]

III. Trends in wage inequality

Figure 1 shows the dynamics of wage inequality in Latin America. It implies that inequality was slightly increasing before the 2000s and started to decline thereafter. It is not a surprising result given the broad literature connecting total labor income as a driver of total income inequality. This is the most up-to-date evidence of the long-term trend in wage inequality in the region as documented by Messina and Silva (2018).[23] In particular, the Gini coefficient of hourly wage rose by around 2 Gini points between 1993 and 2002, and it dropped thereafter by more than 6 Gini points, to reach 0.410 in 2013. This change in the decline of wage inequality is robust to the choice of aggregation method, the measures of inequality, and the selection of countries in the definition of the regional aggregate.

[Figure 1 about here]

The trend reversal in wage inequality presented in Figure 1 was a unique phenomenon relative to other countries in the world. Figure 2 shows the differences in wage inequality in any year between 1993 and 2013 using 2002 as a base year. Panel a shows the result from a regression run on Latin American countries, while panel b uses data on wages from other non-Latin American countries collected from ILO. As can be seen, while Latin America shows a slight increase during the 1990s, followed by a strong and fully synchronized trend reversal after 2002, the rest of the middle- and high-income countries included show a flat trend that suggests not significant changes in the last two decades. Figure 2 shows that the Gini of an average Latin America country declined 6 Gini points between 2002 and 2013, while the average non-Latin America country experienced an increase of 1.3 Gini points with respect the 2002 value.

[Figure 2 about here]

Figure 3 shows the change in wage inequality by country. It reveals that most Latin American countries experienced an increase in labor wage inequality over the 1990s (with the exception of Bolivia, Brazil, El Salvador, and Nicaragua), but this phenomenon reverted in all countries in the region, except Costa Rica, during the

[22] As a robustness check, we compute the trends using only urban population, and we found almost similar results in the trends of wage inequality at the country level.

[23] See Figure 1.4 in the Supplemental Appendix for the correlation between total income inequality and wage inequality.

2000s. In addition, such a homogenous trend reversal in labor income inequality contrasts with the increase or modest decline in labor income inequality in other countries on which data are available in the 1990s and 2000s.

[Figure 3 about here]

The most interesting contrast is the strong reversal suffered by Argentina and Peru. These countries experienced both large increases in wage inequality during the 1990s and large declines in the 2000s. The scatterplot of the 2000s suggests some sort of reversion to the mean, whereby countries with low-income inequality experienced an increase, while countries with high wage inequality experienced a decline. Further research is needed to establish why this may be the case.

To inform the nature of the decline in inequality, Figure 4 illustrates wage growth along the wage distribution. It shows that the trend reversal in wage inequality is characterized by a monotonic relation between wage growth and the percentile of the wage distribution. The average wage growth of workers was positive during the 2000s, but it was disproportionally higher among workers who are at the bottom of the wage distribution in their countries. These workers observed an increase greater than 50 percent in 2002–13. In contrast, the high-paid workers—those at the top of the labor income distribution in their countries—experienced a modest 16 percent growth over the decade. Overall, this suggests that the rise in labor inequality during the 1990s occurred during a plateau in terms of wage growth, while the decline in labor inequality occurred during an expansion of wage growth that benefited low-paid workers disproportionately.

[Figure 4 and 5 about here]

Figure 5 shows a similar set of results from the perspective of growth incidence curves. Basically, it highlights how the increase in wage inequality during the 1990s resulted from a negative reduction in real wages among low-paid workers and an almost null wage growth among the middle-paid and high-paid part of the wage distribution. On the opposite side, the period of decline is explained by a negative and monotone relationship between wage growth and the position in the wage distribution.

An explanation for this regional performance in less well-paid jobs has been underexplored in the literature. Only a recent book by Messina and Silva (2018) builds on our facts and undertakes a comprehensive assessment of the main drivers. Although it is not the scope of this paper, we provide, in section VI, a brief review of the literature based on several country-specific studies and the thorough report of Messina and Silva (2018).

IV. Observed and residual wage inequality

Following the literature, we decompose the wage dispersion into the dispersion among workers with different characteristics and the dispersion among otherwise similar workers, also known as residual wage inequality.

Notice that our measure of dispersion among workers with different characteristics results from both *compositional* changes and changes in the *wage structure*.[24] Regarding *compositional* changes, Bourguignon et al. (2005) suggest that secular trends such as the expansion of education and aging will be always inequality increasing and thus will not be a relevant factor in explaining the reduction in inequality observed in thre region.[25]

Our measure of residual wage inequality results from the variance in wages that remains after controlling for the differences in worker characteristics. It should be interpreted as the wage dispersion among otherwise observationally equivalent workers. The residual inequality may result from the variance among unobserved worker characteristics (for example, ability), the persistence of random productivity shocks, measurement error, or differences in the firms with which workers match.

To estimate observed and residual wage inequality, we apply a standard variance decomposition regression on the wages of worker *i* at *t* on a fully saturated Mincer regression on a set of cell fixed effects, whereby every cell is defined by the combination of groups at education *e*, experience *a*, gender *g*, and place of residence *p* within country *c*. Notice that we do this exercise for every year *t*.

$$\log(y_{it}) = \alpha^{t}_{e,a,g,p,c} + \epsilon_{it} (1)$$

where y_{it} corresponds to the real hourly wage of worker *i*, and the dimension of *e* is three groups: college, high school, and primary education.[26] Experience refers to potential experience and is divided into five groups: 0–5 years, 6–10 years, 11–20 years, 21–30 years, and 31+ years.[27] Gender and place are dummies for men and for workers living in urban areas, while the dimensionality of *c* depends on the number of countries. This implies we assigned workers across 60 skill cells.

[24] We refer to wage inequality that varies solely because of changes in the distribution of worker characteristics as compositional-induced wage inequality. We define the change in wage inequality derived from the changes in the return to worker's characteristics as a change in the wage structure.

[25] See Messina and Fernandez (2018) for an evidence on the paradox of progress about the unequalizing effect of changes in the socio-demographic composition of workers.

[26] To define the level of education, we use country-specific conventions rather than an absolute cutoff for all countries based on years of education. The main reason is that each country's labor market offers a pay schedule based on the structure of its own educational system rather than international standards.

[27] As in any case in which there is no longitudinal data, potential experience is computed as age − (years of education, + 6).

Because there are no other controls, the value of $\alpha^{t}_{e,a,g,p,c}$ is the average log wage of workers with characteristics described by the subscript of the parameter of interest. Based on this, one can easily decompose the variance of log wage into its respective value between and within components, which correspond to the first and the second term on the right-hand side of equation (2).

$$\text{var}\,(\log(y_{it})) = var\left(\alpha^{t}_{e,a,g,p,c}\right) + var(\epsilon_{it}) \qquad (2)$$

Figure 6 plots the variance of the log wage and the variance of the residual wage. The first result from Figure 6 is that the wage dispersion in the average country is mostly a result of the wage dispersion across workers with similar observable attributes. About 70 percent of the level of wage dispersion, the dark line in Figure 6, is explained by the dispersion of the residual wages rather than the dispersion in the average return of observable characteristics. This result is not surprising because the literature on labor market returns finds that the Mincer model has limited explanatory power on the variance in wages. This is particularly true in our case because we did not include variables related to occupation, sector, or firm size.

The second and most important finding of this analysis is related to the dynamics of the wage dispersion. We find that the variance of log wages mimics well the other indicators of wage inequality used in the previous section. Between 1993 and 2002, the total variance in log wages increased from 69.7 to 79.6 log points. Most of this increase, about 6.1 of 9.8 log points, was derived from increases in the dispersion of the wage residual, which means that about 60 percent of the increase in inequality in the 1990s was caused by higher dispersion among workers with similar observable attributes. We find similar results for the 2000s, that is, about 10.7 of 18.6 log points were explained by a reduction in the residual component.

