Labor Market Institutions and Wage-Setting Power: Evidence from Latin America and the Caribbean*

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August 2025

Abstract

We measure firms' wage-setting power in 16 Latin American and Caribbean countries. Exploiting variation in firms' exposure to trade and exchange rates, we generate shocks to labor demand to trace out firm-level labor supply curves and quantify labor market power. We estimate an inverse labor supply elasticity of 0.82, implying that workers receive 55 cents per additional dollar produced. Wage-setting power is significantly higher among firms in countries with lower union density, limited collective bargaining, and no unemployment protection. This underscores the role of labor market institutions in shaping firms' wage-setting power and the distribution of the gains from trade.

JEL Classification: J31, J50, O54.

Keywords: firms, labor market power, labor institutions.

*We thank Ricky Andrés Carrillo for excellent research assistance. We thank Jan Eeckhout and seminar participants at the Competition in Latin America and the Caribbean IDB Discussion Seminars and the LACEA annual meeting for their useful comments. We gratefully acknowledge financial support from the Latin America and the Caribbean Research Network of the Inter-American Development Bank and the Social Sciences and Humanities Research Council (SSHRC) of Canada - Insight Grant Program.

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1 Introduction

When employers face limited competition for workers, they can set wages below labor productivity (Azar and Marinescu, 2024). This depresses the labor share of income and can reduce overall welfare. A growing body of evidence documents substantial wage markdowns in both high- and low- or middle-income countries (see, e.g., Azar et al., 2022; Berger et al., 2022; Yeh et al., 2022; Bassier et al., 2022; Kroft et al., 2025; Amodio and de Roux, 2024; Muralidharan et al., 2023; Bassier, 2023). Yet our understanding of what determines labor market power—and which policies can mitigate it—remains limited. Labor market institutions and regulations are natural candidates, as they shape employment conditions and influence the balance of power between workers and firms (Nickell, 1997; Heckman and Pagés, 2003). For instance, stringent labor regulations can strengthen workers' bargaining positions and reduce wage markdowns (Botero et al., 2004).

A key obstacle in studying the relationship between labor institutions and labor market power is obtaining a measure of wage-setting power that is reliable, consistent, and comparable across countries. Two main barriers stand in the way. The first is measurement itself. Approaches based on production function estimation face well-known limitations, especially under imperfect competition, while the alternative—constructing a labor demand shifter to trace out the labor supply curve—requires data and sources of variation that are rarely available. Second, when such data do exist, they often lack cross-country comparability. Yet developing consistent cross-country measures of labor market power is crucial, as the most meaningful institutional variation occurs between countries.

In this paper, we leverage harmonized firm-level data from the World Bank Enterprise Survey (WBES) to construct a comparable measure of labor market power across 16 countries in Latin America and the Caribbean (LAC), and to examine how this changes with labor market institutions. Specifically, we combine data on export flows and exchange rates to create firm-specific, depreciation-driven shocks to marginal revenue productivity. We then analyze firms' employment and wage responses to estimate the inverse labor supply elasticity—a direct measure of wage-setting power. The harmonized structure of the WBES data enables us to explore how labor market power varies not only across firms but, crucially, across countries with different institutional environments, including differences in the minimum wage, collective bargaining coverage, and unemployment protection. We show that countries with stronger pro-labor institutions exhibit significantly lower levels of wage-setting power.

Our focus on the LAC region is strategic, given the research question at hand. First, while countries in this region share many structural and economic characteristics, they display substantial heterogeneity in labor market institutions and regulations (Heckman and Pagés, 2003; Kugler, 2019). Some, like Brazil and Argentina, have comprehensive labor codes that favor workers, while others, such as Chile and Colombia, maintain more flexible regulatory frameworks (ILO,

2018). This institutional diversity is crucial for examining how labor market regulations shape firms' wage-setting power. Second, LAC countries are deeply integrated into global trade. Since 2009, the region has recorded the highest export growth globally (see Appendix Figure A1). Exporting firms span a wide range of sectors and account for a substantial share of formal wage employment—45% in our sample. This extensive export activity enables us to construct exchange rate-driven shocks that generate exogenous variation in marginal revenue productivity and allow us to trace out firm-level labor supply curves.

Our empirical strategy leverages pre-determined differences in export destinations across 2-digit sectors (ISIC Rev. 3.1), combined with variation in real exchange rates, to generate firm-specific, depreciation-driven demand shocks. We begin by showing that these shocks lead to significant increases in firm sales, employment, and wages—even after controlling for time fixed effects specific to each sector and local labor market within each country. This preliminary finding alone provides clear evidence of labor market power: in a perfectly competitive labor market, idiosyncratic shocks to a firm's marginal revenue product would increase employment but leave wages unchanged. To quantify wage-setting power, we regress changes in wages on changes in employment, using the export shock as an instrument. Our estimates imply a firm-level inverse labor supply elasticity of 0.82, corresponding to a wage markdown of 1.82—indicating that the average worker earns about 55% of their marginal product. Importantly, we show that the observed wage increases are not driven by quality upgrading, as the share of skilled workers, the product mix, and the production processes do not change. The results are robust to alternative definitions of the export shock and a range of sample restrictions.

As a first step, we demonstrate that labor market power varies meaningfully with firm- and country-level characteristics, setting the stage for our institutional analysis. Consistent with previous studies, firms that are larger, more productive, employ a more skilled workforce, or operate in less market-connected areas exhibit high wage markdowns. We also find that labor market power is significantly higher among privately owned and foreign-owned firms. At the country level, firms in low-income economies and in countries with a low labor share of national income tend to exhibit higher markdowns. Finally, we find that labor market power is significantly larger in countries with high self-employment rates.

We then turn to labor market institutions. Our results indicate that markdowns are significantly larger in countries with low union density, limited collective bargaining, and minimal unemployment protection. We also find that a binding minimum wage is associated with lower labor market power. Taken together, these results suggest that pro-labor institutions play a key role in curbing firms' wage-setting power and in shaping how the gains from global integration are distributed between firms and workers.

Our research contributes to multiple strands of the literature. While the presence of employer

market power is now well documented in single-country studies,[1] our paper adds to the limited set of studies offering cross-country comparisons (Armangué-Jubert et al., 2025; Eslava et al., 2025; Amodio et al., 2024).[2] Moreover, our paper contributes to understanding the determinants of labor market power. A few recent studies have begun to address this question in country-specific contexts. For instance, Pham (2023) and Felix (2021) examine the effects of trade liberalization on wage markdowns in China and Brazil, respectively; Amodio et al. (2025) link self-employment rates to labor market power in Peru; and Estefan et al. (2024) explore the role of outsourcing policies in Colombia. A notable exception is Amodio et al. (2024), who document how labor market power is influenced by the prevalence of self-employment and the existence of unemployment protection using a sample if 82 low- and middle-income countries. While they also use WBES data and have a cross-country perspective, there are two main differences with our analysis. First, they estimate wage markdowns across manufacturing firms using a production function approach. We instead exploit plausibly exogenous variation in firm-level labor demand generated by exchange rate-driven export shocks. Our approach allows to estimate wage-setting power directly, using a reduced-form strategy that does not depend on firms' input choices or assumptions about output market structure.[3] Second, the research questions are different. Their focus is on documenting the link between markdowns, self-employment, and unemployment protection at the country level, whereas we examine how wage-setting power varies with labor market institutions. Our findings show that pro-labor institutions and regulations—including labor unions, unemployment protection, and minimum wages—are systematically associated with lower wage markdowns. This has important policy implications, suggesting that labor institutions can curb firms' wage-setting power and influence how the gains from trade are distributed between firms and workers.

Our paper also contributes to the literature on the relationship between international trade and wages, as our instrument for labor demand shifts is based on export shocks. A large body of work documents a positive association between trade exposure and wages. Frías et al. (2024) establish a causal link between exporting and higher wage premiums, while Alfaro-Ureña et al. (2021) show that multinationals tend to pay a wage premium.[4] Our findings suggest, however, that a large share of the gains from trade does not accrue to workers: our markdown estimates

[1] See, for example, Azar et al. (2022); Berger et al. (2022); Yeh et al. (2022); Bassier et al. (2022) for the U.S.; Tortarolo and Zárate (2020); Amodio and de Roux (2024) for Colombia; and Muralidharan et al. (2023); Brooks et al. (2021); Bassier (2023); Cali and Presidente (2023) for India, China, South Africa, and Indonesia.

[2] The few studies adopting a cross-country perspective use WBES data. Armangué-Jubert et al. (2025) develop a general equilibrium model of imperfect labor market competition and calibrate it to five (artificial) representative economies at different income levels. Eslava et al. (2025) explores the link between inequality, markups, and markdowns.

[3] For a discussion of these assumptions, see de Roux et al. (2021). In particular, control function methods require that input choices—such as investment or materials use—be monotonically related to unobserved productivity. Moreover, in the presence of output market power, markdowns on one input cannot generally be identified unless all other input markets are perfectly competitive (Morlacco, 2019; Brooks et al., 2021; Yeh et al., 2022). Ackerberg and De Loecker (2024) further highlight the challenges of production function estimation under imperfect competition.

[4] See Harrison and Scorse (2010) and Boudreau (2024) for studies on working conditions in exporting firms.

imply that, on average, employees receive only 55 cents in wages for every dollar they generate at the margin. This does not necessarily imply that export-led growth is detrimental. Exporting firms may exercise greater wage-setting power while still offering higher wages than domestically oriented firms—particularly in settings where well-paying alternatives are limited. Nonetheless, our results highlight the importance of policy design in ensuring that increased trade openness is accompanied by a more equitable distribution of the gains from trade.

The remainder of the paper is structured as follows. Section 2 describes the data. Section 3 outlines the construction of the export shocks and the empirical strategy for estimating wage markdowns. Section 4 presents the baseline results. Section 5 examines the relationship between firm characteristics and labor market power, while Section 6 analyzes the role of labor market institutions. Section 7 concludes.

2 Data

Our primary data source is the World Bank Enterprise Survey (WBES), a globally harmonized survey administered to owners and top managers of formal firms in manufacturing, retail, and services across 155 countries. The standardized methodology ensures a high degree of data comparability across countries.[5] The survey collects a wide range of information about each firm, including sector, annual sales, input and labor costs, employment, workforce composition, and trade activities such as exports and imports.[6] Importantly, we use a confidential version of the WBES dataset that includes firm geolocation. This information allows us to identify the relevant local labor market for each firm, which, as we explain below, is crucial for our identification strategy.

The survey is representative at the country level, covering firms with at least five employees engaged in formal (non-agricultural) economic activities. It is administered face-to-face, with survey waves conducted in different years and at varying intervals across countries. For our analysis, we use WBES data from 2006 (the first year of the survey) to 2019 (the year prior to the COVID-19 pandemic). The original dataset is a repeated cross-section, but several firms appear in multiple waves. We focus on the panel dimension of the WBES, which is essential for implementing the identification strategy described in Section 3.

Our sample includes all panel firms in LAC countries for which wage data are available. It consists of 3,038 firms located in 210 local labor markets across 16 countries (see Appendix Table A1).[7] Among these firms, 2,531 are observed in two waves and 507 in three waves. Table

[5] Firms are selected using random sampling techniques with three stratification levels to ensure representativeness across firm size (5–19 employees; 20–99 employees; and 100+ employees), economic activities (manufacturing, retail, and other services—with further subcategories in selected economies), and subnational region.

