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Abstract

Using establishment-level data from the World Bank Enterprise Survey, we assess the market power of exporting firms across 16 countries in Latin America. Leveraging information on export destinations, as well as exchange rate and price data, we construct exchange rate-driven shocks to the marginal revenue product of individual firms. By examining firms' employment and wage responses, we estimate the inverse elasticity of the labor supply they face—a direct indicator of labor market power. In our preferred specification, we estimate that workers employed in exporting firms produce on the margin 83% more than what they earn as wage. We investigate the correlations between labor market power and firm characteristics, country attributes, and labor market institutions and regulations. We find that labor market power is higher for firms in countries where unions, collective bargaining, and unemployment protection are less prevalent.[1]

JEL classifications: F10, F14, F16, J2, J3, J42, L10, O54
Keywords: Firms, Exports, Labor market power, Labor market institutions, Latin America

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1 Introduction

When employers face limited competition for workers, they are able to suppress wages below the marginal product of labor. This has significant implications for the labor share of income, income distribution, and overall welfare. A growing body of literature has estimated significant levels of market power in both high-income and low and middle-income countries (see e.g., Azar et al., 2022b; Berger et al., 2022; Yeh et al., 2022; Bassier et al., 2022; Amodio and de Roux, 2023; Muralidharan et al., 2023; Bassier, 2023). While the determinants of labor market power are still under-explored, recent studies are beginning to bridge this gap. For instance, Felix (2021) investigates the effects of tariff reductions on wage markdowns, Amodio et al. (2022) delve into the connection between self-employment and labor market power in Peru, and Estefan et al. (2024) examine the impact of labor policies, particularly labor outsourcing in Mexico, on wage markdowns.

Labor market institutions are a natural candidate for explaining variation in labor market power. These institutions have been shown to significantly affect labor market dynamics (Nickell, 1997; Heckman and Pagés, 2003). For instance, stringent labor regulations, as discussed by Botero et al. (2004), can influence employment levels, but they may also empower workers, potentially leading to a reduction in wage markdowns. To effectively study the relationship between labor market power and institutional features, especially those that vary at the country level, it is essential to employ uniform measures of labor market power that are consistent across different countries.

This paper examines the variation in labor market power in relation to firm and country-specific characteristics, particularly focusing on labor market institutions. We use establishment-level data from the World Bank Enterprise Survey (WBES) to estimate the market power of large employers in Latin American countries. By leveraging data on export destinations, exchange rates, and prices, we construct exchange rate-driven shocks to the marginal revenue product of firms in leading export sectors, enabling us to assess their impact on employment and wages. This approach yields estimates of the inverse elasticity of the labor supply curve faced by individual firms, a direct measure of their labor market power. Importantly, our estimates are consistent across Latin American firms, which allows us to relate them to country-level characteristics.

Our focus on Latin America is strategic, as these countries exhibit significant uniformity in various aspects, yet display considerable diversity in their labor institution environments (Heckman and Pagés, 2003). Additionally, unlike continents such as Africa, Latin America has a substantial presence of large firms operating in a wide array of export sectors. Using export shocks to generate exogenous variation in the marginal revenue product of labor to trace firms' labor supply curve allows us to estimate labor market power with fewer assumptions compared

to methods that rely on production function estimation (Amodio and de Roux, 2023). However, since we must consider exporting establishment to construct the instrument, this measurement strategy is limited to assessing the labor market power of large firms.

We construct export shocks corresponding to a devaluation of the local currency. In our panel regression analysis, which includes year-specific fixed effects for both local labor markets and country-sector pairs, we initially show that these shocks lead firms to increase sales, employment, and wages.[2] This result alone constitutes evidence on the existence of labor market power, as in a perfectly competitive labor market, shocks to firms' marginal revenue product of labor would not affect wages. Employing an instrumental variable (IV) strategy, we regress the logarithmic change in wages against the logarithmic change in employment, using our export shock as the instrument to estimate wage markdowns. We estimate an inverse labor supply elasticity of 0.83, indicating that workers in large firms produce, at the margin, 83% more than their received wages.[3] This finding remains robust across different definitions of exporting sectors. Additionally, we observe no significant impact of export shocks on firm upgrading indicators, such as the proportion of skilled workers or the introduction of new processes. This mitigates concerns that our results are influenced by quality upgrading in firms exposed to shocks, leading to higher wages.

We then shift our focus to examine how labor market power varies across different dimensions. We find that that firms located in smaller cities, outside the country's capital, which are foreign-owned (as opposed to state-owned) and larger according to their sales levels, exhibit higher levels of labor market power. Additionally, we observe that firms in countries with lower overall income and a lower labor share of income tend to have more labor market power. More importantly, regarding labor market institutions, we find that in countries where unions, collective bargaining, and unemployment protection are less prevalent, firms possess greater labor market power. These findings carry substantial implications, suggesting that while pro-worker labor market institutions may adversely impact employment and informality, they may also mitigate the labor market power of large firms. This, in turn, can support workers, enhance welfare, and contribute to reducing inequality.