In sum, most of the cross-sectional variance in wages—about 70 percent—is associated with attributes that are beyond the observable human capital characteristics of workers. Moreover, the rise and decline in labor income inequality were products of the rise and decline of both the variance between workers with different characteristics and the residual wage inequality.

[Figure 6 about here]

V. Trends in the wage structure

This subsection attempts to disentangle the wage structure across observable worker attributes in Latin America over the last two decades. In particular, it explores the wage structure associated with worker's characteristics by estimating the following equation over the pooled microdata:[28]

$$\log(y_i^{ct}) = \alpha^{ct} + \omega_k^t education_i^k + \gamma_x^t experience_i^x + \beta^t women_i + \eta^t urban_i + \epsilon_i^{ct} (3)$$

Where y_i^{ct} is the hourly wage of worker *i* in country *c* and time *t;* α^{ct} is a set of country-time fixed effects; and the rest of covariates are a set of dummies for education (k categories), experience (x categories), gender, and area of residency.[29] To track the evolution of the wage premium over time we allow the parameter to each worker's characteristic to differ across time.

A. Wage structure

The education wage premium. Panel A of Figure 7 shows the trend in the returns to education. It followed a similar path than the change in wage inequality. We find strong evidence of a parallel movement among the Gini coefficients of wage inequality and the education premium in the region. Wage inequality declined from 0.473 in 2002 to 0.410 in 2013. According to Figure 7, the average gap between college-educated workers and workers with primary schooling increased slightly (around 10 percent) during the 1990s and narrowed by 25 percent after 2003. In the case of secondary education, we find slightly different patterns. It also declines in the 2000s (by about 25 percent), but it is relatively constant during the 1990s rather than increasing.

Appendix Figure D.1 shows country-level data estimates of the wage premium and their relationship with wage inequality. We observe a positive and significant correlation between education premium and wage inequality, particularly in countries with higher changes in inequality. Countries outside LAC also showed a positive association (except South Africa), suggesting that this coordination

[28] Particularly, we pooled the microdata of the 17 countries and estimate the weighted OLS regression with household survey weights normalized by total population. This keep the original country-specific weighting scheme and assures the relative weight of each country is equal to 1/17.

[29] As defined in the previous section, the dimension of education is three groups: college, high school, and primary education. Experience refers to potential experience and is divided into five groups: 0–5 years, 6–10 years, 11–20 years, 21–30 years, and 31+ years. Gender and place are dummies for men and for workers living in urban areas.

between wage inequality and the education premium is not a unique characteristic of LAC.

[Figure 7 about here]

The experience wage premium. Now, we turn our attention to trends in the wage gap across different groups of potential experience. For our analysis, we consider five intervals of experience: 0–5 (labor market entrants, the reference category), 6–10, 11–20, 21–30, and more than 31 years of experience.

We find evidence that the experience pay structure does not correlate entirely with the trend reversal in labor wage inequality; instead the experience premium shows a secular declining trend in both the 1990s and the 2000s. Although there is not a trend reversal in the experience pay structure, we find that the trend accelerates at a more rapid pace beginning in the early 2000s (see Figure 8). This fact is novel in the literature;[30] and it deserves more attention because it is not only a unique feature of LAC, it also took place in countries outside LAC, such as Russia and South Africa (see Appendix Figure D.2).

[Figure 8 about here]

For instance, the experience premium among the groups showing the largest difference in years of experience (31+ years of experience) relative to labor market entrants (0–5 years of experience) was reduced by almost 18 percent between 1993 and 2003. After 2004, it declined at a significantly more rapid pace, reaching a reduction of almost 40 percent in 2013. By comparison, the experience premium among the group with 6–10 years of experience relative to the group of labor market entrants (0–5 years of experience) showed the least dramatic decrease during the two decades, although this premium started to decline more rapidly in 2005. These results are not affected by the compositional changes in the labor force, which is aging, because these measures represent the relative differences between older (experienced) workers and younger (unexperienced) workers, independent of their relative incidence in the workforce.

The apparent decrease in labor wages among the most experienced workers relative to the new workers suggests that the skills gained through years of work in the labor market may be losing value because of either skill obsolesce or technological change that favors young workers more with respect to old workers.

The gender wage gap. Discrimination against women has traditionally been linked in the literature to wage differentials (Blinder, 1973 and Oaxaca 1973).

[30] The other paper has similar findings in Ferreira, Firpo, and Messina (2021), which decompose wage inequality in Brazil.

However, our results cannot back up a strong link between the reduction in wage inequality and changes in the gender wage gap. There is evidence of a modest reduction in the wage gap between men and women in the region over the past two decades. However, the timing of this wage compression does not coincide with the timing of the reduction in wage inequality. Figure 9 shows that the gender wage gap declined before 2003, remaining flat thereafter.

[Figure 9 about here]

City wage premium. Figure 10 illustrates the wage premium associated with status as an urban worker. Several theories suggest that agglomeration and externalities provided by cities can increase the productivity and, hence, the wages of workers. Figure 10 shows that the decline in urban and rural wages was accompanied by a substantial trend reversal in the urban-rural labor wage gap. The urban-rural wage gap expanded from 36 percent in 1993 to 46 percent in 2002, and, between 2002 and 2013, it shrink by 25 percent. This suggests that the reduction in wage dispersion may be strongly linked to the lower additional returns of living in cities.

Appendix Figure D.3 shows that this wage compression in the urban-rural wage distribution occurred especially in countries that were exposed to the commodity boom of the 2000s, such as Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, and Peru.[31] In the next section, we elaborate more on how trade may explain a lower urban wage premium.

B. Taking stock of the evidence

Table 1 presents a summary of the main findings on the wage structure by worker characteristics in Latin America in 1993–2013. The four wage premiums and gaps analyzed—education, experience, gender, and city—have exhibited significant declines since the early 2000s, with the exception of the gender wage gap, which exhibited a flat profile during this period. Moreover, if we split further the latest decade into 2003–2010 and 2010–13, we see that the dynamics of most of these wage gaps slowed substantially after 2010, except in the case of the decline in the experience premium, which actually started to decline at a rapid pace. More investigation is needed on this front, but, if the further reduction in wage inequality

[31] According to the World Bank (2015), Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, and Peru were directly impacted by the commodity boom because they registered annualized growth in the terms of trade above 2 percent in 2003–13. The World Bank study classified the Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Paraguay, and Uruguay as noncommodity boom countries, while excluding Costa Rica, Nicaragua, and Panama from the analysis because of data limitations.

in Latin America is the result of further declines in the returns to experience, this would be an undesirable way to tackle the high inequality in the region.

[Table 1 about here]

Table 10 does a correlation exercise exploiting the novel panel dataset we built on wage inequality and different compositional adjusted measures of wage premium. This figure plots the correlation coefficients of two-way fixed effects regression (controlling by country and year fixed effects). The main result highlights that the reduction of experience premium seems to be equally crucial than education premium in explaining wage inequality. Three of the experience wage premium show a strong correlation with the decline in wage inequality. The fact that the decrease in the experience premium is equally significant as the decline in education premium has been overlooked by the literature on wage inequality. More research is needed to understand if the causes of the decline of the experience premium are due to the right reasons. For example, if the returns to experience are declining because human capital is depreciating rapidly, this decline in the experience premium would be an undesired reason for a decrease in wage inequality.

[Figure 10 about here]

VI. The role of demand, supply, labor market institutions and firms

A large body of work that focuses on one country or specific periods suggests that the dynamics of wage inequality can be explained by some or all of the following reasons: international trade, technological change, aging, the upskilling of the labor force, minimum wages, unionization, or firm wage dispersion.

We describe the argument used in each of the country-specific studies on the determinants of wage inequality in the regional studies. We group the factors in three exclusive groups using a framework proposed by Haanwinckel (2018) that considers the classic supply-demand framework combined with institutions, and cross-firm wage dispersion.