[6] We follow the International Standard Industrial Classification (ISIC), Revision 3.1, and define a sector at the 2-digit level.

[7] Another widely used international firm-level dataset is Historic ORBIS, which provides balance sheet data on

1 presents summary statistics, and Appendix Table A12 provides a detailed description of all variables.[8] The median firm has a turnover of USD 0.89 million, employs 30 workers, and pays an average annual wage of USD 5,006. Thirty percent of firms are exporters, selling an average of 9.3% of their revenues abroad.[9] Between survey waves, the median firm experiences a 7.6% increase in employment and an 18% rise in wages.

In addition to firm-level data, we use country-level indicators on labor market institutions from the International Labour Organization (ILO). These data provide harmonized measures of key institutional features—such as union density, collective bargaining coverage, the presence of unemployment protection, and minimum wage levels—across our sample of countries. The ILO is the only source that offers indicators on labor market institutions that are both comparable across countries and consistent over time, making it uniquely suited for cross-country comparisons. This consistency allows us to systematically examine how variation in institutional environments shapes firms' wage-setting power.

We also use information on exchange rates and inflation. Nominal exchange rates and consumer price indexes are obtained from the IMF, the Bank of Italy, the World Bank, and the OECD. Finally, we use data from WITS on bilateral export flows by sector at the 2-digit level (ISIC Rev. 3.1).

3 Empirical strategy

The wage-setting power of employers is measured by the (inverse) elasticity of the labor supply they face (Manning, 2003). Estimating this elasticity is challenging because wages and employment are jointly determined in equilibrium by the interaction of labor supply and demand. To achieve identification, we build on the strategy proposed by Amodio and de Roux (2024). Specifically, we exploit pre-determined differences in export destinations across 2-digit sectors, combined with variation in real exchange rates, to generate firm-specific shocks to exporters' marginal revenue productivity and, consequently, to their labor demand.[10] Under perfect competition, a positive export shock increases employment but leaves wages unchanged, as firms take the wage rate as given. In contrast, when firms have wage-setting power, both employment and wages rise in response to the shock. This joint response enables the identification of the inverse labor supply elasticity by taking the ratio of the log change in wages to the log change in employment.

private and public companies across more than 200 countries and multiple years. The only countries where ORBIS includes more observations than WBES are Colombia and Mexico. Moreover, ORBIS lacks the export destination and trade flow information required to implement our identification strategy. Analyses using ORBIS are generally limited to production function approaches, which have well-known limitations (see Footnote 3).

[8] Table 1 reports descriptive statistics for the sample of firms used in the main estimation.

[9] All nominal variables are expressed in constant 2000 USD and correspond to their first observed year in the panel. Exporter firms are defined as those that exported directly or indirectly in that year.

[10] See Pham (2023) and Frías et al. (2024) for similar identification strategies.

More formally, we aim to estimate the inverse elasticity of the labor supply curve

$$\epsilon = \frac{\partial W_{it}}{\partial N_{it}} \frac{N_{it}}{W_{it}} = \frac{\partial \ln W_{it}}{\partial \ln N_{it}}$$

with N_{it} being the number of workers employed by firm i at time t and W_{it} the average wage.[11] This can be estimated from the regression specification

$$\Delta \ln W_{it} = \epsilon \, \Delta \ln N_{it} + \delta_{sct} + \mu_{mct} + u_{it} \tag{1}$$

with s, m, and c denoting, respectively, the 2-digit sector (ISIC Rev. 3.1), local labor market, and country the firm belongs to.[12] t denotes years. For each firm, the outcome difference is calculated between available waves.[13] The δ_{sct} term represents a full set of 2-digit sector $\times$ country $\times$ year fixed effects, netting out both observed and unobserved shocks that affect all firms in the same sector and country. μ_{mct} denotes local-labor-market $\times$ year fixed effects, constructed using firms' geolocation data from the confidential version of the WBES. By absorbing shocks common to firms in the same local market and year, these fixed effects help to separate out firm-level shocks from market-level shocks, which is crucial for identifying the inverse elasticity of labor supply that is specific to the firm, as discussed below. Finally, u_{it} captures any residual determinants of the change in wages.

The OLS estimate of ϵ from equation (1) is biased and inconsistent because wages and employment are determined jointly in equilibrium. We thus implement an IV strategy and use an instrument Z_{it} as labor demand shifter. The first stage regression is

$$\Delta \ln N_{it} = \gamma \, Z_{it} + \lambda_{sct} + \theta_{mct} + v_{it} \tag{2}$$

where again λ_{sct} and θ_{mct} denote 2-digit sector $\times$ country $\times$ year and local-labor-market $\times$ year fixed effects, and v_{it} is the residual term.

The instrument, Z_{it}, is a depreciation-driven export shock. It captures firms' exposure to exchange rate fluctuations between survey waves by combining their export status with changes in the real exchange rate of their export destinations. We construct it as follows. First, for each

[11] In the WBES data, we don't observe actual wages but the total payroll which equals wages plus other labor costs. This implies that we obtain a lower bound for the wage elasticity if labor costs change less than proportionally with wages. This is likely the case since other labor costs are mostly fixed.

[12] To define local labor markets, we match firms' geolocalization with a shape file of administrative units. For each country, we use secondary sources to choose the level of administrative unit that best captures local labor markets. See Appendix B for details.

[13] For example, if firm i is observed in survey waves in years t_0 and t_1, with $t_0 < t_1$, then the estimation sample will include only one observation for this firm with the outcome $\Delta \ln W_{it} = \ln W_{it_1} - \ln W_{it_0}$. The year t in equation (1) of the terms δ_{sct} and μ_{mct} would correspond to t_1. If the firm is observed in three waves in years t_0, t_1, and t_2 with $t_0 < t_1 < t_2$, then the sample includes two observations for this firm with outcomes $\ln W_{it_1} - \ln W_{it_0}$ and $\ln W_{it_2} - \ln W_{it_1}$. For this second firm, the years t in equation (1) of the terms δ_{sct} and μ_{mct} would correspond to t_1 and t_2.

2-digit sector s in country c and export destination d in year t, consider the share of exports

$$S_{scdt} = \frac{Exp_{scdt}}{\sum_d Exp_{scdt}}$$

where Exp_{scdt} is the export value from 2-digit sector s in country c to destination d. For any two survey years t_0 and t_1 with $t_1 > t_0$, we then compute the change in the real exchange rate $\Delta\widetilde{R}_{cd,t_1} = \widetilde{R}_{cd,t_1} - \widetilde{R}_{cd,t_0}$ where

$$\widetilde{R}_{cdt} = R^n_{cdt}\left(\frac{CPI_{dt}}{CPI_{ct}}\right)$$

and R^n_{cdt} is the nominal exchange rate in units of country c's currency for one unit of the currency of country d. CPI_{ct} and CPI_{dt} are the consumer price indexes of country c and country d, respectively. An increase in $\widetilde{R}_{cdt}$ corresponds to a real depreciation of country c's currency.[14] This means that each unit sold abroad commands more units of domestic currency, increasing marginal revenue productivity.

We then combine export shares at t_0 with the changes in exchange rates between t_0 and t_1 to obtain the change in the effective exchange rate for sector s, i.e.

$$E_{sc,t_1} = \sum_d S_{scd,t_0}\Delta\widetilde{R}_{cd,t_1}$$

Finally, we define an export dummy X_{i,t_0} that is equal to one if firm i was exporting in t_0 and obtain the depreciation-driven export shock as

$$Z_{it} = \mathbb{I}\left\{X_{i,t_0} \times E_{sc,t_1} > 0\right\}. \tag{3}$$

which takes values in $\{0, 1\}$. In our strategy, the variation in N_{it} that identifies ϵ in equation (1) comes solely from the export shock Z_{it}. Intuitively, the shock increases the firm's marginal revenue productivity and thus labor demand holding labor supply fixed. As such, we measure labor market power by leveraging a plausible source of exogenous variation to trace out the labor supply curve and estimate its inverse elasticity ϵ.

We construct our instrument around real depreciations, which induce positive shifts in firms' export demand and result in immediate and sizable increases in sales, employment, and wages. By contrast, real appreciations tend to produce weaker or delayed effects, as firms often reallocate resources toward domestic markets rather than undergoing sharp contractions. Additionally, 74% of annual changes in $\widetilde{R}_{cdt}$ in our sample are depreciations. Concentrating on these episodes sharpens identification and avoids conflating asymmetric firm responses that could bias our estimates.[15]

[14] For firms that we observe in three waves, we also compute $\Delta\widetilde{R}_{cd,t_2} = \widetilde{R}_{cd,t_2} - \widetilde{R}_{cd,t_1}$.

[15] Consistent with this argument, we show below that appreciations have no effect on employment and wages

We use binary indicators—export and depreciation dummies—instead of continuous measures for two main reasons. First, discrete variables avoid imposing a specific functional form on how export intensity or exchange rate changes translate into firm-level shocks, allowing for non-linear pricing and adjustment costs. Second, the binary approach transparently captures the extensive margin of exposure by distinguishing firms that faced an export demand shock from those that did not. This specification yields a straightforward and interpretable first-stage relationship without relying on arbitrary continuous transformations. To allay concerns that small depreciations or marginal exporters might drive our findings, we perform two robustness checks using more stringent definitions of the export shock (see Section 4). First, we redefine the depreciation shock to include only real depreciations exceeding the 10th percentile of observed positive changes, thereby excluding trivial exchange rate movements. Second, we restrict the export dummy to firms with an export share above the 10th percentile of the country-specific export-share distribution (conditional on exporting), thereby excluding marginal exporters before interacting it with the depreciation dummy. Using binary indicators also reduces sensitivity to minor reporting inaccuracies in exchange rates or export shares, thereby mitigating attenuation bias in the first stage.[16] In both cases, the first-stage relationship remains strong, and the estimated labor supply elasticity is unchanged, confirming that our binary specification is not driven by negligible depreciations or by firms with minimal export exposure.

Our empirical strategy requires at least two observations per firm. In the WBES, this condition is met for 3,038 firms in LAC countries (see Appendix Table A1). To construct the export shock, we rely on sector-level export flow data. However, such data are unavailable for sectors that do not engage in international trade, reducing the sample to 2,083 observations. Finally, to strengthen the instrument, we restrict the sample to firms in the top 13 export-oriented 2-digit sectors.[17] Our final sample consists of 1,119 firm-year observations. Appendix Table A2 shows that firms included in the final estimation sample do not differ from those excluded across any of the baseline characteristics considered in our analysis. Panel A reports mean comparisons, indicating that the two groups are broadly similar except for the share of exports—which is, by construction, higher among firms in the top 13 export sectors. Panel B complements this analysis with a regression where the outcome is a dummy equal to one if the firm is included in the estimation sample. Column 1 confirms that export share is the only significant predictor. Columns 2 and 3 show that, conditional on export status, firms in the estimation sample do not differ systematically from those excluded—whether exporters or non-exporters.[18] In our final estimation sample, 40% of firms are exporters, and 28% experience a positive export shock

(Appendix Table A3).

[16] Measurement error in continuous variables used to construct an instrument weakens the correlation between the instrument and the endogenous regressor, reducing instrument strength. Discretizing into a binary indicator mitigates this issue, as small reporting errors are unlikely to alter whether a firm is classified as affected, thus preserving instrument relevance and power.