This brief paper contributes to the burgeoning literature that quantifies labor market power. In the context of developed countries, studies such as Azar et al. (2022b), Bassier et al. (2022), and Yeh et al. (2022) report wage markdowns in the US ranging from 1.14 to 1.53. In the sphere of developing countries, Tortarolo and Zárate (2020) and Amodio and de Roux (2023) estimate wage markdowns of 1.12 and 1.4, respectively, in Colombian manufacturing plants. Muralidharan et al. (2023) find a markdown of 1.33 among landowners in India, while Felix

[2]We have access to a confidential version of the WBES data with the geolocation of the firm that allows us to identify its local labor market.

[3]Alternatively, workers earn about 55 cents for every marginal dollar they produce.

(2021) reports a markdown of 2 in the same country. Our research contributes to this literature by offering new estimates that are consistent across a range of Latin American countries. These estimates do not require the use of production function estimation and reveal a wage markdown for large Latin American firms of 1.83.

We further contribute to the growing body of research that investigates the determinants of labor market power. This includes Azar et al. (2022a), who establish a link between labor market power and market concentrationAmodio et al. (2022), who explore the relationship between self-employment and labor market power, Felix (2021) who examines the connection between labor market power and trade reforms in Brazil, and Estefan et al. (2024) who analyze the impact of outsourcing policies on wage markdowns. Our study adds to this line of work by showing that pro-worker labor market institutions, including labor unions and unemployment protection, are associated with lower wage markdowns. This finding is facilitated by our uniform estimates across a diverse set of countries, which we derive using a plausible source of exogenous variation.

The rest of the paper is organized as follows. The next section describes the data. Section 3 presents the empirical strategy and summary statistics. Sections 4 discusses estimates of labor market power across large firms in Latin America. Section 5 relates these estimates to firm and country-level characteristics. Finally, Section 6 concludes.

2 Data

Our main data source is the World Bank Enterprise Survey (WBES). The WBES is administered to owners and top managers of formal sector firms in the manufacturing, retail, and service sectors in many developing countries. The survey provides information on, among other features, annual sales, cost of inputs and labor, employment and workforce composition, exports and imports, capacity utilization, innovation, and performance. Information is available for about 180,000 firms in 148 countries between 2006 and 2020.

The survey is representative at the country level of the population of privately-owned firms with at least 5 employees operating in the formal (non-agricultural) sector. The administration of the questionnaire is conducted face-to-face in different years and at different time intervals. In terms of coverage, most of the countries in the sample are low- and middle-income economies. 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), sector (manufacturing, retail, and other services, with further sub-sectors in selected economies), and subnational region. Importantly, the WBES follows a standardized methodology that allows for comparable information on an extensive set of firms' activities. The original dataset is a repeated cross-section, but several firms are interviewed in multiple waves. In this paper, we

focus on the panel dimension of the WBES. We have access to a confidential version of the WBES dataset with information on firms' geo-localization. Starting from 2010, geo-reference information on each firm is tracked by the devices used in the Computer-Assisted Personal Interviews (CAPI). The geo-localization of the firm allows us to find its relevant local labor market. For firms observed before 2010, we impute the geo-localization from 2010 or onwards and therefore assume that the firm location is stable over time.

We construct a panel of establishments using data from 16 countries in Latin America and combine it with data on exchange rates and inflation. We obtain nominal exchange and inflation rates from the IMF, the Bank of Italy, the World Bank and the OECD. Finally, we use information from WITS that contains data on bilateral export flows by sector (2-digit ISIC Rev 3.1).

3 Empirical Strategy

The wage-setting power of employers is measured by the elasticity of the labor supply they face (Manning, 2003). Our strategy builds on the one that Amodio and de Roux (2023) implement for Colombia. We leverage pre-determined variation on the export destinations of a firm's sector combined with variation in real exchange rates to generate firm-specific shocks to the marginal revenue product and thus variation in labor demand. These exchange rate-driven export shocks act as a labor demand shifters and can be used to trace the slope of the labor supply curve faced by individual firms. Following a positive export shock, if the labor market is perfectly competitive, the equilibrium number of hired workers will increase, but the wage paid will not. This is because the firm takes the price of labor as given and equal to the ongoing market wage. If the firm has labor market power, both the equilibrium number of hired workers and the wage paid will increase. We can thus identify the inverse elasticity of the labor supply curve by taking the ratio between the log change in wage and the log change in employment.

To operationalize this theory, we start by deriving the share of exports of sector s in country c to destination d in each year t, given by:

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

where Exp_{scdt} is the total export value from sector s in country c to destination d from the WITS data. We then obtain the real exchange rate between country c and destination d in year t as follows:

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

Here, 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. Note that under this definition an increase in $\widetilde{R}_{cdt}$ corresponds to a real *depreciation* of country c's currency.