A. The demand for workers

Acosta et al. (2019) suggest that one should look at changes in the relative demand for skills to explain the trend reversal in wage inequality. Two potential factors that are often mentioned in the literature and that affect the relative demand

for skills are trade and technological change. We explain how each of these could help make sense of the patterns in wage inequality that we observe in the data.

Technology. The theories of *skill-biased technological change* and *job polarization* predict an increase in wage inequality (Acemouglu and Autor 2011). The fact that Latin America experienced a decline in wage inequality does not rule out the underlying presence of technological change that affects wage inequality in the region. Other, unknown factors may have offset the effects of technological change**.** Studies on the effect of technological change on wage inequality are relatively scarce, mostly because of the lack of harmonized data on occupation and the technological content across the countries in the region. Messina, Pica, and Oviedo (2016) are the authors of the only paper that we are aware of that measures job polarization in Latin America. They use information from Chile and Mexico and produce mixed findings: employment polarization took place in Chile, but not in Mexico. Other studies who exploit more granular data on Robot adoption in Brazil, Mexico and Argentina suggest that technology is increasing inequality and unemployment (Gasparini et al 2011). This suggest that wage inequality decrease in spite of the underlying presence of technology and its perversive effects on inequality.

Trade. International trade is a compelling explanation for an observed trend reversal in wage inequality in the region. A large body of work links the observed increase in wage inequality during the 1990s to the trade liberalization episodes experienced by countries in the region.[32] The main argument of these studies is that trade liberalization led to an increase in wage inequality for two reasons. First, trade-induced competition increased the demand for skilled labor among incumbent firms that did not exit the market, increasing within-firm wage inequality. Second, trade-induced competition tends to lead to firm exits; less efficient firms leave the market, which increases inequality as long as the workers who were displaced from their jobs because of trade are not able to find job that are similarly paid.

Trade may also explain the decline in inequality since the 2000s. A commonly cited theory behind the decline in wage inequality is the increase in the terms of trade that resulted from the commodity boom. The main idea is that the commodity boom led to an increase in external demand for the goods that are produced intensively by unskilled labor. This increase in the relative demand for unskilled workers can therefore explain the reduction in the education premium. It can also explain the reduction in the urban wage premium if the production of commodities occurs disproportionally in rural areas. Adão (2015) finds that the increase in the price of commodities can explain at most 10 percent of the observed reduction in

[32] Revenga (1997), Esquivel and Rodriguez-Lopez (20013), and Verhoogen (2008) for the case of Mexico; Galiani and Sanguinetti (2003) for the case of Argentina; Attanasio, Goldberg and Pavnick (2004) for Colombia.

wage inequality in Brazil. On the opposite end, Costa, Garred, and Pessoa (2016) find no effects of the increase in export demand on wage inequality.

B. The supply of workers

The relative supply of skills may potentially explain a secular decline in wage inequality, but it is insufficient to explain the observed trend reversal. The main wage premiums in which we find a strong decline since the early 2000s are the education, experience, and urban wage premiums. In all these cases, we have seen an increase in the relative supply of workers with the relevant characteristics, that is, educated older urban workers.

Education upgrading. The rapid expansion in secondary and tertiary education in Latin America led to a higher relative supply of college-educated workers. This may easily explain a secular decline in the education premium. However, as Acosta et al. (2019) point out, because what we observe is a trend reversal starting in the 2000s, changes in the relative supply are not sufficient for an understanding of the change in wage inequality; they suggest that a factor that pushed down the relative demand for skilled workers is needed.

Campos-Vázquez, López-Calva, and Lustig (2016) propose another compelling explanation for how the expansion in education could push down the education premium more in the 2000s than in the 1990s. They suggest that an expansion in coverage without underlying changes in the unobserved ability of the population would lead to a generation of a college graduates with much lower average ability, and therefore a lower college wage premium, which is a strong factor behind the decline on inequality.

Aging. The aging of the population also leads to an increase in the relative supply of old workers. This excess of supply can easily explain the consistent decline we find in the wage premium associated with experienced workers. One of the main contributions of this study is this detection of this regional trend, also found by Ferreira, Firpo, and Messina (2021) in the case of Brazil. These authors argue that, within a specific aggregation of the results of the decompositions, aging and its effects on the wage premium can explain the overall decline in wage inequality in Brazil. Further research would help clarify the extent to which the results we observe in aging respond to displacement effects because of technological and trade shocks rather than to the general increase in the supply of old workers.

Urbanization. The city wage premium is usually explained by the effect of agglomeration among otherwise equivalent workers (Glaeser and Maré 2001). This is an understudied topic in Latin America. Chauvin et al. (2017) find that wage

elasticity to city size is steeper in developing countries, particularly Brazil, China, and India. We are not aware of studies that focus on explaining the channels through which urbanization may have affected wage inequality in the region. Because rural workers tend to have much lower salaries, we would expect that urbanization increases wages and reduces inequality among otherwise equivalent workers. This would be so as long as general equilibrium effects that push back agglomeration played a minor role.[33]

Most of the evidence on the relation between the urban wage premium and inequality has been documented in Brazil. Thus, Cruz and Naticchioni (2012) find that the decline in the urban wage premium is caused by a decline in the gap of workers in the top quantiles of the wage distribution. Ferreira Firpo, and Messina (2021) obtain similar conclusions using a decomposition approach, they find that urban wage premium explains about 10 percent of the decline in wage inequality.

C. Institutions and firm dispersion

In general, several labor market policies can affect wage dispersion. Here, we focus on formalization and minimum wages. We also describe the role of firm dispersion.

Formalization. The process of the formalization of the workforce may be seen as a reallocation process whereby workers are increasingly hired by more productive firms. Policies that increase the mass of workers in the formal sector will increase the salaries of otherwise low-paid workers in the informal sector. Levy and López-Calva (2021) show for Mexico that this channel would benefited disproportionally the wages of workers with college education, which means that the aggregate effect on inequality is uncertain because the lower wage dispersion among equally observable workers comes with higher wage dispersion across different workers (Messina and Silva 2018). On the other hand, not every policy that aims to increase the size of the formal workforce is successful. These types of policies might lead to the closure of informal firms, increasing unemployment and increasing inequality.

Minimum wages. Under the assumption that minimum wages are binding and do not have effects on unemployment, we should expect that policies that increase the minimum wage lead to higher wage compression. During the period of the large reduction in wage inequality in Latin America, several countries undertook a substantial increase in the minimum wage (Messina and Silva 2018). Two excellent

[33] For example, equilibrium wages in urban areas may decline if the increasing urbanization reduces the amenities of cities because of rising congestion, crime, housing prices, or pollution.

studies have delved into the effects of the minimum wage on inequality in Brazil: Gérard et al. (2021) and Engbom and Moser (2021). Both studies find that an increase in the minimum wage can reduce racial inequality and overall wage inequality. The estimates of Engbom and Moser (2021) suggest that such an increase explains one-third of the decline in wage inequality in Brazil; while Ferriera, Firpo, and Messina (2021) reveals that the increase in the minimum wage after the 2000s explains about 40 percent of the decline in the 50–10 percentile wage ratio.

Firms. The availability of employer-employee surveys has allowed a new angle to be included in the measurement of the drivers of wage inequality. Now, the inequality may be understood as the result of the differences in how workers are matched with firms rather than to any other observables. In Latin America, the groundbreaking paper that relies on this approach is the study by Alvarez et al. (2018) on Brazil. The authors uncover a new fact: 40 percent of the decline in wage inequality derives from the lower dispersion of returns across firms, and, also, the firm size wage premium has declined over time. In a subsequent replication of this study, Messina and Silva (2021) find a similar pattern in Ecuador, but an opposite pattern in Costa Rica. Still, a convincing explanation of why there is lower firm dispersion is missing in this nascent literature.