[17] For each country, we construct this list by summing sectoral exports in the WITS data across sample years.

[18] We define exporter firms as those that exported directly or indirectly in t_0.

between consecutive waves.

3.1 Identifying Assumptions and Related Concerns

The validity of our identification strategy rests on three assumptions. First, the export shock Z_{it} must be relevant, meaning it should have a sufficiently strong effect on the firm's marginal revenue product of labor and, consequently, on employment. Second, Z_{it} should be as good as randomly assigned, and therefore uncorrelated with other unobserved determinants of changes in employment and wages. Third, Z_{it} must affect wages only through its impact on labor demand and employment—without directly influencing firm-specific labor supply conditions.

A first concern with this strategy is that export shocks may be correlated across firms within the same sector and local labor market. If so, the estimated firm-level elasticity could be confounded by market-level responses, including shifts in aggregate labor supply. We address this issue by including a rich set of fixed effects: λ_{sct} and δ_{sct} account for shocks at the sector $\times$ country $\times$ year level, while θ_{mct} and μ_{mct} control for shocks at the local labor market $\times$ year level.

A second potential concern is that the export shock Z_{it} affects wages W_{it} through channels other than its impact on labor demand and employment N_{it}, thereby violating the exclusion restriction. There are two main ways this could occur. First, export shocks might induce firms to upgrade product quality, which could require more skilled labor and lead to higher wages. However, this seems unlikely in our setting: as discussed in Section 4, we find no evidence that export shocks are associated with quality upgrading. Second, if workers have bargaining power, part of the rents generated by the export shock could be shared with them through higher wages. Yet, as shown in Section 6, labor market power is higher in countries with weaker labor unions and limited collective bargaining coverage, suggesting that rent-sharing is unlikely to explain our findings.

A third concern is that our instrument may be relevant only for exporting firms, which could differ systematically from non-exporters. To address this, we control for baseline firm characteristics—employment, average wages, and export status—measured in the period preceding the shock. Specifically, for firms observed in two survey waves in years t_0 and t_1 ($t_0 < t_1$), we include these controls as measured in t_0. For firms observed in three waves ($t_0 < t_1 < t_2$), we include them for both t_0 and t_1. This enhances comparability between shocked and non-shocked firms by conditioning on their initial position along the labor supply curve. In essence, identification comes from variation in the export shock that is conditional on initial employment, wages, and export status—within the same 2-digit sector and local labor market.

A fourth concern is that exchange rate fluctuations may influence the prices of imported inputs, thereby indirectly affecting firms' employment and wage decisions (de Roux et al., 2021). We address this possibility by constructing an import shock measure, I_{it}, that is analogous to our

export shockbut based on import origins by 2-digit sector and the firm's import status in t_0.[19] Finally, we cluster the standard errors along both the local labor market and economic activity $\times$ country dimension.[20]

4 Estimates of labor market power

We begin by establishing the relevance of our instrument.[21] Columns 1 to 3 of Table 2 show that the export shock has a positive effect on firms' sales, which becomes statistically significant once initial sales levels and export status are controlled for. This finding is consistent with a real depreciation increasing marginal revenue productivity, thereby boosting output and sales. Labor demand responds accordingly: Columns 4 to 6 show that firms exposed to the export shock significantly expand employment. This confirms that our instrument generates the variation necessary for identification. Next, we show that the export shock is correlated with changes in both employment and wages. In the left panel of Figure 1, we plot the distribution of employment changes across survey waves, comparing firms that do and do not experience a shock ($Z_{it} = 1$ vs. $Z_{it} = 0$). Consistent with the results in Table 2, firms hit by the export shock display markedly higher employment growth. The right panel shows a similar pattern for wage changes.

Table 3 presents our main results, reporting the reduced-form, first-stage, and IV estimates of the inverse labor supply elasticity, ϵ, from equation (1), our measure of labor market power. Columns 1 and 2 show results for our baseline estimation sample, which includes firms in the top 13 export sectors.[22] The first row confirms that the export shock leads to increases in both employment and average wages. The estimated value of ϵ from the baseline specification is 0.82, implying that workers at exporting firms produce, on the margin, 82% more than what they receive in wages. This corresponds to workers earning about 55 cents for every marginal dollar they generate.[23]

[19] We derive the share of imports as $SI_{scot} = Imp_{scot}/(\sum_d Imp_{scot})$, where Imp_{scot} is the total import value from 2-digit sector s (ISIC Rev. 3.1), in country c, from origin o from the WITS data. Then we obtain $I_{sc,t_1} = \sum_o SI_{sco,t_0} \Delta \widetilde{R}_{cd,t_1}$, where $\Delta \widetilde{R}_{cd,t_1}$ is defined as before. Finally, the import shock term is $I_{it} = \mathbb{I}\{I_{i,t_0} \times I_{sc,t_1} > 0\}$ where $I_{i,t_0} = 1$ if the firm imported in t_0 and zero otherwise.

[20] Firms in our final sample can be classified in three broad economic activities: manufacturing, retail, and services. Our results remain consistent when using alternative clustering approaches: using the 2-digit sector (ISIC Rev. 3.1) instead of the three broad economic activities, or defining clusters at the local labor market $\times$ and 2-digit sector.

[21] Appendix Figure A2 plots Z_{it} both across and within countries and 2-digit sectors, showing substantial variation in our export shock measure.

[22] In selecting the estimation sample, we aim to maximize the number of observations while ensuring the strength of the instrument. Appendix Table A4 reports estimates of ϵ for samples of firms in the top export sectors, ranging from the top 15 to the top 5. The Kleibergen-Paap F-statistic begins to significantly exceed the conventional threshold of 10 in more restrictive samples—starting around the top 13 export sectors—and tends to increase as the sample becomes narrower. Across all specifications, the export shock has a strong effect on both employment and wages, and the estimated value of ϵ is remarkably stable throughout.

[23] In regressions not reported here, using a sample that includes all exporting sectors, the implied wage share

These results remain largely unchanged when we implement more restrictive definitions of the export shock. In Columns 3 and 4, we define the export shock as positive only if the depreciation exceeds the 10th percentile of the distribution of depreciations in the sample. In Columns 5 and 6, we redefine exporter status by setting $X_{i,t_0} = 1$ in equation 3 only for firms whose export share lies above the 10th percentile of the country-specific export share distribution, conditional on exporting. By excluding marginal exporters, this definition ensures that the export shock captures firms with more substantial engagement in international trade. In all cases, the values of the *F*-statistics indicate that the instrument is strong, and the estimated ϵ is very similar across specifications.[24]

Our results are also robust across alternative estimation samples based on the number of 2-digit sectors included in the analysis—from the top 15 to the top 5 exporting sectors. As shown in Appendix Table A4, the estimated values of ϵ remain remarkably consistent across these different samples. As an additional robustness check, we re-estimate our main specification excluding one country at a time. Appendix Figure A3 shows that the estimated ϵ remains stable throughout, indicating that our findings are not driven by any single country. Finally, the statistical significance of our estimates is robust to alternative clustering choices—grouping standard errors by country $\times$ 2-digit industry, local labor market, or 2-digit industry $\times$ local labor market (Appendix Table A5).

As noted in Section 3, one possible concern with our approach is that exchange rate-driven export shocks may induce firms to upgrade product quality and hire more skilled workers, who typically command higher wages. This could raise both the average wage paid by exporting firms and increase within-industry and within-firm wage dispersion (Verhoogen, 2008; Frías et al., 2012). To address this concern, we conduct several exercises. First, we use WBES data on the introduction of new products and processes as proxies for quality upgrading. Appendix Table A6, Columns 1 and 2, shows no effect of the export shock on either measure. Second, if quality upgrading were occurring, we would expect an increase in the share of skilled workers. However, Columns 3 and 4 show that the export shock has no effect on the share of either skilled or production workers. Column 5 also shows no change in sales per worker, suggesting no shift in input mix or production technology. Taken together, these results suggest that quality upgrading is not driving our findings. Moreover, when we include the share of skilled workers, production workers, sales per worker, and the introduction of new products and processes as controls in the IV specification, the estimated ϵ remains stable across all models (Appendix Table A7).

declines to \$0.35 per dollar of output. However, the first-stage F-statistic falls to 3.5, indicating a weak instrument. These results should therefore be interpreted with caution.

[24]Results in Appendix Table A3 show that export shocks defined using episodes of exchange rate appreciation are not relevant, motivating our focus on real depreciations.

5 Labor market power and firm characteristics

In this section, we examine the determinants of labor market power by analyzing variation across firms. Panel A of Table 4 presents estimates of ϵ by groups defined along different firm characteristics. For each dimension of heterogeneity, we define two dummy variables based on whether a firm is above or below the sample median. We then interact both the endogenous variable in equation (1) ($\Delta \ln N_{it}$) and the instrument in equation (2) (Z_{it}) with these dummies to obtain the corresponding IV estimates of ϵ. For each characteristic, we report the *p*-value for a test of the null hypothesis that ϵ is equal across the two groups. Below, we discuss the results and relate them to existing findings in the literature.

We begin by exploring the relationship between labor market power and firm size. Column 1 of Table 4 shows that labor market power is high for large firms. This is consistent with wage markdowns arising from oligopsonistic (Cournot) competition in labor markets and aligns with findings from Estefan et al. (2024) for Mexico and Amodio and de Roux (2024) for Colombia.[25] In Column 2, we examine heterogeneity by workforce skill composition. We find that labor market power is high and statistically significant only for firms employing a large share of skilled workers. This is likely because low-skill workers tend to have more outside options (see, for instance, Tortarolo and Zárate, 2020, Azar et al., 2022 and Amodio et al., 2025). Similarly, more productive firms, as proxied by sales per worker in Column 3, face inelastic labor supply curves. Note that, while the point estimates vary across groups, these differences are not statistically significant.

Next, we explore the role of market access. To this end, we construct a measure of market access following Donaldson and Hornbeck (2016).[26] Column 4 shows that wage markdowns are high and statistically significant only among firms with limited market access. This is consistent with the idea that firms located closer to transportation infrastructure are more exposed to labor market competition due to their proximity to other employers (Brooks et al., 2021).

Column 5 shows that foreign-owned firms exhibit significantly higher labor market power than domestic firms (significant at the 10% level). This likely reflects their greater bargaining power, which may stem from offering better amenities or from a more credible threat of relocating operations abroad if labor costs rise (Estefan et al., 2024). This finding is consistent with the evidence from Alfaro-Ureña et al. (2021), who document limited wage-setting power among domestic firms in Costa Rica. Additionally, Column 6 indicates that state-owned firms have significantly smaller wage markdowns than private firms (at the 5% level), consistent with the

[25] Basic models incorporating search and matching frictions instead predict that labor market power declines with firm size in equilibrium (Burdett and Mortensen, 1998). Our findings suggest that strategic interactions among employers play a more prominent role in Latin America.

[26] To calculate market access, we use each firm's geolocation to identify the most cost-effective freight route to approximately 7,000 global population centers. Market access for each firm is then calculated as the weighted average of the population of each center, with weights given by the inverse of the lowest-cost freight route. See Appendix Table A12 for details.

view that public firms may pursue broader objectives beyond profit maximization. Finally, Column 7 examines how wage markdowns vary with the stringency of the minimum wage, proxied by the ratio between a firm's average wage and the country's minimum wage. We postpone the discussion of this result to the next section on labor market institutions.