Now consider firm i in country c surveyed in year t_1 and in a subsequent year t_2. For each of the destinations to which the sector of this firm exports, we compute the change in the exchange rate between t_1 and t_2, that is, $\Delta\widetilde{R}_{cd,t_2} = \widetilde{R}_{cd,t_2} - \widetilde{R}_{cd,t_1}$. Finally, we compute a measure of the effective exchange rate experienced by this firm between the two waves based on the change in the real exchange rates that are relevant to its sector. The effective change in the real exchange rate for a firm in sector s, surveyed in waves t_1 and t_2, is given by:

$$E_{sc,t_2} = \sum_d S_{scd,t_1} \Delta\widetilde{R}_{cd,t_2}$$

Finally, we define the dummy X_{ismc,t_1} equal to one if the firm was exporting in t_1 and use it to obtain the final export shock measure:

$$Z_{ismct} = \mathbb{I}\left\{X_{ismc,t_1} \times E_{sc,t_2} > 0\right\}$$

We use Z_{ismct} as a labor demand shifter to trace the slope of the labor supply curve faced by the firm. We implement an IV strategy where the first stage is given by:

$$\Delta \ln N_{ismct} = \gamma \; Z_{ismct} + \lambda_{sct} + \theta_{mct} + v_{ismct} \tag{1}$$

and the second stage by:

$$\Delta \ln w_{ismct} = \epsilon \; \Delta \ln N_{ismct} + \delta_{sct} + \mu_{mct} + u_{ismct} \tag{2}$$

where i denotes a firm, s a sector, m a local labor market, c a country and t a year.[4] N_{ismct} is the number of workers and w_{ismct} is the average wage.[5] λ_{sct} and δ_{sct} denote sector-country-year fixed effects and θ_{mct} and μ_{mct} denote local labor market - year fixed effects. v_{ismct} and u_{ismct} are the error terms. Note that under this specification, ϵ is equal to the inverse elasticity of the

[4]To define local labor markets, we use the information provided by the WBES on the administrative units. The WBES contains information on three levels of administrative units. For each country, we choose which one of those three levels best captures local labor markets on a case-by-case basis by using secondary sources of information.

[5]In the WBES data, we do not 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.

labor supply curve since it is equal to

$$\frac{\partial \ln w_{ismct}}{\partial \ln N_{ismct}} = \frac{\partial w_{ismct}}{\partial N_{ismct}} \frac{N_{ismct}}{w_{ismct}} = \epsilon \tag{3}$$

with the variation in N_{ismct} coming solely from the export shock Z_{ismct}. Intuitively, the export shock shifts the marginal revenue product of labor, or in other words, the labor demand of the firm, without affecting the labor supply curve it faces. Therefore, the IV strategy allows us to leverage this plausible source of exogenous variation to trace the labor supply curve and hence estimate its inverse elasticity, ϵ, our measure of labor market power.[6]

The validity of this identification strategy rests upon three assumptions. First, we need a strong effect of Z_{ismct} on the marginal revenue product of labor and hence on N_{ismct}. In other words, we require a strong first stage. Second, we need Z_{ismct} to be as good as random, i.e., uncorrelated with other factors that affect Z_{ismct} and N_{ismct}. Finally, we need that Z_{ismct} affects w_{ismct} only through its effect on N_{ismct}. This poses a few challenges. First, exports shocks can be correlated within sectors and local labor markets. Therefore, we include λ_{sct} and δ_{sct} to hold fixed the labor supply at the level of the sector-country-year. Similarly, θ_{mct} and μ_{mct} control for shocks at the level of the local labor market-country-year level. Second, since exporting firms are different from non-exporting ones, we control for N_{t_1}, w_{t_1} and Z_{ismc,t_1}, which improves comparability and implies that we compare firms at the same point of the labor supply curve. Since exchange rates can have similar effects on input imports, we control for an import shock measure that is constructed analogously to the export shock. Finally, errors are clustered two-way by local labor market and country-sector.

Our initial WBES sample has a total of 3,179 establishments and 70 local labor markets in 16 countries.[7] This sample contains approximately 7,000 observations at the establishment-year level. Panel A of Table 1 shows the descriptive statistics for the whole panel. In each year, the average establishment sells 0.83 million USD, employs 30 employees, and pays an average annual wage of 4,606 USD.[8] In this sample, 30% of the establishment-years corresponds to years during which the establishment exports and 75% to years during which it imports. Once we move to a panel in first differences, we are left with close to 3,700 observations. In this panel, the median establishment increases its employment level in around 7% and its wages in 20%. The export shock is only available for manufacturing firms, so we are left with 2,300 observations. To increase power, we restrict the sample to the top 12 export sectors, which leaves us with 1,400 observations.[9] The inclusion of sector-country-year and local labor market-year fixed

[6]See Amodio and de Roux (2023) for details.

[7]Table A1 shows the number of establishments and local labor markets for each country.

[8]All nominal variable are expressed in constant USD of the year 2000.

[9]The top 12 sectors are the 12 sectors with the largest total exports during the period of analysis. Below we also present results using the top 15 and top 10 export sectors.

effects leads to a final sample of around 1,300 observations.

Our sample consists mostly of large firms in Latin America. There are two reasons for this. First, establishments surveyed in the WBES are formal and have at least 5 employees. Second, for our empirical strategy to be valid, we focus on top exporting sectors which mostly consist of large firms. Most workers in Latin America are employed in small firms (of less than 10 workers). Appendix Table A2 compares the size of the firm of each worker in our estimation sample and the size of the firm of each worker in household surveys for Argentina, Colombia and Paraguay. Most workers in our sample belong to firms with more than 100 workers (88% for Argentina, 78% for Colombia, and 68% for Paraguay). In contrast, according to Argentina's household survey of 2019, only 27% of workers were employed in firms larger than 100 workers, and firms of less than 10 accounted for 60% of workers. The differences are similar for Colombia and Paraguay.