VII. Conclusions

This paper presents the dynamics of wage inequality in Latin America using data on hourly wages among full-time workers in 17 countries in the last two decades. We identify a trend reversal in wage inequality: it increased slightly in the 1990s and started to decline after the early 2000s. The increase in labor income inequality during the 1990s was associated with a reduction in real wages that hurt low-paid workers disproportionally. Yet, we find that the decline in wage inequality in the 2000s was associated with an expansion in wages that benefited low-paid workers disproportionally. This wage growth narrowed inequality in both the lower and upper tails of the wage distribution.

We find that observable worker characteristics cannot explain more than 40 percent of the observed decline in wage inequality after the 2000s. This leaves open a research agenda using recently available employer-employee data (Alvarez et al. 2018) to expand the analysis of the reasons behind the decline in wage inequality among otherwise equal workers.

Among observable worker characteristics, we can rule out any role for changes in the composition of the workforce in explaining the decline in wage inequality,

particularly because the expansion in college education, aging, and urbanization tends to increase wage inequality, a phenomenon known as the paradox of progress (Bourguignon et al. 2005), verified by Ferreira, Firpo, and Messina (2018). This leaves the wage structure or the relative return to worker characteristics as the likely drivers of the decline in wage inequality.

Among the studies focusing on changes in the wage structure, ours is the first to document new factors that have been overlooked by previous research at a regional scale.[34] Namely, we find that, beside the excessively studied education premium, the experience premium and the urban-rural wage gap represent other strong reasons why wage inequality declined in Latin America over the last decade. This is a novel result that deserves more research because, if the observed decline in the experience premium is expected to be reproduced over time, this may lead to significant fiscal pressures to sustain pension and health benefits for the elderly population. Moreover, if the reduction in the urban-rural wage gap is caused by stagnation in the salaries in cities, this may require that policies promoting agglomeration be revisited. Thus, more research is needed to explore whether the observed decline in wage inequality in Latin America is a reason to rejoice.

[34] Ferrerira, Firpo, and Messina (2021) find similar results for Brazil.

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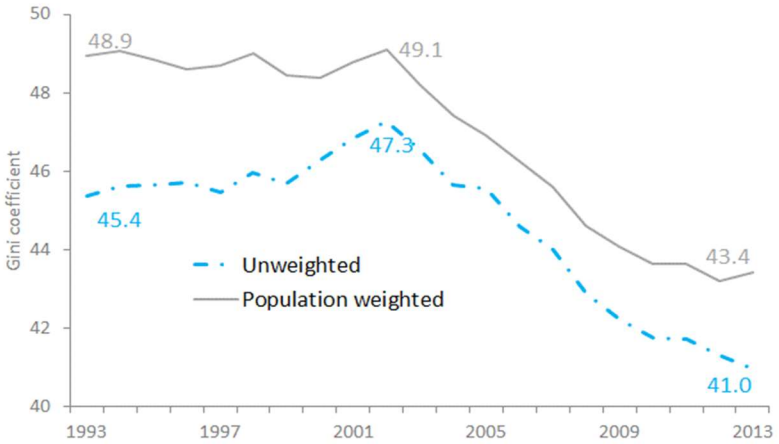
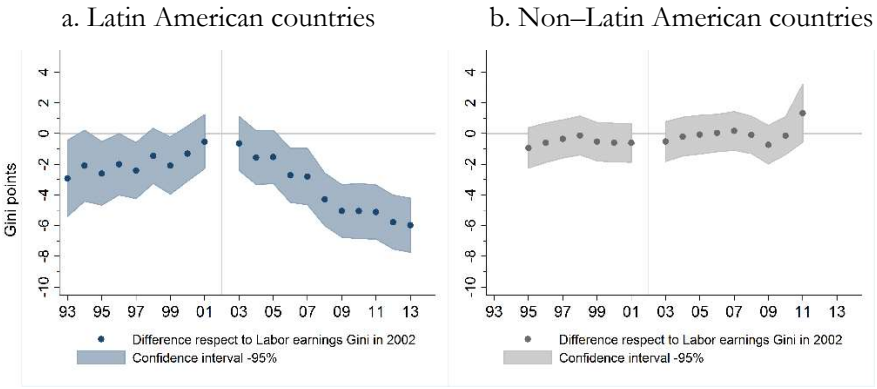
IX. Figures and Tables

Figure 1. Trends in labor income inequality, Latin America, 1993–2013



Source: Calculations based on the SEDLAC database. See Annex A.1 for detailed information.
Note: The underlying data represent the hourly wage Gini for each country and year. They have been multiplied by 100. The sample covers full-time, wage, and self-employed workers 15–64 years of age. The values below the 1st and above the 99th percentiles of the wage distribution were trimmed by each gender-education cell. The regional aggregates are weighted and unweighted averages across the Gini values of the 17 countries on which frequent data are available in the SEDLAC database. If a country-year is missing, an arithmetic linear interpolation is applied. To address missing data at the beginning or at the end of the series, the analysis uses the value of the nearest year for which information is available.

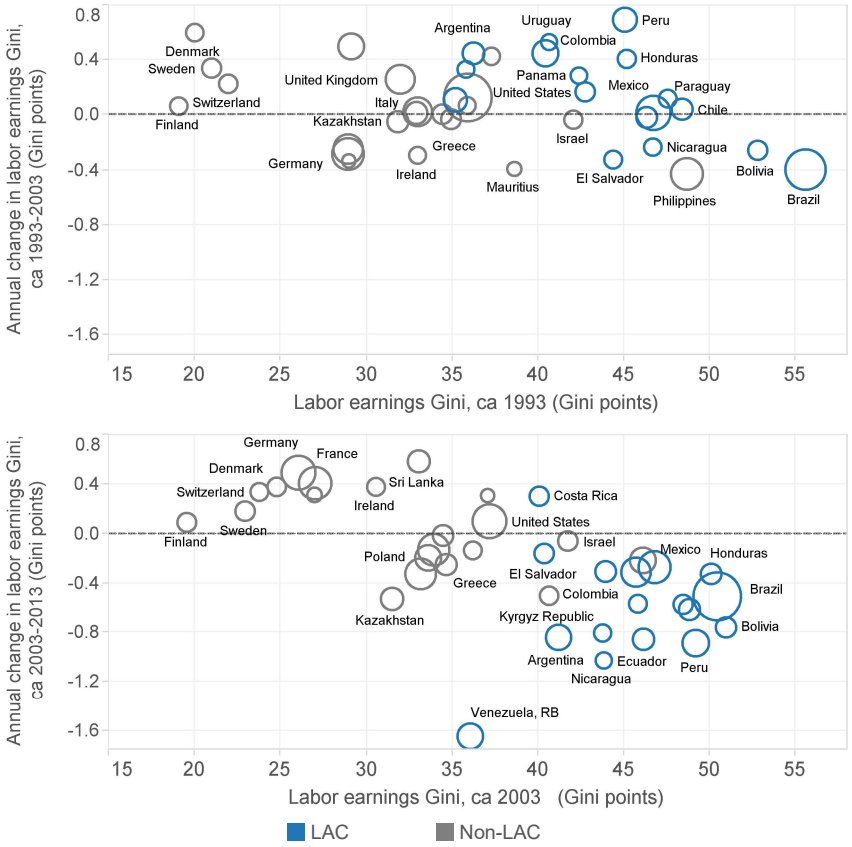
Figure 2. Difference in the labor wage Gini with respect to the value in 2002, Latin America and selected countries, 1993–2013



Source: Venezuela, RB and the non–Latin American countries: Global Wage Report, International Labour Organization. Seventeen Latin American countries: SEDLAC database. See Annex A.1 for details.

Note: The underlying data represent the hourly wage Gini among paid workers 15–64 years of age for each country and year. They have been multiplied by 100. The values below the 1st and above the 99th percentiles of the wage distribution were trimmed by each gender-education cell. This figure uses only the information (noninterpolated) available for each country. It shows the average difference between the labor income Ginis in any year with respect to the value in 2002. Each average value and its standard errors are estimated as part of a simple panel data specification with country fixed effects. The Global Wage Report data are not strictly comparable with SEDLAC data. In some countries, different types of surveys were used, and the sample and trimming criteria are different.

