The Journal of Development Studies

ISSN: 0022-0388 (Print) 1743-9140 (Online) Journal homepage: www.tandfonline.com/journals/fjds20

Does the Minimum Wage Affect Wage Inequality? A Study for the Six Largest Latin American Economies

Carlo Lombardo, Lucía Ramírez Leira & Leonardo Gasparini

To cite this article: Carlo Lombardo, Lucía Ramírez Leira & Leonardo Gasparini (2024) Does the Minimum Wage Affect Wage Inequality? A Study for the Six Largest Latin American Economies, The Journal of Development Studies, 60:4, 494-510, DOI: 10.1080/00220388.2024.2312833

To link to this article: https://doi.org/10.1080/00220388.2024.2312833

View supplementary material

Published online: 28 Feb 2024.

Submit your article to this journal

Article views: 502

View related articles

View Crossmark data

Citing articles: 4 View citing articles

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=fjds20

The Journal of Development Studies, 2024
Vol. 60, No. 4, 494–510, https://doi.org/10.1080/00220388.2024.2312833

Routledge
Taylor & Francis Group
Check for updates

Does the Minimum Wage Affect Wage Inequality? A Study for the Six Largest Latin American Economies

CARLO LOMBARDO[*,**], LUCÍA RAMÍREZ LEIRA[*,***] & LEONARDO GASPARINI[*,†]

[*]Center for Distributive, Labor and Social Studies (CEDLAS), IIE-FCE, Universidad Nacional de La Plata, [**]Cornell University, [***]Instituto de Economía (IECON), Universidad de la República, Uruguay, [†]CONICET, La Plata, Argentina

(Original version submitted December 2022; final version accepted January 2024)

ABSTRACT *Minimum wage (MW) policies are widespread in the developing world and yet their effects are still unclear. In this paper we explore the effect of national MW policies in Latin America's six largest economies by exploiting the heterogeneity in the bite of the national minimum wage across local labor markets and over time. We find evidence that the MW has a compression effect on the wage distribution of formal workers. The effect was particularly large during the 2000s, a decade of sustained growth and strong labor markets. In contrast, the effect seems to vanish in the 2010s, a decade of much weaker labor markets. We also find suggestive evidence of a lighthouse effect: the MW seems to have an equalizing effect also on the wage distribution of informal workers.*

KEYWORDS: minimum wage; wages; labor markets; inequality; informality; Latin America

JEL CLASSIFICATIONS: J22; J31; J38; K31

1. Introduction

The minimum wage (MW) is one of the main policy instruments aimed at affecting labor market outcomes by increasing real wages in the lower tail of the distribution and hence reducing wage inequality. To what extent this instrument is capable of these goals is the subject of a large debate both in the policy arena and in the academic literature. The issue is particularly relevant in Latin America, where minimum wages are key components of the policy strategies seeking to reduce endemic high inequality levels. In particular, the increase in the MW has been singled out as a relevant factor accounting for the substantial reduction in income inequality experienced by Latin American countries during the 2000s (Maurizio & Vázquez, 2016; Messina & Silva, 2017).

In this paper we explore the effect of the MW on the wage distributions of the six largest economies in Latin America over the last two decades. In particular, we exploit the heterogeneity in how binding minimum wages are across local labor markets and over time. To that aim

Correspondence Address: Lucía Ramírez Leira, Center for Distributive, Labor and Social Studies (CEDLAS), IIE-FCE, Universidad Nacional de La Plata, La Plata, Argentina. Email: luciarleira@gmail.com
Supplementary Materials are available for this article which can be accessed via the online version of this journal available at https://doi.org/10.1080/00220388.2024.2312833.

© 2024 Informa UK Limited, trading as Taylor & Francis Group

we use harmonized microdata from the national household surveys of Argentina, Brazil, Chile, Colombia, Mexico and Peru, which represent 79 per cent of total population and 86 per cent of total GDP in Latin America.

Our identification strategy relies on the fact that differences in local labor markets earnings distributions imply heterogeneity in the binding nature of the nationally-set minimum wage. We follow the framework initially proposed by Lee (1999) and define the effective minimum wage (EMW) as the difference between the (log) statutory national MW and the (log) wage of a reference percentile high enough such that it is not affected by the policy. The EMW is then a measure of the bite of the national MW in each local labor market: it reflects the different exposure of each region to changes in the statutory national minimum wage with respect to the regional earnings distribution. We then regress the wage gap (with the reference percentile) at different percentiles against the EMW, including controls, non-linear terms and fixed effects. To increase the reliability of our estimates we also follow an instrumental variables approach proposed by Autor, Manning, and Smith (2016) and modified by Engbom and Moser (2022) that considers historical wealth of each region as a predictor of the 'bindingness' of minimum wages.

We find evidence that the MW in Latin America has a compression effect on the wage distribution of formal workers and impacts wages higher up in the distribution. Although the minimum wage has far-reaching effects, their absolute magnitude is modest over the median. The effect was particularly large during the 2000s, a decade of sustained growth and strong labor markets. In contrast, the effect seems to vanish in the 2010s, a decade of much weaker labor markets. Our results suggest that the positive effect of the MW on wages is particularly significant for male and middle-skilled workers. We also find some evidence for a 'lighthouse effect': the MW seems to have an equalizing effect also on the wage distribution of informal workers.

Our results can be interpreted within a framework similar to the one proposed by Engbom and Moser (2022). They propose a structural model of a frictional labor market with heterogeneous firms in terms of productivity, and heterogeneous workers in terms of ability and value of leisure, as well as time-varying on-the-job search efficiency and separation rate. The model places particular emphasis on the role played by heterogeneous firms in labor markets subject to a minimum wage. The underlying intuition is as follows. Higher-ability workers are employed by more productive firms, while lower-ability workers are allocated to less productive firms. When introducing or raising the minimum wage, low-wage firms must raise wages due to the new regulation. As firms compete to attract their worker type (in terms of ability), this competition induces all firms to raise pay to maintain their ranking in the wage distribution and continue attracting the same type of workers. Thus, a first prediction of this framework is that the minimum wage has spillover effects on higher wages through the equilibrium response of firm pay policies.

As all firms above the new MW are compelled to increase pay, these spillover effects extend all the way to the higher wage levels in the right tail of the wage distribution, albeit at a decreasing rate. Hence, a second prediction of this model is that minimum wage has a compression effect on the wage distribution. The within-component of wage inequality is reduced by the minimum wage because low-productivity firms increase wages by more than high-productivity ones do.

The theoretical framework proposed by Engbom and Moser (2022) also predicts a decrease in wage dispersion among workers with different skills (the between-component of wage inequality). When the minimum wage increases, lower-skilled wages raise on a widespread basis, while higher-skilled wages increase to a lesser extent, as the minimum wage affects the former more than the latter group. Consequently, minimum wage raises can lead to reduce wage disparities.

Our findings speak to this rationalization. Consistent with the predictions of the model, we find that the minimum wage compresses wage dispersion and impacts wages higher up in the distribution, while it also affects dispersion between education groups. Moreover, the framework

discussed above emphasizes two factors influencing the magnitude of the effect of this policy instrument on earnings inequality: the bite of the minimum wage and the dispersion in firm productivity. The high values of these factors are precisely two distinctive features of Latin American labor markets, aiding our understanding of the larger impact of the minimum wage in that region, compared to developed economies.[1]

Interestingly, the impact of the MW could go beyond formal workers. Non-compliance with one labor legislation such as social security contributions does not necessarily imply non-compliance with other labor regulations such as the minimum wage. MW increases could thus have an impact on wages also for informal workers. This phenomenon, known as the 'lighthouse effect', can potentially be explained by at least three mechanisms (Khamis, 2013). The increase in wages within the formal sector resulting from the minimum wage may cause a shift of capital towards the labor-intensive informal sector, leading to an increase in wages. Secondly, increasing wages in the formal sector would result in a rise in the demand for goods and services generated by the informal sector, thereby causing an increase in wages within this sector. Finally, the minimum wage serves as a standard by which fair compensation in the job market is measured. It acts as a reference point, and as a result, wages and benefits in the informal sector could be expressed as multiples of the minimum wage.