6 Labor market power and labor market institutions

A key contribution of our analysis is that it delivers estimates of wage-setting power that are comparable across countries. This allows us to examine how labor market power varies with country-level characteristics, specifically labor market institutions and regulations. For each characteristic, we define two dummy variables indicating whether a firm is located in a country above or below the sample median. As before, we interact both the endogenous variable and the instrument with these dummies to estimate separate IV coefficients for each group, yielding group-specific estimates of ϵ.

Table 4, Panel B, presents the results. Column 1 explores differences by income level. Labor market power is high and significant only for firms in lower-income countries. This is consistent with Armangué-Jubert et al. (2025), who find that labor supply elasticities increase with GDP per capita. A likely explanation is that labor market institutions in lower-income countries tend to favor employers over workers. This is particularly true in Latin America, where labor disputes have historically faced violent repression and unionization rates are low (Mejía and Uribe, 2009; Klor et al., 2021). Column 2 shows that labor market power is high and significant only for firms in countries with a lower labor share of national income, as expected when employers are able to suppress wages below marginal productivity. Additionally, Column 3 indicates that wage markdowns are higher for firms in countries with a greater share of self-employment, with the difference between groups statistically significant at the 5% level. This is consistent with Amodio et al. (2024), who document a hump-shaped relationship between labor market power and self-employment. Our sample of LAC countries lies mostly on the upward-sloping part of that curve—that is, where higher self-employment is associated with higher wage markdowns.

Finally, and most importantly, we examine the relationship between labor market power and institutions. Columns 4 and 5 show that wage markdowns are higher for firms in countries with lower union density or weaker collective bargaining coverage. For both dimensions, the differences between groups are statistically significant—at the 5% and 10% levels, respectively. This pattern supports the idea that, in monopsonistic labor markets, unions and collective bargaining arrangements can help curb firms' wage-setting power (Tortarolo and Zárate, 2020). It is also consistent with evidence from Yeh et al. (2022), who find a negative correlation between industry-level unionization and wage markdowns in the U.S., and with Dodini et al. (2024), who show, using Norwegian data, that strong union presence weakens the negative impact of labor market concentration on earnings. Moreover, Column 6 shows that firms in countries

without unemployment protection also exhibit larger wage markdowns, with the difference statistically significant at the 5% level. This suggests that unemployment benefits—by raising workers' reservation wages and strengthening their outside options—can reduce firms' wage-setting power.

We conclude with an analysis of minimum wage policies, drawing on both country- and firm-level indicators of how binding the minimum wage is. At the country level (Column 7 of Panel B), we compare firms in countries where the average wage-to-minimum wage ratio is above or below the sample median. We find that labor market power is high and significant only in countries where the minimum wage is less binding. This pattern suggests that tighter wage floors, by improving workers' outside options, can limit firms' ability to set wages below competitive levels. At the firm level (Column 7 of Panel A), we use a more granular measure: the ratio of a firm's average wage to the statutory minimum wage in its country. Results show that firms paying closer to the minimum wage exhibit lower labor market power, with the difference statistically significant at the 10% level. This further supports the notion that binding minimum wages constrain firms' wage-setting ability. These findings align with Tortarolo and Zárate (2020) and Muralidharan et al. (2023), who show that wage floors—such as India's NREGA—can raise reservation wages and reduce monopsony power by improving workers' fallback options.

Our heterogeneity results are robust to alternative samples using more or less stringent criteria for defining the top exporting sectors, as shown in Appendix Tables A8 and A9.[27] Moreover, Appendix Tables A10 and A11 show that the results remain consistent under stricter definitions of the export shock—specifically, when the exchange rate depreciation is more substantial or the firm has greater exposure to foreign markets.[28]

7 Conclusion

This paper measures firms' wage-setting power across 16 LAC countries using a harmonized firm-level dataset. Exploiting export shocks driven by exchange rate depreciations, we use an IV strategy to trace out firm-specific labor supply curves and estimate wage markdowns. This approach enables cross-country comparisons and allows us to examine how labor market power varies with the institutional and regulatory environment.

We find that firms wield substantial market power over labor, with workers generating on average 82% more value at the margin than they receive in wages. Importantly, our analysis underscores the central role of labor market institutions in shaping firms' wage-setting power. Firms

[27] In Table A8, we consider the top 14 exporting sectors, which is the broadest sample for which the F-statistic exceeds the conventional threshold of 10. Table A9 reports results for the top 11 sectors, corresponding to the highest F-statistic in Table A4. Qualitatively similar results are obtained when considering the top 15 sectors—although the associated F-statistic drops to around 8—or when restricting the sample to as few as the top 5.

[28] See Section 3 and Table A12 for details on the construction of these alternative shock variables.

in countries with broader collective bargaining coverage, higher union density, and stronger unemployment protection exhibit lower wage markdowns, suggesting that such institutions can meaningfully curb labor market power and enhance workers' gains from economic growth.

At the same time, these policies involve trade-offs. While pro-worker institutions can improve wage outcomes and reduce monopsony power, they may also raise the effective cost of labor—potentially discouraging formal employment, contributing to informality, or leading to rationing when firm productivity is heterogeneous (Ponczek and Ulyssea, 2022; Berger et al., 2025). Moreover, even when firms exert substantial labor market power, integration into global value chains may still result in higher average wages—providing a rationale for export promotion from a broader policy perspective. Effective policy design must account for these interrelated dynamics to enhance firms' competitiveness while ensuring a more equitable distribution of the gains from trade.

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Tables and Figures

Table 1: Descriptive statistics

	Observations	Mean	St. Dev.	p25	p50	p75
Workers (N)	3545	100.40	227.43	12.00	30.00	90.00
Wages (w, annual)	3545	6,862.06	6,369.74	2,575.65	5,005.71	9,251.11
Sales (millions)	3545	5.13	12.60	0.23	0.89	3.60
Exporter	3542	0.30	0.46	0.00	0.00	1.00
Export share	3542	9.34	22.50	0.00	0.00	5.00
Importer	2686	0.75	0.43	0.00	1.00	1.00
$\Delta \ln N$	3545	0.08	0.67	-0.21	0.07	0.38
$\Delta \ln w$	3545	0.18	1.07	-0.34	0.19	0.69
$\Delta \ln$ Sales	3451	0.12	1.07	-0.31	0.15	0.59
Export shock	1960	0.11	0.32	0.00	0.00	0.00
Import shock	1972	0.46	0.50	0.00	0.00	1.00

Sample: Firms in LAC countries included in the panel component of the WBES Global dataset reporting data on wages (see Table A1). The unit of observation is a firm-year. Consistent with the timing of our controls, variables in levels refer to the survey wave at $t-1$. Wages and sales are expressed in constant 2000 USD.

Table 2: Export shocks, sales, and employment

	Δ Log Sales			Δ Log N		
	(1)	(2)	(3)	(4)	(5)	(6)
Export shock	0.312	0.471**	0.495**	0.192***	0.266***	0.258***
	(0.188)	(0.203)	(0.210)	(0.0517)	(0.0527)	(0.0614)
Import shock	0.0781	0.174	0.183	-0.0246	0.0192	-0.00794
	(0.234)	(0.225)	(0.225)	(0.0508)	(0.0467)	(0.0514)
Log sales$_{t-1}$		-0.106***	-0.0876**			
		(0.0356)	(0.0389)			
Log N$_{t-1}$					-0.0703***	-0.0775***
					(0.0168)	(0.0181)
Log w_{t-1}			-0.0868*			0.106***
			(0.0489)			(0.0166)
Share of exports$_{t-1}$			-0.000273			-0.00115
			(0.00122)			(0.000782)
R-squared	0.258	0.285	0.289	0.196	0.215	0.232
Observations	1,051	1,051	1,051	1,119	1,119	1,119

Notes: The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. All variables are defined in Appendix Table A12. All regressions include a set of 2-digit sector × country × year fixed effects and a set of local labor market × year fixed effects. Standard errors clustered at the local labor market and economic activity × country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table 3: Labor market power

Export shock:	Baseline		Large Depreciation		Large Exporter	
	$\Delta \log N$ (1)	$\Delta \log w$ (2)	$\Delta \log N$ (3)	$\Delta \log w$ (4)	$\Delta \log N$ (5)	$\Delta \log w$ (6)
Export shock	0.258***	0.212*	0.255***	0.216*	0.292***	0.224**
	(0.0614)	(0.115)	(0.0605)	(0.117)	(0.100)	(0.0994)
Implied ϵ	0.822**		0.844**		0.766*	
	(0.356)		(0.359)		(0.345)	
F-statistic	17.73		17.85		8.50	
R-squared	0.232	0.550	0.232	0.550	0.232	0.548
Observations	1,119	1,119	1,119	1,119	1,119	1,119

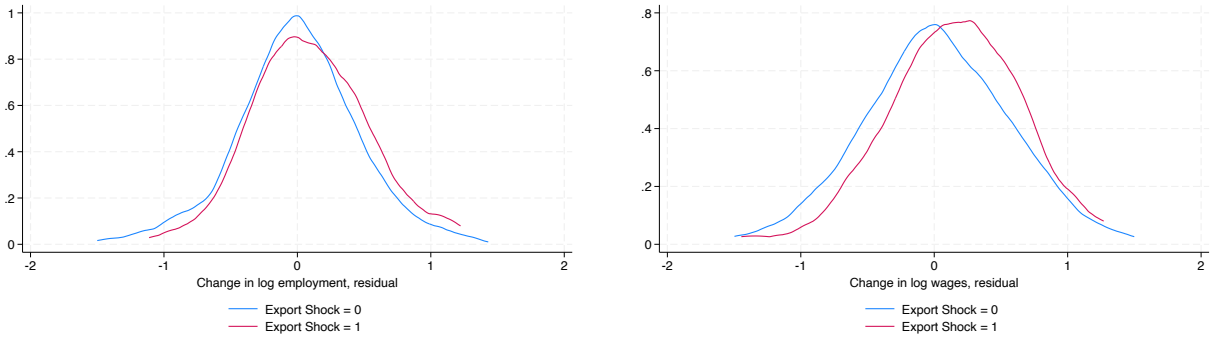
Notes: The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. The first row reports the estimated coefficient of a regression of $\Delta \log N$ or $\Delta \log w$ on the export shock. The second row reports the implied inverse elasticity of labor supply (ϵ), obtained by regressing $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. The shock is defined differently across pairs of columns. In columns 1-2, we use the definition given by equation 3. In columns 3–4, we consider only depreciation shocks above the 10th percentile of the distribution of depreciations, $\Delta \widetilde{R}cd, t$. Specifically, we compute the 10th percentile of the distribution of $\Delta \widetilde{R}cd, t$ across all country–destination–year observations, and set $\Delta \widetilde{R}_{cd,t} = 0$ for all values below that threshold. In columns 5–6, we exclude marginal exporters by coding $X_{i,t_0} = 1$ only for firms whose export share is above the 10th percentile of the country-specific export-share distribution, conditional on exporting. All regressions include the set of controls Log N_{t-1}, Log w_{t-1}, Log Sales_{t-1}, Share of exports_{t-1}, and Import Shock. Details of variable definitions are provided in Appendix Table A12. All regressions include a set of 2-digit sector $\times$ country $\times$ year fixed effects and a set of local labor market $\times$ year fixed effects. Standard errors clustered at the local labor market and economic activity $\times$ country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table 4: Labor market power — Heterogeneity