Figure 3. Annual changes in the labor income Gini, Latin America and selected countries, ca. 1993–2003 and ca. 2003–13



Source: Venezuela, RB and the non–Latin American countries: Global Wage Report, International Labour Organization. Seventeen Latin American countries: SEDLAC database. See Annex A for details about the underlying data and Annex B for circa periods.

Note: The data have been multiplied by 100. For SEDLAC countries, the sample covers full-time, wage, and self-employed workers 15–64 years of age. The values below the 1st and above the 99th percentiles of the wage distribution were trimmed by each gender-education cell. The Global Wage Report data are not strictly comparable with SEDLAC data. In some countries, different types of surveys were used, and the sample and trimming criteria are different. The size of the bubbles represents the population of the country.

Figure 4. **Panel A** Growth in real hourly wage along different points of the labor income distribution, Latin America, 1993–2013

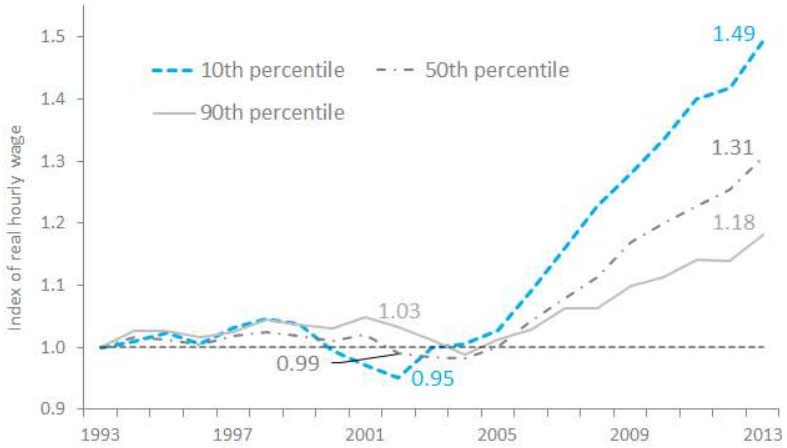
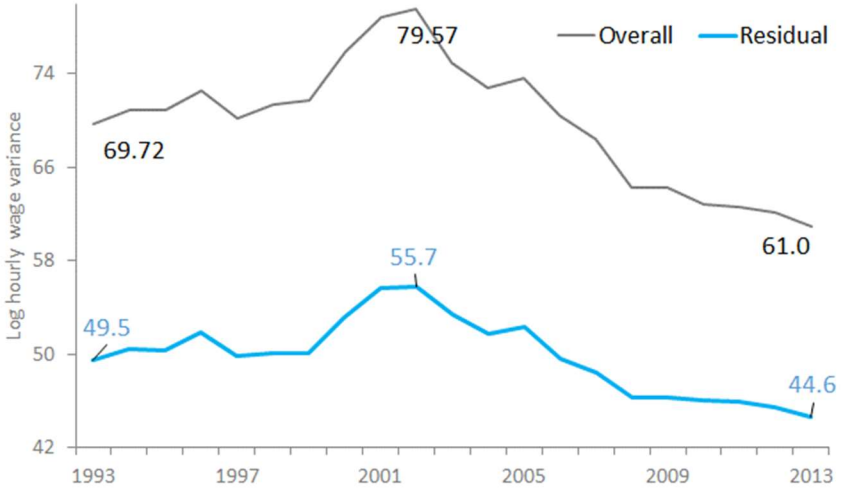


Figure 5. **Average growth incidence curve of real wage in Latin America**

Source: Calculations based on the SEDLAC database. See Annex A.1 for detailed information.
Note: The data were indexed to the 1993 values. The underlying data represent the index of hourly wage for each percentile in the distribution in each country. The sample covers full-time, wage, and self-employed workers 15–64 years of age. The values below the 1st and above the 99th percentiles of the wage distribution were trimmed by each gender-education cell. The regional aggregate is the unweighted average across the index of hourly wage values of the 17 countries on which frequent data are available in the SEDLAC database. If a country-year is missing, an arithmetic linear interpolation has been applied. To address missing data at the beginning or at the end of the series, the analysis uses the value of the nearest year for which information is available.

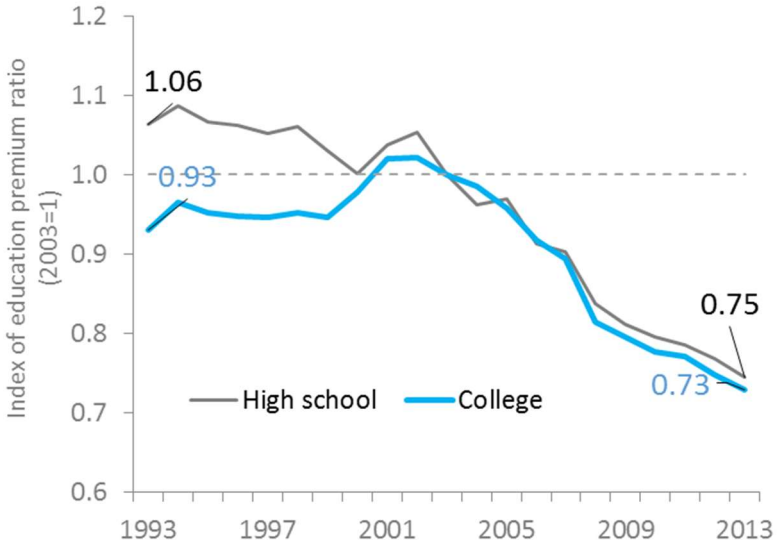
Figure 6. Overall and residual wage inequality, Latin America, 1993–2013



Source: Calculations based on the SEDLAC database. See Annex A.1 for detailed information.

Note: The underlying data represent the log variance of the hourly wage in each country. The residual component is the variance that is not explained by the Mincer model specified in equation 1. The data are aggregated at the regional level as unweighted averages across the log variance of the 17 countries on which frequent data are available in the SEDLAC database. The data have been multiplied by 100. The sample covers full time, wage, and self-employed workers 15–64 years of age. The values below the 1st and above the 99th percentiles of the wage distribution have been trimmed by each gender-education cell. If a country-year is missing, an arithmetic linear interpolation is applied. To address missing data at the beginning or at the end of the series, the analysis uses the value of the nearest year for which information is available.

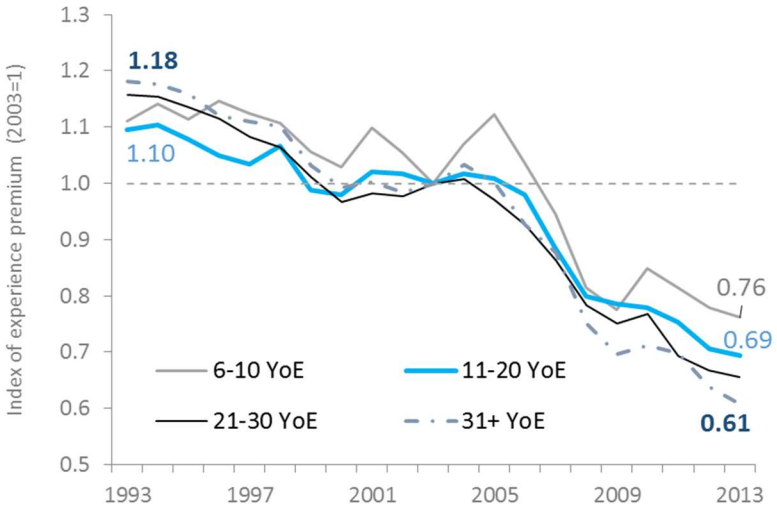
Figure 7. The wage gap between workers with greater educational attainment and workers with primary education or less, Latin America, 1993–2013



Source: Calculations based on the SEDLAC database. See Annex A.1 for detailed information.