Understandably, given its widespread use as a policy instrument, the literature on minimum wages is vast and growing (Dube, 2019; Neumark & Corella, 2021). The evidence shows that the minimum wage was effective in increasing wages of those workers directly reached by the policy, i.e. formal (registered) workers at the bottom of the wage distribution (Cengiz, Dube, Lindner, & Zipperer, 2019), while several papers find also evidence of spillovers, by which the minimum wage also affects the upper tail of the wage distribution (Autor et al., 2016; Engbom & Moser, 2022). In addition, there is evidence of a lighthouse effect (Khamis, 2013; Jales, 2018).

There are reasons to study minimum wage policies in the specific context of developing countries. Compared to rich economies, the targeted workforce is larger (Belman, Wolfson, et al., 2015; Neumark & Corella, 2021), policy enforcement is lower, and workers and firms may more easily evade regulations by moving into the larger informal sector (Wedenoja, 2013; Jales, 2018; Ham, 2018; Arango & Flórez, 2021). Moreover, weaker macroeconomic conditions often faced by these economies may amplify adverse employment effects (Ferreira, Firpo, & Messina, 2014; Silva, Almeida, & Strokova, 2015). Given its salience as a policy measure, the literature on minimum wages has been very active in Latin America. Studies typically find equalizing effects in the wage distribution of formal workers, although results differ depending on the initial level of the MW, the extent of the changes, and the degree of enforcement (Maloney & Mendez, 2007; Bosch & Manacorda, 2010; Alves, Amarante, Salas, & Vigorito, 2012; Maurizio & Vázquez, 2016; Blanchard, Carrasco, Ceni, Parada, & Santín, 2021; Engbom & Moser, 2022). Conclusive evidence regarding the employment effects of the MW is lacking: some studies indicate a negative impact (Grau & Landerretche, 2011; Borraz & González-Pampillón, 2017; Saltiel & Urzúa, 2022; Arango & Rivera, 2022; Flórez, Hermida, & Morales, 2022) while others do not find any significant effect (Engbom & Moser, 2022; Lemos, 2009; Grau Veloso, Miranda, & Encina, 2018).

We make a contribution to this literature in two directions. First, we apply a methodology that was scarcely exploited in the region (probably because is very data-demanding), on a controversial topic that remains relevant to this day. Second, in contrast to most papers that focus on specific countries and short time periods, we take advantage of a large harmonized database of national household surveys and carry out a comprehensive study for the six largest economies in Latin America over two decades.

The rest of the paper is organized as follows. Section 2 provides context on the minimum wage in Latin America. Section 3 details the empirical strategy followed to estimate the effect of the minimum wage, while Section 4 describes the data used for the analysis and presents some descriptive evidence. Section 5 shows the main results, along with some robustness tests. Finally, Section 6 concludes.

2. Minimum wage and inequality in LA

As in most countries in the world, the minimum wage (MW) is a key policy instrument also in Latin America. MW are set with the aim of increasing wages in the bottom of the distribution, and hence reducing wage inequality. There is considerable heterogeneity across countries in some characteristics of this policy instrument, such as level, frequency and dispersion across groups of workers. While some countries set a uniform minimum wage once a year, others have multiple minimum wages set by industry, region, category, and even educational attainment (e.g. most Central American countries).

In this paper we focus on the six largest economies of Latin America: Argentina, Brazil, Chile, Colombia, Mexico and Peru, which represent 79 per cent of total population and 86 per cent of total GDP in Latin America. In these countries the minimum wage is set annually at the national level.[2] The only exception is Mexico, where the minimum wage was determined in different 'minimum wage areas' until October 2015 with the aim of reaching the same level of real minimum wage in each area.[3]

Unlike the United States where the minimum wage is set on an hourly basis, in almost all of the countries studied in this paper it is set monthly with a legal working time of 40 hours per week. The only exception again is Mexico, where the MW wage is set on a daily basis.[4]

Figure 1 shows the evolution of the minimum wage over the last two decades. After a period of moderate increase in the 1990s, the MW strongly grew over the 2000s, and then turned more erratic in the 2010s. For the case of the whole region, the real minimum wage increased at an annual rate of 1.1% between 1992 and 2003; accelerated to 4.7% per year between 2003 and 2013, and then slowed down to 1.8% per year between 2013 and 2018. Changes were similar, although more dramatic, for the group of the six largest economies. The MW grew at an annual rate of 5.5% between 2003 and 2013 and then remained almost constant in the following years.

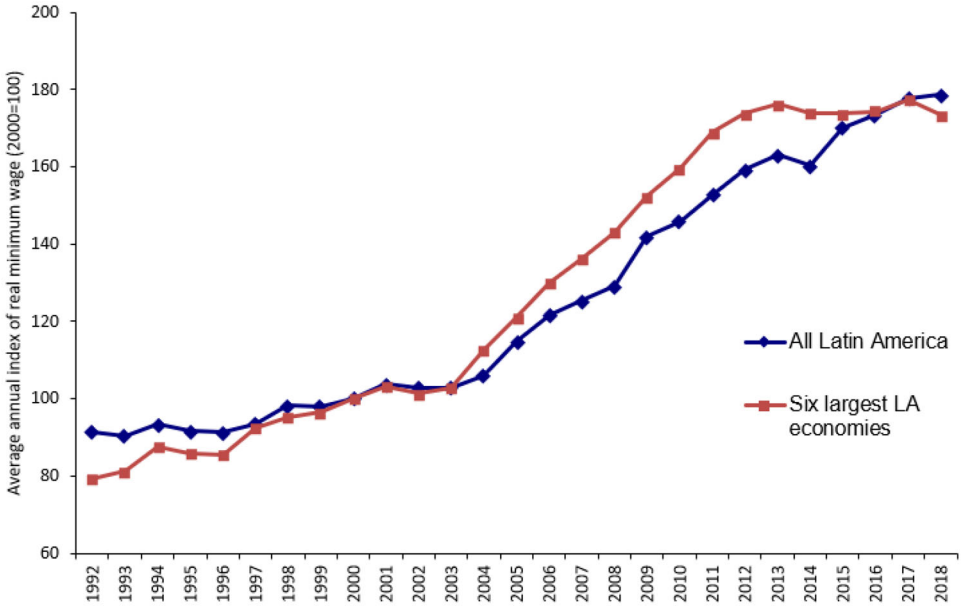

Figure 1. Average real minimum wage index 1992–2018.
Notes: The countries considered in 'All Latin America' group are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. The six largest economies are: Argentina, Brazil, Chile, Colombia, Mexico and Peru.
Source: Own elaboration based on CEPAL.

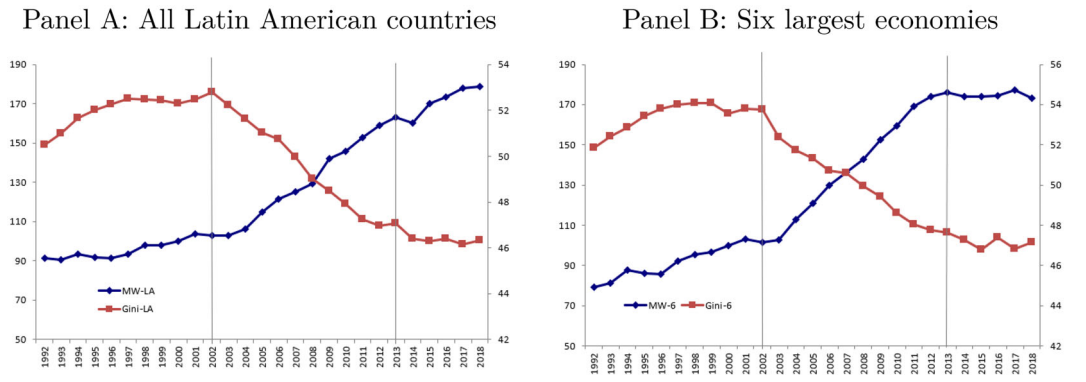

Figure 2. Gini coefficient for the income distribution and minimum wage.
Notes: The right axis shows values of the Gini coefficient for the household income distribution. The left axis shows values of the minimum wage index. The countries considered in 'All Latin America' group are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. The six largest economies are: Argentina, Brazil, Chile, Colombia, Mexico and Peru.
Source: Own elaboration based on households surveys microdata from SEDLAC (CEDLAS and The World Bank).