	Panel A: Firm Characteristics						
	Size	Share Skilled	Sales Per Worker	Market Access	Foreign Owned {0,1}	State Owned {0,1}	$\frac{\text{Avg Wage}_i}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	1.151***	1.358**	1.377***	0.307	1.903***	-1.531	1.073***
	(0.400)	(0.586)	(0.222)	(0.770)	(0.542)	(1.119)	(0.395)
Low [b]	0.951*	0.190	0.946	1.185**	0.678	0.798**	-0.0665
	(0.514)	(0.775)	(0.614)	(0.472)	(0.416)	(0.323)	(0.385)
F-statistics	[11.1; 3.3]	[9.4; 7.4]	[14.0; 8.3]	[8.9; 10.6]	[10.2; 9.3]	[74.1; 17.3]	[6.3; 9.0]
p-value H_0: [a] = [b]	(0.762)	(0.323)	(0.585)	(0.409)	(0.097)	(0.036)	(0.060)
Observations	1,119	1,119	1,119	1,119	1,116	1,116	1,119
	Panel B: Country Characteristics						
	Income	Labor Share	Share of Self-Empl.	Union Density	Collective Bargain	Unempl. Protection	$\frac{\text{Avg Wage}_c}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	0.255	0.514	1.687**	-0.453	0.122	-0.488	1.144**
	(0.679)	(1.277)	(0.750)	(0.501)	(0.486)	(0.619)	(0.526)
Low [b]	1.079**	0.979*	-0.509	1.700**	1.487***	1.275***	0.445
	(0.444)	(0.524)	(0.510)	(0.762)	(0.520)	(0.489)	(0.305)
F-statistics	[8.7; 15.4]	[177.2; 22.8]	[9.5; 12.5]	[11.6; 9.2]	[8.3; 18.4]	[6.3; 18.2]	[11.5; 11.0]
p-value H_0: [a] = [b]	(0.350)	(0.780)	(0.035)	(0.036)	(0.092)	(0.037)	(0.307)
Observations	1,119	1,119	1,119	1,119	1,119	1,119	1,119

Notes: The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. The table reports, for two different groups of firms, the implied inverse elasticity of labor supply (ϵ), obtained from a single regression of $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. All right-hand-side variables are interacted with two indicator variables that define the two groups. In Panel A, columns 1, 2, 3, 4, and 7 define the two groups based on whether the firm is above the median (top row) or below the median (bottom row) of surveyed firms in the country, according to the variable listed in the column header. In column 5, the two groups depend on whether the firm's private foreign ownership is at least 10% (top row) or not (bottom row), and in column 6 on whether the firm is fully owned by the government (top row) or not (bottom row). In Panel B, the two groups correspond to firms located in countries above (top row) or below (bottom row) the median value of the variable listed in the column header. Details of variable definitions are provided in Appendix Table A12. We report two F-statistics, corresponding to the Kleibergen-Paap F-test of the first stage: one for the indicator variable of the first line (reported on the left) and one for the indicator variable of the second line (reported on the right). We also report the p-value of a test of the null hypothesis that ϵ is the same for the two groups. All regressions include the controls Log N$t-1$, Log w$t-1$, Log Sales$t-1$, Share of exports$t-1$, and Import Shock. All regressions include a set of 2-digit sector $\times$ country $\times$ year fixed effects and a set of local labor market $\times$ year fixed effects. Standard errors are clustered at the local labor market and economic activity $\times$ country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Figure 1: Distribution of changes in employment and wages by export shock



Notes: This figure shows the distribution of changes across waves in employment (left panel) and wages (right panel) for firms with and without an export shock. We plot the residuals of a regression on the set of baseline controls, a set of 2-digit sector (ISIC Rev. 3.1) $\times$ country $\times$ year fixed effects, and a set of local labor market $\times$ year fixed effects.

Appendix A Additional Tables and Figures

Table A1: WBES panel global dataset for LAC countries

Country	Firms	LLM
Argentina	452	8
Bolivia	114	3
Chile	269	5
Colombia	412	24
Dominican Republic	58	6
Ecuador	164	7
El Salvador	191	44
Guatemala	223	19
Honduras	92	9
México	159	51
Nicaragua	171	11
Panama	30	3
Paraguay	137	3
Peru	361	11
Suriname	42	3
Uruguay	163	3
Total	3038	210

Notes: Firms in LAC countries included in the panel component of the WBES Global dataset reporting data on wages, sales, and number of workers. LLM is the number of local labor markets.

Table A2: Sample selection

	Panel A: Mean Differences		
	In Estimation Sample	Not in Estimation Sample	Difference p-value
Log N	3.442	3.515	0.151
Log w	8.141	8.207	0.126
Log sales	13.582	13.549	0.658
Share of exports	0.074	0.150	0.000
	Panel B: Regression Analysis		
	Outcome: In Estimation Sample Dummy		
	(1)	(2)	(3)
Log N	-0.00461	-0.0229	0.00322
	(0.00735)	(0.0168)	(0.00971)
Log w	0.00323	-0.00705	0.00430
	(0.00848)	(0.0252)	(0.00811)
Log sales	0.00400	0.0151	-0.00252
	(0.00688)	(0.0133)	(0.00783)
Share of exports	0.0623*	0.00577	
	(0.0369)	(0.0494)	
	All firms	Exporters	Non exporters
R-squared	0.595	0.582	0.609
Observations	3,038	926	2,112

Notes: Panel A presents results of a t-test comparing the mean characteristics of firms included in our estimation sample with those outside it. In Panel B, we estimate a regression in which the outcome is a dummy equal to 1 if the firm appears in the estimation sample of Table 3 (columns 1–2) and 0 if the firm belongs to the panel component of the WBES Global dataset for LAC countries. Columns 2 and 3 report results for the sub-samples of exporters and non-exporters, respectively. We classify a firm as an exporter if it shipped goods—either directly or indirectly—in period t_0.

Table A3: Appreciation shock as alternative instrument

	$\Delta \log N$ (1)	$\Delta \log w$ (2)
Appreciation shock	0.0232	0.114
	(0.0491)	(0.0742)
Implied ϵ	14.52	
	(90.82)	
F-statistic	0.0193	
R-squared	0.206	0.549
Observations	1,119	1,119

Notes: The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. The first row reports the estimated coefficient of a regression of $\Delta \log N$ or $\Delta \log w$ on the appreciation shock. The second row reports the implied inverse elasticity of labor supply (ϵ), obtained by regressing $\Delta \log N$ on $\Delta \log w$, using the appreciation shock as an alternative instrument. All regressions include the set of controls Log N_{t-1}, Log w_{t-1}, Log Sales$_{t-1}$, Share of exports$_{t-1}$, and Import Shock. Details of variable definitions are provided in Appendix Table A12. All regressions include a set of 2-digit sector $\times$ country $\times$ year fixed effects and a set of local labor market $\times$ year fixed effects. Standard errors clustered at the local labor market and economic activity $\times$ country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table A4: Labor market power — Varying top exporting sector samples

	Top 15 Sectors (1)	Top 14 Sectors (2)	Top 13 Sectors (3)	Top 12 Sectors (4)	Top 11 Sectors (5)	Top 10 Sectors (6)	Top 9 Sectors (7)	Top 8 Sectors (8)	Top 7 Sectors (9)	Top 6 Sectors (10)	Top 5 Sectors (11)
	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$	$\Delta \log N$
Export shock	0.204***	0.264***	0.290***	0.291***	0.306***	0.310***	0.315***	0.325***	0.357***	0.357***	0.419***
	(0.0667)	(0.0639)	(0.0623)	(0.0628)	(0.0577)	(0.0614)	(0.0641)	(0.0705)	(0.0733)	(0.0770)	(0.0894)
	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$	$\Delta \log w$
Export shock	0.313***	0.268***	0.273**	0.275**	0.273**	0.310**	0.289**	0.305**	0.414***	0.391***	0.443***
	(0.0942)	(0.0959)	(0.111)	(0.111)	(0.115)	(0.118)	(0.120)	(0.116)	(0.0978)	(0.0821)	(0.0864)
Implied ϵ	1.365***	0.860**	0.822**	0.828**	0.773**	0.913**	0.825**	0.825**	1.054***	0.914**	0.930**
	(0.469)	(0.356)	(0.356)	(0.354)	(0.350)	(0.365)	(0.362)	(0.318)	(0.378)	(0.346)	(0.396)
F-statistic	8.087	13.62	17.73	17.40	25.88	22.42	20.61	18.03	18.32	16.77	19.80
Observations	1311	1176	1119	1101	1048	998	949	804	729	648	558

Notes: The sample is restricted to firms in the top export sectors (2-digit, ISIC Rev. 3.1) listed in the top row. The top and central panels report, respectively, the estimated coefficient of a regression of $\Delta \log N$ and $\Delta \log w$ on the export shock. The bottom panel reports the implied inverse elasticity of labor supply (ϵ), obtained by regressing $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. All regressions include the set of controls Log N_{t-1}, Log w_{t-1}, Log $Sales_{t-1}$, Share of $exports_{t-1}$, and Import Shock. Details of variable definitions are provided in Appendix Table A12. All regressions include a set of 2-digit sector $\times$ country $\times$ year fixed effects and a set of local labor market $\times$ year fixed effects. Standard errors clustered at the local labor market and economic activity $\times$ country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table A5: Labor market power — Alternative clustering options

	$\Delta \log N$ (1)	$\Delta \log w$ (2)	$\Delta \log N$ (3)	$\Delta \log w$ (4)	$\Delta \log N$ (5)	$\Delta \log w$ (6)
Export shock	0.258***	0.212**	0.258***	0.212**	0.258***	0.212**
	(0.0702)	(0.104)	(0.0756)	(0.100)	(0.0693)	(0.0943)
Implied ϵ	0.822**		0.822**		0.822**	
	(0.409)		(0.377)		(0.383)	
F-statistic	13.55		11.70		13.89	
Cluster	Country × 2-digit sector		Local Labor Market		Local Labor Market × 2-digit sector	
R-squared	0.232	0.550	0.232	0.550	0.232	0.550
Observations	1,119	1,119	1,119	1,119	1,119	1,119

Notes: The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. The first row reports the estimated coefficient of a regression of $\Delta \log N$ or $\Delta \log w$ on the export shock. The second row reports the implied inverse elasticity of labor supply (ϵ), obtained by regressing $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. All regressions include the set of controls Log N_{t-1}, Log w_{t-1}, Log $Sales_{t-1}$, Share of $exports_{t-1}$, and Import Shock. Details of variable definitions are provided in Appendix Table A12. All regressions include a set of 2-digit sector × country × year fixed effects and a set of local labor market × year fixed effects. Standard errors clustered at the group level reported in the table. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table A6: Quality upgrading and input mix