4 Estimates of Labor Market Power

Table 2 shows the effect of the export shock on the change in sales (columns 1 to 3), on the change in log employment (columns 4 to 6), and on the ratio between the two (column 7).[10] As for the change in log sales, the point estimate in column 1 is imprecise, but the effect becomes positive and significant once we control for log employment and log wage in t_1 (column 2) and additionally by export status in t_1 (column 3). This is consistent with a real depreciation of the local currency driving the marginal revenue product of labor up. With a real depreciation, each unit sold abroad commands more units of local currency and shifts upwards the marginal revenue curve, that is, it shifts upward the labor demand of the firm. This leads to higher production and sales. Consistently, columns 3 to 6 show that, irrespective of the set of controls that we include, establishments that experience a positive export shock increase employment. Yet, as shown in column 7, there is no effect on the ratio of sales to employment. Figure 1 shows the distribution of employment for establishments with $Z_{ismct} = 0$ and with $Z_{ismct} = 1$. Consistent with the results reported in Table 2, the distribution with a positive export shock is shifted to the right relative to the one with a zero export shock. A similar effect is depicted in Figure 1, which shows the distributions of wages for establishment-years with zero and positive export shocks.[11]

Table 3 shows the estimates of the inverse elasticity of the labor supply curve, ϵ in equation

[10] Figure A1 plots the Z_{ismct} both across and within countries and sectors and shows that our shock measure features considerable variation.

[11] Appendix Figure A2 shows a binned plot of changes in wages (y-axis) on changes in employment (x-axis) after controls and fixed effects have been partialled out, for firms that experienced an export shocks and firms that did not. The fitted line can be interpreted as the labor demand curve, and the figure shows that it shifts to the right for firm-years with a positive export shock.

2. This is our measure of labor market power, and we estimate it for the top 15 export sectors (columns 1 and 2), top 12 (columns 3 and 4) and top 10 (columns 5 and 6). Column 1 shows that the export shock increases the log change of the number of workers and column 2 shows that it leads to an increase in the log change of wages. The fact that wages increase with a positive export shock is evidence that the labor supply curve faced by the firm is not horizontal, consistent with the firm having labor market power. This result holds if we restrict the sample to the top 12 or top 10 export sectors. The second line of the table reports the implied ϵ, which is equal to the estimate in column 2 divided by that in column 1. To obtain its standard error, we estimate by 2SLS equations 1 and 2 discussed above. Finally, the third line reports the F-statistic of the first stage, which is relatively high, especially when we focus on the top 10 and top 12 export sectors. The implied ϵ ranges from 0.83 to 1.37 and the estimate for the top 12 export sectors implies that workers in large Latin American firms produce on the margin 83% more than their wage. Figure A3 presents estimates of ϵ from samples that exclude the country listed in the x-axis and shows that our results are not driven by a single country.

A natural concern at this point is that exchange rate-driven export shocks can induce firms to upgrade the quality of their products and hire not only more workers but also better ones who command higher wages. This would increase the average wage paid by exporting firms, as well as within-industry and within-plant wage dispersion (Verhoogen, 2008; Frias et al., 2012). To assuage this concern, we start by exploiting the information provided by WBES on the introduction of new products and new process, both measures of expenditure on machinery, equipment and R&D and therefore of quality upgrading. Appendix Table A3 shows the effect of our export shock for the top 15, top 12, and top 10 export sectors. We do not find evidence of a positive effect of our export shocks on these measures of upgrading. Furthermore, Appendix Table A3 also shows that the export shock does not cause changes in the share of skilled workers (columns 3, 7, and 11) or on the share of production workers (columns 4, 8, and 12). These results assuage the concern that quality upgrading is an important driver of our results.

5 Heterogeneity

In this section, we present heterogeneity exercises across various characteristics of firms, countries, and institutions. These exercises shed light on the factors contributing to the significant labor market power of large Latin American firms. Panel A of Table 4 displays the variation in estimates of ϵ, based on firm characteristics. Column 1 examines the relation between labor market power and labor market concentration, which is higher when employment is concentrated in fewer firms. Our findings indicate that firms situated outside a country's capital—typically in areas of higher concentration—wield more substantial labor market power. These findings align with those of Azar et al. (2022a) and Amodio and de Roux (2023). Columns

2 and 3 show that labor market power is more pronounced in foreign-owned firms and less so in state-owned firms, suggesting that public firms may distribute a larger portion of their revenues to workers. As shown in column 4, and in alignment with an oligopolistic labor market model, larger firms, as categorized by their sales volume, exhibit more market power. Column 5 explores heterogeneous effects based on a market access measure.[12] Theoretically, the impact of a firm's market access is twofold. Firstly, firms with broader market access, typically situated in urban centers, are likely to be larger. Secondly, these firms encounter more competition in the labor market due to their proximity to other employers. However, our results indicate that these two effects counterbalance each other, as we observe no significant differences in labor market power based on market access.