Many analysts and commentators have suggested that the increase in the minimum wage in the 2000s was one of the main drivers of the fall in inequality in Latin America. Just to motivate this issue, Figure 2 shows the evolution of income inequality, as measured by the Gini coefficient. The strong increase in the minimum wage in the 2010s coincides with a substantial fall in inequality. Also, in the 2010s the deceleration in the minimum wage coincides with a slow down in the reduction of inequality. The patterns are similar for the whole region (panel A) and for the six largest economies (panel B). Of course these simple graphs do not prove any relationship between the MW and inequality, but serve as a motivation for the rest of the analysis. Is there causal evidence of an equalizing effect of the minimum wage policies over the wage distribution, and ultimately on the income distribution? The rest of the paper tackles these questions, limiting the analysis to the six largest economies in the region. The similarity between panels A and B suggests that the results might be more general than for this sample of six countries.

3. Empirical strategy

Although there is a negative correlation between the minimum wage and inequality, this relationship of course cannot be interpreted as causal inference, since there could be other factors that affected inequality. We address this possible simultaneity by exploiting the geographic variability in the bite of the minimum wage among different regions over time.

This variability is related to two main factors: (i) the statutory national minimum wage that varies over time; and (ii) differences in regional effectiveness of the national minimum wage due to different wage distributions across regions.

To study the effect of the minimum wage on the wage distribution, we first define the effective minimum wage (EMW) or Kaitz index, as the difference between the log statutory national minimum wage and the log wage of a percentile high enough such that the pth percentile of the wage distribution is not directly affected by the minimum wage. In this study, we set the 75th percentile as the reference percentile, so that EMW is defined by:[5]

$$EMW_{rt} = w_t^{\min} - w_{rt}^{p75} \tag{1}$$

EMW is then a measure of the bite of the nationally set minimum wage in each region r (the local labor markets or districts of Latin America) and year t. It reflects the different exposure of each region to changes in the statutory national minimum wage over the sample period. For instance in a region where the minimum wage is closer to the $p75$ the bite of the MW is larger. This region will have a higher EMW (a less negative $w_t^{\min} - w_{rt}^{p75}$).

In other words, the intuition behind this identification strategy is that differential regional earning structures allow for variability in the bite of the minimum wage. In poorer regions the statutory national minimum wage is more binding than in other regions with higher wage levels, where their wage distributions are barely affected by changes in national minimum wages. For example, in the wealthy district of Buenos Aires (Argentina), the EMW has a very low bite: the wage distribution of this region has a high 75th wage percentile relative to other poorer regions of Argentina (and Latin America). Thus, its EMW is among the lowest (more negative) in the country. On the other hand, in the lower-income local labor markets of northern Argentina, the 75th percentile of the wage distribution is at a lower level than that of Buenos Aires: this makes the EMW less negative, giving it more bite or effectiveness.

In the next step, we estimate the following equation:

$$w(p)_{rt} - w(p75)_{rt} = \beta_1(p)EMW_{rt} + \beta_2(p)EMW_{rt}^2 + \sigma_{r0}(p) + \sigma_{r1}(p) \times t + \gamma_t(p) + \epsilon_{rt}(p) \tag{2}$$

where $w(p)_{rt} - w(p75)_{rt}$ represents the gap between the log real wage at percentile p and the log real wage at percentile 75th, in region r and year t. Region fixed effects are represented by $\sigma_{r0}, \sigma_{r1} \times t$ represents region-specific time trends and γ_t captures time variability.[6] Yearly and regional fixed effects control for systematic specific shocks in the dependent variable for each local labor market and year, in other words we make only comparisons within each local labor market in each year. Furthermore, quadratic regional time trends flexibly control for differential non-linear trends in each district that may be correlated both with the EMW and our outcome variables.[7]

We are particularly interested in the marginal effect $\beta_1(p) + 2\beta_2(p)EMW_{rt}$ as it captures the idea that a change in the minimum wage is likely to have more impact on the wage distribution where it is more binding. Particularly, if the minimum wage were to compress the wage distribution we would expect to find positive coefficients for wage gaps below the reference percentile (a less negative $w(p) - w(p75)$); and negative coefficients above the reference percentile (a less positive $w(p) - w(p75)$).

The literature suggests that these estimates might be biased, mainly due to the presence of measurement error or transitory shocks (not taken into account by the fixed effects or trends). On the one hand, measurement error may arise when some workers earning the minimum wage inaccurately report their wages, resulting in a peak in the wage distribution around the minimum wage rather than (or in addition to) solely a spike at that level.[8] This could generate spillovers higher up in the income distribution for OLS estimates, thus overestimating existing spillovers or generating spillovers that do not exist.[9] On the other hand, time-varying components that we cannot account for might affect both the EMW and the relative wage of each percentile with respect to that of the third quartile: supply and demand shocks could affect both our variables of interest and our outcomes. The OLS estimation will be biased if a transitory shock affects simultaneously the 75th percentile wages (the reference percentile) and other wage percentiles because the 3rd quartile is used in the construction of the effective minimum. In other words, transitory shocks to the third quartiles of regional wages might be correlated to the difference between the regional wage at the 75th percentile and the wages at other percentiles. Moreover, one would expect that this simultaneous impact of the transitory shock dissipates as one moves away from the p75. This would result in a bias because of the non-zero correlation between fluctuations in the 3rd quartile wage and the measured level of inequality

across the entire distribution. By combining this reasoning with the fact that the minimum wage has a weaker bite in regions with higher wages, it can be argued that OLS would yield an upward bias in estimating the effect of minimum wages on inequality in both the lower and upper ends.[10]

With this in mind, we apply a 2SLS strategy that instruments EMW_{rt} and its square with a set of instruments that consists of: (i) the log statutory national minimum wage; (ii) its square; and (iii) the log statutory national minimum wage interacted with the average real log median wage for the region throughout the sample period. Under this strategy, identification in equation (2) for the linear term in the EMW comes entirely from the variation in the statutory national minimum wage, and identification for the quadratic term comes from the inclusion of the square of the log statutory national minimum wage and the interaction term. The interaction of the log statutory national minimum wage with the average real log median wage for the region throughout the sample period instead of the actual median wage filters for transitory shocks on median wages. Thus, the current level of the minimum wage, in relation to the long-term average income level within a region, affects the concurrent bite of the minimum wage (i.e. instrument relevance); while influences concurrent wage inequality only through its effect on the current bite of the minimum wage (i.e. the exclusion restriction). This solution for possible endogenous EMW was proposed by Autor et al. (2016) and adapted by Engbom and Moser (2022) to the context of countries that, unlike the U.S., do not have minimum wages set at the state level, as it is the case in Latin America.

The rationale for using this set of instruments stems from the relationship between the current level of statutory minimum wages and the long-term average income within a specific district. The intuition is that changes in the national minimum wage will affect the contemporaneous wage distribution of each region, but will not affect its long-term wealth, after controlling for our set of fixed effects. This historical level depends on other factors such as the productive structure at the local level, the level of education of individuals in the region, among other conditions and economic endowments specific to each region. Following this intuition, our set of instruments predict that regions with higher long-term wage levels have lower EMW, which contributes to identifying the minimum wage effect on the wage distribution.