	New Product (1)	New Process (2)	Share Skilled (3)	Share Prod. (4)	$\frac{\text{Sales}}{\text{N}}$ (5)
Export shock	0.0108	-0.0813	6.312	4.123	0.0513
	(0.0538)	(0.0656)	(6.612)	(2.905)	(0.177)
Import shock	0.180***	0.0850**	4.804	1.080	0.0771
	(0.0527)	(0.0389)	(3.786)	(1.250)	(0.219)
Log N_{t-1}	0.0501***	0.0480***	0.774	-0.360	0.0770**
	(0.00914)	(0.0105)	(1.046)	(0.510)	(0.0305)
Share of exports$_{t-1}$	-0.0000423	0.00119	-0.123*	0.00476	-0.00134
	(0.000590)	(0.000767)	(0.0691)	(0.0235)	(0.000883)
R-squared	0.233	0.234	0.154	0.189	0.275
Observations	1,090	1,090	1,010	1,019	1,051

Notes: The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. The table reports the estimated effect of the export shock on several proxies of firm upgrading and changes in the input ratio mix. Details of variable definitions are provided in Appendix Table A12. All regressions include a set of 2-digit sector $\times$ country $\times$ year fixed effects and a set of local labor market $\times$ year fixed effects. Standard errors clustered at the local labor market and economic activity $\times$ country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table A7: Labor market power — Controlling for proxies of quality upgrading

Export shock:	Baseline		Large Depreciation		Large Exporter	
	$\Delta \log N$ (1)	$\Delta \log w$ (2)	$\Delta \log N$ (3)	$\Delta \log w$ (4)	$\Delta \log N$ (5)	$\Delta \log w$ (6)
Export shock	0.270***	0.261**	0.267***	0.266**	0.281***	0.255**
	(0.0609)	(0.112)	(0.0603)	(0.114)	(0.0885)	(0.105)
New Product	0.0148	0.0416	0.0150	0.0416	0.0110	0.0524
	(0.0341)	(0.0765)	(0.0341)	(0.0765)	(0.0321)	(0.0760)
New Process	0.0781*	0.104**	0.0782*	0.104**	0.0779*	0.108**
	(0.0438)	(0.0479)	(0.0438)	(0.0478)	(0.0440)	(0.0489)
Share Skilled	0.000871	0.00120	0.000873	0.00120	0.000872	0.00108
	(0.000916)	(0.000801)	(0.000917)	(0.000801)	(0.000949)	(0.000784)
Share Prod.	0.000355	-0.00194	0.000349	-0.00194	0.000348	-0.00190
	(0.00154)	(0.00119)	(0.00154)	(0.00119)	(0.00154)	(0.00118)
Sales/N	0.145***	0.180***	0.145***	0.180***	0.145***	0.185***
	(0.0223)	(0.0433)	(0.0223)	(0.0433)	(0.0199)	(0.0420)
Implied ϵ	0.852**		0.882**		0.907**	
	(0.342)		(0.342)		(0.368)	
F-statistic	16.99		16.99		10.47	
R-squared	0.266	0.553	0.266	0.553	0.266	0.550
Observations	1,058	1,058	1,058	1,058	1,058	1,058

Notes: This tables augments the baseline specifications to estimate ϵ (reported in Table 3) with additional controls for quality upgrading. The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. The first row reports the estimated coefficient of a regression of $\Delta \log N$ or $\Delta \log w$ on the export shock. Row "Implied ϵ' reports the implied inverse elasticity of labor supply (ϵ), obtained by regressing $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. The shock is defined differently across pairs of columns. In columns 1-2, we use the definition given by equation 3. In columns 3–4, we consider only depreciation shocks above the 10th percentile of the distribution of depreciations, $\Delta \widetilde{R}cd, t$. Specifically, we compute the 10th percentile of the distribution of $\Delta \widetilde{R}cd, t$ across all country–destination–year observations, and set $\Delta \widetilde{R}_{cd,t} = 0$ for all values below that threshold. In columns 5–6, we exclude marginal exporters by coding $X_{i,t_0} = 1$ only for firms whose export share is above the 10th percentile of the country-specific export-share distribution, conditional on exporting. All regressions include the set of controls Log N_{t-1}, Log w_{t-1}, Log Sales$_{t-1}$, Share of exports$_{t-1}$, and Import Shock. The specifications also control for the share of skilled workers, share of production workers, sales per worker, dummy for the introduction of new products, and dummy for the introduction of new processes. Details of variable definitions are provided in Appendix Table A12. All regressions include a set of 2-digit sector × country × year fixed effects and a set of local labor market × year fixed effects. Standard errors clustered at the local labor market and economic activity × country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table A8: Labor market power — Heterogeneity
Firms in the top 14 export sectors

	Panel A: Firm Characteristics						
	Size	Share Skilled	Sales Per Worker	Market Access	Foreign Owned {0,1}	State Owned {0,1}	$\frac{\text{Avg Wage}_i}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	1.152**	1.680*	1.551***	0.172	1.831***	-1.572	1.003**
	(0.427)	(0.933)	(0.257)	(0.851)	(0.532)	(1.133)	(0.428)
Low [b]	1.101**	0.194	0.799	1.257**	0.702	0.838**	0.0683
	(0.518)	(0.668)	(0.657)	(0.511)	(0.421)	(0.329)	(0.318)
F-statistics	[8.2; 4.2]	[6.0; 10.3]	[9.0; 5.6]	[6.0; 8.2]	[14.4; 6.3]	[76.2; 13.6]	[5.0;9.2]
p-value H_0: [a] = [b]	(0.938)	(0.313)	(0.386)	(0.355)	(0.120)	(0.032)	(0.108)
Observations	1,176	1,176	1,176	1,176	1,173	1,173	1,176
	Panel B: Country Characteristics						
	Income	Labor Share	Share of Self-Empl.	Union Density	Collective Bargain	Unemp. Protection	$\frac{\text{Avg Wage}_c}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	0.410	0.429	1.760**	-0.319	0.225	-0.148	1.202**
	(0.637)	(1.354)	(0.816)	(0.480)	(0.497)	(0.612)	(0.539)
Low [b]	1.079**	1.040*	-0.374	1.775**	1.423***	1.266**	0.438
	(0.458)	(0.539)	(0.492)	(0.829)	(0.525)	(0.493)	(0.327)
F-statistics	[46.3; 13.2]	[223.8; 29.6]	[7.7; 28.2]	[28.2; 7.7]	[10.9; 18.4]	[39.7; 17.4]	[20.8; 9.1]
p-value H_0: [a] = [b]	(0.442)	(0.727)	(0.056)	(0.058)	(0.153)	(0.098)	(0.282)
Observations	1,176	1,176	1,176	1,176	1,176	1,176	1,176

Notes: The sample is restricted to firms in the top 14 export sectors (2-digit, ISIC Rev. 3.1) in each country. The table reports, for two different groups of firms, the implied inverse elasticity of labor supply (ϵ), obtained from a single regression of $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. All right-hand-side variables are interacted with two indicator variables that define the two groups. In Panel A, columns 1, 2, 3, 4, and 7 define the two groups based on whether the firm is above the median (top row) or below the median (bottom row) of surveyed firms in the country, according to the variable listed in the column header. In column 5, the two groups depend on whether the firm's private foreign ownership is at least 10% (top row) or not (bottom row), and in column 6 on whether the firm is fully owned by the government (top row) or not (bottom row). In Panel B, the two groups correspond to firms located in countries above (top row) or below (bottom row) the median value of the variable listed in the column header. Details of variable definitions are provided in Appendix Table A12. We report two F-statistics corresponding to the Kleibergen-Paap F-test of the first stage: one for the indicator variable in the first line (reported on the left) and one for the indicator variable in the second line (reported on the right). We also report the p-value of a test of the null hypothesis that ϵ is the same for the two groups. All regressions include the controls Log N$t-1$, Log w$t-1$, Log Sales$t-1$, Share of exports$t-1$, and Import Shock. All regressions include a set of 2-digit sector $\times$ country $\times$ year fixed effects and a set of local labor market $\times$ year fixed effects. Standard errors are clustered at the local labor market and economic activity $\times$ country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table A9: Labor market power — Heterogeneity
Firms in the top 11 export sectors

	Panel A: Firm Characteristics						
	Size	Share Skilled	Sales Per Worker	Market Access	Foreign Owned {0,1}	State Owned {0,1}	$\frac{\text{Avg Wage}_i}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	1.127***	1.284**	1.314***	0.230	2.170***	-1.267	1.127***
	(0.367)	(0.563)	(0.213)	(0.814)	(0.642)	(0.965)	(0.356)
Low [b]	0.814	0.174	0.947	1.143**	0.581	0.745**	-0.155
	(0.497)	(0.773)	(0.597)	(0.472)	(0.472)	(0.315)	(0.535)
F-statistics	[13.2; 4.2]	[10.8; 9.6]	[19.1; 10.4]	[10.4; 15.1]	[8.1; 14.4]	[66.0; 26.4]	[7.7; 8.5]
p-value H_0: [a] = [b]	(0.618)	(0.346)	(0.627)	(0.430)	(0.095)	(0.038)	(0.076)
Observations	1,048	1,048	1,048	1,048	1,045	1,045	1,048
	Panel B: Country Characteristics						
	Income	Labor Share	Share of Self-Empl.	Union Density	Collective Bargain	Unemp. Protection	$\frac{\text{Avg Wage}_c}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	0.162	-0.676	1.638*	-0.277	0.0525	-0.302	1.157**
	(0.631)	(1.857)	(0.847)	(0.511)	(0.459)	(0.655)	(0.481)
Low [b]	1.080**	1.168**	-0.320	1.653*	1.589***	1.213**	0.260
	(0.501)	(0.536)	(0.523)	(0.864)	(0.611)	(0.512)	(0.345)
F-statistics	[11.3; 13.7]	[181.1; 46.9]	[7.0; 16.6]	[15.5; 6.8]	[11.7; 23.1]	[7.0; 16.2]	[15.3; 6.9]
p-value H_0: [a] = [b]	(0.312)	(0.411)	(0.100)	(0.103)	(0.090)	(0.102)	(0.184)
Observations	1,048	1,048	1,048	1,048	1,048	1,048	1,048

Notes: The sample is restricted to firms in the top 11 export sectors (2-digit, ISIC Rev. 3.1) in each country. The table reports, for two different groups of firms, the implied inverse elasticity of labor supply (ϵ), obtained from a single regression of $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. All right-hand-side variables are interacted with two indicator variables that define the two groups. In Panel A, Columns 1, 2, 3, 4, and 7 define the two groups based on whether the firm is above the median (top row) or below the median (bottom row) of surveyed firms in the country, according to the variable listed in the column header. In Column 5, the two groups depend on whether the firm's private foreign ownership is at least 10% (top row) or not (bottom row), and in Column 6 on whether the firm is fully owned by the government (top row) or not (bottom row). In Panel B, the two groups correspond to firms located in countries above (top row) or below (bottom row) the median value of the variable listed in the column header. Details of variable definitions are provided in Appendix Table A12. We report two F-statistics corresponding to the Kleibergen-Paap F-test of the first stage: one for the indicator variable in the first line (reported on the left) and one for the indicator variable in the second line (reported on the right). We also report the p-value of a test of the null hypothesis that ϵ is the same for the two groups. All regressions include the controls Log N$t-1$, Log w$t-1$, Log Sales$t-1$, Share of exports$t-1$, and Import Shock. All regressions include a set of 2-digit sector $\times$ country $\times$ year fixed effects and a set of local labor market $\times$ year fixed effects. Standard errors are clustered at the local labor market and economic activity $\times$ country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table A10: Labor market power — Heterogeneity
Shock based on large depreciations