In Panel B of Table 4, we explore the heterogeneity of labor market power across different countries, focusing on country characteristics and labor market institutions. Column 1 reveals that firms in low to middle-income countries exhibit greater labor market power compared to those in upper-middle and high-income countries, as classified by the World Bank. Column 2 indicates that firms in countries where the labor share of national income is above the median, as reported by the International Labor Organization (ILO), also demonstrate higher labor market power. The findings in columns 3 and 4 suggest that firms in countries with union membership or collective bargaining coverage below the median level experience increased labor market power. This aligns with the notion that unions and collective bargaining arrangements empower workers, enabling them to secure a larger portion of firm revenues. Lastly, column 5 presents evidence that firms in countries with no unemployment protection after one year of tenure are characterized by greater market power. This supports the hypothesis that unemployment protection increases the value of workers' alternative employment options, leading to a more elastic labor supply curve and, consequently, lower labor market power.

6 Conclusion

This paper uses establishment-level data from the World Bank Enterprise Survey to measure the market power of large employers across 16 countries of Latin America and the Caribbean. Using information on export destinations, exchange rates, and prices we construct exchange rate-driven shocks to the marginal revenue product of firms and estimate their effect on employment and wages. This allows us to measure the inverse elasticity of the labor supply curve faced by firms. Given the nature of our sample, our results apply only to large Latin American firms. In our preferred specification, we estimate an inverse labor supply elasticity of 0.83. This implies

[12]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, following Donaldson and Hornbeck (2016). Market access for each firm is then calculated as the weighted average of the population of each center, with weights being the inverse of the lowest-cost freight.

that, on average, workers employed in large firms produce on the margin 83% more than what they earn as wage. To interpret these finding, we study how labor market power correlates with firm and country characteristics and with labor market institutions and regulations. We find that firms in Latin American countries where unions, collective bargaining and unemployment protection are less prevalent have higher labor market power.

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Tables and Figures

Table 1: Descriptive Statistics

	Observations	Mean	St. Dev.	Median
	Panel A: Full Sample			
Year	6905	2009.1	3.8	2009
Employment	6905	127.9	535.3	30
Wage (annual)	6905	6344	6094	4605
Sales (millions)	6611	4.7	11.9	.83
Sales per worker	6611	51174	111740	26283
Expoter	6902	.302	.459	0
Importer	4563	.751	.432	1
Export shock	2083	.114	.318	0
Import Shock	2073	.464	.499	0
$\Delta \log$ Employment	3779	.088	.695	.069
$\Delta \log$ Wage	3726	.177	1.076	.199
$\Delta \log$ Sales	3489	.127	1.077	.158
$\Delta \log$ Sales per Worker	3487	.046	.977	.064
	Panel B: Export Shock = 0			
Year	1845	2010.23	2.6	2009
Employment	1845	118.3	430.0	28
Wage (Annual)	1845	6536	6155	4668
$\Delta \log$ Employment	1845	.063	.657	.041
$\Delta \log$ Wage	1811	.231	1.074	.241
$\Delta \log$ Sales	1719	.137	1.04	.173
$\Delta \log$ Sales per Worker	1719	.079	.958	.095
	Panel C: Export Shock = 1			
Year	238	2011.6	3.2	2009
Employment	238	231.3	428.3	89.5
Wage (Annual)	238	9206	7854	6996
$\Delta \log$ Employment	238	.047	.655	.054
$\Delta \log$ Wage	236	.224	1.046	.256
$\Delta \log$ Sales	223	.23	1.155	.161
$\Delta \log$ Sales per Worker	223	.164	1.079	.091

Notes: The unit of observation is an establishment-year. Wages and sales are in are in constant 2000 USD.

Table 2: Effect of Export Shocks on Sales and Employment

	Δ Log Sales			Δ Log Employment			Δ Log S/E
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Export Shock	0.311	0.466**	0.490**	0.191***	0.224***	0.259***	0.133
	(0.191)	(0.195)	(0.210)	(0.066)	(0.067)	(0.076)	(0.171)
Import Shock	0.078	0.179	0.177	-0.025	-0.009	-0.009	0.137
	(0.202)	(0.163)	(0.165)	(0.062)	(0.063)	(0.063)	(0.155)
Log Employment$_{t-1}$		0.419***	0.420***		-0.082***	-0.076***	0.106***
		(0.102)	(0.103)		(0.016)	(0.016)	(0.024)
Log Wage$_{t-1}$		0.043	0.044		0.106***	0.109***	-0.269***
		(0.046)	(0.047)		(0.016)	(0.016)	(0.044)
Log Sales$_{t-1}$		-0.369***	-0.367***				
		(0.084)	(0.084)				
Share of exports$_{t-1}$			-0.001			-0.001*	-0.001
			(0.002)			(0.001)	(0.001)
Sector × Ctr. × Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LLM × Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1035	1035	1035	1101	1101	1101	1035
R^2	0.258	0.345	0.345	0.191	0.226	0.228	0.324

Notes: Sample is restricted to firms in the top 12 export sectors in each country. Standard errors clustered at the sector × country and local labor market level. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table 3: Estimates of Labor Market Power, ϵ