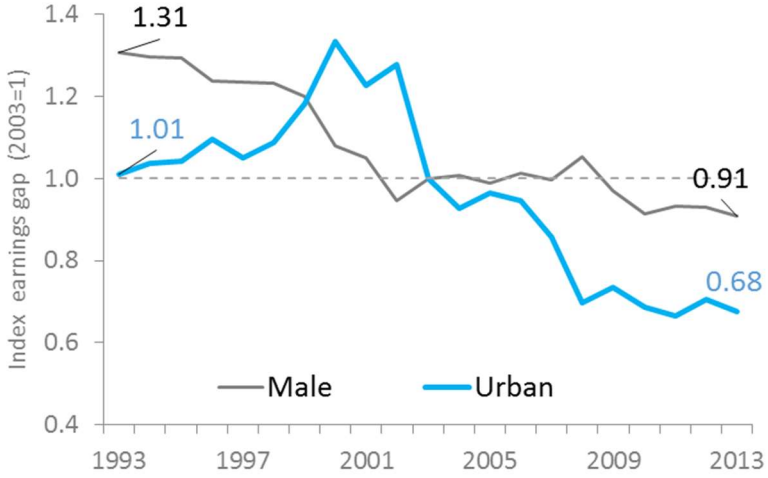
Note: The underlying data represent the returns to education by country and year. The figure shows the ratio of the expected returns for workers with the indicated educational attainment with respect to workers with primary education or less. The educational categories—college, high school, and primary education or less (reference category)—follow country-specific education systems; see section III and equation 1 for details. The sample covers full-time, wage, self-employed, and paid workers 15–64 years of age. The values below the 1st and above the 99th percentiles of the wage distribution were trimmed by each gender-education cell. The regional aggregate is an unweighted average across the returns to education of the 17 countries on which frequent data are available in the SEDLAC database. If a country-year is missing, an arithmetic linear interpolation is applied. To address missing data at the beginning or at the end of the series, the analysis uses the value of the nearest year for which information is available.

Figure 8. The wage gap at different ratios of potential experience, Latin America, 1993–2013



Source: Calculations based on the SEDLAC database. See Annex A.1 for detailed information.
Note: The underlying data represent the returns to experience by country and year. The figure shows the ratio of the expected returns for workers with the indicated years of experience (YoE) with respect to workers with 0-5 years of experience. Experience is measured through potential experience using age and education. According to the potential experience, five groups were defined: 0–5 (reference category), 6–10, 11–20, 21–30, and more than 31 years of experience. See section III and equation 1 for details. The sample covers full-time, wage and self-employed, paid workers 15–64 years of age. The values below the 1st and above the 99th percentiles of the wage distribution were trimmed by each gender-education cell. The regional aggregate is an unweighted average across returns to experience of the 17 countries with frequent data available in the SEDLAC database. If a country-year is missing an arithmetic linear interpolation is applied. To address missing data at the beginning or at the end of the series, the analysis uses the value of the nearest year for which information is available.

Figure 9. The gender and urban/rural wage gap, Latin America, 1993–2013



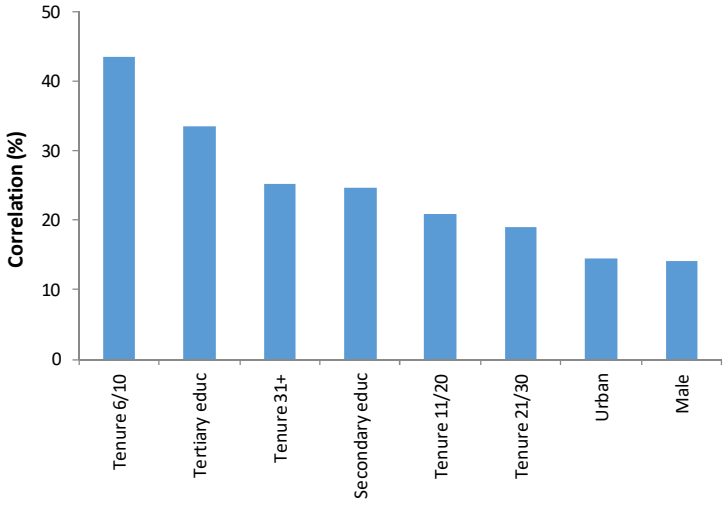
Source: Calculations based on the SEDLAC database. See Annex A.1 for detailed information.
Note: The underlying data represent the wage gap and the area of residence wage gap by country and year. The data show the ratio of the expected wage for male (urban) workers with respect to female (rural) workers. The reference category of the gender gap is a woman, and the reference category of the residence wage gap is rural areas. See section III and equation 1 for details. The sample covers full-time, wage, and self-employed workers 15–64 years of age. The values below the 1st and above the 99th percentiles of the wage distribution were trimmed by each gender-education cell. The regional aggregate is an unweighted average across the gender and area of residence gap of the 17 countries with frequent data available in the SEDLAC database. If a country-year is missing an arithmetic linear interpolation is applied. To address missing data at the beginning or at the end of the series, the analysis uses the value of the nearest year for which information is available.

Table 1. Average changes, measures of the wage gaps, Latin America, 1993–2013

Relative returns	Average growth rate by year (percentage)					
	1993–99	1999–03	2003–10	2010–13	1993–03	2003–13
Education						
High school	−0.5	−0.7	−2.9	−2.1	−0.6	−2.5
Tertiary	0.3	1.4	−2.8	−2.1	0.8	−2.7
Potential experience						
6–10 YoE	−0.8	−1.3	−1.9	−3.4	−1.0	−2.4
11–20 YoE	−1.6	0.3	−2.8	−3.7	−0.9	−3.1
21–30 YoE	−2.1	−0.3	−2.9	−4.9	−1.4	−3.4
31+ YoE	−2.1	−0.8	−3.6	−4.9	−1.5	−3.9
Gender and area of residence						
Male/Female	−1.4	−4.2	−1.1	−0.2	−2.3	−0.9
Urban/Rural	2.8	−3.8	−3.9	−0.5	−0.1	−3.2

Source: Calculations based on the SEDLAC database. See Annex A.1 for detailed information.
Note: The underlying data represent the differences in the trends plotted in figures 7,8 and 9. The bases for each category are primary or less in education, between 0 and 5 years of age for the potential experience, females for gender, and rural areas for area of residence. YoE = years of experience.

Figure 10. Correlation between changes in returns to characteristics and changes in Gini



Source: Harmonized household Surveys. LACs (SEDLAC). Estimation of the wage equation controls by educational level, tenure, gender and region.