To provide a more graphic intuition of how our three-component instrument predicts the behavior of the EMW and its square, we reduced the dimensionality of both the instrument set and the instrumented variables with a principal components analysis.[11] By deriving one-dimensional information for our instrument and the EMW, we can graph the first stage of our regressions in Figure A3. From all the graphs there is a clear negative correlation between the effective minimum wage and the set of instruments. To provide a more concrete example, Buenos Aires (Argentina's historically wealthiest region) has one of the lowest predicted effective minimum wage (and its square) in the sample; conversely, the less wealthy districts of northeastern Argentina present high predicted values of EMW and its square. To further illustrate each component of our instrument, Table A1 of Supplementary Materials (Section A) also shows the results of the first stage of the 2SLS regressions for selected percentiles of the regional wage distributions. The table shows that the instruments have good predictive power with p-values below 1% statistical significance and the directions of the effects are as expected. Also, the Kleinbergen-Paap F-statistic is relatively high and their values are way above the Stock-Yogo weak ID test critical values. These results are reassuring in terms of the use of the empirical strategy followed in this paper.

4. Data and descriptive evidence

4.1. Data

In order to explore the labor market implications of the MW we rely on microdata from the official national household surveys of the six largest Latin American economies: Encuesta

Permanente de Hogares (EPH) in Argentina, Pesquisa Nacional por Amostra de Domicilios (PNAD) in Brazil, Encuesta de Caracterización Socioeconómica Nacional (CASEN) in Chile, Gran Encuesta Integrada de Hogares (GEIH) in Colombia, Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) in Mexico, and Encuesta Nacional de Hogares (ENAHO) in Peru. Surveys were processed following the protocol of the Socioeconomic Database for Latin America and the Caribbean (SEDLAC), a joint project between CEDLAS at the Universidad Nacional de La Plata and the World Bank. Household surveys are not uniform across Latin American countries and in most cases not even within a country over time. The issue of comparability is of great concern. Owing to that situation, we make all possible efforts to make statistics comparable across countries and over time by using similar definitions of variables in each country/year, and by applying consistent methods of processing the data (SEDLAC, 2023). Our paper is data-intensive: our estimates consider information from national household surveys of more than 750 million formal workers in six countries over two decades.

Our main variables of interest are the percentiles of the wage distributions in each region of the six largest economies in Latin America. We define 'regions' as agglomerates in Argentina, states in Brazil, administrative areas in Chile, departments for Colombia, districts for Mexico, and departments in Peru. Wage distributions are constructed by pooling all individual responses using microdata from national household surveys. In particular, we compute percentiles of log real hourly wage, defined as reported monthly monetary income of the main occupation, adjusted by hours worked. The main analysis is carried out for full-employed men and women aged between 18 and 60, living in urban areas and registered in the social security system (formal employees). To reduce the influence of outliers, we winsorized the 3% top and bottom of the wage distribution by assigning the third percentile value to the second and first one; and the ninety-seventh percentiles value to the ninety-eight and ninety-ninth percentiles. Using these individual wage data, we calculate percentiles of regional wage distributions for 2001–2018 (with gaps depending on availability of national household surveys), weighting observations by their sampling weight multiplied by their monthly hours worked.

Regarding the minimum wage data, our main sources of information are ILOSTAT, CEPAL, and data reported by the national statistic offices. We construct hourly minimum wages by dividing monthly minimums by 172.8 hours, considering an average weekly workday of 40 hours.[12] Further details on the determination of minimum wages in each of the countries are provided in Section C of Supplementary Materials.

4.2. Descriptive evidence

Variability in the effectiveness of minimum wage over time and across regions is essential for applying the empirical strategy mentioned above. In this sense, we calculate a 'binding percentile' for each region over the period, defined as the income percentile at which workers start to earn wages equal to the national minimum wage. Figure A1 of Supplementary Materials displays this binding percentile for each region over the period, showing that the range over which it varies is relatively large. This evidence supports the identification strategy, as the 'bindingness' of minimum wages widely differs across regions.

In addition, Figure A1 shows that minimum wage falls on relatively high wage percentiles. This finding motivates to choose the 75th percentile as the reference percentile since the median seems to be directly affected by the minimum wage level, at least for some regions.

We also analyze the minimum wage effectiveness by computing the share of workers earning below, at, or above the minimum wage. Since the minimum wage value is set as a gross wage while household surveys earnings are often net wages, we apply a margin of 10% when delimiting whether an individual's income is below, at, or above the minimum wage. Hence, we define a *below* group that includes those individuals who report wages up to 90% of the minimum wage level; an *at* group that comprises individuals who declare wages between 90% and 110%

of the minimum wage value, and an *above* group which includes those individuals who reported wages higher than 1.1 times the minimum wage. Results in Figure B1 of the Supplementary Materials show that most formal workers in Latin America earn more than the minimum wage, although the share earning below is not negligible. Enforcement problems or potential measurement errors (due to differences between gross and net wages) could explain formal workers earning below the minimum wage.

The share of workers earning below the minimum remained somewhat stable, ranging between 10% and 15% over the period. The share of workers earning at the minimum wage increased from 8% in 2003 to around 16% in 2018, where most of the increase took place in the early 2000s. The flip side was a decrease in the proportion of workers earning above the MW. These changes imply an increase in the bite of the MW over the period.[13]

Tables B2–B4 of the Supplementary Materials show gender, education, and age distributions for workers earning at, below, and above the minimum wage. The profiles for workers earning below the minimum is similar to workers earning at the minimum wage. There has been a particularly marked increase in the share of semi and high skilled, and older workers in those groups

Lastly, Figure A2 in Section A of Supplementary Materials shows the evolution of EMW ($wmin - w(p75)$) across regions and over time, where each grey line represents a region and the dark lines represents the national trend. For most countries, we observe an increase in EMW at a national level with remarkable differences across regions, which supports our identification strategy.

5. Results

5.1. Distributive effects of the minimum wage in Latin America

Table 1 presents the marginal effects of changes in the ratio $\log(minwage)$-$\log(p75)$ (the effective minimum wage, EMW) on the ratio $\log(p)$-$\log(p75)$ for selected percentiles, evaluated at its hours-weighted average across regions and years for our sample of formal employees. Additionally, in the last row we report the marginal effects of the EMW for the Gini of the regional wage distributions. We start by presenting OLS estimates in columns (1) and (2). Column 1 shows the estimates of a specification that includes region and year fixed effects; while the specification in Column 2 adds linear regional trends. As mentioned in Section 3, if the minimum wage causes the wage distribution to become more compressed, we would anticipate positive coefficients for wage gaps below the reference percentile (a less negative $w(p) - w(p75)$), and negative coefficients above the reference percentile (a less positive $w(p) - w(p75)$). Results of Column 2 (our preferred specification for OLS) show that an increase of 10 log points in the effective minimum implies an increase of 4.2 log points in the ratio $\log(p10)$-$\log(p75)$ (first row). The second row suggests that an analogous increase in the EMW narrows the gap between the first and third quartiles of the wage distribution by 3.9 log points.

Columns (3) and (4) present 2SLS estimates, both including region fixed effects. While the third column also adds quadratic regional time trends, the last specification considers linear country time trends. Results of column 3 (our preferred IV specification) show that an increase of 10 log points in the EMW lowers the ratio $\log(p10)$-$\log(p75)$ by 2 log points.[14] Additionally, in all specifications the effective minimum seems to reduce wage inequality as measured by the Gini coefficient.