	Top 15 Sectors		Top 12 Sectors		Top 10 Sectors	
	$\Delta \log N$	$\Delta \log w$	$\Delta \log N$	$\Delta \log w$	$\Delta \log N$	$\Delta \log w$
	(1)	(2)	(3)	(4)	(5)	(6)
Export Shock	0.183**	0.249**	0.259**	0.214**	0.275**	0.251**
	(0.072)	(0.093)	(0.076)	(0.107)	(0.074)	(0.115)
Implied ϵ	1.365**		0.828**		0.913**	
	(0.582)		(0.397)		(0.421)	
F-statistic	6.433		11.72		13.806	
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Sector × Ctr. × Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
LLM × Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1311	1311	1101	1101	998	998
R^2	0.241	0.559	0.228	0.549	0.232	0.559

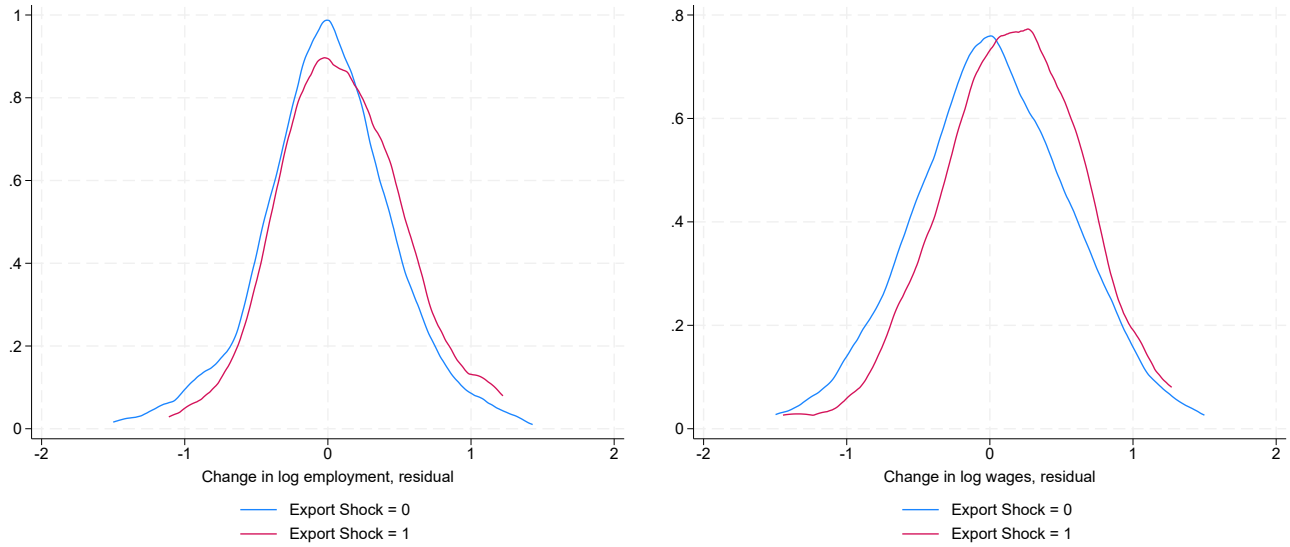
Notes: The first row reports the estimated coefficient of a regression of $\Delta \log N$ or $\Delta \log w$ on the export shock for firms in the top 15, top 12 and top 10 export sectors. The second row reports the estimated coefficient of an IV regression of $\Delta \log N$ on $\Delta \log w$ using the export shock as instrument. The set of controls includes Log Employment$_{t-1}$, Import Shock, Log Wage$_{t-1}$, Log Sales$_{t-1}$, and Share of exports$_{t-1}$. Standard errors clustered at the sector × country and local labor market level.
* p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Table 4: Heterogeneity

	Panel A: Firm Characteristics				
	Country Capital (1)	Foreign Owned (2)	State Owned (3)	Large Firm (4)	Market Access (5)
Yes	0.048	1.944***	-1.222	1.043***	0.802
	(0.689)	(0.608)	(1.010)	(0.274)	(0.644)
No	1.135**	0.670	0.802**	0.513	0.906
	(0.505)	(0.458)	(0.375)	(0.735)	(0.800)
Observations	1101	1098	1098	1101	1101
R^2	-0.071	0.089	0.118	0.098	0.097
	Panel B: Country Characteristics and Institutions				
	High Income	High Lab. Share	High Union	Collect. Bargain	Unemp. Protec.
Yes	0.968	-0.204	0.150	-0.413	-0.185
	(0.628)	(1.018)	(0.710)	(0.845)	(0.778)
No	0.648**	1.186**	1.267**	1.427***	1.296**
	(0.305)	(0.518)	(0.603)	(0.488)	(0.593)
Observations	1184	1184	1144	974	1101
R^2	0.049	0.023	-0.057	-0.233	0.006