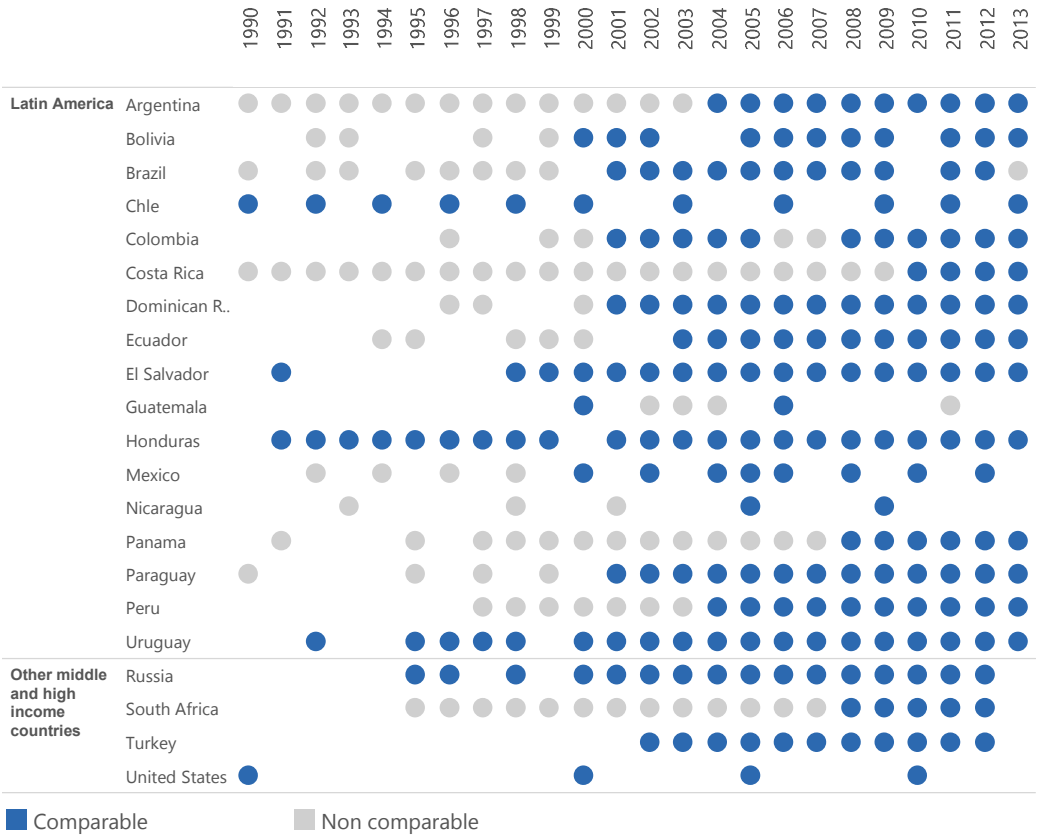
X. Annexes

D. Data sources

A.1 Countries and years with microdata available

The household surveys used in this study have been carried out through various harmonization projects, except for the case of Latin America. The countries outside the region have been selected based on data availability, consistency in the sociodemographic characteristics, and analysis of missing data on labor income. There is no information available on household per capita income for microdata available for countries outside the Latin America and Caribbean region. Data on the Latin American countries are taken from SEDLAC project 2 (World Bank and CEDLAS), South African data are taken from the Post Apartheid Labor Market Series–v2.0. The data on Turkey are taken from Household Income and Consumption Expenditures Survey (HIES). The data on Russia are taken from Russia Longitudinal Monitoring Survey (RLMS) of the University of North Carolina–Chapel Hill. The data on the United States are taken from the I2D2-IPUMS. Table A.1 illustrates the comparability of the data. The blue points means that the data is comparable to the latest survey available. For example, Costa Rica 2013 is comparable with Costa Rica 2010, but it is not comparable with surveys carried out before 2010. There is no information about the comparability of the surveys indicated by the gray circles.

Table A.1. Microdata datasets available and comparability with the most recent survey



Sources: Latin American countries: tabulations of Equity Lab, Team for Statistical Development, World Bank. Other countries: World Bank compilation.

E. Sample selection and comparability criteria

B.1 Selected years for circa analysis in total and wage inequality

Table B.1 Circa periods for each country

	Circa years			
	1993	2003	2011	2013
Latin American countries				
Argentina	1993	2002/2004	2011	2013
Bolivia	1997	2002/2005	2011	2013
Brazil	1993	2003	2011	2012
Chile	1993	2003	2011	2013
Colombia	1996	1999/2003	2011	2013
Costa Rica	1993	2003	2009/2011	2013
Dominican Republic	1996	2000/2003	2011	2013
Ecuador	1994	2000/2003	2011	2013
El Salvador	1995	2002/2004	2011	2013
Guatemala		2000	2011	
Honduras	1993	2003	2011	2013
Mexico	1994	1998/2002	2010	2012
Nicaragua	1993	2005	2009	
Panama	1993	2003	2007	2013
Paraguay	1995	2003	2011	2013
Peru	1997	2003/2004	2011	2013
Uruguay	1997	2003	2011	2013
Other countries				
South Africa	1994	1999/2004	2010	
Turkey		2004	2012	
Russian Federation	1995-1996	2001-2003	2010-2012	
United States	1990	2000	2010	

Sources: Latin American countries: calculations based on tabulations of Equity Lab, Team for Statistical Development, World Bank. Other countries: World Bank calculations based on country-specific trends and data sources on each year.

Note: Columns with more than one year indicate that, depending on the circa period, a specific year was selected.

For the study, four circa periods were selected for a varied analysis on the 1990s and on the 2000s. Because the surveys are not fully comparable within countries and considering the differences in terms of availability for each country, the year used for each circa may differ by country. The rule of thumb was to select, for each circa, the closest year with information available as long as the surveys are fully comparable and do not show

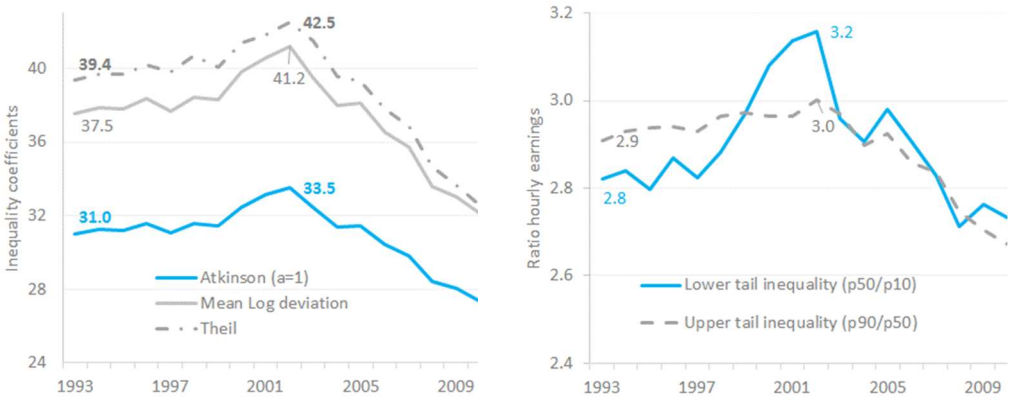
sociodemographic inconsistencies. The distance searching algorithm stop whenever the absolute distance between the circa year and the year selected is greater than four years.

F. The rise and fall of labor inequality

Figure C.1. Labor income inequality according to various measures

a. Theil, mean log deviation, Atkinson (a = 1)

b. Lower and upper tail inequality

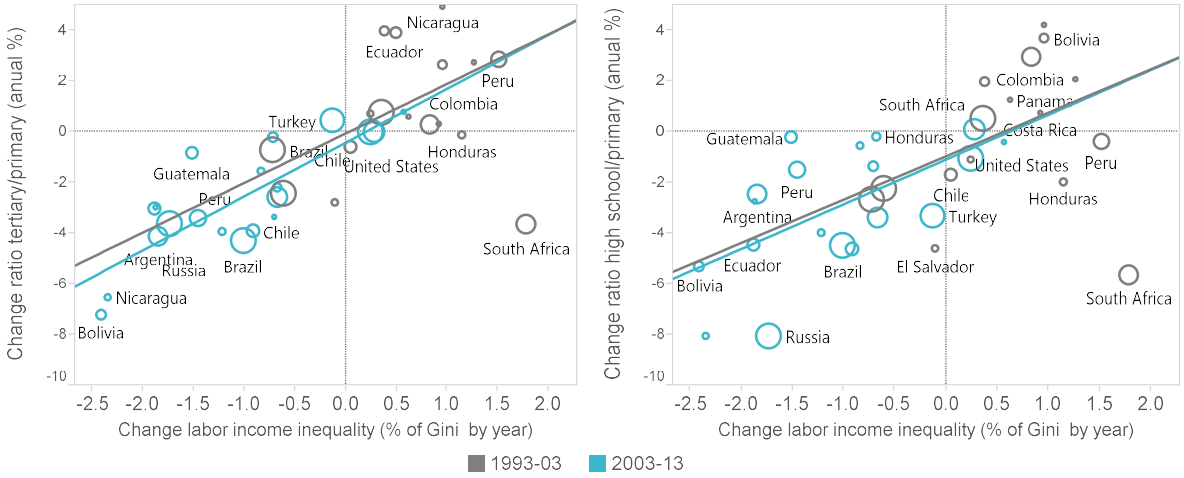


Source: Calculations based on SEDLAC (World Bank and CEDLAS). See Annex A.1 for detailed information.