As mentioned in the empirical strategy, estimations were carried out for each wage distribution percentile by changing the $\log(p)$-$\log(p75)$ ratio iteratively. Figure 3 complements Table 1 by showing estimated marginal effects for all percentiles. On the one hand, the positive coefficients found in the lower tail of the wage distribution indicate that the gap between the wages of those percentiles and the wages of the 75th percentile becomes less negative. On the other

Table 1. OLS & 2SLS relationship between log(p)-log($p75$) and log(*minwage*)-log($p75$) for selected percentiles of formal workers' wage distribution

	OLS		2SLS	
	(1)	(2)	(3)	(4)
$p(10)$	0.421***	0.424***	0.200***	0.191***
	(0.040)	(0.040)	(0.037)	(0.037)
$p(25)$	0.367***	0.391***	0.153***	0.147***
	(0.026)	(0.026)	(0.023)	(0.024)
$p(50)$	0.236***	0.263***	0.075***	0.074***
	(0.021)	(0.022)	(0.016)	(0.016)
$p(80)$	−0.016*	−0.023**	−0.025***	−0.025***
	(0.008)	(0.009)	(0.007)	(0.007)
$p(90)$	−0.058**	−0.077***	−0.083***	−0.084***
	(0.025)	(0.027)	(0.020)	(0.019)
Gini	−0.101***	−0.108***	−0.062***	−0.061***
	(0.012)	(0.012)	(0.009)	(0.009)
Observations	1,909	1,909	1,909	1,909
F-stat			28.25	29.89
Region FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	No
Region trends	No	Linear	Quadratic	No
Country trend	No	No	No	Linear

Notes: We consider formal workers in the period 2001–2018 (with gaps depending on availability of national household surveys). All regressions are unweighted and for all of them, except the one in the last row, the dependent variable is log(p)-log($p75$) where p is the wage of the indicated percentile. For the last row, the dependent variable is the Gini of the wage distribution at regional level. Estimates are the marginal effects of log(*minwage*)-log($p75$), evaluated at its hours-weighted average across regions and years. For 2SLS specifications, the effective minimum and its square are instrumented by the log of the minimum, the square of the log minimum, and the log minimum interacted with the average real log median wage for the state over the sample. Standard errors clustered at the region level in parentheses. Kleibergen-Paap rk Wald F-statistics are shown. ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$.
Source: Own elaboration based on data from SEDLAC (CEDLAS and The World Bank).

hand, the negative coefficients in the upper tail of the distribution imply a reduction of the initial positive gap between the top wages and the reference percentile.[15]

We find a larger effect of the effective minimum wage than Autor et al. (2016) for the U.S. Furthermore, our spillover effects reach higher wages in the distribution (Lee (1999) finds spillovers up to the median and Autor et al. (2016) up to the twentieth percentile). Although this effect is not typical of developed economies, evidence in favor of such an effect has been found in Latin American countries (Engbom & Moser, 2022; Bosch & Manacorda, 2010; Maurizio & Vázquez, 2016; Messina & Silva, 2017).[16] Recently, Engbom and Moser (2022) using administrative data find large equalizing effects of the minimum wage in Brazil and their point and distribution-wise estimates are similar to those found in our paper. The larger effect of the minimum wage in Latin America could be attributed to a greater bite and to the variability in pay practices among firms, as Engbom and Moser (2022) point out. In addition, it is reasonable to expect that the minimum wage would have a more significant effect on lower-skilled workers, who constitute a larger proportion of the population in Latin America compared to the United States.

The narrowing in the gap both in the lower and upper end of the wage distribution showed in Figure 3 implies a compression in the wage distribution: the minimum wage appears to have had an equalizing impact in Latin America.[17]

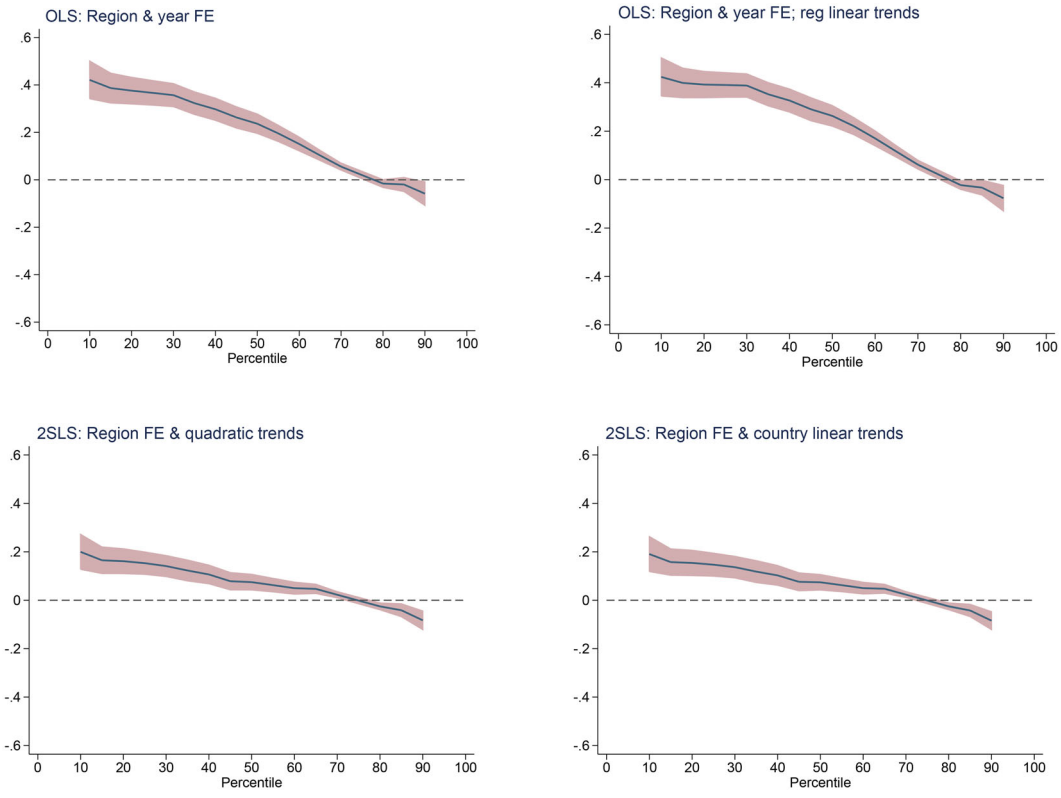

Figure 3. OLS & 2SLS relationship between log(p)-log($p75$) and log(*minwage*)-log($p75$) for selected percentiles of formal workers' wage distribution.

Notes: We consider formal workers in the period 2001–2018 (with gaps depending on availability of national household surveys). All regressions are unweighted and for all of them the dependent variable is log(p)-log($p75$) where p is the wage of the indicated percentile. Estimates are the marginal effects of log(*minwage*)-log($p75$), evaluated at its hours-weighted average across regions and years. For 2SLS specifications, the effective minimum and its square are instrumented by the log of the minimum, the square of the log minimum, and the log minimum interacted with the average real log median wage for the state over the sample. Standard errors clustered at the region level. Red areas show 95% confidence intervals.

Source: Own elaboration based on data from SEDLAC (CEDLAS and The World Bank).

5.2. *Heterogeneous distributive effects of the minimum wage*

5.2.1. Workers characteristics. Results may vary according to workers characteristics, as gender, age or education. To explore this possibility, we construct multiple sub-samples and compute minimum wage effects on percentiles of sample-specific wage distributions. Table 2 presents marginal effects estimated considering each one of the following sub-groups: (i) men and women; (ii) low, medium and high skilled and; (iii) workers between 18 and 24 years old, and workers between 25 and 64 years old.