	Panel A: Firm Characteristics						
	Size	Share Skilled	Sales Per Worker	Market Access	Foreign Owned {0,1}	State Owned {0,1}	$\frac{\text{Avg Wage}_i}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	1.133***	1.387**	1.354***	0.300	1.901***	-1.522	1.072**
	(0.398)	(0.610)	(0.228)	(0.818)	(0.541)	(1.135)	(0.460)
Low [b]	1.017*	0.209	1.008	1.331***	0.679	0.819**	-0.0525
	(0.529)	(0.775)	(0.663)	(0.470)	(0.428)	(0.336)	(0.408)
F-statistics	[12.1; 3.4]	[9.3; 7.4]	[10.9; 6.5]	[7.3 ;9.2]	[10.5; 9.0]	[78.9; 17.5]	[8.0.; 10.5]
p-value H_0: [a] = [b]	(0.862)	(0.327)	(0.682)	(0.360)	(0.105)	(0.036)	(0.086)
Observations	1,119	1,119	1,119	1,119	1,116	1,116	1,119
	Panel B: Country Characteristics						
	Income	Labor Share	Share of Self-Empl.	Union Density	Collective Bargain	Unemp. Protection	$\frac{\text{Avg Wage}_c}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	0.236	0.583	1.687**	-0.440	0.0941	-0.496	1.138**
	(0.681)	(1.375)	(0.750)	(0.518)	(0.488)	(0.623)	(0.527)
Low [b]	1.129**	0.976*	-0.496	1.701**	1.587***	1.320***	0.488
	(0.452)	(0.530)	(0.528)	(0.762)	(0.503)	(0.499)	(0.313)
F-statistics	[8.9; 14.3]	[179.9; 22.9]	[9.5; 12.3]	[11.4; 9.3]	[8.5; 17.6]	[6.3; 17.4]	[11.5; 10.1]
p-value H_0: [a] = [b]	(0.314)	(0.823)	(0.038)	(0.040)	(0.057)	(0.033)	(0.344)
Observations	1,119	1,119	1,119	1,119	1,119	1,119	1,119

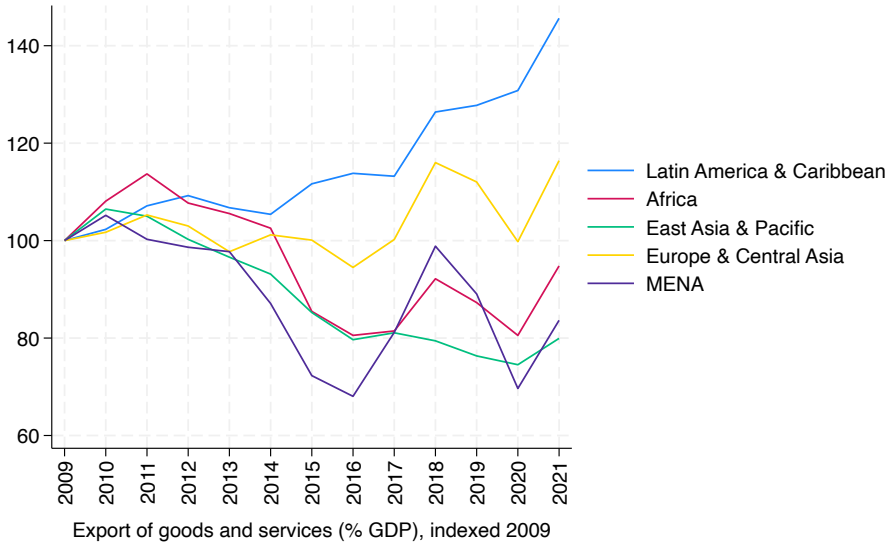
Notes: The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. The table reports, for two different groups of firms, the implied inverse elasticity of labor supply (ϵ), obtained from a single regression of $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. To construct the export shock, we discard small depreciations by computing the 10th percentile of the distribution of $\Delta \widetilde{R}cd, t$ and setting $\Delta \widetilde{R}cd, t = 0$ for all values below that threshold. All right-hand-side variables are interacted with two indicator variables that define the two groups. In Panel A, Columns 1, 2, 3, 4, and 7 define the two groups based on whether the firm is above the median (top row) or below the median (bottom row) of surveyed firms in the country, according to the variable listed in the column header. In Column 5, the two groups depend on whether the firm's private foreign ownership is at least 10% (top row) or not (bottom row), and in Column 6 on whether the firm is fully owned by the government (top row) or not (bottom row). In Panel B, the two groups correspond to firms located in countries above (top row) or below (bottom row) the median value of the variable listed in the column header. Details of variable definitions are provided in Appendix Table A12. We report two F-statistics corresponding to the Kleibergen-Paap F-test of the first stage: one for the indicator variable in the first line (reported on the left) and one for the indicator variable in the second line (reported on the right). We also report the p-value of a test of the null hypothesis that ϵ is the same for the two groups. All regressions include the controls Log N$t-1$, Log w$t-1$, Log Sales$t-1$, Share of exports$t-1$, and Import Shock. All regressions include a set of 2-digit sector × country × year fixed effects and a set of local labor market × year fixed effects. Standard errors are clustered at the local labor market and economic activity × country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table A11: Labor market power — Heterogeneity
Shock based on large exporters

	Panel A: Firm Characteristics						
	Size	Share Skilled	Sales Per Worker	Market Access	Foreign Owned {0,1}	State Owned {0,1}	$\frac{\text{Avg Wage}_i}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	1.156***	1.468*	1.346***	0.415	1.909***	-1.527	1.059**
	(0.402)	(0.806)	(0.197)	(0.578)	(0.548)	(1.160)	(0.434)
Low [b]	0.995	0.384	1.029	1.166**	0.416	0.738*	-0.164
	(0.847)	(0.672)	(0.966)	(0.521)	(0.610)	(0.405)	(0.448)
F-statistics	[15.1; 2.1]	[3.9; 4.4]	[10.4; 4.0]	[7.4; 7.7]	[8.2; 4.2]	[71.4; 8.7]	[20.2; 6.7]
p-value H_0: [a] = [b]	(0.843)	(0.365)	(0.774)	(0.404)	(0.085)	(0.035)	(0.061)
Observations	1,119	1,119	1,119	1,119	1,116	1,116	1,119
	Panel B: Country Characteristics						
	Income	Labor Share	Share of Self-Empl.	Union Density	Collective Bargain	Unemp. Protection	$\frac{\text{Avg Wage}_c}{\text{Min Wage}_c}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High [a]	-0.0817	0.106	1.425**	-0.497	0.0635	-1.266	1.199*
	(1.011)	(1.370)	(0.655)	(0.957)	(0.611)	(1.302)	(0.711)
Low [b]	1.036**	1.093	-0.704	1.472**	1.635**	1.113**	0.424
	(0.468)	(0.741)	(1.040)	(0.696)	(0.694)	(0.491)	(0.315)
F-statistics	[5.5; 18.6]	[174.1; 32.9]	[11.3; 9.1]	[8.5; 10.1]	[7.5; 28.2]	[4.6; 19.3]	[9.1; 11.4]
p-value H_0: [a] = [b]	(0.305)	(0.621)	(0.083)	(0.090)	(0.038)	(0.075)	(0.367)
Observations	1,119	1,119	1,119	1,119	1,119	1,119	1,119

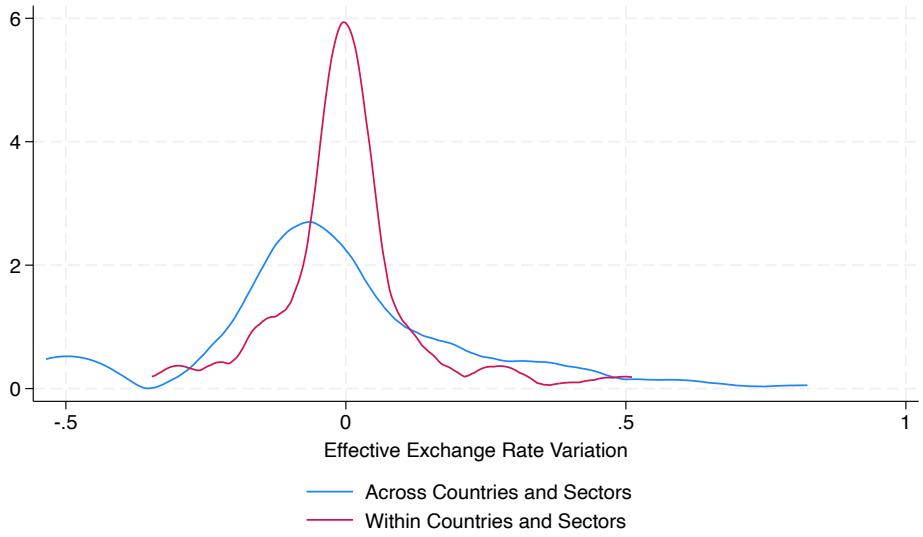
Notes: The sample is restricted to firms in the top 13 export sectors (2-digit, ISIC Rev. 3.1) in each country. The table reports, for two different groups of firms, the implied inverse elasticity of labor supply (ϵ), obtained from a single regression of $\Delta \log N$ on $\Delta \log w$, using the export shock as an instrument. To construct the export shock, we consider only firms with substantial export activity. Specifically, we code $X_{i,t_0} = 1$ only for firms whose export share is above the 10th percentile of the country-specific export-share distribution, conditional on exporting, thereby excluding marginal exporters from the definition. All right-hand-side variables are interacted with two indicator variables that define the two groups. In Panel A, Columns 1, 2, 3, 4, and 7 define the two groups based on whether the firm is above the median (top row) or below the median (bottom row) of surveyed firms in the country, according to the variable listed in the column header. In Column 5, the two groups depend on whether the firm's private foreign ownership is at least 10% (top row) or not (bottom row), and in Column 6 on whether the firm is fully owned by the government (top row) or not (bottom row). In Panel B, the two groups correspond to firms located in countries above (top row) or below (bottom row) the median value of the variable listed in the column header. Details of variable definitions are provided in Appendix Table A12. We report two F-statistics corresponding to the Kleibergen-Paap F-test of the first stage: one for the indicator variable in the first line (reported on the left) and one for the indicator variable in the second line (reported on the right). We also report the p-value of a test of the null hypothesis that ϵ is the same for the two groups. All regressions include the controls Log N$t-1$, Log w$t-1$, Log Sales$t-1$, Share of exports$t-1$, and Import Shock. All regressions include a set of 2-digit sector × country × year fixed effects and a set of local labor market × year fixed effects. Standard errors are clustered at the local labor market and economic activity × country levels. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Figure A1: Exports over time across world regions



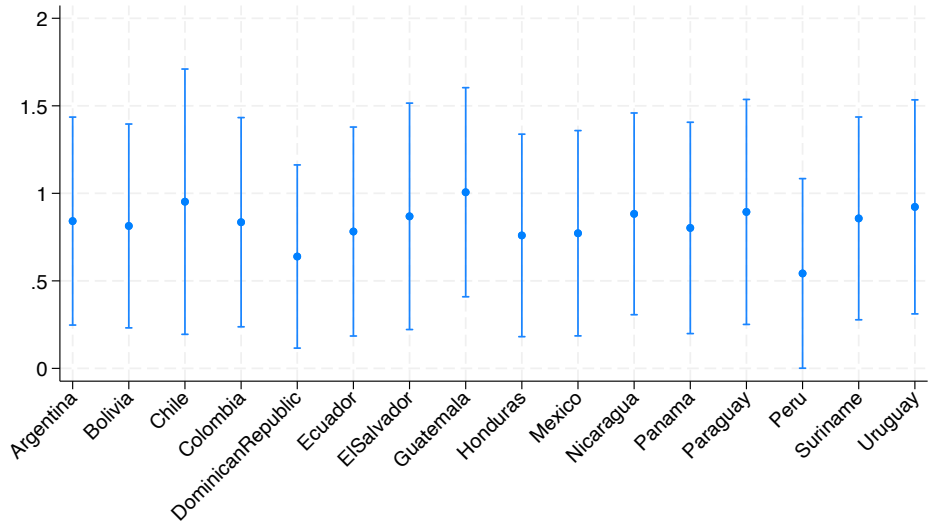
Notes: This figure shows the evolution of export value of goods and services, as a percentage of GDP, for country regions in the global WBES dataset. World Bank data, indexed as 100 at 2009 values. MENA stands for Middle East and North Africa.