Notes: Sample is restricted to firms in the top 12 export sectors in each country. Each column of each panel shows the result of an IV regression of $\Delta \log N$ on $\Delta \log w$ using the export shock as instrument and where all the right hand variables are interacted with an indicator variable listed in the column header. Each column reports the estimated coefficients of the interaction with $\Delta \log w$. In panel A, the indicator variable in column 1 is equal to one if the firm is located in the country capital, in column 2 if its ownership is less than 10% foreign, in column 3 if its ownership is more than 10% public, in column 4 if its total sales are above the median of total sales across firms, in column 5 if the firm's market access is above the median. In panel B, the indicator variable in column 1 is equal to one if the firm belongs to upper-middle and high-income countries as opposed to low-middle income countries according to the World Bank classification, in column 2 if the firm is located in a country with a labor share above the median labor share as reported by the ILO, in column 3 if the firm is located in a country with share of workers who belong to a union above the median as reported by the ILO, in column 4 if the firm is located in a country with a share of employees covered by collective agreements above the median as reported by the ILO, in column 5 if the firm is located in a country with unemployment protection available after one year of tenure on the job. Standard errors clustered at the sector $\times$ country and local labor market level. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

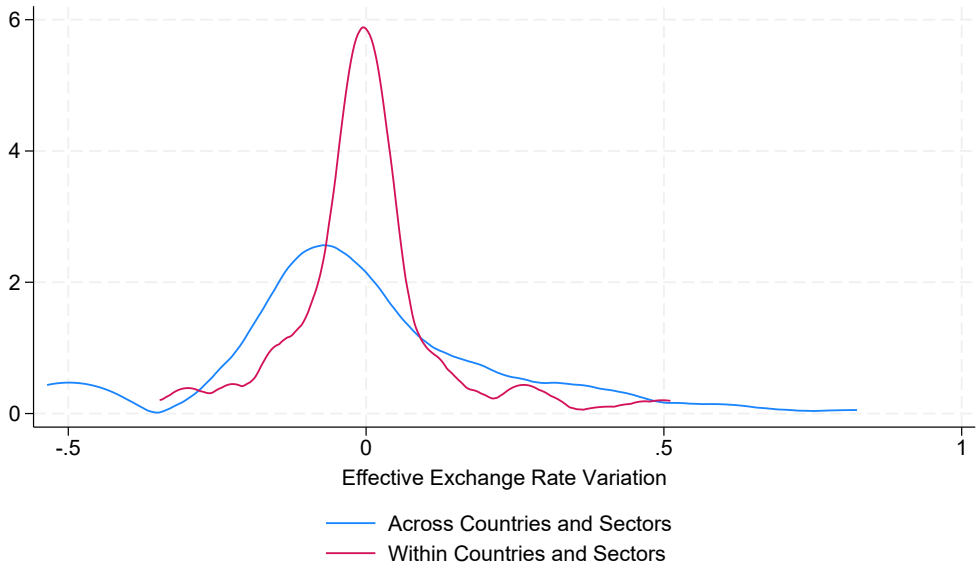
Figure 1: Distribution of Employment and Wage Changes



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

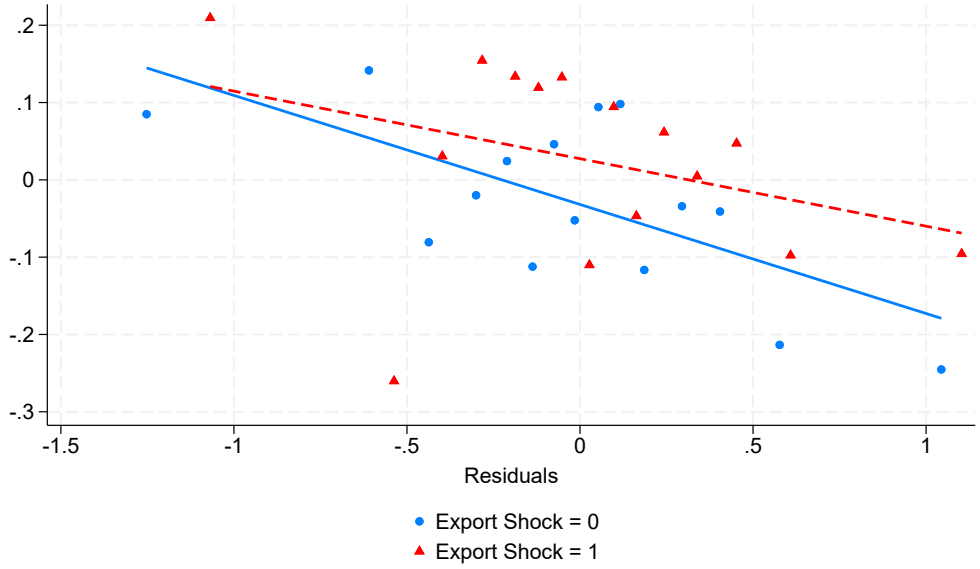
APPENDIX: Additional Figures and Tables (for online publication)