According to gender, the effects are concentrated in male workers, a result opposite to that found in the U.S. (Autor et al., 2016) but in line with the evidence for Mexico (Bosch & Manacorda, 2010). The results for women have the expected sign, but they are not statistically significant. Regarding education, those workers with medium qualification seem to be the ones more affected. This result is in line with the structural model developed by Engbom and Moser (2022), in light of which we interpret our results. Educational attainment measurements reveal a significant over representation of low-skilled workers within the Latin American workforce. It is among workers with completed high school that we find that the minimum

Table 2. 2SLS relationship between log(p)-log($p75$) and log(*minwage*)-log($p75$) for selected percentiles of formal workers' Wage Distribution by socio-demographic characteristics

	Gender		Education			Age		Period	
	Men	Women	Low-skilled	Med-skilled	High-skilled	Young	25–60 years old	2001–2012	2013–2018
$p(10)$	0.232***	0.075	0.275*	0.114*	0.039	0.530**	0.207***	0.221***	0.231
	(0.039)	(0.105)	(0.156)	(0.066)	(0.084)	(0.231)	(0.041)	(0.037)	(0.148)
$p(25)$	0.170***	0.047	0.070	0.121***	−0.049	0.094	0.146***	0.136***	0.179**
	(0.027)	(0.047)	(0.053)	(0.033)	(0.061)	(0.077)	(0.024)	(0.024)	(0.082)
$p(50)$	0.076***	0.062**	0.065*	0.077***	−0.091**	0.037	0.077***	0.042**	0.042
	(0.018)	(0.030)	(0.033)	(0.021)	(0.042)	(0.050)	(0.016)	(0.020)	(0.058)
$p(80)$	−0.023***	−0.002	0.013	−0.020**	0.027**	0.022	−0.016	−0.006	−0.020
	(0.009)	(0.012)	(0.014)	(0.009)	(0.014)	(0.017)	(0.010)	(0.008)	(0.034)
$p(90)$	−0.057***	−0.037	0.006	−0.067***	0.052	0.078**	−0.056***	−0.035	−0.036
	(0.020)	(0.029)	(0.029)	(0.018)	(0.036)	(0.031)	(0.021)	(0.023)	(0.069)
Observations	1,908	1,901	1,883	1,909	1,903	1,884	1,909	1,148	761
F-stat	31.38	9.64	18.26	55.90	19.36	18.71	27.89	42.00	3.81

Notes: Sample period is 2001–2018 with gaps depending on availability of national household surveys and consists only of formal employees. Columns 1 and 2 present estimates for the wage distribution of registered workers considering only men and women, respectively. Columns 3 to 5 also consider sub-samples of formal workers, respectively: individuals with less than completed high school, with completed high school, and with tertiary education or more. Finally, columns 6 and 7 consider formal workers by age sub-samples, columns 8 and 9 consider formal workers by sub-period in our sample column names are self-explanatory. For all regressions the dependent variable is log(p)-log($p75$) where p is the wage of the indicated percentile. Estimates are the marginal effects of log(*minwage*)-log($p75$), evaluated at its hours-weighted average across regions and years. Standard errors clustered at the region level in parentheses. Regressions are unweighted, otherwise they would give disproportionate importance to only Brazil and Mexico. All regressions are 2SLS specifications, the effective minimum and its square are instrumented by the log of the minimum, the square of the log minimum, and the log minimum interacted with the average real log median wage for the state over the sample. All regressions include region FE and quadratic regional time trends. $***p < 0.01$; $**p < 0.05$; $*p < 0.1$.

Source: Own elaboration based on data from SEDLAC (CEDLAS and The World Bank).

wage has a significant equalizing effect. There would also appear to be an unequalizing effect among the most skilled workers.

Finally, when carrying out the analysis according to age, there seem not to be clear differences between both subgroups, in contrast to the US literature that finds larger effects for young workers, where the minima is often binding (Manning, 2021). This lack of effect on young people may be related to the fact that low-wage young workers in Latin America usually work in the informal sector, which acts as a buffer that prevents worse economic conditions, thus replacing the role of the minimum wage.[18]

5.2.2. Periods. The period under analysis can be divided into two episodes. The first period, between 2001 and 2012, witnessed remarkable growth rates in the region, along with a reduction in inequality in almost all countries. This was followed by a second period between 2013 and 2018, where the favorable macroeconomic context changed, bringing a slowdown (or even stagnation) in growth and inequality reduction (Acosta, Cruces, Galiani, & Gasparini, 2019; Gasparini, 2019). The different macroeconomic scenarios could have implied differences in the impact of the minimum wage.

In the last two columns of Table 2 (graphically complemented by Figure A4 in Supplementary Materials) we present the effects of the EMW on wage gaps for the two periods. The effects found in Table 2 were particularly clear in the booming 2000s. During this decade, our IV estimates show an equalizing impact of the minimum wage stemming from the left tail of the wage distribution; while in the second period the effect of the EMW seems to be smaller and rather noisier.

In analyzing the Brazilian case, Saltiel and Urzúa (2022) argue that the impact of the minimum wage can vary based on the overall economic conditions: increases in minimum wage are beneficial only if the economy is growing. Ferreira, Firpo, and Messina (2017) present evidence that supports this idea. Their findings provide evidence that during the period from 1995 to 2002, characterized by slower growth and higher unemployment, raising the minimum wage led to increased inequality. However, between 2003 and 2012 they observe the opposite effect. By conducting an analysis covering a more recent period and a broader range of countries, our findings provide additional evidence indicating that the impact of the minimum wage is strongly influenced by the business cycle.

5.3. Lighthouse effect

A large number of Latin Americans work informally. In our sample, the urban employed population working without social security contributions (our definition of informality) was, on average, 43.5% in 2018. In this context, it is relevant to study whether a labor institution such as the minimum wage affects informal workers.

Figure 4 shows OLS estimates of the effect of the EMW on wage gaps for informal workers' wage distribution. We show OLS estimates since the instrument we use is constructed to predict the effect of the minimum wage among formal workers. The relationship between the historical regional wage level and the bite of the minimum wage among informal workers is not clear. In fact, the correlation between our IV and the effectiveness of the minimum wage for this sample is low. Panel (a) of the figure shows estimates that consider annual and regional fixed effects, while Panel (b) adds linear regional time trends (our preferred specification).

As shown in both figures, the effective minimum wage would appear to have an equalizing impact on the left tail of the informal workers' wage distribution. In other words, the minimum wage would be reducing the existing gap between the informal workers who earn the least and those in the 75th percentile of the wage distribution. This extends the result of the wage compression effect of the minimum wage found for Brazil and Argentina for a previous period (approximately 1982–2004) by Lemos (2009) and Khamis (2013), respectively, to the rest of the

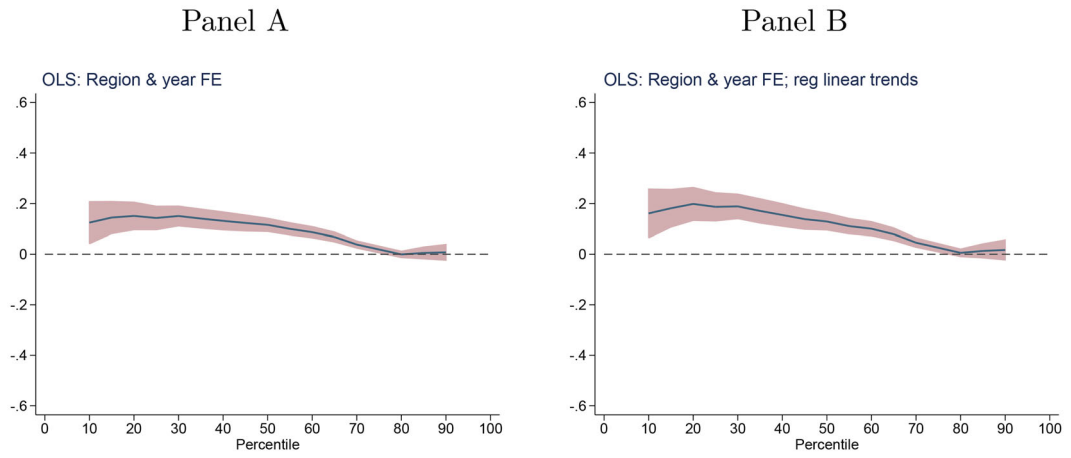

Figure 4. OLS relationship between log(p)-log($p75$) and log(*minwage*)-log($p75$) for informal workers.
Notes: All regressions are unweighted and for all of them the dependent variable is log(p)-log($p75$) where p is the wage of the indicated percentile. We consider informal workers in the period 2001–2018 (with gaps depending on availability of national household surveys). The red shaded areas represent 95 percent confidence intervals.
Source: Own elaboration based on data from SEDLAC (CEDLAS and The World Bank).