Figure A2: Variation in export shocks



Notes: This figure shows the distribution of the exchange rate shocks for two level of variation. The blue line shows the variation across countries and sectors. The red line shows the variation within countries and sectors, which is the residuals of a regression of the export shock a set of 2-digit sector (ISIC Rev. 3.1) $\times$ country fixed effects.

Figure A3: Labor market power — Excluding individual countries



Notes: This figure shows the estimate of ε obtained in a sample that excludes the country listed in the x-axis. 95% confidence intervals are reported.

Appendix B Variables

Local Labor Markets

To define the local labor market of a firm, we proceed as follows. First, we use the geolocation of the firm in conjunction with a shapefile that encompasses the various administrative unit levels of each country. With these two sources of information, we determine for each firm the code of the administrative unit at each respective level of administration.

Next, for each country, we determine which administrative unit level most accurately reflects local labor markets. To achieve this, we start by conducting a web search for documents—such as papers, policy briefs, etc.—that enumerate and detail each country's local labor markets. During this search, we use the country's name and one of the following keywords: "Metropolitan Area,", "Metropolitan Zone," "Metropolitan Region," "Functional Urban Areas," "Local Labor Market," "Labor Commuting Zone," and "Local Labor Agglomerations."

In many of these sources, the definition of a local labor market aligns with or mirrors that of the OECD.[29] According to this definition, a local labor market, which the OECD calls a Functional Urban Area (FUA), consists of a city along with its surrounding areas or commuting zones, forming an integrated labor market with the city. This integration means that individuals within the local labor market can work in the city without residing there, facilitated by commuting. The OECD employs population density and travel-to-work flows as criteria to define local labor markets. Appendix Figure A4 provides web links for the documents we used.

Using these sources, we proceed to identify which level of administrative unit most accurately encapsulates the local labor market. Consider, for example, Colombia, which is divided into 32 departments ("departamentos") and approximately 1,101 municipalities. Using the firm's geolocation and the shapefile, we find the code of its municipality and the code of its department. Do municipalities or departments more effectively capture the local labor market in the data? Drawing from the source document, we concluded that an "area metropolitana" can encompass several municipalities, and that firms are more accurately grouped into local labor markets when they belong to the same department. Consequently, Colombian firms within the same department will be regarded as being in the same local labor market. This methodology is applied similarly across other LAC countries in the WBES data.

[29] https://www.oecd.org/regional/regional-statistics/functional-urban-areas.htm.

Figure A4: Labor Market Definition, Sources

Country	Source
Argentina	https://es.shiftcities.org/projects/argentina
Bolivia	https://plataformaurbana.cepal.org/en/countries-cities
Chile	https://www.oecd.org/regional/regional-statistics/functional-urban-areas.htm
Colombia	https://www.oecd.org/regional/regional-statistics/functional-urban-areas.htm
Dominican Republic	https://plataformaurbana.cepal.org/en/countries-cities
Ecuador	https://plataformaurbana.cepal.org/en/countries-cities
El Salvador	https://plataformaurbana.cepal.org/en/countries-cities
Guatemala	https://plataformaurbana.cepal.org/en/countries-cities
Honduras	https://plataformaurbana.cepal.org/en/countries-cities
Mexico	https://www.oecd.org/regional/regional-statistics/functional-urban-areas.htm
Nicaragua	https://plataformaurbana.cepal.org/en/countries-cities
Panama	https://plataformaurbana.cepal.org/en/countries-cities
Paraguay	https://plataformaurbana.cepal.org/en/countries-cities
Peru	https://plataformaurbana.cepal.org/en/countries-cities
Suriname	https://www.paho.org/en/suriname
Uruguay	https://plataformaurbana.cepal.org/en/countries-cities

Details of Variable Definitions

The following table contains detailed descriptions of all the variables used in the paper.

Table A12: Variable description

Variable name	Definition
Δ Log sales	change in log-sales between t_0 and t_1. Source: WBES.
Δ Log N	change in log-number of employees between t_0 and t_1. Source: WBES.
Log Sales	log-sales in t_0. Source: WBES.
Log N	log-number of employees in t_0. Source: WBES.
Export shock	dummy defined according to equation (3). It takes the value of one if the firm was a direct or indirect exporter in t_0 and its domestic currency experienced a real depreciation vis-à-vis currencies in the average destination country of the firm's sector. Sources: WBES (firm export); WITS (bilateral export flows by sector); IMF, Bank of Italy, World Bank, and OECD (exchange rates and CPIs).
Large Depreciation	alternative definition of Export shock that excludes small depreciations. It is a dummy taking the value of one if the firm was a direct or indirect exporter in t_0 and its domestic currency experienced a real depreciation vis-à-vis currencies in the average destination country of the firm's sector, provided that such depreciation is above the 10th percentile of the depreciation distribution. Sources: WBES (firm export); WITS (bilateral export flows by sector); IMF, Bank of Italy, World Bank, and OECD (exchange rates and CPIs).
Large Exporter	alternative definition of Export Shock that excludes marginal exporters. It is a dummy taking the value of one if the firm was an exporter in t_0, its export share was above the 10th percentile of the country-specific export-share distribution among exporters, and its domestic currency experienced a real depreciation vis-à-vis currencies in the average destination country of the firm's sector. Sources: WBES (firm export); WITS (bilateral export flows by sector); IMF, Bank of Italy, World Bank, and OECD (exchange rates and CPIs).
Import shock	dummy for import shocks. It takes the value of one if the firm was an importer in t_0 and its domestic currency experienced a real depreciation vis-à-vis currencies in the average destination country of the firm's sector. Sources: WBES (firm import); WITS (bilateral export flows by sector); IMF, Bank of Italy, World Bank, and OECD (exchange rates and CPIs).
Appreciation shock	dummy for an alternative shock based on currency appreciation. It takes the value of one if the firm was a direct or indirect exporter in t_0 and its domestic currency experienced a real appreciation vis-à-vis currencies in the average destination country of the firm's sector. Sources: WBES (firm export); WITS (bilateral export flows by sector); IMF, Bank of Italy, World Bank, and OECD (exchange rates and CPIs).
Share of exports	share of sales from exported goods in t_0. Source: WBES.
High Size	dummy for large firms. It takes the value of one if the firm's sales in t_0 are above the median of the country distribution. Source: WBES.
High Share Skilled	dummy for firms with high share of skilled workers. It takes the value of one if the firm's share of skilled workers in t_0 is above the median of the country distribution. Source: WBES.
High Sales Per Worker	dummy for firms with high productivity. It takes the value of one if the firm's sales per worker in t_0 is above the median of the country distribution. Source: WBES.

High Market Access	dummy for geographically-connected firms. It takes the value of one if the firm's measure of market access (MA) in t_0 is above the median of the country distribution. Market access is computed as in Donaldson and Hornbeck (2016). We use each firm's geolocation to identify the most cost-effective freight route to approximately 7,000 global population centers. This measure for each firm is computed as a weighted average of the population of each center, with weights determined by the inverse of the lowest-cost freight. More in detail, the construction of our market access measure relies on three primary components: i) transport cost parameters assigned to each mode of transport (railway, waterway, and wagon) per unit length; ii) utilization of a transport network database to map potential cargo movement along each mode of transport; and iii) calculation of the lowest-cost cargo routes within the network based on given cost parameters. This process involves the use of QGIS and a shapefile encompassing roads, waterways, and railways. The optimal route between the firm and a population center is determined using the Dijkstra algorithm method (Ahuja et al., 1995). Finally, bilateral transportation costs are established using the same cost parameters as Donaldson and Hornbeck (2016). The final market access measure (MA_O) is computed as $MA_O \approx \sum_d \tau_{OD}^{-\theta} N_D$. Here, τ_{OD} represents the bilateral transportation cost between origin (O) and destination (D), while N_D denotes the population at the respective destination. Source: WBES.
Foreign Owned {0,1}	dummy for foreign-owned firms. It takes the value of one if the firm has a share of private foreign ownership above 10%. Source: WBES.
State Owned {0,1}	dummy for state-owned firms. It takes the value of one if the firm is fully owned by the government or state. Source: WBES.
High $\frac{\text{Avg Wage}_i}{\text{Min Wage}_c}$	dummy for firms with less binding minimum wage. It takes the value of one if the ratio of the firm's average paid wage and the country minimum wage is above the median of the country distribution. Source: WBES (firm wage) and ILO (minimum wage).
High Income	dummy for firms in higher-income countries. It takes the value of one if the firm is located in a country with a GDP per capita above the cross-sectional median. Source: World Bank.
High Labor Share	dummy for firms in countries with high labor share of national income. It takes the value of one if the firm is located in a country with labor share of national income above the cross-sectional median. Source: ILO.
High Share of Self-Empl.	dummy for firms in countries with high share of self-employment. It takes the value of one if the firm is located in a country with labor share of national income above the cross-sectional median. Source: World Bank.
High Union Density	dummy for firms in countries with high union density. It takes the value of one if the firm is located in a country with a trade union density above the cross-sectional median. Source: ILO.
High Collective Bargain	dummy for firms in countries with high collective baraining. It takes the value of one if the firm is located in a country with a collective bargaining coverage rate above the cross-sectional median. Source: ILO.
High Unemp. Protection	dummy for firms in countries with high unemployment protection. It takes the value of one if the firm is located in a country with a proportion of unemployed population receiving unemployment benefits that is above the cross-sectional median. Source: ILO.
High $\frac{\text{Avg Wage}_c}{\text{Min Wage}_c}$	dummy for countries with less binding minimum wage. It takes the value of one if the ratio of the country average paid wage and the country minimum wage is above the median of the country distribution. Source: ILO.
New Product	dummy for firms introducing product innovations in t_1. Source: WBES.
New Process	dummy for firms introducing process innovations in t_1. Source: WBES.
Share Skilled	share of firms' skilled employees (workforce employed in highly skilled production roles or professional occupations that require extensive theoretical and technical knowledge) in t_1. Source: WBES.
Share Prod.	share of firms' employees directly involved in production activities in t_1. Source: WBES.
Sales/Employees	ratio of total annual sales to the number of full-time employees in t_1. Source: WBES.