Note:. The underlying data represent the hourly wage inequality in each country measure trough different metrics. They have been multiplied by 100.. The sample covers full-time, wage and self-employed, paid workers 15–64 years of age. The values below the 1st and above the 99th percentiles of the wage distribution were trimmed by each gender-education cell. The regional aggregate is unweighted average across inequality measures of the 17 countries with frequent data available in the SEDLAC database. If a country-year is missing an arithmetic linear interpolation is applied. To address missing data at the beginning or at the end of the series, the analysis uses the value of the nearest year for which information is available.

G. Change in wage premium and changes in inequality

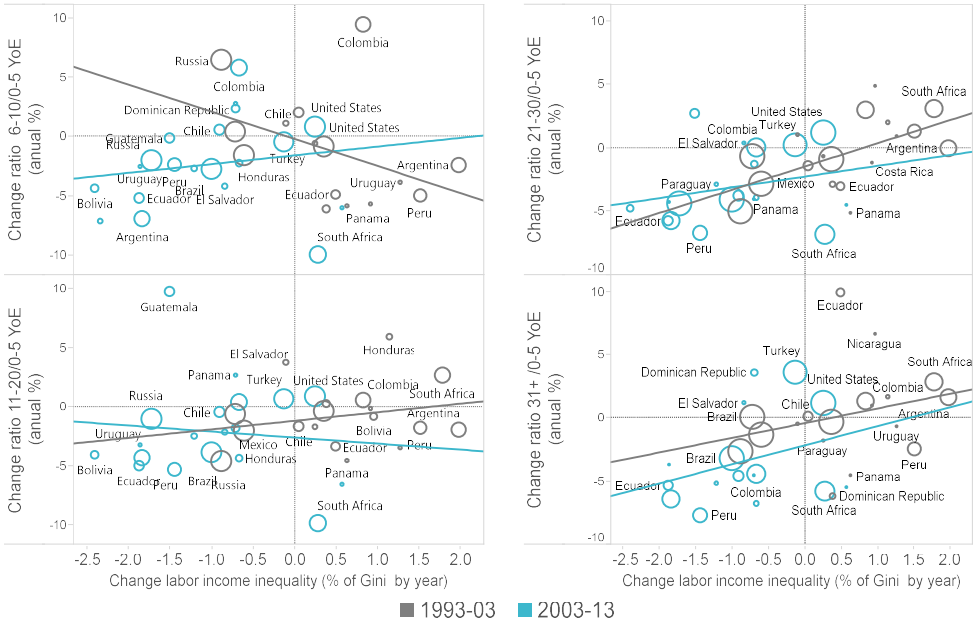
Figure D.1 Annual growth rate of the education premium and labor income inequality, selected countries, 1990–2003 and 2003–10



Sources: Seventeen Latin American countries: SEDLAC database; Russia: the Russia Longitudinal Monitoring Survey; Post Apartheid Labor Market Series: South Africa; Turkey: I2D2-LFS; the United States: I2D2-IPUMS. See annexes A.1 and A.2 for details.

Note: The underlying data represent the change in wage inequality and the change in the earnings premiums for each country and circa period. The years selected for each country-circa combination may be different depending on survey availability and to assure, to the extent possible, within-country comparability for each period; see annex B.1 for details. In the case of the y-axis, the growth rate of the education premium is plotted. For the x-axis, the growth rate of the labor income Gini is plotted. The educational categories—college, high school, and primary education or less (reference category)—follow country-specific education systems; see section III and equation 1 for details. The sample covers full time, wage, and self-employed workers 15–64 years of age. The values of the 1st and 100th percentiles of the earnings distribution were trimmed by each gender-education cell. The size of the bubbles represent the population of the country.

Figure D.2 Growth in the experience premium, the group with 6–10 years of experience relative to the group with 0–5 years of experience, selected countries, 1990–2010

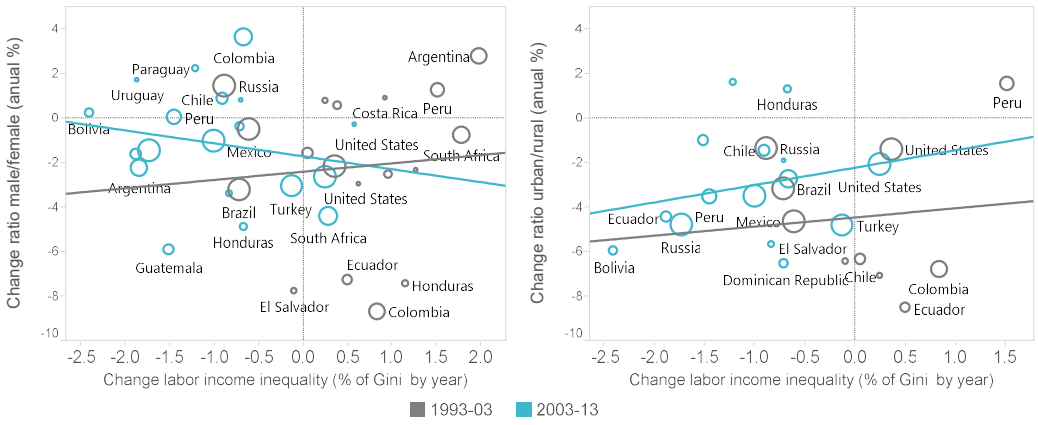


Source: Seventeen Latin American countries: the SEDLAC database; Russia: the Russia Longitudinal Monitoring Survey; Post Apartheid Labor Market Series: South Africa; Turkey: I2D2-LFS; the United States: I2D2-IPUMS. See Annexes A.1 and A.2 for details.

Note: The underlying data represent the change in wage inequality and the change in the earnings premiums for each country and circa period. The years selected for each country-circa combination may be different depending on the survey availability and to assure, to the extent possible, within country comparability for each period; see Annex B.1 for details. In the case of the y-axis, the growth rate of the experience premium is plotted. For the x-axis, the growth rate of the labor income Gini is plotted. Experience is measured trough potential experience using age and education. According to the potential experience, five groups were defined: 0–5 (reference category), 6–10, 11–20, 21–30, and more than 31 years of experience, See section III and equation 1 for details. The sample covers full-time, wage, and self-employed workers 15–64 years of age. The values of the 1st and 100th percentiles of the earnings distribution were trimmed by each gender-education cell. The size of the bubbles represents the populations of the countries.

Figure D.3 The average gender and urban-rural wage gaps, Latin America, 1993–2013

a. Gender labor earnings gap b. Urban-rural labor earnings gap



Source: Seventeen Latin American countries: SEDLAC database; Russia: the Russia Longitudinal Monitoring Survey; Post Apartheid Labor Market Series: South Africa; Turkey: I2D2-LFS; the United States: I2D2-IPUMS. See Annexes A.1 and A.2 for details.

Note: The underlying data represent the change in wage inequality and the change in the earnings premiums for each country and circa period. The years selected for each country-circa combination may be different depending on the survey availability and to assure, to the extent possible, within country comparability for each period; see Annex B.1 for details. In the case of the y-axis, the growth rate of the gender and area of residence gap is plotted. For the x-axis, the growth rate of the labor income Gini is plotted. The reference category of the gender gap is a woman, and the reference category of the residence earnings gap is rural areas. See section III and equation 1 for details. The sample covers full-time, wage, and self-employed workers 15–64 years of age. The values of the 1st and 100th percentiles of the earnings distribution were trimmed by each gender-education cell. The size of the bubbles represents the population of the country.