Latin American countries in our sample and for the 2000s and 2010s. Our results are consistent with the existence of a lighthouse effect. Although the minimum wage is only set for formal workers, it would appear to act as a reference price in the informal sector for wage bargaining.

5.4. Robustness checks

In this section, we perform several robustness exercises to provide further evidence of the effects found in this paper and more confidence about the empirical strategy implemented.

First, we re-estimate our main results by changing the reference wage percentile chosen to calculate the minimum wage bite. As shown in Figure A5, the EMW has an equalizing effect throughout the whole wage distribution when using the median and $p(90)$ as reference percentiles.[19] Our results are robust to the use of these other reference percentiles typically used in the literature.

Additionally, we carried out several specifications in our OLS and 2SLS estimates, such as changing linear regional trends by quadratic regional trends, region fixed effects by country fixed effects and regional trends by country trends; and including the regional unemployment rate. Conclusions about the marginal effect of minimum wage throughout wage distribution are essentially unchanged.

6. Concluding remarks

The minimum wage is at the core of the debate on labor policies. How effective is this instrument to increase real wages at the bottom, and hence reducing wage inequality? Does the impact depend on the phase of the business cycle? Are there spillovers to informal workers? This paper contributes to the rich literature on these issues by exploring the effect of the MW on the wage distributions of the six largest economies in Latin America (Argentina, Brazil, Chile, Colombia, Mexico and Peru) over the last two decades. To that aim we exploit the heterogeneity in the bite of the nationally-set minimum wage across local labor markets and over time.

Our results suggest that the MW has been effective in the 2000s, a decade of sustained growth and strong labor markets. The positive impact of the MW on wages of formal workers decreases over the percentiles of the wage distribution. We also find some evidence that the

equalizing effect spills over the informal sector of the economy: wages in the bottom of the distribution of informal workers are also lifted by this policy. Interestingly, the effects of the minimum wage on formal and informal workers seem to be smaller in the 2010s, a decade of much weaker labor markets.

Notes

1. See Lee (1999) and Autor et al. (2016) for the case of the US; Fortin and Lemieux (2016) for Canada; and Butcher, Dickens, and Manning (2012) for the UK.
2. In some years for some countries the minimum wage is not defined at the beginning of the year but in the middle of it, so these countries have 2 minimum wage levels in that year. Meanwhile, in other countries there may be more than two minimum wages per year (e.g. in Argentina due to high inflation). We take the annual average of the minimum wage in these cases.
3. we work with the national average minimum wage, for more information see Section 4.
4. Thus, when working with minimum hourly wages in our paper we are making the assumption that the monthly minimum wage for an 8-hour working day serves as a reference for employers in case their employees work more (or less) than 8 hours per day.
5. In Section 4, we further discuss the choice of the 75th percentile as the reference percentile. In addition, as robustness checks, we have also carried out the analysis using the 50th and the 90th as alternative reference percentiles (other reference percentiles commonly used in the literature). Conclusions are essentially unchanged. For more information, see Section 5.4.
6. We present specifications either with linear or quadratic district-specific time trends. In addition, we present another specification with country-specific linear time trends.
7. Specifications with linear trends also control for this but with fewer degrees of freedom.
8. This may be due to the fact that some workers report their out-of-pocket income and others report their gross income.
9. As an illustration, consider a scenario where the minimum wage is set at the fifth percentile of the underlying wage distribution (i.e., the distribution absent of measurement error and without a minimum wage) and does not have any spillover effects. Nevertheless, due to inaccuracies in reporting, there is a cluster of wage values around the actual minimum wage that extend from the first up to the ninth percentile. If the legislated minimum wage were to increase to the ninth percentile while the measurement error remains constant, the higher minimum wage would compress the observed wage distribution up to the thirteenth percentile. Consequently, this would result in a decrease in measured inequality by compressing the gap between the first percentiles and the median. This apparent spillover effect would be a characteristic of the data, but it would not accurately represent the true wage distribution.
10. For example, an increase in productivity in a given district that affects the activities of the low and medium skilled workers (due to the establishment of a new firm, the discovery of a mine, etc.) could positively impact their wages, thus decreasing the bite of the minimum wage in this region while increasing the value of the wage relative to p75. Therefore, this shock may exacerbate the effect of the EMW at the lower end of the wage distribution due to spillovers and generate an upward bias in the effect of the MW on inequality.
11. On average across the samples, the score of the first principal component of the EMW and its square explain 97.5% of the variability of the instrumented variables. Meanwhile, the score of the first component of the set of instruments explains 96.8% of their variability.
12. The value of the minimum wage is usually adjusted annually, although changes can occur at different times of the calendar year. We address this point by using an annual average based on monthly minimum wages.
13. Table B1 of the Supplementary Materials displays below, at, and above minimum wage groups for each country. Most Mexican workers earn above the minimum throughout the entire period, while Chile had a significant reduction in workers earning below. In addition, Argentina showed a sharp increase in the low group in 2004 and 2005, possibly related to a considerable increase in the minimum in 2003. These differences among countries may explain heterogeneous impacts, since minimum wage can affect inequality by changing wages levels and modifying the compliance of these policies.
14. We also experimented including country fixed effects and linear trends interacted with country dummies. This has virtually no impact on the results of our estimations.
15. It is worth noting that our results remain practically invariant to removing from our sample the countries with the fewest people earning less than the minimum wage, i.e. Brazil and Mexico (see Table B1). We also experimented including the district-level rate of unemployment as a control variable: this has virtually no impact on the estimated coefficients for any of our specifications. Results are available upon request to the authors.
16. Arango et al. (2022) do not find consistent equalizing macroeconomic effects of the minimum wage for Colombia.

17. Figure B2 in the Supplementary Materials shows the variability in the effect of the EMW for each of the countries analyzed. Despite the differences in the precision of the estimates, we observe a common pattern across countries similar to the average effect found for Latin America shown in Figure 3.
18. For literature studying the informal sector acting as a buffer for the labor market, see Ponczek & Ulyssea, 2022; Brambilla, César, Falcone, & Gasparini, 2023; Cruces, Porto, & Viollaz, 2018.
19. Tables B5 and B6 in Section A of Supplementary Materials complement Figure A5.

Acknowledgements

We would like to thank David Fielding, Managing Editor of JDS and two anonymous referees for contributing to a greatly improved version of this paper. We are also grateful to María Laura Alzúa, Irene Brambilla, Guido Porto and participants in seminars at the PhD program in Economics at UNLP, Asociación Argentina de Economía Política, and XII Jornadas NIP - Capítulo de Uruguay (NIP) for helpful comments and suggestions. The authors are solely responsible for any remaining errors.

Disclosure statement

No potential conflict of interest reported by author(s).

ORCID

Carlo Lombardo http://orcid.org/0009-0004-2433-8230
Lucía Ramírez Leira http://orcid.org/0000-0001-9747-5106
Leonardo Gasparini http://orcid.org/0000-0002-2264-8399

References

Acosta, P., Cruces, G., Galiani, S., & Gasparini, L. (2019). Educational upgrading and returns to skills in Latin America: Evidence from a supply–demand framework. *Latin American Economic Review*, *28*(1), 1–20. doi:10.1186/s40503-019-0080-6

Alves, G., Amarante, V., Salas, G., & Vigorito, A. (2012). La desigualdad del ingreso en uruguay entre 1986 y 2009. *Serie Documentos de Trabajo, DT 03/12*. Uruguay: Instituto de Economía, Facultad de Ciencias Económicas y Administración, Universidad de la República.