Figure A1: Variation in Export Shocks



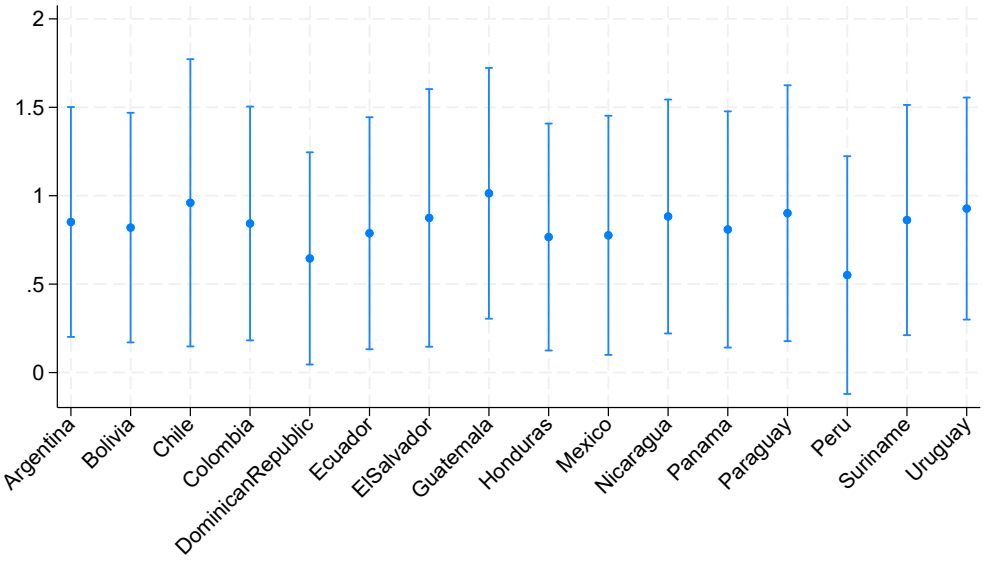
Notes: This figure shows the distribution of the exchange rate shocks for two level of variation. The blue line shows the variation across countries and sector. The red line shows the variation within countries and sectors.

Figure A2: Labor Demand Shift



Notes: This figure is a binned plot of changes in wages (y-axis) on changes in employment (x-axis) after controls and fixed effects have been partialled out, for firms that experienced an export shocks and firms that did not.

Figure A3: Robustness to Dropping Individual Countries



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

Table A1: Potential Sample

Country	Establishments	LLMs
Argentina	631	7
Bolivia	265	3
Chile	380	5
Colombia	499	4
Dominican Republic	98	4
Ecuador	214	3
El Salvador	273	6
Guatemala	331	5
Honduras	161	6
México	199	8
Nicaragua	215	6
Panama	98	3
Paraguay	208	2
Peru	537	4
Suriname	55	2
Uruguay	293	2
Total	4,457	70

Table A2: Firm Size Comparison

	Argentina			
	Estimation Sample		Household Survey, 2017	
Employment Bin	Workers	Frequency	Workers	Frequency
1 to 10	921	0.83	29029	56.52
11 to 25	2809	2.54	4823	9.39
26 to 40	2203	1.99	4025	7.84
41 to 100	7045	6.36	4924	9.59
101 or more	97824	88.29	8560	16.67
	Colombia			
	Estimation Sample		Household Survey, 2019	
Employment Bin	Workers	Frequency	Workers	Frequency
1 to 10	852	1.87	100635	59.84
11 to 20	1296	2.84	6847	4.07
21 to 30	1699	3.72	5798	3.45
31 to 50	2479	5.43	4800	2.85
51 to 100	3807	8.33	4912	2.92
101 or more	35542	77.81	45186	26.87
	Paraguay			
	Estimation Sample		Household Survey, 2017	
Employment Bin	Workers	Frequency	Workers	Frequency
1 to 10	391	2.73	20884	77.17
11 to 20	611	4.27	1855	6.85
21 to 30	354	2.48	1018	3.76
31 to 50	1038	7.26	935	3.46
51 to 100	2227	15.58	942	3.48
101 or more	9677	67.68	1427	5.27

Notes: This table presents a comparison of the size of the firms of workers in the WBES estimation sample and in household surveys of Argentina, Colombia and Paraguay. To obtain a sample of WBES workers for each country, for each firm we keep the first year in which we observe it and expand the data using the number of employees. This results in a data set were each observation corresponds to a worker with information on the number of workers in her firm. We group these observations in bins listed in the first column and analogous to those used in the questionnaires of the corresponding household survey. To obtain the size of the workers firm in the household surveys we use all workers earning a wage.

Table A3: Quality Upgrading

	Top 15 Sectors				Top 12 Sectors				Top 10 Sectors			
	New Product (1)	New Process (2)	Share Skilled (3)	Share Prod. (4)	New Product (5)	New Process (6)	Share Skilled (7)	Share Prod. (8)	New Product (9)	New Process (10)	Share Skilled (11)	Share Prod. (12)
Export Shock	-0.027	-0.067	4.819	3.837	0.009	-0.085	6.307	28.892	0.058	-0.073	9.150	0.124
	(0.057)	(0.050)	(4.443)	(2.369)	(0.069)	(0.057)	(6.382)	(27.647)	(0.066)	(0.060)	(6.533)	(12.423)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector × Ctr. ×	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LLM × Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1277	1277	1184	1196	1072	1072	992	1089	971	971	901	992
R^2	0.231	0.216	0.150	0.185	0.232	0.233	0.151	0.140	0.237	0.227	0.150	0.128

Notes: * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01. Standard errors clustered at the sector × country and local labor market level.