Arango, L. E., & Flórez, L. A. (2021). Regional labour informality in Colombia and a proposal for a differential minimum wage. *Journal of Development Studies*, *57*(6), 1016–1037. doi:10.1080/00220388.2020.1841170

Arango, L. E., & Rivera, S. A. (2022). Moderate wage increases and flexible labour contracts to protect employment in Colombian manufacturing. *Journal of Policy Modeling*, *44*(3), 578–598. doi:10.1016/j.jpolmod.2022.07.002

Arango, L. E., Montealegre, O. I., Bonilla-Mejía, L., Botero, J., Caicedo-García, E., Dávalos, E., … Vargas-Riaño, C. O. (2022). Efectos macroeconómicos del salario mínimo en Colombia. *Ensayos Sobre Política Económica*, *103*(103), 1–117. doi:10.32468/espe103

Autor, D. H., Manning, A., & Smith, C. L. (2016). The contribution of the minimum wage to US wage inequality over three decades: A reassessment. *American Economic Journal: Applied Economics*, *8*(1), 58–99. doi:10.1257/app.20140073

Belman, D., & Wolfson, P. J. (2015). *What does the minimum wage do in developing countries?: A review of studies and methodologies*. Geneva: ILO.

Blanchard, P., Carrasco, P., Ceni, R., Parada, C., & Santín, S. (2021). Distributive and displacement effects of a coordinated wage bargaining scheme. *Serie Documentos de Trabajo, DT 26/2021*. Uruguay: Instituto de Economía, Facultad de Ciencias Económicas y Administración, Universidad de la República.

Borraz, F., & González-Pampillón, N. (2017). Assessing the distributive effects of minimum wage. *Review of Development Economics*, *21*(4), 1081–1112. doi:10.1111/rode.12326

Bosch, M., & Manacorda, M. (2010). Minimum wages and earnings inequality in Urban Mexico. *American Economic Journal: Applied Economics*, *2*(4), 128–149. doi:10.1257/app.2.4.128

Brambilla, I., César, A., Falcone, G., & Gasparini, L. (2023). The impact of robots in Latin America: Evidence from local labor markets. *World Development*, *170*, 106271. doi:10.1016/j.worlddev.2023.106271

Butcher, T., Dickens, R., & Manning, A. (2012). Minimum wages and wage inequality: Some theory and an application to the UK. Technical Report CEP Discussion Paper 1177. Centre for Economic Performance, London School of Economics and Political Science.

Cengiz, D., Dube, A., Lindner, A., & Zipperer, B. (2019). The effect of minimum wages on low-wage jobs. *Quarterly Journal of Economics*, *134*(3), 1405–1454. doi:10.1093/qje/qjz014

Cruces, G., Porto, G., & Viollaz, M. (2018). Trade liberalization and informality in Argentina: Exploring the adjustment mechanisms. *Latin American Economic Review*, *27*(1), 1–29. doi:10.1186/s40503-018-0061-1

Dube, A. (2019). Minimum wages and the distribution of family incomes. *American Economic Journal: Applied Economics*, *11*(4), 268–304. doi:10.1257/app.20170085

Engbom, N., & Moser, C. (2022). Earnings inequality and the minimum wage: Evidence from Brazil. *American Economic Review*, *112*(12), 3803–3847. doi:10.1257/aer.20181506

Ferreira, F. H. G., Firpo, S., & Messina, J. (2014). A more level playing field? Explaining the decline in earnings inequality in Brazil, 1995-2012. Working Paper 12, IRIBA.

Ferreira, F. H. G., Firpo, S., & Messina, J. (2017). Ageing poorly?: Accounting for the decline in earnings inequality in Brazil, 1995-2012. Policy Research Working Paper 8018, World Bank.

Flórez, L. A., Hermida, D., & Morales, L. F. (2022). The heterogeneous effect of minimum wage on labor market flows in Colombia. *Borradores de Economía; No. 1213*.

Fortin, N. M., & Lemieux, T. (2016). Changes in wage inequality in Canada: An interprovincial perspective. *Canadian Journal of Economics/Revue Canadienne D'économique*, *48*(2), 682–713. doi:10.1111/caje.12140

Gasparini, L. (2019). *La desigualdad en su laberinto: hechos y perspectivas sobre desigualdad de ingresos en américa latina*. Documentos de Trabajo del CEDLAS N° 256, Diciembre, 2019. La Plata, Argentina: CEDLAS-IIE-Universidad Nacional de La Plata.

Grau, N., & Landerretche, O. (2011). The labor impact of minimum wages: A method for estimating the effect in emerging economies using Chilean panel data. Working Paper wp329, University of Chile, Department of Economics.

Grau Veloso, N., Miranda, J., & Encina, E. P. (2018). The effects of the minimum wage on employment and wages. Technical Report 466, Series Documentos de Trabajo.

Ham, A. (2018). The consequences of legal minimum wages in Honduras. *World Development*, *102*, 135–157. doi:10.1016/j.worlddev.2017.09.015

Jales, H. (2018). Estimating the effects of the minimum wage in a developing country: A density discontinuity design approach. *Journal of Applied Econometrics*, *33*(1), 29–51. doi:10.1002/jae.2586

Khamis, M. (2013). Does the minimum wage have a higher impact on the informal than on the formal labour market? Evidence from quasi-experiments. *Applied Economics*, *45*(4), 477–495. doi:10.1080/00036846.2011.605763

Lee, D. S. (1999). Wage inequality in the United States during the 1980s: Rising dispersion or falling minimum wage? *Quarterly Journal of Economics*, *114*(3), 977–1023. doi:10.1162/003355399556197

Lemos, S. (2009). Minimum wage effects in a developing country. *Labour Economics*, *16*(2), 224–237. doi:10.1016/j.labeco.2008.07.003

Maloney, W. F., & Mendez, J. N. (2007). *Measuring the impact of minimum wages: Evidence from Latin America*. Chicago, IL: University of Chicago Press.

Manning, A. (2021). The elusive employment effect of the minimum wage. *Journal of Economic Perspectives*, *35*(1), 3–26. doi:10.1257/jep.35.1.3

Maurizio, R., & Vázquez, G. (2016). Impactos distributivos del salario mínimo en américa latina. los casos de la argentina, brasil, chile y uruguay. *Revista Internacional Del Trabajo*, *135*(1), 105–142. doi:10.1111/ilrs.12004

Messina, J., & Silva, J. C. G. (2017). *Wage inequality in Latin America: understanding the past to prepare for the future*. Washington, D.C: Latin American Development Forum Series. World Bank Group.

Neumark, D., & Corella, L. F. M. (2021). Do minimum wages reduce employment in developing countries? A survey and exploration of conflicting evidence. *World Development*, *137*, 105165. doi:10.1016/j.worlddev.2020.105165

Ponczek, V., & Ulyssea, G. (2022). Enforcement of labour regulation and the labour market effects of trade: Evidence from Brazil. *Economic Journal*, *132*(641), 361–390. doi:10.1093/ej/ueab052

Saltiel, F., & Urzúa, S. (2022). Does an increasing minimum wage reduce formal sector employment? evidence from Brazil. *Economic Development and Cultural Change*, *70*(4), 1403–1437. doi:10.1086/714114

Silva, J., Almeida, R., & Strokova, V. (2015). *Sustaining employment and wage gains in Brazil: A skills and jobs agenda*. Washington, DC: World Bank Publications.

Wedenoja, L. (2013). *The employment and wage effects of minimum wages in a context of informality and non-compliance: Evidence from Chile*. Ithaca, NY: Cornell University.